BRAZOS OAKS PHASE II

SITE PLAN CONSTRUCTION DOCUMENTS

5950 JONES ROAD, BRYAN, TX 77807

MAY 2026

ENGINEER:

MITCHELL & MORGAN, L.L.P.
3204 EARL RUDDER FWY. S.
COLLEGE STATION, TEXAS 77845
(979) 260-6963

DEVELOPER:

TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
SUITE A134
AUSTIN, TX 78746

VICINITY MAP
N.T.S.

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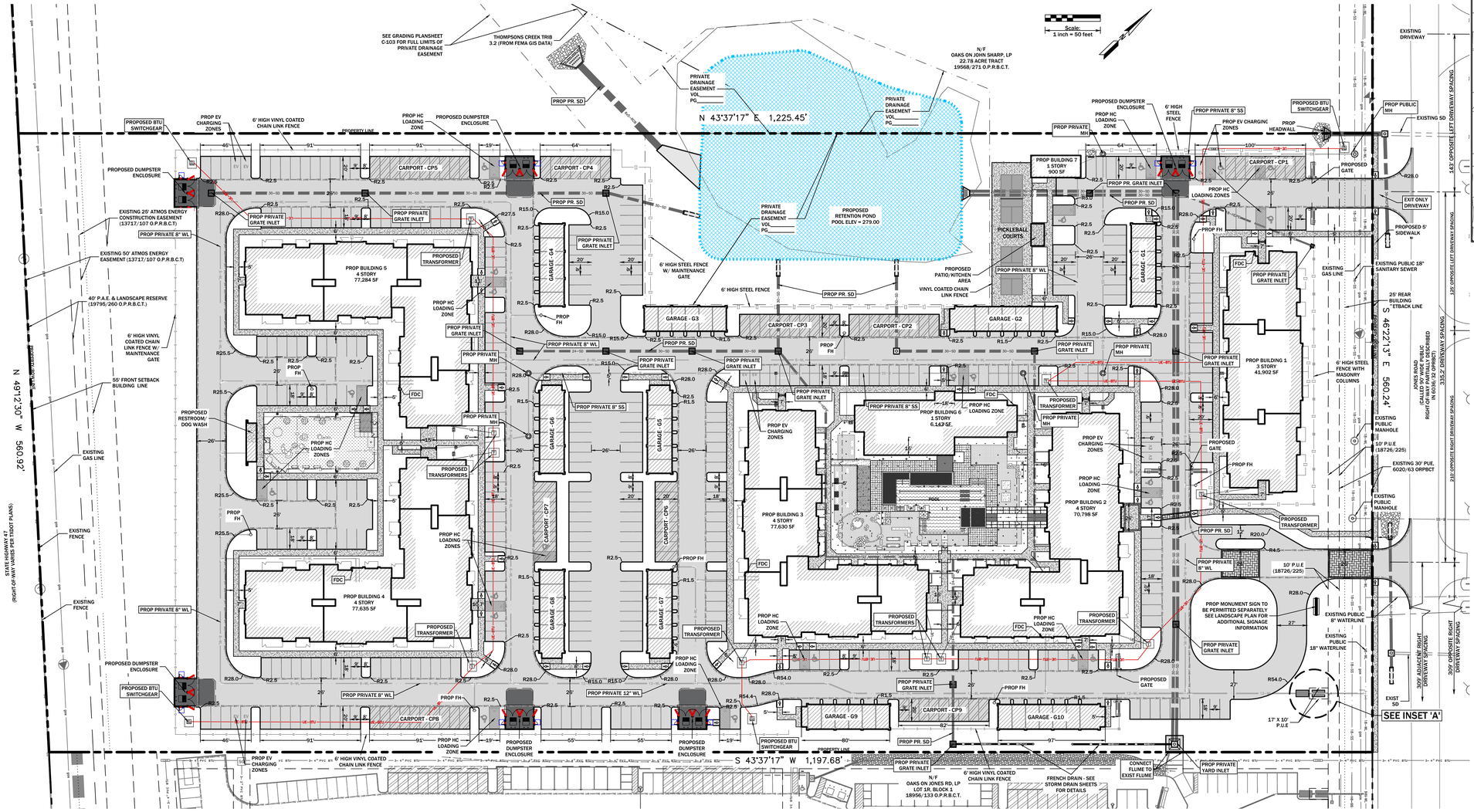

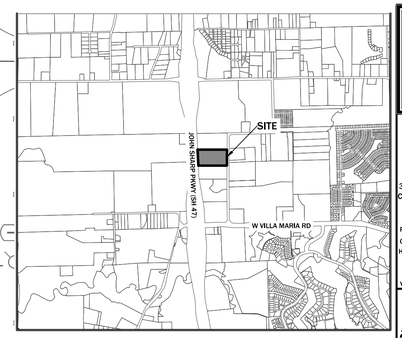

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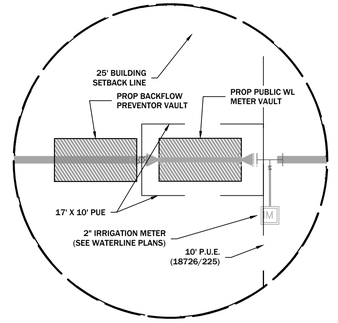
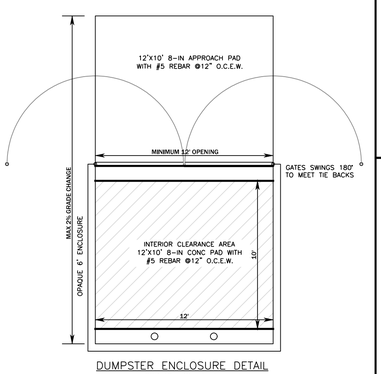


INSET 'A'
SCALE= 1" =10'

NOTE: THE CONTRACTOR WILL NEED TO PURCHASE THE WATER METER VAULTS AND WATER METER THROUGH THE CITY OF BRYAN. CONTRACTOR SHALL COORDINATE WITH CITY OF BRYAN WATER SERVICES 979-209-5900.



DUMPSTER ENCLOSURE DETAIL
COB Min. Standards
(RE: Architect Details for Additional Information)

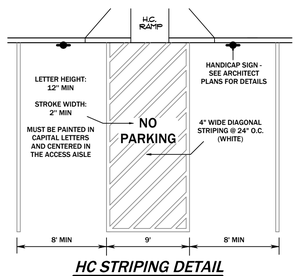
DUMPSTER ENCLOSURE NOTES:
1. BEFORE ENCLOSURE CONTRUCTION/MODIFICATION BEGIN, CONTACT SOLID WASTE AT: (979) 209-5900 FOR AN ON-SITE REVIEW.
2. IF ANY CHANGES ARE MADE TO THE ENCLOSURE PLAN DURING THE CONSTRUCTION PHASE, PLEASE CONTACT SOLID WASTE TO REVIEW MODIFICATIONS.
3. ALL-WEATHER ACCESS ROUTE MUST BE MAINTAINED AND REPAIRED AT THE BUSINESS OWNER'S EXPENSE.

GENERAL CONSTRUCTION NOTES:
1. The contractor is responsible for obtaining all applicable permits for work contemplated on these plans.
2. It is the responsibility of the contractor to schedule a pre-construction meeting with the engineer of record and the regulatory agency inspector prior to commencing construction.
3. It shall be the responsibility of the Contractor to verify the exact location of ALL existing underground utilities. Furthermore, the Contractor shall contact all utility company representatives a minimum of 48 hours in advance of any excavation.
   - 3.1. Contact Dig Tess @ 1-800-344-8377
   - 3.2. Contact Josh Norton @ ATMOS 979-774-2506
   - 3.3. Contact Dan Augsburger @ Optimum Communications 979-204-8263
   - 3.4. Contact Brandon Charanza @ BTU 979-821-5770
   - 3.5. Contact Mac Ortiz @ Frontier 972-365-9198
   - 3.6. Contact Kris Smith @ MetroNet :kris.smith@metronetinc.com
   - 3.7. Contact Jayson Barfknecht @ COB (Water/Wastewater) 979-209-5959
4. All construction shall be in accordance with the current City of Bryan Standard Specifications for Street Construction, B/CS Unified Technical Specifications, Water and Sewer and Generals, 2012, and BCS Unified Design Details. All inspection shall be performed by the staff of the City Engineer of Bryan. All construction shall be coordinated with the City of Bryan City Engineer.
5. In lieu of using the construction materials indicated in these plans, the Contractor shall obtain written approval from the Engineer & Architect for any substitution prior to Construction. Requests for changes should include product information and an engineer's seal where applicable. The contractor shall be financially responsible for the engineer's time spent reviewing changes and redesigning based on contractor's requests.
6. Trench Safety Requirements shall be in accordance with O.S.H.A. Standard 29 CFR Part 1926 Subpart P and all federal, state and local regulations.
7. TRENCHING AND BACKFILLING: All trenching and backfilling shall conform to the specifications set out herein. Testing shall be provided by a certified laboratory, at the Owner's expense, to verify these standards. Any retesting due to substandard work shall be at the expense of the Contractor. Structural areas shall include all sidewalks and shall extend 5' beyond the curb lines of all streets, alleys and parking areas.
8. It is the responsibility of the contractor to comply with all State and Federal Regulations regarding construction activities near energized overhead power lines. Additionally, the contractor shall coordinate all proposed work and procedures with Bryan Texas Utility (BTU).
9. All materials & labor not identified as a Separate Bid Item shall be considered subsidiary to the item in which it is used. All materials and equipment shall be both furnished and installed unless otherwise noted.
10. The Contractor must provide construction staking from the information provide on these plans.
11. All soil exposed by construction shall receive hydromulch or sod in accordance with the landscape plan.
12. Trenches may not be left open overnight.
13. Adjustment of Water Meters, Valves, Manholes, Irrigation Systems, and any other Public or Private Utility, etc, are not separate pay items. The Price of the adjustment shall be subsidiary to the construction of Sewer Line, Force Main, etc.
14. The contractor shall coordinate with Atmos, Suddenlink Communications, BTU, CSU, and Frontier to adjust the location of existing facilities.
15. Temporary spoil areas will be identified on site by owner.
16. All materials storage and staging shall NOT be within the FEMA Floodplain.
17. Contractor shall provide parking lot striping in accordance with the layout shown on this plans.
18. All storm sewer, sanitary sewer and waterline being constructed with this site plan will be private.
19. All roof and ground mounted mechanical equipment shall be screened from view or isolated so as not to be visible from any public right-of-way or residential district within 150' of the subject.
20. All backflow devices must be installed and tested upon installation as per city Ordinance 2394.
21. Outdoor lighting shall not exceed 1 lumen at all property lines. Light fixtures in parking lot shall not exceed a maximum height of 24 feet and pedestrian walkway fixtures shall not exceed a maximum height of 12 feet. Outdoor lighting shall also be shielded and provided with cutoff fixtures that are designed to have a cutoff angle of no more than 90 degrees.
22. Cross slope and running slope of curb ramps serving the Accessible Parking shall comply with ICC A117.1 - 2009 Accesssibility Standards. Maximum cross slope 1:48 (2.08%) and maximum running slope 1:12 (8.33%).
23. The subject property is within the Innovation Corridor Overlay District as defined by Zoning Ordinance Section 130-27(b).
24. Property owner shall have direct responsibility to operate, repair and maintain the private detention facilities. The City of Bryan shall not be responsible for any operation, repair or maintenance of these areas.
25. Where electric facilities are installed, BTU has the right to install, operate, relocate, construct, reconstruct, add to, maintain, inspect, patrol, enlarge, repair, remove and replace said facilities upon, over, under, and across the property included in the PUE, and the right to ingress and egress on property adjacent to the PUE to access electric facilities.

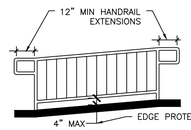
SITE PLAN NOTES:
1. Name of Project: Brazos Oaks Phase II
2. Legal: Lot 2, Block 1 of the OAK CREEK RANCH SUBDIVISION 15.58 ACRES, Vol. 19795/Pg.260
3. Address: 5950 Jones Road Bryan, Texas 77807
4. Owner: Charles S. Teeple Teeple Partners, Inc. 1302 S Capital of Texas Hwy, Suite A134 Austin, Texas 78746 (512) 329 5755
5. Engineer: Mitchell & Morgan, L.L.P. 3204 Earl Rudder Fwy. S. College Station, Texas 77845 (979) 260-6963
6. Zoning: IC-HDR Innovation Corridor - High Density Residential
7. Existing Use: Undeveloped-Vacant
8. Proposed Use: Multi-Family
9. Setbacks: Per City of Bryan Ordinances
10. Overall Site Area: 15.58 Acres
11. Dwelling Units/ Acre =20.0 DU/ACRE
12. Water Demands: Min. = 59 gpm; Avg. = 59 gpm; Peak = 236 gpm
13. Sanitary Demands: Avg. = 84,372 GPD; MAX. = 337,480 GPD
14. All pavement shall have a 6 inch curb unless otherwise noted.
15. This tract lies within FLOOD ZONE 'X' UNSHADED and does not currently lie within a special flood hazard area subject to the 1% Annual Chance Flood (100 YEAR FLOOD PLAIN) according to the Brazos County Flood Insurance Rate Map (FIRM) PANEL NO. 48041C0285E, REVISED DATE: 05-16-2012.
16. Signage shall be permitted separately.
17. Buildings are greater than 30' at eave height.
18. Contours associated with construction plans are shown on the grading plan sheets.
19. Refer to architect's plans for dimensional criteria for dumpster layout.
20. Contractor must contact City of Bryan Solid Waste @ 979-209-5900 prior to construction of dumpster enclosure. If any modifications to the dumpster enclosure are made during construction, the contractor shall notify the Solid Waste Department.
21. The right turn lane at Jones Road/Villa Maria per the TIA must be constructed and completed prior to receiving any Certificate of Occupancy for any building in this phase.

PARKING ANALYSIS	
REQUIRED PARKING:	455

PROVIDED PARKING:	STANDARD	ACCESSIBLE	TOTAL
SURFACE	329	19	348
VISITOR PARKING	19	2	21
DETACHED GARAGES	60	2	62
CARPORTS	75	2	77
TOTAL:	483	25	508



HC STRIPING DETAIL
NTS



RAMP HANDRAILS SHALL EXTEND HORIZONTALLY ABOVE THE LANDING FOR 12 INCHES MINIMUM BEYOND THE TOP AND BOTTOM RAMP RUNS. EXTENSIONS SHALL RETURN TO A WALL, GUARD, OR THE LANDING SURFACE, OR SHALL BE CONTINUOUS TO THE HANDRAIL OF AN ADJACENT RAMP RUN. RAMP HANDRAILS TO BE UTILIZED AT ALL ACCESSIBLE LOCATIONS INTO BUILDINGS WITH SLOPE GREATER THAN 5% AS SHOWN ON THE GRADING PLAN.

TOP AND BOTTOM HANDRAIL EXTENSION AT RAMPS & STEPS
NTS

18" x 12"
See Ordinance for additional Information

All curbs and curb ends designated as firelanes on plans shall be painted red with four inch (4") white lettering stating "FIRE LANE - NO PARKING - TOW AWAY ZONE". Wording may not be spaced for than fifteen feet (15') apart.

From the point the fire lane begins to the point the fire lane ends, including behind all adjacent parking spaces, the fire lane shall be marked with one continuous eight inch (8") red stripe painted on the drive surface behind the parking spaces. All curbing adjoining a fire lane must be painted red. Red stripes and curbs will contain the wording "FIRE LANE - NO PARKING - TOW AWAY ZONE", painted in four inch (4") white letters.

FIRE LANE MARKINGS

Unit Type	Description	BLDG I	BLDG II	BLDG III	BLDG IV	BLDG V	# of Units	# Bedrooms in Unit	# of Bedrooms in Project	Parking Required (1/BR)	Reqd Parking
A1	1BR/1BR/LIVING	9	12	16	16	16	69	1	69	1	69
A2	1BR/1BR/LIVING/DINING	12	0	12	12	12	48	1	48	1	48
A3	1BR/1BR/LIVING/DINING	12	4	16	16	16	64	1	64	1	64
A4	1BR/1BR/LIVING/DINING	0	2	0	1	0	3	1	3	1	3
B1	2BR/2BR/LIVING/DINING	3	21	12	11	11	58	2	116	1	116
B2	2BR/2BR/LIVING/DINING	0	4	4	4	4	16	2	32	1	32
B3	2BR/2BR/LIVING/DINING	6	8	8	8	8	38	2	76	1	76
B4	2BR/2BR/LIVING/DINING	0	0	1	0	0	1	2	2	1	2
C1	3BR/2BR/LIVING/DINING	0	4	3	4	4	15	3	45	1	45
	TOTAL	42	55	72	72	71	312		455		455

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PLAN & DESIGN SPECIALISTS IN CIVIL ENGINEERING HYDRAULICS HYDROLOGY UTILITIES STREETS SITE PLANS SUBDIVISIONS
www.mitchellandmorgan.com

STATE OF TEXAS — JAMES T. BATENHORST — 93631 — LICENSED PROFESSIONAL ENGINEER — on MAY 6, 2026

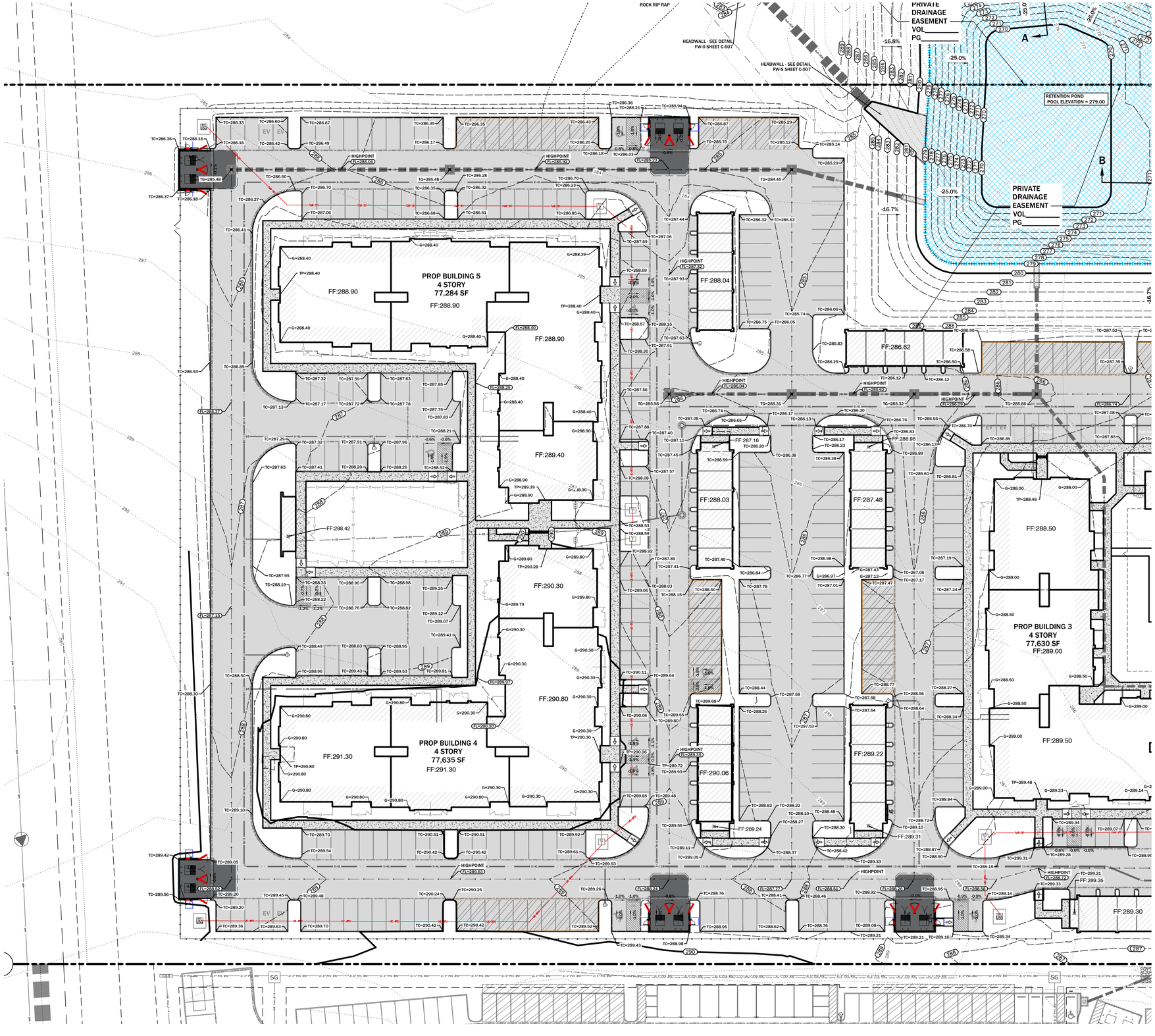
APRIL, 2026
Designed By: JTB/JBS
Drawn By: JBS
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
STE A134
AUSTIN, TX 78746
512.329.5755

Revisions

OVERALL SITE PLAN
BRAZOS OAKS PHASE II

C-100



GRADING PLAN NOTES:

1. The contractors shall place all silt fence and other sediment trapping devices for the graded area and stockpile area prior to any land disturbing activities.
2. The contractor shall strip and stockpile the top 6" of soil for the entire graded area. Minimal stockpile areas are available on site. Stockpiles shall be placed in a manner which does not adversely affect drainage.
3. The contractor may then proceed with grading operations. General cut / fill soil shall be segregated from the topsoil in the stockpile area.
4. The finish grade in all landscape areas shall include at least 6" of topsoil.
5. Any stockpiled Material must be removed from the site prior to substantial completion.
6. All soil exposed by construction shall receive cellulose fibermulch seeding.
7. The contractor is responsible for ADA compliance. ALL sidewalks and buildings on the project shall be accessible.
8. Handrails at all drop offs will be required by building code.

Scale:
1 inch = 30 feet

LEGEND

EX. CONTOURS	TC = Top of Curb
PROP. CONTOURS	FL = Flowline of Pavement/Ground
PROP. CONTOURS	TS = Top of Sidewalk
PVT. DR. EASEMENT	TG = Top of Grade
	G = Top of Ground

MITCHELL M&M MORGAN

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TX. FIRM # F-1443

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PLAN & DESIGN SPECIALISTS IN
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STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL 2026
Designed By: JTB
Drawn By: MGF,SB
Checked By: JTB

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512.329.5755

Revisions

GRADING PLAN 1 OF 3
BRAZOS OAKS PHASE II

C-101

GRADING PLAN NOTES:

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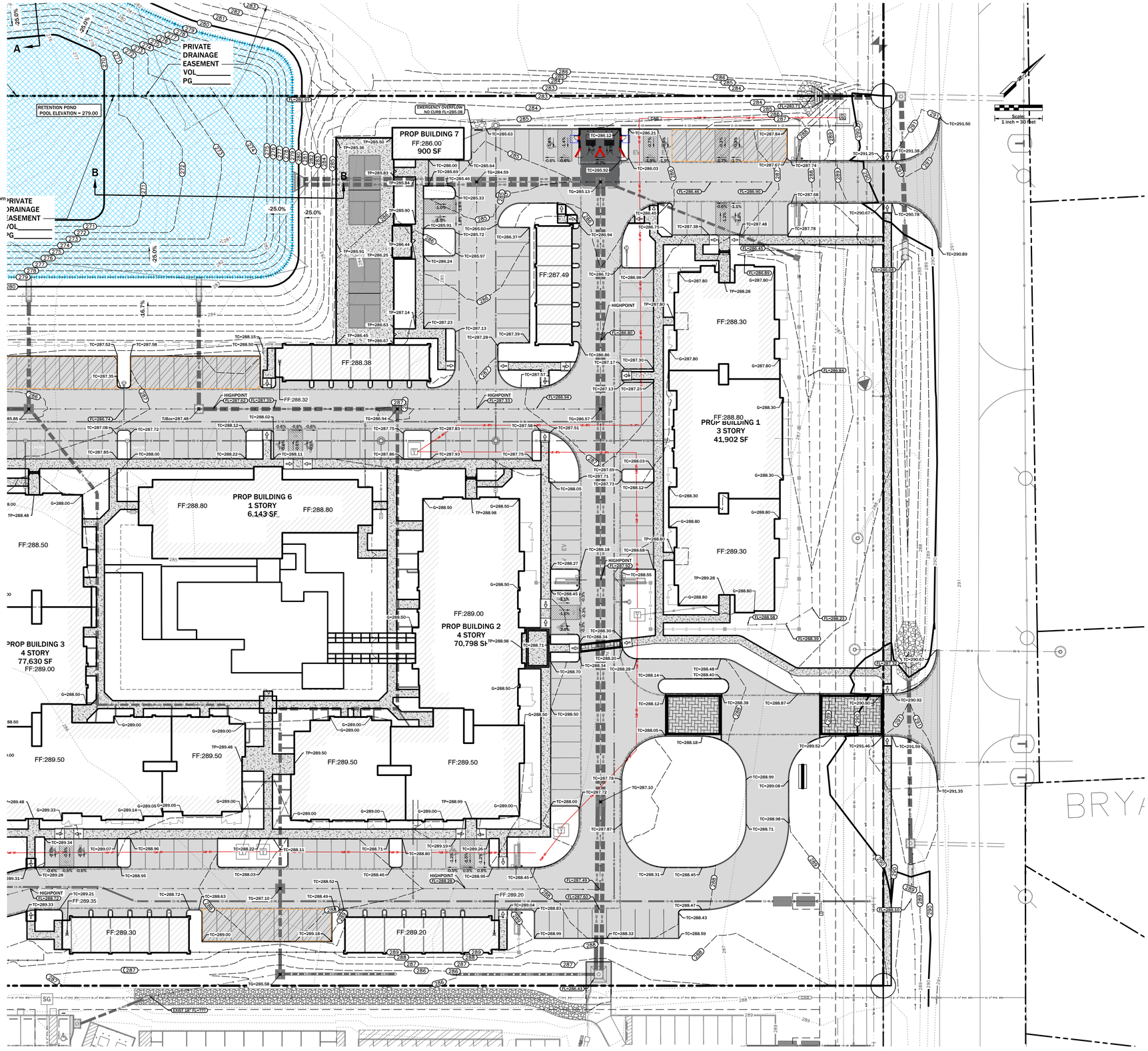

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JAMES T. BATENHORST
93631
LICENSED
PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL 2026
Designed By: JTB
Drawn By: MGF,SB
Checked By: JTB

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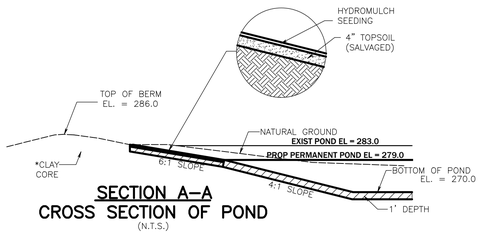
Revisions

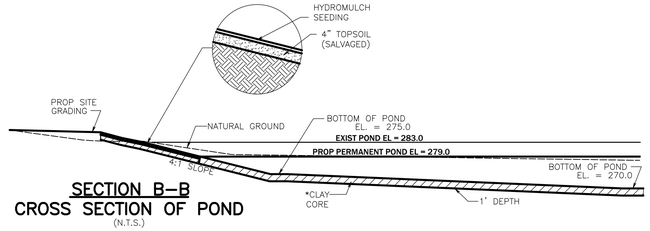
GRADING PLAN 2 OF 3

BRAZOS OAKS PHASE II

C-102



SECTION A–A
CROSS SECTION OF POND
(N.T.S.)



SECTION B–B
CROSS SECTION OF POND
(N.T.S.)

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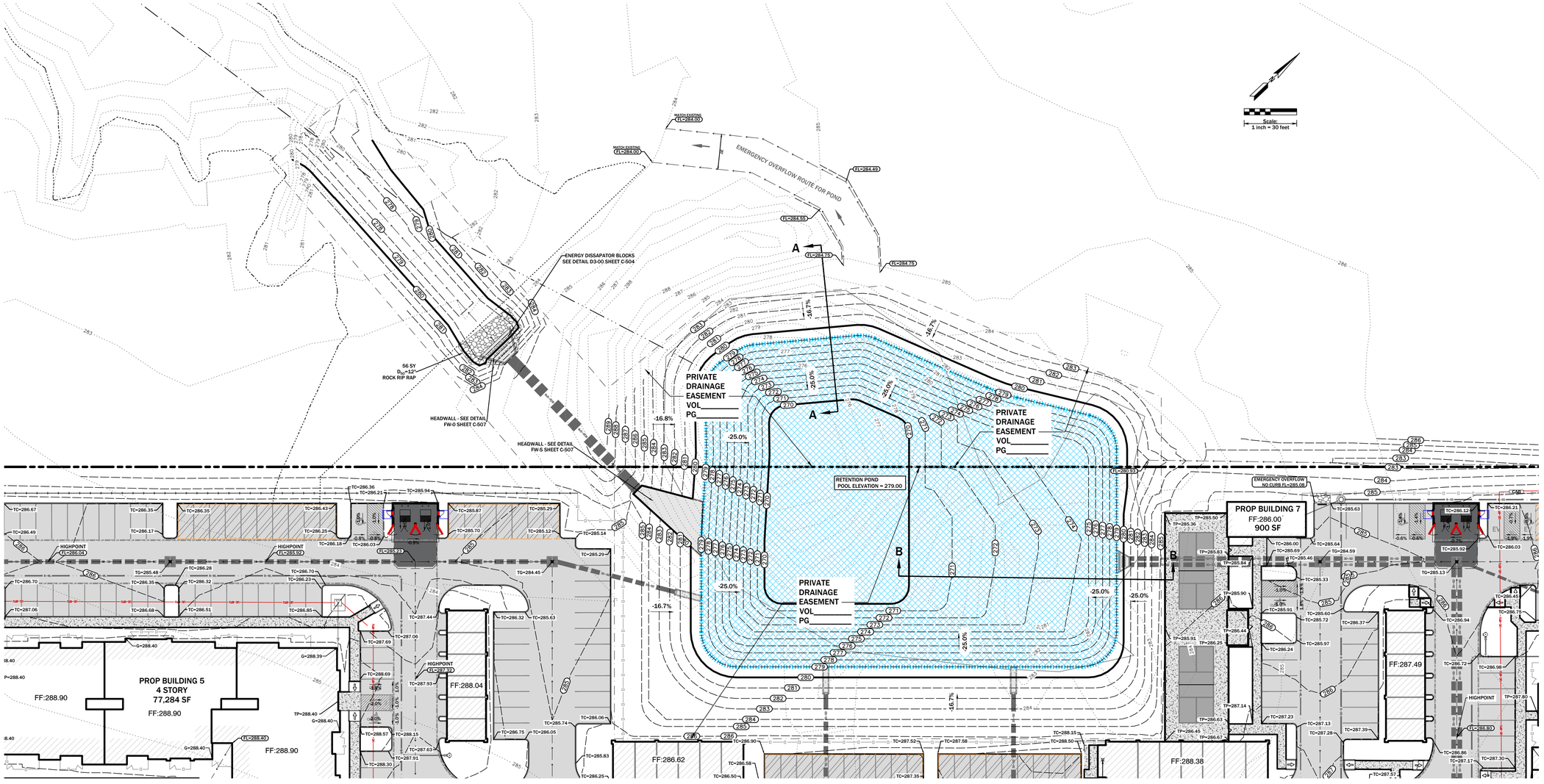
PROP. CONTOURS	TS	= Top of Sidewalk
PVT. DR. EASEMENT	TG	= Top of Grade
	G	= Top of Ground

* Clay Core as shown shall consist of soil group classifaction CH or CH/CL, as defined by ASTM D2487. Minimum PI of 30.

Compaction requirements for Clay Core: 95% maximum per ASTM D1557 @ 0% - 4 % Wet of Optimum Moisture. Lifts shall not exceed 6" compacted lifts.



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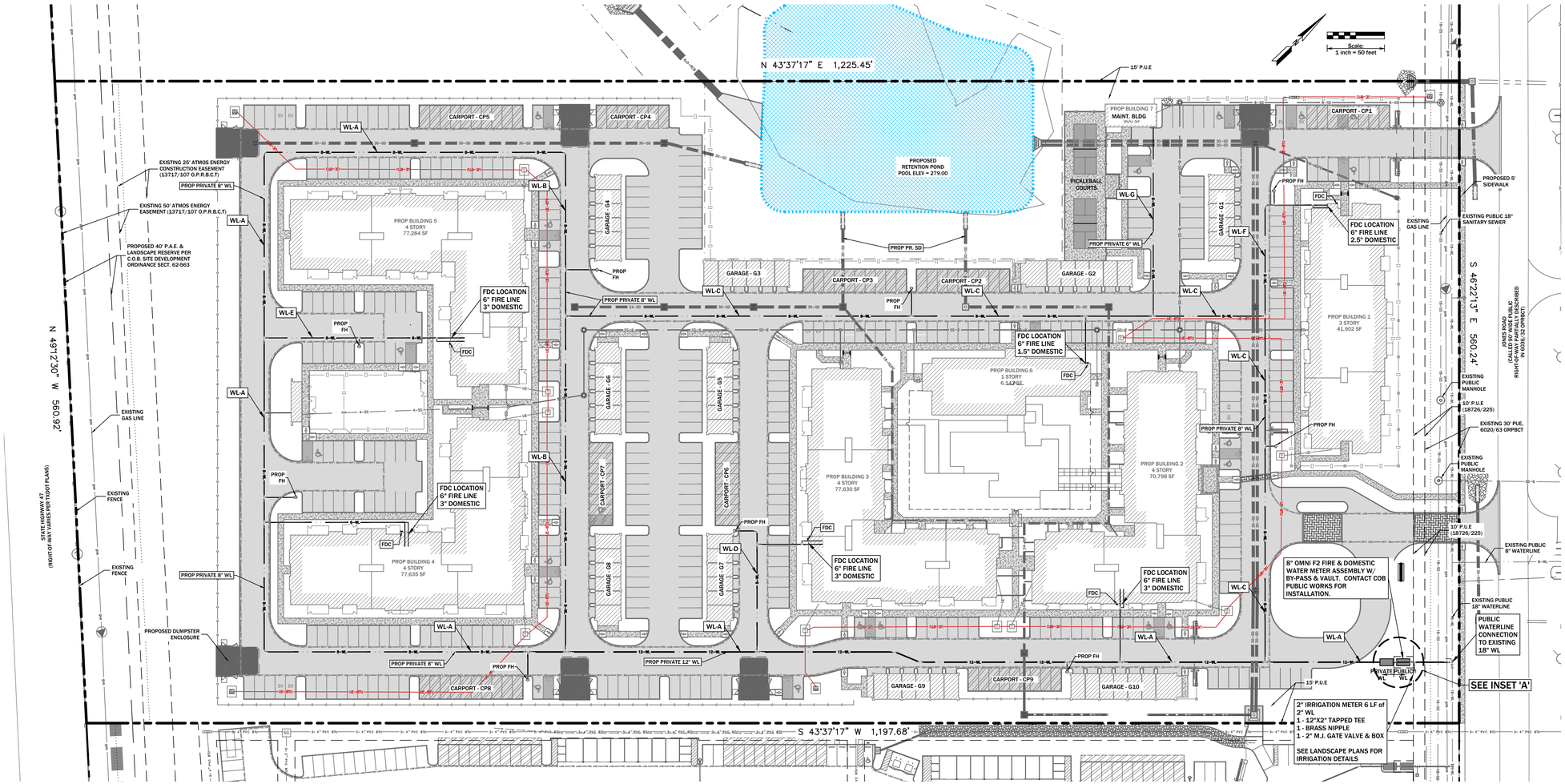
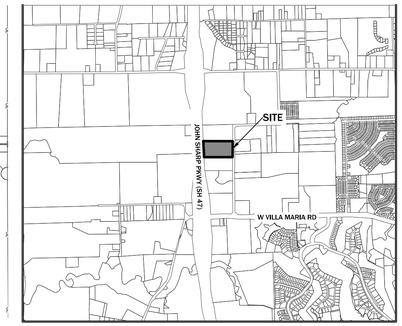
Revisions

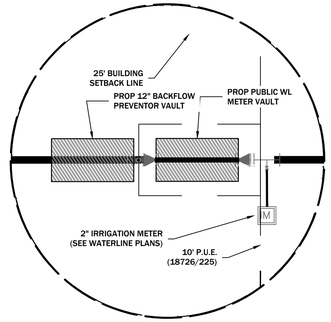
GRADING PLAN 3 OF 3
BRAZOS OAKS PHASE II

C-103





VICINITY MAP
N.T.S.



INSET 'A'
SCALE= 1" =10'

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OVERALL WATERLINE PLAN
BRAZOS OAKS PHASE II

C-200

OMNI™ Fireline (F2) Water Meter

4", 6", 8" and 10"

Strainer

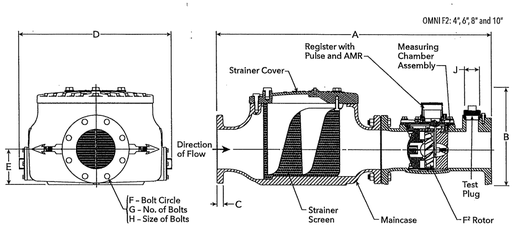
The OMNI F2 meter includes the Sensus designed "V" shaped UL Listed/FM approved strainer which utilizes a stainless steel screen along with Floating Ball Technology (FBT) to create a design that provides greatly improved accuracy even in difficult settings. A removable strainer cover permits easy access to the screen for routine maintenance. Strainer drain ports allow for easy discharging of debris without the need to remove the cover.

AMR/AMI Systems

Meters and Electronic Registers are compatible with current Sensus AMR/AMI systems and other AMI communication systems that use the Sensus UI1203 protocol.

Maintenance

The OMNI F2 meter is designed for easy maintenance. Should any maintenance be required, the measuring chamber and/or strainer cover can be removed independently. Replacement parts or complete measuring chambers are available for repairs.



DIMENSIONS AND NET WEIGHTS

Meter and Pipe Size	Normal Operating Range		Connections	A	B	C	D	E	F	G	H	J	Net Weight	Shipping Weight	Standard Fireline*
4" DN 100 mm	1.5 gpm .34 m³/hr	1200 gpm 227 m³/hr	Flanged	33" 838 mm	13-11/16" 348 mm	15/16" 24 mm	22.25" 515 mm	4-3/4" 121 mm	7-1/2" 191 mm	8	5/8" 16 mm	2" 51 mm	212 lb 96 kg	252 lb 114 kg	51-7/8" 1318 mm
6" DN 150 mm	3 gpm .681 m³/hr	2000 gpm 454 m³/hr	Flanged	45" 1143 mm	15-3/4" 400 mm	15/16" 24 mm	25.00" 635 mm	5-3/4" 146 mm	9-1/2" 241 mm	8	3/4" 19 mm	2" 51 mm	394 lb 179 kg	449 lb 204 kg	67-5/8" 1718 mm
8" DN 200 mm	4 gpm .91 m³/hr	3500 gpm 795 m³/hr	Flanged	53" 1346 mm	18-1/2" 470 mm	11/16" 17 mm	31.00" 788 mm	6-3/4" 171 mm	11-3/4" 298 mm	8	3/4" 19 mm	2" 51 mm	736 lb 334 kg	786 lb 357 kg	77" 1956 mm
10" DN 250 mm	5 gpm 1.1 m³/hr	5500 gpm 1249 m³/hr	Flanged	68" 1727 mm	22-1/4" 565 mm	11/16" 17 mm	37.50" 953 mm	8-1/2" 216 mm	14-1/4" 362 mm	12	7/8" 22 mm	2" 51 mm	1155 lb 524 kg	1215 lb 551 kg	90" 2286 mm

*Standard Fireline lay length with optional spool piece added.

OMNI™ Fireline (F2) Water Meter

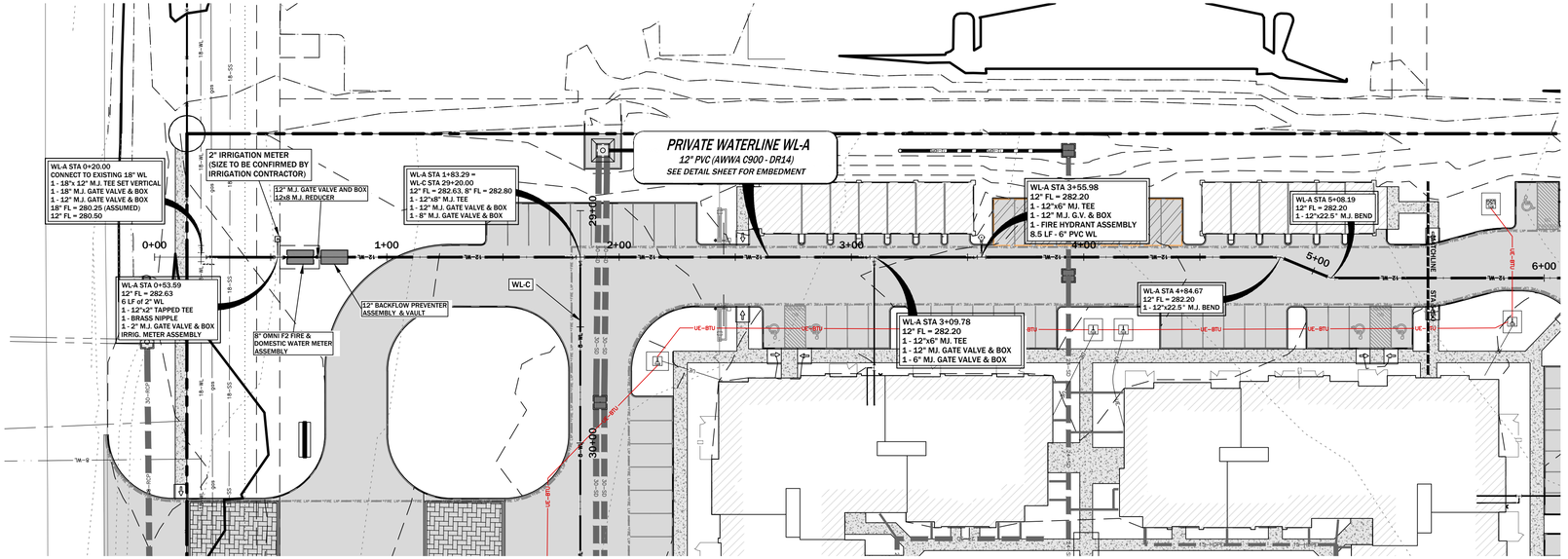
4", 6", 8" and 10"

SPECIFICATIONS

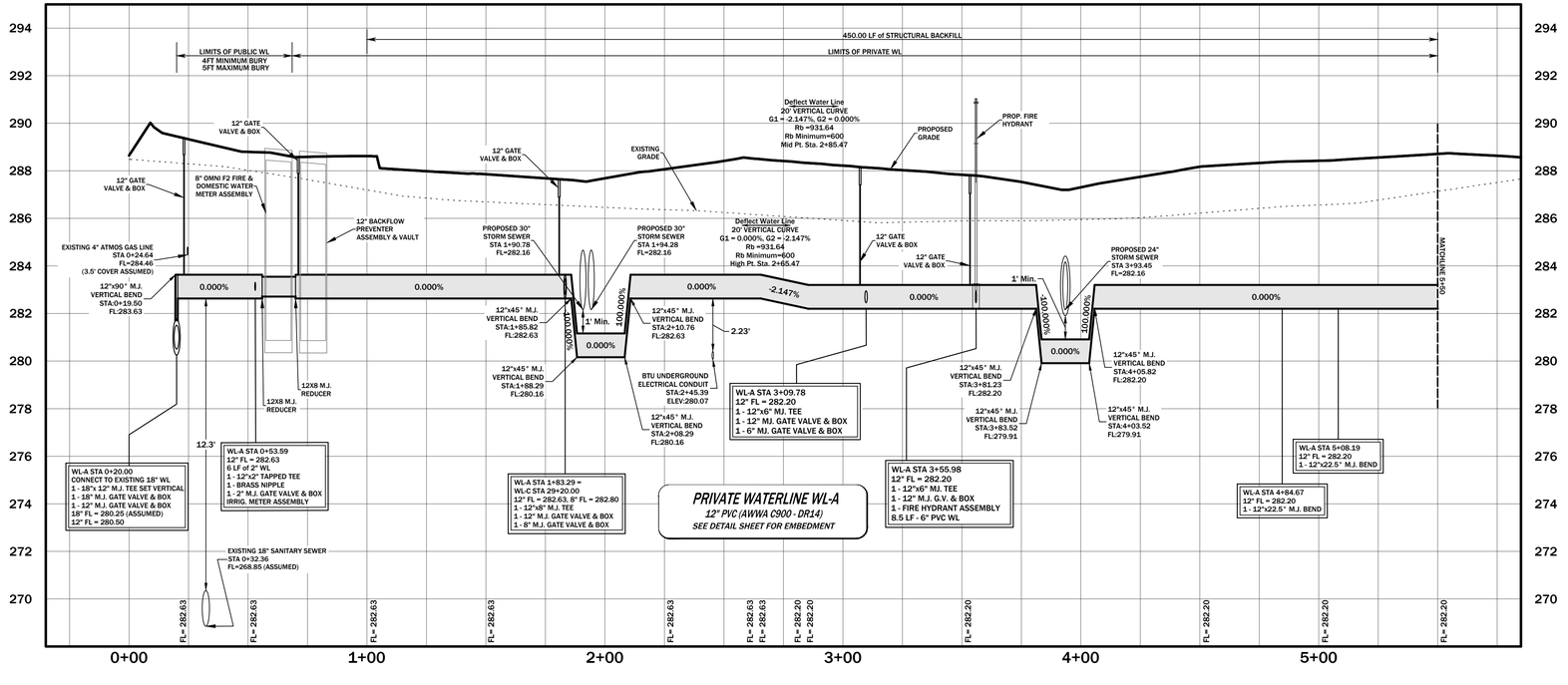
Service	Measurement of potable and reclaim water. Storage temperature: -22 °F (-30 °C) to 155 °F (68.3 °C)	Operating temperatures: Air: -22 °F (-30 °C) to 150 °F (65.6 °C) Water: 33 °F (0.6 °C) to 80 °F (26.7 °C)
Operating Range (100% ± 1.5%)	4": 1.5 – 1000 GPM (0.34 - 227 m³/hr) 6": 3 – 2000 GPM (0.68 - 454 m³/hr)	8": 4 – 3500 GPM (0.91 - 795 m³/hr) 10": 5 - 5500 GPM (1.1 - 1249 m³/hr)
Low flow (95% – 101.5%)	4": 0.75 GPM (0.17 m³/hr) 6": 1.5 GPM (0.34 m³/hr)	8": 2.5 GPM (0.57 m³/hr) 10": 3.5 GPM (0.79 m³/hr)
UL Minimum Flow	8": 97% @ 3 GPM (0.68 m³/hr) 10": 97% @ 4 GPM (0.91 m³/hr)	
Maximum Continuous Operation	4": 1000 GPM (227 m³/hr) 6": 2000 GPM (454 m³/hr)	8": 3500 GPM (795 m³/hr) 10": 5500 GPM (1249 m³/hr)
Maximum Intermittent Operation	4": 1250 GPM (284 m³/hr) 6": 2500 GPM (568 m³/hr)	8": 4700 GPM (1067 m³/hr) 10": 7000 GPM (1590 m³/hr)
Pressure Loss	4": 6.4 psi @ 1000 GPM (0.44 bar @ 227 m³/hr) 6": 6.7 psi @ 2000 GPM (0.46 bar @ 454 m³/hr)	8": 5 psi @ 3500 GPM (0.34 bar @ 795 m³/hr) 10": 7 psi @ 5500 GPM (0.48 bar @ 1249 m³/hr)
Maximum Operating Pressure	175 PSI (12 bar)	
Flange Connections	U.S. ANSI B16.1 / AWWA Class 125	
Test Ports	NPT	
Register	Fully electronic sealed register with programmable registration (Gal. / Cu. Ft. / Cu. Mtr. / Imp. Gal. / Acre Ft.)	Programmable AMR/AMI reading and pulse outputs Guaranteed 10-year battery life
NSF Approved Materials	Maincase: Coated Ductile Iron Measuring Chamber: Thermoplastic Rotor "Floating Ball": Thermoplastic Radial Bearings: Hybrid Thermoplastic Thrust Bearings: Sapphire/Ceramic Jewel	Magnets: Ceramic Strainer Screen: Stainless Steel Strainer Cover: Coated Ductile Iron Test Plug: Stainless Steel

GENERAL NOTES:

1. **CITY OF BRYAN FMC VAULTS WILL HAVE A FULL SIZED BYPASS THROUGH IT.**
2. **THE METER AND VAULTS WILL NEED TO BE PURCHASED/ORDERED THROUGH CITY OF BRYAN WATER SERVICES. CONTRACTOR SHALL COORDINATE WITH CITY OF BRYAN WATER SERVICES @ 979-209-5900.**



WL-A



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STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED
PROFESSIONAL ENGINEER
on MAY 6, 2026

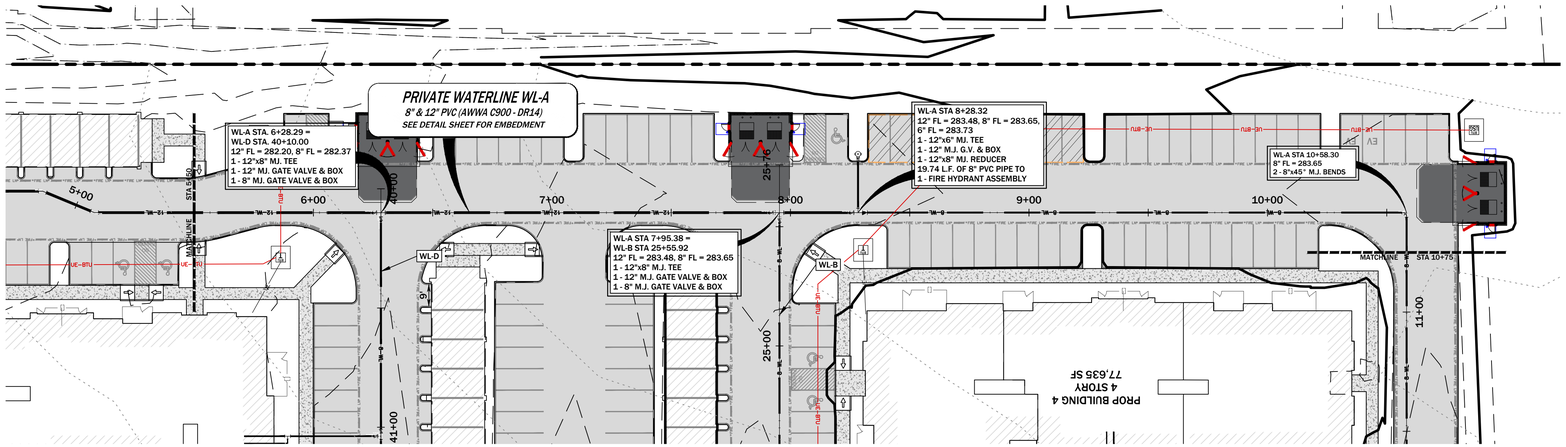
APRIL 2026
Designed By: JTB
Drawn By: MGF,SB
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC
1302 S CAPITAL OF TEXAS HWY
STE A134
AUSTIN, TX 78746
512.329.5755

Revisions

WL-A PLAN & PROFILE
STA. 0+00 TO STA. 5+50
BRAZOS OAKS PHASE II

C-201



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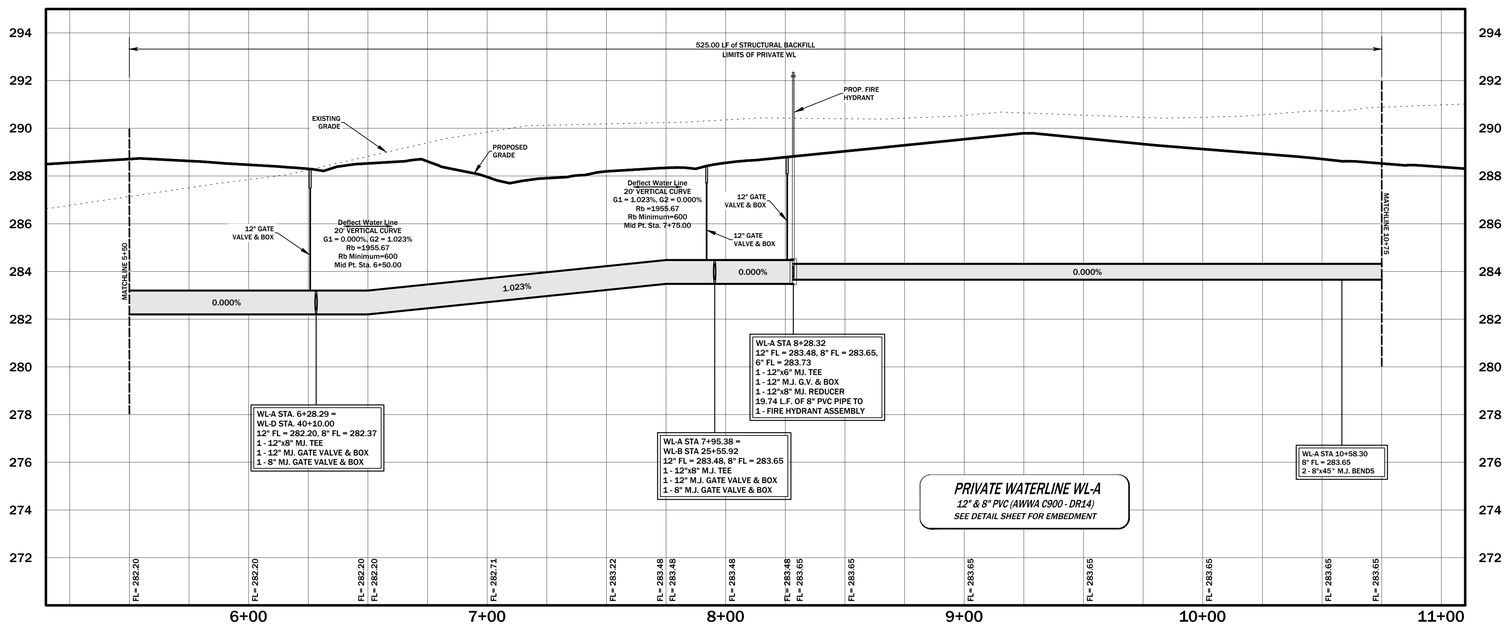

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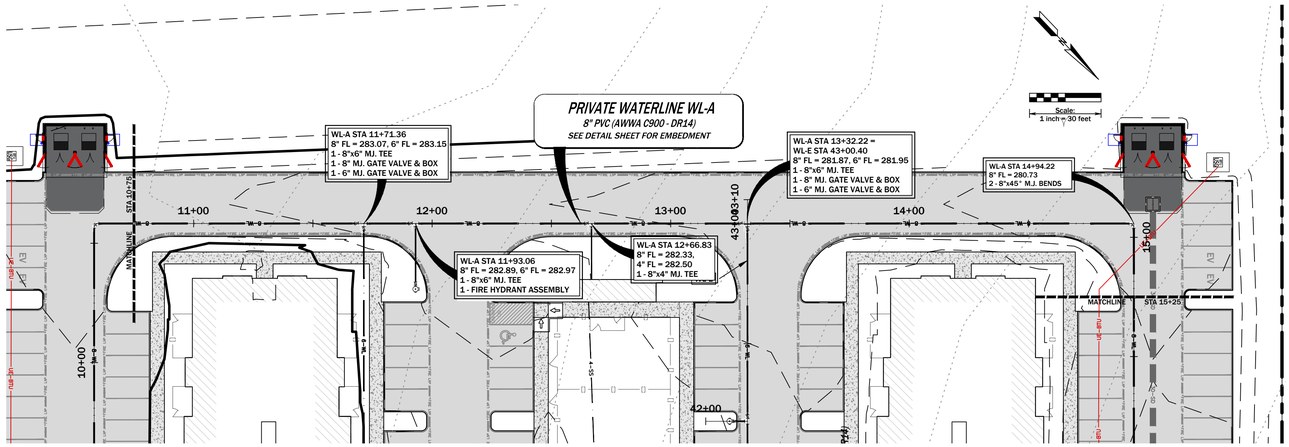
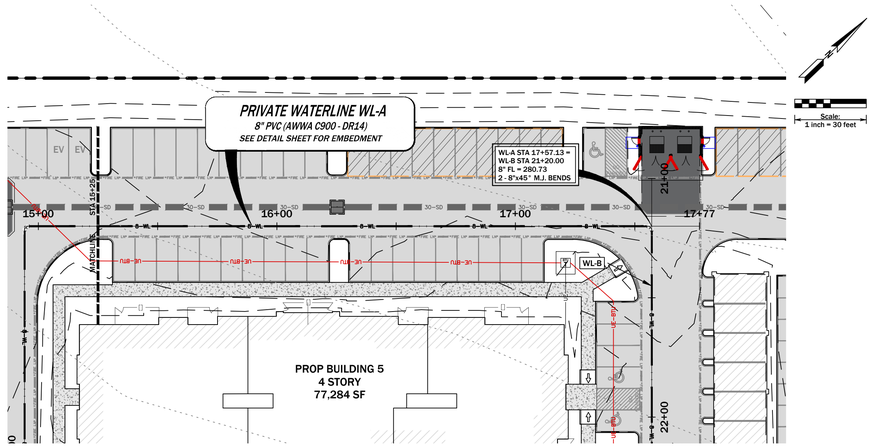
Revisions

WL-A PLAN & PROFILE
STA. 5+50 TO STA. 10+75
BRAZOS OAKS PHASE II

C-202





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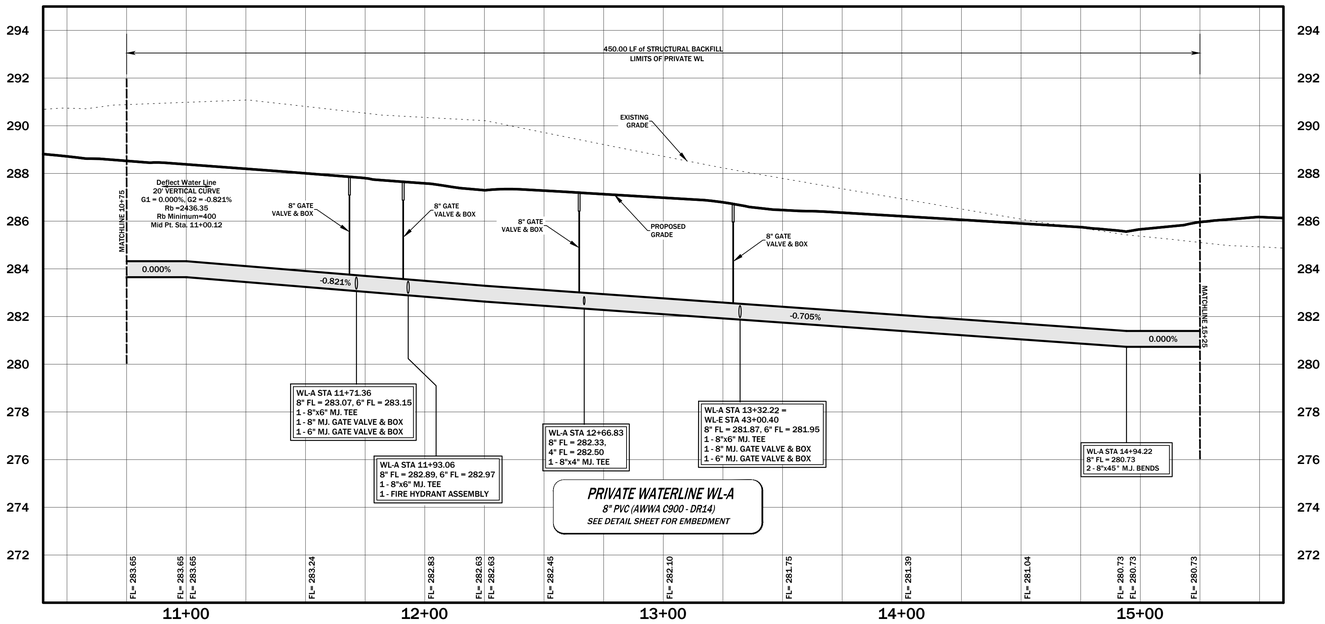

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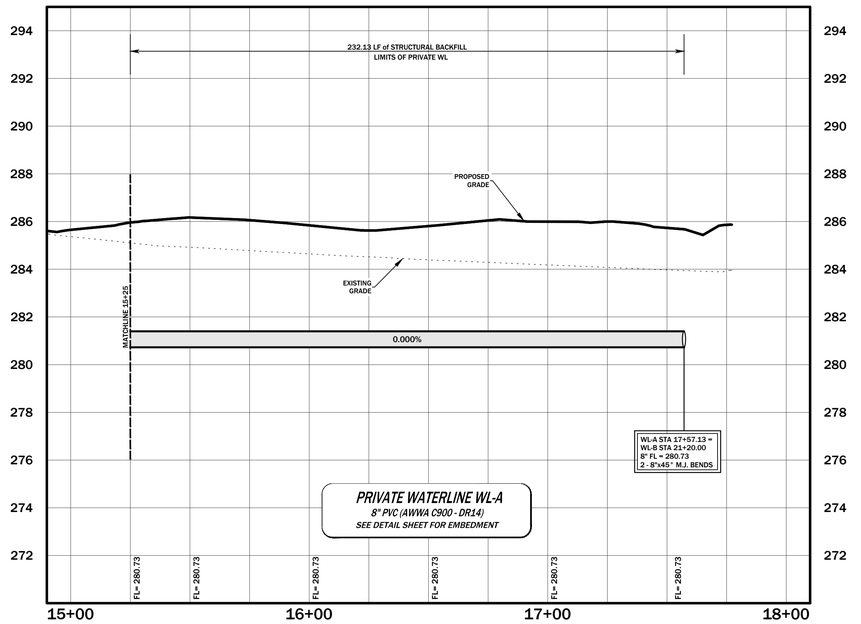

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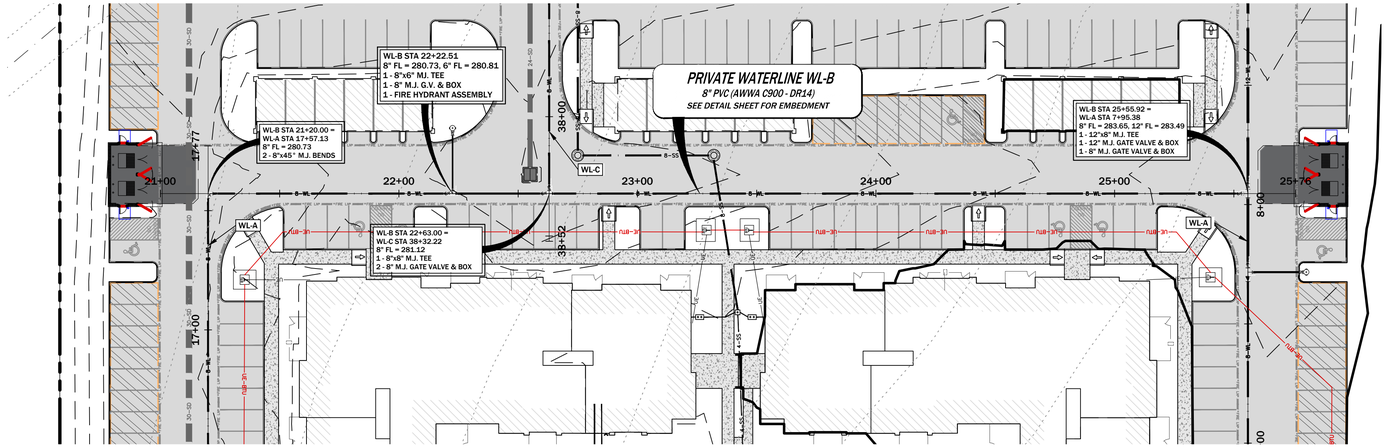
WL-A PLAN & PROFILE
STA. 10+75 TO END
BRAZOS OAKS PHASE II

C-203



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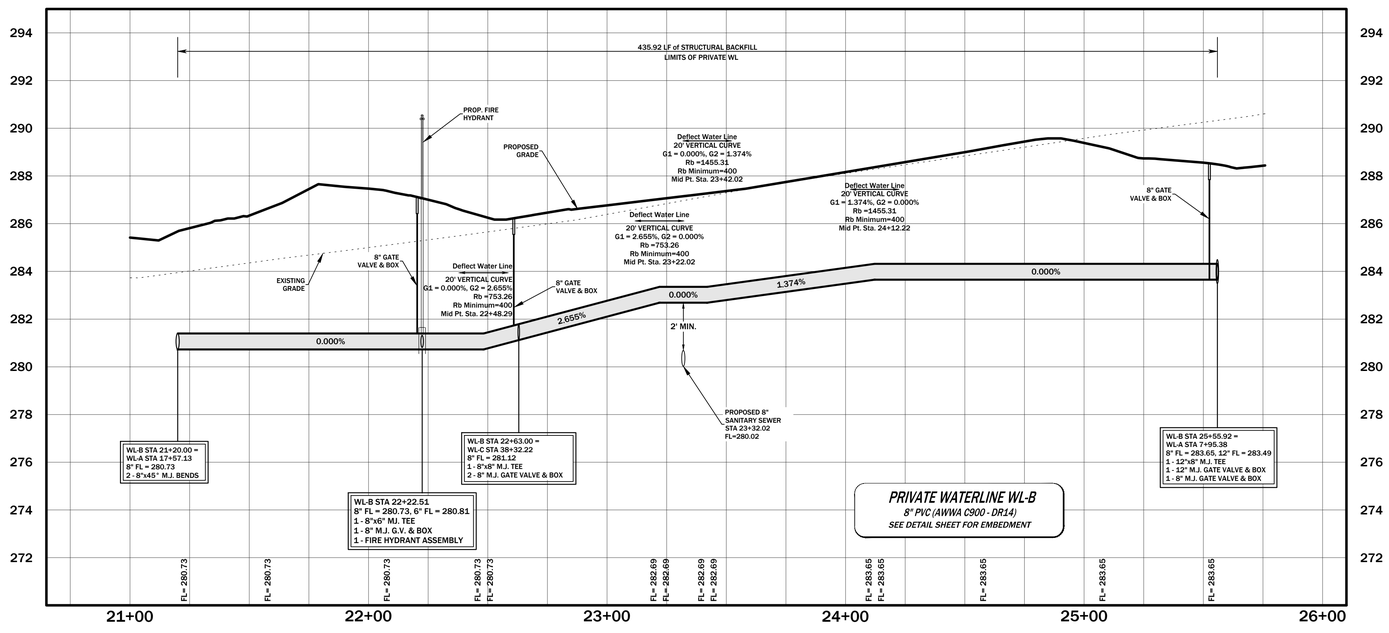

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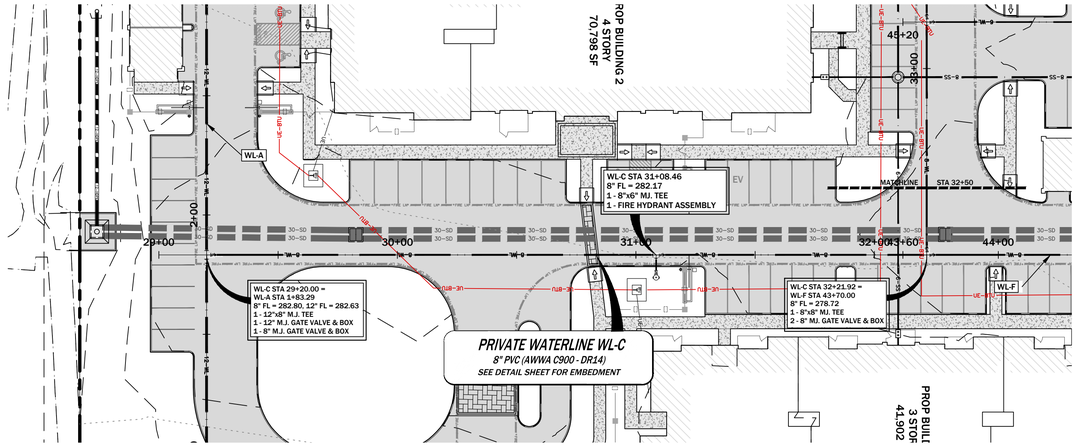
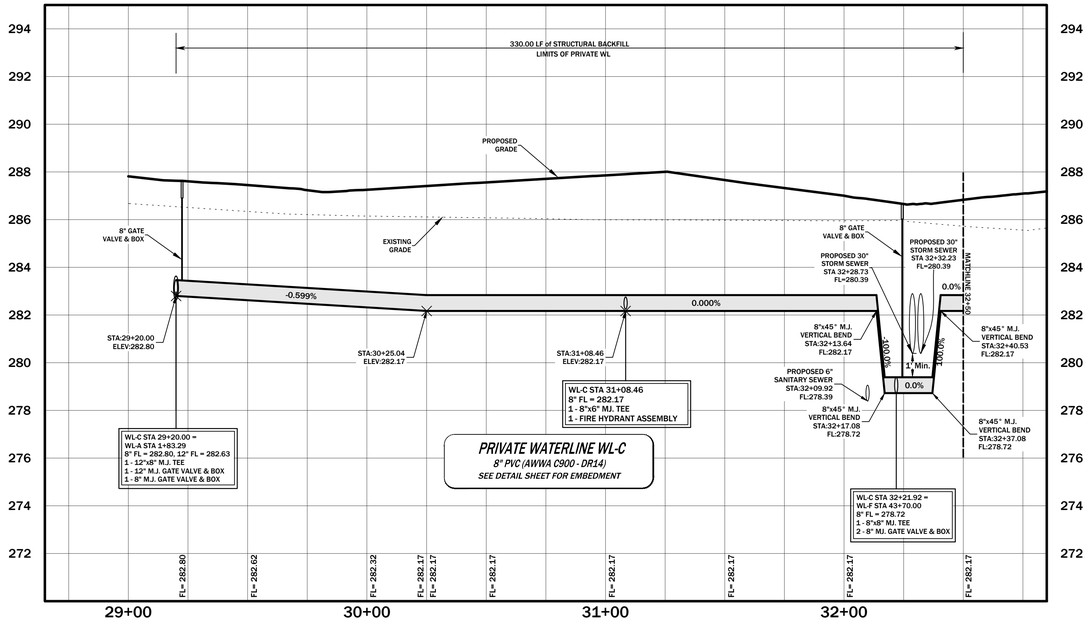
WL-B PLAN & PROFILE
BRAZOS OAKS PHASE II

C-204



Scale:
1 inch = 30 feet

WL-C



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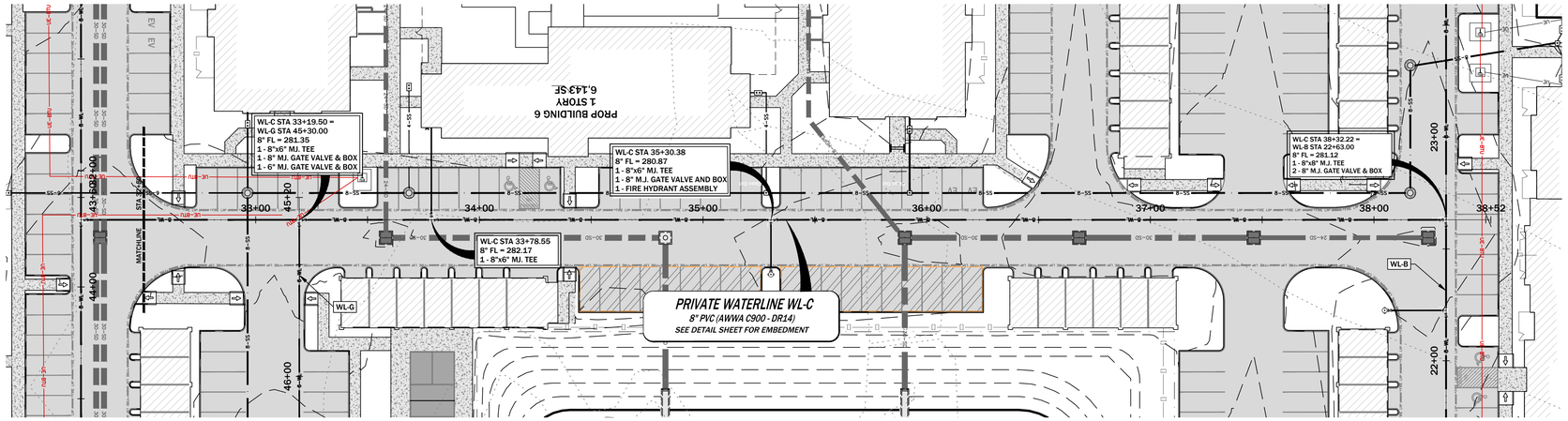
WL-C PLAN & PROFILE
STA. 29+20 TO STA. 32+50
BRAZOS OAKS PHASE II

C-205



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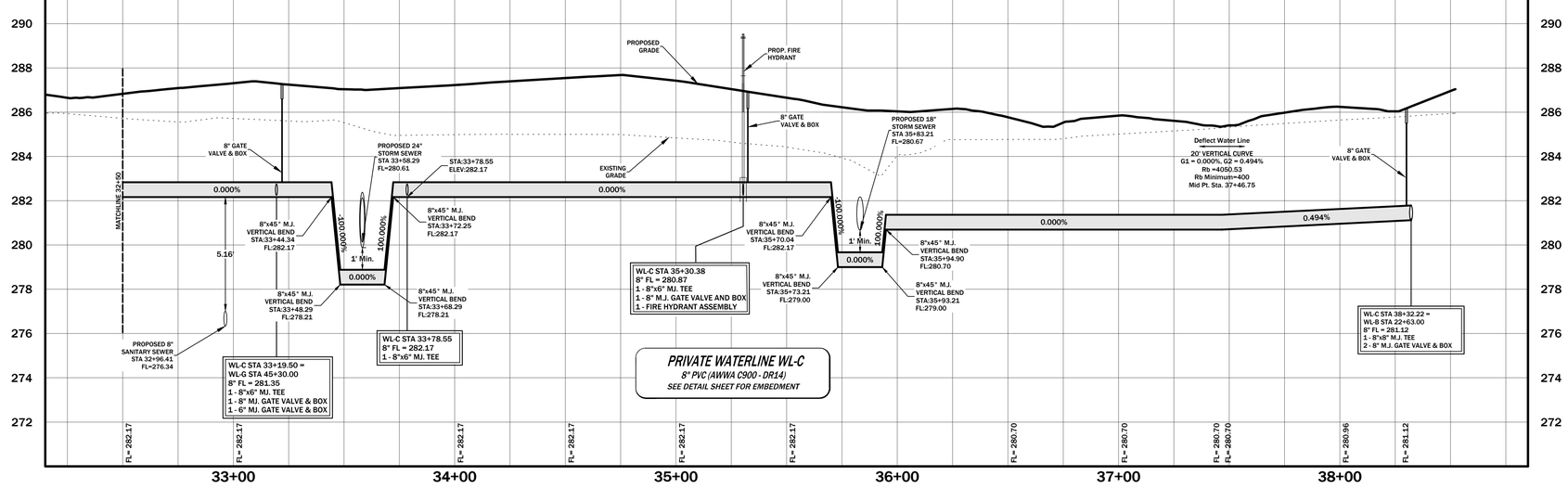

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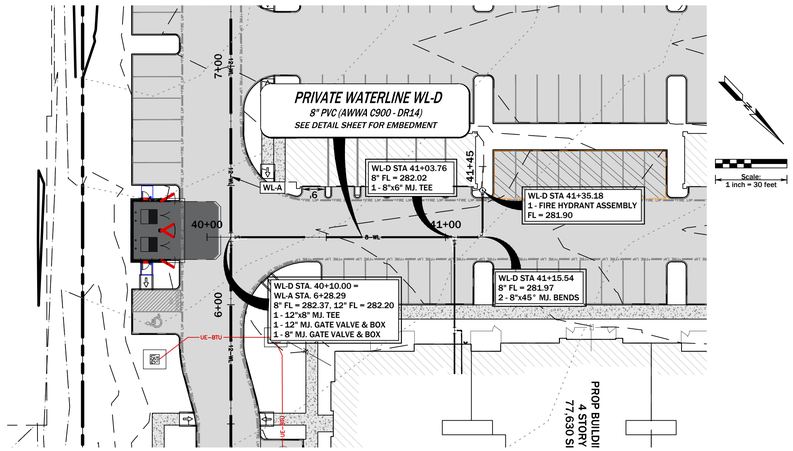
STA. 32+50 TO END
BRAZOS OAKS PHASE II

C-206



Scale:
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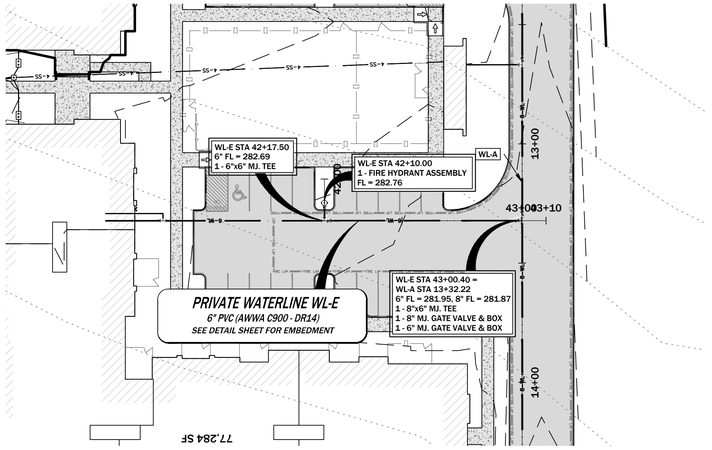

Scale:
1 inch = 30 feet

WL-D

WL-E

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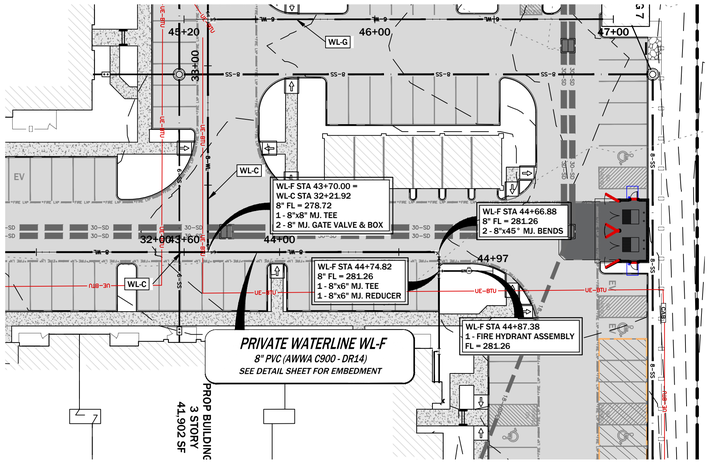
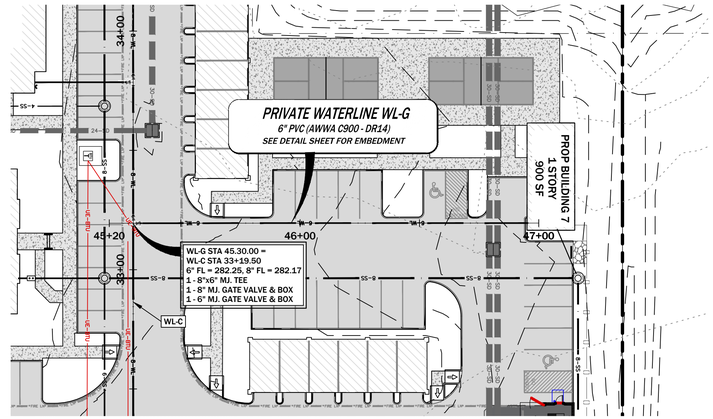
WL-D & WL-E PLAN & PROFILE
BRAZOS OAKS PHASE II

C-207





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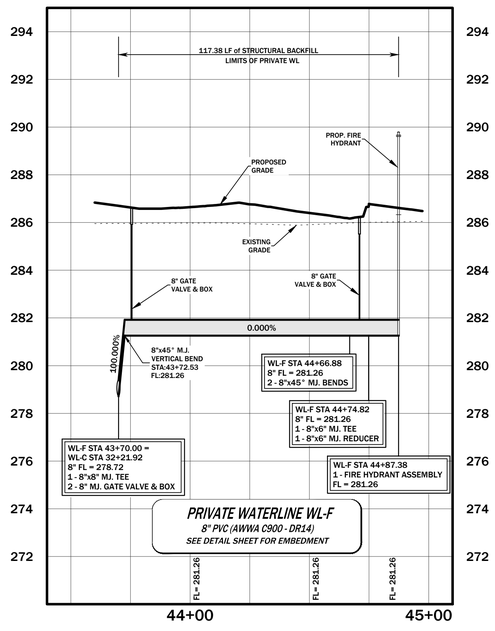

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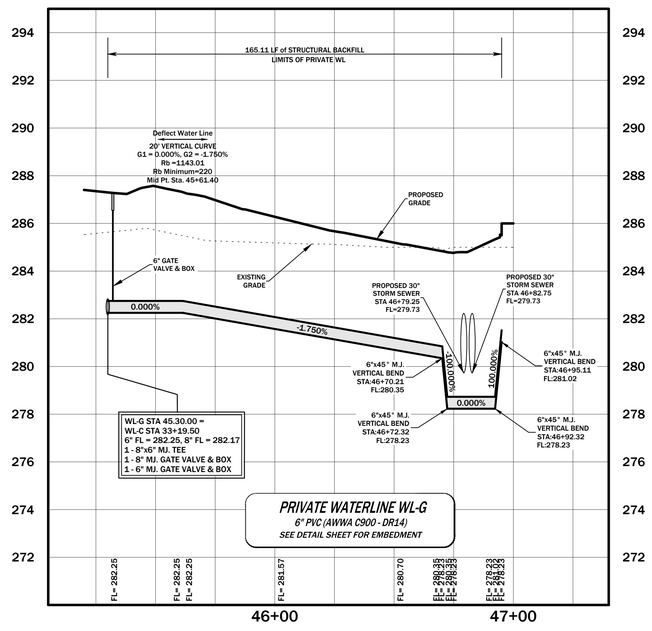

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APRIL 2026
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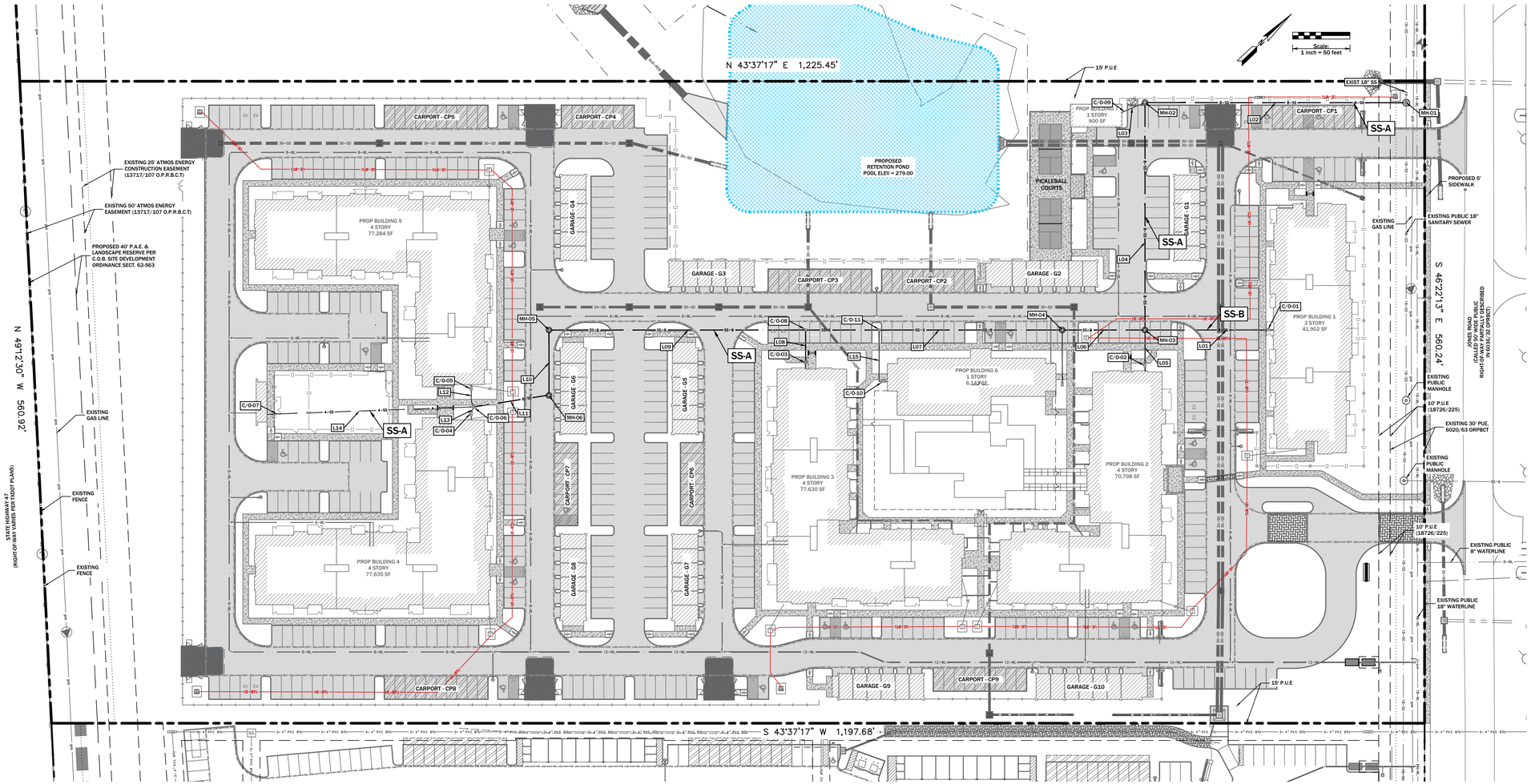
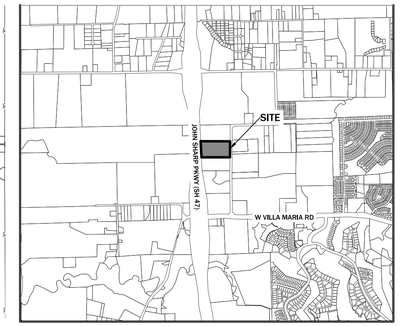
Revisions

WL-F & WL-G PLAN & PROFILE
BRAZOS OAKS PHASE II

C-208

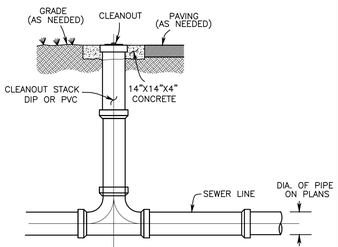




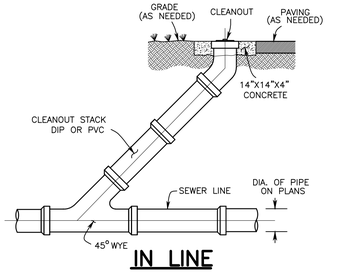
VICINITY MAP
N.T.S.

NOTES:
ALL SANITARY SEWER SHOWN IS PRIVATE. ALL MANHOLE LIDS SHALL BE LABELLED AS PRIVATE AND SHALL NOT CONTAIN CITY OF BRYAN LOGO.

ALL PIPE AND FITTINGS SHALL MEET SDR26-ASTM D3034. PIPE SHALL BE GREEN PVC.



IN LINE



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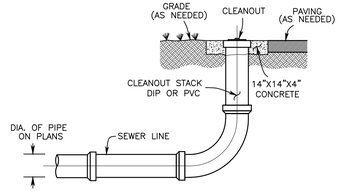
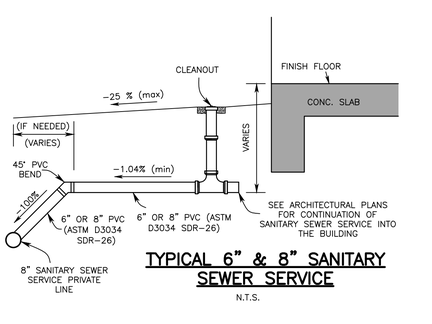


END OF LINE

ONE WAY CLEANOUT
N.T.S.



TYPICAL 6" & 8" SANITARY SEWER SERVICE
N.T.S.

NOTES:
1. A MAX. OF 6 ADD A MIN. OF 3 THICKNESS RINGS MAY BE USED TO ADJUST MANHOLE IN NEW OR EXISTING RIGHT-OF-WAY.
2. USE ADEKA SEALANT OR APPROVED EQUAL BETWEEN ALL CONCRETE SURFACES (RINGS AND CHIMNEY OR CONE/CONE SECTION).
3. MANHOLE BASE THICKNESS AND FOUNDATION DEPTH SHALL BE AS SHOWN IN TABLE:

MANHOLE DEPTH (FT.)	BASE THICKNESS
0 - 12	8"
12 AND OVER	12"

4. MANHOLE LOCATION AND COMPACTION AS FOLLOWS:

LOCATION	COMPACTION REQUIREMENT
PAVEMENT	95 % STANDARD PROCTOR - ASTM D 698
LANDSCAPE AREA	90 % STANDARD PROCTOR - ASTM D 698

5. PLUG TOP WITH CONCRETE FROM ABOVE WATERTIGHT RING AND COVER SHALL BE USED. WATERTIGHT RING AND COVER SHALL BE USED, VENTED WHERE REQUIRED.
6. MANHOLE STEPS SHALL BE PLACED WHERE SEWER DIAMETER OVER 18 DIA.

STD. DUCTILE IRON MANHOLE COVER AND FRAME (30" DIA. OPENING) OR EQUAL
SEE NOTE 1
12" MAX.
2'-6"
VARIES (SEE TABLE)
VARIES
PLUG
MAX
CLASS "A" CONC. 3000 PSI IN 28 DAYS
6" MIN.
12"
BACK FILL AROUND MH SHALL BE AS PER DETAIL
6" MIN.
1'-0"
WATERSTOP-PRECONG MANHOLE, KNIFFER SEAL, OR APPROVED EQUAL (2 REQ'D)
#4 BARS, 8" O.C.E.W.
INVERT = 3/4 DIAMETER OF PIPE FOR 8" AND LARGER PIPE SHALL BE FULL DEPTH INVERTS.
NOTE: DEPTHS GREATER THAN 12' WILL REQUIRE 2 MATS OF REINFORCING STEEL IN THE BASE.

CAST IN PLACE MANHOLE

MANHOLE DIA.	MAX SIZE
3 FT	<18in, >30in
5 FT	<18in, >30in
6 FT	<36in

SEE NOTE 7
SEWER SIGN MANHOLE SIGN (SEE DETAIL SS-02)
3' MIN.
STD. DUCTILE IRON MANHOLE COVER AND FRAME (30" DIA. OPENING) OR EQUAL SEE DETAIL SS-01
SEE NOTE 1
12" MAX.
2'-6"
PRECAST REINFORCED CONC. MANHOLE PER ASTM DESIG C-478
BACK FILL AROUND MH SHALL BE AS PER DETAIL 5 3" MIN.
VARIES (SEE TABLE)
RUBBER-GASKET JOINTS W/ MORTAR SEALANT INSIDE & ALL JOINTS
PLUG
6" MIN.
MAX
12"
6" MIN.
BOOT MUST BE FACTORY INSTALLED
BASE SEE NOTE 5
#4 BAND BENT 90DG AND TIED TO WALL AND BASE
WATERSTOP-PRECONG MANHOLE, KNIFFER SEAL, OR APPROVED EQUAL (3 REQ'D)
#4 BARS, 8" O.C.E.W.
NOTE: DEPTHS GREATER THAN 12' WILL REQUIRE 2 MATS OF REINFORCING STEEL IN THE BASE.

PRE-CAST MANHOLE

CITY OF BRYAN — STANDARD MANHOLE — DATE: DECEMBER 2020 — B/CS UNIFIED STANDARD DETAIL — DETAIL NO. S1-00 — CITY OF COLLEGE STATION

NOTES:
1. FOR BEDDING AND TRENCHING WITHIN ALL EXISTING PAVED AREAS, SEE DETAIL E FOR OPEN CUT STREETS. (Details ST-4-00, ST-4-01, ST-4-02). THIS NOTE DOES NOT APPLY TO STREETS BEING RECONSTRUCTED.
2. ALL BEDDING & INSTALLATION OF PVC PIPE SHALL BE IN ACCORDANCE TO ANSI/AWWA STANDARDS FOR PVC PIPE.
3. ALL BEDDING & INSTALLATION OF DUCTILE IRON PIPE SHALL BE IN ACCORDANCE TO ANSI/AWWA C150/A21.50.
4. COMPACTION SHALL BE ATTAINED BY MECHANICAL TAMPING.
5. ALL TRENCHES SHALL BE BACK FILLED AND TEMPORARY PAVING OR PLANKING PLACED AT THE END OF EACH WORKING DAY.
6. EVERY 100 FEET PROVIDE A WATER STOP BLOCK. (CONSTRUCTED OF CONCRETE OR OTHER IMPERVIOUS MATERIAL DEPENDING ON TRENCH WIDTH). BLOCK SHALL BE 4 FEET IN LENGTH. NO BEDDING SAND IN THIS AREA.

(A) SELECT NATIVE MATERIAL
MATERIAL EXCAVATED FROM THE DITCH, (WHICH IS FREE OF ROCKS, LUMPS, CLODS, OR DEBRIS LARGER THAN TWO (2) INCHES IN ANY DIMENSION AND FREE OF TRASH OR OTHER UNSUITABLE MATERIAL AS DETERMINED BY THE ENGINEER) AND TESTED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDISTURBED NON-STRUCTURAL AREAS (i.e., YARDS, PASTURES, EASEMENTS) OR AT A MOISTURE CONTENT WITHIN OPTIMUM TO +2% OPTIMUM AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER NEW STREET AREAS AND STREETS TO BE RECONSTRUCTED. (OPTION 3)

(B) GRANULAR MATERIAL
MATERIAL SHALL BE RANK RUN RIVER SAND WHICH IS FREE FROM ORGANIC IMPURITIES OF CLAY, VEGETABLE ORGANIC MATERIAL AND HAVING PROPERTIES WHEN TESTED BY LABORATORY METHODS, MEET THE FOLLOWING REQUIREMENTS:
MAXIMUM LIQUID LIMIT 45
MAXIMUM PLASTICITY INDEX 15
MINIMUM PERCENT PASSING NO. 200 SIEVE 100
MINIMUM PERCENT PASSING 3/4" SIEVE 100
THE MATERIAL SHALL BE FREE FLOWING AND WHEN WET, SHALL NOT ADHERE TO FORM A BALL WHEN PRESSED IN THE HAND.

(C) CEMENT STABILIZED SAND

ORIGINAL GROUND OR BOTTOM OF SUBGRADE
A SELECT MATERIAL
B IMMUNALLY CONSOLIDATE AT OPTIMUM MOISTURE
8"-12"MAX.
6" BELOW PIPE BELL O.D.
UNDISTURBED SOIL
PIPE O.D.
6" MIN./12" MAX.
A SELECT MATERIAL
C CEMENT STABILIZED SAND
B IMMUNALLY CONSOLIDATE AT OPTIMUM MOISTURE
PLACE METAL DETECTOR TAPE AT A MINIMUM OF 24" ABOVE TOP OF PIPE

NON-STRUCTURAL AREAS
AREAS TO BE PAVED OR STREETS TO BE RECONSTRUCTED

CITY OF BRYAN — BEDDING AND TRENCH FOR DI PIPE & PVC PIPE — DATE: DECEMBER 2020 — B/CS UNIFIED STANDARD DETAIL — DETAIL NO. S1-01 — CITY OF COLLEGE STATION

NOTE:
MANHOLE BASE SHALL BE PLACED ON FIRM SUBGRADE. ADDITION OF CEMENT STABILIZED SAND OR GRAVEL MAY BE REQUIRED TO STABILIZE FOUNDATION.
IN EXISTING MANHOLE, PLACE PVC MANHOLE INSERT FROM BOTTOM UP TO SPRINGLINE AND TROWEL SMOOTH. FORM SMOOTH CHANNEL TO INVERT.
ALL NEW CONNECTIONS AT EXISTING MANHOLES SHALL BE MADE WATERTIGHT.
MANHOLE BOOTS SHALL BE SIZED SAME AS INCOMING PIPE.
GRADE MUST BE A MINIMUM 24" BELOW CONE SECTION.
5 FOOT DIAMETER MANHOLE 8 WILL BE REQUIRED FOR DROPS 12" AND GREATER.
IF THERE ARE TWO DROPS INSIDE MANHOLE ON OPPOSITE SIDES, THEN MANHOLE TO BE 6' DIA. AND TO BE CENTERED BETWEEN THE TWO DROPS.

PLAN
DROP PIPE
SEWER EFFLUENT PIPE
MAIN SEWER PIPE
ENCLOSE REBAR
PLAN

STD. DUCTILE IRON MANHOLE COVER AND FRAME (30" DIA. OPENING) OR EQUAL (TO BE PLACED DIRECTLY OVER DROP)
GRADE RINGS FOR ADJUSTING TO FINISH GRADE AS PER DETAIL SS-01 - NOTE 1
PRECAST ECCENTRIC FLAT-TOP LID
BACK FILL AROUND MH SHALL BE AS PER DETAIL ST-02 - NOTE 4
GROUT
SEE PLAN OR PROFILE FOR PIPE SIZE, TYPE AND INVERTS
PVC PIPE SIZE EQUAL TO INCOMING PIPE SIZE
45° ELBOW (TURN INFLOW & DROP) (IN PLACE)
8" MIN.
18"MAX
30"
VARIABLE (4' MIN.)
5 INCH THICKNESS (MIN)
PVC CROSS
USE RAM-NECK O-RING, OR APPROVED EQUAL IN JOINTS
1-90° STAINLESS STEEL BANDS, 12" WIDE, 0.030" MIN. THICKNESS (TYP.) W/ STAINLESS STEEL WORM GEAR, TC MINIMUM STEEL ANCHORS (TYP)
#4 BARS, 8" O.C.E.W.
NOTE: DEPTHS GREATER THAN 12' WILL REQUIRE 2 MATS OF REINFORCING STEEL IN THE BASE

CITY OF BRYAN - DROP MANHOLE TO BE USED ON LINES UP TO 12" IN SIZE.
CITY OF COLLEGE STATION - DROP MANHOLE TO BE USED ON LINES UP TO 4" IN SIZE

CITY OF BRYAN — STANDARD DROP MANHOLE — DATE: DECEMBER 2020 — B/CS UNIFIED STANDARD DETAIL — DETAIL NO. S2-02 — CITY OF COLLEGE STATION

2" (51mm) LETTERING LETTERING STYLE BOOKMAN OLD STYLE
32" COVER
(2) PICKBARS
2" (51MM)
SANITARY SEWER
COLLEGE STATION
7" (51mm) LETTERING LETTERING STYLE BOOKMAN OLD STYLE
PLAN VIEW
32" DIA [813 mm]
8/8" [10mm]
1-1/2" [38 mm]
2-7/8" [73 mm]
COVER SECTION
MANHOLES 2-6 ARE PRIVATEAND SHALL NOT BE MARKED WITH CITY LOGO. ONLY MH-1 SHALL USE COB LOGO.
3-13/16" [96mm]
2-7/16" [62mm]
7/8" [22mm]
R 1-3/4" [R44mm]
1" DIA X 4" LG H.R.S. ROD
BOTTOM VIEW OF COVER
PICKBAR DETAIL
NOTE: CITY SPECIFIC SANITARY SEWER MANHOLE COVERS SHALL BE USED UNLESS OTHERWISE SPECIFIED ONLY "SQUIT" TO BE USED ON PRIVATE SEWER SYSTEMS.
33-1/4" DIA [845mm]
30.3/16" DIA [815mm]
1/4" [6mm] DIA RECIPIENSE GASKET
1- 9/16" [40mm]
4-1/2" [114mm]
7/16" [11mm]
32" DIA [813mm]
31-11/16" DIA [805mm]
30-3/16" DIA [767mm]
5/16" [8mm]
7-9/16" [192mm]
FRAME SECTION
CITY OF BRYAN ONLY - V1420
1" DIA (4 PLCS.)
33-1/4" DIA
30" DIA
1- 1/2"
4-7/8"
1"
33-3/4" DIA
40-1/4" DIA
FRAME SECTION
CITY OF COLLEGE STATION ONLY
MACHINED SURFACE
DUCTILE IRON V-1432

CITY OF BRYAN — STANDARD MANHOLE RING AND COVER — DATE: JULY 2022 — B/CS UNIFIED STANDARD DETAIL — DETAIL NO. S4-01 — CITY OF COLLEGE STATION

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PLAN & DESIGN SPECIALISTS IN CIVIL ENGINEERING HYDRAULICS HYDROLOGY UTILITIES STREETS SITE PLANS SUBDIVISIONS
www.mitchellandmorgan.com
STATE OF TEXAS JAMES T. BATENHORST 93631 LICENSED PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL, 2026
Designed By: JTB
Drawn By: JP/SB
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
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AUSTIN, TX 78746
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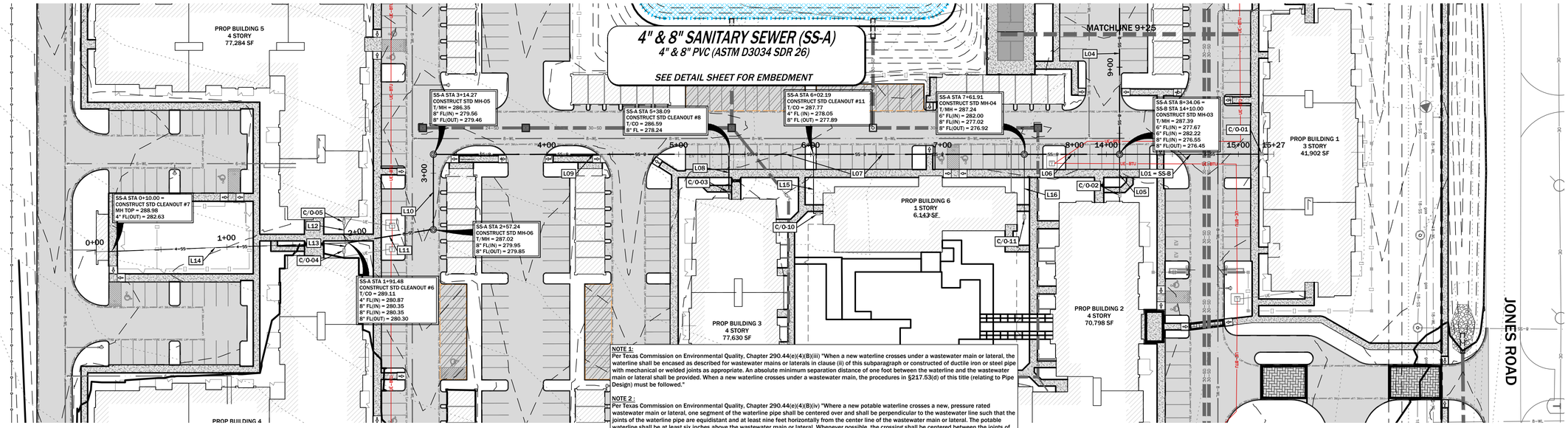
Revisions

BRAZOS OAKS PHASE II
OVERALL SANITARY SEWERLINE PLAN

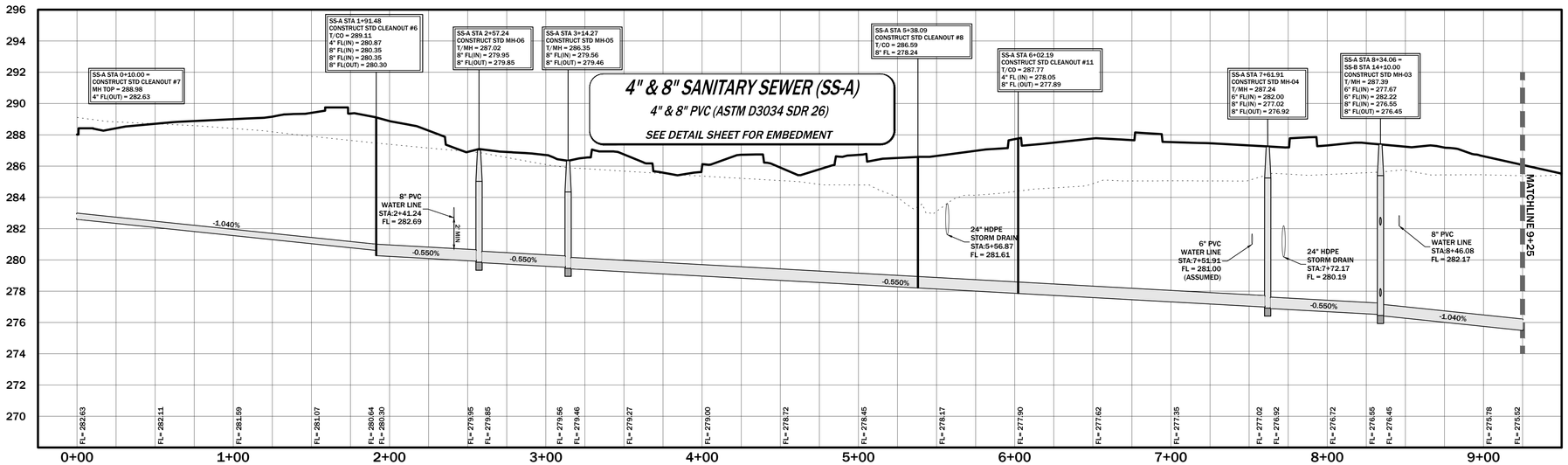
C-300



NOTE 1:
Per Texas Commission on Environmental Quality, Chapter 290.44(e)(4)(B)(iii) "When a new waterline crosses under a wastewater main or lateral, the waterline shall be encased as described for wastewater mains or laterals in clause (ii) of this subparagraph or constructed of ductile iron or steel pipe with mechanical or welded joints as appropriate. An absolute minimum separation distance of one foot between the waterline and the wastewater main or lateral shall be provided. When a new waterline crosses under a wastewater main, the procedures in §217.53(d) of this title (relating to Pipe Design) must be followed."

NOTE 2 :
Per Texas Commission on Environmental Quality, Chapter 290.44(e)(4)(B)(iv) "Where a new potable waterline crosses a new, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over and shall be perpendicular to the wastewater line such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the center line of the wastewater main or lateral. The potable waterline shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pressure rating of at least 150 psi. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end."

SS-A



Pipe Segment	Pipe Diameter	Length	Pipe Slope %
L03	4	20.4	1.50
L05	8	29.4	1.04
L08	8	25.5	1.04
L12	8	16.1	1.50
L13	8	6.0	1.50
L15	4	45.7	1.50

Clean Out	T/CO	F/L Elevation
C02	288.50	277.00
C03	288.20	278.65
C04	289.80	280.59
C05	289.10	280.44
C09	285.50	277.00
C10	288.50	278.71
C11	288.56	279.47

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PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL 2026
Designed By: JTB
Drawn By: MGF,SB
Checked By: JTB

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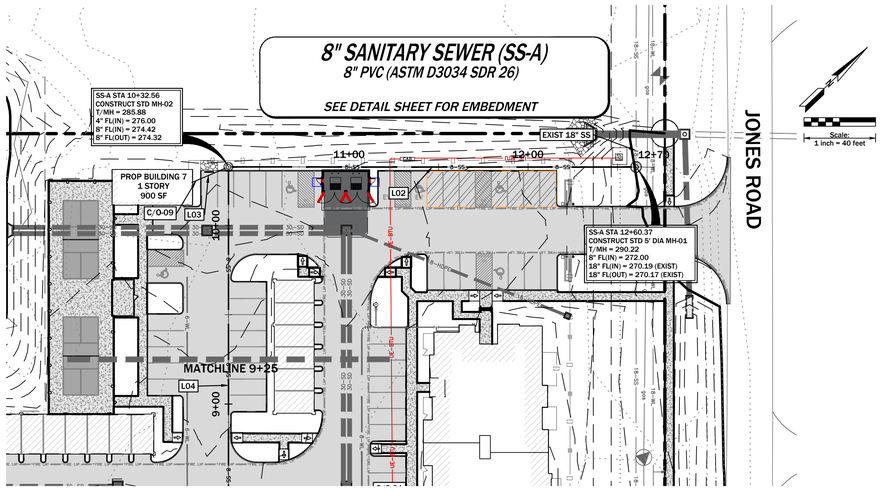
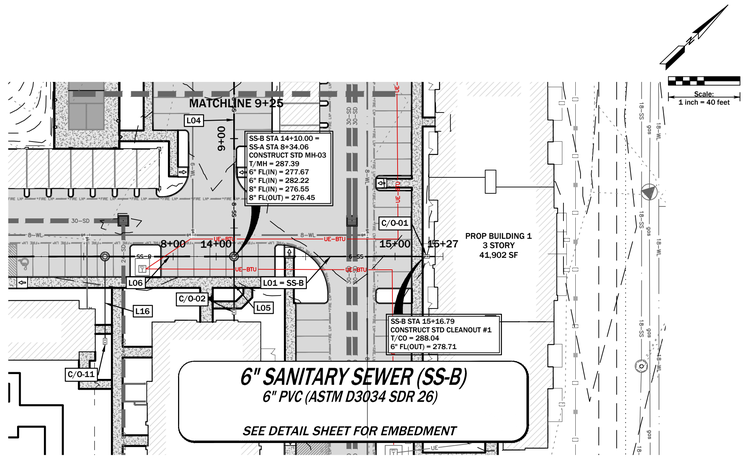
Revisions

SS-A PLAN & PROFILE
1 of 2
BRAZOS OAKS PHASE II

C-301





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L15	4	45.7	1.50

Clean Out	T/CO	F/L Elevation
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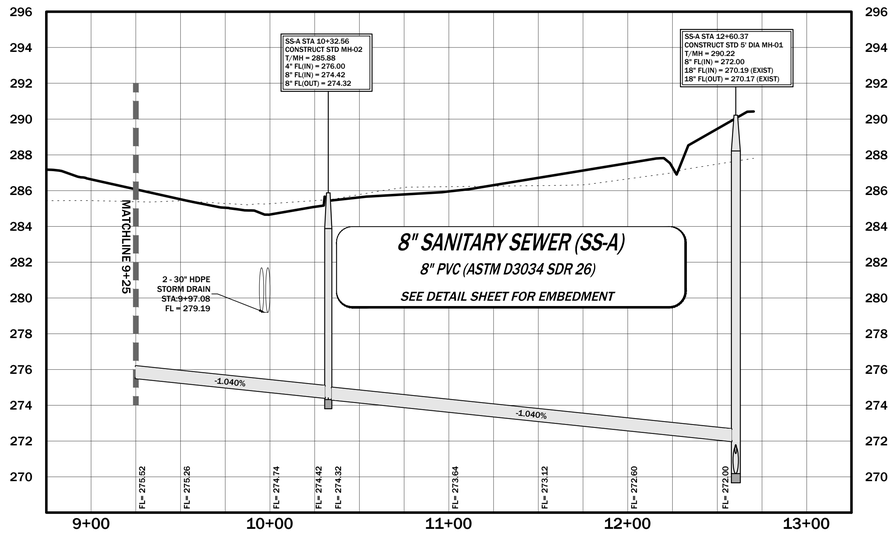
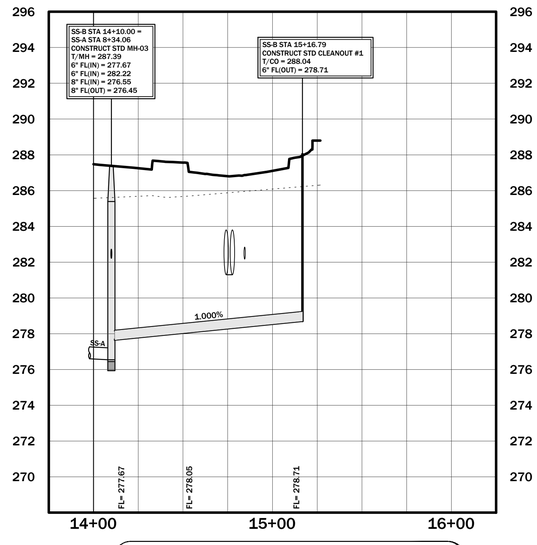
C03	288.20	278.65
C04	289.80	280.59
C05	289.10	280.44
C09	285.50	277.00
C10	288.50	278.71
C11	288.56	279.47





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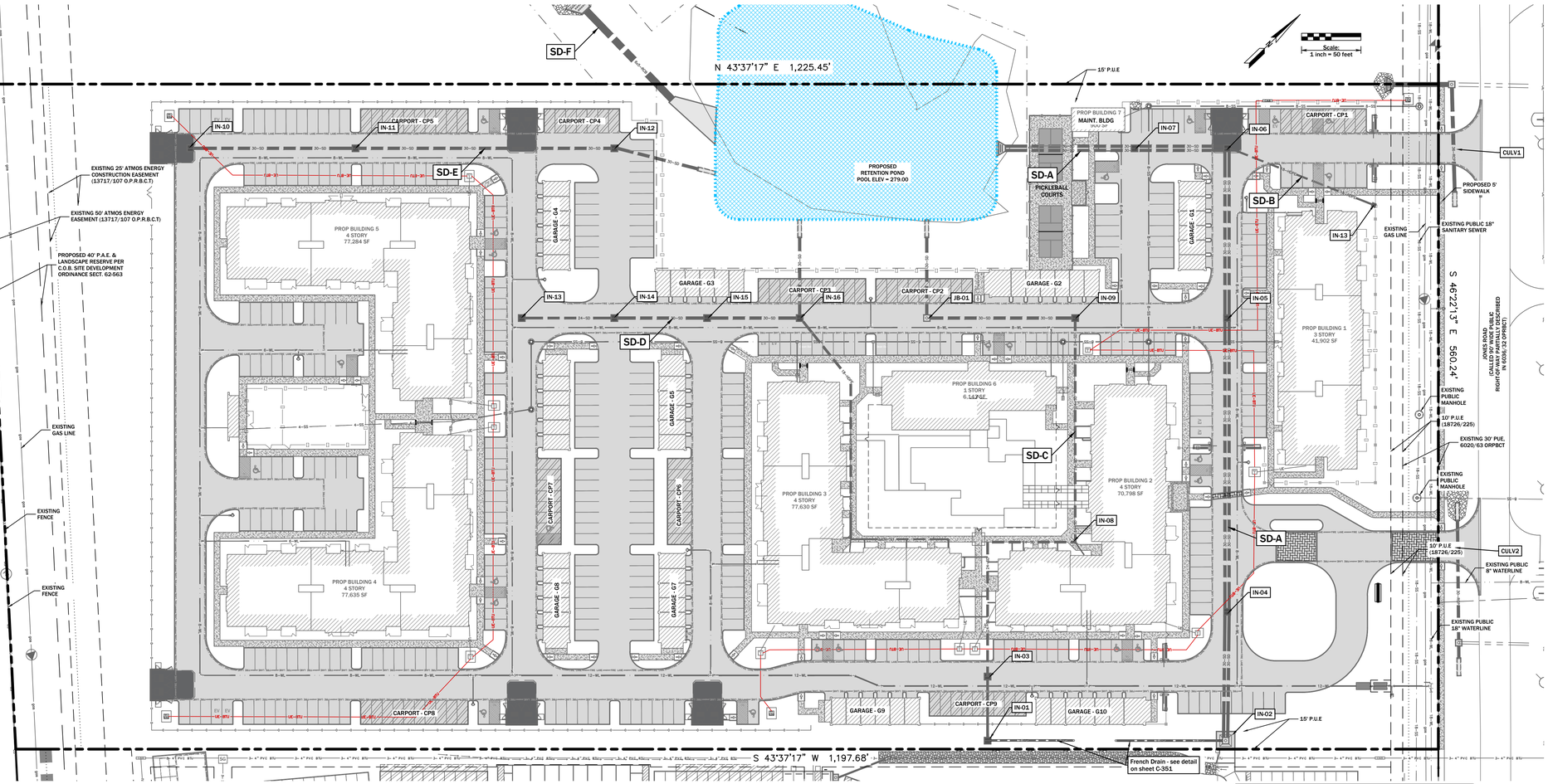
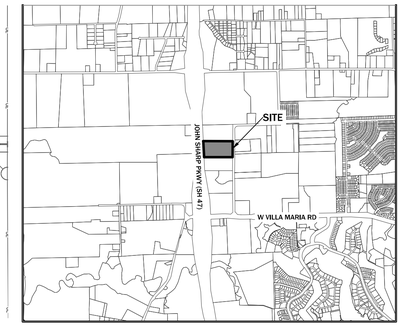
Revisions

SS-A & SSB PLAN & PROFILE
2 of 2
BRAZOS OAKS PHASE II

C-302

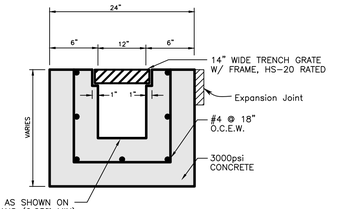




VICINITY MAP
N.T.S.

NOTE:
ALL GRATE INLETS LOCATED WITHIN PARKING/DRIVE AISLE PAVED AREAS SHALL BE CONSTRUCTED WITH TRAFFIC RATED GRATES.

ALL STORM DRAIN LINES ARE PRIVATE AND BOX LIDS SHALL BE LABELLED AS PRIVATE. THEY SHALL NOT CONTAIN CITY OF BRYAN LOGO.



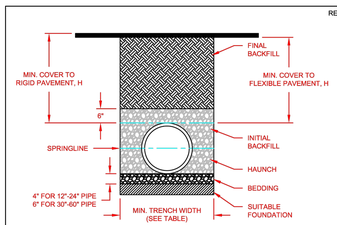
SIDEWALK TRENCH GRATE DETAIL
N.T.S.

Note:
A cast-iron plate covering shall be installed in locations where the flume is constructed under the sidewalk. The cast-iron plate shall sit flush with the top of the sidewalk and be bolted in place. This shall be accomplished by constructing a recessed notch in the top inside edges of the flume.

Coordinate with landscape plan to place trench grates as necessary to convey roof drain runoff.

RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4" (100mm)	21" (533mm)
6" (150mm)	23" (584mm)
8" (200mm)	26" (660mm)
10" (250mm)	28" (711mm)
12" (300mm)	30" (762mm)
15" (375mm)	34" (864mm)
18" (450mm)	39" (991mm)
24" (600mm)	48" (1219mm)
30" (750mm)	56" (1422mm)
36" (900mm)	64" (1626mm)
42" (1050mm)	72" (1829mm)
48" (1200mm)	80" (2032mm)
60" (1500mm)	96" (2438mm)



MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS**

PIPE DIAM.	SURFACE LIVE LOADING CONDITION H-25	HEAVY CONSTRUCTION (75T AXLE LADD) *
12" - 48" (300mm - 1200mm)	12" (305mm)	48" (1219mm)
60" (1500mm)	24" (610mm)	60" (1524mm)

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER
**SEE BACKFILL REQUIREMENTS IN NOTE 6.

MAXIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	CLASS I COMPACTED	CLASS I DUMPED	CLASS II 95%	CLASS II 90%	CLASS III 95%
4" (100mm)	34 (10.4m)	16 (4.9m)	23 (7.0m)	16 (4.9m)	17 (5.2m)
6" (150mm)	40 (12.2m)	19 (5.8m)	27 (8.2m)	19 (5.8m)	20 (6.1m)
8" (200mm)	30 (9.1m)	14 (4.3m)	21 (6.4m)	14 (4.3m)	15 (4.6m)
10" (250mm)	34 (10.4m)	16 (4.9m)	23 (7.0m)	16 (4.9m)	17 (5.2m)
12" (300mm)	35 (10.7m)	17 (5.2m)	24 (7.3m)	17 (5.2m)	18 (5.5m)
15" (375mm)	37 (11.3m)	18 (5.5m)	25 (7.6m)	18 (5.5m)	19 (5.8m)
18" (450mm)	32 (9.8m)	15 (4.6m)	22 (6.7m)	15 (4.6m)	16 (4.9m)
24" (600mm)	27 (8.2m)	13 (4.0m)	19 (5.8m)	13 (4.0m)	14 (4.3m)
30" (750mm)	22 (6.7m)	11 (3.4m)	16 (4.9m)	11 (3.4m)	11 (3.4m)
36" (900mm)	26 (7.9m)	12 (3.7m)	18 (5.5m)	12 (3.7m)	13 (4.0m)
42" (1050mm)	24 (7.3m)	11 (3.4m)	17 (5.2m)	11 (3.4m)	12 (3.7m)
48" (1200mm)	23 (7.0m)	11 (3.4m)	16 (4.9m)	11 (3.4m)	12 (3.7m)
60" (1500mm)	26 (7.9m)	12 (3.7m)	18 (5.5m)	12 (3.7m)	13 (4.0m)

FILL HEIGHT TABLE GENERATED USING AASHTO SECTION 12, LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS:
NO HYDROSTATIC PRESSURE,
UNIT WEIGHT OF SOIL (Ys) = 120 PCF

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-1500mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT. FOR TRAFFIC APPLICATIONS WITH LESS THAN FOUR FEET OF COVER, EMBEDMENT OF THE PIPE SHALL BE USING ONLY A CLASS I OR CLASS II BACKFILL.

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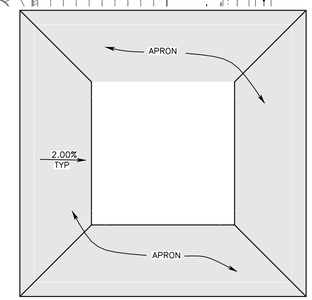
ADVANCED DRAINAGE SYSTEMS, INC. ("ADS") HAS PREPARED THIS DETAIL BASED ON INFORMATION PROVIDED TO ADS. THIS DRAWING IS INTENDED TO DEPICT THE COMPONENTS AS REQUESTED. ADS HAS NOT PERFORMED ANY ENGINEERING OR DESIGN SERVICES FOR THIS PROJECT, NOR HAS ADS INDEPENDENTLY VERIFIED THE INFORMATION SUPPLIED. THE INSTALLATION DETAILS PROVIDED HEREIN ARE GENERAL RECOMMENDATIONS AND ARE NOT SPECIFIC FOR THIS PROJECT. THE DESIGN ENGINEER SHALL REVIEW THESE DETAILS PRIOR TO CONSTRUCTION. IT IS THE DESIGN ENGINEERS RESPONSIBILITY TO ENSURE THE DETAILS PROVIDED HEREIN MEETS OR EXCEEDS THE APPLICABLE NATIONAL, STATE, OR LOCAL REQUIREMENTS AND TO ENSURE THAT THE DETAILS PROVIDED HEREIN ARE ACCEPTABLE FOR THIS PROJECT.

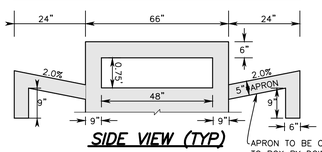
REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
4	ADDED CLASS 3 MAX COVER COLUMN	RJS	01/27/17	

TRENCH INSTALLATION DETAIL (ASTM F2648)
DRAWING NUMBER: STD-101A

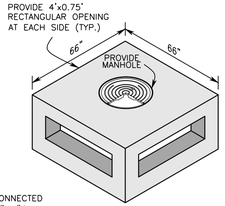
ADS
ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OHIO 43026

DWN BY: JJE
DATE: 8/15/13
CHK BY:
SCALE: NTS
SHEET: 1 OF 1



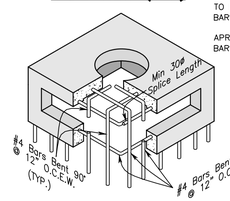


SIDE VIEW (TYP)

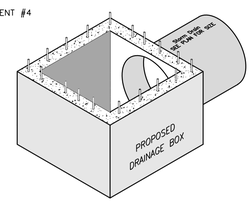


APRON TO BE CONNECTED TO BOX BY DOWEL #4 BARS @12" O.C.

APRON REINFORCEMENT #4 BARS @ 12" O.C.



SECTIONAL VIEW



YARD DRAIN
NTS

MITCHELL M&M MORGAN
T.979.260.6963
F.979.260.3564
TX. FIRM # F-1443
3204 EARL RUDDER FWY. S.
COLLEGE STATION, TX 77845
PLAN & DESIGN SPECIALISTS IN
CIVIL ENGINEERING HYDRAULICS
HYDROLOGY UTILITIES STREETS
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www.mitchellandmorgan.com

STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED PROFESSIONAL ENGINEER
on MAY 6, 2026

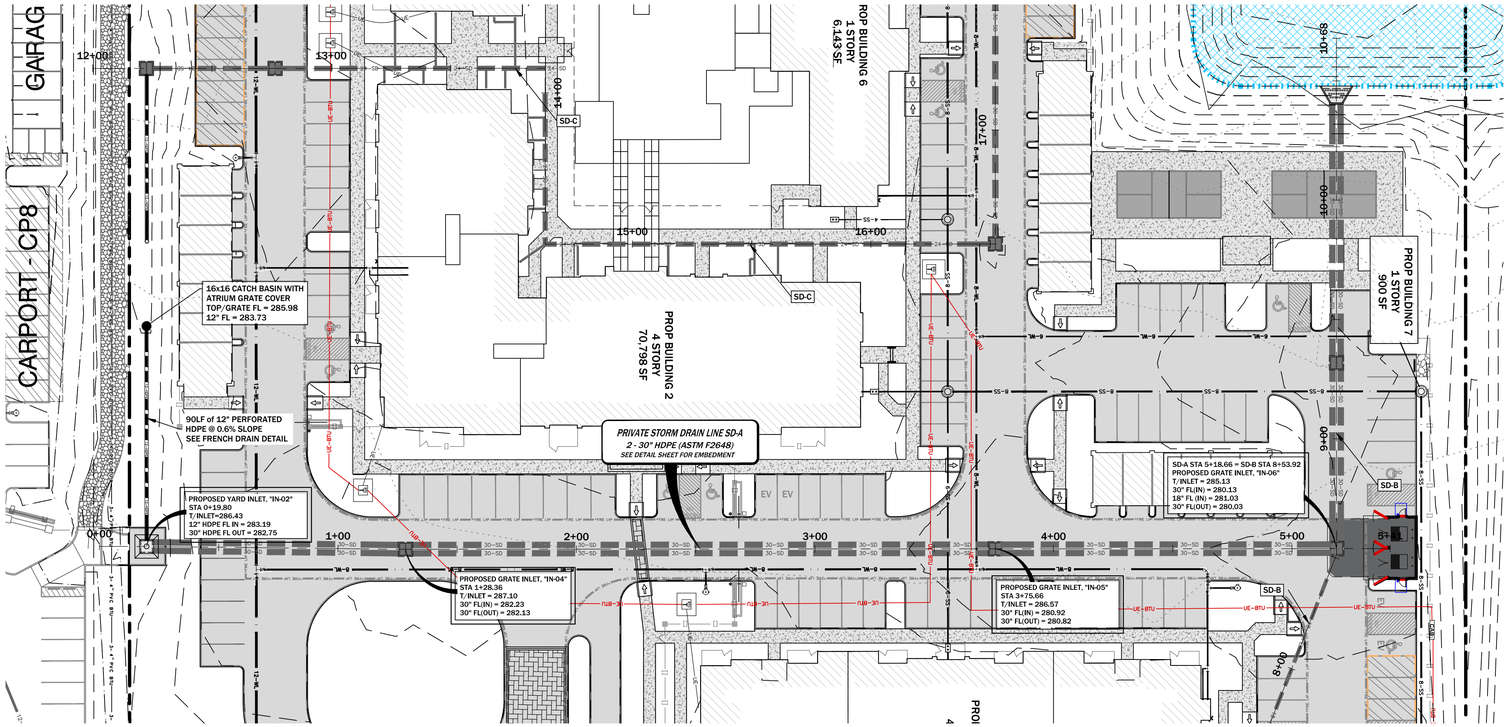
APRIL 2026
Designed By: JTB
Drawn By: MGF,SB
Checked By: JTB

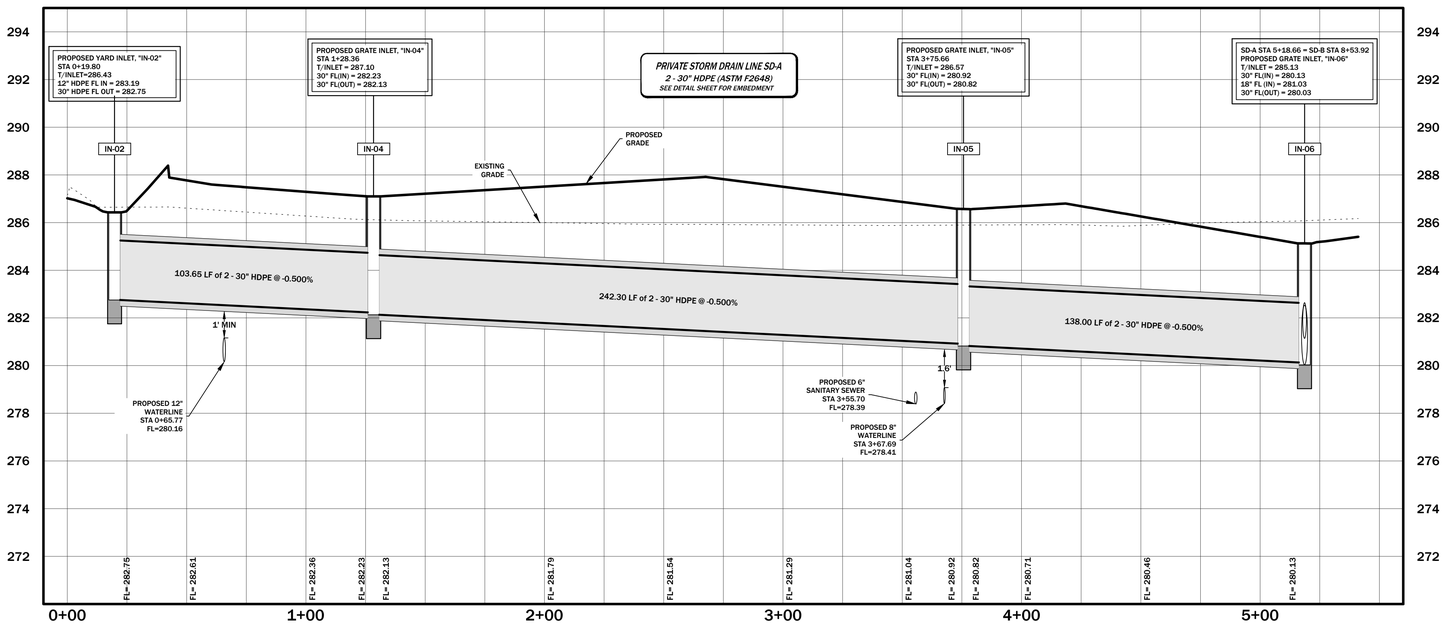
Prepared For:
TEEPLE PARTNERS, INC
1302 S CAPITAL OF TEXAS HWY
STE A1.34
AUSTIN, TX 78746
512.329.5755

Revisions

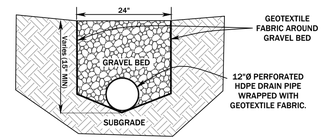
OVERALL STORM DRAIN PLAN
BRAZOS OAKS PHASE II

C-350





Scale:
1 inch = 30 feet



FRENCH DRAIN DETAIL

NOTES:
SUBGRADE TO DRAIN TOWARDS PERFORATED DRAIN PIPE

GRAVEL BED TO CONSIST OF #3 ANGULAR CRUSHED STONE (1/2" - 2" NOMINAL)

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APRIL, 2026
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Checked By: JTB

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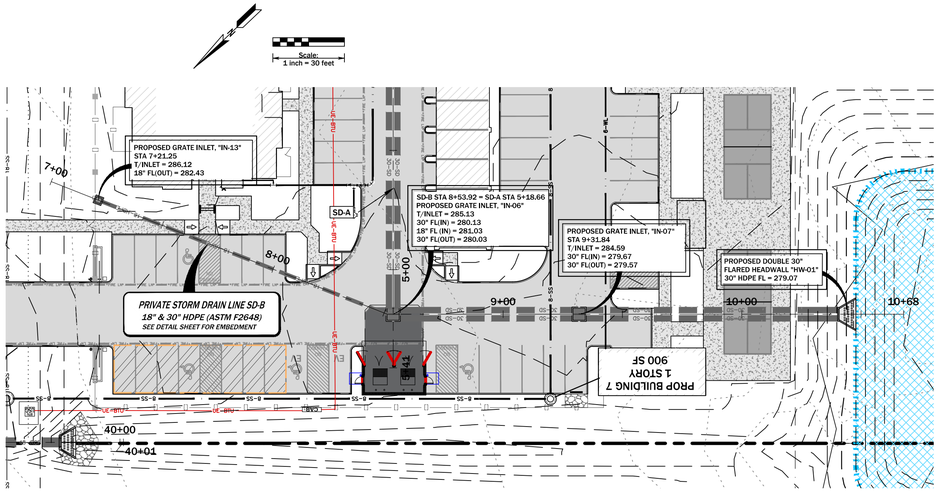
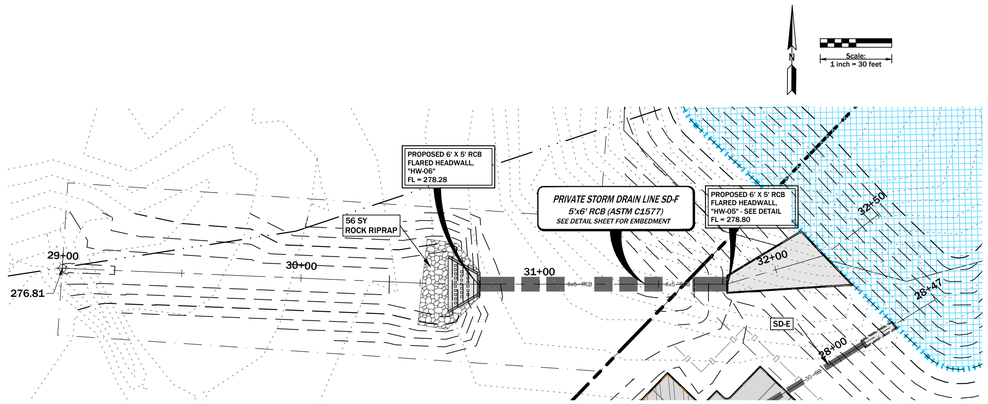
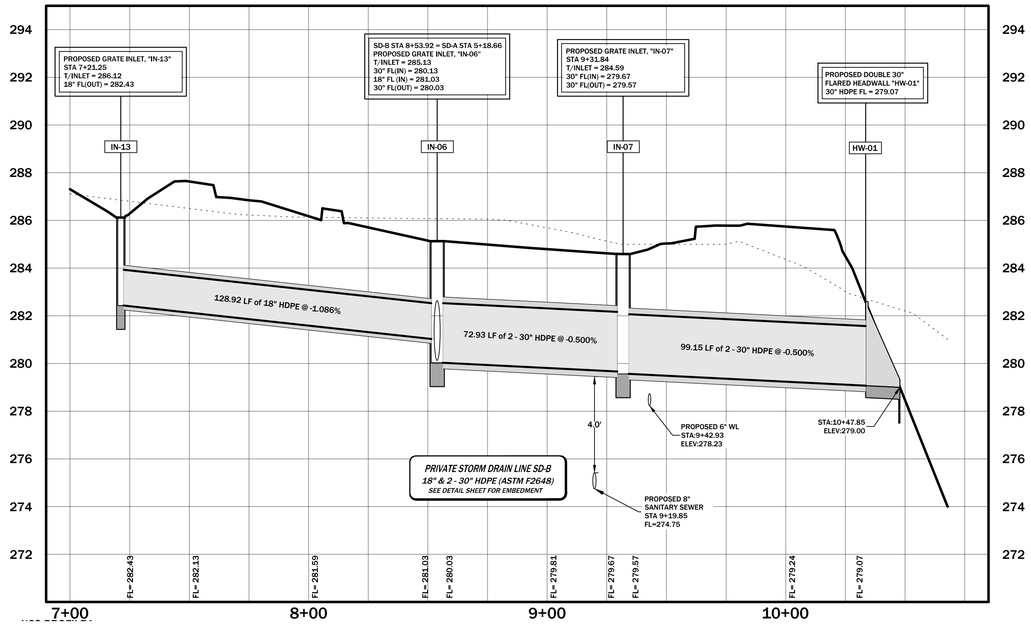
Revisions

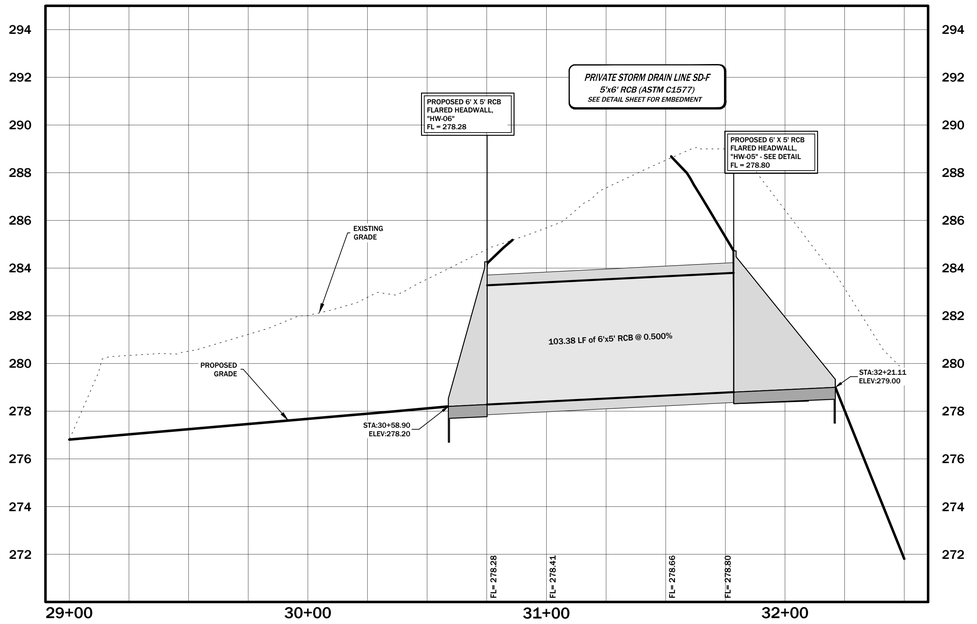
SD-A PLAN & PROFILE
BRAZOS OAKS PHASE II

C-351









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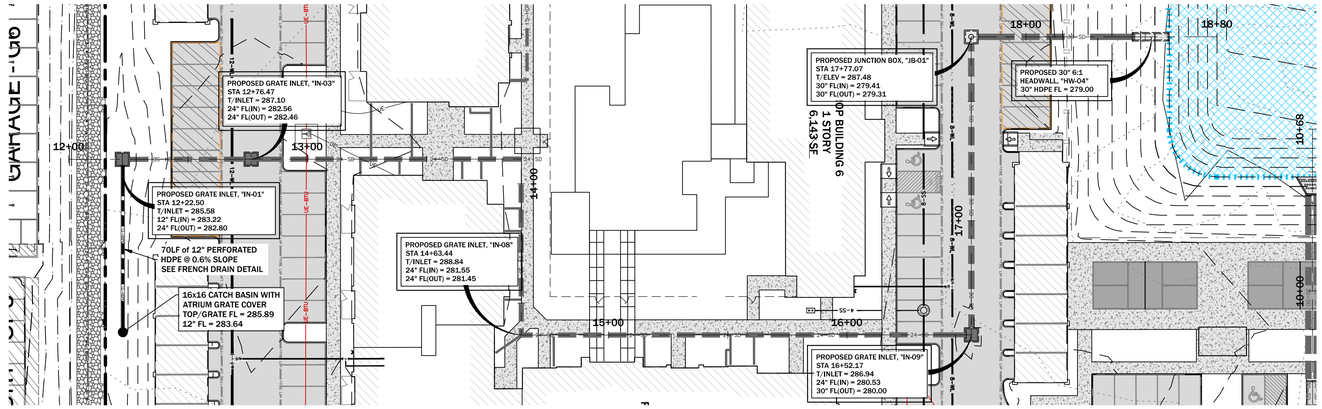
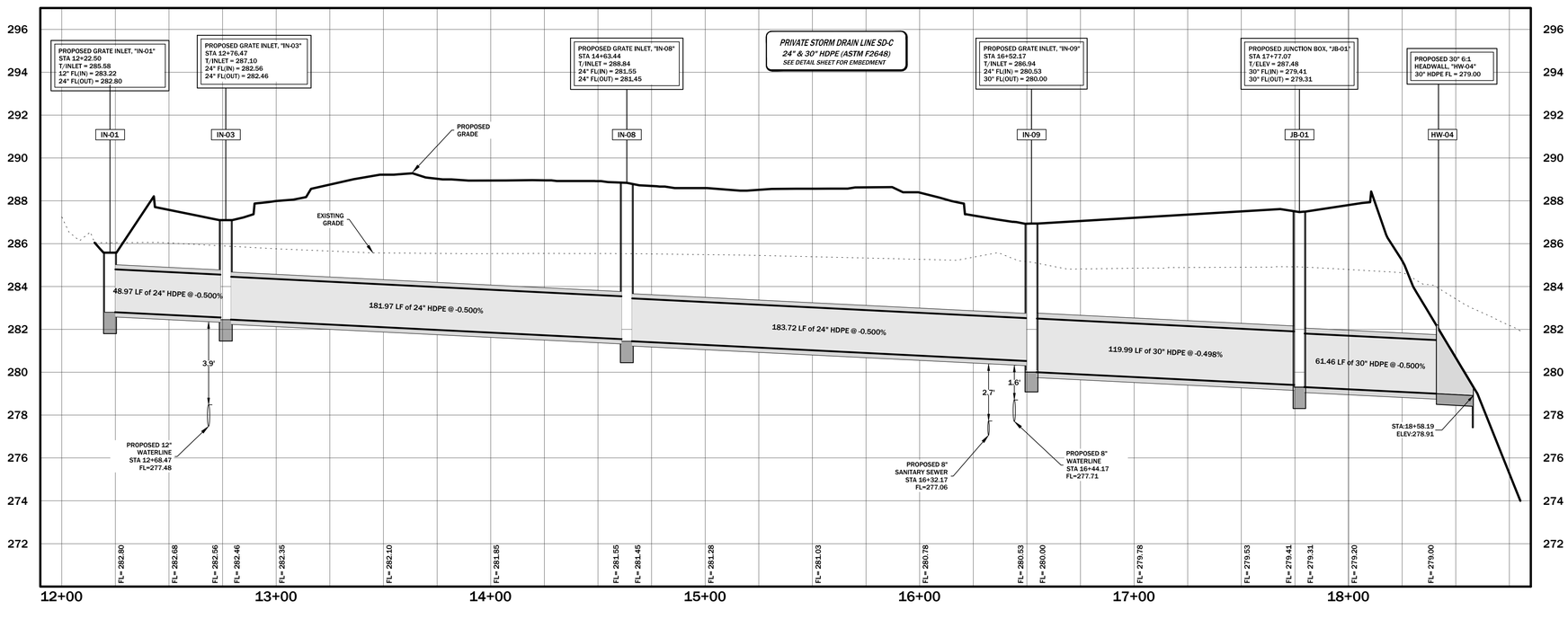
Revisions

SD-B & SD-F PLAN & PROFILE
BRAZOS OAKS PHASE II

C-352





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ENGINEER
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APRIL 2026
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Drawn By: JPSB
Checked By: JTB

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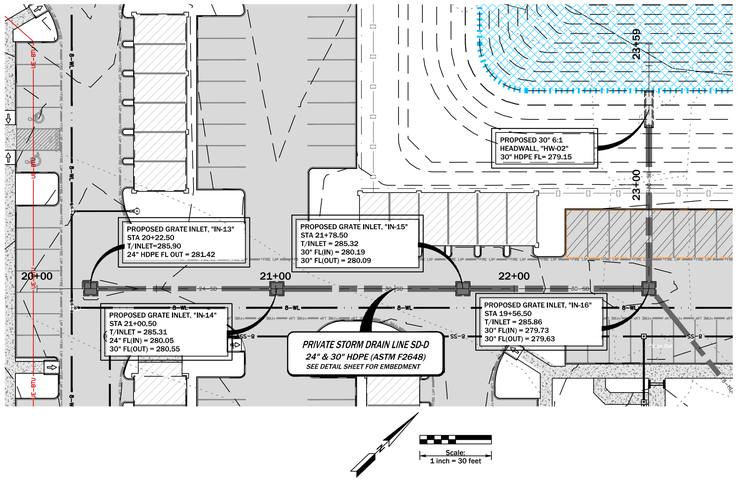
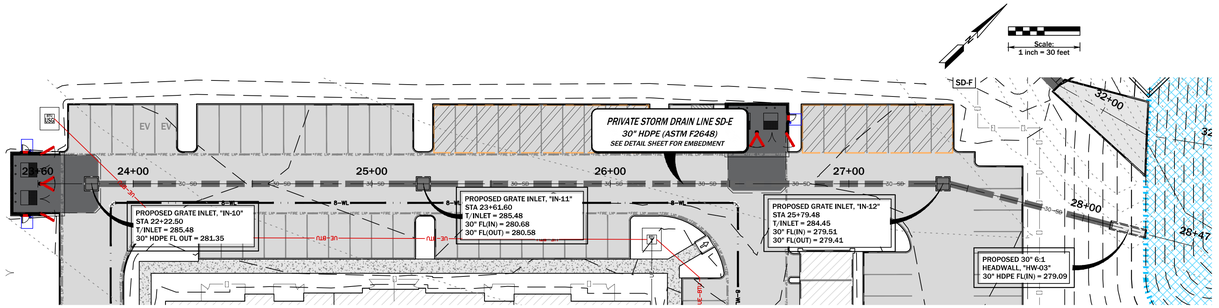
AUSTIN, TX 78746
512.329.5755

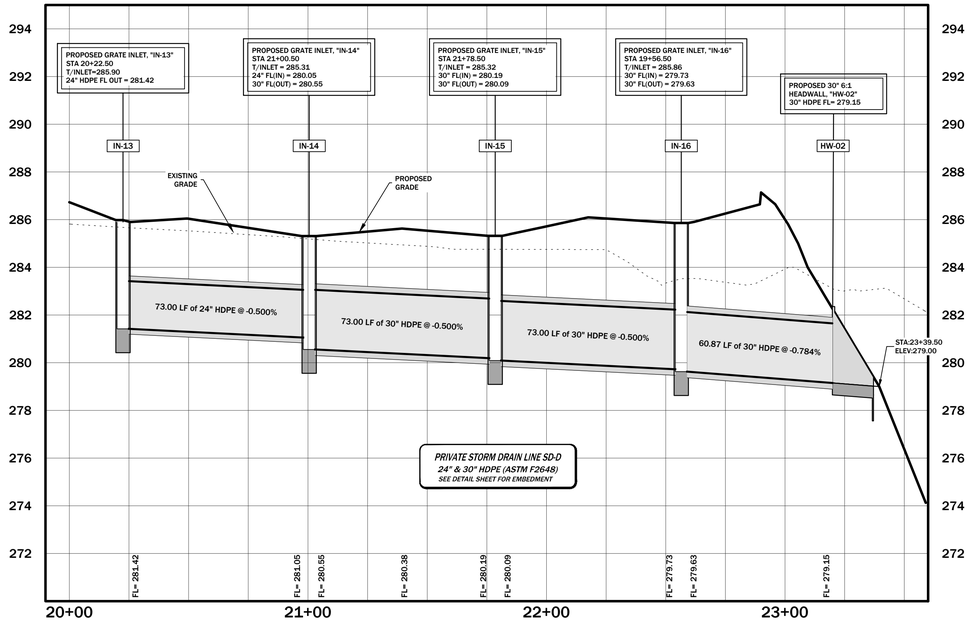
Revisions

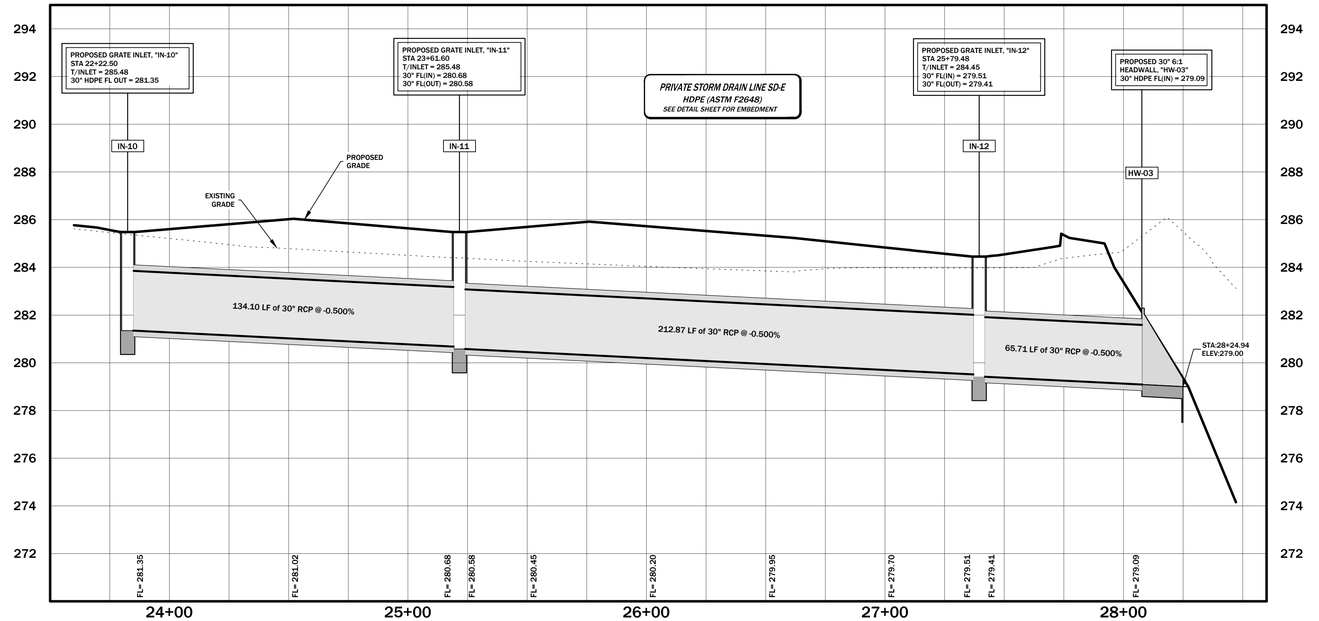
SD-C PLAN & PROFILE
BRAZOS OAKS PHASE II

C-353









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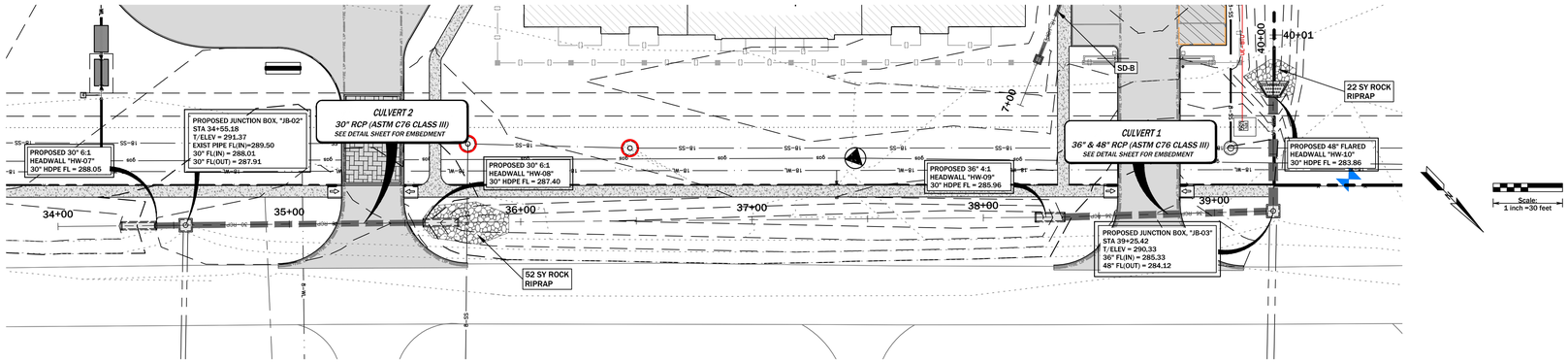
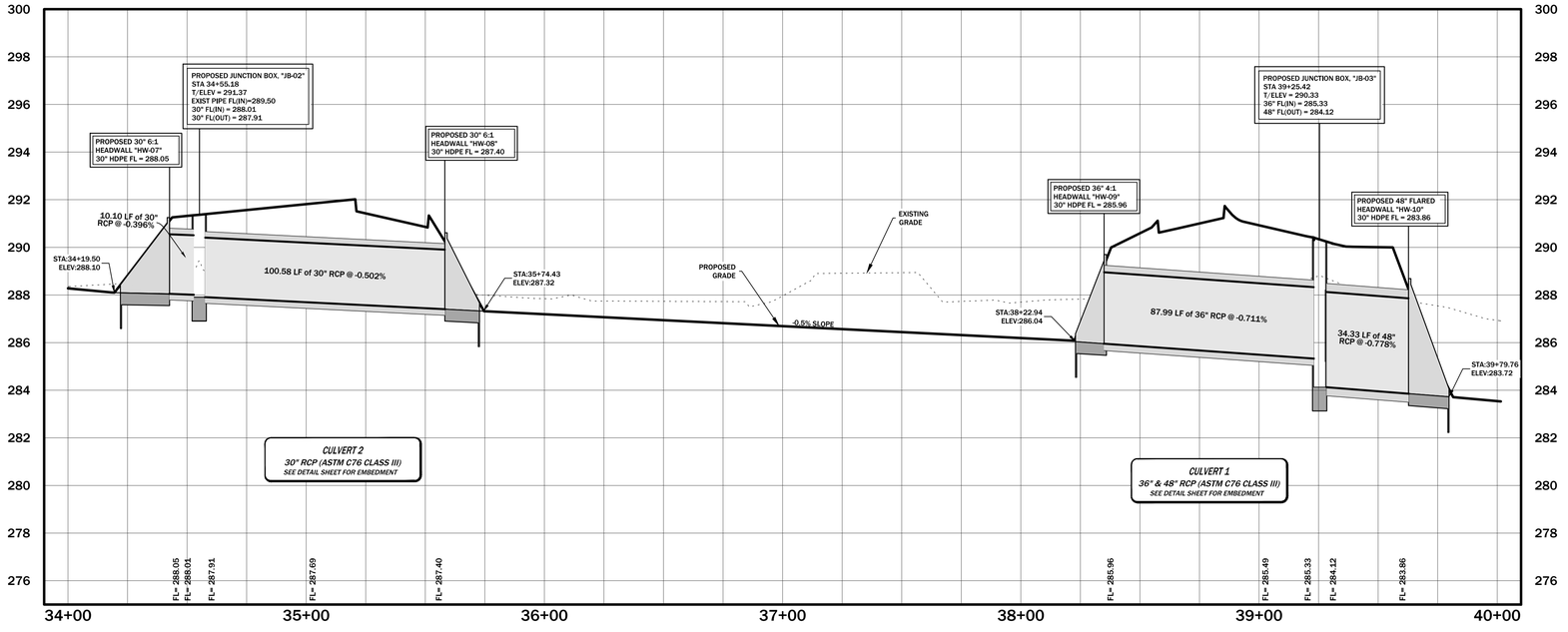
SD-D & SD-E PLAN & PROFILE
BRAZOS OAKS PHASE II

C-354





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Checked By: JTB

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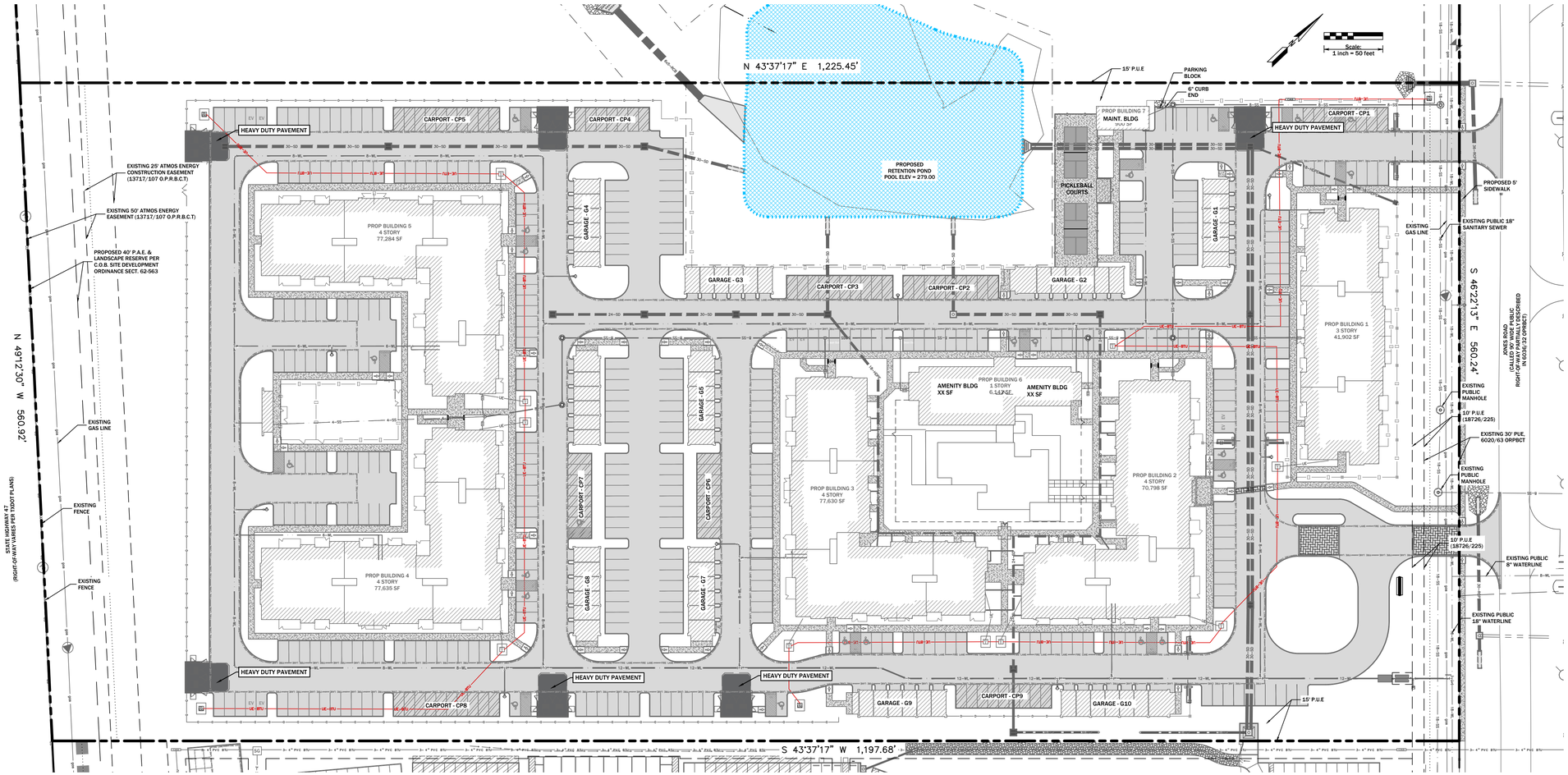
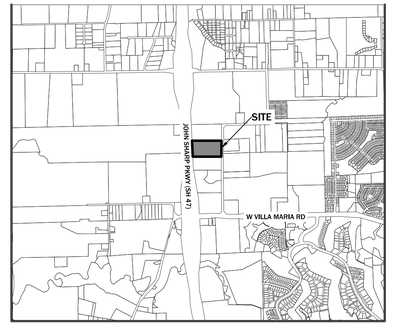
Revisions

CULVERTS 1 & 2 PLAN & PROFILE
BRAZOS OAKS PHASE II

C-355

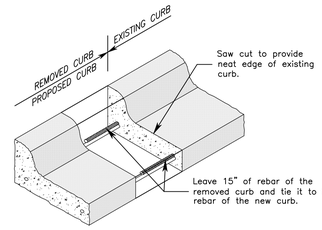




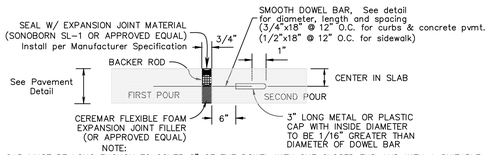
VICINITY MAP
N.T.S.

LEGEND:

- SIDEWALK CONCRETE
- STANDARD PAVEMENT
- HEAVY DUTY PAVEMENT
- PROPOSED BUILDING SLAB
- SIDEWALK CONCRETE WITH ARCHITECTURAL SCORING

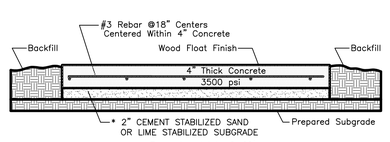


CONNECT TO EXISTING CURB DETAIL
NTS



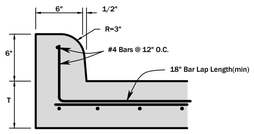
NOTE:
1. CAP MUST BE LONG ENOUGH TO COVER 2" OF THE DOWEL WITH ONE CLOSED END AND WITH A SUITABLE STOP TO HOLD THE END OF THE CAP AT LEAST 1" FROM THE END OF THE DOWEL BAR.
2. EXPANSION JOINT WIDTH SHOWN IS THE MINIMUM. SHOULD THE SEALANT OR PLACEMENT CONDITIONS REQUIRE A GREATER WIDTH, THE GREATER WIDTH SHALL BE PROVIDED AT THE EXPENSE OF THE CONTRACTOR.
3. G-SEAL 626 MODIFIED PVC MATERIAL AND WOLMANIZED LUMBER MAY BE SUBSTITUTED FOR SL-1 AND CEREMAR FOAM. INSTALL PER MANUFACTURERS RECOMMENDATIONS. THIS MATERIAL MAY ALSO BE USED IN CONTRACTION AND LONGITUDINAL JOINTS.

EXPANSION JOINT
(60' MAX. SPACING UNLESS OTHERWISE INDICATED IN PLANS)



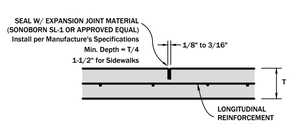
Expansion Joints @ 60' o.c.
Contracting Joints @ 5' o.c.

STANDARD CONCRETE SIDEWALK DETAIL
NTS
* 5" CONCRETE ON PREPARED SUBGRADE IS ACCEPTABLE.

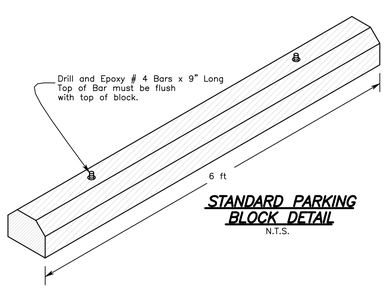


TYPE II CURB

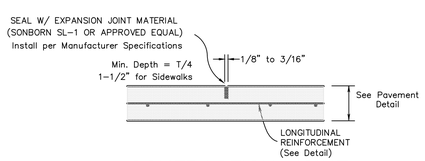
FOR USE WITH CONCRETE PAVEMENT OR APRON
ALL CURBS SHALL BE CAST MONOLITHICALLY WITH CONCRETE PAVEMENT EXCEPT IN INTERSECTION RADII WHERE REBAR SHALL BE LEFT PROTRUDING FROM THIS INITIAL POUR.



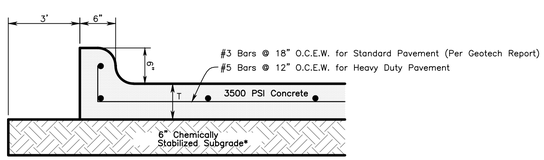
CONTRACTION JOINT
15' spacing



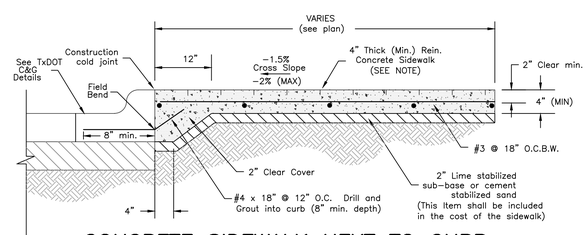
STANDARD PARKING BLOCK DETAIL
N.T.S.



CONTRACTION JOINT
See detail for spacing



CONCRETE PAVEMENT DETAIL
T=6" FOR STANDARD PAVEMENT SECTION
T=8" FOR HEAVY DUTY PAVEMENT SECTION
Expansion Joints @ 60' o.c.
Contracting Joints @ 15' o.c.



CONCRETE SIDEWALK NEXT TO CURB
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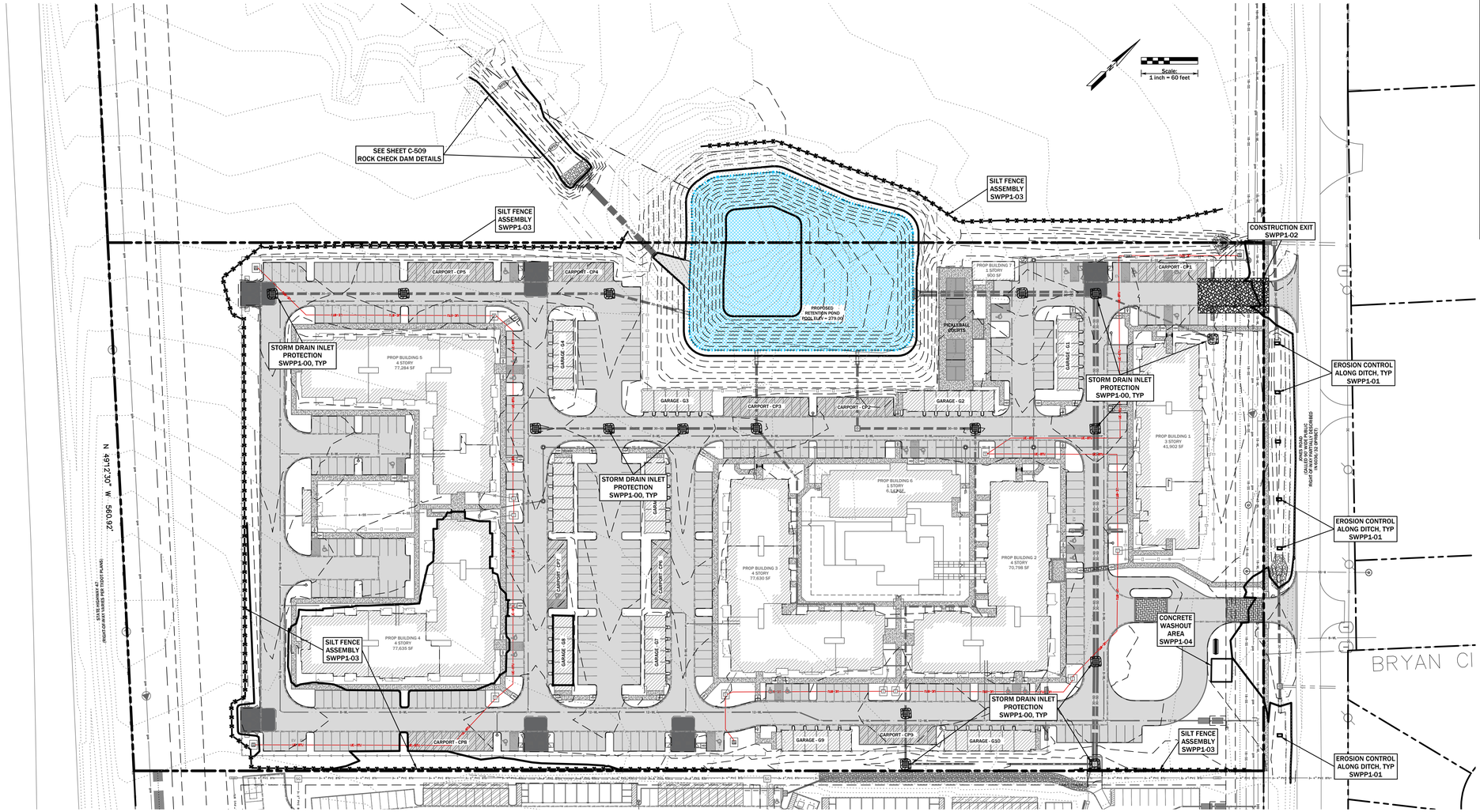
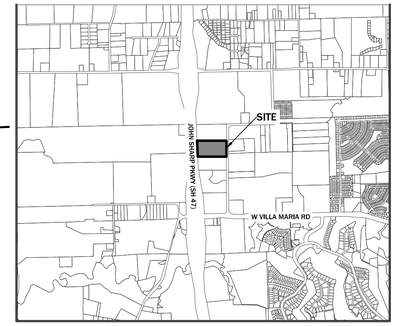
STE A1.34
AUSTIN, TX 78746
512.329.5755

Revisions

OVERALL PAVING PLAN
BRAZOS OAKS PHASE II

C-400





VICINITY MAP
N.T.S.

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PLAN & DESIGN SPECIALISTS IN
CIVIL ENGINEERING HYDRAULICS
HYDROLOGY UTILITIES STREETS
SITE PLANS SUBDIVISIONS
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STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED
PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL 2026
Designed By: JTB
Drawn By: MGF,SB
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC
1302 S CAPITAL OF TEXAS HWY
STE A134
AUSTIN, TX 78746
512.329.5755

Revisions

EROSION CONTROL PLAN
BRAZOS OAKS PHASE II

C-401

SWPP Information:

Nature of Construction Activity:
Drainage, utility, and pavement improvements for building construction. Potential pollutants and sources - Sediment from excavation and equipment movement around the site.

Schedule of Events:
1. Install silt fencing.
2. Install stabilized construction exit.
3. Clear and grub
4. Install utilities.
5. Install pavement.
6. Complete grading and install permanent seeding.
7. When all construction activity is completed the site is stabilized. Remove silt fence and re-seed any area disturbed during construction and assure a healthy ground cover.

Area of Disturbance:
During the construction of the pavement, drainage, and utility improvements the entire lot will be disturbed except for the existing structures and the grass area behind the existing building.

Structural Controls:
Temporary stabilization – areas where construction activity temporarily ceases for at least 21 days will be stabilized with temporary seed no later than 14 days from the last construction activity in that area all proposed fill material will be seeded.

Silt fence and/or hay bales will be installed at all outfalls, areas where water runs off the site.

Storm Water Management:
Storm water drainage will be controlled by existing grassed areas adjacent to the site. All areas affected by construction will be fine graded and have permanent seeding. The remainder of the area will remain in its natural state.

Offsite vehicle tracking:
A stabilized construction entrance will be provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be swept to remove any excess mud, dirt, or rock tracked from the site. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

Certification of Compliance with State and Local Regulations:
This storm water pollution prevention plan reflects the city's/state's requirements for storm water management, erosion, and sediment control. to ensure compliance, this plan was prepared in accordance with the city's drainage policy.

Maintenance/Inspection Procedures:
These are the inspection and maintenance practices that will be used to maintain erosion and sediment controls:
- All control measures will be inspected at least once every 14 days and following any storm event of 0.50 inches or greater.
- All BMP's will be maintained in good working order; is a repair is necessary if will be initiated within 24 hours of the report.
- Built up sediment will be removed from silt fence when it has reached one-half the height of the fence.
- Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- Temporary and permanent and seeding and planting will be inspected for bare spots, washouts, and healthy growth.
- A maintenance inspection report will be made after each inspection. The inspection report form will be prepared by the site superintendent and filed for record.
- A site superintendent will be responsible for inspections, maintenance and repair activities, and filling out the inspection and maintenance report.

Non-storm Water Discharges:
It is expected that the following non-storm water discharges will occur from the site during the construction period:

-Water from water line flushing

Site Description:

Project name and location:
BRAZOS OAKS PHASE II
5950 JONES ROAD, Bryan, Brazos County, Texas

Developer:
TEEPLE PARTNERS, INC.
1302 S. CAPITAL OF TEXAS HWY
SUITE A134
AUSTIN, TX 78746

The site is not located on Indian lands.

Latitude: 30° 36' 49" N
Longitude: 96°24' 53" W

MS4 operator name: City of Bryan, Texas
Receiving water body: THOMPSONS CREEK TRIBUTARY 2
Estimated area to be disturbed: 15.58 acres

The storm water pollution prevention plan shall be in compliance with state and local sediment and erosion plans,

Operator Requirements:
The operator shall submit a NOI to TCEQ (when applicable) and a copy to the operator and post a copy at the construction site in a location where it is readily available for viewing prior to commencing construction activities, and maintain the notice in that location until completion of the construction activity.

The operator shall provide a copy of NOI to the operator of the municipal separate storm sewer system receiving the discharge, at least two (2) days prior to commencing construction activities.

The operator shall submit a NOT to TCEQ (when applicable) and a copy to the operator of the municipal storm sewer system once the final stabilization has been achieved and the temporary erosion controls have been removed.

Controls must be developed to limit, to the extent practicable, offsite transport of litter, construction debris and construction materials.

Operator Inspection Requirements:
The following records must be maintained and either attached to or referenced in the storm water plan:

The dates when major grading activities occur.
The dates when construction activities temporarily or permanently cease on a portion of the site.
The dates when stabilization measures are initiated.

A report summarizing the scope of the inspection, name and qualifications of personnel making the inspection, the dates of the inspection, and major observations must be made and retained with the storm water plan. Major observations should include:

The locations of discharges of sediment or other pollutants from the site;
Locations of BMP's that failed to operate as designed or proved inadequate for a particular location; and
Location where additional BMP's are needed.

Operator's Record Keeping:
The permittee must retain the following records for a minimum of 3 years from the date that a NOT is submitted:

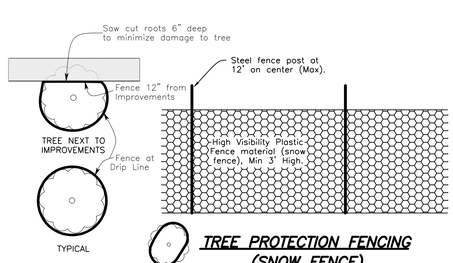
A copy of the storm water plan and
All reports and actions required by this permit, including a copy of the construction site notice all data used to complete the NOI.

LEGEND

XXX.XX	Existing Grade
XXX.XX	Proposed Grade
XXX.XX	Proposed Grade
	Tree Protection Fence
	Silt Fence

SWPP PLAN NOTES:

1. All contractor vehicles, including employee's vehicles, shall park within the project site to minimize traffic on the public streets adjacent to the worksite entrance. Contractor will provide sufficient parking areas to accommodate his vehicles. Any areas disturbed by vehicular parking will be repaired to original condition prior to completion of project.
2. If required on the plans, the contractor shall maintain a vehicle wash down area of sufficient size and in a location to facilitate cleaning his vehicles prior to leaving the work site.
3. All areas where existing vegetation and grass cover have been bared by construction shall be adequately block sodded or hydromulched and watered until growth is established. In developed areas where grass is present, block sod will be required. Bared areas shall be seeded or sodded within 14 calendars days of last disturbance. All erosion control measures shall remain in place until acceptable vegetative growth is established after construction is complete and then removed by contractor.
4. Approved erosion control measures must be installed during the entire time earth has been bared by construction and shall stay in place until acceptable vegetative growth is established after construction is complete and then removed by the contractor.
5. All erosion control measures should be cleaned of silt after every rain event.
6. Approved erosion control measures must be installed during the entire time earth has been bared by construction
7. It is the responsibility of the contractor to use whatever means necessary to minimize erosion and prevent sediment from leaving the project site.
8. The contractor is responsible for implementing, inspecting and maintaining the erosion and sediment control devices.
9. Construction exit is to be dressed with additional rock as needed and maintain so as to prevent construction traffic from tracking mud onto adjacent public streets.
10. Inspection shall be performed every 14 days and every rainfall event of 1/2" or more. All erosion control devices shall be cleaned of silt (as needed) after every rain.
11. Structural controls shall be installed as soon after clearing as practical and maintained in good working order until the site is stabilized. Alternate structural controls may be utilized if approved by Engineer.
12. The contractor is responsible for complying with the TPDES General Permit No. TXR150000 requirements for construction sites.
13. The contractor shall coordinate with the owner to determine a temporary spoils, earthwork, and topsoil area for the site.
14. All areas that have a slope >15% shall be hydromulched (mix determined based upon season) upon completion of grading and contractor shall utilize a rolled single net straw erosion control blanket with poly netting (US-1S) as produced by US Erosion Control Products or approved equal to lay over the hydromulched slope. Contractor shall be responsible for watering and assuring 80% coverage in 21 days.
15. Contractor shall strip topsoil from the site prior to construction and stockpile and protect from contamination from other soils for later use onsite by the landscape contractor.
16. **ONCE GRADING OF POND IS COMPLETED, SILT FENCE SHALL BE ESTABLISHED AS SHOWN IN "**" LOCATIONS TO PREVENT ONSITE SILT FROM ENTERING POND.



TREE PROTECTION FENCING (SNOW FENCE)

NTS
Place fencing @ the drip line of all trees shown to be protected.

GENERAL REQUIREMENTS

OSHA STANDARD 29 CFR PART 1926, SUBPART P shall be used for design of trench safety requirements. Should there be any conflict between this drawing and CFR 1926, SUBPART P, the OSHA Standard shall prevail.

Protection of employees in excavations against cave-ins and against falling rock, soil or material by use of an "adequate" system. An exception being when the excavation is in stable rock or when the excavation is less than 5 feet deep and examination by a competent person provides no evidence that a cave-in should be expected. Protection from falling rock, soil or material includes scaling to remove loose rock or soil, installation of protective barricades and other "equivalent protection." Material or equipment which might fall or roll into an excavation must be kept at least two feet from the edge of excavations, or have retaining devices, or be prevented from falling with a combination of both precautions.

Daily inspections of excavations, adjacent areas, and protective systems by a competent person and the removal of exposed employees if evidence of possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions until necessary precautions have been taken.

A "competent person" should remain at the worksite continually while employees are within an open excavation where protective systems are being used.

Removal of or neutralization of surface encumbrances which may create a hazard.

Estimate location of underground installations (sewer, telephone, electrical, fuel and other lines; storage tanks, etc.) prior to digging; pinpoint actual locations as estimated locations are approached.

Ramps, runways, ladders or stairs as means of access/egress must be within 25 feet of an employee work area if a trench is four feet or more deep.

Warning systems for mobile equipment including barricades, hand or mechanical signals, or stop logs.

Testing and Controls for hazardous atmosphere including emergency rescue equipment and daily inspections for potentially hazardous conditions by a "competent person." Controls include individually attended lifelines during descent into bell-bottom pier holes or similar excavations.

Support systems such as shoring, bracing, or underpinning to ensure the stability of adjacent structures such as buildings, walls or sidewalks.

SOIL CLASSIFICATION

as per Appendix A to Subpart P, OSHA 29 CFR Part 1926

TYPE A

Type A means cohesive soils with an unconfined compressive strength of 1.5 tsf (144kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:

1) The soil is fissured; or
2) The soil is subject to vibration from heavy traffic, pile driving, or similiar effects; or
3) The soil has been previously disturbed; or
4) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or
5) The material is subject to other factors that would require it to be classified as a less stable material.

TYPE B

1) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa); or
2) Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silty loam, sandy loam and in some cases, silty clay loam and sandy clay loam.
3) Previously disturbed soils except those which would otherwise be classed as Type C soil.
4) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or
5) Dry rock that is not stable; or
6) Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

TYPE C

1) Cohesive soil with an unconfined compressive strength of 0.5 tsf (48kPa) or less; or
2) Granular soils including gravel, sand and loamy sand; or
3) Submerged soil or soil from which water is freely seeping; or
4) Submerged rock that is not stable; or
5) Material in a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper.

REQUIREMENT FOR PROTECTIVE SYSTEMS

SLOPING AND BENCHING SYSTEMS (FOUR OPTIONS)

1) A slope of 34 degrees or less, in lieu of soil classification. A slope of this gradation or less is considered safe for any type of soil.
2) Maximum allowable slopes and allowable configurations for sloping and benching systems will be determined through use of Appendices A (soil classification) and B (Sloping and Benching) of 29CFR Part 1926, Subpart P.
3) Designs of sloping or benching shall be selected from, and be in accordance with, data provided in written form. The text to identify: Criteria that affect the selection, the limits of use of the data, and sufficient explanatory data as necessary to assist in making a correct choice of a protective system. At least one copy of the tabulated data identifying the Registered Professional Engineer who approved the information shall be maintained at the jobsite during the time the work is being carried out.
4) Excavations can be designed by a Registered Professional Engineer, put in written form and kept at the worksite, but must include, at least, the magnitude and configuration of the slopes determined to be safe for the project and the name of the RPE who approved the plan.

SUPPORT SHIELD AND OTHER PROTECTIVE SYSTEMS (FOUR OPTIONS)

1) Designs for timber shoring in trenches set in accordance with the conditions and requirements determined by using Appendices A and C (timber shoring for trenches) of 29 CFR, Part 1926, Subpart P. For aluminum hydraulic shoring, Appendices A and D of 29 CFR, Part 1926, Subpart P, can be used if manufacturers' tabulated data is not available.
2) Designs of support systems, shield systems or other protective systems using manufacturers' tabulated data may be used, deviation allowed only with specific, written approval of the manufacturer.
3) Designs of support systems, shield systems or other protective systems using other tabulated data may be used provided the data is in writing and includes: Explanatory information to aid the user in making a selection of criteria determining the selection, and the limits on the use of the data. At least one copy of the information, including the identity of the RPE, is to be kept at the worksite during construction of the protective system.
4) Design systems not using any of the three previously cited options must be approved by a Registered Professional Engineer, shall be in writing and include the identity of the RPE and details such as sizes, types and configurations of the materials to be used. At least one copy of the plan is to be at the job site during construction.

According to the new standard, information necessary for the safe installation, placement, use and removal of any trench support system must be available at the work site at all times.

TABLE OF MAXIMUM ALLOWABLE SLOPES

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V) FOR EXCAVATIONS LESS THAN 20 FEET DEEP
STABLE ROCK	VERTICAL (90 deg)
TYPE A	3/4 : 1 (53 deg)
TYPE B	1 : 1 (45 deg)
TYPE C	1 1/2 : 1 (34 deg)

NOTES:

1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
2. A short-term maximum allowable slope of 1/2H:1V (63 deg.) is allowed in excavations in Type A soil that are 12 feet (3.67m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67m) in depth shall be 3/4H:1V (53 deg.).
3. Sloping or benching for excavations greater than 20 feet deep shall be designed by a Registered Professional Engineer.
4. For acceptable slope and benching configurations, see figure B-1 in OSHA Standard 29 CFR Part 1926, Subpart P.

TIMBER TRENCH SHORING - MINIMUM TIMBER REQUIREMENTS

Mixed oak or equiv. w/bending strength not less than 850 psi

Depth of Trench (feet)	Cross Braces: Horizontal Spacing (feet)	Cross Braces: Width of Trench (Feet): Up to 4	Up to 6	Up to 9	Up to 12	Up to 15	Cross Braces: Vert. Spacing (feet)	Wales: Size (in)	Wales: Vert. Spacing (feet)	Uprights: Maximum allowable horizontal spacing (feet): Close	4	6	8
5 Up to 10	Up To 6	4 x 4	4 x 4	4 x 6	6 x 6	6 x 6	4	Not Req'd				2 x 6	
	Up To 8	4 x 4	4 x 4	4 x 6	6 x 6	6 x 6	4	Not Req'd					2 x 8
	Up To 10	4 x 6	4 x 6	4 x 6	6 x 6	6 x 6	4	8 x 8	4			2 x 6	
	Up To 12	4 x 6	4 x 6	6 x 6	6 x 6	6 x 6	4	8 x 8	4				2 x 6
10 Up to 15	Up To 6	4 x 4	4 x 4	4 x 6	6 x 6	6 x 6	4	Not Req'd				3 x 8	
	Up To 8	4 x 6	4 x 6	6 x 6	6 x 6	6 x 6	4	8 x 8	4		2 x 6		
	Up To 10	6 x 6	6 x 6	6 x 6	6 x 8	6 x 8	4	8 x 10	4		2 x 6		
	Up To 12	6 x 6	6 x 6	6 x 6	6 x 8	6 x 8	4	10x10	4			3 x 8	
15 Up to 20	Up To 6	6 x 6	6 x 6	6 x 6	6 x 8	6 x 8	4	6 x 8	4	3 x 6			
	Up To 8	6 x 6	6 x 6	6 x 6	6 x 8	6 x 8	4	8 x 8	4	3 x 6			
	Up To 10	8 x 8	8 x 8	8 x 8	8 x 8	8 x 10	4	8 x 10	4	3 x 6			
	Up To 12	8 x 8	8 x 8	8 x 8	8 x 8	8 x 10	4	10x10	4	3 x 6			
Over 20	Note (1)												

Soil Type A

Pa=25xH+72 psf

(2 ft Surcharge)

Depth of Trench (feet)	Cross Braces: Horizontal Spacing (feet)	Cross Braces: Width of Trench (Feet): Up to 4	Up to 6	Up to 9	Up to 12	Up to 15	Cross Braces: Vert. Spacing (Feet)	Wales: Size (in)	Wales: Vert. Spacing (Feet)	Uprights: Maximum allowable horizontal spacing (feet): Close	2	3
5 Up to 10	Up To 6	4 x 6	4 x 6	6 x 6	6 x 6	6 x 6	5	6 x 8	5			2 x 6
	Up To 8	6 x 6	6 x 6	6 x 6	6 x 8	6 x 8	5	8 x 10	5			2 x 6
	Up To 10	6 x 6	6 x 6	6 x 6	6 x 8	6 x 8	5	10 x 10	5			2 x 6
	See Note 1											
10 Up to 15	Up To 6	6 x 6	6 x 6	6 x 6	6 x 8	6 x 8	5	8 x 8	5		2 x 6	
	Up To 8	6 x 8	6 x 8	6 x 8	8 x 8	8 x 8	5	10 x 10	5		2 x 6	
	Up To 10	8 x 8	8 x 8	8 x 8	8 x 8	8x10	5	10 x 12	5		2 x 6	
	See Note 1											
15 Up to 20	Up To 6	6 x 8	6 x 8	6 x 8	8 x 8	8 x 8	5	8 x 10	5	3 x 6		
	Up To 8	8 x 8	8 x 8	8 x 8	8 x 8	8 x 10	5	10 x 12	5	3 x 6		
	Up To 10	8x10	8x10	8x10	8x10	10x10	5	12 x 12	5	3 x 6		
	See Note 1											
Over 20	See Note (1)											

Soil Type B

Pa=45xH+72 psf

(2 ft Surcharge)

Depth of Trench (feet)	Cross Braces: Horizontal Spacing (feet)	Cross Braces: Width of Trench (Feet): Up to 4	Up to 6	Up to 9	Up to 12	Up to 15	Cross Braces: Vert. Spacing (Feet)	Wales: Size (in)	Wales: Vert. Spacing (Feet)	Uprights: Maximum allowable horizontal spacing (feet): Close	2	3	(See Note 2)
5 Up to 10	Up To 6	6 x 8	6 x 8	8 x 8	8 x 8	8 x 8	5	8 x 10	5	2 x 6			
	Up To 8	8 x 8	8 x 8	8 x 8	8 x 8	8 x 10	5	10 x 12	5	2 x 6			
	Up To 10	8x10	8x10	8x10	8x10	10x10	5	12 x 12	5	2 x 6			
	See Note 1												
10 Up to 15	Up To 6	8 x 8	8 x 8	8 x 8	8 x 8	8x10	5	10 x 12	5	2 x 6			
	Up To 8	8x10	8x10	8x10	8x10	10x10	5	12 x 12	5	2 x 6			
	See Note 1												
	See Note 1												
	Up To 6	8 x 10	8x10	8x10	8x10	10x10	5	12 x 12	5	3 x 6			
	See Note 1												
	See Note 1												
	See Note 1												
Over 20	See Note (1)												

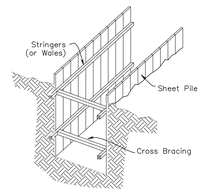
Soil Type C

Pa=80xH+72 psf

(2 ft Surcharge)

Douglas fir or equiv. w/bending strength not less than 1500 psi

Depth of Trench (feet)	Cross Braces: Horizontal Spacing (Feet)	Cross Braces: Width of Trench (Feet): Up to 4	Up to 6	Up to 9	Up to 12	Up to 15	Cross Braces: Vert. Spacing (Feet)	Wales: Size (In)	Wales: Vert. Spacing (Feet)	Uprights: Maximum allowable horizontal spacing (feet): Close	4	6	8
5 Up to 10	Up To 6	4 x 4	4 x 4	4 x 4	4 x 4	4 x 6	4	Not Req'd	Not Req'd			4 x 6	
	Up To 8	4 x 4	4 x 4	4 x 4	4 x 6	4 x 6	4	Not Req'd	Not Req'd				4 x 8
	Up To 10	4 x 6	4 x 6	4 x 6	6 x 6	6 x 6	4	8 x 8	4			4 x 6	
	Up To 12	4 x 6	4 x 6	6 x 6	6 x 6	6 x 6	4	8 x 8	4				4 x 6
10 Up to 15	Up To 6	4 x 4	4 x 4	6 x 6	6 x 6	6 x 6	4	Not Req'd	Not Req'd			4 x 10	
	Up To 8	4 x 6	4 x 6	4 x 6	6 x 6	6 x 6	4	6 x 8	4		4 x 6		
	Up To 10	6 x 6	6 x 6	6 x 6	6 x 6	6 x 6	4	8 x 8	4		4 x 6		
	Up To 12	6 x 6	6 x 6	6 x 6	6 x 6	6 x 6	4	8 x 10	4			4 x 10	
15 Up to 20	Up To 6	6 x 6	6 x 6	6 x 6	6 x 6	6 x 6	4	6 x 8	4	3 x 6			
	Up To 8	6 x 6	6 x 6	6 x 6	6 x 6	6 x 6	4	8 x 8	4	3 x 6	4 x 12		
	Up To 10	6 x 6	6 x 6	6 x 6	6 x 6	6 x 8	4	8 x 10	4	3 x 6	4 x 12		
	Up To 12	6 x 6	6 x 6	6 x 6	6 x 8	6 x 8	4	8 x 12	4	3 x 6	4 x 12		
Over 20	Note (1)												



TRENCH SAFETY NOMENCLATURE

GENERAL NOTES FOR TIMBER TRENCH SHORING TABLES:

(1) Member sizes at spacings other than indicated are to be determined as specified in (i) 1926.652(c), "Design of Protective Systems."
(2) When conditions are saturated or submerged, use Sheet Sheeting. Tight Sheeting refers to the use of specially-edged timber planks (e.g., tongue and groove) at least three inches thick, steel sheet piling, or similar construction that when driven or placed in position provide a tight wall to resist the lateral pressure of water and to prevent the loss of backfill material. Close Sheeting refers to the placement of planks side-by-side allowing as little space as possible between them.
(3) All spacing indicated is measured center to center.
(4) Wales to be installed with greater dimension horizontal.
(5) If the vertical distance from the the center of the lowest crossbrace to the bottom of the trench exceeds two and one-half feet, uprights shall be firmly embedded or a mudsill shall be used. Where uprights are embedded, the vertical distance from the center of the lowest crossbrace to the bottom of the trench shall not exceed 36 inches. When mudsills are used, the vertical distance shall not exceed 42 inches. Mudsills are wales that are installed at the toe of the trench side.
(6) Trench jacks may be used in lieu of or in combination with timber crossbraces.
(7) Placement of crossbraces. When the vertical spacing of crossbraces is four feet, place the top crossbrace no more than two feet below the top of the trench. When the vertical spacing of crossbraces is five feet, place the top crossbrace no more than 2.5 feet below the top of the trench.

ALUMINUM HYDRAULIC SHORING

VERTICAL SHORES FOR SOIL TYPES A & B

Depth of Trench (feet)	Maximum Horizontal Spacing (Feet)	Maximum Vertical Spacing (Feet)	HYDRAULIC CYLINDERS: Width of Trench (Feet): Up to 8	Over 8 Up to 12	Over 12 Up to 15
Over 5 Up to 10	8 (Type A) 8 (Type B)	4	2 inch Diameter	2 inch Diameter Note(2)	3 inch Diameter
Over 10 Up to 15	8 (Type A) 6.5 (Type B)				
Over 15 Up to 20	7 (Type A) 5.5 (Type B)				
Over 20	Note (1)				

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

WALER SYSTEMS FOR SOIL TYPE B

Depth of Trench (feet)	Vertical Shoring (Feet)	Section* Modulus (In3)	HYDRAULIC CYLINDERS: Width of Trench (Feet): Up to 8 Horz. Spac.	Up to 8 Cylinder Dia	Over 8 UP TO 12 Horz. Spac.	Over 8 UP TO 12 Cylinder Dia	Over 12 Up to 15 Horz. Spac.	Over 12 Up to 15 Cylinder Dia	TIMBER UPRIGHTS: Max. Horiz. Spacing (In Center): Solid Sheet	2 FL	3 FL
Over 5 Up to 10	4	3.5	8.0	2 in	8.0	2 in Note(2)	8.0	3 in		—	3x12
		7.0	9.0	2 in	9.0	2 in Note(2)	9.0	3 in		—	
		14.0	12.0	3 in	12.0	3 in	12.0	3 in		—	
Over 10 Up to 15	4	3.5	6.0	2 in	6.0	2 in Note(2)	6.0	3 in		—	3x12
		7.0	8.0	3 in	8.0	3 in	8.0	3 in		—	
		14.0	10.0	3 in	10.0	3 in	10.0	3 in		—	
Over 15 Up to 20	4	3.5	5.5	2 in	5.5	2 in Note(2)	5.5	3 in		—	3x12
		7.0	6.0	3 in	6.0	3 in	6.0	3 in		—	
		14.0	9.0	3 in	9.0	3 in	9.0	3 in		—	
Over 20	Note (1)										

WALER SYSTEMS FOR SOIL TYPE C

Depth of Trench (feet)	Vertical Shoring (Feet)	Section* Modulus (In3)	HYDRAULIC CYLINDERS: Width of Trench (Feet): Up to 8 Horz. Spac.	Up to 8 Cylinder Dia	Over 8 UP TO 12 Horz. Spac.	Over 8 UP TO 12 Cylinder Dia	Over 12 Up to 15 Horz. Spac.	Over 12 Up to 15 Cylinder Dia	TIMBER UPRIGHTS: Max. Horiz. Spacing (In Center): Solid Sheet	2 FL	3 FL
Over 5 Up to 10	4	3.5	6.0	2 in	6.0	2 in Note(2)	6.0	3 in			
		7.0	6.5	2 in	6.5	2 in Note(2)	6.5	3 in		3x12	
		14.0	10.0	3 in	10.0	3 in	10.0	3 in			
Over 10 Up to 15	4	3.5	4.0	2 in	4.0	2 in Note(2)	4.0	3 in			
		7.0	5.5	3 in	5.5	3 in	5.5	3 in		3x12	
		14.0	8.0	3 in	8.0	3 in	8.0	3 in			
Over 15 Up to 20	4	3.5	3.5	2 in	3.5	2 in Note(2)	3.5	3 in			
		7.0	5.0	3 in	5.0	3 in	5.0	3 in		3x12	
		14.0	6.0	3 in	6.0	3 in	6.0	3 in			
Over 20	Note (1)										

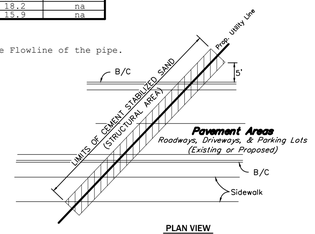
* Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

Maximum Depth Chart Using Typical Water and Sewer Trench Detail

(see detail this sheet)

	Sewer Line			Water Line
Spec.	D3034	D2241	C905	C900
SDR	26	26	25	14
Class	nc	160	165	200
Size	Maximum Depth of Bury (feet)			
4"	81.3	76.3	na	219.3
6"	54.5	51.5	na	152.5
8"	40.7	39.7	na	116.7
10"	33.5	32.8	na	95.8
12"	28.5	28	na	81
14"	na	25.7	24.7	na
15"	23.3	na	na	na
16"	na	na	21.8	na
18"	na	20.5	19.9	na
20"	na	na	18.2	na
24"	na	na	15.9	na

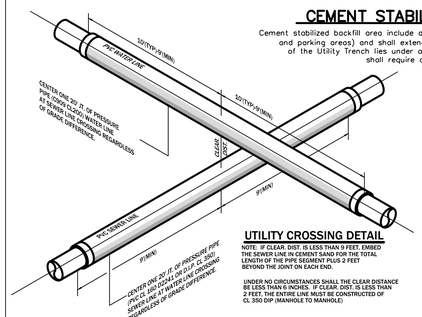
Depth of Bury in feet is measured to the Flowline of the pipe.
na = Not Available
nc = no pressure class



PLAN VIEW

CEMENT STABILIZED BACKFILL AREA

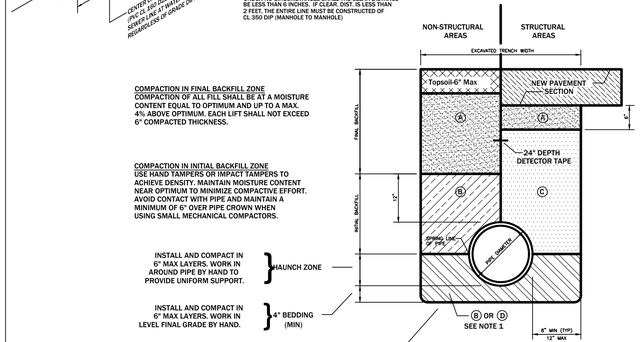
Cement stabilized backfill area include all paved areas (sidewalks, streets, alleys, driveways and parking areas) and shall extend 5' beyond the curb line. Where any portion of the Utility Trench lies under a paved area, the entire width of the trench shall require cement stabilized backfill.



UTILITY CROSSING DETAIL

NOTE: IF CLEAR. DIST. IS LESS THAN 9 FEET, EMBED THE SEWER LINE IN CEMENT SAND FOR THE TOTAL LENGTH OF THE PIPE SEGMENT PLUS 2 FEET BEYOND THE JOINT ON EACH END.

UNDER NO CIRCUMSTANCES SHALL THE CLEAR DISTANCE BE LESS THAN 6 INCHES. IF CLEAR. DIST. IS LESS THAN 2 FEET, THE ENTIRE LINE MUST BE CONSTRUCTED OF CL 350 DIP (MANHOLE TO MANHOLE)



COMPACTION IN FINAL BACKFILL ZONE
COMPACTION OF ALL FILL SHALL BE AT A MOISTURE CONTENT EQUAL TO OPTIMUM AND UP TO A MAX. 4% ABOVE OPTIMUM. EACH LIFT SHALL NOT EXCEED 6" COMPACTED THICKNESS.

COMPACTION IN INITIAL BACKFILL ZONE
USE HAND TAMPERS OR IMPACT TAMPERS TO ACHIEVE DENSITY. MAINTAIN MOISTURE CONTENT NEAR OPTIMUM TO MINIMIZE COMPACTIVE EFFORT. AVOID CONTACT WITH PIPE AND MAINTAIN A MINIMUM OF 6" OVER PIPE CROWN WHEN USING SMALL MECHANICAL COMPACTORS.

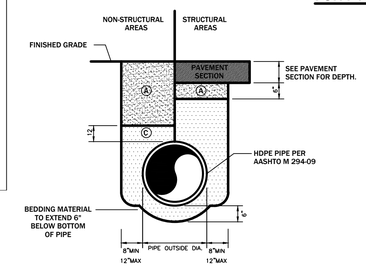
INSTALL AND COMPACT IN 6" MAX LAYERS. WORK IN AROUND PIPE BY HAND TO PROVIDE UNIFORM SUPPORT. } HAUNCH ZONE

INSTALL AND COMPACT IN 6" MAX LAYERS. WORK IN LEVEL FINAL GRADE BY HAND. } 4" BEDDING (MIN)

WHERE THE TRENCH BOTTOM IS UNSTABLE, EXCAVATE TO A DEPTH AS REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF TYPE "D" MATERIAL. PLACE AND COMPACT TO ACHIEVE 85% MOD. PROCTOR DENSITY. THIS ITEM SHALL CONSTITUTE "EXTRA WORK" AND SHALL BE PAID FOR AS EXCAVATION.

TYPICAL WATER AND SEWER TRENCH DETAIL FOR PVC, DIP, CMP, AND TYPE K COPPER

TRENCH AND EMBEDMENT TO BE SUBSIDIARY TO MAIN AND SERVICE LINE BID ITEMS.

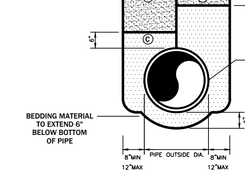


TYPICAL HDPE STORM DRAIN TRENCH DETAIL

TRENCH AND EMBEDMENT TO BE SUBSIDIARY TO UNIT PRICE OF PIPE.

BACKFILL MATERIAL LEGEND

CLASS OF MATERIAL	CLASS OF MATERIAL PER ASTM D2321-89	COMPACTION REQUIREMENTS: STRUCTURAL	NON-STRUCTURAL
A	IV A OR IV B	95% MAX. PER ASTM D1557 @ 0 TO 4% WET OF OPT. MOISTURE	85% MAX. PER ASTM D1557 @ 0 TO 4% WET OF OPT. MOISTURE
B	II, III, OR C	95% MAX. PER ASTM D1557 @ 0 TO 4% WET OF OPT. MOISTURE	85% MAX. PER ASTM D1557 @ 0 TO 4% WET OF OPT. MOISTURE
C	CEMENT STABILIZED SAND (SEE SPECIFICATION THIS SHEET)	95% MAX. PER ASTM D558 @ 0 TO 2% WET OF OPT. MOISTURE	95% MAX. PER ASTM D558 @ 0 TO 2% WET OF OPT. MOISTURE
D	1A OR 1B	95% MAX. PER ASTM D1557 @ 0 TO 4% WET OF OPT. MOISTURE	85% MAX. PER ASTM D1557 @ 0 TO 4% WET OF OPT. MOISTURE
TESTING REQUIREMENTS		ONE TEST PER 200' OF TRENCH PER 2' FILL	



TYPICAL RCP STORM DRAIN TRENCH DETAIL

TRENCH AND EMBEDMENT TO BE SUBSIDIARY TO UNIT PRICE OF PIPE.

NOTE 1: UNDER NORMAL CIRCUMSTANCES THE CONTRACTOR SHALL USE TYPE "B" MATERIAL FOR BEDDING AND IN THE HAUNCH ZONE; ONLY WITH THE PERMISSION AND AT THE DIRECTION OF THE ENGINEER SHALL THE CONTRACTOR USE TYPE "D" MATERIAL AS SHOWN.

NOTE 2: BACKFILL OF STRUCTURES- WHEN STRUCURES (MANHOLES, INLETS, JUNCTION BOXES, ETC.) ARE WITHIN STRUCTURAL AREAS (AS DEFINED ON THIS SHEET) CEMENT STABILIZED SAND BACKFILL SHALL BE REQUIRED. USE CLASS III MATERIAL IN ALL OTHER AREAS.

NOTE 3: DETECTOR TAPE IS NOT REQUIRED ON DIP OR CMP.

CEMENT STABILIZED SAND BACKFILL/BEDDING SPECIFICATIONS:

DESCRIPTION:
This item shall govern the mixing and placement of cement stabilized sand as a trench backfill material or bedding material. Placement shall be in conformity with the typical sections shown on the Plans or as described in the Special Provisions.

MATERIALS:
A. SAND- Clean durable sand meeting grading requirements for fine aggregates of ASTM C33, and the following requirements:
1. Classified as SW, SP or SM by the United Soil Classification System of ASTM D2487.
2. Deleterious materials:
(a) Clay lumps, ASTM C142; less than 0.5 percent.
(b) Lightweight pieces, ASTM C123; less than 5.0 percent
(c) Organic impurities, ASTM C40; color no darker than the standard color.
(d) Plasticity index of 4 or less when tested in accordance with ASTM D4318.
B. CEMENT- Type I Portland Cement conforming to ASTM C150.
C. WATER- Potable water, free of oils, acids, alkalies, organic matter or other deleterious substances, meeting requirements of ASTM C94.

REQUIREMENTS FOR DESIGN:
Design sand-cement mixture to produce a minimum unconfined compressive strength of 50 pounds per square inch in 48 hours and 100 pounds per square inch in 7 days. All compaction shall be to 95% in accordance with ASTM D558. All curing shall be in accordance with ASTM D1632 and tested in accordance with ASTM D1633.
Mix shall contain a minimum of 1-1/2 sacks of cement per cubic yard for general purposes. Mix for use as sanitary sewer embedment within 9 feet of waterlines shall contain 2 1/2 sacks of cement per cubic yard. All mixes shall have a moisture content between 0% to 2% above optimum.

MIXING:
A. Thoroughly mix sand, cement and water according to the mix design using a pugmill-type mixer. The plant shall be equipped with automatic weight controls to ensure correct mix proportions.
B. Stamp batch ticket at plant with time of loading directly after mixing. Material not placed and compacted within 4 hours after mixing shall be rejected.

PLACING CEMENT STABILIZED SAND:
A. Place cement stabilized sand mixture in 8-inch lifts and compact to 95% of ASTM D558, unless otherwise specified. The moisture content during compaction shall be between 0% to 2% above optimum. Perform and complete compaction of cement stabilized sand mixture within 4 hours after mixing at the plant.
B. Do not place or compact cement stabilized sand mixture in standing or free water.

FIELD QUALITY CONTROL:
A. The cement content will be checked on samples obtained in the field whenever there are apparent changes in the mix properties.
B. Mixing plant inspections will be performed periodically. Material samples will be obtained and tested if there is evidence of change in material characteristic.
C. Random samples of delivered product will be taken in the field at point of delivery for each day of placement in a work area. Specimens will be prepared in accordance with ASTM D1632 and tested for 48-hour compressive strength in accordance with ASTM D1633.

MEASUREMENT AND PAYMENT:
No direct payment will be made for cement stabilized sand under this item. Payment for cement stabilized sand should be included in the unit price for the applicable utility or structure installation.

ASTM D2321-89 CLASSES OF EMBEDMENT & BACKFILL MATERIALS

Class IA: Angular, Crushed Rock, no fines.

Class IB: Angular, Crushed Rock and sand, well graded to minimize migration of adjacent soils. Little or no fines.

Class II: Coarse Grained Soils, Clean. Native soils from the trench generally do not meet this requirement. The contractor may use native materials from the trench only after providing soils laboratory test demonstrating compliance.

Class III: Coarse Grained Soils with Fines. Native soils from the trench generally do not meet this requirement. The contractor may use native materials from the trench only after providing soils laboratory test demonstrating compliance. Bank run sand generally meets this requirement

Class IV A: Select Material from the Trench consisting of Fine-Grained Soils (inorganic). Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays. This material must have a liquid limit >50 and a Plasticity Index >7 and > "A" Line. See specification (ASTM D2321-89) for details.

Class IV B: Select Material from the Trench consisting of Fine-Grained Soils (inorganic). Inorganic clays of medium to high plasticity, fat clays, inorganic silts, fine sandy or silty soils, elastic silts.

Class V: Organic Soils. Material from the Trench which does not meet the requirements above. All rocks, lumps, and clods must be removed from this material prior to placement in the trench. This material is only appropriate for topsoil in the non-structural trench.

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STATE OF TEXAS — JAMES T. BATENHORST — 93631 — LICENSED PROFESSIONAL ENGINEER — on MAY 6, 2026

APRIL, 2026
Designed By: JTB
Drawn By: JTB
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
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AUSTIN, TX 78746
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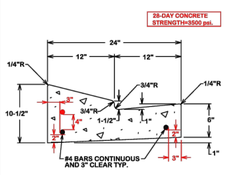
Revisions

EMBEDMENT & TRENCH SAFETY
BRAZOS OAKS PHASE II

C-402

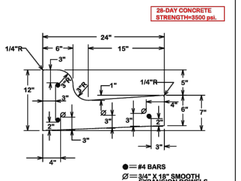
NOTE:
TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "B" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART.



24" LAY DOWN GUTTER SECTION

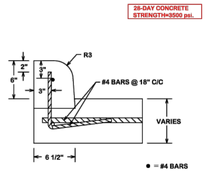
ST1-00

NOTE:
TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "B" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART.



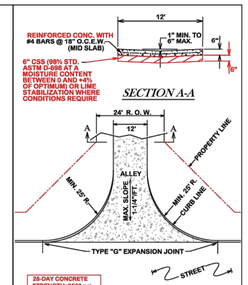
TYPICAL COMBINED CURB & GUTTER SECTION

ST1-01



DOWELLED IN CURBS DETAIL

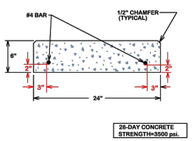
ST1-02



ALLEY PAVING

ST1-06

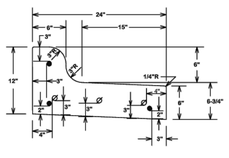
NOTE:
TYPE "B" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "B" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART



TYPICAL RIBBON CURB

ST1-03

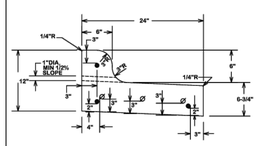
NOTE:
TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "B" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART



TYPICAL COMBINED SPILL CURB

ST1-04

NOTE:
1. TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S, AND P.C.'S. TYPE "B" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAXIMUM DISTANCE OF 10' APART
2. PIPE EXTENDED 1"-2" FROM BOC TO BE COVERED WITH FABRIC AND TIED IN PLACE



TYPICAL WEEPHOLE CURB

ST1-05

GENERAL NOTES:

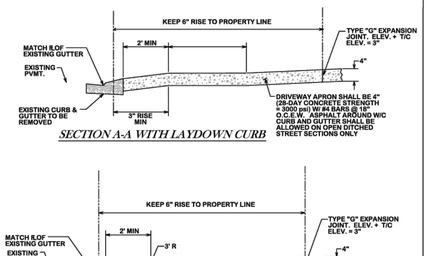
ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN DAMAGED BY CONSTRUCTION SHALL BE ADEQUATELY RESTORED SO AS TO PROVIDE A PERMANENT STAND OF GRASS GROWTH IS ESTABLISHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE SEEDED OR SODDED WITHIN 14 CALENDAR DAYS OF LAST DISTURBANCE.

APPROVED EROSION CONTROL MEASURES MUST BE INSTALLED DURING THE ENTIRE TIME THAT EARTH HAS BEEN BARED BY CONSTRUCTION AND SHALL STAY IN PLACE UNTIL ACCEPTABLE GRASS GROWTH IS ESTABLISHED UNLESS OTHERWISE INSTRUCTION IS COMPLETE AND THEN REMOVED BY CONTRACTOR.

ALL EROSION CONTROL MEASURES SHOULD BE CLEANED OF SILT AFTER EVERY RAIN.

ALL TRAFFIC SIGNALS AND APPURTENANCES, AND ALL PAVEMENT MARKINGS AND MARKERS SHALL BE IN ACCORDANCE WITH TXDOT STANDARDS

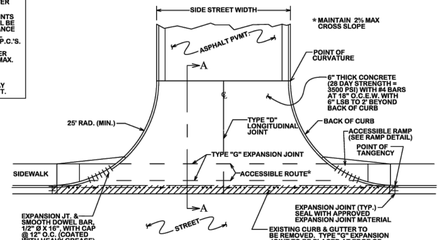
REFER TO SPEC 31 17 23.23 (PAVEMENT MARKINGS) FOR ADDITIONAL LOCAL REQUIREMENTS.



RESIDENTIAL DRIVEWAY

ST2-00

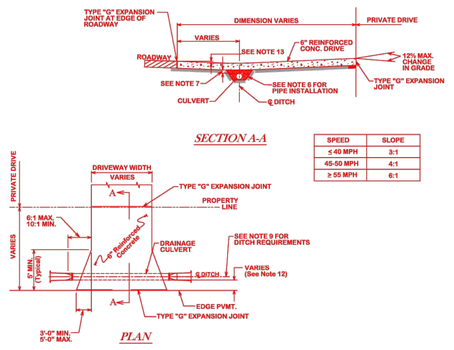
NOTES:
1. IF THERE IS A VALLEY GUTTER, THEN TRANSITION CROWN AT VALLEY GUTTER TO FULL CROWN IN 50'.
2. TYPE "G" EXPANSION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAX. DISTANCE OF 40' APART AND AT ALL RADIUS POINTS, P.T.'S & P.C.'S. TYPE "S" CONTRACTION JOINTS IN CURB & GUTTER SHALL BE SPACED AT A MAX. DISTANCE OF 10' APART.
3. 2% MAX SLOPE.
4. 5' MIN TRANSITION TO LAY DOWN CURB BEGIN AT P.T.



TYPICAL STREET CONCRETE APRON

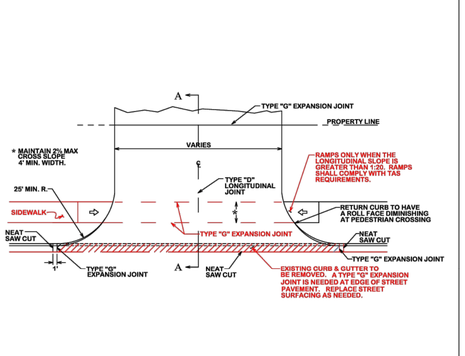
ST2-01

NOTE:
1. LENGTH OF DRAINAGE PIPE FOR RESIDENTIAL DRIVES IS 30' MAX & 20' MIN.
2. ALL DRIVEWAY PIPES WITHIN ROW MUST HAVE CONCRETE R.E.T.(SAFETY END TREATMENTS)(4:1 SLOPE) OR APPROVED EQUAL.
3. CULVERT DIAMETER TO BE APPROVED BY THE CITY ENGINEER. THE SIZE OF THE DRIVE CULVERT SHALL BE A MINIMUM OF 18" DIAMETER OR LARGER AS NEEDED TO HANDLE A 10 YR STORM EVENT. THE SLOPE OF THE PIPE SHALL BE A MINIMUM OF 0.5%.
4. CULVERT SHALL BE RCP OR HDPE, MEETING THE CITY'S SPECIFICATIONS FOR STORM PIPE. CMP IS NOT ALLOWED.
5. BELL AND SPIGOT GASKETED JOINTS OR MANUFACTURED COUPLING BANDS ARE REQUIRED WITH HDPE.
6. CEMENT STABILIZED SAND IS REQUIRED WITH HDPE.
7. THERE SHALL BE A MINIMUM OF 12" COVER FOR HDPE PIPE AND 6" COVER FOR RCP PIPE.
8. TOP OF CONCRETE DRIVE TO BE LEVEL WITH ROAD SURFACE.
9. DITCH NEEDS TO BE CLEANED BOTH UPSTREAMAND DOWNSTREAM. CULVERT TO MATCH DITCH SOPE.
10. SLOPES TRANSVERSE TO THE PUBLIC STREET (e.g., DRIVEWAY SIDE SLOPES) SHOULD BE AS FLAT AS PRACTICAL. WHERE PRACTICAL, A SLOPE OF 1 VERTICAL TO 6 HORIZONTAL (1V:6H) OR FLATTER SHALL BE CONSTRUCTED. A SLOPE OF 1V:4H IS THE MAXIMUM ALLOWED. IN NO INSTANCE SHALL THE SLOPE EXCEED 1V:4H WITHOUT SPECIFIC CITY APPROVAL.
11. DRIVEWAY CULVERTS:
   A. SHALL BE PLACED AS FAR AWAY FROM THE PUBLIC ROADWAY AS PRACTICAL.
   B. SHALL BE CUT TO MATCH THE DRIVEWAY SLOPE.
   C. SHALL HAVE DELINEATORS PLACED AT EACH END FOR HAZARD INDENTIFICATION.
12. REFER TO THE CURRENT ADDITION OF THE AASHTO ROADSIDE DESIGN GUIDE FOR ADDITIONAL INFORMATION ON THE CONSTRUCTION OF THE DRIVEWAY AND THE PLACEMENT OF THE DRIVEWAY CULVERT TO ALLOW SUFFICIENT CLEAR ZONE AND FLARE RATES.
13. DRIVEWAY ELEVATION OVER THE CULVERT MUST BE A MINIMUM 4" BELOW ROAD SURFACE WHEN DIP AND MAXIMUM OF 12" ABOVE ROAD SURFACE IF A HUMP.



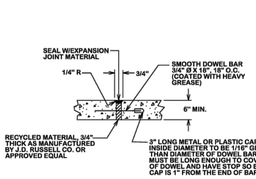
TYPICAL DRIVEWAY ENTRANCE WITH CULVERT

ST2-02

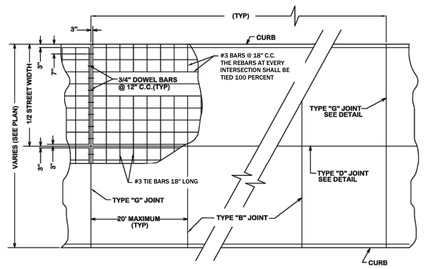


COMMERCIAL DRIVEWAY

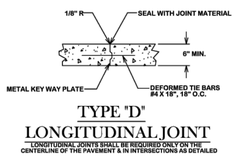
ST2-03



TYPE "G" EXPANSION & CONSTRUCTION JOINT

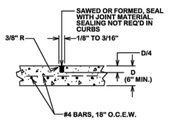


TYPICAL JOINT & REINFORCEMENT LAYOUT FOR CONCRETE PAVEMENT

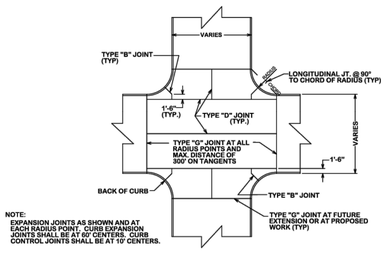


TYPE "D" LONGITUDINAL JOINT

LONGITUDINAL JOINTS SHALL BE REQUIRED ONLY ON THE CENTERLINE OF THE PAVEMENT & IN INTERSECTIONS AS DETAILED



TYPE "B" CONTRACTION JOINT



NOTE:
EXPANSION JOINTS AS SHOWN AND AT EACH RADIUS POINT. CURB EXPANSION JOINTS SHALL BE AT 60' CENTERS. CURB CONTROL JOINTS SHALL BE AT 10' CENTERS.

TYPICAL JOINT LAYOUT AT CONCRETE INTERSECTION

ST3-00

MITCHELL M&M MORGAN
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TX. FIRM # F-1443
3204 EARL RUDDER FWY. S.
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HYDROLOGY UTILITIES STREETS
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www.mitchellandmorgan.com

STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED PROFESSIONAL ENGINEER
on MAY 6, 2026

REVISIONS:

APRIL 2026
Designed By: JTB
Drawn By: PJSB
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
STE A134
AUSTIN, TX 78746
512.329.5755

Revisions

BRYAN - COLLEGE STATION STANDARD STREET DETAILS

CITY OF COLLEGE STATION

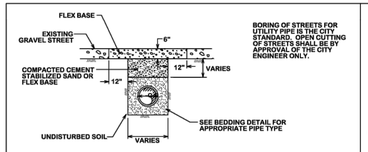
CITY OF BRYAN
The Good Life, Texas Style.

B/CS STANDARD STREET DETAILS -1
BRAZOS OAKS PHASE II

DRAWN BY: B.L
DATE: 12/2020
SCALE: N T S
APPROVED: W. P. K.

FIGURE:
ST1
SHEET 1 OF 2

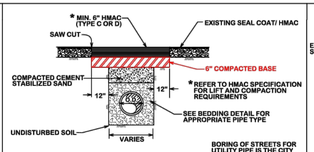
C-500



BORING OF STREETS FOR UTILITY PIPE IS THE CITY STANDARD. OPEN CUTTING OF STREETS SHALL BE BY APPROVAL OF THE CITY ENGINEER ONLY.

OPEN CUT GRAVEL STREET

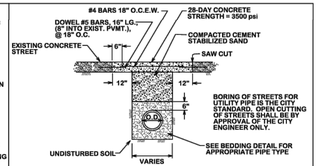
ST4-00



BORING OF STREETS FOR UTILITY PIPE IS THE CITY STANDARD. OPEN CUTTING OF STREETS SHALL BE BY APPROVAL OF THE CITY ENGINEER ONLY.

OPEN CUT SEAL COAT/ OVERLAY STREET

ST4-01



BORING OF STREETS FOR UTILITY PIPE IS THE CITY STANDARD. OPEN CUTTING OF STREETS SHALL BE BY APPROVAL OF THE CITY ENGINEER ONLY.

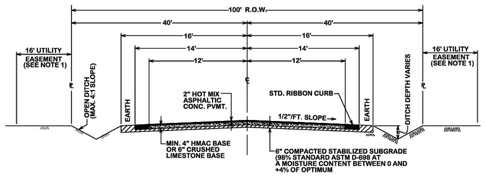
OPEN CUT CONCRETE STREET

ST4-02

	RESIDENTIAL SECTION	COLLECTOR SECTION
PAVEMENT WIDTH	24	30
R.O.W. WIDTH	70	100

NOTES:

1. RURAL SECTIONS WILL NOT REQUIRE 16' EASEMENTS PARALLEL TO R.O.W. WITHIN CITY LIMITS.
2. WITHIN ETJ AREA, RURAL SECTIONS SHALL FOLLOW COUNTY SPECS AND STANDARDS

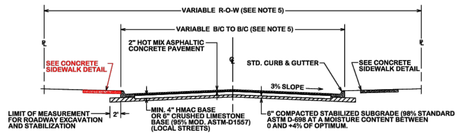


TYPICAL RURAL ROAD RIBBON CURB SECTION

ST4-03

NOTES:

1. ALL SUBGRADES SHALL BE STABILIZED.
2. FOR SUBGRADES WITH PI > 15 AND % PASSING THE #200 SIEVE ≥ 35%, USE LIME STABILIZATION.
3. FOR SUBGRADES WITH PI < 7 AND % PASSING THE #200 SIEVE < 35%, USE PORTLAND CEMENT STABILIZATION.
4. SIDEWALK PLACEMENT VARIES WITH EACH LOCATION AND WILL BE DETERMINED BY THE ENGINEER.
5. REFER TO B/CS UNIFIED DESIGN GUIDELINE MANUAL FOR ACCEPTED RIGHT OF WAY AND PAVEMENT WIDTH.
6. COLLECTOR STREETS WILL BE REQUIRED TO USE 5" HMAC BASE OR 8" CRUSHED LIMESTONE BASE AND STABILIZED SUBGRADE IN ACCORDANCE WITH THE B/CS UNIFIED DESIGN GUIDELINE MANUAL OR AS DIRECTED BY CITY ENGINEER.



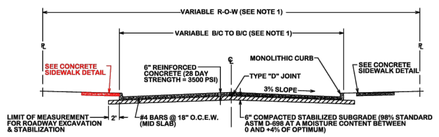
TYPICAL STREET SECTION

ASPHALTIC CONCRETE PAVEMENT

ST4-04

NOTES:

1. REFER TO B/CS UNIFIED DESIGN GUIDELINE MANUAL FOR ACCEPTED RIGHT OF WAY AND PAVEMENT WIDTH.
2. COLLECTOR STREETS WILL BE REQUIRED TO USE 6" REINFORCED CONCRETE (28 DAY STRENGTH = 3500 PSI)



TYPICAL STREET SECTION

REINFORCED CONCRETE PAVEMENT

ST4-05

REVISIONS:

BRYAN - COLLEGE STATION STANDARD STREET DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY:	B.I.
DATE:	12/2020
SCALE:	N T S
APPROVED:	W. P. K.

FIGURE: ST2

SHEET 2 OF 2

MITCHELL M&M MORGAN

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Designed By: JTB
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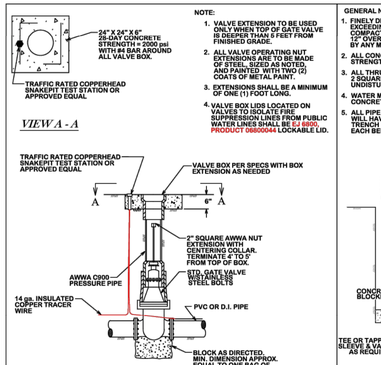
Revisions

B/CS STANDARD STREET DETAILS -2

BRAZOS OAKS PHASE II

C-501

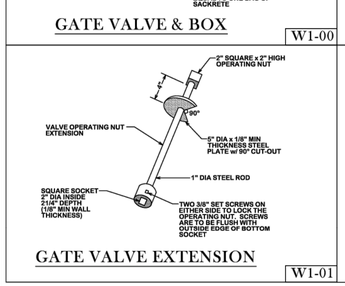


GATE VALVE & BOX

W1-00

NOTE:

1. VALVE EXTENSION TO BE USED ONLY WHEN TOP OF GATE VALVE IS DEEPER THAN 5 FEET FROM FINISHED GRADE.
2. ALL VALVE OPERATING NUT EXTENSIONS ARE TO BE MADE OF STEEL, SIZED AS NOTED, AND PAINTED WITH TWO (2) COATS OF METAL PAINT.
3. EXTENSIONS SHALL BE A MINIMUM OF ONE (1) FOOT LONG.
4. VALVE BOX LIDS LOCATED ON VALVES TO ISOLATE FIRE SUPPRESSION LINES FROM PUBLIC WATER LINES SHALL BE EJ 6850, PRODUCT 06800044 LOCKABLE LID.

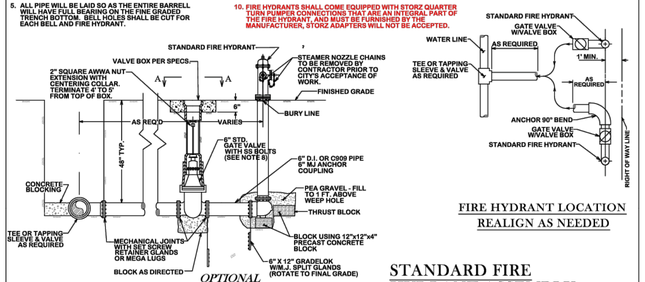


GATE VALVE EXTENSION

W1-01

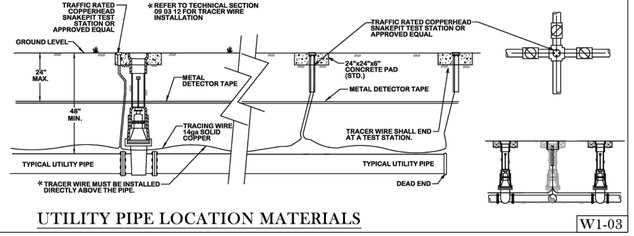
GENERAL NOTES:

1. FINELY DIVIDED EARTH FREE OF ROCK, LUMPS AND CLODS EXCEEDING 6" SHALL BE PLACED BY HAND, AND COMPACTED AROUND THE CAST IRON PIPE TO A DEPTH OF 12" ABOVE THE TOP OF THE PIPE BEFORE BACKFILL IS BEGUN BY ANY MECHANICAL EQUIPMENT.
2. ALL CONCRETE BLOCKING SHALL BE - 28 DAY CONCRETE STRENGTH = 2000psi.
3. ALL THRUST BLOCKING SHALL PROVIDE A MINIMUM OF 2 SQUARE FEET OF BEARING AREA OF CONCRETE ON UNDISTURBED SOIL, OR AS DIRECTED BY THE ENGINEER.
4. WATER MAINS WILL NOT BE FULLY PRESSURIZED UNTIL CONCRETE HAS REACHED 7 DAY STRENGTH.
5. ALL PIPE WILL BE LAID SO AS THE ENTIRE BARRELL WILL HAVE FULL BEARING ON THE FINE GRADED TRENCH BOTTOM. BELL HOLES SHALL BE CUT FOR EACH BELL AND FINE HYDRANT.
6. ALL FITTING SHALL BE MECHANICL JOINTS UNLESS OTHERWISE DIRECTED.
7. HYDRANTS SHALL BE LOCATED NO CLOSER THAN 3 FEET MEASURED FROM THE BACK OF CURB TO THE FACE OF THE STEAMER ON THE FIRE HYDRANT AND NO FURTHER THAN 10 FEET FROM BACK OF CURB
8. IF MAIN VALVE IS WITHIN 50 FEET OF FIRE HYDRANT THEN ASSEMBLY VALVE MAY BE OMITTED ON A DEAD END HYDRANT LEAD WITH NO ADDITIONAL CONNECTIONS.
9. HEIGHT OF FIRE HYDRANT MEASURED FROM THE STEAMER NOZZLE SHALL BE 16 TO 24 INCHES ABOVE NEAREST FINAL GRADE.
10. FIRE HYDRANTS SHALL COME EQUIPPED WITH STORZ QUARTER TURN PUMPER CONNECTIONS THAT ARE AN INTEGRAL PART OF THE FIRE HYDRANT, AND MUST BE FURNISHED BY THE MANUFACTURER, STORZ ADAPTERS WILL NOT BE ACCEPTED.



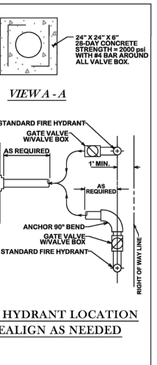
STANDARD FIRE HYDRANT ASSEMBLY

W1-02



UTILITY PIPE LOCATION MATERIALS

W1-03



FIRE HYDRANT LOCATION REALIGN AS NEEDED

THRUST BLOCK NOTES:

1. ALL CALCULATIONS ARE BASED ON INTERNAL PRESSURE OF 200 psi FOR 24" AND SMALLER INNER DIAMETER PIPE.
2. ALL BEARING SURFACES OF THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED EARTH OR ROCK.
3. CONCRETE FOR BLOCKING SHALL BE 2000 psi.
4. DIMENSIONS MAY BE VARIED AS REQUIRED BY FIELD WHERE AND AS DIRECTED BY THE ENGINEER. THE VOLUME OF CONCRETE BLOCKING SHALL NOT BE LESS THAN SHOWN HERE.
5. WATER MAIN SHALL NOT BE PRESSURIZED UNTIL ALL CONCRETE BLOCKING HAS REACHED 1500 psi.

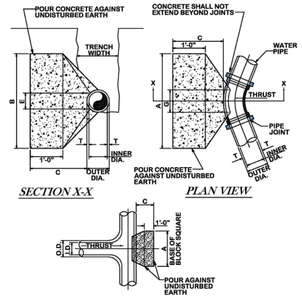
TEE SCHEDULE

ID (in)	THRUST (lbs)	C (ft)	A (ft)	VOLUME (c.y.)
4,6,8	5.1	1.5	2.5	0.4
10,12	11.3	1.5	3.5	0.8

HORIZONTAL THRUST BLOCK SCHEDULE

BEND	SIZE	A (ft)	B (ft)	C (ft)	E (ft)	G (ft)	VOLUME (c.y.)
90°	6,8"	1.0	1.5	1.5	0.9	2.7	0.4
	10,12"	6.5	2.5	1.5	1.2	4.0	1.0
45°	6,8"	2.0	2.0	1.5	0.9	1.5	0.2
	10,12"	3.5	2.5	1.5	1.2	2.2	0.5
22.5°	6,8"	1.5	1.5	1.5	0.9	0.8	0.1
	10,12"	2.0	2.5	1.5	1.2	1.1	0.3
11.25°	6,8"	1.0	1.5	1.5	0.9	0.4	0.1
	10,12"	1.5	1.5	1.5	1.2	0.6	0.1

THRUST BLOCK DETAILS



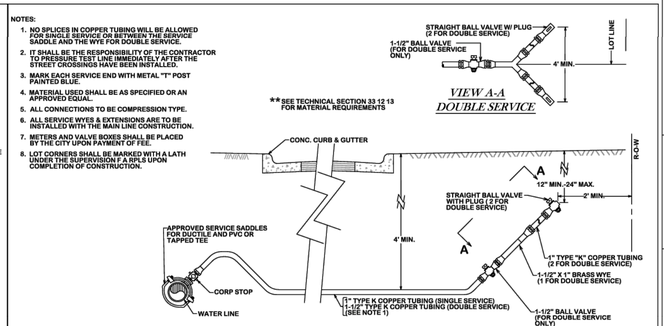
TYPICAL HORIZONTAL THRUST BLOCK

W2-00

NOTES:

1. NO SPLICES IN COPPER TUBING WILL BE ALLOWED FOR SINGLE SERVICE OR BETWEEN THE SERVICE SADDLE AND THE WYE FOR DOUBLE SERVICE.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PRESSURE TEST LINE IMMEDIATELY AFTER THE STREET CROSSINGS HAVE BEEN INSTALLED.
3. MARK EACH SERVICE END WITH METAL "T" POST PAINTED BLUE.
4. MATERIAL USED SHALL BE AS SPECIFIED OR AN APPROVED EQUAL.
5. ALL CONNECTIONS TO BE COMPRESSION TYPE.
6. ALL SERVICE WYES & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.
7. METERS AND VALVE BOXES SHALL BE PLACED BY THE CITY UPON PAYMENT OF FEE.
8. LOT CORNERS SHALL BE MARKED WITH A LATH UNDER THE SUPERVISION F A RPLS UPON COMPLETION OF CONSTRUCTION.

NOTE:
USE POLYETHYLENE WRAP OR EQUAL BETWEEN CONCRETE & PLUG TO PREVENT CONCRETE FROM STICKING TO PLUG.

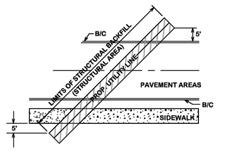


NEW WATER SERVICE

(SHORT AND LONG SIDE)

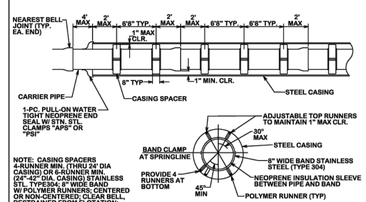
W2-01

STRUCTURAL BACKFILL AREA INCLUDES ALL PAVED AREAS (SIDEWALKS, STREETS, ALLEYS, DRIVEWAYS AND PARKING AREAS) AND SHALL EXTEND 9' BEYOND THE CURB LINE. STRUCTURAL BACKFILL SHALL BE CEMENT STABILIZED (SEE DETAIL W4-02 - AREARTO BE PAVED) OR EXCAVATED SOIL COMPACTED TO 98% MAXIMUM DRY DENSITY AS PER ASTM D698 WITHIN OPTIMUM TO +4% WET OF OPTIMUM (SEE DETAIL W4-02 - NON-STRUCTURAL AREAS)



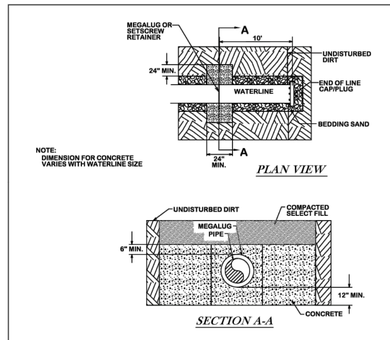
STRUCTURAL BACKFILL AREA

W2-02



CASING DETAIL

W2-03

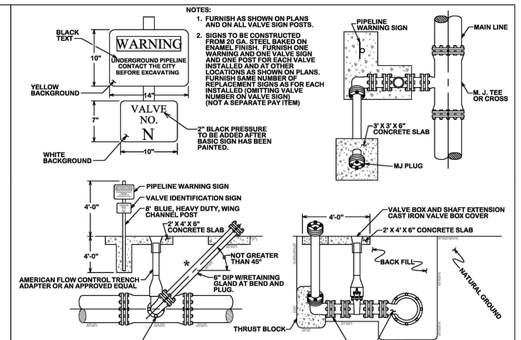


END OF LINE BLOCKING

W3-00

NOTES:

1. FURNISH AS SHOWN ON PLANS AND ON ALL VALVE SIGN POSTS.
2. SIGNS TO BE CONSTRUCTED FROM 20 GA. STEEL BAKED ON ENAMEL FINISH. FURNISH ONE WARNING AND ONE VALVE SIGN AND ONE POST FOR EACH VALVE INSTALLED AND AT OTHER LOCATIONS AS SHOWN ON PLANS. FURNISH SAME NUMBER OF REPLACEMENT SIGNS AS FOR EACH NUMBER OF VALVES. NUMBER OF VALVE SIGNS (NOT A SEPARATE PAY ITEM)

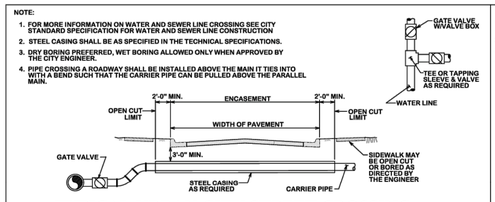


IN-LINE BLOW OFF ASSEMBLY

W3-01

NOTE:

1. FOR MORE INFORMATION ON WATER AND SEWER LINE CROSSING SEE CITY STANDARD SPECIFICATION FOR WATER AND SEWER LINE CONSTRUCTION
2. STEEL CASING SHALL BE AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
3. DRY BORING IS REQUIRED.
4. PIPE CROSSING A ROADWAY SHALL BE INSTALLED ABOVE THE MAIN IT TIES INTO WITH A BEND SUCH THAT THE CARRIER PIPE CAN BE PULLED ABOVE THE PARALLEL MAIN.

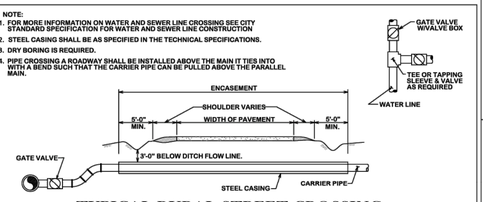


TYPICAL URBAN CITY STREET CROSSING

W4-00

NOTE:

1. FOR MORE INFORMATION ON WATER AND SEWER LINE CROSSING SEE CITY STANDARD SPECIFICATION FOR WATER AND SEWER LINE CONSTRUCTION
2. STEEL CASING SHALL BE AS SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
3. DRY BORING IS REQUIRED.
4. PIPE CROSSING A ROADWAY SHALL BE INSTALLED ABOVE THE MAIN IT TIES INTO WITH A BEND SUCH THAT THE CARRIER PIPE CAN BE PULLED ABOVE THE PARALLEL MAIN.



TYPICAL RURAL STREET CROSSING

W4-01

Ⓐ SELECT MATERIAL

MATERIAL EXCAVATED FROM THE DITCH, (WHICH IS FREE OF ROCK, BOULDERS, LOGS, OR DEBRIS LARGER THAN TWO (2) INCHES IN THE LARGEST DIMENSION), COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER NON-STRUCTURAL AREAS (ie., YARDS, PASTURES, EASEMENTS) AND TO A MINIMUM OF 98% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER NEW STREET AREAS AND STREETS TO BE RECONSTRUCTED.

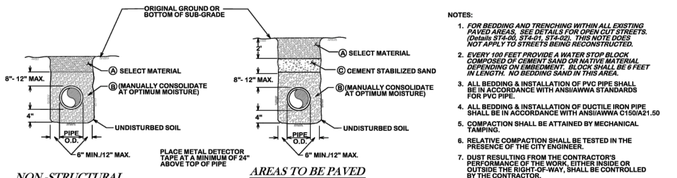
Ⓑ GRANULAR MATERIAL

MATERIAL SHALL BE BANK RUN RIVER SAND WHICH IS FREE OF DETRIMENTAL QUANTITIES OF CLAY, DEBRIS, OR ORGANIC MATERIAL AND WHICH, WHEN TESTED BY STANDARD LABORATORY METHODS, MEET THE FOLLOWING REQUIREMENTS:

MAXIMUM LIQUID LIMIT.....45
MAXIMUM PLASTICITY INDEX.....15
MAXIMUM PERCENT PASSING NO. 200 SIEVE.....35
MINIMUM PERCENT PASSING 3/4" SIEVE.....100

THE MATERIAL SHALL BE FREE FLOWING AND WHEN WET, SHALL NOT ADHERE TO FORM A BALL WHEN PRESSED IN THE HAND.

Ⓒ CEMENT STABILIZED SAND



NOTES:

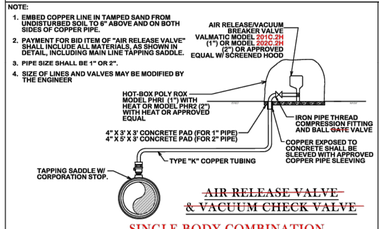
1. *FOR BEDDING AND TRENCHING WITHIN ALL EXISTING PAVED AREAS, SEE DETAILS FOR OPEN CUT STREETS. (Details ST4-00, ST4-01, ST4-02). THIS NOTE DOES NOT APPLY TO STREETS BEING RECONSTRUCTED.*
2. *EVERY 100 FEET PROVIDE A WATER STOP BLOCK COMPOSED OF CEMENT SAND OR NATIVE MATERIAL DEPENDING ON EMBEDMENT. BLOCK SHALL BE 6 FEET IN LENGTH. NO BEDDING SAND IN THIS AREA.*
3. ALL BEDDING & INSTALLATION OF PVC PIPE SHALL BE IN ACCORDANCE WITH ANSI/AWWA STANDARDS FOR PVC PIPE.
4. ALL BEDDING & INSTALLATION OF DUCTILE IRON PIPE SHALL BE IN ACCORDANCE WITH ANSI/AWWA C150/A21.50
5. COMPACTION SHALL BE ATTAINED BY MECHANICAL TAMPING.
6. RELATIVE COMPACTION SHALL BE TESTED IN THE PRESENCE OF THE CITY ENGINEER.
7. DUST RESULTING FROM THE CONTRACTOR'S PERFORMANCE OF THE WORK, EITHER INSIDE OR OUTSIDE THE RIGHT-OF-WAY, SHALL BE CONTROLLED BY THE CONTRACTOR.
8. ALL TRENCHES SHALL BE BACK FILLED AND TEMPORARY PAVING OR PLATING PLACED AT THE END OF EACH WORKING DAY.

BEDDING AND TRENCH FOR DI PIPE & PVC PIPE

W4-02

NOTE:
ENSURE COPPER LINE IN TAMPED SAND FROM UNDISTURBED SOIL TO 6" ABOVE AND ON BOTH SIDES OF COPPER PIPE.

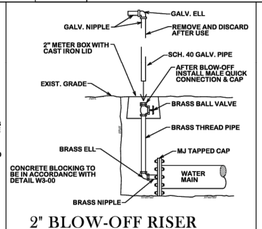
2. PAYMENT FOR BID ITEM OF "AIR RELEASE VALVE" SHALL INCLUDE ALL MATERIALS AS SHOWN IN DETAIL, INCLUDING MAIN LINE TAPPING SADDLE.
3. PIPE SIZE SHALL BE 1" OR 2".
4. SIZE OF LINES AND VALVES MAY BE MODIFIED BY THE ENGINEER



~~AIR RELEASE VALVE & VACUUM CHECK VALVE~~

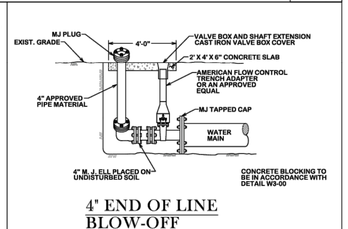
SINGLE BODY COMBINATION AIR RELEASE VALVE

W3-02



2" BLOW-OFF RISER

W3-03



4" END OF LINE BLOW-OFF

W3-04

GENERAL NOTES:

ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN BARED BY CONSTRUCTION SHALL BE ADEQUATELY BLOCK SODDED OR HYDROMULCHED AND WATERED UNTIL GROWTH IS ESTABLISHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE SEEDED OR SODDED WITHIN 14 CALENDAR DAYS OF LAST DISTURBANCE.

APPROVED EROSION CONTROL MEASURES MUST BE INSTALLED DURING THE ENTIRE TIME THAT EARTH HAS BEEN BARED BY CONSTRUCTION AND SHALL STAY IN PLACE UNTIL ACCEPTABLE VEGETATIVE GROWTH IS ESTABLISHED AFTER CONSTRUCTION IS COMPLETE AND THEN REMOVED BY CONTRACTOR.

ALL EROSION CONTROL MEASURES SHOULD BE CLEANED OF SILT AFTER EVERY RAIN.

ESTABLISHMENT OF VEGETATION MAY BE A WARRANTY ITEM.

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REVISIONS:

APRIL 2026
Designed By: PJS/BB
Drawn By: BB
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
STE A134
AUSTIN, TX 78746
512.329.5755

Revisions

BRYAN - COLLEGE STATION STANDARD WATER DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

B/CS STANDARD WATER DETAILS -1
BRAZOS OAKS PHASE II

DRAWN BY: B.I.
DATE: 12/2020
SCALE: N T S
APPROVED: W. P. K.

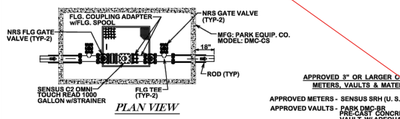
FIGURE:
W1
SHEET 1 OF 2

C-502

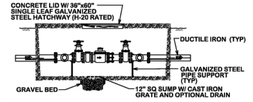
SPECIAL CONDITIONS

1. METER REGISTER SHALL BE NO DEEPER THAN 12 INCHES BELOW FINISHED GRADE.
2. FLOOR OF VAULT WILL BE A MINIMUM OF 6 INCHES FROM BOTTOM OF ANY PIPING APPARATUS OR METER WITHIN THE VAULT.
3. REINFORCED CONCRETE VAULT BASE (FLOOR) SHALL BE CONSTRUCTED USING A STANDARD FIVE SACK CONCRETE MIX AND REINFORCING COMPRISED OF #3 REBAR ON 12 INCH CENTERS WITH A MINIMUM BASE THICKNESS OF 6 INCHES.
4. SET SCREW RETAINER GLANDS SHALL BE INSTALLED AT EACH FITTING ON MECHANICAL JOINT PIPE.
5. VALVES SHALL MEET THE CITY SPECIFICATIONS FOR VALVES.
6. THERE SHALL BE NO PIPING UNDER THE FLOOR OF THE VAULT.

MODEL	SIZE	L1	W1	H1	WEIGHT LBS
DMC-CS3	3"	8'-8"	5'-0"	4'-6"	12,000
DMC-CS4	4"	8'-8"	5'-0"	4'-6"	12,000
DMC-CS6	6"	11'-0"	6'-0"	4'-6"	12,000



PLAN VIEW



ELEVATION VIEW

APPROVED 3" OR LARGER COMPOUND METERS, VAULTS & MATERIALS

APPROVED METERS - SENSUS SRH (U. S. GALLONS)

APPROVED VAULTS - PARK DMC-SD PRECAST CONCRETE VAULT W/ ADEQUATE ACCESS AND VAULT DIMENSIONS FOR METER SELECTED

APPROVED MATERIALS - DUCTILE IRON PIPE WITH MECHANICAL JOINT. SET SCREW RETAINER GLANDS WILL BE BASED ON ALL M.J. FITTINGS.

ANY DEVIATIONS FROM THE ABOVE SPECIAL CONDITIONS OR APPROVED METERS, VAULTS OR MATERIALS MUST BE SUBMITTED TO THE DIVISION MANAGER, WATER SERVICES, 72 HOURS PRIOR TO ANTICIPATED DEVIATION.

CITY OF COLLEGE STATION
METER VAULT ASSEMBLY

W5-00

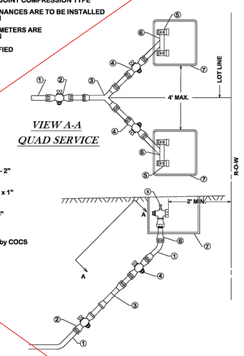
SPECIAL CONDITIONS

ALL CONNECTIONS SHALL BE PACK-JOINT COMPRESSION TYPE

ALL SERVICE EXTENSIONS/APPURTENANCES ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION

A MAXIMUM OF FOUR – 0.75" WATER METERS ARE ALLOWED FOR THIS CONFIGURATION

MATERIAL USED SHALL BE AS SPECIFIED OR AN APPROVED EQUAL



VIEW A-A
QUAD SERVICE

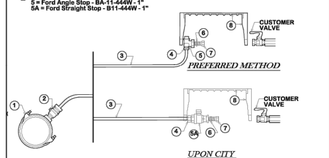
1. Service tubing: Type K copper - soft - 2"
2. Ford Ball Valve - B44-777-NL- 2"
3. Ford "Y" Branch - Y44-274-NL- 2" x 1" x 1"
4. Ford Ball Valve - B44-444-NL- 1"
5. Ford Angle Stop KV13-332W-NL - .75" x .75" Meter Nut Swivel
6. Ford 'U' Branch - U48-43-NL
7. Dual Concrete Meter Box - Provided by COCS

CITY OF COLLEGE STATION
QUAD SERVICE CONNECTION

W5-01

NOTES:

1. Service saddle, SS straps, CC threads installed per manufacturer's recommendations. All main types: Smith Blair 317
2. Corporation Stop: Ford FB 1000-4-Q - 1"
3. Service tubing: Type K copper - soft - 1"
4. Ford male adapter - C84-44-Q - 1"
5. Meter box valve: 5 = Ford Angle Stop - BA-11-444W - 1" 5A = Ford Straight Stop - B11-444W - 1"
6. Brass bushing IPS - 1" x 3/4"
7. Meter nipple - C38-23-2-5 - 3/4"
8. Meter box and lid: Old Castle/Christy meter box and lid: - B29 Utility Box - NSRR Concrete Lid Marked "Water" with Flex-Net Sensus Probe Hole

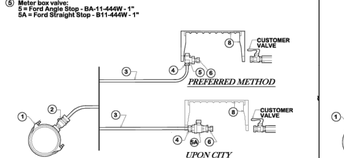


CITY OF BRYAN
STRAIGHT OR ANGLE TAP-3/4"

W6-00

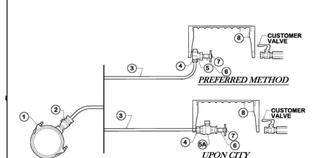
NOTES:

1. Service saddle, SS straps, CC threads installed per manufacturer's recommendations. All main types: Smith Blair 317
2. Corporation Stop: Ford FB 1000-4-Q - 1"
3. Service tubing: Type K copper - soft - 1"
4. Ford male adapter - C84-44-Q - 1"
5. Meter box valve: 5 = Ford Angle Stop - BA-11-444W - 1" 5A = Ford Straight Stop - B11-444W - 1"
6. Meter nipple - C38-44-2-625 - 1"
7. Meter box and lid: Old Castle/Christy meter box and lid: - B12 Utility Box - NSRR Concrete Lid Marked "Water" with Flex-Net Sensus Probe Hole



CITY OF BRYAN
STRAIGHT OR ANGLE TAP - 1"

W6-01

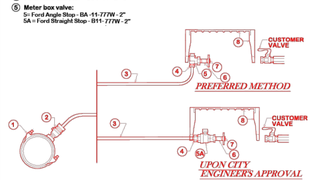


CITY OF BRYAN
STRAIGHT OR ANGLE TAP-1-1/2"

W6-02

NOTES:

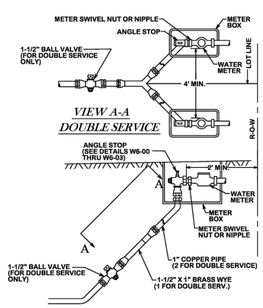
1. Service saddle, SS straps, CC threads installed per manufacturer's recommendations. All main types: Smith Blair 317
2. Corporation Stop: Ford FB 1000-7-Q (cc thread) - 2"
3. Service tubing: Type K copper - soft - 2"
4. Ford male adapter - C84- 77 -Q - 2"
5. Meter box valve: 5= Ford Angle Stop - BA -11-777W - 2" 5A = Ford Straight Stop - B11- 777W - 2"
6. Brass nipple I.P.S. - 2"x3"
7. Meter Flange - CF31 - 77 - 2"
8. Meter box and lid: Old Castle/Christy meter box and lid: - B95 Utility Box - NSRR Concrete Lid Marked "Water" with Flex-Net Sensus Probe Hole



CITY OF BRYAN
STRAIGHT OR ANGLE TAP - 2"

W6-03

METER NUT SIZE	FORD PART NO.
3/4" x 2.5" Long	C38-23-2-5
3/4" x 3" Long	C38-23-3
3/4" x 12" Long	C38-23-12
1" x 2.625" Long	C38-44-2-625
1" x 5.5" Long	C38-44-5-5
1-1/2" Meter Nipple	C38-66-2-875
1-1/2" Meter Bushing	BBIM-66
2" Meter Nipple	C38-77
2" Meter Bushing	BBIM-77

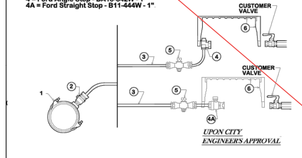


CITY OF BRYAN
WATER SERVICE RECONNECTION

W6-04

NOTES:

1. Service saddle and CC threads installed per manufacturer's recommendations. All main types: Ford S70/S90
2. Corporation Stop: Ford FB 1000-4- 1"
3. Service tubing: Type K copper - soft - 1"
4. Meter box valve: 4 = Ford Angle Stop - BA-13-342W - 1" 4A = Ford Straight Stop - B11-444W - 1"
5. Ball valve
6. Meter box and lid: Old Castle meter box, CI lid with Reader #36

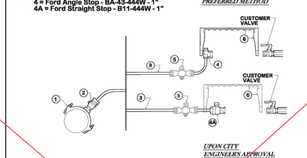


CITY OF COLLEGE STATION
STRAIGHT OR ANGLE TAP - 3/4"

W7-00

NOTES:

1. Service saddle and CC threads installed per manufacturer's recommendations. All main types: Ford S70/S90
2. Corporation Stop: Ford FB 1000-4- 1"
3. Service tubing: Type K copper - soft - 1"
4. Meter box valve: 4 = Ford Angle Stop - BA-43-444W - 1" 4A = Ford Straight Stop - B11-444W - 1"
5. Ball valve
6. Meter box and lid: Old Castle meter box, CI lid with Reader #36

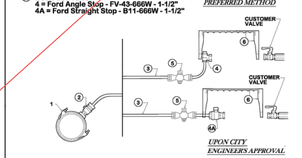


CITY OF COLLEGE STATION
STRAIGHT OR ANGLE TAP - 1"

W7-01

NOTES:

1. Service saddle and CC threads installed per manufacturer's recommendations. All main types: Ford S70/S90
2. Corporation Stop: Ford FB 1000-6- 1-1/2"
3. Service tubing: Type K copper - soft - 1-1/2"
4. Meter box valve: 4 = Ford Angle Stop - FV-43-666W - 1-1/2" 4A = Ford Straight Stop - B11-666W - 1-1/2"
5. Ball valve
6. Meter box and lid: Old Castle meter box, CI lid with Reader #65

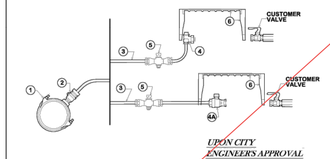


CITY OF COLLEGE STATION
STRAIGHT OR ANGLE TAP - 1-1/2"

W7-02

NOTES:

1. Service saddle and CC threads installed per manufacturer's recommendations. All main types: Ford S70/S90
2. Corporation Stop: Ford FB 1000-7 (cc thread) - 2"
3. Service tubing: Type K copper - soft - 2"
4. Meter box valve: 4 = Ford Angle Stop - FV-43-777W - 2" 4A = Ford Straight Stop - B11-777W - 2"
5. Ball valve
6. Meter box and lid: Old Castle meter box, CI lid with Reader #65



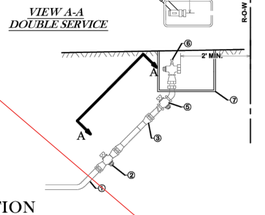
CITY OF COLLEGE STATION
STRAIGHT OR ANGLE TAP - 2"

W7-03

NOTES:

- ALL CONNECTIONS TO BE COMPRESSION TYPE.
- MATERIAL USED SHALL BE AS SPECIFIED OR AN APPROVED EQUAL.
- ALL SERVICE WYES & EXTENSIONS ARE TO BE INSTALLED WITH THE MAIN LINE CONSTRUCTION.

1. Service Tubing: Type K Copper - cu - soft - 1.50"
2. Ford Ball Valve - B44-666-NL- 1.50"
3. Ford "Y" Branch - Y44-264-NL- 1.50" x 1" x 1"
4. Service Tubing: Type K Copper - soft - 1"
5. Ford Ball Valve - B44-444-NL - 1"
6. Ford Angle Stop KV43-332W-NL - 1" x 0.75 Meter Nut Swivel
7. Concrete Meter Box - Provided by COCS



CITY OF COLLEGE STATION
DOUBLE WATER SERVICE RECONNECTION

W7-04

REVISIONS:

7/1/2016 - Details W6-00 thru W6-04 Accepted for use by COB

BRYAN - COLLEGE STATION
STANDARD WATER DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY:
DATE:
SCALE:
APPROVED:

W2

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STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL 2026
Designed By: JTB
Drawn By: PJSB
Checked By: JTB

Prepared For:
TEPPLE PARTNERS, INC.
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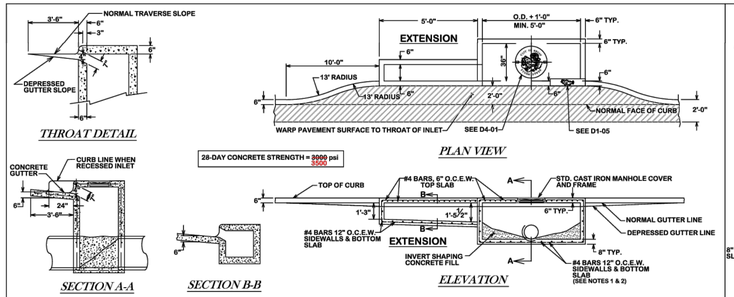
Revisions

B/CS STANDARD WATER DETAILS -2
BRAZOS OAKS PHASE II

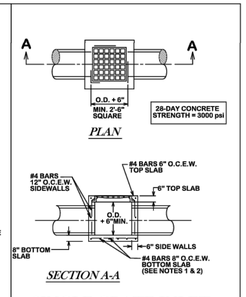
C-503

E.L.
APR 2024
SITE
W.P.#.



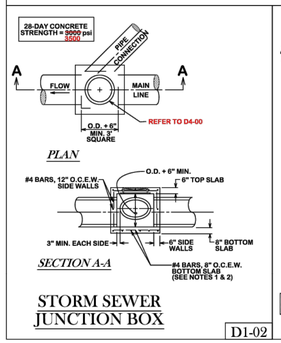
SINGLE RECESSED CURB INLET & CURB INLET W/EXTENSION

D1-00



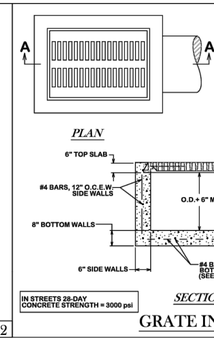
SINGLE GRATE INLET

D1-01



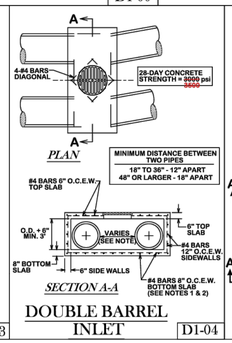
STORM SEWER JUNCTION BOX

D1-02



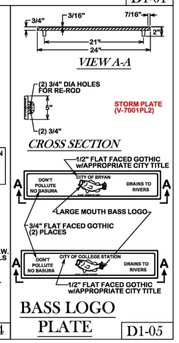
GRATE INLET

D1-03



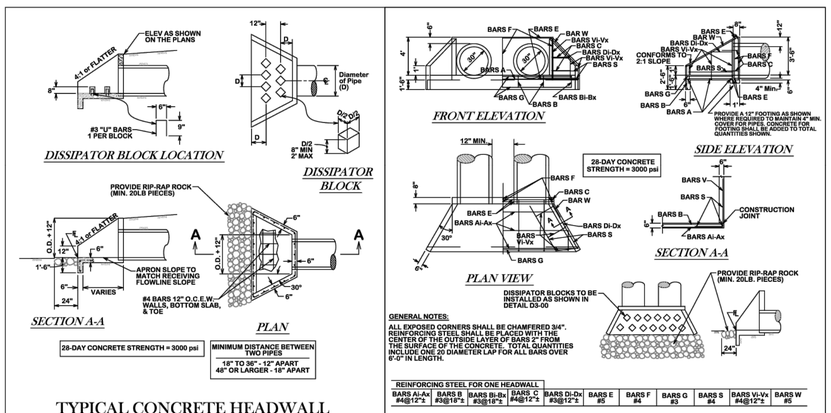
DOUBLE BARREL INLET

D1-04



BASS LOGO PLATE

D1-05



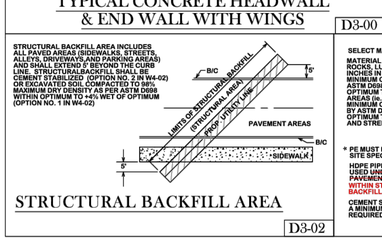
TYPICAL CONCRETE HEADWALL & END WALL WITH WINGS

D3-00

BARS Ai-Ax	BARS B	BARS Bi-Bx	BARS C	BARS Di-Dx	BARS E	BARS F	BARS G	BARS S	BARS Vi-Vx	BARS W
#4@12"±	#3@18"±	#3@18"±	#4@12"±	#3@12"±	#5	#4	#3	#4	#4@12"±	#5

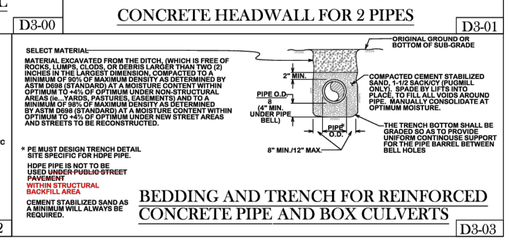
CONCRETE HEADWALL FOR 2 PIPES

D3-01



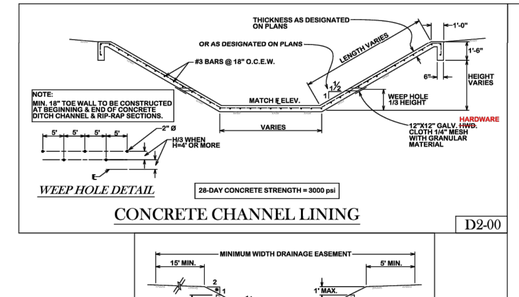
STRUCTURAL BACKFILL AREA

D3-02



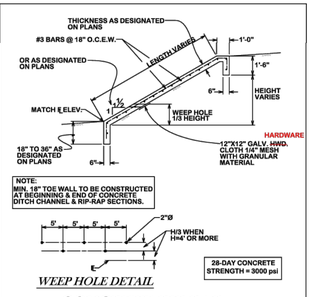
BEDDING AND TRENCH FOR REINFORCED CONCRETE PIPE AND BOX CULVERTS

D3-03



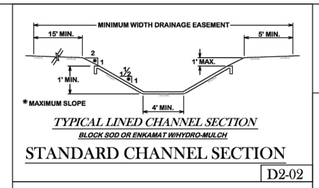
CONCRETE CHANNEL LINING

D2-00



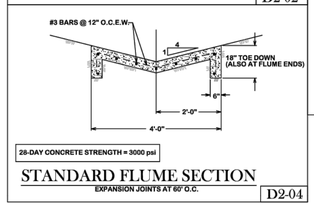
CONCRETE RIP-RAP

D2-01



STANDARD CHANNEL SECTION

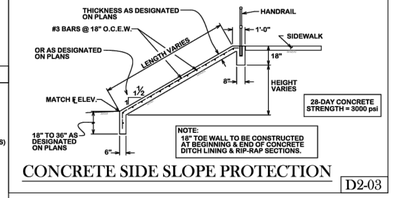
D2-02



STANDARD FLUME SECTION

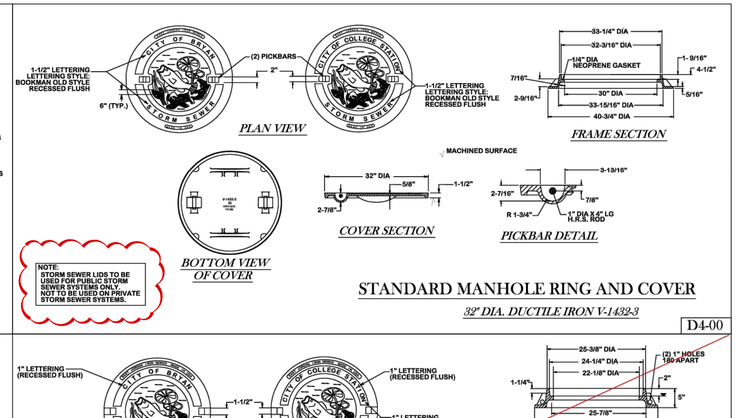
EXPANSION JOINTS AT 60' O.C.

D2-04



CONCRETE SIDE SLOPE PROTECTION

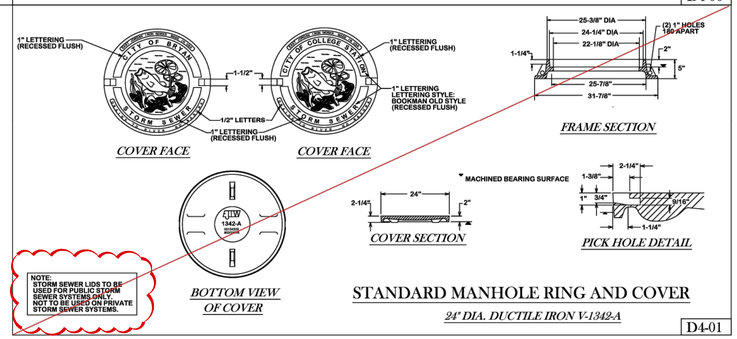
D2-03



STANDARD MANHOLE RING AND COVER

32" DIA. DUCTILE IRON V-1432-3

D4-00



STANDARD MANHOLE RING AND COVER

24" DIA. DUCTILE IRON V-1342-A

D4-01

REVISIONS:

BRYAN - COLLEGE STATION STANDARD DRAINAGE DETAILS

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www.mitchellandmorgan.com

STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL, 2026
Designed By: JTB
Drawn By: JTB
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
STE A134
AUSTIN, TX 78746
512.329.5755

Revisions

CITY OF COLLEGE STATION

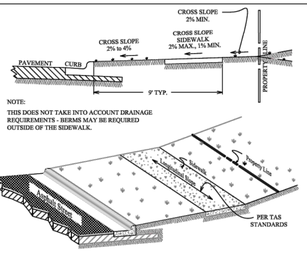
CITY OF BRYAN
The Good Life, Texas Style.

B/CS STANDARD DRAINAGE DETAILS
BRAZOS OAKS PHASE II

DRAWN BY: B.I.
DATE: 12-2020
SCALE: N T S
APPROVED: W. P. K.

FIGURE:
D
SHEET 1 OF 1

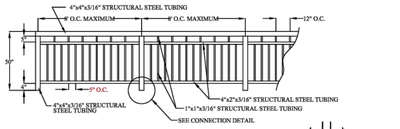
C-504



NOTE:
THIS DOES NOT TAKE INTO ACCOUNT DRAINAGE REQUIREMENTS - BERMS MAY BE REQUIRED OUTSIDE OF THE SIDEWALK.

SIDEWALK SLOPE REQUIREMENTS

SW1-00



TYPICAL PEDESTRIAN GUARDRAIL

CONNECTION DETAIL

SW1-01

GENERAL NOTES:

ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN BARED BY CONSTRUCTION SHALL BE ADEQUATELY BLOCK SODDED OR HYDROMULCHED AND WATERED UNTIL GROWTH IS ESTABLISHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE SEEDED OR SODDED WITHIN 14 CALENDAR DAYS OF LAST DISTURBANCE.

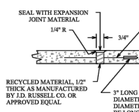
APPROVED EROSION CONTROL MEASURES MUST BE INSTALLED DURING THE ENTIRE TIME THAT EARTH HAS BEEN BARED BY CONSTRUCTION AND SHALL STAY IN PLACE UNTIL ACCEPTABLE VEGETATIVE GROWTH IS ESTABLISHED AFTER CONSTRUCTION IS COMPLETE AND THEN REMOVED BY CONTRACTOR.

ALL EROSION CONTROL MEASURES SHOULD BE CLEANED OF SILT AFTER EVERY RAIN.

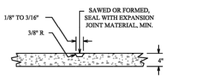
ALL TRAFFIC SIGNALS AND APPURTENANCES, AND ALL PAVEMENT MARKINGS AND MARKERS SHALL BE IN ACCORDANCE WITH TXDOT STANDARDS

REFER TO SPEC 31 17 23.23 (PAVEMENT MARKINGS) FOR ADDITIONAL LOCAL REQUIREMENTS.

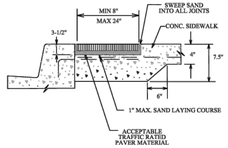
NOTES:
1. SIDEWALK PLACEMENT SHALL BE IN ACCORDANCE WITH B/CS UNIFIED DESIGN GUIDELINES.
2. FINISH: LIGHT BROOM FINISH. JOINTS TO BE TOOLED 1" DEEP AT AN INTERVAL EQUAL TO THE SIDEWALK WIDTH. EXPANSION JOINTS @ 40' O.C.,CONTRACTION JOINTS @ 4' O.C.
3. DOWEL IN AND TIE TO ANY CONCRETE STRUCTURE ADJACENT TO SIDEWALK (DRIVEWAY, INLET BOX, CURB, JUNCTION BOX, ETC.) WITH #3 x 12" BARS @ 12" O.C. OR #4 x 12" BARS @ 18" O.C.
4. COMPACTION: COMPACTED SUBGRADE MATERIAL COMPACTED TO A DENSITY AT LEAST 98% OF MAXIMUM DRY DENSITY AS DETERMINED BY PROCTOR COMPACTION TEST ASTM D698 (STANDARD) AND SHALL BE 0-4% WET OF THE OPTIMUM MOISTURE CONTENT
5. A MINIMUM CLEAR PEDESTRIAN WIDTH AS DEFINED BY TAS AND ADA SHALL BE PROVIDED FOR ENTIRE LENGTH OF SIDEWALK.



SIDEWALK EXPANSION & CONSTRUCTION JOINT

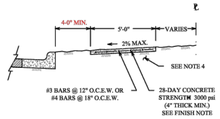


SIDEWALK CONTRACTION JOINT

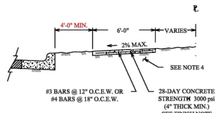


SIDEWALK PAVER SECTION

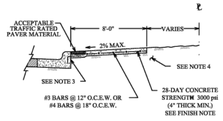
CONCRETE SIDEWALK



ALONG LOCAL STREETS

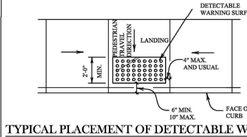


ALONG MINOR COLLECTORS AND LARGER



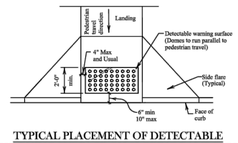
ALONG MINOR COLLECTORS AND LARGER

SW1-02



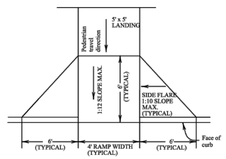
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE

SW2-00



TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN

SW2-01



TYPICAL AMBULATORY RAMP W/ FLARED WINGS

SW2-02

DETECTABLE WARNINGS GENERAL NOTES

1. CURB RAMPS MUST CONTAIN A DETECTABLE WARNING SURFACE THAT CONSISTS OF RAISED TRUNCATED DOMES COMPLYING WITH SECTION 4.29 OF THE TEXAS ACCESSIBILITY STANDARDS (TAS). THE SURFACE MUST CONTRAST VISUALLY WITH ADJOINING SURFACES, INCLUDING SIDE FLARES. FURNISH DARK BROWN OR DARK RED DETECTABLE WARNING SURFACE ADJACENT TO UNCOLORED CONCRETE, UNLESS SPECIFIED ELSEWHERE IN THE PLANS.
2. DETECTABLE WARNING SURFACES MUST BE SLIP RESISTANT AND NOT ALLOW WATER TO ACCUMULATE.
3. ALIGN TRUNCATED DOMES IN THE DIRECTION OF PEDESTRIAN TRAVEL WHEN ENTERING THE STREET.
4. SHADED AREAS ON SHEETS 3 AND 4 INDICATE THE APPROXIMATE LOCATION FOR THE DETECABLE WARNING SURFACE FOR EACH CURB RAMP TYPE.
5. DETECTABLE WARNING SURFACES SHALL BE A MINIMUM OF 24" IN DEPTH IN THE DIRECTION OF PEDESTRIAN TRAVEL, AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR LANDING WHERE THE PEDESTRIAN ACCESS ROUTE ENTERS THE STREET.
6. DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS A MINIMUM OF 6" AND A MAXIMUM OF 10" FROM THE EXTENSION OF THE FACE OF CURB. DETECTABLE WARNING SURFACES MAY BE CURVED ALONG THE CORNER RADIUS.
7. ACCEPTABLE PAVER MATERIAL SHALL BE CLAY, VITRIFIED POLYMER COMPOSITE, PRECAST POLYMER CONCRETE, AND CONCRETE.

SW2-GN00

CROSSWALKS GENERAL NOTES

1. CROSSWALK MARKINGS ARE IMPORTANT TRAFFIC CONTROL DEVICES AT CONTROLLED INTERSECTIONS. THESE DEVICES IDENTIFY THE APPROPRIATE LOCATION FOR PEDESTRIANS TO CROSS THE INTERSECTION AS WELL AS INFORMING DRIVERS WHERE PEDESTRIANS MAYBE PRESENT. NOT ALL LOCATIONS NEED THE CROSSWALKS MARKED; HOWEVER, TYPICALLY COLLECTOR AND ARTERIAL STREETS DO. AS STATED IN THE TMUTCD, AN ENGINEERING STUDY SHOULD BE PERFORMED BEFORE CROSSWALKS ARE INSTALLED AT LOCATIONS OTHER THAN CONTROLLED INTERSECTIONS.
2. THE CITY OF BRYAN'S PREFERENCE FOR MARKING CROSSWALKS IS THE LONGITUDINAL (OR "LADDER" STYLE). THE CITY OF COLLEGE STATION'S PREFERENCE IS THE TYPICAL "TRANSVERSE" STYLE; HOWEVER, IN THE NORTHGATE AREA, ADJACENT TO SCHOOL OR SCHOOL ZONES, AND OTHER HIGH PEDESTRIAN CROSSINGS, THE LONGITUDINAL (OR "LADDER" STYLE) IS PREFERRED. DEVIATION FROM THESE PREFERENCES WILL BE ALLOWED ONLY WITH THE APPROVAL OF THE CITY ENGINEER.
3. THE LONGITUDINAL "LADDER" STYLE MARKING SHALL BE 24" WIDE AND 8 FEET IN LENGTH, SPACED 48-INCHES APART, CONSIST OF 12-INCH WIDE, WHITE LONGITUDINAL LINES SPACED 24-INCHES APART. LONGITUDINALLY, THESE MARKINGS SHALL EXTEND 8 FEET. THE TRANSVERSE MARKINGS SHALL CONSIST OF TWO 12-INCH WIDE LINES SEPARATED BY 8 FEET OF UNMARKED PAVEMENT. ALL CROSSWALK PAVEMENT MARKINGS SHALL ALWAYS MEET TxDOT'S SPECIFICATION FOR TYPE I MARKINGS UNLESS OTHERWISE BE THERMOPLASTIC, UNLESS A DIFFERENT MATERIAL IS APPROVED BY THE CITY ENGINEER.
4. ADDITIONAL INFORMATION ABOUT CROSSWALK MARKINGS CAN BE FOUND IN THE TMUTCD.
5. CROSSWALKS WITH BRICK PAVERS, STAMPED ASPHALT, STAMPED CONCRETE, ETC., SHALL ALSO REQUIRE RETRO-REFLECTIVE, THERMOPLASTIC TRANSVERSE STRIPING.

SW2-GN01

PEDESTRIAN FACILITIES GENERAL NOTES

1. ALL SLOPES ARE MAXIMUM ALLOWABLE. THE LEAST POSSIBLE SLOPE THAT WILL DRAIN PROPERLY SHOULD BE USED. ADJUST CURB RAMP LENGTH OR GRADE AS NECESSARY WHERE SIDEWALKS AS DIRECTED.
2. LANDINGS SHALL BE A 5' X 5' MINIMUM WITH A MAXIMUM OF A 2% SLOPE IN ANY DIRECTION.
3. MANEUVERING SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 4' X 4' WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
4. MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND CURB RAMP IS 2%.
5. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP, EITHER BECAUSE THE ADJACENT SURFACE IS PLANTING OR OTHER NON-WALKING SURFACE OR BECAUSE THE SIDE APPROACH IS SUBSTANTIALLY OBSTRUCTED. OTHERWISE, PROVIDE FLARED SIDES.
6. ADDITIONAL INFORMATION ON CURB RAMP LOCATION, DESIGN, LIGHT REFLECTIVE VALUE AND TEXTURE MAY BE FOUND IN THE CURRENT EDITION OF THE TEXAS ACCESSIBILITY STANDARDS (TAS) AND IN TAC 68.102.
7. TO SERVE AS A PEDESTRIAN REFUGE AREA, THE MEDIAN SHOULD BE A MINIMUM OF 5' WIDE. MEDIANS SHOULD BE DESIGNED TO PROVIDE ACCESSIBLE PASSAGE OVER OR THROUGH THEM.
8. CROSSWALK DIMENSIONS, CROSSWALK MARKINGS AND STOP BAR LOCATIONS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS. AT INTERSECTIONS WHERE CROSSWALK MARKINGS ARE NOT REQUIRED, CURB RAMPS SHALL BE ALIGNED WITH THEORETICAL CROSSWALKS, OR AS DIRECTED BY THE ENGINEER.
9. EXISTING FEATURES THAT COMPLY WITH TAS MAY REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS.
10. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS. PROVIDE CURB RAMPS WHERESVER ON ACCESSIBLE ROUTE CROSSES (PENETRATES) A CURB.
11. SEPARATE CURB RAMP AND LANDINGS FROM ADJACENT SIDEWALK AND ANY OTHER ELEMENTS WITH PREMOLD OR BOARD JOINT OF 3/4" UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
12. PROVIDE A SMOOTH TRANSITION WHERE THE CURB RAMPS CONNECT TO THE STREET.
13. FLARE SLOPE SHALL NOT EXCEED 10% MEASURED ALONG CURB LINE.

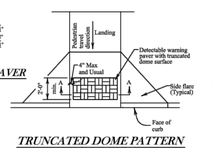
SW2-GN02

DETECTABLE WARNING PAVER

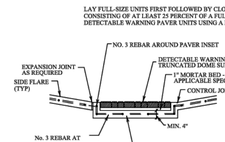
GENERAL NOTES (PAVERS)

FURNISH DETECTABLE WARNING PAVER UNITS MEETING ALL REQUIREMENTS OF ASTM C-936, C-33. LAY IN A TWO BY TWO UNIT BASKET WEAVE PATTERN OR AS DIRECTED.

LAY FULL SIZE UNITS FIRST FOLLOWED BY CLOSURE UNITS CONSISTING OF AT LEAST 25 PERCENT OF A FULL UNIT. CUT DETECTABLE WARNING PAVER UNITS USING A POWER SAW.



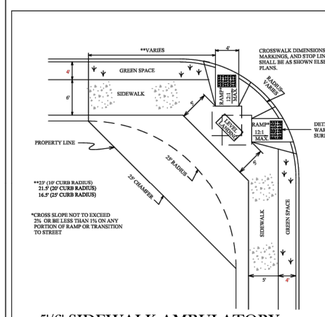
TRUNCATED DOME PATTERN CURB RAMP



SECTION A-A

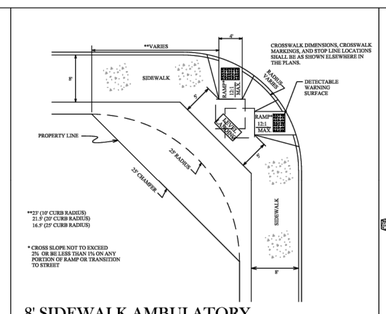
DETECTABLE WARNING PAVER

SW2-03



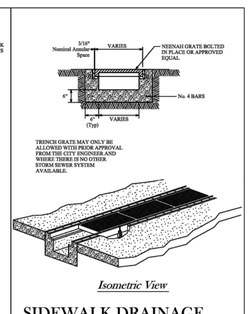
5'/6' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION

SW3-00



8' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION

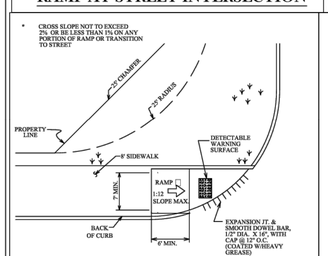
SW3-01



Isometric View

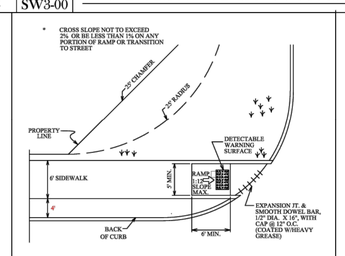
SIDEWALK DRAINAGE TRENCH GRATE

SW3-02



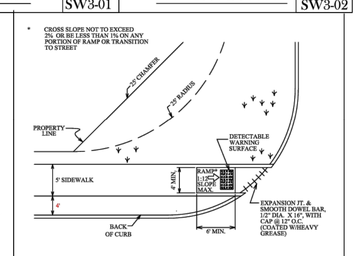
8' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION & DRIVES

SW3-03



6' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION & DRIVES

SW3-04



5' SIDEWALK AMBULATORY RAMP AT STREET INTERSECTION & DRIVES

SW3-05

REVISIONS:

BRYAN - COLLEGE STATION STANDARD SIDEWALK DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY:	B.L
DATE:	12/2020
SCALE:	NTS
APPROVED:	W. P. K.

FIGURE:
SW1
SHEET 1 OF 1

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STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED
PROFESSIONAL ENGINEER
on MAY 6, 2026

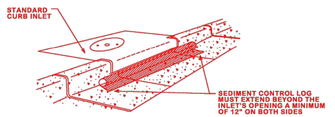
Prepared For:
TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
STE A134
AUSTIN, TX 78746
512.329.5755

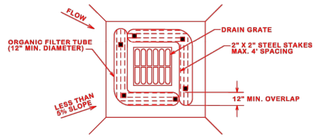
APRIL 2026
Designed By: PJSB
Drawn By: PJSB
Checked By: JTB

Revisions

B/CS STANDARD SIDEWALK DETAILS
BRAZOS OAKS PHASE II

C-505





NOTE:
TEMPORARY DEVICES AROUND STORMS DRAINS ARE USED TO DETAIN AND/OR FILTER SEDIMENT-LADEN RUNOFF. THE PROTECTION ALLOWS SEDIMENT TO SETTLE PRIOR TO DISCHARGE INTO A STORM DRAIN INLET OR CATCH BASIN.

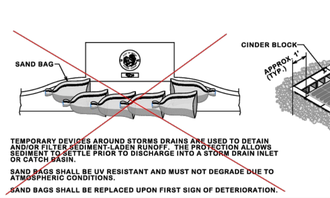
SEDIMENT CONTROL LOGS ARE TO BE USED ON EXISTING CURB INLETS WHICH ARE LOCATED ADJACENT TO OCCUPIED TRAVEL LANES WITHIN THE DISTURBED LIMITS OF A PROJECT AS SHOWN ON THE PLANS.

SEDIMENT CONTROL LOGS ARE TO BE INSTALLED AND MAINTAINED PER THE MANUFACTURER'S INSTRUCTIONS AND PROPERLY WEIGHTED IN ORDER TO REMAIN SECURELY IN PLACE. INSTALLATION MUST MEET THE CONSTRUCTION INSPECTOR'S APPROVAL.

SEDIMENT CONTROL LOGS ARE TO BE CONSTRUCTED OF WOOD FIBERS, SYNTHETIC FIBERS OR OTHER SUITABLE MATERIAL SUFFICIENT TO RETAIN ITS SHAPE AND ENCASED IN A UV STABILIZED FILTERING MEDIA OF SUFFICIENT STRENGTH TO RETAIN SEDIMENT.

SEDIMENT CONTROL LOGS ARE TO BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

SAND BAGS SHALL NOT BE USED.



TEMPORARY DEVICES AROUND STORMS DRAINS ARE USED TO DETAIN AND/OR FILTER SEDIMENT-LADEN RUNOFF. THE PROTECTION ALLOWS SEDIMENT TO SETTLE PRIOR TO DISCHARGE INTO A STORM DRAIN INLET OR CATCH BASIN.

SAND BAGS SHALL BE UV RESISTANT AND MUST NOT DEGRADE DUE TO ATMOSPHERIC CONDITIONS.

SAND BAGS SHALL BE REPLACED UPON FIRST SIGN OF DETERIORATION.

STORM DRAIN INLET PROTECTION

SWPP1-00

NOTE:
POST A SIGN READING "CONCRETE WASH OUT PIT" NEXT TO THE PIT.

VERBALLY INSTRUCT THE CONCRETE TRUCK DRIVERS WHERE THE PIT IS AND TO WASH OUT THEIR TRUCKS IN THE PIT AND NO WHERE ELSE.

NO WASHING OUT OF CONCRETE TRUCKS OR WASHING OF SWEEPINGS FROM EXPOSED AGGREGATE CONCRETE INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS IS ALLOWED.

EXCESS CONCRETE IS NOT ALLOWED TO BE DUMPED ON-SITE, EXCEPT IN DESIGNATED TEMPORARY CONCRETE WASHOUT PIT AREAS.

ON-SITE TEMPORARY CONCRETE WASHOUT AREAS WILL BE LOCATED AT LEAST 50 FEET AWAY FROM STORM DRAIN INLETS, DITCHES, OR WATER BODIES AS DETERMINED IN THE FIELD.

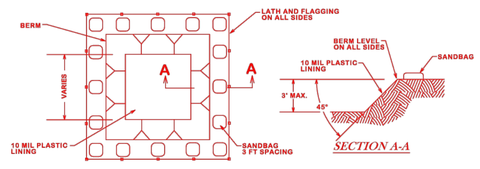
TEMPORARY CONCRETE WASHOUT FACILITIES WILL BE CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

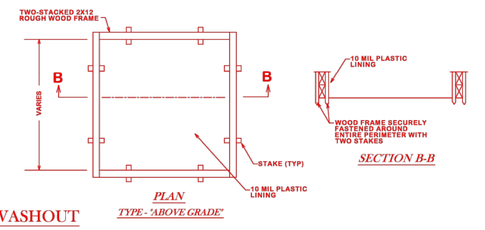
WASHOUT FACILITIES WILL BE CLEANED OUT OR REPLACED ONCE THE WASHOUT IS 75% FULL.

PLASTIC LINING MATERIAL WIL BE MINIMUM OF 10 MIL POLYETHYLENE SHEETING AND WILL BE FREE OF HOLES, TEARS, OR OTHER DEFECTS.

WHEN WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR WORK, THE HARDENED CONCRETE WILL BE REMOVED AND DISPOSED OF OFFSITE. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES WILL BE REMOVED FROM THE SITE AND DISPOSED OF. HOLES, DEPRESSIONS SHALL BE FILLED WITH CLEAN FILL MATERIAL AND COMPACTED TO IN-SITU CONDITIONS, OR AS DIRECTED BY THE PROJECT SPECIFICATIONS.

CONSTRUCT ENTRY ROAD AND BOTTOM OF WASHOUT AREA TO SUPPORT EXPECTED LOADINGS FROM TRUCK EQUIPMENT.

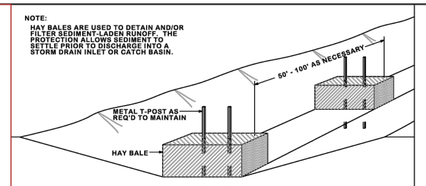




CONCRETE WASHOUT

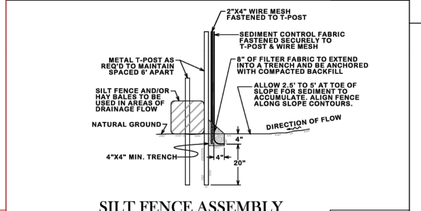
SWPP1-04

NOTE:
HAY BALES ARE USED TO DETAIN AND/OR FILTER SEDIMENT-LADEN RUNOFF. THE PROTECTION ALLOWS SEDIMENT TO SETTLE PRIOR TO DISCHARGE INTO A STORM DRAIN INLET OR CATCH BASIN.



EROSION CONTROL ALONG DITCH

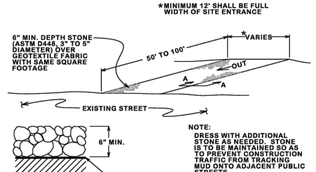
SWPP1-01



SILT FENCE ASSEMBLY

SWPP1-03

*MINIMUM 12' SHALL BE FULL WIDTH OF SITE ENTRANCE



NOTE:
DRESS WITH ADDITIONAL STONE AS NEEDED. STONE IS TO BE MAINTAINED SO AS TO PREVENT CONSTRUCTION TRAFFIC FROM TRACKING MUD ONTO ADJACENT PUBLIC STREETS.

CONSTRUCTION EXIT SILT CONTROL

SWPP1-02

GENERAL NOTES:

ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN BARED BY CONSTRUCTION SHALL BE ADEQUATELY BLOCK SODDED OR HYDROMULCHED AND WATERED UNTIL GROWTH IS ESTABLISHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE BLOCK SODDED WITHIN 14 CALENDAR DAYS OF LAST DISTURBANCE.

APPROVED EROSION CONTROL MEASURES MUST BE INSTALLED DURING THE ENTIRE TIME THAT EARTH HAS BEEN BARED BY CONSTRUCTION AND SHALL STAY IN PLACE UNTIL ACCEPTABLE VEGETATIVE GROWTH IS ESTABLISHED AFTER CONSTRUCTION IS COMPLETE AND THEN REMOVED BY CONTRACTOR.

ALL EROSION CONTROL MEASURES SHOULD BE CLEANED OF SILT AFTER EVERY RAIN.

REVISIONS:

BRYAN - COLLEGE STATION STANDARD STORM WATER POLLUTION PREVENTION DETAILS

CITY OF COLLEGE STATION

CITY OF BRYAN
The Good Life, Texas Style.

DRAWN BY: B.I.
DATE: 12/2020
SCALE: N T S
APPROVED: W. P. K.

FIGURE:
SWPP
SHEET 1 OF 1

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STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL 2026
Designed By: JTB
Drawn By: RC/JSB
Checked By: JTB

Prepared For:
TEEPLE PARTNERS, INC.
1302 S CAPITAL OF TEXAS HWY
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Revisions

B/CS STANDARD STORM WATER POLLUTION PREVENTION DETAILS
BRAZOS OAKS PHASE II

C-506

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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per Ft of wing length (2-wings) ② Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#3	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING (2-wings)

Bar	Size	No.	Spa
DL	#5	–	1'-0"
DS	#5	–	1'-0"
E	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	4	–
M	#4	4	–
P	#4	–	1'-0"
RS	#5	3	–
RL	#5	3	–
V	#4	–	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	–	1'-0"
Q	#4	1	–
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)

Hw = H + T + C – 0.250
A = (Hw – 0.333‘(SL)
B = (A) tangent (θ x 15°))
Lw = (A) ÷ (cosine (θ x 15°))

For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U) + cosine θ

For precast culverts:
Ltw = (N) (2U + S) + (N – 1) (0.5)] + cosine θ

Total wingwall area (two wings – SF) = 0.5 (Hw + 0.333) (Lw + A)

Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
A = Length of short wingwalls
Lw = Length of long wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
θ = Culvert skew

See applicable box culvert standard sheet for H, S, T, and U values.

BARS DS (Short wing) — Skew; 2'-0"; 2'-0"
BARS DL (Long wing) — 2'-0"; 2'-0"; 15°
BARS RS (Short wing) — 2'-0"; 2'-0"
BARS RL (Long wing) — 2'-0"; 2'-0"; = 75° – skew

1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by 0.5 x (A + Lw).
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. Applicable values of skew are: 15°, 30°, and 45°.
8. Typical wingwall angle for all skews.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, 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.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

INSIDE ELEVATION — (Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)
PLAN — (Showing dimensions and 30° skew.)
SECTION A-A
WINGWALL
CORNER DETAILS — (Culvert and culvert toewall reinforcing not shown for clarity.)
FOOTING AND TOEWALL
SECTION B-B ③

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR SKEWED BOX CULVERTS

FW-S

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STATE OF TEXAS — JAMES T. BATENHORST — 93631 — LICENSED PROFESSIONAL ENGINEER — on MAY 6, 2026

APRIL 2026
Designed By: MJ/PSB
Detailed By: PSB
Checked By: JTB

Prepared For:
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Revisions

TxDOT RCB STANDARDS
BRAZOS OAKS PHASE II

C-507

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BOX DATA

SECTION DIMENSIONS S (Ft.)	H (Ft.)	TT (in.)	TB (in.)	TS (in.)	Fill Height (Ft.)	H Height (Min) (in.)	REINFORCING (sq. in. / ft.) ② AS1	AS2	AS3	AS4	AS5	AS7	AS8	① Lift Weight (tons)
6	2	8	7	7	< 2	–	0.23	0.27	0.19	0.17	0.19	0.19	0.17	7.2
6	2	7	7	7	2 < 3	43	0.20	0.25	0.21	0.17	–	–	–	6.8
6	2	7	7	7	3 - 5	43	0.20	0.17	0.17	0.17	–	–	–	6.8
6	2	7	7	7	10	39	0.20	0.17	0.17	0.17	–	–	–	6.8
6	2	7	7	7	15	39	0.26	0.20	0.20	0.17	–	–	–	6.8
6	2	7	7	7	20	39	0.34	0.26	0.26	0.17	–	–	–	6.8
6	2	7	7	7	25	39	0.43	0.32	0.32	0.17	–	–	–	6.8
6	2	7	7	7	30	39	0.52	0.38	0.39	0.17	–	–	–	6.8
6	3	8	7	7	< 2	–	0.20	0.31	0.22	0.17	0.19	0.19	0.17	7.9
6	3	7	7	7	2 < 3	43	0.17	0.24	0.19	0.17	–	–	–	7.5
6	3	7	7	7	3 - 5	39	0.17	0.18	0.17	0.17	–	–	–	7.5
6	3	7	7	7	10	39	0.17	0.18	0.19	0.17	–	–	–	7.5
6	3	7	7	7	15	38	0.22	0.24	0.24	0.17	–	–	–	7.5
6	3	7	7	7	20	38	0.28	0.31	0.31	0.17	–	–	–	7.5
6	3	7	7	7	25	38	0.35	0.38	0.39	0.17	–	–	–	7.5
6	3	7	7	7	30	38	0.42	0.46	0.46	0.17	–	–	–	7.5
6	4	8	7	7	< 2	–	0.19	0.34	0.25	0.17	0.19	0.19	0.17	8.6
6	4	7	7	7	2 < 3	43	0.19	0.27	0.21	0.17	–	–	–	8.2
6	4	7	7	7	3 - 5	39	0.17	0.21	0.19	0.17	–	–	–	8.2
6	4	7	7	7	10	39	0.17	0.20	0.21	0.17	–	–	–	8.2
6	4	7	7	7	15	38	0.18	0.27	0.27	0.17	–	–	–	8.2
6	4	7	7	7	20	38	0.24	0.34	0.35	0.17	–	–	–	8.2
6	4	7	7	7	25	38	0.29	0.43	0.42	0.17	–	–	–	8.2
6	4	7	7	7	30	38	0.35	0.51	0.52	0.17	–	–	–	8.2
6	5	8	7	7	< 2	–	0.19	0.37	0.28	0.17	0.19	0.19	0.17	9.3
6	5	7	7	7	2 < 3	43	0.17	0.30	0.24	0.17	–	–	–	8.9
6	5	7	7	7	3 - 5	43	0.17	0.23	0.21	0.17	–	–	–	8.9
6	5	7	7	7	10	39	0.17	0.22	0.23	0.17	–	–	–	8.9
6	5	7	7	7	15	38	0.17	0.28	0.29	0.17	–	–	–	8.9
6	5	7	7	7	20	38	0.20	0.37	0.38	0.17	–	–	–	8.9
6	5	7	7	7	25	38	0.25	0.45	0.46	0.17	–	–	–	8.9
6	5	7	7	7	30	38	0.30	0.54	0.55	0.17	–	–	–	8.9
6	6	8	7	7	< 2	–	0.19	0.38	0.30	0.17	0.19	0.19	0.17	10
6	6	7	7	7	2 < 3	52	0.17	0.32	0.26	0.17	–	–	–	9.6
6	6	7	7	7	3 - 5	52	0.17	0.24	0.22	0.17	–	–	–	9.6
6	6	7	7	7	10	43	0.17	0.23	0.24	0.17	–	–	–	9.6
6	6	7	7	7	15	39	0.17	0.29	0.31	0.17	–	–	–	9.6
6	6	7	7	7	20	39	0.18	0.38	0.39	0.17	–	–	–	9.6
6	6	7	7	7	25	38	0.23	0.46	0.48	0.17	–	–	–	9.6
6	6	7	7	7	30	38	0.27	0.55	0.57	0.17	–	–	–	9.6

① For box length = 8'-0"
② AS1 thru AS4, AS7 and AS8 are minimum required areas of reinforcement per linear foot of box length. AS5 is minimum required area of reinforcement per linear foot of box width.

CORNER OPTION "A" — CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER

SECTION A-A
(Showing top and bottom slab joint reinforcement.)

CORNER OPTION "A" — CORNER OPTION "B"

FILL HEIGHT LESS THAN 2 FT

④ Length is equal to spacing of longitudinal reinforcing plus 2". (10" Min) (Typ)

MATERIAL NOTES:
Provide 0.03 sq. in./ft. minimum longitudinal reinforcement at each face in slabs and walls. This minimum requirement may be met by the transverse wires when wire mesh reinforcement is used.
Provide Class H concrete (f'c = 5,000 psi).

GENERAL NOTES:
Designs shown conform to ASTM C1577. Refer to ASTM C1577 for information or details not shown.
See Box Culverts Precast Miscellaneous Details (SCP-MD) standard sheet for details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or stronger than the designs shown, as determined by the Engineer. Submit shop drawings for alternate design in accordance with Item "Precast Concrete Structural Members (Fabrication)."

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

SINGLE BOX CULVERTS PRECAST 6'-0" SPAN

SCP-6

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TABLE OF DIMENSIONS AND REINFORCING STEEL (Wings for one structure end)

Maximum Wingwall Height Hw	Dimensions W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per Ft of wing length (2-wings) ② Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#3	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING (2-wings)

Bar	Size	No.	Spa
D	#5	–	1'-0"
E	#4	–	1'-0"
F	#4	–	1'-0"
G	#6	4	–
M	#4	4	–
P	#4	–	1'-0"
R	#5	6	–
V	#4	–	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	–	1'-0"
Q	#4	1	–
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)
Hw = H + T + C – 0.250
A = (Hw – 0.333‘(SL)
B = (A) tangent (30°)
Lw = (A) ÷ cosine (30°)
For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)
For precast culverts:
Ltw = (N) (2U + S) + (N – 1) (0.5)
Total wingwall area (two wings – SF) = (Hw + 0.333) (Lw)
Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
A = Length of short wingwalls
Lw = Length of long wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

See applicable box culvert standard sheet for H, S, T, and U values.

BARS D — 2'-0"; 2'-0"; 30°
BARS R — 2'-0"; 2'-0"; 60°
BARS J1 — Length varies – Hw + 4" (Shortest); Y = 4"
BARS V — Length varies – Hw + 4" (Shortest); Z (Shortest)
BARS L — 2'-0"; 2'-0"
BARS J2 — W – 4"; Z – 2½"

1. Extend Bars P 3'-0" minimum into bottom slab of box culvert.
2. Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.
3. Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.
4. Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.
5. When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.
6. At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.
7. 0° Min to 5'-0° Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
8. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete, synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

INSIDE ELEVATION — (Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)
PLAN — (Showing dimensions.)
SECTION A-A
WINGWALL
CORNER DETAILS — (Culvert and culvert toewall reinforcing not shown for clarity.)
FOOTING AND TOEWALL
SECTION B-B ③

Texas Department of Transportation — Bridge Division Standard

CONCRETE WINGWALLS WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS

FW-0

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STATE OF TEXAS
JAMES T. BATENHORST
93631
LICENSED
PROFESSIONAL ENGINEER
on MAY 6, 2026

APRIL 2026
Designed By: JTB
Drawn By: MCJSB
Checked By: JTB

Prepared For:
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Revisions

TxDOT TRAFFIC CONTROL STANDARDS
BRAZOS OAKS PHASE II

C-508

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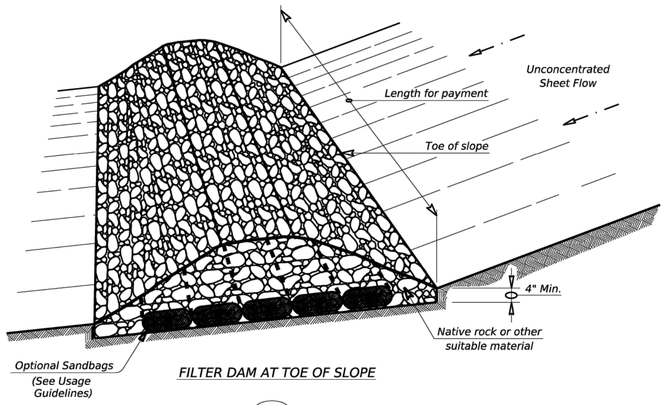
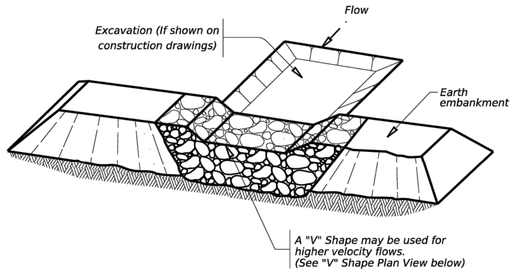


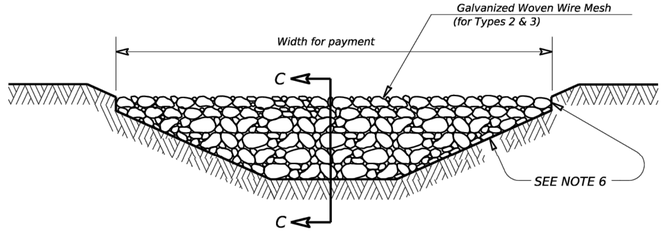
FILTER DAM AT TOE OF SLOPE

RFD1



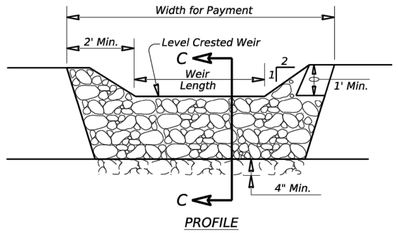
FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3



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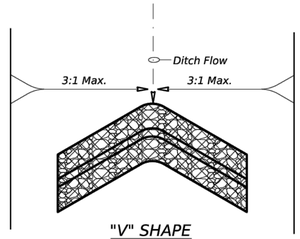
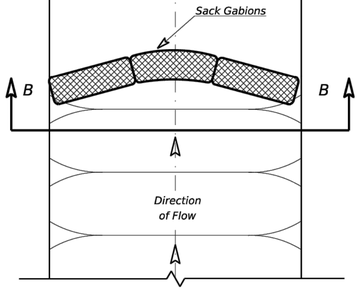
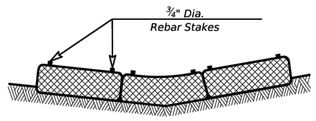


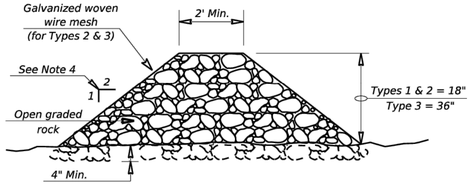
"V" SHAPE
PLAN VIEW



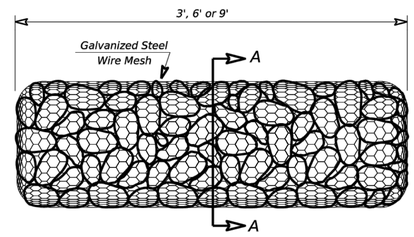
PLAN VIEW



SECTION B-B

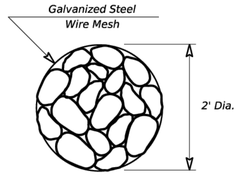


SECTION C-C



TYPE 4 (SACK GABIONS)

RFD4



SECTION A-A

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

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