City Council Meeting

Aubrey City Council Chambers
226 Countryside Dr.
Aubrey, TX 76227
January 22, 2026
6:00 PM

**(Notice of Potential Quorum for Planning & Zoning Commission, Board of Adjustment, Library Board, Municipal Development District, and Parks and Recreation Board - even though a quorum of the members of these boards may or may not be present, no official action will be taken by their members.)*

Notice Regarding Remote Participation of Council Members

Pursuant to Section 551.127, Texas Government Code, one or more Council Members may attend this meeting remotely using videoconferencing technology. A quorum of the board will be physically present at the location provided above.

Call to Order - Determine if a Quorum is Present:

Invocation & Pledge of Allegiance: Pledge of Allegiance to the Texas Flag - “Honor the Texas flag; I pledge allegiance to thee, Texas, one state, under God, one, and indivisible.”

Community Announcements: Items of community interest may include recognizing Citizens and Staff for outstanding contributions to the community, a reminder about an upcoming event that is organized or sponsored by the governing body, and announcements of an imminent threat to public safety that has arisen after the posting of this agenda.

1. - Presentation of ICC/IAEI ElectriCity award by Amanda Wozniak

Citizen Input: Any person may address the City Council. If your comments are concerning an agenda item, you may wait until the discussion on that item if you prefer. Once recognized by the Mayor, please step forward to the speaker’s podium, state your name and address and speak directly into the microphone so that people in the room can hear comments and see

presentations. Citizen comments are limited to three (3) minutes per individual unless additional time is otherwise required by law. No discussion or action may be taken at this meeting on any item not listed on the agenda, other than to make statements of factual information or recite existing policy in response to a citizen's inquiry.

Consent Items: Items placed on the Consent Agenda are considered routine in nature and non-controversial. The Consent Agenda can be acted upon in one motion. Items may be removed from the Consent Agenda by the request of Council, board members or staff. Consideration and action on the following:

2. Approve minutes of the December 18, 2025 and January 10, 2026 meetings.

3. Approve Monthly Staff Reports

4. Approve Monthly Financial Report.

5. Approve Quarterly Investment Report

6. Approve the request from Council member(s) identified in the Staff report for an excused absence from the December 18, 2025 Regular City Council meeting.

7. Approve Ordinance Number 945-26, ordering the May 2, 2026 City of Aubrey General Election for the election of persons to Place 1 and Place 4 on the Aubrey City Council and providing for other matters relating to the election.

8. Approve a Professional Services Agreement with Plummer Associates for On-Call Planning Services for an amount not to exceed $30,000, and authorize the City Manager to execute the Agreement.

New Business: New items requested for consideration.

9. Consideration and action on a Resolution nominating a candidate to fill the vacancy for the unexpired term of Place 5 on the Denton Central Appraisal District Board of Directors.

10. Consider and act on a Final Plat application for Lot 1, Block 1, AUB Office Addition, a proposed replat of Lot 82, Block 23, Map of the Town of Aubrey, together with an adjacent triangular tract described in Volume 481, Page 131 of the Deed Records of Denton County, Texas, and contains approximately 0.557 acres situated within the Dennis Cowan Survey, Abstract No. 304, City of Aubrey, Denton County, Texas. The purpose of the replat is to create a single lot and to dedicate a fire lane easement, water easement, and drainage and detention easement. *(Applicant: SHAP, LLC,* 403 S. Main)

11. Consider and act on a Site Plan application for office space use at 403 S. Main Street, an approximate 0.557 acre tract of land located within the Aubrey city limits. *(Applicant: SHAP, LLC)*

12. Consider and take action on Individual Project Order Number 2026-1 with Kimley-Horn and Associates, Inc. for Professional Engineering Services for the Main Street Phase II Capital Improvement Project in an amount not to exceed $420,100, and authorize the City Manager to execute the Agreement.

13. Consider and take action on the award/rejection of bids for the FM 428 Sewer Lift Station Improvements.

14. Consider and take action on a Professional Engineering Services Agreement with Birkhoff, Hendricks and Carter, L.L.P., for the 2025-2026 Downtown Drainage Capital Improvement Plan Projects for an amount not to exceed $598,804, and authorize the City Manager to execute the Agreement.

15. Consider and take action on a Professional Engineering Services Agreement with Birkhoff, Hendricks and Carter, L.L.P., for the Blackjack and Magnolia Street Reconstruction Project for an amount not to exceed $510,565, and authorize the City Manager to execute the agreement.

16. Consider and take action on Change Order No. 4 to the City of Aubrey WWTP Expansion to 2.25 MGD Contract with Gracon Construction in the amount not to exceed $245,689.93, and authorize the City Manager to execute necessary documents.

17. Consideration and action on award/rejection of bids for the Hill Street and 428 Ground Storage Tank project in an amount not to exceed $225,919.26 plus $1,200.00 for each replacement beam, and authorize the Mayor or his designee to execute necessary documents.

18. Consideration and action on a Professional Services Agreement with CSL not to exceed $70,000 for an MDD Hotel Product Development and Amateur Sports Facility Feasibility Study, and authorize the City Manager to execute the agreement,

19. Conduct a Public Hearing and Consider and take appropriate action regarding the adoption of Resolution No. 1033-26 adopting The Policy Statement for Economic Development Incentives (2026), providing guidelines for economic development incentives and reauthorizing and adopting guidelines for tax abatement pursuant to State law; and providing for an effective period.

Department Updates and Discussion:

20. Administration & Finance:
    - Incode Update
    - Audit Schedule

21. Library:

22. Fire Department:

- Fire Station Updates

23. Police Department:

24. Public Works:
    - Water Main Break Update

25. Human Resources:

26. Municipal Development:

Future Agenda Requests: Council or Board Members, City Staff, and Citizens may request items to be included on future agendas. Discussion is limited to what the request is for, and if and when the item can be put on a future agenda.

*****EXECUTIVE SESSION***** In accordance with Texas Government Code, Section 551.001, et seq., the City Council will recess into Executive Session (closed meeting) to discuss the following:

27. **Section 551.071(1) and (2) Consultation with Attorney.** For Council to seek the advice of its attorney about pending or contemplated litigation or a settlement offer and to consult with the City Attorney on a matter in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with the Texas Open Meetings Act:
    - *City of Aubrey v. Jerry H. Simmon*s, et al, Cause No. PR-2024-01392-B, Denton County, Texas
    - Municipal Utilities Tyler Tech Contract
    - Purchase of Property for Municipal Services
    - Downtown Property Purchase
    - Sign Ordinance
    - Highpointe Commercial
    - Onyx Development
    - Downtown Development
    - Coffey Road Development
    - Local Government Code 52.004 Designating an Official Newspaper

28. **Section 551.072 Real Property.**Deliberate the purchase, exchange, lease, or value of real property if deliberation in an open meeting would have a detrimental effect on the position of the governmental body in negotiations with a third person.
    - Property acquisition for municipal purposes

29. **Section 551.087 Economic Development Negotiations.** To discuss or deliberate regarding commercial or financial information that the City has received from a business prospect that the City seeks to have locate, stay, or expand in or near the territory of the City and with which the City is conducting economic development negotiations; and/or to deliberate the offer of a financial or other incentive to the business prospect:
    - Project Anchor

- Purchase of downtown property for economic development

Motion to Recess into Executive Session.

Reconvene into Open Session: In accordance with Texas Government Code, Chapter 551, the City Council will reconvene into Regular Session to consider and take appropriate action, if any, regarding any items discussed in Executive Session.

30. Consider and take appropriate action on Project Anchor as discussed in closed session.

-ADJOURN-

I, Jenny Hicks, City Secretary, certify that this Notice of Meeting was posted, per the Open Meetings Act, on the official bulletin board at the City Hall of the City of Aubrey, Texas and on the City's website at www.aubreytx.gov in accordance with Chapter 551, Texas Government Code, and shall remain posted until the meeting is adjourned.

I certify that the attached notice and agenda of items to be considered by the City Council of the City of Aubrey, Texas was removed by me from the official bulletin board of the City of Aubrey, Texas, 107 S. Main St, Aubrey, Texas on the _____day of _____, 2026.

(The City Council reserves the right to adjourn into closed session at any time during the course of this meeting to consult with its attorney regarding any of the matters listed on this document, as authorized by Texas Government Code Section 551.071 Consultation with Attorney.)

This facility is wheelchair accessible and accessible parking spaces are available. Persons with disabilities who plan to attend this meeting and who may need auxiliary aids or services such as interpreters for persons who are deaf or hearing impaired, readers, or large print, need to contact the ADA Coordinator at least 48-hours prior to the meeting. Please e-mail your request to: swilliams@aubreytx.gov.gov or call (940) 440-9343 ext 106. BRAILLE IS NOT AVAILABLE.

City Council Meeting Minutes

Aubrey City Council Chambers
226 Countryside Dr.
Aubrey, TX 76227
December 18, 2025
6:30 PM

The meeting was called to order at 6:30 PM.

Present: Jeff Perry, Chuck Fikes, Randy Jones, Chris Rich, Mike Browning

Absent: Matt Jones

Staff Present: City Attorney Patricia Adams, City Manager Charles Kreidler, City Secretary Jenny Hicks, Finance Director Mike English, Fire Chief Eric Schlotter, Police Chief Richard Brooks, Assistant City Manager Leanne Wilson, Library Director Brittany McLain, HR Director Shaena Williams, Municipal Development Director Christine Gossett, Administrative Clerk Kacey Hagen, Assistant to the City Manager Bailey Thompson

Council Member Mike Browning offered the Invocation and led the Pledge of Allegiance.

Community Announcements:

1. **Chief Richard Brooks thanked former Police Chief Charles Kreidler for getting the Annual Shop with a Cop kicked off, and announced this year was the 5th year of the event.**

   Fire Chief Eric Schlotter announced two new members of the department, Mike Holmes and Dalton King. Mayor Rich led the swearing-in ceremony.

   Chief Schlotter also announced the prestigious 25 years of service of Assistant Fire Chief Scott Downes.

Citizen Input: None

Consent Items: Items placed on the Consent Agenda are considered routine in nature and non-controversial. The Consent Agenda can be acted upon in one motion. Items may be removed from the Consent Agenda by the request of Council, board members or staff. Consideration and action on the following:

2. Approve minutes of the November 20, 2025 meeting.

3. Approve Monthly Staff Reports
4. Approve Monthly Financial Report.
5. Approve the request from Council member(s) identified in the Staff report as an excused absence from the November 20, 2025 Regular City Council meetings.
6. Approve a Memorandum of Understanding with Aubrey Independent School district for the Fire Academy Program.
7. Approve Ordinance No. 943-25 approving an amendment to Chapter 13, "Utilities" of the Code of Ordinances to amend Article 13.02, "Solid Waste and Recycling" to adopt fees reflecting the CPI rate adjustment for Republic Services.
8. Approve the assignment and assumption of the Maylar Development Agreement between DTC Ventures and the City to authorize DTC Ventures, Inc. to assign its interest and obligations in the Development Agreement to GSP Redfearn LLC; and authorizing the Mayor to execute necessary documents.
9. Approve a Development Agreement between Arck Developers, LLC and the City of Aubrey, for the residential and general retail development of an approximate 53.606 acre tract of land generally located at 6411 Knuckles Road, Denton County, within the extraterritorial jurisdiction of the City; and authorizing the Mayor to execute necessary documents.
10. Approve an Amended and Restated Interlocal Agreement between the City and Mustang Special Utility District for Billing Services; and authorize the City Manager to finalize and execute necessary documents.
11. Approve Ordinance No. 944-25 amending Ordinance No. 781-23 and Ordinance No. 869-24 approving the Second Amendment to the Solid Waste and Recycling Franchise Agreement between the City and Republic Services of Lewisville to adjust rates based upon the CPI adjustment provided in the Agreement and to amend contractual terms related to CPI calculations; and authorize the Mayor to execute necessary documents.

    Council Member Chuck Fikes made a motion to approve the consent items. Council Member Jeff Perry seconded. Motion Passed (5:0). None opposed.

New Business:

12. Consideration and action on a Preliminary Plat for Highpointe Ranch Phase 4B for eighty-six (86) single-family residential lots and two (2) HOA lots, being approximately 25.623 acres out of the Francisco Trevino Survey, Abstract 1243 generally located South of E. Blackjack Road, east of U.S. Highway 377, and North of Springhill Road/FM 428, City of Aubrey, Denton County, Texas. (Aubrey Blackjack Partners, LLC)

    Assistant City Manager Leanne Wilson provided information.

    Council Member Jeff Perry made a motion to approve the preliminary plat for Highpointe Ranch Phase 4B. Council Member Randy Jones seconded. Motion Passed (5:0). None opposed.

13. Consideration and action on a Final Plat for Highpointe Ranch Phase 4B for eighty- six (86) residential lots and two (2) HOA lots, being approximately 25.623 acres out of the Francisco Trevino Survey, Abstract 1243 generally located south of E. Blackjack Road, East of U.S. Highway 377, and North of Springhill Road/FM

428, City of Aubrey, Denton County, Texas. (Aubrey Blackjack Partners, LLC)

Assistant City Manager Leanne Wilson provided information.

Council Member Jeff Perry made a motion to approve the final plat for Highpointe Ranch Phase . Council Member Randy Jones seconded. Motion Passed (5:0). None opposed.

14. Consideration and action on a Final Plat, being a replat of the Sand Dollar Addition 2, creating three (3) lots, and being approximately 43.225 acres out of the J, Bridges Survey, Abstract No. 36, Sand Dollar Addition Block A, Lot 1, identified as an Addition to the City of Aubrey and located in the Extraterritorial Jurisdiction of the City of Aubrey, Denton County, Texas. (North Texas Natural Select Materials, LLC)

    Assistant City Manager Leanne Wilson provided information.

    Council Member Chuck Fikes made a motion to approve the replat. City Council Member Mike Browning seconded. Motion Passed (5:0). None opposed.

15. Consideration and action on an Amending Plat for Belmont Phase I, containing one- hundred fifty (150) lots in approximately 37.752 acres of land out of the F. Trevino Survey, Abstract No. 1243, within the Extraterritorial Jurisdiction of the City of Aubrey, Denton County, Texas. (*Belmont Development, LLC*)

    Assistant City Manager Leanne Wilson provided information.

    Council Member Randy Jones made a motion to approve the amended plat. Council Member Chuck Fikes seconded. Motion Passed (5:0). None opposed.

16. Consideration and action on Ordinance No. 941-25 annexing approximately 6.74-acres of land known as a portion of McNatt Road, legally described as being all of the 30-foot wide prescriptive right-of-way of McNatt Road, beginning at the Aubrey City limits and FM 428, continuing to the Future Ike Byrom Road, being legally described as being a part of the F. Trevino Survey, Abstract No. 1243, Denton County, Texas.

    City Manager Charles Kreidler provided information.

    Council Member Randy Jones made a motion to approve the annexation ordinance. Council Member Jeff Perry seconded. Motion Passed (5:0). None opposed.

17. Consideration and action on Ordinance No. 942-25 annexing approximately 13.06-acre tract of land known as a portion of Blackjack Road, legally described as being all of the prescriptive right-of-way of Blackjack Road, generally 30 feet in width along the existing Aubrey City limits and expanding to a total width of 60 feet after departing the existing Aubrey City limits, beginning at east right-of-way line of U.S. Highway 377 continuing to FM 2931, being legally described as being a part of the F. Trevino Survey, Abstract No. 1243, and the T. Chambers Survey, Abstract No. 223, Denton County, Texas.

City Manager Charles Kreidler provided information.

Council Member Randy Jones made a motion to approve the annexation ordinance. Council Member Jeff Perry seconded. Motion Passed (5:0). None opposed.

18. Consideration and action on Resolution No. 1032-25 granting a petition requesting annexation by A-Affordable Boat RV & Mini Storage Aubrey, LLC, owners of approximately 10 acres of land, being the entirety of Parcel ID 983657 generally located on the Wilson 10 Acre Subdivision Blk A Lot 1, Denton County, Texas, setting a Public Hearing for the annexation; authorizing staff to negotiate and enter into a written services agreement with Owner.

    City Manager Charles Kreidler provided information.

    After discussion in Executive Session, Council Member Jeff Perry made a motion to approve the Resolution, calling a public hearing for January 22, 2025 at 6:00 PM at the City Council Chambers, 226 Countryside Dr. City Council Member Mike Browning seconded. Motion Passed (5:0). None opposed.

19. Receive a presentation from Westwood regarding the design and cost estimate for an Outdoor Sports Complex; Discuss and provide direction to staff.

    Tricia Woliver, and Cody Atwood, with Westwood, provided information.

    Staff direction: Hold workshop to discuss. Preference leaned toward option 4 with some modifications.

20. Consideration and action on reappointing and/or removing members to the Historic Preservation Commission.

    Council Member Jeff Perry made a motion to remove Melba Baxter and Vinita Tribble, reappoint Darlene Wilson for a two-year term, and appoint Krys Murray as a regular member for a two-year term. Council Member Randy Jones seconded. Motion Passed (5:0). None opposed.

21. Consideration and action on the addition of a new City Staff position for a Senior Planner.

    HR Manager Shaena Williams provided information.

    Council Member Chuck Fikes made a motion to authorize the creation of one new full-time Senior Planner in the 2025-2026 fiscal year budget. Council Member Jeff Perry seconded. Motion Passed (0:0). None opposed.

Department Updates and Discussion:

22. Administration & Finance:

23. Library:

24. Fire Department:
    - Station Construction Update

    Chief Schlotter provided the following updates: the work on Station 2 has slowed due to the holidays, the park is moving along nicely and the dog park is progressing, and the estimated completion date is January 12th.

25. Police Department:
    - Property Room Update

    Chief Brooks provided the following updates: thanked the council for their support of the property room expansion, which is complete and much more organized, and they have the ability to process the evidence on the countertop. A new evidence-destroying device was purchased.

26. Public Works:
    - Water Updates
    - Wastewater Updates

    Assistant City Manager Leanne Wilson provided the following updates: The second contractor is moving in on the Rock Hill Pump Station, so you'll start to see the ground storage tank and pumps going in. There is about 12 to 18 months to completion; The surface water delivery point is still under design; we are looking for an elevated storage parcel; the wastewater treatment plant is continuing and on schedule; the Pecan Creek Lift Station is in design; and, an RFP is being drafted for the drainage improvements for downtown.

27. Human Resources:

28. Municipal Development:
    - RFP for Tenant Opportunity in Downtown Aubey

    MDD Director Christine Gossett provided information about the Proposal for Tenants that is out for a project at 204-208 S Main St.

Future Agenda Requests: Council or Board Members, City Staff, and Citizens may request items to be included on future agendas. Discussion is limited to what the request is for, and if and when the item can be put on a future agenda.

29. Discussion regarding future special meeting date(s).

    Discussion was held to have a special meeting on January 10th at 8:00 AM to discuss the ballpark design along with the Parks and Recreation Board, and to discuss a joint meeting date with the MDD and additional special meeting date for annexation public hearings.

*****EXECUTIVE SESSION***** In accordance with Texas Government Code, Section 551.001, et seq., the City Council will recess into Executive Session (closed meeting) to discuss the following:

30. **Section 551.071(1) and (2) Consultation with Attorney.** For Council to seek the advice of its attorney about pending or contemplated litigation or a settlement

offer and to consult with the City Attorney on a matter in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with the Texas Open Meetings Act:

- *City of Aubrey v. Jerry H. Simmon*s, et al, Cause No. PR-2024-01392-B, Denton County, Texas
- Municipal Utilities Tyler Tech Contract
- Purchase of Property for Municipal Services
- Downtown Property Purchase
- Hidden Lakes
- Trivedi Farms
- Highpointe Commercial
- Onyx Development
- Downtown Street Abandonment

31. **Section 551.072 Real Property.** Deliberate the purchase, exchange, lease, or value of real property if deliberation in an open meeting would have a detrimental effect on the position of the governmental body in negotiations with a third person.
    - Property acquisition for municipal purposes

Council Member Jeff Perry made a motion to recess into Executive Session including the items listed on the agenda and item number 18 at 7:15 PM. Council Member Randy Jones seconded. Motion Passed (5:0). None opposed.

City Council reconvened into Open Session at 9:05 PM: In accordance with Texas Government Code, Chapter 551, the City Council will reconvene into Regular Session to consider and take appropriate action, if any, regarding any items discussed in Executive Session.

Action was taken on item 18.

The meeting was adjourned at 9:06 PM.

PASSED and APPROVED by the City Council of the City of Aubrey, Texas, this 22nd day of January, 2026.

_____

Chris Rich, Mayor

ATTEST:

_____

Jenny Hicks, City Secretary

City Council and Parks and Recreation Board Joint Meeting Minutes

Aubrey Area Library Community Center
226 Countryside Dr.
Aubrey, TX 76227
January 10, 2026
8:00 AM

The meeting was called to order at 8:00 AM.

City Council Members Present: Jeff Perry, Chuck Fikes, Randy Jones, Chris Rich, Mike Browning,

City Council Members Absent: Matt Jones

Parks Board Members Present: Courtney Kelly, Jessica Hamilton, Mark Arbenowske, Erin Bansal, Amy Kramer

Parks Board Members Absent: Eric Probst

Council Member Jeff Perry offered the invocation and led the Pledges of Allegiance.

Community Announcements: None

Citizen Input: None

Workshop Items:

1. Receive a presentation and discuss the design concepts and cost estimate for a new outdoor sports complex.

   Assistant City Manager Leanne Wilson and Public Works Manager Kurt Karnowski provided information.

   Tricia Woliver and Cody Atwood, with Westwood, provided information.

   Discussion was held regarding the proposed outdoor sports complex including

the following items: field purpose, field types, and design concepts,

2. Parks and Recreation Board general park discussion.

   Also discussed were the practice fields which will be installed at the future Fire Station 4, Trivedi Park is at 30% of concept, the Pocket Park for Police Station 3 was introduced, and the Winn Ridge dog park will be completed in early February, and the remainder of the park will be completed mid-February.

3. AAYSA board general park discussion.

   AAYSA Treasurer, Ginny Lyn Petroline, spoke regarding their preferences.

Action Items

4. City Council: Consideration and any necessary action regarding the design concept of a new outdoor sports complex.

   Council Member Jeff Perry made a motion to approve concept number four including turf. Council Member Randy Jones seconded. Motion Passed (5:0). None opposed.

5. City Council: Discussion regarding setting a special meeting date for annexation public hearings, and a joint meeting with the Municipal Development District Board.

   Discussion was held to have a joint meeting with the Aubrey MDD on February 10th at 6:00 PM.

The meeting was adjourned at 9:34 AM.

PASSED and APPROVED by the City Council of the City of Aubrey, Texas this 22nd day of January, 2026.

_____

Chris Rich, Mayor

ATTEST:

_____

Jenny Hicks, City Secretary

City of Aubrey - Police Department

December 2025 Statistical Report

Calls for Police Service		% +/-
December 2025	788	16%
December 2024	678	
YTD - 2025	8,760	2%
YTD - 2024	8,610	

Calls for Service - Dispatched		% +/-
December 2025	616	21%
December 2024	509	
YTD - 2025	6,755	4%
YTD - 2024	6,508	

Calls for Service - Officer Initiated		% +/-
December 2025	172	2%
December 2024	169	
YTD - 2025	2,005	-5%
YTD - 2024	2,102	

Calls for Service By Area

Aubrey		% +/-
December 2025	216	19%
December 2024	182	
YTD - 2025	2,366	4%
YTD - 2024	2,271	

Providence Village		% +/-
December 2025	277	7%
December 2024	258	
YTD - 2025	3,073	-3%
YTD - 2024	3,154	

Sandbrock		% +/-
December 2025	47	0%
December 2024	47	
YTD - 2025	675	10%
YTD - 2024	611	

Silverado		% +/-
December 2025	148	42%
December 2024	104	
YTD - 2025	1,473	25%
YTD - 2024	1,179	

Winn Ridge		% +/-
December 2025	67	2%
December 2024	66	
YTD - 2025	806	-13%
YTD - 2024	929	

Outside ETJ		% +/-
December 2025	20	25%
December 2024	16	
YTD - 2025	188	-11%
YTD - 2024	211	

Criminal Offenses/Arrests

Criminal Offenses		% +/-
December 2025	68	-14%
December 2024	79	
YTD - 2025	827	3%
YTD - 2024	803	

Arrests		% +/-
December 2025	19	-46%
December 2024	35	
YTD - 2025	261	-45%
YTD - 2024	471	

Motor Vehicle Crashes - Aubrey

Non-Injury Crashes		%+/-
December 2025	19	46%
December 2024	13	
YTD - 2025	138	55%
YTD - 2024	89	

Injury Crashes		%+/-
December 2025	4	300%
December 2024	1	
YTD - 2025	61	144%
YTD - 2024	25	

Motor Vehicle Crashes - Providence Village

Non-Injury Crashes		%+/-
December 2025	10	150%
December 2024	4	
YTD - 2025	74	30%
YTD - 2024	57	

Injury Crashes		%+/-
December 2025	4	300%
December 2024	1	
YTD - 2025	27	4%
YTD - 2024	26	

Traffic Stops and Citations

Traffic Stops		%+/-
December 2025	812	18%
December 2024	687	
YTD - 2025	8,852	-25%
YTD - 2024	11,832	

Warnings		%+/-
December 2025	736	-8%
December 2024	797	
YTD - 2025	8,249	-27%
YTD - 2024	11,300	

Total Citations		%+/-
December 2025	455	64%
December 2024	277	
YTD - 2025	4,801	-14%
YTD - 2024	5,602	

Citations - Aubrey		%+/-
December 2025	264	115%
December 2024	123	
YTD - 2025	4,801	65%
YTD - 2024	2,914	

Citations - Providence Village		%+/-
December 2025	128	17%
December 2024	109	
YTD - 2025	1,487	-12%
YTD - 2024	1,696	

Citations - JP 5		%+/-
December 2025	63	40%
December 2024	45	
YTD - 2025	562	-43%
YTD - 2024	992	

Top 10 Calls

Top 10 Calls			
Type of Call	Providence Village	Aubrey	Total
Suspicious Activity	52	64	116
Welfare Concern	12	44	56
Disturbance	15	40	55
Traffic Crash	20	31	51
Alarm	14	36	50
Noise Complaint	8	22	30
Theft	13	16	29
Motorist Assist	7	20	27
Animal Complaint	8	9	17
Road Blockage/ Hazard	4	13	17

Neighborhood Safety Initiative		%+/-
December 2025	17,450	81%
December 2024	9,653	
YTD - 2025	168,023	66%
YTD - 2024	101,195	

Providence Village Data

Close Patrols - Providence Village		% +/-
December 2025	4,070	29%
December 2024	3,143	
YTD - 2025	49,267	40%
YTD - 2024	35,101	

Walk Through - Providence Village		% +/-
December 2025	99	-15%
December 2024	117	
YTD - 2025	1,316	14%
YTD - 2024	1,154	

Total - Providence Village		% +/-
December 2025	4,169	28%
December 2024	3,260	
YTD - 2025	50,583	40%
YTD - 2024	36,255	

Department Data

Percentage - Crime/Order Maintenance/Service Calls		
Top 10 Calls Total		448
Crime	29	6%
Service Calls	392	88%
Order Maintenance	27	6%
Reported Crime	68	9%

Authorized Strength		% +/-
Sworn - Authorized	37	89%
Sworn - Current	33	
Civilian Authorized	5	60%
Civilian - Current	3	

Criminal Investigations Statistical Data

CID Case Assignment		% +/-
December 2025	68	-14%
December 2024	79	
YTD - 2025	827	3%
YTD - 2024	803	

Patrol Case Assignment		% +/-
December 2025	19	-44%
December 2024	34	
YTD - 2025	263	-35%
YTD - 2024	403	

CID Arrests		% +/-
December 2025	0	-100%
December 2024	1	
YTD - 2025	35	-51%
YTD - 2024	72	

Case Status - Cleared by Arrest		% +/-
December 2025	19	-47%
December 2024	36	
YTD - 2025	287	-39%
YTD - 2024	471	

Case Status - Suspended		% +/-
December 2025	49	188%
December 2024	17	
YTD - 2025	259	-1%
YTD - 2024	261	

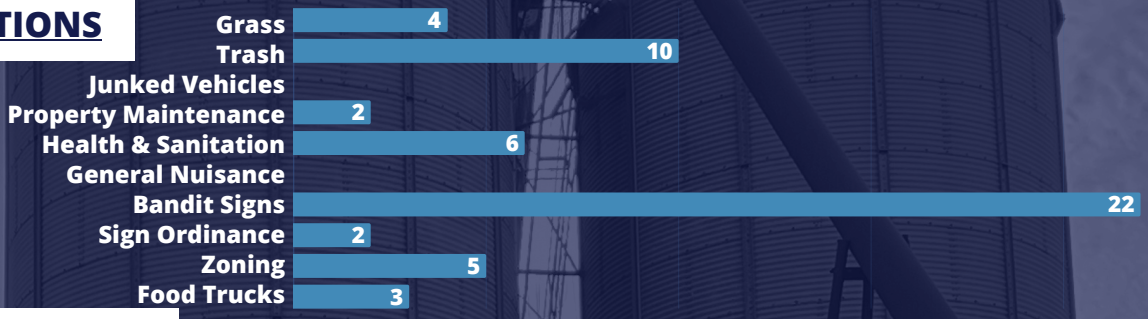
Case Status - Cleared by Exception		% +/-
December 2025	3	0%
December 2024	3	
YTD - 2025	15	-40%
YTD - 2024	25	

Case Status - Unfounded		% +/-
December 2025	1	-1%
December 2024	2	
YTD - 2025	40	-17%
YTD - 2024	48	

Cases - Open		% +/-
Yearly Total	699	

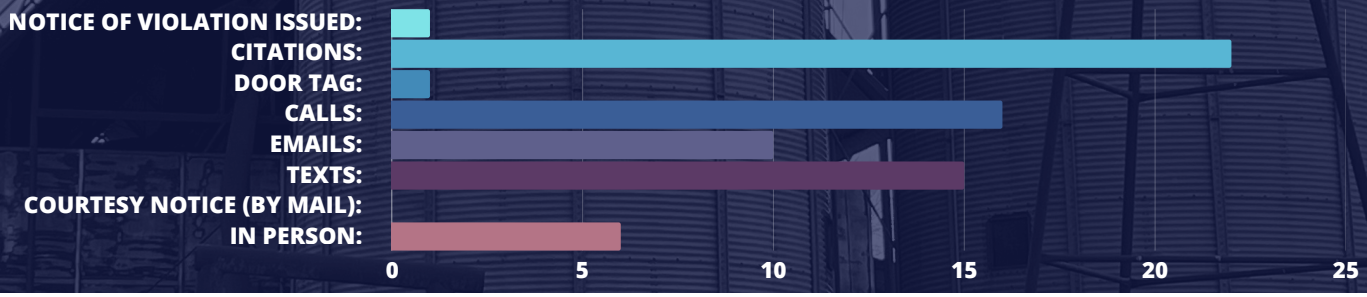
MUNICIPAL SERVICES REPORT FOR DECEMBER 2025

AUBREY VIOLATIONS

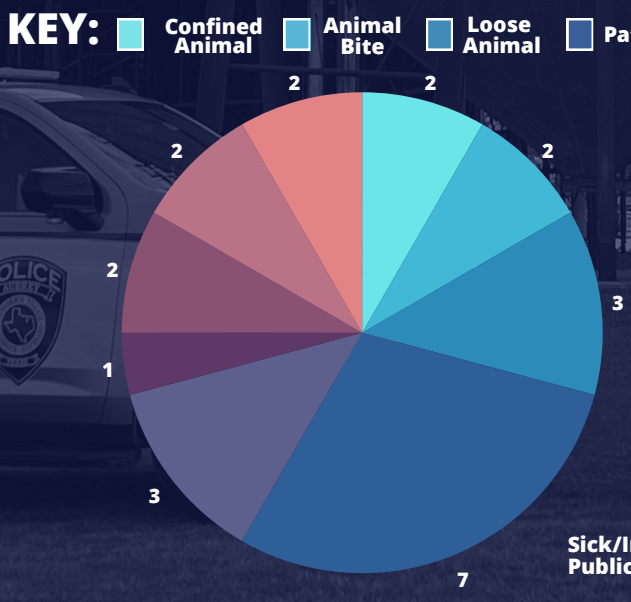


WINN RIDGE VIOLATIONS

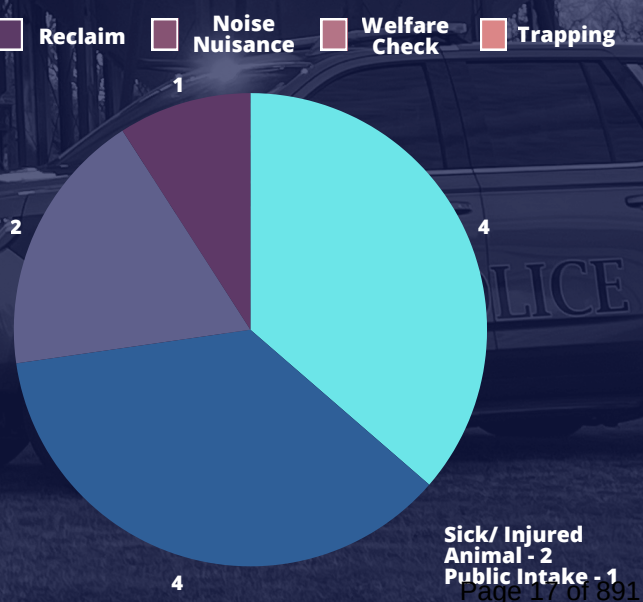
OFFICER COMMUNICATION WITH THE COMMUNITY



ANIMAL SERVICES IN AUBREY



ANIMAL SERVICES IN WINN RIDGE



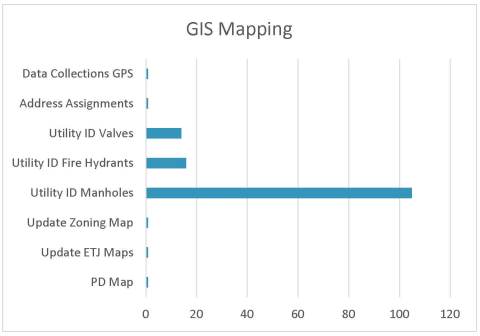
City of Aubrey - Development Services
December 2025 Activity Report

No. Permits Issued

New Single Family	130
Residential Misc	54
Commercial	49
Plat, Re-Plat, Site Plan, or Variance	1
Total	**234**

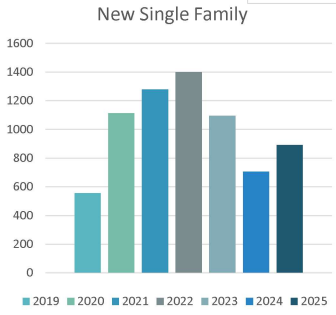
Fees Collected

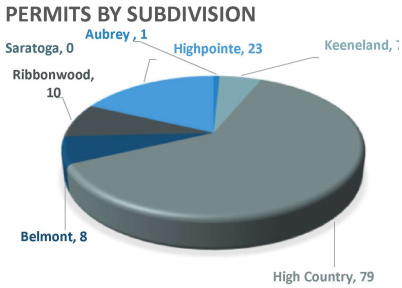
New Single Family	$	1,066,459.70
Residential Misc	$	8,468.73
Commercial	$	61,420.50
Variance or Zoning	$	5,990.63
Total	**$**	**1,142,339.56**



Annual New Single Family

2019	556
2020	1,113
2021	1,279
2022	1,400
2023	1,095
2024	706
2025 YTD	892
2019 - 2025 Total:	**7,041**





Total House

10165

Location	Jul-26	Aug-25	Sep-25	Oct-25	Nov-25	Dec-25
Aubrey Proper	**1800**	**1830**	**1865**	**1911**	**1917**	**1919**
Winn Ridge	**1746**	**1746**	**1746**	**1746**	**1746**	**1746**
Silverado & High Country	**3700**	**3723**	**3726**	**3761**	**3779**	**3811**
Aspen Meadows	**312**	**312**	**312**	**312**	**312**	**312**
Keeneland	**156**	**164**	**171**	**173**	**175**	**177**
Sandbrock	**1761**	**1787**	**1809**	**1821**	**1853**	**1874**
Highpointe	**191**	**212**	**238**	**281**	**292**	**292**
Belmont	**0**	**0**	**0**	**16**	**28**	**34**
Saratoga	**0**	**0**	**0**	**0**	**0**	**0**
Ribbonwood	**0**	**0**	**0**	**0**	**0**	**0**

Project Status

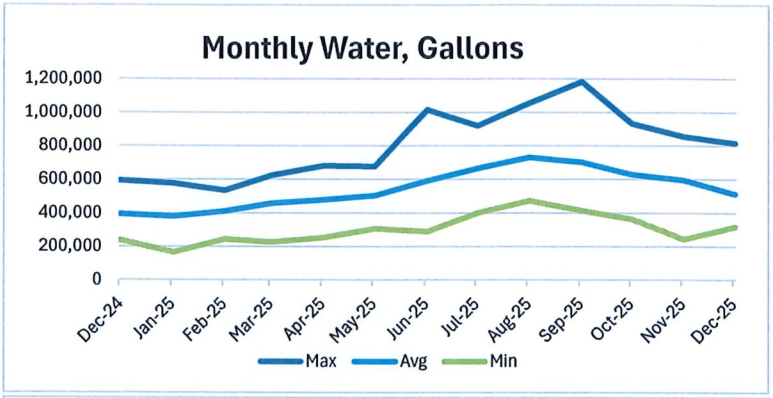
Knuckles Rd Development	City Council approved a Development Agreement between Arck Developers, LLC and the City of Aubrey, for the residential and general retail development of an approximate 53.606 acre tract of land generally located at 6411 Knuckles Road, Denton County, within the extraterritorial jurisdiction of the City.
Highpointe Ranch, Phase 4B	City Council approved a Preliminary Plat for Highpointe Ranch Phase 4B for eighty-six (86) single-family residential lots and two (2) HOA lots, being approximately 25.623 acres out of the Francisco Trevino Survey, Abstract 1243 generally located South of E. Blackjack Road, east of U.S. Highway 377, and North of Springhill Road/FM 428, City of Aubrey, Denton County, Texas.
Highpointe Ranch, Phase 4B	City Council approved a Final Plat for Highpointe Ranch Phase 4B for eighty- six (86) residential lots and two (2) HOA lots, being approximately 25.623 acres out of the Francisco Trevino Survey, Abstract 1243 generally located south of E. Blackjack Road, East of U.S. Highway 377, and North of Springhill Road/FM 428, City of Aubrey, Denton County, Texas. (Aubrey
Sand Dollar, Addition 2	City Council approved a Final Plat, being a replat of the Sand Dollar Addition 2, creating three (3) lots, and being approximately 43.225 acres out of the J, Bridges Survey, Abstract No. 36, Sand Dollar Addition Block A, Lot 1, identified as an Addition to the City of Aubrey and located in the Extraterritorial Jurisdiction of the City of Aubrey, Denton County, Texas. (North Texas Natural
Belmont, Phase 1	City Council approved an Amending Plat for Belmont Phase I, containing one- hundred fifty (150) lots in approximately 37.752 acres of land out of the F. Trevino Survey, Abstract No. 1243, within the Extraterritorial Jurisdiction of the City of Aubrey, Denton County, Texas. (Belmont Development, LLC)
ORD 941-25 (ROW Annexation)	City Council approved Ordinance No. 941-25 annexing approximately 6.74- acres of land known as a portion of McNatt Road, legally described as being all of the 30-foot wide prescriptive right-of-way of McNatt Road, beginning at the Aubrey City limits and FM 428, continuing to the Future Ike Byrom Road, being legally described as being a part of the F. Trevino Survey, Abstract No. 1243, Denton County, Texas.
ORD 942-25 (ROW Annexation)	City Council approved Ordinance No. 942-25 annexing approximately 13.06- acre tract of land known as a portion of Blackjack Road, legally described as being all of the prescriptive right-of-way of Blackjack Road, generally 30 feet in width along the existing Aubrey City limits and expanding to a total width of 60 feet after departing the existing Aubrey City limits, beginning at east right-of-way line of U.S. Highway 377 continuing to FM 2931, being legally described as being a part of the F. Trevino Survey, Abstract No. 1243, and the T. Chambers Survey, Abstract No. 223, Denton County, Texas.
A-Affordable Storage, Resolution 1032-25	City Council approved Resolution No. 1032-25 granting a petition requesting annexation by A-Affordable Boat RV & Mini Storage Aubrey, LLC, owners of approximately 10 acres of land, being the entirety of Parcel ID 983657 generally located on the Wilson 10 Acre Subdivision Blk A Lot 1, Denton County, Texas, setting a Public Hearing for the annexation; authorizing staff to negotiate and enter into a written services agreement with Owner.

City of Aubrey - Public Works

Dec. 2025 Activity Report

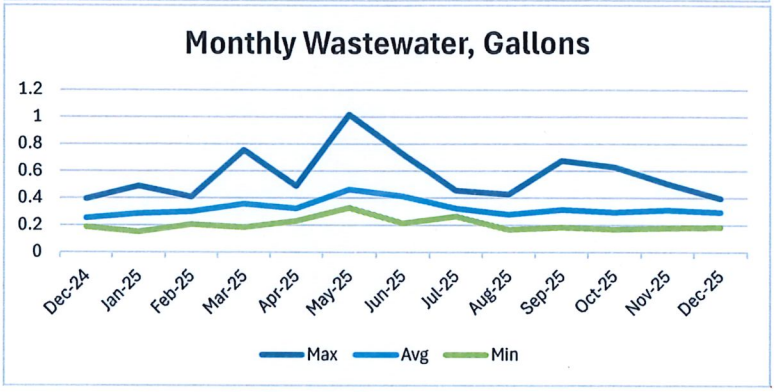
Water Production MG

Dec-25	15,891,800
Nov-25	17,852,300
Oct-25	19,499,000
Daily Average Gal	591,590



Wastewater Treatment MG

Dec-25	8,832,000
Nov-25	9,342,000
Oct-25	8,844,000
Daily Average Gal	300,200



Work Orders

Water & Sewer Maintenance	47
Cut-offs Non Payment	0
Street/Parks	48
Line Locates	157
Billing and Meters	147
Total	399

Fees Collected	Dec-25
Water Impact	$169,944.00
Sewer Impact	$317,369.00
Roadway Impact	$78,027.12
Parks Fee	$190,500.00
Total	$755,840.12

Projects

Highpointe Commercial Area	Grading is complete.
HighPointe Phase 3	Final grading is underway.
HighPointe Phase 4A	Grading has begun.
HighPointe 4B	Grading has begun.
HighPointe East Phase 1	Paving is 99% complete.
HighPointe East Phase 2	Pre-construction for grading has been scheduled.
Rockhill Well	Awaiting pump specifications.
Rockhill Pump Station	Surveying has been completed and equipment has been mobilized.
Veterans Park Phase 2	Sun shades installed. Waiting on final approval for digital Veterans Memorial Sign display.
WinnRidge 1st Responder Park	Dog park closing in on being completed, turf 50% complete, fencing being completed now.
Sports Complex	Meeting on 1/10/26 to go over specific details of the complex.
Aubrey Heights	Building screen wall, installing storm drain inlets, finished overhead power lines.
Palomino	Paving is complete. Finishing up inlet boxes.
Saratoga	Phase 1 walk-through complete. Waiting on punch list items to be completed.
Blackjack Paving	90% complete, but the results are unsatisfactory.
Blackjack/Dane Water Line	Water bore at Blackjack under tracks at Sherman has been completed. Job 90% complete.
Magnolia to Blackjack Line	Been awarded. Pre-construction meeting has been held.
Chaparral Ridge	Dirt continues to be moved, building house pads, cutting in streets, mulched up trees.

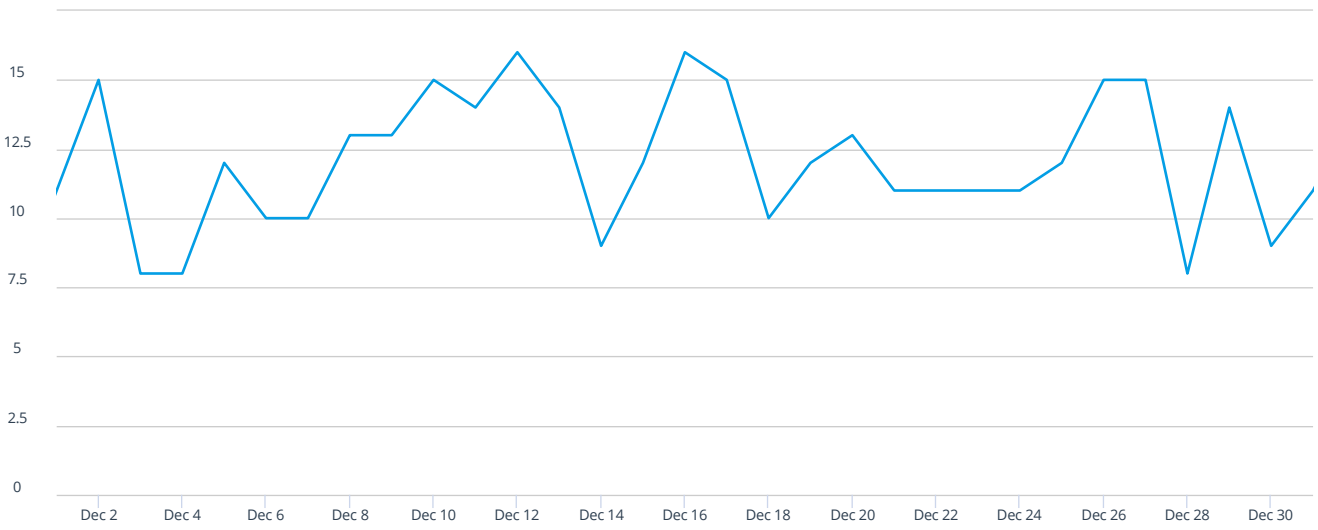
Previous Month Dec 1, 2025 - Dec 31, 2025

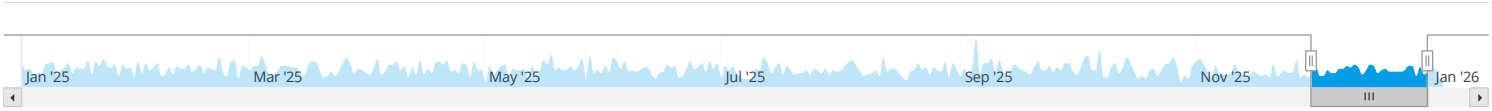
36%
FIRE
Percentage of Total Incidents

64%
EMS
Percentage of Total Incidents

374
INCIDENTS
In Selected Time Slice

31
DAYS
In Selected Time Slice





Counts | % Rows | % Columns | % All

Week Ending	12/7/25	12/14/25	12/21/25	12/28/25	1/4/26	1/11/26	1/18/26	1/25/26	2/1/26	2/8/26	2/15/26	2/22/26	3/1/26	Total
Aubrey Fire Station 1	26	26	27	26	9									114
Aubrey Fire Station 2	22	39	23	26	12									122
Aubrey Fire Station 3	26	29	39	31	13									138
Total	74	94	89	83	34									374

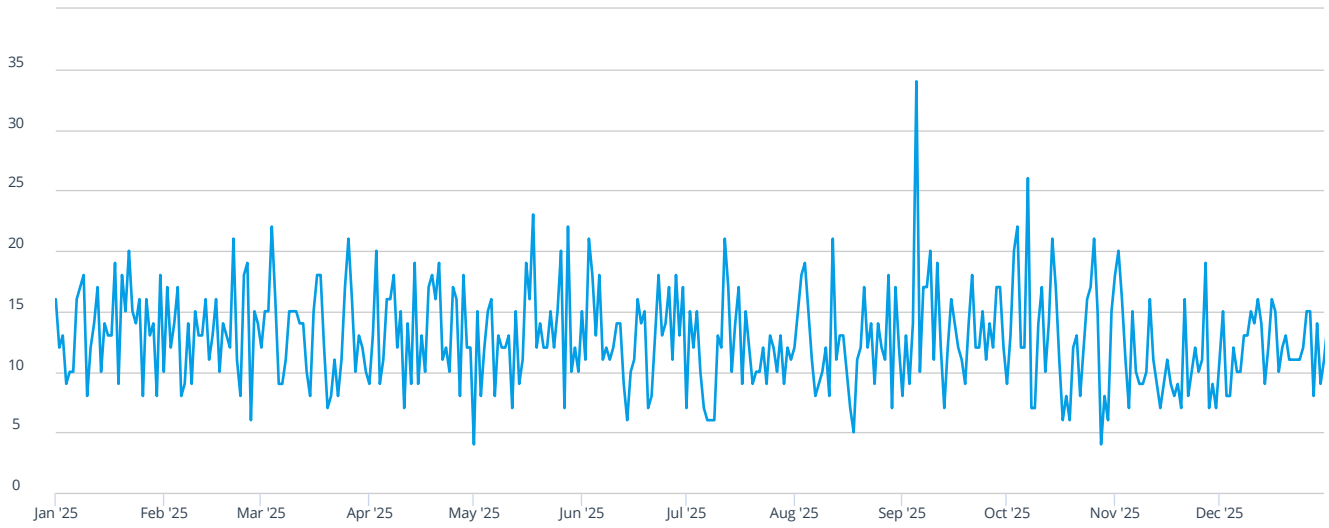
Custom Jan 1, 2025 - Dec 31, 2025

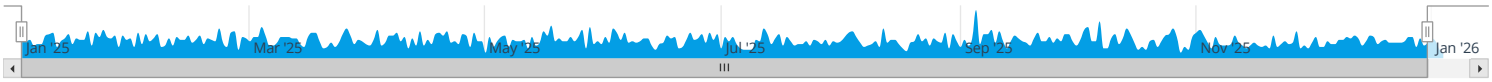
34%
FIRE
Percentage of Total Incidents

66%
EMS
Percentage of Total Incidents

4,666
INCIDENTS
In Selected Time Slice

365
DAYS
In Selected Time Slice





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	Jan '25	Feb '25	Mar '25	Apr '25	May '25	Jun '25	Jul '25	Aug '25	Sep '25	Oct '25	Nov '25	Dec '25	Jan '26	Total
Aubrey Fire Station 1	127	117	129	113	126	131	90	111	124	113	93	114		1,388
Aubrey Fire Station 2	166	126	152	167	152	119	127	115	138	120	98	122		1,602
Aubrey Fire Station 3	31	52	47	44	74	62	132	157	157	166	138	138		1,198
PV Farm	101	73	79	82	49	88	5				1			478
Total	425	368	407	406	401	400	354	383	419	399	330	374		4,666

DECEMBER 2025 STAFF REPORT
Aubrey Municipal Development District

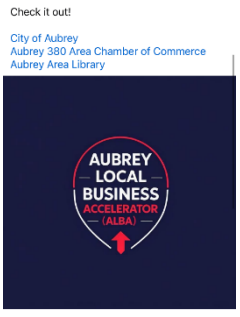
Christine Gossett – Executive Director

Commercial Property for Sale/Lease/Build-to-Suit:

Combined commercial land for sale/lease 150 + acres and combined 15,000 +/- sq ft commercial space available for sale/lease. See Aubrey MDD Real Estate/Sites web page for details:

Real Estate & Maps – Aubrey Municipal Development District

Completed and posted Tenant RFP for 204-208 S. Main Street on Aubrey websites for the City and MDD.



Highest performing FB post was the update to the Aubrey Local Business Accelerator on 12/11/2025 6,193 Views and 348 Engagements.

Business Activity and Updates

- No new business Openings or Closings in December.

Project Updates:

- Attended Aubrey MS Career Fair.
- Promoted registration for the Aubrey Local Business Accelerator.
- Website – site design and site migration to new server completed.
- Completed and posted Tenant RFP for 204-208 S. Main.
- On-Going:
  - Site Selection GIS Map Page: continuous monitoring and updating of properties and photos for commercial sites available in Aubrey City Limits and ETJ. Commercial property listings in business corridors and adjacent areas continue to increase.
  - Strategic Plan: Continue progress on goals, projects, and updates to the workplan and timeline for 2025-26 Fiscal Year.

Marketing:

- Social Media/Facebook: On-going content management and posts on Aubrey MDD FB page. December's post on 12/11/2025 featuring an update to the Aubrey Local Business Accelerator received 6,193 Views and 348 Engagements. MDD social media posts feature businesses, activites, events, and business education.
- Website Statistics: December '25 – 1,186 Visitors; *467 Views; November '25 - 1,310 Visitors and 794 Views; October '25 – 431 Visitors and 699 Views.
  **Due to site migration mid-December Views stat was incomplete.*
- Commercial Development: On-going calls and meetings with prospective businesses and developers.

Sales & Use-Tax Allocation:

- Payment received in December: $117,248.23; ($1,267.80 gross collections derived from audit payments.)

City of Aubrey - Municipal Court Report

New Cases Filed	
December - Traffic	169
December - Non Traffic	26

Total Fines Collected	
December - State	$13,312.00
December - City	$18,203.00

Final Disposition	
December - Traffic	116
December - Non Traffic	4

Fiscal YTD Collected	
YTD - State	$ 40,153.00
YTD - City	$ 59,778.00

Warrants	
Issued	23
Cleared	13
Pending	1297

City of Aubrey
Departmental Report
Library

To: City Council Members

From: Brittany McLain, Library Director

RE: Departmental Report - Dec. 2025

Monthly Report	December 2025		Fiscal Year to date
People & Activity	New Cards Issued	87	255
	Number of Patrons	2652	8424
	Patrons per Hour (Average)	16	18
	Volunteer Hours / Persons	27/6	72.5
	Number of Days Open	20	60
	Number of Hours Open	164	492
Material Usage	Total Items checked out	9067	29314
	Items per Hour (Average)	55	59
	Adult Material Checked Out	1310	3917
	Juvenile Material Checked Out	6182	20593
	Self-Checkout Use	0	0
	Digital Materials Checked Out	1575	4804
	Interlibrary shipped	167	456
	Interlibrary received	155	436
	Reference	211	617
	Computer Sessions	154	534
	Computer Usage (hours)	129	415
Programs	Community Center Event Hrs	1.5	1.5
	Total Number of Programs	34	104
	Total Program Attendance	514	1517

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Approve Quarterly Investment Report

Staff Contact
Mike English, Finance Director
menglish@aubreytx.gov
940-440-9343

Summary

Financial Summary

Staff Recommended Action

Staff Recommended Motion

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Approve the request from Council member(s) identified in the Staff report for an excused absence from the December 18, 2025 Regular City Council meeting.

Staff Contact

Summary
Matt Jones from the December 18, 2025 meeting.

Financial Summary

Staff Recommended Action

Staff Recommended Motion

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Approve Ordinance Number 945-26, ordering the May 2, 2026 City of Aubrey General Election for the election of persons to Place 1 and Place 4 on the Aubrey City Council and providing for other matters relating to the election.

Staff Contact
Jenny Hicks, City Secretary
jhicks@aubreytx.gov
940-440-9343

Summary
This Ordinance is required to call the general election for City Council Places 1 and 4. Both will be for three-year terms. It also authorizes a contract for the city election to be conducted jointly with other political subdivisions of Denton County.

Financial Summary
The cost is shared with other entities holding a joint election with Denton County. The estimate will not be known until the county knows which political subdivisions will hold an election.

Staff Recommended Action
Approve

Staff Recommended Motion
Motion to approve/deny/table the ordinance calling the May 2, 2026 General Election.

CITY OF AUBREY, TEXAS
ORDINANCE NO. 945-25
GENERAL ELECTION ORDER FOR MAY 2, 2026

AN ORDINANCE OF THE CITY OF AUBREY, TEXAS, CALLING FOR A GENERAL ELECTION TO BE HELD ON MAY 2, 2026 FOR THE PURPOSE OF ELECTING A PERSON TO SERVE AS COUNCIL MEMBER PLACE 1 FOR A THREE (3) YEAR TERM AND A PERSON TO SERVE AS COUNCIL MEMBER PLACE 4 FOR A THREE (3) YEAR TERM,; PROVIDING FOR THE INCORPORATION OF PREMISES; PROVIDING FOR THE PUBLICATION AND POSTING OF NOTICE; PROVIDING FOR EARLY VOTING; PROVIDING FOR THE APPOINTMENT OF ELECTION ADMINISTRATORS AND JUDGES; ESTABLISHING REGULAR BUSINESS HOURS OF THE CITY SECRETARY'S OFFICE ON THE DAYS OF EARLY VOTING BY PERSONAL APPEARANCE; PROVIDING A SEVERABILITY CLAUSE; PROVIDING FOR ENGROSSMENT AND ENROLLMENT; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City of Aubrey, Texas is a Home Rule municipality located in Denton County, Texas, created in accordance with the provisions of the Texas Local Government Code and operating pursuant to the enabling legislation of the State of Texas; and

WHEREAS, Section 26.042 of the Local Government Code provides that the governing body of a Home Rule municipality may set the date of election for municipal officers in accordance with applicable provisions of the Election Code; and

WHEREAS, Section 41.001 of the Texas Election Code establishes the first Saturday of May, 2026, as a uniform election day for the purposes of conducting a general election; and

WHEREAS, Section 3.004(a)(3) of the Texas Election Code provides that the governing body of a municipality shall be the authority to order a general election for electing municipal officers; and

WHEREAS, in accordance with Section 271.002 of the Texas Election Code, the City General Election will be conducted jointly with other political subdivisions of Denton County, Texas.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF AUBREY, TEXAS, THAT:

SECTION I
INCORPORATION OF PREMISES

The premises set forth above are hereby declared true and correct and shall be incorporated as if set forth fully herein.

SECTION II
ELECTION ORDERED

The City Council of the City of Aubrey ("City Council") hereby orders that a general election be held on May 2, 2026, being the first Saturday in May of 2026, for the purposes of electing one citizen to City Council Place 1 for a term of three (3) years, and one citizen to City Council Place 4 for a term of three (3) years.

SECTION III
PRECINCTS

The election precincts for said election shall be the regular precincts of Denton County (Precinct Nos. 1010, 1012 and 1225) to the extent that they are within the corporate limits of the City of Aubrey.

SECTION IV
ADMINISTRATION OF ELECTION

The general election will be conducted jointly with other political subdivisions in Denton County on May 2, 2026, pursuant to Chapters 31 and 271, Texas Election Code and in accordance with applicable joint election agreements. The City Secretary is hereby authorized to sign the contract with the Denton County Elections Administrator for the purpose of having Denton County furnish all or any portion of the election services and equipment needed to conduct the election. During the election period, the office of the City Secretary (and/or the office of the authority performing the duties of the City Secretary under the Texas Election Code) shall be open for election duties at least three hours each day, during regular office hours, on regular City business days, beginning on March 13, 2026, and ending on June 11, 2026. Upon execution, the contract with Denton County shall be incorporated into this Ordinance.

SECTION V
EARLY VOTING CLERKS

(a) In accordance with Sections 31.097 and 271.006 of the Texas Election Code, the following named person is hereby appointed as the Early Voting Clerk for the purposes of conducting said election:

Frank Phillips, Early Voting Clerk
Denton County Elections
PO Box 1720
Denton, TX 76202
Email: elections@dentoncounty.gov

(b) Jenny Hicks, City Secretary for the City of Aubrey, shall serve as Deputy Early Voting Clerk.

(c) Any permanent county employee serving under the Elections Administrator shall serve as deputy early voting clerks.

SECTION VI
EARLY VOTING LOCATIONS & TIMES

Early Voting by personal appearance of Aubrey residents shall be conducted beginning April 20, 2026 and continuing through April 28, 2026. Dates and hours for early voting shall be as specified by the Denton County Elections Administrator and future notice(s) for the election and incorporated herein by reference, to include at least eight hours of each weekday of the early voting period that is not a legal state holiday, and during other times as specified by written order of the Early Voting Clerk for Saturdays or Sundays within the early voting period. The main early voting location shall be located at:

Denton County Elections, 701 Kimberly Drive, Denton 76208.

Additional early voting locations will be identified in the contract executed with the Denton County Elections Administrator.

SECTION VII
ELECTION DAY POLLING PLACES

The polling place for Precincts 1010, 1012 and 1225 within the corporate limits of the City of Aubrey will be located at a location determined by the Denton County Elections Administrator, as identified in the joint election services agreement and future notice(s) for the election.

SECTION VIII
NOTICE AND PUBLICATION

The City Secretary is hereby authorized and directed to file, publish and/or post, in the time and manner prescribed by law, all notices required to be so filed, published and/or posted in connection with the conduct of this election. Notice shall be published on the City's website and in the official newspaper of the City, being a newspaper of general circulation within the City, at least once not earlier than the 30th day nor later than the 10th day before election day, as provided in Section 4.003(a)(1) of the Texas Election Code. Public notice shall be provided by posting on the bulletin board used for posting notices of the City Council meetings not later than the 21st day before election day and filed with the City Secretary. A copy of the published notice that contains the name of the newspaper and the date of publication shall be retained as a record of such notice, and the person posting the notice shall make a record at the time of posting stating the date and place of posting in accordance with Texas Election Code § 4.005.

SECTION IX

A copy of this order shall be retained with the other records of the election in accordance with the Texas Election Code.

SECTION X

All ordinances or resolutions of the City in conflict with the provisions of this ordinance are repealed to the extent of that conflict. If any provision of this ordinance shall be held to be invalid or unconstitutional, the remainder of such ordinance shall continue in full force and effect the same as if such invalid or unconstitutional provision had never been a part hereof. The City declares that it would have passed this ordinance, and each section, subsection, sentence, clause, or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses, and phrases be declared unconstitutional or invalid.

SECTION XI

The City Secretary is hereby directed to engross and enroll this Ordinance by copying the exact Caption and Effective Date clause in the minutes of the City Council and by filing this Ordinance in the Ordinance records of the City.

SECTION XII

This Ordinance shall be effective immediately upon its adoption.

PASSED AND APPROVED by the City Council of the City of Aubrey, Texas this the 22nd day of January, 2026.

APPROVED:

_____
Chris Rich, Mayor

ATTEST:

_____
Jenny Hicks, City Secretary

APPROVED AS TO FORM:

_____
Patricia A. Adams, City Attorney

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Approve a Professional Services Agreement with Plummer Associates for On-Call Planning Services for an amount not to exceed $30,000, and authorize the City Manager to execute the Agreement.

Staff Contact
Leanne Wilson, Assistant City Manager
lwilson@aubreytx.gov

Summary
Utilizing on-call planner services while building an in-house planning department will allow developments to continue smoothly through the process and help develop policy and procedures more quickly. Approval of the agreement will enable the Development Manager to outsource work as needed among consultants.

The Agreement sets forth terms whereby Plummer will provide professional services to assist in the review and processing of planning applications and submittals such as subdivision plats, zoning requests, and site plans. Written comment responses will be provided, and presentations to city boards will be provided as needed. Additionally, the consultant shall provide professional services to assist in the review of water and wastewater-related plans and specifications.

Financial Summary
To date, an in-house planner has not been hired. Funds are budgeted in the Development Services Department for planners, and funds are currently available.

Staff Recommended Action
Approve

Staff Recommended Motion
Motion to (approve, table, or deny) the Professional Services Agreement with Plummer Associates.

SHORT FORM OF AGREEMENT
BETWEEN OWNER AND CONSULTANT
FOR PROFESSIONAL SERVICES

THIS IS AN AGREEMENT effective as of December ____, 2025 ("Effective Date") between the City of Aubrey, Texas ("Owner") and Plummer Associates, Inc. ("Consultant").

Owner's Project, of which Consultant's services under this Agreement are a part, is generally identified as ("Project").

Consultant's services under this Agreement are generally identified as "Services" as further described in Exhibit A.

Owner and Consultant further agree as follows:

1.01 *Basic Agreement and Period of Service*

~~A.~~ Consultant shall provide or furnish the Services set forth in this Agreement. If authorized by Owner, or if required because of changes in the Project, Consultant shall furnish services in addition to those set forth above ("Additional Services").

B. Consultant shall complete its Services within the contract period: 12/1/2025 – 12/1/2026. If no specific time period is indicated for project review, Consultant shall complete its Services within a reasonable period of time.

C. If, through no fault of Consultant, such periods of time or dates are changed, or the orderly and continuous progress of Consultant's Services is impaired, or Consultant's Services are delayed or suspended, then the time for completion of Consultant's Services, and the rates and amounts of Consultant's compensation, shall be adjusted equitably.

2.01 *Payment Procedures*

A. *Invoices:* Consultant shall prepare invoices in accordance with its standard invoicing practices and submit the invoices to Owner on a monthly basis. Invoices are due and payable within 30 days of receipt. If Owner fails to make any payment due Consultant for Services, Additional Services, and expenses within 30 days after receipt of Consultant's invoice, then (1) the amounts due Consultant will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) from said thirtieth day, and (2) in addition Consultant may, after giving seven days written notice to Owner, suspend Services under this Agreement until Consultant has been paid in full all amounts due for Services, Additional Services, expenses, and other related charges. Owner waives any and all claims against Consultant for any such suspension.

B. *Payment:* As compensation for Consultant providing or furnishing Services and Additional Services, Owner shall pay Consultant as set forth in Paragraphs 2.01, 2.02 (Services), and 2.03 (Additional Services). If Owner disputes an invoice, either as to amount or entitlement, then Owner shall promptly advise Consultant in writing of the specific basis for doing so, may withhold only that portion so disputed, and must pay the undisputed portion.

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2.02 *Basis of Payment—Hourly Rates Plus Reimbursable Expenses*

A. Owner shall pay Consultant for Services as follows:

An amount equal to the monthly cumulative hours charged to the Project by each class of Consultant's employees times standard hourly rates for each applicable billing class, plus reimbursement of monthly expenses incurred in connection with providing the Services and Consultant's consultants' charges, if any.

Consultant's Standard Hourly Rates are attached as Appendix 1.

The total compensation for Services and reimbursable expenses is estimated not to exceed $30,000

2.03 *Additional Services:* For Additional Services, Exhibit B will be used. Owner shall pay Consultant an amount equal to the cumulative hours charged in providing the Additional Services by each class of Consultant's employees, times standard hourly rates for each applicable billing class; plus reimbursement of expenses incurred in connection with providing the Additional Services and Consultant's consultants' charges, if any. Consultant's standard hourly rates are attached as Appendix 1.

3.01 *Termination*

A. The obligation to continue performance under this Agreement may be terminated:

For cause,

a. By either party upon 30 days written notice in the event of substantial failure by the other party to perform in accordance with the Agreement's terms through no fault of the terminating party. Failure to pay Consultant for its services is a substantial failure to perform and a basis for termination.

b. By Consultant:

1) upon seven days written notice if Owner demands that Consultant furnish or perform services contrary to Consultant's responsibilities as a licensed professional; or

2) upon seven days written notice if the Consultant's Services are delayed for more than 90 days for reasons beyond Consultant's control, or as the result of the presence at the Site of undisclosed Constituents of Concern, as set forth in Paragraph 5.01.I.

c. Consultant shall have no liability to Owner on account of a termination for cause.

d. Notwithstanding the foregoing, this Agreement will not terminate as a result of a substantial failure under Paragraph 3.01.A.1.a if the party receiving such notice begins, within seven days of receipt of such notice, to correct its substantial failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of notice; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 30 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but in no case more than, 60 days after the date of receipt of the notice.

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For convenience, by Owner effective upon Consultant's receipt of written notice from Owner.

B. In the event of any termination under Paragraph 3.01, Consultant will be entitled to invoice Owner and to receive full payment for all Services and Additional Services performed or furnished in accordance with this Agreement, plus reimbursement of expenses incurred through the effective date of termination in connection with providing the Services and Additional Services, and Consultant's consultants' charges, if any.

4.01 *Successors, Assigns, and Beneficiaries*

A. Owner and Consultant are hereby bound and the successors, executors, administrators, and legal representatives of Owner and Consultant (and to the extent permitted by Paragraph 4.01.B the assigns of Owner and Consultant) are hereby bound to the other party to this Agreement and to the successors, executors, administrators, and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.

B. Neither Owner nor Consultant may assign, sublet, or transfer any rights under or interest (including, but without limitation, money that is due or may become due) in this Agreement without the written consent of the other party, except to the extent that any assignment, subletting, or transfer is mandated by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement.

C. Unless expressly provided otherwise, nothing in this Agreement shall be construed to create, impose, or give rise to any duty owed by Owner or Consultant to any Contractor, other third-party individual or entity, or to any surety for or employee of any of them. All duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of Owner and Consultant and not for the benefit of any other party.

5.01 *Insurance*

A. Consultant will procure and maintain the following insurance coverage for Workers' Compensation, General Liability, Professional Liability, and Automobile Liability and will provide certificates of insurance.

Coverage	Policy limits of not less than:
Workers' Compensation	
State	**$1,000,000**
Employer's Liability	
Each accident	**$1,000,000**
Each employee	**$1,000,000**
Policy limit	**$1,000,000**
Commercial General Liability	
General Aggregate	**$2,000,000**
Personal and Advertising Injury	**$1,000,000**
Bodily Injury and Property Damage—Each Occurrence	**$1,000,000**
Automobile Liability	
Bodily Injury	
Each Person	**$1,000,000**

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Coverage	Policy limits of not less than:
Each Accident	**$1,000,000**
Property Damage	
Each Accident	**$1,000,000**
Or	
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	**$1,000,000**
Excess or Umbrella Liability	
Each Occurrence	**$5,000,000**
General Aggregate	**$5,000,000**
Professional Liability	
Each Claim	**$3,000,000**
Annual Aggregate	**$3,000,000**
Unmanned Aerial Vehicle Liability Insurance	
Each Claim	**$if required**
General Aggregate	**$if required**
Other Insurance [Specify]	
Each Claim	**$if required**
General Aggregate	**$if required**

6.01 *Additional Insureds:*

A. Owner shall cause Consultant, its Subconsultants, and its Consultant's Subcontractors to be listed as additional insureds on any of Owner's general liability policies that are applicable to the Project.

1. The following individuals or entities are to be listed on Owner's general liability policies of insurance as additional insureds:

   Plummer Associates, Inc._____
   Consultant

2. During the term of this Agreement the Consultant shall notify Owner of any other Consultant to be listed as an additional insured on Owner's general liability policies of insurance.

3. The Owner shall be listed on Consultant's general liability policy.

7.01 *General Considerations*

A. The standard of care for all professional engineering and related services performed or furnished by Consultant under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Consultant makes no warranties, express or implied, under this Agreement or otherwise, in connection with any services performed or furnished by Consultant. Subject to the foregoing standard of care, Consultant and its consultants may use or rely upon design elements and information ordinarily or customarily furnished by others, including, but not limited to, specialty contractors, manufacturers, suppliers, and the publishers of technical standards.

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B. Consultant shall not at any time supervise, direct, control, or have authority over any Contractor's work, nor shall Consultant have authority over or be responsible for the means, methods, techniques, sequences, or procedures of construction selected or used by any Contractor, or the safety precautions and programs incident thereto, for security or safety at the Project site, nor for any failure of a Contractor to comply with laws and regulations applicable to such Contractor's furnishing and performing of its work. Consultant shall not be responsible for the acts or omissions of any Contractor.

C. Consultant neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform its work.

D. Consultant's opinions (if any) of probable construction cost are to be made on the basis of Consultant's experience, qualifications, and general familiarity with the construction industry. However, because Consultant has no control over the cost of labor, materials, equipment, or services furnished by others, or over contractors' methods of determining prices, or over competitive bidding or market conditions, Consultant cannot and does not guarantee that proposals, bids, or actual construction cost will not vary from OPCC(s) prepared by Consultant. If Owner requires greater assurance as to probable construction cost, then Owner agrees to obtain an independent cost estimate.

E. Consultant shall not be responsible for any decision made regarding the construction contract requirements, or any application, interpretation, clarification, or modification of the construction contract documents other than those made by Consultant or its consultants.

F. All documents prepared or furnished by Consultant are instruments of service, and Consultant retains an ownership and property interest (including the copyright and the right of reuse) in such documents, whether or not the Project is completed. Owner shall have a limited license to use the documents on the Project, extensions of the Project, and for related uses of the Owner, subject to receipt by Consultant of full payment due and owing for all Services and Additional Services relating to preparation of the documents and subject to the following limitations:

Owner acknowledges that such documents are not intended or represented to be suitable for use on the Project unless completed by Consultant, or for use or reuse by Owner or others on extensions of the Project, on any other project, or for any other use or purpose, without written verification or adaptation by Consultant;

any such use or reuse, or any modification of the documents, without written verification, completion, or adaptation by Consultant, as appropriate for the specific purpose intended, will be at Owner's sole risk and without liability or legal exposure to Consultant or to its officers, directors, members, partners, employees, and consultants;

Owner shall indemnify and hold harmless Consultant and its officers, directors, members, partners, employees, and consultants from all claims, damages, losses, and expenses, including attorneys' fees, arising out of or resulting from any use, reuse, or modification of the documents without written verification, completion, or adaptation by Consultant; and such limited license to Owner shall not create any rights in third parties.

G. Owner and Consultant may transmit, and shall accept, Project-related correspondence, documents, text, data, drawings, information, and graphics, in electronic media or digital format, either directly, or through access to a secure Project website, in accordance with a mutually agreeable protocol.

H. To the fullest extent permitted by law, Owner and Consultant (1) waive against each other, and the other's employees, officers, directors, members, insurers, partners, and consultants, any and all claims for or

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entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to this Agreement or the Project, and (2) agree that Consultant's total liability to Owner under this Agreement shall be limited to $ 30,000 or the total amount of compensation received by Consultant, whichever is greater.

I. The parties acknowledge that Consultant's Services do not include any services related to unknown or undisclosed Constituents of Concern. If Consultant or any other party encounters, uncovers, or reveals an unknown or undisclosed Constituent of Concern, then Consultant may, at its option and without liability for consequential or any other damages, suspend performance of Services on the portion of the Project affected thereby until such portion of the Project is no longer affected, or terminate this Agreement for cause if it is not practical to continue providing Services.

J. Owner and Consultant agree to negotiate each dispute between them in good faith during the 30 days after notice of dispute. If negotiations are unsuccessful in resolving the dispute, then the dispute shall be mediated. If mediation is unsuccessful, then the parties may exercise their rights at law.

K. This Agreement is to be governed by the law of the state in which the Project is located.

L. Consultant's Services and Additional Services do not include: (1) serving as a "municipal advisor" for purposes of the registration requirements of Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (2010) or the municipal advisor registration rules issued by the Securities and Exchange Commission; (2) advising Owner, or any municipal entity or other person or entity, regarding municipal financial products or the issuance of municipal securities, including advice with respect to the structure, timing, terms, or other similar matters concerning such products or issuances; (3) providing surety bonding or insurance-related advice, recommendations, counseling, or research, or enforcement of construction insurance or surety bonding requirements; or (4) providing legal advice or representation.

M. If an event or circumstance beyond the Consultant's reasonable control occurs, including without limitation an act of God, fire, flood, hurricane, wind event, storm, weather disturbance, earthquake, or other causes that are beyond the reasonable control of the Consultant, whether similar or dissimilar to any of the foregoing, that cause the Consultant delay or additional expense ("*Force Majeure* Event"), then the Consultant is entitled to an equitable adjustment in the contract price or time for performance, or both. If any Force Majeure Event renders Consultant's performance impossible or impracticable, Consultant has the right to terminate performance under this Agreement consistent with any termination requirements that might exist in this Agreement. Upon occurrence of a **Force Majeure** Event, Consultant will notify Owner within a reasonable time that a Force Majeure Event has occurred and its anticipated impact on the Consultant's performance, including its expected duration. Consultant will use reasonable good-faith efforts to mitigate the impact of any *Force Majeure* Event on Consultant's ability to perform under this Agreement.

8.01 *Total Agreement*

A. This Agreement (including any expressly incorporated attachments), constitutes the entire agreement between Owner and Consultant and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified, or canceled by a duly executed written instrument. Exhibit B will be used for Amendments to this Agreement.

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9.01 *Definitions*

A. *Contractor*—Any person or entity (not including the Consultant, its employees, agents, representatives, and consultants), performing or supporting construction activities relating to the Project, including but not limited to contractors, subcontractors, suppliers, Owner's work forces, utility companies, construction managers, testing firms, shippers, and truckers, and the employees, agents, and representatives of any or all of them.

B. *Constituent of Concern*—Asbestos, petroleum, radioactive material, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5101 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, State, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

10.01 *Appendix to Agreement*

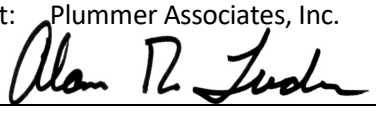
A. Appendix 1, Consultant's Standard Hourly Rates

11.01 *Exhibits to Agreement*

Exhibit A – Scope of Services

Exhibit B – Amendment to Owner-Consultant Agreement

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

Owner: City of Aubrey, Texas	Consultant: Plummer Associates, Inc.
By: _____	By: 
Print name: _____	Print name: Alan Tucker, PE
Title: _____	Title: Principal
Date Signed: _____	Date Signed: 12/18/25
	Consultant License or Firm's Certificate No.: F-13
	State of: Texas
Address for Owner's receipt of notices: [ ]	Address for Consultant's receipt of notices: 1320 S. University Dr. Suite 300

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Fort Worth, Texas 76107
cball@plummer.com
ap@plummer.com
mkuykendall@plummer.com

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APPENDIX 1
PLUMMER ASSOCIATES, INC
HOURLY FEE SCHEDULE
2026

Category	Rate
Administration	
A1	$ 100.00
A2	$ 110.00
A3	$ 125.00
A4	$ 145.00

Category	Rate
CAD Designers	
C1	$ 130.00
C2	$ 140.00
C3	$ 165.00
C4	$ 185.00
C5	$ 210.00

Category	Rate
Resident Project Representatives	
RR1	$ 140.00
RR2	$ 150.00
RR3	$ 160.00
RR4	$ 180.00

Category	Rate
Construction Managers	
CM1	$ 160.00
CM2	$ 170.00
CM3	$ 185.00
CM4	$ 210.00
CM5	$ 230.00
CM6	$ 270.00
CM7	$ 320.00
CM8	$ 340.00

Category	Rate
Electrical Engineers and Specialists	
EE1	$ 155.00
EE2	$ 170.00
EE3	$ 195.00
EE4	$ 230.00
EE5	$ 260.00
EE6	$ 300.00
EE7	$ 350.00
EE8	$ 370.00
EE9	$ 390.00

Category	Rate
Engineers/Scientists	
ES0	$ 95.00
ES1	$ 155.00
ES2	$ 170.00
ES3	$ 190.00
ES4	$ 220.00
ES5	$ 250.00
ES6	$ 270.00
ES7	$ 325.00
ES8	$ 360.00
ES9	$ 390.00

Category	Rate
Geospatial	
LS1	$ 130.00
LS2	$ 135.00
LS3	$ 150.00
LS4	$ 175.00
LS5	$ 220.00
LS6	$ 265.00
LS7	$ 280.00

Category	Rate
Telecommunication Designers	
TD1	$ 130.00
TD2	$ 140.00
TD3	$ 160.00
TD4	$ 175.00

Category	Rate
Professional	
P1	$ 140.00
P2	$ 160.00
P3	$ 220.00
P4	$ 300.00
P5	$ 375.00

Billing rates may be adjusted up to 5 percent annually (at the beginning of each calendar year) during the term of the agreement.

A mulitiplier of 1.15 will be applied to all direct expenses.

Fleet vehicles charge at $1,500 per month, $150 per day.

Exhibit A Table of Contents

Article 1— BASIC SERVICES 2
1.01 Management of Engineering Services 2
1.02 On-Call Plan Review Services 2
Article 2— ADDITIONAL SERVICES 2
2.01 Additional Services Requiring Owner's Written Authorization 2

Article 1 of the Agreement, Services of Consultant, is supplemented to include the following provisions:

Baseline Information: Owner has furnished the following Project information to Consultant as of the Effective Date. Consultant's scope of services has been developed based on this information. As the Project moves forward, some of the information may change or be refined, and additional information will become known, resulting in the possible need to change, refine, or supplement the scope of services.

Project Title:	On-Call Planning and Engineering Services, City of Aubrey, TX
Type and Size of Facility:	Various
Facility Location(s):	Various, throughout the City of Aubrey and its ETJ.
Funding Sources:	Typically, paid by developer. At times, the city may participate with a City cost-share. TBD project by project.
Known Design Standards:	City Design Standards, City Subdivision & Zoning regulations, TCEQ water and wastewater regulations. City to provide Plummer most current set of city ordinances and design standards from which to base reviews if online versions are not current.
Known Project Limitations:	Plummer will be third party plan review. For planning review, typically a 7 to 10 day plan review turn-around schedule, to be coordinated between the City and Plummer as the City receives development applications. Engineering plan review typically up to 1 month, but shall be coordinated and confirmed between the City and Plummer as Plummer is provided plans for review.
Project Assumptions:	Should Plummer be reviewing plans for existing facilities, the City will provide record drawings as part of the information included in the plan review. Plummer staff will not typically be required to present applications to Council and P&Z but will be required to provide a recommendation for staff to present.
Other Pertinent Information:	

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Consultant shall provide Basic and Additional Services as set forth below.

ARTICLE 1—BASIC SERVICES

1.01 Management of Engineering and Planning Services

A. All phases of Consultant's services will include management of Consultant's Project-specific responsibilities, including but not limited to the following management tasks, whether separately tracked and itemized or included as being incidental to other phase and scope task items.

1. Coordinate services within Consultant's internal team, and with Subconsultants and Consultant's Subcontractors.

2. Prepare for and participate in meetings with consultants and contractors working on other parts of the Project that may affect, or be affected by, Consultant's services or resulting construction.

3. Prepare and submit monthly invoices in accordance with Consultant's standard invoicing practices with progress reporting, if needed.

4. Maintaining communications records and files pertaining to or arising from Consultant's services.

1.02 On-Call Plan Review Services

A. Consultant shall Provide professional services to assist the Owner in the review and processing of planning applications and submittals such as subdivision plats, zoning requests, and site plans. Written comment responses will be provided to the Owner after the review of materials.

B. Consultant shall provide professional services to assist the Owner in the review of water and wastewater-related plans and specifications. Written comment responses will be provided to the Owner after the review of materials provided by the City.

ARTICLE 2—ADDITIONAL SERVICES

2.01 Additional Services Requiring Owner's Written Authorization

A. If authorized in writing by Owner, Consultant shall provide Additional Services of the types listed below. These services are not included as part of Basic Services and will be paid for by Owner as indicated in the Agreement.

1. Obtain or provide specified additional Project-related information and data to enable Consultant to complete its Basic and Additional Services.

2. Preparation of special and customized reporting, invoicing, and related support documentation in addition to that identified to be provided under Basic Services.

3. Preparation of applications and supporting documents (in addition to those furnished under Basic Services) for private or governmental grants, loans, or advances in connection with the Project; preparation or review of environmental assessments and impact statements; review and evaluation of the effects on the design requirements for

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the Project of any such statements and documents prepared by others; and assistance in obtaining approvals of authorities having jurisdiction over the anticipated environmental impact of the Project.

4. Services to make measured drawings of existing conditions or facilities, to conduct tests or investigations of existing conditions or facilities, or to verify the accuracy of drawings or other information furnished by Owner or others.

5. Services required as a result of Owner's providing incomplete or incorrect Project information to Consultant.

6. Undertaking investigations and studies including, but not limited to:

    a. All-hazards risk assessments and other studies to evaluate the feasibility of enhancing the resiliency of the design;

    b. detailed consideration of operations, maintenance, and overhead expenses;

    c. the preparation of feasibility studies (such as those that include projections of output capacity, utility project rates, project market demand, or project revenues) and cash flow analyses, provided that such services are based on the engineering and technical aspects of the Project, and do not include rendering advice regarding municipal financial products or the issuance of municipal securities;

    d. preparation of appraisals;

    e. with respect to proprietary systems or processes requiring licensing, providing services necessary to assist Owner in obtaining such licensing.

    f. detailed quantity surveys of materials, equipment, and labor; and

    g. audits or inventories required in connection with construction performed or furnished by Owner.

7. Assist Owner in obtaining data or services needed for the scope of services.

8. Services during out-of-town travel required of Consultant, other than for visits to the Site or Owner's office as required in Basic Services (Article 1 of Exhibit A).

9. Preparing additional bidding-related documents (or requests for proposals or other construction procurement documents); preparing pre-qualification procedures and documents, and participating in pre-qualifying prospective Bidders; and preparing Construction Contract Documents for alternate bids.

10. Assistance in connection with bid protests, rebidding, or renegotiating contracts for construction, materials, equipment, or services.

11. Any services by Consultant in connection with Owner or Consultant providing a Document to a Requesting Party under Exhibit F Paragraph 1.01.D (see Exhibit F, Electronic Documents Protocol), or any other distribution of a Document to a third party. Such services may include but are not limited to preparing the data contained in the requested Document in a manner deemed appropriate by Consultant; creating or otherwise preparing and distributing the Document in a format necessary to respond to Owner's direction or decision to provide the Document to a requesting party, including

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Contractor, in a format other than that required for deliverables from Consultant to Owner; and services in connection with obtaining required releases from the third parties to which the Documents will be distributed. Compensation for these Additional Services is not contingent upon Owner's reimbursement from the requesting party.

12. Providing more extensive services required to enable Consultant to issue notices or certifications requested by Owner.
13. Review Annexation Requests
14. Ordinance creation or ordinance amendments.
15. Providing full-time or part-time Resident Project Representative.
16. Other additional services performed or furnished by Consultant not otherwise provided for in this Agreement.

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This is **Exhibit B**, Amendment**,** referred to in and part of the Agreement between Owner and Engineer for Professional Services.

AMENDMENT TO OWNER-CONSULTANT AGREEMENT

Amendment No. **Enter Amendment Number**

Owner: **City of Aubrey, Texas**
Consultant: **Plummer**
Project: **On Call Services, City of Aubrey, Texas**
Effective Date of Owner-Consultant Agreement: **Effective Date**
Nature of Amendment: (Check those that apply)

☐ Additional Services to be performed by Consultant
☐ Modifications to services of Consultant
☐ Modifications to responsibilities of Owner
☐ Modifications of payment to Consultant
☐ Modifications to time(s) for rendering services
☐ Modifications to other terms and conditions of the Agreement

Description of Modifications:

SCOPE – to be determined.

Agreement Summary:
Original agreement amount: $
Net change for prior amendments: $
This amendment amount: $
Adjusted Agreement amount: $
Change in time for services (days or date, as applicable):

Owner and Consultant hereby agree to modify the above-referenced Agreement as set forth in this Amendment. The Effective Date of the Amendment is **Enter Effective Date of Amendment**. The Engineer and Consultant acknowledge that this Agreement shall not become enforceable until approved by **INSERT AGENCY OR OWNER, OTHERWISE OMIT**.

Owner	Consultant
City of Aubrey, Texas	Plummer Associates, Inc.
(typed or printed name of organization)	(typed or printed name of organization)
By: _____	By: _____
(individual's signature)	(individual's signature)
Date: _____	Date: _____
(date signed)	(date signed)
Name: _____	Name: _____
(typed or printed)	(typed or printed)
Title: _____	Title: _____
(typed or printed)	(typed or printed)

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City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consideration and action on a Resolution nominating a candidate to fill the vacancy for the unexpired term of Place 5 on the Denton Central Appraisal District Board of Directors.

Staff Contact
Charles Kreidler, City Manager
kreidler@aubreytx.gov
940-440-9343

Summary
The Denton Central Appraisal District Board of Directors has received notification of the resignation of Board Member Rob Altman, Place 5, effective immediately.

Mr. Altman was an appointed member of the DCAD Board of Directors whose term ends on December 31, 2027. According to the Texas Property Tax Code, a vacancy at DCAD by an appointed member falls under Section 6.0301(f), which states:

> "(f) If a vacancy occurs in an appointive position on the board of directors, each taxing unit that is entitled to vote under Section 6.03 may nominate by resolution adopted by its governing body a candidate to fill the vacancy. The taxing unit shall submit the name of its nominee to the chief appraiser within 45 days after notification from the board of directors of the existence of the vacancy, and the chief appraiser shall prepare and deliver to the board of directors within the next five days a list of the nominees. The board of directors shall appoint by majority vote of its members one of the nominees to fill the vacancy."

The City of Aubrey is eligible to nominate one person to fill the unexpired term.

Following this deadline, the Chief Appraiser will prepare a list of all submitted nominees, and the current Board of Directors shall appoint one of the nominees by majority vote to fill the vacancy.

This process is separate from the regular board appointment process currently underway for terms ending this year.

Financial Summary
N/A

Staff Recommended Action

Staff Recommended Motion

CITY OF AUBREY, TEXAS

RESOLUTION NO. _____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBREY, TEXAS, NOMINATING A CANDIDATE TO FILL THE UNEXPIRED TERM OF PLACE 5 ON THE DENTON CENTRAL APPRAISAL DISTRICT BOARD OF DIRECTORS; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Denton Central Appraisal District ("DCAD") Board of Directors has provided notification of the resignation of Board Member **Rob Altman**, who served in **Place 5**, effective immediately; and

WHEREAS, Section **6.0301(f)** of the Texas Property Tax Code provides that if a vacancy occurs in an appointive position on the board of directors of an appraisal district, each taxing unit entitled to vote under Section 6.03 may nominate, by resolution adopted by its governing body, a candidate to fill the vacancy, and submit the nominee's name to the chief appraiser within forty-five (45) days after notification of the vacancy; and

WHEREAS, the City of Aubrey, Texas, is a taxing unit entitled to vote under Section 6.03 of the Texas Property Tax Code and is therefore eligible to nominate one person to fill the vacancy for the unexpired term of Place 5 on the DCAD Board of Directors; and

WHEREAS, the City Council of the City of Aubrey desires to exercise its statutory authority to nominate a candidate for appointment to the DCAD Board of Directors in accordance with state law.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUBREY, TEXAS, THAT:

1. **Nomination.** The City Council of the City of Aubrey hereby nominates **_____** to fill the vacancy in **Place 5** on the Denton Central Appraisal District Board of Directors for the **unexpired term ending December 31, 2027**.
2. **Submission to Chief Appraiser.** The City Secretary is hereby authorized and directed to submit the name of the City's nominee to the Chief Appraiser of the Denton Central Appraisal District within the timeframe prescribed by Section 6.0301(f) of the Texas Property Tax Code.
3. **Effective Date.** This Resolution shall take effect immediately upon its adoption.

PASSED AND APPROVED by the City of Aubrey, Texas this 22nd day of January, 2026.

APPROVED:

_____
Chris Rich, Mayor

ATTEST:

_____
Jenny Hicks, City Secretary

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consider and act on a Final Plat application for Lot 1, Block 1, AUB Office Addition, a proposed replat of Lot 82, Block 23, Map of the Town of Aubrey, together with an adjacent triangular tract described in Volume 481, Page 131 of the Deed Records of Denton County, Texas, and contains approximately 0.557 acres situated within the Dennis Cowan Survey, Abstract No. 304, City of Aubrey, Denton County, Texas. The purpose of the replat is to create a single lot and to dedicate a fire lane easement, water easement, and drainage and detention easement. *(Applicant: SHAP, LLC,* 403 S. Main)

Staff Contact
Leanne Wilson, Assistant City Manager
lwilson@aubreytx.gov

Summary
Owner: SHAP, LLC
Engineer: Triangle Engineering LLC (Kartavya S. Patel, PE)

Application Date: December 9, 2025
Location: South of the intersection between S. Main Street and W. Plum Street
General Retail, Zone “GR”
Current Use: Single Family Home. Proposed use is office space.

Water and sewer are provided by the City and connections will be provided along S. Main Street.

A Final Plat application was received for AUB Office Addition, Lot 1, Block 1, proposed as a replat of Block 23, Lot 82 & Adjacent Triangle, being approximately 0.557 acres out of the Dennis Cowan Survey, Abstract No. 304, City of Aubrey, Denton County, Texas. The purpose of the replat is to dedicate a fire lane. The property owner is Shap, LLC and the intended use is for office space. The property is located on the east side of Main Street, south of Plum Street.

Water and sewer service will be provided by the city of Aubrey.

The final plat was reviewed to evaluate compliance with the City of Aubrey’s Subdivision Ordinance and the Final Plat Checklist. The plat is in general compliance with the subdivision ordinance and checklist. Items were identified that require revisions, and a conditional approval was recommended at the Planning and Zoning Commission meeting on January 8, 2026, to include the following conditions:

1.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Engineering plans shall be approved by the City Engineer prior to filing the Final Plat. Plans shall be amended to remove outdated information related to a restaurant.
2.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Engineering plans shall be approved by the City Engineer prior to filing the Final Plat. Plans shall be amended to address the contradiction in water tap sizes. Note shall be amended to remove tapping sleeves and shall include tapping saddles.
3.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Engineering plans shall be approved by the City Engineer prior to filing the Final Plat. Plans shall be amended to reference permitting and compliance with TxDOT on long-side service bores.

4.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Engineering plans shall be approved by the City Engineer prior to filing the Final Plat. Backflow devices are required by code for irrigation and commercial water connections.
5. CHAPTER 10; Article 3 – Plat note shall be added “The maintenance of detention facilities, drainage improvements and/or easements shown on the plat are the responsibility of the individual property owners and does not constitute acceptance of the same for maintenance purposes by the City of Aubrey, or Denton County.

The Planning and Zoning Board made a recommendation for Council to approve the Final Plat contingent on the five conditions listed in this staff report. Since the Planning and Zoning meeting, the applicant has submitted revisions that satisfactorily addressed three of the five conditions. Staff recommends conditional approval of the Final Plat. With the following two conditions:

1. CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Engineering plans shall be approved by the City Engineer prior to filing the Final Plat. Plans shall be amended to address the contradiction in water tap sizes. Note shall be amended to remove tapping sleeves and shall include tapping saddles.
2. CHAPTER 10; Article 3 – Plat note shall be added “The maintenance of detention facilities, drainage improvements and/or easements shown on the plat are the responsibility of the individual property owners and does not constitute acceptance of the same for maintenance purposes by the City of Aubrey, or Denton County.

The City Council may:
A. Approve the Final Plat,
B. Approve the Final Plat with conditions, or
C. Deny the Final Plat.

Financial Summary
NA

Staff Recommended Action
Approve with Conditions

Staff Recommended Motion
Motion to (approve, approve with conditions, or deny) the Final Plat.

Plat Application

In order to ensure a thorough and expedited review of a plat and/or plan, all development requests require that a pre-application discussion or a pre-submittal meeting occur <u>prior</u> to making an application to the City in order to discuss development needs and issues.

Description of Property

Subdivision Name: O T AUBREY BLK 23 LOT 82 & ADJ TRIANGLE

Total Number of Lots: 1 Total Acreage: 0.557 acres

Property Location: 403 S. Main Street, Aubrey, TX-76227

Contact Information

Owner: SHAP LLC Phone #: 469-554-0390

Address: 10812 CAPRI DR, MCKINNEY, TX -75072

Email address: hanarealinvestments@gmail.com

Applicant contact info: 469-554-0390

Engineer/Surveyor: AKHILA REDDY GONDI Phone #: 469-331-8566

Email address: areddy@triangle-engr.com

***See submittal calendar on-line for application submittal dates. ***

	FEES	
Application Review Fee	$500.00	
Preliminary Plat – Residential	$550.00	Plus $20.00 per lot
Preliminary Plat – Commercial	$600.00	Plus $25.00 per acre
Final Plat – Residential	$650.00	Plus $20.00 per lot
Final Plat – Commercial	$700.00	Plus $25.00 per acre
Minor Plat	$500.00	
Replat - Residential	$550.00	Plus $20.00 per lot
Replat - Commercial	$600.00	Plus $25.00 per acre
Amended Plat	$350.00	
Plat Vacation	$250.00	Plus $20.00 per lot
Plat filing (County recording)	$200.00	
Legal notices (published)	$150.00	Plus actual expenses
Professional fees for review of land use related permits as prepared by City's consultants (ex: Engineer, Planner, Attorney)	*see Special Fees section of ordinance	*Requires deposit, and fee assessed to cover reasonable and necessary expenses in review of development related permits

The Texas Local Government Code generally requires that the municipal authority responsible for approving plats is to take action on a plat within 30 days of proper filing. Because thorough plat review, and resubmittal of corrections, generally requires in excess of 30 days, an opportunity to allow for additional review time is available to an owner/applicant. You may contact city staff for information on requesting a time extension and for scheduling your plat. In cases where city staff does not have adequate time for review and corrections to be made, there is a high likelihood that the plat will be forwarded to PZ and CC with a recommendation of denial.

Owner's signature required to authorize plat application submittal: _____

Fees paid: _____

- ○ Cash
- ○ Check # _____

Project #: _____

Date: _____

Receipt #: _____

Plat Application Checklist

In order to ensure a thorough and expedited review of a plat and/or plan, all development requests require that a pre- application discussion or a pre-submittal meeting occur prior to making an application to the City. A complete application, fee, and supplementary materials, in accordance with the City's Subdivision Ordinance, must accompany a plat submittal.

Required for ALL Plats

- ✓ Project name in lower right corner
- ✓ Application form, fees, electronic copy/pdf
- ____ Utility company letters
- ____ ETJ affidavit or approval by city
- ✓ Vicinity map
- ✓ Owner's name, address & phone
- ✓ Surveyor/Engineer's name, address & phone
- ✓ Adjacent properties identified
- ✓ Front building lines
- ✓ Flood plain statement/boundary
- ✓ Lot/Alley dimensions
- ____ Metes & bounds
- ✓ Easements (drainage, utility, landscape, etc.)
- ✓ Monuments, pins & B.M.'s set
- ____ 4 Copies of Plat (folded) for initial review by staff
- ____ Engineer's summary report (Art. 2, Section 1.05 of Subdivision Ord. (how does property drain, grading)
- ____ Proof of ownership per Art. 2, Sect. 1.05 Sub. Ord.
- ✓ North arrow
- ____ Scale 1" = 200 figure & scale bar
- ✓ Size 24" x 36"
- ✓ Boundary lines identified
- ✓ Lots & blocks, acreage identified
- ____ Required signatures
- ✓ Street dimensions
- ____ RPLS certificate
- ____ Match lines
- ✓ Street names
- ____ Certified Tax certificate at time of recording

Additional requirements for Preliminary Plats

- ____ Preliminary Drainage/Utility plans
- ____ Street & road interconnect
- ____ Contour lines
- ____ Proposed street names
- ____ Physical features
- ____ Scale 1"= 200', 1"=100'
- ____ Match lines
- ____ Proposed parks, trails, open space

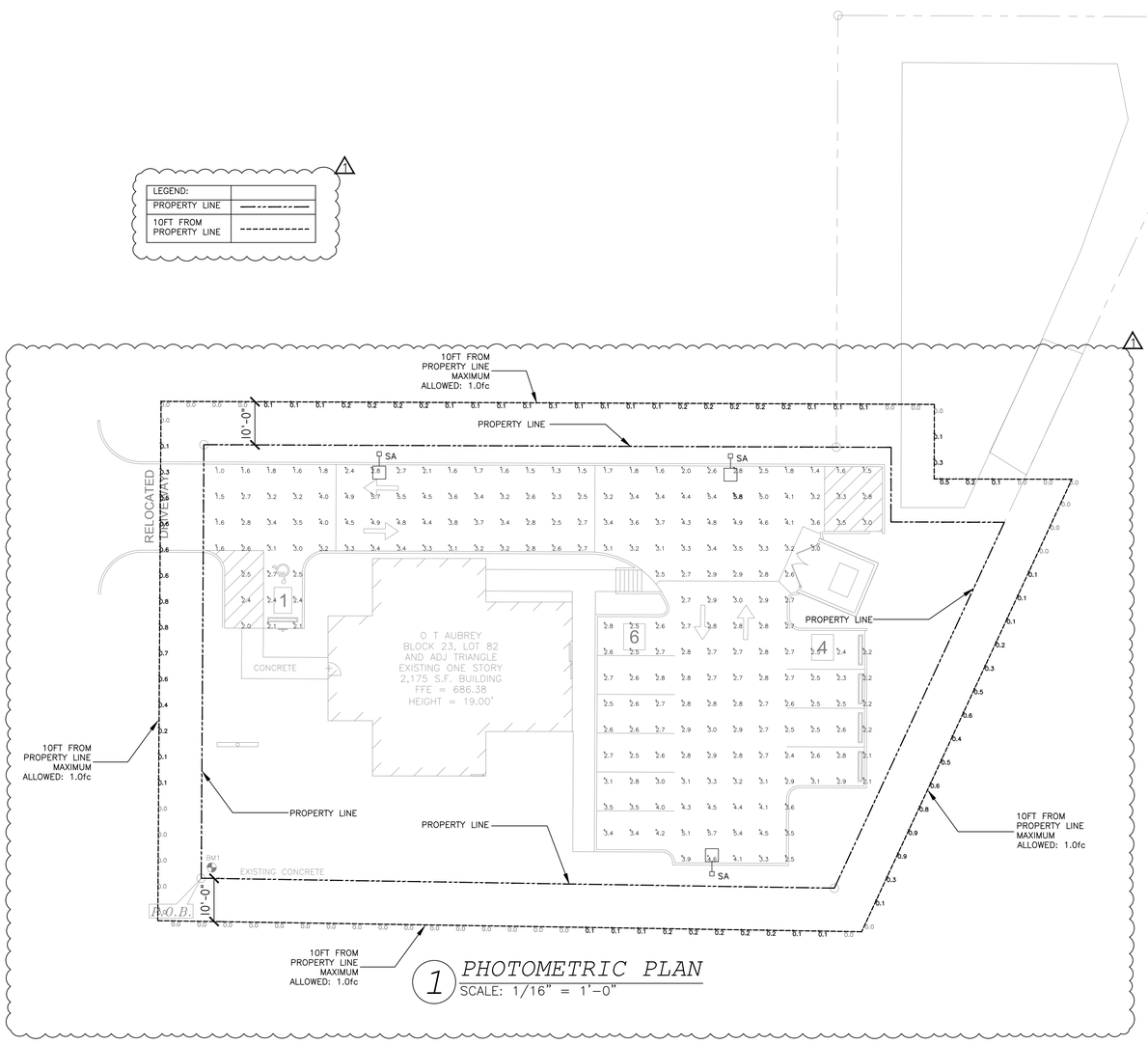
Additional requirements for Re-Plat, Minor Plat, and Final Plats

(see Subdivision Ordinance for complete list of plat documents required):

- ____ Filing documents and recording fees
- ✓ 2 x 3 recording block
- ____ Co. judge signature block (if in ETJ)
- ____ Street & road interconnect
- ____ Owners certificate
- ____ Deed restrictions

In accordance with Section 212.014 of the Texas Local Government Code, a Public Hearing is required for a re-plat.

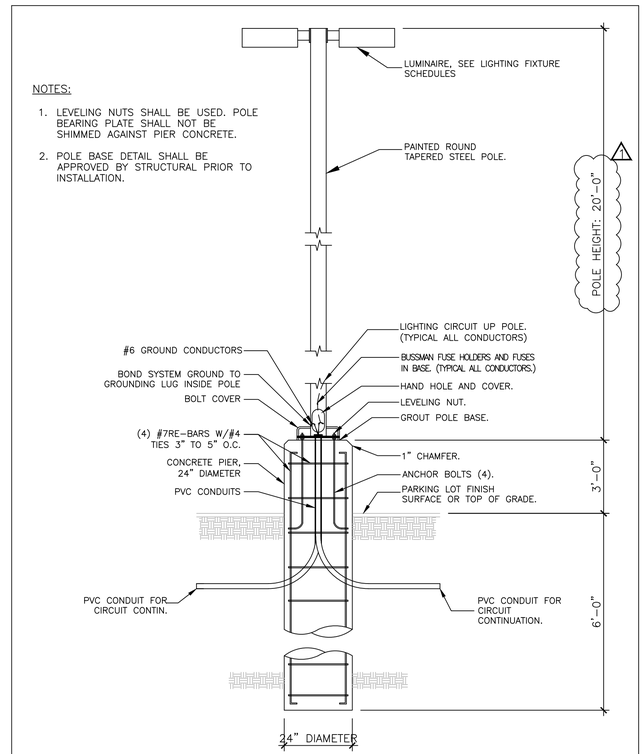
*Any required documentation that is missing from the application packet may constitute the application to be rejected and/or determined to be incomplete.



1 PHOTOMETRIC PLAN
SCALE: 1/16" = 1'-0"

NOTES:

1. LEVELING NUTS SHALL BE USED. POLE BEARING PLATE SHALL NOT BE SHIMMED AGAINST PIER CONCRETE.
2. POLE BASE DETAIL SHALL BE APPROVED BY STRUCTURAL PRIOR TO INSTALLATION.



2 POLE BASE DETAIL
SCALE: N.T.S.

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Car Parking	Illuminance	Fc	2.99	5.8	1.0	2.99	5.80
10ft From Property Line	Illuminance	Fc	0.18	0.9	0.0	N.A.	N.A.

Luminaire Schedule							
Qty	Label	Arrangement	Description	LLF	Lum. Watts	Lum. Lumens	Mounting Height
3	SA	SINGLE	NV-1-T4-48L-1-40K8-HSS	1.000	156	12356	23 ft

NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING THE SITE LIGHTING PHOTOMETRIC TESTING AND COMMISSIONING TO ENSURE THE ACTUAL PHOTOMETRIC READINGS ARE CONSISTENT WITH THOSE OF THE DESIGNED PHOTOMETRIC PLAN.

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TRIANGLE ENGINEERING LLC
Texas Registered Engineering Firm F-20513
T: 214.609.9371 F: 469.399.0709 E: kyle@triangle-engr.com
W: triangle-engr.com 5151 Belt Line Road, Suite 1000, Dallas, Texas 75254
Planning | Civil Engineering | Construction Management

No.	DATE	REVISION	BY
1	11/07/2025	CITY COMMENTS	

MEP GREEN DESIGN & BUILD
FAST AND ACCURATE

NOV. 07, 2025

RESTAURANT
AUBREY, TEXAS

PROJECT No:
DATE:
DRAWN BY: PL
CHECKED BY: DV

SHEET # E5.1
REVISION #

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JPL-1-X-X-40K7-UNV-ASA-BRZ
Description/Loc: Area Light Head,Bronze Qty:0

LED WATTAGE CHART

	16L	32L	48L	64L
1050 milliamps	80w	106w	159w	205w

FORM AND FUNCTION

- Sleek, low profile housing
- Spec grade performance
- Engineered for optimum thermal management
- Low depreciation rate
- Reduces energy consumption and costs up to 65%
- Exceeds IES foot candle levels utilizing the least number of poles and fixtures per project
- Optical system designed for:
  - Parking Lots
  - Auto Dealerships
  - General Area Lighting

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

FINISH

- 3-5 mils electrostatic powder coat.
- Standard high-quality finishes prevent corrosion, protects against extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

BUY AMERICAN

To ensure the latest BAA/TAA/BABA Standards are being met, please select BAA, TAA, or BABA in the options section. Please contact the factory before placing an order for any products requesting BAA (Buy American Act), TAA (Trade American Act), or BABA (Build America, Buy America).

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JPL-1-X-X-40K7-UNV-ASA-BRZ
Description/Loc: Area Light Head,Bronze Qty:0

JPL-1 ORDERING GUIDE

Cat# | Light Dist. | # of LEDs | Milliamps | Kelvin | Volts

(JPL-1) | Type 2 (T2), Type 3 (T3), Type 4 (T4), Type 5 (T5) | 16 (16L), 32 (32L), 48 (48L), 64 (64L) | 1050 (1) | Amber 590 nm (AMBER) ❶❷❸, 2700K 70 CRI (27K7) ❶, 2700K 80 CRI (27K8) ❶❷, 3000K 70 CRI (30K7) ❶, 3000K 80 CRI (30K8) ❶❷, 3500K 80 CRI (35K8), 4000K 70 CRI (40K7) ❶, 4000K 80 CRI (40K8) ❶❷, 5000K 70 CRI (50K7) ❶, 5000K 80 CRI (50K8) ❶❷ | 120-277 (UNV), 347-480 (HV)

Mounting | Color | Controls Options | Options | Lens Options

Mounting: Architectural Sweep Arm (ASA) ❶; Direct Pole 3" Arm Single (DP3S) ❶; Direct Pole 3" Arm D180, D90, D60, D Quad (DP3T) ❶; Knuckle Mount (KM); Wall Mount (WM); Trunnion Mount (TM) ❶; Tennis Arm Mount (TA); Mast Arm Mount (MA)

Color: Bronze Textured (BRZ); White Textured (WHT); Smooth White Gloss (SWT); Silver Metallic (SMV); Black Textured (BLK); Smooth Black Gloss (SBK); Graphite Textured (GPH); Grey Textured (GRY); Green Textured (GRN); Hunter Green Textured (HGN); Custom (CS)

Controls Options: Nema 7-Pin Receptacle (P7); Photocell + Receptacle (PCR); Receptacle + Shorting Cap (PER); FSP-211 with Motion Sensor 9'-20' Height ❶ (FSP-22) ❷ (FSP-40) ❸; Custom Outdoor Integration (CCI) ❶; Button Type Photocell (PC) ❶

Options: Bird Spikes (BS); Marine Grade Finish (MGF); Optic Plate Painted to Match Fixture (OPP); Quick Mount Bracket (QMB); Retrofit Mount Bracket (RQMB); Round Pole Adaptor 3"-4" (RPA4); Rotated Optic Left (ROL); Rotated Optic Right (ROR); Automotive House Side Shield (AHS) ❶; House Side Shield (HSS); Black Hardware (BH); Black Optic Frame (BOF); Buy America Act (BAA) ❶; Trade America Act (TAA) ❶; Build America Buy American (BABA) ❶

Lens Options: Glass Lens (GL) ❶❷; HAL LLG (HALL) ❶❷

Notes:
❶ Consult Factory for Lead Time. Consult Factory for 90 CRI Requests.
❷ For Round Pole Specify RPA4 or RPA5
❸ Optic Plate Painted Black as standard, can be painted to match fixture.
❹ Universal Voltage 120-277
❺ HSS not applicable with Nema 7.
❻ Automotive House Side Shielding options only, must be selected to meet International Dark-Sky Association certification.
❼ Glass Lens: Low iron glass, fully tempered per ANSI C1047 (QCH-2201-37)
❽ HAL Lens: Clear Soda Lime Silica Float Glass, Yellow (Spectrum Yellow Smooth 1616), Annealed, Flat
❾ Controls Agnostic: Please contact factory for Custom Control Integration requests (Hi-light, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, Dali II, AerOn, or other control systems)
❿ Turtle Safe
⓫ Consult Factory for all BAA/TAA/BABA requests
⓬ Consult Factory for Lead Time.
⓭ Not Available above 1000mA
❶❹ Contact Factory

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JPL-1-X-X-40K7-UNV-ASA-BRZ
Description/Loc: Area Light Head,Bronze Qty:0

PRODUCT SPECIFICATIONS

ELECTRICAL

- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver
- Driver power factor at maximum load is ≥ .95, THD maximum load is 15%
- LED Drivers Ambient Temp. Min is -40°C and Ambient Temp. Max ranges from 50°C to 55°C and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it.
- All internal wiring UL certified for 600 VAC and 105°C
- All drivers, controls, and sensors housed in enclosed IP65 compartment
- CRI 70, 80 or 90 (Contact factory for 90 CRI)
- Color temperatures: Amber, 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KVA supplied as standard.

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

OPTIONS

- BIRD SPIKES (BS) - Offers a practical and humane deterrent for larger bird species and provides a cost-effective long-term solution to nuisance bird infestations and protects your property.
- MARINE GRADE FINISH (MGF) - A multi-step process creating protective finishing coat against harsh environments. Chemically washed in a 5 stage cleaning system. Pre-baked, Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.
- OPTIC PLATE PAINTED TO MATCH FIXTURE (OPP) - Optic plate is clear anodized as standard. The optic plate can be powder coated to match the finish of the fixture.
- QUICK MOUNT BRACKET (QMB) - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Has a 2"x4" Drill Pattern.
- RETROFIT MOUNT BRACKET - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Drill Pattern is adjustable from 2"x4" to 2"x6".
- ROUND POLE ADAPTER (RPA) - When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3"-4" round poles, and RPA5 when installing on 5"-6" round poles.
- ROTATED OPTICS (ROL) (ROR) - Rotated optics are designed for perimeter lighting for auto dealerships.
- SHIELDS (HSS, AHS) - House Side Shield (HSS) is designed for full property line cut off. Automotive House Side Shield (AHS) is a single-sided shield allowing partial cut-off on either side or front of luminaire.
- BLACK HARDWARE (BH) - Optional black, zinc coated steel hardware.
- BLACK OPTIC FRAME (BOF) - Optional black optic frame. Standard is white.
- CLASS I LENS (CL) - Low Iron Glass, fully tempered.
- HIGH PERFORMANCE AMBER LENS (HAL) -

The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.

CONTROL OPTIONS

- FSP-211 (FSP-X) - Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
  - All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
  - FSP-20 mounting heights 9-20 feet
  - FSP-40 mounting heights 21-40 feet
  - Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field.
  - FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering.
- NEMA 7-PIN RECEPTACLE (PE7) - An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.
- PHOTOCELL + RECEPTACLE (PCR)–7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation.
- RECEPTACLE + SHORTING CAP (PER)–7-Pin Receptacle and Shorting Cap.
- Controls Agnostic: Please contact factory for your preferred controls option. (Hi-light, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, DALI II, AerOn, or other control systems)

FINISH

- 3-5 mils electrostatic powder coat.
- Standard high-quality finishes prevent corrosion protects against and extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

OPTICS

Silicone optics high thermal stability and light output provide higher powered LEDs with minimized lumen depreciation. UV stability with scratch resistance increases exterior application durability. Silicone optics do not yellow, crack or brittle over time

LISTINGS

- Certified to UL 1598
- UL 8750
- CSA C22.2 No. 250.0
- DesignLights Consortium® (DLC)
- DesignLights Consortium Premium® (DLCP)
- IP6X/ IP67 Rated
- 3G Vibration Rated per ANSI C136.31-2010
- IDA Dark Sky Approved
- IK10 Rated

BUY AMERICAN OPTION

While all of the products listed in this document qualify for the Buy America(n) Act of 1933, we reserve the right to change our listings without notice.

The information provided above is for general informational purposes only. We encourage you to consult legal professionals for advice particular to your projects concerning BAA, TAA, BABA or Buy America.

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JPL-1-X-X-40K7-UNV-ASA-BRZ
Description/Loc: Area Light Head,Bronze Qty:0

LUMENS

PART NUMBER	N3	LM/W	T2	LM/W	T3	LM/W	T4	LM/W	T4 AHS	LM/W	T5	LM/W	W
JPL-1-16L-1-30K7	6272	112	6160	110	6384	114	6232	112	4032	72	6440	115	56
JPL-1-16L-1-40K7	6496	116	6832	122	6888	123	6776	121	4256	76	6944	124	56
JPL-1-16L-1-50K7	6720	120	7168	128	7224	129	7112	127	4480	80	7280	130	56
JPL-1-32L-1-30K7	11872	112	11660	110	12084	114	11920	112	7632	72	12190	115	106
JPL-1-32L-1-40K7	12296	116	12932	122	13038	123	12926	121	8056	76	13144	124	106
JPL-1-32L-1-50K7	12720	120	13568	128	13674	129	13462	127	8480	80	13780	130	106
JPL-1-48L-1-30K7	17672	112	17740	113	17784	114	17472	112	11232	72	17960	115	156
JPL-1-48L-1-40K7	18096	116	19032	122	19188	123	18876	121	11856	76	19344	124	156
JPL-1-48L-1-50K7	18720	120	19968	128	20124	129	19812	127	12480	80	20280	130	156
JPL-1-64L-1-30K7	22960	112	23350	113	23370	114	22960	112	14760	72	23575	115	205
JPL-1-64L-1-40K7	23780	116	25010	122	25215	123	24805	121	15580	76	25420	124	205
JPL-1-64L-1-50K7	24600	120	26240	128	26445	129	26035	127	16400	80	26650	130	205

3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.

BUG RATINGS

PART NUMBER	T2	T3	T4	T5
JPL-1-16L-1-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
JPL-1-16L-1-40K7	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2
JPL-1-16L-1-50K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
JPL-1-32L-1-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
JPL-1-32L-1-40K7	B2-U0-G2	B2-U0-G2	B3-U0-G2	B4-U0-G2
JPL-1-32L-1-50K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2
JPL-1-48L-1-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
JPL-1-48L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G3
JPL-1-48L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3
JPL-1-64L-1-30K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3
JPL-1-64L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	B5-U0-G3
JPL-1-64L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	B5-U0-G3

LUMENS HSS

PART NUMBER	T2 HSS	LM/W	BUG	T3 HSS	LM/W	BUG	T4 HSS	LM/W	BUG	W
JPL-1-16L-1050-2767	3639	65	B0-U0-G1	3508	63	B0-U0-G1	3926	62	B0-U0-G1	56
JPL-1-16L-1050-3067	3864	69	B0-U0-G1	3864	69	B0-U0-G1	3864	69	B0-U0-G1	56
JPL-1-16L-1050-4067	3864	69	B0-U0-G1	3864	69	B0-U0-G1	3528	63	B0-U0-G1	56
JPL-1-16L-1050-5067	3920	70	B1-U0-G1	3752	68	B0-U0-G1	3812	68	B0-U0-G1	56
JPL-1-16L-1050-6067	3696	66	B1-U0-G1	3920	70	B0-U0-G1	3528	63	B0-U0-G1	56
JPL-1-16L-1050-8067	3920	70	B1-U0-G1	4088	73	B0-U0-G1	3612	64	B0-U0-G1	56
JPL-1-16L-1050-9067	4032	72	B1-U0-G1	4088	73	B0-U0-G1	4179	74	B0-U0-G1	56
JPL-1-16L-1050-5067	4032	72	B1-U0-G1	3752	68	B0-U0-G1	3612	64	B0-U0-G1	56
JPL-1-32L-1050-2767	7224	64	B1-U0-G2	7056	63	B1-U0-G2	7672	68	B1-U0-G2	106
JPL-1-32L-1050-3767	7224	64	B1-U0-G2	7616	68	B1-U0-G2	7951	71	B1-U0-G2	106
JPL-1-32L-1050-2768	6816	64	B1-U0-G2	6969	62	B1-U0-G2	6832	62	B1-U0-G2	106
JPL-1-32L-1050-3768	7401	69	B1-U0-G2	7952	71	B1-U0-G2	7672	67	B1-U0-G2	106
JPL-1-32L-1050-3067	7672	74	B1-U0-G2	7392	72	B1-U0-G2	7952	72	B1-U0-G2	106
JPL-1-32L-1050-4067	8064	77	B1-U0-G2	7840	75	B1-U0-G2	7952	72	B1-U0-G2	106
JPL-1-32L-1050-5068	7672	74	B1-U0-G2	7840	75	B1-U0-G2	7504	72	B1-U0-G2	106
JPL-1-32L-1050-4067	8064	77	B1-U0-G2	8176	77	B1-U0-G2	8232	78	B1-U0-G2	106
JPL-1-32L-1050-5067	8064	77	B1-U0-G2	7840	75	B1-U0-G2	7504	72	B1-U0-G2	106
JPL-1-32L-1050-5067	8304	80	B1-U0-G2	8176	77	B1-U0-G2	8232	78	B1-U0-G2	106
JPL-1-48L-1050-2767	10416	59	B1-U0-G3	10920	62	B1-U0-G2	10976	62	B1-U0-G2	156
JPL-1-48L-1050-3768	10220	64	B1-U0-G3	9800	62	B1-U0-G2	9800	62	B1-U0-G2	156
JPL-1-48L-1050-3067	10976	70	B1-U0-G3	10976	70	B1-U0-G2	10976	70	B1-U0-G2	156
JPL-1-48L-1050-5067	11865	76	B1-U0-G3	11257	72	B1-U0-G2	11424	73	B1-U0-G2	156
JPL-1-48L-1050-3568	10861	69	B1-U0-G2	10864	68	B1-U0-G2	10618	66	B1-U0-G2	156
JPL-1-48L-1050-4068	11865	76	B1-U0-G2	11317	73	B1-U0-G2	11424	73	B1-U0-G2	156
JPL-1-48L-1050-4067	12152	83	B1-U0-G2	12293	79	B1-U0-G2	12208	78	B1-U0-G2	156
JPL-1-48L-1050-5069	11865	76	B1-U0-G2	11317	73	B1-U0-G2	11536	74	B1-U0-G2	156
JPL-1-48L-1050-5067	12152	83	B1-U0-G2	12293	79	B1-U0-G2	12208	78	B1-U0-G2	156
JPL-1-64L-700-3767	9296	71	B1-U0-G2	9856	69	B1-U0-G2	9856	69	B1-U0-G2	205
JPL-1-64L-1050-3767	14038	71	B1-U0-G2	14672	68	B1-U0-G2	14728	69	B1-U0-G2	205
JPL-1-64L-1050-2768	13631	66	B1-U0-G2	13737	64	B1-U0-G2	13055	64	B1-U0-G2	205
JPL-1-64L-1050-3568	14615	71	B1-U0-G2	14672	68	B1-U0-G2	14737	69	B1-U0-G2	205
JPL-1-64L-1050-3067	15749	77	B1-U0-G2	15173	74	B1-U0-G3	15048	74	B1-U0-G3	205
JPL-1-64L-1050-4068	15749	77	B1-U0-G2	15173	74	B1-U0-G3	15048	74	B1-U0-G3	205
JPL-1-64L-1050-3568	15305	72	B1-U0-G2	15176	74	B1-U0-G3	15048	74	B1-U0-G3	205
JPL-1-64L-1050-4067	17007	83	B2-U0-G2	16991	80	B1-U0-G3	16473	80	B1-U0-G3	205
JPL-1-64L-1050-5068	15749	77	B1-U0-G2	15176	74	B1-U0-G3	15048	74	B1-U0-G3	205
JPL-1-64L-1050-5067	17007	83	B2-U0-G2	16991	80	B1-U0-G3	16473	80	B1-U0-G3	205

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JP-SSS-4.0-11-XX-BRZ
Description/Loc: Square Steel Pole, Bronze Qty:0

Square Straight Steel Poles

Pole Shaft
The pole shaft is one piece construction, being fabricated from a weldable grade carbon steel structural tubing. The pole has a uniform wall thickness of 11 gauge (0.1196"), 7 gauge (0.1793"), or 3 gauge (0.2391"). The pole shaft material shall conform to ASTM A1011 Gr.50 with a minimum yield strength of 50,000 psi. The pole shaft has a full length longitudinal resistance weld and is uniformly square in cross-section with flat sides, small corner radii and excellent torsional properties.

Base Plate
The anchor base is fabricated from structural quality hot rolled carbon steel plate that meets or exceeds a minimum yield strength of 36,000 psi. The anchor base telescopes the pole shaft and is circumferentially welded top and bottom. All welds are performed in accordance with the American Welding Society specification AWS D1.1, latest edition.

Anchor Bolts
Anchor bolts are fabricated from commercial quality hot rolled carbon steel bar that meets or exceeds a minimum yield strength of 55,000 psi. Four properly sized anchor bolts, each with two regular hex nuts and washers, are furnished and shipped with all poles unless otherwise specified. Anchor bolts shall have the threaded and galvanized a minimum of 8 inches in accordance with ASTM A153. Fully galvanized anchor bolts are available upon request.

Handhole
An oval reinforced gasketed handhole, having a nominal 3" x 5" or 4" x 6-1/2" inside opening, located 1'-0" above base, is standard on all poles. Optional 5" x 8" and 4" x 10" handholes are available (see options). A grounding provision is located inside the handhole ring.

Finishes
The Standard Finish is a polyester thermosetting powder coating applied to the surface of the substrate to a minimum of 3 mils for all color finishes. Hot dip Galvanized finish to a ASTM A123 specification or primed finish is also available. For optional finishes, see K-KLAD and K-KLAD Over Galvanizing.

FINISHES

Standard		Galvanized		K-KLAD		K-KLAD Over Galvanizing	
BRZ	Bronze	G	Galvanized	KB13	Bronze	KZ13	Bronze
BLK	Black			KB21	Black	KZ21	Black
GRY	Gray			KB41	Gray	KZ41	Gray
GRN	Green			KB91	Green	KZ91	Green
WHT	White			KB81	White	KZ81	White
P	Primed			KB45	Natural Aluminum	KZ45	Natural Aluminum
NA	Natural Aluminum						

1 YEAR WARRANTY | 5 YEAR WARRANTY | 10 YEAR WARRANTY

MOUNTING DESIGNATIONS

Tenon Mount
2 2 3/8" x 4" TENON
3 2 7/8" x 4" TENON
3.5 3 1/2" x 6" TENON
4 4" x 6" TENON

Open Mount
OT Open Top
OTC Open Top includes Pole Cap

Drill Mount
DM1 Drilled for 1 Luminaire
DM2S0 Drilled for 2 Luminaires @ 90º
DM2180 Drilled for 2 Luminaires @ 180º
DM3 Drilled for 3 Luminaires @ 90º
DM4 Drilled for 4 Luminaires @ 90º

Slain Mount
1GSS4 (1) CXA
2GSS4 (2) CXA's located on the Same Side
3GSS4 (3) CXA's located on the Same Side
4GSS4 (4) CXA's located on the Same Side
2GBB4 (2) CXA's located Back to Back
4GBB4 (4) CXA's located Back to Back
1GSS9 (1) CXASQ
2GSS9 (2) CXASQ's located on the Same Side
3GSS9 (3) CXASQ's located on the Same Side
4GSS9 (4) CXASQ's located on the Same Side
2GBB9 (2) CXASQ's located Back to Back
4GBB9 (4) CXASQ's located Back to Back

Accessories
BC Base Cover
CPL Threaded Coupling*
NPL Threaded Nipple*
WPRP Festoon Opening**
LAB Less Anchor Bolt
VDI Vibration Damper Internal

Optional Handholes
SBHH 5" x 8" Handhole*
410HH 4" x 10" Handhole*

Extra Handholes
XHH Extra Handhole*

Embedment Pole Options
E Embedded Pole
GS Ground Sleeve
CTE Coal Tar Epoxy

Additional Simatex
1S 1 @ 0º *
2S 2 @ 180º *
3S 3 @ 90º *
4S 4 @ 90º *

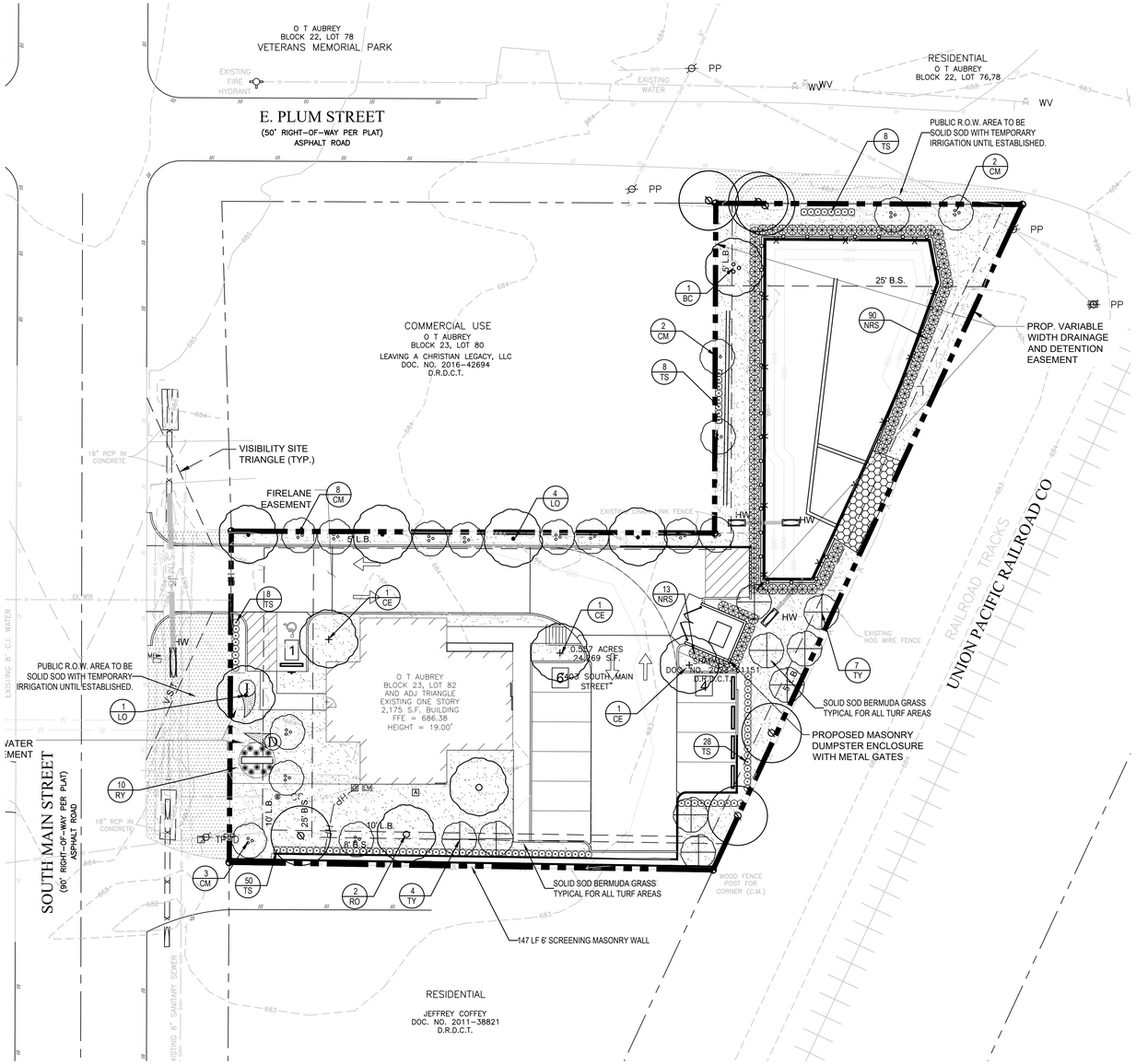
* Please advise size, location, and orientation. (Handholes are restricted by size of pole shaft diameter)
** Located 24" above baseplate and same side as handhole. (No electrical included)

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JP-SSS-4.0-11-XX-BRZ
Description/Loc: Square Steel Pole, Bronze Qty:0

Square Non-Tapered Steel Poles

Catalog Number	Nominal Height	Pole Shaft	Gauge	Handhole Size	Anchor Bolt	Bolt Circle	80 MPH	90 MPH	100 MPH	Ship WT.
JP-SSS (height)-(pole shaft)-(gauge)	08	4.0 x 8.0	11	3 x 5	0.75 x 17 x 3	8	42.1	33.5	27.1	87
	10	4.0 x 10.0	7	3 x 5	0.75 x 30 x 3	8	55	44	35.5	130
	10	5.0 x 10.0	11	3 x 5	1.00 x 36 x 4	11	58	44	34	151
	12	4.0 x 12.0	11	3 x 5	0.75 x 17 x 3	8	33.7	26.7	21.4	100
	12	4.0 x 12.0	7	3 x 5	0.75 x 30 x 3	8	47.5	37.3	29.8	150
	12	5.0 x 12.0	11	3 x 5	1.00 x 36 x 4	11	49	38	29	168
	14	4.0 x 14.0	11	3 x 5	0.75 x 17 x 3	8	27.4	21.5	17.1	113
	14	4.0 x 14.0	7	3 x 5	0.75 x 30 x 3	8	40	31	24.5	170
	14	5.0 x 14.0	11	3 x 5	1.00 x 36 x 4	11	40	30	23	184
	14	5.0 x 14.0	7	3 x 5	1.00 x 36 x 4	11	65	52	41.5	240
	15	4.0 x 15.0	11	3 x 5	0.75 x 17 x 3	8	20.7	16.1	12.6	119
	15	4.0 x 15.0	7	3 x 5	0.75 x 30 x 3	8	30.9	24.4	19.6	172
	15	5.0 x 15.0	11	3 x 5	1.00 x 36 x 4	11	36	27.5	21	192
	15	5.0 x 15.0	7	3 x 5	1.00 x 36 x 4	11	59	46.5	37	258
	16	4.0 x 16.0	11	3 x 5	0.75 x 17 x 3	8	18.7	14.4	11.2	125
	16	4.0 x 16.0	7	3 x 5	0.75 x 30 x 3	8	27.2	20.7	16	210
	16	5.0 x 16.0	11	3 x 5	1.00 x 36 x 4	11	33.5	25	18	201
	16	5.0 x 16.0	7	3 x 5	1.00 x 36 x 4	11	54	43	34	260
	18	4.0 x 18.0	11	3 x 5	0.75 x 17 x 3	8	15.2	11.5	8.7	138
	18	4.0 x 18.0	7	3 x 5	0.75 x 30 x 3	8	27.2	20.7	16	210
	18	5.0 x 18.0	11	3 x 5	1.00 x 36 x 4	11	27	19.5	15	218
	18	5.0 x 18.0	7	3 x 5	1.00 x 36 x 4	11	46	36	28	291
	20	5.0 x 20.0	11	3 x 5	1.00 x 36 x 4	11	21.3	14.5	11	245
	20	5.0 x 20.0	11	3 x 5	1.00 x 57 x 1	13.5	27.1	19.8	14.8	255
	20	5.0 x 20.0	11	3 x 5	1.00 x 36 x 4	11	27.1	19.8	14.8	255
	20	5.0 x 20.0	7	3 x 5	1.00 x 57 x 1	13.5	36	26	19.5	324
	20	5.0 x 20.0	7	3 x 5	1.00 x 36 x 4	11	36	26	19.5	324
	22	4.0 x 22.0	11	3 x 5	0.75 x 17 x 3	8	6.9	4.3	2.3	182
	22	4.0 x 22.0	7	3 x 5	0.75 x 30 x 3	8	12.2	8.7	6	266
	22	5.0 x 22.0	11	3 x 5	1.00 x 36 x 4	11	18.5	13.6	9.8	252
	22	5.0 x 22.0	7	3 x 5	1.00 x 36 x 4	11	30.2	23.2	17.8	337
	22	6.0 x 22.0	7	3 x 5	1.00 x 36 x 4	11.5	49	37.5	28	398
	24	4.0 x 24.0	7	3 x 5	0.75 x 30 x 3	8	12.2	8.7	6	266
	24	5.0 x 24.0	11	3 x 5	1.00 x 36 x 4	11	15.2	10.8	7.4	268
	24	5.0 x 24.0	7	3 x 5	1.00 x 36 x 4	11	25.8	19.4	14.6	361
	24	6.0 x 24.0	7	3 x 5	1.00 x 36 x 4	11.5	42	31.5	23	428
	25	4.0 x 25.0	11	3 x 5	0.75 x 17 x 3	8	6.9	4.3	2.3	182
	25	4.0 x 25.0	7	3 x 5	0.75 x 30 x 3	8	12.2	8.7	6	266
	25	5.0 x 25.0	11	3 x 5	1.00 x 36 x 4	11	13.8	9.5	6.3	276
	25	5.0 x 25.0	7	3 x 5	1.00 x 36 x 4	11	23.8	17.7	13.1	373
	25	6.0 x 25.0	7	3 x 5	1.00 x 36 x 4	11.5	39	28.5	21	443
	26	4.0 x 26.0	7	3 x 5	0.75 x 30 x 3	8	6.9	4	1	312
	26	5.0 x 26.0	11	3 x 5	1.00 x 36 x 4	11	12.4	8.4	5.2	284
	26	5.0 x 26.0	7	3 x 5	1.00 x 36 x 4	11	21.9	16.1	11.8	384
	26	6.0 x 26.0	7	3 x 5	1.00 x 36 x 4	11.5	35.5	25.5	18.5	457
	28	4.0 x 28.0	7	3 x 5	0.75 x 30 x 3	8	6.9	4	1	312
	28	5.0 x 28.0	11	3 x 5	1.00 x 36 x 4	11	9.8	6.1	3.2	300
	28	5.0 x 28.0	7	3 x 5	1.00 x 36 x 4	11	18.4	13.2	9.2	408
	28	6.0 x 28.0	7	3 x 5	1.00 x 36 x 4	11.5	30	21.5	15	487
	30	4.0 x 30.0	7	3 x 5	0.75 x 30 x 3	8	6.9	4	1	312
	30	5.0 x 30.0	11	3 x 5	1.00 x 36 x 4	11	6.5	3.5	1.2	315
	30	5.0 x 30.0	7	3 x 5	1.00 x 36 x 4	11	13.4	9.1	5.9	432
	30	6.0 x 30.0	7	3 x 5	1.00 x 36 x 4	11.5	27.5	19.9	14.1	512
	30	6.0 x 30.0	3	3 x 5	1.00 x 36 x 4	12	34.3	25.3	18.5	645
	35	5.0 x 35.0	7	3 x 5	1.00 x 36 x 4	11	7.2	3.7	1	491
	35	5.0 x 35.0	7	3 x 5	1.00



SITE AREA: 24,270 S.F.
LANDSCAPE AREA: 13,762 S.F. (43.3 % OF TOTAL SITE)

BUFFER YARDS:

NORTH - (248 L.F.)
BUFFER TYPE: A
REQUIREMENTS:
5' BUFFER
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(3) canopy trees	(3) canopy trees +
	(2) existing trees to remain
(5) understory tress	(7) understory trees
(20) shrubs	(24) shrubs

RAILROAD - (223 L.F.)
BUFFER TYPE: A
REQUIREMENTS:
5' BUFFER
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(3) canopy trees	(5) existing trees to remain
(5) understory tress	(7) understory trees
(18) shrubs	(33) shrubs

SOUTH - (146 L.F.)
BUFFER TYPE: F
REQUIREMENTS:
10' BUFFER
F2 SCREEN WALL (6' HT.)
PER 100 L.F.
2 CANOPY TREE
4 UNDERSTORY TREES
12 SHRUBS

REQUIRED:	PROVIDED:
(4) canopy trees	(3) canopy trees +
	(1) existing tree to remain
(6) understory tress	(6) understory trees
(24) shrubs	(62) shrubs

S. MAIN ST. - (101 L.F.)
BUFFER TYPE: E
REQUIREMENTS:
10' BUFFER
B1 BERM
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(1) canopy trees	(1) canopy tree+
	(1) exisiting trees
(2) understory trees	(2) understory trees
(8) shrubs	(18) shrubs

30" HT. PARKING LOT SCREEN
PROVIDED

PARKING LOT TREES- 1 TREE PER 10 SPACES- 22 SPACES
REQUIRED: 3 (3" cal. trees) PROVIDED: 3 (3" cal. trees)

DETENTION AREA 252 LF
REQUIRED: 1 CANOPY TREE AT 30 O.C. (9) CANOPY TREES
W/ EVERGREEN SCREENING
IRON FENCE
WALL RETAINING
PROVIDED: (8) CANOPY TREES (3) EXISTING TREES
(89) 3' HT EVERGREEN SCREEN
DECORATIVE IRON FENCE (REFERENCE CIVIL PLANS)
WALL RETAINING (REFERENCE CIVIL PLANS)

GENERAL LAWN NOTES

1. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED ON CIVIL PLANS.
2. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
3. ALL LAWN AREAS TO RECEIVE SOLID SOD SHALL BE LEFT IN A MAXIMUM OF 1" BELOW FINAL FINISH GRADE. CONTRACTOR TO COORDINATE OPERATIONS WITH ON-SITE CONSTRUCTION MANAGER.
4. IMPORTED TOPSOIL SHALL BE NATURAL, FRIABLE SOIL FROM THE REGION, KNOWN AS BOTTOM AND SOIL, FREE FROM LUMPS, CLAY, TOXIC SUBSTANCES, ROOTS, DEBRIS, VEGETATION, STONES, CONTAINING NO SALT AND BLACK TO BROWN IN COLOR.
5. *ALL LAWN AREAS TO BE FINE GRADED, IRRIGATION TRENCHES COMPLETELY SETTLED, AND FINISH GRADE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER OR ARCHITECT PRIOR TO INSTALLATION.*
6. *ALL ROCKS 3/4" DIAMETER AND LARGER, DIRT CLODS, STICKS, CONCRETE SPOILS, ETC. SHALL BE REMOVED PRIOR TO PLACING TOPSOIL AND ANY LAWN INSTALLATION*
7. CONTRACTOR SHALL PROVIDE (1") ONE INCH OF IMPORTED TOPSOIL ON ALL AREAS TO RECEIVE LAWN.

SOLID SOD NOTES

1. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED. LEAVE AREAS TO RECEIVE TOPSOIL 3" BELOW FINAL DESIRED GRADE IN PLANTING AREAS AND 1" BELOW FINAL GRADE IN TURF AREAS.
2. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
3. ALL LAWN AREAS TO RECEIVE SOLID SOD SHALL BE LEFT IN A MAXIMUM OF 1" BELOW FINAL FINISH GRADE. CONTRACTOR TO COORDINATE OPERATIONS WITH ON-SITE CONSTRUCTION MANAGER.
4. CONTRACTOR TO COORDINATE WITH ON-SITE CONSTRUCTION MANAGER FOR AVAILABILITY OF EXISTING TOPSOIL.
5. PLANT SOD BY HAND TO COVER INDICATED AREA COMPLETELY. INSURE EDGES OF SOD ARE TOUCHING. TOP DRESS JOINTS BY HAND WITH TOPSOIL TO FILL VOIDS.
6. ROLL GRASS AREAS TO ACHIEVE A SMOOTH, EVEN SURFACE, FREE FROM UNNATURAL UNDULATIONS.
7. WATER SOD THOROUGHLY AS SOD OPERATION PROGRESSES.
8. CONTRACTOR SHALL MAINTAIN ALL LAWN AREAS UNTIL FINAL ACCEPTANCE. THIS SHALL INCLUDE, BUT NOT LIMITED TO: MOWING, WATERING, WEEDING, CULTIVATING, CLEANING AND REPLACING DEAD OR BARE AREAS TO KEEP PLANTS IN A VIGOROUS, HEALTHY CONDITION.
9. CONTRACTOR SHALL GUARANTEE ESTABLISHMENT OF AN ACCEPTABLE TURF AREA AND SHALL PROVIDE REPLACEMENT FROM LOCAL SUPPLY IF NECESSARY.
10. IF INSTALLATION OCCURS BETWEEN SEPTEMBER 1 AND MARCH 1, ALL SOD AREAS TO BE OVER-SEEDED WITH WINTER RYEGRASS, AT A RATE OF (4) POUNDS PER ONE THOUSAND (1000) SQUARE FEET.

LANDSCAPE NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED SITE ELEMENTS AND NOTIFY ARCHITECT OF ANY DISCREPANCIES. SURVEY DATA OF EXISTING CONDITIONS WAS SUPPLIED BY OTHERS.
2. CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND NOTIFY ARCHITECT OF ANY CONFLICTS. CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF UNDERGROUND UTILITIES.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED LANDSCAPE AND IRRIGATION PERMITS.
4. CONTRACTOR TO PROVIDE A MINIMUM 2% SLOPE AWAY FROM ALL STRUCTURES.
5. ALL PLANTING BEDS AND LAWN AREAS TO BE SEPARATED BY STEEL EDGING. NO STEEL TO BE INSTALLED ADJACENT TO SIDEWALKS OR CURBS.
6. ALL LANDSCAPE AREAS TO BE 100% IRRIGATED WITH AN UNDERGROUND AUTOMATIC IRRIGATION SYSTEM AND SHALL INCLUDE RAIN AND FREEZE SENSORS.
7. ALL LAWN AREAS TO BE SOLID SOD BERMUDAGRASS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

City of Aubrey Chapter 14, Section 23 (G) (b) (xiii) Maintenance Notes

1. General:The owner, tenant and the agent, if any, shall be jointly and severably responsible for the maintenance of all landscaping and irrigation. All required landscaping shall be maintained in a neat and orderly manner at all times. This shall include mowing, edging, pruning, fertilizing, watering, weeding, and other such activities common to the maintenance of landscaping. Landscaped areas shall be kept free of trash, litter, weeds and other such material or plants not a part of the landscaping, all plant materials shall be maintained in a healthy and growing condition as is appropriate for the season of the year. All irrigation heads or lines that are broken and flow water shall be replaced or repaired immediately to prevent the waste of water.
2. Plant Replacement:The owner shall be responsible for replacing all plant materials which shows dead branching over 25 percent or more of the normal branching pattern and repair irrigation system for a period of one year from the date of issuance of the Certificate of Occupancy. Plant materials that die shall be replaced with plant material of similar variety and similar initial size. The Owner shall make such necessary replacements within 30 days of notification by the City.

PLANT MATERIAL SCHEDULE

TREES

TYPE	QTY	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
CE	3	Cedar Elm	*Ulmus crassifolia*	3" cal.	B&B, 13' ht., 5' spread min., 5' clear trunk
LO	5	Live Oak	*Quercus virginiana*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk
RO	2	Red Oak	*Quercus shumardii*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk
CM	16	Crepe Myrtle	*Lagerstoema indica*	2" cal.	container, 8' ht., 4' spread, tree form
TY	7	Tree Yaupon	*Ilex vomitoria*	2" cal.	container, 8' ht., 4' spread, tree form
BC	8	Bald Cypress	*Taxodium distichum*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk

SHRUBS

TYPE	QTY.	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
TS	102	Texas Sage	*Leucophyllum frutescens*	5 gal.	container, 30" ht., 20" spread
RY	10	Red Yucca	*Hesperaloe parviflolia*	3 gal.	container full, 12" spread
NRS	103	Nellie R. Stevens	*Ilex x 'Nellie R. Stevens'*	7 gal.	container, 36" ht., 24" spread

GROUNDCOVERS

TYPE	QTY	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
		'419' Bermudagrass	*Cynodon dactylon '419'*		Solid Sod refer to notes

NOTE: Plant list is an aid to bidders only. Contractor shall verify all quantities on plan. All heights and spreads are minimums. All plant material shall meet or exceed remarks as indicated. All trees to have straight trunks and be matching within varieties.

ALL LANDSCAPE AREAS TO BE IRRIGATED WITH AN AUTOMATIC IRRIGATION SYSTEM

01 LANDSCAPE PLAN
SCALE 1"=20'-0"
0 10 20 40

Studio Green Spot
LANDSCAPE ARCHITECT
STUDIO GREEN SPOT, INC.
1782 W. McDERMOTT DR.
ALLEN, TEXAS 75013
(469) 369-4448
CHRIS@STUDIOGREENSPOT.COM

REGISTERED LANDSCAPE ARCHITECT
CHRIS TROWLAND
2042
STATE OF TEXAS
11.05.2025

RESTAURANT
SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
CITY COMMENTS 11.15.2024
CITY COMMENTS 12.16.2024
CITY COMMENTS 01.17.2025
CITY COMMENTS 04.22.2025
CITY COMMENTS 06.26.2025
CITY COMMENTS 11.05.2025

DATE:
11.05.2025

SHEET NAME:
LANDSCAPE PLAN

SHEET NUMBER:
L.2

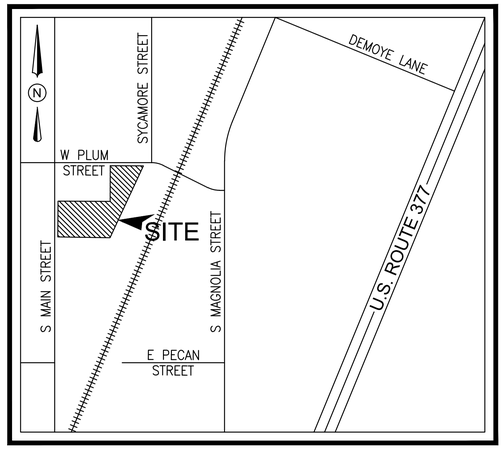
SITE DEVELOPMENT PLANS

FOR

OFFICE

403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304
0.557 ACRES

PROJECT CONTACT LIST
ENGINEER TRIANGLE ENGINEERING LLC 1782 W. McDERMOTT DRIVE ALLEN, TEXAS 75013 CONTACT: KARTAVYA PATEL, P.E. PHONE: 469-331-8566
SURVEYOR TRAVERSE LAND SURVEYING 14200 MIDWAY ROAD, SUITE 130 DALLAS, TEXAS 75244 CONTACT: MARK NACE PHONE: 469-784-9321
OWNER/DEVELOPER JPAR McKINNEY 2629 SHADOW GLEN DRIVE PROSPER, TEXAS 76058 CONTACT: HARI NAMASIVAYAM PHONE: 469-554-0390



VICINITY MAP
N.T.S.

SHEET LIST TABLE	
C-1.0	COVER SHEET
	PLAT
	SURVEY
C-1.1	GENERAL NOTES
C-1.2	TXDOT GENERAL NOTES
C-2.0	DEMOLITION PLAN
C-3.0	SITE PLAN
C-3.1	SITE DETAILS
C-3.2	DIMENSION CONTROL PLAN
C-3.3	GARBAGE TRUCK ROUTE-LEFT
C-3.4	GARBAGE TRUCK ROUTE-RIGHT
C-4.0	GRADING PLAN
C-4.1	CROSS SECTIONS
C-5.0	PRE-DRAINAGE PLAN
C-6.0	POST-DRAINAGE PLAN
C-6.1	DETENTION CALCULATIONS
C-6.2	PIPE CULVERT CAPACITY CALCS
C-6.3	STORM SEWER DETAILS
C-7.0	EROSION CONTROL PLAN
C-7.1	EROSION CONTROL DETAILS
C-8.0	PAVING PLAN
C-8.1	PAVING DETAILS
C-9.0	UTILITY PLAN
C-9.1	UTILITY DETAILS
L.1	TREE REMOVAL PLAN
L.2	LANDSCAPE PLAN
L.3	LANDSCAPE SPECIFICATIONS
L.4	IRRIGATION PLAN
L.5	IRRIGATION SPECIFICATIONS
	TXDOT DETAILS
	BC(1-12)-21
	EC(1)-16
	EC(2)-16
	EC(3)-16
	DRIVEWAY DETAILS PRIVATE
	PSET-RP

BHC Seventh Review
01-14-2026

Seventh review of the 403 S. Main St. Civil plan submittal. Our review is for general compliance with the City of Aubrey development requirements. It is based on the City's Code of Ordinances and Good Engineering Practice, and does not relieve the design engineer of their responsibilities as the Engineer of Record under the Texas Engineering Practice Act.

Once the remaining comment is addressed we offer no further objections. Resubmittal is not required.

Cooper Reinbold, P.E.
Chase Crawford, R.P.L.S.

811 Know what's below. Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
.	.	.	.
.	.	.	.
.	.	.	.

STATE OF TEXAS · KARTAVYA S. PATEL · 97534 · LICENSED PROFESSIONAL ENGINEER
01-08-26

COVER SHEET

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

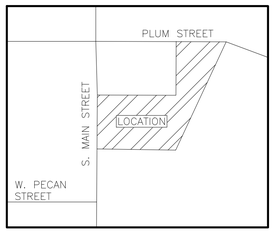
DENTON COUNTY, TEXAS

DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-1.0

TX. P.E. FIRM #11525



VICINITY MAP
NOT TO SCALE

UTILITY PROVIDERS:

WATER / SEWER – TO BE PROVIDED BY CITY

ELECTRIC GAS – COSERV

N

20 10 0 20

SCALE IN FEET
1"=20'

GENERAL NOTES

1. The Basis of Bearings is from the Texas State Plane Coordinate System, NAD83, North Central Zone is derived from GPS Observatinos using the Allterra RTK Network and adjusted to surface using a scale factor of 1.00015063.
2. Notice: Selling a portion of this addition by metes and bounds is a violation of City subdivision ordinance and state platting statutes and is subject to fines and withholding of utilities and building certificates.
3. The purpose of this plat is to create one recorded lot out of a tract of land.
4. 1 Lot for commercial use.

Add note: "The maintenance of detention facilities, drainage improvements and/or easements shown on the plat are the responsibility of the individual property owners and does not constitute acceptance of the same for maintenance purposes by the City of Aubrey, or Denton County".

SURVEYOR'S CERTIF

KNOW ALL MEN BY THESE PRESENTS:

That I, David F. McCullah, do hereby certify that I prepared this plat from an actual and accurate survey of the land and that the corner monuments shown thereon as set were properly placed under my personal supervision.

PRELIMINARY, THIS SURVEY SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT

David F. McCullah
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 4023

DATE: _____

STATE OF TEXAS §
COUNTY OF COLLIN §

BEFORE ME, the undersigned authority, a notary public in and for the State of Texas, on this day personally appeared David F. McCullah, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same in the capacity therein stated.

Given under my hand and seal of office this _____ day of _____, 202__

Notary Public in and for the State of Texas

FLOOD NOTES

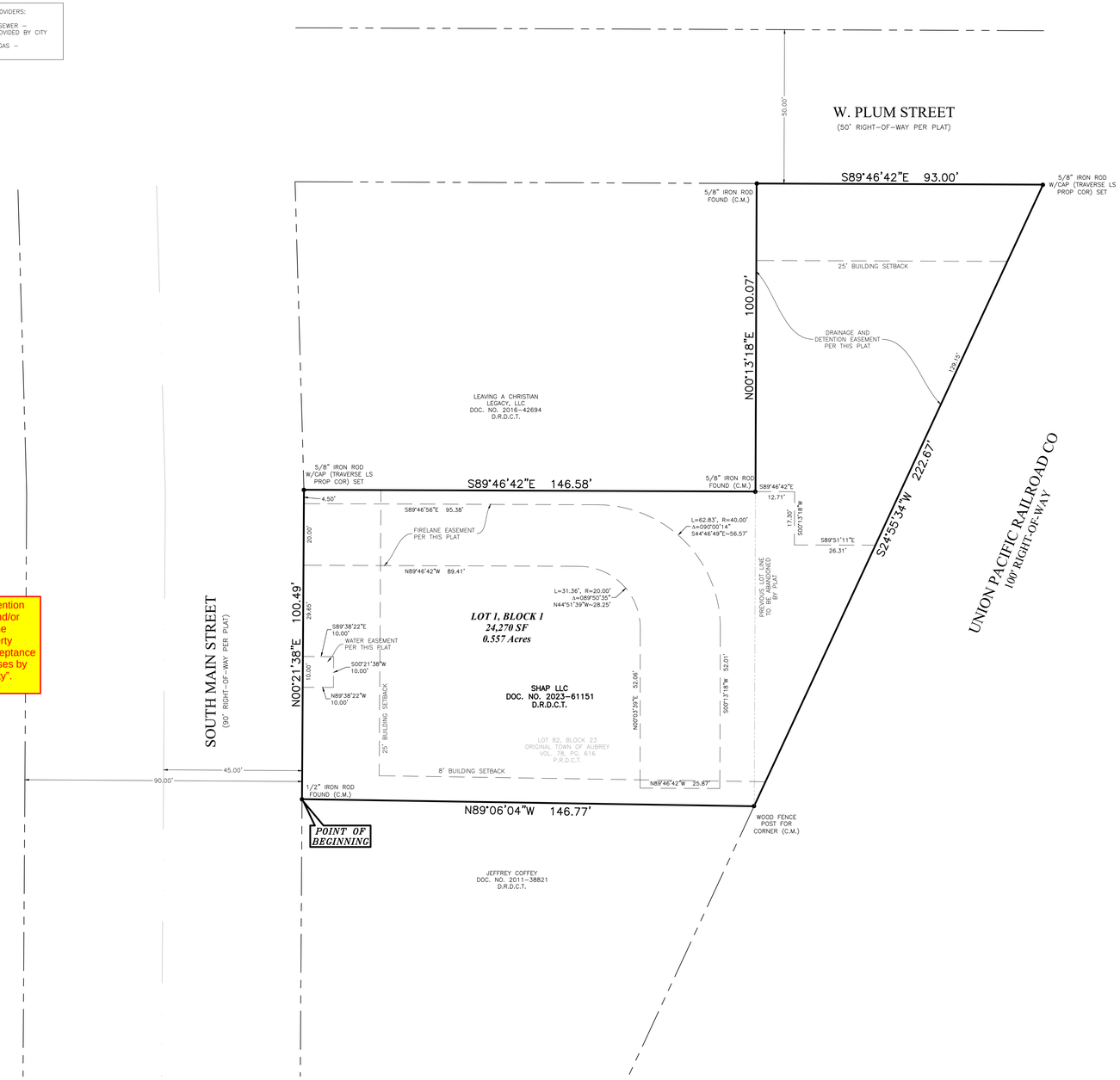
No portion of the subject property shown hereon lies within the 100 year flood hazard area according to the Flood Insurance Rate Map, Community Panel No. 48121C0265G, dated April 18, 2011. The subject property is located in the area designated as Zone "X", (areas determined to be outside the 0.2% annual chance floodplain).

LEGEND

D.R.D.C.T.	DEED RECORDS, DENTON COUNTY, TEXAS
P.R.D.C.T.	PLAT RECORDS, DENTON COUNTY, TEXAS
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS, DENTON COUNTY, TEXAS
C.M.	CONTROLLING MONUMENT
CAB. SLIDE	CABINET AND SLIDE
DOC. NO.	DOCUMENT NUMBER
VOL., PG.	VOLUME AND PAGE
CIRS	5/8" INCH IRON ROD SET CAPPED "TRAVERSE LS PROP COR"

SUBJECT PROPERTY LINE
ADJOINING PROPERTY LINE
EXISTING EASEMENT LINE
PROPOSED EASEMENT LINE
CENTERLINE OF ROAD

● FOUND/SET MONUMENT (SEE LABEL)



CERTIFICATE OF APPROVAL:

Approved:

_____
Mayor, City of Aubrey, Texas

The undersigned, the City Secretary of the City of Aubrey, Texas, heredby certifies that the foregoing plat of Aub Office Addition, an addition to the City of Aubrey, Texas, was submitted to the City Council on the _____ day of _____, 20____ and the council by formal action, then and there accepted the dedication of streets, utility easement and droiange easemetns as shown and set forth in and upon said plat and said council further authorized the Mayor to note the acceptance thereof by signing her name as herein above subscribed.

ATTEST this _____ day of _____, 20____.

_____
City Secretary
City of Aubrey, Texas

STATE OF TEXAS
COUNTY OF DENTON

BEING all that certain lot, tract, or parcel of land situated in the Dennis Cowan Survey, Abstract Number 304, being all of that certain called 0.56 acres to SHAP LLC in Warranty Deed recorded in Document Number 2023-61151 of the Deed Records of Denton County, Texas, and being more particularly described by metes and bounds as follows:

BEGINNNING at a 1/2 inch iron rod found for corner in the most southwesterly corner of said SHAP tract, same being the most northwesterly corner of Jeffrey Coffey recorded in Document Number 2011-38821 of the Deed Records of Denton County, Texas, also being a point in the most easterly Right-of-Way line of South Main Street (90 foot Right-of-Way);

THENCE North 00 degrees 21 minutes 38 seconds East, in a northerly direction along said South Main Street, a distance of 100.49 feet to a capped 5/8 inch iron rod stamped "TRAVERSE LS PROP COR" set for corner in the most northwesterly corner of said SHAP tract, same being the most southwesterly corner of Leaving a Christian Legacy, LLC recorded in Document Number 2016-42694 of the Deed Records of Denton County, Texas;

THENCE South 89 degrees 46 minutes 42 seconds East, in an easterly direction departing from said South Main Street, a distance of 146.58 feet to a 5/8 inch iron rod found for corner in the most southeasterly corner of said Christian Legacy tract, same being at an outside "L" corner of said SHAP tract;

THENCE North 00 degrees 13 minutes 18 seconds East, in a northerly direction along the common line between said Christan Legacy tract and said SHAP tract, a distance of 100.07 feet to a 5/8 inch iron rod found for corner in the most northeasterly corner of said Christian Legacy tract, same being a an inside "L" corner of said SHAP tract, also being a point in the most southerly Right-of-Way line of W. Plum Street (50 foot Right-of-Way)

THENCE 89 degrees 46 minutes 42 seconds East, in an easterly direction along said W. Plum Street, a distance of 93.00 feet to a capped 5/8 inch iron rod stamped "TRAVERSE LS PROP COR" set for corner in the most northeasterly corner of said SHAP tract;

THENCE South 24 degrees 55 minutes 34 seconds West, in a southerly direction departing from said W. Plum Street following the most easterly line of said SHAP tract, a distance of 222.67 feet to a Wood Fence Post found for corner in the most southeasterly corner of said SHAP tract, same being the most northeasterly corner of said Coffey tract;

THENCE North 89 degrees 06 minutes 04 seconds West, in a westerly direction along the common line between said SHAP tract and Coffey tract, a distance of 146.77 feet to the POINT OF BEGINNING and containing 0.557 acres (24,270 square feet) of land, more or less.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS

THAT we SHAP LLC do hereby adopt this plat, designating the herein described property as AUB OFFICE ADDITION, an addition to the City of Aubrey, Denton County, Texas and do hereby dedicate to the public use forever the streets and easemetns as shown hereon.

Witness, my hand at _____, _____, This _____ day of _____, 20_____.

_____
Signature – SHAP LLC Representative

_____
Printed Name

_____
Title / Date

STATE OF TEXAS §
COUNTY OF _____ §

BEFORE ME, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared_____, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that she executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this _____day of _____ 20_____.

_____
Notary Public in and for the State of Texas

OWNER/DEVELOPER
SHAP LLC
10812 Capri Drive,
McKinney, Texas 75072

TRAVERSE LAND SURVEYING LLC
14200 Midway Road, Suite 130, Dallas, TX 75244 I T: 469.784.9321
W: TraverseLandSurveying.com I Texas Firm No. 10194631
Surveying | Construction Staking | Platting

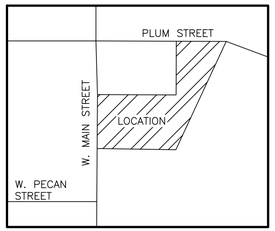
Date: 2025.06.26 Project No.: TR-93-24

REPLAT
LOT 1, BLOCK 1
AUB OFFICE ADDITION

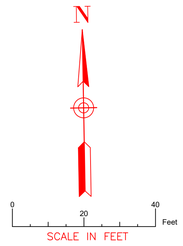
BEING 0.557 ACRES
OUT OF THE DENNIS COWAN SURVEY
ABSTRACT NUMBER 304
CITY OF AUBREY, DENTON COUNTY, TEXAS
JUNE 2025

1 OF 1

FOR DENTON COUNTY RECORDATION ONLY



VICINITY MAP
NOT TO SCALE



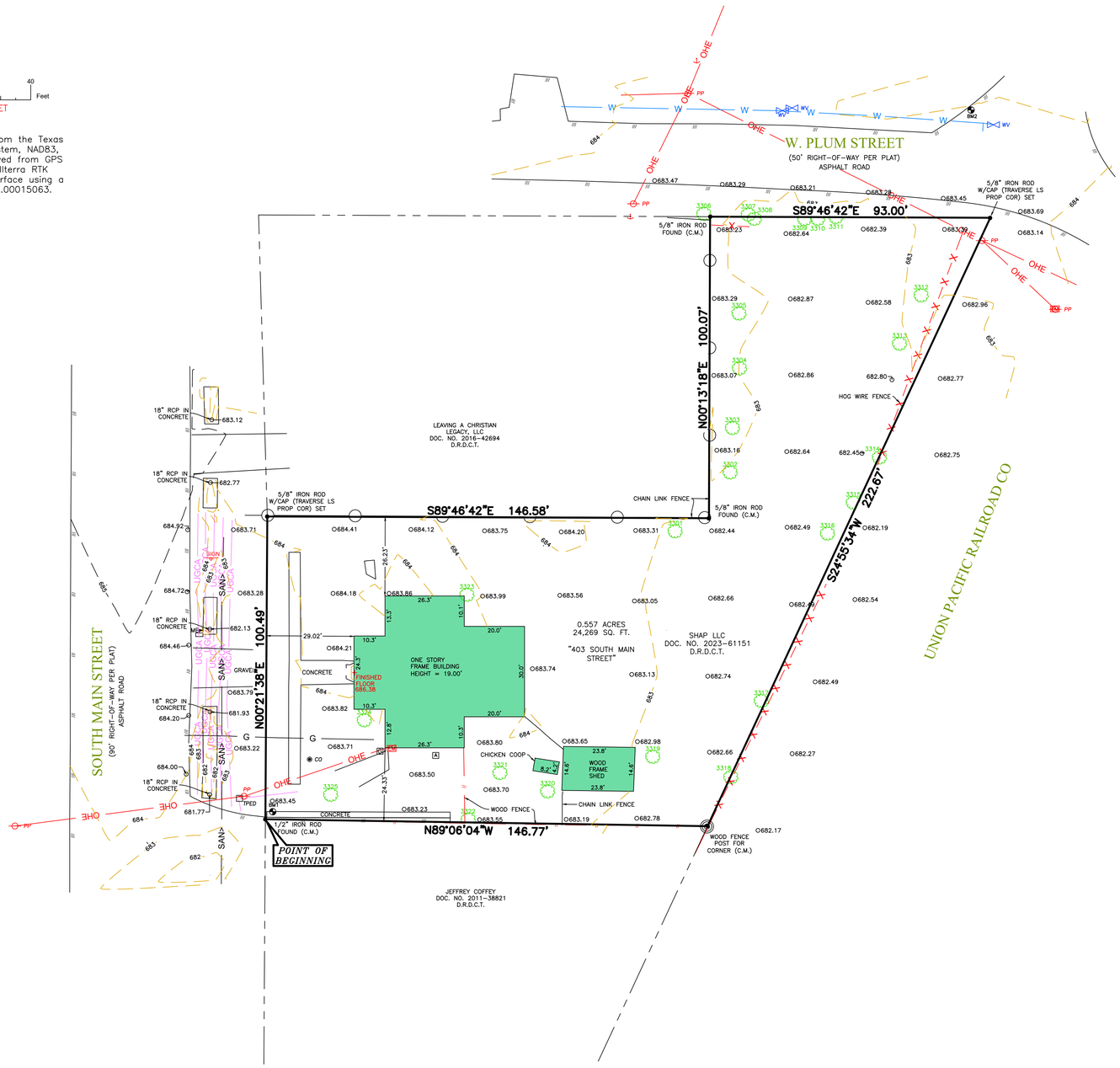
SCALE IN FEET

The Basis of Bearings is from the Texas State Plane Coordinate System, NAD83, North Central Zone as derived from GPS observations using the Allterra RTK Network and adjusted to surface using a surface scale factor of 1.00015063.

TREE TABLE		
NO.	SIZE"	SPECIES
3301	8	REDBUD
3302	8	APRICOT
3303	14	CHERRY
3304	6	PEACH
3305	6	PLUM
3306	16	HACKBERRY
3307	23	ELM
3308	17	ELM
3309	16	ELM
3310	17	ELM
3311	32	MAPLE
3312	7	PEAR
3313	6	PEACH
3314	18	HACKBERRY
3315	18	ELM
3316	6	PEAR
3317	27	COTTONWOOD
3318	19	ELM
3319	16	CYPRESS
3320	13	REDBUD
3321	16	PINE
3322	12	CHINABERRY
3323	34	ELM
3324	28	ELM
3325	8	CEDAR

LEGEND

———	BOUNDARY LINE
———	ADJOINER BOUNDARY LINE
———	EASEMENT LINE (AS NOTED)
W	WATER LINE
———	SEWER LINE
OHE	OVERHEAD ELECTRIC LINE
———	WOOD FENCE
———	CHAIN LINK FENCE
FH	FIRE HYDRANT
WV	WATER VALVE
ICV	IRRIGATION CONTROL VALVE
CO	SEWER CLEAN OUT
	VAULT
TR	TRANSFORMER
E	ELECTRIC VAULT
EM	ELECTRIC METER
EB	ELECTRIC BOX
CV	CABLE VAULT
TJB	TELEPHONE JUNCTION BOX
SS	SANITARY SEWER MAN HOLE
SD	STORM MAN HOLE
T	TELEPHONE MAN HOLE
	LIGHT POLE
	POWER POLE
G	GAS METER
AC	AIR CONDITIONER UNIT
	FLAG POLE
TS	TRAFFIC SIGN
	BENCH MARK
(CM)	CONTROL MONUMENT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS
D.R.D.C.T.	DEED RECORDS DENTON COUNTY, TEXAS
P.R.D.C.T.	PLAT RECORDS DENTON COUNTY, TEXAS



BENCHMARK NOTES

The Benchmarks and elevations shown are based on the North American Vertical Datum 1988 (NAVD88) by using GPS observations in conjunction with the AllTerra RTK Network.

Benchmark No. 1
From the most southwesterly corner North 2.49 feet thence East 2.43 feet to a "Square cut X" on top of concrete. Elevation: 683.50'

Benchmark No. 2
From the most northeasterly corner North 35.76 feet thence West 36.60 feet to a Rail Road Spike in asphalt. Elevation: 683.09'

FLOOD NOTES

No portion of the subject property shown hereon lies within the 100 year flood hazard area according to the Flood Insurance Rate Map, Community Panel No. 48121C0265G, dated April 18, 2011. The subject property is located in the area designated as Zone "X", (areas determined to be outside the 0.2% annual chance floodplain).

GENERAL NOTES

1. All underground utilities shown hereon were observed in the field, none of the underground utilities shown hereon have been field verified by the surveyor.
2. This survey was created with the information provided by the client or their representative. the surveyor did not abstract the subject property and cannot be used to represent warranty of title or guarantee of ownership.

LAND DESCRIPTION

BEING all that certain lot, tract, or parcel of land situated in the Dennis Cowan Survey, Abstract Number 304, being all of that certain called 0.56 acres to SHAP LLC in Warranty Deed recorded in Document Number 2023-61151 of the Deed Records of Denton County, Texas, and being more particularly described by metes and bounds as follows:

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SURVEYOR'S CERTIFICATION

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS and includes Items 1-5, 8, 11 (a), and 13 in conjunction with the laws of the State of Texas.
The fieldwork was completed on 3-18-2024.

Date of Plat or Map: 3-25-2024

David F. McCullah
Registered Public Land Surveyor
Texas Registration No. 4023

STATE OF TEXAS
REGISTERED
DAVID F. McCULLAH
4023
PROFESSIONAL
LAND SURVEYOR

SCAN HERE FOR FIELD IMAGES OR CLICK THE LINK BELOW:
FIELD IMAGES

NO.	DATE	DESCRIPTION	BY

ALTA/NSPS LAND TITLE SURVEY

0.557 ACRES SITUATED IN
DENNIS COWAN SURVEY, ABSTRACT NO. 304
CITY OF AUBREY, DENTON COUNTY, TEXAS

TRAVERSE
LAND SURVEYING LLC
14200 Midway Road, Suite 130, Dallas, TX 75224 | T: 469.784.9321
W: TraverseLandSurveying.com | Texas Firm No. 10194631

Surveying | Construction Staking | Platting

DRAWN	CHECK	DATE	SCALE	PROJECT NO.	SHEET NO.
JCN	DM	3-18-2024	1" = 20'	TR-93-24	1

GENERAL NOTES

1. ALL MATERIALS MUST BE DOMESTICALLY SOURCED AND PRODUCED UNLESS OTHERWISE APPROVED BY THE PUBLIC WORKS DIRECTOR.

PAVING NOTES

1. CONCRETE FOR ALL STREETS, ALLEYS, & DRIVEWAYS SHALL BE IN ACCORDANCE WITH NCTCOG CLASS "C" CONCRETE (3,600 P.S.I. COMPRESSIVE STRENGTH @ 28 DAYS). DRIVEWAYS SHALL BE HAND POURED. CONCRETE FOR ALL SIDEWALKS SHALL BE IN ACCORDANCE WITH NCTCOG CLASS "A" CONCRETE (3,000 COMPRESSIVE STRENGTH @ 28 DAYS).
2. REINFORCING STEEL SHALL BE DEFORMED BARS NO. 3 ON 18 INCH CENTERS OR NO. 4 BARS ON 24 INCH CENTERS UNLESS OTHERWISE NOTED IN THE DETAILS. REINFORCING SHALL BE IN BOTH DIRECTIONS ON CENTER. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM 615, 616 AND 617.
3. ALL REINFORCING STEEL SHALL BE TIED (100%). REINFORCING STEEL SHALL BE SET ON PLASTIC CHAIRS. BAR LAPS BE MINIMUM 30 DIAMETERS.
4. EXPANSION JOINTS SHALL BE SPACED EVERY 200 FEET AND AT ALL INTERSECTIONS. ALLEYS SHALL HAVE A MINIMUM OF TWO EXPANSION JOINTS.
5. SAWED TRANSVERSE DUMMY JOINTS SHALL BE SPACED EVERY 20 FEET ON PAVING 8 INCHES OR THICKER AND EVERY 15 FEET FOR PAVING THICKNESS LESS THAN 8 INCHES SAWING SHALL OCCUR WITHIN 5 TO 12 HOURS AFTER THE POUR INCLUDING SEALING. OTHERWISE THE SECTION SHALL BE REMOVED AND LONGITUDINAL BUTT JOINT CONSTRUCTED.
6. SUBGRADE UNDER PAVEMENTS SHALL BE A MINIMUM OF 8 INCHES OF EITHER HYDRATED LIME OR CEMENT TREATED SUBGRADE, WITH OPTIMUM CONTENT AND COMPACTION REQUIREMENTS AS RECOMMENDED BY THE GEOTECHNICAL DESIGN, AS WELL AS APPROVED BY THE PUBLIC WORKS DIRECTOR. CONTENT AND COMPACTION TESTS SHALL BE TAKEN ALONG THE EXCAVATION AT ALL CHANGES IN SOIL AND A MINIMUM OF 300 FEET DISTANCES. ALL TESTS SHALL BE COMPLETED BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY AND PAID FOR BY THE CONTRACTOR.
7. LIME TREATED SUBGRADE SHALL BE COMPACTED TO A DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D 698. MOSTURE CONTENT SHALL BE WITHIN -2 TO +4 OF OPTIMUM. DENSITY TEST RESULTS SHALL BE COMPLETED BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY. ALL RESULTS SHALL BE PROVIDED TO THE CITY.
8. LIME TRIMMINGS ARE NOT ACCEPTABLE FOR ANY USE.
9. ALL FILL SHALL BE COMPACTED BY MECHANICAL METHODS. MAXIMUM LOOSE LIFT FOR COMPACTION SHALL BE 8 INCHES. ALL LIFTS SHALL BE TESTED FOR DENSITY BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY. DENSITY REQUIREMENT SHALL BE AS SHOWN ON THE PLANS FOR THE TYPE OF MATERIAL CALLED FOR IN THE PLANS.
10. ALL DISTURBED AREAS OF ROADWAY WORK SHALL HAVE GRASS ESTABLISHED IMMEDIATELY. GRASS SHALL MEET THE REQUIREMENTS OF ITEM 3.8, 3.9. 3.10 & 3.11 OF NCTCOG.
11. ALL AREAS TO BE EXCAVATED OR FILLED SHALL HAVE EROSION CONTROL PLACED PRIOR TO COMMENCING EARTHWORK. EROSION CONTROL DEVICES SHALL BE MAINTAINED THROUGHOUT THE PROJECT IN ACCORDANCE WITH NCTCOG ITEM 3.12.
12. ALL SIDEWALKS SHALL INCLUDE BARRIER FREE RAMPS AT INTERSECTING STREETS, ALLEYS, DRIVEWAYS, ETC. BARRIER FREE RAMPS SHALL MEET CURRENT ADA REQUIREMENTS AND BE APPROVED BY THE TEXAS LICENSING BOARD.
13. SIDEWALKS SHALL BE DOWELED INTO PAVEMENT WHERE IT ABUTS DRIVEWAYS. REDWOOD EXPANSION JOINT MATERIAL SHALL BE USED AT THESE LOCATIONS.
14. NO VEHICLES SHALL BE PERMITTED ON CONCRETE PAVEMENT WITHOUT APPROVAL FROM THE CITY. THE CITY WILL MAKE DETERMINATION BASED ON CONCRETE BREAK REPORT.
15. SIDEWALKS REQUIRE 2-INCH SAND CUSHION ON SUBGRADE COMPACTED WITHIN 95% STANDARD PROCTOR DENSITY.
16. POURS SHALL REQUIRE A PRE-POUR INSPECTION FOR FORMWORK, REINFORCEMENT AND GEOPMETRY. VISUAL INSPECTIONS MAY BE MADE AFTER THE POUR TO ADDRESS TOOLED JOINTS, FINISH, SUBGRADE INTEGRITY, ETC.
17. ENSURE THAT FLATWORK DOES NOT OBSCURE ABOVE-GROUND APPURTENANCES (I.E. VALVES, MH LIDS).
18. EXPOSED AGGREGATE CONCRETE IS NOT ACCEPTABLE FOR SIDEWALK WITHIN PUBLIC RIGHT-OF-WAY.
19. SIDEWALKS SHALL BE 5' WIDE MINIMUM WIDTH.

LINED CHANNELS

1. CONSTRUCTION JOINT SHOWN IN DETAILS FOR CONVENIENCE ONLY, MONOLITHIC CONSTRUCTION MAY BE USED.
2. ALL VISIBLE SURFACES SHALL BE A TROWEL FINISH.
3. ALL REINFORCING STEEL SHALL BE 3/8" DIAMETER AND SPACED 12" CENTER TO CENTER BOTH WAYS UNLESS OTHERWISE SPECIFIED.
4. IF WOOD FORMS ARE USED WITH CONSTRUCTION JOINT, THEY SHALL BE TWO, 2"x4", AND SHALL NOT BE REMOVED UNTIL CONCRETE ON SLOPES IS READY TO BE PLACE.
5. ALL CONCRETE IN LINED CHANNEL SHALL BE NCTCOG CLASS "A" (MINIMUM 3.000 P.S.I.) CONCRETE.
6. FLAT BOTTOM TO BE CONSTRUCTED WHEN CHANNEL WIDTH IS LESS THAN 12 FOOT.
7. 3/4" CHAMFER ON ALL CONCRETE CORNERS.

STORM SEWER

1. THE FLOOR OF THE EXCAVATION FOR INLET BOX MUST PROVIDE A FIRM, LEVEL BED FOR THE BASE SECTION TO REST UPON.
2. A MINIMUM OF 6 INCHES OF 1" DIAMETER (MAXIMUM) ROCK OR GRAVEL SHALL BE USED TO PREPARE THE BEDDING TO FINAL GRADE OR IN LIEU OF THIS, AT LEAST 6 INCHES OF 2- SACK CEMENT STABILIZED SAND SHALL BE USED TO PREPARE THE BEDDING TO GRADE CEMENT STABILIZED-SAND SHALL BE ALLOWED TO SET BY KEEPING HOLE PUMPED DRY.
3. AFTER PIPE HAS BEEN LAID ON PROPER BEDDING, BACKFILLING TO COMMENCE WITH 8' MAXIMUM LOOSE LIFTS MECHANICALLY COMPACTED TO 95% STANDARD PROCTOR UNDER ROADWAY OR 12" MAXIMUM LOOSE LIFT BEHIND CURB. MAXIMUM SIZE ROCK IN BACKFILL SHALL NOT EXCEED 4 INCHES IN DIAMETER.
4. PRECAST INLETS MUST BE APPROVED BY THE CITY.
5. CONCRETE TO BE MINIMUM 4,200 P.S.I.
6. LOCKING DEVICE IS REQUIRED ON ALL STORM SEWER LIDS.
7. "NO DUMPING" WARNING PLAQUE TO BE INSTALLED ON ALL STANDARD AND RECESSED INLETS.
8. CONCRETE CAST-IN-PLACE INLETS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,200 PSI @ 28 DAYS.
9. STORM DRAIN TILE SHALL BE PLACED IN THE CENTER OF THE INLET, 2 INCHES FROM THE EDGE OF OPENING AS SHOWN IN THE DRAWING USE PL-200 CONSTRUCTION ADHESIVE FOR APPLICATION. TILES CAN BE ORDERED FROM: CENTERLINE SUPPLY. INC., 425 JESSE STREET, GRAND PRAIRIE, TEXAS 75061-1141. 1-800-321-1731, METRO: 214-647-8300, FAX: 214-641-1221.
10. EXISTING STORM SEWER PIPE AND/ OR LATERALS SHALL BE LOCATED PRIOR TO SETTING OF CONSTRUCTING INLET BOXES. IF ADJUSTMENT IN GRADE OF LATERAL IS REQUIRED, A REVISED DESIGN BY THE ENGINEER OF RECORD SHALL BE SUBMITTED TO THE CITY FOR APPROVAL.
11. REINFORCED CONCRETE PIPE CLASS III MINIMUM.

SANITARY SEWER

1. ALL SEWER LINES CROSSING POTABLE WATERLINES SHALL BE AS SHOWN IN THE PLANS AND MEET TNRCC REQUIREMENTS
2. ALL SANITARY SEWER MAINS SHALL BE A MINIMUM OF 6" INSIDE DIAMETER. ALL SERVICE LINES SHALL BE A MINIMUM OF 4" INSIDE DIAMETER. PIPES 6 INCHES THROUGH 24 INCHES SHALL BE IN ACCORDANCE WITH ASTM D3034 WITH A MINIMUM SDR OF 26.
3. PIPES LARGER THAN 24 INCHES SHALL BE CCFRPM, CENTRIFUGALLY CAST FIBER REINFORCED POLYMER MORTAR PIPE(HOBAS OR APPROVED EQUIVALENT) OR AS DIRECTED BY THE PUBLIC WORKS DIRECTOR. SHALL BE IN ACCORDANCE WITH ASTM STANDARDS D3262, D4161, D2412, D3681, D638.
4. MANHOLES SHALL BE CAST IN PLACE OR PRECAST. ALL MANHOLES SHALL BE WATER TIGHT. ALL RING AND COVERS SHALL INCLUDE AN INTERNAL CHIMNEY SEAL.
5. ALL PIPE OPENINGS IN MANHOLES SHALL INCLUDE COUPLINGS WITH "O" RING RUBBER GASKETS.
6. STUBOUTS OUT OF MANHOLES SHALL BE FITTED WITH A STOPPER AND CAP. STUBOUTS SHALL BE A MINIMUM OF 5 FEET FROM MANHOLE AND BE SUPPORTED BY A CONCRETE CRADLE.
7. ALL DROP MANHOLES SHALL BE OF THE EXTERNAL TYPE.
8. MANHOLES SHALL BE VENTED IN ACCORDANCE WITH TCEQ REQUIREMENTS.
9. ALL SANITARY SEWER PIPE SHALL BE TESTED (NCTCOG ITEM 6.7 2) AFTER CONSTRUCTION. TESTING SHALL INCLUDE PRESSURE TESTING, MANDREL TEST (TCEQ REQUIRED) AND COLOR TV INSPECTION. COLOR TV INSPECTION SHALL BE COMPLETED IN PRESENCE OF CITY REPRESENTATIVE AND THE ORIGINAL VHS FORMATTED TAPE SHALL BE GIVEN TO THE CITY AT THE COMPLETION OF THE INSPECTION.
10. MANHOLES SHALL BE VACUUM TESTED IN THE PRESENCE OF THE CITY REPRESENTATIVE.

WATER

1. ALL WATER LINE CROSSINGS OF SANITARY SEWER LINES SHALL BE AS SHOWN IN THE PLANS AND MEET TNRCC REQUIREMENTS.
2. PIPES 12 INCHES IN DIAMETER AND SMALLER SHALL BE POLYVINYL CHLORIDE (P.V.C.) MEETING THE REQUIREMENTS OF AWWA C900 DR 18 OR DUCTILE IRON PIPE (D.I.P.) MEETING THE REQUIREMENTS OF AWWAC 151 CLASS 50 PIPE. ALL D.I.P. SHALL BE WRAPPED WITH A POLYETHYLENE LINER.
3. FOR PIPES LARGER THAN 12 INCHES IN DIAMETER, THE PIPE SHALL BE DUCTILE IRON PIPE (AWWA C151 CLASS 50) OR POLYVINYL CHLORIDE PIPE UP TO 18 INCHES MEETING THE REQUIREMENTS OF AWWA C905 - 235 P.S.I. RATED PIPE.
4. ALL VALVES ON PIPES 12 INCHES AND SMALLER SHALL BE RESILIENT SEALED WEDGE VALVES (AWWA C509).
5. ALL VALVES ON PIPES LARGER THAN 12 INCHES BUT SMALLER THAN 30 INCHES SHALL BE BUTTERFLY VALVES (AWWA C504) OR WEDGE VALVES (AWWA C509).
6. ALL VALVES ON PIPES 30 INCHES AND LARGER SHALL BE BUTTERFLY VALVES (AWWA C504).
7. EMBEDMENT SHALL BE AS SHOWN IN THE PLANS. BACKFILL WITHIN THE LIMITS OF EXISTING AND PROPOSED PAVEMENT SHALL BE COMPACTED TO 95% STANDARD PROCTOR. OUTSIDE PAVEMENT (EXISTING OR PROPOSED) SHALL BE COMPACTED TO MINIMUM OF 95% STANDARD PROCTOR ALL COMPACTION SHALL BE BY MECHANICAL METHODS.
8. WATER LINES SHALL BE PRESSURE TESTEDCOG ITEM 6.7.3..
9. ALL HORIZONTAL AND VERTICAL BENDS SHALL BE BLOCKED USING 3,000 PSI COMMERCIAL CONCRETE. NO HAND MIXING OF SAID CONCRETE SHALL BE PERFORMED ON SITE.
10. ALL SADDLES SHALL BE MUELLER/HYMAX BR2B 4"-16" SADDLES, FORD METER 202B DOUBLE STRAP BRASS SADDLE, OR APPROVED EQUIVALENT.

SCREENING WALLS

1. CONCRETE - MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. @28 DAYS.
2. REINFORCEMENT - ASTM A-36.
3. MASONRY - COMPRESSIVE STRENGTH SHALL BE PRESCRIBED IN ITEM 2.3.6 SPECIAL PROVISIONS.
4. WIND LOAD FOR DESIGN - 20 P.S.F.
5. PIER BEARING STRESSES - SEE BRICK SCREENING WALL NOTES.
6. MORTAR - TYPE "S".
7. PROVIDE CONTROL JOINTS AT 50 FEET.
8. PROVIDE EXPANSION JOINTS AT 200 FEET CENTER MAXIMUM.
9. PROVIDE PIER WITH MINIMUM 9 FOOT W/ 24 INCH DIAMETER BELL IN CLAY OR OTHER MATERIAL EXCEPT BLUE SHALE, 6 FOOT MINIMUM WITH 3 FOOT MINIMUM INTO BLUE SHALE.
10. ALL EXPOSED CONCRETE SHALL BE CLASS 2 RUBBED FINISHED SURFACE.
11. SIDEWALKS ADJACENT TO WALLS MUST BE 5 FOOT MINIMUM WIDTH FROM ALL PORTIONS OF THE WALL (INCLUDING PILASTERS, COLUMNS, ETC.).
12. MAXIMUM PILASTER SPACING 40 FEET.
13. WALLS SHALL NOT BE PLACED IN THE VISIBILITY EASEMENT OR STREET RIGHT OF WAY.
14. THE WALL SHALL BE A MINIMUM OF EIGHT FEET IN HEIGHT AS MEASURED FROM THE NEAREST ALLEY EDGE OR SIDEWALK GRADE, WHICHEVER IS THE HIGHER. THE COLOR OF THE WALL SHALL BE LIMITED TO EARTH-TONE COLORS, EXCLUDING GRAY, GREEN AND WHITE. THE COLOR OF THE WALL SHALL BE UNIFORM ON EACH SIDE OF A THOROUGHFARE FOR THE ENTIRE LENGTH BETWEEN INTERSECTING THOROUGHFARES, UNLESS OTHERWISE APPROVED BY THE CITY'S PUBLIC WORKS DEPARTMENT. THE FINISH OF THE WALL SHALL BE CONSISTENT ON ALL SURFACES.
15. IF WROUGHT IRON FENCING IS TO BE UTILIZED ON REQUIRED SCREENING, ALL WROUGHT IRON MUST BE SOLID STOCK, NO TUBULAR STEEL WILL BE ALLOWED.
16. A 3"X3"X10' GALVANIZED ANGLE IRON PLATE SHALL BE INSTALLED BELOW THE BOTTOM ROW OF BRICKS & ANCHORED INTO THE COLUMNS FOR MASONRY SCREENING WALLS.

TRAFFIC SIGNS AND LIGHTING

1. THE EXISTING SIGNS LOCATED ON PUBLIC CONSTRUCTION SITES ARE THE PROPERTY OF THE CITY OF AUBREY. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY.
2. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC.THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE COMPLETION OF THE PROJECT.
3. ALL GROUND MOUNTED AND OVERHEAD SIGNS SHALL USE ANSI STANDARD BQ1528 ALUMINUM BLANKS.
4. ALL BLANKS TO BE INSTALLED SHALL BE 5052-H38 ALUMINIUM (ASTM B –209).
5. THE THICKNESS FOR ALL SIGN BLANKS IS 0.080" EXCEPT OVERHEAD STREET NAME BLADES WHICH ARE 0.100".
6. ALL HOLES SHALL BE 3/8" DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND / OR ROUGH EDGES.
7. ALL SIGN FACE MATERIALS SHALL BE ASTM-4956 TYPE XI FULL CUBE PRISMATIC GRADE RETROREFLECTIVE SHEETING OR EQUIVALENT.
8. ALL STREETNAME SIGNS SHALL HAVE 1/4" DIAMETER HOLES DRILLED ON EACH END AND AFFIXED TOGETHER.
9. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON SHEET 5.
10. ALL SIGN BLANK ARE TO BE ETHCHED, DEGREASEODINE FINISH PRIOR TO APPLICATION OF LEGENDS.
11. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE LATEST CITY OF AUBREY SIGN STANDARDS.
12. DETAILS ARE FOR ALL NEW AND REPLACEMENT SIGN INSTALLATIONS.
13. ALL ADVISORY SPEED SIGNS SHALL BE BASED ON A TRAFFIC STUDY, PLEASE FOLLOW TXDOT PROCEDURES FOR ESTABLISHING SPEED ZONES. THE PROCEDURES ARE AVAILABLE AT http://onlinemanuals.txdot.gov/txdotmanuals/szn/szn.pdf.
14. ALL SCHOOL ZONE WARNING SIGNS SHALL HAVE FLUORESCENT YELLOW GREEN BACKGROUNDS.
15. REFER TO *STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS* AVAILABLE AT https://www.txdot.gov/inside-txdot/forms-publications/publications/highway-signs.html OR CONTACT THE PUBLIC WORKS MAINTENANCE MANAGER FOR GUIDANCE.
16. SPEED LIMIT WITHIN CITY LIMIT SHALL BE 25 MPH

DETAILS

1. ALL DETAILS ARE NOT TO SCALE
2. SPECIAL DETAILS OR MODIFICATIONS TO THESE STANDARD DETAILS TO BE UTILIZED ON ANY GIVEN PROJECT SHALL BE SUBMITTED TO THE CITY FOR APPROVAL FOR USE.
3. The minimum depth of cover for cable television and copper cable communications lines shall be 24 inches. The minimum depth of cover for fiber optic facilities shall be 42 inches. The minimum depth of cover for cable television and copper cab;e communication line shall be 24 inches under ditches or 18 inches beneath the bottom of the pavement structure, whichever is greater.

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4	01–08–26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS — KARTAVYA S. PATEL 97534 — LICENSED PROFESSIONAL ENGINEER

01–08–26

GENERAL NOTES

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

DENTON COUNTY, TEXAS

DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 I F: 469.213.7145 I E: info@triangle-engr.com
W: triangle-engr.com I O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-1.1

TX. P.E. FIRM #11525

TXDOT GENERAL NOTES:

1. ALL CONSTRUCTION WITHIN THE STATE RIGHT-OF-WAY WELL REQUIRE COMPLICANCE TO 2014 TXDOT STANDARD SPECIFICATIONS, STANDARD PLAN, TXDOT ON-LINE MANUAL, AND THE TEXAS MAUNAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. BY SEALING AND SIGNING THESE PERMIT PLANS AS A PROFESSINAL CIVIL ENGINEER LCESNSE TO PARCTICE IN THE STATE OF TEXAS, I CERTIFY THAT THE PROPOSED PRIVATE DRIVEWAY CONNECTIONS TO THE STATE ROADWAY MEET OR EXCEED THE MINIMUM STOPPINGG SIGHT DISTANCE REQUIRED FOR A DESIGN SPEED OF **30** MILES PER HOUR, BASED ON THE MOST RECENT ON-LINE TXDOT ROADWAY DESIGN MANUAL REQUIREMENTS.
3. POSTED SPEED LIMIT IS **30** MILES PER HOUR.
4. SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION AS OF NOVEMBER 1ST, 2014 AND SPECIFICATION ITMES LISED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT FOR ALL WORK WITHIN THE SATE RIGHT-OF-WAY.
5. TRAFFIC CONTROL MUST BE MAINTAINED THROUGHOUT THE DURATION OF WORK WITHIN TXDOT RIGHT-OF-WAY.
6. ALL DISTURBED RIGHT-OF-WAY MUST BE RE-VEGETATED WITH SOD AND MAINTAINED UNTIL VEGETATION IS RE-ESTABLISHED.
7. ALL LANE CLOSURES MUST BE COORDINATED WITH BOTH TXDOT AND MUNICIPALITY INSPECTORS.
8. NO CONSTRUCTION SHALL BE PERMITTED WITHIN TEXAS DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY PRIOR TO TXDOT APPROVAL AND ISSUANCE OF PERMIT.
9. ANY UTILITY RELOCATION UNDER TXDOT RIGHT-OF-WAY REQURIES SEPARATE **"UIR"** PERMIT.
10. ALL LANE CLOSURES SHALL TAKE PLACE BETWEEN **09:00am-3:30pm Monday thru Friday. NO LANE CLOSURES ARE ALLOWED DURING PEAK HOURS.**

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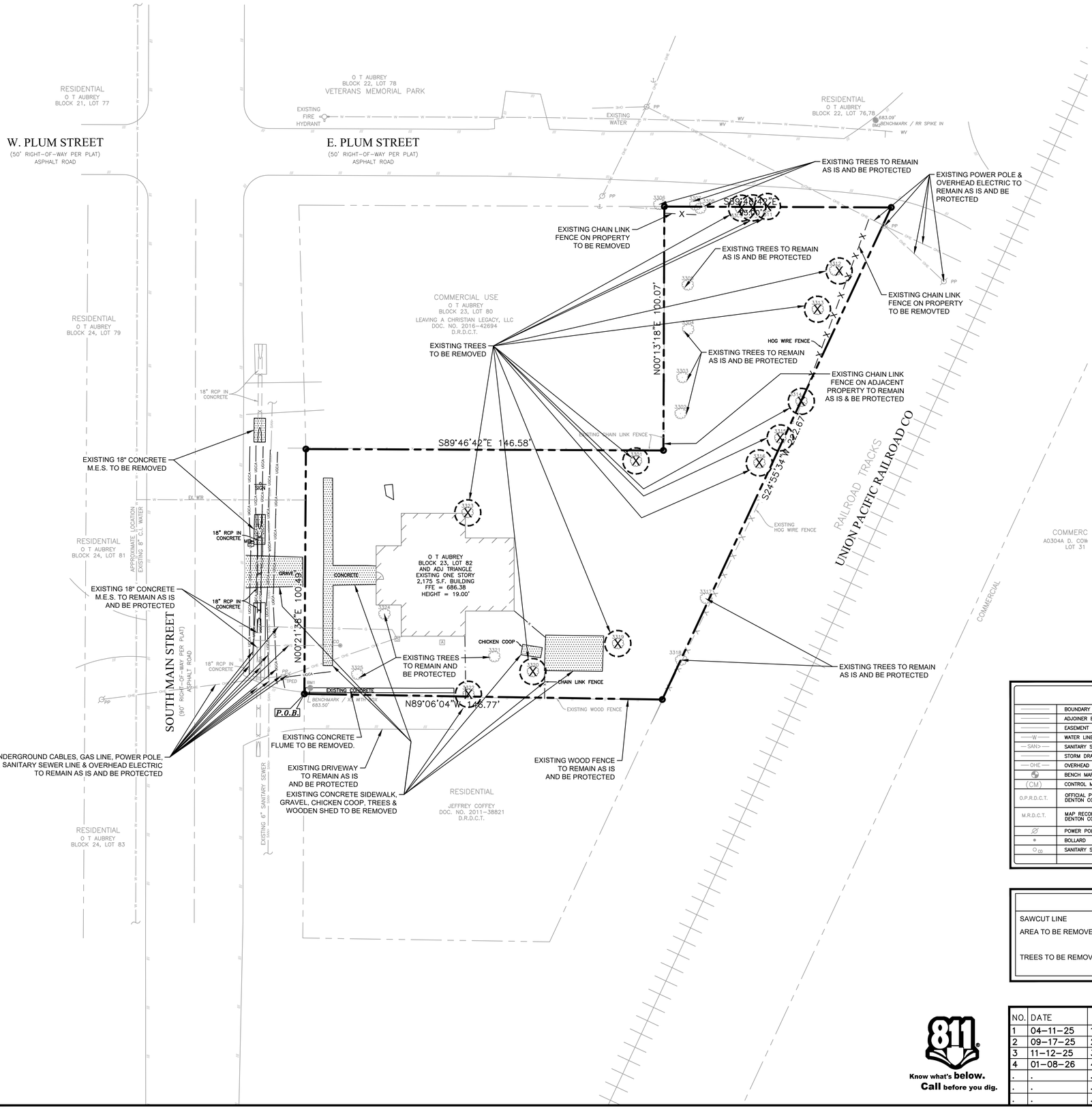
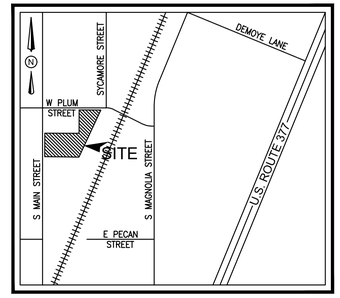
TX. P.E. FIRM #11525





VICINITY MAP
N.T.S.

0 40
Scale: 1" = 20' Feet

DEMOLITION GENERAL NOTES

1. ANY DEMOLITION IS TO BE PERFORMED IN STRICT CONFORMANCE WITH ALL APPLICABLE CITY, COUNTY AND STATE, AND/OR GOVERNING BODY'S STANDARDS.
2. EROSION AND SEDIMENT CONTROL MEASUREMENTS SHALL BE MAINTAINED AT ALL TIMES DURING DEMOLITION.
3. THE PURPOSE OF THIS DRAWING IS TO CONVEY THE OVERALL SCOPE OF WORK AND IT IS NOT INTENDED TO COVER ALL DETAILS OR SPECIFICATIONS REQUIRED TO COMPLY WITH GENERALLY ACCEPTED DEMOLITION PRACTICES. CONTRACTOR SHALL THOROUGHLY GET FAMILIARIZED WITH THE SITE, SCOPE OF WORK, AND ALL EXISTING CONDITIONS AT THE JOB SITE PRIOR TO BIDDING AND COMMENCING THE WORK. THE DEMOLITION CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, OR PROCEDURES USED TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND IS LIABLE FOR THE SAFETY OF THE PUBLIC OR CONTRACTOR'S EMPLOYEES DURING THE COURSE OF THE PROJECT.
4. THE DEMOLITION PLAN IS INTENDED TO SHOW REMOVAL OF KNOWN SITE FEATURES AND UTILITIES AS SHOWN ON THE SURVEY. THERE MAY BE OTHER SITE FEATURES, UTILITIES, STRUCTURES, AND MISCELLANEOUS ITEMS BOTH BURIED AND ABOVE GROUND THAT ARE WITHIN THE LIMITS OF WORK THAT MAY NEED TO BE REMOVED FOR THE PROPOSED PROJECT THAT ARE NOT SHOWN HEREON. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE CITY, ENGINEER AND/OR OWNER PRIOR TO REMOVING ITEMS NOT SHOWN ON THE PLANS.
5. THE CONTRACTOR SHALL CONTACT RESPECTIVE UTILITY COMPANIES PRIOR TO DEMOLITION TO COORDINATE DISCONNECTION AND REMOVAL OF EXISTING UTILITIES WITHIN THE AREA OF WORK.
6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES THAT ARE INTENDED TO CONTINUE TO PROVIDE SERVICE WHETHER THESE UTILITIES ARE SHOWN ON THE PLAN OR NOT.
7. UPON DISCOVERY OF ANY UNDERGROUND TANKS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE. NO REMOVAL OF TANKS SHALL OCCUR UNTIL AUTHORIZED BY OWNER.
8. BUILDING AND APPURTENANCES DESIGNATED FOR DEMOLITION SHALL NOT BE DISTURBED BY THE CONTRACTOR UNTIL HE HAS BEEN FURNISHED WITH NOTICE TO PROCEED BY THE OWNER. AS SOON AS SUCH NOTICE HAS BEEN GIVEN, THE CONTRACTOR SHALL PERFORM THE DEMOLITION, UNDER THE DIRECTION OF THE OWNER'S REPRESENTATIVE.
9. DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE. ALL UNSUITABLE MATERIAL AND DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH ALL CITY, STATE, AND FEDERAL LAWS AND ORDINANCES.
10. AS SOON AS DEMOLITION WORK HAS BEEN COMPLETED, THE FINAL GRADE OF BACKFILL IN DEMOLITION AREAS SHALL BE COMPACTED PER THE GEOTECHNICAL REPORT. CONTRACTOR TO PREVENT WATER FROM DRAINING ONTO ADJACENT PROPERTIES.
11. EXISTING TREES TO REMAIN SHOULD BE PROTECTED FROM DAMAGE DURING DEMOLITION AND CONSTRUCTION.

EXISTING LEGEND

	BOUNDARY LINE	○	SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE	●	FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)	⊗	"X" CUT FOUND
—W—	WATER LINE	⊗	"X" CUT SET
—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

DEMOLITION LEGEND

SAWCUT LINE

AREA TO BE REMOVED

TREES TO BE REMOVED

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STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
01-08-26

DEMOLITION PLAN

OFFICE

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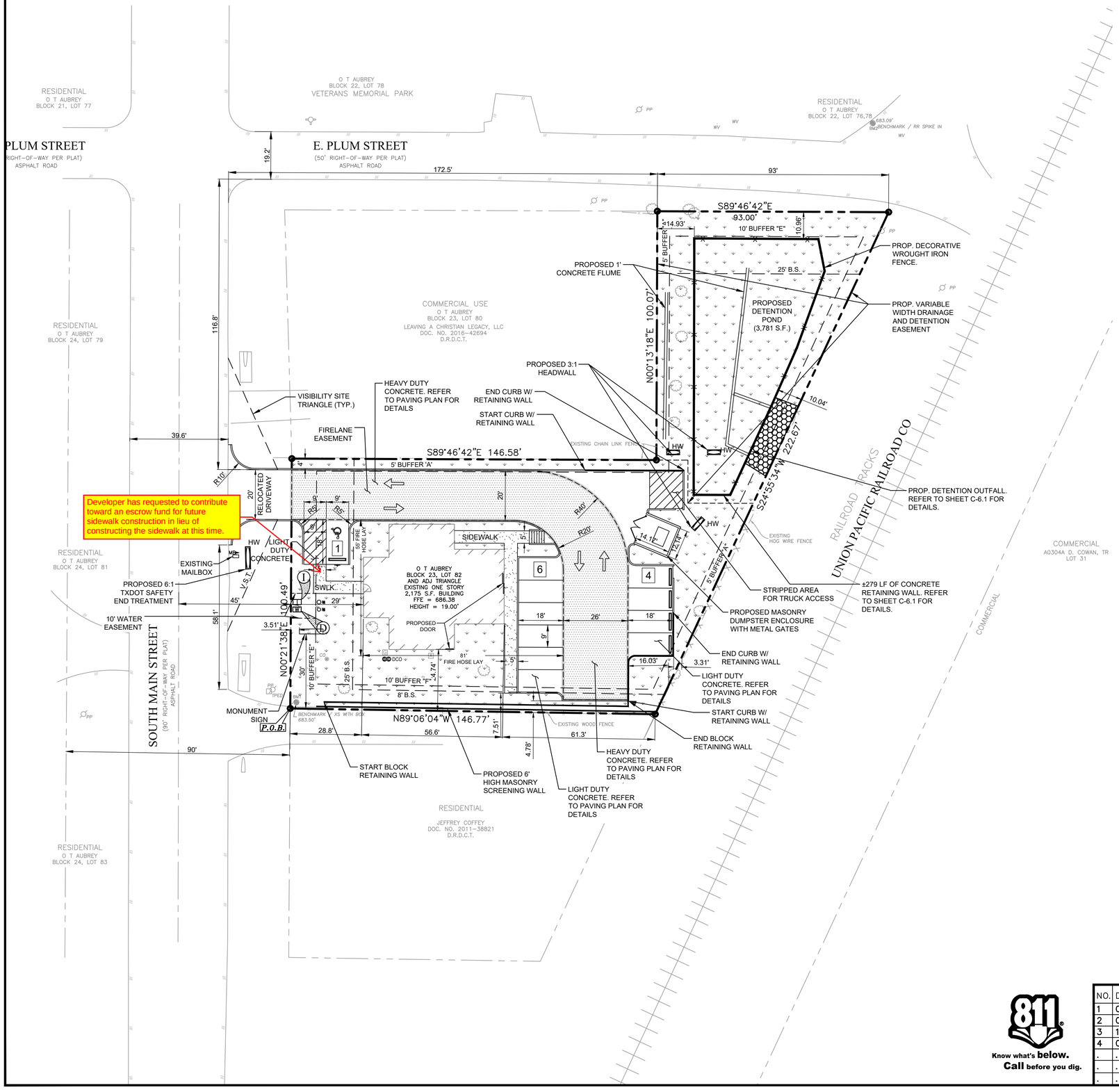
TX. P.E. FIRM #11525



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

SITE DATA SUMMARY TABLE

SITE ACREAGE:	0.557 ACRES (24,269 S.F.)
ZONING:	GR - GENERAL RETAIL
PROPOSED USE:	OFFICE
BUILDING AREA:	EXISTING 2,175 S.F.
NUMBER OF STORIES:	1
BUILDING HEIGHT:	19'-0"
BUILDING COVERAGE:	8.9%
FLOOR AREA RATIO:	0.09
IMPERVIOUS AREA:	13,762 S.F. (56.70%)
PERVIOUS/LANDSCAPE AREA:	10,507 S.F. (43.3%)
REGULAR PARKING REQUIRED: 1 SPACE PER 300 S.F.	8 SPACES
REGULAR PARKING PROVIDED:	10 SPACES
HANDICAP PARKING REQUIRED:	1 SPACE (1 VAN ACCESSIBLE)
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TOTAL PARKING PROVIDED:	11 SPACES

SITE LEGEND

CONCRETE CURB	
SAW-CUT LINE	
FENCE	
FIRE LANE	
LANDSCAPE AREA	
STRIPING	
PARKING SPACES	X
MONUMENT/PYLON SIGN	
WHEEL STOPS	
HANDICAP LOGO	
HANDICAP SIGN	
RAMP	
BOLLARD	
TRAFFIC ARROW	
FIRE HYDRANT	
DUMPSTER	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	C
SANITARY SEWER DOUBLE CLEANOUT	DC
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DOMESTIC WATER METER	D W
IRRIGATION METER	I
GAS METER	G
TRANSFORMER	T
LIGHT POLE	

CITY NOTES

1. THE SANITATION CONTAINER SCREENING WALLS SHALL BE BRICK MASONRY, STONE MASONRY, OR OTHER ARCHITECTURAL MASONRY FINISH, INCLUDING A METAL GATE, PRIMED AND PAINTED, AND THE SANITATION CONTAINER SCREENING WALLS, GATE AND PAD SITE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY DESIGN SPECIFICATIONS.
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3. THE LIGHTING FOR THE SUBJECT PROPERTY WILL BE CONSTRUCTED AND OPERATED IN CONFORMANCE WITH THE CITY OF AUBREY ZONING ORDINANCE.

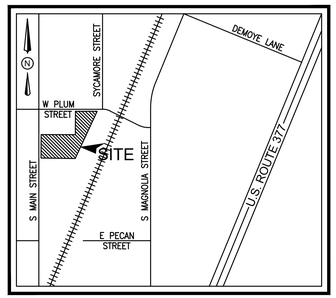
SETBACK LEGEND

BUILDING SETBACK	B.S.
LANDSCAPE BUFFER	L.B.

N

0 20 40

Scale: 1" = 20' Feet



VICINITY MAP

N.T.S.

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3. WHERE EXISTING UTILITIES OR SERVICE LINES ARE CUT, BROKEN OR DAMAGED, THE CONTRACTOR SHALL REPLACE OR REPAIR THE UTILITIES OR SERVICE LINES WITH THE SAME TYPE OF ORIGINAL MATERIAL AND CONSTRUCTION, OR BETTER, UNLESS OTHERWISE SHOWN OR NOTED ON THE PLANS, AT HIS OWN COST AND EXPENSE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICTS WITH UTILITIES.
4. ALL EXCAVATIONS, TRENCHING AND SHORING OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE U. S. DEPARTMENT OF LABOR, OSHA, CONSTRUCTION SAFETY AND HEALTH REGULATIONS AND ANY AMENDMENTS THERETO.
5. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION TO ORIGINAL CONDITION OR BETTER. RESTORED AREAS INCLUDE, BUT ARE NOT LIMITED TO TRENCH BACKFILL, SIDE SLOPES, FENCES, DRAINAGE DITCHES, DRIVEWAYS, PRIVATE YARDS AND ROADWAYS.
6. ANY CHANGES NEEDED AFTER CONSTRUCTION PLANS HAVE BEEN RELEASED, SHALL BE APPROVED BY THE CITY ENGINEER. THESE CHANGES MUST BE RECEIVED IN WRITING.
7. THE CONTRACTOR SHALL PROVIDE "RED LINED" MARKED PRINTS TO THE ENGINEER PRIOR TO FINAL INSPECTION INDICATING ALL CONSTRUCTION WHICH DEVIATED FROM THE PLANS OR WAS CONSTRUCTED IN ADDITION TO THAT INDICATED ON THE PLANS.
8. ALL CURB RADIUS TO BE 10' OR 2' UNLESS OTHERWISE NOTED ON THE SITE PLAN.

PROJECT CONTACT LIST

ENGINEER
TRIANGLE ENGINEERING LLC
1782 W. McDERMOTT DRIVE
ALLEN, TEXAS 75013
CONTACT: KARTAVYA PATEL, P.E.
PHONE: 469-331-8566

SURVEYOR
TRAVERSE LAND SURVEYING
14200 MIDWAY ROAD, SUITE 130
DALLAS, TEXAS 75244
CONTACT: MARK NACE
PHONE: 469-784-9321

OWNER/DEVELOPER
JPAR McKINNEY
2629 SHADOW GLEN DRIVE
PROSPER, TEXAS 76058
CONTACT: HARI NAMASIVAYAM
PHONE: 469-554-0390

Know what's below. Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED
PROFESSIONAL ENGINEER
01-08-26

SITE PLAN

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

DENTON COUNTY, TEXAS

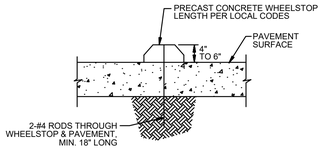
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013

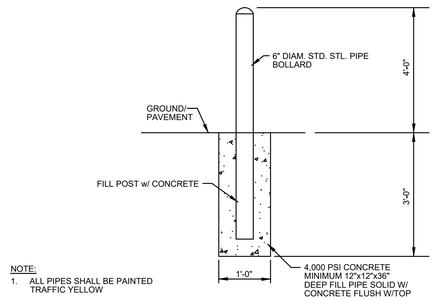
Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-3.0

TX. P.E. FIRM #11525

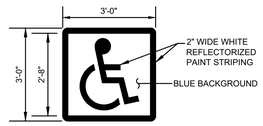


PRECAST CONCRETE WHEEL STOP DETAIL
N.T.S.



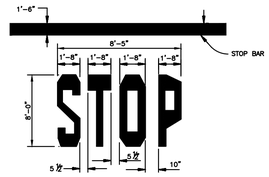
NOTE:
1. ALL PIPES SHALL BE PAINTED TRAFFIC YELLOW

BOLLARD DETAIL
N.T.S.



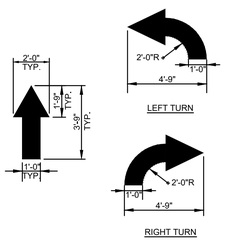
NOTES:
1. STENCIL ONE SYMBOL ONTO PARKING SURFACE IN EACH ACCESSIBLE STALL.
2. LOCATE PER ACCESSIBLE PARKING STALL DETAIL(S).
3. ALL LINES 2" WIDE PAINTED ON WHITE ON BLUE BACKGROUND.

ACCESSIBLE PARKING EMBLEM DETAIL
N.T.S.



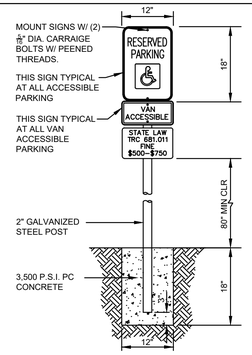
NOTE:
STOP BAR TO BE SOLID YELLOW REFLECTIVE TRAFFIC PAINT PER DIMENSIONS ABOVE.

STOP BAR DETAIL
N.T.S.

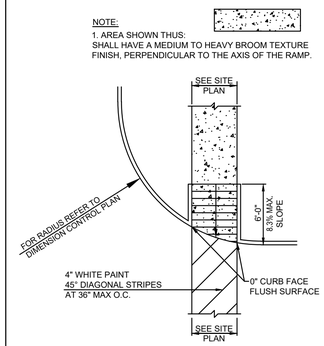


NOTE:
ALL TRAFFIC FLOW ARROWS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT PER DIMENSIONS ABOVE.

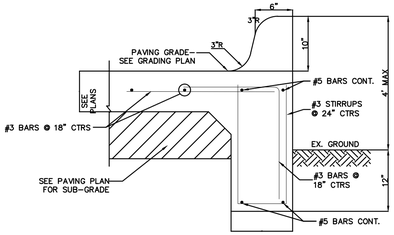
TRAFFIC FLOW ARROW DETAIL
N.T.S.



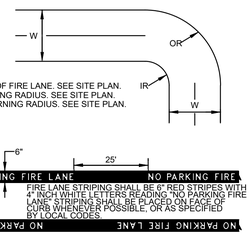
ACCESSIBLE PARKING SIGN DETAIL
N.T.S.



BARRIER FREE RAMP DETAIL
N.T.S.

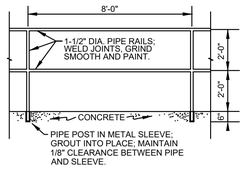


CURB W/RETAINING WALL DETAILS (TYPE 2)
N.T.S.



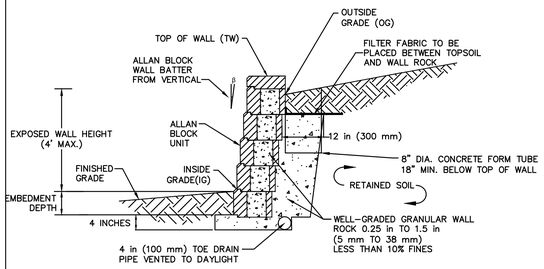
FIRE LANE MARKING

FIRE LANE DETAIL
N.T.S.



NOTE:
REFER TO STATE AND LOCAL SPECIFICATIONS FOR MATERIALS, CONSTRUCTION, AND PAINTING.

HANDRAIL DETAIL
N.T.S.



VARIABLE HEIGHT BLOCK RETAINING WALL
N.T.S.

NO.	DATE	DESCRIPTION	BY
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED
PROFESSIONAL ENGINEER
01-08-26

SITE DETAILS

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
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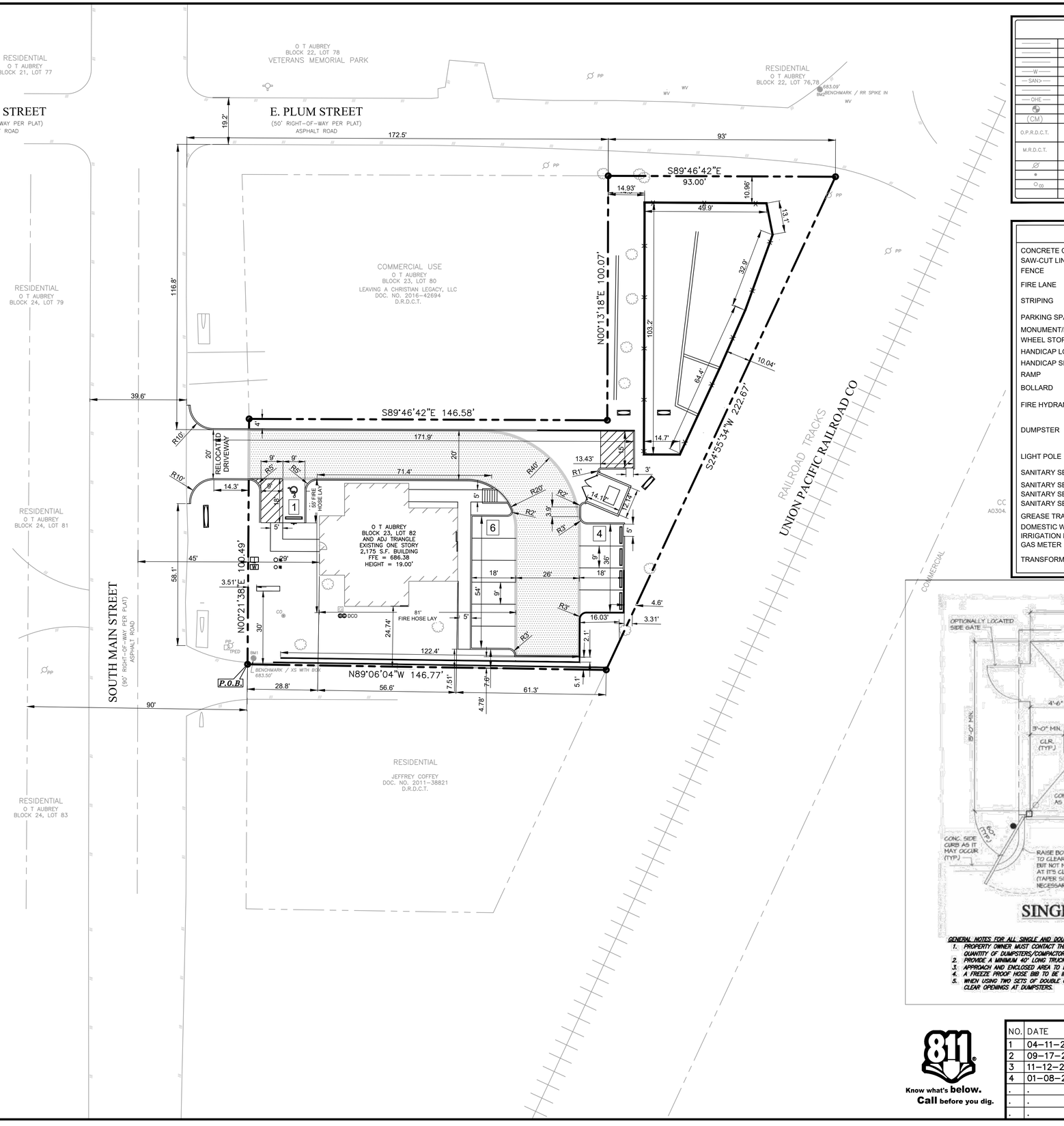
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-3.1



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
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—SAN>—	SANITARY SEWER LINE	WM	WATER METER
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O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
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	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
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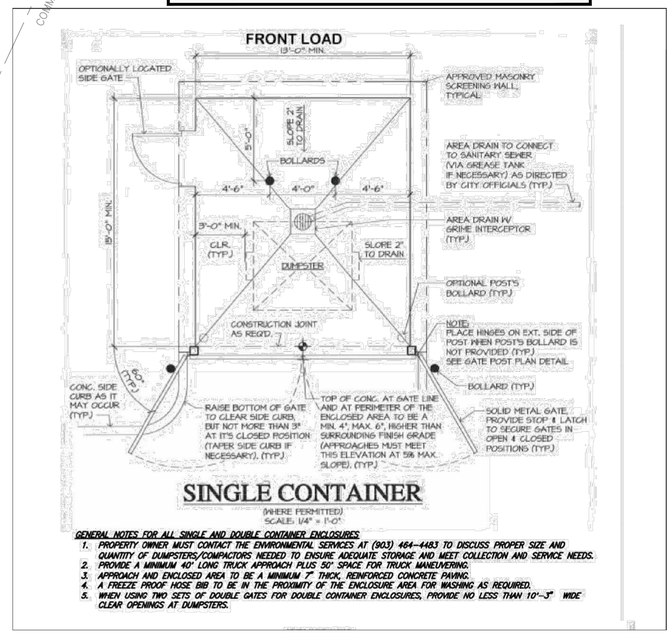
DIMENSION CONTROL LEGEND

CONCRETE CURB	
SAW-CUT LINE	
FENCE	
FIRE LANE	
STRIPING	
PARKING SPACES	X
MONUMENT/PYLON SIGN	
WHEEL STOPS	
HANDICAP LOGO	
HANDICAP SIGN	
RAMP	
BOLLARD	
FIRE HYDRANT	
DUMPSTER	
LIGHT POLE	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	
SANITARY SEWER DOUBLE CLEANOUT	DC
SANITARY SEWER SAMPLE PORT	
GREASE TRAP	
DOMESTIC WATER METER	W
IRRIGATION METER	
GAS METER	G
TRANSFORMER	T

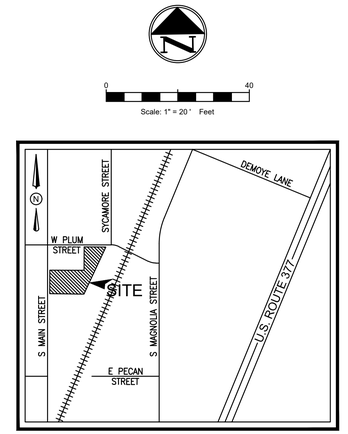


SINGLE CONTAINER

(WHERE PERMITTED)
SCALE: 1/4" = 1'-0"

GENERAL NOTES FOR ALL SINGLE AND DOUBLE CONTAINER ENCLOSURES

1. PROPERTY OWNER MUST CONTACT THE ENVIRONMENTAL SERVICES AT (903) 464-4483 TO DISCUSS PROPER SIZE AND QUANTITY OF DUMPSTERS/COMPACTORS NEEDED TO ENSURE ADEQUATE STORAGE AND MEET COLLECTION AND SERVICE NEEDS.
2. PROVIDE A MINIMUM 40' LONG TRUCK APPROACH PLUS 50' SPACE FOR TRUCK MANEUVERING.
3. APPROACH AND ENCLOSED AREA TO BE A MINIMUM 7" THICK, REINFORCED CONCRETE PAVING.
4. A FREEZE PROOF HOSE BIB TO BE IN THE PROXIMITY OF THE ENCLOSURE AREA FOR WASHING AS REQUIRED.
5. WHEN USING TWO SETS OF DOUBLE GATES FOR DOUBLE CONTAINER ENCLOSURES, PROVIDE NO LESS THAN 10'-3" WIDE CLEAR OPENINGS AT DUMPSTERS.



VICINITY MAP
N.T.S.

DIMENSION CONTROL GENERAL NOTES

1. ALL DIMENSIONS ARE MEASURED TO FACE OF CURB AS SHOWN. CONTACT ENGINEER/ARCHITECT IF THERE IS ANY DISCREPANCIES IN THE DIMENSIONS.
2. REFER TO ARCHITECTURAL FLOOR PLAN FOR EXACT BUILDING DIMENSIONS.
3. LIGHTED MONUMENT SIGN SHALL BE BY SEPARATE PERMIT.
4. BARRIER-FREE RAMPS ARE REQUIRED ON ALL STREET FRONTAGES. RAMPS WITH DETECTABLE WARNING SURFACES IS REQUIRED AT ALL INTERSECTIONS.

811 Know what's below. Call before you dig.

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STATE OF TEXAS — KARTAVYA S. PATEL — 97534 — LICENSED PROFESSIONAL ENGINEER
01-08-26

DIMENSION CONTROL PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
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DENNIS COWAN SURVEY, ABSTRACT No. 304

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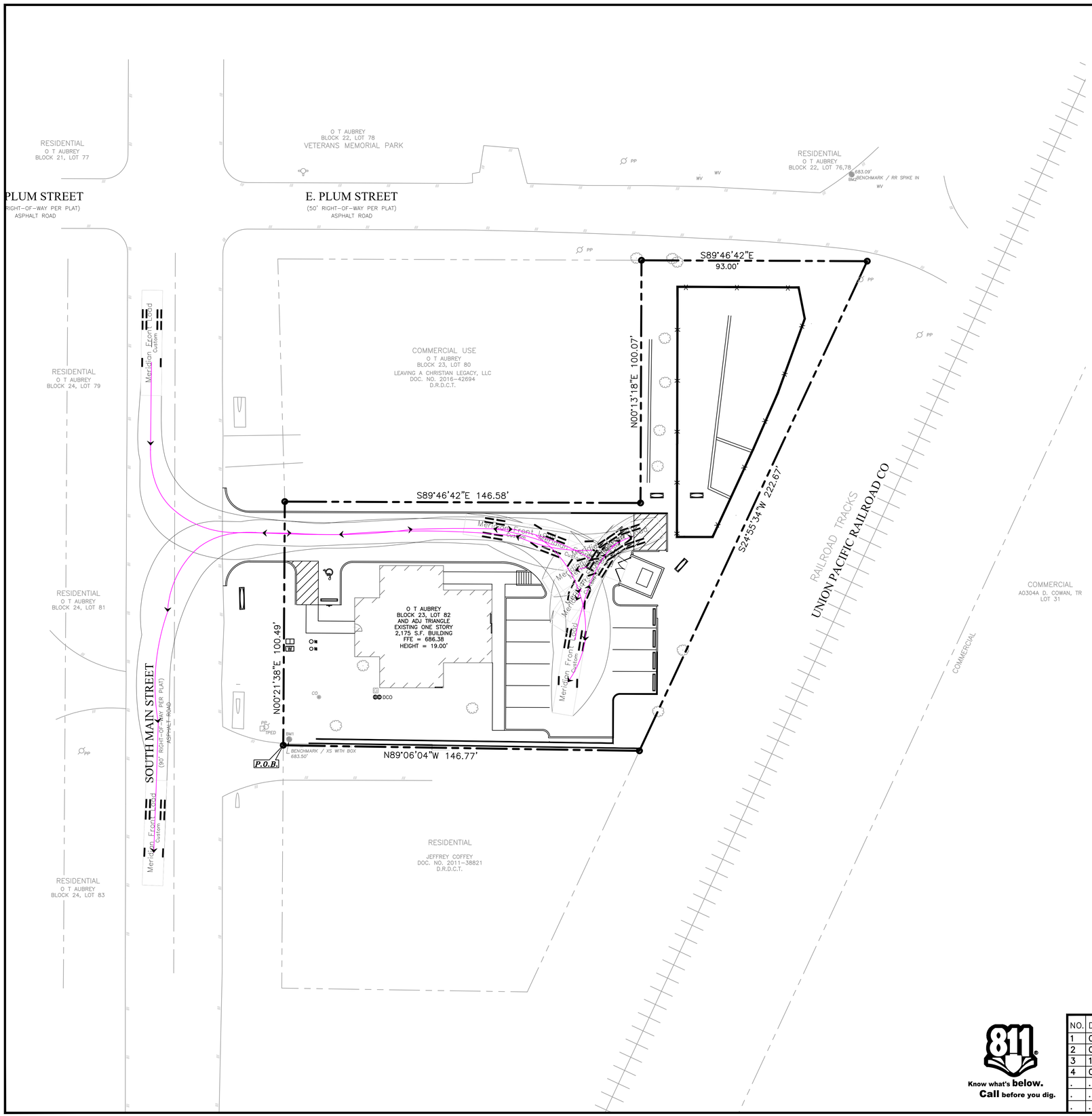
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-3.2

TX. P.E. FIRM #11525



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FIRE LANE
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IRRIGATION METER (I)
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TRANSFORMER (T)
LIGHT POLE

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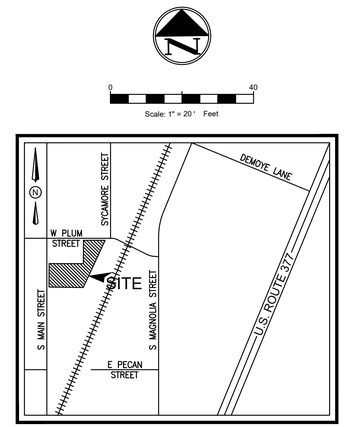

VICINITY MAP

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8. ALL CURB RADIUS TO BE 10' OR 2' UNLESS OTHERWISE NOTED ON THE SITE PLAN.

PROJECT CONTACT LIST

ENGINEER
TRIANGLE ENGINEERING LLC
1782 W. McDERMOTT DRIVE
ALLEN, TEXAS 75013
CONTACT: KARTAVYA PATEL, P.E.
PHONE: 469-331-8566

SURVEYOR
TRAVERSE LAND SURVEYING
14200 MIDWAY ROAD, SUITE 130
DALLAS, TEXAS 75244
CONTACT: MARK NACE
PHONE: 469-784-9321

OWNER/DEVELOPER
JPAR McKINNEY
2629 SHADOW GLEN DRIVE
PROSPER, TEXAS 76058
CONTACT: HARI NAMASIVAYAM
PHONE: 469-554-0390

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3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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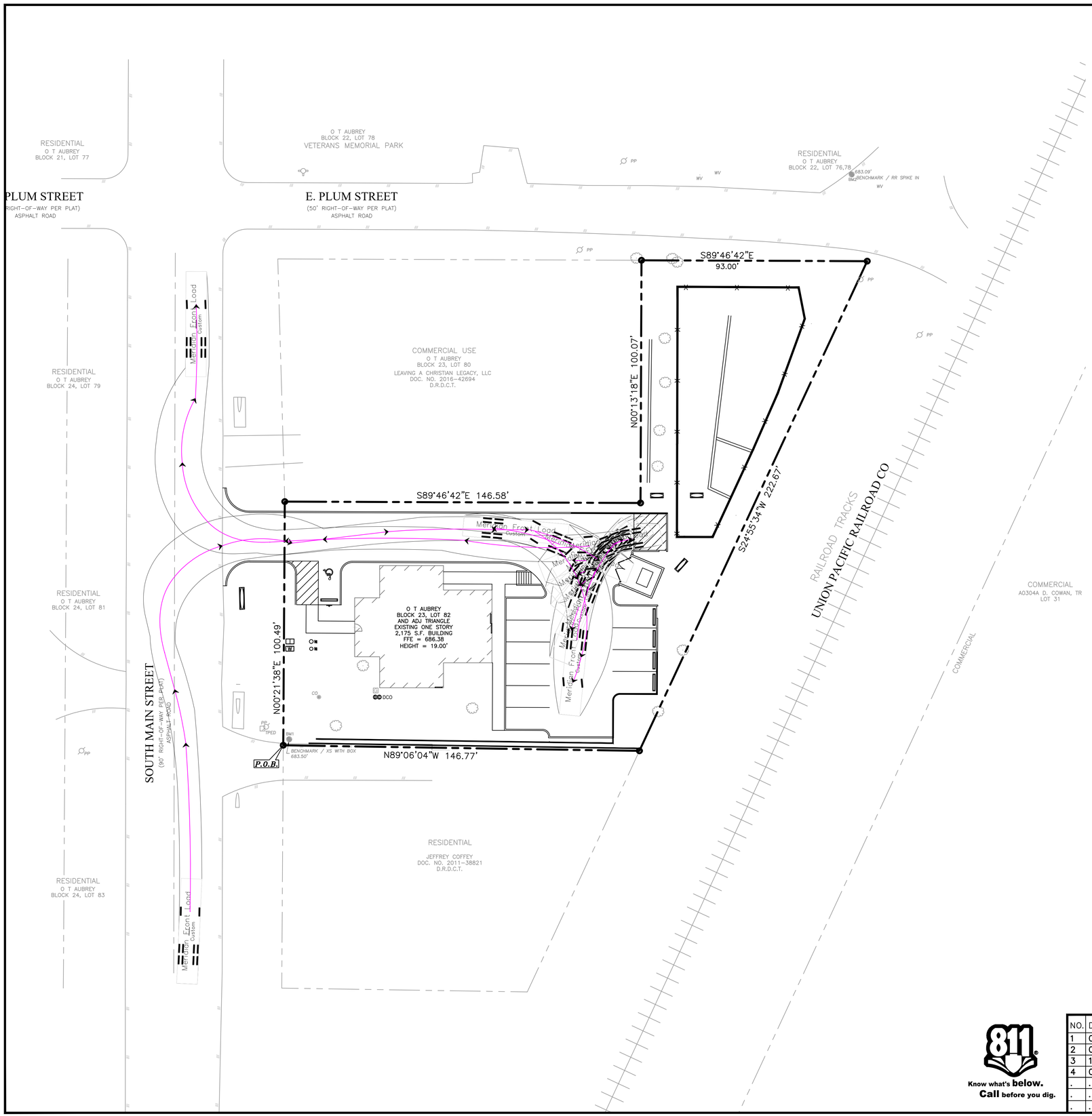
STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

GARBAGE TRUCK ROUTE- LEFT

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management
TX. P.E. FIRM #11525

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-3.3



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

SITE DATA SUMMARY TABLE

SITE ACREAGE:	0.557 ACRES (24,269 S.F.)
ZONING:	GR - GENERAL RETAIL
PROPOSED USE:	OFFICE
BUILDING AREA:	EXISTING 2,175 S.F.
NUMBER OF STORIES:	1
BUILDING HEIGHT:	19'-0"
BUILDING COVERAGE:	8.9%
FLOOR AREA RATIO:	0.09
IMPERVIOUS AREA:	13,762 S.F. (56.70%)
PERVIOUS/LANDSCAPE AREA:	10,507 S.F. (43.3%)
REGULAR PARKING REQUIRED: 1 SPACE PER 300 S.F.	8 SPACES
REGULAR PARKING PROVIDED:	10 SPACES
HANDICAP PARKING REQUIRED:	1 SPACE (1 VAN ACCESSIBLE)
HANDICAP PARKING PROVIDED:	1 SPACES (1 VAN ACCESSIBLE)
TOTAL PARKING PROVIDED:	11 SPACES

SITE LEGEND

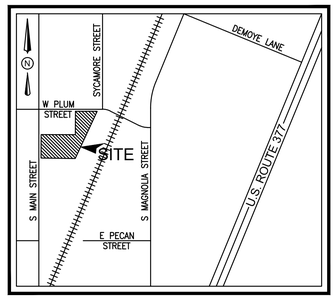
CONCRETE CURB
SAW-CUT LINE
FENCE
FIRE LANE
LANDSCAPE AREA
STRIPING
PARKING SPACES (X)
MONUMENT/PYLON SIGN
WHEEL STOPS
HANDICAP LOGO
HANDICAP SIGN
RAMP
BOLLARD
TRAFFIC ARROW
FIRE HYDRANT
DUMPSTER
SANITARY SEWER MANHOLE (S)
SANITARY SEWER CLEANOUT (C)
SANITARY SEWER DOUBLE CLEANOUT (DC)
SANITARY SEWER SAMPLE PORT (S)
GREASE TRAP
DOMESTIC WATER METER (D) (W)
IRRIGATION METER (I)
GAS METER (G)
TRANSFORMER (T)
LIGHT POLE

CITY NOTES

1. THE SANITATION CONTAINER SCREENING WALLS SHALL BE BRICK MASONRY, STONE MASONRY, OR OTHER ARCHITECTURAL MASONRY FINISH, INCLUDING A METAL GATE, PRIMED AND PAINTED, AND THE SANITATION CONTAINER SCREENING WALLS, GATE AND PAD SITE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY DESIGN SPECIFICATIONS.
2. MECHANICAL, HEATING AND AIR-CONDITIONING EQUIPMENT IN NON-RESIDENTIAL USES SHALL BE SCREENED FROM VIEW FROM THE PUBLIC RIGHT-OF-WAY AND FROM ADJACENT RESIDENTIAL PROPERTIES.
3. THE LIGHTING FOR THE SUBJECT PROPERTY WILL BE CONSTRUCTED AND OPERATED IN CONFORMANCE WITH THE CITY OF AUBREY ZONING ORDINANCE.

N

0 20 40
Scale: 1" = 20' Feet



VICINITY MAP
N.T.S.

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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

GARBAGE TRUCK ROUTE- RIGHT

OFFICE

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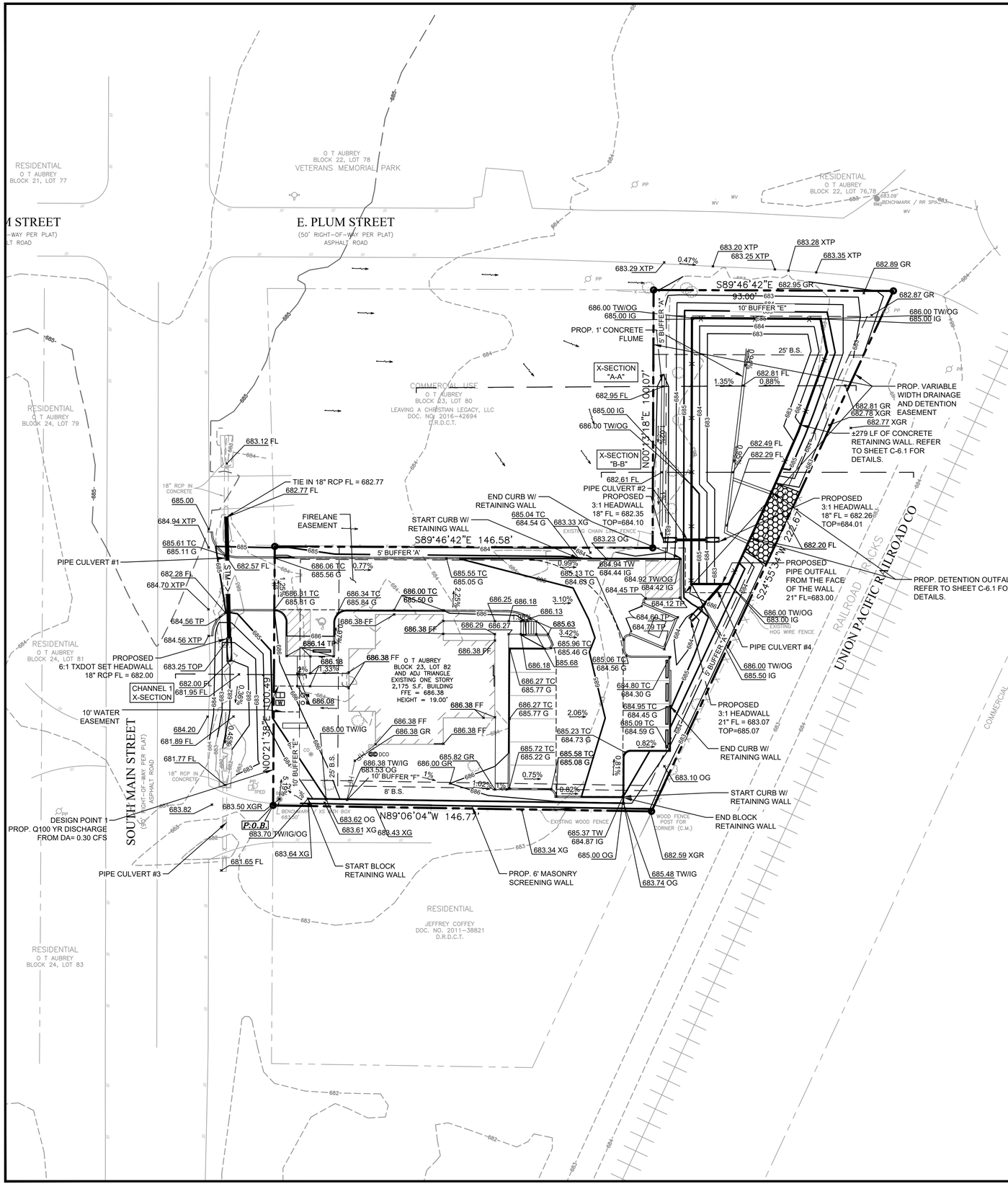

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	BENCH MARK	CV	CABLE VAULT
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	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

GRADING LEGEND

EXISTING ELEVATION	464.00 EX
EXISTING MINOR CONTOURS	464
EXISTING MAJOR CONTOURS	465
MINOR CONTOURS	464
MAJOR CONTOURS	465
SWALE	
HIGH POINT	HP
STORM PIPE	STM–>
RETAINING WALL	
RIP RAP	
PROPOSED DETENTION POND	
FINISH FLOOR ELEVATION	467.00 FF
TOP OF CURB ELEVATION	466.00 TC
GUTTER ELEVATION	465.50 G
SIDEWALK ELEVATION	465.00 SW
TOP OF PAVEMENT	464.00 TP
GROUND ELEVATION	463.00 GR
DRAINAGE FLOW DIRECTION	1%
CURB INLET	
STORM MANHOLE	
STORM CLEANOUT	
SANITARY SEWER MANHOLE	
SANITARY SEWER CLEANOUT	
SANITARY SEWER DOUBLE CLEANOUT	
SANITARY SEWER SAMPLE PORT	
GREASE TRAP	
DOMESTIC WATER METER	W
IRRIGATION METER	
GAS METER	G
TRANSFORMER	T
LIGHT POLE	
POWER POLE	

BENCHMARKS

BENCHMARK NO. 1
FROM THE MOST SOUTHWESTERLY CORNER NORTH 2.49 FEET THENCE EAST 2.43 FEET TO A "SQUARE CUT X" ON TOP OF CONCRETE
ELEVATION = 683.50'

BENCHMARK NO. 2
FROM THE MOST NORTHEASTERLY CORNER NORTH 35.76 FEET THENCE WEST 36.60 FEET TO A RAILROAD SPIKE IN ASPHALT
ELEVATION = 683.090'

FLOOD PLAIN NOTE

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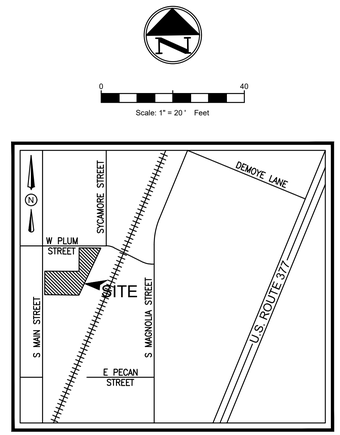
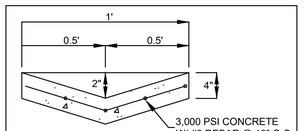


VICINITY MAP
N.T.S.

GRADING GENERAL NOTES

1. ALL SURPLUS EXCAVATION AND WASTE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND IT SHALL BE HIS SOLE RESPONSIBILITY TO REMOVE SUCH SURPLUS EXCAVATION AND WASTE MATERIAL FROM THE SITE TO A PUBLIC DUMP SITE APPROVED FOR THE DISPOSAL OF SUCH MATERIALS. IF SURPLUS EXCAVATION IS REMOVED FROM THIS SITE TO ANOTHER PROPERTY, IT SHALL BE PLACED ON SUCH PROPERTY WITH THE WRITTEN CONSENT OF THE OWNER(S) OF SUCH PROPERTY. A COPY OF SUCH WRITTEN CONSENT SHALL BE PROVIDED TO THE OWNER. IF THE CONTRACTOR WISHES TO DISPOSE OF SURPLUS EXCAVATION ON-SITE, IT SHALL BE ONLY WITH THE PRIOR APPROVAL OF THE OWNERS PROJECT REPRESENTATIVE AND CARE SHOULD BE TAKEN TO AVOID BLOCKING NATURAL DRAINAGE AND INCREASING STEEP SLOPES. THE CONTRACTOR IS REQUIRED TO PROVIDE HIS OWN STAKING AND TO VERIFY PROJECT ELEVATIONS. "MATCH EXISTING" SHALL BE UNDERSTOOD TO APPLY TO BOTH VERTICAL ELEVATION AND HORIZONTAL ALIGNMENT.
2. THE CONTRACTOR SHALL PREPARE ALL LANDSCAPE AREAS INCLUDING STREET RIGHT-OF-WAY AREAS TO AN ACCEPTABLE SUBGRADE CONDITION IN ACCORDANCE WITH THE LANDSCAPE PLANS. IF THE CONTRACTOR IS NOT EMPLOYED TO PROVIDE AND INSTALL LANDSCAPING, HE SHALL PREPARE A FINISHED AND COMPACTED SUB-GRADE IN THE LANDSCAPING AREAS.
3. NO SLOPES TO EXCEED 3H:1V WITHOUT SLOPE STABILIZATION.



1' CONCRETE FLUME DETAIL
N.T.S.

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4	01–08–26	4th CITY SUBMITTAL	IA
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.	.	.	.

STATE OF TEXAS — KARTAVYA S. PATEL — 97534 — LICENSED PROFESSIONAL ENGINEER
01–08–26

GRADING PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

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W: triangle-engr.com I O: 1782 W. McDermott Drive, Allen, TX 75013
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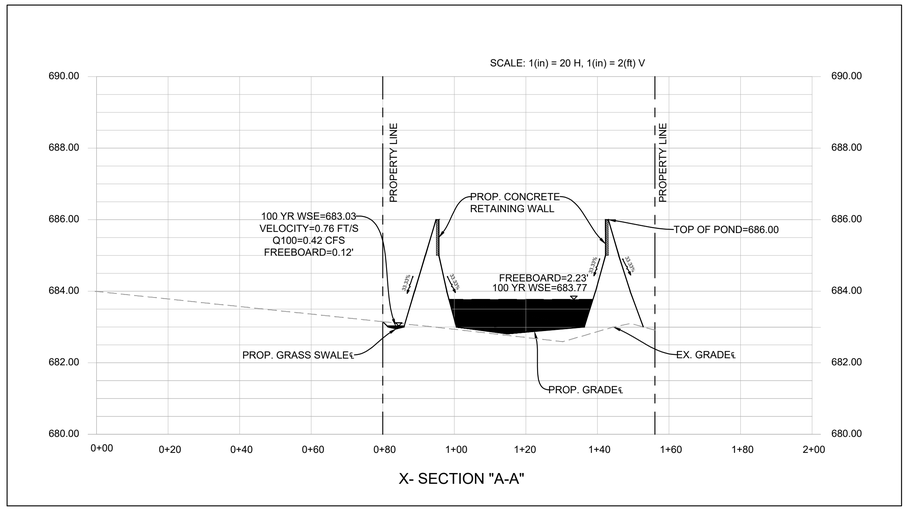
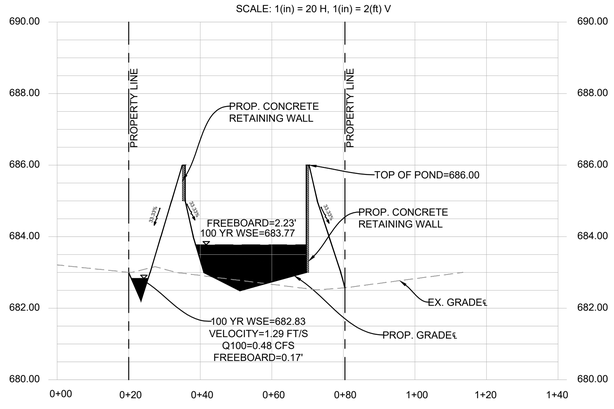
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-4.0

TX. P.E. FIRM #11525



X- SECTION "A-A"



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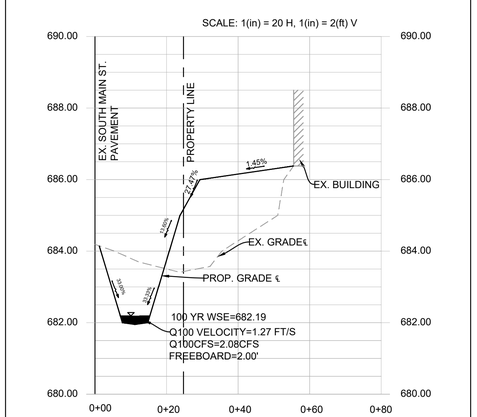

CHANNEL 1
X-SECTION

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.	.	.	.
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STATE OF TEXAS
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01–08–26

CROSS SECTIONS

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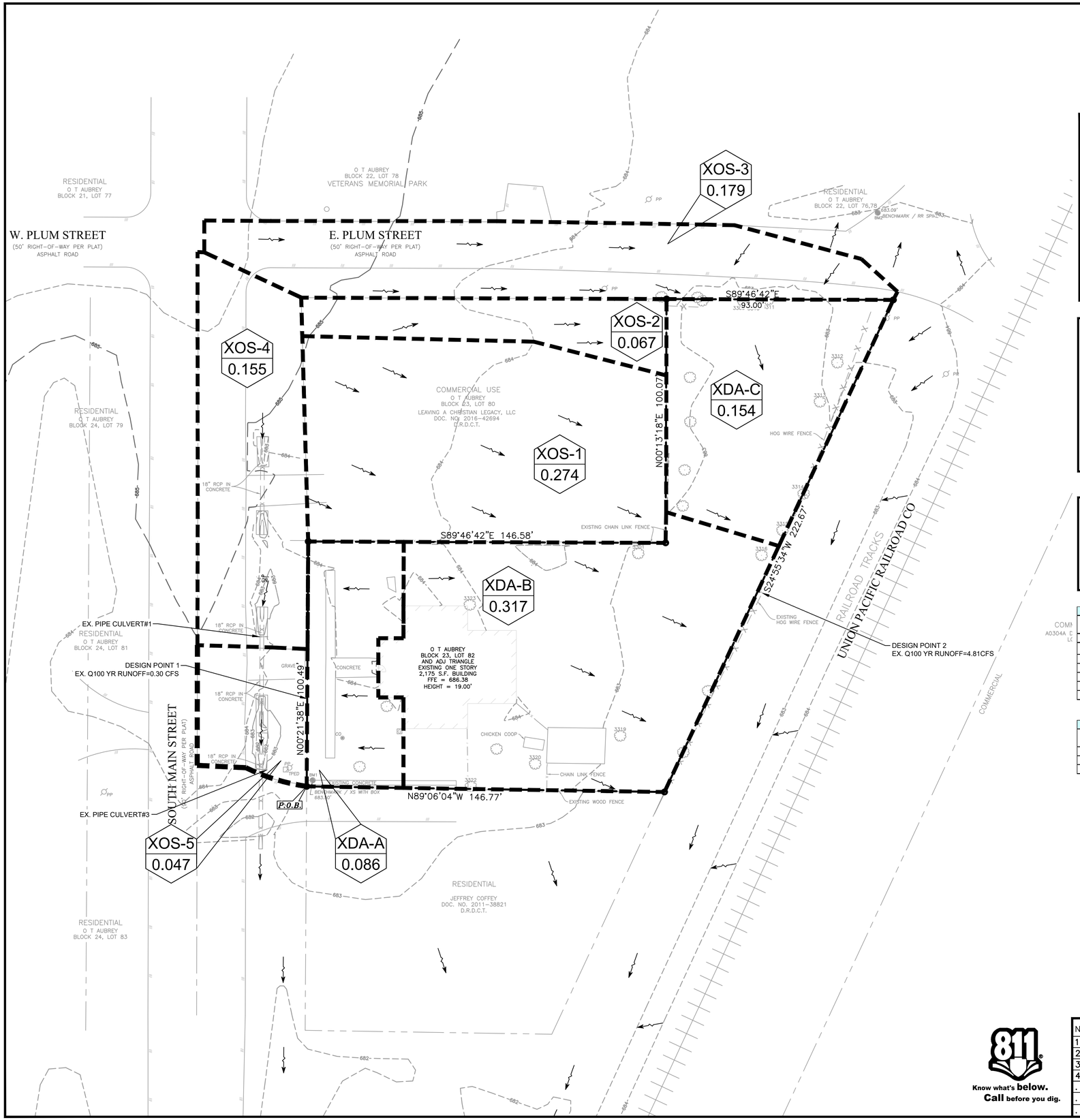
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-4.1

TX. P.E. FIRM #11525



0 40
Scale: 1" = 20' Feet

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		SD	STORM MANHOLE
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	BOLLARD	G	GAS METER
OCO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

PRE-DRAINAGE LEGEND

EXISTING MINOR CONTOURS	464
EXISTING MAJOR CONTOURS	465
DRAINAGE DIVIDE	
DRAINAGE AREA NO.	XDA-X
DRAINAGE AREA ACREAGE	X.XX
DRAINAGE FLOW DIRECTION	

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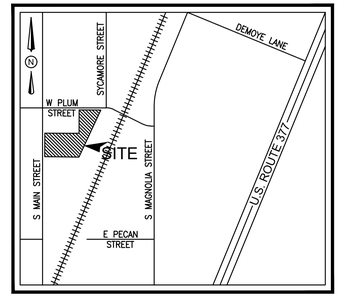

VICINITY MAP
N.T.S.

PRE- DRAINAGE AREAS

BASIN ID	OVERALL AREA (ac)	Tc (min)	2-YR STORM C	2-YR STORM I (in/hr)	2-YR STORM Q (cfs)	10-YR STORM C	10-YR STORM I (in/hr)	10-YR STORM Q (cfs)	100-YR STORM C	100-YR STORM I (in/hr)	100-YR STORM Q (cfs)	REMARKS
XDA-A	0.086	15	0.45	3.89	0.15	0.45	5.48	0.21	0.45	7.85	0.30	SHEET FLOWS TO EX. DITCH ALONG SOUTH WEST
XDA-B	0.317	15	0.45	3.89	0.55	0.45	5.48	0.78	0.45	7.85	1.12	SHEET FLOWS TO SOUTH EAST
XDA-C	0.154	15	0.45	3.89	0.27	0.45	5.48	0.38	0.45	7.85	0.54	SHEET FLOWS TO SOUTH EAST
XOS-1	0.274	15	0.60	3.89	0.64	0.60	5.48	0.90	0.60	7.85	1.29	SHEET FLOWS TO XDA-B AND EVENTUALLY DRAINS SOUTH EAST
XOS-2	0.067	15	0.60	3.89	0.16	0.60	5.48	0.22	0.60	7.85	0.32	SHEET FLOWS TO XDA-C AND EVENTUALLY DRAINS SOUTH EAST
XOS-3	0.179	10	0.90	4.69	0.76	0.90	6.62	1.07	0.90	9.53	1.54	SHEET FLOWS TO XDA-C AND EVENTUALLY DRAINS SOUTH EAST
SUM TOTAL	1.077				2.53			3.56			5.11	

PRE- DRAINAGE OFF-SITE AREAS FLOWING TO PIPE CULVERT#1 & PIPIE CULVERT#3

BASIN ID	OVERALL AREA (ac)	Tc (min)	2-YR STORM C	2-YR STORM I (in/hr)	2-YR STORM Q (cfs)	10-YR STORM C	10-YR STORM I (in/hr)	10-YR STORM Q (cfs)	100-YR STORM C	100-YR STORM I (in/hr)	100-YR STORM Q (cfs)	REMARKS
XOS-4	0.155	10	0.90	4.69	0.65	0.90	6.62	0.92	0.90	9.53	1.33	SHEET FLOWS TO PIPE CULVERT#1
XOS-5	0.047	10	0.90	4.69	0.20	0.90	6.62	0.28	0.90	9.53	0.40	SHEET FLOWS TO PIPE CULVERT#3
SUM TOTAL	0.202				0.85			1.20			1.73	

811 Know what's below. Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

PRE-DRAINAGE PLAN

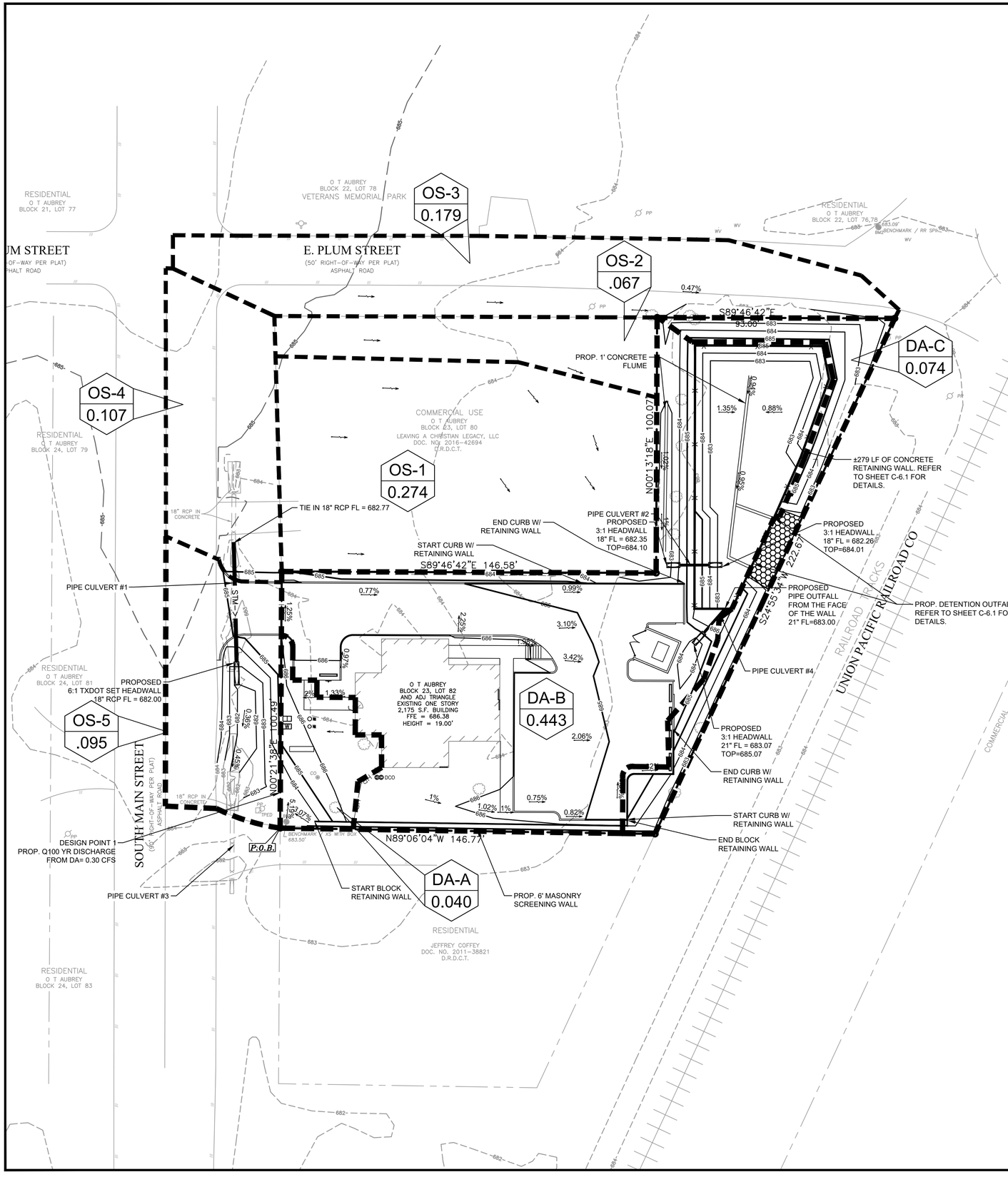
OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013

Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-5.0

TX. P.E. FIRM #11525



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
W	WATER LINE		"X" CUT SET
SAN	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
OHE	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

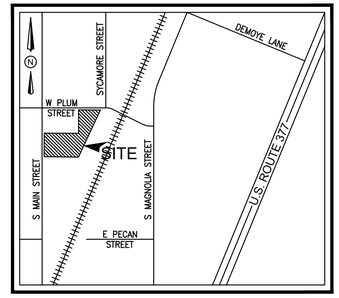
POST-DRAINAGE LEGEND

EXISTING MINOR CONTOURS	464
EXISTING MAJOR CONTOURS	465
MINOR CONTOURS	464
MAJOR CONTOURS	465
DRAINAGE DIVIDE	
HIGH POINT	HP HP HP HP
DRAINAGE AREA NO.	DA-X
DRAINAGE AREA ACREAGE	X.XX
DRAINAGE FLOW DIRECTION	1%

N

0 20 40

Scale: 1" = 20' Feet



VICINITY MAP
N.T.S.

FLOOD PLAIN NOTE

THE SUBJECT PROPERTY LIES WITHIN THE ZONE "X" UNSHADED (DETERMINED TO BE OUTSIDE THE 0.20% ANNUAL CHANCE FLOODPLAIN) AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY NATIONAL FLOOD INSURANCE PROGRAM (NFIP) FLOOD INSURANCE RATE MAP NUMBER 48121C0265G, DATED APRIL 18, 2011 FOR DENTON COUNTY, TEXAS AND INCORPORATED AREAS.

BENCHMARKS

BENCHMARK NO. 1
FROM THE MOST SOUTHWESTERLY CORNER NORTH 2.49 FEET THENCE EAST 2.43 FEET TO A "SQUARE CUT X" ON TOP OF CONCRETE
ELEVATION = 683.50'

BENCHMARK NO. 2
FROM THE MOST NORTHEASTERLY CORNER NORTH 35.76 FEET THENCE WEST 36.60 FEET TO A RAILROAD SPIKE IN ASPHALT
ELEVATION = 683.090'

POST- DRAINAGE AREAS

BASIN ID	OVERALL AREA (ac)	Tc (min)	2-YR STORM C	2-YR STORM I (in/hr)	2-YR STORM Q (cfs)	10-YR STORM C	10-YR STORM I (in/hr)	10-YR STORM Q (cfs)	100-YR STORM C	100-YR STORM I (in/hr)	100-YR STORM Q (cfs)	REMARKS
DA-A	0.040	10	0.80	4.69	0.15	0.80	6.62	0.21	0.80	9.53	0.30	SHEET FLOWS TO EX. DITCH ALONG SOUTH WEST
DA-B	0.443	10	0.80	4.69	1.66	0.80	6.62	2.35	0.80	9.53	3.38	SHEET FLOWS TO PROP. PIPE CULVERT#4 AND EVENTUALLY DISCHARGES TO PROP. DETENTION POND.
DA-C	0.074	10	0.80	4.69	0.28	0.80	6.62	0.39	0.80	9.53	0.56	SHEETS FLOWS TO SOUTH EAST
OS-1	0.274	15	0.60	3.89	0.64	0.60	5.48	0.90	0.60	7.85	1.29	SHEETS FLOWS TO PROP. PIPE CULVERT#2 AND EVENTUALLY DISCHARGES TO PROP. DETENTION POND.
OS-2	0.067	15	0.60	3.89	0.16	0.60	5.48	0.22	0.60	7.85	0.32	SHEETS FLOWS TO PROP. PIPE CULVERT#2 AND EVENTUALLY DISCHARGES TO PROP. DETENTION POND.
OS-3	0.179	10	0.90	4.69	0.76	0.90	6.62	1.07	0.90	9.53	1.54	SHEETS FLOWS TO SOUTH EAST
SUM TOTAL	1.077				3.64			5.14			7.39	

POST- DRAINAGE AREAS FLOWING TO PIPE CULVERT#1 & PIPE CULVERT#3

BASIN ID	OVERALL AREA (ac)	Tc (min)	2-YR STORM C	2-YR STORM I (in/hr)	2-YR STORM Q (cfs)	10-YR STORM C	10-YR STORM I (in/hr)	10-YR STORM Q (cfs)	100-YR STORM C	100-YR STORM I (in/hr)	100-YR STORM Q (cfs)	REMARKS
OS-4	0.107	10	0.90	4.69	0.45	0.90	6.62	0.64	0.90	9.53	0.92	SHEET FLOWS TO PIPE CULVERT#1
OS-5	0.095	10	0.90	4.69	0.40	0.90	6.62	0.57	0.90	9.53	0.81	SHEET FLOWS TO PIPE CULVERT#3
SUM TOTAL	0.202				0.85			1.20			1.73	

100-YR DISCHARGE COMPARISON

DIRECTION	PRE-DRAINGE RUNOFF(CFS)	POST-DRAINGE RUNOFF(CFS)
TO WEST(DA-A)	0.3	0.3
TO EAST (DA-B+DA-C+OS-1+OS-2)	4.81	4.80*

*2.70 CFS(DISCHARGE FROM DETENTION POND)+0.56 (DA-C FLOW)+1.54 CFS(OS-3 OFF-SITE FLOW)=4.80 CFS.

NOTE:
1.POST DEVELOPMENT DISCHARGE FROM THE SITE DOES NOT EXCEED PRE-DEVELOPMENT DISCHARGE.
2. AN ABOVE GROUND DETENTION WITH FREEBOARD 2.23' HAS BEEN PROVIDED. PLEASE REFER TO SHEET C-6.1 FOR CALCULATIONS.
3.REFER TO SHEET C-6.2 FOR PIPE CULVERT REPORT.

Know what's **below.**
Call before you dig.

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1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
.	.	.	.
.	.	.	.
.	.	.	.

STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

POST-DRAINAGE PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
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DENNIS COWAN SURVEY, ABSTRACT No. 304

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Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-6.0

TX. P.E. FIRM #11525

DETENTION CALCUALTIONS-2YR

ALLOWABLE RELEASE RATE EQUAL TO THE 2-YEAR PEAK RUNOFF RATE PRIOR TO SITE DEVELOPMENT
WHEN C=0.45, I=3.89 @ Tc=15 MINS
TOTAL SITE AREA:0.471 ACRES
ALLOWABLE RUNOFF FROM SITE: (0.45 x3.89x 0.471+0.80(XOS-1+XOS-2) =1.62 CFS
ALLOWABLE RELEASE FROM STORAGE AREA: (1.62 CFS - 0.28CFS BYPASS FLOW) 1.34
AREA FLOW TO THE DETENTION POND: 0.784 ACRES

STORM DURATION DATA & DETENTION POND SYSTEM CALCULATION :

TIME	C	I2	TOTAL AREA	Q	INFLOW	OUTFLOW	STORAGE
(Min)	Full Dev.	(2-Year)	(Acres)	(CFS)	(CF)	(CF)	(CF)
10	0.80	4.69	0.784	2.94	1,765	804	961
20	0.80	3.50	0.784	2.19	2,631	1,206	1,425
30	0.80	2.71	0.784	1.70	3,059	1,608	1,451
40	**0.80**	**2.39**	**0.784**	**1.50**	**3,602**	**2,010**	**1,592**
50	0.80	2.08	0.784	1.30	3,906	2,412	1,494
60	0.80	1.76	0.784	1.10	3,974	2,814	1,160
70	0.80	1.65	0.784	1.03	4,341	3,216	1,125
80	0.80	1.54	0.784	0.96	4,624	3,618	1,006
90	0.80	1.43	0.784	0.89	4,826	4,020	806
100	0.80	1.31	0.784	0.82	4,941	4,422	519

REQUIRED STORAGE VOLUME = INFLOW - OUTFLOW
INFLOW = STORM DURATION x RESPECTIVE PEAK DISCHARGE x 60 SEC./MIN.
OUTFLOW = HALF OF THE RESPECTIVE INFLOW DURATION x CONTROL RELEASE DISCHARGE x 60 SEC./MIN.

2 YEAR STORM EVENT @ 40 MIN.
INFLOW =40 x 0.80 x2.39x 0.784x 60 =3,602
OUTFLOW = 0.5 x 50x1.34x 60 = 2,010

REQUIRED DETENTION SYSTEM STORAGE CAPACITY = INFLOW - OUTFLOW = 3,602-2,010 CF = 1,592 CF
PROPOSED DETENTION STORAGE VOLUME = 10,887 CF

DETENTION CALCUALTIONS-100YR

ALLOWABLE RELEASE RATE EQUAL TO THE 100-YEAR PEAK RUNOFF RATE PRIOR TO SITE DEVELOPMENT
WHEN C=0.45, I=7.85 @ Tc=15 MINS
TOTAL SITE AREA:0.471 ACRES
ALLOWABLE RUNOFF FROM SITE: (0.45 x7.85 x 0.471+1.61(XOS-1+XOS-2) =3.27 CFS
ALLOWABLE RELEASE FROM STORAGE AREA: (3.27 CFS - 0.56CFS BYPASS FLOW) 2.71
AREA FLOW TO THE DETENTION POND: 0.784 ACRES

STORM DURATION DATA & DETENTION POND SYSTEM CALCULATION :

TIME	C	I100	TOTAL AREA	Q	INFLOW	OUTFLOW	STORAGE
(Min)	Full Dev.	(100-Year)	(Acres)	(CFS)	(CF)	(CF)	(CF)
10	0.80	9.53	0.784	5.98	3,586	1,626	1,960
20	0.80	7.04	0.784	4.41	5,296	2,439	2,857
30	0.80	5.41	0.784	3.39	6,108	3,252	2,856
40	**0.80**	**4.80**	**0.784**	**3.01**	**7,225**	**4,065**	**3,160**
50	0.80	4.19	0.784	2.63	7,882	4,878	3,004
60	0.80	3.58	0.784	2.25	8,083	5,691	2,392
70	0.80	3.37	0.784	2.11	8,880	6,504	2,376
80	0.80	3.16	0.784	1.98	9,522	7,317	2,205
90	0.80	2.96	0.784	1.85	10,008	8,130	1,878
100	0.80	2.75	0.784	1.72	10,334	8,943	1,391

REQUIRED STORAGE VOLUME = INFLOW - OUTFLOW
INFLOW = STORM DURATION x RESPECTIVE PEAK DISCHARGE x 60 SEC./MIN.
OUTFLOW = HALF OF THE RESPECTIVE INFLOW DURATION x CONTROL RELEASE DISCHARGE x 60 SEC./MIN.

100 YEAR STORM EVENT @ 40 MIN.
INFLOW =40 x 0.80 x4.80x 0.784x 60 =7,225
OUTFLOW = 0.5 x 50x2.71x 60 = 4,065

REQUIRED DETENTION SYSTEM STORAGE CAPACITY = INFLOW - OUTFLOW = 7,225-4,065 CF = 3,160 CF
PROPOSED DETENTION STORAGE VOLUME = 10,887 CF

SPILLWAY OVERFLOW WEIR CALCULATIONS

Using Weir Equation. Q=CLH^3/2

SPILLWAY-"1"
Weir coefficient, C=3.1
lenth of opening , L=0.5'
Post development Q100 = 5.55CFS
Bottom of Pond = 682.20
Spillway Emergency WSE = 683.77'
L(ft)= 0.5 ft
H(ft)= 2.23 ft
Q= 5.16 cfs

SPILLWAY-"2"
Weir coefficient, C=3.1
lenth of opening , L=0.5'
Post development Q100 = 5.55CFS
Bottom of Pond = 682.20
Spillway Emergency WSE = 683.77'
L(ft)= 0.5 ft
H(ft)= 2.23 ft
Q= 5.16 cfs

Total Q= 10.32 cfs > 5.55cfs (OK)

DETENTION POND OUTFLOW SUMMARY

YEAR	Q ALLOWABLE	Q RELEASE
2YEAR	1.34 CFS	1.34 CFS
10YEAR	1.89 CFS	1.80 CFS
100YEAR	2.71 CFS	2.69 CFS

DETENTION POND

Stage	Elevation	Contour Area	Incremental Storage	Total Storage
(ft)	(ft)	(sqft)	(cuft)	(cuft)
0.00	682.20	0	0.000	0.000
0.80	683.00	2,513	1,005	1,005
1.80	684.00	3,064	2,789	3,794
2.80	685.00	3,670	3,367	7,162
3.80	686.00	3,781	3,725	10,887

2 YR WATER SURFACE ELEVATION OF POND

	x	y	REQUIRED VOL
683.21	683	1005	1,592
	684	3794	

2-year Storm Event
a) The required storage for 2-year is 1,592 CF.
b) Interpolate the water surface elevation, 683.21 ft
b) Using Weir Equation. Q=CLH^3/2
Allowable discharge, Q=1.34cfs
Orifice coefficient, C=0.6
Opening A-1
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 0.86 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.67 cfs

Opening A-2
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 0.86 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.67 cfs

Total Q= 1.34 cfs < 1.34cfs (OK)

100 YR WATER SURFACE ELEVATION OF POND

	x	y	REQUIRED VOL
683.77	683	1005	3,160
	684	3794	

100-year Storm Event
a) The required storage for 100-year is 3,160 CF.
b) Interpolate the water surface elevation, 683.77 ft
c) Sizing discharger regulator, orifice. Q=CAsqr(2gh)
Allowable discharge, Q=2.71cfs
Orifice coefficient, C=0.6
Opening A-1
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 1.42 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.86 cfs

Opening A-2
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 1.42 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.86 cfs

Opening B-1
Opening Elev.(ft)= 683.21 ft
h (ft)= 0.36 ft
L(ft)= 0.42 ft
H(ft)= 0.4 ft
Q= 0.49 cfs

Opening B-2
Opening Elev.(ft)= 683.21 ft
h (ft)= 0.36 ft
L(ft)= 0.42 ft
H(ft)= 0.4 ft
Q= 0.49 cfs

Total Q= 2.69 cfs<2.71 cfs (OK)

DETENTION CALCUALTIONS-10YR

ALLOWABLE RELEASE RATE EQUAL TO THE 10-YEAR PEAK RUNOFF RATE PRIOR TO SITE DEVELOPMENT
WHEN C=0.45, I=5.48 @ Tc=15 MINS
TOTAL SITE AREA:0.471 ACRES
ALLOWABLE RUNOFF FROM SITE: (0.45 x5.48 x 0.471+1.12(XOS-1+XOS-2) =2.28 CFS
ALLOWABLE RELEASE FROM STORAGE AREA: (2.28 CFS - 0.39CFS BYPASS FLOW) 1.89
AREA FLOW TO THE DETENTION POND: 0.784 ACRES

STORM DURATION DATA & DETENTION POND SYSTEM CALCULATION :

TIME	C	I10	TOTAL AREA	Q	INFLOW	OUTFLOW	STORAGE
(Min)	Full Dev.	(10-Year)	(Acres)	(CFS)	(CF)	(CF)	(CF)
10	0.80	6.62	0.784	4.15	2,491	1,134	1,357
20	0.80	4.92	0.784	3.09	3,703	1,701	2,002
30	0.80	3.80	0.784	2.38	4,290	2,268	2,022
40	**0.80**	**3.36**	**0.784**	**2.11**	**5,062**	**2,835**	**2,227**
50	0.80	2.93	0.784	1.84	5,506	3,402	2,104
60	0.80	2.49	0.784	1.56	5,622	3,969	1,653
70	0.80	2.34	0.784	1.47	6,154	4,536	1,618
80	0.80	2.18	0.784	1.37	6,572	5,103	1,469
90	0.80	2.03	0.784	1.27	6,875	5,670	1,205
100	0.80	1.88	0.784	1.18	7,060	6,237	823

REQUIRED STORAGE VOLUME = INFLOW - OUTFLOW
INFLOW = STORM DURATION x RESPECTIVE PEAK DISCHARGE x 60 SEC./MIN.
OUTFLOW = HALF OF THE RESPECTIVE INFLOW DURATION x CONTROL RELEASE DISCHARGE x 60 SEC./MIN.

10 YEAR STORM EVENT @ 40 MIN.
INFLOW =40 x 0.80 x3.36x 0.784x 60 =5,062
OUTFLOW = 0.5 x 50x1.89x 60 = 2,835

REQUIRED DETENTION SYSTEM STORAGE CAPACITY = INFLOW - OUTFLOW = 5,062-2,835 CF =2,227 CF
PROPOSED DETENTION STORAGE VOLUME = 10,887 CF

10 YR WATER SURFACE ELEVATION OF POND

	x	y	REQUIRED VOL
683.44	683	1005	2,227
	684	3794	

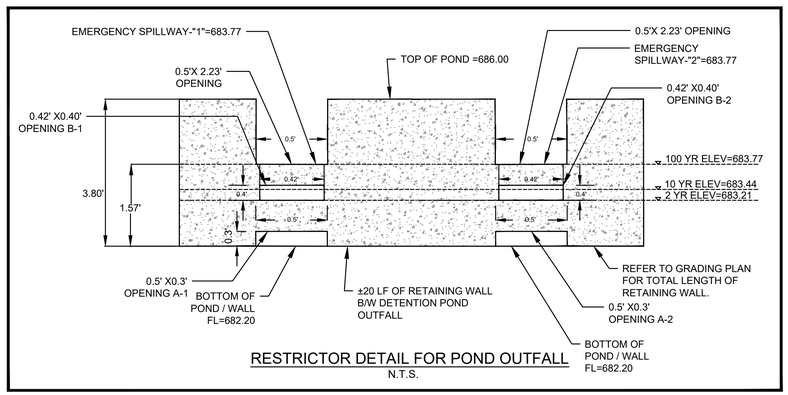
10-year Storm Event
a) The required storage for 10-year is 2,227 CF.
b) Interpolate the water surface elevation, 683.44ft
C) Using Weir Equation. Q=CLH^3/2
Allowable discharge, Q=1.89cfs
Orifice coefficient, C=0.6
Opening A-1
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 1.09 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.75 cfs

Opening A-2
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 1.09 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.75 cfs

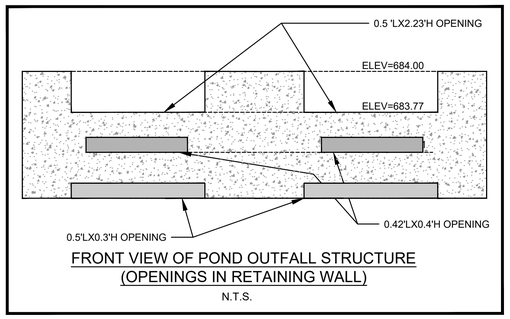
Opening B-1
Weir coefficient, C=3.1
Opening Elev.(ft)= 683.21 ft
L(ft)= 0.42 ft
H(ft)= 0.23 ft
Q= 0.14 cfs

Opening B-2
Weir coefficient, C=3.1
Opening Elev.(ft)= 683.21 ft
L(ft)= 0.42 ft
H(ft)= 0.23 ft
Q= 0.14 cfs

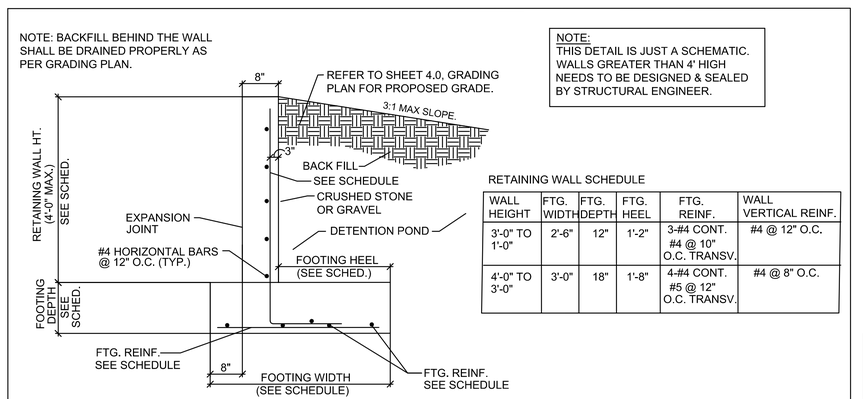
Total Q= 1.80 cfs<1.89 cfs(OK)



RESTRICTOR DETAIL FOR POND OUTFALL
N.T.S.



FRONT VIEW OF POND OUTFALL STRUCTURE (OPENINGS IN RETAINING WALL)
N.T.S.



NOTE:
THIS DETAIL IS JUST A SCHEMATIC. WALLS GREATER THAN 4' HIGH NEEDS TO BE DESIGNED & SEALED BY STRUCTURAL ENGINEER.

RETAINING WALL SCHEDULE

WALL HEIGHT	FTG. WIDTH	FTG. DEPTH	FTG. HEEL	FTG. REINF.	WALL VERTICAL REINF.
3'-0" TO 1'-0"	2'-6"	12"	1'-2"	3-#4 CONT. #4 @ 10" O.C. TRANSV.	#4 @ 12" O.C.
4'-0" TO 3'-0"	3'-0"	18"	1'-8"	4-#4 CONT. #5 @ 12" O.C. TRANSV.	#4 @ 8" O.C.

CONCRETE RETAINING WALL DETAIL FOR DETENTION POND
N.T.S.

Know what's **below.** **Call** before you dig.

NO.	DATE	DESCRIPTION	BY
1	04–11–25	1st CITY SUBMITTAL	KP
2	09–17–25	2st CITY SUBMITTAL	KP
3	11–12–25	3rd CITY SUBMITTAL	IA
4	01–08–26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS — KARTAVYA S. PATEL — 97534 — LICENSED PROFESSIONAL ENGINEER
01–08–26

PRELIMINARY DETENTION CALCULATION

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
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Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-6.1

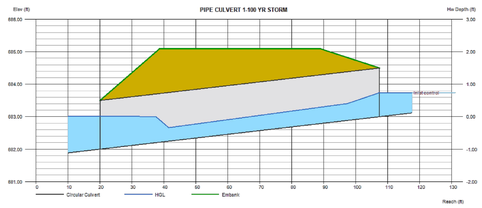
TX. P.E. FIRM #11525

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Apr 10 2025

PIPE CULVERT 1-100 YR STORM

Invert Elev Dn (ft)	= 682.00	**Calculations**	
Pipe Length (ft)	= 87.43	Qmin (cfs)	= 2.04
Slope (%)	= 1.14	Qmax (cfs)	= 11.50
Invert Elev Up (ft)	= 683.00	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 18.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 18.0	Qtotal (cfs)	= 2.04
No. Barrels	= 1	Qpipe (cfs)	= 2.04
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 1.60
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.58
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 683.02
		HGL Up (ft)	= 683.54
Embankment		Hw Elev (ft)	= 683.74
Top Elevation (ft)	= 685.10	Hw/D (ft)	= 0.49
Top Width (ft)	= 50.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 25.61		

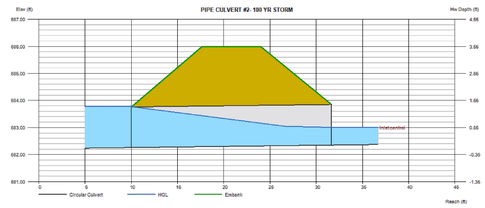


Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Apr 10 2025

PIPE CULVERT #2- 100 YR STORM

Invert Elev Dn (ft)	= 682.26	**Calculations**	
Pipe Length (ft)	= 21.65	Qmin (cfs)	= 1.61
Slope (%)	= 0.42	Qmax (cfs)	= 2.00
Invert Elev Up (ft)	= 682.35	Tailwater Elev (ft)	= 683.77
Rise (in)	= 18.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 18.0	Qtotal (cfs)	= 1.61
No. Barrels	= 1	Qpipe (cfs)	= 1.61
n-Value	= 0.013	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 0.91
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.34
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 683.77
		HGL Up (ft)	= 682.83
Embankment		Hw Elev (ft)	= 683.00
Top Elevation (ft)	= 686.00	Hw/D (ft)	= 0.44
Top Width (ft)	= 6.30	Flow Regime	= Inlet Control
Crest Width (ft)	= 10.90		

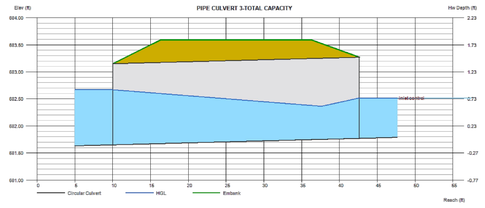


Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Apr 10 2025

PIPE CULVERT 3-TOTAL CAPACITY

Invert Elev Dn (ft)	= 681.65	**Calculations**	
Pipe Length (ft)	= 32.63	Qmin (cfs)	= 2.04
Slope (%)	= 0.37	Qmax (cfs)	= 15.00
Invert Elev Up (ft)	= 681.77	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 18.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 18.0	Qtotal (cfs)	= 2.04
No. Barrels	= 1	Qpipe (cfs)	= 2.04
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 1.60
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.58
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 682.67
		HGL Up (ft)	= 682.31
Embankment		Hw Elev (ft)	= 682.52
Top Elevation (ft)	= 683.59	Hw/D (ft)	= 0.50
Top Width (ft)	= 20.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 15.00		

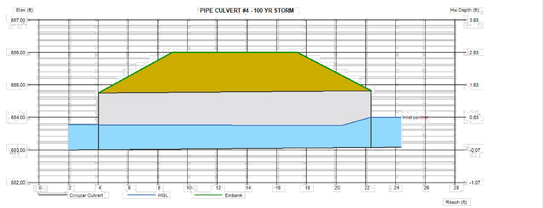


Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jun 11 2025

PIPE CULVERT #4 - 100 YR STORM

Invert Elev Dn (ft)	= 683.00	**Calculations**	
Pipe Length (ft)	= 18.36	Qmin (cfs)	= 3.38
Slope (%)	= 0.38	Qmax (cfs)	= 4.00
Invert Elev Up (ft)	= 683.07	Tailwater Elev (ft)	= 683.77
Rise (in)	= 21.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 21.0	Qtotal (cfs)	= 3.38
No. Barrels	= 1	Qpipe (cfs)	= 3.38
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 3.32
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.97
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 683.77
		HGL Up (ft)	= 683.74
Embankment		Hw Elev (ft)	= 684.00
Top Elevation (ft)	= 686.00	Hw/D (ft)	= 0.53
Top Width (ft)	= 8.44	Flow Regime	= Inlet Control
Crest Width (ft)	= 9.10		



Know what's **below.**
Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04–11–25	1st CITY SUBMITTAL	KP
2	09–17–25	2st CITY SUBMITTAL	KP
3	11–12–25	3rd CITY SUBMITTAL	IA
4	01–08–26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01–08–26

PIPE CULVERT CAPACITY CALCS

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

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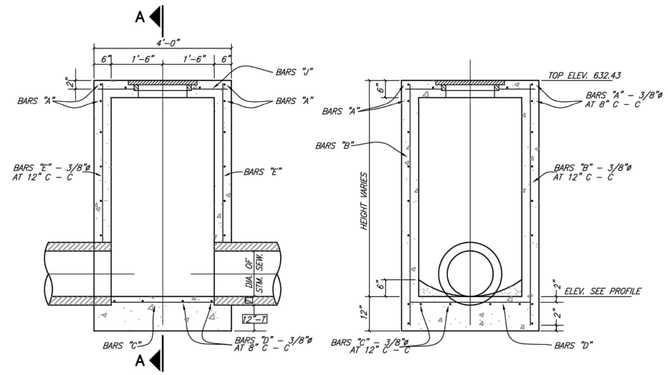
TX. P.E. FIRM #11525



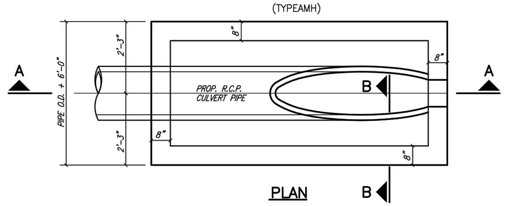
ELEVATION

SECTION A–A

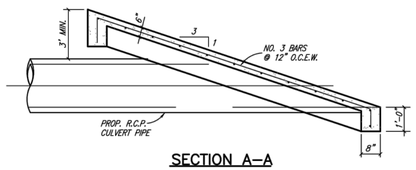
STORM SEWER TYPE A MANHOLE

MAX. PIPE SIZE 30"

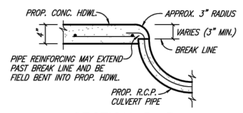
(TYPEAMH)



PLAN

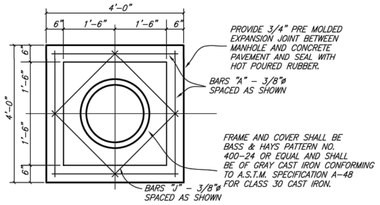


SECTION A–A



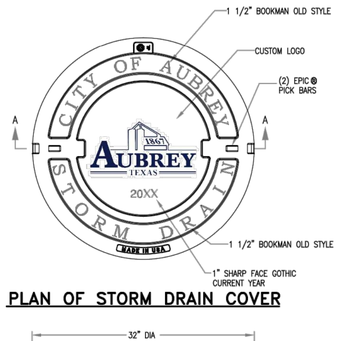
SECTION B–B

SLOPED CONCRETE HEADWALL

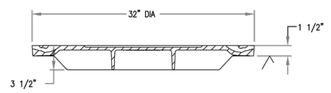


TOP PLAN
TYPE A & TYPE B
STORM SEWER MANHOLE

(MH_TOP)



PLAN OF STORM DRAIN COVER

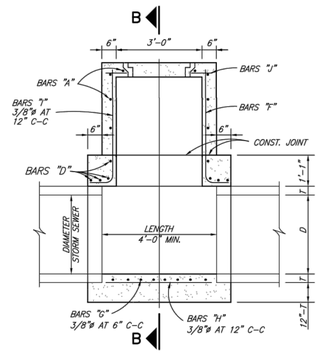


SECTION A–A OF COVER

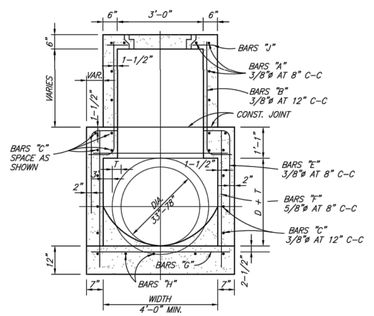
STORM DRAIN INLET COVER

BASS & HAYS COVER, PART# VRM30-LID9B OR EJ 1408A1 COVER,
BASS & HAYS FRAME, PART# VRM30 RING

(MH-COV5)



ELEVATION

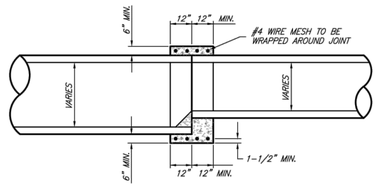


SECTION B–B

TYPE B STORM SEWER MANHOLE

MAX. PIPE SIZE 78"

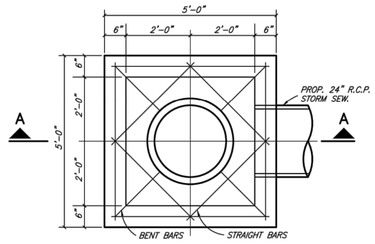
(TYPEBMH)



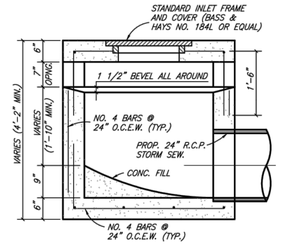
DETAIL OF CONCRETE COLLAR
FOR R.C.P. OR R.C.A.P. CONNECTIONS

INSIDE JOINT SHALL BE CONCRETE MORTAR

(CONCCOL)



PLAN



SECTION A–A

STANDARD DROP INLET

	AUBREY 1867 TEXAS				**CITY OF AUBREY, TEXAS** **STANDARD CONSTRUCTION DETAILS** **STORM SEWER / INLET / DETAILS**	AUGUST, 2024	SHEET NO. 15

REVISED: 8/19/24 – NPandey | H:\Projects\Aubrey\4000\360-Standard Construction Details\Standard Details 2.0\Aubrey-15.dwg | PLOT SCALE: 1:2 | PLOT STYLE: 11x17.ctb | PLOTTED BY: Nabin Pandey ON 8/19/2024

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1	04-11-25	1st CITY SUBMITTAL	KP
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3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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.	.	.	.

STATE OF TEXAS · KARTAVYA S. PATEL · 97534 · LICENSED PROFESSIONAL ENGINEER · 01-08-26

STORM SEWER DETAILS

OFFICE

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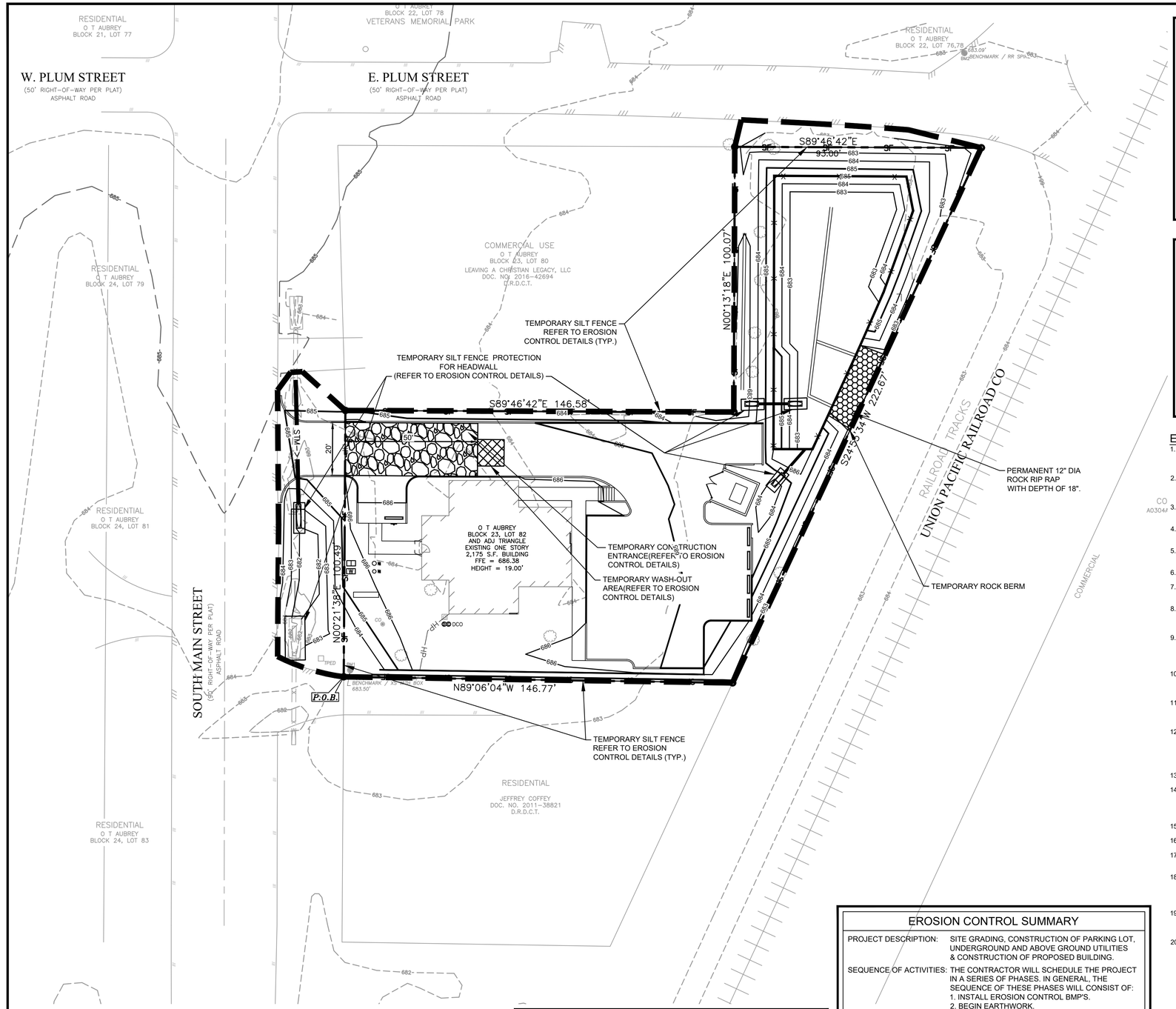
TX. P.E. FIRM #11525



EXISTING LEGEND

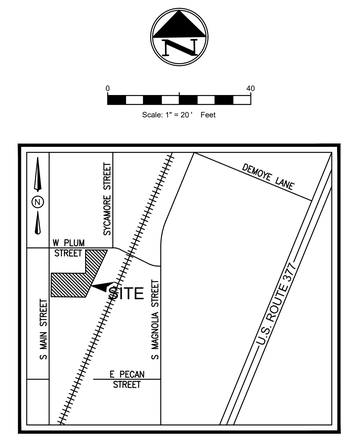
	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
			STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

EROSION CONTROL LEGEND

TEMPORARY CONSTRUCTION ENTRANCE	
TEMPORARY CONCRETE WASHOUT AREA	
RIP RAP	
TEMPORARY SILT FENCE	SF SF
TEMPORARY COMPOST FILTER SOCK	FS FS
HIGH POINT	HP HP HP HP
LIMITS OF DISTURBANCE	
TEMPORARY INLET PROTECTION	
ROCK BERM	

EROSION CONTROL GENERAL NOTES

1. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN AND THE STATE OF TEXAS NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES AND BECOME FAMILIAR WITH THEIR CONTENTS.
2. THE TEMPORARY PARKING AND STORAGE AREA SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AREA, EQUIPMENT CLEANING AREA, EMPLOYEE BREAK AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES. THE EXACT LOCATIONS SHALL BE COORDINATED WITH THE OWNERS CONSTRUCTION MANAGER.
3. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DISPOSED OF IN A MANNER THAT PREVENTS CONTACT BETWEEN THESE MATERIALS AND STORM WATER THAT IS DISCHARGED FROM THE SITE.
4. MAINTAIN ON THE SITE OR HAVE READILY AVAILABLE SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
5. DUST ON THE SITE SHALL BE CONTROLLED BY SPRAYING WATER ON DRY AREAS OF THE SITE. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
6. NO RUBBISH, TRASH, GARBAGE, OR OTHER SUCH MATERIALS SHALL BE DISCHARGED INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
7. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
8. NEW OR AFFECTED CUT OR FILLED SLOPES MUST BE AT AN ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER, AND MUST BE PROVIDED WITH A GROUND COVER SUFFICIENT TO RETAIN EROSION WITHIN 21 CALENDAR DAYS OF COMPLETION OF ANY PHASE (ROUGH OR FINAL) OF GRADING
9. EROSION CONTROL AND STABILIZATION MEASURES MUST BE INITIATED IMMEDIATELY IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. STABILIZATION MEASURES THAT PROVIDE A PROTECTIVE COVER MUST BE INITIATED IMMEDIATELY IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED.
10. THE CONTRACTOR SHALL VERIFY WATER RESTRICTIONS WITHIN THE CITY OF MCKINNEY AT TIME OF PLANTING. SHOULD WATER RESTRICTIONS NOT ALLOW HYDROMULCH, HYDROSEEDING, SPRIGGING (STAGE 3 AND STAGE 4 WATER RESTRICTIONS), OR AN APPROVED ALTERNATIVE FOR GRASSING SHALL BE INSTALLED.
11. A PERMANENT GROUND COVER, SUFFICIENT TO RESTRAIN EROSION, MUST BE PROVIDED WITHIN THE SHORTER OF 15 WORKING OR 90 CALENDAR DAYS (IF IN A HIGH QUALITY ZONE, THE SHORTER OF 15 WORKING OR 60 CALENDAR DAYS) AFTER COMPLETION OF CONSTRUCTION OR DEVELOPMENT ON ANY PORTION OF THE TRACT.
12. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCES IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT OR MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE. THE EXACT LOCATIONS SHALL BE COORDINATED WITH THE OWNERS CONSTRUCTION MANAGER.
13. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
14. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT IN THE DETENTION POND AFTER THE STABILIZATION OF THE SITE AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS. CONTRACTORS OR SUBCONTRACTORS WILL ALSO BE RESPONSIBLE TO CLEAN THE SWALE FROM ANY SEDIMENT IF NECESSARY.
15. IF SOIL STOCKPILING IS EMPLOYED ON THE SITE, SILT FENCES SHALL BE USED TO HELP CONTAIN THE SEDIMENT.
16. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
17. SEDIMENT BASINS ARE ATTRACTIVE TO CHILDREN AND CAN BE VERY DANGEROUS. IN ALL CASES, LOCAL ORDINANCES AND REGULATIONS REGARDING HEALTH AND SAFETY MUST BE ADHERED TO.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE DISPOSED OF WITHIN 30 DAYS AFTER FINAL STABILIZATION. FINAL STABILIZATION HAS OCCURRED WHEN ALL SOIL DISTURBING ACTIVITIES ARE COMPLETED AND A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% OF THE COVER FOR UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES HAS BEEN EMPLOYED.
19. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, SILT DIKES, ETC.) TO HELP PREVENT EROSION AND STORM WATER POLLUTION.
20. ALL OFF-SITE CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY, THIS INCLUDES BACKFILLING OF TRENCHES FOR STORM DRAINS & UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.



VICINITY MAP
N.T.S.

EROSION CONTROL GENERAL NOTES

1. EVERY SOIL DISTURBING ACTIVITY SHALL HAVE AN ACCOMPANYING EROSION CONTROL PLAN.
2. THE STORM WATER POLLUTION PREVENTION PLAN (SWP3) SHALL BE READILY AVAILABLE FOR REVIEW BY FEDERAL, STATE, OR LOCAL OFFICIALS.
3. NO SOIL DISTURBING ACTIVITIES WILL OCCUR PRIOR TO THE SWP3 AND ASSOCIATED BEST MANAGEMENT PRACTICES (BMP) BEING FULLY IMPLEMENTED AND THEN INSPECTED.
4. THE CONTRACTOR SHALL COMPLY WITH THE CITY'S STORM WATER ORDINANCE, THE TPDES GENERAL CONSTRUCTION PERMIT TXR150000 AND ANY OTHER STATE AND/OR LOCAL REGULATIONS.
5. THE SITE SHALL BE INSPECTED BY THE CONTRACTOR OR HIS REPRESENTATIVE WEEKLY, AND AFTER ANY MAJOR STORM. ADJUSTMENTS/REPAIRS TO THE EROSION CONTROL MEASURES SHOULD BE MADE AS NEEDED.
6. CONTRACTOR SHALL VEGETATE ALL DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF GRADING ACTIVITIES. FINAL ACCEPTANCE OF A SITE SHALL BE CONTINGENT UPON VEGETATION BEING ESTABLISHED IN ALL DISTURBED AREAS.
7. ADEQUATE MEASURES SHALL BE TAKEN TO PREVENT EROSION. IN THE EVENT THAT SIGNIFICANT EROSION OCCURS AS A RESULT OF CONSTRUCTION THE CONTRACTOR SHALL RESTORE THE ERODED AREA TO ORIGINAL CONDITION OR BETTER.
8. TEMPORARY STONE STABILIZED CONSTRUCTION ENTRANCE SHALL HAVE THE FOLLOWING MINIMUM DIMENSIONS: 24' WIDE X 50' LONG X 6" DEEP. (3"-5" COURSE AGGREGATE). PLACE FILTER FABRIC UNDER STONE.
9. THE CONCRETE WASHOUT AREA IS TO BE USED AS A VEHICLE WASH DOWN AREA FOR DEBRIS AND SOIL REMOVAL PRIOR TO EXITING THE SITE.

BMP MAINTENANCE NOTES

1. ALL MEASURES STATED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURE SHALL BE CHECKED BY A QUALIFIED PERSON IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR THE APPLICABLE PERMIT, WHICHEVER IS MORE STRINGENT, AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:
2. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
3. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.
4. SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF OF THE SILT FENCE.
5. THE VEHICLE TRACKING CONTROL SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRED PERIODIC TOP DRESSING OF THE CONSTRUCTION EXITS AS CONDITIONS DEMAND.
6. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.
7. PRIOR TO LEAVING THE SITE, ALL VEHICLES SHALL BE CLEANED OF DEBRIS. ANY DEBRIS AND/OR SEDIMENT REACHING THE PUBLIC STREET SHALL BE CLEANED IMMEDIATELY BY A METHOD OTHER THAN FLUSHING.

811
Know what's **below.**
Call before you dig.

SURFACE STABILIZATION MEASURES

KEY	PRACTICE	DESCRIPTION	NOTES
M	DISTURBED AREA STABILIZATION(W/ MULCHING ONLY)	Temporary protection for disturbed areas; as an erosion retardant cover when temporary grassing is inapplicable.	Straw (1-2 tons/acre), Wood chips (5-6 tons/acre),, Wood fiber (0.5-1 tons/acre), Bark (35 cy/acre), Corn stalks (4-6 tons / acre), or Nets/Mats/Chemical stabilizers applicable
TS	DISTURBED AREA STABILIZATION(W/ TEMP. SEEDING)	Planting rapid-growing annual grasses, small grains, or legumes to provide initial, temporary cover for erosion control on disturbed areas.	May-Aug.: German millet (40 lbs./ac), Aug.-Dec.: Rye grain (120 lbs./ac), Jan.-May: Mixture of Rye grain (120 lbs./ac) and Kobe lespedeza (50 lbs./ac) 750 (1000 lbs.-for Fall) lbs./ac of 10-10-10 fertilizer
PS	DISTURBED AREA STABILIZATION(W/ PERM. SEEDING)	Controlling runoff and preventing erosion by establishing a perennial vegetative cover with seed.	Mixture of Tall fescue (80 lbs./ac) and Kobe lespedeza (40 lbs./ac) with 1000 lbs./ac of 10-10-10 fertilizer and 4,000 lbs./ac of lime *May-Aug.: Add 10 lbs./ac German millet *Oct.-Feb.: Add 40 lbs./ac Rye grain
SO	DISTURBED AREA STABILIZATION(W/ PERM. SODDING)	Transplanting vegetative sections of plant materials to promptly stabilize areas that are subject to erosion.	Warm Season: Hybrid Bermuda grass, Zaysiagrass, Centipede grass, or St Augustine grass Cool Season: Tall fescue/Kentucky bluegrass
DC	DUST CONTROL	Utilize dust control methods whenever there are offsite impacts, especially periods of drought until final stabilization is reached.	Phasing the project, vegetative cover, Mulch, sprinkling water, spray-on-adhesive, calcium chloride, barriers, etc.

EROSION & SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:
SELECT T = TEMPORARY OR P = PERMANENT
(AS APPLICABLE)

___	MULCHING (HAY OR STRAW)
___	BUFFER ZONES
P	PLANTING
T	SEEDING
P	SODDING
___	PRESERVATION OF NATURAL RESOURCES
___	FLEXIBLE CHANNEL LINER
___	RIGID CHANNEL LINER
___	SOIL RETENTION BLANKET
___	COMPOST MANUFACTURED TOPSOIL
___	EROSION CONTROL BLANKET

EROSION CONTROL SUMMARY

PROJECT DESCRIPTION:	SITE GRADING, CONSTRUCTION OF PARKING LOT, UNDERGROUND AND ABOVE GROUND UTILITIES & CONSTRUCTION OF PROPOSED BUILDING.
SEQUENCE OF ACTIVITIES:	THE CONTRACTOR WILL SCHEDULE THE PROJECT IN A SERIES OF PHASES. IN GENERAL, THE SEQUENCE OF THESE PHASES WILL CONSIST OF: 1. INSTALL EROSION CONTROL BMP'S. 2. BEGIN EARTHWORK. 3. INSTALL WET AND DRY UTILITIES. 4. INSTALL STORM SEWER LINES AND INLETS. 5. BEGIN SITE GRADING. 6. INSTALL CURBS, DRIVEWAY AND PARKING LOT. 7. POUR BUILDING FOUNDATION PAD. 8. BEGIN VERTICAL BUILDING CONSTRUCTION. 9. INSTALL TREES, SHRUBS, ETC. AND RESTORE ALL DISTURBED VEGETATION. 10. REMOVAL OF EXISTING EROSION CONTROL BMP'S & INSTALLATION OF PERMANENT EROSION CONTROL BMP'S.
SOIL DISTURBING ACTIVITIES:	SOIL DISTURBING ACTIVITIES WILL INCLUDE CLEARING & GRUBBING, GRADING, TRENCHING IN PREPARATION FOR INSTALLING UTILITIES, BUILDING PAD, PARKING LOT, EROSION & SEDIMENTATION CONTROLS AND TOPSOIL WORK FOR FINAL PLANTING AND SEEDING.
TOTAL PROJECT AREA:	0.557 ACRES
TOTAL DISTURBED AREA:	0.633 ACRES

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3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

EROSION CONTROL PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
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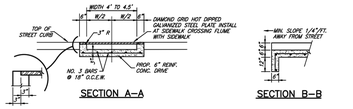
Planning | Civil Engineering | Construction Management

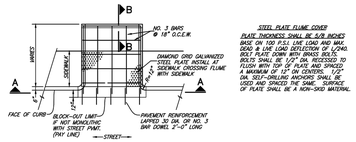
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-7.0

TX. P.E. FIRM #11525



SECTION A–A

SECTION B–B



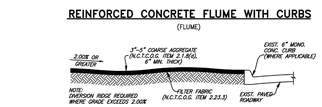
PLAN

REINFORCED CONCRETE FLUME WITH CURBS

(FLUME)

STEEL PLATE FLUME COVER

PLATE THICKNESS SHALL BE 5/8 INCHES BASE ON 100 P.S.I. LIVE LOAD AND MAX. DEAD & LIVE LOAD DEFLECTION OF L/240. BOLT PLATE DOWN WITH BRACKETS. COUNTERSINK BOLT HEADS AS REQUIRED TO FLUSH WITH TOP OF PLATE AND SPACED A MAXIMUM OF 12" ON CENTERS. 1/2" DIA. SELF-DRILLING ANCHORS SHALL BE USED AND SPACED THE SAME. SURFACE OF PLATE SHALL BE A NON-SKID MATERIAL.



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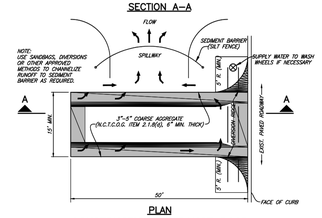
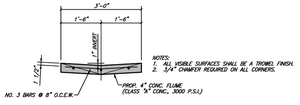


PLAN

CONSTRUCTION ENTRANCE ROAD FOR EROSION CONTROL

NO SCALE

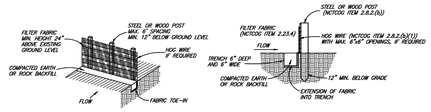
(ENTRANCE)



NOTES:
1. ALL VISIBLE SURFACES SHALL BE A TROWEL FINISH.
2. 3/4" CHAMFER REQUIRED ON ALL CORNERS.

REINFORCED CONCRETE FLUME WITHOUT CURBS

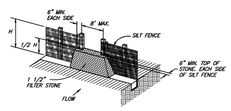
(FLUMESEC)



ISOMETRIC VIEW

SECTION VIEW

SILT FENCE DETAIL



STONE OVERFLOW STRUCTURE

LOCATION AS CALLED FOR IN PLANS

NOTES:

1) THE CONTRACTOR SHALL INSPECT SILT FENCE WEEKLY AND AFTER MAJOR RAIN EVENTS TO ENSURE THAT THE DEVICE IS FUNCTIONING PROPERLY AND MAINTAIN IN ACCORDANCE WITH NCTCOG ITEM 3.5.2.

2) THE CONTRACTOR SHALL REMOVE SEDIMENT FROM BEHIND FENCE WHEN THE DEPTH OF SEDIMENT HAS BUILT UP TO ONE–THIRD THE HEIGHT OF THE FENCE ABOVE GRADE.

3) THE CONTRACTOR SHALL INSPECT THE BASE OF THE FENCE TO ENSURE THAT NO GAPS HAVE DEVELOPED AND RE–TRENCH AS NECESSARY.

4) THE CONTRACTOR SHALL INSPECT FENCE POSTS TO ENSURE THAT THEY ARE PROPERLY SUPPORTING THE FENCE. IF NECESSARY, THE CONTRACTOR SHALL RESET AND ADD POSTS.

5) IF FILTER FABRIC IS RIPPED, DAMAGED OR DETERIORATED, THE CONTRACTOR SHALL REPLACE IT IN ACCORDANCE WITH THE ORIGINAL SPECIFICATIONS AND DETAILS. (MAINTENANCE OF THE SILT FENCE SHALL BE AT THE CONTRACTORS OWN EXPENSE)

EROSION CONTROL

(SILT–DTL)

					CITY OF AUBREY, TEXAS	AUGUST, 2024	SHEET NO. 10
	AUBREY TEXAS				STANDARD CONSTRUCTION DETAILS CONCRETE FLUME / EROSION CONTROL		

REVISED: 4/26/24 – NPondey | H:\Projects\Aubrey\4000\360–Standard Construction Details\Standard Details 2.0\Aubrey–10.dwg | PLOT SCALE: 1:2 | PLOT STYLE: 11x17.ctb | PLOTTED BY: Nabin Pondey ON 8/19/2024

NO.	DATE	DESCRIPTION	BY
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STATE OF TEXAS
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97534
LICENSED PROFESSIONAL ENGINEER
01–08–26

EROSION CONTROL DETAILS

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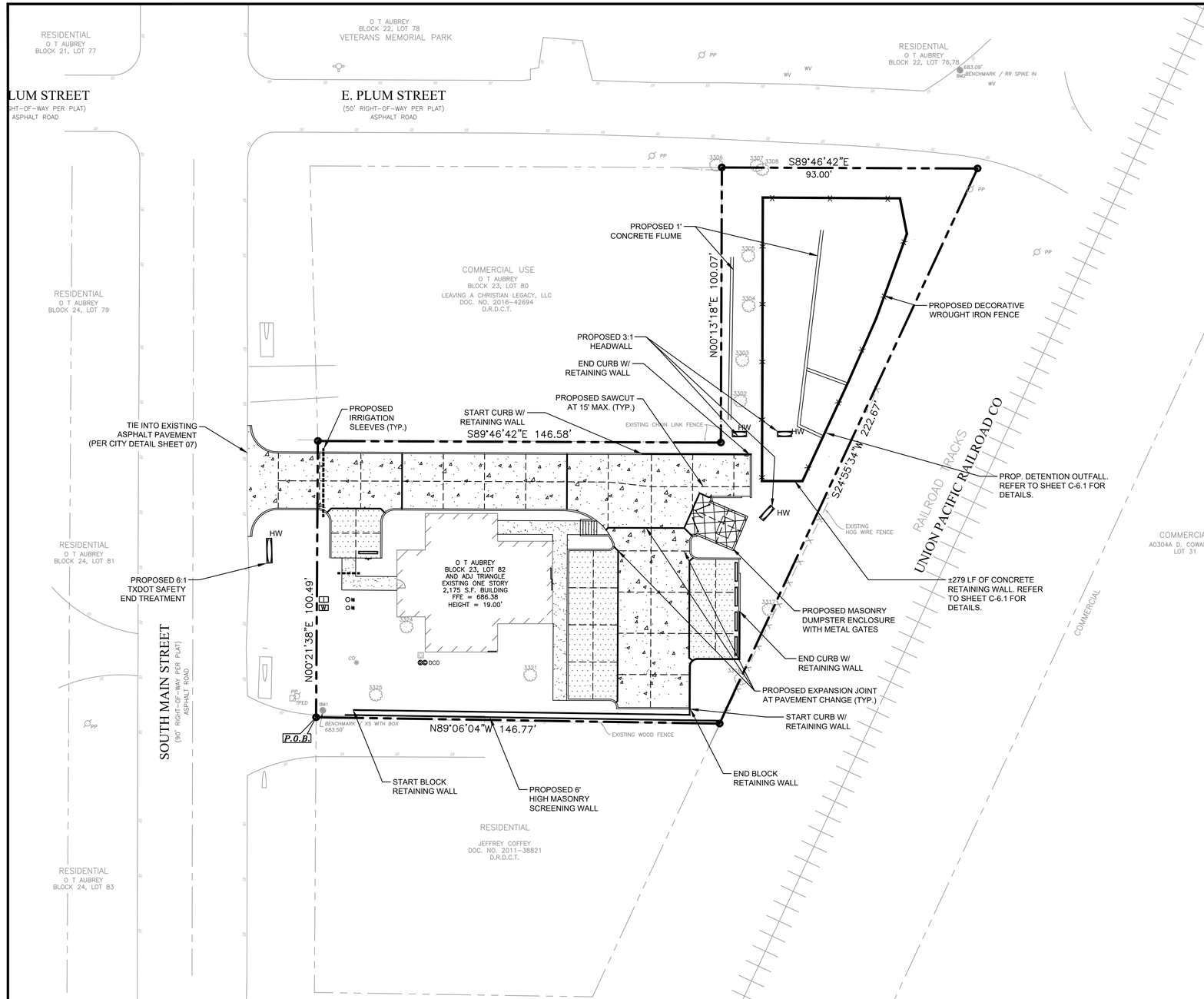
TX. P.E. FIRM #11525



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
W	WATER LINE		"X" CUT SET
SAN	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
OHE	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
SS	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

PAVING LEGEND

EXPANSION JOINT (@ 60' MAX.)

SAWCUT JOINT (@ 15' MAX.)

4" CONCRETE SIDEWALK

5" LIGHT DUTY CONCRETE

6" HEAVY DUTY CONCRETE

7" HEAVY DUTY DUMPSTER CONCRETE

UTILITY STRUCTURE LEGEND

FIRE HYDRANT	
FIRE DEPARTMENT CONNECTION-FDC	
GAS METER	G
GREASE TRAP	GT
LIGHT POLE	
POWER POLE	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	
SANITARY SEWER DOUBLE CLEANOUT	
SANITARY SEWER SAMPLE PORT	
STORM SEWER MANHOLE	D
STORM SEWER CLEANOUT	
TRANSFORMER	T
WATER METER - DOMESTIC	WM
WATER METER - IRRIGATION	WM

PROPOSED RIGID PAVEMENT RECOMMENDATIONS

PROPOSED CONTINUOUSLY REINFORCED RIGID CONCRETE PAVEMENT RECOMMENDATIONS

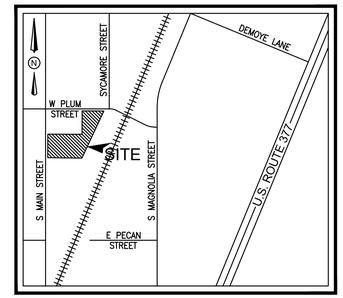
(BAR LAPS SHALL BE 30 DIAMETERS IN LENGTH)

SIDEWALK - PRIVATE 4" THICK CONCRETE PAVEMENT @ 3,000 P.S.I. # 3 REBAR @ 18" O.C. EACH-WAY 6" THICK COMPACTED SUBGRADE	
PARKING AREAS 5" THICK CONCRETE PAVEMENT @ 3,600 P.S.I. # 3 REBAR @ 18" O.C. EACH-WAY 6" THICK COMPACTED & LIME STABILIZED SUBGRADE	
FIRE LANE / DRIVE AISLES 6" THICK CONCRETE PAVEMENT @ 4,000 P.S.I. # 3 REBAR @ 24" O.C. EACH-WAY 6" THICK COMPACTED & LIME STABILIZED SUBGRADE	
DUMPSTER PAD 7" THICK CONCRETE PAVEMENT @ 3,600 P.S.I. # 4 REBAR @ 12" O.C. EACH-WAY 6" THICK COMPACTED & LIME STABILIZED SUBGRADE	

N

0 40

Scale: 1" = 20' Feet



VICINITY MAP

N.T.S.

PAVING GENERAL NOTES

1. STRIP & REMOVE FROM THE CONSTRUCTION AREA ALL TOPSOIL, ORGANICS & VEGETATION TO A MINIMUM DEPTH OF 6 INCHES.
2. CONTROL JOINTS FORMED BY SAWING ARE RECOMMENDED BOTH LONGITUDINAL AND TRANSVERSE DIRECTIONS. CONTROL JOINT SHALL BE SAWED WITHIN 3 HOURS AFTER PLACING CONCRETE. JOINTS SHALL BE PROPERLY CLEANED AND SEALED AS SOON AS POSSIBLE AFTER JOINTS ARE CUT.
3. DRAINAGE SHOULD BE MAINTAINED AWAY FROM THE FOUNDATION, BOTH DURING AND AFTER CONSTRUCTION. WATER SHOULD NOT BE ALLOWED TO POND NEAR THE FOUNDATION. THE FOLLOWING ITEMS SHOULD PROVIDE FOR POSITIVE DRAINAGE OF WATER AWAY FROM THE FOUNDATION: SIDEWALKS AND OTHER CONCRETE FLAT WORK, PARKING AREAS, DRIVEWAYS AND OTHER SURFACE DRAINAGE FEATURES, AND LANDSCAPING.
4. FRENCH DRAINS ARE RECOMMENDED AROUND ANY SLABS WHERE SEEPING GROUND WATER IS ENCOUNTERED DURING CONSTRUCTION.
5. SIDEWALK AROUND THE BUILDING SHALL NOT BE STRUCTURALLY CONNECTED TO THE BUILDING FOUNDATION UNLESS IT'S NOTED ON THE STRUCTURAL PLANS.
6. ALL EXPANSION JOINTS AND CRACK CONTROL JOINTS SHOULD BE SEALED TO PREVENT THE INFILTRATION OF WATER INTO THE SUBSURFACE. THIS IS PARTICULARLY IMPORTANT AROUND IRRIGATED LANDSCAPING AND ALONG THE DRAINAGE PATH OF ROOF DOWNSPOUTS.
7. LANDSCAPE ISLANDS SHOULD BE BACKFILLED WITH LOW PLASTICITY CLAYS TO REDUCE WATER INTRUSION INTO THE SUBSURFACE PAVEMENT STRUCTURES. CURBS SHOULD BE PROVIDED WITH WEEP HOLES IN LANDSCAPE AREAS TO REDUCE THE BUILD UP OF HYDROSTATIC PRESSURE AND TO REDUCE THE INTRUSION OF WATER INTO THE SUBSURFACE MATERIAL.
8. CURB AND GUTTER SHALL CONSIST OF STEEL REINFORCED CONCRETE AND SHALL BE SIX (6") INCHES HIGH, UNLESS OTHERWISE NOTED ON THE SITE/GRADING PLANS.
9. THE CONTRACTOR SHALL PROCEED WITH PAVING NO MORE THAN SEVENTY-TWO (72) HOURS AFTER DENSITY/MOISTURE TESTS HAVE BEEN TAKEN AND PASSED BY A REGULAR TESTING FIRM.
10. MANHOLE RIM ELEVATIONS, CLEAN-OUTS, VALVE BOXES, ETC. SHALL BE ADJUSTED TO FINISHED GRADE BY THE PAVING CONTRACTOR AT THE TIME OF PAVING.
11. SEE IRRIGATION PLAN FOR IRRIGATION SLEEVE PLACEMENT PRIOR TO PAVING CONSTRUCTION.

811 Know what's below. Call before you dig.

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PAVING PLAN

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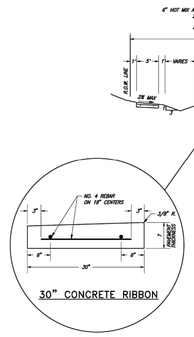
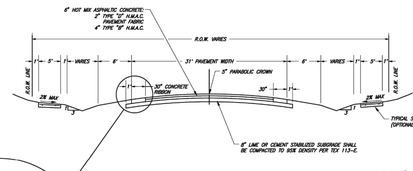
TX. P.E. FIRM #11525

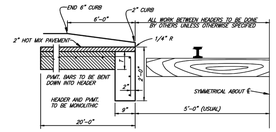


30" CONCRETE RIBBON



31' HMAC PAVEMENT SECTION
ESTATE LOT
TYPICAL CROSS SECTION

NOTES:
1. BAR DITCH SIDE SLOPE VARIES DEPENDING UPON DESIGN, NO GREATER THAN 3:1 WITHOUT ARMORING.
2. CUL DE SAC SHALL HAVE A 7 INCH PARABOLIC CROWN.
3. PAVING AND SUBGRADE ARE MINIMUMS AND SHALL BE VERIFIED BY GEOTECHNICAL RECOMMENDATION.
4. HMAC SECTIONS SHALL ONLY BE USED FOR REPAIR OF EXISTING HMAC STREET. NO PROPOSED STREETS MAY BE HMAC.

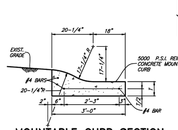


RAIL HEADER
(RR-HEADER)

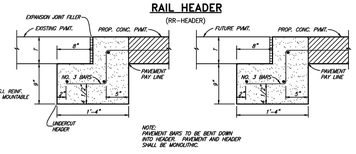
31' HMAC PAVEMENT SECTION
LOCAL STREET
TYPICAL CROSS SECTION

NOTES:
1. FOR 30" GUTTER DETAIL, SEE "SEPARATE CURB & GUTTER" DETAIL.
2. CUL DE SAC SHALL HAVE A 7 INCH PARABOLIC CROWN.
3. PAVING AND SUBGRADE ARE MINIMUMS AND SHALL BE VERIFIED BY GEOTECHNICAL RECOMMENDATION.
4. HMAC SECTIONS SHALL ONLY BE USED FOR REPAIR OF EXISTING HMAC STREET. NO PROPOSED STREETS MAY BE HMAC.

NOTE:
LIME OR CEMENT SUBGRADE DESIGN TO BE RECOMMENDED BY GEOTECHNICAL ENGINEER AND MUST BE APPROVED BY THE PUBLIC WORKS DIRECTOR.

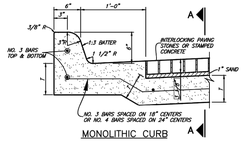


MOUNTABLE CURB SECTION



NOTE:
PAVEMENT BARS TO BE BENT DOWN INTO HEADER. PAVEMENT AND HEADER SHALL BE MONOLITHIC.

STREET HEADER
(HEADER)



MONOLITHIC CURB

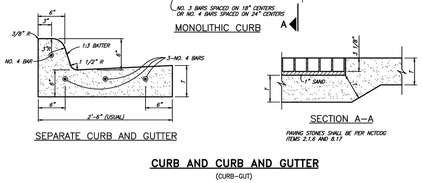
ROADWAY WIDTH (W)	TOTAL CROWN HEIGHT	3/4 POINT	MID-POINT	1/4 POINT
26'	4"	2-1/4"	1"	1/4"
36'	6"	3-3/8"	1-1/2"	3/8"
44'	6"	3-3/8"	1-1/2"	3/8"

TABLE OF CROWN HEIGHTS AND ORDINATES
FOR VARIOUS PARABOLIC SECTIONS

SLIP-FORM PAVEMENT MUST MEET CROWN GRADES AT GUTTERS, AT MID-POINTS & ℄

PARABOLIC ROADS ONLY TO BE CONSTRUCTED WITH SLIP FORM PAVERS

(PARA-TABLE)

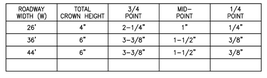


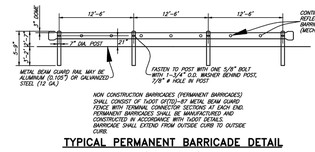
SEPARATE CURB AND GUTTER

SECTION A-A

PAVING STONES SHALL BE PER NCTCOG ITEMS 2.1.6 AND 8.17

CURB AND CURB AND GUTTER
(CURB-GUT)

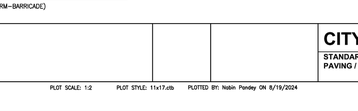


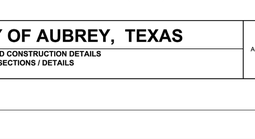


CONTINUOUS 3" ORANGE REFLECTING TAPE ACROSS BARRICADE, ON 4" DIA. REFLECTORS, (MECHANICALLY ATTACHED) ON 3' CENTERS.

NON CONSTRUCTION BARRICADES (PERMANENT BARRICADES) SHALL CONSIST OF TxDOT SPTSD-97 METAL BEAM GUARD FENCE WITH TERMINAL CONNECTOR SECTIONS AT EACH END. TYPE I BARRICADE SHALL BE USED UNLESS OTHERWISE INDICATED ON CONSTRUCTION PLANS. FOR OUTSIDE CURB, BARRICADE SHALL EXTEND FROM OUTSIDE CURB TO OUTSIDE CURB.

TYPICAL PERMANENT BARRICADE DETAIL
(PERM-BARRICADE)





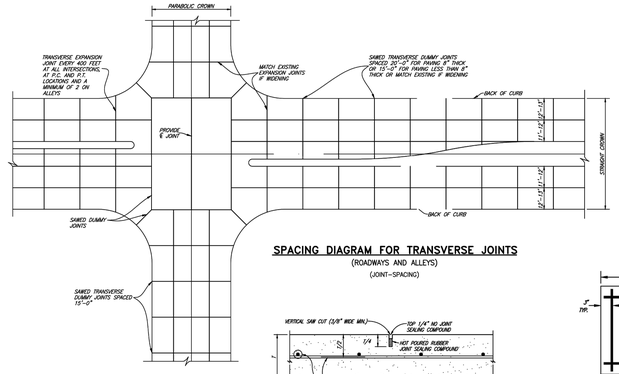
MONOLITHIC CURB

SEPARATE CURB AND GUTTER

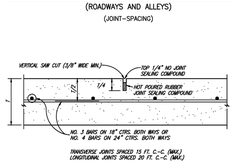
SECTION A-A

PAVING STONES SHALL BE PER NCTCOG ITEMS 2.1.6 AND 8.17

CURB AND CURB AND GUTTER
(CURB-GUT)

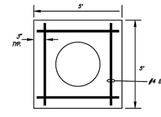


SPACING DIAGRAM FOR TRANSVERSE JOINTS
(ROADWAYS AND ALLEYS)
(JOINT-SPACING)

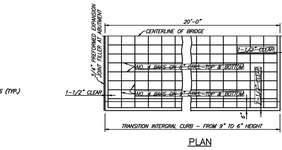


TRANSVERSE JOINTS SPACED 15 FT. C.-C. (MAX.)
LONGITUDINAL JOINTS SPACED 20 FT. C.-C. (MAX.)

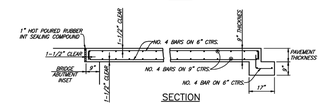
SAWED DUMMY JOINT
(DUMMY-JNT)



MANHOLE PAD PLAN

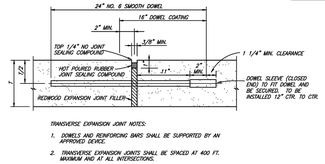


PLAN



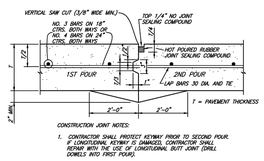
SECTION

BRIDGE APPROACH SLAB
(APPROACHSLAB)



TRANSVERSE EXPANSION JOINT NOTES:
1. DOWELS AND REINFORCING BARS SHALL BE SUPPORTED BY AN APPROVED DEVICE.
2. TRANSVERSE EXPANSION JOINTS SHALL BE SPACED AT 400 FT. MAXIMUM AND AT ALL INTERSECTIONS.

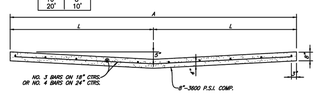
TRANSVERSE EXPANSION JOINT
(EXPJNT)



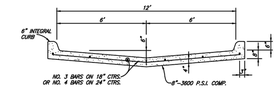
CONSTRUCTION JOINT NOTES:
1. CONTRACTOR SHALL PROTECT KEYWAY PRIOR TO SECOND POUR. IF LONGITUDINAL KEYWAY IS DAMAGED, CONTRACTOR SHALL REPAIR WITH THE USE OF LONGITUDINAL BUTT JOINT (DRILL DOWELS INTO FIRST POUR).
2. THICKENED EDGES ARE REQUIRED FOR FUTURE WIDENING ONLY.

CONSTRUCTION JOINT
(CONSTJNT)

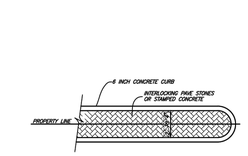
ALLEY WIDTH (A)	HALF WIDTH (L)
12'	6'
16'	8'
20'	10'



STANDARD 12, 16' & 20' ALLEY SECTION
(STDALLEY2)

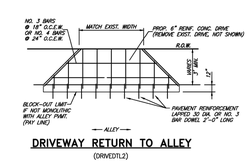


STANDARD ALLEY SECTION WITH CURBS
(STDALLEY)

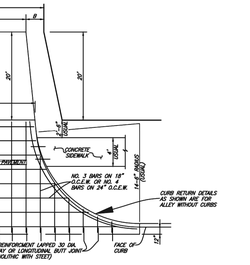


TYPICAL DRIVE OR STREET CONNECTION
TO EXISTING ASPHALT STREET
(DRIVE_CON)

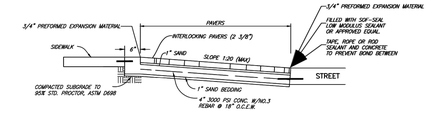
MEDIAN AT DRIVEWAYS SPLIT BY PROPERTY LINE
(DRIVEDTL3)



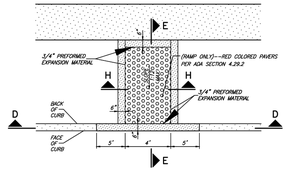
DRIVEWAY RETURN TO ALLEY
(DRIVEDTL2)



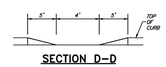
ALLEY RETURN DETAILS
(ALLEY_DTL)



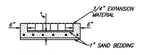
SECTION E-E
(BARRIER_FREE)



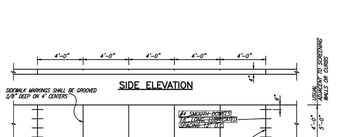
BARRIER FREE RAMP @ STRAIGHT CURB



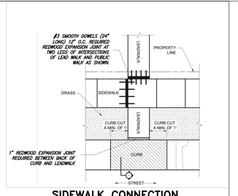
SECTION D-D



SECTION H-H



REINFORCED CONCRETE SIDEWALK
(SIDEWALK)



SIDEWALK CONNECTION

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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.	.	.	.

STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

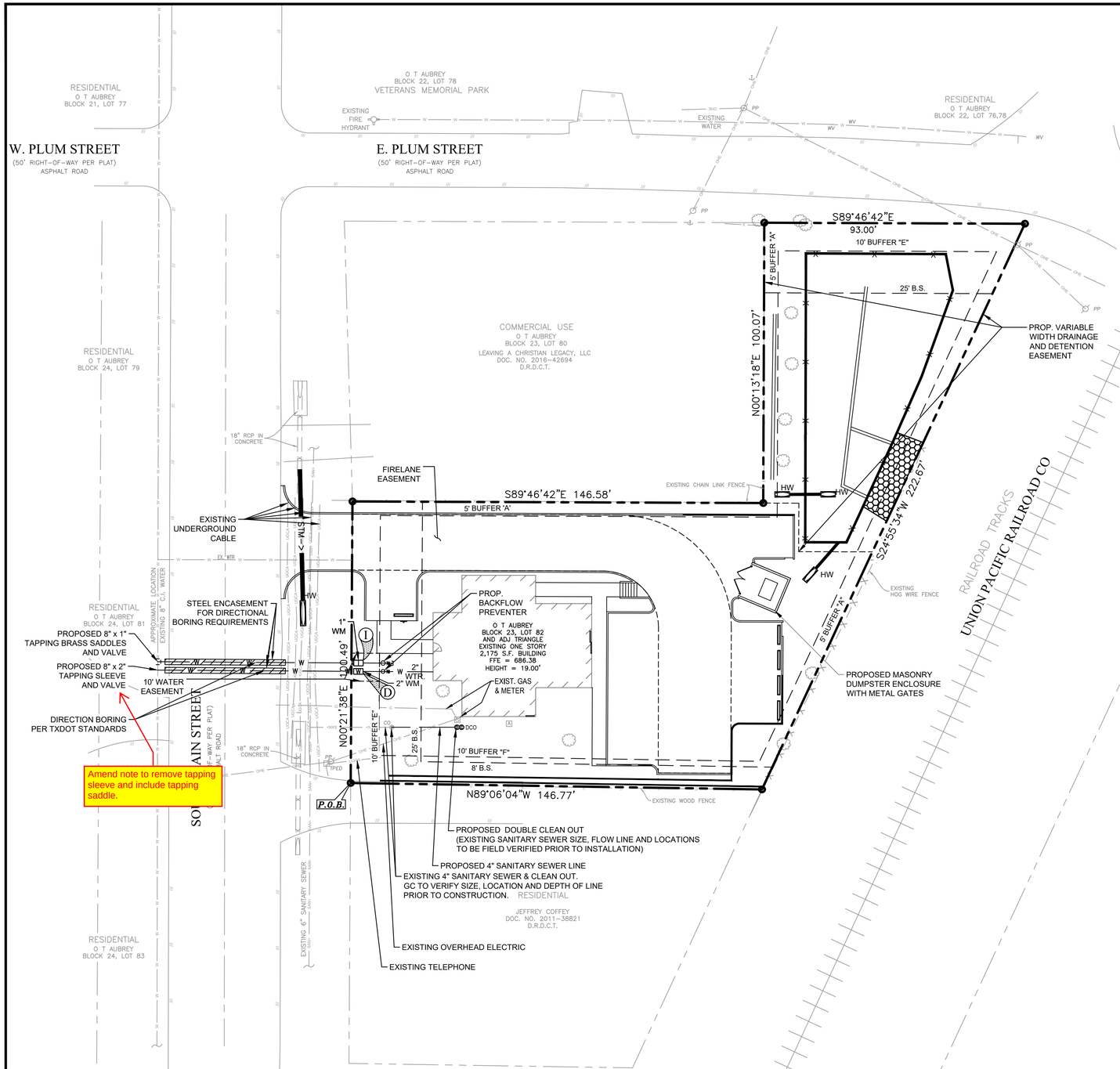
PAVING DETAILS

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-8.1

TX. P.E. FIRM #11525



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN>	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

UTILITY LEGEND

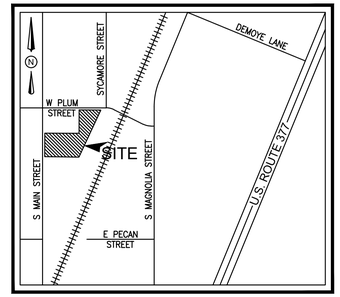
UNDERGROUND TELEPHONE LINE	UGT
UNDERGROUND ELECTRIC LINE	UGE
GAS LINE	G G
SANITARY SEWER LINE	X"SS
WATER MAIN	X"W
DOMESTIC WATER LINE	D D
STORM LINE	STM-->
STORM SEWER MANHOLE	D
STORM SEWER CLEANOUT	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	
SANITARY SEWER DOUBLE CLEANOUT	
SANITARY SEWER SAMPLE PORT	
GREASE TRAP	
DOMESTIC WATER METER	W
IRRIGATION METER	I
GAS METER	G
FIRE HYDRANT	
FIRE DEPARTMENT CONNECTION-FDC	
TRANSFORMER	T
LIGHT POLE	
POWER POLE	

WATER METER & SANITARY SEWER SCHEDULE

ID	TYPE	SIZE	NO.
D	DOMESTIC	1"	1
I	IRRIGATION	1"	1
	SANITARY SEWER	6"	

Plan shows this as a 4" sewer service

Plan shows this as a 2" water service



VICINITY MAP
N.T.S.

UTILITY GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE CITY/UTILITY COMPANY STANDARDS.
2. FIELD VERIFY LOCATION OF EXISTING WATER MAIN , SEWER MAIN, GAS, TELEPHONE AND ELECTRICAL LINE. POT HOLE RECOMMENDED PRIOR TO CONSTRUCTION BEGIN. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH UTILITY SERVICE PROVIDERS.
3. THE LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS IS TAKEN FROM AS-BUILTS, UTILITY PLANS OR SURVEY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ARRANGEMENTS WITH THE OWNERS OF SUCH UNDERGROUND UTILITIES PRIOR TO WORKING IN THE AREA TO CONFIRM THEIR EXACT LOCATION AND TO DETERMINE WHETHER ANY ADDITIONAL UTILITIES OTHER THAN THOSE SHOWN ON THE PLANS MAY BE PRESENT. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL UNDERGROUND UTILITIES. IF EXISTING UNDERGROUND UTILITIES ARE DAMAGED, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COST OF REPAIRING THE UTILITY.
4. WHERE EXISTING UTILITIES OR SERVICE LINES ARE CUT, BROKEN OR DAMAGED, THE CONTRACTOR SHALL REPLACE OR REPAIR THE UTILITIES OR SERVICE LINES WITH THE SAME TYPE OF ORIGINAL MATERIAL AND CONSTRUCTION, OR BETTER, UNLESS OTHERWISE SHOWN OR NOTED ON THE PLANS, AT HIS OWN COST AND EXPENSE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICTS WITH UTILITIES.
5. ALL EXCAVATIONS, TRENCHING AND SHORING OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE U. S. DEPARTMENT OF LABOR, OSHA, CONSTRUCTION SAFETY AND HEALTH REGULATIONS AND ANY AMENDMENTS THERETO.
6. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION TO ORIGINAL CONDITION OR BETTER. RESTORED AREAS INCLUDE, BUT ARE NOT LIMITED TO TRENCH BACKFILL, SIDE SLOPES, FENCES, CULVERT PIPES, DRAINAGE DITCHES, DRIVEWAYS, PRIVATE YARDS AND ROADWAYS.
7. ANY CHANGES NEEDED AFTER CONSTRUCTION PLANS HAVE BEEN RELEASED, SHALL BE APPROVED BY THE CITY ENGINEER. THESE CHANGES MUST BE RECEIVED IN WRITING.
8. THE CONTRACTOR SHALL PROVIDE "RED LINED" MARKED PRINTS TO THE ENGINEER PRIOR TO FINAL INSPECTION INDICATING ALL CONSTRUCTION WHICH DEVIATED FROM THE PLANS OR WAS CONSTRUCTED IN ADDITION TO THAT INDICATED ON THE PLANS.

811 Know what's below. Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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.	.	.	.
.	.	.	.

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
01-08-26

UTILITY PLAN

OFFICE
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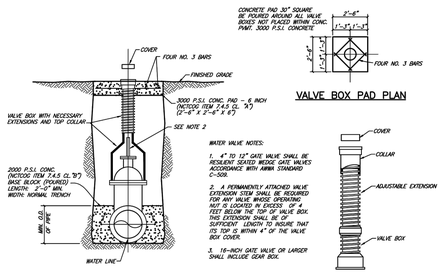
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-9.0

TX. P.E. FIRM #11525

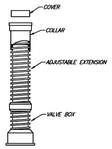


VALVE SETTING & BOX

VALVE BOX PAD PLAN

WATER VALVE NOTES:

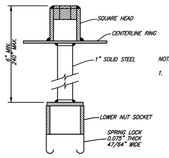
1. 4" TO 12" GATE VALVE SHALL BE RESILIENT SEATED WEDGE GATE VALVES IN ACCORDANCE WITH AWWA STANDARD C-509.
2. A PERMANENTLY ATTACHED VALVE EXTENSION STEM SHALL BE REQUIRED FOR ANY VALVE WHOSE OPERATING NUT IS LOCATED IN EXCESS OF 7 FEET BELOW FINISH GRADE OF VALVE BOX. THE EXTENSION SHALL BE OF SUFFICIENT LENGTH TO INSURE THAT ITS TOP IS WITHIN 4" OF THE VALVE BOX COVER.
3. 16-INCH GATE VALVE OR LARGER SHALL INCLUDE GEAR BOX.



VALVE BOX WITH EXTENSION

GATE VALVE INSTALLATION

(YARDVLV)

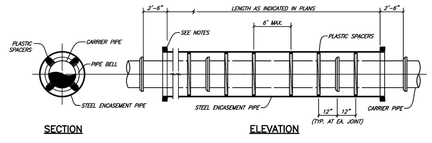


NOTES:

1. EXTENSION SHALL BE PROVIDED FOR VALVE OVER A 3-FOOT WATERLINE DEPTH

SPRING LOCK VALVE EXTENSION

(LOCK)



SECTION

ELEVATION

ENCASED ROAD BORE

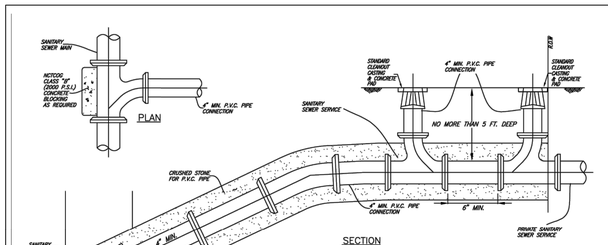
NO SCALE

NOTES:

1) PREFABRICATED PLASTIC SPACERS MUST BE APPROVED BY THE OWNER.
2) CONTRACTOR SHALL PROVIDE SUPPORT UNDER CARRIER PIPE TO HAVE MIN. 1" CLEARANCE BETWEEN PIPE BELL AND ENCASEMENT PIPE.
3) ENDS OF ENCASEMENT PIPE SHALL BE PLUGGED WITH BRICK AND MORTAR FOR ROADWAY CROSSINGS. PLUGS SHALL BE CONSTRUCTED WITH A WEEP HOLE.

	AUBREY TEXAS			**CITY OF AUBREY, TEXAS** **STANDARD CONSTRUCTION DETAILS** **WATER**	AUGUST, 2024 / SHEET NO. **19**

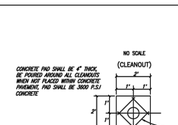
REVISED: 8/19/24 – NPandey | H:\Projects\Aubrey\4000\360-Standard Construction Details\Standard Details 2.0\Aubrey-19.dwg | PLOT SCALE: 1:2 | PLOT STYLE: 11x17.ctb | PLOTTED BY: Nabin Pandey ON 8/19/2024



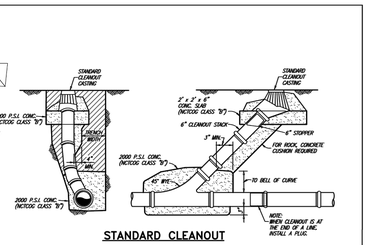
SECTION

REHAB SERVICE CONNECTION

SANITARY SEWER CLEANOUT BOOTS SHALL BE BASS & HAYS # 339 OR APPROVED EQUAL. CLEANOUTS SHALL BE PLACED OUTSIDE OF PAVEMENT. CONCRETE PADS REQUIRED FOR ALL MULTI-FAMILY, COMMERCIAL, AND INDUSTRIAL CLEANOUTS. (HOUSE_SERVICE)



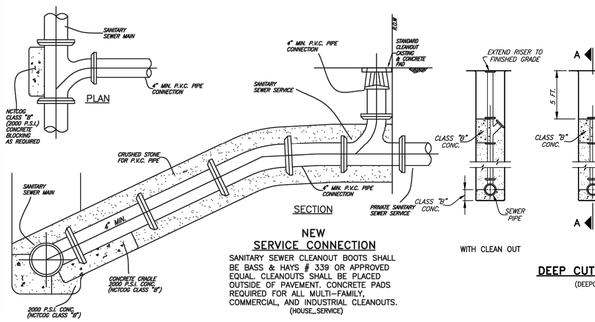
CLEANOUT BOX PAD PLAN



STANDARD CLEANOUT

NO SCALE

(CLEANOUT)

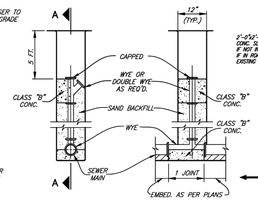


SECTION

NEW SERVICE CONNECTION

SANITARY SEWER CLEANOUT BOOTS SHALL BE BASS & HAYS # 339 OR APPROVED EQUAL. CLEANOUTS SHALL BE PLACED OUTSIDE OF PAVEMENT. CONCRETE PADS REQUIRED FOR ALL MULTI-FAMILY, COMMERCIAL, AND INDUSTRIAL CLEANOUTS. (HOUSE_SERVICE)

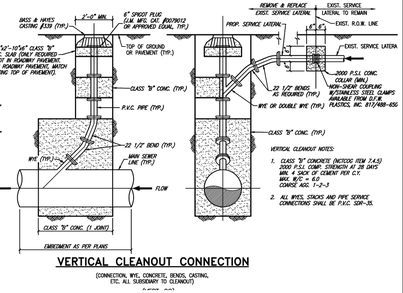
WITH CLEAN OUT



SECTION "A-A"

DEEP CUT CLEANOUT

(DEEPCUT-CO)



VERTICAL CLEANOUT CONNECTION

(CONNECTION, WYE, CONCRETE, BENDS, CASTING, ETC. ALL SUBSIDIARY TO CLEANOUT)

	AUBREY TEXAS			**CITY OF AUBREY, TEXAS** **STANDARD CONSTRUCTION DETAILS** **SANITARY SEWER**	AUGUST, 2024 / SHEET NO. **25**

REVISED: 8/19/24 – NPandey | H:\Projects\Aubrey\4000\360-Standard Construction Details\Standard Details 2.0\Aubrey-25.dwg | PLOT SCALE: 1:2 | PLOT STYLE: 11x17.ctb | PLOTTED BY: Nabin Pandey ON 8/19/2024

UTILITY DETAILS

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

DENTON COUNTY, TEXAS

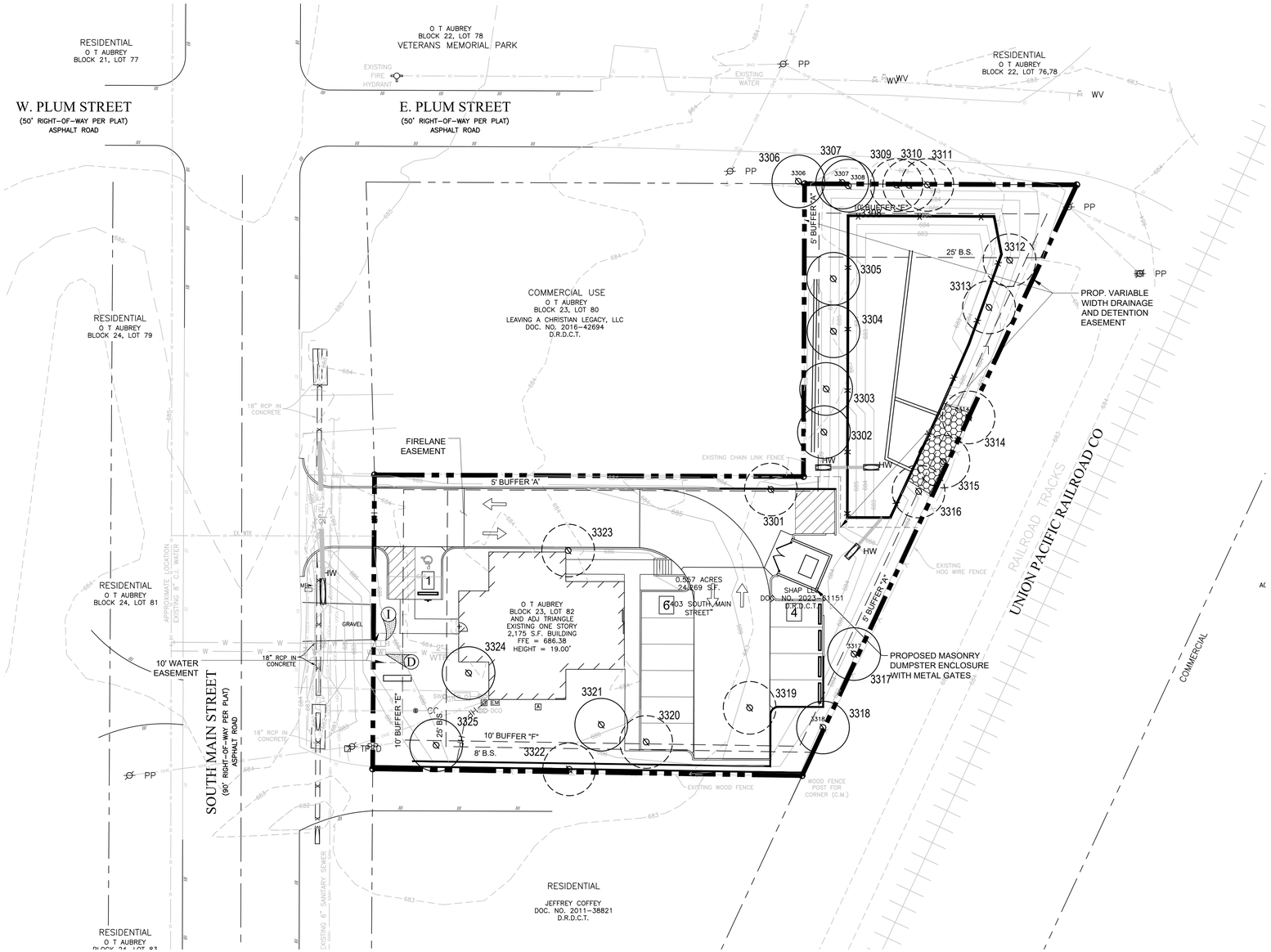
DENNIS COWAN SURVEY, ABSTRACT No. 304

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
.	.	.	.
.	.	.	.
.	.	.	.

STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management
TX. P.E. FIRM #11525

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-9.1



TREE TABLE

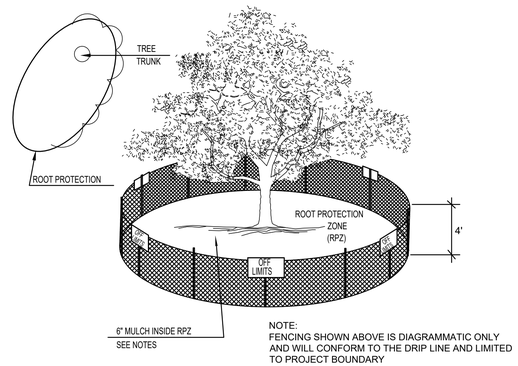
NO.	SIZE	SPECIES	BOTANICAL NAME	STATUS
3301	8 INCH	RED BUD	Cercis canadensis	REMOVE
3302	8 INCH	APRICOT	Prunius armeniaca	REMAIN
3303	14 INCH	CHERRY	Prunius avium	REMAIN
3304	6 INCH	PEACH	Prunius Persica	REMAIN
3305	6 INCH	PLUM	Prunius domestica	REMAIN
3306	16 INCH	HACKBERRY	*Celtis occidentalis*	REMAIN
3307	23 INCH	ELM	*Ulmus crassifolia*	REMAIN
3308	17 INCH	ELM	*Ulmus crassifolia*	REMAIN
3309	16 INCH	ELM	*Ulmus crassifolia*	REMOVE
3310	17 INCH	ELM	*Ulmus crassifolia*	REMOVE
3311	32 INCH	MAPLE	*Acer palmatium*	REMOVE
3312	7 INCH	PEAR	*Genus pyrus*	REMOVE
3313	6 INCH	PEACH	*Prunius persica*	REMOVE
3314	18 INCH	HACKBERRY	*Celtis occidentalis*	REMOVE
3315	18 INCH	ELM	*Ulmus crassifolia*	REMOVE
3316	6 INCH	PEAR	*Genus pyrus*	REMOVE
3317	27 INCH	COTTONWOOD	*Populus deltoides*	REMAIN
3318	19 INCH	ELM	*Ulmus crassifolia*	REMAIN
3319	16 INCH	CYPRUS	*Genus cypressus*	REMOVE
3320	13 INCH	RED BUD	Cercis canadensis	REMOVE
3321	16 INCH	PINE	Pinus	REMAIN
3322	12 INCH	CHINABERRY	Melia azedarach	REMOVE
3323	34 INCH	ELM	*Ulmus crassifolia*	REMOVE
3324	28 INCH	ELM	*Ulmus crassifolia*	REMAIN
3325	8 INCH	CEDAR	Jupierus virginana	REMAIN

EXISTING TREE LEGEND

- EXISTING TREE TO BE PROTECTED
- EXISTING TREE TO BE REMOVED
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.00

EXISTING TREE NOTES

1. *Existing trees to remain shall be protected during construction from tree structure damage and compaction of soil under and around dripline (canopy) of tree.*
2. *If any root structure is damaged during adjacent excavation/construction, notify the Architect immediately. It is recommended that a licensed Arborist be secured for the treatment of any possible tree wounds.*
3. *No disturbance of the soil greater than 4" shall be located closer to the tree trunk than 1/2 the distance of the drip line to the tree trunk. A minimum of 75% of the drip line and root zone shall be preserved at natural grade.*
4. *Any fine grading done within the critical root zones of the protected trees must be done with light machinery such as a bobcat or light tractor. No earth moving equipment with tracks is allowed within the critical root zone of the trees.*
5. *Material Storage: No materials intended for use in construction or waste materials accumulated due to excavation or demolition shall be placed within the limits of the dripline of any tree.*
6. *Equipment Cleaning/Liquid Disposal: No equipment may be cleaned, toxic solutions, or other liquid chemicals shall be deposited within the limits of the dripline of a tree. This would include but not be limited to paint, oil, solvents, asphalt, concrete, mortar, primers, etc.*
7. *Tree Attachments: No signs, wires or other attachments, other than those of a protective nature shall be attached to any tree.*
8. *Vehicular Traffic: No vehicular and construction equipment traffic or parking is allowed within the limits of the dripline of trees.*
9. *Boring of Utilities: May be permitted under protected trees in certain circumstances. The minimum length of the bore shall be the width of the tree's canopy and shall be a minimum depth of forty-eight (48") inches.*
10. *Trenching: Any irrigation trenching which must be done within the critical root zone of a tree shall be dug by hand and enter the area in a radial manner.*
11. *Tree Flagging: All trees to be removed from the site shall be flagged by the Contractor with bright red vinyl tape (3" width) wrapped around the main trunk at a height of four (4') feet above grade. Flagging shall be approved by Landscape Architect prior to any tree removal. Contractor shall contact Landscape Architect with 72 hour notice to schedule on-site meeting.*
12. *Protective Fencing: All trees to remain, as noted on drawings, shall have protective fencing located at the tree's dripline. The protective fencing may be comprised of snow fencing, orange vinyl construction fencing, chain link fence or other similar fencing with a four (4') foot approximate height. The protective fencing will be located as indicated on the Tree Protection Detail(s).*
13. *Bark Protection: In situations where a tree remains in the immediate area of intended construction, the tree shall be protected by enclosing the entire circumference of the tree's trunk with lumber encircled with wire or other means that does not damage the tree. Refer to Tree Protection Detail(s).*
14. *Construction Pruning: In a case where a low hanging limb is broken during the course of construction, the Contractor shall notify the Landscape Architect immediately. In no instance shall the Contractor prune any portion of the damaged tree without the prior approval by the Landscape Architect.*



01 TREE PROTECTION FENCE A
NOT TO SCALE

01 TREE REMOVAL PLAN
SCALE 1"=30'-0"
0 15 30 60

CITY COMMENTS 11.05.2025

LANDSCAPE ARCHITECT
STUDIO GREEN SPOT, INC.
1784 W. McDERMOTT DR.
SUITE 110
ALLEN, TEXAS 75013
(469) 369-4448
CHRIS@STUDIOGREENSPOT.COM

REGISTERED LANDSCAPE ARCHITECT
CHRIS TROWLAND
2042
STATE OF TEXAS
01.08.2026

OFFICE

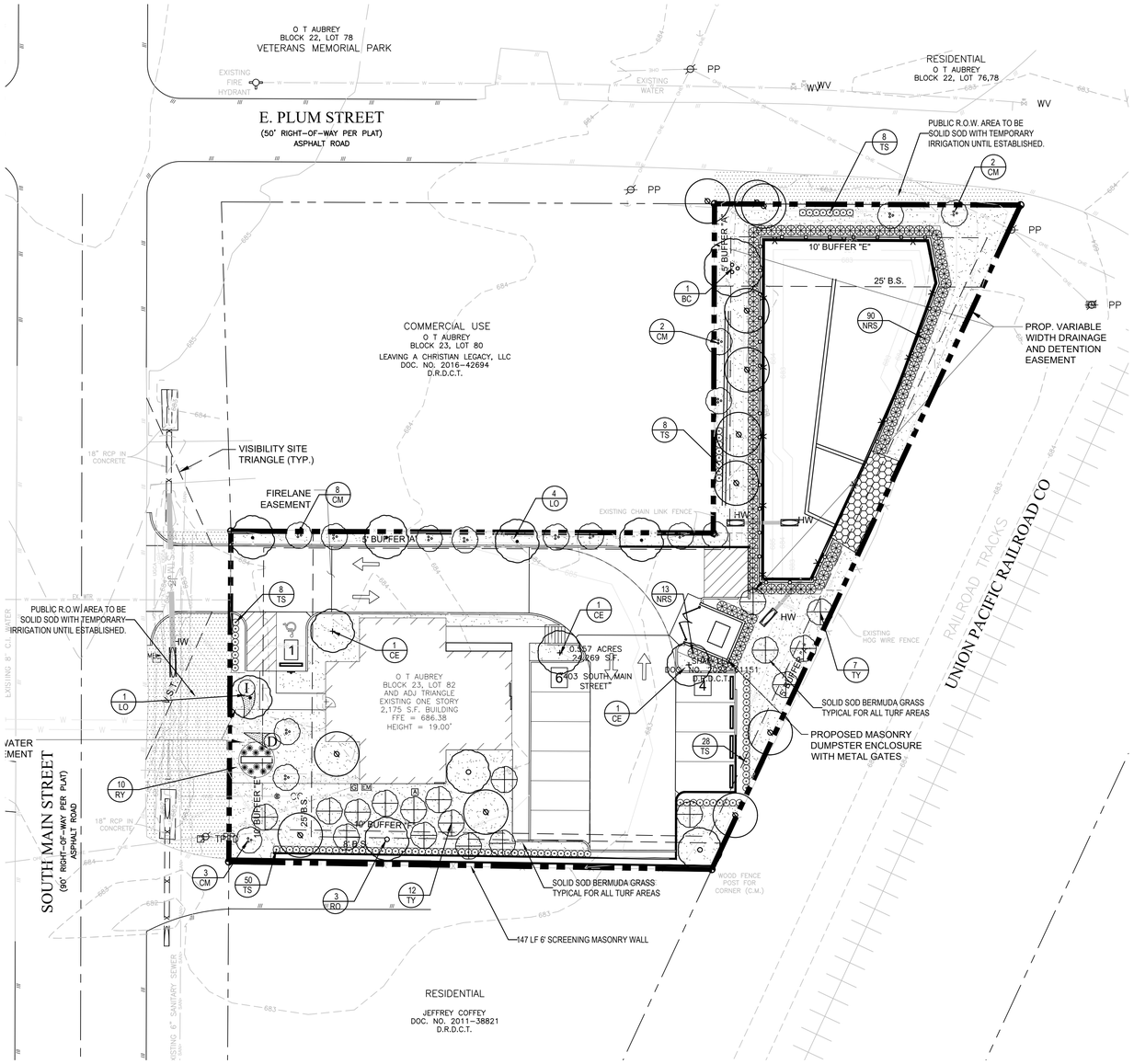
SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
CITY COMMENTS 12.16.2024
CITY COMMENTS 04.22.2025
CITY COMMENTS 06.26.2025
CITY COMMENTS 11.05.2025
CITY COMMENTS 01.05.2026

DATE:
01.05.2026

SHEET NAME:
TREE REMOVAL PLAN

SHEET NUMBER:
L.1



SITE AREA: 24,270 S.F.
LANDSCAPE AREA: 13,762 S.F. (43.3 % OF TOTAL SITE)

BUFFER YARDS:

NORTH - (248 L.F.)
BUFFER TYPE: A
REQUIREMENTS:
5' BUFFER
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(3) canopy trees	(3) canopy trees +
	(2) existing trees to remain
(5) understory tress	(7) understory trees
(20) shrubs	(24) shrubs

RAILROAD - (223 L.F.)
BUFFER TYPE: A
REQUIREMENTS:
5' BUFFER
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(3) canopy trees	(5) existing trees to remain
(5) understory tress	(7) understory trees
(18) shrubs	(33) shrubs

SOUTH - (146 L.F.)
BUFFER TYPE: F
REQUIREMENTS:
10' BUFFER
F2 SCREEN WALL (6' HT.)
PER 100 L.F.
4 CANOPY TREE
8 UNDERSTORY TREES
12 SHRUBS

REQUIRED:	PROVIDED:
(6) canopy trees	(3) canopy trees +
	(3) existing tree to remain
(12) understory tress	(12) understory trees
(24) shrubs	(62) shrubs

E. PLUM ST. - (93 L.F.)
BUFFER TYPE: E
REQUIREMENTS:
10' BUFFER
B1 BERM
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(1) canopy trees	(1) canopy tree+
	(1) exisiting trees
(2) understory trees	(2) understory trees
(8) shrubs	(8) shrubs

S. MAIN ST. - (101 L.F.)
BUFFER TYPE: E
REQUIREMENTS:
10' BUFFER
B1 BERM
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(1) canopy trees	(1) canopy tree+
	(1) exisiting trees
(2) understory trees	(2) understory trees
(8) shrubs	(8) shrubs

30" HT. PARKING LOT SCREEN
PROVIDED

PARKING LOT TREES- 1 TREE PER 10 SPACES- 11 SPACES
REQUIRED: 3 (3" cal. trees) PROVIDED: 3 (3" cal. trees)

DETENTION AREA 252 LF
REQUIRED: 1 CANOPY TREE AT 30 O.C. (9) CANOPY TREES
W/ EVERGREEN SCREENING
IRON FENCE
WALL RETAINING
PROVIDED: (8) CANOPY TREES (3) EXISTING TREES
(89) 3' HT EVERGREEN SCREEN
DECORATIVE IRON FENCE (REFERENCE CIVIL PLANS)
WALL RETAINING (REFERENCE CIVIL PLANS)

GENERAL LAWN NOTES

1. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED ON CIVIL PLANS.
2. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
3. ALL LAWN AREAS TO RECEIVE SOLID SOD SHALL BE LEFT IN A MAXIMUM OF 1" BELOW FINAL FINISH GRADE. CONTRACTOR TO COORDINATE OPERATIONS WITH ON-SITE CONSTRUCTION MANAGER.
4. IMPORTED TOPSOIL SHALL BE NATURAL, FRIABLE SOIL FROM THE REGION, KNOWN AS BOTTOM AND SOIL, FREE FROM LUMPS, CLAY, TOXIC SUBSTANCES, ROOTS, DEBRIS, VEGETATION, STONES, CONTAINING NO SALT AND BLACK TO BROWN IN COLOR.
5. *ALL LAWN AREAS TO BE FINE GRADED, IRRIGATION TRENCHES COMPLETELY SETTLED, AND FINISH GRADE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER OR ARCHITECT PRIOR TO INSTALLATION.*
6. *ALL ROCKS 3/4" DIAMETER AND LARGER, DIRT CLODS, STICKS, CONCRETE SPOILS, ETC. SHALL BE REMOVED PRIOR TO PLACING TOPSOIL AND ANY LAWN INSTALLATION*
7. CONTRACTOR SHALL PROVIDE (1") ONE INCH OF IMPORTED TOPSOIL ON ALL AREAS TO RECEIVE LAWN.

SOLID SOD NOTES

1. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED. LEAVE AREAS TO RECEIVE TOPSOIL 3" BELOW FINAL DESIRED GRADE IN PLANTING AREAS AND 1" BELOW FINAL GRADE IN TURF AREAS.
2. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
3. ALL LAWN AREAS TO RECEIVE SOLID SOD SHALL BE LEFT IN A MAXIMUM OF 1" BELOW FINAL FINISH GRADE. CONTRACTOR TO COORDINATE OPERATIONS WITH ON-SITE CONSTRUCTION MANAGER.
4. CONTRACTOR TO COORDINATE WITH ON-SITE CONSTRUCTION MANAGER FOR AVAILABILITY OF EXISTING TOPSOIL.
5. PLANT SOD BY HAND TO COVER INDICATED AREA COMPLETELY. INSURE EDGES OF SOD ARE TOUCHING. TOP DRESS JOINTS BY HAND WITH TOPSOIL TO FILL VOIDS.
6. ROLL GRASS AREAS TO ACHIEVE A SMOOTH, EVEN SURFACE, FREE FROM UNNATURAL UNDULATIONS.
7. WATER SOD THOROUGHLY AS SOD OPERATION PROGRESSES.
8. CONTRACTOR SHALL MAINTAIN ALL LAWN AREAS UNTIL FINAL ACCEPTANCE. THIS SHALL INCLUDE, BUT NOT LIMITED TO: MOWING, WATERING, WEEDING, CULTIVATING, CLEANING AND REPLACING DEAD OR BARE AREAS TO KEEP PLANTS IN A VIGOROUS, HEALTHY CONDITION.
9. CONTRACTOR SHALL GUARANTEE ESTABLISHMENT OF AN ACCEPTABLE TURF AREA AND SHALL PROVIDE REPLACEMENT FROM LOCAL SUPPLY IF NECESSARY.
10. IF INSTALLATION OCCURS BETWEEN SEPTEMBER 1 AND MARCH 1, ALL SOD AREAS TO BE OVER-SEEDED WITH WINTER RYEGRASS, AT A RATE OF (4) POUNDS PER ONE THOUSAND (1000) SQUARE FEET.

LANDSCAPE NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED SITE ELEMENTS AND NOTIFY ARCHITECT OF ANY DISCREPANCIES. SURVEY DATA OF EXISTING CONDITIONS WAS SUPPLIED BY OTHERS.
2. CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND NOTIFY ARCHITECT OF ANY CONFLICTS. CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF UNDERGROUND UTILITIES.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED LANDSCAPE AND IRRIGATION PERMITS.
4. CONTRACTOR TO PROVIDE A MINIMUM 2% SLOPE AWAY FROM ALL STRUCTURES.
5. ALL PLANTING BEDS AND LAWN AREAS TO BE SEPARATED BY STEEL EDGING. NO STEEL TO BE INSTALLED ADJACENT TO SIDEWALKS OR CURBS.
6. ALL LANDSCAPE AREAS TO BE 100% IRRIGATED WITH AN UNDERGROUND AUTOMATIC IRRIGATION SYSTEM AND SHALL INCLUDE RAIN AND FREEZE SENSORS.
7. ALL LAWN AREAS TO BE SOLID SOD BERMUDAGRASS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

City of Aubrey Chapter 14, Section 23 (G) (b) (xiii) Maintenance Notes

1. General:The owner, tenant and the agent, if any, shall be jointly and severably responsible for the maintenance of all landscaping and irrigation. All required landscaping shall be maintained in a neat and orderly manner at all times. This shall include mowing, edging, pruning, fertilizing, watering, weeding, and other such activities common to the maintenance of landscaping. Landscaped areas shall be kept free of trash, litter, weeds and other such material or plants not a part of the landscaping, all plant materials shall be maintained in a healthy and growing condition as is appropriate for the season of the year. All irrigation heads or lines that are broken and flow water shall be replaced or repaired immediately to prevent the waste of water.
2. Plant Replacement:The owner shall be responsible for replacing all plant materials which shows dead branching over 25 percent or more of the normal branching pattern and repair irrigation system for a period of one year from the date of issuance of the Certificate of Occupancy. Plant materials that die shall be replaced with plant material of similar variety and similar initial size. The Owner shall make such necessary replacements within 30 days of notification by the City.

PLANT MATERIAL SCHEDULE

TREES

TYPE	QTY	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
CE	3	Cedar Elm	*Ulmus crassifolia*	3" cal.	B&B, 13' ht., 5' spread min., 5' clear trunk
LO	5	Live Oak	*Quercus virginiana*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk
RO	3	Red Oak	*Quercus shumardii*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk
CM	16	Crepe Myrtle	*Lagerstoema indica*	2" cal.	container, 8' ht., 4' spread, tree form
TY	18	Tree Yaupon	*Ilex vomitoria*	2" cal.	container, 8' ht., 4' spread, tree form
BC	8	Bald Cypress	*Taxodium distichum*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk

SHRUBS

TYPE	QTY.	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
TS	102	Texas Sage	*Leucophyllum frutescens*	5 gal.	container, 30" ht., 20" spread
RY	10	Red Yucca	*Hersperaloe parvifolia*	3 gal.	container full, 12" spread
NRS	103	Nellie R. Stevens	*Ilex x 'Nellie R. Stevens'*	7 gal.	container, 36" ht., 24" spread

GROUNDCOVERS

TYPE	QTY	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
		'419' Bermudagrass	*Cynodon dactylon '419'*		Solid Sod refer to notes

NOTE: Plant list is an aid to bidders only. Contractor shall verify all quantities on plan. All heights and spreads are minimums. All plant material shall meet or exceed remarks as indicated. All trees to have straight trunks and be matching within varieties.

ALL LANDSCAPE AREAS TO BE IRRIGATED WITH AN AUTOMATIC IRRIGATION SYSTEM

01 LANDSCAPE PLAN
SCALE 1"=20'-0"
0 10 20 40

Studio Green Spot
LANDSCAPE ARCHITECT
STUDIO GREEN SPOT, INC.
1782 W. McDERMOTT DR.
ALLEN, TEXAS 75013
(469) 369-4448
CHRIS@STUDIOGREENSPOT.COM

REGISTERED LANDSCAPE ARCHITECT
CHRISTOPHER TROWLAND
2042
STATE OF TEXAS
01.08.2026

OFFICE

SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
CITY COMMENTS 11.15.2024
CITY COMMENTS 12.16.2024
CITY COMMENTS 01.17.2025
CITY COMMENTS 04.22.2025
CITY COMMENTS 06.26.2025
CITY COMMENTS 11.05.2025
CITY COMMENTS 01.08.2026

DATE:
01.08.2026

SHEET NAME:
LANDSCAPE PLAN

SHEET NUMBER:
L.2

SECTION 02900 - LANDSCAPE

PART 1 - GENERAL

1.1 REFERENCED DOCUMENTS

Refer to bidding requirements, special provisions, and schedules for additional requirements.

1.2 DESCRIPTION OF WORK

Work included: Furnish all supervision, labor, materials, services, equipment and appliances required to complete the work covered in conjunction with the landscaping covered in these specifications and landscaping plans, including:

1. Planting (trees, shrubs, and grass)
2. Bed preparation and fertilization
3. Notification of sources
4. Water and Maintenance until final acceptance
5. Guarantee

1.3 REFERENCE STANDARDS

A. American Standard for Nursery Stock published by American Association of Nurserymen: 27 October 1980, Edition; by American National Standards Institute, Inc. (Z60.1) – plant material.

B. American Joint Committee on Horticultural Nomenclature: 1942 Edition of Standardized Plant Names.

C. Texas Association of Nurserymen, Grades and Standards.

D. Hortis Third, 1976 - Cornell University

1.4 NOTIFICATION OF SOURCES AND SUBMITTALS

A. The Contractor shall, within ten (10) days following acceptance of bid, notify the Architect/Owner of the sources of plant materials and bed preparation required for the project.

B. Samples: Provide representative quantities of sandy loam soil, mulch, bed mix material, gravel, and crushed stone. Samples shall be approved by Architect before use on project.

C. Product Data: Submit complete product data and specifications on all other specified materials.

D. Submit three representative samples of each variety of ornamental trees, shrubs, and groundcover plants for Architect's approval. When approved, tag, install, and maintain as representative samples for final installed plant materials.

E. File Certificates of Inspection of plant material by state, county, and federal authorities with Architect, if required.

F. Soil Analysis: Provide sandy loam soil analysis if requested by the Architect.

PART 3 - EXECUTION

3.1 BED PREPARATION & FERTILIZATION

A. Landscape Contractor to inspect all existing conditions and report any deficiencies to the Owner.

B. All planting areas shall be conditioned as follows:

1. Prepare new planting beds by scraping away existing grass and weeds as necessary. Till existing soil to a depth of six (6") inches prior to placing compost and fertilizer. Apply fertilizer as per manufacturers recommendations. Add six (6") inches of compost and till into a depth of six (6") inches of the topsoil. Apply organic fertilizer such as Sustane or Green Sense at the rate of twenty (20) pounds per one thousand (1,000) square feet.
2. All planting areas shall receive a two (2") inch layer of specified mulch.
3. Backfill for tree pits shall be as follows: Use existing top soil on site (use imported topsoil as needed) free from large clumps, rocks, debris, caliche, subsoils, etc., placed in nine (9") inch layers and watered in thoroughly.

C. Grass Areas:

1. Areas to be Solid Sod Bermudagrass: Blocks of sod should be laid joint to joint, (staggered joints) after fertilizing the ground first. Roll grass areas to achieve a smooth, even surface. The joints between the blocks of sod should be filled with topsoil where they are evidently gaped open, then watered thoroughly.
2. Areas to be Hydromulch Common Bermudagrass: Hydromulch with bermudagrass seed at a rate of two (2) pounds per one thousand (1,000) square feet. Use a 4' x 8' batter board against the bed areas.

3.2 INSTALLATION

A. Maintenance of plant materials shall begin immediately after each plant is delivered to the site and shall continue until all construction has been satisfactorily accomplished.

B. Plant materials shall be delivered to the site only after the beds are prepared and area ready for planting. All shipments of nursery materials shall be thoroughly protected from the drying winds during transit. All plants which cannot be planted at once, after delivery to the site, shall be well protected against the possibility of drying by wind and sun. Balls of earth of B & B plants shall be kept covered with soil or other acceptable material. All plants remain the property of the Contractor until final acceptance.

C. Position the trees and shrubs in their intended location as per plan.

D. Notify the Landscape Architect for inspection and approval of all positioning of plant materials.

E. Excavate pits with vertical sides and horizontal bottom. Tree pits shall be large enough to permit handling and planting without injury to balls of earth or roots and shall be of such depth that, when planted and settled, the crown of the plant shall bear the same relationship to the finish grade as it did to soil surface in original place of growth.

JOB CONDITIONS

A. General Contractor to complete the following punch list: Prior to Landscape Contractor initiating any portion of landscape installation, General Contractor shall leave planting bed areas three (3") inches below finish grade of sidewalks, drives and curbs as shown on the drawings. All lawn areas to receive solid sod shall be left one (1") inch below the finish grade of sidewalks, drives, and curbs. All construction debris shall be removed prior to Landscape Contractor beginning any work.

B. General Contractor shall provide topsoil as described in Section 02200 - Earthwork.

C. Storage of materials and equipment at the job site will be at the risk of the Landscape Contractor. The Owner cannot be held responsible for theft or damage.

1.6 MAINTENANCE AND GUARANTEE

A. Maintenance:

1. The Landscape Contractor will be held responsible for the maintenance of all work from the time of planting until final acceptance by the Owner. No trees, shrubs, groundcover or grass will be accepted unless they show a healthy growth and satisfactory foliage conditions.
2. Maintenance shall include watering of trees and plants, cultivation, weeding spraying, edging, pruning of trees, mowing of grass, cleaning up and all other work necessary of maintenance.
3. A written notice requesting final inspection and acceptance should be submitted to the Owner at least seven (7) days prior to completion. An on-site inspection by Owner and Landscape Contractor will be completed prior to written acceptance.
4. After final acceptance of installation, the Landscape Contractor will not be required to do any of the above listed work.

B. Guarantee:

1. Trees shall be guaranteed for a twelve (12) month period after acceptance. Shrubs and groundcover shall be guaranteed for twelve (12) months. The Contractor shall replace all dead materials as soon as weather permits and upon notification of the Owner. Plants, including trees, which have partially died so that shape, size, or symmetry has been damaged, shall be considered subject to replacement. In such cases, the opinion of the Owner shall be final.
   a. Plants used for replacement shall be of the same size and kind as those originally planted and shall be planted as originally specified. All work, including materials, labor and equipment used in replacements, shall carry a twelve (12) month guarantee. Any damage, including ruts in lawn or bed areas, incurred as a result of making replacements shall be immediately repaired.
   b. At the direction of the Owner, plants may be replaced at the start of the next year's planting season. In such cases, dead plants shall be removed from the premises immediately.
   c. When plant replacements are made, plants, soil mix, fertilizer and mulch are to be utilized as originally specified and reinspected for full compliance with Contract requirements. All replacements are to be included under "Work" of this section.

F. Shrub and tree pits shall be no less than two (2') feet, twenty-four (24") inches, wider than the lateral dimension of earth ball and six (6") inches deeper than it's vertical dimension. Remove and haul from site all rocks and stones over one (1") inch in diameter. Plants should be thoroughly moist before removing containers.

G. Dig a wide, rough sided hole exactly the same depth as the height of the ball, especially at the surface of the ground. The sides of the hole should be rough and jagged, never slick or glazed.

H. Percolation Test: Fill the hole with water. If the water level does not percolate within 24 hours, the tree needs to move to another location or have drainage added. Install a PVC stand pipe per tree planting detail as approved by the Landscape Architect.

I. Backfill only with 5 parts existing soil or sandy loam and 1 part bed preparation. When the hole is dug in solid rock, topsoil from the same area should not be used. Carefully settle by watering to prevent air pockets. Remove the burlap from the top 1/3 of the ball, as well as all nylon, plastic string and wire mesh. Container trees will usually be pot bound, if so follow standard nursery practice of 'root scoring'.

J. Do not wrap trees.

K. Do not over prune.

L. Mulch the top of the ball. Do not plant grass all the way to the trunk of the tree. Leave the area above the top of the ball and mulch with at least two (2") inches of specified mulch.

M. All plant beds and trees to be mulched with a minimum settled thickness of two (2") inches over the entire bed or pit.

N. Obstruction below ground: In the event that rock, or underground construction work or obstructions are encountered in any plant pit excavation work to be done under this section, alternate locations may be selected by the Owner. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3') feet below grade and no less than six (6") inches below the bottom of ball when plant is properly set at the required grade. The work of this section shall include the removal from the site of such rock or underground obstructions encountered at the cost of the Landscape Contractor.

O. Trees and large shrubs shall be staked as site conditions require. Position stakes to secure tree against seasonal prevailing winds.

P. Pruning and Mulching: Pruning shall be directed by the Architect and shall be pruned in accordance with standard horticultural practice following Fine Pruning, Class I pruning standards provided by National Arborist Association.

1. Dead wood or suckers and broken badly bruised branches shall be removed. General tipping of the branched is not permitted. Do not cut terminal branches.
2. Pruning shall be done with clean, sharp tools.
3. Immediately after planting operations are completed, all tree pits shall be covered with a layer of organic material two (2") inches in depth. This limit of the organic material

Q. Steel Curbing Installation:

1. Curbing shall be aligned as indicated on plans. Stake out limits of steel curbing and obtain Owners approval prior to installation.
2. All steel curbing shall be free of kinks and abrupt bends.
3. Top of curbing shall be 3/4" maximum height above grade.
1. Stakes are to be installed on the planting bed side of the curbing, as opposed to the grass side.
2. Do not install steel edging along sidewalks.
3. Cut steel edging at 45 degree angle where edging meets sidewalk.

3.3 CLEANUP AND ACCEPTANCE

A. Cleanup: During the work, the premises shall be kept neat and orderly at all times. Storage areas for all materials shall be so organized that they, too, are neat and orderly. All trash and debris shall be removed from the site as work progresses. Keep paved areas clean by sweeping or hosing at end of each days work.

END OF SECTION

2. The Owner agrees that for the guarantee to be effective, he will water plants at least twice a week during dry periods and cultivate beds once a month after final acceptance.
3. The above guarantee shall not apply where plants die after acceptance because of injury from storms, hail, freeze, insects, diseases, injury by humans, machines or theft.
4. Acceptance for all landscape work shall be given after final inspection by the Owner provided the job is in a completed, undamaged condition, and there is a stand of grass in all lawn areas. At this time, the Owner will assume maintenance on the accepted work.

C. Repairs: Any necessary repairs under the Guarantee must be made within ten (10) days after receiving notice, weather permitting, and in the event the Landscape Contractor does not make repairs accordingly, the Owner, without further notice to Contractor, may provide materials and men to make such repairs at the expense of the Landscape Contractor.

1.7 QUALITY ASSURANCE

A. General: Comply with applicable Federal, State, County and Local regulations governing landscape materials and work

B. Personnel: Employ only experienced personnel who are familiar with the required work. Provide full time supervision by a qualified foreman acceptable to Landscape Architect.

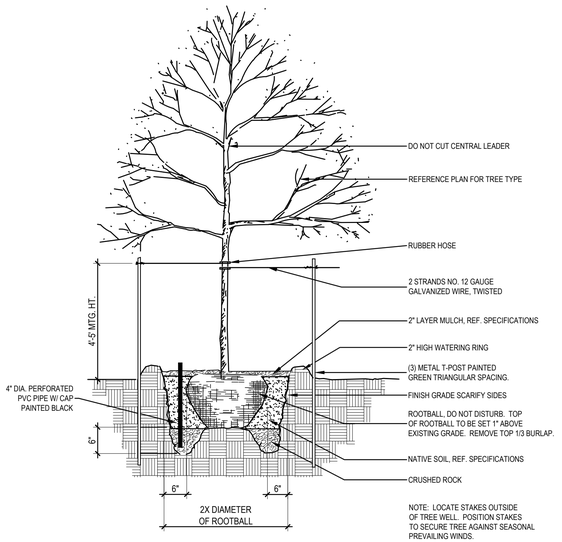
C. Selection of Plant Material:

1. Make contact with suppliers immediately upon obtaining notice of contract acceptance to select and book materials. Develop a program of maintenance (pruning and fertilization) which will insure the purchased materials will meet and/or exceed project specifications.
2. Landscape Architect will provide a key identifying each tree location on site. Written verification will be required to document material selection, source and delivery schedules to site.
3. Owner and/or Architect shall inspect all plant materials when reasonable at place of growth for compliance with requirements for genus, species, cultivar/variety, size and quality.
4. Owner and/or Architect retains the right to further inspect all plant material upon arrival at the site and during installation for size and condition of root balls, limbs, branching habit, insects, injuries, and latent defects.
5. Owner and/or Architect may reject unsatisfactory or defective material at any time during the process of work. Remove rejected materials from the site immediately. Plants damaged in transit or at job site shall be rejected.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Preparation:

1. Balled and Burlapped (B&B) Plants: Dig and prepare shipment in a manner that will not damage roots, branches, shape, and future development.
2. Container Grown Plants: Deliver plants in rigid container to hold ball shape and protect root mass.



01 TREE PLANTING DETAIL — NOT TO SCALE

A. Delivery:

1. Deliver packaged materials in sealed containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.
2. Deliver only plant materials that can be planted in one day unless adequate storage and watering facilities are available on job site.
3. Protect root balls by heeling in with sawdust or other approved moisture retaining material if not planted within 24 hours of delivery.
4. Protect plants during delivery to prevent damage to root balls or desiccation of leaves. Keep plants moist at all times. Cover all materials during transport.
5. Notify Architect of delivery schedule 72 hours in advance so plant material may be observed upon arrival at job site.
6. Remove rejected plant material immediately from site.
7. To avoid damage or stress, do not lift, move, adjust to plumb, or otherwise manipulate plants by trunk or stems.

PART 2 - PRODUCTS

2.1 PLANTS

A. General: Well-formed No. 1 grade or better nursery grown stock. Listed plant heights are from tops of root balls to nominal tops of plants. Plant spread refers to nominal outer width of the plant, not to the outer leaf tips. Plants will be individually approved by the Architect and his decision as to their acceptability shall be final.

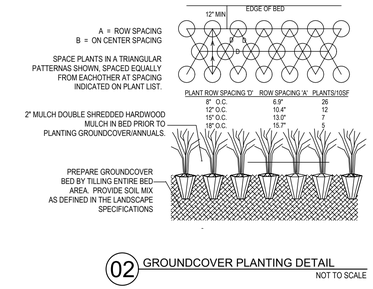
B. Quantities: The drawings and specifications are complimentary. Anything called for on one and not the other is as binding as if shown and called for on both. The plant schedule is an aid to bidders only. Confirm all quantities on plan.

C. Quality and size: Plant materials shall conform to the size given on the plan, and shall be healthy, symmetrical, well-shaped, full branched, and well rooted. The plants shall be free from injurious insects, diseases, injuries to the bark or roots, broken branches, objectionable disfigurements, insect eggs and larvae and are to be of specimen quality.

D. Approval: All plant materials shall be subject to the approval of the Owner. All plants which are found unsuitable in growth, or in any unhealthy, badly shaped, or undersized condition, will be rejected by the Landscape Architect, either before or after planting, and shall be removed at the expense of the Landscape Contractor and replaced with acceptable plants as specified.

E. Trees shall be healthy, full-branched, well-shaped and shall meet the trunk diameter and height requirements of the plant schedule. Balls shall be firm, neat, slightly tapered, and well wrapped in burlap. Any tree loose in the ball or with broken ball at time of planting will be rejected. Balls shall be ten (10") inched in diameter for each one (1") inch of trunk diameter, Measured six (6") inched above ball.
Nomenclature conforms to the customary nursery usage: for clarification, the term "multi-trunk" defines a plant having three (3) or more trunks of nearly equal diameter.

F. Pruning: All pruning of trees and shrubs, as directed by the Landscape Architect, shall be executed by the Landscape Contractor at no additional cost to the Owner.



02 GROUNDCOVER PLANTING DETAIL — NOT TO SCALE

2.2 SOIL PREPARATION MATERIALS

A. Sandy Loam:

1. Friable, fertile, dark, loamy soil, free of clay lumps, subsoil, stones and other extraneous material and reasonably free of weeds and foreign grasses. Loam containing Dallasgrass or Nutgrass shall be rejected.
2. Physical properties as follows:
   Clay – between 7-27 percent
   Silt – between 15-25 percent
   Sand – less than 52 percent
3. Organic matter shall be 3%-10% of total dry weight.
4. If requested, provide a certified soil analysis conducted by an approved soil testing laboratory verifying that sandy loam meets the above requirements.

B. Organic Material: Compost with a mixture of 80% vegetative matter and 20% animal waste. Ingredients should be a mix of course and fine textured material.

C. Premixed Bedding Soil as supplied by Vital Earth Resources, Gladewater, Texas; Professional Bedding Soil as supplied by Living Earth Technology, Dallas, Texas or Acid Gro Municipal Mix as supplied by Soil Building Systems, Dallas, Texas or approved equal.

D. Sharp Sand: Sharp sand must be free of seeds, soil particles and weeds.

E. Mulch: Double Shredded Hardwood Mulch, partially decomposed, dark brown. Living Earth Technologies or approved equal.

F. Organic Fertilizer: Fertilaid, Sustane, or Green Sense or equal as recommended for required applications. Fertilizer shall be delivered to the site in original unopened containers, each bearing the manufacturer's guaranteed statement of analysis.

A. Commercial Fertilizer: 10-20-10 or similar analysis. Nitrogen source to be a minimum 50% slow release organic Nitrogen (SCU or UF) with a minimum 8% sulphur and 4% iron, plus micronutrients.

B. Peat: Commercial sphagnum peat moss or partially decomposed shredded pine bark or other approved organic material.

2.3 MISCELLANEOUS MATERIALS

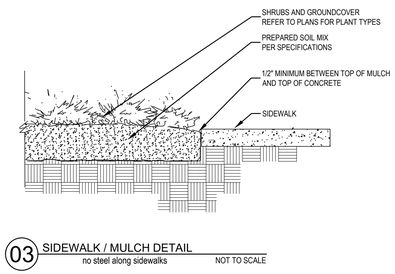
A. Steel Edging: Shall be Ryerson "Estate Curbing", 1/8" x 4" with stakes 4' on center.

B. Staking Material for Shade Trees:

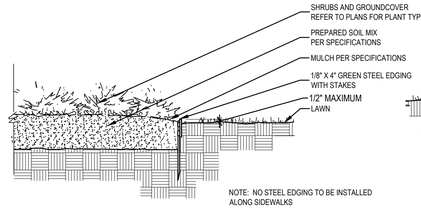
1. Post: Studded T-Post, #1 Armco with anchor plate; 6'-0" length; paint green.
2. Wire: 12 gauge, single strand, galvanized wire.
3. Rubber hose: 2 ply, fiber reinforced hose, minimum ½ inch inside diameter. Color: Black.

C. Gravel: Washed native pea gravel, graded 1 in. to 1-1/2 in.

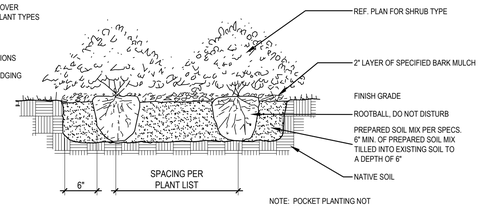
D. Filter Fabric: Mirafi 140N by Celanese Fibers Marketing Company, available at Lofland Co., (214) 631-5250 or approved equal.



03 SIDEWALK / MULCH DETAIL — no steel along sidewalks — NOT TO SCALE



04 STEEL EDGING DETAIL — NOT TO SCALE



05 SHRUB PLANTING DETAIL — NOT TO SCALE

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11.05.2025

OFFICE

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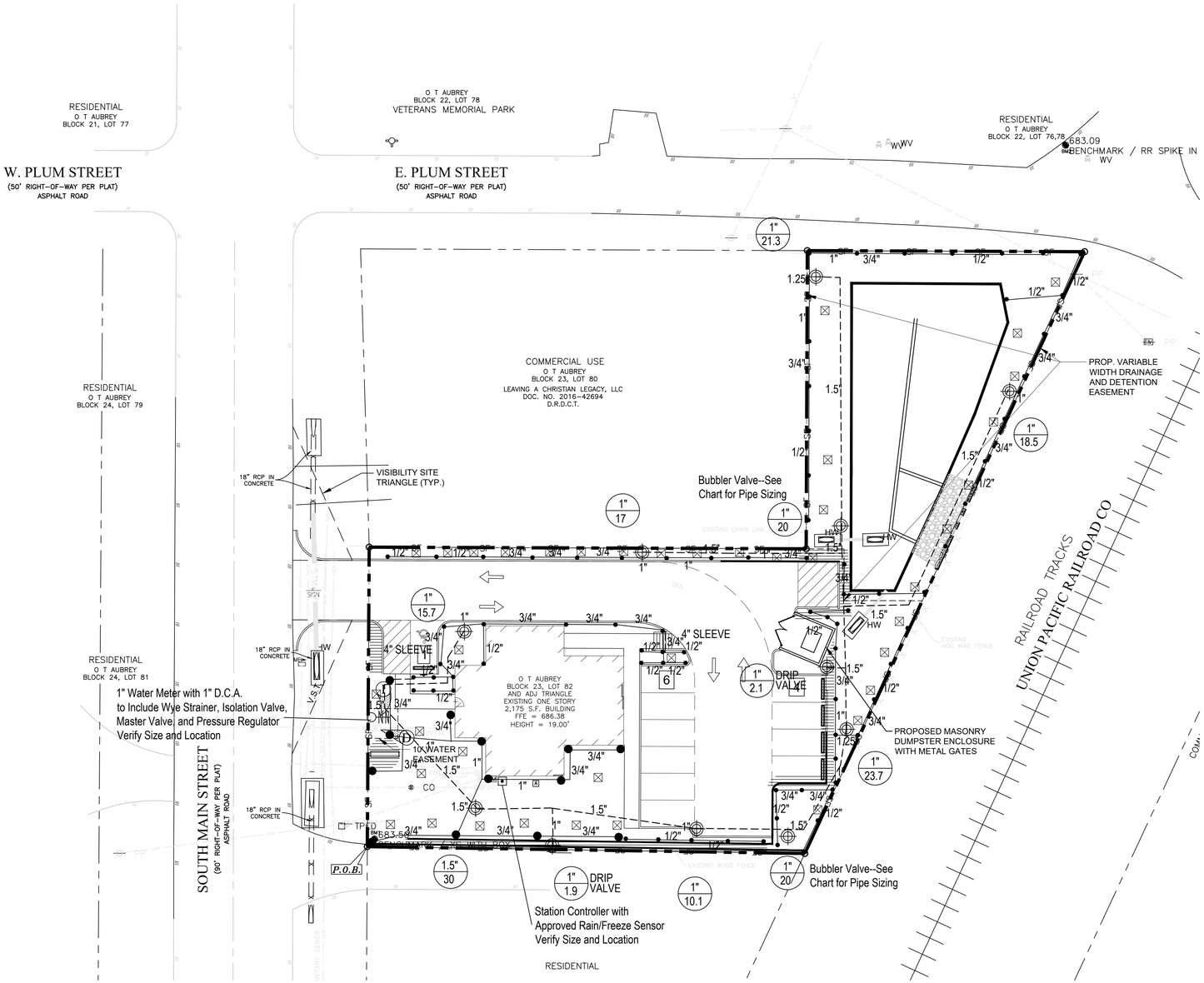
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
CITY APPROVAL 06.23.2025

DATE:
11.05.2025

SHEET NAME:
LANDSCAPE SPECIFICATIONS

SHEET NUMBER:
L.3



01 IRRIGATION PLAN
SCALE 1"=20'-0"
0 10 20 40

BUBBLER PIPING CHART

1-5 BUBBLERS - 1/2" PIPE
6-10 BUBBLERS - 3/4" PIPE
11-20 BUBBLERS - 1" PIPE
21-30 BUBBLERS - 1 1/4" PIPE
31-40 BUBBLERS - 1 1/2" PIPE

IRRIGATION LEGEND

- Hunter PRS30-04 4" Pop-up Spray Head with Plastic Hunter Pro Adjustable Nozzle
- Hunter PRS30-12 12" Pop-up Spray Head with Plastic Hunter Pro Adjustable Nozzle
- Hunter PGP Ultra-04 Rotors
- Hunter Multi-Stream Bubbler Nozzle on Hunter PRS30-06 Pop-up Spray Head
- Spray, Rotor & Bubbler Zones-Hunter PGV Control Valves (See Plan for Size)
  Drip Zones-Hunter ICZ Drip Zone Control Kits (See Plan for Size)
- Hunter I-Core series Controller with Hunter Solar Sync Sensor
- WATER METER, SIZE AS INDICATED
  D.C.A., SIZE AS INDICATED
  to Include Wye Strainer, Isolation Valve, Master Valve, and Pressure Regulator
- PVC CLASS 200 LATERAL LINE
- PVC CLASS 200 MAINLINE
- PVC SCHEDULE 40 SLEEVING
- VALVE SIZE
  GPM
- HUNTER HDL-09-12-100-PC Drip Line and Fittings
  (12" LATERAL SPACING, 12" EMITTER SPACING)
  PVC LATERAL PIPING SIZED AS REQUIRED
  INSTALL ALL EQUIPMENT ACCORDING TO
  MANUFACTURERS SPECIFICATIONS

SLEEVING NOTES

1. *Contractor shall lay sleeves and conduits at twenty-four (24") inches below finish grade of the top of pavement.*
2. *Contractor shall extend sleeves one (1') foot beyond edge of all pavement.*
3. *Contractor shall cap pipe ends using PVC caps.*
4. *All sleeves shall be Schedule 40 PVC pipe.*
5. *Contractor shall furnish Owner and Irrigation Contractor with an 'as-built' drawing showing all sleeve locations.*

Water Pressure Calculations

Static Pressure (at the water meter)- 65 psi
Design Pressure for Remote Zone- 55.9 psi
Pressure Losses for Remote Zone and Meter Components- 16.9 psi

Water Meter Components- Pressure Losses

Master Valve Pressure- 2 psi
Pressure Requlator- 1.2 psi
Back Flow- 5 psi
Wye Strainer- .75 psi
Ball Valve- .8 psi

Irrigation Zones Pressure Losses- (most remote zone)

Main Line- 3.6 psi
Valve- 2 psi
Later Line- 1.6 psi
Sprinkler requirements-35 psi

IRRIGATION NOTES

1. *All sprinkler equipment numbers reference the HUNTER equipment catalog unless otherwise indicated.*
2. *LAWN SPRAY HEADS are SRS-04 installed as per detail shown.*
3. *SHRUB SPRAY HEADS are SRS-12 installed as per detail shown.*
4. *ELECTRIC CONTROL VALVES shall be HUNTER PGV-S SERIES installed per detail shown. Size valves as shown on plan. Valves shall be installed in value boxes large enough to permit manual operation, removal of solenoid and/or valve cover without any earth excavation.*
5. *AUTOMATIC CONTROLLER shall be installed at location shown. Power (120V) shall be located in a junction box within five (5') feet of controller location by other trades.*
6. *All 24 volt valve wiring is to be UF 14 single conductor. All wire splices are to be permanent and waterproof.*
7. *SLEEVES shall be installed by General Contractor. Sleeve material shall be Schedule 40. Size as indicated on plan.*
8. *Ten days prior to start of construction, Landscape or Irrigation Contractor shall verify static water pressure. If static pressure is less than 65 P.S.I., do not work until notified to do so by Owner. The irrigation contractor shall also verify that the site plan matches what has been constructed on site. Any landscape area that is less that 48 inches wide must be drip irrigation. If discrepancies between the irrigation plan and what is on site is discovered the irrigation contractor shall notify the GC, Civil Engineer and Landscape Architect.*
9. *All main line and lateral piping to a minimum of 12 inches of cover. All piping under paving shall have a minimum of 18" of cover.*
10. *The Irrigation Contractor shall coordinate installation of the system with the Landscape Contractor so that all plant material will be watered in accordance with the intent of the plans and specifications.*
11. *The Irrigation Contractor shall select the proper arc and radius for each nozzle to insure 100% and proper coverage of all lawn areas and plant material. All nozzles in parking lot islands and planting beds shall be low angle to minimize over spray on pavement surfaces. No water will be allowed to spray on building.*

DRIP IRRIGATION NOTES

1. *Drip Irrigation Equipment numbers reference Rainbird Equipment Catalog unless otherwise noted.*
2. *Landscape Contractor shall be required to supply Owner's Construction Manager with all equipment specifications and maintenance guidelines.*
3. *Landscape Contractor shall be required to follow Manufacturer's Specifications and Installation guidelines for drip system.*
4. *PRESSURE COMPENSATING EMITTERS shall be: Multioutlet Rain Bug EM6-M101, Multi outlet Shrub Bug EMT6-M101 or approved equal. (1 PER EVERY 6 - 4" POTS)*
5. *SINGLE OUTLET PRESSURE COMPENSATING EMITTERS shall be: Rain Bug Emitters EM-Mo5, -M10, -M20 and Shrub Bug Emitters EMT-M10, -M20 or approved equal. (1 PER EACH 1 OR 5 GAL PLANT)*
6. *DRIP PRESSURE REGULATORS shall be: PSI-HLA-15, PSI-HLA-20, PSI-HMB-20, PSI-HMB-25 or approved equal.*
7. *Y-FILTERS shall be: RBY-075-200, RBY-100-200 or approved equal.*
8. *MAIN IRRIGATION TUBING shall be:RBT-150P,RBT-160V or approved equal.*
9. *EMITTER DISTRIBUTION TUBING shall be: RBT-150P, RBT-160V or approved equal.*
10. *SUBTERRANEAN EMITTER BOX shall be: SEB-6 or approved equal.*
11. *Drip system piping only occurs within shrub / groundcover beds and rock mulch areas. Piping shall be a maximum 4" depth and a minimum 2" depth.*
12. *Contractor shall verify that all drip system valves and spray system valves are sectioned separately on controller.*

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STATE OF TEXAS
JON TUCK
15638
LICENSED IRRIGATOR
08.01.2025

OFFICE

SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
FOR APPROVAL 12.16.2024
CITY COMMENTS 04.22.2025

DATE:
08.01.2025

SHEET NAME:
IRRIGATION PLAN

SHEET NUMBER:
L.4

SECTION 02810 - IRRIGATION

PART 1 - GENERAL

1.1 SCOPE

A. Provide complete sprinkler installation as detailed and specified herein, includes furnishing all labor, materials, and equipment for the proper installation. Work includes but is not limited to:

1. Trenching and backfill
2. Automatic controlled system.
3. Upon completion of installation, supply drawings showing details of construction including location of mainline piping, manual and automatic valves, electrical supply to valves, and specifically exact location of automatic valves.

B. All sleeves as shown on plans will be furnished by General Contractor. Meter and power source to be provided by General Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. See Irrigation Plans. See plans for controller, heads, and valves.

B. Section 02900-Landscape

C. Section 02811-Underground Irrigation Sleeve and Utility Conduits

1.3 APPLICABLE STANDARDS

A. America Standard for Testing and Materials (ASTM) – Latest edition.

1. D2241 Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)
2. D2464 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Thread, Schedule 80
3. D2455 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
4. D2467 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Socket Type, Schedule 80
5. D2564 Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings
6. D2287 Flexible Poly Vinyl Chloride (PVC) Plastic Pipe
7. F556 Poly Vinyl Chloride (PVC) Solvent Weld Primer
8. D2855 Making Solvent – Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings

1.4 MAINTENANCE AND GUARANTEE

A. Materials and workmanship shall be fully guaranteed for one (1) year after final acceptance.

B. Provide maintenance of system, including raising and lowering of heads to compensate for lawn growth, cleaning and adjustment of heads, raising and lowering of shrub heads to compensate for shrub growth, for one (1) year after completion of installation.

C. Guarantee is limited to repair and replacement of defective materials or workmanship, including repair of backfill settlement.

1.5 SUBMITTALS

A. Procedure: Comply with Division I requirements.

B. Product Data: Submit (5) copies of equipment manufacturer's specifications and literature for approval by Landscape Architect prior to installation.

C. Project Record Documents

1. Comply with Division I requirements.
2. Locate by written dimension, routing of mainline piping, remote control valves and quick coupling valves. Locate mainlines by single dimensions from permanent site features provided they run parallel to these elements. Locate valves, intermediate electrical connections, and quick couplers by two dimensions from a permanent site feature at approximately 70 degrees to each other.
3. When dimensioning is complete, transpose work to mylar reproducible tracings.
4. Submit completed tracings prior to final acceptance. Mark tracings "Record Prints Showing Significant Changes". Date and sign drawings.
5. Provide three complete operation manuals and equipment brochures neatly bound in a hard back three-ring binder. Include product data on all installed materials. Include warranties and guarantees extended to the Owner by the manufacturer of all equipment.

D. Quick Coupler Keys: Provide 3 coupler keys with boiler drains attached using brass reducer.

E. Controller Keys: Provide three sets of keys to controller enclosure(s).

F. Use of materials differing in quality, size, or performance from those specified will only be allowed upon written approval of the Landscape Architect. The decision will be based on comparative ability of material or article to perform fully all purposes of mechanics and general design considered to be possessed by item specified.

G. Bidders desiring to make a substitution for specified sprinklers shall submit manufacturer's catalog sheet showing full specification of each type sprinkler proposed as a substitute, including discharge in GPM maximum allowable operating pressure at sprinkler.

H. Approval of substitute sprinkler shall not relieve Irrigation Contractor of his responsibility to demonstrate that final installed sprinkler system will operate according to intent of originally designed and specified system.

I. It is the responsibility of the Irrigation Contractor to demonstrate that final installed sprinkler system will operate according to intent of originally designed and specified system. If Irrigation Contractor notes any problems in head spacing or potential coverage, it is his responsibility to notify the Landscape Architect in writing, before proceeding with work. Irrigation Contractor guarantees 100% coverage of all areas to be irrigated.

1.6 TESTING

A. Perform testing required with other trades, including earthwork, paving, plumbing, electrical, etc. to avoid unnecessary cutting, patching and boring.
B. Wire Connectors: Waterproof splice kit connectors. Type DBY by 3M.

2.6 SCHEDULE 80 PVC NIPPLES

A. Composed of Standard Schedule 40 PVC Fittings and PVC meeting noted standards. No clamps or wires may be used. Nipples for heads and shrub risers to be nominal one-half inch diameter by eight inches long, where applicable.

B. Polyethylene nipples six (6") inches long to be used on all pop-up spray heads.

2.7 MATERIALS - See Irrigation Plan

A. Sprinkler heads in lawn area as specified on plan.

B. PVC Pipe: Class 200, SPR 21
Copper Tubing (City Connection): Type "M"
24V Wire: Size 14, Type U.F.

C. Electric valves to be all plastic construction as indicated on plans.

D. Refer to drawing for backflow prevention requirements and flow valve.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. Staking: Before installation is started, place a stake where each sprinkler is to be located, in accordance with drawing. Staking shall be approved by Landscape Architect before proceeding.

B. Excavations: Excavations are unclassified and include earth, loose rock, rock or any combination thereof, in wet or dry state. Backfill trenches with material that is suitable for compaction and contains no lumps, clods rock, debris, etc. Special backfill specifications, if furnished take preference over this general specification.

C. Backfill: Flood or hand-tamp to prevent after settling. Hand rake trenches and adjoining area to leave grade in as good or better condition than before installation.

D. Piping Layout: Piping layout is diagrammatic. Route piping around trees and shrubs in such a manner as to avoid damage to plantings. Do not dig within ball of newly planted trees or shrubs.

3.2 PIPE INSTALLATION

A. Sprinkler Mains: Install a four (4") inch minimum trench with a minimum of eighteen (18") inches of cover.

B. Lateral Piping: Install a four (4") inch wide minimum trench deep enough to allow for installation of sprinkler heads and valves, but in no case, with less than twelve (12") of cover.

C. Trenching: Remove lumber, rubbish, and large rocks from trenches. Provide firm, uniform bearing for entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. Remove foreign matter or dirt from inside of pipe before welding, and keep piping clean by approved means during and after laying of pipe.

3.3 PVC PIPE AND FITTING ASSEMBLY

A. Solvent: Use only solvent recommended by manufacturer to make solvent-welded joints. Thoroughly clean pipe and fittings of dirt, dust and moisture before applying solvent.

B. PVC to metal connection: Work metal connections first. Use a non-hardening pipe dope such as Permatex No. 2 on threaded PVC adapters into which pipe may be welded.

3.4 COPPER TUBING AND FITTING ASSEMBLY

Clean pipe and fitting thoroughly and lightly sand pipe connections to remove residue from pipe. Attach fittings to tubing in an approved manner using 50-50 soft solid core solder.

3.5 POP-UP SPRAY HEADS

Supply pop-up spray heads in accordance with materials list and plan. Attach sprinkler to lateral piping with a semi-flexible polyethylene nipple not less than three (3") inches or more than six (6") inches long.

3.6 VALVES

Supply valves in accordance with materials list and sized according to drawings. Install valves in a level position in accordance with Manufacturer's Specifications. See plan for typical installation of electric valve, valve box.

3.7 WIRING

A. Supply wire from the automatic sprinkler controls to the valves. No conduit will be required for U.F. wire unless otherwise noted on the plan. Wire shall be tucked under the piping.

B. A separate wire is required from the control to each electric valve. A common neutral wire is also required from each control to each of the valves served by each particular control.

C. Bundle multiple wires and tape them together at ten (10') foot intervals. Install ten (10") inch expansion coil at not more than one hundred (100') foot intervals. Make splices waterproof.

3.8 AUTOMATIC SPRINKLER CONTROLS

Supply in accordance with Irrigation Plan. Install according to manufacturer's recommendations.

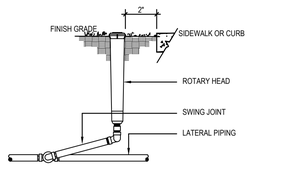
3.9 TESTING

A. Sprinkler Mains: Test sprinkler main only for a period of twelve (12) to fourteen (14) hours under normal pressure. If leaks occur, replace joint or joints and repeat test.
B. Complete tests prior to backfilling. Sufficient backfill material may be placed in trenches between fittings to insure stability of line under pressure. In each case, leave fittings and couplings open to visual inspection for full period of test.

3.10 FINAL ADJUSTMENT

After installation has been completed, make final adjustment of sprinkler system in preparation for Landscape Architect's final inspection. Completely flush system to remove debris from lines and turning on system. Check sprinklers for proper operation and proper alignment for direction of flow. Check each section of spray heads for operating pressure and balance to other sections by use of flow adjustment and top of each valve. Check nozzling for proper coverage. Prevailing wind conditions may indicate that arch of angle of spray should be other than shown on drawings. In this case, change nozzles to provide correct coverage.

END OF SECTION



01 ROTARY HEAD
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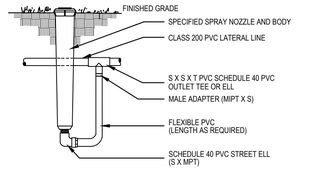

02 HIGH POP-UP SPRAY ASSEMBLY
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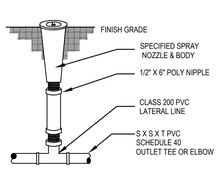

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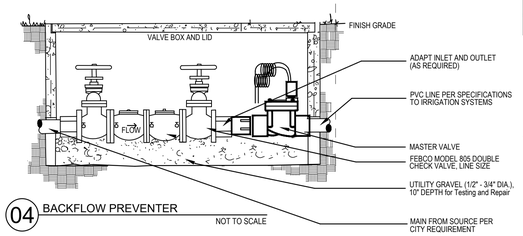

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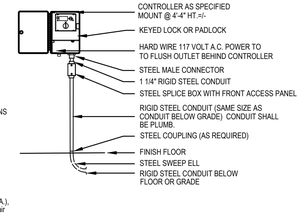

05 WALL MOUNTED CONTROLLER
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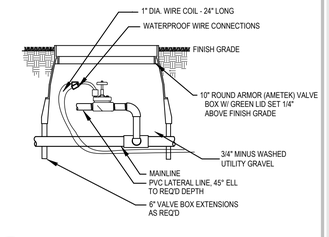

06 REMOTE CONTROL VALVE
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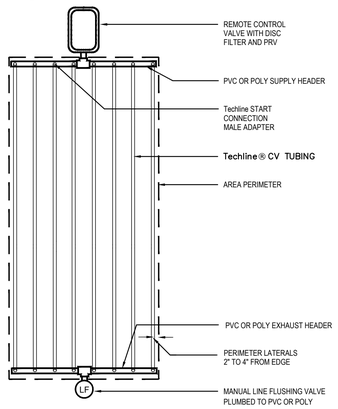
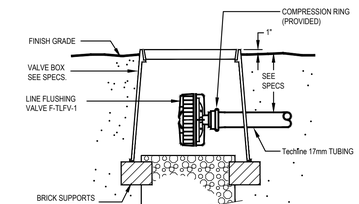


07 TechLine CV END FEED LAYOUT
NOT TO SCALE



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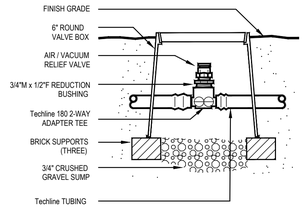

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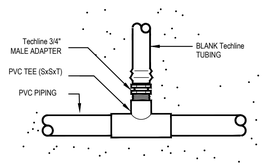

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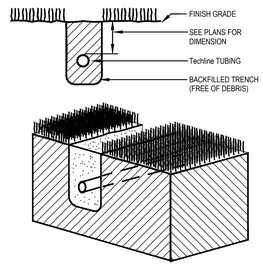

12 TechLine TRENCHING
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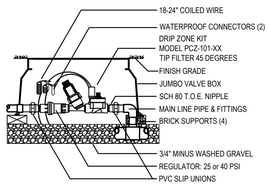

13 DRIP CONTROL VALVE
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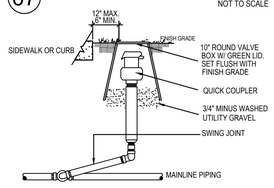

14 QUICK COUPLER
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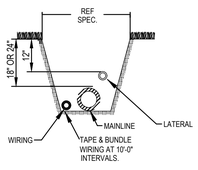

15 TRENCH DETAIL
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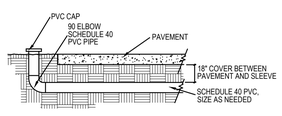

16 SLEEVE DETAIL
NOT TO SCALE

Studio Green Spot
LANDSCAPE ARCHITECT
STUDIO GREEN SPOT, INC.
1782 W. McDERMOTT DR.
ALLEN, TEXAS 75013
(469) 369-4448
CHRIS@STUDIOGREENSPOT.COM

STATE OF TEXAS
JON TUCK
15638
LICENSED IRRIGATOR
08.01.2025

OFFICE
SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
FOR APPROVAL 12.16.2024

DATE:
08.01.2025

SHEET NAME:
IRRIGATION SPECIFICATIONS

SHEET NUMBER:
L.5

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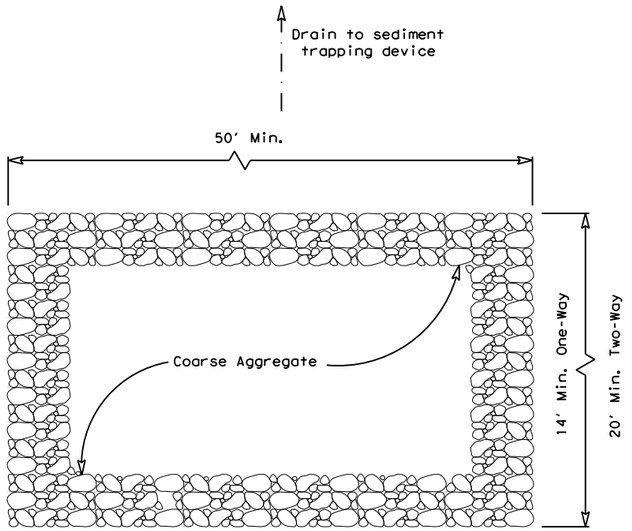
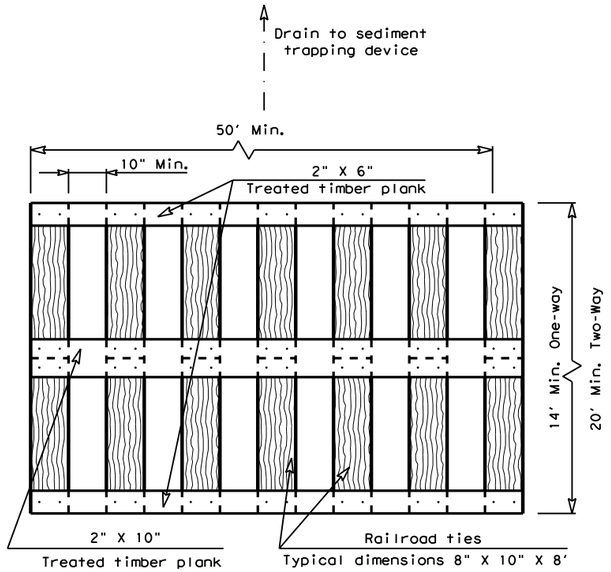


PLAN VIEW



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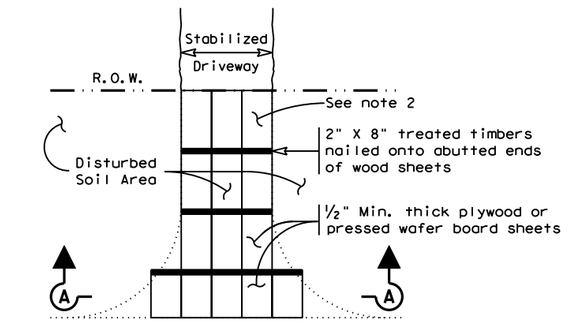

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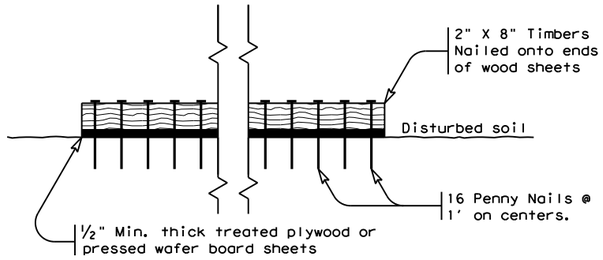
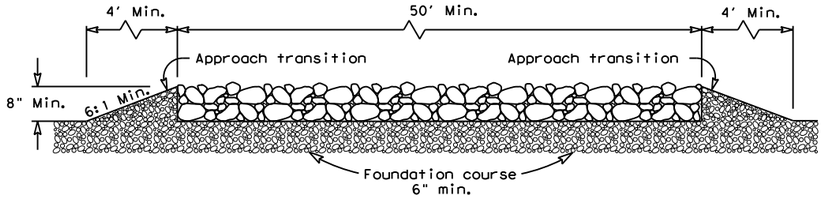


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

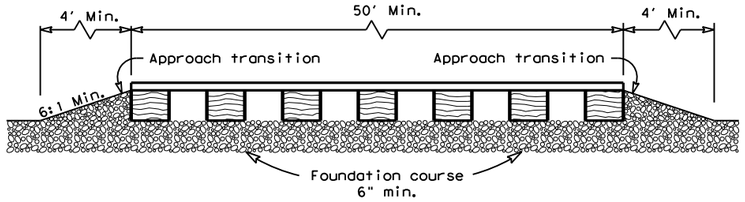
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation | Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	C	S	J	HWY
	DIST	COUNTY		SHEET NO.
	DST	CTY		$EC(3)-16$

DATE: $DATE$
FILE: $FILE$

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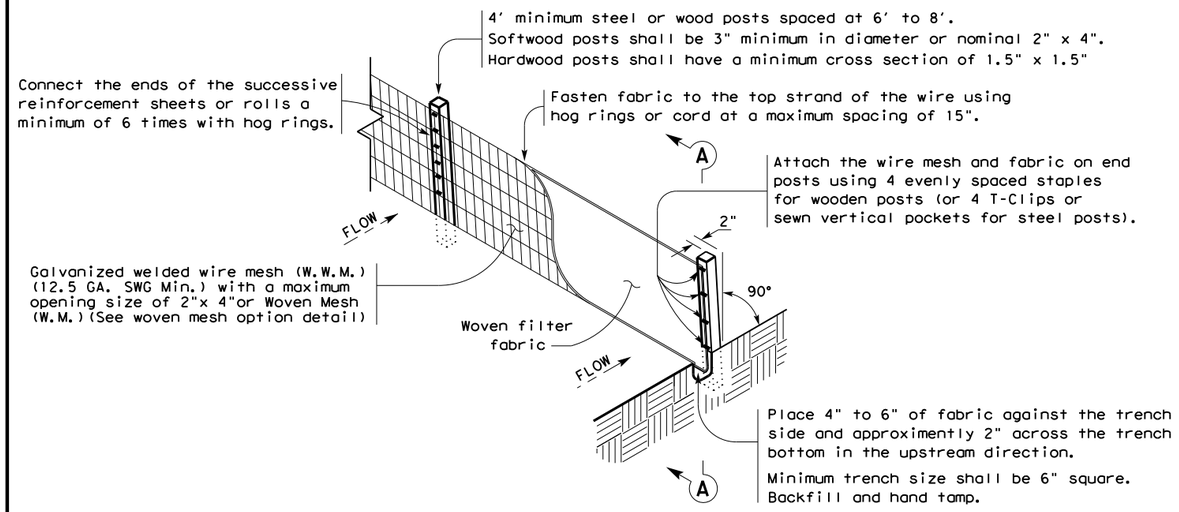
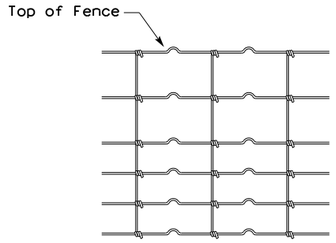
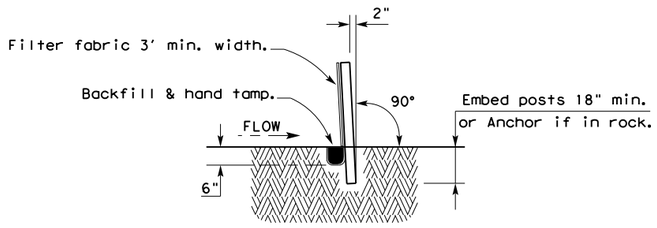


TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

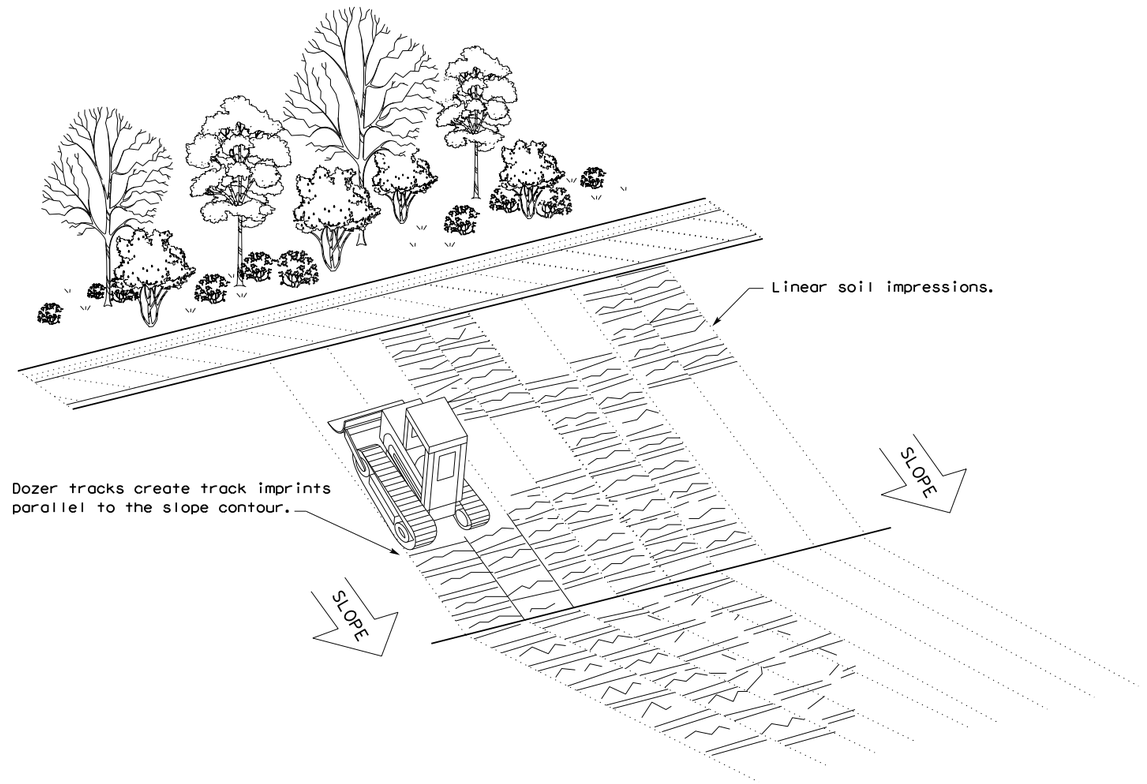
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	

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FILE

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DATE:
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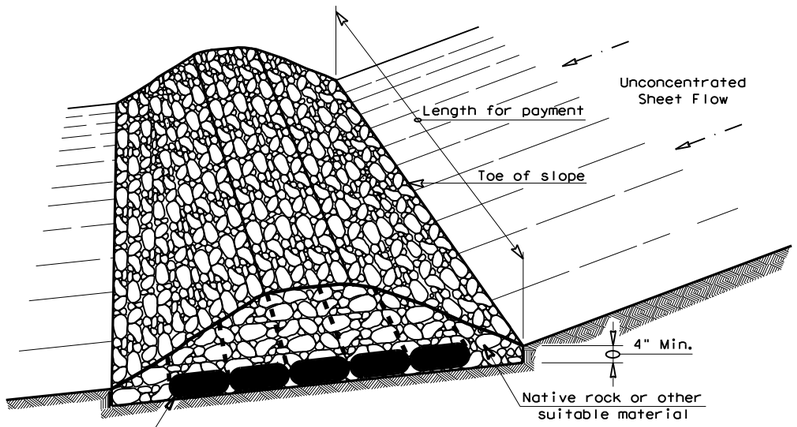
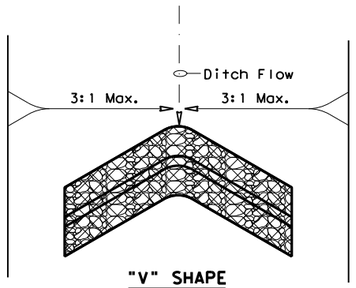
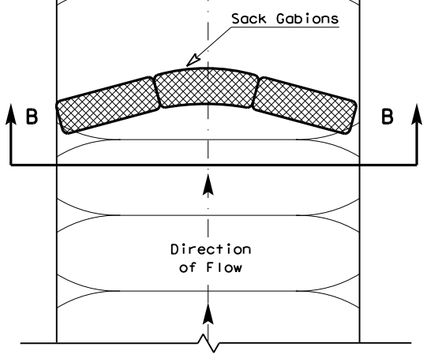


FILTER DAM AT TOE OF SLOPE

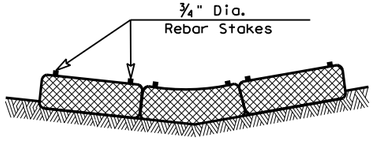
RFD1



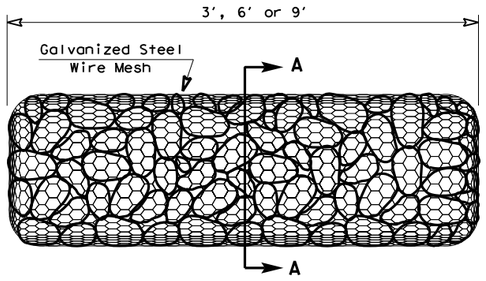
"V" SHAPE PLAN VIEW



PLAN VIEW

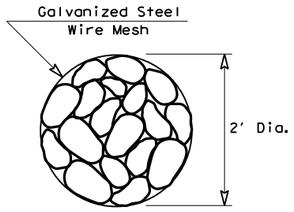


SECTION B-B

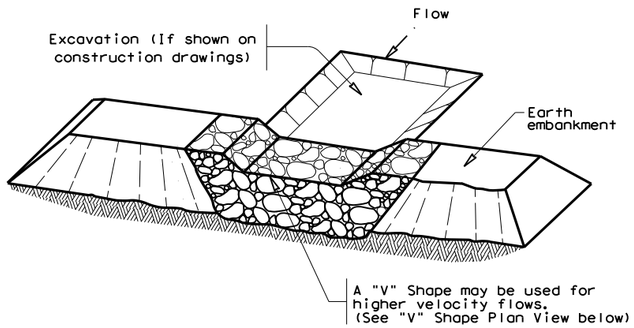


TYPE 4 (SACK GABIONS)

RFD4

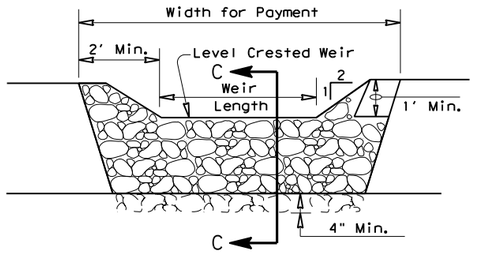


SECTION A-A

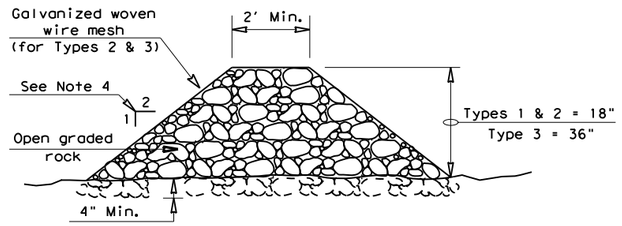


FILTER DAM AT SEDIMENT TRAP

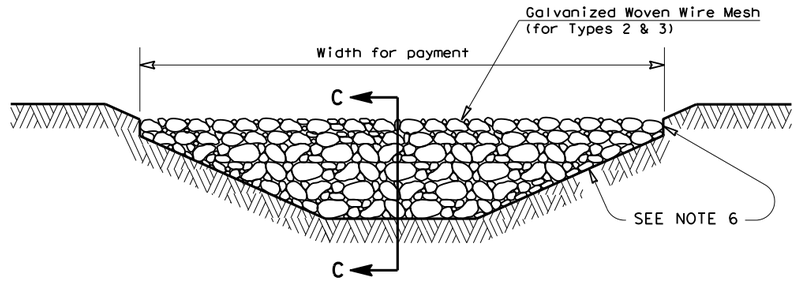
RFD1 — OR — RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation — Design Division Standard

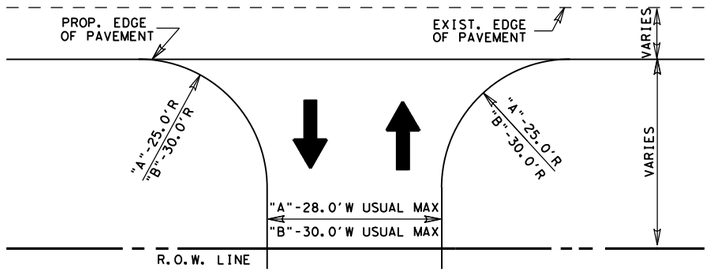
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

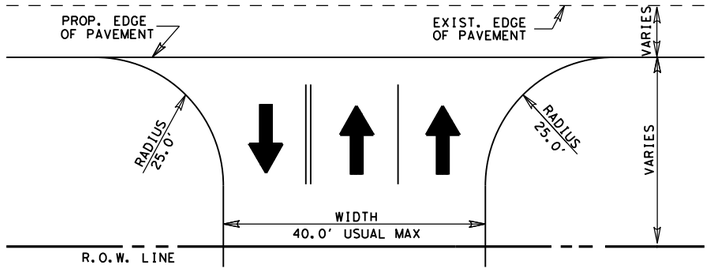
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



"A"- ONE ENTRY LANE AND ONE EXIT LANE, FEWER THAN 4 LARGE VEHICLES PER HOUR

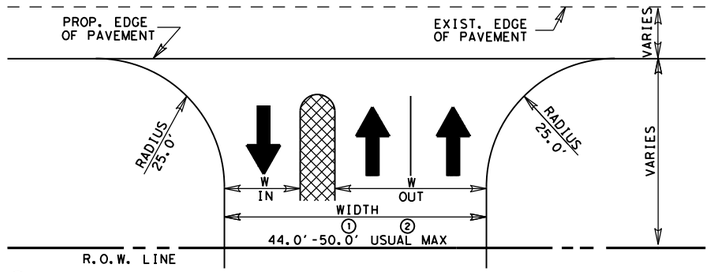
"B"- ONE ENTRY LANE AND ONE EXIT LANE, 4 OR MORE SINGLE UNIT VEHICLES① PER HOUR

① - *DRIVEWAY DESIGNS FOR LARGER VEHICLES WILL BE CONSIDERED ON A CASE BY CASE BASIS*



ONE ENTRY LANE AND TWO EXIT LANES (WITHOUT DIVIDERS)

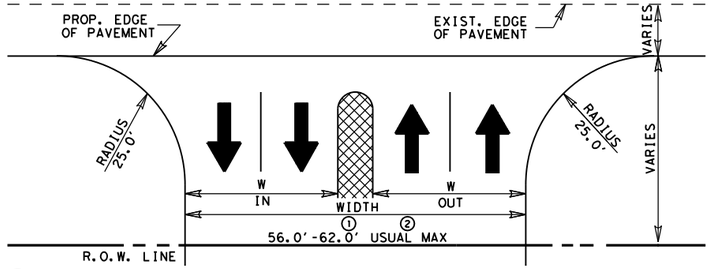
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*

② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

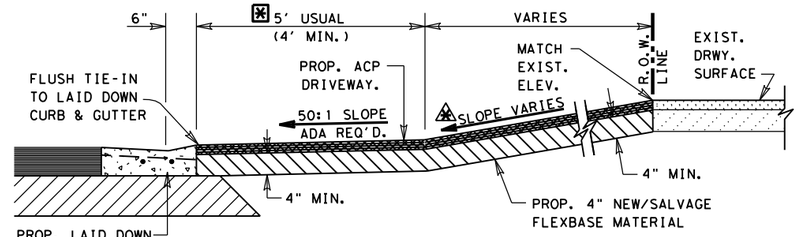
ONE ENTRY LANE AND TWO EXIT LANES (WITH A DIVIDER)



① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*

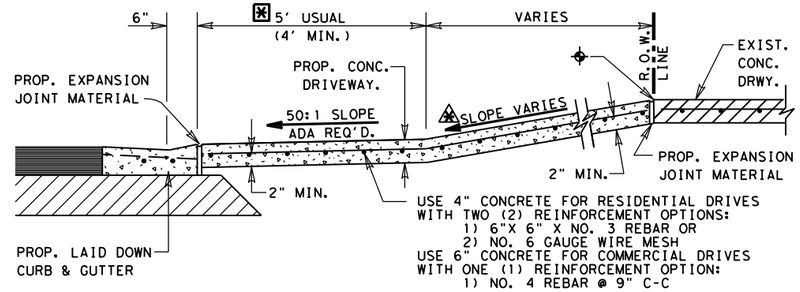
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

TWO ENTRY LANES AND TWO EXIT LANES (WITH A DIVIDER)



TYPICAL ASPH. CONC. PVM'T. DRIVEWAY SECTION

N.T.S.



TYPICAL CONCRETE DRIVEWAY SECTION

N.T.S.

⊕ CONCRETE SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

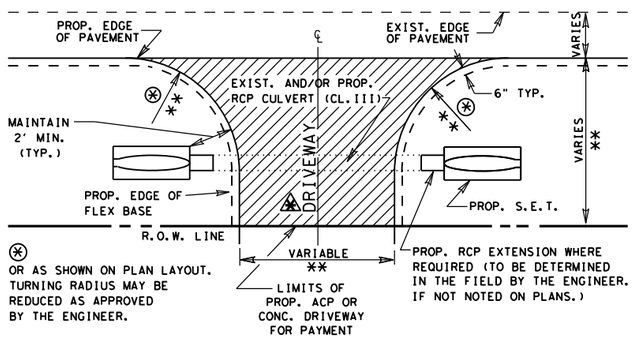
⊠ PROP./FUTURE SIDEWALK CROSSING LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. SEE P&P SHEETS FOR PROP. SIDEWALK LOCATION IF SIDEWALKS ARE INCLUDED AS PART OF PROJECT. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⚠ ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

PROP. DWY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% MAX. RESIDENTIAL DRIVEWAYS @ A = 8% MAX.

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX. RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER



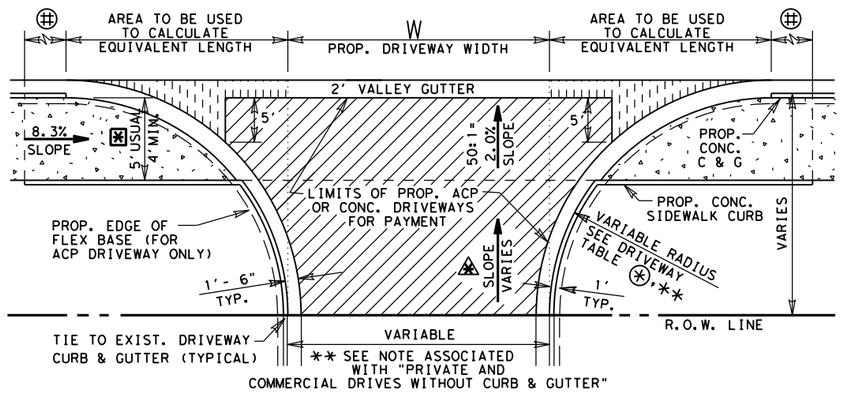
⊛ OR AS SHOWN ON PLAN LAYOUT. TURNING RADIUS MAY BE REDUCED AS APPROVED BY THE ENGINEER.

PLAN OF PRIVATE AND COMMERCIAL DRIVES

** FOR PRIVATE RESIDENTIAL DRIVES, TRY TO MATCH EXISTING WITH A MINIMUM WIDTH OF 12 FT. AND A MAXIMUM WIDTH OF 24 FT. WITH 15 FT. USUAL RADIUS. FOR COMMERCIAL DRIVES, USE ABOVE COMMERCIAL DRIVEWAY DETAILS.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES
N.T.S.

⊠ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⊕ LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

LF OF VALLEY GUTTER= W + X1 + X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

TY PB-1

EXIST. PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 171#/SY ACP. (HMA-D PG 64-22 SAC B MEETING ITEM 340)

CONCRETE (RESIDENTIAL)

EXIST. PRIVATE DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

CONCRETE (COMMERCIAL)

EXIST. BUSINESS DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 6" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

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PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

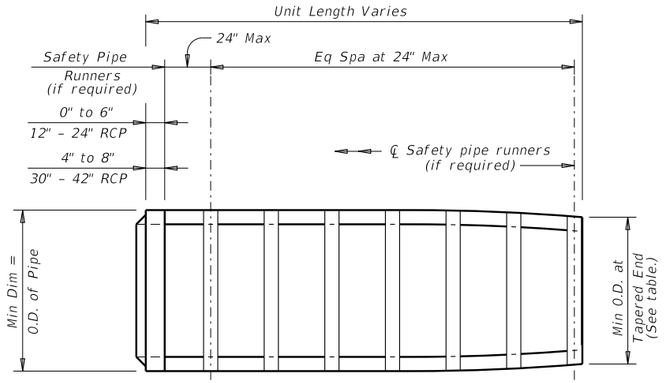
REV. 08/22

DRIVEWAY2.DGN

FED. RD. DIV. NO.	PROJECT NO.	FILE NO.	SHEET NO.
6			

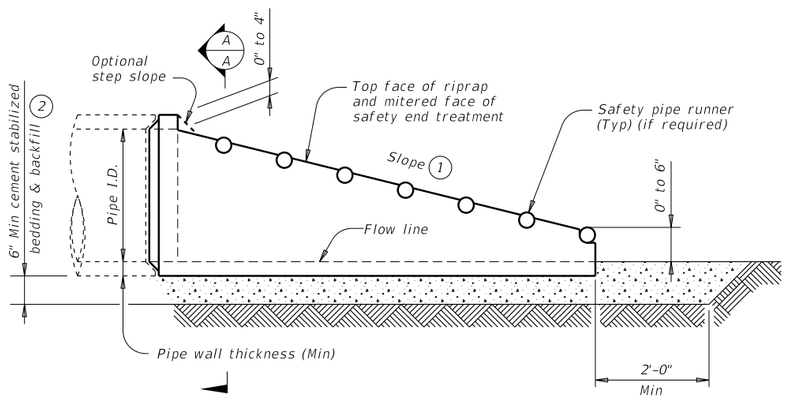
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21					

DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



PLAN VIEW – 12" THRU 24"

(Showing spigot end connection.)



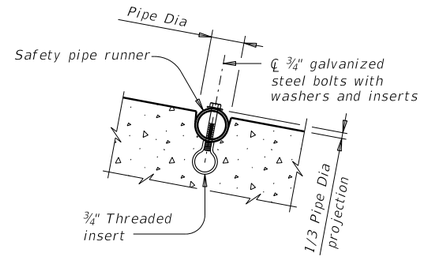
LONGITUDINAL ELEVATION - 12" THRU 24"

(Showing spigot end connection.)

1. Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
2. Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
3. Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."
4. Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
5. Safety pipe runners are required for multiple pipe culverts with more than two pipes.

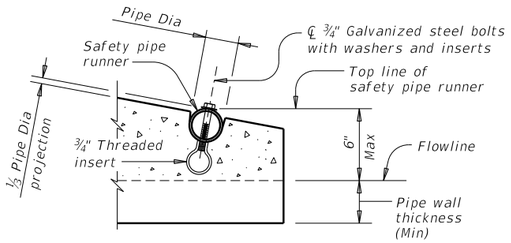
REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	Min Wall Thickness	Min O.D.	Min O.D. at Tapered End	Min Reinf Requirements (sq. in. per ft. of Pipe)	Max Slope	Min Length of Unit	Pipe Runner Requirements		Required Pipe Runner Sizes		
							Single Pipe	Multiple Pipe	Nominal Dia	O.D.	I.D.
12"	2"	16"	16"	0.07 Circ.	6:1	4'–0"	No	(5)	3" STD	3.500"	3.068"
15"	2 ¼"	19 ½"	19"	0.07 Circ.	6:1	5'–8"	No	(5)	3" STD	3.500"	3.068"
18"	2 ½"	23"	21 ½"	0.07 Circ.	6:1	7'–3"	No	(5)	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 Circ.	6:1	10'–6"	No	(5)	3" STD	3.500"	3.068"
30"	3 ½"	37"	31"	0.18 Circ.	6:1	12'–1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 Ellip.	6:1	15'–4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	51"	41 ½"	0.23 Ellip.	6:1	18'–7"	Yes	Yes	4" STD	4.500"	4.026"

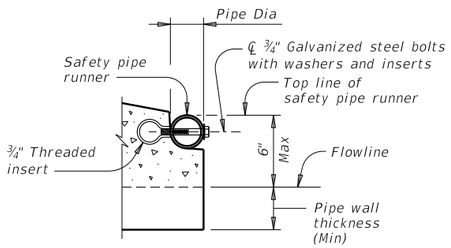


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



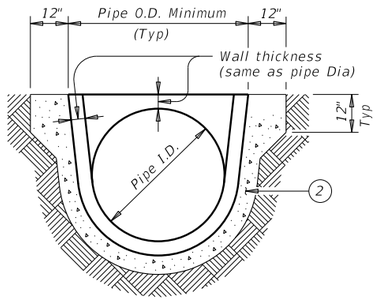
OPTION A



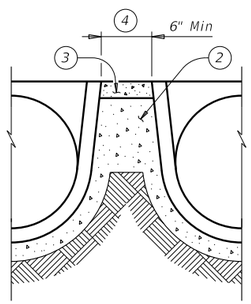
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)



SECTION A-A



MULTIPLE PIPE INSTALLATION

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Galvanize steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP) may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Manufacture precast concrete end sections in accordance with Item 464, "Reinforced Concrete Pipe" and in accordance with ASTM Specification C–76, Class III, Wall B for circular pipe.

Provide precast concrete end sections with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for grout, mortar, cold applied asphalt joint compound or pre–formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280–2F, "Safety Treatment of Roadside Parallel–Drainage Structures", Texas Transportation Institute, March 1981.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-RP

FILE: CD-PSET-RP-20.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

DATE:
FILE:

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consider and act on a Site Plan application for office space use at 403 S. Main Street, an approximate 0.557 acre tract of land located within the Aubrey city limits. *(Applicant: SHAP, LLC)*

Staff Contact
Leanne Wilson, Assistant City Manager
lwilson@aubreytx.gov

Summary
Owner: SHAP, LLC
Engineer: Triangle Engineering LLC (Kartavya S. Patel, PE)

Application Date: December 9, 2025
Location: South of the intersection between S. Main Street and W. Plum Street
General Retail, Zone “GR”
Current Use: Single Family Home. Proposed use is office space.

Per Aubrey’s zoning ordinance (Chapter 14) Section 5Q2(a) prior to receipt of a building permit, properties greater than one (1) acre or within 200 ft of single-family platted development shall have their site plans reviewed by the Planning and Zoning Commission and City Council. The applicant has provided a complete application. This property is less than 1 acre (it is 0.557 acres) but is located within an existing single-family neighborhood. The owners desire to convert the existing 2,175 SF house into office space.

Water and sewer are provided by the City and connections will be provided along S. Main Street.

The applicant has provided a substantially complete application, and the application packet was reviewed by staff, the City Engineer, and the City Planner. The Site Plan is in general compliance with the City Code of Ordinances. Items were identified that require revisions, and a conditional approval was recommended from the Planning and Zoning Commission on January 8, 2026, to include the following conditions:

1.CHAPTER 14; SECTION 23. G.1 (i) — NONRESIDENTIAL LANDSCAPE REQUIREMENTS. The intent of the nonresidential landscape requirements is for the protection of healthy trees and vegetation and promoting the natural ecological, environmental, and aesthetic qualities of the city. This plan lacks tree preservation. This lot has many existing trees from 8" inches to 32" inches in diameter. The landscape plan shall be amended to include some preservation. The landscape plan shall be approved by the Development Manager prior to issuance of a building permit.
2.CHAPTER 14; SECTION 23. A.1 (e) (ii). Part of the requirements for the "E" buffer zone include berms. The design includes the berm along E. Plum Street for the detention pond but does not include a berm along S. Main Street. If an exception is not approved by council, the site plan shall be amended to include the required berm. The site plan shall be approved by the Development Manager prior to issuance of a building permit.
3.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Plans shall be amended to remove outdated information related to a restaurant.
4.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Plans shall be amended to address the contradiction in water tap sizes. Note shall be amended to remove tapping sleeves and shall include tapping saddles.
5.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Plans shall be amended to reference

permitting and compliance with TxDOT on long-side service bores.
6.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Backflow devices are required by code for irrigation and commercial water connections.
7.CHAPTER 14; SECTION 23. A.1 (e) (ii). The landscape Plan must be revised to accurately indicate the actual number of parking spaces and tree requirements for Buffer Type F. The landscape plan shall be approved by the Development Manager prior to issuance of a building permit.
8.CHAPTER 10; ARTICLE 3, SECTION 6.02 - SIDEWALKS — A minimum of a five-foot wide sidewalk is required along Main Street from property line to property line. A certificate of occupancy shall not be issued until the sidewalk is installed or funds have been escrowed to the city.

Since the Planning and Zoning meeting, the client has submitted revisions that satisfy six of the items. Staff recommends conditional approval based on the following conditions:

1.CHAPTER 10; ARTICLE 2, SECTION 4.01 — ENGINEERING PLANS. Plans shall be amended to address the contradiction in water tap sizes. Note shall be amended to remove tapping sleeves and shall include tapping saddles.
2.CHAPTER 10; ARTICLE 3, SECTION 6.02 - SIDEWALKS — A minimum of a five-foot wide sidewalk is required along Main Street from property line to property line. A certificate of occupancy shall not be issued until the sidewalk is installed or funds have been escrowed to the city.

The City Council may:
A. Approve the Site Plan,
B. Approve the Site Plan with conditions, or
C. Deny the Site Plan.

Financial Summary
NA

Staff Recommended Action
Approve with Conditions

Staff Recommended Motion
Motion to (approve, approve with conditions, or deny) the Site Plan.

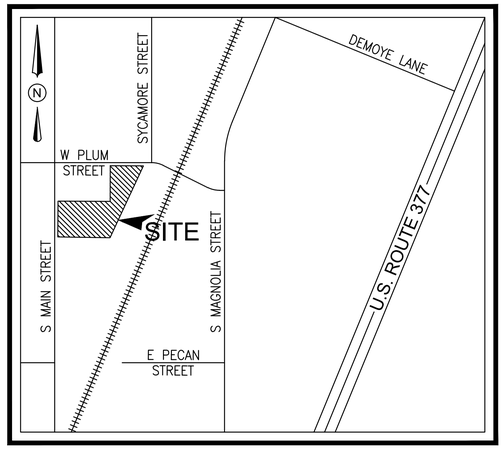
SITE DEVELOPMENT PLANS

FOR

OFFICE

403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304
0.557 ACRES

PROJECT CONTACT LIST
ENGINEER TRIANGLE ENGINEERING LLC 1782 W. McDERMOTT DRIVE ALLEN, TEXAS 75013 CONTACT: KARTAVYA PATEL, P.E. PHONE: 469-331-8566
SURVEYOR TRAVERSE LAND SURVEYING 14200 MIDWAY ROAD, SUITE 130 DALLAS, TEXAS 75244 CONTACT: MARK NACE PHONE: 469-784-9321
OWNER/DEVELOPER JPAR McKINNEY 2629 SHADOW GLEN DRIVE PROSPER, TEXAS 76058 CONTACT: HARI NAMASIVAYAM PHONE: 469-554-0390



VICINITY MAP
N.T.S.

SHEET LIST TABLE	
C-1.0	COVER SHEET
	PLAT
	SURVEY
C-1.1	GENERAL NOTES
C-1.2	TXDOT GENERAL NOTES
C-2.0	DEMOLITION PLAN
C-3.0	SITE PLAN
C-3.1	SITE DETAILS
C-3.2	DIMENSION CONTROL PLAN
C-3.3	GARBAGE TRUCK ROUTE-LEFT
C-3.4	GARBAGE TRUCK ROUTE-RIGHT
C-4.0	GRADING PLAN
C-4.1	CROSS SECTIONS
C-5.0	PRE-DRAINAGE PLAN
C-6.0	POST-DRAINAGE PLAN
C-6.1	DETENTION CALCULATIONS
C-6.2	PIPE CULVERT CAPACITY CALCS
C-6.3	STORM SEWER DETAILS
C-7.0	EROSION CONTROL PLAN
C-7.1	EROSION CONTROL DETAILS
C-8.0	PAVING PLAN
C-8.1	PAVING DETAILS
C-9.0	UTILITY PLAN
C-9.1	UTILITY DETAILS
L.1	TREE REMOVAL PLAN
L.2	LANDSCAPE PLAN
L.3	LANDSCAPE SPECIFICATIONS
L.4	IRRIGATION PLAN
L.5	IRRIGATION SPECIFICATIONS
	TXDOT DETAILS
	BC(1-12)-21
	EC(1)-16
	EC(2)-16
	EC(3)-16
	DRIVEWAY DETAILS PRIVATE
	PSET-RP

BHC Seventh Review
01-14-2026

Seventh review of the 403 S. Main St. Civil plan submittal. Our review is for general compliance with the City of Aubrey development requirements. It is based on the City's Code of Ordinances and Good Engineering Practice, and does not relieve the design engineer of their responsibilities as the Engineer of Record under the Texas Engineering Practice Act.

Once the remaining comment is addressed we offer no further objections. Resubmittal is not required.

Cooper Reinbold, P.E.
Chase Crawford, R.P.L.S.

811 Know what's below. Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS · KARTAVYA S. PATEL · 97534 · LICENSED PROFESSIONAL ENGINEER
01-08-26

COVER SHEET

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

DENTON COUNTY, TEXAS

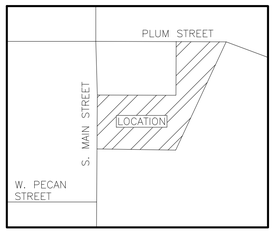
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013

Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-1.0

TX. P.E. FIRM #11525

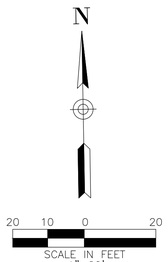


VICINITY MAP
NOT TO SCALE

UTILITY PROVIDERS:

WATER / SEWER – TO BE PROVIDED BY CITY

ELECTRIC GAS – COSERV



GENERAL NOTES

1. The Basis of Bearings is from the Texas State Plane Coordinate System, NAD83, North Central Zone is derived from GPS Observatinos using the Allterra RTK Network and adjusted to surface using a scale factor of 1.00015063.
2. Notice: Selling a portion of this addition by metes and bounds is a violation of City subdivision ordinance and state platting statutes and is subject to fines and withholding of utilities and building certificates.
3. The purpose of this plat is to create one recorded lot out of a tract of land.
4. 1 Lot for commercial use.

Add note: "The maintenance of detention facilities, drainage improvements and/or easements shown on the plat are the responsibility of the individual property owners and does not constitute acceptance of the same for maintenance purposes by the City of Aubrey, or Denton County".

SURVEYOR'S CERTIF

KNOW ALL MEN BY THESE PRESENTS:

That I, David F. McCullah, do hereby certify that I prepared this plat from an actual and accurate survey of the land and that the corner monuments shown thereon as set were properly placed under my personal supervision.

PRELIMINARY, THIS SURVEY SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT

David F. McCullah
REGISTERED PROFESSIONAL LAND SURVEYOR
TEXAS REGISTRATION NO. 4023

DATE: _____

STATE OF TEXAS §
COUNTY OF COLLIN §

BEFORE ME, the undersigned authority, a notary public in and for the State of Texas, on this day personally appeared David F. McCullah, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same in the capacity therein stated.

Given under my hand and seal of office this _____ day of _____, 202__

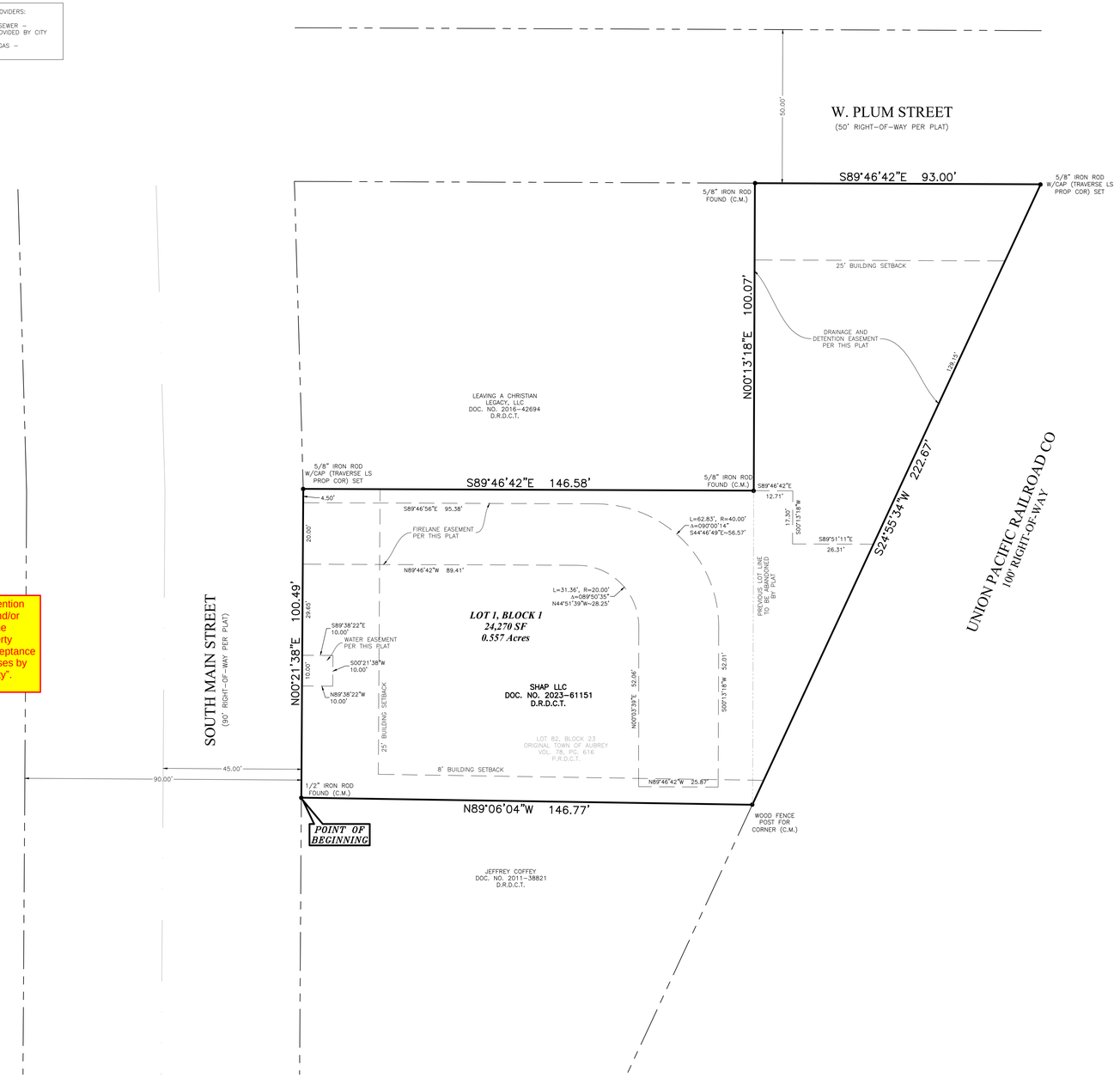
Notary Public in and for the State of Texas

FLOOD NOTES

No portion of the subject property shown hereon lies within the 100 year flood hazard area according to the Flood Insurance Rate Map, Community Panel No. 48121C0265G, dated April 18, 2011. The subject property is located in the area designated as Zone "X", (areas determined to be outside the 0.2% annual chance floodplain).

LEGEND

D.R.D.C.T.	DEED RECORDS, DENTON COUNTY, TEXAS
P.R.D.C.T.	PLAT RECORDS, DENTON COUNTY, TEXAS
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS, DENTON COUNTY, TEXAS
C.M.	CONTROLLING MONUMENT
CAB. SLIDE	CABINET AND SLIDE
DOC. NO.	DOCUMENT NUMBER
VOL., PG.	VOLUME AND PAGE
CIRS	5/8" INCH IRON ROD SET CAPPED "TRAVERSE LS PROP COR"
———	SUBJECT PROPERTY LINE
——— – – ———	ADJOINING PROPERTY LINE
— — — — —	EXISTING EASEMENT LINE
— — — — —	PROPOSED EASEMENT LINE
— — — — —	CENTERLINE OF ROAD
●	FOUND/SET MONUMENT (SEE LABEL)



CERTIFICATE OF APPROVAL:

Approved:

_____
Mayor, City of Aubrey, Texas

The undersigned, the City Secretary of the City of Aubrey, Texas, heredby certifies that the foregoing plat of Aub Office Addition, an addition to the City of Aubrey, Texas, was submitted to the City Council on the _____ day of _____, 20____ and the council by formal action, then and there accepted the dedication of streets, utility easement and droiange easemetns as shown and set forth in and upon said plat and said council further authorized the Mayor to note the acceptance thereof by signing her name as herein above subscribed.

ATTEST this _____ day of _____, 20____.

_____
City Secretary
City of Aubrey, Texas

STATE OF TEXAS
COUNTY OF DENTON

BEING all that certain lot, tract, or parcel of land situated in the Dennis Cowan Survey, Abstract Number 304, being all of that certain called 0.56 acres to SHAP LLC in Warranty Deed recorded in Document Number 2023-61151 of the Deed Records of Denton County, Texas, and being more particularly described by metes and bounds as follows:

BEGINNNING at a 1/2 inch iron rod found for corner in the most southwesterly corner of said SHAP tract, same being the most northwesterly corner of Jeffrey Coffey recorded in Document Number 2011-38821 of the Deed Records of Denton County, Texas, also being a point in the most easterly Right-of-Way line of South Main Street (90 foot Right-of-Way);

THENCE North 00 degrees 21 minutes 38 seconds East, in a northerly direction along said South Main Street, a distance of 100.49 feet to a capped 5/8 inch iron rod stamped "TRAVERSE LS PROP COR" set for corner in the most northwesterly corner of said SHAP tract, same being the most southwesterly corner of Leaving a Christian Legacy, LLC recorded in Document Number 2016-42694 of the Deed Records of Denton County, Texas;

THENCE South 89 degrees 46 minutes 42 seconds East, in an easterly direction departing from said South Main Street, a distance of 146.58 feet to a 5/8 inch iron rod found for corner in the most southeasterly corner of said Christian Legacy tract, same being at an outside "L" corner of said SHAP tract;

THENCE North 00 degrees 13 minutes 18 seconds East, in a northerly direction along the common line between said Christan Legacy tract and said SHAP tract, a distance of 100.07 feet to a 5/8 inch iron rod found for corner in the most northeasterly corner of said Christian Legacy tract, same being a an inside "L" corner of said SHAP tract, also being a point in the most southerly Right-of-Way line of W. Plum Street (50 foot Right-of-Way)

THENCE 89 degrees 46 minutes 42 seconds East, in an easterly direction along said W. Plum Street, a distance of 93.00 feet to a capped 5/8 inch iron rod stamped "TRAVERSE LS PROP COR" set for corner in the most northeasterly corner of said SHAP tract;

THENCE South 24 degrees 55 minutes 34 seconds West, in a southerly direction departing from said W. Plum Street following the most easterly line of said SHAP tract, a distance of 222.67 feet to a Wood Fence Post found for corner in the most southeasterly corner of said SHAP tract, same being the most northeasterly corner of said Coffey tract;

THENCE North 89 degrees 06 minutes 04 seconds West, in a westerly direction along the common line between said SHAP tract and Coffey tract, a distance of 146.77 feet to the POINT OF BEGINNING and containing 0.557 acres (24,270 square feet) of land, more or less.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS

THAT we SHAP LLC do hereby adopt this plat, designating the herein described property as AUB OFFICE ADDITION, an addition to the City of Aubrey, Denton County, Texas and do hereby dedicate to the public use forever the streets and easemetns as shown hereon.

Witness, my hand at _____, _____, This _____ day of _____, 20_____.

_____
Signature – SHAP LLC Representative

_____
Printed Name

_____
Title / Date

STATE OF TEXAS §
COUNTY OF _____ §

BEFORE ME, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared_____, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that she executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE this _____day of _____ 20_____.

_____
Notary Public in and for the State of Texas

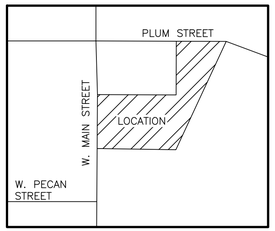
OWNER/DEVELOPER
SHAP LLC
10812 Capri Drive,
McKinney, Texas 75072

TRAVERSE LAND SURVEYING LLC
14200 Midway Road, Suite 130, Dallas, TX 75244 I T: 469.784.9321
W: TraverseLandSurveying.com I Texas Firm No. 10194631
Surveying | Construction Staking | Platting
Date: 2025.06.26 Project No.: TR-93-24

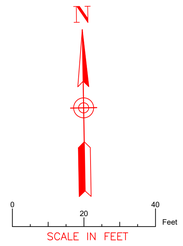
REPLAT
LOT 1, BLOCK 1 AUB OFFICE ADDITION
BEING 0.557 ACRES
OUT OF THE DENNIS COWAN SURVEY
ABSTRACT NUMBER 304
CITY OF AUBREY, DENTON COUNTY, TEXAS
JUNE 2025

1 OF 1

FOR DENTON COUNTY RECORDATION ONLY



VICINITY MAP
NOT TO SCALE



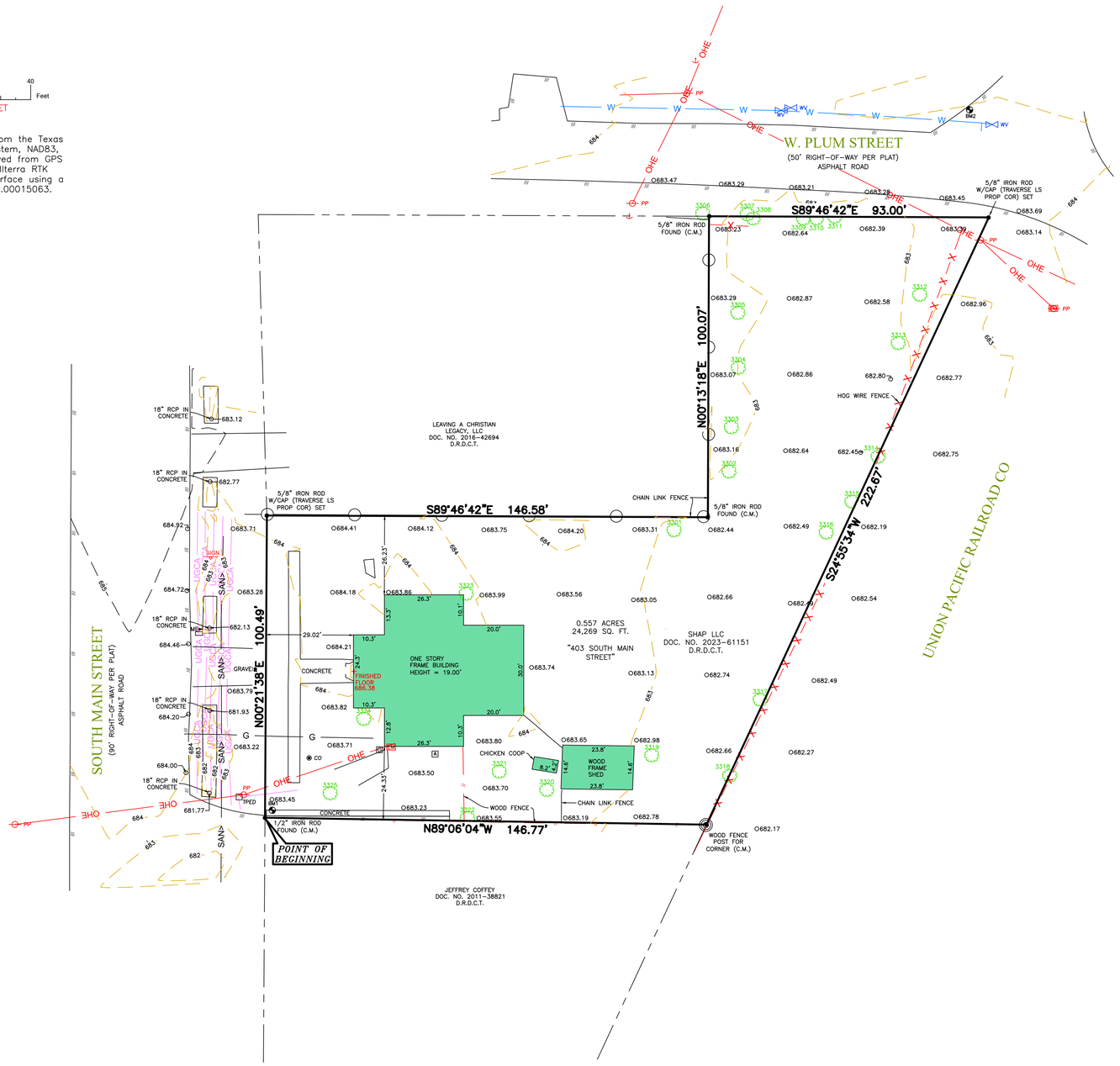
SCALE IN FEET

The Basis of Bearings is from the Texas State Plane Coordinate System, NAD83, North Central Zone as derived from GPS observations using the Allterra RTK Network and adjusted to surface using a surface scale factor of 1.00015063.

TREE TABLE		
NO.	SIZE"	SPECIES
3301	8	REDBUD
3302	8	APRICOT
3303	14	CHERRY
3304	6	PEACH
3305	6	PLUM
3306	16	HACKBERRY
3307	23	ELM
3308	17	ELM
3309	16	ELM
3310	17	ELM
3311	32	MAPLE
3312	7	PEAR
3313	6	PEACH
3314	18	HACKBERRY
3315	18	ELM
3316	6	PEAR
3317	27	COTTONWOOD
3318	19	ELM
3319	16	CYPRESS
3320	13	REDBUD
3321	16	PINE
3322	12	CHINABERRY
3323	34	ELM
3324	28	ELM
3325	8	CEDAR

LEGEND

———	BOUNDARY LINE
———	ADJOINER BOUNDARY LINE
———	EASEMENT LINE (AS NOTED)
W	WATER LINE
———	SEWER LINE
OHE	OVERHEAD ELECTRIC LINE
———	WOOD FENCE
———	CHAIN LINK FENCE
FH	FIRE HYDRANT
WV	WATER VALVE
ICV	IRRIGATION CONTROL VALVE
CO	SEWER CLEAN OUT
	VAULT
TR	TRANSFORMER
E	ELECTRIC VAULT
EM	ELECTRIC METER
EB	ELECTRIC BOX
CV	CABLE VAULT
TJB	TELEPHONE JUNCTION BOX
SS	SANITARY SEWER MAN HOLE
SD	STORM MAN HOLE
T	TELEPHONE MAN HOLE
	LIGHT POLE
	POWER POLE
G	GAS METER
AC	AIR CONDITIONER UNIT
	FLAG POLE
TS	TRAFFIC SIGN
	BENCH MARK
(CM)	CONTROL MONUMENT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS
D.R.D.C.T.	DEED RECORDS DENTON COUNTY, TEXAS
P.R.D.C.T.	PLAT RECORDS DENTON COUNTY, TEXAS



BENCHMARK NOTES

The Benchmarks and elevations shown are based on the North American Vertical Datum 1988 (NAVD88) by using GPS observations in conjunction with the AllTerra RTK Network.

Benchmark No. 1
From the most southwesterly corner North 2.49 feet thence East 2.43 feet to a "Square cut X" on top of concrete. Elevation: 683.50'

Benchmark No. 2
From the most northeasterly corner North 35.76 feet thence West 36.60 feet to a Rail Road Spike in asphalt. Elevation: 683.09'

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GENERAL NOTES

1. All underground utilities shown hereon were observed in the field, none of the underground utilities shown hereon have been field verified by the surveyor.
2. This survey was created with the information provided by the client or their representative. the surveyor did not abstract the subject property and cannot be used to represent warranty of title or guarantee of ownership.

LAND DESCRIPTION

BEING all that certain lot, tract, or parcel of land situated in the Dennis Cowan Survey, Abstract Number 304, being all of that certain called 0.56 acres to SHAP LLC in Warranty Deed recorded in Document Number 2023-61151 of the Deed Records of Denton County, Texas, and being more particularly described by metes and bounds as follows:

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SURVEYOR'S CERTIFICATION

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS and includes Items 1-5, 8, 11 (a), and 13 in conjunction with the laws of the State of Texas.
The fieldwork was completed on 3-18-2024.

Date of Plat or Map: 3-25-2024

David F. McCullah
Registered Public Land Surveyor
Texas Registration No. 4023

STATE OF TEXAS · REGISTERED · DAVID F. McCULLAH · 4023 · PROFESSIONAL LAND SURVEYOR

SCAN HERE FOR FIELD IMAGES OR CLOCK THE LINK BELOW:
FIELD IMAGES

NO.	DATE	DESCRIPTION	BY

ALTA/NSPS LAND TITLE SURVEY

0.557 ACRES SITUATED IN
DENNIS COWAN SURVEY, ABSTRACT NO. 304
CITY OF AUBREY, DENTON COUNTY, TEXAS

TRAVERSE
LAND SURVEYING LLC
14200 Midway Road, Suite 130, Dallas, TX 75224 | T: 469.784.9321
W: TraverseLandSurveying.com | Texas Firm No. 10194631

Surveying | Construction Staking | Platting

DRAWN	CHECK	DATE	SCALE	PROJECT NO.	SHEET NO.
JCN	DM	3-18-2024	1" = 20'	TR-93-24	1

GENERAL NOTES

1. ALL MATERIALS MUST BE DOMESTICALLY SOURCED AND PRODUCED UNLESS OTHERWISE APPROVED BY THE PUBLIC WORKS DIRECTOR.

PAVING NOTES

1. CONCRETE FOR ALL STREETS, ALLEYS, & DRIVEWAYS SHALL BE IN ACCORDANCE WITH NCTCOG CLASS "C" CONCRETE (3,600 P.S.I. COMPRESSIVE STRENGTH @ 28 DAYS). DRIVEWAYS SHALL BE HAND POURED. CONCRETE FOR ALL SIDEWALKS SHALL BE IN ACCORDANCE WITH NCTCOG CLASS "A" CONCRETE (3,000 COMPRESSIVE STRENGTH @ 28 DAYS).
2. REINFORCING STEEL SHALL BE DEFORMED BARS NO. 3 ON 18 INCH CENTERS OR NO. 4 BARS ON 24 INCH CENTERS UNLESS OTHERWISE NOTED IN THE DETAILS. REINFORCING SHALL BE IN BOTH DIRECTIONS ON CENTER. REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ASTM 615, 616 AND 617.
3. ALL REINFORCING STEEL SHALL BE TIED (100%). REINFORCING STEEL SHALL BE SET ON PLASTIC CHAIRS. BAR LAPS BE MINIMUM 30 DIAMETERS.
4. EXPANSION JOINTS SHALL BE SPACED EVERY 200 FEET AND AT ALL INTERSECTIONS. ALLEYS SHALL HAVE A MINIMUM OF TWO EXPANSION JOINTS.
5. SAWED TRANSVERSE DUMMY JOINTS SHALL BE SPACED EVERY 20 FEET ON PAVING 8 INCHES OR THICKER AND EVERY 15 FEET FOR PAVING THICKNESS LESS THAN 8 INCHES SAWING SHALL OCCUR WITHIN 5 TO 12 HOURS AFTER THE POUR INCLUDING SEALING. OTHERWISE THE SECTION SHALL BE REMOVED AND LONGITUDINAL BUTT JOINT CONSTRUCTED.
6. SUBGRADE UNDER PAVEMENTS SHALL BE A MINIMUM OF 8 INCHES OF EITHER HYDRATED LIME OR CEMENT TREATED SUBGRADE, WITH OPTIMUM CONTENT AND COMPACTION REQUIREMENTS AS RECOMMENDED BY THE GEOTECHNICAL DESIGN, AS WELL AS APPROVED BY THE PUBLIC WORKS DIRECTOR. CONTENT AND COMPACTION TESTS SHALL BE TAKEN ALONG THE EXCAVATION AT ALL CHANGES IN SOIL AND A MINIMUM OF 300 FEET DISTANCES. ALL TESTS SHALL BE COMPLETED BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY AND PAID FOR BY THE CONTRACTOR.
7. LIME TREATED SUBGRADE SHALL BE COMPACTED TO A DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D 698. MOSTURE CONTENT SHALL BE WITHIN -2 TO +4 OF OPTIMUM. DENSITY TEST RESULTS SHALL BE COMPLETED BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY. ALL RESULTS SHALL BE PROVIDED TO THE CITY.
8. LIME TRIMMINGS ARE NOT ACCEPTABLE FOR ANY USE.
9. ALL FILL SHALL BE COMPACTED BY MECHANICAL METHODS. MAXIMUM LOOSE LIFT FOR COMPACTION SHALL BE 8 INCHES. ALL LIFTS SHALL BE TESTED FOR DENSITY BY AN INDEPENDENT LABORATORY APPROVED BY THE CITY. DENSITY REQUIREMENT SHALL BE AS SHOWN ON THE PLANS FOR THE TYPE OF MATERIAL CALLED FOR IN THE PLANS.
10. ALL DISTURBED AREAS OF ROADWAY WORK SHALL HAVE GRASS ESTABLISHED IMMEDIATELY. GRASS SHALL MEET THE REQUIREMENTS OF ITEM 3.8, 3.9. 3.10 & 3.11 OF NCTCOG.
11. ALL AREAS TO BE EXCAVATED OR FILLED SHALL HAVE EROSION CONTROL PLACED PRIOR TO COMMENCING EARTHWORK. EROSION CONTROL DEVICES SHALL BE MAINTAINED THROUGHOUT THE PROJECT IN ACCORDANCE WITH NCTCOG ITEM 3.12.
12. ALL SIDEWALKS SHALL INCLUDE BARRIER FREE RAMPS AT INTERSECTING STREETS, ALLEYS, DRIVEWAYS, ETC. BARRIER FREE RAMPS SHALL MEET CURRENT ADA REQUIREMENTS AND BE APPROVED BY THE TEXAS LICENSING BOARD.
13. SIDEWALKS SHALL BE DOWELED INTO PAVEMENT WHERE IT ABUTS DRIVEWAYS. REDWOOD EXPANSION JOINT MATERIAL SHALL BE USED AT THESE LOCATIONS.
14. NO VEHICLES SHALL BE PERMITTED ON CONCRETE PAVEMENT WITHOUT APPROVAL FROM THE CITY. THE CITY WILL MAKE DETERMINATION BASED ON CONCRETE BREAK REPORT.
15. SIDEWALKS REQUIRE 2-INCH SAND CUSHION ON SUBGRADE COMPACTED WITHIN 95% STANDARD PROCTOR DENSITY.
16. POURS SHALL REQUIRE A PRE-POUR INSPECTION FOR FORMWORK, REINFORCEMENT AND GEOPMETRY. VISUAL INSPECTIONS MAY BE MADE AFTER THE POUR TO ADDRESS TOOLED JOINTS, FINISH, SUBGRADE INTEGRITY, ETC.
17. ENSURE THAT FLATWORK DOES NOT OBSCURE ABOVE-GROUND APPURTENANCES (I.E. VALVES, MH LIDS).
18. EXPOSED AGGREGATE CONCRETE IS NOT ACCEPTABLE FOR SIDEWALK WITHIN PUBLIC RIGHT-OF-WAY.
19. SIDEWALKS SHALL BE 5' WIDE MINIMUM WIDTH.

LINED CHANNELS

1. CONSTRUCTION JOINT SHOWN IN DETAILS FOR CONVENIENCE ONLY, MONOLITHIC CONSTRUCTION MAY BE USED.
2. ALL VISIBLE SURFACES SHALL BE A TROWEL FINISH.
3. ALL REINFORCING STEEL SHALL BE 3/8" DIAMETER AND SPACED 12" CENTER TO CENTER BOTH WAYS UNLESS OTHERWISE SPECIFIED.
4. IF WOOD FORMS ARE USED WITH CONSTRUCTION JOINT, THEY SHALL BE TWO, 2"x4", AND SHALL NOT BE REMOVED UNTIL CONCRETE ON SLOPES IS READY TO BE PLACE.
5. ALL CONCRETE IN LINED CHANNEL SHALL BE NCTCOG CLASS "A" (MINIMUM 3.000 P.S.I.) CONCRETE.
6. FLAT BOTTOM TO BE CONSTRUCTED WHEN CHANNEL WIDTH IS LESS THAN 12 FOOT.
7. 3/4" CHAMFER ON ALL CONCRETE CORNERS.

STORM SEWER

1. THE FLOOR OF THE EXCAVATION FOR INLET BOX MUST PROVIDE A FIRM, LEVEL BED FOR THE BASE SECTION TO REST UPON.
2. A MINIMUM OF 6 INCHES OF 1" DIAMETER (MAXIMUM) ROCK OR GRAVEL SHALL BE USED TO PREPARE THE BEDDING TO FINAL GRADE OR IN LIEU OF THIS, AT LEAST 6 INCHES OF 2- SACK CEMENT STABILIZED SAND SHALL BE USED TO PREPARE THE BEDDING TO GRADE CEMENT STABILIZED-SAND SHALL BE ALLOWED TO SET BY KEEPING HOLE PUMPED DRY.
3. AFTER PIPE HAS BEEN LAID ON PROPER BEDDING, BACKFILLING TO COMMENCE WITH 8' MAXIMUM LOOSE LIFTS MECHANICALLY COMPACTED TO 95% STANDARD PROCTOR UNDER ROADWAY OR 12" MAXIMUM LOOSE LIFT BEHIND CURB. MAXIMUM SIZE ROCK IN BACKFILL SHALL NOT EXCEED 4 INCHES IN DIAMETER.
4. PRECAST INLETS MUST BE APPROVED BY THE CITY.
5. CONCRETE TO BE MINIMUM 4,200 P.S.I.
6. LOCKING DEVICE IS REQUIRED ON ALL STORM SEWER LIDS.
7. "NO DUMPING" WARNING PLAQUE TO BE INSTALLED ON ALL STANDARD AND RECESSED INLETS.
8. CONCRETE CAST-IN-PLACE INLETS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,200 PSI @ 28 DAYS.
9. STORM DRAIN TILE SHALL BE PLACED IN THE CENTER OF THE INLET, 2 INCHES FROM THE EDGE OF OPENING AS SHOWN IN THE DRAWING USE PL-200 CONSTRUCTION ADHESIVE FOR APPLICATION. TILES CAN BE ORDERED FROM: CENTERLINE SUPPLY. INC., 425 JESSE STREET, GRAND PRAIRIE, TEXAS 75061-1141. 1-800-321-1731, METRO: 214-647-8300, FAX: 214-641-1221.
10. EXISTING STORM SEWER PIPE AND/ OR LATERALS SHALL BE LOCATED PRIOR TO SETTING OF CONSTRUCTING INLET BOXES. IF ADJUSTMENT IN GRADE OF LATERAL IS REQUIRED, A REVISED DESIGN BY THE ENGINEER OF RECORD SHALL BE SUBMITTED TO THE CITY FOR APPROVAL.
11. REINFORCED CONCRETE PIPE CLASS III MINIMUM.

SANITARY SEWER

1. ALL SEWER LINES CROSSING POTABLE WATERLINES SHALL BE AS SHOWN IN THE PLANS AND MEET TNRCC REQUIREMENTS
2. ALL SANITARY SEWER MAINS SHALL BE A MINIMUM OF 6" INSIDE DIAMETER. ALL SERVICE LINES SHALL BE A MINIMUM OF 4" INSIDE DIAMETER. PIPES 6 INCHES THROUGH 24 INCHES SHALL BE IN ACCORDANCE WITH ASTM D3034 WITH A MINIMUM SDR OF 26.
3. PIPES LARGER THAN 24 INCHES SHALL BE CCFRPM, CENTRIFUGALLY CAST FIBER REINFORCED POLYMER MORTAR PIPE(HOBAS OR APPROVED EQUIVALENT) OR AS DIRECTED BY THE PUBLIC WORKS DIRECTOR. SHALL BE IN ACCORDANCE WITH ASTM STANDARDS D3262, D4161, D2412, D3681, D638.
4. MANHOLES SHALL BE CAST IN PLACE OR PRECAST. ALL MANHOLES SHALL BE WATER TIGHT. ALL RING AND COVERS SHALL INCLUDE AN INTERNAL CHIMNEY SEAL.
5. ALL PIPE OPENINGS IN MANHOLES SHALL INCLUDE COUPLINGS WITH "O" RING RUBBER GASKETS.
6. STUBOUTS OUT OF MANHOLES SHALL BE FITTED WITH A STOPPER AND CAP. STUBOUTS SHALL BE A MINIMUM OF 5 FEET FROM MANHOLE AND BE SUPPORTED BY A CONCRETE CRADLE.
7. ALL DROP MANHOLES SHALL BE OF THE EXTERNAL TYPE.
8. MANHOLES SHALL BE VENTED IN ACCORDANCE WITH TCEQ REQUIREMENTS.
9. ALL SANITARY SEWER PIPE SHALL BE TESTED (NCTCOG ITEM 6.7 2) AFTER CONSTRUCTION. TESTING SHALL INCLUDE PRESSURE TESTING, MANDREL TEST (TCEQ REQUIRED) AND COLOR TV INSPECTION. COLOR TV INSPECTION SHALL BE COMPLETED IN PRESENCE OF CITY REPRESENTATIVE AND THE ORIGINAL VHS FORMATTED TAPE SHALL BE GIVEN TO THE CITY AT THE COMPLETION OF THE INSPECTION.
10. MANHOLES SHALL BE VACUUM TESTED IN THE PRESENCE OF THE CITY REPRESENTATIVE.

WATER

1. ALL WATER LINE CROSSINGS OF SANITARY SEWER LINES SHALL BE AS SHOWN IN THE PLANS AND MEET TNRCC REQUIREMENTS.
2. PIPES 12 INCHES IN DIAMETER AND SMALLER SHALL BE POLYVINYL CHLORIDE (P.V.C.) MEETING THE REQUIREMENTS OF AWWA C900 DR 18 OR DUCTILE IRON PIPE (D.I.P.) MEETING THE REQUIREMENTS OF AWWAC 151 CLASS 50 PIPE. ALL D.I.P. SHALL BE WRAPPED WITH A POLYETHYLENE LINER.
3. FOR PIPES LARGER THAN 12 INCHES IN DIAMETER, THE PIPE SHALL BE DUCTILE IRON PIPE (AWWA C151 CLASS 50) OR POLYVINYL CHLORIDE PIPE UP TO 18 INCHES MEETING THE REQUIREMENTS OF AWWA C905 - 235 P.S.I. RATED PIPE.
4. ALL VALVES ON PIPES 12 INCHES AND SMALLER SHALL BE RESILIENT SEALED WEDGE VALVES (AWWA C509).
5. ALL VALVES ON PIPES LARGER THAN 12 INCHES BUT SMALLER THAN 30 INCHES SHALL BE BUTTERFLY VALVES (AWWA C504) OR WEDGE VALVES (AWWA C509).
6. ALL VALVES ON PIPES 30 INCHES AND LARGER SHALL BE BUTTERFLY VALVES (AWWA C504).
7. EMBEDMENT SHALL BE AS SHOWN IN THE PLANS. BACKFILL WITHIN THE LIMITS OF EXISTING AND PROPOSED PAVEMENT SHALL BE COMPACTED TO 95% STANDARD PROCTOR. OUTSIDE PAVEMENT (EXISTING OR PROPOSED) SHALL BE COMPACTED TO MINIMUM OF 95% STANDARD PROCTOR ALL COMPACTION SHALL BE BY MECHANICAL METHODS.
8. WATER LINES SHALL BE PRESSURE TESTEDCOG ITEM 6.7.3..
9. ALL HORIZONTAL AND VERTICAL BENDS SHALL BE BLOCKED USING 3,000 PSI COMMERCIAL CONCRETE. NO HAND MIXING OF SAID CONCRETE SHALL BE PERFORMED ON SITE.
10. ALL SADDLES SHALL BE MUELLER/HYMAX BR2B 4"-16" SADDLES, FORD METER 202B DOUBLE STRAP BRASS SADDLE, OR APPROVED EQUIVALENT.

SCREENING WALLS

1. CONCRETE - MINIMUM COMPRESSIVE STRENGTH OF 3,000 P.S.I. @28 DAYS.
2. REINFORCEMENT - ASTM A-36.
3. MASONRY - COMPRESSIVE STRENGTH SHALL BE PRESCRIBED IN ITEM 2.3.6 SPECIAL PROVISIONS.
4. WIND LOAD FOR DESIGN - 20 P.S.F.
5. PIER BEARING STRESSES - SEE BRICK SCREENING WALL NOTES.
6. MORTAR - TYPE "S".
7. PROVIDE CONTROL JOINTS AT 50 FEET.
8. PROVIDE EXPANSION JOINTS AT 200 FEET CENTER MAXIMUM.
9. PROVIDE PIER WITH MINIMUM 9 FOOT W/ 24 INCH DIAMETER BELL IN CLAY OR OTHER MATERIAL EXCEPT BLUE SHALE, 6 FOOT MINIMUM WITH 3 FOOT MINIMUM INTO BLUE SHALE.
10. ALL EXPOSED CONCRETE SHALL BE CLASS 2 RUBBED FINISHED SURFACE.
11. SIDEWALKS ADJACENT TO WALLS MUST BE 5 FOOT MINIMUM WIDTH FROM ALL PORTIONS OF THE WALL (INCLUDING PILASTERS, COLUMNS, ETC.).
12. MAXIMUM PILASTER SPACING 40 FEET.
13. WALLS SHALL NOT BE PLACED IN THE VISIBILITY EASEMENT OR STREET RIGHT OF WAY.
14. THE WALL SHALL BE A MINIMUM OF EIGHT FEET IN HEIGHT AS MEASURED FROM THE NEAREST ALLEY EDGE OR SIDEWALK GRADE, WHICHEVER IS THE HIGHER. THE COLOR OF THE WALL SHALL BE LIMITED TO EARTH-TONE COLORS, EXCLUDING GRAY, GREEN AND WHITE. THE COLOR OF THE WALL SHALL BE UNIFORM ON EACH SIDE OF A THOROUGHFARE FOR THE ENTIRE LENGTH BETWEEN INTERSECTING THOROUGHFARES, UNLESS OTHERWISE APPROVED BY THE CITY'S PUBLIC WORKS DEPARTMENT. THE FINISH OF THE WALL SHALL BE CONSISTENT ON ALL SURFACES.
15. IF WROUGHT IRON FENCING IS TO BE UTILIZED ON REQUIRED SCREENING, ALL WROUGHT IRON MUST BE SOLID STOCK, NO TUBULAR STEEL WILL BE ALLOWED.
16. A 3"X3"X10' GALVANIZED ANGLE IRON PLATE SHALL BE INSTALLED BELOW THE BOTTOM ROW OF BRICKS & ANCHORED INTO THE COLUMNS FOR MASONRY SCREENING WALLS.

TRAFFIC SIGNS AND LIGHTING

1. THE EXISTING SIGNS LOCATED ON PUBLIC CONSTRUCTION SITES ARE THE PROPERTY OF THE CITY OF AUBREY. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY.
2. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CITY INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIGN SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC.THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE COMPLETION OF THE PROJECT.
3. ALL GROUND MOUNTED AND OVERHEAD SIGNS SHALL USE ANSI STANDARD BQ1528 ALUMINUM BLANKS.
4. ALL BLANKS TO BE INSTALLED SHALL BE 5052-H38 ALUMINIUM (ASTM B –209).
5. THE THICKNESS FOR ALL SIGN BLANKS IS 0.080" EXCEPT OVERHEAD STREET NAME BLADES WHICH ARE 0.100".
6. ALL HOLES SHALL BE 3/8" DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND / OR ROUGH EDGES.
7. ALL SIGN FACE MATERIALS SHALL BE ASTM-4956 TYPE XI FULL CUBE PRISMATIC GRADE RETROREFLECTIVE SHEETING OR EQUIVALENT.
8. ALL STREETNAME SIGNS SHALL HAVE 1/4" DIAMETER HOLES DRILLED ON EACH END AND AFFIXED TOGETHER.
9. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON SHEET 5.
10. ALL SIGN BLANK ARE TO BE ETHCHED, DEGREASEODINE FINISH PRIOR TO APPLICATION OF LEGENDS.
11. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN CONFORMANCE TO THE LATEST CITY OF AUBREY SIGN STANDARDS.
12. DETAILS ARE FOR ALL NEW AND REPLACEMENT SIGN INSTALLATIONS.
13. ALL ADVISORY SPEED SIGNS SHALL BE BASED ON A TRAFFIC STUDY, PLEASE FOLLOW TXDOT PROCEDURES FOR ESTABLISHING SPEED ZONES. THE PROCEDURES ARE AVAILABLE AT http://onlinemanuals.txdot.gov/txdotmanuals/szn/szn.pdf.
14. ALL SCHOOL ZONE WARNING SIGNS SHALL HAVE FLUORESCENT YELLOW GREEN BACKGROUNDS.
15. REFER TO *STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS* AVAILABLE AT https://www.txdot.gov/inside-txdot/forms-publications/publications/highway-signs.html OR CONTACT THE PUBLIC WORKS MAINTENANCE MANAGER FOR GUIDANCE.
16. SPEED LIMIT WITHIN CITY LIMIT SHALL BE 25 MPH

DETAILS

1. ALL DETAILS ARE NOT TO SCALE
2. SPECIAL DETAILS OR MODIFICATIONS TO THESE STANDARD DETAILS TO BE UTILIZED ON ANY GIVEN PROJECT SHALL BE SUBMITTED TO THE CITY FOR APPROVAL FOR USE.
3. The minimum depth of cover for cable television and copper cable communications lines shall be 24 inches. The minimum depth of cover for fiber optic facilities shall be 42 inches. The minimum depth of cover for cable television and copper cab;e communication line shall be 24 inches under ditches or 18 inches beneath the bottom of the pavement structure, whichever is greater.

811 Know what's **below.** **Call** before you dig.

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4	01–08–26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS — KARTAVYA S. PATEL 97534 — LICENSED PROFESSIONAL ENGINEER
01–08–26

GENERAL NOTES

OFFICE

403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 I F: 469.213.7145 I E: info@triangle-engr.com
W: triangle-engr.com I O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management
TX. P.E. FIRM #11525

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-1.1

TXDOT GENERAL NOTES:

1. ALL CONSTRUCTION WITHIN THE STATE RIGHT-OF-WAY WELL REQUIRE COMPLICANCE TO 2014 TXDOT STANDARD SPECIFICATIONS, STANDARD PLAN, TXDOT ON-LINE MANUAL, AND THE TEXAS MAUNAL ON UNIFORM TRAFFIC CONTROL DEVICES.
2. BY SEALING AND SIGNING THESE PERMIT PLANS AS A PROFESSINAL CIVIL ENGINEER LCESNSE TO PARCTICE IN THE STATE OF TEXAS, I CERTIFY THAT THE PROPOSED PRIVATE DRIVEWAY CONNECTIONS TO THE STATE ROADWAY MEET OR EXCEED THE MINIMUM STOPPINGG SIGHT DISTANCE REQUIRED FOR A DESIGN SPEED OF **30** MILES PER HOUR, BASED ON THE MOST RECENT ON-LINE TXDOT ROADWAY DESIGN MANUAL REQUIREMENTS.
3. POSTED SPEED LIMIT IS **30** MILES PER HOUR.
4. SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION AS OF NOVEMBER 1ST, 2014 AND SPECIFICATION ITMES LISED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT FOR ALL WORK WITHIN THE SATE RIGHT-OF-WAY.
5. TRAFFIC CONTROL MUST BE MAINTAINED THROUGHOUT THE DURATION OF WORK WITHIN TXDOT RIGHT-OF-WAY.
6. ALL DISTURBED RIGHT-OF-WAY MUST BE RE-VEGETATED WITH SOD AND MAINTAINED UNTIL VEGETATION IS RE-ESTABLISHED.
7. ALL LANE CLOSURES MUST BE COORDINATED WITH BOTH TXDOT AND MUNICIPALITY INSPECTORS.
8. NO CONSTRUCTION SHALL BE PERMITTED WITHIN TEXAS DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY PRIOR TO TXDOT APPROVAL AND ISSUANCE OF PERMIT.
9. ANY UTILITY RELOCATION UNDER TXDOT RIGHT-OF-WAY REQURIES SEPARATE **"UIR"** PERMIT.
10. ALL LANE CLOSURES SHALL TAKE PLACE BETWEEN **09:00am-3:30pm Monday thru Friday. NO LANE CLOSURES ARE ALLOWED DURING PEAK HOURS.**

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TXDOT GENERAL NOTES

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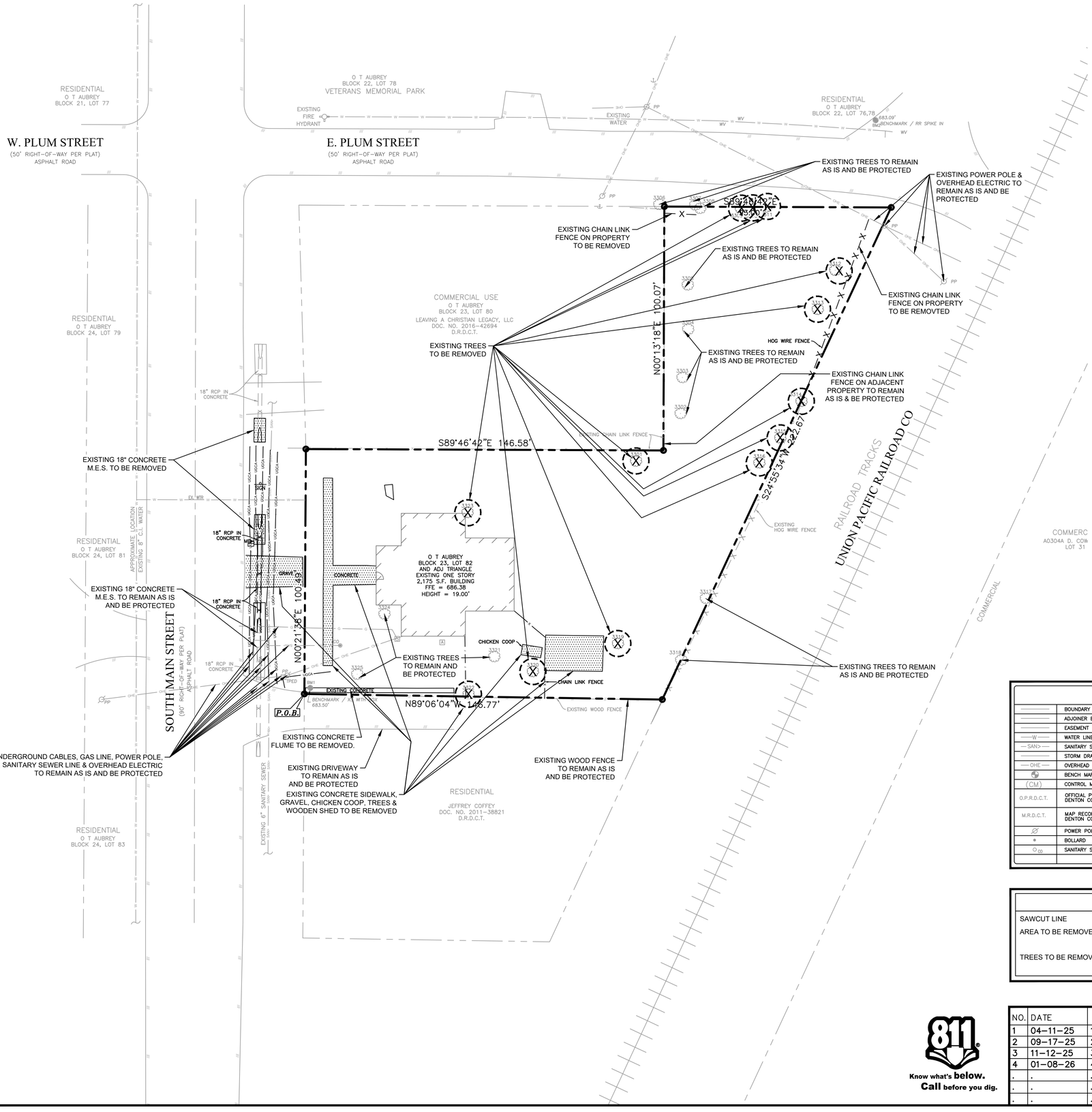
TX. P.E. FIRM #11525



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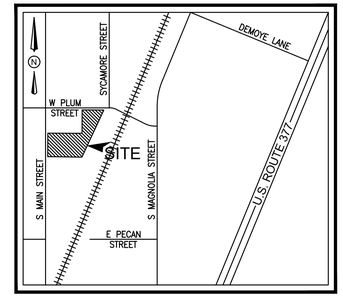
Scale: 1" = 20' Feet



VICINITY MAP

N.T.S.

DEMOLITION GENERAL NOTES

1. ANY DEMOLITION IS TO BE PERFORMED IN STRICT CONFORMANCE WITH ALL APPLICABLE CITY, COUNTY AND STATE, AND/OR GOVERNING BODY'S STANDARDS.
2. EROSION AND SEDIMENT CONTROL MEASUREMENTS SHALL BE MAINTAINED AT ALL TIMES DURING DEMOLITION.
3. THE PURPOSE OF THIS DRAWING IS TO CONVEY THE OVERALL SCOPE OF WORK AND IT IS NOT INTENDED TO COVER ALL DETAILS OR SPECIFICATIONS REQUIRED TO COMPLY WITH GENERALLY ACCEPTED DEMOLITION PRACTICES. CONTRACTOR SHALL THOROUGHLY GET FAMILIARIZED WITH THE SITE, SCOPE OF WORK, AND ALL EXISTING CONDITIONS AT THE JOB SITE PRIOR TO BIDDING AND COMMENCING THE WORK. THE DEMOLITION CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEANS, METHODS, TECHNIQUES, OR PROCEDURES USED TO COMPLETE THE WORK IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS AND IS LIABLE FOR THE SAFETY OF THE PUBLIC OR CONTRACTOR'S EMPLOYEES DURING THE COURSE OF THE PROJECT.
4. THE DEMOLITION PLAN IS INTENDED TO SHOW REMOVAL OF KNOWN SITE FEATURES AND UTILITIES AS SHOWN ON THE SURVEY. THERE MAY BE OTHER SITE FEATURES, UTILITIES, STRUCTURES, AND MISCELLANEOUS ITEMS BOTH BURIED AND ABOVE GROUND THAT ARE WITHIN THE LIMITS OF WORK THAT MAY NEED TO BE REMOVED FOR THE PROPOSED PROJECT THAT ARE NOT SHOWN HEREON. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE CITY, ENGINEER AND/OR OWNER PRIOR TO REMOVING ITEMS NOT SHOWN ON THE PLANS.
5. THE CONTRACTOR SHALL CONTACT RESPECTIVE UTILITY COMPANIES PRIOR TO DEMOLITION TO COORDINATE DISCONNECTION AND REMOVAL OF EXISTING UTILITIES WITHIN THE AREA OF WORK.
6. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES THAT ARE INTENDED TO CONTINUE TO PROVIDE SERVICE WHETHER THESE UTILITIES ARE SHOWN ON THE PLAN OR NOT.
7. UPON DISCOVERY OF ANY UNDERGROUND TANKS, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE. NO REMOVAL OF TANKS SHALL OCCUR UNTIL AUTHORIZED BY OWNER.
8. BUILDING AND APPURTENANCES DESIGNATED FOR DEMOLITION SHALL NOT BE DISTURBED BY THE CONTRACTOR UNTIL HE HAS BEEN FURNISHED WITH NOTICE TO PROCEED BY THE OWNER. AS SOON AS SUCH NOTICE HAS BEEN GIVEN, THE CONTRACTOR SHALL PERFORM THE DEMOLITION, UNDER THE DIRECTION OF THE OWNER'S REPRESENTATIVE.
9. DEBRIS SHALL NOT BE BURIED ON THE SUBJECT SITE. ALL UNSUITABLE MATERIAL AND DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH ALL CITY, STATE, AND FEDERAL LAWS AND ORDINANCES.
10. AS SOON AS DEMOLITION WORK HAS BEEN COMPLETED, THE FINAL GRADE OF BACKFILL IN DEMOLITION AREAS SHALL BE COMPACTED PER THE GEOTECHNICAL REPORT. CONTRACTOR TO PREVENT WATER FROM DRAINING ONTO ADJACENT PROPERTIES.
11. EXISTING TREES TO REMAIN SHOULD BE PROTECTED FROM DAMAGE DURING DEMOLITION AND CONSTRUCTION.

EXISTING LEGEND

	BOUNDARY LINE	○	SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE	●	FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)	⊗	"X" CUT FOUND
—W—	WATER LINE	⊗	"X" CUT SET
—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

DEMOLITION LEGEND

SAWCUT LINE

AREA TO BE REMOVED

TREES TO BE REMOVED

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STATE OF TEXAS
KARTAVYA S. PATEL
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LICENSED PROFESSIONAL ENGINEER
01-08-26

DEMOLITION PLAN

OFFICE

403 SOUTH MAIN STREET (FM 428)

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DENTON COUNTY, TEXAS

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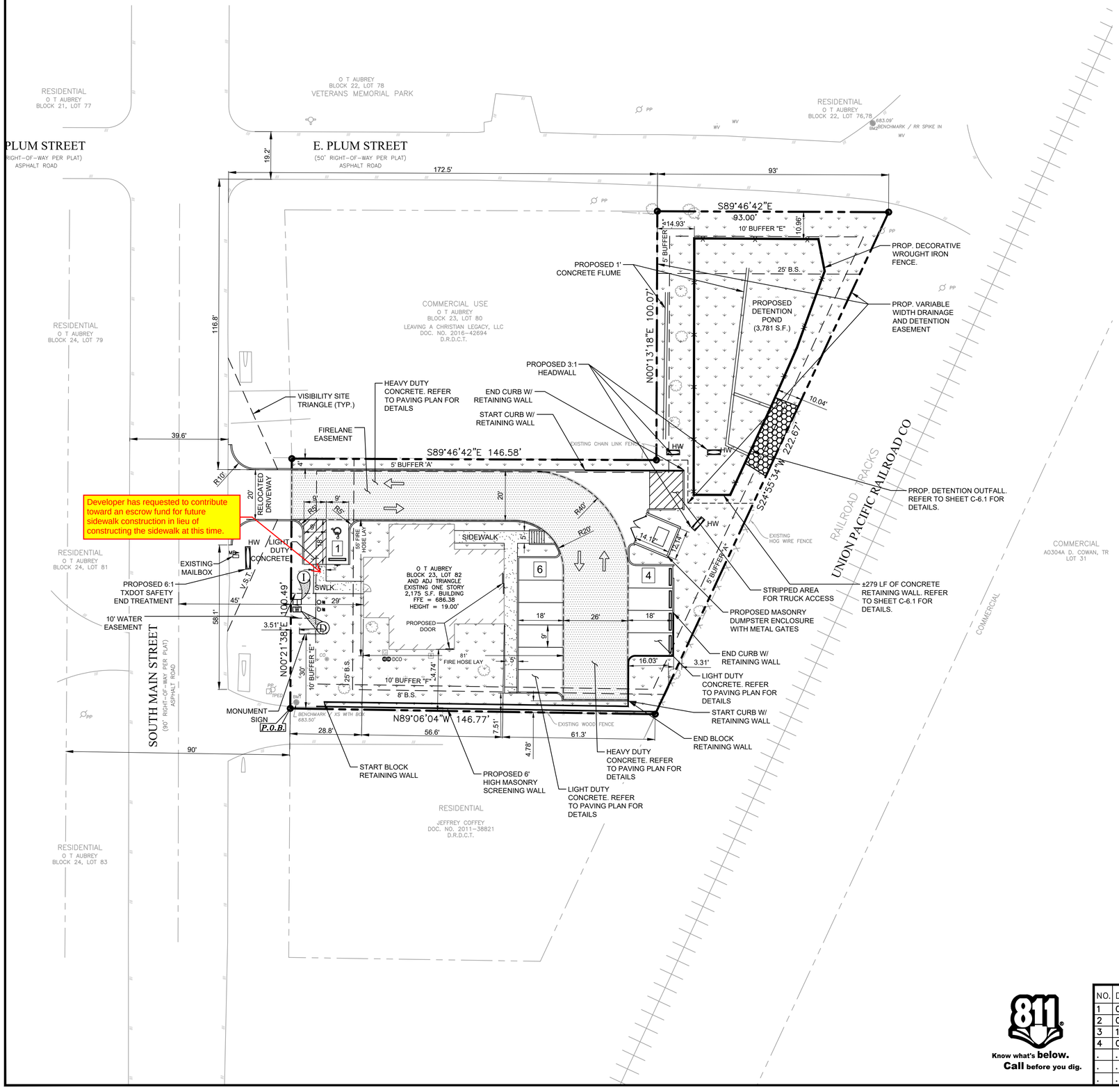
TX. P.E. FIRM #11525



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
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O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

SITE DATA SUMMARY TABLE

SITE ACREAGE:	0.557 ACRES (24,269 S.F.)
ZONING:	GR - GENERAL RETAIL
PROPOSED USE:	OFFICE
BUILDING AREA:	EXISTING 2,175 S.F.
NUMBER OF STORIES:	1
BUILDING HEIGHT:	19'-0"
BUILDING COVERAGE:	8.9%
FLOOR AREA RATIO:	0.09
IMPERVIOUS AREA:	13,762 S.F. (56.70%)
PERVIOUS/LANDSCAPE AREA:	10,507 S.F. (43.3%)
REGULAR PARKING REQUIRED: 1 SPACE PER 300 S.F.	8 SPACES
REGULAR PARKING PROVIDED:	10 SPACES
HANDICAP PARKING REQUIRED:	1 SPACE (1 VAN ACCESSIBLE)
HANDICAP PARKING PROVIDED:	1 SPACES (1 VAN ACCESSIBLE)
TOTAL PARKING PROVIDED:	11 SPACES

SITE LEGEND

CONCRETE CURB	
SAW-CUT LINE	
FENCE	
FIRE LANE	
LANDSCAPE AREA	
STRIPING	
PARKING SPACES	X
MONUMENT/PYLON SIGN	
WHEEL STOPS	
HANDICAP LOGO	
HANDICAP SIGN	
RAMP	
BOLLARD	
TRAFFIC ARROW	
FIRE HYDRANT	
DUMPSTER	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	C
SANITARY SEWER DOUBLE CLEANOUT	DC
SANITARY SEWER SAMPLE PORT	C
GREASE TRAP	
DOMESTIC WATER METER IRRIGATION METER GAS METER	D W I G
TRANSFORMER	T
LIGHT POLE	

CITY NOTES

1. THE SANITATION CONTAINER SCREENING WALLS SHALL BE BRICK MASONRY, STONE MASONRY, OR OTHER ARCHITECTURAL MASONRY FINISH, INCLUDING A METAL GATE, PRIMED AND PAINTED, AND THE SANITATION CONTAINER SCREENING WALLS, GATE AND PAD SITE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY DESIGN SPECIFICATIONS.
2. MECHANICAL, HEATING AND AIR-CONDITIONING EQUIPMENT IN NON-RESIDENTIAL USES SHALL BE SCREENED FROM VIEW FROM THE PUBLIC RIGHT-OF-WAY AND FROM ADJACENT RESIDENTIAL PROPERTIES.
3. THE LIGHTING FOR THE SUBJECT PROPERTY WILL BE CONSTRUCTED AND OPERATED IN CONFORMANCE WITH THE CITY OF AUBREY ZONING ORDINANCE.

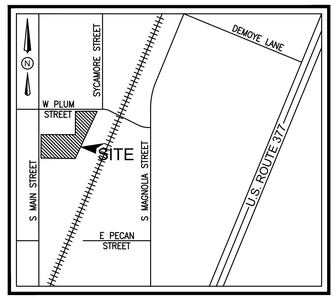
SETBACK LEGEND

BUILDING SETBACK	B.S.
LANDSCAPE BUFFER	L.B.

N

0 20 40

Scale: 1" = 20' Feet



VICINITY MAP

N.T.S.

SITE GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE CITY OR LOCAL JURISDICTION STANDARDS.
2. THE LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS IS TAKEN FROM AS-BUILTS, UTILITY PLANS OR SURVEY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ARRANGEMENTS WITH THE OWNERS OF SUCH UNDERGROUND UTILITIES PRIOR TO WORKING IN THE AREA TO CONFIRM THEIR EXACT LOCATION AND TO DETERMINE WHETHER ANY ADDITIONAL UTILITIES OTHER THAN THOSE SHOWN ON THE PLANS MAY BE PRESENT. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL UNDERGROUND UTILITIES. IF EXISTING UNDERGROUND UTILITIES ARE DAMAGED, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COST OF REPAIRING THE UTILITY.
3. WHERE EXISTING UTILITIES OR SERVICE LINES ARE CUT, BROKEN OR DAMAGED, THE CONTRACTOR SHALL REPLACE OR REPAIR THE UTILITIES OR SERVICE LINES WITH THE SAME TYPE OF ORIGINAL MATERIAL AND CONSTRUCTION, OR BETTER, UNLESS OTHERWISE SHOWN OR NOTED ON THE PLANS, AT HIS OWN COST AND EXPENSE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICTS WITH UTILITIES.
4. ALL EXCAVATIONS, TRENCHING AND SHORING OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE U. S. DEPARTMENT OF LABOR, OSHA, CONSTRUCTION SAFETY AND HEALTH REGULATIONS AND ANY AMENDMENTS THERETO.
5. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION TO ORIGINAL CONDITION OR BETTER. RESTORED AREAS INCLUDE, BUT ARE NOT LIMITED TO TRENCH BACKFILL, SIDE SLOPES, FENCES, DRAINAGE DITCHES, DRIVEWAYS, PRIVATE YARDS AND ROADWAYS.
6. ANY CHANGES NEEDED AFTER CONSTRUCTION PLANS HAVE BEEN RELEASED, SHALL BE APPROVED BY THE CITY ENGINEER. THESE CHANGES MUST BE RECEIVED IN WRITING.
7. THE CONTRACTOR SHALL PROVIDE "RED LINED" MARKED PRINTS TO THE ENGINEER PRIOR TO FINAL INSPECTION INDICATING ALL CONSTRUCTION WHICH DEVIATED FROM THE PLANS OR WAS CONSTRUCTED IN ADDITION TO THAT INDICATED ON THE PLANS.
8. ALL CURB RADIUS TO BE 10' OR 2' UNLESS OTHERWISE NOTED ON THE SITE PLAN.

PROJECT CONTACT LIST

ENGINEER
TRIANGLE ENGINEERING LLC
1782 W. McDERMOTT DRIVE
ALLEN, TEXAS 75013
CONTACT: KARTAVYA PATEL, P.E.
PHONE: 469-331-8566

SURVEYOR
TRAVERSE LAND SURVEYING
14200 MIDWAY ROAD, SUITE 130
DALLAS, TEXAS 75244
CONTACT: MARK NACE
PHONE: 469-784-9321

OWNER/DEVELOPER
JPAR McKINNEY
2629 SHADOW GLEN DRIVE
PROSPER, TEXAS 76058
CONTACT: HARI NAMASIVAYAM
PHONE: 469-554-0390

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LICENSED
PROFESSIONAL ENGINEER
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SITE PLAN

OFFICE
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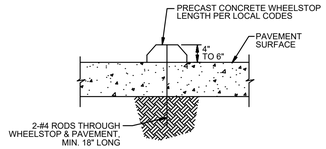
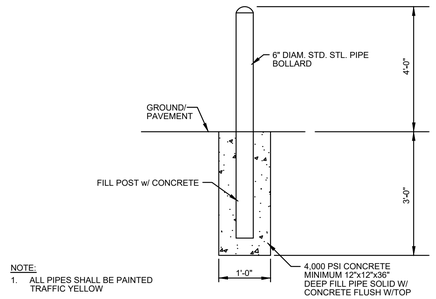
TX. P.E. FIRM #11525

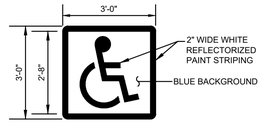


PRECAST CONCRETE WHEEL STOP DETAIL
N.T.S.



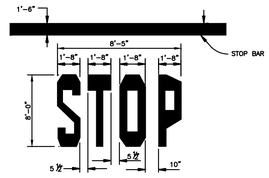
NOTE:
1. ALL PIPES SHALL BE PAINTED TRAFFIC YELLOW

BOLLARD DETAIL
N.T.S.



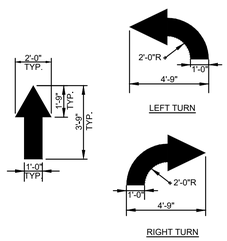
NOTES:
1. STENCIL ONE SYMBOL ONTO PARKING SURFACE IN EACH ACCESSIBLE STALL.
2. LOCATE PER ACCESSIBLE PARKING STALL DETAIL(S).
3. ALL LINES 2" WIDE PAINTED ON WHITE ON BLUE BACKGROUND.

ACCESSIBLE PARKING EMBLEM DETAIL
N.T.S.



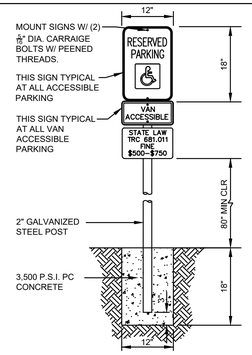
NOTE:
STOP BAR TO BE SOLID YELLOW REFLECTIVE TRAFFIC PAINT PER DIMENSIONS ABOVE.

STOP BAR DETAIL
N.T.S.

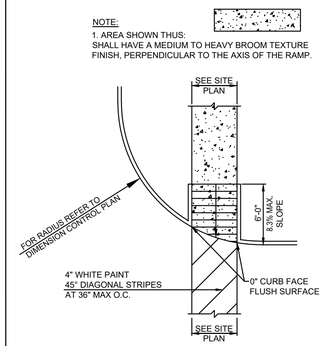


NOTE:
ALL TRAFFIC FLOW ARROWS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT PER DIMENSIONS ABOVE.

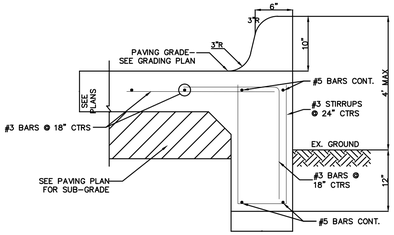
TRAFFIC FLOW ARROW DETAIL
N.T.S.



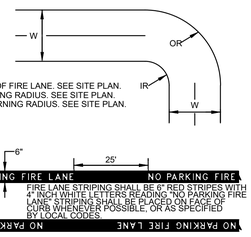
ACCESSIBLE PARKING SIGN DETAIL
N.T.S.



BARRIER FREE RAMP DETAIL
N.T.S.

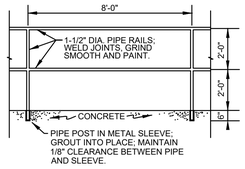


CURB W/RETAINING WALL DETAILS (TYPE 2)
N.T.S.



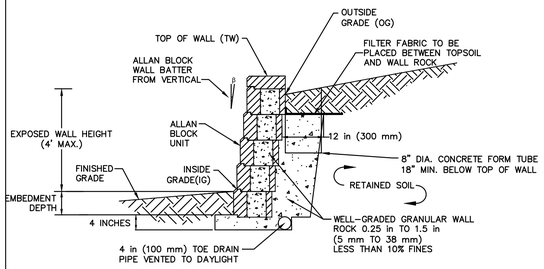
FIRE LANE MARKING

FIRE LANE DETAIL
N.T.S.



NOTE:
REFER TO STATE AND LOCAL SPECIFICATIONS FOR MATERIALS, CONSTRUCTION, AND PAINTING.

HANDRAIL DETAIL
N.T.S.



VARIABLE HEIGHT BLOCK RETAINING WALL
N.T.S.

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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.	.	.	.

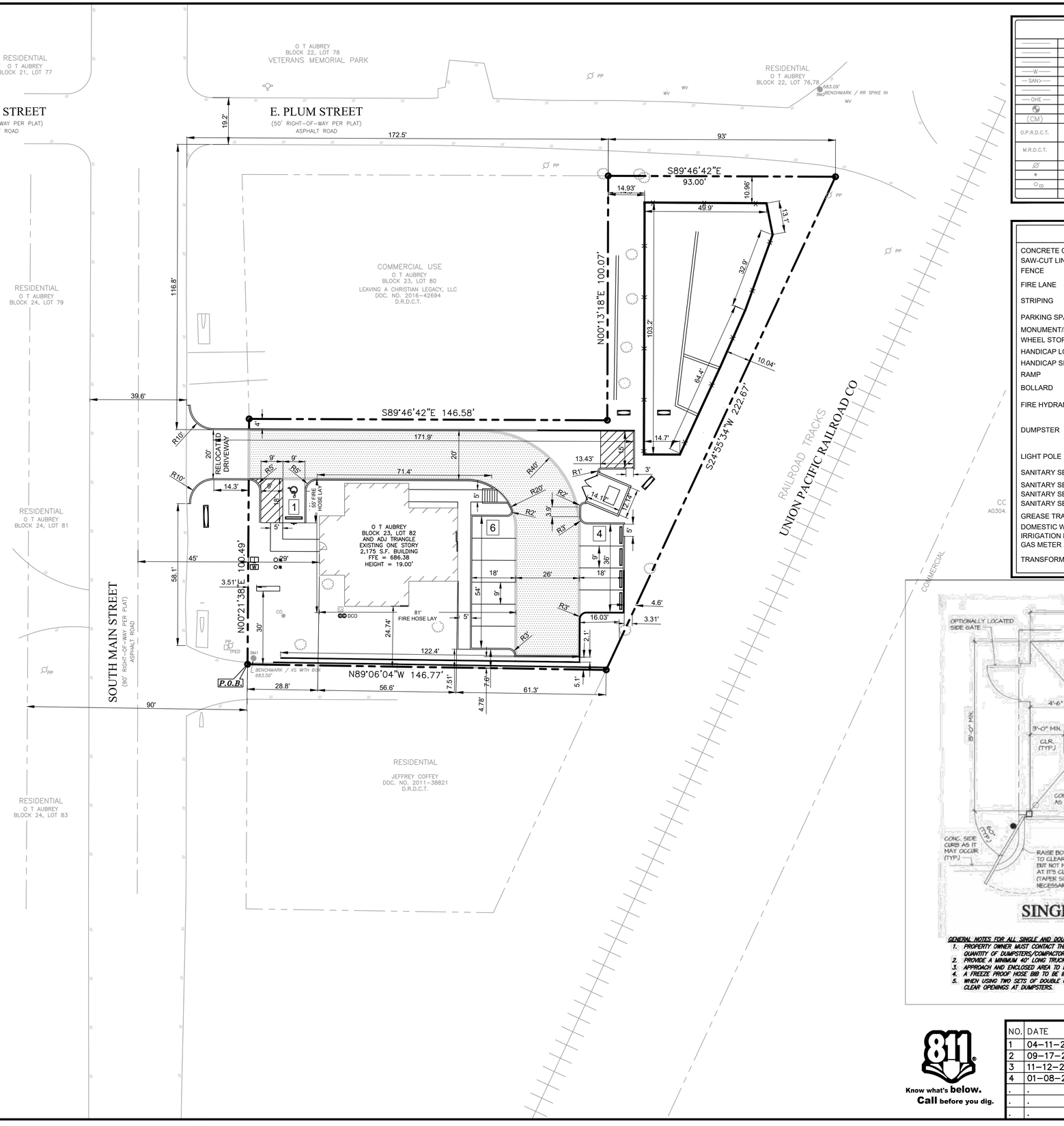
STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED
PROFESSIONAL ENGINEER
01-08-26

SITE DETAILS

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 I F: 469.213.7145 I E: info@triangle-engr.com
W: triangle-engr.com I O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management
TX. P.E. FIRM #11525

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-3.1

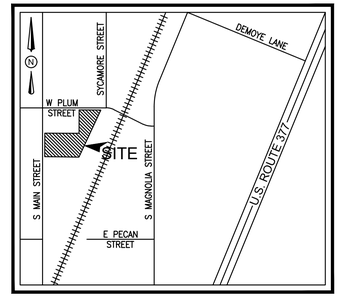


EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

DIMENSION CONTROL LEGEND

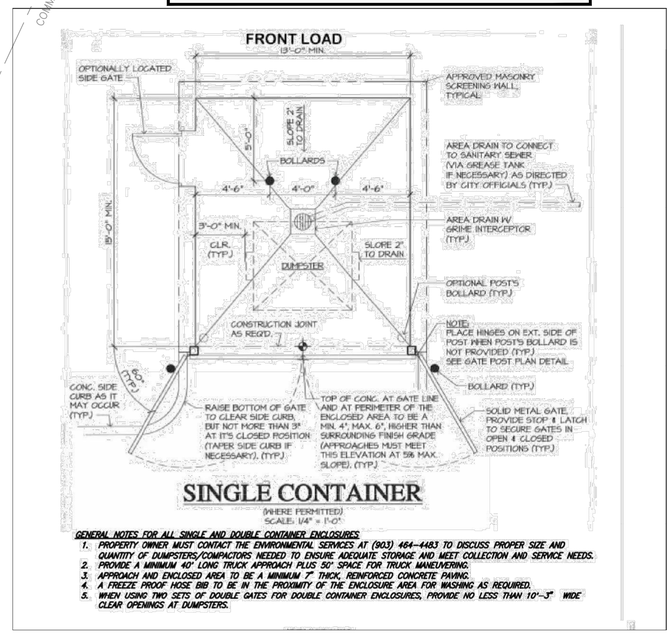
CONCRETE CURB	
SAW-CUT LINE	
FENCE	
FIRE LANE	
STRIPING	
PARKING SPACES	X
MONUMENT/PYLON SIGN	
WHEEL STOPS	
HANDICAP LOGO	
HANDICAP SIGN	
RAMP	
BOLLARD	
FIRE HYDRANT	
DUMPSTER	
LIGHT POLE	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	
SANITARY SEWER DOUBLE CLEANOUT	DCO
SANITARY SEWER SAMPLE PORT	
GREASE TRAP	
DOMESTIC WATER METER	W
IRRIGATION METER	
GAS METER	G
TRANSFORMER	T



VICINITY MAP
N.T.S.

DIMENSION CONTROL GENERAL NOTES

1. ALL DIMENSIONS ARE MEASURED TO FACE OF CURB AS SHOWN. CONTACT ENGINEER/ARCHITECT IF THERE IS ANY DISCREPANCIES IN THE DIMENSIONS.
2. REFER TO ARCHITECTURAL FLOOR PLAN FOR EXACT BUILDING DIMENSIONS.
3. LIGHTED MONUMENT SIGN SHALL BE BY SEPARATE PERMIT.
4. BARRIER-FREE RAMPS ARE REQUIRED ON ALL STREET FRONTAGES. RAMPS WITH DETECTABLE WARNING SURFACES IS REQUIRED AT ALL INTERSECTIONS.



GENERAL NOTES FOR ALL SINGLE AND DOUBLE CONTAINER ENCLOSURES

1. PROPERTY OWNER MUST CONTACT THE ENVIRONMENTAL SERVICES AT (903) 484-4483 TO DISCUSS PROPER SIZE AND QUANTITY OF DUMPSTERS/COMPACTORS NEEDED TO ENSURE ADEQUATE STORAGE AND MEET COLLECTION AND SERVICE NEEDS.
2. PROVIDE A MINIMUM 40' LONG TRUCK APPROACH PLUS 50' SPACE FOR TRUCK MANEUVERING.
3. APPROACH AND ENCLOSED AREA TO BE A MINIMUM 7" THICK, REINFORCED CONCRETE PAVING.
4. A FREEZE PROOF HOSE BIB TO BE IN THE PROXIMITY OF THE ENCLOSURE AREA FOR WASHING AS REQUIRED.
5. WHEN USING TWO SETS OF DOUBLE GATES FOR DOUBLE CONTAINER ENCLOSURES, PROVIDE NO LESS THAN 10'-3" WIDE CLEAR OPENINGS AT DUMPSTERS.

811 Know what's below. Call before you dig.

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4	01-08-26	4th CITY SUBMITTAL	IA
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.	.	.	.

STATE OF TEXAS — KARTAVYA S. PATEL — 97534 — LICENSED PROFESSIONAL ENGINEER
01-08-26

DIMENSION CONTROL PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

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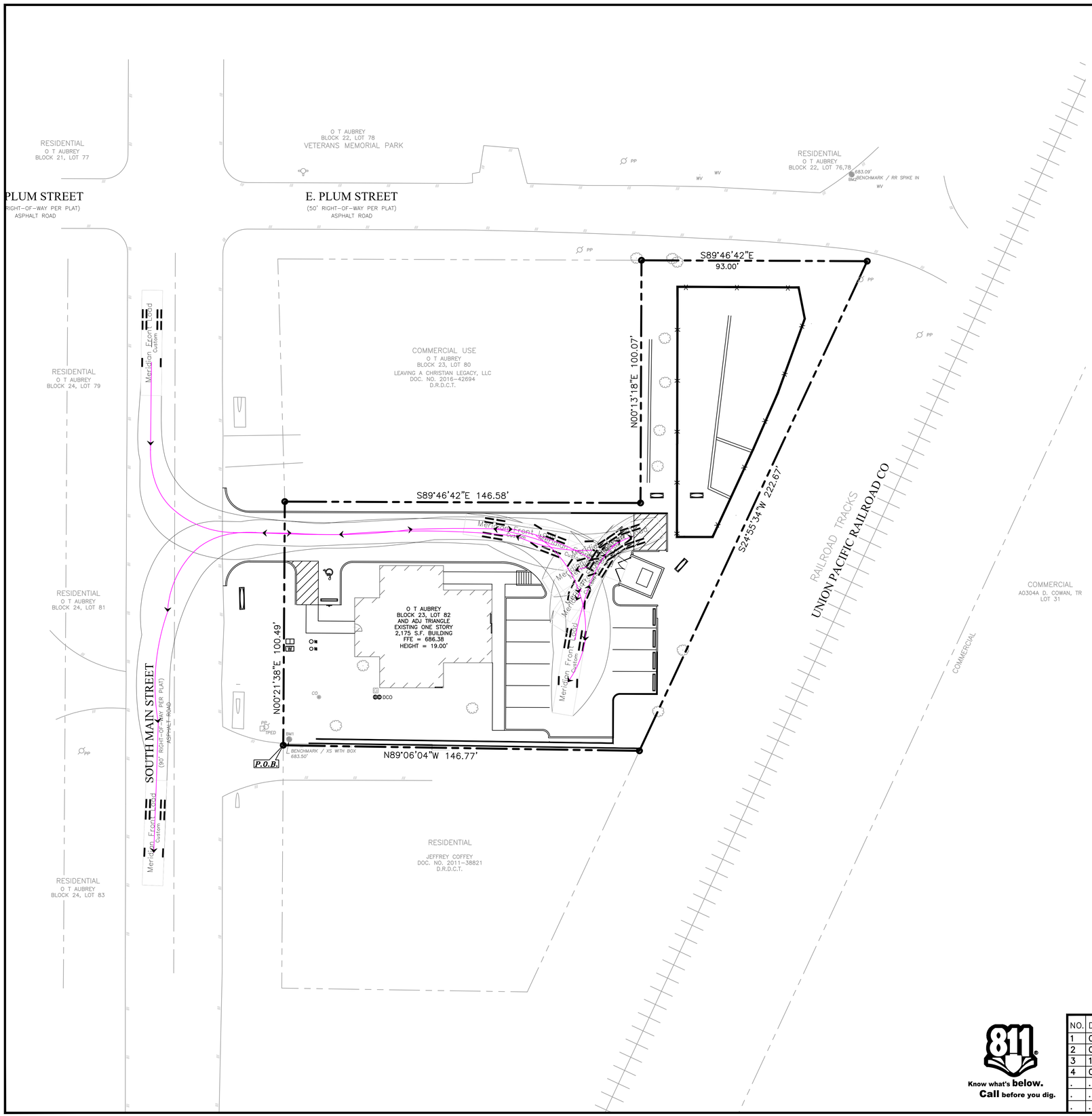
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-3.2

TX. P.E. FIRM #11525



EXISTING LEGEND

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	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
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—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

SITE DATA SUMMARY TABLE

SITE ACREAGE:	0.557 ACRES (24,269 S.F.)
ZONING:	GR - GENERAL RETAIL
PROPOSED USE:	OFFICE
BUILDING AREA:	EXISTING 2,175 S.F.
NUMBER OF STORIES:	1
BUILDING HEIGHT:	19'-0"
BUILDING COVERAGE:	8.9%
FLOOR AREA RATIO:	0.09
IMPERVIOUS AREA:	13,762 S.F. (56.70%)
PERVIOUS/LANDSCAPE AREA:	10,507 S.F. (43.3%)
REGULAR PARKING REQUIRED: 1 SPACE PER 300 S.F.	8 SPACES
REGULAR PARKING PROVIDED:	10 SPACES
HANDICAP PARKING REQUIRED:	1 SPACE (1 VAN ACCESSIBLE)
HANDICAP PARKING PROVIDED:	1 SPACES (1 VAN ACCESSIBLE)
TOTAL PARKING PROVIDED:	11 SPACES

SITE LEGEND

CONCRETE CURB	
SAW-CUT LINE	
FENCE	
FIRE LANE	
LANDSCAPE AREA	
STRIPING	
PARKING SPACES	X
MONUMENT/PYLON SIGN	
WHEEL STOPS	
HANDICAP LOGO	
HANDICAP SIGN	
RAMP	
BOLLARD	
TRAFFIC ARROW	
FIRE HYDRANT	
DUMPSTER	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	C
SANITARY SEWER DOUBLE CLEANOUT	DC
SANITARY SEWER SAMPLE PORT	S
GREASE TRAP	
DOMESTIC WATER METER	W
IRRIGATION METER	I
GAS METER	G
TRANSFORMER	T
LIGHT POLE	

CITY NOTES

1. THE SANITATION CONTAINER SCREENING WALLS SHALL BE BRICK MASONRY, STONE MASONRY, OR OTHER ARCHITECTURAL MASONRY FINISH, INCLUDING A METAL GATE, PRIMED AND PAINTED, AND THE SANITATION CONTAINER SCREENING WALLS, GATE AND PAD SITE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY DESIGN SPECIFICATIONS.
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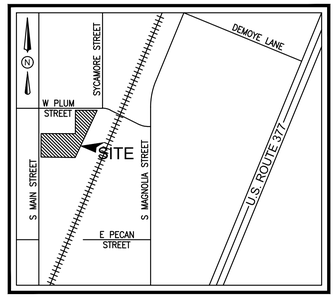
3. THE LIGHTING FOR THE SUBJECT PROPERTY WILL BE CONSTRUCTED AND OPERATED IN CONFORMANCE WITH THE CITY OF AUBREY ZONING ORDINANCE.



VICINITY MAP

N.T.S.

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PROJECT CONTACT LIST

ENGINEER
TRIANGLE ENGINEERING LLC
1782 W. McDERMOTT DRIVE
ALLEN, TEXAS 75013
CONTACT: KARTAVYA PATEL, P.E.
PHONE: 469-331-8566

SURVEYOR
TRAVERSE LAND SURVEYING
14200 MIDWAY ROAD, SUITE 130
DALLAS, TEXAS 75244
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OWNER/DEVELOPER
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2629 SHADOW GLEN DRIVE
PROSPER, TEXAS 76058
CONTACT: HARI NAMASIVAYAM
PHONE: 469-554-0390

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.	.	.	.

STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

GARBAGE TRUCK ROUTE- LEFT

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

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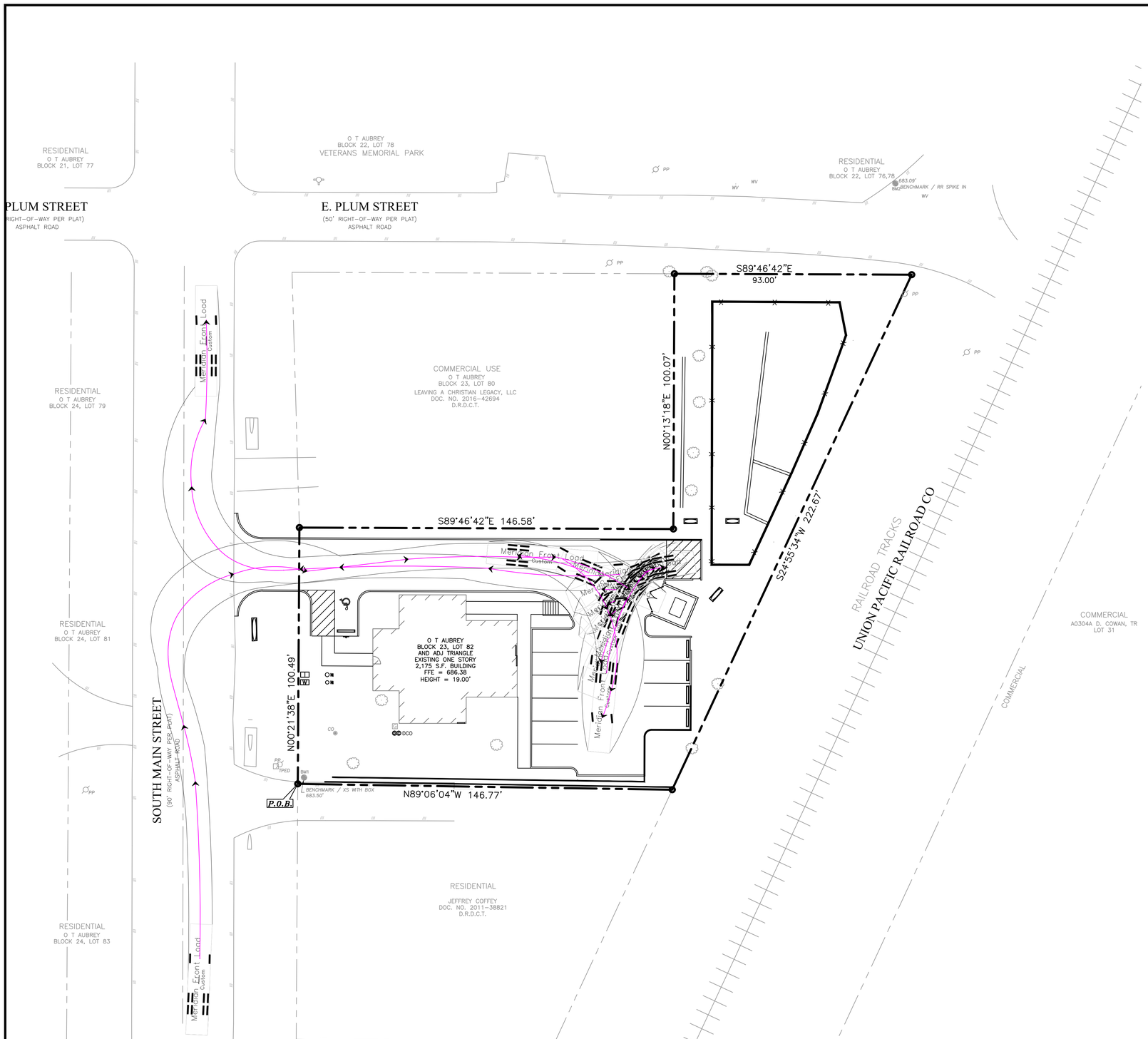
TX. P.E. FIRM #11525



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FENCE	
FIRE LANE	
LANDSCAPE AREA	
STRIPING	
PARKING SPACES	X
MONUMENT/PYLON SIGN	
WHEEL STOPS	
HANDICAP LOGO	
HANDICAP SIGN	
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TRAFFIC ARROW	
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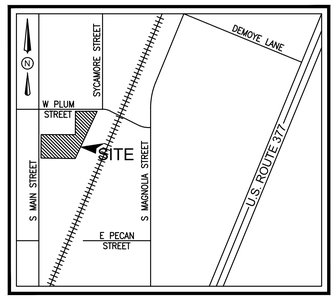
N

0 20 40
Scale: 1" = 20' Feet



VICINITY MAP
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3	11-12-25	3rd CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

GARBAGE TRUCK ROUTE- RIGHT

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

DENTON COUNTY, TEXAS

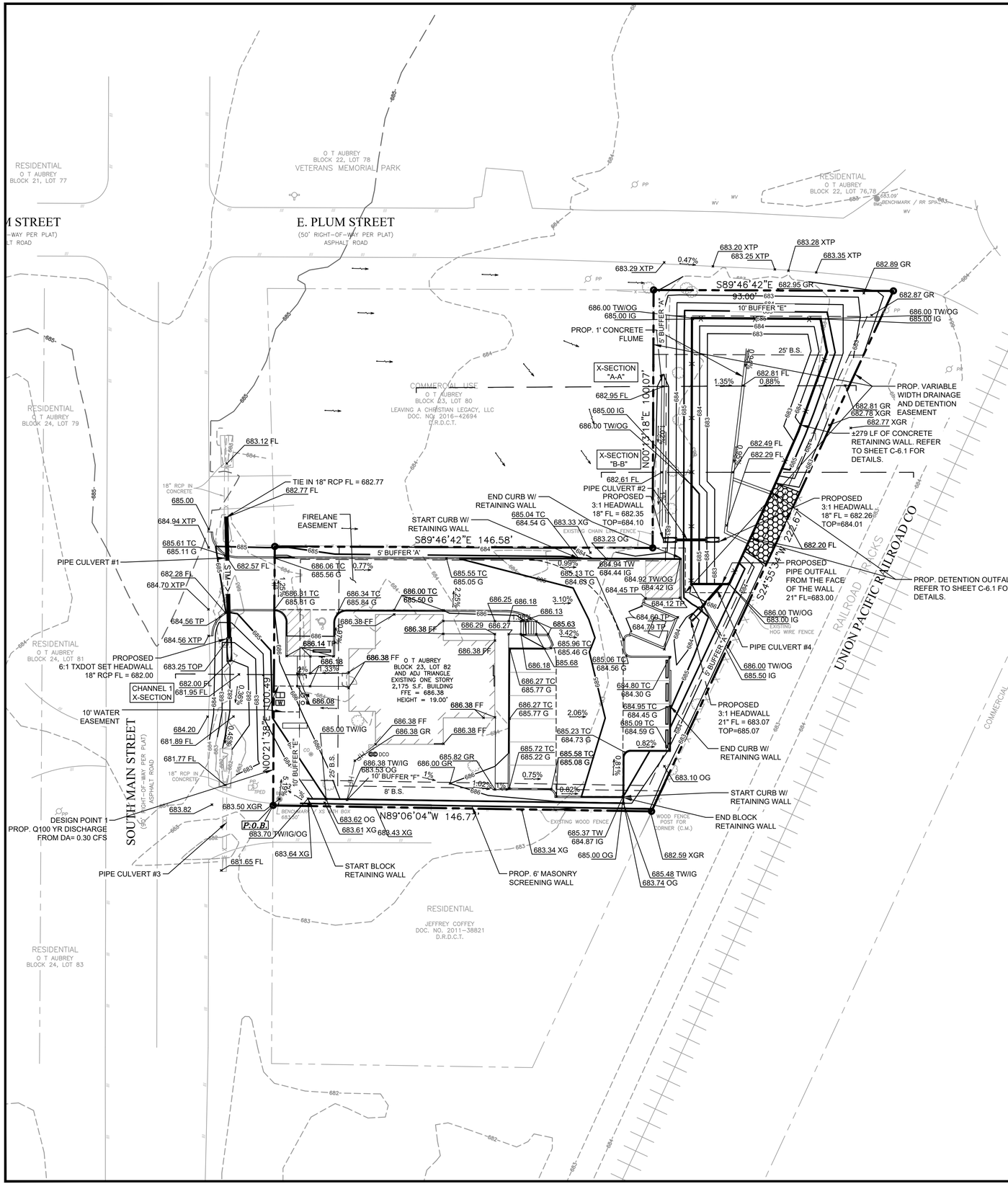
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W. triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013

Planning | Civil Engineering | Construction Management

TX. P.E. FIRM #11525

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-3.4



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

GRADING LEGEND

EXISTING ELEVATION	464.00 EX
EXISTING MINOR CONTOURS	464
EXISTING MAJOR CONTOURS	465
MINOR CONTOURS	464
MAJOR CONTOURS	465
SWALE	
HIGH POINT	HP
STORM PIPE	STM–>
RETAINING WALL	
RIP RAP	
PROPOSED DETENTION POND	
FINISH FLOOR ELEVATION	467.00 FF
TOP OF CURB ELEVATION	466.00 TC
GUTTER ELEVATION	465.50 G
SIDEWALK ELEVATION	465.00 SW
TOP OF PAVEMENT	464.00 TP
GROUND ELEVATION	463.00 GR
DRAINAGE FLOW DIRECTION	1%
CURB INLET	
STORM MANHOLE	
STORM CLEANOUT	
SANITARY SEWER MANHOLE	
SANITARY SEWER CLEANOUT	
SANITARY SEWER DOUBLE CLEANOUT	
SANITARY SEWER SAMPLE PORT	
GREASE TRAP	
DOMESTIC WATER METER	W
IRRIGATION METER	
GAS METER	G
TRANSFORMER	T
LIGHT POLE	
POWER POLE	

BENCHMARKS

BENCHMARK NO. 1
FROM THE MOST SOUTHWESTERLY CORNER NORTH 2.49 FEET THENCE EAST 2.43 FEET TO A "SQUARE CUT X" ON TOP OF CONCRETE
ELEVATION = 683.50'

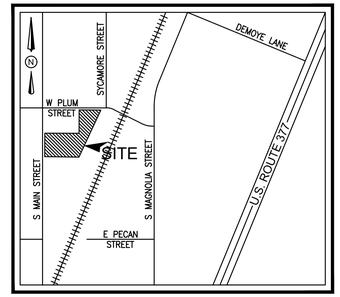
BENCHMARK NO. 2
FROM THE MOST NORTHEASTERLY CORNER NORTH 35.76 FEET THENCE WEST 36.60 FEET TO A RAILROAD SPIKE IN ASPHALT
ELEVATION = 683.090'

FLOOD PLAIN NOTE

THE SUBJECT PROPERTY LIES WITHIN THE ZONE "X" UNSHADED (DETERMINED TO BE OUTSIDE THE 0.20% ANNUAL CHANCE FLOODPLAIN) AS DETERMINED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY NATIONAL FLOOD INSURANCE PROGRAM (NFIP) FLOOD INSURANCE RATE MAP NUMBER 48121C0265G, DATED APRIL 18, 2011 FOR DENTON COUNTY, TEXAS AND INCORPORATED AREAS.

N

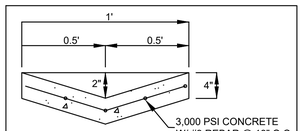
0 20 40
Scale: 1" = 20' Feet



VICINITY MAP
N.T.S.

GRADING GENERAL NOTES

1. ALL SURPLUS EXCAVATION AND WASTE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND IT SHALL BE HIS SOLE RESPONSIBILITY TO REMOVE SUCH SURPLUS EXCAVATION AND WASTE MATERIAL FROM THE SITE TO A PUBLIC DUMP SITE APPROVED FOR THE DISPOSAL OF SUCH MATERIALS. IF SURPLUS EXCAVATION IS REMOVED FROM THIS SITE TO ANOTHER PROPERTY, IT SHALL BE PLACED ON SUCH PROPERTY WITH THE WRITTEN CONSENT OF THE OWNER(S) OF SUCH PROPERTY. A COPY OF SUCH WRITTEN CONSENT SHALL BE PROVIDED TO THE OWNER. IF THE CONTRACTOR WISHES TO DISPOSE OF SURPLUS EXCAVATION ON-SITE, IT SHALL BE ONLY WITH THE PRIOR APPROVAL OF THE OWNERS PROJECT REPRESENTATIVE AND CARE SHOULD BE TAKEN TO AVOID BLOCKING NATURAL DRAINAGE AND INCREASING STEEP SLOPES. THE CONTRACTOR IS REQUIRED TO PROVIDE HIS OWN STAKING AND TO VERIFY PROJECT ELEVATIONS. "MATCH EXISTING" SHALL BE UNDERSTOOD TO APPLY TO BOTH VERTICAL ELEVATION AND HORIZONTAL ALIGNMENT.
2. THE CONTRACTOR SHALL PREPARE ALL LANDSCAPE AREAS INCLUDING STREET RIGHT-OF-WAY AREAS TO AN ACCEPTABLE SUBGRADE CONDITION IN ACCORDANCE WITH THE LANDSCAPE PLANS. IF THE CONTRACTOR IS NOT EMPLOYED TO PROVIDE AND INSTALL LANDSCAPING, HE SHALL PREPARE A FINISHED AND COMPACTED SUB-GRADE IN THE LANDSCAPING AREAS.
3. NO SLOPES TO EXCEED 3H:1V WITHOUT SLOPE STABILIZATION.



1' CONCRETE FLUME DETAIL
N.T.S.

Know what's **below.**
Call before you dig.

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2	09–17–25	2st CITY SUBMITTAL	KP
3	11–12–25	3rd CITY SUBMITTAL	IA
4	01–08–26	4th CITY SUBMITTAL	IA
.	.	.	.
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.	.	.	.

STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01–08–26

GRADING PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

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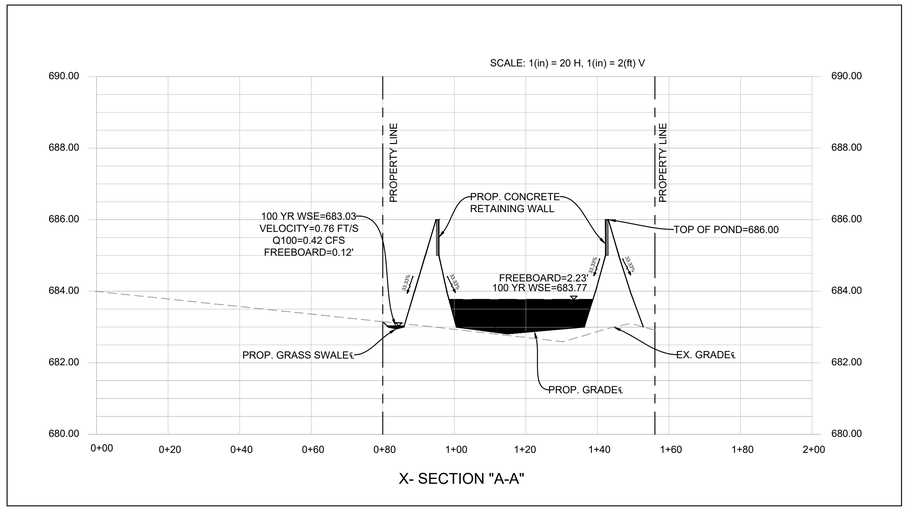
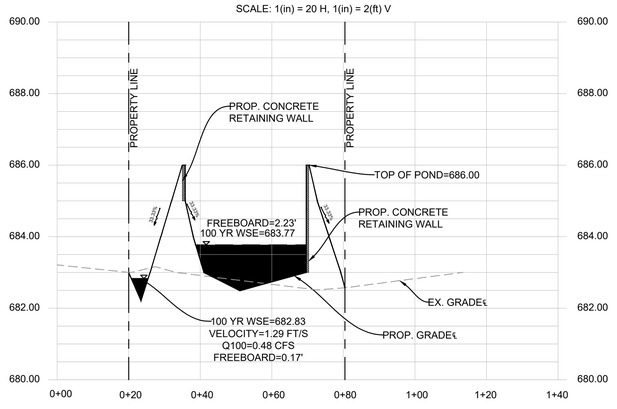
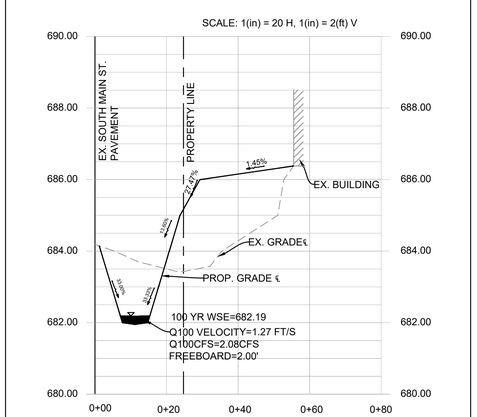
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-4.0



X- SECTION "A-A"



X- SECTION "B-B"



CHANNEL 1
X-SECTION

Know what's below. Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04–11–25	1st CITY SUBMITTAL	KP
2	09–17–25	2st CITY SUBMITTAL	KP
3	11–12–25	3rd CITY SUBMITTAL	IA
4	01–08–26	4th CITY SUBMITTAL	IA
.	.	.	.
.	.	.	.
.	.	.	.

STATE OF TEXAS
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01–08–26

CROSS SECTIONS

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

DENTON COUNTY, TEXAS

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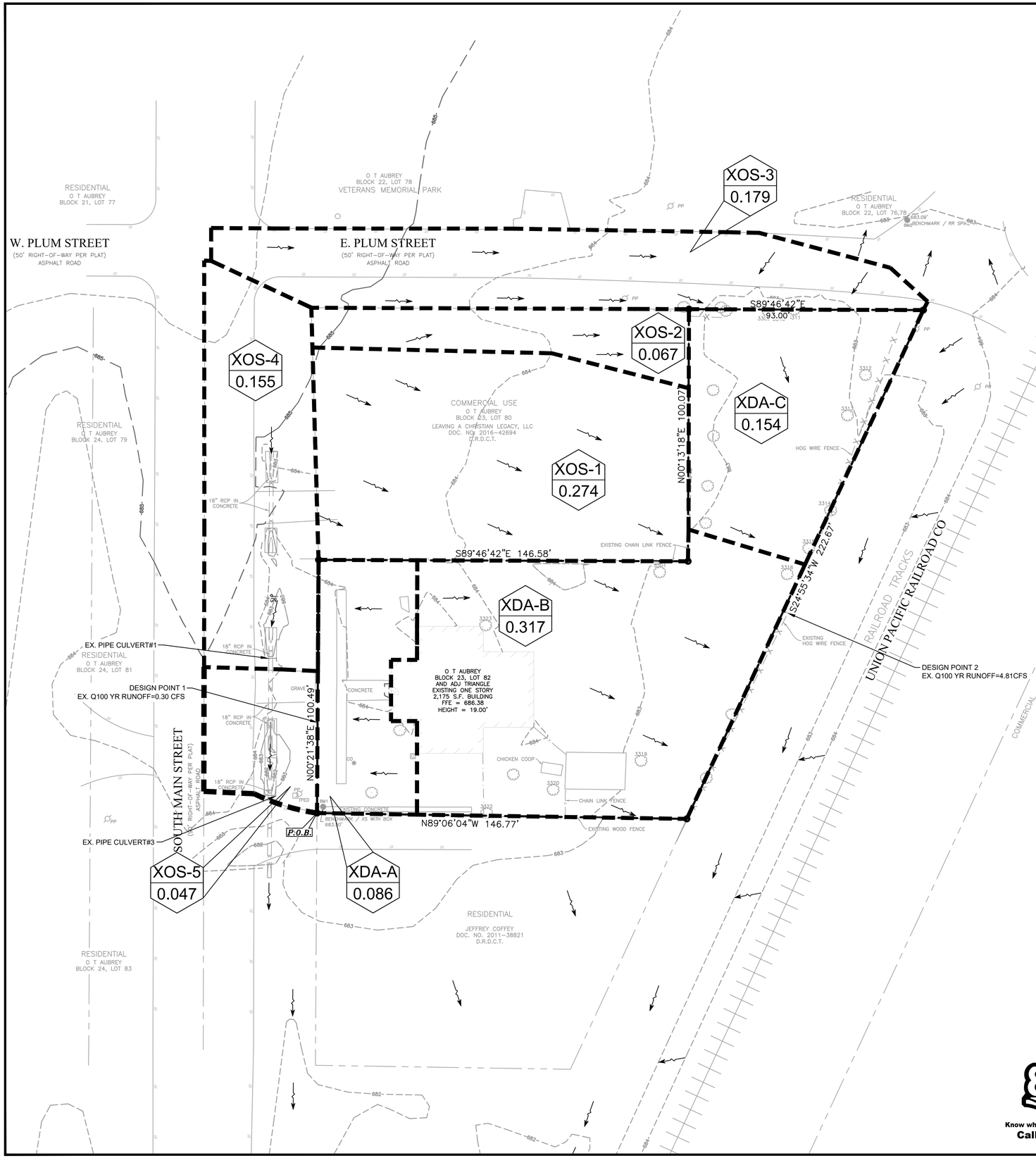
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-4.1

TX. P.E. FIRM #11525



0 40
Scale: 1" = 20' Feet

EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	WV	WATER VALVE
		TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

PRE-DRAINAGE LEGEND

EXISTING MINOR CONTOURS	464
EXISTING MAJOR CONTOURS	465
DRAINAGE DIVIDE	
DRAINAGE AREA NO.	XDA-X
DRAINAGE AREA ACREAGE	X.XX
DRAINAGE FLOW DIRECTION	

FLOOD PLAIN NOTE

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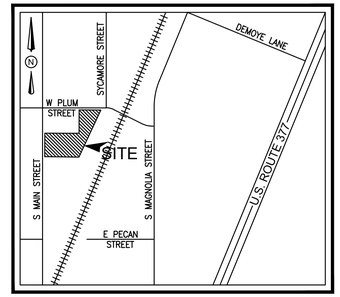

VICINITY MAP
N.T.S.

PRE- DRAINAGE AREAS

BASIN ID	OVERALL AREA (ac)	Tc (min)	2-YR STORM C	2-YR STORM I (in/hr)	2-YR STORM Q (cfs)	10-YR STORM C	10-YR STORM I (in/hr)	10-YR STORM Q (cfs)	100-YR STORM C	100-YR STORM I (in/hr)	100-YR STORM Q (cfs)	REMARKS
XDA-A	0.086	15	0.45	3.89	0.15	0.45	5.48	0.21	0.45	7.85	0.30	SHEET FLOWS TO EX. DITCH ALONG SOUTH WEST
XDA-B	0.317	15	0.45	3.89	0.55	0.45	5.48	0.78	0.45	7.85	1.12	SHEET FLOWS TO SOUTH EAST
XDA-C	0.154	15	0.45	3.89	0.27	0.45	5.48	0.38	0.45	7.85	0.54	SHEET FLOWS TO SOUTH EAST
XOS-1	0.274	15	0.60	3.89	0.64	0.60	5.48	0.90	0.60	7.85	1.29	SHEET FLOWS TO XDA-B AND EVENTUALLY DRAINS SOUTH EAST
XOS-2	0.067	15	0.60	3.89	0.16	0.60	5.48	0.22	0.60	7.85	0.32	SHEET FLOWS TO XDA-C AND EVENTUALLY DRAINS SOUTH EAST
XOS-3	0.179	10	0.90	4.69	0.76	0.90	6.62	1.07	0.90	9.53	1.54	SHEET FLOWS TO XDA-C AND EVENTUALLY DRAINS SOUTH EAST
SUM TOTAL	1.077				2.53			3.56			5.11	

PRE- DRAINAGE OFF-SITE AREAS FLOWING TO PIPE CULVERT#1 & PIPIE CULVERT#3

BASIN ID	OVERALL AREA (ac)	Tc (min)	2-YR STORM C	2-YR STORM I (in/hr)	2-YR STORM Q (cfs)	10-YR STORM C	10-YR STORM I (in/hr)	10-YR STORM Q (cfs)	100-YR STORM C	100-YR STORM I (in/hr)	100-YR STORM Q (cfs)	REMARKS
XOS-4	0.155	10	0.90	4.69	0.65	0.90	6.62	0.92	0.90	9.53	1.33	SHEET FLOWS TO PIPE CULVERT#1
XOS-5	0.047	10	0.90	4.69	0.20	0.90	6.62	0.28	0.90	9.53	0.40	SHEET FLOWS TO PIPE CULVERT#3
SUM TOTAL	0.202				0.85			1.20			1.73	

811 Know what's below. Call before you dig.

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3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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.	.	.	.

STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

PRE-DRAINAGE PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

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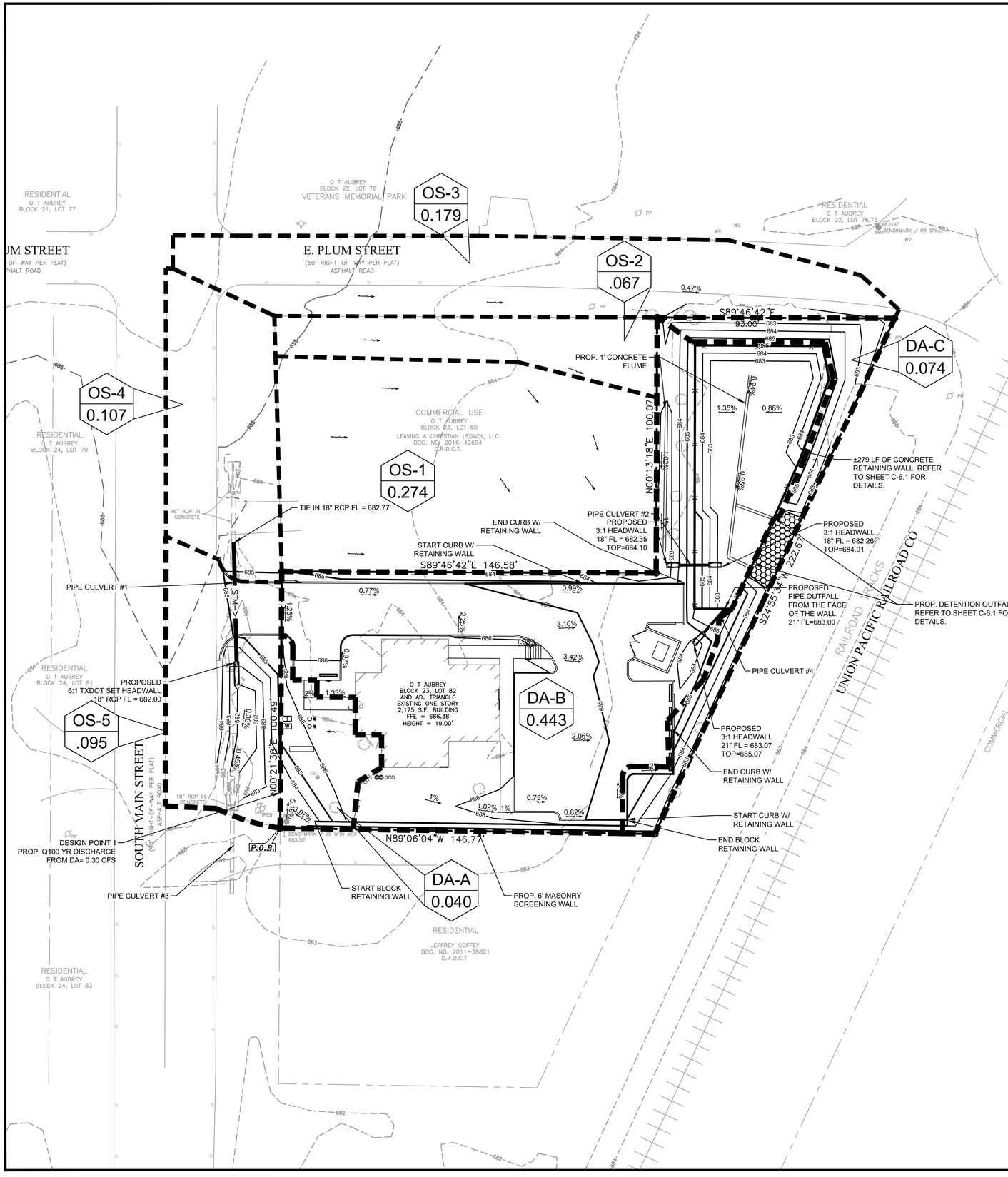
Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-5.0

TX. P.E. FIRM #11525



EXISTING LEGEND

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	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
W	WATER LINE		"X" CUT SET
SAN	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
OHE	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

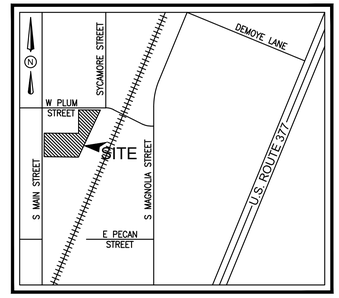
POST-DRAINAGE LEGEND

EXISTING MINOR CONTOURS	464
EXISTING MAJOR CONTOURS	465
MINOR CONTOURS	464
MAJOR CONTOURS	465
DRAINAGE DIVIDE	
HIGH POINT	HP HP HP HP
DRAINAGE AREA NO.	DA-X
DRAINAGE AREA ACREAGE	X.XX
DRAINAGE FLOW DIRECTION	1%

N

0 20 40

Scale: 1" = 20' Feet



VICINITY MAP
N.T.S.

FLOOD PLAIN NOTE

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BENCHMARKS

BENCHMARK NO. 1
FROM THE MOST SOUTHWESTERLY CORNER NORTH 2.49 FEET THENCE EAST 2.43 FEET TO A "SQUARE CUT X" ON TOP OF CONCRETE
ELEVATION = 683.50'

BENCHMARK NO. 2
FROM THE MOST NORTHEASTERLY CORNER NORTH 35.76 FEET THENCE WEST 36.60 FEET TO A RAILROAD SPIKE IN ASPHALT
ELEVATION = 683.090'

POST- DRAINAGE AREAS

BASIN ID	OVERALL AREA (ac)	Tc (min)	2-YR STORM C	2-YR STORM I (in/hr)	2-YR STORM Q (cfs)	10-YR STORM C	10-YR STORM I (in/hr)	10-YR STORM Q (cfs)	100-YR STORM C	100-YR STORM I (in/hr)	100-YR STORM Q (cfs)	REMARKS
DA-A	0.040	10	0.80	4.69	0.15	0.80	6.62	0.21	0.80	9.53	0.30	SHEET FLOWS TO EX. DITCH ALONG SOUTH WEST
DA-B	0.443	10	0.80	4.69	1.66	0.80	6.62	2.35	0.80	9.53	3.38	SHEET FLOWS TO PROP. PIPE CULVERT#4 AND EVENTUALLY DISCHARGES TO PROP. DETENTION POND.
DA-C	0.074	10	0.80	4.69	0.28	0.80	6.62	0.39	0.80	9.53	0.56	SHEETS FLOWS TO SOUTH EAST
OS-1	0.274	15	0.60	3.89	0.64	0.60	5.48	0.90	0.60	7.85	1.29	SHEETS FLOWS TO PROP. PIPE CULVERT#2 AND EVENTUALLY DISCHARGES TO PROP. DETENTION POND.
OS-2	0.067	15	0.60	3.89	0.16	0.60	5.48	0.22	0.60	7.85	0.32	SHEETS FLOWS TO PROP. PIPE CULVERT#2 AND EVENTUALLY DISCHARGES TO PROP. DETENTION POND.
OS-3	0.179	10	0.90	4.69	0.76	0.90	6.62	1.07	0.90	9.53	1.54	SHEETS FLOWS TO SOUTH EAST
SUM TOTAL	1.077				3.64			5.14			7.39	

POST- DRAINAGE AREAS FLOWING TO PIPE CULVERT#1 & PIPE CULVERT#3

BASIN ID	OVERALL AREA (ac)	Tc (min)	2-YR STORM C	2-YR STORM I (in/hr)	2-YR STORM Q (cfs)	10-YR STORM C	10-YR STORM I (in/hr)	10-YR STORM Q (cfs)	100-YR STORM C	100-YR STORM I (in/hr)	100-YR STORM Q (cfs)	REMARKS
OS-4	0.107	10	0.90	4.69	0.45	0.90	6.62	0.64	0.90	9.53	0.92	SHEET FLOWS TO PIPE CULVERT#1
OS-5	0.095	10	0.90	4.69	0.40	0.90	6.62	0.57	0.90	9.53	0.81	SHEET FLOWS TO PIPE CULVERT#3
SUM TOTAL	0.202				0.85			1.20			1.73	

100-YR DISCHARGE COMPARISON

DIRECTION	PRE-DRAINGE RUNOFF(CFS)	POST-DRAINGE RUNOFF(CFS)
TO WEST(DA-A)	0.3	0.3
TO EAST (DA-B+DA-C+OS-1+OS-2)	4.81	4.80*

*2.70 CFS(DISCHARGE FROM DETENTION POND)+0.56 (DA-C FLOW)+1.54 CFS(OS-3 OFF-SITE FLOW)=4.80 CFS.

NOTE:
1.POST DEVELOPMENT DISCHARGE FROM THE SITE DOES NOT EXCEED PRE-DEVELOPMENT DISCHARGE.
2. AN ABOVE GROUND DETENTION WITH FREEBOARD 2.23' HAS BEEN PROVIDED. PLEASE REFER TO SHEET C-6.1 FOR CALCULATIONS.
3.REFER TO SHEET C-6.2 FOR PIPE CULVERT REPORT.

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1	04-11-25	1st CITY SUBMITTAL	KP
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.	.	.	.
.	.	.	.

STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

POST-DRAINAGE PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
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P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-6.0

TX. P.E. FIRM #11525

DETENTION CALCUALTIONS-2YR

ALLOWABLE RELEASE RATE EQUAL TO THE 2-YEAR PEAK RUNOFF RATE PRIOR TO SITE DEVELOPMENT
WHEN C=0.45, I=3.89 @ Tc=15 MINS
TOTAL SITE AREA:0.471 ACRES
ALLOWABLE RUNOFF FROM SITE: (0.45 x3.89x 0.471+0.80(XOS-1+XOS-2) =1.62 CFS
ALLOWABLE RELEASE FROM STORAGE AREA: (1.62 CFS - 0.28CFS BYPASS FLOW) 1.34
AREA FLOW TO THE DETENTION POND: 0.784 ACRES

STORM DURATION DATA & DETENTION POND SYSTEM CALCULATION :

TIME	C	I2	TOTAL AREA	Q	INFLOW	OUTFLOW	STORAGE
(Min)	Full Dev.	(2-Year)	(Acres)	(CFS)	(CF)	(CF)	(CF)
10	0.80	4.69	0.784	2.94	1,765	804	961
20	0.80	3.50	0.784	2.19	2,631	1,206	1,425
30	0.80	2.71	0.784	1.70	3,059	1,608	1,451
40	**0.80**	**2.39**	**0.784**	**1.50**	**3,602**	**2,010**	**1,592**
50	0.80	2.08	0.784	1.30	3,906	2,412	1,494
60	0.80	1.76	0.784	1.10	3,974	2,814	1,160
70	0.80	1.65	0.784	1.03	4,341	3,216	1,125
80	0.80	1.54	0.784	0.96	4,624	3,618	1,006
90	0.80	1.43	0.784	0.89	4,826	4,020	806
100	0.80	1.31	0.784	0.82	4,941	4,422	519

REQUIRED STORAGE VOLUME = INFLOW - OUTFLOW
INFLOW = STORM DURATION x RESPECTIVE PEAK DISCHARGE x 60 SEC./MIN.
OUTFLOW = HALF OF THE RESPECTIVE INFLOW DURATION x CONTROL RELEASE DISCHARGE x 60 SEC./MIN.

2 YEAR STORM EVENT @ 40 MIN.
INFLOW =40 x 0.80 x2.39x 0.784x 60 =3,602
OUTFLOW = 0.5 x 50x1.34x 60 = 2,010

REQUIRED DETENTION SYSTEM STORAGE CAPACITY = INFLOW - OUTFLOW = 3,602-2,010 CF = 1,592 CF
PROPOSED DETENTION STORAGE VOLUME = 10,887 CF

DETENTION CALCUALTIONS-100YR

ALLOWABLE RELEASE RATE EQUAL TO THE 100-YEAR PEAK RUNOFF RATE PRIOR TO SITE DEVELOPMENT
WHEN C=0.45, I=7.85 @ Tc=15 MINS
TOTAL SITE AREA:0.471 ACRES
ALLOWABLE RUNOFF FROM SITE: (0.45 x7.85 x 0.471+1.61(XOS-1+XOS-2) =3.27 CFS
ALLOWABLE RELEASE FROM STORAGE AREA: (3.27 CFS - 0.56CFS BYPASS FLOW) 2.71
AREA FLOW TO THE DETENTION POND: 0.784 ACRES

STORM DURATION DATA & DETENTION POND SYSTEM CALCULATION :

TIME	C	I100	TOTAL AREA	Q	INFLOW	OUTFLOW	STORAGE
(Min)	Full Dev.	(100-Year)	(Acres)	(CFS)	(CF)	(CF)	(CF)
10	0.80	9.53	0.784	5.98	3,586	1,626	1,960
20	0.80	7.04	0.784	4.41	5,296	2,439	2,857
30	0.80	5.41	0.784	3.39	6,108	3,252	2,856
40	**0.80**	**4.80**	**0.784**	**3.01**	**7,225**	**4,065**	**3,160**
50	0.80	4.19	0.784	2.63	7,882	4,878	3,004
60	0.80	3.58	0.784	2.25	8,083	5,691	2,392
70	0.80	3.37	0.784	2.11	8,880	6,504	2,376
80	0.80	3.16	0.784	1.98	9,522	7,317	2,205
90	0.80	2.96	0.784	1.85	10,008	8,130	1,878
100	0.80	2.75	0.784	1.72	10,334	8,943	1,391

REQUIRED STORAGE VOLUME = INFLOW - OUTFLOW
INFLOW = STORM DURATION x RESPECTIVE PEAK DISCHARGE x 60 SEC./MIN.
OUTFLOW = HALF OF THE RESPECTIVE INFLOW DURATION x CONTROL RELEASE DISCHARGE x 60 SEC./MIN.

100 YEAR STORM EVENT @ 40 MIN.
INFLOW =40 x 0.80 x4.80x 0.784x 60 =7,225
OUTFLOW = 0.5 x 50x2.71x 60 = 4,065

REQUIRED DETENTION SYSTEM STORAGE CAPACITY = INFLOW - OUTFLOW = 7,225-4,065 CF = 3,160 CF
PROPOSED DETENTION STORAGE VOLUME = 10,887 CF

SPILLWAY OVERFLOW WEIR CALCULATIONS

Using Weir Equation. Q=CLH^3/2

SPILLWAY-"1"
Weir coefficient, C=3.1
lenth of opening , L=0.5'
Post development Q100 = 5.55CFS
Bottom of Pond = 682.20
Spillway Emergency WSE = 683.77'
L(ft)= 0.5 ft
H(ft)= 2.23 ft
Q= 5.16 cfs

SPILLWAY-"2"
Weir coefficient, C=3.1
lenth of opening , L=0.5'
Post development Q100 = 5.55CFS
Bottom of Pond = 682.20
Spillway Emergency WSE = 683.77'
L(ft)= 0.5 ft
H(ft)= 2.23 ft
Q= 5.16 cfs

Total Q= 10.32 cfs > 5.55cfs (OK)

DETENTION POND OUTFLOW SUMMARY

YEAR	Q ALLOWABLE	Q RELEASE
2YEAR	1.34 CFS	1.34 CFS
10YEAR	1.89 CFS	1.80 CFS
100YEAR	2.71 CFS	2.69 CFS

DETENTION POND

Stage	Elevation	Contour Area	Incremental Storage	Total Storage
(ft)	(ft)	(sqft)	(cuft)	(cuft)
0.00	682.20	0	0.000	0.000
0.80	683.00	2,513	1,005	1,005
1.80	684.00	3,064	2,789	3,794
2.80	685.00	3,670	3,367	7,162
3.80	686.00	3,781	3,725	10,887

2 YR WATER SURFACE ELEVATION OF POND

	x	y	REQUIRED VOL
683.21	683	1005	1,592
	684	3794	

2-year Storm Event
a) The required storage for 2-year is 1,592 CF.
b) Interpolate the water surface elevation, 683.21 ft
b) Using Weir Equation. Q=CLH^3/2
Allowable discharge, Q=1.34cfs
Orifice coefficient, C=0.6

Opening A-1
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 0.86 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.67 cfs

Opening A-2
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 0.86 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.67 cfs

Total Q= 1.34 cfs < 1.34cfs (OK)

100 YR WATER SURFACE ELEVATION OF POND

	x	y	REQUIRED VOL
683.77	683	1005	3,160
	684	3794	

100-year Storm Event
a) The required storage for 100-year is 3,160 CF.
b) Interpolate the water surface elevation, 683.77 ft
c) Sizing discharger regulator, orifice. Q=CAsqr(2gh)
Allowable discharge, Q=2.71cfs
Orifice coefficient, C=0.6

Opening A-1
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 1.42 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.86 cfs

Opening A-2
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 1.42 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.86 cfs

Opening B-1
Opening Elev.(ft)= 683.21 ft
h (ft)= 0.36 ft
L(ft)= 0.42 ft
H(ft)= 0.4 ft
Q= 0.49 cfs

Opening B-2
Opening Elev.(ft)= 683.21 ft
h (ft)= 0.36 ft
L(ft)= 0.42 ft
H(ft)= 0.4 ft
Q= 0.49 cfs

Total Q= 2.69 cfs<2.71 cfs (OK)

DETENTION CALCUALTIONS-10YR

ALLOWABLE RELEASE RATE EQUAL TO THE 10-YEAR PEAK RUNOFF RATE PRIOR TO SITE DEVELOPMENT
WHEN C=0.45, I=5.48 @ Tc=15 MINS
TOTAL SITE AREA:0.471 ACRES
ALLOWABLE RUNOFF FROM SITE: (0.45 x5.48 x 0.471+1.12(XOS-1+XOS-2) =2.28 CFS
ALLOWABLE RELEASE FROM STORAGE AREA: (2.28 CFS - 0.39CFS BYPASS FLOW) 1.89
AREA FLOW TO THE DETENTION POND: 0.784 ACRES

STORM DURATION DATA & DETENTION POND SYSTEM CALCULATION :

TIME	C	I10	TOTAL AREA	Q	INFLOW	OUTFLOW	STORAGE
(Min)	Full Dev.	(10-Year)	(Acres)	(CFS)	(CF)	(CF)	(CF)
10	0.80	6.62	0.784	4.15	2,491	1,134	1,357
20	0.80	4.92	0.784	3.09	3,703	1,701	2,002
30	0.80	3.80	0.784	2.38	4,290	2,268	2,022
40	**0.80**	**3.36**	**0.784**	**2.11**	**5,062**	**2,835**	**2,227**
50	0.80	2.93	0.784	1.84	5,506	3,402	2,104
60	0.80	2.49	0.784	1.56	5,622	3,969	1,653
70	0.80	2.34	0.784	1.47	6,154	4,536	1,618
80	0.80	2.18	0.784	1.37	6,572	5,103	1,469
90	0.80	2.03	0.784	1.27	6,875	5,670	1,205
100	0.80	1.88	0.784	1.18	7,060	6,237	823

REQUIRED STORAGE VOLUME = INFLOW - OUTFLOW
INFLOW = STORM DURATION x RESPECTIVE PEAK DISCHARGE x 60 SEC./MIN.
OUTFLOW = HALF OF THE RESPECTIVE INFLOW DURATION x CONTROL RELEASE DISCHARGE x 60 SEC./MIN.

10 YEAR STORM EVENT @ 40 MIN.
INFLOW =40 x 0.80 x3.36x 0.784x 60 =5,062
OUTFLOW = 0.5 x 50x1.89x 60 = 2,835

REQUIRED DETENTION SYSTEM STORAGE CAPACITY = INFLOW - OUTFLOW = 5,062-2,835 CF =2,227 CF
PROPOSED DETENTION STORAGE VOLUME = 10,887 CF

10 YR WATER SURFACE ELEVATION OF POND

	x	y	REQUIRED VOL
683.44	683	1005	2,227
	684	3794	

10-year Storm Event
a) The required storage for 10-year is 2,227 CF.
b) Interpolate the water surface elevation, 683.44ft
C) Using Weir Equation. Q=CLH^3/2
Allowable discharge, Q=1.89cfs
Orifice coefficient, C=0.6

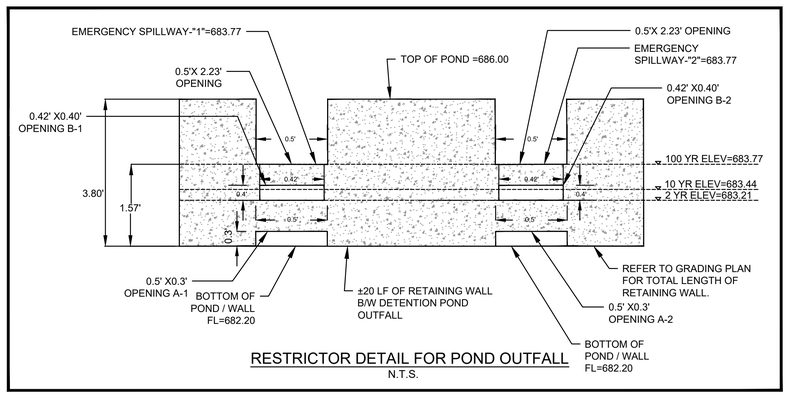
Opening A-1
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 1.09 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.75 cfs

Opening A-2
Pond Bottom Elev.(ft)= 682.20 ft
h (ft)= 1.09 ft
L(ft)= 0.5 ft
H(ft)= 0.3 ft
Q= 0.75 cfs

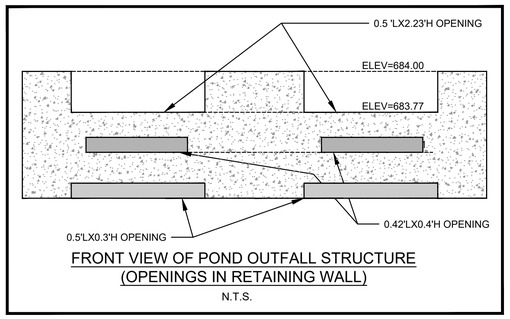
Opening B-1
Weir coefficient, C=3.1
Opening Elev.(ft)= 683.21 ft
L(ft)= 0.42 ft
H(ft)= 0.23 ft
Q= 0.14 cfs

Opening B-2
Weir coefficient, C=3.1
Opening Elev.(ft)= 683.21 ft
L(ft)= 0.42 ft
H(ft)= 0.23 ft
Q= 0.14 cfs

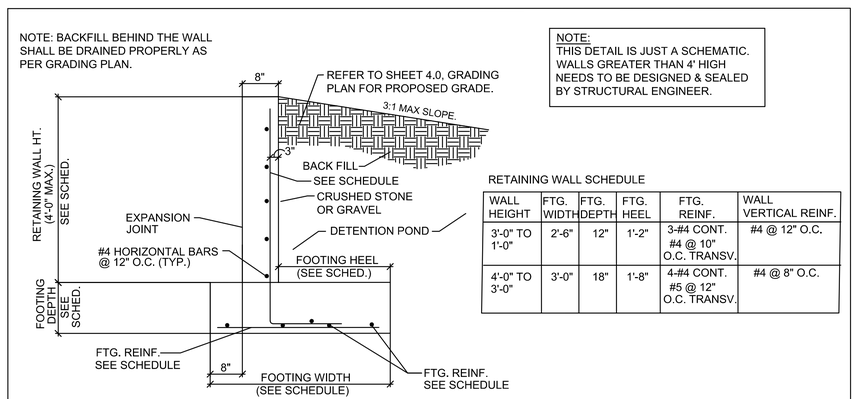
Total Q= 1.80 cfs<1.89 cfs(OK)



RESTRICTOR DETAIL FOR POND OUTFALL
N.T.S.



FRONT VIEW OF POND OUTFALL STRUCTURE (OPENINGS IN RETAINING WALL)
N.T.S.



NOTE:
THIS DETAIL IS JUST A SCHEMATIC. WALLS GREATER THAN 4' HIGH NEEDS TO BE DESIGNED & SEALED BY STRUCTURAL ENGINEER.

RETAINING WALL SCHEDULE

WALL HEIGHT	FTG. WIDTH	FTG. DEPTH	FTG. HEEL	FTG. REINF.	WALL VERTICAL REINF.
3'-0" TO 1'-0"	2'-6"	12"	1'-2"	3-#4 CONT. #4 @ 10" O.C. TRANSV.	#4 @ 12" O.C.
4'-0" TO 3'-0"	3'-0"	18"	1'-8"	4-#4 CONT. #5 @ 12" O.C. TRANSV.	#4 @ 8" O.C.

CONCRETE RETAINING WALL DETAIL FOR DETENTION POND
N.T.S.

Know what's **below.** **Call** before you dig.

NO.	DATE	DESCRIPTION	BY
1	04–11–25	1st CITY SUBMITTAL	KP
2	09–17–25	2st CITY SUBMITTAL	KP
3	11–12–25	3rd CITY SUBMITTAL	IA
4	01–08–26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS — KARTAVYA S. PATEL — 97534 — LICENSED PROFESSIONAL ENGINEER
01–08–26

PRELIMINARY DETENTION CALCULATION

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013

Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-6.1

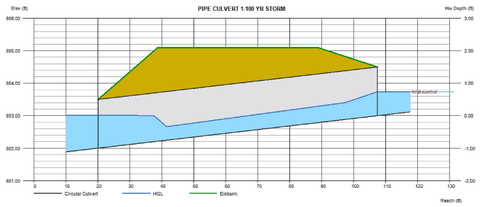
TX. P.E. FIRM #11525

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Apr 10 2025

PIPE CULVERT 1-100 YR STORM

Invert Elev Dn (ft)	= 682.00	**Calculations**	
Pipe Length (ft)	= 87.43	Qmin (cfs)	= 2.04
Slope (%)	= 1.14	Qmax (cfs)	= 11.50
Invert Elev Up (ft)	= 683.00	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 18.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 18.0	Qtotal (cfs)	= 2.04
No. Barrels	= 1	Qpipe (cfs)	= 2.04
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 1.60
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.58
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 683.02
		HGL Up (ft)	= 683.54
Embankment		Hw Elev (ft)	= 683.74
Top Elevation (ft)	= 685.10	Hw/D (ft)	= 0.49
Top Width (ft)	= 50.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 25.61		

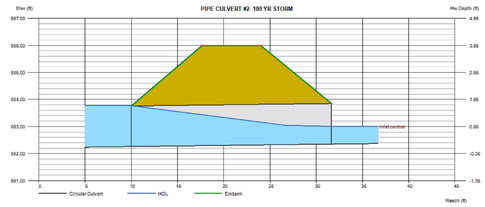


Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Apr 10 2025

PIPE CULVERT #2- 100 YR STORM

Invert Elev Dn (ft)	= 682.26	**Calculations**	
Pipe Length (ft)	= 21.65	Qmin (cfs)	= 1.61
Slope (%)	= 0.42	Qmax (cfs)	= 2.00
Invert Elev Up (ft)	= 682.35	Tailwater Elev (ft)	= 683.77
Rise (in)	= 18.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 18.0	Qtotal (cfs)	= 1.61
No. Barrels	= 1	Qpipe (cfs)	= 1.61
n-Value	= 0.013	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 0.91
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.34
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 683.77
		HGL Up (ft)	= 682.83
Embankment		Hw Elev (ft)	= 683.00
Top Elevation (ft)	= 686.00	Hw/D (ft)	= 0.44
Top Width (ft)	= 6.30	Flow Regime	= Inlet Control
Crest Width (ft)	= 10.90		

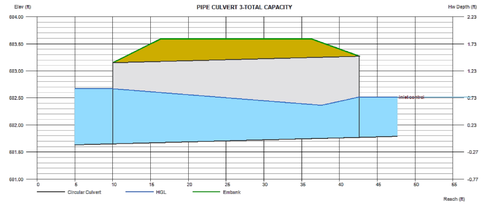


Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Thursday, Apr 10 2025

PIPE CULVERT 3-TOTAL CAPACITY

Invert Elev Dn (ft)	= 681.65	**Calculations**	
Pipe Length (ft)	= 32.63	Qmin (cfs)	= 2.04
Slope (%)	= 0.37	Qmax (cfs)	= 15.00
Invert Elev Up (ft)	= 681.77	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 18.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 18.0	Qtotal (cfs)	= 2.04
No. Barrels	= 1	Qpipe (cfs)	= 2.04
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 1.60
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.58
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 682.67
		HGL Up (ft)	= 682.31
Embankment		Hw Elev (ft)	= 682.52
Top Elevation (ft)	= 683.59	Hw/D (ft)	= 0.50
Top Width (ft)	= 20.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 15.00		

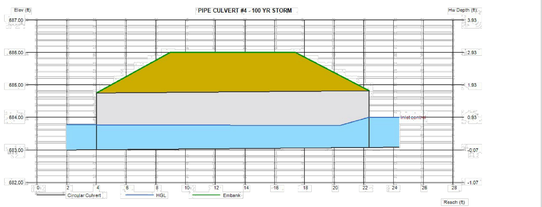


Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jun 11 2025

PIPE CULVERT #4 - 100 YR STORM

Invert Elev Dn (ft)	= 683.00	**Calculations**	
Pipe Length (ft)	= 18.36	Qmin (cfs)	= 3.38
Slope (%)	= 0.38	Qmax (cfs)	= 4.00
Invert Elev Up (ft)	= 683.07	Tailwater Elev (ft)	= 683.77
Rise (in)	= 21.0		
Shape	= Circular	**Highlighted**	
Span (in)	= 21.0	Qtotal (cfs)	= 3.38
No. Barrels	= 1	Qpipe (cfs)	= 3.38
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 3.32
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.97
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 683.77
		HGL Up (ft)	= 683.74
Embankment		Hw Elev (ft)	= 684.00
Top Elevation (ft)	= 686.00	Hw/D (ft)	= 0.53
Top Width (ft)	= 8.44	Flow Regime	= Inlet Control
Crest Width (ft)	= 9.10		



Know what's **below.**
Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04–11–25	1st CITY SUBMITTAL	KP
2	09–17–25	2st CITY SUBMITTAL	KP
3	11–12–25	3rd CITY SUBMITTAL	IA
4	01–08–26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01–08–26

PIPE CULVERT CAPACITY CALCS

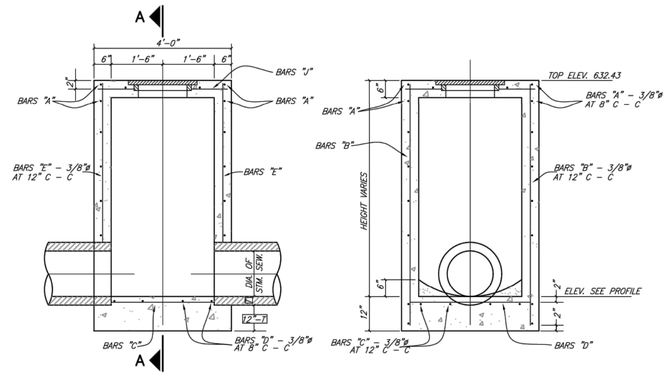
OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 I F: 469.213.7145 I E: info@triangle-engr.com
W: triangle-engr.com I O: 1782 W. McDermott Drive, Allen, TX 75013

Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-6.2

TX. P.E. FIRM #11525



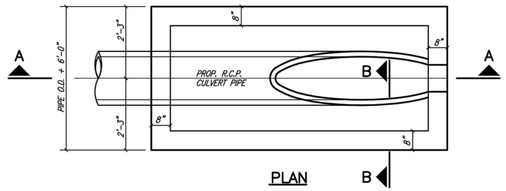
ELEVATION

SECTION A–A

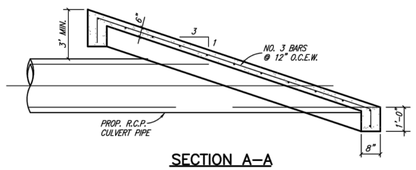
STORM SEWER TYPE A MANHOLE

MAX. PIPE SIZE 30"

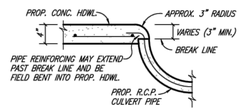
(TYPEAMH)



PLAN

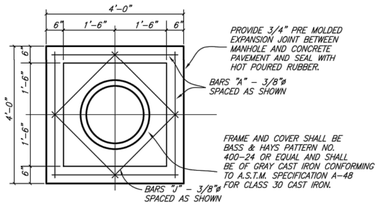


SECTION A–A



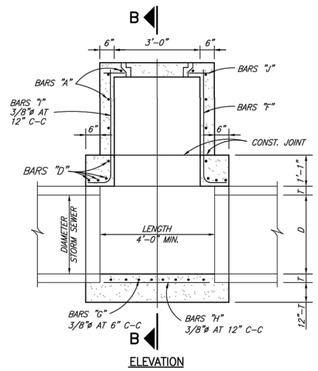
SECTION B–B

SLOPED CONCRETE HEADWALL

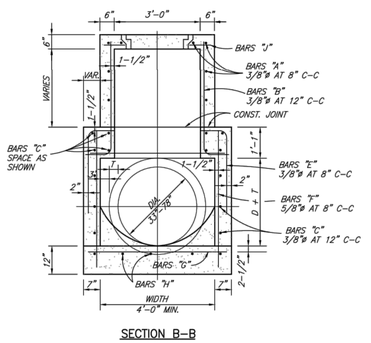


TOP PLAN
TYPE A & TYPE B
STORM SEWER MANHOLE

(MH_TOP)



ELEVATION

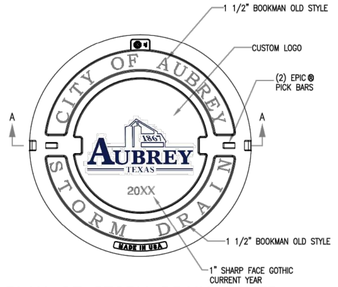


SECTION B–B

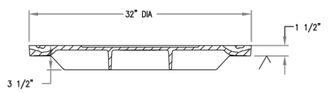
TYPE B STORM SEWER MANHOLE

MAX. PIPE SIZE 78"

(TYPEBMH)



PLAN OF STORM DRAIN COVER

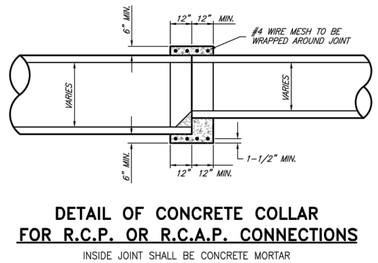


SECTION A–A OF COVER

STORM DRAIN INLET COVER

BASS & HAYS COVER, PART# VRM30-LID98 OR EJ 1408A1 COVER,
BASS & HAYS FRAME, PART# VRM30 RING

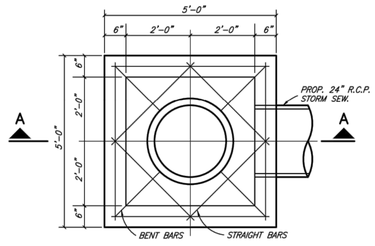
(MH-COV5)



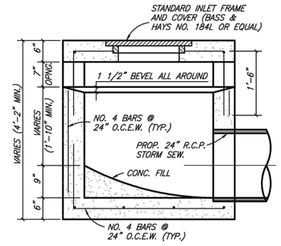
DETAIL OF CONCRETE COLLAR
FOR R.C.P. OR R.C.A.P. CONNECTIONS

INSIDE JOINT SHALL BE CONCRETE MORTAR

(CONCCOL)



PLAN



SECTION A–A

STANDARD DROP INLET

	AUBREY TEXAS 1867				**CITY OF AUBREY, TEXAS** **STANDARD CONSTRUCTION DETAILS** **STORM SEWER / INLET / DETAILS**	AUGUST, 2024	SHEET NO. 15

REVISED: 8/19/24 – NPandey | H:\Projects\Aubrey\4000\360-Standard Construction Details\Standard Details 2.0\Aubrey-15.dwg | PLOT SCALE: 1:2 | PLOT STYLE: 11x17.ctb | PLOTTED BY: Nabin Pandey ON 8/19/2024

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

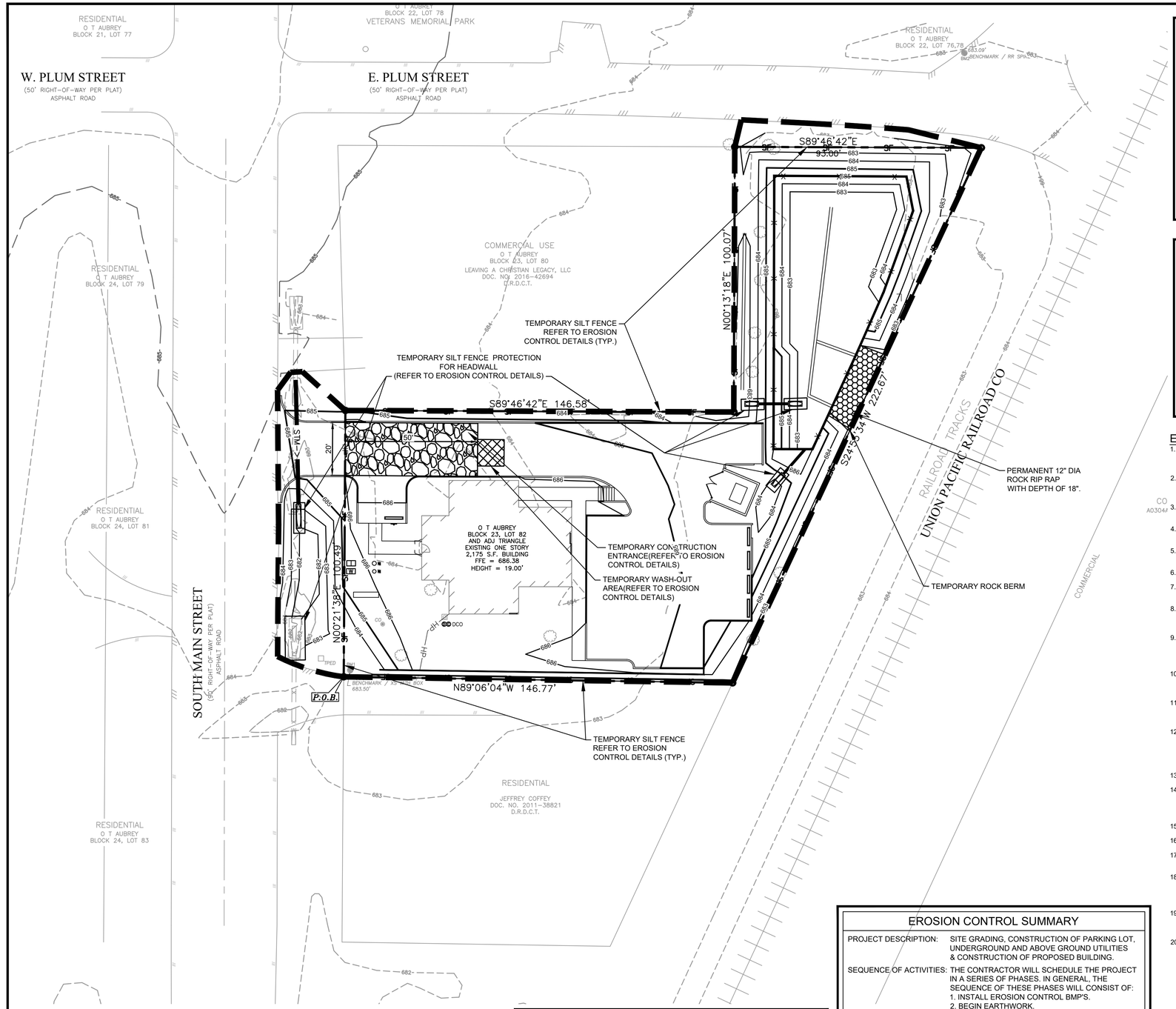
STORM SEWER DETAILS

OFFICE

403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management
TX. P.E. FIRM #11525

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-6.3



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN>—	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS		FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

EROSION CONTROL LEGEND

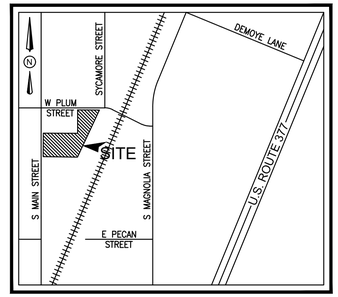
TEMPORARY CONSTRUCTION ENTRANCE	
TEMPORARY CONCRETE WASHOUT AREA	
RIP RAP	
TEMPORARY SILT FENCE	SF SF
TEMPORARY COMPOST FILTER SOCK	FS FS
HIGH POINT	HP HP HP HP
LIMITS OF DISTURBANCE	
TEMPORARY INLET PROTECTION	
ROCK BERM	

EROSION CONTROL GENERAL NOTES

1. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE STORM WATER POLLUTION PREVENTION PLAN AND THE STATE OF TEXAS NPDES GENERAL PERMIT FOR STORM WATER DISCHARGES AND BECOME FAMILIAR WITH THEIR CONTENTS.
2. THE TEMPORARY PARKING AND STORAGE AREA SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AREA, EQUIPMENT CLEANING AREA, EMPLOYEE BREAK AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES. THE EXACT LOCATIONS SHALL BE COORDINATED WITH THE OWNERS CONSTRUCTION MANAGER.
3. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) SHALL BE DISPOSED OF IN A MANNER THAT PREVENTS CONTACT BETWEEN THESE MATERIALS AND STORM WATER THAT IS DISCHARGED FROM THE SITE.
4. MAINTAIN ON THE SITE OR HAVE READILY AVAILABLE SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
5. DUST ON THE SITE SHALL BE CONTROLLED BY SPRAYING WATER ON DRY AREAS OF THE SITE. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
6. NO RUBBISH, TRASH, GARBAGE, OR OTHER SUCH MATERIALS SHALL BE DISCHARGED INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
7. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE INITIATED AS SOON AS PRACTICABLE.
8. NEW OR AFFECTED CUT OR FILLED SLOPES MUST BE AT AN ANGLE THAT CAN BE RETAINED BY VEGETATIVE COVER, AND MUST BE PROVIDED WITH A GROUND COVER SUFFICIENT TO RETAIN EROSION WITHIN 21 CALENDAR DAYS OF COMPLETION OF ANY PHASE (ROUGH OR FINAL) OF GRADING
9. EROSION CONTROL AND STABILIZATION MEASURES MUST BE INITIATED IMMEDIATELY IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. STABILIZATION MEASURES THAT PROVIDE A PROTECTIVE COVER MUST BE INITIATED IMMEDIATELY IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED.
10. THE CONTRACTOR SHALL VERIFY WATER RESTRICTIONS WITHIN THE CITY OF MCKINNEY AT TIME OF PLANTING. SHOULD WATER RESTRICTIONS NOT ALLOW HYDROMULCH, HYDROSEEDING, SPRIGGING (STAGE 3 AND STAGE 4 WATER RESTRICTIONS), OR AN APPROVED ALTERNATIVE FOR GRASSING SHALL BE INSTALLED.
11. A PERMANENT GROUND COVER, SUFFICIENT TO RESTRAIN EROSION, MUST BE PROVIDED WITHIN THE SHORTER OF 15 WORKING OR 90 CALENDAR DAYS (IF IN A HIGH QUALITY ZONE, THE SHORTER OF 15 WORKING OR 60 CALENDAR DAYS) AFTER COMPLETION OF CONSTRUCTION OR DEVELOPMENT ON ANY PORTION OF THE TRACT.
12. IF THE ACTION OF VEHICLES TRAVELING OVER THE GRAVEL CONSTRUCTION ENTRANCES IS NOT SUFFICIENT TO REMOVE THE MAJORITY OF DIRT OR MUD, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD. IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE. THE EXACT LOCATIONS SHALL BE COORDINATED WITH THE OWNERS CONSTRUCTION MANAGER.
13. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
14. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT IN THE DETENTION POND AFTER THE STABILIZATION OF THE SITE AND ANY SEDIMENT THAT MAY HAVE COLLECTED IN THE STORM SEWER DRAINAGE SYSTEMS. CONTRACTORS OR SUBCONTRACTORS WILL ALSO BE RESPONSIBLE TO CLEAN THE SWALE FROM ANY SEDIMENT IF NECESSARY.
15. IF SOIL STOCKPILING IS EMPLOYED ON THE SITE, SILT FENCES SHALL BE USED TO HELP CONTAIN THE SEDIMENT.
16. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
17. SEDIMENT BASINS ARE ATTRACTIVE TO CHILDREN AND CAN BE VERY DANGEROUS. IN ALL CASES, LOCAL ORDINANCES AND REGULATIONS REGARDING HEALTH AND SAFETY MUST BE ADHERED TO.
18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE DISPOSED OF WITHIN 30 DAYS AFTER FINAL STABILIZATION. FINAL STABILIZATION HAS OCCURRED WHEN ALL SOIL DISTURBING ACTIVITIES ARE COMPLETED AND A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% OF THE COVER FOR UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES HAS BEEN EMPLOYED.
19. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, SILT DIKES, ETC.) TO HELP PREVENT EROSION AND STORM WATER POLLUTION.
20. ALL OFF-SITE CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY, THIS INCLUDES BACKFILLING OF TRENCHES FOR STORM DRAINS & UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.

0 40

Scale: 1" = 20 ' Feet



VICINITY MAP
N.T.S.

EROSION CONTROL GENERAL NOTES

1. EVERY SOIL DISTURBING ACTIVITY SHALL HAVE AN ACCOMPANYING EROSION CONTROL PLAN.
2. THE STORM WATER POLLUTION PREVENTION PLAN (SWP3) SHALL BE READILY AVAILABLE FOR REVIEW BY FEDERAL, STATE, OR LOCAL OFFICIALS.
3. NO SOIL DISTURBING ACTIVITIES WILL OCCUR PRIOR TO THE SWP3 AND ASSOCIATED BEST MANAGEMENT PRACTICES (BMP) BEING FULLY IMPLEMENTED AND THEN INSPECTED.
4. THE CONTRACTOR SHALL COMPLY WITH THE CITY'S STORM WATER ORDINANCE, THE TPDES GENERAL CONSTRUCTION PERMIT TXR150000 AND ANY OTHER STATE AND/OR LOCAL REGULATIONS.
5. THE SITE SHALL BE INSPECTED BY THE CONTRACTOR OR HIS REPRESENTATIVE WEEKLY, AND AFTER ANY MAJOR STORM. ADJUSTMENTS/REPAIRS TO THE EROSION CONTROL MEASURES SHOULD BE MADE AS NEEDED.
6. CONTRACTOR SHALL VEGETATE ALL DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF GRADING ACTIVITIES. FINAL ACCEPTANCE OF A SITE SHALL BE CONTINGENT UPON VEGETATION BEING ESTABLISHED IN ALL DISTURBED AREAS.
7. ADEQUATE MEASURES SHALL BE TAKEN TO PREVENT EROSION. IN THE EVENT THAT SIGNIFICANT EROSION OCCURS AS A RESULT OF CONSTRUCTION THE CONTRACTOR SHALL RESTORE THE ERODED AREA TO ORIGINAL CONDITION OR BETTER.
8. TEMPORARY STONE STABILIZED CONSTRUCTION ENTRANCE SHALL HAVE THE FOLLOWING MINIMUM DIMENSIONS: 24' WIDE X 50' LONG X 6" DEEP. (3"-5" COURSE AGGREGATE). PLACE FILTER FABRIC UNDER STONE.
9. THE CONCRETE WASHOUT AREA IS TO BE USED AS A VEHICLE WASH DOWN AREA FOR DEBRIS AND SOIL REMOVAL PRIOR TO EXITING THE SITE.

BMP MAINTENANCE NOTES

1. ALL MEASURES STATED ON THIS SITE MAP, AND IN THE STORM WATER POLLUTION PREVENTION PLAN, SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURE SHALL BE CHECKED BY A QUALIFIED PERSON IN ACCORDANCE WITH THE CONTRACT DOCUMENTS OR THE APPLICABLE PERMIT, WHICHEVER IS MORE STRINGENT, AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:
2. INLET PROTECTION DEVICES AND BARRIERS SHALL BE REPAIRED OR REPLACED IF THEY SHOW SIGNS OF UNDERMINING OR DETERIORATION.
3. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.
4. SILT FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE-HALF OF THE SILT FENCE.
5. THE VEHICLE TRACKING CONTROL SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRED PERIODIC TOP DRESSING OF THE CONSTRUCTION EXITS AS CONDITIONS DEMAND.
6. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.
7. PRIOR TO LEAVING THE SITE, ALL VEHICLES SHALL BE CLEANED OF DEBRIS. ANY DEBRIS AND/OR SEDIMENT REACHING THE PUBLIC STREET SHALL BE CLEANED IMMEDIATELY BY A METHOD OTHER THAN FLUSHING.

811 Know what's **below.** **Call** before you dig.

SURFACE STABILIZATION MEASURES

KEY	PRACTICE	DESCRIPTION	NOTES
M	DISTURBED AREA STABILIZATION(W/ MULCHING ONLY)	Temporary protection for disturbed areas; as an erosion retardant cover when temporary grassing is inapplicable.	Straw (1-2 tons/acre), Wood chips (5-6 tons/acre),, Wood fiber (0.5-1 tons/acre), Bark (35 cy/acre), Corn stalks (4-6 tons / acre), or Nets/Mats/Chemical stabilizers applicable
TS	DISTURBED AREA STABILIZATION(W/ TEMP. SEEDING)	Planting rapid-growing annual grasses, small grains, or legumes to provide initial, temporary cover for erosion control on disturbed areas.	May-Aug.: German millet (40 lbs./ac), Aug.-Dec.: Rye grain (120 lbs./ac), Jan.-May: Mixture of Rye grain (120 lbs./ac) and Kobe lespedeza (50 lbs./ac) 750 (1000 lbs.-for Fall) lbs./ac of 10-10-10 fertilizer
PS	DISTURBED AREA STABILIZATION(W/ PERM. SEEDING)	Controlling runoff and preventing erosion by establishing a perennial vegetative cover with seed.	Mixture of Tall fescue (80 lbs./ac) and Kobe lespedeza (40 lbs./ac) with 1000 lbs./ac of 10-10-10 fertilizer and 4,000 lbs./ac of lime *May-Aug.: Add 10 lbs./ac German millet *Oct.-Feb.: Add 40 lbs./ac Rye grain
SO	DISTURBED AREA STABILIZATION(W/ PERM. SODDING)	Transplanting vegetative sections of plant materials to promptly stabilize areas that are subject to erosion.	Warm Season: Hybrid Bermuda grass, Zaysiagrass, Centipede grass, or St Augustine grass Cool Season: Tall fescue/Kentucky bluegrass
DC	DUST CONTROL	Utilize dust control methods whenever there are offsite impacts, especially periods of drought until final stabilization is reached.	Phasing the project, vegetative cover, Mulch, sprinkling water, spray-on-adhesive, calcium chloride, barriers, etc.

EROSION & SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:
SELECT T = TEMPORARY OR P = PERMANENT
(AS APPLICABLE)

___ MULCHING (HAY OR STRAW)
___ BUFFER ZONES
P PLANTING
T SEEDING
P SODDING
___ PRESERVATION OF NATURAL RESOURCES
___ FLEXIBLE CHANNEL LINER
___ RIGID CHANNEL LINER
___ SOIL RETENTION BLANKET
___ COMPOST MANUFACTURED TOPSOIL
___ EROSION CONTROL BLANKET

EROSION CONTROL SUMMARY

PROJECT DESCRIPTION:	SITE GRADING, CONSTRUCTION OF PARKING LOT, UNDERGROUND AND ABOVE GROUND UTILITIES & CONSTRUCTION OF PROPOSED BUILDING.
SEQUENCE OF ACTIVITIES:	THE CONTRACTOR WILL SCHEDULE THE PROJECT IN A SERIES OF PHASES. IN GENERAL, THE SEQUENCE OF THESE PHASES WILL CONSIST OF: 1. INSTALL EROSION CONTROL BMP'S. 2. BEGIN EARTHWORK. 3. INSTALL WET AND DRY UTILITIES. 4. INSTALL STORM SEWER LINES AND INLETS. 5. BEGIN SITE GRADING. 6. INSTALL CURBS, DRIVEWAY AND PARKING LOT. 7. POUR BUILDING FOUNDATION PAD. 8. BEGIN VERTICAL BUILDING CONSTRUCTION. 9. INSTALL TREES, SHRUBS, ETC. AND RESTORE ALL DISTURBED VEGETATION. 10. REMOVAL OF EXISTING EROSION CONTROL BMP'S & INSTALLATION OF PERMANENT EROSION CONTROL BMP'S.
SOIL DISTURBING ACTIVITIES:	SOIL DISTURBING ACTIVITIES WILL INCLUDE CLEARING & GRUBBING, GRADING, TRENCHING IN PREPARATION FOR INSTALLING UTILITIES, BUILDING PAD, PARKING LOT, EROSION & SEDIMENTATION CONTROLS AND TOPSOIL WORK FOR FINAL PLANTING AND SEEDING.
TOTAL PROJECT AREA:	0.557 ACRES
TOTAL DISTURBED AREA:	0.633 ACRES

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

EROSION CONTROL PLAN

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
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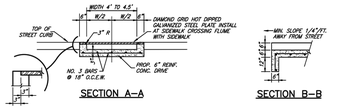
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013

Planning | Civil Engineering | Construction Management

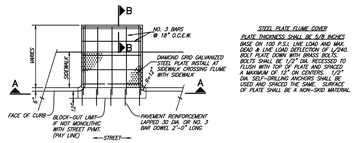
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-7.0

TX. P.E. FIRM #11525



SECTION A–A

SECTION B–B



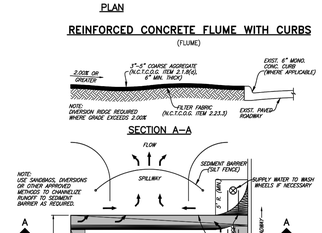
PLAN

REINFORCED CONCRETE FLUME WITH CURBS

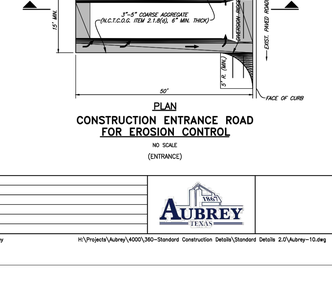
(FLUME)

STEEL PLATE FLUME COVER

PLATE THICKNESS SHALL BE 5/8 INCHES BASE ON 100 P.S.I. LIVE LOAD AND MAX. DEAD & LIVE LOAD DEFLECTION OF L/240. BOLT PLATE DOWN WITH BRACKETS AT 4 CORNERS AS REQUIRED. TO FLUSH WITH TOP OF PLATE AND SPACED A MAXIMUM OF 12" ON CENTERS. 1/2" DIA. SELF-DRILLING ANCHORS SHALL BE USED AND SPACED THE SAME. SURFACE OF PLATE SHALL BE A NON-SKID MATERIAL.



SECTION A–A

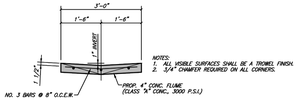


PLAN

CONSTRUCTION ENTRANCE ROAD FOR EROSION CONTROL

NO SCALE

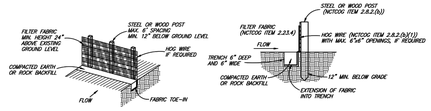
(ENTRANCE)



NOTES:
1. ALL VISIBLE SURFACES SHALL BE A TROWEL FINISH.
2. 3/4" CHAMFER REQUIRED ON ALL CORNERS.

REINFORCED CONCRETE FLUME WITHOUT CURBS

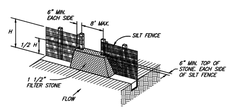
(FLUMESEC)



ISOMETRIC VIEW

SECTION VIEW

SILT FENCE DETAIL



STONE OVERFLOW STRUCTURE

LOCATION AS CALLED FOR IN PLANS

NOTES:

1) THE CONTRACTOR SHALL INSPECT SILT FENCE WEEKLY AND AFTER MAJOR RAIN EVENTS TO ENSURE THAT THE DEVICE IS FUNCTIONING PROPERLY AND MAINTAIN IN ACCORDANCE WITH NCTCOG ITEM 5.12.

2) THE CONTRACTOR SHALL REMOVE SEDIMENT FROM BEHIND FENCE WHEN THE DEPTH OF SEDIMENT HAS BUILT UP TO ONE–THIRD THE HEIGHT OF THE FENCE ABOVE GRADE.

3) THE CONTRACTOR SHALL INSPECT THE BASE OF THE FENCE TO ENSURE THAT NO GAPS HAVE DEVELOPED AND RE–TRENCH AS NECESSARY.

4) THE CONTRACTOR SHALL INSPECT FENCE POSTS TO ENSURE THAT THEY ARE PROPERLY SUPPORTING THE FENCE. IF NECESSARY, THE CONTRACTOR SHALL RESET AND ADD POSTS.

5) IF FILTER FABRIC IS RIPPED, DAMAGED OR DETERIORATED, THE CONTRACTOR SHALL REPLACE IT IN ACCORDANCE WITH THE ORIGINAL SPECIFICATIONS AND DETAILS. (MAINTENANCE OF THE SILT FENCE SHALL BE AT THE CONTRACTORS OWN EXPENSE)

EROSION CONTROL

(SILT–DTL)

REVISED: 4/26/24 – NPondey	H:\Projects\Aubrey\4000\360–Standard Construction Details\Standard Details 2.0\Aubrey–10.dwg	PLOT SCALE: 1:2	PLOT STYLE: 11x17.ctb	PLOTTED BY: Nabin Pandey ON 8/19/2024

CITY OF AUBREY, TEXAS

STANDARD CONSTRUCTION DETAILS
CONCRETE FLUME / EROSION CONTROL

AUGUST, 2024

SHEET NO. 10

NO.	DATE	DESCRIPTION	BY
1	04–11–25	1st CITY SUBMITTAL	KP
2	09–17–25	2st CITY SUBMITTAL	KP
3	11–12–25	3rd CITY SUBMITTAL	IA
4	01–08–26	4th CITY SUBMITTAL	IA
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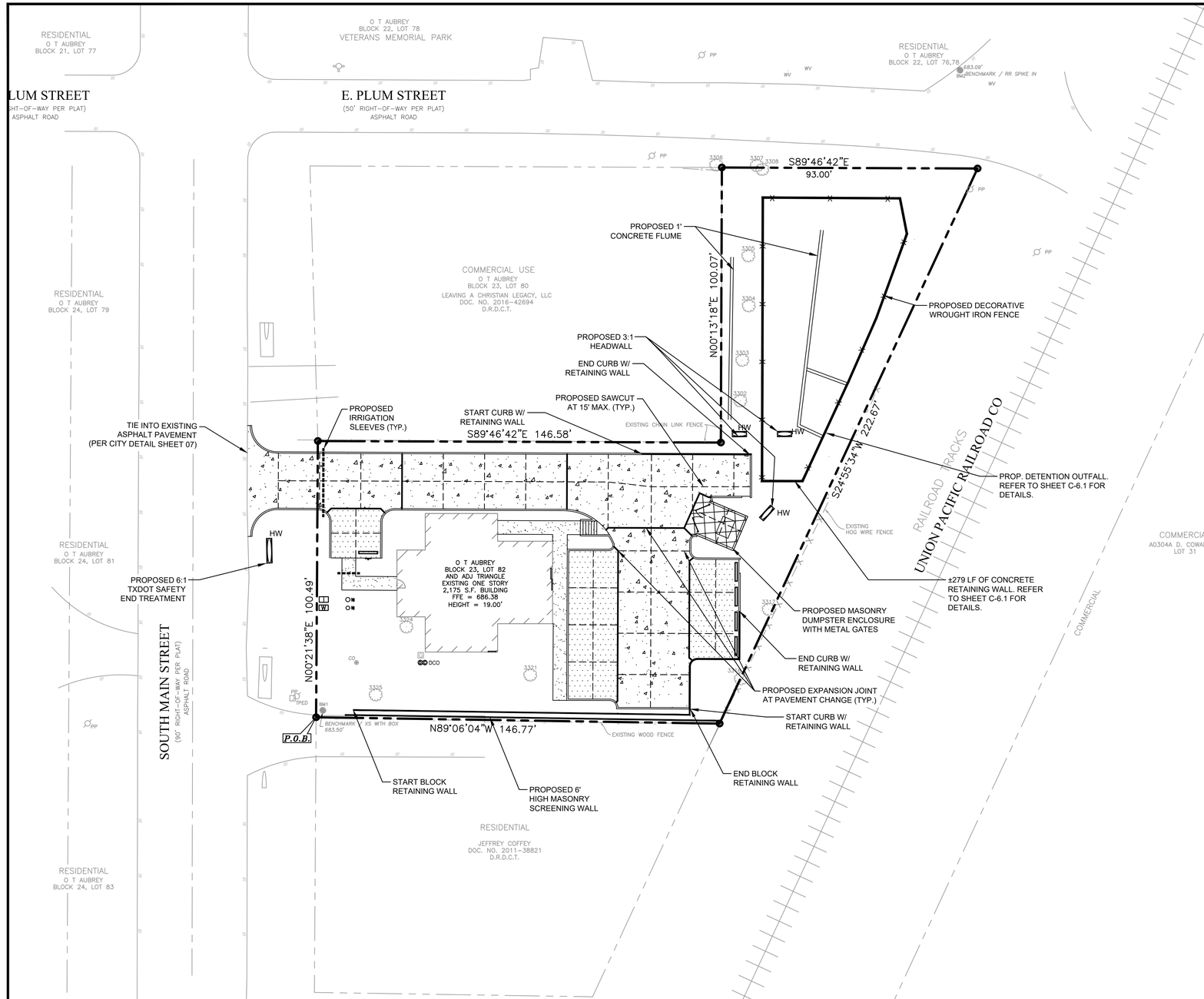
STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01–08–26

EROSION CONTROL DETAILS

OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 I F: 469.213.7145 I E: info@triangle-engr.com
W: triangle-engr.com I O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management
TX. P.E. FIRM #11525

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04–05–24	SEE SCALE BAR	035–24	C-7.1



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
W	WATER LINE		"X" CUT SET
SAN	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
OHE	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE		LIGHT POLE
	BOLLARD	G	GAS METER
SS	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

PAVING LEGEND

EXPANSION JOINT (@ 60' MAX.)

SAWCUT JOINT (@ 15' MAX.)

4" CONCRETE SIDEWALK

5" LIGHT DUTY CONCRETE

6" HEAVY DUTY CONCRETE

7" HEAVY DUTY DUMPSTER CONCRETE

UTILITY STRUCTURE LEGEND

FIRE HYDRANT	
FIRE DEPARTMENT CONNECTION-FDC	
GAS METER	G
GREASE TRAP	GT
LIGHT POLE	
POWER POLE	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	
SANITARY SEWER DOUBLE CLEANOUT	
SANITARY SEWER SAMPLE PORT	
STORM SEWER MANHOLE	D
STORM SEWER CLEANOUT	
TRANSFORMER	T
WATER METER - DOMESTIC	WM
WATER METER - IRRIGATION	WM

PROPOSED RIGID PAVEMENT RECOMMENDATIONS

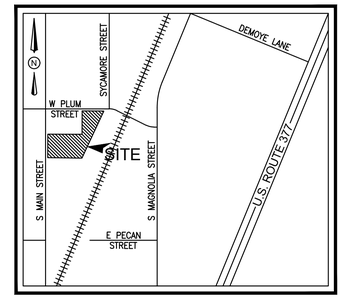
PROPOSED CONTINUOUSLY REINFORCED RIGID CONCRETE PAVEMENT RECOMMENDATIONS
(BAR LAPS SHALL BE 30 DIAMETERS IN LENGTH)

SIDEWALK - PRIVATE 4" THICK CONCRETE PAVEMENT @ 3,000 P.S.I. # 3 REBAR @ 18" O.C. EACH-WAY 6" THICK COMPACTED SUBGRADE	
PARKING AREAS 5" THICK CONCRETE PAVEMENT @ 3,600 P.S.I. # 3 REBAR @ 18" O.C. EACH-WAY 6" THICK COMPACTED & LIME STABILIZED SUBGRADE	
FIRE LANE / DRIVE AISLES 6" THICK CONCRETE PAVEMENT @ 4,000 P.S.I. # 3 REBAR @ 24" O.C. EACH-WAY 6" THICK COMPACTED & LIME STABILIZED SUBGRADE	
DUMPSTER PAD 7" THICK CONCRETE PAVEMENT @ 3,600 P.S.I. # 4 REBAR @ 12" O.C. EACH-WAY 6" THICK COMPACTED & LIME STABILIZED SUBGRADE	

N

0 40

Scale: 1" = 20' Feet



VICINITY MAP
N.T.S.

PAVING GENERAL NOTES

1. STRIP & REMOVE FROM THE CONSTRUCTION AREA ALL TOPSOIL, ORGANICS & VEGETATION TO A MINIMUM DEPTH OF 6 INCHES.
2. CONTROL JOINTS FORMED BY SAWING ARE RECOMMENDED BOTH LONGITUDINAL AND TRANSVERSE DIRECTIONS. CONTROL JOINT SHALL BE SAWED WITHIN 3 HOURS AFTER PLACING CONCRETE. JOINTS SHALL BE PROPERLY CLEANED AND SEALED AS SOON AS POSSIBLE AFTER JOINTS ARE CUT.
3. DRAINAGE SHOULD BE MAINTAINED AWAY FROM THE FOUNDATION, BOTH DURING AND AFTER CONSTRUCTION. WATER SHOULD NOT BE ALLOWED TO POND NEAR THE FOUNDATION. THE FOLLOWING ITEMS SHOULD PROVIDE FOR POSITIVE DRAINAGE OF WATER AWAY FROM THE FOUNDATION: SIDEWALKS AND OTHER CONCRETE FLAT WORK, PARKING AREAS, DRIVEWAYS AND OTHER SURFACE DRAINAGE FEATURES, AND LANDSCAPING.
4. FRENCH DRAINS ARE RECOMMENDED AROUND ANY SLABS WHERE SEEPING GROUND WATER IS ENCOUNTERED DURING CONSTRUCTION.
5. SIDEWALK AROUND THE BUILDING SHALL NOT BE STRUCTURALLY CONNECTED TO THE BUILDING FOUNDATION UNLESS IT'S NOTED ON THE STRUCTURAL PLANS.
6. ALL EXPANSION JOINTS AND CRACK CONTROL JOINTS SHOULD BE SEALED TO PREVENT THE INFILTRATION OF WATER INTO THE SUBSURFACE. THIS IS PARTICULARLY IMPORTANT AROUND IRRIGATED LANDSCAPING AND ALONG THE DRAINAGE PATH OF ROOF DOWNSPOUTS.
7. LANDSCAPE ISLANDS SHOULD BE BACKFILLED WITH LOW PLASTICITY CLAYS TO REDUCE WATER INTRUSION INTO THE SUBSURFACE PAVEMENT STRUCTURES. CURBS SHOULD BE PROVIDED WITH WEEP HOLES IN LANDSCAPE AREAS TO REDUCE THE BUILD UP OF HYDROSTATIC PRESSURE AND TO REDUCE THE INTRUSION OF WATER INTO THE SUBSURFACE MATERIAL.
8. CURB AND GUTTER SHALL CONSIST OF STEEL REINFORCED CONCRETE AND SHALL BE SIX (6") INCHES HIGH, UNLESS OTHERWISE NOTED ON THE SITE/GRADING PLANS.
9. THE CONTRACTOR SHALL PROCEED WITH PAVING NO MORE THAN SEVENTY-TWO (72) HOURS AFTER DENSITY/MOISTURE TESTS HAVE BEEN TAKEN AND PASSED BY A REGULAR TESTING FIRM.
10. MANHOLE RIM ELEVATIONS, CLEAN-OUTS, VALVE BOXES, ETC. SHALL BE ADJUSTED TO FINISHED GRADE BY THE PAVING CONTRACTOR AT THE TIME OF PAVING.
11. SEE IRRIGATION PLAN FOR IRRIGATION SLEEVE PLACEMENT PRIOR TO PAVING CONSTRUCTION.

811 Know what's below. Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

PAVING PLAN

OFFICE

403 SOUTH MAIN STREET (FM 428)

CITY OF AUBREY

DENTON COUNTY, TEXAS

DENNIS COWAN SURVEY, ABSTRACT No. 304

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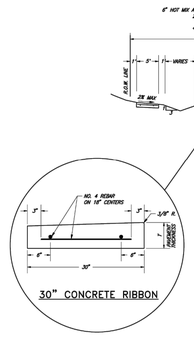
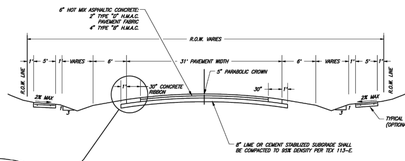
P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-8.0

TX. P.E. FIRM #11525



30" CONCRETE RIBBON



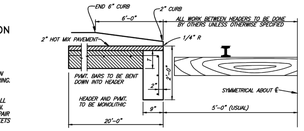
31' HMAC PAVEMENT SECTION
ESTATE LOT
TYPICAL CROSS SECTION

NOTES:
1. BAR DITCH SIDE SLOPE VARIES DEPENDING UPON DESIGN, NO GREATER THAN 3:1 WITHOUT ARMORING.
2. CUL DE SAC SHALL HAVE A 7 INCH PARABOLIC CROWN.
3. PAVING AND SUBGRADE ARE MINIMUMS AND SHALL BE VERIFIED BY GEOTECHNICAL RECOMMENDATION.
4. HMAC SECTIONS SHALL ONLY BE USED FOR REPAIR OF EXISTING HMAC STREET. NO PROPOSED STREETS MAY BE HMAC.

31' HMAC PAVEMENT SECTION
LOCAL STREET
TYPICAL CROSS SECTION

NOTES:
1. FOR 30" GUTTER DETAIL, SEE "SEPARATE CURB & GUTTER" DETAIL.
2. CUL DE SAC SHALL HAVE A 7 INCH PARABOLIC CROWN.
3. PAVING AND SUBGRADE ARE MINIMUMS AND SHALL BE VERIFIED BY GEOTECHNICAL RECOMMENDATION.
4. HMAC SECTIONS SHALL ONLY BE USED FOR REPAIR OF EXISTING HMAC STREET. NO PROPOSED STREETS MAY BE HMAC.

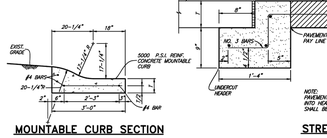
NOTE:
LIME OR CEMENT SUBGRADE DESIGN TO BE RECOMMENDED BY GEOTECHNICAL ENGINEER AND MUST BE APPROVED BY THE PUBLIC WORKS DIRECTOR.



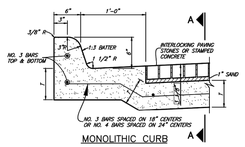
RAIL HEADER
(RR-HEADER)

NOTE:
PAVEMENT BARS TO BE BENT DOWN INTO HEADER. PAVEMENT AND HEADER SHALL BE MONOLITHIC.

STREET HEADER
(HEADER)



MOUNTABLE CURB SECTION



MONOLITHIC CURB

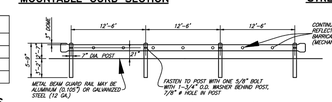
ROADWAY WIDTH (W)	TOTAL CROWN HEIGHT	3/4 POINT	MID-POINT	1/4 POINT
26'	4"	2-1/4"	1"	1/4"
36'	6"	3-3/8"	1-1/2"	3/8"
44'	6"	3-3/8"	1-1/2"	3/8"

TABLE OF CROWN HEIGHTS AND ORDINATES
FOR VARIOUS PARABOLIC SECTIONS

SLIP-FORM PAVEMENT MUST MEET CROWN GRADES AT GUTTERS, AT MID-POINTS & ℄

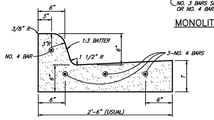
PARABOLIC ROADS ONLY TO BE CONSTRUCTED WITH SLIP FORM PAVERS

(PARA-TABLE)

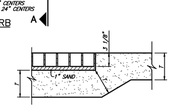


NON CONSTRUCTION BARRICADES (PERMANENT BARRICADES) SHALL CONSIST OF TxDOT SPTSD-97 METAL BEAM GUARD FENCE WITH TERMINAL CONNECTOR SECTIONS AT EACH END. TEMPORARY BARRICADES SHALL BE REQUIRED DURING ANY CONSTRUCTION ALL ACCESS FROM OUTSIDE STREETS. BARRICADE SHALL EXTEND FROM OUTSIDE CURB TO OUTSIDE CURB.

TYPICAL PERMANENT BARRICADE DETAIL
(PERM-BARRICADE)



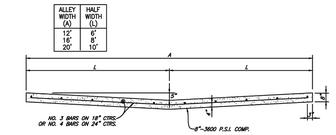
SEPARATE CURB AND GUTTER



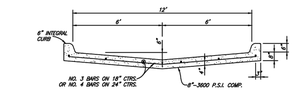
SECTION A-A

PAVING STONES SHALL BE PER NCTCOG ITEMS 2.1.6 AND 8.17

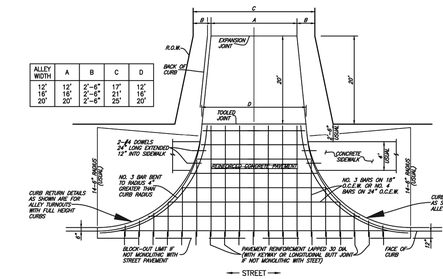
CURB AND CURB AND GUTTER
(CURB-GUT)



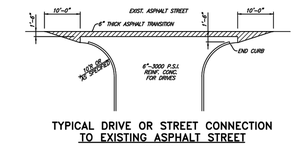
STANDARD 12, 16' & 20' ALLEY SECTION
(STDALLEY2)



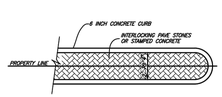
STANDARD ALLEY SECTION WITH CURBS
(STDALLEY)



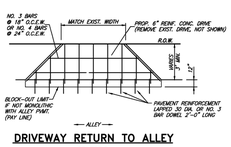
ALLEY RETURN DETAILS
(ALLEY_DTL)



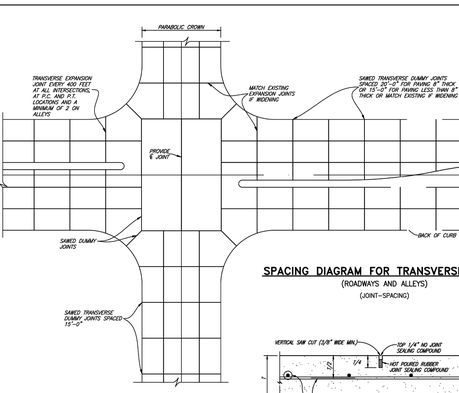
TYPICAL DRIVE OR STREET CONNECTION
TO EXISTING ASPHALT STREET
(DRIVE_CON)



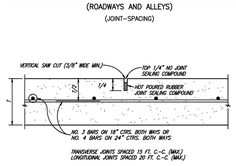
MEDIAN AT DRIVEWAYS SPLIT BY PROPERTY LINE
(DRIVEDTL3)



DRIVEWAY RETURN TO ALLEY
(DRIVEDTL2)

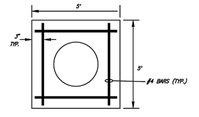


SPACING DIAGRAM FOR TRANSVERSE JOINTS
(ROADWAYS AND ALLEYS)
(JOINT-SPACING)

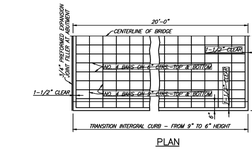


TRANSVERSE JOINTS SPACED 15 FT. C.-C. (MAX.)
LONGITUDINAL JOINTS SPACED 20 FT. C.-C. (MAX.)

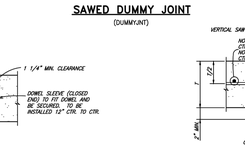
SAWED DUMMY JOINT
(DUMMY-JNT)



MANHOLE PAD PLAN

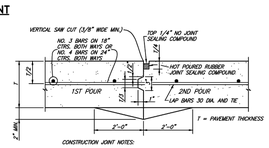


PLAN



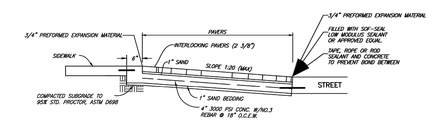
TRANSVERSE EXPANSION JOINT NOTES:
1. DOWELS AND REINFORCING BARS SHALL BE SUPPORTED BY AN APPROVED DEVICE.
2. TRANSVERSE EXPANSION JOINTS SHALL BE SPACED AT 400 FT. MAXIMUM AND AT ALL INTERSECTIONS.

TRANSVERSE EXPANSION JOINT
(EXPJNT)

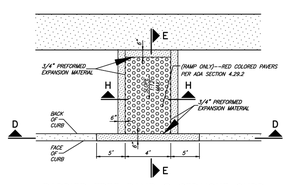


CONSTRUCTION JOINT NOTES:
1. CONTRACTOR SHALL PROTECT KEYWAY PRIOR TO SECOND POUR. IF LONGITUDINAL KEYWAY IS DAMAGED, CONTRACTOR SHALL REPAIR WITH THE USE OF LONGITUDINAL BUTT JOINT (DRILL DOWELS INTO FIRST POUR).
2. THICKENED EDGES ARE REQUIRED FOR FUTURE WIDENING ONLY.

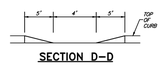
CONSTRUCTION JOINT
(CONSTJNT)



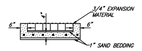
SECTION E-E
(BARRIER_FREE)



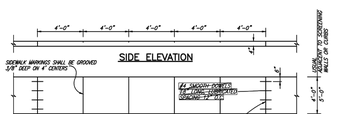
BARRIER FREE RAMP @ STRAIGHT CURB



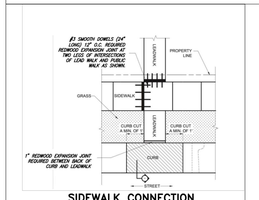
SECTION D-D



SECTION H-H



REINFORCED CONCRETE SIDEWALK
(SIDEWALK)



SIDEWALK CONNECTION

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
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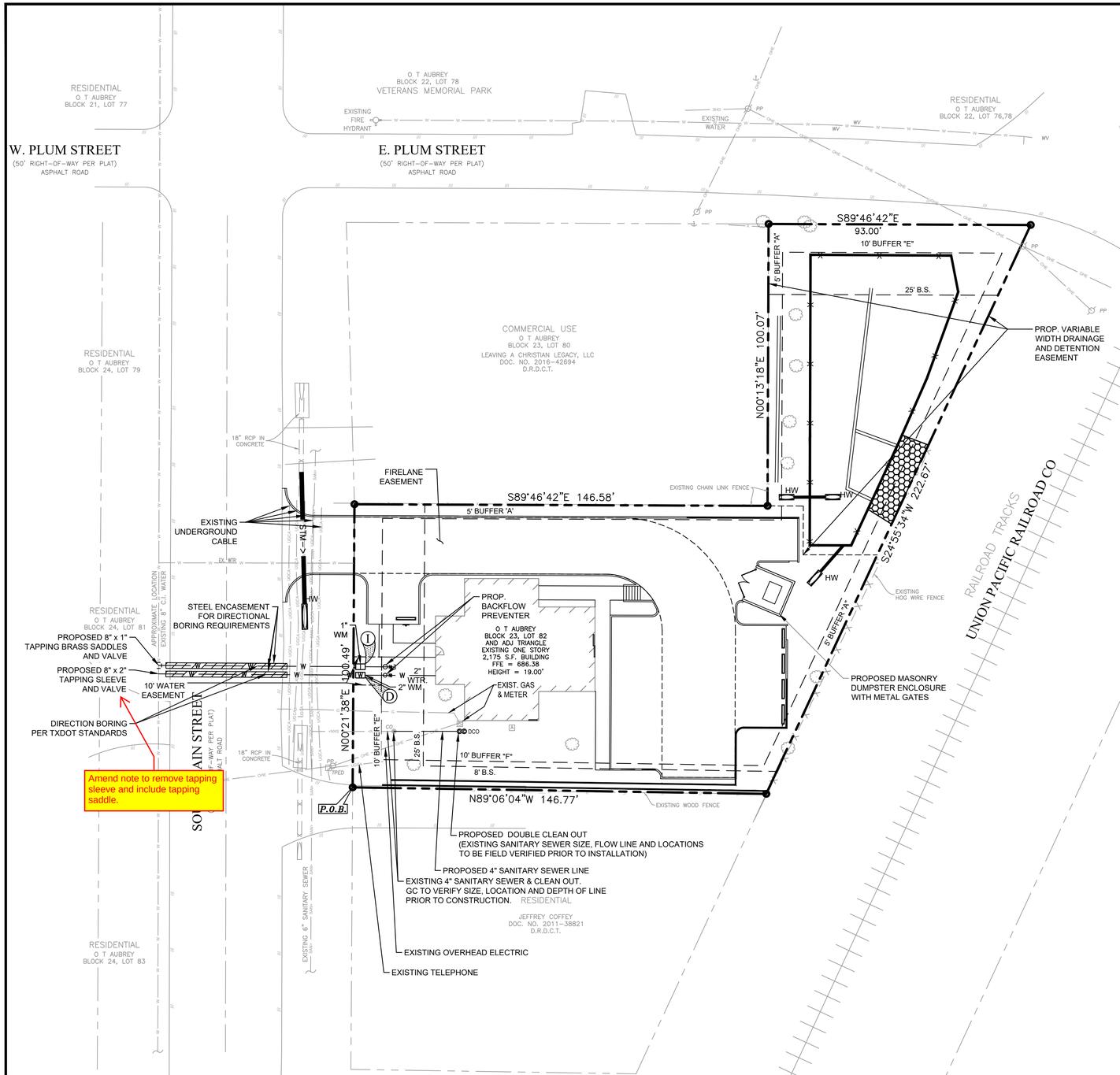
STATE OF TEXAS
KARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

PAVING DETAILS
OFFICE
403 SOUTH MAIN STREET (FM 428)
CITY OF AUBREY
DENTON COUNTY, TEXAS
DENNIS COWAN SURVEY, ABSTRACT No. 304

TRIANGLE ENGINEERING LLC
T: 469.331.8566 | F: 469.213.7145 | E: info@triangle-engr.com
W: triangle-engr.com | O: 1782 W. McDermott Drive, Allen, TX 75013
Planning | Civil Engineering | Construction Management

P.E.	DES.	DATE	SCALE	PROJECT NO.	SHEET NO.
KP	MLM	04-05-24	SEE SCALE BAR	035-24	C-8.1

TX. P.E. FIRM #11525



EXISTING LEGEND

	BOUNDARY LINE		SET IRON ROD (AS NOTED)
	ADJOINER BOUNDARY LINE		FOUND IRON ROD (AS NOTED)
	EASEMENT LINE (AS NOTED)		"X" CUT FOUND
—W—	WATER LINE		"X" CUT SET
—SAN>	SANITARY SEWER LINE	WM	WATER METER
	STORM DRAIN LINE (AS NOTED)	FH	FIRE HYDRANT
—OHE—	OVERHEAD ELECTRIC LINE	SS	SANITARY SEWER MANHOLE
	BENCH MARK	CV	CABLE VAULT
(CM)	CONTROL MONUMENT	UV	UTILITY VAULT
O.P.R.D.C.T.	OFFICIAL PUBLIC RECORDS DENTON COUNTY, TEXAS	FO	FIBER OPTIC MARKER
		WV	WATER VALVE
M.R.D.C.T.	MAP RECORDS DENTON COUNTY, TEXAS	TS	TRAFFIC SIGN
		SD	STORM MANHOLE
	POWER POLE	LP	LIGHT POLE
	BOLLARD	G	GAS METER
CO	SANITARY SEWER CLEAN OUT	GT	GREASE TRAP
		T	TELEPHONE RISER

UTILITY LEGEND

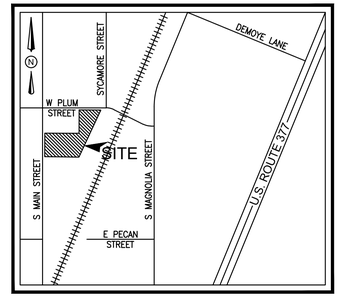
UNDERGROUND TELEPHONE LINE	UGT
UNDERGROUND ELECTRIC LINE	UGE
GAS LINE	G G
SANITARY SEWER LINE	X"SS
WATER MAIN	X"W
DOMESTIC WATER LINE	D D
STORM LINE	STM-->
STORM SEWER MANHOLE	D
STORM SEWER CLEANOUT	
SANITARY SEWER MANHOLE	S
SANITARY SEWER CLEANOUT	
SANITARY SEWER DOUBLE CLEANOUT	
SANITARY SEWER SAMPLE PORT	
GREASE TRAP	
DOMESTIC WATER METER	W
IRRIGATION METER	I
GAS METER	G
FIRE HYDRANT	
FIRE DEPARTMENT CONNECTION-FDC	
TRANSFORMER	T
LIGHT POLE	
POWER POLE	

WATER METER & SANITARY SEWER SCHEDULE

ID	TYPE	SIZE	NO.
D	DOMESTIC	1"	1
I	IRRIGATION	1"	1
	SANITARY SEWER	6"	

Plan shows this as a 4" sewer service

Plan shows this as a 2" water service



VICINITY MAP
N.T.S.

UTILITY GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE CITY/UTILITY COMPANY STANDARDS.
2. FIELD VERIFY LOCATION OF EXISTING WATER MAIN , SEWER MAIN, GAS, TELEPHONE AND ELECTRICAL LINE. POT HOLE RECOMMENDED PRIOR TO CONSTRUCTION BEGIN. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH UTILITY SERVICE PROVIDERS.
3. THE LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS IS TAKEN FROM AS-BUILTS, UTILITY PLANS OR SURVEY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAKE ARRANGEMENTS WITH THE OWNERS OF SUCH UNDERGROUND UTILITIES PRIOR TO WORKING IN THE AREA TO CONFIRM THEIR EXACT LOCATION AND TO DETERMINE WHETHER ANY ADDITIONAL UTILITIES OTHER THAN THOSE SHOWN ON THE PLANS MAY BE PRESENT. THE CONTRACTOR SHALL PRESERVE AND PROTECT ALL UNDERGROUND UTILITIES. IF EXISTING UNDERGROUND UTILITIES ARE DAMAGED, THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COST OF REPAIRING THE UTILITY.
4. WHERE EXISTING UTILITIES OR SERVICE LINES ARE CUT, BROKEN OR DAMAGED, THE CONTRACTOR SHALL REPLACE OR REPAIR THE UTILITIES OR SERVICE LINES WITH THE SAME TYPE OF ORIGINAL MATERIAL AND CONSTRUCTION, OR BETTER, UNLESS OTHERWISE SHOWN OR NOTED ON THE PLANS, AT HIS OWN COST AND EXPENSE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AT ONCE OF ANY CONFLICTS WITH UTILITIES.
5. ALL EXCAVATIONS, TRENCHING AND SHORING OPERATIONS SHALL COMPLY WITH THE REQUIREMENTS OF THE U. S. DEPARTMENT OF LABOR, OSHA, CONSTRUCTION SAFETY AND HEALTH REGULATIONS AND ANY AMENDMENTS THERETO.
6. THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY CONSTRUCTION TO ORIGINAL CONDITION OR BETTER. RESTORED AREAS INCLUDE, BUT ARE NOT LIMITED TO TRENCH BACKFILL, SIDE SLOPES, FENCES, CULVERT PIPES, DRAINAGE DITCHES, DRIVEWAYS, PRIVATE YARDS AND ROADWAYS.
7. ANY CHANGES NEEDED AFTER CONSTRUCTION PLANS HAVE BEEN RELEASED, SHALL BE APPROVED BY THE CITY ENGINEER. THESE CHANGES MUST BE RECEIVED IN WRITING.
8. THE CONTRACTOR SHALL PROVIDE "RED LINED" MARKED PRINTS TO THE ENGINEER PRIOR TO FINAL INSPECTION INDICATING ALL CONSTRUCTION WHICH DEVIATED FROM THE PLANS OR WAS CONSTRUCTED IN ADDITION TO THAT INDICATED ON THE PLANS.

811 Know what's below. Call before you dig.

NO.	DATE	DESCRIPTION	BY
1	04-11-25	1st CITY SUBMITTAL	KP
2	09-17-25	2st CITY SUBMITTAL	KP
3	11-12-25	3rd CITY SUBMITTAL	IA
4	01-08-26	4th CITY SUBMITTAL	IA
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STATE OF TEXAS
PARTAVYA S. PATEL
97534
LICENSED PROFESSIONAL ENGINEER
01-08-26

UTILITY PLAN

OFFICE
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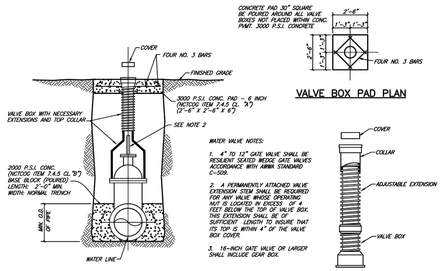
TX. P.E. FIRM #11525



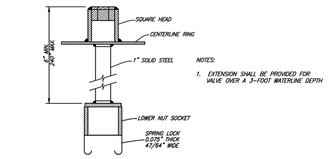
VALVE SETTING & BOX

VALVE BOX WITH EXTENSION

VALVE BOX PAD PLAN

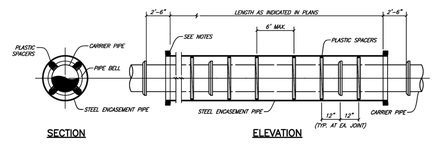
GATE VALVE INSTALLATION

(YARDVLV)



SPRING LOCK VALVE EXTENSION

(LOCK)



SECTION

ELEVATION

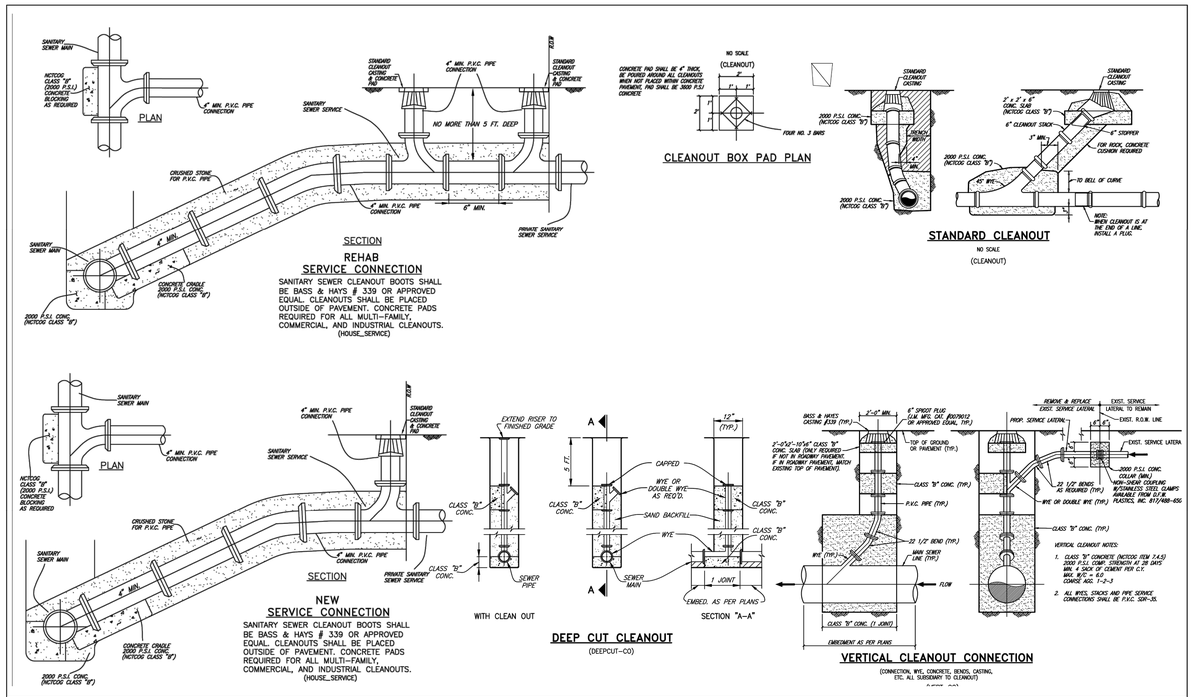
ENCASED ROAD BORE

NO SCALE

NOTES:
1) PREFABRICATED PLASTIC SPACERS MUST BE APPROVED BY THE OWNER.
2) CONTRACTOR SHALL PROVIDE SUPPORT UNDER CARRIER PIPE TO HAVE MIN. 1" CLEARANCE BETWEEN PIPE BELL AND ENCASEMENT PIPE.
3) ENDS OF ENCASEMENT PIPE SHALL BE PLUGGED WITH BRICK AND MORTAR FOR ROADWAY CROSSINGS. PLUGS SHALL BE CONSTRUCTED WITH A WEEP HOLE.

	AUBREY TEXAS			**CITY OF AUBREY, TEXAS** **STANDARD CONSTRUCTION DETAILS** **WATER**	AUGUST, 2024 / SHEET NO. **19**

REVISED: 8/19/24 – NPandey | H:\Projects\Aubrey\4000\360-Standard Construction Details\Standard Details 2.0\Aubrey-19.dwg | PLOT SCALE: 1:2 | PLOT STYLE: 11x17.ctb | PLOTTED BY: Nabin Pandey ON 8/19/2024



	AUBREY TEXAS			**CITY OF AUBREY, TEXAS** **STANDARD CONSTRUCTION DETAILS** **SANITARY SEWER**	AUGUST, 2024 / SHEET NO. **25**

REVISED: 8/19/24 – NPandey | H:\Projects\Aubrey\4000\360-Standard Construction Details\Standard Details 2.0\Aubrey-25.dwg | PLOT SCALE: 1:2 | PLOT STYLE: 11x17.ctb | PLOTTED BY: Nabin Pandey ON 8/19/2024

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UTILITY DETAILS

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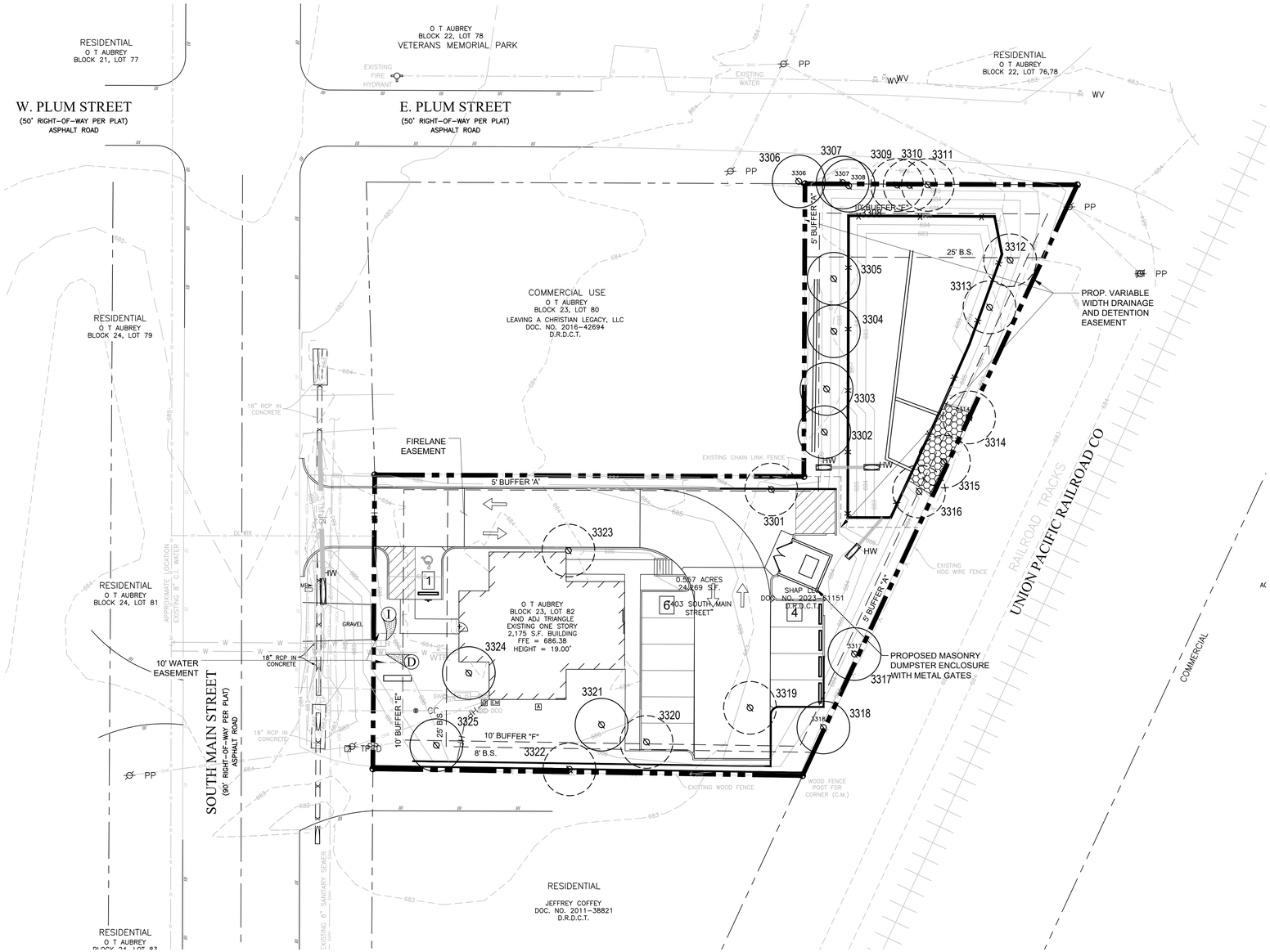


TREE TABLE

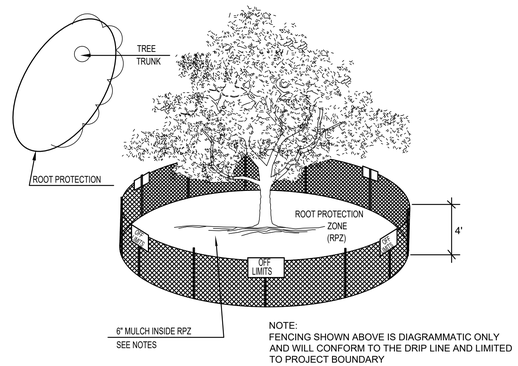
NO.	SIZE	SPECIES	BOTANICAL NAME	STATUS
3301	8 INCH	RED BUD	Cercis canadensis	REMOVE
3302	8 INCH	APRICOT	Prunius armeniaca	REMAIN
3303	14 INCH	CHERRY	Prunius avium	REMAIN
3304	6 INCH	PEACH	Prunius Persica	REMAIN
3305	6 INCH	PLUM	Prunius domestica	REMAIN
3306	16 INCH	HACKBERRY	*Celtis occidentalis*	REMAIN
3307	23 INCH	ELM	*Ulmus crassifolia*	REMAIN
3308	17 INCH	ELM	*Ulmus crassifolia*	REMAIN
3309	16 INCH	ELM	*Ulmus crassifolia*	REMOVE
3310	17 INCH	ELM	*Ulmus crassifolia*	REMOVE
3311	32 INCH	MAPLE	*Acer palmatium*	REMOVE
3312	7 INCH	PEAR	*Genus pyrus*	REMOVE
3313	6 INCH	PEACH	*Prunius persica*	REMOVE
3314	18 INCH	HACKBERRY	*Celtis occidentalis*	REMOVE
3315	18 INCH	ELM	*Ulmus crassifolia*	REMOVE
3316	6 INCH	PEAR	*Genus pyrus*	REMOVE
3317	27 INCH	COTTONWOOD	*Populus deltoides*	REMAIN
3318	19 INCH	ELM	*Ulmus crassifolia*	REMAIN
3319	16 INCH	CYPRUS	*Genus cypressus*	REMOVE
3320	13 INCH	RED BUD	Cercis canadensis	REMOVE
3321	16 INCH	PINE	Pinus	REMAIN
3322	12 INCH	CHINABERRY	Melia azedarach	REMOVE
3323	34 INCH	ELM	*Ulmus crassifolia*	REMOVE
3324	28 INCH	ELM	*Ulmus crassifolia*	REMAIN
3325	8 INCH	CEDAR	Jupierus virginana	REMAIN

EXISTING TREE LEGEND

- EXISTING TREE TO BE PROTECTED
- EXISTING TREE TO BE REMOVED
- TREE PROTECTION FENCING TO REMAIN DURING CONSTRUCTION REFER TO 01/L1.00

EXISTING TREE NOTES

1. *Existing trees to remain shall be protected during construction from tree structure damage and compaction of soil under and around dripline (canopy) of tree.*
2. *If any root structure is damaged during adjacent excavation/construction, notify the Architect immediately. It is recommended that a licensed Arborist be secured for the treatment of any possible tree wounds.*
3. *No disturbance of the soil greater than 4" shall be located closer to the tree trunk than 1/2 the distance of the drip line to the tree trunk. A minimum of 75% of the drip line and root zone shall be preserved at natural grade.*
4. *Any fine grading done within the critical root zones of the protected trees must be done with light machinery such as a bobcat or light tractor. No earth moving equipment with tracks is allowed within the critical root zone of the trees.*
5. *Material Storage: No materials intended for use in construction or waste materials accumulated due to excavation or demolition shall be placed within the limits of the dripline of any tree.*
6. *Equipment Cleaning/Liquid Disposal: No equipment may be cleaned, toxic solutions, or other liquid chemicals shall be deposited within the limits of the dripline of a tree. This would include but not be limited to paint, oil, solvents, asphalt, concrete, mortar, primers, etc.*
7. *Tree Attachments: No signs, wires or other attachments, other than those of a protective nature shall be attached to any tree.*
8. *Vehicular Traffic: No vehicular and construction equipment traffic or parking is allowed within the limits of the dripline of trees.*
9. *Boring of Utilities: May be permitted under protected trees in certain circumstances. The minimum length of the bore shall be the width of the tree's canopy and shall be a minimum depth of forty-eight (48") inches.*
10. *Trenching: Any irrigation trenching which must be done within the critical root zone of a tree shall be dug by hand and enter the area in a radial manner.*
11. *Tree Flagging: All trees to be removed from the site shall be flagged by the Contractor with bright red vinyl tape (3" width) wrapped around the main trunk at a height of four (4') feet above grade. Flagging shall be approved by Landscape Architect prior to any tree removal. Contractor shall contact Landscape Architect with 72 hour notice to schedule on-site meeting.*
12. *Protective Fencing: All trees to remain, as noted on drawings, shall have protective fencing located at the tree's dripline. The protective fencing may be comprised of snow fencing, orange vinyl construction fencing, chain link fence or other similar fencing with a four (4') foot approximate height. The protective fencing will be located as indicated on the Tree Protection Detail(s).*
13. *Bark Protection: In situations where a tree remains in the immediate area of intended construction, the tree shall be protected by enclosing the entire circumference of the tree's trunk with lumber encircled with wire or other means that does not damage the tree. Refer to Tree Protection Detail(s).*
14. *Construction Pruning: In a case where a low hanging limb is broken during the course of construction, the Contractor shall notify the Landscape Architect immediately. In no instance shall the Contractor prune any portion of the damaged tree without the prior approval by the Landscape Architect.*



01 TREE PROTECTION FENCE A
NOT TO SCALE

01 TREE REMOVAL PLAN
SCALE 1"=30'-0"
0 15 30 60

CITY COMMENTS 11.05.2025

LANDSCAPE ARCHITECT
STUDIO GREEN SPOT, INC.
1784 W. McDERMOTT DR.
SUITE 110
ALLEN, TEXAS 75013
(469) 369-4448
CHRIS@STUDIOGREENSPOT.COM

REGISTERED LANDSCAPE ARCHITECT
CHRIS TROWLAND
2042
STATE OF TEXAS
01.08.2026

OFFICE

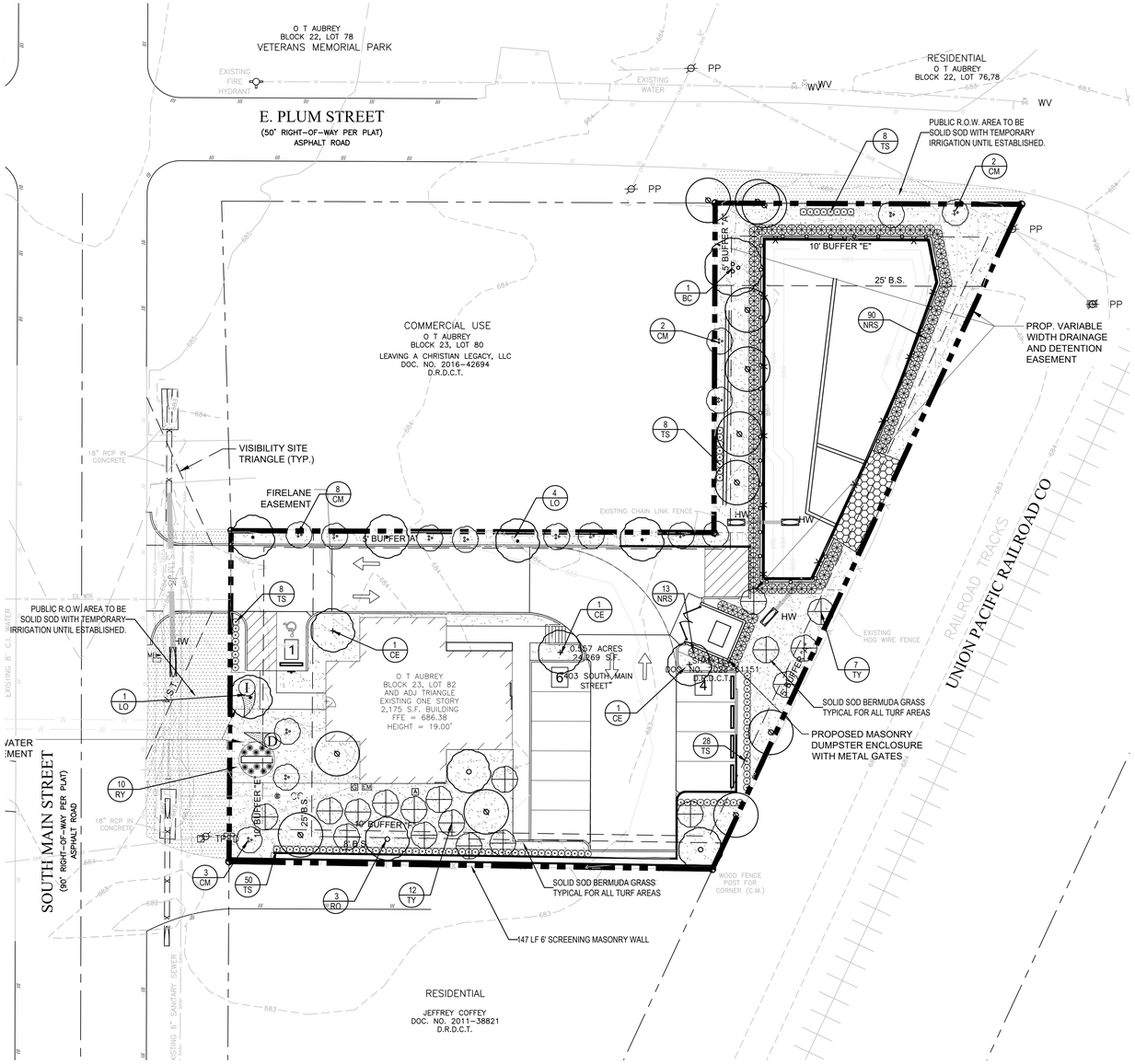
SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
CITY COMMENTS 12.16.2024
CITY COMMENTS 04.22.2025
CITY COMMENTS 06.26.2025
CITY COMMENTS 11.05.2025
CITY COMMENTS 01.05.2026

DATE:
01.05.2026

SHEET NAME:
TREE REMOVAL PLAN

SHEET NUMBER:
L.1



SITE AREA: 24,270 S.F.
LANDSCAPE AREA: 13,762 S.F. (43.3 % OF TOTAL SITE)

BUFFER YARDS:

NORTH - (248 L.F.)
BUFFER TYPE: A
REQUIREMENTS:
5' BUFFER
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(3) canopy trees	(3) canopy trees +
	(2) existing trees to remain
(5) understory tress	(7) understory trees
(20) shrubs	(24) shrubs

RAILROAD - (223 L.F.)
BUFFER TYPE: A
REQUIREMENTS:
5' BUFFER
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(3) canopy trees	(5) existing trees to remain
(5) understory tress	(7) understory trees
(18) shrubs	(33) shrubs

SOUTH - (146 L.F.)
BUFFER TYPE: F
REQUIREMENTS:
10' BUFFER
F2 SCREEN WALL (6' HT.)
PER 100 L.F.
4 CANOPY TREE
8 UNDERSTORY TREES
12 SHRUBS

REQUIRED:	PROVIDED:
(6) canopy trees	(3) canopy trees +
	(3) existing tree to remain
(12) understory tress	(12) understory trees
(24) shrubs	(62) shrubs

E. PLUM ST. - (93 L.F.)
BUFFER TYPE: E
REQUIREMENTS:
10' BUFFER
B1 BERM
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(1) canopy trees	(1) canopy tree+
	(1) exisiting trees
(2) understory trees	(2) understory trees
(8) shrubs	(8) shrubs

S. MAIN ST. - (101 L.F.)
BUFFER TYPE: E
REQUIREMENTS:
10' BUFFER
B1 BERM
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(1) canopy trees	(1) canopy tree+
	(1) exisiting trees
(2) understory trees	(2) understory trees
(8) shrubs	(8) shrubs

30" HT. PARKING LOT SCREEN
PROVIDED

PARKING LOT TREES- 1 TREE PER 10 SPACES- 11 SPACES
REQUIRED: 3 (3" cal. trees) PROVIDED: 3 (3" cal. trees)

DETENTION AREA 252 LF
REQUIRED: 1 CANOPY TREE AT 30 O.C. (9) CANOPY TREES
W/ EVERGREEN SCREENING
IRON FENCE
WALL RETAINING
PROVIDED: (8) CANOPY TREES (3) EXISTING TREES
(89) 3' HT EVERGREEN SCREEN
DECORATIVE IRON FENCE (REFERENCE CIVIL PLANS)
WALL RETAINING (REFERENCE CIVIL PLANS)

GENERAL LAWN NOTES

1. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED ON CIVIL PLANS.
2. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
3. ALL LAWN AREAS TO RECEIVE SOLID SOD SHALL BE LEFT IN A MAXIMUM OF 1" BELOW FINAL FINISH GRADE. CONTRACTOR TO COORDINATE OPERATIONS WITH ON-SITE CONSTRUCTION MANAGER.
4. IMPORTED TOPSOIL SHALL BE NATURAL, FRIABLE SOIL FROM THE REGION, KNOWN AS BOTTOM AND SOIL, FREE FROM LUMPS, CLAY, TOXIC SUBSTANCES, ROOTS, DEBRIS, VEGETATION, STONES, CONTAINING NO SALT AND BLACK TO BROWN IN COLOR.
5. *ALL LAWN AREAS TO BE FINE GRADED, IRRIGATION TRENCHES COMPLETELY SETTLED, AND FINISH GRADE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER OR ARCHITECT PRIOR TO INSTALLATION.*
6. *ALL ROCKS 3/4" DIAMETER AND LARGER, DIRT CLODS, STICKS, CONCRETE SPOILS, ETC. SHALL BE REMOVED PRIOR TO PLACING TOPSOIL AND ANY LAWN INSTALLATION*
7. CONTRACTOR SHALL PROVIDE (1") ONE INCH OF IMPORTED TOPSOIL ON ALL AREAS TO RECEIVE LAWN.

SOLID SOD NOTES

1. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED. LEAVE AREAS TO RECEIVE TOPSOIL 3" BELOW FINAL DESIRED GRADE IN PLANTING AREAS AND 1" BELOW FINAL GRADE IN TURF AREAS.
2. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
3. ALL LAWN AREAS TO RECEIVE SOLID SOD SHALL BE LEFT IN A MAXIMUM OF 1" BELOW FINAL FINISH GRADE. CONTRACTOR TO COORDINATE OPERATIONS WITH ON-SITE CONSTRUCTION MANAGER.
4. CONTRACTOR TO COORDINATE WITH ON-SITE CONSTRUCTION MANAGER FOR AVAILABILITY OF EXISTING TOPSOIL.
5. PLANT SOD BY HAND TO COVER INDICATED AREA COMPLETELY. INSURE EDGES OF SOD ARE TOUCHING. TOP DRESS JOINTS BY HAND WITH TOPSOIL TO FILL VOIDS.
6. ROLL GRASS AREAS TO ACHIEVE A SMOOTH, EVEN SURFACE, FREE FROM UNNATURAL UNDULATIONS.
7. WATER SOD THOROUGHLY AS SOD OPERATION PROGRESSES.
8. CONTRACTOR SHALL MAINTAIN ALL LAWN AREAS UNTIL FINAL ACCEPTANCE. THIS SHALL INCLUDE, BUT NOT LIMITED TO: MOWING, WATERING, WEEDING, CULTIVATING, CLEANING AND REPLACING DEAD OR BARE AREAS TO KEEP PLANTS IN A VIGOROUS, HEALTHY CONDITION.
9. CONTRACTOR SHALL GUARANTEE ESTABLISHMENT OF AN ACCEPTABLE TURF AREA AND SHALL PROVIDE REPLACEMENT FROM LOCAL SUPPLY IF NECESSARY.
10. IF INSTALLATION OCCURS BETWEEN SEPTEMBER 1 AND MARCH 1, ALL SOD AREAS TO BE OVER-SEEDED WITH WINTER RYEGRASS, AT A RATE OF (4) POUNDS PER ONE THOUSAND (1000) SQUARE FEET.

LANDSCAPE NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED SITE ELEMENTS AND NOTIFY ARCHITECT OF ANY DISCREPANCIES. SURVEY DATA OF EXISTING CONDITIONS WAS SUPPLIED BY OTHERS.
2. CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND NOTIFY ARCHITECT OF ANY CONFLICTS. CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF UNDERGROUND UTILITIES.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED LANDSCAPE AND IRRIGATION PERMITS.
4. CONTRACTOR TO PROVIDE A MINIMUM 2% SLOPE AWAY FROM ALL STRUCTURES.
5. ALL PLANTING BEDS AND LAWN AREAS TO BE SEPARATED BY STEEL EDGING. NO STEEL TO BE INSTALLED ADJACENT TO SIDEWALKS OR CURBS.
6. ALL LANDSCAPE AREAS TO BE 100% IRRIGATED WITH AN UNDERGROUND AUTOMATIC IRRIGATION SYSTEM AND SHALL INCLUDE RAIN AND FREEZE SENSORS.
7. ALL LAWN AREAS TO BE SOLID SOD BERMUDAGRASS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

City of Aubrey Chapter 14, Section 23 (G) (b) (xiii) Maintenance Notes

1. General:The owner, tenant and the agent, if any, shall be jointly and severably responsible for the maintenance of all landscaping and irrigation. All required landscaping shall be maintained in a neat and orderly manner at all times. This shall include mowing, edging, pruning, fertilizing, watering, weeding, and other such activities common to the maintenance of landscaping. Landscaped areas shall be kept free of trash, litter, weeds and other such material or plants not a part of the landscaping, all plant materials shall be maintained in a healthy and growing condition as is appropriate for the season of the year. All irrigation heads or lines that are broken and flow water shall be replaced or repaired immediately to prevent the waste of water.
2. Plant Replacement:The owner shall be responsible for replacing all plant materials which shows dead branching over 25 percent or more of the normal branching pattern and repair irrigation system for a period of one year from the date of issuance of the Certificate of Occupancy. Plant materials that die shall be replaced with plant material of similar variety and similar initial size. The Owner shall make such necessary replacements within 30 days of notification by the City.

PLANT MATERIAL SCHEDULE

TREES

TYPE	QTY	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
CE	3	Cedar Elm	*Ulmus crassifolia*	3" cal.	B&B, 13' ht., 5' spread min., 5' clear trunk
LO	5	Live Oak	*Quercus virginiana*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk
RO	3	Red Oak	*Quercus shumardii*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk
CM	16	Crepe Myrtle	*Lagerstoema indica*	2" cal.	container, 8' ht., 4' spread, tree form
TY	18	Tree Yaupon	*Ilex vomitoria*	2" cal.	container, 8' ht., 4' spread, tree form
BC	8	Bald Cypress	*Taxodium distichum*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk

SHRUBS

TYPE	QTY.	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
TS	102	Texas Sage	*Leucophyllum frutescens*	5 gal.	container, 30" ht., 20" spread
RY	10	Red Yucca	*Hersperaloe parvifolia*	3 gal.	container full, 12" spread
NRS	103	Nellie R. Stevens	*Ilex x 'Nellie R. Stevens'*	7 gal.	container, 36" ht., 24" spread

GROUNDCOVERS

TYPE	QTY	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
		'419' Bermudagrass	*Cynodon dactylon '419'*		Solid Sod refer to notes

NOTE: Plant list is an aid to bidders only. Contractor shall verify all quantities on plan. All heights and spreads are minimums. All plant material shall meet or exceed remarks as indicated. All trees to have straight trunks and be matching within varieties.

ALL LANDSCAPE AREAS TO BE IRRIGATED WITH AN AUTOMATIC IRRIGATION SYSTEM

01 LANDSCAPE PLAN
SCALE 1"=20'-0"
0 10 20 40

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REGISTERED LANDSCAPE ARCHITECT
CHRISTOPHER TROWLAND
2042
STATE OF TEXAS
01.08.2026

OFFICE

SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
CITY COMMENTS 11.15.2024
CITY COMMENTS 12.16.2024
CITY COMMENTS 01.17.2025
CITY COMMENTS 04.22.2025
CITY COMMENTS 06.26.2025
CITY COMMENTS 11.05.2025
CITY COMMENTS 01.08.2026

DATE:
01.08.2026

SHEET NAME:
LANDSCAPE PLAN

SHEET NUMBER:
L.2

SECTION 02900 - LANDSCAPE

PART 1 - GENERAL

1.1 REFERENCED DOCUMENTS

Refer to bidding requirements, special provisions, and schedules for additional requirements.

1.2 DESCRIPTION OF WORK

Work included: Furnish all supervision, labor, materials, services, equipment and appliances required to complete the work covered in conjunction with the landscaping covered in these specifications and landscaping plans, including:

1. Planting (trees, shrubs, and grass)
2. Bed preparation and fertilization
3. Notification of sources
4. Water and Maintenance until final acceptance
5. Guarantee

1.3 REFERENCE STANDARDS

A. American Standard for Nursery Stock published by American Association of Nurserymen: 27 October 1980, Edition; by American National Standards Institute, Inc. (Z60.1) – plant material.

B. American Joint Committee on Horticultural Nomenclature: 1942 Edition of Standardized Plant Names.

C. Texas Association of Nurserymen, Grades and Standards.

D. Hortis Third, 1976 - Cornell University

1.4 NOTIFICATION OF SOURCES AND SUBMITTALS

A. The Contractor shall, within ten (10) days following acceptance of bid, notify the Architect/Owner of the sources of plant materials and bed preparation required for the project.

B. Samples: Provide representative quantities of sandy loam soil, mulch, bed mix material, gravel, and crushed stone. Samples shall be approved by Architect before use on project.

C. Product Data: Submit complete product data and specifications on all other specified materials.

D. Submit three representative samples of each variety of ornamental trees, shrubs, and groundcover plants for Architect's approval. When approved, tag, install, and maintain as representative samples for final installed plant materials.

E. File Certificates of Inspection of plant material by state, county, and federal authorities with Architect, if required.

F. Soil Analysis: Provide sandy loam soil analysis if requested by the Architect.

PART 3 - EXECUTION

3.1 BED PREPARATION & FERTILIZATION

A. Landscape Contractor to inspect all existing conditions and report any deficiencies to the Owner.

B. All planting areas shall be conditioned as follows:

1. Prepare new planting beds by scraping away existing grass and weeds as necessary. Till existing soil to a depth of six (6") inches prior to placing compost and fertilizer. Apply fertilizer as per manufacturers recommendations. Add six (6") inches of compost and till into a depth of six (6") inches of the topsoil. Apply organic fertilizer such as Sustane or Green Sense at the rate of twenty (20) pounds per one thousand (1,000) square feet.
2. All planting areas shall receive a two (2") inch layer of specified mulch.
3. Backfill for tree pits shall be as follows: Use existing top soil on site (use imported topsoil as needed) free from large clumps, rocks, debris, caliche, subsoils, etc., placed in nine (9") inch layers and watered in thoroughly.

C. Grass Areas:

1. Areas to be Solid Sod Bermudagrass: Blocks of sod should be laid joint to joint, (staggered joints) after fertilizing the ground first. Roll grass areas to achieve a smooth, even surface. The joints between the blocks of sod should be filled with topsoil where they are evidently gaped open, then watered thoroughly.
2. Areas to be Hydromulch Common Bermudagrass: Hydromulch with bermudagrass seed at a rate of two (2) pounds per one thousand (1,000) square feet. Use a 4' x 8' batter board against the bed areas.

3.2 INSTALLATION

A. Maintenance of plant materials shall begin immediately after each plant is delivered to the site and shall continue until all construction has been satisfactorily accomplished.

B. Plant materials shall be delivered to the site only after the beds are prepared and area ready for planting. All shipments of nursery materials shall be thoroughly protected from the drying winds during transit. All plants which cannot be planted at once, after delivery to the site, shall be well protected against the possibility of drying by wind and sun. Balls of earth of B & B plants shall be kept covered with soil or other acceptable material. All plants remain the property of the Contractor until final acceptance.

C. Position the trees and shrubs in their intended location as per plan.

D. Notify the Landscape Architect for inspection and approval of all positioning of plant materials.

E. Excavate pits with vertical sides and horizontal bottom. Tree pits shall be large enough to permit handling and planting without injury to balls of earth or roots and shall be of such depth that, when planted and settled, the crown of the plant shall bear the same relationship to the finish grade as it did to soil surface in original place of growth.

JOB CONDITIONS

A. General Contractor to complete the following punch list: Prior to Landscape Contractor initiating any portion of landscape installation, General Contractor shall leave planting bed areas three (3") inches below finish grade of sidewalks, drives and curbs as shown on the drawings. All lawn areas to receive solid sod shall be left one (1") inch below the finish grade of sidewalks, drives, and curbs. All construction debris shall be removed prior to Landscape Contractor beginning any work.

B. General Contractor shall provide topsoil as described in Section 02200 - Earthwork.

C. Storage of materials and equipment at the job site will be at the risk of the Landscape Contractor. The Owner cannot be held responsible for theft or damage.

1.6 MAINTENANCE AND GUARANTEE

A. Maintenance:

1. The Landscape Contractor will be held responsible for the maintenance of all work from the time of planting until final acceptance by the Owner. No trees, shrubs, groundcover or grass will be accepted unless they show a healthy growth and satisfactory foliage conditions.
2. Maintenance shall include watering of trees and plants, cultivation, weeding spraying, edging, pruning of trees, mowing of grass, cleaning up and all other work necessary of maintenance.
3. A written notice requesting final inspection and acceptance should be submitted to the Owner at least seven (7) days prior to completion. An on-site inspection by Owner and Landscape Contractor will be completed prior to written acceptance.
4. After final acceptance of installation, the Landscape Contractor will not be required to do any of the above listed work.

B. Guarantee:

1. Trees shall be guaranteed for a twelve (12) month period after acceptance. Shrubs and groundcover shall be guaranteed for twelve (12) months. The Contractor shall replace all dead materials as soon as weather permits and upon notification of the Owner. Plants, including trees, which have partially died so that shape, size, or symmetry has been damaged, shall be considered subject to replacement. In such cases, the opinion of the Owner shall be final.
   a. Plants used for replacement shall be of the same size and kind as those originally planted and shall be planted as originally specified. All work, including materials, labor and equipment used in replacements, shall carry a twelve (12) month guarantee. Any damage, including ruts in lawn or bed areas, incurred as a result of making replacements shall be immediately repaired.
   b. At the direction of the Owner, plants may be replaced at the start of the next year's planting season. In such cases, dead plants shall be removed from the premises immediately.
   c. When plant replacements are made, plants, soil mix, fertilizer and mulch are to be utilized as originally specified and reinspected for full compliance with Contract requirements. All replacements are to be included under "Work" of this section.

F. Shrub and tree pits shall be no less than two (2') feet, twenty-four (24") inches, wider than the lateral dimension of earth ball and six (6") inches deeper than it's vertical dimension. Remove and haul from site all rocks and stones over one (1") inch in diameter. Plants should be thoroughly moist before removing containers.

G. Dig a wide, rough sided hole exactly the same depth as the height of the ball, especially at the surface of the ground. The sides of the hole should be rough and jagged, never slick or glazed.

H. Percolation Test: Fill the hole with water. If the water level does not percolate within 24 hours, the tree needs to move to another location or have drainage added. Install a PVC stand pipe per tree planting detail as approved by the Landscape Architect.

I. Backfill only with 5 parts existing soil or sandy loam and 1 part bed preparation. When the hole is dug in solid rock, topsoil from the same area should not be used. Carefully settle by watering to prevent air pockets. Remove the burlap from the top 1/3 of the ball, as well as all nylon, plastic string and wire mesh. Container trees will usually be pot bound, if so follow standard nursery practice of 'root scoring'.

J. Do not wrap trees.

K. Do not over prune.

L. Mulch the top of the ball. Do not plant grass all the way to the trunk of the tree. Leave the area above the top of the ball and mulch with at least two (2") inches of specified mulch.

M. All plant beds and trees to be mulched with a minimum settled thickness of two (2") inches over the entire bed or pit.

N. Obstruction below ground: In the event that rock, or underground construction work or obstructions are encountered in any plant pit excavation work to be done under this section, alternate locations may be selected by the Owner. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3') feet below grade and no less than six (6") inches below the bottom of ball when plant is properly set at the required grade. The work of this section shall include the removal from the site of such rock or underground obstructions encountered at the cost of the Landscape Contractor.

O. Trees and large shrubs shall be staked as site conditions require. Position stakes to secure tree against seasonal prevailing winds.

P. Pruning and Mulching: Pruning shall be directed by the Architect and shall be pruned in accordance with standard horticultural practice following Fine Pruning, Class I pruning standards provided by National Arborist Association.

1. Dead wood or suckers and broken badly bruised branches shall be removed. General tipping of the branched is not permitted. Do not cut terminal branches.
2. Pruning shall be done with clean, sharp tools.
3. Immediately after planting operations are completed, all tree pits shall be covered with a layer of organic material two (2") inches in depth. This limit of the organic material

Q. Steel Curbing Installation:

1. Curbing shall be aligned as indicated on plans. Stake out limits of steel curbing and obtain Owners approval prior to installation.
2. All steel curbing shall be free of kinks and abrupt bends.
3. Top of curbing shall be 3/4" maximum height above grade.
1. Stakes are to be installed on the planting bed side of the curbing, as opposed to the grass side.
2. Do not install steel edging along sidewalks.
3. Cut steel edging at 45 degree angle where edging meets sidewalk.

3.3 CLEANUP AND ACCEPTANCE

A. Cleanup: During the work, the premises shall be kept neat and orderly at all times. Storage areas for all materials shall be so organized that they, too, are neat and orderly. All trash and debris shall be removed from the site as work progresses. Keep paved areas clean by sweeping or hosing at end of each days work.

END OF SECTION

2. The Owner agrees that for the guarantee to be effective, he will water plants at least twice a week during dry periods and cultivate beds once a month after final acceptance.
3. The above guarantee shall not apply where plants die after acceptance because of injury from storms, hail, freeze, insects, diseases, injury by humans, machines or theft.
4. Acceptance for all landscape work shall be given after final inspection by the Owner provided the job is in a completed, undamaged condition, and there is a stand of grass in all lawn areas. At this time, the Owner will assume maintenance on the accepted work.

C. Repairs: Any necessary repairs under the Guarantee must be made within ten (10) days after receiving notice, weather permitting, and in the event the Landscape Contractor does not make repairs accordingly, the Owner, without further notice to Contractor, may provide materials and men to make such repairs at the expense of the Landscape Contractor.

1.7 QUALITY ASSURANCE

A. General: Comply with applicable Federal, State, County and Local regulations governing landscape materials and work

B. Personnel: Employ only experienced personnel who are familiar with the required work. Provide full time supervision by a qualified foreman acceptable to Landscape Architect.

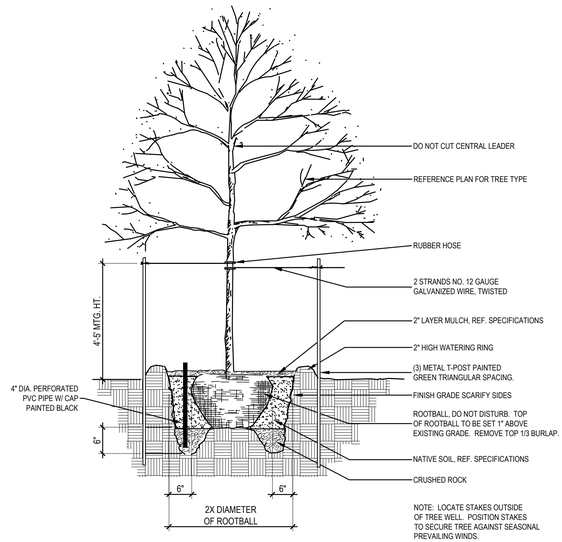
C. Selection of Plant Material:

1. Make contact with suppliers immediately upon obtaining notice of contract acceptance to select and book materials. Develop a program of maintenance (pruning and fertilization) which will insure the purchased materials will meet and/or exceed project specifications.
2. Landscape Architect will provide a key identifying each tree location on site. Written verification will be required to document material selection, source and delivery schedules to site.
3. Owner and/or Architect shall inspect all plant materials when reasonable at place of growth for compliance with requirements for genus, species, cultivar/variety, size and quality.
4. Owner and/or Architect retains the right to further inspect all plant material upon arrival at the site and during installation for size and condition of root balls, limbs, branching habit, insects, injuries, and latent defects.
5. Owner and/or Architect may reject unsatisfactory or defective material at any time during the process of work. Remove rejected materials from the site immediately. Plants damaged in transit or at job site shall be rejected.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Preparation:

1. Balled and Burlapped (B&B) Plants: Dig and prepare shipment in a manner that will not damage roots, branches, shape, and future development.
2. Container Grown Plants: Deliver plants in rigid container to hold ball shape and protect root mass.



01 TREE PLANTING DETAIL — NOT TO SCALE

A. Delivery:

1. Deliver packaged materials in sealed containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.
2. Deliver only plant materials that can be planted in one day unless adequate storage and watering facilities are available on job site.
3. Protect root balls by heeling in with sawdust or other approved moisture retaining material if not planted within 24 hours of delivery.
4. Protect plants during delivery to prevent damage to root balls or desiccation of leaves. Keep plants moist at all times. Cover all materials during transport.
5. Notify Architect of delivery schedule 72 hours in advance so plant material may be observed upon arrival at job site.
6. Remove rejected plant material immediately from site.
7. To avoid damage or stress, do not lift, move, adjust to plumb, or otherwise manipulate plants by trunk or stems.

PART 2 - PRODUCTS

2.1 PLANTS

A. General: Well-formed No. 1 grade or better nursery grown stock. Listed plant heights are from tops of root balls to nominal tops of plants. Plant spread refers to nominal outer width of the plant, not to the outer leaf tips. Plants will be individually approved by the Architect and his decision as to their acceptability shall be final.

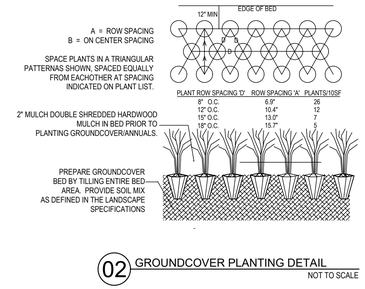
B. Quantities: The drawings and specifications are complimentary. Anything called for on one and not the other is as binding as if shown and called for on both. The plant schedule is an aid to bidders only. Confirm all quantities on plan.

C. Quality and size: Plant materials shall conform to the size given on the plan, and shall be healthy, symmetrical, well-shaped, full branched, and well rooted. The plants shall be free from injurious insects, diseases, injuries to the bark or roots, broken branches, objectionable disfigurements, insect eggs and larvae and are to be of specimen quality.

D. Approval: All plant materials shall be subject to the approval of the Owner. All plants which are found unsuitable in growth, or in any unhealthy, badly shaped, or undersized condition, will be rejected by the Landscape Architect, either before or after planting, and shall be removed at the expense of the Landscape Contractor and replaced with acceptable plants as specified.

E. Trees shall be healthy, full-branched, well-shaped and shall meet the trunk diameter and height requirements of the plant schedule. Balls shall be firm, neat, slightly tapered, and well wrapped in burlap. Any tree loose in the ball or with broken ball at time of planting will be rejected. Balls shall be ten (10") inched in diameter for each one (1") inch of trunk diameter, Measured six (6") inched above ball.
Nomenclature conforms to the customary nursery usage: for clarification, the term "multi-trunk" defines a plant having three (3) or more trunks of nearly equal diameter.

F. Pruning: All pruning of trees and shrubs, as directed by the Landscape Architect, shall be executed by the Landscape Contractor at no additional cost to the Owner.



02 GROUNDCOVER PLANTING DETAIL — NOT TO SCALE

2.2 SOIL PREPARATION MATERIALS

A. Sandy Loam:

1. Friable, fertile, dark, loamy soil, free of clay lumps, subsoil, stones and other extraneous material and reasonably free of weeds and foreign grasses. Loam containing Dallasgrass or Nutgrass shall be rejected.
2. Physical properties as follows:
   Clay – between 7-27 percent
   Silt – between 15-25 percent
   Sand – less than 52 percent
3. Organic matter shall be 3%-10% of total dry weight.
4. If requested, provide a certified soil analysis conducted by an approved soil testing laboratory verifying that sandy loam meets the above requirements.

B. Organic Material: Compost with a mixture of 80% vegetative matter and 20% animal waste. Ingredients should be a mix of course and fine textured material.

C. Premixed Bedding Soil as supplied by Vital Earth Resources, Gladewater, Texas; Professional Bedding Soil as supplied by Living Earth Technology, Dallas, Texas or Acid Gro Municipal Mix as supplied by Soil Building Systems, Dallas, Texas or approved equal.

D. Sharp Sand: Sharp sand must be free of seeds, soil particles and weeds.

E. Mulch: Double Shredded Hardwood Mulch, partially decomposed, dark brown. Living Earth Technologies or approved equal.

F. Organic Fertilizer: Fertilaid, Sustane, or Green Sense or equal as recommended for required applications. Fertilizer shall be delivered to the site in original unopened containers, each bearing the manufacturer's guaranteed statement of analysis.

A. Commercial Fertilizer: 10-20-10 or similar analysis. Nitrogen source to be a minimum 50% slow release organic Nitrogen (SCU or UF) with a minimum 8% sulphur and 4% iron, plus micronutrients.

B. Peat: Commercial sphagnum peat moss or partially decomposed shredded pine bark or other approved organic material.

2.3 MISCELLANEOUS MATERIALS

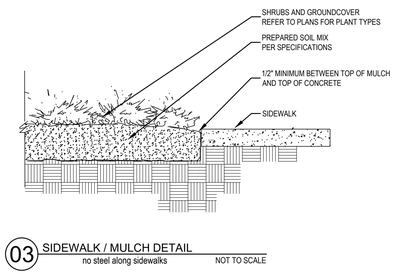
A. Steel Edging: Shall be Ryerson "Estate Curbing", 1/8" x 4" with stakes 4' on center.

B. Staking Material for Shade Trees:

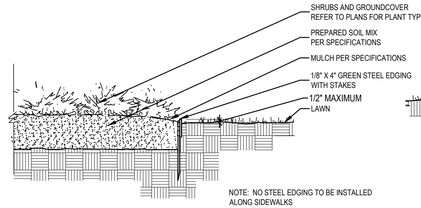
1. Post: Studded T-Post, #1 Armco with anchor plate; 6'-0" length; paint green.
2. Wire: 12 gauge, single strand, galvanized wire.
3. Rubber hose: 2 ply, fiber reinforced hose, minimum ½ inch inside diameter. Color: Black.

C. Gravel: Washed native pea gravel, graded 1 in. to 1-1/2 in.

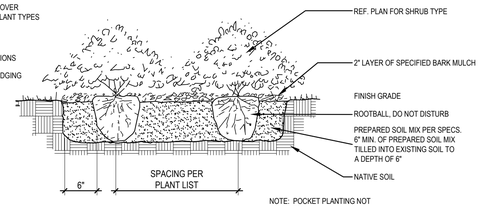
D. Filter Fabric: Mirafi 140N by Celanese Fibers Marketing Company, available at Lofland Co., (214) 631-5250 or approved equal.



03 SIDEWALK / MULCH DETAIL — no steel along sidewalks — NOT TO SCALE



04 STEEL EDGING DETAIL — NOT TO SCALE



05 SHRUB PLANTING DETAIL — NOT TO SCALE

Studio Green Spot

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REGISTERED LANDSCAPE ARCHITECT CHRIS TROWLAND 2042 STATE OF TEXAS

11.05.2025

OFFICE

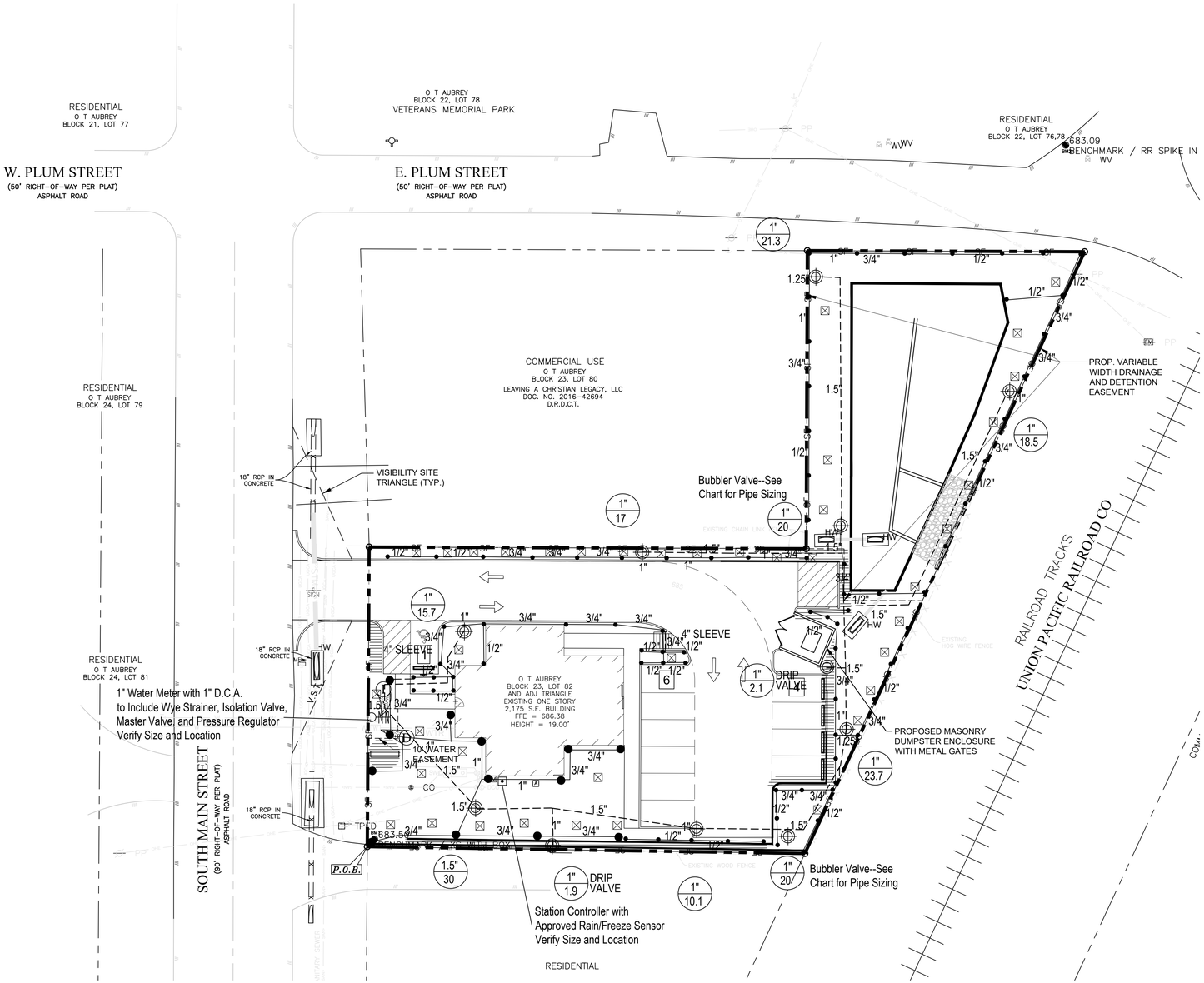
SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
CITY APPROVAL 06.23.2025

DATE:
11.05.2025

SHEET NAME:
LANDSCAPE SPECIFICATIONS

SHEET NUMBER:
L.3



01 IRRIGATION PLAN
SCALE 1"=20'-0"
0 10 20 40

BUBBLER PIPING CHART

1-5 BUBBLERS - 1/2" PIPE
6-10 BUBBLERS - 3/4" PIPE
11-20 BUBBLERS - 1" PIPE
21-30 BUBBLERS - 1 1/4" PIPE
31-40 BUBBLERS - 1 1/2" PIPE

IRRIGATION LEGEND

- Hunter PRS30-04 4" Pop-up Spray Head with Plastic Hunter Pro Adjustable Nozzle
- Hunter PRS30-12 12" Pop-up Spray Head with Plastic Hunter Pro Adjustable Nozzle
- Hunter PGP Ultra-04 Rotors
- Hunter Multi-Stream Bubbler Nozzle on Hunter PRS30-06 Pop-up Spray Head
- Spray, Rotor & Bubbler Zones-Hunter PGV Control Valves (See Plan for Size)
  Drip Zones-Hunter ICZ Drip Zone Control Kits (See Plan for Size)
- Hunter I-Core series Controller with Hunter Solar Sync Sensor
- WATER METER, SIZE AS INDICATED
  D.C.A., SIZE AS INDICATED
  to Include Wye Strainer, Isolation Valve, Master Valve, and Pressure Regulator
- PVC CLASS 200 LATERAL LINE
- PVC CLASS 200 MAINLINE
- PVC SCHEDULE 40 SLEEVING
- VALVE SIZE
  GPM
- HUNTER HDL-09-12-100-PC Drip Line and Fittings
  (12" LATERAL SPACING, 12" EMITTER SPACING)
  PVC LATERAL PIPING SIZED AS REQUIRED
  INSTALL ALL EQUIPMENT ACCORDING TO
  MANUFACTURERS SPECIFICATIONS

SLEEVING NOTES

1. *Contractor shall lay sleeves and conduits at twenty-four (24") inches below finish grade of the top of pavement.*
2. *Contractor shall extend sleeves one (1') foot beyond edge of all pavement.*
3. *Contractor shall cap pipe ends using PVC caps.*
4. *All sleeves shall be Schedule 40 PVC pipe.*
5. *Contractor shall furnish Owner and Irrigation Contractor with an 'as-built' drawing showing all sleeve locations.*

Water Pressure Calculations

Static Pressure (at the water meter)- 65 psi
Design Pressure for Remote Zone- 55.9 psi
Pressure Losses for Remote Zone and Meter Components- 16.9 psi

Water Meter Components- Pressure Losses

Master Valve Pressure- 2 psi
Pressure Requlator- 1.2 psi
Back Flow- 5 psi
Wye Strainer- 75 psi
Ball Valve- .8 psi

Irrigation Zones Pressure Losses- (most remote zone)

Main Line- 3.6 psi
Valve- 2 psi
Later Line- 1.6 psi
Sprinkler requirements-35 psi

IRRIGATION NOTES

1. *All sprinkler equipment numbers reference the HUNTER equipment catalog unless otherwise indicated.*
2. *LAWN SPRAY HEADS are SRS-04 installed as per detail shown.*
3. *SHRUB SPRAY HEADS are SRS-12 installed as per detail shown.*
4. *ELECTRIC CONTROL VALVES shall be HUNTER PGV-S SERIES installed per detail shown. Size valves as shown on plan. Valves shall be installed in value boxes large enough to permit manual operation, removal of solenoid and/or valve cover without any earth excavation.*
5. *AUTOMATIC CONTROLLER shall be installed at location shown. Power (120V) shall be located in a junction box within five (5') feet of controller location by other trades.*
6. *All 24 volt valve wiring is to be UF 14 single conductor. All wire splices are to be permanent and waterproof.*
7. *SLEEVES shall be installed by General Contractor. Sleeve material shall be Schedule 40. Size as indicated on plan.*
8. *Ten days prior to start of construction, Landscape or Irrigation Contractor shall verify static water pressure. If static pressure is less than 65 P.S.I., do not work until notified to do so by Owner. The irrigation contractor shall also verify that the site plan matches what has been constructed on site. Any landscape area that is less that 48 inches wide must be drip irrigation. If discrepancies between the irrigation plan and what is on site is discovered the irrigation contractor shall notify the GC, Civil Engineer and Landscape Architect.*
9. *All main line and lateral piping to a minimum of 12 inches of cover. All piping under paving shall have a minimum of 18" of cover.*
10. *The Irrigation Contractor shall coordinate installation of the system with the Landscape Contractor so that all plant material will be watered in accordance with the intent of the plans and specifications.*
11. *The Irrigation Contractor shall select the proper arc and radius for each nozzle to insure 100% and proper coverage of all lawn areas and plant material. All nozzles in parking lot islands and planting beds shall be low angle to minimize over spray on pavement surfaces. No water will be allowed to spray on building.*

DRIP IRRIGATION NOTES

1. *Drip Irrigation Equipment numbers reference Rainbird Equipment Catalog unless otherwise noted.*
2. *Landscape Contractor shall be required to supply Owner's Construction Manager with all equipment specifications and maintenance guidelines.*
3. *Landscape Contractor shall be required to follow Manufacturer's Specifications and Installation guidelines for drip system.*
4. *PRESSURE COMPENSATING EMITTERS shall be: Multioutlet Rain Bug EM6-M101, Multi outlet Shrub Bug EMT6-M101 or approved equal. (1 PER EVERY 6 - 4" POTS)*
5. *SINGLE OUTLET PRESSURE COMPENSATING EMITTERS shall be: Rain Bug Emitters EM-Mo5, -M10, -M20 and Shrub Bug Emitters EMT-M10, -M20 or approved equal. (1 PER EACH 1 OR 5 GAL PLANT)*
6. *DRIP PRESSURE REGULATORS shall be: PSI-HLA-15, PSI-HLA-20, PSI-HMB-20, PSI-HMB-25 or approved equal.*
7. *Y-FILTERS shall be: RBY-075-200, RBY-100-200 or approved equal.*
8. *MAIN IRRIGATION TUBING shall be:RBT-150P,RBT-160V or approved equal.*
9. *EMITTER DISTRIBUTION TUBING shall be: RBT-150P, RBT-160V or approved equal.*
10. *SUBTERRANEAN EMITTER BOX shall be: SEB-6 or approved equal.*
11. *Drip system piping only occurs within shrub / groundcover beds and rock mulch areas. Piping shall be a maximum 4" depth and a minimum 2" depth.*
12. *Contractor shall verify that all drip system valves and spray system valves are sectioned separately on controller.*

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STATE OF TEXAS
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LICENSED IRRIGATOR
08.01.2025

OFFICE

SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

ISSUE:
FOR APPROVAL 12.16.2024
CITY COMMENTS 04.22.2025

DATE:
08.01.2025

SHEET NAME:
IRRIGATION PLAN

SHEET NUMBER:

L.4

SECTION 02810 - IRRIGATION

PART 1 - GENERAL

1.1 SCOPE

A. Provide complete sprinkler installation as detailed and specified herein, includes furnishing all labor, materials, and equipment for the proper installation. Work includes but is not limited to:

1. Trenching and backfill
2. Automatic controlled system.
3. Upon completion of installation, supply drawings showing details of construction including location of mainline piping, manual and automatic valves, electrical supply to valves, and specifically exact location of automatic valves.

B. All sleeves as shown on plans will be furnished by General Contractor. Meter and power source to be provided by General Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. See Irrigation Plans. See plans for controller, heads, and valves.

B. Section 02900-Landscape

C. Section 02811-Underground Irrigation Sleeve and Utility Conduits

1.3 APPLICABLE STANDARDS

A. America Standard for Testing and Materials (ASTM) – Latest edition.

1. D2241 Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR)
2. D2464 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Thread, Schedule 80
3. D2455 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
4. D2467 Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Socket Type, Schedule 80
5. D2564 Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Pipe and Fittings
6. D2287 Flexible Poly Vinyl Chloride (PVC) Plastic Pipe
7. F556 Poly Vinyl Chloride (PVC) Solvent Weld Primer
8. D2855 Making Solvent – Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings

1.4 MAINTENANCE AND GUARANTEE

A. Materials and workmanship shall be fully guaranteed for one (1) year after final acceptance.

B. Provide maintenance of system, including raising and lowering of heads to compensate for lawn growth, cleaning and adjustment of heads, raising and lowering of shrub heads to compensate for shrub growth, for one (1) year after completion of installation.

C. Guarantee is limited to repair and replacement of defective materials or workmanship, including repair of backfill settlement.

1.5 SUBMITTALS

A. Procedure: Comply with Division I requirements.

B. Product Data: Submit (5) copies of equipment manufacturer's specifications and literature for approval by Landscape Architect prior to installation.

C. Project Record Documents

1. Comply with Division I requirements.
2. Locate by written dimension, routing of mainline piping, remote control valves and quick coupling valves. Locate mainlines by single dimensions from permanent site features provided they run parallel to these elements. Locate valves, intermediate electrical connections, and quick couplers by two dimensions from a permanent site feature at approximately 70 degrees to each other.
3. When dimensioning is complete, transpose work to mylar reproducible tracings.
4. Submit completed tracings prior to final acceptance. Mark tracings "Record Prints Showing Significant Changes". Date and sign drawings.
5. Provide three complete operation manuals and equipment brochures neatly bound in a hard back three-ring binder. Include product data on all installed materials. Include warranties and guarantees extended to the Owner by the manufacturer of all equipment.

D. Quick Coupler Keys: Provide 3 coupler keys with boiler drains attached using brass reducer.

E. Controller Keys: Provide three sets of keys to controller enclosure(s).

F. Use of materials differing in quality, size, or performance from those specified will only be allowed upon written approval of the Landscape Architect. The decision will be based on comparative ability of material or article to perform fully all purposes of mechanics and general design considered to be possessed by item specified.

G. Bidders desiring to make a substitution for specified sprinklers shall submit manufacturer's catalog sheet showing full specification of each type sprinkler proposed as a substitute, including discharge in GPM maximum allowable operating pressure at sprinkler.

H. Approval of substitute sprinkler shall not relieve Irrigation Contractor of his responsibility to demonstrate that final installed sprinkler system will operate according to intent of originally designed and specified system.

I. It is the responsibility of the Irrigation Contractor to demonstrate that final installed sprinkler system will operate according to intent of originally designed and specified system. If Irrigation Contractor notes any problems in head spacing or potential coverage, it is his responsibility to notify the Landscape Architect in writing, before proceeding with work. Irrigation Contractor guarantees 100% coverage of all areas to be irrigated.

1.6 TESTING

A. Perform testing required with other trades, including earthwork, paving, plumbing, electrical, etc. to avoid unnecessary cutting, patching and boring.
B. Wire Connectors: Waterproof splice kit connectors. Type DBY by 3M.

2.6 SCHEDULE 80 PVC NIPPLES

A. Composed of Standard Schedule 40 PVC Fittings and PVC meeting noted standards. No clamps or wires may be used. Nipples for heads and shrub risers to be nominal one-half inch diameter by eight inches long, where applicable.

B. Polyethylene nipples six (6") inches long to be used on all pop-up spray heads.

2.7 MATERIALS - See Irrigation Plan

A. Sprinkler heads in lawn area as specified on plan.

B. PVC Pipe: Class 200, SPR 21
Copper Tubing (City Connection): Type "M"
24V Wire: Size 14, Type U.F.

C. Electric valves to be all plastic construction as indicated on plans.

D. Refer to drawing for backflow prevention requirements and flow valve.

PART 3 - EXECUTION

3.1 INSTALLATION - GENERAL

A. Staking: Before installation is started, place a stake where each sprinkler is to be located, in accordance with drawing. Staking shall be approved by Landscape Architect before proceeding.

B. Excavations: Excavations are unclassified and include earth, loose rock, rock or any combination thereof, in wet or dry state. Backfill trenches with material that is suitable for compaction and contains no lumps, clods rock, debris, etc. Special backfill specifications, if furnished take preference over this general specification.

C. Backfill: Flood or hand-tamp to prevent after settling. Hand rake trenches and adjoining area to leave grade in as good or better condition than before installation.

D. Piping Layout: Piping layout is diagrammatic. Route piping around trees and shrubs in such a manner as to avoid damage to plantings. Do not dig within ball of newly planted trees or shrubs.

3.2 PIPE INSTALLATION

A. Sprinkler Mains: Install a four (4") inch minimum trench with a minimum of eighteen (18") inches of cover.

B. Lateral Piping: Install a four (4") inch wide minimum trench deep enough to allow for installation of sprinkler heads and valves, but in no case, with less than twelve (12") of cover.

C. Trenching: Remove lumber, rubbish, and large rocks from trenches. Provide firm, uniform bearing for entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. Remove foreign matter or dirt from inside of pipe before welding, and keep piping clean by approved means during and after laying of pipe.

3.3 PVC PIPE AND FITTING ASSEMBLY

A. Solvent: Use only solvent recommended by manufacturer to make solvent-welded joints. Thoroughly clean pipe and fittings of dirt, dust and moisture before applying solvent.

B. PVC to metal connection: Work metal connections first. Use a non-hardening pipe dope such as Permatex No. 2 on threaded PVC adapters into which pipe may be welded.

3.4 COPPER TUBING AND FITTING ASSEMBLY

Clean pipe and fitting thoroughly and lightly sand pipe connections to remove residue from pipe. Attach fittings to tubing in an approved manner using 50-50 soft solid core solder.

3.5 POP-UP SPRAY HEADS

Supply pop-up spray heads in accordance with materials list and plan. Attach sprinkler to lateral piping with a semi-flexible polyethylene nipple not less than three (3") inches or more than six (6") inches long.

3.6 VALVES

Supply valves in accordance with materials list and sized according to drawings. Install valves in a level position in accordance with Manufacturer's Specifications. See plan for typical installation of electric valve, valve box.

3.7 WIRING

A. Supply wire from the automatic sprinkler controls to the valves. No conduit will be required for U.F. wire unless otherwise noted on the plan. Wire shall be tucked under the piping.

B. A separate wire is required from the control to each electric valve. A common neutral wire is also required from each control to each of the valves served by each particular control.

C. Bundle multiple wires and tape them together at ten (10') foot intervals. Install ten (10") inch expansion coil at not more than one hundred (100') foot intervals. Make splices waterproof.

3.8 AUTOMATIC SPRINKLER CONTROLS

Supply in accordance with Irrigation Plan. Install according to manufacturer's recommendations.

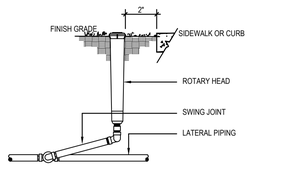
3.9 TESTING

A. Sprinkler Mains: Test sprinkler main only for a period of twelve (12) to fourteen (14) hours under normal pressure. If leaks occur, replace joint or joints and repeat test.
B. Complete tests prior to backfilling. Sufficient backfill material may be placed in trenches between fittings to insure stability of line under pressure. In each case, leave fittings and couplings open to visual inspection for full period of test.

3.10 FINAL ADJUSTMENT

After installation has been completed, make final adjustment of sprinkler system in preparation for Landscape Architect's final inspection. Completely flush system to remove debris from lines and turning on system. Check sprinklers for proper operation and proper alignment for direction of flow. Check each section of spray heads for operating pressure and balance to other sections by use of flow adjustment and top of each valve. Check nozzling for proper coverage. Prevailing wind conditions may indicate that arch of angle of spray should be other than shown on drawings. In this case, change nozzles to provide correct coverage.

END OF SECTION



01 ROTARY HEAD
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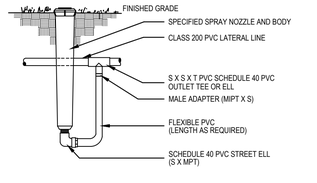

02 HIGH POP-UP SPRAY ASSEMBLY
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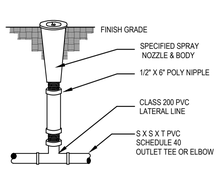

03 POP-UP LAWN SPRAY ASSEMBLY
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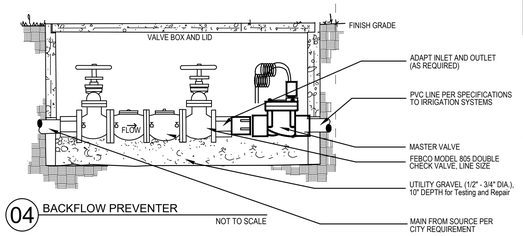

04 BACKFLOW PREVENTER
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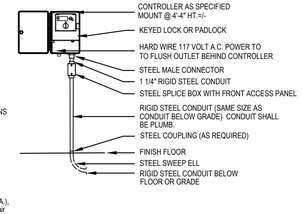
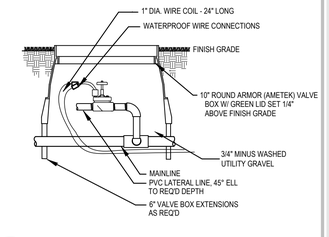


05 WALL MOUNTED CONTROLLER
NOT TO SCALE



06 REMOTE CONTROL VALVE
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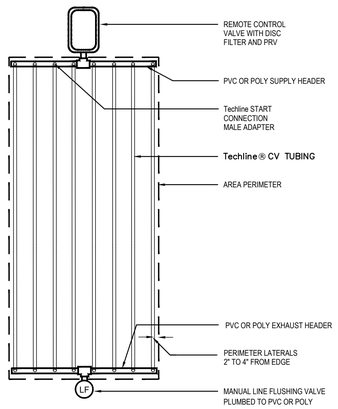

07 TechLine CV END FEED LAYOUT
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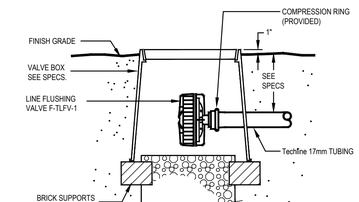

08 TechLine LINE FLUSHING VALVE
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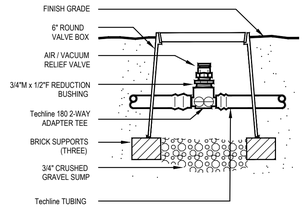

09 TechLine AIR/VACUUM RELIEF
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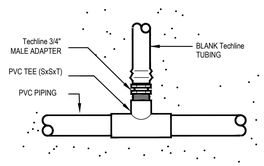

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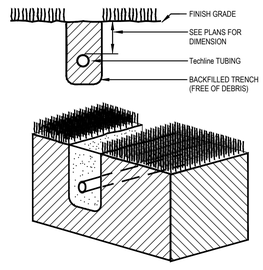

12 TechLine TRENCHING
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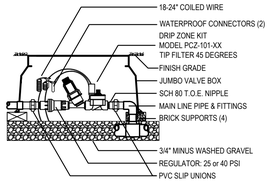

13 DRIP CONTROL VALVE
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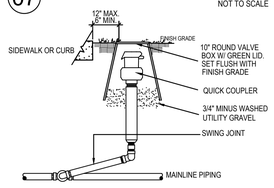

14 QUICK COUPLER
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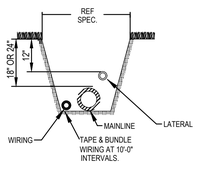

15 TRENCH DETAIL
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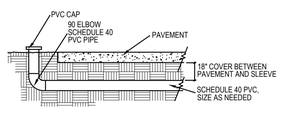

16 SLEEVE DETAIL
NOT TO SCALE

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ISSUE:
FOR APPROVAL 12.16.2024

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08.01.2025

SHEET NAME:
IRRIGATION SPECIFICATIONS

SHEET NUMBER:
L.5

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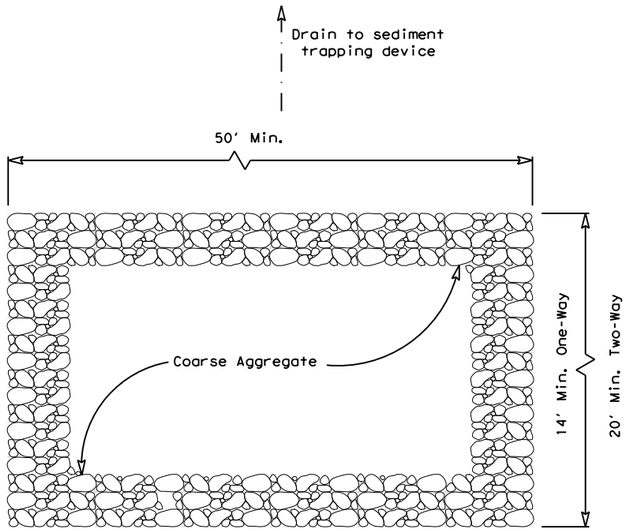
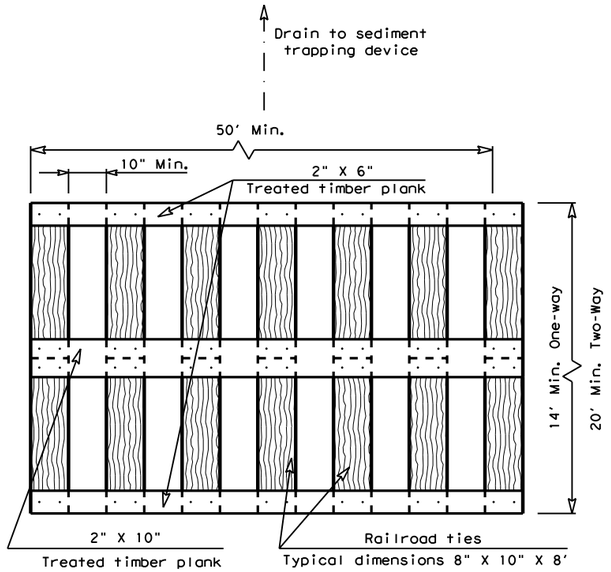


PLAN VIEW



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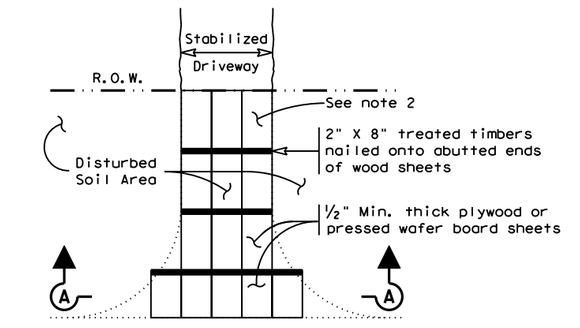

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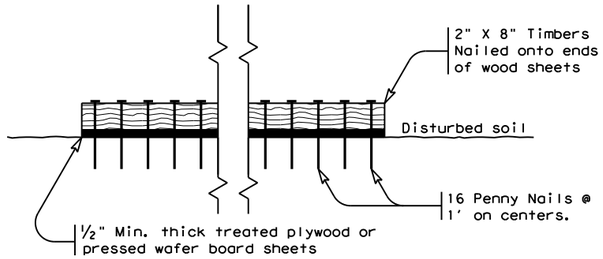
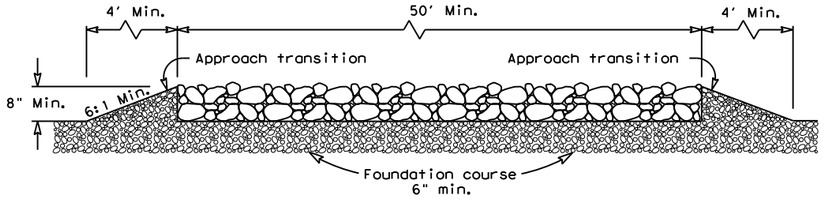


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

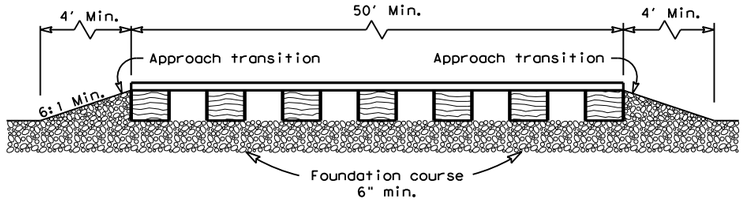
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	C	S	J	HWY
	DIST	COUNTY		SHEET NO.
	DST	CTY		$EC(3)-16$

DATE: $DATE$
FILE: $FILE$

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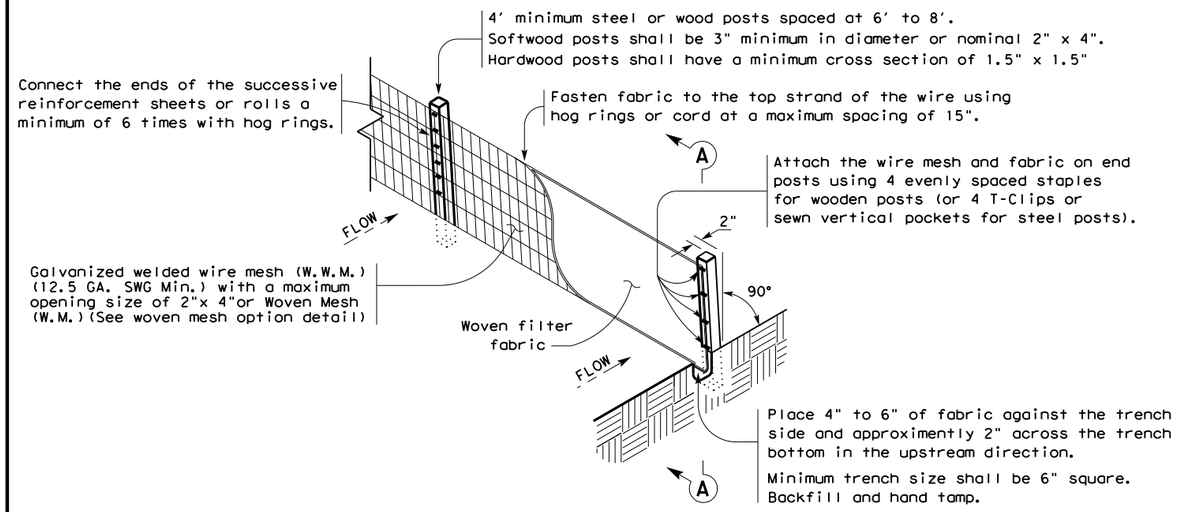
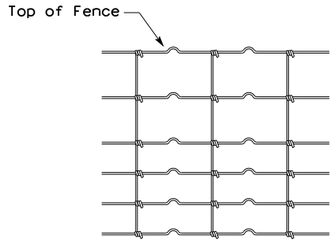
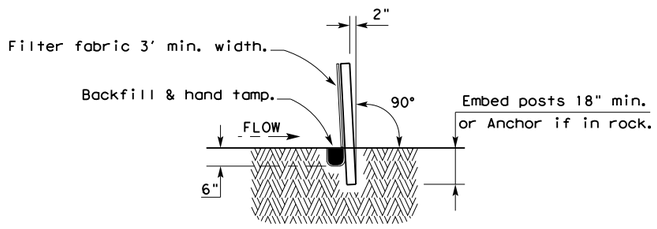


TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

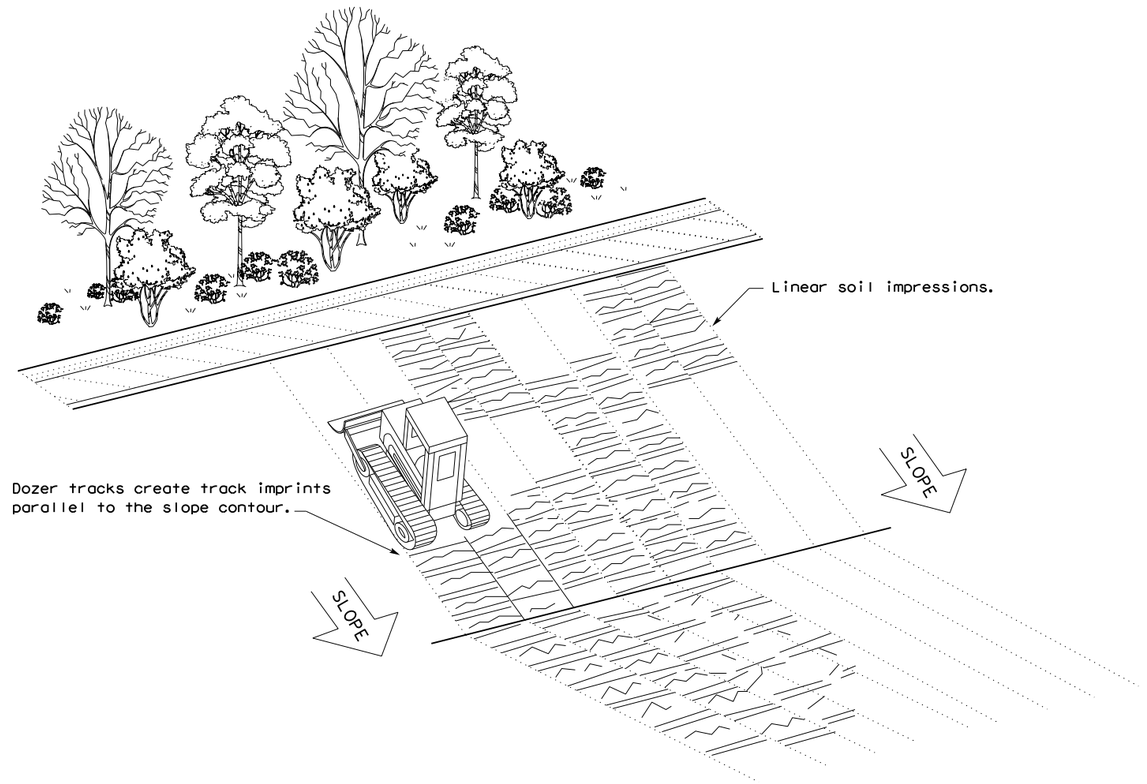
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	

DATE
FILE

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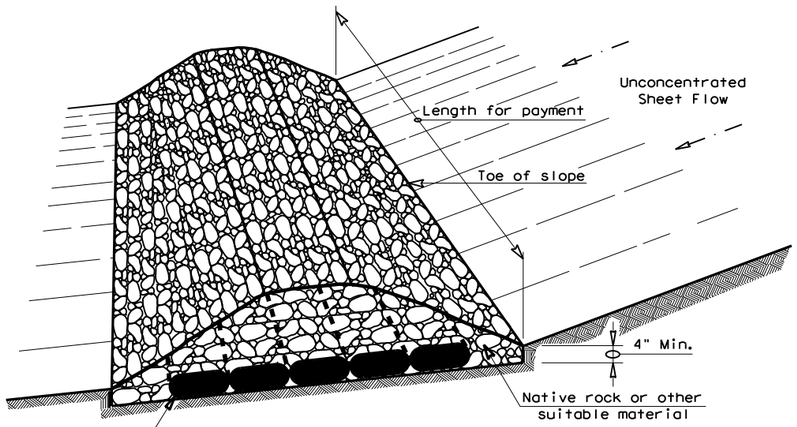
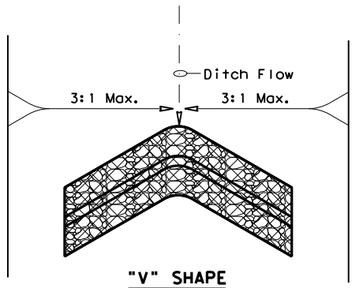
DATE:
FILE:

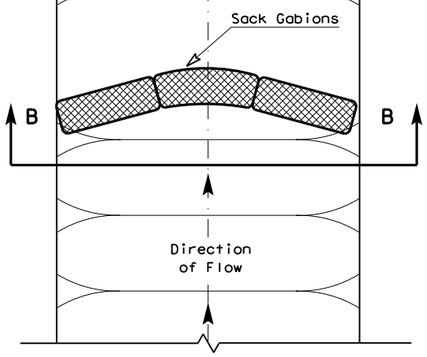


FILTER DAM AT TOE OF SLOPE

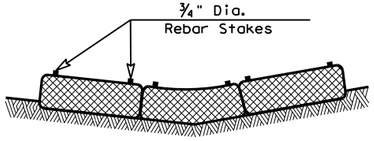
RFD1



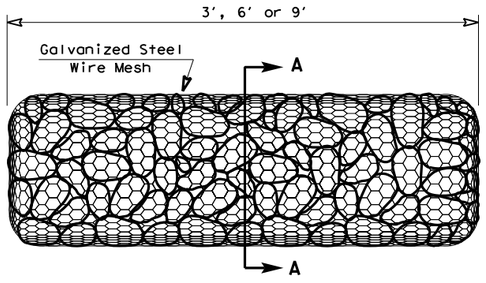
"V" SHAPE PLAN VIEW



PLAN VIEW

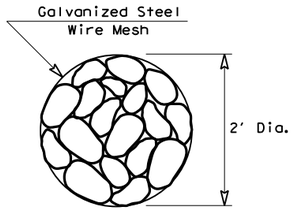


SECTION B-B

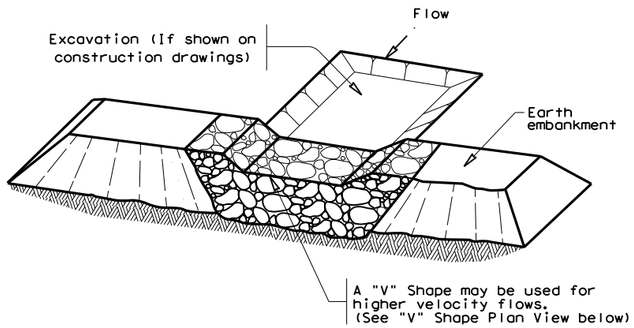


TYPE 4 (SACK GABIONS)

RFD4

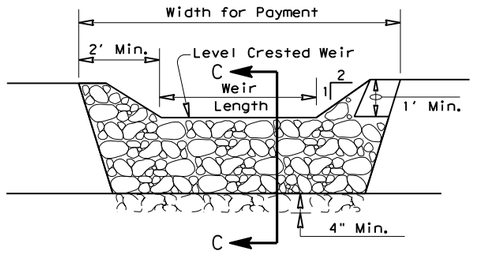


SECTION A-A

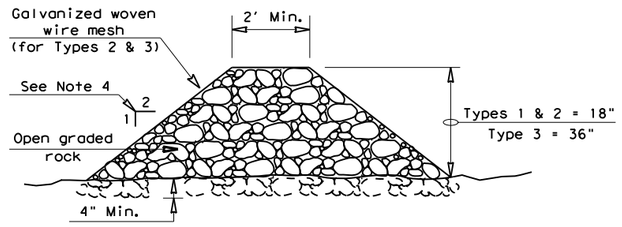


FILTER DAM AT SEDIMENT TRAP

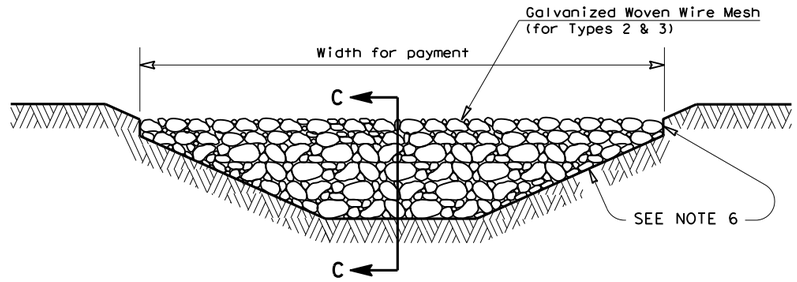
RFD1 — OR — RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation — Design Division Standard

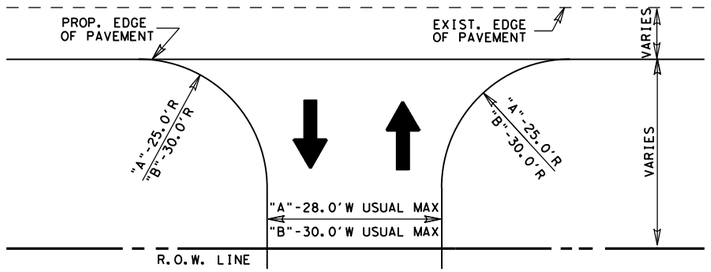
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

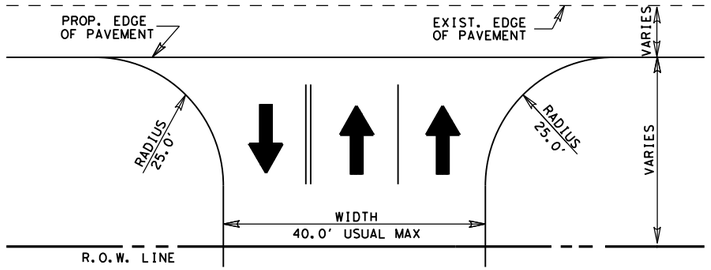
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



"A"- ONE ENTRY LANE AND ONE EXIT LANE, FEWER THAN 4 LARGE VEHICLES PER HOUR

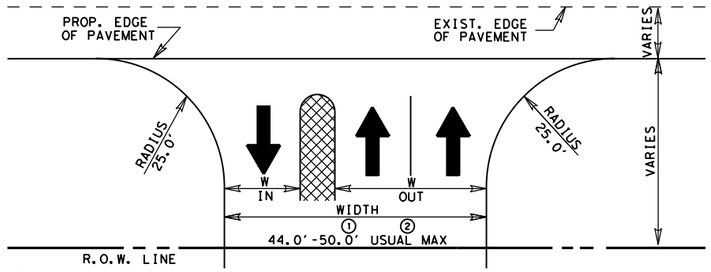
"B"- ONE ENTRY LANE AND ONE EXIT LANE, 4 OR MORE SINGLE UNIT VEHICLES① PER HOUR

① - *DRIVEWAY DESIGNS FOR LARGER VEHICLES WILL BE CONSIDERED ON A CASE BY CASE BASIS*



ONE ENTRY LANE AND TWO EXIT LANES (WITHOUT DIVIDERS)

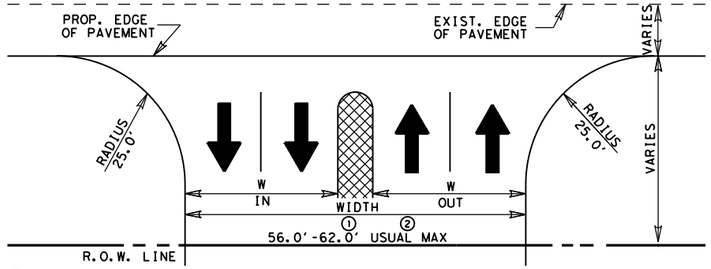
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*

② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

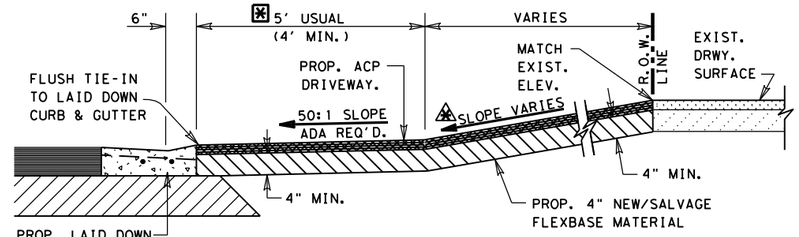
ONE ENTRY LANE AND TWO EXIT LANES (WITH A DIVIDER)



① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*

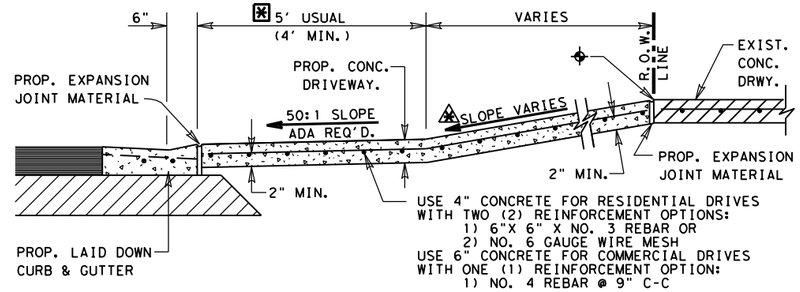
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

TWO ENTRY LANES AND TWO EXIT LANES (WITH A DIVIDER)



TYPICAL ASPH. CONC. PVM'T. DRIVEWAY SECTION

N.T.S.



TYPICAL CONCRETE DRIVEWAY SECTION

N.T.S.

⊕ CONCRETE SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

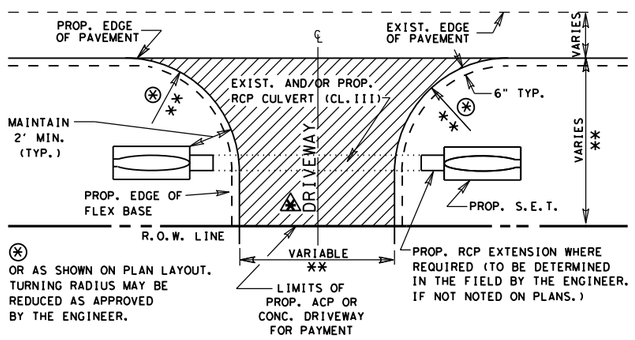
⊠ PROP./FUTURE SIDEWALK CROSSING LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. SEE P&P SHEETS FOR PROP. SIDEWALK LOCATION IF SIDEWALKS ARE INCLUDED AS PART OF PROJECT. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⚠ ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

PROP. DWY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% MAX. RESIDENTIAL DRIVEWAYS @ A = 8% MAX.

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX. RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER



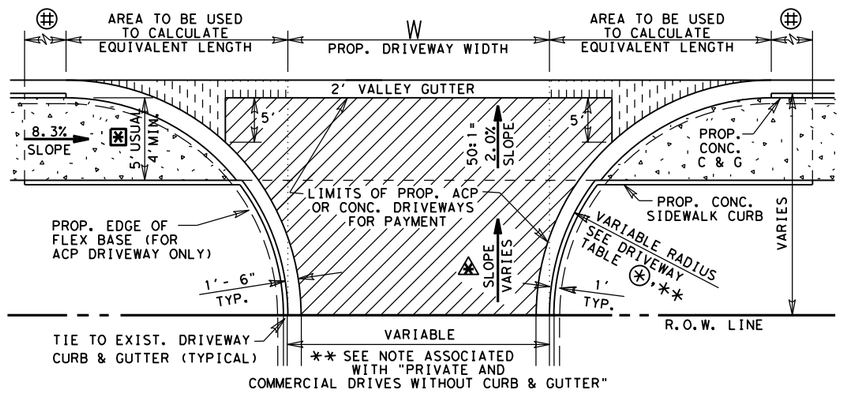
⊛ OR AS SHOWN ON PLAN LAYOUT. TURNING RADIUS MAY BE REDUCED AS APPROVED BY THE ENGINEER.

PLAN OF PRIVATE AND COMMERCIAL DRIVES

** FOR PRIVATE RESIDENTIAL DRIVES, TRY TO MATCH EXISTING WITH A MINIMUM WIDTH OF 12 FT. AND A MAXIMUM WIDTH OF 24 FT. WITH 15 FT. USUAL RADIUS. FOR COMMERCIAL DRIVES, USE ABOVE COMMERCIAL DRIVEWAY DETAILS.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES
N.T.S.

⊠ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⊕ LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

LF OF VALLEY GUTTER= W + X1 + X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

TY PB-1

EXIST. PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 171#/SY ACP. (HMA-D PG 64-22 SAC B MEETING ITEM 340)

CONCRETE (RESIDENTIAL)

EXIST. PRIVATE DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

CONCRETE (COMMERCIAL)

EXIST. BUSINESS DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 6" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

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PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

REV. 08/22

DRIVEWAY2.DGN

FED. RD. DIV. NO.	PROJECT NO.	FILE NO.	SHEET NO.
6			

STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21					

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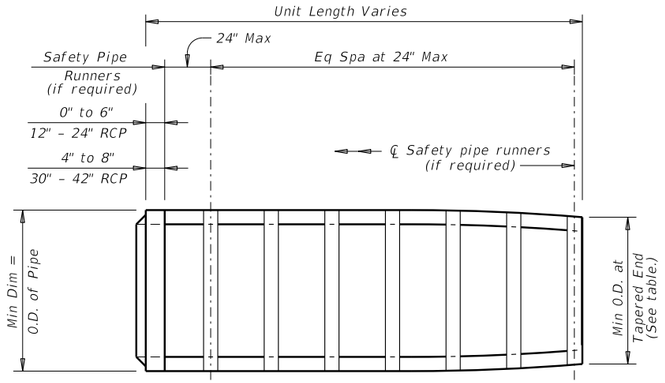
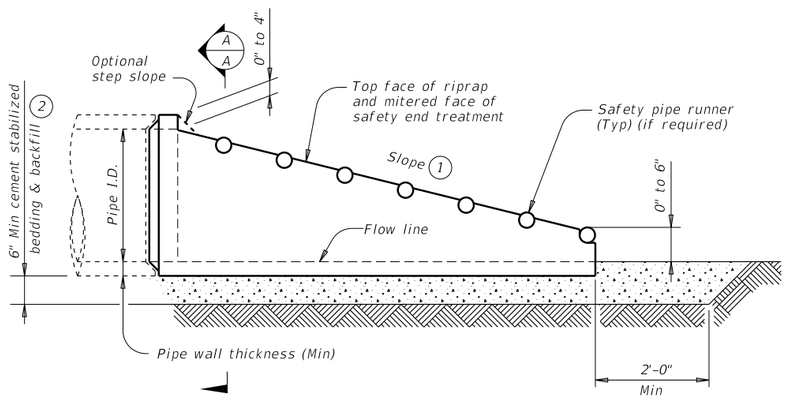


PLAN VIEW – 12" THRU 24"

(Showing spigot end connection.)



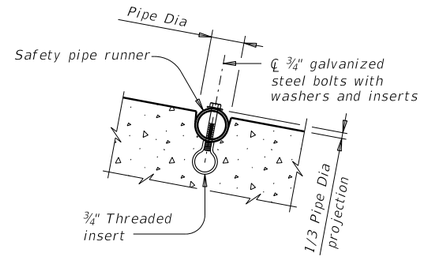
LONGITUDINAL ELEVATION - 12" THRU 24"

(Showing spigot end connection.)

1. Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
2. Provide cement stabilized bedding and backfill in accordance with the Item, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
3. Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."
4. Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
5. Safety pipe runners are required for multiple pipe culverts with more than two pipes.

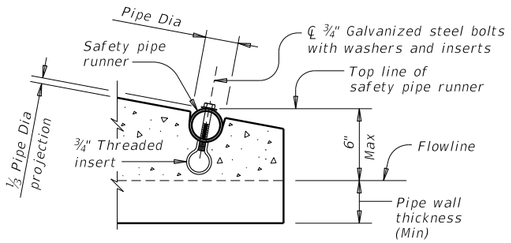
REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	Min Wall Thickness	Min O.D.	Min O.D. at Tapered End	Min Reinf Requirements (sq. in. per ft. of Pipe)	Max Slope	Min Length of Unit	Pipe Runner Requirements		Required Pipe Runner Sizes		
							Single Pipe	Multiple Pipe	Nominal Dia	O.D.	I.D.
12"	2"	16"	16"	0.07 Circ.	6:1	4'–0"	No	(5)	3" STD	3.500"	3.068"
15"	2 ¼"	19 ½"	19"	0.07 Circ.	6:1	5'–8"	No	(5)	3" STD	3.500"	3.068"
18"	2 ½"	23"	21 ½"	0.07 Circ.	6:1	7'–3"	No	(5)	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 Circ.	6:1	10'–6"	No	(5)	3" STD	3.500"	3.068"
30"	3 ½"	37"	31"	0.18 Circ.	6:1	12'–1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 Ellip.	6:1	15'–4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	51"	41 ½"	0.23 Ellip.	6:1	18'–7"	Yes	Yes	4" STD	4.500"	4.026"

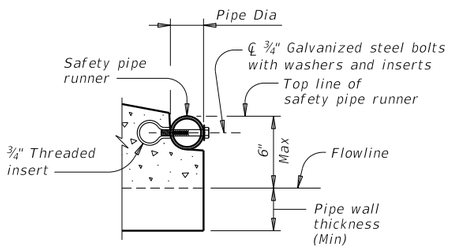


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



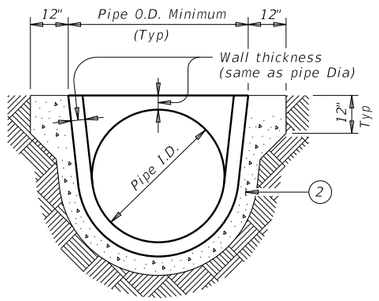
OPTION A



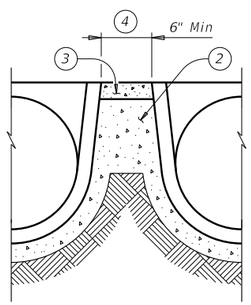
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)



SECTION A-A



MULTIPLE PIPE INSTALLATION

MATERIAL NOTES:

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Galvanize steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP) may be used for TYPE II end treatment as specified in Item 467, "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Manufacture precast concrete end sections in accordance with Item 464, "Reinforced Concrete Pipe" and in accordance with ASTM Specification C–76, Class III, Wall B for circular pipe.

Provide precast concrete end sections with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for grout, mortar, cold applied asphalt joint compound or pre–formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280–2F, "Safety Treatment of Roadside Parallel–Drainage Structures", Texas Transportation Institute, March 1981.

Texas Department of Transportation

Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-RP

FILE: CD-PSET-RP-20.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

DATE:
FILE:

Plat Application

In order to ensure a thorough and expedited review of a plat and/or plan, all development requests require that a pre-application discussion or a pre-submittal meeting occur <u>prior</u> to making an application to the City in order to discuss development needs and issues.

Description of Property

Subdivision Name: O T AUBREY BLK 23 LOT 82 & ADJ TRIANGLE

Total Number of Lots: 1 Total Acreage: 0.557 acres

Property Location: 403 S. Main Street, Aubrey, TX-76227

Contact Information

Owner: SHAP LLC Phone #: 469-554-0390

Address: 10812 CAPRI DR, MCKINNEY, TX -75072

Email address: hanarealinvestments@gmail.com

Applicant contact info: 469-554-0390

Engineer/Surveyor: AKHILA REDDY GONDI Phone #: 469-331-8566

Email address: areddy@triangle-engr.com

***See submittal calendar on-line for application submittal dates. ***

	FEES	
Application Review Fee	$500.00	
Preliminary Plat – Residential	$550.00	Plus $20.00 per lot
Preliminary Plat – Commercial	$600.00	Plus $25.00 per acre
Final Plat – Residential	$650.00	Plus $20.00 per lot
Final Plat – Commercial	$700.00	Plus $25.00 per acre
Minor Plat	$500.00	
Replat - Residential	$550.00	Plus $20.00 per lot
Replat - Commercial	$600.00	Plus $25.00 per acre
Amended Plat	$350.00	
Plat Vacation	$250.00	Plus $20.00 per lot
Plat filing (County recording)	$200.00	
Legal notices (published)	$150.00	Plus actual expenses
Professional fees for review of land use related permits as prepared by City's consultants (ex: Engineer, Planner, Attorney)	*see Special Fees section of ordinance	*Requires deposit, and fee assessed to cover reasonable and necessary expenses in review of development related permits

The Texas Local Government Code generally requires that the municipal authority responsible for approving plats is to take action on a plat within 30 days of proper filing. Because thorough plat review, and resubmittal of corrections, generally requires in excess of 30 days, an opportunity to allow for additional review time is available to an owner/applicant. You may contact city staff for information on requesting a time extension and for scheduling your plat. In cases where city staff does not have adequate time for review and corrections to be made, there is a high likelihood that the plat will be forwarded to PZ and CC with a recommendation of denial.

Owner's signature required to authorize plat application submittal: _____

Fees paid: _____

- ○ Cash
- ○ Check # _____

Project #: _____

Date: _____

Receipt #: _____

Plat Application Checklist

In order to ensure a thorough and expedited review of a plat and/or plan, all development requests require that a pre- application discussion or a pre-submittal meeting occur prior to making an application to the City. A complete application, fee, and supplementary materials, in accordance with the City's Subdivision Ordinance, must accompany a plat submittal.

Required for ALL Plats

- ✓ Project name in lower right corner
- ✓ Application form, fees, electronic copy/pdf
- ____ Utility company letters
- ____ ETJ affidavit or approval by city
- ✓ Vicinity map
- ✓ Owner's name, address & phone
- ✓ Surveyor/Engineer's name, address & phone
- ✓ Adjacent properties identified
- ✓ Front building lines
- ✓ Flood plain statement/boundary
- ✓ Lot/Alley dimensions
- ____ Metes & bounds
- ✓ Easements (drainage, utility, landscape, etc.)
- ✓ Monuments, pins & B.M.'s set
- ____ 4 Copies of Plat (folded) for initial review by staff
- ____ Engineer's summary report (Art. 2, Section 1.05 of Subdivision Ord. (how does property drain, grading)
- ____ Proof of ownership per Art. 2, Sect. 1.05 Sub. Ord.
- ✓ North arrow
- ____ Scale 1" = 200 figure & scale bar
- ✓ Size 24" x 36"
- ✓ Boundary lines identified
- ✓ Lots & blocks, acreage identified
- ____ Required signatures
- ✓ Street dimensions
- ____ RPLS certificate
- ____ Match lines
- ✓ Street names
- ____ Certified Tax certificate at time of recording

Additional requirements for Preliminary Plats

- ____ Preliminary Drainage/Utility plans
- ____ Street & road interconnect
- ____ Contour lines
- ____ Proposed street names
- ____ Physical features
- ____ Scale 1"= 200', 1"=100'
- ____ Match lines
- ____ Proposed parks, trails, open space

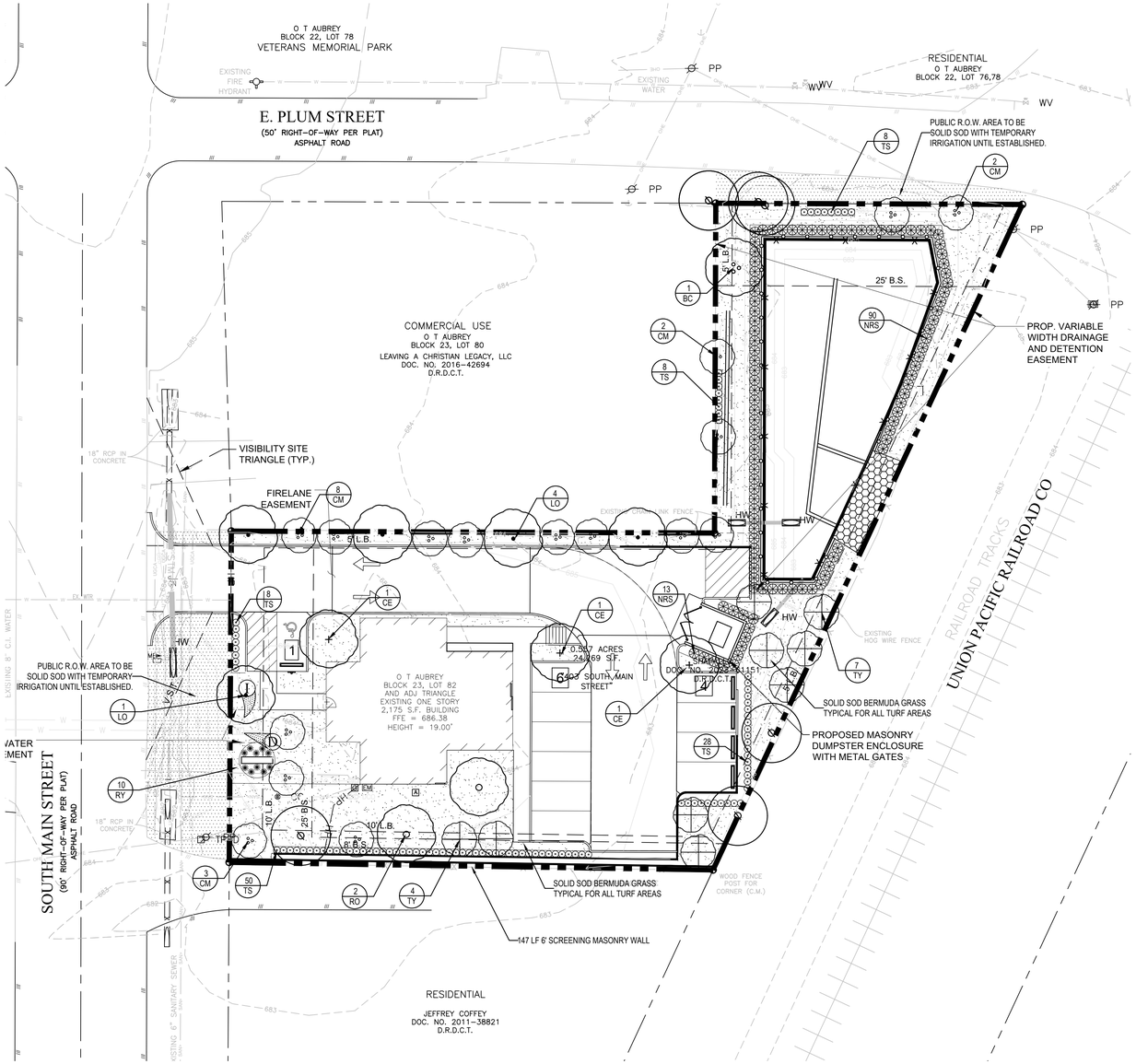
Additional requirements for Re-Plat, Minor Plat, and Final Plats

(see Subdivision Ordinance for complete list of plat documents required):

- ____ Filing documents and recording fees
- ✓ 2 x 3 recording block
- ____ Co. judge signature block (if in ETJ)
- ____ Street & road interconnect
- ____ Owners certificate
- ____ Deed restrictions

In accordance with Section 212.014 of the Texas Local Government Code, a Public Hearing is required for a re-plat.

*Any required documentation that is missing from the application packet may constitute the application to be rejected and/or determined to be incomplete.



SITE AREA: 24,270 S.F.
LANDSCAPE AREA: 13,762 S.F. (43.3 % OF TOTAL SITE)

BUFFER YARDS:

NORTH - (248 L.F.)
BUFFER TYPE: A
REQUIREMENTS:
5' BUFFER
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(3) canopy trees	(3) canopy trees + (2) existing trees to remain
(5) understory tress	(7) understory trees
(20) shrubs	(24) shrubs

RAILROAD - (223 L.F.)
BUFFER TYPE: A
REQUIREMENTS:
5' BUFFER
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(3) canopy trees	(5) existing trees to remain
(5) understory tress	(7) understory trees
(18) shrubs	(33) shrubs

SOUTH - (146 L.F.)
BUFFER TYPE: F
REQUIREMENTS:
10' BUFFER
F2 SCREEN WALL (6' HT.)
PER 100 L.F.
2 CANOPY TREE
4 UNDERSTORY TREES
12 SHRUBS

REQUIRED:	PROVIDED:
(4) canopy trees	(3) canopy trees + (1) existing tree to remain
(6) understory tress	(6) understory trees
(24) shrubs	(62) shrubs

S. MAIN ST. - (101 L.F.)
BUFFER TYPE: E
REQUIREMENTS:
10' BUFFER
B1 BERM
PER 100 L.F.
1 CANOPY TREE
2 UNDERSTORY TREES
8 SHRUBS

REQUIRED:	PROVIDED:
(1) canopy trees	(1) canopy tree+ (1) exisiting trees
(2) understory trees	(2) understory trees
(8) shrubs	(18) shrubs

30" HT. PARKING LOT SCREEN
PROVIDED

PARKING LOT TREES- 1 TREE PER 10 SPACES- 22 SPACES
REQUIRED: 3 (3" cal. trees) PROVIDED: 3 (3" cal. trees)

DETENTION AREA 252 LF
REQUIRED: 1 CANOPY TREE AT 30 O.C. (9) CANOPY TREES
W/ EVERGREEN SCREENING
IRON FENCE
WALL RETAINING
PROVIDED: (8) CANOPY TREES (3) EXISTING TREES
(89) 3' HT EVERGREEN SCREEN
DECORATIVE IRON FENCE (REFERENCE CIVIL PLANS)
WALL RETAINING (REFERENCE CIVIL PLANS)

GENERAL LAWN NOTES

1. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED ON CIVIL PLANS.
2. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
3. ALL LAWN AREAS TO RECEIVE SOLID SOD SHALL BE LEFT IN A MAXIMUM OF 1" BELOW FINAL FINISH GRADE. CONTRACTOR TO COORDINATE OPERATIONS WITH ON-SITE CONSTRUCTION MANAGER.
4. IMPORTED TOPSOIL SHALL BE NATURAL, FRIABLE SOIL FROM THE REGION, KNOWN AS BOTTOM AND SOIL, FREE FROM LUMPS, CLAY, TOXIC SUBSTANCES, ROOTS, DEBRIS, VEGETATION, STONES, CONTAINING NO SALT AND BLACK TO BROWN IN COLOR.
5. *ALL LAWN AREAS TO BE FINE GRADED, IRRIGATION TRENCHES COMPLETELY SETTLED, AND FINISH GRADE APPROVED BY THE OWNER'S CONSTRUCTION MANAGER OR ARCHITECT PRIOR TO INSTALLATION.*
6. *ALL ROCKS 3/4" DIAMETER AND LARGER, DIRT CLODS, STICKS, CONCRETE SPOILS, ETC. SHALL BE REMOVED PRIOR TO PLACING TOPSOIL AND ANY LAWN INSTALLATION*
7. CONTRACTOR SHALL PROVIDE (1") ONE INCH OF IMPORTED TOPSOIL ON ALL AREAS TO RECEIVE LAWN.

SOLID SOD NOTES

1. FINE GRADE AREAS TO ACHIEVE FINAL CONTOURS INDICATED. LEAVE AREAS TO RECEIVE TOPSOIL 3" BELOW FINAL DESIRED GRADE IN PLANTING AREAS AND 1" BELOW FINAL GRADE IN TURF AREAS.
2. ADJUST CONTOURS TO ACHIEVE POSITIVE DRAINAGE AWAY FROM BUILDINGS. PROVIDE UNIFORM ROUNDING AT TOP AND BOTTOM OF SLOPES AND OTHER BREAKS IN GRADE. CORRECT IRREGULARITIES AND AREAS WHERE WATER MAY STAND.
3. ALL LAWN AREAS TO RECEIVE SOLID SOD SHALL BE LEFT IN A MAXIMUM OF 1" BELOW FINAL FINISH GRADE. CONTRACTOR TO COORDINATE OPERATIONS WITH ON-SITE CONSTRUCTION MANAGER.
4. CONTRACTOR TO COORDINATE WITH ON-SITE CONSTRUCTION MANAGER FOR AVAILABILITY OF EXISTING TOPSOIL.
5. PLANT SOD BY HAND TO COVER INDICATED AREA COMPLETELY. INSURE EDGES OF SOD ARE TOUCHING. TOP DRESS JOINTS BY HAND WITH TOPSOIL TO FILL VOIDS.
6. ROLL GRASS AREAS TO ACHIEVE A SMOOTH, EVEN SURFACE, FREE FROM UNNATURAL UNDULATIONS.
7. WATER SOD THOROUGHLY AS SOD OPERATION PROGRESSES.
8. CONTRACTOR SHALL MAINTAIN ALL LAWN AREAS UNTIL FINAL ACCEPTANCE. THIS SHALL INCLUDE, BUT NOT LIMITED TO: MOWING, WATERING, WEEDING, CULTIVATING, CLEANING AND REPLACING DEAD OR BARE AREAS TO KEEP PLANTS IN A VIGOROUS, HEALTHY CONDITION.
9. CONTRACTOR SHALL GUARANTEE ESTABLISHMENT OF AN ACCEPTABLE TURF AREA AND SHALL PROVIDE REPLACEMENT FROM LOCAL SUPPLY IF NECESSARY.
10. IF INSTALLATION OCCURS BETWEEN SEPTEMBER 1 AND MARCH 1, ALL SOD AREAS TO BE OVER-SEEDED WITH WINTER RYEGRASS, AT A RATE OF (4) POUNDS PER ONE THOUSAND (1000) SQUARE FEET.

LANDSCAPE NOTES

1. CONTRACTOR SHALL VERIFY ALL EXISTING AND PROPOSED SITE ELEMENTS AND NOTIFY ARCHITECT OF ANY DISCREPANCIES. SURVEY DATA OF EXISTING CONDITIONS WAS SUPPLIED BY OTHERS.
2. CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES AND NOTIFY ARCHITECT OF ANY CONFLICTS. CONTRACTOR SHALL EXERCISE CAUTION WHEN WORKING IN THE VICINITY OF UNDERGROUND UTILITIES.
3. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL REQUIRED LANDSCAPE AND IRRIGATION PERMITS.
4. CONTRACTOR TO PROVIDE A MINIMUM 2% SLOPE AWAY FROM ALL STRUCTURES.
5. ALL PLANTING BEDS AND LAWN AREAS TO BE SEPARATED BY STEEL EDGING. NO STEEL TO BE INSTALLED ADJACENT TO SIDEWALKS OR CURBS.
6. ALL LANDSCAPE AREAS TO BE 100% IRRIGATED WITH AN UNDERGROUND AUTOMATIC IRRIGATION SYSTEM AND SHALL INCLUDE RAIN AND FREEZE SENSORS.
7. ALL LAWN AREAS TO BE SOLID SOD BERMUDAGRASS, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

City of Aubrey Chapter 14, Section 23 (G) (b) (xiii) Maintenance Notes

1. General:The owner, tenant and the agent, if any, shall be jointly and severably responsible for the maintenance of all landscaping and irrigation. All required landscaping shall be maintained in a neat and orderly manner at all times. This shall include mowing, edging, pruning, fertilizing, watering, weeding, and other such activities common to the maintenance of landscaping. Landscaped areas shall be kept free of trash, litter, weeds and other such material or plants not a part of the landscaping, all plant materials shall be maintained in a healthy and growing condition as is appropriate for the season of the year. All irrigation heads or lines that are broken and flow water shall be replaced or repaired immediately to prevent the waste of water.
2. Plant Replacement:The owner shall be responsible for replacing all plant materials which shows dead branching over 25 percent or more of the normal branching pattern and repair irrigation system for a period of one year from the date of issuance of the Certificate of Occupancy. Plant materials that die shall be replaced with plant material of similar variety and similar initial size. The Owner shall make such necessary replacements within 30 days of notification by the City.

PLANT MATERIAL SCHEDULE

TREES

TYPE	QTY	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
CE	3	Cedar Elm	*Ulmus crassifolia*	3" cal.	B&B, 13' ht., 5' spread min., 5' clear trunk
LO	5	Live Oak	*Quercus virginiana*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk
RO	2	Red Oak	*Quercus shumardii*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk
CM	16	Crepe Myrtle	*Lagerstoema indica*	2" cal.	container, 8' ht., 4' spread, tree form
TY	7	Tree Yaupon	*Ilex vomitoria*	2" cal.	container, 8' ht., 4' spread, tree form
BC	8	Bald Cypress	*Taxodium distichum*	3" cal.	container, 14' ht., 6' spread, 5' clear straight trunk

SHRUBS

TYPE	QTY.	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
TS	102	Texas Sage	*Leucophyllum frutescens*	5 gal.	container, 30" ht., 20" spread
RY	10	Red Yucca	*Hesperaloe parviflolia*	3 gal.	container full, 12" spread
NRS	103	Nellie R. Stevens	*Ilex x 'Nellie R. Stevens'*	7 gal.	container, 36" ht., 24" spread

GROUNDCOVERS

TYPE	QTY	COMMON NAME	*BOTANICAL NAME*	SIZE	REMARKS
		'419' Bermudagrass	*Cynodon dactylon '419'*		Solid Sod refer to notes

NOTE: Plant list is an aid to bidders only. Contractor shall verify all quantities on plan. All heights and spreads are minimums. All plant material shall meet or exceed remarks as indicated. All trees to have straight trunks and be matching within varieties.

ALL LANDSCAPE AREAS TO BE IRRIGATED WITH AN AUTOMATIC IRRIGATION SYSTEM

01 LANDSCAPE PLAN
SCALE 1"=20'-0"
0 10 20 40

Studio Green Spot
LANDSCAPE ARCHITECT
STUDIO GREEN SPOT, INC.
1782 W. McDERMOTT DR.
ALLEN, TEXAS 75013
(469) 369-4448
CHRIS@STUDIOGREENSPOT.COM

REGISTERED LANDSCAPE ARCHITECT
CHRIS TROWLAND
2042
STATE OF TEXAS
11.05.2025

RESTAURANT

SOUTH MAIN ST./ W. PLUM ST.
CITY OF AUBREY, DENTON COUNTY, TEXAS

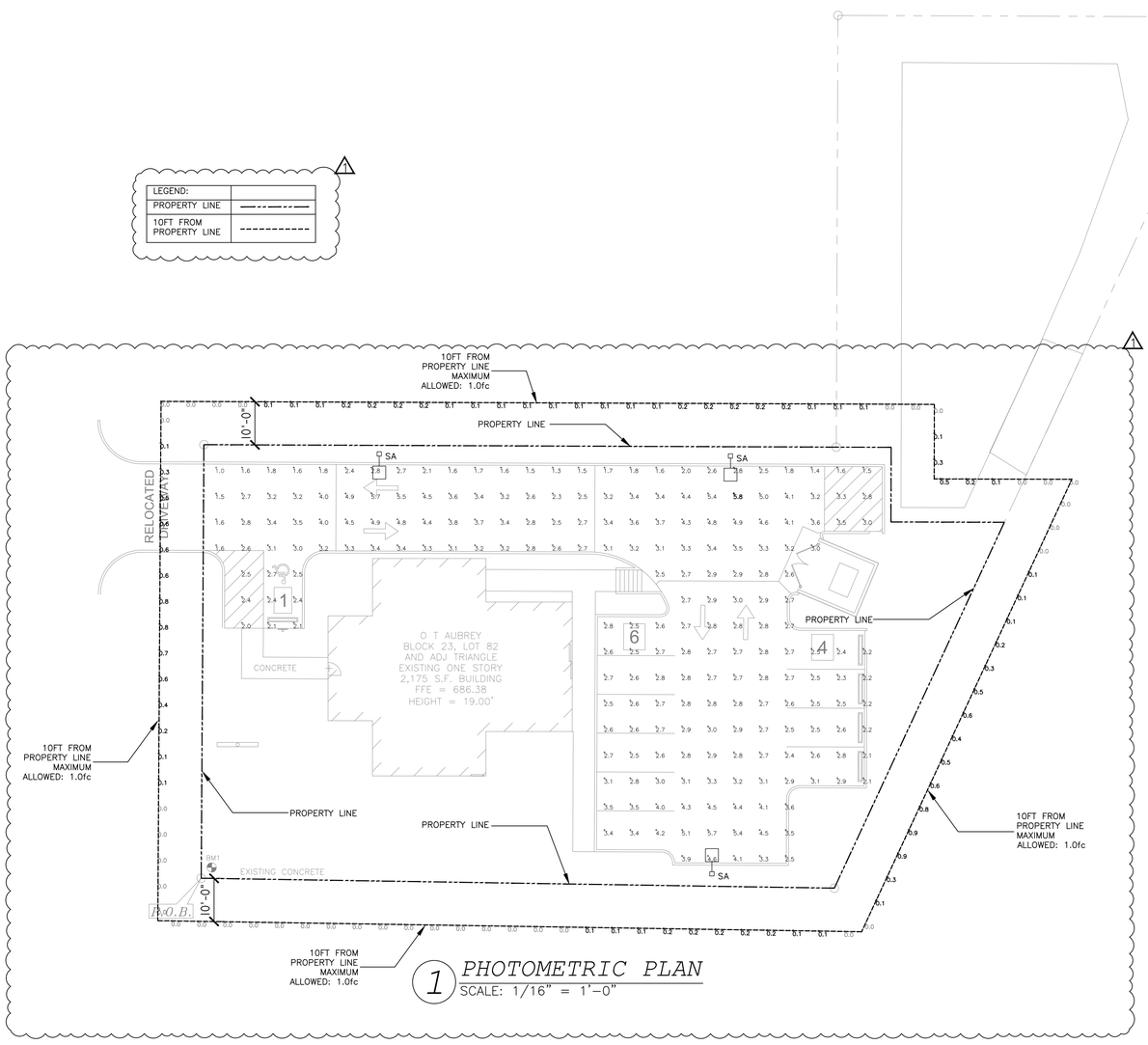
ISSUE:
CITY COMMENTS 11.15.2024
CITY COMMENTS 12.16.2024
CITY COMMENTS 01.17.2025
CITY COMMENTS 04.22.2025
CITY COMMENTS 06.26.2025
CITY COMMENTS 11.05.2025

DATE:
11.05.2025

SHEET NAME:
LANDSCAPE PLAN

SHEET NUMBER:

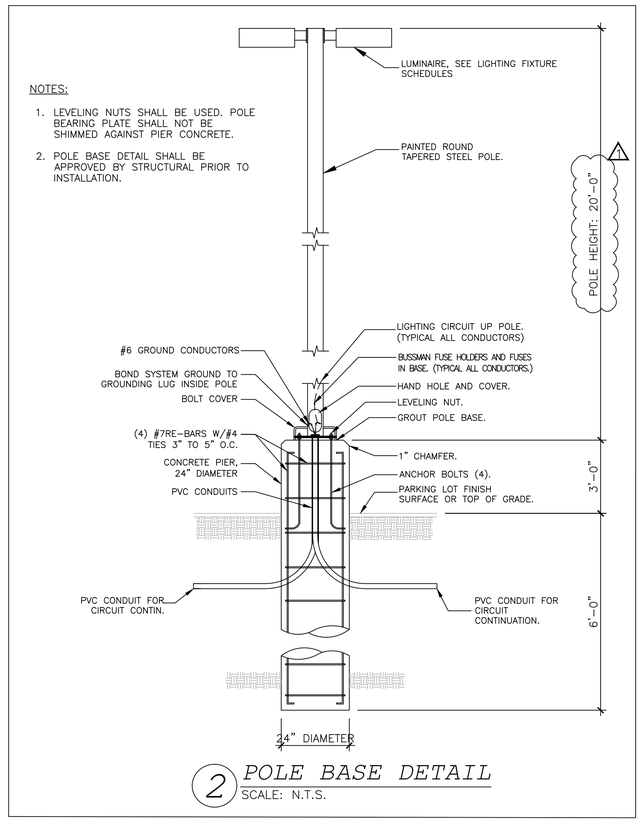
L.2



1 PHOTOMETRIC PLAN
SCALE: 1/16" = 1'-0"

NOTES:

1. LEVELING NUTS SHALL BE USED. POLE BEARING PLATE SHALL NOT BE SHIMMED AGAINST PIER CONCRETE.
2. POLE BASE DETAIL SHALL BE APPROVED BY STRUCTURAL PRIOR TO INSTALLATION.



2 POLE BASE DETAIL
SCALE: N.T.S.

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Car Parking	Illuminance	Fc	2.99	5.8	1.0	2.99	5.80
10ft From Property Line	Illuminance	Fc	0.18	0.9	0.0	N.A.	N.A.

Luminaire Schedule							
Qty	Label	Arrangement	Description	LLF	Lum. Watts	Lum. Lumens	Mounting Height
3	SA	SINGLE	NV-1-T4-48L-1-40K8-HSS	1.000	156	12356	23 ft

NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING THE SITE LIGHTING PHOTOMETRIC TESTING AND COMMISSIONING TO ENSURE THE ACTUAL PHOTOMETRIC READINGS ARE CONSISTENT WITH THOSE OF THE DESIGNED PHOTOMETRIC PLAN.

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Texas Registered Engineering Firm F-20513
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W: triangle-engr.com 5151 Belt Line Road, Suite 1000, Dallas, Texas 75254
Planning | Civil Engineering | Construction Management

No.	DATE	REVISION	BY
1	11/07/2025	CITY COMMENTS	

MEP GREEN DESIGN & BUILD
FAST AND ACCURATE

NOV. 07, 2025

RESTAURANT
AUBREY, TEXAS

PROJECT No:
DATE:
DRAWN BY: PL
CHECKED BY: DV

SHEET # E5.1
REVISION #

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JPL-1-X-X-40K7-UNV-ASA-BRZ
Description/Loc: Area Light Head,Bronze Qty:0

LED WATTAGE CHART

	16L	32L	48L	64L
1050 milliamps	80w	158w	238w	315w

FORM AND FUNCTION

- Sleek, low profile housing
- Spec grade performance
- Engineered for optimum thermal management
- Low depreciation rate
- Reduces energy consumption and costs up to 65%
- Exceeds IES foot candle levels utilizing the least number of poles and fixtures per project
- Optical system designed for:
  - Parking Lots
  - Auto Dealerships
  - General Area Lighting

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

FINISH

- 3-5 mils electrostatic powder coat.
- Standard high-quality finishes prevent corrosion, protects against extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

BUY AMERICAN

To ensure the latest BAA/TAA/BABA Standards are being met, please select BAA, TAA, or BABA in the options section. Please contact the factory before placing an order for any products requesting BAA (Buy American Act), TAA (Trade American Act), or BABA (Build America, Buy America).

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JPL-1-X-X-40K7-UNV-ASA-BRZ
Description/Loc: Area Light Head,Bronze Qty:0

JPL-1 ORDERING GUIDE

Cat#	Light Dist.	# of LEDs	Milliamps	Kelvin	Volts
(JPL-1)	Type 2 (T2) Type 3 (T3) Type 4 (T4) Type 5 (T5)	16 (16L) 32 (32L) 48 (48L) 64 (64L)	1050 (1)	Amber 590 nm (AMBER) ❶❷❸ 2700K 70 CRI (27K7) ❶ 2700K 80 CRI (27K8) ❶❷ 3000K 70 CRI (30K7) ❶ 3000K 80 CRI (30K8) ❶❷ 3500K 80 CRI (35K8) 4000K 70 CRI (40K7) ❶ 4000K 80 CRI (40K8) ❶ 5000K 70 CRI (50K7) 5000K 80 CRI (50K8) ❶	120-277 (UNV) 347-480 (HV)

Mounting	Color	Controls Options	Options	Lens Options
Architectural Sweep Arm (ASA) ❶ Direct Pole 3" Arm Single (DP3S) ❶ Direct Pole 3" Arm D180, D90, D90 T, 3 @ 90, Quad (DP3T) ❶ Knuckle Mount (KM) Wall Mount (WM) Trunnion Mount (TM) ❶ Tennis Arm Mount (TA) Mast Arm Mount (MA)	Bronze Textured (BRZ) White Textured (WHT) Smooth White Gloss (SWT) Silver Metallic (SMV) Black Textured (BLK) Smooth Black Gloss (SBK) Graphite Textured (GPH) Grey Textured (GRY) Green Textured (GRN) Hunter Green Textured (HGN) Custom (CS)	Nema 7-Pin Receptacle (P7) Photocell + Receptacle (PCR) Receptacle + Shorting Cap (PER) FSP-211 with Motion Sensor 9'-20' Height ❶ (FSP-22) ❶ FSP-211 (FSP-42) ❶ Custom Outside Integration (CCI) ❶ Button Type Photocell (PC) ❶	Bird Spikes (BS) Marine Grade Finish (MGF) Optic Plate Painted to Match Fixture (OPP) Quick Mount Bracket (QMB) Retrofit Mount Bracket (RQMB) Round Pole Adaptor (RPA5) Rotated Optic Left (ROL) Rotated Optic Right (ROR) Automotive House Side Shield (AHS) ❶ House Side Shield (HSS) ❶ Black Hardware (BH) Black Optic Frame (BOF) Buy America Act (BAA) ❶ Trade America Act (TAA) ❶ Build America Buy American (BABA) ❶	Glass Lens (GL) ❶❷ HAL Lens (HAL) ❶❷

Notes:
❶ Consult Factory for Lead Time. Consult Factory for 90 CRI Requests.
❷ For Round Pole Specify RPA4 or RPA5
❸ Amber LED's. Housing is powder coated, Can be painted to match fixture.
❹ Universal Voltage 120-277
❺ HSS not applicable with Nema 7.
❻ Photocell and Nema 7 shorting options only, must be selected to meet International Dark-Sky Association certification.
❼ Glass Lens: Low iron glass, fully tempered per ANSI C1047 (QCH-2201-37)
❽ HAL Lens: Clear Soda Lime Silica Float Glass, Yellow (Spectrum Yellow Smooth 1616), Annealed, Flat
❾ Controls Agnostic: Please contact factory for Custom Control Integration requests (Hi-light, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, Dali II, AerOn, or other control systems)
❿ Turtle Safe
⓫ Consult Factory for all BAA/TAA/BABA requests
⓬ Consult Factory for Lead Time.
⓭ Not Available above 1000mA
❹ Contact Factory

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JPL-1-X-X-40K7-UNV-ASA-BRZ
Description/Loc: Area Light Head,Bronze Qty:0

PRODUCT SPECIFICATIONS

ELECTRICAL

- 120-277 Volts (UNV) or 347-480 Volts (HV)
- 0-10V dimming driver
- Driver power factor at maximum load is ≥ .95, THD maximum load is 15%
- LED Drivers Ambient Temp. Min is -40°C and Ambient Temp. Max ranges from 50°C to 55°C and, in some cases, even higher. Consult the factory for revalidation by providing the fixture catalog string before quoting and specifying it.
- All internal wiring UL certified for 600 VAC and 105°C
- All drivers, controls, and sensors housed in enclosed IP65 compartment
- CRI 70, 80 or 90 (Contact factory for 90 CRI)
- Color temperatures: Amber, 2700K, 3000K, 3500K, 4000K, 5000K
- Surge Protection: 20KVA supplied as standard.

CONSTRUCTION

- Die Cast Aluminum
- External cooling fins
- Corrosion resistant external hardware
- One-piece silicone gasket ensures IP65 seal for electronics compartment
- One-piece Optics Plate™ mounting silicone Micro Optics
- Two-piece silicone Micro Optic system ensures IP67 level seal around each PCB
- Grade 2 Clear Anodized Optics Plate™ standard

OPTIONS

- BIRD SPIKES (BS) - Offers a practical and humane deterrent for larger bird species and provides a cost-effective long-term solution to nuisance bird infestations and protects your property.
- MARINE GRADE FINISH (MGF) - A multi-step process creating protective finishing coat against harsh environments. Chemically washed in a 5 stage cleaning system. Pre-baked, Powder coated 3-5 mils of Zinc Rich Super Durable Polyester Primer. Oven Baked. Finished Powder Coating of Super Durable Polyester Powder Coat 3-5 mil thickness.
- OPTIC PLATE PAINTED TO MATCH FIXTURE (OPP) - Optic plate is clear anodized as standard. The optic plate can be powder coated to match the finish of the fixture.
- QUICK MOUNT BRACKET (QMB) - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Has a 2"x4" Drill Pattern.
- RETROFIT MOUNT BRACKET - Optional Cast Aluminum Bracket designed for quick mounting on Direct Square or Round Poles. Cleat mounts directly to pole for easily hung fixtures. Drill Pattern is adjustable from 2"x4" to 2"x6".
- ROUND POLE ADAPTER (RPA) - When using round poles, specify Round Pole Adapter (RPA). Specify RPA4 when installing on 3"-4" round poles, and RPA5 when installing on 5"-6" round poles.
- ROTATED OPTICS (ROL) (ROR) - Rotated optics are designed for perimeter lighting for auto dealerships.
- SHIELDS (HSS, AHS) - House Side Shield (HSS) is designed for full property line cut off. Automotive House Side Shield (AHS) is a single-sided shield allowing partial cut-off on either side or front of luminaire.
- BLACK HARDWARE (BH) - Optional black, zinc coated steel hardware.
- BLACK OPTIC FRAME (BOF) - Optional black optic frame. Standard is white.
- CLASS LENS (GL) - Low Iron Glass, fully tempered.
- HIGH PERFORMANCE AMBER LENS (HAL) -

CONTROL OPTIONS

- FSP-211 (FSP-X) - Passive infrared (PIR) sensor providing multi-level control based on motion/daylight contribution.
  - All control parameters adjustable via wireless configuration remote storing and transmitting sensor profiles.
  - FSP-20 mounting heights 9-20 feet
  - FSP-40 mounting heights 21-40 feet
  - Includes 5 dimming event cycles, 0-10V dimming with motion sensing, re-programmable in the field.
  - FSIR-100 commissioning remote is required to change sensor settings. Please contact factory for ordering.
- NEMA 7-PIN RECEPTACLE (PE7)—An ANSI C136.41-2013 receptacle provides electrical and mechanical interconnection between photo control cell and luminaire. Dimming receptacle available two or four dimming contacts supports 0-10 VDC dimming methods or Digital Addressable Lighting Interface (DALI), providing reliable power interconnect.
- PHOTOCELL + RECEPTACLE (PCR)—7-Pin Receptacle and Electronic Twist Lock Photocell for dusk to dawn operation.
- RECEPTACLE + SHORTING CAP (PER)—7-Pin Receptacle and Shorting Cap.
- Controls Agnostic: Please contact factory for your preferred controls option. (Hi-light, NX, WaveLinx, Crestron, DMX/RDM, Synapse, Casambi, DALI II, AerOn, or other control systems)

FINISH

- 3-5 mils electrostatic powder coat.
- Standard high-quality finishes prevent corrosion protects against and extreme environmental conditions

WARRANTY

Five-year limited warranty for drivers and LEDs.

OPTICS

Silicone optics high thermal stability and light output provide higher powered LEDs with minimized lumen depreciation. UV stability with scratch resistance increases exterior application durability. Silicone optics do not yellow, crack or brittle over time

LISTINGS

- Certified to UL 1598
- UL 8750
- CSA C22.2 No. 250.0
- DesignLights Consortium® (DLC)
- DesignLights Consortium Premium® (DLCP)
- IP65/ IP67 Rated
- 3G Vibration Rated per ANSI C136.31-2010
- IDA Dark Sky Approved
- IK10 Rated

BUY AMERICAN OPTION

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The information provided above is for general informational purposes only. We encourage you to consult legal professionals for advice particular to your projects concerning BAA, TAA, BABA or Buy America.

The information and specifications on this document are subject to change without any notification. All values are design, nominal, typical or prorated values when measured under internal and external laboratory conditions.

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JPL-1-X-X-40K7-UNV-ASA-BRZ
Description/Loc: Area Light Head,Bronze Qty:0

LUMENS

PART NUMBER	N3	LM/W	T2	LM/W	T3	LM/W	T4	LM/W	T4 AHS	LM/W	T5	LM/W	W
JPL-1-16L-1-30K7	6272	112	6160	110	6384	114	6232	112	4032	72	6440	115	56
JPL-1-16L-1-40K7	6496	116	6832	122	6888	123	6776	121	4256	76	6944	124	56
JPL-1-16L-1-50K7	6720	120	7168	128	7224	129	7112	127	4480	80	7280	130	56
JPL-1-32L-1-30K7	11872	112	11660	110	12084	114	11920	112	7632	72	12190	115	106
JPL-1-32L-1-40K7	12296	116	12932	122	13038	123	12826	121	8036	76	13144	124	106
JPL-1-32L-1-50K7	12720	120	13568	128	13674	129	13462	127	8480	80	13780	130	106
JPL-1-48L-1-30K7	17672	112	17740	113	17784	114	17472	112	11232	72	17960	115	156
JPL-1-48L-1-40K7	18096	116	19032	122	19188	123	18876	121	11856	76	19344	124	156
JPL-1-48L-1-50K7	18720	120	19968	128	20124	129	19812	127	12480	80	20280	130	156
JPL-1-64L-1-30K7	22960	112	23350	113	23370	114	22960	112	14780	72	23575	115	205
JPL-1-64L-1-40K7	23780	116	25010	122	25215	123	24805	121	15580	76	25420	124	205
JPL-1-64L-1-50K7	24600	120	26240	128	26445	129	26035	127	16400	80	26650	130	205

3000K or lower, with fixed mounting options only, must be selected to meet International Dark-Sky Association certification.

BUG RATINGS

PART NUMBER	T2	T3	T4	T5
JPL-1-16L-1-30K7	B1-U0-G1	B1-U0-G1	B1-U0-G1	B3-U0-G1
JPL-1-16L-1-40K7	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G2
JPL-1-16L-1-50K7	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G2
JPL-1-32L-1-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
JPL-1-32L-1-40K7	B2-U0-G2	B2-U0-G2	B3-U0-G2	B4-U0-G2
JPL-1-32L-1-50K7	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G2
JPL-1-48L-1-30K7	B2-U0-G2	B2-U0-G2	B2-U0-G2	B4-U0-G2
JPL-1-48L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G2
JPL-1-48L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3
JPL-1-64L-1-30K7	B3-U0-G3	B3-U0-G3	B3-U0-G3	B5-U0-G3
JPL-1-64L-1-40K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	B5-U0-G3
JPL-1-64L-1-50K7	B3-U0-G3	B3-U0-G3	B3-U0-G4	B5-U0-G3

LUMENS HSS

PART NUMBER	T2 HSS	LM/W	BUG	T3 HSS	LM/W	BUG	T4 HSS	LM/W	BUG	W
JPL-1-16L-1050-2767	3639	65	B0-U0-G1	3508	63	B0-U0-G1	3926	62	B0-U0-G1	56
JPL-1-16L-1050-3767	3864	69	B0-U0-G1	3744	67	B0-U0-G1	3926	70	B0-U0-G1	56
JPL-1-16L-1050-4767	3864	69	B0-U0-G1	3744	67	B0-U0-G1	3926	70	B0-U0-G1	56
JPL-1-16L-1050-5767	3935	70	B1-U0-G1	3760	68	B0-U0-G1	3812	68	B0-U0-G1	56
JPL-1-16L-1050-2769	3654	65	B1-U0-G1	3521	63	B0-U0-G1	3929	63	B0-U0-G1	56
JPL-1-16L-1050-4769	3935	70	B1-U0-G1	3760	68	B0-U0-G1	3812	68	B0-U0-G1	56
JPL-1-16L-1050-4867	4263	76	B1-U0-G1	4086	73	B0-U0-G1	4179	74	B0-U0-G1	56
JPL-1-16L-1050-5867	4559	76	B1-U0-G1	4392	68	B0-U0-G1	3812	68	B0-U0-G1	56
JPL-1-32L-1050-2767	7279	64	B1-U0-G2	7017	62	B1-U0-G2	7852	69	B1-U0-G2	106
JPL-1-32L-1050-3767	7279	64	B1-U0-G2	7018	62	B1-U0-G2	7851	69	B1-U0-G2	106
JPL-1-32L-1050-2768	6816	64	B1-U0-G2	6569	62	B1-U0-G2	6602	62	B1-U0-G2	106
JPL-1-32L-1050-3868	7601	69	B1-U0-G2	7042	66	B1-U0-G2	7079	67	B1-U0-G2	106
JPL-1-32L-1050-3867	7870	74	B1-U0-G2	7585	72	B1-U0-G2	7624	72	B1-U0-G2	106
JPL-1-32L-1050-4868	7870	74	B1-U0-G2	7585	72	B1-U0-G2	7624	72	B1-U0-G2	106
JPL-1-32L-1050-4867	7870	74	B1-U0-G2	7585	72	B1-U0-G2	7624	72	B1-U0-G2	106
JPL-1-32L-1050-5867	8304	80	B1-U0-G2	8196	77	B1-U0-G2	8238	78	B1-U0-G2	106
JPL-1-32L-1050-5868	7870	74	B1-U0-G2	7585	72	B1-U0-G2	7624	72	B1-U0-G2	106
JPL-1-32L-1050-5867	8304	80	B1-U0-G2	8196	77	B1-U0-G2	8238	78	B1-U0-G2	106
JPL-1-48L-1050-2767	10918	70	B1-U0-G2	10523	67	B1-U0-G2	10577	68	B1-U0-G2	156
JPL-1-48L-1050-3768	10223	66	B1-U0-G2	9853	63	B1-U0-G2	9903	63	B1-U0-G2	156
JPL-1-48L-1050-4768	10223	66	B1-U0-G2	9853	63	B1-U0-G2	9903	63	B1-U0-G2	156
JPL-1-48L-1050-5867	11805	76	B1-U0-G2	11377	73	B1-U0-G2	11436	73	B1-U0-G2	156
JPL-1-48L-1050-3968	10861	70	B1-U0-G2	10994	68	B1-U0-G2	10618	66	B1-U0-G2	156
JPL-1-48L-1050-4968	11805	76	B1-U0-G2	11377	73	B1-U0-G2	11436	73	B1-U0-G2	156
JPL-1-48L-1050-4967	12755	82	B1-U0-G2	12293	79	B1-U0-G2	12356	79	B1-U0-G2	156
JPL-1-48L-1050-5969	11805	76	B1-U0-G2	11377	73	B1-U0-G2	11436	73	B1-U0-G2	156
JPL-1-48L-1050-5967	12755	82	B1-U0-G2	12293	79	B1-U0-G2	12356	79	B1-U0-G2	156
JPL-1-64L-700-3767	10784	71	B1-U0-G2	9354	69	B1-U0-G2	9354	69	B1-U0-G2	205
JPL-1-64L-1050-3767	14038	73	B1-U0-G2	14601	68	B1-U0-G2	14101	65	B1-U0-G2	205
JPL-1-64L-1050-2768	13631	68	B1-U0-G2	13131	64	B1-U0-G2	13005	64	B1-U0-G2	205
JPL-1-64L-1050-3968	14615	71	B1-U0-G2	14101	68	B1-U0-G2	14101	69	B1-U0-G2	205
JPL-1-64L-1050-3967	15749	77	B1-U0-G2	15170	74	B1-U0-G3	15048	74	B1-U0-G3	205
JPL-1-64L-1050-4968	14615	71	B1-U0-G2	14101	68	B1-U0-G2	14101	69	B1-U0-G2	205
JPL-1-64L-1050-4967	15749	77	B1-U0-G2	15170	74	B1-U0-G3	15048	74	B1-U0-G3	205
JPL-1-64L-1050-5967	17007	83	B2-U0-G2	16391	80	B1-U0-G3	16473	80	B1-U0-G3	205
JPL-1-64L-1050-5968	15749	77	B1-U0-G2	15170	74	B1-U0-G3	15048	74	B1-U0-G3	205
JPL-1-64L-1050-5967	17007	83	B2-U0-G2	16391	80	B1-U0-G3	16473	80	B1-U0-G3	205

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JP-SSS-4.0-11-XX-BRZ
Description/Loc: Square Steel Pole, Bronze Qty:0

Square Straight Steel Poles

Pole Shaft
The pole shaft is one piece construction, being fabricated from a weldable grade carbon steel structural tubing. The pole has a uniform wall thickness of 11 gauge (0.1196"), 7 gauge (0.1793"), or 3 gauge (0.2391"). The pole shaft material shall conform to ASTM A1011 Gr.50 with a minimum yield strength of 50,000 psi. The pole shaft has a full length longitudinal resistance weld and is uniformly square in cross-section with flat sides, small corner radii and excellent torsional properties.

Base Plate
The anchor base is fabricated from structural quality hot rolled carbon steel plate that meets or exceeds a minimum yield strength of 36,000 psi. The anchor base telescopes the pole shaft and is circumferentially welded top and bottom. All welds are performed in accordance with the American Welding Society specification AWS D1.1, latest edition.

Anchor Bolts
Anchor bolts are fabricated from commercial quality hot rolled carbon steel bar that meets or exceeds a minimum yield strength of 55,000 psi. Four properly sized anchor bolts, each with two regular hex nuts and washers, are furnished and shipped with all poles unless otherwise specified. Anchor bolts shall have the threaded and galvanized a minimum of 8 inches in accordance with ASTM A153. Fully galvanized anchor bolts are available upon request.

Handhole
An oval reinforced gasketed handhole, having a nominal 3" x 5" or 4" x 6-1/2" inside opening, located 1'-0" above base, is standard on all poles. Optional 5" x 8" and 4" x 10" handholes are available (see options). A grounding provision is located inside the handhole ring.

Finishes
The Standard Finish is a polyester thermosetting powder coating applied to the surface of the substrate to a minimum of 3 mils for all color finishes. Hot dip Galvanized finish to a ASTM A123 specification or primed finish is also available. For optional finishes, see K-KLAD and K-KLAD Over Galvanizing.

FINISHES

Standard		Galvanized		K-KLAD		K-KLAD Over Galvanizing	
BRZ	Bronze	G	Galvanized	KB13	Bronze	KZ13	Bronze
BLK	Black			KB21	Black	KZ21	Black
GRY	Gray			KB41	Gray	KZ41	Gray
GRN	Green			KB91	Green	KZ91	Green
WHT	White			KB81	White	KZ81	White
P	Primed			KB45	Natural Aluminum	KZ45	Natural Aluminum
NA	Natural Aluminum						
1 YEAR WARRANTY				5 YEAR WARRANTY		10 YEAR WARRANTY	

MOUNTING DESIGNATIONS

Tenon Mount	
2	2 3/8" x 4" TENON
3	2 7/8" x 4" TENON
3.5	3 1/2" x 6" TENON
4	4" x 6" TENON

Open Mount	
OT	Open Top
OTC	Open Top includes Pole Cap

Drill Mount	
DM1	Drilled for 1 Luminaire
DM2SO	Drilled for 2 Luminaires @ 90º
DM2180	Drilled for 2 Luminaires @ 180º
DM3	Drilled for 3 Luminaires @ 90º
DM4	Drilled for 4 Luminaires @ 90º

Slain Mount	
1GSS4	(1) CXA
2GSS4	(2) CXA's located on the Same Side
3GSS4	(3) CXA's located on the Same Side
4GSS4	(4) CXA's located on the Same Side
2GBB4	(2) CXA's located Back to Back
4GBB4	(4) CXA's located Back to Back
1GSS9	(1) CXASQ
2GSS9	(2) CXASQ's located on the Same Side
3GSS9	(3) CXASQ's located on the Same Side
4GSS9	(4) CXASQ's located on the Same Side
2GBB9	(2) CXASQ's located Back to Back
4GBB9	(4) CXASQ's located Back to Back

Accessories	
BC	Base Cover
CPL	Threaded Coupling*
NPL	Threaded Nipple*
WPRP	Festoon Opening**
LAB	Less Anchor Bolt
VDS	Vibration Damper Internal

Optional Handholes	
SBHH	5" x 8" Handhole*
410HH	4" x 10" Handhole*

Extra Handholes	
XHH	Extra Handhole*

Embedment Pole Options	
E	Embedded Pole
GS	Ground Sleeve
CTE	Coal Tar Epoxy

Additional Simatec	
1S	1 @ 0º *
2S	2 @ 180º *
3S	3 @ 90º *
4S	4 @ 90º *

* Please advise size, location, and orientation. (Handholes are restricted by size of pole shaft diameter)
** Located 24" above baseplate and same side as handhole. (No electrical included)

Submitted by JSA on Jun 24, 2024

Project: JSA Area Lights, Type:
Catalog#:JP-SSS-4.0-11-XX-BRZ
Description/Loc: Square Steel Pole, Bronze Qty:0

Square Non-Tapered Steel Poles

Catalog Number	Nominal Height	Pole Shaft	Gauge	Handhole Size	Anchor Bolt	Bolt Circle	80 MPH	90 MPH	100 MPH	Ship WT.
JP-SSS (height)-(pole shaft)-(gauge)	10	4.0 x 10.0	11	3 x 5	0.75 x 17 x 3	8	42.1	33.5	27.1	87
	10	4.0 x 10.0	7	3 x 5	0.75 x 30 x 3	8	55	44	35.5	130
	10	5.0 x 10.0	11	3 x 5	1.00 x 36 x 4	11	58	44	34	151
	12	4.0 x 12.0	11	3 x 5	0.75 x 17 x 3	8	33.7	26.7	21.4	100
	12	4.0 x 12.0	7	3 x 5	0.75 x 30 x 3	8	47.5	37.3	29.8	150
	12	5.0 x 12.0	11	3 x 5	1.00 x 36 x 4	11	49	38	29	168
	14	4.0 x 14.0	11	3 x 5	0.75 x 17 x 3	8	27.4	21.5	17.1	113
	14	4.0 x 14.0	7	3 x 5	0.75 x 30 x 3	8	40	31	24.5	170
	14	5.0 x 14.0	11	3 x 5	1.00 x 36 x 4	11	40	30	23	184
	14	5.0 x 14.0	7	3 x 5	1.00 x 36 x 4	11	65	52	41.5	240
	15	4.0 x 15.0	11	3 x 5	0.75 x 17 x 3	8	20.7	16.1	12.6	119
	15	4.0 x 15.0	7	3 x 5	0.75 x 30 x 3	8	30.9	24.4	19.6	177
	15	5.0 x 15.0	11	3 x 5	1.00 x 36 x 4	11	36	27.5	21	192
	15	5.0 x 15.0	7	3 x 5	1.00 x 36 x 4	11	59	46.5	37	258
	16	4.0 x 16.0	11	3 x 5	0.75 x 17 x 3	8	18.7	14.4	11.2	125
	16	4.0 x 16.0	7	3 x 5	0.75 x 30 x 3	8	27.2	20.7	16	210
	16	5.0 x 16.0	11	3 x 5	1.00 x 36 x 4	11	33.5	25	18	201
	16	5.0 x 16.0	7	3 x 5	1.00 x 36 x 4	11	54	43	34	260
	18	4.0 x 18.0	11	3 x 5	0.75 x 17 x 3	8	15.2	11.5	8.7	138
	18	4.0 x 18.0	7	3 x 5	0.75 x 30 x 3	8	27.2	20.7	16	210
	18	5.0 x 18.0	11	3 x 5	1.00 x 36 x 4	11	27	19.5	15	218
	18	5.0 x 18.0	7	3 x 5	1.00 x 36 x 4	11	46	36	28	291
	20	5.0 x 20.0	11	3 x 5	1.00 x 36 x 4	11	21.3	14.5	11	235
	20	5.0 x 20.0	11	3 x 5	1.00 x 57 x 4	13.5	36	25.5	19.5	350
	20	5.0 x 20.0	11	3 x 5	1.00 x 36 x 4	11	27.2	18.8	14.2	235
	20	5.0 x 20.0	7	3 x 5	1.00 x 57 x 4	13.5	36	25.5	19.5	350
	22	4.0 x 22.0	11	3 x 5	0.75 x 17 x 3	8	6.9	4.3	2.3	182
	22	4.0 x 22.0	7	3 x 5	0.75 x 30 x 3	8	12.2	8.7	6	266
	22	5.0 x 22.0	11	3 x 5	1.00 x 36 x 4	11	18.5	13.6	9.8	252
	22	5.0 x 22.0	7	3 x 5	1.00 x 36 x 4	11	30.2	23.2	17.8	377
	22	6.0 x 22.0	7	3 x 5	1.00 x 36 x 4	11.5	49	37.5	28	398
	24	4.0 x 24.0	7	3 x 5	0.75 x 30 x 3	8	12.2	8.7	6	266
	24	5.0 x 24.0	11	3 x 5	1.00 x 36 x 4	11	15.2	10.8	7.4	268
	24	5.0 x 24.0	7	3 x 5	1.00 x 36 x 4	11	25.8	19.4	14.6	361
	24	6.0 x 24.0	7	3 x 5	1.00 x 36 x 4	11.5	42	31.5	23	428
	25	4.0 x 25.0	11	3 x 5	0.75 x 17 x 3	8	6.9	4.3	2.3	182
	25	4.0 x 25.0	7	3 x 5	0.75 x 30 x 3	8	12.2	8.7	6	266
	25	5.0 x 25.0	11	3 x 5	1.00 x 36 x 4	11	13.8	9.5	6.3	276
	25	5.0 x 25.0	7	3 x 5	1.00 x 36 x 4	11	23.8	17.7	13.1	373
	25	6.0 x 25.0	7	3 x 5	1.00 x 36 x 4	11.5	39	28.5	21	443
	26	4.0 x 26.0	7	3 x 5	0.75 x 30 x 3	8	6.9	4	1	312
	26	5.0 x 26.0	11	3 x 5	1.00 x 36 x 4	11	12.4	8.3	5.2	284
	26	5.0 x 26.0	7	3 x 5	1.00 x 36 x 4	11	21.9	16.1	11.8	384
	26	6.0 x 26.0	7	3 x 5	1.00 x 36 x 4	11.5	35.5	25.5	18.5	457
	28	4.0 x 28.0	7	3 x 5	0.75 x 30 x 3	8	6.9	4	1	312
	28	5.0 x 28.0	11	3 x 5	1.00 x 36 x 4	11	9.8	6.1	3.2	300
	28	5.0 x 28.0	7	3 x 5	1.00 x 36 x 4	11	18.4	13.2	9.2	408
	28	6.0 x 28.0	7	3 x 5	1.00 x 36 x 4	11.5	30	21.5

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consider and take action on Individual Project Order Number 2026-1 with Kimley-Horn and Associates, Inc. for Professional Engineering Services for the Main Street Phase II Capital Improvement Project in an amount not to exceed $420,100, and authorize the City Manager to execute the Agreement.

Staff Contact
Leanne Wilson, Assistant City Manager
lwilson@aubreytx.gov

Summary

Specific Scope of Basic Services:
The Consultant will prepare construction plans and bidding documents for South Main Street from Mulberry Street to Sherman Drive, as well as approximately 100 feet of each connecting side street between Mulberry Street and Sherman Drive (known as the project limits). Also included in the Scope is the project limits along the western side of South Main Street from Mulberry Street to Plum Street. Construction phase services are also included in the Scope.

The adopted Downtown Master Plan and the Main Street Phase I Improvements, located along Veterans Park, will guide the design, along with input from City Council, Property Owners, and City Staff. During the design concept phase, parking stall orientation will be considered, the need for a monument will be considered, drainage will be improved, and pedestrian access will be priority.

Tasks include:

1. Design
    a. The Downtown Master Plan includes a concept for a 'roundabout' at the intersection of Sherman and Main Street. The consultant will perform a conceptual evaluation of a ‘roundabout’ at this intersection (this scope does not include the preliminary or final design of the 'roundabout'). TxDOT has communicated that a 'roundabout' at this location is not feasible.
    b. Consultant will prepare a typical section(s) for South Main Street and the side streets if applicable (Commerce Street, Elm Street, Sherman Drive and Mulberry Street).
    c. Consultant will prepare paving sheets for South Main Street from Sherman Drive to Mulberry Street. Paving sheets will be prepared to tie in the side streets of Commerce Street, Elm Street, Sherman Drive, and Mulberry Street.
    d. Consultant will provide a design for new sidewalks and barrier-free ramps, and provide a parking layout within the project limits.
    e. Consultant will prepare drainage area map(s) for the project limits. The drainage area maps will be based upon topographic survey and supplemented with LIDAR. Design points and outfall locations will be noted on the drainage area map where appropriate.
    f. Consultant will prepare a storm drainage design to meet the current drainage criteria. The Rational Method will be used to determine inlet and pipe sizing. A standard HGL spreadsheet will be used to size the underground storm drain system. TxDOT calculations will be provided on the TxDOT drainage submittal.

g. Consultant will design approximately 800 feet of water lines (less than 12” in diameter) within the project limits. This includes the water line along South Main Street and making tie in connections to the side streets.
h. Consultant will design approximately 600 feet of sanitary sewer lines (less than 12” in diameter) within the project limits.
i. Consultant will provide a layout of the pavement markings and traffic signs for the project limits, street lighting plan for streetlights, landscaping and irrigation plans within the project limits.

2. Topographic Survey
3. Geotechnical Analysis
4. Structural Design
5. Coordination with TxDOT
6. Bidding Phase Services
7. Construction Phase Services
8. Traffic Signal Design and Traffic Study

It is anticipated that the topographic survey and geotechnical services will take approximately three (3) months to complete. The design will take approximately six (6) months for 60% plans. The final schedule for the project will be dependent upon franchise and TxDOT coordination. Our goal will be to have plans out to bid by the end of 2026 and construction underway in 2027.

Financial Summary
The Main Street Phase II Project was budgeted and funded with the 2025 Bond, offset by the Phase I reimbursement from TxDOT. Funds are available for the project.

Staff Recommended Action
Approve

Staff Recommended Motion
Motion to (approve, table, or deny) Individual Project Order Number 2026-1 with Kimely-Horn and Associates, Inc.

INDIVIDUAL PROJECT ORDER NUMBER 2026-1

Describing a specific agreement between Kimley-Horn and Associates, Inc. (the Consultant), and City of Aubrey, Texas (the Client) in accordance with the terms of the Master Agreement for Continuing Professional Services dated December 20, 2021, which is incorporated herein by reference.

Identification of Project:

Project Name: Downtown Reconstruction of Main Street from Plum Street to Sherman Drive
KH Project Manager: Misty Christian, P.E
Project Number: To be assigned

Specific scope of basic Services:
The Consultant will prepare construction plans and bidding documents for South Main Street from Mulberry Street to Sherman Drive, as well as approximately 100 feet of each connecting side street between Mulberry Street and Sherman Drive (known as the project limits). Also included in the Scope is the project limits along the western side of South Main Street from Mulberry Street to Plum Street. Construction phase services will be provided as identified in the below Scope.

Scope of Services

Task 1: Design
This task consist of designing roadway, sidewalk, storm drainage, water line and sanitary sewer line, and pavement markings within the project limits. The effort associated with this task is based upon a twelve (12) month design phase schedule.

A. This task consist of project management activities during the design phase which consists of the following subtasks:
    - Routine project management activities associated with coordination with the Client.
    - Prepare all contract and scoping documents for the execution of the professional services contract.
    - Coordinating with internal team members throughout the project.
    - Coordinate with subconsultants (geotechnical, survey).
    - Prepare and e-mail progress reports to the Client monthly.
    - Develop a project schedule and interim milestones.
    - Prepare monthly invoices to the Client.

B. Review the topographic survey prepared as part of Task 2. Kimley-Horn will convert the survey information into the format of the design plans (drafting, lineweights, linetypes and 3-D surfaces).

C. Review the geotechnical recommendations performed as part of Task 3 to determine the proposed pavement section.

D. Perform a conceptual evaluation of a ‘roundabout’ intersection at Sherman Drive and South Main Street. This Scope does not include the preliminary or final design of the roundabout.

E. Prepare a typical section(s) for South Main Street and the side streets if applicable (Commerce Street, Elm Street, Sherman Drive and Mulberry Street).

F. Prepare paving sheets for South Main Street from Sherman Drive to Mulberry Street. Paving sheets will be prepared to tie in the side streets of Commerce Street, Elm Street, Sherman Drive and Mulberry Street.

G. Prepare detailed intersection grading sheets for the project limits.

H. Provide a design for new sidewalks and barrier free ramps along the project limits.

I. Provide a parking layout within the project limits.

J. Prepare drainage area map(s) for the project limits. The drainage area maps will be based upon topographic survey and supplemented with LIDAR. Design points and outfall locations will be noted on the drainage area map where appropriate.

K. Prepare a storm drainage design to meet the Client's current drainage criteria. The Rational Method will be used to determine inlet and pipe sizing. A standard HGL spreadsheet will be used to size the underground storm drain system. TxDOT calculations will be provided on the TxDOT drainage submittal.

L. Design approximately 800 feet of water lines (less than 12" in diameter) within the project limits. This includes the water line along South Main Street and making tie in connections to the side streets. This does not include providing profile sheets of the water line.

M. Design approximately 600 feet of sanitary sewer lines (less than 12" in diameter) within the project limits. Plan and profile sheets will be provided.

N. Provide a layout of the pavement markings and traffic signs for the project limits.

O. Provide a street lighting plan for street lights.

P. Provide landscaping and irrigation plans within the project limits.

Q. The project will be registered with TDLR if the pedestrian improvements within the public right-of-way exceed $50,000. Fees associated with the project registration, plan review, and final inspection are included in this Scope. Kimley-Horn will coordinate with a Registered Accessibility Specialist (RAS) subconsultant to register, review, and inspect the project.

R. Prepare engineered construction plans (22"x34"/11"x17", 1:20 scale) for the project. The construction plans will consist of the following sheets:

1. Cover Sheet – 1 Sheet
2. General Notes, 1- Sheet if needed
3. Index Sheet – 1 Sheet, if needed
4. Dimensional Control/Borings – 1 Sheet
5. Paving Plan and Profile (1" =20' scale) – 5-6 Sheets
6. Grading Sheets
7. Typical Sections – 1 Sheet
8. Cross Sections (every 25') – 3-5 Sheet
9. Intersection Grading Sheets– 3-4 Sheets
10. Storm Design (Drainage Area Map, Calculations) – 3-5 Sheet
11. Storm Drain Sheets-2-3 Sheets
12. Water Line Sheets– 2-4 Sheet
13. Sanitary Sewer Sheets– 3-5 Sheet
14. Erosion Control Sheet – 1-2 Sheets
15. Landscaping Sheets– 2-4 Sheet

16. Irrigation Sheets– 3-4 Sheet
17. General Construction Details – 4-6 Sheets
18. TxDOT Details (where appropriate)

S. Prepare 30%, 60% and 90% construction plans and Opinion of Probable Construction Costs (OPCC). 30% plans will include a plan view layout of the proposed improvements (horizontal locations only). After the 30% plan is complete, Consultant will submit the 60% and 90% construction plans to the Client for review and comment. The final plans will be prepared after comments on the 90% plans are received.

T. Consultant will prepare contract documents using the Client's preferred bidding documents.

Meetings:

- Kickoff meeting
- 30% plan review meeting
- 60% plan review meeting
- 90% plan review meeting
- Final plan review meeting

Deliverables:

- Electronic (pdf) submittal of the 30% concept plan (22"x34")
- Electronic (pdf) submittal of the 60% construction plans (22"x34") and 60% OPCC
- Electronic (pdf) submittal of the 90% concept plan (22"x34") and 90% OPCC
- Electronic (pdf) submittal of the Final Plans (22"x34") and Final OPCC, Final Contract Documents (front end, technical specifications)
-

Task 2: Topographic Survey

The Consultant, through its subconsultant, will provide topographic survey approximately 800 linear feet along South Main Street from Mulberry Street and Sherman Drive. The survey will include the intersections the intersections within the project limits. Approximately 200 feet will be survey along the side streets connecting to South Main Street within the project limits. Other subtasks in the scope are as follows:

A. Establish horizontal control points.

B. Establish a vertical control benchmark circuit as needed throughout the project. The Client will provide established monument information for the area.

C. Set horizontal and vertical control points, which shall be based on NAD 83 and NAVD 88.

D. Perform a survey to identify and locate existing topographic along each street and intersection described above. The following items will be surveyed:

- Property corner monumentation
- Existing pavement, curbs, sidewalks, barrier free ramps, etc.
- Existing storm drain inlets, manholes, junction boxes (including culvert sizes and invert elevations)
- Outfalls and erosion control
- Trees (3" and larger)
- Utility manholes (including rims/inverts), vaults, water valves, water meters, sprinkler heads, telephone poles, power poles, utility markers, other public utilities, and franchise utilities
- Signs (excluding temporary signs)
- Buildings and permanent structures

- Retaining walls
- Landscaping
- Fence limits and material types (excluding temporary fences)
- Concrete abutments and riprap
- Culverts/ flume
- Downstream and upstream sanitary sewer manholes

E. Perform a survey with the project limits described above.

F. Perform cross-sections throughout project limits at 50-foot intervals and at grade breaks.

G. Perform cross-sections along each of the streets and intersections at 50-foot intervals.

H. Determine existing property lines and right of way.

I. Prepare a final topographic drawing in digital format (including contours and breaklines) showing the features located in the field and an ASCII coordinate file of the points located in the field.

J. This Task does not include any easement preparation or preparation of exhibits that may be needed as part of the acquisition or property owner coordination efforts.

Task 3: Geotechnical Analysis

The Consultant, through its subconsultant, will provide geotechnical testing services of subsurface conditions for this project. The geotechnical analysis will identify the types of soils present and subsurface soil conditions. Two (2) bores will be performed to determine the soil conditions. The geotechnical engineer will recommend a pavement section to be relied upon in the design. A geotechnical study will be provided to the Client for their records.

Task 4: Structural Design Allowance

It is understood structural designs may be needed for the adjustments of the existing structures along the parkway which may include post, supports, canopies, and awnings. This task provides an allowance for structural design(s) to occur. There is no specific scope for this task, however, before any work is authorized under this task, The Consultant, will provide a detailed scope and budget to the Client for approval prior to commencing the work. Any portion of the allowance not used in the task will not be billed to the Client.

Task 5: Coordination with TxDOT

This Task allows for approximately 40 hours of coordination time with the Texas Department of Transportation (TxDOT) regarding permitting for the proposed improvements. This may consist of the preparation of the permit, exhibits and supporting documentation.

Task 6 Bidding Phase Services

The Consultant will assist the Client in bidding the project. This task consists of assisting the Client with advertising the project in the local newspapers or electronically through an electronic bidding platform (fees to be paid by the Client), answering questions from the bidders during the bidding process, issuing addendums (when appropriate), attending the pre-bid meeting, attending the bid opening, preparing the bid tabulations, reviewing the qualifications/previous project experience provided by the apparent low bidder, and provide a summary of bid/bidder evaluation to the Client. This task assumes bidding the project one time. Additional bidding will be considered Additional Services. The bidding documents will be provided to the Client via an electronic format (pdf). No hard copies will be provided for distribution. The Client will be responsible for maintaining the list of bidders. The Client shall be responsible for preparing the executed contracts after the council approves the construction contract.

Task 7 Construction Phase Services

This task consists of Consultant performing Construction Phase Services which may include the following subtasks. The budget for this task is based upon 120 hours of effort for staff that will be anticipated to work on the project during construction.. Exceeding the budgeted amount will be considered Additional Services.

A. Pre-Construction Conference. Consultant will conduct a Pre-Construction Conference prior to commencement of Work at the Site.

B. Visits to Site and Observation of Construction. Only if requested by the City, Consultant will provide on-site construction observation services during the construction phase. Consultant will make visits at intervals as directed by City in order to observe the progress of the Work. Such visits and observations by Consultant are not intended to be exhaustive or to extend to every aspect of Contractor's work in progress. Observations are to be limited to spot checking, selective measurement, and similar methods of general observation of the Work based on Consultant's exercise of professional judgment. Based on information obtained during such visits and such observations, Consultant will evaluate whether Contractor's work is generally proceeding in accordance with the Contract Documents, and Consultant will keep City informed of the general progress of the Work.

   The purpose of Consultant's site visits will be to enable Consultant to better carry out the duties and responsibilities specifically assigned in this Agreement to Consultant, and to provide City a greater degree of confidence that the completed Work will conform in general to the Contract Documents. Consultant shall not, during such visits or as a result of such observations of Contractor's work in progress, supervise, direct, or have control over Contractor's work, nor shall Consultant have authority over or responsibility for the means, methods, techniques, equipment choice and usage, sequences, schedules, or procedures of construction selected by Contractor, for safety precautions and programs incident to Contractor's work, nor for any failure of Contractor to comply with laws and regulations applicable to Contractor's furnishing and performing the Work. Accordingly, Consultant neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform its work in accordance with the Contract Documents.

C. Recommendations with Respect to Defective Work. Consultant will recommend to City that Contractor's work be disapproved and rejected while it is in progress if, on the basis of such observations, Consultant believes that such work will not produce a completed Project that conforms generally to Contract Documents.

D. Clarifications and Interpretations. Consultant will respond to reasonable and appropriate Contractor requests for information and issue necessary clarifications and interpretations of the Contract Documents to City as appropriate to the orderly completion of Contractor's work. Any orders authorizing variations from the Contract Documents will be made by City.

E. Change Orders. Consultant may recommend Change Orders to City and will review and make recommendations related to Change Orders submitted or proposed by the Contractor.

F. Shop Drawings, Submittals and Samples. Consultant will review and approve or take other appropriate action in respect to Shop Drawings and Samples and other data which Contractor is required to submit (including data on materials, schedules, traffic control plans and SWPP), but only for conformance with the information given in the Contract Documents. Such review and approvals or other action will not extend to means, methods, techniques, equipment choice and usage, sequences, schedules, or procedures of construction or to related safety precautions and programs.

G. Substitutes and "or-equal." Consultant will evaluate and determine the acceptability of substitute or "or-equal" materials and equipment proposed by Contractor in accordance with the Contract Documents, but subject to the provisions of applicable standards of state or local government entities.

H. Inspections and Tests. Consultant may require special inspections or tests of Contractor's work as Consultant deems appropriate and may receive and review certificates of inspections within Consultant's area of responsibility or of tests and approvals required by laws and regulations or the Contract Documents. Consultant's review of such certificates will be solely for the purpose of determining that the results certified indicate compliance with the Contract Documents and will not constitute an independent evaluation that the content or procedures of such inspections, tests, or approvals comply with the requirements of the Contract Documents. Consultant shall be entitled to rely on the results of such tests and the facts being certified.

I. Disputes between City and Contractor. Consultant will, if requested by City, render written decision on all claims of City and Contractor relating to the acceptability of Contractor's work or the interpretation of the requirements of the Contract Documents pertaining to the progress of Contractor's work. In rendering such decisions, Consultant shall be fair and not show partiality to City or Contractor and shall not be liable in connection with any decision rendered in good faith in such capacity.

J. Only if requested by the City, Consultant will review applications for payment. Based on its observations and on review of applications for payment and accompanying supporting documentation, Consultant will recommend amounts that Contractor be paid. Such recommendations of payment will be in writing and will constitute Consultant's representation to City, based on such observations and review, that, to the best of Consultant's knowledge, information and belief, Contractor's work has progressed to the point indicated and that such work-in-progress is generally in accordance with the Contract Documents subject to any qualifications stated in the recommendation. In the case of unit price work, Consultant's recommendations of payment will include determinations of quantities and classifications of Contractor's work, based on observations and measurements of quantities provided with pay requests.

K. By recommending any payment, Consultant shall not thereby be deemed to have represented that its observations to check Contractor's work have been exhaustive, extended to every aspect of Contractor's work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Consultant in this Agreement. It will also not impose responsibility on Consultant to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, nor to determine that title to any portion of the work in progress, materials, or equipment has passed to City free and clear of any liens, claims, security interests, or encumbrances, nor that there may not be other matters at issue between City and Contractor that might affect the amount that should be paid.

L. Substantial Completion. Only if requested by the City, Consultant will, promptly after notice from Contractor that it considers the entire Work ready for its intended use, in company with City and Contractor, conduct a site visit to determine if the Work is substantially complete. Work will be considered substantially complete following satisfactory completion of all items with the exception of those identified on a final punch list. If after considering any objections of City, Consultant considers the Work substantially complete, Consultant will notify City and Contractor.

M. Final Notice of Acceptability of the Work. Only if requested by the City, Consultant will conduct a final site visit to determine if the completed Work of Contractor is generally in accordance with the Contract Documents and the final punch list so that Consultant may recommend, in writing, final payment to Contractor. Accompanying the recommendation for final payment, Consultant shall also provide a notice that the Work is generally in accordance with the Contract Documents to the best of Consultant's

knowledge, information, and belief based on the extent of its services and based upon information provided to Consultant upon which it is entitled to rely.

N. Limitation of Responsibilities. Consultant shall not be responsible for the acts or omissions of any Contractor, or of any of their subcontractors, suppliers, or of any other individual or entity performing or furnishing the Work. Consultant shall not have the authority or responsibility to stop the work of any Contractor.

O. Prepare record drawings provided by the Contractor and the City to Consultant. Record drawings shall show significant changes reported by the Contractor or made to the design by the Consultant. Record drawings are not guaranteed to be as-built, but will be based on information made available. Record drawings will be provided in pdf and AutoCAD format.

Task 8 Traffic Signal Design and Traffic Study

The Consultant will conduct weekday AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak period turning movement counts to study the Sherman Drive and South Main Street intersection. The Consultant will collect a 72-hour roadway volume counts along South Main Street and Sherman Drive.

The Consultant will conduct field observations within the study area during a peak period and verify the following elements:

- Number and required/permitted usage of each lane on each approach; and
- Current traffic control devices and operations

The Consultant will prepare a traffic impact analysis (TIA) for project to assist in determining the traffic projections for the roadway and intersection. The Consutlant will prepare a signal warrant for the signal and address up to two (2) rounds of comments from the City/TxDOT. The TIA and signal warrant will assist in the design of the traffic signal and the roadway, as well as permitting requirements with TxDOT. The following subtasks will be performed as part of this effort.

- Existing Traffic Volumes. Engineer will summarize the data collection efforts, and develop weekday AM and PM peak hour turning movement volumes at the study intersections.

- Trip Generation, Distribution, and Assignment. Trip generation estimates will be generated for any undeveloped parcels of land. The trip generation will be developed based on the *ITE Trip Generation Manual – 11th Edition*. Site traffic distribution and assignment will be established based upon existing and future area demographics; the existing and future area roadway system; and traffic counts collected in Task 1. Engineer will then provide a total traffic assignment that includes site and non-site generated traffic volumes for the weekday AM and PM peak periods.

- Future Traffic Volumes. Consultant will develop future traffic projections at the study intersections, accounted for two years of background growth.

- Intersection Capacity Analysis. Intersection capacity analysis for the weekday AM and PM peak periods will be performed for the study intersections listed above. The capacity analysis will be performed for Existing Conditions, Build-Out Conditions and Horizon Conditions. The results will be summarized to compare no-build vs. build conditions.

- Signal Warrant Analysis. Consultant will prepare a signal warrant analysis for the intersection. The signal warrant analysis will be performed for Warrant 1 (Eight-hour Warrant), Warrant 2 (Four-Hour Warrant), and Warrant 3 (Peak Hour Warrant). The two future year volume scenarios will be evaluated. The signal warrant analysis will be performed in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

- Document Study Results and Project Coordination. An electronic (PDF) draft report that documents the study methodology, traffic volumes, analysis results, and recommendations will be prepared and submitted to the Client for review and comment. Consultant will coordinate with the City to receive concurrence regarding recommended improvements.

Engineer will design a permanent traffic signal at the intersection of Sherman Drive and South Main Street. The design will follow TxDOT specifications.

Schedule:

It is anticipated that the topographic survey and geotechnical services will take approximately three (3) months to complete. The design will take approximately six (6) months for 60% plans. The final schedule for the project will be dependent upon franchise and TxDOT coordination. Additional details regarding the schedule will be discussed at the kickoff meeting.

Terms of compensation:

Kimley-Horn will perform the services in Tasks 1 – 4, 6 and 8 for the lump sum fee below. Individual task amounts are informational only. All permitting, application, and similar project fees will be paid directly by the Client, unless otherwise specified in the Scope.

Lump Sum	
Task 1 Design	$250,000
Task 2 Topographic Survey	$ 15,000
Task 3 Geotechnical Analysis	$ 12,100
Task 4 Structural Design Allowance	$ 10,000
Task 6 Bidding Phase Services	$ 8,000
Task 8 Traffic Signal Design and Traffic Study	$ 60,000
Total:	**$355,100**

Kimley-Horn will perform the Services in Task 5 and 7 on a labor fee plus expense basis as shown below. Labor fee will be billed on an hourly basis.

Task 5 Coordination with TxDOT	$ 15,000
Task 7 Construction Phase Services	$ 50,000
Total:	**$ 65,000**
Total Budgetary Fee:	**$ 420,100**

The Consultant will not exceed the total labor fee shown without authorization from the Client. Individual task amounts are provided for budgeting purposes only. The Consultant reserves the right to reallocate amounts among tasks as necessary. Direct reimbursable expenses such as express delivery services, fees, and other direct expenses will be billed at 1.15 times cost. A percentage of labor fee (6%) will be added to each invoice to cover certain other expenses such as telecommunications, in-house reproduction, postage, supplies, project related computer time, and local mileage (this is included in the budgeted amounts above). Administrative time related to the project will be billed hourly. All permitting, application, and similar project fees will be paid directly by the Client. Payment will be due within 30 days of your receipt of the invoice and should include the invoice number and the Consultant's project number.

ACCEPTED:

CITY OF AUBREY, TEXAS	**KIMLEY-HORN AND ASSOCIATES, INC.**
BY:_____	BY: Bradley J Hill
TITLE:_____	TITLE: Regional Contract Lead
DATE:_____	DATE: January 12, 2026

rev 1/2021

Kimley-Horn and Associates, Inc.

Standard Rate Schedule

(Hourly Rate)

Analyst	$175 - $260
Professional	$250 - $315
Senior Professional I	$275 - $380
Senior Professional II	$370 - $400
Senior Technical Support	$170 - $295
Support Staff	$115 - $160
Technical Support	$130 - $165

Effective through June 30, 2026

Subject to periodic adjustment thereafter

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consider and take action on the award/rejection of bids for the FM 428 Sewer Lift Station Improvements.

Staff Contact
Leanne Wilson, Assistant City Manager
lwilson@aubreytx.gov

Summary
The FM 428 Sewer Lift Station Improvements consist of furnishing and installing two submersible pumps and 4-inch discharged piping, and emergency bypass connection, a metering manhole and a standby generator with all electrical and SCADA improvements.

Bids were opened on January 6, 2026, for the FM 428 Sewer Lift Station Improvements project. Only one bid was received. Standard Site Utilities, L.L.C. of Garland, Texas submitted the sole bid, and thus the low bid of $810,900. However, the bidder was considered non-responsive as they did not include experience requirements by submitting a list of similar projects (lift station rehab) within the last five years with the bid documents.

Additionally, the bid came in over budget. Staff recommends rejecting the bid and rebidding the project to get more responses to see if we can get a price more in line with the budget.

Financial Summary
This Project is part of the 2024 CIP. Bond funds and developer contributions are funding the project.

Staff Recommended Action

Staff Recommended Motion
Motion to (award the bid, reject the bid, and direct staff to rebid).

TABULATION OF BIDS

Date: January 6, 2026 @ 2:00 p.m.

Project: City of Aubrey
F.M. 428 Lift Station Improvements

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
Dallas, Texas

BID OF
Standard Site Utilities, LLC
3121 Benton Street
Garland, TX 75042
Mathew Luetge
469-793-1887
mLuetge@standardsiteutilities.com

Item No.	Approximate Quantities	Unit	Description	Unit Bid Price	Extension
1	1	L.S.	For Mobilization, Bonds, Insurance & Shop Drawings (Max 5.0%)	$38,000.00	$ 38,000.00
2	1	L.S.	Remove & Dispose of Existing Pumps, Pump Bases, Discharge Elbows, Discharge Piping, and Float Switches	$50,000.00	$ 50,000.00
3	1	L.S.	For Furnishing All Labor, Materials, Tools & Equipment For F.M. 428 Lift Station Improvements, Complete In All Details, Including Site Preparation, Excavation, Site Grading, Metering Manhole, Flow Meter, Furnishing & Installing Submersible Pumps & Pump Accessories, Piping, Emergency Bypass Connection, Valves, Couplings, Fittings, Electrical Equipment, SCADA/RTU & HMI Modifications, Painting, Testing, & All Other Items Called For In The Bidding Documents To Be Furnished To Make The Lift Station Functional & Operational	$560,000.00	$ 560,000.00
4	1	L.S.	Furnish & Install Standby Generator Foundation	$7,000.00	$ 7,000.00
5	1	L.S.	Furnish & Install 80 kW Standby Generator, Including ATS, Load Bank, Testing & Making the Generator Functional & Operational	$58,500.00	$ 58,500.00
6	25	L.F.	Remove & Dispose of Existing 4-inch Force Main	$50.00	$ 1,250.00
7	25	L.F.	Furnish & Install 4-inch PVC DR25 Force Main Pipe with Embedment	$250.00	$ 6,250.00
8	19	L.F.	Remove & Dispose of Existing Chain Link Fence	$50.00	$ 950.00
9	51	L.F.	Furnish & Install Chain Link Fence	$250.00	$ 12,750.00
10	4	Tons	Furnish & Place 6-inch Mechanically Compacted Flexible Base on Geotextile Fabric	$1,550.00	$ 6,200.00
11	1	L.S.	Furnich Bypass Pumping Plan	$5,000.00	$ 5,000.00
12	1	L.S.	Implement, Maintain & Remove Bypass Pumping Plan, Complete In Place, Including Piping, Valves, Connections, & All Other Items Required to Make the Bypass System Functional & Operational	$45,000.00	$ 45,000.00
13	1	L.S.	Furnish Trench Saftey Plan	$5,000.00	$ 5,000.00
14	1	L.S.	Implement & Maintain Trench Safety Plan	$15,000.00	$ 15,000.00
			TOTAL AMOUNT BID		**$ 810,900.00**

Bidder did not fill out "Price in Words" column on Bid Schedule.

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS

11910 Greenville Ave., Suite 600 Dallas, Texas 75243 Phone (214) 361-7900 www.bhcllp.com

CRAIG M. KERKHOFF, P.E., C.F.M.
GARY C. HENDRICKS, P.E., R.P.L.S.
JOE R. CARTER, P.E.
ANDREW MATA, JR., P.E.

DEREK B. CHANEY, P.E., R.P.L.S.
JUSTIN R. IVY, P.E.
COOPER E. REINBOLD, P.E.
CHASE CRAWFORD, R.P.L.S.

January 13, 2026

Ms. Leanne Wilson
Assistant City Manager
City of Aubrey, TX
107 S. Main Street
Aubrey, TX 76227

Re: F.M. 428 Lift Station Improvements
Bid Award Recommendation

Dear Ms. Wilson:

We have checked the bids received at 2:00 p.m., Tuesday, January 6, 2026, for the City of Aubrey F.M. 428 Lift Station Improvements project and are enclosing one (1) copy of the Bid Summary and itemized Bid Tabulation for the City's reference and files.

Standard Site Utilities, LLC, of Garland, Texas submitted the sole bid, and thus the apparent low bid, in the amount of $810,900.00. However, the bidder was considered non-responsive as they did not provide the relevant experience requirements of submitting a list of similar projects (i.e. lift station rehabilitation projects) completed within the last five (5) years with their bidding documents. We recommend the City reject all bids received in accordance with Section 7.1 of the City of Aubrey's Procurement Policy and Procedures.

We are available to discuss our recommendation further at your convenience.

Sincerely,

Cooper Reinbold, P.E.

Enclosures: Bid Tabulation
Bid Summary

STANDARD
SITE UTILITIES

RESUME

Premier Underground Utility Services | Standardsiteutilities.com

TABLE OF CONTENTS

INTRODUCTION

SCOPES OF WORK PERFORMED

GOVERNMENT AGENCIES REFERENCES

SELECT PROJECT PROFILES

PROJECT REFERENCES

VENDOR REFERENCES

EQUIPMENT LIST

CURRENT PROJECTS 2025

COMPLETED PROJECTS 2025

COMPLETED PROJECTS 2024

COMPLETED PROJECTS 2023

COMPLETED PROJECTS 2022

CERFT OF FACT | TX OFFICE OF THE SECRETARY OF STATE

SURETY REFERENCE LETTER

BANK REFERENCE: CHASE

OSHA FORM 300A

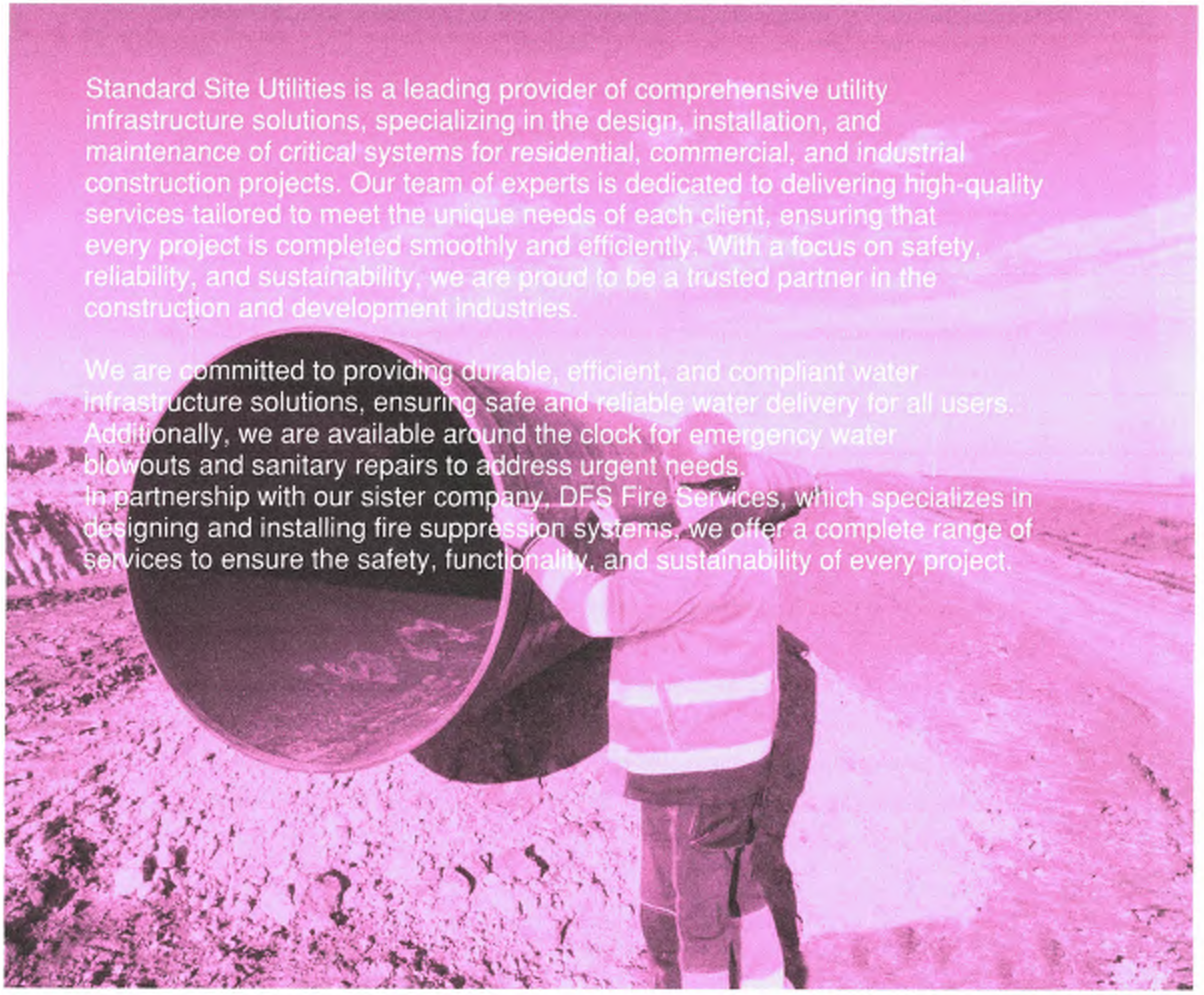
WORKERS COMPENSATION EXPERIENCE RATING

CERTIFIED FINANCIAL STATEMENTS

COI

W9

Premier Underground Utility Services in Texas



Standard Site Utilities is a leading provider of comprehensive utility infrastructure solutions, specializing in the design, installation, and maintenance of critical systems for residential, commercial, and industrial construction projects. Our team of experts is dedicated to delivering high-quality services tailored to meet the unique needs of each client, ensuring that every project is completed smoothly and efficiently. With a focus on safety, reliability, and sustainability, we are proud to be a trusted partner in the construction and development industries.

We are committed to providing durable, efficient, and compliant water infrastructure solutions, ensuring safe and reliable water delivery for all users. Additionally, we are available around the clock for emergency water blowouts and sanitary repairs to address urgent needs.
In partnership with our sister company, DFS Fire Services, which specializes in designing and installing fire suppression systems, we offer a complete range of services to ensure the safety, functionality, and sustainability of every project.

STANDARD
SITE UTILITIES

Standard Site Utilities Scopes of Work

At Standard Site Utilities, we specialize in the installation and maintenance of utility infrastructure systems for commercial, industrial, and residential projects.
Our services include, but are not limited to:

Water Infrastructure Systems Installation and Maintenance

Large Water Mains: Installation of large-diameter water mains to ensure optimal water flow and distribution for large-scale projects.

Ductile Iron & PVC Pipes: We install durable ductile iron and PVC pipes, ideal for both commercial and residential applications, ensuring efficient water conveyance.

Bar-Wrapped Water Mains: We provide bar-wrapped water mains, offering enhanced strength and protection against corrosion for long-lasting performance.

Corrosion Protection & Cathodic Protection: We implement corrosion and cathodic protection systems to prevent pipe deterioration, extending the lifespan of water infrastructure.

SCADA Monitored Pressure Release Valves: We install SCADA-monitored pressure release valves that provide real-time monitoring and control, ensuring system pressure remains safe and stable.

Fire Department Connections (FDCs): We install FDCs, providing fire departments with easy access to the water supply for emergency response and fire suppression.

Underground Fire Service: We install underground fire lines that supply water to fire suppression systems, ensuring adequate pressure and water availability during emergencies.

In-House RME-G: Our team includes certified Registered Mechanical Engineers - General (RME-G), ensuring that all systems are designed, installed, and maintained to the highest standards of safety, performance, and compliance.

Sanitary Sewer Systems Installation and Maintenance

Lift Stations and Wet Wells: We install lift stations that pump wastewater from lower to higher elevations, ensuring consistent flow even in areas with challenging terrain.

Force Mains: Our team installs force mains, which are pressurized pipelines used to transport wastewater over long distances, ensuring reliable and efficient wastewater conveyance.

Gravity Pipe: We install gravity-fed sewer pipes, allowing wastewater to flow naturally downhill, minimizing the need for additional power or pumping.

Precast and Cast-in-Place Manholes: We construct both precast and cast-in-place manholes that provide essential access points for maintenance and inspection, ensuring the longevity and functionality of the sewer system.

Grease Traps: We install grease traps to capture fats, oils, and grease (FOG), preventing blockages and contamination in the sewer system.

Storm Drainage Systems Installation and Maintenance

Underground Detention Systems: We install systems to store excess stormwater during heavy rains, gradually releasing it to prevent flooding and reduce strain on public drainage.

Filtration Systems: We integrate filtration systems to remove contaminants, debris, and pollutants from stormwater, ensuring environmental compliance and water quality preservation.

Wingwalls: Our wingwalls direct water flow, provide structural support, and protect against erosion, ensuring smooth water passage through culverts or detention systems.

Concrete Box Culverts: We install durable concrete box culverts to channel large volumes of stormwater under roads and infrastructure, preventing flooding and maintaining traffic flow.

Corrugated Metal Pipe (CMP): We install cost-effective, corrosion-resistant CMP for stormwater conveyance, ideal for various drainage applications.

Advanced Drainage Systems (ADS): We use ADS systems for efficient water flow, resistant to root intrusion and other common drainage issues, offering flexibility in different environments.

Reinforced Concrete Pipe (RCP) and Reinforced Concrete Cylinder Pipe (RCCP): We install RCP and RCCP for stormwater conveyance, ensuring high structural integrity and load-bearing capacity.

STANDARD
SITE UTILITIES

Standard Site Utilities Team

Jeremy Davis: Owner (214) 717-0942

Jeremy Davis is the owner of Standard Site Utilities and the CEO of DFS Fire Services, a role he has held since January 2010. With over 25 years of experience in the industry, Jeremy has developed a deep expertise in both commercial fire sprinkler and alarm systems, as well as underground wet and dry utilities. His extensive background spans across a wide range of projects, where he has demonstrated exceptional leadership, a strong commitment to quality, and a focus on safety.

Jeremy's experience encompasses the design, installation, and maintenance of critical infrastructure systems, making him a trusted expert in both fire suppression and utility systems. Under his leadership, both Standard Site Utilities and DFS Fire Services have grown to become respected names in the industry, delivering reliable, high-quality solutions for commercial, industrial, and residential clients.

His hands-on approach and dedication to his clients ensure that each project is completed efficiently and to the highest standards. Jeremy continues to lead his companies with a vision of excellence, focusing on innovation, customer satisfaction, and long-term sustainability.

Matt Luetge: Lead Estimator (469) 793-1887

Matt Luetge is the Lead Estimator at Standard Site Utilities, bringing a wealth of experience and expertise to the team. Matt began his career in 2008 at MSI, where he started in the field as an operator. Over the years, he worked his way up through various roles, including project coordinator, concrete paving estimator, TxDOT asphalt estimator, business process manager, and underground utility estimator. His diverse background in heavy highway, commercial, and residential projects has equipped him with a comprehensive understanding of all aspects of construction estimating.
Matt's experience spans projects of varying sizes, with a particular focus on estimating high-value projects, including those up to $100 million. As a turnkey estimator, he has gained valuable insights into the complexities of large-scale projects, consistently delivering accurate, efficient, and reliable cost estimates.

In making the transition from heavy highway work, Matt chose to join Standard Site Utilities because he believes in the vision and leadership of Jeremy Davis. He is excited to contribute to the growth and success of this up-and-coming construction company, leveraging his skills and experience to help drive the company's continued success in the utility and infrastructure sectors. Matt's dedication to the team and his commitment to excellence are integral to the ongoing success of Standard Site Utilities.

Mike Woelfle: Project Manager (806) 549-5985

Mike Woelfle brings 15 years of experience to Standard Site Utilities, having started his career alongside Jeremy Davis during the early stages of DFS Fire Services. Over the years, Mike has become the heart of the Standard Site Utilities team, known for his exceptional customer service and dedication to his clients. Available at any time, Mike has earned a reputation for being a reliable and responsive point of contact, always going above and beyond to meet client needs.

With extensive experience working as a liaison between municipalities and developers, Mike is well-versed in navigating the complexities of local regulations and permitting processes. His expertise in dealing with entities such as Dallas Water Utilities (DWU) and Dallas ISD has proven invaluable in ensuring projects run smoothly and efficiently. Mike plays a key role in helping developers and owners secure the necessary permits, making the process as seamless as possible.

Mike's commitment to customer satisfaction has resulted in many repeat and loyal clients who trust his work and professionalism. Whether it's responding to emergency midnight water repairs, installing risers, or pushing through final punch lists, Mike is always ready to take action. His dedication to getting the job done, no matter the challenge, has made him an indispensable part of the team and a cornerstone of Standard Site Utilities' success.

Daniel Perry: General Superintendent (469) 927-0385

Dan Perry brings over 25 years of experience in underground utilities, having worked with some of the largest contractors in the industry, including BurnsCo and Rumsy. Throughout his career, Dan has encountered virtually every emergency field situation and has handled all variables with remarkable calm and confidence. His wealth of field knowledge has been invaluable in saving developers money by making in-field design decisions that optimize efficiency and minimize costs.

Known for his strong relationships with developers, Dan works closely with them to implement field changes while ethically limiting change orders, ensuring both cost-effectiveness and transparency. He is highly regarded in the industry as a man of his word, consistently delivering on commitments and taking full accountability for the work of his team.

As the "General" of Standard Site Utilities, Dan commands the respect of his crew, leading them with a clear vision and a strong sense of responsibility. His leadership, professionalism, and vast experience have made him an essential part of the company, driving successful outcomes on every project. Dan's ability to navigate complex field situations while maintaining a high standard of ethics and quality has earned him the trust and respect of both clients and colleagues.

GOVERNMENT AGENCIES REFERENCE PAGE

1. Project Owner — Ray Wright
   COMPANY NAME — CONTACT PERSON
   285 Uptown Blvd — Cedar Hill — TX — 75104
   STREET ADDRESS — CITY — STATE — ZIP
   214-802-4830 — EMAIL ADDRESS
   TELEPHONE NUMBER
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

2. Public Water/Wastewater Utilities – City of Dallas — Jorge Sanchez
   COMPANY NAME — CONTACT PERSON
   2710 Municipal St #6818 caulfield — Dallas — TX — 75215
   STREET ADDRESS — CITY — STATE — ZIP
   915-730-5034 — jorge.sanchez@dallas.gov
   COTNACT PERSON — TELEPHONE NUMBER
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

3. City of Colleyville — Adilda Carzorta
   COMPANY NAME — CONTACT PERSON
   1601 Hall-Johnson Road — Colleyville — TX — 76034
   STREET ADDRESS — CITY — STATE — ZIP
   817-762-0582 — acarzorta@colleyville.com
   TELEPHONE NUMBER — EMAIL ADDRESS
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

4. Public Water/Wastewater Utilities – City of Dallas — Daniel Bosquez
   COMPANY NAME — CONTACT PERSON
   2710 Municipal St #6818 caulfield — Dallas — TX — 75215
   STREET ADDRESS — CITY — STATE — ZIP
   469-558-0014 — daniel.bosquez@dallas.gov
   TELEPHONE NUMBER — EMAIL ADDRESS
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

5. City of Farmersville — Matt Jones
   COMPANY NAME — CONTACT PERSON
   134 N Washington St — Farmersville — TX — 75442
   STREET ADDRESS — CITY — STATE — ZIP
   945-237-3589 — m.jones@farmersvilletx.com
   TELEPHONE NUMBER — EMAIL ADDRESS
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

Government Agencies:

City of Dallas
City of Colleyville
City of Farmersville
City of Cedar Hill
City of Mesquite
City of Wylie
City of Prosper

GOVERNMENT AGENCIES REFERENCE PAGE

1. Public Works – City of McKinney — Chris Glover
   COMPANY NAME — CONTACT PERSON
   401 E. Virginia St — McKinney — TX — 75069
   STREET ADDRESS — CITY — STATE — ZIP
   214-592-7099 — cglover@mckinneytexas.org
   TELEPHONE NUMBER — EMAIL ADDRESS
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

2. City of Prosper — Jakob Kendzie
   COMPANY NAME — CONTACT PERSON
   601 W 5th St — Prosper — TX — 75078
   STREET ADDRESS — CITY — STATE — ZIP
   469-712-0051 — JKendzie@prospertx.gov
   COTNACT PERSON — TELEPHONE NUMBER
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

3. City of Mesquite — Daniel Barret
   COMPANY NAME — CONTACT PERSON
   1515 N Galloway Ave — Mesquite — TX — 75149
   STREET ADDRESS — CITY — STATE — ZIP
   214-878-4567 — DLBarret@cityofmesquite.com
   TELEPHONE NUMBER — EMAIL ADDRESS
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

4. Public Water/Wastewater Utilities – City of Dallas — Fred Kelly
   COMPANY NAME — CONTACT PERSON
   2710 Municipal St #6818 caulfield — Dallas — TX — 75215
   STREET ADDRESS — CITY — STATE — ZIP
   469-268-2709 — frederick.kelly@dallas.gov
   TELEPHONE NUMBER — EMAIL ADDRESS
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

5. Public Works – City of Cedar Hill — Steve Earl Schell
   COMPANY NAME — CONTACT PERSON
   285 Uptown Blvd — Cedar Hill — TX — 75104
   STREET ADDRESS — CITY — STATE — ZIP
   972-291-5100 — steve.schell@cedarhilltx.com
   TELEPHONE NUMBER — EMAIL ADDRESS
   Water, Wastewater, Drainage Products
   PRODUCTS CURRENTLY BEING USED

Government Agencies:

City of Dallas
City of Colleyville
City of Farmersville
City of Cedar Hill
City of Mesquite
City of Wylie
City of Prosper

STANDARD
SITE UTILITIES

Standard Site Utilities Project References

Project: Beauchamp
Location: W. Princeton Blvd & N. Beauchamp Blvd., Princeton TX
Work Performed: Underground Utilities
Start/Completed: May 2023/Sept 2023
Contract Amount: $527,225
General Contractor: Wyatt Management
Contact: Jason Tucker / 817-247-7688

Project: White Water Car Wash
Location: 2420 Sam Rayburn Hwy, Melissa TX
Work Performed: Water, Sanitary Sewer and Storm Drain
Start/Completed: June 2022/March2023
Contract Amount: $985,321
General contractor: Texana Builders
Contact: Micheal Stewart/512-912-7888

Project: The Marcus
Location: 2016 Ervay Street
Work Performed: Water, Sanitary Sewer and Storm Drain
Start/Completed: Oct 2024/In Progress
Contract Amount: $904,936.36
General Contractor: Mid Ervay, LLC
Contact: Hunt Neurohr/214-534-1817

Project: The Parker
Location: 812 Comal Street, Dallas TX
Work Performed: Water, Sanitary Sewer and Storm Drain
Start/Completed: Sept 2024/In Progress
Contract Amount: $990,834.17
General Contractor: 13 Jefferson LLC
Contact: Hunt Neurohr/214-534-1817

Project: The Elms Apartments
Location: 1710 Morrell Avenue, Dallas TX
Work Performed: Underground Utilities
Start/Completed: Oct 2023/11/2024
Contract Amount: $1,177,630
General Contractor: Smart Living Residential
Contact: Swede Hanson/214-578-8982

Project: Chapel Creek Cottages
Location: 1710 Morrell Ave., Fort Worth TX
Work Performed: Water Sanitary Sewer and Storm Drain
Start/Completed:
Contract Amount: $1,922,231
General Contractor: Clay Development
Contact: Heath Beasley/214-578-8982

Many Satisfied Clients

STANDARD
SITE UTILITIES

Projects: The Marcus and The Parker

Total Project Amount: $1,895,770.53

GC: Hunt Neurohr (214) 534-1817

City of Dallas Inspector:

Jorge Sanchez (915) 730-5034

Fred Kelly (469) 268-2709

Attached are the work areas for the City of Dallas

or

Date: 05/20/24

This TCP is to scale:

Sign Spacing - 120'
Taper Length - N/A
Buffer Area - N/A

LITE BARRICADE
WWW.DLBINC.NET

TCP DESIGNER
LINDSAY WHITTINGTON
469-323-1939

HALF ROAD CLOSURE W/ DETOUR ROUTE

1303 E JEFFERSON BLVD
DALLAS

PAGE: 1 of 1

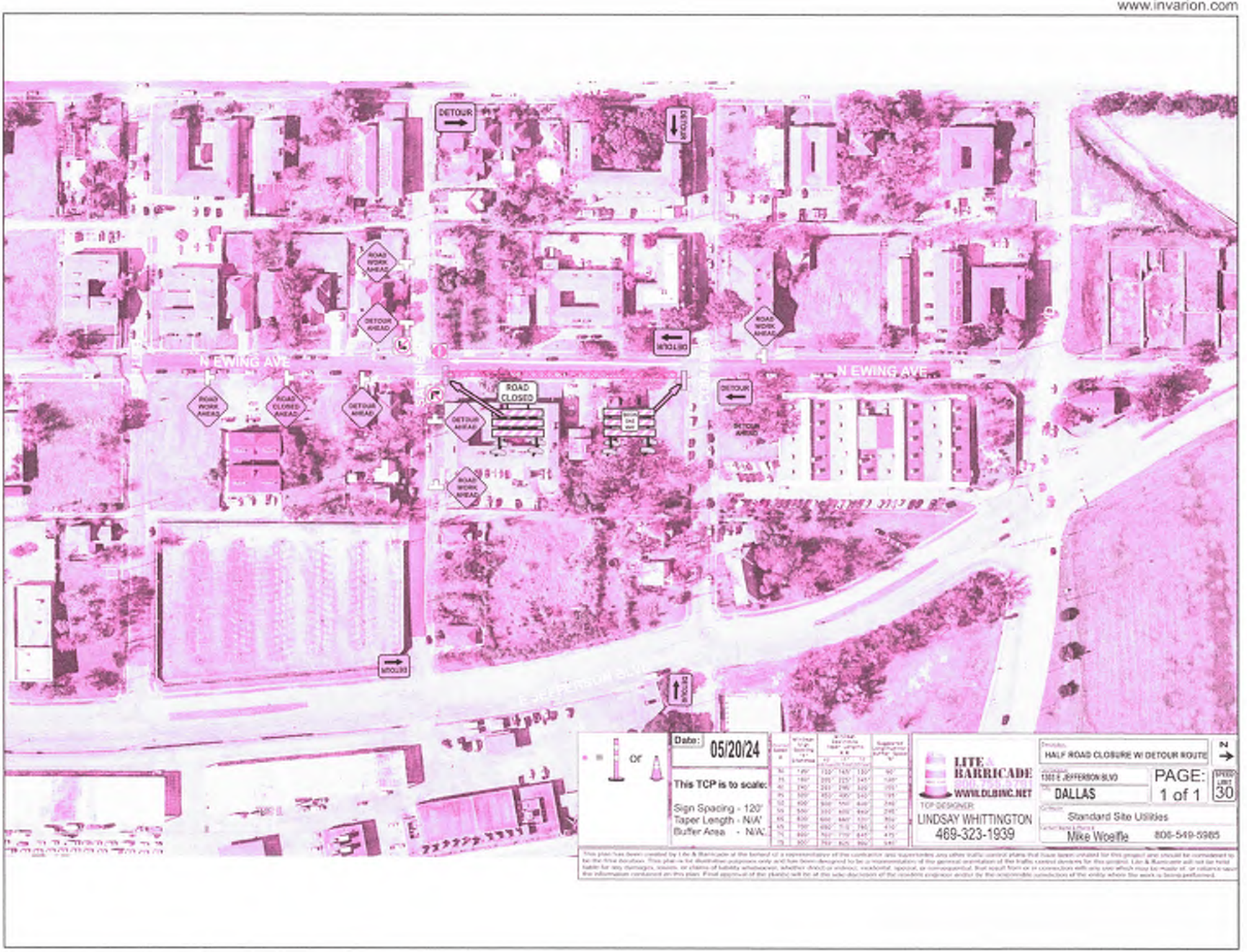
SPEED LIMIT 30

Standard Site Utilities

Mike Woelfle 806-549-5985

N

This plan has been created by Lite A Barricade at the behest of a representative of the contractor and supersedes any other traffic control plans that have been created for this project and should be considered to be the most accurate. This plan is for illustrative purposes only and has been designed to be a comprehension of the general orientation of the traffic control devices for this project. Lite A Barricade will not be held liable for any damages, losses, or claims of liability whatsoever, whether direct or indirect, incidental, special, or consequential, that result from or in connection with any use which may be made of or reliance upon the information contained on this plan. Final approval of the plan(s) will be at the sole discretion of the resident engineer and/or by the responsible jurisdiction of the entity where the work is being performed.


DETOUR
ROAD WORK AHEAD
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ROAD CLOSED
N EWING AVE
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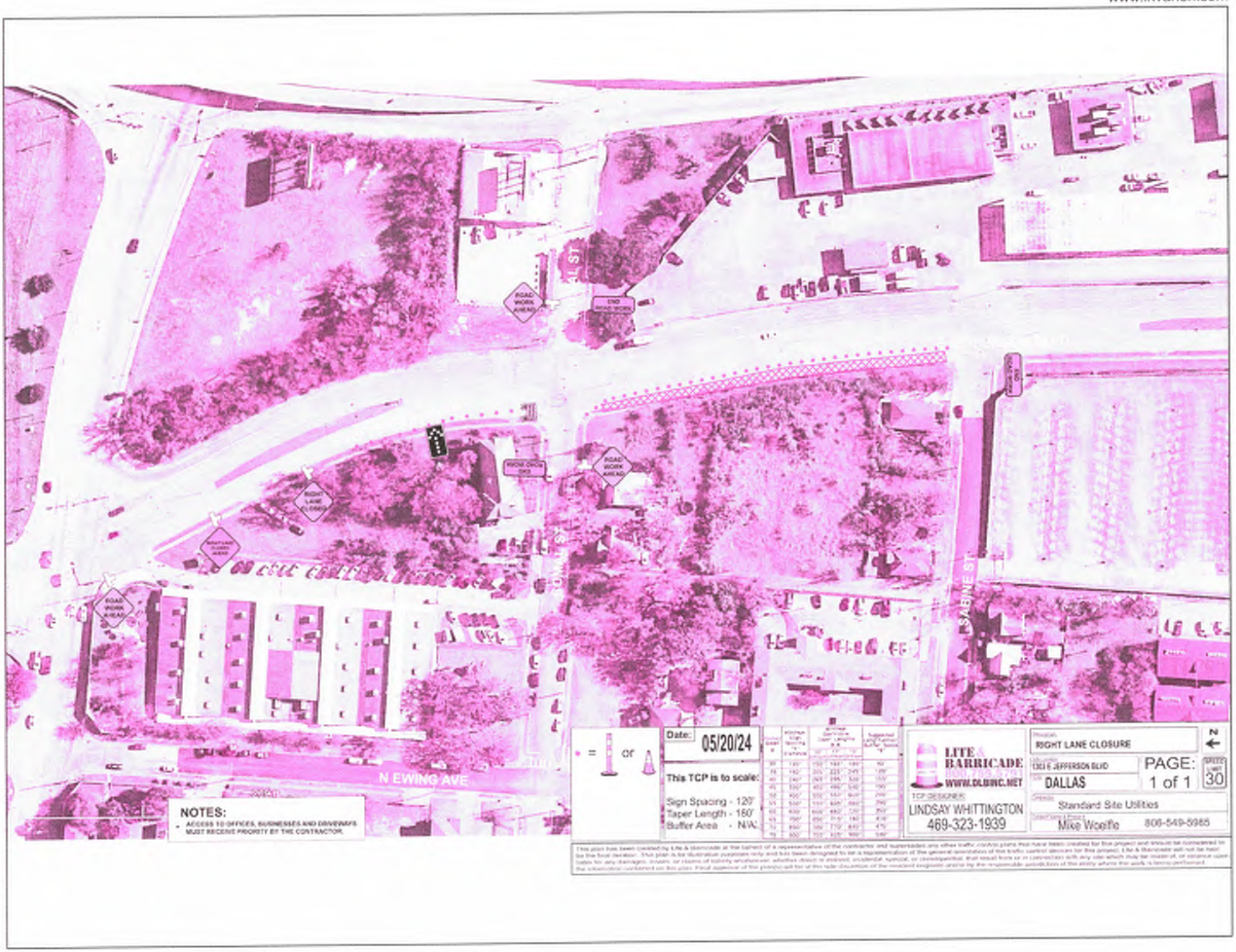
DETOUR AHEAD
ROAD WORK AHEAD
or
Date: 05/20/24
This TCP is to scale:
Sign Spacing - 120'
Taper Length - N/A'
Buffer Area - N/A'
LITE A BARRICADE
WWW.LABINC.NET
TCP DESIGNER:
LINDSAY WHITTINGTON
469-323-1939
HALF ROAD CLOSURE W/ DETOUR ROUTE
1301 E JEFFERSON BLVD
DALLAS
PAGE: 1 of 1
SPEED LIMIT 30
Standard Site Utilities
Mike Woelfle
806-549-5985


31 ST
SABINE ST
N EWING AVE
NOTES:
- ACCESS TO OFFICES, BUSINESSES AND DRIVEWAYS MUST RECEIVE PRIORITY BY THE CONTRACTOR
= or
Date: 05/20/24
This TCP is to scale:
Sign Spacing - 120'
Taper Length - 160'
Buffer Area - N/A
LITE & BARRICADE
WWW.DLBINC.MET
TCP DESIGNER:
LINDSAY WHITTINGTON
469-323-1939
Project: RIGHT LANE CLOSURE
Location: 1301 E JEFFERSON BLVD
City: DALLAS
PAGE: 1 of 1
SPEED LIMIT 30
Owner: Standard Site Utilities
Contact Name & Phone #: Mike Woelfle 806-549-5985
N

STANDARD
SITE UTILITIES

Projects: Hi Holland Elementary School

Total Project Amount: $1,001,349.16

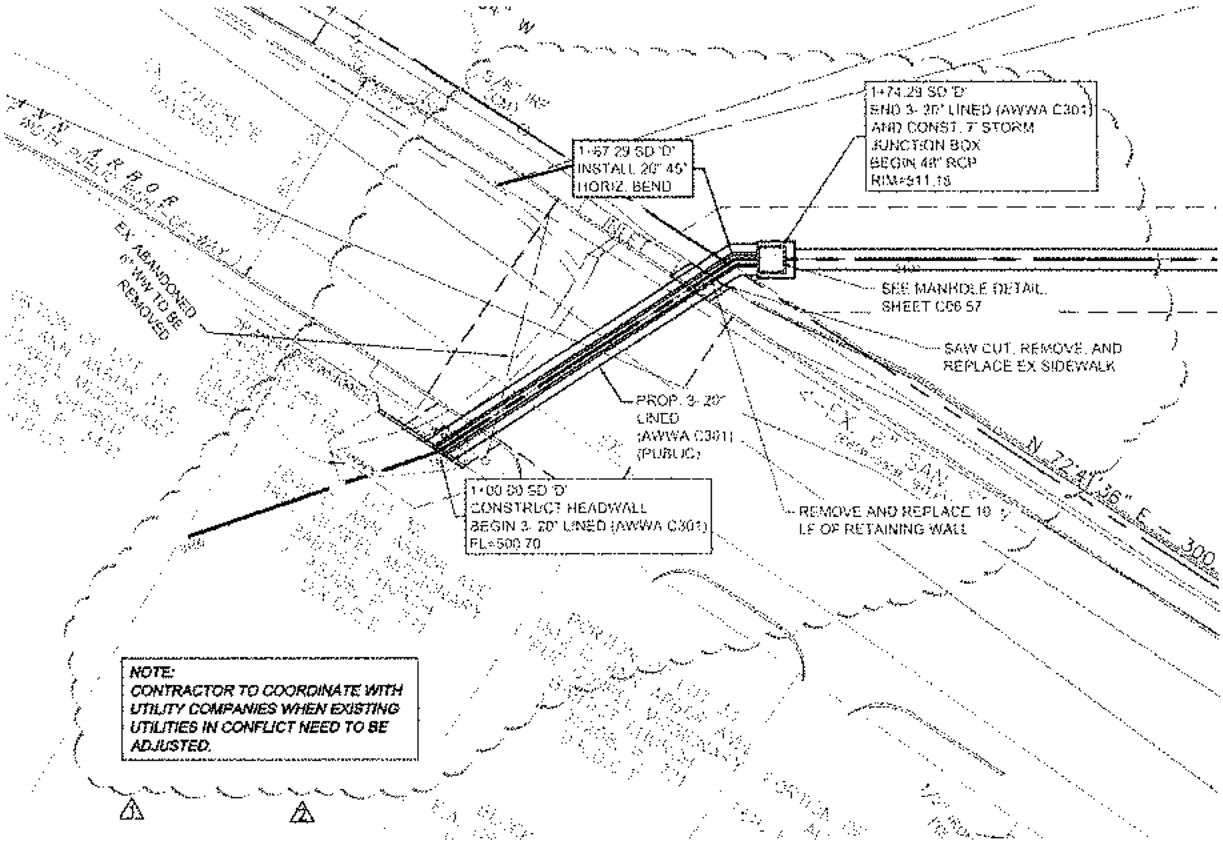
GC: Philips May

City of Dallas Inspector:

Jorge Sanchez (915) 730-5034

Fred Kelly (469) 268-2709

Currently Installing 3-20" RCCP across existing Ann Arbor Road


1+74.29 SD 'D'
END 3- 20" LINED (AWWA C301)
AND CONST. 7' STORM
JUNCTION BOX
BEGIN 48" RCP
RIM=511.16
1+67.29 SD 'D'
INSTALL 20" 45°
HORIZ. BEND
EX ABANDONED
6" WW TO BE
REMOVED
SEE MANHOLE DETAIL,
SHEET C06 57
SAW CUT, REMOVE, AND
REPLACE EX SIDEWALK
PROP. 3- 20"
LINED
(AWWA C301)
(PUBLIC)
1+00.00 SD 'D'
CONSTRUCT HEADWALL
BEGIN 3- 20" LINED (AWWA C301)
FL=500.70
REMOVE AND REPLACE 10 ±
LF OF RETAINING WALL
N 72°41'36" E
NOTE:
CONTRACTOR TO COORDINATE WITH
UTILITY COMPANIES WHEN EXISTING
UTILITIES IN CONFLICT NEED TO BE
ADJUSTED.

STANDARD
SITE UTILITIES

Projects: Foreman's Landing

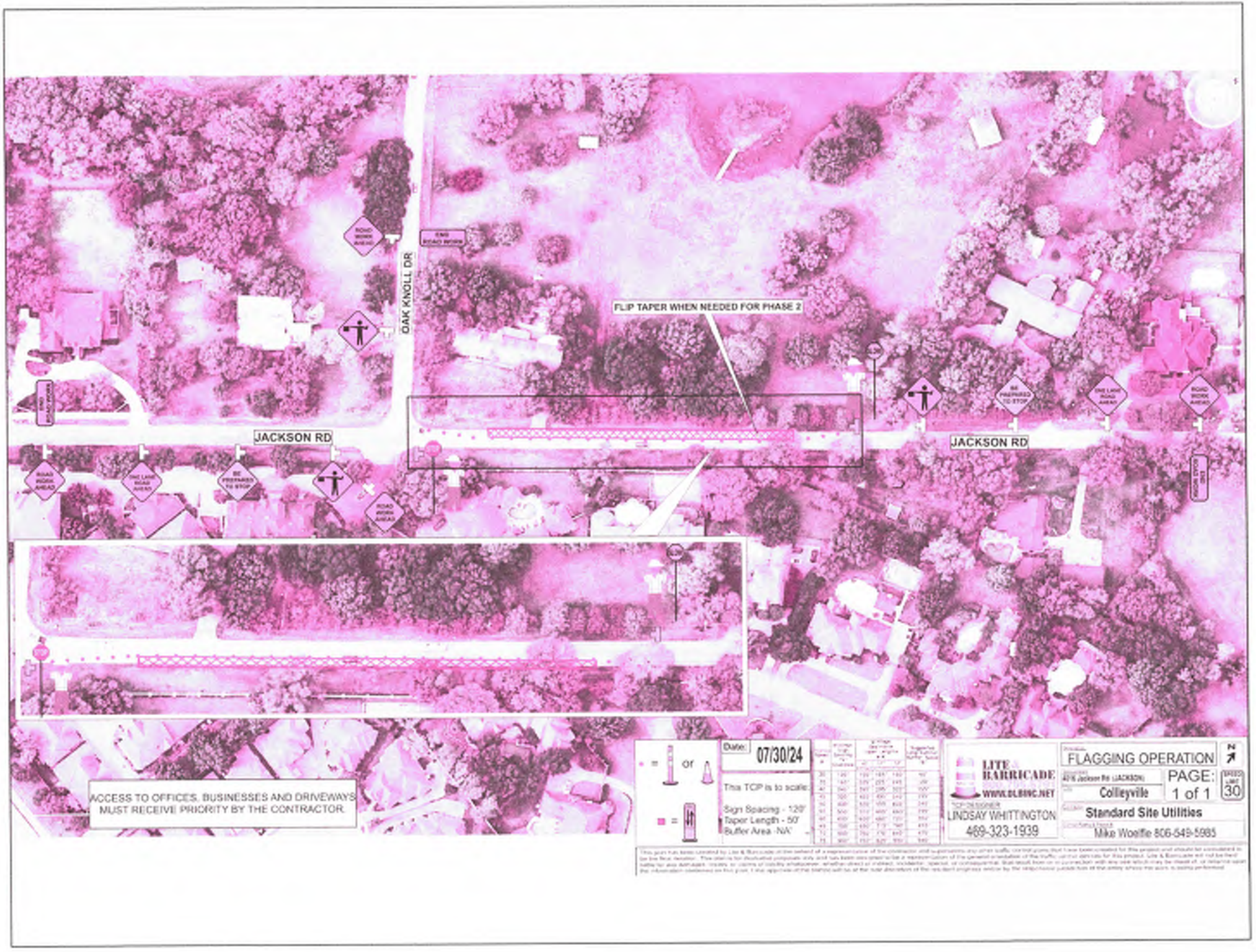
Total Project Amount: $273,611

GC: Wyatt Management – Jason Tucker (817) 247-7688

City of Colleyville Inspector: Adilda Carzorta (817) 762-0582

Attached are the work areas for the City of Colleyville

OAK KNOLL DR
JACKSON RD
OAK KNOLL DR
JACKSON RD
FLIP TAPER FOR PHASE 2 WHEN NEEDED
PHASE 2
JACKSON RD
ROAD WORK AHEAD
END ROAD WORK
ROAD WORK AHEAD
ROAD WORK AHEAD
ROAD WORK AHEAD
BE PREPARED TO STOP
ONE LANE ROAD AHEAD
ROAD WORK AHEAD
SLOW
WORK OVER
ACCESS TO OFFICES, BUSINESSES AND DRIVEWAYS MUST RECEIVE PRIORITY BY THE CONTRACTOR.
or
Date: 07/30/24
This TCP is to scale
Sign Spacing - 120'
Taper Length - 50'
Buffer Area -NA'
LITE BARRICADE
WWW.DLBINC.NET
TCP DESIGNER
LINDSAY WHITTINGTON
469-323-1939
FLAGGING OPERATION
4216 Jackson Rd (OAK KNOLL DR)
Colleyville
PAGE: 1 of 1
SHEET UNIT 30
Standard Site Utilities
Mike Woelfle 606-549-5985


OAK KNOLL DR
JACKSON RD
JACKSON RD
FLIP TAPER WHEN NEEDED FOR PHASE 2
ACCESS TO OFFICES, BUSINESSES AND DRIVEWAYS MUST RECEIVE PRIORITY BY THE CONTRACTOR
or
Date:
07/30/24
This TCP is to scale:
Sign Spacing - 120'
Taper Length - 50'
Buffer Area -NA'
LITE & BARRICADE
WWW.DLBINC.NET
LINDSAY WHITTINGTON
469-323-1939
FLAGGING OPERATION
Colleyville
PAGE:
1 of 1
SPEED LIMIT
30
Standard Site Utilities
Mike Woelfle 806-549-5985

STANDARD
SITE UTILITIES

Projects: Champions School of Real Estate

Total Project Amount: $609,376.77

GC: Smith Commercial Contractors

City of Plano Inspector:

Diego DeLeon (214) 621-9450

Diego.deleon@dallas.gov

See Water Line Scope of Work:

16"x8" Cut-in Tee Connection
8" C900 DR 18
6" C900 DR 14
4" C900 DR 18
Ductile Iron Fittings
16" Gate Valve
8" Gate Valve
6" Gate Valve
4" Gate Valve
Fire Hydrant Assemblies
3" Domestic Meter Vault
6" Single Detector Check Vault
8"x2" Irrigation Service w/box, tee
Sawcut, Remove & replace Conc
Traffic Control & Plates
Trench Safety
Testing
6" C900 DR 14
3" Sch 40
Ductile Iron Fittings
6" SS Fire Riser @ 1' AFF
Trench Safety
Testing

STANDARD
SITE UTILITIES

Standard Site Utilities Project References

Project: Aspen Dental
Location: 1510 W. University Drive, McKinney
Work Performed: Water, Sewer, Storm
Start/Completed: June 2023/Nov 2023
Contract Amount: $179,370
General Contractor: Integra Premier
Contact: Dustin Martinez / 817-609-3074

Project: McDonalds
Location: 4177 Gazebo Street, Aubry TX
Work Performed: Water, Sewer, Storm
Start/Completed: Aug 2023/Oct 2023
Contract Amount: $324,719
General Contractor: Morrison Construction
Contact: Travis Thomason / 918-627-0041

Project: Outback Steakhouse
Location: 6744 NW Loop 820, Fort Worth
Work Performed: Water, Storm, Sewer
Start/Completed: Sept 2023/Nov 2023
Contract Amount: $339,024
General Contractor: Jerry Kachel Builders
Contact: Debbie Gette/281-370-6049

Project: Longhorn Steakhouse
Location: 2900 S. I-35, Denton TX
Work Performed: Water, Sewer, Storm
Start/Completed: Aug 2023/Sept 2023
Contract Amount: $292,345
General Contractor: Fry Group
Contact: Ryan Fry/ 469-465-3645

Project: Chick fila Highland Meadows
Location: 11089 E. NW Hwy, Dallas TX
Work Performed: Water, Sewer, Storm
Start/Completed: Aug 2023/Jan 2024
Contract Amount: $348,530
General Contractor: Regas Contracting
Contact: Claude White/281-240-4777

Project: Lakeshore Church
Location: 5575 SH-205, Rockwall TX
Work Performed: Water, Storm
Start/Completed: Sept 2023/Jan 2024
Contract Amount: $227,557
General Contractor: Goff Companies
Contact: Dane Scoggins/214-716-5101

Project: Discount Tire
Location: 7855 Preston Road, Frisco TX
Work Performed: Water, Sewer, Storm
Start/Completed: Nov 2023/Jan 2024
Contract Amount: $366,552
General Contractor: DZI Construction
Contact: Steve Oliverio/248-241-6670

Project: Cash Cow
Location: 402 Good Latimer, Dallas TX
Work Performed: Water, Sewer, Storm
Start/Completed: Dec 2023/May 2024
Contract Amount: $352,207
General Contractor: Gilmore Fox
Contact: Zach Honea/469-872-3550

STANDARD
SITE UTILITIES

Standard Site Utilities Project References

Project: Chipotle - Arlington
Location: 4422 S. Collins Street, Arlington
Work Performed: Water, Sewer, Storm
Start/Completed: March 2024/April 2024
Contract Amount: $120,828
General Contractor: Wyatt Management
Contact: Jason Tucker/817-247-7688

Project: Mesquite Fire Station
Location: 2755 Oates Drive, Mesquite TX
Work Performed: Site Utilities
Start/Completed: Apr 2024/Aug 2024
Contract Amount: $334,135
General Contractor: AUI Partners
Contact: Christi Stehling/817-926-4377

Project: Shadow Creek
Location: 3250 E/ Carwright Rd., Mesquite TX
Work Performed: Water, Storm, Sewer
Start/Completed:
Contract Amount: $692,278
General Contractor: Greenroads Construction
Contact: Jacob Green/214-500-7350

Project: Jack in the Box
Location: 2312 N. Galloway Ave, Mesquite TX
Work Performed: Water, Sewer, Storm
Start/Completed: June 2024/July 2024
Contract Amount: $128,267.47
General Contractor: Construction Solutions
Contact: Lindsey Stout/469-758-0079

Project: Pelican Spirit Beer
Location: 1880 Bray Central Drive, McKinney TX
Work Performed: Water, Sewer
Start/Completed: Jun 2024/July 2024
Contract Amount: $171,182
General Contractor: Innovative Construction
Contact: John Weedon/972-740-3713

Project: Heartland Dental
Location: 1321 N. Preston Rd., Prosper TX
Work Performed: Storm, Sewer
Start/Completed: Jun 2024/Oct 2024
Contract Amount: $534,189
General Contractor: Ready Construction
Contact: David Holt/817-805-8492

Project: Victory Wylie
Location: 240 State Hwy 78, Wylie TX
Work Performed: Site Utilities
Start/Completed: July 2024/Aug 2024
Contract Amount: $142,720
General Contractor: Wyatt Management
Contact: Jason Tucker/817-247-7688

Project: Outback Steakhouse
Location: 840 S. Preston Rd., Prosper TX
Work Performed: Site Utilities
Start/Completed: July 2024/Sept 2024
Contract Amount: $239,864
General Contractor: Ready Construction
Contact: Tyler Fischer/913-207-3942

STANDARD
SITE UTILITIES

Standard Site Utilities Project References

Project: First Watch Cafe
Location: 5353 Beltline Rd., Dallas TX
Work Performed: Fire Water
Start/Completed: Sept 2024/Oct 2024
Contract Amount: $81,749
General Contractor: Bears Construction
Contact: David Hughes/469-722-6017

Project: McDonald's
Location: 3030 CR 50, Prosper TX
Work Performed: Water and Storm
Start/Completed: Aug 2024/Sept 2024
Contract Amount: $176,383
General Contractor: Morrison Construction
Contact: Travis Thomason / 918-627-0041

Project: Chipotle Mexican Grill
Location: 1831 Military Pkwy., Mesquite TX
Work Performed: Site Utilities
Start/Completed: Aug 2024/Sept 2024
Contract Amount: $103,489
General Contractor: Wyatt Management
Contact: Jason Tucker/817-247-7688

Project: Foreman's Landing
Location: 4016 Jackson Rd., Colleyville TX
Work Performed: Storm, Water, Sewer
Start/Completed: Aug 2024/Oct 2024
Contract Amount: $273,611
General Contractor: Wyatt Management
General Contact: Jason Tucker/817-247-7688

Project: 2501 Camp Ave.
Location: 2501 Camp Ave., Carrollton TX
Work Performed: Sewer
Start/Completed: July 2025
Contract Amount: $50,000
General Contractor: Bleeker Partners
Contact: Ben Siegel/972-534-3106

Project: Homewood Suites
Location: Stemmons Fwy, Dallas TX
Work Performed: Site Utilities
Start/Completed: May 2025/June 2025
Contract Amount: $125,000
General Contractor: Unity Construction
Contact: Garrett Voegeli/972-322-3286

Project: Cracker Barrel
Location: US 380 & Teel Pkwy, Prosper TX
Work Performed: Storm, Sewer, Water
Start/Completed: June 2025/July 2025
Contract Amount: $22,8179
General Contractor: Bruman Companies
Contact: Ellen Hensley/417-581-0304

Project: Chipotle
Location: 4930 E. I30, Fate TX
Work Performed: Site Utilities
Start/Completed: May 2025/June 2025
Contract Amount: $87,136
General Contractor: Wyatt Management
Contact: Jason Tucker/817-247-7688

STANDARD
SITE UTILITIES

Standard Site Utilities Project References

Project: Extra Space Storage
Location: 810 Denton Tap Rd., Coppell TX
Work Performed: Site Utilities
Start/Completed: In Progress
Contract Amount: $32,083
General Contractor: Ameripro Fire
Contact: William Moore/972-905-5556

Project: Harmony School
Location: 4261 Mission Blvd., Odessa TX
Work Performed: Water, Storm
Start/Completed: April 2025/June 2025
Contract Amount: $59,520
General Contractor: Subterra Construction
Contact: Austin Findlay/ 817-891-7650

Project: The Bluffs
Location: 4900 Pool Rd., Colleyville TX
Work Performed: Storm, Water, Sewer
Start/Completed: In progress
Contract Amount: $379,221
General Contractor: HCI Commercial
Contact: Cole Carter/817-350-4332

Project:UTSW Demo
Location: 1950 Record Crossing, Dallas TX
Work Performed: Demo
Start/Completed: July 2025
Contract Amount: $46,925
General Contractor: Baton Cook
Contact: Rocky Stephenson/972-550-3417

Project: 702 E. Pleasant Run
Location: 702 E. Pleasant Run, Cedar Hill TX
Work Performed: Storm, Water, Sewer
Start/Completed: In Progress
Contract Amount: $275,426
General Contractor: City of Cedar Hill
Contact: Steve Schell/214-58-6148

Project: First Anna Church
Location: 213 W. 2ne Street, Anna TX
Work Performed: Site Utilities
Start/Completed: July 2025
Contract Amount: $42,972
General Contractor: First Anna Church
Contact: Sky Blake/425-495-0553

Project: Inception Retail
Location: 5701 S. Custer Rd., McKinney TX
Work Performed: Water, Fire
Start/Completed: July 2025
Contract Amount: $23,394
General Contractor: Above Board Construction
Contact: Kevin Catullo/908-627-2898

STANDARD
SITE UTILITIES

Standard Site Utilities Vendor References

Dallas Winwater
6675 Hwy 276
Royse City, TX 75189
Ashley Fletcher
214-843-8440

Fortiline
15850 Dallas Pkwy
Dallas TX 75248
Sherry Lakey
704-788-9800

3Paz Trucking
2300 Valley View Ln.
Irving TX 75062
469-524-3443

Ferguson
2650 S. Pipeline
Euless TX 76040
817-508-7357

Burton Trucking
PO Box 39
Keller TX 76244
817-319-6547

United Rentals
3421 Ave. D
Arlington TX
980-341-5992

STANDARD
SITE UTILITIES

Standard Site Utilities Owned Equipment

Komatsu 270-8 (x2)	JD 310 L Ep
Komatsu PC240	Bomag 48" Pad Roller
Komatsu PC88MP-10	Bomag BMP 8500
Kubota SVL97	Bobcat Skid Steer
Kubota 80	D 210P
Kubota U55	JD 544K
JD 345 EXC	Trench Roller

STANDARD
SITE UTILITIES

3121 Benton Street, Garland, TX 75042

Current Projects 2025	Contract Amount	recent Complete
903 Brewer 2025-147	$ 97,592.00	96.80%
Arka Montessori - Forney	$ 116,944.23	43.28%
Blassingame Ave Phase 2	$ 565,983.00	99.90%
Blazing Hospitality Phase II 2025-142	$ 378,189.86	58.90%
Burleson Shell 2025-152	$ 200,521.58	100.00%
Celebree Forney 2025-145	$ 99,766.46	98.50%
Christ Center of Hope Church 2025-144	$ 80,000.00	100.00%
FM 2642 16" Waterline - Royse City	$ 1,218,082.53	16.73%
Free Life Church 2025-153	$ 233,038.00	61.28%
Glen Abbey Drainage 2025-132	$ 513,043.40	54.60%
KCI Fire Line 2025-148	$ 98,453.00	100.00%
Kids Pediatrics 2025-151	Negotiating	
Landscape Structures 2025-113	$ 148,341.00	97.00%
Mavis Tire 2025-138	$ 110,451.17	97.40%
Richardson Square Shell	$ 215,000.00	96.80%
Town & Country Shopping Center 2025-135	$ 155,000.00	97.80%
Villas at Park Addition 2025-143	$ 392,000.00	1.90%
Waxahachie_MLK Blvd 16-Inch Waterline 2025-134	$ 1,521,765.00	98.70%
US 67 at Cedar Hill 2025-149	$ 511,222.00	83.80%
	$ 6,655,393.23	**69%**

Completed Projects 2025	Contract Amount
Buena Vista 2025-101	$ 11,000.00
Homewood Suites 2025-103	$ 134,175.00
Korean BBq Fire Line 2025-104	$ 16,100.00
357 E Tripp 2025-105	$ 6,600.00
Cracker Barrel Prosper 2025-106	$ 273,074.00
Chipotle - Fate 2025-107	$ 87,136.00
Extra Space Storage 2025-108	$ 32,083.00
Harmony School 2025-109	$ 73,020.00
The Bluffs 2025-110	$ 469,402.67
440 S. Town East Blvd 2025-111	$ 66,523.00
Target-Wynnewood Village 2025-112	$ 33,659.74
Bellagio Amenity Fire Line 2025-114	$ 75,378.00
702 Pleasant Run 2025-117	$ 309,401.00
UTSW Demo 2025-115	$ 50,475.00
AAA Storage 2025-118	$ 39,984.00
First Anna Church 2025-119	$ 42,972.00
Woodwind Apartments 2025-120	$ 14,805.00
Inception Retail 2025-121	$ 30,909.65
2501 Camp Ave 2025-122	$ 50,000.00
River's Dog Retreat 2025-123	$ 304,300.97
Fast Lane Arglye 2025-124	$ 34,713.10
Extra Space Storage Dallas 2025-125	$ 57,257.00
6000 Eldorado 2025-126	$ 18,000.00
Farmersville 1,2 & 3	$ 40,843.25
Porter Residence 2024-130	$ 23,974.00
7 Brew Gainesville 2025-140	$ 108,992.35
Dura-Line 2025-150	$ 36,588.74
	$2,441,367.47

STANDARD
SITE UTILITIES

3121 Benton Street, Garland, TX 75042

Completed Projects 2024	Contract Amount
Chipotle - Arlington 2024-101	$ 120,828.48
Dutch Bros Westlake 2024-102	$ 69,759.10
Neticom Building 2024-103	$ 35,000.00
Mesquite Fire Station 2024-105	$ 337,135.57
Mall Circle Fire Line 2024-106	$ 65,000.00
Shadow Creek Ph 1 2024-107	$ 692,789.52
Jack in the Box - Mesquite 2024-108	$ 128,267.47
Pelican Spirit Beer & Wine 2024-109	$ 169,335.58
Heartland Dental 2024-110	$ 534,188.79
WellMed - Public 2024-111	$ 230,064.83
WellMed - Private 2024-111	$ 261,547.96
Victory @ Wylie 2024-112	$ 142,720.66
Longhorn - Mesquite 2024-113	$ 79,788.22
The Parker 2024-114	$ 1,002,646.22
The Marcus Apartments 2024-115	$ 910,820.96
Bojangles 2024-116	$ 87,134.78
Outback Steakhouse Prosper 2024-117	$ 238,461.93
First Watch Cafe 2024-118	$ 85,350.35
McDonald's - Prosper 2024-119	$ 176,382.60
Chipotle - Mesquite 2024-120	$ 103,488.73
Foreman's Landing 2024-121	$ 273,610.74
Open Arms 2024-125	$ 140,000.00
SSD Alarm 2024-127	$ 26,509.14
1937 Irving Blvd 2024-129	$ 31,000.00
MB2 Athletic Center 2024-130	$ 9,802.60
	$ 5,951,634.23

STANDARD
SITE UTILITIES

3121 Benton Street, Garland, TX 75042

Completed Projects 2023	Contract Amount
Airgas	$ 25,600.00
Advantage Storage	$ 400,792.82
Auto Zone Grand Prairie	$ 223,680.16
Aspen Dental	$ 182,405.90
Argyle Neighborhood Shops	$ 69,275.93
Beauchamp Plaza	$ 527,225.47
Brakes Plus	$ 82,308.68
Cash Cow 2023-138	$ 352,207.09
Champion School of Real Estate 2023-105	$ 598,212.77
Chick Fila Dallas	$ 346,183.10
Crawford Apts	$ 105,567.44
DATCU Credit Union 2023-113	$ 158,418.48
Discount Tire 2023-129	$ 370,277.75
Floor and Decor Wylie	$ 305,631.28
Furniture Direct	$ 35,000.00
Hi Holland Lisbon Elementary 2023-117	$ 1,009,077.17
Humana Garland	$ 60,811.17
Humana Pantego	$ 228,964.74
Jack in the Box	$ 71,715.38
Lakeshore Church 2023-136	$ 227,556.73
Longhorn Steakhouse	$ 292,345.54
Mansfield Retail #3 2023-132	$ 130,701.46
McDonald's - Aubrey	$ 324,719.38
McKinney Shell Bldg. 2023-128	$ 437,276.41
Outback Steakhouse 2023-125	$ 339,024.13
Platinum Office Park	$ 644,556.28
Reeher Shops - Midlothian	$ 90,174.00
Remington College	$ 65,318.73
Rosemeade Rec Center	$ 35,214.96
Riverside Storage Ph 2	$ 188,241.00
The Elms Apartments 2023-108	$ 1,199,981.51
Twenty Five 25 Apartments	$ 120,000.00
	$ 9,248,465.46

STANDARD
SITE UTILITIES

3121 Benton Street, Garland, TX 75042

Completed Projects 2022	Contract Amount
One Addison Place	$180,036.81
Stacy Road Retail	$162,111.04
Chapel Creek	$1,954,171.42
White Water Car Wash	$970,321.01
Wyburn Medical Offices	$324,790.84
	$ 3,591,431.12

Corporations Section
P.O.Box 13697
Austin, Texas 78711-3697

Jane Nelson
Secretary of State

Office of the Secretary of State

Certificate of Fact

The undersigned, as Secretary of State of Texas, does hereby certify that the document, Certificate of Formation for Standard Site Utilities LLC (file number 803848182), a Domestic Limited Liability Company (LLC), was filed in this office on December 03, 2020.

It is further certified that the entity status in Texas is in existence.

It is further certified that our records indicate DUNN & DILL CPAS P.C. as the designated registered agent for the above named entity and the designated registered office for said entity is as follows:

1225 THOMASVILLE CT

GARLAND, TX - 75044 USA

In testimony whereof, I have hereunto signed my name officially and caused to be impressed hereon the Seal of State at my office in Austin, Texas on April 01, 2025.

Jane Nelson
Secretary of State

McCauley Bond Agency

December 9, 2025

RE: Standard Site Utilities, LLC

To Whom It May Concern:

Please be advised that McCauley Bond Agency manages the bonding needs for Standard Site Utilities, LLC. They are bonded with Merchants Bonding Company (Mutual) and approved for single-size projects within the $6,000,000 range, having an aggregate capacity of $15,000,000. Our experience with Standard Site Utilities, LLC has been excellent, and we highly recommend them to you.

Merchants Bonding Company (Mutual) is Treasury listed, has an A.M. Best Rating of "A" (Excellent). If bonds for Faithful Performance and Labor and Material Payment would be required, issuance is conditioned upon acceptable review of contract terms, contract amount, bond forms and financing for each project as well as other pertinent underwriting information at the time of the request.

If I can be of further assistance, please do not hesitate to contact me at 630-696-2068.

Sincerely,
McCauley Bond Agency, LLC

Sean McCauley, Jr.
Merchants Bonding Company (Mutual)
Attorney-In-Fact

5710 LBJ Frwy., Ste. 235
Dallas, TX 75240
(214) 989-7047

MERCHANTS BONDING COMPANY

POWER OF ATTORNEY

Know All Persons By These Presents, that MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC., both being corporations of the State of Iowa, d/b/a Merchants National Indemnity Company (in California only) (herein collectively called the "Companies") do hereby make, constitute and appoint, individually,

Alex Rausch; Ashlyn Simchik; Bridget Truxillo; Jarrod Yost; Liam Hackett; Sarah Timmons; Sean McCauley Jr; Sterling Ward

their true and lawful Attorney(s)-in-Fact, to sign its name as surety(ies) and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof, on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

This Power-of-Attorney is granted and is signed and sealed by facsimile under and by authority of the following By-Laws adopted by the Board of Directors of Merchants Bonding Company (Mutual) on April 23, 2011 and amended August 14, 2015 and adopted by the Board of Directors of Merchants National Bonding, Inc., on October 16, 2015.

"The President, Secretary, Treasurer, or any Assistant Treasurer or any Assistant Secretary or any Vice President shall have power and authority to appoint Attorneys-in-Fact, and to authorize them to execute on behalf of the Company, and attach the seal of the Company thereto, bonds and undertakings, recognizances, contracts of indemnity and other writings obligatory in the nature thereof."

"The signature of any authorized officer and the seal of the Company may be affixed by facsimile or electronic transmission to any Power of Attorney or Certification thereof authorizing the execution and delivery of any bond, undertaking, recognizance, or other suretyship obligations of the Company, and such signature and seal when so used shall have the same force and effect as though manually fixed."

In connection with obligations in favor of the Florida Department of Transportation only, it is agreed that the power and aut hority hereby given to the Attorney-in-Fact includes any and all consents for the release of retained percentages and/or final estimates on engineering and construction contracts required by the State of Florida Department of Transportation. It is fully understood that consenting to the State of Florida Department of Transportation making payment of the final estimate to the Contractor and/or its assignee, shall not relieve this surety company of any of its obligations under its bond.

In connection with obligations in favor of the Kentucky Department of Highways only, it is agreed that the power and authority hereby given to the Attorney-in-Fact cannot be modified or revoked unless prior written personal notice of such intent has been given to the Commissioner-Department of Highways of the Commonwealth of Kentucky at least thirty (30) days prior to the modification or revocation.

In Witness Whereof, the Companies have caused this instrument to be signed and sealed this 22nd day of January , 2024 .

MERCHANTS NATIONAL BONDING, INC. INCORPORATED -o- 2003

MERCHANTS BONDING COMPANY (MUTUAL) INCORPORATED -o- 1933

MERCHANTS BONDING COMPANY (MUTUAL)
MERCHANTS NATIONAL BONDING, INC.
d/b/a MERCHANTS NATIONAL INDEMNITY COMPANY

By Larry Taylor
President

STATE OF IOWA
COUNTY OF DALLAS ss.

On this 22nd day of January 2024 , before me appeared Larry Taylor, to me personally known, who being by me duly sworn did say that he is President of MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC.; and that the seals affixed to the foregoing instrument are the Corporate Seals of the Companies; and that the said instrument was signed and sealed in behalf of the Companies by authority of their respective Boards of Directors.

Kim Lee
Commission Number 702737
My Commission Expires
April 14, 2024

Kim Lee
Notary Public

(Expiration of notary's commission does not invalidate this instrument)

I, William Warner, Jr., Secretary of MERCHANTS BONDING COMPANY (MUTUAL) and MERCHANTS NATIONAL BONDING, INC., do hereby certify that the above and foregoing is a true and correct copy of the POWER-OF-ATTORNEY executed by said Companies, which is still in full force and effect and has not been amended or revoked.

In Witness Whereof, I have hereunto set my hand and affixed the seal of the Companies on this 9th day of December , 2025 .

MERCHANTS NATIONAL BONDING, INC. INCORPORATED -o- 2003

MERCHANTS BONDING COMPANY (MUTUAL) INCORPORATED -o- 1933

William Warner Jr.
Secretary

POA 0018 (10/22)

BANK REFERENCE

CHASE

900 W Rusk St, Rockwall, TX, 75087

+1 (972) 772-5193

Contact: Matthew Kees

OSHA's Form 300A (Rev. 04/2004)

Summary of Work-Related Injuries and Illnesses

Note: You can type input into this form and save it.
Because the forms in this recordkeeping package are "fillable/writable" PDF documents, you can type into the input form fields and then save your inputs using the free Adobe PDF Reader.

Year 20 24

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the Log. If you had no cases, write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR Part 1904.35, in OSHA's recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of . . . (M)			
(1) Injuries	0	(4) Poisonings	0
(2) Skin disorders	0	(5) Hearing loss	0
(3) Respiratory conditions	0	(6) All other illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: U.S. Department of Labor, OSHA Office of Statistical Analysis, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment Information

Your establishment name: Standard Site Utilties

Street: 3121 Benton Street

City: Garland State: TX Zip: 75042

Industry description (e.g., *Manufacture of motor truck trailers*)

Underground wet utilities

North American Industrial Classification (NAICS), if known (e.g., 336212)

2 3 7 1 1 0

Employment Information *(If you don't have these figures, see the Worksheet on the next page to estimate.)*

Annual average number of employees: 37

Total hours worked by all employees last year: 77,149.60

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive: [signature] Title:

Phone: 469-880-5848 Date: 1/22/2025

Reset

OSHA's Form 300A (Rev. 01/2004)
Summary of Work-Related Injuries and Illnesses

Year 2023

U.S. Department of Labor
Occupational Safety and Health Administration

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases, write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of

	(M)		(M)
(1) Injury	0	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Establishment information

Your establishment name: Standard Site Utilities

Street: 3121 Dennis Street

City: Galena State: Texas Zip: 75042

Industry description (e.g., Manufacture of motor truck trailers):
Underground Utilities

Standard Industrial Classification (SIC), if known (e.g., SIC 3715):

OR North American Industrial Classification (NAICS), if known (e.g., 336212):

Employment information

Annual average number of employees: 34

Total hours worked by all employees last year: 24,000

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company Executive

Vice President
Title

Phone

Date

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room 3644, 200 Constitution Ave NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA's Form 300A (Rev. 01/2004)

Summary of Work-Related Injuries and Illnesses

Year 2022

U.S. Department of Labor
Occupational Safety and Health Administration
Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

Injury and Illness Types

Total number of...	(M)		(M)
(1) Injury	0	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Establishment information

Your establishment name: Standard Site Utilities

Street: 3121 Renton Street

City: Garland State: Texas Zip: 75042

Industry description (e.g., Manufacture of motor truck trailers):
Underground Utilities

Standard Industrial Classification (SIC), if known (e.g., SIC 3715):

OR North American Industrial Classification (NAICS), if known (e.g., 336212):

Employment information

Annual average number of employees: 38

Total hours worked by all employees last year: 69,402

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

Company executive

Vice President
Title

Phone

12/31/2022
Date

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 58 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave, NW, Washington, DC 20210. Do not send the completed forms to this office.

WORKERS COMPENSATION EXPERIENCE RATING

Risk Name: STANDARD SITE UTILITIES LLC Risk ID: 421777004

Rating Effective Date: 01/25/2025 Production Date: 08/29/2024 State: TEXAS

State	Wt	Exp Excess Losses	Expected Losses	Exp Prim Losses	Act Exc Losses	Ballast	Act Inc Losses	Act Prim Losses	Split Point
TX	.13	14,930	23,286	8,356	0	31,280	0	0	16,500

(A) Wt	(B)	(C) Exp Excess Losses (D - E)	(D) Expected Losses	(E) Exp Prim Losses	(F) Act Exc Losses (H - I)	(G) Ballast	(H) Act Inc Losses	(I) Act Prim Losses
.13		14,930	23,286	8,356	0	31,280	0	0

	Primary Losses	Stabilizing Value	Ratable Excess	Totals
	(I)	C * (1 - A) + G	(A) * (F)	(J)
Actual	0	44,269	0	44,269
	(E)	C * (1 - A) + G	(A) * (C)	(K)
Expected	8,356	44,269	1,941	54,566

	ARAP	FLARAP	SARAP	MAARAP	Exp Mod
Factors					(J) / (K) .81

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WORKERS COMPENSATION EXPERIENCE RATING

Risk Name: STANDARD SITE UTILITIES LLC Risk ID: 421777004

Rating Effective Date: 01/25/2025 Production Date: 08/29/2024 State: TEXAS

42-TEXAS Firm ID: Firm Name: STANDARD SITE UTILITIES LLC

Carrier: 29939 Policy No. 0002057531 Eff Date: 01/25/2021 Exp Date: 01/25/2022

Code	ELR	D-Ratio	Payroll	Expected Losses	Exp Prim Losses	Claim Data	IJ	OF	Act Inc Losses	Act Prim Losses
5606	.12	.33	79,207	95	31					
6306	.95	.38	153,749	1,461	555					
6319	.65	.33	153,749	999	330					
8810	.02	.49	23,523	5	2					
Policy Total:			410,228	Subject Premium:	16,891	Total Act Inc Losses:			0	

42-TEXAS Firm ID: Firm Name: STANDARD SITE UTILITIES LLC

Carrier: 29939 Policy No. 0002057531 Eff Date: 01/25/2022 Exp Date: 01/25/2023

Code	ELR	D-Ratio	Payroll	Expected Losses	Exp Prim Losses	Claim Data	IJ	OF	Act Inc Losses	Act Prim Losses
5606	.12	.33	516,009	618	204					
6306	.95	.38	636,733	6,049	2,299					
6319	.65	.33	636,733	4,139	1,366					
8810	.02	.49	357,176	71	35					
Policy Total:			2,145,651	Subject Premium:	65,713	Total Act Inc Losses:			0	

42-TEXAS Firm ID: Firm Name: STANDARD SITE UTILITIES LLC

Carrier: 29939 Policy No. 0002057531 Eff Date: 01/25/2023 Exp Date: 01/25/2024

Code	ELR	D-Ratio	Payroll	Expected Losses	Exp Prim Losses	Claim Data	IJ	OF	Act Inc Losses	Act Prim Losses
5606	.12	.33	584,428	701	231					
6306	.95	.38	565,738	5,375	2,043					
6319	.65	.33	565,738	3,677	1,213					
8810	.02	.49	481,053	96	47					
Policy Total:			2,196,957	Subject Premium:	53,272	Total Act Inc Losses:			0	

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* Total by Policy Year of all cases $2,000 or less. D Disease Loss X Ex-Medical Coverage U USL&HW

C Catastrophic Loss E Employers Liability Loss ≡ Limited Loss

STANDARD SITE UTILITIES, LLC

Financial Statements
For the Year Ended
December 31, 2023

Dunn & Dill CPAs, P.C.
CPAs | Advisors

STANDARD SITE UTILITIES, LLC
TABLE OF CONTENTS

	Page
Independent Accountants' Review Report	1
Balance Sheet	2
Statement of Income and Changes in Members Equity	3
Statement of Cash Flows	4
Notes to the Financial Statements	5 - 10

DUNN & DILL
CPAs | Advisors

Members:
American Institute of CPAs
Texas Society of CPAs

William L. Dunn, CPA
Julie K. Dill, CPA

INDEPENDENT ACCOUNTANTS' REVIEW REPORT

To the Board of Directors of
Standard Site Utilities, LLC
Richardson, Texas

We have reviewed the accompanying financial statements of Standard Site Utilities, LLC (a single owner LLC), which comprise the balance sheets as of December 31, 2023 and the related statements of income, and statements of cash flows for the year then ended, and the related notes to the financial statements. A review includes primarily applying analytical procedures to management's financial date and making inquiries of entity management. A review is substantially less in scope than an audit, the objective of which is expression of an opinion regarding the financial statements as a whole. Accordingly, we do not express such an opinion.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Accountants' Responsibility

Our responsibility is to conduct the review engagement in accordance with Statements on Standards for Accounting and Review Services promulgated by the Accounting and Review Services Committee of the AICPA. Those standards require us to perform procedures to obtain limited assurance as a basis for reporting whether we are aware of any material modifications that should be made to the financial statements for them to be in accordance with accounting principles generally accepted in the United States of America. We believe that the results of our procedures provide a reasonable basis for our conclusion.

Accountants' Conclusion

Based on our review, we are not aware of any material modifications that should be made to the accompanying financial statements in order for them to be in accordance with accounting principles generally accepted in the United States of America.

Dunn & Dill CPA's PC

Dunn & Dill CPAs, P.C.
Garland, TX
August 15, 2024

1225 Thomasville Ct.
Garland, TX 75044

Phone: (972)-485-5333
Fax: (972)-485-5337
www.dunndillcpa.com

Standard Site Utilities, LLC
Balance Sheet
For the Year Ended December 31, 2023

ASSETS

	2023
Current Assets	
Cash and Cash Equivalents	$ 642,045
Accounts Receivable	1,011,869
Total Current Assets	1,653,915
Fixed Assets	
Property and Equipment, Net	1,807,930
Total Fixed Assets	2,278,992
Total Assets	$ 3,932,906

LIABILITIES AND MEMBERS EQUITY

Current Liabilities	
Accounts Payable and Accrued Liabilities	$ 360,519
Current Portion of Notes Payable	66,654
Total Current Liabilities	427,173
Long-Term Liabilities	
Notes Payable, ANB Loans	799,923
Notes Payable, Equipment/Vehicle Loans	735,922
Total Long-Term Liabilities	1,535,845
Total Liabilities	1,963,018
Members Equity	
Members Equity	1,969,889
Total Members Equity	1,969,889
Total Liabilities and Members Equity	$ 3,932,906

Standard Site Utilities, LLC
Statement of Income and Changes in Stockholders' Equity
For Year Ended December 31, 2023

	2023
Sales	$ 7,525,399
Cost of Sales	3,493,797
Gross Profit	4,031,602
Operating Expenses:	
Employer Related	2,201,448
General and Administrative	640,872
Rent	44,312
Total Operating Expenses	2,886,632
Income (Loss) from Operations	1,144,971
Other Income (Expenses):	
Dividend Income	19,255
Equipment Leasing Income	5,976
Insurance Claim Income	2,093
Interest Income	9,294
Interest Expense	46,289
Other Misc Expense	6,452
Total Other Income (Expense)	(16,124)
Net Income	$ 1,128,846
Members Equity	
Balance at Beginning of Year	$ 841,042
Distributions	-
Net Income	1,128,846
Balance at End of Year	$ 1,969,889

Standard Site Utilities, LLC
Statement of Cash Flows
For the Year Ended December 31, 2023

	2023
Cash Flows from Operating Activities	
Change in Net Income (Loss)	$ 1,128,846
Adjustments to Reconcile Net Income (Loss) to Net Cash Provided by (Used By) Operating Activities:	
Depreciation Expense	331,668
(Increase) Decrease in Contracts Receivable	(537,074)
Increase (Decrease) in Accounts Payable and Accrued Liabilities	(67,268)
Increase (Decrease) in Contract Liabilities	609,203
Increase (Decrease) in Billings in Excess of Revenue on Uncompleted Contracts	66,107
Increase (Decrease) in Other Payables	(132,485)
Net Cash Provided/(Used) in Operating Activities	270,151
Cash Flows from Investing Activities	
Collection of Note Receivables	-
Issuance of Note Receivables	-
Loan to Shareholders'	-
Purchases of Property and Equipment, Net	(104,403)
Net Cash Provided (Used) in Investing Activities	(104,403)
Cash Flows from Financing Activities	
Distributions	-
Increase (Decrease) in Equity	83,732
Payments on Line of Credit	(10,601)
Proceeds from Notes Payable	(609,203)
Payments on Notes Payable	(420,077)
Net Cash Used by Financing Activities	(956,149)
Net Increase (Decrease) in Cash and Cash Equivalents	338,446
Cash and Cash Equivalents at Beginning of Year	303,600
Cash and Cash Equivalents at End of Period	**$ 642,045**

NOTE 1 – NATURE OF ACTIVITIES AND SIGNIFICANT ACCOUNTING POLICIES

Nature of Activities

Standard Site Utilities, LLC (hereinafter the "Company") is a privately held Texas LLC headquartered in Richardson, Texas. The Company is a specialty contractor that specializes in excavation, fill, fire suppression, demolition, water based fire suppression systems, cutting, and boring.

Significant Accounting Policies

Management selects accounting principles generally in the United States of America and adopts methods of their application. The summary of significant accounting policies selected by the Agency's management is presented to assist in understanding the financial statements.

a) Basis of Accounting

The accompanying financial statements are presented in accordance with accounting principles generally accepted in the United States of America. Accordingly, revenues are recognized when earned and expenses are recorded when incurred on the accrual basis of accounting.

b) Accounting Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the amounts reported in the financial statements and the accompanying notes. Actual results could differ from those estimates and may affect amounts reported in future periods.

c) Cash Equivalents

The Company considers all highly liquid investments with a maturity date of three months or less, when purchased, to be cash equivalents. The Company maintains its cash and cash equivalent balances in financial institutions located in Texas, which are times may exceed insured limits.

d) Risk Concentration

Financial instruments which potentially subject the Company to concentrations of credit risk consist principally of accounts receivable. The Company continuously evaluates its customers' credit worthiness and generally does not require collateral.

NOTE 1 – NATURE OF ACTIVITIES AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

e) Contract Receivables

Contract receivables are stated at the amount management expects to collect from outstanding balances. The Company establishes an allowance for doubtful accounts based upon factors surrounding the credit risk of specific customers, historical trends, and other information. As of December 31, 2023, management assessed the status of individual accounts and its collection history with customers having outstanding balances and estimated that an allowance for uncollectible accounts was not necessary. Certain customers withhold 10% of the invoice until the entirety of the project is completed.

f) Contract Assets

Contract assets include cost and estimated earnings in excess of billings as well as amounts due under contractual retention provisions. Costs and estimated earnings in excess of billings represent amounts earned and reimbursable under contracts, including customer affirmative claim recovery estimates, and have a conditional right for billing and payment such as achievement of milestones or completion of the project. Generally, such unbilled amounts will become billable according to the contract terms and generally will be billed and collected over the next twelve months. Based on our historical experience, we generally consider the collection risk related to billable amounts to be low. When events or conditions indicate that it is probable that the amounts outstanding become unbillable, the transaction price and associated contract price is reduced.

g) Property and Equipment

The Company records additions to property and equipment at cost when acquired. Modifications that enhance the operating performance or extend the useful lives of an asset are capitalized.

Depreciation and amortization of depreciable assets is based on the straight-line method over the assets estimated useful lives. Leasehold improvements are amortized over the lesser of the asset's useful life or remaining term of the lease.

NOTE 1 – NATURE OF ACTIVITIES AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Property and Equipment (Continued)

The estimated useful lives of property and equipment are as follows:

Automobiles	5 Years
Leasehold Improvements	15 Years
Machinery and Equipment	5 - 20 Years
Office Equipment	5 Years

h) Contract Liabilities

Contract liabilities represent billings in excess of revenues recognized.

i) Revenue and Cost Recognition

The Company recognizes revenue from fixed price and modified price construction contracts on the percentage-of-completion method, measured by the percentage of cost incurred to date to estimated total cost for each contract. That method is used because management considers total cost to be the best available measure of progress on the contracts. Because of inherent uncertainties in estimating costs, it is at least reasonably possible that the estimated used will change within the near term. Certain jobs are performed on an ongoing basis under short-term contracts and are recorded when invoices are issued upon job completion. Contract retentions are included in contract receivables.

j) Income Taxes

The Company, with the consent of its shareholders, is classified as a single owner LLC, a disregarded entity, and is reported on the owner's individual income tax return. Therefore, no provision or liability for federal income taxes has been included in the financial statements. The Company, however, is subject to Texas franchise tax.

The Company's federal and state income tax returns are subject to possible examination by the taxing authorities until the expiration of the related statuses of limitations on those tax returns.

NOTE 1 – NATURE OF ACTIVITIES AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

k) Recent Accounting Pronouncements

The accounting principles governing the reported amounts, presentations, and disclosures in our financial statements are subject to change from time to time based on the issuance of new pronouncements of various standard-setting bodies. New pronouncements are in effect as of December 31, 2023 and will not have a material effect on our financial statements.

NOTE 2 – RELATED PARTY

The Company leases its offices and warehouses in Texas from the owner. The term is month to month and is cancellable with 30 days' notice. The Company is responsible for all taxes, maintenance, and insurance. Payments for rent and related expenses paid to the owner in 2023 was $30,000.

There are also $101,231.00 of accounts receivable due from a related party.

NOTE 3 – CONTRACT RECEIVABLES

	2023
Billed:	
Completed Contracts	$ 1,011,869
Retainage	-0-
Contracts in Progress	471,062
Total	1,482,931
Allowance for Doubtful Accounts	-0-
Total Contract Receivables – Net of Allowance	$ 1,482,931

NOTE 4 – PROPERTY AND EQUIPMENT

Property and equipment on December 31, 2023, consisted of the following:

	2023
Automobiles	$ 273,577
Leasehold and Improvements	16,000
Machinery and Heavy Equipment	2,122,625
Computer Equipment	16,626
Office Furniture	7,037
	2,435,864
Less: Accumulated Depreciation and Amortization	(627,935)
Total Property and Equipment, Net	$ 1,807,930

NOTE 5 – BACKLOG

Backlog represents the amount of revenue the Company expects to realize from work to be performed on uncompleted contracts as of December 31, 2023. Backlog is summarized as follows:

	2023
Total Approved Contract Amounts for Uncompleted Contracts as of December 31, 2023	$ 2,687,922
Less: Contract Revenues Earned on Uncompleted Contracts During the Year Ended December 31, 2023	2,190,032
Backlog Balance as of December 31, 2023	$ 497,890

NOTE 6 – CONTRACT BILLING STATUS

Activity on uncompleted contracts consists of the following for the year ended December 31, 2023:

	2023
Cost Incurred on Uncompleted Contracts	$ 1,442,784
Estimated Earnings	747,248
	2,190,032
Less: Billings to Date	(1,785,077)
Total	$ 404,955

The above items are included in the accompanying balance sheet under the following captions:

	2023
Costs/Profits in Excess of Billings	$ 471,062
Billings in Excess of Costs/Profits	(66,107)
Total	$ 404,955

NOTE 7 – DEBT OBLIGATIONS

On December 31, 2023, the Company had outstanding loans for vehicles and with interest rates ranging from 0.00% to 9.50%. The following is a schedule of future minimum payments:

	2023
2024	$ 609,203
2025	435,417
2026	277,467
2027	177,213
Thereafter	36,545
Total	$ 1,535,845

NOTE 8 - SUBSEQUENT EVENTS

Subsequent events have been evaluated through August 15, 2024, which is the date the financial statements were available to be issued. There were no material subsequent events which affected the amounts or disclosures in the financial statements on December 31, 2023.

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 1/29/2025

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
The Baldwin Group Southwest LLC
2255 Ridge Rd, Ste 333
Rockwall TX 75087

License#: BR-1796913

CONTACT NAME: Rebecca Powell
PHONE (A/C, No, Ext): 972-771-4071 FAX (A/C, No): 972-771-4695
E-MAIL ADDRESS: rebecca.powell@baldwin.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : FCCI Insurance Company	10178
INSURER B : Monroe Guaranty Insurance Co	32506
INSURER C : Texas Mutual Insurance Company	22945
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Standard Site Utilities, LLC
P.O. Box 460939
Garland TX 75040-9998

STANSIT-02

COVERAGES **CERTIFICATE NUMBER:** 110099023 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY			CPP 100082305 02	1/25/2025	1/25/2026	EACH OCCURRENCE	$ 1,000,000
	CLAIMS-MADE X OCCUR						DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 100,000
							MED EXP (Any one person)	$ 5,000
							PERSONAL & ADV INJURY	$ 1,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	$ 2,000,000
	POLICY X PRO-JECT LOC						PRODUCTS - COMP/OP AGG	$ 2,000,000
	OTHER:							$
B	AUTOMOBILE LIABILITY			CA 100082306 02	1/25/2025	1/25/2026	COMBINED SINGLE LIMIT (Ea accident)	$ 1,000,000
	X ANY AUTO						BODILY INJURY (Per person)	$
	OWNED AUTOS ONLY / SCHEDULED AUTOS						BODILY INJURY (Per accident)	$
	X HIRED AUTOS ONLY / X NON-OWNED AUTOS ONLY						PROPERTY DAMAGE (Per accident)	$
								$
A	X UMBRELLA LIAB X OCCUR			UMB 100082307 02	1/25/2025	1/25/2026	EACH OCCURRENCE	$ 3,000,000
	EXCESS LIAB CLAIMS-MADE						AGGREGATE	$ 3,000,000
	DED X RETENTION $ 10,000							$
C	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY Y / N			0002057531	1/25/2025	1/25/2026	X PER STATUTE OTH-ER	
	ANY PROPRIETOR/PARTNER EXECUTIVE OFFICER/MEMBER EXCLUDED? Y	N/A					E.L. EACH ACCIDENT	$ 1,000,000
	(Mandatory in NH)						E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - POLICY LIMIT	$ 1,000,000
A	Leased/Rented Equipment Installation Floater			CPP 100082305 02	1/25/2025	1/25/2026	Rented Equip / Ded Install Jobsite / Ded Intall Storage / Ded	300,000/2,500 Ded *100,000/2,500 Ded 100,000 /2,500 Ded

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
*Blanket Installation Floater Limits: 100,000 Per Any One Jobsite / 250,000 Catastrophe Limit (most paid for all jobsites)

GENERAL LIABILITY:
Automatic Additional Insured Contractors including ongoing & completed operations form #CGL121 02/21 applies to the General Liability Policy when required by written contract.

Additional Insured Lessor of Equipment form #CGL088 02/21 applies to the General Liability Policy when required by written contract.

See Attached...

CERTIFICATE HOLDER

Sample Cert

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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AGENCY CUSTOMER ID: STANSIT-02

LOC #:

ADDITIONAL REMARKS SCHEDULE

AGENCY	NAMED INSURED
The Baldwin Group Southwest LLC	Standard Site Utilities, LLC P.O. Box 460939 Garland TX 75040-9998
POLICY NUMBER	
CARRIER / NAIC CODE	EFFECTIVE DATE:

ADDITIONAL REMARKS

THIS ADDITIONAL REMARKS FORM IS A SCHEDULE TO ACORD FORM,

FORM NUMBER: 25 **FORM TITLE:** CERTIFICATE OF LIABILITY INSURANCE

Primary & Non-Contributory form #CG2001 12/19 applies to the General Liability Policy when required by written contract.

Waiver of Subrogation form # CGL088 02/21 applies to the General Liability Policy when required by written contract.

COMMERCIAL AUTOMOBILE LIABILITY:
Additional Insured form #CAU058 10/22 applies to the Auto Policy when required by written contract.

Primary & Non-Contributory form # CAU082 01/15 applies to the Auto Policy when required by written contract.

Waiver of Subrogation form # CAU058 10/22 applies to the Auto Policy when required by written contract.

WORKERS' COMPENSATION:
Waiver of Subrogation form #WC420304B applies to the Workers Compensation Policy when required by written contract.

*ALWAYS REFER TO THE ATTACHED POLICY FORMS FOR SPECIFIC WORDING OF SUCH COVERAGE, LIMITS, CONDITIONS AND EXCLUSIONS.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

FIRST CHOICE CONTRACTORS LIABILITY ENDORSEMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

NOTE: The following are additions, replacements and amendments to the Commercial General Liability Coverage Form, and will apply unless excluded by separate endorsement(s) to the Commercial General Liability Coverage Form.

The COMMERCIAL GENERAL LIABILITY COVERAGE FORM is amended as follows:

SECTION I - COVERAGES, COVERAGE A. BODILY INJURY AND PROPERTY DAMAGE is amended as follows:

1. **Extended "Property Damage"**

   Exclusion 2.a., Expected or Intended Injury, is replaced with the following:

   a. "Bodily injury" or "property damage" expected or intended from the standpoint of the insured. This exclusion does not apply to "bodily injury" or "property damage" resulting from the use of reasonable force to protect persons or property.

2. **Non-owned Watercraft**

   Exclusion 2.g. (2) (a) is replaced with the following:

   (a) Less than 51 feet long; and

3. **Property Damage Liability – Borrowed Equipment**

   The following is added to Exclusion 2.j. (4):

   Paragraph (4) of this exclusion does not apply to "property damage" to borrowed equipment while at a jobsite and not being used to perform operations. The most we will pay for "property damage" to any one borrowed equipment item under this coverage is $25,000 per "occurrence". The insurance afforded under this provision is excess over any other valid and collectible property insurance (including deductible) available to the insured, whether primary, excess, contingent or on any other basis.

4. **Limited Electronic Data Liability**

   Exclusion 2.p. is replaced with the following:

   p. Electronic Data

      Damages arising out of the loss of, loss of use of, damage to, corruption of, inability to access, or inability to manipulate "electronic data" that does not result from physical injury to tangible property.

   The most we will pay under Coverage A for "property damage" because of all loss of "electronic data" arising out of any one "occurrence" is $10,000.

   We have no duty to investigate or defend claims or "suits" covered by this Limited Electronic Data Liability coverage.

   The following definition is added to **SECTION V – DEFINITIONS** of the Coverage Form:

   "Electronic data" means information, facts or programs stored as or on, created or used on, or transmitted to or from computer software (including systems and applications software), hard or floppy disks, CD-ROMS, tapes, drives, cells, data processing devices or any other media which are used with electronically controlled equipment.

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For purposes of this **Limited Electronic Data Liability** coverage, the definition of "Property Damage" in **SECTION V – DEFINITIONS** of the Coverage Form is replaced by the following:

17. "Property damage" means:

a. Physical injury to tangible property, including all resulting loss of use of that property. All such loss of use shall be deemed to occur at the time of the physical injury that caused it;

b. Loss of use of tangible property that is not physically injured. All such loss of use shall be deemed to occur at the time of the "occurrence" that caused it;

c. Loss of, loss of use of, damage to, corruption of, inability to access, or inability to properly manipulate "electronic data", resulting from physical injury to tangible property. All such loss of "electronic data" shall be deemed to occur at the time of the "occurrence" that caused it.

For purposes of this insurance, "electronic data" is not tangible property.

SECTION I – COVERAGES, COVERAGE B. PERSONAL AND ADVERTISING INJURY LIABILITY is amended as follows:

Paragraph 2.e. Exclusions – the Contractual Liability Exclusion is deleted.

SECTION I – COVERAGES, the following coverages are added:

COVERAGE D. VOLUNTARY PROPERTY DAMAGE

1. Insuring Agreement

We will pay, at your request, for "property damage" caused by an "occurrence", to property of others caused by you, or while in your possession, arising out of your business operations. The amount we will pay for damages is described in SECTION III LIMITS OF INSURANCE.

2. Exclusions

This insurance does not apply to:

"Property Damage" to:

a. Property at premises owned, rented, leased or occupied by you;

b. Property while in transit;

c. Property owned by, rented to, leased to, loaned to, borrowed by, or used by you;

d. Premises you sell, give away, or abandon, if the "property damage" arises out of any part of those premises;

e. Property caused by or arising out of the "products-completed operations hazard";

f. Motor vehicles;

g. "Your product" arising out of it or any part of it; or

h. "Your work" arising out of it or any part of it.

3. Deductible

We will not pay for loss in any one "occurrence" until the amount of loss exceeds $250. We will then pay the amount of loss in excess of $250 up to the applicable limit of insurance.

4. Cost Factor

In the event of a covered loss, you shall, if requested by us, replace the damaged property or furnish the labor and materials necessary for repairs thereto at your actual cost, excluding profit or overhead charges.

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The insurance afforded under COVERAGE D is excess over any other valid and collectible property or inland marine insurance (including the deductible applicable to the property or inland marine coverage) available to you whether primary, excess, contingent or any other basis.

Coverage D covers unintentional damage or destruction, but does not cover disappearance, theft, or loss of use.

The insurance under COVERAGE D does not apply if a loss is paid under COVERAGE E.

COVERAGE E. CARE, CUSTODY OR CONTROL

1. Insuring Agreement

We will pay those sums that the insured becomes legally obligated to pay as damages because of "property damage" caused by an "occurrence", to property of others while in your care, custody, or control or property of others as to which you are exercising physical control if the "property damage" arises out of your business operations. The amount we will pay for damages is described in SECTION III LIMITS OF INSURANCE.

2. Exclusions

This insurance does not apply to:

"Property Damage" to:

a. Property at premises owned, rented, leased or occupied by you;

b. Property while in transit;

c. Premises you sell, give away, or abandon, if the "property damage" arises out of any part of those premises;

d. Property caused by or arising out of the "products-completed operations hazard";

e. Motor vehicles;

f. "Your product" arising out of it or any part of it; or

g. "Your work" arising out of it or any part of it.

3. Deductible

We will not pay for loss in any one "occurrence" until the amount of loss exceeds $250. We will then pay the amount of loss in excess of $250 up to the applicable limit of insurance.

4. Cost Factor

In the event of a covered loss, you shall, if requested by us, replace the damaged property or furnish the labor and materials necessary for repairs thereto at your actual cost, excluding profit or overhead charges.

The insurance afforded under COVERAGE E is excess over any other valid and collectible property or inland marine insurance (including the deductible applicable to the property or inland marine coverage) available to you whether primary, excess, contingent or any other basis.

The insurance under COVERAGE E does not apply if a loss is paid under COVERAGE D.

COVERAGE F. LIMITED PRODUCT WITHDRAWAL EXPENSE

1. Insuring Agreement

a. If you are a "seller", we will reimburse you for "product withdrawal expenses" associated with "your product" incurred because of a "product withdrawal" to which this insurance applies.

The amount of such reimbursement is limited as described in SECTION III - LIMITS OF INSURANCE. No other obligation or liability to pay sums or perform acts or services is covered.

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a. This insurance applies to a "product withdrawal" only if the "product withdrawal" is initiated in the "coverage territory" during the policy period because:

(1) You determine that the "product withdrawal" is necessary; or

(2) An authorized government entity has ordered you to conduct a "product withdrawal".

c. We will reimburse only those "product withdrawal expenses" which are incurred and reported to us within one year of the date the "product withdrawal" was initiated.

d. The initiation of a "product withdrawal" will be deemed to have been made only at the earliest of the following times:

(1) When you have announced, in any manner, to the general public, your vendors or to your employees (other than those employees directly involved in making the determination) your decision to conduct a "product withdrawal" This applies regardless of whether the determination to conduct a "product withdrawal" is made by you or is requested by a third party;

(2) When you received, either orally or in writing, notification of an order from an authorized government entity to conduct a "product withdrawal; or

(3) When a third party has initiated a "product withdrawal" and you communicate agreement with the "product withdrawal", or you announce to the general public, your vendors or to your employees (other than those employees directly involved in making the determination) your decision to participate in the "product withdrawal", whichever comes first.

e. "Product withdrawal expenses" incurred to withdraw "your products" which contain:

(1) The same "defect" will be deemed to have arisen out of the same "product withdrawal"; or

(2) A different "defect" will be deemed to have arisen out of a separate "product withdrawal" if newly determined or ordered in accordance with paragraph 1.b of this coverage.

2. Exclusions

This insurance does not apply to "product withdrawal" expenses" arising out of:

a. Any "product withdrawal" initiated due to:

(1) The failure of "your products" to accomplish their intended purpose, including any breach of warranty of fitness, whether written or implied. This exclusion does not apply if such failure has caused or is reasonably expected to cause "bodily injury" or physical damage to tangible property.

(2) Copyright, patent, trade secret or trademark infringements;

(3) Transformation of a chemical nature, deterioration or decomposition of "your product", except if it is caused by:

(a) An error in manufacturing, design, processing or transportation of "your product"; or

(b) "Product tampering".

(4) Expiration of the designated shelf life of "your product".

b. A "product withdrawal", initiated because of a "defect" in "your product" known to exist by the Named Insured or the Named Insured's "executive officers", prior to the inception date of this Coverage Part or prior to the time "your product" leaves your control or possession.

c. Recall of any specific products for which "bodily injury" or "property damage" is excluded under Coverage A - Bodily Injury And Property Damage Liability by endorsement.

d. Recall of "your products" which have been banned from the market by an authorized government entity prior to the policy period.

e. The defense of a claim or "suit" against you for "product withdrawal expenses".

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3. For the purposes of the insurance afforded under COVERAGE F, the following is added to 2. Duties In The Event Of Occurrence, Offense, Claim Or Suit Condition under SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS:

   e. Duties In The Event Of A "Defect" Or A "Product Withdrawal"

      (1) You must see to it that we are notified as soon as practicable of any actual, suspected or threatened "defect" in "your products", or any governmental investigation, that may result in a "product withdrawal". To the extent possible, notice should include:

         (a) How, when and where the "defect" was discovered;

         (b) The names and addresses of any injured persons and witnesses; and

         (c) The nature, location and circumstances of any injury or damage arising out of use or consumption of "your product".

      (2) If a "product withdrawal" is initiated, you must:

         (a) Immediately record the specifics of the "product withdrawal" and the date it was initiated;

         (b) Send us written notice of the "product withdrawal" as soon as practicable; and

         (c) Not release, consign, ship or distribute by any other method, any product, or like or similar products, with an actual, suspected or threatened defect.

      (3) You and any other involved insured must:

         (a) Immediately send us copies of pertinent correspondence received in connection with the "product withdrawal";

         (b) Authorize us to obtain records and other information; and

         (c) Cooperate with us in our investigation of the "product withdrawal".

4. For the purposes of this Coverage F, the following definitions are added to the Definitions Section:

   a. "Defect" means a defect, deficiency or inadequacy that creates a dangerous condition.

   b. "Product tampering" is an act of intentional alteration of "your product" which may cause or has caused "bodily injury" or physical injury to tangible property.

      When "product tampering" is known, suspected or threatened, a "product withdrawal" will not be limited to those batches of "your product" which are known or suspected to have been tampered with.

   c. "Product withdrawal" means the recall or withdrawal of "your products", or products which contain "your products", from the market or from use, by any other person or organization, because of a known or suspected "defect" in "your product", or a known or suspected "product tampering", which has caused or is reasonably expected to cause "bodily injury" or physical injury to tangible property.

   d. "Product withdrawal expenses" means those reasonable and necessary extra expenses, listed below paid and directly related to a "product withdrawal":

      (1) Costs of notification;

      (2) Costs of stationery, envelopes, production of announcements and postage or facsimiles;

      (3) Costs of overtime paid to your regular non-salaried employees and costs incurred by your employees, including costs of transportation and accommodations;

      (4) Costs of computer time;

      (5) Costs of hiring independent contractors and other temporary employees;

      (6) Costs of transportation, shipping or packaging;

      (7) Costs of warehouse or storage space; or

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(8) Costs of proper disposal of "your products", or products that contain "your products", that cannot be reused, not exceeding your purchase price or your cost to produce the products; but "product withdrawal expenses" does not include costs of the replacement, repair or redesign of "your product", or the costs of regaining your market share, goodwill, revenue or profit.

e. "Seller" means a person or organization that manufactures, sells or distributes goods or products. "Seller" does not include a "contractor" as defined elsewhere in this endorsement.

The insurance under COVERAGE F does not apply if a loss is paid under COVERAGE G.

COVERAGE G. CONTRACTORS ERRORS AND OMISSIONS

1. Insuring Agreement

If you are a "contractor", we will pay those sums that you become legally obligated to pay as damages because of "property damage" to "your product", "your work" or "impaired property", due to faulty workmanship, material or design, or products including consequential loss, to which this insurance applies. The damages must have resulted from your negligent act, error or omission while acting in your business capacity as a contractor or subcontractor or from a defect in material or a product sold or installed by you while acting in this capacity. The amount we will pay for damages is described in SECTION III LIMITS OF INSURANCE.

We have no duty to investigate or defend claims or "suits" covered by this Contractors Errors or Omissions coverage.

This coverage applies only if the "property damage" occurs in the "coverage territory" during the policy period.

This coverage does not apply to additional insureds, if any.

Supplementary Payments – Coverage A and B do not apply to Coverage G. Contractors Errors and Omissions.

2. Exclusions

This insurance does not apply to:

a. "Bodily injury" or "personal and advertising injury".

b. Liability or penalties arising from a delay or failure to complete a contract or project, or to complete a contract or project on time.

c. Liability because of an error or omission:

(1) In the preparation of estimates or job costs;

(2) Where cost estimates are exceeded;

(3) In the preparation of estimates of profit or return on capital;

(4) In advising or failure to advise on financing of the work or project; or

(5) In advising or failing to advise on any legal work, title checks, form of insurance or suretyship.

d. Any liability which arises out of any actual or alleged infringement of copyright or trademark or trade dress or patent, unfair competition or piracy, or theft or wrongful taking of concepts or intellectual property.

e. Any liability for damages:

(1) From the intentional dishonest, fraudulent, malicious or criminal acts of the Named Insured, or by any partner, member of a limited liability company, or executive officer, or at the direction of any of them; or

(2) Which is in fact expected or intended by the insured, even if the injury or damage is of a different degree or type than actually expected or intended.

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f. Any liability arising out of manufacturer's warranties or guarantees whether express or implied.

g. Any liability arising from "property damage" to property owned by, rented or leased to the insured.

h. Any liability incurred or "property damage" which occurs, in whole or in part, before you have completed "your work." "Your work" will be deemed completed at the earliest of the following times:

(1) When all of the work called for in your contract or work order has been completed;

(2) When all the work to be done at the job site has been completed if your contract calls for work at more than one job site; or

(3) When that part of the work done at a job site has been put to its intended use by any person or organization other than another contractor or subcontractor working on the same project.

Work that may need service or maintenance, correction, repair or replacement, but which is otherwise complete, will be treated as complete.

i. Any liability arising from "property damage" to products that are still in your physical possession.

j. Any liability arising out of the rendering of or failure to render any professional services by you or on your behalf, but only with respect to either or both of the following operations:

(1) Providing engineering, architectural or surveying services to others; and

(2) Providing or hiring independent professionals to provide engineering, architectural or surveying services in connection with construction work you perform.

Professional services include the preparing, approving or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders, or drawings and specifications. Professional services also include supervisory or inspection activities performed as part of any related architectural or engineering activities.

But, professional services do not include services within construction means, methods, techniques, sequences and procedures employed by you in connection with construction work you perform.

k. Your loss of profit or expected profit and any liability arising therefrom.

l. "Property damage" to property other than "your product," "your work" or "impaired property."

m. Any liability arising from claims or "suits" where the right of action against the insured has been relinquished or waived.

n. Any liability for "property damage" to "your work" if the damaged work or the work out of which the damage arises was performed on your behalf by a subcontractor.

o. Any liability arising from the substitution of a material or product for one specified on blueprints, work orders, contracts or engineering specifications unless there has been written authorization, or unless the blueprints, work orders, contracts or engineering specifications were written by you, and you have authorized the changes.

p. Liability of others assumed by the insured under any contract or agreement, whether oral or in writing. This exclusion does not apply to liability for damages that the insured would have in the absence of the contract or agreement.

3. For the purposes of Coverage G, the following definition is added to the Definitions section:

a. "Contractor" means a person or organization engaged in activities of building, clearing, filing, excavating or improvement in the size, use or appearance of any structure or land. "Contractor" does not include a "seller" as defined elsewhere in this endorsement.

4. Deductible

We will not pay for loss in any one "occurrence" until the amount of loss exceeds $250. The limits of insurance will not be reduced by the application of the deductible amount.

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We may pay any part or all of the deductible amount to effect settlement of any claim or "suit", and upon notification of the action taken, you shall promptly reimburse us for such part of the deductible amount as has been paid by us.

5. Cost Factor

In the event of a covered loss, you shall, if requested by us, replace the damaged property or furnish the labor and materials necessary for repairs thereto at your actual cost, excluding profit or overhead charges.

The insurance under COVERAGE G does not apply if a loss is paid under COVERAGE F.

COVERAGE H. LOST KEY COVERAGE

1. Insuring Agreement

We will pay those sums, subject to the limits of liability described in SECTION III LIMITS OF INSURANCE in this endorsement and the deductible shown below, that you become legally obligated to pay as damages caused by an "occurrence" and due to the loss or mysterious disappearance of keys entrusted to or in the care, custody or control of you or your "employees" or anyone acting on your behalf. The damages covered by this endorsement are limited to the:

a. Actual cost of the keys;

b. Cost to adjust locks to accept new keys; or

c. Cost of new locks, if required, including the cost of installation.

2. Exclusions

This insurance does not apply to:

a. Keys owned by any insured, employees of any insured, or anyone acting on behalf of any insured;

b. Any resulting loss of use; or

c. Any of the following acts by any insured, employees of any insured, or anyone acting on behalf of any insured:

1) Misappropriation;

2) Concealment;

3) Conversion;

4) Fraud; or

5) Dishonesty.

3. Deductible

We will not pay for loss in any one "occurrence" until the amount of loss exceeds $1,000. The limits of insurance will not be reduced by the application of the deductible amount.

We may pay any part or all of the deductible amount to effect settlement of any claim or "suit" and, upon notification of the action taken, you shall promptly reimburse us for such part of the deductible amount as has been paid by us.

EXPANDED COVERAGE FOR TENANT'S PROPERTY AND PREMISES RENTED TO YOU

The first paragraph after subparagraph (6) in Exclusion j., Damage to Property is amended to read as follows:

Paragraphs **(1), (3)** and **(4)** of this exclusion do not apply to "property damage" (other than damage by fire) to premises, including the contents of such premises, rented to you. A separate limit of insurance applies to Damage To Premises Rented To You as described in Section **III** – Limits Of Insurance.

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SECTION I - COVERAGES, SUPPLEMENTARY PAYMENTS – COVERAGE A and B is amended as follows:

All references to SUPPLEMENTARY PAYMENTS – COVERAGES A and B are amended to SUPPLEMENTARY PAYMENTS – COVERAGES A, B, D, E, G, and H.

1. **Cost of Bail Bonds**

   Paragraph 1.b. is replaced with the following:

   b. Up to $2,500 for cost of bail bonds required because of accidents or traffic law violations arising out of the use of any vehicle to which the Bodily Injury Liability Coverage applies. We do not have to furnish these bonds.

2. **Loss of Earnings**

   Paragraph 1.d. is replaced with the following:

   d. All reasonable expenses incurred by the insured at our request to assist us in the investigation or defense of the claim or "suit", including actual loss of earnings up to $500 a day because of time off from work.

SECTION II – WHO IS AN INSURED is amended as follows:

1. **Incidental Malpractice**

   Paragraph 2.a.(1)(d) is replaced with the following:

   (d) Arising out of his or her providing or failing to provide professional health care services. However, this exclusion does not apply to a nurse, emergency medical technician or paramedic employed by you to provide medical services, unless:

      (i) You are engaged in the occupation or business of providing or offering medical, surgical, dental, x-ray or nursing services, treatment, advice or instruction; or

      (ii) The "employee" has another insurance that would also cover claims arising under this provision, whether the other insurance is primary, excess, contingent or on any other basis.

2. **Broadened Who Is An Insured**

   The following are added to Paragraph 2.:

   Subsidiaries

   e. Your subsidiaries if:

      (1) They are legally incorporated entities; and

      (2) You own more than 50% of the voting stock in such subsidiaries as of the effective date of this policy. If such subsidiaries are not shown in the Declarations, you must report them to us within 180 days of the inception of your original policy.

   Additional Insureds

   f. Any person or organization described in paragraphs g. through k. below whom you are required to add as an additional insured on this policy under a written contract or agreement in effect during the term of this policy, provided the written contract or agreement was executed prior to the "bodily injury", "property damage" or "personal and advertising injury" for which the additional insured seeks coverage.

      However, the insurance afforded to such additional insured(s):

      (1) Only applies to the extent permitted by law;

      (2) Will not be broader than that which you are required by the contract or agreement to provide for such additional insured;

      (3) Will not be broader than that which is afforded to you under this policy;

      (4) Is subject to the conditions described in paragraphs g. through k. below; and

      (5) Nothing herein shall extend the term of this policy.

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g. Owner, Lessor or Manager of Premises

If the additional insured is an owner, lessor or manager of premises, such person or organization shall be covered only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by you or those acting on your behalf in connection with the ownership, maintenance or use of that part of any premises leased to you and subject to the following additional exclusions:

(1) Any "occurrence" that takes place after you cease to occupy those premises; or

(2) Structural alterations, new construction or demolition operations performed by or on behalf of such person or organization.

h. State or Governmental Agency or Subdivision or Political Subdivision – Permits or Authorizations

If the additional insured is the state or any political subdivision, the state or political subdivision shall be covered only with respect to operations performed by you or on your behalf for which the state or political subdivision has issued a permit or authorization. This insurance does not apply to:

(1) "Bodily injury", "property damage", or "personal and advertising injury" arising out of operations performed for the federal government, state or municipality; or

(2) "Bodily injury" or "property damage" included within the "products-completed operations hazard".

i. Lessor of Leased Equipment

If the additional insured is a lessor of leased equipment, such lessor shall be covered only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by your maintenance, operation or use of equipment leased to you by such person(s) or organization(s). With respect to the insurance afforded to these additional insureds, this insurance does not apply to any "occurrence" which takes place after the equipment lease expires.

j. Mortgagee, Assignee, or Receiver

If the additional insured is a mortgagee, assignee, or receiver of premises, such mortgagee, assignee or receiver of premises is an additional insured only with respect to their liability as mortgagee, assignee, or receiver and arising out of the ownership, maintenance, or use of the premises by you. This insurance does not apply to structural alterations, new construction and demolition operations performed by or for that person or organization.

k. Vendor

If the additional insured is a vendor, such vendor is an additional insured only with respect to liability for "bodily injury" or "property damage" caused by "your products" which are distributed or sold in the regular course of the vendor's business, subject to the following additional exclusions:

(1) The insurance afforded to the vendor does not apply to:

(a) "Bodily injury" or "property damage" for which the vendor is obligated to pay damages by reason of the assumption of liability in a contract or agreement. This exclusion does not apply to liability for damages that the vendor would have in absence of the contract or agreement.

(b) Any express warranty unauthorized by you;

(c) Any physical or chemical change in "your product" made intentionally by the vendor;

(d) Repackaging, unless unpacked solely for the purpose of inspection, demonstration, testing, or the substitution of parts under instructions from the manufacturer, and then repackaged in the original container;

(e) Any failure to make such inspections, adjustments, tests or servicing as the vendor has agreed to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products;

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(f) Demonstration, installation, servicing or repair operations, except such operations performed at the vendor's premises in connection with the sale of the product;

(g) Products which, after distribution or sale by you, have been labeled or relabeled or used as a container, part or ingredient of any other thing or substance by or for the vendor; or

(h) "Bodily injury" or "property damage" arising out of the sole negligence of the vendor for its own acts or omissions or those of its own acts or omissions or those of its employees or anyone else acting on its behalf. However, this exclusion does not apply to:

i. The exceptions contained in Subparagraphs d. or f.; or

ii. Such inspections, adjustments, tests or servicing as the vendor has agreed to make or normally undertakes to make in the usual course of business, in connection with the distribution or sale of the products.

(2) This insurance does not apply to any insured person or organization, from whom you have acquired such products, or any ingredient, part or container, entering into, accompanying or containing such products.

3. Newly Formed or Acquired Organizations

Paragraph 3. is amended as follows:

a. Coverage under this provision is afforded until the end of the policy period.

d. Coverage A does not apply to product recall expense arising out of any withdrawal or recall that occurred before you acquired or formed the organization.

SECTION III – LIMITS OF INSURANCE is amended as follows:

1. Paragraph 2. is replaced with the following:

2. The General Aggregate Limit is the most we will pay for the sum of:

a. Medical expenses under Coverage C;

b. Damages under Coverage A, except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard";

c. Damages under Coverage B;

d. Voluntary "property damage" payments under Coverage D;

e. Care, Custody or Control damages under Coverage E.; and

f. Lost Key Coverage under Coverage H.

2. Paragraph 5. is replaced with the following:

5. Subject to Paragraph 2. or 3. above, whichever applies, the Each Occurrence Limit is the most we will pay for the sum of:

a. Damages under Coverage A;

b. Medical expenses under Coverage C;

c. Voluntary "property damage" payments under Coverage D;

d. Care, Custody or Control damages under Coverage E;

e. Limited Product Withdrawal Expense under Coverage F;

f. Contractors Errors and Omissions under Coverage G.; and,

g. Lost Key Coverage under Coverage H.

because of all "bodily injury" and "property damage" arising out of any one "occurrence".

3. Paragraph 6. is replaced with the following:

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6. Subject to Paragraph 5. above the Damage To Premises Rented To You Limit is the most we will pay under Coverage A for damages because of "property damage" to any one premises, while rented to you, or in the case of damage by fire or explosion, while rented to you or temporarily occupied by you with permission of the owner.

   The Damage to Premises Rented to You Limit is the higher of the Each Occurrence Limit shown in the Declarations or the amount shown in the Declarations as Damage To Premises Rented To You Limit.

4. Paragraph 7. is replaced with the following:

7. Subject to Paragraph 5. above, the higher of $10,000 or the Medical Expense Limit shown in the Declarations is the most we will pay under Coverage C for all medical expenses because of "bodily injury" sustained by any one person.

5. Paragraph 8. is added as follows:

8. Subject to Paragraph 5. above, the most we will pay under Coverage D. Voluntary Property Damage for loss arising out of any one "occurrence" is $1,500. The most we will pay in any one-policy period, regardless of the number of claims made or suits brought, is $3,000.

6. Paragraph 9. is added as follows:

9. Subject to Paragraph 5. above, the most we will pay under Coverage E. Care, Custody or Control for "property damage" arising out of any one "occurrence" is $1,000. The most we will pay in any one-policy period, regardless of the number of claims made or suits brought, is $5,000.

7. Paragraph 10. is added as follows:

10. Subject to Paragraph 5. above, the most we will pay under Coverage F. Limited Product Withdrawal Expense for "product withdrawal expenses" in any one-policy period, regardless of the number of insureds, "product withdrawals" initiated or number of "your products" withdrawn is $10,000.

8. Paragraph 11. is added as follows:

11. Subject to Paragraph 5. above, the most we will pay under Coverage G. Contractors Errors and Omissions for damage in any one-policy period, regardless of the number of insureds, claims or "suits" brought, or persons or organizations making claim or bringing "suits" is $10,000.

    For errors in contract or job specifications or in recommendations of products or materials to be used, this policy will not pay for additional costs of products and materials to be used that would not have been incurred had the correct recommendations or specifications been made.

9. Paragraph 12. is added as follows:

12. Subject to Paragraph 5. above, the most we will pay under Coverage H., Lost Key Coverage for damages arising out of any one occurrence is $50,000.

10. Paragraph 13. is added as follows:

13. The General Aggregate Limit applies separately to:

    a. Each of your projects away from premises owned by or rented to you; or

    b. Each "location" owned by or rented to you.

    "Location" as used in this paragraph means premises involving the same or connecting lots, or premises whose connection is interrupted only by a street, roadway, waterway or right-of-way of a railroad.

11. Paragraph 14. is added as follows:

14. With respect to the insurance afforded to any additional insured provided coverage under this endorsement:

    If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

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a. Required by the contract or agreement; or

b. Available under the applicable Limits of Insurance;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance.

SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS is amended as follows:

1. **Subparagraph 2.a. of Duties In The Event Of Occurrence, Offense, Claim, or Suit is replaced with the following:**

   a. You must see to it that we are notified as soon as practicable of an "occurrence" or an offense which may result in a claim. This requirement applies only when the "occurrence" or offense is known to the following:

      (1) An individual who is the sole owner;

      (2) A partner, if you are a partnership or joint venture;

      (3) An "executive officer" or insurance manager, if you are a corporation;

      (4) A manager, if you are a limited liability company;

      (5) A person or organization having proper temporary custody of your property if you die;

      (6) The legal representative of you if you die; or

      (7) A person (other than an "employee") or an organization while acting as your real estate manager.

      To the extent possible, notice should include:

      (1) How, when and where the "occurrence" or offense took place;

      (2) The names and addresses of any injured persons and witnesses; and

      (3) The nature and location of any injury or damage arising out of the "occurrence" or offense.

2. **The following is added to Subparagraph 2.b. of Duties In The Event Of Occurrence, Offense, Claim, or Suit:**

   The requirement in 2.b.applies only when the "occurrence" or offense is known to the following:

      (1) An individual who is the sole owner;

      (2) A partner or insurance manager, if you are a partnership or joint venture;

      (3) An "executive officer" or insurance manager, if you are a corporation;

      (4) A manager or insurance manager, if you are a limited liability company;

      (5) Your officials, trustees, board members or insurance manager, if you are a not-for-profit organization;

      (6) A person or organization having proper temporary custody of your property if you die;

      (7) The legal representative of you if you die; or

      (8) A person (other than an "employee") or an organization while acting as your real estate manager.

3. **The following is added to paragraph 2. of Duties in the Event of Occurrence, Offense, Claim or Suit:**

   e. If you report an "occurrence" to your workers compensation carrier that develops into a liability claim for which coverage is provided by the Coverage Form, failure to report such an "occurrence" to us at the time of the "occurrence" shall not be deemed a violation of paragraphs a., b., and c. above. However, you shall give written notice of this "occurrence" to us as soon as you become aware that this "occurrence" may be a liability claim rather than a workers compensation claim.

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4. Paragraph 6. is replaced with the following:

6. Representations

By accepting this policy, you agree:

a. The statements in the Declarations are accurate and complete;

b. Those statements are based upon representations you made to us; and

c. We have issued this policy in reliance upon your representations.

Any error or omission in the description of, or failure to completely describe or disclose any premises, operations or products intended to be covered by the Coverage Form will not invalidate or affect coverage for those premises, operations or products, provided such error or omission or failure to completely describe or disclose premises, operations or products was not intentional.

You must report such error or omission to us as soon as practicable after its discovery. However, this provision does not affect our right to collect additional premium charges or exercise our right of cancellation or nonrenewal.

5. The following is added to paragraph 8. Transfer Of Rights Of Recovery Against Others To Us:

We waive any right of recovery against any person or organization, because of any payment we make under this Coverage Part, to whom the insured has waived its right of recovery in a written contract or agreement. Such waiver by us applies only to the extent that the insured has waived its right of recovery against such person or organization prior to loss.

6. Paragraph 10. is added as follows:

10. Liberalization

If we revise this Coverage Form to provide more coverage without additional premium charge, your policy will automatically provide the additional coverage as of the day the revision is effective in the applicable state(s).

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS – AUTOMATIC STATUS WHEN REQUIRED IN CONTRACT OR AGREEMENT – ONGOING OPERATIONS AND PRODUCTS-COMPLETED OPERATIONS (TEXAS LIMITED SOLE NEGLIGENCE)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

SCHEDULE (OPTIONAL)

Name of Additional Insured Persons or Organizations
(As required by written contract or agreement per Paragraph A. below.)

Locations of Covered Operations
(As per the written contract or agreement, provided the location is within the "coverage territory".)

(Information required to complete this Schedule, if not shown above, will be shown in the Declarations.)

A. **Section II – Who Is An Insured** is amended to include as an additional insured:

1. Any person or organization for whom you are performing operations when you and such person or organization have agreed in writing in a contract or agreement in effect during the term of this policy that such person or organization be added as an additional insured on your policy; and
2. Any other person or organization you are required to add as an additional insured under the contract or agreement described in Paragraph 1. above; and
3. The particular person or organization, if any, scheduled above.

Such person(s) or organization(s) is an additional insured only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" occurring after the execution of the contract or agreement described in Paragraph 1. above and caused, in whole or in part, by:

a. Your acts or omissions; or

b. The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations for the additional insured; or

c. "Your work" performed for the additional insured and included in the "products-completed operations hazard" if such coverage is specifically required in the written contract or agreement.

With respect to liability of the additional insured for "bodily injury" of an employee or agent of a named insured or the employee of a named insured's subcontractor, coverage shall apply for the partial or sole negligence of the additional insured, but only if such coverage is specifically required in the written contract or agreement.

However, the insurance afforded to such additional insured(s) described above:

a. Only applies to the extent permitted by law;

b. Will not be broader than that which you are required by the contract or agreement to provide for such additional insured;

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c. Will not be broader than that which is afforded to you under this policy; and

d. Nothing herein shall extend the term of this policy.

B. The insurance provided to the additional insured does not apply to "bodily injury", "property damage" or "personal and advertising injury" arising out of the rendering of, or the failure to render, any professional architectural, engineering or surveying services, including:

1. The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; or

2. Supervisory, inspection, architectural or engineering activities.

C. This insurance is excess over any other valid and collectible insurance available to the additional insured whether on a primary, excess, contingent or any other basis; unless the written contract or agreement requires that this insurance be primary and non-contributory, in which case this insurance will be primary and non-contributory relative to insurance on which the additional insured is a Named Insured.

D. With respect to the insurance afforded to these additional insureds, the following is added to **Section III – Limits of Insurance**:

The most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement described in Paragraph A.1.; or

2. Available under the applicable Limits of Insurance;

whichever is less.

This endorsement shall not increase the applicable Limits of Insurance.

E. **Section IV – Commercial General Liability Conditions** is amended as follows:

The Duties In The Event of Occurrence, Offense, Claim or Suit condition is amended to add the following additional conditions applicable to the additional insured:

An additional insured under this endorsement must as soon as practicable:

1. Give us written notice of an "occurrence" or an offense which may result in a claim or "suit" under this insurance, and of any claim or "suit" that does result;

2. Send us copies of all legal papers received in connection with the claim or "suit", cooperate with us in the investigation or settlement of the claim or defense against the "suit", and otherwise comply with all policy conditions; and

3. Tender the defense and indemnity of any claim or "suit" to any provider of other insurance which would cover the additional insured for a loss we cover under this endorsement and agree to make available all such other insurance. However, this condition does not affect Paragraph C. above.

We have no duty to defend or indemnify an additional insured under this endorsement until we receive from the additional insured written notice of a claim or "suit".

F. This endorsement does not apply to any additional insured or project that is specifically identified in any other additional insured endorsement attached to the Commercial General Liability Coverage Form.

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COMMERCIAL GENERAL LIABILITY
CG 20 01 12 19

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

PRIMARY AND NONCONTRIBUTORY – OTHER INSURANCE CONDITION

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
LIQUOR LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

The following is added to the **Other Insurance** Condition and supersedes any provision to the contrary:

Primary And Noncontributory Insurance

This insurance is primary to and will not seek contribution from any other insurance available to an additional insured under your policy provided that:

(1) The additional insured is a Named Insured under such other insurance; and

(2) You have agreed in writing in a contract or agreement that this insurance would be primary and would not seek contribution from any other insurance available to the additional insured.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

AUTO FIRST CHOICE COVERAGE ENDORSEMENT

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

NOTE: The following are additions, replacements and amendments to the Business Auto Coverage Form, and will apply unless excluded by separate endorsement(s) to the Business Auto Coverage Form.

With respect to coverages provided by this endorsement, the provisions of the Business Auto Coverage Form apply unless modified by this endorsement.

The Business Auto Coverage Form is amended as follows:

SECTION II – COVERED AUTOS LIABILITY COVERAGE is amended as follows:

A. Paragraph **1. Who Is An Insured** in section **A. Coverage** is amended by the addition of the following:

d. Any legally incorporated subsidiary of yours in which you own more than 50% of the voting stock on the effective date of this coverage form. However, "insured" does not include any subsidiary that is an "insured" under any other liability policy or would be an "insured" under such a policy but for its termination or the exhaustion of its limits of insurance. In order for such subsidiaries to be considered insured under this policy, you must notify us of such subsidiaries within 60 days of policy effective date.

e. Any organization you newly acquire or form during the policy period, other than a partnership or joint venture, and over which you maintain sole ownership or a majority interest. However, coverage under this provision:

(1) Does not apply if the organization you acquire or form is an "insured" under another liability policy or would be an "insured" under such a policy but for its termination or the exhaustion of its limits of insurance;

(2) Does not apply to "bodily injury" or "property damage" that occurred before you acquired or formed the organization; and

(3) Is afforded only for the first 90 days after you acquire or form the organization or until the end of the policy period, whichever comes first.

f. Any person or organization who is required under a written contract or agreement between you and that person or organization, that is signed and executed by you before the "bodily injury" or "property damage" occurs and that is in effect during the policy period, to be named as an additional insured is an "insured" for Liability Coverage, but only for damages to which this insurance applies and only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured provision contained in Section II.

g. Any "employee" of yours using:

(1) a covered "auto" you do not own, hire or borrow, or a covered "auto" not owned by an "employee" or a member of his or her household, while performing duties related to the conduct of your business or your personal affairs; or

(2) an "auto" hired or rented under a contract or agreement in that "employee's" name, with your permission, while performing duties related to the conduct of your business. However, your "employee" does not qualify as an insured under this paragraph (2) while using a covered "auto" rented from you or from any member of the "employee's" household

h. Your members, if you are a limited liability company, while using a covered "auto" you do not own, hire or borrow, while performing duties related to the conduct of your business or your personal affairs.

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B. Paragraphs **(2)** and **(4)** under section **2. Coverage Extensions, a. Supplementary Payments** are deleted and replaced by the following:

(2) Up to $3,000 for cost of bail bonds (including bonds for related traffic violations) required because of an "accident" we cover. We do not have to furnish these bonds.

(4) All reasonable expenses incurred by the "insured" solely at our request, including actual loss of earnings up to $500 a day because of time off from work.

C. Paragraph **5.** under section **B. Exclusions** is deleted and replaced by the following:

5. Fellow Employee

"Bodily injury" to:

a. Any fellow "employee" of the "insured" arising out of and in the course of a fellow "employee's" employment or while performing duties related to the conduct of your business. However, this exclusion does not apply to your "employees" that are officers or managers if the "bodily injury" results from the use of a covered "auto" you own, hire or borrow. Coverage is excess over any other collectible insurance; or

b. The spouse, child, parent, brother or sister of that fellow "employee" as a consequence of Paragraph **a.** above.

SECTION III – PHYSICAL DAMAGE COVERAGE is amended as follows:

A. Paragraph **4. Coverage Extensions** under section **A. Coverage** is deleted and replaced by the following:

4. Coverage Extensions

a. Transportation Expenses

We will pay up to $50 per day to a total maximum of $1,500 for temporary transportation expense incurred by you due to covered loss to any covered auto. We will pay only for those covered "autos" for which you carry either Comprehensive or Specified Causes Of Loss Coverage. We will pay for temporary transportation expenses incurred during the period beginning 24 hours after a loss and ending, regardless of the policy's expiration, when the covered "auto" is returned to use or we pay for its "loss".

b. Loss of Use Expenses

For Hired Auto Physical Damage, we will pay expenses for which an "insured" becomes legally responsible to pay for loss of use of a vehicle rented or hired without a driver under a written rental contract or agreement. We will pay for loss of use expenses if caused by:

(1) Other than collision only if the Declarations indicate that Comprehensive Coverage is provided for hired "autos";

(2) Specified Causes of Loss only if the Declarations indicate that Specified Causes of Loss Coverage is provided for hired "autos"; or

(3) Collision only if the Declarations indicate that Collision Coverage is provided for hired "autos".

However, the most we will pay for any expenses for loss of use to any one vehicle is $75 per day, to a total maximum of $1,500.

B. The following is added to paragraph **4. Coverage Extensions** under section **A. Coverage**:

c. Fire Department Service Charge

When a fire department is called to save or protect a covered "auto", its equipment, its contents, or occupants from a covered cause of loss, we will pay up to $1,000 for your liability for fire department service charges assumed by contractor or agreement prior to loss.

No deductible applies to this additional coverage.

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d. Auto Loan/Lease Gap Coverage

The following provisions apply:

(1) If a long term leased "auto", under an original lease agreement, is a covered "auto" under this coverage form and the lessor of the covered "auto" is named as an additional insured under this policy, in the event of a total loss to the leased covered "auto", we will pay any unpaid amount due on the lease, less the amount paid under the Physical Damage Coverage Section of the policy; and less any:

(a) Overdue lease or loan payments including penalties, interest, or other charges resulting from overdue payments at the time of the "loss";

(b) Financial penalties imposed under a lease for excessive use, abnormal wear and tear or high mileage;

(c) Security deposits not refunded by the lessor;

(d) Costs for extended warranties, Credit Life Insurance, Health Accident or Disability Insurance purchased with the loan or lease; and

(e) Carry-over balances from previous loans or leases.

(2) If an owned "auto" is a covered "auto" under this coverage form and the loss payee of the covered "auto" is named a loss payee under this policy, in the event of a total loss to the covered "auto", we will pay any unpaid amount due on the loan, less the amount paid under the Physical Damage Coverage Section of the policy; and less any;

(a) Overdue loan payments at the time of the "loss";

(b) Costs for extended warranties, Credit Life Insurance, Health Accident or Disability Insurance purchased with the loan; and

(c) Carry-over balances from previous loans.

C. Paragraph **3.** under section **B. Exclusions** is deleted and replaced by the following:

3. We will not pay for "loss" due and confined to:

a. Wear and tear, freezing, mechanical or electrical breakdown

b. Blowouts, punctures or other road damage to tires

This exclusion does not apply to such "loss" resulting from the total theft of a covered "auto".

However, this exclusion does not include the discharge of an airbag in a covered "auto" you own that inflates due to a cause other than a cause of "loss" set forth in Paragraphs **A.1.b and A.1.c.**but only:

a. If that "auto" is a covered "auto" for Comprehensive Coverage under this policy;

b. The airbags are not covered under any warranty; and

c. The airbags were not intentionally inflated

We will pay up to a maximum of $1,000 for any one "loss".

D. Section **D. Deductible** is deleted and replaced by the following:

D. Deductible

For each covered "auto", our obligation to pay for, repair, return or replace damaged or stolen property will be reduced by the applicable deductible shown in the Declarations prior to the application of the Limit of Insurance provided that:

1. The Comprehensive or Specified Causes of Loss Coverage deductible applies only to "loss" caused by:

a. Theft or mischief or vandalism; or

b. All perils.

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2. Regardless of the number of covered "autos" damaged or stolen, the maximum deductible applicable for all "loss" in any one event caused by:

   a. Theft or mischief or vandalism; or

   b. All perils;

   will be equal to five times the highest deductible applicable to any one covered "auto" on the Policy for Comprehensive or Specified Causes of Loss Coverage. The application of the highest deductible used to calculate the maximum deductible will be made regardless of which covered "autos" were damaged or stolen in the "loss".

3. Any Comprehensive Coverage deductible shown in the Declarations does not apply to:

   a. "Loss" arising out of theft of your vehicle if your vehicle is equipped with an active GPS tracking system.

   b. Glass damage if repaired rather than replaced.

SECTION IV – BUSINESS AUTO CONDITIONS is amended as follows:

A. The following is added to paragraph **a.** under section **A. Loss Conditions, 2. Duties in the Event of Accident, Claim, Suit or Loss**:

   This duty applies when the "accident", claim, "suit" or "loss" is first known to:

   (a) You, if you are an individual;

   (b) A partner, if you are a partnership;

   (c) An executive officer or insurance manager, if you are a corporation; or

   (d) A member or manager, if you are a limited liability company.

B. Condition **5. Transfer of Rights of Recovery against Others to Us** under section **A. Loss Conditions** is deleted and replaced by the following:

   5. Transfer of Rights of Recovery against Others to Us

   If a person or organization to or for whom we make payment under this coverage form has rights to recover damages from another, those rights are transferred to us. That person or organization must do everything necessary to secure our rights and must do nothing after "accident" or "loss" to impair them. However, if the insured has waived rights to recover through a written contract, or if your work was commenced under a letter of intent or work order, subject to a subsequent reduction in writing of such a waiver with customers whose customary contracts require a waiver, we waive any right of recovery we may have under this coverage form.

C. The following is added to Condition **2. Concealment, Misrepresentation or Fraud** under section **B. General Conditions**:

   However, if you unintentionally fail to disclose any hazards at the inception of your policy, we will not deny coverage under this coverage form because of such failure. This provision does not affect our right to collect additional premium or exercise our right of cancellation or non-renewal.

D. Paragraph **b.** of Condition **5. Other Insurance** under section **B. General Conditions** is deleted and replaced by the following:

   b. For Hired Auto Physical Damage Coverage, the following are deemed to be covered "autos" you own;

   (1) Any covered "auto" you lease, hire, rent or borrow; and

   (2) Any covered "auto" hired or rented by your "employee" under a contract in that individual "employee's" name, with your permission, while performing duties related to the conduct of your business. However, any "auto" that is leased, hired, rented or borrowed with a driver is not a covered "auto", nor is any "auto" you hire from any of your "employees", partners (if you are a partnership), members (if you are a limited liability company), or members of their households.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

AUTOMATIC INSURED – BUSINESS AUTO POLICY PRIMARY/NON-CONTRIBUTING WHEN REQUIRED BY CONTRACT

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

This endorsement is subject to the terms, conditions, exclusions and any other provisions of the BUSINESS AUTO COVERAGE FORM or any endorsement attached thereto unless changes or additions are indicated below.

For the purpose of this endorsement, Section II.A.1. Who Is An Insured is amended by adding the following:

1. Any person or organization when you and such person have agreed in writing in a contract signed and executed by you prior to the loss for which coverage is sought, that such person or organization be added as an "insured" on your auto policy. Such person or organization shall be an "insured" to the extent your negligent actions or omissions impose liability on such "insured" without fault on its part.

2. This insurance is primary and non-contributory to other liability coverages of the person or organization being added to this policy as an "insured" when so required in a written contract or agreement that is executed prior to the loss for which coverage is sought.

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TEXAS WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

This endorsement applies only to the insurance provided by the policy because Texas is shown in item 3.A. of the Information Page.

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule, but this waiver applies only with respect to bodily injury arising out of the operations described in the schedule where you are required by a written contract to obtain this waiver from us.

This endorsement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

The premium for this endorsement is shown in the Schedule.

Schedule

1. ( ) Specific Waiver
   Name of person or organization
   (X) Blanket Waiver
   Any person or organization for whom the Named Insured has agreed by written contract to furnish this waiver.

2. Operations: All Texas operations
3. Premium:
   The premium charge for this endorsement shall be **2.00** percent of the premium developed on payroll in connection with work performed for the above person(s) or organization(s) arising out of the operations described.
4. Advance Premium: Included, see Information Page

This endorsement changes the policy to which it is attached effective on the inception date of the policy unless a different date is indicated below.
(The following "attaching clause" need be completed only when this endorsement is issued subsequent to preparation of the policy.)
This endorsement, effective on 1/25/25 **at 12:01 a.m.** standard time, forms a part of:

Policy no. 0002057531 of Texas Mutual Insurance Company effective on 1/25/25

Issued to: STANDARD SITE UTILITIES LLC

Janette Ward

This is not a bill

Authorized representative

NCCI Carrier Code: 29939

1/24/25

PO Box 12058, Austin, TX 78711-2058
texasmutual.com | (800) 859-5995 | Fax (800) 359-0650

Form **W-9**
(Rev. March 2024)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give form to the requester. Do not send to the IRS.

Before you begin. For guidance related to the purpose of Form W-9, see *Purpose of Form*, below.

Print or type. See *Specific Instructions* on page 3.

1 Name of entity/individual. An entry is required. (For a sole proprietor or disregarded entity, enter the owner's name on line 1, and enter the business/disregarded entity's name on line 2.)

Standard Site Utilities

2 Business name/disregarded entity name, if different from above.

3a Check the appropriate box for federal tax classification of the entity/individual whose name is entered on line 1. Check only one of the following seven boxes.

☐ Individual/sole proprietor ☐ C corporation ☑ S corporation ☐ Partnership ☐ Trust/estate

☐ LLC. Enter the tax classification (C = C corporation, S = S corporation, P = Partnership) _____

Note: Check the "LLC" box above and, in the entry space, enter the appropriate code (C, S, or P) for the tax classification of the LLC, unless it is a disregarded entity. A disregarded entity should instead check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) _____

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from Foreign Account Tax Compliance Act (FATCA) reporting code (if any) _____

(Applies to accounts maintained outside the United States.)

3b If on line 3a you checked "Partnership" or "Trust/estate," or checked "LLC" and entered "P" as its tax classification, and you are providing this form to a partnership, trust, or estate in which you have an ownership interest, check this box if you have any foreign partners, owners, or beneficiaries. See instructions ☐

5 Address (number, street, and apt. or suite no.). See instructions.

3121 Benton Street

Requester's name and address (optional)

6 City, state, and ZIP code

Garland TX 75042

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. See also *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number

			–			–			

or

Employer identification number

8	5	–	4	1	8	1	0	5	3

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and, generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here Signature of U.S. person _____ Date 04/22/2025

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9*.

What's New

Line 3a has been modified to clarify how a disregarded entity completes this line. An LLC that is a disregarded entity should check the appropriate box for the tax classification of its owner. Otherwise, it should check the "LLC" box and enter its appropriate tax classification.

New line 3b has been added to this form. A flow-through entity is required to complete this line to indicate that it has direct or indirect foreign partners, owners, or beneficiaries when it provides the Form W-9 to another flow-through entity in which it has an ownership interest. This change is intended to provide a flow-through entity with information regarding the status of its indirect foreign partners, owners, or beneficiaries, so that it can satisfy any applicable reporting requirements. For example, a partnership that has any indirect foreign partners may be required to complete Schedules K-2 and K-3. See the Partnership Instructions for Schedules K-2 and K-3 (Form 1065).

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS is giving you this form because they

NOTICE TO BIDDERS

F.M. 428 LIFT STATION IMPROVEMENTS

Sealed bids will be received in the office of the City Secretary, City Hall, 107 S. Main Street, Aubrey, Texas 76227 until **2:00 P.M. Tuesday, January 6, 2026**, then publicly opened and read at the City Council Chamber, 226 Countryside Drive, Aubrey, Texas 76227 at 3:00 P.M., Tuesday, January 6, 2026, for furnishing all necessary materials, machinery, equipment, superintendence, and performing all work required for furnishing all materials, labor, supervision, tools, equipment, and all incidentals required for the construction of the F.M. 428 Lift Station Improvements project. The project consists of, but is not limited to, furnishing and installing two submersible pumps and 4-inch discharge piping, one emergency bypass connection, one 7-foot diameter metering manhole, standby generator, along with all associated electrical and SCADA improvements, as shown on the drawings, along with necessary appurtenances.

Bidders are expected to inspect the site of work and to inform themselves regarding all local conditions. A Pre-Bid Conference will be held at the City of Aubrey Public Works Building, located at 510 Rockhill Road, Aubrey, Texas 76227, at 10:00 A.M., Tuesday, December 23, 2025.

Award to the successful bidder will be made according to the factors listed in the Proposal of these Specifications. The successful bidder must furnish Performance Bond and Payment Bond in the amount of one hundred percent (100%) of the total contract price from a Surety Company holding a permit from the State of Texas to act as Surety. Should the total contract price be less than $25,000.00, no performance bond or payment bond will be required.

All lump sum and unit prices must be stated in both script and figures on the forms provided. The City of Aubrey reserves the right to reject any or all bids and to waive formalities. In case of ambiguity or lack of clearness in stating prices in the bids, the City of Aubrey reserves the right to consider the most advantageous construction thereof, or to reject the bid. Unreasonable (or "unbalanced") unit prices will authorize the City of Aubrey to reject any bid.

Bidders are required to submit a cashier's or certified check issued by a bank satisfactory to the City of Aubrey, or a Bid Bond (with proper Power of Attorney) from a surety licensed to do business in the State of Texas, payable without recourse to the City of Aubrey, in an amount not less than five (5%) percent of the total amount of the proposal submitted to insure that the successful bidder will enter into a contract and execute all necessary bonds within ten (10) days after notice of award of the contract to him. **This bid security must be included in the bid envelope for the bidder to be considered responsive.** The successful bidder will be required to furnish Performance, Payment and Maintenance Bonds as described in the bidding documents.

Plans, specifications, and bidding documents will be available on CIVCAST at www.civcastusa.com. They may also be purchased at the office of Birkhoff, Hendricks & Carter, L.L.P., located at 11910 Greenville Ave., Suite 600, Dallas, Texas 75243. The cost for the plans and specifications are $35.00 per set (non-refundable). Bidding documents downloaded from plan rooms or third-party websites shall be at the Bidder's sole risk. No guarantee of receipt of addenda or clarifications will be made for third-party downloads. **Cooper Reinbold, P.E.** may be reached with general questions at (214) 361-7900. No questions will be answered from questions posted on CIVCAST.

CITY OF AUBREY, TEXAS

Advertisement Dates: Friday, December 19, 2025
Friday, December 26, 2025

Pre-Bid Conference: Tuesday, December 23, 2025, at 10:00 a.m.

Questions Deadline: Tuesday, December 30, 2025

Addendum Deadline: Thursday, January 1, 2026

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consider and take action on a Professional Engineering Services Agreement with Birkhoff, Hendricks and Carter, L.L.P., for the 2025-2026 Downtown Drainage Capital Improvement Plan Projects for an amount not to exceed $598,804, and authorize the City Manager to execute the Agreement.

Staff Contact
Leanne Wilson, Assistant City Manager
lwilson@aubreytx.gov

Summary
The 2025 Stormwater Master Plan provides the City with a strategy for managing stormwater to reduce flooding, protect public health and safety, and improve stormwater quality in waterways, along roadways, and within public drainage easements. The Master Plan identified fourteen projects within the downtown study area for improvements that will result in better management of runoff from the existing neighborhoods. Table 5 below identifies the proposed structure and area of improvements.

TABLE 5
Capital Improvement Plan Cost Summary for Downtown Drainage Study

Project No.	Proposed Structure	Cost	Debt Service		Total Project
			Interest Rate %	Cost	
C1	Blackjack Road Culvert Replacement (Near Blackjack Rd & Almeda St)	$132,000.00	5.00%	$ 38,946.04	$ 170,946.04
C2	Bruce Street Pavement & Storm Sewer Improvements	$684,000.00	5.00%	$ 201,811.29	$ 885,811.29
C3	Brockett Street Pavement & Storm Sewer Improvements	$1,755,000.00	5.00%	$ 517,805.29	$ 2,272,805.29
C4	North Street Pavement & Storm Sewer Improvements	$594,000.00	5.00%	$ 175,257.18	$ 769,257.18
C5	Sherman Drive Culvert Replacement	$532,000.00	5.00%	$ 156,964.34	$ 688,964.34
C6	Cadell Street Culvert Replacement	$403,000.00	5.00%	$ 118,903.44	$ 521,903.44
C7	Maple Street Culvert Replacement	$80,000.00	5.00%	$ 23,603.66	$ 103,603.66
D1	Channel Improvements (North St to Sherman Dr)	$115,000.00	5.00%	$ 33,930.26	$ 148,930.26
D2	Channel Improvements (Brockett Dr to Sherman Dr)	$107,000.00	5.00%	$ 31,569.90	$ 138,569.90
D3	Tisdell Lane Channel Improvements	$77,000.00	5.00%	$ 22,718.52	$ 99,718.52
D4	Demoye Street Channel Improvements	$314,000.00	5.00%	$ 92,644.37	$ 406,644.37
D5	In between Maple St and Caddell St Channel Improvements	$306,000.00	5.00%	$ 90,284.00	$ 396,284.00
P1	Detention Pond at Northeast of Blackjack Rd and Union R.R. Intersection	$21,000.00	5.00%	$ 6,195.96	$ 27,195.96
P2	Detention Pond at Sherman Dr	$673,000.00	5.00%	$ 198,565.79	$ 871,565.79
	Total:	**$5,793,000.00**		**$ 1,709,200.03**	**$ 7,502,200.03**

Note: Estimated costs are shown in 2025 dollars

Financial Summary
The 2025-2026 Drainage Capital Improvement Plan was budgeted and funded with the 2025 Bond, and funds are available for the project.

Staff Recommended Action
Approve

Staff Recommended Motion
Motion to (approve, table, or deny) the Professional Engineering Services Agreement with Birkhoff, Hendricks, and Carter.

2025 STORMWATER MASTER PLAN

Prepared For

Prepared By

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
DALLAS, TEXAS
TBPELS FIRM NO. 526

November 2025

CITY OF AUBREY, TEXAS

2025 STORMWATER MASTER PLAN

TABLE OF CONTENTS

Page No.

A. Executive Summary 1

B. Introduction 2

C. Drainage Design Criteria 4

D. Stormwater Capital Improvement Plan 6

- Table 1 – Project Recommendations (Culverts) 7
- Table 2 – Project Recommendations (Bridges) 8
- Table 3 – Downtown Study – Project Recommendations 8
- Table 4 – Capital Improvement Plan Cost Summary for Overall Stormwater Mater Plan... 9
- Table 5 – Capital Improvement Plan Cost Summary for Downtown Drainage Study..... 10
- Figure 1 – Storm Water Collection System Master Plan 11
- Figure 2 – Aubrey Stormwater Master Plan Capital Improvement Plan 12
- Figure 3 – Downtown Storm Drainage Capital Improvement Map 13

CITY OF AUBREY, TEXAS
2025 STORMWATER MASTER PLAN

A. EXECUTIVE SUMMARY

The purpose of a stormwater master plan is to provide the City with a strategy for managing stormwater to reduce flooding, protect public health and safety, and improve stormwater quality in waterways, along roadways and within public drainage easements. This report presents the results and recommendations of the City of Aubrey's Stormwater Master Plan study and Capital Improvement Plan necessary to manage stormwater runoff from existing Downtown areas of the City, as well as provide a plan for sizing future stormwater infrastructure. The limits of the City's planning area boundary considered in this stormwater master plan study are shown on Figure 1.

For the purposes of this report, the City of Aubrey's storm drainage system is generally divided into two categories:

1) Aubrey Downtown Drainage – Older portions of the City of Aubrey constructed with open channel and culvert drainage, as well as asphalt or concrete roadways. This area was developed prior to updates and adoption of more stringent stormwater design manuals and includes larger residential lots with less impervious areas compared to more recent development.

2) Overall Stormwater Master Plan – Newer developments within this City of Aubrey's planning area that were built with concrete streets, curb, gutter and underground storm drainage systems. These areas primarily consist of smaller lots and more impervious areas compared to the Aubrey Downtown drainage area.

B. INTRODUCTION

The City of Aubrey, Texas Stormwater Master Plan Area contains nine watersheds, each with a drainage channel, and all containing a FEMA Floodplain. As the City continues to develop, stormwater facilities must have adequate capacity to convey peak runoff from less frequent, and more intense, storm events. A stormwater runoff analysis was conducted for the major and minor thoroughfares that cross the existing streams and rivers. Drainage structures included in the study were evaluated to determine existing capacity and compare to the required 100-year fully developed design storm. Proposed roadway drainage improvements are shown in Figure 2 and detailed in Table 1, Table 2 and Table 3. Estimated costs for the proposed drainage improvements projects are detailed in Table 4 and Table 5. Basic descriptions of each of the nine watersheds evaluated in this study are listed below.

Elm Fork North Watershed

The northwesternmost watershed within the service area of the City of Aubrey, is the Elm Fork North (EFN) watershed. The watershed totals approximately 600-acres and drains into the Elm Fork Trinity River Tributary.

Bray Branch Watershed

Just southeast of the Elm Fork North watershed is the Bray Branch (BB) watershed which has an area of approximately 3,200-acres. All runoff from this watershed flows into the Bray Branch which combines with the Elm Fork Trinity River at the western side of the watershed. All thoroughfares within this watershed fall within TxDOT jurisdiction and are excluded from this masterplan.

Aubrey Branch Watershed

The Aubrey Branch (AB) watershed is located south of the Bray Branch watershed which has an area of approximately 2,300-acres. Runoff from this watershed flows into the Aubrey Branch upstream of the confluence with the Elm Fork Trinity River at the western edge of the watershed.

Pecan Creek Watershed

The Pecan Creek (PC) watershed is the largest watershed in the planning boundary, totaling approximately 9,500-acres. The majority of downtown Aubrey drains into the Pecan Creek watershed. However, the watershed is generally bound by Sherman Drive and Union Pacific Railroad along its eastern boundary. The Pecan Creek Tributary consists of several reaches within the watershed and generally flows in a southeasterly direction to its confluence with Little Elm Creek near the City's

southeast planning boundary. A significant portion of the Pecan Creek Tributary has been, or is being studied, to support ongoing developments within the planning boundary.

Elm Fork South Watershed

The Elm Fork South (EFS) watershed is located southwest of the Aubrey Branch watershed and contains area of approximately 2,900-acres. All runoff from this watershed flows southwesterly into the Elm Fork Trinity River.

Running Branch North Watershed

The Running Branch North (RBN) watershed is located southeast of Bray Branch watershed and contains area of approximately 600-acres. All runoff from this watershed flows into the Running Branch. All thoroughfares crossing in this watershed fall within the TxDOT jurisdiction and are excluded from the masterplan.

Running Branch South Watershed

The Running Branch South (RBS) watershed contains total drainage area of approximately 1,000-acres and is located southwest of the Pecan Creek watershed. All runoff from this watershed flows into the Running Branch Creek. All thoroughfares crossing in this watershed fall within the TxDOT jurisdiction and are excluded from the masterplan.

Mustang Creek Watershed

The Mustang Creek (MC) watershed is located in the northeast portion of the City of Aubrey planning boundary and contains approximately 1,400-acres. All runoff from the Mustang Creek watershed flows in Mustang Creek.

Little Elm Creek Watershed

The Little Elm Creek (LEC) watershed contains approximately 3,300-acres and is located in the southeast portion of the City of Aubrey planning boundary, south of the Mustang Creek watershed. Runoff from the Little Elm Creek watershed flows into the Little Elm Creek and a secondary tributary of the creek.

C. DRAINAGE DESIGN CRITERIA

The drainage criteria utilized in this study were based on the City of Aubrey's Technical Construction Standards & Specifications (TCSS), as well as county and state regulations. Proposed culverts, storm sewers and drainage channel improvements presented in this report utilize the 100-year fully developed runoff to estimate facility sizes. Peak flows were obtained from HEC-HMS software for facilities on major tributaries and calculated for facilities located elsewhere.

Overview

The Overall Stormwater Master Plan focuses on addressing peak runoff at major thoroughfare crossings located outside the downtown area and adjacent to new development with underground storm drainage. Therefore, the peak flow in creeks and tributaries were the focus of the Overall Stormwater Master Plan analysis.

The existing downtown area possesses unique drainage challenges due to the width of right-of-way and lack of underground storm drainage systems. Since streets were constructed with open ditch and culvert drainage, there is little space to improve above ground stormwater conveyance. This study assumes streets will be lowered and include underground storm drainage systems to help reduce the amount of overland flow and convey runoff to natural or proposed channels.

Hydrology

The Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS), version 4.12, software was utilized to estimate the 100-year runoff to each drainage facility crossing a FEMA defined floodplain and lacking hydrologic data (Zone A). Facilities crossing FEMA defined floodplains with hydrologic data available (Zone AE) utilize flows from the approved studies.

The SCS Curve Number Method utilized in this study is based on hydrologic soils data along with the assumed land use type to estimate the curve number for a particular watershed. The curve number is a representation of percentage of impervious areas used to approximate direct runoff from rainfall over a defined area. Landuse was assumed to generally follow the City's Landuse plan with the majority of development being single-family residential with some local retail.

Hydrologic soils groups are used to estimate the permeability and runoff potential of the soils in a watershed. Hydrologic soils range from Group A (low runoff potential and high permeability) to group D (high runoff potential and low permeability). All watersheds within the study area are assumed to contain Group D soils to conservatively estimate runoff potential as outlined in the City's Drainage Criteria.

Once the assumed land use and hydrologic soils group is established, a curve number can be selected for the watershed. The iSWM Hydrology Technical Manual, Table 1.9 provides guidance for selection of curve numbers based on land use, hydrologic soil groups and percent impervious area. The curve numbers range from 98 for paved surfaces and group D soil down to 25 for wood or forest land with good cover and group A soil. An average curve number of 85 was selected for calculating runoff from watersheds in this study which is representative of a composite curve number for single-family residential development with local retail and open space lots.

The SCS curve number method assumes uniform rainfall over the entire watershed for a given design storm event. A type II rainfall distribution hydrograph with a 24-hour duration was selected for calculating the runoff to proposed stormwater facilities in this study. A type II NRCS curve is the predominate rainfall distribution curve for calculating runoff in most of the United States and represents the most intense synthetic storm developed by NRCS.

The HEC-HMS software utilizes the input data to calculate the peak runoff to each of the proposed stormwater facilities and develop a hydrograph for each watershed in the study based on existing topography (NCTCOG LiDAR contour maps). While this approach typically provides a conservative estimate of the peak runoff to a point of interest, it is important to note that this does not negate the need for a more detailed study, updated data, grading plan, and verification of peak flows when each of the proposed stormwater facilities are designed.

Hydraulics

Roadway culverts were sized based on peak flow utilizing Manning's equation and a maximum discharge velocity of 6-feet per second. Culvert slopes were estimated based on natural topography. Culvert dimensions were selected based on aerial photography and NCTCOG contours to provide estimated depths of cover and a minimum 1-foot of freeboard above the conduit. Some crossings require multiple conduits to convey the peak flow.

Storm sewers were sized in a similar nature; however, dimensions were estimated based on not only the natural topography but also the estimated depth of excavation for roadway lowering and estimated slope of the hydraulic gradient (HGL). Flow through the storm sewer was not limited to a maximum 6-feet per second as with the culverts.

The dimensions of open channels were estimated based on the width, depth, and slopes of natural channels. A "typical channel section" for each open channel was selected based on existing conditions.

The maximum width of each proposed channel was assumed to be contained within the apparent flow area (i.e. between existing fences). The required bottom width, channel depth to provide a minimum 1-foot of freeboard was determined and channel side slopes calculated. Side slopes steeper than 4-feet horizontal to 1-foot vertical were assumed to require concrete lining to bank stabilization.

The rate of peak flow, along with the geometry and length of a roadway crossing, on a tributary does not always allow for installation of more culvert barrels to achieve the capacity required. For this reason, the maximum number of conduits at each roadway crossing was limited to 4 barrels. Crossings requiring more than 4 conduits were assumed to require bridges. The length of bridges varies widely based on the peak flow and characteristics of the tributary. This study assumes that bridges will span from one edge of the defined floodplain to the opposite edge of the floodplain.

D. STORMWATER CAPITAL IMPROVEMENT PLAN

After analyzing the capacity of the drainage courses and streams, the following list of Capital Improvement Projects was compiled to mitigate the possible stormwater flows and raise the capacity of the existing stormwater drainage network. The proposed CIPs are summarized in Tables 4 and 5.

Each project was added to the Capital Improvement Plan and assigned an identification number as shown in Figure 2 and Figure 3. The total costs (2025 dollars) of the capital improvement projects were estimated based on the engineer's opinion of probable construction costs, professional services, construction inspections, and materials testing for each project.

TABLE 1
Project Recommendations (Culverts)

Crossing ID	Watershed	Sub-Basin ID	Stormwater Structures[2]	Runoff Rate (cfs)	Culvert Rise (ft)	Channel Width (ft)[1]	No. of Culverts	Culvert Size (WxH)
1	Elm Fork North	EFN103	4-12'x8' RC Box Culverts ASTM C-1677	1,946.00	5.00	64.87	7	12'x8'
2	Aubrey Branch	AB115	1-10'x6' RC Box Culverts ASTM C-1677	356.00	6.00	9.89	1	10'x6'
3	Aubrey Branch	AB113	1-10'x6' RC Box Culverts ASTM C-1677	244.00	6.00	6.78	1	10'x6'
4	Aubrey Branch	AB111	3-10'x4' RC Box Culverts ASTM C-1677	680.00	4.00	28.33	3	10'x4'
5	Aubrey Branch	AB123	4-12'x12' RC Box Culverts ASTM C-1677	3,287.00	5.00	109.57	11	12'x12'
6	Aubrey Branch	AB125	3-10'x4' RC Box Culverts ASTM C-1677	700.00	4.00	29.17	3	10'x4'
7	Aubrey Branch	AB121	18" Circular Culverts ASTM C-76	42.00	-	7.00	-	18" Dia Pipe
8	Aubrey Branch	AB127	4-10'x4' RC Box Culverts ASTM C-1677	947.00	4.00	39.46	4	10'x4'
9	Aubrey Branch	AB123	6-10'x4' RC Box Culverts ASTM C-1677	1,270.00	4.00	52.92	6	10'x4'
10	Aubrey Branch	AB105	2-10'x6' RC Box Culverts ASTM C-1677	652.00	6.00	18.11	2	10'x6'
11	Aubrey Branch	AB127	1-18" Circular Culverts ASTM C-76	50.00	-	8.33	-	18" Dia Pipe
12	Aubrey Branch	AB101	2-10'x8' RC Box Culverts ASTM C-1677	638.00	8.00	13.29	2	10'x8'
13	Aubrey Branch	AB121	4-10'x4' RC Box Culverts ASTM C-1677	730.00	4.00	30.42	4	10'x4'
14	Aubrey Branch	AB101	2-10'x4' RC Box Culverts ASTM C-1677	278.00	4.00	11.58	2	10'x4'
15	Aubrey Branch	AB103	1-5'x5' RC Box Culverts ASTM C-1677	150.00	5.00	5.00	1	5'x5'
16	Elm Fork South	EFS109	30" Circular Culverts ASTM C-76	80.00	4.00	52.83	6	30" Dia Pipe
17	Elm Fork South	EFS113	5-10'x6' RC Box Culverts ASTM C-1677	1,465.00	6.00	40.69	5	10'x6'
18	Elm Fork South	EFS115	36" Circular Culverts ASTM C-76	100.00	-	16.67	-	36" Dia Pipe
19	Elm Fork South	EFS119	6-10'x6' RC Box Culverts ASTM C-1677	1,823.00	6.00	50.64	6	10'x6'
20	Pecan Creek	PC123	5-10'x6' RC Box Culverts ASTM C-1677	1,641.00	6.00	45.58	5	10'x6'
21	Pecan Creek	PC123	6-10'x8' RC Box Culverts ASTM C-1677	2,829.00	8.00	58.94	6	10'x8'
22	Pecan Creek	PC125	24" Circular Culverts ASTM C-76	65.00	-	10.83	1	24" Dia Pipe
23	Pecan Creek	PC125	4-10'x6' RC Box Culverts ASTM C-1677	1,303.00	6.00	36.19	4	10'x6'
24	Pecan Creek	PC125	2-10'x4' RC Box Culverts ASTM C-1677	261.00	4.00	10.88	2	10'x4'
25	Pecan Creek	PC139	3-10'x6' RC Box Culverts ASTM C-1677	829.00	6.00	23.03	3	10'x6'
31	Pecan Creek	PC111	3-6'x4' RC Box Culverts ASTM C-1677	302.00	4.00	12.58	3	6'x4'
33	Little Elm Creek	LEC105	3-8'x6' RC Box Culverts ASTM C-1677	752.00	6.00	20.89	3	8'x6'
35	Little Elm Creek	AB105	18" Circular Culverts ASTM C-76	40.00	-	6.67	-	18" Dia Pipe
36	Little Elm Creek	LEC105	1-6'x4' RC Box Culverts ASTM C-1677	127.00	4.00	5.29	1	6'x4'

TABLE 2
Project Recommendations (Bridges)

Crossing ID	Watershed	Sub-Basin ID	Stormwater Structures[2]	Runoff Rate (CFS)	Bridge length (100-yr Flood Plain)	Bridge Design Height	Bridge Design Height (ft)
26	Pecan Creek	PC105	105' Bridge	3,016.00	1,131	18	18
27	Pecan Creek	PC105	1450' Bridge	17,634.00	798	18	18
28	Pecan Creek	MC101	100' Bridge	4,622.00	1,131	18	18
29	Pecan Creek	PC103	1500' Bridge	18,786.00	798	18	18
30	Pecan Creek	PC149	700' Bridge	19,683.00	1,229	8	8
32	Mustang Creek	MC101	950' Bridge	11,733.00	936	20	20
34	Little Elm Creek	LEC105	3500' Bridge	34,897.00	4,252	20	20
37	Little Elm Creek	LEC101	3280' Bridge	35,224.00	12,200	6	6

(1) Channel width is the length of road crossing the FEMA 100-yr floodplain.
(2) Span of Bridge and culverts are determined by the existing high flow level of channel at 100-yr rainfall event.

TABLE 3
Downtown Study - Project Recommendations

Project No.	Watershed	Stormwater Structures	Runoff Rate (cfs)	Storage Volume (cf)
C1	Bray Branch	3'x3' Reinforced Concrete Box Culvert	61.6	-
C2	Pecan Creek	Drainage and Street Improvements at Bruce St	64.5	-
C3	Pecan Creek	6'x4' Reinforced Concrete Box Culvert Sewer and Street Improvements at Brockett St	132.76	-
C4	Pecan Creek	6'x4' Reinforced Concrete Box Culvert with Drainage Improvement Ditch	347.13	-
C5	Pecan Creek	Two 7'x4' Reinforced Concrete Box Culvert	446.87	-
C6	Aubrey Branch	6'x4' Reinforced Concrete Box Culvert	215.55	-
C7	Aubrey Branch	3'x2' Reinforced Concrete Box Culvert	88.23	-
D1	Aubrey Branch	Ditch Improvements	78.69	-
D2	Pecan Creek	Ditch Improvements - Concrete Channel	43.94	-
D3	Pecan Creek	Ditch Improvements	64.29	-
D4	Pecan Creek	Ditch Improvements - Concrete Channel	182.92	-
D5	Aubrey Branch	Ditch Improvements at Plum St	78.69	-
P1	Pecan Creek	Detention Pond	72.87	45,800.00
P2	Pecan Creek	Detention Pond	446.87	904,200.00

TABLE 4

Capital Improvement Plan Cost Summary for Overall Stormwater Masterplan

Crossing ID	Proposed Structure	Cost	Debt Service		Total Project
			Interest Rate %	Cost	Cost ($)
1	4-12'x8' RC Box Culverts ASTM C-1677	$ 1,629,000.00	5.00%	$ 480,629.53	$ 2,109,629.53
2	1-10'x6' RC Box Culverts ASTM C-1677	$ 2,437,000.00	5.00%	$ 719,026.49	$ 3,156,026.49
3	1-10'x6' RC Box Culverts ASTM C-1677	$ 116,000.00	5.00%	$ 34,225.31	$ 150,225.31
4	3-10'x4' RC Box Culverts ASTM C-1677	$ 268,000.00	5.00%	$ 79,072.26	$ 347,072.26
5	4-12'x12' RC Box Culverts ASTM C-1677	$ 2,437,000.00	5.00%	$ 719,026.49	$ 3,156,026.49
6	3-10'x4' RC Box Culverts ASTM C-1677	$ 268,000.00	5.00%	$ 79,072.26	$ 347,072.26
7	18" Circular Culverts ASTM C-76	$ 68,000.00	5.00%	$ 20,063.11	$ 88,063.11
8	4-10'x4' RC Box Culverts ASTM C-1677	$ 688,000.00	5.00%	$ 202,991.48	$ 890,991.48
9	6-10'x4' RC Box Culverts ASTM C-1677	$ 1,025,000.00	5.00%	$ 302,421.89	$ 1,327,421.89
10	2-10'x6' RC Box Culverts ASTM C-1677	$ 1,528,000.00	5.00%	$ 450,829.91	$ 1,978,829.91
11	1-18" Circular Culverts ASTM C-76	$ 167,000.00	5.00%	$ 49,272.64	$ 216,272.64
12	2-10'x8' RC Box Culverts ASTM C-1677	$ 688,000.00	5.00%	$ 202,991.48	$ 890,991.48
13	4-10'x4' RC Box Culverts ASTM C-1677	$ 688,000.00	5.00%	$ 202,991.48	$ 890,991.48
14	2-10'x4' RC Box Culverts ASTM C-1677	$ 352,000.00	5.00%	$ 103,856.10	$ 455,856.10
15	1-5'x5' RC Box Culverts ASTM C-1677	$ 120,000.00	5.00%	$ 35,405.49	$ 155,405.49
16	30" Circular Culverts ASTM C-76	$ 395,000.00	5.00%	$ 116,543.07	$ 511,543.07
17	5-10'x6' RC Box Culverts ASTM C-1677	$ 1,024,000.00	5.00%	$ 302,126.85	$ 1,326,126.85
18	36" Circular Culverts ASTM C-76	$ 66,000.00	5.00%	$ 19,473.02	$ 85,473.02
19	6-10'x6' RC Box Culverts ASTM C-1677	$ 1,529,000.00	5.00%	$ 451,124.95	$ 1,980,124.95
20	5-10'x6' RC Box Culverts ASTM C-1677	$ 1,276,000.00	5.00%	$ 376,478.38	$ 1,652,478.38
21	6-10'x8' RC Box Culverts ASTM C-1677	$ 2,033,000.00	5.00%	$ 599,828.01	$ 2,632,828.01
22	24" Circular Culverts ASTM C-76	$ 268,000.00	5.00%	$ 79,072.26	$ 347,072.26
23	4-10'x6' RC Box Culverts ASTM C-1677	$ 1,024,000.00	5.00%	$ 302,126.85	$ 1,326,126.85
24	2-10'x4' RC Box Culverts ASTM C-1677	$ 352,000.00	5.00%	$ 103,856.10	$ 455,856.10
25	3-10'x6' RC Box Culverts ASTM C-1677	$ 772,000.00	5.00%	$ 227,775.32	$ 999,775.32
26	105' Bridge	$ 2,802,000.00	5.00%	$ 826,718.19	$ 3,628,718.19
27	1450' Bridge	$ 38,489,000.00	5.00%	$ 11,356,015.86	$ 49,845,015.86
28	100' Bridge	$ 2,669,000.00	5.00%	$ 787,477.11	$ 3,456,477.11
29	1500' Bridge	$ 39,816,000.00	5.00%	$ 11,747,541.57	$ 51,563,541.57
30	700' Bridge	$ 18,594,000.00	5.00%	$ 5,486,080.67	$ 24,080,080.67
31	3-6'x4' RC Box Culverts ASTM C-1677	$ 379,000.00	5.00%	$ 111,822.34	$ 490,822.34
32	950' Bridge	$ 25,229,000.00	5.00%	$ 7,443,709.22	$ 32,672,709.22
33	3-8'x6' RC Box Culverts ASTM C-1677	$ 621,000.00	5.00%	$ 183,223.41	$ 804,223.41
34	3500' Bridge	$ 92,883,000.00	5.00%	$ 27,404,734.37	$ 120,287,734.37
35	18" Circular Culverts ASTM C-76	$ 53,000.00	5.00%	$ 15,637.42	$ 68,637.42
36	1-6'x4' RC Box Culverts ASTM C-1677	$ 116,000.00	5.00%	$ 34,225.31	$ 150,225.31
37	3280' Bridge	$ 87,046,000.00	5.00%	$ 25,682,552.32	$ 112,728,552.32
	Total:	**$ 329,915,000.00**		**$ 97,340,018.50**	**$ 427,255,018.50**

TABLE 5

Capital Improvement Plan Cost Summary for Downtown Drainage Study

Project No.	Proposed Structure	Cost	Debt Service		Total Project
			Interest Rate %	Cost	
C1	Blackjack Road Culvert Replacement (Near Blackjack Rd & Almeda St)	$132,000.00	5.00%	$ 38,946.04	$ 170,946.04
C2	Bruce Street Pavement & Storm Sewer Improvements	$684,000.00	5.00%	$ 201,811.29	$ 885,811.29
C3	Brockett Street Pavement & Storm Sewer Improvements	$1,755,000.00	5.00%	$ 517,805.29	$ 2,272,805.29
C4	North Street Pavement & Storm Sewer Improvements	$594,000.00	5.00%	$ 175,257.18	$ 769,257.18
C5	Sherman Drive Culvert Replacement	$532,000.00	5.00%	$ 156,964.34	$ 688,964.34
C6	Cadell Street Culvert Replacement	$403,000.00	5.00%	$ 118,903.44	$ 521,903.44
C7	Maple Street Culvert Replacement	$80,000.00	5.00%	$ 23,603.66	$ 103,603.66
D1	Channel Improvements (North St to Sherman Dr)	$115,000.00	5.00%	$ 33,930.26	$ 148,930.26
D2	Channel Improvements (Brockett Dr to Sherman Dr)	$107,000.00	5.00%	$ 31,569.90	$ 138,569.90
D3	Tisdell Lane Channel Improvements	$77,000.00	5.00%	$ 22,718.52	$ 99,718.52
D4	Demoye Street Channel Improvements	$314,000.00	5.00%	$ 92,644.37	$ 406,644.37
D5	In between Maple St and Caddell St Channel Improvements	$306,000.00	5.00%	$ 90,284.00	$ 396,284.00
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	Total:	**$5,793,000.00**		**$ 1,709,200.03**	**$ 7,502,200.03**

Note: Estimated costs are shown in 2025 dollars

AUBREY
TEXAS

STORM WATER COLLECTION SYSTEM MASTER PLAN

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
TBPE Firm No. 526; TBPLS Firm No. 10031800
Dallas, Texas

NOVEMBER 2025

FIGURE 1

0 1500 3000 4500
SCALE IN FEET

LEGEND

BOUNDARIES AND ETJ

- EXISTING PARCELS
- AUBREY EXISTING CITY LIMITS
- AUBREY E.T.J. AGREEMENTS
- AUBREY STATUTORY E.T.J.
- DOWNTOWN STORM DRAINAGE STUDY LIMITS
- E.T.J. BOUNDARY AGREEMENTS

THROUGHFARE DESIGNATIONS

- HIGHWAY (500' ROW)
- PRINCIPAL ARTERIAL (140' ROW)
- MAJOR ARTERIAL (120' ROW)
- MINOR ARTERIAL (100' ROW)
- MAJOR COLLECTOR (80' ROW)
- MINOR COLLECTOR (60' ROW)
- EXISTING ROADWAY
- PROPOSED NEW ROADWAY (FUTURE)

CROSSINGS

- GRADE SEPARATED ROADWAY (FUTURE)
- RAILROAD - AT GRADE (EXISTING)
- RAILROAD - AT GRADE (FUTURE)
- RAILROAD - GRADE SEPARATED (EXISTING)
- RAILROAD - GRADE SEPARATED (FUTURE)

CIP PROJECT NUMBERS

- (1) CIP PROJECT NUMBERS FOR OVERLL MASTER PLAN
- (C1) CIP PROJECT NUMBERS FOR DOWNTOWN STUDY

DOWNTOWN INSET

0 500 1000 1500
HORIZONTAL SCALE IN FEET

H:\Projects\Aubrey\20241.32 2024 Storm Water Master Plan and Storm Water Utility District Rate Evaluation\Basedwgs\2024 Storm Water Master Plan Map.dwg

AUBREY STORMWATER MASTER PLAN
CAPITAL IMPROVEMENT PLAN

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
TBPE Firm No. 526; TBPLS Firm No. 10031800
11910 Greenville Ave., Suite 600
Dallas, Texas 75243 (214) 361-7900

NOVEMBER 2025

FIGURE 2

SCALE IN FEET
0 2200 4400 6600

Crossing ID	Watershed	Stormwater Structures	Runoff rate (cfs)	Culvert Size (WxH)
1	Elm Fork North	4-12'x8' RC Box Culverts ASTM C-1677	1,946.00	12'x8'
2	Aubrey Branch	1-10'x6' RC Box Culverts ASTM C-1677	356.00	10'x6'
3	Aubrey Branch	1-10'x6' RC Box Culverts ASTM C-1677	244.00	10'x6'
4	Aubrey Branch	3-10'x4' RC Box Culverts ASTM C-1677	680.00	10'x4'
5	Aubrey Branch	4-12'x12' RC Box Culverts ASTM C-1677	3,287.00	12'x12'
6	Aubrey Branch	3-10'x4' RC Box Culverts ASTM C-1677	700.00	10'x4'
7	Aubrey Branch	18" Circular Culverts ASTM C-76	42.00	18" Dia Pipe
8	Aubrey Branch	4-10'x4' RC Box Culverts ASTM C-1677	947.00	10'x4'
9	Aubrey Branch	6-10'x4' RC Box Culverts ASTM C-1677	1,270.00	10'x4'
10	Aubrey Branch	2-10'x6' RC Box Culverts ASTM C-1677	652.00	10'x6'
11	Aubrey Branch	1-18" Circular Culverts ASTM C-76	50.00	18" Dia Pipe
12	Aubrey Branch	2-10'x8' RC Box Culverts ASTM C-1677	638.00	10'x8'
13	Aubrey Branch	4-10'x4' RC Box Culverts ASTM C-1677	730.00	10'x4'
14	Aubrey Branch	2-10'x4' RC Box Culverts ASTM C-1677	278.00	10'x4'
15	Aubrey Branch	1-5'x5' RC Box Culverts ASTM C-1677	150.00	5'x5'
16	Elm Fork South	30" Circular Culverts ASTM C-76	80.00	30" Dia Pipe
17	Elm Fork South	5-10'x6' RC Box Culverts ASTM C-1677	1,465.00	10'x6'
18	Elm Fork South	36" Circular Culverts ASTM C-76	100.00	36" Dia Pipe
19	Elm Fork South	6-10'x6' RC Box Culverts ASTM C-1677	1,823.00	10'x6'
20	Pecan Creek	5-10'x6' RC Box Culverts ASTM C-1677	1,641.00	10'x6'
21	Pecan Creek	6-10'x8' RC Box Culverts ASTM C-1677	2,829.00	10'x8'
22	Pecan Creek	24" Circular Culverts ASTM C-76	65.00	24" Dia Pipe
23	Pecan Creek	4-10'x6' RC Box Culverts ASTM C-1677	1,303.00	10'x6'
24	Pecan Creek	2-10'x4' RC Box Culverts ASTM C-1677	261.00	10'x4'
25	Pecan Creek	3-10'x6' RC Box Culverts ASTM C-1677	829.00	10'x6'
31	Pecan Creek	3-6'x4' RC Box Culverts ASTM C-1677	302.00	6'x4'
33	Little Elm Creek	3-8'x6' RC Box Culverts ASTM C-1677	752.00	8'x6'
35	Little Elm Creek	18" Circular Culverts ASTM C-76	40.00	18" Dia Pipe
36	Little Elm Creek	1-6'x4' RC Box Culverts ASTM C-1677	127.00	6'x4'

Crossing ID	Major Basin	Bridge	Runoff rate (CFS)
26	Pecan Creek	105' Bridge	3,016.00
27	Pecan Creek	1,450' Bridge	17,634.00
28	Pecan Creek	100' Bridge	4,622.00
29	Pecan Creek	1,500 Bridge	18,786.00
30	Pecan Creek	700' Bridge	19,683.00
32	Mustang Creek	950' Bridge	11,733.00
34	Little Elm Creek	3,500' Bridge	34,897.00
37	Little Elm Creek	3,280' Bridge	35,224.00

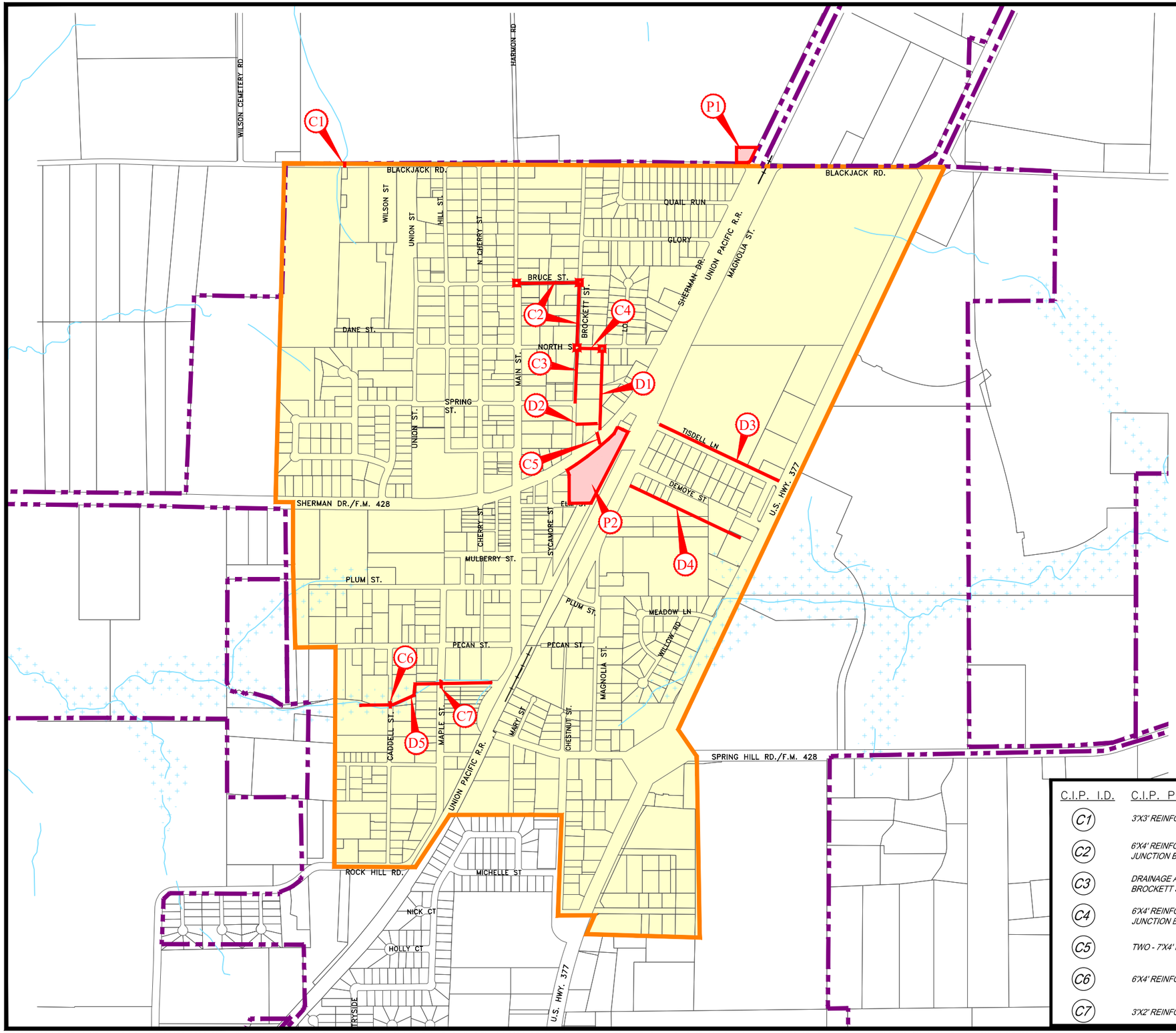
REVISED: 11/18/25 – HR Projects\Aubrey\2024132 2024 Storm Water Master Plan and Storm Water Utility District Rate Evaluation\Sheets\2024 CIP Map for Aubrey Stormwater Masterplan.dgn SCALE: 1:2 PLOT STYLE: 11x17.ctb PLOTTED BY: Nabin Pandey ON 11/18/2025

DOWNTOWN STORM DRAINAGE CAPITAL IMPROVEMENT MAP

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
TBPE Firm No. 526; TBPLS Firm No. 10031800
Dallas, Texas

NOVEMBER 2025

FIGURE 3



LEGEND

- AUBREY CITY LIMIT
- DOWNTOWN PLANNING BOUNDARY
- PROPOSED C.I.P. DRAINAGE STRUCTURES
- PROPOSED C.I.P. RETENTION/DETENTION POND
- EXISTING PARCELS

C.I.P. I.D.	C.I.P. PROJECT DESCRIPTION	C.I.P. I.D.	C.I.P. PROJECT DESCRIPTION
C1	3'X3' REINFORCED CONCRETE BOX CULVERT	D1	DITCH IMPROVEMENTS (3'X3' SECTION)
C2	6'X4' REINFORCED CONCRETE BOX CULVERT WITH JUNCTION BOX AND STREET IMPROVEMENTS	D2	DITCH IMPROVEMENTS (4'X2' SECTION)
C3	DRAINAGE AND STREET IMPROVEMENTS AT BROCKETT ST	D3	DITCH IMPROVEMENTS (6'X3' SECTION)
C4	6'X4' REINFORCED CONCRETE BOX CULVERT WITH JUNCTION BOX AND STREET IMPROVEMENTS	D4	DITCH IMPROVEMENTS (3'X3' SECTION)
C5	TWO - 7'X4' REINFORCED CONCRETE BOX CULVERT	D5	DITCH IMPROVEMENTS (4'X3.5' SECTION)
C6	6'X4' REINFORCED CONCRETE BOX CULVERT	P1	PROPOSED RETENSION / DETENTION POND 10.5 AC-FT
C7	3'X2' REINFORCED CONCRETE BOX CULVERT	P2	PROPOSED RETENSION / DETENTION POND 20.76 AC-FT

REVISED: 11/18/25 -H:\Projects\Aubrey\2024132 2024 Storm Water Master Plan and Storm Water Utility District Rate Evaluation\Sheets\2024 CIP Map for Downtown Storm Drainage Study.dwg PLOT SCALE: 1:2 PLOT STYLE: 11x17.ctb PLOTTED BY: Nabin Pandey ON 11/18/2025

2025 STORMWATER MASTER PLAN

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
DALLAS, TEXAS
TBPELS Firm No. 526

November 2025

PROFESSIONAL ENGINEERING SERVICES AGREEMENT

THIS AGREEMENT is made and entered into by and between the **City of Aubrey, Texas**, hereinafter referred to as "City", and **Birkhoff, Hendricks & Carter, L.L.P.**, hereinafter referred to as "Engineer", to be effective from and after the date as provided herein.

The City desires to engage the services of the Engineer to complete engineering design, provide bidding and construction administration services and provide surveying services for the ***Downtown Stormwater Improvements***, hereinafter referred to as the "Project"; and the Engineer desires to render such engineering design services for the City under the terms and conditions provided herein. That for and in consideration of the covenants contained herein, and for the mutual benefits to be obtained hereby, the parties hereto agree as follows:

I. Employment of the Engineer

The City hereby agrees to retain the Engineer to perform professional engineering services in connection with the Project; Engineer agrees to perform such services in accordance with the terms and condition of this Agreement.

II. Scope of Services

The parties agree that Engineer shall perform such services as expressly set forth and described in Exhibit “A”, which is attached hereto and thereby made a part of this Agreement. The parties understand and agree that deviations or modifications, in the form of written changes may be authorized from time to time by the City. Engineer shall have no further obligations or responsibilities for the project except as agreed to in writing. Engineer’s services and work product are intended for the sole use and benefit of Client and are non-intended to create any third party rights or benefits, or for any use by any other entity or person for any other purpose.

Engineer shall perform his or her professional engineering services with the professional skill and care ordinarily provided by competent engineers practicing in North Central Texas and under the same or similar circumstances and professional license. Professional services shall be performed as expeditiously as is prudent, considering the ordinary professional skill and care of a competent engineer.

III. Schedule of Work

The Engineer agrees to commence services immediately upon execution of this Agreement, and to proceed diligently with said service, except for delays beyond the reasonable control of Engineer, to completion, as described in the Completion Schedule attached hereto as Exhibit "B" and thereby made a part of this Agreement.

IV. Compensation and Method of Payment

The parties agree that Engineer shall be compensated for all services provided pursuant to this Agreement in the amount and manner described and set forth in the Payment Schedule attached hereto as Exhibit "C" and thereby made a part of this Agreement. Engineer further agrees that it will prepare and present such monthly progress reports and itemized statements as are described in said Exhibit "C". City agrees to pay invoices within 30 days of receipt. Statement for services shall include a line for previous payments, contract amount, and amount due current invoice.

V. Information To Be Provided By The City

The City agrees to furnish, prior to commencement of work, all information pertinent to the Project, requested by Engineer that is available to the City.

VI. Insurance

Engineer agrees to procure and maintain for the duration of the contract Professional Liability Insurance ($3,000,000), Worker's Compensation, General Liability and Automobile Insurance.

VII. Assignment and Subletting

The Engineer agrees that neither this Agreement nor the services to be performed hereunder will be assigned or sublet without the prior written consent of the City. The Engineer further agrees that the assignment or subletting of any portion or feature of the work or materials required in the performance of this Agreement shall not relieve the Engineer from its full obligations to the City as provided by this Agreement.

VIII. Contract Termination

The parties agree that City or the Engineer shall have the right to terminate this Agreement without cause upon thirty (30) days written notice to the other. In the event of such termination without cause, Engineer shall deliver to City all finished or unfinished documents, data, studies, surveys, drawings, maps, models, reports, photographs or other items prepared by Engineer in connection with this Agreement. Engineer shall be entitled to compensation for any and all services completed to the satisfaction of City in accordance with the provisions of this Agreement prior to termination.

IX. Engineer's Opinion of Cost

The parties recognize and agree that any and all opinions of cost prepared by Engineer in connection with the Project represent the best judgment of Engineer as a design professional familiar with the construction industry, but that the Engineer does not guarantee that bids solicited or received in connection with the Project will not vary from the opinion by the Engineer.

X. Construction

On projects that include construction, the Owner recognizes that the Contractor and Subcontractors will be solely in control of the Project site and exclusively responsible for construction means, methods, scheduling, sequencing, jobsite safety, safety programs, and compliance with all construction documents and directions from Owner or Building Officials. Construction contracts are between the City and the Construction Contractor. Consultant shall not be responsible for construction related damages, losses, costs, or claims; except only to the extent caused by Consultant's sole negligence.

XI. Ownership of Documents

Original drawings, specifications and reports are the property of the Engineer; however, the Project is the property of the City. City shall be furnished with such reproductions of drawings, specifications and reports. Upon completion of the services or any earlier termination of this Agreement under Article VIII, Engineer will revise drawings to reflect changes made during construction as reported by the City and contractor and will furnish the City with one set of construction record drawings in accordance with terms provided in Exhibit "A" – Engineering Services.

All deliverables shall be furnished as an additional service at any other time requested by the City, when such deliverables are available in the Engineer's record keeping system.

XII. Complete Contract

This Agreement, including the exhibits hereto numbered Exhibit "A" through "F" constitutes the entire agreement by and between the parties regarding the subject matter hereof, and supersedes all prior or contemporaneous written or oral understanding. This agreement may only be amended, supplemented, modified or canceled by a duly executed written agreement.

XIII. Mailing of Notices

Unless instructed otherwise in writing, Engineer agrees that all notices or communications to City permitted or required under this Agreement shall be addressed to City at the following address:

Ms. Leanne Wilson
Assistant City Manager
City of Aubrey, TX
107 Main Street
Aubrey, TX 76227
Phone: 940-440-9343
Email: lwilson@aubreytx.gov

City agrees that all notices or communications to Engineer permitted or required under this Agreement shall be addressed to Engineer at the following address:

Craig M. Kerkhoff, P.E., C.F.M.
Managing Partner
Birkhoff, Hendricks & Carter, L.L.P.
11910 Greenville Ave., #600
Dallas, Texas 75243
Phone: (214) 361-7900
Email: ckerkhoff@bhcllp.com

All notices or communications required to be given in writing by one party or the other shall be considered as having been given to the addressee on the date such notice or communication is posted by the sending party.

XIV. Texas Board of Professional Engineers & Land Surveying Contact Information

Recipients of professional land surveying services under this agreement may direct complaints regarding such services to the Texas Board of Professional Engineers & Land Surveyors, 1917 South Interstate 35, Austin, Texas 78741, Phone (512) 440-7723.

XV. Miscellaneous

A. Boycott of Israel – The Engineer represents, to the current actual knowledge of the individual signing this Agreement on behalf of the Engineer as set forth on the signature page hereto (the "Engineer's Officer"), in such Engineer's Officer's representative capacity on behalf of the Engineer, that, to the extent this Agreement constitutes a contract for goods or services within the meaning of Section 2271.002 of the Texas Government Code, as amended, solely for purposes of compliance with Chapter 2271 of the Texas Government Code, and subject to applicable federal law, neither the Engineer, nor any wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of the Engineer, as of the date of this Agreement, (i) boycotts Israel; or (ii) will boycott Israel during the term of this Agreement. The terms "boycotts Israel" and "boycott Israel" as used in this paragraph have the meanings assigned to the term "boycott Israel" in Section 808.001 of the Texas Government Code, as amended.

B. Boycott of Certain Energy Companies – The Engineer represents, to the current actual knowledge of the Engineer' Officer, in such Engineer's Officer's representative capacity on behalf of the Engineer, that, to the extent this Agreement constitutes a contract for goods or services within the meaning of Section 2276.002 of the Texas Government Code, as amended, solely for purposes of compliance with Chapter 2276 of the Texas Government Code, and subject to applicable federal law, neither the Engineer, nor any wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of the Engineer, as of the date of this Agreement, (i) boycotts energy companies; or (ii) will boycott energy companies during the term of this Agreement. The term "boycott energy companies" as used in this paragraph has the meaning assigned to the term "boycott energy company" in Section 809.001 of the Texas Government Code, as amended.

C. Discrimination Against Firearm Entity or Firearm Trade Association – The Engineer represents, to the current actual knowledge of the Engineer' Officer, in such Engineer's Officer's representative capacity on behalf of the Engineer, that, to the extent this Agreement constitutes a contract for goods or services within the meaning of Section 2274.002 of the Texas Government Code, as amended, solely for purposes of compliance with Chapter 2274 of the Texas Government Code, and subject to applicable federal law, neither the Engineer, nor any wholly owned subsidiary, majority-owned

subsidiary, parent company, or affiliate of the Engineer, as of the date of this Agreement, (i) has a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; or (ii) will discriminate against a firearm entity or firearm trade association during the term of this Agreement. The term "discriminate against a firearm entity or firearm trade association" as used in this paragraph has the meanings assigned to the term in Section 2274.001 of the Texas Government Code, as amended.

D. Iran, Sudan and Foreign Organizations – Section 2252.151 of the Texas Government Code defines a "governmental contract" as a contract awarded by a governmental entity for general construction, an improvement, a service, or a public works project or for a purchase of supplies, materials, or equipment, and provides that the term includes a contract to obtain a professional or consulting service subject to Chapter 2254 of the Texas Government Code. The Engineer represents, to the current actual knowledge of the Engineer's Officer, in his or her representative capacity on behalf of the Engineer, that, as of the date of this Agreement, to the extent this Agreement constitutes a governmental contract within the meaning of Section 2252.151 of the Texas Government Code, as amended, solely for purposes of compliance with Subchapter F of Chapter 2252 of the Texas Government Code, and except to the extent otherwise required by applicable federal law, neither the Engineer nor any wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of the Engineer is an entity listed by the Texas Comptroller of Public Accounts under Sections 806.051, 807.051, or 2252.153 of the Texas Government Code. The term "foreign terrorist organization" in this paragraph has the meaning assigned to such term in Section 2252.151 of the Texas Government Code.

E. Form 1295 – Submitted herewith is a completed Form 1295 generated by the Texas Ethics Commission's (the "TEC") electronic filing application in accordance with the provisions of Section 2252.908 of the Texas Government Code and the rules promulgated by the TEC (the "Form 1295"). The City hereby confirms receipt of the Form 1295 from the Engineer, and the City agrees to acknowledge such form with the TEC through its electronic filing application not later than the 30th day after the receipt of such form. The Parties understand and agree that, with the exception of information identifying the City and the contract identification number, neither the City nor its consultants are responsible for the information contained in the Form 1295; that the information contained in the Form 1295 has been provided solely by the Engineer; and, neither the City nor its consultants have verified such information.

F. Compliance with Federal Regulations – During the performance of this agreement, the engineer, for itself, its assignees, and successors in interest agrees to comply with Federal Regulations and

Non-discrimination statutes and authorities outlined in **Exhibit D**, Appendix "A" and Appendix "E" attached hereto and made a part of this agreement

XVI. Contract Amendments

This Agreement may be amended only by the mutual agreement of the parties expressed in writing.

XVII. Effective Date

This Agreement shall be effective from and after execution by both parties hereto, with originals in the hand of both parties.

WITNESS OUR HANDS AND SEALS on the date indicated below.

CITY OF AUBREY, TEXAS
A Texas Home-Rule Municipal Corporation

By: _____

Date: _____

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
A Texas Limited Liability Partnership
Texas Board of Professional Engineers & Land Surveys
Engineering Firm No. 526
Land Surveying Firm No. 100318-06

Craig M. Kerkhoff, P.E., C.F.M.
Digitally signed by Craig M. Kerkhoff, P.E., C.F.M.
DN: C=US, E=ckerkhoff@bhcllp.com, O="Birkhoff, Hendricks & Carter, L.L.P.", OU=Managing Partner, CN="Craig M. Kerkhoff, P.E., C.F.M."
Date: 2026.01.12 19:34:52-06'00'

By: _____
Craig M. Kerkhoff, P.E., Managing Partner

Date: _____

ATTEST

By: _____

EXHIBIT "A"

ENGINEERING SERVICES

Downtown Stormwater Improvements

GENERAL PROJECT SCOPE

This project scope of services consists of the preparation of construction plans, specifications and bidding documents for construction of the fourteen (14) projects proposed within the downtown area of the City's stormwater masterplan.

LiDAR data will be utilized to develop the base drawings for each of the individual projects and is included within the design budget. Field survey will be utilized where additional information is required, to locate property corners, or additional subterranean information that is needed.

Each project will be initiated with the 100-year design storm criteria. At the 30% completion of each respective project, if the design storm cannot be reasonably accommodated, coordination will occur with the City prior to continuing with design efforts.

It is intended to advertise the fourteen (14) projects as one bid package. The projects will be designed with identifying project numbers that match the stormwater masterplan. The projects are the following:

C1. 3-foot x 3-foot Reinforced Concrete Box Culvert (RCB)

C2. 6-foot x 4-foot Reinforced Concrete Box Culvert (RCB) with junction box and street improvements

C3. Drainage and street improvements at Brockett Street

C4. 6-foot x 4-foot Reinforced Concrete Box (RCB) with junction box and street improvements

C5. Two 7-foot x 4-foot Reinforced Concrete Boxes (RCB)

C6. 6-foot x 4-foot Reinforced Concrete Box Culvert (RCB

C7. 3-foot x 2-foot Reinforced Concrete Box Culvert (RCB)

D1. Ditch Improvements (3-foot x 3-foot Section)

D2. Ditch Improvements (4-foot x 2-foot Section)

D3. Ditch Improvements (6-foot x 3-foot Section)

D4. Ditch Improvements (3-foot x 3-foot Section)

D5. Ditch Improvements (4-foot x 3.5-foot Section)

P1. Proposed Retention / Detention Pond (10.5 AC-FT)

P2. Proposed Retention / Detention Pond (20.76 AC-FT)

Part I: Preliminary Engineering (Lump Sum)

The following tasks will be completed for each of the projects listed, as applicable.

1. Create base map based on property information obtained through the Central Appraisal District and field surveys.
2. Conduct an aerial LiDAR scanning across the project limits to obtain high-resolution topographic data. The collected field data will be post-processed and analyzed to classify ground surfaces, structures, vegetation, and other topographic features. Using the processed data, develop a topographic base drawing. Base drawing includes topography, utility markings, pavement, fences, and trees.
3. Obtain record drawings from City staff on City utilities and right-of-way documents.
4. Preliminary drainage evaluation including drainage area map, identification of major drainage outfall structures and drainage system with preliminary sizing and any drainage easement requirements.
5. Preliminary roadway schematic (Brockett, Bruce & North Streets) including horizontal and vertical alignments of roadway, including establishing the centerline of the roadway, typical section and geometric layouts to determine land rights.
6. Attend two design review meetings with City Staff.
7. Prepare opinion of probable construction cost based on preliminary engineering.
8. Submit Preliminary Plans to City for review.

Part II: Final Design (Lump Sum)

Upon receiving direction for each respective project from the City from the Preliminary Engineering, BHC will complete the following tasks:

A. Prepare construction plan and profile sheets for the horizontal and vertical layout for the roadway construction.

B. Creates Stormwater run-off calculations/sizing, including plan and profile sheets of storm sewer.

C. Create cross-sections of channels and roadways.

D. Prepare Coordinate Control Plans with benchmarks.

E. Prepare typical construction details and general notes.

F. Prepare typical sections for roadways.

G. Create Signing and Pavement Marking Plan and Summary, where applicable.

H. Prepare Cover Sheet, Location Map, and Sheet Index.

I. Attend two design review meetings with City Staff.

J. Complete quantity take-off and update Opinion of Probable Construction Cost at 60% and 90% plan sets.

K. Prepare technical specifications and Contract Documents using NCTCOG Standard Specifications as the base.

L. Prepare Signed and Sealed Construction Plans, Specifications, Contract and Bidding Documents.

Part III: Bidding Services (Lump Sum)

A. The City will publish notices in the newspaper recognized by the City Council as the official newspaper for the City of Aubrey. BHC will post the plans for bid advertisement on Civcast.

B. The Engineer will answer online questions in order submitted, in addition the Engineer will prepare addenda to modify the plans and specifications. Questions must be submitted by potential bidders a minimum of 72-hours before the bid opening. All addenda shall be posted a minimum of 24-hours before the bid opening.

C. Assist during opening of bids and provide bid tabulation sheets.

D. Complete cursory review of bid documents to determine that the bid includes all sheets of the Engineer's office original file set.

E. Obtain experience record and references from the apparent low bidder. Check references of apparent low bidder.

F. Formulate opinion from information received and provide a letter of recommendation for award of a construction contract. Bid tabulation summary sheets will also be sent to the City.

Part IV: <u>Construction Administration (Lump Sum)</u>

A. After award of contract, furnish six (6) sets of 11" x 17" final plans, specifications and contract documents to the City for construction use by the City and Contractor.

B. Attend the Pre-Construction Conference, including preparing an agenda.

C. Attend coordination meetings with contractor, quality control personnel, and City representatives as required to discuss strategy, problem areas, progress, and other coordination matters (3 meetings are included).

D. Review shop drawings and other submittal information which the Contractor submits. This review is for the benefit of the Owner and covers only general conformance with information stated by the Contract Documents. The contractor is to review and stamp their approval on submittals prior to submitting to the Engineer. Review by the Engineer does not relieve the Contractor of any responsibilities, safety measures or the necessity to construct a complete and workable facility in accordance with the Contract Documents. Review of shop drawings will be completed by review of electronic PDF files provided by the Contractor.

E. Provide written responses to requests for information or clarification to City or Contractor. Responses will be in electronic format.

F. Prepare and process routine change orders for this project as they pertain to the original scope of work. Transmittal will be electronically and will include construction plan sheet changes.

G. Make periodic site visits during construction as the project requirements dictate. Minimum of one project site visit per month.

H. Prepare monthly pay request from information obtained from Contractor and/or City Inspector, and prepare pay request along with letter of recommendation for payment. Pay requests will be transmitted electronically.

I. Accompany the City during their final inspection of the project. Prepare City's punch list and transmit it electronically.

J. Prepare Record drawing utilizing information from the contractor and on-site representative. Record drawings will be transmitted electronically in PDF format.

Part V: Additional Services (Hourly or each, as needed)

A. Field Survey for Design, Boundary and Construction Layout based on the Texas State Plane Grid Coordinate System, and Boundary Survey for locating property corners for use in development of right-of-way (ROW) and easement field note descriptions and exhibits.

B. Preparation of Plat and Metes and Bounds Descriptions for possible right-of-way and easements required. Eight (8) right-of-way descriptions are included for the purpose of establishing a budget for this work

C. Perform Deed research and develop basis of existing land rights for the proposed alignments. Twenty-two (22) properties are included for the purpose of establishing a budget for this work

D. Land Rights Acquisition will assist the City with obtaining the proposed easements or right-of-way (ROW). Title research for each tract is included in the effort for this task. Proposed ROW for eight (8) tracts has been included in the proposed project to establish a budget for this phase of work. Whitman Land Group, LLC will assist with acquisition on this project. Fee does not include the costs paid to property owners, fees for appraisals or eminent domain support.

E. Geotechnical Investigation and Report; including up to eight (8) borings for the proposed pavement design and as necessary for other projects within this scope.

F. Coordination with parties other than the City of Aubrey.

G. Project Expenses which will include all plan reproduction costs, mileage, postage, etc.

Part VI: Terms and Conditions for Electronic File Transfers

Electronic files are transmitted on the terms and conditions below:

By opening, accessing, copying or otherwise using the transmitted electronic files, these terms and conditions are accepted by the user.

A. The electronic files are compatible with the following software packages operating on a PC using Windows operating systems:

- Autocad Civil 3D 2024 , Civil 3D 2014
- Innovyze InfoWater Pro 3.0 with ESRI Arc Pro 2.7
- Innovyze InfoSewer Pro 7.6 with ESRI Arc Map 10.5
- ESRI 10.4
- MS Office 365
- Bluebeam Revu (PDF) Ver 10 - Ver 2020

B. Birkhoff, Hendricks & Carter, L.L.P. does not make any warranty as to the compatibility of these files beyond the specified release of the above stated software.

C. Because data stored on electronic media can deteriorate undetected or be modified, Birkhoff, Hendricks & Carter, L.L.P. will not be held liable for completeness or correctness of electronic media.

D. The electronic files are instruments of our service. Where there is a conflict between the hard copy drawings and the electronic files, Birkhoff, Hendricks & Carter, L.L.P.'s hard copy file will govern in all cases.

E. Electronic files may only be modified in accordance with the Texas Engineering Practice Act for modifying another Engineer's design.

Part VII: Exclusions

The intent of this scope of services is to include only the services specifically listed herein and no others. Services specifically excluded from this scope of services include, but are not necessarily limited to the following:

A. Certification that work is in accordance with plans and specifications.

B. Consulting services by others not included in Scope of Services.

C. Contractor's means and methods.

D. Environmental cleanup.

E. Environmental permitting (not included in the scope herein), impact assessment (preparation of NEPA documentation), or site assessment/remediation.

F. Fees for publicly advertising the construction project.

G. Fiduciary responsibility to the Client.

H. Landscape/irrigation design and installation

I. On-site construction safety precautions, programs and responsibility (Contractor's responsibility).

J. Phasing of Contractor's work.

K. Quality control and testing services during construction.

L. Revisions and/or change orders as a result of revisions after completion of original design (unless to correct error on plans).

M. Services in connection with condemnation hearings.

N. Street Lighting

O. Submittals to FEMA (CLOMR, LOMR, etc.)

P. Traffic engineering study or reports.

Q. Trench safety designs.

EXHIBIT "B"

COMPLETION SCHEDULE

Downtown Stormwater Improvements

Notice to Proceed (NTP)	February 2, 2026
Submit Preliminary Engineering to City for Review	April 10, 2026
Submit 60% to City for Review	May 22, 2026
Plat and Field Notes completed.....	June 5, 2026
Submit 90% to City for Review	July 2, 2026
Complete Final Plans	August 2, 2026
Advertise Project	pending land rights acquisition
Construction	8 Months

EXHIBIT "C"

PAYMENT SCHEDULE

Downtown Stormwater Improvements

Payment for basic engineering services described under Parts I through IV shall be based on a lump sum amount of $467,740.

The following is a summary of the estimated charges for the lump sum elements of the proposed services:

Basic Services:		
I.	Preliminary Engineering Design	$130,892
II.	Final Engineering Design	$282,819
III.	Bidding Services	$11,687
IV.	Construction Administration	$42,072
**Total Basic Services ..... **		**$467,740**

Payment for Additional Services described under Part V shall be on the basis of salary cost times a multiplier of 2.49 for time expended on the task. Field survey crew shall be based on $185.00 per hour, inclusive of all equipment rentals and software licensing; plus, mileage charge at the IRS established rate. Expenses shall be at invoice cost times a multiplier of 1.15. We recommend a budget of $131,334 be established for the hourly or as needed services.

The following is a summary of the estimated charges for the various elements of the proposed additional services:

V.	**Additional Services**	
	Field & Boundary Survey	$18,734
	Plat & Field Note Preparation	$28,000
	Deed Research	$11,000
	Land Rights Acquisition Agent	$44,600
	Geotechnical Investigation & Report	$25,000
	Coordination	$2,500
	Project Expenses	$1,500
	**Total Additional Services ..... **	**$131,334**

TOTAL CONTRACT NOT TO EXCEED $598,804

The maximum overall fee established herein shall not be exceeded without written authorization from the City, based on increased scope of services. Payment invoices are to be prepared and emailed on a monthly basis, based on percentage complete for the basic services, and on actual hour expenditures for the Additional Services. Payment is due within 30 days of receipt of invoice.

EXHIBIT "D"

Compliance with Federal Regulations and Non-Discrimination Statues and Authorities

Appendix A (Rev. 04/20) Page 1 of 9

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations: The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the FHWA, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. Non-discrimination: The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
4. Information and Reports: The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of

(Rev. 04/20) Page 2 of 9

another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or FHWA, as appropriate, and will set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, the Recipient will impose such contract sanctions as it or FHWA may determine to be appropriate, including, but not limited to:
   a. withholding payments to the contractor under the contract until the contractor complies, and/or
   b. cancelling, terminating, or suspending a contract, in whole or in part.
6. Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

(Rev. 04/20) Page 9 of 9

Appendix E

- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.P.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to -ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

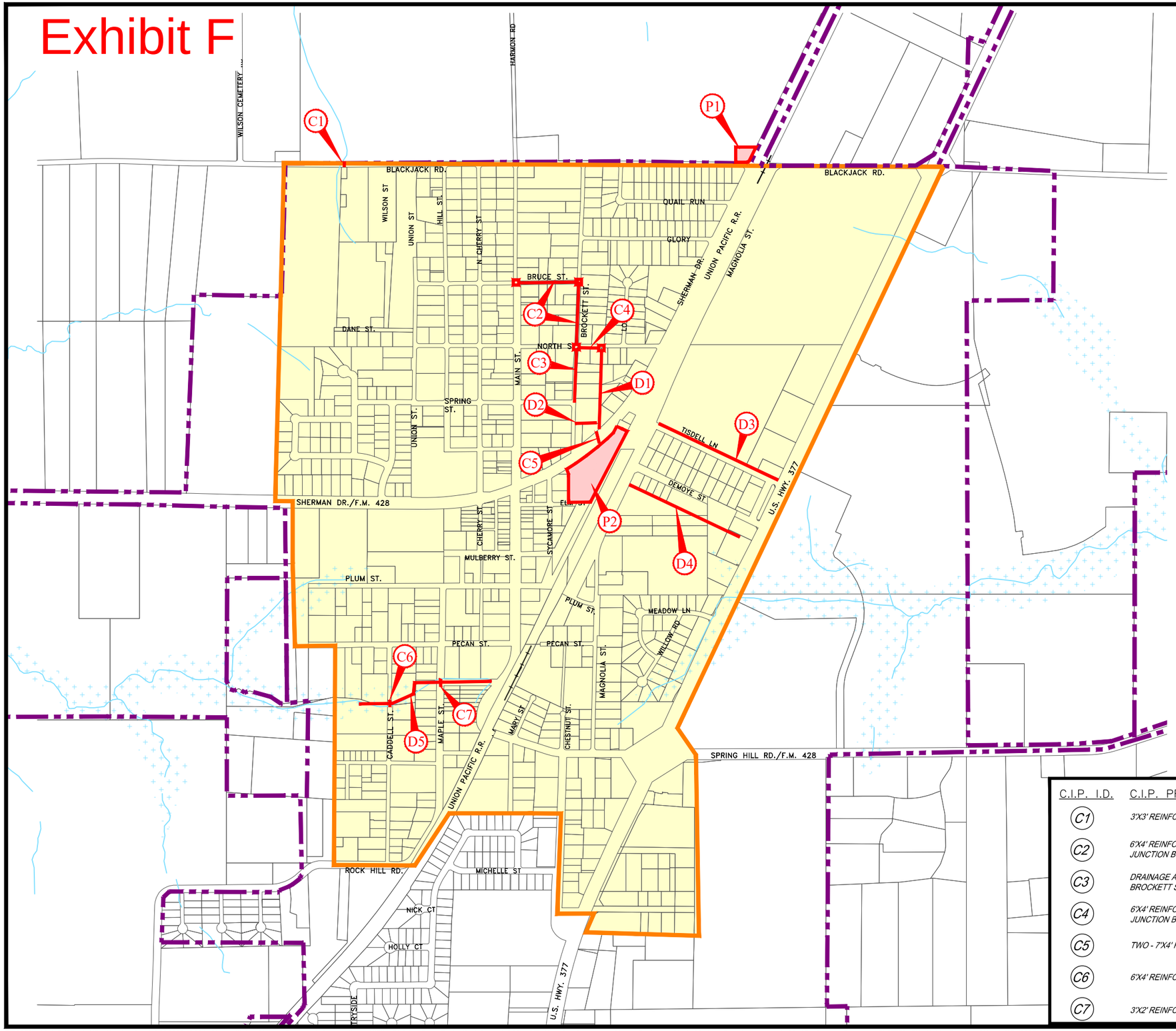
Exhibit F

DOWNTOWN STORM DRAINAGE CAPITAL IMPROVEMENT MAP

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
TBPE Firm No. 526; TBPLS Firm No. 10031800
Dallas, Texas

NOVEMBER 2025

FIGURE 3



LEGEND

- AUBREY CITY LIMIT
- DOWNTOWN PLANNING BOUNDARY
- PROPOSED C.I.P. DRAINAGE STRUCTURES
- PROPOSED C.I.P. RETENTION/DETENTION POND
- EXISTING PARCELS

C.I.P. I.D.	C.I.P. PROJECT DESCRIPTION	C.I.P. I.D.	C.I.P. PROJECT DESCRIPTION
C1	3'X3' REINFORCED CONCRETE BOX CULVERT	D1	DITCH IMPROVEMENTS (3'X3' SECTION)
C2	6'X4' REINFORCED CONCRETE BOX CULVERT WITH JUNCTION BOX AND STREET IMPROVEMENTS	D2	DITCH IMPROVEMENTS (4'X2' SECTION)
C3	DRAINAGE AND STREET IMPROVEMENTS AT BROCKETT ST	D3	DITCH IMPROVEMENTS (6'X3' SECTION)
C4	6'X4' REINFORCED CONCRETE BOX CULVERT WITH JUNCTION BOX AND STREET IMPROVEMENTS	D4	DITCH IMPROVEMENTS (3'X3' SECTION)
C5	TWO - 7'X4' REINFORCED CONCRETE BOX CULVERT	D5	DITCH IMPROVEMENTS (4'X3.5' SECTION)
C6	6'X4' REINFORCED CONCRETE BOX CULVERT	P1	PROPOSED RETENSION / DETENTION POND 10.5 AC-FT
C7	3'X2' REINFORCED CONCRETE BOX CULVERT	P2	PROPOSED RETENSION / DETENTION POND 20.76 AC-FT

REVISED: 11/18/25 H:\Projects\Aubrey\2024132 2024 Storm Water Master Plan and Storm Water Utility District Rate Evaluation\Sheets\2024 CIP Map for Downtown Storm Drainage Study.dwg SCALE: 1:2 PLOT STYLE: 11x17.ctb PLOTTED BY: Nabin Pandey ON 11/18/2025

City Council Meeting
Staff Report
January 22, 2026

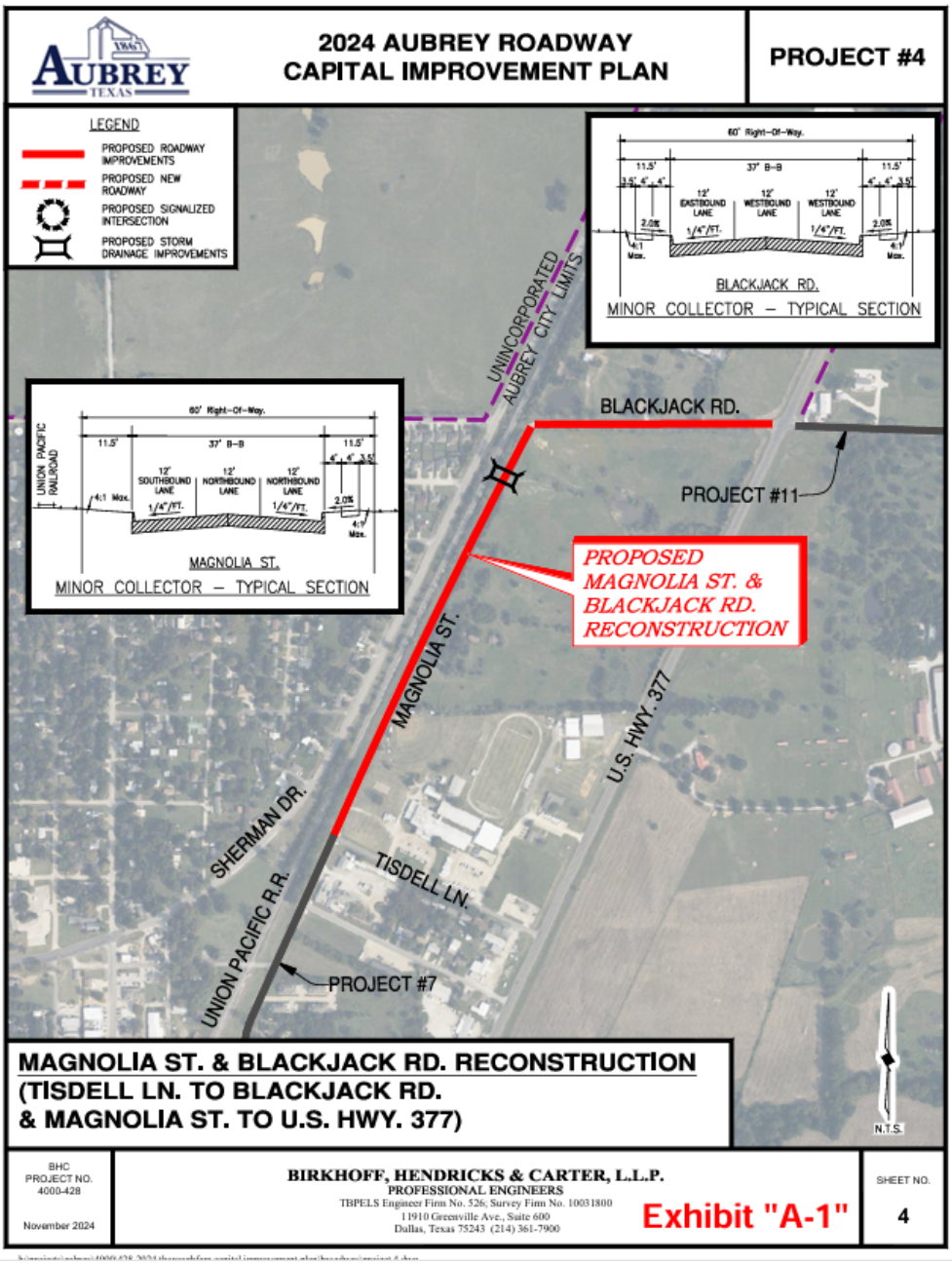
Agenda Item
Consider and take action on a Professional Engineering Services Agreement with Birkhoff, Hendricks and Carter, L.L.P., for the Blackjack and Magnolia Street Reconstruction Project for an amount not to exceed $510,565, and authorize the City Manager to execute the agreement.

Staff Contact
Leanne Wilson, Assistant City Manager
lwilson@aubreytx.gov

Summary
This project scope of services consists of the preparation of construction plans, specifications, and bidding documents for the construction of the Magnolia Street (from Tisdell Lane to Blackjack Road) and Blackjack Road (from Magnolia Street to U.S. Highway 377) Reconstruction, and assisting in the bidding and construction administration phases of the project.

This project includes the construction of 3 lanes of undivided reinforced concrete roadway with monolithic concrete curbs, 37 feet in width (back-to-curb), from F.M. 428 to Tisdell Lane. A minimum of 5-foot wide sidewalk is planned, located parallel to and along the east side of Magnolia Street and along both the north and south sides of Blackjack Road. The project includes underground storm drainage designed to convey the 100-year storm frequency.

The roadway will be constructed in a 60-foot-wide right-of-way.



This project schedule will be coordinated with the Surface Water Delivery Pump Station and the Sports Complex. The design is estimated for a 12-month delivery and 6 months for construction.

Financial Summary
The Blackjack and Magnolia Street Project is Project No. 4 of the 2024 Capital Improvement Plan. It was budgeted and funded with the 2025 Bond, offset by a Denton County Bond match. Funds are available for the project.

Staff Recommended Action
Approve

Staff Recommended Motion
Motion to (approve, table, or deny) the Professional Engineer Services Agreement with Birkhoff, Hendricks and Carter,

PROFESSIONAL ENGINEERING SERVICES AGREEMENT

THIS AGREEMENT is made and entered into by and between the **City of Aubrey, Texas**, hereinafter referred to as "City", and **Birkhoff, Hendricks & Carter, L.L.P.**, hereinafter referred to as "Engineer", to be effective from and after the date as provided herein.

The City desires to engage the services of the Engineer to complete engineering design, provide bidding and construction administration services and provide surveying services for the ***Magnolia Street & Blackjack Road Reconstruction***, hereinafter referred to as the "Project"; and the Engineer desires to render such engineering design services for the City under the terms and conditions provided herein. That for and in consideration of the covenants contained herein, and for the mutual benefits to be obtained hereby, the parties hereto agree as follows:

I. Employment of the Engineer

The City hereby agrees to retain the Engineer to perform professional engineering services in connection with the Project; Engineer agrees to perform such services in accordance with the terms and condition of this Agreement.

II. Scope of Services

The parties agree that Engineer shall perform such services as expressly set forth and described in Exhibit “A”, which is attached hereto and thereby made a part of this Agreement. The parties understand and agree that deviations or modifications, in the form of written changes may be authorized from time to time by the City. Engineer shall have no further obligations or responsibilities for the project except as agreed to in writing. Engineer’s services and work product are intended for the sole use and benefit of Client and are non-intended to create any third party rights or benefits, or for any use by any other entity or person for any other purpose.

Engineer shall perform his or her professional engineering services with the professional skill and care ordinarily provided by competent engineers practicing in North Central Texas and under the same or similar circumstances and professional license. Professional services shall be performed as expeditiously as is prudent, considering the ordinary professional skill and care of a competent engineer.

III. Schedule of Work

The Engineer agrees to commence services immediately upon execution of this Agreement, and to proceed diligently with said service, except for delays beyond the reasonable control of Engineer, to completion, as described in the Completion Schedule attached hereto as Exhibit "B" and thereby made a part of this Agreement.

IV. Compensation and Method of Payment

The parties agree that Engineer shall be compensated for all services provided pursuant to this Agreement in the amount and manner described and set forth in the Payment Schedule attached hereto as Exhibit "C" and thereby made a part of this Agreement. Engineer further agrees that it will prepare and present such monthly progress reports and itemized statements as are described in said Exhibit "C". City agrees to pay invoices within 30 days of receipt. Statement for services shall include a line for previous payments, contract amount, and amount due current invoice.

V. Information To Be Provided By The City

The City agrees to furnish, prior to commencement of work, all information pertinent to the Project, requested by Engineer that is available to the City.

VI. Insurance

Engineer agrees to procure and maintain for the duration of the contract Professional Liability Insurance ($3,000,000), Worker's Compensation, General Liability and Automobile Insurance.

VII. Assignment and Subletting

The Engineer agrees that neither this Agreement nor the services to be performed hereunder will be assigned or sublet without the prior written consent of the City. The Engineer further agrees that the assignment or subletting of any portion or feature of the work or materials required in the performance of this Agreement shall not relieve the Engineer from its full obligations to the City as provided by this Agreement.

VIII. Contract Termination

The parties agree that City or the Engineer shall have the right to terminate this Agreement without cause upon thirty (30) days written notice to the other. In the event of such termination without cause, Engineer shall deliver to City all finished or unfinished documents, data, studies, surveys, drawings, maps, models, reports, photographs or other items prepared by Engineer in connection with this Agreement. Engineer shall be entitled to compensation for any and all services completed to the satisfaction of City in accordance with the provisions of this Agreement prior to termination.

IX. Engineer's Opinion of Cost

The parties recognize and agree that any and all opinions of cost prepared by Engineer in connection with the Project represent the best judgment of Engineer as a design professional familiar with the construction industry, but that the Engineer does not guarantee that bids solicited or received in connection with the Project will not vary from the opinion by the Engineer.

X. Construction

On projects that include construction, the Owner recognizes that the Contractor and Subcontractors will be solely in control of the Project site and exclusively responsible for construction means, methods, scheduling, sequencing, jobsite safety, safety programs, and compliance with all construction documents and directions from Owner or Building Officials. Construction contracts are between the City and the Construction Contractor. Consultant shall not be responsible for construction related damages, losses, costs, or claims; except only to the extent caused by Consultant's sole negligence.

XI. Ownership of Documents

Original drawings, specifications and reports are the property of the Engineer; however, the Project is the property of the City. City shall be furnished with such reproductions of drawings, specifications and reports. Upon completion of the services or any earlier termination of this Agreement under Article VIII, Engineer will revise drawings to reflect changes made during construction as reported by the City and contractor and will furnish the City with one set of construction record drawings in accordance with terms provided in Exhibit "A" – Engineering Services.

All deliverables shall be furnished as an additional service at any other time requested by the City, when such deliverables are available in the Engineer's record keeping system.

XII. Complete Contract

This Agreement, including the exhibits hereto numbered Exhibit "A" through "C" constitutes the entire agreement by and between the parties regarding the subject matter hereof, and supersedes all prior or contemporaneous written or oral understanding. This agreement may only be amended, supplemented, modified or canceled by a duly executed written agreement.

XIII. Mailing of Notices

Unless instructed otherwise in writing, Engineer agrees that all notices or communications to City permitted or required under this Agreement shall be addressed to City at the following address:

Ms. Leanne Wilson
Director of Public Works
City of Aubrey, TX
107 Main Street
Aubrey, TX 76227
Phone: 940-440-9343
Email: lwilson@aubreytx.gov

City agrees that all notices or communications to Engineer permitted or required under this Agreement shall be addressed to Engineer at the following address:

Cooper Reinbold, P.E.
Partner
Birkhoff, Hendricks & Carter, L.L.P.
11910 Greenville Ave., #600
Dallas, Texas 75243
Phone: (214) 361-7900
Email: creinbold@bhcllp.com

All notices or communications required to be given in writing by one party or the other shall be considered as having been given to the addressee on the date such notice or communication is posted by the sending party.

XIV. Texas Board of Professional Engineers & Land Surveying Contact Information

Recipients of professional land surveying services under this agreement may direct complaints regarding such services to the Texas Board of Professional Engineers & Land Surveyors, 1917 South Interstate 35, Austin, Texas 78741, Phone (512) 440-7723.

XV. Miscellaneous

A. Boycott of Israel – The Engineer represents, to the current actual knowledge of the individual signing this Agreement on behalf of the Engineer as set forth on the signature page hereto (the "Engineer's Officer"), in such Engineer's Officer's representative capacity on behalf of the Engineer, that, to the extent this Agreement constitutes a contract for goods or services within the meaning of Section 2271.002 of the Texas Government Code, as amended, solely for purposes of compliance with Chapter 2271 of the Texas Government Code, and subject to applicable federal law, neither the Engineer, nor any wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of the Engineer, as of the date of this Agreement, (i) boycotts Israel; or (ii) will boycott Israel during the term of this Agreement. The terms "boycotts Israel" and "boycott Israel" as used in this paragraph have the meanings assigned to the term "boycott Israel" in Section 808.001 of the Texas Government Code, as amended.

B. Boycott of Certain Energy Companies – The Engineer represents, to the current actual knowledge of the Engineer' Officer, in such Engineer's Officer's representative capacity on behalf of the Engineer, that, to the extent this Agreement constitutes a contract for goods or services within the meaning of Section 2276.002 of the Texas Government Code, as amended, solely for purposes of compliance with Chapter 2276 of the Texas Government Code, and subject to applicable federal law, neither the Engineer, nor any wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of the Engineer, as of the date of this Agreement, (i) boycotts energy companies; or (ii) will boycott energy companies during the term of this Agreement. The term "boycott energy companies" as used in this paragraph has the meaning assigned to the term "boycott energy company" in Section 809.001 of the Texas Government Code, as amended.

C. Discrimination Against Firearm Entity or Firearm Trade Association – The Engineer represents, to the current actual knowledge of the Engineer' Officer, in such Engineer's Officer's representative capacity on behalf of the Engineer, that, to the extent this Agreement constitutes a contract for goods or services within the meaning of Section 2274.002 of the Texas Government Code, as amended, solely for purposes of compliance with Chapter 2274 of the Texas Government Code, and subject to applicable federal law, neither the Engineer, nor any wholly owned subsidiary, majority-owned

subsidiary, parent company, or affiliate of the Engineer, as of the date of this Agreement, (i) has a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; or (ii) will discriminate against a firearm entity or firearm trade association during the term of this Agreement. The term "discriminate against a firearm entity or firearm trade association" as used in this paragraph has the meanings assigned to the term in Section 2274.001 of the Texas Government Code, as amended.

D. Iran, Sudan and Foreign Organizations – Section 2252.151 of the Texas Government Code defines a "governmental contract" as a contract awarded by a governmental entity for general construction, an improvement, a service, or a public works project or for a purchase of supplies, materials, or equipment, and provides that the term includes a contract to obtain a professional or consulting service subject to Chapter 2254 of the Texas Government Code. The Engineer represents, to the current actual knowledge of the Engineer's Officer, in his or her representative capacity on behalf of the Engineer, that, as of the date of this Agreement, to the extent this Agreement constitutes a governmental contract within the meaning of Section 2252.151 of the Texas Government Code, as amended, solely for purposes of compliance with Subchapter F of Chapter 2252 of the Texas Government Code, and except to the extent otherwise required by applicable federal law, neither the Engineer nor any wholly owned subsidiary, majority-owned subsidiary, parent company, or affiliate of the Engineer is an entity listed by the Texas Comptroller of Public Accounts under Sections 806.051, 807.051, or 2252.153 of the Texas Government Code. The term "foreign terrorist organization" in this paragraph has the meaning assigned to such term in Section 2252.151 of the Texas Government Code.

E. Form 1295 – Submitted herewith is a completed Form 1295 generated by the Texas Ethics Commission's (the "TEC") electronic filing application in accordance with the provisions of Section 2252.908 of the Texas Government Code and the rules promulgated by the TEC (the "Form 1295"). The City hereby confirms receipt of the Form 1295 from the Engineer, and the City agrees to acknowledge such form with the TEC through its electronic filing application not later than the 30th day after the receipt of such form. The Parties understand and agree that, with the exception of information identifying the City and the contract identification number, neither the City nor its consultants are responsible for the information contained in the Form 1295; that the information contained in the Form 1295 has been provided solely by the Engineer; and, neither the City nor its consultants have verified such information.

F. Compliance with Federal Regulations – During the performance of this agreement, the engineer, for itself, its assignees, and successors in interest agrees to comply with Federal Regulations and

Non-discrimination statutes and authorities outlined in **Exhibit D**, Appendix "A" and Appendix "E" attached hereto and made a part of this agreement.

XVI. Contract Amendments

This Agreement may be amended only by the mutual agreement of the parties expressed in writing.

XVII. Effective Date

This Agreement shall be effective from and after execution by both parties hereto, with originals in the hand of both parties.

WITNESS OUR HANDS AND SEALS on the date indicated below.

CITY OF AUBREY, TEXAS
A Texas Home-Rule Municipal Corporation

By: _____

Date: _____

ATTEST

By: _____

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
A Texas Limited Liability Partnership
Texas Board of Professional Engineers & Land Surveys
Engineering Firm No. 526
Land Surveying Firm No. 100318-06

By: _____
Cooper Reinbold, P.E., Partner

Date: 7/29/2025

Reviewed By: _____
Andrew Mata Jr., P.E., Alt. Managing Partner

EXHIBIT "A"

ENGINEERING SERVICES

Magnolia Street & Blackjack Road Reconstruction

GENERAL PROJECT SCOPE

This project scope of services consists of the preparation of construction plans, specifications and bidding documents for construction of the Magnolia Street (from Tisdell Lane to Blackjack Road) and Blackjack Road (from Magnolia Street to U.S. Highway 377) Reconstruction and providing assistance during the bidding and construction administration phases of the project.

This project includes construction of 3 lanes of undivided reinforced concrete roadway with monolithic concrete curbs, 37-feet in width (back-to-curb), from F.M. 428 to Tisdell Lane. A 4-foot wide sidewalk is planned located parallel to and along the east side of Magnolia Street and along both the north and south sides of Blackjack Road. The project includes underground storm drainage designed to convey the 100-year storm frequency.

The roadway will be constructed in a 60-foot wide right-of-way. It appears that an approximate 20-foot wide strip of additional right-of-way will need to be acquired along approximately 2,250 L.F. of the project along Magnolia Street beyond the existing right-of-way and a 60-foot wide strip of right-of-way will need to be acquired along approximately 1,170 L.F. of the project along Blackjack Road to accommodate the new roadway. Exhibit "A-1", attached to the end of this Exhibit A, is included to assist in defining the project scope. An itemized opinion of total project construction cost is attached to the end of Exhibit C as Exhibit "C-1".

Part I: Preliminary Engineering

A. Create base map based on property information obtained through the Central Appraisal District and field survey.

B. Prepare horizontal and vertical alignments of roadway, including establishing the centerline of the roadway, typical section, geometric layout of turn lanes, preliminary grade of the roadway and cross-sections (50-foot intervals) in order to determine final land rights requirements.

C. Preliminary drainage evaluation including drainage area map, identification of major drainage outfall structures with preliminary sizing and any drainage easement requirements.

D. Prepare opinion of probable construction cost based on preliminary engineering.

E. Attend one design review meeting with City Staff.

F. Submit Preliminary Plans to City for review.

Part II: Final Engineering Design

A. Prepare construction plan and profile sheets for the horizontal and vertical layout for the roadway construction.

B. Prepare stormwater run-off calculations/sizing, including plan and profile sheets of storm sewer.

C. Prepare Coordinate Control Plans with benchmarks.

D. Prepare typical construction details and general notes.

E. Project typical sections for Roadway.

F. Prepare permanent Signing and Pavement Marking Plan and Summary.

G. Prepare Erosion Control Plan.

H. Prepare Cover Sheet, Location Map and Sheet Index.

I. Attend two design review meetings with City Staff.

J. Complete quantity take-off and update Opinion of Probable Construction Cost at 60% and 90% plan sets.

K. Prepare technical specifications and Contract Documents using NCTCOG Standard Specifications as the base.

L. Prepare Signed and Sealed Construction Plans, Specifications, Contract and Bidding Documents.

M. Provide final sets to the City.

Part III: Bidding Services

A. The City will publish notices in the newspaper recognized by the City Council as the official newspaper for the City of Aubrey. BHC will post the plans for bid advertisement on Civcast.

B. The Engineer will answer online questions in order submitted, in addition the Engineer will prepare addenda to modify the plans and specifications. Questions must be submitted by potential bidders a minimum of 72-hours before the bid opening. All addenda shall be posted a minimum of 24-hours before the bid opening.

C. Assist during opening of bids and provide bid tabulation sheets.

D. Complete cursory review of bid documents to determine that the bid includes all sheets of the Engineer's office original file set.

E. Obtain experience record and references from the apparent low bidder. Check references of apparent low bidder.

F. Formulate opinion from information received and provide a letter of recommendation for award of a construction contract. Bid tabulation summary sheets will also be sent to the City.

Part IV: Construction Administration

A. After award of contract, furnish six (6) sets of 11" x 17" final plans, specifications and contract documents to the City for construction use by the City and Contractor.

B. Attend the Pre-Construction Conference, including preparing an agenda.

C. Attend coordination meetings with contractor, quality control personnel, and City representatives as required to discuss strategy, problem areas, progress, and other coordination matters (3 meetings are included).

D. Review shop drawings and other submittal information which the Contractor submits. This review is for the benefit of the Owner and covers only general conformance with information stated by the Contract Documents. The contractor is to review and stamp their approval on submittals prior to submitting to the Engineer. Review by the Engineer does not relieve the Contractor of any responsibilities, safety measures or the necessity to construct a complete and workable facility in accordance with the Contract Documents. Review of shop drawings will be completed by review of electronic PDF files provided by the Contractor.

E. Provide written responses to requests for information or clarification to City or Contractor. Responses will be in electronic format.

F. Prepare and process routine change orders for this project as they pertain to the original scope of work. Transmittal will be electronically and will include construction plan sheet changes.

G. Make periodic site visits during construction as the project requirements dictate. Minimum of one project site visit per month.

H. Prepare monthly pay request from information obtained from Contractor and/or City Inspector, and prepare pay request along with letter of recommendation for payment. Pay requests will be transmitted electronically.

I. Accompany the City during their final inspection of the project. Prepare City's punch list and transmit it electronically.

J. Prepare Record drawing utilizing information from the contractor and on-site representative. Record drawings will be transmitted electronically in PDF format.

Part V: <u>Additional Services</u>

A. Field Survey for Design and Construction Layout based on the Texas State Plane Grid Coordinate System, and Boundary Survey for locating property corners for use in development of right-of-way (ROW) and easement field note descriptions and exhibits.

B. Preparation of Plat and Metes and Bounds Descriptions for possible right-of-way and easements required. Six (6) right-of-way descriptions are included for the purpose of establishing a budget for this work.

C. Perform Deed research and develop a right-of-way (ROW) strip map showing the proposed alignments. Nine (9) properties are included for the purpose of establishing a budget for this work.

D. Land Rights Acquisition will assist the City with obtaining the proposed right-of-way (ROW). Title research for each tract is included in the effort for this task. Proposed ROW for six (6) tracts has been included in the proposed project to establish a budget for this phase of work. Whitman Land Group, LLC will assist with ROW acquisition on this project. Fee does not include the costs for ROW paid to property owners, fees for appraisals or eminent domain support.

E. Permission to Survey utilizing the Land Rights agent to make contact with each property owner. Six (6) properties are included for the purpose of establishing a budget for this work.

F. Geotechnical Investigation and Report; including up to seven (7) borings for the proposed pavement design.

G. Utility Locates: four (4) subsurface Level A utility locates are included in the budget. This includes 2 days of potential traffic control along F.M. 428 and Magnolia Street and submittal of a TCP Permit to TxDOT, if required.

H. Register the project with the TDLR and coordinate the TDLR review and approval of the construction plans. Coordinate and assist in scheduling the post-construction TDLR inspection.

I. Coordination with parties other than the City of Aubrey.

J. Printing of three (3) sets of final plans and specifications for distribution to the successful contractor.

K. Prepare Record Drawings and submit electronically (PDF) to City.

Part VI: Terms and Conditions for Electronic File Transfers

Electronic files are transmitted on the terms and conditions below:

By opening, accessing, copying or otherwise using the transmitted electronic files, these terms and conditions are accepted by the user.

A. The electronic files are compatible with the following software packages operating on a PC using Windows operating systems:

- Autocad Civil 3D 2022 , Civil 3D 2017
- Innovyze InfoWater Pro 3.0 with ESRI Arc Pro 2.7
- Innovyze InfoSewer Pro 7.6 with ESRI Arc Map 10.5
- ESRI 10.4
- MS Office 365
- Bluebeam Revu (PDF) Ver 10 - Ver 2020

B. Birkhoff, Hendricks & Carter, L.L.P. does not make any warranty as to the compatibility of these files beyond the specified release of the above stated software.

C. Because data stored on electronic media can deteriorate undetected or be modified, Birkhoff, Hendricks & Carter, L.L.P. will not be held liable for completeness or correctness of electronic media.

D. The electronic files are instruments of our service. Where there is a conflict between the hard copy drawings and the electronic files, Birkhoff, Hendricks & Carter, L.L.P.'s hard copy file will govern in all cases.

E. Electronic files may only be modified in accordance with the Texas Engineering Practice Act for modifying another Engineer's design.

Part VII: Exclusions

The intent of this scope of services is to include only the services specifically listed herein and no others. Services specifically excluded from this scope of services include, but are not necessarily limited to the following:

A. Certification that work is in accordance with plans and specifications.

B. Consulting services by others not included in Scope of Services.

C. Contractor's means and methods.

D. Environmental cleanup.

E. Environmental permitting (not included in the scope herein), impact assessment (preparation of NEPA documentation), or site assessment/remediation.

F. Fees for publicly advertising the construction project.

G. Fiduciary responsibility to the Client.

H. On-site construction safety precautions, programs and responsibility (Contractor's responsibility).

I. Phasing of Contractor's work.

J. Quality control and testing services during construction.

K. Revisions and/or change orders as a result of revisions after completion of original design (unless to correct error on plans).

L. Services in connection with condemnation hearings.

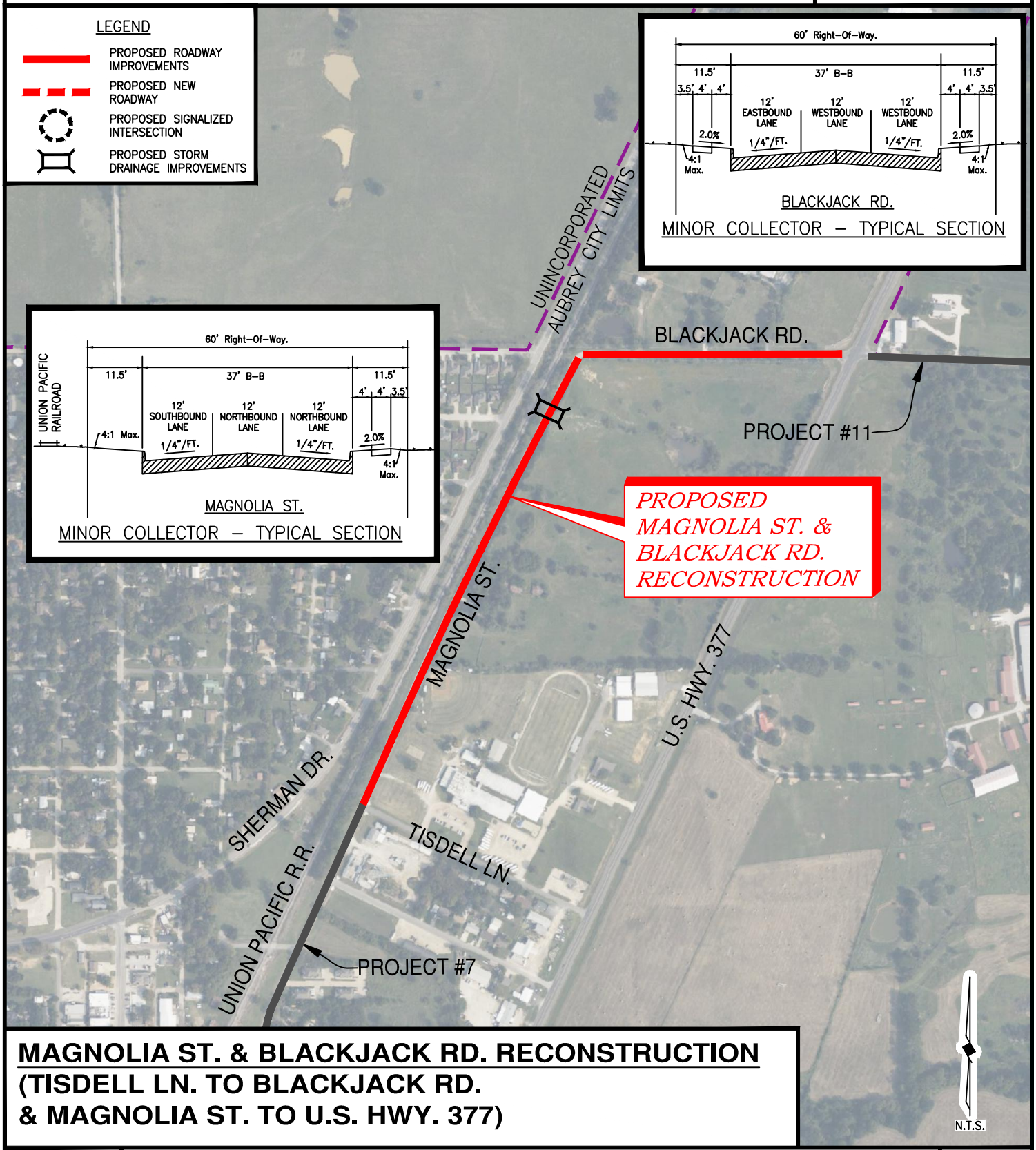
M. Traffic engineering study or reports.

N. Trench safety designs.

2024 AUBREY ROADWAY CAPITAL IMPROVEMENT PLAN

PROJECT #4

AUBREY 1867 TEXAS



MAGNOLIA ST. & BLACKJACK RD. RECONSTRUCTION (TISDELL LN. TO BLACKJACK RD. & MAGNOLIA ST. TO U.S. HWY. 377)

BHC PROJECT NO. 4000-428

November 2024

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
TBPELS Engineer Firm No. 526; Survey Firm No. 10031800
11910 Greenville Ave., Suite 600
Dallas, Texas 75243 (214) 361-7900

Exhibit "A-1"

SHEET NO. 4

h:\projects\aubrey\4000\428-2024 thoroughfare capital improvement plan\basedwgs\project 4.dwg

EXHIBIT "B"

COMPLETION SCHEDULE

Magnolia Street & Blackjack Road Reconstruction

Notice to Proceed (NTP)	August 28, 2025
Permission to Survey Requests (PTS)	September 11, 2025
Begin Field Surveys	October 9, 2025
Complete Field Surveys	October 23, 2025
Submit Preliminary Engineering to City for Review	February 5, 2026
Receive Preliminary Review Comments from City	February 19, 2026
Submit 60% to City for Review	May 21, 2026
Receive 60% Review Comments from City	June 4, 2026
Plat and Field Notes completed	June 18, 2026
Submit 90% to City for Review	July 9, 2026
Receive 90% Review Comments from City	July 23, 2026
Complete Final Plans	September 3, 2026
Advertise Project	pending ROW acquisition
Construction	6 Months

EXHIBIT "C"

PAYMENT SCHEDULE

Magnolia Street & Blackjack Road Reconstruction

Payment for basic engineering services described under Parts I through IV shall be based on a lump sum amount of $339,498.

The following is a summary of the estimated charges for the lump sum elements of the proposed services:

Basic Services:

I.	Preliminary Engineering	$76,387.00
II.	Final Engineering Design	$203,699.00
III.	Bidding Services	$8487.00
IV.	Construction Administration	$50,925.00
**Total Basic Services		**$339,498.00**

Payment for Additional Services described under Part V shall be on the basis of salary cost times a multiplier of 2.49 for time expended on the task. Field survey crew shall be based on $195.00 per hour, inclusive of all equipment rentals and software licensing; plus, mileage charge at the IRS established rate. Expenses shall be at invoice cost times a multiplier of 1.15. We recommend a budget of $171,067 be established for the hourly or as needed services.

The following is a summary of the estimated charges for the various elements of the proposed additional services:

V. Additional Services

Field & Boundary Survey	$39,132.00
Plat & Field Note Preparation	$18,000.00
Deed Research & Strip Map	$7,200.00
Land Rights Acquisition Agent	$29,040.00
Permission to Survey	$2,760.00
Geotechnical Investigation & Report	$28,700.00
TDLR Review and Inspection	$17,250.00

Utility Locates	$15,985.00
Coordination	$10,000.00
Reproduction	$500.00
Record Drawings	$2,500.00
**Total Additional Services ..... **	**$171,067.00**
**TOTAL CONTRACT NOT TO EXCEED ..... **	**$510,565.00**

The maximum overall fee established herein shall not be exceeded without written authorization from the City, based on increased scope of services. Payment invoices are to be prepared and emailed on a monthly basis, based on percentage complete for the basic services, and on actual hour expenditures for the Additional Services. Payment is due within 30 days of receipt of invoice.

BIRKHOFF, HENDRICKS & CARTER, L.L.P.
PROFESSIONAL ENGINEERS
TEXAS FIRM F526

Project No. 4000-428

Exhibit "C-1"

Client: City of Aubrey
Date: 29-Jul-25
Project: 2024 Aubrey Roadway Capital Improvement Plan – Project No. 4
Magnolia Street Reconstruction (Tisdell Ln. to Blackjack Rd.)
Blackjack Road Reconstruction (Magnolia St. to U.S. Hwy. 377)
By: Cooper Reinbold, P.E.

ENGINEER'S PRELIMINARY OPINION OF CONSTRUCTION COST

Item No.	Description	Quantity	Unit	Price	Amount
	Project Description: A 3-lane Undivided Thoroughfare, 12-ft. Lanes, 10-inch Reinforced Concrete Pavement with 8-inch Subgrade, Curbs and Underground Storm Drainage				
	Project Length Permanent Pavement and Storm Sewer	**3,420**	**L.F.**		
	Total Width Concrete Pavement	**37**	**B -B**		
	Expected Average Depth of Roadway Excavation	**2.50**	**feet**		
	Approximate Lime Stabilized Subgrade Application Rate	**8%**	**by unit weight**		
1	Right-of-way Preparation	34	Sta.	$ 3,000.00	$ 102,600
2	Unclassified Excavation Roadway	19,000	C.Y.	$ 25.00	$ 475,000
3	Imported Fill for Embankment	-	C.Y.	$ 10.00	$ -
4	8-inch Lime Treated Subgrade	14,820	S.Y.	$ 3.65	$ 54,100
5	Hydrated Lime @ 79#/S.Y.	586	Tons	$ 325.00	$ 190,500
6	6-inch Monolithic Concrete Curb	6,840	L.F.	$ 5.00	$ 34,200
7	10-inch Reinforced Concrete Pavement	14,060	S.Y.	$ 125.00	$ 1,757,500
8	8-inch Reinforced Concrete Pavement	-	S.Y.	$ 100.00	$ -
9	Reinforced Concrete Driveways (5 ea. x 18' wide x 20' deep)	200	S.Y.	$ 110.00	$ 22,000
10	4-foot Wide Reinforced Concrete Sidewalk (both sides along Blackjack, one side along Magnolia)	2,040	S.Y.	$ 100.00	$ 204,000
11	Finish Grade and Sodding (plus 10% beyond excavation limits)	5,126	S.Y.	$ 6.55	$ 33,600
	Paving Improvements Subtotal (Rounded to Nearest $1,000):				**$ 2,874,000**
12	Underground Storm Drainage (Round to Nearest $1,000)	25%	Paving Improvements		$ 719,000
13	Major Roadway Culvert or Bridge	1	Ea.	$ 200,000.00	$ 200,000
	Drainage Improvements Subtotal (Rounded to Nearest $1,000):				**$ 919,000**
14	Signalization Improvements	-	L.S.	$ -	$ -
15	Pavement Markings, Striping, and Signage	3,420	L.F.	$ 6.00	$ 20,520
16	Landscaping & Irrigation Improvements	-	L.F.	$ 200.00	$ -
17	Street Lighting Improvements	-	L.F.	$ 250.00	$ -
	Signalization, Aesthetics & Street Lights (Rounded to Nearest $1,000):				**$ 21,000**
	Paving, Drainage, and Miscellaneous Subtotal:				**$ 3,814,000**
	Miscellaneous Contingencies (Rounded to Nearest $1,000):	**20%**			**$ 763,000**
	Opinion of Probable Construction Cost (Rounded to Nearest $1,000):				**$ 4,577,000**
	Project Construction Cost per Linear Foot:				**$ 1,338.30**
	Estimated Engineering, Surveys and Easement Documents:	11.16%			$510,565
	FEMA Flood Study & LOMR:	-			$ -
	Estimated Cost Quality Monitoring Testing:	1.5%			$ 68,655
	Estimated Subtotal, Professional Fees:				**$ 579,220**
	Project Total Including Probable Construction Cost & Fees:				**$ 5,156,220**
	Estimated Land Rights (Right-of-Way) Rounded up to Nearest $10,000 :	2.64	Ac.	$ 70,000.00	**$ 190,000**
	TOTAL PROJECT COST (ROUNDED TO NEAREST $10,000):				**$ 5,350,000**

EXHIBIT "D"

Compliance with Federal Regulations and Non-Discrimination Statues and Authorities

Appendix A (Rev. 04/20) Page 1 of 9

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations: The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the FHWA, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. Non-discrimination: The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
4. Information and Reports: The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of

(Rev. 04/20) Page 2 of 9

another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or FHWA, as appropriate, and will set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, the Recipient will impose such contract sanctions as it or FHWA may determine to be appropriate, including, but not limited to:
   a. withholding payments to the contractor under the contract until the contractor complies, and/or
   b. cancelling, terminating, or suspending a contract, in whole or in part.
6. Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

(Rev. 04/20) Page 9 of 9

Appendix E

- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.P.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to -ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

Complete Nos. 1 - 4 and 6 if there are interested parties.
Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

OFFICE USE ONLY
CERTIFICATION OF FILING

Certificate Number:
2025-1341729

Date Filed:
07/25/2025

Date Acknowledged:

1 Name of business entity filing form, and the city, state and country of the business entity's place of business.

Birkhoff, Hendricks & Carter, LLP
Dallas, TX United States

2 Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

City of Aubrey

3 Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

Professional Engr Services
Magnolia Street & Blackjack Road Reconstruction

4 Name of Interested Party	City, State, Country (place of business)	Nature of interest (check applicable)	
		Controlling	Intermediary
Kerkhoff, Craig	Dallas, TX United States	X	
Mata, Andrew	Dallas, TX United States	X	
Chaney, Derek	Dallas, TX United States	X	
Ivy, Justin	Dallas, TX United States		X
Reinbold, Cooper	Dallas, TX United States		X
Crawford, Chase	Dallas, TX United States		X

5 Check only if there is NO Interested Party. ☐

6 UNSWORN DECLARATION

My name is Cooper Reinbold, and my date of birth is October 12, 1992.

My address is 11910 Greenville Ave, Suite 600, Dallas (city), Texas (state), 75243 (zip code), USA (country).

I declare under penalty of perjury that the foregoing is true and correct.

Executed in Dallas County, State of Texas, on the 25th day of July (month), 20 25 (year).

Signature of authorized agent of contracting business entity
(Declarant)

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consider and take action on Change Order No. 4 to the City of Aubrey WWTP Expansion to 2.25 MGD Contract with Gracon Construction in the amount not to exceed $245,689.93, and authorize the City Manager to execute necessary documents.

Staff Contact
Dean Rylant, Public Works Director
drylant@aubreytx.gov

Summary
The referenced proposed contract modifications (PCMs) contain different amounts. Below, you can see why the Change Order is being asked for:

1. PCM-05 Local Control Stations at Grit, $7,462.38. This adds local controls at the Vortex Grit Removal Unit which increases safety and access to plant staff. There will be no added time to the work schedule.
2. PCM-06 ILS Monorail Crane and Canopy, $233,674.70. This will add a Monorail Crane and Canopy at the Influent Lift Station at the request of the City. This proposal adds 20 working days to the project's schedule.
3. PCM-07 Dewatering Screw Press Level Sensor applied to the sludge storage tank, $2.472.50. This will help monitor sludge levels and protect the pumps from over pumping at low levels. No working days will be added to the project's schedule.
4. PCM-09 Dewatering Building Conveyor Openings, $2,080.35. This will add openings to the pre-fabricated metal Dewatering building for the conveyors to fit through. There will be no working days added to the project's schedule.

In conclusion, Gracon's total proposed price is $245,689.93 with 20 additional working days added to the project's schedule. The engineer of record and the inspector have reviewed the change order and recommend approval.

Financial Summary
This project was funded with the 2024 Bond, and funds are available.

Staff Recommended Action
Approve

Staff Recommended Motion
Motion to (approve/deny or request changes) to the change order.

Mead
&Hunt

December 9, 2025

Ms. Leanne Wilson
Executive Director of Operations
City of Aubrey
107 S Main
Aubrey, TX, 76227

RE: WWTP Expansion to 2.25 MGD
Proposed Contract Modification (PCM) 05, 06, 07 and 09

Dear Ms. Wilson:

Change Order (CO) 04 contains the above referenced proposed contract modifications (PCMs)containing differing amounts.

- PCM-05 adds local controls at the Vortex Grit Removal Unit which increases safety and access to plant staff. The amount added is $7,462.38 with no working days added to the project's schedule.
- PCM-06 adds a Monorail Crane and Canopy at the Influent Lift Station at the request of the City. This adds $233,674.70 with 20 working days added to the project's schedule.
- PCM-07 adds a Level Sensor at the Sludge Storage Tank for monitoring sludge levels and protecting the pumps from over pumping at low levels. This adds $2,472.50 with no working days added to the project's schedule.
- PCM-09 adds openings to the pre-fabricated metal Dewatering building for the conveyors to fit through. This adds $2,080.35 with no working days added to the project's schedule.

Gracon's total proposed price is $245,689.93 with 20 additional working days added to the project's schedule. We have reviewed and discussed the Contractor's pricing and find it reasonable, and we recommend acceptance of a change order for this work. Please let me know if you have questions.

Sincerely,

Mark A. Perkins, P.E.
Mead & Hunt, Inc.

cc: Dean Rylant, City of Aubrey
Freddy J. Mena, P.E.

PLUMMER

CHANGE ORDER
CO-004

				PROJECT NUMBERS
OWNER:	City of Aubrey			
PROJECT	City of Aubrey Wastewater Treatment Plant Expansion to 2.25 MGD			
CONTRACTOR:	Gracon Construction, Inc.			
CONSTRUCTION MANAGER:	Plummer Associates, Inc.			0798-010-01
CHANGE ORDER NO.:	CO-004	DESCRIPTION:	Change Order No. 4	

The payment to the Contractor for this Change Order shall be based on the mutually agreed lump sum for each contract modification in accordance with the General Conditions, Article 11, Section 11.07.B.2. The compensation agreed upon in this Change Order is a full, complete and final payment for all costs the Contractor incurs as a result of or relating to this change, whether said costs are known, unknown, foreseen or unforeseen at this time, including without limitation, any costs for delay, extended overhead, ripple or impact costs, or any other effect on changed or unchanged work as a result of this change.

CHANGE ORDER WORK TO BE PERFORMED

Contract Modification	**Time Extension (Calendar Days)**	**Increase/(Decrease) Amount**
PCM-05 Local Control Stations at Grit	TBD	$7,462.38
PCM-06 ILS Monorail Crane and Canopy	20	$233,674.70
PCM-07 Dewatering Screw Press Level Sensor	TBD	$2,472.50
PCM-09 Dewatering Building Conveyor Openings	TBD	$2,080.35
TOTAL THIS CHANGE ORDER	20	$245,689.93

Original Contract Amount	$39,957,140.00
Previous Change Order(s)	$209,376.25
Net Increase in Contract Amount (this Change Order)	$245,689.93
Revised Contract Amount	$40,412,206.18

Original Project Substantial Completion Date	10/30/2026
Original Project Final Completion Date	12/29/2026
Previous Change Order(s)	5
Net Increase in Contract Time (this Change Order)	20
Revised Project Substantial Completion Date	11/24/2026
Revised Project Final Completion Date	1/23/2027

CHANGE ORDER
CO-004

Submitted by Contractor:

Greg Graves
Gracon Construction, Inc.

Date

Recommended by Engineer:

Freddy Mena, P.E.
Mead & Hunt, Inc.

Date

Approved by:

Leanne Wilson
City of Aubrey

Date

Approved by:

Charles Kreidler
City of Aubrey

Date

PLUMMER

PROJECT CONTRACT MODIFICATION

PROJECT NOS.

OWNER:	City of Aubrey		
PROJECT:	Aubrey WWTP Expansion to 2.25 MGD		
CONTRACTOR:	Gracon Construction, Inc.		
ENGINEER:	Plummer Associates, Inc.		0798-010-01
PCM NO.:	PCM-05	DESCRIPTION:	Local Control Stations at Grit Removal

NOTIFICATION TO CONTRACTOR:

We are requesting making the change to the Contract described in the attached materials and request that you take the following action:

- ☐ Notify us that you concur that this change does not require a change in contract time or amount. A Field Order will be issued.
- ☒ Submit a price proposal with detailed cost breakdown and revised schedule for performing the described change.
- ☐ A change order will be issued for payment at the unit price bid.
- ☐ Proceed with the change under the time and materials provision of the Contract.

REQUESTED BY:	Joan Torres	8/25/2025
	TYPED NAME	DATE

RESPONSE FROM CONTRACTOR:

We respond to your request as follows:

- ☐ We concur that this is a no cost or time change. Issue a Field Order.
- ☒ We submit the attached price proposal with detailed cost breakdown and revised schedule for performing the described change.

  The proposed change in cost is $7,462.38
  The proposed change in time is TBD.
- ☐ We are proceeding with the change at the unit price bid.
- ☐ We are proceeding with the change under the time and materials provision of the Contract.

RESPONSE BY:	Greg Graves	9/8/2025
	TYPED NAME	DATE

ACTION TAKEN:

- ☐ Proposed contract modification rejected. Contractor notified not to proceed.
- ☐ Field Order Issued — FO-
- ☐ Change Order Issued — CO-

RESPONSE BY:		
	TYPED NAME	DATE

PROJECT CONTRACT MODIFICATION

Local Control Stations at Grit Removal
PCM-05

Written Description of the PCM.

One of the engineers' comments on SD-462323-02 Vortex Grit Removal System P&ID approved the addition of Local Control Stations at Grit Screw Motor, Grit Motor, and Grit Pump as recommended by the supplier which required Veolia to provide pricing.

The components of the PCM shall include:

1. Pricing from Veolia to provide Local Control Stations with Emergency Stops at the Grit Screw Motor, Grit Motor, and Grit Pump.
2. As well as pricing from CF Electric to install LCS's by Veolia.

Gracon Construction, Inc.
MAILING ADDRESS: P.O. BOX 360039, DALLAS, TEXAS 75336-0039, PHONE: (972) 222-8533
FAX: (972) 222-8542

PROJECT DESCRIPTION			
PROJECT NAME	Aubrey Wastewater Treatment Plant Expansion to 2.25 MGD		
PROJECT LOCATION	514 Bluebonnet Drive, Aubrey, TX 76227		
OWNER	City of Aubrey, Texas	PROJECT NO.	2024-06
ENGINEER	Mead & Hunt, Inc.	PROJECT NO.	
CONTRACTOR	Gracon Construction Inc.	PROJECT NO.	2405

PROPOSED CONTRACT MODIFICATION	PCM-05 LCSs at Grit Removal

REASON FOR CHANGE

One of the engineer's comments on SD-462323-02 Vortex Grit Removal System P&ID Response required Veolia to provide pricing for adding LCSs with E-Stops at the Grit Screw Motor, Grit Motor, and Grit Pump.

REQUESTED BY	Mead & Hunt, Inc. / MBROH / Owner

ATTACHED DOCUMENTS

PCM-05 Breakdown
SD-462323-02 Vortex Grit Removal System P&ID Response
Veolia CO: Local Control Stations
CF Electric CO: E-Stops at Vortex Grit System Install

DESCRIPTION OF CHANGES

Pricing for Veolia to provide the LCSs with E-Stops at the Grit Screw Motor, Grit Motor, and Grit Pump, and for CF Electric to install the LCSs supplied by Veolia.

CLARIFICATIONS/EXCLUSIONS

COST INCREASE/DESCREASE	$ 7,462.38		
ADDITIONAL DAYS	TBD	Working Days	Pending Approval & Leadtime
SUBMITTED BY	Greg Graves	DATE	Monday, September 08, 2025

Gracon Construction, Inc.
MAILING ADDRESS: P.O. BOX 360039, DALLAS, TEXAS 75336-0039, PHONE: (972) 222-8533
FAX: (972) 222-8542

Breakdown		
Description	Cost	
Veolia - Local Control Stations	$	4,157.52
CF Electric - Install	$	1,250.00
Sub-Total	$	5,407.52
Field Burden	$	1,081.50
Sub-Total	$	6,489.02
Overhead/Profit	$	973.35
Total	$	7,462.38
Additional Days	TBD	

Mead & Hunt

SUBMITTAL COVER SHEET

OWNER City of Aubrey

ENGINEER Mead & Hunt, Inc.
6001 I 20 West, Ste 214
Arlington, TX 76017
817-719-0372

PROJECT NAME Wastewater Treatment Plant Expansion to 2.25 MGD

DATE May 28, 2025

M&H PROJECT NO 4665702-220196.01

Submittal SD-462323-02 Vortex Grit Removal System P&ID

Contractor: Gracon

Reviewed By: Hans Poures, PE – Mbroh Engineering

Submittal documents for the above project were received and reviewed, and comments are listed below. Checking is only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication processes or to techniques of construction; and for coordination of the work of all trades. Review and comment does not relieve the contractor from compliance with the requirements of the drawings and specifications.

REVIEW CODE:	
☐	No Exceptions Taken
☒	Furnish as Corrected
☒	Written Response Required
☐	Revise and Resubmit
☐	Rejected
☐	Cancelled
☐	Not Reviewed
☐	Record Data; No Review Performed

Review Comments

Submittal Reference	Reviewer	Comments
46 23 23	HP	The grit removal system supplier shall follow the tagging numbers as defined in P&ID 03-I-03: • Plant Water Valve and its associated signals and elements – Tag number shall be 0330 • Grit Motor and its associated components – Tag number shall be 0330 • Grit Pump Suction Valve and its associated components – Tag number shall be 0331 • Grit Pump and its associated components – Tag number shall be 0331 • Grit Screw Motor and its associated components – Tag number shall be 0332

Mead & Hunt

SUBMITTAL COVER SHEET

46 23 23	HP	Approved the addition of a Local Control Station with an E-Stop for the Grit Screw Motor (0332), Grit Motor (0330), and Grit Pump (0331), as recommended by the supplier
46 23 23	HP	Grit Screw Motor (0332), Grit Motor (0330), and Grit Pump (0331) shall be provided with winding temperature limiting switches, as indicated in P&ID 03-I-03.

VEOLIA

EXTERNAL CHANGE REQUEST # 01

Date : 2025-08-18 (yyyy-mm-dd)

Project Name:	Aubrey, TX	**Client:**	Gracon Construction, Inc.
Project Number:	5000225007		

Item #	Description	Amount
1	Local Control Stations (Supply only) 3x E-stop control stations, 1-Gang, NEMA 7 Includes drawing updates	4,157.52 $
	Total (USD):	**4,157.52 $**

INTERNAL USE

Request Acceptance	**Director :**	John Kodis	**Date:**	
	Project Manager:	Vincent Tam	**Date:**	

Distribution

1. Project Manager
2. Contract Administrator

EXTERNAL USE

Client's Acceptance	**Name:**		**Title :**	
	Signature :		**Date:**	

ELECTRIC, INC.

4901 Tim Donald Rd Justin, TX 76247 Phone: (817) 267-6000

September 4, 2025

Gracon Construction
ATTENTION: Greg Graves

SUBJECT: Aubrey WWTP Vortex Grit System E-Stops

Below is the work scope and pricing for the above referenced project.

Work Scope:

- **Install Local Control Stations LCS-10-01, LCS10-02, and LCS20-01 (Provided by Others)**
- **Install conduit and wiring from LCP-0330 to LCS-10-01, LCS10-02, and LCS20-01**

Exclusions:

- **Sales Tax**

Quote Amount **$ 1,250.00**

If you should have any questions regarding this proposal, please feel free to contact me at the numbers provided below.

Regulated by the Texas Department of Licensing & Regulations
P.O. Box 12157
Austin, Texas 78711
1.800.803.9202
www.license.state.tx.us

Sincerely,

Bill Thompson
CF Electric Inc.
817-267-6000 office
817-267-6002 fax
817-789-9044 mobile

PLUMMER

PROJECT CONTRACT MODIFICATION

PROJECT NOS.

OWNER:	City of Aubrey			
PROJECT:	Aubrey WWTP Expansion to 2.25 MGD			
CONTRACTOR:	Gracon Construction, Inc.			
ENGINEER:	Plummer Associates, Inc.			0798-010-01
PCM NO.:	PCM-06	DESCRIPTION:	ILS Monorail and Canopy	

NOTIFICATION TO CONTRACTOR:

We are requesting making the change to the Contract described in the attached materials and request that you take the following action:			
	Notify us that you concur that this change does not require a change in contract time or amount. A Field Order will be issued.		
X	Submit a price proposal with detailed cost breakdown and revised schedule for performing the described change.		
	A change order will be issued for payment at the unit price bid.		
	Proceed with the change under the time and materials provision of the Contract.		
REQUESTED BY:	Joan Torres		09/30/2025
	TYPED NAME		DATE

RESPONSE FROM CONTRACTOR:

We respond to your request as follows:			
	We concur that this is a no cost or time change. Issue a Field Order.		
X	We submit the attached price proposal with detailed cost breakdown and revised schedule for performing the described change. The proposed change in cost is $233,674.70 The proposed change in time is 20 day(s).		
	We are proceeding with the change at the unit price bid.		
	We are proceeding with the change under the time and materials provision of the Contract.		
RESPONSE BY:	Greg Graves		11/6/2025
	TYPED NAME		DATE

ACTION TAKEN:

	Proposed contract modification rejected. Contractor notified not to proceed.	
	Field Order Issued	FO-
	Change Order Issued	CO-

RESPONSE BY:		
	TYPED NAME	DATE

ILS Monorail and Canopy
PCM-06

Written Description of the PCM.

Please provide the cost for procurement and installation of the monorail system and canopy at the ILS per the city's request.

The components of the PCM shall include:

1. Detailed cost to procure and install monorail / canopy at ILS.
2. Changes in contract time (if any).

Gracon Construction, Inc.
MAILING ADDRESS: P.O. BOX 360039, DALLAS, TEXAS 75336-0039, PHONE: (972) 222-8533
FAX: (972) 222-8542

PROJECT DESCRIPTION			
PROJECT NAME	Aubrey Wastewater Treatment Plant Expansion to 2.25 MGD		
PROJECT LOCATION	514 Bluebonnet Drive, Aubrey, TX 76227		
OWNER	City of Aubrey, Texas	PROJECT NO.	2024-06
ENGINEER	Mead & Hunt, Inc.	PROJECT NO.	
CONTRACTOR	Gracon Construction Inc.	PROJECT NO.	2405

PROPOSED CONTRACT MODIFICATION	PCM-06 ILS Monorail Crane and Canopy

REASON FOR CHANGE

The Owner has requested the addition of a monorail crane and canopy with lighting at the Headworks Influent Lift Station.

REQUESTED BY	Mead & Hunt, Inc. / Owner

ATTACHED DOCUMENTS

PCM-06 Breakdown
CF Electric
Seguin Fabricators
HSC

DESCRIPTION OF CHANGES

CLARIFICATIONS/EXCLUSIONS

COST INCREASE/DESCREASE	$ 233,674.70
ADDITIONAL DAYS	20 Working Days

SUBMITTED BY	Greg Graves	DATE	Thursday, November 6, 2025

Gracon Construction, Inc.
MAILING ADDRESS: P.O. BOX 360039, DALLAS, TEXAS 75336-0039, PHONE: (972) 222-8533
FAX: (972) 222-8542

PCM-06 Breakdown	
Description	Cost
Labor	$ 21,200.00
EOE	$ 3,800.00
Epoxy, Grout, Touch-Up Paint	$ 2,000.00
HSC- Monorail Crane	$ 47,609.00
Seguin- Misc. Metal	$ 78,122.00
CF Electric	$ 11,710.00
Sub-Total	$ 164,441.00
Field Burden	$ 38,754.39
Sub-Total	$ 203,195.39
Overhead/Profit	$ 30,479.31
Total	$ 233,674.70
Additional Days	20

ELECTRIC, INC.

4901 Tim Donald Rd Justin, TX 76247 Phone: (817) 267-6000

October 16, 2025

Gracon Construction
ATTENTION: Josue Lopez

SUBJECT: Aubrey WWTP ILS Monorail Hoist and Canopy

Below is the work scope and pricing for the above referenced project.

Work Scope:

- **Provide and install 4 light fixtures as specified**
- **Provide and install 30A NF NEMA 4X Disconnect for Hoist**
- **Provide and install 20A 3-Pole breaker in PP-1410 for Hoist**
- **Install conduit and wire for lighting and monorail hoist**

Exclusions:

- **Sales Tax**

Quote Amount **$ 11,710.00**

If you should have any questions regarding this proposal, please feel free to contact me at the numbers provided below.

Regulated by the Texas Department of Licensing & Regulations
P.O. Box 12157
Austin, Texas 78711
1.800.803.9202
www.license.state.tx.us

Sincerely,

Bill Thompson
CF Electric Inc.
817-267-6000 office
817-267-6002 fax
817-789-9044 mobile

Change Order

Seguin Fab #: **CO#001 - 24-251 Aubrey WWTP**
Revision: A
Description: Canopy & Monorail
Created By: Kevin Dodson
Date Created: 10/2/2025 12:00:00 AM
Change Order Status: Submitted To Client
Change Order Received: 10/2/2025
Customer Reference:

To: Gracon Construction
c/o:
PO Box 360039

Dallas
TX

Attn:

Details:

Per the request of Josue Lopez, 10/2/2025:

Kevin,
Please provide pricing for PCM-06 regarding the addition of a monorail crane and canopy at the Aubrey WWTP Influent Lift Station. The associated drawings and specifications are attached. Please quote this with galvanized steel.
Let me know if you have any questions. Thanks!
Josue Lopez | Project Manager
Gracon Construction
4343 Lasater Rd., Mesquite, TX 75181
Direct: 972-331-8036 | Cell: 972-576-6073 | Office: 972-222-8533

SFL will supply (1) each Canopy and (1) each Monorail Beam to consist of the following:

-(3) W 12 X 79 X 21'-0" A992
-(3) W 12 X 79 X 20'-9" A992
-(3) W16 X 40 X 16'-6" A992
-(3) W 16 X 40 X 16'-9" A992
-(3) W 16 X 40 X 11'-11" A992
-(1) S 15 X 50 X 36'-8" A992
-(13) L 4 X 4 X 1/4 X 5'-0" A36
-(36) L 4 X 4 X 1/4 X 1'-0" A36
-(28) SF PL 1/2" A36
-(6) PL 3/4 X 14 X 1'-2" A36
-(15) DECKING 3N 20, 24 X 18'-0" G90 FINISH
-(24) ANCHOR BOLT, 3/4 X 1'-8" F1554 GR55
-(124) BOLT, 3/4 X 3" A325-GALV

FINISH WILL BE GALVANIZED

IF ENGINEERING IS REQUIRED ADD: $4,000.00

Estimated Value: $ 74,122.000

If you would like to proceed, please sign below and return.

Authorized By: _____ **Date:** _____

Handling Systems & Conveyors, Inc.

10/2/2025

Gracon Construction
Attention: Josue Lopez
Subject: Quote for Aubrey project monorail hoist and electrification

We are pleased to provide the following quotation for your project.

Monorail Electric Chain Hoist

Capacity	2 ton
Hoist	Coffing ECMT 4016
Hoist speed	16/4.9 fpm, 2-speed
Lift available	35' 0"" available
Trolley speed	35/3.5 fpm, VFD control
Control	Push button from hoist
Control panel	NEMA 4/12 indoor
Voltage	460 volts 3 phase 60 HZ
Paint	Standard HSC safety yellow
Monorail electrification	4-conductor insulated bar
Electrification length	37' 0"

Installation: Start up, and training

Provide labor, equipment, and test weights to install, startup, and load test above.
Notes:

- Installation will be by HSC non-union crew during regular work hours including all lift equipment, tools, and expenses.
- HSC will provide electrification to junction box (not by HSC) provided at the interior end on the monorail (Connection not by HSC).
- Customer is responsible for having permanent power available to the crane at time of installation, otherwise additional cost may be incurred.
- After the installation is complete, HSC will load test the crane at 100-125% of capacity.
- The adequacy of the purchaser's building or support structure for the referenced equipment is solely the responsibility of the purchaser. This includes roof, column and wall structures as well as foundations or floors.
- After completion and startup, HSC will provide load test certificates with O&M manuals.
- HSC will instruct owners' personnel in use and maintenance of the equipment.

PRICING SUMMARY (tax and freight, not included)

Monorail hoist and electrification	*$ 23,917.00*
Installation, Testing, Startup and Training	*$ 21,917.00*
Freight	*$ 1,775.00*
Total	*$ 47,609.00*

MHI. THE INDUSTRY THAT MAKES SUPPLY CHAINS WORK™ Member Company

CMAA CRANE MANUFACTURERS ASSOCIATION OF AMERICA, INC. Member company

Terms: per contract

Lead time: 10-12 weeks after receipt of order and approved submittal

Pricing is based on previous installations in similar environments and does not conform entirely to the specifications provided by Gracon Construction. Receipt of order/contract is subject to an approved submittal and may need to be requoted if changes are needed.

Handling Systems appreciates the opportunity to quote on this project. If you have further questions or if we may be of further assistance, please do not hesitate to contact us.

Regards,
HANDLING SYSTEMS & CONVEYORS, INC.

Mike Harms

HSC- Fort Worth
1300 Meacham Blvd. Fort Worth, TX 76106
cell 817-201-6005
mike.harms@hsc-lr.com
www.hsc-lr.com

GENERAL NOTES

1. All items must be approved for construction within 6 months of the date of this proposal and be delivered within 1 year. Or all items are subject to price escalation of 6% per year.
2. Our price does not include any state or local sales taxes, or any use taxes, or tariffs. You will need to provide us with a tax except number/documentation
3. The system proposed meets or exceeds specifications for CMAA 70
4. Our 1-year warranty covers only HSC purchased parts and labor. Purchased items *(motors, gearboxes, electrical components, etc.)* will carry a pass-through warranty *(i.e., length of warranty is per manufacturer)*.
5. Our proposal excludes cost for handling any hazardous materials/substances, including asbestos, lead paint, etc.
6. HSC does not agree to accept consequential liquidated damages, either written or implied.
7. No premium time has been anticipated, nor included
8. This quote is based on the use of non-union labor.
9. Pricing is FOB HSC shop Ft Worth with freight quoted
10. Customer shall be responsible for the following:
    a) Building Interferences
    b) Electrical Feeders to HSC provided power feed location.
    c) Providing free and clear access to the building to install quoted material.
11. All drawings submitted for approval must be signed and returned prior to any purchase and/or fabrication.

MHI. THE INDUSTRY THAT MAKES SUPPLY CHAINS WORK™
Member Company

CMAA CRANE MANUFACTURERS ASSOCIATION OF AMERICA, INC.
Member company

Handling Systems & Conveyors, Inc.
10909 Otter Creek East Blvd.
Mabelvale, AR 72103
(501)-455-5898

October 2, 2025

Mike Harms
Sales
Handling Systems & Conveyors, Inc.
Mike.Harms@hsc-lr.com
817-201-6005

Monorail hoist and electrification
Gracon Construction
4343 Lasater Rd.
Mesquite, TX 75181
PCM-06, Aubrey WWTP Expansion to 2.25 MGD

Dear Sir/Madam,
I have attached drawings and information for the monorail hoist for installation at the Aubrey WWTP in Aubrey, TX
1. Coffing hoist drawing
2. Coffing ECMT hoist specifications
3. Coffing Hoist O&M manual
4. Conductix electrification information

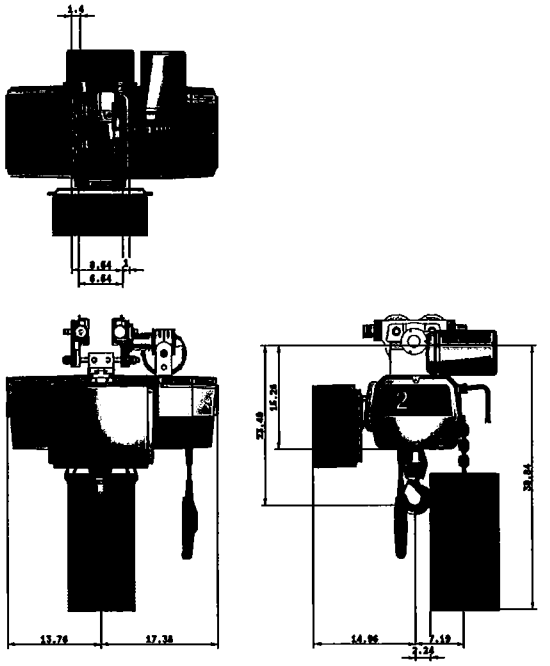
Regards,

Mike Harms
Mike Harms

COFFING ELECTRIC CHAIN HOIST DRAWING

Coffing EC

Electric Chain Hoist



Customer Name:HANDLING SYSTEMS AND CONVEYORS
Quote Number:C0301996 Line 1
Revision:1
Quote Date:10/2/2025

TECHNICAL DATA

Model Number	EC4016
Hoist ID	Coffing EC MT Hoist
Rated Lift Capacity	2 Ton
Lift Distance (ft)	35
Maximum Lifting Speed (fpm)	16
Reeving Style	1-Part Single
Hoist Control Type	Two Speed
Suspension Type	Underhung Motorized Trolley
Hoist Mounting	Cross
Trolley Flange Width	5.640 (INCH)
Trolley Travel Speed (FPM)	35
Trolley Control Type	Variable Speed Drive
Trolley Bumpers	Included
Chain Container	Fabric Container
Hoist Duty Classification	HMI Class H3
Hoist Operating Voltage	460V / 3 ph / 60 Hz
Hoist Control Voltage	24VAC
Trolley Motor HP	0.25
Trolley Motor Qty	1.00
Assembly Weight of Hoist (lbs)	457.5200

This document was generated by COMPASS® by Columbus McKinnon Corporation Getzville, New York USA

This drawing is intended for preliminary reference use only and depicts general clearance dimensions based on standard product configurations. If your application includes specific or close dimensional constraints it is recommended that an Approved Drawing be requested at time of order.

Dimensional Units
First Angle Projection

COLUMBUS McKINNON

PDF Datasheet Powered by CADENAS PARTsolutions

COFFING HOIST SPECIFICATIONS

The Coffing EC is a high-performance hoist engineered for heavy-duty industrial service. Designed for safety, the EC incorporates mechanical load brake, motor brake and overload clutch as standard. Available in a standard model and a variable speed model both of which support hook/lug suspensions.

FEATURES & BENEFITS

- MECHANICAL LOAD BRAKE Weston type, controls load lowering and prevents load drift. Holds rated load independent of multiple disc motor brake.
- MULTIPLE DISC MOTOR BRAKE Heavy duty, direct acting design for positive load spotting and holding.
- ERGONOMIC DESIGNED PUSH BUTTON STATION Fits operator's hand for thumb or two-handed operation. 24 Volt Control standard for operator safety. 115 Volt Control available upon request. NEMA 3R (weather resistant).
- FIVE-POCKET LOAD SHEAVE Increases chain and sheave engagement 25% over hoists with conventional four-pocket sheaves. Provides smoother lifting and reduces chain wear over four-pocket sheaves.
- LIMIT SWITCHES Adjustable to regulate upper and lower load travel. Brass nuts standard for improved switch setting and repeatability. Stainless steel limit switch shaft standard.
- GEARING & TRANSMISSION First stage helical gearing on EC small frame; first and third stage helical gearing on EC large frame. Transmission gears are precision machined of alloy steel and run in oil bath for longer, quieter operation.
- PANEL PLATE Provides easy access to controls and motor leads for changing voltage on dual-voltage motors or performing hoist maintenance. Connection wires are numbered to assist maintenance.
- CHAIN END STOP ASSEMBLY Fits below dead end link on lifting chain for added measure of safety.
- OVERLOAD CLUTCH Protects hoist, operator and supporting structures from damaging overloads, chain jamming, and reverse phasing.

Specifications of quoted hoist:

Configured Code	ECMT4016
Brand	Coffing
Hoist Operating Environment	Outdoor
Ambient Temperature	-10 to 130°F / -24 to 54°C
Hoist Headroom Definition	Standard Headroom
Rated Lift Capacity	2 U.S. Tons
Hoist Suspension Type	Underhung Motorized Trolley Hoist
Mounting	Cross
Requested Lift Distance (ft)	35.0
Operating Voltage	460V / 3 ph / 60 Hz
Control Voltage	24 VAC
Reeving Style	1-Part Single Reeved
Hoist Control Type	Two speed
Maximum Lifting Speed	16 ft/min (4.9 m/min)

Rope/Chain Finish	Zinc Plated
Load Chain Specification (in)	0.438 x 1.180
Load Chain Weight (lbs/ft)	1.848
Lower Hook Type	Latch Type
Lower Hook Material	Steel Zinc Plated
Hoist Duty Classification	HMI Class H3 / ISO M4
Geared Limit Switch Style	2 Element Linear Screw
Hoist Brake Type	AC multiple-disk brake
Hoist Mechanical Load Brake	Included Weston Type
Mainline Contactor	Included
Hoist Enclosure Rating	NEMA-3R
Control Enclosure Rating	NEMA-4X STAINLESS STEEL
Control Enclosure Location	Mounted on Hoist
Hoist Transformer Fusing	Pri. Fused / Sec. Fused & Grnd
Motor Fusing	Hoist & Trolley Motor Fuses
Hoist Thermal Protection	Overload Relays (TOL)
Hoist Paint Finish	Epoxy Paint
Hoist Paint Color	White
Power Cord Short Cord	2.5 ft (0.76m)
Trolley Selection	Coffing Motorized Trolley
Trolley Control Type	Variable Speed Drive
Trolley Traverse Speed (60Hz)	35 ft/min (10.67 m/min)
Secondary Traverse Speed(60Hz)	3.5 ft/min (1.07 m/min)
Trolley VFD Type	VFD 2-step Infinitely Variable
Trolley VFD Step Frequencies	10Hz thru 60Hz
Trolley Drive Configuration	4 Wheel Rigid, Single Drive
Trolley Motor HP (each)	0.25
Trolley Motor Qty	1.00
Trolley Motor Amperage (Total)	0.70
Trolley Drop Stops	Included
Trolley Drop-Stop Material	Steel
Trolley Bumpers	Included
Trolley Wheel Tread Style	Compound
Trolley Wheel Tread Diameter	4.00 in (10.16 cm)
Trolley Wheel Tread Width	1.0890
Trolley Wheel Material	Grey Cast Iron
Beam Flange Width (in)	5.640
Flange Thickness (in)	1.0890
Trolley Paint Finish	Epoxy
Trolley Paint Color	White
Pendant Enclosure Rating	NEMA-4X
Pendant Strain Relief	External
Pendant Drop (ft)	31.0
Quantity of used Pendant Slots	5
Hoist Lift Buttons	Two Step Buttons
Trolley Travel Buttons	Two Step Buttons
Mainline Operator Button	Twist ON / Push OFF

COFFING HOIST O&M MANUAL

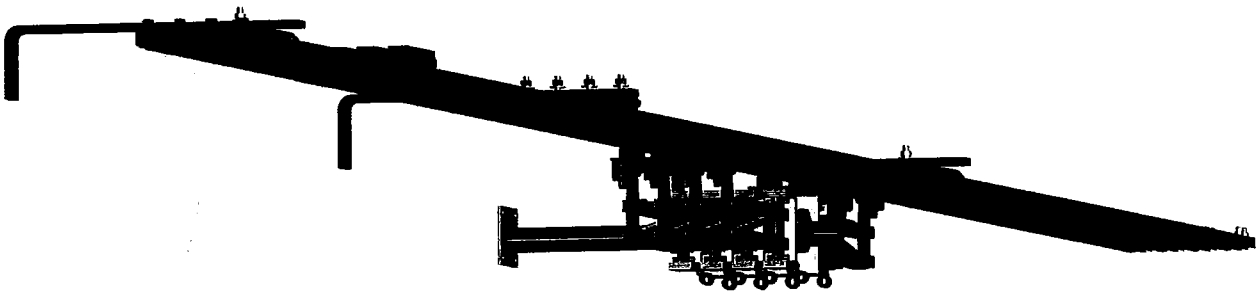
See attached Hoist O&M Manual

CONDUCTIX ELECTRIFICATION INFORMATION

System Length	37.00 feet
Environment	Under roof
Ambient temperature	0 °F to 110 °F
Number of hoists	1
Bar layout	Standard (Vertical)
Support spacing	59"
Number of conductors	4 total (3 phase + 1 ground)
Nominal amps	4.3 A
System voltage	460VAC
Powerfeed locations	End

SEE ATTACHED "4-bar Manual" for more information.

Conductor Bar
Safe-Lec 2®



CONDUCTIX wampfler

Contents

Overview & Design Features 3

Conductor Bar Summary Chart 4

Quotations Data Sheet 5-6

Overview & Features 7-11

Safe-Lec 2 vs. 8-Bar 7
Typical 4 Bar System 8
Bar and Collector UL Electrical Ratings 9-10
Specifications 11

Safe-Lec 2 System Components 12-31

Galvanized Steel Bar (100,125A) 12
Copper Bar (160, 250, 400A) 13
Aluminum/Stainless Steel Bar (200, 315 400A) 14
Splice Joints & Joint Compound 15
Joint Covers & Power Feeds 16-17
End Caps 17
Hanger Clamps 18-19
Anchor Clamps 19
Pickup Guides 20
Power Interrupting Sections 21
Collectors 22-25
Collector Shoe & Holder 26
Flange Brackets 27-28
Girder Clamps 28
Web Brackets 29
Mounting and Collector Brackets 30
Splice Hardware Kits 31
Installed Dimensions 32
Heater Wire 33

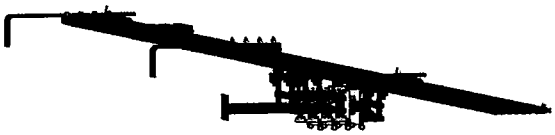
Notes 34

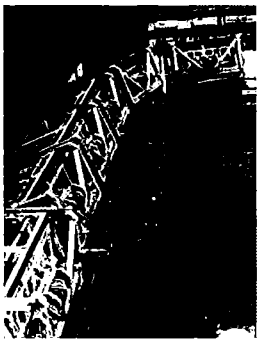
Other Products from Conductix-Wampfler 35

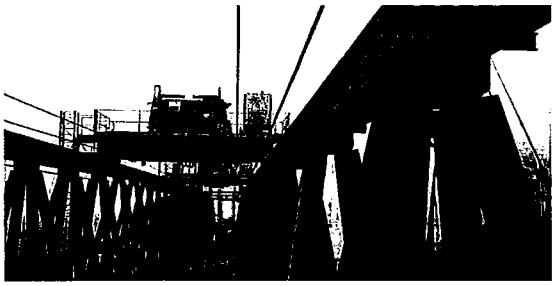
Contact Information 36

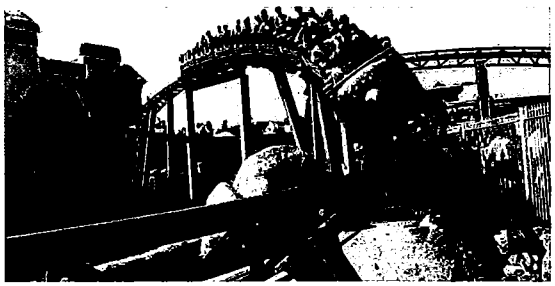
Overview & Design Features

Safe-Lec 2™ - The "next generation" In electrification for overhead cranes and other moving equipment. This modern system delivers safe, reliable power in a rugged, easy-to-install package.









Safe-Lec 2 is ideal for:

- Small to medium cranes
- Conveyor systems
- Moderately curved systems
- Monorails
- Material Handling Equipment
- Amusement rides

Ampacity range

100A, 125A, 160A, 200A, 250A, 315A, & 400A capacities up to 600 volts maximum.

Maximum Speed

1200 ft/min

Options

Heater wire systems (Pg. 26), stainless steel hardware, green bonding (ground) conductor covers, black "UV resistant" outdoor covers, curved systems to a minimum of 60" radius (curved at our factory).

Safe-Lec 2 Features

- Positive shoe tracking and superior conductivity. Long-wearing shoe is guided by the V-contact in the rail.
- Robust collector arm articulates to help maintain contact.
- IP2 "finger safe" operation; no live parts exposed.
- Secure, bolted splice joints pre-installed on conductors for superior electrical connection. Won't pull apart over time. Includes one-piece snap-on cover.
- Peaked insulating covers to shed dust and water. The same cover profile fits all bar styles; fewer parts to stock.

Safe-Lec 2 Features

- Less expense and shorter crane downtime.
- Requires fewer splice joints; 14' 9" (4.5m) rail lengths versus 10' for most other systems.
- Includes pre-installed splice joints on one end of bar.
- Uses multi-pole hanger; multiple bars snap into the same hanger and hanger mounts with a single bolt.
- Requires fewer expansion joints; up to 492' (150m) without an expansion section.
- Is easy to install and align with slotted hanger brackets.

MATERIAL HANDLING INDUSTRY OF AMERICA® Member Company

CMAA OEM Crane Component Manufacturer

Conductor Bar Summary Chart

Conductor Bar Lines Manufactured in the USA

For conductor rails manufactured in Germany but available in the USA, please refer to KAT0800-0001 I Conductor Rail Overview

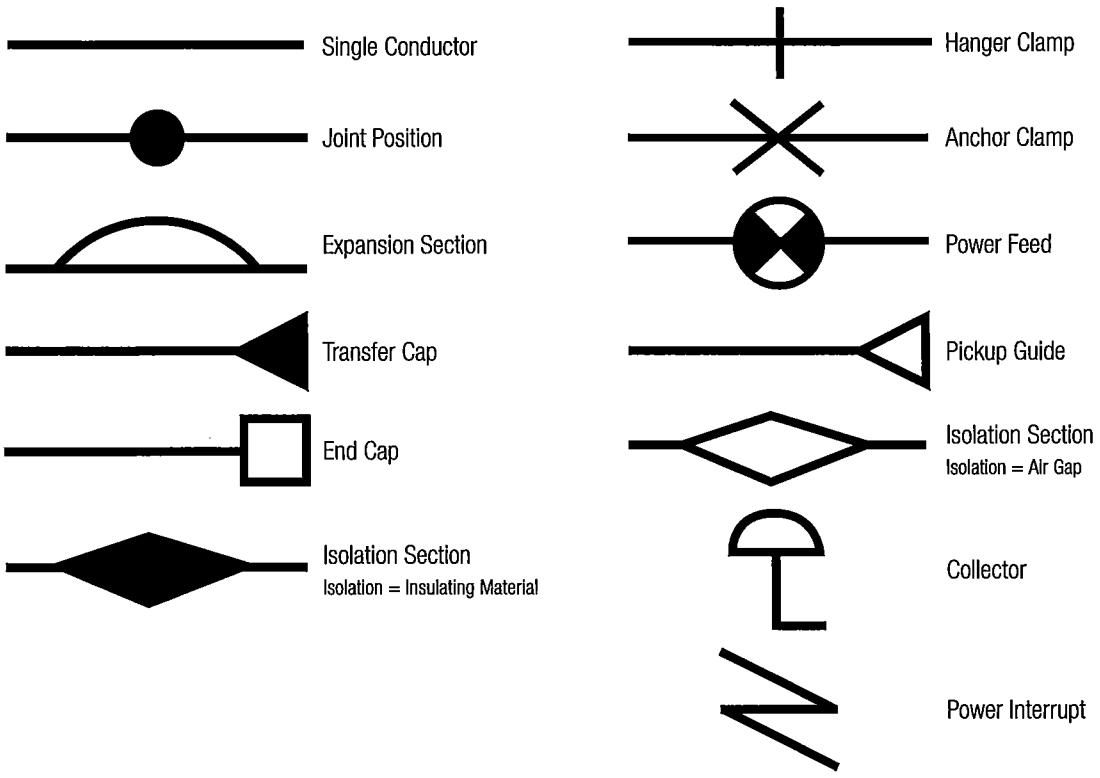
	Sys Loc2 CAT1003	Hevi-Bar II CAT1006	8 Bar CAT100A	Side Contact CAT1004
Common Applications	Small to medium overhead cranes, moderate curves	Medium to large overhead cranes, higher speeds	Very large cranes, mill handling systems, and transit	Contained spaces, slip ring applications, curves
Bar Ampacity Selections	100 125 160 200 250 315 400	500 700 1000 1500	40 90 110 250 350 500	40 90 110 250 350
Maximum Voltage	600	600	600	600
Maximum Speed[1] ft/min (m/min)	1200 (365.78)	2000 (609.6)	900 (274.3)	600 (182.8)
Bar Spacing - In. (mm)	1.69 (43)	3.0 (76.2)	3.0 (76.2)	1.375 (34.9)
Cover Temperatures Low 150°F (71°C) Medium 220°F (121°C) Extreme 60° to 280°F (15.1 to 137.7°C)	Low Medium	Low Medium Extreme (700 & 1000 Amp only)	Low Medium Extreme	Low Medium
Offset or Rated	Yes	Yes	Yes	No
Dual Cir. Avail. (Bi-Polar Option) (Collector Only)	No Bottom/Side	Yes Bottom/Side	No Bottom/Side	No Side Only
Minimum Bend Radius with Low Temp Cover - In. (mm)	60.0 (1542)	Consult Factory	180.0 (457)	9.0 (228)
Minimum Bend Radius with Medium Temp Cover - In. (mm)	6.0 (1542)	96.0 (2438.4)	57.0 (1447)	57.0 (1447)
Heater Wire Available	Yes	500 Amp Only	No	No

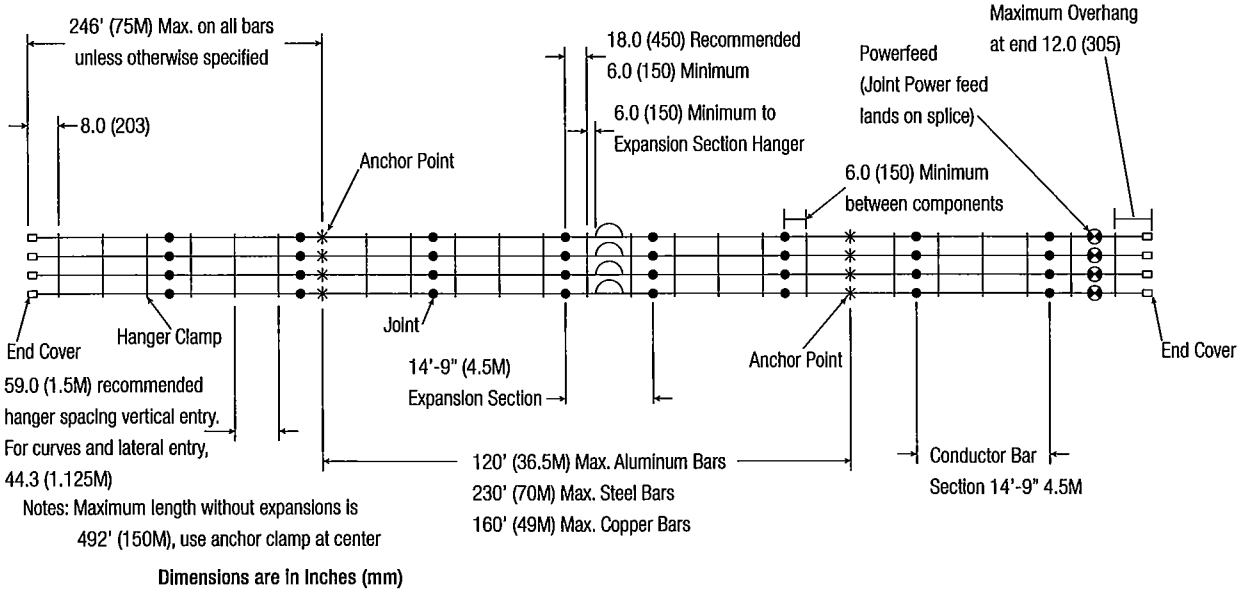
1 For faster speeds - contact factory.

Conductix-Wampfler Germany - Conductor Bar Lines
Conductix-Wampfler Germany's high performance conductor rails are stocked and available in the USA. Please contact our sales office at 1-800-521-4888 for more information. See Pg 88 of this catalog for a brief overview of available series.

Don't see what you need? Give us a call! We offer hundreds of special designs and options!

Typical 4-Bar System





Dimensions are in Inches (mm)

ATTENTION: CURVED BAR TO BE FACTORY BENT ONLY!

Electrical Ratings

Voltage Drop Calculations

Volt drop calculation ^{3}U:

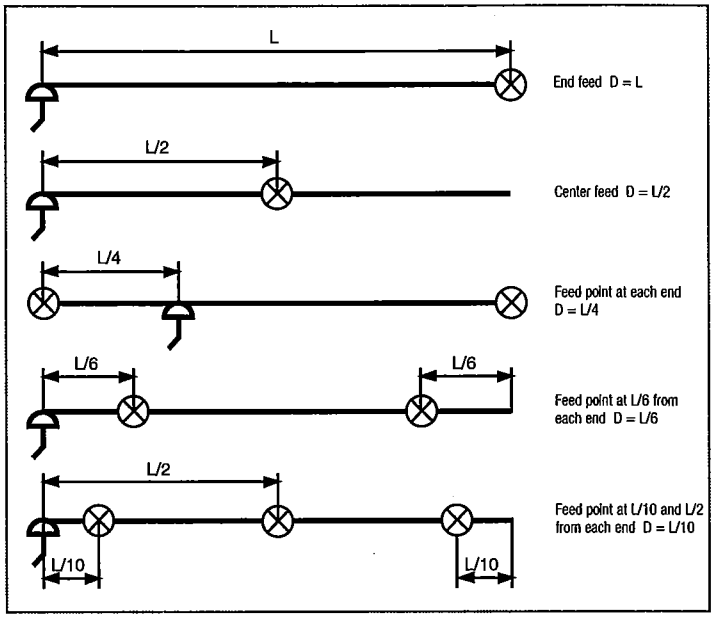
3-Phase AC	$\Delta U = \sqrt{3} \times I \times D \times Z$
Single Phase AC	$\Delta U = 2 \times I \times D \times Z$
Continuous current DC	$\Delta U = 2 \times I \times D \times R$

$$\Delta U\% = (^{3}U \times 100) / U_{n}$$

Where:

- ΔU: voltage drop in Volts
- U_n: Nominal voltage
- I: Maximum current in amps
- D: Distance between the feed and pick-up points in meters.
- R: Resistance of conductor in ohms per meter (see Pg. 11)
- Z: Impedance of conductor in ohms per meter (see Pg. 11)

See Appendix I and Appendix II for more information about voltage drop.



Current Rating

The maximum allowable continuous current rating of the conductor bar depends on the Duty Factor "K" of the cranes and the maximum ambient temperature Ta. Allowable current (I) is calculated using the following formula:

$$I_{allowable} = \text{Nominal Current} \times K$$

	Factor "K"					
	Duty / Ta	100%	80%	60%	40%	20%
Standard Cover	77°F (25°C)	1.000	1.118	1.291	1.581	2.236
	95°F (35°C)	0.905	1.011	1.168	1.430	2.023
	113°F (45°C)	0.798	0.892	1.030	1.261	1.784
	130°F (55°C)	0.674	0.754	0.870	1.066	1.508
Medium Heat Cover	150°F (65°C)	0.775	0.866	1.000	1.225	1.732
	167°F (75°C)	0.707	0.791	0.913	1.118	1.581
	185°F (85°C)	0.632	0.707	0.816	1.000	1.414

For UL rated capacities, see table on Pg. 10

Bar and Collector UL Electrical Ratings

UL testing performed at fully stationary

UL File: E16232

For a full list of UL listed components vist UL Product IQ at: productiq.ulprospector.com or contact the factory.

Questions? Contact us at: 800-521-4888 or sales.us@conductix.com

Standard Phase	Standard Ground	Description	UL Rating (Continuous)	UL Rating (60% DC)	UL Rating (83% DC)
310101-J	310102-J	100A Galvanized Steel Conductor Bar	85A	100A	N/A
310201C-J	310202-J	125A Galvanized Steel Conductor Bar	100A	125A	N/A
310301-J	310302-J	160A Copper Conductor Bar	160A	200A	N/A
310401-J	310402-J	250A Copper Conductor Bar	250A	315A	N/A
310501-J	310502-J	400A Copper Conductor Bar	300A	400A	N/A
310601-J	310602-J	200A Aluminum-Stainless Conductor Bar	200A	250A	N/A
310701-J	310702-J	315A Aluminum-Stainless Conductor Bar	250A	315A	N/A
399101-J	399102-J	400A Aluminum-Stainless Conductor Bar	250A	350A	400A
SL2C-100SP-1M	SL2C-100G-1M	100A SL2C Collector (w / Copper or Galvanized bar)	75A	100A	130A
SL2C-100SP-1M	SL2C-100G-1M	100A SL2C Collector (w / Aluminum-Stainless Bar)	36A	50A	60A
SL2C-200SP-1M	SL2C-200G-1M	200A SL2C Collector (w / Copper or Galvanized bar)	115A	160A	200A
SL2C-200SP-1M	SL2C-200G-1M	200A SL2C Collector (w / Aluminum-Stainless bar)	75A	100A	130A

Specifications

The appropriate conductor bar can be chosen only when all the relevant factors are known. Please refer to the Data Sheet on Pg. 5, and to Appendices I through IV at the back of this catalog. Also, please consult Conductix-Wampfler sales if you have any questions about the suitability of this product to your application.

Safe-Lec 2 Conductor Bar

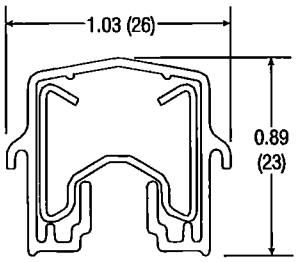
	Galvanized Steel		Copper			Aluminum/ Stainless Steel		
Nominal Current	100A	125A	160A	250A	400A	200A	315A	400A
Cross Sectional Area	63mm²	93mm²	50mm²	63mm²	93mm²	104mm²	120mm²	156mm²
Maximum System Voltage AC or DC (Per UL listing) *	600V	600V	600V	600V	600V	600V	600V	600V
Resistance R (for DC) at 20° C (Ω/m)	0.002867	0.001933	0.000342	0.000274	0.000184	0.000301	0.000261	0.000199
Impedance Z (for AC) at 20° C (Ω/m)	0.002891	0.001968	0.000364	0.000300	0.000221	0.000325	0.000288	0.000234
Maximum Allowable Ambient Temperature for 100% Duty Cycle	25°C	25°C	25°C	25°C	25°C	25°C	25°C	25°C
Bar Length	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m
Support Pitch Standard Lateral	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm	1500mm 1125mm
Minimum Pitch Centers Standard	43mm	43mm	43mm	43mm	43mm	43mm	43mm	43mm
Expansion Sections (Not required for runs less than)	150m	150m	150m	150m	150m	150m	150m	150m
Minimum Bending Radius (Horizontal only, bent at factory)	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m	1.5m

Safe-Lec 2 Conductor Bar Covers

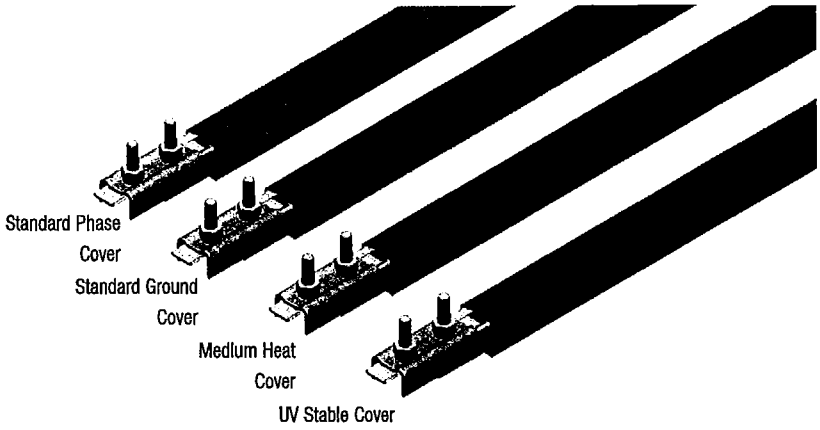
	Standard (Orange or Green)	UV Stable (Black)	Medium Heat (Red)
Material	PVC	PVC	Polycarbonate
Dielectric Strength	180 kv/cm	180 kv/cm	240 kv/cm
Surface Resistivity	$10^{11}\Omega$	$10^{11}\Omega$	$>10^{14}\Omega$
Volume Resistivity	$>10^{15}\Omega$/cm	$>10^{15}\Omega$/cm	$>10^{16}\Omega$/cm
Vicat Softening Temperature **Never expose PVC cover to temperatures in excess of 164° F (73.3° C)**	160°F (71.1°C)	160°F (71.1°C)	250°F (121.1°C)
Flame Test	Self extinguishing	Self extinguishing	Self extinguishing
Oxygen Index	54%	54%	24%
Specific Density	1.5 g/cm³	1.5 g/cm³	1.15 g/cm³

Galvanized Steel Bar

Galvanized Steel Conductor Bars with Splice Installed



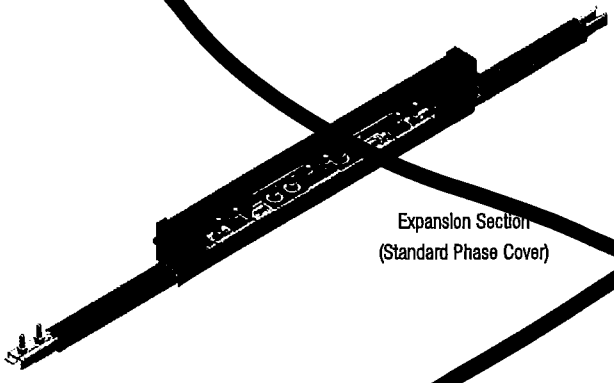
Bar Length: 14.76' (4.5m)



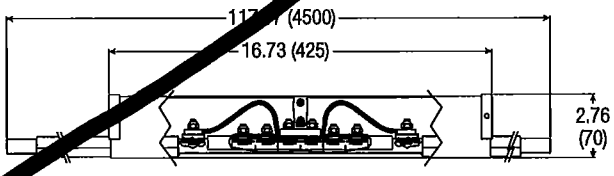
COVER TYPE	100A	Wt. lb (kg)	125A	Wt. lb (kg)
Standard Phase Cover (Orange)	310101-J	6.36 (2.88)	310201-J	8.83 (4.01)
Standard Ground Cover (Green)	310102-J	6.44 (2.92)	310202-J	8.83 (4.01)
Medium Heat Cover (Red)	310103-J	6.24 (2.83)	310203-J	8.65 (3.92)
Medium Heat Cover (Green)	310103G-J	6.26 (2.84)	310203G-J	8.69 (3.94)
UV Stable (Black)	310101B-J	6.50 (2.95)	310201B-J	8.91 (4.04)
UV Stable (Green)	310101G-J	6.44 (2.92)	310201P-J	8.87 (4.02)

Expansion Sections with Splice Installed

Expansion Sections are used at all structural expansion joints and for systems longer than 492' (150m) to allow for thermal expansion / contraction of the bar. The maximum gap of the Expansion Section is 2.0" (50). The Expansion Section is 14'-9" (4.5m) long and is installed in place of one length of conductor bar.



Expansion Section
(Standard Phase Cover)

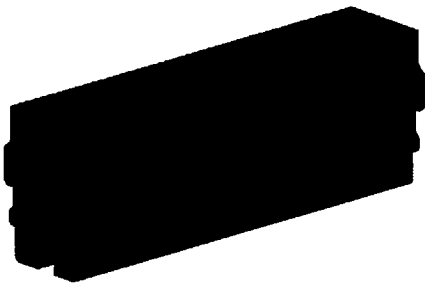


COVER TYPE	100A	Wt. lb (kg)	125A	Wt. lb (kg)
Standard Phase Cover (Orange)	310107-J	7.91 (3.59)	310207-J	10.49 (4.76)
Standard Ground Cover (Green)	310108-J	7.84 (3.56)	310208-J	10.42 (4.73)
Medium Heat Cover (Red)	310109-J	7.71 (3.50)	310209-J	10.29 (4.67)
Medium Heat Cover (Green)	310109G-J	7.87 (3.57)	310209G-J	10.43 (4.73)
UV Stable (Black)	39130-J	7.91 (3.59)	39131-J	10.49 (4.76)
UV Stable (Green)	39130G-J	8.07 (3.66)	39131G-J	10.65 (4.83)

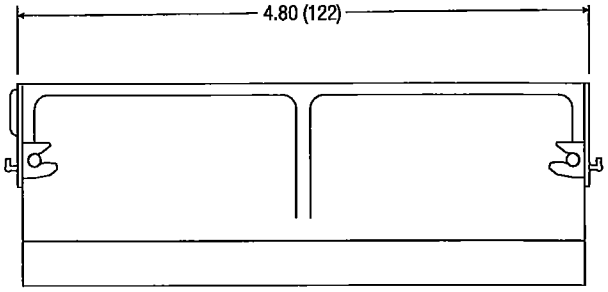
Joint Covers & Power Feeds

Joint Covers

Must be ordered separately - one per splice joint.



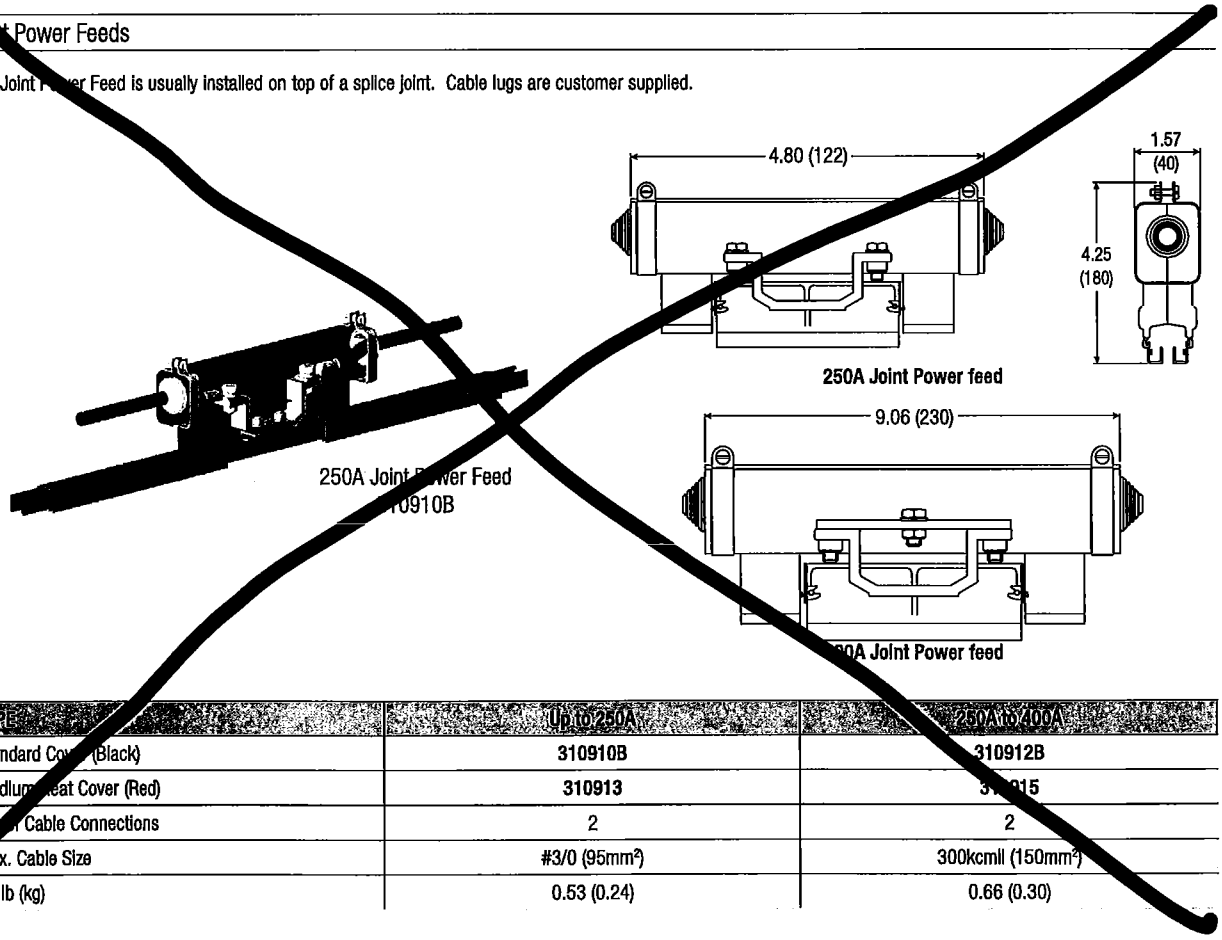
Standard Phase Joint Cover



TYPE	Part No.	Wt lb (kg)
Standard Cover (UV Black)	**310850B**	.05 (0.027)
Medium Heat Cover (Red)	**310855**	.06 (0.027)

Joint Power Feeds

The Joint Power Feed is usually installed on top of a splice joint. Cable lugs are customer supplied.

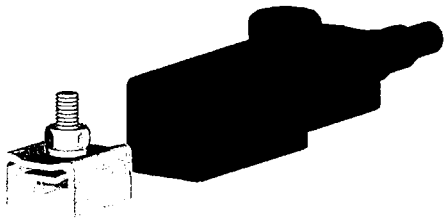


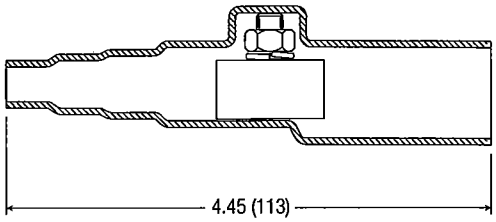
TYPE	Up to 250A	250A to 400A
Standard Cover (Black)	**310910B**	**310912B**
Medium Heat Cover (Red)	**310913**	**310915**
No. of Cable Connections	2	2
Max. Cable Size	#3/0 (95mm²)	300kcmil (150mm²)
Wt lb (kg)	0.53 (0.24)	0.66 (0.30)

Power Feeds & End Caps

End Power Feed

The End Power Feed is installed in place of an end cover. Maximum cable connection size: 6 AWG (16mm²). These are suitable for 100A Galvanized Steel Bar only.

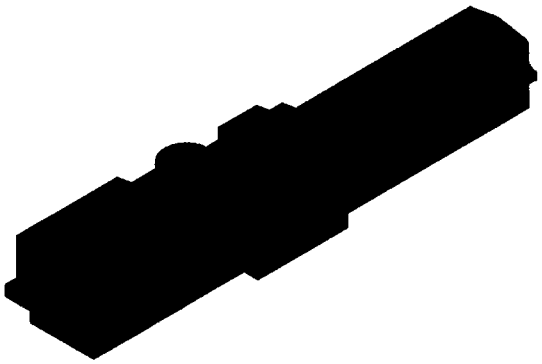


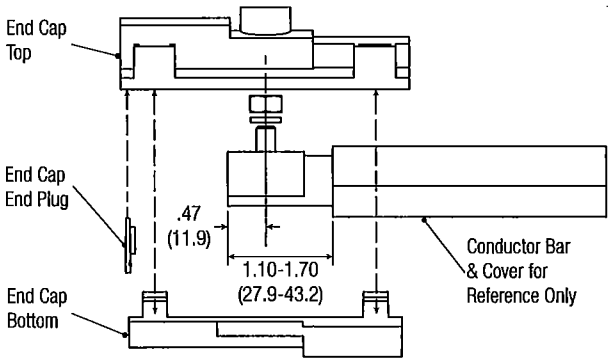


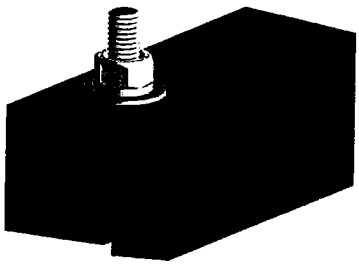
Part No.	Wt lb (Kg)
310911	0.1 (0.045)

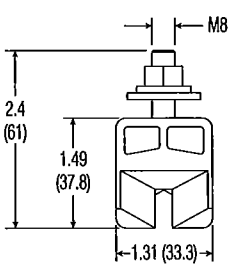
End Caps

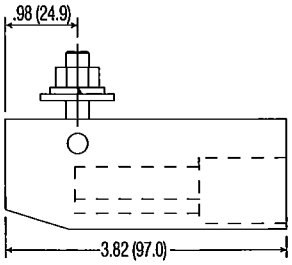
End Caps are insulated covers installed at the ends of the conductor system. Transfer Caps transfer the collectors across switch gaps up to 0.40" (10mm) wide.











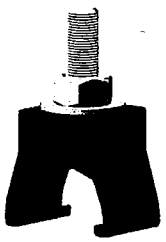
Transfer Cap Tolerances: Vertical tolerance ± 0.20 (5)
Horizontal tolerance ± 0.08 (2)

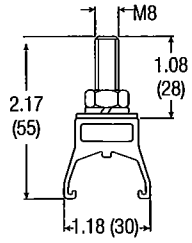
TYPE	Material	Part No.	Wt lb (Kg)
End Cap Steel / Copper Bar	PVC	SL2ENDCAP-CU	0.09 (0.04)
End Cap Aluminum Bar	PVC	SL2ENDCAP-AL	0.05 (0.02)
Transfer Cap	Polycarbonate	310951	0.24 (0.11)

Hanger Clamps

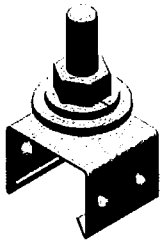
Hanger Clamps Standard

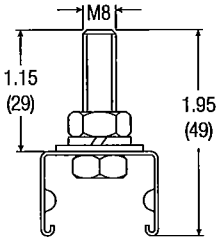
Maximum support bracket spacing is 59.1" (1.5m) Hardware is plated steel unless noted otherwise.



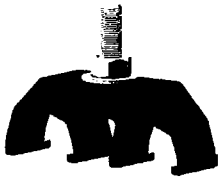


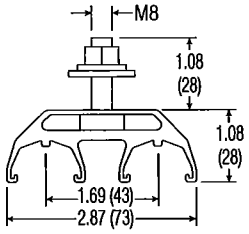
Single Pole Hanger Clamp I Standard Mount



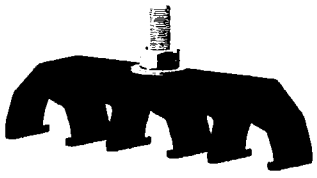


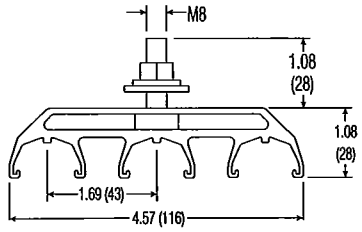
Single Pole Stainless Steel Hanger Clamp I Standard Mount



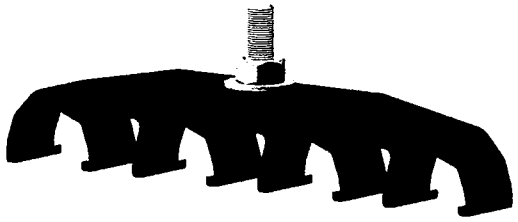


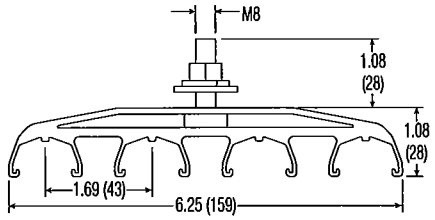
Dual Pole Hanger Clamp I Standard Mount



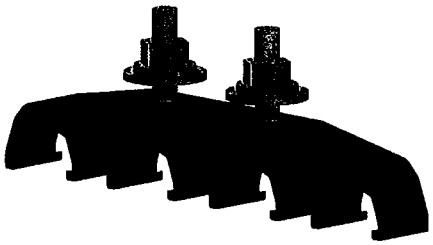


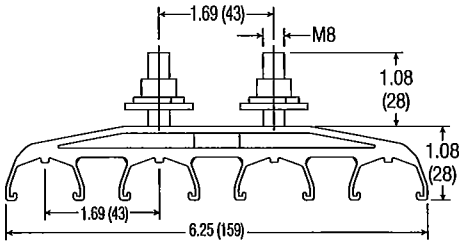
Three Pole Hanger Clamp I Standard Mount





Four Pole Hanger Clamp I Standard Mount





Four Pole Hanger Clamp I Lateral Mount

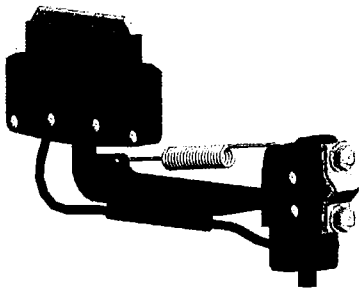
TYP	Mounting Orientation		Acetyl (Black) 160° Max	Wt. lb (kg)	Polycarbonate (Red) 260° Max	Wt. lb (kg)	Stainless Steel Hardware / Plastic Hanger	Wt. lb (kg)	Stainless Steel	Wt. lb (kg)
	Standard	Lateral								
Single Pole	X	X	310824	0.07 (0.03)	310829	0.09 (0.04)	310919	0.07 (0.03)	399416B	0.09 (0.04)
Two Pole	X	X	310882	0.11 (0.05)	310899	0.13 (0.06)	-	-	-	-
Three Pole	X	X	310861	0.13 (0.06)	310871	0.14 (0.06)	-	-	-	-
Four Pole	X		310821	0.15 (0.07)	310857	0.16 (0.07)	-	-	39768	0.14 (0.06)
Four Pole		X	310835	0.23 (0.10)	310859	0.26 (0.12)	-	-	50120	0.13 (0.06)

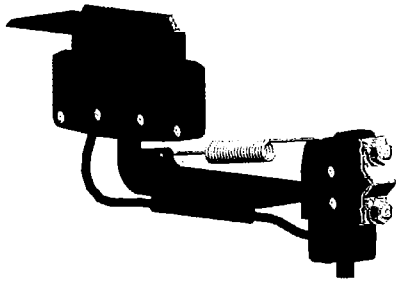
Collectors

Safe-Lec 2 "V-Contact" Collectors articulate to accurately track in the conductor bar groove for superior conductivity. Includes long-wearing copper graphite shoe (in holder) and shunt wires as noted below. The green "ground" (earth) collectors are available without "deflector", or with either right-hand or left-hand deflector. Deflectors prevent the ground collector from coming in contact with adjacent phase collectors. For recommendations about choosing collectors see Appendix I, Pg. 57.

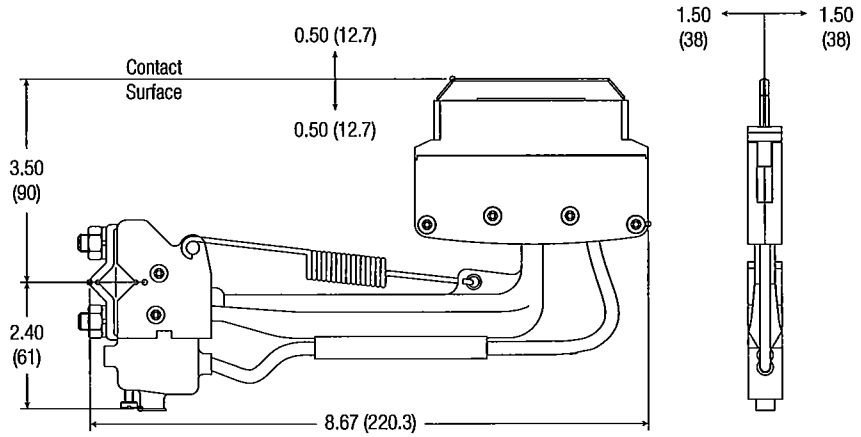
50A Collectors

Collector shoe shunt wire is integrated into the arm. Incoming cable is connected to the terminal lug at the base of the collector (maximum 8 AWG).





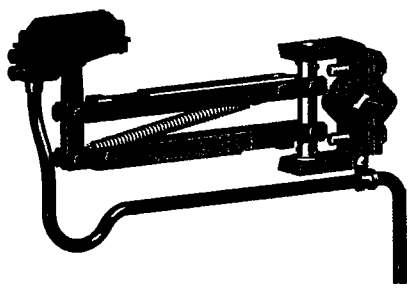
TYPE	Part No.	Wt lb (kg)
Phase (Red)	XA-399360	0.84 (0.381)
Ground witout Deflector	XA-399380	0.85 (0.385)
Ground with Right Hand Deflector	XA-399373	0.87 (0.394)
Ground with Left Hand Delfector	XA--399372	0.87 (0.394)

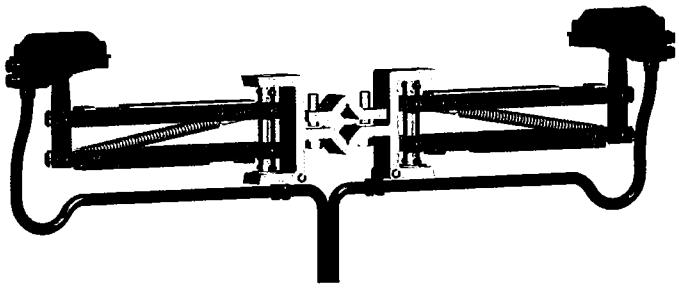


Note: The above 50 amp collectors are not UL listed, for UL listed options please consult the factory.

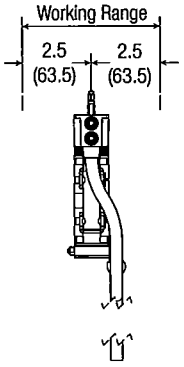
100A Collectors

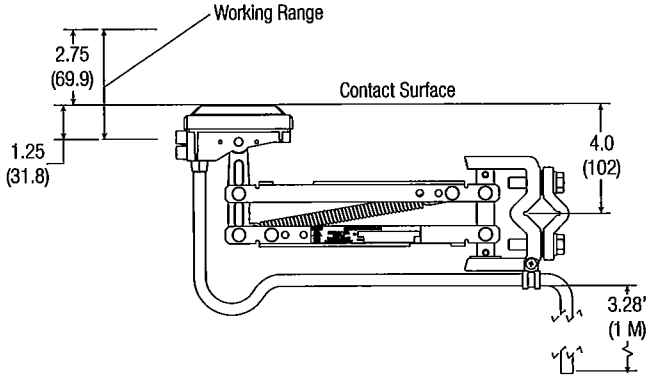
Single and Tandem collectors with easy installation and serviceability. Includes 1M pigtail of 4AWG cable.

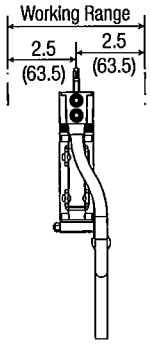


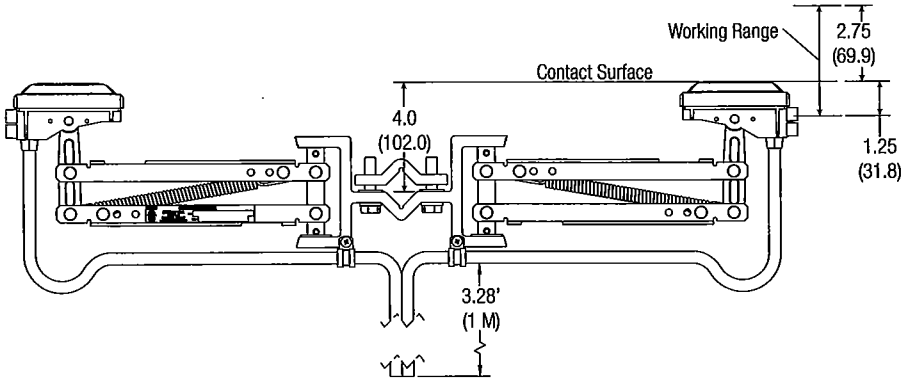


TYPE	Amperage	Part No.	Wt lb (kg)
Single Phase Collector with 1 Meter Pigtail	100	XA-SL2C-100SP-1M	3.51 (1.59)
Single Ground Collector with 1 Meter Pigtail	100	XA-SL2C-100SG-1M	3.57 (1.62)
Tandem Phase Collector with 1 Meter Pigtails	200	XA-SL2C-100TP-1M	8.56 (3.88)
Tandem Ground Collector with 1 Meter Pigtails	200	XA-SL2C-100TG-1M	8.69 (3.94)
Tandem Phase Collector with 1 Meter Pigtails and Cable Terminators	200	XA-SL2C-100TPY-1M	8.68 (3.93)
Tandem Ground Collector with 1 Meter Pigtails and Cable Terminators	200	XA-SL2C-100TGY-1M	8.81 (4.00)



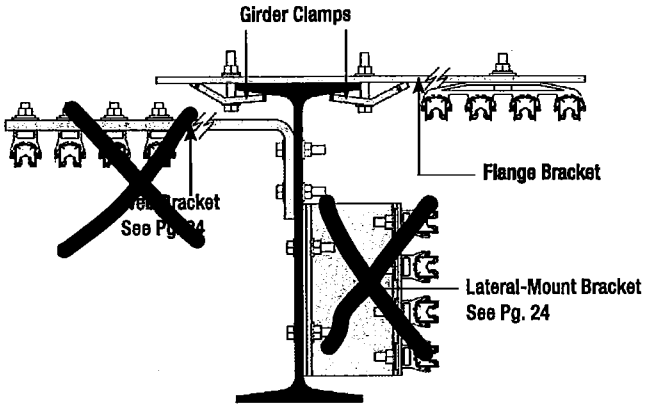






Flange Brackets

The various mounting brackets shown on this pages 26-29 are used to mount Safe-Lec 2 in many different configurations to suit the application. The diagram shown at the left illustrates how the various brackets are mounted to the I-beam. **All brackets are zinc plated unless noted otherwise.**

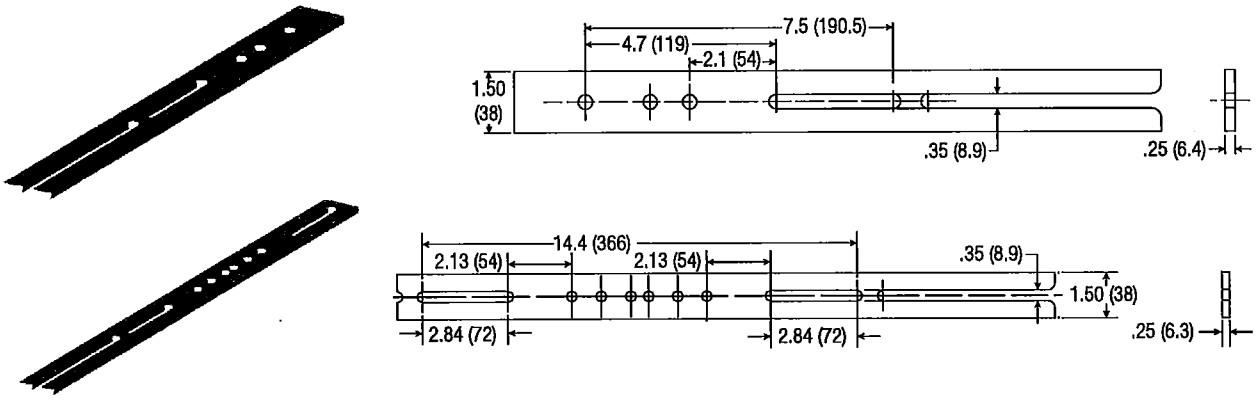


Example Bracket Installations

Recommended Max. Bracket Spacing

Application	# Collectors Coming Into	Spacing - In. (M)
Vertical Entry	Bottom of rail	59.0 (1.50)
Lateral Entry	Side of rail	44.3 (1.13)
Curves	Bottom of rail	44.3 (1.13)

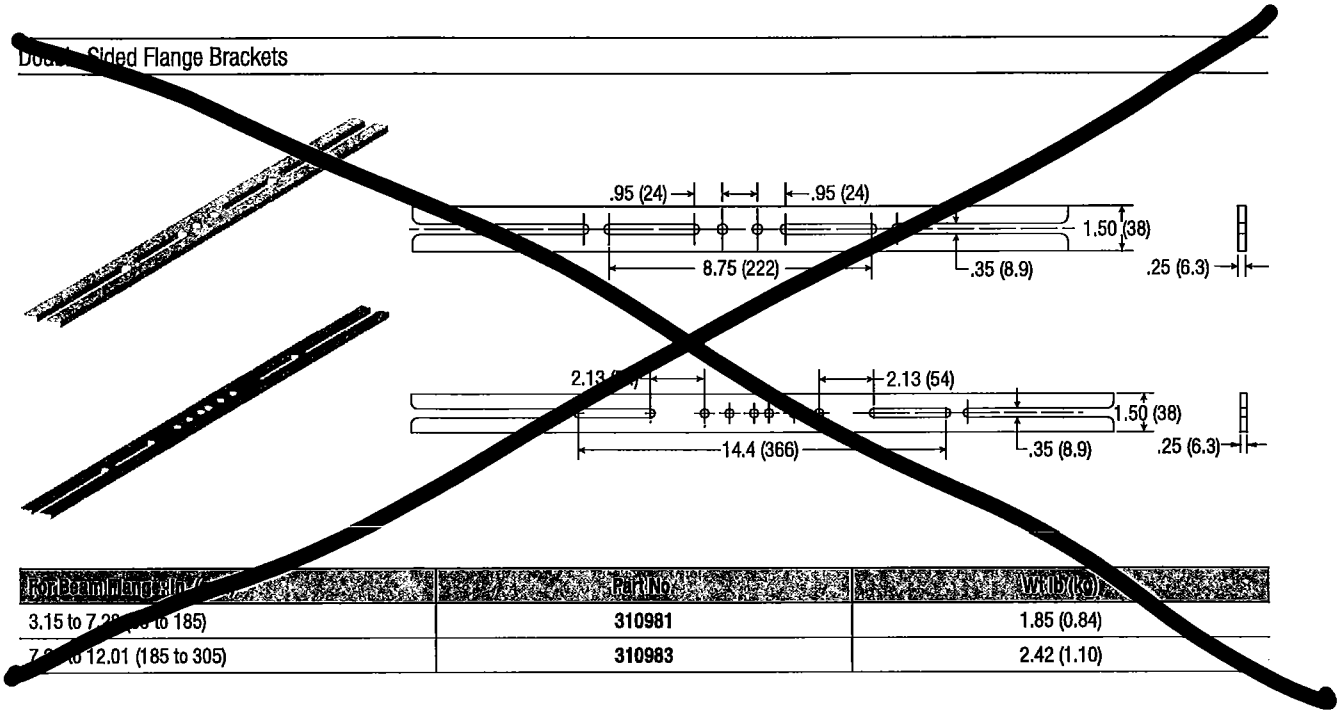
Single Sided Flange Brackets



For Beam Flange	Part No.	Wt. lb (kg)
3.15" to 6.10" (80 to 155 mm)	**310980**	1.42 (0.64)
3.15" to 6.10" (80 to 155 mm)	**579442** stainless steel	
6.10" to 12.01" (155 to 305 mm)	**310982**	1.95 (0.88)
6.10" to 12.01" (155 to 305 mm)	**530987** stainless steel	1.62 (0.73)

Flange Brackets

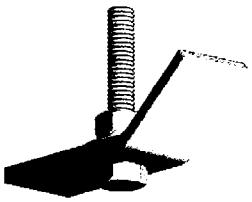
Double Sided Flange Brackets

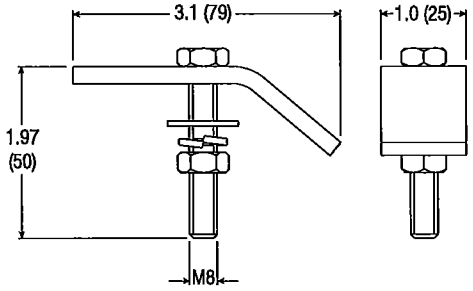


For Beam Flange Size	Part No.	Wt. lb (kg)
3.15 to 7.28 (80 to 185)	**310981**	1.85 (0.84)
7.28 to 12.01 (185 to 305)	**310983**	2.42 (1.10)

Girder Clamps

Two required with each flange bracket.

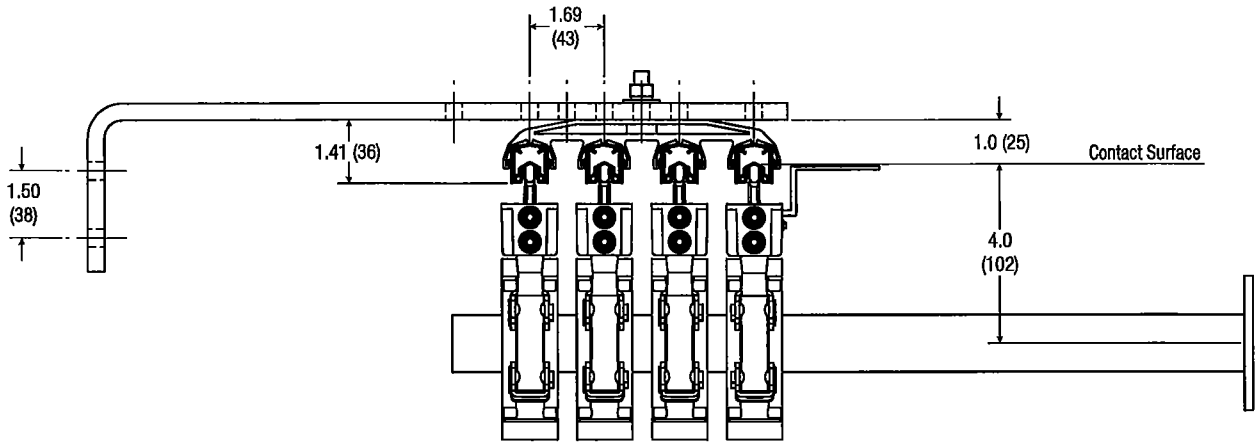




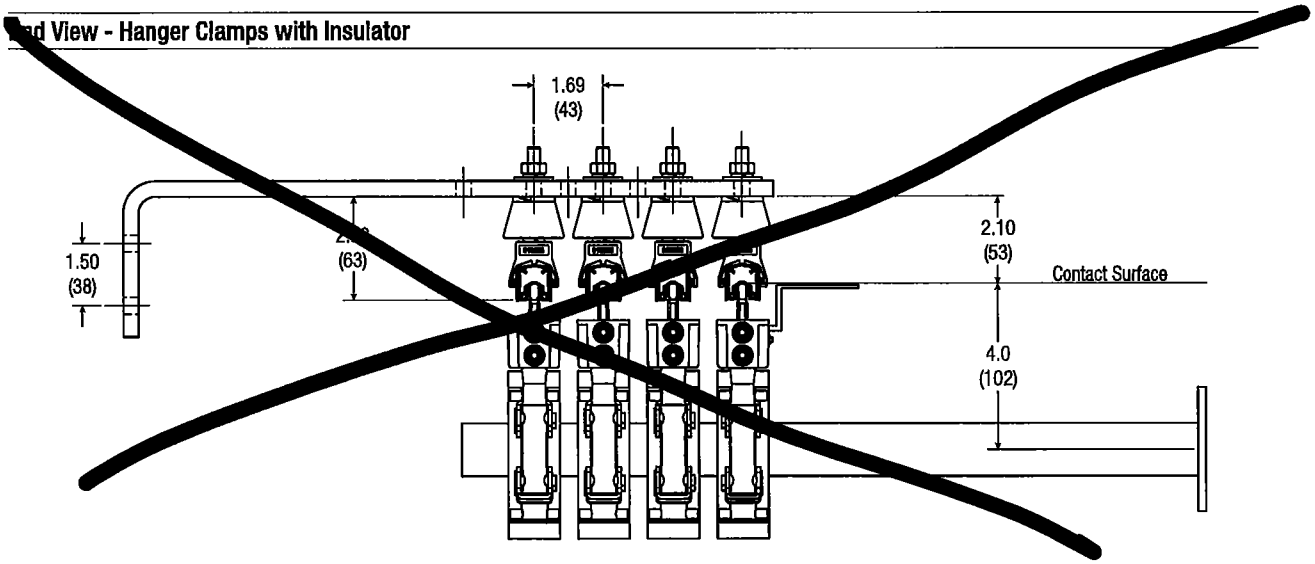
Part No.	Wt. lb (kg)
51142	0.27 (0.12)
537183 stainless steel	0.28 (0.13)

Installed Dimensions

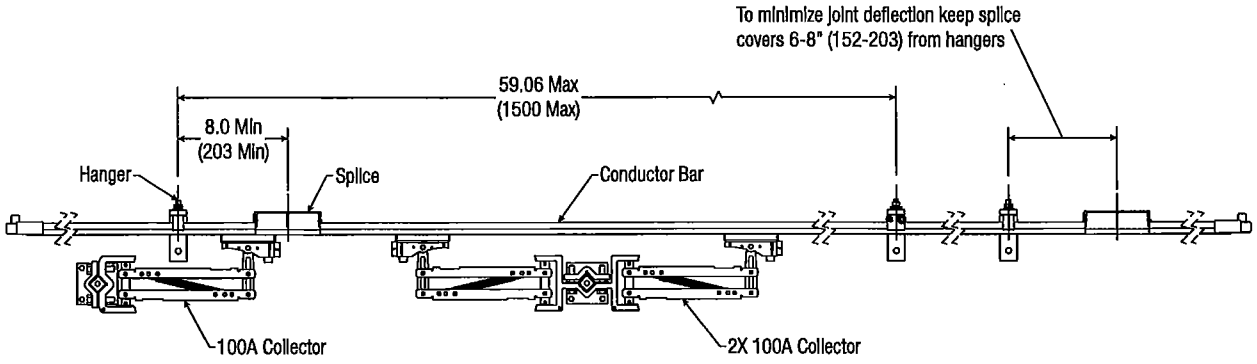
End View - Standard Hanger Clamps



End View - Hanger Clamps with Insulator



Side View



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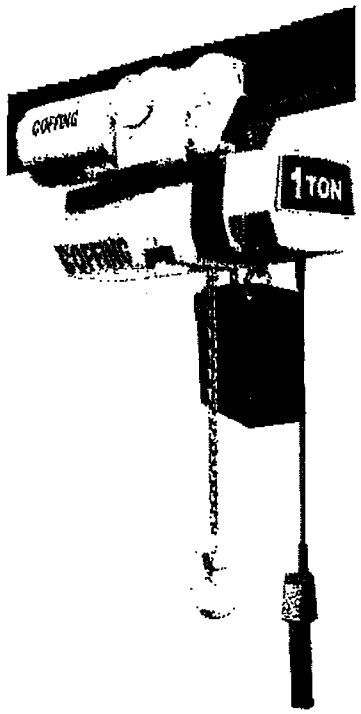
CAT1003.2.4-US

COFFING®
HOISTS

OPERATING & MAINTENANCE INSTRUCTIONS
WITH PARTS LIST



Publication Part No. ECMT-680-5

ECMT - MT Series
Trolleys used with Electric Chain Hoist

For Capacities:

EC-1 Models - 1/4-3 Ton — Up to 1HP

EC-3 Models - 1-5 Ton — 2 & 3 HP

IMPORTANT—CAUTION

To safeguard against the possibility of personal injury or property damage, follow the recommendations and instructions of this manual. This manual contains important information for the correct installation, operation, and maintenance of this equipment. All persons involved in the installation, operation, and maintenance of this equipment should be thoroughly familiar with the contents of this manual. Keep this manual for reference and further use.

⚠ WARNING

To prevent personal injury, do not use the equipment shown in this manual to lift, support, or otherwise transport people, or to suspend unattended loads over people.

TABLE OF CONTENTS

SECTION I INTRODUCTION

1-1 General 1
1-2 Safety Standards 1
1-3 Warranty 1

SECTION II INSTALLATION

2-1 Safety Notes 1
2-2 Trolley Mounting 1
2-3 Power Supply Connection 1

SECTION III OPERATION

3-1 3
3-2 Safety Notes 3
3-3 Handling the Load 3

SECTION IV INSPECTION 3

SECTION V MAINTENANCE AND REPAIR

5-1 3
5-2 Lubrication 3

SECTION VI WIRING

6-1 Voltage Conversion 4
6-2 Wiring Diagrams 4

SECTION VII ILLUSTRATED PARTS LIST

7-1 General 7
7-2 How to Order Replacement Parts 7

SECTION I

INTRODUCTION

1-1. General Information

This manual provides information for the installation and maintenance of Coffing® MT Series Motorized Trolleys furnished with EC Series Electric Chain Hoists. The Illustrated Parts List shows all trolley parts. For unillustrated hoist parts, refer to the Operating and Maintenance Instructions for the hoist.

1-2. Safety Standards

Refer to the EC Hoist Operating and Maintenance Instructions for guidelines and applicable standards for safe hoist and trolley operation, as well as information on the proper application of this product.

1-3. Warranty

Every hoist is thoroughly inspected and tested prior to shipment from the factory. Should any problems develop, return the complete hoist prepaid to your nearest Duff-Norton Authorized Warranty Repair Station. If inspection reveals that the problem is caused by defective workmanship or materials, repairs will be made without charge and the hoist will be returned, transportation prepaid.

This warranty does not apply where: (1) deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, overloading, chemical or abrasive actions, improper maintenance or excessive heat; (2) problems resulted from repairs, modifications or alterations made by persons other than factory or Duff-Norton Authorized Warranty Repair Station personnel; (3) the hoist has been abused or damaged as a result of an accident; (4) repair parts or accessories other than those supplied by Duff-Norton are used on the hoist. Equipment and accessories not of the seller's manufacture are warranted only to the extent that they are warranted by the manufacturer. EXCEPT AS STATED HEREIN, DUFF-NORTON MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

SECTION II

INSTALLATION

2-1. Safety Notes

a. Inspect the hoist and trolley for any evidence of shipping damage or loose parts.
b. The beam and supporting structure should have a load rating at least equal to that of the hoist.
c. All beams or tracks must have positive stops to prevent the trolley from running off the end.

2-2. Trolley Mounting

a. For the best possible wheel and beam life, Coffing® Motorized Trolleys use different wheels for American Standard I-beams, Wide (flat) Flange beams and patented monorail track. Check that the trolley wheels match the contour of the beam flange.
b. Standard Motorized Trolleys are adjustable for the flange widths of 3.33 to 6.00 inches (4.0 inch minimum on 4 or 5 ton models). Adjustment for I-beam sizes and tolerances is accomplished by locating the spacer washers as shown in Figure 2-1. Normal placement of washers is given in Table 2-1.
c. The load pin nuts for trolleys require a tightening torque of 100 ft.-lbs. Refer to Figure 2-1 for nut identification.
d. Trolleys can be mounted on beam radii as small as 4 feet. Slightly increased spacing may be required when the trolley is mounted on curved beams to maintain freedom of movement.

BEAM MANUFACTURING TOLERANCES ALLOW WIDE VARIATIONS FROM HANDBOOK FLANGE WIDTHS. SLIGHT CHANGES TO RECOMMENDED WASHER DISTRIBUTION MAY BE NECESSARY TO SUIT SPECIFIC INSTALLATIONS.

The particular beam on which your hoist is to be installed should be measured and trolley spacer washers adjusted as required to achieve a wheel to beam flange clearance of $^{3}/_{32}$" to $^{1}/_{8}$".

2-3. Power Supply Connection

a. Disconnect and lock out power before making connections.
b. Follow procedures under "Power Supply Connection" in the hoist Operating and Maintenance Instructions.
c. When used, current collectors should be installed per the recommendations of the collector manufacturer. A collector mounting arm is available from Duff-Norton

which accepts most brands of collectors. This arm is vertically adjustable to accommodate most collectors and beam sizes.

2-4. Initial Lubrication

Lubricate trolley wheel gears with NLGI-2 or heavier grease.

TABLE 2-1. TROLLEY I-BEAM ADJUSTMENT DATA

		"I" Beam Size					
		6"	8"	10"	12"	15"	18"
¼ to 3 Ton, Lug Mount (EC-1 Models)							
Washers Between Hoist & Trolley	Thick	1	3	6	5	9	8
	Thin	0	1	0	4	0	5
Washers Outside Trolley	Thick	8	6	3	4	0	1
	Thin	5	4	5	1	5	0
1, 2 and 3 Ton, Box Mount (EC-3 Models)							
Washers Between Hoist & Trolley	Thick	0	3	1	4	7	6
	Thin	1	0	8	5	3	8
Washers Outside Trolley	Thick	7	4	6	3	0	1
	Thin	8	9	1	4	6	1
4 and 5 Ton (EC-3 Models)							
Washers Between Hoist & Trolley	Thick		1	1	3	6	6
	Thin		0	4	3	1	4
Washers Outside Trolley	Thick		6	6	4	1	1
	Thin		5	1	2	4	1

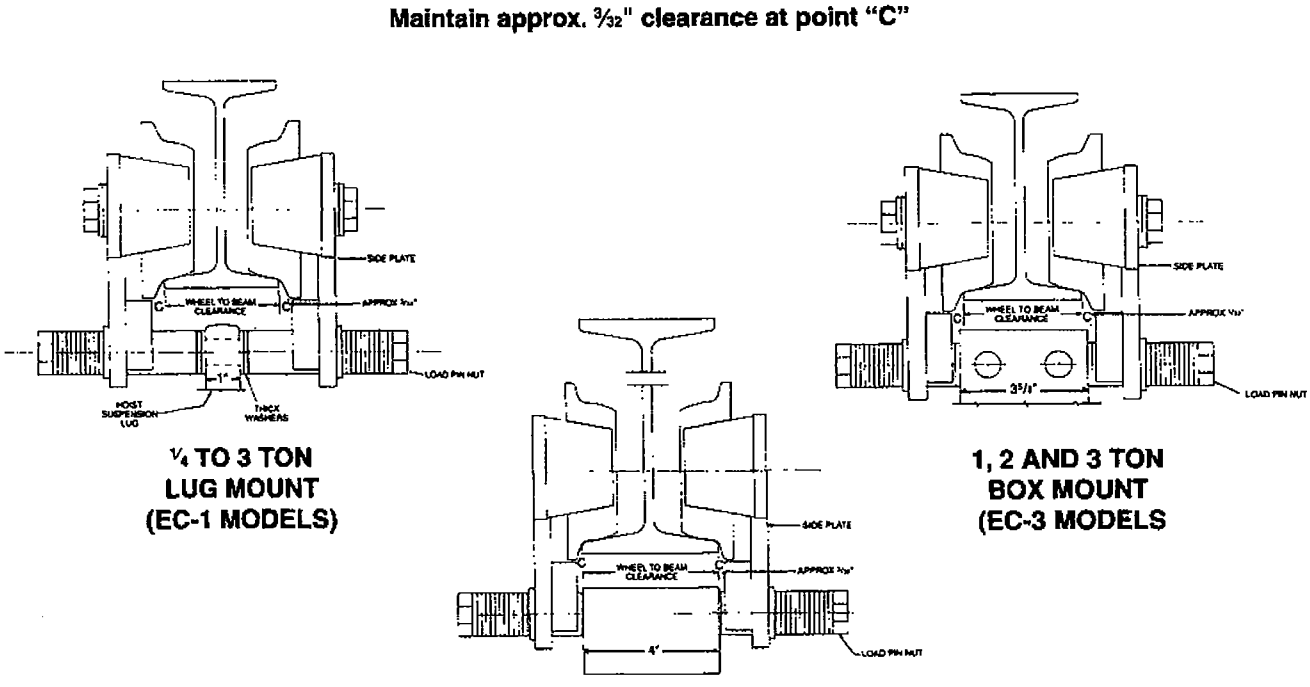


FIGURE 2-1. SPACER WASHER LOCATION: LUG MOUNTED HOISTS

SECTION III

OPERATION

3-1. This section offers guidelines for the proper operation of Coffing Motorized Trolleys used with electric hoists. It is not intended to serve as a handbook on rigging. For information on the safe use of slings and similar gear, users are urged to consult a textbook on rigging.

3-2. Safety Notes

a. Inspect the trolley for any sign of loose, broken or malfunctioning parts. Any malfunctioning trolley should be tagged as "out of order" and removed from service until the defect is corrected.
b. Be sure that beam end stops are in place.
c. Before starting the trolley, the operator should be certain that all personnel are clear.
d. Do not carry more than the rated load of the trolley.
e. Avoid jogging controls or quick reversals of trolley.
f. Do not carry people or loads over people.
g. Do not leave a suspended load unattended.
h. The operator should have a clear view of the load anytime it is moving and should be sure that the load does not contact any obstructions.
i. Read ANSI B30.16 Safety Standard for Overhead Hoists.

3-3. Handling the Load

a. Align hoist and trolley directly over the load. Avoid side pull or any action which causes trolley wheels to lift off one side of beam.
b. Bring the hoist hook into engagement with the load and make sure it is well seated before proceeding to move the load.
c. Lift the load just clear of its supports to check for proper brake operation, then proceed to lift the load to the height necessary to clear any objects over which the load must pass.
d. Avoid letting load swing excessively while moving the trolley. Let the trolley coast to a stop instead of reverse plugging the trolley motor.
e. Do not run the motorized trolley into beam end stops or other trolleys on the beam.

SECTION IV

INSPECTION

The trolley should be inspected for damage, loose parts, and excessive wheel wear at the same time as hoist inspection. See the hoist Operating and Maintenance Instructions for inspection schedule guidelines.

SECTION V

MAINTENANCE AND REPAIR

5-1. No routine maintenance of the trolley is required other than wheel gear lubrication.

5-2. Lubrication

a. **Trolley Wheel Gears**—Lubricate at periodic inspection with an NLGI #2 or heavier grease.
b. **Trolley Gearbox**—Periodic lubrication should not be necessary. If the gearbox is opened for repair, repack with an NLGI #1 grease.
c. **Trolley Wheel Bearings**—Trolley wheel bearings are prelubricated and sealed. Bearings must be replaced if problems are indicated.

SECTION VI

WIRING

SAFETY NOTE

Disconnect power from unit before removing electrical covers.

6-1. Voltage Conversion

Standard single speed units use dual voltage motors (230/460 volt, 3 phase; 115/230 volt, single phase). Motorized trolley units are factory wired for a specified voltage. Reconnection to the alternate voltage requires resplicing of leads in both the trolley and the hoist. See the appropriate wiring diagram for splice connections.

6-2. Wiring Diagrams

The wiring diagram for standard models are reproduced on the following pages. In addition, every hoist should have a wiring diagram located in either the trolley control box or the hoist long end cover.

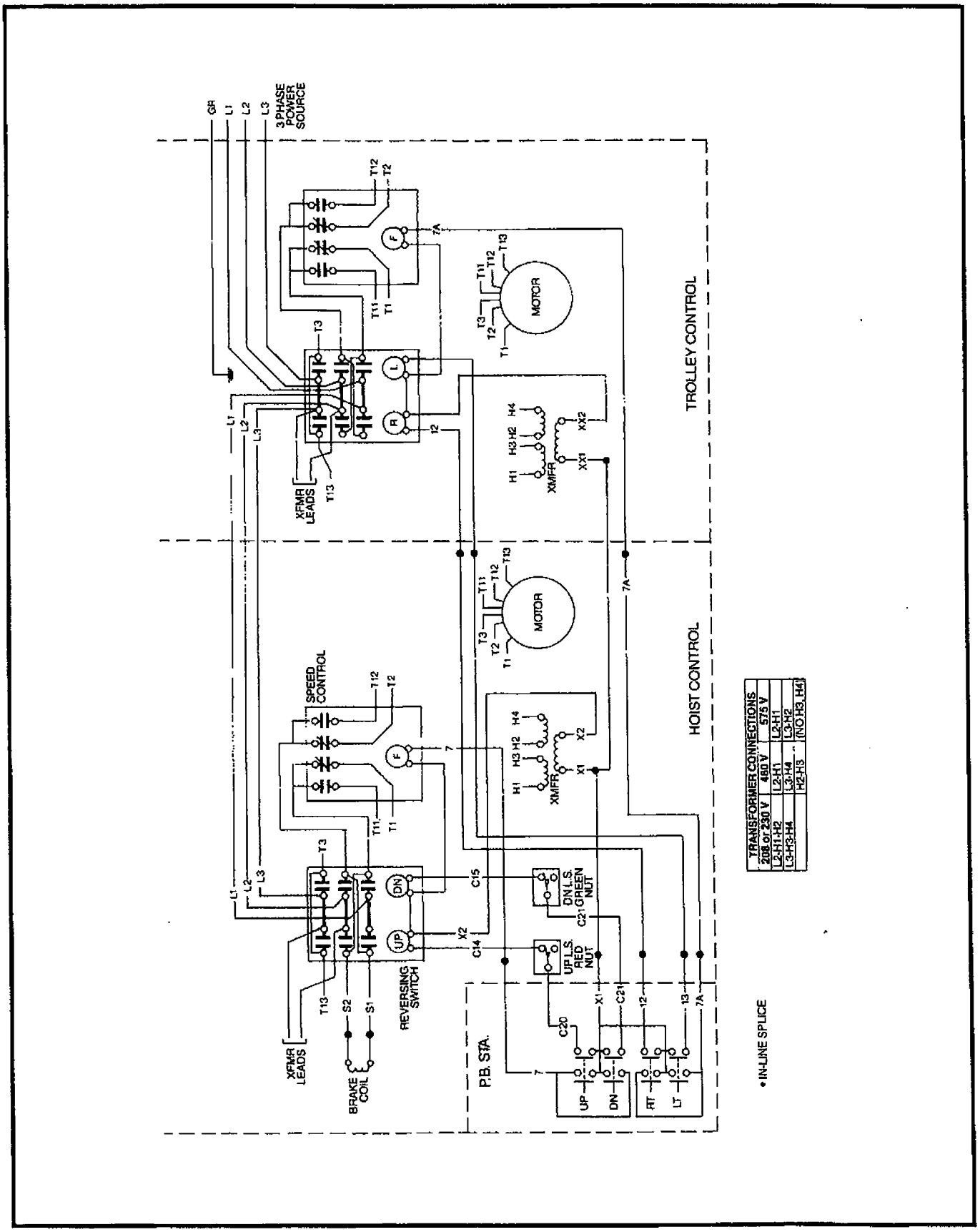


FIGURE 6-5. 983ECMT271
(TWO SPEED HOIST, TWO SPEED TROLLEY)

SECTION VII

ILLUSTRATED PARTS LIST

7-1. General

The following exploded drawings provide a complete list of parts used in standard Motorized Trolleys used with EC hoist models. Since a number of different hoist and trolley models are covered by this manual, differences may be noted between the appearance of your part and the reference illustration. Where more than one part is shown for a reference number, sufficient information to pick the correct part should be included in the part description. For hoist parts not shown in this manual, refer to the hoist's Operating and Maintenance Instructions.

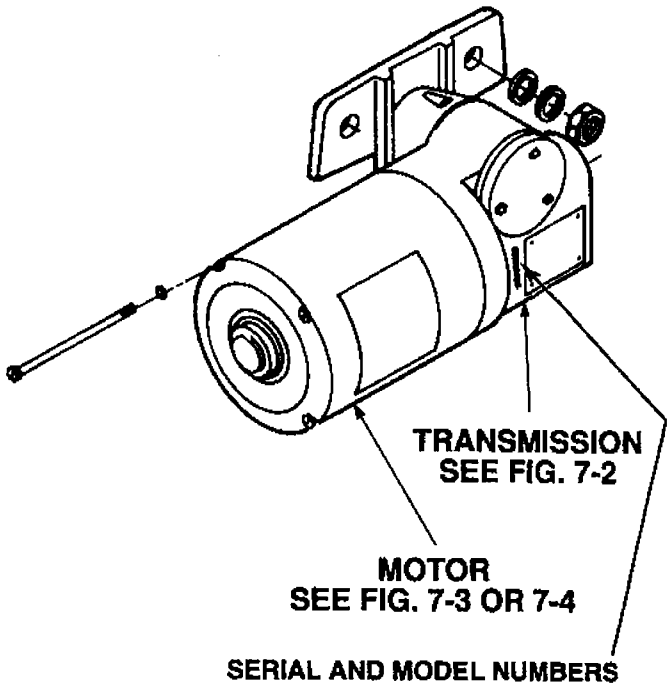
7-2. How to Order Replacement Parts

When ordering parts or requesting information concerning your trolley or hoist, always include the model and serial numbers of hoist and trolley. The hoist and trolley will each have its own numbers stamped into its housing.

When ordering motor parts, please provide complete motor nameplate data, including motor manufacturer name and motor "ref." number or model number.

NOTE

Repair parts are available only from Coffing distributors or authorized repair facilities. It is recommended that repair part orders be directed to the authorized repair facility nearest you.



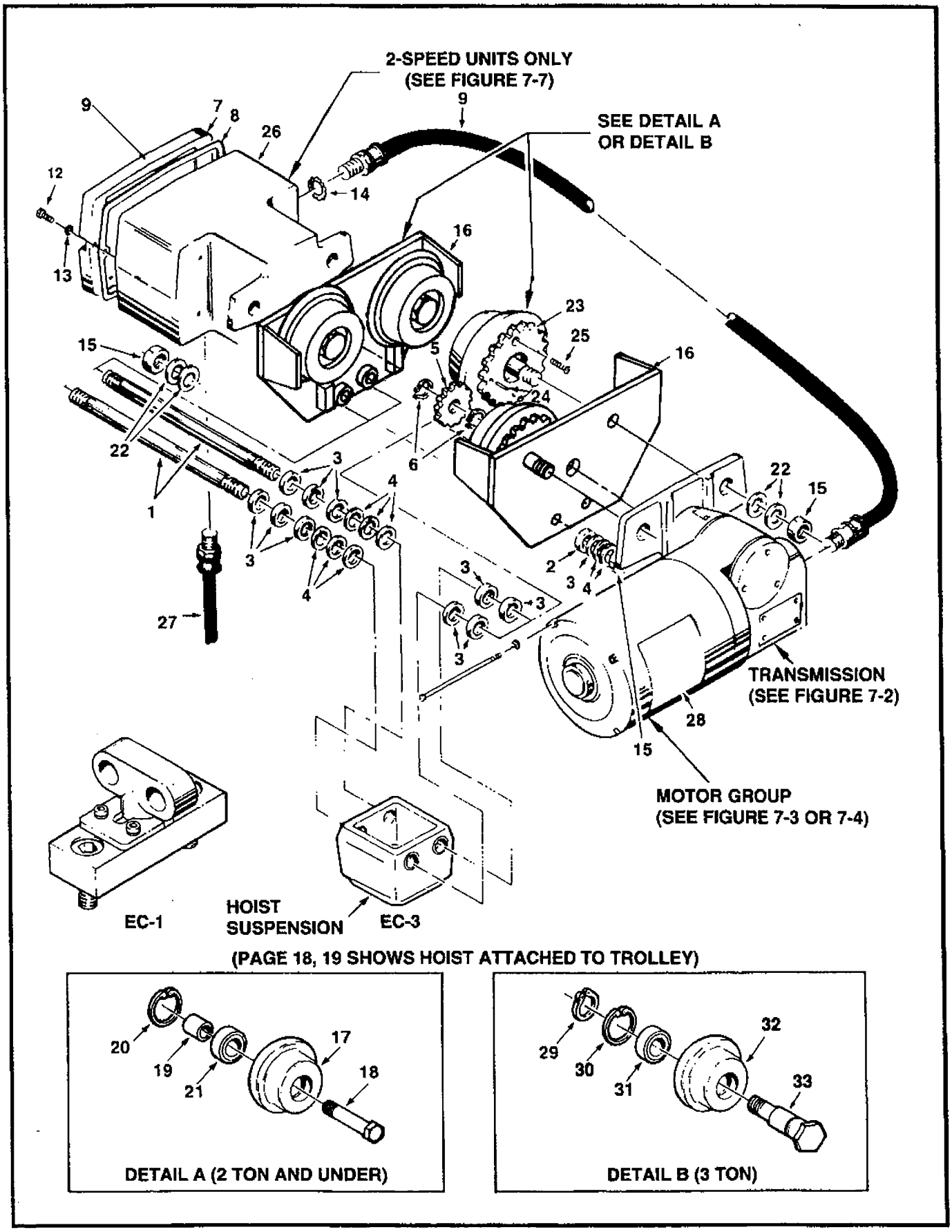


FIGURE 7-1. TROLLEY GENERAL ASSEMBLY (3 TON & UNDER)

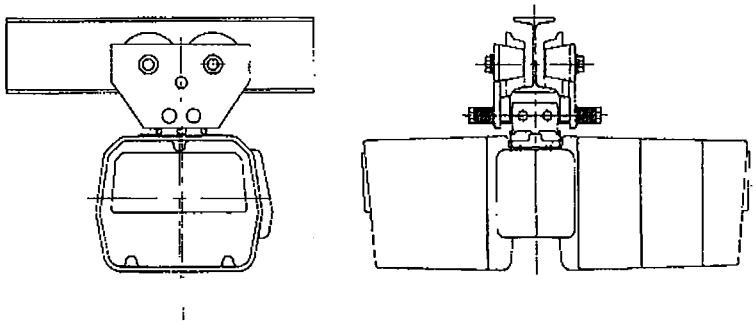
Index No.	Part Name	Part No.
1	Load Pin	103K1
2	Washer (1/8" Thick)	H-4211
3	Washer (.135 Thick)	H-4209
4	Washer (.075 Thick)	H-4210
5	Pinion	420K1
6	Retaining Ring	H-5501
7	Cover, Control Box	36K3
8	Gasket	560K4
9	Capacity Label:	
	1/4 Ton	675K18
	1/2 Ton	675K19
	1 Ton	675K20
	2 Ton	675K21
	3 Ton	675K22
10*	Splice Cap	H-7519
11*	Insulator, Splice Cap	H-7520
12	Screw	S-44-4
13	Lock Washer	H-4084-P
15	Lock Washer	
	2 Ton & Under	H-3945
	3 Ton	H-3946
16**	Side Plate Weldment:	
	1 & 2 Ton (EC-3 Models)	5KG4
	3 Ton (EC-3 Models)	5KG31
	2 Ton & Under (EC-1 Models)	5KG1
	3 Ton (EC-1 Models)	5KG2

Index No.	Part Name	Part No.
17	Wheel:	
	Plain	45K10
	Drive	45K1
18	Axle	102K1
19	Spacer	200K1
20	Retaining Ring	H-5528
21	Bearing	500K4
22	Washer (1/8 Thick)	
	2 Ton & Under	H-4211
	3 Ton	H-4212
23	Gear	420K2
24	Dowel Pin	H-5331
25	Screw	H-2165
26	Control Box (If Used)	
	2 Ton and under	36K1
	3 Ton	36K2
28	Decal	692K1
29	Retaining Ring	H-5529
30	Retaining Ring	H-5530
31	Bearing	500K5
32	Wheel:	
	Plain	45K20
	Drive	45K2
33	Axle	102K2

* Not Illustrated

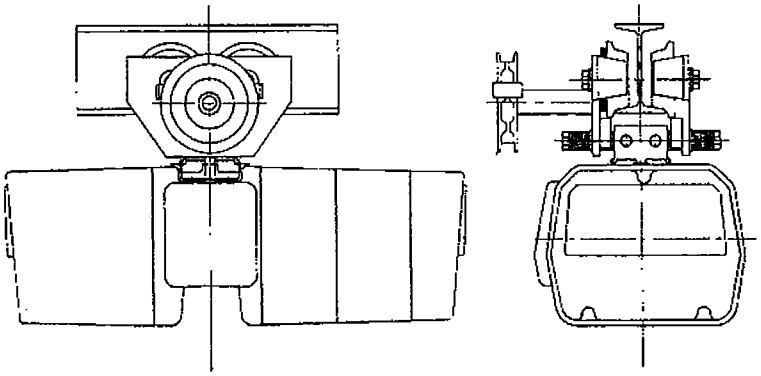
** Identify hoist and trolley model as an EC-1 or EC-3.

FIGURE 7-1. TROLLEY GENERAL ASSEMBLY (3 TON & UNDER)



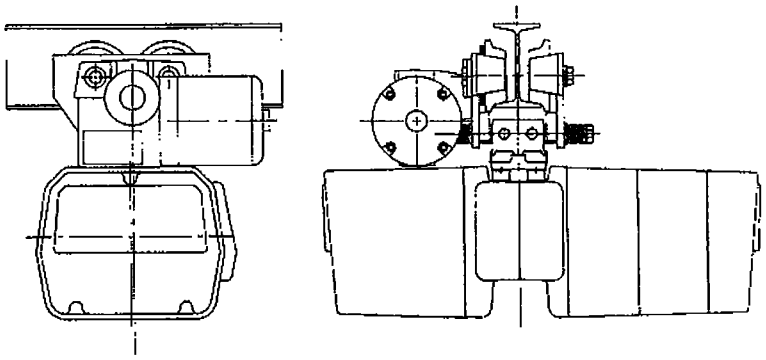
EC-3
PLAIN TROLLEY
MOUNTED HOIST
(CROSS MOUNTED)

1, 2, 3 TON



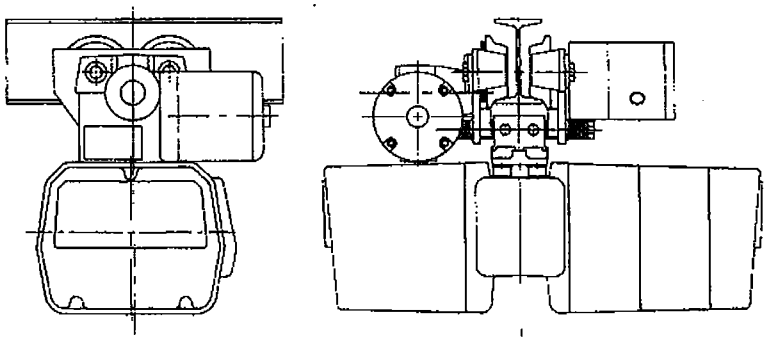
EC-3
GEARED TROLLEY
MOUNTED HOIST
(PARALLEL MOUNTED)

1, 2, 3 TON



EC-3
MOTORIZED TROLLEY
MOUNTED HOIST
SINGLE SPEED
HOIST AND TROLLEY
(CROSS MOUNTED)

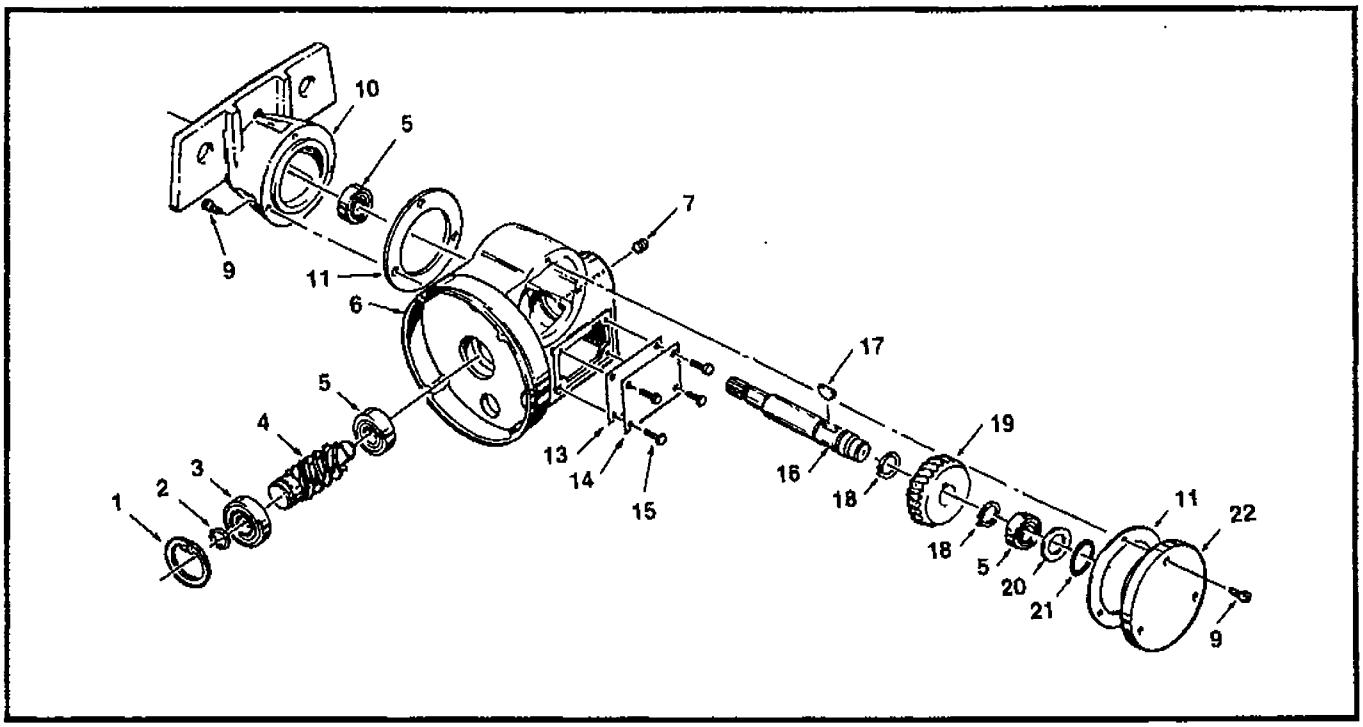
1, 2, 3 TON



EC-3
MOTORIZED TROLLEY
MOUNTED HOIST
ANY 2 SPEED
COMBINATIONS
(CROSS MOUNTED)

1, 2, 3 TON

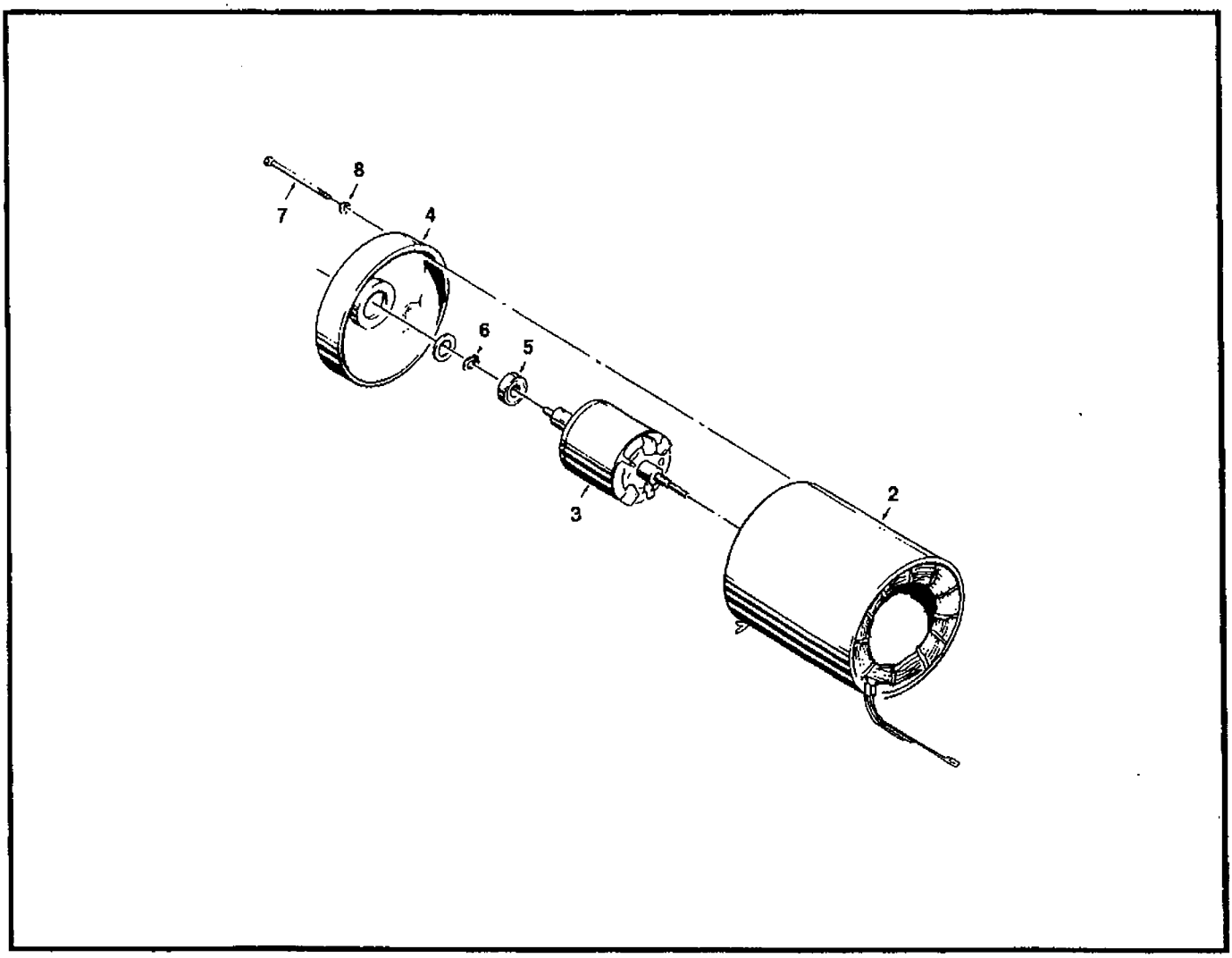
ARRANGEMENT DRAWING — REFERENCE FOR EC-3, 1, 2, 3 TON FIG. 1D



Index No.	Part Name	Part No.
1	Retaining Ring	SK2658-6
2	Retaining Ring	H-5549
3	Bearing	JF-504-2
4	Worm:	
	35 FPM	485K21
	75 FPM	485K22
5	Bearing	500K3
6	Gear Housing	39K22
7	Plug	S-25-13
9	Screw	H-2215
10	Adapter Housing:	
	All Except 3, 5 Ton	38K60A
	3 and 5 Ton Only	38K61A

Index No.	Part Name	Part No.
11	Gasket	560K2
13	Gasket	560K3
14	Splice Plate	295K1
15	Screw	H-1009-P
16	Shaft	100K12
17	Woodruff Key	S-23-15
18	Retaining Ring	H-5527
19	Worm Gear:	
	35 FPM	487K4
	75 FPM	487K3
20	Shim Washer	202K1
21	"O" Ring	H-5609
22	End Cap	32K3

FIGURE 7-2. TROLLEY TRANSMISSION



Index No.	Part Name	Part No.
1	Motor Complete, 3 Ph, 60 Hz:	
	Single Speed;	
	208-230/460V.	
	1/4 HP	JL-863-1M
	1/2 HP	JL-863-2
	575V.	
	1/4 HP	JL-863-5M
	1/2 HP	JL-863-6
	Two Speed;	
	208-230V.	
	1/4 HP	JL-873-1M
	1/2 HP	JL-873-2M
	460V.	
	1/4 HP	JL-873-5M
	1/2 HP	JL-873-6M

Index No.	Part Name	Part No.
1 (Cont.)	Two Speed (Cont.);	
	575V.	
	1/4 HP	JL-873-9M
	1/2 HP	JL-873-10M
2	Stator (Not Available Separately)	*
3	Rotor & Shaft	*
4	End Shield	*
5	Bearing, Front	500K3
6	Ring, Retaining	*
7	Screw, Motor Mount	*
8	Lock Washer	*

*For individual motor parts, contact your Duff-Norton Distributor and supply complete motor nameplate data.

FIGURE 7-4. TROLLEY MOTOR PARTS (3 PHASE)

COFFING®
HOISTS

WARRANTY

Every hoist is thoroughly inspected and tested prior to shipment from the factory. Should any problem develop, return the complete hoist prepaid to your nearest Coffing Hoists Authorized Warranty Repair Station. If inspection reveals that the problem is caused by defective workmanship or material, repairs will be made without charge and the hoist will be returned, transportation prepaid. This warranty does not apply where: **(1)** deterioration is caused by normal wear, abuse, improper or inadequate power supply, eccentric or side loading, overloading, chemical or abrasive actions, improper maintenance, or excessive heat; **(2)** problems resulted from repairs, modifications, or alterations made by persons other than factory or Coffing Authorized Warranty Repair Stations personnel; **(3)** the hoist has been abused or damaged as a result of an accident; **(4)** repair parts or accessories other than those supplied by Coffing Hoists are used on the hoist. Equipment and accessories not of the seller's manufacture are warranted by the manufacturer.

Except as stated herein, Coffing Hoists makes no other warranties, express or implied, including warranties or merchantability and fitness for a particular purpose.

⚠WARNING

Overloading and Improper Use Can Result In Injury

To Avoid Injury:

- Do not exceed working load limit, load rating, or capacity.
- Do not use to lift people or loads over people.
- Use only alloy chain and attachments for overhead lifting.
- Read and follow all instructions.

Coffing Hoists • Country Club Road • P.O. Box 779 • Wadesboro, NC 28170 USA
Customer Service: Tel. (800) 477-5003 (704) 694-2156 • **FAX** (800) 374-6853 (704) 694-6829

ECMT-680-5
2C 2/00
Printed in USA
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PLUMMER

PROJECT CONTRACT MODIFICATION

PROJECT NOS.

OWNER:	City of Aubrey		
PROJECT:	Aubrey WWTP Expansion to 2.25 MGD		
CONTRACTOR:	Gracon Construction, Inc.		
ENGINEER:	Plummer Associates, Inc.		0798-010-01
PCM NO.:	PCM-07	DESCRIPTION:	Dewatering Screw Press Level Sensor

NOTIFICATION TO CONTRACTOR:

We are requesting making the change to the Contract described in the attached materials and request that you take the following action:	
☐	Notify us that you concur that this change does not require a change in contract time or amount. A Field Order will be issued.
☒	Submit a price proposal with detailed cost breakdown and revised schedule for performing the described change.
☐	A change order will be issued for payment at the unit price bid.
☐	Proceed with the change under the time and materials provision of the Contract.

REQUESTED BY:	Joan Torres	10/20/2025
	TYPED NAME	DATE

RESPONSE FROM CONTRACTOR:

We respond to your request as follows:	
☐	We concur that this is a no cost or time change. Issue a Field Order.
☒	We submit the attached price proposal with detailed cost breakdown and revised schedule for performing the described change. The proposed change in cost is $2,472.50 The proposed change in time is TBD.
☐	We are proceeding with the change at the unit price bid.
☐	We are proceeding with the change under the time and materials provision of the Contract.

RESPONSE BY:	Greg Graves	10/23/2025
	TYPED NAME	DATE

ACTION TAKEN:

☐	Proposed contract modification rejected. Contractor notified not to proceed.	
☐	Field Order Issued	FO-
☐	Change Order Issued	CO-

RESPONSE BY:		
	TYPED NAME	DATE

PROJECT CONTRACT MODIFICATION

Dewatering Screw Press Level Sensor
PCM-07

Written Description of the PCM.

The project engineer has determined that Andritz is to supply the level sensor (LIT/LE 0901) for the sludge tank, as shown on sheet 09-I-02 and described in Specification Section 40 61 96, 3.12A & B.1. Please note, this item was not originally included in Andritz's scope of supply per the contract documents

---

The components of the PCM shall include:

1. Pricing from Andritz to supply the level sensor.

Gracon Construction, Inc.
MAILING ADDRESS: P.O. BOX 360039, DALLAS, TEXAS 75336-0039, PHONE: (972) 222-8533
FAX: (972) 222-8542

PROJECT DESCRIPTION			
PROJECT NAME	Aubrey Wastewater Treatment Plant Expansion to 2.25 MGD		
PROJECT LOCATION	514 Bluebonnet Drive, Aubrey, TX 76227		
OWNER	City of Aubrey, Texas	PROJECT NO.	2024-06
ENGINEER	Mead & Hunt, Inc.	PROJECT NO.	
CONTRACTOR	Gracon Construction Inc.	PROJECT NO.	2405

PROPOSED CONTRACT MODIFICATION	PCM-07 Dewatering Screw Press Level Sensor

REASON FOR CHANGE

The project engineer has determined that Andritz is to supply the level sensor (LIT/LE 0901) for the sludge tank, as shown on sheet 09-I-02 and described in Specification Section 40 61 96, 3.12A & B.1. Please note, this item was not originally included in Andritz's scope of supply per the contract documents.

REQUESTED BY	Mead & Hunt, Inc. / Owner

ATTACHED DOCUMENTS

PCM-07 Breakdown
Andritz: Aubrey RCO-01 Addition of Level Sensor

DESCRIPTION OF CHANGES

Andritz to supply the level sensor (LIT/LE 0901) for the Sludge Tank.
Reference: RFI-41 Dewatering Screw Press Level Sensor Response

CLARIFICATIONS/EXCLUSIONS

COST INCREASE/DESCREASE	$ 2,472.50		
ADDITIONAL DAYS	TBD	Working Days	Pending Approval & Leadtime

SUBMITTED BY	Greg Graves	DATE	Thursday, October 23, 2025

Gracon Construction, Inc.
MAILING ADDRESS: P.O. BOX 360039, DALLAS, TEXAS 75336-0039, PHONE: (972) 222-8533
FAX: (972) 222-8542

PCM-07 Breakdown		
Description	Cost	
Andritz: Level Sensor	$	2,150.00
Sub-Total	$	2,150.00
Sub-Total	$	2,150.00
Overhead/Profit	$	322.50
Total	$	2,472.50
Additional Days	TBD	

September 26, 2025

Greg Graves
Gracon Construction

Project: Aubrey TX
Andritz Project Number: 858603

Jason Rogers
Project Manager
SEPARATION

p: 817-419-1765
jason.rogers@andritz.com

Greg,

Please find the following change order request to add a level sensor to scope of the project.

Rev 1: Addition of level sensor to scope of the project

The engineer for the project has determined that they want Andritz to supply the level sensor (LIT/LE 0901) for sludge tank, per sheet 09-I-02, as described in spec section 40 61 96, 3.12A & B.1. This item was not originally part of Andritz's responsibility, per the scope/specs.

Revisions to scope to include:

1) Addition of level sensor approved by engineer via RFI 41
2) Additional materials for control panel
3) Additional project management and electrical engineering hours

Costs to include these revisions to the scope of supply:

Addition of radar level sensor to scope of project	$4,300 USD
Total Cost	**$4,300 USD**

Change Order Proposal Validity: 30 Days

Terms & Conditions: Per the originally agreed to terms and conditions between ANDRITZ Separation Technologies Inc. and Gracon Construction.

Please provide a change order for these revisions to be captured in the project scope.

Sincerely,

Jason Rogers
Project Manager

ENGINEERED SUCCESS

PLUMMER

PROJECT CONTRACT MODIFICATION

PROJECT NOS.

OWNER:	City of Aubrey		
PROJECT:	Aubrey WWTP Expansion to 2.25 MGD		
CONTRACTOR:	Gracon Construction, Inc.		
ENGINEER:	Plummer Associates, Inc.		0798-010-01
PCM NO.:	PCM-09	DESCRIPTION:	Dewatering Building Conveyor Openings

NOTIFICATION TO CONTRACTOR:

We are requesting making the change to the Contract described in the attached materials and request that you take the following action:

- ☐ Notify us that you concur that this change does not require a change in contract time or amount. A Field Order will be issued.
- ☒ Submit a price proposal with detailed cost breakdown and revised schedule for performing the described change.
- ☐ A change order will be issued for payment at the unit price bid.
- ☐ Proceed with the change under the time and materials provision of the Contract.

REQUESTED BY:	Joan Torres	10/20/2025
	TYPED NAME	DATE

RESPONSE FROM CONTRACTOR:

We respond to your request as follows:

- ☐ We concur that this is a no cost or time change. Issue a Field Order.
- ☒ We submit the attached price proposal with detailed cost breakdown and revised schedule for performing the described change.

  The proposed change in cost is $2,080.35
  The proposed change in time is TBD.
- ☐ We are proceeding with the change at the unit price bid.
- ☐ We are proceeding with the change under the time and materials provision of the Contract.

RESPONSE BY:	Greg Graves	10/28/2025
	TYPED NAME	DATE

ACTION TAKEN:

- ☐ Proposed contract modification rejected. Contractor notified not to proceed.
- ☐ Field Order Issued — FO-
- ☐ Change Order Issued — CO-

RESPONSE BY:		
	TYPED NAME	DATE

PROJECT CONTRACT MODIFICATION

Dewatering Building Conveyor Openings
PCM-09

Written Description of the PCM.

Additional openings are needed for the Dewatering Building Pre-Engineered Metal Building to allow for the clearance of the Dewatering Screw Press Conveyors as they exit the building.

The components of the PCM shall include:

1. Pricing from Red Dot Buildings for material and labor for adding (2) 3'-0" X 3'-0" Framed openings for the Dewatering Screw Press Conveyor

Gracon Construction, Inc.
MAILING ADDRESS: P.O. BOX 360039, DALLAS, TEXAS 75336-0039, PHONE: (972) 222-8533
FAX: (972) 222-8542

PROJECT DESCRIPTION			
PROJECT NAME	Aubrey Wastewater Treatment Plant Expansion to 2.25 MGD		
PROJECT LOCATION	514 Bluebonnet Drive, Aubrey, TX 76227		
OWNER	City of Aubrey, Texas	PROJECT NO.	2024-06
ENGINEER	Mead & Hunt, Inc.	PROJECT NO.	
CONTRACTOR	Gracon Construction Inc.	PROJECT NO.	2405

PROPOSED CONTRACT MODIFICATION	PCM-09 Dewatering Building Conveyor Openings

REASON FOR CHANGE

Additional modifications are needed for the Dewatering Building Pre-Engineered Metal Building to allow for clearance of the Dewatering Screw Press Conveyors as they exit the building.

REQUESTED BY	Mead & Hunt, Inc. / Owner

ATTACHED DOCUMENTS

PCM-09 Breakdown
Red Dot Buildings

DESCRIPTION OF CHANGES

Red Dot to supply additional material and labor for adding (2) 3'-0"X3'-0" Framed Openings for the Dewatering Building Screw Press Conveyor.

CLARIFICATIONS/EXCLUSIONS

COST INCREASE/DESCREASE	$ 2,080.35		
ADDITIONAL DAYS	TBD	Working Days	Pending Approval & Leadtime

SUBMITTED BY	Greg Graves	DATE	Tuesday, October 28, 2025

Gracon Construction, Inc.
MAILING ADDRESS: P.O. BOX 360039, DALLAS, TEXAS 75336-0039, PHONE: (972) 222-8533
FAX: (972) 222-8542

PCM-08 Breakdown		
Description	Cost	
Modifications to Dewatering Building for Screw Press Conveyor	$	1,809.00
Sub-Total	$	1,809.00
Sub-Total	$	1,809.00
Overhead/Profit	$	271.35
Total	$	2,080.35
Additional Days	TBD	

RED DOT BUILDINGS

Better building systems.
You have our word on it.

CHANGE ORDER QUOTE # **15953**

QUOTE DATE: **Friday, October 24, 2025**

CUSTOMER NAME: **Gracon Construction Inc.**

JOB NUMBER & NAME: **24452 Aubrey WWTP - Dewatering**

CUSTOMER CONTACT: **Greg Graves**

RED DOT CONTACT: **Steve Jay**

PROJECT TYPE: **Erected**

RED DOT to:

1. **Add (2) 3'-0"X 3'-0" Framed Openings, in 26ga Kynar Medium Bronze, to Partition Wall #1, between Grid Lines 2-3.**

NOTE: Includes Material and Labor

Cost of Changes: $1,809

Acceptance and authorization of this COQ is required within 10 business days of receiving unless noted otherwise to ensure costs are not affected. If Red Dot is erecting this project and the erector has demobilized before Red Dot is able to fabricate and deliver materials to the job site, additional erection labor will be added to the CO amount.

Red Dot reserves the right to alter this contract price to offset significant steel cost increases imposed upon the metal building industry.

Please authorize by signing below and return to Red Dot via the sender's email.

RED DOT BUILDINGS REPRESENTATIVE	CUSTOMER REPRESENTATIVE
Signature/ Date	Signature/ Date
Printed	Printed

Pricing: AS Reviewed: AS Approved: AS

Mead
&Hunt

November 5, 2025

Ms. Leanne Wilson
City of Aubrey
Executive Director of Operations
107 S Main
Aubrey, TX, 76227

RE: WWTP Expansion to 2.25 MGD
Proposed Contract Modification (PCM) 05

Dear Ms. Wilson:

In May, Gracon submitted the Grit Removal System piping & instrumentation diagram where-in the manufacturer (Veolia) recommended the addition of 3 local control stations with emergency stops near the equipment.
The addition of local control stations near the equipment will increase safety for plant staff, allowing them to quickly stop the equipment in an emergency instead of returning to the main control station.
Gracon's proposed price is $7,462.38 with no working days added to the project's schedule.
We have reviewed and discussed the Contractor's pricing and find it reasonable, and we recommend acceptance of a change order for this work.

Please let me know if you have questions.

Sincerely,

Mark A. Perkins, P.E.
Mead & Hunt, Inc.

cc: Dean Rylant, City of Aubrey
Freddy J. Mena, P.E.

City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consideration and action on award/rejection of bids for the Hill Street and 428 Ground Storage Tank project in an amount not to exceed $225,919.26 plus $1,200.00 for each replacement beam, and authorize the Mayor or his designee to execute necessary documents.

Staff Contact
Dean Rylant, Public Works Director
drylant@aubreytx.gov

Summary
Request for bids was advertised on October 31, 2025 and on November 7, 2025. On Wednesday, December 10, 2025, nine bids from general contractors were received at City Hall. The bids were opened and publicly read aloud at the Council Chambers for the Hill Street and 428 Ground Storage Tank project. The bids were as follows:

Contractor:	Total Base Bid:	Alternate Bid Unit Price:
BEC Services Group, LLC	$225,919.26	$1,200.00
Stoic Industrial Coatings, LLC	$235,500.00	$5,000.00
N.G. Painting	$311,000.00	$2,000.00
I&S Tank services, LLC	$313,354.00	$5,500.00
Viking Painting, LLC	$366,300.00	$7,500.00
Brother Group, LLC	$420,100.00	$25,000.00
Patterson Professional Services	$436,548.50	$2,500.00
Tanksco Inc.	$462,500.00	$9,000.00
Mandros Painting, Inc.	$528,700.00	$4,200.00

BEC Services Group, LLC was the apparent low bidder. The bid submitted by BEC Services Group, LLC has been reviewed as well as the bidder's qualifications provided and everything appears to be in order. Plummer contacted several references regarding BEC Services Group's previous work and personnel, and they were all positive. FCCI Insurance Group was contacted, and they had no issues with the submitted bid.

Financial Summary
This project is budgeted and funded with the 2025 bond.

Staff Recommended Action
Approve

Staff Recommended Motion
Motion to (award/table/deny) the bid to BEC Services Group, LLC for the maintenance of the Hill Street and 428 Ground Storage Tank in an amount not to exceed $225,919.26 plus $1,200.00 for each replacement beam.

PLUMMER

0798-008-01

January 12, 2026

Mr. Dean Rylant
Director of Public Works
City of Aubrey
107 S. Main St.
Aubrey, Texas 76227

Re: City of Aubrey, Texas
Hill St. and 428 Ground Storage Tanks Maintenance Project
Recommendation of Award

Dear Mr. Rylant:

On Wednesday, December 10, 2025, nine bids from general contractors were received at City Hall in Aubrey, Texas, and subsequently opened and publicly read aloud at the City Council Chambers in Aubrey, Texas for the above-referenced project. The bids were as follows:

Contractor	Total Base Bid	Alternate Bid Unit Price
BEC Services Group, LLC	$225,919.26*	$1,200.00
Stoic Industrial Coatings, LLC	$234,500.00	$5,000.00
N.G. Painting	$311,000.00	$2,000.00
I&S Tank Services, LLC	$313,354.00	$2,500.00
Viking Painting, LLC	$366,300.00	$7,500.00
Brother Group, LLC	$420,100.00	$25,000.00
Patterson Professional Services	$436,548.50	$2,500.00
Tanksco Inc.	$462,500.00	$9,000.00
Mandros Painting, Inc.	$528,700.00	$4,200.00

*The as-read bid was $227,119.00; however, discrepancies in the unit prices listed in the Bid Form resulted in an actual bid of $225,919.26.

1320 South University Drive, Suite 300
Fort Worth, Texas 76107
Phone 817.806.1700
Fax 817.870.2536
plummer.com
TBPE Firm No. 13

BEC Services Group, LLC was the apparent low bidder with a Total Base Bid of $227,119.00 and an Alternate Bid Unit Price of $1,200.00. However, as noted in the table above, a discrepancy in the sum of the submitted unit prices—when resolved in accordance with the Bid Form provisions stating that unit prices govern in the event of discrepancies—resulted in an actual Total Base Bid of $225,919.26, with the Alternate Bid Unit Price remaining at $1,200.00.

A letter of correction resolving this discrepancy is attached to this letter for your reference. We have reviewed the bid submitted by BEC Services Group, LLC, as well as the bidder qualifications they subsequently provided, and everything appears to be in order. Plummer contacted several references regarding BEC Services Group's previous work and personnel, and they were all positive. We contacted FCCI Insurance Group, and they had no issue with the submitted bid. Therefore, we recommend award of the Total Base Bid to BEC Services Group, LLC in the amount of $225,919.26 with an additional unit price of $1,200.00 per unit brace replaced as deemed necessary by the procedures outlined in the Project Documents.

Please call me if you have any questions. We look forward to working with you during construction of this project.

Sincerely,

PLUMMER ASSOCIATES, INC

Matt Kuykendall, P.E.
Project Manager

MLK/ash

Enclosure

xc: Ms. Leanne Wilson, City of Aubrey
Ms. Jenny Hicks, City of Aubrey
Mr. Dean Rylant, City of Aubrey

1320 South University Drive, Suite 300
Fort Worth, Texas 76107
Phone 817.806.1700
Fax 817.870.2536
plummer.com
TBPE Firm No. 13

SECTION 00 11 16
ADVERTISEMENT FOR BIDS

1st Advertisement: **October 31st, 2025**
2nd Advertisement: **November 7th, 2025**

The City of Aubrey is soliciting bid proposals for the construction of the following project:

HILL ST AND 428 GROUND STORAGE TANKS MAINTENANCE

Sealed proposals must be delivered to:

Physical and Mailing Address:
City of Aubrey
107 South Main Street
Aubrey, Texas 76227

Proposals shall be received no later than **December 3rd, 2025 at 2:00 PM**. The proposals will be publicly opened and read aloud at this time and place. Bids received after this time will be returned unopened. Address proposals to **Jenny Hicks, City Secretary.**

Contract Documents, including Plans and Specifications, may be examined without charge in the:

Engineer	Owner
Plummer Associates, Inc.	**City of Aubrey**
1320 S. University Dr, Suite 300	**107 South Main Street**
Fort Worth, TX	**Aubrey, TX 76227**
Matt Kuykendall, PE	**Jenny Hicks, City Secretary**

Further information regarding this project may be obtained by contacting:
Matt Kuykendall, PE at **mkuykendall@plummer.com**

Advertisement and bid phase information for the Project can be found at the following web site: www.civcast.com.

Contract Documents may be downloaded or viewed free of charge at this web site. It is the downloader's responsibility to determine that a complete set of documents, as defined in the Instructions to Bidders are received. Printed copies of the Contract Documents may be purchased at the website for the cost of printing. The cost for printed Contract Documents is not refunded.

This web site will be updated periodically with addenda, plan holders lists, bid tabulations, additional reports, or other information relevant to bidding the Project. If there are any questions concerning the specifications, or other bid documents or any part thereof, questions must be submitted by Tuesday, November 18, 2025.

To be accepted, a bid must be accompanied by a bid security instrument payable to the City of Aubrey, Texas, in an amount not less than five (5%) percent of the total base bid, in the form of either (a) a

cashier's check or certified check on a Texas bank or thrift with FDIC insurance or (b) an acceptable bidder's bond with a surety authorized to operate in the State of Texas.

Performance, Payment, and Maintenance Bonds will be required.

In case of ambiguity or lack of clearness in stating bid/proposal prices, the City of Aubrey reserves the right to adopt the most advantageous construction thereof, to reject any or all bids, and to waive formalities. No bid may be withdrawn within ninety (90) days after the date on which bids are opened.

The City of Aubrey, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

CITY OF AUBREY
Chris Rich Mayor

END OF SECTION

City of Aubrey, Texas

Hill St. and 428 Ground Storage Tanks Maintenance

Project Specifications

October 2025

Project #: 0798-008-01

PLUMMER

TBPE Firm Registration No. F-13

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CONTRACT DOCUMENTS AND SPECIFICATIONS FOR
CITY OF AUBREY, TEXAS
HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

TABLE OF CONTENTS

Section Number and Title

DIVISION 0 - BIDDING AND CONTRACT REQUIREMENTS

00 01 10	Table of Contents
00 01 10.10	Seals Page
00 11 16	Advertisement for Bids
00 21 13	Instruction to Bidders
00 42 00	Bid Proposal
00 42 10	Bid Form
00 43 43	Employment Requirements and Wage Rates
00 44 10	Conflict of Interest Questionnaire
00 45 13	Bidder Qualifications
00 45 16	Certification of Bidder – Civil Rights
00 45 18	Vendor Compliance to State Law
00 45 19	Non-Collusion Affidavit
00 45 43	Resolution of Corporation
00 45 60	Attorney's Review Certification
00 46 00	Post-Bid Procedures
00 52 13	Agreement Between Owner and Contractor for Construction Contract
00 61 10	Bid Bond
00 61 13.13	Performance Bond
00 61 13.16	Payment Bond
00 61 19	Maintenance Bond
00 62 16	Certificate of Insurance
00 72 13	Standard General Conditions of the Construction Contract
00 73 13	Supplementary Conditions of the Construction Contract

TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

DIVISION 1 - GENERAL REQUIREMENTS

01 00 00	Construction General Requirements
01 10 00	Summary of Work
01 12 16	Sequence of Construction
01 31 00	Project Management and Coordination
01 31 24	Internet-Based Construction Management
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 40 00	Quality Requirements
01 42 00	References
01 43 33	Manufacturers' Field Services
01 50 00	Temporary Facilities and Control
01 60 00	Product Requirements
01 70 00	Execution and Closeout Requirements
01 73 29	Cutting and Patching
01 77 00	Closeout Procedures

TABLE OF CONTENTS
(continued)

DIVISION 1 – GENERAL REQUIREMENTS (CONTINUED)

01 78 10	Project Record Documents
01 78 23	Operation and Maintenance Data
01 78 36	Warranties

DIVISION 2 – EXISTING CONDITIONS

02 41 19	Selective Demolition

DIVISION 5 - METALS

05 05 20	Anchor Bolts and Concrete Inserts
05 50 00	Metal Fabrications

DIVISION 8 - FINISHES

08 11 13	Hollow Metal Doors and Frames
08 71 00	Door Hardware
08 80 00	Glazing

DIVISION 9 - FINISHES

09 08 00	Coating and Painting for Rehabilitating Tanks
09 91 00	Painting and Coating

DIVISION 10 - SPECIALTIES

10 14 00	Signage
10 14 19	Safety Signs
10 90 00	Identification, Stenciling, and Tagging

DIVISION 31 – EARTHWORK

31 05 10	Materials for Earthwork
31 20 00	Earthwork

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 92 13	Hydro-Mulching

DIVISION 33 – UTILITIES

33 01 10.58	Disinfection of Potable Water Piping and Tanks
33 01 11	Rehabilitation of Bolted Steel Water Storage Tanks
33 01 11.10	Rehabilitation of Welded Steel Water Storage Tanks

DIVISION 40 – PROCESS INTERCONNECTIONS

40 72 00	Level Instruments

APPENDIX A – CONSTRUCTION PLANS

SECTION 00 01 10.10
SEALS PAGE

Division 00
Division 01
Division 02
Division 05
Division 08
Division 09
Division 10
Division 31
Division 32
Division 33

06/20/2025

MATTHEW L. KUYKENDALL
TEXAS P.E. 127451

PLUMMER ASSOCIATES, INC.,
TBPE FIRM No. F-13

END OF SECTION

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SECTION 00 11 16
ADVERTISEMENT FOR BIDS

1st Advertisement: **October 31st, 2025**
2nd Advertisement: **November 7th, 2025**

The City of Aubrey is soliciting bid proposals for the construction of the following project:

HILL ST AND 428 GROUND STORAGE TANKS MAINTENANCE

Sealed proposals shall be received at City Hall, 107 S. Main Street, Aubrey, Texas 76227, no later than **December 3, 2025 at 2:00 PM.** Proposals received after this time will be returned unopened. The proposals will be publicly opened and read aloud at the City Council Chambers, 226 Countryside Drive, Aubrey, Texas 76227 at 2:30 PM on December 3rd. Address proposals to **Jenny Hicks, City Secretary**.

Contract Documents, including Plans and Specifications, may be examined without charge in the:

Engineer	Owner
Plummer Associates, Inc.	**City of Aubrey**
1320 S. University Dr, Suite 300	**107 South Main Street**
Fort Worth, TX	**Aubrey, TX 76227**
Matt Kuykendall, PE	**Jenny Hicks, City Secretary**

Further information regarding this project may be obtained by contacting:
Matt Kuykendall, PE at **mkuykendall@plummer.com**

Advertisement and bid phase information for the Project can be found at the following web site: www.civcast.com.

Contract Documents may be downloaded or viewed free of charge at this web site. It is the downloader's responsibility to determine that a complete set of documents, as defined in the Instructions to Bidders are received. Printed copies of the Contract Documents may be purchased at the website for the cost of printing. The cost for printed Contract Documents is not refunded.

This web site will be updated periodically with addenda, plan holders lists, bid tabulations, additional reports, or other information relevant to bidding the Project. If there are any questions concerning the specifications, or other bid documents or any part thereof, questions must be submitted by Tuesday, November 18, 2025.

To be accepted, a bid must be accompanied by a bid security instrument payable to the City of Aubrey, Texas, in an amount not less than five (5%) percent of the total base bid, in the form of either (a) a cashier's check or certified check on a Texas bank or thrift with FDIC insurance or (b) an acceptable bidder's bond with a surety authorized to operate in the State of Texas.

Performance, Payment, and Maintenance Bonds will be required.

In case of ambiguity or lack of clearness in stating bid/proposal prices, the City of Aubrey reserves the right to adopt the most advantageous construction thereof, to reject any or all bids, and to waive formalities. No bid may be withdrawn within ninety (90) days after the date on which bids are opened.

The City of Aubrey, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

CITY OF AUBREY
Chris Rich Mayor

END OF SECTION

SECTION 00 21 13
INSTRUCTION TO BIDDERS

PART 1 - PART 1

1.1 USE OF SEPARATE BID FORMS

A. These contract documents include a complete set of bid and contract forms which are for the convenience of the bidders and are not to be detached from the contract document, completed or executed. Separate bid forms are provided for your use.

1.2 INTERPRETATIONS OR ADDENDA

A. No oral interpretations will be made to any bidder. Each request for clarification shall be made in writing to the City or engineer no less than seven (7) days prior to the bid opening. Each interpretation made will be in the form of an Addendum to the contract documents and will be distributed to all parties holding contract documents no less than seven (7) days prior to the bid opening. It is, however, the bidder's responsibility to make inquiry as to any addenda issued. All such addenda shall become part of the contract documents and all bidders shall be bound by such addenda, whether or not received by the bidders.

B. If an addendum to the bid package is necessary, it must be distributed to each potential bidder. The distribution of an addendum shall be verified either by statements of receipt or registered/certified mail receipts, which shall be included in the public works construction file. The addendum shall allow adequate time for consideration in bid preparation (usually at least one week). If adequate time is not available, the bid opening date must be extended and the must republish the invitation for bids containing the place, time, and date for the new bid opening. Note that any change to the original bid opening date will require republication of the invitation for bids at least once in a locally published newspaper. The republished notice will include the place, time and date for the new bid opening and must be published at least seven days prior to the new bid opening date.

1.3 INSPECTION OF SITE

A. Each bidder should visit the site of the proposed work and should become acquainted with the existing conditions and facilities, the difficulties and restrictions pertaining to the performance of the contract. The bidder should thoroughly examine and become familiar with the drawings, technical specifications and all other contract documents. The contractor by the execution of the contract shall in no way be relieved of any obligation under it due to failure to receive or examine any form or legal document or to visit the site or the conditions existing at the site. The City will be justified in rejecting any claim based on lack of inspection of the site prior to the bid.

1.4 ALTERNATE BID ITEMS

A. No alternate bids or bid items will be considered unless they are specifically requested by the technical specifications.

1.5 BIDS

A. All bids must be submitted on the forms provided and are subject to all requirements of the Contract Documents, including the Drawings.

B. All bids must be regular in every respect and no interlineation, excisions or special conditions may be made or included by the bidder.

C. Bid documents, including but not limited to the bid, the bid bond(s), the contractor's certifications, local opportunity plan, and the statement of the bidder's qualifications, shall be sealed in an envelope and clearly labeled with the words "Bid Documents", the project number, name of bidder and the date and time of bid opening.

D. The City may consider as irregular any bid on which there is an alteration of or departure from the bid form and, at its option, may reject any irregular bid.

E. If a contract is awarded, it will be awarded to a responsible bidder on the basis of the lowest/best bid and the selected alternate bid items, if any. The contract will require the completion of the work in accordance with the contract documents.

1.6 BID MODIFICATIONS PRIOR TO BID OPENING

A. Any bidder may modify its bid by submitting a modification or supplemental bid at any time prior to the scheduled closing time for receipt of bids, provided such modification or supplemental bid is received by the locality prior to the closing time. The modification or supplemental bid should not reveal the original bid price but should provide only the addition, subtractions or other modifications to the original bid so that the final prices or terms will not be known by the locality until the sealed bid is open.

1.7 BID BOND

A. A bid bond in the amount of 5% of the bid issued by an acceptable surety shall be submitted with each bid. A certified check or bank draft payable to the City or negotiable U.S. Government Bonds (as par value) may be submitted in lieu of the Bid Bond.

B. The bid bond or its comparable will be returned to the bidder as soon as practical after the opening of the bids.

1.8 STATEMENT OF BIDDERS QUALIFICATIONS

A. Each bidder shall submit on the form furnished for that purpose a statement of the bidder's qualifications. The City shall have the right to take such steps as it deems necessary to determine the ability of the bidder to perform its obligations under the contract, and the bidder shall furnish the City all such information and data for this purpose as it may request. The right is reserved to reject any bid where an investigation of the available data does not satisfy the City that the bidder is qualified to carry out properly the terms of the contract.

1.9 UNIT PRICE

A. The unit price for each of the several items in the bid shall include its pro rata share of overhead so that the sum of the products obtained by multiplying the quantity shown for each item by the unit price bid represents the total bid. Any bid not conforming to this requirement may be rejected as informal. Special attention is drawn to this condition, as the unit prices will be used to determine the amount of any change orders resulting from an increase or decrease in quantities.

1.10 CORRECTIONS

A. Erasures or other corrections in the bid must be noted over the signature of the bidder.

1.11 TIME FOR RECEIVING BIDS

A. Bids received prior to the advertised hour of opening shall be kept securely sealed. The officer appointed to open the bids shall decide when the specified time has arrived and no bid received thereafter will be considered; except that when a bid arrives by mail after the time fixed for opening, but before the reading of all other bids is completed, and it is shown to the satisfaction of the City that the late arrival of the bid was solely due to delay in the mail for which the bidder was not responsible, such bid will be received and considered.

1.12 OPENING OF BIDS

A. The City shall, at the time and place fixed for the opening of bids, open each bid and publicly read it aloud, irrespective of any irregularities therein. Bidders and other interested individuals may be present.

1.13 WITHDRAWAL OF BIDS

A. Bidder may withdraw the bid before the time fixed for the opening of bids, by communicating its purpose in writing to the Grant Recipient. Upon receipt of such notice, the unopened bid will be returned to the bidder. The bid guaranty of any bidder withdrawing his bid will be returned promptly.

1.14 AWARD OF CONTRACT/REJECTION OF BIDS

A. The contract will be awarded to the responsive, responsible Bidder submitting the lowest/best bid. The bidder selected will be notified at the earliest possible date. The locality reserves the right to reject any or all bids and to waive any informality in bids received where such rejection or waiver is in its interest.

B. The City reserves the right to consider as unqualified to do the work any bidder who does not habitually perform with his own forces the major portions of the work involved in construction of the improvements embraced in this contract.

1.15 EXECUTION OF AGREEMENT/PERFORMANCE AND PAYMENT BONDS

A. Performance Bonds - Requires all prime contractors which enter into a formal contract in excess of $100,000 with the State, a county, or a municipality; a department, board, or agency of the state, a county, or a municipality; and a school district or a subdivision thereof, to obtain a Performance Bond in the amount of the contract before commencing with work

B. Payment Bonds- Requires all prime contractors which enter into a formal contract with the State, a county, or a municipality; a department, board, or agency of the state, a county, or a municipality; and a school district or a subdivision thereof, to furnish to the governmental entity a payment bond in the amount of the contract. The payment bond must be filed within 30 days from the date of the Notice of Award:

1. Municipalities: If the contract is in excess of $50,000, a payment bond is required.

C. The failure of the successful bidder to execute the agreement and supply the required bonds within thirty (30) days from the date of the notice of award-or within such extended period as the locality may grant, shall constitute a default and the locality may, at its option, either award the contract to the next lowest responsible bidder, or re-advertise for bids. In either case, the locality may charge against the bidder the difference between the amount of the bid, and the amount for which a contract is subsequently executed irrespective of whether this difference exceeds the amount of the bid bond. If a more favorable bid is received through re-advertisement, the defaulting bidder shall have no claim against the locality for a refund.

1.16 EQUAL EMPLOYMENT OPPORTUNITY

A. Attention is called to the requirements for ensuring that employees and applicants for employment are not discriminated against because of race, color, religion, sex, sexual identity, gender identity, or national origin, and other civil rights requirements.

END OF SECTION

SECTION 00 42 00

BID PROPOSAL

TO:

City of Aubrey
107 South Main Street Aubrey,
Texas 76227

Date: _____

Name of Bidder: _____ **Phone:** _____

Street Address: _____

_____

City and State: _____ **Zip:** _____

Mailing Address: _____

_____

City and State: _____ **Zip:** _____

The undersigned BIDDER, having examined the site and the Construction Contract Documents, HEREBY PROPOSES to furnish all labor, materials, tools, supplies, and necessary equipment to construct, complete in place and ready for use:

HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

For the Total Price of:

In Words: _____Dollars

and _____Cents

In Figures: $_____.

Maximum contract time required by the Contractor for completion of these improvements, beginning on the date specified in the Notice to Proceed, shall be as stated in the Agreement Section 00 52 13.

Receipt is acknowledged of the following Addenda:

Addendum No. 1_____

Addendum No. 2_____

Addendum No. 3_____

SUPPLEMENTS TO THIS BID:

The following Supplements are attached as an integral part of this Bid:

Document 00 43 10 - Bid Bond Form (Form May be Supplied by Bidder)
Document 00 45 10 - Form of Business
Document 00 45 13 - Statement of Bidder's Qualifications
Document 00 45 15 - Certificate of Bidder's Experience & Qualifications
Document 00 45 18 – Vendor Compliance with State Law
Document 00 45 19 - Non-Collusion Affidavit
Document 00 45 43 - Resolution of Corporation (Form May be Supplied by Bidder) Document 00 45 50 – Conflict of Interest Questionnaire (CIQ)

This Proposal, when accepted by the OWNER, shall constitute the CONTRACT between the Parties, together with the appurtenant documents presented in the Table of Contents.

The undersigned, as Bidder, declares that the only person or parties interested in this Proposal as principals are those named herein, that this Proposal is made without collusion with any other person, firm or corporation.

Bidder:_ [Print the full name of your proprietorship, partnership, corporation, or joint venture.*]

By:_____
[Signature**] [Date]

Name:_____
[Print name] [Title]

(Seal - if Bidder is a Corporation)

ATTEST:

_____

* *If the Bid is a joint venture, add additional Bid form signature sheets for each member of the joint venture.*

** *The undersigned, as bidder, certifies that the only person or parties interested in this proposal as principals are those named herein; that the Bidder has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the Contract for the Project.*

Note: This document constitutes a government record, as defined by § 37.01 of the Texas Penal Code. Submission of a false government record is punishable as provided In § 37.10 of the Texas Penal Code.

END OF SECTION

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SECTION 00 42 10

UNIT PRICE BID FORM

TO THE CITY OF AUBREY, TEXAS:

The undersigned hereby proposes to furnish the equipment, fuel, labor, materials, power, tools, superintendence, transportation, and to perform the work required for the construction of HILL ST AND 428 GROUND STORAGE TANKS MAINTENANCE: In the City of Aubrey, Texas, for the following prices, which it is clearly and definitely understood, shall include all construction materials and equipment as set out in the basis of payment in these contractual documents and maintaining same as required by the detailed specifications.

1. BASE BID

Item No.	Unit	Qty.	Description and Price in Words	PRICE IN FIGURES*	
				Unit Price	Total
1	LS	1	**Mobilization** of personnel, equipment, and supplies to and from the **428 Ground Storage Tank** project site for the sum of _____ dollars and_____cents as a lump sum.		
2	LS	1	**Mobilization** of personnel, equipment, and supplies to and from the **Hill St Ground Storage Tank** project site for the sum of _____ dollars and_____ cents as a lump sum.		
3	LS	1	For all work required at the **Hill St Ground Storage Tank** as described by the contract documents except for the items listed blow for the sum of _____ dollars and _____cents as a lump sum.		
4	LS	1	For all work required at the **428 Ground Storage Tank** as described by the contract documents except for the items listed below for the sum of _____ dollars and _____cents as a lump sum.		
5	EA	2	Furnishing and installing **new liquid level indicators** (one at each tank) for the sum of _____ dollars and _____cents each.		
6	EA	1	Furnishing and installing **rigid rail safe climbing device** at 428 Ground Storage Tank for the sum of _____ dollars and _____cents each.		
7	LS	1	Install, maintain, and remove **Storm Water Pollution Prevention Plan** devices for the sum of _____ dollarsand _____cents as a lump sum.		

2. ALTERNATE BID

Item No.	Unit	Description and Price in Words	PRICE IN FIGURES*
			Unit Price
1	EA	For all work required to replace damaged roof support braces inside of the Hill St. Ground Storage Tank for the sum of _____ dollars and _____cents each brace.	

TOTAL BASE BID AMOUNT $_____

ALTERNATE BID UNIT PRICE AMOUNT $_____

It is definitely understood that in case of a conflict among the prices quoted for any item in the Bid Form on the foregoing pages, the unit price shall govern.

The undersigned bidder agrees to begin work at an agreed upon Notice to Proceed date and to be substantially complete within the number of days explained below for each portion of the project following the start time; provided, however, that the OWNER'S construction funds are available:

- Days from NTP to 428 Ground Storage Tank substantial completion: 100
- Days from NTP to Hill St Ground Storage Tank substantial completion: 380

Enclosed with this Bid is a Bidder's Bond or Cashier's Check for ($_____) dollars, which it is agreed shall be collected and retained by the OWNER as liquidated damages if the OWNER accepts this bid within sixty (60) days after the opening of bids, and the undersigned bidder then fails to execute the contract and bonds with the said OWNER within ten (10) days after official notice of such acceptance; otherwise, said Bidder's Bond or Check shall be returned to the undersigned on demand. This sum of money is not to be considered as a penalty, but shall be deemed, taken and treated as reasonable liquidated damages. The sum of money is fixed and agreed on between the bidder and owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damage to the OWNER.

* Total represents total determined by multiplying quantity by total unit price. Unit Labor and Unit Material prices should add to give total unit price set forth in "Description and Price in Words" column.

The undersigned acknowledges receipt of the following addendum:

Addendum No. 1 _____

Addendum No. 2 _____

Addendum No. 3 _____

If Bidder is:

An Individual

Name (typed or printed): _____.

By: _____. (SEAL)
(Individual's signature)

Doing business as: _____.

A Partnership

Partnership Name: _____. (SEAL)

By: _____.
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____.

A Corporation

Corporation Name: _____. (SEAL)

State of Incorporation: _____.
Type (General Business, Professional, Service, Limited Liability):

By: _____.
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____.

Title: _____. (CORPORATE SEAL)

Attest _____

Date of Authorization to do business in Oklahoma is _____.

A Joint Venture

Name of Joint Venture: _____.

First Joint Venturer Name: _____. (SEAL)

By: _____.
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____.

Title: _____.

Second Joint Venturer Name: _____. (SEAL)

By: _____.
(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____.

Title: _____.

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

_____

Phone No. Fax No. _____

SUBMITTED on _____, 20____.

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END OF SECTION

SECTION 00 45 13
STATEMENT OF BIDDER'S QUALIFICATIONS

All questions must be answered and the data given must be clear and comprehensive. **This statement must be notarized.** If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information it desires.

Date: _____

Bidder (Legal Name of Firm):_____

Date Organized:_____

Address :_____

_____

Date Incorporated_____

Federal ID Number: _____

Number of Years in contracting business under present name_____

List all other names under which your business has operated in the last 10 years:

_____

_____

Work Presently Under Contract:

Contract	Amount $	Completion Date

Type of work performed by your company: _____

Total Staff employed by Firm (Break down by Managers and Trades on separate sheet):

_____

_____

_____

Have you ever failed to complete any work awarded to you? ☐ Yes ☐ No
(If yes, please attach summary of details on a separate sheet. Include brief explanation of cause and resolution)

Have you ever defaulted on a contract? ☐ Yes ☐ No
(If yes, please attach summary of details on a separate sheet.)

Has your organization had any disbarments or suspensions that have been imposed in the past five years or that was still in effect during the five year period or is still in effect? ☐ Yes ☐ No

(If yes, list and explain; such list must include disbarments and suspensions of officers, principals, partners, members, and employees of your organization.)

List the projects most recently completed by your firm (include project of similar importance):

Project	Amount $	Mo/Yr
Completed		

Major equipment available for this contract: _____
_____
_____

Are you in compliance with all applicable EEO requirements? ☐ Yes ☐ No
(If no, please attach summary of details on a separate sheet.))

Bank References

Address: _____ Contact Name: _____

City & State:_____Zip:_____Phone Number: _____

Credit available: $ _____

Has the firm or predecessor firm been involved in a bankruptcy or reorganization? ☐ Yes ☐ No
(If yes, please attach summary of details on a separate sheet.)

List on a sheet attached hereto all judgements, claims, arbitration proceedings, or suits pending or outstanding against bidder over the last five (5) years with amount of claim and brief description.

List on a sheet attached hereto all lawsuits or requested arbitration with regard to construction contracts which bidder has initiated within the last five (5) years and brief explanation of claim and outcome.

Attach resume(s) for the principal member(s) of your organization, including the officers as well as the proposed superintendent for the project.

Signed this_____ day of_____, 20____.

_____
Signature

_____
Printed Name and Title

_____
Company Name

Notary Statement:

_____, being duly sworn, says that he/she is the _____Position/Title_____of_____(Firm Name), and hereby swears that the answers to the foregoing questions and all statements therein contained are true and correct. He/she hereby authorizes and requests any person, firm, or corporation to furnish any information requested City/County of_____ in verification of the recitals comprising this Statement of Bidder's Qualifications.

Subscribed and sworn before me this _____day of_____, 20____.

Notary Public

_____

Signature

_____

Printed Name

My Commission Expires: _____,

The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

END OF SECTION

SECTION 00 45 15
CERTIFICATE OF BIDDER'S EXPERIENCE & QUALIFICATIONS

The undersigned bidder certifies that he is, at the time of bidding, and shall be, throughout the period of the Contract, licensed by the State of Texas to do the type of work required under terms of the contract documents. Bidder further certifies that he is skilled and regularly engaged in the general class and type of work called for in the contract documents.

The bidder represents that he is competent, knowledgeable and has special skills on the nature, extent and inherent conditions of the work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the particular facilities that may create, during the construction program, unusual or peculiar unsafe conditions hazardous to persons and property. Bidder expressly acknowledges that he is aware of such peculiar risks and that he has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the construction work with respect to such hazards.

Signed this_____day of_____, 20___.

_____

Name of Bidder

_____

Contractor's License No. and State

_____

Signature of Bidder

_____

Title of Signatory

END OF SECTION

SECTION 00 45 16

U.S. Department of Housing and Urban Development

CERTIFICATION OF BIDDER REGARDING CIVIL RIGHTS LAWS AND REGULATIONS

INSTRUCTIONS

CERTIFICATION OF BIDDER REGARDING Executive Order 11246 and Federal Laws Requiring Federal Contractor to adopt and abide by equal employment opportunity and affirmative action in their hiring, firing, and promotion practices. This includes practices related to race, color, gender, religion, national origin, disability, and veterans' rights.

NAME AND ADDRESS OF BIDDER (include ZIP Code)

CERTIFICATION BY BIDDER

Bidder has participated in a previous contract or subcontract subject to Civil Rights Laws and Regulations.

☐ Yes ☐ No

The undersigned hereby certifies that:

☐ The Provision of Local Training, Employment, and Business Opportunities clause (Section 3 provision) is included in the Contract. A written Section 3 plan (Local Opportunity Plan) was prepared and submitted as part of the bid proceedings (if bid equals or exceeds $100,000).

☐ The Equal Opportunity clause is included in the Contract (if bid equals or exceeds $10,000).

Have you ever been or are you being considered for sanction due to violation of Executive Order 11246, as amended?

☐ Yes ☐ No

NAME AND TITLE OF SIGNER (Please type)

SIGNATURE DATE

END OF SECTION

SECTION 00 45 18
VENDOR COMPLIANCE WITH STATE LAW

The 1985 Session of Texas Legislature passed House Bill 620 relative to the award of Contracts to non-resident bidders. This law provided for non-resident bidders to bid projects for construction, improvements, supplies or services in Texas. To be awarded these Contracts, non-resident bidder must bid an amount lower than the lowest Texas resident bidder by the same amount that a Texas resident bidder would be required to underbid a non-resident bidder to obtain a comparable Contract in the state of the non-resident's principal place of business.

NOTE: A non-resident bidder is a Contractor whose corporate office or principal place of business is located outside of the State of Texas.

Item A: ALL BIDDERS

I hereby certify that our principal place of business is in the State of Texas.

YES_____ NO_____

Item B: NON-RESIDENT BIDDERS

Non-resident vendors in_____(State), our principal place of business, are required to bid_____% lower than resident bidders by State Law.

Non-resident vendors in _____(State), our principal place of business, are **not** required to underbid resident bidders.

AFFIDAVIT AGAINST PROHIBITED ACTS

I hereby affirm that I am aware of the provisions of the Texas Penal Code Sec. 36.02, 36.08, 36.09, and 36.10, dealing with Bribery and Gifts to Public Servants. I further affirm that I will adhere to such rules and instruct and require all agents, employees, and subcontractors to do the same. I am aware that any violation of these rules subjects this agreement to one or more of the following: revocation, removal from bid lists, prohibiting future Contract / subcontract work, revocation of permits and / or prosecution.

Signature	Date
Attest (if Contractor is a Corporation)	Date

END OF SECTION

SECTION 00 45 19
NON-COLLUSION AFFIDAVIT

State of_____§

County of_____§

_____, being duly sworn, deposes and says that:

(1) He (she) is_____of _____ _____, the Bidder submitting the attached Proposal;

(2) He (she) is fully informed respecting the preparation and contents of the attached Bid and any and all appurtenances thereof;

(3) Such Bid is genuine and is not a collusive Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with another Bidder, firm or person to submit a collusive Bid in connection with the Contract for which the attached bid has been submitted or to refrain from bidding in connection with such contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix an overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner or any other person interested in the proposed contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit.

Signature:_____

Title: _____

Subscribed and sworn to me this_____day of_____, 20___.

By:_____

Notary Public in and for _____

County, Texas

My commission expires _____

END OF SECTION

SECTION 00 45 43
RESOLUTION OF CORPORATION

I hereby certify that it was RESOLVED by a quorum of the directors of

_____

[Name of Corporation / Contractor]

meeting on this_____day of_____, 20___, that_____,

[Corporate Representative]

be, and hereby is, authorized to act on behalf of the Corporation, as its representative, in all business transactions conducted in the State of Texas, and that the above resolution was unanimously ratified by the Board of Directors at said meeting and that the resolution has not been rescinded or amended and is now in full force and effect; and in authentication of the adoption of this resolution, I subscribe my name and affix the seal of the Corporation on this

_____day of,_____, 20___.

_____

Secretary/Assistant Secretary

_____

[Seal]

END OF SECTION

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SECTION 00 45 60
ATTORNEY'S REVIEW CERTIFICATION

I, the undersigned,_____, the duly authorized and acting legal representative of the_____, do hereby certify as follows:

I have examined the attached contract(s) and surety bonds and am of the opinion that each of the agreements may be duly executed by the proper parties, acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties; and that the agreements shall constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

Attorney's signature:_____Date: _____

Print Attorney's Name: _____

Texas State Bar Number: _____

END OF SECTION

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SECTION 00 46 00
POST-BID PROCEDURES

PART 1 - GENERAL

1.1 IDENTICAL BIDS

A. In the event of two or more identical low bids, the agreement will be awarded as prescribed by Chapter 271, Subchapter Z, Section 271.901 of Vernon's Texas Codes Annotated.

1.2 BID AMBIGUITY

A. Any ambiguity in the bid as a result of omission, error, lack of clarity or non-compliance by the Bidder with specifications, instructions and all conditions of bidding shall be construed in the favor of the City.

1.3 DISQUALIFICATION OF BIDDER(S)

A. Any bidder(s) may be disqualified and their bid not considered for award by any the following specific reasons:

1. The bidder is party to any litigation against the City of Aubrey, Texas.
2. The bidder is delinquent in performance of an existing contract or has defaulted on a previous contract with the City of Aubrey, Texas, or with another party for the same or similar kinds of work.
3. Reasonable grounds exist for believing that the bidder lacks competency or capacity to satisfactorily and timely perform based on the bidder’s financial statement, experience, equipment, existing contractual commitment, etc.

1.4 AGREEMENT, BONDS, INSURANCE AND STATE SALES TAX CERTIFICATES

A. Within 10 days of receipt of the Notice of Award, the lowest responsible Bidder shall execute and deliver to the Engineer for the Owner's approval those documents indicated by an "X" below:

[X] Document 00 52 00 - Standard Form of Agreement
[X] Document 00 61 10 - Performance Bond
[X] Document 00 61 15 - Payment Bond
[X] Document 00 61 20 - Maintenance Bond
[X] Document 00 61 25 - Certificate of Insurance (Form to be Supplied by Contractor)
[X] Document 00 61 30 - State Sales Tax - Separated Contract Certificate
[X] Document 00 61 40 – Contractor’s Act of Assurance
[X] Document 00 61 50 – Certification Regarding Debarment

END OF SECTION

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AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT

This Agreement is by and between the City of Aubrey, a Texas home rule municipality ("Owner") and _____, a _____("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

For and in consideration of the mutual promises and covenants contained herein, Owner and Contractor hereby agree as follows:

ARTICLE 1-WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents and shown in the plans in Appendix A. The Work is generally described as follows:

Hill St Ground Storage Tank:

Install a new safety gate on the water outlet, replace damaged roof support braces if needed following abrasive grit blast, install new reverse level float gauge, clean tank interior, and abrasive grit blast and recoat interior and exterior of tank.

428 Ground Storage Tank:

Remove safety cage from existing ladder and install rigid track fall system, install a new reverse level float gauge, clean tank interior, and abrasive grit blast and recoat interior and exterior of tank. Tank exterior to include the school logo.

ARTICLE 2-THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

Hill St. and 428 Ground Storage Tanks Maintenance

ARTICLE 3-ENGINEER

3.1 The Owner has retained Mead & Hunt, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.2 The part of the Project that pertains to the Work has been designed by Plummer Associates, Inc.

ARTICLE 4-CONTRACT TIMES

4.1 Time is of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract. Contract Times shall commence to run as set forth in the Notice to Proceed.

4.2 Contract Times: Days

A. The Work at the 428 Ground Storage Tank will be substantially complete within **100** calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and shall be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **130** calendar days after the date when the Contract Times commence to run as set forth in the Notice to Proceed.

B. The Work at the Hill St. Ground Storage Tank will be substantially complete within **380** days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and shall be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **410** after the date when the Contract Times commence to run as set forth in the Notice to Proceed.

4.3 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion:* Contractor shall pay Owner $500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.

2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $500 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive damage remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5-CONTRACT PRICE

5.1 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, subject to adjustment under the Contract, **in an amount not to exceed _____($_____):**

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6-PAYMENT PROCEDURES

6.1 Submittal and Processing of Payments

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.2 Progress Payments; Retainage

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment monthly during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

a. 95-percent of the value of the Work completed (with the balance being retainage).

b. 95-percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

6.3 Final Payment

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.4 Consent of Surety

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.5 Interest

A. The Owner is not obligated to pay interest on moneys not paid except as provided in Section 49.276(d) of the Texas Water Code, if applicable.

ARTICLE 7-CONTRACT DOCUMENTS

7.1 Contents

A. The Contract Documents consist of all of the following:

1. This Agreement.

2. Bonds:

a. Performance bond (together with power of attorney).

b. Payment bond (together with power of attorney).

c. Maintenance bond (together with power of attorney).

3. General Conditions.
4. Supplementary Conditions.
5. Specifications as listed in the table of contents of the project manual (copy of list attached).
6. Drawings listed on the associated sheet index.
7. Addenda
8. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid.
    b. Documentation submitted by Contractor prior to Notice of Award.
9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.
    c. Change Orders.
    d. Field Orders.
    e. Warranty Bond, if any.

B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8-REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.1 Contractor's Representations

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and

drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.2 Contractor's Certifications

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.3. Contractor's Compliance with Statutory Requirements and Declarations.

A. Contractor affirms that it has submitted the necessary forms to comply with Texas Gov't Code Section 2252.908, Certificate of Interested Parties (Form 1295)(https://www.ethics.state.tx.us/forms/1295.pdf) and Chapter 176, Texas Local Gov't Code, Conflict of Interest Questionnaire (Form CIQ)(https://www.ethics.state.tx.us/forms/CIQ.pdf) and has returned a fully executed copy of the former as an attachment to this executed contract and proof of the latter to the City after filing with the Texas Ethics Commission as required by the referenced provision of the Texas Government Code.

B. Verification Regarding Energy Company Boycotts. To the extent this Agreement constitutes a contract for goods or services for which a written verification is required under § 2276.002, TEX. GOV'T. CODE, , Contractor hereby verifies that it and its parent company, wholly- or majority-owned subsidiaries, and other affiliates, if any, do not boycott energy companies and, will not boycott energy companies during the term of this Agreement. The foregoing verification is made solely to comply with § 2276.002, TEX. GOV'T. CODE, as amended, to the extent § 2276.002, TEX. GOV'T. CODE does not contravene applicable Texas or federal law. As used in the foregoing verification, "boycott energy companies" shall have the meaning assigned to the term "boycott energy company" in § 809.001, TEX.GOV'T.CODE. Contractor understands "affiliate" to mean an entity that controls, is controlled by, or is under common control with the Underwriter and exists to make a profit.

C. Verification Regarding Firearm Entities or Trade Associations. To the extent this Agreement constitutes a contract for goods or services for which a written verification is required under § 2274.002 (b) TEX. GOV'T. CODE, (N) the Contractor verifies that it does not have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; and (ii) the Contractor will not discriminate during the term of the contract against a firearm entity or firearm trade association. The foregoing verification is made solely to comply with Chapter 2274, TEX. GOV'T. CODE, to the extent the appliable provision in Chapter 2274.002, TEX. GOV'T. CODE does not contravene applicable Texas or federal law. As used in the foregoing verification, "firearm entity or firearm trace association" shall have the meaning assigned to the terms in § 2274.001 (6), (7), TEX.GOV'T.CODE. Contractor understands "affiliate" to mean an entity that controls, is controlled by, or is under common control with the Underwriter and exists to make a profit.

D. Certification Regarding Terrorist Organizations. To the extent this Agreement constitutes a contract for goods or services for which a written verification is required under §§ 2252.151-.154 TEX. GOV'T.

CODE, Contractor hereby certifies that it and its parent company, wholly or majority- owned subsidiaries, and other affiliates, if any, is not a company identified on the Texas Comptroller's list of companies known to have contracts with, or provide supplies or services to, a foreign organization designated as a Foreign Terrorist Organization by the U.S. Secretary of State under federal law.

E. Verification No Boycott of Israel. To the extent this Agreement constitutes a contract for goods or services for which a written verification is required under Sections 2271.001-002 TEX. GOV'T. CODE, Contractor and its parent company, wholly or majority- owned subsidiaries, and other affiliates, if any, further certifies and verifies that it does not boycott Israel and agrees that it will not boycott Israel during the term of this Agreement. For purposes of this Agreement, the term "boycott" shall mean and include terminating business activities or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory. (TEX. GOV'T. CODE §§ 2270.001-.002, 808.001-.006, .051-.057, .101-.102) The foregoing verification is made solely to comply with Chapter 2271, TEX. GOV'T. CODE, to the extent the appliable provision in Chapter 2271.001, TEX. GOV'T. CODE does not contravene applicable Texas or federal law. As used in the foregoing verification, "boycott Israel" shall have the meaning assigned to such term in § 808.001(1), TEX. GOV'T. CODE. Contractor understands "affiliate" to mean an entity that controls, is controlled by, or is under common control with the Underwriter and exists to make a profit.

F. Liability for breach of any such foregoing verifications during the term of this Agreement shall survive until barred by the applicable statute of limitations and shall not be liquidated or otherwise limited by any provision of this Agreement, notwithstanding anything in this Agreement to the contrary.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on the date of approval of this Agreement by the Aubrey City Council (which is the Effective Date of the Contract).

Owner:	Contractor:
_____ *(typed or printed name of organization)*	_____ *(typed or printed name of organization)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Date: _____ *(date signed)*	Date: _____ *(date signed)*
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

Title: _____
(typed or printed)

Address for giving notices:

_____

_____

_____

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

_____

_____

_____

Phone: _____

Email: _____

License No.: _____
(where applicable)

BID BOND (PENAL SUM FORM)

Bidder	**Surety**
Name: Address *{principal place of business)*:	Name: Address *{principal place of business)*:
Owner	**Bid**
Name: City of Aubrey Address *{principal place of business)*: City of Aubrey 107 S Main Street Aubrey, Texas 76227	Project *{name and location)*: Hill St. and 428 Ground Storage Tanks Maintenance
Bond	
Penal Sum: Date of Bond:	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
_____ *{Full formal name of Bidder)*	_____ *{Full formal name of Surety) {corporate seal)*
By: _____ *{Signature)*	By: _____ *{Signature) {Attach Power of Attorney)*
Name: _____ *{Printed or typed)*	Name: _____ *{Printed or typed)*
Title: _____	Title: _____
Attest: _____ *{Signature)*	Attest: _____ *{Signature)*
Name: _____ *{Printed or typed)*	Name: _____ *{Printed or typed)*
Title:	Title:
Notes: {1) Note: Addresses are to be used for giving any required notice. {2) Provide execution by any additional parties, such as joint venturers, if necessary.	

EJCDC® C-430, Bid Bond (Penal Sum Form).
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1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
    3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
    3.2. All Bids are rejected by Owner, or
    3.3. Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable

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PERFORMANCE BOND

STATE OF TEXAS }
COUNTY OF DENTON }

Bond #_____

That _____, of the City of _____, County of _____, and State of _____, as principal, and _____ authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto The City of Aubrey (Owner), in the penal sum of _____ Dollars ($_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

Principal has entered into a certain written contract with the Owner, dated the _____ Day of _____, 20_____, to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall faithfully perform said Contract and shall in all respects duly and faithfully observe and perform all and singular the covenants, conditions and agreements in and by said contract agreed and covenanted by the Principal to be observed and performed, and according to the true intent and meaning of said Contract and the Plans and Specifications hereto annexed, then this obligation shall be void; otherwise to remain in full force and effect;

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Texas Government Code, Chapter 2253, as amended, and Article 7.19-1 of the Insurance Code, as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications, or drawings accompanying the same, shall in anyway affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20_____.

Principal	Surety
By: _____	**By:** _____
Title: _____	**Title:** _____
Address: _____	**Address:** _____
_____	_____

The name and address of the Resident Agent of Surety is _____

_____

* Not applicable for federal work. See "The Miller Act," 40 U.S.C. §270.

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PAYMENT BOND

STATE OF TEXAS }
COUNTY OF DENTON }

Bond #_____

That _____, of the City of _____, County of _____, and State of _____, as principal, and _____ authorized under the laws of the State of Texas to act as surety on bonds for principals, are held and firmly bound unto The City of Aubrey (Owner), in the penal sum of _____ Dollars ($_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents:

Principal has entered into a certain written contract with the Owner, dated the _____ Day of _____, 20_____, to which contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said contract, then, this obligation shall be void; otherwise to remain in full force and effect;

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Texas Government Code, Chapter 2253, as amended, and Article 7.19-1 of the Insurance Code, as amended, and all liabilities on this bond shall be determined in accordance with the provisions of said Article to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract, or to the work performed thereunder, or the plans, specifications or drawings accompanying the same, shall in anywise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20_____.

Principal	Surety
By: _____	**By:** _____
Title: _____	**Title:** _____
Address: _____	**Address:** _____
_____	_____

The name and address of the Resident Agent of Surety is _____

_____

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MAINTENANCE BOND

Bond #_____

THE STATE OF TEXAS }
}
COUNTY OF _____ }

KNOW ALL PERSONS BY THESE PRESENTS:

THAT _____, as Principal, and _____, a Corporation organized under the laws of _____, as sureties, do hereby expressly acknowledge themselves to be held and bound to pay unto the The City of Aubrey, a Municipal Corporation, Texas, the sum of _____ Dollars and _____ Cents ($ _____), which this amount is _____ **%** of the total contract amount of ($ _____), for the payment of which sum will and truly be made unto said _____, and its successors, said principal and sureties do hereby bind themselves, their assigns and successors jointly and severally.

THIS obligation is conditioned; however, that whereas, the said _____ has this day entered into a written contract with the said _____ to build and construct Hill St and 428 Ground Storage Tanks Maintenance which contract and the plans and specifications therein mentioned, adopted by the _____ are hereby expressly made a part thereof as through the same were written and embodied herein.

WHEREAS, under the plans, specifications, and contract, it is provided that the Contractor will maintain and keep in good repair, the work herein contracted to be done and performed, for a period of two (2) years from the date of the acceptance of said work, and to do all necessary repairs and/or reconstructing in whole or in part of said improvements that should be occasioned by settlement of foundation, defective workmanship or materials furnished in the construction or any part thereof or any of the accessories thereto constructed by the Contractor. It being understood that the purpose of this section is to cover all defective conditions arising by reason of defective material and charge the same against the said Contractor, and sureties on this obligation, and the said Contractor and sureties hereon shall be subject to the liquidation damages mentioned in said contract for each day's failure on its' part to comply with the terms of said provisions of said contract. Now, therefore, if the said Contractor shall keep and perform its' said agreement to maintain said work and keep the same in repair for the said maintenance period of two (2) years, as provided, then these presents shall be null and void, and have not further effect, but if default shall be made by the said Contractor in the performance of its' contract to so maintain and repair said work, then these presents shall have full force and effect, and said _____ _____ shall have and receive from the said Contractor and its' principal and sureties damages in the premises, as provided; and it is further agreed that this obligation shall be a continuing one against the principal and sureties, hereon, and that successive recoveries may be and had hereon for successive branches until the full amount shall have been exhausted; and it is further understood that the obligation herein to maintain said work shall continue throughout said maintenance period, and the same shall not be changed, diminished or in any manner affected from any cause during said time.

IN WITNESS THEREOF, the said _____ has caused these presents to be executed by _____ and the said _____ has caused these presents to be executed by its' Attorney in fact and the said Attorney in fact _____, has hereunto set his hand, the _____ day of _____, 20_____.

SURETY:	**PRINCIPAL:**
_____	_____
By: _____	**By:** _____
WITNESS:	**ATTEST:**
_____	_____
	Secretary

NOTE: Date of Maintenance Bond must not be prior to date of Contract.

CERTIFICATE OF INSURANCE

Within ten (10) days of award of the contract, Contractor shall provide Certificate(s) of Insurance to the Owner evidencing compliance with the insurance requirements of the Contract Documents. Certificate(s) will be included in the documents to be executed by the Owner and in the conformed construction contract documents. A certificate of insurance shall be provided on an Acord Standard Form and shall be included as an attachment to this Section entitled “Certificate of Insurance” incorporated into this Section.

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STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

Page

Article 1-Definitions and Terminology 1
1.1 Defined Terms 1
1.2 Terminology 6
Article 2-Preliminary Matters 7
2.1 Delivery of Performance Payment Bonds and Maintenance Bonds; Evidence of Insurance 7
2.2 Copies of Documents 7
2.3 Before Starting Construction 7
2.4 Preconstruction Conference; Designation of Authorized Representatives 8
2.5 Acceptance of Schedules 8
2.6 Electronic Transmittals 8
Article 3-Contract Documents: Intent, Requirements, Reuse 9
3.1 Intent 9
3.2 Reference Standards 9
3.3 Reporting and Resolving Discrepancies 10
3.4 Requirements of the Contract Documents 10
3.5 Reuse of Documents 11
Article 4-Commencement and Progress of the Work 11
4.1 Commencement of Contract Times; Notice to Proceed 11
4.2 Starting the Work 11
4.3 Reference Points 11
4.4 Progress Schedule 12
4.5 Delays in Contractor's Progress 12
Article 5-Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions 13
5.1 Availability of Lands 13
5.2 Use of Site and Other Areas 14
5.3 Subsurface and Physical Conditions 15
5.4 Differing Subsurface or Physical Conditions 16

5.5 Underground Facilities 17
5.6 Hazardous Environmental Conditions at Site 19
Article 6-Bonds and Insurance 21
6.1 Performance, Payment, and Other Bonds 21
6.2 Insurance—General Provisions 22
6.3 Contractor's Insurance 24
6.4 Builder's Risk and Other Property Insurance 25
6.5 Property Losses; Subrogation 25
6.6 Receipt and Application of Property Insurance Proceeds 27
Article 7-Contractor's Responsibilities 27
7.1 Contractor's Means and Methods of Construction 27
7.2 Supervision and Superintendence 27
7.3 Labor; Working Hours 27
7.4 Services, Materials, and Equipment 28
7.5 "Or Equals" 28
7.6 Substitutes 29
7.7 Concerning Subcontractors and Suppliers 31
7.8 Patent Fees and Royalties 32
7.9 Permits 33
7.10 Taxes 33
7.11 Laws and Regulations 33
7.12 Record Documents 33
7.13 Safety and Protection 34
7.14 Hazard Communication Programs 35
7.15 Emergencies 35
7.16 Submittals 35
7.17 Contractor's General Warranty and Guarantee 38
7.18 Indemnification 39
7.19 Delegation of Professional Design Services 39
Article 8-Other Work at the Site 40
8.1 Other Work 40
8.2 Coordination 41
8.3 Legal Relationships 41

Article 9-Owner's Responsibilities 42
9.1 Communications to Contractor 42
9.2 Replacement of Engineer 42
9.3 Furnish Data 42
9.4 Pay When Due 42
9.5 Lands and Easements; Reports, Tests, and Drawings 43
9.6 Insurance 43
9.7 Change Orders 43
9.8 Inspections, Tests, and Approvals 43
9.9 Limitations on Owner's Responsibilities 43
9.10 Undisclosed Hazardous Environmental Condition 43
9.11 Evidence of Financial Arrangements 43
9.12 Safety Programs 43
Article 10—Engineer's Status During Construction 44
10.1 Owner's Representative 44
10.2 Visits to Site 44
10.3 Resident Project Representative 44
10.4 Engineer's Authority 44
10.5 Determinations for Unit Price Work 45
10.6 Decisions on Requirements of Contract Documents and Acceptability of Work 45
10.7 Limitations on Engineer's Authority and Responsibilities 45
10.8 Compliance with Safety Program 45
Article 11—Changes to the Contract 46
11.1 Amending and Supplementing the Contract 46
11.2 Change Orders 46
11.3 Work Change Directives 46
11.4 Field Orders 47
11.5 Owner-Authorized Changes in the Work 47
11.6 Unauthorized Changes in the Work 47
11.7 Change of Contract Price 47
11.8 Change of Contract Times 49
11.9 Change Proposals 49
11.10 Notification to Surety 50

Article 12—Claims 50
12.01 Claims 50
Article 13—Cost of the Work; Allowances; Unit Price Work 51
13.1 Cost of the Work 51
13.2 Allowances 55
13.3 Unit Price Work 55
Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work 56
14.1 Access to Work 56
14.2 Tests, Inspections, and Approvals 56
14.3 Defective Work 57
14.4 Acceptance of Defective Work 58
14.5 Uncovering Work 58
14.6 Owner May Stop the Work 58
14.7 Owner May Correct Defective Work 59
Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period 59
15.1 Progress Payments 59
15.2 Contractor's Warranty of Title 62
15.3 Substantial Completion 62
15.4 Partial Use or Occupancy 63
15.5 Final Inspection 64
15.6 Final Payment 64
15.7 Waiver of Claims 65
15.8 Correction Period 66
Article 16—Suspension of Work and Termination 67
16.1 Owner May Suspend Work 67
16.2 Owner May Terminate for Cause 67
16.3 Owner May Terminate for Convenience 68
16.4 Contractor May Stop Work or Terminate 68
Article 17—Final Resolution of Disputes 69
17.01 Methods and Procedures 69
Article 18—Miscellaneous 69
18.1 Giving Notice 69
18.2 Computation of Times 69

18.3 Cumulative Remedies 70
18.4 Limitation of Damages 70
18.5 No Waiver 70
18.6 Survival of Obligations 70
18.7 Controlling Law 70
18.8 Assignment of Contract 70
18.9 Successors and Assigns 70
18.10 Headings 70

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STANDARD GENERAL CONDITIONS
OF THE CONSTRUCTION CONTRACT

ARTICLE 1-DEFINITIONS AND TERMINOLOGY

1.1 Defined Terms

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*-The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*-The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*-The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. Claim

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract

Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*-The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*-Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*-The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*-The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*-See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*-Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*-Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions,

including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*-A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*-The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*-Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*-A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*-The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*-A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*-The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*-A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*-The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and

start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *Samples*-Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*-A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*-Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. *Specifications*-The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*-An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*-A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*-The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended as evidenced by issuance of a Certification of Substantial Completion by Owner’s designated

representative. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.*Successful Bidder*-The Bidder to which the Owner makes an award of contract.

43. *Supplementary Conditions*-The part of the Contract that amends or supplements these General Conditions.

44. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

45. Technical Data

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

    c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

46. *Underground Facilities*-All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

47. *Unit Price Work*-Work to be paid for on the basis of unit prices.

48. *Work*-The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

49. *Work Change Directive*-A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an

addition, deletion, or revision in the Work.

1.2 Terminology

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. Furnish, Install, Perform, Provide

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said

services, materials, or equipment complete and ready for intended use.

F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2-PRELIMINARY MATTERS

2.1 Delivery of Performance and Payment Bonds; Evidence of Insurance

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond, and maintenance bond on the form provided in this Agreement.

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Intentionally Deleted.*

2.2 Copies of Documents

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.3 Before Starting Construction

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.4 Preconstruction Conference; Designation of Authorized Representatives

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.5 Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.6 Electronic Transmittals

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3-CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.1 Intent

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.2 Reference Standards

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.3 Reporting and Resolving Discrepancies

A. Reporting Discrepancies

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

   a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

   b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.4 Requirements of the Contract Documents

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.5 Reuse of Documents

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4-COMMENCEMENT AND PROGRESS OF THE WORK

4.1 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.2 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.3 Reference Points

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work.

Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.4 Progress Schedule

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.5 Delays in Contractor's Progress

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5-SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.1 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which

Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.2 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor

shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.3 Subsurface and Physical Conditions

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.4 Differing Subsurface or Physical Conditions

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.5 Underground Facilities

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. Possible Price and Times Adjustments

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.6 Hazardous Environmental Conditions at Site

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article

11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6-BONDS AND INSURANCE

6.1 Performance, Payment, and Other Bonds

A. Contractor shall furnish a performance bond, a payment bond, and a maintenance bond each in an amount at least equal to the Contract Price and increased amounts based upon approved change orders, on the forms provided herein, as security for the faithful performance and payment of Contractor's obligations under the Contract and for the maintenance of the Work. The performance and payment bonds shall remain in effect until one (1) year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract. The term of the maintenance bond shall be for a period of two (2) years from the date of final acceptance by Owner.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or

the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.2 Insurance-General Provisions

A. Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Intentionally Deleted .

F. Failure of Owner to demand such certificates or other evidence of tContractor's full compliance with these insurance requirements, or failure of Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the Contractor’s obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at

Owner's sole discretion and option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.3 Contractor's Insurance

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner, and any individuals or entities identified as additional insureds in the Supplementary Conditions;

2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;

3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and

5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.4 Builder's Risk and Other Property Insurance

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk

insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.5 Property Losses; Subrogation

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent

structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.6 Receipt and Application of Property Insurance Proceeds

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7-CONTRACTOR'S RESPONSIBILITIES

7.1 Contractor's Means and Methods of Construction

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.2 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.3 Labor; Working Hours

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.4 Services, Materials, and Equipment

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality,

except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.5 "Or Equals"

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

   a. in the exercise of reasonable judgment Engineer determines that the proposed item:

      1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

      2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

      3) has a proven record of performance and availability of responsive service; and

      4) is not objectionable to Owner.

   b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

      1) there will be no increase in cost to the Owner or increase in Contract Times; and

      2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by

an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.6 Substitutes

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

   a. will certify that the proposed substitute item will:

      1) perform adequately the functions and achieve the results called for by the general design;

      2) be similar in substance to the item specified; and

      3) be suited to the same use as the item specified.

   b. will state:

      1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

      2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

      3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from the item specified; and

2) available engineering, sales, maintenance, repair, and replacement services.

d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.7 Concerning Subcontractors and Suppliers

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the

Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.8 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in

the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.9 Permits

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 Laws and Regulations

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses,

and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 Record Documents

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 Hazard Communication Programs

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 Emergencies

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or

Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 Submittals

A. Shop Drawing and Sample Requirements

1. Before submitting a Shop Drawing or Sample, Contractor shall:

   a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

   b. determine and verify:

      1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

      2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

      3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

   c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. Shop Drawings

   a. Contractor shall submit the number of copies required in the Specifications.

   b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. Samples

   a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Engineer's Review of Shop Drawings and Samples

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.

2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

   a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

   b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

   c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

   d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph

12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;

2. Recommendation by Engineer or payment by Owner of any progress or final payment;

3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any review and approval of a Shop Drawing or Sample submittal;

6. The issuance of a notice of acceptability by Engineer;

7. The end of the correction period established in Paragraph 15.08;

8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;

2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and

3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8-OTHER WORK AT THE SITE

8.1 Other Work

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.2 Coordination

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for

coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.3 Legal Relationships

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor,

Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9-OWNER'S RESPONSIBILITIES

9.1 Communications to Contractor

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.2 Replacement of Engineer

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.3 Furnish Data

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.4 Pay When Due

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.5 Lands and Easements; Reports, Tests, and Drawings

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.6 Insurance

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.7 Change Orders

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.8 Inspections, Tests, and Approvals

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.9 Limitations on Owner's Responsibilities

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 Evidence of Financial Arrangements

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 Safety Programs

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.1 Owner's Representative

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.2 Visits to Site

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.3 Resident Project Representative

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.4 Engineer's Authority

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.5 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.6 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.7 Limitations on Engineer's Authority and Responsibilities

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract

Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.8 Compliance with Safety Program

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.1 Amending and Supplementing the Contract

A. The Contract may only be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (1) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.2 Change Orders

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph

11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.3 Work Change Directives

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.4 Field Orders

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.5 Owner-Authorized Changes in the Work

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.6 Unauthorized Changes in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.7 Change of Contract Price

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be

no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.8 Change of Contract Times

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.9 Change Proposals

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. Change Proposal Procedures

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

b. Change proposals related to a change of Contract Price must include full and detailed

accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 Notification to Surety

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.1 Claims

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. Mediation

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of

the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.1 Cost of the Work

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make

provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.

5. Other costs consisting of the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

        1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

    c. Construction Equipment Rental

        1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

        2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.

        3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly,

dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor's Fee

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.2 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance,

if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.3 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. Adjustments in Unit Price

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

    a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

    b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14-TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.1 Access to Work

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site

and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.2 Tests, Inspections, and Approvals

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.3 Defective Work

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.4 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.5 Uncovering Work

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or

inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.6 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.7 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and

remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.1 Progress Payments

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to

the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work;

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. Reductions in Payment by Owner

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or

on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.2 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.3 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's

risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.4 Partial Use or Occupancy

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.5 Final Inspection

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such

measures as are necessary to complete such Work or remedy such deficiencies.

15.6 Final Payment

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.

2. The final Application for Payment must be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

   c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

   d. a list of all duly pending Change Proposals and Claims; and

   e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.7 Waiver of Claims

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.8 Correction Period

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period,

Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.1 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work. General conditions damages shall not be allowed during the suspension period.

16.2 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to consistently supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Intentionally Deleted.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B.

16.3 Owner May Terminate for Convenience

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, including without limitation, a claim upon Contractor bonds, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work; and

2. expenses sustained prior to the effective date of termination in performing services and

furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, general conditions damages, or other economic loss arising out of or resulting from such termination.

16.4 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, except for force majeure, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.1 Methods and Procedures

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.1 Giving Notice

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.2 Computation of Times

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.3 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.4 Limitation of Damages

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.5 No Waiver

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.6 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.7 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

18.8 Assignment of Contract

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.9 Successors and Assigns

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 Headings

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

Page

Article 1 - Definitions and Terminology 2
Article 2 - Preliminary Matters 2
Article 3 - Contract Documents: Intent, Requirements, Reuse 6
Article 4 - Commencement and Progress of the Work 6
Article 5 - Site, Subsurface and Physical Conditions, Hazardous Environmental Conditions 6
Article 6 - Bonds and Insurance 7
Article 7 - Contractor's Responsibilities 11
Article 8 - Other Work at the Site 12
Article 9 - Owner's Responsibilities 12
Article 10 — Engineer's Status During Construction 12
Article 11 — Changes to the Contract 13
Article 12 — Claims 14
Article 13 — Cost of Work; Allowances, Unit Price Work 14
Article 14 — Tests and Inspections; Correction, Removal, or Acceptance of Defective Work 14
Article 15 — Payments to Contractor, Set Offs; Completions; Correction Period 14
Article 16 — Suspension of Work and Termination 14
Article 17 — Intentionally Deleted. 14
Article 18 — Miscellaneous 14

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement Standard General Conditions of the Construction Contract provided herein. The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added-for example, "Paragraph SC-4.05."

ARTICLE 1-DEFINITIONS AND TERMINOLOGY

No Supplementary Conditions in this Article.

ARTICLE 2-PRELIMINARY MATTERS

2.2 Copies of Documents

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

A. Owner shall furnish the Contractor one copy in electronic portable document format (PDF) of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract and one printed copy of the fully signed counterpart of the Agreement.

2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

B. *Electronic Documents Protocol:* The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.

1. Basic Requirements

a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.

b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.

c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.

e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.

f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 1) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. System Infrastructure for Electronic Document Exchange

a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.

1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 10 MB. Attachments larger than that to be exchanged using large file transfer functions.

2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.

b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.

c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties. To the extent

that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.

d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.

e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.

f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.

g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.

h. The Engineer will operate a Project information management system (also referred to in this EDP as "Project Website") for use of Owner, Engineer and Contractor during the Project for exchange and storage of Project-related communications and information. Except as otherwise provided in this EDP or the General Conditions, use of the Project Website by the parties as described in this Paragraph will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information. The following conditions and standards will govern use of the Project Website:

    1) Describe the period of time during which the Project Website will be operated and be available for reliance by the parties;

    2) Provide any minimum system infrastructure, software licensing and security standards for access to and use of the Project Website;

    3) Describe the types and extent of services to be provided at the Project Website (such as large file transfer, email, communication and document archives, etc.); and

    4) Include any other Project Website attributes that may be pertinent to Contractor's use of the facility and pricing of such use.

C. *Software Requirements for Electronic Document Exchange; Limitations*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.

    a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.

2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.

3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Exhibit A to this EDP, including software versions, if listed.

SC-2.06 Supplement Paragraph 2.06 of the General Conditions by adding the following paragraph:

D. Requests by Contractor for Electronic Documents in Other Formats

1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.

2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor ("Request") in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be subject to the provisions of the Owner's response to the Request, and to the following conditions to which Contractor agrees:

    a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer's purposes solely, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.

    b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor's sole risk and the Contractor waives any claims against Engineer or Owner arising from use of data in Electronic Documents

covered by the Request.

c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys' fees and defense costs arising out of or resulting from Contractor's use, adaptation, or distribution of any Electronic Documents provided under the Request.

d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to Contractor's subcontractors. Contractor warrants that subsequent use by Contractor's subcontractors complies with all terms of the Contract Documents and Owner's response to Request.

3. In the event that Owner elects to provide or directs the Engineer to provide to Contractor any Contractor-requested Electronic Document versions of Project information that is not explicitly identified in the Contract Documents as being available to Contractor, the Owner shall be reimbursed by Contractor on an hourly basis (at $145 per hour) for any engineering costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Engineer.

ARTICLE 3-CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

SC-3.01 Delete Paragraph 3.01.C in its entirety.

ARTICLE 4-COMMENCEMENT AND PROGRESS OF THE WORK

4.05 *Delays in Contractor's Progress*

SC-4.05 Amend Paragraph 4.05.C by adding the following subparagraphs:

5. Weather-Related Delays

a. If "abnormal weather conditions" as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled.

b. The existence of abnormal weather conditions will be determined on a month-by-month basis.

ARTICLE 5-SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 *Subsurface and Physical Conditions*

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
None		

F. The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
None		

G. Contractor may examine copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents at Plummer Associates, Inc. during regular business hours, or may request copies from Engineer.

5.06 *Hazardous Environmental Conditions*

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	Date of Report	Technical Data
None		

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
None		

ARTICLE 6-BONDS AND INSURANCE

Intentionally Deleted.

6.3 Contractor's Insurance

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability and automobile liability policies must include as additional insureds the following:

E. City of Aubrey, Texas, its officials, officers, employees, contractors, agents, and

representatives *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Employer's Liability	
Each accident	$500,000
Each employee	$500,000
Policy limit	$500,000

F. *Commercial General Liability-Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
2. damages insured by reasonably available personal injury liability coverage, and
3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

G. *Commercial General Liability-Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
   a. Such insurance must be maintained for three years after final payment.
   b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products

and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements subject to Owner's written approval.

H. *Commercial General Liability-Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Contractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. Commercial General Liability-Minimum Policy Limits

Commercial General Liability	**Policy limits of not less than:**
General Aggregate	$2,000,000
Products-Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Bodily Injury and Property Damage-Each Occurrence	$1,000,000

J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	$500,000
Each Accident	$500,000
Property Damage	
Each Accident	$500,000
[or]	
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	$1,000,000

K. Contractor shall meet or exceed the Insurance and Bonding Requirements set forth herein.

6.4 Builder's Risk and Other Property Insurance

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

F. *Builder's Risk Requirements:* The builder's risk insurance must:

1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).

   a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.

   b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.

2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

3. cover expenses incurred in the repair or replacement of any insured property (including

but not limited to fees and charges of contractors, engineers, and architects).

4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier). If this coverage is subject to a sublimit, such sublimit will be a minimum of $500,000.5. extend to cover damage or loss to insured property while in transit. If this coverage is subject to a sublimit, such sublimit will be a minimum of $500,000.

6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.

7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.

8. include performance/hot testing and start-up, if applicable.

9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.

10 include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:

   a. None

11. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:

   a. None

12. If debris removal in connection with repair or replacement of insured property is subject to a coverage sublimit, such sublimit will be a minimum of $100,000.

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

G. *Builder's Risk and Other Property Insurance Deductibles:* The purchaser of any required builder's risk, installation floater, or other property insurance will be responsible for costs not covered because of the application of a policy deductible.

1. The builder's risk policy (or if applicable the installation floater) will be subject to a deductible amount of no more than $1,000 for direct physical loss in any one occurrence.

ARTICLE 7-CONTRACTOR'S RESPONSIBILITIES

7.3 Labor; Working Hours

SC-7.03 Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Regular working hours will be 7:00 a.m. and 6:00 p.m.

2. Owner's legal holidays are New Year, President's Day, Good Friday, Memorial Day,

Independence Day, Labor Day, Thanksgiving Day, the day after Thanksgiving and Christmas Eve and Christmas Day.

SC-7.03 Amend the first and second sentences of Paragraph 7.03.C to state "All Work at the Site must be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday without the prior written permission of Owner."

7.10 Taxes

SC-7.10 Add a new paragraph immediately after Paragraph 7.10.A:

A. Owner is exempt from payment of sales and compensating use taxes of the State of Texas and of cities and counties thereof on all materials to be incorporated into the Work.

1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.

2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

ARTICLE 8-OTHER WORK AT THE SITE

No Supplementary Conditions in this Article.

ARTICLE 9-OWNER'S RESPONSIBILITIES

No Supplementary Conditions in this Article.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.B:

C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:

1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of meeting notes thereof.

2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.

3. Liaison

a. Serve as Engineer's liaison with Contractor. Working principally through

Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.

b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.

4. Review of Work; Defective Work

a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.

b. Observe whether any Work in place appears to be defective.

c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.

5. Inspections and Tests

a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.

b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.

6. *Payment Requests:* Review Applications for Payment with Contractor.

7. Completion

a. Participate in Engineer's visits regarding Substantial Completion.

b. Assist in the preparation of a punch list of items to be completed or corrected.

c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.

d. Observe whether items on the final punch list have been completed or corrected.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.

5 Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11—CHANGES TO THE CONTRACT

No Supplementary Conditions in this Article.

ARTICLE 12—CLAIMS

No Supplementary Conditions in this Article.

ARTICLE 13—COST OF WORK; ALLOWANCES, UNIT PRICE WORK

13.1 Cost of the Work

SC-13.01 Supplement Paragraph 13.01.B.5.c.(2) by adding the following sentence:

The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of Rental Rate Blue Book for Construction Equipment, or the AED Green Book: Rental Rates & Specifications for Construction Equipment.

SC-13.01 Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:

a. For purposes of this paragraph, "small tools and hand tools" means any tool or equipment whose current price if it were purchased new at retail would be less than $500.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

No Supplementary Conditions in this Article.

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

No Supplementary Conditions in this Article.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No Supplementary Conditions in this Article.

ARTICLE 17—INTENTIONALLY DELETED

ARTICLE 18—MISCELLANEOUS

No Supplementary Conditions in this Article.

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TITLE VI
OF THE CIVIL RIGHTS ACT OF 1964

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations: The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, the FHWA, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.
2. Non-discrimination: The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.
3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.
4. Information and Reports: The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or FHWA to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of

another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or FHWA, as appropriate, and will set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Nondiscrimination provisions of this contract, the Recipient will impose such contract sanctions as it or FHWA may determine to be appropriate, including, but not limited to:
    a. withholding payments to the contractor under the contract until the contractor complies, and/or
    b. cancelling, terminating, or suspending a contract, in whole or in part.
6. Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

Appendix B

Clauses for Deeds Transferring United States Property

The following clauses will be included in deeds effecting or recording the transfer of real property, structures, or improvements thereon, or granting interest therein from the United States pursuant to the provisions of Assurance 4:

NOW, THEREFORE, the U.S. Department of Transportation as authorized by law and upon the condition that the (Enter Recipient Name) _____ will accept title to the lands and maintain the project constructed thereon in accordance with all applicable federal statutes, the Regulations for the Administration of all DOT programs, and the policies and procedures prescribed by FHWA of the U.S. Department of Transportation in accordance and in compliance with all requirements imposed by Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Non-discrimination in Federally-assisted programs of the U.S Department of Transportation pertaining to and effectuating the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252; 42 U.S.C. § 2000d to 2000d-4), does hereby remise, release, quitclaim and convey unto (Enter Recipient Name) _____ the all the right, title and interest of the U.S. Department of Transportation in and to said lands described in Exhibit A attached hereto and made a part hereof.

(HABENDUM CLAUSE)

TO HAVE AND TO HOLD said lands and interests therein unto (Enter Recipient Name) _____ and its successors forever, subject, however, to the covenants, conditions, restrictions and reservations herein contained as follows, which will remain in effect for the period during which the real property or structures are used for a purpose for which Federal financial assistance is extended or for another

purpose involving the provision of similar services or benefits and will be binding on the (Enter Recipient Name) _____, its successors and assigns.

The (Enter Recipient Name) _____, in consideration of the conveyance of said lands and interests in lands, does hereby covenant and agree as a covenant running with the land for itself, its successors and assigns, that (1) no person will on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination with regard to any facility located wholly or in part on, over, or under such lands hereby conveyed [,] [and]* (2) that the (Enter Recipient Name) _____ will use the lands and interests in lands and interests in lands so conveyed, in compliance with all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation, Effectuation of Title VI of the Civil Rights Act of 1964, and as said Regulations and Acts may be amended [, and (3) that in the event of breach of any of the above-mentioned non-discrimination conditions, the Department will have a right to enter or re-enter said lands and facilities on said land, and that above described land and facilities will thereon revert to and vest in and become the absolute property of the U.S. Department of Transportation and its assigns as such interest existed prior to this instruction].*

*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.

Appendix C

Clauses for Transfer or Real Property Acquired or Improved Under the Activity, Facility, or Program

The following clauses will be included in deeds, licenses, leases, permits, or similar instruments entered into by the Recipient pursuant to the provisions of Assurance 7(a):

A. The (grantee, lessee, permittee, etc. as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree [in the case of deeds and leases add "as a covenant running with the land"] that:

   1. In the event facilities are constructed, maintained, or otherwise operated on the property described in this (deed, license, lease, permit, etc.) for a purpose for which a U.S. Department of Transportation activity, facility, or program is extended or for another purpose involving the provision of similar services or benefits, the (grantee, licensee, lessee, permittee, etc.) will maintain and operate such facilities and services in compliance with all requirements imposed by the Acts and Regulations (as may be amended) such that no person on the grounds of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities.

B. With respect to licenses, leases, permits, etc., in the event of breach of any of the above Non-discrimination covenants, (Enter Recipient Name) _____ will have the right to terminate the (lease, license, permit, etc.) and to enter, re-enter, and repossess said lands and facilities thereon, and hold the same as if the (lease, license, permit, etc.) had never been made or issued.*

C. With respect to a deed, in the event of breach of any of the above Non-discrimination covenants, (Enter Recipient Name) _____ will have the right to enter or re-enter the lands and

*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.

facilities thereon, and the above-described lands and facilities will there upon revert to and vest in and become the absolute property of the (Enter Recipient Name) _____ and its assigns. *

*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.

Appendix D

Clauses for Construction/Use/Access to Real Property Acquired Under the Activity, Facility, or Program

The following clauses will be included in deeds, licenses, permits, or similar instruments/agreements entered into by the Recipient pursuant to the provisions of Assurance 7(b):

A. The (grantee, licensee, permittee, etc., as appropriate) for himself/herself, his/her heirs, personal representatives, successors in interest, and assigns, as a part of the consideration hereof, does hereby covenant and agree (in the case of deeds and leases add, "as a covenant running with the land") that (1) no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or be otherwise subjected to discrimination in the use of said facilities, (2) that in the construction of any improvements on, over, or under such land, and the furnishing of services thereon, no person on the ground of race, color, or national origin, will be excluded from participation in, denied the benefits of, or otherwise be subjected to discrimination, (3) that the (grantee, licensee, lessee, permittee, etc.) will use the premises in compliance with all other requirements imposed by or pursuant to the Acts and Regulations, as amended, set forth in this Assurance.

B. With respect to (licenses, leases, permits, etc.), in the event of breach of any of the above Nondiscrimination covenants, (Enter Recipient Name) _____ will have the right to terminate the (license, permit, etc., as appropriate) and to enter or re-enter and repossess said land and the facilities thereon, and hold the same as if said (license, permit, etc., as appropriate) had never been made or issued. *

C. With respect to deeds, in the event of breach of any of the above non-discrimination covenants, (Enter Recipient Name) _____ will there upon revert to and vest in and become the absolute property of (Enter Recipient Name) _____ and its assigns. *

*Reverter clause and related language to be used only when it is determined that such a clause is necessary to make clear the purpose of Title VI.

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 4 71, Section 4 7123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.P.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to -ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

SECTION 01 00 00
GENERAL CONSTRUCTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes: Construction General Requirements not included in the General and Supplementary Conditions and in the related Sections listed below.

B. Related Division 01 Sections:

1. Section 01 10 00 “Summary of Work” that expands provisions in Owner/Contractor Agreement and General Conditions by summarizing Work required by Contract Documents.
2. Section 01 12 16 “Sequence of Construction” provides for sequence of construction for various elements.
3. Section 01 32 00 “Construction Progress Documentation” for administrative and procedural requirements for documenting the progress of construction during performance of the Work.
4. Section 01 33 00 “Submittal Procedures” for the procedures for submitting Action, Informational, and Delegated-Design Submittals.
5. Section 01 40 00 “Quality Requirements” for the Quality Assurance and Control requirements and special inspections.
6. Section 01 42 00 “References” for references and definitions.
7. Section 01 43 33 “Manufacturer’s Field Services” for administrative procedure and requirements for manufacturers’ services.
8. Section 01 50 00 “Temporary Facilities and Controls” for the temporary utilities and construction facilities for support, security, and protection.
9. Section 01 60 00 “Product Requirements” for the administrative and procedural requirements for selection of products used in Project; product delivery, storage and handling; manufacturer’s standard warranties on products; special warranties; product substitutions; and comparable products.
10. Section 01 70 00 “Execution Requirements” for the execution of the work.
11. Section 01 73 29 “Cutting and Patching” special procedures for interfacing with existing facilities.
12. Section 01 77 00 “Closeout Procedures” for the administrative and procedural requirements for Contract closeout.
13. Section 01 78 23 “Operation and Maintenance Data” for the emergency, operation, and maintenance manuals for products and equipment.
14. Section 01 78 10 “Project Record Documents” for administrative and procedural requirements for producing and submitting Project Record Documents.
15. Section 01 79 00 “Demonstration and Training” for the administrative and procedural

requirements for instructing Owner’s personnel.

1.3 ALLOWANCES

A. Selection and Purchase:

1. At the earliest practical date after award of the Contract, notify ENGINEER of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.
2. At ENGINEER'S request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.
3. Purchase products and systems selected by ENGINEER from the designated supplier.
4. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

B. Allowances:

1. Allowance shall include cost to CONTRACTOR of specific products and materials ordered by OWNER and/or selected by ENGINEER under allowance and shall include taxes, freight, and delivery to Project site.
2. Unless otherwise indicated, CONTRACTOR’S costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by OWNER and/or selected by ENGINEER under allowance shall be included as part of the Contract Sum and not part of the allowance.
3. Contingency Allowances:
    a. Use the contingency allowance only as directed by ENGINEER for OWNER'S purposes and only by Change Order that indicate amounts to be charged to the allowance.
    b. CONTRACTOR’S overhead, profit, and related costs for products and equipment ordered by OWNER under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.
    c. Change Orders authorizing use of funds from the contingency allowance will include CONTRACTOR'S related costs and reasonable overhead and profit margins.
    d. At Project closeout, credit unused amounts remaining in the contingency allowance to OWNER by Change Order.
4. Testing and Inspecting Allowances:
    a. Testing and inspecting allowances include the cost of engaging testing agencies, actual tests and inspections, and reporting results.
    b. The allowance does not include incidental labor required to assist the testing, cost for incidental labor to assist the testing agency, or costs for retesting if previous tests result in failure. The cost for incidental labor to assist the testing agency shall be included in the Contract Sum.
    c. Costs of services not required by the Contract Documents are not included in the allowance.
    d. At Project Closeout, credit unused amounts remaining in the testing and inspecting allowance to OWNER by Change Order.

1.4 ALTERNATES

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if OWNER decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.5 UNIT PRICES

A. Procedures:

1. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

2. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

3. OWNER reserves the right to reject CONTRACTOR'S measurement of work-in-place that involves use of established unit prices and to have this work measured, at OWNER'S expense, by an independent surveyor acceptable to CONTRACTOR.

1.6 CONTRACT MODIFICATION PROCEDURES

A. Minor Changes in Work: ENGINEER will issue Field Orders authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

B. Proposal Requests:

1. OWNER-Initiated Proposal Requests: ENGINEER will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

a. Proposal Requests issued by ENGINEER are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

b. Within time specified in Proposal Request after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

1) Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

2) Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

3) Include costs of labor and supervision directly attributable to the change.

4) Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available

total float before requesting an extension of the Contract Time.

2. CONTRACTOR-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, CONTRACTOR may propose changes by submitting a request for a change to ENGINEER.
   a. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
   b. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   c. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   d. Include costs of labor and supervision directly attributable to the change.
   e. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
   f. Comply with requirements in Section 01 60 00 “Product Requirements” if the proposed change requires substitution of one product or system for product or system specified.
3. Allowances:
   a. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.
      1) Include installation costs in purchase amount only where indicated as part of the allowance.
      2) If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
      3) Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
      4) OWNER reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.
   b. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or CONTRACTOR’S handling, labor, installation, overhead, and profit. Submit claims within 21-days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. OWNER will reject claims submitted later than 21-days after such authorization.

C. Change Order Procedures: On OWNER’S approval of a Proposal Request, ENGINEER will issue a Change Order for signatures of OWNER and CONTRACTOR.

1.7 PAYMENT PROCEDURES

A. Schedule of Values:

1. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule

    a. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Application for Payment forms with Continuation Sheets, Submittals Schedule, and Contractor's Construction Schedule.

    b. Submit the Schedule of Values to ENGINEER at earliest possible date but no later than ten (10) days before the date scheduled for submittal of initial Applications for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Application for Payment:

    a. Project name and location.

    b. OWNER'S Project Number.

    c. Name of ENGINEER.

    d. ENGINEER'S project number.

    e. CONTRACTOR'S name and address.

    f. Date of submittal.

    g. Application for Payment number.

2. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.

3. Mobilization payment shall not exceed 3 percent of the total Contract amount. Payment will be made as follows:

    a. Payment of 50% will be authorized when CONTRACTOR'S and OWNER'S REPRESENTATIVE field offices are installed at Project site, complete with all-weather access roads, parking area, utilities, and interior furnishings.

    b. Payment of 50% will be authorized when CONTRACTOR commences site preparation and earthwork with equipment and materials sufficiently deployed to maintain progress of work in accordance with the construction schedule.

4. For major items of equipment delivered to the Project site; a maximum payment of ninety (90) percent of the supplier's invoice amount will be made. The remaining ten (10) percent will be made following completion of installation, startup, testing and placement of the equipment in service.

5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

6. Include accepted Schedule of Values for each schedule or portion of lump sum Work, and the unit price breakdown for Work to be paid on a unit price basis.

7. Include separate line item for each Change Order and Work Order Directive executed prior to date of submission. Provide further breakdown of such as requested by ENGINEER.

8. Allowances: Provide a separate line item in the Schedule of Values for each allowance.

Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

9. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as general overhead expense, at CONTRACTOR'S option.
10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

C. Applications for Payment:

1. Each Application for Payment shall be consistent with previous applications and payments as certified by ENGINEER and paid for by OWNER.
    a. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
2. Payment Application Forms: Use one of the following forms for Applications for Payment.
    a. AIA Document G702 and AIA Document G703 Continuation Sheets
    b. AIA Document G702/CMa and AIA Document G703 Continuation Sheets
    c. EJCDC Document 1910-8-E, or
    d. CONTRACTOR'S form, when approved by ENGINEER and OWNER.
3. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of CONTRACTOR. ENGINEER will return incomplete applications without action.
    a. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
    b. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Payment Application Procedures:
    a. Once a month, the CONTRACTOR shall submit to the Owner's Representative one (1) draft copy of the partial pay estimate for review. Owner's Representative shall review and revise, as necessary, and then return the draft to the CONTRACTOR. Allow Owner's Representative seven (7) days minimum to check pay estimate.
    b. CONTRACTOR shall then prepare six (6) original signed copies for the Owner's Representative's signature. Provide one (1) extra original for Owner's Representative to check one more time. (Original signatures are required on all six (6) summary pages and six (6) signature pages. Photocopied signatures will not be accepted.)
    c. One copy shall include waivers of lien and similar attachments if required. Partial pay requests shall be on forms approved by the OWNER.
    d. CONTRACTOR shall use approved Schedule of Values and Bid Schedule for pay items. Provide signature space for CONTRACTOR and OWNER and ENGINEER as designated.

e. Pay Estimate pages should be submitted in this order:

1) Summary of Payment Estimate Values with notarized statement.

2) Attachment A – Total Value of Contract Performed

3) Attachment B – Extra Work on Approved Change Orders

4) Attachment C – Materials on Hand

5) Copies of new "materials on hand" invoices received during the current payment period placed in the order listed on Attachment C. Copies of invoices for prior periods do not need to be submitted again.

6) Signature page

5. After signature is obtained from the Owner's Representative, the CONTRACTOR shall submit the six (6) signed copies to the ENGINEER for review and forwarding to the OWNER for payment.

6. The ENGINEER will review and if he approves shall mail the six (6) copies to the OWNER.

7. CONTRACTOR should always check pay estimate remittance copies for any corrections prior to preparation of the next pay estimate. Just because the payment amount is the same as that submitted does not mean there were no errors.

8. Type written working copies are required.

9. Materials incorporated into the project are tax-exempt. CONTRACTOR is responsible for all taxes related to construction of this project.

D. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.

2. Schedule of Values.

3. Contractor's Construction Schedule (preliminary if not final).

4. Schedule of unit prices.

5. Submittals Schedule (preliminary if not final).

6. List of Contractor's staff assignments.

7. List of Contractor's principal consultants.

8. Copies of building permits.

9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.

10. Initial progress report.

11. Report of preconstruction conference.

12. Certificates of insurance and insurance policies.

E. Contractor's Affidavit. Beginning with the second Application for Payment, each Application shall include a Contractor's Affidavit regarding discharge of payment obligations in accordance with the General Conditions.

F. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a

statement showing an accounting of changes to the Contract Sum.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for OWNER occupancy of designated portions of the Work.

G. Final Payment Application: Submit Final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Requirements of General and Supplementary Conditions for final payment.
2. Evidence of completion of Project closeout requirements.
3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
4. Updated final statement, accounting for final changes to the Contract Sum.
5. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
6. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
7. AIA Document G707, "Consent of Surety to Final Payment."
8. Evidence that claims have been settled, or provide a list of claims CONTRACTOR believes are unsettled.
9. Final, liquidation damages settlement statement.

H. Nonpayment for Rejected or Unused Products:

1. Payment will not be made for the following:
   a. Loading, hauling, and disposing of rejected material.
   b. Quantities of material wasted or disposed of in manner not called for under Contract Documents.
   c. Rejected loads of material, including material rejected after it has been placed by reason of failure of CONTRACTOR to conform to provisions of Contract Documents.
   d. Material not unloaded from transporting vehicle.
   e. Material remaining on hand after completion of work.

I. Partial Payment for Stored Materials and Equipment

1. Partial Payment: No partial payment will be made for materials and equipment delivered or stored unless Shop Drawings or preliminary operation and maintenance manuals are acceptable to ENGINEER.
2. Final Payment: Will be made only for products incorporated in Work; remaining products, for which partial payment have been made, shall revert to CONTRACTOR unless otherwise agreed, and partial payments made for those items will be deducted from final payment.

1.8 PROJECT MANAGEMENT AND COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required obtaining the best results

where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Project closeout activities.
7. Startup and adjustment of systems.

1.9 PROJECT MEETINGS

A. General: Owner’s Representative will schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Meeting Notes: Record significant discussions and agreements achieved. Distribute the meeting notes to everyone concerned within 7 days of the meeting.

B. Preconstruction Conference: ENGINEER will schedule a preconstruction conference before starting construction, at a time convenient to OWNER, ENGINEER, and CONTRACTOR, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of OWNER, ENGINEER, and their consultants; CONTRACTOR and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Meeting Notes: ENGINEER will record and distribute meeting notes.

C. Pre-installation Conferences: CONTRACTOR will conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.

1. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

2. Reporting: CONTRACTOR shall distribute meeting notes to each party present and to parties who should have been present, as well as to the OWNER and ENGINEER.

D. Progress Meetings: Unless otherwise specified, conduct progress meetings at monthly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of OWNER and ENGINEER, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve notes from previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

3. Meeting Notes: ENGINEER will record and distribute to Contractor the meeting notes.

4. Reporting: CONTRACTOR shall distribute notes from the meeting to each subcontractor present and to parties who should have been present.

a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Facility Startup Meetings:

1. Schedule a minimum of two facility startup meetings. The initial meeting will be held prior to submitting Facility Startup and Performance Demonstration Plan. The meeting shall initiate the preliminary discussions regarding the Plan.

2. Agenda items will include as a minimum; the objectives of the equipment testing and facility startup, what actions and work will be included, the coordination between the various parties, and potential problems associated with startup.

3. Attendees will include:

a. CONTRACTOR.

b. CONTRACOR’S designated quality control representative.

c. Subcontractors and manufacturer’s representatives designate by CONTRACTOR.

d. ENGINEER’S representatives.

e. OWNER’S operating and maintenance personnel.

f. Others as required by Contract Documents.

g. Other Meetings: As requested by OWNER, ENGINEER, and CONTRACTOR.

F. Request for Information (RFI):

1. Procedure: Immediately on discovery of the need for interpretation or information of the Contract Documents, and if not possible to request interpretation at Project

meeting, prepare and submit an RFI in the form specified.

a. RFIs shall originate with CONTRACTOR. RFIs submitted by entities other than CONTRACTOR will be returned with no response.

b. Coordinate and submit RFIs in a prompt manner so as to avoid delays in CONTRACTOR'S work or work of subcontractors.

2. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

a. Project name.

b. Date.

c. Name of CONTRACTOR.

d. Name of ENGINEER.

e. RFI number, numbered sequentially.

f. Specification Section number and title and related paragraphs, as appropriate.

g. Drawing number and detail references, as appropriate.

h. Field dimensions and conditions, as appropriate.

i. CONTRACTOR'S suggested solution(s). If CONTRACTOR'S solution(s) impact the Contract Time or the Contract Sum, CONTRACTOR shall state impact in the RFI.

j. Contractor's signature.

k. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

3. ENGINEER'S Action: ENGINEER will review each RFI, determine action required, and return it. Allow seven working days for ENGINEER'S response for each RFI. RFIs received after 1:00 p.m. local time will be considered as received the following working day.

4. The following RFIs will be returned without action:

a. Requests for approval of submittals.

b. Requests for approval of substitutions.

c. Requests for coordination information already indicated in the Contract Documents.

d. Requests for adjustments in the Contract Time or the Contract Sum.

e. Requests for interpretation of ENGINEER'S actions on submittals.

f. Incomplete RFIs or RFIs with numerous errors.

5. ENGINEER'S action may include a request for additional information, in which case ENGINEER'S time for response will start again.

6. ENGINEER'S action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for CONTRACTOR to submit Change Proposal.

7. If CONTRACTOR believes the RFI response warrants change in the Contract Time or the Contract Sum, notify ENGINEER in writing within 10 days of receipt of the RFI response.

G. On receipt of ENGINEER'S action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify ENGINEER within seven days if CONTRACTOR disagrees with response.

1. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly.

1.10 CONSTRUCTION PROGRESS DOCUMENTATION

A. Definitions:

1. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
    a. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
    b. Predecessor Activity: An activity that precedes another activity in the network.
    c. Successor Activity: An activity that follows another activity in the network.
2. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
3. Float: The measure of leeway in starting and completing an activity.
    a. Float time is not for the exclusive use or benefit of either OWNER or CONTRACTOR, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.
4. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.
5. Major Area: An area of construction, a separate facility, or a similar significant construction element.

B. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

C. Contractor's Construction Schedule, General:

1. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
    a. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
2. Activities: Treat each facility or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
    a. Activity Duration: Define activities so no activity is longer than approximately 20 days.
    b. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
    c. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
    d. Substantial Completion: Indicate completion in advance of date established for

Substantial Completion, and allow time for ENGINEER'S administrative procedures necessary for certification of Substantial Completion.

3. Constraints: Include constraints and work restrictions indicated in the Contract Documents and show how the sequence of the Work is affected.
4. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
5. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

D. Contractor's Construction Schedule (GANTT Chart)

1. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
2. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
3. For construction activities that require 3 months or longer completing, indicate an estimated completion percentage in 10 percent increments within time bar.

1.11 PHOTOGRAPHIC DOCUMENTATION

A. Preconstruction Photographs: Before starting construction, take color photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by ENGINEER.

1. Flag construction limits before taking construction photographs.
2. Take a minimum of ten (10) photographs to show existing conditions adjacent to property before starting the Work.
3. Take photographs of existing facilities either on or adjoining property to accurately record physical conditions at start of construction.

B. Periodic Construction Photographs: Take a minimum of two (2) color photographs of each structure or area under construction monthly, coinciding with the cutoff date associated with each Application for Payment. As approved by Owner's Representative, select vantage points to show status of construction and progress since last photographs were taken.

C. Final Construction Photograph. Provide a minimum of five (5) color photographs of Project site following construction."

1.12 REFERENCES

A. Definitions:

1. General: Basic Contract definitions are included in the Conditions of the Contract.
2. "Approved": When used to convey ENGINEER'S action on CONTRACTOR'S submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
3. "Directed": A command or instruction by ENGINEER. Other terms including

"requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

4. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
5. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
6. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
7. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
8. "Provide": Furnish and install, complete and ready for the intended use.
9. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

B. Industry Standards:

1. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
2. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
3. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
4. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.13 PRODUCT REQUIREMENTS

A. Substitution Requests:

1. Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title; Drawing numbers and titles; sufficient information for review by ENGINEER; CONTRACTOR'S certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated; and CONTRACTOR'S waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
2. ENGINEER'S Action: If necessary, ENGINEER will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. ENGINEER will notify CONTRACTOR of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or

documentation, whichever is later.

a. Form of Acceptance: Change Order or Field Order.

b. Use product specified if ENGINEER cannot make a decision on use of a proposed substitution within time allocated.

B. Product Delivery, Storage, and Handling:

1. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

2. Delivery and Handling:

a. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

b. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

c. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

d. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

3. Storage:

a. Store products to allow for inspection and measurement of quantity or counting of units.

b. Store materials in a manner that will not endanger Project structure.

c. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

d. Store cementitious products and materials on elevated platforms.

e. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

f. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

g. Protect stored products from damage and liquids from freezing.

h. Off-site storage of materials and equipment shall be the sole responsibility of the CONTRACTOR.

4. Extra Materials, Special Tools, Test Equipment, and Expendables:

a. Divisions 02 through 48 Sections for specific requirements.

b. Schedule:

1) Ensure shipment and delivery occurs concurrent with shipment of product.

2) Transfer to OWNER upon acceptance by CONTRACTOR of shipment.

c. Packaging and Shipment:

1) Package and ship items to avoid damage during long term storage in original cartons or in appropriately sized, hinged-cover, wood, plastic or

metal boxes.

2) Prominently display on each package: Part number, consistent with Operation and Maintenance Manual identification system; equipment description, quantity of parts; and equipment manufacturer.

d. Deliver to designation location as directed by Owner's Representative.

C. Reuse of Existing Material:

1. Except as specifically indicated or specified, materials and equipment removed from existing facilities shall not be used in the completed Work.

2. For materials and equipment designated for reuse in the Work:

a. Use special care in removal, handling, storage, and installation to ensure proper function in the completed Work.

b. Arrange for transportation, storage and handling of the products when offsite storage, restoration, or renovation. All costs associated with this work are the CONTRACTOR'S responsibility.

D. Work in Accordance with Manufacturer's Instructions:

1. When the specification Section requires the Work to be accomplished in accordance with "manufacturer's instructions", obtain and distribute copies of such instructions to parties involved in the installation. Provide two copies to the Owner's Representative and maintain one set at the Project site.

2. Handle, install, connect, clean, condition and adjust products in strict accordance with the manufacturer's instructions and in conformity with the Contract Documents. Do not omit any preparatory step or installation procedures. In case of conflict between job conditions or Contract Documents with manufacturer's instructions notify Owner's Representative.

3. Upon completion of installation, obtain Certificate of Installation from manufacturer's representative.

1.14 EXECUTION REQUIREMENTS

A. Refer to Section 01 70 00 "Execution Requirements."

1.15 PROJECT RECORD DOCUMENTS

A. Submittals Required:

1. Record Drawings: Submit one set of marked-up Record Prints.

2. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.

3. Record Product Data: Submit one copy of each Product Data submittal.

B. Record Drawings:

1. Record Prints: CONTRACTOR shall maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

a. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.

1) Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.

2) Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

b. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

1) Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

2) Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

2. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

a. Include identification on cover sheets.

b. Identification: As follows:

1) Date.

2) Designation "PROJECT RECORD DRAWINGS."

3) Name of ENGINEER.

4) Name of CONTRACTOR.

1.16 POST FINAL INSPECTION

A. Approximately one month before the end of the General Warranty period; the ENGINEER will make arrangements with the OWNER and CONTRACTOR for a post final inspection. Written notice will be sent the above parties informing them of the date and time for the inspection.

1. After the inspection, the ENGINEER will inform the CONTRACTOR of any corrective action required.

B. The Special Warranties for equipment as described in Division 01 Section 01 60 00 “Product Requirements” Part 1.7 paragraph titled “Product Warranties” and other work as described in other Sections of the specifications will still be in force.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 10 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Project Identification and Contact Information.
   2. Scope of Work.
   3. Type of the Contract.
   4. Work phases.
   5. Work under other contracts.
   6. Limits of subcontractor participation.
   7. Products ordered in advance.
   8. Owner-furnished products.
   9. Use of premises.
   10. Owner's occupancy requirements.
   11. Work restrictions.
   12. Special Formats and Conventions.
   13. Permits.

B. Related Sections include the following:
   1. Section 01 12 16 “Sequence of Construction” for requirements for the construction sequence of various work elements during the construction improvements and expansion of an existing facility.

1.3 PROJECT IDENTIFICATION AND CONTACT INFORMATION

A. Project Identification: City of Aubrey Hill St. and 428 Ground Storage Tanks Maintenance.
   1. Project Location:
      a. Hill St Ground Storage Tank – 618 Hill St., Aubrey, TX 76227
      b. 428 Ground Storage Tank – 813 Sherman Dr., Aubrey, TX 76227

B. OWNER: City of Aubrey.
   1. OWNER’S Representative: Leanne Wilson, Assistant City Manager, 107 S. Main St., Aubrey, Texas 76227, (940) 440-9343.

C. ENGINEER: Plummer Associates, Inc., 1320 South University Drive, Suite 300, Fort Worth, Texas 76107.

1.4 SCOPE OF WORK

A. The Work, under this Contract, consists of furnishing all labor, supervision, equipment, tools, materials, transportation, services, and related items necessary for the construction and completions, start-up and placing in service the Project described in the following paragraphs.

1. The Work includes, but is not necessarily limited to, modifications or additions to the following existing facilities:
    a. Hill St. Ground Storage Tank
        1) Installation of a new safety gate on the water outlet.
        2) Replace damaged roof support braces (to be determined following abrasive grit blast).
        3) Install new reverse level float gauge.
        4) Cleaning of tank interior.
        5) Abrasive grit blast and recoat interior and exterior of tank.
        6) Abrasive grit blast and recoat exterior of pump building.
    b. 428 Ground Storage Tank
        1) Remove safety cage from existing ladder and install rigid track fall arrest system.
        2) Install new reverse level float gauge.
        3) Cleaning of tank interior.
        4) Abrasive grit blast and recoat interior and exterior of tank. The tank exterior will include the school logo.
2. Testing of all systems to ensure performance in accordance with manufacturer's design and as specified herein; perform necessary adjustment as required, reporting proper functioning to ENGINEER; and all required plant start-up services.
3. Unless otherwise specified, CONTRACTOR shall provide the following:
    a. Temporary facilities and controls as specified in Section 01 50 00 "Temporary Facilities and Controls".
    b. Provide quality control, material testing, field-testing, and related services in accordance with Section 01 40 00 "Quality Requirements".
    c. Provide training of OWNER'S operation and maintenance personnel in accordance with Section 01 79 00 "Demonstration and Training".
    d. Field surveying required for support of construction operations.
    e. Applicable permits, licenses and jurisdictional inspections, certificate of occupancy, and related work as necessary for OWNER to assume operation of facility.

1.5 TYPE OF CONTRACT

A. Project will be constructed under a single prime contract.

1.6 LIMITS OF SUBCONTRACTOR PARTICIPATION

A. It is the intent of these Contract Documents that a General Contractor completes the Project having the capability to perform a substantial percentage a minimum of forty (40) percent of the total Project. The apparent low bidder for the Project shall submit a list of work to be performed by subcontractors and materials purchased directly by subcontractors, with their estimated dollar value for consideration. Contractors may be disqualified if more than sixty (60) percent of the total Project is to be performed by subcontractors.

1.7 USE OF PREMISES

A. General: CONTRACTOR shall have limited use of premises for construction operations as indicated on Drawings by the Contract limits.

B. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to areas where work is permitted.
2. OWNER Occupancy: Allow for OWNER occupancy of Project site.
3. Driveways and Entrances: Keep driveways and entrances serving facilities clear and available to OWNER, OWNER'S employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

C. Use of Existing Facilities: Maintain existing building, structures and/or site elements in a working condition throughout construction period. Repair damage caused by construction operations. Protect any facility and their occupants during construction period.

D. The CONTRACTOR should be aware that additional information and coordination may be required in order to enter and to bring materials and equipment into the project site. Delays should be expected. All costs due to this additional information, coordination and resultant delays shall be subsidiary to the cost of the project.
   1. The CONTRACTOR shall provide at the beginning of the project with updates as necessary:
      a. List of employees
      b. Badges for employees (photo ID)
      c. Inform OWNER of working hours.
   2. Information on all visitors on CONTRACTOR-related business may be required from the CONTRACTOR during the project, including subcontractor employees, manufacturer's representatives, suppliers, and truck drivers.

1.8 OWNER'S OCCUPANCY REQUIREMENTS

A. Full OWNER Occupancy: OWNER will occupy site during entire construction period. Cooperate with OWNER during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with OWNER'S day-to-day operations. Maintain existing exits, unless otherwise indicated.
   1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from OWNER and authorities having jurisdiction.
   2. Provide not less than 72-hours notice to OWNER of activities that will affect OWNER'S operations.

B. OWNER Occupancy of Completed Areas of Construction: OWNER reserves the right to occupy and to place and install equipment in completed areas of Project, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
   1. ENGINEER will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before OWNER occupancy.
   2. Obtain a Certificate of Occupancy from authorities having jurisdiction before OWNER occupancy.
   3. Before partial OWNER occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, OWNER will operate and maintain mechanical and electrical systems serving occupied portions of facilities.
   4. On occupancy, OWNER will assume responsibility for maintenance and custodial service for occupied portions of building.

1.9 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed at the site during normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except otherwise indicated.
   1. Weekend Hours: 7:00 a.m. to 5:00 p.m., with written notification to OWNER 48 hours in advance.
   2. Early Morning Hours: Contractor shall minimize early morning hours or late evening hours of work, and shall comply with local requirements of authorities having jurisdiction for restrictions on noisy work. A variance shall be obtained before proceeding with the work.
   3. Hours for Utility Shutdowns: Tuesday through Thursday, no utility shutdown on Monday or Friday.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by OWNER or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify ENGINEER not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without ENGINEER'S written permission.

1.10 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using a 50-division format and CSI "Master Format" numbering system.
   1. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.

B. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
   2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by CONTRACTOR. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by CONTRACTOR or by others when so noted.
      a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
   3. Additional meaning of language used may be found in the General Conditions Article "Defined Terms and Terminology."

1.11 PERMITS

A. Attention is directed to the requirements of the General Conditions regarding obtaining permits. The CONTRACTOR shall obtain all applicable permits in connection with the Work including a stormwater discharge permit. The Bid Prices shall include the costs, when required, for obtaining all required permits, as well as performing the work in accordance with the permit requirements.

B. The CONTRACTOR shall obtain building permits from the City; however, there will not be any payment of fees to the City for the permits. The required City permits are the building permit, the mechanical permit, and the electrical permit.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 12 16
SEQUENCE OF CONSTRUCTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and Division 01 Specification Sections, apply to this Section.

1.2 GENERAL

A. Schedules of connections, renovations and modifications required after startup shall be submitted to the OWNER for approval, and all such items shall be coordinated throughout the entire construction period.

B. The CONTRACTOR shall prepare and submit a project schedule within 30 days of beginning work, outlining the schedule and time requirements for each item involving an existing piece of equipment. No payment shall be made until these items are received.

C. The CONTRACTOR shall notify the OWNER at least 14 days in advance and again three (3) days prior to beginning work on a particular area, and coordinate with the OWNER the specific items to be isolated and duration for each. Obtain written approval from the OWNER prior to each shutdown. High demand conditions or equipment outages may require the rescheduling of an approved shutdown. Any cost associated with rescheduling will be subsidiary to Project.

D. The contractor shall obtain written approval from the Owner for shutdowns of each tank, including the start dates and durations. All shutdowns must be coordinated around peak demand. No shutdowns will be allowed from May 1st through September 30th. If demand increases due to increased temperatures, shutdowns previously approved by the OWNER may need to be rescheduled at the OWNER'S discretion. It is the CONTRACTOR'S responsibility to coordinate any required rescheduling with the OWNER.

E. After startup, the CONTRACTOR shall not operate any valves or equipment on the site unless directed to do so by the OWNER.

F. Prior to beginning work, the CONTRACTOR shall have onsite all materials, equipment, and personnel necessary to complete the work in the time scheduled. The CONTRACTOR shall also perform all possible tasks to the most complete state possible prior to shutdowns. All exposed bolts and nuts on valves or fittings which are to be disassembled shall be removed and replaced one at a time prior to shutdown to assure as timely progress as possible.

G. Failure of the CONTRACTOR to properly plan and perform the work in the prescribed manner may result in discharge of inadequately treated wastewater. In this case, the CONTRACTOR may be liable for payment of fines, fees or other charges imposed upon the OWNER by state or federal regulatory agencies, and all other costs associated with the inadequately treated discharge.

H. Access to all site facilities must be maintained at all times.

I. Existing plugged pipelines, in which water has been standing, shall have to be cleaned of debris prior to connecting to a new pipeline.

J. The CONTRACTOR shall coordinate and schedule each task necessary to complete all work within the time allowed for the project. Specific connection coordination, shutdown, and out of service (downtime) limitations, but not limited to, are described in paragraph 1.3.

K. The sequencing may require the CONTRACTOR to perform work such as installing temporary or permanent plugs and/or diversion facilities in structures that are online. The specifics related to flow diversion and temporary plugging means and methods are the responsibility of the CONTRACTOR, however, the CONTRACTOR'S proposed work operations and schedules shall be submitted to the OWNER for review.

L. Piping Interconnections Requirements. All testing of pipes to be connected shall be completed and test reports furnished to the ENGINEER prior to making connections.

1. Drain system connections should generally not require prior notification to proceed unless the existing pipe must be temporarily plugged or blocked for the connection.
2. Potable water connections require advance notification and concurrence from the OWNER prior to isolating or shutting down the system for connection. Potable pipes should be flushed and pressure tested prior to connection and disinfected following the connection. CONTRACTOR shall coordinate these items.
3. Reduce the number of shutdowns required for piping systems by combining as many connections at the same time as feasible.
4. Piping connections are critical and shall be fully coordinated and shall be expedited and done in a continuous manner upon initiation. These pipes generally do not have isolation valves or parallel pipes and require shutting down the treatment process for connection.
5. Time shall be allowed for shutting down the process and dewatering the existing tanks in addition to the actual connection time. CONTRACTOR shall provide all equipment, tools and labor to dewater the pipes for connections. This process water shall be contained in the facilities and not allowed to discharge over the ground or to the surface drainage systems. Generally, the time period allowed for these connections will not exceed four hours total unless approved in writing by the OWNER.
6. All shutdowns must be coordinated with and approved by the OWNER. OWNER will not allow work to be performed in a series of shutdowns on back-to-back nights. Pipe connections shall be completed within a four-hour period at night during low flow periods, or alternate means to divert flow shall be provided.
7. Since the flow into the plant varies over the course of a day; when pumps are used for diversions, size pumps for the range of flows the plant is experiencing at that time. CONTRACTOR shall have an employee on site 24 hours a day to observe that the pumps are operating continuously.

M. PROTECTION OF EXISTING STRUCTURES AND UTILITIES

1. Where excavation or demolition endangers adjacent structures (including fences) and utilities, the CONTRACTOR shall at his own expense carefully support and protect all such structures and/or utilities to prevent failure or settlement. Where it is necessary to move services, poles, guy wires, pipelines or other obstructions, the CONTRACTOR shall notify and cooperate with the utility owner.
2. In case damage to an existing structure or utility occurs, whether failure or settlement, the CONTRACTOR shall restore the structure or utility to its original condition and position without compensation from the OWNER. The CONTRACTOR shall protect any plant equipment in construction areas, which remain in service during construction.

3. CONTRACTOR shall repair or replace all damaged street surfaces, driveways, sidewalks, curb and gutter, fences, drainage structures, or other structures, to the satisfaction of the ENGINEER and the OWNER. Structures shall be restored to a condition equal to or better than the original condition and of a similar material and design. The costs of such repair or replacement shall be borne by the CONTRACTOR and shall be included in the Proposal.
4. The OWNER and the ENGINEER assume no responsibility for failure to show any or all structures or utilities on the Plans, or to show them in their exact locations. It is mutually agreed that such failure shall not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or require the building of special work, provisions for which are not made in the Plans and Proposal, in which case the provisions in these Specifications for extra work shall apply.
5. It is anticipated that some utilities exist which are not shown on the Plans. The CONTRACTOR, prior to ordering material and beginning work, shall make an independent survey to locate and identify the type and size of all existing piping and valves in the construction area, using hand excavation if necessary.
6. The CONTRACTOR shall keep an accurate record of the location, depth, size, type of material, and type of service of all underground utilities encountered during construction. All piping, valves, electrical conduits, etc. in the construction area shall be protected as necessary, in a manner acceptable to the ENGINEER. No additional compensation will be considered for the protection of any of these items whether shown on the Plans or not.
7. No claims for delays will be considered as a result of encountering obstructions or conflicts not shown on the Plans. It is the sole responsibility of the CONTRACTOR to confirm the location of all subsurface piping, electrical conduits, etc., which affect the prosecution of his work prior to ordering materials or beginning work.

1.3 CONSTRUCTION SEQUENCE FOR SPECIFIC ITEMS

A. Work at the 428 Ground Storage Tank shall be completed 30 days prior to removing the Hill St. Ground Storage Tank from service.

B. 428 GROUND STORAGE TANK

1. Tank openings, supports, and other tank modifications required for adding the reverse level float gauge shall be completed prior to recoating the tank. Reverse level float gauge shall be installed after tank exterior has been recoated.
2. Existing ladder and safety cage shall be removed from tank prior to abrasive grit blasting. Existing ladder with new rigid rail fall arrest system shall be reinstalled after tank exterior has been repainted.

C. HILL ST GROUND STORAGE TANK

1. The Hill St Tank interior shall be cleaned and abrasive grit blasted before determination can be made as to whether roof support braces need repair or replacement. Modifications to roof support braces shall not commence until approved by the Owner and Engineer.
2. Safety grate on interior water outlet shall be installed after tank interior has been cleaned and abrasive grit blasted.

3. Tank openings, supports, and other tank modifications required for adding the reverse level float gauge shall be completed prior to recoating the tank. Reverse level float gauge shall be installed after tank exterior has been recoated.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on the Project including project meetings.

1.2 RELATED DOCUMENT

A. Division 1 sections including but not limited to Section 01 20 00 “Project Administration”, 01 77 00 “Closeout Procedures”, and 01 78 39 “Project Record Documents.”

1.3 PROJECT COORDINATION

A. Construction Operations:

1. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation.
    a. Schedule construction operations in sequence required obtaining the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
    b. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
    c. Make adequate provisions to accommodate items scheduled for later installation.
    d. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Administrative Procedures:

1. Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
    a. Preparation of Contractor's Construction Schedule.
    b. Preparation of the Schedule of Values.
    c. Installation and removal of temporary facilities and controls.
    d. Delivery and processing of submittals.
    e. Progress meetings.
    f. Project closeout activities.
2. Startup and adjustment of systems.

1.4 PROJECT MEETINGS

A. Resident Project Representative

1. The Resident Project Representative (RPR) will schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
    a. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
    b. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
    c. Meeting notes: Record significant discussions and agreements achieved. Distribute the meeting notes to everyone concerned within 7 days of the meeting.

B. Preconstruction Conference:
1. ENGINEER will schedule a preconstruction conference before starting construction, at a time convenient to OWNER, ENGINEER, and CONTRACTOR, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
    a. Attendees: Authorized representatives of OWNER, ENGINEER, and their consultants; CONTRACTOR and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
    b. Meeting notes: ENGINEER will record and distribute meeting notes.

C. Pre-installation Conferences:
1. CONTRACTOR will conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.
    a. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
    b. Reporting: CONTRACTOR shall distribute meeting notes to each party present and to parties who should have been present, as well as to the OWNER and ENGINEER.

D. Progress Meetings:
1. Unless otherwise specified, conduct progress meetings at monthly intervals. Coordinate dates of meetings with preparation of payment requests.
    a. Attendees: In addition to representatives of OWNER and ENGINEER, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
    b. Agenda: Review and correct or approve meeting notes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
        1) Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule

revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

c. Meeting notes: ENGINEER will record and distribute to Contractor the meeting notes.

d. Reporting: CONTRACTOR shall distribute meeting notes of the meeting to each subcontractor present and to parties who should have been present.

1) Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Facility Startup Meetings:

1. Schedule a minimum of two facility startup meetings. The initial meeting will be held prior to submitting Facility Startup and Performance Demonstration Plan. The meeting shall initiate the preliminary discussions regarding the Plan.
2. Agenda items will include as a minimum; the objectives of the equipment testing and facility startup, what actions and work will be included, the coordination between the various parties, and potential problems associated with startup.
3. Attendees will include:
   a. CONTRACTOR.
   b. CONTRACTOR'S designated quality control representative.
   c. Subcontractors and Manufacturer's representatives designate by CONTRACTOR.
   d. ENGINEER'S representatives.
   e. OWNER'S operating and maintenance personnel.
   f. Others as required by Contract Documents.
   g. Other Meetings: As requested by OWNER, ENGINEER, and CONTRACTOR.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

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SECTION 01 31 24
INTERNET-BASED CONSTRUCTION MANAGEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. The ENGINEER will subscribe to and manage an Internet-based construction management system specific to this project.

B. The project website will provide server space and secured access to staff members representing the OWNER, ENGINEER, and CONTRACTOR. Each user will have a separate log-in name and password to access the website.

C. Contract management related documents will be submitted, tracked, responded to, and made available to the OWNER, ENGINEER, and CONTRACTOR over the Internet.

1.2 REQUIREMENTS

A. The CONTRACTOR will be required to make all submittals in electronic format, unless additional hard copies are requested. The required format will be discussed at the preconstruction meeting. The contractor shall also submit 2 hard copies of each shop drawing, O&M Manual, and equipment test report for the ENGINEER's review. The software product to be chosen will support multiple file formats and provide viewing and markup capability. See software products in "Part 2 - Products" below.

B. The website includes a secured document management system for storing and making available to the project team the following:
   1. Ability to store files and correspondence.
   2. Latest drawings and specifications.
   3. Project progress photos.

C. The website will include the following database driven applications. The system is designed to inform team members regarding new or updated documents and automatic task assignment and overdue notifications. The following items shall be entered, submitted, tracked, and responded to on-line.
   1. Meeting Notes
   2. Supplemental Instructions
   3. Field Reports
   4. CTR (Certified Test Reports)
   5. RFIs (Requests For Information)
   6. CMR (Contract Modification Request)
   7. Shop Drawings/Submittals
   8. PCMs (Proposed Contract Modifications)
   9. Change Orders
   10. Field Orders
   11. Contractor's Daily Reports
   12. RPR's Daily Field Report
   13. Contractor's Storm Water Pollution Prevention Inspections
   14. Applications for Payment with Schedule of Values,
   15. Payment Forecast Schedules

16. Construction Schedule.

1.3 ARCHIVES

A. The chosen web based project management application is capable of archiving all files on the website periodically.

B. All data from the website, such as RFIs, Submittals, etc. will be available in the archive.

PART 2 - PRODUCTS

A. General information on the software product to be used can be obtained by looking at the following website:

Procore

https://www.procore.com/

B. The specific site used by the Engineer will be sent to the Contractor via email with instructions on accessing the site.

PART 3 - EXECUTION

A. TRAINING: Training by the Vendor is available, but not required. The Contractor may ask Engineer questions regarding the use of the system. Vendor training expenses will be borne by the Contractor.

B. SUPPORT: Software support will be available by the software vendor to all users of the project.

C. OPERATION: Contractor shall maintain a PC system on the jobsite including high-speed access to the Internet and ability to scan documents.

D. DURATION: The website will be active during construction and a minimum of 3 months past final completion. The Owner will have the option to continue use of the website after completion of the project.

E. ARCHIVES: All files on the website will be archived every quarter and at the end of the project. These archives will be made available to the Contractor for download over the Internet.

END OF SECTION

SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Submittals Schedule.
   3. Daily construction reports.
   4. Field condition reports.

B. Related Sections include the following:
   1. Section 01 00 00 "General Requirements" for submitting the Schedule of Values and for submitting and distributing meeting and conference notes.

1.3 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Float: The measure of leeway in starting and completing an activity.
   1. Float time is not for the exclusive use or benefit of either OWNER or CONTRACTOR, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

E. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

F. Major Area: An area of construction, a separate facility, or a similar significant construction element.

1.4 SUBMITTALS

A. Submittals Schedule: Submit four copies of schedule. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for ENGINEER'S final release or approval.

B. Preliminary Network Diagram: Submit two opaque copies of each submittal, large enough to show entire network for entire construction period. Show logic ties for activities.

C. Contractor's Construction Schedule: Submit two opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
   1. Submit an electronic copy of schedule, using software indicated, on CD-R, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.

D. CPM Reports: Concurrent with CPM schedule, submit three copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.
   1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.
   2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.
   3. Total Float Report: List of all activities sorted in ascending order of total float.

E. Daily Construction Reports: Submit two copies at weekly intervals.

F. Field Condition Reports: Submit two copies at time of discovery of differing conditions.

1.5 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
   1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
   2. Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
   1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each facility or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
   1. Activity Duration: Define activities so no activity is longer than approximately 20 days.
   2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
   3. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
   4. Startup and Testing Time: Include time for equipment testing and facility startup.
   5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for ENGINEER’S administrative procedures necessary for certification of Substantial Completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
      a. Coordination with existing construction.
      b. Limitations of continued occupancies.
      c. Uninterruptible services.
      d. Partial occupancy before Substantial Completion.
      e. Use of premises restrictions.
      f. Provisions for future construction.
      g. Seasonal variations.
      h. Environmental control.
   2. Work Stages: Indicate important stages of construction for each major portion of the Work.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, East Channel Substantial Completion, Project Substantial Completion, and Final Completion.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
   1. For construction activities that require 3 months or longer completing, indicate an estimated completion percentage in 10 percent increments within time bar.

2.4 CONTRACT TIME

A. Contract time can not be changed by the submission of progress changes. Contract time can only be modified by approved Change Order.

2.5 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site.
   2. Equipment at Project site.
   3. Material deliveries.
   4. High and low temperatures and general weather conditions.
   5. Accidents.
   6. Stoppages, delays, shortages, and losses.
   7. Meter readings and similar recordings.
   8. Orders and requests of authorities having jurisdiction.
   9. Services connected and disconnected.
   10. Equipment or system tests and startups.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
   1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: Distribute copies of approved schedule to ENGINEER, OWNER, separate contractors, testing and inspecting agencies, and other parties identified by CONTRACTOR with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION

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SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

B. Related Sections include the following:
   1. Section 01 77 00 "Closeout Procedures" for submitting warranties.
   2. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
   3. Section 01 78 10 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   4. Section 01 79 00 "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of Owner's personnel.
   5. Divisions 02 through 46 for specific requirements for submittals in those Sections.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information that requires ENGINEER'S responsive action.

B. Informational Submittals: Written information that does not require ENGINEER'S responsive action. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that requires sequential activity.
   2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
      a. ENGINEER reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
   3. Submittals shall be made electronically and sent to the ENGINEER via email, FTP site, or other means coordinated with the ENGINEER. Also, submit two hard copies of each document to the ENGINEER.

B. Submittals Schedule: Comply with requirements in Section 01 32 00 "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on ENGINEER'S receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
   1. Initial Review: Allow 21 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. ENGINEER will advise CONTRACTOR when a submittal being processed must be delayed for coordination.
   2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
   3. Resubmittal Review: Allow 21 days for review of each resubmittal.

D. Identification: Place a permanent label or title block on each submittal for identification.
   1. Indicate name of firm or entity that prepared each submittal on label or title block.
   2. Provide a space approximately on label or beside title block to record CONTRACTOR'S review markings (Green in color).
   3. Include the following information on label for processing and recording action taken:
      a. Project name.
      b. Date.
      c. Name and address of ENGINEER.
      d. Name and address of CONTRACTOR.
      e. Name and address of subcontractor.
      f. Name and address of supplier.
      g. Name of manufacturer.
      h. Submittal number shall be by means of a specification number, a chronological order, and a letter suffices to indicate number of times submitted.
         1) Submittal number shall use Specification Section number followed by a hyphen and then a sequential number (e.g., 06 10 00-01). Resubmittals shall include an alphabetic suffix after another hyphen (e.g., 06 10 00-01-A).
         2) Operational and Maintenance Manuals submitted shall be identified with the same number as it's corresponding equipment submittal. (e.g., 11 30 00-DRAFT), indicates preliminary O&M Manual for equipment submitted under Section 11 30 00.
      i. Number and title of appropriate Specification Section.
      j. Drawing number and detail references, as appropriate.
      k. Location(s) where product is to be installed, as appropriate.
      l. Other necessary identification.

E. Deviations from Contract Documents: CONTRACTOR shall highlight, encircle, or otherwise specifically identify deviations (Green in color) from the Contract Documents on submittals. Requests for deviation shall be by Contractor's Modification Request in accordance with the requirements of Section 01 00 00 "Construction General Requirements".

F. Additional Copies: Unless additional copies are required for final submittal, and unless ENGINEER observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. ENGINEER will return submittals, without review, received from sources other than Contractor.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
   1. Note date and content of previous submittal.
   2. Note date and content of revision in label or title block and clearly indicate extent of revision.
   3. Resubmit submittals until they are marked “REVIEWED."
   4. For resubmittals, CONTRACTOR shall provide the entire and complete submittal for project documentation. If the CONTRACTOR provides only the portions required by the previous shop drawing review, then the ENGINEER may elect to return the submittal without review.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, and authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Use only final submittals with mark indicating “REVIEWED" or “Furnished As Corrected”.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
   1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
   2. Mark each copy of each submittal to show which products and options are applicable.
   3. When pre-printed catalog information is submitted, clearly identified item to be submitted with arrow or other mark. Catalog information not marked clearly shall be returned.
   4. Include the following information, as applicable:
      a. Manufacturer's written recommendations.
      b. Manufacturer's product specifications.
      c. Manufacturer's installation instructions.
      d. Manufacturer's catalog cuts.
      e. Wiring diagrams showing factory-installed wiring.
      f. Printed performance curves.
      g. Operational range diagrams.
      h. Compliance with specified referenced standards.
      i. Testing by recognized testing agency.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data**,** unless submittal of ENGINEER’S CAD Drawings is otherwise permitted.
   1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
      a. Dimensions.
      b. Identification of products.
      c. Fabrication and installation drawings.
      d. Roughing-in and setting diagrams.

e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Shopwork manufacturing instructions.
g. Templates and patterns.
h. Schedules.
i. Notation of coordination requirements.
j. Notation of dimensions established by field measurement.
k. Relationship to adjoining construction clearly indicated.
l. Seal and signature of professional engineer if specified.
m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
n. Electrical requirements.
o. Limits of or range of operation.
p. Performance curves.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 22 by 34 inches.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of appropriate Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. ENGINEER will return submittal with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
a. Number of Samples: Submit two sets of Samples. ENGINEER will retain one Sample set; remainder will be returned.

E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location.

F. Submittals Schedule: Comply with requirements specified in Section 01 32 00 "Construction Progress Documentation."

G. Application for Payment: Comply with requirements specified in Section 01 00 00 "Construction General Requirements".

H. Schedule of Values: Comply with requirements specified in Section 01 00 00 "Construction General Requirements".

I. Subcontractor List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.
   1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. An officer shall sign certificates and certifications or other individual authorized to sign documents on behalf of that entity.
   2. Test and Inspection Reports: Comply with requirements specified in Section 01 40 00 "Quality Requirements."

B. Coordination Drawings: Prepare Coordination Drawings, as applicable, if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
   1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information as applicable:
      a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
      b. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to ENGINEER for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

C. Contractor's Construction Schedule: Comply with requirements specified in Section 01 32 00 "Construction Progress Documentation".

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

L. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

M. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

N. Operational and Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Section 01 78 23 "Operation and Maintenance Data”.

O. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

P. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

Q. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
   1. Statement on condition of substrates and their acceptability for installation of product.
   2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
   3. Results of operational and other tests and a statement of whether observed performance complies with requirements.

R. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

S. Construction Photographs and Videotapes: Comply with requirements specified in Section 01 00 00 "Construction General Requirements".

T. Material Safety Data Sheets (MSDS): Submit information directly to OWNER; do not submit to ENGINEER.
   1. ENGINEER will not review submittals that include MSDS and will return them for resubmittal.

2.3 DELEGATED DESIGN

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of CONTRACTOR by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
   1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to ENGINEER.

B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to CONTRACTOR to be designed or certified by a design professional.
   1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. CONTRACTOR shall be responsible for the accuracy and completeness of the information contained in each submittal and shall insure the values, material, equipment, or method of work shall be as described.

B. CONTRACTOR shall insure there is no conflict with other submittals and shall notify ENGINEER of each case where a conflict may occur.

C. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp (Green in color) before submitting to ENGINEER.

D. Approval Stamp: Stamp each submittal with a uniform, approval stamp (Green in color). Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of CONTRACTOR'S approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ENGINEER'S ACTION

A. General: ENGINEER will not review submittals that do not bear CONTRACTOR'S approval stamp and will return them without action.

B. Action Submittals: ENGINEER will review each submittal, make marks to indicate corrections or modifications required, and return it. ENGINEER will either stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, or use the Shop Drawing Review Comments form listed in Part 3 to indicate the action taken for each submittal as follows:
   1. REVIEWED
      a. CONTRACTOR may incorporate product(s) or implement Work covered by submittal.
   2. FURNISHED AS CORRECTED
      a. CONTRACTOR may incorporate product(s) or implement Work covered by submittal, in accordance with ENGINEER"S notations.
   3. REVISE AND RESUBMIT
      a. Make corrections or obtain missing portions, and resubmit.
   4. REJECTED
      a. Contractor may not incorporate product(s) or implement Work covered by submittal.

C. Informational Submittals: ENGINEER will review each submittal and will not return it, or will return it if it does not comply with requirements. ENGINEER will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
   2. Specified tests, inspections, and related actions do not limit CONTRACTOR'S other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.
   3. Provisions of this Section do not limit requirements for CONTRACTOR to provide quality-assurance and control services required by ENGINEER, OWNER, or authorities having jurisdiction.

C. Related Sections include the following:
   1. Section 01 32 00 "Construction Progress Documentation" for developing a schedule of required tests and inspections.
   2. Divisions 02 through 46 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that the actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by ENGINEER.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

E. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

F. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

G. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

I. Installer/Applicator/Erector: CONTRACTOR or another entity engaged by CONTRACTOR as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
   1. Using a term such as "carpentry" does not imply that accredited or unionized individuals of a corresponding generic name, such as “carpenter”, must perform certain construction activities. It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

J. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five (5) previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to ENGINEER for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to ENGINEER for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

F. Testing Agency Qualifications:
   1. Laboratory facilities, including personnel, and equipment, utilize shall meet the criteria detailed in ASTM E329 “Specification for Agencies Engaged in Construction Inspection and/or Testing”, ASTM D3666 “Practice for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials,” and ASTM D3740 “Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.”
   2. Testing Agency shall be accredited by the American Association of Laboratory Accreditation (AALA), National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP), the American Association of State Highway and Transportation Officials (AASHT)), or other nationally recognized testing laboratory according to 29 CFR 1910.7.
   3. Comply with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

G. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

H. Mockups: If applicable, before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
   1. Build mockups in location and of size indicated or, if not indicated, as directed by ENGINEER.
   2. Notify ENGINEER seven days in advance of dates and times when mockups will be constructed.
   3. Demonstrate the proposed range of aesthetic effects and workmanship.
   4. Obtain ENGINEER’S approval of mockups before starting work, fabrication, or construction.
      a. Allow seven days for initial review and each re-review of each mockup.
   5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
   6. Demolish and remove mockups when directed, unless otherwise indicated.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as OWNER'S responsibility, OWNER will engage a qualified testing agency to perform these services.
   1. OWNER will furnish CONTRACTOR with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.
   2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to CONTRACTOR, and Change Order will adjust the Contract Sum.

B. Tests and inspections not explicitly assigned to OWNER are CONTRACTOR'S responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of CONTRACTOR by authorities having jurisdiction, whether specified or not.
   1. Where services are indicated as CONTRACTOR'S responsibility, engage a qualified testing agency to perform these quality-control services.
      a. CONTRACTOR shall not employ same entity engaged by OWNER, unless agreed to in writing by OWNER.
   2. OWNER shall pay for all charges of testing laboratory services in connection with tests made in the field or laboratory for the following services:
      a. Concrete compressive strength testing.
      b. Soil test for classifications of on-site and off-site borrow materials, soil densities and moisture determination of subgrade and embankment materials, cement or lime stabilization of subgrade, and other related testing required during construction.
   3. CONTRACTOR shall pay for all charges of testing laboratory services in connection with tests made in the field or laboratory for the following, but not limited to, services:
      a. Concrete mix designs, design of asphalt mixtures, lime stabilization of subgrade, flowable mix design, and related design parameter determinations.
      b. Weld inspection, coating inspections, torque requirements for steel erection, and other non-destructive testing.
      c. Vacuum and pressure testing of pipe lines, manholes, and related work, including disinfection testing of potable water lines and CCTV of lines.
      d. Other all inspection and testing work not specially stated to be the OWNER'S responsibility.
   4. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
   5. Where quality-control services are indicated as CONTRACTOR'S responsibility, submit a certified written report, distribution as indicated, of each quality-control service.
      a. Engineer: two (2) copies
      b. Contractor: two (2) copies
      c. Owner: three (3) copies
   6. Testing and inspecting desired by CONTRACTOR and not required by the Contract Documents are Contractor's responsibility.
   7. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including

service connections. Report results in writing as specified in Section 01 33 00 "Submittal Procedures".

D. Retesting/Reinspecting: Regardless of whether original tests or inspections were CONTRACTOR'S responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with ENGINEER and CONTRACTOR in performance of duties. Provide qualified personnel to perform required tests and inspections. The Testing Agency shall:
   1. Notify ENGINEER and CONTRACTOR promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
   4. Submit a certified written report, distribution as indicated, of each test, inspection, and similar quality-control service.
      a. Engineer: two (2) copies
      b. Contractor: two (2) copies
      c. Owner: three (3) copies
   5. Not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
   6. Not perform any duties of CONTRACTOR.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies as applicable.
   6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
   7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:
   1. Date test or inspection was conducted.
   2. Description of the Work tested or inspected.
   3. Date test or inspection results were transmitted to ENGINEER.
   4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for ENGINEER'S reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
   1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
   2. When included comply with the Contract Document requirements for Division 01 Section 01 73 29 "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are CONTRACTOR'S responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

SECTION 01 42 00
REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey ENIGNEER'S action on CONTRACTOR'S submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by ENGINEER. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the organizations responsible for the standards and regulations in the following list.

ADAAG	Americans with Disabilities Act (ADA)
	Architectural Barriers Act (ABA)
CFR	Code of Federal Regulations
DOD	Department of Defense Military Specifications and Standards
DSCC	Defense Supply Center Columbus (See FS)
FED-STD	Federal Standard (See FS)
FS	Federal Specification
FTMS	Federal Test Method Standard (See FS)
MIL	(See MILSPEC)
MIL-STD	(See MILSPEC)
MILSPEC	Military Specification and Standards
UFAS	Uniform Federal Accessibility Standards
TAS	Texas Accessibility Standards
TDLR	Texas Department of Licensing and Regulations

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

AA	Aluminum Association, Inc. (The)
AAADM	American Association of Automatic Door Manufacturers
AAMA	American Architectural Manufacturers Association
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Bearing Manufacturers Association
ACI	ACI International (American Concrete Institute)
ACPA	American Concrete Pipe Association
AEIC	Association of Edison Illuminating Companies, Inc. (The)
AGA	American Gas Association
AGC	Associated General Contractors of America (The)
AI	Asphalt Institute
AIA	American Institute of Architects (The)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALCA	Associated Landscape Contractors of America
	(Now PLANET - Professional Landcare Network)
ALSC	American Lumber Standard Committee, Incorporated

AMCA	Air Movement & Control Association International, Inc.
ANSI	American National Standards Institute
APA	Architectural Precast Association
API	American Petroleum Institute
ARI	Air-Conditioning & Refrigeration Institute
ARMA	Asphalt Roofing Manufacturers Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	ASME International
ASSE	American Society of Sanitary Engineering
ASTM	ASTM International
	(American Society for Testing and Materials International)
AWI	Architectural Woodwork Institute
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
BIA	Brick Industry Association (The)
CGA	Compressed Gas Association
CISPI	Cast Iron Soil Pipe Institute
CLFMI	Chain Link Fence Manufacturers Institute
CPA	Composite Panel Association
CPPA	Corrugated Polyethylene Pipe Association
CRSI	Concrete Reinforcing Steel Institute
CSI	Cast Stone Institute
CSI	Construction Specifications Institute (The)
DHI	Door and Hardware Institute
DMS	Departmental Material Specifications, TxDOT
EIA	Electronic Industries Alliance
EJCDC	Engineers Joint Contract Documents Committee
EJMA	Expansion Joint Manufacturers Association, Inc.
FMG	FM Global (Formerly: FM - Factory Mutual System)
FMRC	Factory Mutual Research (Now FMG)
HI	Hydraulic Institute
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM)
HPVA	Hardwood Plywood & Veneer Association
ICEA	Insulated Cable Engineers Association, Inc.
IEEE	Institute of Electrical and Electronics Engineers, Inc. (The)
IESNA	Illuminating Engineering Society of North America
IEST	Institute of Environmental Sciences and Technology
IGCC	Insulating Glass Certification Council
IGMA	Insulating Glass Manufacturers Alliance
ISO	International Organization of Standardization
LPI	Lightning Protection Institute

MBMA	Metal Building Manufacturers Association
MFMA	Metal Framing Manufacturers Association
MHIA	Material Handling Industry of America
MSS	Manufacturers Standardization Society of The Valve and Fittings Industry Inc.
NAAMM	National Association of Architectural Metal Manufacturers
NACE	NACE International
	(National Association of Corrosion Engineers International)
NRCA	National Roofing Contractors Association
NECA	National Electrical Contractors Association
NEMA	National Electrical Manufacturers Association
NETA	InterNational Electrical Testing Association
NFPA	NFPA (National Fire Protection Association)
NGA	National Glass Association
NHLA	National Hardwood Lumber Association
NSF	NSF International (National Sanitation Foundation International)
NWWDA	National Wood Window and Door Association (Now WDMA)
PCI	Precast/Prestressed Concrete Institute
PDCA	Painting & Decorating Contractors of America
PDI	Plumbing & Drainage Institute
PGI	PVC Geomembrane Institute
PLANET	Professional Landcare Network
	(Formerly: ACLA - Associated Landscape Contractors of America)
PTI	Post-Tensioning Institute
RCSC	Research Council on Structural Connections
SAE	SAE International
SDI	Steel Deck Institute
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturers Association (Now IGMA)
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association
SSINA	Specialty Steel Industry of North America
SSPC	SSPC: The Society for Protective Coatings
STI	Steel Tank Institute
UL	Underwriters Laboratories Inc.
UNI	Uni-Bell PVC Pipe Association
WASTEC	Waste Equipment Technology Association
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association)

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

BOCA	BOCA International, Inc. (See ICC)
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials (See ICC)
ICBO ES	ICBO Evaluation Service, Inc. (See ICC-ES)
ICC	International Code Council
ICC-ES	ICC Evaluation Service, Inc.
SBCCI	Southern Building Code Congress International, Inc. (See ICC)

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list.

CE	Army Corps of Engineers
CPSC	Consumer Product Safety Commission
DOC	Department of Commerce
DOD	Department of Defense
DOE	Department of Energy
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FDA	Food and Drug Administration
GSA	General Services Administration
HUD	Department of Housing and Urban Development
NCHRP	National Cooperative Highway Research Program (See TRB)
NIST	National Institute of Standards and Technology
OSHA	Occupational Safety & Health Administration
PBS	Public Building Service (See GSA)
PHS	Office of Public Health and Science
RUS	Rural Utilities Service (See USDA)
SD	State Department
TRB	Transportation Research Board
USDA	Department of Agriculture
USPS	Postal Service

D. State Government and Regional Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web sites are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

E.

MDSOT	Mississippi Department of Transportation
NCTCOG	North Central Texas Council of Governments
TCEQ	Texas Commission on Environmental Quality
NTMWD	North Texas Municipal Water District
TFS	Texas Forest Service
	Forest Resource Development
TPWD	Texas Parks and Wildlife Department
TRA	Trinity River Authority of Texas
TRWD	Tarrant Regional Water District
TxDOT	Texas Department of Transportation
UTRWD	Upper Trinity Regional Water District

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 43 33
MANUFACTURERS' FIELD SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the requirements for the qualifications, services, training, installation assistance, and related Work required for manufacturers' services.

B. Related Sections include the following:
   1. Section 01 78 23 "Operation and Maintenance Data" for requirements for furnishing operation and maintenance information and materials.
   2. Division 02 through 46 Sections for additional requirements.

1.3 DEFINITIONS

A. Person-Day: One person for 8 hours within regular CONTRACTOR working hours.

1.4 SUBMITTALS

A. Training Schedule: Submit not less than 21 days prior to start of equipment installation.

B. Lesson Plan: Submit proposed lesson plan not less than 21 days prior to schedule training session.

C. Training Session Tapes: Furnish OWNER with two complete sets of training tapes; indexed and cataloged with printed label stating session and date taped.

1.5 QUALITY ASSURANCE

A. Authorized representative of the manufacturer, factory trained, and experienced in the technical applications, operation, and maintenance of respective equipment, subsystem, or system, with full authority by the equipment manufacturer to issue the certifications require of equipment manufacturer. Additional qualifications may be specified in the individual Sections.

B. Representative will be subject to acceptance by ENGINEER and OWNER. No substitute representative will be allowed unless prior written approval has been given.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 MANUFACTURERS' SERVICES

A. Furnish minimum manufacturers' services, when required by a Division 02 through 46 Section, to comply with the requirements of this Section.

B. Where time is necessary in excess of that stated in the Section for manufacturers' services, or when a minimum time is not specified, the time required to perform the specified services shall be considered incidental.

C. Schedule manufacturers' services to avoid conflict with other onsite testing or other manufacturers' onsite services.

D. Determine, before scheduling manufacturers' services that all conditions necessary to allow successful completion of the services have been complied with.

E. Only those days of service approved by ENGINEER will be credited to fulfill the specified minimum service.

F. When specified by a Division 02 through 46 Section, manufacturer's onsite services shall include:
   1. Assistance during product (system, subsystem, or component) installation to include observation, guidance, and instruction of CONTRACTOR'S personnel during the assembly, erection, installation or application Work.
   2. Inspection, checking, and adjustments as required for product (system, subsystem, or component) to function as warranted by manufacturer and required to provide Manufacturer's Certificate of Installation.
   3. Provide on a daily basis copies of manufacturer's representative field notes and data to ENGINEER.
   4. Visiting site as required to correct problems and until installation and operation are acceptable to ENGINEER.
   5. Resolution of assemble or installation problems attributable to, or associated with, respective manufacturer's products and systems.
   6. Assistance during functional and performance testing, facility start-up, evaluation, and commissioning.
   7. Training of OWNER'S personnel in the operation and maintenance of the product as required.
   8. Additional requirements may be specified in a Division 02 through 46 Section.

3.2 MANUFACTURER'S CERIFICATE OF COMPLIANCE

A. When specified in a Division 02 through 48 Section, provide a Manufacturer's Certificate of Compliance, completed and signed by the entity supplying the product, material, or service prior to shipment. A copy of this form is attached to this Section.

B. ENGINEER may permit use of certain products, materials, or service prior to sampling and testing if accompanied by an accepted Certificate of Compliance.

C. The Certificate shall certify the product, material, or service complies with the Contract Documents. Attach supporting documentation as appropriate. This information may reflect previous test results on the product, material, or services.

3.3 MANUFACTURER'S CERTIFICATE OF INSTALLATION

A. When specified in a Division 02 through 46 Section, provide a Manufacturer's Certificate of Proper Installation, completed and signed by the manufacturer's representative. A copy of this form is attached to this Section.

B. The Certificate shall certify the signing party is a duly-authorized representative of the manufacturer, is empowered by the manufacturer to inspect, approve the installation, operate their equipment, and make recommendations required to ensure the equipment installation is complete and operational.

3.4 TRAINING

A. Provide manufacturers' representative for detailed classroom and hands-on training to OWNER'S personnel on the operation and maintenance of specified product (system, subsystem, and component). Refer to Section 01 79 00 "Demonstration and Training" for addition requirements.

B. Furnish trained, articulate personnel to coordinate and expedite training, to be present during training coordination meetings with OWNER and familiar with required operation and maintenance information submitted in accordance with Section 01 78 23 "Operation and Maintenance Data".

C. Furnish training materials, which will be retained by the trainee.

3.5 SUPPLEMENTS

A. The following forms located after "END OF SECTION" are part of this Section.
   1. Form: Manufacturer's Certificate of Compliance.
   2. Form: Manufacturer's Certificate of Installation.

END OF SECTION

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SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities. The Section also includes provisions for the project sign, plant operation during construction and plant shut downs, and other work.

B. Related Sections include the following:
1. Section 01 10 00 "Summary of Work" for limitations on utility interruptions and other work restrictions.
2. Section 01 33 00 "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
3. Divisions 02 through 46 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by ENGINEER, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to Owner's construction forces, ENGINEER, testing agencies, and authorities having jurisdiction.

B. Water Service: Water from OWNER'S existing water system is available for use at no cost to the contractor. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service: Electric power shall be obtained by CONTRACTOR, with CONTRACTOR responsible for obtaining meter and paying for all use charges. Provide connections and extensions of services as required for construction operations.

1.5 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel AND Owner’s Representative.

1.6 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before OWNER'S acceptance, regardless of previously assigned responsibilities.

B. Progress Cleaning: Clean Project site and work areas daily, including common areas, in accordance with Section 01 00 00 "Construction General Requirements" paragraph titled "Progress Cleaning."

PART 2 - PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, foundations adequate for normal loading, having insulated double walls, ceiling, and floors.

2.3 EQUIPMENT

A. Fire Protection:
   1. Furnish and maintain onsite adequate firefighting equipment capable of extinguishing incipient fires. UL rated; with class and extinguishing agent as required by locations and classes of fire exposures. Comply with applicable parts of National fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241).
   2. Provide portable fire extinguishers, rated 2A minimum, at CONTRACTOR's and ENGINEER'S field office, and at storage sheds.
   3. Ensure that internal combustion engine powered equipment is located a safe distance from combustible materials.
   4. Prohibit smoking in locations and operations of potential fire hazard and clearly post "No Smoking" or "Open Flame" signs.

B. Flammable Material Storage: Store flammable/combustible liquids in conformance with requirements of federal and local codes and regulations, and prohibit storage of flammable/combustible liquids near exits, stairways or common passageways. Provide approved metal safety containers for storage of flammable/combustible liquids in excess of 1 gallon.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

C. Owner's Representative Field Office. Make available prior to start of the Work at the site and to remain onsite for minimum 30 days after final acceptance of the Work.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

I. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Provide a directory at each telephone, listing the name and business telephone number of:
   1. CONTRACTOR and all subcontractors employed at work site.
   2. OWNER'S representatives.
   3. Medical Services; Physicians, Hospitals, and Ambulance service companies.
   4. Emergency numbers of all utilities.
   5. Police.
   6. Fire Departments.

J. Electronic Communication Service: Provide temporary electronic communication service, including electronic mail in field offices.

3.3 PLANT OPERATIONS DURING CONSTRUCTION AND PLANT SHUTDOWNS

A. The following stipulations shall apply to the construction on this project.
   1. The ability of the plant to meet effluent permit requirements is critical and will take priority in allowing shutdown of existing facilities. All shutdowns of any plant facilities must be coordinated with the ENGINEER and the OWNER. The CONTRACTOR shall request permission from the ENGINEER to take existing equipment, structures, roadways, pipelines and electrical and instrumentation facilities out of service at least fourteen (14) days prior to the requested date.
   2. The request must include the proposed date; the proposed time for initiating the shutdown; the proposed time for returning the item back to service; a description of the item to be taken out of service; the purpose of the shutdown; and any other information which may be needed by the ENGINEER to evaluate the request.
   3. This request must be repeated three (3) days prior to the requested date. The CONTRACTOR shall not initiate the shutdown until approval is granted. The OWNER reserves the right to choose a range of times during the day or night that work associated with shutdowns must be completed in order to protect plant operations.
   4. The CONTRACTOR is reminded that this is an operating plant and that, as such, it must remain in service during the construction period with no degradation in performance. Under no circumstances will the CONTRACTOR be permitted to divert or discharge any untreated flows from the plant.
   5. No partially treated wastewater will be permitted to be discharged from the plant. The CONTRACTOR must be aware of this limitation at all times and not consider diverting as a construction technique. Contaminated water from basin draining, dewatering operations and excavations must be recycled into the plant treatment process at locations designated by the OWNER and at a flow rate acceptable to the OWNER.
   6. Contaminated or turbid water cannot be pumped into the streets or storm drainage system or any stream. The CONTRACTOR must obtain the OWNER'S approval for his proposed method to discharge into the plant's system. Process facilities must be accessible to plant personnel at all times. For these reasons, although approval for a shutdown may be granted, operating conditions at the plant may require that the shutdown be canceled at the last minute, or that the time allowed for the shutdown be reduced. No additional compensation will be made to the CONTRACTOR for these unforeseen changes in the schedule.

7. If failure of the CONTRACTOR to properly plan and prosecute the work results in the discharge of untreated or partially treated wastewater, the CONTRACTOR will be liable for payment of such fines as may be imposed on the OWNER by applicable state or federal regulatory agencies, and any and all other costs which result from these fines.
8. It may be necessary, during the course of construction, to make several connections to the existing facilities such as pipelines, structures or process equipment. All work involved in making connections, which will require that existing facilities be taken out of service, shall be carefully planned and coordinated with both the ENGINEER and the OWNER to permit "down time" of the existing facilities be held to a minimum. On occasions when more than one parallel existing facility (basin, pump, pipeline, etc.) must be taken out of service, work shall proceed on a 24-hour schedule until the additional facilities are back in operation.

3.4 FIELD OFFICE'S AND SUPPORT FACILITIES

A. General Requirements: Where required, provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet of building lines. Comply with NFPA 241.

B. Contractor Field Office: Not required.

C. Storage Sheds: Provide storage sheds for products in conformance with the General Conditions. The storage sheds shall have weather-tight construction, heating, ventilating and air conditioning as required to comply with the General Conditions, sufficient space to provide for inspection, and electric lighting.

D. Equipment and Material Storage: Properly store and protect equipment delivered to the job site until installation in accordance with manufacturer's recommendations. Motor space heaters shall be connected, shafts rotated, etc. All equipment shall be stored on skids or blocking, off the ground.

E. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations and access to field offices. When possible, locate temporary roads and paved areas in same location as permanent roads and paved areas. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
2. Prepare subgrade and install subbase and base for temporary roads and paved areas according to Section 31 20 00 "Earthwork".
3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
4. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

F. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.
3. Construction traffic shall be controlled to minimize impact of normal plant traffic.

4. CONTRACTOR shall repair damage to plant and public roadways.
5. Provide signs warning of a construction site entrance.
6. Provide flagman when excessive construction traffic is expected.

G. Parking: Provide temporary parking areas for construction personnel.

H. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

I. Project Identification and Temporary Signs: Provide Project identification and other signs. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
1. Provide temporary, directional signs for construction personnel and visitors.
2. Maintain and touchup signs so they are legible at all times.

J. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Section 01 00 00 "Construction General Requirements" for progress cleaning requirements.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

D. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

E. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for OWNER. Perform control operations lawfully, using environmentally safe materials.

F. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner's Representative with one set of keys.

G. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

3.6 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Where excavation or demolition endangers adjacent structures (including fences) and utilities, the CONTRACTOR shall at his own expense carefully support and protect all such structures and/or utilities to prevent failure or settlement. Where it is necessary to move services, poles, guy wires, pipelines or other obstructions, the CONTRACTOR shall notify and cooperate with the utility owner.

B. In case damage to an existing structure or utility occurs, whether failure or settlement, the CONTRACTOR shall restore the structure or utility to its original condition and position without compensation from the OWNER. The CONTRACTOR shall protect any plant equipment in construction areas, which remain in service during construction.

C. CONTRACTOR shall repair or replace all damaged street surfaces, driveways, sidewalks, curb and gutter, fences, drainage structures, or other structures, to the satisfaction of the ENGINEER and the OWNER. Structures shall be restored to a condition equal to or better than the original condition and of a similar material and design. The costs of such repair or replacement shall be borne by the CONTRACTOR and shall be included in the Proposal.

D. The Plans show the locations of all known surface and subsurface structures and utilities. However, the OWNER and the ENGINEER assume no responsibility for failure to show any or all of these structures or utilities on the Plans, or to show them in their exact locations. It is mutually agreed that such failure shall not be considered sufficient basis for claims for additional compensation for extra work or for increasing the pay quantities in any manner whatsoever, unless the obstruction encountered is such as to necessitate changes in the lines or grades, or require the building of special work, provisions for which are not made in the Plans and Proposal, in which case the provisions in these Specifications for extra work shall apply.

E. It is anticipated that some utilities exist which are not shown on the Plans. The CONTRACTOR, prior to ordering material and beginning work, shall make an independent survey to locate and identify the type and size of all existing piping and valves in the construction area, using hand excavation if necessary.

F. The CONTRACTOR shall keep an accurate record of the location, depth, size, type of material, and type of service of all underground utilities encountered during construction. All piping, valves, electrical conduits, etc. in the construction area shall be protected as necessary, in a manner acceptable to the ENGINEER. No additional compensation will be considered for the protection of any of these items whether shown on the Plans or not.

G. No claims for delays will be considered as a result of encountering obstructions or conflicts not shown on the Plans. It is the sole responsibility of the CONTRACTOR to confirm the location of all subsurface piping, electrical conduits, etc., which affect the prosecution of his work prior to ordering materials or beginning work.

3.7 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor, except as noted elsewhere. Owner reserves right to take possession of Project identification signs.
   2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures”.

3.8 DUST CONTROL

A. The CONTRACTOR shall be responsible for eliminating and/or alleviating dust resulting from his construction operations. This is particularly applicable to dust which results from vehicular traffic traveling along or through areas where construction has resulted in dirt of dust being left on roadways. The CONTRACTOR shall sprinkle water or use other dust control methods which will reduce dust to a minimum. The OWNER may request additional dust control sprinkling at anytime as deemed necessary. Dust control will be considered subsidiary to construction and no separate measurement and payment will be made.

3.9 FIREARMS

A. Neither the Contractor nor any of his employees shall be allowed to carry firearms on the Project, either on their persons or within their automobiles. Any violation of this requirement will result in the permanent removal from the Project of the employee committing the violation.

3.10 HANDLING MATERIALS NOT APPROVED

A. The CONTRACTOR shall remove from the site any materials found to be damaged, and any materials not meeting the specifications. These materials shall be removed promptly, unless the ENGINEER will accept the materials after repairing. Materials found to be damaged, or not acceptable to the ENGINEER, shall be removed. Examination before installation shall not relieve the CONTRACTOR from any responsibility to furnish good quality materials.

3.11 SALVAGED MATERIAL

A. Surplus equipment or material, which is removed by the CONTRACTOR as specified in the plans and specifications, shall become the property of the CONTRACTOR. The CONTRACTOR shall be responsible for the disposal of salvage material offsite. Equipment and material designed to be salvage shall be transported by the CONTRATOR to a location as directed by the Owner's Representative.

3.12 ARCHEOLOGICAL DISCOVERIES

A. No activity, which may affect a State Archeological Landmark, is authorized until the OWNER has complied with provisions of the Antiquities Code of Texas. The OWNER has previously coordinated with the appropriate agencies and impacts to known cultural or archeological deposits have been avoided or mitigated. However, the CONTRACTOR may encounter unanticipated cultural or archeological deposits during construction.

B. If archeological sites or historic structures, which may qualify for designation as a State Archeological Landmark according to the criteria in 13 TAC 41.6-41.10, are discovered after construction operations begins, the CONTRACTOR shall immediately cease operations in that particular area. Notify the Owner's Representative and the Texas Historical Commission, P.O. Box 12276, Capitol Station, Austin, Texas 78711-2276, 512/463-6096. The CONTRACTOR shall take responsible steps to protect and preserve the discoveries until the Owner's Representative has inspected them. The OWNER will promptly coordinate with the Texas Historical Commission and any other appropriate agencies to obtain required approvals or permit to enable the continuation of work. The CONTRACTOR shall not resume work in the area of the discovery until authorized to do so by the Owner's Representative.

3.13 ENDANGERED SPECIES

A. No activity is authorized that is likely to jeopardize the continued existence, or a threatened, or endangered species as listed, or proposed for listing, under the Federal Endangered Species Act (ESA), and/or the State of Texas Parks and Wildlife Code on Endangered Species, or to destroy or adversely modify the habitat of such species.

B. If a threatened or endangered species is encountered during construction, the CONTRACTOR shall immediately cease work in the area of the encounter and notify the Owner's Representative, who will immediately implement actions in accordance with the ESA and applicable State statues. These actions shall include reporting the encounter to the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department, obtaining any necessary approvals or permits to enable the continuation of work, or implement other mitigate actions. The CONTRACTOR shall not resume construction in the area of the encounter until authorized to do so by the Owner's Representative.

END OF SECTION

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:
   1. Section 01 42 00 "References" for applicable industry standards for products specified.
   2. Section 01 77 00 "Closeout Procedures" for submitting warranties for Contract closeout.
   3. Divisions 02 through 46 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material”, "equipment”, "system”, and terms of similar intent.
   1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, which is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design”, including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.4 SUBMITTALS

A. Material and Equipment List. Within 60 days after Notice to Proceed, submit three copies of a complete list of major products proposed for the Project, with the name of the manufacturer and the installing entity.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
   1. Substitution Request Form: Use facsimile of form provided at end of Section.
   2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
      a. Statement indicating why specified material or product cannot be provided.

      b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by OWNER and separate contractors, which will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
      d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
      e. Samples, where applicable or requested.
      f. List of similar installations for completed projects with project names and addresses and names and addresses of architects, engineers, and owners.
      g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
      h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
      i. Cost information, including a proposal of change, if any, in the Contract Sum.
      j. CONTRACTOR'S certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
      k. CONTRACTOR'S waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
   3. ENGINEER'S Action: If necessary, ENGINEER will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. ENGINEER will notify CONTRACTOR of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
      a. Form of Acceptance: Change Order or Field Order.
      b. Use product specified if ENGINEER cannot make a decision on use of a proposed substitution within time allocated.

C. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. ENGINEER'S Action: If necessary, ENGINEER will request additional information or documentation for evaluation within one week of receipt of a comparable product request. ENGINEER will notify CONRACTOR of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
    a. Form of Approval: As specified in Division 01 Section 01 33 00 "Submittal Procedures."
    b. Use product specified if ENGINEER cannot make a decision on use of a comparable product request within time allocated.

D. Basis-of-Design Product Specification Submittal: Comply with requirements in Section 01 33 00 "Submittal Procedures". Show compliance with requirements.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If CONTRACTOR is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

B. Design Requirements: Where CONTRACTOR design is specified; design of installation, systems, equipment, and components, including supports and anchorage, shall be in with provisions of International Building Code by International Code Council. Refer to the drawings for required design load criteria.

C. Environmental Requirements: Provide products suitable for installation and operation under rated conditions at 3000 feet above sea level. Products installed outdoors or in unheated enclosures shall be capable of continuous operation within an ambient temperature range of 0˚F to 120˚F.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:
    1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
    2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
    3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
    4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:
    1. Store products to allow for inspection and measurement of quantity or counting of units.
    2. Store materials in a manner that will not endanger Project structure.
    3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
    4. Store cementitious products and materials on elevated platforms.

5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Off-site storage of materials and equipment shall be the sole responsibility of the CONTRACTOR.

D. Extra Materials, Special Tools, Test Equipment, and Expendables:
1. Divisions 02 through 48 Sections for specific requirements.
2. Schedule:
a. Ensure shipment and delivery occurs concurrent with shipment of product.
b. Transfer to OWNER upon acceptance by CONTRACTOR of shipment.
3. Packaging and Shipment:
a. Package and ship items to avoid damage during long term storage in original cartons or in appropriately sized, hinged-cover, wood, plastic or metal boxes.
b. Prominently display on each package: Part number, consistent with Operation and Maintenance Manual identification system; equipment description, quantity of parts; and equipment manufacturer.
4. Deliver to designation location as directed by Owner’s Representative.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to OWNER.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for OWNER.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
3. Refer to Divisions 02 through 48 Sections for specific content requirements and particular requirements for submitting special warranties.
4. Special Equipment Warranty.
a. The equipment manufacturers shall jointly warrant to the OWNER and to the CONTRACTOR that all equipment, including all components of the complete assembly furnished by it hereunder, complies in all respects with the design and specifications of these Documents and contains no defects of material or workmanship.
b. In the event of failure of any part or parts of the equipment during the warranty period due to defects of design, materials, or workmanship; the CONTRACTOR shall

replaced affected part or parts shall be replaced promptly upon notification by the OWNER. All replacement parts shall be furnished, delivered, and installed at the expense of the equipment manufacturer.

c. The warranty period shall begin on the date of the Certification of Substantial Completion for that portion of the project where the equipment was installed.
d. The warranty period shall be two (2) years, unless otherwise specified. Provisional acceptance of the equipment shall not affect this requirement.
e. The CONTRACTOR shall be responsible for insuring that the manufacturer's special equipment warranty is not voided by acceptance of the terms of purchase agreements between the CONTRACTOR and the MANUFACTURER. In all events, the CONTRACTOR will be held ultimately responsible for enforcement of the requirements of this warranty at his expense.
f. Payment for equipment as "Materials-On-Hand" will not be made until the OWNER receives an approved Special Equipment Warranty.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
   1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
   2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
   3. Like items of products furnished and installed shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, manufacturer’s services, and implement same or similar process instrumentation and control functions.
   4. Provide interchangeable components of the same manufacturer, for similar components, unless otherwise specified.
   5. OWNER reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
   6. Where products are accompanied by the term "as selected," ENGINEER will make selection.
   7. Where products are accompanied by the term "match sample," sample to be matched is ENGINEER’S.
   8. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
   9. Regulatory Requirements: Coating materials shall meet federal, state, and local requirements limiting the emission of volatile organic compounds and for worker exposure.
   10. Safety Guards:
      a. Provide for all belt or chain drives, fan blades, couplings, or other moving or rotary parts. Cover rotating part on all sides. Design for easy installation and removal.
      b. Use 16-gauge or heavier; galvanized steel, aluminum, coated steel and ½-inch mesh expanded steel.

c. For outdoor installations prevent entrance of rain or dripping water.

11. Electrical Components: Provide Work in accordance with NFPA 70, National Electrical code, and be labeled by a nationally recognized testing laboratory or other agency acceptable to the authority having jurisdiction.
12. Equipment Finish:
    a. Provide manufacturer's standard finish and color, except where specific color is indicated.
    b. If manufacturer does not have a standard color, provide color as approved by ENGINEER.
13. Special Tools and Accessories: Provide to OWNER all special tools and accessories required placing equipment in operation. These include, but not limited to, adequate oil and grease (as required for first servicing of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, handwheels, chain operators, special tools, and other spare parts required for maintenance.
14. Lubricant: Provide initial lubricant recommended by manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, start-up, and operation until final acceptance by OWNER.

B. Fabrication and Manufacture:
    1. General Requirements:
        a. Manufacture parts to U.S.A. standard sizes and gauges.
        b. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.
        c. Design structural members for anticipated shock and vibratory loads.
        d. Use 1/4-inch minimum thickness for steel that will be submerged, wholly or partially, during normal operation.
        e. Modify standard products as necessary to meet performance specifications.
    2. Lubrication System Requirements:
        a. Require no more than weekly attention during continuous operation.
        b. Convenient and accessible. Oil drains, with bronze or stainless steel valves, and fill-plugs easily accessible from normal operating area or platform. Locate drains to allow convenient collection of oil during changes without removing equipment from its installed position.
        c. Provide constant-level oilers or oil level indicators for oil lubrication systems.
        d. For grease type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to convenient location with suitable grease fitting.

C. Product Selection Procedures:
    1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
    2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
    3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that comply with requirements.
    4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
    5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies

with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.

6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches ENGINEER'S sample. ENGINEER'S decision will be final on whether a proposed product matches.
    a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, and textures" or a similar phrase, select a product that complies with other specified requirements.
    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, ENGINEER will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, ENGINER will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: ENGINEER will consider requests for substitution if received within 30 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of ENGINEER.

B. Conditions: ENGINEER will consider CONTRACTOR'S request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, ENGINEER will return requests without action, except to record noncompliance with these requirements:
    1. Requested substitution offers OWNER a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities OWNER must assume. OWNER'S additional responsibilities may include compensation to ENGINEER for redesign and evaluation services, increased cost of other construction by OWNER, and similar considerations.
    2. Requested substitution does not require extensive revisions to the Contract Documents.
    3. Requested substitution is consistent with the Contract Documents and will produce indicated results.

4. Substitution request is fully documented and properly submitted.
5. Requested substitution will not adversely affect CONTRACTOR'S Construction Schedule.
6. Requested substitution has received necessary approvals of authorities having jurisdiction.
7. Requested substitution is compatible with other portions of the Work.
8. Requested substitution has been coordinated with other portions of the Work.
9. Requested substitution provides specified warranty.

2.3 COMPARABLE PRODUCTS

A. Conditions: ENGINEER will consider CONTRACTOR'S request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, ENGINEER will return requests without action, except to record noncompliance with these requirements:
   1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, which it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
   2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
   3. Evidence that proposed product provides specified warranty.
   4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
   5. Samples, if requested.

2.4 REUSE OF EXISTING MATERIAL

A. Except as specifically indicated or specified, materials and equipment removed from existing facilities shall not be used in the completed Work.

B. For materials and equipment designated for reuse in the Work:
   1. Use special care in removal, handling, storage, and installation to ensure proper function in the completed Work.
   2. Arrange for transportation, storage and handling of the products when offsite storage, restoration, or renovation. All costs associated with this work are the CONTRACTOR'S responsibility.

PART 3 - EXECUTION

3.1 WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS

A. When the specification Section requires the Work to be accomplished in accordance with "manufacturer's instructions", obtain and distribute copies of such instructions to parties involved in the installation. Provide two copies to the Owner's Representative and maintain one set at the Project site.

B. Handle, install, connect, clean, condition and adjust products in strict accordance with the manufacturer's instructions and in conformity with the Contract Documents. Do not omit any preparatory step or installation procedures. In case of conflict between job conditions or Contract Documents with manufacturer's instructions notify Owner's Representative.

C. Upon completion of installation, obtain Certificate of Installation from manufacturer's representative.

3.2 INSPECTION

A. Inspect products for signs of pitting, rust decay, or other deleterious effects of storage. Do not install products showing such effects. Remove damaged product from Project site and expedite delivery of identical new product. Delays to Work resulting from product damage, which necessitates procurement of new product, will be considered delays within CONTRACTOR'S control.

3.3 INSTALLATION

A. Drawings show general locations for product installation, unless specially dimensioned.

B. No shimming between machined surfaces is allowed.

C. Install Work in accordance with NECA Standard of Installation, unless otherwise specified.

D. Recoat finish surfaces that are damaged prior to final acceptance of Work.

E. Do not cut or notch any structural member or building surface without specific approval of ENGINEER.

F. Handle, install, connect, clean, condition, and adjust product in accordance with Contract Documents and manufacturer's instructions.

G. Apply field coating in accordance with Contract Documents.

H. Perform required adjustments, tests, operation checks, and other start-up activities.

I. Fill lubricant reservoirs and replace consumption during testing, start-up, and operation prior to final acceptance of Work by OWNER.

3.4 SUPPLEMENTS

A. Sample forms included after "End Of Section" are considered part of this Section:
   1. Substitution Request.

END OF SECTION

Advancement of Construction Technology

SUBSTITUTION REQUEST
(After the Bidding Phase)

Project: _____ Substitution Request Number: _____

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____ Address: _____ Phone: _____

Trade Name: _____ Model No.: _____

Installer: _____ _____ Address: _____ Phone: _____

History: ☐ New product ☐ 2-5 years old ☐ 5-10 yrs old ☐ More than 10 years old
Differences between proposed substitution and specified product: _____

_____

☐ Point-by-point comparative data attached - REQUIRED BY ENGINEER

Reason for not providing specified item: _____

_____

Similar Installation:

Project: _____ Engineer: _____

Address: _____ Owner: _____

_____ Date Installed: _____

Proposed substitution affects other parts of Work: ☐ No ☐ Yes; explain _____

_____

Savings to Owner for accepting substitution: _____ ($ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐

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SUBSTITUTION REQUEST (Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

_____

Telephone: _____

Attachments: _____

_____

_____

_____

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: Date:

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐

_____

_____

_____

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SECTION 01 70 00
EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. Construction layout.
2. Field engineering and surveying.
3. General installation of products.
4. Progress cleaning.
5. Starting and adjusting.
6. Protection of installed construction.
7. Correction of the Work.
8. Basin dewatering and cleaning.
9. Workmanship.
10. Firearms.
11. Handling materials not approved.
12. Salvaged material.
13. Archeological discoveries.
14. Endangered species.
15. Blasting and burning.
16. Pipe closure and buoyancy of structures.
17. OSHA standards.

1.2 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Related Division 01 Sections:

1. Section 01 43 33 “Manufacturer’s Field Services” for administrative procedure and requirements for manufacturers’ services.

1.3 SUBMITTALS

A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

C. Certified Surveys: Submit two copies signed by land surveyor.

D. Final Property Survey: Submit two copies showing the Work performed and record survey data.

1.4 QUALTIY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Existing Conditions and Utilities: When appropriate, the existence and location of site improvements, underground and other utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of connection of utility services.
2. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
3. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
2. Examine rough-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to ENGINEER. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify ENGINEER promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
3. Inform installers of lines and levels to which they must comply.
4. Check the location, level and plumb, of every major element as the Work progresses.
5. Notify ENGINEER when deviations from required lines and levels exceed allowable tolerances.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by ENGINEER.

3.4 FIELD ENGINEERING:

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of two temporary benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

3.5 INSTALLATION:

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produces harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by ENGINEER.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING:

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

I. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation in accordance with the following:

1. Remove malfunctioning components, replace with new components, and retest.
2. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
3. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Manufacturer's Services: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Section 01 43 33 "Manufacturers' Field Services."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturers written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and

finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

3.10 HAZARDOUS ENVIRONMENT/CONFINED SPACE ENTRY PLANS

A. CONTRACTOR shall develop and implement Hazardous Environment/Confined Space Entry Plans for this Project. Plans shall be submitted to the ENGINEER for record purposes prior to the pre-construction conference. Plans shall include all local, state and federal requirements for entrance to and working in hazardous environments and confined spaces and shall include a written safety plan for the Project.

B. CONTRACTOR shall have a safety officer present at the jobsite whenever the CONTRACTOR'S activities require entering or working in a hazardous environment or confined space.

3.11 PLAN OF ACTION

A. CONTRACTOR shall prepare a detailed, written plan of action (covering all shutdowns, material deliveries, confined space/hazardous environment entries, plant protection system, construction sequence for major facilities and modifications to existing facilities, and trench/excavation protection) for review and coordination with the OWNER and ENGINEER at the pre-construction conference. The pre-construction conference will be held prior to beginning construction activities.

3.12 BASIN DEWATERING AND CLEANING

A. The CONTRACTOR shall clean basins, pipelines and equipment as specified and, when necessary to complete the work. No additional payment will be made for such work. Washdown water shall be contained and disposed of properly.

3.13 WORKMANSHIP

A. Specifications contain detailed instructions and descriptions of the major items of construction and workmanship necessary for building and completing the various elements of the Project. The Specifications are intended to be written so that only first class workmanship and finish of the best grade and quality will result. The fact that these Specifications may fail to be so complete as to cover all details will not relieve the CONTRACTOR of full responsibility for providing a completed project of high quality, first class finish and appearance and satisfactory for operation, all within the apparent intent of the Plans and Specifications.

3.14 FIREARMS

A. Neither the Contractor nor any of his employees shall be allowed to carry firearms on the

Project, either on their persons or within their automobiles. Any violation of this requirement will result in the permanent removal from the Project of the employee committing the violation.

3.15 HANDLING OF MATERIALS NOT APPROVED

A. The CONTRACTOR shall remove from the site any materials found to be damaged, and any materials not meeting the specifications. These materials shall be removed promptly, unless the ENGINEER will accept the materials after repairing. Materials found to be damaged, or not acceptable to the ENGINEER, shall be removed. Examination before installation shall not relieve the CONTRACTOR from any responsibility to furnish good quality materials.

3.16 SURPLUS AND SALVAGED MATERIAL

A. Surplus equipment or material, which is removed by the CONTRACTOR as specified in the Drawings and Specifications, shall become the property of the CONTRACTOR unless otherwise noted. The CONTRACTOR shall be responsible for the disposal of salvage material offsite. Equipment and material designated to be salvaged shall be transported by the CONTRACTOR to a location as directed by the Owner's Representative.

3.17 ARCHEOLOGICAL DISCOVERIES:

A. No activity, which may affect a State Archeological Landmark, is authorized until the OWNER has complied with provisions of the Antiquities Code of Texas. The OWNER has previously coordinated with the appropriate agencies and impacts to known cultural or archeological deposits have been avoided or mitigated. However, the CONTRACTOR may encounter unanticipated cultural or archeological deposits during construction.

B. If archeological sites or historic structures, which may qualify for designation as a State Archeological Landmark according to the criteria in 13 TAC § 41.6-41.10, are discovered after construction operations begins, the CONTRACTOR shall immediately cease operations in that particular area. Notify the Owner's Representative and the Texas Historical Commission, P.O. Box 12276, Capitol Station, Austin, Texas 78711-2276, 512-463-6096.

C. The CONTRACTOR shall take responsible steps to protect and preserve the discoveries until the Owner's Representative has inspected them. The OWNER will promptly coordinate with the Texas Historical Commission and any other appropriate agencies to obtain required approvals or permit to enable the continuation of work.

D. The CONTRACTOR shall not resume work in the area of the discovery until authorized to do so by the Owner's Representative.

3.18 ENDANGERED SPECIES:

A. No activity is authorized that is likely to jeopardize the continued existence, or a threatened, or endangered species as listed, or proposed for listing, under the Federal Endangered Species Act (ESA), and/or the State of Texas Parks and Wildlife Code on Endangered Species, or to destroy or adversely modify the habitat of such species.

B. If a threatened or endangered species is encountered during construction, the CONTRACTOR shall immediately cease work in the area of the encounter and notify the Owner's Representative, who will immediately implement actions in accordance with the ESA and applicable State statutes. These actions shall include reporting the encounter to the U.S. Fish

and Wildlife Service and the Texas Parks and Wildlife Department, obtaining any necessary approvals or permits to enable the continuation of work, or implement other mitigate actions.

C. The CONTRACTOR shall not resume construction in the area of the encounter until authorized to do so by the Owner's Representative.

3.19 BLASTING, BURNING, AND WASTE DISPOSAL:

A. Explosives:

1. Do not use explosives.

B. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted. Trees and brush removed shall be shredded onsite with disposal off-site.

3.20 PIPE CLOSURE AND BUOYANCY OF STRUCTURES

A. At the end of each working day, the CONTRACTOR shall plug the ends of all exposed pipeline to prevent any material or objects from entering the pipeline.

B. The CONTRACTOR shall anchor all pipelines and structures to prevent their flotation should rain occur prior to the completion of backfilling to proposed final grade.

3.21 OSHA STANDARDS

A. All work performed under this Contract shall meet the applicable requirements of the Occupational Safety and Health Administration (OSHA). It is the responsibility of the CONTRACTOR to become familiar with the provisions of regulations published by OSHA in the Federal Register and to perform all of the responsibilities there under. It is the CONTRACTOR'S responsibility to see that the Project is constructed in accordance with OSHA regulations and to indemnify and save harmless the OWNER from any penalties resulting from the CONTRACTOR'S failure to so perform.

END OF SECTION

SECTION 01 73 29
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. Related Sections include the following:
   1. Section 02 41 19 "Selective Demolition" for demolition of selected portions of the facilities.
   2. Divisions 02 through 48 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.3 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
   1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
   2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
   3. Products: List products to be used and firms or entities that will perform the Work.
   4. Dates: Indicate when cutting and patching will be performed.
   5. Utility Services and Mechanical/Electrical Systems: As applicable, list services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
   6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure signed and sealed by Professional Engineer licensed in the State of Texas, and submit welder certification.
   7. ENGINEER'S Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, which results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. The CONTRACTOR'S attention is directed to the fact that the existing facilities must be kept in service throughout the construction period and that no interruption will be permitted that adversely affects operation of the facilities. When permission is obtained from the OWNER, portions of the existing facilities may be taken out of service for short periods corresponding with periods of minimum flow.

B. The CONTRACTOR shall make his own investigations and determine the nature of work involved in making the connections and modifications to existing facilities in the manner intended by the Plans. The CONTRACTOR shall then coordinate the items requiring interruptions with the OWNER, and proceed only when approval is obtained from the OWNER and within the time frame permitted by the OWNER.

C. All work involved in making connections which will require that existing facilities be taken out of service shall be carefully planned and coordinated with both the ENGINEER and the OWNER so that "down time" of the existing facilities may be held to a minimum. On occasions when more than one parallel existing facility (basin, pump, pipeline, etc.) must be taken out of service for the purpose of making a connection, work shall proceed on a 24-hour schedule until the facilities are back in operation.

D. Sequencing and coordination requirements are described elsewhere.

E. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas, if applicable.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
   4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
   5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
   6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. The CONTRACTOR shall dewater and clean existing basins, pipelines and equipment as specified and, when necessary to complete the work, shall be the responsibility of the CONTRACTOR. No additional payment will be made for such work.

E. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Inspection procedures.
   2. Warranties.
   3. Final cleaning.

B. Related Sections include the following:
   1. Section 01 00 00 “General Construction Requirements” for the following paragraphs titled:
      a. "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
      b. "Photographic Documentation" for submitting Final Completion construction photographs and negatives.
      c. "Execution Requirements" for progress cleaning of Project site.
      d. "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
   2. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.
   3. Section 01 79 00 "Demonstration and Training" for requirements for instructing Owner's personnel.
   4. Divisions 02 through 48 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise OWNER of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting OWNER unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.

6. Deliver tools, spare parts, extra materials, and similar items to location designated by OWNER. Label with manufacturer's name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to OWNER. Advise OWNER'S personnel of changeover in security provisions.
8. Complete startup testing of systems.
9. Submit test/adjust/balance records.
10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
11. Advise OWNER of changeover in heat and other utilities.
12. Submit changeover information related to OWNER'S occupancy, use, operation, and maintenance.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, ENGINEER will either proceed with inspection or notify CONTRACTOR of unfulfilled requirements. ENGINEER will prepare the Certificate of Substantial Completion after inspection or will notify CONTRACTOR of items, either on CONTRACTOR'S list or additional items identified by ENGINEER, which must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
   1. Submit a final Application for Payment according to Section 01 00 00 "General Construction Requirements" for paragraph titled for "Payment Procedures."
   2. Submit certified copy of ENGINEER'S Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by ENGINEER. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   4. Submit pest-control final inspection report and warranty, as applicable.
   5. Instruct OWNER'S personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, ENGINEER will either proceed with inspection or notify CONTRACTOR of unfulfilled requirements. ENGINEER will prepare a final Certificate for Payment after inspection or will notify CONTRACTOR of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by CONTRACTOR that are outside the limits of construction. Use Punch List similar to the form attached.
   1. Organize list in sequential order as directed by Owner's Representative.
   2. Organize items applying to each space by major element.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of ENGINEER for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of CONTRACTOR.

C. Include additional copies of each warranty in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each Project site, equipment, structures, buildings and related facilities. Comply with manufacturer's written instructions.
   1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
g. Sweep concrete floors broom clean in unoccupied spaces.
h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
j. Remove labels that are not permanent.
k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
m. Replace parts subject to unusual operating conditions.
n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
q. Leave Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid Project of rodents, insects, and other pests. Prepare a report.

D. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

3.2 SUPPLEMENTS

A. Punch List form included after “End Of Section” is considered part of this Section.

END OF SECTION

Project:	**Engineer:**
Owner:	**Site Visit Date:**
Contractor:	**Project No.:**

The following items require the attention of the Contractor for completion or correction. This list may not be all-inclusive, and the failure to include any items on this list does not alter the responsibility of the contractor to complete all Work in accordance with the Contract Documents.

Item	Location	Description	Correction/Completion Date	Verification Engineer Check
Signed By:				Date:
Copies: Owner, Engineer, Consultants, File				

SECTION 01 78 10
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
   1. Record Drawings.
   2. Record Specifications.
   3. Record Product Data.

B. Related Sections include the following:
   1. Section 01 77 00 "Closeout Procedures" for general closeout procedures.
   2. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.
   3. Divisions 02 through 48 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Submit one set of marked-up Record Prints.

B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit six copies of each Product Data submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: CONTRACTOR shall maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
   1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
      a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
      b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
   2. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Include identification on cover sheets.
2. Identification: As follows:
   a. Date.
   b. Designation "PROJECT RECORD DRAWINGS."
   c. Name of ENGINEER.
   d. Name of CONTRACTOR.

2.2 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Prior to Substantial Completion, complete miscellaneous records and place in good order, properly identified and found or filed, ready for use and reference. Miscellaneous records include, but are not limited to, the following:
1. Field records on excavations and foundations.
2. Field records on underground construction and similar work.
3. Surveys showing locations and elevations of underground lines.
4. Invert elevations of drainage pipes.
5. Surveys establishing building lines and levels.
6. Records of equipment testing, start-up, and operation.
7. Certifications received in lieu of labels on bulk products.
8. Batch mixing and bulk delivery tickets.
9. Documented qualifications of installation firms.
10. Inspections and certification of governing agencies.
11. Load and performance testing.
12. Results of pressure testing of lines.
13. Final inspection and correction procedures.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for ENGINEER'S reference during normal working hours.

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
   1. Operation and maintenance documentation directory.
   2. Emergency manuals.
   3. Operation manuals for systems, subsystems, and equipment.
   4. Maintenance manuals for the care and maintenance of systems and equipment.

B. Related Sections include the following:
   1. Section 01 33 00 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
   2. Section 01 77 00 "Closeout Procedures" for submitting operation and maintenance manuals.
   3. Divisions 02 through 48 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. Preliminary Data: Initial and subsequent submissions for ENGINEER'S review.

B. Final Data: ENGINEER accepted data, submitted as specified herein.

C. Maintenance Operation: As used on Maintenance Summary Form is defined to mean any routine operation required to ensure satisfactory performance and longevity of equipment. Examples of typical maintenance operations are lubrication, belt tensioning, adjustment of pump packing glands, and routine adjustments.

D. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

E. Subsystem: A portion of a system with characteristics similar to a system.

F. Instructional Manual: Equipment and Operating Data submitted prior to the testing and startup of the equipment, subsystem, or system.

G. Operation and Maintenance Data: The operation and maintenance data submitted to be included in the Operation and Maintenance Manual for the Project.

1.4 SEQUENCING AND SCHEDULING

A. Equipment and System Data (Instructional manual):
   1. Preliminary Data:
      a. Do not submit until ENGINEER has approved Shop Drawings.
      b. Submit prior to shipment date.
   2. Final Data: Submit Instructional Manual Formatted data not less than 30 days prior to equipment or system field functional testing. Submit Compilation Formatted and Electronic Media Formatted data prior to Substantial Completion of Project.

1.5 SUBMITTALS

A. Initial Submittal: Submit two (2) draft copies of each Operation and Maintenance Data (Manual) at least 60 days before requesting inspection for Substantial Completion. Include a complete operation and maintenance directory. ENGINEER will return one copy of draft and mark whether general scope and content of Manual is acceptable.

B. Final Submittal: Submit one (1) copy of each Manual in final form at least 30 days before requesting inspection for Substantial Completion. ENGINEER will return copy with comments within 15 days of receipt or notify CONTRACTOR it's accepted.
   1. Correct or modify each manual to comply with ENGINEER'S comments. Submit (4) copies of each corrected manual within 15 days of receipt of ENGINEER'S comments. Provide three (3) electronic copies of the final manual in PDF format.

1.6 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically or by treatment area as directed by ENGINEER. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system or by treatment area as directed by ENGINEER. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents.

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.
   3. Manual contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of OWNER.
   4. Name, address, and telephone number of CONTRACTOR.
   5. Name and address of ENGINEER.
   6. Subcontractor, Supplier, Manufacturer, Installer, or Maintenance Contractor's name, address, and telephone number, as appropriate.
      a. Identify area of responsibility of each.
      b. Provide name and telephone number of local source of supply for parts, replacement, and service.
   7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
   1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
      a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
      b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL, VOLUME NO. ___ OF ___" , Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.
      c. Text: Manufacturer's printed data, or neatly typed.
      d. Three-hole punch data for binding and composition; arrange printing so punched holes do not obscure data.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch 20-POUND MINIMUM, white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
    a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
    b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.
6. Electronic Media Format:
    a. Portable Document format (PDF)
        1) After all preliminary data has been found to be acceptable, submit operational and maintenance data in PDF format on CD-ROM.
        2) Files to be exact duplicates of accepted preliminary data. Arrange by specification Section number. Bookmark sections.
        3) Files to by fully functional and viewable in most recent version of Adobe Acrobat.
    b. Manufacturer’s Standard Electronic Format:

2.3 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions.
2. Performance and design criteria.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.

9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:
   1. Startup procedures.
   2. Equipment or system break-in procedures.
   3. Routine and normal operating instructions.
   4. Regulation and control procedures.
   5. Instructions on stopping.
   6. Normal shutdown instructions.
   7. Seasonal and weekend operating instructions.
   8. Required sequences for electric or electronic systems.
   9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identifies color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Color, pattern, and texture.
   4. Material and chemical composition.
   5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
   1. Standard printed maintenance instructions and bulletins.
   2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
   3. Identification and nomenclature of parts and components.
   4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
   1. Test and inspection instructions.
   2. Troubleshooting guide.
   3. Precautions against improper maintenance.
   4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   5. Aligning, adjusting, and checking instructions.
   6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
   1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
   2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: If applicable, include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
   1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
   2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
   1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.
   1. Do not use original Project Record Documents as part of operation and maintenance manuals.
   2. Comply with requirements of newly prepared Record Drawings in Section 01 78 10 "Project Record Documents."

G. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

H. Maintenance Summary:
   1. Compile individual Maintenance Summary Form for each applicable equipment item, respective unit or system and for components or sub-units.
   2. Format:
      a. Use Maintenance Summary Form include with this Section as a guide.
      b. Use only 8-1/2 by 11-inch size paper.
   3. Include detailed lubrication instructions and diagrams showing points to be greased or oiled; recommended type, grade, and temperature range of lubricants and frequency of lubrication.

4. Recommended Spare Parts:
    a. Data to be consistent with manufacturer's Bill of Materials/Parts List furnished with the Operation and Maintenance Data.
    b. "Unit" is the unit of measure for ordering part.
    c. "Quantity" is the number of units recommended.
    d. "Unit Cost" is the current purchase price.

3.2 DATA FOR MATERIALS AND FINSIHES

A. Content for Architectural Products, Applied Materials, and Finishes:
    1. Manufacturer's data, giving full information on products:
        a. Catalog number, size, and composition.
        b. Color and texture designations.
        c. Information required for reordering special-manufactured products.
    2. Instructions for Care and Maintenance:
        a. Manufacturer's recommendation for types of cleaning agents and methods.
        b. Cautions against cleaning agents and methods that are detrimental to product.
        c. Recommended schedule for cleaning and maintenance.

B. Content for Moisture Protection and Weather Exposed Products:
    1. Manufacturer's data, giving full information on products:
        a. Applicable standards.
        b. Chemical composition.
        c. Details of installation.
    2. Instructions for inspection, maintenance, and repair.

3.3 SUPPLEMENTS

A. Sample forms included after "End Of Section" are considered part of this Section.
    1. Maintenance Summary Form.

END OF SECTION

MAINTENANCE SUMMARY FORM

PROJECT: _____ CONTRACT NO: _____

EQUIPMENT ITEM: _____

MANUFACTURER: _____

EQUIPMENT TAG NOS.: _____

WEIGHT OF INDIVIDUAL COMPONENTS (Over 100 Pounds) _____

_____

NAME PLATE DATA (HP, Voltage, Speed, etc.): _____

_____

Manufacturer's Local Representative:

Name: _____ Telephone No. _____

Address: _____

Maintenance Operation Requirements	Frequency	Lubricant
List briefly each maintenance operation required and refer to specific information in manufacturer's maintenance manual, if applicable. Also note tools needed for each maintenance operation and safety considerations.	List frequency of each maintenance operation.	Refer by symbol to lubricant required.

MAINTENANCE SUMMARY FORM (Continued)

LUBRICANT LIST

Reference Symbol	Mfgr _____	Mfgr _____	Mfgr _____
List symbols used in maintenance requirements	List equivalent lubricants of several manufacturers'		

RECOMMENDED SPARE PARTS FOR OWNER'S INVENTORY

Part No.	Description	Unit	Quantity	Unit Price

SECTION 01 78 36
WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Preparation and submittal of warranties.
2. Time and schedule of submittals.
3. Transfer of Maintenance responsibility.

1.2 REFERENCES

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to this Section.

B. Related Sections:

1. Section 01 33 00 “Submittal Procedures”
2. Section 01 78 23 “Operation and Maintenance Data”
3. Section 01 77 00 “Closeout Procedures.”
4. Warranties required for specific products or work included in individual technical specification Sections.

1.3 SUBMITTALS

A. At the end of the project furnish the following warranty summary:

1. Provide two copies of all warranty information in an electronic format on a compact disk (CD) or USB Flash drive.
2. Shall be labeled WARRANTIES with current year, project name, contractor name and telephone number, and equipment supplier name and telephone number.
3. Prepare table of contents in the same sequence as the manual submitted per Section 01 78 23 “Operation and Maintenance Data.”
4. Separate each warranty with index tab sheets keyed to the table of contents listing.
5. Behind each index sheet, or within each warranty file, include an information sheet labeled WARRANTIES, with current year, project name, contractor name and telephone number, subcontractor name and telephone number, equipment supplier name and telephone number, manufacturer name and telephone number, and applicable Section number and title.

B. Preparation

1. Warranty shall be on the company’s’ original forms signed by authorized agent only.
2. No warranty shall start prior to equipment being put into operation.
3. Verify that documents are in proper form, contain full information, and are notarized.
4. Co-execute submittals when required.
5. Retain warranties until time specified for submittal.
6. All of the above shall be included in each submittal.

C. Conditions

1. Warranty date of beginning shall be the date of Substantial Completion as determined by the applicable technical specification Section. If an item does not have a separate substantial completion date, the project substantial completion data shall be used as the beginning of the warranty period.
2. Equipment warranty period shall be for a minimum of two years from the warranty date of substantial completion, unless specifically stated otherwise.

D. Schedule

1. Submittals shall be submitted by the CONTRACTOR in accordance with Section 01 33 00 "Submittal Procedures."
2. Provide the responsible subcontractors, suppliers, and manufacturers' warranties in duplicate, within ten days after completion of the applicable item of work.
3. Warranties shall be submitted prior to final Application for Payment.
4. Provide a separate letter for each maintenance responsibility transference to include the mutually agreed time and date of the transfer of responsibility.

1.4 SPECIAL EQUIPMENT WARRANTY

A. Special Equipment Warranty

1. The SUPPLIER shall jointly warrant to the OWNER and CONTRACTOR that all equipment, including all components of the complete assembly furnished by it hereunder, complies in all material respects with the design and specifications of these documents and contains no defects of material or workmanship. In the event of failure of any part or parts of the equipment during the warranty period, due to defects of design, materials, or workmanship, the affected part or parts shall be replaced or repaired at SUPPLIER's option promptly upon notice by the OWNER. All replacement parts shall be furnished, delivered, and installed at the expense of the SUPPLIER.
2. Unless specifically stated otherwise, the warranty period shall be interpreted as the 12-month period of beneficial use following substantial completion which includes successful completion of the performance testing of the SUPPLIER-furnished equipment by the OWNER as provided below, and shall be exclusive of the time of use of the equipment in installation, testing, adjusting, etc., during the construction period, or of the time in storage, after delivery and prior to installation. SUPPLIER's warranty, should CONTRACTOR be delayed, will not extend beyond five (5) years (for equipment with a 2-year warranty, extend period for equipment with longer warranties) after receipt of purchase order from the CONTRACTOR, without adjustment in contract price.
3. If the equipment does not meet the requirements of the Specifications, the SUPPLIER shall correct or service the equipment at no additional cost to Owner, as necessary to meet the specified requirements. In the event the equipment is unable to meet the specified requirements within the warranty period, the equipment SUPPLIER shall refund an amount equal to the original purchase price of the equipment.
4. The CONTRACTOR shall be responsible for ensuring that the SUPPLIER's special equipment warranty is not voided by acceptance of the terms of purchase agreements between the CONTRACTOR and the SUPPLIER. In all events, the CONTRACTOR will be held ultimately responsible for enforcement of the requirements of this warranty at his expense.

5. Payment for equipment as "Materials-On-Hand" will not be made until the OWNER receives an approved Special Equipment Warranty.

PART 2 - PRODUCTS

2.1 WARRANTY CERTIFICATES

A. The installation contractor shall complete all warranty certificates and register the product with the manufacturer.
B. Use the date of substantial completion as the installation date.
C. List the product model, product serial number, and any additional information required by the manufacturer on each certificate.
D. Provide a copy of the original certificate in lieu of the original certificate in the warranty manual if the manufacturer requires the original copy in lieu of a copy.

PART 3 - EXECUTION

3.1 PRODUCT WARRANTY

A. The CONTRACTOR shall fill out all product warranty forms during the manufacturer's required time limit.
   1. Failure to do so may result in the OWNER's loss of standard product coverage in which the CONTRACTOR shall become liable for the same coverage and time limit forfeited due to their omission.
   2. The CONTRACTOR shall notify the owner, prior to installation, of all optional extended warranties provided by the manufacturer and make available to the owner the opportunity to purchase the extended warranty.
   3. The CONTRACTOR shall insure that all warranty documents, including copies of completed registration forms, are included in the closeout documents into their closeout documents as required by Section 01 77 00 "Closeout Procedures."

B. Warranty pre-expiration equipment review
   1. The CONTRACTOR, OWNER, and ENGINEER shall conduct an on-site review of equipment and systems covered by warranties.
      a. This review will be scheduled approximately 2-months prior to expiration of the Warranty.
      b. The purpose of the review will be to evaluate the condition of the equipment and systems to determine if Warranty repairs of claims are necessary.
      c. The CONTRACTOR shall cooperate to notify the issuer of the Warranty and to schedule necessary repairs or corrective actions prior to expiration of the Warranty.

END OF SECTION

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SECTION 02 41 19
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following selective demolition work when shown on the Drawings:
   1. Demolition and removal of selected portions of building or structure.
   2. Demolition and removal of selected site elements.
   3. Salvage of existing items to be reused or recycled.

B. Related Sections include the following:
   1. Section 01 73 29 "Cutting and Patching" for cutting and patching procedures.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services, use of elevator and stairs, and locations of temporary partitions and means of egress.

B. Predemolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces, which might be misconstrued as damage caused by selective demolition operations. Comply with Section 01 00 00 "Construction General Requirements". Submit before Work begins.

C. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Predemolition Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

A. OWNER will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so OWNER'S operations will not be disrupted.

B. OWNER will maintain conditions existing at time of inspection for bidding purpose as far as practical.

C. Notify ENGINEER of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: It is unknown whether hazardous materials will be encountered in the Work.
   1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify ENGINEER and OWNER. OWNER will remove hazardous materials under a separate contract.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.7 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to ENGINEER.

E. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
   1. Comply with requirements specified in Section 01 00 00 "Construction General Requirements".

F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with requirements for access and protection specified in Section 01 50 00 "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.4 SELECTIVE DEMOLITION

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
   1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
   2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
   3. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before

starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.

4. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
5. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:
   1. Clean salvaged items.
   2. Pack or crate items after cleaning. Identify contents of containers.
   3. Store items in a secure area until delivery to OWNER.
   4. Transport items to OWNER'S storage area designated by OWNER.
   5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by ENGINEER, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 HAZARDOUS MATERIALS

A. This Section does not address removal of hazardous materials or substances such as asbestos or polychlorinated byphenyls (PCBs). If these materials or substances are or could be found on-site, stop work in the area and notify the OWNER and ENGINEER.

B. OWNER will contract with a licensed remediation or abatement firm to determine if dangerous materials exist in the demolition area. If they exist, the firm will proceed with the removal.

C. PCBs are heavy, oil-like liquids or solids, clear to yellow in color, produced in the U.S. from 1929 to 1977; their manufacturer banned in 1979. PCBs were used as dielectric fluids in electrical transformers, capacitors, and fluorescent light ballasts; also in adhesives and calking compounds.

D. Asbestos used in many construction products was banned in 1978. In construction completed before 1978, asbestos is typically found in four forms; as sprayed- or troweled-on surfaces for ceilings or walls; as the thermal insulation around pipes or ducts; as fire proofing on structural members; and in various materials, such as shingles, roofing tiles, and gypsum board patching compounds.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain OWNER'S property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off OWNER'S property and legally dispose them.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

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SECTION 05 05 20
ANCHOR BOLTS AND CONCRETE INSERTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Provide anchor bolts, expansion anchors and concrete inserts for equipment and metal fabrications as specified or shown on the Drawings, including, but not limited to:
      a. Baffles, weirs and troughs.
      b. Rails.
      c. Sluice and slide gates.
      d. Hangers and brackets.
      e. Equipment.
      f. Piping.
      g. Tanks.
      h. Grating and floor plate.
      i. Electrical, Plumbing and HVAC Work.
      j. Wood and plastic fabrications.

B. Related Sections:
   1. Section 05 12 00 “Structural Steel Framing” for fasteners for structural steel framing, with the requirements for anchor bolts and fasteners for structural steel, steel joists, steel decking, and metal fabrications are described in applicable sections of Division 5 Metals.
   2. Section 26 05 29 “Hangers and Supports” for requirements for hangers and supports for electrical conduits, cable trays, components and related work.

1.3 REFERENCES AND DEFINITIONS

A. References:
   1. American Concrete Institute (ACI):
      a. ACI 318, Appendix D - Building Code Requirements for Structural Concrete and Commentary; Anchoring to Concrete.
      b. ACI 355.2 - Qualification of Post-Installed Mechanical Anchors in Concrete & Commentary
   2. ASTM International (ASTM):
      a. A 36 – Specification for Carbon Structural Steel
      b. A 193 – Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High-Pressure Service and Other Special Purpose Applications
      c. A 194 – Specification for Carbon and Alloy Steel for Bolts for High Pressure or High Temperature, or Both

d. A 283 – Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
e. A 307 – Specification for Carbon Steel Externally and Internally Threaded Standard Fasteners
f. A 320 – Specification for Alloy-Steel and Stainless Steel Bolting Materials for Low-Temperature Service
g. C 881 – Specification for Epoxy-Resin-Base Bonding Systems for concrete
h. E 488 – Test Method for Strength of Anchors in Concrete and Masonry Units
i. E 1512 – Test Method for Testing bond Performance of Bonded Anchors
j. F 436 – Specification for Hardened Steel Washers
k. F 593 – Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs
l. F 594 – Specification for Stainless Steel Nuts
m. F 844 - Specification for Washers, Steel, Plain (Flat), Unhardened for General Use
n. F 1554 – Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

3. International Building Code, 2006 or later edition.
4. ICC Evaluation Service, Inc. (ICC ES):
   a. AC193 – Acceptance Criteria for Mechanical Anchors in Concrete Elements
   b. ESR - Evaluation Service Report
5. FM Global (Formerly: FM - Factory Mutual System)
6. National Sanitation Foundation International (NSF)

B. Definitions:
1. Exterior Area: Location not protected from the weather by a building or other enclosed structure.
2. Interior Dry Area: Location inside building or structure where floor is not subject to liquid spills or washdown, not where wall or roof slab is common to a water-holding or earth-retaining structure.
3. Interior Wet Area: Location inside building or structure where floor is sloped to floor drains or gutters and is subject to liquid spills or washdown, or where wall, floor, or roof slab is common to a water-holding or earth-retaining structure.
4. Submerged: Location at or below top of wall or embankment of open water-holding structure, such as a basin or channel, or wall, a ceiling, or floor surface inside a covered water-holding structure, or an exterior below grade wall or roof surface of a water-holding structure (open or covered).

1.4 SYSTEM DESCRIPTION

A. Design Requirements:
1. Designed in accordance with ACI 318 (Strength Design method using Appendix D) for use in cracked and uncracked concrete.
2. Testing Requirements: Tested in accordance with ACI 355.2 and ICC ES AC193 for use in cracked and uncracked concrete including seismic and wind loading (Category 1 anchors).
3. When the size, length, or load-carrying capacity of an anchor bolt, expansion anchor, or concrete insert is not shown on the Drawings, provide the size, length and capacity required to carry the design load in accordance with ACI 318, Appendix D for cracked and uncracked concrete.

4. Determine design loads as follows:
    a. For equipment anchors, use the design load recommended by the manufacturer and approved by the ENGINEER.
    b. For pipe hangers and supports, use one half the total weight of pipe, fittings, valves, accessories, and water contained in pipe between the hanger or support in question, and adjacent hangers and supports on both sides.

1.5 SUBMITTALS

A. Product Data:
    1. For each type of product indicated: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for products.
    2. Provide the ICC ES Evaluation Service Report (ESR Number) for each fastener.

B. Shop Drawings: Submit the following:
    1. Setting drawings and templates for location and installation of anchorage devices.
    2. Copies of manufacturer's specifications, materials, load tables, dimension diagrams, and installation instructions for anchorage devices.

C. Samples: Submit representative samples of bolts, anchors, and inserts as may be requested for review by the ENGINEER. Review will be for type and finish only. Compliance with all other requirements is the exclusive responsibility of CONTRACTOR.

1.6 QUALITY ASSURANCE

A. Manufacturer:
    1. Manufacturer shall have been engaged in the manufacturer of anchor bolts, expansion anchors, concrete inserts, and related items for a minimum of ten (10) years.
    2. ISO 9001 Certified.

B. Installer Qualifications: Adhesive anchor installers shall be trained and certified by manufacturer.

C. Testing Agency Qualifications: Qualified for testing anchors in accordance with ASTM E 488 and E 1512 and has performed ICC ES method of evaluation.

PART 2 - PRODUCTS

2.1 GENERAL

A. Unless otherwise indicated, comply with the following requirements:

Table 1
Material Requirements

Item	ASTM Reference
Stainless Steel:	
Bolts, Threaded Rods, and Anchor Studs	F 593, AISI Type 316, Condition CW
Nuts	F 594, AISI Type 316, Condition CW
Steel Bolts and Nuts:	

Table 1 Material Requirements	
Item	**ASTM Reference**
Carbon Steel	A 307 bolts, with A 563 nuts
High-Strength	A 325, Type 1 bolts, with A 563 nuts
Anchors Bolts and Rods	F 1554, Grade 55, with weldability supplement S1
Eyebolts	A 489
Threaded Rods	A 36
Flat Washers (Unhardened)	F 844
Flat and Beveled Washers (Hardened)	F 436
Thrust Ties for Steel Pipe:	
Threaded Rods	A 193, Grade B7
Nuts	A 194, Grade 2H
Plate	A 283, Grade D

B. Bolt, Washers, and Nuts: Use stainless steel and carbon steel types, as indicated in Fastener Schedule at end of this Section.

2.2 ANCHOR BOLTS AND ANCHOR BOLT SLEEVES

A. Cast-In-Place Anchor Bolts:

1. Headed type, unless otherwise shown on Drawings.
2. Material type and protective coating as listed in Fastener Schedule.

B. Anchor Bolt Sleeves:

1. Plastic:
   a. Single unit construction with corrugated sleeve.
   b. Top of sleeve shall be self-threading to provide adjustment of threaded anchor bolt projection.
   c. Material: High density polyethylene.
2. Fabricated Steel: ASTM A 36.

2.3 CONCRETE AND MASONRY DRILLED ANCHORS

A. Mechanical Expansion Anchors:

1. Design Requirements: Anchor bolt and sleeve assembly shall have capability to sustain without failure, as determined by the Strength Design method when installed in cracked and uncracked concrete, in accordance with the International Building Code and as determined by testing in accordance with ASTM E 488 and AC-355.2.
2. Material: AISI Type 304, Type 316 stainless steel, and carbon steel as listed in Fastener Schedule.
3. Current evaluation and acceptance reports by ICC or other similar code organization, and listed by UL and FM Global.
4. Acceptable for use in potable water structures by NSF and local health organizations.
5. Type:
   a. ICC-ES Code Listed, Category 1, Cracked and Uncracked Concrete.

b. Self-drilling Anchors; snap-off or flush type, zinc-plated.
c. Non-drilling Anchors; flush type for use with zinc-plated or stainless steel bolt, or stud type with projecting threaded stud.

6. Size: As shown on Drawings and required for the concrete strength specified.
7. Manufacturers. Subject to compliance with requirements, available products that may be incorporated into the Work include the following:
   a. ITW Ramset/Red Head, Wood Dale, IL.
   b. Hilti, Inc., Tulsa, OK
   c. Powers Fasteners, New Rochelle, NY
   d. Simpson Strong-Tie Co., Inc., Pleasanton, CA

B. Wedge Bolts:
1. Material: Zinc-plated, case-hardened carbon steel.
2. Current evaluation and acceptance reports by ICC or other similar code organization, and listed by UL and FM Global.
3. Type:
   a. ICC-ES Code Listed, Category 1, Cracked and Uncracked Concrete.
   b. Description: One piece, heavy duty screw anchor with finished hexhead suitable for cracked and uncracked concrete and grouted masonry.
4. Size: As shown on Drawings and required for the concrete strength specified.
5. Manufacturers. Subject to compliance with requirements, available products that may be incorporated into the Work include the following:
   a. ITW Ramset/Red Head, Wood Dale, IL.
   b. Hilti, Inc., Tulsa, OK
   c. Powers Fasteners, New Rochelle, NY
   d. Simpson Strong-Tie Co., Inc., Pleasanton, CA

C. Drop-In Anchors:
1. Material: Zinc plated, case hardened carbon steel.
2. Current evaluation and acceptance reports by ICC or other similar code organization, and listed by UL and FM Global.
3. Type:
   a. ICC-ES Code Listed, Category 1, Cracked and Uncracked Concrete.
   b. Description: Internally threaded, self-tapping screw anchor designed for performance in cracked and uncracked concrete and grouted masonry. Suitable base materials included normal-weight concrete, structural lightweight concrete, and concrete over metal deck.
4. Size: As shown on Drawings and required for the concrete strength specified.
5. Manufacturers. Subject to compliance with requirements, available products that may be incorporated into the Work include the following:
   a. ITW Ramset/Red Head, Wood Dale, IL.
   b. Hilti, Inc., Tulsa, OK
   c. Powers Fasteners, New Rochelle, NY
   d. Simpson Strong-Tie Co., Inc., Pleasanton, CA

D. Adhesive Anchors:
1. General: Adhesive anchoring system designed for bonding threaded anchor rod and reinforcing bar hardware into drilled holes in concrete and solid masonry base materials.

2. Threaded rod:
    a. Material: Unless otherwise specified:
        1) ASTM A36 for interior application, unless otherwise specified.
        2) ASTM F593 Stainless steel threaded rod for exterior, interior wet, and submerge applications.
        3) ASTM A193, Grade B7, Type 2 for high strength applications.
    b. Diameter as shown on the Drawings or as required for the loads and conditions.
    c. Length as required to provide minimum depth of embedment.
    d. Clean and free of grease, oil, or other deleterious material.
    e. For hollow-unit masonry, provide galvanized or stainless steel wire cloth screen tube to fit threaded rod.
    f. Anchor rods shall have rolled threads.
3. Adhesive:
    a. Two-component, high strength adhesive anchoring system designed to be used in adverse/thaw environments, with gray color mixing.
        1) ICC-ES Code Listed.
        2) Cure Temperature, Pot Life, and Workability: Compatible for the intended use and environmental conditions.
        3) Non-sag, with selected viscosity base on installation temperature and overhead application where applicable.
        4) ASTM Compliance:
            a) Uncracked Concrete: Meets ASTM C881, Types I, II, IV, and V, Grade 3, Class A and B.
            b) Uncracked and Cracked Concrete: Meets ASTM C881, Types I, II, IV, and V, Grade 3, Class B and C.
        5) Compliant with NSF/ANSI Standard 61 for potable water applications.
        6) Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the Work include the following:
            a) ITW Ramset/Red Head, Wood Dale, IL.
            b) Hilti, Inc., Tulsa, OK
            c) Powers Fasteners, New Rochelle, NY
            d) Simpson Strong-Tie Co., Inc., Pleasanton, CA

E. Concrete Inserts:
    1. For piping, grating and floor plate provide malleable iron inserts.
    2. Provide those recommended by the manufacturer for the required loading.
    3. Finish shall be black.

F. Powder-actuated fasteners and other types of bolts and fasteners not specified herein shall not be used, unless approved by ENGINEER.

PART 3 - EXECUTION

3.1 CAST-IN-PLACE ANCHOR BOLTS

A. Accurately locate and hold anchor bolts in place with templates at the time concrete is placed.

B. Use anchor bolt sleeves for location adjustment, and provide two nuts and one washer per bolt of same material as bolt.

C. Minimum Bolt Size: 1/2-inch diameter by 12 inches long, unless otherwise shown.

3.2 CONCRETE AND MASONRY DRILLED ANCHORS

A. Begin installation only after concrete or masonry to receive anchors has obtained design strength.

B. Install in accordance with manufacturer's instructions.

C. Provide minimum embedment, edge distance, and spacing as follows, unless indicated otherwise by manufacturer's instructions or shown otherwise on Drawings.

Table 2
Minimum Requirements
Concrete and Masonry Drilled Anchors

Anchor Type	Min. Embedment (bolt diameters)	Min. Edge Distance (bolt diameters)	Min. Spacing (bolt diameters)
Wedge	9	6	12
Expansion and Sleeve	4	6	12
Adhesive	9	9	13.5

D. Use only drill type, bit type, and diameter recommended by anchor manufacturer. Clean hole of debris and dust with brush and oil-free compressed air.

E. Contractor shall accurately locate steel reinforcement by the use of a pachometer or other approved means, prior to drilling the hole. If reinforcing is encountered in drilling holes for mechanical anchors, the hole should be abandoned and a new hole should be drilled.

F. Mechanical anchors shall be set by applying the manufacturer's recommended torque.

G. Adhesive Anchors:
1. Do not install adhesive anchors when temperature is below 40 degree F or above 100 degree F.
2. Remove any standing water from hole with oil-free compressed air. Inside surface of hole shall be dry.
3. For hollow-unit masonry, install screen tube in accordance with manufacturer's instructions.
4. Do not disturb anchor during recommended curing time.
5. Do not exceed maximum torque specified in manufacturer's instructions.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: OWNER will engage a qualified testing agency to perform tests and inspections on concrete and masonry anchors when indicated on the Drawings.

3.4 MANUFACTURER'S SERVICES

A. Adhesive Anchors: Conduct site training of installation personnel for proper installation, handling, and storage of adhesive anchor system.

3.5 FASTENER SCHEDULE

A. Unless otherwise indicated on the Drawings, provide anchor bolts and anchors as shown in Table 3.

B. Anti-seizing Lubricant: Use on all stainless steel threads.

C. Do not use adhesive anchors to support fire-resistive construction or where ambient temperature will exceed 120 degree F.

Table 3: Fastener Schedule Requirements for Anchor Bolts and Anchors		
Service Use and Location	**Product**	**Remarks**
1. Anchor Bolts Cast into Concrete for Equipment Bases		
Interior Dry Areas	Stainless steel headed anchor bolts, unless otherwise specified with equipment.	
Submerged, Exterior, Interior Wet, and Corrosive Areas	Stainless steel headed anchor bolts with fusion bonded coating, unless otherwise specified with equipment.	See Section 09 91 00, "Painting and Protective Coatings."
2. Drilled Anchors for Equipment and Components to Cast-in-Place Concrete		
Interior Dry Areas	Adhesive zinc-plated carbon steel anchors.	
Submerged, Exterior, Interior Wet, and Corrosive Areas	Adhesive stainless steel anchors.	
3. Anchors in Grout-Filled Concrete Masonry Units		
Exterior and Interior Wet and Dry Areas	Zinc-coated carbon steel or stainless steel adhesive anchors.	
4. Anchors in Hollow Concrete Masonry Units		
Exterior and Interior Wet and Dry Areas	Zinc-plated carbon steel or stainless steel wedge anchors or stainless steel adhesive anchors with screen tube.	
5. Connections for Structural Steel Framing and Support Components		
Exterior and Interior Wet and Dry Areas	High-strength steel bolted connections.	Use hot-dipped galvanized, high-strength bolted connections for galvanized steel framing members.
6. Connections of Aluminum Components		
Submerged, Exterior and Interior Wet and Dry Areas	Stainless steel bolted connections, unless otherwise specified with equipment.	
7. Overhead Pipe and Duct Supports		
Exterior and Interior Wet and Dry Areas	Snake anchors or adhesive anchoring systems.	

END OF SECTION

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SECTION 05 50 00
METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Steel framing and supports for mechanical and electrical equipment.
   2. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   3. Metal Bollards
   4. Metal Ladders and Safety Cages
   5. Loose bearing and leveling plates for applications where they are not specified in other Sections

B. Products furnished, but not installed, under this Section:
   1. Embedment including embedded anchors and anchor bolts, steel pipe sleeves, and slotted-channel inserts indicated to be cast into concrete.
   2. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

1.3 PERFORMANCE REQUIREMENTS

A. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
   1. Temperature Change: 120° F, ambient; 180° F, material surfaces.

B. Structural Performance of Ladders: Provide ladders capable of withstanding the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.

1.4 ACTION SUBMITTALS

A. Shop Drawings: Show fabrication and installation details for metal fabrications.
   1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
   2. Provide templates for anchors and bolts specified for installation under other Sections.

B. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Mill Certificates: Signed by manufacturers of stainless-steel certifying that products furnished comply with requirements.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1, “Structural Welding Code - Steel.”
   2. AWS D1.2, “Structural Welding Code - Aluminum.”
   3. AWS D1.3, “Structural Welding Code - Sheet Steel.”
   4. AWS D1.6, “Structural Welding Code - Stainless Steel.”

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.

1.8 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers’ written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages and steel weld plates and angles for casting into concrete. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

2.2 FERROUS METALS

A. Steel Plates, Shapes, and Bars: ASTM A36.

B. Stainless-Steel Sheet, Strip, and Plate: ASTM A240 or ASTM A666, Type 316L.

C. Stainless-Steel Bars and Shapes: ASTM A276, Type 316L.

D. Steel Tubing: ASTM A500, cold-formed steel tubing.

E. Steel Pipe: ASTM A53, standard weight (Schedule 40) unless otherwise indicated.

F. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
   1. Size of Channels: 1-5/8 by 1-5/8 inches.
   2. Material: Galvanized steel, ASTM A653, structural steel, Grade 33, with G90 coating; 0.108-inch nominal thickness.
   3. Material: Cold-rolled steel, ASTM A1008, structural steel, Grade 33; 0.0966-inch minimum thickness; hot-dip galvanized after fabrication.

G. Cast Iron: Either gray iron, ASTM A48, or malleable iron, ASTM A47, unless otherwise indicated.

2.3 NON-FERROUS METALS

A. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.

B. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.

C. Aluminum Castings: ASTM B26, Alloy 443.0-F.

D. Bronze Plate, Sheet, Strip, and Bars: ASTM B36, Alloy UNS No. C28000 (muntz metal, 60 percent copper).

E. Bronze Extrusions: ASTM B455, Alloy UNS No. C38500 (extruded architectural bronze).

F. Bronze Castings: ASTM B584, Alloy UNS No. C83600 (leaded red brass) or No. C84400 (leaded semi-red brass).

G. Nickel Silver Extrusions: ASTM B151, Alloy UNS No. C74500.

H. Nickel Silver Castings: ASTM B584, Alloy UNS No. C97600 (20 percent leaded nickel bronze).

2.4 FASTENERS

A. General: Unless otherwise indicated, provide Type 316 stainless-steel fasteners. Select fasteners for type, grade, and class required.
   1. Provide stainless-steel fasteners for fastening aluminum.
   2. Provide stainless-steel fasteners for fastening stainless steel.
   3. Provide stainless-steel fasteners for fastening nickel silver.
   4. Provide bronze fasteners for fastening bronze.

B. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 2.

C. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors.
   1. Material: Alloy Group 2 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.5 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

C. Shop Primers: Provide primers that comply with Section 09 91 00 “Painting and Protective Coatings.”

D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187.

2.6 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that will be exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
   1. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.7 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
   1. Fabricate units from slotted channel framing where indicated.
   2. Furnish inserts for units installed after concrete is placed.

C. Galvanize miscellaneous framing and supports where indicated.

D. Prime miscellaneous framing and supports with primer specified in Section 09 91 00 “Painting and Protective Coatings” where indicated.

2.8 METAL BOLLARDS

A. Fabricate metal bollards from Schedule 40 steel pipe.

B. Prime bollards with primer specified in Section 09 91 00 “Painting.”

2.9 METAL LADDERS AND SAFETY CAGES

A. General:
1. Comply with ANSI A14.3, unless otherwise indicated.
2. Space siderails 16 inches apart, unless otherwise indicated.

B. Steel Ladder Construction:
1. Flat bar siderails, with 3/4-inch- diameter steel bar rungs fitted in centerline of siderails, plug-welded, and ground smooth on outer rail faces.

C. Aluminum Ladder Construction:
1. Extruded channel or tube siderails, not less than 2-1/2 inches deep, 3/4 inch wide, and 1/8 inch thick; with extruded tube rungs, not less than 3/4 inch deep and not less than 1/8 inch thick, fitted into centerline of siderails and fastened by welding or with stainless-steel fasteners or brackets and aluminum rivets.
2. Provide rungs with ribbed tread surfaces.

D. Safety Cages:
1. Fabricate ladder safety cages to comply with ANSI A14.3.
2. Fabricate from same metal as ladders to which safety cages are attached and assemble by welding or riveting.

2.10 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize plates. Prime plates with primer specified in Section 09 91 00 “Painting.”

2.11 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.12 FINISHES, GENERAL

A. Comply with NAAMM’s “Metal Finishes Manual for Architectural and Metal Products” for recommendations for applying and designating finishes.

B. Finish metal fabrications after assembly.

C. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.13 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153 for steel and iron hardware and with ASTM A123 for other steel and iron products.

B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete or masonry, or unless otherwise indicated.

C. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
   1. Exterior Items: SSPC-SP 6/NACE No. 3, “Commercial Blast Cleaning.”
   2. Items Indicated to Receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, “Commercial Blast Cleaning.”
   3. Items Indicated to Receive Primers Specified in Section 09 91 00 “Painting”: SSPC-SP 6/NACE No. 3, “Commercial Blast Cleaning.”
   4. Other Items: SSPC-SP 3, “Power Tool Cleaning.”

D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, “Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel,” for shop painting.
   1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.14 STAINLESS-STEEL FINISHES

A. Remove tool and die marks and stretch lines or blend into finish.

B. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

C. Dull Satin Finish: No. 6.

D. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2.15 ALUMINUM FINISHES

A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

C. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: non-specular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size

limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
   1. Cast Aluminum: Heavy coat of bituminous paint.
   2. Extruded Aluminum: Two coats of clear lacquer.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 INSTALLING METAL BOLLARDS

A. Anchor bollards in place with concrete footings. Center and align bollards in holes three inches above bottom of excavation. Place concrete and vibrate or tamp for consolidation. Support and brace bollards in position until concrete has cured.

B. Fill bollards solidly with concrete, mounding top surface to shed water.

3.4 INSTALLING BEARING AND LEVELING PLATES

A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.

B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
   1. Use non-shrink, non-metallic grout.
   2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Section 09 91 00 “Painting.”

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780.

END OF SECTION

SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Standard hollow metal doors and frames.

1.2 RELATED SECTIONS:

A. Division 00

B. Division 01

1.3 REFERENCES – NOT USED

1.4 ADMINISTRATIVE REQUIREMENTS – NOT USED

1.5 SUBMITTALS

A. Action Submittals:

1. Product Data: For each type of product indicated.
2. Shop Drawings: Include elevations, door edge details, frame profiles, metal thicknesses, preparations for hardware, and other details.
3. Schedule: Prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings.

B. Informational Submittals:

1. Samples for Initial Selection: For units with factory-applied color finishes.
2. Samples for Verification: For each type of exposed finish required.

1.6 QUALITY ASSURANCE

A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252.

1. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.

B. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9. Label each individual glazed lite.

C. Smoke-Control Door Assemblies: Comply with NFPA 105 or UL 1784.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work shall comply with this specification.

2.2 MATERIALS

A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, CS, Type B; suitable for exposed applications.

B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, CS, Type B.

C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 or A60 metallic coating.

D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.

1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASTM A 153/A 153M, Class B.

E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

F. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.

G. Mineral-Fiber Insulation: ASTM C 665, Type I.

H. Glazing: Division 08 Section "Glazing."

I. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat.

2.3 STANDARD HOLLOW METAL DOORS

A. General: Comply with ANSI/SDI A250.8.

1. Design: Flush panel.

2. Core Construction: Manufacturer's standard kraft-paper honeycomb, polystyrene, polyurethane, polyisocyanurate, mineral-board, or vertical steel-stiffener core.

a. Fire Door Core: As required to provide fire-protection and temperature-rise ratings indicated.

b. Thermal-Rated (Insulated) Doors: R-value of not less than 6.0 deg F x h x sq. ft./Btu when tested according to ASTM C 1363.

3. Vertical Edges for Single-Acting Doors: Manufacturer's standard.

4. Top and Bottom Edges: Closed with flush or inverted 0.042-inch- thick, end closures or channels of same material as face sheets.

5. Tolerances: SDI 117, "Manufacturing Tolerances for Standard Steel Doors and Frames."

B. Exterior Doors: Face sheets fabricated from metallic-coated steel sheet. Comply with ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush).

C. Interior Doors: Face sheets fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated. Provide doors complying with requirements indicated below by

referencing ANSI/SDI A250.8 for level and model and ANSI/SDI A250.4 for physical performance level:

1. Level 2 and Physical Performance Level B (Heavy Duty), Model 1 (Full Flush).

D. Hardware Reinforcement: ANSI/SDI A250.6.

2.4 STANDARD HOLLOW METAL FRAMES

A. General: Comply with ANSI/SDI A250.8.

B. Exterior Frames: Fabricated from metallic-coated steel sheet.

1. Fabricate frames with mitered or coped corners.
2. Fabricate frames as full profile welded unless otherwise indicated.
3. Frames for Level 2 Steel Doors: 0.053-inch- thick steel sheet.

C. Interior Frames: Fabricated from cold-rolled steel sheet unless metallic-coated sheet is indicated.

1. Fabricate frames with mitered or coped corners.
2. Fabricate frames as full profile welded unless otherwise indicated.
3. Fabricate knocked-down, drywall slip-on frames for in-place gypsum board partitions.
4. Frames for Level 2 Steel Doors: 0.053-inch- thick steel sheet.

D. Hardware Reinforcement: ANSI/SDI A250.6.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch thick, with corrugated or perforated straps not less than 2 inches wide by 10 inches long; or wire anchors not less than 0.177 inch thick.
2. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch thick.
3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
4. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8-inch-diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames, not less than 0.042 inch thick, and as follows:

1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.
2. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at finish floor surface.

2.6 STOPS AND MOLDINGS

A. Moldings for Glazed Lites in Doors: Minimum 0.032 inch thick, same material as door face sheet.

B. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch

high unless otherwise indicated.

C. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch thick, same material as frames.

2.7 LOUVERS

A. Provide sightproof louvers for interior doors, where indicated, that comply with SDI 111C, with blades or baffles formed of 0.020-inch- thick, cold-rolled steel sheet set into 0.032-inch- thick steel frame.

2.8 ACCESSORIES

A. Mullions and Transom Bars: Join to adjacent members by welding or rigid mechanical anchors.

B. Ceiling Struts: Minimum 1/4-inch-thick by 1-inch- wide steel.

C. Grout Guards: Formed from same material as frames, not less than 0.016-inch thick.

2.9 FABRICATION

A. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.

B. Hollow Metal Doors:

1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors. Seal joints in top edges of doors against water penetration.
2. Glazed Lites: Factory cut openings in doors.

C. Hollow Metal Frames: Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
5. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
6. Jamb Anchors: Provide number and spacing of anchors as follows:
    a. Masonry Type: Locate anchors not more than 18 inches from top and bottom of frame. Space anchors not more than 32 inches o.c. and as follows:
        1) Two anchors per jamb up to 60 inches high.
        2) Three anchors per jamb from 60 to 90 inches high.
        3) Four anchors per jamb from 90 to 120 inches high.
        4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 120 inches high.
    b. Stud-Wall Type: Locate anchors not more than 18 inches from top and bottom

of frame. Space anchors not more than 32 inches o.c. and as follows:

1) Three anchors per jamb up to 60 inches high.
2) Four anchors per jamb from 60 to 90 inches high.
3) Five anchors per jamb from 90 to 96 inches high.
4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches or fraction thereof above 96 inches high.
5) Two anchors per head for frames more than 42 inches wide and mounted in metal-stud partitions.

c. Compression Type: Not less than two anchors in each jamb.

d. Postinstalled Expansion Type: Locate anchors not more than 6 inches from top and bottom of frame. Space anchors not more than 26 inches o.c.

7. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers.

a. Single-Door Frames: Three door silencers.

b. Double-Door Frames: Two door silencers.

D. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware according to the Door Hardware Schedule and templates furnished as specified in Division 8 Section "Door Hardware."

1. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
2. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
3. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
4. Coordinate locations of conduit and wiring boxes for electrical connections with Division 16 electrical Sections.

E. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

1. Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow metal work.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite are capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
4. Provide loose stops and moldings on inside of hollow metal work.
5. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

2.10 FINISHES

A. Select the finish coating for the equipment based on location, substrate, and environment. Refer to Division 9 Section 09910 “Painting and Protective Coatings” and Coating System Schedule for information.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Hollow Metal Frames: Comply with ANSI/SDI A250.11.

1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    a. At fire-protection-rated openings, install frames according to NFPA 80.
    b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    c. Install frames with removable glazing stops located on secure side of opening.
    d. Install door silencers in frames before grouting.
    e. Remove temporary braces necessary for installation only after frames have been properly set and secured.
    f. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
    g. Field apply bituminous coating to backs of frames that are filled with grout containing antifreezing agents.
2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with postinstalled expansion anchors.
    a. When permitted, floor anchors may be set with powder-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.
3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
4. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
5. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not deformed or damaged by grout forces.
6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
7. In-Place Gypsum Board Partitions: Secure frames in place with postinstalled expansion anchors through floor anchors at each jamb. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
8. Ceiling Struts: Extend struts vertically from top of frame at each jamb to overhead structural supports or substrates above frame unless frame is anchored to masonry or to other structural support at each jamb. Bend top of struts to provide flush contact for securing to supporting construction. Provide adjustable wedged or bolted anchorage to frame jamb members.
9. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
    a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90

degrees from jamb perpendicular to frame head.

b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.

c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.

B. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:

a. Jambs and Head: 1/8 inch plus or minus 1/16 inch.

b. Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.

c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.

d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

3. Smoke-Control Doors: Install doors according to NFPA 105.

C. Glazing: Comply with installation requirements in Division 8 Section 08800 "Glazing" and with hollow metal manufacturer's written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

3.2 ADJUSTING AND CLEANING

A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

END OF SECTION

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SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Hardware for metal hollow doors and frames.
2. Lock cylinders for doors for which hardware is specified in other sections.
3. Weatherstripping, seals and door gaskets.

B. Related Sections

1. Division 0
2. Division 1

1.2 REFERENCES

A. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2003.

B. NFPA 101 - Code for Safety to Life from Fire in Buildings and Structures; National Fire Protection Association; 2006.

1.3 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other directly affected sections involving manufacture or fabrication of internal reinforcement for door hardware.
2. Furnish templates for door and frame preparation.
3. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
4. Coordinate City of Coppell’s keying requirements during the course of the Work.

B. Pre-Installation Meeting:

1. Convene one week prior to commencing work of this section.

1.4 SUBMITTALS

A. Action Submittals

1. Shop Drawings:
   a. Indicate locations and mounting heights of each type of hardware, schedules, catalog cuts.
   b. Submit manufacturer's parts lists and templates.

B. Informational Submittals:

1. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

C. Closeout Submittals:

1. Project Record Documents: Record actual locations of concealed equipment, services,

and conduit.

2. Maintenance Data: Include date on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
3. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in the Owner’s name and registered with manufacturer.

D. Maintenance Material Submittals:

1. Keys:
   a. Deliver with identifying tags to City of Coppell by security shipment direct from hardware supplier.
   b. Provide ten extra key lock cylinders for each master keyed group.
2. Tools:
   a. Provide special wrenches and tools applicable to each different or special hardware component.
   b. Provide maintenance tools and accessories supplied by hardware component manufacturer.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Hardware Supplier Qualifications: Company specializing in supplying commercial door hardware approved by manufacturer.

C. Hardware Supplier Personnel: Employ an Architectural Hardware Consultant (AHC) to assist in the work of this section.

1.6 DELIVERY, STORAGE, AND PROTECTION

A. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.7 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Provide five year warranty for door closers.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Hinges:

1. As specified in Section 08 22 50 - Fiberglass Doors and Frames and Window Frames.

B. Lock and Latch Sets: shall be stainless steel

1. Best Access Systems: www.bestlock.com.
2. Schlage: www.schlage.com.
3. Yale Commercial Locks and Hardware: www.yalelocks.com.

C. Mortise Locksets: shall be stainless steel

1. Best Access Systems: www.bestlock.com.
2. Schlage: www.schlage.com.
3. Yale Commercial Locks and Hardware: www.yalelocks.com.

D. Closers: shall be stainless steel
1. DORMA Group North America: www.dorma-usa.com/usa.
2. LCN: www.lcnclosers.com.
3. Yale Commercial Locks and Hardware: www.yalelocks.com.

2.2 GENERAL REQUIREMENTS FOR DOOR HARDWARE PRODUCTS

A. Provide products that comply with the following:
1. Applicable provisions of Federal, State, and local codes.
2. ANSI/ICC A117.1, American National Standard for Accessible and Usable Buildings and Facilities.
3. Applicable provisions of NFPA 101, Life Safety Code.

B. Finishes: Identified in schedule shall be stainless steel.

2.3 KEYING

A. Door Locks: Grand master keyed.
1. Include construction keying.
2. Key to existing keying system or as per Owner's requirements.

B. Supply keys in the following quantities:
1. Master keys as per Owner's requirements.
2. Grand master keys as per Owner's requirements.
3. Construction keys as per Owner's requirements.
4. Change keys for each lock as per Owner's requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.

3.2 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Use templates provided by hardware item manufacturer.

C. Mounting heights for hardware from finished floor to center line of hardware item: As listed in Schedule, unless otherwise noted:
1. For fiberglass doors and frames: Comply with recommendations of the Manufacturer.

3.3 FIELD QUALITY CONTROL

A. Provide an Architectural Hardware Consultant to inspect installation and certify that

hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.4 ADJUSTING

A. Adjust work under provisions of Section 01 70 00.

B. Adjust hardware for smooth operation.

3.5 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Section 01 70 00.

B. Do not permit adjacent work to damage hardware or finish.

3.6 SCHEDULE:

A. Refer to Drawings for hardware sets.

END OF SECTION

SECTION 08 80 00
GLAZING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Insulating glass units.

B. Glazing compounds.

1.2 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015.

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2015).

D. ASTM C1036 - Standard Specification for Flat Glass; 2016.

E. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.

F. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2016.

G. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021.

H. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2016.

I. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2010.

J. GANA (SM) - GANA Sealant Manual; 2008.

K. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2017.

L. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2014, with Errata (2017).

M. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2017.

1.3 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data on Insulating Glass Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Certificate: Certify that products of this section meet or exceed specified requirements.

E. Manufacturer's qualification statement.

F. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.

a. Insulating Glass Certification Council (IGCC).

1.5 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

1.6 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.

1. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.

2. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.

3. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.

1. In conjunction with weather barrier related materials described in other sections, as follows:

2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:

1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.

2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using

Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.

3. Solar Optical Properties: Comply with NFRC 300 test method.

2.2 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.

1. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
2. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
3. Safety Wired Glass Type: ASTM C1036, Type II - Wired Flat Glass, Quality - Q5, complying with ANSI Z97.1 - Class B, or 16 CFR 1201 - Category I impact test requirements, and with color and performance characteristics as indicated.

2.3 INSULATING GLASS UNITS

A. Manufacturers:

1. AGC Glass North America, Inc: www.agcglass.com/#sle.
2. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
3. Guardian Glass, LLC: www.guardianglass.com/#sle.
4. Pilkington North America Inc: www.pilkington.com/na/#sle.
5. Viracon, Apogee Enterprises, Inc: www.viracon.com/#sle.
6. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
7. Substitutions: See Section 01 60 00 - Product Requirements.

B. Insulating Glass Units: Types as indicated.

1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Metal Edge Spacers: Stainless steel, bent and soldered corners.
4. Spacer Color: Light Gray.
5. Edge Seal:
   a. Color: Black.
6. Purge interpane space with dry air, hermetically sealed.

C. Insulating Glass Units: Vision glass, double glazed.

1. Applications: Exterior glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Outboard Lite: Wired Flat Glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
   b. Coating: Low-E (passive type), on #2 surface.
4. Inboard Lite: Fully tempered float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
5. Total Thickness: 1 inch.

6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.29, nominal.
7. Visible Light Transmittance (VLT): 54 percent, nominal.
8. Solar Heat Gain Coefficient (SHGC): 0.28, nominal.
9. Glazing Method: Dry glazing method, gasket glazing.

2.4 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.2 INSTALLATION, GENERAL

A. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

3.3 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.4 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.5 PROTECTION

E. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

F. Remove and replace glass that is damaged during construction period prior to Date of Final Acceptance.

END OF SECTION

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SECTION 09 08 00
COATING AND PAINTING
FOR REHABILITATION OF STEEL WATER STORAGE TANKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the surface preparation and application of HIGH-PERFORMANCE COATING SYSTEMS for exterior and interior surfaces applied to the steel water storage tank.

B. Related Sections:

1. Division 9 Section 09 91 00 “Painting and Protective Coatings” for painting and coatings of all other surfaces associated with the Project.

1.3 REFERENCES AND DEFINITIONS

A. References: Following is a list of standards, which might be referenced in this Section.

1. ASTM International (ASTM):
    a. D520 “Standard Specification for Zinc Dust Pigment”
    b. D4417 “Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel”
    c. E337 “Standard Practice Test Method for Measuring Humidity with a Psychrometer”
    d. D2200 “Standard Methods for Evaluating Degree of Rusting on Painted Surfaces”
2. American National Standards Institute (ANSI):
    a. ANSI/ASC 29.4 Exhaust Systems “Abrasive Blasting Operations – Ventilation and Safe Practice”
    b. ANSI/NSF 61 “Drinking Water Components”
    c. ANSI/AWWA D100-11 “Welded Carbon Steel Tanks for Water Storage”
3. American Water Works Association (AWWA):
    a. D102 “Coating Steel Water Storage Tanks
4. National Association of Corrosion Engineers International (NACE):
    a. TPC2 “Coatings and Linings for Immersion Service”
    b. SP0178 “Standard Recommend Practice – Fabrication Details, Surface Finish Requirements and Proper Design Considerations for Tanks and Vessels to be Lined for Immersion Service”
    c. SP0188 “Standard Recommended Practice – Discontinuity (Holiday) Testing of Protective Coatings”
    d. RP0287 “Field Measurement of Surface Profile of Abrasive Blast-Cleaned Steel Surfaces Using a Replica Tape”

e. RP0288 “Standard Recommended Practice. – Inspection of Linings on Steel and Concrete”

5. Society for Protective Coatings (SSPC):
    a. SP2 “Hand Tool Cleaning”
    b. SP3 “Power Tool Cleaning”
    c. SP11 “Power Tool Cleaning to Bare Metal”
    d. PA-1 “Shop, Field and Maintenance Painting”
    e. PA-2 “Measurement of Dry Film Thickness with Magnetic Gages”
    f. PA-3 “Guide to Safety in Paint Application”
    g. Guide 12 “Guide for Illumination of Industrial Painting Projects”
    h. VIS 1-89 “Pictorial Surface Preparation Standards for Painting Steel Surfaces”
    i. Paint Spec 36 “Two Component Weatherable Aliphatic Polyurethane Topcoat, Performance-Based”
6. SSPC/NACE Joint Standards:
    a. SSPC-SP5/NACE 1 “White Metal Blast Cleaning”
    b. SSPC-SP6/NACE 3 “Commercial Blast Cleaning”
    c. SSPC-SP7/NACE 4 “Brush-Off Blast Cleaning”
    d. SSPC-SP10/NACE 2 “Near White Metal Blast Cleaning”

B. Definitions:

1. Barrier Coat: Recommended coating material applied to factory-applied or other coatings, which consist of unidentified materials or non-compliance materials, prior to the application of the specified coating system.
2. CSDS: Coating System Data Sheet.
3. Coverage: Total minimum dry film thickness in mils or square feet per gallon.
4. MDFT: Minimum Dry Film Thickness, mils.
5. MDFTPC: Minimum Dry Film Thickness per Coat, mils.
6. Mils: Thousandth of an Inch.
7. PDS: Product Data Sheet.
8. SFPG: Square Feet Per Gallon.
9. SFPGPC: Square Feet Per Gallon Per Coat.

1.4 SUBMITTALS

A. Action Submittals:

1. Product Data:
    a. For each product. Furnish a Product Data Sheet (PDS), the manufacturer’s technical data sheets, and paint colors available, where available. The PDS form is appended to the end of this Section.
    b. For each coating system, furnish a Coating System Data Sheet (CSDS). The CSDS form is appended to the end of this Section.
    c. Technical and performance information that demonstrates compliance with this specification.

d. Indiscriminate submittal of only manufacturer's literature is not acceptable.

e. Detail chemical and gradation analysis for each abrasive material.

2. Samples:

a. Proposed Abrasive Materials: Minimum 5-pound sample for each type.

b. Reference Panel:

1) Surface Preparation:

a) Prior to start of surface preparation, furnish a 4-inch by 4-inch steel panel for grade of sandblast specified herein, prepared to specified requirements.

b) Provide panel representation of the steel used; prevent deterioration of surface quality.

c) Panel to be reference source for inspection upon approval by ENGINEER.

2) Paint Samples for Verification: For each type of paint system and in each color and gloss of topcoat indicated.

a) Submit Samples on rigid backing, 8 inches square.

b) Step coats on Samples to show each coat required for system.

c) Label each coat of each Sample.

d) Label each Sample for location and application area.

3) Product List: For each product indicated, include the following:

a) Show where each coating is to be used on the Project, with cross reference to this Section paragraphs and Painting Schedule.

b) Product date and information submitted shall demonstrate compliance with this Section.

c) Provide the surface preparation required or recommended by coating manufacturer for each type of coating application if different from that specified in this Section.

B. Information Submittals:

1. Manufacturer's verification that submitted coating materials is suitable for the intended use.
2. Manufacturer's Certification of Compliance.
3. Special shipping, storage and protection, and handling instructions.
4. Manufacturer's Certificate of Proper Installation.
5. Qualification Data: For manufacturer and manufacturer's representative, if applicable.
6. Material Safety Data Sheets (MSDS) for review and posting at Site.
7. Volatile Organic Compounds (VOC's) certification that VOC's emitted by paints and coatings are in compliance with regulatory requirements.
8. Manufacturer's Instructions:

a. Provide manufacturer's instructions for the application of the coating system for the purpose intended by these specifications. The instructions shall provide the limitations, precautions, and requirements that may adversely affect the coating system; that may cause unsatisfactorily results after the application; or that may

prevent the coating system not to serve the purpose for which it was intended, which is to provided coverage and protection from corrosion, shall be clearly stated.

b. The instructions shall include, but not limited to:

1) Surface preparation.
2) Methods of Application.
3) Number of coats.
4) Thickness of each coat.
5) Total Thickness.
6) Drying time of each coat, including primer.
7) Drying time of final coat before placement in service.
8) Time allowed between coats.
9) Primers required to be used.
10) Primers not permitted.
11) Use of a primer.
12) Compatible topcoats.
13) Thinner and use of thinner.
14) Weather limitations during and after application (temperature, humidity, wind velocity).
15) Protection from sun.
16) Physical properties of paint, including percent solids content by volume, ingredient analysis, and weight per unit surface per dry mil thickness.
17) Equipment settings (air cap, fluid tip, equipment pressure settings, etc.)

C. Field Quality-Control Reports: Provide temperature and humidity readings, testing for coating dry mil thickness and bonding, surface preparation, and related requirements.

1.5 QUALITY ASSURANCE

A. Coating Manufacturer Qualifications:

1. Nationally recognized manufacturers of paints and protective coatings who are regularly engaged in the production of such materials for essentially identical service conditions.
2. Minimum of 5 years verifiable experience in manufacture of specified product.
3. Certified to ISO 9001 by an accredited certification agency.

B. Contractor/Applicator Qualifications:

1. The CONTRACTOR shall have three (3) years practical experience and successful history in the application of the specified products to surfaces of steel water tanks. Upon request, the CONTRACTOR shall substantiate this requirement by furnishing a list of references and job completions. The reference list shall the size of the project in both dollars and square feet of area coated, product utilized, and contact information for the project.
2. The CONTRACTOR shall submit with the Shop Drawing a written statement by the coatings manufacturer stating that the CONTRACTOR is familiar with the materials specified and has workers capable of performing the work specified herein.

3. The personnel performing the work shall be knowledgeable and have the required experience and skill to adequately perform the work for this Project, in accordance with SSPC-PA1, “Shop, Field and Maintenance Painting.”

C. Manufacturer's Authorized Representative: Person who is trained and approved to provide the on-site supervision of the installation.

D. Source Limitations: Coating systems of each type specified in this section shall be supplied by a single manufacturer.

E. General:

1. Quality assurance procedures and practices shall be prepared and utilized by the CONTRACTOR to monitor all phases of surface preparation, application, and review of work throughout the duration of the Project.
2. Procedures and practices not specifically defined herein may be utilized provided they meet recognized and accepted professional standards, are acceptable to the paint supplier, and are approved by the ENGINEER.

F. Surface Preparation:

1. Surface preparation will be based upon comparison with the following:
    a. SSPC-VIS 1-89
    b. ASTM D2200
2. Surface profile shall be measured in accordance with one of the following:
    a. ASTM D4417-19 Method B and/or Method C
    b. NACE RP0287-2002.
3. The number of surface profile readings to be taken shall be as proscribed in SSPC-PA 2, Section 8 regarding the number of dry film readings. In all cases the written standard shall take precedence over the visual standards.
4. In addition, NACE SP0178-2007, along with the Visual Comparator, shall be used to verify the surface preparation of welds.

G. Application: No coating or paint shall be applied when: 1) the surrounding air temperature or the temperature of the surface to be coated or painted is below the minimum surface temperature for the products specified herein, 2) rain, snow, fog or mist is present, 3) the surface temperature is less than 5oF above the dew point, 4) the air temperature is expected to drop below the minimum temperature for the products specified within six hours after application of coating. Dewpoint shall be measured by use of an instrument such as a Sling Psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychometric Tables. If any of the above conditions are prevalent, coating or painting shall be delayed or postponed until conditions are favorable. The day's coating or painting shall be completed in time to permit the film sufficient drying time prior to damage by atmospheric conditions.

H. Coating Thickness: Thickness of coatings and paint shall be measured checked according to the procedures outlined in SSPC-PA 2 “Measurement of Dry Film Thickness with Magnetic Gages”, May 2012 Edition. Dry film thickness shall be a Level 2 as defined in Paragraph 9.2, excepting that no single gage reading shall be less than 80% of the specified dry film thickness. Areas that fail to meet these criteria shall be corrected at no expense to the Owner. Use of an instrument such as a Tooke Gauge, precision groove grinder, etc. is

permitted if a destructive test is deemed necessary by the Engineer and the total DFT is less than 50 mils.

I. Holiday (Pinhole Testing): The integrity of interior coated surfaces shall be tested for holidays in accordance with NACE Standard SP0188-2006. For dry films less than 20 mils, a non-destructive holiday detector shall not exceed 67.5 volts, nor shall destructive holiday detector exceed the voltage recommended by the manufacturer of the coating system. A solution of 1 ounce non-sudsing type wetting agent, such as Kodak Photo-Flo, and 1 gallon of tap water shall be used to perform the holiday testing. For coating thickness at 20 mils and greater, a high voltage Tinker & Rasor AP/W holiday tester shall be used. Contact coating manufacturer for voltage recommendations and curing parameters. All pinholes and/or holidays shall be marked and repaired in accordance with the manufacturer's printed recommendations and retested. No pinholes or other irregularities will be permitted in the final coating.

J. Inspection Devices: The contractor shall furnish, until final acceptance of coating and painting is accepted, inspection devices in good working condition for detection of holidays and measurement of dry film thickness of coating and paint. The Contractor shall also furnish U.S. Department of Commerce, National Bureau of Standards certified thickness calibration plates and/or plastic shims, depending upon the thickness gauge used, to test the accuracy of dry film thickness gauges and certified instrumentation to test the accuracy of holiday detectors. Dry film gauges and holiday detectors shall be made available for the Owner's use at all times until final acceptance of application. Holiday detection devices shall be operated in the presence of the Owner.

K. Inspection: Inspection for this project shall consist of 'hold point' inspections. The Owner or Owner's representative shall inspect the surface prior to abrasive blasting, after abrasive blasting but prior to application of coating materials, and between subsequent coats of material. Final inspection shall take place after all coatings are applied, but prior to placing the tank in service. Contractor will insure that sufficient rigging is in place so that the Owner or Owner's representative shall be able to conduct the required inspections.

L. Pre-installation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. All materials shall be brought to the jobsite in original, sealed, labeled, and unopened containers. Materials exceeding storage life recommended by the manufacturer shall be rejected and removed the Project site. Deliver, store, and protect products in accordance with manufacturer's instructions. Damaged containers will not be accepted.

B. Store paint materials in original containers in a secure (lockable), dry, heated and well ventilated single designation area meeting the minimum requirements of the paint manufacturer and jurisdictional authorities and at minimum ambient temperatures continuously maintained at not less than 45°F (7°C) and not more than 90°F (32°C).

C. Where toxic and/or volatile/explosive/flammable materials are being used, provide adequate fireproof storage lockers and take all necessary precautions and post adequate warnings (e.g. no smoking) as required.

D. Take precautionary and safety measures to prevent fire hazards and spontaneous combustion. Remove oily rags, waste, or other fire hazards from facilities each night. Place

cloths and cotton waste, which might constitute a fire hazard, in metal containers or destroy at the end of each work day.

1.7 PROJECT CONDITIONS

A. Environmental Requirements: Do not perform painting work:

1. The surrounding air temperature or the temperature of the surface to be coated or painted is below the minimum surface temperature for the products specified herein,
2. Rain, snow, fog, or mist is present,
3. The surface temperature is less than 5°F above the dew point,
4. The air temperature is expected to drop below the minimum temperature for the products specified within six (6) hours after application of coating, and
5. Unless a minimum lighting level of 323 Lux (30 foot candles) is provided on surfaces to be painted. Adequate lighting shall be furnished by CONTRACTOR.

B. CONTRACTOR shall be fully responsible for personnel safety during painting operations.

1. Display caution signs in necessary areas advising of spray painting and warning against open flames.
2. Provide barriers or shelters on windy days to protect equipment and facilities.
3. Temporary ladders and scaffolds shall conform to applicable safety requirements.

C. All coatings in contact with potable water and water being treated for use as potable water shall conform to ANSI/NSF Standard 61 and shall be certified by an organization accredited by ANSI.

D. Coating of existing steel tanks shall meet the requirements of the current version of ANSI/AWWA D102 Coating Steel Water Storage Tanks.

1.8 EXTRA MATERIALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Furnish an additional one (1) percent, but not less than 1 gallon of each material and color applied.
2. The material shall be delivered in unopened labeled containers as delivered from the manufacturer. If the manufacturer does not delivered in gallon containers, and in the case of special colors, the new gallon containers, properly closed with typed labels indicating brand, type, color, location used, etc.
3. Where multiple component materials are used, provide an unopened kit of the necessary materials in the manufacturer's smallest standard packaging size. Provide three (3) copies of the manufacturer's instructions describing the materials and directions for their use.
4. Provide a typed inventory list of the extra materials furnished at time of delivery.

1.9 SPECIAL WARRANTY

A. Warranty inspection of the coating systems shall be conducted during the eleventh month following completion and acceptance of all coating system work. The personnel or their representatives present at the pre-installation conference are requested to attend. All

defective coating systems shall be repaired in accordance with this Section and to the satisfaction of the ENGINEER and OWNER.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers: Provide coating products from one of the manufacturers listed below:

1. Tnemec Company, Inc.
2. PPG Industries, Inc.
3. Carboline Company, Inc.

2.2 COATING MATERIALS

A. General:

1. Coating manufacturer's highest quality products suitable for intended service.
2. All materials shall be from a single manufacturer for the each coating system used.
3. All materials shall be lead-free as defined by the Consumer Product Safety Act, Part 1303 and as required by Federal, State, and local laws and regulations.
4. All materials shall be free of chromate (including zinc chromate and strontium chromate), asbestos, and mercury
5. All zinc dust pigment contained in any zinc-rich material shall be the requirements of ASTM D520 Type III with regard to zinc content and purity.
6. All materials for the interior portion of the tank shall meet the requirements of ANSI/NSF Standard 61 for potable water contact.
7. All catalyzed polyurethane products shall meet the minimum requirements of SSPC Paint Specification Number 36, Level 3 Performance Level.
8. No products containing MOCHA shall be allowed.

B.
B:

B. Refer to Section 09 91 00 Painting and Coating for appropriate surface preparation and coating systems.

1.
1:

1. CONTRACTOR shall have complete responsibility for ensuring that each coating applied is compatible with its substrate and/or its intended finish coat, and that the completed coating system is suitable for its intended service.

C. Accessory Materials: Thinning of paint and all accessory type materials used shall be strictly in accordance with the manufacturer's recommendations covering material types, solvents, mix ratios, and methods.

D. Volatile Organic Compounds (VOC's) emitted by paints and coatings shall be in accordance with federal, state, and local regulations. Provide certification that paints and coatings comply.

2.3 MIXING

A. Multiple-Component Coatings:

1. Prepare using each component as packaged by coating manufacturer. Mix only

components specified by coating manufacturer.

2. No partial batches will be permitted.
3. Do not use multiple-component coatings that have been mixed beyond their pot life.
4. Furnish small quantity kits for touchup painting and for painting other small areas.
5. Do not intermix additional components for reasons of color or otherwise, even within the same generic type of coating.
6. Colorants: Formulate coatings with colorants free of lead, lead components, or other materials that might be affected by presence of chlorine or other gas likely to be present at Site.

2.4 COLOR SCHEDULE

A. Color Selection:

1. Colors: As selected by the Owner from manufacturer's full range.
2. Submit color charts to Owner at least 60 days prior to coating application to allow time for color selection.

PART 3 - EXECUTION

3.1 GENERAL

A. All surface preparation, coating, and painting shall conform to applicable standards of the Society for Protective Coatings, NACE International, and the manufacturer's printed instructions. Materials applied to the surface prior to the approval of the ENGINEER shall be removed and re-applied to the satisfaction of the ENGINEER at the expense of the CONTRACTOR.

B. All work shall be performed by skilled craftsmen, qualified to perform the required work in a manner comparable with the best standards of practice.

C. The Painting Contractor shall provide a superintendent at the work site during cleaning and application operations.

D. Dust, dirt, oil, grease, or any foreign matter that will affect the adhesion or durability of the coating or paint must be removed by washing with clean rags dipped in an approved cleaning solvent and wiped dry with clean rags.

E. The CONTRACTOR's coating and painting equipment shall be designed for application of materials specified herein and shall be adequately maintained. Compressors shall have suitable traps and filters to remove water and oils from the air.

F. Application of the first coat shall follow immediately after surface preparation and cleaning and stripe coat, if applicable, before rust bloom occurs or the same day, whichever is less. Any cleaned areas not receiving first coat within this period shall be re-cleaned prior to application of first coat. Use of dehumidification equipment shall be first reviewed by the ENGINEER and coatings manufacturer prior to deviating from this provision.

3.2 PROTECTION OF ITEMS NOT TO BE PAINTED

A. Remove, mask, or otherwise protect plates, machined surfaces, hardware, lighting fixtures, couplings, shafts, bearing, stainless steel, aluminum, fiberglass, and similar surfaces already in place that are not to be painted. If removal is impractical or impossible because of size

or weight of item, provide surface-applied protection before surface preparation and painting.

1. Mask openings in motors, vents, filters, etc. to prevent paint materials from entering.
2. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
3. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
4. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces.

B. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process. Protect surfaces adjacent to or downwind of Work from overspray.

3.3 CLEANING

A. Tank interior and exterior surfaces shall be cleaned prior to surface preparation and upon completion of protective coating system work.

B. Cleaning Procedure

1. All manways, access hatches, scaffolding, tools, and any other material which is not part of the structure or operating facility of the tank shall be removed for cleaning.
2. After Owner has reviewed the tank, the floor shall be swept clean, and the surfaces of the walls, floor, and roof cleaned thoroughly using a high pressure (200 psi or higher) water jet.
3. All water, dirt, and foreign material accumulated in these cleaning operations shall be discharged through the floor drain or otherwise removed.

C. Following cleaning, the vent screen shall be removed.

3.4 SURFACE PREPARATION

A. General Requirement:

1. Comply with manufacturer's written instructions, recommendations contained in this Section, and SSPC PA 3, Guide to Safety in Paint Applications.
2. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints.
3. When removal is not feasible and with approval of ENGINEER, CONTRACTOR may apply a barrier coat in accordance with coating manufacturer's instructions prior to application of the designated coating system.
4. When abrasive blasting, use a source of compressed air, which is free of detrimental water and oil and capable of delivering the required volume and pressure.

B. The latest revisions of the following surface preparation specifications for the Society for Protective Coatings (SSPC) shall form a part of this Specification. The summaries listed below are for informational purposes; consult the actual SSPC specification for full detail:

1. Solvent Cleaning (SSPC-SP1): Removal of oil grease, soil, and other contaminants by use of solvents, emulsions, cleaning compounds, steam cleaning, or similar materials and methods with involve a solvent or cleaning action.

2. Hand Tool Cleaning (SSPC-SP2): Removal of loose rust, loose mil scale, and other detrimental foreign matter to a degree specified by hand chipping, scraping, sanding, and wire-brushing.
3. Power Tool Cleaning (SSPC-SP3): Removal of loose rust, loose mil scale, and other detrimental foreign matter by power wire-brushing, power impact tools, or power sanders.
4. White Metal Blast Cleaning (SSPC-SP5/NACE No. 1): Air blast cleaning to a gray-white uniform metallic color until each element of surface area is free of all visible residues.
5. Commercial Blast Cleaning (SSPC-SP6/NACE No. 3): Air blast cleaning until at least two-thirds of each element of surface area is free of all visible residues.
6. Brush-Off Blast Cleaning (SSPC-SP7/NACE No. 4): Air blast cleaning to remove loose rust, loose mil scale, and other detrimental foreign matter to a degree specified.
7. Near-White Metal Blast Cleaning (SSPC-SP10/NACE No. 2): Air blast cleaning until at least 95-percent of each element of surface area is free of all visible residues.
8. Power Tool Cleaning to Bare Metal (SSPC-SP11): Differs from SSPC-SP3 in that is requires more thorough cleaning and a surface profile not less than 1 mil.

C. Slab, weld metal accumulation and spatters not removed by the fabricator, erector, or installed shall be removed by chipping and/or grinding. All sharp edges shall be peened, ground, or otherwise blunted as required by the paint/coating manufacturer and ENGINEER. All grinding and finishing of welds, edges, etc. shall be performed prior to solvent cleaning and abrasive blasting. Welds shall be prepared as per NACE Standards SP0178 for all interior and exterior surfaces:
1. Butt Welds: Shall be ground smooth and free of all defects, designation “D”.
2. Lap Welds: Shall be ground smooth and blended, designation “D”.
3. Fillet Welded Tee Joint: Shall be ground smooth and blended, designation “D”.

D. Field blast cleaning for all surfaces shall be by dry method unless otherwise directed. Blast nozzles shall be venturi-type nozzles with a minimum pressure at the nozzle of 90 psi.

E. Particle size of abrasives used in blast cleaning shall be that which will produce the specified surface profile or in accordance with recommendations of the manufacturer of the specified coating or paint system to be applied. If the profile of the blasted steel exceeds the profile specified, the CONTRACTOR shall be required to do one or both of the following:
1. Reblast the surface using a finer aggregate in order to produce the required profile.
2. Apply a thicker prime coat, if possible given the limitations of the products being applied, in order to adequately cover the blast profile.

F. Abrasive used in blast cleaning operations shall be new, washed, graded, and free of contaminants that would interfere with adhesions of coating or paint and shall be not be reused.

G. During blast cleaning operations, caution shall be exercised to insure that existing coatings or paint are not exposed to abrasion from blast cleaning.

H. The CONTRACTOR shall keep the area of work and surrounding environment in a clean condition. The CONTRACTOR shall not permit blasting materials to accumulate as to constitute a nuisance or hazard to the accomplishment of the work, the operation of the

existing facilities, or to the surrounding environment.

I. Blast cleaned surfaces shall be cleaned prior to application of specified coatings or paint. All surfaces shall be free of dust, dirt, and other residue resulting from the abrasive blasting operation. No coatings or paint shall be applied over damp or moist surfaces.

J. All wells shall be neutralized with a suitable chemical compatible with the specified coating or paint. The CONTRACTOR shall coordinate with the coating manufacturer and submit information to the ENGINEER.

K. Pitted areas on the tank interior shall be repaired by either filling with a product approved by the coating manufacturer and ENGINEER or by welding. No protrusions or splatter shall be allowed. Pits deeper than 1/8-inch shall be brought to the attention of the ENGINEER prior to welding.

L. Surface preparation shall be as specified in Part 2 of this Specification.

3.5 NON-VISIBLE CONTAMINANTS

A. Surface shall be checked in three locations for the presence of chlorides, free iron, and sulfates. Tanks being rehabilitated shall be tested prior to blasting. If blisters are present in existing tank, testing shall also be performed after abrasive blasting. These tests are an Iron Test (Fe^{2+}), Chloride Test, and Sulfate Test. Testing shall be carried out per SSPC Technology Guide 15, "Field Methods for Retrieval and Analysis of Soluble Salts on Steel and Other Nonporous Substrates". The maximum limits for these contaminants shall be:

1. The maximum level of chloride is 30 milligrams per square meter or 3 micrograms per square centimeter.
2. The maximum level of sulfates is 100 milligrams per square meter or 10 micrograms per square centimeter.
3. The maximum level of ferrous ions (Fe^{2+}) is 50 mil milligrams per square meter or 5 micrograms per square centimeter.
4. Contamination levels above these limits will require washing and retesting in accordance with this Specification until the surface is under the allowable limits.

B. If testing shows amounts present in the test solution to be greater than the limits listed herein, the CONTRACTOR shall clean the surface of the entire tank interior with a 5,000 psi water blast with fine entrained abrasive until the levels of the test solutions are below the maximum acceptable level. Alternate cleaning methods may be allowed with prior approval of the ENGINEER. Surface shall be reblasted as specified in Part 2 at no additional cost to the OWNER.

C. CONTRACTOR shall provide a written statement from the paint manufacturer stating that the maximum acceptable levels are not less than those listed herein. Results of the testing shall be provided to the OWNER and ENGINEER prior to any coatings being applied.

D. The following test kits are approved for use on this Project:

1. Clor*Rid Chlor*Test Kit.
2. KTA SCAT Test Kit.

E. When exterior coats are to be applied on subsequent days, or when the shroud is dropped between coats, the previously-applied coat of paint shall be thoroughly pressured-washed to remove any fallout and/or salt that have settled on the surface.

3.6 APPLICATION

A. General Requirements:

1. Inspection: Schedule with Owner in advance for cleaned surfaces and all coats to succeeding coat.
2. Apply paint only to a dry, clean, properly cured and adequately prepared surfaces in areas where dust is no longer generated by construction activities such that airborne particles will not affect the quality of finished surfaces.
3. Apply products in accordance with manufacturer's instructions in regard to drying time between coats, technique of application, ventilation, paint thinning, and safety precautions. Use applicators and techniques suited for paint and substrate indicated.
4. Allow applied coat to dry for the time period specified by the coating manufacturer before next coat is applied. Do not apply finishes to surfaces that are not dry to touch.
5. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.
6. Where multiple coats are specified; apply each coat in a different color, which compliments the following coat and is different than the proceeding coat. Each coat must be free of shadows and uniform in appearance.
7. Repair any damage or overspray to paint on existing structures caused by construction work. Match existing colors with touch-up paint.

B. Substrates Subject to Immersion:

1. Coating shall be applied to internal vessel and pipe surfaces, nozzle bores, flange gasket seating surfaces, carbon steel internals, and stainless steel internals, unless otherwise specified.
2. Obtain full cure for completed system. Do not immerse coating until completion of curing cycle.
    a. Apply coating to surfaces, which will be under water constantly or periodically, to appoint one foot above maximum water level. Mask the line of demarcation between the coating systems to a straight level line.

C. Film Thickness and Coverage:

1. Number of Coats:
    a. Minimum required without regard to coating thickness.
    b. Additional coats may be required to achieve minimum paint thickness.
2. Application Thickness:
    a. Do not exceed coating manufacturer’s recommendations.
    b. Measure using wet film thickness gauge to ensure proper coating thickness during application.
3. Film Thickness Measurements and Electrical Inspection of Coated Surfaces:
    a. Perform with properly calibrated instruments.
    b. Where inspection shows that the specified thickness is not developed, apply additional coats in accordance with manufacturer’s instructions and cure schedule requirements to produce the required dry film thickness.

4. Attention shall be paid to edges, angles, flanges, and other similar areas, where insufficient film thickness are likely to be present. Assure complete hiding of underlying coats have been achieved.

3.7 FIELD QUALITY CONTROL

A. CONTRACTOR shall be responsible for the following testing during coating operations:

1. Prior to start and during the coating application each day, temperature and humidity readings will be obtained. If the values obtained are not within the recommended temperature and humidity range described herein or as required by the coating manufacture, the coating application will not be allowed.
2. Periodically check the wet film thickness during coating applications.
3. Prepared records of the above tests and readings.

B. Testing Agency: CONTRACTOR shall engage a qualified, independent testing agency to perform tests and inspections.

1. MDFT Measurement:
    a. Obtain after application of each coat of paint and final coat for every 25 square feet of surface and at locations designated by the ENGINEER.
    b. A minimum of three readings of the area around the location will be obtained.
    c. If the average of these readings indicates the MDFT for the final coat is below the specified minimum, CONTRACTOR shall apply another coat in accordance with the manufacturer's instructions.
2. The interiors of liquid containing structures and tanks will be tested for holidays after final coat application. Areas found to be defective shall have an additional coat applied.
3. Visually inspect concrete, nonferrous metal, plastic, and wood surfaces to ensure proper and complete coverage has been obtained.
4. Provide particular attention to edges, angles, flanges, and similar areas where insufficient film thickness is likely to occur.

C. Damaged Coatings, Pinholes, and Holidays:

1. After the interior coating system has been installed and holiday tested, repair pinholes and voids as follows:
    a. Abrasive blasting shall be in accordance with SSPC-SP10/NACE No.2 Near White Blast Cleaning obtaining a minimal surface profile as specified herein.
    b. Power tool cleaning shall be in accordance with SSPC-SP11 Power Tool Cleaning to Bare Metal. Surface profile shall be angular and not less than the surface profile as specified herein.
    c. All edges of remaining sound, tightly adhering coating shall be feathered back (beveled) to create a smooth transition from the substrate to the coatings surface. The coating may be considered tightly adhering if an edge cannot be lifted with a dull putty knife.
    d. Install the coating system as specified herein to provide a complete and monolithic system, free of voids and pinholes.
2. For exterior surfaces, repair as follows:
    a. Hand or Power Tool Sand as per SSPC-SP2 or SP3 to remove the defect. In cases

where the defect extends to the substrate, prepare the surface as per SSPC-SP11 Power Tool Cleaning to Bare Metal, obtaining a minimum anchor profile as specified herein.

b. All edges of remaining sound, tightly adhering coating shall be feathered back (beveled) to create a smooth transition from the substrate to the coatings surface. The coating may be considered tightly adhering if an edge cannot be lifted with a dull putty knife.

c. Install the coating system as specified herein to provide a complete and monolithic system, free of voids and pinholes.

3. The coating system will be considered defective if it does not pass tests and inspections. When this occurs the ENGINEER will specify corrective measures. The coating system will be retested, with the additional expense occurred charged to the CONTRACTOR.

D. Unsatisfactory Appearance:

1. Top coat surface found to have improper finish color or insufficient film thickness.
2. Evidence of runs, bridges, shiners, laps, or other imperfections shall be cause for rejection.
3. Repair defects in accordance with coating manufacturer's recommendations.
4. Leave staging up until the coating has been inspected and approval received.

E. Testing of Paint Materials: OWNER reserves the right to invoke the following procedure at any time and as often as OWNER deems necessary during the period when paints are being applied:

1. Owner will engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
2. Testing agency will perform tests for compliance of paint materials with product requirements.
3. OWNER may direct CONTRACTOR to stop applying paints if test results show materials being used do not comply with product requirements. CONTRACTOR shall remove non-complying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. CONTRACTOR will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

a. Testing Report: Prepare a Report for each coating applied on the Project.

F. Prepare test and inspection reports.

3.8 MANUFACTURER'S SERVICES

A. In accordance with the requirements of Division 1 Section 01640 "Manufacturer's Services," coating representative shall be present at Project site as follows:

1. On first day of application of any coating system.
2. Minimum of two additional Site inspection visits as required to resolve filed problems attributable to, or associated with, coating manufacturer's product.
3. As required to verify full cure of coating prior to coated surfaces being placed into immersion service.

3.9 SOLVENT VAPOR REMOVAL

A. All solvent vapors shall be completely removed by suction-type exhaust fans and blowers before placing tank in operating service.

B. All solvent vapors will be exhausted both during and after coating application as per AWWA D 102 to allow the proper curing of the coating material.

C. Ventilation shall be continued until such time as the coating has reached “full cure” as specified by the coating manufacturer.

3.10 CLEANING AND PROTECTION

A. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

B. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

C. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

D. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by ENGINEER, and leave in an undamaged condition.

E. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

F. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

G. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

H. Upon completion of the work remove all staging and scaffolding. Dispose of all sand, containers, ad rubbish in a suitable manner. Remove overspray, paint spots, oil or stains on adjacent surfaces. Leave the entire Project clean and acceptable.

3.11 DISINFECTION

A. Disinfection of interior surfaces shall be performed in accordance with Section 33 01 10.58, “Disinfection of Potable Water Piping and Tanks”.

B. Disinfection shall be performed after protective coatings have been applied to the interior surfaces and allowed to thoroughly cure.

C. Prior to disinfecting, the complete interior shall be washed down with clean water and thoroughly flushed out by the CONTRACTOR.

3.12 PRODUCT DATA SHEET, COATING SYSTEM DATA SHEET, AND PAINTING SCHEDULE

A. Product Data Sheet and Coating System Data Sheet: Information shall be provided by coating system manufacturer for each system in accordance with the PDS and CSDS after the “END OF SECTION”.

END OF SECTION

PRODUCT DATA SHEET

Complete and attach manufacturer's Technical Data Sheet to this Product Data Sheet (PDS) for each product submitted. Provide manufacturer's recommendations for the following parameters at temperature (°F)/relative humidity.

TEMPERATURE/RH	50/50	70/30	90/25
Induction Time			
Pot Life			
Shelf Life			
Drying Time			
Curing Time			
Min. Recoat Time			
Max. Recoat Time			

Provide manufacturer's recommendations for the following:

- Mixing Ratio: _____
- Maximum Permissible Thinning: _____
- Ambient Temperature Limitations: _____
- Surface Temperature Limitations: _____
- Surface Profile Requirements: _____

COATING SYSTEM DATA SHEET

Complete this Coating System Data Sheet (CSDS) for each coating system; include all components of the system (surface preparation, primer, intermediate coats, and finish coat). Include all components of a given coating system on a single PSD.

PAINT SYSTEM NUMBER:		
Paint System Title:		
Coating System Supplier:		
Representative:		
Surface Preparation:		
Paint Material (Generic)	**Product Name/Number (Proprietary)**	**Minimum Coats Coverage**

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SECTION 09 91 00
PAINTING AND COATING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Surface preparation and surface finish per schedule of all items provided/constructed in this Project.

B. Related Sections:

1. Section 10 90 00 “Identification, Stenciling, and Tagging”.

1.2 REFERENCES

A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.

B. ASTM D2016 - Test Method for Moisture Content of Wood.

C. ANSI/NSF Standard 61 and ANSI/NSF Standard 600.

D. Conform to applicable code for flame/fuel/smoke rating requirements for finishes.

E. Where the terms "exposed" surfaces are used to define painting locations and requirements it shall include all visible interior or exterior surfaces, top of walls, ceilings, and inside surfaces to 1'-0" below grade or the weir level or to floor level, whichever applies.

1.3 SYSTEM DESCRIPTION (NOT USED)

1.4 SUBMITTALS

A. Product Data

1. Submit product data under provisions of Section 01 33 00, “Submittal Procedures.”
2. Provide product data on all coatings.

B. Samples: Submit samples or color charts illustrating range of colors and textures available for each surface finishing product scheduled, for selection by OWNER.

C. Submit manufacturer's application instructions under provisions of Section “Submittal Procedures.”

D. Submit applicator qualifications including certification from product manufacturer.

1.5 QUALITY ASSURANCE

A. Qualifications

1. Product Manufacturer: Company specializing in manufacturing quality paint and finish products.
2. Applicator: Company specializing in industrial painting and finishing, approved by product manufacturer.

B. Certifications: All coatings in contact with potable water and water being treated for use as potable water shall conform to ANSI/NSF Standard 61 and ANSI/NSF Standard 600 and shall

be certified by an organization accredited by ANSI. All process, service water, potable, and chemical piping, fittings, tanks, valves, equipment, and structures in contact with the water being treated are included in this requirement

C. CONTRACTOR shall coordinate materials to be painted, shop primers, field primers, and finish coating systems to ensure compatibility for all materials and coatings in this project.DELIVERY, STORAGE, AND HANDLING

D. Acceptance at Site:

1. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
2. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

E. Storage and Protection

1. Store paint materials at minimum ambient temperature of 45ºF (7ºC) and a maximum of 90ºF (32ºC), in well-ventilated area, unless required otherwise by manufacturer's instructions.
2. Take precautionary measures to prevent fire hazards and spontaneous combustion.

F. Deliver, store, and protect products in accordance with coating manufacturer's instructions.

1.6 PROJECT CONDITIONS

A. Environmental Requirements

1. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45ºF (7ºC) for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
2. No exterior coatings shall be applied during rain or snow, when the air temperature is below 50ºF (10ºC) or above 120ºF (49ºC) or when the temperature of the surface to be coated is below 50ºF (10ºF) except as allowed by the coating manufacturer. No coating shall be applied if a predicted temperature of 35ºF (1.67ºC) or lower is forecast within 24 hours of application unless the coating is enclosed and heated. No painting is to be done when the relative humidity meets or exceed 50 percent or when the substrate temperature is within 5ºF (2.78ºC) of the dew point, as allowed by the manufacturer.
3. Minimum Application Temperatures for Latex Paints: 45ºF (7ºC) for interiors; 50ºF (10ºC) for exterior; unless required otherwise by manufacturer's instructions.
4. Minimum Application Temperature for Varnish and Finishes: 65ºF (18ºC) for interior or exterior, unless required otherwise by manufacturer's instructions.
5. The CONTRACTOR shall strictly follow the manufacturer’s instructions regarding recoat windows. If for any reason the Applicator fails to apply subsequent coats within the manufacturer’s allowable recoat window, the Applicator shall conduct necessary surface preparations as required by the manufacturer’s instructions at no additional cost to the OWNER prior to placing subsequent coats.
6. Provide lighting level of 80-foot candles measured mid-height at substrate surface.
7. CONTRACTOR shall be fully responsible for personnel safety during painting

operations.

1.7 WARRANTY (NOT USED)

1.8 EXPERIENCE REQUIREMENTS

A. Product Manufacturer: 10 years' experience.

B. Applicator: 5 years documented experience.

1.9 MAINTENANCE

A. Extra Materials

1. Provide an unopened 1-gallon container of each color and surface texture to OWNER.

2. Label each container with color, texture, room locations, and in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.1 MANUFACTURERS - ALL COATINGS

A. Tnemec.

B. Carboline.

C. PPG Protective and Marine Coatings (formerly Ameron Coatings).

2.2 MATERIALS

A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.

B. CONTRACTOR shall have complete responsibility for ensuring that each coating applied is compatible with its substitute and/or its intended finish coat, and that the completed coating system is suitable for its intended service.

C. Accessory Materials: Thinning of paint and all accessory type materials used shall be strictly in accordance with the manufacturer's recommendations covering material types, solvents, mix ratios, and methods.

2.3 FINISHES

A. Refer to schedule at end of Section for surface finish schedule. Colors shall be selected by OWNER from manufacturer's standard color charts.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums, unless more

stringent limitations are recommended by the coating manufacturer:

1. Plaster and Gypsum Wallboard: 12 percent.
2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
3. Interior Located Wood: 15 percent, measured in accordance with ASTM D2016.

3.2 PREPARATION

A. Surface preparation shall be as indicated in Part 3.7.

3.3 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site and dispose of all excess materials and empty containers in full accordance with all applicable state, federal, and local laws.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry to touch.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand lightly between coats to achieve required finish.

F. Allow applied coat to dry to touch before next coat is applied.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Prime back surfaces of interior and exterior woodwork with primer paint.

I. Prime back surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

J. Paint all items throughout the project except for surfaces listed below unless shown otherwise in the plans or specifications:

1. Concrete walkways, pavement, sidewalks, and stair treads.
2. Interior fiberglass items unless specified otherwise. Exterior fiberglass shall be painted.
3. Metal surfaces of anodized aluminum, stainless steel, or chromium plate.
4. Operating parts, unless otherwise specified.
5. Existing structures or equipment, unless otherwise specified.

K. Repair any damage or overspray to paint on existing structures caused by construction work. Match existing colors with touch-up paint.

L. New concrete and rubbed finish and mortar joints shall age a minimum of 30 days before

application of coatings. Concrete surfaces to be painted shall be coated prior to installation of equipment, piping, conduit and supports and touched up following installation of these items. Components which cannot be adequately painted due to space limitations following installation shall be coated prior to installation and touched up after installation as well.

3.5 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Refer to Section 10 90 00 and Electrical specifications for schedule of color-coding and identification banding of ductwork, piping, and conduit. Colors for equipment shall be selected by OWNER during submittal process.

B. Paint shop primed equipment. Touchup paint equipment furnished with finish coatings of correct colors.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

D. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports. For insulated pipe, provide shop and field primer coats on pipe and surface preparation and final coat on insulation jacket.

E. Replace identification markings on mechanical or electrical equipment when painted accidentally.

F. Paint interior surfaces of air ducts, and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint, to limit of sight line. Paint dampers exposed behind louvers, grilles, and convector and baseboard cabinets to match face panels.

G. Paint exposed conduit and electrical equipment occurring in finished areas.

H. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

I. Color code equipment, piping, conduit, and exposed ductwork in accordance with requirements indicated. Color band and identify with flow arrows and names.

J. Replace electrical plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.6 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.7 SCHEDULE

A. Cast-in Place Concrete Walls and Ceilings, Precast Concrete Surfaces, Equipment Bases, Pipe Supports, and Similar Surfaces, all with "smooth rubbed finish," Interior Nonsubmerged, where painting is specified:

1. Surface preparation: Brush-blast or acid-etch.

2. Product and Manufacturer: Provide one of the following:
    a. Tnemec:
        1) Primer: 66 Hi-Build Epoxoline - 1 coat, 5.0 dry mils per coat.
        2) Finish: 66 Hi-Build Epoxoline - 1 coat, 4.0 dry mils per coat, 160 square feet per gallon.
    b. Carboline:
        1) Primer: Carboline 890 - 1 coat, 5.0 mils dft.
        2) Finish: Carboline 890 - 1 coat, 4.0 mils dft.
    c. PPG:
        1) Primer: Amerlock 2/400 Epoxy - 1 coat, 5.0 dry mils per coat.
        2) Finish: Amerlock 2/400 Epoxy - 1 coat, 4.0 dry mils per coat.

B. Concrete Block Walls and Cast-In-Place Concrete not conforming to smooth rubbed finish, Interior, where painting is specified:
    1. Surface Preparation: Remove grease, oil and all foreign matter by one of the following:
        a. Exterior - Brush-blast, acid etch, or high pressure water-blast.
        b. Interior - High pressure water-blast at 3 to 5 gpm with a nozzle pressure of 4500 psi.
    2. Product and Manufacturer: Provide one of the following:
        a. Tnemec:
            1) Primer: 54-660 Epoxy Polyamide Masonry Filler - 1 coat, 100 square feet per gallon for lightweight and haydite block.
            2) Finish: 66 Hi-Build Epoxoline - 2 coats, 5.0 dry mils per coat.
        b. Carboline:
            1) Primer: Carboguard 954HB - 1 coat, 85-125 sf/gallon.
            2) Finish: Carboline 890 - 2 coats, 5.0 dry mils per coat.
        c. PPG:
            1) Primer: Amerlock 400 BF, Epoxy Block Filler - 1 coat, 100 sf/gallon.
            2) Finish: Amerlock 2/400 Epoxy - 2 coats, 5.0 dry mils per coat.

C. Concrete Floors and Walks, Interior, where painting is required:
    1. Surface preparation: Acid etch.
    2. Product and Manufacturer: Provide one of the following:
        a. Tnemec:
            1) Primer: Series 203 Enviroprime LV - 1 coat, 2.0 dry mils, 200 square feet per gallon.
            2) Finish: Series 280 Tneme-Glaze - 1 coat, 2.0 dry mils, 200 square feet per gallon. Add 5 pounds of 50 mesh dry wash silica sand to topcoat to provide a non-skid surface in walkway areas.
        b. Carboline:
            1) Primer: Carboline 1340 clear - 1 coat, 2.0 mils dft.

2) Finish: Carboline 890 - 1 coat, 4.0 mils dft with clean, dry sand broadcast into the film and back rolled to encapsulate.

c. PPG:

1) Primer: Amerlock Sealer – 1 coat, 2.0 mils dft.

2) Finish: Amershield - 1 coat, 5.0 dry mils, 377 square feet per gallon theoretical. Add 5 pounds 50 mesh dry wash silica sand to topcoat to provide a non-slip surface for walkway areas.

D. Special protective coating for submerged or intermittently submerged concrete where painting is required:

1. Application shall be performed by a certified applicator as approved by the manufacturer. Application procedure shall meet all manufacturer requirements.

2. Surface Preparation: SSPC-SP13 Surface Preparation of Concrete. Surfaces shall be fully cured, sound and contaminant free with a surface profile equivalent to a minimum CSP 5 (walls) or CSP 4 (floors) in accordance with ICRI Technical Guideline No 310.2R-2013.

3. Product and manufacturer: Provide one of the following:

a. Raven Lining Systems Inc.

1) Finish: Raven 405 – 125 mils dft; 2 coats minimum required to achieve total dft of 125 mils.

b. Warren Environmental

1) Finish: 301-14 – 125 mils dft; 1 coat required to achieve total dft of 125 mils.

4. A three (3) year maintenance bond is required on all “special protective coatings” including those required in section 3.7.D. of this specification. In lieu of the maintenance bond, a five (5) year extended warranty provided by the manufacturer shall be provided. The manufacturer shall warranty, in writing, the following:

a. Seepage and Leakage through the coating.

b. Gas permeation through the coating.

c. Corrosion damage resulting from coating failure.

5. Warranty shall provide for repair of damage and replacement of coating, including but not limited to substrate repair where corrosion occurred due to coating failure, surface preparation, materials, and application at no cost to OWNER. As part of the warranty, OWNER will make annual observations of the coating and inform the manufacturer within 30 days of suspected coating failure. Determination of coating failure shall lie solely with the OWNER. MANUFACTURER assumes responsibility for fulfilling warranty provisions. MANUFACTURER price shall include all necessary field and laboratory investigations by MANUFACTURER during installation to insure coating has been applied in an acceptable manner and that Warranty above will be honored.

E. Masonry, Exterior, where painting is required:

1. Surface Preparation: Brush-off blast or acid-etch.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Block filler: Series 130 Envirofill
   a) Porous CMU: 60-80 sq. ft. per gallon.
   b) Dense CMU: 85-115 sq. ft. per gallon.
2) Second coat: Series 156 Enviro-Crete – 1 coat, 6.0-8.0 dry mils.
3) Third coat: Series 156 (smooth) / 157 (textured) Enviro-Crete – 1 coat, 6.0-8.0 dry mils.

b. Carboline:
1) Primer: Sanitile 120 – 1 coat, 3.0 mils dft.
2) Finish: Carbocrylic 3359 – 1 coat, 3.0 mils. May require 2 coats for complete hide.

c. PPG:
1) Primer: Amerlock 400 Epoxy - 1 coat, 8 mils.
2) Finish: Pitthane Ultra Polyurethane - 2 coats, 2.0–3.0 dry mils per coat.

F. Ferrous Steels including Structural Metal Bar Joists, Miscellaneous Metals and Piping, including piping to be insulated, Interior:
1. Surface Preparation: SSPC-SP6 commercial blast.
2. Product and Manufacturer: Provide one of the following:
a. Tnemec:
1) Shop Primer: Series 37H Chem-Prime - 1 coat, 2.0 dry mils, 330 square feet per gallon.
2) Shop Primer for Bar Joists: Series 37H Chem-Prime - 1 coat, 2.0 dry mils, 330 square feet per gallon.
3) Field primer or field touch-up: Series 37H Chem-Prime - 1 coat, 2.0 dry mils, 330 square feet per gallon.
4) Finish: Series 66 Epoxoline - 1 coat, 4.0 dry mils, 200 square feet per gallon.

b. Carboline:
1) Shop primer, shop primer for bar joists, field primer or touch-up: Rustbond Penetrating Sealer 2 mils dft - 1 coat.
2) Finish: Carboline 890 - 1 coat, 4.0 mils dft.

c. PPG:
1) Shop primer: Amercoat 68HS - 1 coat, 3.0 dry mils.
2) Shop primer for Bar Joists, Field, or Field touch-up is the same as the shop primer.
3) Finish: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.

G. Ferrous Metals Encased in Concrete, Plaster, Fireproofing and Similar Materials:
1. Surface preparation: SSPC SP6, Commercial Blast Cleaning.
2. Product and Manufacturer: Provide one of the following:
a. Tnemec:
1) Shop Primer and Field Touch-up: Series 46H-413 red - 1 coat, 2.0 dry mils, 420 square feet per gallon.

b. Carboline:

1) Shop Primer and Field Touch-up: Carboline GH818 Red - 1 coat, 2.0 mils dft.

c. PPG:

1) Shop Primer and Field Touch-up: Multiprime 4360 – 1 coat, 2.0 dry mils.

3. Verify the compatibility of primer with fireproofing manufacturer.

H. Ferrous Metals, Interior and Exterior, Submerged or Intermittently Submerged, except in potable water and where Polibrid is shown:

1. Surface Preparation: SSPC-SP10, Near-White Blast.
2. Product and Manufacturer: Provide one of the following:
   a. Tnemec:
      1) Shop Primer: Series 66 Hi-Build Epoxoline - 1 coat, 3.0 – 6.0 dry mils.
      2) Second Coat: Series 66 Hi-Build Epoxoline – 1 coat, 3.0 – 6.0 dry mils.
      3) Finish: 104 H.S. Epoxy – 1 coat, 5.0 to 1.0 dry mils.
   b. Carboline:
      1) Shop Primer: Carboline 893 - 1 coat, 4.0 mils dft.
      2) Finish: Carbomastic 300M - 2 coats, 8.0 mils dft per coat.
   c. PPG:
      1) Shop Primer: Amerlock 600 Epoxy - 1 coat, 4.0 dry mils.
      2) Finish: Sigmashield 880 Epoxy - applied in 1 coat, 16 total dry mils.

I. All surfaces in contact with potable water:

1. Surface Preparation:
   a. Interior Ferrous Metals, submerged or intermittently submerged:
      1) SSPC-SP10, Near White Blast.
   b. Interior Ferrous Metals dry:
      1) SSPC-SP6, Commercial Blast.
   c. Concrete:
      1) Brush Blast.
2. Products and Manufacturer:
   a. Tnemec:
      1) Primer: Series L140 Pota Pox Primer - 1 coat, 2.0-4.0 dry mils.
      2) Stripe coat: Series L140 Pota Pox Plus – applied by brush to all weld seams, edges, corners, bolts, nuts, and other difficult to coat areas.
      3) Finish: Series 21 Epoxoline - 1 coat, 14.0-18.0 dry mils.
   b. Carboline:
      1) REACTAMINE 760 Elastomeric Polyurethane Coating – 1 coat, 25-35 mils (flat surfaces).
      2) REACTAMINE 760 Elastomeric Polyurethane Coating (Bolt Trays and Seams).
   c. PPG:

1) Primer: Amerlock 2 Epoxy – 1 coat, 5.0 dry mils.

2) Finish: Amerlock 2 Epoxy – 1 coat, 5.0 dry mils.

d. Or approved equal by named manufacturers.

J. Ferrous Metals, Exterior:

1. Shop Surface Preparation: SSPC-SP6 commercial blast.

2. Field Surface Preparation: Abrasive grit blasting of field welds and other imperfections. ENGINEER may require all areas to be blasted at his discretion, in accordance with SSPC-SP6, commercial blast.

3. Products and Manufacturer: Provide one of the following:

a. Tnemec:

1) 1st coat: Series 94-H2O Hydro-Zinc - 1 coat, 2.5 – 3.5 dry mils.

2) 2nd coat: Series 1095 Endurashield - 1 coat, 2.0 – 3.0 dry mils.

3) 3rd coat: Series 700 HydroFlon - 1 coat, 2.0 - 3.0 dry mils per coat.

b. Carboline:

1) Shop Primer: Carboline 890 - 1 coat, 4.0 mils dft.

2) Field Primer: Carboline 890 - 1 coat, 4.0 mils dft.

3) Finish: Carboline 134HG - 2 coats, 2.0 – 3.0 mils dft per coat.

c. PPG:

1) Shop/Field primer: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.

2) Finish: Pitthane Ultra Polyurethane – 2 coats, 1.5 dry mils per coat.

K. Galvanized Metal and Non-Ferrous Metal, Interior:

1. Surface Preparation: Solvent Cleaning, SPPC-SP1.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Primer: 66 Epoxoline - 1 coat, 5 dry mils per coat, 160 square feet per gallon.

b. Carboline:

1) Primer/Finish: Carboline 890 - 1 coat, 5 mils dft.

c. PPG:

1) Primer/Finish: Amerlock 2/400 Epoxy – 1 coat, 5 dry mils.

L. Galvanized Metal and Non-Ferrous Metal, Exterior, where painting is required:

1. Surface Preparation: Solvent Cleaning, SSPC-SP1.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Primer: Series L140 Pota-Pox – 1 coat, 2.0-4.0 dry mils.

2) Stripe Coat: Series L140 Pota-Pox Plus – applied by brush to all weld seams, edges, corners, bolts, nuts, and other difficult to coat areas.

3) Finish coat: Endura-Shield – 1 coat, 3.0-4.0 dry mils.

b. Carboline:

1) Primer: Carboline 890 - 1 coat, 4.0 mils dft.

2) Finish: Carboline 134 - 1 coat, 1.5 mils dft.

c. PPG:

1) Primer: Amerlock 2/400 Epoxy – 1 coat, 4 dry mils.

2) Finish: Pitthane Ultra Polyurethane – 1 coat, 1.5 dry mils.

M. Galvanized Ferrous Metal, Interior, Non-Ferrous Metal Submerged or Intermittently Submerged:

1. Surface Preparation: Solvent Cleaning SSPC-SP1 or hand tool clean, SSPC-S82, to remove insoluble contaminants.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Primer: 66-1211 Epoxoline primer, 1 coat, 4.0 dry mils, 200 square feet per gallon.

2) Finish: Series 66 Hi-Build Epoxoline - 1 coat, 4.0 dry mils, 200 square feet per gallon.

b. Carboline:

1) Primer: Carboline 893 - 1 coat, 4.0 mils dft.

2) Finish: Carboline 890 - 1 coat, 4.0 mils dft.

c. PPG:

1) Primer: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.

2) Finish: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.

N. All Metal Surfaces Exposed to Temperatures Over 250°F.

1. Surface Preparation: SSPC-SP10 Near-White Blast.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Finish: 39-1261 Silicone Aluminum - 2 coats, 1.0 dry mils per coat, 360 square feet per gallon.

b. Carboline:

1) Finish: Carboline 4700 Aluminum - 2 coats, 1.0 mils dft per coat.

c. PPG:

1) Finish: Hi-Temp 1000 Aluminum – 2 coats, 1.0 dry mils per coat.

O. All Aluminum in Contact with Dissimilar Materials:

1. Surface Preparation: Remove all foreign matter.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Series 66 Hi-Build Epoxoline - 2 coats, 4.0 dry mils per coat, 200 square feet per gallon.

b. Carboline:

1) Carboline 893 - 2 coats, 4.0 mils dft per coat.

c. PPG:

1) Amerlock 2/400 Epoxy – 2 coats, 4.0 dry mils per coat.

P. Mill-Coated Steel Pipe (Exterior):

1. Surface Preparation: SSPC-SP10 Near-White blast.
2. Product and Manufacturer: Provide one of the following:
   a. Tnemec:
      1) Primer: 66-1211 Epoxoline Primer - 1 coat, 4.0 dry mils per coat, 200 square feet per gallon.
      2) Finish: Series 66 Hi-Build Epoxoline - 1 coat, 4.0 dry mils per coat, 200 square feet per gallon.
      3) Exterior Finish (UV Exposure): Series 74 Endura-Shield, 1 coat, 4.0 mils dft.
   b. Carboline:
      1) Primer: Carboline 893 - 1 coat, 4.0 mils dft.
      2) Finish: Carboline 890 - 1 coat, 4.0 mils dft.
      3) Exterior Finish: Similar to TNEMEC.
   c. PPG:
      1) Primer: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.
      2) Finish: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.
      3) Exterior Finish: Similar to TNEMEC (ex. Pitthane Ultra Polyurethane).

Q. Plaster and Dry Wall Interior:

1. Surface Preparation: Sand and seal.
2. Product and Manufacturer: Provide one of the following:
   a. Tnemec:
      1) Primer: 51-792 PVA Sealer - 1 coat, 1.0 dry mils, 450 square feet per gallon.
      2) Finish: Series 66 Hi-Build Epoxoline - 2 coats, 4.0 dry mils per coat, 225 square feet per gallon.
   b. Carboline:
      1) Primer: Carboline 120 - 1 coat, 1.0 mils dft; 300-350 sf/gal.
      2) Finish: Carboline 890 - 2 coats, 4.0 mils dft/coat, 300 sf/gal/coat.
   c. PPG:
      1) Primer: Amerlock 2/400 Epoxy, 4.0 dry mils.
      2) Finish: Amerlock 2/400 Epoxy, 2 coats, 4.0 dry mils per coat.

R. Wood Surfaces, Interior and Exterior:

1. Surface Preparation: Sand and seal.
2. Product and Manufacturer: Provide one of the following:
   a. Tnemec:
      1) Primer: 151 Elasto Grip - 1 coat, 200 to 400 square feet per gallon.
      2) Finish: Series 2H Hi-Build Tneme-Gloss - 2 coats, 1.5 dry mils per coat. 500 square feet per gallon.

b. Carboline:

1) Primer: Carbocrylic 120 - 1 coat, 2.0 mils dft, 160 sq. ft/gallon.

2) Finish: Carbocrylic 3359 - 2 coats, 2.0-3.0 mils dft/coat, 200 sf/gal.

c. PPG:

1) Primer: Pitt-Tech Plus EP DTM Acrylic – 1 coat, 2.0 – 4.0 dry mils.

2) Finish: Pitt-Tech Plus EP DTM Acrylic – 2 coats, 2.0 dry mils per coat.

S. Insulated Ferrous Metal Pipe, Interior, Temperatures below 200ºF:

1. Surface Preparation: Remove foreign matter.

2. Products and Manufacturer: Provide one of the following:

a. Tnemec:

1) Primer: Series 37H Chem-Prime - 1 coat, 2.0 dry mils, 330 square feet per gallon.

2) Finish: Series 66 Epoxoline - 1 coat, 4.0 dry mils per coat, 200 square feet per gallon.

b. Carboline:

1) Primer: Rustland Penetrating Sealer - 1 coat, 2.0 mils dft.

2) Finish: Carboline 890 - 1 coat, 4.0 mils dft.

c. PPG:

1) Primer: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.

2) Finish: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.

T. Exposed Uninsulated PVC Piping and FRP Components, Interior and Exterior. (Unless noted otherwise on the drawings, all PVC and CPVC uninsulated and exposed piping shall be painted.).

1. Surface Preparation: As recommended by coating manufacturer.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Finish: Series 66 Hi-Build Epoxoline - 1 coat, 4.0 dry mils, 200 square feet per gallon.

b. Carboline:

1) Finish: Carboline 890 - 1 coat, 4.0 mils dft; 300 sf/gal.

c. PPG:

1) Finish: Amerlock 2/400 Epoxy – 1 coat, 4.0 dry mils.

3. A second finish coating of 3 mils dft epoxy urethane shall be applied on all exterior PVC and FRP components (TNEMEC Series 74).

U. Metal Pipe, Interior and Exterior, with Temperatures up to 250°F:

1. Surface Preparation:

a. Immersion Service:

1) SSPC-SP10 Near-White Blast Cleaning.

b. Non-Immersion Service

1) SSPC-SP6 Commercial Blast Cleaning.

2. Products and Manufacturer: Provide one of the following:
    a. Exterior Surfaces:
        1) Tnemec:
            a) Primer: Series 66 Hi-Build Epoxoline at 4.0 dry mils.
            b) Finish: Series 66 Hi-Build Epoxoline at 5.0 dry mils.
            c) Finish (UV Exposure): Series 74 Endura-Shield - 4 mils dft.
        2) Carboline:
            a) Primer: Carboline 893 at 3.0 mils dft, 1 coat.
            b) Finish: Carboline 890 at 4.0 mils dft, 1 coat.
            c) Finish (UV Exposure): Similar to TNEMEC above.
        3) PPG:
            a) Primer: Amerlock 400 Epoxy at 5.0 dry mils, 1 coat.
            b) Finish: Amerlock 400 Epoxy at 5.0 dry mils, 1 coat.
            c) Finish (UV Exposure): Similar to TNEMEC above (ex. Pitthane Ultra Polyurethane).
    b. Interior Surfaces (SP10 Surface Preparation):
        1) Tnemec:
            a) Primer: Tnemec 120-5002 at 15 dry mils, 1 coat.
            b) Finish: Tnemec 120-5001 at 15 dry mils, 1 coat.
        2) Or Approved Equal.

V. Concrete Floors, Trenches, Containment Walls, and Curbs for Secondary Containment:
    1. Surface Preparation:
        a. Interior Surface:
            1) Brush-off blast cleaning after concrete has cured for a minimum of 28 days.
    2. Products and Manufacturers: Provide chemical containment coatings listed below except where elastomeric liner is specified:
        a. Interior Surface:
            1) Tnemec:
                a) Primer: Tnemec Series 120-5002 Beige at 17 mils dft, 1 coat.
                b) Finish: Tnemec Series 120-5001 Gray at 17 mils dft, 1 coat.
                c) Patching Compound: Tnemec Series 120-5003 to fill voids.
            2) PPG:
                a) Primer: PPG Milamar 6850 at 17 – 24 mils dft, 1 coat.
                b) Finish: PPG Milamar 6850 at 17 – 24 mils dft, 1 coat.
                c) Patching Compound: PPG Milamar 6000 Putty to fill voids.
            3) Or Approved Equal.

W. Bolted, Galvanized or Ferrous Metal, Potable Water Storage Tank, Interior
    1. Galvanized Metal and Ferrous Metal, Interior, where painting is required:

a. Surface Preparation: Abrasive blast uniformly and thoroughly after cleaning as per SSPC-SP16 to remove existing coatings and to provide tooth and anchor. Anchor profile shall be a minimum of 2.0 mils. Clean all rusted or bare metal areas as per SSPC-SP10 Near-White Metal Blast Cleaning.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Primer: Series L140 Pota-Pox – 1 coat, 2.0-4.0 dry mils.

2) Stripe Coat: Series L140 Pota-Pox Plus – applied by brush to all weld seams, edges, corners, bolts, nuts, and other difficult to coat areas.

3) Finish coat: Series 21 Epoxoline – 1 coat, 14.0-18.0 dry mils.

4) The total minimum DFT shall be 16.0 mils.

b. PPG:

1) Primer: Amerlock 2 Epoxy – 1 coat, 5.0 dry mils.

2) Finish: Amerlock 2 Epoxy – 1 coat, 5.0 dry mils.

c. Carboline:

1) Flat surfaces: REACTAMINE 760 Elastomeric Polyurethane Coating – 1 coat, 23.0-35.0 mils

2) Bolt Trays and Seams: REACTAMINE 760 Elastomeric Polyurethane Coating, 40.0-80.0 mils.

X. Bolted, Galvanized or Ferrous Metal, Potable Water Storage Tank, Exterior

1. Galvanized Metal and Non-Ferrous Metal, Exterior, where painting is required:

a. Surface Preparation: Abrasive blast uniformly and thoroughly after cleaning as per SSPC-SP16 to remove existing coatings and to provide tooth and anchor. Anchor profile shall be a minimum of 1.0 mils. Clean all rusted or bare metal areas as per SSPC-SP10 Near-White Metal Blast Cleaning.

2. Product and Manufacturer: Provide one of the following:

a. Tnemec:

1) Primer: Series L140 Pota-Pox – 1 coat, 2.0-4.0 dry mils.

2) Stripe Coat: Series L140 Pota-Pox Plus – applied by brush to all weld seams, edges, corners, bolts, nuts, and other difficult to coat areas.

3) Finish coat: Series 1094 Endura-Shield – 1 coat, 3.0-4.0 dry mils.

4) The total minimum DFT shall be 5.0 mils.

b. PPG:

1) Primer: Amerlock 2/400 Epoxy – 2 coats, 5.0 dry mils per coat.

2) Finish: Pitthane Ultra Polyurethane – 2 coats, 1.5 dry mils per coat.

c. Carboline:

1) Primer: Carboline 890 - 1 coat, 4.0 mils DFT.

2) Finish: Carboline 134 - 1 coat, 1.5 mils DFT.

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SECTION 10 14 00
SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Furnish all labor, materials, tools, equipment, and perform all work and services for furnishing and installing signage as shown on the drawings and as specified.
   2. Provide all supplementary or miscellaneous items, including connections and mounting hardware, necessary for a sound, secure, and complete installation.

B. Related Sections:
   1. Division 09 Section 09 91 00 “Painting” for surface preparation and coating system requirements.
   2. Division 10 Section 10 14 19 “Safety Signs” for safety signage installation in plants.
   3. Division 10 Section 10 90 00 “Identification, Stenciling and Tagging” for identification devices for piping, valves, equipment and other items.

1.3 REFERENCES

A. American National Standards Institute (ANSI):
   1. A13.1 – Schemes for the Identification of Piping Systems
   2. Z53.1 – Safety Color Code for Marking Physical Hazards

B. Federal Specification (FS):
   1. L-P-387A(1) Plastic Sheet, Laminated, Thermosetting (For Designation Plates)

C. National Fire Protection Association (NFPA):
   1. 49-75 Hazardous Chemical Data
   2. 704-90 Standard System for the Identification of the Fire Hazards of Materials

D. Occupational Safety and Health Act (OSHA):
   1. §1910.144 Safety Color Code for Marking Physical Hazards
   2. §1910.145 Specifications for accident Prevention Signs and Tags

E. Definitions
   1. ADA-ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines."

1.4 SYSTEM DESCRIPTION

A. Plaques.

B. Building Identification signs.

1.5 SUBMITTALS

A. Product Data:
   1. Submit copies of manufacturer's technical brochure including color chart and list of standard signs.

B. Shop Drawings: Show fabrication and installation details for signs.
   1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
   2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
   3. Ground mounted signs: provide foundation requirements, assembly instructions, and related work.
   4. Wiring Diagrams: Power, signal, and control wiring for illuminated signs.

C. Samples: for each sign type and for each color and texture required.

1.6 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with applicable provisions in the ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

B. Electrical Components, Devices, and Accessories: For illuminated signs, listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following available manufacturers:
   1. A.R.K. Ramos Signage Systems
   2. Or approved equal.

2.2 MATERIAL

A. Aluminum Castings: ASTM B 26/B 26M, of alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated.

B. Aluminum Extrusions: ASTM B 221/B 221M, allow and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with at least the strength and durability properties of Alloy 6063-T5.

C. Bronze Castings: ASTM B 584, Alloy UNS No. C86500 (No. 1 manganese bronze).

2.3 PLAQUES

A. Cast Plaques: Provide castings free of pits, scale, sand holes, and other defects, as follows:
   1. Plaque Material: Bronze.
   2. Background Texture: Manufacturer's standard matte texture.
   3. Border Style: Plain bevel.

4. Mounting: Concealed studs, noncorroding for substrates encountered.
5. Text to be provided by ENGINEER.

B. Plaques (Type A): Cast Bronze plaques.
1. Lettering: Helvetica medium upper case 3/4-inch depth, or other indicated by OWNER. Refer to Identifying Device Schedule for height of lettering.
2. Logo: OWNER's latest logo, in color, a minimum of 6-inches tall.
3. Size: Refer to Identifying Device Schedule.
4. Mounting: Concealed studs, noncorroding for substrates encountered.

2.4 BUILDING AND STRUCTURE IDENTIFICATION

A. Identification: Provide identification of buildings and structures as indicated in the Identifying Device Schedule at the end of this Section and as shown on the Drawings. Location to be coordinated with OWNER.

B. Dimensional Cast Characters (Type B):
1. Cast Characters: Produce characters with smooth flat faces, sharp corners, and precisely formed lines and profiles, free of pits, scale, sand holes, and other defects. Cast lugs into back of characters and tap to receive threaded mounting studs. Alloy and temper recommended by sign manufacturer for casting process used and for use and finish indicated. Comply with the following requirements.
a. Character Material: Aluminum
b. Thickness: 1-inch
c. Color: Clear Anodic Satin Finish
d. Mounting: Concealed studs, noncorroding for substrates encountered.

C. Identification: Provide identification of buildings and structures as indicated in the Identifying Device Schedule at the end of this Section and as shown on the Drawings. Location to be coordinated with OWNER.

2.5 ACCESSORIES

A. Lighting: Provide illuminated signs and/or characters as shown on the Drawings. Provide lighting, including transformers, insulators, and other components. Make provisions for servicing and concealing connections to building electrical system.

B. Anchors and Inserts: Provide 316 stainless steel anchors and inserts for installations. Use toothed steel or lead expansion-bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

2.6 FABRICATION

A. General: Provide manufacturer's standard signs of configurations indicated.
1. Welded Connections: Comply with AWS standards for recommended practices in shop welding. Provide welds behind finished surfaces without distortion or discoloration of exposed side. Clean exposed welded surfaces of welding flux and dress exposed and contact surfaces.
2. Mill joints to tight, hairline fit. Form joints exposed to weather to exclude water penetration.
3. Conceal fasteners if possible; otherwise, locate fasteners where they will be inconspicuous.

2.7 FINISHES

A. Aluminum:
   1. Clear Anodic Finish: Manufacturer's standard Class 1 clear anodic coating, 0.018 mm or thicker, over a satin (directionally textured) mechanical finish, complying with AAMA 611.
   2. Color Anodic Finish: Manufacturer's standard Class 1 integrally colored or electrolytically deposited color anodic coating, 0.018 mm or thicker, in medium bronze] applied over a satin (directionally textured) mechanical finish, complying with AAMA 611, unless otherwise specified.

B. Copper-Alloy:
   1. Cast-Bronze Character Finishes: Manufacturer's standard satin finish with exposed surfaces free from porosity, burrs, and rough spots; with returns finished with fine-grain air blast.
   2. Cast-Bronze Plaque Finishes: Exposed surfaces free of porosity, burrs, and rough spots; with returns finished with fine-grain air blast.
      a. Raised Areas: Hand-tool and buff borders and raised copy to produce manufacturer's standard satin finish.
      b. Background Finish: Dark oxidized.
   3. Clear Protective Coating: Coat exposed surfaces of copper alloys with manufacturer's standard, clear organic coating specially designed for coating copper-alloy products.

C. Acrylic sheet:
   1. Colored Coatings for Acrylic Sheet: For copy and background colors, provide colored coatings, including inks, dyes, and paints, that are recommended by acrylic manufacturers for optimum adherence to acrylic surface and that are UV and water resistant for five years for application intended.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Locate signs and accessories where indicated, using mounting methods of types described and complying with manufacturer's written instructions.
   1. Install signs level, plumb, and at heights indicated, with sign surfaces free of distortion and other defects in appearance.
   2. Interior Wall Signs: If not designated on the Drawings or indicated on the Sign Schedule, install signs on walls adjacent to latch side of door where applicable. Where not indicated or possible, such as double doors, install signs on nearest adjacent walls. Locate to allow approach within 3 inches (75 mm) of sign without encountering protruding objects or standing within swing of door.

B. Wall-Mounted Signs: Comply with sign manufacturer's written instructions except where more stringent requirements apply.
   1. Two-Face Tape: Mount signs to smooth, nonporous surfaces. Do not use this method for vinyl-covered or rough surfaces.
   2. Hook-and-Loop Tapes: Mount signs to smooth, nonporous surfaces.

3. Silicone-Adhesive Mounting: Attach signs to irregular, porous, or vinyl-covered surfaces.
4. Shim Plate Mounting: If signs are to be applied to irregular surfaces; provide 1/8-inch-(3-mm-) thick, concealed aluminum shim plates with predrilled and countersunk holes, at locations indicated, and where other mounting methods are not practicable. Attach plate with fasteners and anchors suitable for secure attachment to substrate. Attach panel signs to plate using method specified above.
5. Mechanical Fasteners: Use nonremovable mechanical fasteners placed through predrilled holes. Attach signs with fasteners and anchors suitable for secure attachment to substrate as recommended in writing by sign manufacturer.

C. Bracket-Mounted Signs: Provide manufacturer's standard brackets, fittings, and hardware for mounting signs that project at right angles from walls and ceilings. Attach brackets and fittings securely to walls and ceilings with concealed fasteners and anchoring devices to comply with manufacturer's written instructions.

D. Dimensional Characters: Mount characters using standard fastening methods to comply with manufacturer's written instructions for character form, type of mounting, wall construction, and condition of exposure indicated. Provide heavy paper template to establish character spacing and to locate holes for fasteners. As shown on the Drawings:
1. Flush Mounting: Mount characters with backs in contact with wall surface.
2. Projected Mounting: Mount characters at projection distance from wall surface indicated.

E. Cast-Metal Plaques: Mount plaques using standard fastening methods to comply with manufacturer's written instructions for type of wall surface indicated.
1. Concealed Mounting: Mount plaques by inserting threaded studs into tapped lugs on back of plaque. Set in predrilled holes filled with quick-setting cement.

3.2 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 IDENTIFYING DEVICE SCHEDULE

A. Provide identifying devices at the locations indicated in the Identifying Device Schedule after the “END OF SECTION”.

END OF SECTION

IDENTIFYING DEVICE SCHEDULE									
Sign				Mounting		Lettering			
Sign Type	QTY.	Location	Size W x H (in)	Type	Height to Top (in)	Height	Message	Faces	Remarks

SECTION 10 14 19
SAFETY SIGNS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Furnish all labor, materials, tools, equipment, and perform all work and services for furnishing and installing safety signage as shown on the drawings and as specified.
   2. Provide all supplementary or miscellaneous items, including connections and mounting hardware, necessary for a sound, secure, and complete installation.

B. Related Sections:
   1. Division 09 Section 09 91 00 “Painting” for surface preparation and coating system requirements.
   2. Division 10 Section 10 90 00 “Identification, Stenciling and Tagging” for identification devices for piping, valves, equipment and other items.

1.3 ALLOWANCES

A. Except where specifically designated on the Drawings or in the Specifications, the type, number and locations of signs shall be determined by the OWNER.

B. The CONTRACTOR shall include unit bid item of $500 for safety sign materials either not required by this specification or indicated in the Drawings. Labor for sign installation, costs for ordering and accepting delivery, as well as overhead and profit shall be included in the Base Bid and shall not be part of the bid item.

1.4 REFERENCES

A. American National Standards Institute (ANSI):
   1. A13.1 – Schemes for the Identification of Piping Systems
   2. Z53.1 – Safety Color Code for Marking Physical Hazards

B. Federal Specification (FS):
   1. L-P-387A(1) Plastic Sheet, Laminated, Thermosetting (For Designation Plates)

C. National Fire Protection Association (NFPA):
   1. 49-75 Hazardous Chemical Data
   2. 704-90 Standard System for the Identification of the Fire Hazards of Materials

D. Occupational Safety and Health Act (OSHA):
   1. §1910.144 Safety Color Code for Marking Physical Hazards
   2. §1910.145 Specifications for accident Prevention Signs and Tags

1.5 SYSTEM DESCRIPTION

A. Safety signage shall be installed at non-potable water locations, equipment that automatically starts, covers for rotating machinery, electrical control centers, firefighting apparatus locations, eye and noise protection, hazardous material locations, chlorine and chemical areas, and other designated locations.

1.6 SUBMITTALS

A. Product Data:
   1. Submit copies of manufacturer's technical brochure including color chart and list of standard signs.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following available manufacturers:
   1. Brady Corporation, Milwaukee, WI
   2. Seton Name Plate Corp., New Haven, CT

2.2 SAFETY SIGNS

A. Plastic Signs (Type A):
   1. 60-mil rigid plastic for indoor/outdoor use, endures temperatures of -40°F to 176°F.
   2. Rounded corners with mounting holes.

B. Signs, Self-Sticking (Type B):
   1. Flexible 4-mil peel and stick vinyl for indoor/outdoor use, endures temperatures of -40°F to 176°F.
   2. Adhesive backing shall adhere quickly and firmly to smooth surfaces.

C. Fiberglass Signs (Type C):
   1. Material: Multi-ply laminated fiberglass, minimum 0.100-inch thick, with guaranteed not to chip, fade, rust, shatter or peel for 15 years.
   2. Message encapsulated between two clear weather-resistant surface layers.
   3. Indoor/outdoor use, endures temperatures of -40°F to 190°F and graffiti resistance.

D. Metal Signs (Type D):
   1. Material: Silk-screened, baked enamel finish or synthetic film laminate, 0.040 aluminum panels.
   2. Round-cornered and punched for application to wall surfaces.

E. Painted Signs (Type E):
   1. Stencils: Standard stencils prepared with letter sizes complying with recommendations in ASME A13.1. Minimum letter height is 1-1/4 inches for ducts, and 3/4 inch for access door signs and similar operational instructions.
   2. Material: Fiberboard.
   3. Stencil Paint: Exterior, oil-based, alkyd-gloss black enamel, unless otherwise indicated. Paint may be in pressurized spray-can form.

4. Identification Paint: Exterior, oil-based, alkyd enamel in colors according to ASME A13.1, unless otherwise indicated.

F. Exit Signs (Type F):
1. Material: Plastic, 1/8-inch (minimum) thickness.
2. Description: 6-inch high, 3/4-inch stroke, red letters on white background.
3. Illumination: As required by applicable jurisdictional agency fire code.
4. Available Manufacturers:
a. Brady Corporation, Milwaukee, WI
b. Seton Name Plate Corp., New Haven, CT

G. Safety Sign Message:
1. Consists of two parts; the OSHA Heading and the Specific Message.
2. OSHA Heading will consist of one of the following:
a. DANGER. White letters on red oval surrounded by a rectangular black field.
b. NOTICE. White letters on a blue field.
c. SAFETY FIRST. White letters on a green field.
d. CAUTION. Yellow letters on a black field.
e. RADIATION. Yellow letters on a purple field.
f. THINK. White letters on a green field.
g. BE CAREFUL. White letters on a green field.
3. Safety signs shall comply with the requirements of OSHA 1920.145 with respect to size, color, and symbols.
4. Information regarding message, location, and related items shall be shown on the Drawings or in the Sign Schedule at END OF SECTION.

H. All sign attachment and mounting hardware shall be Type 316 stainless steel. Each sign shall utilize 4 screws or 2 brackets.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATIONS

A. Safety Signage: Provide and install at the following locations as applicable:
1. Non-potable Water Faucets: CAUTION/Do Not Drink Water.
2. Automatic Equipment Operation: CAUTION/Equipment Starts and Stops Automatically.
3. Electrical Entrance and Fence Surrounding Electrical Equipment: DANGER/ High Voltage.
4. Eye Wash Station: EMERGENCY/ Eye Wash Station Keep Area Clean.
5. Safety Shower: EMERGENCY/ Safety Shower Keep Area Clean.
6. Fence Surrounding Property: Notice/No Trespassing.
7. Adjacent to Vertical Ladders: SAFETY FIRST/Remember Wear Safety Harness.

8. Visitors: NOTICE/All Visitors Must Register at Office.
9. Visitor Parking:
10. No Smoking: At designated locations.

B. Warning Labels: Apply warning labels to equipment, machinery, electrical equipment, storage containers, and related items to the items as designated below. Label size shall be according to the space available. Do not apply label to concrete or masonry surfaces, use Type A or C signs.
1. Electrical Disconnects: DANGER/480 Volts (Provide correct voltage or use High Voltage).
2. Equipment Belt Guards: CAUTION/Keep Guard in Place.
3. Flammable Material Storage: Flammable Liquids.

C. Chemical and HazCom:
1. Chemicals: Place NFPA Signs on chemical storage tanks, adjacent to chemical pumps, and related items communicating the following information:
a. Health Hazard.
b. Fire Hazard.
c. Specific Hazard.
d. Instability Hazard.
Type: Depending on application sign shall be self-adhesive vinyl (Type B) or fiberglass (Type C).

3.3 SIGN SCHEDULE

A. Safety Signs: In addition to paragraph 3.2 above, refer to Safety Sign Schedule following the "End of Section" for other applications.

END OF SECTION

SAFETY SIGN SCHEDULE								
Item	**Qty.**	**Type[1]**	**Size (inches)**	**OSHA Heading**	**Message**	**Location**	**Mounting**	**Remarks**
1	Note 2	B	2-1/2 x 1-3/4	CAUTION	Keep Guard In Place	Equipment safety guards	Apply to safety guards.	Warning Label
2	Note 2	C	10 x 7	CAUTION	Equipment Starts and Stops Automatically	All equipment and pumps that start automatically.	Wall or electrical HOA control.	
3	4	D	14 x 10	DANGER	High Voltage	Entrance to electrical rooms.	Exterior of door.	
4	Note 2	F	12 x 8	NA	EXIT		Above exterior doors of buildings, hallways, stairs to exterior doors.	
5	Note 2	C	14 x 10	NOTICE	NO SMOKING	Doors to MCC and as designated.	Entrance doors to MCC and walls at designated locations.	

Notes:

1. Type refers to Safety Sign type as designated in Part 2 – Products.
2. Quantity determined by number of belt guards, equipment operated automatically, ladders, exterior exit doors, and as designated by Owner.

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SECTION 10 90 00
IDENTIFICATION, STENCILING AND TAGGING

PART 1 - GENERAL

1.1 SUMMARY

A. Furnish all labor, materials, tools, equipment, and perform all work and services for all identifications, stenciling and tagging as shown on the drawings and as specified herein. Although such work is not specifically shown or specified, all supplementary or miscellaneous items, including connections and mounting hardware, necessary for a sound, secure, and complete installation shall be furnished and installed as part of this work.

B. Items included, but are not necessarily limited to, the following areas of work:

1. Piping and valve identification.
2. Equipment, pumping units, and machinery.
3. Instrumentation and electrical identification.

C. Provide all supplementary or miscellaneous items, including connections and mounting hardware, necessary for a sound, secure, and complete installation.

1.2 REFERENCES

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Related Sections:

1. Division 9 Section 09 91 00 “Painting and Protective Coatings” for surface preparation and coating system requirements.
2. Division 10 Section 10 14 19 “Safety Signs” for various safety signage to be installed.
3. Division 26 “Identification for Electrical Systems” if included.

C. Standards

1. American National Standards Institute (ANSI):
   a. Z53.1 – Safety Color Code for Marking Physical Hazards
2. American Society of Mechanical Engineers (ASME):
   a. A13.1 – Schemes for the Identification of Piping Systems
3. Federal Specification (FS):
   a. L-P-387A(1) Plastic Sheet, Laminated, Thermosetting (For Designation Plates)
4. National Fire Protection Association (NFPA):
   a. 49-75 Hazardous Chemical Data
   b. 704-90 Standard System for the Identification of the Fire Hazards of Materials
5. Occupational Safety and Health Act (OSHA):
   a. §1910.144 Safety Color Code for Marking Physical Hazards
   b. §1910.145 Specifications for accident Prevention Signs and Tags
6. Texas Commission on Environmental Quality (TCEQ):
   a. Chapter 290 – Public Drinking Water Systems

b. Chapter 217 – Design Criteria for Sewage Systems

1.3 ADMINISTRATIVE REQUIREMENTS – NOT USED

1.4 SUBMITTALS

A. Product Data:

1. Submit identification register acknowledging all designated or scheduled equipment, instruments, gauges, valves, and HVAC, mechanical and electrical equipment. All items on register shall be tagged. The numbering system will be as shown on P&ID drawings, or if not provided in the drawings, as OWNER will determine numbering system.
2. Develop and submit full identification register acknowledging equipment, valves, instruments, mechanical equipment and electrical equipment, which is not designated or scheduled in drawings and specifications. Provide identifications compatible but not conflicting with designated or scheduled equipment and related items. All items on register shall be tagged.
3. Submit assurances that subcontractors and manufacturers have been advised of register requirements.
4. Update identification register immediately prior to final acceptance of work.

B. Samples:

1. Submit for approval samples of each type of marker and sign specified.
2. Submit copies of manufacturer's technical brochure including color chart and list of standard signs.

1.5 QUALITY ASSURANCE – NOT USED

1.6 DELIVERY, STORAGE, AND HANDLING – NOT USED

1.7 SITE CONDITIONS – NOT USED

1.8 WARRANTY – NOT USED

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. All exposed piping, duct, and conduit systems and accessible piping and conduit systems located in chases shall be painted with an identifying coded color with the product identification and flow directional arrows applied.

B. All equipment, pumping units and machinery shall be identified.

C. All valves shall be identified.

D. Electrical and instrumentation components shall be identified.

E. Safety signage shall be installed at non-potable water locations, equipment that automatically starts, covers for rotating machinery, electrical control centers, firefighting apparatus locations, eye and noise protection, hazardous material locations, chlorine and chemical areas, and other designated locations.

F. Unless otherwise specified, openings, accesses and related locations are required to be identified.

G. Coordination, development, and initiation of identification, marking, and tagging systems and determination of separation of subcontractor and manufacturers corresponding responsibilities shall be determined by the CONTRACTOR.

2.2 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following manufactures:

1. Brady
2. Seton

2.3 IDENTIFICATION DEVICES

A. General: Products specified are for applications referenced in other Sections. If more than single type is specified for listed applications, selection is Installer's option.

B. Equipment Nameplates: Metal permanently fastened to equipment with data engraved or stamped.

1. Data: Manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances, and essential data.
2. Location: Accessible and visible.

C. Piping systems:

1. Pressure-Sensitive Pipe Markers: Manufacturer's standard preprinted, color-coded, pressure-sensitive-vinyl type with permanent adhesive.
2. Pipes with OD, Including Insulation, Less Than 6 Inches: Full-band pipe markers, extending 360 degrees around pipe at each location.
3. Pipes with OD, Including Insulation, 6 Inches and Larger: Either full-band or strip- type pipe markers and of a length required for label.
4. Lettering:
   a. Outside pipe or pipe covering diameter is 5/8-inch or smaller, use metal tags with specified lettering stamped-in, fastened to pipe with chains. Tag and chain material shall be aluminum or stainless steel. Pipe shall be color coded as specified.
   b. Lettering on piping shall be painted, stenciled, or snap-on plastic sleeves with nominal lettering size as shown in Table 1.

Table 1
Pipe Identification

Outside Diameter Pipe or Covering	Minimum Height of Lettering
5/8-inch of smaller	Metal Tags - 1/2-inch
3/4-inch to 1-3/8 inches	1/2-inch
1-1/2 inch to 2-3/8 inches	3/4-inches
2-1/2 inches to 7-7/8 inches	1-1/4 inches
8-inches to 10-inches	2-1/2 inches

Over 10-inches	3-1/2 inches

5. Arrows: Either integrally with piping system service lettering to accommodate both directions of flow, or as separate unit on each pipe marker to indicate direction of flow.

D. Plastic Tape: Manufacturer's standard color-coded, pressure-sensitive, self-adhesive vinyl tape, at least 3 mils thick.

1. Width: 1-1/2 inches on pipes with OD, including insulation, less than 6 inches; 2-1/2 inches for larger pipes.
2. Background Color: Comply with the tables at the end of this section unless otherwise indicated. If a particular process is not included in the table, comply with
3. ASME A13.1.
4. Lettering Color: Comply with the tables at the end of this section unless otherwise indicated. If a particular process is not included in the table, comply with
5. ASME A13.1.

E. Engraved Plastic-Laminate Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic- resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.

1. Engraving: Engraver's standard letter style, of sizes and with terms to match equipment identification.
2. Thickness: 1/16-inch, for units up to 20 sq. in. or 8 inches in length, and 1/8-inch for larger units.
3. Fasteners: Self-tapping, stainless steel screws or contact-type permanent adhesive.

2.4 VALVE IDENTIFICATION

A. Aboveground Valves

1. Valve Tags: Engraved with 1/4-inch letters for piping system abbreviation and 3/8-inch sequenced numbers, with numbering system as shown on the valve schedule in the drawings or approved by ENGINEER. Include one (1) 5/32-inch hole for fastener.
2. Material: 1” x 3” x 3/32-inch thick plastic laminate, suitable for indoor and outdoor environment, chemical and abrasive resistance.
3. Provide white or black letters and numbers depending on background color as follows:
    a. Instrumentation: white background; black letters
    b. Process valves and equipment: red background; white letters
    c. Potable water valves: blue background; white letters
    d. Mechanical valves and equipment: green background; white letters
    e. Electrical equipment: yellow background; black letters
4. Attachment: Stainless steel wire, stainless steel beaded chain, or brass beaded chain fasteners for above ground valves.

B. Buried Valves

1. Valve Tags: Engraved with 1/2-inch letters for piping system abbreviation and 1/2-inch sequenced numbers, with numbering system as shown on the valve schedule in the drawings or approved by ENGINEER. Include two (2) 5/32-inch holes on each end of the tag for mounting to the concrete cap over of the valve box.
2. Material: 2” x 5-1/2” x 1/32-inch 316 stainless steel with rounded corners.
3. Letter color shall be black; background color shall be natural material.
4. Attachment: 316 stainless steel anchors embedded into the concrete cap over the valve box.

2.5 ELECTRICAL IDENTIFICATION

A. Any conflicting information in Division 26 “Identification for Electrical Systems” shall

B. supersede the information in this section.

C. Markers:
1. Self-sticking, vinyl-cloth for general purpose indoor use or protected by 5-mil polyester film for resistance to solvents, chemicals, and limited outdoor use.
2. Letters and numbers printed in black on an orange background.
3. Message, location, and related items shall be as shown on Drawings or listed in Sign Schedule.

D. Underground Cable Signs:
1. Rigid, preprinted signs, 3/16-inch thick, fabricated with the printed message sealed with a fiberglass resin package for outdoors environment.
2. Black characters on yellow background.
3. Message, location, and related items shall be as shown on Drawings or listed in Sign Schedule.

E. Identification of transformers, light standards, electrical components, and related items shall be yellow characters on black background.

2.6 EQUIPMENT IDENTIFICATION DEVICES

A. Nameplates: Stainless steel, with data engraved or stamped, for permanent attachment on equipment.
1. Data:
a. Manufacturer, product name, model number, and serial number.
b. Capacity, operating and power characteristics, and essential data.
c. Labels of tested compliance.
2. Location: Accessible and visible.
3. Fasteners: As required to mount on equipment.

B. Equipment Markers: Engraved, color-coded manufacturer's standard laminated plastic:
1. Green: Cooling equipment and components.
2. Yellow: Heating equipment and components.
3. Brown: Energy reclamation equipment and components.
4. Blue: Equipment and components that do not meet criteria above.

5. Hazardous Equipment: Use colors and designs recommended by ASME A13.1.
6. Terminology: Match schedules as closely as possible. Include the following:
    a. Name and plan number.
    b. Equipment service.
    c. Design capacity.
    d. Other design parameters such as pressure drop, entering and leaving conditions, and speed.
7. Size: 2-1/2 by 4 inches for control devices, dampers, and valves; 4-1/2 by 6 inches for equipment.

C. Equipment Signs: ASTM D709, Type 1, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine subcore, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.
1. Data: Instructions for operation of equipment and for safety procedures.
2. Engraving: Manufacturer's standard letter style, of sizes and with terms to match
3. equipment identification.
4. Thickness: 1/16-inch for signs up to 20 square inches or 8-inches in length, and 1/8-inch for larger signs.
5. Fasteners: Self-tapping, stainless steel screws or contact type, permanent adhesive.

2.7 WARNING TAGS

A. Warning Tags: Preprinted or partially preprinted, accident-prevention tags, of plasticized card stock with mat finish suitable for writing.
1. Size: 3-1/4 by 5-5/8 inches.
2. Fasteners: Brass grommets and wire.
3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.
4. Color: Yellow background with black lettering.

PART 3 - EXECUTION

3.1 GENERAL APPLICATIONS

A. Products specified are for applications referenced in other specification Sections. Ifmore than single-type material, device, or label is specified for listed applications, selection is installer's option.

B. Lettering and Graphics: Coordinate names, abbreviations, and other designations used in piped utility identification with corresponding designations indicated. Use numbers, letters, and terms indicated for proper identification, operation, and maintenance of piped utility systems and equipment.

3.2 IDENTIFICATION OF PIPING SYSTEMS

A. Identification Markers: Exposed piping and piping in accessible chases shall be identified with banding tape containing lettering designating the service of each piping system; shall

have flow directional arrows; and shall be color coded in accordance with Schedule A. Piping identification shall comply with the latest version of ASME A13.1.

B. Piping designated to be color coded shall be completely painted with the indicated color prior to installation of the pipe identification markers.

1. Protected adjacent surfaces and work and materials by suitable covering during progress of work.
2. Insure hardware, accessories, plates, fixtures, finished work and similar items are removed or protected.

C. Paint or apply not less than two (2) bands on any length of pipe when addressing the “piping color” denoted in Schedule A in Paragraph 3.7of this Section. Follow a clean-cut line around entire pipe.

D. Install piping markers and safety signs only after all painting and finish work has been completed. This does not include temporary "wet paint" or construction safety signs.

E. Provide arrows and identification markers:

1. At 20'-0" maximum centers along continuous lines.
2. At changes in direction (route), adjacent to valves, at each branch or tee, and near machinery or equipment served.
3. Where pipes and ducts pass through floor, wall, ceiling, cladding assemblies and the like obstruction on both sides of assembly.
4. Apply markers on both sides of pipe and where view is not obstructed.
5. Arrow markers must point away from pipe markers and in flow direction if flow in both directions use double-headed arrow markers.
6. If, in the opinion of the ENGINEER, these requirements result in an excessive amount of markers and arrows on a run of pipe, the number required may be reduced.

F. Identify all piping and ductwork; including interior or exterior, exposed or covered, insulated or not, including pipes and ducts in open or covered floor or ceiling ducts or spaces.

G. Apply tapes in uniform manner and parallel to piping and ducts.

3.3 VALVE IDENTIFICATION

A. Install tags on valves and control devices in piping systems. Include new tagged valves in a valve schedule.

B. Valve Tag Application Schedule: Include Tag No. as shown on the Plans.

C. Exiting valves do not require tags unless specifically stated.

3.4 EQUIPMENT IDENTIFICATION

A. Equipment Nameplates: Install and permanently fasten equipment nameplates on each item of equipment, pumping unit, and machinery that does not have nameplate nor has nameplate that is damaged or located where not easily visible.

B. Equipment Markers: Install equipment markers with permanent adhesive on or near each major item of equipment

1. General: Install engraved plastic laminate sign or plastic equipment marker near each

major item of mechanical equipment and each operational device.

2. Lettering Size: Minimum 1/4-inch high lettering for name of unit where viewing distance is less than 2'-0", 1/2-inch high for distances up to 6'-0", and proportionately larger lettering for greater distances. Provide secondary lettering 2/3 to 3/4 of size of principal lettering.
3. Data: Distinguish among multiple units, indicate operational requirements, indicate safety and emergency precautions, warn of hazards and improper operations, and identify units.
4. Locate markers where accessible and visible. Include markers for the following general categories of equipment:
    a. Main control and operating valves, including safety devices.
    b. Meters, gages, thermometers, and similar units.
    c. Process equipment, pumps, compressors, chillers, condensers, and similar motor driven units.
    d. Heat exchangers, coils, evaporators, cooling towers, heat recovery units, and similar equipment.
    e. Fans, blowers, primary balancing dampers, and mixing boxes.
    f. Packaged HVAC central station and zone type units.
    g. Strainers, filters, humidifiers, water-treatment systems, and similar equipment.
5. Equipment Signs: Install equipment signs with screws or permanent adhesive on or near each item of equipment. Locate signs where accessible and visible.

3.5 APPURTENANCES

A. Warning Tags: Write required message on, and attach warning tags to, equipment and other items where required.

3.6 CLEANING AND ADJUSTING

A. Relocate identification devices that have become visually blocked by other work.

B. Clean faces of mechanical identification devices.

3.7 PIPING COLOR CODE SCHEDULE

Schedule A
Water Piping Color Code

Product	Piping Color	Lettering Color	Background Color for Label
Potable Water	Light Blue	Black	Light Blue
Compressed Air	Stainless Steel	White	Light Green
Instrument Air	Stainless Steel	White	Light Green with Dark Green Bands
Chlorine (gas, liquid or vent)	Yellow	Red	Yellow
Chlorine (solution)	Yellow with Red Bands	Black	Yellow with Red Bands
Liquid Alum	Yellow with Orange Bands	Black	Yellow with Orange Bands

Schedule A Water Piping Color Code			
Product	**Piping Color**	**Lettering Color**	**Background Color for Label**
Alum (solution)	Yellow with Green Bands	Black	Yellow with Green Bands
Ammonia	Yellow with Brown Bands	Black	Yellow with Brown Bands
Chlorine Dioxide (solution)	Yellow with Blue Bands	Black	Yellow with Blue Bands
Ferric Chloride	Brown with Red Bands	White	Brown with Red Bands
Ferric Sulfate	Brown with Yellow Bands	White	Brown with Yellow Bands
Polymer	White with Green Bands	Black	White with Green Bands
Liquid Caustic	White with Red Bands	Black	White with Red Bands
Caustic (solution)	White with Orange Bands	Black	White with Orange Bands
Fluoride	White with Yellow Bands	Black	White with Yellow Bands
Hydrogen Peroxide	Stainless Steel	Black	Green
CIP Feed	Yellow	Black	Yellow
CIP Return	Yellow	Black	Yellow
Hydrogen Gas	Yellow	Black	Yellow
Domestic Hot Water	Blue with Red Bands	Black	Blue
Air Conditioning Water	Blue	White	Blue
Membrane Waste	Tan	Black	Tan
Settled Water	Green	Black	Green
Filter Effluent	Light Blue	Black	Light Blue
Backwash Supply	Light Blue	Black	Light Blue
Backwash Waste	Dark Gray	Black	Dark Gray
Drain	Dark Gray	Black	Dark Gray
Raw Water	Tan	Black	Tan
Finished Water	Light Blue	Black	Light Blue
Fire	Red	White	Red
Brine	Green	White	Green
Softened Water	Blue	White	Blue
In-Plant Water	Dark Gray with Red Bands	White	Dark Gray
Acid	Yellow with Orange Bands	Black	Yellow with Orange Bands
Sanitary Drain	Dark Gray	White	Dark Gray
Vent	Yellow with Black Bands	Black	Yellow

END OF SECTION

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SECTION 31 05 10
MATERIALS FOR EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section provides the requirements for materials used for preparation of roadway fill, subgrade and base; structural subgrade and backfill; utility subgrade, bedding, embedment, and backfill; embankment and levee subgrade and fill; and other materials for related work.

B. Related Sections include the following:
   1. Section 31 20 00 “Earthwork” for excavation, filling and backfilling, and rough grading.
   2. Section 32 92 13 “Hydro-Mulching” for soil preparation and turf renovation

1.3 SUBMITTALS

A. Submittals for Review.
   1. Samples: As required by ENGINEER, provide one-gallon sample in a sealed container.
   2. Contractor Design Mix Determination: Submit proposed mix design for Controlled Low Strength Material and preliminary results demonstrating the mix design achieves required compressive strength.

B. Submittals for Information.
   1. Source of Materials: Submit name and location of source of materials.
   2. Off-Site Borrow Source: Prior to furnishing off-site borrow (soils), provide notarized certification from the landowner stating to the best of landowner’s knowledge and belief, the borrow source has never been contaminated by hazardous and/or toxic waste materials.
   3. Certified Analysis: Submit test results by independent laboratory of material compliance with specifications. Results shall not be more than thirty (30) days old.

1.4 REFERENCES

A. Definitions.
   1. Well-Graded: A mixture of particle sizes that has no specific concentrations or lack thereof of one or more sizes producing a material type which, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.

B. Reference Standards: Following are standards that may be referenced in this Section.
   1. American Concrete Institute, ACI 229. – Controlled Low Strength Materials.
   2. ASTM International (ASTM):
      a. C33 – Standard Specification for Concrete Aggregate.

b. C40 – Standard Test Method for Organic Impurities in Fine Aggregates for Concrete.
c. C88 – Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
d. C94 – Standard Specification for Ready-Mixed Concrete.
e. C117 – Standard Test Method for Material Finer than 75 Micrometer (No. 200) Sieve in Mineral Aggregates by Washing.
f. C127 – Standard Test Method for Density, Relative Density (Specific Gravity), and Adsorption of Coarse Aggregates.
g. C131 – Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
h. C136 – Standard Test Method for Sieve Analysis of Fine and coarse Aggregates.
i. C142 – Standard Test Method for Clay Lumps and Friable Particles in Aggregates.
j. C150 – Standard Specification for Portland Cement.
k. C535 – Standard Test Method for Resistant to Degradation of Large-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
l. C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
m. D75 – Standard Practice for Sampling Aggregates.
n. D448 - Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
o. D1140 – Standard Test Method for Amount of Materials in Soils Finer than the No. 200 (75 micrometer) Sieve.
p. D2487 – Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
q. D2940 – Standard Specification for Graded Aggregate Material for Bases or Subbases for highways or Airports.
r. D2974 – Standard Test Method for Moisture, Ash, and Organic Matter of Peat and other Organic Soils.
s. D4221 – Standard Test Method for Dispersive Characteristics of Clay Soil by Double hydrometer.
t. D4318 – Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
u. D4832 – Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.
v. D5084 – Standard Test Methods for Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter.
w. E-11 – Standard Specification for Wire-Cloth and Sieves for Testing Purposes.

3. Public Works Construction Standards, North Texas Council of Governments (NCTCOG).
4. Texas Department of Transportation, Standard Specifications for Construction of Highways, Streets, and Bridges (TxDOT).
   a. TxDOT Item 247 “Flexible Base”
5. Texas Department of Transportation, Manual of Testing Procedures (TEX):
   a. TEX-110-E “Particle Size Analysis of Soils”
   b. TEX-116-E “Ball Mill Method for Determining the Disintegration of Flexible Base Material”

c. TEX-117-E “Triaxial Compression for Disturbed Soils and Base Materials”
d. TEX-411-A “Soundness of Aggregate Using the Los Angeles Machine”
e. TEX-460-A “Determining Crushed Face Particle Count”

1.5 DELIVERY, STORAGE AND HANDLING

A. Storage and Protection.
1. Stockpile excavated materials and imported materials in designated areas or in areas approved by ENGINEER. Clearly identify stockpiles.
2. Lightly compact top and slope stockpiles to prevent excessive erosion and ponding of water.
3. Store and handle materials in a manner to prevent contamination.

B. Erosion and Sedimentation Control: Provide silt fences and surface drainage control at material stockpile areas in accordance with the Storm Water Pollution Prevention Plan (SWPPP).

PART 2 - PRODUCTS

2.1 GENERAL

A. Various site preparation, earthwork, trenching, and roadway subgrade and base sections reference the materials listed in the following paragraphs. Not all materials listed in this Section are used on the Project.

B. Sampling of materials shall be in accordance with ASTM D75.

2.2 GRANULAR MATERIAL

A. Granular material shall be free flowing, such as sand or hydraulically-graded crushed stone fines, or mixed sand and gravel. The material shall be free from lumps, stones over 2-inches in diameter, clay and organic matter. The granular material shall be classified as GW, GP, GM, GC, SW, or SP according to Unified Soil Classification System, ASTM D2487.

2.3 COARSE AGGREGATE

A. Coarse aggregate shall consist of gravel, crushed gravel, and crushed stone. It shall consist of sound and durable particles, free from frozen materials or injurious amounts of salts, alkali, organic matter of other material either free or as adherent coating, and reasonably well graded between the prescribed limits listed in Table 1 when tested in accordance with ASTM C136.

B. Abrasion: It shall have wear of not more than 40 percent when tested in accordance with ASTM C131 or ASTM C535.

C. Soundness: When material is subjected to five (5) cycles of the sodium sulfate soundness test in accordance with ASTM C88, the weighted percentage of loss shall not exceed 12 percent.

D. Amount of material finer than 75-micrometer (No. 200) sieve: Coarse aggregate for embedment shall contain no more than one percent by weight organic matter (other than native bitumen), clays, loam or pebbles coated therewith, and shall contain no more than five percent by weight on any one or combination of slate, schist or soft particles of sandstone.

E. Each class of aggregate gradation shall comply with the applicable gradation limits listed in Table No. 1, when tested in accordance with ASTM C136.

Table No. 1 Coarse Aggregate Gradation					
Sieve Size	Aggregate Size No. 467 (1-1/2 to No. 4)	Aggregate Size No. 4 (1-1/2 to 3/4 in.)	Aggregate Size No. 57 (1 in. to No. 4)	Aggregate Size No. 67 (3/4 in. to No. 4)	Aggregate Size No. 8 (3/8 in. to No. 8)
	Amounts Finer than Each Laboratory Sieve Mass Percent				
2 in.	100	100	-----	-----	-----
1-1/2 in.	95 to 100	90 to 100	100	-----	-----
1 in.	----	20 to 55	95 to 100	100	-----
3/4 in.	35 to 70	0 to 5	-----	90 to 100	-----
1/2 in.	----	-----	25 to 60	-----	100
3/8 in.	10 to 30	0 to 5	-----	20 to 55	85 to 100
No. 4	0 to 5	-----	0 to 10	0 to 10	10 to 30
No. 8	----	-----	0 to 5	0 to 5	0 to 10
No. 16	----	-----	-----	-----	0 to 5
Aggregate Size Number and gradation is in accordance with ASTM C33 and ASTM D448.					

2.4 FINE AGGREGATE

A. Fine aggregate shall consist of natural sand, manufactured sand, or a combination thereof, complying with the requirements for abrasion, soundness, and impurities as specified for coarse aggregate.

B. The fine aggregate gradation shall comply with the applicable gradation limits, when tested in accordance with ASTM C136. Fine aggregate shall not have more than 45 percent passing any sieve and retained on the next consecutive sieve shown in Table No. 2 and, its fineness modulus shall not be less than 2.3 or more than 3.1.

Table No. 2 Fine Aggregate Gradation	
Sieve	**Percent Passing**
3/8 in.	100
No. 4	95 to 100
No. 8	80 to 100
No. 16	50 to 85
No. 30	25 to 60
No. 50	5 to 30
No. 100	0 to 10
Gradation in accordance with ASTM C33 Fine Aggregate.	

C. Plasticity index shall be less than 6 for material passing a No. 30 sieve.

2.5 NATURAL GRAVEL

A. Natural gravel shall consist of uncrushed stones, washed and screened, complying with the requirements for abrasion, soundness, and impurities as specified for coarse aggregate.

B. The aggregate gradation shall comply with the gradation limits listed in Table No. 3, when tested in accordance with ASTM C136.

Table No. 3 Natural Gravel Gradation	
Passing or Retained on Sieve	**Percent by Weight**
Coarse Aggregate	
Passing on 1-1/2 inch	100
Retained on 3/4 inch	100
Fine Aggregate	
Passing on 3/4 inch	100
Retained on No. 4	100

2.6 CRUSHED STONE FOR FOUNDATION

A. Crushed stone for foundations shall comply with the requirements for abrasion, soundness, and impurities as specified for coarse aggregate.

B. Unless otherwise shown on the drawings, the aggregate gradation shall comply with the gradation limits listed in Table No. 1; Aggregate Size No. 57 or No. 67, when tested in accordance with ASTM C136.

2.7 SAND

A. Sand shall consist of well-graded, clean, hard, durable, uncoated grains, free from lumps and organic material having a Soil Classification SW. Sand particles will pass a No. 4 sieve and be retained on a No. 200 sieve with the subdivisions as listed in Table No. 4. If gradation subdivision is not indicated, provide sand complying with the above gradation limits.

Table No. 4 Sand Gradation Subdivisions	
Passing or Retained on Sieve	**Percent by Weight**
Coarse Sand	
Passing No. 4	100
Retained on No. 10	100
Medium Sand	
Passing on No. 10	100
Retained on No. 40	100
Fine Sand	
Passing on No. 40	100
Retained on No. 200	100
Gradation requirements obtained from ASTM D2487.	

2.8 PEA GRAVEL

A. Pea Gravel: Conforming to ASTM C33, Aggregate Size No. 8, and coarse aggregate graded with 100 percent passing a 3/8-inch sieve and 90 percent retained on a No. 4 sieve.

2.9 CONCRETE ENCASEMENT

A. Provide Ready-mixed concrete prepared in accordance with ASTM C94. Select and proportion ingredients to obtain a minimum compressive strength of 2,000 pounds per square inch (psi) at 28 days.

B. Materials:
   1. Cement: ASTM C150, Type I or Type II.
   2. Aggregate: ASTM C33, Size 67 or similar.
   3. Fly Ash (if used): ASTM C618, Class C.
   4. Water: Clean, potable, free of odor, organics, and deleterious materials.

C. Slump: Not less than 1-inch, cushion portion of embedment; 1 to 3 inches for the sides and top of encasement.

D. Unless otherwise indicated, pipe encasement shall be flowable fill as described below.

2.10 CONTROLLED LOW STRENGTH MATERIAL (FLOWABLE FILL)

A. Ready-mixed flowable fill is a blend of cement, fly ash, fine aggregate, and water. It is designed as a low-strength, flowable material requiring no subsequent vibration or tamping to achieve 100% consolidation.

B. Unless indicaed otherwise, select and proportion ingredients to obtain compressive strength between 50 and 150 psi at 28 days in accordance with ASTM D4832.

C. Materials:
   1. Cement: ASTM C150, Type I, II, or III.
   2. Aggregate: ASTM C33, Size 8 or fine aggregate.
   3. Fly Ash (if used): ASTM C618, Class C.
   4. Water: Clean, potable, free of odor, organics, and deleterious materials.

D. The flowable fill mixture shall be mixed either in a pug mill, concrete mixer, or transit mixer and shall a minimum slump of 5-inches.

2.11 CEMENT-SOIL BACKFILL (NOT USED)

2.12 FLEXIBLE BASE

A. Material Type: Unless otherwise specified, provide either crushed stone or crushed gravel as described below:
   1. Crushed stone produced and graded from oversize quarried aggregate that originates from a single, naturally occurring source. Do not use gravel or multiple sources.
   2. Crushed gravel with a minimum of 60% of the particles retained on a No. 4 sieve with two or more crushed faces as determined by TEX-460-A, Part I. Blending of two or more sources is allowed.

B. Material Grade: Unless otherwise indicated, aggregate used as flexible base material, shall comply with the requirements listed in Table 5, Grade 2. Do not use additives such as, but not limited to lime, cement, or fly ash to modify aggregate to meet requirements of Table 5, unless shown on the Drawings.

Table No. 5
Flexible Base Material

Property	Test Method	Grade 1	Grade 2	Grade 3
Master Gradation Sieve Size (% Retained)	Tex-110-E			
2-1/2 inch		---	0	0
1-3/4 inch		0	0 - 10	0 - 10
7/8-inch		10 – 35	---	---
3/8-inch		30 – 50	---	---
No. 4		45 – 65	45 – 75	45 - 75
No. 40		70 - 85	60 - 85	50 -85
Liquid Limit % Max.	ASTM D4318	35	40	40
Plasticity Index % Max.		10	12	12
Wet Ball Mill1 Maximum	Tex-116-E	40	45	---
Wet Ball Mill, % Max. increase passing No. 40		20	20	---
Classification2	Tex-117-E	1.0	1.1 to 2.3	---
Minimum Compressive Strength2, psi at:				
Lateral Pressure 0 psi		45	35	---
Lateral Pressure 15 psi		175	175	---
Foreign Material, % Max.		1	1	

When soundness value required by Drawings, test material in accordance with Tex-411-A.
Meet both the classification and the minimum compressive strength, unless otherwise shown on the Drawings.
For work under TxDOT jurisdiction the flexible base material shall comply with the requirements of TxDOT Item 247, “Flexible Base”, Type A, Grade 2, or Type C, Grade 2, unless otherwise indicated on the Drawings.

2.13 SELECT FILL

A. Select fill shall consist of non-expansive material, such as gravel, fine stone cuttings, sand, sandy loam, or loam free from excessive clay, roots, grass, trash, or other organic materials. Stone cuttings shall have no dimension greater than 2-inches. Use approved material excavated from site or imported material.

B. Select fill shall have a liquid limit of 35 or less; plasticity index between 6 and 15; and gradation approximately the limits indicated in Table No. 6.

Table No. 6 Select Fill	
Retained on Sieve	**Percent by Weight**
No. 4	25 to 50
No. 40	50 to 85
No. 200	Not less than 35% fines passing
Maximum aggregate size: 1-3/4 inches	

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C. Contractor may elect to use on-site material for select fill, where specifically allowed per the Geotechnical Report. Obtain written permission from ENGINEER prior to using on-site materials for this purpose.

2.14 IMPERVIOUS CLAY FILL

A. Impervious clay fill shall be placed as indicated on the Drawings. The material shall not be used as backfill against walls of structures except in the upper two feet.

B. The material shall consist of soil materials classified as CH or CL in accordance with ASTM D2487; have a minimum liquid limit of 40; have a minimum plasticity index of 20; have a minimum of 50 percent by weight passing a No. 200 sieve; and shall be free of organics or other deleterious materials.

C. The material shall have a percent dispersion of less than 20 when tested in accordance with ASTM D4221. The material, when compacted to the recommended moisture and density, shall have permeability less than 1x E-06 cm/s (1 ft/yr), as determined by remolded specimens of the actual materials proposed, in accordance with ASTM D5084.

D. Contractor may elect to use on-site material for select fill, where specifically allowed per the Geotechnical Report. Obtain written permission from ENGINEER prior to using on-site materials for this purpose.

2.15 SITE FILL

A. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 3-inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

B. Material shall have a liquid limit of 40 or less; plasticity index between 4 and 20; and gradation approximately the limits indicated in Table No. 7.

Table No. 7 Site Fill	
Retained on Sieve	**Percent by Weight**
No. 4	Less than 35
No. 200	Less than 65

C. Contractor may elect to use on-site material for select fill, where specifically allowed per the Geotechnical Report. Obtain written permission from ENGINEER prior to using on-site materials for this purpose.

2.16 TOP SOIL

A. Material shall be natural friable loam; free of subsoil, roots, grasses, and excessive amount of weeds, stone, and foreign matter.

B. Material shall have a acidity range (pH) between 5.5 to 7.5; an organic matter content between 4 to 25 percent in accordance with ASTM D2974; and a gradation complying with Table No. 8.

Table No. 8 Top Soil	
Retained on Sieve	**Percent by Weight**
No. 4	Less than 35
No. 200	Less than 65

2.17 UNCLASSIFIED EXCAVATION

A. All material excavated from the site not meeting the requirements for materials specified above.

2.18 MATERIAL QUALITY CONTROL

A. Sampling of material stockpiles and material sources shall be in accordance with ASTM D75.

B. Perform gradation analysis in accordance with ASTM C136 for:
   1. Coarse and fine aggregate, natural gravel, crushed stone for foundation, sand, select fill, impervious clay fill, earth fill, and topsoil.

C. Perform abrasion testing in accordance with ASTM C131 or ASTM C535.
   1. Coarse and fine aggregate and when requested by ENGINEER for natural gravel and crushed stone for foundation.

D. Soundness testing in accordance with ASTM C88.
   1. Coarse and fine aggregate and when requested by ENGINEER for natural gravel and crushed stone for foundation.

E. Deleterious materials determination in accordance with ASTM C40, C117, and C142.
   1. Coarse and fine aggregate and when requested by ENGINEER for natural gravel and crushed stone for foundation

F. Determine liquid limit and plasticity index in accordance with ASTM D4318.

1. Sand for particles passing a No. 8 sieve, select fill, impervious clay fill, and earth fill.

G. Determine pH of topsoil in accordance with ASTM D2974.

H. Determine permeability (hydraulic gradient) in accordance with ASTM D5084 and percent dispersion in accordance with ASTM D4221 of impervious clay fill materials.

I. Provide tests results showing flowable fill mix design achieves desired compressive strength.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 31 20 00
EARTHWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Preparing subgrades for roadways, structures, slabs-on-grade, and related facility work not specified elsewhere.
   2. Excavating and backfilling for buildings and structures.
   3. Drainage course for slabs-on-grade.
   4. Subsurface drainage backfill for walls and trenches.

B. Related Sections:
   1. Section 32 92 13, "Hydro-mulching" for soil preparation and turf renovation.

1.3 UNIT PRICES

A. Unit prices for earthwork excavation and quantity allowances for additional earthwork excavation, such as trench or structural subgrade material stabilization, are included in Section 01 00 00 "Construction General Requirements".

1.4 REFERENCES

A. Definitions.
   1. Backfill: Soil material or controlled low-strength material used to fill an excavation.
   2. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
   3. Completed Course: A course or layer that is ready for next layer or next phase of Work.
   4. Drainage Course: Course supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
   5. Earthwork: Includes excavation, fill and compaction, grading, and disposal of waste and surplus material.
   6. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
      a. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by ENGINEER. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.
      b. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
      c. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by ENGINEER. Unauthorized excavation, as well as remedial work directed by ENGINEER, shall be without additional compensation.

7. Prepared Ground Surface: Ground surface after completion of required demolition, clearing and grubbing, stripping of topsoil, excavation or fill-to-grade, and subgrade preparation.
8. Fill: Soil materials used to raise existing grades.
9. Lift: Loose (uncompacted) layer of material.
10. Optimum Moisture Content: Determined in accordance with ASTM Standard specified to determine maximum dry density for relative compaction. Determine field moisture content on basis of fraction passing 3/4-inch sieve.
11. Relative Compaction: Ratio, in percent, of as-compacted field dry density to laboratory maximum dry density as determined in accordance with ASTM D698. Apply corrections for oversize material to either as-compacted field dry density or maximum dry density, as determined by ENGINEER.
12. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
    a. Excavation of Footings, Trenches, and Pits: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch wide, maximum, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,090 lbf and stick-crowd force of not less than 18,650 lbf; measured according to SAE J-1179.
    b. Bulk Excavation: Late-model, track-mounted loader; rated at not less than 210-hp flywheel power and developing a minimum of 48,510-lbf breakout force with a general-purpose bare bucket; measured according to SAE J-732.
13. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
14. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
15. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.
16. Well-Graded: A mixture of particle sizes that has no specific concentrations or lack thereof, of one or more sizes, producing a material type which, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids.

B. Reference Standards.
1. ASTM International:
    a. D448 – Standard Method Classification for sizes of Aggregate for Road and Bridge construction.
    b. D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,499 ft-lb.ft3 (600 kN-m/m3))
    c. D2487 – Standard Method Classification of Soils for Engineering Purposes (Unified Soil Classification system)
    d. D6938 – Standard Test Method for In-Density and Water Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
2. American Association of State Highways and Transportation Officials (AASHTO):
    a. M288 – Geotextile Specification for Highway Application

3. Texas Department of Transportation: Standard Specifications for Construction of Highways, Streets and Bridges. (TxDOT).
   a. TxDOT Item 216 “Proof Rolling”

1.5 SUBMITTALS

A. Product Data: For the following:
   1. Geotextile, if specified on Drawings.
   2. Controlled low-strength material, including design mixture.

B. Samples: 12-inch by 12-inch Sample of subdrainage and/or separation geotextile.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
   1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
   2. Laboratory compaction curve according to ASTM D 698 for each on-site and borrow soil material proposed for fill and backfill.
   3. Designated submittals for materials per Section 31 05 10 “Materials for Earthwork.”

D. Pre-excavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces, which might be misconstrued as damage caused by earthwork operations. Submit before earthwork begins.

1.6 PROJECT CONDITIONS

A. Existing Utilities: If applicable, do not interrupt utilities serving facilities occupied by OWNER or others unless permitted in writing by ENGINEER and then only after arranging to provide temporary utility services according to requirements indicated.
   1. Notify ENGINEER not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without ENGINEER'S written permission.
   3. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities as indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

C. Weather Limitations:
   1. Material excavated when frozen or when air temperature is less than 32˚F shall not be used as fill or backfill until material completely thaws.
   2. Material excavated during inclement weather shall not be used as fill or backfill until after material drains and dries sufficiently for proper compaction.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension,

debris, waste, frozen materials, vegetation, and other deleterious matter. Satisfactory soils shall comply with the requirements of Section 31 05 10 “Materials for Earthwork.”

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 or a combination of these groups.
   1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
   2. Depending on the plasticity index (PI) and liquid limits (LL), Soil Classification Groups GC and SC may be used.

2.2 DRAINAGE COURSE AND FILTER MATERIAL

A. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and 0 to 5 percent passing a No. 8 sieve.

B. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.

2.3 GEOTEXTILES

A. Subsurface Drainage Geotextile: When shown on Drawings, provide non-woven needle-punched geotextile, manufactured for subsurface drainage applications, made from 100% polypropylene fibers. The geotextile shall be inert to biological degradation and resist naturally encountered chemicals, alkalis, and acids. The test methods and properties are listed below:
   1. Grab Tensile Strength (ASTM D4632): ≥ 205 lbs.
   2. Grab Tensile Elongation (ASTM D4632): ≥ 50 %.
   3. Trapezoidal Tear Strength (ASTM D4533): ≥ 80 lbs.
   4. CBR Puncture Strength (ASTM D6421): ≥ 500 lbs.
   5. Apparent Opening Size (ASTM D4751): ≤ 80 US Sieve.
   6. Permittivity (ASTM D4491): ≥ 1.35 sec-1.
   7. Flow Rate (ASTM D4491): ≥ 90 gpm/sf.
   8. UV Resistance at 500 hours (ASTM D4355): 70 %.
   9. Acceptable manufacturers:
      1) TenCate Mirafi 180N.
      2) Hanes Geo Components TerraTexN08.
      3) US Fabrics, Inc. US 205NW.

B. Separation Geotextile: If shown on the Drawings, provide woven geotextile fabric, manufactured for separation applications, made from polyolefin or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
   1. Survivability: Class 2; AASHTO M 288.
   2. Grab Tensile Strength: 247 lbf; ASTM D 4632.
   3. Sewn Seam Strength: 222 lbf; ASTM D 4632.
   4. Tear Strength: 90 lbf; ASTM D 4533.
   5. Puncture Strength: 90 lbf; ASTM D 4833.
   6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.

7. Permittivity: 0.02 per second, minimum; ASTM D 4491.
8. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.

2.4 MATERIAL QUALITY CONTROL

A. Sampling of material stockpiles and material sources shall be in accordance with ASTM D75.

B. Perform gradation analysis in accordance with ASTM C136 for:
1. Coarse and fine aggregate, natural gravel, crushed stone for foundation, sand, select fill, impervious clay fill, earth fill, and topsoil.

C. Perform abrasion testing in accordance with ASTM C131 or ASTM C535.
1. Coarse and fine aggregate and when requested by ENGINEER for natural gravel and crushed stone for foundation.

D. Soundness testing in accordance with ASTM C88.
1. Coarse and fine aggregate and when requested by ENGINEER for natural gravel and crushed stone for foundation.

E. Deleterious materials determination in accordance with ASTM C40, C117, and C142.
1. Coarse and fine aggregate and when requested by ENGINEER for natural gravel and crushed stone for foundation.

F. Determine liquid limit and plasticity index in accordance with ASTM D4318.
1. Sand for particles passing No. 8 sieve, select fill, impervious clay fill, and earth fill.

G. Determine pH of topsoil in accordance with ASTM D2974.

H. Determine permeability (hydraulic gradient) in accordance with ASTM D5084 and percent dispersion in accordance with ASTM D4221 of impervious clay fill materials.

I. Provide tests results showing flowable fill mix design achieves desired compressive strength.

2.5 CONTAMINATION TESTING AND CERTIFICATION

A. When materials are suspected of contamination, the CONTRACTOR shall arrange and pay for the services of an EPA-approved laboratory to perform a toxic contaminant scan of composite borrow material samples in accordance with Section 31 05 10 “Materials for Earthwork”.

B. Soil materials derived from the excavation of underground petroleum storage tanks shall not be used as fill on the Project.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
   1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
   1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
   2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
      a. 24 inches outside of concrete forms other than at footings.
      b. 12 inches outside of concrete forms at footings.
      c. 6 inches outside of minimum required dimensions of concrete cast against grade.
      d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
      e. 6 inches beneath bottom of concrete slabs on grade.

3.4 EXCAVATION FOR STRUCTURES

A. Excavate to specified elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
   1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other Work. Refer to Drawings for treatment of subgrade, the addition of a concrete seal slab, installation of vapor barrier, or other work required prior to placement of footings and foundations.
   2. Pile Foundations: Stop excavations 6 to 12 inches above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
   3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.

B. Undercutting:
   1. When objectionable material not suitable for foundation or subgrade material is present in locations for subgrade or foundation construction, as determined by ENGINEER, undercut material to the depth and extent as directed, and backfill with suitable material.
   2. Place fill material in uniform layers and compact as specified for soil backfill and fills.

3. Dispose of undercut materials off-site.

3.5 SUBGRADE INSPECTION

A. Notify ENGINEER when excavations have reached required subgrade.

B. If ENGINEER determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof roll subgrade to identify soft pockets and areas of excess yielding using rollers that, when loaded weigh at least 25 tons and no more than 50 tons:
   1. Do not proof-roll wet or saturated subgrades.
   2. Make at least two passes, offsetting each pass one tire width. Operate at speeds between 2 and 6 miles per hour.
   3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by ENGINEER, and replace with compacted backfill, or fill as directed.
   4. Work in areas under TxDOT jurisdiction, proof roll in accordance with TxDOT Item 216.

D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for unit prices.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by ENGINEER, without additional compensation.

3.6 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by ENGINEER. Fill unauthorized excavations under other construction or utility pipe as directed by ENGINEER.

3.7 STORAGE OF SOIL MATERIALS

A. Stockpile borrows soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
   1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.
   2. Confine stockpiles to within easements, right-of-way, and approved areas. Do not obstruct roads or streets.

3.8 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following work as applicable:
   1. Construction below finish grade including, where applicable, subdrainage, damp proofing, waterproofing, and perimeter insulation.
   2. Surveying locations of underground utilities for Record Documents.
   3. Testing and inspecting underground utilities.
   4. Removing concrete formwork.
   5. Removing trash and debris.

6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
8. Leakage tests for structures.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.9 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal units so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:
1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use select or granular fill, unless otherwise shown on Drawings.
4. Under building slabs, use select or granular fill, unless otherwise shown on Drawings.

C. Place soil fills on subgrades free of mud, frost, snow, or ice.

3.10 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content, if not specified on the Drawings or in the Geotechnical Report.
1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.11 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698, if not specified on the Drawings:
1. Under structures, building slabs, steps, and pavements, scarify and compact top 12 inches of existing subgrade and each layer of backfill or fill soil material against underground structural walls at 95 percent.
2. Under walkways, scarify and compact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.
3. Under lawn or unpaved areas, scarify and compact top below subgrade and compact each layer of backfill or fill soil material at 90 percent.

3.12 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
   1. Provide a smooth transition between adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
   1. Lawn or Unpaved Areas: Plus or minus 1-inch.
   2. Walks: Plus or minus 1 inch.
   3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.13 SUBSURFACE DRAINAGE

A. When shown on the Drawings, provide subsurface drainage in accordance with the following paragraphs:
   1. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6 inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches. Compact each filter material layer with a minimum of two passes of a plate-type vibratory compactor.
   2. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
      a. Compact each filter material layer with a minimum of two passes of a plate-type vibratory compactor.
      b. As shown on the Drawings, place and compact impervious fill over drainage backfill in 6 inch thick compacted layers to final subgrade.

3.14 DRAINAGE COURSE

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
   1. Install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
   2. Place drainage course 6-inches or less in compacted thickness in a single layer.
   3. Place drainage course that exceeds 6-inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6-inches thick or less than 3 inches thick.

4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.15 CONCRETE SEAL SLAB

A. When shown on the Drawings, provide a concrete seal slab on subgrade under structures of the specified thickness. Concrete shall comply with Section 03 30 00 “Cast-In-Place Concrete” having a compressive strength of 3,000 psi.

3.16 FIELD QUALITY CONTROL

A. Tests shall be required throughout the Work to monitor the compaction and density of the earthwork.

B. Unless otherwise noted, testing of the materials and backfill will be by an independent testing agency. The OWNER will select and pay for this service. A summary of all tests performed will be available.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by ENGINEER.

E. Testing agency will test compaction of soils in place according to ASTM D 2922. Tests will be performed at the following locations and frequencies:
   1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than 3 tests.
   2. Foundation Wall Backfill: At each compacted backfill layer, at least 1 test for each 100 feet or less of wall length, but no fewer than 2 tests.

F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.17 PROTECTION

A. Protecting Graded Areas: Protect newly-graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
   1. Scarify or remove and replace soil material to depth as directed by ENGINEER; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
   1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.18 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off OWNER's property.

END OF SECTION

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SECTION 32 92 13
HYDRO-MULCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Hydromulch seeding; includes mixing grass seed, fertilizer, mulch, with water.
   2. Pesticide application.
   3. Erosion control materials.
   4. Maintenance of seeded areas for designated time period.

B. Related Sections:
   1. Section 31 20 00 "Earthwork" for excavation, filling and backfilling, and rough grading.

1.3 DEFINITIONS AND REFERENCES

A. Definitions:
   1. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
   2. Finish Grade: Elevation of finished surface of planting soil.
   3. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
   4. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
   5. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
   6. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
   7. Subgrade: Surface or elevation of subsoil remaining after excavation is complete or top surface of a fill or backfill before planting soil is placed.
   8. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
   9. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.
   10. Turf: Short grass with earth bound to it by matted roots.

11. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

B. References:
   1. ASTM International (ASTM):
      a. C 602 – Specification for Agricultural Liming Materials
      b. D 977 – Specification for Emulsified Asphalt
      c. D 5268 – Specification for Topsoil Used for Landscaping Purposes

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.
   2. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
   3. Fertilizer: Provide product manufacturer’s name, warranty of producer, weight and analysis, and form of constituents.
   4. Product Certificates: For soil amendments and fertilizers, from manufacturer.
   5. Pesticides: Type, analysis, application information, and safety information.

B. Qualification Data: For qualified landscape Installer.

C. Material Test Reports: For existing native surface topsoil, existing in-place surface soil, and imported or manufactured topsoil.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf establishment.
   1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
   2. Experience: Three (3) years' experience in turf installation, in addition to requirements in Section 01 40 00 "Quality Requirements”.
   3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

B. Pesticide Applicator: State licensed, commercial.

1.6 PROJECT CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of planting completion.
   1. Seeding for landscaping: Refer to Table 1.
   2. Seeding for erosion control: Refer to Table 2.

B. CONTRACTOR shall provide both the temporary and permanent planting mixtures at no additional cost to the OWNER. This includes returning to the Project following Substantial Completion in the spring to apply the permanent planting mixture.

C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials:
   1. Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.
   2. Deliver fertilizer in waterproof bags.
   3. Store packaged materials in dry locations.

B. Bulk Materials:
   1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
   2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   3. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

1.8 MAINTENANCE SERVICE

A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
   1. Seeded Turf:
      a. Ninety (90) days from date of planting completion during spring and summer.
      b. Sixty (60) days from date of planting completion during fall and winter.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed:
   1. Fresh, clean, dry, new-crop seed complying with requirements of Texas Seed Law. The seed packaged shall contain a Texas Testing Seed Label showing purity and germination, name, type of seed, and complies with Texas Seed law.
   2. Treated with fungicide.
   3. New crop seed harvested within 1 year of planting, free of other weed seed to the limits allowable under the Texas Seed Law.
   4. Seed shall have a germination and purity that will produce a live seed content of not less than 85-percent pure seed, and not more than 0.2-percent weed seed.

5. Seed which has become wet, moldy, or otherwise damaged in transit or storage, will not be acceptable.

B. Seeding for Landscaping: Where specified on Drawings, provide a seed mixture at the rate depending on the planting as listed in Table 1.

TABLE 1 - SEEDING FOR LANDSCAPING

Seed Mixture	Planting Dates	Seed Mix
No. 1	April 15 – August 31	100% Common Bermuda (Hulled)
No. 2	September 1 – April 14	50% Italian Rye 25% Unhulled Common Bermuda 25% Kentucky 31 Tall Fescue

C. Rate shall be as specified in Part 3 depending on application method.

2.2 FERTILIZER

A. Commercial Fertilizer: Commercial-grade, pelletized, uniform in composition, free-flowing, and suitable for application with standard equipment. Fertilizer shall be of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
   1. Composition:
      a. Initial Application: Analysis ratio of 20-20-20; traces of sulfur, iron and zinc; at a rate specified in Part 3 per 1000 Sq. Ft.
      b. Second Application: Analysis ratio of 12-4-8 at a rate specified in Part 3 per 1000 Sq. Ft.
      c. Figures in analysis ratio represent percentage of nitrogen, phosphorus, and potash nutrients, respectively, as determined by methods of the Association of Official Agricultural Chemists.
      d. Fifty percent of the nitrogen required shall be in the form of nitrate nitrogen, with the remaining may be in the form of urea nitrogen.

B. The fertilizer shall comply with the applicable State fertilizer laws and shall be delivered in bags or other convenient containers, each fully labeled and bearing the name, trademark, and warranty of the producer.

C. In the event it is necessary to substitute a fertilizer of a different analysis, it shall be pelletized or granulated fertilizer, with the total amount of nutrients furnished and applied per 1000 square feet shall equal or exceed that specified for each nutrient.

D. Fertilizer which has become caked or exposed to excess humidity or moisture will not be acceptable.

2.3 WATER

A. Water shall be fresh and free from injurious amounts of oil, acid, alkali, salts, or other materials harmful to the growth of the grass. Plant and/or service water may also be used, as directed by the OWNER.

2.4 MULCHES

A. General: Consisting of straw, wood-fiber, mulch nettings, wood chips, compost, or other approved suitable material, free from of Johnson grass and other noxious weed seeds.

B. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay, or threshed straw of wheat, rye, oats, barley, Bermuda grass hay or other hay harvested before seed production. The straw mulch shall be kept dry and shall not be rotted or molded. A minimum of 50-percent by weight of the herbage comprising hay shall be in 10-inch lengths or longer.

C. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; non-toxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15-percent and a pH range of 4.5 to 6.5.

D. Fiber mulch in paragraph above and non-asphaltic tackifier in first paragraph below are primarily used to protect hydroseeded areas from wind and water erosion during establishment.

E. Non-Asphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; non-toxic and free of plant-growth or germination inhibitors.

F. Asphalt emulsion in paragraph below may be used as a tackifier in a hydroseeding slurry or to temporarily bond straw mulch in place.

G. Asphalt Emulsion: ASTM D 977, Grade SS-1; non-toxic and free of plant-growth or germination inhibitors.

2.5 PESTICIDES

A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.6 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50- to 65-percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

C. Erosion-Control Mats: Cellular, non-biodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of 3-inch nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

2.7 HYDROMULCH

A. Hydromulch Material:
   1. Product and Manufacturer: Areas requiring grass establishment shall be Second Nature® Wood Fiber Hydroseeding Mulch as manufactured by Central Fiber Corporation, or approved equivalent.
   2. Mulch shall be manufactured of natural fiber stock free of plastics and foreign materials.
   3. Mulch shall have a green non-toxic dye, disperse rapidly in water to form homogeneous slurry and shall remain in suspension. It shall have a water holding capacity of not less than 1200 grams water per 100 gram fiber (1200%).

2.8 PLANTING SOIL AND AMENDMENTS

A. Topsoil: Unless otherwise designated on the Drawings, comply with the topsoil requirements of Section 31 05 10 “Materials for Earthwork”.

B. Amendments: As designated on the Drawings, add inorganic and organic amendments to on-site or off-site topsoil types to obtain acceptable planting soils.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
   3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by ENGINEER and replace with new planting soil.

C. Examine areas and conditions, with Installer present, for compliance with requirements of site conditions and any other conditions affecting performance of the Work.

D. Examine seed and fertilizer before installation. Reject any seed or fertilizer that is wet, moisture damaged, or mold damaged.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect adjacent and adjoining areas from Hydromulch seeding and hydromulching overspray.
2. Protect grade stakes set by others until directed to remove them.

B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

A. Limit subgrade preparation to areas to be planted.

B. Newly-Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off OWNER's property.

C. Spread planting soil or topsoil to a depth of 4 to 6 inches, but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
1. Spread approximately 1/2 the thickness of planting soil over loosened subgrade. Mix thoroughly into top 2 inches of subgrade. Spread remainder of planting soil.

D. Unchanged Subgrades: If Hydromulch is to be placed in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
2. Loosen surface soil to a depth of at least 6-inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.
3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
4. Legally dispose of waste material, including grass, vegetation, and turf, off OWNER's property.

E. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus (+) or minus (-) 1/2-inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

F. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

G. Smooth areas that have become gullied; and loosen or refill areas that have become compacted since completion of grading to a depth of 6 inches.

H. Before planting, obtain ENGINEER'S acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 FERTILIZING

A. Initial Fertilizer Application: Minimum rate of 15 lbs per 1000 Sq. Ft. with Hydromulch mixture.

B. Second Fertilizer Application:
1. Minimum rate 8 lbs per 1000 Sq. Ft.

2. Period: Applied to the establishment areas between 45 and 60 days after date of seeding.

3.5 HYDROMULCH APPLICATION

A. Hydromulch Seeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
   1. Mix slurry with non-asphaltic or asphalt-emulsion tackifier for slopes 3:1 or steeper.
   2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than rate listed below, and seed component is deposited at not less than the specified seed-sowing rate.
      a. Grades 2:1 or less: 2.5 lbs per 1000 Sq. Ft.
      b. Grades greater than 2:1: 3.0 lbs per 1000 Sq. Ft.
   3. Mulch: As recommended by manufacturer.

B. Apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 1000-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch (hydromulching) at a rate to comply with the mulch component specified above.

C. For areas to be established, apply water with a fine spray immediately (within 24 hours) after each area has been seeded and mulched. Saturate to 4 inches of soil. Water daily as often as necessary for 4 weeks to establish grass.

3.6 SEED PROTECTION

A. Cover seeded slopes where grade is steeper than 3:1 with erosion fabric. Roll fabric onto slopes without stretching or pulling. Cover hydromulched areas as recommended to obtain establishment of grass.

B. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Provide 12-inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.

C. Secure outside edges and overlaps at 36-inch intervals with stakes.

D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges a minimum of 6 inches.

F. No heavy equipment shall be moved over planted area unless area is to be retilled and reseeded.

3.7 PREPARATION FOR EROSION-CONTROL MATERIALS

A. Prepare area as specified in "Turf Area Preparation" Article.

B. For erosion-control mats, install planting soil in two lifts, with second lift equal to thickness of erosion-control mats. Install erosion-control mat and fasten as recommended by material manufacturer.

C. Fill cells of erosion-control mat with planting soil and compact before planting.

D. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

E. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.8 TURF RENOVATION

A. Renovate existing turf.

B. Renovate existing turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
   1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
   2. Install new planting soil as required.

C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

D. Remove topsoil containing foreign materials such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.

E. Mow, dethatch, core aerate, and rake existing turf.

F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off OWNER's property.

H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6-inches.

I. Apply soil amendments and initial fertilizers required for establishing new turf and mix thoroughly into top 4-inches of existing soil. Install new planting soil to fill low spots and meet finish grades.

J. Apply seed and protect with straw mulch or sod as required for new turf.

K. Water newly-planted areas and keep moist until new turf is established.

3.9 TURF MAINTENANCE REQUIREMENTS

A. Maintain and establish grass by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas, and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
   1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
   2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
   3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
   1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
   2. Water seeded area daily, keeping area moist until seeds have spouted, then at a minimum rate of 1-inch every four days unless rainfall precipitation is adequate.
   3. Provide temporary irrigation systems in areas where permanent systems are not installed.

C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowing. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowing to maintain a grass height of 1 to 2 inches.

D. Turf Post-Fertilization: Apply second application of fertilizer after initial mowing and when grass is dry.
   1. Use fertilizer of the analysis and at the rate specified in “Fertilizers” Article to turf area after the first mowing.
   2. Prior to the second fertilizer application, CONTRACTOR shall reseed areas which show bare spots of 2 square feet or larger.

3.10 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by ENGINEER:
   1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities, with coverage exceeding 95 percent or 150 plants per square foot.

B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

C. Protect seeded areas with warning signs during maintenance period, if necessary.

D. Acceptance: Following the specified maintenance, turf exhibiting the above qualities to the satisfaction of the OWNER will be accepted.

3.11 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with OWNER's operations and others in proximity to the Work. Notify OWNER before each application is performed.

B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.12 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect temporary fencing or barricades and warning signs as required protecting newly-planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

C. Remove non-degradable erosion-control measures after grass establishment period.

END OF SECTION

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SECTION 32 92 23
SODDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Furnish all materials, sod, labor and equipment to perform all operations necessary to establish healthy, growing sod in the areas shown in the Plans and in accordance with the Specifications. Areas to be sodded include a 4-foot wide strip on either side of all new or modified concrete roads, sidewalks, mow strips, curbs, retaining walls, structures, areas around the landscaping and as shown on the Plans.

2. Establishment of sod includes:

a. Fertilizing.

b. Planting solid sod (as indicated).

c. Maintenance.

B. Related Sections:

1. Section 31 05 10 “Materials for Earthwork”.

1.2 REFERENCES (NOT USED)

1.3 SYSTEM DESCRIPTION (NOT USED)

1.4 SUBMITTALS

A. Record Data:

1. Submittals shall be prepared and in accordance with Division 1.

2. Submit data on fertilizer and each type of sod necessary to demonstrate compliance with the Drawings and Specifications. Include source of supply for all materials, as well as:

a. Name, trademark, warranty, analysis, form, and coverage for fertilizer.

b. Name, type, and certification of grass for each type of grass for sod.

3. Submit maintenance instructions, cutting method, minimum and maximum grass heights; type, application frequency and recommended coverage for fertilizer.

1.5 QUALITY ASSURANCE (NOT USED)

1.6 DELIVERY, STORAGE AND HANDLING

A. Acceptance at Site:

1. Deliver fertilizer in waterproof bags.

2. Sod may be shipped in blocks or rolled sections of equal width.

B. Storage and Protection:

1. Store in dry location not in contact with runoff.
2. Sod materials shall be planted within 48 hours of harvest unless stored in approved manner.
3. Sod shall be protected from excessive moisture loss during delivery and storage.
4. Sod shall not be dumped from vehicles. Damaged sod shall be rejected and removed from the site.

1.7 PROJECT CONDITIONS (NOT USED)

1.8 WARRANTY (NOT USED)

1.9 EXPERIENCE REQUIREMENTS (NOT USED)

1.10 MAINTENANCE

A. Maintenance Service:

1. Maintain sodded areas for 60 days beginning immediately after placement, watering as required until grass is well established and exhibits a vigorous growing condition. The irrigation piping and yard hydrants installed at the treatment plant may be utilized as coordinated with the Owner's schedule and water availability as determined by the Owner.
2. Contractor shall control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
3. Contractor shall replace sod as necessary during 60-day period to provide fully healthy, growing sod for acceptance.

PART 2 - PRODUCTS

2.1 SOD MATERIAL

A. Sod shall contain a good cover of growing or living grass and a strong root system. Living grass shall be interpreted to include grass that is seasonably dormant during the cold season and capable of renewing growth after the dormant period.

B. The sod shall be free of weeds, or undesirable plants, large stones, roots and other materials that might be detrimental to the establishment and future maintenance of the sod.

C. When sod is cut, the height of the grass shall not be any higher than 4 inches nor lower than 1-inch.

D. Sod shall be cut evenly with a sod cutting machine to provide a soil thickness of at least 3/4-inch and not more than 1-1/4 inches.

E. Care shall be taken at all times to retain native soil on the roots of the sod during excavating, hauling, and planting.

F. Solid sod areas shall be certified common bermudagrass (Cynodon dactylon), certified in accordance with State Certification regulations.

2.2 SOIL MATERIALS

A. Topsoil: Refer to material specification in Section 31 05 10 “Materials for Earthwork”.

2.3 FERTILIZER

A. Fertilizer shall be a commercial grade, pelleted, uniform in composition, free flowing, and suitable for application with standard equipment. The fertilizer shall comply with the applicable State fertilizer laws and shall be delivered in bags or other convenient containers, each fully labeled and bearing the name, trademark, and warranty of the producer and the weight, analysis and form of nutrients. Fertilizer applied shall have an analysis of 16-20-0 with iron and sulfur. The figures in the analysis represent the percent of nitrogen, phosphorus, and potash nutrients, respectively as determined by methods of the Association of Official Agricultural Chemists. Fifty percent or greater of the nitrogen required shall be in the form of nitrate nitrogen. The remaining nitrogen may be in the form of urea nitrogen.

B. In the event it is necessary to substitute a fertilizer of a different analysis, it shall be pelleted or granulated fertilizer and the total amount of nutrients furnished and applied per 1000 square feet shall equal or exceed that specified for each nutrient.

C. Any fertilizer that is caked or damaged or exposed to excess moisture shall not be acceptable.

2.4 WATER

A. Water shall be fresh and free from injurious amounts of oil, acid, alkali, salts, or other materials harmful to the growth of the grass. Plant and/or service water may also be used as directed by the Owner.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify that prepared soil base is ready to receive the work of this Section.

B. Beginning of installation means acceptance of existing site conditions.

3.2 FINAL GRADING

A. Comply with requirements in Section 31 20 00 “Earthwork” for final grading, subsoil preparation and placement of topsoil prior to placing sod.

B. Smooth areas that have become gullied and loosen or till areas that have become compacted since completion of grading.

3.3 FERTILIZER APPLICATION

A. Apply fertilizer in accordance with manufacturer's instructions uniformly at a rate of 18 pounds per 1000 square feet (750 pounds per acre) over all areas to be sodded.

3.4 TILLAGE

A. Thoroughly till all areas to be sodded following application of fertilizer to a minimum depth of 3 inches by rototilling, disking, harrowing or other approved method.

B. The soil shall not be excessively dry or wet during tillage.

C. Clean area of stones and debris larger than 1-inch and level irregularities from tillage prior to sodding.

3.5 PLANTING SOLID SOD

A. Sodding may be performed between April 1 and October 1. Areas to receive sod shall be moist but not muddy.

B. When grades are not low enough for sodding along paved areas or at the outer edge of the sodded areas, the soil shall be excavated so that the sod soil line is at or slightly below grade.

C. Solid Sodding: The sod will be laid smoothly, edge-to-edge and with staggered joints. The sod shall be pressed immediately into contact with the sodbed by tamping or rolling with approved equipment, in order to eliminate air pockets and to provide a true and even surface. Following tamping or rolling, soil of the same texture as the sodbed shall be used to fill all cracks between sod strips. The level of the fill soil shall not exceed the soil level of the sod.

D. After the sodding operation has been completed, the edges of the sodded area shall be smooth and shall conform with the contour of the adjacent area. On slopes greater than 3 to 1, and on any other areas designed by the Plans, the sod shall be fastened in place with wooden pegs, wire staples or any other approved device.

E. Water shall be applied to all sodded areas immediately (within 1-hour) after the finishing operation has been completed. Water shall be applied at a rate sufficient to ensure that the sod is completely wetted and that the underlying soil is wetted to a depth of 4 to 6 inches. Water liberally during the first 10 days to establish grass and then as necessary to keep sod from drying out (at least 1-inch per week). Provide temporary irrigation systems in areas that permanent systems are not being installed.

3.6 ACCEPTANCE

A. Grass must be weed free, uniform, healthy, devoid of discoloration and signs of dehydration, and shall exhibit vigorous growth.

B. Grass shall be firmly rooted as that sections cannot be removed.

C. Following 60-day maintenance period, if grass exhibits the above qualities to the satisfaction of the Owner, it shall be accepted. Any grasses replanted will be subject to the 60-day maintenance period commencing upon installation of the newly planted grasses.

END OF SECTION

SECTION 33 01 10.58
DISINFECTION OF POTABLE WATER PIPING AND TANKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Disinfection of water piping, filters, tanks, and clearwells for raw, settled, filtered, finished, and potable water.
   2. Testing.
   3. Bacteriological and Disinfection Reports.

1.3 REFERENCES

A. American Water Works Association (AWWA):
   1. C651 – Standard for Disinfecting Water Mains.
   2. C652 – Standard for Disinfection of Water Storage Facilities.
   3. C653 – Standard for Disinfection of Water Treatment Plants.

1.4 CHAPTER 290 –QUALITY ASSURANCE

A. Testing Laboratory: State Health Department certified approved for examination of drinking water in compliance with applicable legislation of the State of Texas.

B. Piping, tanks, and equipment to be cleaned and disinfected shall be isolated from the finished water (potable water) at all times and shall be placed into service by the Owner following receipt of acceptable test reports.

C. Regulatory Requirements: Conform to applicable Texas Department of Health Rules and Regulations for Public Water Systems for work of this section.

1.5 SUBMITTALS

A. Submit a schedule of the proposed sequence for cleaning and method of sterilization to be used or list of the equipment to be used, and the sterilizing agent and quantities to be used, location and/or sizes of fill, blown down connections, sources of test water, and proposed plan to dispose of test water.

B. Disinfection Report: Accurately record the items listed below and submit five (5) copies of the report.
   1. Type and form of disinfection used.
   2. Date and time of disinfectant injection start and time of completion.
   3. Test locations.
   4. Initial and 24-hour disinfectant residuals (quantity in treated water) in parts per million (ppm) for each outlet tested.
   5. Date and time of flushing in ppm for each outlet tested.

C. Bacteriological Report: Accurately record the items listed below and submit five (5) copies of the report.
   1. Data issued, project name, and testing laboratory name, address, and telephone number.
   2. Time and date of water sample collection.
   3. Name of person collecting samples.
   4. Test locations.
   5. Initial and 24-hour disinfectant residuals in ppm for each outlet tested.
   6. Coliform bacteria test results for each outlet tested.
   7. Certification that water conforms, or fails to conform, to bacterial standards of Texas Department of Health.

8. Bacteriologist's signature.

PART 2 - PRODUCTS

2.1 REQUIREMENTS

A. Provide all equipment, temporary connections, taps, valves, piping, pumps, hoses, chemicals, and test equipment to accomplish the work, including taps to line. Provide adequate provisions to the line for sampling.

B. Disinfection agents shall be chlorine solution prepared from sodium hypochlorite, or calcium hypochlorite.

C. After completion of purging and disinfection, remove surplus pipe at the chlorination and sampling locations, plug the remaining pipe, backfill, and complete all appurtenant work required to secure the pipeline.

PART 3 - EXECUTION

3.1 GENERAL

A. Contractor shall exercise care at all times during construction to prevent contaminated material from entering the structures and pipelines in the raw, settled, filtered, finished, and potable water systems.

B. All facilities and piping designed to hold or transport process water shall be cleaned, including piping, basins, and channels, prior to disinfection.

C. The finished water storage tank, pump column, finished water piping, together with valves and meters, all potable water, service water, and chemical piping shall be disinfected with chlorine solution as specified herein, following cleaning and testing. Vertical pumps may be disinfected immediately prior to installation. All surfaces shall be cleaned or washed and disinfected, even though there is no visible evidence of necessity thereof.

D. Disinfection shall be in accordance with the applicable disinfection procedure described in AWWA C651, AWWA C652, AWWA C653, and AWWA C654, as well as in accordance with the Rules and Regulations for Public Water Systems of the Texas Commission on Environmental Quality and the requirements of this Section. Where conflicts exist, the Engineer shall determine the appropriate procedures.

3.2 PIPELINE DISINFECTION

A. Preparation: Verify that piping system has been cleaned, inspected, and pressure tested. Flush out line, completely replacing its entire volume with potable water.

B. Purging: Purging may be accomplished by passing an appropriately sized "poly-pig(s)" through the pipe, or by flushing.

1. Poly-Pig Method

a. In general, this shall consist of furnishing all equipment, material, and labor to satisfactorily expose cleaning wye, remove cleaning wye covers, etc., as directed by the Owner’s Project Representative.

b. Where expulsion of the "poly-pig" is required through a dead-ended main, the Contractor shall make every effort to prevent backflow of purged water into the main after passage of the pig. On small pipe, such as cast iron pipe through 12 inches (30 cm), backwater re-entry into the pipe can be prevented by the temporary installation of mechanical joint shallow bends and pipe joints to provide a riser out of the trench. On larger pipe, additional excavation of the trench may serve the same purpose.

c. Short dead-end pipe sections not swabbed by the pig shall be flushed.

d. Backflow water, which has inadvertently entered the pipe under conditions similar to those described in the preceding Paragraph b. shall be flushed from the system.

e. After passage of the "poly-pig," flushing of all backwater from the pipe, satisfactory test results are received, and at the direction of the Owner, the Contractor shall proceed with sterilization.

2. Flushing Method: If the "flushing" method of purging is used, the Contractor shall be required to prepare the main by installing blow-offs at locations and sized as directed by the Owner's Project Representative.

a. In general, this shall consist of furnishing all equipment, material and labor to satisfactorily install blow-offs of sizes shown in Table 1:

Table 1
Flushing Method Blow-Off Requirements

Size Main	Size Blow-Off
2 to 8 inches	1-1/2 inches
10 to 12 inches	4 inches
16 inches to 24 inches	6 inches
30 inches and greater	10 inches

b. Before disinfection, flush all foreign matter from the pipeline. Provide hoses, temporary pipes, ditches, etc., as required to dispose of flushing water without damage to adjacent properties. Flushing velocities shall be at least 2.5 fps. For large diameter pipe where it is impractical or impossible to flush the pipe at 2.5 fps velocity, clean the pipeline in-place from the inside by brushing and sweeping, then flush the line at a lower velocity.

c. After flushing is complete and satisfactory test results are received at the direction of the Engineer, the Contractor shall proceed with disinfection.

C. Disinfection: Disinfection of the pipeline shall be accomplished by the "continuous feed" method or the "slug" method in accordance with the Owner or regulatory agency requirements. The free chlorine amounts shown are the minimum allowed, and granulated calcium hypochlorite shall be used as the source of chlorine.

1. Continuous Feed Method:

a. Water from the existing disinfection system or other approved source shall be controlled to flow into the section to be sterilized at a constant rate.

b. Inject treatment disinfectant at a point not more than 10 feet downstream from the beginning of the new conduit through a corporation stop or other approved connection inserted in the horizontal axis of the newly laid pipe.

c. The water being used to fill the line shall be controlled to flow into the section to be sterilized very slowly, and the rate of application of the chlorinating agent shall be in such proportion of the rate of water entering the line that the chlorine dose applied to the water entering the line and released at the opposite end shall have a minimum chlorine concentration of 100 ppm or a level determined by TCEQ.

d. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Use check valves if necessary.

e. All valves shall then be closed and the chlorine solution shall remain in the line for a minimum of 24 hours.

f. Operate all valves, hydrants, and other appurtenances during disinfection to ensure that the disinfecting mixture is dispersed into all parts of the line, including dead ends, and similar areas that otherwise may not receive the disinfecting solution.

g. Do not allow the chlorinated water to flow into conduits in 'active' services.

h. After the 24-hour contact time, the chlorinated water shall be tested to determine the amount of free chlorine residual. A minimum residual of 10 ppm free chlorine shall be present in the main following the 24-hour holding period.

i. The water shall remain in the conduit until the chlorine residual is less than 4 ppm. after this residual is achieved the water may be discharged into the drainage system.

j. Remove the chlorine solution and flush the line with potable water. Comply with regulations and obtain necessary approvals for disposal or discharge of chlorine solution and flushing water.

2. Slug Method:

a. Water from the existing disinfection system or other approved source shall be controlled to flow into the section to be sterilized at a constant rate.
b. Inject treatment disinfectant at a point not more than 10-feet downstream from the beginning of the new conduit through a corporation stop or other approved connection inserted in the horizontal axis of the newly laid pipe.
c. Water entering the conduit shall receive a dose of chlorine, such that the water shall have not less than 100 ppm free chlorine. The chlorine shall be applied continuously and for a sufficient time to develop a solid column or "slug" of chlorinated water that shall expose all interior surfaces to the "slug" for at least 3-hours.
d. Operate all valves, hydrants, and other appurtenances during disinfection to ensure that the disinfecting mixture is dispersed into all parts of the line, including dead ends and similar areas that may not otherwise receive the disinfecting solution.
e. Do not allow the chlorinated water to flow into conduits in 'active' services.
f. The heavy chlorinated water shall be flushed from the system and disposed of in an approved manner.

D. Sampling:
1. The Owner will take samples from the sterilized line through a suitable point in accordance with AWWA C651 (not at a fire hydrant) and submit to the testing laboratory.
2. Provide analysis and testing of treated water for bacteriological quality in accordance with AWWA C651.
3. Two (2) consecutive sets of acceptable samples shall be collected from the new conduit at least 24 hours apart.
4. At least one (1) set of samples shall be collected from every 1,000 linear feet of new conduit, plus one (1) set from the end of the line, and at least one (1) set from each branch.
5. The sterilized portion of the line shall be placed in service if the results of two consecutive tests conform to the bacterial standards.
6. If the samples show unsatisfactory quality, the sterilization process shall be repeated until satisfactory results are obtained.

E. Replace permanent system devices removed for disinfection.

F. Scheduling: Perform scheduling and disinfection activity with startup, testing, adjusting, and balancing, and demonstration procedures, including coordination with related systems.

3.3 WATER STORAGE TANK DISINFECTION

A. Preparation:
1. Upon completion of the tank construction and before filling for the leakage test, thoroughly clean and flush the interior of the tank to remove any foreign material from tanks. Fire hoses and/or pressure washers and other tools required for adequate scrubbing and cleaning shall be used. The cleaning water shall be pumped or drained from the tank before disinfection.
2. Notify the Owner's Project Representative a minimum of 24 hours prior to chlorinating the tank. Disinfection shall meet with the approval of the Owner or Engineer, AWWA C652, and the appropriate state agency.

B. Disinfection Methods: The following disinfections methods are acceptable for this Project.
1. Disinfection Method A:
a. Add water and chlorine to the storage facility in amounts such that the solution will initially contain 50 ppm available chlorine and fills approximately 5 percent of the total storage volume. This solution shall be held in the storage facility for not less than 6 hours.
b. Fill the storage facility to the overflow level by flowing potable water into the highly-chlorinated water. This mixture of water shall be held at the overflow level for a period of not less than 24-hours
c. The actual volume of the 50-ppm chlorine solution shall be such that, after the solution is mixed with filling potable water and the storage facility is held full for 24 hours, there will be a free-chlorine residual of not less than 2-mg/L.
d. This method shall comply with AWWA C-652 Chlorination Method 3.

2. Disinfection Method B:
    a. Apply a solution of 200 ppm available chlorine directly to the surfaces of all parts of the storage facility that will be in contact with water when the storage facility is full to the overflow elevation.
    b. Apply chlorine solution either with brushes or spray equipment.
    c. Thoroughly coat all surfaces to be treated, including the inlet and out piping, and any separate drain piping, such that it will have available chlorine of not less than 10 ppm when filled with water.
    d. The disinfected surfaces shall remain in contact with the chlorine solution for not less than 30 minutes, after which potable water shall be admitted.
    e. Purge the storage facility and the drain piping of the 10-ppm chlorinated water and fill the facility to the overflow level.
    f. This method shall comply with AWWA C-652 Chlorination Method 2.

C. Steel Reservoirs:
1. Disinfect using an alternate method of disinfection. Other structures (excluding the filter media and underdrains) may be disinfected using the alternate method, when approved by the Engineer.
2. The alternate method consists of scrubbing or spraying with solution containing at least 200 ppm of available chlorine, rinsing the walls and floor with water, and wasting the rinse water.
3. The structures shall then be filled with water containing at least 2 ppm of available chlorine.
4. After 24 hours' contact time, 1 ppm of chlorine must remain.

D. Bacteriological Testing: Prior to placing the facility in service, bacteriological testing shall be accomplished by an independent testing laboratory coordinated by the Contractor (at no cost to the Owner). The Owner shall bear the cost of the initial tank fill required for bacteriological testing. Should the initial test fail, the Contractor shall be responsible for all costs associated with refilling the tank for any subsequent testing.

3.4 FILTER DISINFECTION (NOT USED)

3.5 DISPOSAL OF DISINFECTING WATER

A. The disinfecting water shall be dechlorinated before being released to natural drainage ways in accordance with AWWA C652. Release neutralized disinfecting water at a controlled rate so as not to damage downstream facilities.

B. Contractor shall coordinate with Owner for disposal location of disinfecting water. For storage basins or wet wells of limited volume(s), disinfecting water disposal volumes and durations shall be coordinated with Owner and Engineer to ensure dilution of high levels of chlorine prior to returning the water to the plant.

END OF SECTION

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SECTION 33 01 11
REHABILITATION OF BOLTED STEEL WATER STORAGE TANKS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following structures and related appurtenances:
   1. Tank Draining and Bypass
   2. Tank Reinspection Requirements (prior to cleaning/recoating work)
   3. Interior and Exterior Protective Coating Systems
   4. Roof Access Hatches
   5. Manway Access Hatches
   6. Tank Ladder and Landing Platforms
   7. Foundation Rehabilitation
   8. Roof Rehabilitation
   9. Field Inspections
   10. Hydrostatic Field Testing
   11. Disinfection

B. Related Work Specified Elsewhere:
   1. Section 09 91 00 – Painting and Coating.
   2. Section 33 01 10.58 – Disinfection of Potable Water Piping and Tanks.
   3. Appendices: N/A

1.2 REFERENCES

A. Applicable standards:
   1. API 653 – Tank Inspection, Repair, Alteration, and Reconstruction (latest edition)
   2. CWI – Certified Welding Inspectors
   3. NACE – National Association of Corrosion Engineers
   4. American Water Works Association (AWWA):
      a. C652 - Disinfection for Water Storage Facilities
      b. D103 – Factory Coated Bolted Carbon Steel Tanks for Water Storage
      c. D102 - Coating Steel Water-Storage Tanks
   5. National Sanitation Foundation (NSF):
      a. Standard No. 61 - Drinking Water System Components-Health Effects
      b. Standard No. 600 – Health Effects Evaluation and Criteria for Chemicals in Drinking Water
   6. American Society for Testing and Materials (ASTM):
      a. D5162-91 - Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates
   7. Society for Protective Coatings (SSPC) Surface Preparation Specifications:
      a. SSPC-SP1 - Solvent Cleaning: Removes oil, grease, soil, drawing and cutting compounds, and other soluble contaminants

b. SSPC-SP5 / National Association of Corrosion Engineers (NACE) No. 1 - White Metal Blast Cleaning: Removes all scale, rust, foreign matter. Leaves surface gray-white uniform metallic color

c. SSPC-SP6 / NACE No. 3 - Commercial Blast Cleaning: Two-thirds of every nine square inches free of all visible residues; remainder only light discoloration

d. SSPC-SP7 / NACE No. 4 - Brush-Off Blast Cleaning

e. SSPC-SP10 / NACE No. 2 - Near-White Blast Cleaning

f. SSPC-SP11 - Power Tool Cleaning to Bare Metal

g. SSPC-SP13 - Surface Preparation of Concrete

h. SSPC-SP15 - Commercial Grade Power Tool Cleaning

i. SSPC-TU 3 - Technical Update: Overcoating

8. Occupational Safety and Health Administration (OSHA), Department of Labor

1.3 SUBMITTALS

A. General:

1. All design calculations for the tank, including structural modifications and fabricated supports, shall be submitted by the Contractor prior to the approval of the shop drawings. Design calculations shall be sealed by a Professional Engineer registered in the State of Texas. Furnish certification that the tank repairs and appurtenances have been designed in accordance with AWWA D103 for bolted steel tanks.

2. Shop drawings for the steel tank appurtenances and modifications shall show all bolt details (for bolted steel tanks), plate and structural member sizes, piping connections and accessories. Submit calculations verifying compliance with governing structural code. Tank modification drawings shall be sealed by a Professional Engineer registered in the State of Texas.

3. The Engineer's review of shop drawings and calculations shall be for conformance to the specifications only. The Contractor shall remain responsible for the design and details.

B. Submit as specified in Construction Contract.

C. Submit a Tank Reinspection Report:

1. Owner and Engineer review per the requirements in Part 3 of this specification.

2. Final approval for recommended improvements will be provided by Engineer.

D. Submit surface preparation report by an independent Certified NACE / SSPC Inspector.

E. Submit welding certifications and radiographs of all field welds by an independent Certified Welding Inspector (CWI) and Certified Radiographic Interpreter (CRI).

F. Submit final coating reports by an independent Certified NACE Inspector.

G. Submittals shall include, but not be limited to the following:

1. Manufacturer's specifications and product data for the specified products.

2. General tank outline drawings showing overall dimensions, location of major components, weights, and location of required openings.

3. Detailed installation drawings, showing anchor bolt sizes and locations; access hatch type, size, and location; ports for cord entries; roof vent; location of Owner's

connections; and all clearances required for erection, operation, and disassembly for maintenance (where applicable).

H. Welder Certifications.

I. SSPC Certifications.

J. Coating Application Certifications.

K. Reports and certifications for all field tests.

L. Where independent testing is required, the Contractor shall submit information on each third-party laboratory or testing service to the City for review and approval. The information provided shall be sufficient to demonstrate that the third-party laboratory or testing service is independent from the Contractor. The Contractor shall receive approval for each third-party laboratory or testing service used for the Work prior to the start of the associated testing.

1.4 QUALITY ASSURANCE

A. Contractor:

1. Experienced in the commercial application of the specific material for a minimum period of ten years.
2. Shall provide references of recent, similar installations within comparable environments.

B. Factory Tests and Reports:

1. Submit results of manufacturer's factory tests in accordance with Construction Contract.

C. Independent Inspections

1. Tank reinspection services, certified welding inspection services, certified radiographic interpreter services, NACE certified inspection services, and other required independent inspection and testing services shall be coordinated and furnished by the Contractor at no cost to the Owner.

1.5 DELIVERY, HANDLING, AND STORAGE

A. Handle in a manner to ensure installation in sound and undamaged condition.

B. Do not bump or drop.

C. Use slings, lifting lugs, hooks, and other devices designed to protect pipe, joint elements, linings and coating.

D. Ship, move, and store with provisions to prevent movement or shock contact.

E. Packaging, handling, and shipping shall be done in accordance with the manufacturer's instructions.

1.6 PERFORMANCE AND DESIGN CRITERIA

A. 428 Ground Storage Tank

1. Size: Nominal diameter of 29-feet and 9-inches (approximate) with nominal sidewall height (to roof eave) of 24-feet (approximate).
2. Capacity: 125,000 nominal U.S. gallons (approximate).

3. Surface Area:
    a. Exterior Sidewall: 3,016 SF (estimated)
    b. Interior Sidewall: 3,016 SF (estimated)
    c. Exterior Roof: 696 SF (estimated)
    d. Interior Roof: 696 SF (estimated)
    e. Interior Floor: 694 SF (estimated)
4. Maximum Fill Rate: TBD
5. Maximum Withdrawal Rate: 250 gpm

PART 2 - PRODUCTS

2.1 PROTECTIVE COATING SYSTEMS

A. As specified in Section 09 91 00.

2.2 CATHODIC PROTECTION (NOT USED)

PART 3 - EXECUTION

3.1 PRE-CLEANING

A. The Owner will isolate and drain the tanks to a level of 2ft prior to the start of work. Contractor to drain any remaining water. Coordinate all shutdowns with the Owner and schedule a minimum of 2 weeks in advance of the shutdown date.
    1. Temporarily cap and seal the inlet and outlet pipes to prevent entry of dirt and foreign matter during the cleaning operations.

B. Remove all loose debris from sidewalls and tank floor.

C. Disassemble all manways and roof access hatches for cleaning, surface preparation, and recoating or replacement and coating (as applicable).

D. Disassemble vent screen for replacement.

3.2 CLEANING

A. Tank interior and exterior surfaces shall be cleaned prior to surface preparation and upon completion of protective coating system work.

B. Cleaning Procedure:
    1. All manways, access hatches, scaffolding, tools, and any other material which is not part of the structure or operating facility of the tank shall be removed for cleaning.
    2. The floor shall be swept clean, and the surfaces of the walls, floor, and roof cleaned thoroughly using a high pressure (200 psi or higher) water jet.
    3. All water, dirt, and foreign material accumulated in these cleaning operations shall be discharged through the floor drain or otherwise removed.

3.3 CONTAINMENT

A. Shrouding

The CONTRACTOR shall apply the containment system (shrouding) to prevent coating droplets, spent cleaning, blasting debris, dust, overspray or emissions of any kinds resulting from paint removal, surface preparation and painting operations from emitting to the atmosphere and travelling more than 30ft from the base of the water storage tank base or lesser distance required to prevent contamination on adjacent buildings, work sites and parking lots during the blasting and paint operations in accordance with 30 TAC, Rule 111.135 or Rule 111.137. The containment system shall also be designed to secure edges and seams.

1. The containment system shall at a minimum meet the emission control requirements of a Class 2 System in accordance with the latest edition of Section 4, 2.2.2 of SSPC-Guide 6 (CON), *Guide for Containing Debris Generated During Paint Removal Operations*. The ground surrounding the tank shall be protected from all debris, emissions, dust, and other materials generated in the cleaning operations with a minimum of two layers of polyethylene covered with plywood or the same material used for the perimeter containment system.
2. The CONTRACTOR shall be responsible for all materials that are used and for any apparatus used to contain dust emissions, debris, overspray, and coating droplets. The containment system attachments to the water storage tank shall be designed by a professional engineer licensed in the State of Texas not to impose excessive loading on the water storage tank. CONTRACTOR shall reinforce the tank to prevent permanent deformation from placing additional loads added by the containment system that the tank was not originally designed for. CONTRACTOR shall assure that no damage occurs to the tank. Any damage to the tank as a direct or indirect result of the containment system shall be repaired or sections replaced by the CONTRACTOR at no additional cost to OWNER. Neither the OWNER nor the ENGINEER assumes any responsibility for the structural ability of the tank to support the containment system.
3. The CONTRACTOR shall provide a full bonnet with the complete shroud if complete containment of the tank is utilized to contain all cleaning dust, debris, emissions, paint droplets, and paint overspray.
4. If tarps are used as part of the containment system, the tarps shall be an impervious, solid, flame-resistant material, reinforced with a fiber mesh and shall allow as much light as possible to pass through the material.
5. The OWNER reserves the right to stop work or require additional or different containment methods if the CONTRACTOR's operations create a nuisance beyond the tank site property line in the sole opinion of the OWNER, the ENGINEER, the OWNER's designated representative, any regulatory agency, or neighbor. All costs of providing an adequate containment system shall be included by the CONTRACTOR in the Base Bid.
6. The robotic or creeper-type cleaning devices are not exempted from the containment criteria as that of the types of containment (lack of emissions). All overspray and paint droplets shall be contained on the tank site.
7. Review of the containment system for containing the spent cleaning dust, debris, emissions, overspray, and coating droplets shall not warrant the structural integrity of the containment system and shall not warrant the structural integrity of the tank to support the containment system. Nor shall review of the containment system warrant the ability of the system to contain spent cleaning dust, debris, emissions, and overspray.

8. All attachments to the tank shall include a “reinforcing” pad/plate designed to distribute the loads and to prevent damage to the tank. The reinforcing pad/plate may remain in the tank at the completion of the project as long as the pad/plate is completely seal welded. All edges ground to 1/8 in. minimum radius. All submittals shall include, at a minimum, the following detail, and descriptions:
    a. Brackets/Outriggers to be attached to tank including size, material, etc.
    b. Bracket/Outrigger attachments to the tank.
    c. Number of Brackets/Outriggers and spacing on tank container.
    d. Center roof “tree” and attachment details.
    e. Reinforcing pad between structure and attachments.
    f. Any additional roof support to prevent damage to or deformation of the water storage tank roof or shell.
    g. Size of cables to be used and locations.
    h. Anchorage details of hoist and locations.
    i. Ground Anchors.
    j. Catalog cuts of Screen/Tarp material.
    k. Screen/Tarp material connection and overlaps.
    l. Design/Operation parameters of containment, such as wind speed when containment shall be lowered or not used.
    m. Material, ground cover and etc.
    n. Other dust collection and engineering controls.
    o. Any item desired to be left on the water storage tank structure at the completion of the Project (subject to approval by the OWNER).
    p. Maximum wind velocity which the containment system can remain raised and the procedure for which the containment system will be utilized on forecasted high/gusty wind days.
    q. Membranes that are impervious to the abrasive blast media, paint debris dust, and process water shall be placed on the ground around the tank to prevent contamination of the ground storm waters and surface waters due to run off. The debris must be contained within 30 feet of the base of the tank.
    r. The CONTRACTOR shall ensure the containment system is maintained and is free of defects throughout the project.
    s. For elevated water storage tanks, the CONTRACTOR shall ensure the containment enclosure shall be designed to be raised and lowered within a reasonable time to prevent damage to the enclosure, the water storage tank, personnel and excessive loading to the tank and tank appurtenances in the event of high winds and foul weather.

B. Dust Collection
    1. The CONTRACTOR shall furnish, operate and maintain adequate dust collection during the Project to achieve negative pressure within the containment or adequate air flows within the tank interior. The dust collection system shall at a minimum meet the requirements of a Type J1 Air Filtration System, as specified in Section 5.4.5.1 of the SSPC-Guide 6 (CON), Guide for Containing Debris Generated During Paint Removal Operations, latest edition. The dust collection shall be operated

during all abrasive blast cleaning and until the area is clean enough for coating application. The dust collection system shall be sized by the CONTRACTOR based upon the CONTRACTOR's operations, number of blasters, duration of blasting, etc. Precautions shall be taken by the CONTRACTOR to avoid a vacuum from developing inside the water storage tank, as a slight vacuum may result in damage to the tank.

3.4 REINSPECTION

A. Provide "Tank Reinspection Report":

1. Reinspect tank for additional deterioration and wear from the attached inspection reports (attached to this Project Manual as reference material). The Reinspection shall occur following draining and cleaning of the tanks and shall include a full visual and structural inspection of the tank, roof, floor, supports, roof supports, accessories, and concrete foundation; inspector must meet API 653 requirements. Remove existing coating as needed to complete the inspection. Reinspection of the roof must identify roof panels proposed for replacement, if applicable, prior to beginning rehabilitation work on the tank. Reinspection must be performed by an independent inspection agency.
2. Submit to Engineer and Owner in writing on locations where additional welding or welding repair is recommended by the API 653 inspector.
3. Submit to Engineer and Owner in writing on locations where additional steel material is recommended by the API 653 inspector.
4. Submit to Engineer and Owner in writing where roof system is recommended for replacement or repair by the API 653 inspector.
5. Engineer will review final Tank Inspection Report and provide recommendation for repairs.

3.5 SURFACE PREPARATION

A. Perform all surface preparation under supervision of an independent NACE Certified Inspector.

B. Provide surface preparation reports to Owner and Engineer prior to proceeding with protective coating system work.

3.6 GENERAL REPAIR

A. Ensure all hinges from removed access and manways and miscellaneous loose steel is surface prepped for new coatings in accordance with Section 09 91 00.

B. Perform all applicable sheet metal and welding repairs, including repair or replacement of roof panels, under direct supervision of a Certified Welding Inspector at all times. At a minimum, sheet metal and welding repairs shall include the following items. Additional sheet metal repairs and roof repairs will be provided as recommended within the Tank Reinspection Services report; and approved and recommended by Engineer and Owner.

C. Submit inspection reports from an independent Certified Welding Inspector to Owner and Engineer. Additional welding repairs will be provided by Contractor as recommended within the Tank Reinspection Services report; and approved and recommended by Engineer and Owner.

D. Submit weld radiograph reports from an independent Certified Radiographic Interpreter

hired by Owner or Engineer.

3.7 CATHODIC PROTECTION SYSTEMS (NOT USED)

3.8 PROTECTIVE COATING SYSTEMS

A. Removal of existing protective coating system, surface preparation, and installation of new protective coating systems shall be performed in accordance with Section 09 91 00.

B. Provide final coating reports by a NACE Certified Inspector. Coating report templates are attached to Section 09 91 00. Inspection shall include holiday testing and coating thickness testing.

3.9 ACCESSORIES AND ATTACHMENTS

A. Non-Structural Foundation Crack Repairs and Sealing:

1. Repair all visible non-structural cracks in foundation.
2. Clean all visible surface cracks thoroughly using a high pressure (200 psi or higher) water jet.
3. Seal all cracks with MasterSeal NP-1 and allow to cure per manufacturer's instructions.

B. Manways:

1. Hill St. Ground Storage Tank: Remove and replace manway gaskets after surface preparation and coatings are in place in accordance with AWWA-D100 and AWWA D-102.
2. 428 Ground Storage Tank: Remove and replace manway gaskets after surface preparation and coatings are in place in accordance with AWWA-D100 and AWWA D-102.

C. Exterior Ladder:

1. 428 Ground Storage Tank: Remove safety cage from existing ladder and install rigid fall arrest system as shown on the drawings and in accordance with all applicable AWWA and OSHA standards.

D. Liquid Level Indicator:

1. Install new liquid level indicator as shown on the drawings.
2. Float shall freely move up and down via float cable while limiting the float's ability to drift around inside the tank.
3. All wetted or submerged material shall be 316 stainless steel. Access cover to roller assembly may be aluminum.
4. Install isolation kits at all interfaces between dissimilar metals to prevent galvanic corrosion.
5. Subject to compliance with the Contract Documents, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
    a. Columbia TecTank.
    b. Approved equal.
6. The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features, and functions.

Manufacturers listed above are not relieved from meeting these specifications in their entirety. Manufacturer shall provide written statement on Manufacturer's letterhead regarding the suitability for the application.

E. Interior Ladder: (Not Used)

F. Roof Access Hatch: (Not Used)

G. Roof Vent: (Not Used)

H. Roof Vent Mesh: Remove existing and replace with 16 Mesh, 316 stainless steel screens.

I. Water Inlet (Not Used)

J. Water Outlet (Not Used)

K. Overflow Pipe (Not Used)

L. Instrumentation:

1. 428 Ground Storage Tank: Remove instrumentation prior to performing other tank repair activities. Reinstall instrumentation following completion of repair work and reattach cables to tank.

3.10 DISPOSAL

A. Dispose of all hazardous materials per all local, state, and federal guidelines.

3.11 DISINFECTION

A. Refer to Section 33 01 10.58 "Disinfection of Potable Water Piping and Tanks."

3.12 MAXIMUM FILL RATES

A. Unless otherwise permitted by the Owner, the tanks shall be filled at rates no greater than the fill rates defined in Section 1.6, subject to approval by the Owner.

3.13 WATER TIGHTNESS TEST

A. If the water storage tank integrity is compromised during the rehabilitation work, the Contractor shall be responsible for a water tightness test prior to placing the tank back in operation.

B. Water Tightness Test Procedure:

1. After the tank is filled to within 6-inches maximum and 3-inches minimum of the overflow level, the water tightness test shall be conducted for a period of 3 days.

2. The level range required to last 3 day time period shall be 5/100 of 1 percent (0.05 percent). This loss of water, 1/8-inch, shall be determined by measuring the drop in the water surface over the 3 day time period.

3. Measurements shall be taken every day to determine any trend in water loss.

4. Any leaks disclosed by this test shall be corrected by the authorized dealer in accordance with the manufacturer's recommendations.

C. Water required for initial testing shall be furnished by the Owner at the time of tank erection completion, and at no charge to the tank erector. Should the initial test fail, the Contractor shall be responsible for all costs associated with refilling the tank for any subsequent testing.

D. Disposal of test water shall be the responsibility of the Owner. Contractor will coordinate with Owner to determine test water disposal method.

E. Contractor shall provide labor and equipment necessary for water tightness testing.

3.14 WARRANTY

A. Contractor shall include a warranty for the work and protective coating systems, which at a minimum, shall provide assurance against defects in material or workmanship for the period of two (2) years after the date of Final Completion.

END OF SECTION

SECTION 33 01 11.10
REHABILITATION OF WELDED STEEL WATER STORAGE TANKS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following structures and related appurtenances:
   1. Tank Draining and Bypass
   2. Tank Reinspection Requirements (prior to cleaning/recoating work)
   3. Interior and Exterior Protective Coating Systems
   4. Roof Access Hatches
   5. Manway Access Hatches
   6. Tank Ladder and Landing Platforms
   7. Foundation Rehabilitation
   8. Roof Rehabilitation
   9. Field Inspections
   10. Hydrostatic Field Testing
   11. Disinfection

B. Related Work Specified Elsewhere:
   1. Section 09 91 00 – Painting and Protective Coatings.
   2. Section 33 01 10.58 – Disinfection of Potable Water Piping and Tanks.

C. Appendices: N/A

1.2 REFERENCES

A. Applicable standards:
   1. API 653 – Tank Inspection, Repair, Alteration, and Reconstruction (latest edition)
   2. CWI – Certified Welding Inspectors
   3. NACE – National Association of Corrosion Engineers
   4. American Water Works Association (AWWA):
      a. C652 - Disinfection for Water Storage Facilities
      b. D100 - Welded Steel Tanks for Water Storage
      c. D102 - Coating Steel Water-Storage Tanks
   5. National Sanitation Foundation (NSF):
      a. Standard No. 61 - Drinking Water System Components-Health Effects
   6. American Society for Testing and Materials (ASTM):
      a. D5162-91 - Discontinuity (Holiday) Testing of Nonconductive Protective Coating on Metallic Substrates
   7. Society for Protective Coatings (SSPC) Surface Preparation Specifications:
      a. SSPC-SP1 - Solvent Cleaning: Removes oil, grease, soil, drawing and cutting compounds, and other soluble contaminants
      b. SSPC-SP5 / National Association of Corrosion Engineers (NACE) No. 1 - White

Metal Blast Cleaning: Removes all scale, rust, foreign matter. Leaves surface gray-white uniform metallic color

c. SSPC-SP6 / NACE No. 3 - Commercial Blast Cleaning: Two-thirds of every nine square inches free of all visible residues; remainder only light discoloration

d. SSPC-SP7 / NACE No. 4 - Brush-Off Blast Cleaning

e. SSPC-SP10 / NACE No. 2 - Near-White Blast Cleaning

f. SSPC-SP11 - Power Tool Cleaning to Bare Metal

g. SSPC-SP13 - Surface Preparation of Concrete

h. SSPC-SP15 - Commercial Grade Power Tool Cleaning

i. SSPC-TU 3 - Technical Update: Overcoating

8. Occupational Safety and Health Administration (OSHA), Department of Labor

1.3 SUBMITTALS

A. General:

1. All design calculations for the tank, including structural modifications and fabricated supports, shall be submitted by the Contractor prior to the approval of the shop drawings. Design calculations shall be sealed by a Professional Engineer registered in the State of Texas. Furnish certification that the tank repairs and appurtenances have been designed in accordance with AWWA D100 for welded steel tanks.

2. Shop drawings for the steel tank appurtenances and modifications shall show all weld details (for welded steel tanks), plate and structural member sizes, piping connections and accessories. Submit calculations verifying compliance with governing structural code. Tank modification drawings shall be sealed by a Professional Engineer registered in the State of Texas.

3. The Engineer's review of shop drawings and calculations shall be for conformance to the specifications only. The Contractor shall remain responsible for the design and details.

B. Submit as specified in Construction Contract.

C. Submit a Tank Reinspection Report:

1. Owner and Engineer review per the requirements in Part 3 of this specification.

2. Final approval for recommended improvements will be provided by Engineer.

D. Submit surface preparation report by an independent Certified NACE / SSPC Inspector.

E. Submit welding certifications and radiographs of all field welds by an independent Certified Welding Inspector (CWI) and Certified Radiographic Interpreter (CRI).

F. Submit final coating reports by an independent Certified NACE Inspector.

G. Submittals shall include, but not be limited to the following:

1. Manufacturer's specifications and product data for the specified products.

2. General tank outline drawings showing overall dimensions, location of major components, weights, and location of required openings.

3. Detailed installation drawings, showing anchor bolt sizes and locations; access hatch type, size, and location; ports for cord entries; roof vent; location of Owner's connections; and all clearances required for erection, operation, and disassembly for

maintenance (where applicable).

H. Welder Certifications.

I. SSPC Certifications.

J. Coating Application Certifications.

K. Reports and certifications for all field tests.

L. Where independent testing is required, the Contractor shall submit information on each third-party laboratory or testing service to the City for review and approval. The information provided shall be sufficient to demonstrate that the third-party laboratory or testing service is independent from the Contractor. The Contractor shall receive approval for each third-party laboratory or testing service used for the Work prior to the start of the associated testing.

1.4 QUALITY ASSURANCE

A. Contractor:

1. Experienced in the commercial application of the specific material for a minimum period of ten years.

2. Shall provide references of recent, similar installations within comparable environments.

B. Factory Tests and Reports:

1. Submit results of manufacturer's factory tests in accordance with Construction Contract.

C. Independent Inspections

1. Tank reinspection services, certified welding inspection services, certified radiographic interpreter services, NACE certified inspection services, and other required independent inspection and testing services shall be coordinated and furnished by the Contractor at no cost to the Owner.

1.5 DELIVERY, HANDLING, AND STORAGE

A. Handle in a manner to ensure installation in sound and undamaged condition.

B. Do not bump or drop.

C. Use slings, lifting lugs, hooks, and other devices designed to protect pipe, joint elements, linings and coating.

D. Ship, move, and store with provisions to prevent movement or shock contact.

E. Packaging, handling, and shipping shall be done in accordance with the manufacturer's instructions.

1.6 PERFORMANCE AND DESIGN CRITERIA

A. Hill St. Ground Storage Tank:

1. Size: Estimated diameter of 40-feet with an estimated sidewall height (to roof eave) of 10-feet and 8-inches.

2. Capacity: 100,000 nominal U.S. gallons (estimated).

3. Surface Area:
    a. Exterior Sidewall: 1,337 SF (estimated)
    b. Interior Sidewall: 1,337 SF (estimated)
    c. Exterior Roof: 1,260 SF (estimated)
    d. Interior Roof: 1,260 SF (estimated)
    e. Interior Floor: 1,257 SF (estimated)
4. Maximum Fill Rate: TBD
5. Maximum Withdrawal Rate: 250 gpm

PART 2 - PRODUCTS

2.1 PROTECTIVE COATING SYSTEMS

A. As specified in Section 09 91 00.

2.2 CATHODIC PROTECTION (NOT USED)

PART 3 - EXECUTION

3.1 PRE-CLEANING

A. The Owner will isolate and drain the tanks to a level of 2 ft prior to the start of work. Contractor to drain any remaining water. Coordinate all shutdowns with the Owner and schedule a minimum of 2 weeks in advance of the shutdown date.
    1. Temporarily cap and seal the inlet and outlet pipes to prevent entry of dirt and foreign matter during the cleaning operations.

B. Remove all loose debris from sidewalls and tank floor.

C. Disassemble all manways and roof access hatches for cleaning, surface preparation, and recoating or replacement and coating (as applicable).

D. Disassemble vent screen for replacement.

3.2 CLEANING

A. Tank interior and exterior surfaces shall be cleaned prior to surface preparation and upon completion of protective coating system work.

B. Cleaning Procedure:
    1. All manways, access hatches, scaffolding, tools, and any other material which is not part of the structure or operating facility of the tank shall be removed for cleaning.
    2. The floor shall be swept clean, and the surfaces of the walls, floor, and roof cleaned thoroughly using a high pressure (200 psi or higher) water jet.
    3. All water, dirt, and foreign material accumulated in these cleaning operations shall be discharged through the floor drain or otherwise removed.

3.3 CONTAINMENT

A. Shrouding

The CONTRACTOR shall apply the containment system (shrouding) to prevent coating droplets, spent cleaning, blasting debris, dust, overspray or emissions of any kinds resulting from paint

removal, surface preparation and painting operations from emitting to the atmosphere and travelling more than 30ft from the base of the water storage tank base or lesser distance required to prevent contamination on adjacent buildings, work sites and parking lots during the blasting and paint operations in accordance with 30 TAC, Rule 111.135 or Rule 111.137. The containment system shall also be designed to secure edges and seams.

1. The containment system shall at a minimum meet the emission control requirements of a Class 2 System in accordance with the latest edition of Section 4, 2.2.2 of SSPC-Guide 6 (CON), Guide for Containing Debris Generated During Paint Removal Operations. The ground surrounding the tank shall be protected from all debris, emissions, dust, and other materials generated in the cleaning operations with a minimum of two layers of polyethylene covered with plywood or the same material used for the perimeter containment system.
2. The CONTRACTOR shall be responsible for all materials that are used and for any apparatus used to contain dust emissions, debris, overspray, and coating droplets. The containment system attachments to the water storage tank shall be designed by a professional engineer licensed in the State of Texas not to impose excessive loading on the water storage tank. CONTRACTOR shall reinforce the tank to prevent permanent deformation from placing additional loads added by the containment system that the tank was not originally designed for. CONTRACTOR shall assure that no damage occurs to the tank. Any damage to the tank as a direct or indirect result of the containment system shall be repaired or sections replaced by the CONTRACTOR at no additional cost to OWNER. Neither the OWNER nor the ENGINEER assumes any responsibility for the structural ability of the tank to support the containment system.
3. The CONTRACTOR shall provide a full bonnet with the complete shroud if complete containment of the tank is utilized to contain all cleaning dust, debris, emissions, paint droplets, and paint overspray.
4. If tarps are used as part of the containment system, the tarps shall be an impervious, solid, flame-resistant material, reinforced with a fiber mesh and shall allow as much light as possible to pass through the material.
5. The OWNER reserves the right to stop work or require additional or different containment methods if the CONTRACTOR’s operations create a nuisance beyond the tank site property line in the sole opinion of the OWNER, the ENGINEER, the OWNER’s designated representative, any regulatory agency, or neighbor. All costs of providing an adequate containment system shall be included by the CONTRACTOR in the Base Bid.
6. The robotic or creeper-type cleaning devices are not exempted from the containment criteria as that of the types of containment (lack of emissions). All overspray and paint droplets shall be contained on the tank site.
7. Review of the containment system for containing the spent cleaning dust, debris, emissions, overspray, and coating droplets shall not warrant the structural integrity of the containment system and shall not warrant the structural integrity of the tank to support the containment system. Nor shall review of the containment system warrant the ability of the system to contain spent cleaning dust, debris, emissions, and overspray.
8. All attachments to the tank shall include a “reinforcing” pad/plate designed to distribute the loads and to prevent damage to the tank. The reinforcing pad/plate

may remain in the tank at the completion of the project as long as the pad/plate is completely seal welded. All edges ground to 1/8 in. minimum radius. All submittals shall include, at a minimum, the following detail, and descriptions:

a. Brackets/Outriggers to be attached to tank including size, material, etc.
b. Bracket/Outrigger attachments to the tank.
c. Number of Brackets/Outriggers and spacing on tank container.
d. Center roof “tree” and attachment details.
e. Reinforcing pad between structure and attachments.
f. Any additional roof support to prevent damage to or deformation of the water storage tank roof or shell.
g. Size of cables to be used and locations.
h. Anchorage details of hoist and locations.
i. Ground Anchors.
j. Catalog cuts of Screen/Tarp material.
k. Screen/Tarp material connection and overlaps.
l. Design/Operation parameters of containment, such as wind speed when containment shall be lowered or not used.
m. Material, ground cover and etc.
n. Other dust collection and engineering controls.
o. Any item desired to be left on the water storage tank structure at the completion of the Project (subject to approval by the OWNER).
p. Maximum wind velocity which the containment system can remain raised and the procedure for which the containment system will be utilized on forecasted high/gusty wind days.
q. Membranes that are impervious to the abrasive blast media, paint debris dust, and process water shall be placed on the ground around the tank to prevent contamination of the ground storm waters and surface waters due to run off. The debris must be contained within 30 feet of the base of the tank.
r. The CONTRACTOR shall ensure the containment system is maintained and is free of defects throughout the project.
s. For elevated water storage tanks, the CONTRACTOR shall ensure the containment enclosure shall be designed to be raised and lowered within a reasonable time to prevent damage to the enclosure, the water storage tank, personnel and excessive loading to the tank and tank appurtenances in the event of high winds and foul weather.

B. Dust Collection

1. The CONTRACTOR shall furnish, operate and maintain adequate dust collection during the Project to achieve negative pressure within the containment or adequate air flows within the tank interior. The dust collection system shall at a minimum meet the requirements of a Type J1 Air Filtration System, as specified in Section 5.4.5.1 of the SSPC-Guide 6 (CON), Guide for Containing Debris Generated During Paint Removal Operations, latest edition. The dust collection shall be operated during all abrasive blast cleaning and until the area is clean enough for coating

application. The dust collection system shall be sized by the CONTRACTOR based upon the CONTRACTOR's operations, number of blasters, duration of blasting, etc. Precautions shall be taken by the CONTRACTOR to avoid a vacuum from developing inside the water storage tank, as a slight vacuum may result in damage to the tank.

3.4 REINSPECTION

A. Provide "Tank Reinspection Report":

1. Reinspect tank for additional deterioration and wear from the attached inspection reports (attached to this Project Manual as reference material). The Reinspection shall occur following draining and cleaning of the tanks and shall include a full visual and structural inspection of the tank, roof, floor, supports, roof supports, accessories, and concrete foundation; inspector must meet API 653 requirements. Remove existing coating as needed to complete the inspection. Reinspection of the roof must identify roof panels proposed for replacement, if applicable, prior to beginning rehabilitation work on the tank. Reinspection must be performed by an independent inspection agency.
2. Submit to Engineer and Owner in writing on locations where additional welding or welding repair is recommended by the API 653 inspector.
3. Submit to Engineer and Owner in writing on locations where additional steel material is recommended by the API 653 inspector.
4. Submit to Engineer and Owner in writing where roof system is recommended for replacement or repair by the API 653 inspector.
5. Engineer will review final Tank Inspection Report and provide recommendation for repairs.

3.5 SURFACE PREPARATION

A. Perform all surface preparation under supervision of an independent NACE Certified Inspector.

B. Provide surface preparation reports to Owner and Engineer prior to proceeding with protective coating system work.

3.6 GENERAL REPAIR

A. Ensure all hinges from removed access and manways and miscellaneous loose steel is surface prepped for new coatings in accordance with Section 09 91 00.

B. Perform all applicable sheet metal and welding repairs, including repair or replacement of roof panels, under direct supervision of a Certified Welding Inspector at all times. At a minimum, sheet metal and welding repairs shall include the following items. Additional sheet metal repairs and roof repairs will be provided as recommended within the Tank Reinspection Services report; and approved and recommended by Engineer and Owner.

C. Submit inspection reports from an independent Certified Welding Inspector to Owner and Engineer. Additional welding repairs will be provided by Contractor as recommended within the Tank Reinspection Services report; and approved and recommended by Engineer and Owner.

D. Submit weld radiograph reports from an independent Certified Radiographic Interpreter hired by Owner or Engineer.

3.7 CATHODIC PROTECTION SYSTEMS (NOT USED)

3.8 PROTECTIVE COATING SYSTEMS

A. Removal of existing protective coating system, surface preparation, and installation of new protective coating systems shall be performed in accordance with Section 09 08 00.

B. Provide final coating reports by a NACE Certified Inspector. Coating report templates are attached to Section 09 08 00. Inspection shall include holiday testing and coating thickness testing.

3.9 ACCESSORIES AND ATTACHMENTS

A. Non-Structural Foundation Crack Repairs and Sealing:

1. Repair all visible non-structural cracks in foundation.
2. Clean all visible surface cracks thoroughly using a high pressure (200 psi or higher) water jet.
3. Seal all cracks with MasterSeal NP-1 and allow to cure per manufacturer's instructions.

B. Manways:

1. Hill St. Ground Storage Tank: Remove and replace manway gaskets after surface preparation and coatings are in place in accordance with AWWA-D100 and AWWA D-102.

C. Liquid Level Indicator:

1. Install new liquid level indicator as shown on the drawings.
2. Float shall freely move up and down via float cable while limiting the float's ability to drift around inside the tank.
3. All wetted or submerged material shall be 316 stainless steel. Access cover to roller assembly may be aluminum.
4. Install isolation kits at all interfaces between dissimilar metals to prevent galvanic corrosion.
5. Subject to compliance with the Contract Documents, available manufacturers offering products that may be incorporated into the Work include, but are not limited to:
    a. Columbia TecTank.
    b. Approved equal.
6. The listing of specific manufacturers above does not imply acceptance of their products that do not meet the specified ratings, features, and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Manufacturer shall provide written statement on Manufacturer's letterhead regarding the suitability for the application.

D. Exterior Ladder (Not Used)

E. Interior Ladder: (Not Used)

F. Roof Access Hatch: (Not Used)

G. Roof Vent: (Not Used)

H. Roof Vent Mesh: Remove existing and replace with 16 Mesh, 316 stainless steel screens.

I. Water Inlet (Not Used)

J. Water Outlet

1. Hill St. Ground Storage Tank: Repair safety grate over tank outlet.

K. Overflow Pipe (Not Used)

L. Instrumentation:

1. Hill St. Ground Storage Tank: Remove instrumentation prior to performing other tank repair activities. Reinstall instrumentation following completion of repair work and reattach cables to tank. Install new level gauge as shown on the drawings.

3.10 DISPOSAL

A. Dispose of all hazardous materials per all local, state, and federal guidelines.

3.11 DISINFECTION

A. Refer to Section 33 01 10.58 “Disinfection of Potable Water Piping and Tanks.”

3.12 MAXIMUM FILL RATES

A. Unless otherwise permitted by the Owner, the tanks shall be filled at rates no greater than the fill rates defined in Section 1.6, subject to approval by the Owner.

3.13 WATER TIGHTNESS TEST

A. If the water storage tank integrity is compromised during the rehabilitation work, the Contractor shall be responsible for a water tightness test prior to placing the tank back in operation.

B. Water Tightness Test Procedure:

1. After the tank is filled to within 6-inches maximum and 3-inches minimum of the overflow level, the water tightness test shall be conducted for a period of 3 days.

2. The level range required to last 3 day time period shall be 5/100 of 1 percent (0.05 percent). This loss of water, 1/8-inch, shall be determined by measuring the drop in the water surface over the 3 day time period.

3. Measurements shall be taken every day to determine any trend in water loss.

4. Any leaks disclosed by this test shall be corrected by the authorized dealer in accordance with the manufacturer's recommendations.

C. Water required for initial testing shall be furnished by the Owner at the time of tank erection completion, and at no charge to the tank erector. Should the initial test fail, the Contractor shall be responsible for all costs associated with refilling the tank for any subsequent testing.

D. Disposal of test water shall be the responsibility of the Owner. Contractor will coordinate with Owner to determine test water disposal method.

E. Contractor shall provide labor and equipment necessary for water tightness testing.

3.14 WARRANTY

A. Contractor shall include a warranty for the work and protective coating systems, which at a minimum, shall provide assurance against defects in material or workmanship for the period of two (2) years after the date of Final Completion.

END OF SECTION

APPENDIX A:
CONSTRUCTION PLANS

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CITY OF AUBREY, TEXAS

CONSTRUCTION PLANS FOR

HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

CITY COUNCIL

CHRIS RICH - MAYOR
JEFF PERRY - COUNCIL PLACE 1
MATT JONES - COUNCIL PLACE 2
MIKE BROWNING - COUNCIL PLACE 3
RANDY JONES - COUNCIL PLACE 4
CHUCK FIKES - COUNCIL PLACE 5

CITY ADMINISTRATION

CHARLES KRIEDLER - CITY MANAGER
LEANNE WILSON - ASSISTANT CITY MANAGER
DEAN RYLANT - DIRECTOR OF PUBLIC WORKS

OCTOBER 2025

STATE OF TEXAS
ALAN R. TUCKER
79101
REGISTERED
PROFESSIONAL ENGINEER

06/20/2025

ALAN R. TUCKER P.E., PRINCIPAL-IN-CHARGE

STATE OF TEXAS
MATTHEW L. KUYKENDALL
127451
LICENSED
PROFESSIONAL ENGINEER

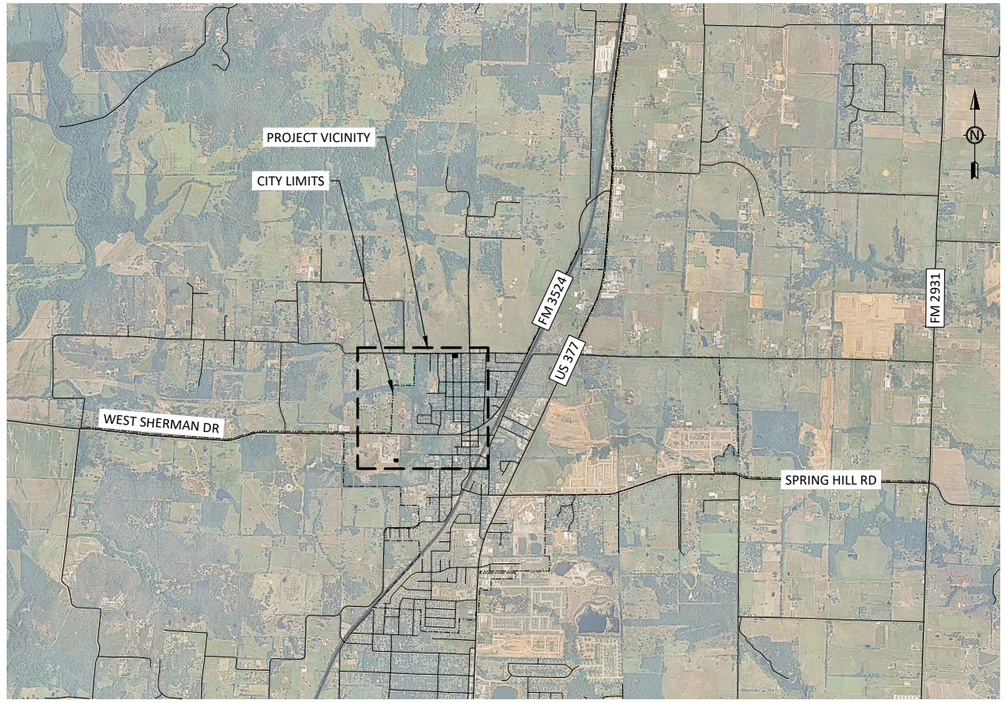
06/20/2025

MATTHEW L. KUYKENDALL P.E., PROJECT MANAGER

PLUMMER

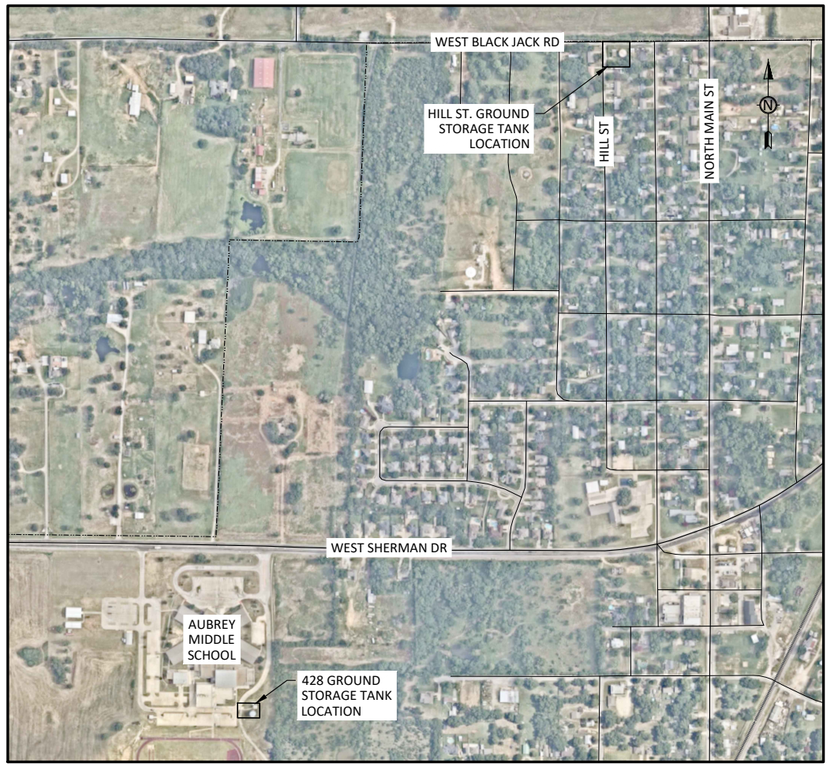
1320 S UNIVERSITY DR, STE 300 | FORT WORTH, TX 76107
817.806.1700 | TBPE REGISTERED FIRM NUMBER F-13

Aug 02, 2024 - 6:40pm C:\Users\creed\DC\ACCDocs\Plummer Associates\0798-008-01_Aubrey_CST\Project Files\Plummer\Sheets\General\COVER.dwg LAYOUT: COVER USER:



LOCATION MAP

SCALE: 1"=2500'



VICINITY MAP

SCALE: 1"=400'

INDEX OF DRAWINGS

SEQ.	SHEET	TITLE
GENERAL		
1.	G-001	COVER SHEET
2.	G-002	LOCATION MAP AND SHEET INDEX
3.	G-003	CONSTRUCTION NOTES, SYMBOLS, AND ABBREVIATIONS
MECHANICAL		
4.	M-100	HILL ST GROUND STORAGE TANK - PLAN AND SECTION
5.	M-101	HILL ST GROUND STORAGE TANK - SECTIONS
6.	M-200	428 GROUND STORAGE TANK - PLAN
7.	M-201	428 GROUND STORAGE TANK - SECTIONS AND LOGO DETAILS
8.	M-900	LIQUID LEVEL INDICATOR DETAILS

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NO.	DATE	REVISION	BY

107 S. Main Street,
Aubrey, TX 76227

CITY OF AUBREY, TEXAS
HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

GENERAL
INDEX SHEET AND MAP LOCATION

STATE OF TEXAS
MATTHEW L. KUYKENDALL
127451
LICENSED
PROFESSIONAL ENGINEER
DATE: 7/20/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED A. HIBBARD
DRAWN C. READ
CHECKED M. KUYKENDALL
REVIEWED A. TUCKER

Seq.
Dwg. No. G-002
0798-008-01

PRINTED: 4/14/2025 2:58 PM C:\Users\rpemberton\DC\ACCDocs\Plummer Associates\0798-008-01_Aubrey_GST\Project Files\Plummer\Sheets\General\LOCATION-MAP.dwg SAVED: 4/14/2025 11:51 AM SAVED BY: Rpemberton USER: Pemberton, Ron

GENERAL ABBREVIATIONS INDEX

°	DEGREES
Ø	DIAMETER
&	AND
ALUM.	ALUMINUM
APPROX.	APPROXIMATE
ASS'Y	ASSEMBLY
AUTO	AUTOMATIC
AVG.	AVERAGE
BC	BOLT CIRCLE
BLDG	BUILDING
CPLG	COUPLING
C/C	CENTER TO CENTER
CONSTR	CONSTRUCTION
CONT.	CONTINUOUS
E	EAST
EQ SP	EQUAL SPACING
EX.	EXISTING
EXT.	EXTERNAL
FLG	FLANGE
FT	FEET, FOOT
GA.	GAUGE
GLV	GALVANIZED
INT.	INTERNAL
LB	POUNDS
MAX	MAXIMUM
MIN	MINIMUM
N.T.S.	NOT TO SCALE
N	NORTH
PVC	POLYVINYL CHLORIDE
S	SOUTH
SS	STAINLESS STEEL
ST.	STREET
TBE	THREADED BOTH ENDS
TOE	THREADED ONE END
TYP.	TYPICAL
W	WEST
W/	WITH
W/O	WITHOUT

GENERAL CONSTRUCTION NOTE

1. FOR COORDINATION, SCHEDULE REQUIREMENTS FOR CONSTRUCTION, CONNECTION TO EXISTING PIPING, AND SHUTDOWN LIMITATIONS, REFER TO SPECIFICATION SECTION 01 12 16 "SEQUENCE OF CONSTRUCTION". CONNECTIONS TO EXISTING FACILITIES SHALL NOT BE INITIATED UNTIL ALL MATERIALS ARE ON-SITE. LOCATIONS, DIMENSIONS, AND ELEVATIONS OF EXISTING FACILITIES SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR BEGINNING WORK IN ANY AREA.

2. BENCHMARKS: NO BENCH MARKS ARE PROVIDED. ELEVATIONS SHOWN IN THE DRAWINGS HAVE NOT BEEN VERIFIED IN THE FIELD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ELEVATIONS WHEN NECESSARY TO ENSURE PROPER EQUIPMENT INSTALLATION AND COMPLETION OF ANY OTHER SCOPE OF WORK ITEMS.

3. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROTECT EXISTING STRUCTURES, UTILITIES,EQUIPMENT, ELECTRICAL, PIPING, AND ALL OTHER SITE COMPONENTS DURING THE PROSECUTION OF HIS WORK. ANY DAMAGE TO THESE EXISTING ITEMS RESULTING FROM THE CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE REPAIRED TO THE OWNER'S SATISFACTION BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER.

4. ALL ANCHOR BOLTS, EXPANSION ANCHORS, AND CONCRETE INSERTS SHALL BE TYPE 316 STAINLESS STEEL UNLESS OTHERWISE NOTES AND SHALL COMPLY WITH THE REQUIREMENTS OF SPECIFICATION SECTION 05 05 20 "ANCHOR BOLTS AND CONCRETE INSERTS".

5. DIMENSIONS, ELEVATIONS AND DETAILS OF EXISTING FACILITIES ARE BASED ON PREVIOUS CONSTRUCTION PLANS. THE OWNER AND/OR ENGINEER HAS NOT FIELD VERIFIED THE DIMENSIONS AND ELEVATIONS. THE ACCURACY AND COMPLETENESS OF THE INFORMATION SHOWN IS NOT GUARANTEED. SOME OF THE EXISTING EQUIPMENT INFORMATION HAS BEEN OMITTED FOR CLARITY. ACTUAL DIMENSIONS, ELEVATIONS AND DETAILS WILL VARY. IT IS THE BIDDER'S RESPONSIBILITY TO INQUIRE IF ADDITIONAL INFORMATION IS AVAILABLE, TO MAKE ARRANGEMENTS TO REVIEW THE SAME PRIOR TO BIDDING. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING THE JOB TO DETERMINE THE EXTENT OF THE WORK. IN CONSTRUCTION OF THE NEW AND TEMPORARY FACILITIES, CONTRACTOR SHALL FIELD VERIFY PRIOR TO BEGINNING WORK AND MAKE NECESSARY ADJUSTMENTS AT NO ADDITIONAL COST AND EXTENSION OF THE CONTRACT TIME TO THE OWNER.

6. CONTRACTOR SHALL PROVIDE ALL FITTINGS AND APPURTENANCES NECESSARY TO MAKE ALL CONNECTIONS AS SHOWN ON THESE PLANS.

7. COORDINATE WORK AND ACTIVITIES WITH OTHER CONTRACTORS WORKING ON SITE AS APPLICABLE. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING REQUIRED SECURITY TO PROTECT HIS OWN PROPERTY, EQUIPMENT, AND WORK IN PROGRESS AT ALL TIMES.

8. TAG ALL NEW EQUIPMENT PER SPECIFICATION 10 90 00 "IDENTIFICATION, STENCILING, AND TAGGING" AND ALL INSTRUMENTS, STARTERS, MCC PANELS, AND CONTROL PANELS PER

9. ALL STAINLESS STEEL IN CONTACT WITH WATER SHALL BE 316/316L.

10. EQUIPMENT INSTALLATION:
    - A. PROVIDE EQUIPMENT PADS FOR ALL MECHANICAL EQUIPMENT AND ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS. NOT ALL EQUIPMENT PADS HAVE BEEN DESIGNATED ON THE DRAWINGS.
    - B. STORE AND PROTECT EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
    - C. EQUIPMENT SHALL BE INSTALLED AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PROVIDE AT THE SITE ONE COPY OF THE MANUFACTURER'S INSTRUCTIONS.

11. NO TREES SHALL BE CUT DOWN WITHOUT PRIOR PERMISSION OF THE OWNER. CONTRACTOR SHALL PROTECT EXISTING TREES, SHRUBS, AND OTHER PERMANENT OBJECTS. NO VEHICLES SHALL BE DRIVEN OR PARKED UNDER THE DRIP LINES OF TREES. COORDINATE WITH THE OWNER FOR DRIP LINE LOCATIONS. IT IS ANTICIPATED THAT THIS PROJECT CAN BE COMPLETED WITHOUT THE USE OF TREE PROTECTION. HOWEVER IF THE CONTRACTOR VIOLATES THE TREE PROTECTION ORDINANCE INCLUDING BUT NOT LIMITED TO DRIVING OR PARKING VEHICLES AND OTHER CONSTRUCTION EQUIPMENT OR STORING CONSTRUCTION MATERIALS UNDER THE DRIP LINE OF TREES, THE CONTRACTOR SHALL ERECT CHAIN LINK FENCE BARRIER AT THE DRIP LINE OF ALL TREES IN OR NEAR THE AREAS OF CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.

12. CONTRACTOR SHALL REPAIR OR REPLACE ITEMS DAMAGED DURING CONSTRUCTION ACTIVITIES TO THE OWNER'S SATISFACTION AT NO ADDITIONAL COST TO THE OWNER.

13. CONTRACTOR SHALL HYDROMULCH GRASSY AREAS DISTURBED OR DESTROYED BY CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH SPECIFICATION 32 92 13 "HYDROMULCH SEEDING" AS DIRECTED BY THE OWNER. AT THE CONTRACTOR'S OPTION, CONTRACTOR MAY SOD DISTURBED AREAS PER SECTION 32 92 10 "SODDING" IN LIEU OF HYDROMULCH SEEDING.

14. THE SITE ENTRANCE GATES ARE LOCKED AT ALL HOURS. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER FOR ACCESS TO THE SITE. OUTSIDE OF NORMAL BUSINESS HOURS REFER TO SECTION 01 10 00 "SUMMARY" FOR ADDITIONAL INFORMATION REGARDING WORK RESTRICTIONS.

15. LIMITED POWER AND NON-POTABLE WATER IS AVAILABLE ON-SITE. CONTRACTOR SHALL COORDINATE WITH THE OWNER. DRINKING WATER AND PORTA-POTTIES SHALL BE PROVIDED BY CONTRACTOR.

16. PAINT EQUIPMENT, PIPING, FITTINGS, VALVES, AND SUPPORTS EXCEPT STAINLESS STEEL, ALUMINUM, PVC, AND FIBERGLASS IN ACCORDANCE WITH SPECIFICATION 09 91 00. COLORS SHALL BE SELECTED BY OWNER. CONCRETE SHALL NOT BE COATED EXCEPT WHERE SPECIFICALLY CALLED OUT ON DRAWINGS OR IN SPECIFICATIONS.

17. CONTRACTOR'S ACTIVITIES SHALL BE LIMITED TO THE CONSTRUCTION AREAS SHOWN ON THE DRAWINGS. THE SIZE AND LOCATION OF THE CONSTRUCTION AREAS SHALL NOT BE CHANGED WITHOUT PRIOR APPROVAL FROM THE OWNER.

18. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A MANNER SUCH THAT TRUCKS AND OTHER VEHICLES DO NOT CREATE A DIRT OR MUD NUISANCE ON THE ROADS IN AND AROUND THE PLANT SITE. THE CONTRACTOR SHALL GRADE AND SPREAD TEMPORARY ROCK OR BASE MATERIAL AS REQUIRED TO MAINTAIN ACCEPTABLE ROADS AND WORK AREA AT NO ADDITIONAL COST TO THE OWNER.

19. PROVIDE DUST CONTROL PER SPECIFICATION SECTION 01 50 00 "TEMPORARY FACILITIES AND CONTROLS."

20. CONTRACTOR SHALL NOT OPERATE ANY EXISTING VALVES DURING CONSTRUCTION. ALL EXISTING VALVE OPERATIONS SHALL BE COORDINATED WITH AND PERFORMED BY THE OWNER.

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817.806.1700 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

107 S. Main Street,
Aubrey, TX 76227

AUBREY TEXAS

CITY OF AUBREY, TEXAS
HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

GENERAL
ABBREVIATIONS AND GENERAL NOTES

STATE OF TEXAS
MATTHEW L. KUYKENDALL
127451
LICENSED
PROFESSIONAL ENGINEER
8/20/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED A. HIBBARD
DRAWN C. READ
CHECKED M. KUYKENDALL
REVIEWED A. TUCKER

Seq.

Dwg. No. G-003

0798-008-01

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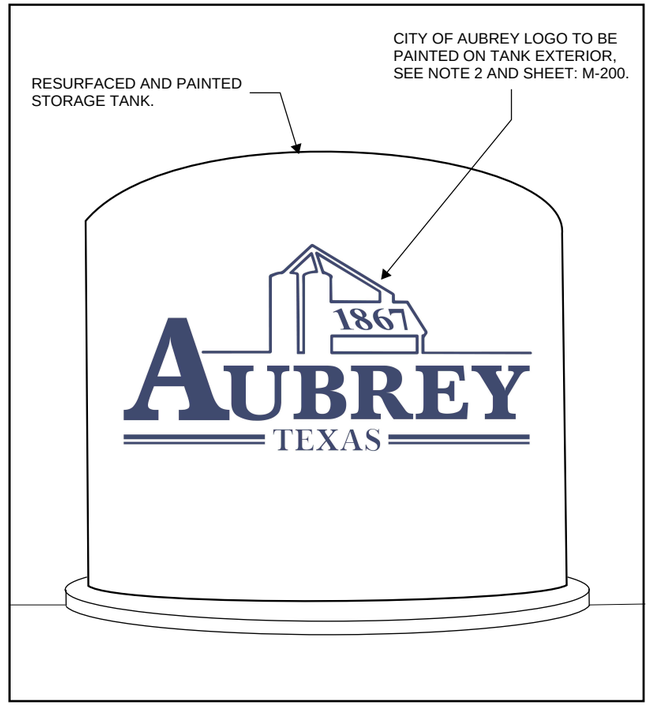
10 5 0 10 20

HORIZ. SCALE : 1" = 10'

N

NOTE:

1. REFER TO SHEET G-002 FOR ADDITIONAL NOTES.
2. LOGO IMAGES SHOWN FOR REFERENCE ONLY. CONTRACTOR TO VERIFY DESIGN, COLOR, SIZE, AND POSITION OF ONE (1) CITY OF AUBREY LOGO WITH OWNER. LOGO TO BE PAINTED ON HILL ST. TANK EXTERIOR.



HILL ST. TANK EXTERIOR LOGO DETAIL A

NOT TO SCALE

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817.806.1700 | TBPE REGISTERED FIRM NUMBER F-13

NO.	DATE	REVISION	BY

107 S. Main Street,
Aubrey, TX 76227

AUBREY TEXAS

CITY OF AUBREY, TEXAS
HILL ST. AND 428 GROUND STORAGE TANK MAINTENANCE

MECHANICAL
HILL ST. GROUND STORAGE TANK PLAN AND SECTION

STATE OF TEXAS
MATTHEW L. KUYKENDALL
127451
LICENSED PROFESSIONAL ENGINEER
4/20/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

DESIGNED A. HIBBARD
DRAWN C. READ
CHECKED M. KUYKENDALL
REVIEWED A. TUCKER

Seq.

Dwg. No. M-100

0798-008-01

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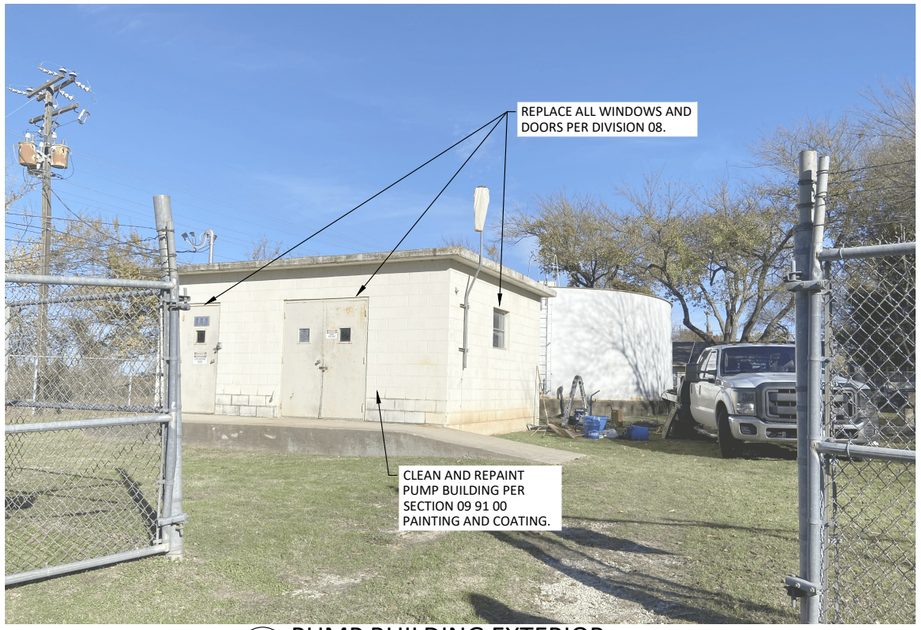
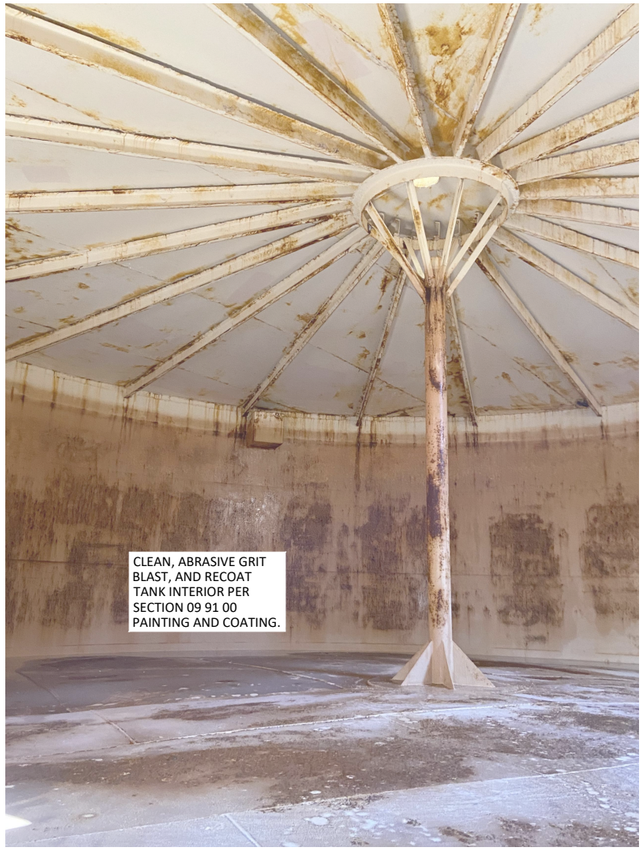
1 M-101 TANK EXTERIOR SECTION VIEW
NTS



2 M-101 PUMP BUILDING EXTERIOR
NTS

NOTES:

1. REFER TO SHEET M-100 FOR ADDITIONAL NOTES.
2. TANK INTERIOR IS TO BE INSPECTED FOLLOWING ABRASIVE GRIST BLASTING. IF, UPON INSPECTION, ROOF SUPPORT BRACES ARE FOUND TO BE DAMAGED, CONTRACTOR SHALL REPLACE IN-KIND. RESURFACE AND COAT NEW AND/OR UNDAMAGED ROOF BRACES ACCORDING TO SECTION 09 91 00 PAINTING AND COATING.



3 M-101 TANK INTERIOR SECTION VIEW
NTS

4 M-101 TANK INTERIOR SECTION VIEW 2
NTS

5 M-101 SAFETY GRATE AT WATER OUTLET
NTS

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NO.	DATE	REVISION	BY

107 S. Main Street,
Aubrey, TX 76227

CITY OF AUBREY, TEXAS
HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

MECHANICAL
HILL ST. GROUND STORAGE TANK SECTIONS

STATE OF TEXAS
MATTHEW L. KUYKENDALL
127451
LICENSED
PROFESSIONAL ENGINEER
4/20/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

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DRAWN C. READ
CHECKED M. KUYKENDALL
REVIEWED A. TUCKER

Seq.

Dwg. No. M-101

0798-008-01

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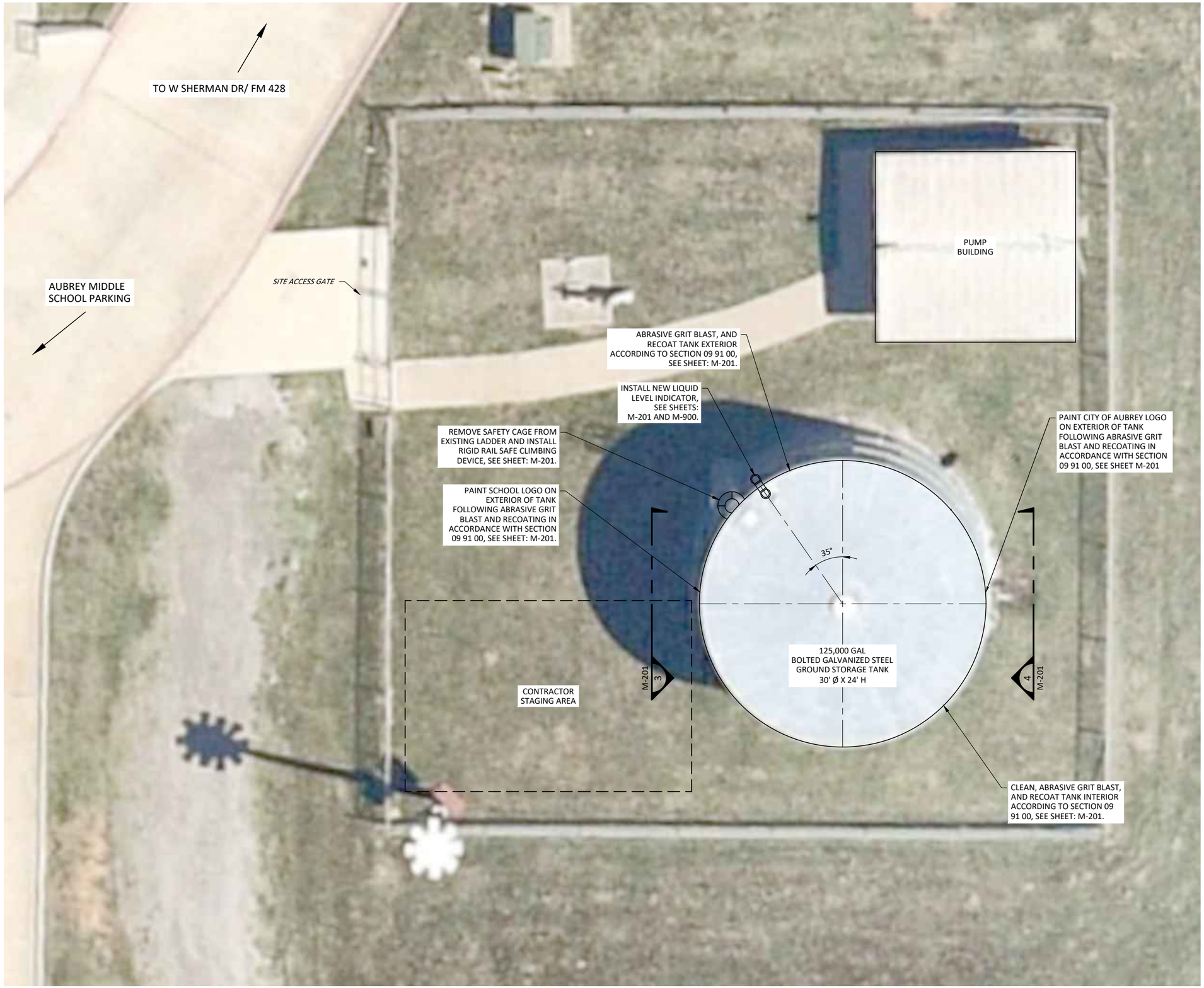

5 0 5 10
HORIZ. SCALE : 1" = 5'

NOTE:

1. REFER TO SHEET G-002 FOR ADDITIONAL NOTES.

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Aubrey, TX 76227

CITY OF AUBREY, TEXAS
HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

MECHANICAL
428 GROUND STORAGE TANK PLAN

STATE OF TEXAS
MATTHEW L. KUYKENDALL
127451
LICENSED
PROFESSIONAL ENGINEER
4/20/2025

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0798-008-01

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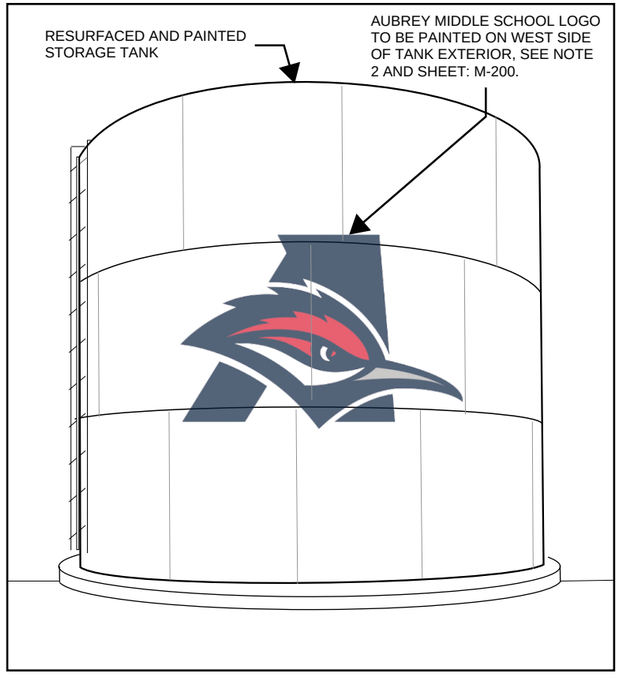
1 / 201 TANK EXTERIOR SECTION VIEW

NTS

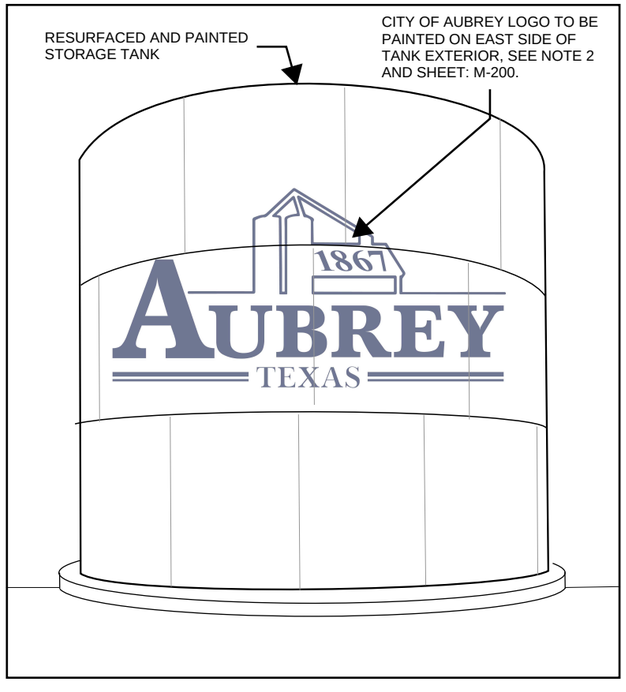


2 / M-201 TANK EXTERIOR LOGO DETAIL 1

NTS

3 / M-100 TANK EXTERIOR SECTION VIEW 2

NTS



4 / M-201 TANK EXTERIOR LOGO DETAIL 2

NTS

NOTES:

1. REFER TO SHEET M-200 FOR ADDITIONAL NOTES.
2. LOGO IMAGES SHOWN FOR REFERENCE ONLY. CONTRACTOR TO VERIFY DESIGN, COLOR, SIZE, AND POSITION OF ONE (1) AUBREY MIDDLE SCHOOL LOGO AND ONE (1) CITY OF AUBREY LOGO WITH OWNER. LOGOS TO BE PAINTED ON EXTERIOR OF 428 TANK.
3. CONTRACTOR TO INSTALL REVERSE LEVEL FLOAT GAUGE SO THAT LEVEL IS LEGIBLE FROM ACCESS ROAD TO PARKING LOT.
4. HIGH STRENGTH ALUMINUM, RIGID RAIL SAFE CLIMBING DEVICE SHALL BE PROVIDED. RAIL SHALL BE CENTER MOUNTED AND EXTEND FROM 3 FT. ABOVE THE LADDER BOTTOM TO THE TOP OF THE LADDER SECTION. MOUNTING BRACKETS, FASTENERS, AND SPLICE BARS SHALL BE PROVIDED AS REQUIRED FOR A RIGID INSTALLATION. THREE TROLLEYS WITH SNAP HOOKS SHALL BE PROVIDED THAT ARE DESIGNED TO BE OPERATED WITH THE ALUMINUM RAIL. A SAFETY BODY HARNESS WITH FRONT AND SIDE RINGS AND A DUAL LEG ELASTIC PACK STYLER SHOCK ABSORBING LANYARD (2 1/2" SNAP) SHALL BE SUPPLIED FOR SUCH TROLLEY, SIZES TO BE DETERMINED BY OWNER. A CAUTION SIGN SHALL BE PROVIDED AT THE LOWEST POINT OF ACCESS TO THE LADDER REQUIRING SAFE CLIMBING DEVICES. THE SIGN SHALL READ "CAUTION - SAFETY EQUIPMENT REQUIRED WHEN CLIMBING LADDER". THE SIGN SHALL BE SECURED TO THE WALL. FRENCHCREEK PRODUCTION, INC. SAFETY CLIMBING DEVICE OR APPROVED EQUAL.

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Aubrey, TX 76227

AUBREY TEXAS

CITY OF AUBREY, TEXAS
HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

MECHANICAL
428 GROUND STORAGE TANK
SECTIONS AND LOGO DETAILS

STATE OF TEXAS
MATTHEW L. KUYKENDALL
127451
LICENSED
PROFESSIONAL ENGINEER
4/14/2025

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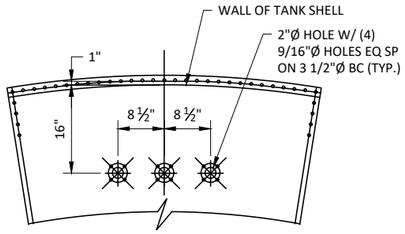
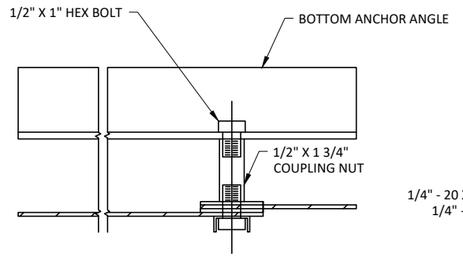
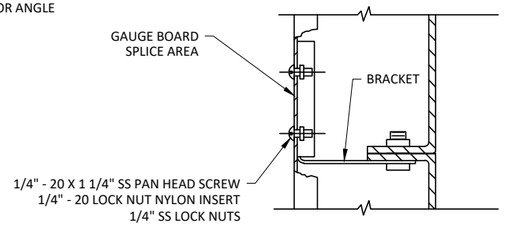


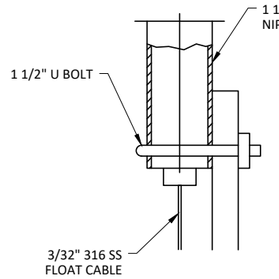
12 GA. (0.097" MIN.)
DECK SHEET W/ LAYOUT OF
LIQUID LEVEL INDICATOR HOLES



DETAIL A



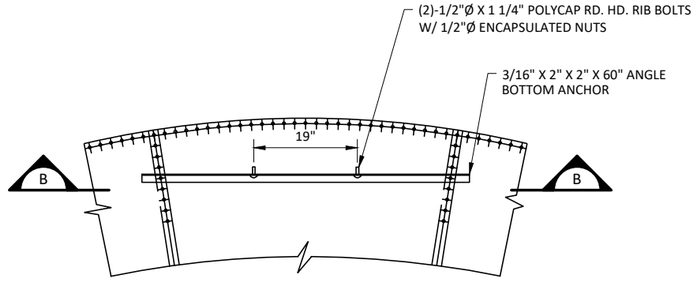
DETAIL B



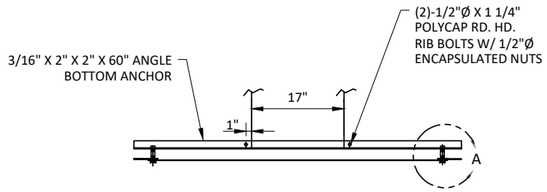
DETAIL C

NOTES:

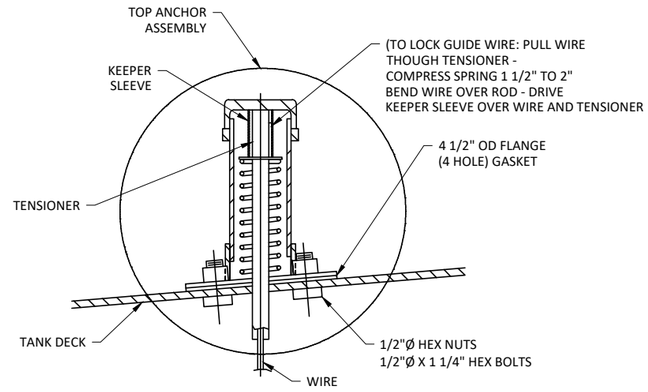
1. REFER TO SHEET G-003 FOR ADDITIONAL NOTES.
2. REFER TO MANUFACTURER DRAWINGS FOR TANK ASSEMBLY.



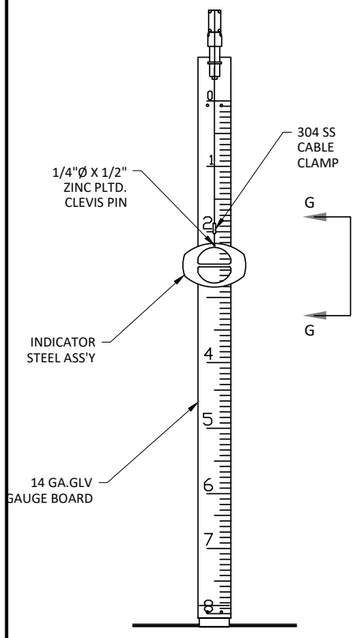
BOTTOM VIEW W/ ANCHOR ANGLE



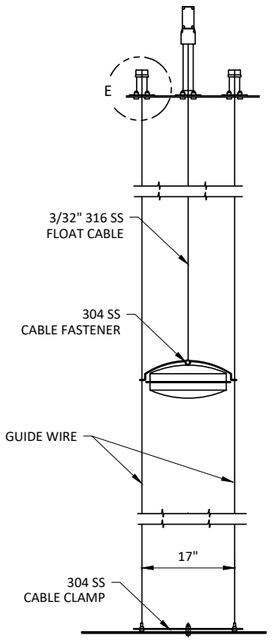
SECTION B-B



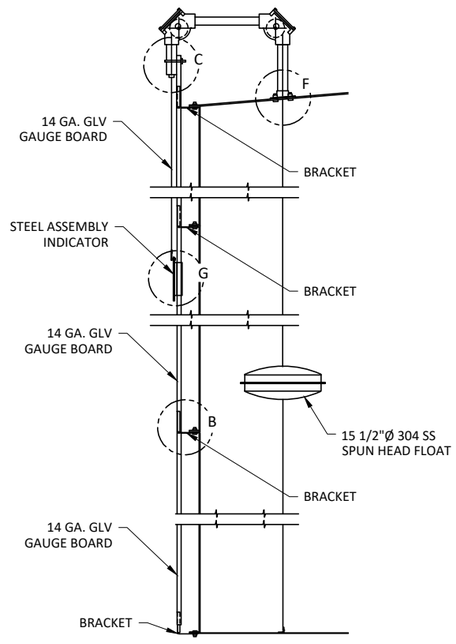
DETAIL E



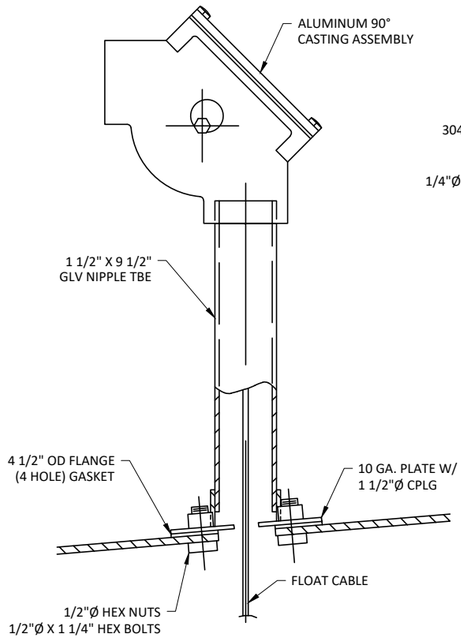
FRONT VIEW



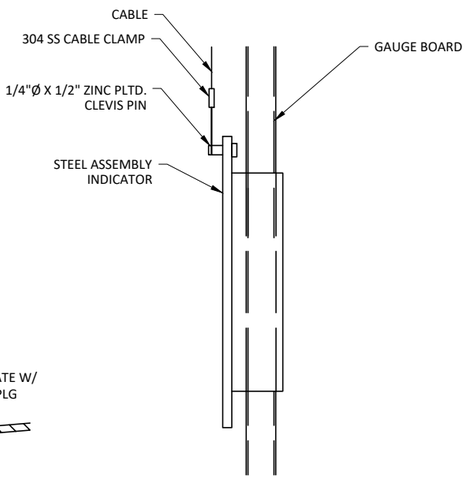
INSIDE VIEW 24'
HIGH TANK



SECTION VIEW
24' HIGH TANK



DETAIL F



DETAIL G

1 M-900 LIQUID LEVEL INDICATOR DETAIL

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107 S. Main Street,
Aubrey, TX 76227

AUBREY TEXAS

CITY OF AUBREY, TEXAS
HILL ST. AND 428 GROUND STORAGE TANKS MAINTENANCE

MECHANICAL
LIQUID LEVEL INDICATOR DETAILS

STATE OF TEXAS
MATTHEW L. KUYKENDALL
127451
LICENSED
PROFESSIONAL ENGINEER
4/14/2025

IF THIS BAR DOES NOT MEASURE ONE INCH, DRAWING IS NOT TO LABELED SCALE

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DRAWN C. READ
CHECKED M. KUYKENDALL
REVIEWED A. TUCKER

Seq.

Dwg. No. M-900

0798-008-01

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City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Consideration and action on a Professional Services Agreement with CSL not to exceed $70,000 for an MDD Hotel Product Development and Amateur Sports Facility Feasibility Study, and authorize the City Manager to execute the agreement,

Staff Contact
Christine Gossett, MDD Executive Director
cgossett@aubreytx.gov
940-440-9343

Summary
The Aubrey MDD board has prioritized several goals from the Aubrey Economic Development Strategic Plan and Goal 5 in the plan is to "Expand tourism in Aubrey." The first objective of Goal 5 is to "Leverage the existing tourism economy in Aubrey to expand local and non-local tourist business." It was determined that an analysis/feasibility study of the hospitality and sports market was needed to determine market demand and capacity for a hotel and an indoor amateur sports facility.

The following are summaries from the CSL proposal for the feasibility studies scope of services:

1. The study of a potential new Hotel Product Development is designed to evaluate market demand, supportable development and program, cost and operating performance, asset valuation, estimated economic impacts, and partnership opportunities associated with one or more potential new Hotel projects in Aubrey. This study would include a detailed analysis of key supply and demand and a current understanding of revenue and expense of similar products in markets comparable to Aubrey to assist in forecasting income potential for Hotel projects here.

2. The study and analysis for a potential new Indoor Amateur Sports Facility product component will include a multi-faceted, market-based approach that focuses on the specific needs and characteristics of existing and potential new youth and adult sports and recreation user groups and market segments, both from a local and non-local perspective. The study would also take the outdoor field complex being developed into consideration, including opportunities associated with co-location, cross-usage, partnerships and collaboration with a potential new Indoor Amateur Sports Facility.

The results of these studies will provide the MDD with necessary information and analyses to make informed decisions regarding hotel product and amateur sports facility development and related strategic planning.

Financial Summary
The professional services agreement would not exceed $70,000 for a combined study. If studies are done separately, it would increase the cost per study.

Staff Recommended Action
Approve

Staff Recommended Motion
Motion to (approve/table/deny) the professional services agreement

PROPOSAL FOR FEASIBILITY STUDY & ADVISORY SERVICES ASSOCIATED WITH A NEW INDOOR AMATEUR SPORTS COMPLEX & HOTEL PRODUCT DEVELOPMENT IN AUBREY, TEXAS

JANUARY 8, 2026

CSL | LEGENDS GLOBAL

CSL FRISCO OFFICE
One Cowboys Way, Suite 325
Frisco, TX 75034
www.cslintl.com

CSL MINNEAPOLIS OFFICE
120 South 6th Street, Suite 1200
Minneapolis, MN 55402
612.294.2000

January 8, 2026

Ms. Christine Gossett
Director, Municipal Development District
City of Aubrey
135 S. Main Street
Aubrey, Texas 76227

Dear Ms. Gossett:

Conventions, Sports & Leisure International (CSL) is pleased to submit our proposal to conduct a Feasibility Study of a New Indoor Amateur Sports Facility and Hotel Product Development in Aubrey, Texas, as well as post-study advisory services that we could provide to assist with project implementation. The results of this study will assist the City of Aubrey (City) and other community stakeholders assess new facility market demand and opportunities, supportable facility concepts and programs, development costs, operating performance and economic impact projections, and funding and partnership opportunities associated with both a potential new Indoor Amateur Sports Facility and new hotel product development initiatives.

CSL is a wholly-owned subsidiary of Legends, with offices in Frisco, Texas; Minneapolis, Minnesota; and Chicago, Illinois. The professional resources at CSL include over 250 years of combined industry experience and a large staff of highly-trained consultants. Our professionals have conducted more than 2,500 market, feasibility and strategic planning studies for sports/event facilities, as well as tourism, hospitality and destination projects throughout North America. In addition to more than 100 feasibility study engagements in markets of all sizes throughout Texas, CSL has conducted hundreds of studies and advisory engagements involving indoor amateur sports facility and hotel facility development projects throughout the country over the past decade. Additionally, CSL has extensive study and public/private partnership (P3) advisory experience involving hotels, amateur sports facilities, mixed-use districts, conference/meeting facilities, entertainment venues and other such facility assets.

Each market is unique, and there is no substitute for the extensive research that is necessary to ensure that decision making during the various stages of project development accurately reflect these distinctive characteristics. More so than any other firm performing these types of studies, CSL conducts more direct outreach to competitive and comparable venues and current and/or potential new users of sports, event and hospitality facilities in your market. This research-based approach not only ensures that the findings and recommendations reflect the unique conditions of your individual project, it also provides a comprehensive understanding of how these findings and recommendations were reached.

The objectivity and value that CSL brings to each project is highlighted by the large number of clients who have retained our firm for multiple engagements over the years. Very simply, no other firm has the overall research capabilities, relevant event facility industry planning experience, detailed study approach, understanding of the national and regional amateur sports and hospitality marketplace that we offer.

The contents of this proposal highlight the extensive experience of the professionals who would be assigned to this project and the proposed study methods designed to provide you with the analysis needed for key decision-making. Please feel free to contact me at bkrueger@cslintl.com should you have any questions or require any additional information. We greatly appreciate your consideration and would greatly look forward to an opportunity to lead this important study effort in Aubrey.

Sincerely,

Bill Krueger
Senior Vice President
CSL International

TABLE OF CONTENTS

1 FIRM OVERVIEW & EXPERIENCE 4

2 PROFESSIONAL RESUMES 42

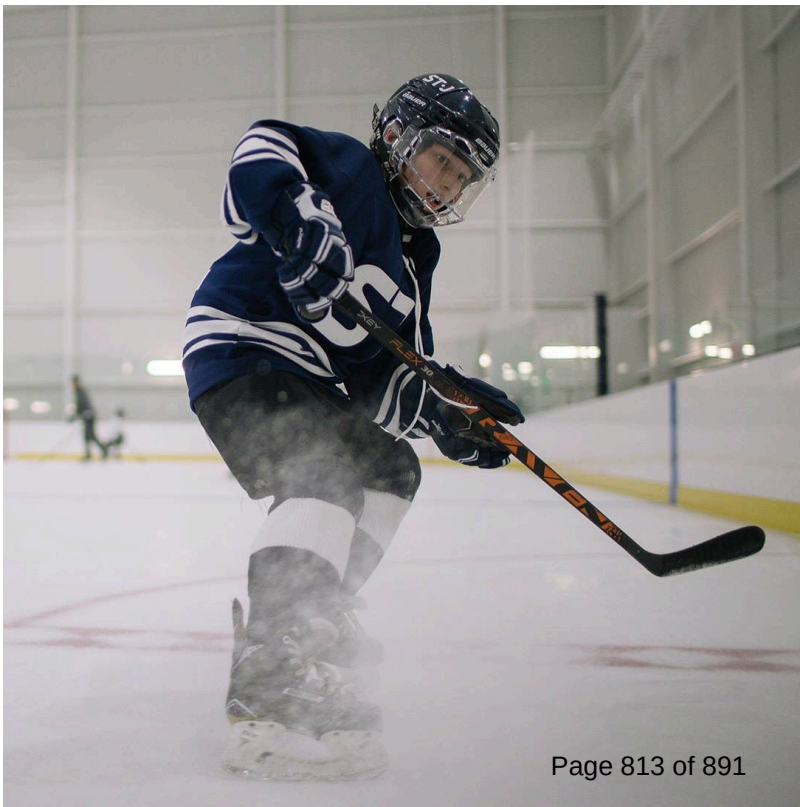
3 PROPOSED SCOPE OF SERVICES 46

4 PROJECT REFERENCES 58

5 PROPOSED FEES & TIMING 60

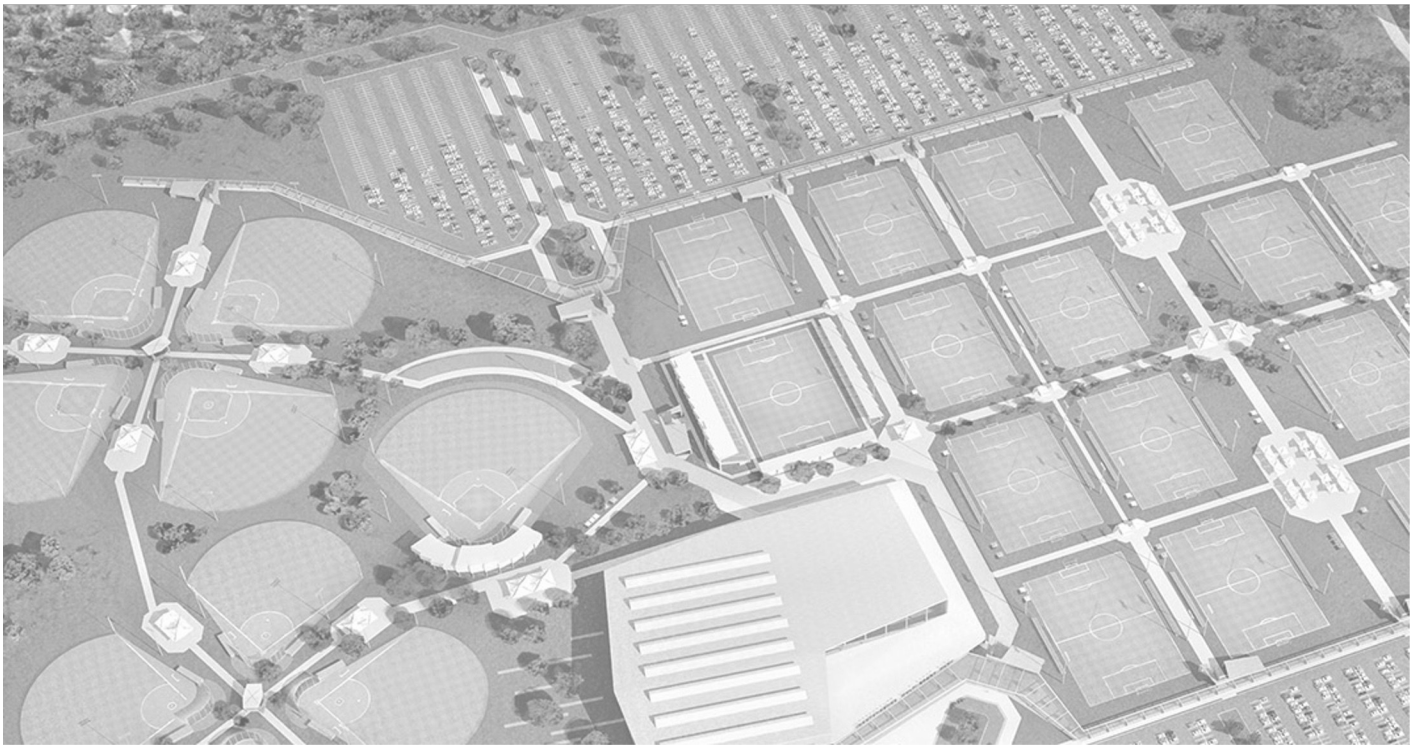
CSL | LEGENDS GLOBAL

1 FIRM OVERVIEW & EXPERIENCE



CSL | LEGENDS GLOBAL

1 FIRM OVERVIEW & EXPERIENCE



THE LEADING ADVISORY AND PLANNING FIRM

SPECIALIZING IN PROVIDING CONSULTING SERVICES TO THE SPORTS, ENTERTAINMENT, CONVENTION, & HOSPITALITY INDUSTRIES

Conventions, Sports & Leisure International (CSL) was established for the specific purpose of providing a source of focused research and expertise in the sports, convention, hospitality, tourism, entertainment and leisure industries. Members of our firm have been providing services to these specialized industries since the mid-1990's and have been involved in over 2,000 engagements. We assist our clients from the earliest stages of project planning, ensuring that all decisions are informed ones. Our consultants provide in-depth information, creative solutions to underlying issues, a thorough analysis of financial implications, and various measurements of risk and return surrounding alternative courses of action.

CSL has built its reputation on meeting client needs by delivering quality services that have credibility in the marketplace. Our firm is able to provide these services by drawing upon the years of experience of its professional staff. Being consistently involved in many major transactions allows our professionals to obtain knowledge of both tangible and intangible components of completed transactions, the reasons for failed efforts, and changes in the marketplace affecting revenue streams for a variety of sports and event facilities.

Our project team has extensive experience in providing assistance for a variety of municipalities, teams, facilities and entities in the sports, convention, hospitality, tourism, entertainment and leisure industries. Collectively, with over 200 years of specific consulting experience, no other competing firm has the depth or breadth of experience to match CSL. This level of broad and extensive experience provides CSL with a platform from which to assist our clients from a base of working knowledge of over 500 municipalities. From the largest markets in the country to some of the smallest, the diversity of our experience provides us with a broad and comprehensive perspective to help guide our clients toward their goals of growing tourism, economic activity and enhancing the quality of life for their residents.

1 FIRM OVERVIEW & EXPERIENCE

MARKET ANALYSIS

FINANCIAL ANALYSIS

ECONOMIC IMPACTS

STRATEGIC PLANNING

ADVISORY & IMPLEMENTATION

In nearly all of our projects, **MARKET DEMAND** forms the basis of the evaluation of a facility project, development initiative, or strategic planning exercise. Without a clear and accurate understanding of demand potential unique to a specific market and project, all later analysis of programmatic, financial, economic and implementation issues may be misdirected. As such, we utilize the most comprehensive set of research and analysis tools and techniques in the industry to comprehensively evaluate and estimate the unique market demand and potential for each project. Our methods have been employed and refined through hundreds of diverse projects over 30+ years.

Building on market conclusions, **FINANCIAL** and **ECONOMIC** issues are often central to the consideration of facility development, performance enhancement, and economic development projects. Our extensive database of comparable projects collected over hundreds of engagements is a critical asset during our analysis of project financial and economic issues. Being consistently involved in many projects and strategic planning efforts throughout North America allows our professionals to obtain knowledge of both tangible and intangible components of successful projects/transactions, the reasons for failed efforts, and changes in the marketplace affecting financial and economic performance.

IMPLEMENTATION is key to any successful project. Our professionals bring a wealth of industry-specific experience to every one of our engagements, delivering objective answers, creative solutions and focused recommendations to complex projects. We provide our clients with the detailed information they need to make informed decisions regarding project implementation.

1 FIRM OVERVIEW & EXPERIENCE

The following provides a brief summary of the services that CSL provides with regard to feasibility planning:

MARKET FEASIBILITY
Estimate probable market demand for arena, sports, entertainment, convention, community, meeting, hospitality and other event facilities projects and identify appropriate market(s) in which to compete.

DESTINATION PLANNING
Considering conditions beyond a facility or complex, focusing on how to generate visitation by developing attraction, hotel, arts/cultural, outdoor, historic assets, festivals, hospitality districts, walkability, festivals and other assets. Our destination planning often goes hand in hand with our venue analysis, helping to create a full picture of the opportunities to increase destination visitation and improve quality of life.

STRATEGIC PROJECT PLANNING
Establish the framework for the initial planning phases of a project and design an action plan to bring a project from planning to successful operation.

ECONOMIC IMPACT ANALYSIS
Provide an estimate of the quantitative and qualitative short and long-term economic and fiscal impacts of construction and operations of a project or entity on the local area.

FINANCIAL ANALYSIS
Develop a financial model based upon estimated levels of utilization and patron spending that will reflect important variables that will impact the financial operations of multipurpose event facilities, complexes, and entities.

PREFERENTIAL AMENITIES ANALYSIS
Assist in the evaluation, market positioning, pricing, quantity, target markets and successful marketing of preferential amenities. Such amenities include event space, registration/lobby space, hospitality and food service operations, technological and other facility/complex service offerings and other related concepts.

FACILITY FUNDING ANALYSIS
Identify funding alternatives that could be available to support various initiatives and to develop a strategic funding plan. This analysis can also be used to initiate the process of identifying prospective interest in all components of the financing plan and to evaluate the level of private or public sector funding that may be necessary.

FACILITY DESIGN CRITERIA
Assist in defining optimal size and configuration criteria for varying multipurpose event facilities within a given complex and market.

LITIGATION ASSISTANCE
Assist parties in litigation regarding economic or market issues related to varying multipurpose event and entertainment facility industries.

NEGOTIATION ASSISTANCE
Assist in reaching negotiated development, relocation, lease and management agreements with a variety of parties, including facility management, concessionaire and other such parties.

STRATEGIC PLAN DEVELOPMENT AND IMPLEMENTATION
Assist in the development and implementation of a strategic business plan. This includes the consideration of the organization of the development, construction, operational and legal teams. In addition, this step will assist in developing the appropriate pricing and inventories for event space, establishing a marketing plan, and selecting various facility contractors (i.e., concessionaires, media, etc.).

VALUATION ANALYSIS
Develop exposure-based calculators of the fair market value of a property, relying on a variety of both quantitative (on-site visibility, broadcast exposure, paid and earned media) and qualitative (property prestige, track record with sponsors loyalty of audience and degree of sponsor protection) factors.

WHO WE ARE

Founded in 2008 as a joint venture between two of the most iconic brands in the world, the Dallas Cowboys and New York Yankees, Legends Global has grown organically and through acquisition from a hospitality business to a holistic, industry-leading service provider working with the most innovative brands in the live experiences industry.

In 2011, Legends Global acquired Conventions, Sports & Leisure International, LLC (CSL), the largest sports and entertainment venue market study and financial feasibility consulting firm in the United States. CSL has led and been involved with more than 2,000 studies and advisory engagements for public and private clients over three decades.

In 2024, Legends Global and ASM Global, the world's largest private event facility management company, joined forces to create the world's preeminent premium live events company dedicated to delivering exceptional fan and guest experiences globally.

Together, the companies provide a data-driven, customizable solution across all areas of venue operations and revenue generation for many of the world's most iconic brands and venues in the conventions, attractions, multipurpose event, sports, entertainment and leisure industries.

As your partner, our purpose is your success. Our white-label approach puts the spotlight on your business while we work behind the scenes to execute your vision.

With all the services you need now under one umbrella, we deliver results that are hard to match. Simply put, we build it, sell it, monetize it, and manage it. No stitching together services or dealing with complicated logistics.

With decades of experience and a trusted reputation, leading organizations, brands, and venues rely on our teams to tackle their toughest problems. Our customized, end-to-end solutions will strengthen your business and its role as an economic driver and community pillar.

We're honored that clients continue to trust us to achieve their vision, increase monetization, and enhance the experience of fans and guests.

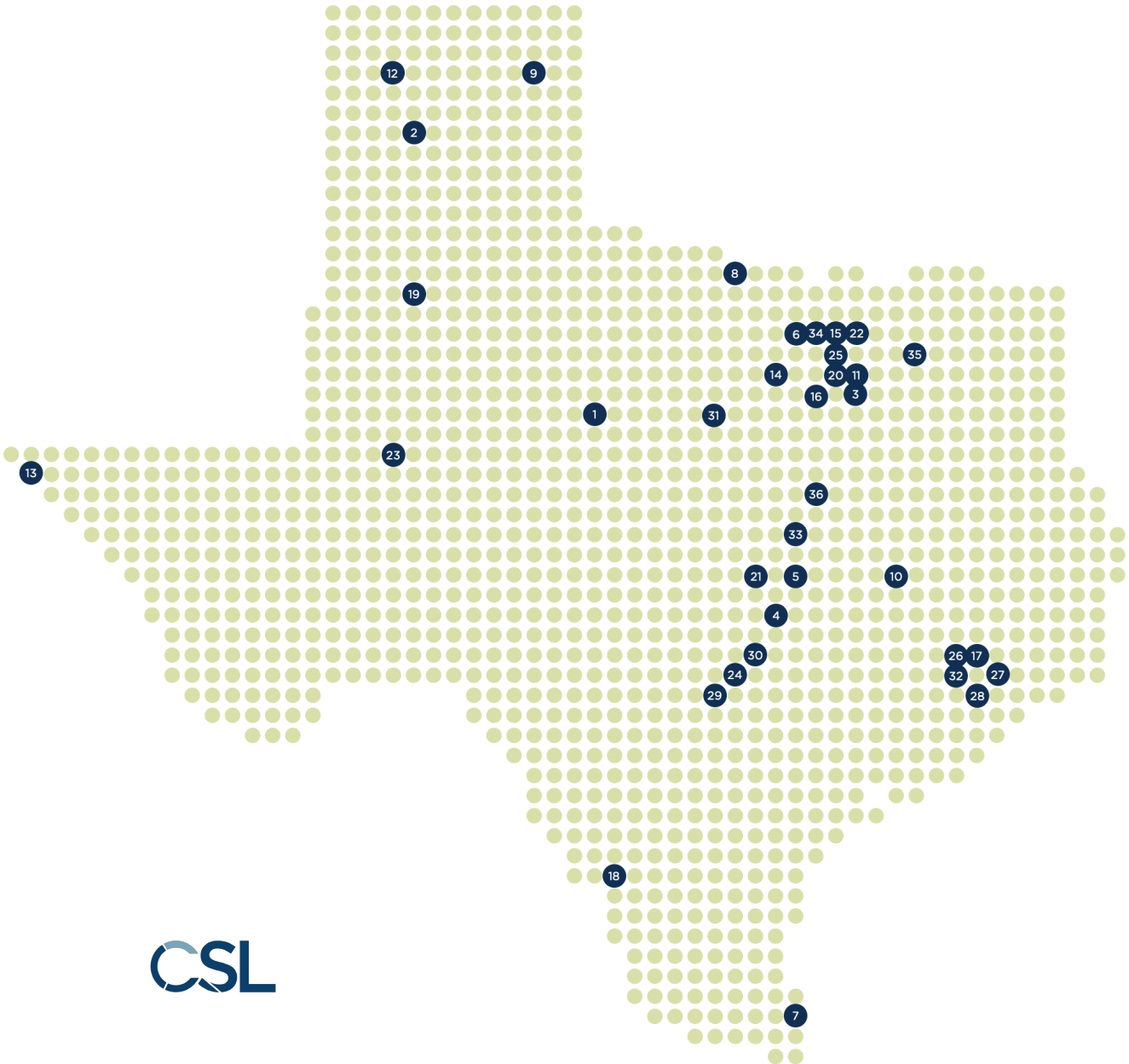
OUR SOLUTIONS

At Legends Global, we provide tailored, data-driven solutions that cover every aspect of your business.

- FEASIBILITY STUDIES (CSL)
- PROJECT DEVELOPMENT
- PREMIUM TICKETING
- PARTNERSHIPS
- VENUE MANAGEMENT
- CONTENT PROGRAMMING & BOOKING
- HOSPITALITY
- OMNICHANNEL MERCHANDISE

TEXAS PROJECT EXPERIENCE (CSL)

CSL's extensive breadth of study, planning and advisory experience at the national level is complemented by a strong understanding of various in-state markets through a variety of amateur sports and hotel facility studies and advisory engagements over the past 30 years within Texas, in addition to similar planning work with other types of sports, hospitality, event and entertainment facilities and projects. Specifically, CSL has conducted and advised on 100+ individual feasibility studies and advisory projects concerning hotel, sports, convention center, and entertainment facility projects throughout Texas over the past 30 years. A sampling of these projects are indicated on the map below, with the individual referenced projects and host communities listed on the following page.



TEXAS PROJECT EXPERIENCE (CSL)

1 ABILENE
- Sports Complex Market & Financial Feasibility Study

2 AMARILLO
- Hodgetown Stadium Market & Financial Feasibility Study

3 ARLINGTON
- Arlington Destination Plan
- Arlington Hospitality District Plan
- Globe Life Field Market Demand Analysis

4 AUSTIN
- Convention Center Expansion Feasibility Study
- Darryl K. Royal-Texas Memorial Stadium End Zone Expansion Assessment

5 BELTON
- Expanded Bell County Expo Center Study

6 BRIDGEPORT
- New Multipurpose Arena & Event Center

7 BROWNSVILLE / MCALLEN
- New Brownsville Arena Market & Financial Feasibility Study
- McAllen Convention Center Feasibility Study

8 BURKBURNETT
- Sports Complex Market & Financial Feasibility Study

9 CANADIAN
- Equine Arena Market & Financial Feasibility Study

10 COLLEGE STATION
- 12th Man Foundation Benchmarking Analysis
- Blue Bell Park Renovation Market Demand Analysis
- Kyle Field End Zone Suite Assessment
- Kyle Field Renovation Market Demand Analysis
- Reed Arena Renovation Market Demand Analysis

11 DALLAS
- American Airlines Center Renovation Market Demand Analysis
- Kay Bailey Hutchison Convention Ctr. Expansion Feasibility Study
- Moody Coliseum Seating and Funding Analysis
- Victory Park Economic Impact Study

12 DUMAS
- Fairgrounds and Expo Center Study

13 EL PASO
- Arena Feasibility Study
- New Entertainment Venue Market & Financial Feasibility Study

14 FORT WORTH
- Amon G. Carter Stadium Premium Seating Study
- Amon G. Carter Stadium Renovation Market Demand Analysis
- Dickies Arena Market & Financial Feasibility Study
- Fort Worth Convention Center Feasibility Study
- USL Stadium Market & Financial Feasibility Study
- Will Rogers Coliseum Renovation Study

15 FRISCO
- AT&T Stadium Economic Impact & Financing Analysis
- Brand Awareness Assessment
- Center for the Arts Funding Assessment
- Cowboys Club Market Demand Analysis
- Fieldhouse USA Naming Rights and Sponsorship Services
- Toyota Stadium Market Assessment

16 GRANBURY
- Conference Center Feasibility Study

17 HOUSTON
- George R. Brown Convention Center Study
- Houston Marathon Economic Impact Analysis
- NRG Arena Replacement Analysis
- NRG Center Expansion Feasibility Study
- NRG Stadium Renovation Assessment
- Robertson Stadium Premium Seating and Funding Analysis

18 LAREDO
- Conv. Center & Hotel Feasibility Study

19 LUBBOCK
- Jones AT&T Stadium Premium Seating Demand Study
- Jones AT&T Stadium End Zone Expansion Assessment
- Memorial Coliseum Renovation Study

20 MANSFIELD
- StarCenter Economic Impact Study

21 MARBLE FALLS
- Sports Complex Feasibility Study

22 MCKINNEY
- Sports Complex Feasibility Study

23 MIDLAND / ODESSA
- Convention Center Feasibility Study
- Performing Arts Center Feasibility Study
- Midland County Coliseum Economic Impact Analysis
- Strategic Downtown Hotel Needs Study

24 NEW BRAUNFELS
- Convention Center Feasibility Study
- Aquatic Center Feasibility Study

25 NORTHLAKE
- StarCenter Market & Financial Feasibility Study

26 PASADENA
- Arena & Convention Center Study

27 PEARLAND / STAFFORD
- New Pearland Event Center Feasibility Study
- New Pearland Full-Service Hotel & Conf. Ctr. Study
- Pearland Indoor Amateur Sports Feasibility Study
- Pearland Mixed-Use District Economic Impact Study
- Pearland Hotel & Sports Facility P3 Advisory
- Stafford Centre Expansion/Improvement Study

28 ROSENBERG
- Expanded Fort Bend County Fairgrounds Feasibility Study

29 SAN ANTONIO
- Alamodome Improvement Study
- Ballpark District Benchmarking Analysis
- Ballpark Economic Impact Analysis
- Boeing Center Feasibility Study
- Frost Bank Center Renovation Market Analysis
- Henry B. Gonzalez Convention Center Expansion
- New Music Venue Study
- Sunken Garden Theater Expansion Assessment

30 SEGUIN
- New Full-Service Hotel & Convention Center Feasibility Study

31 STEPHENVILLE
- New Focused-Service Hotel Feasibility Study

32 SUGAR LAND
- Constellation Field Market & Financial Feasibility Study
- Smart Financial Centre Market & Financial Analysis

33 TEMPLE
- New/Expanded Convention Center Feasibility Study

34 THE COLONY
- StarCenter Economic Impact Study

35 UNIVERSITY PARK
- Garry Webber End Zone Expansion Market Demand Analysis
- Moody Coliseum Market Analysis

36 WACO
- Extraco Events Center Expansion/Improvement Study

SAMPLE OF AMATEUR SPORTS FACILITY PROJECT EXPERIENCE

MARKET	FACILITY	Market Analysis	Financial Analysis	Economic Impact	Funding Analysis	P3 Advisory	Mgmt. Advisory
Abilene, Texas	Abilene Sports Complex Feasibility Study	◉	◉	◉	◉		
Albany, New York	Albany County Sports Complex Feasibility Study	◉	◉	◉			
Amsterdam, New York	Amsterdam Sports Complex Feasibility Study	◉	◉	◉			
Batavia, New York	Batavia Indoor Sports Complex Feasibility Study	◉	◉	◉	◉		
Boise, Idaho	Boise Aquatic Center Market Assessment & Peer Review	◉	◉	◉			
Boston, Massachusetts	New NWSL Training Complex Study & Projections	◉	◉	◉			
Bradley, Illinois	Bradley Sports and Tourism Asset Study	◉	◉	◉	◉	◉	
Burkburnett, Texas	Burkburnett Baseball Complex Feasibility Study	◉	◉	◉	◉		
Chandler, Arizona	Wild Horse Pass Baseball Complex Feasibility Study	◉	◉	◉	◉		
Chapel Hill, North Carolina	Chapel Hill Proposed New Sports Complexes Feasibility Study	◉	◉	◉			
Chico, California	Amateur Sports Facility Needs Assessment & Study	◉	◉	◉	◉		
Concord, North Carolina	Cabarrus County Sports Complex Feasibility Study	◉	◉	◉			
Covington, Kentucky	Northern Kentucky Amateur Sports Complex Feasibility Study	◉	◉	◉		◉	
Des Moines, Iowa	Cownie Soccer Park Expansion Feasibility & Master Plan	◉	◉	◉			
Elmhust, Illinois	Indoor Sports & Recreation Facilities Feasibility Study	◉	◉	◉	◉		
Eugene, Oregon	Eugene New Multi-use Sports Facilities Feasibility Study	◉	◉	◉	◉		
Evansville, Indiana	Evansville Sports Complex Planning Study	◉	◉	◉		◉	
Fairfax, Virginia	County Sports Tourism Facilities Study & Strategic Plan	◉	◉	◉	◉		◉
Fort Bend, Texas	Fort Bend County Multipurpose Facility Feasibility Study	◉	◉	◉			
Fort Smith, Arkansas	Fort Smith Indoor Amateur Sports Facility Feasibility Study	◉	◉	◉	◉	◉	◉
Fredericksburg, Virginia	University of Mary Washington Natatorium Feasibility Study	◉	◉	◉			
Fremont, California	Fremont Sports Complex Feasibility Study	◉	◉	◉			
Frisco, Texas	Fieldhouse USA Naming Rights & Sponsorship Marketing Advisory		◉				◉
Grand Rapids, Michigan	Grand Rapids Soccer Complex Feasibility Study & Strategic Plan	◉	◉	◉	◉		
Greenville, North Carolina	New Amateur Sports Complex Feasibility Study	◉	◉	◉			
Janesville, Wisconsin	Janesville Indoor Sports Complex Feasibility Study	◉	◉	◉	◉		
Kalamazoo, Michigan	Kalamazoo County Sports Tourism Facilities Feasibility Study	◉	◉	◉	◉		
Kansas City, Missouri	MCC Fieldhouse Feasibility Study	◉	◉	◉	◉		
Keene, New Hampshire	Keene Fieldhouse Feasibility Study	◉	◉	◉	◉		
Lone Tree, Colorado	Colorado Swim Center Feasibility Study & Financial Analysis	◉	◉	◉			
Loveland, Colorado	New Amateur Sports Complex Feasibility Study & Advisory	◉	◉	◉	◉	◉	
Louisville, Kentucky	Louisville Multipurpose Amateur Sports Complex Feasibility Study	◉	◉	◉	◉		
Madison, Wisconsin	Madison Sports Complex Market & Financial Feasibility Study	◉	◉	◉			
Marble Falls, Texas	Marble Falls Sports Complex Feasibility Study	◉	◉	◉	◉		
Mauston, Wisconsin	Juneau County Woodside Sports Complex Feasibility Study	◉	◉	◉	◉		
McKinney, Texas	Sports Complex Market, Financial & Economic Impact Study	◉	◉	◉	◉		
Mounds View, Minnesota	Mounds View Indoor Sports Complex Feasibility Study	◉	◉	◉	◉		
Muncie, Indiana	Delaware County Amateur Sports Complex Feasibility Study	◉	◉	◉	◉		
Muscatine, Iowa	Muscatine Amateur Sports Complex Feasibility Study	◉	◉	◉	◉		
Northern Michigan	Great Lakes Sports Commission Sports Facilities Strategic Plan	◉	◉	◉	◉	◉	
Olathe, Kansas	Olathe Soccer Complex Market and Economic Impact Study	◉		◉			
Osage Beach, Missouri	Lake of the Ozarks Sports Complex Feasibility Study	◉	◉	◉	◉		
Palm Beach Gardens, Florida	Palm Beach Gardens Spring Training Complex Feasibility Study	◉	◉	◉	◉		
Palm Springs, California	Palm Springs Sports Complex Feasibility Study	◉	◉	◉			
Pearland, Texas	Amateur Sports Complex Feasibility Study & Advisory	◉	◉	◉	◉	◉	◉
Pinehurst, North Carolina	Moore County Sports Complex Feasibility Study	◉	◉	◉			
Plainfield, Indiana	Indoor Amateur Sports Facility Feasibility Study	◉	◉	◉			
Racine, Wisconsin	Racine Proposed New Field Complex Feasibility Study	◉	◉	◉			
Rehoboth Beach, Delaware	Southern Delaware New Indoor Sports Complex Feasibility Study	◉	◉	◉			
Riverside, California	Riverside County Amateur Sports Complex Feasibility Study	◉	◉	◉	◉	◉	
Rochester, Minnesota	Rochester Redeveloped Sports Complex Feasibility Study	◉	◉	◉	◉		
Savannah, Georgia	Chatham County Indoor Sports Complex Feasibility Study	◉	◉	◉	◉		
Sioux Falls, South Dakota	Sioux Falls Recreation Complex Feasibility Study	◉	◉	◉	◉		
Spokane, Washington	Spokane Proposed New Sports Complexes Feasibility Study	◉	◉	◉	◉		
Syracuse, New York	County Outdoor Field Sports Complex Feasibility Study	◉	◉	◉			
Tacoma, Washington	Tacoma Rainiers Youth Training Complex	◉	◉	◉			
Traverse City, Michigan	Regional Amateur Sports Facilities Feasibility & Strategic Plan	◉	◉	◉		◉	
Valparaiso, Indiana	Valparaiso Amateur Sports Complex Feasibility Study	◉	◉	◉	◉		
Waukee, Iowa	Waukee Amateur Sports Complex Feasibility Study	◉	◉	◉	◉		
Williamsburg, Virginia	Williamsburg Potential Indoor Sports Complex Feasibility Study	◉	◉	◉	◉		

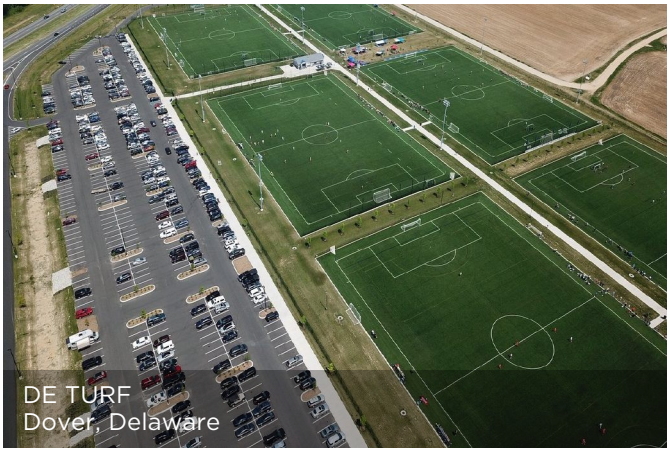
SAMPLE OF AMATEUR SPORTS & RECREATION FACILITIES THAT HAVE BEEN BUILT BASED ON CSL STUDIES / ADVISORY ENGAGEMENTS

- Campus Recreation and Wellness Center (Iowa City, IA) – opened July 2010
- Chappapeela Sports Park (Hammond, LA) – opened January 2013
- D1 Sports Training Facility (Madison, MS) – opened May 2013
- DE Turf Sports Complex (Frederica, DE) – opened Spring 2017
- Community First Champion Center (Grand Chute, WI) – opened Fall 2019
- Gradin Community Sports Park (Gresham, OR) – opened June 2009
- McKinney Soccer Complex at Craig Ranch (McKinney, TX) – opened spring 2005
- Overland Park Soccer Complex (Overland Park, KS) – opened September 2009
- Patriot Park North (Fairfax County, VA) – opened April 2023
- Rocky Top Sports World (Gatlinburg, TN) – opened July 2014
- Sports Pavilion Lawrence at Rock Chalk Park (Lawrence, KS) – opened October 2014
- The Fields at Seventeen Springs (Millbrook, AL) – opened 2022
- Toyota Soccer Center (Frisco, TX) – opened August 2005
- Valparaiso Aquatic Center (Valparaiso, IN) – opened December 2019
- Woodman's Sports & Convention Center (Janesville, WI) – opened September 2025
- Woodside Sports Complex (Mauston, WI) – opened June 2013

COMMUNITY FIRST CHAMPION CENTER
Grand Chute, Wisconsin

ROCKY TOP SPORTS WORLD
Gatlinburg, Tennessee

SPORTS PAVILION AT ROCK CHALK PARK
Lawrence, Kansas


DE TURF
Dover, Delaware

CSL HOTEL & CONVENTION FACILITY PROJECT EXPERIENCE

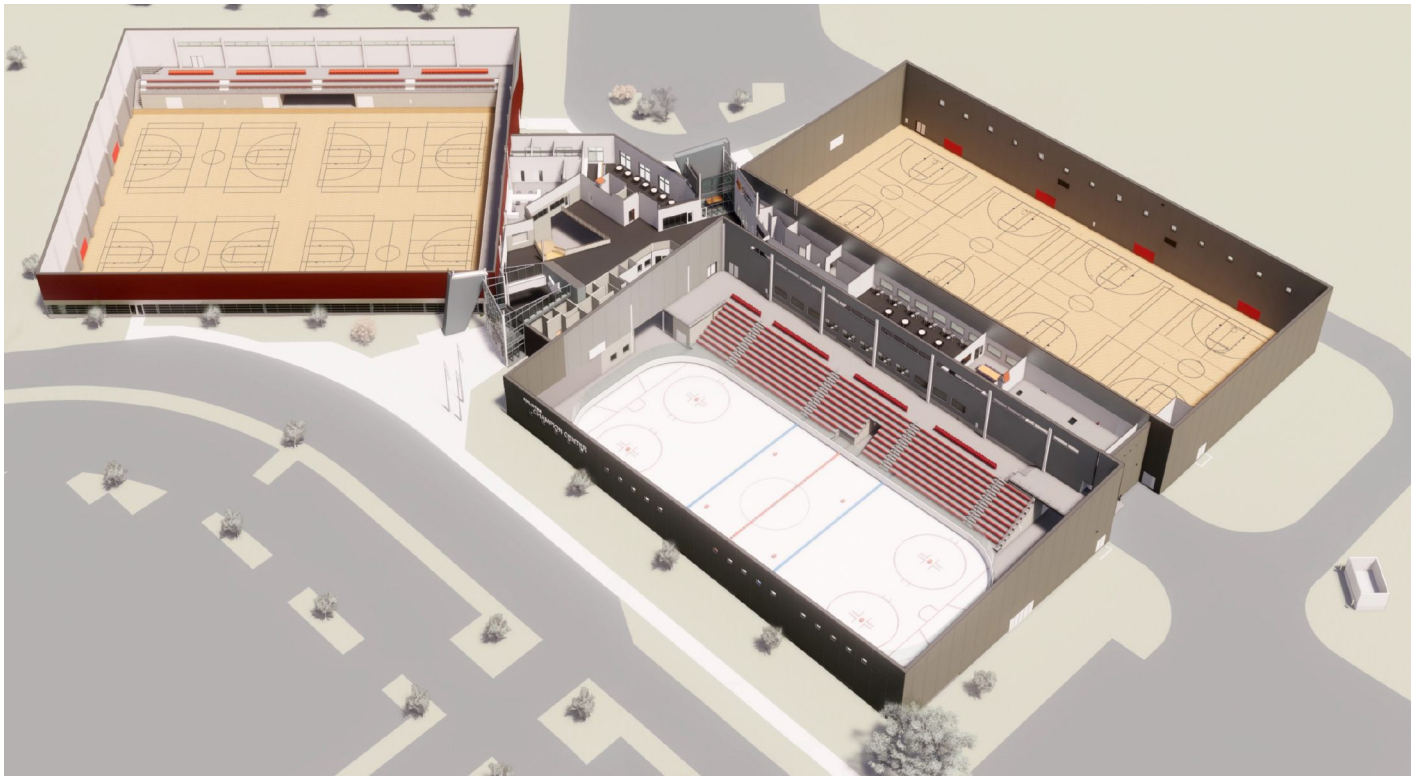
MARKET	FACILITY	Market Analysis	Financial Analysis	Economic Impact	Funding Analysis	P3 Advisory	Mgmt. Advisory
Ames, Iowa	New Headquarters Hotel & Convention Center	◉	◉	◉	◉	◉	
Anaheim, California	Expanded Anaheim Convention Center	◉	◉	◉	◉		
Ann Arbor, Michigan	New Convention Center & HQ Hotel	◉	◉	◉	◉	◉	
Appleton, Wisconsin	New Fox Cities Convention/Expo Center	◉	◉	◉	◉	◉	◉
Arlington, Virginia	New Convention Center	◉	◉	◉	◉		
Arvada, Colorado	Expanded Arvada Events Center	◉	◉	◉	◉		
Ashland, Kentucky	New Conference Center	◉	◉	◉			◉
Austin, Texas	Expanded Convention Center	◉	◉	◉	◉		
Baltimore, Maryland	Various Statewide Convention Facilities	◉	◉	◉	◉		
Bangor, Maine	New Convention Center	◉	◉	◉	◉		
Bartlesville, Oklahoma	New Convention/Civic Center	◉	◉	◉	◉		
Bellevue, Washington	Expanded Meydenbauer Center	◉	◉	◉	◉		
Belton, Texas	Expanded Bell County Expo Center	◉	◉	◉	◉		
Bemidji, Minnesota	Sandford Center & New HQ Hotel	◉	◉	◉	◉	◉	◉
Bentonville, Arkansas	New Convention/Civic Center	◉	◉	◉	◉		
Bettendorf, Iowa	New Convention/Event Center	◉	◉	◉	◉		
Biloxi, Mississippi	Expanded Mississippi Coast Convention Center	◉	◉	◉	◉		
Birch Run, Michigan	New Convention/Event Center	◉	◉	◉	◉		
Bismarck, North Dakota	Expanded Bismarck Civic Center & New Hotel	◉	◉	◉	◉	◉	
Boise, Idaho	Expanded Boise Centre on the Grove	◉	◉	◉	◉		
Boston, Massachusetts	Boston Convention & Exhibition Center	◉	◉	◉	◉		
Boulder, Colorado	New Conference Center	◉	◉	◉	◉		
Bradley, Illinois	New Convention & Event Facilities	◉	◉	◉	◉	◉	
Branson, Missouri	Branson Convention Center & Mixed Use	◉	◉	◉	◉		
Bridgeport, Texas	New Arena & Event Center	◉	◉	◉	◉		
Buena Park, California	New Convention Center	◉	◉	◉	◉		
Burlingame, California	New Conference Center	◉	◉	◉	◉		
Calgary, Alberta	Expanded Calgary Exhibition & Stampede	◉	◉	◉	◉		
Center Houston, Texas	Expanded George R. Brown Convention	◉	◉	◉	◉		
Chandler, Arizona	New Convention Center & Hotel	◉	◉	◉	◉	◉	
Charleston, West Virginia	Expanded Convention/Civic Center	◉	◉	◉	◉		
Chattanooga, Tennessee	Expanded Convention Center and District Study	◉	◉	◉	◉		◉
Cincinnati, Ohio	Expanded Duke Conv. Center & New HQ Hotel	◉	◉	◉	◉	◉	
Cleveland, Ohio	New/Expanded Cleveland Convention Center	◉	◉	◉	◉		
Covington, Kentucky	Expanded Northern Kentucky Conv. Center	◉	◉	◉	◉		
Denver, Colorado	Expanded Colorado Convention Center	◉	◉	◉	◉		
Denver, Colorado	New Convention HQ Hotel	◉	◉	◉	◉		
Denver, Colorado	Expanded National Western Complex	◉	◉	◉	◉		
Des Moines, Iowa	New/Expanded Conv. Center & Auditorium	◉	◉	◉	◉		
Dubuque, Iowa	Grand River Center	◉	◉	◉	◉		◉
Dubuque, Iowa	Expanded/Improved Five Flags Center	◉	◉	◉	◉	◉	◉
Dunn, North Carolina	New Convention/Civic Center	◉	◉	◉	◉		
Durango, Colorado	New Conference Center	◉	◉	◉	◉		
Eugene, Oregon	New Convention Center	◉	◉	◉	◉		
Evansville, Indiana	New Convention Center	◉	◉	◉	◉		
Fairbanks, Alaska	New Convention & Performing Arts Facilities	◉	◉	◉	◉		
Fort Lauderdale, Florida	Expanded Convention Center & New Hotel	◉	◉	◉	◉	◉	
Fort Wayne, Indiana	Expanded Grand Wayne Center	◉	◉	◉	◉		
Forth Worth, Texas	New/Expanded Convention & Event Facilities	◉	◉	◉	◉		
Gatlinburg, Tennessee	Expanded Gatlinburg Convention Center	◉	◉	◉	◉		
Granbury, Texas	New Conference Center	◉	◉	◉	◉		
Grand Junction, Colorado	Expanded Two Rivers Convention Center	◉	◉	◉	◉		
Grand Wayne, Indiana	Expanded Grand Wayne Convention Center	◉	◉	◉	◉		
Hammond, Louisiana	New Convention Center & HQ Hotel	◉	◉	◉	◉	◉	
Hartford, Connecticut	New/Expanded Convention Center	◉	◉	◉	◉		
Havre, Montana	Mew Multipurpose Event Center	◉	◉	◉	◉		

CSL HOTEL & CONVENTION FACILITY PROJECT EXPERIENCE (continued)

MARKET	FACILITY	Market Analysis	Financial Analysis	Economic Impact	Funding Analysis	P3 Advisory	Mgmt. Advisory
Helena, Montana	New Convention/Event Facilities	◉	◉	◉	◉		
Hendersonville, North Carolina	New Convention Center	◉	◉	◉	◉		
Hollywood Park, Texas	New Convention/Conference Center	◉	◉	◉	◉		
Honolulu, Hawaii	Hawaii Convention Center	◉	◉	◉	◉		
Jackson, Michigan	New Convention Center & Hotel	◉	◉	◉	◉		
Jackson, Mississippi	Expanded Convention Center	◉	◉	◉	◉		
Jacksonville, Florida	Expanded Prime Osborn Convention Center	◉	◉	◉	◉		
Joliet, Illinois	New Convention & Arena Facilities	◉	◉	◉	◉		
Kansas City, Missouri	Expanded Kansas City Convention Center	◉	◉	◉	◉		
Kansas City, Missouri	New Crown Center Convention Center & Hotel	◉	◉	◉	◉	◉	
Knoxville, Tennessee	Expanded Knoxville Convention Center	◉	◉	◉	◉		
La Crosse, Wisconsin	Expanded La Crosse Center	◉	◉	◉	◉		
Lake County, Indiana	New Lake County Convention Center	◉	◉	◉	◉		
Lancaster, Pennsylvania	New Lancaster Convention Center	◉	◉	◉	◉		
Lansing, Michigan	Expanded Lansing Center	◉	◉	◉	◉		
Laredo, Texas	New Convention Center & HQ Hotel	◉	◉	◉	◉	◉	
Las Vegas, Nevada	Expanded/Improved Cashman Center	◉	◉	◉	◉		
Las Vegas, Nevada	Expanded Las Vegas Convention Center	◉	◉	◉	◉		
Lawrence, Kansas	New Conference Center & Hotel	◉	◉	◉	◉		
Layton, Utah	Expanded Davis Conference Center	◉	◉	◉	◉		◉
Lincoln, Nebraska	New Convention Center & HQ Hotel	◉	◉	◉	◉		
Los Angeles, California	Expanded Los Angeles Convention Center	◉	◉	◉	◉		
Louisville, Kentucky	Expanded Convention Center	◉	◉	◉	◉		
Louisville, Kentucky	Expanded KY Fair & Exposition Center	◉	◉	◉	◉		
Loveland, Colorado	New Exhibition Center at The Ranch	◉	◉	◉	◉		
Lubbock, Texas	Expanded Lubbock Civic Center	◉	◉	◉	◉		
Madison, Wisconsin	Expanded Alliant Energy Center	◉	◉	◉	◉		
McAllen, Texas	New McAllen Convention Center	◉	◉	◉	◉		
Meadowlands, New Jersey	New Jersey Exhibition Center	◉	◉	◉	◉		
Memphis, Tennessee	Expanded Mid-South Fairgrounds	◉	◉	◉	◉		
Mexico City, Mexico	New Congress & Expo Center	◉	◉	◉	◉		
Miami, Florida	Expanded Coconut Grove Convention Center	◉	◉	◉	◉		
Miami, Florida	Expanded Knight Ctr./Miami Conv. Center	◉	◉	◉	◉		
Miami, Florida	Expanded Miami Beach Convention Center	◉	◉	◉	◉		◉
Midland, Texas	New Midland Convention Center	◉	◉	◉	◉		
Milwaukee, Wisconsin	Expanded MECCA /Wisconsin Center	◉	◉	◉	◉		
Milwaukee, Wisconsin	Improved Wisconsin Center District	◉	◉	◉	◉		
Minneapolis, Minnesota	Expanded Convention Center & New HQ Hotel	◉	◉	◉	◉	◉	
Minot, North Dakota	New Community Event Facilities	◉	◉	◉	◉		
Montgomery, Alabama	Expanded Montgomery Civic Center	◉	◉	◉	◉		
Moorhead, Minnesota	New Conference Center	◉	◉	◉	◉		
Muskegon, Michigan	Van Dyk Mortgage Convention Center	◉	◉	◉	◉		
Myrtle Beach, South Carolina	Expanded Myrtle Beach Convention Center	◉	◉	◉	◉		
Nashville, Tennessee	Nashville Convention Center	◉	◉	◉	◉		
Nashville, Tennessee	New Convention Headquarters Hotel	◉	◉	◉	◉		
New Bern, North Carolina	Expanded New Bern Convention Center	◉	◉	◉	◉		
New Iberia, Louisiana	New Hotel & Conference Center	◉	◉	◉	◉		
New Orleans, Louisiana	Expanded Morial Convention Center	◉	◉	◉	◉		
New York City, New York	Pier 92/94 Tradeshow Facility	◉	◉	◉	◉		
New York, New York	New Queens Convention Center & HQ Hotel	◉	◉	◉	◉		
New York, New York	Expanded Javits Convention Center	◉	◉	◉	◉		
Newark, New Jersey	New Tradeshow & Conv. Center	◉	◉	◉	◉		
Norfolk, Virginia	New Conference Center & Hotel	◉	◉	◉	◉		
Northampton, Massachusetts	Expanded Three County Fairgrounds	◉	◉	◉	◉		◉
Ocean City, Maryland	Expanded Roland E. Powell Convention Center	◉	◉	◉	◉		
Oklahoma City, Oklahoma	New Oklahoma City Convention Center	◉	◉	◉	◉		

CSL HOTEL & CONVENTION FACILITY PROJECT EXPERIENCE (continued)

MARKET	FACILITY	Market Analysis	Financial Analysis	Economic Impact	Funding Analysis	P3 Advisory	Mgmt. Advisory
Oklahoma City, Oklahoma	Expanded State Fair Park	◉	◉	◉	◉		
Osage Beach, Missouri	New Convention/Exposition Center	◉	◉	◉	◉		
Owatonna, Minnesota	New Conference/Events Center	◉	◉	◉	◉		
Palmer, Alaska	New Convention/Events Center	◉	◉	◉	◉		
Palm Springs, California	Expanded Convention Center	◉	◉	◉			◉
Pasadena, California	Expanded Pasadena Center	◉	◉	◉	◉		
Pensacola, Florida	New Convention Center	◉	◉	◉	◉		
Philadelphia, Pennsylvania	Expanded Pennsylvania Convention Center	◉	◉	◉	◉		◉
Pinehurst, North Carolina	New Convention Center	◉	◉	◉	◉		
Plainfield, Indiana	Embassy Suites Hotel & Convention Center	◉	◉	◉	◉	◉	
Port Huron, Michigan	Blue Water Area Convention Center	◉	◉	◉	◉	◉	◉
Portland, Maine	New/Expanded Convention Facilities	◉	◉	◉	◉		
Price, Utah	New Fairgrounds Event Center	◉	◉	◉	◉		
Provo, Utah	Utah Valley Convention Center & Hotel	◉	◉	◉	◉	◉	◉
Plymouth, Massachusetts	New Convention Center	◉	◉	◉			
Reading, Pennsylvania	New Exhibition Center	◉	◉	◉	◉		
Redding, California	Redding Convention Center	◉	◉	◉	◉		
Reno, Nevada	New Reno Downtown Events Center	◉	◉	◉	◉		
Reno, Nevada	Expanded Reno Livestock Events Center	◉	◉	◉	◉		
Reno, Nevada	Expanded Reno/Sparks Convention Center	◉	◉	◉	◉		◉
Roanoke, Virginia	New Conference Center	◉	◉	◉	◉		
Sacramento, California	Expanded Sacramento Convention Center	◉	◉	◉	◉		
Salisbury, North Carolina	New Conference Center	◉	◉	◉	◉		
Salt Lake City, Utah	Expanded Salt Palace & New HQ Hotel	◉	◉	◉	◉	◉	
San Antonio, Texas	Expanded Gonzalez Convention Center	◉	◉	◉	◉		
San Francisco, California	New Pier 48 Exhibition Center	◉	◉	◉	◉		
San Juan, Puerto Rico	Expanded Puerto Rico Convention Center	◉	◉	◉	◉		
Santa Fe, New Mexico	Expanded Santa Fe Civic Center	◉	◉	◉	◉		
Sarasota, Florida	Sarasota Convention Center	◉	◉	◉	◉		
Scranton, Pennsylvania	New Convention Center	◉	◉	◉	◉		
Seattle, Washington	Expanded WA State Convention/Trade Ctr.	◉	◉	◉	◉		
Sioux Falls, South Dakota	New/Expanded Sioux Falls Convention Center	◉	◉	◉	◉		
Seguin, Texas	New Hotel and Convention Center	◉	◉	◉			
Snowmass, Colorado	New Snowmass Conference Facilities	◉	◉	◉	◉		
So. Lake Tahoe, California	New South Lake Tahoe Conference Center	◉	◉	◉	◉		
So. San Francisco, California	Expanded South San Francisco Conf. Ctr.	◉	◉	◉	◉		
Springfield, Massachusetts	Expanded Springfield Civic Center	◉	◉	◉	◉		
Springfield, Missouri	Expanded Convention Center	◉	◉	◉	◉		
St. Charles, Missouri	St. Charles Convention Center	◉	◉	◉	◉		
St. Cloud, Minnesota	Expanded Convention/Civic Center	◉	◉	◉	◉		
St. Louis, Missouri	Expanded Americas Center	◉	◉	◉	◉		
St. Paul, Minnesota	Expanded St. Paul River Centre & New Hotel	◉	◉	◉	◉	◉	
Statesville, North Carolina	Expanded Statesville Civic Center	◉	◉	◉	◉		
Stephenville, Texas	New Hotel & Conference Center	◉	◉	◉	◉	◉	
Stillwater, Oklahoma	New Convention Center & Hotel	◉	◉	◉	◉	◉	
Temple, Texas	New/Expanded Convention Center	◉	◉	◉	◉		
Tulsa, Oklahoma	Expanded Tulsa Convention Center	◉	◉	◉	◉		
Tulsa, Oklahoma	New Downtown Hotel Projects	◉	◉	◉	◉	◉	
Vail, Colorado	Expanded Vail Conference Center	◉	◉	◉	◉		
Washington, D.C.	Washington D.C. Convention Center & Hotel	◉	◉	◉	◉		
Waterbury, Connecticut	New Exhibition Center	◉	◉	◉	◉		
Watertown, South Dakota	Ramkota Inn & Convention Center	◉	◉	◉	◉		
West Palm Beach, Florida	Expanded Palm Beach Convention Center	◉	◉	◉	◉		◉
Wilkes-Barre, Pennsylvania	New Exhibition Center	◉	◉	◉	◉		
Woodstock, Illinois	New Convention/Exhibition Facility	◉	◉	◉	◉		
Zanesville, Ohio	New Convention/Event Center	◉	◉	◉	◉		



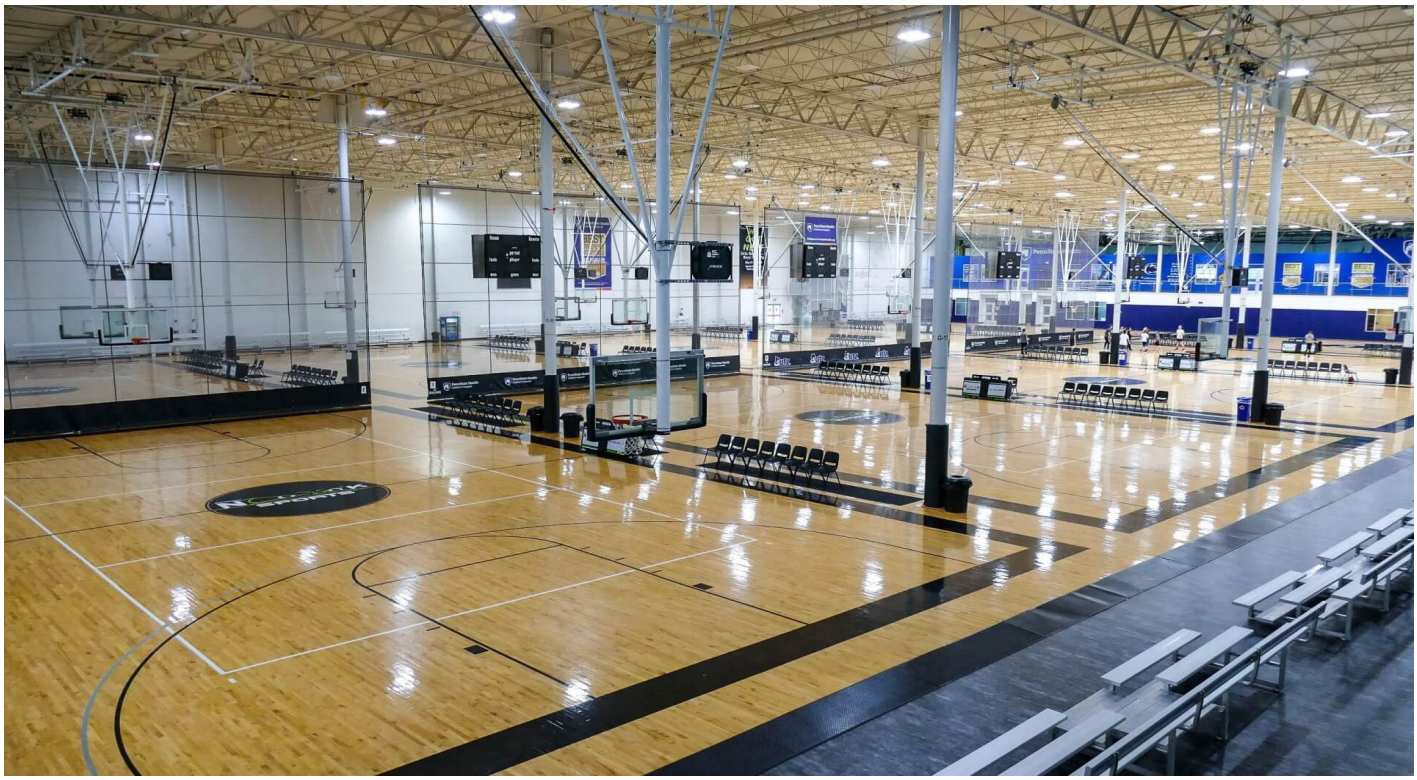
COMMUNITY FIRST CHAMPION CENTER

GRAND CHUTE, WISCONSIN

In 2015, CSL assisted the Fox Cities Convention and Visitors Bureau comprehensively evaluate the market, programmatic, financial and economic feasibility of a new Indoor Hardwood Sports Complex and an expanded/new multi-sheet Ice Complex in the Fox Cities of northeast Wisconsin. As envisioned, the facilities would drive new visitation and economic impact to the Fox Cities destination, as well as enhance rental, practice and other special event facility alternatives available for area residents. The Community First Champion Center, located in Grand Chute (near Appleton) and offering a combination of flexible ice and hardcourt facilities, opened in Fall 2019.

CSL has been engaged by the Fox Cities Convention and Visitors Bureau (FCCVB) numerous times over the years. In 2008, CSL conducted a feasibility study for a new convention center and then, in 2009, CSL was retained to provide professional services related to the planning, evaluation and transaction assistance concerning a potential public/private partnership agreement for a new convention center development and associated headquarters hotel (existing or new) in the Fox Cities area.

In 2013, CSL was re-engaged by the FCCVB to provide business planning advisory services, including an updated market analysis associated with the Fox Cities Exhibition Center and the overall related convention facility product that includes existing conference space provided within the Radisson Paper Valley Hotel. In order to plan and implement a successful development, ownership, management and operational framework for the project based on industry best practices and to best protect the interests of the public sector, CSL provided targeted advisory assistance to the FCCVB and other relevant stakeholders in planning for funding, partner/stakeholder roles and other business planning aspects for the convention center project.



NEW AMATEUR SPORTS FACILITY PRODUCTS

CABARRUS COUNTY, NORTH CAROLINA

In early 2024, CSL was retained by the Cabarrus County Convention & Visitors Bureau (CVB) to conduct a feasibility study of a potential new Amateur Sports Facility in Cabarrus County, North Carolina. The purpose of the study was to assist the CVB, Cabarrus County, and other stakeholders in evaluating key market, program, financial, economic and ownership/management aspects of a potential new Amateur Sports Facility. Previously, in 2016, CSL was originally retained by the CVB to conduct a similar feasibility study of a new Amateur Sports Complex with of focus on indoor facility products, including an aquatic center, ice complex, and hardcourt facility.

The most recent study involved a local market visit at the outset of the project, including community and existing sports and recreation facility tours, and discussions with study stakeholders and community leaders. CSL conducted research, analysis and interviews with more than 40 competitive/regional and comparable amateur sports facilities. CSL conducted telephone and virtual interviews with stakeholders and representatives of potential user groups, including key local, state, regional and national athletic associations, organizations, clubs and leagues that run sports programs, leagues, tournaments, competitions and meets that could have an interest in a new Amateur Sports Facility in Cabarrus County. Overall, more than 100 organizations were targeted, and approximately 50 in-person, videoconference and telephone interviews were completed with organizations representing in excess of 1,000 teams, leagues, tournaments, meets and competitions. Additionally, a detailed cost/benefit model was developed to analyze multiple scenarios of facility product development.

Study findings indicated that three specific facility investment strategies could provide the highest return-on-investment (ROI) to the Cabarrus County sports tourism industry—a New Indoor Hardcourt and Turf Facility, an Expanded/Improved Rectangle Field Complex, and an Expanded/Improved Diamond Field Complex.

NEW INDOOR AMATEUR SPORTS FACILITY

KALAMAZOO, MICHIGAN

In late 2022, CSL was retained by Discover Kalamazoo to conduct a feasibility study for the potential development of a new youth/amateur sports facility in Kalamazoo County, Michigan. A new youth/amateur sports facility would address opportunities and needs related to sports tourism (i.e., tournaments) in Kalamazoo County, while also enhancing opportunities for local amateur sports and recreation users. Key goals of the study were to: (1) evaluate market demand for a new sports facility, (2) identify the optimal type, size and characteristics of a new sports facility, (3) preliminarily evaluate site/location options, and (4) evaluate various cost/benefit aspects generated through its construction/development and operation.

For the 2022/2023 work, CSL conducted a detailed analysis of demand among rectangle fields, diamond fields, indoor courts, indoor turf, aquatic facilities, indoor ice sports facilities and indoor racket facilities, including an analysis of existing local facilities, competitive regional facilities and comparable national facilities. Additionally, we conducted direct outreach to local area user group candidates and regional sports teams, clubs, associations and tournament organizers that could represent candidates for use of a new youth/amateur sports facility in Kalamazoo. Overall, more than 90 organizations were targeted, and 60 in-person and telephone interviews were completed with organizations representing more than 550 teams. Our recommendations focused on three independent development scenarios for both indoor and outdoor sports facility concepts, recommending potential development scenarios for each and developing cost/benefit comparisons for each option.

Additionally, CSL was subsequently retained in late 2023, as part of a multi-disciplinary team, to conduct further site selection and project cost estimating tasks.

In 2025, Kalamazoo County approved funding sources and the creation of a new Sports Authority for the purpose of funding and overseeing the development and operation of a new Indoor Sports Facility. The Authority is currently underway with advanced planning steps for the project, including the contracting of a design firm and private operator. CSL is presently serving as an ongoing industry advisor for the project through the implementation phase, and will remain in this capacity until facility opening.

PROPOSED NEW INDOOR AMATEUR SPORTS FACILITY

PLAINFIELD, INDIANA

In 2022, CSL was engaged by Visit Hendricks County (CVB) to conduct a feasibility study of a potential new Indoor Sports Facility in Plainfield, Indiana. The purpose of the study was to assist the CVB and other stakeholders, including Hendricks County and the Town of Plainfield, in evaluating key market, program, site/location, financial, economic and ownership/management aspects of a potential new Indoor Sports Facility in Plainfield. The CVB presently owns an approximate 10-acre site directly south of the Embassy Suites Hotel and Conference Center in Plainfield. Importantly, the targeted site is located within close proximity of the highest existing concentration of visitor amenities (i.e., hotels, restaurants, retail, and entertainment) in Hendricks County, along with strong roadway accessibility and close proximity to the Indianapolis International Airport.

Key goals of the study were to (1) evaluate market demand for a new Indoor Sports Facility, (2) identify the optimal type, size and characteristics of a new Indoor Sports Facility, (3) determine whether the targeted site is appropriate and could accommodate the project, and (4) evaluate various cost/benefit aspects generated through its construction and operation. The envisioned Indoor Sports Facility would address opportunities and needs related to sports tourism (i.e., tournaments) in Plainfield and Hendricks County, while also enhancing opportunities for local amateur sports and recreation users. The project was originally conceptualized to potentially include one or more ice sheets, indoor turf space, court space, and/or other multipurpose space and sport/rec/wellness amenities.

The study included direct outreach to local area user group candidates and regional sports team, club, association and tournament organizers that could represent candidates for use of a new Indoor Sports Facility in Plainfield. Overall, more than 60 organizations were targeted, and 30 in-person and telephone interviews were completed with organizations representing in excess of 200 annual activities. Study results recommended a 120,000-square foot indoor facility consisting of permanent hardwood courts (eight full-sized basketball courts or 16 full-sized volleyball courts), indoor turf (one 200’ by 85’ regulation-size indoor field), and various associated amenities.

SPORTS PAVILION AT ROCK CHALK PARK

LAWRENCE, KANSAS

The City of Lawrence, Kansas engaged CSL to provide a market demand and economic impact analysis of the proposed Sports Pavilion Lawrence at Rock Chalk Park. The Park is envisioned to be a "Town and Gown" partnership between the City of Lawrence and the University of Kansas to develop a multi-use sports complex to host events and tournaments that would be expected to generate economic benefits for the community and improve the quality of life for residents.

CSL conducted a detailed market demand analysis to estimate potential utilization and attendance and developed financial and economic impact projections. We conducted an extensive analysis of local, regional and national sports complexes that could offer some competition to the Sports Pavilion and/or a benchmark from which to assess the potential for the proposed venue. Additionally, local, regional and national amateur sports event promoters were contacted to assess their potential interest in using the venue.

The analysis was utilized to create estimates of direct, indirect and induced economic impacts that could be generated as a result of operating the Sports Pavilion. CSL developed projections of annual venue utilization in a stabilized year of operations and a profile of event attendees which was then used to develop estimates of net new direct spending, total new economic output, fiscal impacts and job creation.

In October 2014 the Lawrence Sports Pavilion at Rock Chalk Park opened, incorporating a 181,000- square foot indoor recreation center offering 8 full-size basketball courts/16 half- size basketball courts, 16 full-size volleyball courts, and a 175' x 75' regulation indoor turf field, as well as a competition soccer stadium and a 10,000-seat track and field stadium. As envisioned, the City would own the Sports Pavilion and operate the indoor facility, leasing the track and field/soccer stadium to the University of Kansas, which is used primarily to accommodate University activity. The project is widely-considered to be a success—accommodating dozens of tournaments annually and generating substantial economic impacts throughout Lawrence, while also providing a key quality of life amenity to local citizens.

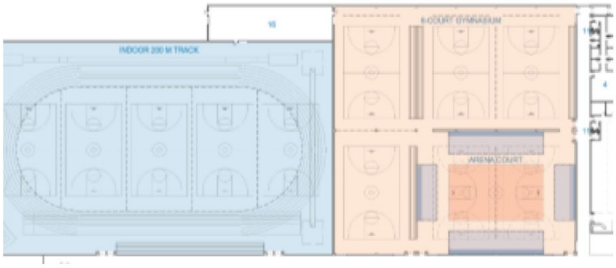
ROCKY TOP SPORTS WORLD

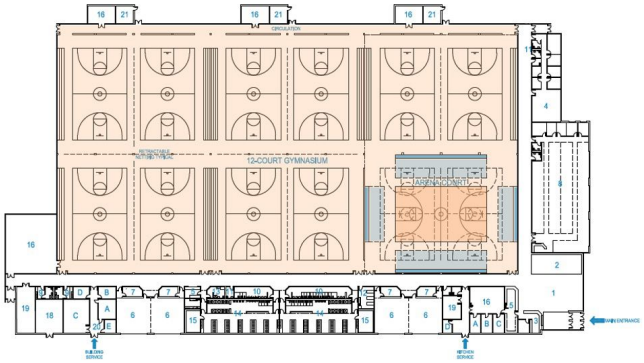
GATLINBURG, TENNESSEE

In the early 2010s, CSL was engaged by the Sevier County Economic Development Council to provide a feasibility study and master plan for a proposed tournament sports complex in the Gatlinburg/Pidgeon Forge area. The Gatlinburg, Sevierville, and Pigeon Forge area is home to the Dollywood theme park and the Smoky Mountains and is a considerable tourist destination. Project representatives originally proposed the development of a major tournament sports complex as a means of further diversifying the tourism economy in the area and to create synergies with existing tourism assets (hotels, restaurants, theme parks, family vacation activities, etc.).

As part of the original feasibility study of an indoor and outdoor multisport amateur sports complex, CSL reviewed local visitor industry assets and sports participation trends in the region, interviewed potential complex users and assessed the competitive environment in which the sports complex would operate in order to determine demand, building program, development costs, financial operations, economic impacts and funding options. Study findings found strong unmet market demand from nonlocal and regional tournament sources.

The $20 million Rocky Top Sports World opened in July 2014, consisting of an 80-acre complex that includes seven synthetic turf and lighted soccer/multi-sport fields and an 86,000-square foot indoor hardcourt facility.





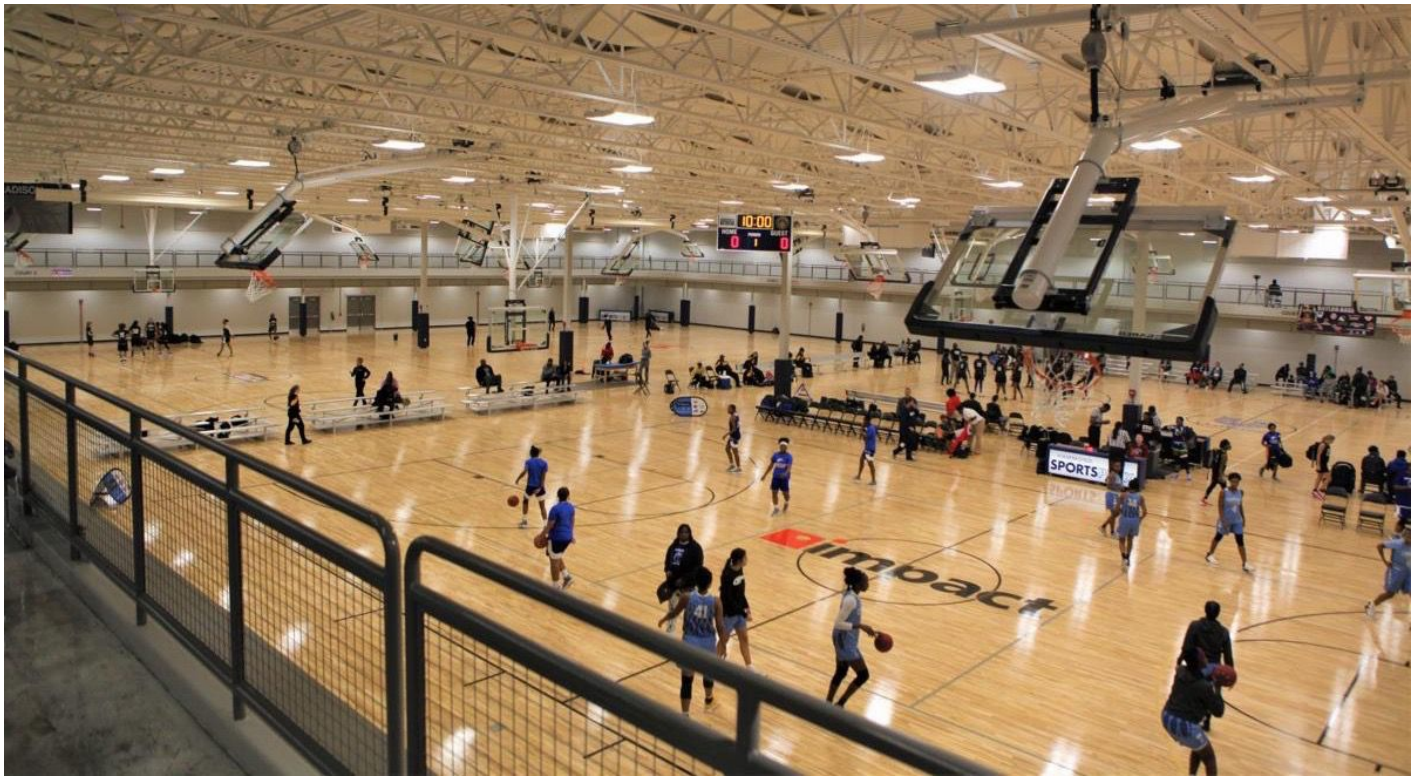
CHATHAM COUNTY INDOOR SPORTS COMPLEX

SAVANNAH, GEORGIA

In 2023, CSL was engaged by Chatham County to conduct an indoor sports complex market analysis and feasibility study in Chatham County, Georgia. Originally the project was envisioned as a two-court indoor facility to better serve local users; however, County leaders endeavored to explore the potential for developing and operating a larger complex to accommodate a larger portion of the growing local community, while creating an opportunity to attract sports tourism activity. Additionally, County leaders wished to explore the potential for developing multipurpose sports and activity space that could accommodate a 200m indoor track.

Key study components included a site visit and tours of existing facility infrastructure, interviews with stakeholders and other local sports organizations and user groups, gap analysis within the competitive regional market, benchmarking of comparable national facilities and telephone interviews with tournament producers and other potential non-local user groups. Overall, more than 80 organizations were targeted, and 30 in-person and telephone interviews were completed with local, regional and national organizations representing basketball, volleyball, soccer, dance and other youth/ recreational sports.

Based on this research, two development scenarios were considered. The first option consisted of an indoor 200-meter, six-lane flat track and six hardwood basketball courts, where the track space would be overlayed with six synthetic courts. The second was for an indoor, multipurpose facility offering 12 hardwood basketball courts or 24 volleyball courts. A detailed cost/benefit analysis was conducted to compare and contrast these two options, including analysis of order-of-magnitude construction cost estimates, financial operating projections and potential economic and other associated benefits. Additionally, CSL and CHA worked with the County to identify a select set of potential locations for developing an Indoor Sports Complex and developed a detailed site scoring matrix to analyze the strengths, challenges, opportunities and other factors associated with each site. Ultimately, a set of three preferred sites were identified for continued consideration for facility development.



NEW INDOOR/OUTDOOR AMATEUR SPORTS FACILITY

PULLMAN, WASHINGTON

CSL is currently engaged with the Youth Athletic Recreational Development (YARD) to conduct a feasibility study of a potential new youth and amateur sports complex in Pullman, Washington. Historically, Pullman has relied heavily on Washington State University, the region's largest employer and primary economic driver. The development of a new sports complex would offer the potential opportunity to diversify the local economy by attracting visitors during the shoulder season and introducing first-time visitors to the community.

A new youth and amateur sports complex in Pullman would address key gaps in the sports tourism market by providing facilities for tournaments and events, which currently necessitate travel to Spokane and other nearby markets. In addition to supporting sports tourism, the complex would enhance opportunities for local amateur sports and recreational users.

Two potential sites are being evaluated as part of the study. The first site is a vacant building supply store that would require significant renovation to convert it into an indoor sports complex potentially featuring courts, turf and other amenities. The second option consists of 350 acres of farmland located north of downtown Pullman, which would be well-suited to support outdoor rectangle or diamond fields.

The study process has consisted of detailed research and analysis, including a comprehensive set of market-specific information analyzing existing local market conditions, competitive and comparable facilities and market demand outreach. CSL has engaged with over 30 local stakeholders and is conducting telephone interviews and virtual meetings with representatives of potential non-local user groups and tournament organizers. In the coming months, CSL plans to develop concept scenarios and programmatic details, construction cost estimates, and projections for financial operations and economic impacts.

NEW INDOOR AMATEUR SPORTS FACILITY

FORT SMITH, ARKANSAS

In 2022, CSL was retained by the City of Fort Smith, Arkansas to conduct a feasibility study of a potential new Indoor Sports Facility in Fort Smith. The purpose of the study was to assist the City of Fort Smith, the Fort Smith Convention & Visitors Bureau, and other stakeholders in evaluating key market, program, financial, economic and ownership/management aspects of a potential new Indoor Sports Facility in Fort Smith.

Located in northwestern Arkansas in Sebastian County, Fort Smith is the third-largest city in the state. The envisioned Indoor Sports Facility would address opportunities and needs related to sports tourism (i.e., tournaments) in Fort Smith, while also enhancing opportunities for local amateur sports and recreation users. The Facility could also serve as a key anchor for a larger sports complex/destination.

In order to provide guidance to the City, CVB and other community stakeholders, CSL's project leader initially participated in a kick-off visit to Fort Smith, which included tours and meetings with key client representatives, stakeholders and business leaders. Subsequently, CSL conducted direct outreach to local area user group candidates and national/regional sports team, club, association and tournament organizers that could represent candidates for use of a new Indoor Sports Facility in Fort Smith. Overall, more than 130 organizations were targeted and nearly 50 telephone interviews were completed with organizations.

A detailed cost/benefit analysis was undertaken as part of the study. Performance estimates for the Indoor Sports Facility were developed over a 20-year projection period. A detailed utilization model was developed to consider a large number of variables and inputs to analyze each sport/use for a potential new Indoor Sports Facility in Fort Smith. The model differentiated among different types of usage (i.e., use from local leagues/clubs versus non-local tournaments/meets versus clinics/camps/lessons versus open recreation, etc.) and separate assumptions were used to generate usage and attendance (participants and spectators) estimates. A detailed set of quantifiable and intangible economic impacts were outlined to best articulate the benefits of community investment in the project.

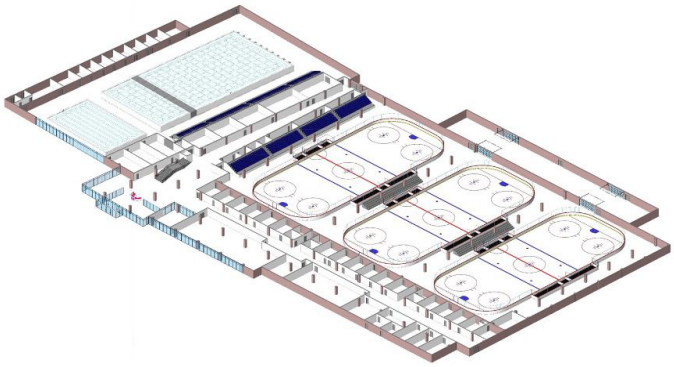
STRATEGIC SPORTS TOURISM FACILITY PLAN

FAIRFAX COUNTY, VIRGINIA

In 2019, CSL led a multi-disciplinary team that was selected by the Fairfax County Park Authority, in partnership with Visit Fairfax, Fairfax County, Nova Parks and other community partners via a competitive bid process, to conduct a sports complex market analysis and feasibility study in Fairfax County, Virginia. Located just outside of Washington, D.C., the County is home to over 1.0 million people and offers numerous indoor and outdoor amateur and recreational sports facilities throughout 395 square miles. The goal of this study was to develop a strategic plan to provide improved athletic facilities to serve area residents while better positioning the County to attract sports tourism activity and generate incremental economic impacts for the community.

Our analysis consisted of a comprehensive inventory and analysis of existing recreational and amateur sports facilities throughout Fairfax County, accounting for factors such as location, accessibility, owner/ operator, usage and expansion potential. Analyzed facilities included indoor ice rinks, indoor gymnasium space, indoor tracks, indoor pools/natatorium, indoor turf facilities, outdoor diamond fields for baseball/softball, outdoor rectangle fields for soccer, football, lacrosse, rugby, etc. and other recreational sporting facilities. In-person interviews and focus groups were completed with more than 100 stakeholders assess the strengths, weaknesses and challenges among existing facilities, while investigating the potential opportunities for expanding, enhancing and/or developing new amateur and recreational sports facilities in the County.

Additionally, our work considered the competitive environment for sports tourism activity in the greater Washington, D.C. marketplace, a review of comparable national amateur sports and sports tourism facilities and further exploration of the potential demand for new sports facility space in Fairfax County among a variety of potential user groups and disciplines. Our recommendations involved evaluation of potential partnerships that could be formed to fund the development and/or ongoing operations of new facilities, a detailed site analysis and recommendation of preferred sites for each of the product development initiatives, development site layouts and detailed construction cost estimates, development a series of five strategic initiatives for operating new amateur sports and sports tourism complexes, and a comprehensive cost/benefit comparison of each identified development option.



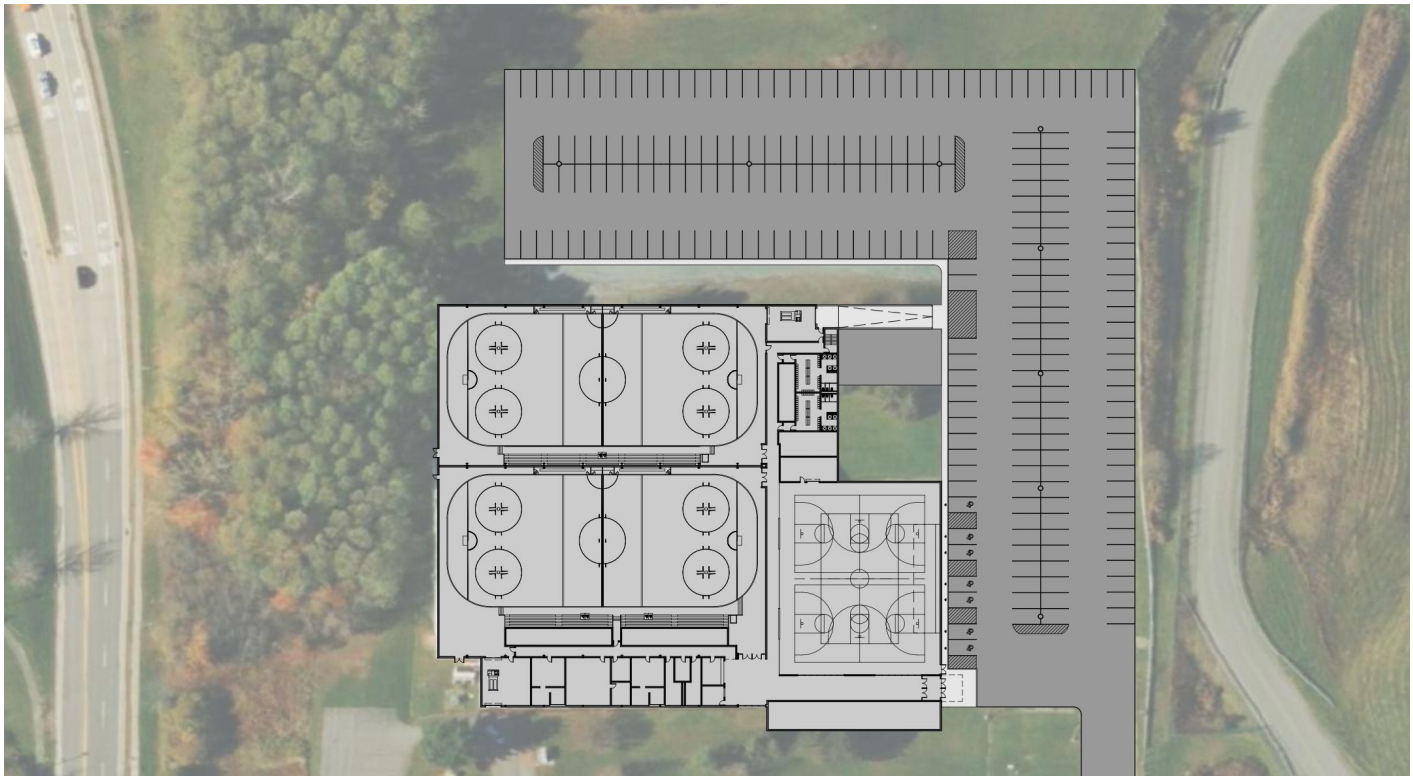
NEW SPORTS, EVENT & MIXED-USE FACILITIES AT THE RANCH

LOVELAND, COLORADO

In 2018, CSL, Populous and Legends Project Development were hired to develop an Implementation Program and Strategy for Larimer County, Colorado concerning The Ranch Events Complex. The County developed a Master Plan in 2017 that included more than $200 million in planned capital improvements. The project team's Implementation Program defined specific site improvement projects that will lead into the design phase of the delivery process. Core facility elements of the strategy developed included a new 10,000-seat spectator/sports arena, a new amateur sports complex, a new 250-room full-service hotel and convention center organized under a public/private partnership (P3), and a variety of other event and support facility products.

As part of our analysis, we tested the market demand and associated benefits of a potential new sports and entertainment arena and evaluated the potential development of a new three-sheet indoor ice center; a natatorium offering a 50-meter competition pool, warm-up pool and other such amenities; renovations and expansion of the existing equestrian complex; and, the opportunity to develop a County-developed, 60,000-square foot exhibition center attached to a new full-service hotel and associated ballroom and breakout meeting space. Using project-specific market demand research, industry expertise and computer modeling software, CSL then estimated the quantifiable and unquantifiable benefits associated with each project component.

CSL was subsequently retained to provide research, analysis and planning and advisory services with respect to the evaluation, solicitation, and negotiation of P3 (public-private partnership) opportunities associated with the planned full-service hotel, new sports/entertainment arena, and new indoor amateur sports complex at The Ranch. This process includes a comprehensive hotel market and financial analysis, preparation of P3 RFI (request for expressions of interest), P3 planning and evaluation, the development and distribution of RFPs (request for proposals), evaluation of RFP responses, selection of and negotiation with private sector partners, as well as development and business planning assistance. In December 2019, the $260 million Updated Master Plan for The Ranch was approved by Larimer County's Board of Commissioners.



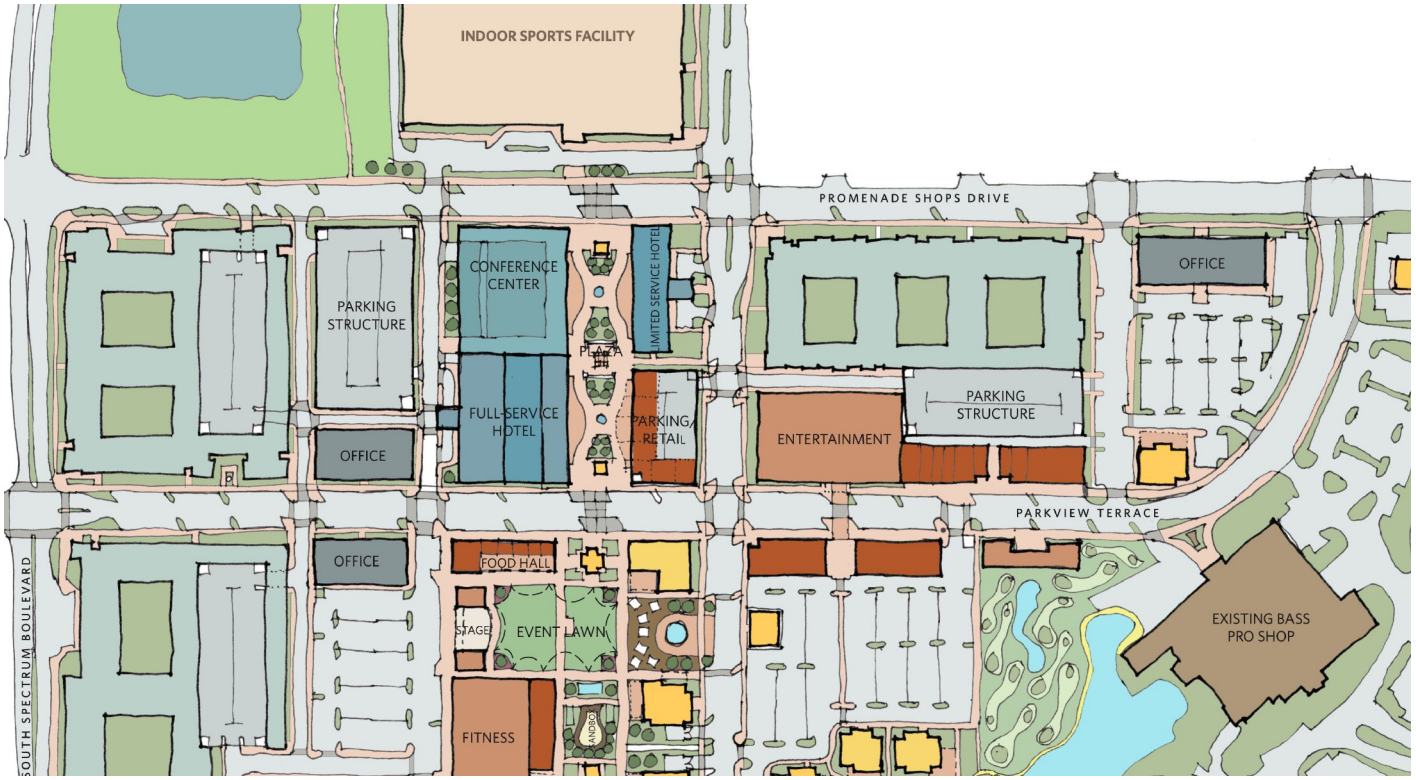
NEW/EXPANDED AMATEUR SPORTS FACILITY

ALBANY, NEW YORK

In 2023, CSL and CHA were retained by Albany County, New York to conduct a feasibility study of a potential new/expanded Amateur Sports Facility in Albany County, New York. The purpose of the study is to assist the County and other stakeholders in evaluating key market, program, financial, economic and ownership/management aspects of a potential new/expanded Amateur Sports Facility. The existing Albany County Hockey Facility site, situated adjacent to the Albany International Airport, was initially identified as a particular location of interest by County officials for product investment.

The study process consisted of detailed research and analysis including a comprehensive set of market-specific information analyzing existing local market conditions, analysis of historical operations of the Albany County Hockey Facility, competitive and comparable facilities, market demand, concept scenarios and programmatic detail, site layout concepts, detailed construction cost estimates, and estimated financial operations and economic impacts. Telephone interviews and virtual meetings with representatives of potential user groups, including key local, state, regional and national athletic associations, organizations, clubs and leagues that run sports programs, leagues, tournaments, competitions and meets that could have an interest in a new/expanded Amateur Sports Facility in Albany County. Overall, more than 100 organizations were targeted, and more than 40 videoconference and telephone interviews were completed with organizations representing in excess of 1,000 teams, clubs, leagues, tournaments, meets and competitions.

Key findings suggested that a distinct market opportunity existed for a new/expanded Amateur Sports Facility in Albany County for the purpose of attracting new sports tourism activity, better serving local area user groups, and enhancing quality-of-life for Albany County families. An expansion/improvement plan was developed that could leverage the existing Albany County Hockey Facility physical product and site.



FULL-SERVICE HOTEL, CONFERENCE CENTER & SPORTS FACILITIES

PEARLAND, TEXAS

Since 2017, under multiple engagements, CSL has assisted the Pearland Economic Development Corporation (PEDC) with feasibility studies and other advisory services concerning proposed new event and hospitality facility products in Pearland, Texas. Originally, CSL was selected under a competitive bid process in 2017 to conduct feasibility study of a potential new Multi-Use Center in Pearland. As identified in Pearland's 20/20 Community Strategic Plan, a new Multi-Use Center would be expected to drive new tourism, hotel room nights, and economic impact to Pearland, while serving as a community resource and enhancing quality of life for residents. The study concluded that a hotel & conference center project, executed under a public/private partnership (P3) model, would be one of two project types that would best meet market needs/opportunities in Pearland and be advantageous to pursue. The second recommended project type was an indoor amateur sports facility optimized to drive sport tourism activity, in addition to better serving local sports and recreation needs.

In 2018, CSL was subsequently re-engaged to assist the PEDC provide advisory services concerning the evaluation and planning for a potential P3 for hotel/conference center development and in soliciting private management firms to assist in the development and/or operations of an indoor amateur sports facility. Through this process, Sports Facilities Companies (SFC) was selected for private management and other pre-opening services for the planned new indoor amateur sports facility project.

In 2022, CSL completed an update of the feasibility analysis of the Hotel and Conference Center project and assisted the PEDC and other stakeholders with ongoing advisory services associated with planning and implementation steps involving a P3 transaction for the Hotel and Conference Center project. These services included work to solicit, engage, select, and negotiate various terms and agreements associated with the transaction with a private hotel partner. Additionally, CSL was also commissioned to complete a detailed economic impact analysis associated with the planned Lower Kirby Mixed-Use District, which would include both the new Indoor Amateur Sports Facility and the proposed new full-service hotel and conference center projects, in addition to a variety of retail, restaurant and entertainment assets.

NEW/IMPROVED AMATEUR SPORTS FACILITIES

LOUISVILLE, KENTUCKY

In 2016, CSL assisted the Greater Louisville Convention and Visitors Bureau (GLCVB) evaluate the market, programmatic, site, financial and economic feasibility of a new Amateur Sports Complex in Louisville, Kentucky. The purpose of the study was to determine whether an amateur Sports Complex development would drive new visitation and economic impact to Louisville, as well as enhance rental, practice and other special event facility alternatives available for local area residents. Ultimately, the study focused on providing a detailed cost/benefit model, inclusive of estimates of community-wide impacts including spending, output, earnings, employment and tax revenues. We also prepared a funding analysis to provide a roadmap for future facility development options.

Key study components used to generate economic impact model inputs included a multi-faceted, market-based approach focused on the specific needs and characteristics of both local and potential non-local users of an Amateur Sports Complex. Our extensive outreach process included numerous in-person and telephone surveys of various youth and adult recreational sports associations, clubs and organizations; national, regional and local tournament organizers; and a variety of potential soccer, lacrosse, rugby, football, ultimate Frisbee, field hockey and other such user groups.

In 2019, CSL was subsequently re-engaged by the GLCVB to update this analysis and again in 2022 by Kentucky Venues to consider the development of an amateur sports complex at the site of the Kentucky Exposition Center (KEC) in Louisville. Additionally, in 2022, CSL was again retained as part of a larger project team, including CHA, to further conduct a study of the project's integration into an aggressive Master Plan for the future of the KEC and its surrounding district. The project concept included significant improvements to the KEC's ability to attract and accommodation indoor court-based tournaments, competitions and athletic programming. In 2022, the Kentucky State Legislature allocated $200 million to master planned improvements to the KEC, with a commitment to additional rounds of funding in future years.

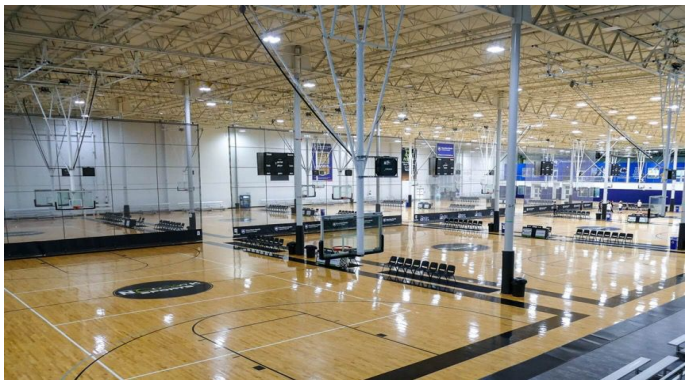
NEW MULTI-SPORT COMPLEX & ICE ARENA IMPROVEMENTS

BATAVIA, NEW YORK

In 2019, CSL and CHA were retained by the City of Batavia to conduct a feasibility study of a potential new Multi-Sport Complex in Batavia, New York. With only one sheet of ice, the existing Falleti Ice Arena could not attract major amateur tournaments. Additionally, local hockey organizations and other community stakeholders had expressed an interest in developing a multi-sports complex to include two sheets of ice and a multi-sport playing surface for soccer, baseball, lacrosse and other sports.

The study process consisted of detailed research and analysis including a comprehensive set of market-specific information analyzing existing local market conditions, analysis of historical Falleti Ice Arena operations, competitive and comparable facilities, market demand, concept scenarios and programmatic detail, site analysis, site layout development, detailed construction cost estimates and capital needs, estimated financial operations and economic impacts, and funding options. We conducted detailed analysis of the competitive environment among indoor multi-sports facilities and a comparative analysis of similar national facilities. We conducted extensive outreach to local community stakeholders, Falleti Arena operators and primary user groups and potential new user groups of new ice and/or multi-sport facility space in Batavia.

The CSL and CHA team developed recommendations for three development options and compared projections of order-of-magnitude construction costs, utilization by user group type, financial operations and economic impacts for each option.



POTENTIAL INDOOR SPORTS & RECREATION FACILITIES

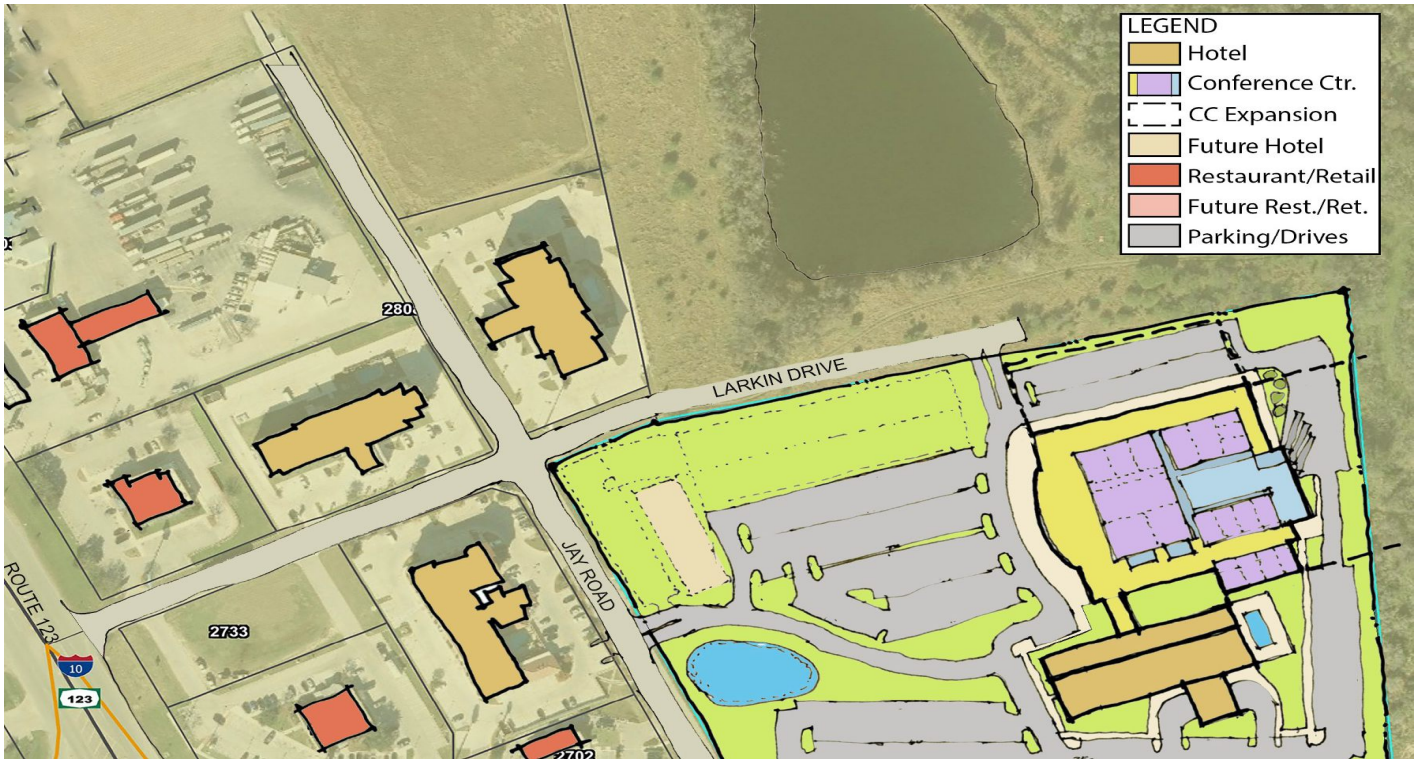
ELMHURST, ILLINOIS

In 2016, CSL was engaged by the City of Elmhurst and the Elmhurst Park District to conduct a feasibility study of potential new indoor sports facilities in Elmhurst, Illinois. Elmhurst is a suburb of Chicago, located 20 miles west of downtown and ten miles south of O'Hare International Airport with a City population of approximately 45,800. Two key areas of focus for the study were a potential new/expanded indoor sports and recreation facilities (including both hardwood and multipurpose sport court-oriented venues) and a new ice complex. Other potential facilities that were considered included a new indoor aquatic center and an indoor turf facility.

CSL implemented a two-phased, multi-faceted approach to determine the local need for such facilities and whether any potential exists to support ongoing operations through attracting non-local tournaments, competitions and other such non-local events. The first phase of the study included a local market and existing conditions analysis, competitive and comparable facilities analysis, potential user surveys, among other efforts to evaluate the market demand, supportable facilities program, usage and program levels for potential indoor sports facilities.

The second phase built off these findings to evaluate various key quantitative program, cost and benefit aspects of potential indoor sports facilities. We further assessed other pertinent areas such as site/ location issues, funding options and development of a structure to effectively market and attract a sustainable capacity of visitors and events to potential indoor sports facilities in Elmhurst.

In 2019, CSL was again retained to update various aspects of the market and financial analyses as more aspects of the project were clarified through site selection and architectural design and costing. CSL completed additional market demand interviews and further refined market, financial, and economic impact projections.



PROPOSED NEW HOTEL & CONFERENCE CENTER

SEGUIN, TEXAS

In 2022/2023, CSL led a project team that was retained by the City of Seguin, Texas, through the Seguin Main Street & CVB, to conduct a feasibility study for the potential development of a Hotel & Conference Center in Seguin, Texas. The Seguin market has experienced significant residential growth in recent years, with thousands of new home permits granted for future housing projects. The market's location between Austin and San Antonio, both of which are quickly growing major metropolitan areas, will likely have material, positive impacts on the City's economy, tax base, and marketability. This growth marks the impetus for the study effort—though the area is growing as a place to live and work, some local leaders feel that it is underdeveloped as a visitor destination and lacks assets that can generate room nights.

Existing event facilities in Seguin are generally substandard relative to modern industry models and have material limitations with respect to their ability to host large, economically impactful events such as conventions and tradeshows. At the same time, many large employers in the area have noted that Seguin lacks business-quality hotel rooms, and that their visiting employees and clients prefer full-service properties in other nearby cities. A Hotel & Conference Center in Seguin could importantly address: (1) providing event space for non-local conventions and other events, (2) providing business-class overnight accommodations to corporate transient visitors and other high impact visitor segments, and (3) working to elevate Seguin's presence in the convention/conference industry, while also delivering a quality new lodging and event facility product that can benefit a wide spectrum of residents and businesses alike.

CSL completed a multi-day site visit for tours and meetings with key stakeholders, conducted detailed telephone surveys with more than 35 surveys of event planners representing nearly 820 total events including representatives of potential user groups, including state/association tradeshows and conventions, corporate events, amateur sports tournaments, public/consumer shows and other such groups/events. Based on the market research and supportable facility recommendations, CSL conducted a detailed site analysis of 11 potential site opportunities, ultimately narrowing down the analysis to four recommended sites. Detailed financial and economic impact analyses were then completed to provide guidance on the potential development of a new Hote & Conference Center in Seguin.

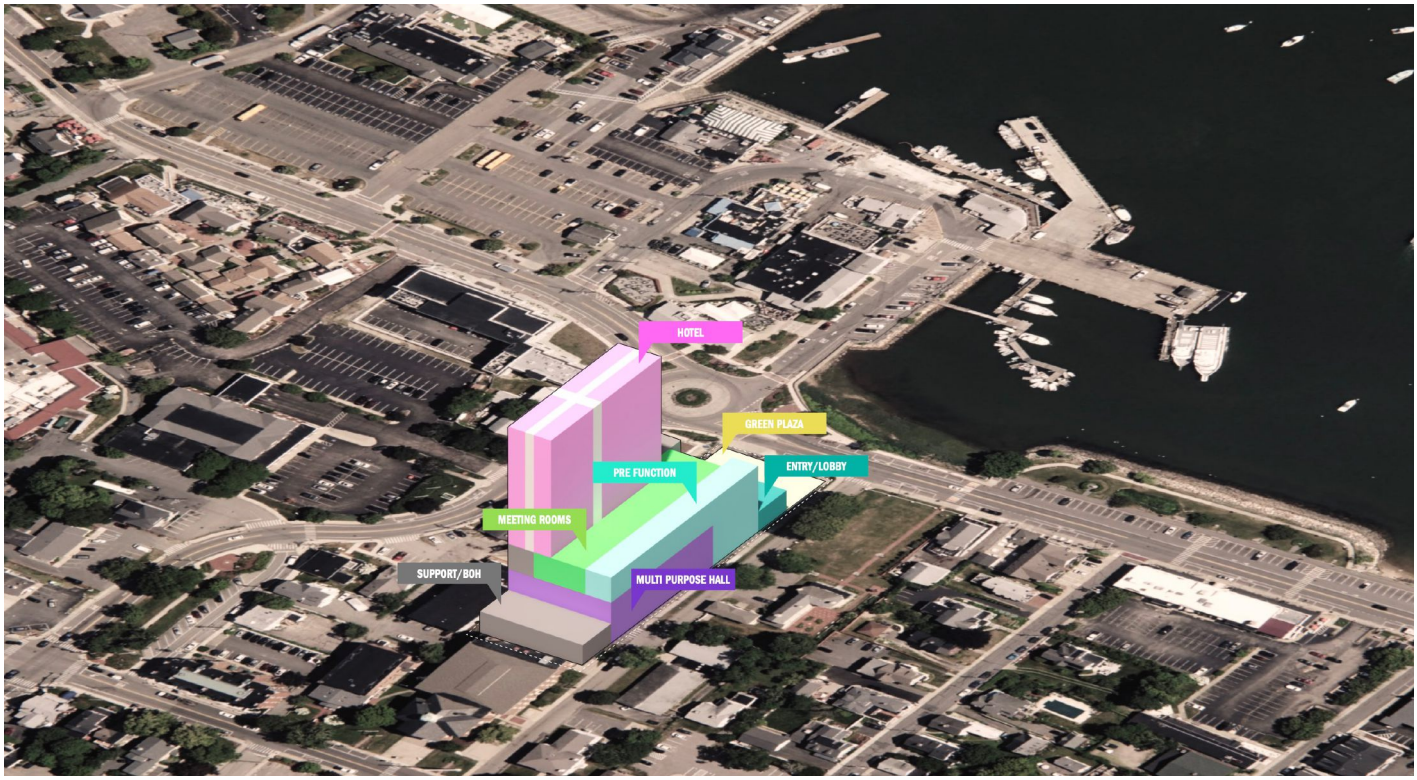
NEW FOCUSED-SERVICE HOTEL & CONFERENCE CENTER

STEPHENVILLE, TEXAS

In 2020, CSL was retained by the City of Stephenville, Texas to conduct a feasibility analysis of a potential new Hotel and Conference Center in Stephenville.

Located approximately 70 miles southwest of Dallas/Fort Worth, Stephenville consists of approximately 45,000 residents—an estimated 17,000 of whom live within the city of Stephenville. It is home to Tarleton State University (TSU), with an enrollment of over 13,000 students and the Cowboy Capital of the World Pro-Rodeo. Given Stephenville's strong resident and commercial growth in recent years, along with TSU's rapid enrollment growth and recent reclassification to Division I athletics, the City and TSU identified the need for a new Hotel and Conference Center in Stephenville to best position the community to absorb and leverage future demand opportunities.

CSL's study included a detailed market, financial and economic analysis of the proposed Hotel and Conference Center in Stephenville. The end product was designed to assist the City, TSU, and other stakeholders in evaluating various aspects of the project opportunity and a potential public/private partnership (P3) transaction. The analysis included recommendations and projections of performance for the subject property, including the type of public sector incentive that could be required to successfully exe cute an appropriate development project in Stephenville.



NEW HOTEL & CONFERENCE CENTER

PLYMOUTH, MASSACHUSETTS

In early 2023, CSL led a multi-disciplinary team in conducting a Market Analysis & Feasibility Study concerning a new Convention Center and associated headquarters hotel in Plymouth, Massachusetts. The purpose of the analysis was to assist the Town of Plymouth, See Plymouth (CVB) and other community stakeholders in evaluating key market, program, site/location, financial, economic impact, and funding aspects associated with a new convention center in Plymouth, Massachusetts.

The study included detailed research and analysis of local market conditions, competitive facilities, comparable facility benchmarking, industry trends, market demand and partnership opportunities, site analysis, financial characteristics, economic impacts, and funding options. CSL completed more than 115 surveys of potential convention and event planners representing more than 700 total events. The study effort also specifically evaluated macroeconomic trends in the convention, exhibition and meetings industries, as well as surveys of meeting planners regarding changing event space and destination preferences during/after the COVID-19 pandemic.

As it was clear that a new full-service hotel would be required to support any new convention center development in Plymouth, our analysis shifted to including market and financial due diligence involving securing a new private hotel partner. A detailed hotel market and financial analysis was completed, including the development of financial projections and determination of the feasibility gap associated with the hotel (i.e., the likely public sector incentive required to deliver the type of return-on-investment that traditional hotel inventors require).

CSL will soon commence and lead additional P3 Advisory Services at the Town's request relating to the solicitation, evaluation, selection and negotiation of a new hotel partner for the project under a P3 framework.

STRATEGIC DOWNTOWN HOTEL NEEDS & CONVENTION CENTER

MIDLAND, TEXAS

In 2024, the City of Midland hired CSL to conduct a Strategic Hotel Needs Study focusing on new hotel development opportunities in downtown Midland to support the Bush Convention Center and other downtown commercial and leisure lodging needs. A market, financial and economic impact analysis is being completed, including cost and performance projections, for one or more recommended new Hotel properties that would be best served to meet the needs identified through the strategic assessment. The analysis was designed to evaluate market demand, supportable development and program, cost and operating performance, valuation of one or more new Hotel assets, estimated economic impacts, and partnership opportunities associated with the identified subject Hotels. These conclusions will be critical in establishing a beneficial negotiating position for the City should the Hotel projects involve a public/private partnership (P3) framework and transaction.

Previously, in 2006/2007, CSL, with the participation of Rhotenberry Wellen Architects, was retained by the City of Midland to conduct a feasibility study to evaluate the potential development of a new/expanded convention center in Midland, Texas.

The Midland Center had served the Midland/Odessa community well for more than a quarter century, hosting a wide variety of local and non-local conventions, conferences, exhibitions, meetings and special events. It was believed that a new/expanded convention center would act as an economic generator and a public resource for the local community, hosting conventions, conferences, tradeshows, public/consumer shows, meetings and other events of both a non-local and local nature.

The study included analysis of local market conditions, competitive/regional facilities and markets, market demand, supportable facility program, event levels, site/location, preliminary construction costs, financial operations and economic impacts and funding alternatives. Specifically, the market demand analysis included: (1) a site visit and tours of existing local event facilities, (2) in-person interviews/meetings with more than 45 local Midland area individuals, (3) analysis of facility data obtained from 21 competitive and comparable convention centers, and (4) comparable analysis of socioeconomic data from competitive and comparable facility markets. The Midland Center closed in December 2015 and the new Barbara & H.W. Bush Convention Center opened in 2019.

NEW FULL-SERVICE HOTEL & CONVENTION CENTER

ANN ARBOR, MICHIGAN

In late 2019, CSL was retained by Washtenaw County, Michigan, with participation by Destination Ann Arbor, to conduct a feasibility study for a new multipurpose Convention Center. The study was intended to assist the County and other community stakeholders develop a plan to meet the current and future need for conventions, meetings and event facilities in Ann Arbor, Ypsilanti, and throughout Washtenaw County. The study scope and process was designed to provide the County, Destination Ann Arbor and other community stakeholders both short- and long-term direction not only as to the facility components/development options that may be supportable from a market demand perspective, but also the supporting amenities and infrastructure required in order to maximize the community's return-on-investment.

The study included extensive outreach to local stakeholders and potential user groups, including more than 100 completed telephone interviews with planners representing conventions, tradeshows, conferences, meetings, consumer shows, sports, and special events. Other tasks included analysis of local market conditions, competitive facilities and destinations, comparable facilities, industry trends, market demand, supportable facility concept and program, public/private partnership (P3) opportunities, construction costs, financial operating projections, economic impacts, and funding alternatives. At the client's request, the study process was paused near completion as the COVID-19 pandemic disrupted the industry.

In 2023, CSL was re-engaged to update the feasibility study. Detailed analysis was conducted on changes that occurred since the initial market study related to the competitive facility environment, local market conditions (including new lodging facilities and visitor industry infrastructure), industry trends (including relevant post-pandemic issues), and comparable facilities. Additionally, CSL conducted a targeted set of new telephone interviews with convention planners to assess changes in interest, space requirements, lodging preferences and other aspects to inform necessary adjustments in market demand, program and development option conclusions.

NEW HEADQUARTERS HOTEL & EXPANDED CONVENTION CENTER

SPRINGFIELD, ILLINOIS

In 2024, CSL was engaged by the Springfield Metropolitan Exposition and Auditorium Authority (SMEAA) to complete a market, financial and economic analysis associated with a new 300-key, nationally-branded, full-service headquarters hotel in downtown Springfield. The analysis was designed to evaluate demand, program, cost and operating performance, valuation, estimated economic impacts, and partnership issues associated with a new hotel. These conclusions are normally critical in establishing a beneficial negotiating position for the public sector should the hotel project involve a public/private partnership (P3) framework/transaction, including the determination of the "feasibility gap" for the potential new hotel, which corresponds to the approximate contribution that may be required by the public sector or other third parties to make the subject transaction attractive to typical private investors.

Additionally, CSL conducted a feasibility study of a proposed expansion of the Bank of Springfield (BOS) Center along with the development of a new 300-key full-service headquarters hotel in Springfield, Illinois. The BOS Center currently offers approximately 40,000 square feet of multipurpose exhibition space that accommodates both flat floor shows (such as conventions, conferences and tradeshows) and arena-style events (such as concerts, family shows and sporting events). Local leaders had an interest in evaluating whether an expansion of event space to provide more dedicated conference and event space would increase event levels and economic activity within the market.

CSL conducted detailed analysis of existing market conditions, including analysis of historic event and financial activity within the BOS Center, analysis of competitive state/regional event facilities, benchmarking analysis of comparable facilities with detailed analysis of industry-wide trends and conducted extensive market outreach to current/past and potential new users of an expanded BOS Center. Specific recommendations focused on the market potential for facility expansion and the necessary hotel and community investments necessary to accommodate incremental demand at the BOS Center. Further, CSL explored funding and partnership opportunities to support facility expansion and ongoing operations of the BOS Center.

EMBASSY SUITES HOTEL & CONFERENCE CENTER

PLAINFIELD, INDIANA

In December 2007, CSL was retained by the Hendricks County Convention and Visitors Bureau to conduct a feasibility study related to the potential development of a new hotel/convention center near the Indianapolis International Airport.

Key study components included the analysis of local market conditions, competitive/comparable projects, hotel market demand, conference space market demand, development scenarios, performance projections, project cost assessment, financial operations, economic and fiscal impacts and funding alternatives.

In mid-2008, CSL was engaged to assist the CVB build upon a previously conducted feasibility study to develop a Request for Proposal to solicit private hotel developer/operator candidates for a potential hotel conference center, assist in evaluation of developer/operator proposals, and structure and negotiate development and operator agreements.

Previously in 2003, CSL project managers directed a study to evaluate the feasibility of a conference center in Hendricks County. An important goal of the facility was to retain and attract non-local and local events to the area that presently cannot be accommodated by existing facilities in the community.

The $25 million, 175-room Embassy Suites Hotel & Conference Center opened in 2018.

NEW FOCUSED-SERVICE HOTEL & CONFERENCE CENTER

BROUSSARD, LOUISIANA

In 2024, CSL was retained by the City of Broussard with the participation of the Lafayette Economic Development Authority and the Broussard Economic Development Corporation, to conduct a feasibility study related to a proposed new Hotel and Conference/Event Center in Broussard, Louisiana.

The study involved a site visit, community tours, meetings with stakeholders, preliminary research steps, and observations regarding the viability of the Hotel and Conference/Event Center concept. The study included detailed research and analysis of local market characteristics, competitive facilities, industry trends, market demand, supportable program, financial operations, development costs, valuation, economic impacts, partnership opportunities and funding alternatives.

These conclusions are normally critical in establishing a beneficial negotiating position for the public sector should the hotel project involve a public/private partnership (P3) framework/transaction, including the determination of the "feasibility gap" for the potential new hotel, which corresponds to the approximate contribution that may be required by the public sector or other third parties to make the subject transaction attractive to typical private investors.

The estimated feasibility gap was determined to be substantial; however, the investment opportunity for the City was considered favorable—a $23.9 million dollar City investment would be expected to facilitate private sector investment in the development and operation of a new, focused-service $71.8 million Hotel & Conference Center project in Broussard (i.e., 33% public, 67% private). Additionally, projections were developed concerning the economic impact of a potential new Hotel & Conference Center, focusing on net new impacts in Broussard. The investment in Hotel and Conference Space projects typically provide substantial quantifiable benefits (direct spending, indirect/induced spending, personal income, employment, and tax revenue). These quantifiable benefits often serve as the "return on investment" of public dollars that are contributed to the facility project. The economic impact analysis considered (A) construction period impacts, (B) in-facility impacts, and (C) out-of-facility impacts.

NEW DOUBLETREE HOTEL & SANFORD CENTER

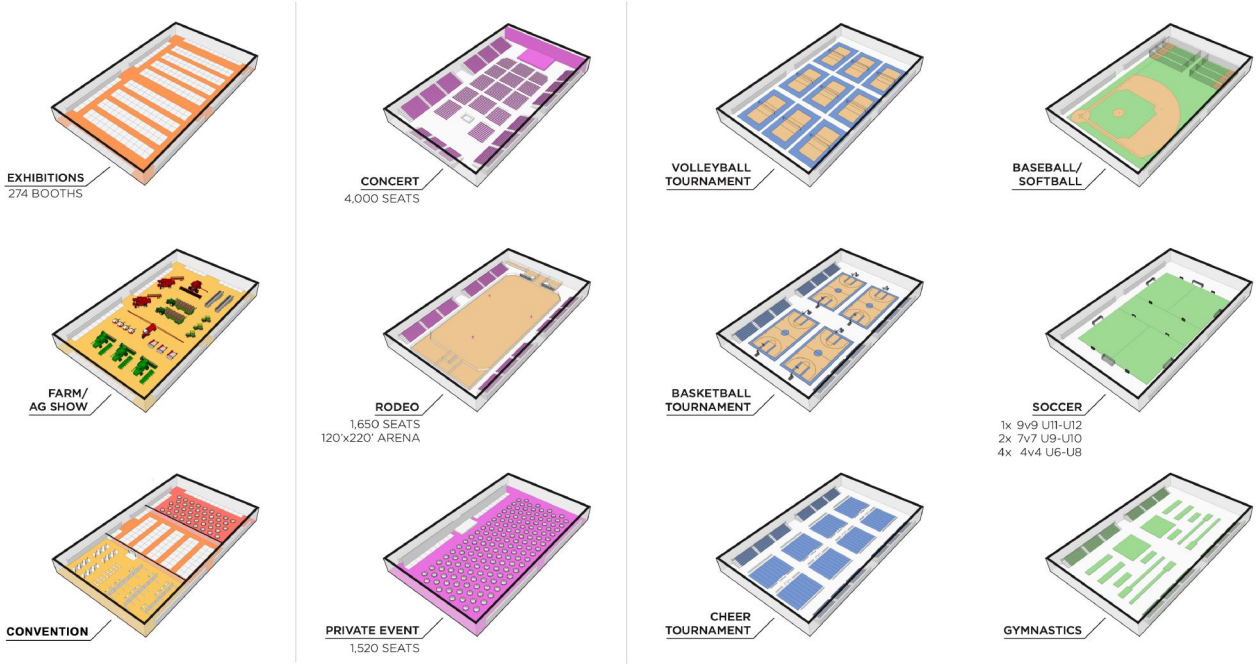
BEMIDJI, MINNESOTA

In 2010, CSL was engaged by the City of Bemidji, Minnesota to evaluate a potential transaction and partnership with a private hotel developer/investor team to develop a new Hotel to support the Sanford Center, an arena and convention center complex near downtown Bemidji. The purpose of the partnership was to maximize private sector involvement and support to help defray public sector costs. Our assistance included providing market and financial assessments for the hotel project, including development of assumptions regarding market absorption, occupancy, average daily rate, revPAR, hypothetical operating cash flows, preliminary cost-to-build and partner return on investment (ROI) considerations. Additionally, CSL assisted in soliciting private partner candidates, evaluating developer/operator proposals, and structuring and negotiating development and operator agreements. A new DoubleTree by Hilton opened at the site in November 2013.

Originally, in 2009, CSL was selected among a competitive field to perform the initial feasibility study for the then-proposed Sanford Center. The multi-use facility was envisioned to fulfill a number of important roles, including the accommodation of various local and non-local events such as conferences, tradeshows, performing arts, athletics and recreation. Further, the venue serves as a home to BSU's men's and women's hockey programs, through an ice hockey arena component and associated ice sheet (in addition to multipurpose flat floor space appropriate for conferences, meetings, tradeshows and other such events). Pursuant to the study's recommendations, the City pursued the project and the Sanford Center opened in October 2010.

Following the original feasibility study, CSL assisted the City with the solicitation, evaluation, and negotiation of third-party private management. The assistance led to the selection of VenuWorks as the facility's operator and a management agreement was subsequently negotiated. Additionally, CSL provided assistance with negotiating a new lease agreement with Bemidji State University (BSU) concerning use of the Sanford Center by the Division 1 BSU Beavers men's and women's hockey programs.

In late 2021, CSL was again retained by the City to evaluate management options and to lead the solicitation, selection and negotiation of a new third-party private management firm for the Sanford Center, a multipurpose Arena and Convention Center. CSL's work resulted in the selection of ASM Global and subsequent negotiation of a new private management agreement associated with the Sanford Center.



POPULOUS

NEW EXPO CENTER / MULTIPURPOSE EVENT CENTER

DENTON COUNTY, TEXAS

In 2022, CSL was engaged by Denton County, Texas to conduct a feasibility study of a potential new Expo Center, or Multipurpose Event Center. Denton County is situated just north of Fort Worth and Dallas, within one hour's drive of the majority of the greater metro area's population. The proposed project is envisioned by County leaders as a facility that could drive new economic impact within the County and to also provide expanded opportunities for area events and local residents. The targeted site for the project is 170 acres owned by the County, adjacent to 110 acres owned by the North Texas Fair & Rodeo.

The study included multiple site visits, community and existing event facility tours, more than 30 meetings with community leaders and stakeholders, and more than 35 telephone and virtual interviews with organizations, promoters and event planners representing in excess of 500 events.

Other study components included research and analysis of (1) local and regional market conditions, (2) competitive facility environment, (3) comparable facility benchmarking, (4) industry characteristics and trends, (5) market demand and opportunities, (6) supportable facility concept and program, (7) site/location, (8) business model, (9) construction costs, (10) financial operating estimates, and (11) economic and tax impacts.

Study findings identified an opportunity for a phased development, with the first phase involving a new Multipurpose Event Center facility concept to serve as a key anchor for a larger development project at the large targeted site. It was suggested that Phase Two consist of incentivizing private development of synergistic mixed-use and hospitality elements at targeted areas of the site, along with the development of additional equestrian/livestock/fair facilities, while Phase Three could consist of the development of a new Coliseum or Arena facility project that would be well-positioned to attract spectator-oriented entertainment events, such as concerts, family shows, motorsports, rodeos and other such activity.

2 PROFESSIONAL RESUMES

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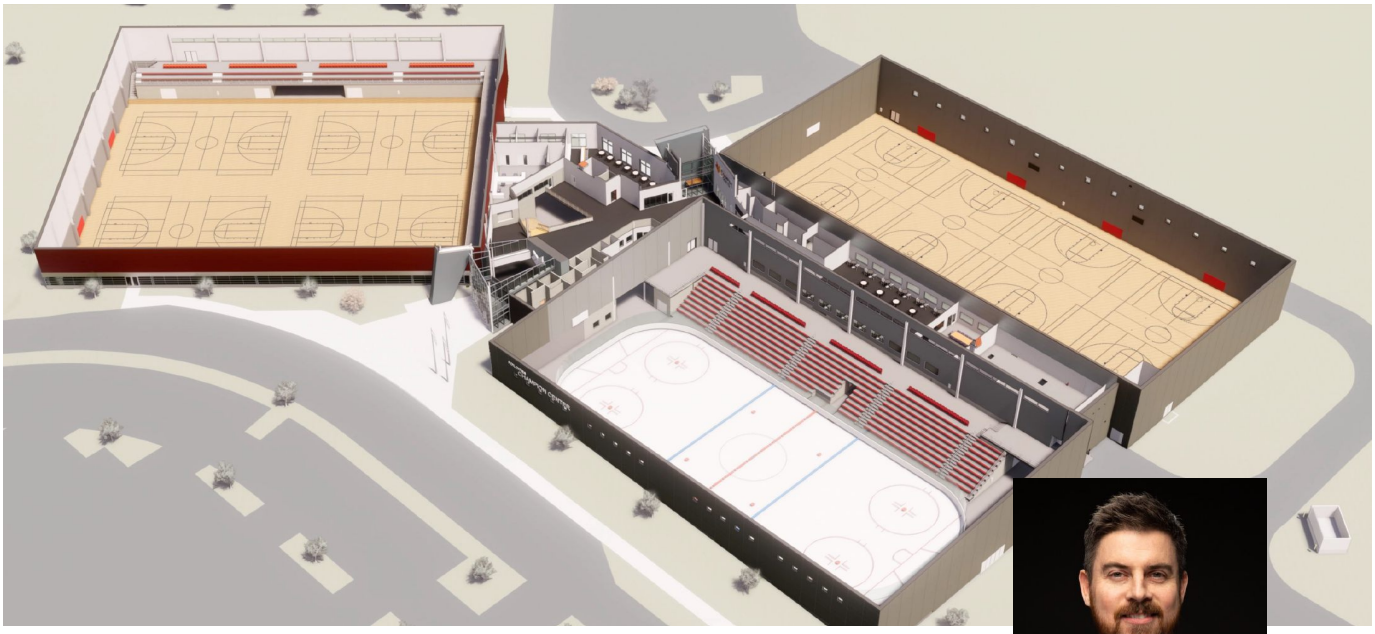


BILL KRUEGER

SENIOR VICE PRESIDENT

Bill Krueger, a CSL Principal and Senior Vice President, will serve as the project leader if selected for this engagement if our team is selected. Bill has been a sports, tourism, hotel and event facility consultant for the past 30 years and has consulted on over 650 projects relating to the amateur sports, hospitality, convention, arena, tourism and other multipurpose event facility industries. Areas of project focus have included facility development and expansion feasibility, facility/organization performance evaluation, community economic growth strategy formulation, and public/private evaluation and negotiation assistance. Bill has led studies in communities of all sizes throughout North America, many of which have involved analysis of opportunities to expand and enhance communities' ability to generate new economic activity and visitation.

EDUCATION:

B.S.B. in Marketing and Finance
University of Minnesota (1993)

EXPERIENCE:

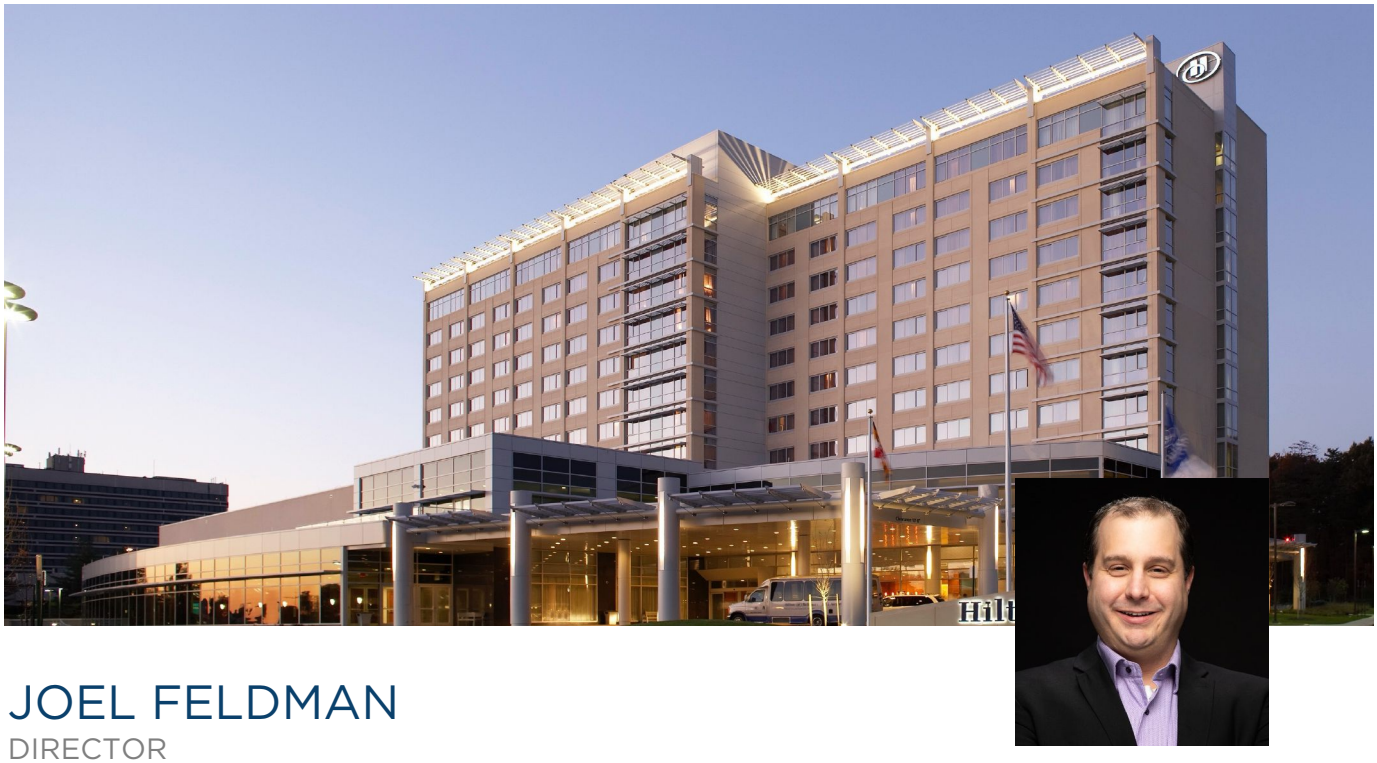
30 years Public Assembly
Facility Consulting 1995 – Present
Sr. VP & Principal – CSL International
Public Assembly Practice

AFFILIATIONS:

Destinations International
Int'l Association of Venue Managers
Sports ETA

REPRESENTATIVE CLIENTS:

New Amateur Sports Complex Study – Palm Springs, CA
Sports Tourism Facility Strategic Plan – Fairfax County, VA
New Indoor Amateur Sports Facility Study – Plainfield, IN
Sports Tourism Facility Study – Chapel Hill/Orange County, NC
Rocky Top Sports World Study – Gatlinburg, TN
New Indoor Amateur Sports Complex Study – Fort Smith, AR
Youth & Amateur Sports Facility Complex Study – Eugene, OR
Indoor Amateur Sports Facility Study – Cabarrus County, NC
New/Expanded Ice Complex Facility – Albany, NY
Community First Champion Center Study – Grand Chute, WI
Indoor Sports & Recreation Facility Studies – Elmhurst, IL
Amateur & Sports Tourism Facility Feasibility Analysis – Greenville, NC
Multi-purpose Indoor Sports Facility Study – Batavia, NY
Potential New Sports Complex Feasibility Study – Onondaga County, NY
New Amateur Sports Complex Study – Covington, KY
New/Expanded Amateur Sports Complex Study – Kalamazoo, MI
New/Expanded Amateur Sports Facilities – Traverse City, MI
New Amateur Sports Facility & Hotel Studies – Loveland, CO
Indoor Amateur Sports Facility & Hotel Studies – Pearland, TX
Hotel & Convention Center Feasibility Study – Ann Arbor, MI
Convention Center Study & Hotel P3 Advisory – Port Huron, MI
Convention Center & Hotel Feasibility Study & Mgmt. Advisory – Provo, UT
Hotel & Convention Center Feasibility Study & P3 Advisory – Plainfield, IN
New Focused-Service Hotel Feasibility Study – Stephenville, TX
New Dual Brand Hotel & Mixed-Use District Study & Advisory – Canton, OH
New HQ Hotel Study & Advisory – Springfield, IL
New Full-Service Hotel & Conference Center Study – Charlotte, NC



JOEL FELDMAN

DIRECTOR

Joel Feldman, a Director with CSL, brings over 18 years of experience consulting on more than 350 facility-related studies in markets located throughout the country, ranging from major metropolitan areas to emerging markets. Joel will coordinate with Mr. Krueger in managing the market research, data collections and other relevant day-to-day tasks throughout the study process. Joel's wide range of experience provides an understanding of the issues faced by a variety of municipalities as they assess potential opportunities to develop youth/amateur sports, multipurpose event, hospitality and other public assembly facilities with the goal of both attracting new economic activity and providing enhancements to the quality-of-life of area residents. Joel is actively involved in local youth sports in his hometown of Bloomington, Minnesota. He has coached youth baseball since 2016 and has volunteered with the youth hockey association since 2017, serving as President of the Bloomington Amateur Hockey Association during the 2021-22 season.

EDUCATION:

B.A. in Economics Carleton College (2000)

EXPERIENCE:

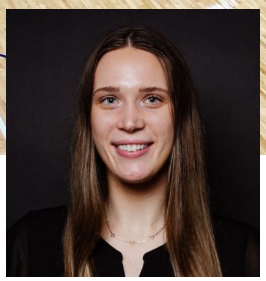
18 Years Public Assembly Facility Consulting
2006 – Present
Director - CSL International

AFFILIATIONS:

International Association of Fairs and Expositions
Destinations International (formerly DMAI)
International Association of Venue Managers
Sports ETA (formerly NASC)

REPRESENTATIVE CLIENTS:

Indoor Recreation Facilities Feasibility Analysis - Elmhurst, IL
Indoor/Outdoor Youth Sports Complex Study - Valparaiso, IN
Multi-sport Indoor Court or Turf Facility - Bay City, MI
Assessment & Sports Tourism Facility Plan - Fairfax County, VA
Grandview Family YMCA Sports Complex Master Plan - Millbrook, AL
Youth/Amateur Sports Complex Needs Assessment - Eugene, OR
County-wide Sports Tourism Assessment - Porter County, IN
James Cownie Soccer Complex Expansion Analysis – Des Moines, IA
Studies for New Amateur Sports Facilities - Loveland, CO
Youth Sports/Rec Facility Needs Assessment – Delaware County, IN
Chico Area Rec. and Park District Master Plan - Chico, CA
Outdoor Sports Facility Development Analysis - Racine, WI
Indoor Sports Complex Feasibility Study – Savannah, GA
Sports Tourism Facilities Feasibility Study – Kalamazoo, MI
Proposed New Sports Complexes Feasibility Study – Spokane, WA
Community Center & Sports Complex Study – Cedar Rapids, IA
Indoor Sports Complex Feasibility Study – Meridian, ID
New Hotel & Event Spaces at The Ranch Events Complex – Loveland, CO
Full-Service Hotel & Conference Center Feasibility Study – Black Hawk, CO
New Hotel & Conference Center – Stephenville, TX
New Hotel, Conference Center & Multi-use Event Facilities – Pearland, TX



BAILEY HELGREN

RESEARCH ANALYST

Ms. Helgren serves as a Market Research Analyst for studies of youth/amateur sports and sports tourism industry-related event facilities spanning a wide range of markets across the country. Serving in this role, Bailey has provided planning and research into the development and operation of facilities and destinations throughout the country. Since joining CSL, Bailey has been involved in a variety of facility feasibility studies, including those for amateur sport and recreation complexes, convention, conference and exhibition centers, arenas and other such multipurpose event venues. Bailey is actively involved in youth sports after playing Division I basketball at The University of Kansas and The University of Minnesota. Bailey has served as a coach of middle school girls' basketball and presently serves as a coach with the Class 4A high school girl's basketball team in Edina, Minnesota.

EDUCATION:

B.S.B. in Marketing
University of Kansas (2021)

MEd in Sport Management
University of Minnesota (2022)

EXPERIENCE:

4 years Public Assembly Facility Consulting
2022 – Present

REPRESENTATIVE CLIENTS:

New Indoor Amateur Sports Facility – Traverse City, MI
New Ice Complex – Marquette, MI
New Ice Complex & Event Facilities – Lake Delton, WI
New Amateur Sports Complex Study – Palm Springs, CA
New Indoor Sports Complex Study – Savannah, GA
New Amateur Sports Complex Study – Covington, KY
New/Expanded Sports Complex Study– Kalamazoo, MI
New/improved Sports Facilities Study – Spokane, WA
New Community Center & Sports Complex – Cedar Rapids, IA
Indoor Sports Complex Feasibility Study – Meridian, ID
Proposed Indoor Sports/Entertainment Complex – Cary, NC
Event Center Feasibility Study – Myrtle Beach, SC
New Amateur Sports Complex – Cabarrus County, NC
New Youth Sports Training Complex – Boston, MA
New Amateur Sports Complex – Riverside, CA
New Hotel & Convention Center Study – Plymouth, MA
Hotel/Event Center Feasibility Study – Myrtle Beach, SC

3 PROPOSED SCOPE OF SERVICES

CSL | LEGENDS GLOBAL

3 PROPOSED SCOPE OF SERVICES

It is understood that the City of Aubrey (City) desires to commission a Feasibility Study of a New Indoor Amateur Sports Facility and Hotel Product Development in Aubrey, Texas. The study process will assist the City and other community stakeholders assess market demand and opportunities, supportable facility concepts and programs, development costs, operating performance and economic impact projections, and funding and partnership opportunities associated with both a potential new Indoor Amateur Sports Facility and new hotel product development initiatives. In addition, CSL has extensive study and public/private partnership (P3) advisory experience involving hotels, amateur sports facilities, mixed-use districts, conference/meeting facilities, entertainment venues and other such facility assets. For the Indoor Amateur Sports Facility concept, it is understood that court sports, and possibly ice sports, are envisioned areas of focus for the project.

In addition to more than 100 feasibility study engagements in markets of all sizes throughout Texas, CSL has conducted hundreds of studies and advisory engagements involving indoor amateur sports facility and hotel facility development projects throughout the country over the past decade. This experience provides us with a strong foundation and understanding of the state and regional marketplace and associated key market drivers, including an understanding of new Texas legislation involving funding for qualified hotel and convention center projects. The scope of work outlined herein comprises a study process CSL has successfully implemented for similar amateur sports and hotel facility feasibility and strategic planning projects throughout the country. We would look forward to discussing with you any ultimate approach and/or discuss scope variations to best meet your objectives for this project and deliver the highest value for all stakeholders.

The specific tasks proposed to be completed as part of the Feasibility Study for the two primary product development components (Hotel and Amateur Sports Facility) are summarized below and on the following pages. Additionally, we have provided provided information related to additional advisory services CSL could provide at the conclusion of one or both of the studies to assist with implementation steps for either facility.

1) HOTEL PRODUCT DEVELOPMENT FEASIBILITY STUDY

The study of potential new Hotel Product Development is designed to evaluate market demand, supportable development and program, cost and operating performance, asset valuation, estimated economic impacts, and partnership opportunities associated with one or more potential new Hotel projects in Aubrey. These conclusions are normally critical in establishing a beneficial negotiating position for you should the Hotel project(s) involve a public/private partnership (P3) framework and transaction. These estimates are necessary to fully understand the "feasibility gap" for the proposed Hotel(s), which corresponds to the approximate contribution that would be required by the City or other third parties to make the subject transaction attractive to typical private investors.

To gain an understanding of the market potential for new hotel product development in Aubrey, a detailed analysis of key supply/demand and related issues will be conducted. A current understanding of revenue and expense characteristics of similar hotel projects in markets comparable to Aubrey will assist in forecasting the income potential of one or more new Hotel projects in Aubrey.

Based on this understanding, CSL has developed a scope of services that we believe will provide the City and other stakeholders with the necessary information and analyses to make informed decisions regarding new hotel product development and related strategic planning. The proposed scope of services for this study effort is summarized below and on the following pages, along with a set of optional advisory services that CSL could perform at the City's express request involving solicitation and negotiation with candidate hotel developer/investor partners.

Task 1. Project Organization, Kickoff and Planning:

- Conduct an initial kickoff meeting with the City and/or project representatives to establish the organizational framework to ensure the study's outcome will meet objectives.
- Collect and assemble any existing background materials and information, including any master plans and key project pipeline information.
- Complete meetings/interviews with key local officials, stakeholders, and representatives of key hospitality and tourism organizations.
- Collect historical utilization data associated with key local area event and sports facilities and attractions, along with booking and lost business reports.
- Conduct community and key facility tours, including key area lodging facilities.
- Review proposed site(s) (if applicable).

Task 2. Local Market Area Analysis:

- Evaluation of macroeconomic trends and local economic indicators, such as:
  - Population growth.
  - Income statistics.
  - Unemployment trends.
  - Real estate development trends.
  - Analyze recent trends in variables generally correlated with lodging and conference/meeting demand in the market, as applicable:
  - Office statistics.
  - Airport statistics.
  - Convention, conference, meeting and other event statistics.
- Develop conclusions about the directional trends of key economic indicators that influence the lodging and conference/meeting industries.

Task 3. Hotel Supply & Demand Analysis:

- Define the existing set of competitive hotels in the area.
- Estimate occupancy and average daily rate of each hotel in the defined competitive set.
- Identify and evaluate proposed new competitors in the market area and the resulting impact on occupancies and average rates.
- Estimate demand segmentation of accommodated demand (i.e., percentage of business, leisure, and meeting/group activity).
- Analyze un-accommodated demand related to local sell-out patterns.
- Evaluate potential induced demand from any proposed major developments in the area.
- Conduct interviews/meetings, as needed, with representatives of key local area demand generators, including key local hotels, event facilities, sports facilities/complexes, attractions, major businesses and other hospitality/tourism industry participants.
- Development of conclusions related to market opportunities and key hotel product development needs.
- Identification/confirmation of the subject Hotel property's characteristics, including hotel type/brand, number of guest rooms, location, key amenities/specs, and other such concept/programmatic aspects.

Task 4. Assess Financial Results & Program Levels from Comparable Hotel Projects:

- Identify a set of comparable facilities in similar settings that share key characteristics with the proposed subject Hotel(s).
- Obtain financial statements/reports from comparable projects, including operating revenues and expenses, average daily rate (ADR), occupancy, revenue per available room (RevPAR) and related metrics from the cumulative set of comparable properties.
- Provide a detailed analysis of performance metrics, including all revenue and expense line items.
- Inventory specific program elements, including number of guest rooms, conference/meeting space, flag/brand, age and related characteristics.

Task 5. Determination of Program:

- Number and size of rooms by type.
- Food and beverage facilities.
- In-house meeting/conference space, including square footage and delineation of key spaces.
- Amenities package, price-point and service levels appropriate for the subject Hotel(s).
- Parking requirements.
- Desirable hotel brands best suited for the identified location(s).
- Amenities, programming, functionality, flexibility, and optimal layout.

Task 6. Projections of Hotel Occupancy & ADR:

- Prepare penetration analysis of commercial demand segment.
- Prepare penetration analysis of leisure demand segment.
- Prepare penetration analysis of meeting/group demand segment.
- Estimate the likely ability of the subject property (or properties) to penetrate each demand segment relative to the defined competitive set of hotels in its market.
- Forecast occupancy and average daily rates through the estimated stabilization period.

Task 7. Financial Projections & Feasibility Gap Analysis:

- Develop a computer-based model to assess and develop foundational metrics and performance projections for the subject Hotel(s) over a 20-year period, including: (1) Hotel market mix; (2) in-house conference/meeting space market mix, event levels, utilization, and attendance; (3) ADR; (4) occupancy; (5) RevPAR; (6) operating revenue; and (7) operating expenses.
- Prepare 20-year projections of net income for the subject Hotel(s). Cash flow available for debt service and income taxes will be assessed, analyzing the impact of changes to the facility program(s) on available cash flow.
- Develop order-of-magnitude capital (development) costs for the project(s).
- Determine an estimated feasibility gap for the Hotel project(s) (the level of City or other public sector or third-party support that could be required to deliver a sufficient return-on-investment [ROI] to hotel investors).

Task 8. Economic Impact Analysis:

- Prepare economic impact modeling and projections over 20-year period:
  - Direct spending (construction, in-facility and out-of-facility).
  - Indirect and induced spending.
  - Personal income (earnings).
  - Employment (full- and part-time jobs).
  - Tax revenue (including sales, lodging and other taxes).
  - Intangible/non-quantifiable impacts and benefits.

Task 9. Reports & Presentations:

- Prepare a written draft report summarizing study findings and conclusions.
- Present findings to the City and other stakeholder groups.

2) AMATEUR SPORTS FACILITY FEASIBILITY STUDY

In conducting the study/analysis for the potential new Indoor Amateur Sports Facility product component, we will implement a multi-faceted, market-based approach that focuses on the specific needs and characteristics of existing and potential new youth and adult sports and recreation user groups and market segments, both from a local and non-local perspective. It is understood that an outdoor field complex is being developed in Aubrey. Our study will consider this development, including opportunities associated with co-location, cross-usage, partnerships and collaboration with a potential new Indoor Amateur Sports Facility.

Task 1. Kickoff, Project Orientation & Interviews

As an initial task, CSL will work with the City and other key stakeholders to establish the specific project goals and timeframe. An initial planning meeting will take place to collect pertinent project data and to identify the local organizations, officials and others that CSL will need to meet with at the study's outset.

CSL will connect with key project stakeholders to obtain background information related to the project. In addition to meetings with the City, these interviews could include individuals such as leadership from the County, surrounding municipalities, sports and recreation user groups, leagues, clubs, tournament organizers and/or camp/clinic operators, leadership and/or sports representatives from local schools, colleges, area hoteliers, hospitality and service industry representatives, and other community groups and stakeholders. These meetings will focus on understanding conditions with regard to local market characteristics, facility needs and the opportunities that future investment in a new Indoor Amateur Sports Facility in Aubrey may represent.

Task 2. Local Market Conditions Analysis

The purpose of this task is to define and evaluate the local market characteristics of the Aubrey area, and assess the area's ability to support a new Indoor Amateur Sports Facility. Initially, CSL will review any existing data, documentation and resources, historical utilization and financial operations data among existing area sports and recreation facilities, plans related to past or proposed facilities and sites, land acquisition cost estimates, lease agreements for potential sports organizations/tenants and other such information.

Characteristics to be evaluated include, but are not limited to the following:

- Existing/planned youth/amateur sports facilities in the local area.
- Key demographic and socioeconomic characteristics and trends, such as population, disposable income, retail sales, entertainment spending, corporate base and other such indicators.
- Existing/planned lodging properties, rooms and cost structures.
- Destination marketing efforts, programs and funding.
- Tax rates, collections and uses (e.g., hospitality industry taxes, sales/use taxes, etc.).
- Proximity issues to major metropolitan markets and other population centers.
- Air, rail, ground transportation and shuttle access.
- Entertainment, recreation and other cultural amenities.
- Key community resources.
- Other such characteristics.

The results of this task will be used in combination with data prepared throughout the study to assess Aubrey's competitive position within the greater Dallas-Fort Worth and regional marketplace and its ability to accommodate demand associated with a new Indoor Amateur Sports Facility. By understanding the type of local sports and recreation activity, sports tourism and other activity currently accommodated within the community and greater local/regional area, CSL can focus recommendations on facility development that could add to the overall level of activity and economic impact.

Task 3. Industry Characteristics & Trends Analysis

As part of this task, CSL will provide an overview of local sports/recreation and sports tourism participation trends in the local, regional and national marketplace. An understanding of these trends provides a framework from which to assess potential demand for a new Indoor Amateur Sports Facility in Aubrey. Throughout this task, CSL will evaluate these and related trends, summarizing the potential impact on a new Indoor Amateur Sports Facility. An evaluation of these trends will be important in framing and placing overall market demand estimates into the context of the industry, presently and into the foreseeable future.

Task 4. Competitive & Comparable Facility Analysis

The number and types of facilities in the local and regional market that may compete for the limited supply of facility users will affect the market potential for a new Indoor Amateur Sports Facility in Aubrey. In this task, CSL will review the existing amateur sports facility offerings throughout the competitive regional marketplace. Inventories of sports tourism and amateur sports facilities/complexes will be developed to determine the level of competition within the marketplace and identify areas of potential need. CSL will analyze existing and planned local and regional competitive sports facilities and other event facilities to assess the relation, interaction and impact, if any, they may have on the demand for a new Indoor Amateur Sports Facility in Aubrey.

Additionally, CSL will also evaluate projects around the country that may offer some element of comparable insight (e.g., pricing structures, staffing levels, sponsorship/advertising opportunities, expense ratios, etc.). A specific emphasis will be placed on identifying and analyzing facility complexes in destinations similar to Aubrey. The types of data that will be assembled include, but are not limited to, the following:

- Facility type and marketing focus.
- Physical characteristics including number and type of indoor courts (e.g., hardwood, synthetic sportcourt, etc.), indoor turf space, number and type of ice sheets (e.g., NHL vs. Olympic vs. studio sheets), spectator seating, dryland training space, fitness and wellness spaces and amenities, meeting rooms, player and official locker rooms, lobby and other hospitality space, types of facility layouts, and other such features.
- Future expansion plans.
- Construction costs and financing sources.
- Leveraged private partnerships and/or sponsorship opportunities.
- Partnerships with local schools, colleges and/or universities.
- Game, tournament, practice, training, camp, and clinic characteristics (levels, attendance, utilization, future bookings, etc.).

- Operating revenues and expenses.
- Tenant and daily rental terms.
- Concessions and other ancillary services and amenities.
- Available parking.
- Area demographics.
- Location characteristics (e.g., proximity to restaurants, transportation access, etc.).

This analysis will assist in providing data as to how a new Indoor Amateur Sports Facility in Aubrey could compete within the greater regional marketplace (including greater Dallas-Fort Worth area facilities), as well as later assisting in the evaluation of the associated financial operations, pricing structure and staffing levels. Detailed case studies for each facility will be provided.

Task 5. Market Outreach, Interviews & Surveys

The purpose of this task is to develop primary market research specific to Aubrey. In-person interviews, telephone and videoconference meetings and/or other focus group interviews with key local individuals, user groups and business leaders will be conducted near the outset of the study to gain insight into the local community's attitude toward development and operations of a new Indoor Amateur Sports Facility in Aubrey.

Beyond these local interviews, CSL will identify and interview via telephone/videoconference a sample of potential users and/or user groups from a regional and potentially national basis. These interviews allow for going beyond simply relying on competitive and comparable facility data in order to develop utilization and other financial operating assumptions. These interviews may include organizations and/or individuals from the following segments:

- Various youth and adult recreational sports associations, clubs and organizations.
- Local county and municipal Parks and Recreation departments.
- Local school districts.
- Local colleges and universities.
- Amateur sports associations.
- National, regional, and local tournament organizers.
- Other potential user groups of new/expanded/improved amateur sports facilities, as identified.

For each demand segment, CSL will evaluate whether the current Aubrey area inventory of facilities is presently adequate and which segments represent the greatest areas of need/emphasis for new product development. League, tournament, camp, clinic, and other such organizer survey results will be analyzed to provide summaries of the following data specific to the potential for amateur sports facility product development in Aubrey:

- Likelihood of utilizing a potential new Indoor Amateur Sports Facility in Aubrey.
- Reasons for a lack of interest in using a potential new Indoor Amateur Sports Facility in Aubrey.
- Physical characteristic needs (i.e., number/size of courts, fields, ice sheets, other playing surfaces, etc.).
- Space/seating levels required.
- Overall hotel room requirements.
- Other important community requirements.
- Weekday, weekend and other timing/seasonality issues.
- Length of the league, tournament, camp, clinic or other activity.
- Past facility use and perceptions of the Aubrey area and destination.
- Other related information and relevant opinions.

By combining the results of this task with the analysis results generated in previous tasks, CSL will be able to identify the leagues, tournaments, camps, clinics or other activities that represent the primary sources of demand for a potential new Indoor Amateur Sports Facility in Aubrey, upon which future facility recommendations and activity estimates are based.

Task 6. Program, Site & Capital Cost Analysis

The purpose of this task is to synthesize findings from the previous tasks to analyze and translate market demand into prioritized strategic initiatives for product development and supportable facility programs and projected utilization of a new Indoor Amateur Sports Facility in Aubrey. Initially, CSL will prepare an analysis of supportable concepts and facility programs for the targeted new Indoor Amateur Sports Facility in Aubrey. Should multiple facilities be indicated, CSL will also recommend a prioritization of projects and sequence of development/investment initiatives.

In analyzing the potential facility development options, a comparison of each market-indicated product concept or scenario will be developed, focusing on:

- Physical characteristics such as number and size of courts (hardwood, sportcourt), size and/or quantity of indoor turf space, number and size of ice sheets, performance/training spaces, etc.
- Fixed and temporary seating levels.
- Amount and type of other revenue-producing areas and key amenities.
- Supporting infrastructure needs, including indoor programmed areas, restroom and locker room facilities, concessions and hospitality offerings, storage space, etc.
- Sustainability and low maintenance systems.
- Possibilities for future expansion.

Further, CSL will identify any external factors that could significantly affect the ability of any new facility development to maximize its potential. Should any existing complementary facilities, amenities and/or infrastructure be deemed inadequate to accommodate the noted demand for each product development initiative, CSL will conduct a preliminary assessment of such items/issues. A discussion of potential methods of facilitating their development or creation will be prepared, including incentivizing private sector participation and/or creative public/private partnership (P3) structures to enhance the infrastructure needed to adequately support any future amateur sports facility product investment.

As part of this analysis, CSL will tour and evaluate the targeted development site and surrounding area, considering the strength of various important attributes such as parcel size, adjacencies to area demand generators, accessibility, ability to stimulate future economic growth, access to available funding sources/partnerships and other such factors. A summary of strengths, weaknesses, opportunities and challenges will be presented to provide guidance for the City and other stakeholders with respect to feasibility and development strategy that could include a new Indoor Amateur Sports Facility at the site. If necessary and requested, CSL will also comment on alternate site options to allow City decision-makers to chart the most appropriate course for the project.

Last, CSL will preliminarily assess capital (construction) costs associated with the identified Indoor Amateur Sports Facility product initiative. With the assistance of key architect partners and data from comparable facilities, order-of-magnitude construction costs will be estimated.

Task 7. Financial Operating Analysis

Based on the results of the market demand and program analysis, CSL will project the anticipated usage among local, drive-in and overnight visitors. The success opportunity will be assessed for a new Indoor Amateur Sports Facility in terms of accommodating existing and future demand from Aubrey area users, while competing with other regional facilities for the opportunity to host non-local games, tournaments, meets, camps, clinics, practices and other such activities. Specifically, from these data, information will be provided concerning the following:

- Description of leagues, tournaments, camps, clinics and/or other activities that could use a potential new Indoor Amateur Sports Facility in Aubrey.
- Appropriate mix of utilization from each category.
- Projected attendance at each type of activity/usage.
- Estimates of participant and spectator spending on concessions, merchandise, tickets, etc.
- Access and/or rental terms anticipated.
- Levels and seasonality of use.

CSL will identify the leagues, tournaments, camps, clinics or other activities that represent the primary sources of demand for a new Indoor Amateur Sports Facility in Aubrey and assess the potential penetration of these markets to estimate activity levels, attendance levels and other primary characteristics by type of sport/activity. These estimates will form the basis on which CSL will evaluate the financial implications of operating the Indoor Amateur Sports Facility and its ability to accommodate demand and fill areas of need in the market and the community's overall sports, recreation and tourism strategies.

CSL will then conduct a detailed financial analysis to estimate financial operating results over a 20-year period for a new Indoor Amateur Sports Facility in Aubrey under the supportable development scenario(s) identified. The results of this analysis will help the City and other project stakeholders make informed decisions about potential facility development. Based on the potential usage mix and levels, attendance, rent and fee structures, per capita spending estimates and the financial performance of comparable sports facilities, CSL will prepare estimates of operating revenues and expenses associated with the targeted amateur sports product initiative. Revenue and expense estimates will include, but are not limited to, the following:

Revenues	Expenses
In-House League Registration	Salaries, Wages & Benefits
In-House Tournament Registration	Utilities
Rental Income	Maintenance & Repair
Camps/Clinics	Materials & Supplies
Concessions	Insurance
Parking	Concessions
Advertising/Sponsorships	General & Administrative
Naming Rights	Tournament Expenses
Other/Miscellaneous	League Operations/Programming

The financial operating model allows flexibility in adjusting certain key variables and cost-effective analysis of a variety of potential facility concepts, operating scenarios and supportable program characteristics. In addition, this sensitivity analysis allows CSL to estimate potential annual fluctuations by modifying various inputs and assumptions, thereby providing an assessment of the potential financial and operating risks involved with facility operations.

Task 8. Economic Impact Analysis

CSL will estimate the economic and tax impacts associated with the operation of the identified new Indoor Amateur Sports Facility in Aubrey. As part of this analysis, estimates of total incremental out-of-town visitors to the Aubrey area generated as a result of these targeted facilities will be developed. Appropriate per-participant/attendee spending estimates will then be applied using industry data adjusted to the local area. The resulting participant/attendee spending levels will be segmented by industry and applied to economic impact multipliers.

The multipliers, provided by leading input/output multiplier models, will be used to estimate total economic output, earnings and employment generated as a result of the identified amateur sports facility product initiatives in Aubrey. From these economic impact variables, CSL will apply appropriate local, regional and statewide tax rates to estimate the added tax revenue generated as a result of the project.

The completion of the economic and fiscal impact analysis will allow for a comparison of key costs and benefits associated with the development and operation of a new Indoor Amateur Sports Facility in Aubrey. Estimates of impacts associated with facility construction and operations will be presented over a 20-year period. Further, a summary of various non-quantifiable (or intangible) benefits associated with investment in the project will be presented and discussed.

Task 9. Ownership, Management, Funding & Partnerships

A key component of the analysis will focus on the various means of facility ownership and guidance, including how a new Indoor Amateur Sports Facility in Aubrey could be operated and marketed. Each potential governance structure for amateur sports facilities has its own unique advantages and disadvantages, which should be considered when making decisions regarding implementation strategies for a new Indoor Amateur Sports Facility.

Initially, CSL will assess various partnerships and funding sources for a new Indoor Amateur Sports Facility in Aubrey. While the development of sports facilities/complexes throughout the country typically involve some level of public funding, intense and increasing levels of competition among facilities and destination, coupled with increased pressure from governmental entities for publicly-owned facilities/complexes to break even, has forced many communities to attempt changes in the fundamental process of funding and managing recreational and sports tourism facilities and complexes.

Further, CSL will evaluate options for the operations of a new Indoor Amateur Sports Facility in Aubrey and will suggest appropriate key policies to ensure any ultimate facilities developed appropriately balance the recreational and amateur sporting needs of Aubrey and the surrounding communities with the opportunity to leverage the facility as an economic development tool for the City in terms of driving new tourism. In many communities, a partnership with existing or new sports clubs or associations, educational institutions, medical/rehabilitation facilities and/or existing/planned lodging facility ownership is created to secure the recommended facilities.

Task 10. Reports & Presentations

In this final task, CSL will prepare a written report summarizing key findings and conclusions. These matters will be summarized in a draft report including an executive summary, which will be submitted to the City prior to finalizing the document. After comments are incorporated, CSL will issue a final written report summarizing all findings, conclusions and recommendations. CSL will also conduct oral presentations for the City and other appropriate stakeholders regarding the study findings.

3) Post-Study Advisory Services

Upon the conclusion of the feasibility study process, at the City's express written request, CSL could also assist with various advisory and consultation services associated with project implementation and the evaluation and planning for a potential P3 transaction for the new Hotel and/or Amateur Sports Facility product recommendation(s), in addition to consultation concerning business planning issues, partnerships, management/operator selection, site selection, architect and development partner selection, design and programmatic review, and other such areas involving project implementation and execution. This type of on-call consultation emphasizes protecting the interests of the City and will be based on CSL's past experience with similar projects and an understanding of industry best practices.

The optional implementation advisory services below and on the subsequent pages represent typical implementation planning, evaluation and execution steps that CSL has provided to clients pursuing similar projects in markets throughout the country. While most sports and hospitality facility implementation processes, including those involving P3 transactions and private management, vary in terms of the assistance requirements, the following services can often be useful as the project advances:

1. **On-Call Availability:** Availability for telephone conference calls and in-person visits to Aubrey for discussions, strategic planning and negotiations.
2. **Refine Concept & Update Key Feasibility Study Assumptions:** Utilizing the results of the feasibility study, past experience and knowledge of industry best practices, CSL will work collaboratively with the City and other stakeholders to further refine pertinent detail, assumptions, and business planning issues as they relate to project concepts, including, but not limited to, physical characteristics and amenities, market positioning, configuration at the master plan site, parking needs/opportunities, marketing opportunities and challenges, fit within the greater destination/marketplace, ownership/management scenarios, operational issues, marketing and operational synergy among other site/property elements, and other such items. As needed, CSL will conduct research to update key analysis and findings associated with the feasibility study, including, but not limited to: local and regional competition, industry supply and demand trends, market demand capture implications of current site elements, condition, and program, and other such items.
3. **Develop Market/Financial/Economic Modeling Tool:** Building on work developed through the feasibility study, CSL will work with the City to develop a core set of market assumptions (e.g., utilization, occupancy, and attendance and financial assumptions, including rates, food & beverage and merchandise per capitas, and other such operating revenue and expense assumptions) for each identified facility and scenario. These will form the basis for ongoing analysis of utilization, revenues, expenses, and return-on-investment calculations. The model will be a useful tool for ongoing evaluation of the project under various scenarios as programmatic elements of the facility product and elements are finalized, and business plan and transaction terms are negotiated.
4. **Refine Management/Operating Model Detail:** Based on the outcome of the previous analyses, CSL will work with the City to outline and further refine the core parameters and characteristics of management and operating assumptions for the subject facility (or facilities), based on industry best practices and assessment of the unique attributes of the subject items. If applicable, CSL will recommend the most appropriate models associated with governance/oversight, day-to-day operations, staffing, strategic marketing/promotion partnerships, method of provision of services (in-house, exclusive vendor, preferred vendors, open vendor policy, etc.), hypothetical general FF&E needs, booking and discounting policies, and other such business planning items.
5. **Private Management Solicitation, Selection & Negotiation:** CSL has assisted many municipal clients with the solicitation of qualified private management firms (i.e., operators) concerning amateur sports, event and hospitality facilities. This includes the development of RFEI (request for Expressions of Interest) and RFP (Request for Proposals) documents for private management. Additionally, CSL can assist with the evaluating responses, advising with selection, and assisting with negotiation an appropriate management agreement that best protects and services the interests of the City and adheres to industry best practices. Given the recent acquisition of ASM Global (the nation's largest third-party private management company) by CSL's parent company, Legends Global, CSL could be conflicted out of assisting with the selection and negotiation steps of a private management firm for the Amateur Sports Facility (as Legends Global manages a number of amateur sports facilities around the country under contract with public owners), but CSL would not have any conflict with a new Hotel project (as Legends Global does not manage any hotels).

6. **Funding Analysis/Modeling:** CSL will identify and summarize financing sources and the extent to which facility/core element development may require funding from external sources to fund project operations and debt service. The analysis will focus on both financing mechanisms and the project revenue sources that could be used to partially fund facility development and/or ongoing operations. Working with the City and other stakeholders, CSL will identify, assess and integrate various funding assumptions and sources within financial models.

7. **P3 (Public-Private Partnership) Transaction Assistance:**

   a. P3 Requests for Expressions of Interest (RFEI):

   - Work with the City to develop a RFEI document designed to preliminarily gauge developer & investor interest.
   - Identify a targeted list of developer/investor candidates from our database, representing the most likely potential partners for the project(s).
   - Distribute RFEI.
   - Conduct preliminary telephone discussions with interested partner candidates to obtain valuable information that will aid in the subsequent development of a subsequent Request for Proposals (RFP) document.

   b. P3 Planning & Evaluation:

   - Evaluate scenarios for the ultimate P3 transaction structure(s) and funding sources.
   - Provide comparable project information relating to partnership frameworks, financial and economic performance, visitation impacts, and other such information.
   - Update assumptions and conduct sensitivity analyses for the project(s) relating to utilization, occupancy, rate, financial projections, and ROI based on P3 transaction scenarios.
   - Assist in identifying potential financial advisors/underwriters and that might be required for the transaction(s).
   - Assist with the development of a prioritized list of key terms that development and operator agreements should contain to best protect City interests—financially and economically.

   c. Development & Distribution of Request for Proposals (RFP):

   - Provide copies of actual RFPs associated with comparable projects throughout the country.
   - Work with the City to develop an RFP seeking submittals from qualified partners for the P3 opportunity.
   - Develop and provide a list of potential bidders for final RFP distribution associated with the project(s).
   - Assist in the planning for a pre-bidders conference with potential contractors, including the provision of a list of specific questions and topic areas of discussion.

   d. Evaluation of RFP Responses:

   - In coordination with the City, review each submittal to determine if all required information has been provided.
   - Compile a list of questions and/or clarifications that will be submitted to the proposers for further clarification.
   - Develop a matrix that allows for comparison of individual responses.
   - Participation in an interview process with selected respondents, furthering the City's understanding of final bids through questions and interactive discussions.
   - Assist with the final scoring of short-listed proposing teams.

   e. Selection & Negotiations:

   - Assist the City with the identification of the most desirable proposing firm/team for further negotiation.
   - Collect copies of similar development, management, room block, and/or equity partner agreements associated with comparable projects throughout the country to inform an initial framework for the negotiations.
   - As needed, conduct additional analyses and modeling of project performance.
   - Assist the City throughout the negotiation & agreement drafting/revising processes to arrive at agreements that are fair and equitable to all parties for each of the projects, with specific attention paid to the City's operating goals.

8. Agreements and Best Practices Consulting:

a. Access to a large proprietary database of industry research, agreement documents from comparable projects (i.e., Development Agreements, Management Agreements, Marketing Agreements, Hotel Room Block Agreements, Food Service and other service provider agreements, etc.).

b. Assistance in identifying, evaluating and negotiating funding options for the project (or projects), with a focus on both industry best practices as well as specific opportunities present in Aubrey and Texas.

c. Negotiation assistance with key terms associated with a variety of agreements involving the public sector and private parties.

d. Assistance, in collaboration with City counsel and other City assignees, in developing, reviewing and revising draft and final agreement documents associated with the City and/or other relevant participants.

e. Assistance in planning, developing, negotiating and finalizing agreements related to development, management, hotel room block, booking/discounting, and/or service provision elements of the overall project.

f. Assistance in reviewing programmatic and design documents related to the targeted facility or tourism asset projects, and other project elements upon their development and refinement.

g. As needed, research and discussion of best practices and industry benchmarking relative to "business planning" aspects for the subject facility (or facilities), and in terms of best positioning coordination and collaboration among parties. This could include staffing levels/roles/responsibilities, operating policies/procedures, mission statements, sales/marketing plan, provision of services by functional area/department (i.e., in-house vs. exclusive contract vs. preferred vs. open-vendor, etc.), reporting format and procedures, and other such items.

h. Assistance in developing key policies and produces to be employed at the facility or facilities (i.e., space/equipment/service rental rates, booking policies, mission statement, discounting policies, sustainability issues, user guides, etc.).

i. Other industry-related and project-specific areas, as requested by the City, as reasonable with consideration of total available engagement budget capacity.

4 PROJECT REFERENCES

CSL | LEGENDS GLOBAL

4 PROJECT REFERENCES

New Indoor Amateur Sports Facility Study
Kalamazoo, Michigan
Ms. Jane Ghosh
President & CEO
Discover Kalamazoo
240 W. Michigan Avenue
Kalamazoo, Michigan 49007
T: (269) 488-0051
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New/Expanded Amateur Sports Facilities Study
Cabarrus County, North Carolina
Ms. Donna Carpenter
President / CEO
Cabarrus County Convention & Visitors Bureau
10099 Weddington Road, Suite 102
Concord, North Carolina 28027
T: (704) 456-7963
E: donnacarpenter@explorecabarrus.com

Sports Facility, Hotel & Mixed-Use Studies
Pearland, Texas
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Pearland Economic Development Corporation
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Pearland, Texas 77581
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Community First Champion Center Study
Grand Chute, Wisconsin
Ms. Pam Seidl
Executive Director
Fox Cities Convention and Visitors Bureau
3433 West College Avenue
Appleton, Wisconsin 54914
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New Downtown Hotel Study & P3 Advisory
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New Hotel & Convention Center Study
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Ann Arbor, Michigan 48103
T: (734) 794-0647
E: mprice@annarbor.org

5 PROPOSED TIMING & FEES

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5 PROPOSED FEES & TIMING

Total professional fees for any engagement will depend on the number of hours required to complete the project and skill levels of the assigned personnel. Costs and timing are presented below for each of the three (3) study/advisory scope of work options outlined herein, along with costs and timing associated with a combined, concurrent study effort.

A) Hotel Product Development Feasibility Study

Total professional fees and out-of-pocket expenses associated with the scope of services outlined herein related to the Hotel Product Development Feasibility Study will not exceed Thirty-Seven Thousand Five Hundred Dollars ($37,500). Professional fees and out-of-pocket expenses will be billed and are payable on a monthly basis.

Should additional work be required beyond the scope of services detailed herein, professional fees will be billed on an hourly rate basis. Total professional fees for additional services will depend on the number of hours required to complete the services and skill levels of the assigned personnel.

Assuming timely responses by the City to requests for meetings and information, CSL would expect to be able to complete the scope of services for the study scope of services outlined herein within eight (8) to ten (10) weeks from project initiation.

CSL expects to complete one (1) in-person visits to Aubrey during the course of the study. Regular progress updates will be forwarded to the Client during the analysis period and the CSL project leader will be available for telephone or virtual meetings as needed to complement the study effort and for coordination/collaboration purposes.

B) Amateur Sports Facility Feasibility Study

Total professional fees and out-of-pocket expenses associated with the scope of services outlined herein related to the Amateur Sports Facility Feasibility Study will not exceed Fifty-Five Thousand Dollars ($55,000). Professional fees and out-of-pocket expenses will be billed and are payable on a monthly basis.

Should additional work be required beyond the scope of services detailed herein, professional fees will be billed on an hourly rate basis. Total professional fees for additional services will depend on the number of hours required to complete the services and skill levels of the assigned personnel.

Assuming timely responses by the City to requests for meetings and information, CSL would expect to be able to complete the scope of services for the study scope of services outlined herein within twelve (12) to fourteen (14) weeks from project initiation.

CSL expects to complete two (2) in-person visits to Aubrey during the course of the study. Regular progress updates will be forwarded to the Client during the analysis period and the CSL project leader will be available for telephone or virtual meetings as needed to complement the study effort and for coordination/collaboration purposes.

A+B) Combined Feasibility Study

A number of efficiencies would be realized under a scenario where both feasibility studies are conducted concurrently. Much of the cost savings relate to one project mobilization of CSL staff and resources (rather than two separate, noncurrent efforts), two travel related visits (instead of three), presentation and report deliverable efficiencies, and other such items.

Total professional fees and out-of-pocket expenses associated with the scope of services outlined herein related to a combined Feasibility Study focusing on Hotel Product Development and a potential new Amateur Sports Facility will not exceed Seventy Thousand Dollars ($70,000). Professional fees and out-of-pocket expenses will be billed and are payable on a monthly basis.

Should additional work be required beyond the scope of services detailed herein, professional fees will be billed on an hourly rate basis. Total professional fees for additional services will depend on the number of hours required to complete the services and skill levels of the assigned personnel.

Assuming timely responses by the City to requests for meetings and information, CSL would expect to be able to complete the scope of services for the study scope of services outlined herein within fourteen (14) to sixteen (16) weeks from project initiation.

CSL expects to complete two (2) in-person visits to Aubrey during the course of the study. Regular progress updates will be forwarded to the Client during the analysis period and the CSL project leader will be available for telephone or virtual meetings as needed to complement the study effort and for coordination/collaboration purposes.

C) Post-Study Advisory Services

The number of hours that would be required to complete the work related to Post-Study Advisory Services is not fully defined, due to the uniqueness of all efforts of this nature. Therefore, professional fees would be billed on an hourly basis against a minimum fixed Base Fee of Thirty Thousand Dollars ($30,000). Out-of-pocket expenses would be billed separately at cost. Billable hours by staff member will be tracked and itemized monthly for the City. If the aggregate total of hourly billings and out-of-pocket expenses exceed the Base Fee amount, CSL will immediately inform the City and, upon the City's express written consent, CSL will bill additional fees on an hourly rate basis.

Professional fees and out-of-pocket expenses will be billed and are payable on a monthly basis. Should additional work be required beyond the scope of services detailed herein, professional fees will be billed on an hourly rate basis. Total professional fees for additional services will depend on the number of hours required to complete the services and skill levels of the assigned personnel.

Hourly rates by CSL staff position are as follows. These hourly rates have been developed in consideration of a premium associated with the provision of proprietary in-house industry data and the variable, on-call preferential nature that will be afforded to the City for requested services.

Principal (Bill Krueger)	$355
Analysts & Support Staff	$205

* * * * *

We would be happy to discuss with the City any potential adjustments to the scope of services to best meet any requirements that it may have for these study and advisory projects.

Thank you for your consideration.

AUBREY
1867
TEXAS

THANK YOU FOR YOUR CONSIDERATION

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City Council Meeting
Staff Report
January 22, 2026

Agenda Item
Conduct a Public Hearing and Consider and take appropriate action regarding the adoption of Resolution No. 1033-26 adopting The Policy Statement for Economic Development Incentives (2026), providing guidelines for economic development incentives and reauthorizing and adopting guidelines for tax abatement pursuant to State law; and providing for an effective period.

Staff Contact
Christine Gossett, MDD Executive Director
cgossett@aubreytx.gov
940-440-9343

Summary
The Aubrey Economic Development Incentive Policy is updated and renewed every two years. The last policy update and renewal was January 2024. The MDD Board reviewed the following updates and recommendations for the Aubrey Economic Development Policy policy and approved them at the MDD meeting on December 9, 2025.

Recommended Updates:

- Updated General Purpose and Objectives to state the City and/or the MDD can consider these incentives
- Added Target Industries
- Added Priority Geographic Areas
- Added Sales Tax Rebate and Hotel Tax Rebates as Incentives for projects that meet the criteria and minimum sales requirements
- Added language Infrastructure Improvements – pedestrian and parking in business districts
- Increase rebate on grease traps from $7,500 to $10,000
- Added section on buildings and land as incentives
- Added a Matrix outlining the incentives and updated the application to provide for more instructions and details applicant will provide.
- Added clauses at the bottom of the application.

The City Council will review the recommended changes and consider approval of the policy renewal.

Financial Summary
N/A

Staff Recommended Action

Staff Recommended Motion

RESOLUTION NO. 1033-26

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF AUBREY, TEXAS, REPEALING RESOLUTION NO. 951-24 APPROVING THE POLICY STATEMENT FOR ECONOMIC DEVELOPMENT INCENTIVES AND ADOPTING A NEW POLICY STATEMENT FOR ECONOMIC DEVELOPMENT INCENTIVES TO REESTABLISH REAUTHORIZE CRITERIA FOR INCENTIVES TO PROMOTE STATE AND LOCAL ECONOMIC DEVELOPMENT AND TO STIMULATE BUSINESS AND COMMERCIAL ACTIVITY OFFERED BY THE CITY OF AUBREY AND BY THE AUBREY MUNICIPAL DEVELOPMENT DISTRICT; PROVIDING GENERAL PURPOSE AND OBJECTIVES; PROVIDING CRITERIA; PROVIDING VALUE INCENTIVES; PROVIDING AVAILABLE INCENTIVES AND TARGETED INCENTIVES; PROVIDING FOR THE INCORPORATION OF PREMISES; PROVIDING FOR ADOPTION OF THE POLICY SET FORTH IN EXHIBIT "A" AND ESTABLISHING THE EFFECTIVE PERIOD FOR TAX ABATEMENT; PROVIDING FOR THE REPEAL OF CONFLICTING POLICIES; PROVIDING SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the attraction of long-term investment and the establishment of permanent new jobs in the City of Aubrey (the "City") will enhance the economic base of area taxing entities; and

WHEREAS, the City must compete with other communities across the nation currently offering tax inducements and other incentives to attract new commercial development; and

WHEREAS, granting economic development incentives is one of the principle means by which the public sector and the private sector can forge a partnership to promote real economic growth within a community; and

WHEREAS, any economic development incentives offered must be strictly limited in application to those new and existing businesses that bring new wealth to the community in order to avoid reducing the needed tax revenues of area taxing authorities; and

WHEREAS, Chapter 380 of the Texas Local Government Code authorizes municipalities to establish and provide for economic development programs, including programs for making loans and grants of public money and providing personnel and services of the municipality, as an incentive for the development or the redevelopment of property within the municipality; and

WHEREAS, Chapter 312 of the Texas Tax Code authorizes a City to enter into a tax abatement agreement after the adoption of guidelines and criteria that are effective for two (2) years; and

WHEREAS, the City Aubrey desires to repeal existing economic development policies and programs approved by resolution and to adopt an updated program to develop and expand the local economy by promoting and encouraging projects that will enhance the City's economic base, that will stimulate business and commercial activity, and that will diversify and expand job opportunities; and

WHEREAS, the City previously adopted its Policy Statement for Economic Development Incentives pursuant to Resolution No. 951-24 on January 25, 2024 after holding a public hearing; and

WHEREAS, on December 9, 2025, the Aubrey Municipal Development District ("AMDD") took action to approve the Policy Statement for Economic Development Incentives (2026) set forth in **Exhibit "A"** hereto; and

WHEREAS, on January 22, 2026, at an open public meeting, the City Council of the City of Aubrey considered this Resolution adopting the Policy Statement for Economic Development Incentives (2026) **(Exhibit "A")** hereto and held a public hearing on the adoption and reauthorizations of guidelines and criteria for economic development and tax abatement set forth in **Exhibit "A"** for the City and for the AMDD at which members of the public were afforded the opportunity to speak, in accordance with Chapter 312 of the Texas Tax Code; and

WHEREAS, the City Council hereby elects to remain eligible to participate in tax abatement and has determined that the adoption and reauthorization of the Policy Statement for Economic Development Incentives as set forth in **Exhibit "A"** for itself and for the AMDD, and compliance with the provisions of Chapter 312 of the Tax Code and other applicable State laws relative to economic development incentives, serves the public health, safety and welfare and supports and enhances economic development for both new facilities and structures and for the expansion or modernization of existing facilities and structures within the City;

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF AUBREY, TEXAS:

I.
Incorporation of Premises

The facts and recitations contained in the preamble of this Resolution are findings of the City County, are hereby found and declared by the City Council to be true and correct, and are incorporated herein in their entirety.

II.
Adoption of Policy – Effective Period

The Policy Statement for Economic Development Incentives (2026) and related economic development program, as described in **Exhibit "A",** attached hereto and incorporated herein for all purposes, is hereby adopted as the guidelines and criteria for the City of Aubrey to make loans and grants of public money to promote economic development and stimulate business and

commercial activity in the City pursuant to Chapter 380 of the *Texas Local Government Code, as amended,* electing to become eligible to participate in tax abatement and to provide tax abatements pursuant to Chapter 312 of the *Texas Tax Code,* and other sections of State law authorizing such economic development incentives. The Policy Statement for Economic Development Incentives as set forth in **Exhibit "A"** shall be effective for a period of two (2) years from the date of adoption.

Further the City Council hereby adopts and approves The Policy Statement for Economic Development Incentives (2026) set forth in **Exhibit "A"** as the guidelines and criteria for the Aubrey Municipal Development District when making loans and grants of public money to promote economic development and stimulate business and commercial activity in the City and the extraterritorial jurisdiction pursuant to Chapter 377 of the *Texas Local Government Code, as amended* and to provide tax abatements pursuant to Chapter 312 of the *Texas Tax Code,* and other sections of State law authorizing such economic development incentives by the AMDD.

The Policy Statement for Economic Development Incentives (2026) shall remain in effect until January 22, 2028 pursuant to Section 312.002 of the Texas Tax Code (the "Effective Period"), and during the Effective Period, the guidelines and criteria for tax abatement set forth in **Exhibit "A"** may be amended or repealed only by a vote of three-fourths of the members of the City Council.

III.
Conflicting Policies Repealed

The City of Aubrey hereby repeals any and all economic development policies, including without limitation tax abatement policies, that conflict with **Exhibit "A", previously adopted** whether adopted by resolution or otherwise.

IV.
Severability

Should any section, subsection, sentence, clause or phrase of this Resolution or **Exhibit "A"** hereto be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Resolution and **Exhibit "A"** shall remain in full force and effect. Aubrey hereby declares that it would have passed this Resolution adopting **Exhibit "A",** and each section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences clauses and phrases be declared unconstitutional or invalid.

V.
Effective Date/Internet Posting Required

This Resolution shall be effective immediately upon its approval. Upon approval, the Policy set forth in Exhibit "A" shall be posted on the internet website for the City and the AMDD as required for compliance with Section 312.002 of the Texas Tax Code as required for the City and AMDD to maintain eligibility for participation in tax abatement.

PASSED AND APPROVED this 22nd day of January, 2026.

_____
Chris Rich, Mayor

ATTEST:

_____
Jenny Hicks, City Secretary

APPROVED AS TO FORM:

_____
Patricia A. Adams, City Attorney

EXHIBIT "A"
POLICY STATEMENT FOR ECONOMIC DEVELOPMENT INCENTIVES

CITY OF AUBREY, TEXAS

POLICY STATEMENT FOR ECONOMIC DEVELOPMENT INCENTIVES (2026)

I. GENERAL PURPOSE AND OBJECTIVES

The City of Aubrey (the "City") is committed to the promotion of job creation and high-quality development in all parts of the city and to an ongoing improvement in the quality of life for its citizens. In so far as these objectives are generally served by the enhancement and expansion of the local economy, the City of Aubrey and/or the Aubrey Municipal Development District ("MDD") will, on a case-by-case basis, give consideration to providing incentives as stimulation for economic development in Aubrey. It is the policy of the City of Aubrey and the MDD that said consideration will be provided in accordance with the procedures and criteria in this Policy; however, this Policy shall not be construed as a limitation on the authority of the City or the MDD to provide economic development incentives. Additionally, nothing herein shall imply or suggest that either the City of Aubrey or MDD are under any obligation to provide incentives to any applicant. All applicants shall be considered on a case-by-case basis. This policy shall serve as nonexclusive reference material for City staff, City officials, MDD Board Members, and applicants to use in drafting and comparing alternative economic development incentive applications or proposals.

II. CRITERIA

Any request for incentives[1] shall be evaluated based upon a subjective review of the following criteria that each applicant will be requested to address in narrative as well as an application form to be provided by the City Secretary or Executive Director of the MDD, as appropriate.

Fiscal Impact

- How much real and personal property value will be added to the tax roll?
- How much direct sales tax will be generated?
- How will this project affect existing business?
- What infrastructure construction would be required?
- What is the total projected annual operating budget of this facility?

Community Impact

- What effect would the project have on the local housing market?
- What environmental impact, if any, will be created by the project?
- How compatible is the project with the City's comprehensive plan?
- What effect would the project have on other taxing entities?

[1] These requirements are not applicable to MDD grant programs, including but not limited to the MDD TIP grant.

Employment Impact

- How many jobs will be brought to Aubrey?
- What types of jobs will be created?
- What will be the total annual payroll?

Target Industries

- Retail/Restaurant/Entertainment
- Manufacturing
- Healthcare
- Hospitality: Accommodations, Entertainment, Sports/Recreation/Leisure
- Professional Services
- Educational Services

Priority Geographic Areas

- Hwy. 377 in City limits or the City's extra-territorial jurisdiction
- Downtown Aubrey

III. VALUE INCENTIVES

The subjective criteria outlined in Section II will be used in determining whether it is in the best interests of the City of Aubrey that an incentive is offered to a particular applicant. Specific considerations will include the degree to which the individual project furthers the goals and objectives of the community, as well as the relative impact of the project.

IV. AVAILABLE INCENTIVES

The City of Aubrey and/or the MDD may consider providing one or a combination of any of the following economic development incentives:

A. Tax Abatement

The City has elected to participate in tax abatement and will consider providing tax abatements for real and/or personal property. Abatement will be conditioned upon improvement being made to the property and eligibility under applicable State law. A cost/benefit analysis will be performed to determine the feasibility of the project. Once a determination has been made that a tax abatement is an appropriate incentive type for the program at issue, the value and term of the abatement may be considered by reference to the following table:

Tax Abatement for Real and/or Personal Property

Amount of Capital Investment	Years of Abatement	% Abatement
$ 500,000 - 1,999,999	1-3	10- 50%
$ 2,000,000 - 4,999,999	1-4	10- 75%
$ 5,000,000 - 9,999,999	1-5	10- 75%
$10,000,000 - 19,999,999	1-6	10-100%

$20,000,000 - 39,999,999	1-7	10-100%
$40,000,000 - 59,999,999	1-8	10-100%
$60,000,000 or greater	Not to exceed 10	10-100%

B. Sales Tax Rebates

The City and/or the MDD may consider sales tax rebates for projects with a minimum of a $500,000 investment and projected new taxable sales of no less than $1,000,000.00 per year.

C. Hotel Occupancy Tax Rebate

The City may consider rebates of hotel occupancy tax in accordance with the provisions of State law for qualifying projects pursuant to Chapter 351 of the Texas Tax Code, as amended and other applicable law.

D. Fee Waivers

The City may consider a negotiated reduction of any city fees associated with the development of the project.

E. Infrastructure Improvements

The City may consider the provision of, or participation in, the extension of community infrastructure to the project site, including water, wastewater, drainage, road improvements, and/or pedestrian and parking infrastructure in business districts.

F. Loans and Grants

The City may consider providing loans and grants of City funds, may underwrite or guaranty loans and financial obligations, and may acquire, purchase, convey, or assign loans and grants and any rights or obligations arising thereunder, as permitted by Chapter 380 of the Texas Local Government Code, as amended, and in accordance with the Texas Constitution

The Aubrey Municipal Development District may consider providing grants to applicants, as permitted by State law, including without limitation Chapter 377 of the Texas Local Government Code, as amended.

G. Fast Track City Services

The City may provide fast track service involving all inspections, permitting, and planning activities for an approved project. The City Manager will designate appropriate City Staff to assist with the progress of the project.

V. TARGETED INCENTIVES

Along with Section IV., the City and/or the MDD may consider providing one or a combination of any of the following targeted incentives in order to further its respective strategic objectives:

A. Job Creation

The City may consider an incentive for the creation and maintenance of jobs within the City of Aubrey by offering a grant payment for companies that create or relocate a minimum of 25 full-time jobs. The company must maintain the number of jobs created and/or relocated for at least a 2-year period to receive the total grant payment. Each job eligible for grant payment must pay at least 100% of the average annual wage for Denton County, as determined by the United States Dept. of Labor, Bureau of Labor Statistics.

For each job paying 100-124% of the average annual wage for Denton County, the incentive is $3,000 per job, payable as $1,500 each year over a two-year period.

For each job paying 125% or more of the average annual wage for Denton County, the incentive is $5,000 per job, payable as $2,500 each year over a two-year period.

The maximum grant amount cannot exceed 50% of the net new ad valorem and business personal property taxes paid annually to the City of Aubrey as a result of the project.

B. Specialty Retail, Entertainment, and Restaurant

The City and/or MDD may consider providing incentives to “destination” retailers and restaurants that have the capability to attract customers from outside the area and fit well into the existing retail/restaurant economy to provide new and different shopping, dining, and/or entertainment experiences. Local, regional, and national retailers or restaurants may apply if they meet the above qualifications. This incentive may also be considered for existing “destination” retailers and restaurants that are expanding or relocating if their added square footage is a minimum of 50% larger than their current space.

In order to qualify for incentives, “destination” retailers and restaurants may own the property, otherwise they are required to sign a minimum 5-year lease with the property owner. Based on the value of the incentive requested, the City may require the tenant to sign and maintain a lease for a period longer than five (5) years, but not to exceed ten (10) years. Consideration for incentives shall require a return on investment (“ROI”) for the City; any and all incentives under this provision shall be limited by an ROI of 10:1 (for example, a $1 million investment, maximum incentive would be $100,000).

Incentives that may be considered for a “destination” retailer or restaurant as outlined above are as follows:

1. **Matching Grants**
   The City and/or MDD may reimburse up to 50% of the costs of tenant improvements (including FFE – fixtures, furniture, and equipment).

2. **Grease Trap Rebate**
   The City and/or MDD may consider a rebate equal to fifty percent (50%) of the cost to purchase and install or upgrade an existing grease trap up to a maximum of
   $10,000 per project for "destination" restaurants.

C. Sale, Lease, or Exchange of Land or Buildings:

In accordance with the provisions of applicable State law, including without limitation, Sections 253.0125, 272.001, and 377.071 of the Texas Local Government Code, the MDD may consider the sale, lease, or exchange of land without the necessity of accepting written bids pursuant to a published notice and at or below market value to further the economic development objectives identified herein.

The MDD may consider providing any of the incentives listed above to tenants of MDD owned buildings. These incentives may be combined with additional incentives, including:

i. Build-to-Suit / Leaseback: An agreement where the MDD builds a building or facility to suit the needs of an applicant in exchange for a commitment from the applicant to lease the facility and in consideration for applicant compliance with specified performance criteria.

ii. Free / Reduced-Cost Land: Any provision where the MDD provides free or reduced-cost land to an applicant in consideration for applicant compliance with specified performance criteria.

iii. Free / Reduced-Cost Building: Any provision where the MDD provides a free or reduced-cost building for an applicant in consideration for applicant compliance with specified performance criteria..

iv. Land Lease: Any provision where the MDD leases rights to MDD-owned land to an applicant to allow construction of their facility in consideration for applicant compliance with specified performance criteria.

These incentives will be evaluated on a case-by-case basis so that the total incentive package may be designed specifically for each project as well as provide maximum flexibility for an incentive package that accommodates the unique needs of each project. The City will, and MDD may, require a recapture provision on all incentives granted. These recapture provisions would specify requirements a company must fulfill in order to continue to receive incentives and would specify the process for recapture of incentives

should a company be in default of its contract with the City or MDD. Nothing herein shall imply or suggest that the City of Aubrey or MDD is under any obligation to provide incentives to any applicant.

CITY OF AUBREY

ECONOMIC DEVELOPMENT INCENTIVES

MATRIX and PROCEDURAL GUIDELINES

The following matrix shall provide a framework for identifying the potential incentives that are applicable to various classifications of projects. Term and amount of incentives shall be determined on a case-by-case basis in the sole discretion of the City and/or MDD.

Potential Incentive	Corporate	Industrial	Retail	Hotel/Facility	Development	Expansion
Tax Abatement	X	X	-	X	-	-
Sales Tax Rebate	-	-	X	X	X	-
Sales Tax Grants/TIP/Sign	-	-	X	-	X	-
Construction Sales Tax	X	X	X	X	X	X
Fee Reductions/Credits	X	X	X	X	X	X
Land/Building Related	X	X	X	X	-	-
Employment Related	X	X	-	X	-	-
Infrastructure Assistance	X	X	X	X	X	X
HOT Tax Rebate	-	-	-	X	-	-

Any person, organization, or corporation desiring that the City of Aubrey or MDD consider providing incentives to encourage location or expansion of operations within the City limits of Aubrey (or the extraterritorial jurisdiction for the purposes of an incentive from the MDD) shall comply with the following procedural guidelines. Nothing within these guidelines shall imply or suggest that City or MDD is under any obligation to provide incentives to any applicant. The award of incentives lies within the sole discretion of the City and/or MDD, as applicable.

Preliminary Application Steps

A. Applicant shall complete the City and/or MDD Application for Incentives, a substantial copy of which is attached hereto as Exhibit "A", or specific grant application for the MDD as required by the MDD. Included in said application shall be a statement regarding the applicant's desire for consideration of available incentives listed in the Policy Statement for Economic Development Incentives.

B. Applicant shall address all criteria questions outlined in Section II of the Incentive Policy Statement.

C. Applicant shall prepare a plat showing the precise location of the property and all roadways

within 500 feet of the site.

(see next page)

D. If the property is described by metes and bounds, a complete legal description shall be provided.

E. Project description, including the following:

- Describe the type of building proposed (e.g. number of stories, style, materials). *Include pictures or drawings when possible.*
- Describe the development concept (e.g. single building or campus setting, open space, surface, or structured parking). *Include pictures or drawings when possible.*
- Describe the extent that any infrastructure components will be enhanced or expanded by the project.
- Provide timing estimates for major milestones of the project.
- Provide estimates of project data by phase and date, including but not limited to:
  - i. The type, number, use, square footage, and location of all the proposed improvements on the property.
  - ii. Total capital investment including acquisitions, improvements, building costs, and equipment.
  - iii. Estimated appraised value of all proposed improvements and existing improvements on the property.
  - iv. Acquisition cost of all business personal property.
  - v. Estimated appraised value of all business personal property.
  - vi. Number, type, quality, and wage levels of new Full-Time Equivalent (FTE) employees.
  - vii. All new payroll added.
  - viii. Average employees' annual salary.
  - ix. Number of employees with salary $50,000 or greater.
  - x. Taxable sales generated from the project.
  - xi. Hotel occupancy tax generated (if applicable).

F. Applicant shall complete all forms and information and submit them to the City Secretary, City of Aubrey, Texas, 107 South Main, Aubrey, TX 76227-5519.

Once an application has been submitted to the City Secretary, it shall be regarded as a matter of public record and will be available for inspection by the public. Any proprietary information included as a part of the application should be so indicated, marked in advance, and supplied in such a manner so as to be readily separated from the remainder of the application.

Consideration of the Application

A. The application will be sent to the Aubrey Municipal Development District Board for review and comments. Additional information may be requested as needed.

B. The Aubrey Municipal Development District Board will make a recommendation to the City Council regarding the incentive request.

C. The City Council of Aubrey will consider the application at a regular or called meeting(s). Additional information may be requested as needed.

D. If a tax abatement, HOT tax rebate, or sales tax rebate is being considered, the City Council of Aubrey will comply with applicable law and may hold a public hearing and consider establishment of a tax reinvestment zone to determine whether the project is feasible, practical, and would be of benefit to the land to be included in the zone and municipality.

E. If a tax abatement, HOT tax rebate, or sales tax rebate is being considered, the City Council of Aubrey will comply with applicable law and may consider adoption of an ordinance designating the area described in the legal description of the proposed project as a commercial/industrial tax abatement zone.

F. If a tax abatement, HOT tax rebate, or sales tax rebate is being considered, the City Council of Aubrey will comply with applicable law and may consider approval of the terms and conditions of a contract between the City, the MDD, and the applicant governing the provision of the tax abatement.

G. The final decision on any incentive application will rest with the Aubrey City Council.

(This page intentionally left blank.)

Exhibit "A"

Representative Form of Incentive Application

APPLICATION FOR INCENTIVES CITY OF AUBREY, TEXAS

PROPERTY OWNER:_____

ADDRESS: _____

CITY, STATE, ZIP: _____

TELEPHONE NUMBER:_____FAX NUMBER:_____

PROPERTY OWNER'S REPRESENTATIVE: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

TELEPHONE NUMBER: _____FAX NUMBER:_____

PROPERTY ADDRESS: _____

CITY, STATE, ZIP: _____

PROPERTY LEGAL DESCRIPTION:_____
(Provide Plat; Provide Metes and Bounds if available)

DESCRIPTION OF PROJECT: (See list items E and F in Procedural Guidelines.)

_____

PROJECTED OCCUPANCY/INITIATION OF OPERATIONS:

_____

PROVIDE CORPORATE/DEVELOPMENT HISTORY, RESUME OF KEY INDIVIDUALS OR DEVELOPMENTS RELEVANT WITH PROJECT, AND FINANCIAL INFORMATION ON CORPORATION OR KEY STAKEHOLDERS.

Please complete a written narrative response to the questions in Section II of the "Policy Statement for Economic Development Incentives". Please itemize the incentives applicant is requesting from Section IV and V above. Please include any additional information necessary to address the criteria outlined therein.

The offer of Incentives by any Incentive Agreement shall expire ninety (90) days from the date it is provided to the Applicant unless the Applicant requests an extension in writing and provides a reason for request. If granted, the City will offer the extension writing. The expiration of any offered Incentive Agreement shall not preclude continued negotiations toward the development of an alternative Agreement.

INDEMNIFICATION: THE APPLICANT SHALL CERTIFY THAT THEY ARE SOLELY RESPONSIBLE FOR OVERSEEING THE WORK, AND BY SUBMISSION OF THIS APPLICATION, THE APPLICANT DOES HEREBY RELEASE AND HOLD HARMLESS THE CITY, THE MDD, AND/OR THEIR RESPECTIVE OFFICIALS, AGENTS, EMPLOYEES, OFFICERS, AND/OR DIRECTORS LIABLE FOR ANY CLAIMS AND /OR DAMAGES, INCLUDING WITHOUT LIMITATION, CLAIMS FOR PROPERTY DAMAGE, PERSONAL INJURY, DEATH, OR ANY OTHER TYPE OF DAMAGE, INCLUDING WITHOUT LIMITATION, ECONOMIC, MONETARY, NON-MONETARY, OR EQUITABLE DAMAGE OR LOSS ARISING OUT OF OR RELATED IN ANY WAY TO THIS POLICY, A REQUESTED INCENTIVE, AND AWARDED INCENTIVE, OR A PROPOSED PROJECT (COLLECTIVELY "CLAIM(S")). FURTHER, BY SUBMISSION OF AN APPLICATION FOR INCENTIVES, APPLICANT AGREES TO INDEMNIFY, DEFEND, RELEASE AND HOLD HARMLESS THE CITY, THE MDD, AND / OR THEIR RESPECTIVE OFFICIALS, AGENTS, EMPLOYEES, OFFICERS, AND / OR DIRECTORS FROM ANY CLAIMS OR DAMAGES AS DEFINED OR DESCRIBED HEREIN RESULTING FROM OR ARISING OUT OF THE PROJECT, INCLUDING ATTORNEY FEES AND COSTS OF LITIGATION.

Signature of Property Owner: _____ Date: _____
Signature of Business Owner: _____
Date:_____
(if different from Property Owner)

The City/MDD reserves the right to approve or deny any application for incentives for any reason. Though the policy includes examples of priority projects, the City and the MDD Board are not obligated to provide funding for all or any incentive requests. Further, the City/MDD reserves the right to request the applicant to modify the proposed project to better accommodate the existing priorities of the City Comprehensive Plan or the MDD Economic Development Strategic Plan.