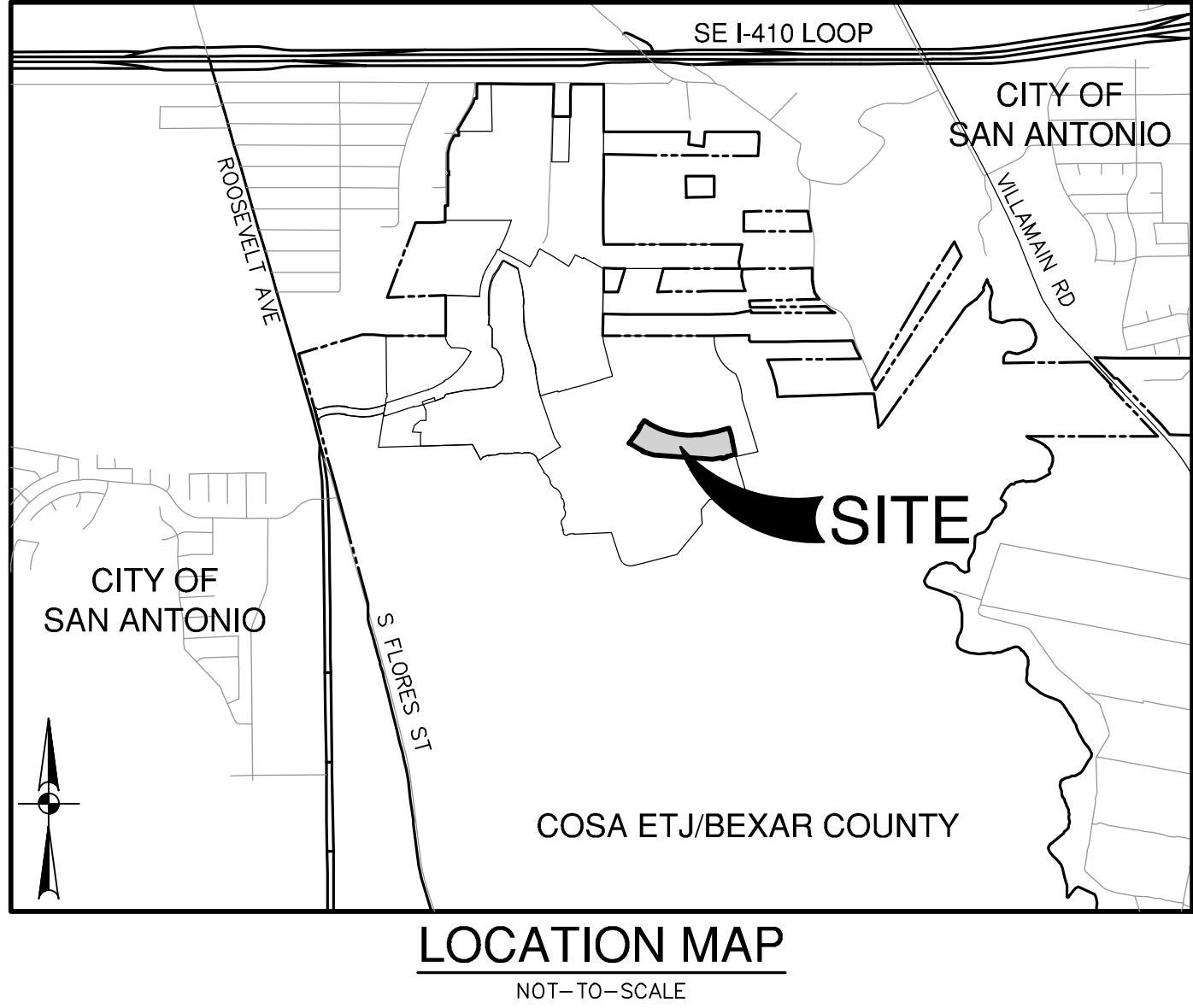


ESPADA TRACT UNIT 17

SAN ANTONIO, TEXAS

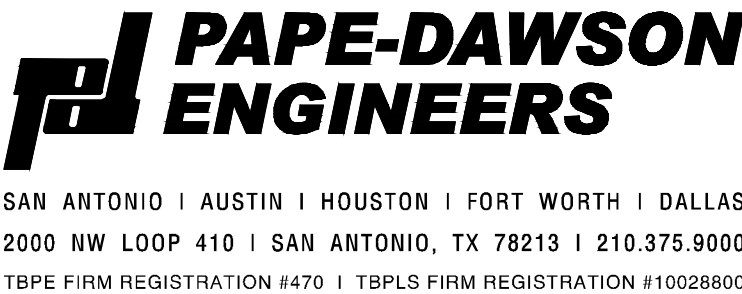
CIVIL CONSTRUCTION PLANS



PREPARED FOR:

LENNAR HOMES OF TEXAS  
100 NE LOOP 410, STE. 1155  
SAN ANTONIO TX, 78216

NOVEMBER 2023



WATER (SAWS PRESSURE ZONE 750)

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS	
ADDRESS: 100 NE LOOP 410, STE. 1155	
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200	FAX# N/A
SAWS BLOCK MAP# 172536 TOTAL EDU'S 75 TOTAL ACREAGE 11.73	
TOTAL LINEAR FOOTAGE OF PIPE: 3224.56 LF ~ 8" PVC PLAT NO. 23-1180384	
NUMBER OF LOTS 74	SAWS JOB NO. 23-1197

SALADO CREEK - SAN ANTONIO RIVER WATERSHED - DOS RIOS W.R.C.

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS	
ADDRESS: 100 NE LOOP 410, STE. 1155	
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200	FAX# N/A
SAWS BLOCK MAP# 172536 TOTAL EDU'S 74 TOTAL ACREAGE 11.73	
TOTAL LINEAR FOOTAGE OF PIPE: 1217.00 LF ~ 8" PVC PLAT NO. 23-11800384	
NUMBER OF LOTS 74	SAWS JOB NO. 23-1669

Sheet List Table

Sheet Number	Sheet Title
C0.00	COVER SHEET
C1.00	OVERALL DRAINAGE PLAN (ULTIMATE DEVELOPMENT)
C1.01	OVERALL DRAINAGE PLAN (PROPOSED DEVELOPMENT)
C1.02	DRAIN T1 PLAN & PROFILE (STA. 1+15.00 TO 1+43.80)
C2.00	AQUEDUCT CREEK PLAN & PROFILE (STA. 55+11.61 TO 64+00.00)
C2.01	AQUEDUCT CREEK PLAN & PROFILE (STA. 64+00.00 TO 68+81.66)
C2.02	CALABAZAS MANOR PLAN & PROFILE (STA. 1+15.03 - 2+47.88)
C2.03	ESPADA RIDGE PLAN & PROFILE (STA. 34+83.39 - 44+00.00)
C2.04	ESPADA RIDGE PLAN & PROFILE (STA. 44+00.00 TO 50+02.59)
C2.05	TYPICAL STREET DETAILS
C2.06	TYPICAL STREET DETAILS
C2.07	TYPICAL STREET DETAILS
C3.00	OVERALL SIGNAGE PLAN
C3.01	TxDOT SIGN MOUNTING DETAILS
C3.02	TxDOT SIGN MOUNTING DETAILS
C3.03	TxDOT SIGN MOUNTING DETAILS
C4.00	OVERALL WATER DISTRIBUTION PLAN
C4.01	OVERALL WATER DISTRIBUTION DETAILS
C4.02	OVERALL WATER DISTRIBUTION NOTES
C5.00	OVERALL SANITARY SEWER PLAN
C5.01	SS LINE EE PLAN & PROFILE (STA 1+00.00 - 10+00.00)
C5.02	SS LINE EE PLAN & PROFILE (STA 10+00.00 - END)
C5.03	SS LINE Y PLAN & PROFILE (STA 2+00.00 - 6+00.00)
C5.04	OVERALL SANITARY SEWER DETAILS
C5.05	OVERALL SANITARY SEWER NOTES
C6.00	OVERALL UTILITY PLAN
C7.00	OVERALL GRADING PLAN
C7.01	OVERALL GRADING PLAN
C8.00	STORM WATER POLLUTION PREVENTION PLAN
C8.01	STORM WATER POLLUTION PREVENTION PLAN
C8.02	STORM WATER POLLUTION PREVENTION DETAILS



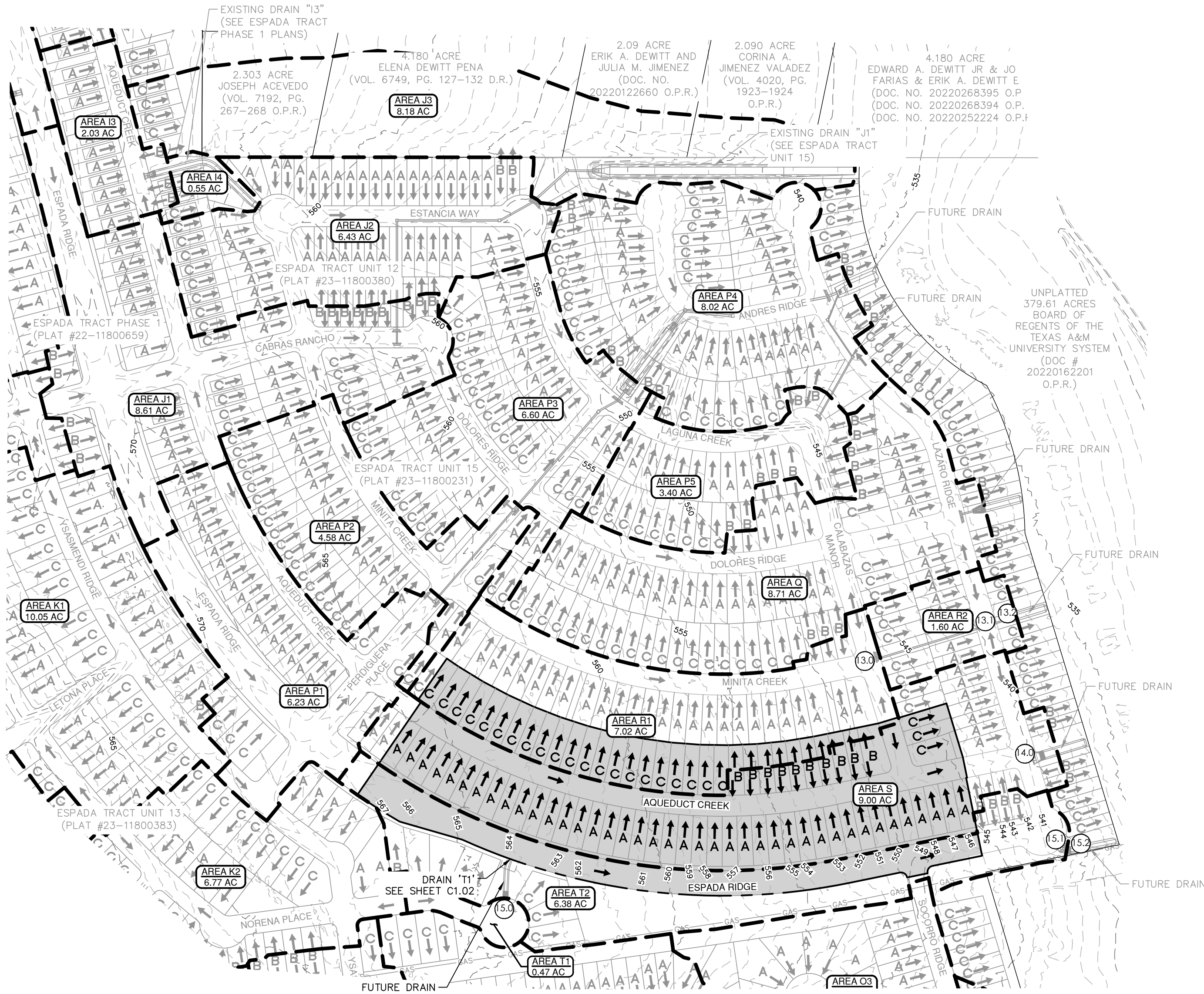
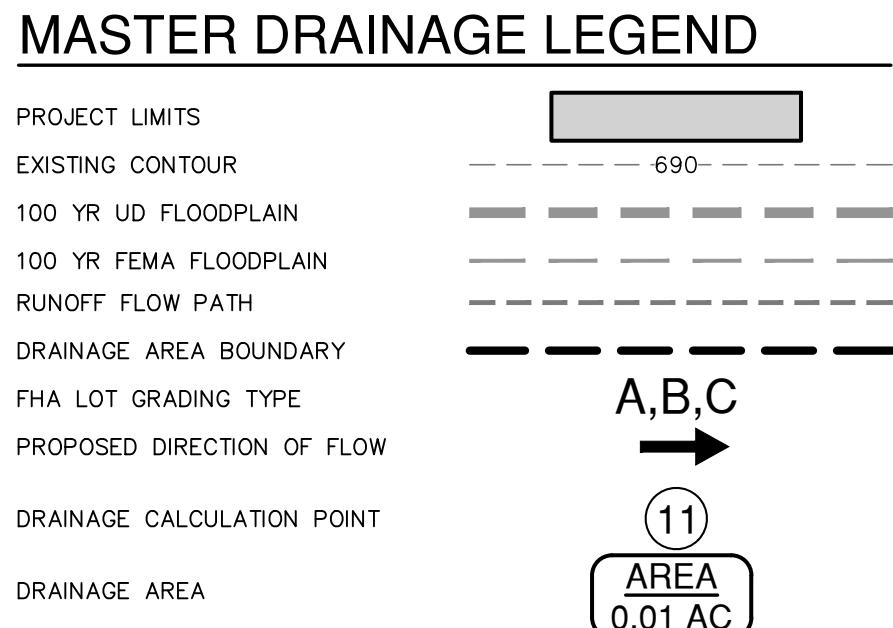
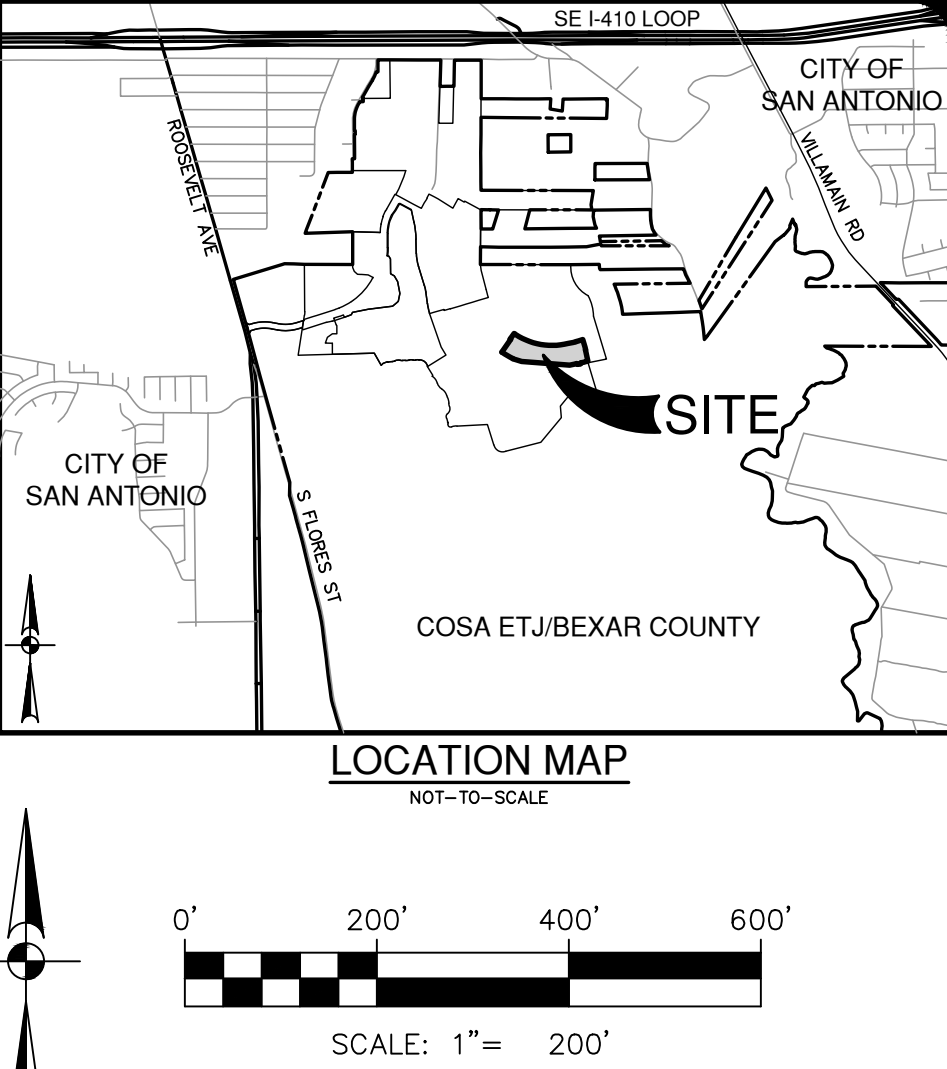
Master Drainage Plan Calculations																				
(Ultimate Development)																				
Ref. Point	Structure / Description	Drainage Areas			Total Flowpath (ft)	Overland/Sheet Flow (Seelye)			Shallow Concentrated Flow - 1**				Channelized Flow**			Tc-tot	Rational Method Q=CIA			
		#	Area (Ac)	C		L <sub>O</sub> (FT)	S <sub>O</sub> (ft/ft)	T <sub>O</sub> * (MIN)	L <sub>SC</sub> (FT)	Condition**	Slope (ft/ft)	V <sub>SC</sub> (FPS)	T <sub>SC</sub> ** (MIN)	L <sub>CH</sub> (FT)	V <sub>CH</sub> (FPS)		T <sub>CH</sub> ** (MIN)	IDF Curv	COSA A14 PA4	Q (cfs)
13.0	Future Drain R1	R1	7.02	0.77	1,255	100	0.02	13	150	U	0.02	2.3	1.1	1,005	6.0	2.8	16	5	5.06	27.4
13.1	Calculation Point	R2	1.60	0.77	385	100	0.01	15	160	U	0.01			125	6.0	0.3	16	25	6.99	37.8
																	16	100	8.71	47.1
																	16	5	5.06	6.2
																	16	25	6.99	8.6
13.2	Future Drain R1	R1+R2	8.62	0.77													16	100	8.71	10.7
																	5	-	-	
																	25	-	46.4	
																	100	-	57.8	
14.0	Future Drain S	S	9.00	0.77	1,725	100	0.02	13	40	U	0.02	2.3	0.3	1,585	6.0	4.4	17	5	4.91	34.0
15.0	Proposed Drain T1	T1	0.47	0.97	270	-	-	-	-	-	-	-	270	6.0	0.8	17	25	6.76	46.8	
																17	100	8.42	58.4	
																5	5	7.85	3.6	
																5	25	10.92	5.0	
15.1	Future Drain	T2	6.38	0.72	1,345	100	0.02	13	500	U	0.02	2.3	3.7	745	6.0	2.1	5	100	13.65	6.2
																	18	5	4.76	21.9
																	18	25	6.56	30.1
																	18	100	8.16	37.5
15.2	Future Drain	T1+T2	6.85	0.74	1,345	100	0.02	13	500	U	0.02	2.3	3.7	745	6.0	2.1	18	5	4.76	24.1
																	18	25	6.56	33.3
																	18	100	8.16	41.4

\*Seelye Chart or TR-55 Eqn. 3-3  
\*\*As Calculated using Mannings or TR-55 Figure 3-1 or 6 ft/s

$$T_o = \frac{(0.007(n+1)^{0.8})}{(P^{0.2}-S^{0.5})} + 60$$
$$v = \frac{k}{R^{2/3} S_o^{1/2}}$$
$$k = 1.486 \text{ ft}^{1/3}/\text{s}$$

S: For Streets: n = 0.018, R = 0.2 (Adapted from Mannings)  
P: For Paved: n = 0.025, R = 0.2  
U: For Unpaved: n = 0.05, R = 0.4  
D: For Default: v = 6 fps

Accumulated Flow Rates									
Ref. Point	Desc.	Return Year	Contributing Flow			Reference Sub-point			
			Upstream Watershed #	Upstream Surface Bypass	Upstream Pipe Flow	T	C	B	P
			#	Q <sub>WATERSHED</sub> (cfs)	Surf Byp. Upstream Ref. Point	Q <sub>SURF-UP</sub> (cfs)	Q <sub>PIPE-UP</sub> (cfs)	Q <sub>INLET-TO-BLL</sub> (cfs)	Q <sub>CAPTURED</sub> (cfs)
13.2	FUTURE DRAIN R1	5	6.2				27.4	6.2	6.2
		25	8.6		N/A	0.0	37.8	8.6	8.6
		100	10.7			0.0	47.1	10.7	10.7



DATE	
NO.	
REVISION	

**PAPE-DAWSON ENGINEERS**  
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

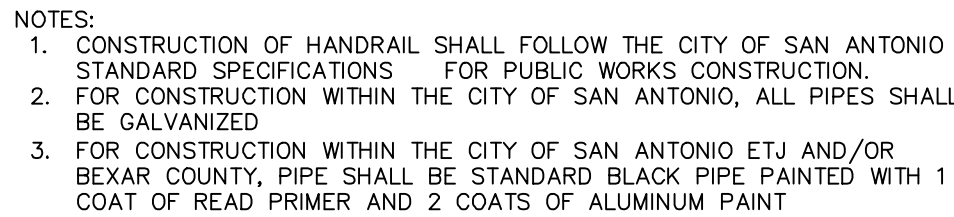
**ESPADA TRACT UNIT 17**  
SAN ANTONIO, TEXAS  
MASTER DRAINAGE PLAN (ULTIMATE DEVELOPMENT CONDITIONS)

PLAT NO.	23-11800384
JOB NO.	12632-17
DATE	NOVEMBER 2023
DESIGNER	BK
CHECKED	DW
DRAWN	AV
SHEET	C1.00









Technical drawing of a 3" DIA. PIPE with a 1/4" thick BUTT WELD. The drawing shows two views: one for slabs and one for vertical walls. Dimensions include 7/8" for the slab view, 2" for the vertical wall view, and 11" for the vertical wall view. The drawing also indicates that the weld is 1/16" thick and that the center is in the slab.



585

580

575

570

565

560

555

550

545

540

1+00

1+20

1+40

1+60

1+80

2+00

585

580

575

570

565

560

555

550

545

540

5.00 L.F. PIPE RAILING  
SEE DETAIL THIS SHEET

TOP OF REVERSE  
SIDEWALK BOX  
ELEV: ±564.14  
PAV: ±563.14  
TOP OF  
PAVEMENT

6.75 L.F. ~ 6"  
CONCRETE RIP-  
RAP @ 1.00%

2.00'  
MIN.

12.05 L.F. ~ EARTHEN  
CHANNEL @ 8.00%

10.00 L.F. ~ 6"  
CONCRETE RIP-  
RAP @ 1.00%

36" TOEDOWN  
ALL AROUND

PROPOSED TOP  
OF CHANNEL

EXISTING GROUND (LT)  
EXISTING GROUND (CL)  
EXISTING GROUND (RT)

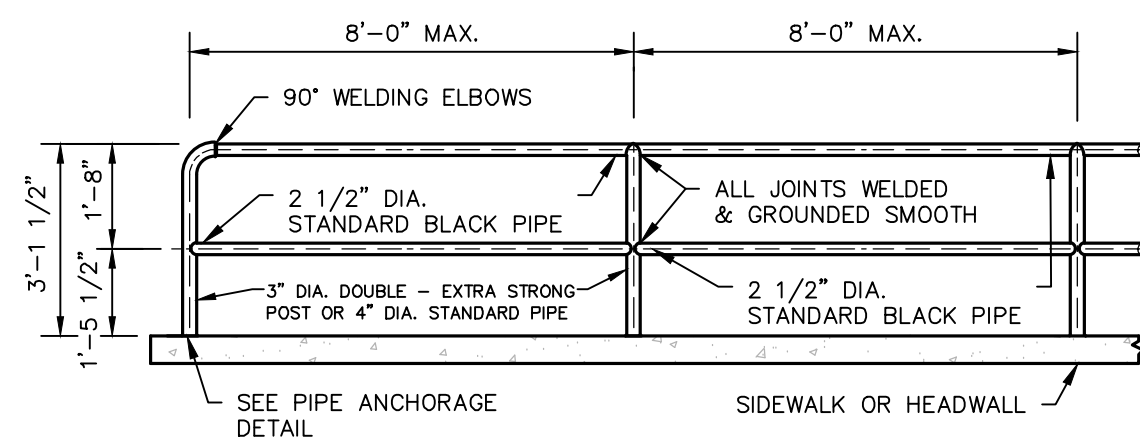
CHANNAL FLOW LINE

PROPOSED 8"  
WATER MAIN  
STA: 1+21.58  
ELEV: ±560.03

STA: 1+15.00  
BEGIN (1) 5' REVERSE  
SIDEWALK BOX  
STA: 1+21.75  
END (1) 5' REVERSE  
SIDEWALK BOX  
STA: 1+31.75  
END CONCRETE RIP-RAP  
STA: 1+43.80  
BEGIN TRANSITION TO  
EXISTING GROUND  
STA: 1+43.80  
END TRANSITION  
TO EXISTING GROUND  
END DRAIN "1"

PROPOSED  
DRAIN  
FLOWLINE

PROPOSED  
DRAIN  
FLOWLINE



NOTES:

1. FOR CONSTRUCTION WITHIN THE CITY OF SAN ANTONIO ETJ AND/OR BEXAR COUNTY, PIPE SHALL BE STANDARD BLACK PIPE PAINTED WITH 1 COAT OF READ PRIMER AND 2 COATS OF ALUMINUM PAINT

NOT-TO-SCALE



$Q_{25} = 5.0 \text{ CFS}$   
 $Q_{25} = CA\sqrt{2gn}$  (ORIFICE FLOW EQN.)  
 $A = L(0.50)$ ,  $h = 0.50$ ,  $g = 32.2$ ,  $c = 0.70$   

$$L = \frac{5.0 \text{ CFS}}{(0.7) (0.50)\sqrt{2 (32.2) (0.50)}}$$
  
 $L = 2.52 \text{ FT}$

1. A BEAR COUNTRY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEAR COUNTRY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN WITH THE CITY OF SAN ANTONIO. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING EXACT LOCATION OF ALL UTILITIES AND DRAINAGE STRUCTURES WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL UNCOVER ALL UTILITIES PRIOR TO CONSTRUCTION. TO VERIFY SIZE, GRADE, AND LOCATION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DEVIATIONS FROM PLANS PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SHOWING ON THE PLANS OR NOT, SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR, AT HIS EXPENSE.
3. ALL CONCRETE FOR TxDOT DRAINAGE STRUCTURES SHALL MEET TxDOT SPECIFICATIONS. ALL OTHER CONCRETE SHALL BE CLASS "A" 3000 PSI CYLINDER STRENGTH IN 28 DAYS.
4. REFERENCE DRAINAGE DETAILS FOR PIPE TRENCH DETAILS, BOX CULVERT, HEADWALL, AND MINGWALL CONSTRUCTION DETAILS, AND BOX CULVERT BEDDING AND EXCAVATION LIMITS.
5. CONTRACTOR SHALL GROUT ALL CURB INLETS AND JUNCTION BOXES TO PROVIDE FOR POSITIVE DRAINAGE.
6. EARTHEN CHANNELS WILL BE VEGETATED BY SEEDING OR SODDING 85% OF THE CHANNEL SURFACE MUST HAVE ESTABLISHED VEGETATION BEFORE THE CITY OF SAN ANTONIO WILL ACCEPT.
7. CONTRACTOR SHALL MATCH TOP OF CHANNEL TO NATURAL GROUND, AND CONTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL/SAFETY/STRUCTURAL/DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT'S PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND DOCUMENTS PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THE TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND DOCUMENTS PROCEDURES SHALL BE IN ACCORDANCE WITH THE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH THE MINIMUM OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IF PROJECT CONDITIONS WARRANT AND/OR CONTRACTOR'S PROJECT OR TRENCH ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

**CAUTION!!**

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ARCHITECT AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE FULL RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.



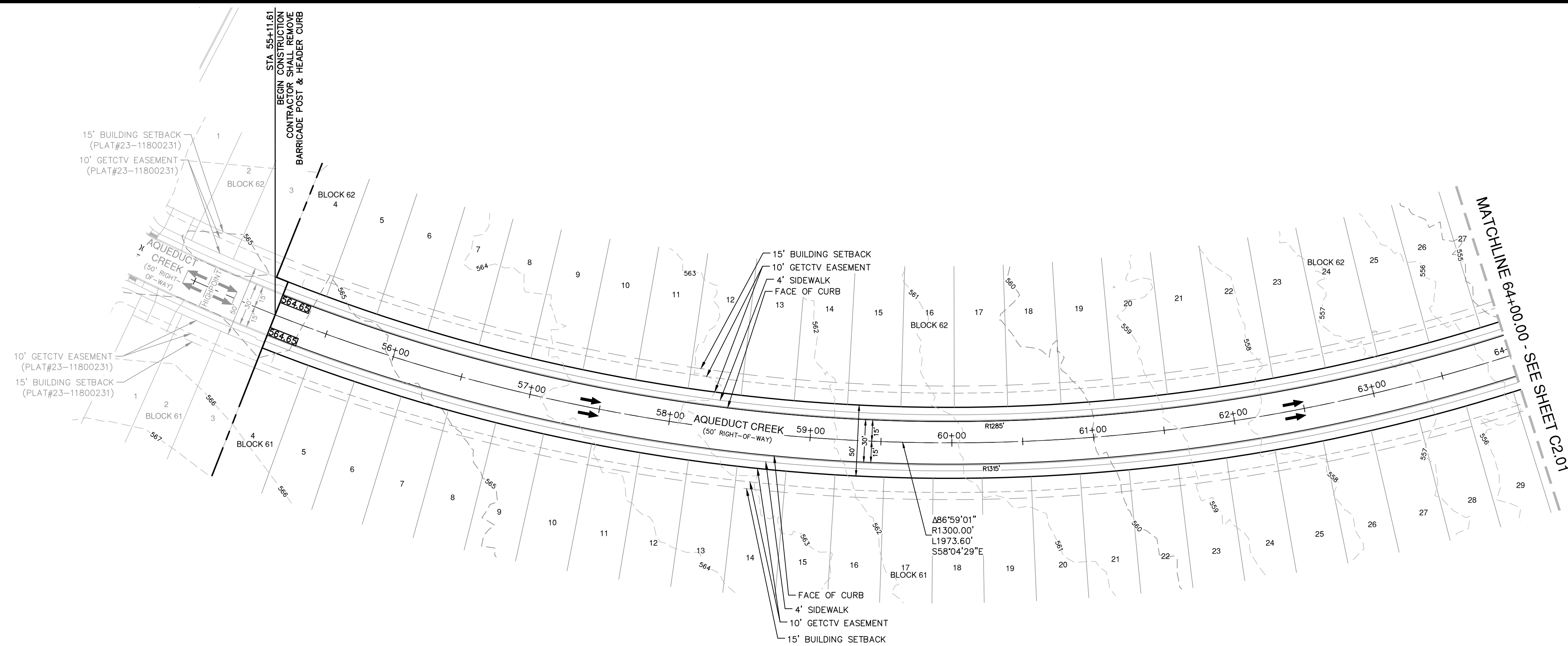
**PAPE-DAWSON  
ENGINEERS**

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028600

**ESPADA TRACT UNIT 17**  
**SAN ANTONIO, TEXAS**

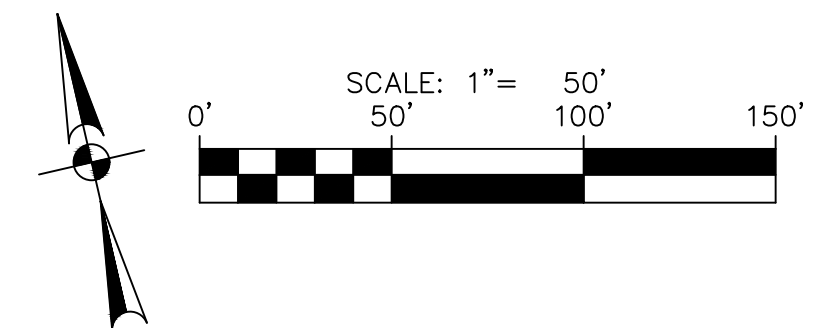
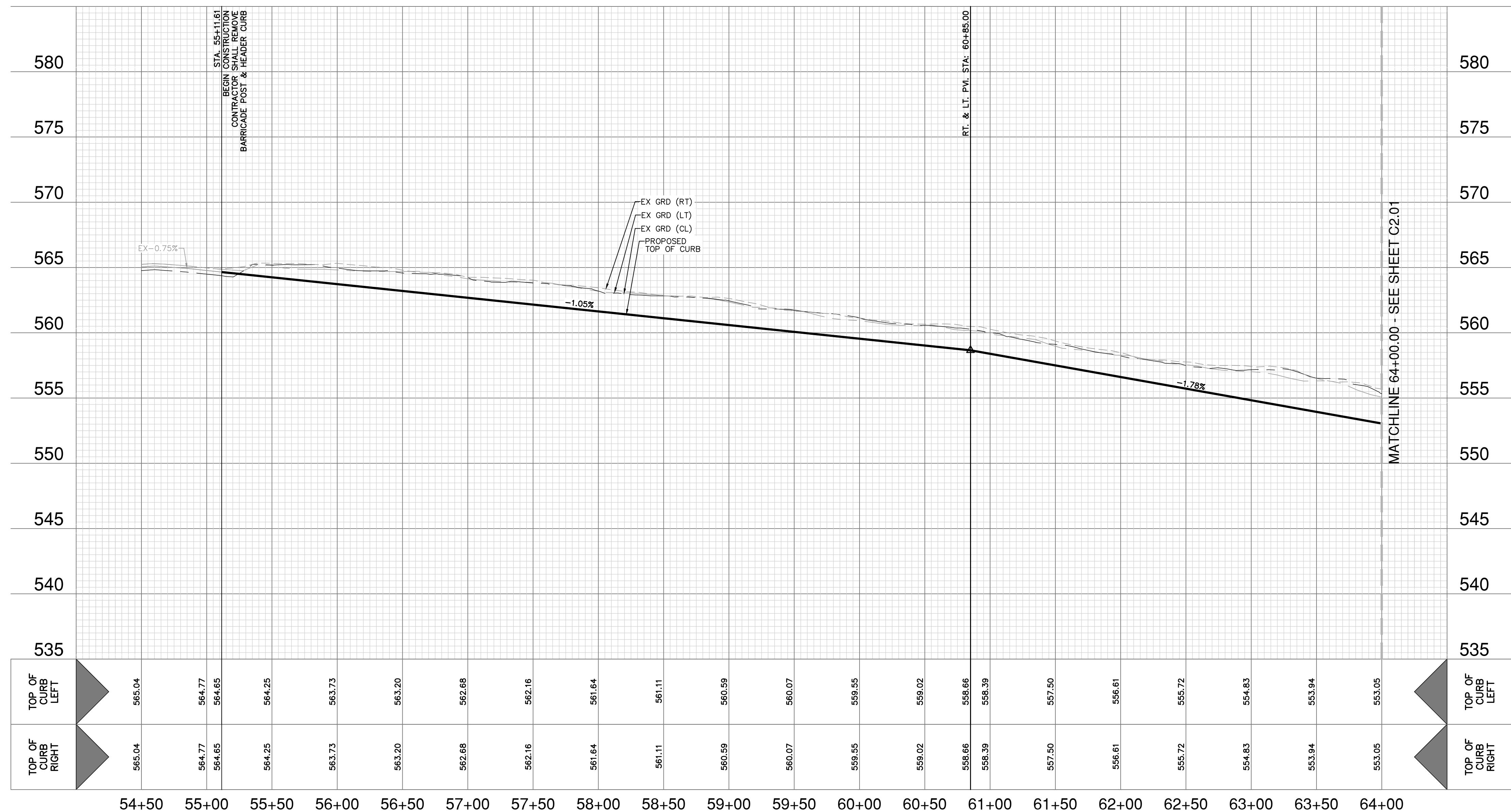
**DRAIN T1 PLAN & PROFILE**  
**(STA. 1+15.00 TO 1+43.80)**








AQUEDUCT CREEK  
STA. 55+11.61 TO 64+00.00

VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 50'



### STREET LEGEND

PROJECT LIMITS	_____
MAINTAIN GUTTER	_____→
EXISTING CONTOUR	-----→
WHEELCHAIR RAMP	①
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	→
TOP OF CURB SPOT ELEVATION	<span style="border: 1px solid black; padding: 2px;">857.30</span>
PAVEMENT ELEVATION	857.00(P) ×
WASHOUT CROWN SECTION	
SIDEWALK (HOMEOWNER'S RESPONSIBILITY)	
SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
DRIVEWAY	_____
	_____
EXISTING WELL	⊙
VEHICULAR NON ACCESS EASEMENT	VNAE

[illegible]

**PAPE-DAWSON  
ENGINEERS**

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1028600

**ESPADA TRACT UNIT 17**  
**SAN ANTONIO, TEXAS**

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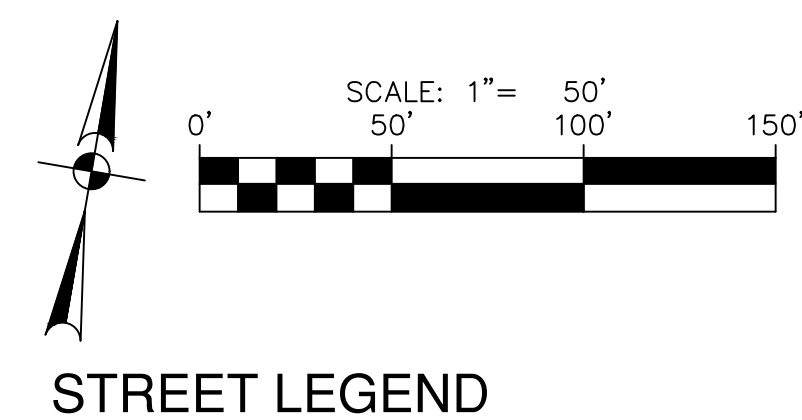
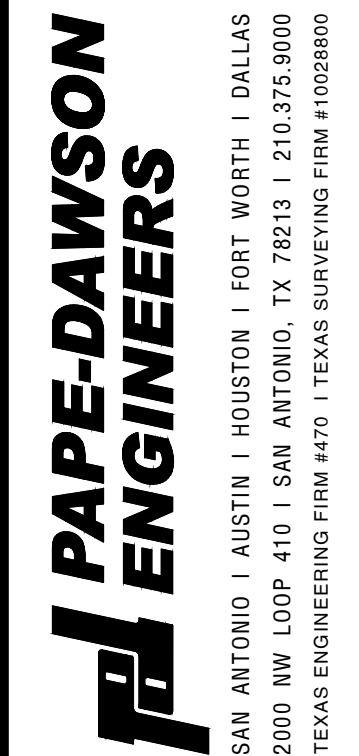
**AQUEDUCT CREEK PLAN & PROFILE**  
**(STA. 55+11.61 TO 64+00.00)**

PLAT NO. 23-11800384  
 JOB NO. 12632-17  
 DATE NOVEMBER 2023  
 DESIGNER BK  
 CHECKED DW DRAWN AV  
 SHEET C2.00

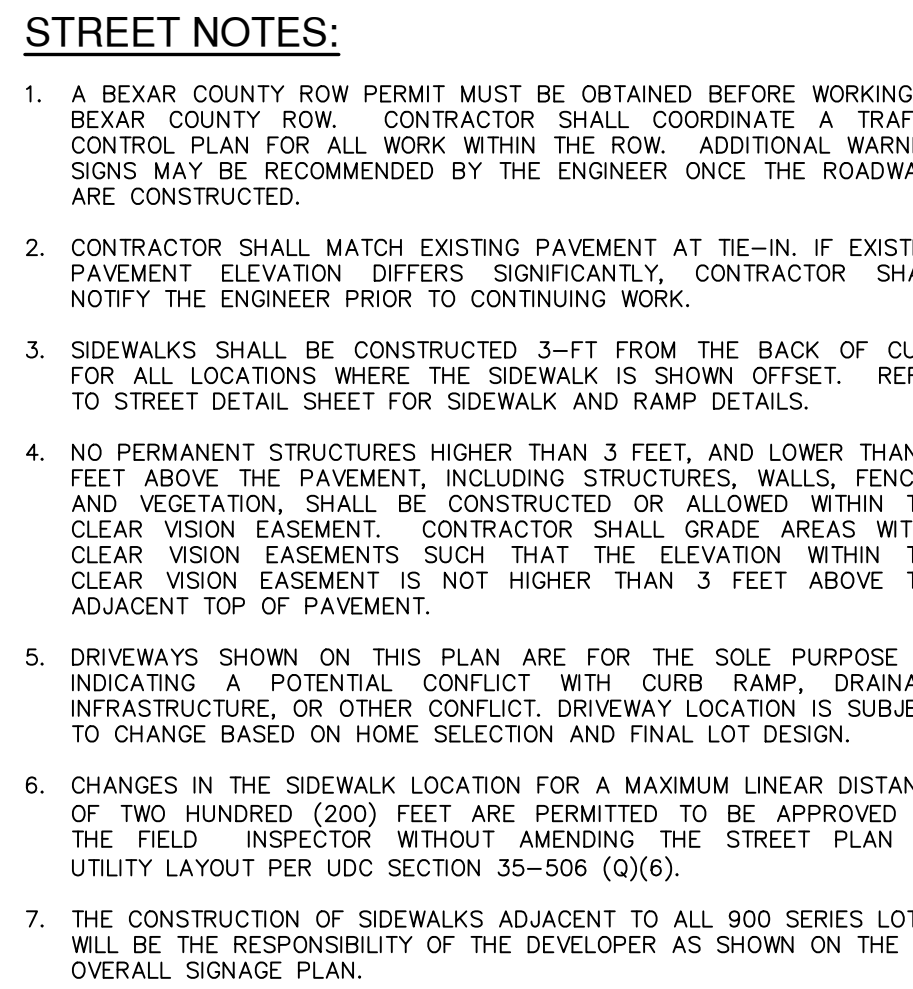
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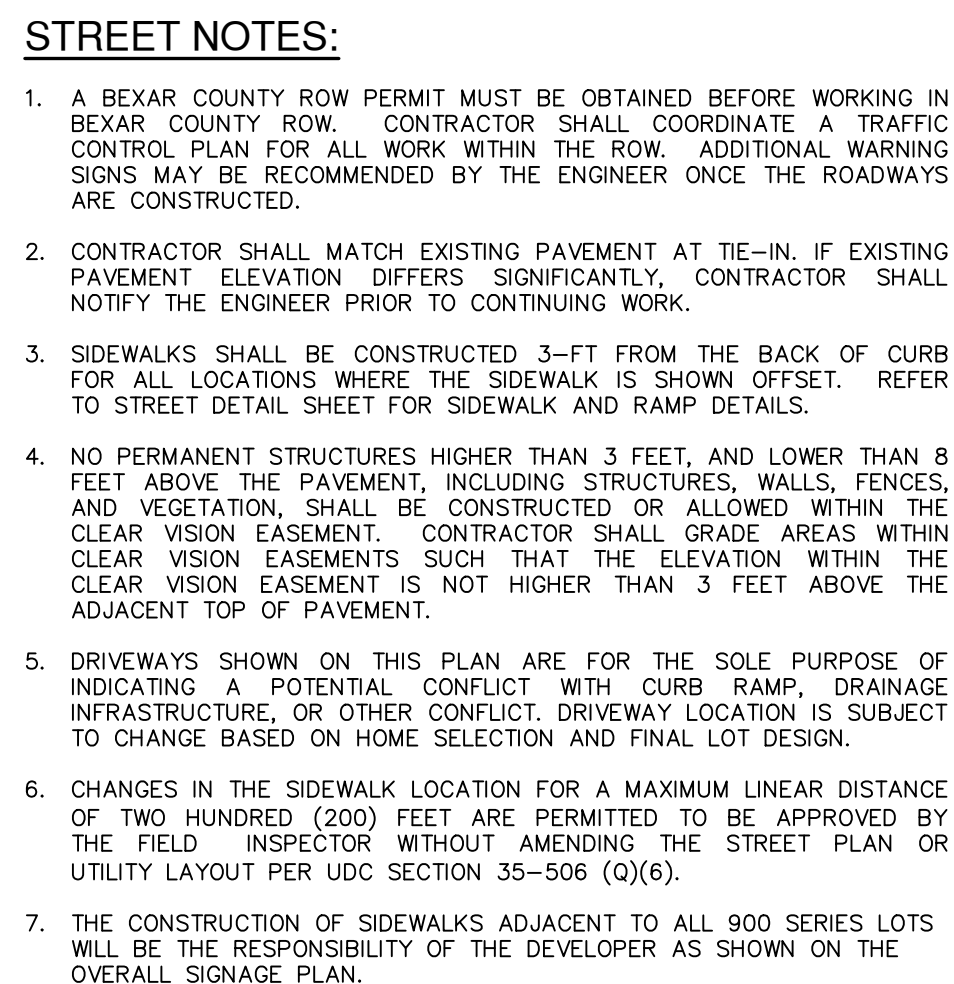
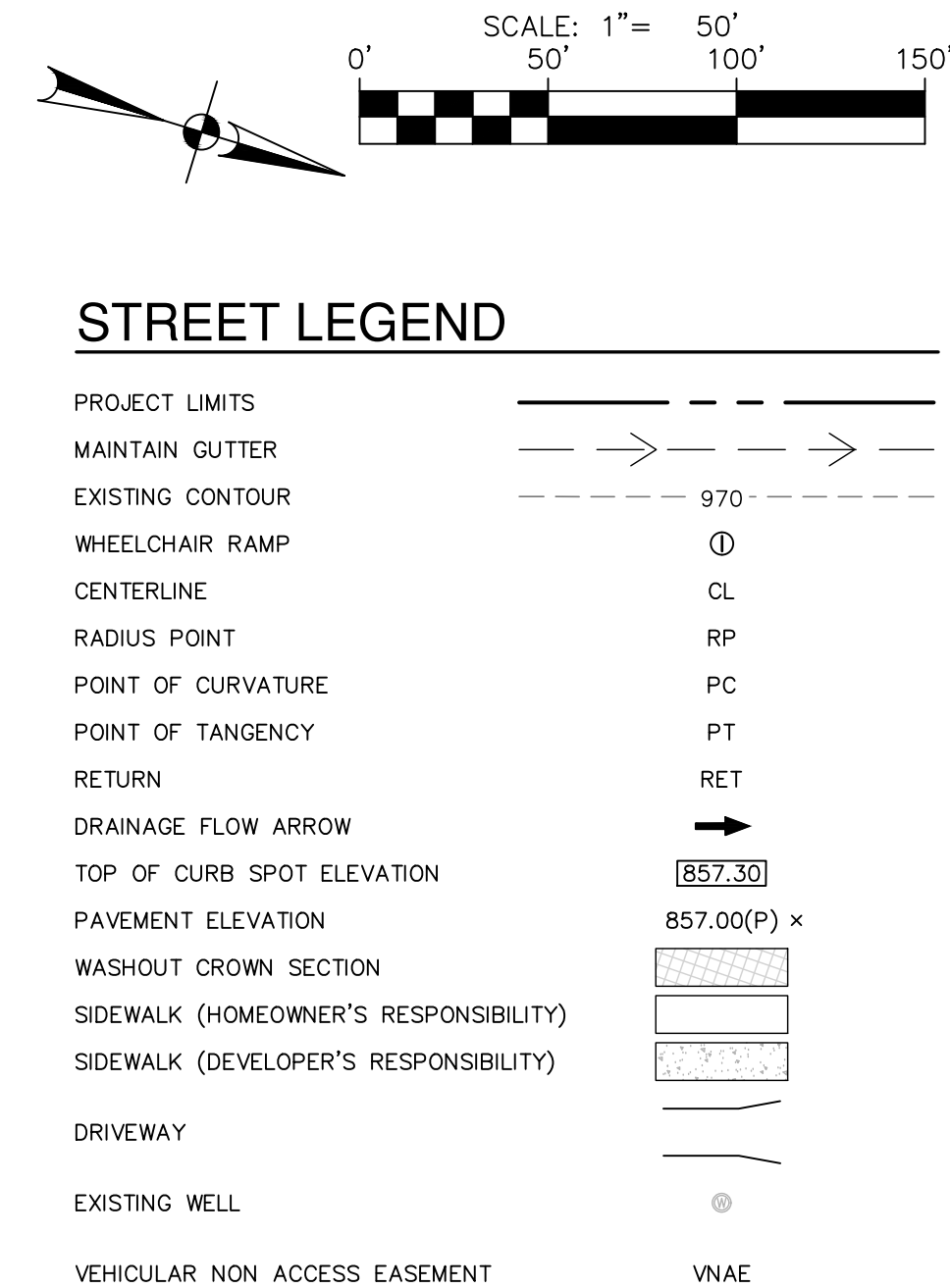


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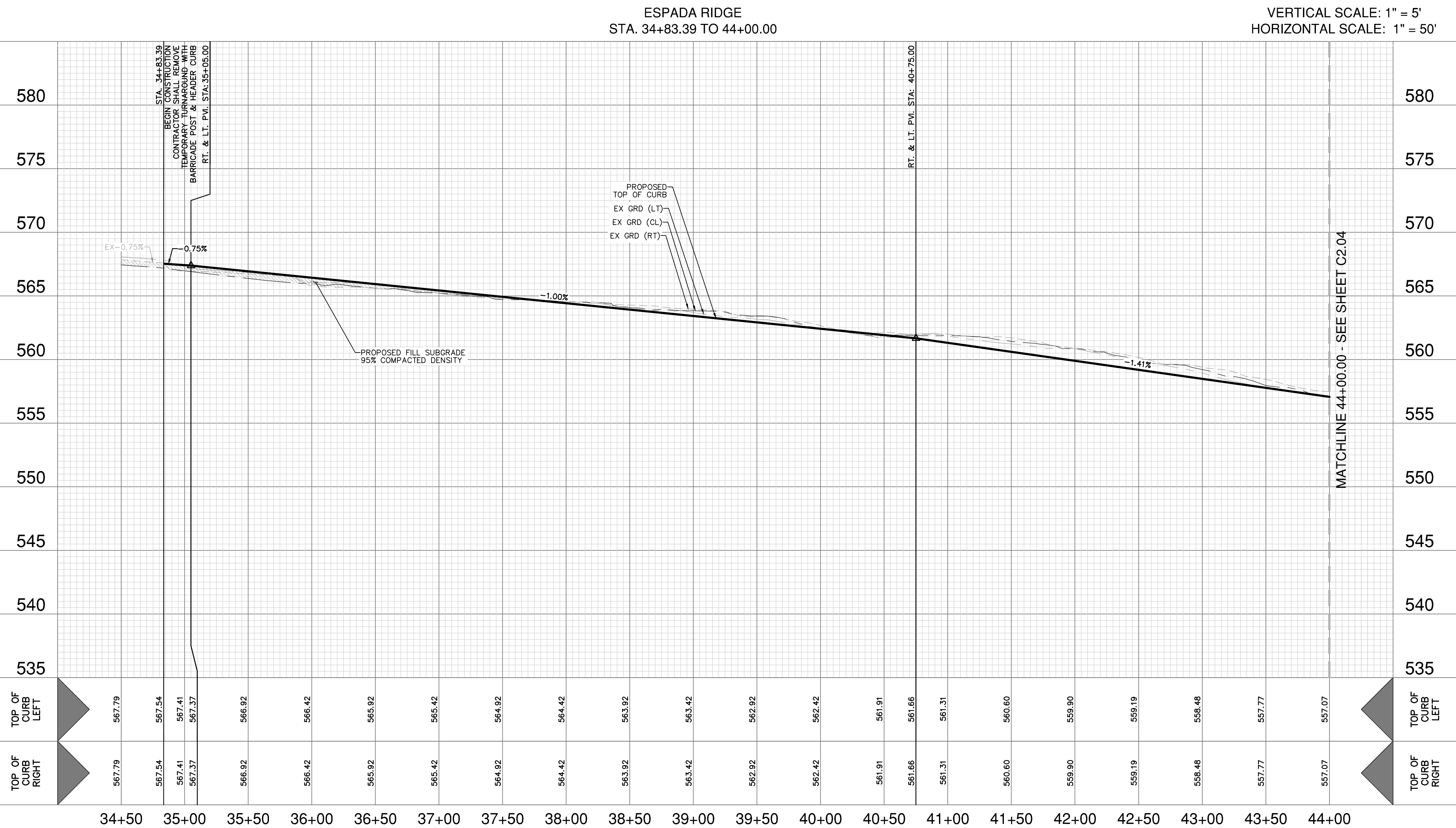
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JOB NO. 12632-17  
DATE NOVEMBER 2023  
DESIGNER BK  
CHECKED DW DRAWN AV  
SHEET C2.01




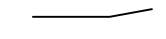


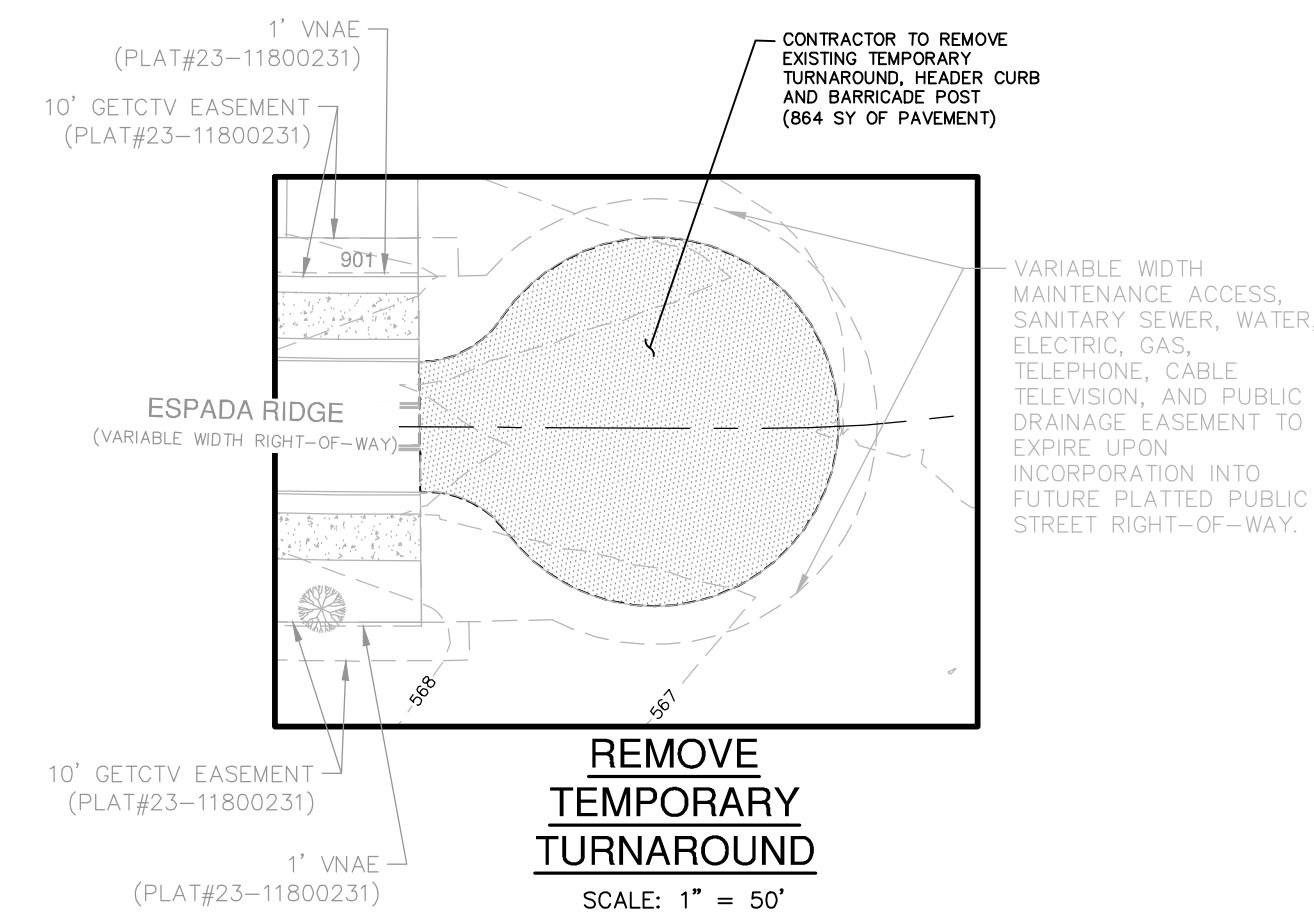






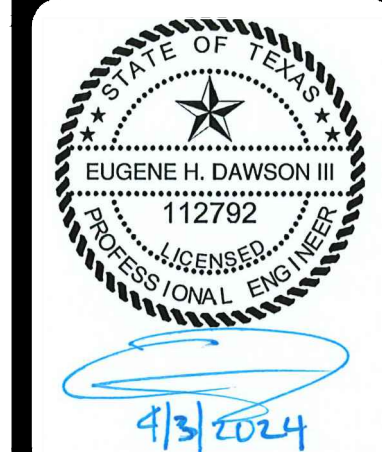


PROJECT LIMITS	— — — — —
MAINTAIN GUTTER	→ — — — — — →
EXISTING CONTOUR	— — — — — 970 — — — — —
WHEELCHAIR RAMP	①
CENTERLINE	CL
RADIUS POINT	RP
POINT OF CURVATURE	PC
POINT OF TANGENCY	PT
RETURN	RET
DRAINAGE FLOW ARROW	➔
TOP OF CURB SPOT ELEVATION	857.30
PAVEMENT ELEVATION	857.00(P) x
WASHOUT CROWN SECTION	
SIDEWALK (HOMEOWNER'S RESPONSIBILITY)	
SIDEWALK (DEVELOPER'S RESPONSIBILITY)	
DRIVEWAY	
EXISTING WELL	⊙
VEHICULAR NON ACCESS EASEMENT	WNAE



STREET NOTES:

1. A BEYAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEYAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.
2. CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
3. SIDEWALKS SHALL BE CONSTRUCTED 3-FT FROM THE BACK OF CURB FOR ALL LOCATIONS WHERE THE SIDEWALK SHALL BE SHOWN. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
4. NO PERMANENT STRUCTURES HIGHER THAN 3 FEET, AND LOWER THAN 8 FEET ABOVE THE PAVEMENT, INCLUDING STRUCTURES, WALLS, FENCES, AND VEGETATION, SHALL BE CONSTRUCTED OR ALLOWED WITHIN THE CLEAR VISION EASEMENT. CONTRACTOR SHALL GRADE AREAS WITHIN THE CLEAR VISION EASEMENT TO MATCH EXISTING ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
5. DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.
6. CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE CITY ENGINEER WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
7. THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 9000 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

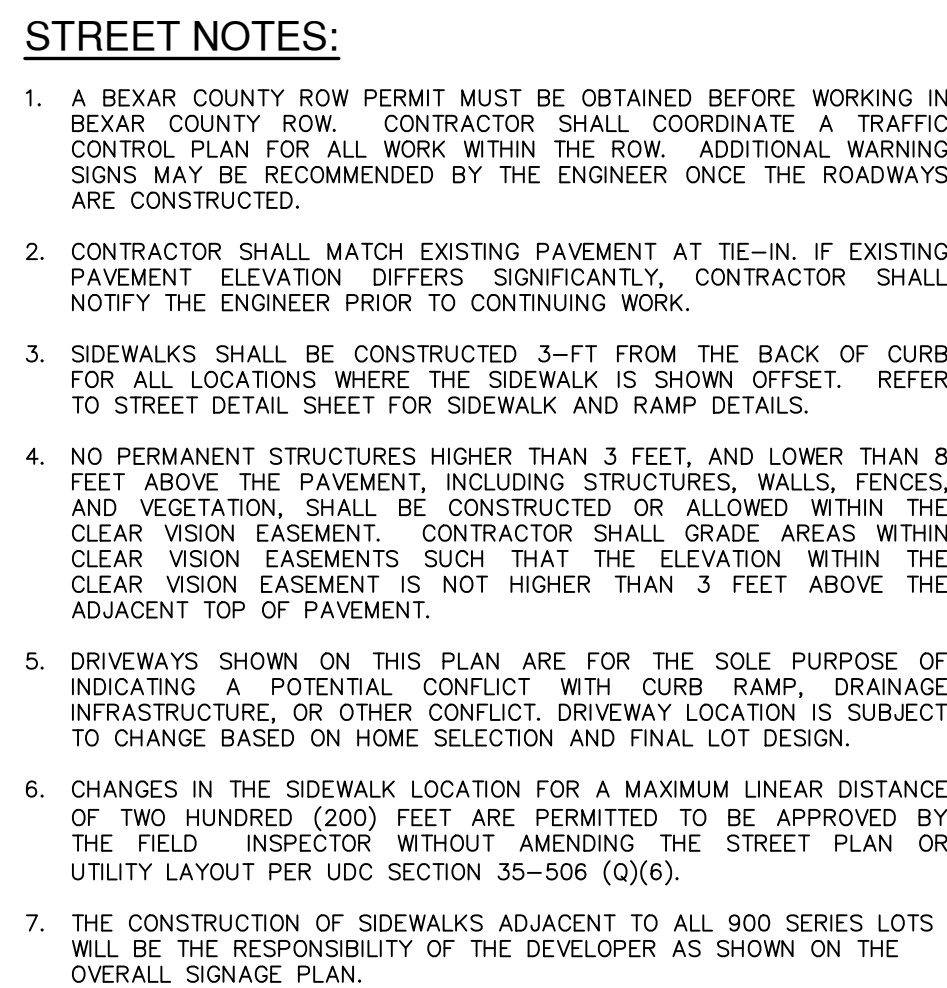
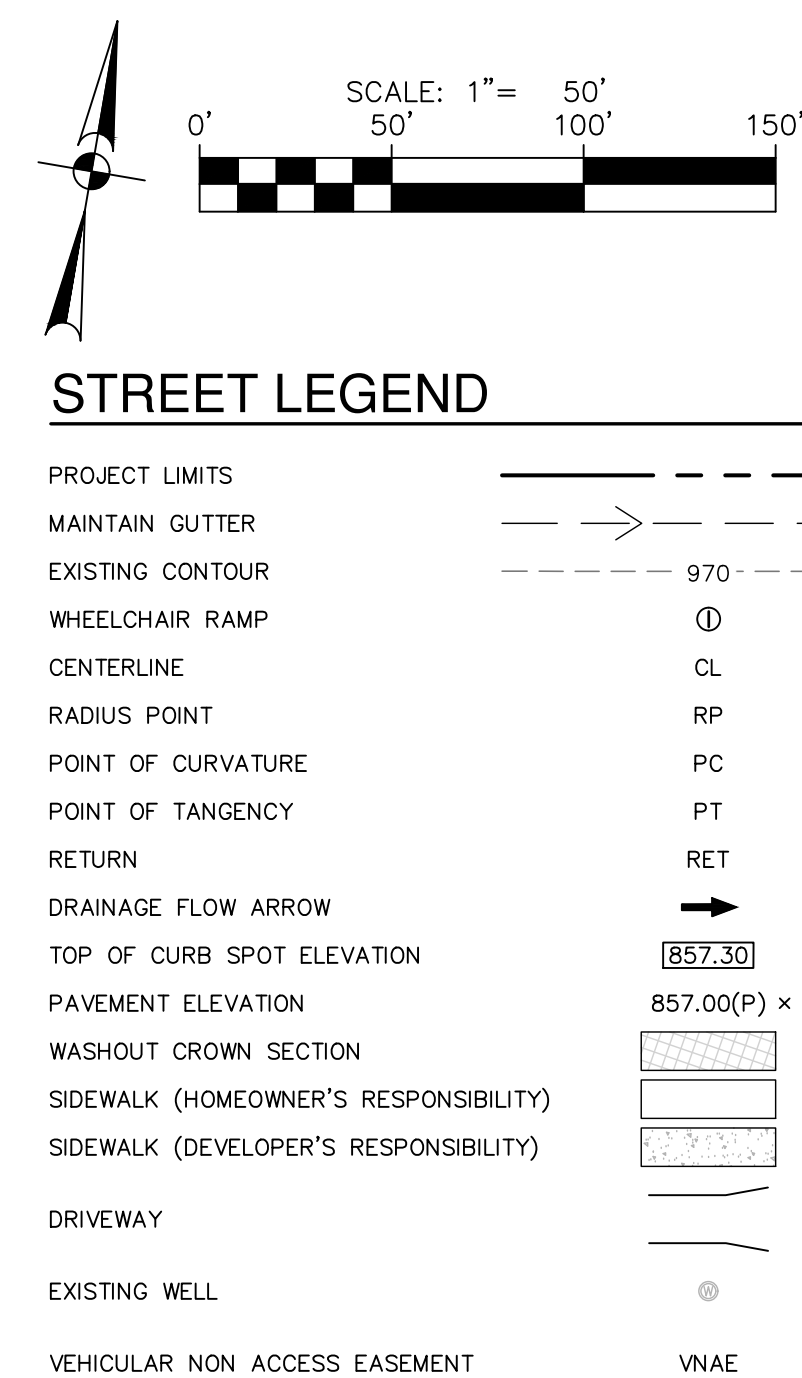


**PAPE-DAWSON**  
**ENGINEERS**

**ESPADA TRACT UNIT 17**  
**SAN ANTONIO, TEXAS**  
**ESPADA RIDGE PLAN & PROFILE**  
**(STA. 34+83.39 - 44+00.00)**

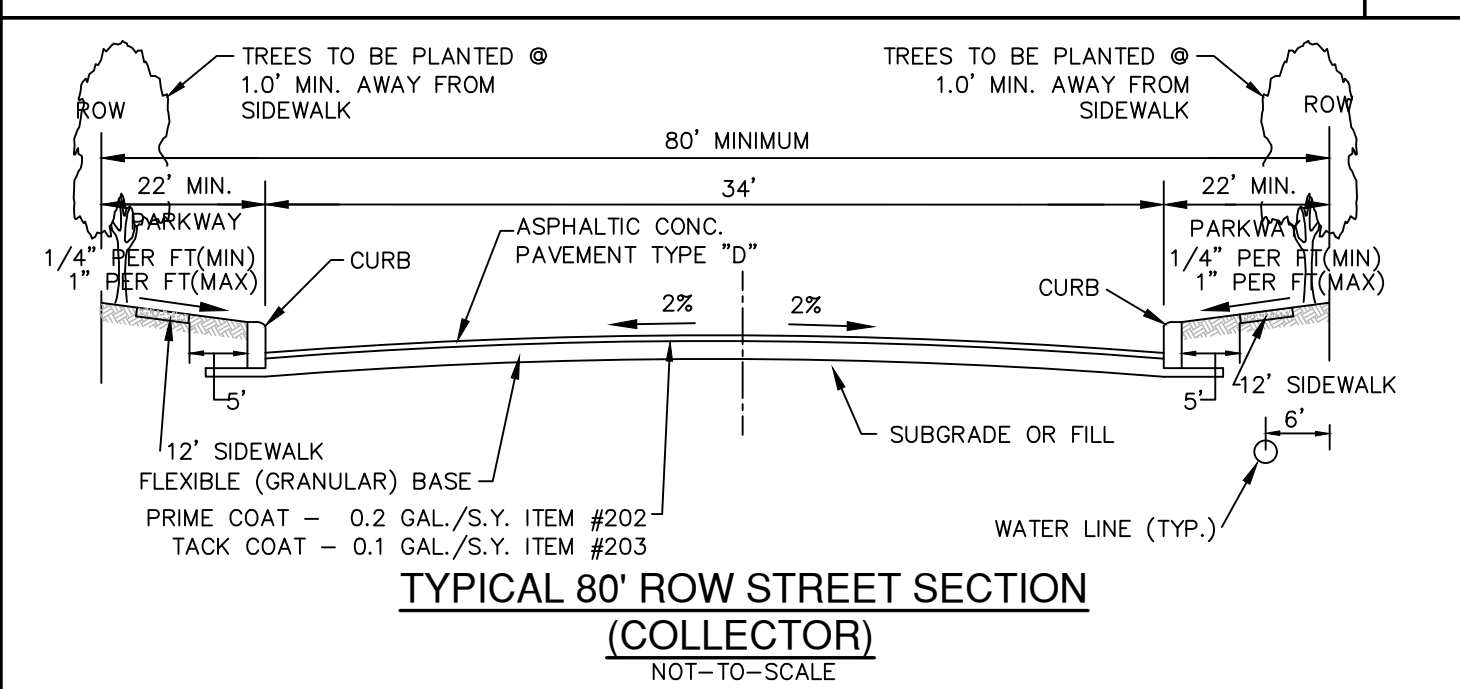
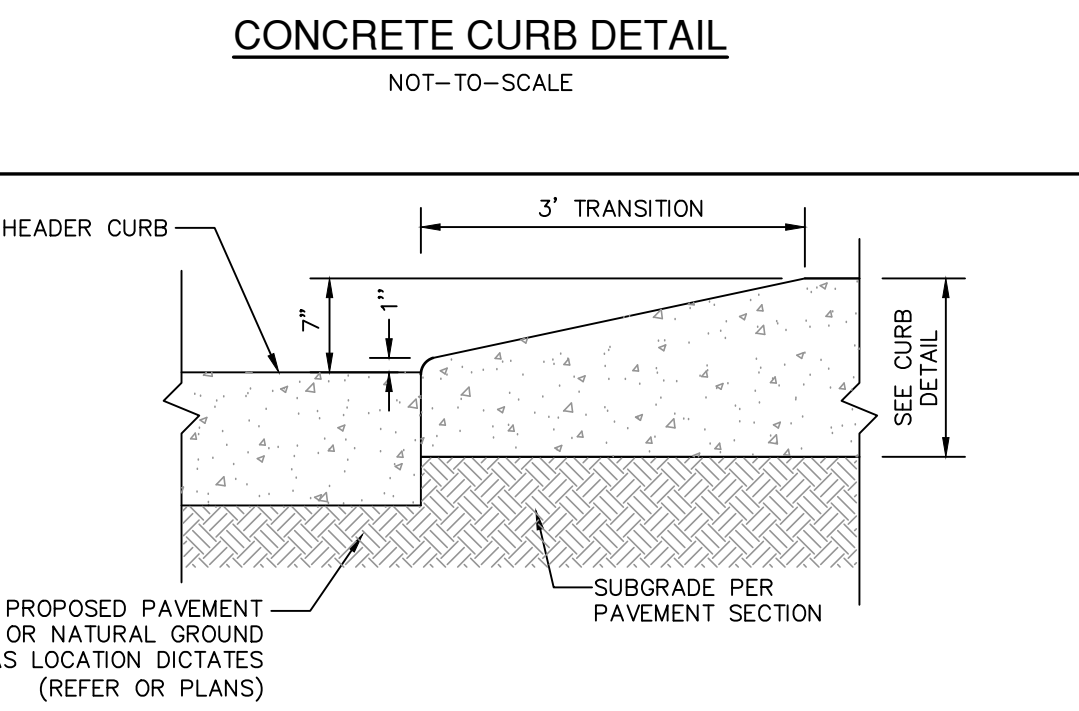
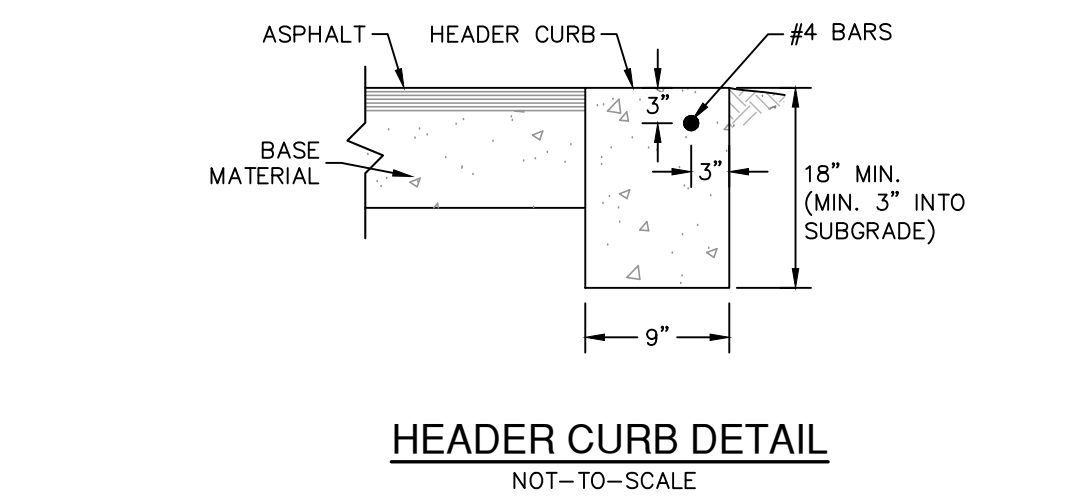
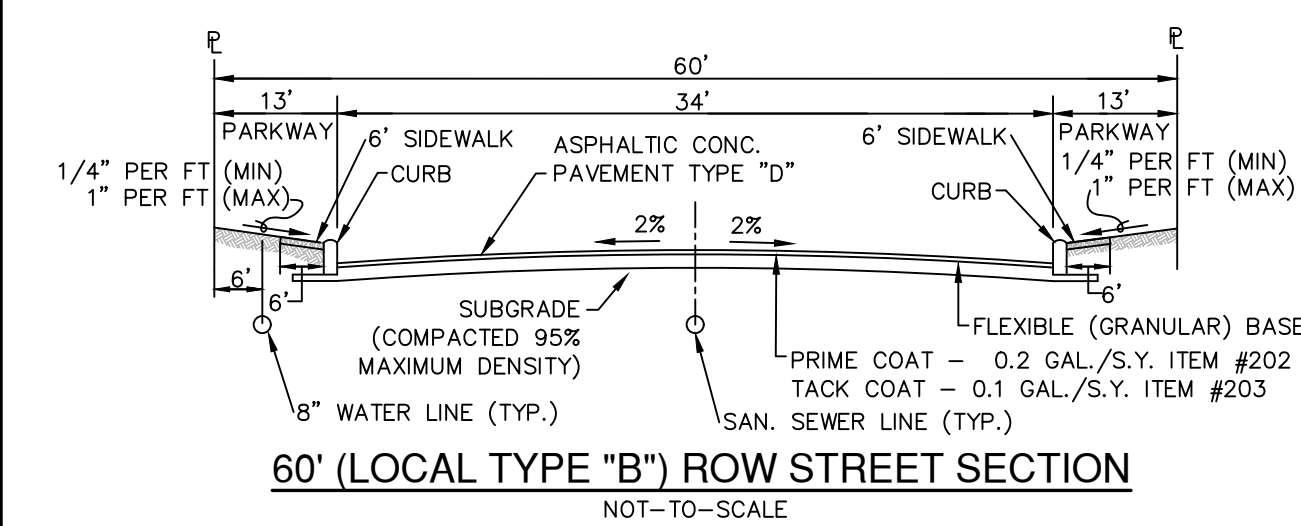
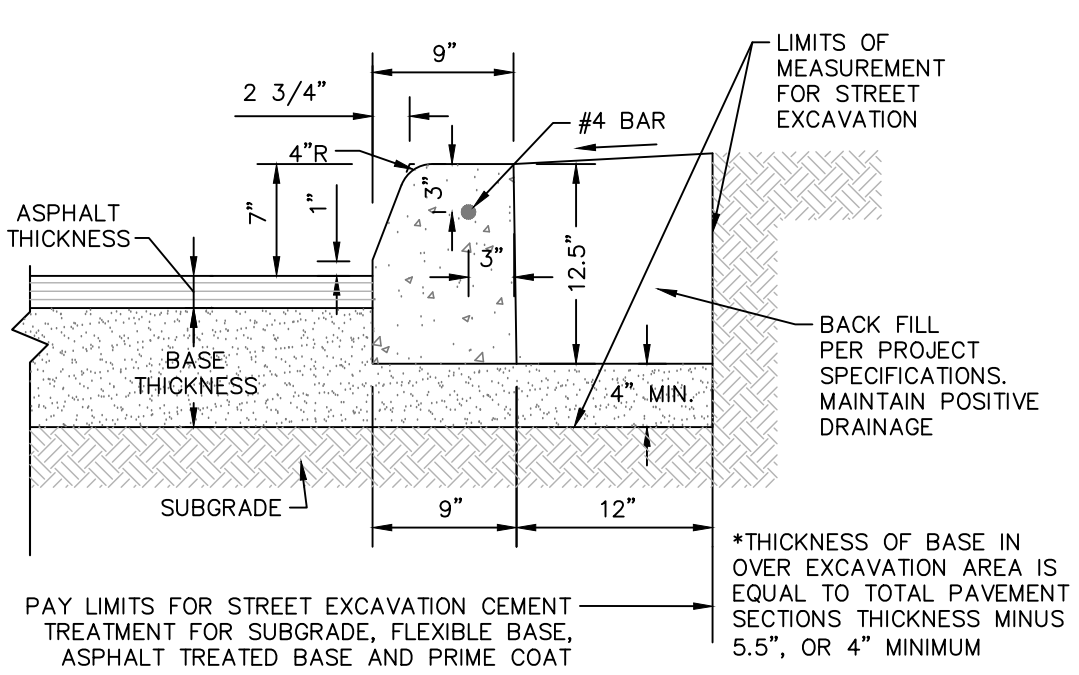
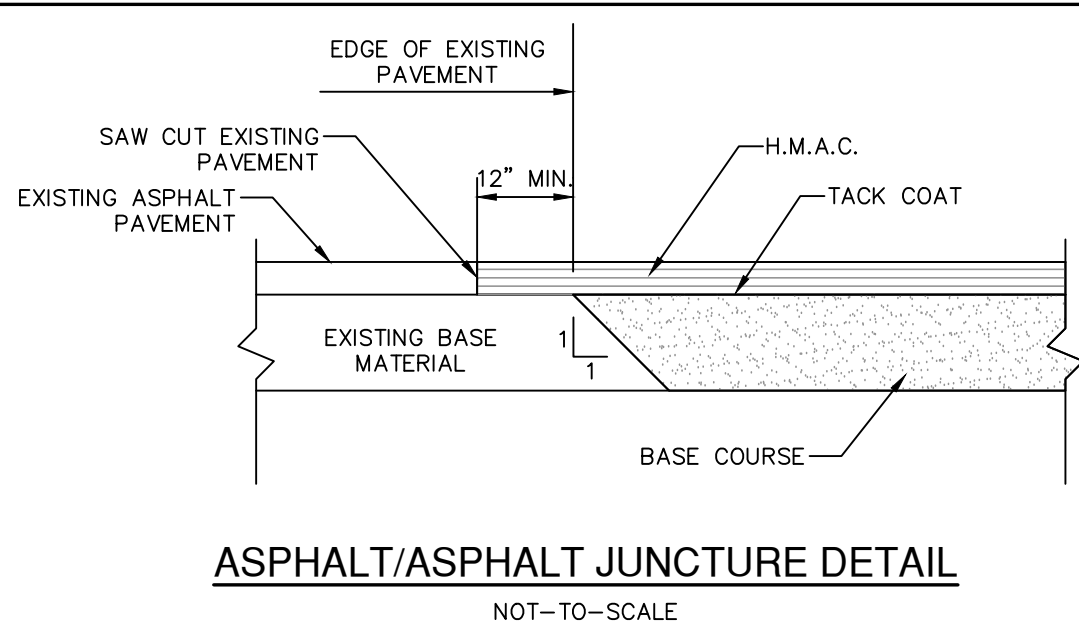
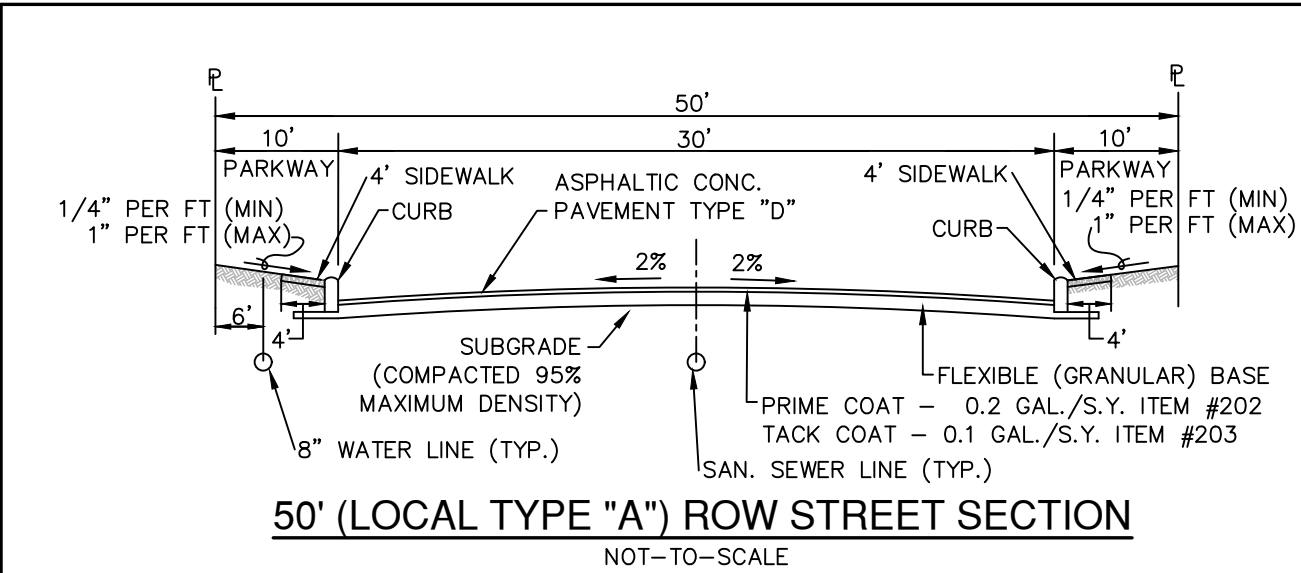
PLAT NO. 23-11800384  
JOB NO. 12632-17  
DATE NOVEMBER 2023  
DESIGNER BK  
CHECKED DW DRAWN AV  
SHEET C2.03







PAVEMENT SECTION DETAIL									
STREET NAME	STATION	TYPE "D" HMAc	TYPE "B" HMAc	TYPE "C" HMAc	GRANULAR BASE COURSE	CEMENT TREATED SUBGRADE	GEOGRID (TENSAR TRIAX TX5)	CBR	STRUCTURAL NUMBER
AQUEDUCT CREEK	55+11.61 TO 68+81.66	2"	—	—	10"	6"	NO	4.0	2(.44) = 0.88 10(.14) = 1.4
CALABAZAS MANOR	1+15.03 TO 2+47.88	2"	—	—	10"	6"	NO	4.0	2(.44) = 0.88 10(.14) = 1.4
ESPADA RIDGE (COLLECTOR)	34+83.39 TO 37+47.55	2"	—	4"	12"	6"	NO	4.0	2(.44) = 0.88 4(.44) = 1.76 12(.14) = 1.68
ESPADA RIDGE (LOCAL B)	37+47.55 TO 50+02.59	1.5"	—	3"	15"	6"	NO	4.0	1.5(.44) = 0.66 3(.44) = 1.32 15(.14) = 2.10

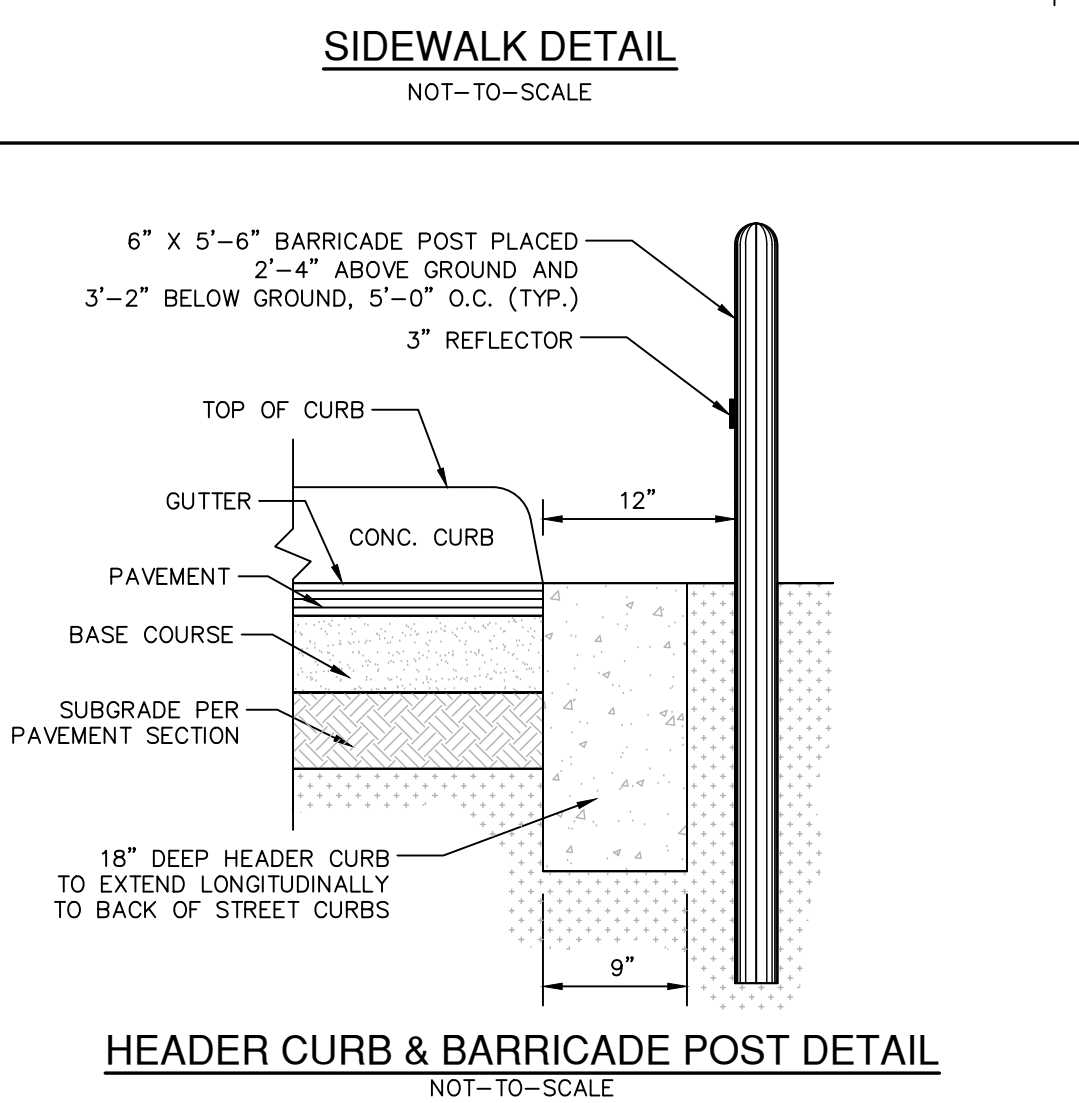
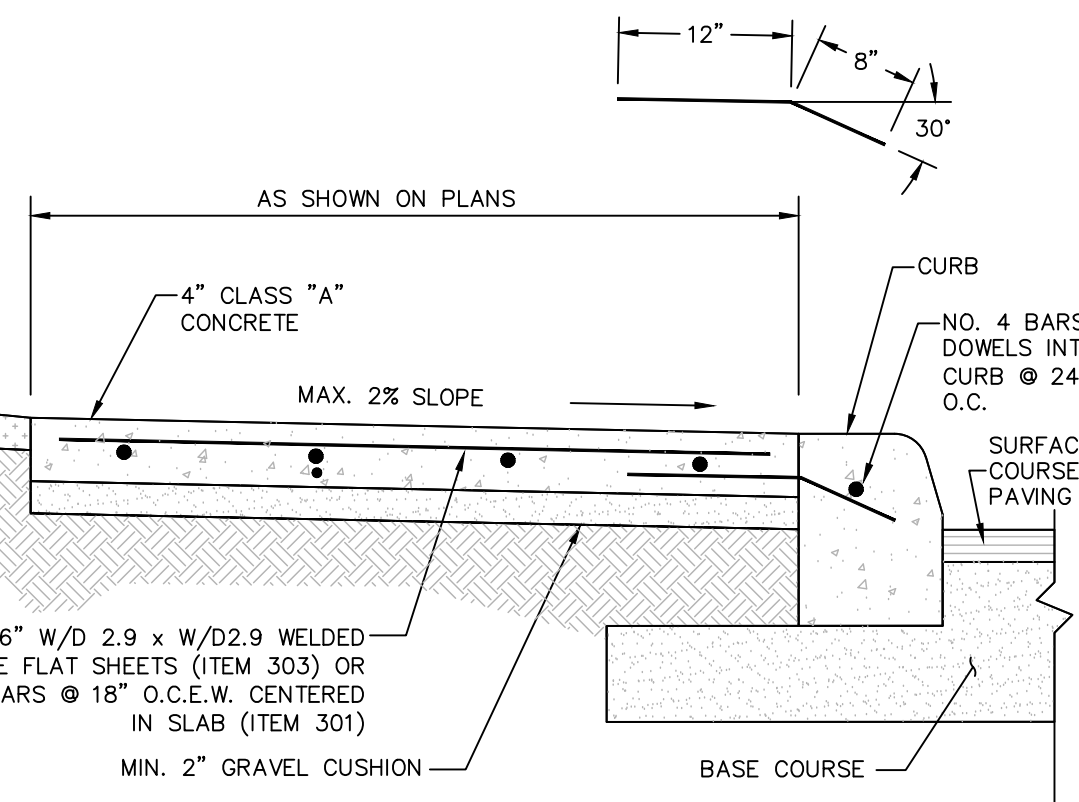
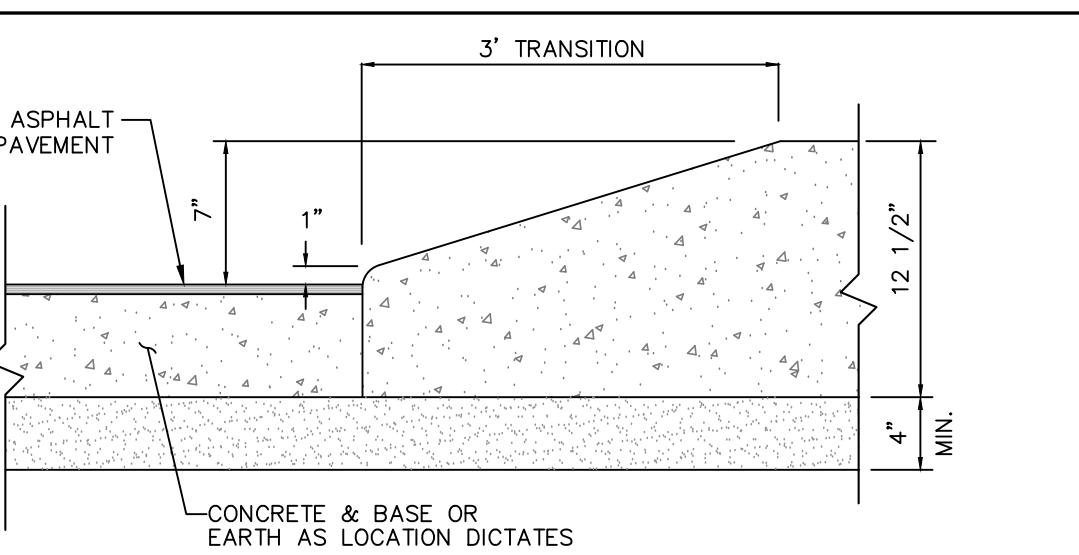


#### GENERAL NOTES:

- CONTRACTOR SHALL REFERENCE THE PROJECT PAVEMENT DESIGN REPORT PREPARED BY TIL DATED FEBRUARY 13, 2024.
- CONTRACTOR SHALL RETAIN A GEOTECHNICAL ENGINEER TO VERIFY THE SUB GRADE CONDITION PRIOR TO PLACING ANY BASE MATERIAL. GEOTECHNICAL ENGINEER SHALL DETERMINE THE SUB GRADE CONDITION AND IF CEMENT STABILIZATION IS REQUIRED.
- GEOTECHNICAL ENGINEER SHOULD VERIFY THE STREET SUBGRADE AT THE TIME OF CONSTRUCTION PRIOR TO PLACEMENT OF AGGREGATE BASE.
- THE FLEXIBLE BASE COURSE SHOULD BE CRUSHED LIMESTONE CONFORMING TO TxDOT STANDARD SPECIFICATIONS, ITEM 247, TYPE A, GRADES 1 OR 2.
- EACH LIFT OF SOIL SHALL BE MOISTURE CONDITIONED BETWEEN MINUS TWO (-2) AND PLUS THREE (+3) PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY.
- IN THE EVENT THAT THE CLAY FILL USED IS DIFFERENT THAN THE EXISTING SUBGRADE, THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT COULD BE INVALIDATED AND THE DESIGN ENGINEER MUST BE CONSULTED TO DETERMINE IF ADDITIONAL CBR TESTING AND THICKER PAVEMENT SECTIONS ARE REQUIRED.
- UNDERCUT SOFT, WEAK, AND UNSTABLE SOILS BY EXCAVATING BELOW SUBGRADE LEVEL TO EXPOSE STABLE SOILS. THE EXCAVATED SOIL CAN BE USED TO RESTORE THE EXCAVATION SUBGRADE, PROVIDED THAT THE SOILS ARE RELATIVELY FREE AND CLEAN OF DELETERIOUS MATERIAL OR MATERIALS EXCEEDING 3 INCHES IN MAXIMUM DIMENSION. THE EXCAVATED SOIL, OR IMPORTED FILL SOIL, SHALL BE PLACED IN MAXIMUM 6-INCH COMPACTED LIFTS. EACH LIFT OF SOIL SHALL BE MOISTURE CONDITIONED BETWEEN PLUS OR MINUS TWO (+2) PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT AND COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH THE STANDARD COMPACTION EFFORT (ASTM D 698). IF UNDERCUTTING DEEPER THAN ABOUT 3 FEET IS NEEDED, CONTACT TIL.
- THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL MATERIAL TESTING WITH THE PROJECT GEOTECHNICAL ENGINEER. TESTING SHALL BE PAID FOR BY THE OWNER.
- SOIL SUBGRADE AREAS REQUIRING FILL PLACEMENT SHOULD BE SCARIFIED TO A DEPTH OF ABOUT EIGHT (8) INCHES AND MOISTURE CONDITIONED BETWEEN PLUS OF MINUS TWO (+2) POINTS OF THE OPTIMUM MOISTURE CONTENT. THE MOISTURE-CONDITIONED SUBGRADE SHOULD THEN BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH ASTM D 698. THE SUBGRADE SHOULD BE MOISTURE CONDITIONED JUST PRIOR TO FILL PLACEMENT SO THE SUBGRADE MAINTAINS ITS COMPACTION MOISTURE LEVELS AND DOES NOT DRY OUT.
- A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN THE BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

#### STREET SUBGRADE NOTES:

- IF THE STREET SUBGRADE PLASTICITY INDEX VALUE IS GREATER THAN 20, SUBGRADE TREATMENT IS NEEDED AS PER CITY OF SAN ANTONIO AND BEXAR COUNTY REQUIREMENTS.
- IF THE SUBGRADE PLASTICITY INDEX VALUE IS 20 OR LESS, SUBGRADE TREATMENT IS NOT NEEDED. THE SUBGRADE SHOULD BE MOISTURE CONDITIONED (COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AT A MINIMUM MOISTURE CONTENT OF OPTIMUM PLUS 2 PERCENT (TEX114E)).
- THE SUBGRADE SHOULD BE TREATED USING A MINIMUM OF 6% PORTLAND CEMENT, BY DRY WEIGHT TO A DEPTH OF 6 INCHES.
- THE SUBGRADE SOILS SHOULD BE TESTED FOR SOIL SULFATE CONTENT PRIOR TO TREATMENT. IF THE SOIL SULFATE CONTENT IS HIGH, AN ALTERNATE PROCEDURE / RECOMMENDATION WILL BE NEEDED.
- CEMENT APPLICATION RATE OF 28 LBS PER SQ YARD OF SOIL IS RECOMMENDED.
- APPROVED FILL MATERIAL SHOULD BE USED TO RAISE THE GRADE. THE FILL SHOULD BE FREE OF DELETERIOUS MATERIAL WITH THE MINIMUM CBR VALUE OF 4.0 AND PI NOT MORE THAN 35. CEMENT APPLICATION RATES SHOULD BE RE-EVALUATED AND TESTED FOR SULFATE CONTENT PRIOR TO USE OF THE FILL MATERIAL. THE MATERIAL SHOULD BE PLACED AS PER APPLICABLE CITY OR COUNTY GUIDELINES.
- THE SUBGRADE SHOULD BE PROOF ROLLED TO IDENTIFY SOFT AREAS BEFORE TREATMENT.



DATE	
NO.	
REVISION	

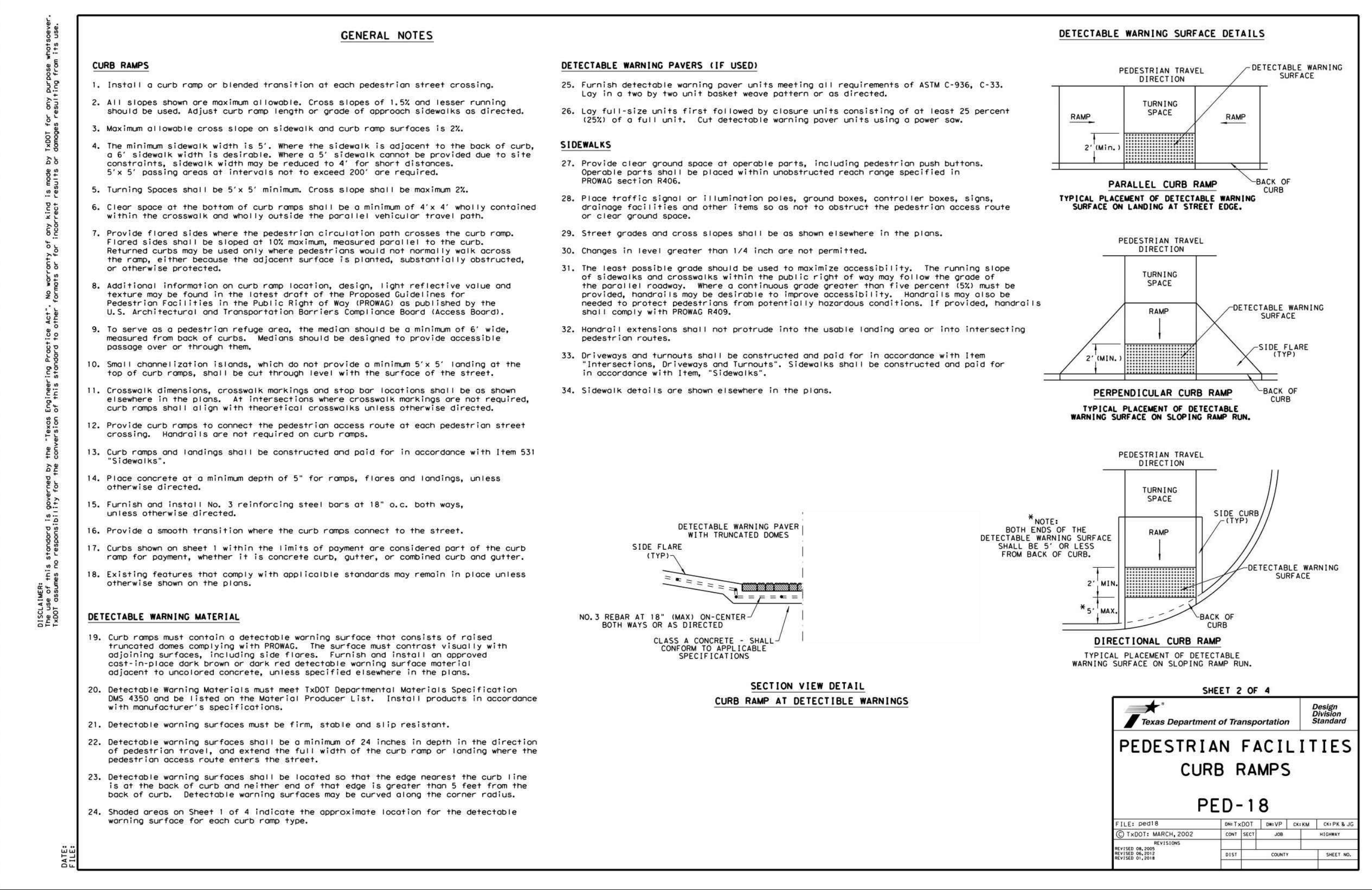
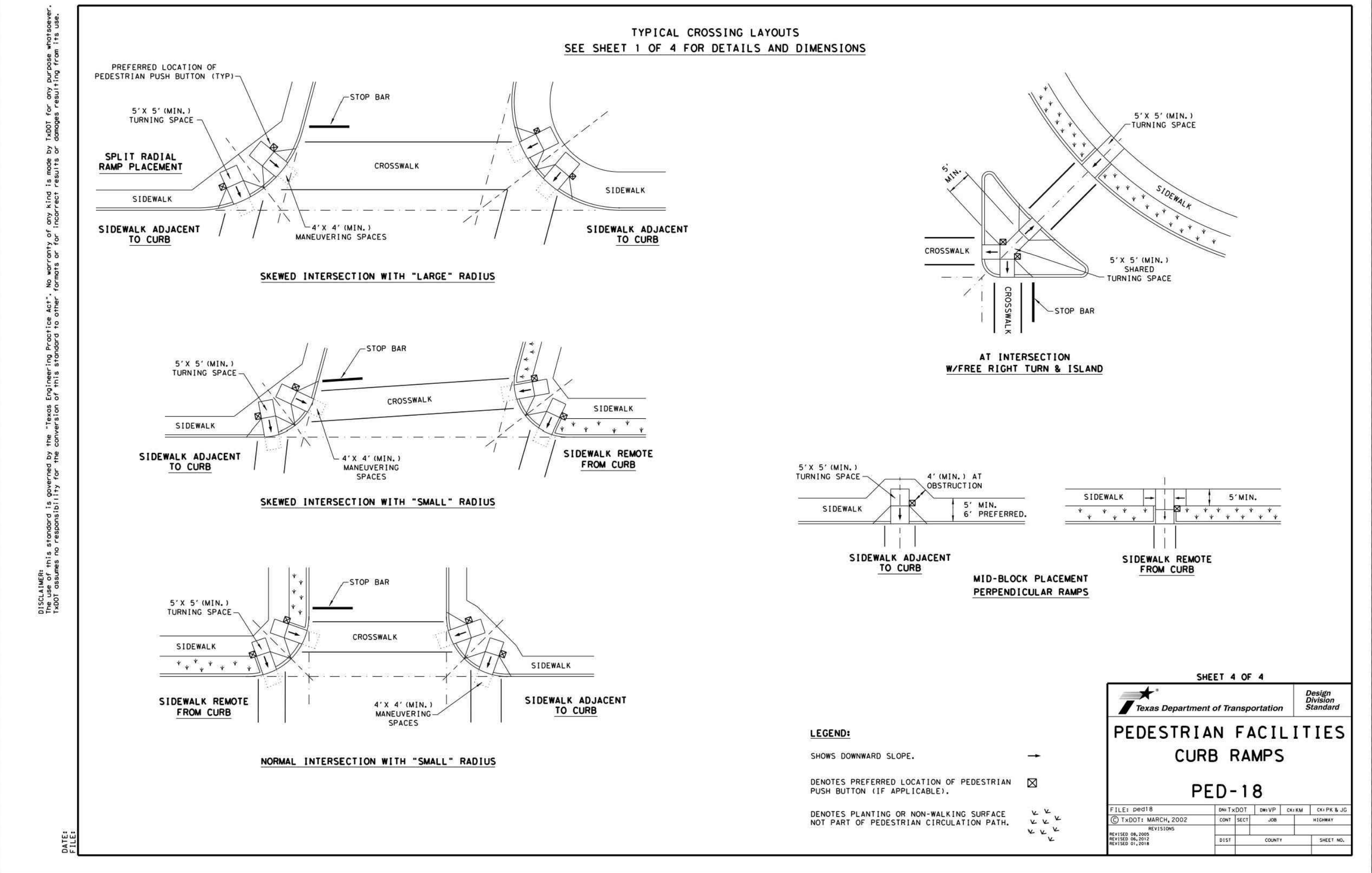
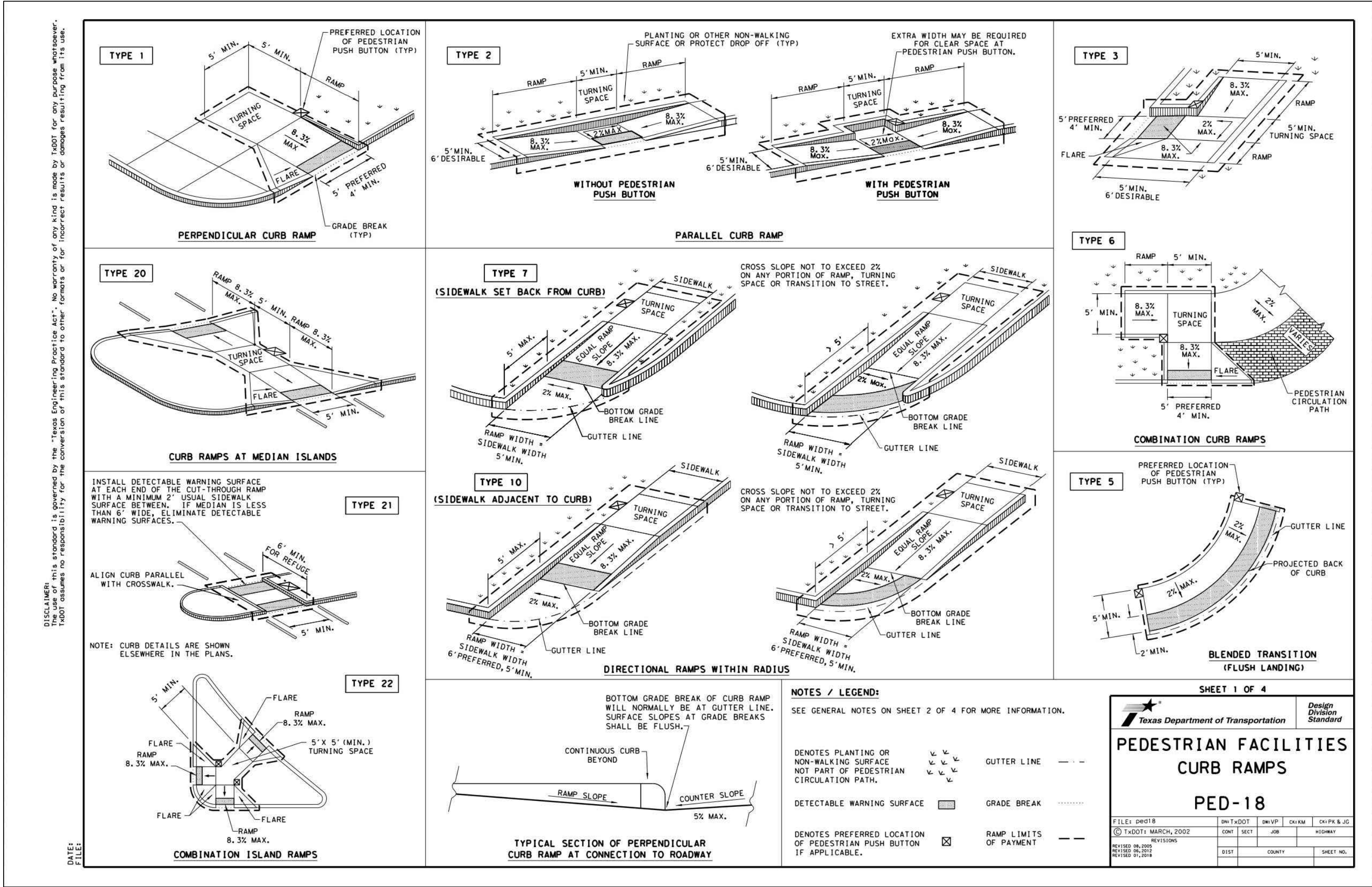
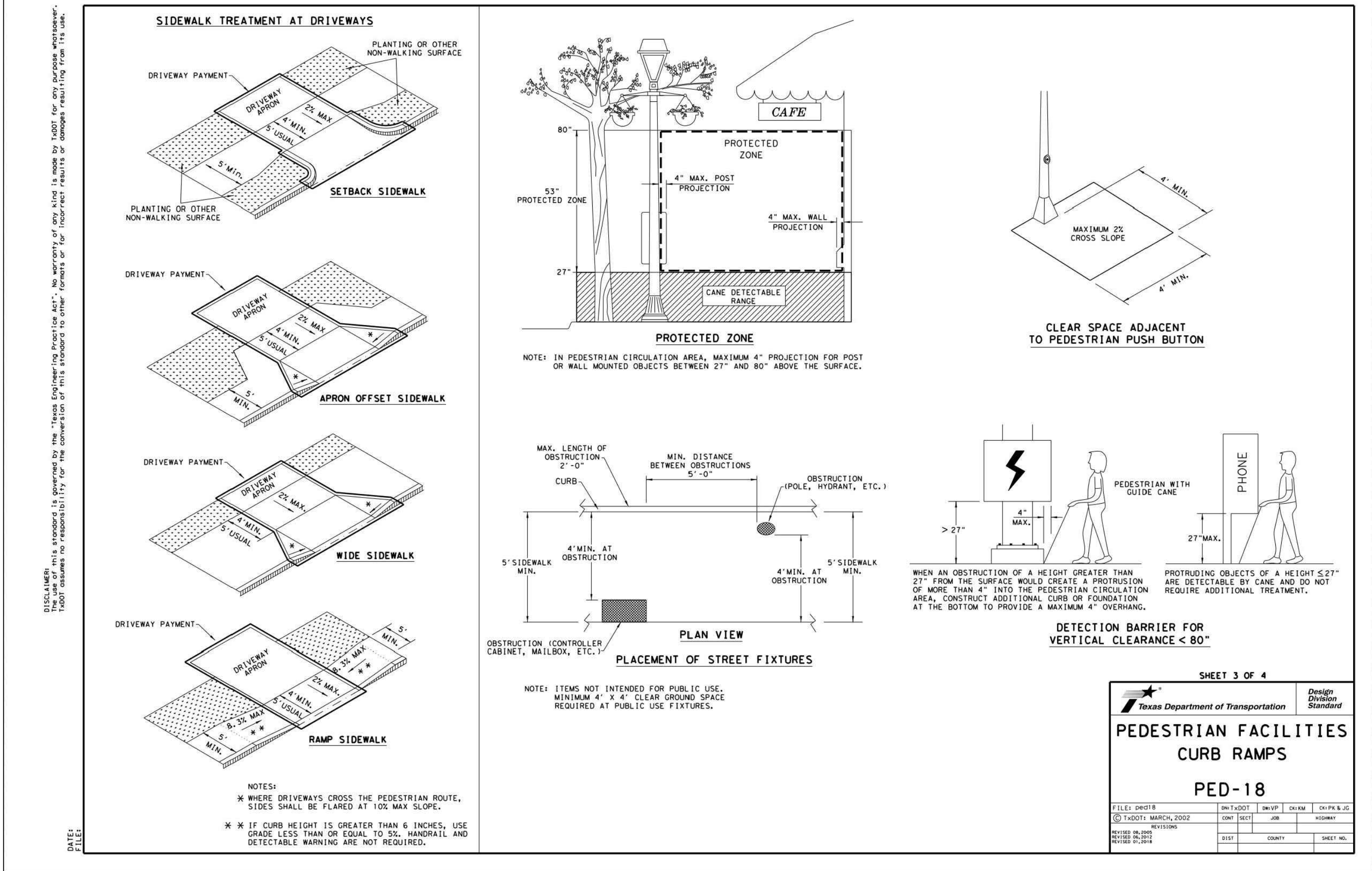


**PAPE-DAWSON**  
**ENGINEERS**  
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

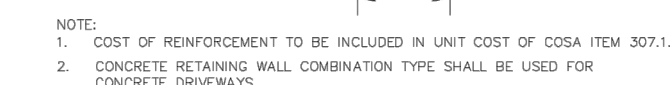
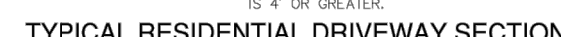
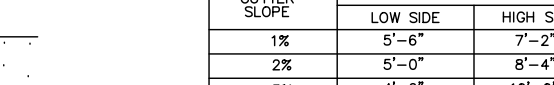
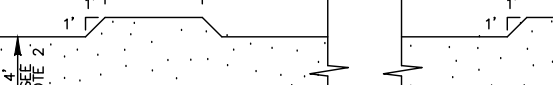
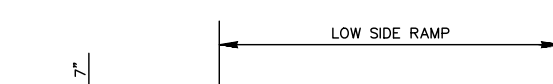
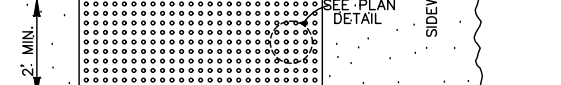
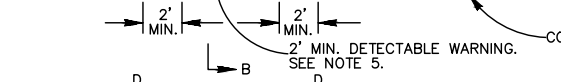
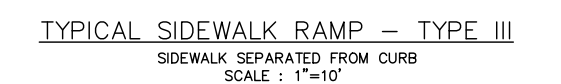
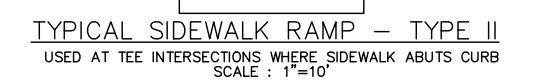
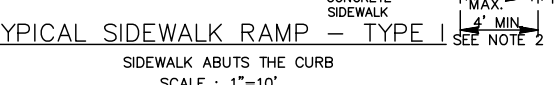
**ESPADA TRACT UNIT 17**  
SAN ANTONIO, TEXAS  
TYPICAL STREET DETAILS

PLAT NO.	23-11800384
JOB NO.	12632-17
DATE	NOVEMBER 2023
DESIGNER	BK
CHECKED	DW
DRAWN	AV
SHEET	C2.05







DATE: FEBRUARY 2024

PROJECT NO. _____		DATE: _____
DSGN BY: _____	CHKD BY: <u>R.S. HOGGINS, P.E.</u>	SHEET NO.: _____ OF _____

STATE OF TEXAS  
EUGENE H. DAWSON III  
112792  
LICENSED  
PROFESSIONAL ENGINEER  
4/3/2024

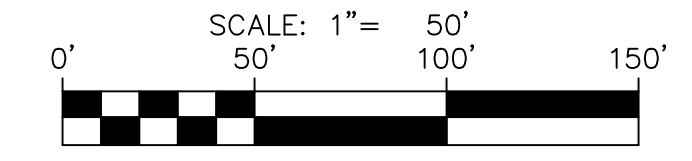
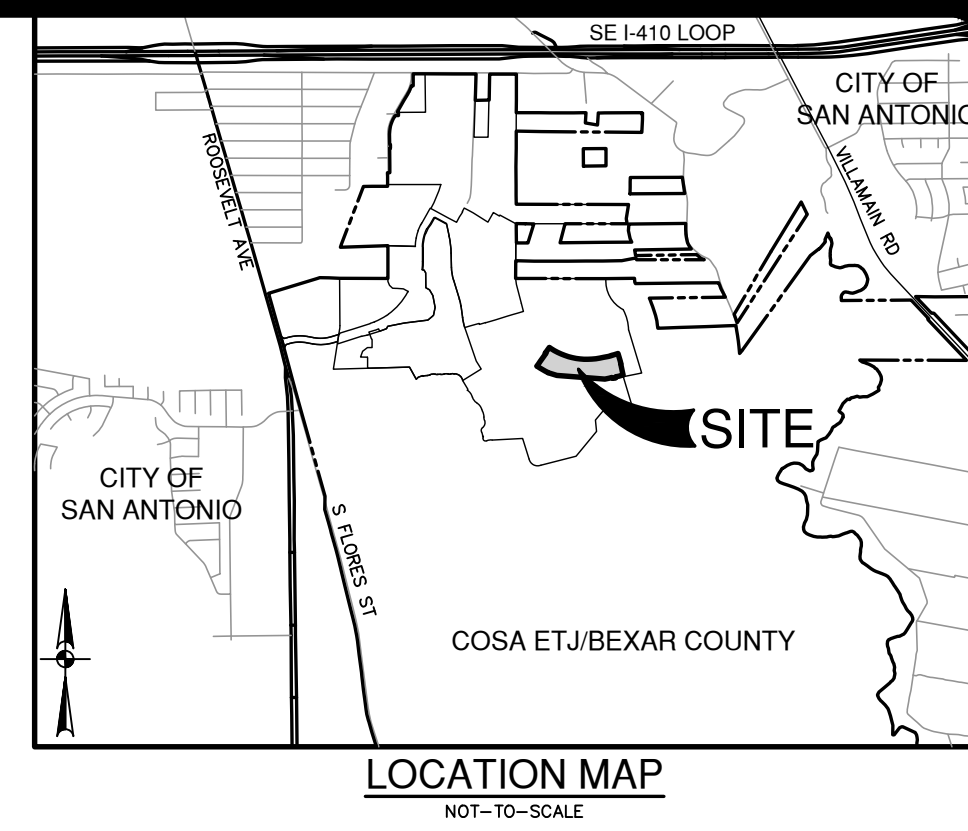
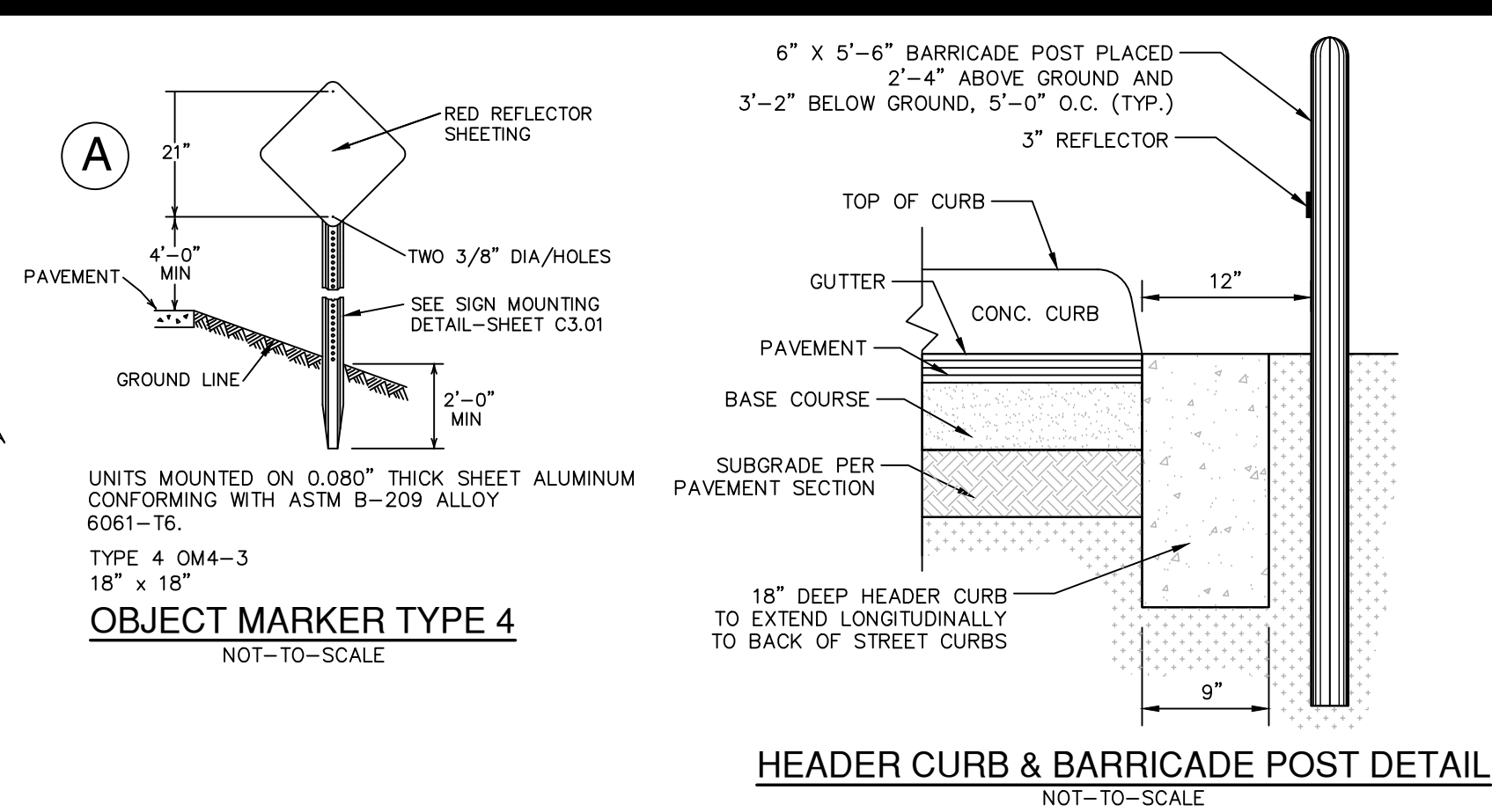
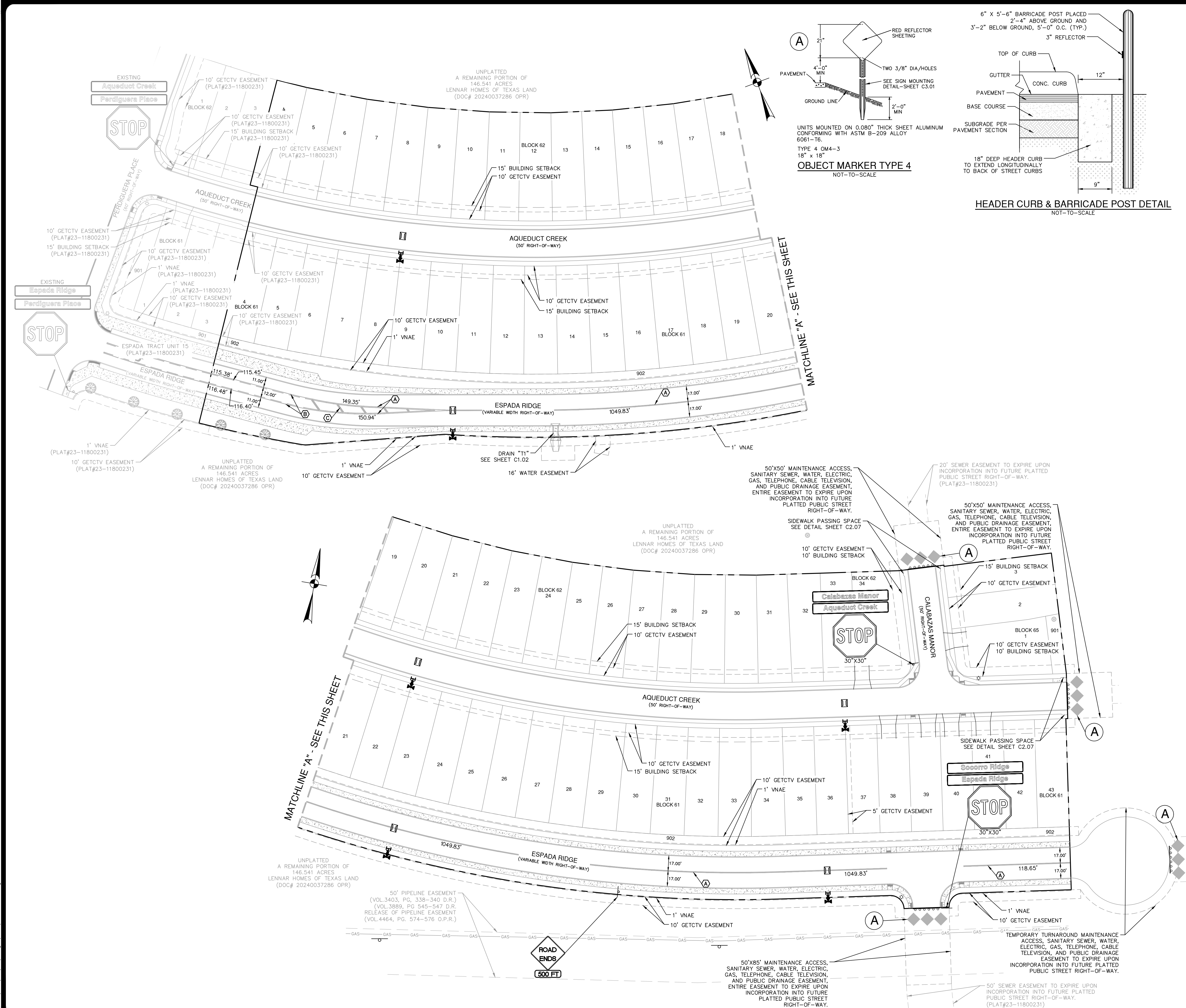
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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

## TYPICAL STREET DETAILS

1800384  
2632-17  
MBER 2023  
BK  
DRAWN AV  
2.07



Date: Apr. 03, 2024, 9:33am User: IS: tomochio  
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SYMBOL	ITEM NUMBER
	UNIT BOUNDARY
	CURB INLET
	PROPOSED DRIVEWAY
	SIDEWALK (HOMEBUILDER RESPONSIBILITY)
	SIDEWALK (DEVELOPER'S RESPONSIBILITY)
	EXISTING WELL
	TYPE II BLUE RAISED PAVEMENT MARKERS - NO SEPARATE PAY ITEM (N.T.S.)
	END OF ROAD MARKER OM4-3
	HEADER CURB W/ BARRICADE POSTS
	YELLOW DOUBLE 6" SOLID - THERMOPLASTIC WITH TYPE II A-A @ 20" (REFL) PAVEMENT MARKERS
	YELLOW 6" THERMOPLASTIC SOLID (REFL) & YELLOW 6" BROKEN THERMOPLASTIC (REFL) W/ TYPE II A-A @ 40" C-C REF. PWT MARKING
	YELLOW 24" SOLID LINE (DIAGONAL) THERMOPLASTIC WITH TYPE II A-A @ 20" (REFL) PAVEMENT MARKERS
	STREET SIGN
	R1-1 30"x30"
	W14-1T 36"x36"
	W16-2aP 24"x12"

**BEXAR COUNTY ROW NOTES:**  
A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

**DRIVEWAY NOTE:**  
DRIVEWAYS SHOWN ON THIS PLAN ARE FOR THE SOLE PURPOSE OF INDICATING A POTENTIAL CONFLICT WITH CURB RAMP, DRAINAGE INFRASTRUCTURE, OR OTHER CONFLICT. DRIVEWAY LOCATION IS SUBJECT TO CHANGE BASED ON HOME SELECTION AND FINAL LOT DESIGN.

**TRENCH EXCAVATION SAFETY PROTECTION:**  
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

DATE	
NO.	
REVISION	



**PAPE-DAWSON ENGINEERS**  
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

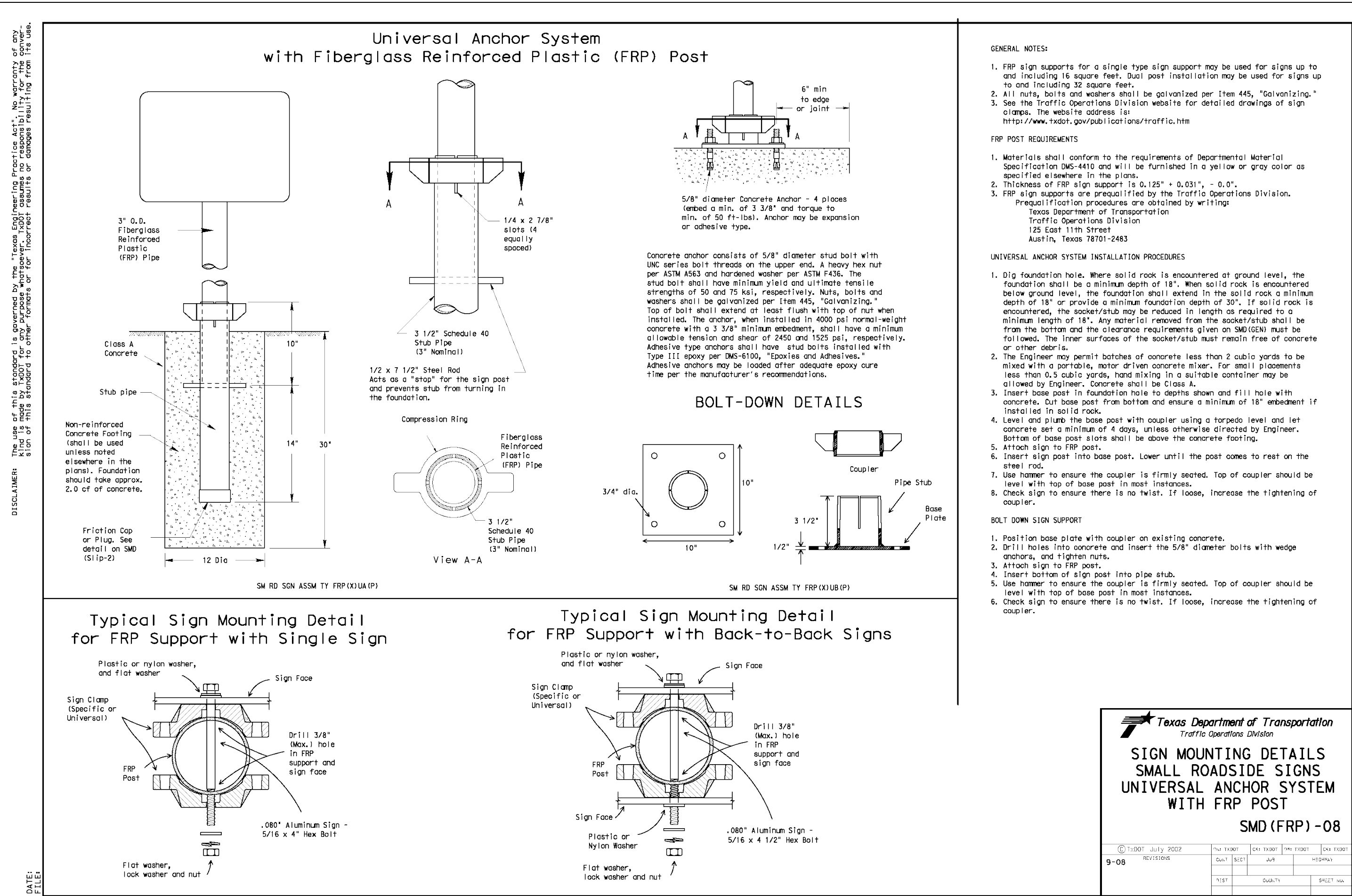
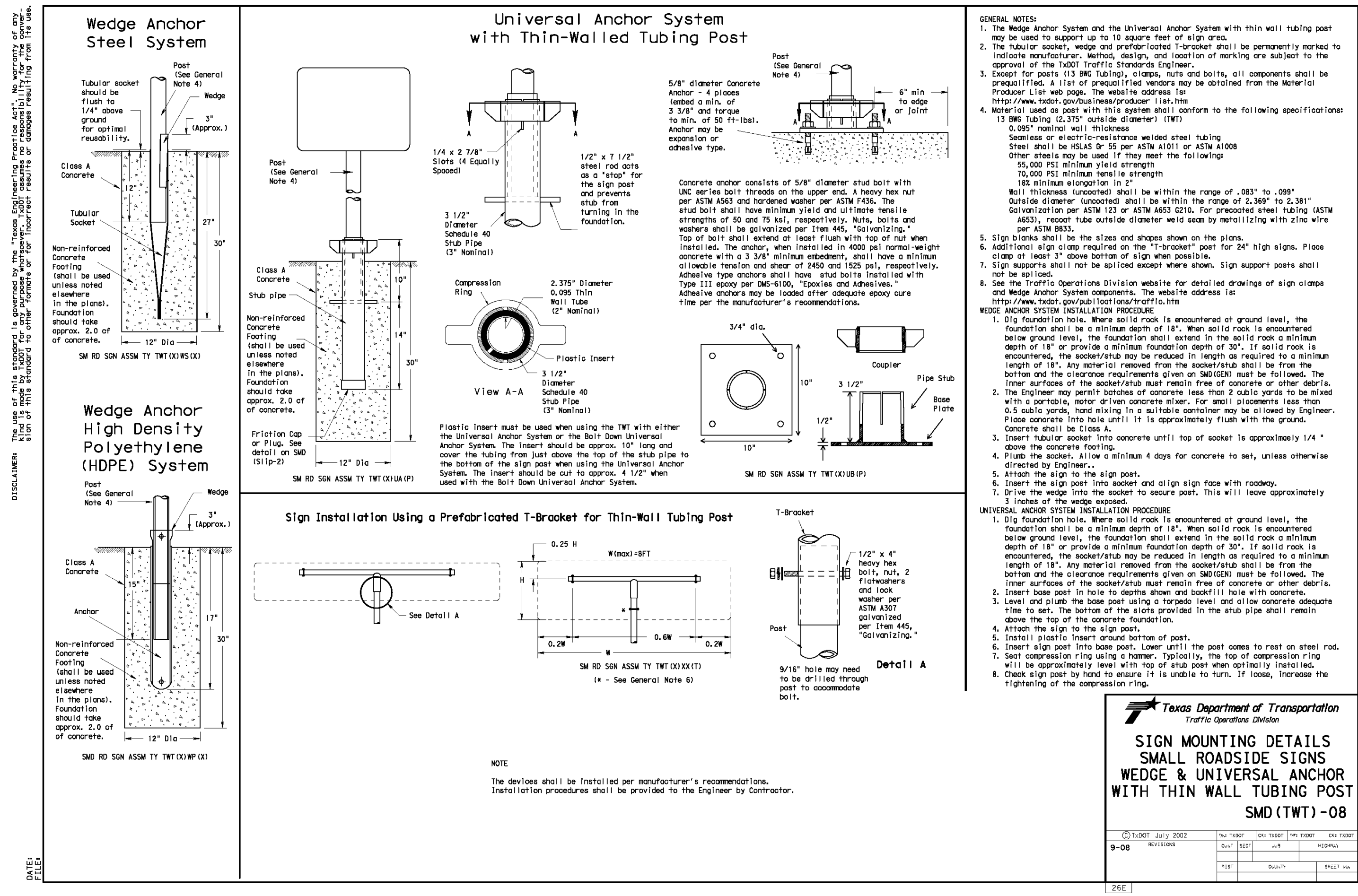
**ESPADA TRACT UNIT 17**  
SAN ANTONIO, TEXAS  
OVERALL SIGNAGE PLAN

PLAT NO.	23-11800384
JOB NO.	12632-17
DATE	NOVEMBER 2023
DESIGNER	BK
CHECKED	DW
DRAWN	AV
SHEET	C3.00

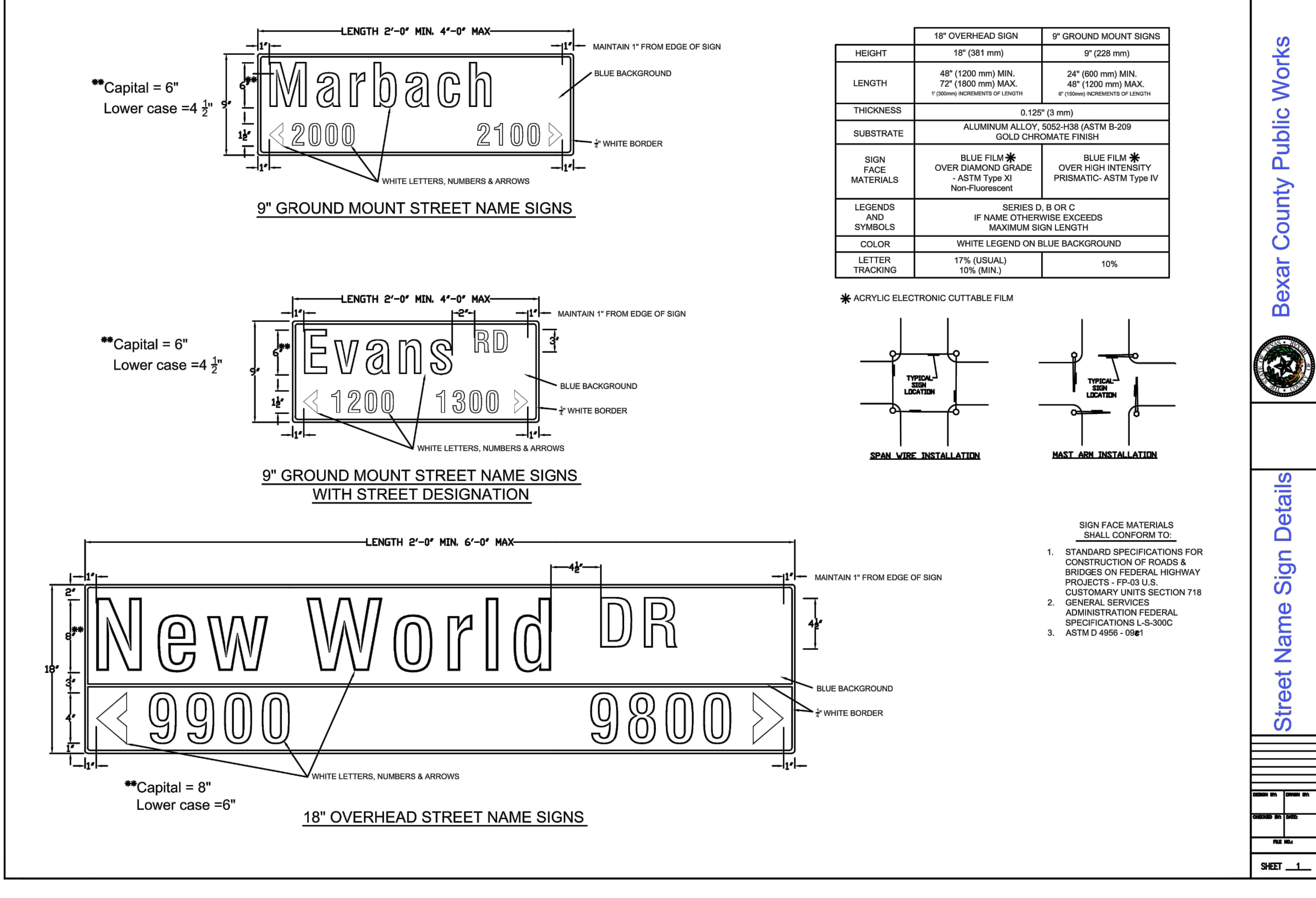








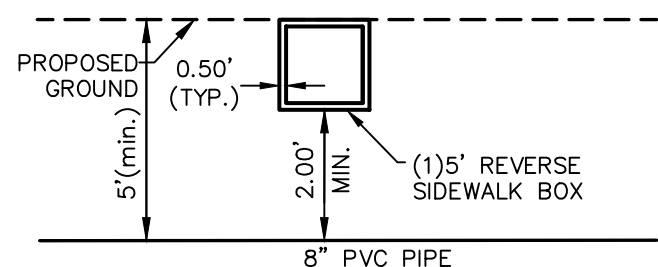




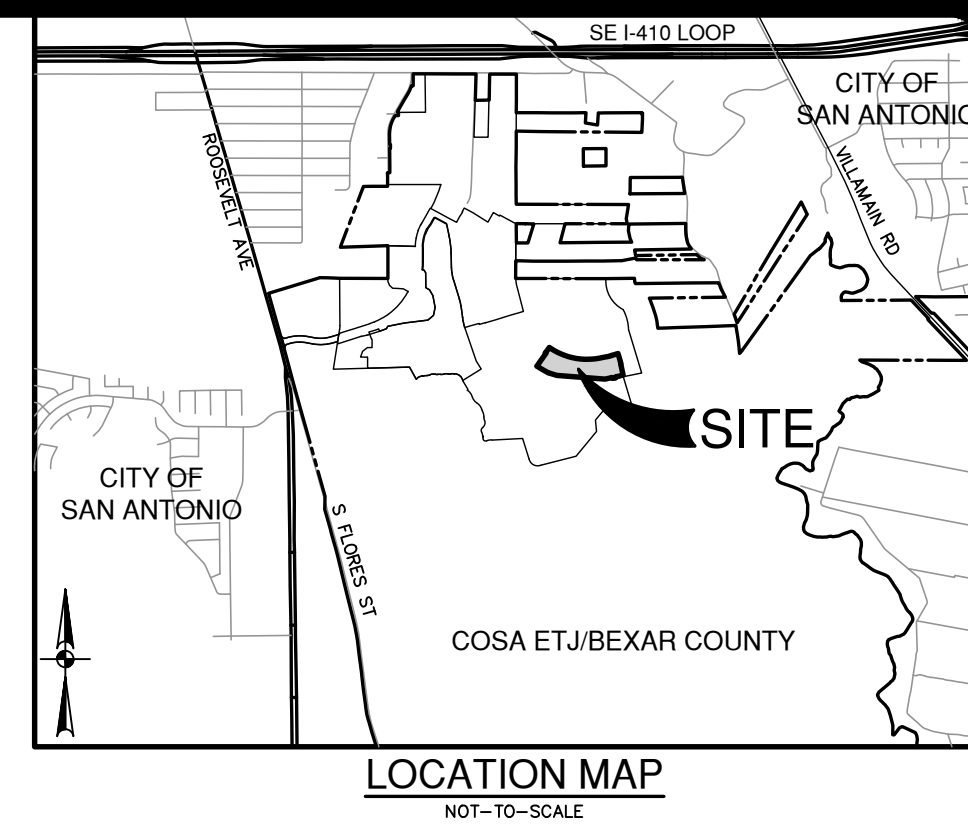
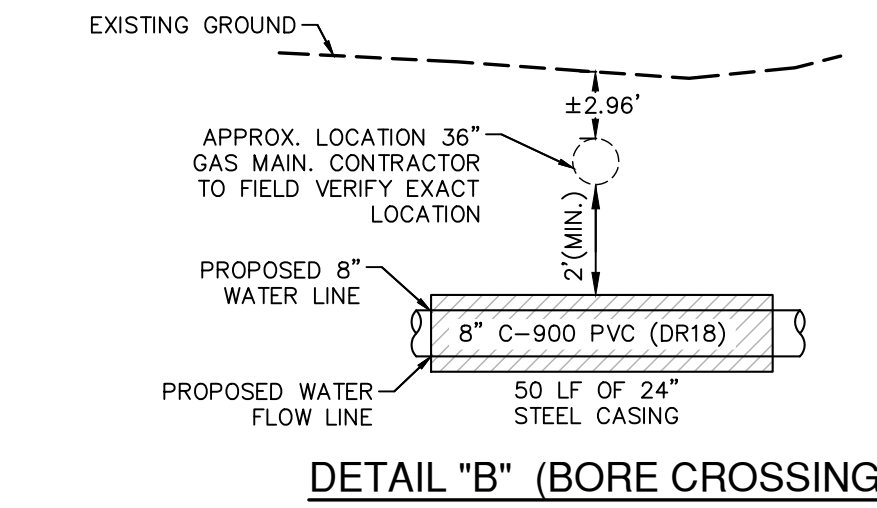
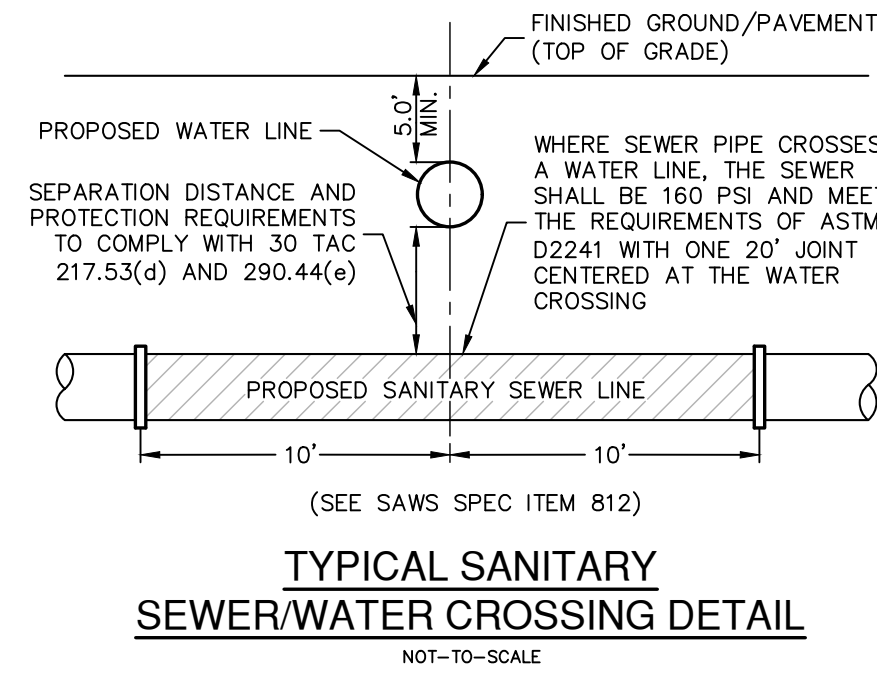
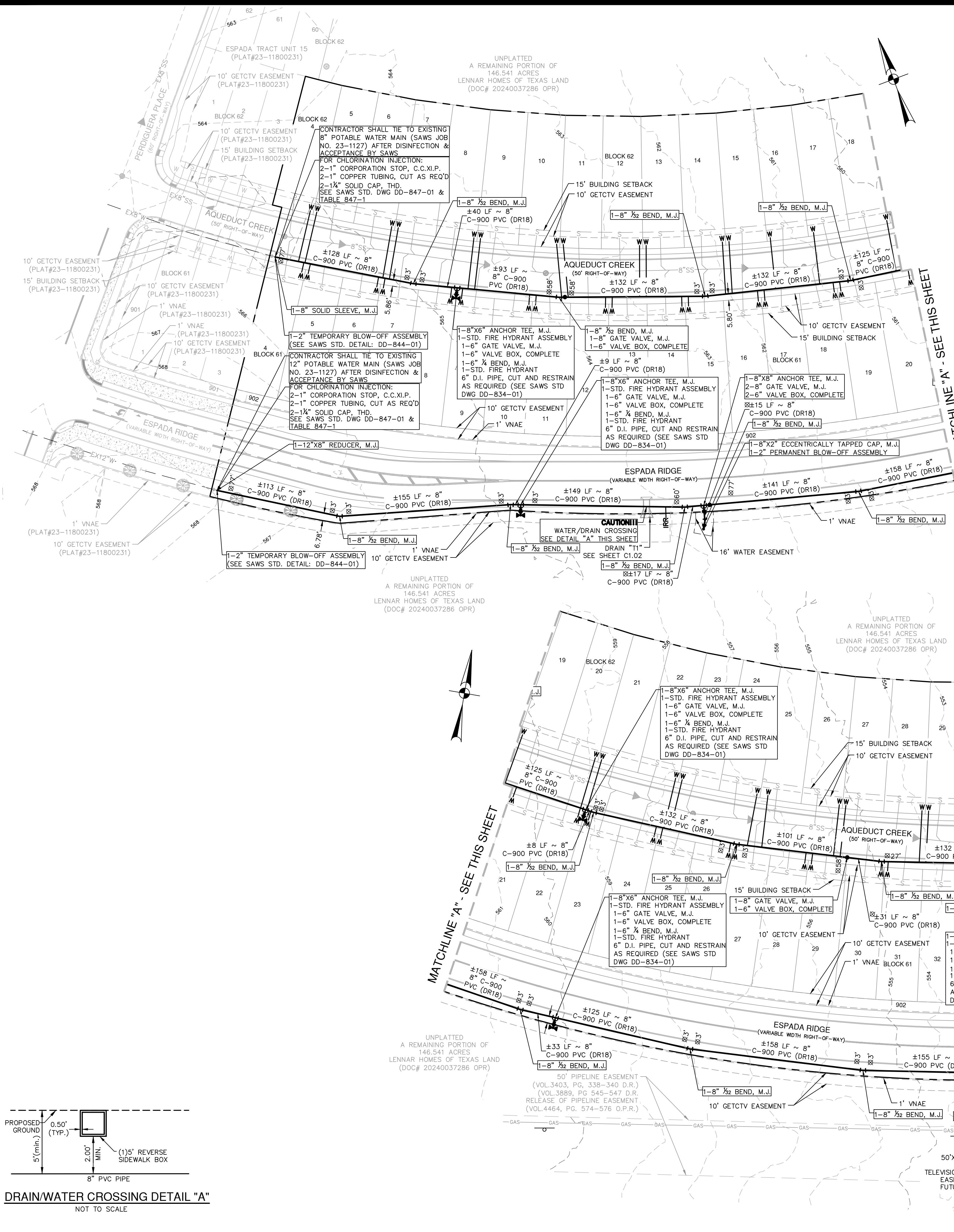


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**DRAIN/WATER CROSSING DETAIL "A"**  
NOT TO SCALE



## WATER LEGEND

PROJECT LIMITS	
EXISTING WATER	
EXISTING SEWER	
PROPOSED SEWER	
PROPOSED WATER	
PROPOSED 3/4" SINGLE SERVICE WITH 5/8" METER	
PROPOSED 1" DUAL SERVICE WITH 5/8" METER	
SINGLE IRRIGATION SERVICE (REF. PLAN VIEW FOR SIZE)	
JOINT RESTRAINT	
EXISTING WELL	
TREES TO REMAIN	
VEHICULAR NO ACCESS EASEMENT	
EXISTING ENTERPRISE GAS MAIN	

## FIRE FLOW NOTE:

IN AN EFFORT TO MEET THE CITY OF SAN ANTONIO'S FIRE FLOW REQUIREMENTS FOR THE PROPOSED RESIDENTIAL DEVELOPMENT, THE PUBLIC WATER MAIN SYSTEM HAS BEEN DESIGNED FOR A MINIMUM FIRE FLOW DEMAND OF 1500 GPM AT 25 PSI RESIDUAL PRESSURE. THE FIRE FLOW REQUIREMENTS FOR INDIVIDUAL STRUCTURES WILL BE REVIEWED DURING THE BUILDING PERMIT PROCESS IN ACCORDANCE WITH THE PROCEDURES SET FORTH BY THE CITY OF SAN ANTONIO DIRECTOR OF DEVELOPMENT SERVICES DEPARTMENT AND THE SAN ANTONIO FIRE DEPARTMENT FIRE MARSHAL.

## ROW PERMIT NOTE:

A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY RIGHTS-OF-WAY.

## PRESSURE REDUCING VALVE NOTE:

PRESSURE REDUCING VALVE TO BE INSTALLED ON CUSTOMER'S SIDE OF METER BY HOMEBUILDER.

## PRESSURE NOTE:

CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 565 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 565 FEET, THE DEVELOPER OR BUILDER SHALL INSTALL AT EACH LOT, ON THE CUSTOMER'S SIDE OF THE METER, AN APPROVED TYPE PRESSURE REGULATOR IN CONFORMANCE WITH THE PLUMBING CODE OF THE CITY OF SAN ANTONIO. NO DUAL SERVICES ALLOWED FOR ANY LOT(S) IF \*PRV IS/ARE REQUIRED FOR SUCH LOT(S), ONLY SINGLE SERVICE CONNECTIONS SHALL BE ALLOWED.

\*NOTE: A PRESSURE REGULATOR IS ALSO KNOWN AS A PRESSURE REDUCING VALVE (PRV).

## JOINT RESTRAINT NOTE:

CONTRACTOR SHALL INSTALL RETAINER GLANDS AT ALL FITTINGS AND PROVIDE JOINT RESTRAINING HARNESSES OR FIELD LOCK GASKETS AT ALL JOINTS WITHIN THE LENGTH SHOWN. CONTRACTOR SHALL INSURE THAT ALL TEES, BENDS, VALVES, ETC. HAVE A MINIMUM OF 5 FT OF PIPE WITH NO JOINTS ON EACH SIDE OF THE FITTING. JOINT RESTRAINTS AND RETAINER GLANDS SHALL BE CALCULATED BY SAWS APPROVED PROGRAMS. THERE WILL BE NO SEPARATE PAY ITEM FOR RETAINER GLANDS AND OTHER JOINT RESTRAINING HARNESSES AND GASKETS, BUT SHALL BE SUBSIDIARY TO THE UNIT COST PER LINEAL FOOT OF PIPE INSTALLATION.

## TRENCH EXCAVATION SAFETY PROTECTION:

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND /OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

## WATER (SAWS PRESSURE ZONE 750)

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 122536 TOTAL EDU'S 75 TOTAL ACREAGE 11.73
TOTAL LINEAR FOOTAGE OF PIPE: 3224.56 LF ~ 8" PVC PLAT NO. 22-1180384
NUMBER OF LOTS 74 SAWS JOB NO. 23-1197

DATE	
NO.	REVISION
4/13/2024	

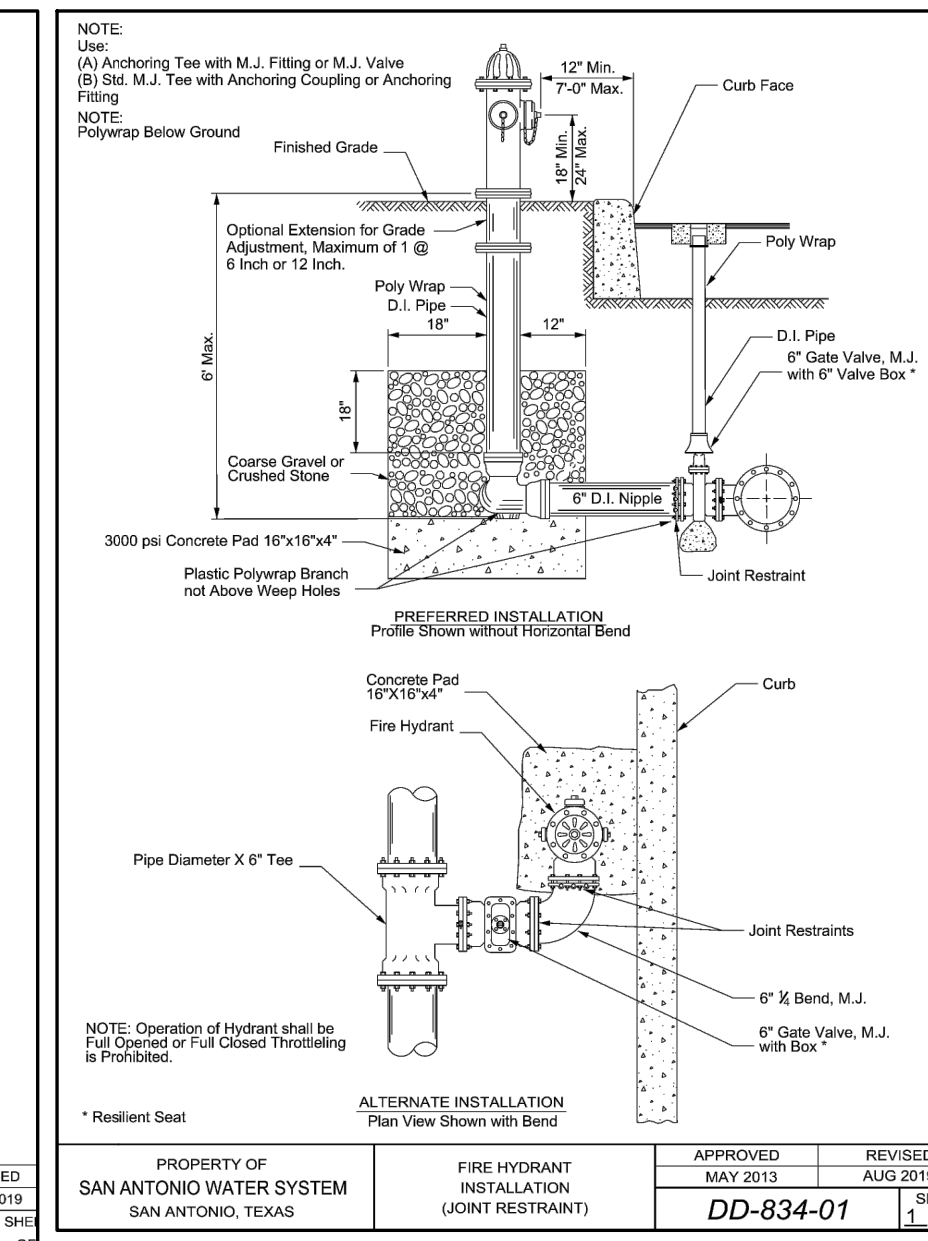
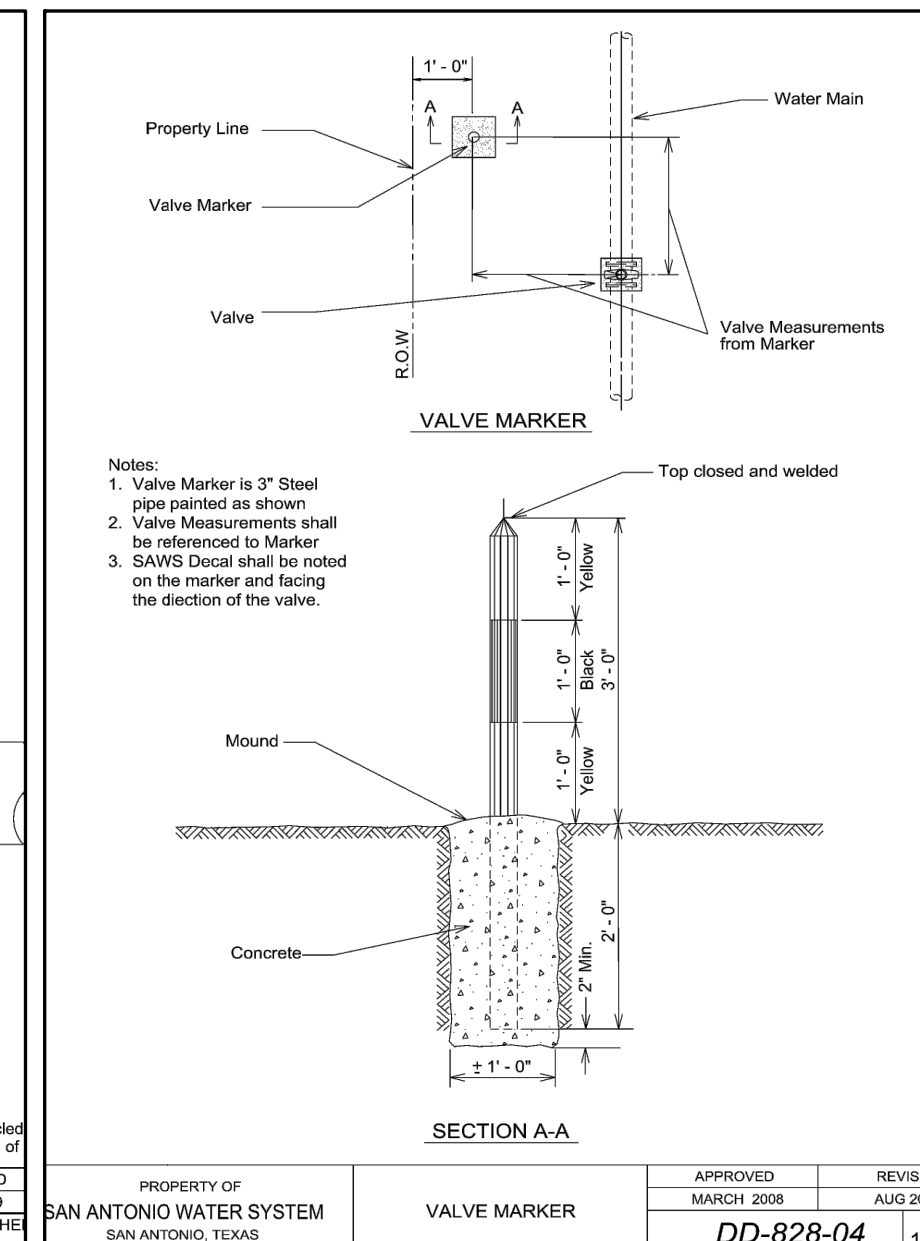
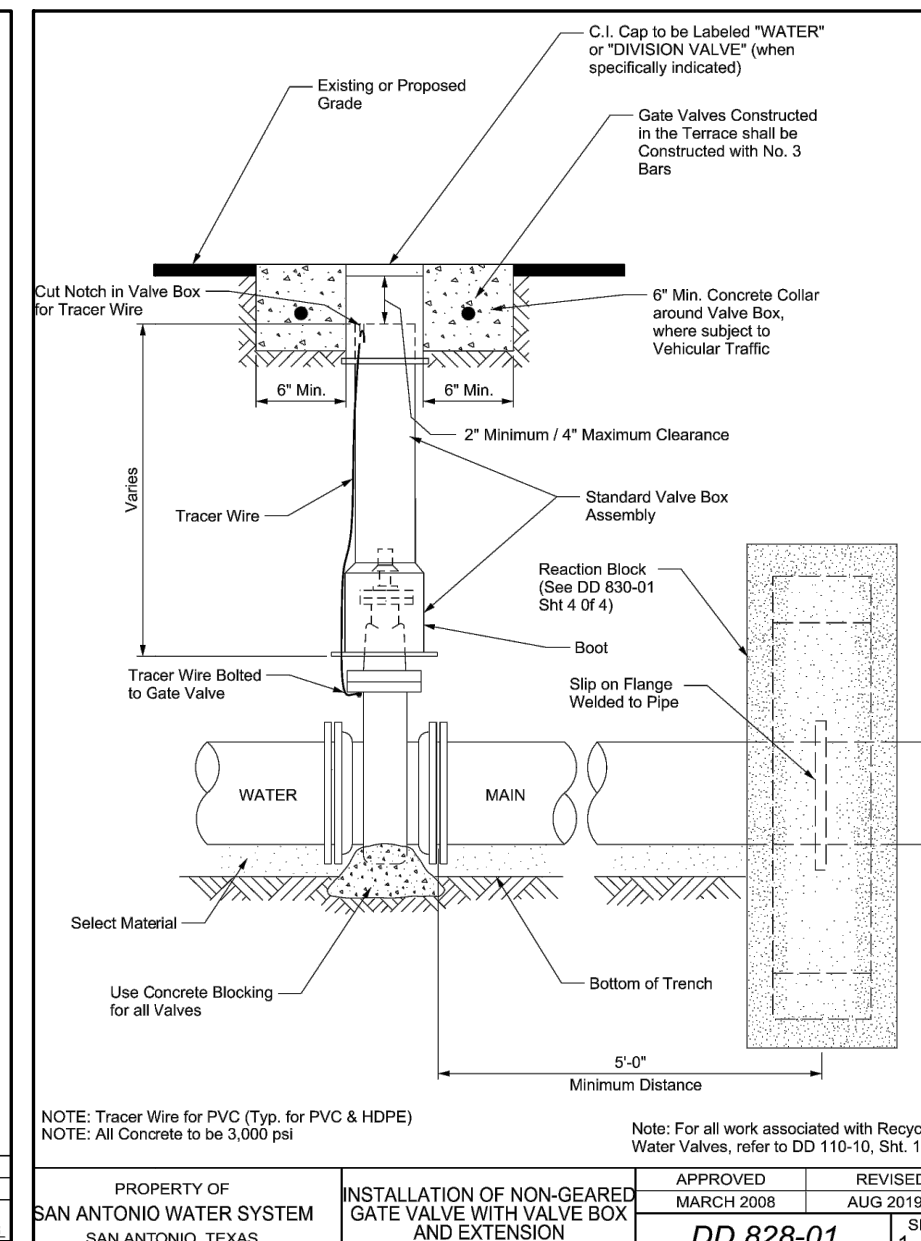
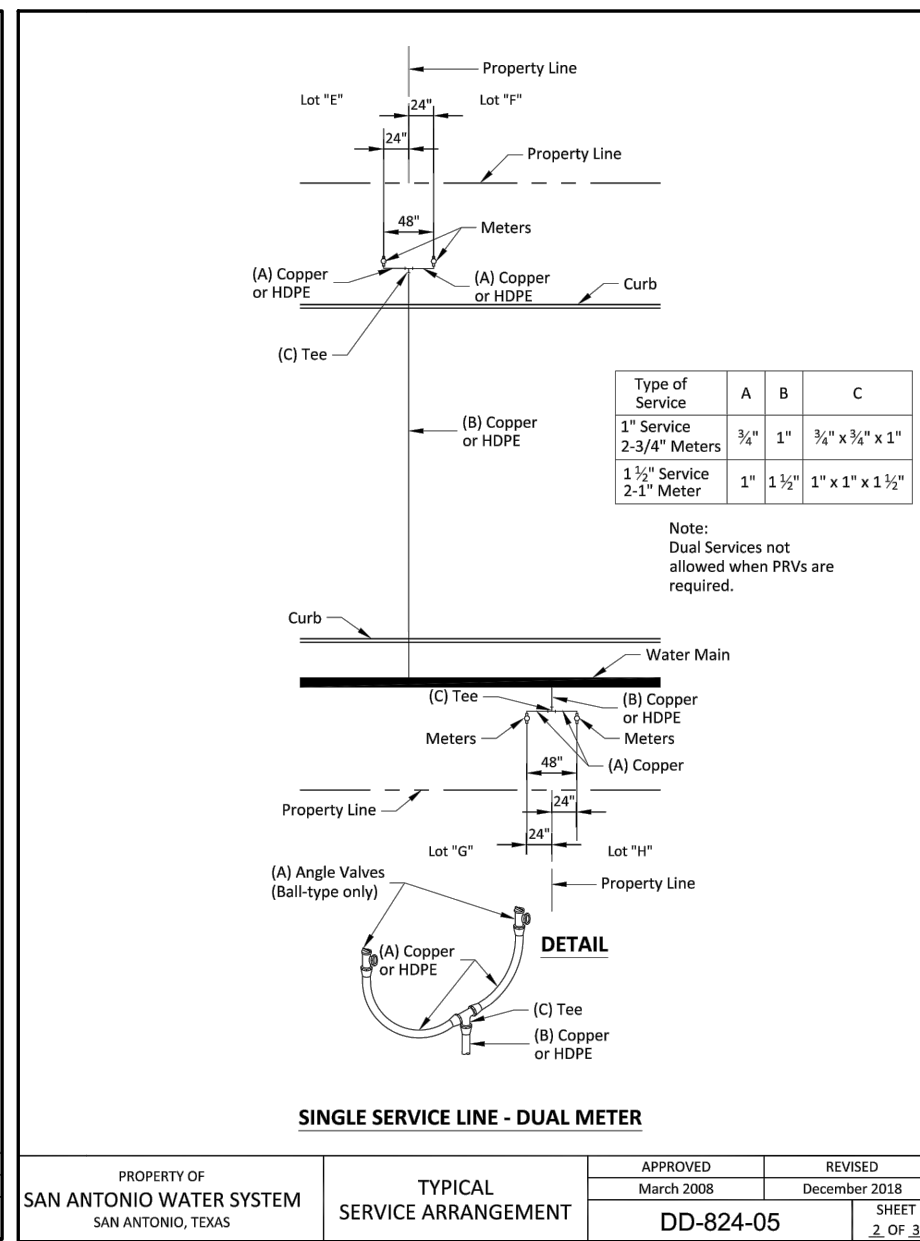
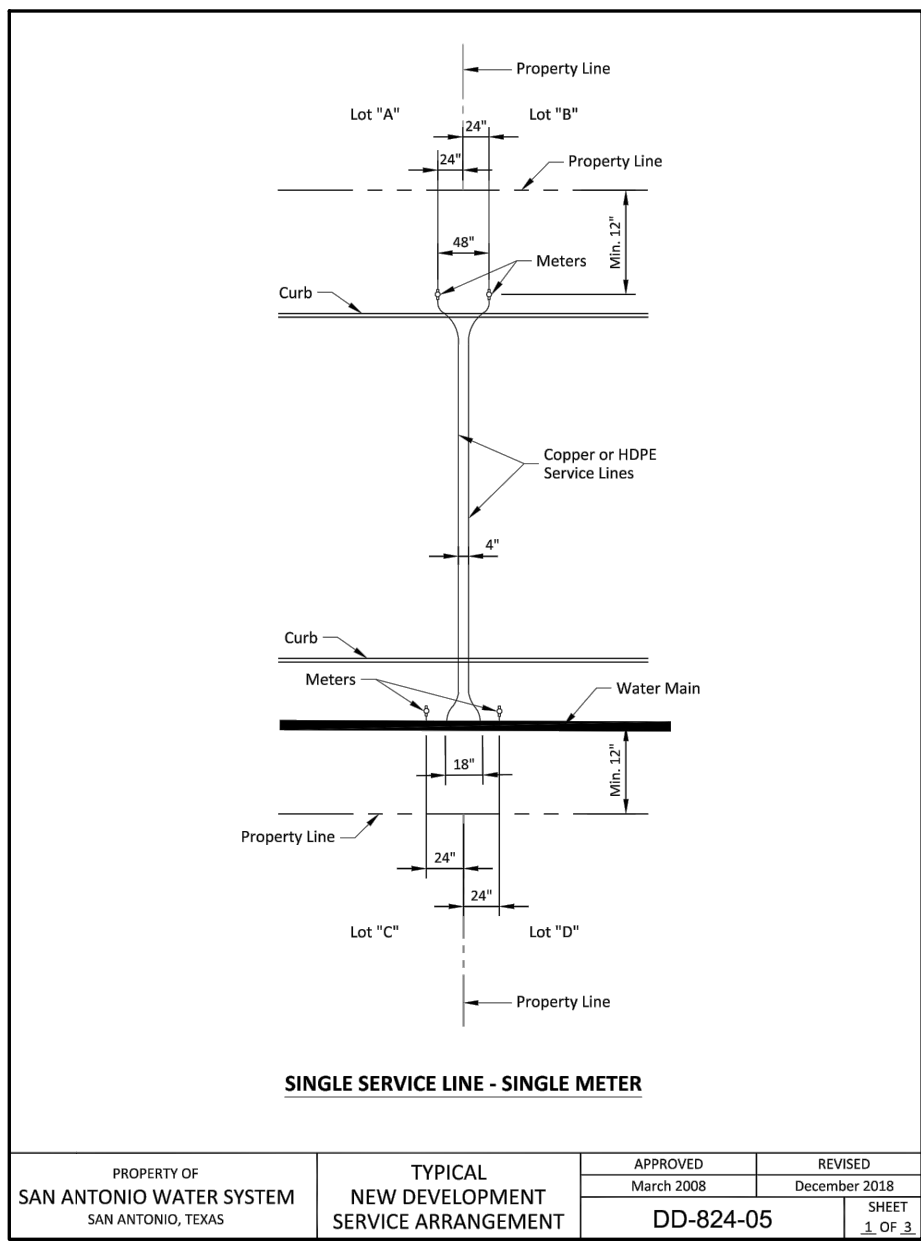
**PAPE-DAWSON ENGINEERS**  
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008860

**ESPADA TRACT UNIT 17**  
SAN ANTONIO, TEXAS

OVERALL WATER DISTRIBUTION PLAN

PLAT NO. 23-11800384
JOB NO. 12632-17
DATE NOVEMBER 2023
DESIGNER BK
CHECKED DW DRAWN AV
SHEET C4.00





**RESTRAINED LENGTH DESIGN**

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note: These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF  
SAN ANTONIO WATER SYSTEM  
SAN ANTONIO, TEXAS

RESTRAINED LENGTHS  
FOR TEES

APPROVED  
March 2008  
DD-839-04

REVISED  
August 2019  
SHEET 1 OF 2

PIPE SIZE (INCH)	BRANCH SIZE (INCH)	LENGTH OF RUN (FEET)	RESTRAINED LENGTH (FEET) TEST PRESSURE = 200 psi	RESTRAINED LENGTH (FEET) TEST PRESSURE = 150 psi
6	4	0	42	31
6	4	5	27	20
6	4	10	12	11
6	4	15	0	0
6	6	0	59	44
6	6	5	35	29
6	6	10	11	1
8	4	0	42	31
8	4	5	27	20
8	4	10	12	11
8	4	15	0	0
8	6	0	59	44
8	6	5	35	29
8	6	10	11	1
8	8	0	77	58
8	8	5	53	34
8	8	10	30	11
8	8	15	6	1

**RESTRAINED LENGTH DESIGN**

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

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PROPERTY OF  
SAN ANTONIO WATER SYSTEM  
SAN ANTONIO, TEXAS

RESTRAINED LENGTHS FOR  
DEAD ENDS / INLINE VALVES

APPROVED  
March 2008  
DD-839-05

REVISED  
August 2019  
SHEET 1 OF 1

PIPE SIZE (INCH)	RESTRAINED LENGTH (FEET) TEST PRESSURE = 200 psi	RESTRAINED LENGTH (FEET) TEST PRESSURE = 150 psi
6	59	44
8	77	58
10	93	69
12	109	82

**RESTRAINED LENGTH DESIGN**

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Note: These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF  
SAN ANTONIO WATER SYSTEM  
SAN ANTONIO, TEXAS

RESTRAINED LENGTHS  
VERTICAL OFFSETS

APPROVED  
March 2008  
DD-839-06

REVISED  
August 2019  
SHEET 1 OF 1

PIPE SIZE (INCH)	BEND ANGLE (deg.)	LOW SIDE DEPTH (INCH)	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 200 psi	UPPER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi	LOWER BEND RESTRAINED LENGTH IN FEET TEST PRESSURE = 150 psi
6	45	5	24	8	18	6
6	22.5	5	12	4	9	3
6	11.25	5	6	2	4	1
6	45	10	24	18	18	12
6	22.5	10	12	9	9	6
6	11.25	10	6	4	4	3
8	45	5	32	11	24	8
8	22.5	5	16	5	11	4
8	11.25	5	8	3	6	2
8	45	10	32	24	24	16
8	22.5	10	16	12	12	8
8	11.25	10	8	6	6	4
12	45	5	48	18	36	12
12	22.5	5	24	9	18	6
12	11.25	5	12	4	9	3
12	45	10	48	36	36	24
12	22.5	10	24	18	18	12
12	11.25	10	12	9	9	6

**RESTRAINED LENGTH DESIGN**

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note: These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF  
SAN ANTONIO WATER SYSTEM  
SAN ANTONIO, TEXAS

RESTRAINED LENGTHS  
FOR REDUCERS

APPROVED  
March 2008  
DD-839-07

REVISED  
August 2019  
SHEET 1 OF 1

PIPE SIZE (INCH)	SMALLER SIZE (INCH)	RESTRAINED LENGTH (FEET) TEST PRESSURE = 200 psi	RESTRAINED LENGTH (FEET) TEST PRESSURE = 150 psi
6	4	30	23
6	4	35	27
6	4	40	31
6	4	45	35
6	4	50	39
6	4	55	43
6	4	60	47
6	4	65	51
6	4	70	55
6	4	75	59
6	4	80	63
6	4	85	67
6	4	90	71
6	4	95	75
6	4	100	79
6	4	105	83
6	4	110	87
6	4	115	91
6	4	120	95
6	4	125	99
6	4	130	103
6	4	135	107
6	4	140	111
6	4	145	115
6	4	150	119
6	4	155	123
6	4	160	127
6	4	165	131
6	4	170	135
6	4	175	139
6	4	180	143
6	4	185	147
6	4	190	151
6	4	195	155
6	4	200	159
6	4	205	163
6	4	210	167
6	4	215	171
6	4	220	175
6	4	225	179
6	4	230	183
6	4	235	187
6	4	240	191
6	4	245	195
6	4	250	199
6	4	255	203
6	4	260	207
6	4	265	211
6	4	270	215
6	4	275	219
6	4	280	223
6	4	285	227
6	4	290	231
6	4	295	235
6	4	300	239
6	4	305	243
6	4	310	247
6	4	315	251
6	4	320	255
6	4	325	259
6	4	330	263
6	4	335	267
6	4	340	271
6	4	345	275
6	4	350	279
6	4	355	283
6	4	360	287
6	4	365	291
6	4	370	295
6	4	375	299
6	4	380	303
6	4	385	307
6	4	390	311
6	4	395	315
6	4	400	319
6	4	405	323
6	4	410	327
6	4	415	331
6	4	420	335
6	4	425	339
6	4	430	343
6	4	435	347
6	4	440	351
6	4	445	355
6	4	450	359
6	4	455	363
6	4	460	367
6	4	465	371
6	4	470	375
6	4	475	379
6	4	480	383
6	4	485	387
6	4	490	391
6	4	495	395
6	4	500	399
6	4	505	403
6	4	510	407
6	4	515	411
6	4	520	415
6	4	525	419
6	4	530	423
6	4	535	427
6	4	540	431
6	4	545	435
6	4	550	439
6	4	555	443
6	4	560	447
6	4	565	451
6	4	570	455
6	4	575	459
6	4	580	463
6	4	585	467
6	4	590	471
6	4	595	475
6	4	600	479
6	4	605	483
6	4	610	487
6	4	615	491
6	4	620	495
6	4	625	499
6	4	630	503
6	4	635	507
6	4	640	511
6	4	645	515
6	4	650	519
6	4	655	523
6	4	660	527
6	4	665	531
6	4	670	535
6	4	675	539
6	4	680	543
6	4	685	547
6	4	690	551
6	4	695	555
6	4	700	559
6	4	705	563
6	4	710	567
6	4	715	571
6	4	720	575
6	4	725	579
6	4	730	583
6	4	735	587
6	4	740	591
6	4	745	595
6	4	750	599
6	4	755	603
6	4	760	607
6	4	765	611
6	4	770	615
6	4	775	619
6	4	780	623
6	4	785	627
6	4	790	631
6	4	795	635
6	4	800	639
6	4	805	643
6	4	810	647
6	4	815	651
6	4	820	655
6	4	825	659
6	4	830	663
6	4	835	667
6	4	840	671
6	4	845	675
6	4	850	679
6	4	855	683
6	4	860	687
6	4	865	691
6	4	870	695
6	4	875	699
6	4	880	703
6	4	885	707
6	4	890	711
6	4	895	715
6	4	900	719
6	4	905	723
6	4	910	727
6	4	915	731
6	4	920	735
6	4	925	739
6	4	930	743
6	4	935	747
6	4	940	751
6	4	945	755
6	4	950	759
6	4	955	763
6	4	960	767
6	4	965	771
6	4	970	775
6	4	975	779
6	4	980	783
6	4	985	787
6	4	990	791
6	4	995	795
6	4	1000	799

**RESTRAINED LENGTH DESIGN**

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note: These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

PROPERTY OF  
SAN ANTONIO WATER SYSTEM  
SAN ANTONIO, TEXAS

RESTRAINED LENGTHS  
FOR HORIZONTAL BENDS

APPROVED  
March 2008  
DD-839-08

REVISED  
August 2019  
SHEET 1 OF 1

PIPE SIZE (INCH)	ANGLE (deg.)	RESTRAINED LENGTH (FEET) TEST PRESSURE = 200 psi	RESTRAINED LENGTH (FEET) TEST PRESSURE = 150 psi
6	90	23	17
6	45	12	9
6	22.5	6	4
6	11.25	3	2
8	90	30	22
8	45	15	11
8	22.5	8	6
8	11.25	4	3
10	90	37	28
10	45	19	14
10	22.5	10	7
10	11.25	5	4
12	90	43	32
12	45	22	17
12	22.5	11	8
12	11.25	6	4

**RESTRAINED LENGTH DESIGN**

Restrained length calculations are for P.V.C. pipe bedded in compacted granular material extending to the top of the pipe. The native soil material is assumed to be inorganic clay of high plasticity. Depth of bury is assumed to be 4 feet.

Note: These calculations are provided for reference. The restrained length shall be designed based upon the conditions encountered during the installation.

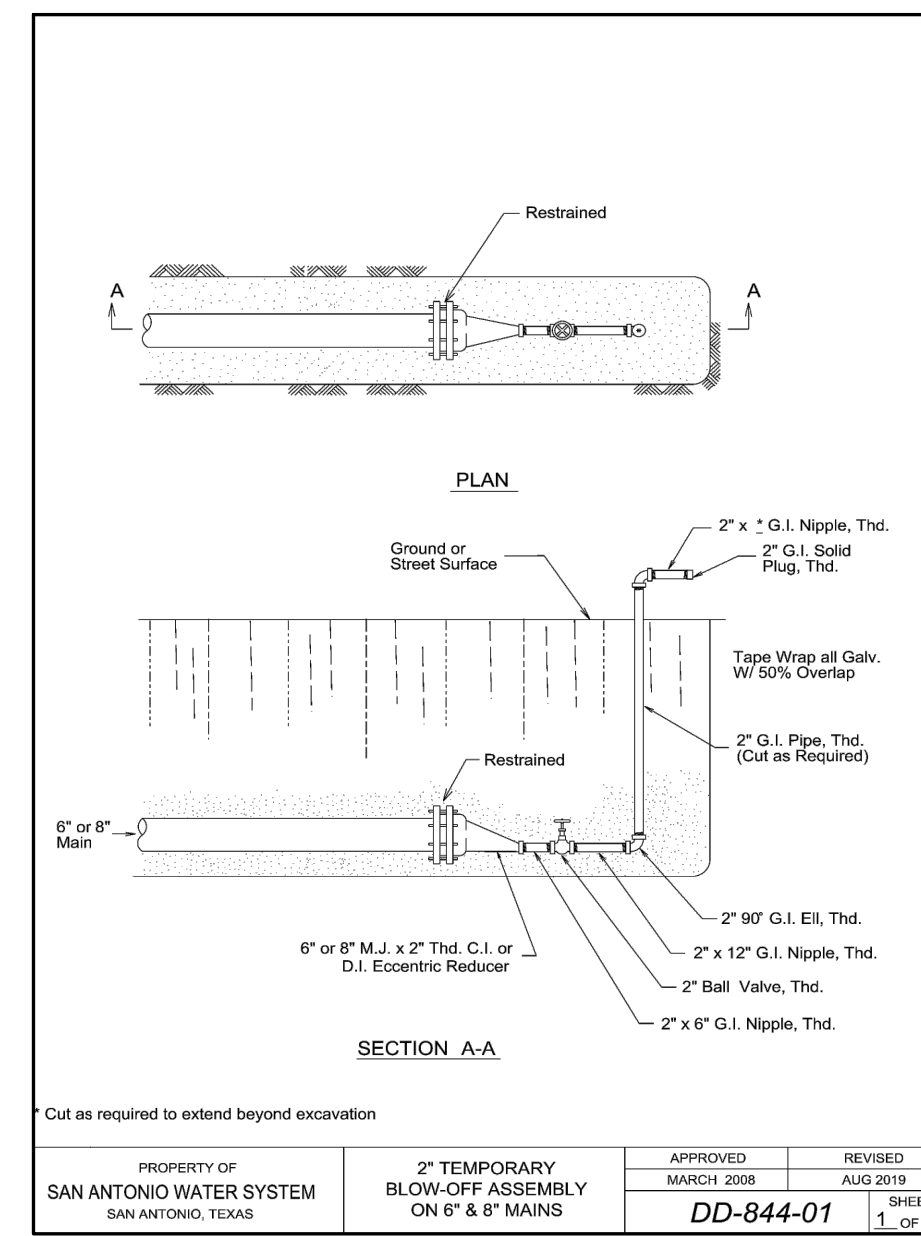
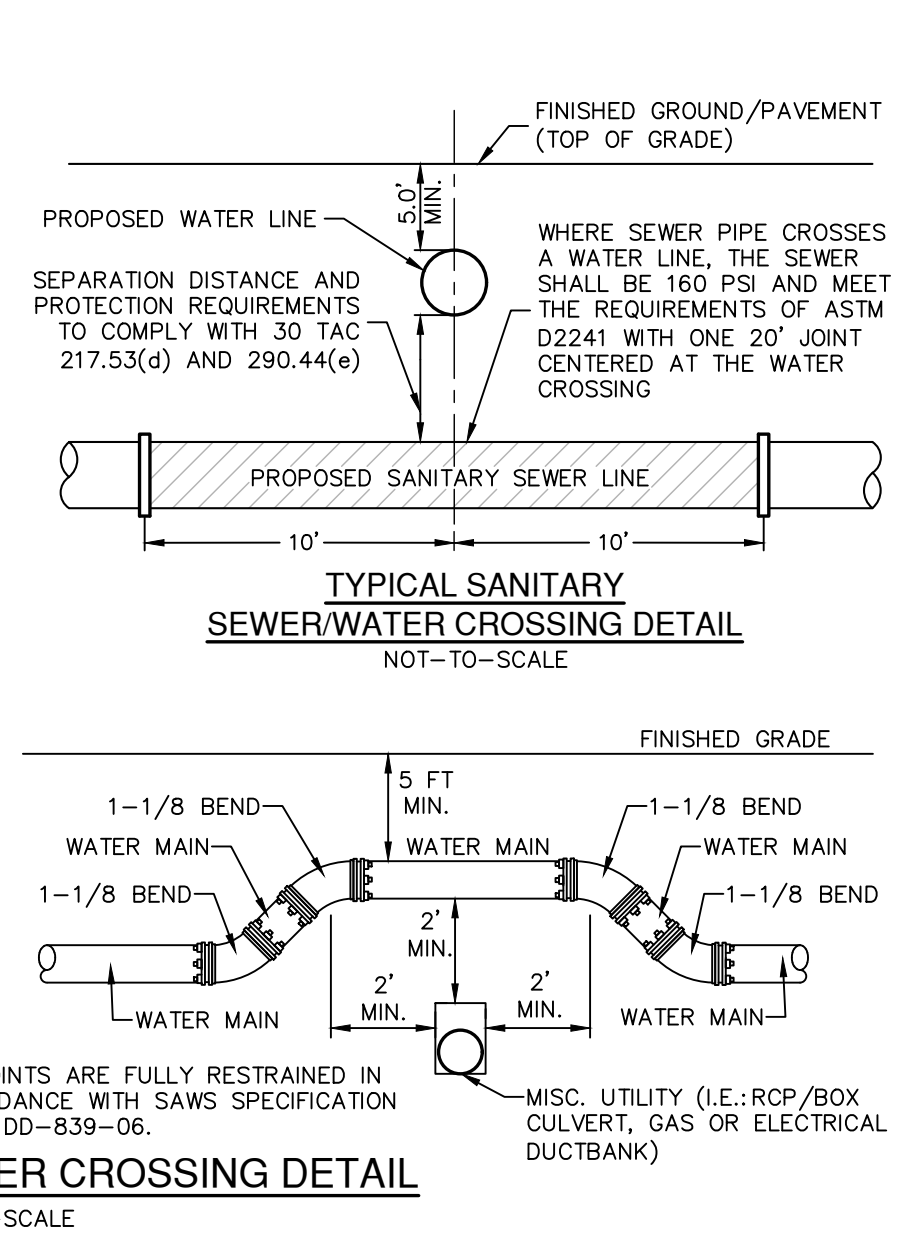
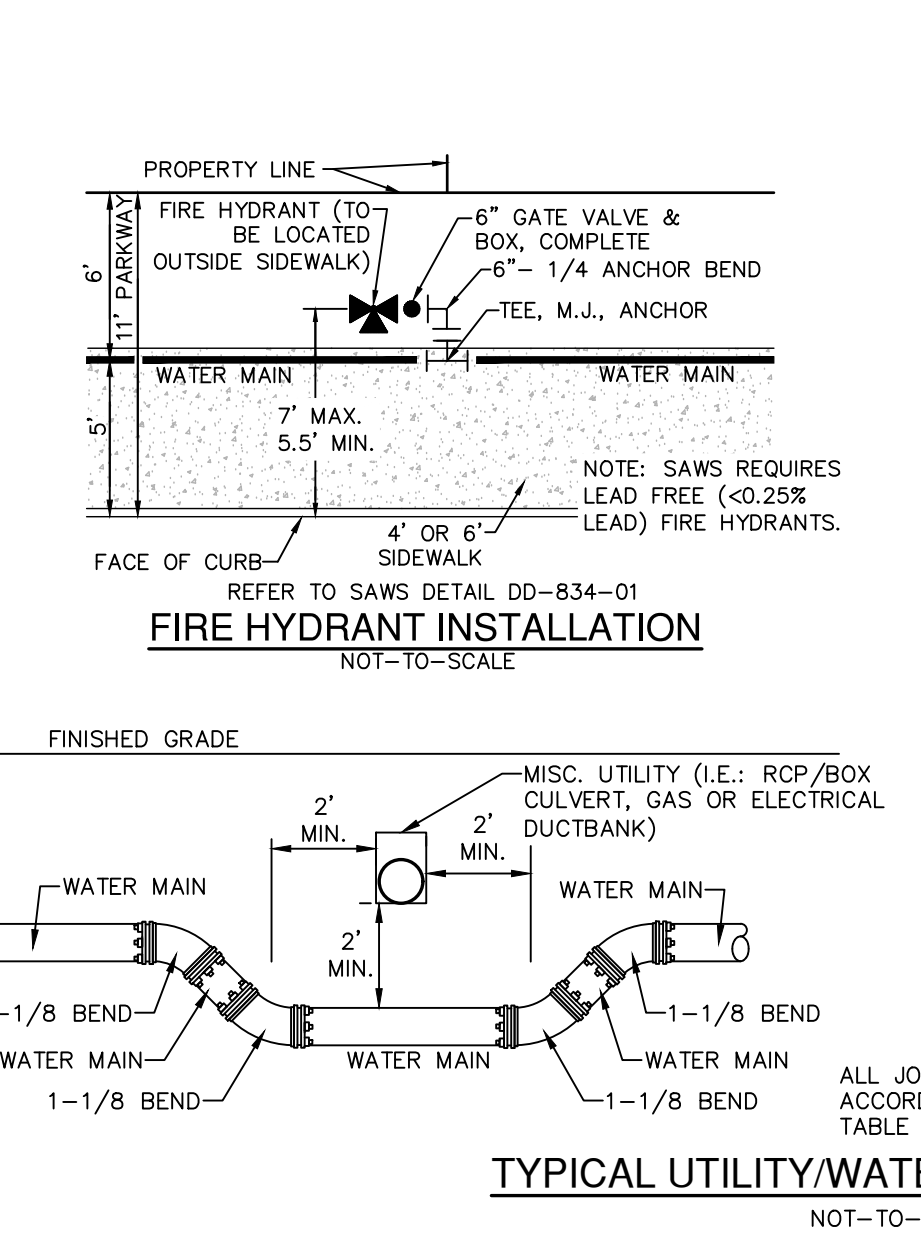
PROPERTY OF  
SAN ANTONIO WATER SYSTEM  
SAN ANTONIO, TEXAS

RESTRAINED LENGTHS  
FOR HORIZONTAL BENDS

APPROVED  
March 2008  
DD-839-08

REVISED  
August 2019  
SHEET 1 OF 1

PIPE SIZE (INCH)	ANGLE (deg.)	RESTRAINED LENGTH (FEET) TEST PRESSURE = 200 psi	RESTRAINED LENGTH (FEET) TEST PRESSURE = 150 psi
6	90	23	17
6	45	12	9
6	22.5	6	4
6	11.25	3	2
8	90	30	22
8	45	15	11
8	22.5	8	6
8	11.25	4	3
10	90	37	28
10	45	19	14
10	22.5	10	7
10	11.25	5	4
12	90	43	32
12	45	22	17
12	22.5	11	8
12	11.25	6	4







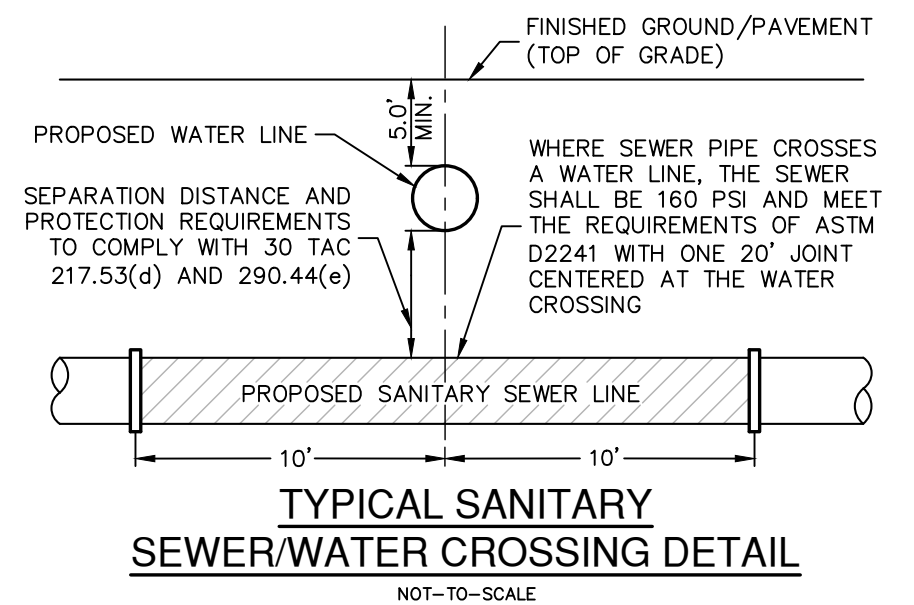
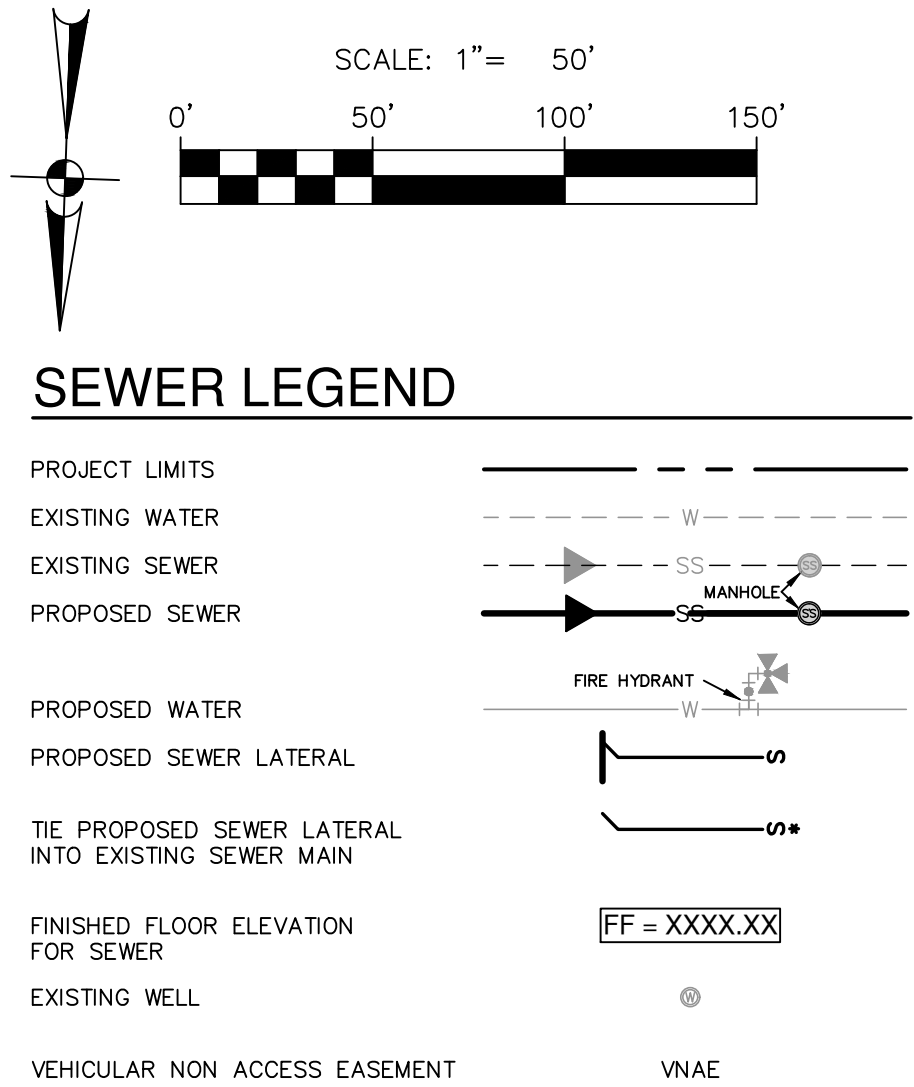
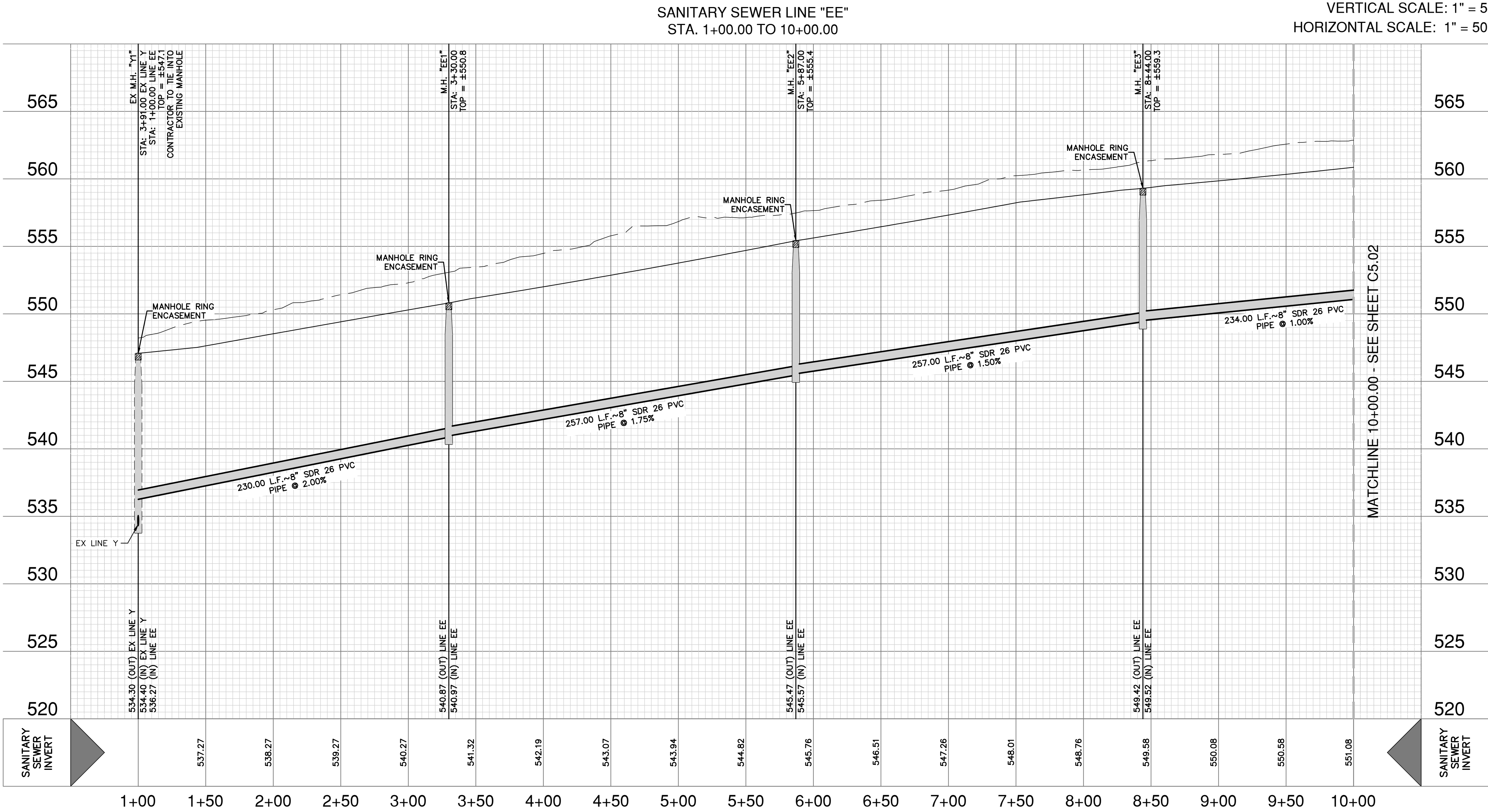






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**CAUTION!!**

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

**TRENCH EXCAVATION SAFETY PROTECTION:**

CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

SALADO CREEK - SAN ANTONIO RIVER WATERSHED - DOS RIOS W.R.C.

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS			
ADDRESS: 100 NE LOOP 410, STE. 1155			
CITY: SAN ANTONIO	STATE: TEXAS	ZIP: 78216	
PHONE# (210) 403-6200	FAX# N/A		
SAWS BLOCK MAP# 172536 TOTAL EDU'S .74 TOTAL ACREAGE 11.73			
TOTAL LINEAR FOOTAGE OF PIPE: 1212.00 LF ~ 8" PVC PLAT NO 23-11800384			
NUMBER OF LOTS 74 SAWS JOB NO. 23-1669			

DATE	
NO.	REVISION

**PAPE-DAWSON ENGINEERS**

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008860

**ESPADA TRACT UNIT 17**  
SAN ANTONIO, TEXAS

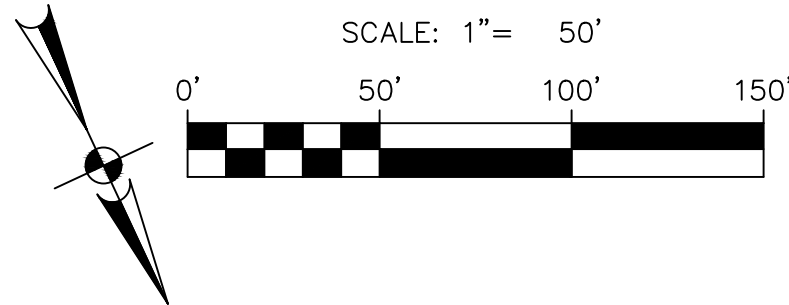
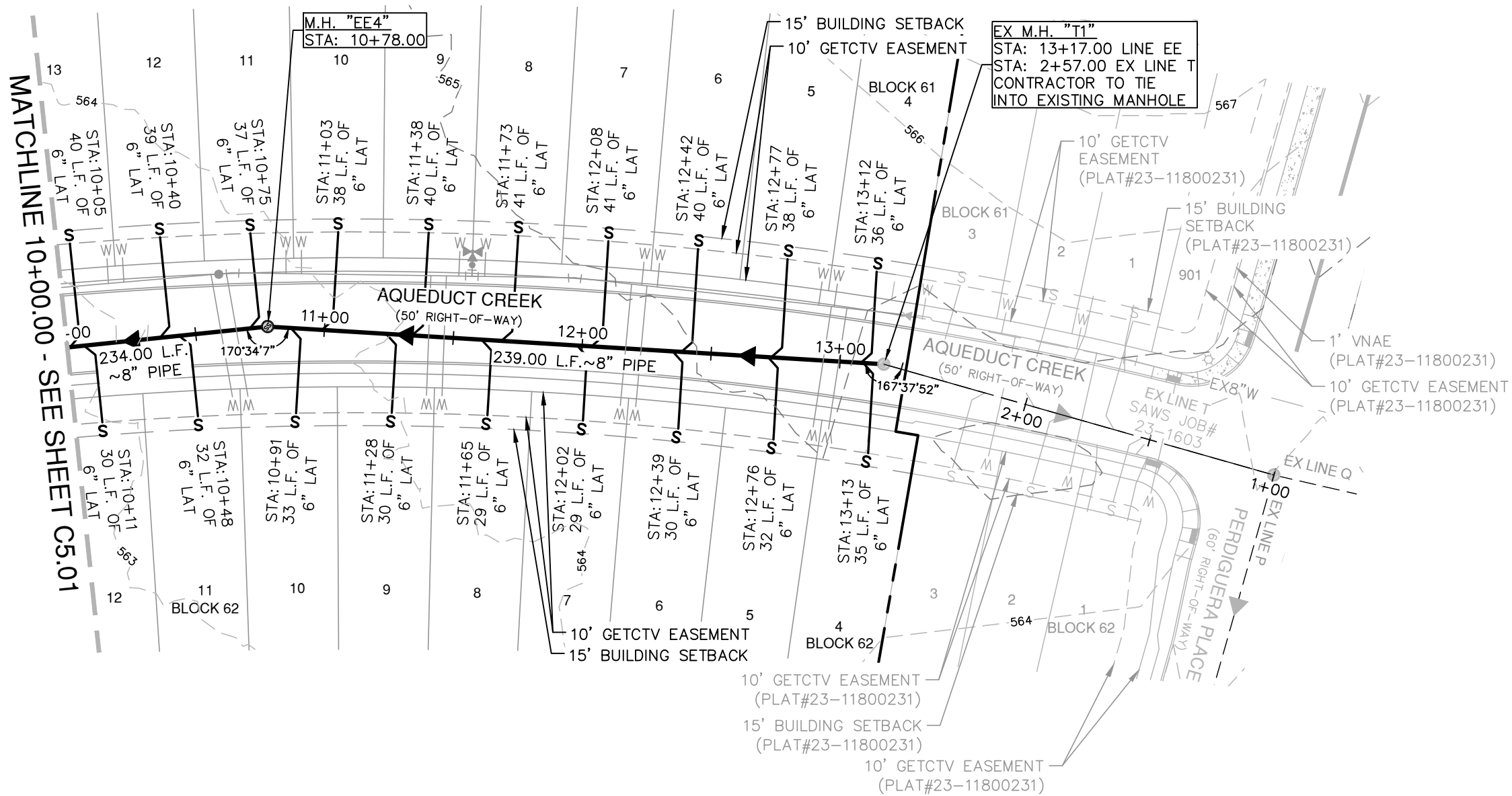
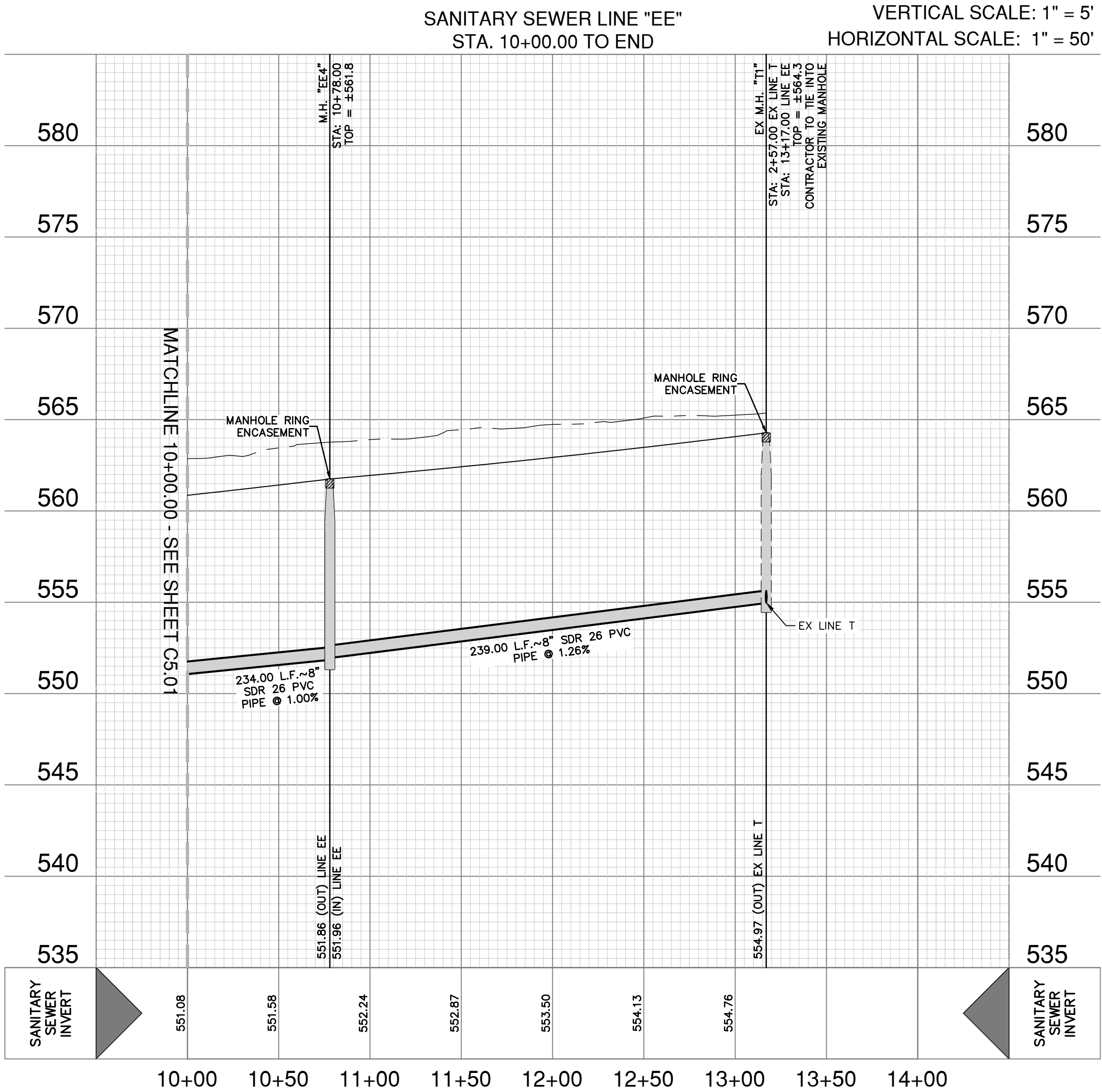
**SS LINE EE PLAN & PROFILE (STA 1+00.00 - 10+00.00)**

PLAT NO	23-11800384
JOB NO.	12632-17
DATE	NOVEMBER 2023
DESIGNER	BK
CHECKED	DW DRAWN
SHEET	C5.01



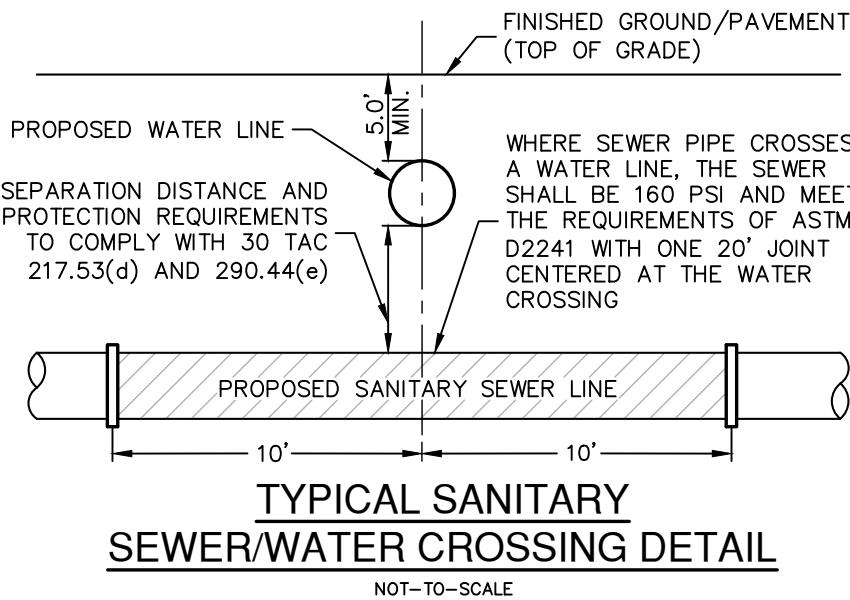
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## SEWER LEGEND

PROJECT LIMITS	
EXISTING WATER	
EXISTING SEWER	
PROPOSED SEWER	
PROPOSED WATER	
PROPOSED SEWER LATERAL	
TIE PROPOSED SEWER LATERAL INTO EXISTING SEWER MAIN	
FINISHED FLOOR ELEVATION FOR SEWER	FF = XXXX.XX
EXISTING WELL	
VEHICULAR NON ACCESS EASEMENT	VNAE



### CAUTION!!

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

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SALADO CREEK - SAN ANTONIO RIVER WATERSHED - DOS RIOS W.R.C.

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS
ADDRESS: 100 NE LOOP 410, STE. 1155
CITY: SAN ANTONIO STATE: TEXAS ZIP: 78216
PHONE# (210) 403-6200 FAX# N/A
SAWS BLOCK MAP# 172536 TOTAL EDU'S 74 TOTAL ACREAGE 11.73
TOTAL LINEAR FOOTAGE OF PIPE: 1217.00 L.F. ~8" PVC PLAT NO 23-11800384
NUMBER OF LOTS 74 SAWS JOB NO. 23-1669

NO.	REVISION	DATE



**PAPE-DAWSON ENGINEERS**  
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008860

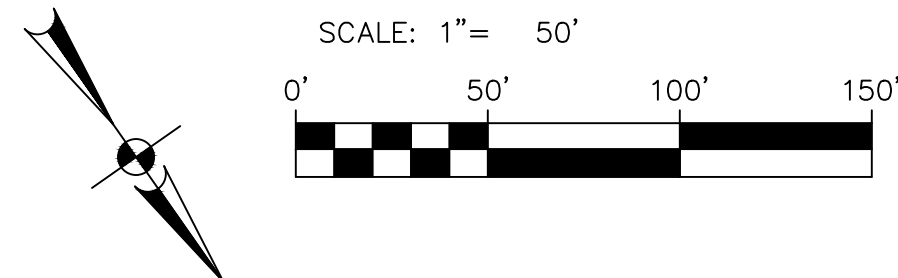
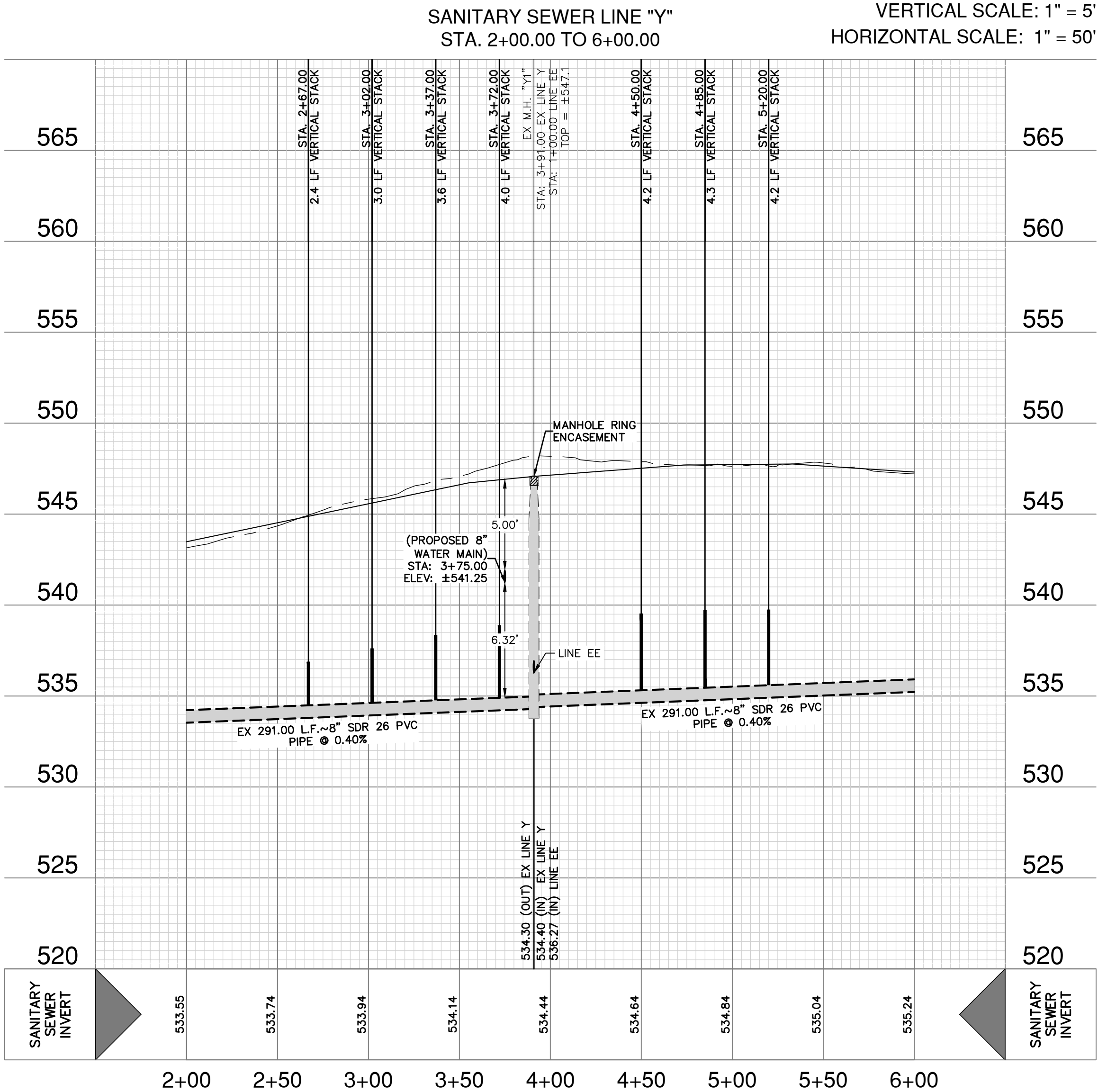
**ESPADA TRACT UNIT 17**  
SAN ANTONIO, TEXAS  
SS LINE EE PLAN & PROFILE (STA 10+00.00 - END)

PLAT NO.	23-11800384		
JOB NO.	12632-17		
DATE	NOVEMBER 2023		
DESIGNER	BK		
CHECKED	DW	DRAWN	AV
SHEET	C5.02		

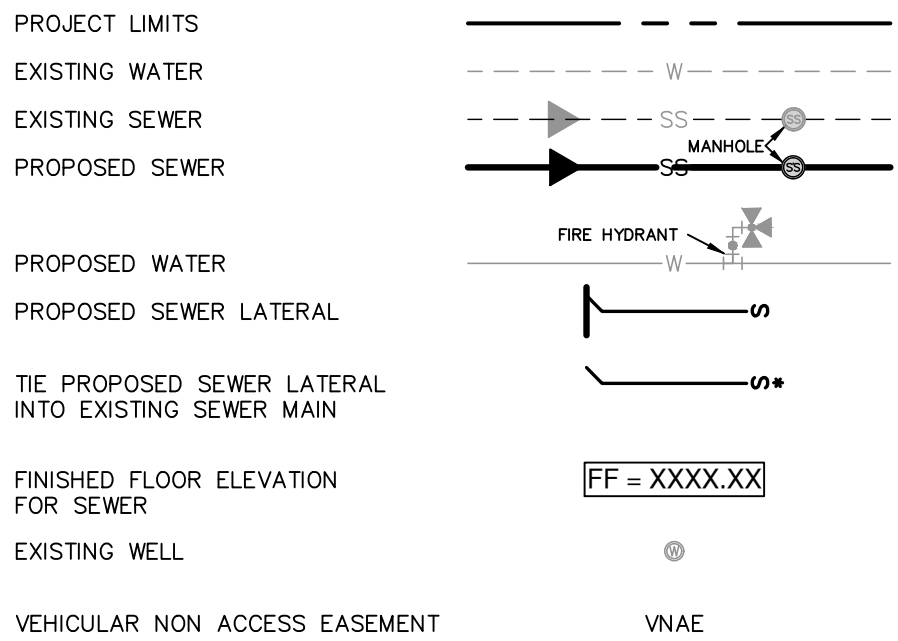


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### SEWER LEGEND

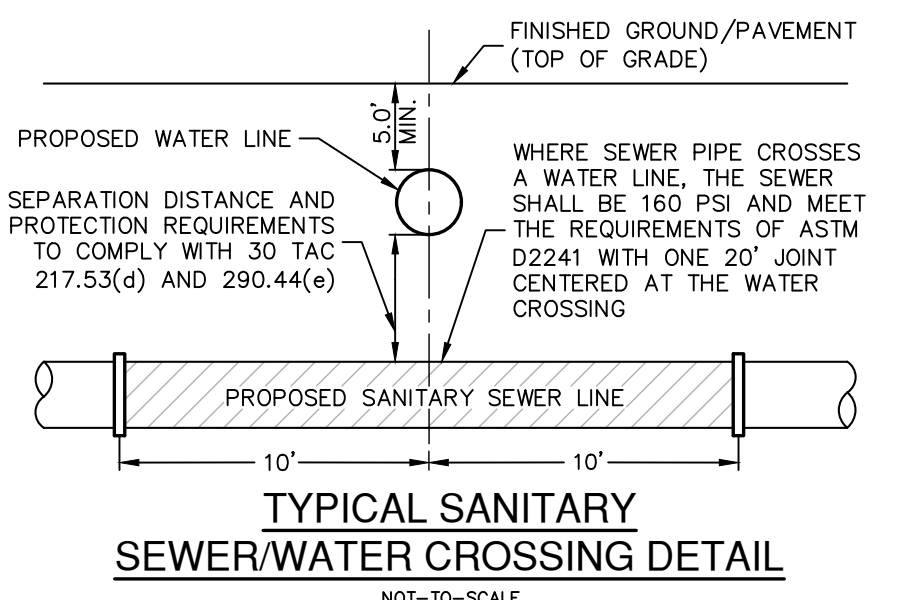


NO.	REVISION	DATE

**EUGENE H. DAWSON III**  
PROFESSIONAL ENGINEER  
4/13/2024

**PAPE-DAWSON ENGINEERS**

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10088600



**CAUTION!!**  
CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING, ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. ANY UTILITY CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT 1-800-DIG-TESS A MINIMUM OF 48 HOURS PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

**TRENCH EXCAVATION SAFETY PROTECTION:**  
CONTRACTOR AND/ OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITES WITHIN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL PROVIDE FOR ADEQUATE TRENCH EXCAVATION SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

**SALADO CREEK - SAN ANTONIO RIVER WATERSHED - DOS RIOS W.R.C.**

DEVELOPER'S NAME: LENNAR HOMES OF TEXAS		
ADDRESS: 100 NE LOOP 410, STE. 1155		
CITY: SAN ANTONIO	STATE: TEXAS	ZIP: 78216
PHONE# (210) 403-6200	FAX# N/A	
SAWS BLOCK MAP# 172536 TOTAL EDU'S 74 TOTAL ACREAGE 11.73		
TOTAL LINEAR FOOTAGE OF PIPE: 1217.00 LF ~ 8" PVC PLAT NO 23-11800384		
NUMBER OF LOTS 74	SAWS JOB NO. 23-1669	

**ESPADA TRACT UNIT 17**  
SAN ANTONIO, TEXAS

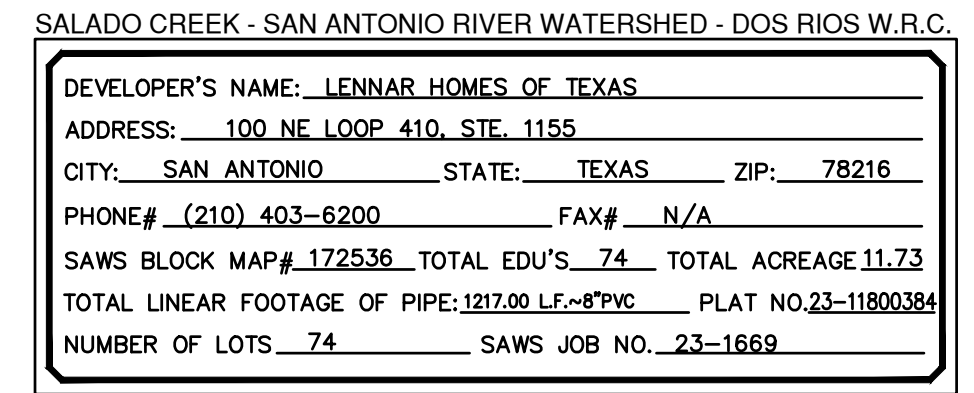
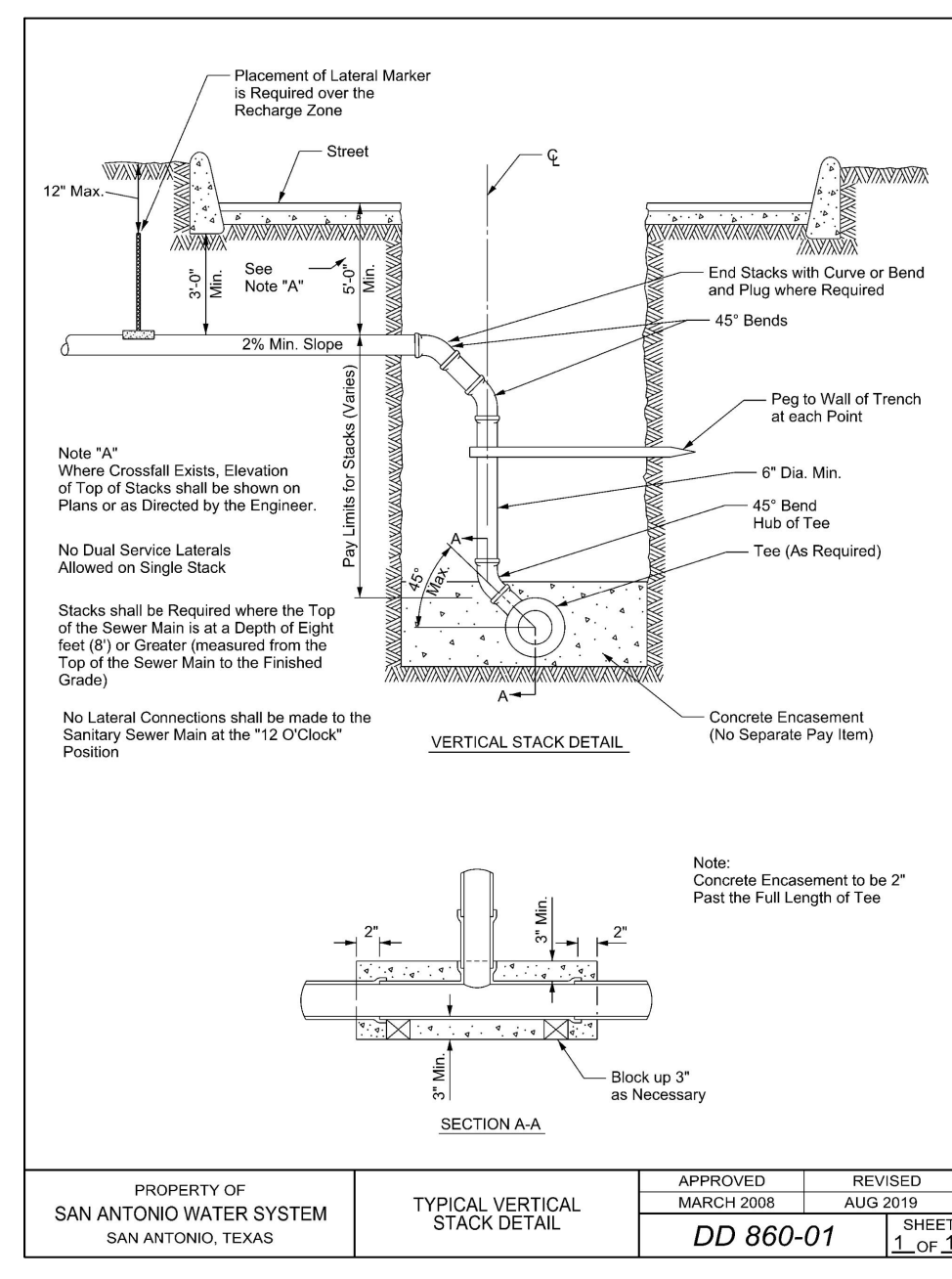
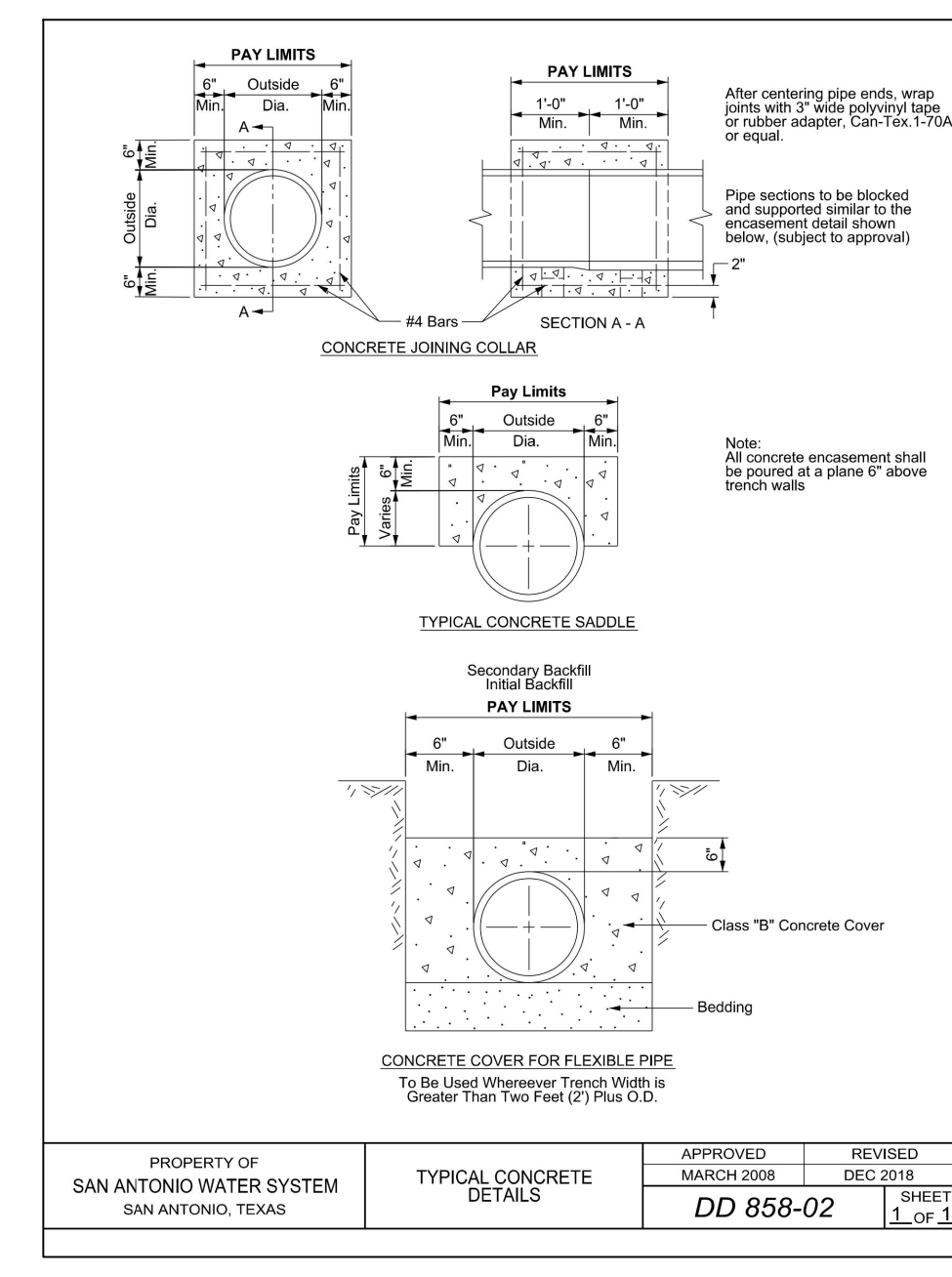
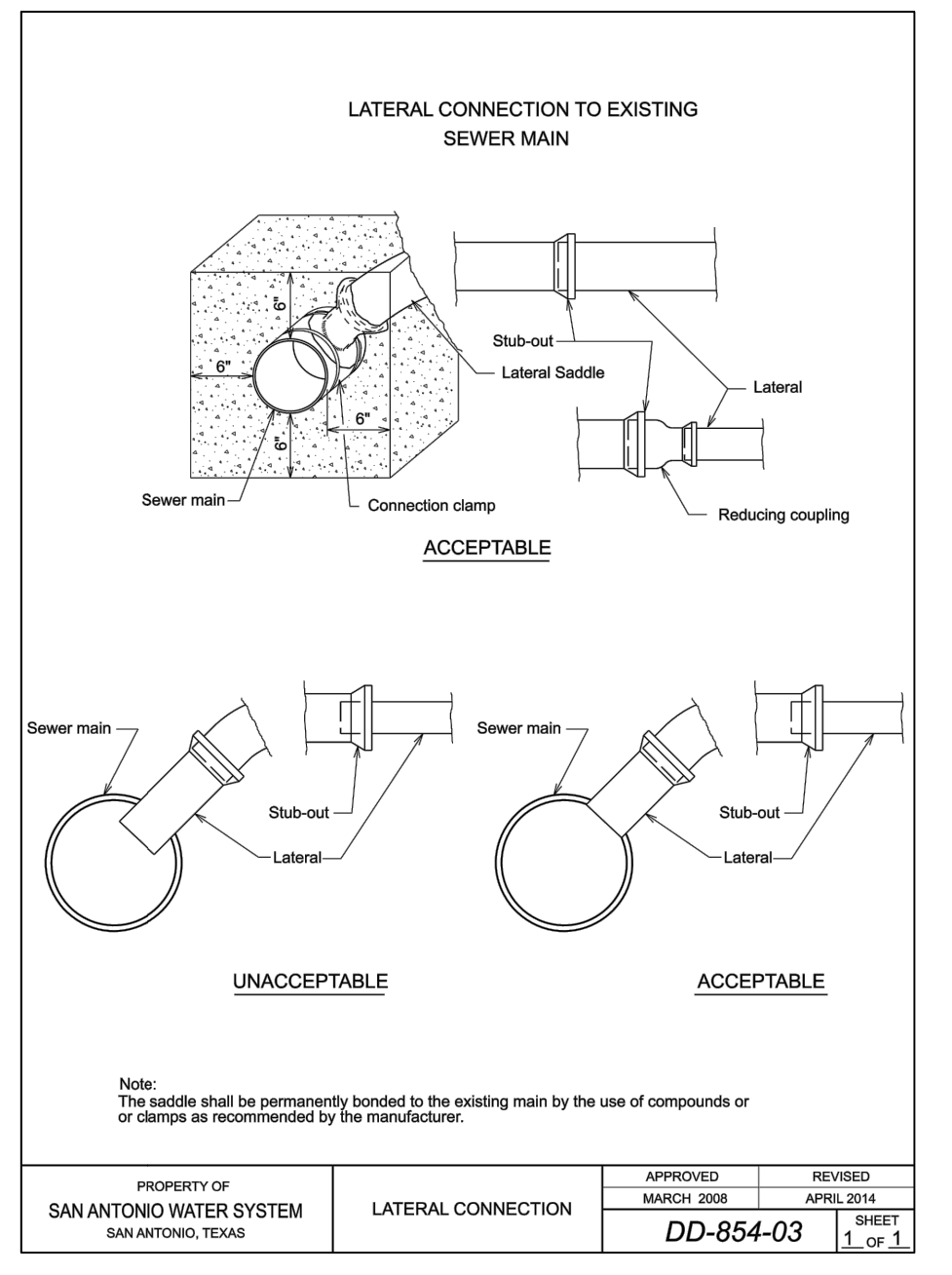
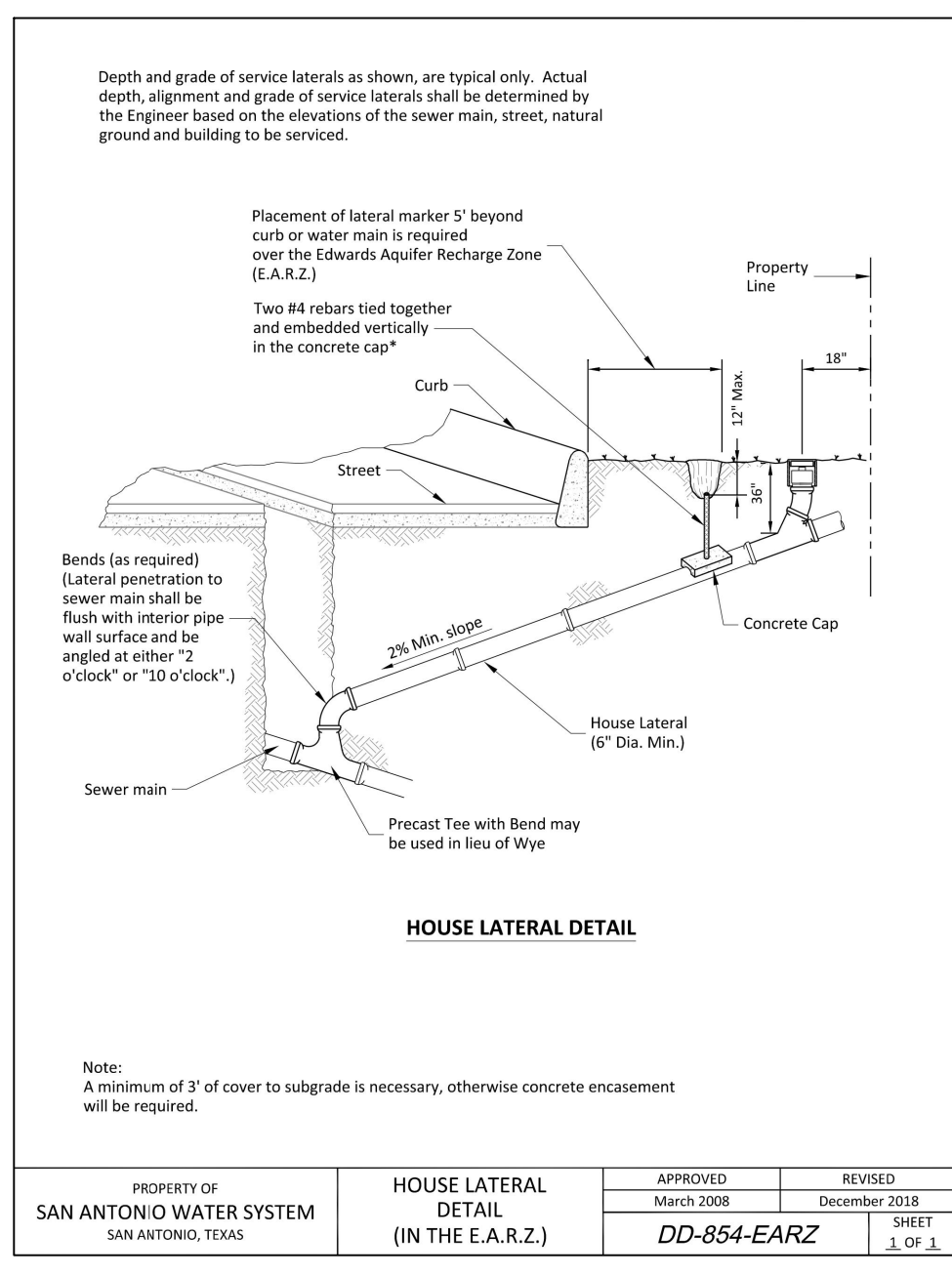
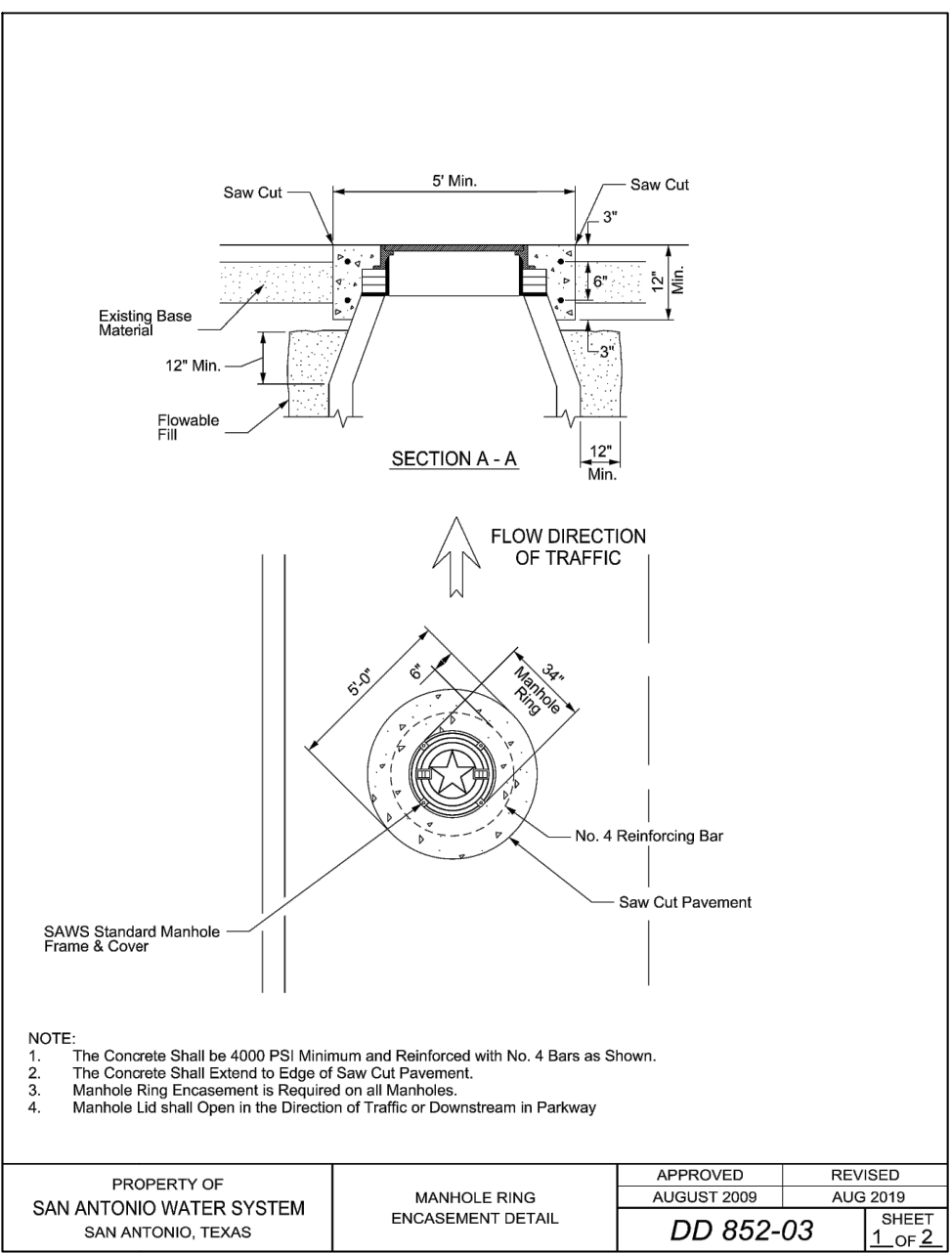
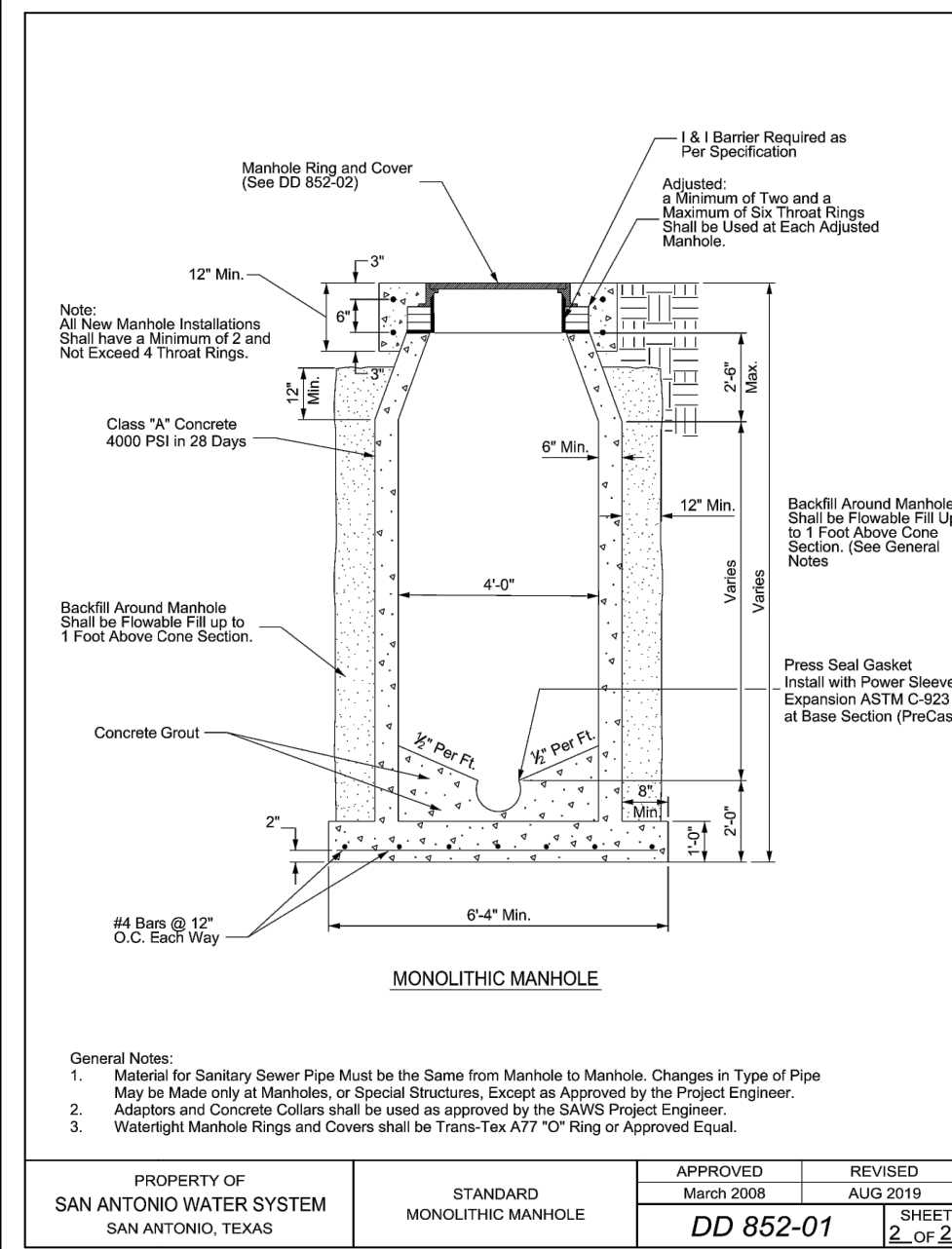
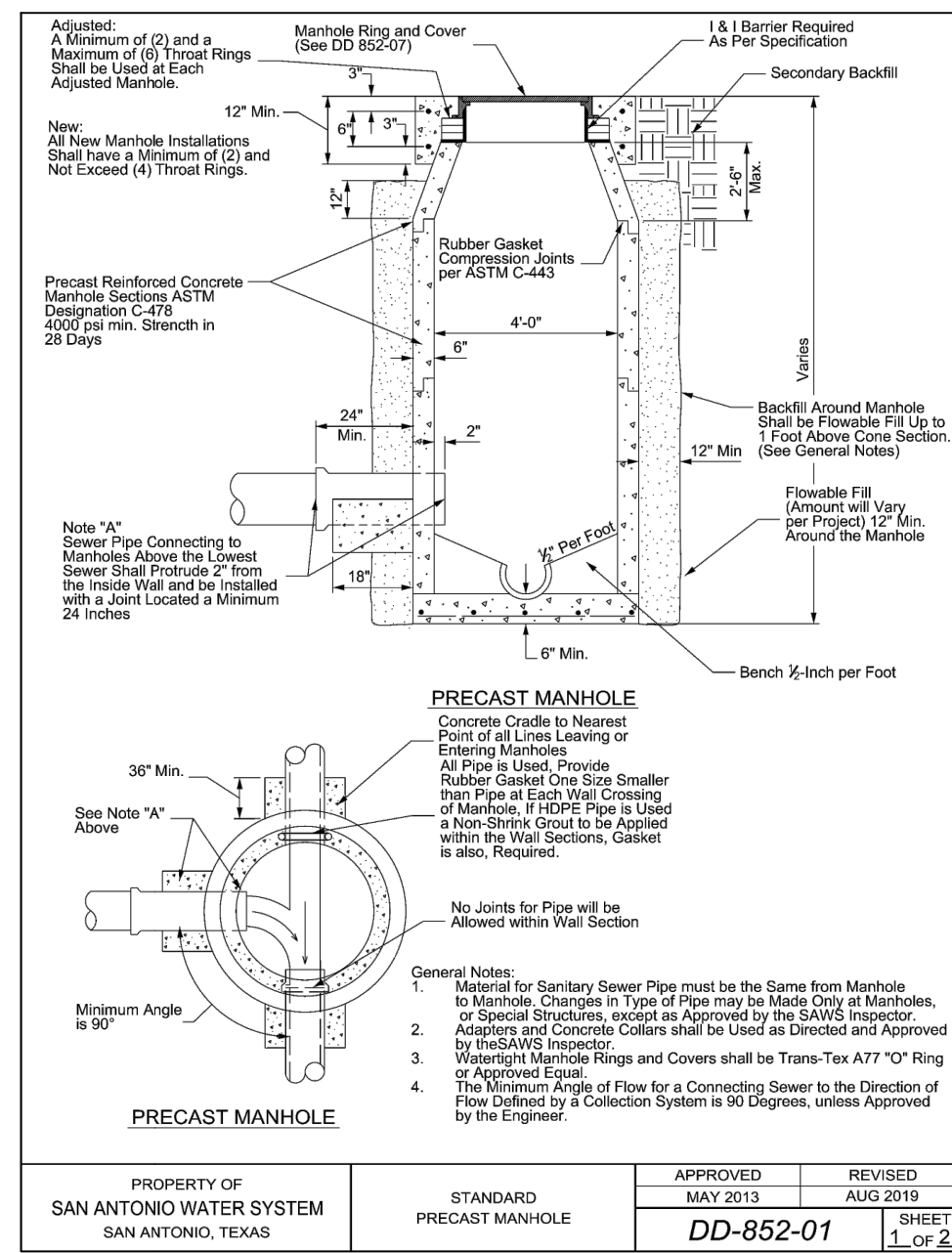
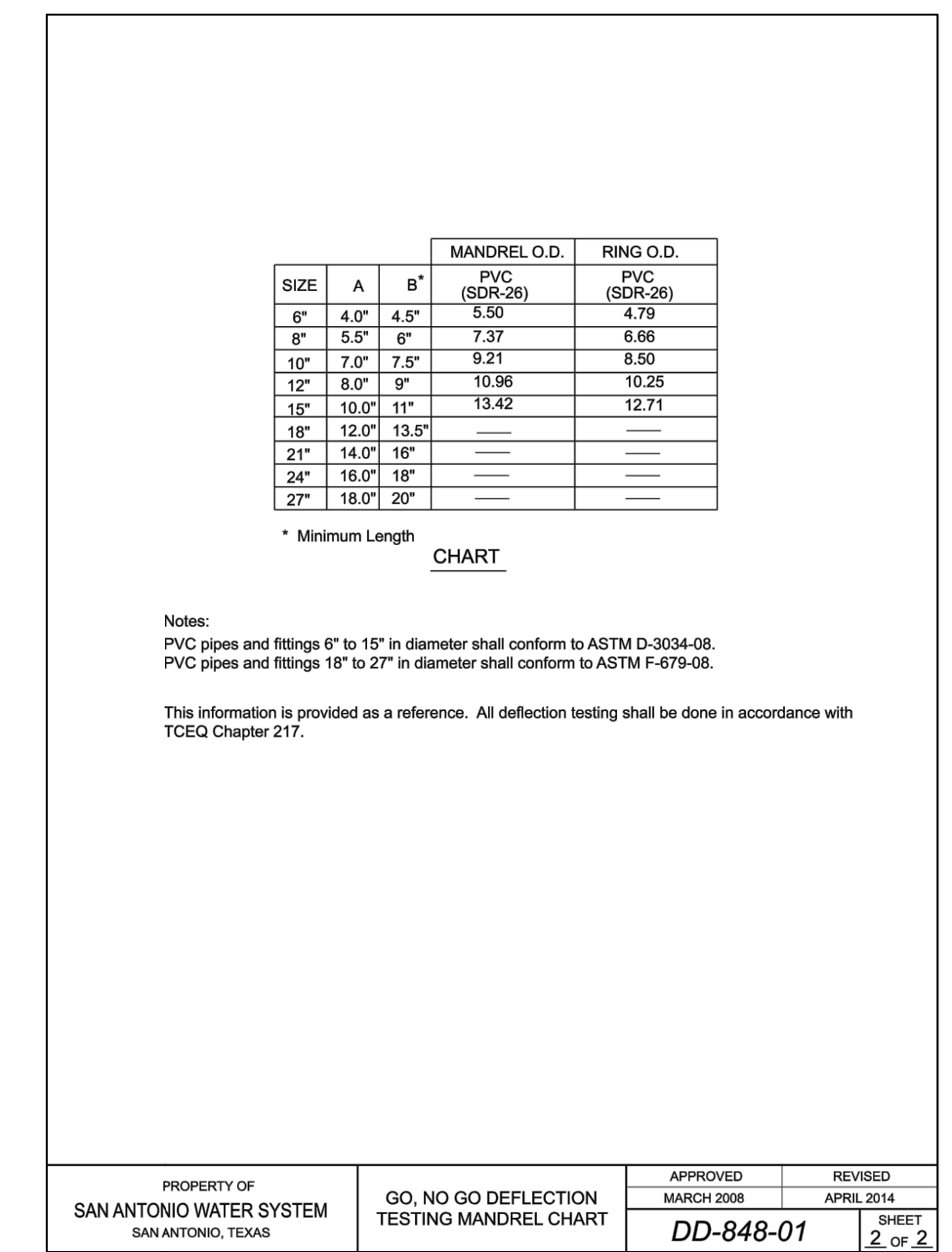
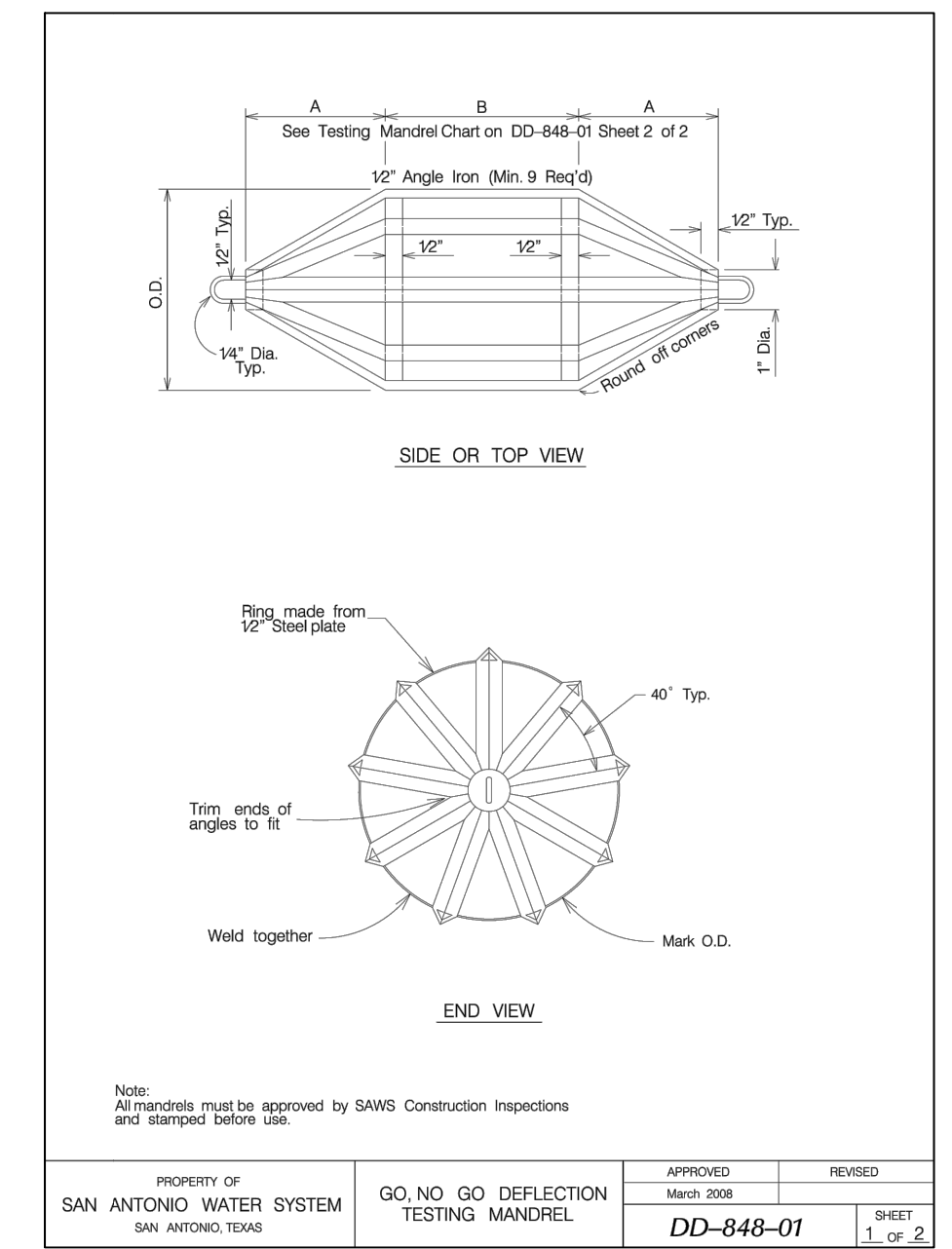
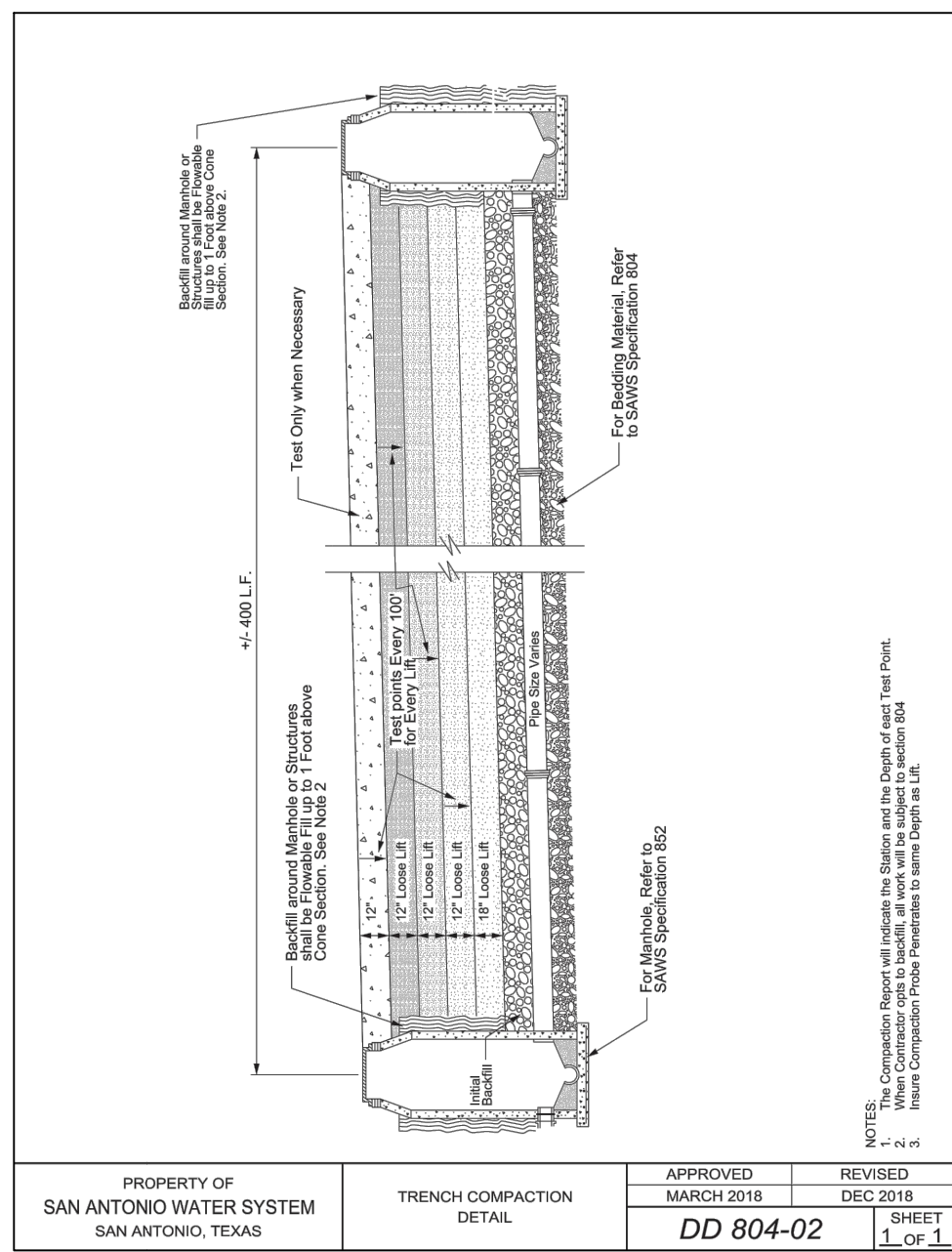
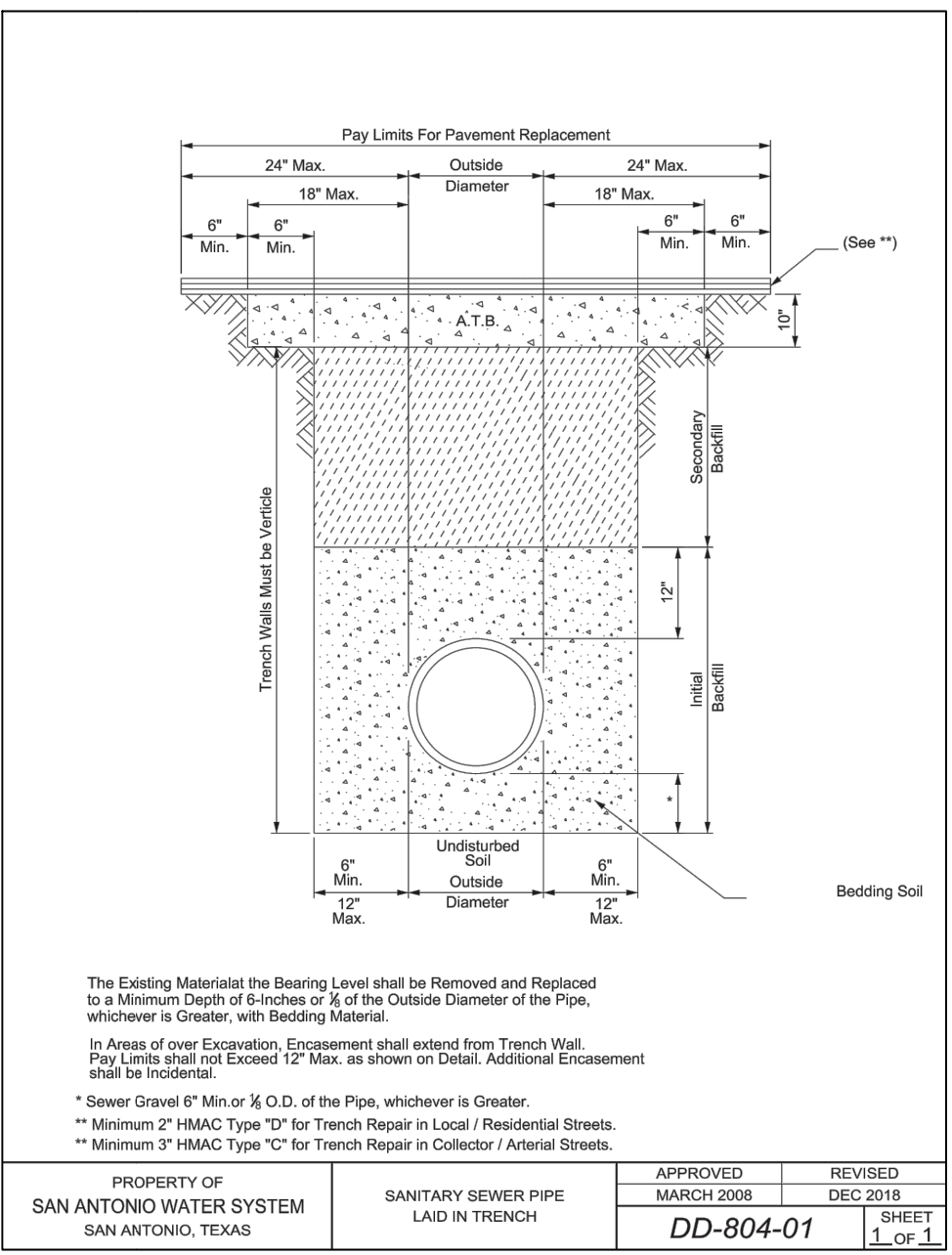
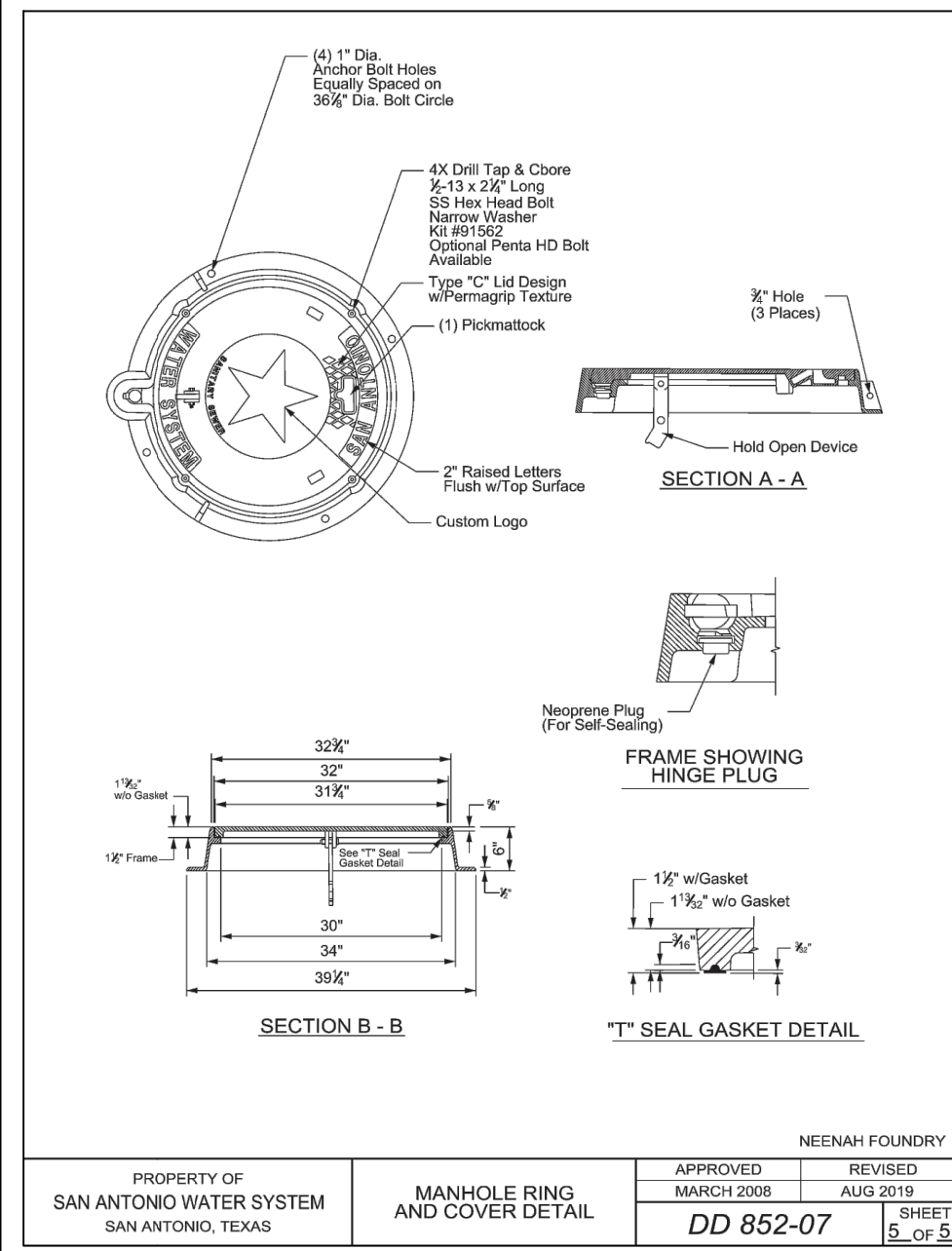
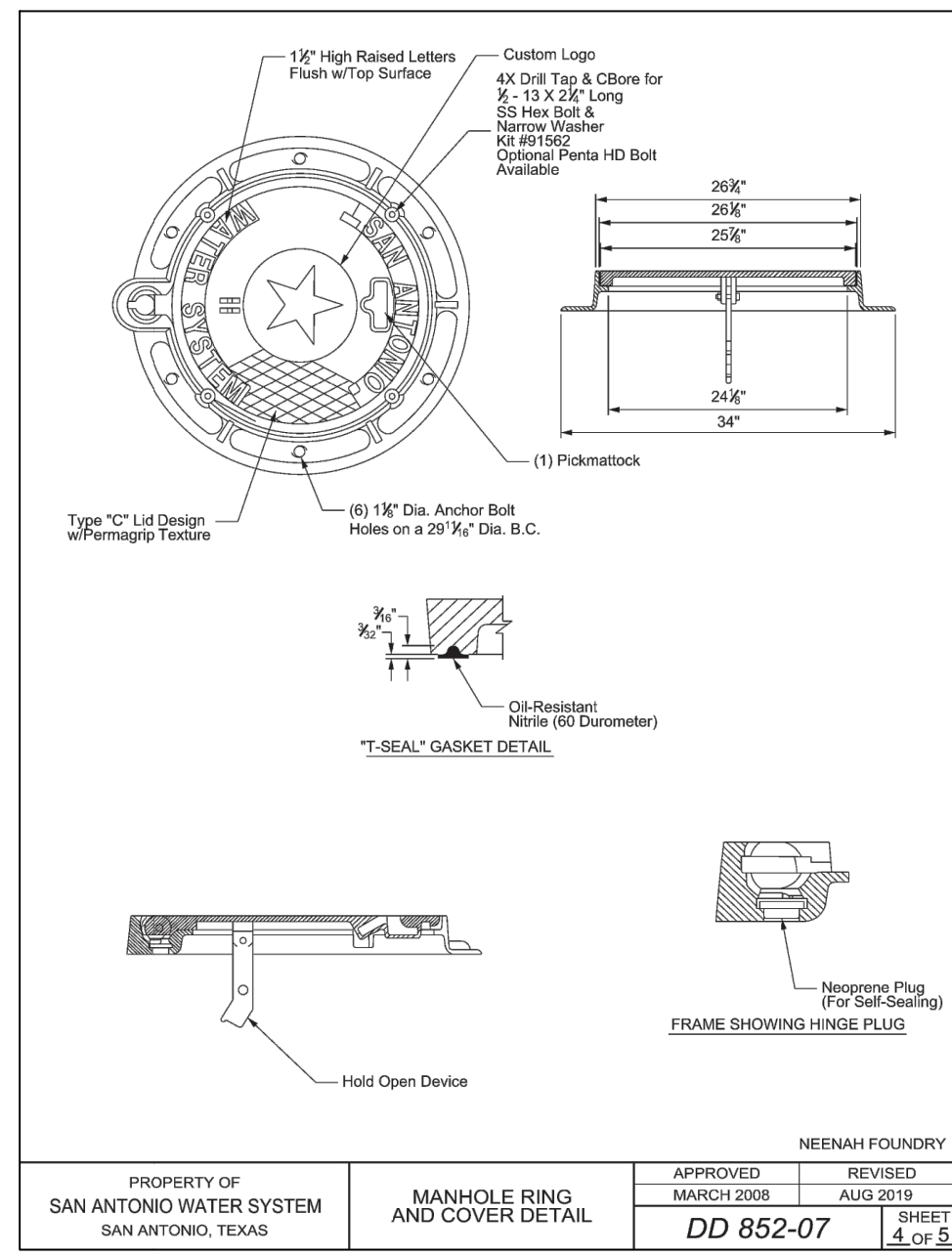
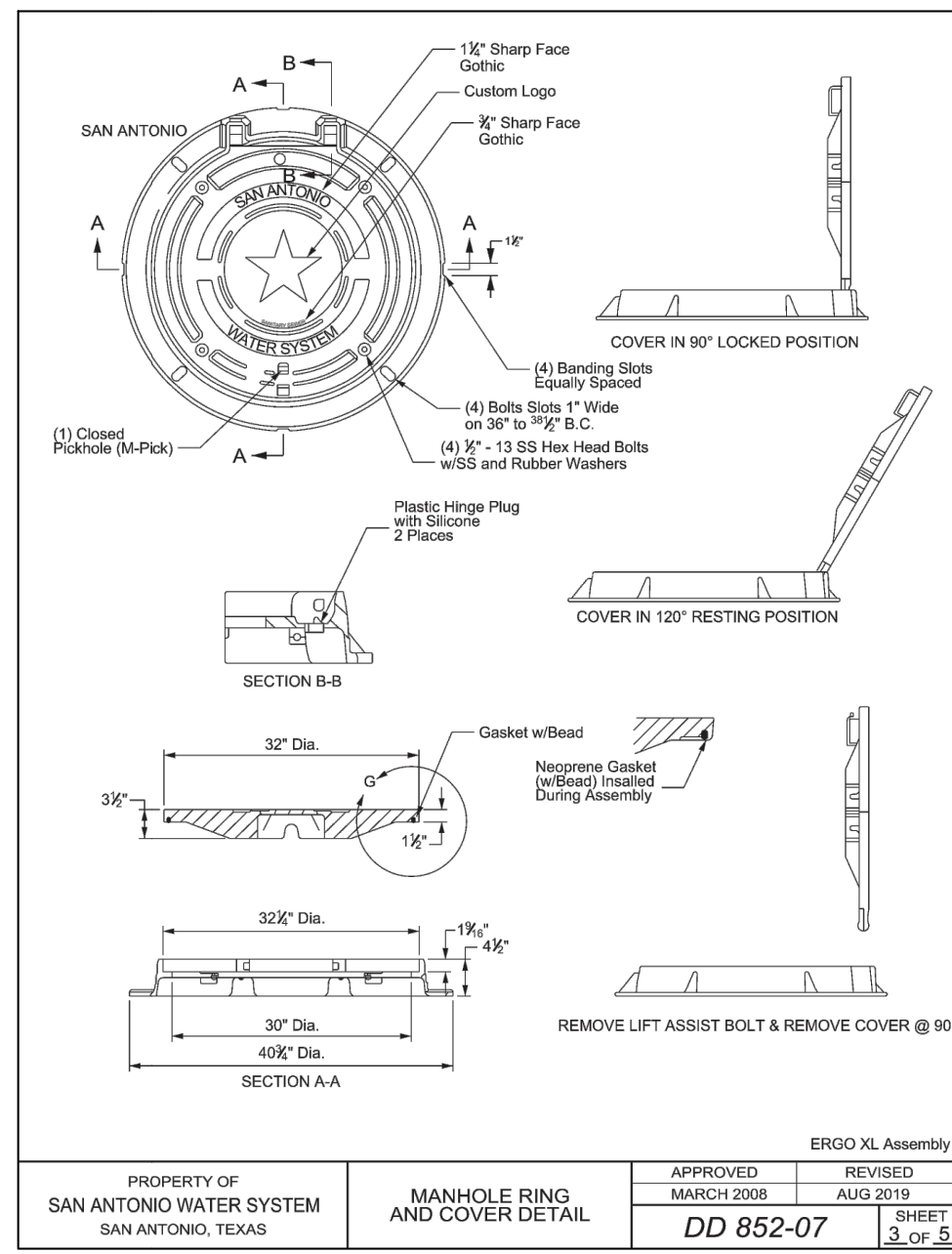
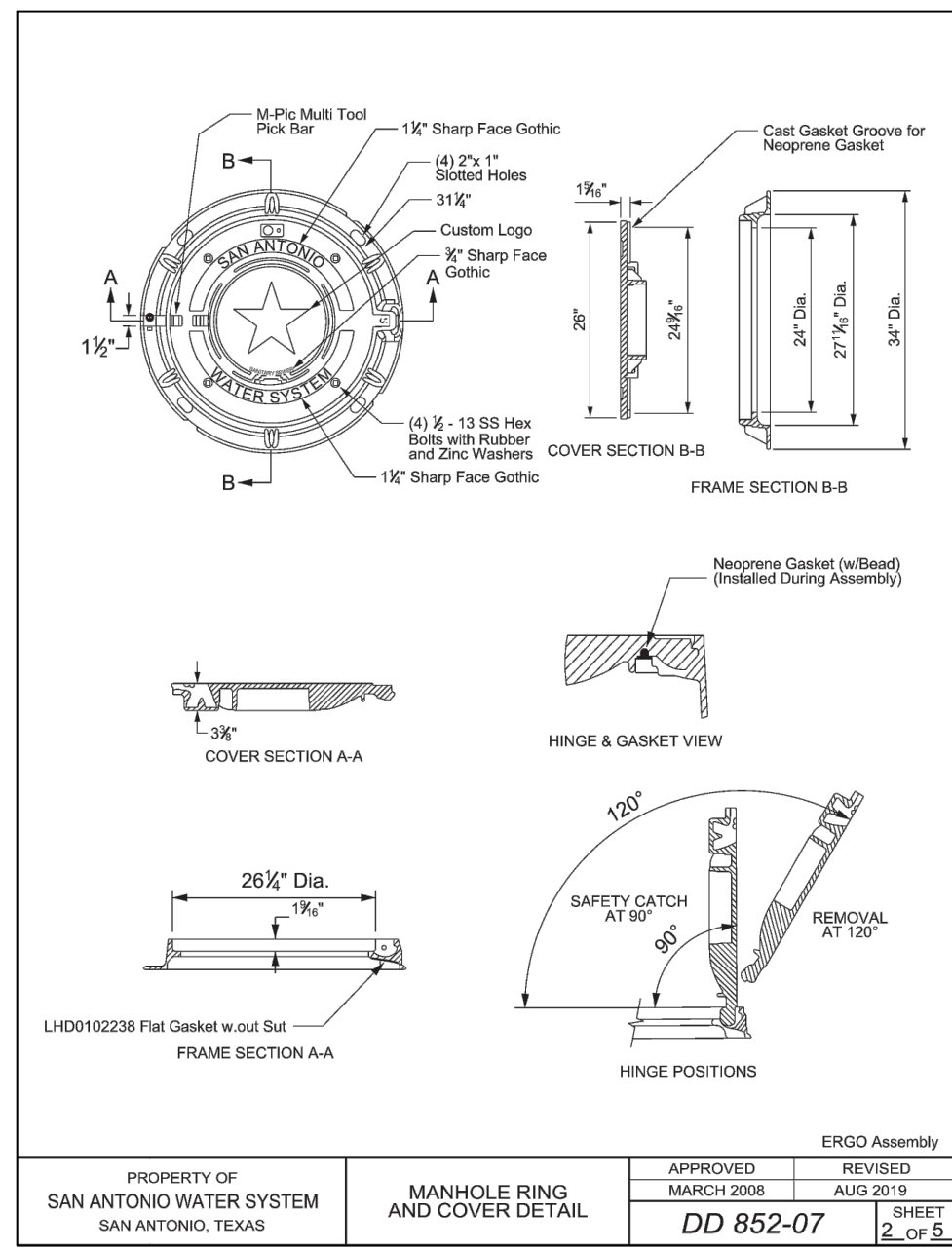
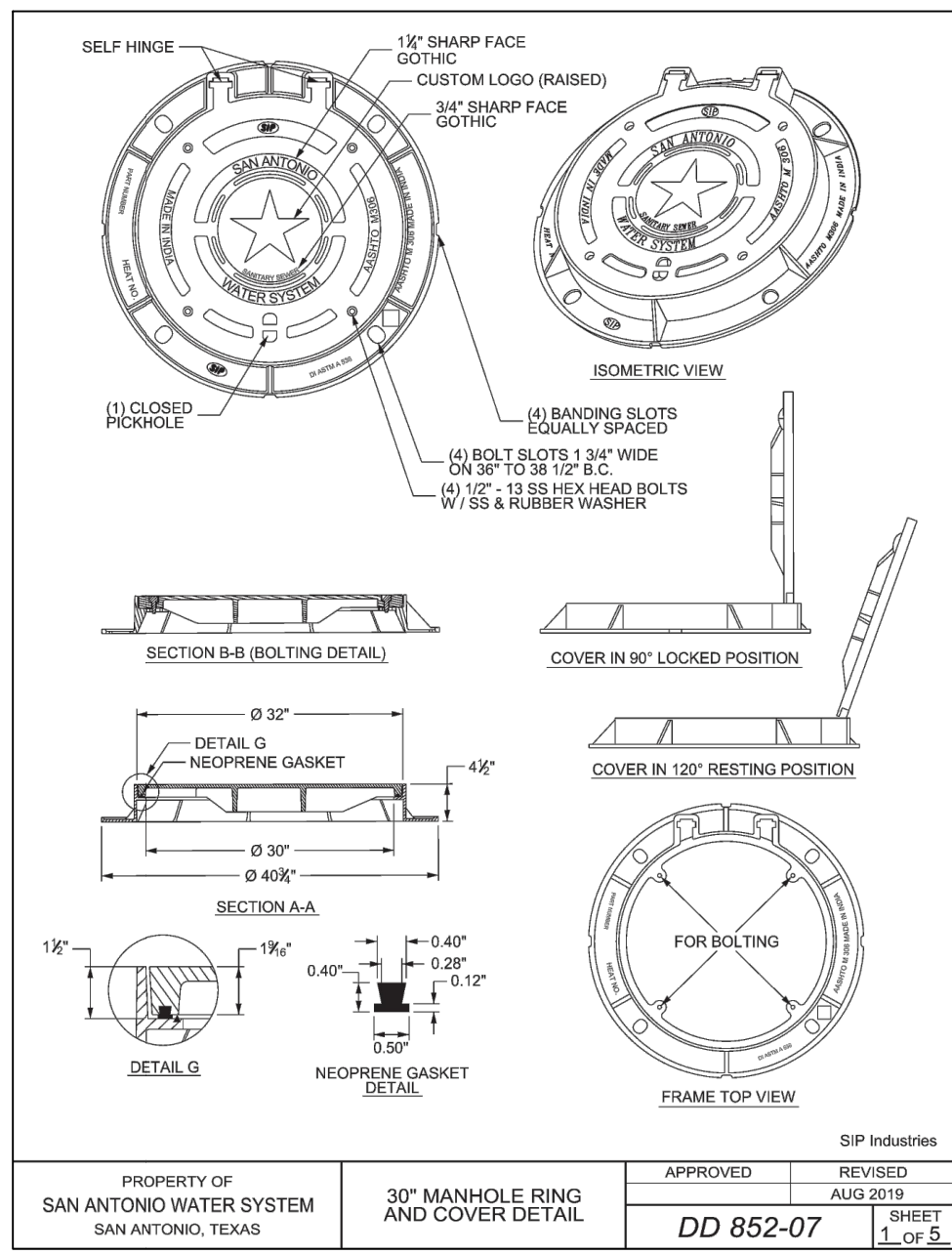
**SS LINE Y PLAN & PROFILE (STA 2+00.00 - 6+00.00)**

PLAT NO	23-11800384
JOB NO.	12632-17
DATE	NOVEMBER 2023
DESIGNER	BK
CHECKED	DW DRAWN
SHEET	C5.03



Date: Mar 14, 2024, 3:49pm User ID: 1000000000  
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DATE

NO.

REVISION

BRUNA F. SPENGLER  
127547  
PROFESSIONAL ENGINEER

Bruna Spengler  
3/16/24

ESPADA TRACT UNIT 17  
SAN ANTONIO, TEXAS

OVERALL SANITARY SEWER DETAILS

PLAT NO. 23-11800384

JOB NO. 12632-17

DATE NOVEMBER 2023

DESIGNER BK

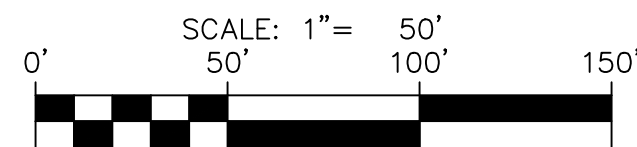
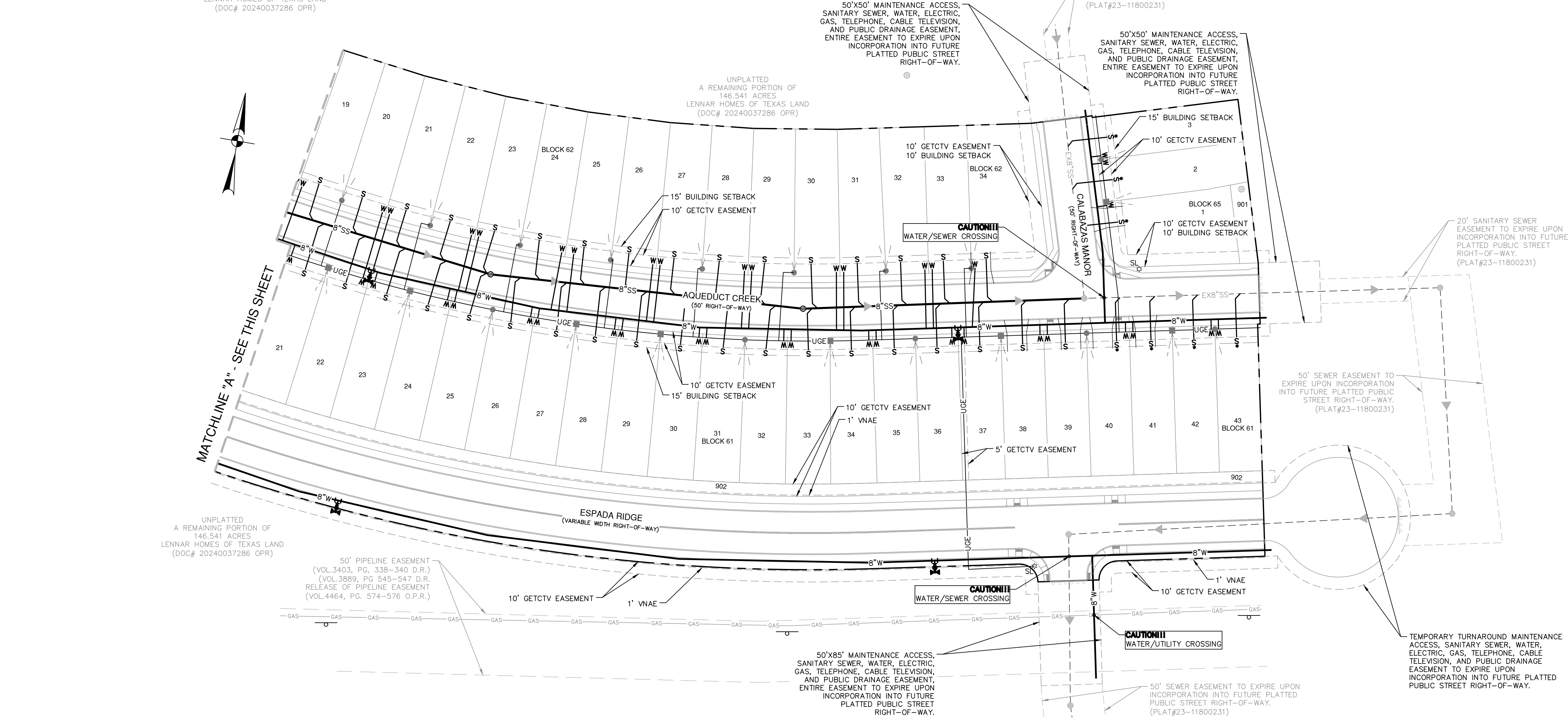
CHECKED DW DRAWN AV

SHEET C5.04









PROJECT LIMITS  
EXISTING WATER  
EXISTING SEWER  
PROPOSED SEWER  
PROPOSED WATER  
PROPOSED WYE & LATERAL  
TIE PROPOSED SEWER LATERAL  
INTO EXISTING SEWER MAIN  
SINGLE WATER SERVICE  
DUAL WATER SERVICE  
STREET LIGHTS  
GAS, ELECTRIC, TELEPHONE &  
CABLE TELEVISION EASEMENT  
SECONDARY PEDESTAL  
TRANSFORMER  
PULL BOX  
EXISTING WELL  
TREES TO REMAIN  
VEHICULAR NON ACCESS EASEMENT  
DRIVEWAY

- ## CONDUIT NOTES:
1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURBS WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
  2. CONDUITS SHALL BE PVC WITH MINIMUM RUBY OF 36 INCHES BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
  3. ALL CONDUITS SHALL BE EXTENDED BEHIND CURBS OR PROPOSED SIDEWALKS A MINIMUM OF 3 FEET AND CAPPED FOR FUTURE USE.
  4. ALL CONDUIT SLEEVES TO BE USED FOR ELECTRIC, GAS, OR TELECOMMUNICATION UTILITY CROSSLINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH IS THE PRIMARY SERVICE PROVIDING, BUT NOT LIMITED TO THE DEPTH, TRENCH PLACEMENT, AND PROXIMITY TO OTHER UTILITIES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR VERIFYING AND INSTALLING THE CONDUIT SLEEVES TO MEET THESE SPECIFICATIONS INCLUDING COORDINATING WITH THE UTILITY AGENCY FOR ANY REQUIRED INSPECTIONS

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL DATA AND RECORDS AND SHALL BE RESPONSIBLE FOR DETERMINING THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S TRENCH EXCAVATION SAFETY PROTECTION SYSTEMS, PROGRAMS AND/OR PROCEDURES FOR THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S IMPLEMENTATION OF THESE SYSTEMS, PROGRAMS AND/OR PROCEDURES SHALL BE IN ACCORDANCE WITH THE MINIMUM OSHA SAFETY PROTECTION THAT COMPLY WITH AS MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA PROHIBITED WORK PRACTICES AND PREVENT ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITIES INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, STATE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRICAL DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. IN THE EVENT UTILITIES CONFLICTS THAT ARISE SHOULD BE COMMUNICATED TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CONTACT THE UTILITY TO TEST A MINIMUM OF FOUR FEET PRIOR TO THE START OF CONSTRUCTION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.









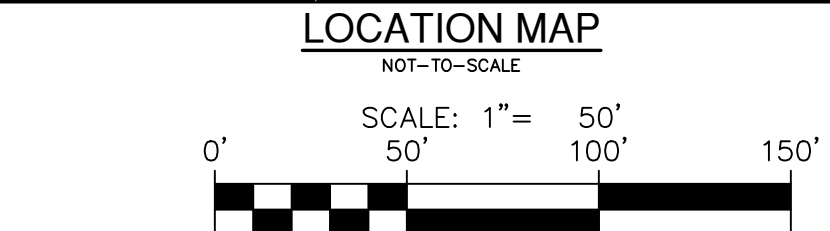
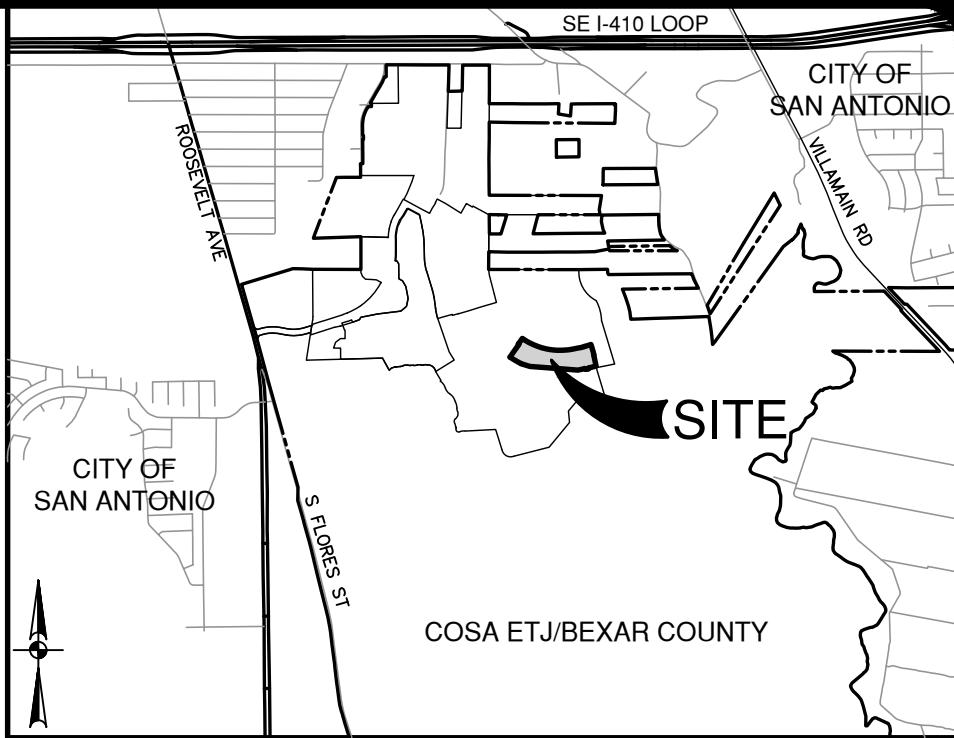
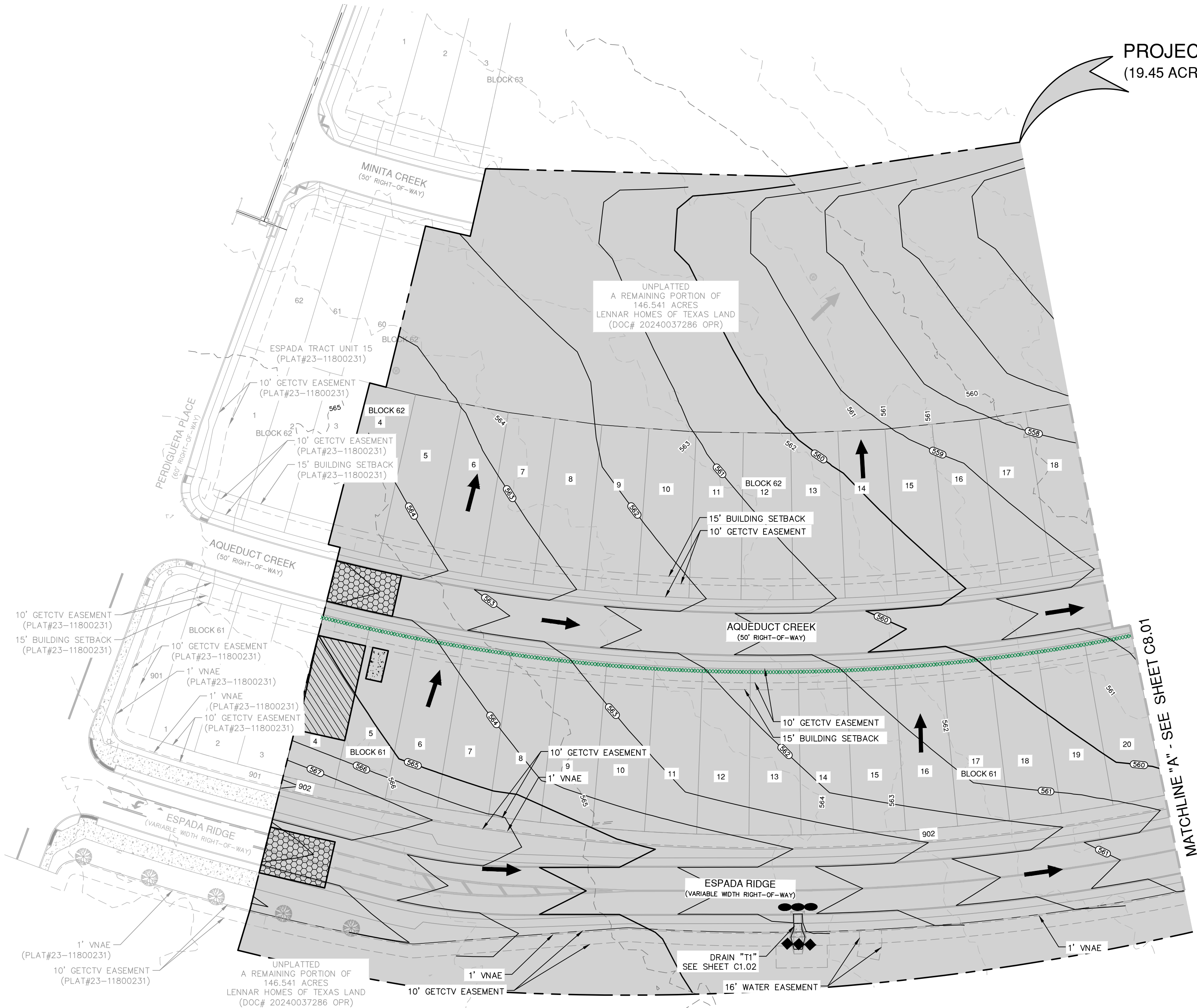


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### SWP3 MODIFICATIONS

DATE	SIGNATURE	DESCRIPTION



### GENERAL NOTES

- DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
- CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.
- STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
- RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
- ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
- FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.
- STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.
- AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
- BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADE AREAS.
- BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.
- UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.
- WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS, OTHERWISE CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.
- SHADED AREA [Symbol] DENOTES LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS, WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD, ARE NOT A PART OF THIS TPDES STORM WATER POLLUTION PREVENTION PLAN (SWP3) AND WILL NOT BE DISTURBED BY CIVIL CONSTRUCTION ACTIVITIES. HOUSE CONSTRUCTION ACTIVITIES WILL REQUIRE A SEPARATE STORM WATER POLLUTION PREVENTION PLAN.
- PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE PLACEMENT OF TEMPORARY BEST MANAGEMENT PRACTICES WITHIN TXDOT RIGHT-OF-WAY WITH TXDOT.
- CPS ENERGY WILL FUNCTION AS A SECONDARY OPERATOR ON THIS PROJECT AND WILL BE INSTALLING ELECTRIC UTILITIES FOR ON-SITE CONSTRUCTION AND OFF-SITE FEED TO THE PROJECT.
- A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN ANY BEXAR COUNTY ROW.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

### EXHIBIT 2A

DATE	NO.	REVISION



**PAPE-DAWSON ENGINEERS**  
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008860

## ESPADA TRACT UNIT 17 SAN ANTONIO, TEXAS STORM WATER POLLUTION PREVENTION PLAN

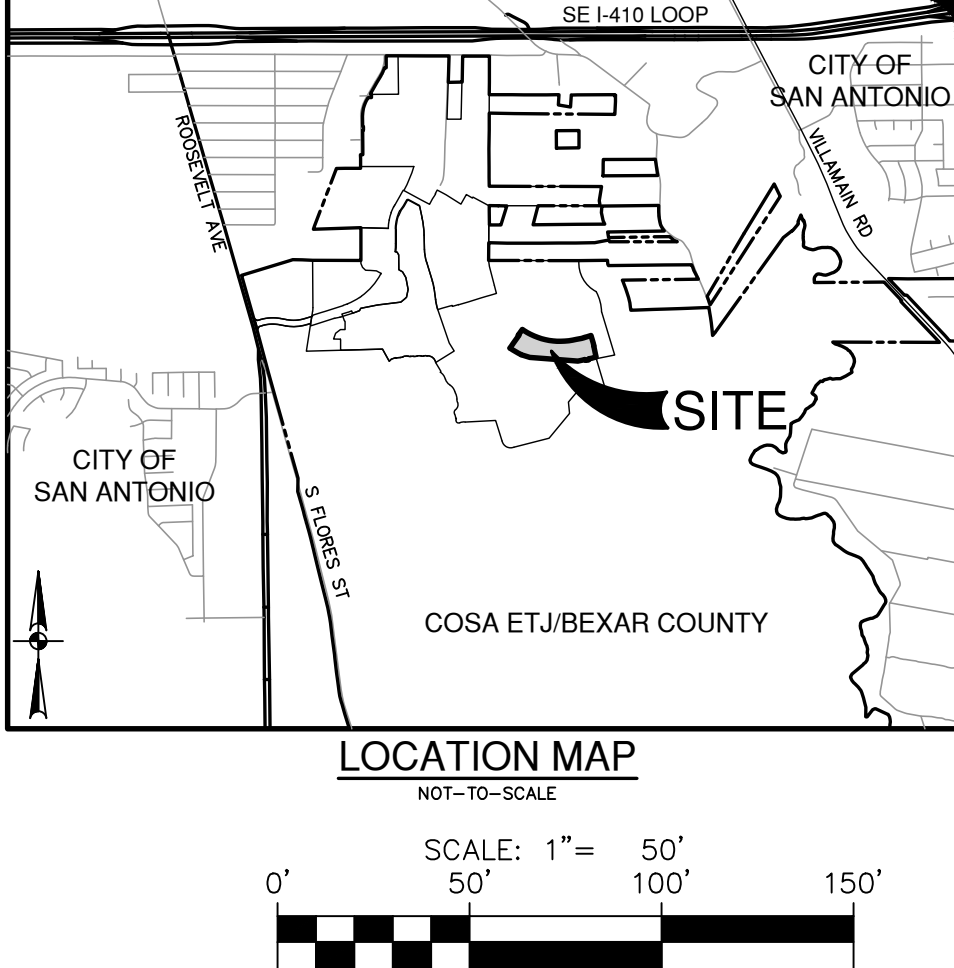
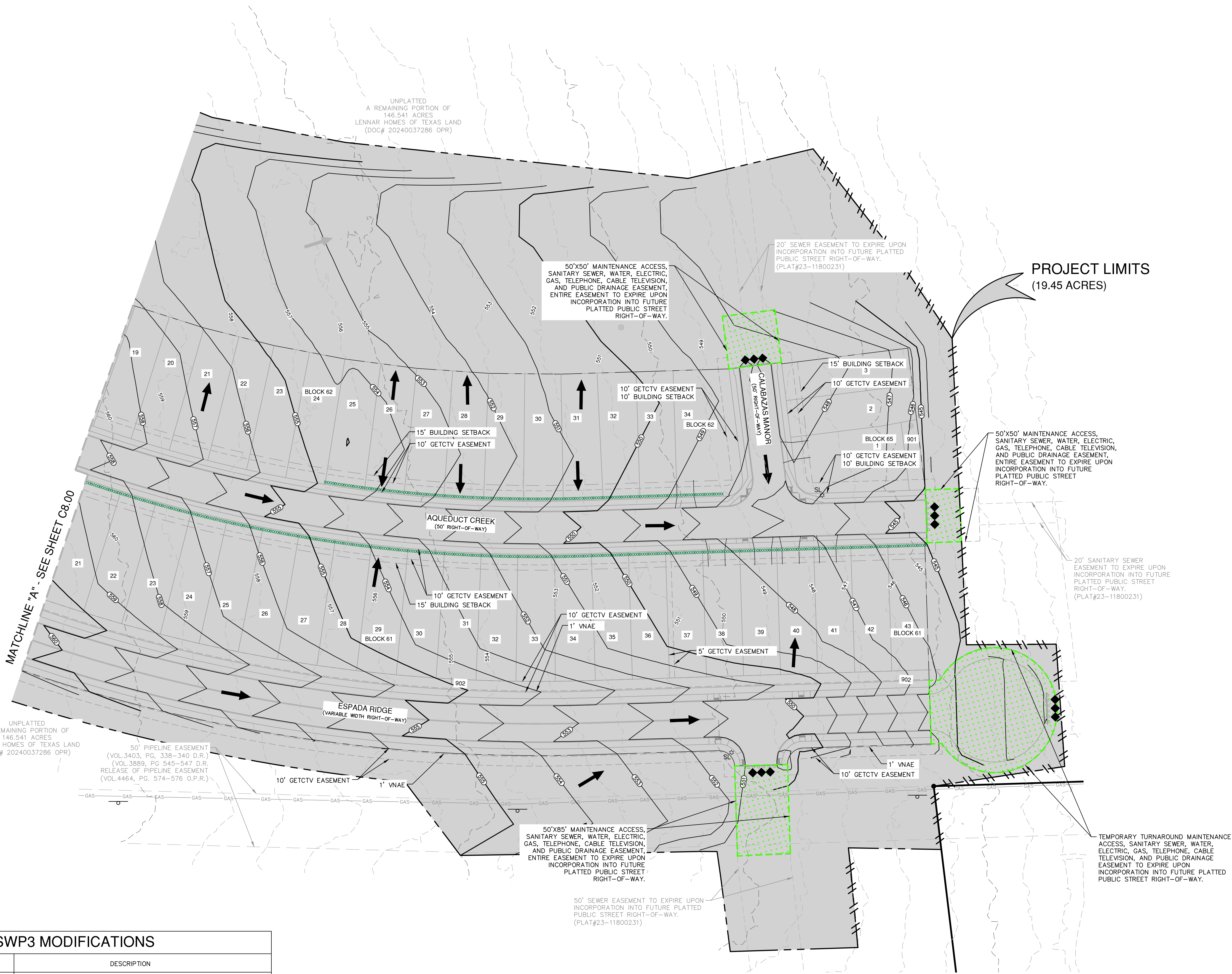
PLAT NO.	23-11800384
JOB NO.	12632-17
DATE	NOVEMBER 2023
DESIGNER	BK
CHECKED	DW
DRAWN	AV
SHEET	C8.00



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SWP3 MODIFICATIONS		
DATE	SIGNATURE	DESCRIPTION



- SWPPP LEGEND**
- PROJECT LIMITS  
EXISTING CONTOUR  
PROPOSED CONTOUR  
FLOW ARROW (EXISTING)  
FLOW ARROW (PROPOSED)  
SILT FENCE  
ROCK BERM (TO BE REMOVED POST CONSTRUCTION)  
GRAVEL FILTER BAGS  
GRAVEL BAG BERM (CAN BE REMOVED ONCE CHANNEL IS STABILIZED OR RIP-RAP IS IN PLACE)  
LIMITS OF DISTURBED AREA  
STABILIZED CONSTRUCTION ENTRANCE/EXIT (FIELD LOCATE)  
CONSTRUCTION EQUIPMENT, VEHICLE & MATERIALS STORAGE AREA (FIELD LOCATE)  
CONCRETE TRUCK WASH-OUT PIT (FIELD LOCATE)  
EARTHEN BERM W/POLYLINER AND SPILLWAY (BERMS ARE TO SPAN ACROSS PROPOSED STREET SECTION APPROX. 30-FEET WIDE FROM CURB TO CURB)  
STREAM CENTERLINE  
SILT FENCE (PHASE II)  
AREA TO BE PERMANENTLY STABILIZED/VEGETATED OUTSIDE OF PHASE II
- GENERAL NOTES**
- DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
  - CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO BE DETERMINED IN THE FIELD.
  - STORM WATER POLLUTION PREVENTION CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED EFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS EXHIBIT AND SIGNED AND DATED BY THE RESPONSIBLE PARTY.
  - RESTRICT ENTRY/EXIT TO THE PROJECT SITE TO DESIGNATED LOCATIONS BY USE OF ADEQUATE FENCING, IF NECESSARY.
  - ALL STORM WATER POLLUTION PREVENTION CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITIONS AT ALL TIMES.
  - FOR A COMPLETE LISTING OF TEMPORARY STORM WATER POLLUTION PREVENTION CONTROLS REFER TO THE TPDES STORM WATER POLLUTION PREVENTION PLAN.
  - STORM WATER POLLUTION PREVENTION STRUCTURES SHOULD BE CONSTRUCTED WITHIN THE SITE BOUNDARIES. SOME OF THESE FEATURES MAY BE SHOWN OUTSIDE THE SITE BOUNDARIES ON THIS PLAN FOR VISUAL CLARITY.
  - AS SOON AS PRACTICAL, ALL DISTURBED SOIL THAT WILL NOT BE COVERED BY IMPERVIOUS COVER SUCH AS PARKWAY AREAS, EASEMENT AREAS, EMBANKMENT SLOPES, ETC. WILL BE STABILIZED PER APPLICABLE PROJECT SPECIFICATIONS.
  - BEST MANAGEMENT PRACTICES MAY BE INSTALLED IN STAGES TO COINCIDE WITH THE DISTURBANCE OF UPGRADIENT AREAS.
  - BEST MANAGEMENT PRACTICES MAY BE REMOVED IN STAGES ONCE THE WATERSHED FOR THAT PORTION CONTROLLED BY THE BEST MANAGEMENT PRACTICES HAS BEEN STABILIZED IN ACCORDANCE WITH TPDES REQUIREMENTS.
  - UPON COMPLETION OF THE PROJECT, INCLUDING SITE STABILIZATION, AND BEFORE FINAL PAYMENT IS ISSUED, CONTRACTOR SHALL REMOVE ALL SEDIMENT AND EROSION CONTROL MEASURES, PAYING SPECIAL ATTENTION TO ROCK BERMS IN DRAINAGE FEATURES.
  - WHERE VEGETATED FILTER STRIPS ARE INDICATED, CONTRACTOR SHALL VERIFY THAT SUFFICIENT VEGETATION EXISTS, OTHERWISE CONTRACTOR SHALL PLACE SILT FENCING IN LIEU OF VEGETATED FILTER STRIP.
  - SHADED AREA DENOTES LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS, WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD, ARE NOT A PART OF THIS TPDES STORM WATER POLLUTION PREVENTION PLAN (SWP3) AND WILL NOT BE DISTURBED BY CIVIL CONSTRUCTION ACTIVITIES. HOUSE CONSTRUCTION ACTIVITIES WILL REQUIRE A SEPARATE STORM WATER POLLUTION PREVENTION PLAN.
  - PRIOR TO BEGINNING CONSTRUCTION, CONTRACTOR SHALL COORDINATE PLACEMENT OF TEMPORARY BEST MANAGEMENT PRACTICES WITHIN TXDOT RIGHT-OF-WAY WITH TXDOT.
  - CPS ENERGY WILL FUNCTION AS A SECONDARY OPERATOR ON THIS PROJECT AND WILL BE INSTALLING ELECTRIC UTILITIES FOR ON-SITE CONSTRUCTION AND OFF-SITE FEED TO THE PROJECT.
  - A BEXAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN ANY BEXAR COUNTY ROW.

THE ENGINEERING SEAL HAS BEEN AFFIXED TO THIS SHEET ONLY FOR THE PURPOSE OF DEMONSTRATING COMPLIANCE WITH THE TPDES-STORM WATER POLLUTION PREVENTION PLAN (SWP3) REGULATIONS.

THIS SHEET HAS BEEN PREPARED FOR PURPOSES OF THE SWP3 ONLY. ALL OTHER CIVIL ENGINEERING RELATED INFORMATION SHOULD BE ACQUIRED FROM THE APPROPRIATE SHEET IN THE CIVIL IMPROVEMENT PLANS.

**EXHIBIT 2B**

DATE: NOVEMBER 2023  
JOB NO.: 12632-17  
CHECKED: DW  
DRAWN: AV  
SHEET: C8.01

DATE: \_\_\_\_\_  
NO. REVISION: \_\_\_\_\_

**PAPE-DAWSON ENGINEERS**  
SAN ANTONIO, TEXAS  
112792  
PROFESSIONAL ENGINEER  
4/13/2024

**ESPADA TRACT UNIT 17**  
SAN ANTONIO, TEXAS  
STORM WATER POLLUTION PREVENTION PLAN

PLAT NO: 23-11800384  
JOB NO.: 12632-17  
DATE: NOVEMBER 2023  
CHECKED: DW  
DRAWN: AV  
SHEET: C8.01



