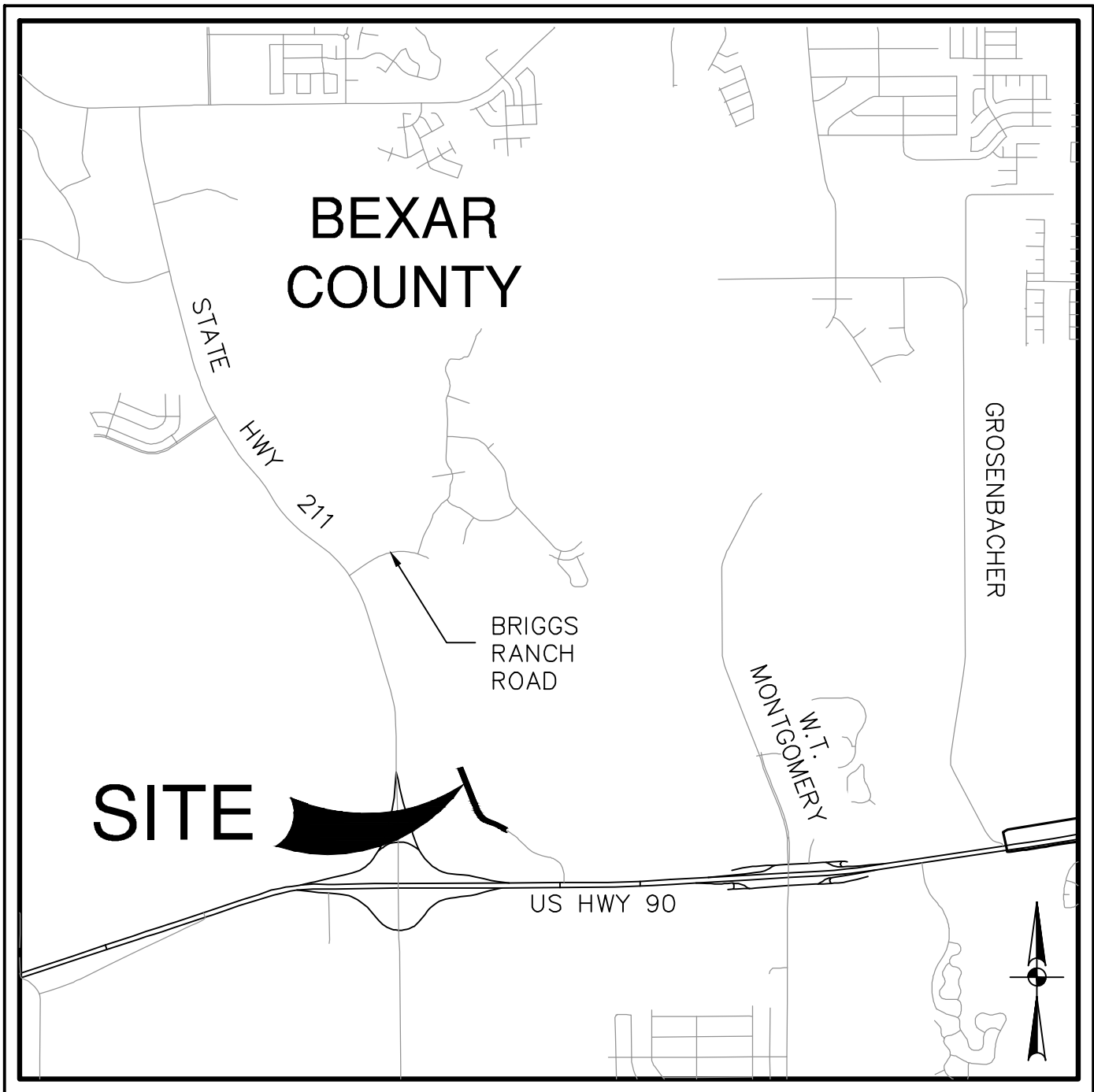


# BRE PHASE 5 COLLECTOR PHASE 2A

## SAN ANTONIO, TEXAS

### CIVIL CONSTRUCTION PLANS

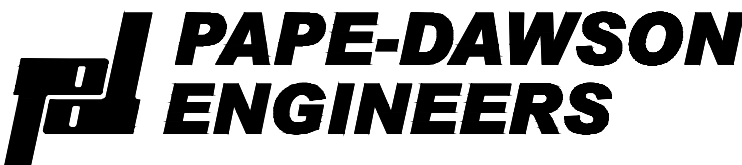


LOCATION MAP  
NOT-TO-SCALE

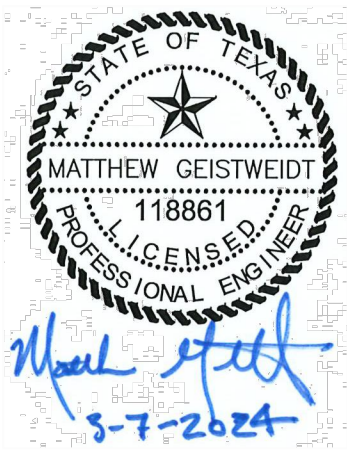
PREPARED FOR:

PULTE HOMES OF TEXAS, L.P.  
1718 DRY CREEK WAY, SUITE 120  
SAN ANTONIO, TEXAS 78259

MARCH 2024



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS  
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TBPE FIRM REGISTRATION #470 | TBPLS FIRM REGISTRATION #10028800



SHEET LIST TABLE

Sheet Number	Sheet Title
C0.00	COVER SHEET
C1.00-A	POST DEVELOPMENT MASTER DRAINAGE PLAN
C1.00	ULTIMATE DEVELOPMENT MASTER DRAINAGE PLAN
C1.01	DRAIN A
C1.02	DRAIN A
C1.03	DRAIN A
C1.04	DRAIN B
C1.05	DRAIN C
C1.10	DRAINAGE DETAILS
C1.11	DRAINAGE DETAILS
C1.12	DRAINAGE DETAILS
C2.00	MANSIONS BLUFFS
C2.01	MANSIONS BLUFFS
C2.10	STREET DETAILS
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C2.12	STREET DETAILS
C3.00	OVERALL SIGNAGE PLAN
C3.10	SIGNAGE DETAILS
C3.11	SIGNAGE DETAILS
C3.12	SIGNAGE DETAILS
C5.00	OVERALL WATER DISTRIBUTION PLAN
C5.10	WATER DISTRIBUTION NOTES
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C6.00	OVERALL UTILITY PLAN
C7.00	OVERALL GRADING PLAN
C8.00	STORM WATER POLLUTION PREVENTION PLAN
C8.10	STORM WATER POLLUTION PREVENTION DETAILS

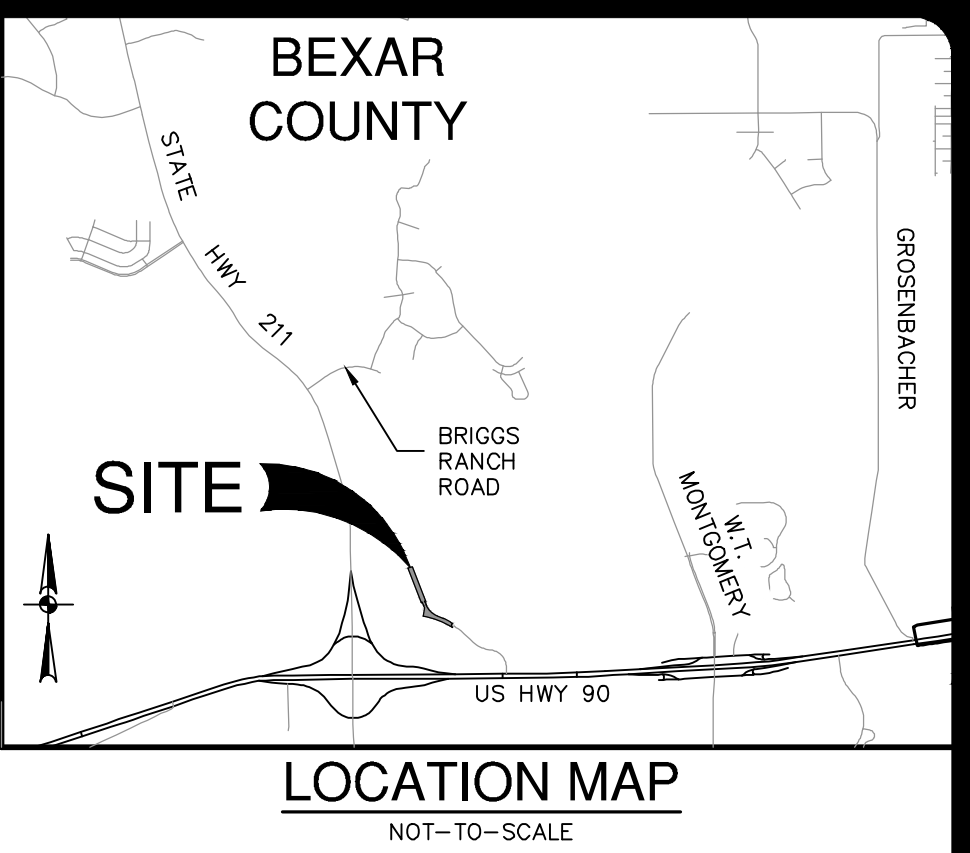
WATER (SAWS PRESSURE ZONE 930)

DEVELOPER'S NAME: PULTE HOMES OF TEXAS, L.P.	
ADDRESS: 1718 DRY CREEK WAY, SUITE 120	
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78259
PHONE# (210) 496-1985	FAX#
SAWS BLOCK MAP# 078560	TOTAL EDU'S 6 TOTAL ACREAGE 4.779
TOTAL LINEAR FOOTAGE OF PIPE: 12'-11.808 LF PLAT NO. 22-118006B1	
NUMBER OF LOTS 4 NSF	SAWS JOB NO. 24-1009

SHEET C0.00



Date: April 24, 2023, 4:57 PM - User ID: murdolas  
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**LEGEND**

---	OVERALL BRIGGS RANCH EAST BOUNDARY
---	PROPERTY LINES
---	CURRENT PHASE
---	DRAINAGE AREA BOUNDARY
---	OVERLAND FLOW PATH
---	SHALLOW CONCENTRATED FLOW PATH
---	CHANNELIZED FLOW PATH
---	1' CONTOUR
---	5' CONTOUR
---	DRAINAGE REFERENCE POINT
---	FHA LOT GRADING TYPE

STATE OF TEXAS  
MATTHEW GEISTWEIT  
118861  
PROFESSIONAL ENGINEER  
2-15-2024

**PAPE-DAWSON ENGINEERS**  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 214.375.9000  
TEXAS ENGINEERING FIRM #479 | TEXAS SURVEYING FIRM #1008900

**BRE PHASE 5 - COLLECTOR PHASE 2A**  
SAN ANTONIO, TEXAS  
ULTIMATE DEVELOPMENT MASTER DRAINAGE PLAN

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE NOVEMBER 2023  
DESIGNER EDK  
CHECKED MG DRAWN NA  
SHEET C1.00

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Ref. Point	Structure / Description	Drainage Areas			Total Pipe Length (ft)	Overland/Sheet Flow (Seelye)		Shallow Concentrated Flow - 1"				Shallow Concentrated Flow - 2"				Channelized Flow**				Rational Method Q=CIA IDF Curves: COSA A14 PC4						
		#	Area (Ac)	C		L <sub>1</sub> (FT)	S <sub>1</sub> (Ft/Ft)	T <sub>1</sub> (MIN)	L <sub>1</sub> (FT)	C <sub>1</sub>	Slope (ft/ft)	V <sub>1</sub> (FPS)	T <sub>1</sub> ** (MIN)	L <sub>2</sub> (FT)	C <sub>2</sub>	Slope (ft/ft)	V <sub>2</sub> (FPS)	T <sub>2</sub> ** (MIN)	L <sub>3</sub> (FT)	V <sub>3</sub> (FPS)	T <sub>3</sub> ** (MIN)	T <sub>Return</sub>	Return Year	Intensity (in/hr)	Q (cfs)	
2.00	Watershed // Inlets On-Grade	B1	9.03	0.72	1,186	100	0.018	12	64	U	0.029	2.7	0.39	1,022	S	0.023	4.30	3.96	-	-	16	5	5.06	32.9		
2.01	Watershed // Inlets On-Grade	B2	4.86	0.72	862	100	0.020	12	47	U	0.016	2.0	0.39	715	S	0.025	4.47	2.67	-	-	16	25	6.99	45.4		
																					16	100	8.71	56.6		
2.02	Watershed // Street Capacity	B3	2.01	0.72	635	100	0.016	12	53	U	0.085	4.7	0.19	482	S	0.018	3.81	2.11	-	-	15	5	5.24	18.3		
																					15	25	7.24	25.3		
2.03	Watershed // Inlets On-Grade	B4	2.56	0.72	591	100	0.020	12	151	U	0.043	3.3	0.75	340	S	0.029	4.77	1.19	-	-	14	100	9.03	31.6		
																					14	5	5.42	7.8		
2.04	Watershed // Sag Inlet	B3+B5	5.46	0.72	714	100	0.016	12	53	U	0.085	4.7	0.19	561	S	0.016	3.61	2.59	-	-	14	25	7.53	10.9		
																					13	100	9.39	13.6		
3.00	Watershed // Inlets on Grade	C1	9.76	0.72	1,430	100	0.015	13	99	U	0.015	2.0	0.83	1,231	S	0.018	3.79	5.42	-	-	14	5	5.61	10.3		
																					13	25	7.82	14.4		
3.01	Watershed // Street Capacity	C2	1.32	0.72	471	100	0.030	12	53	U	0.030	2.8	0.32	318	S	0.022	4.19	1.27	-	-	14	100	9.39	36.9		
																					13	5	5.61	5.3		
3.02	Watershed // Inlets in Sag	C2+C3	4.87	0.72	683	100	0.020	12	151	U	0.040	3.2	0.78	432	S	0.025	4.46	1.61	-	-	13	25	6.37	44.8		
																					13	100	9.76	9.3		
3.03	Watershed	C4	3.97	0.92	541	100	0.007	16	349	U	0.025	2.5	2.30	-	-	92	6.0	0.3	-	-	18	5	5.42	19.0		
																					18	25	7.53	26.4		
3.03A	Watershed	C5A	2.13	0.89	711	100	0.005	17	474	U	0.037	3.1	2.55	-	-	137	6.0	0.4	-	-	18	100	9.39	32.9		
																					19	5	4.63	8.8		
3.04	Watershed	C5	3.25	0.90	841	100	0.005	17	529	U	0.033	2.9	3.02	-	-	212	6.0	0.6	-	-	19	25	6.37	12.1		
																					19	100	7.93	15.0		
3.05	Combined Flow Rational Calculation	C4+C5+C5A	9.35	0.91	841	100	0.005	17	529	U	0.033	2.9	3.02	-	-	212	6.0	0.6	-	-	20	5	4.51	13.2		
																					20	25	6.21	18.2		
3.11	Watershed	C9	4.00	0.95	914	100	0.005	17	460	U	0.037	3.1	2.47	-	-	354	6.0	1.0	-	-	20	100	7.71	22.6		
																					20	5	4.51	17.1		
3.12	Watershed	C10	2.58	0.88	886	100	0.005	17	786	U	0.035	3.0	4.35	-	-	-	-	-	-	-	20	25	6.21	23.6		
																					21	5	4.40	10.0		
3.14	Watershed	C11	14.95	0.48	1,350	100	0.005	17	293	U	0.030	2.8	1.75	-	-	957	6.0	2.7	-	-	21	25	6.05	13.7		
																					21	100	7.52	54.0		
3.14P	Watershed	C1+C2+C3+C4+C5+C5A+C11	38.93	0.67	2,743	100	0.015	13	99	U	0.015	2.0	0.83	1,371	S	0.018	3.79	6.03	1,173	6.0	3.3	23	5	4.21	106.8	
																						23	25	5.77	180.5	
																							23	100	7.17	187.0

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

$T_o = \frac{(0.007(L+1)^{0.8})}{(48.3 S^{0.48})} \times 60$   
 $k = 1.486 f^{1/3} / S$

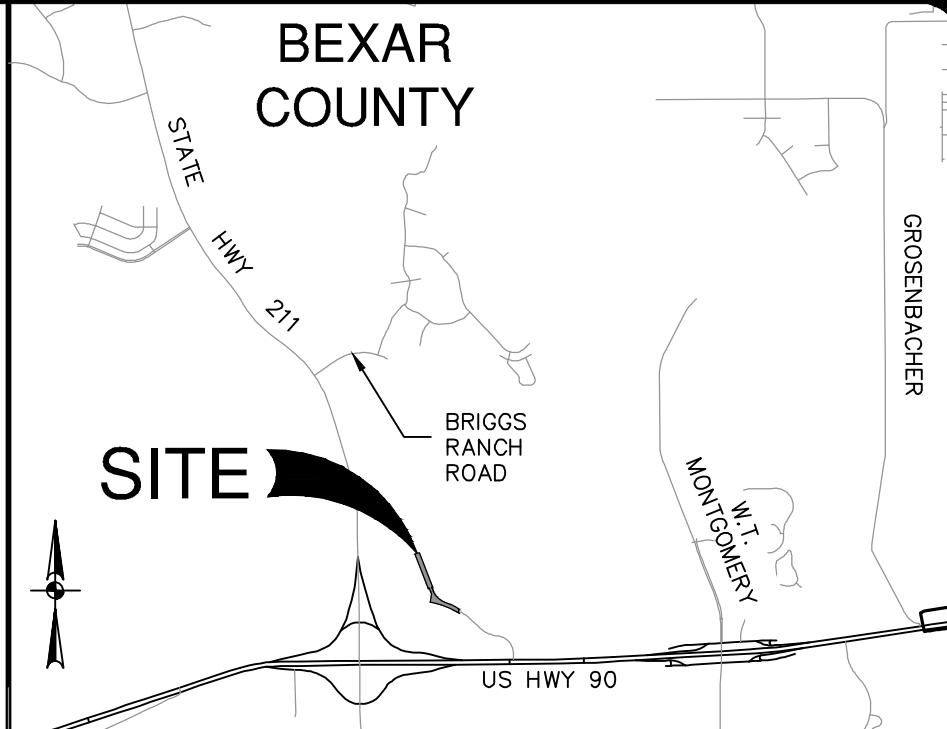
From TR-55 Figure 3-1\*\*  
S: For Streets: n = 0.018, R = 0.2 (Adapted from Mannings)  
P: For Paved: n = 0.025, R = 0.2  
U: For Unpaved: n = 0.05, R = 0.4  
D: For Default: n = 6 fps

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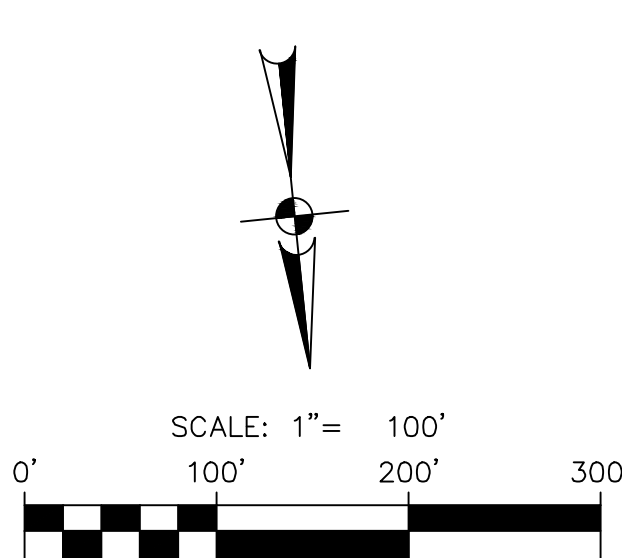
### LEGEND

- OVERALL BRIGGS RANCH EAST BOUNDARY
- PROPERTY LINES
- CURRENT PHASE
- DRAINAGE AREA BOUNDARY
- OVERLAND FLOW PATH
- SHALLOW CONCENTRATED FLOW PATH
- CHANNELIZED FLOW PATH
- 1' CONTOUR
- 5' CONTOUR
- DRAINAGE REFERENCE POINT
- FHA LOT GRADING TYPE



### LOCATION MAP

NOT-TO-SCALE



Accumulated Flow Rates											
Ref. Point	Return Year	Contributing Flow			Reference Sub-point			T	C	B	P
		Upstream Watershed	Upstream Surface Bypass	Upstream Pipe Flow	Upstream Watershed	Upstream Surface Bypass	Upstream Pipe Flow				
#	Q <sub>WATERSHED</sub> (cfs)	Q <sub>UP</sub> (cfs)	Q <sub>PIPE</sub> (cfs)	Q <sub>PIPE</sub> (cfs)	Q <sub>WATERSHED</sub> (cfs)	Q <sub>UP</sub> (cfs)	Q <sub>PIPE</sub> (cfs)	Q <sub>WATERSHED</sub> (cfs)	Q <sub>UP</sub> (cfs)	Q <sub>PIPE</sub> (cfs)	Q <sub>PIPE</sub> (cfs)
2.00	2.00	32.9	0.0	0.0	32.9	0.0	0.0	32.9	21.3	11.6	21.3
	5	45.4	0.0	0.0	45.4	0.0	0.0	45.4	26.4	19.0	26.4
	100	56.6	0.0	0.0	56.6	0.0	0.0	56.6	29.0	27.6	29.0
2.01	2.01	25.3	0.0	0.0	25.3	0.0	0.0	25.3	19.1	6.2	19.1
	5	31.6	0.0	0.0	31.6	0.0	0.0	31.6	21.2	10.4	21.2
	100	10.3	0.0	0.0	10.3	0.0	0.0	10.3	10.1	0.2	10.1
2.03	2.03	14.4	0.0	0.0	14.4	0.0	0.0	14.4	13.8	0.8	13.6
	5	18.0	0.0	0.0	18.0	0.0	0.0	18.0	15.8	2.2	15.8
	100	21.3	0.0	0.0	21.3	0.0	0.0	21.3	35.5	-	62.8
2.04	2.04	29.6	0.0	0.0	29.6	0.0	0.0	29.6	55.6	-	114.7
	5	36.9	0.0	0.0	36.9	0.0	0.0	36.9	77.1	-	143.1
	100	32.5	0.0	0.0	32.5	0.0	0.0	32.5	20.9	11.6	20.9
3.00	3.00	44.8	0.0	0.0	44.8	0.0	0.0	44.8	25.8	19.0	25.8
	5	55.7	0.0	0.0	55.7	0.0	0.0	55.7	28.7	27.0	28.7
	100	19.0	0.0	0.0	19.0	0.0	0.0	19.0	30.6	-	51.5
3.02	3.02	26.4	19.0	3.00	25.8	45.4	45.4	45.4	45.4	-	71.2
	5	32.9	27.0	3.00	28.7	59.9	59.9	59.9	-	-	88.6
3.06P	5	0.0	0.0	0.0	88.9	0.0	0.0	88.9	-	-	88.9
	100	0.0	0.0	0.0	124.0	0.0	0.0	124.0	-	-	124.0
3.12P	25	13.7	0.0	3.11	23.6	13.7	13.7	13.7	-	-	37.3
	100	17.1	0.0	0.0	29.3	17.1	17.1	17.1	-	-	46.4

DATE	
NO.	
REVISION	



**PAPE-DAWSON ENGINEERS**  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008900

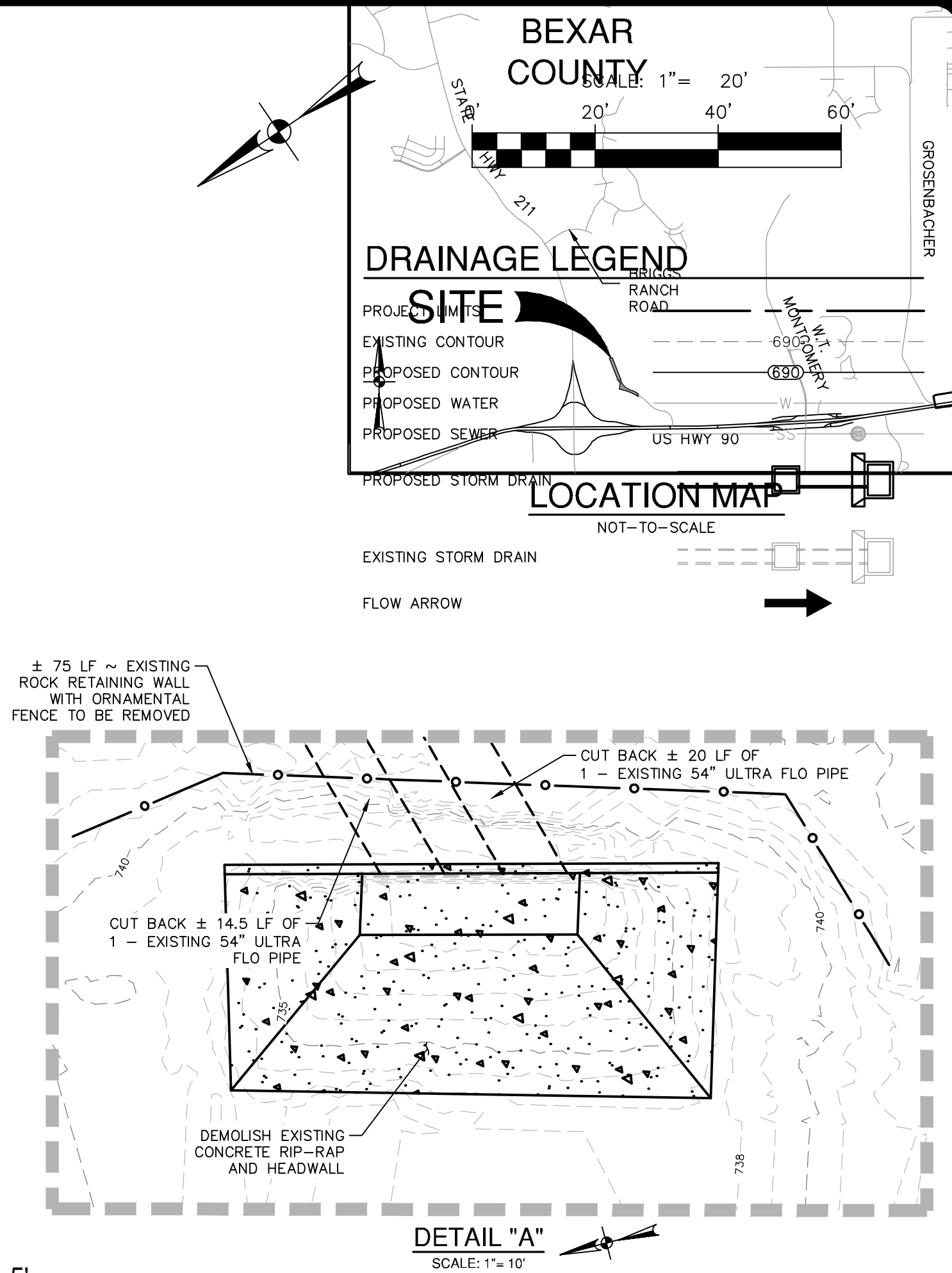
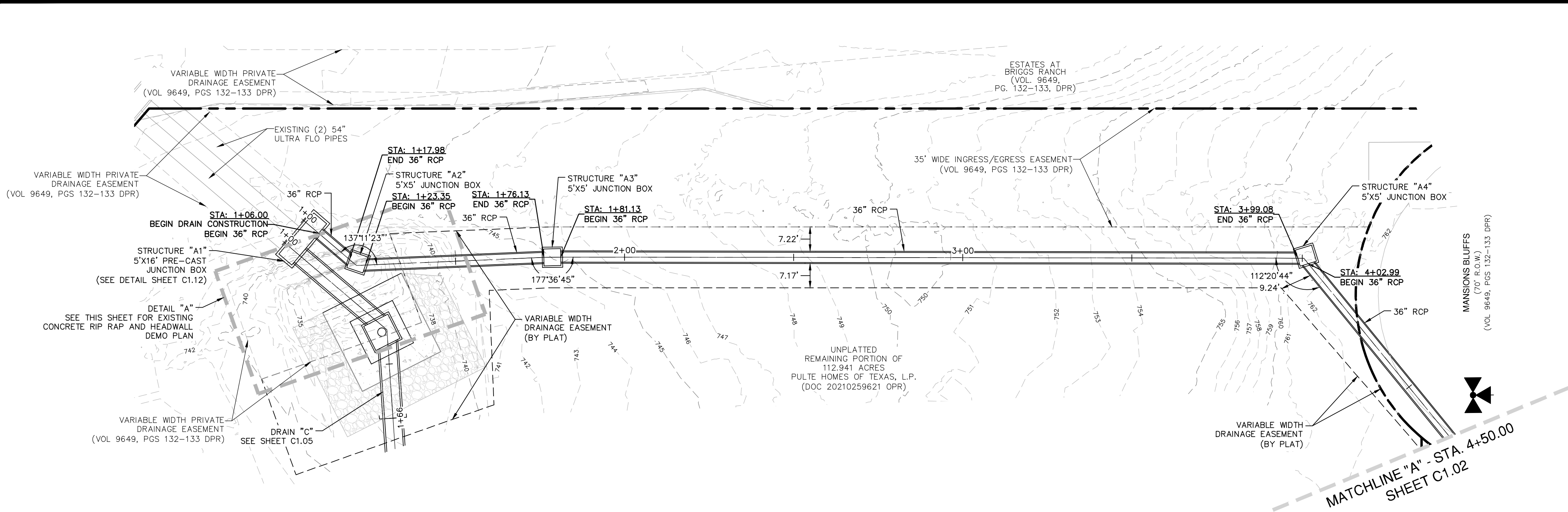
**BRE PHASE 5 - COLLECTOR PHASE 2A**  
SAN ANTONIO, TEXAS  
POST DEVELOPMENT MASTER DRAINAGE PLAN

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE NOVEMBER 2023  
DESIGNER EDK  
CHECKED MG DRAWN NA  
SHEET C1.00-A

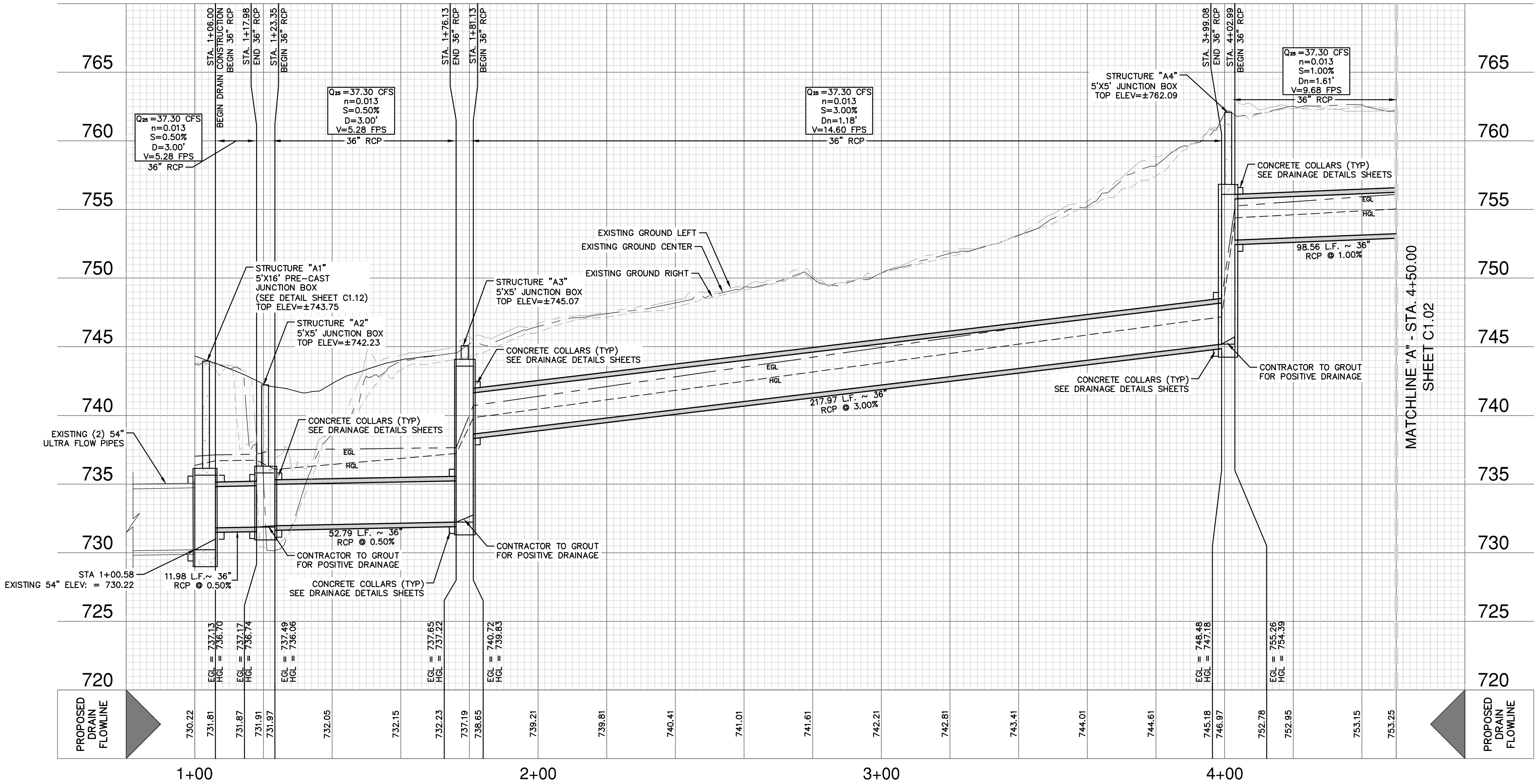


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DRAIN A  
PLAN AND PROFILE (STA. 1+06.00 TO STA. 4+50.00)  
VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 20'



**DRAINAGE & GRADING NOTES:**

1. A BEXAR COUNTY ROW 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.
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 EXISTING 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. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN 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 WINGWALL 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 MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

**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.

**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.

DATE: \_\_\_\_\_

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

STATE OF TEXAS  
MATTHEW GEISTWEIDT  
118861  
LICENSED PROFESSIONAL ENGINEER

*Matthew Geistweidt*  
3-7-2024

**PAPE-DAWSON ENGINEERS**

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

**BRE PHASE 5 - COLLECTOR PHASE 2A**  
SAN ANTONIO, TEXAS

**DRAIN A**  
PLAN AND PROFILE (STA. 1+06.00 TO STA. 4+50.00)

PLAT NO. 22-11800681

JOB NO. 12361-09

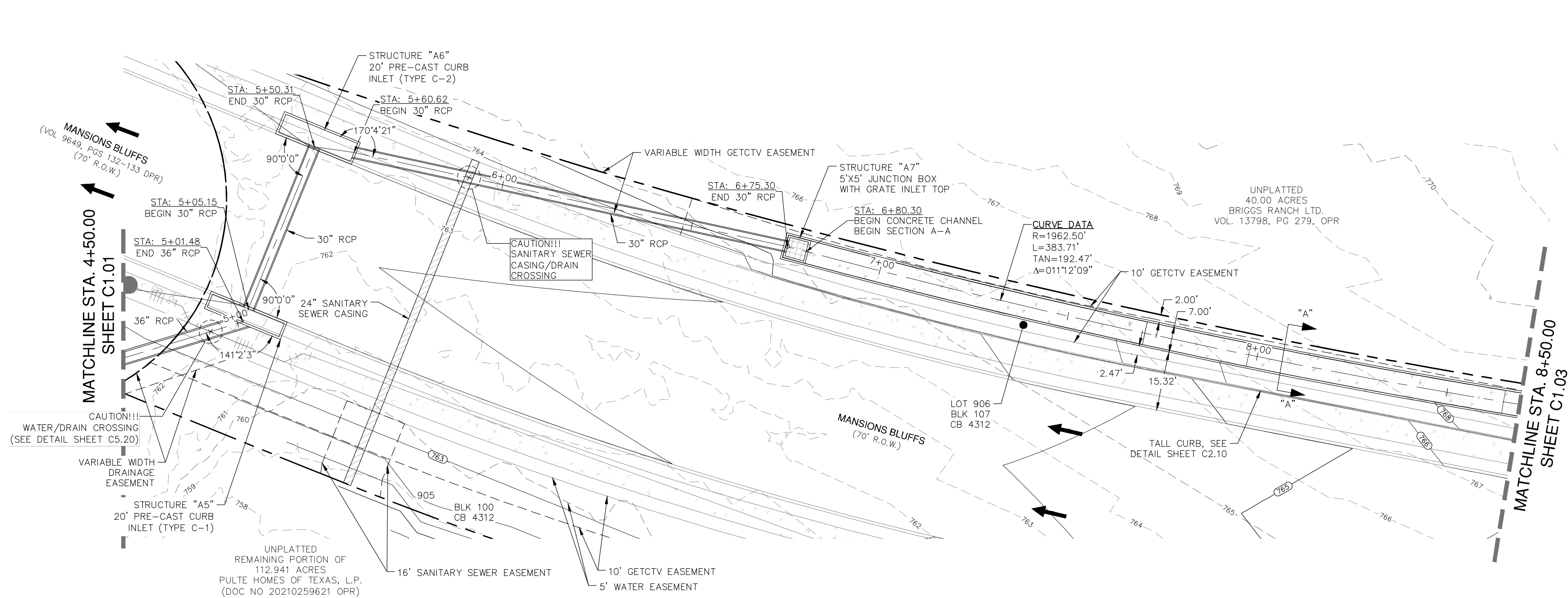
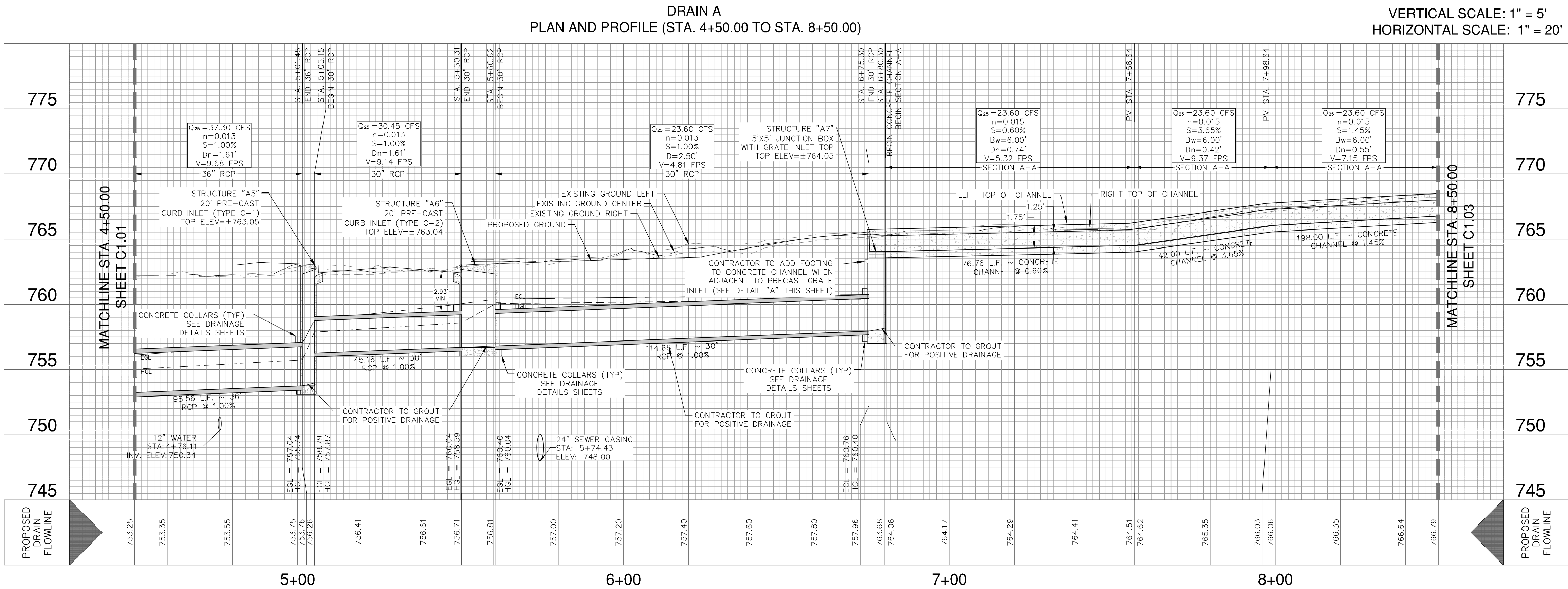
DATE NOVEMBER 2023

DRAWN EDK

CHECKED MG DRAWN NA

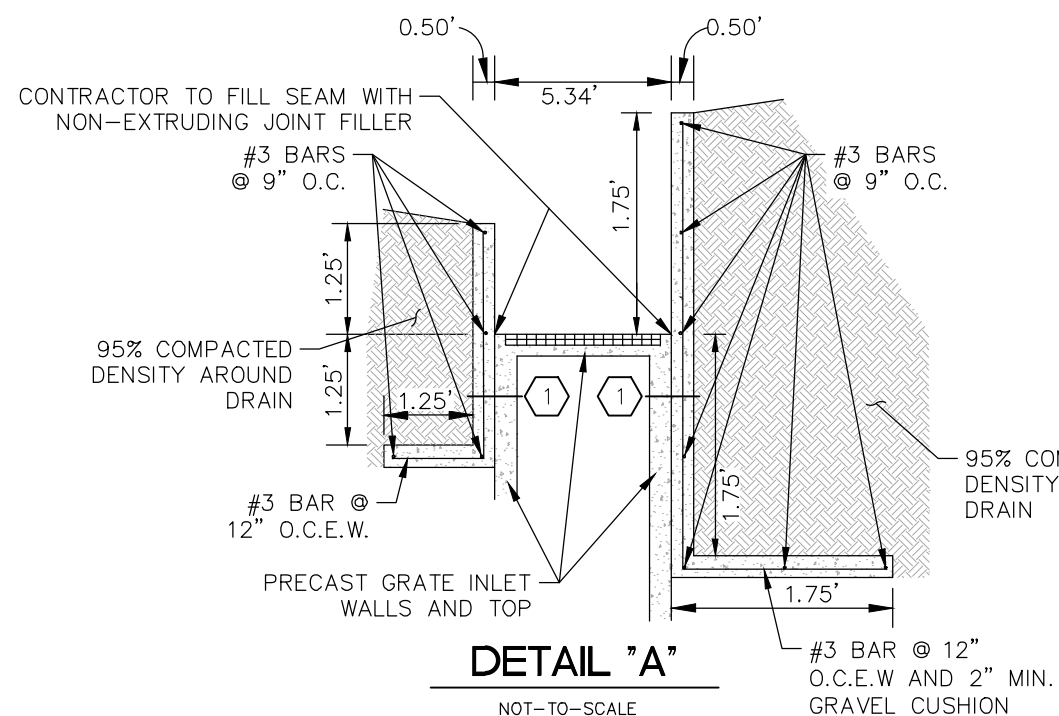
SHEET C1.01





**STRUCTURE "A5"**  
**5'X5' GRATE INLET**  
**HYDRAULIC CALCULATION**

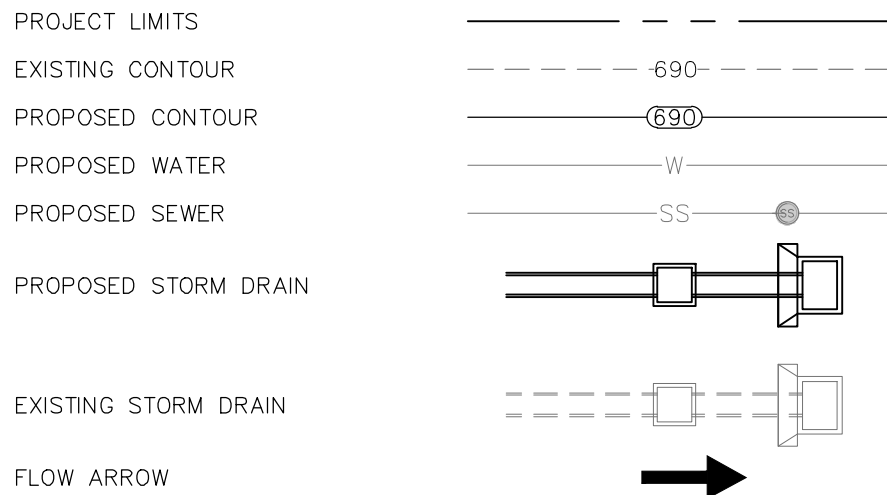
$A_g$  = GROSS AREA  
 $G_o$  = GRATE OPENING AREA (%)  
 $A_n$  = NET AREA  
 $K_o$  = ORIFICE COEFFICIENT = 0.7  
 $X_o$  = CLOGGING FACTOR = 50%  
 $q$  = 32.2  
 $h$  = HEAD ON INLET =  $D_n = 0.74'$   
 $Q_{25}$  TO INLET = 23.6 CFS (POINT 3.11)  
 $A_g = 5'5' = 25$  SQ.FT.  
 $G_o = 80\%$   
 $A_n = A_g(G_o) = 25(80\%) = 20$  SQ.FT.  
 $Q_{25}$  CAPACITY =  $X_o \cdot K_o \cdot A_n \cdot (2gh)^{1/2}$   
 $Q_{25}$  CAPACITY = 48.32 CFS  
48.32 CFS > 23.6 CFS      OK



**SECTION "A-A"**

NOT-TO-SCALE

**DRAINAGE LEGEND**



**STRUCTURE "A5" & "A6"**  
**20' ON-GRADE CURB INLET**  
**HYDRAULIC CALCULATION**

$Q_{25}$  = 13.70 CFS (POINT 3.12 - UD)  
 $Q_{25/2}$  = 6.85 CFS  
 $S$  = 0.50%  
 $L$  = 20' INLET  
 $Q_{\text{captured}}$  = 6.85 CFS

**DRAINAGE & GRADING NOTES:**

1. A BEAR COUNTY ROW PERMIT MUST BE OBTAINED BEFORE WORKING IN BEAR 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.
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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 WINGWALL 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 MAINTAIN A MINIMUM CHANNEL DEPTH OF "D" AS SHOWN IN THE PROFILE.

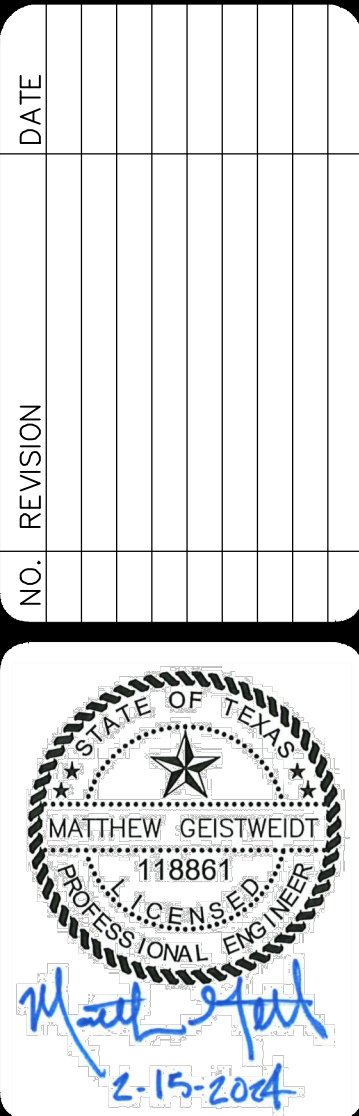
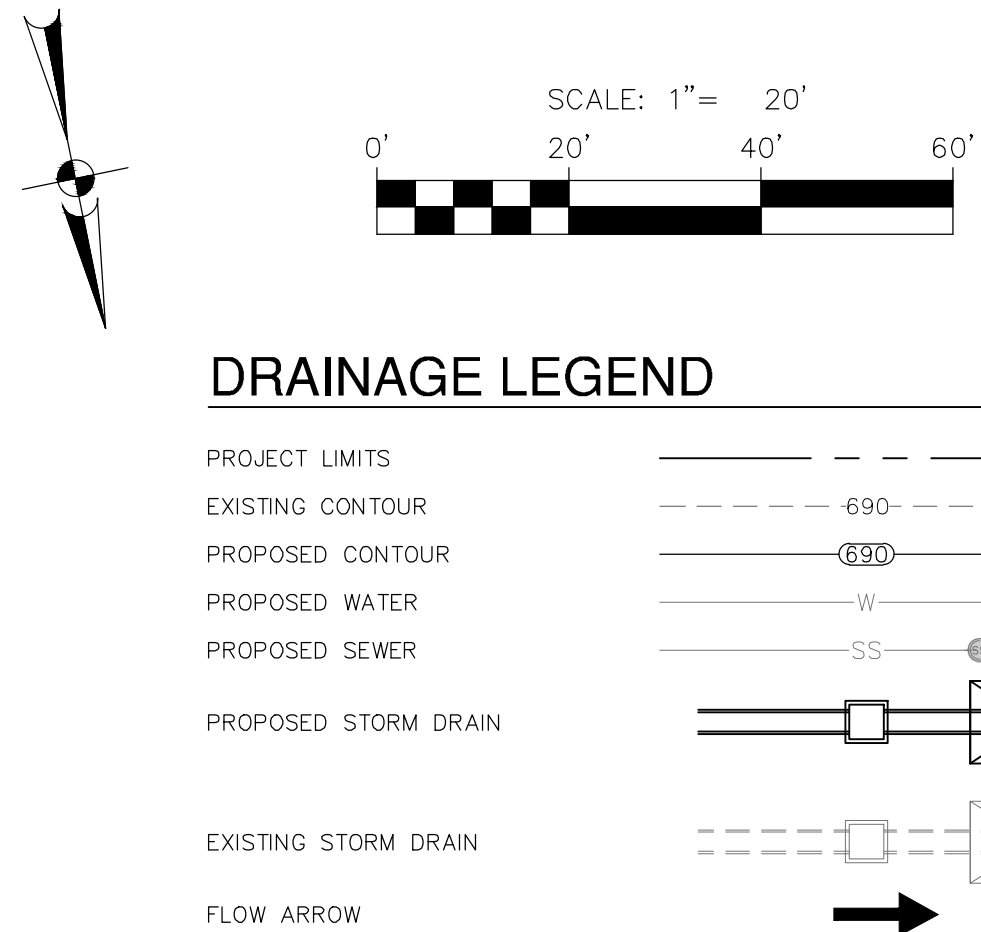
**TRENCH EXCAVATION SAFETY PROTECTION:**

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.

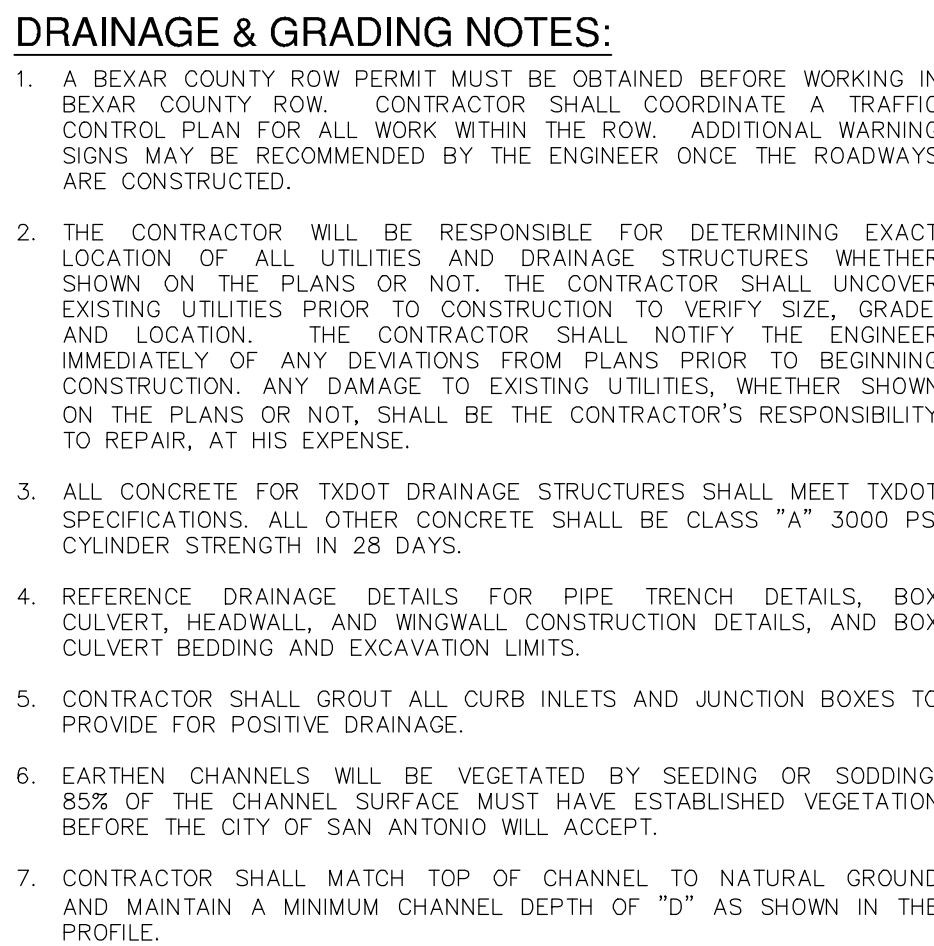
**CAUTION!!**

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.





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



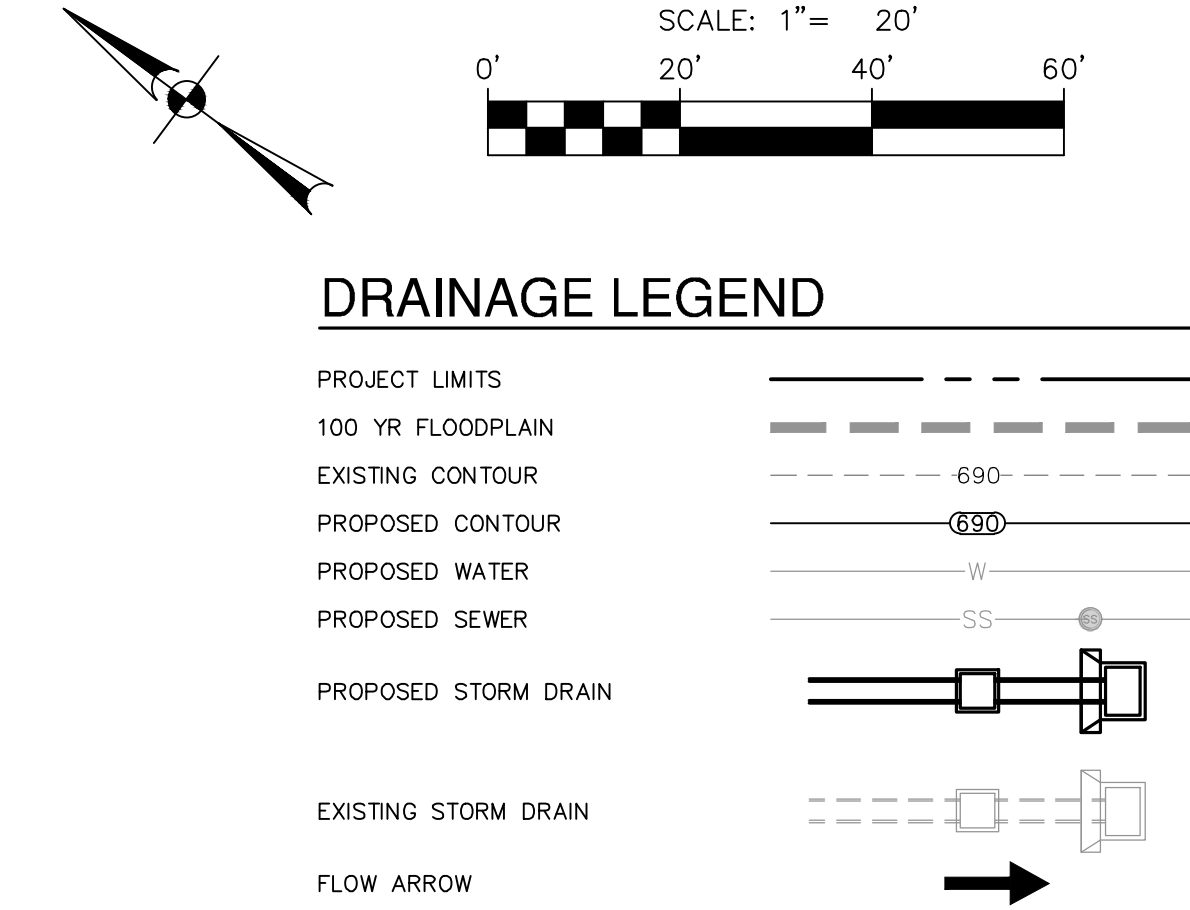
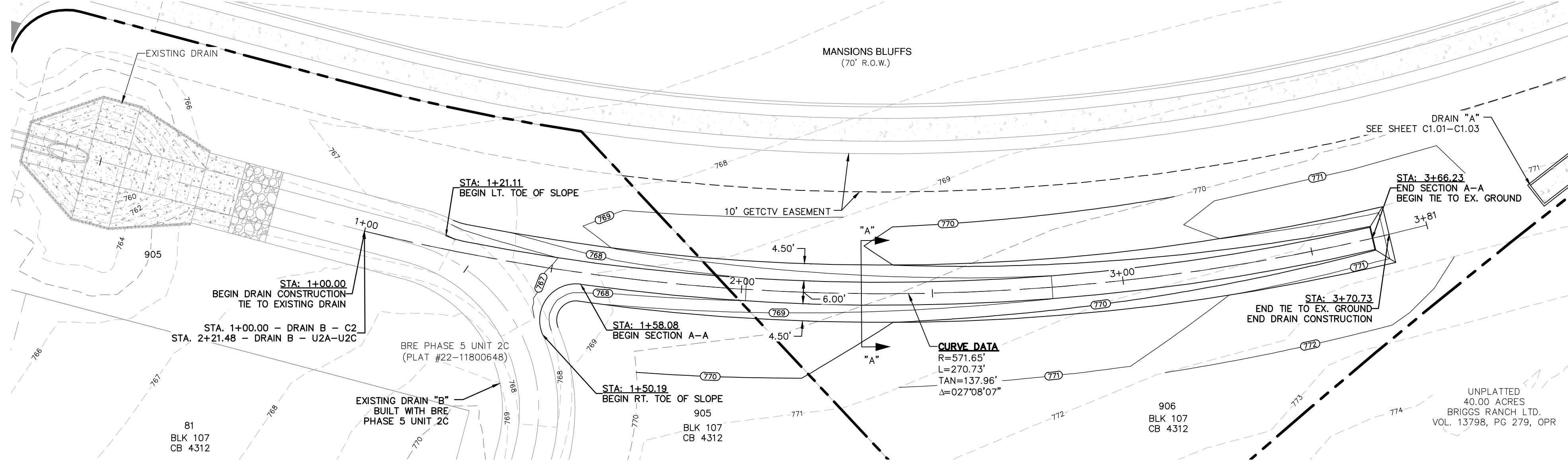
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE  
OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT  
IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL  
INFORMATION AND RECOMMENDATIONS AND SIGN OFF ON THE PLANS. THE  
PROJECT WORK AREA IN ORDER TO IMPLEMENT 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 ALL APPLICABLE  
SAFETY PROTECTION THAT COMPLY WITH AS A MINIMUM, OSHA STANDARDS  
FOR TRENCH EXCAVATIONS. SPECIFICALLY, CONTRACTOR AND/OR  
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DRAIN A  
PLAN AND PROFILE (STA. 8+50.00 TO END)

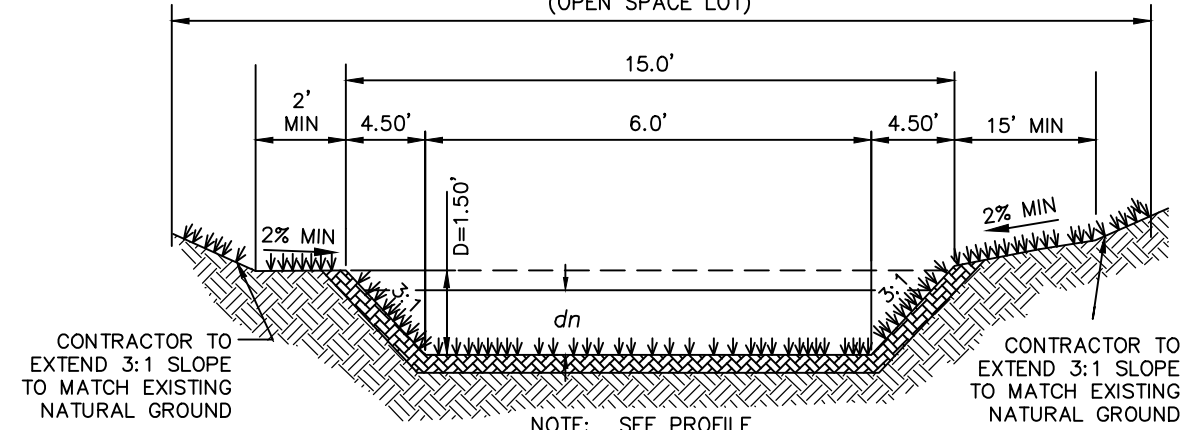
PLAT NO. 22-11800681  
 JOB NO. 12361-09  
 DATE NOVEMBER 2023  
 DESIGNER EDK  
 CHECKED MG DRAWN NA  
 SHEET C1.03





NOTE: CONTRACTOR TO HYDOMULCH AND WATER UNTIL VEGETATION IS ESTABLISHED. SEED MIXTURE TO BE DETERMINED BY OWNER.

CONTRACTOR SHALL OVER EXCAVATE CHANNEL AND PROVIDE 6" MINIMUM TOPSOIL (STRIPPINGS FROM INITIAL CLEANING OPERATIONS ARE ACCEPTABLE). NO SEPARATE PAY ITEM.

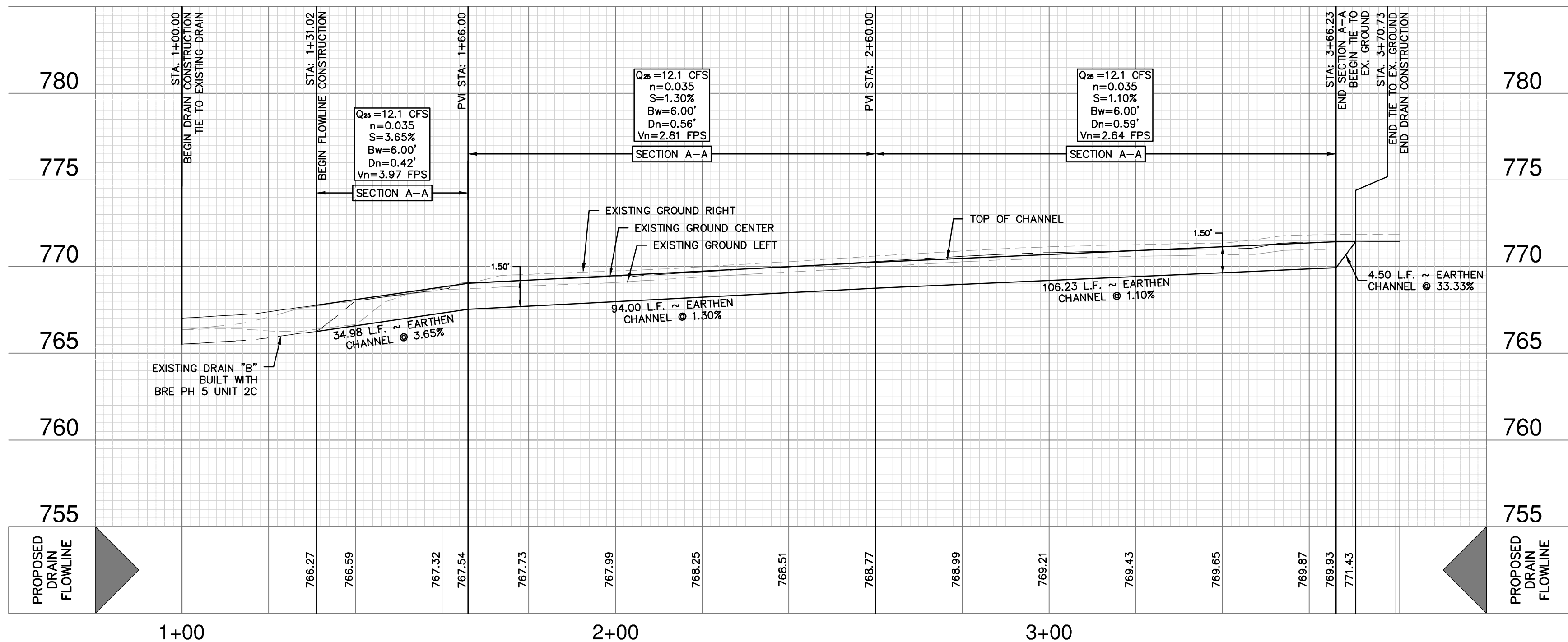


#### SECTION A-A

NOT-TO-SCALE

DRAIN B  
PLAN AND PROFILE STA. 1+00.00 TO END

VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 20'



#### DRAINAGE & GRADING NOTES:

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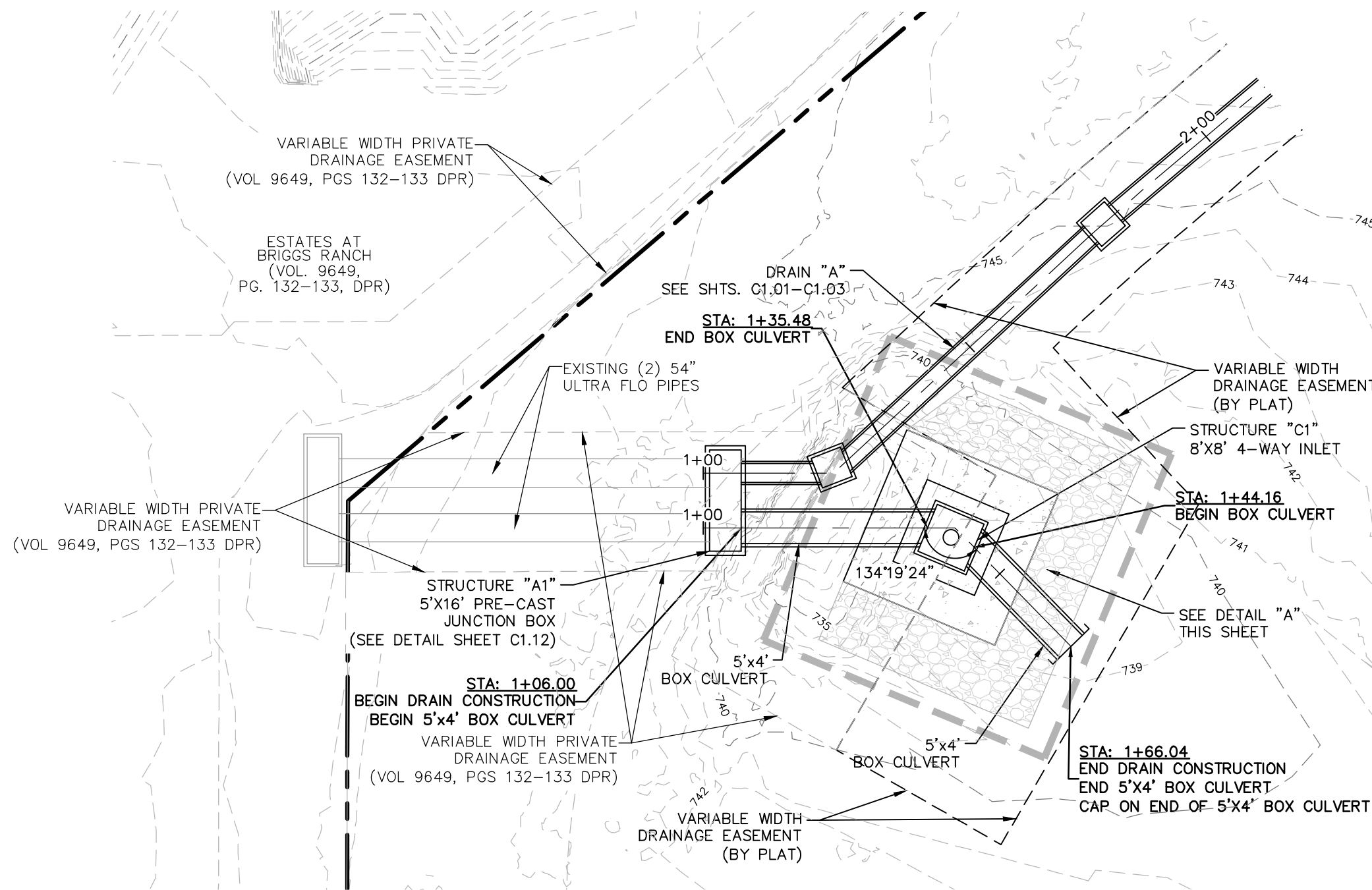
**PAPE-DAWSON  
ENGINEERS**  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028900

**BRE PHASE 5 - COLLECTOR PHASE 2A**  
SAN ANTONIO, TEXAS

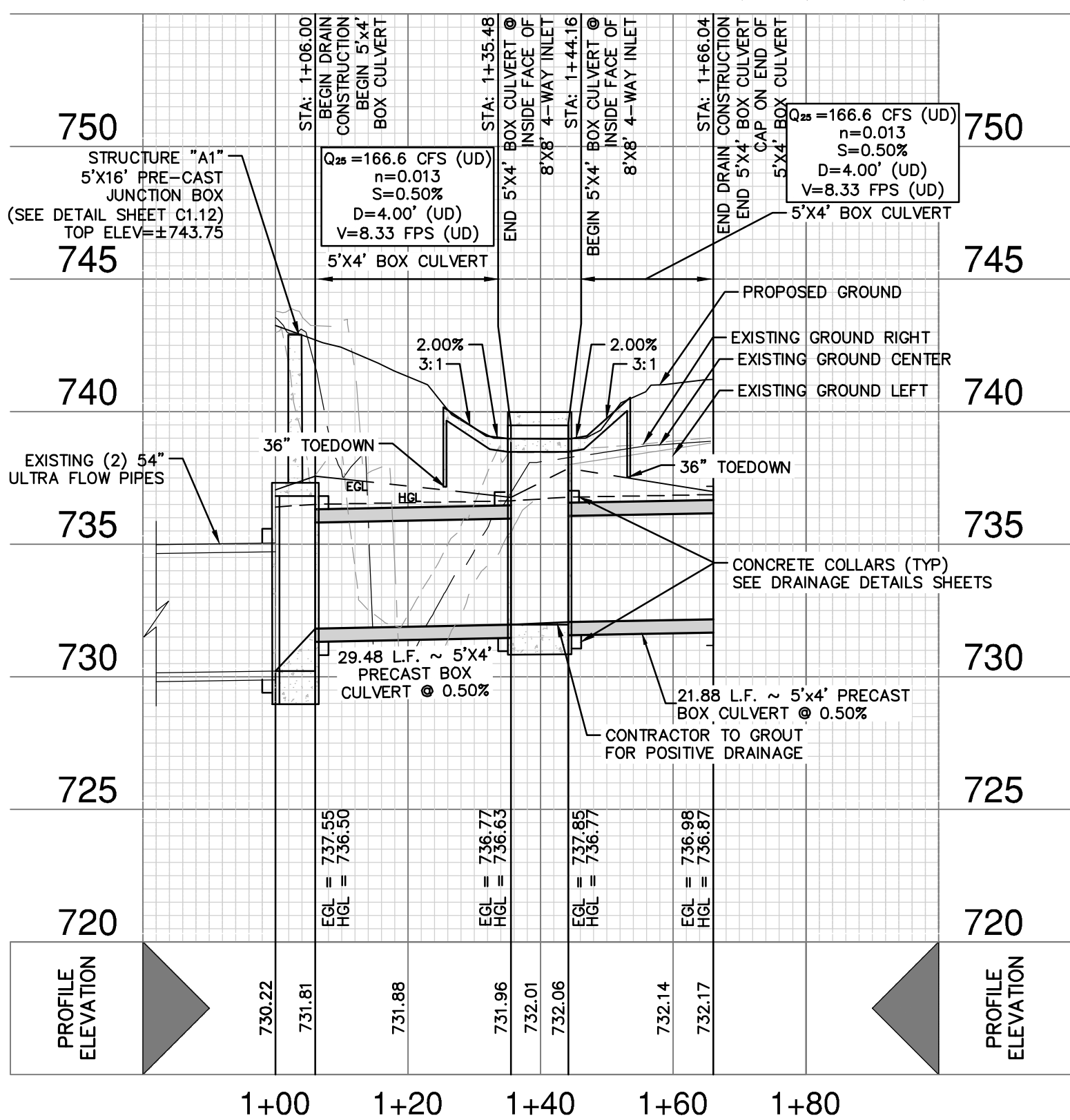
**DRAIN B**  
PLAN AND PROFILE STA. 1+00.00 TO END

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE NOVEMBER 2023  
DESIGNER EDK  
CHECKED MG DRAWN NA  
SHEET C1.04



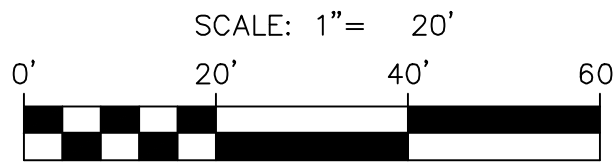
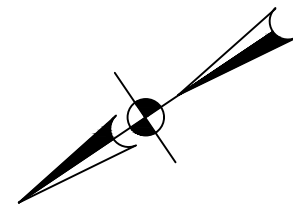


DRAIN C  
PLAN AND PROFILE STA. 1+06.00 TO STA 1+66.04  
VERTICAL SCALE: 1" = 5'  
HORIZONTAL SCALE: 1" = 20'

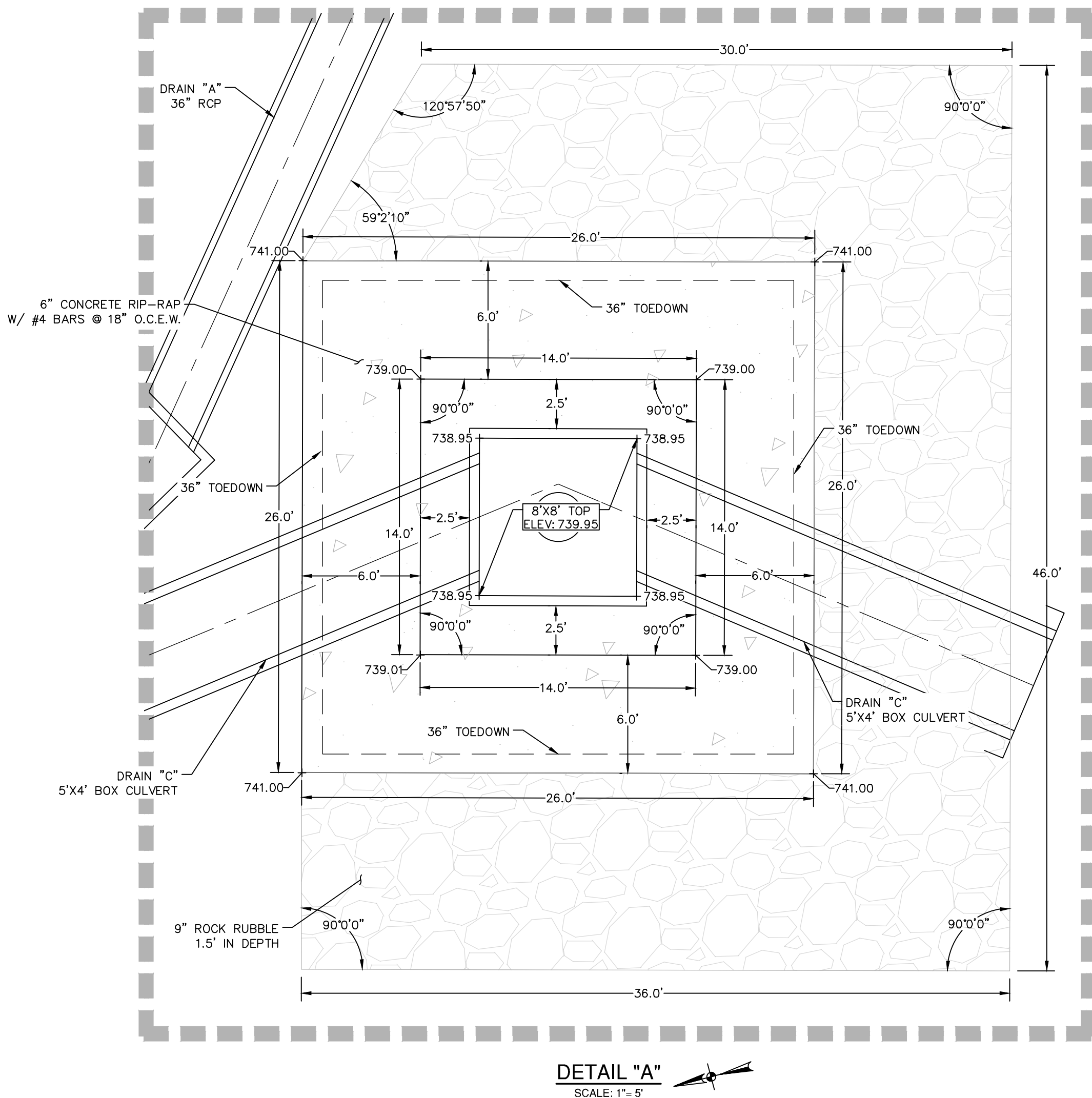
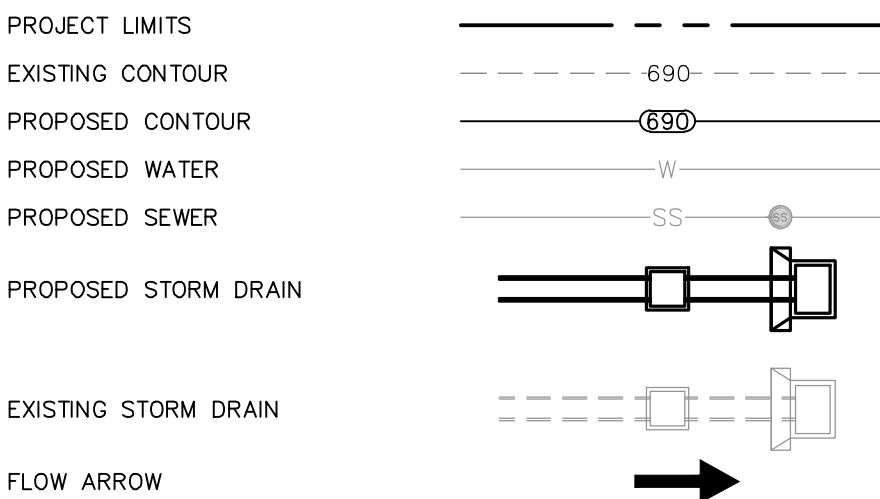


POST DEVELOPMENT CONDITION  
4-WAY INLET HYDRAULIC CALCULATION

$Q_{25} = 150.5 \text{ CFS}$   
 $Q_{25} = CA/2gn \text{ (ORIFICE FLOW EQN.)}$   
 $A = L(0.5), h = 2.80 \text{ g} = 32.2, c = 0.7$   
 $L = \frac{150.5 \text{ CFS}}{(0.7)(0.50)\sqrt{2(32.2)(2.80)}}$   
 $L = 32.12 \text{ FT} \quad \text{USE } 8'X8' \text{ 4-WAY INLET} = 32'$



DRAINAGE LEGEND



DETAIL "A"  
SCALE: 1" = 5'

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DATE	
NO.	
REVISION	

Matthew Geistweidt  
118861  
Professional Engineer  
3-7-2024

**PAPE-DAWSON  
ENGINEERS**

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

**BRE PHASE 5 - COLLECTOR PHASE 2A**  
SAN ANTONIO, TEXAS

DRAIN C

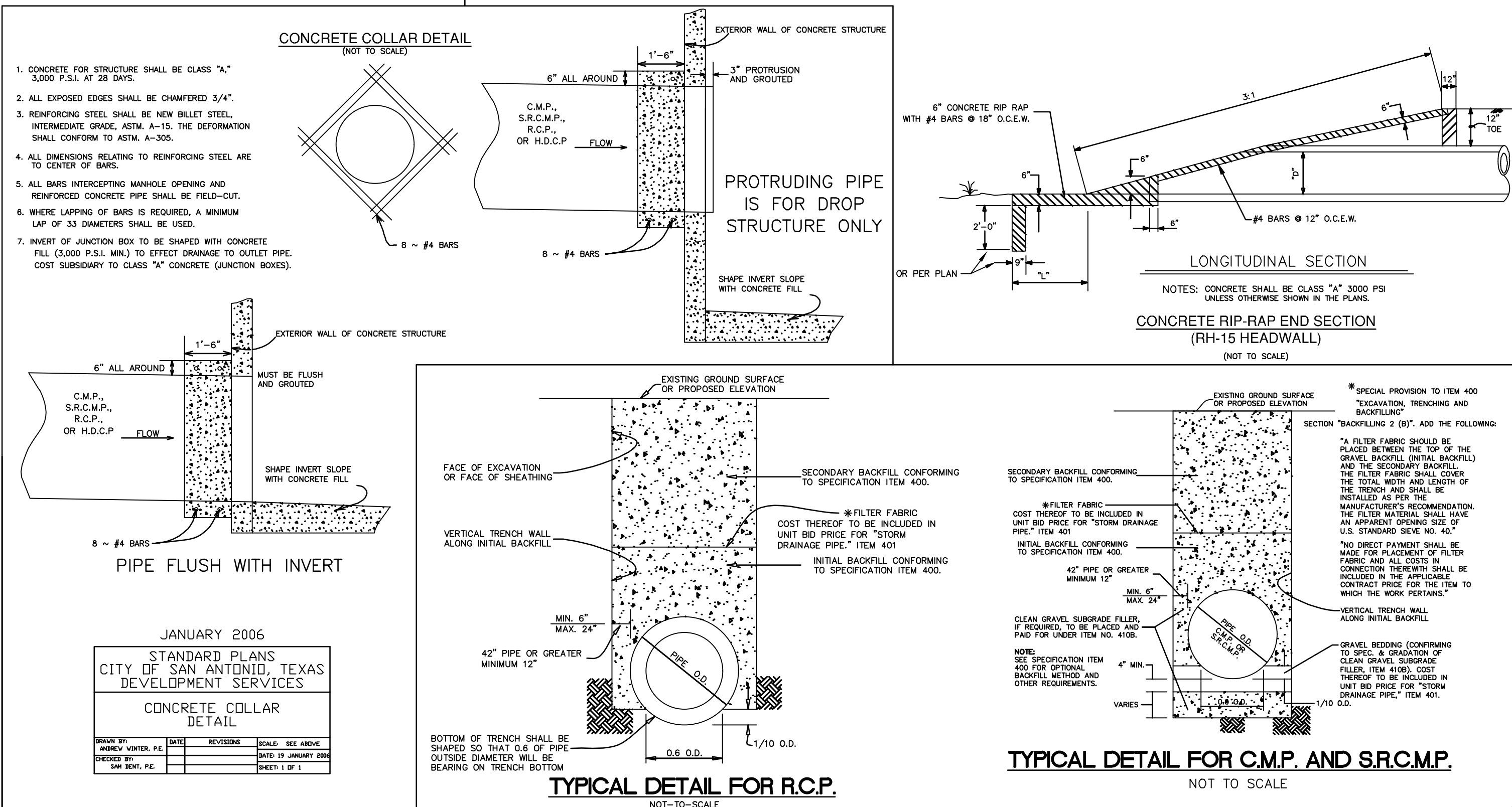
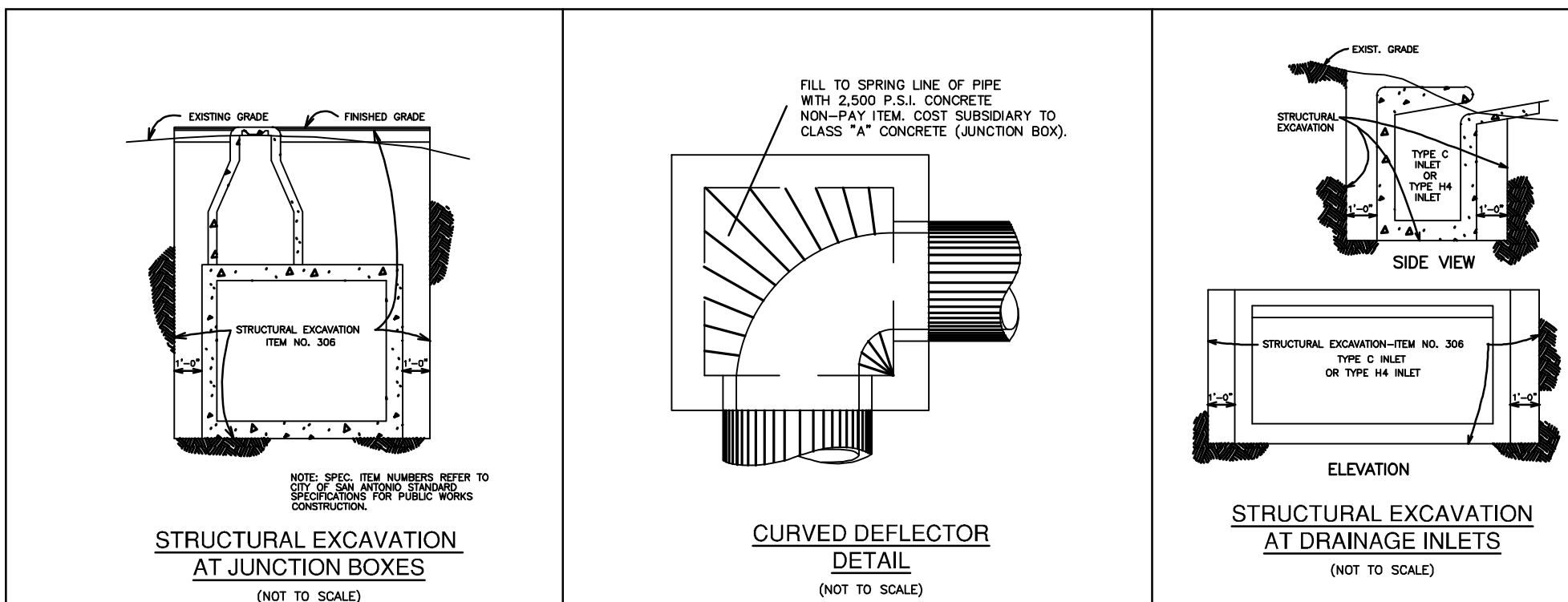
PLAN AND PROFILE STA. 1+06.00 TO STA 1+66.04

PLAT NO.	22-11800681
JOB NO.	12361-09
DATE	NOVEMBER 2023
DRAWN	EDK
CHECKED	MG
DRAWN	NA
SHEET	C1.05



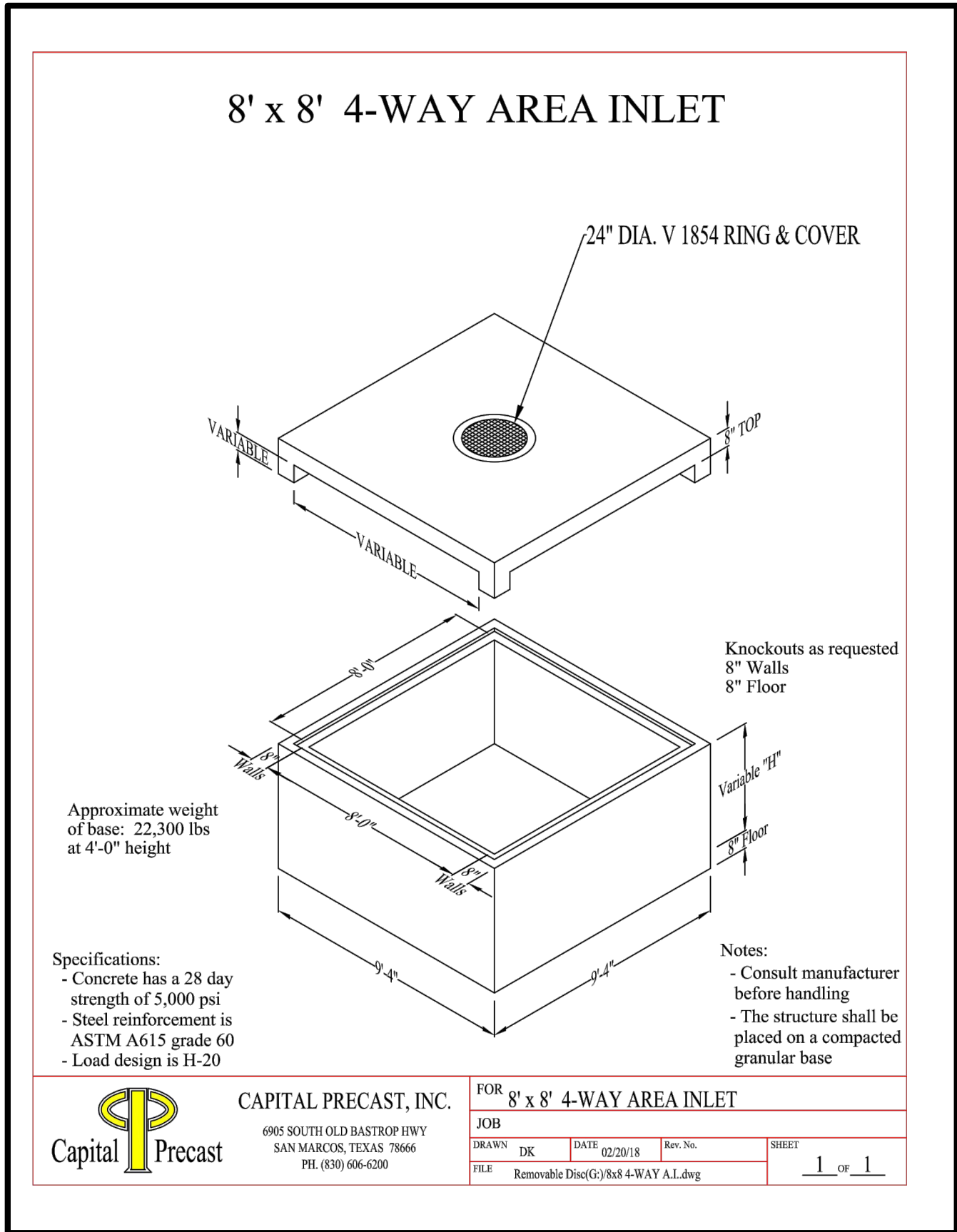
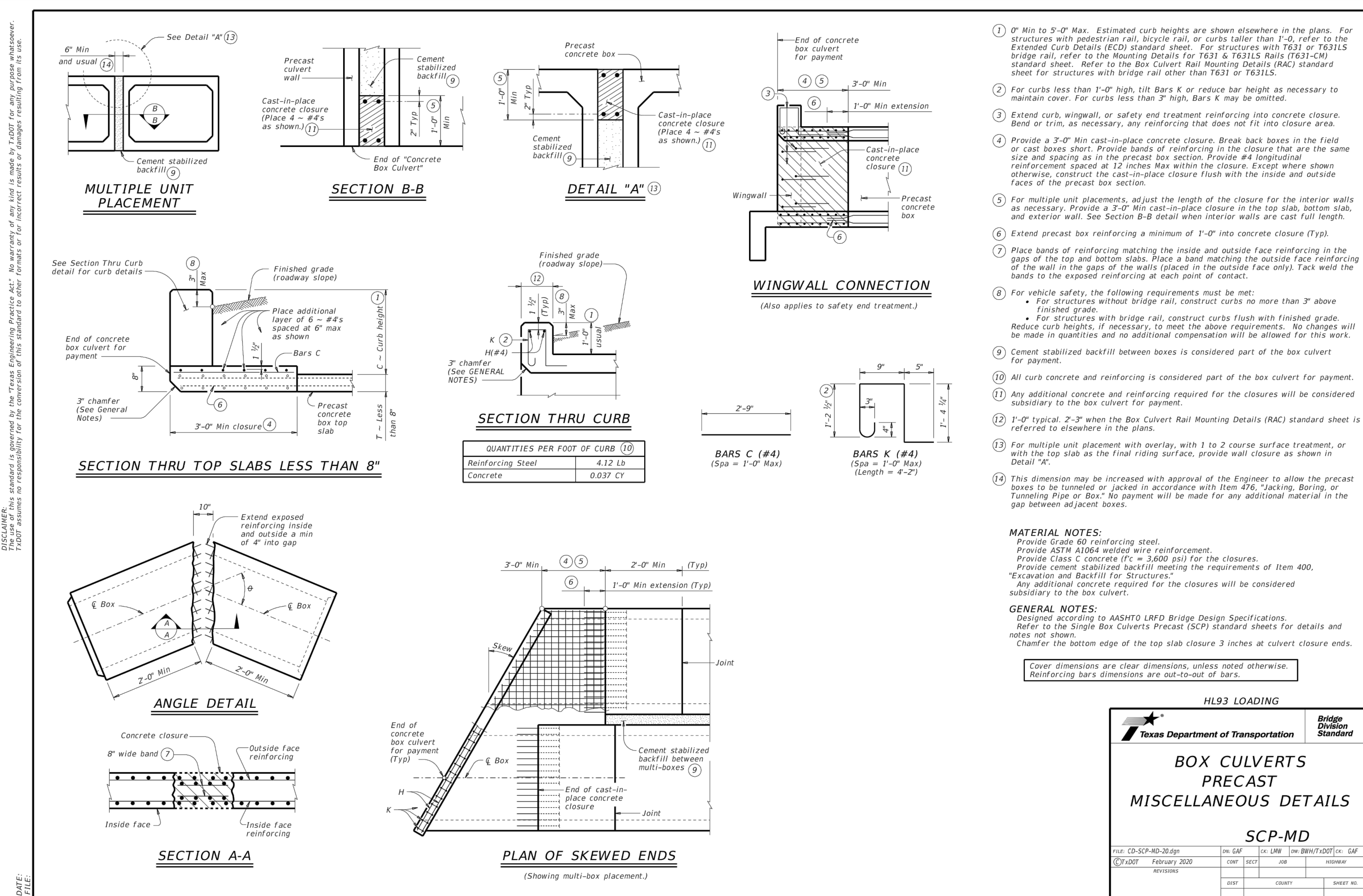




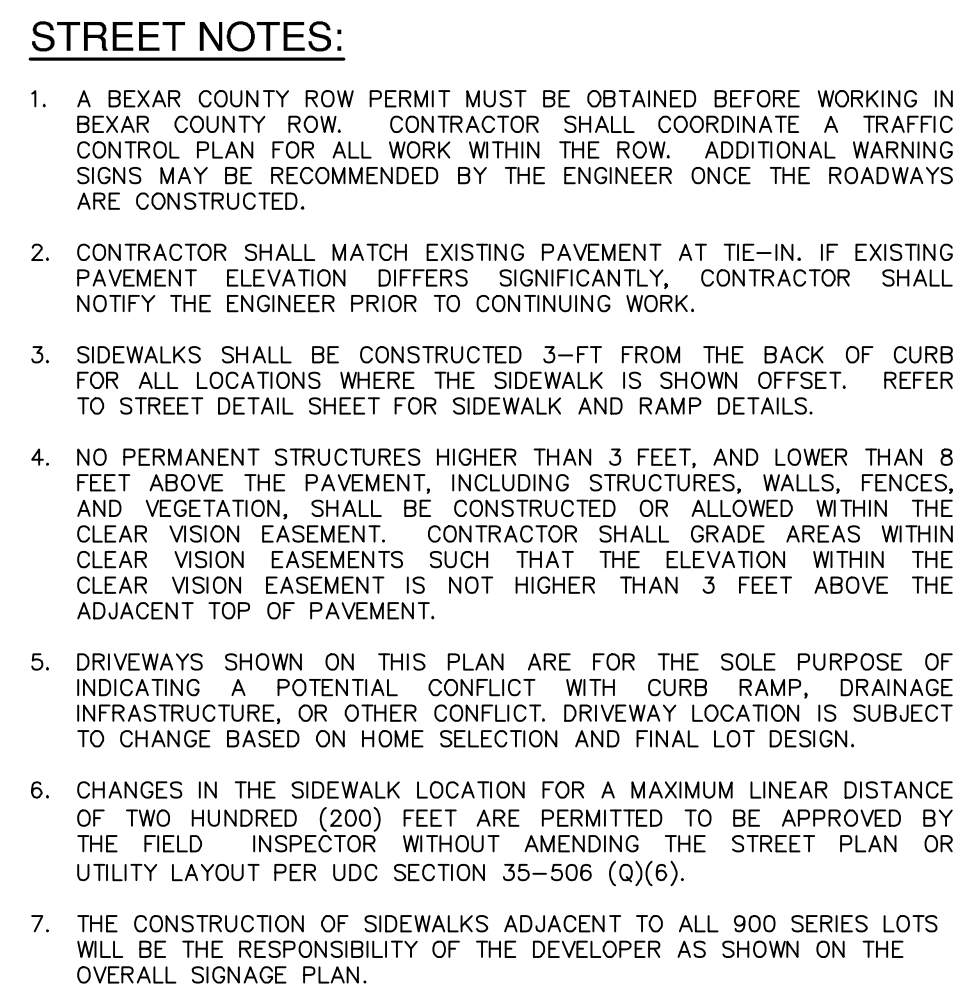
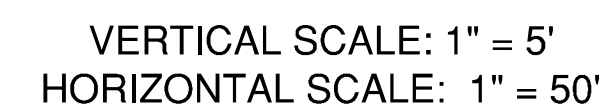
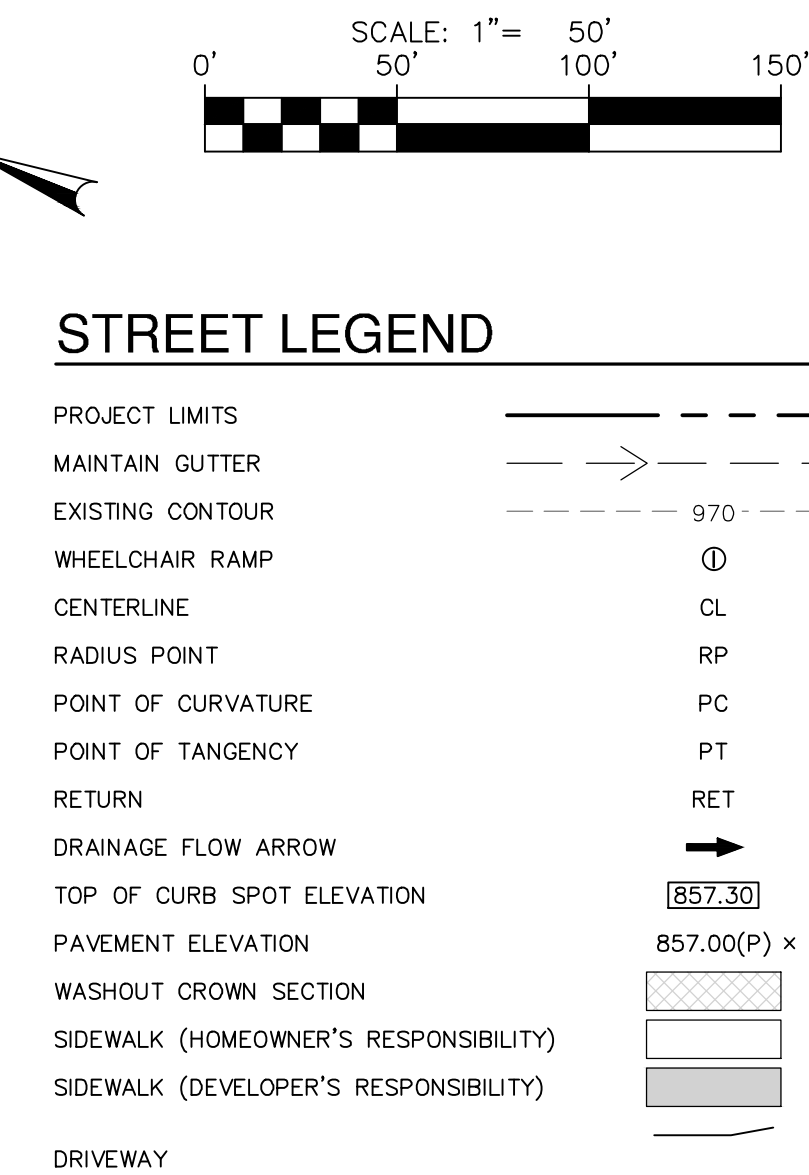


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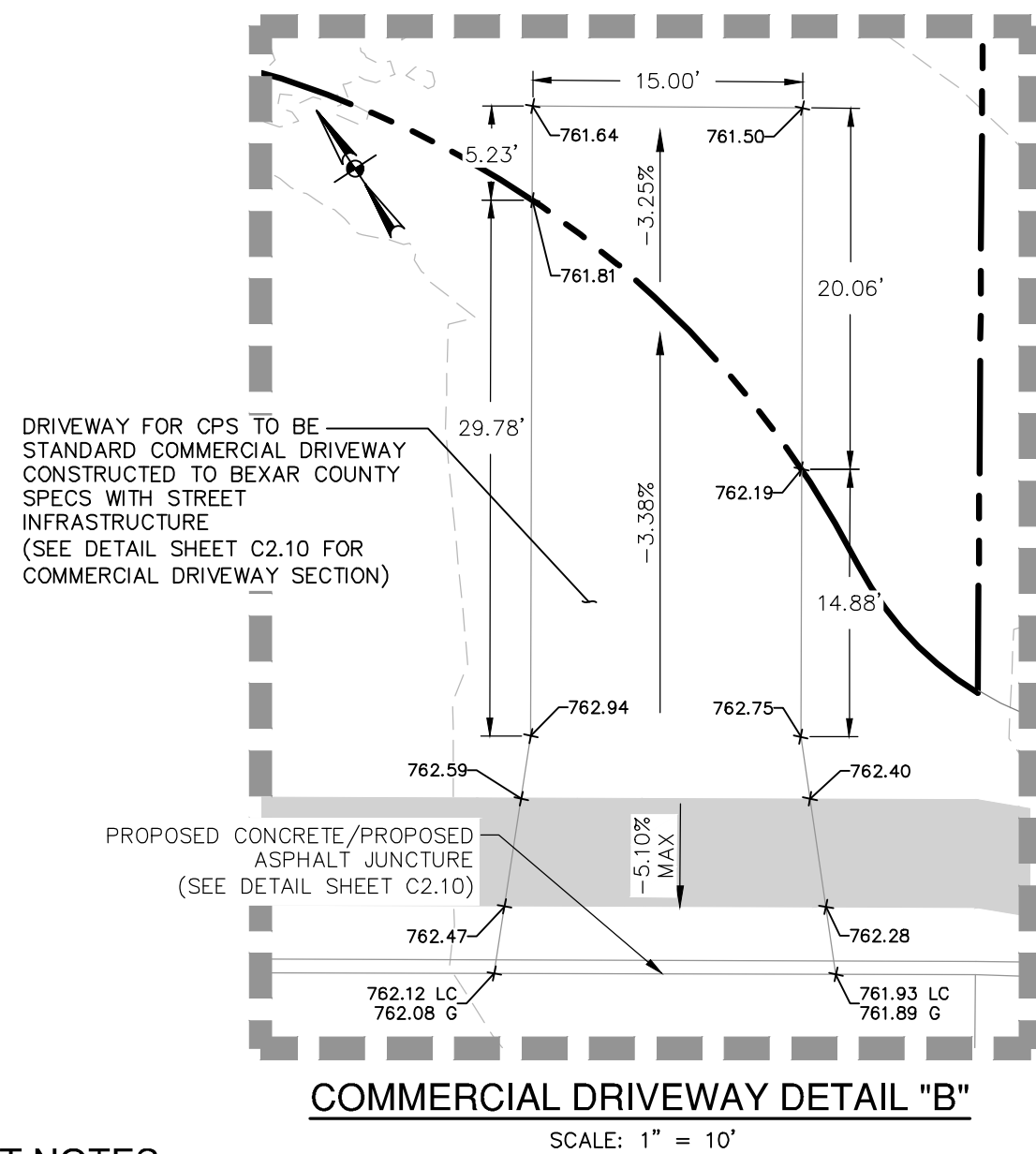
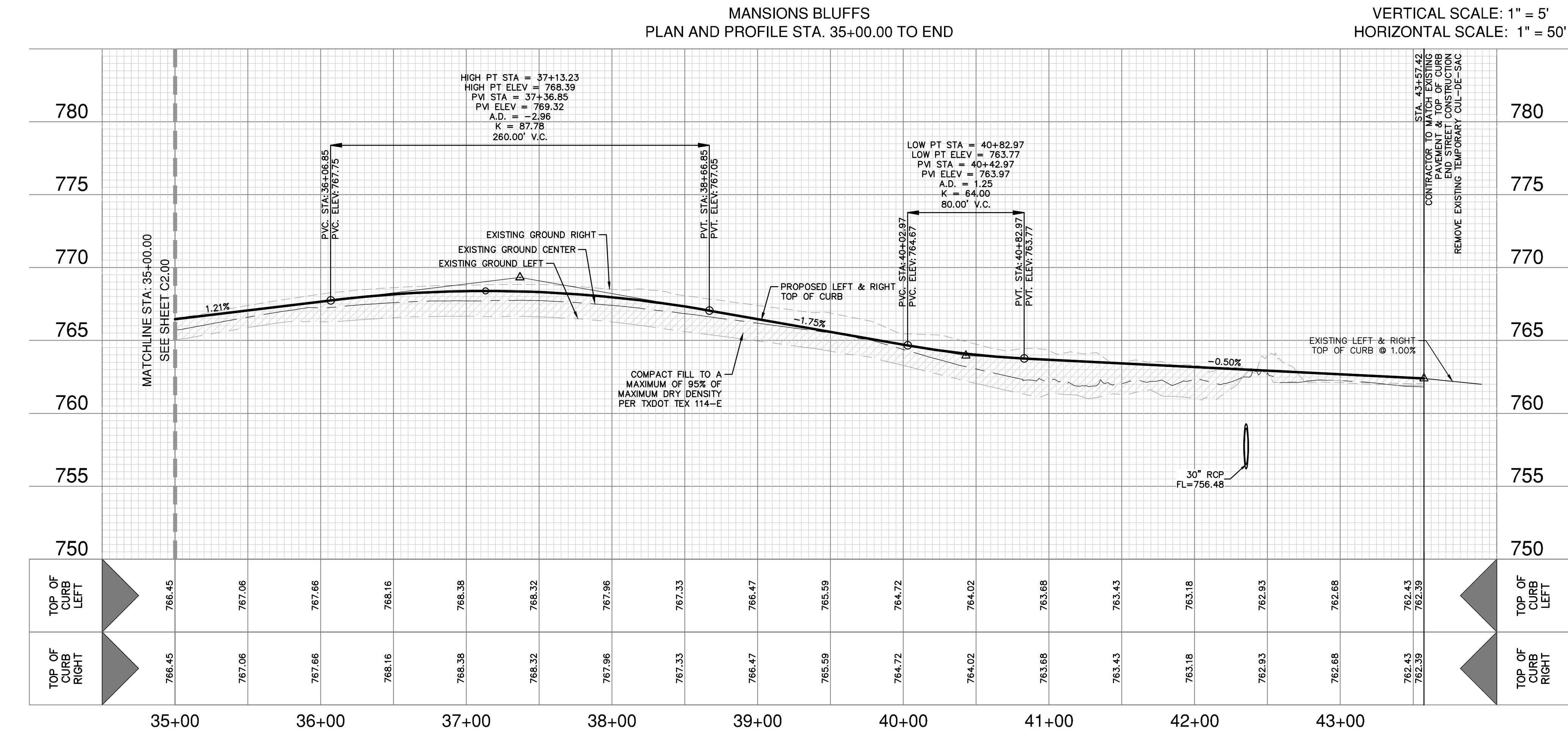
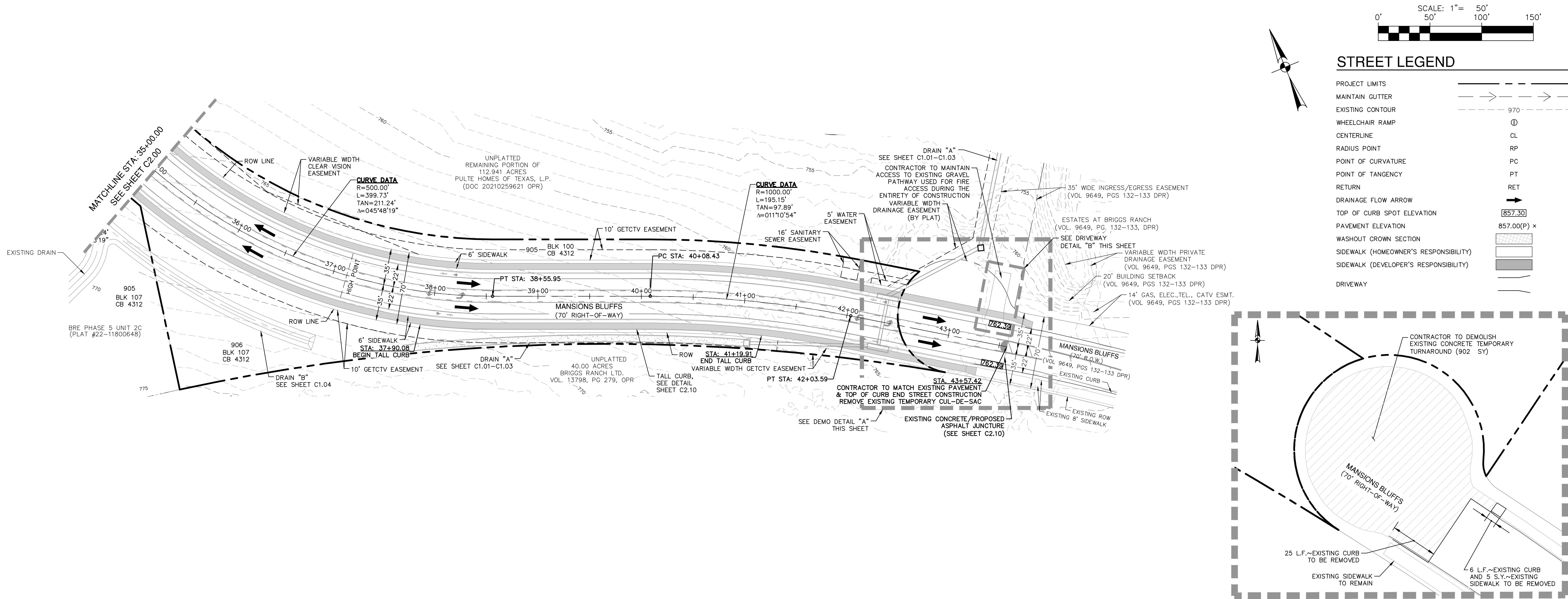












**STREET NOTES:**

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- CONTRACTOR SHALL MATCH EXISTING PAVEMENT AT TIE-IN. IF EXISTING PAVEMENT ELEVATION DIFFERS SIGNIFICANTLY, CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CONTINUING WORK.
- SIDEWALKS SHALL BE CONSTRUCTED 3-FT FROM THE BACK OF CURB FOR ALL LOCATIONS WHERE THE SIDEWALK IS SHOWN OFFSET. REFER TO STREET DETAIL SHEET FOR SIDEWALK AND RAMP DETAILS.
- 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 CLEAR VISION EASEMENTS SUCH THAT THE ELEVATION WITHIN THE CLEAR VISION EASEMENT IS NOT HIGHER THAN 3 FEET ABOVE THE ADJACENT TOP OF PAVEMENT.
- 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.
- CHANGES IN THE SIDEWALK LOCATION FOR A MAXIMUM LINEAR DISTANCE OF TWO HUNDRED (200) FEET ARE PERMITTED TO BE APPROVED BY THE FIELD INSPECTOR WITHOUT AMENDING THE STREET PLAN OR UTILITY LAYOUT PER UDC SECTION 35-506 (Q)(6).
- THE CONSTRUCTION OF SIDEWALKS ADJACENT TO ALL 900 SERIES LOTS WILL BE THE RESPONSIBILITY OF THE DEVELOPER AS SHOWN ON THE OVERALL SIGNAGE PLAN.

**PAPE-DAWSON ENGINEERS**  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008890

**BRE PHASE 5 - COLLECTOR PHASE 2A**  
SAN ANTONIO, TEXAS

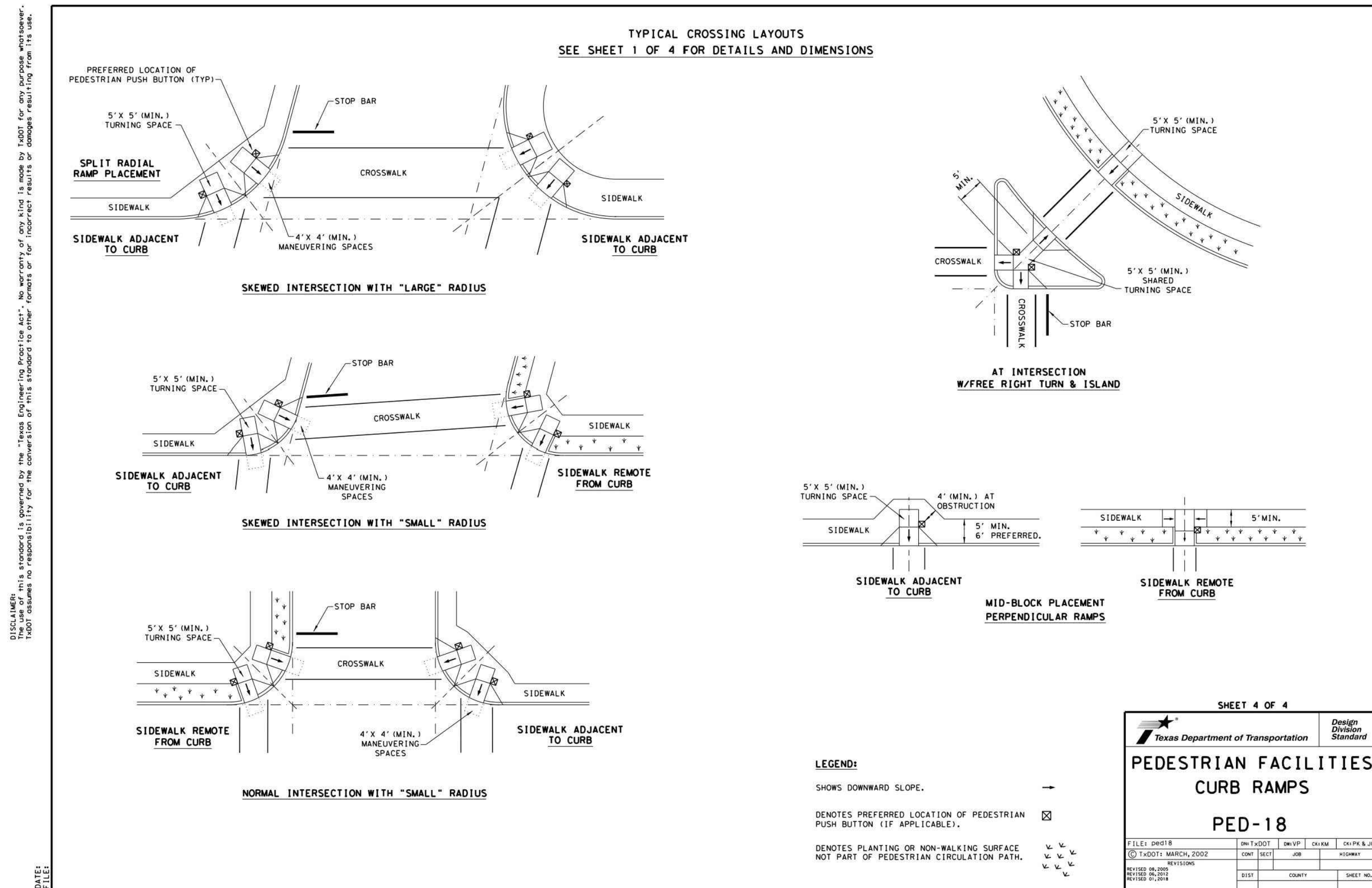
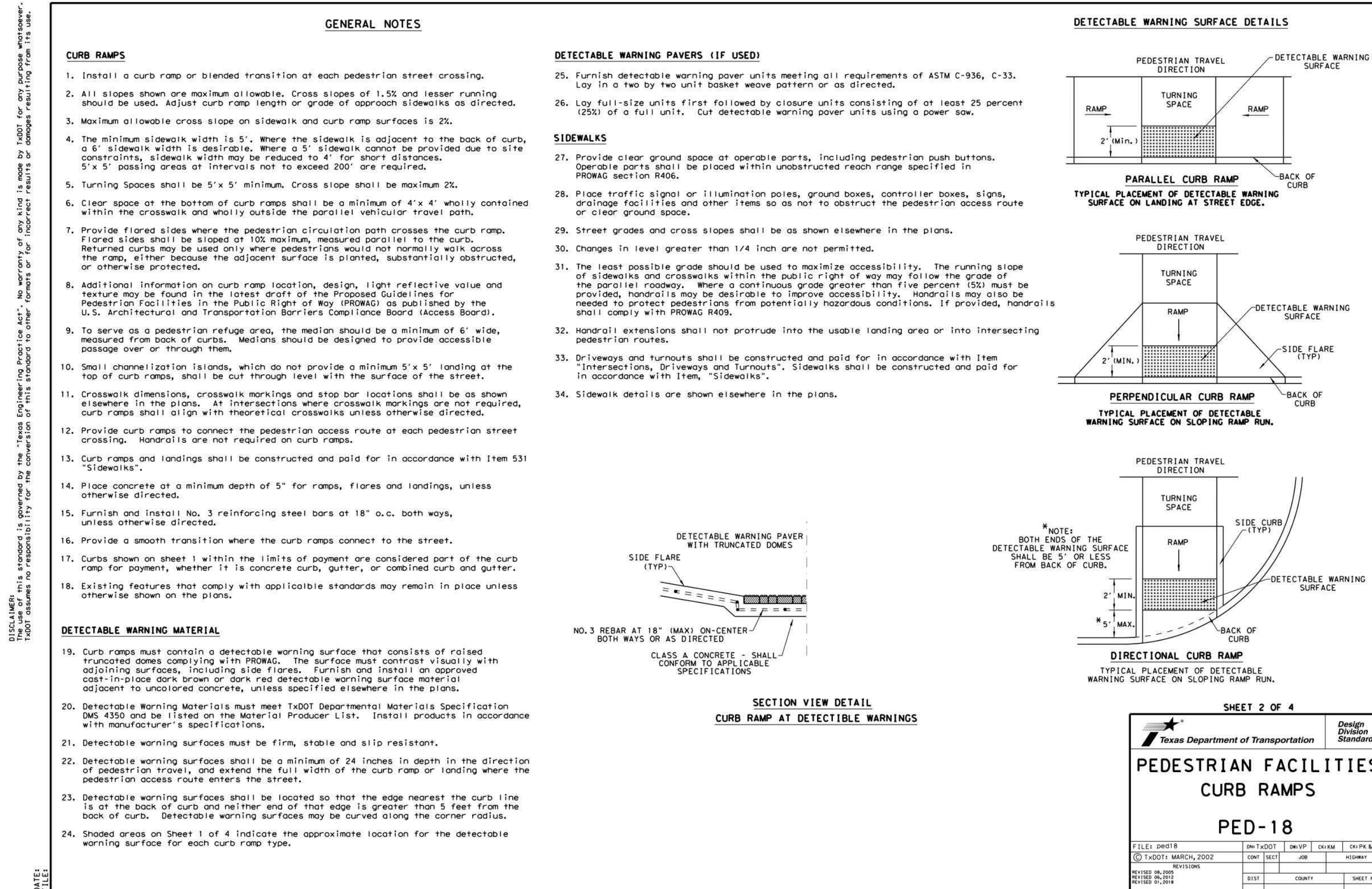
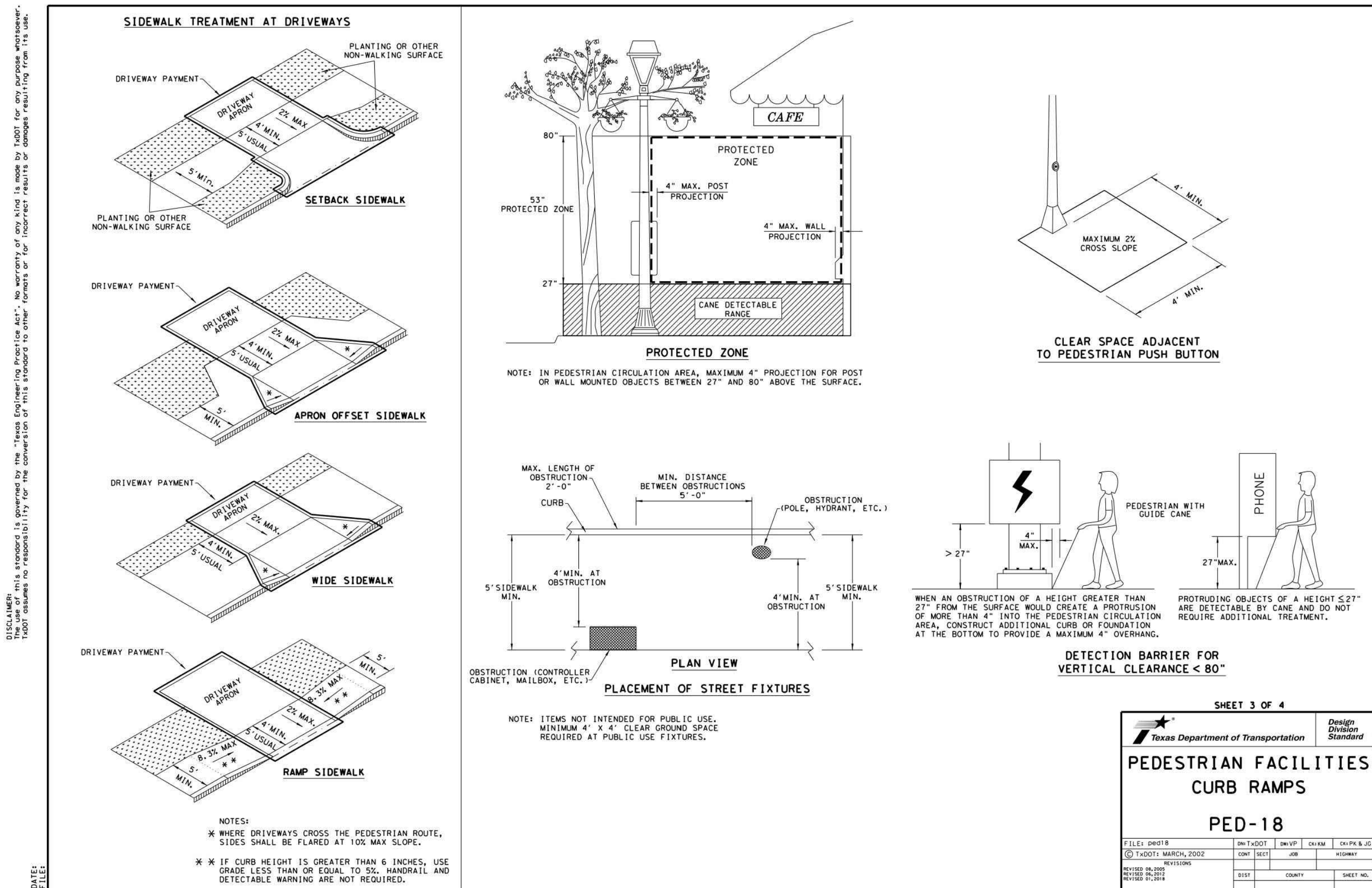
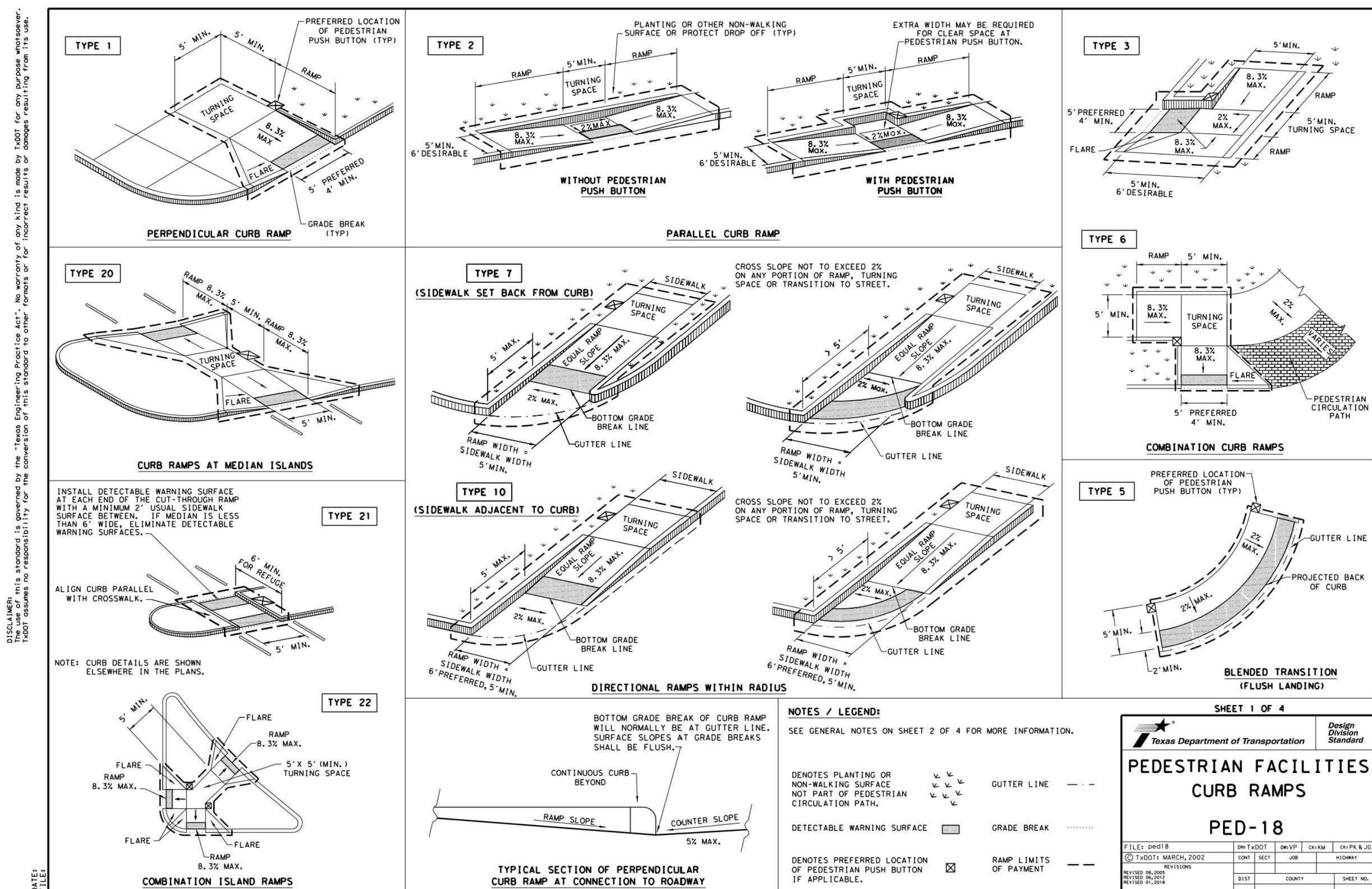
**MANSIONS BLUFFS**  
PLAN AND PROFILE STA. 35+00.00 TO END

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE NOVEMBER 2023  
DESIGNER EDK  
CHECKED MG DRAWN NA  
SHEET C2.01

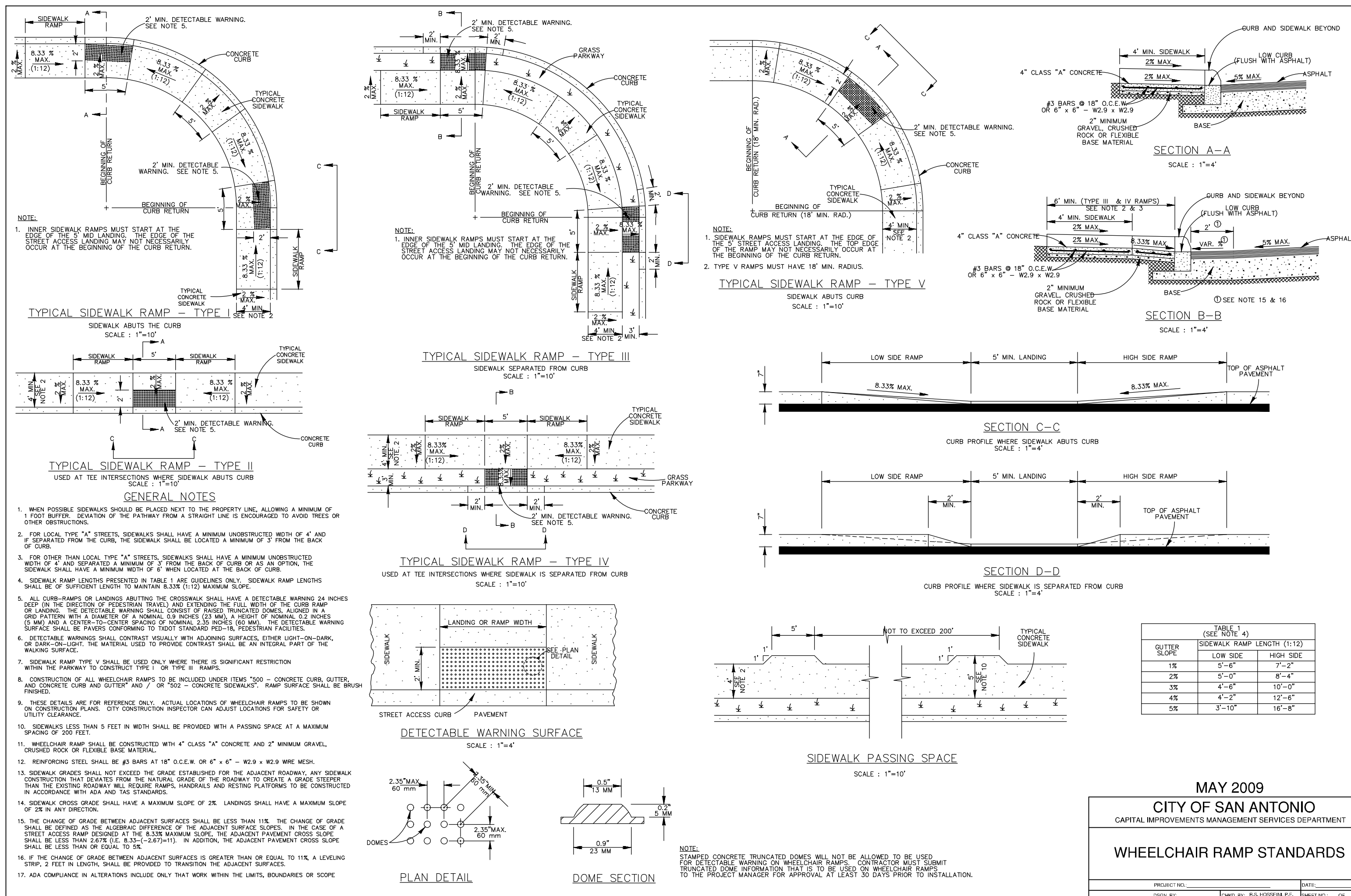
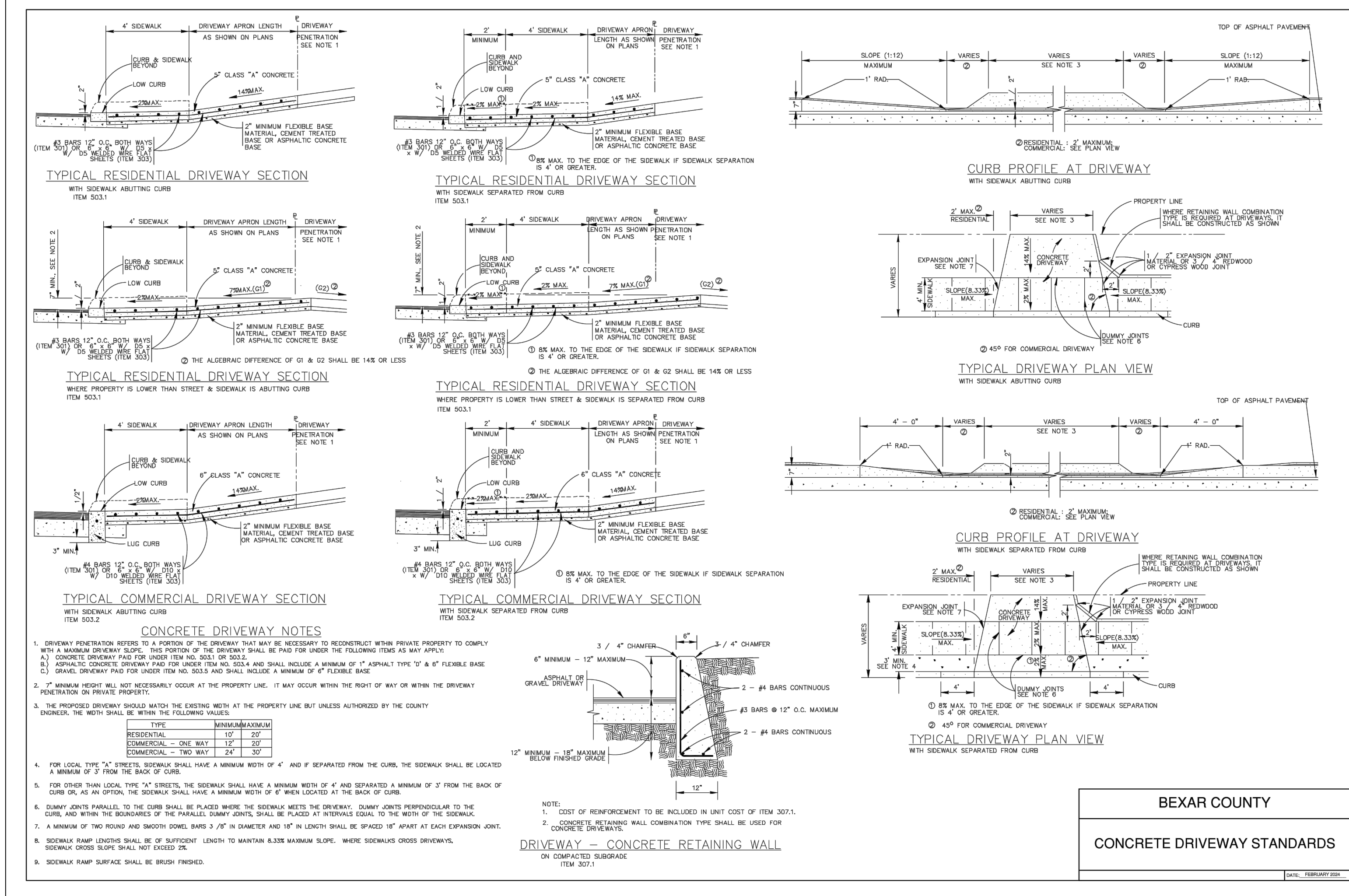










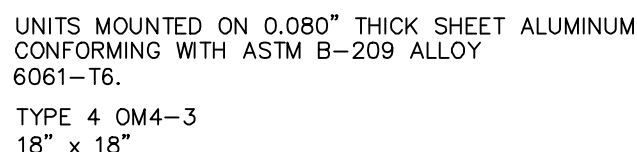




A BEXAR COUNTY PERMIT MUST BE OBTAINED BEFORE WORKING IN BEXAR COUNTY ROW. CONTRACTOR SHALL COORDINATE A TRAFFIC CONTROL PLAN FOR ALL WORK WITHIN THE ROW. ADDITIONAL WARNING SIGNS MAY BE RECOMMENDED BY THE ENGINEER ONCE THE ROADWAYS ARE CONSTRUCTED.

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.

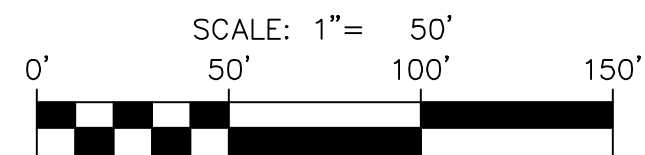
CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND ADVISE THE CONTRACTOR OF ANY DEFICIENCIES IN THE PROJECT WORK AREA IN ORDER TO IMPLEMENT CONTRACTOR'S 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 PROCEDURES SHALL BE IN ACCORDANCE WITH ALL APPLICABLE TRENCH 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 BE RESPONSIBLE FOR THE TRENCH EXCAVATION IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.



**OBJECT MARKER TYPE 4**  
NOT-TO-SCALE



NOT-TO-SCALE



## KEY NOTES:

- (A) 8 INCH WIDE WHITE THERMOPLASTIC LINE SOLID (REFL)
- (B) 6 INCH WIDE YELLOW THERMOPLASTIC SOLID (REFL) &  
6 INCH WIDE YELLOW BROKEN THERMOPLASTIC (REFL)  
W/ TYPE II A-A @ 40' C-C REFL. PVM'T MARKING
- (C) PAVEMENT MARKING, THERMOPLASTIC BICYCLE  
SYMBOL AND ARROW
- (D) WHITE THERMOPLASTIC ARROW (REFL)
- (E) 6 INCH WIDE DOUBLE YELLOW THERMOPLASTIC SOLID  
(REFL) W/ TYPE II A-A @ 40' C-C REFL. PVM'T  
MARKING
- (F) YELLOW THERMOPLASTIC SOLID (REFL) MEDIAN NOSE  
W/ TYPE II A-A @ 2' C-C REFL. PVM'T MARKING
- (G) BLACK CONTRAST LINE - SEE DETAIL SHEET  
C3.11
- (H) EXISTING 6 INCH WIDE WHITE BROKEN THERMOPLASTIC  
(REFL) W/ TYPE I-C @ 40' C-C REFL. PVM'T MARKING
- (I) EXISTING YELLOW THERMOPLASTIC SOLID (REFL)  
MEDIAN NOSE W/ TYPE II A-A @ 2' C-C REFL. PVM'T  
MARKING

2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #100228800

## OVERALL SIGNAGE PLAN

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE NOVEMBER 2023  
DESIGNER EDK  
CHECKED MG DRAWN NA  
SHEET C3.00

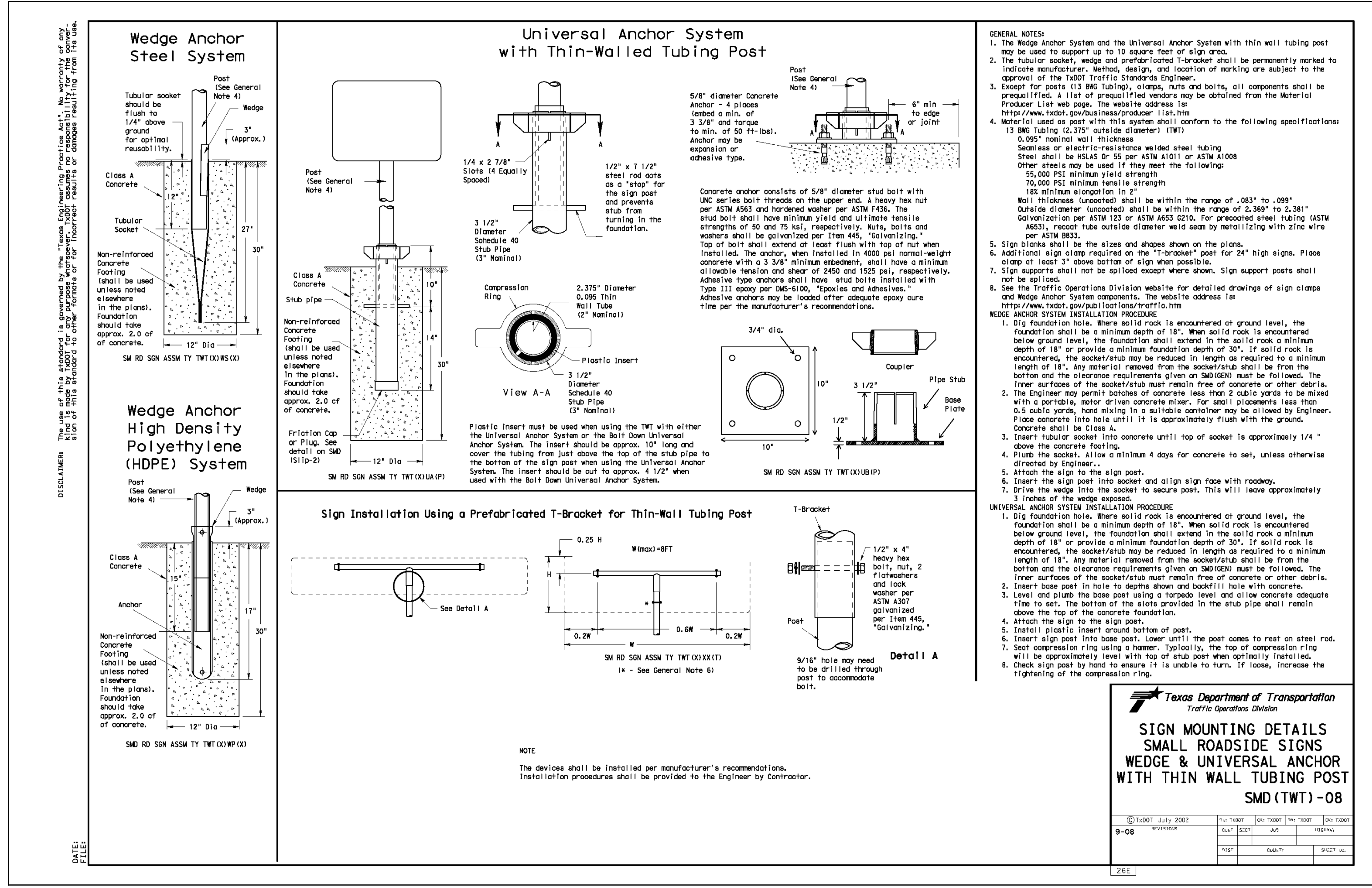
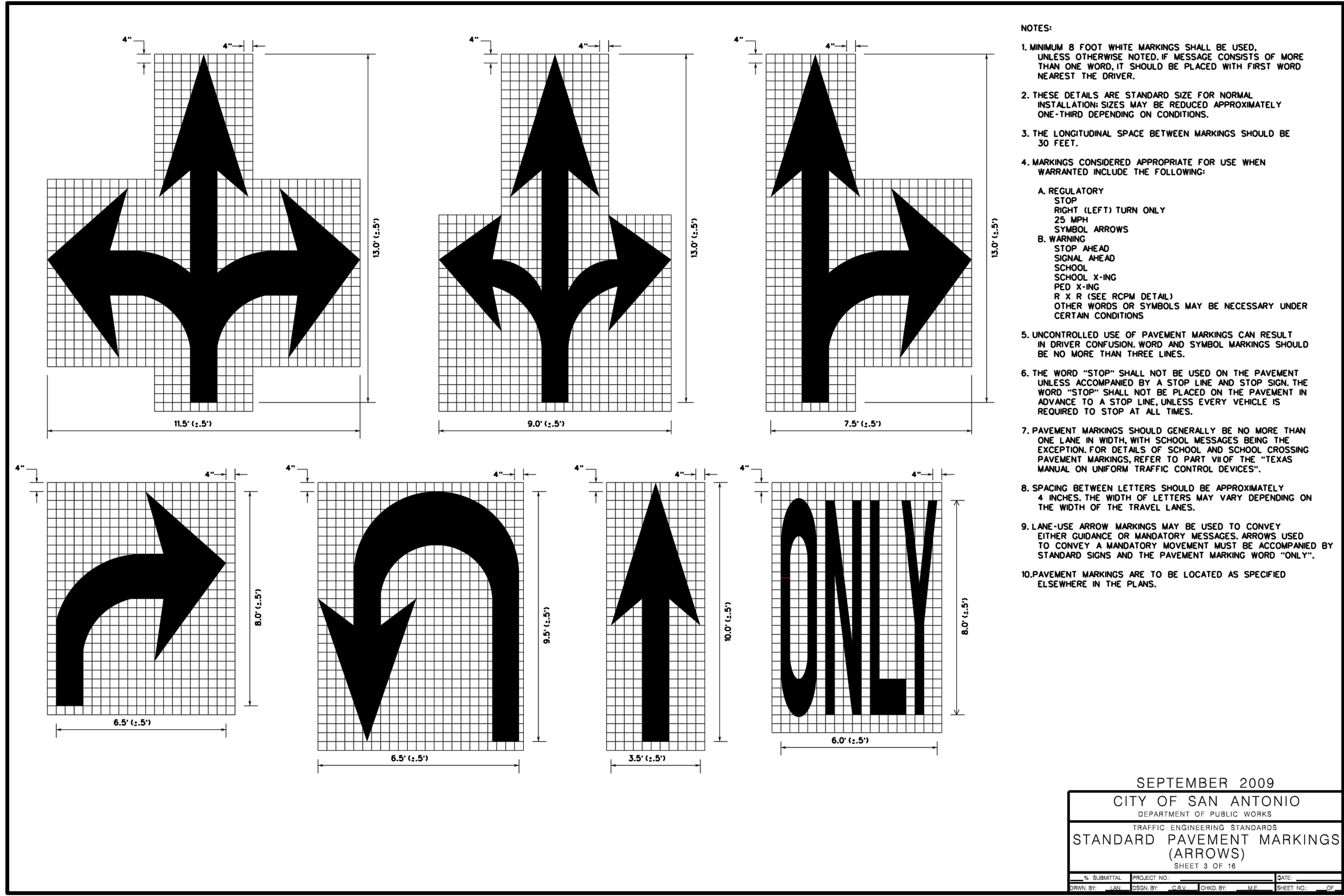
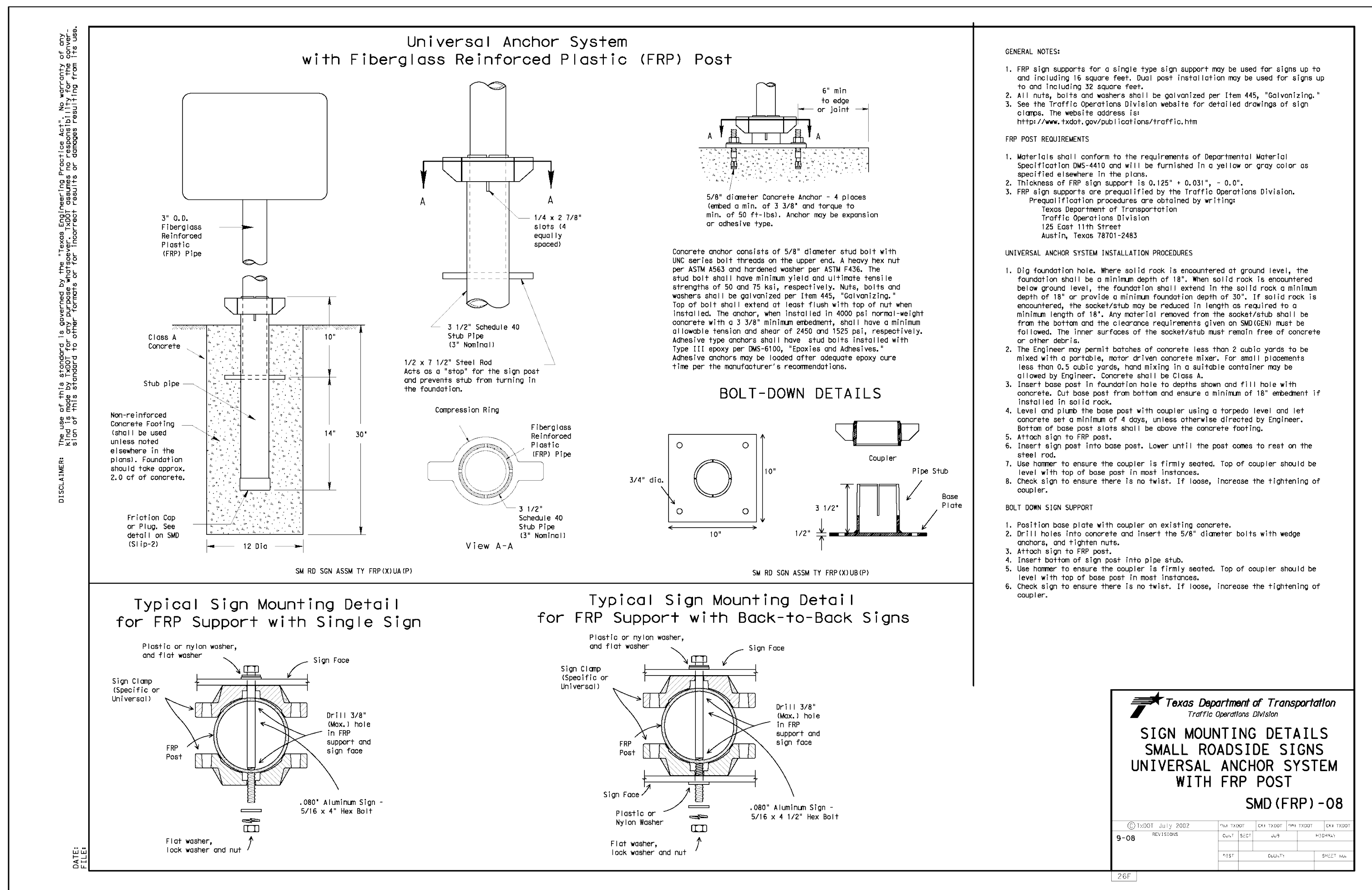
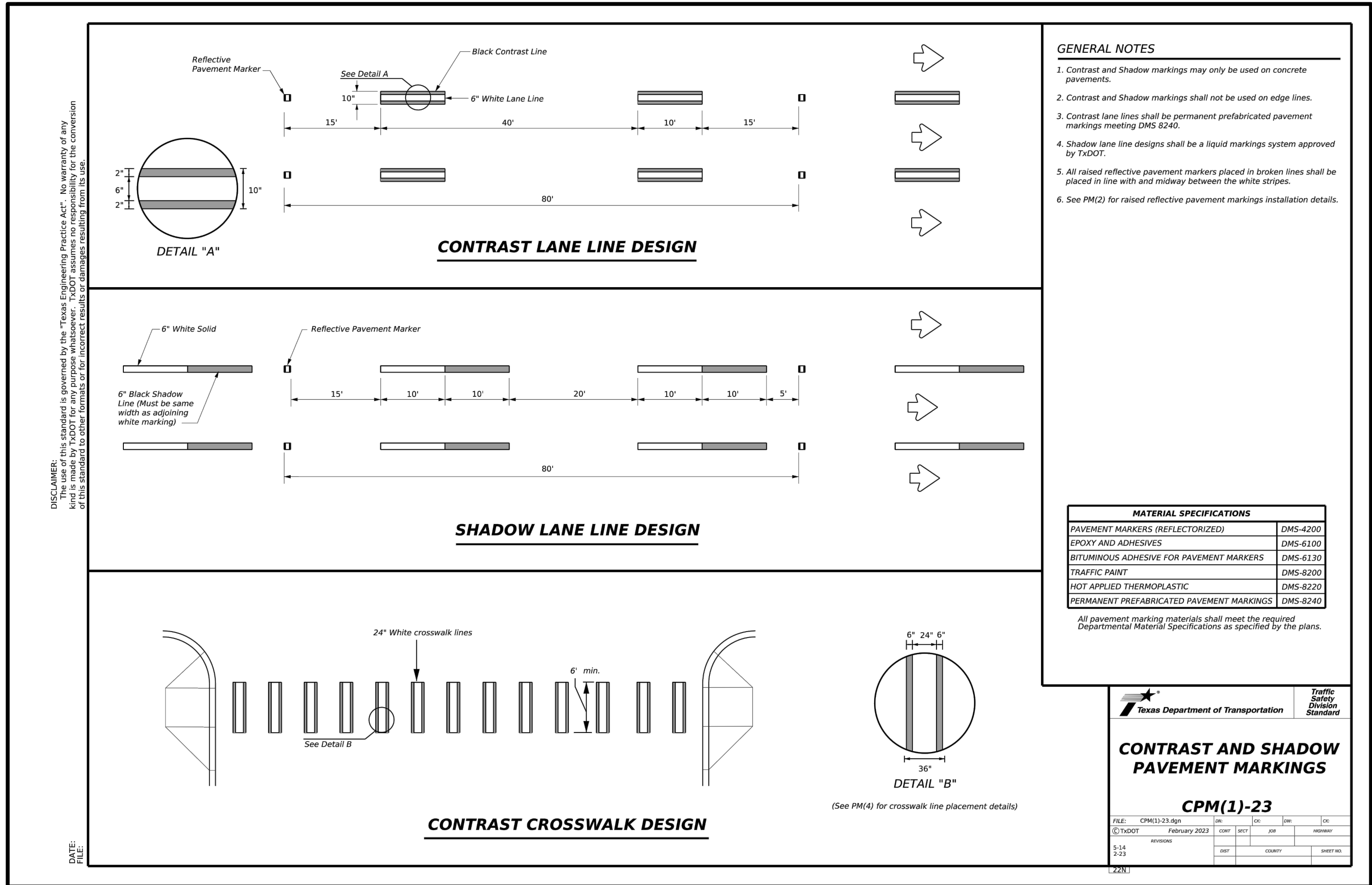
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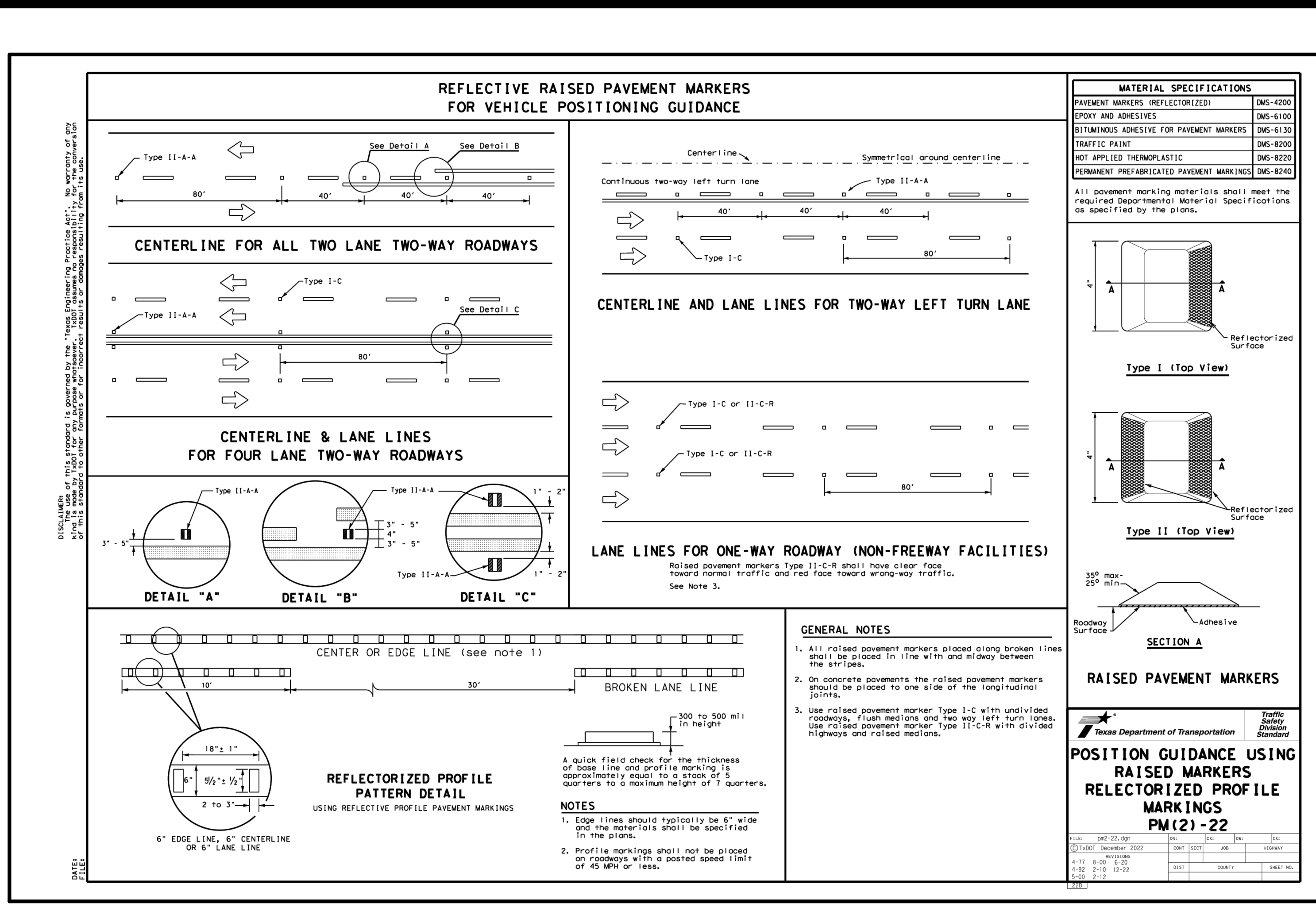
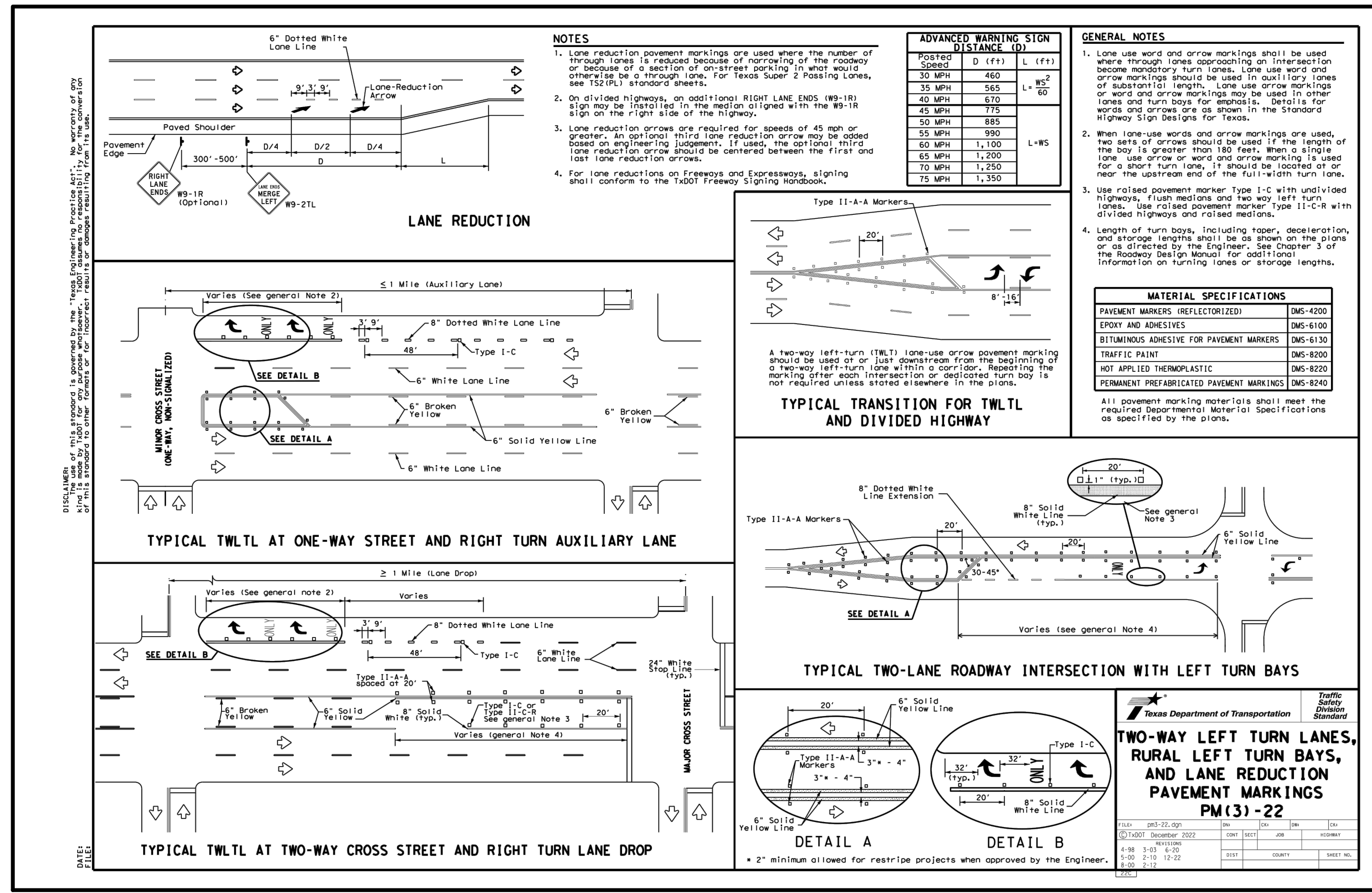
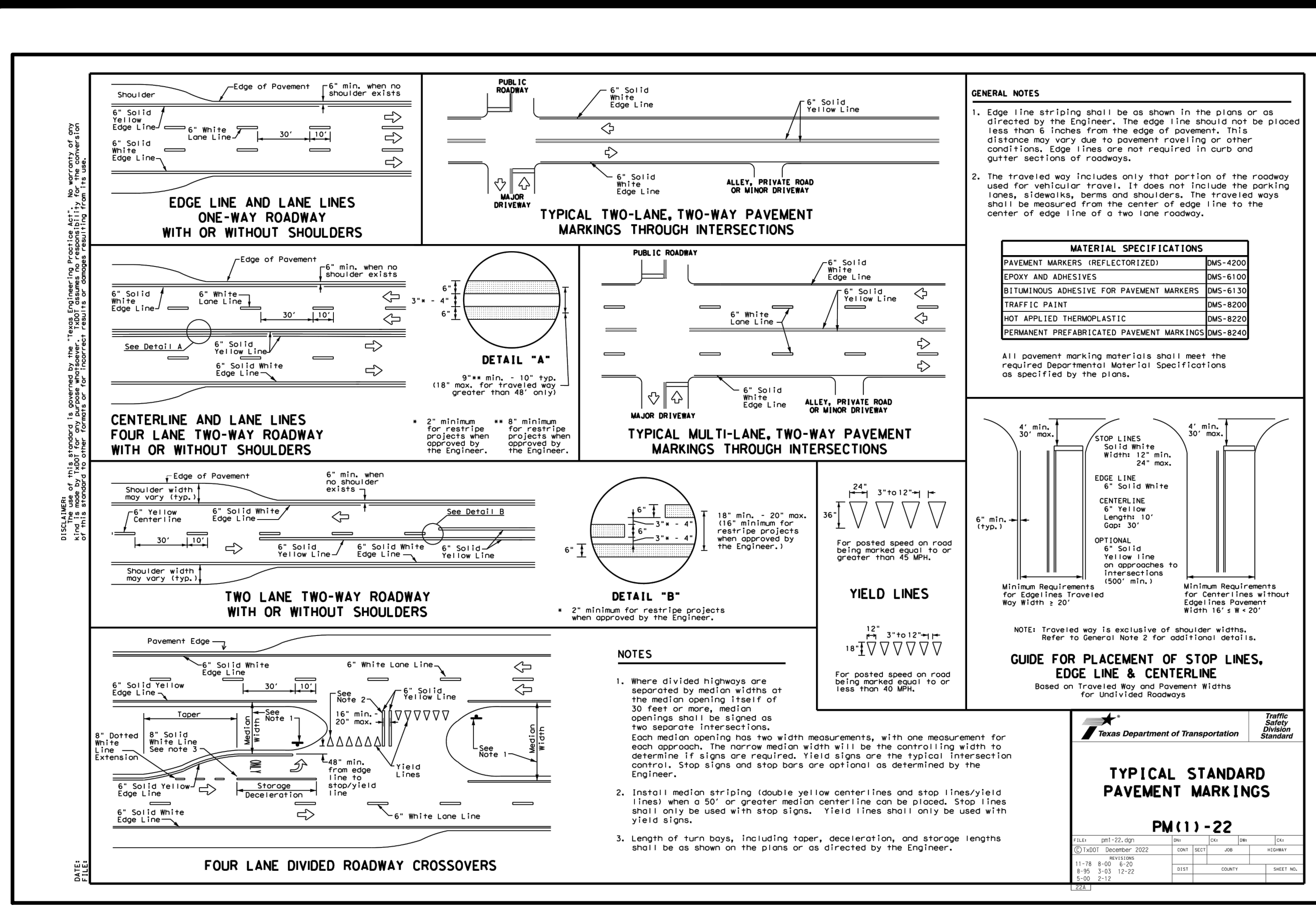
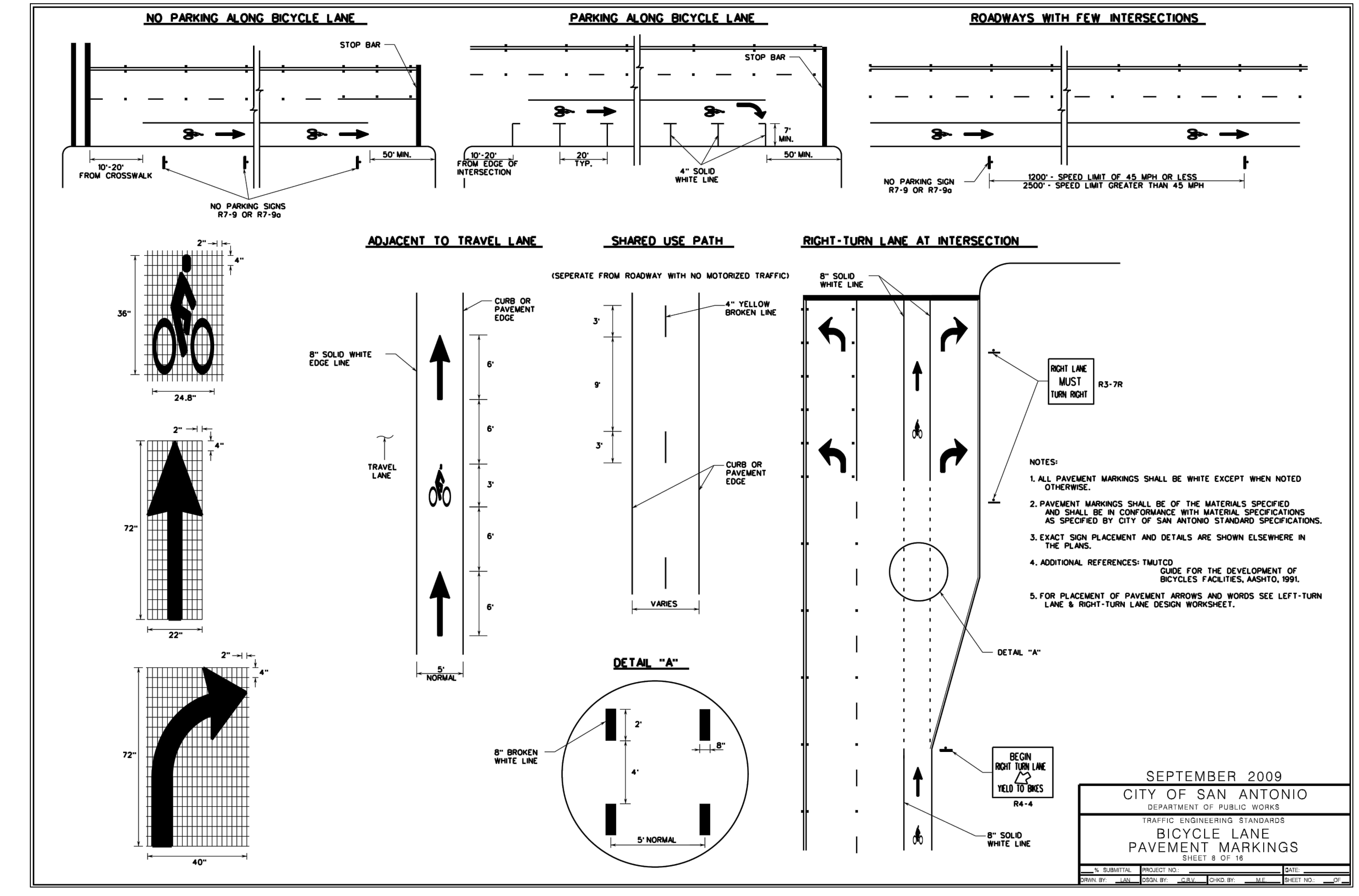






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**BRE PHASE 5 - COLLECTOR PHASE 2A**  
**SAN ANTONIO, TEXAS**  
**SIGNAGE DETAILS**

**STATE OF TEXAS**  
**MATTHEW GEISTWEIDT**  
**118861**  
**PROFESSIONAL ENGINEER**  
**1-12-2023**

**PAPE-DAWSON ENGINEERS**  
2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1008890

**DATE**  
**NO. REVISION**

**PLAT NO.** 22-11800681  
**JOB NO.** 12361-09  
**DATE** NOVEMBER 2023  
**DESIGNER** EDK  
**CHECKED** MG **DRAWN** NA  
**SHEET** C3.12







Date: April 24, 2023, 5:05 PM - User ID: murdoles  
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SAWS CONSTRUCTION NOTES  
(LAST REVISED JANUARY 2022)

SAWS GENERAL SECTION

- ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT SHALL BE APPROVED BY THE SAN ANTONIO WATER SYSTEM (SAWS) AND COMPLY WITH THE PLANS, SPECIFICATIONS, GENERAL CONDITIONS AND WITH THE FOLLOWING AS APPLICABLE:
  - A.CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) "DESIGN CRITERIA FOR DOMESTIC WASTEWATER SYSTEM"; TEXAS ADMINISTRATIVE CODE (TAC) TITLE 30 PART 1 CHAPTER 217 AND "PUBLIC DRINKING WATER"; TAC TITLE 30 PART 1 CHAPTER 290.
  - B.CURRENT TxDOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND DRAINAGE".
  - C.CURRENT "SAN ANTONIO WATER SYSTEM STANDARD SPECIFICATIONS FOR WATER AND SANITARY SEWER CONSTRUCTION".
  - D.CURRENT CITY OF SAN ANTONIO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".
  - E.CURRENT CITY OF SAN ANTONIO "UTILITY EXCAVATION CRITERIA MANUAL" (UECM).
- THE CONTRACTOR SHALL NOT PROCEED WITH ANY PIPE INSTALLATION WORK UNTIL THEY OBTAIN A COPY OF THE APPROVED COUNTER PERMIT OR GENERAL CONSTRUCTION PERMIT (GCP) FROM THE CONSULTANT AND HAS BEEN NOTIFIED BY SAWS CONSTRUCTION INSPECTION DIVISION TO PROCEED WITH THE WORK AND HAS ARRANGED A MEETING WITH THE INSPECTOR AND CONSULTANT FOR THE WORK REQUIREMENTS. WORK COMPLETED BY THE CONTRACTOR WITHOUT AN APPROVED COUNTER PERMIT AND/OR A GCP WILL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE EXPENSE OF THE CONTRACTORS AND/OR THE DEVELOPER.
- THE CONTRACTOR SHALL OBTAIN THE SAWS STANDARD DETAILS FROM THE SAWS WEBSITE. [HTTP://WWW.SAWS.ORG/BUSINESS\\_CENTER/SPECS](http://www.saws.org/business_center/specs). UNLESS OTHERWISE NOTED WITHIN THE DESIGN PLANS.
- THE CONTRACTOR IS TO MAKE ARRANGEMENTS WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT (210) 233-2973. ON NOTIFICATION PROCEDURES THAT WILL BE USED TO NOTIFY AFFECTED HOME RESIDENTS AND/OR PROPERTY OWNERS 48 HOURS PRIOR TO BEGINNING ANY WORK.
- LOCATION AND DEPTH OF EXISTING UTILITIES AND SERVICE LATERALS SHOWN ON THE PLANS ARE UNDERSTOOD TO BE APPROXIMATE. ACTUAL LOCATIONS AND DEPTHS MUST BE FIELD VERIFIED BY THE CONTRACTOR AT LEAST 1 WEEK PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE UTILITY SERVICE LINES AS REQUIRED FOR CONSTRUCTION AND TO PROTECT THEM DURING CONSTRUCTION AT NO COST TO SAWS.
  - SAWS UTILITY LOCATES: [HTTP://WWW.SAWS.ORG/SERVICE/LOCATES](http://www.saws.org/service/locates)
  - COSA DRAINAGE (210) 207-0724 OR (210) 207-6026
  - COSA TRAFFIC SIGNAL OPERATIONS (210) 206-8480
  - COSA TRAFFIC SIGNAL DAMAGES (210) 207-3951
  - TEXAS STATE WIDE ONE CALL LOCATOR 1-800-545-6005 OR 811
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING EXISTING FENCES, CURBS, STREETS, DRIVEWAYS, SIDEWALKS, LANDSCAPING AND STRUCTURES TO ITS ORIGINAL OR BETTER CONDITION IF DAMAGES ARE MADE AS A RESULT OF THE PROJECT'S CONSTRUCTION.
- ALL WORK IN TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT) AND/OR BEXAR COUNTY RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH RESPECTIVE CONSTRUCTION SPECIFICATIONS AND PERMIT REQUIREMENTS.
- THE CONTRACTOR SHALL COMPLY WITH CITY OF SAN ANTONIO OR OTHER GOVERNING MUNICIPALITY'S TREE ORDINANCES WHEN EXCAVATING NEAR TREES.
- THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIALS IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN PERMIT.
- HOLIDAY WORK: CONTRACTORS WILL NOT BE ALLOWED TO PERFORM SAWS WORK ON SAWS RECOGNIZED HOLIDAYS. REQUEST SHOULD BE SENT TO [CONSTWORKREQ@SAWS.ORG](mailto:CONSTWORKREQ@SAWS.ORG).  
  
WEEKEND WORK: CONTRACTORS ARE REQUIRED TO NOTIFY THE SAWS INSPECTION CONSTRUCTION DEPARTMENT 48 HOURS IN ADVANCE TO REQUEST WEEKEND WORK. REQUEST SHOULD BE SENT TO [CONSTWORKREQ@SAWS.ORG](mailto:CONSTWORKREQ@SAWS.ORG).  
  
ANY AND ALL SAWS UTILITY WORK INSTALLED WITHOUT HOLIDAY/WEEKEND APPROVAL WILL BE SUBJECT TO BE UNCOVERED FOR PROPER INSPECTION.
- COMPACTION NOTE (ITEM 804): THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE COMPACTION REQUIREMENTS ON ALL TRENCH BACKFILL AND FOR PAYING FOR THE TESTS PERFORMED BY A THIRD PARTY. COMPACTION TESTS WILL BE DONE AT ONE LOCATION POINT RANDOMLY SELECTED, OR AS INDICATED BY THE SAWS INSPECTOR AND/OR THE TEST ADMINISTRATOR, PER EACH 12-INCH LOOSE LIFT PER 400 LINEAR FEET AT A MINIMUM. THIS PROJECT WILL NOT BE ACCEPTED AND FINALIZED BY SAWS WITHOUT THIS REQUIREMENT BEING MET AND VERIFIED BY PROVIDING ALL NECESSARY DOCUMENTED TEST RESULTS.
- A COPY OF ALL TESTING REPORTS SHALL BE FORWARDED TO SAWS CONSTRUCTION INSPECTION DIVISION.

SAWS WATER NOTES

- PRIOR TO TIE-INS, ANY SHUTDOWNS OF EXISTING MAINS OF ANY SIZE MUST BE COORDINATED WITH THE SAWS CONSTRUCTION INSPECTION DIVISION AT LEAST ONE WEEK IN ADVANCE OF THE SHUTDOWN. THE CONTRACTOR MUST ALSO PROVIDE A SEQUENCE OF WORK AS RELATED TO THE TIE-INS; THIS IS AT NO ADDITIONAL COST TO SAWS OR THE PROJECT AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEQUENCE THE WORK ACCORDINGLY.
  - FOR WATER MAINS 12" OR HIGHER: SAWS EMERGENCY OPERATIONS CENTER (210) 233-2014
- ASBESTOS CEMENT (AC) PIPE, ALSO KNOWN AS TRANSITE PIPE WHICH IS KNOWN TO CONTAIN ASBESTOS- CONTAINING MATERIAL (ACM), MAY BE LOCATED WITHIN THE PROJECT LIMITS. SPECIAL WASTE MANAGEMENT PROCEDURES AND HEALTH AND SAFETY REQUIREMENTS WILL BE APPLICABLE WHEN REMOVAL AND/OR DISTURBANCE OF THIS PIPE OCCURS. SUCH WORK IS TO BE MADE UNDER SPECIAL SPECIFICATION ITEM NO. 3000, "SPECIAL SPECIFICATION FOR HANDLING ASBESTOS CEMENT PIPE".
- VALVE REMOVAL: WHERE THE CONTRACTOR IS TO ABANDON A WATER MAIN, THE CONTROL VALVE LOCATED ON THE ABANDONING BRANCH WILL BE REMOVED AND REPLACED WITH A CAP/PLUG. (NSP)
- SUITABLE ANCHORAGE/THRUST BLOCKING OR JOINT RESTRAINT SHALL BE PROVIDED AT ALL OF THE FOLLOWING MAIN LOCATIONS: DEAD ENDS, PLUGS, CAPS, TEES, CROSSES, VALVES, AND BENDS, IN ACCORDANCE WITH THE STANDARD DRAWINGS DD-839 SERIES AND ITEM NO. 839, IN THE SAWS STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- ALL VALVES SHALL READ "OPEN RIGHT".
- PRVS REQUIRED: CONTRACTOR TO VERIFY THAT NO PORTION OF THE TRACT IS BELOW GROUND ELEVATION OF 745 FEET WHERE THE STATIC PRESSURE WILL NORMALLY EXCEED 80 PSI. AT ALL SUCH LOCATIONS WHERE THE GROUND LEVEL IS BELOW 745 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).
- PIPE DISINFECTION WITH DRY HTH FOR PROJECTS LESS THAN 800 LINEAR FEET. (ITEM NO. 847.3): MAINS SHALL BE DISINFECTED WITH DRY HTH WHERE SHOWN IN THE CONTRACT DOCUMENTS OR AS DIRECTED BY THE INSPECTOR, AND SHALL NOT EXCEED A TOTAL LENGTH OF 800 FEET. THIS METHOD OF DISINFECTION WILL ALSO BE FOLLOWED FOR MAIN REPAIRS. THE CONTRACTOR SHALL UTILIZE ALL APPROPRIATE SAFETY MEASURE TO PROTECT HIS PERSONNEL DURING DISINFECTION OPERATIONS.
- BACKFLOW PREVENTION DEVICES:
  - ALL IRRIGATION SERVICES WITHIN RESIDENTIAL AREAS ARE REQUIRED TO HAVE BACKFLOW PREVENTION DEVICES.
  - ALL COMMERCIAL BACKFLOW PREVENTION DEVICES MUST BE APPROVED BY SAWS PRIOR TO INSTALLATION.
- FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL THE WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED, AND SAWS HAS RELEASED THE MAIN FOR TIE-IN AND USE.
- DIVISION VALVES: DIVISION VALVES SHOWN ON PLANS OR NOT SHOWN ON PLANS BUT FOUND IN THE FIELD SHALL ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF AND ONLY WITH PRIOR WRITTEN APPROVAL OF THE SAWS DIRECTOR OF PRODUCTION AND OPERATIONS AND PROPER COORDINATION WITH ALL SAWS DEPARTMENTS. CONTRACTOR SHALL PROVIDE WRITTEN NOTIFICATION TO THE INSPECTOR A MINIMUM OF TWO WEEKS IN ADVANCE TO START THE COORDINATION PROCESS AND WILL BE INFORMED BY THE INSPECTOR WHEN THE DIVISION VALVE WILL BE OPERATED BY THE SAWS DISTRIBUTION AND COLLECTION STAFF. THE DIVISION VALVE CAN ONLY BE OPERATED BY SAWS DISTRIBUTION AND COLLECTION STAFF MEMBER NOT THE INSPECTOR OR THE CONTRACTOR. OPERATION OF A DIVISION VALVE WITHOUT THE EXPRESS PRIOR WRITTEN APPROVAL OF THE SAWS DISTRIBUTION AND COLLECTION STAFF WILL CONSTITUTE A MATERIAL BREACH OF ANY WRITTEN SAWS CONTRACT OR PERMIT IN ADDITION TO SUBJECTING THE CONTRACTOR TO LIABILITY FOR ANY AND ALL FINES, FEES, OR OTHER DAMAGES, DIRECT OR CONSEQUENTIAL THAT MAY ARISE FROM OR BE CAUSED BY THE OPERATION OF THE VALVE WITHOUT PRIOR WRITTEN PERMISSION. PLEASE BE INFORMED THAT THE APPROVAL OF THE OPERATION OR OPENING OR CLOSING OF A DIVISION VALVE CAN TAKE SEVERAL WEEKS FOR APPROVAL. DIVISION VALVES WILL ALSO HAVE A VALVE LID LABELED DIVISION VALVE AND A LOCKING MECHANISM INSTALLED WITH A KEY. THE LOCK AND KEY MECHANISM WILL BE PAID FOR BY THE CONTRACTOR BUT WILL BE INSTALLED BY SAWS DISTRIBUTION AND COLLECTION STAFF.

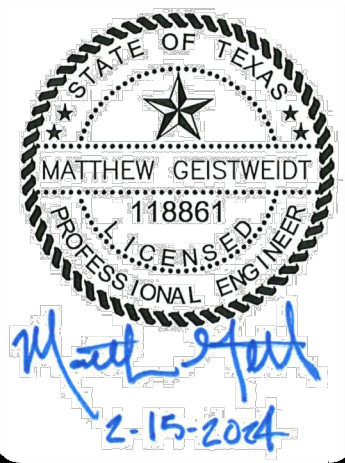
PROJECT WATER NOTES

- MACHINE CHLORINATION BY THE S.A.W.S.
- ALL 8", 12" AND 16" PIPE SHALL BE P.V.C. C-900 CLASS 235 DR 18.
- ALL MAINS SHALL BE HYDROSTATICALLY TESTED BY THE CONTRACTOR, AS PROVIDED FOR IN THE SPECIAL CONDITIONS.
- THE WATER LINES WILL BE SET FROM THE STREET HUBS BEFORE THIS CONTRACT BEGINS. STREET CUT SHEETS WILL BE SUPPLIED TO THE CONTRACTOR. THERE SHOULD BE NO ADDITIONAL STAKES REQUIRED, AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE SITE AND VERIFY THAT ALL STAKES REQUIRED FOR HIS WORK ARE IN PLACE AT THE TIME THE CONSTRUCTION BEGINS. IF ANY STAKES ARE MISSING THE ENGINEER SHOULD BE NOTIFIED IMMEDIATELY. AFTER CONSTRUCTION BEGINS, ALL CONSTRUCTION STAKES, MARKS, ETC., SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR, AND IN CASE OF DESTRUCTION OR REMOVAL BY THE CONTRACTOR, HIS EMPLOYEE OR ANY OTHER MEANS, SUCH STAKES, MARKS, ETC., SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH ALL THE FINAL MEASUREMENTS, TAPS AND LENGTH OF SERVICE CONNECTIONS.
- THE LOT CORNERS WILL BE SET BY THE ENGINEER FOR INSTALLATION OF ALL WATER SERVICES. THESE LOT CORNERS SHALL BE CAREFULLY PRESERVED BY THE CONTRACTOR SO THE METER BOXES CAN BE SET IN PHASE II. ANY LOT CORNER DESTROYED OR REMOVED BY THE CONTRACTOR, HIS EMPLOYEES, OR BY ANY OTHER MEANS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
- STREETS WILL HAVE BEEN EXCAVATED DOWN TO SUBGRADE AND THE PARKWAY WILL BE CUT DOWN TO TOP OF CURB BY THE STREET CONTRACTOR, PRIOR TO CONSTRUCTION OF THE WATER MAINS. IT WILL BE THE UTILITY CONTRACTOR'S RESPONSIBILITY TO PROVIDE A PAD FOR HIS EQUIPMENT.
- WATER METER BOXES IF APPLICABLE SHALL BE INSTALLED NINE FEET FROM FACE OF CURB TO CENTER OF THE METER BOX.
- ALL GARBAGE OR SPOIL MATERIAL FROM THIS WORK SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR, AT HIS EXPENSE.
- FINAL CONNECTION TO THE EXISTING WATER MAIN SHALL NOT BE MADE UNTIL WATER MAIN HAS BEEN PRESSURE TESTED, CHLORINATED AND THE S.A.W.S. RELEASES THE MAIN FOR TIE-IN AND USE.
- UNIT PRICE BID FOR "STANDARD FIRE HYDRANT ASSEMBLY" SHALL INCLUDE FIRE HYDRANT, 6-INCH GATE VALVE AND 6-INCH VALVE BOX COMPLETE, ANCHOR BEND, AND ALL 6-INCH DI PIPE REQUIRED (DI PIPE REQUIRED SHALL INCLUDE ALL PIPE FROM THE TEE ON THE MAIN LINE TO THE FIRE HYDRANT).
- WHEN SEWER LINES ARE INSTALLED IN THE VICINITY OF WATER MAINS, SUCH INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION "RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS" (1988 OR ANY REVISIONS THERETO).
- A CLEAR SPACE SHALL BE PROVIDED AROUND ALL FIRE HYDRANTS. THIS AREA SHOULD HAVE A MINIMUM DIAMETER OF 3.0' AND BE CLEAN OF VERTICAL OBSTRUCTIONS, VALVES, AND METER BOXES.
- SAWS REQUIRES LEAD FREE (< 0.25%) FIRE HYDRANTS.
- UNLESS OTHERWISE NOTED ALL SERVICES SHALL BE 3/4" WITH 5/8" METER.

WATER (SAWS PRESSURE ZONE 930)

DEVELOPER'S NAME: PULTE HOMES OF TEXAS, L.P.	
ADDRESS: 1718 DRY CREEK WAY, SUITE 120	
CITY: SAN ANTONIO	STATE: TEXAS ZIP: 78259
PHONE# (210) 496-1985	FAX#
SAWS BLOCK MAP# 078560 TOTAL EDU'S 6 TOTAL ACREAGE 4.779	
TOTAL LINEAR FOOTAGE OF PIPE: 12" 8'-52 LF PLAT NO. 22-118006B1	
NUMBER OF LOTS 4 NSF	SAWS JOB NO. 24-1009

NO.	REVISION	DATE



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

2000 HW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000  
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028903

**BRE PHASE 5 - COLLECTOR PHASE 2A**

SAN ANTONIO, TEXAS

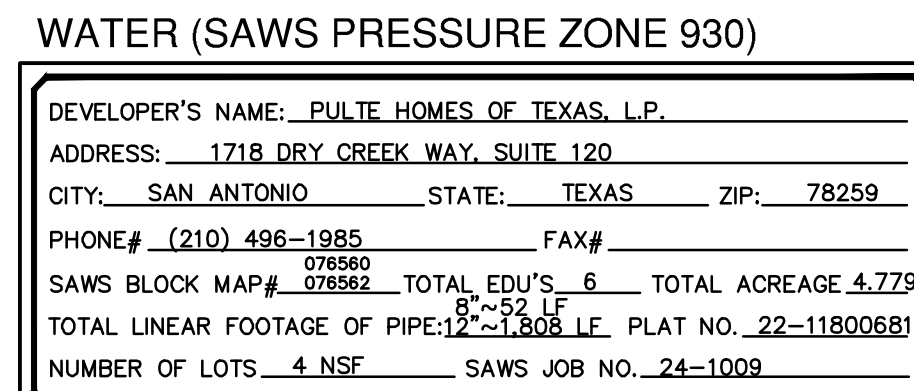
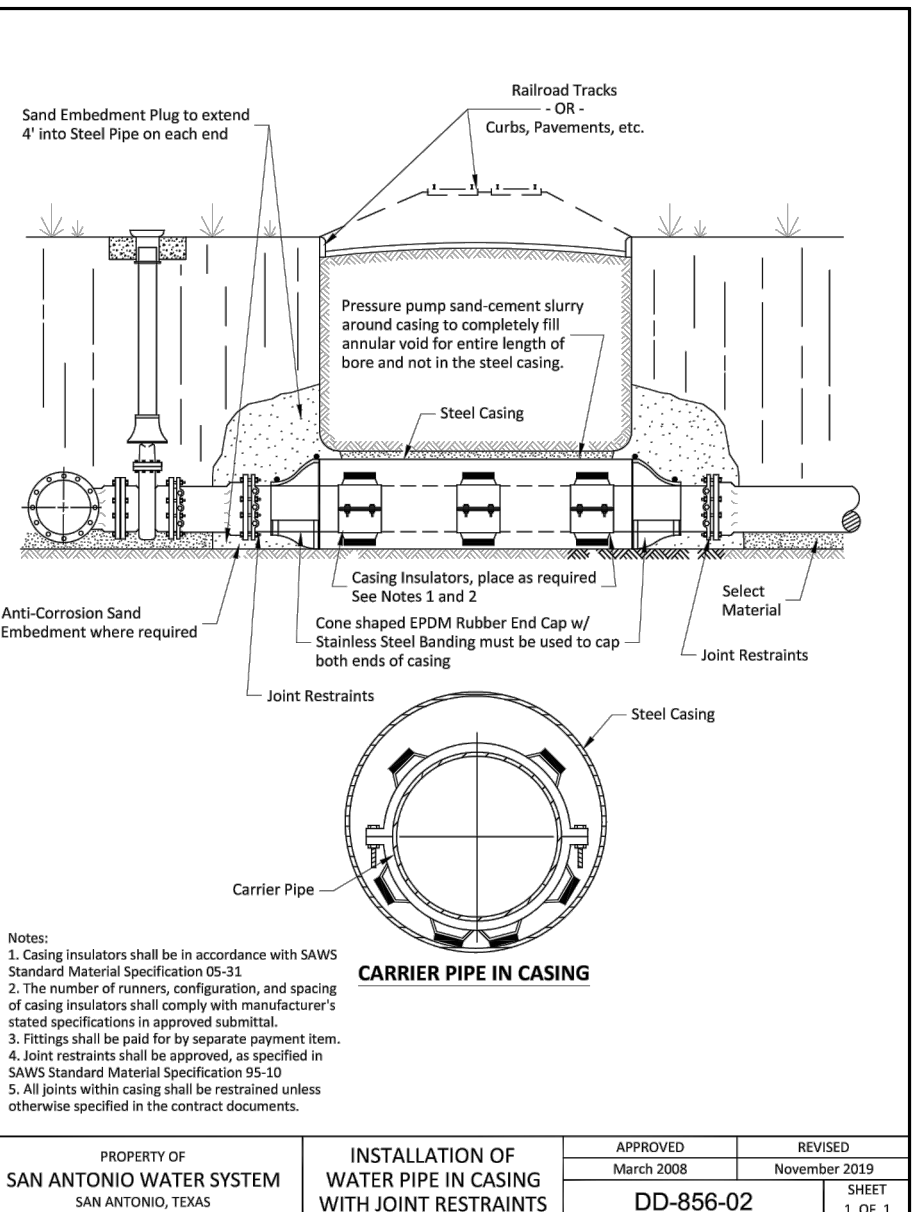
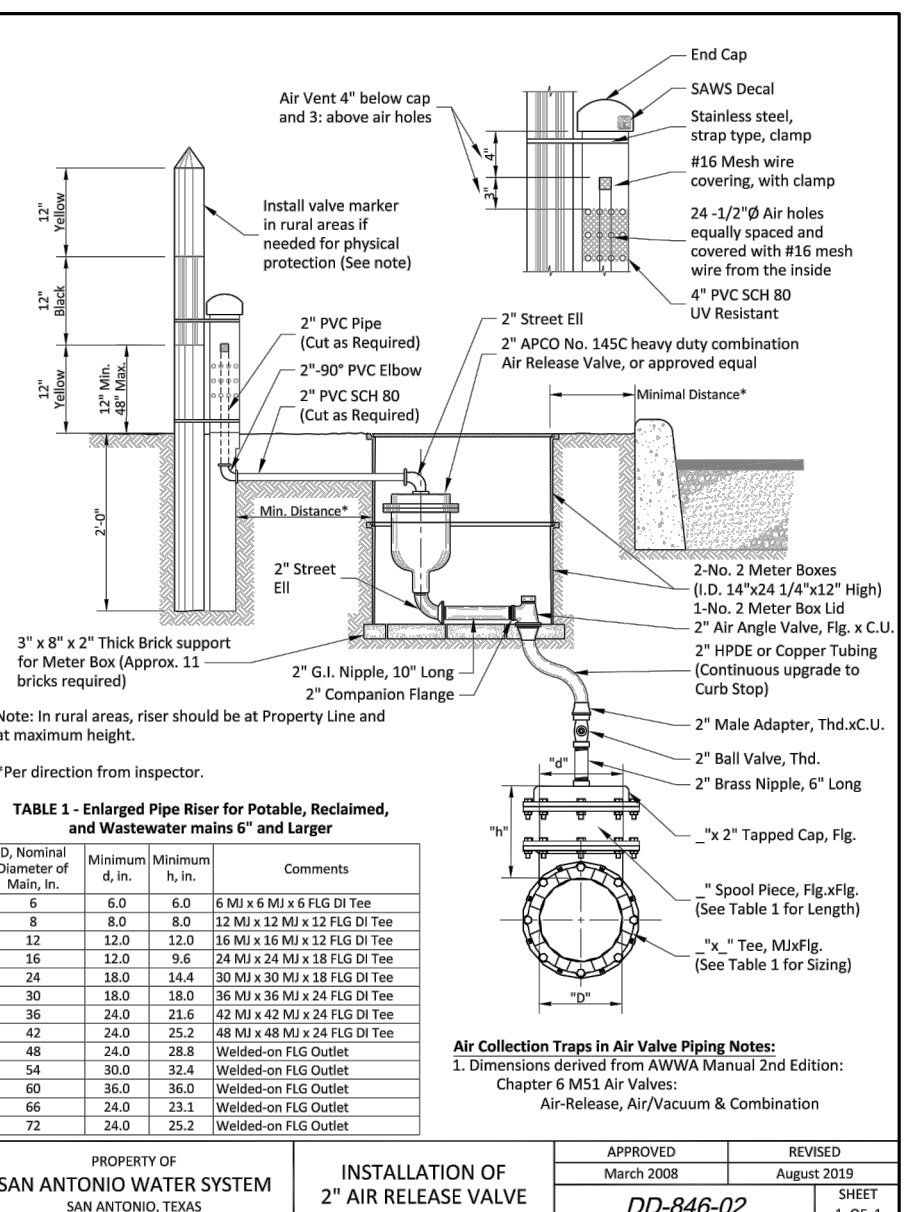
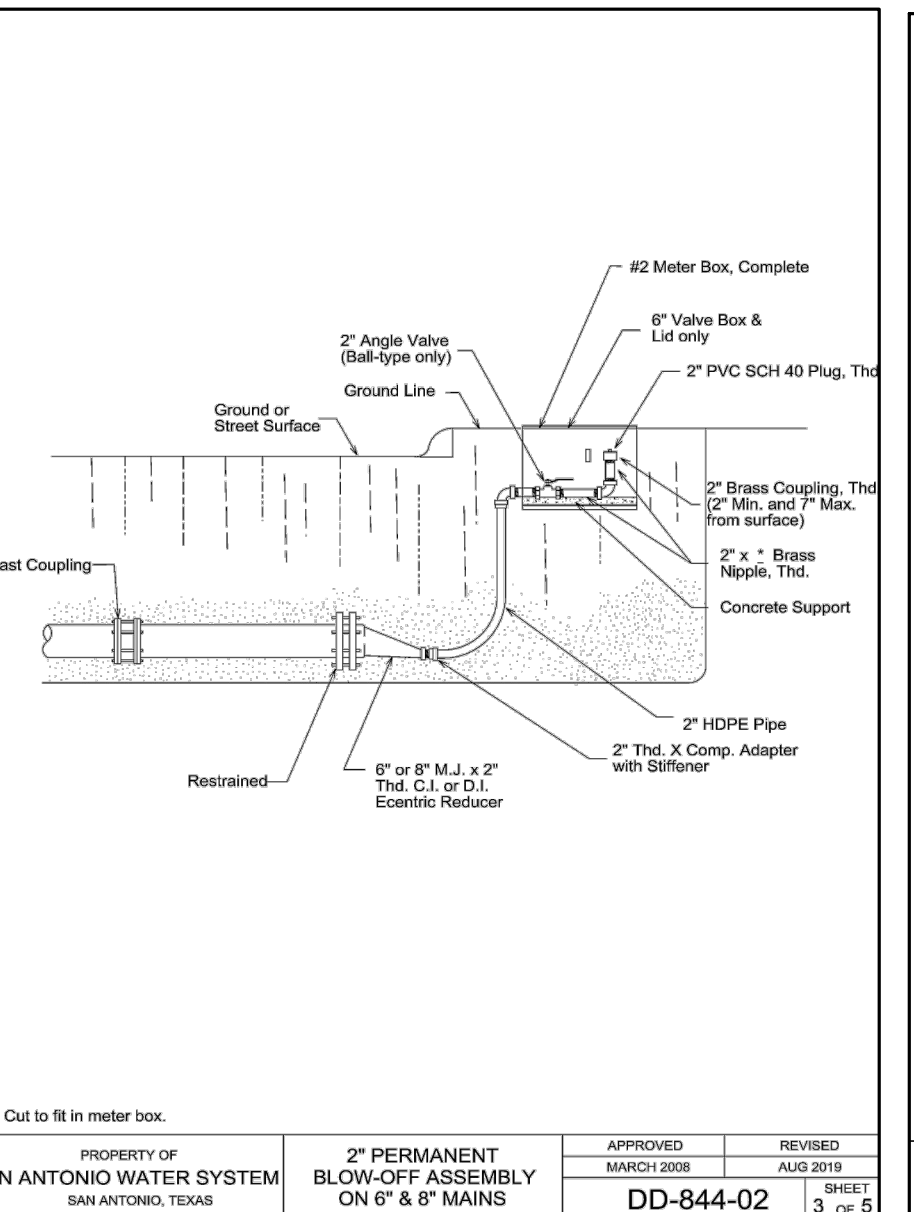
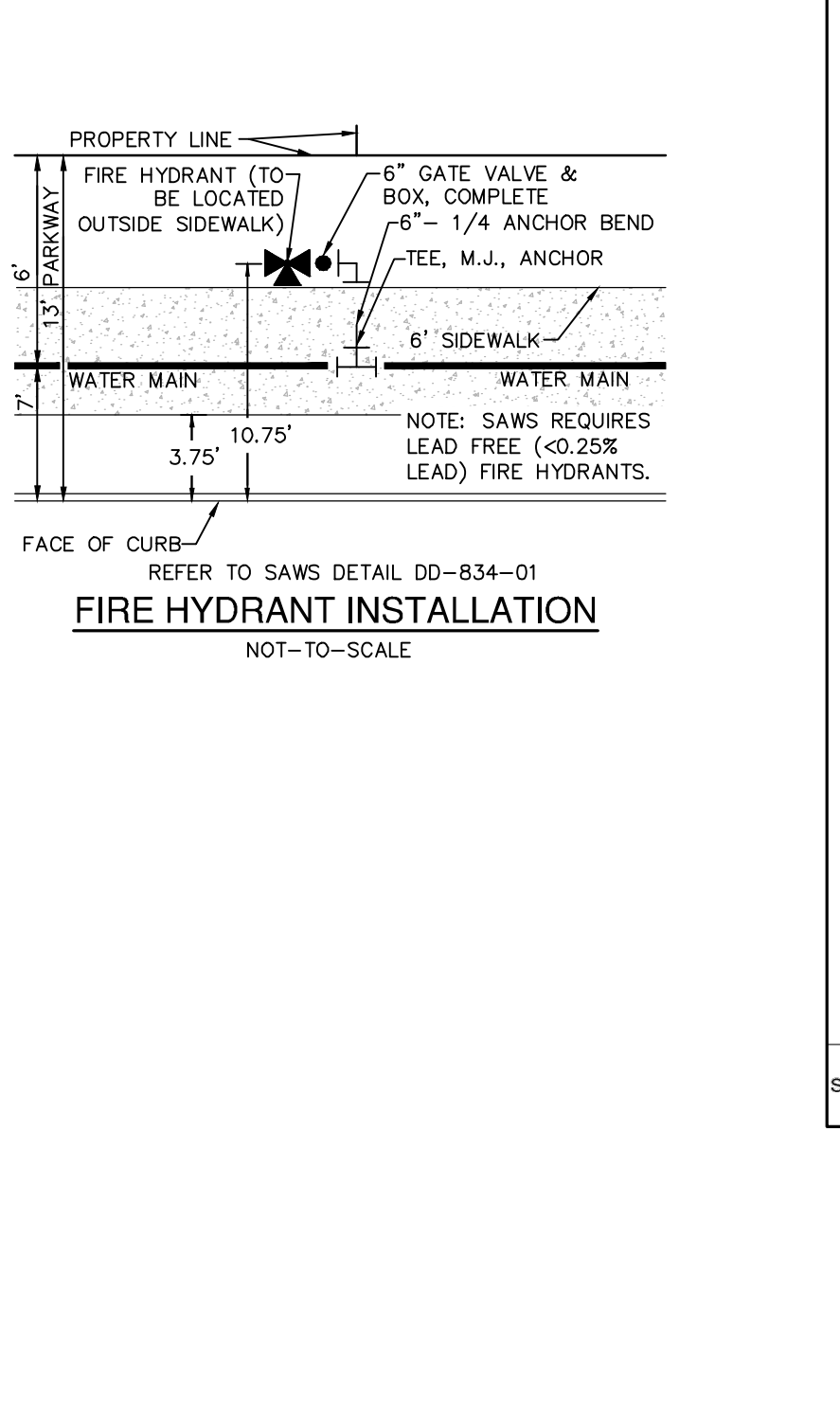
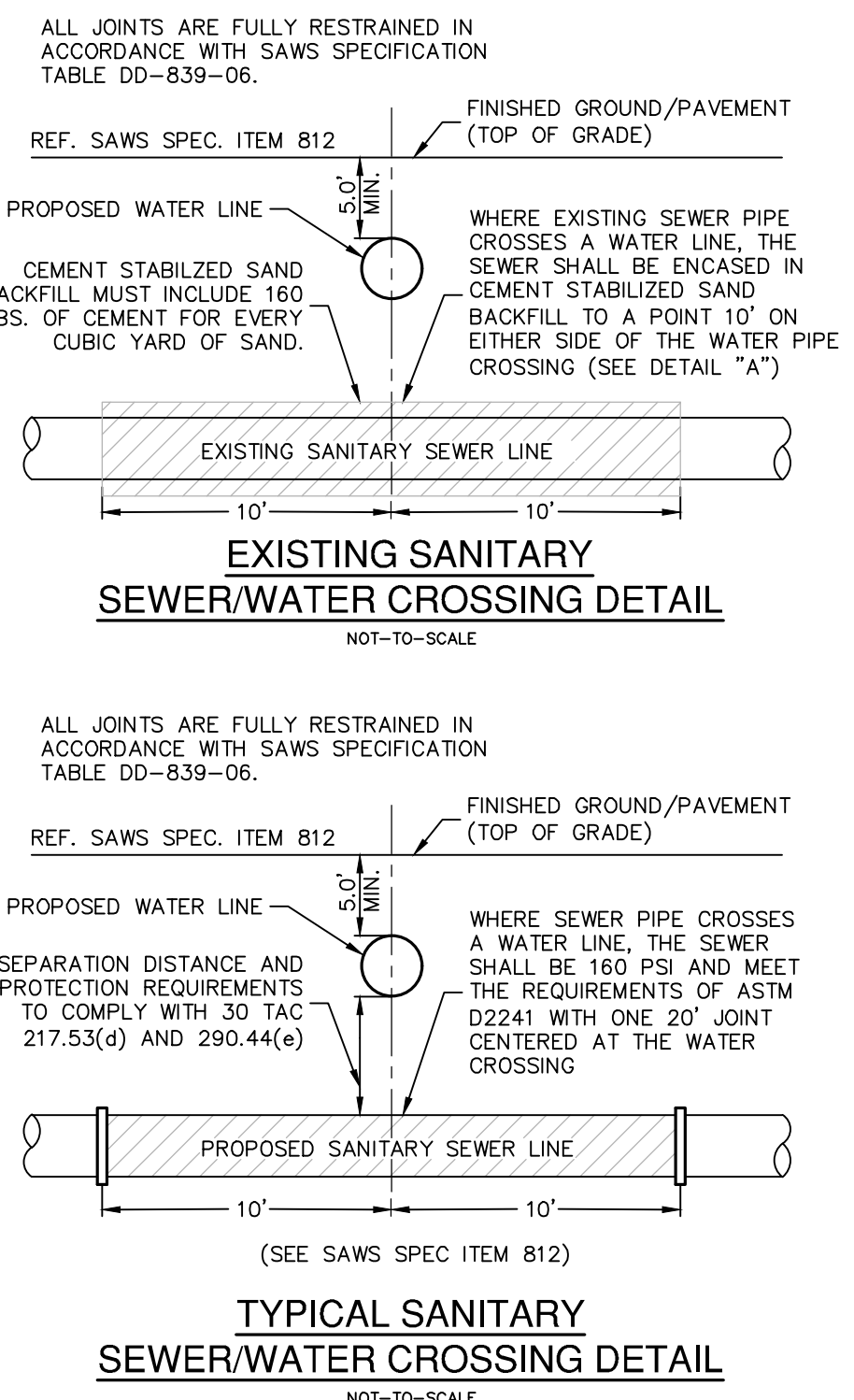
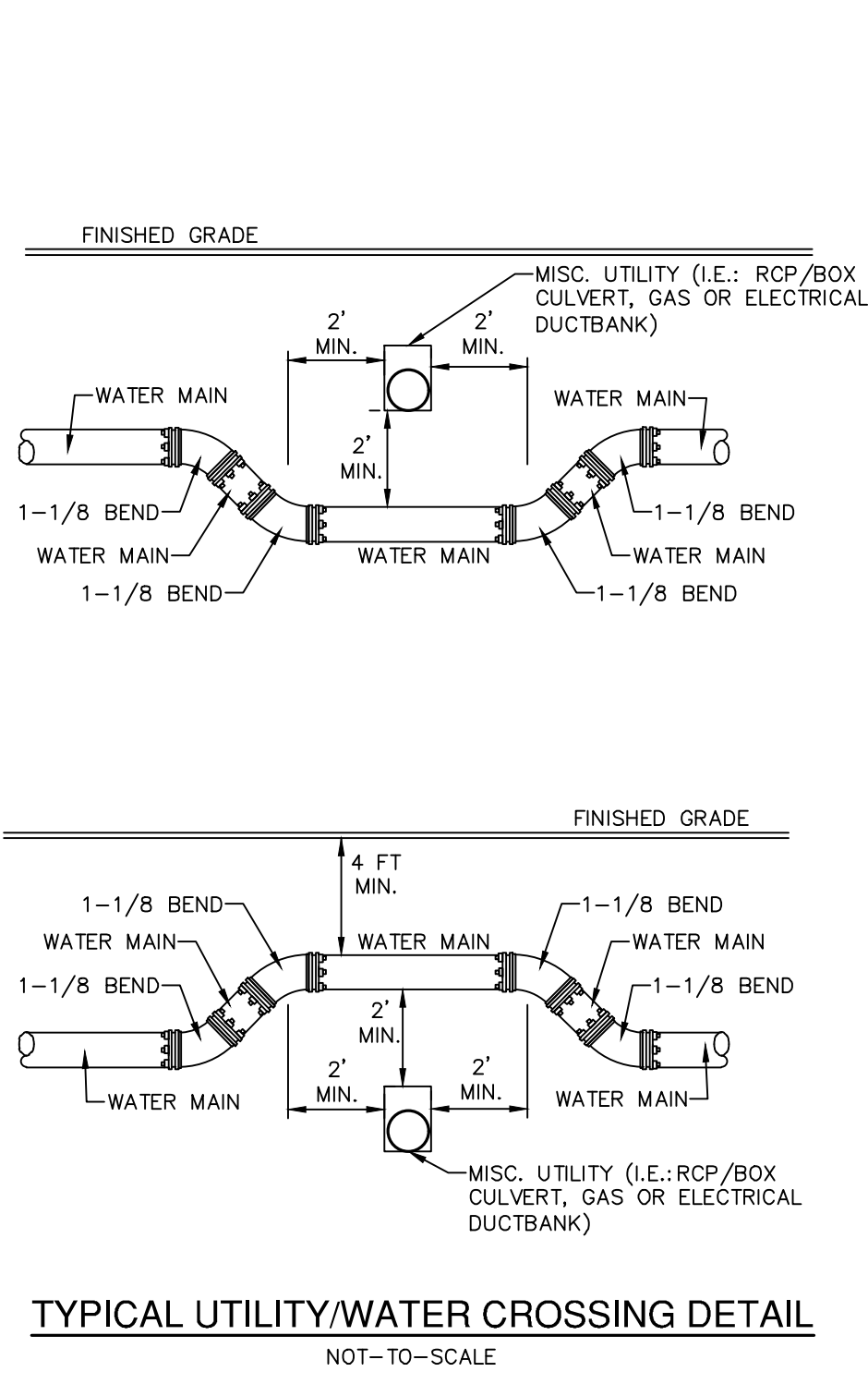
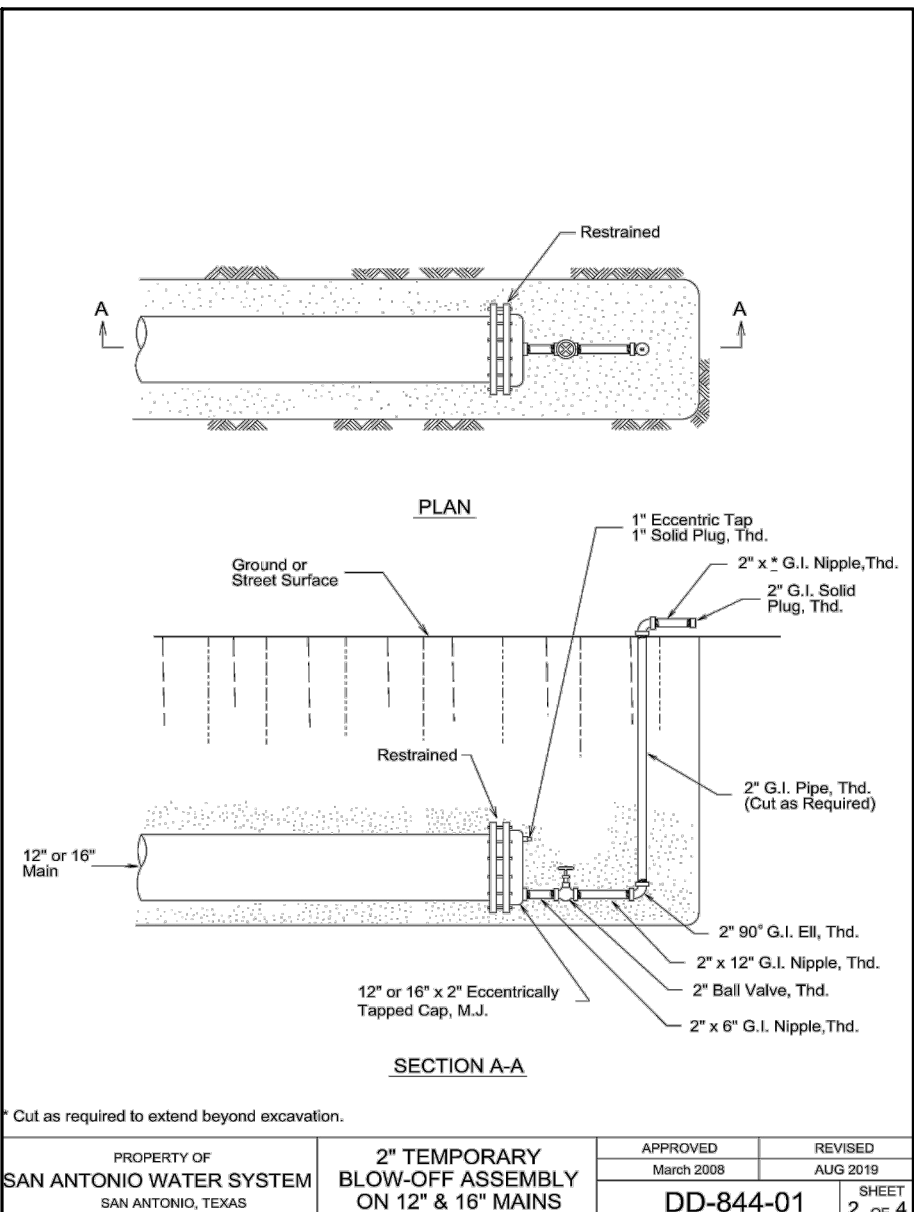
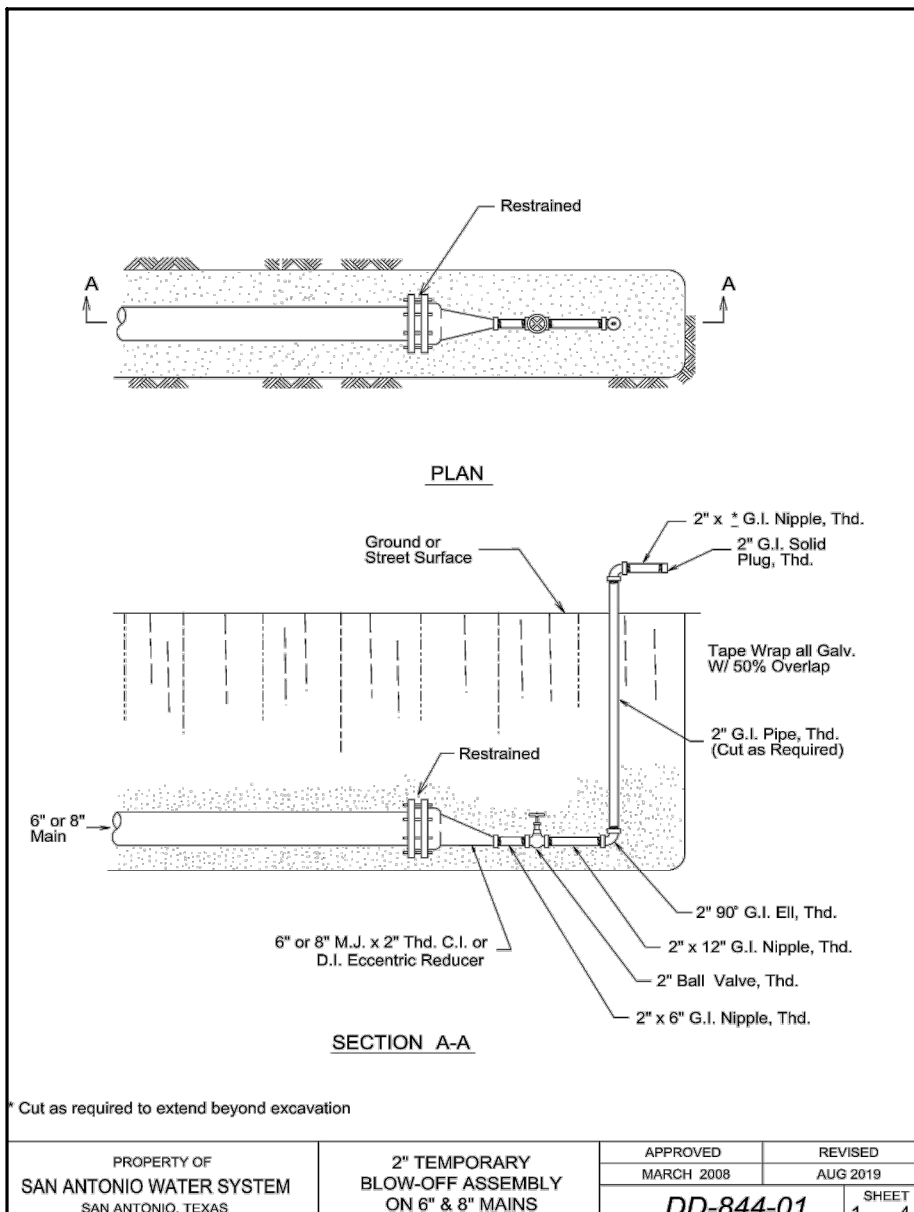
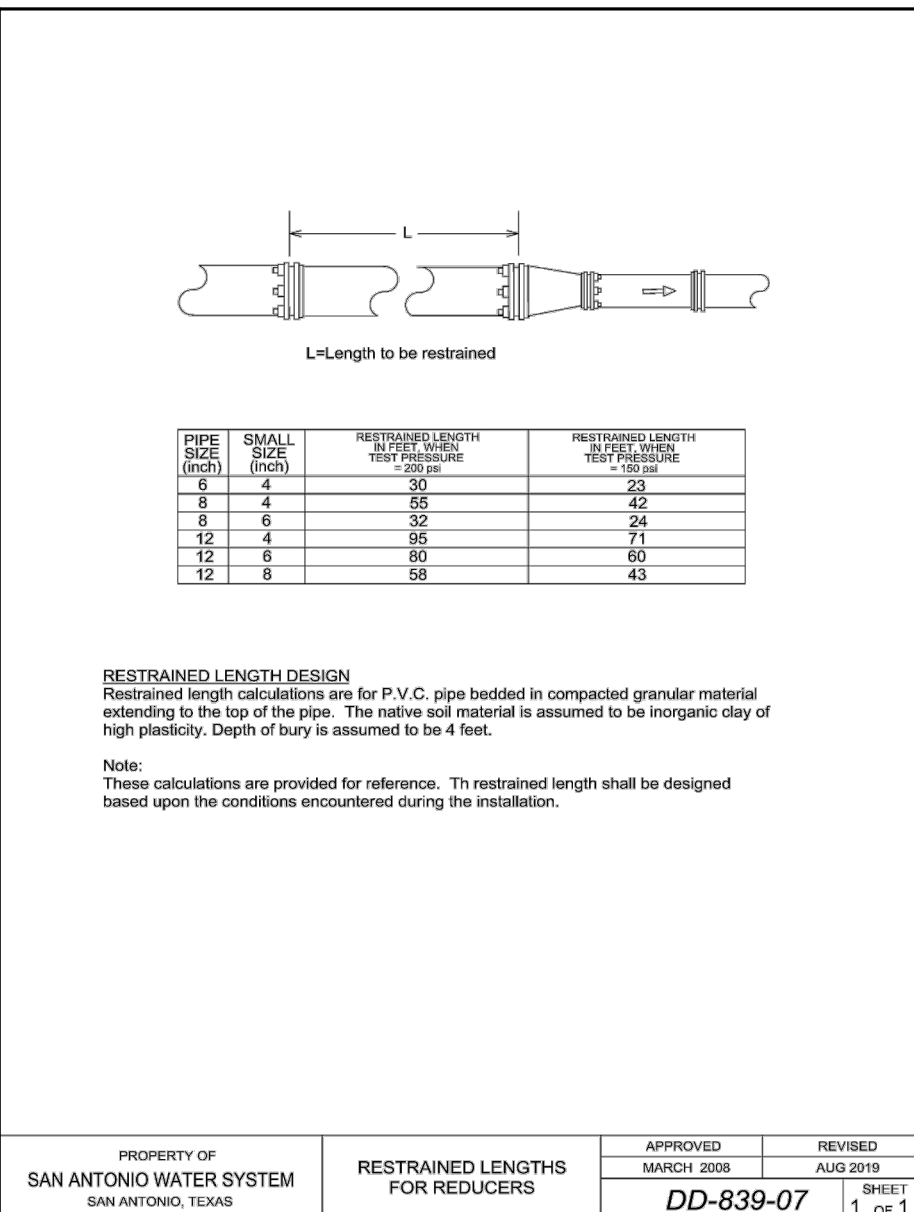
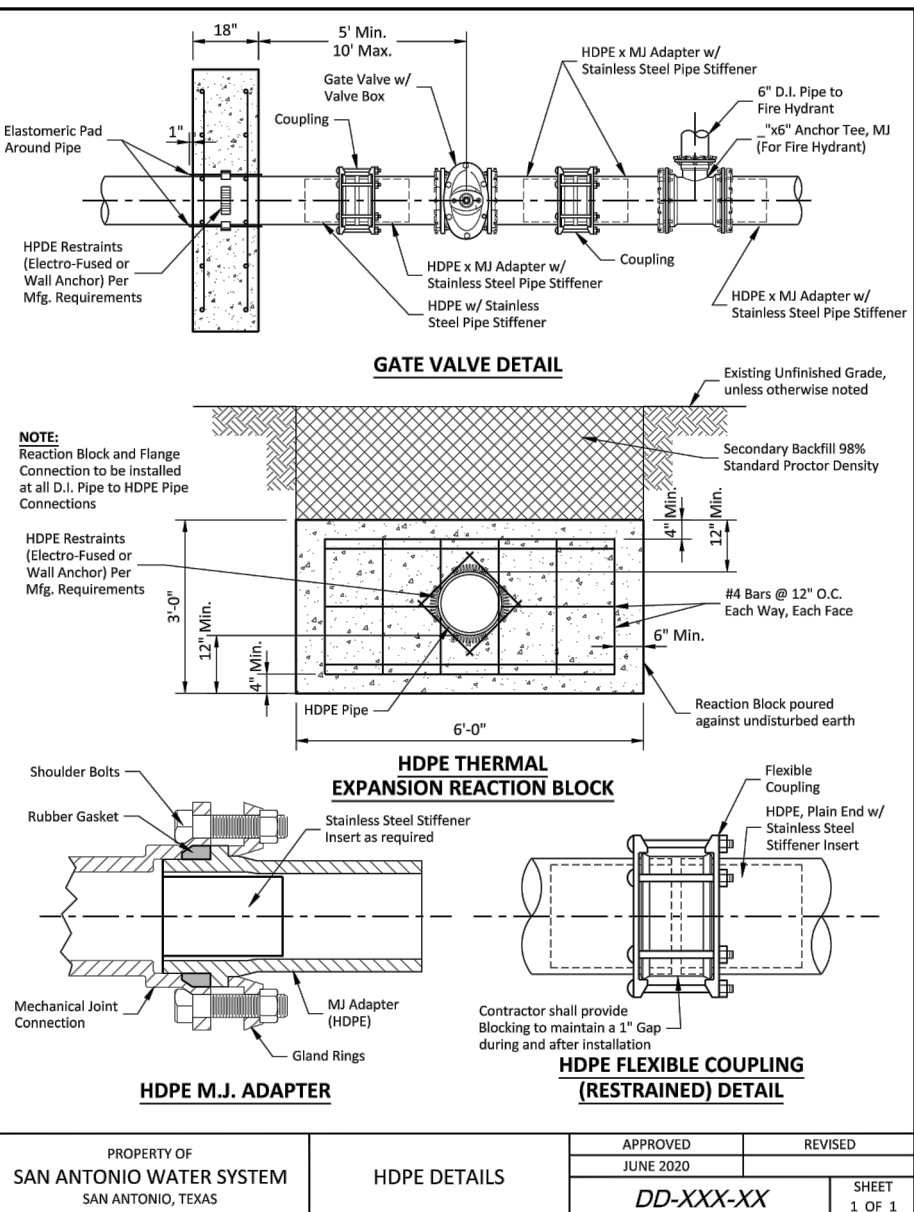
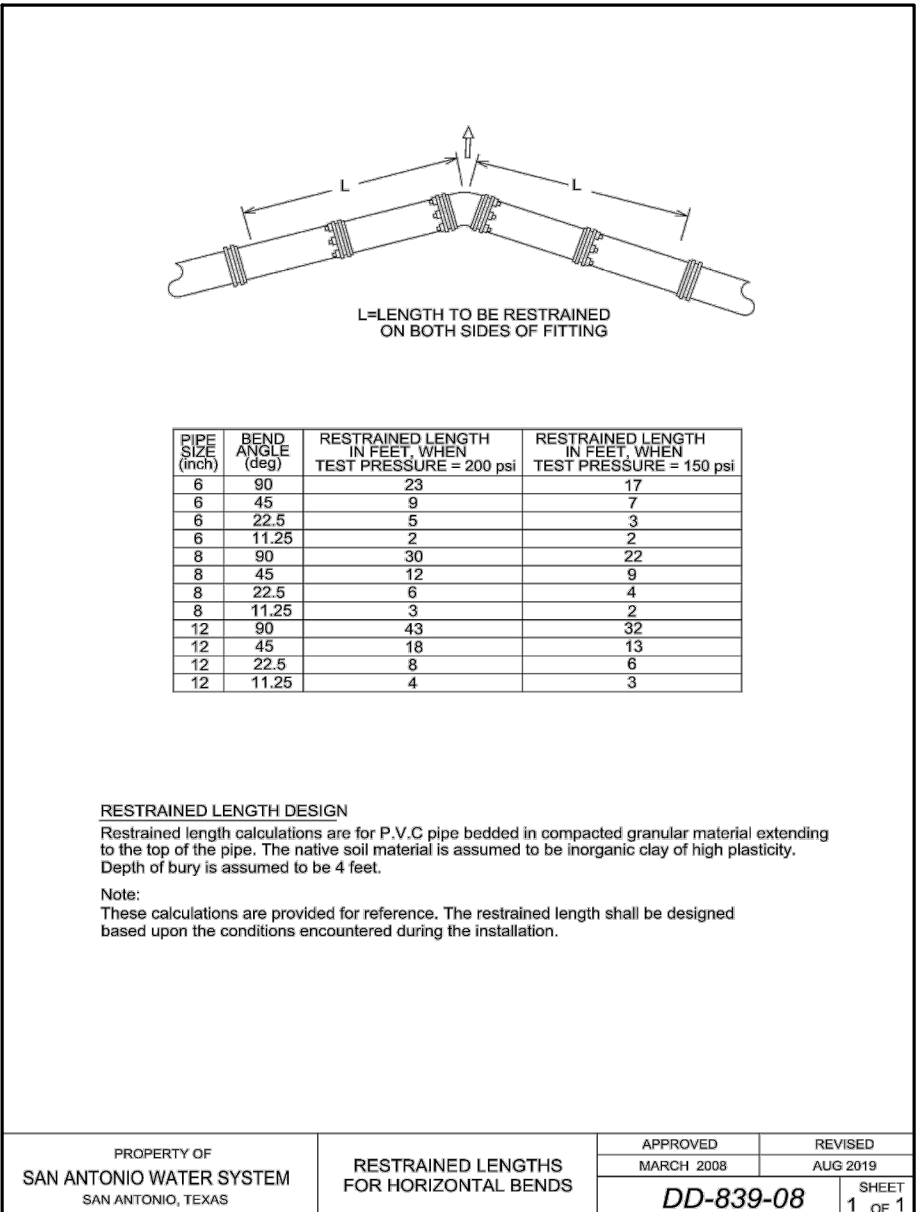
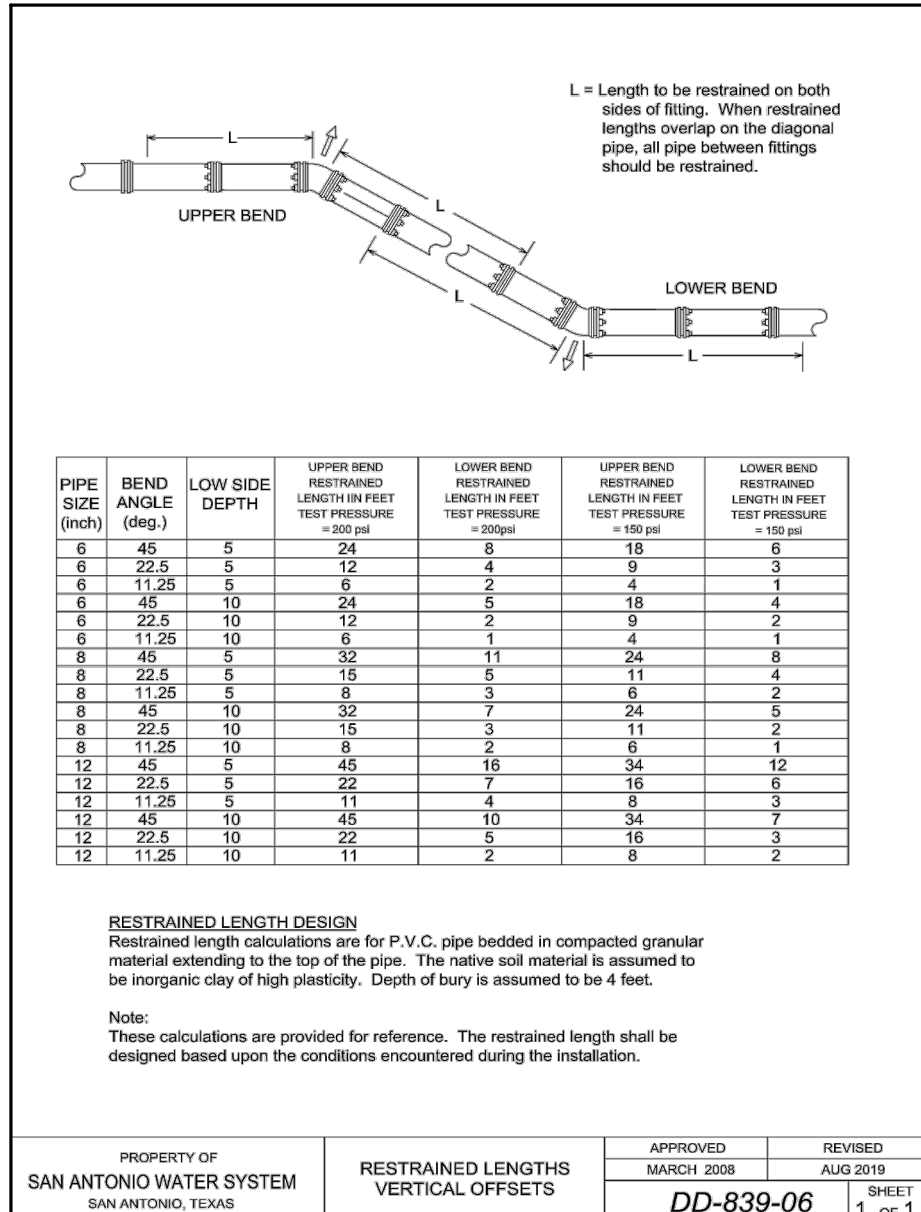
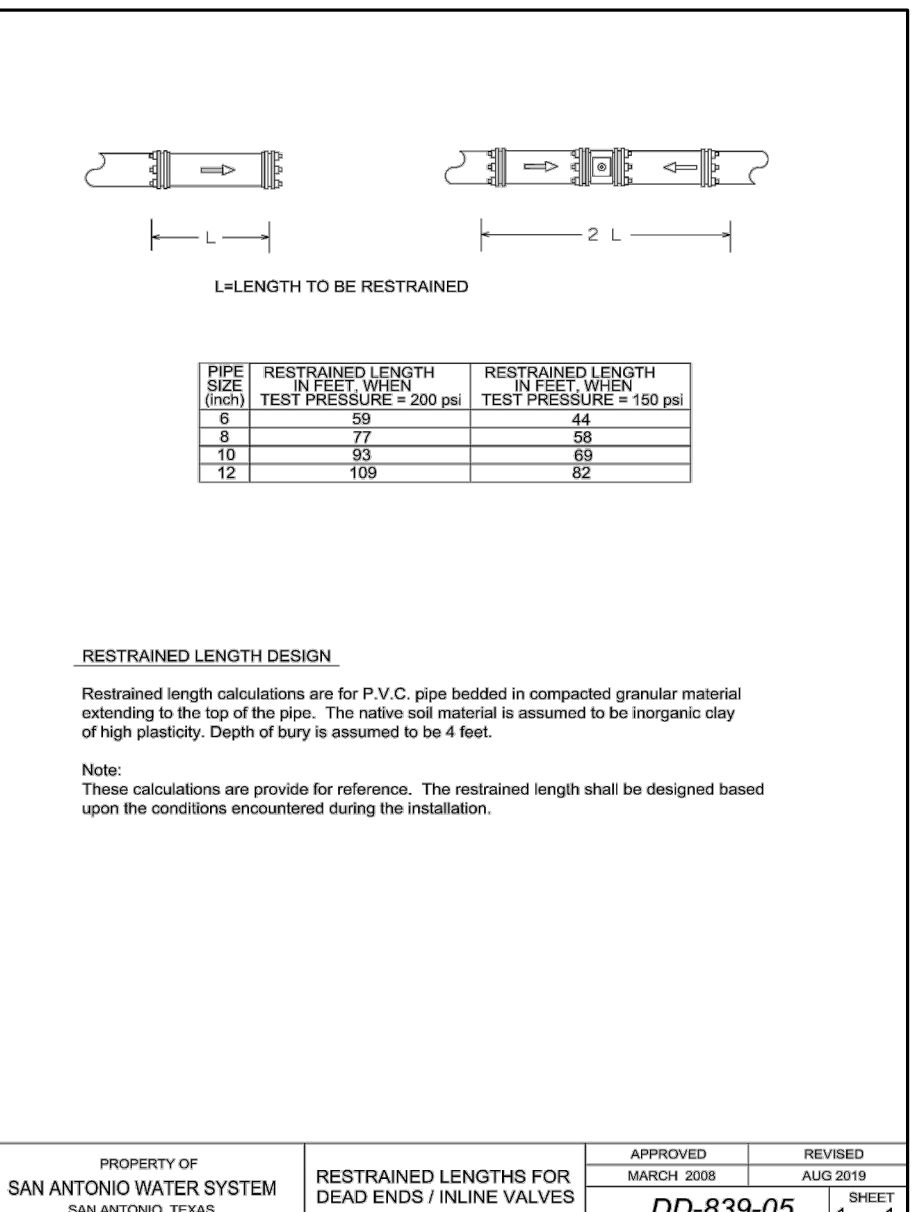
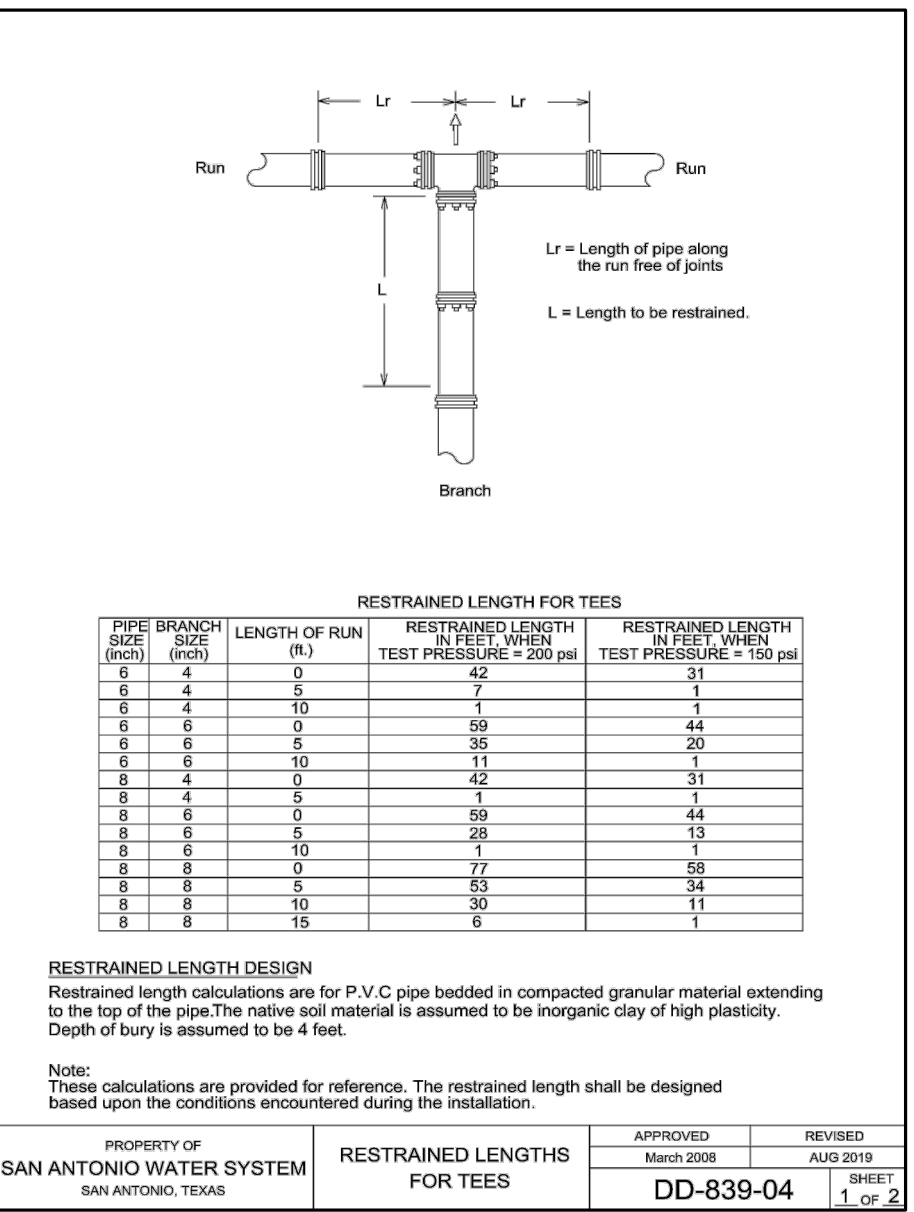
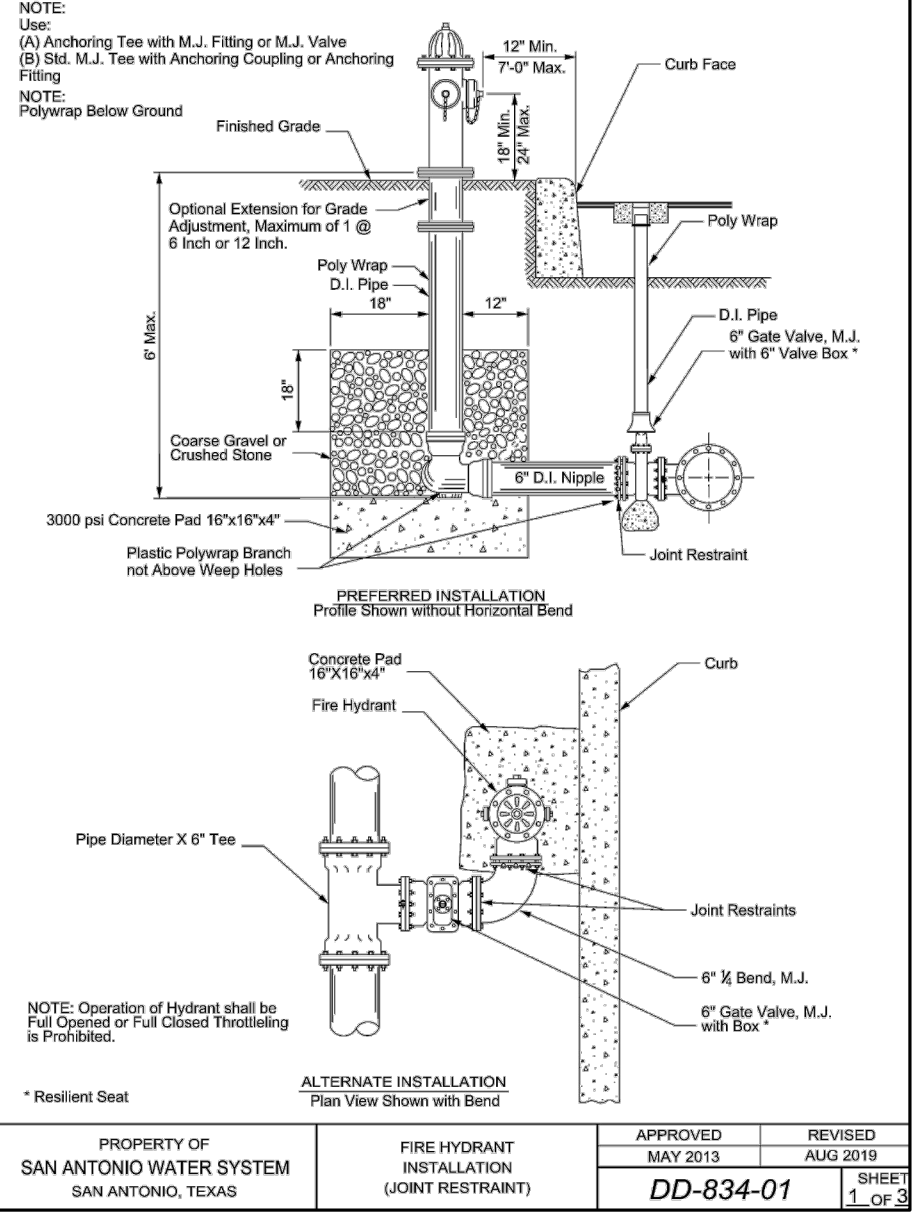
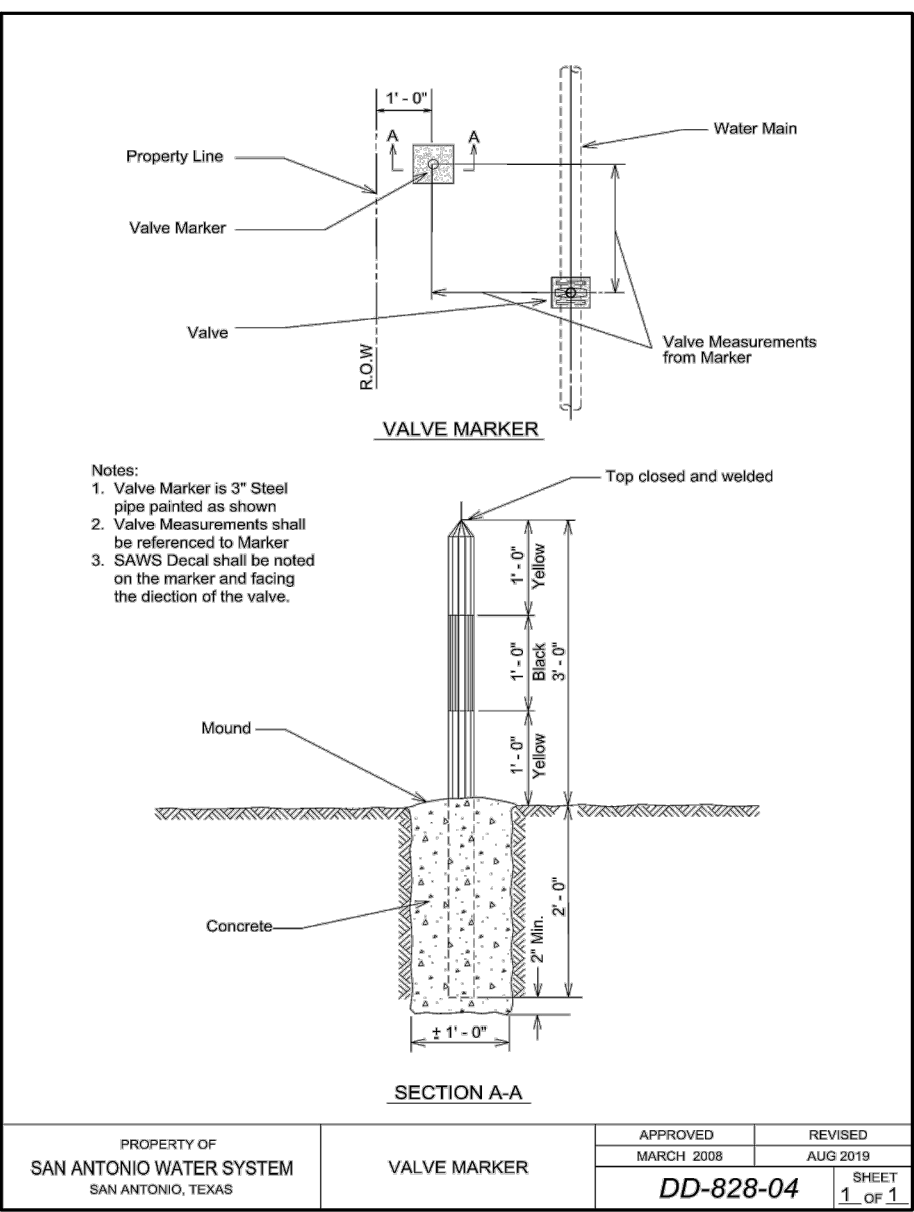
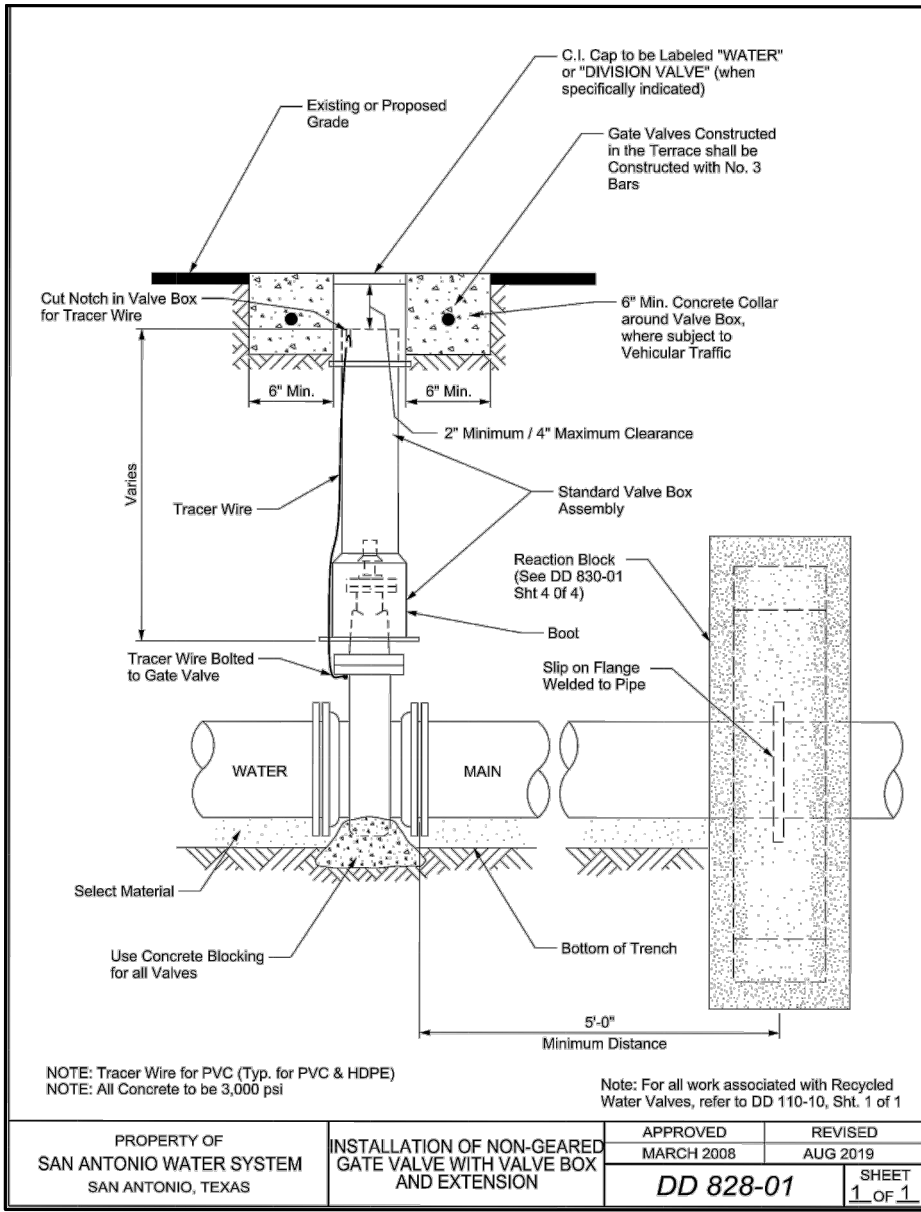
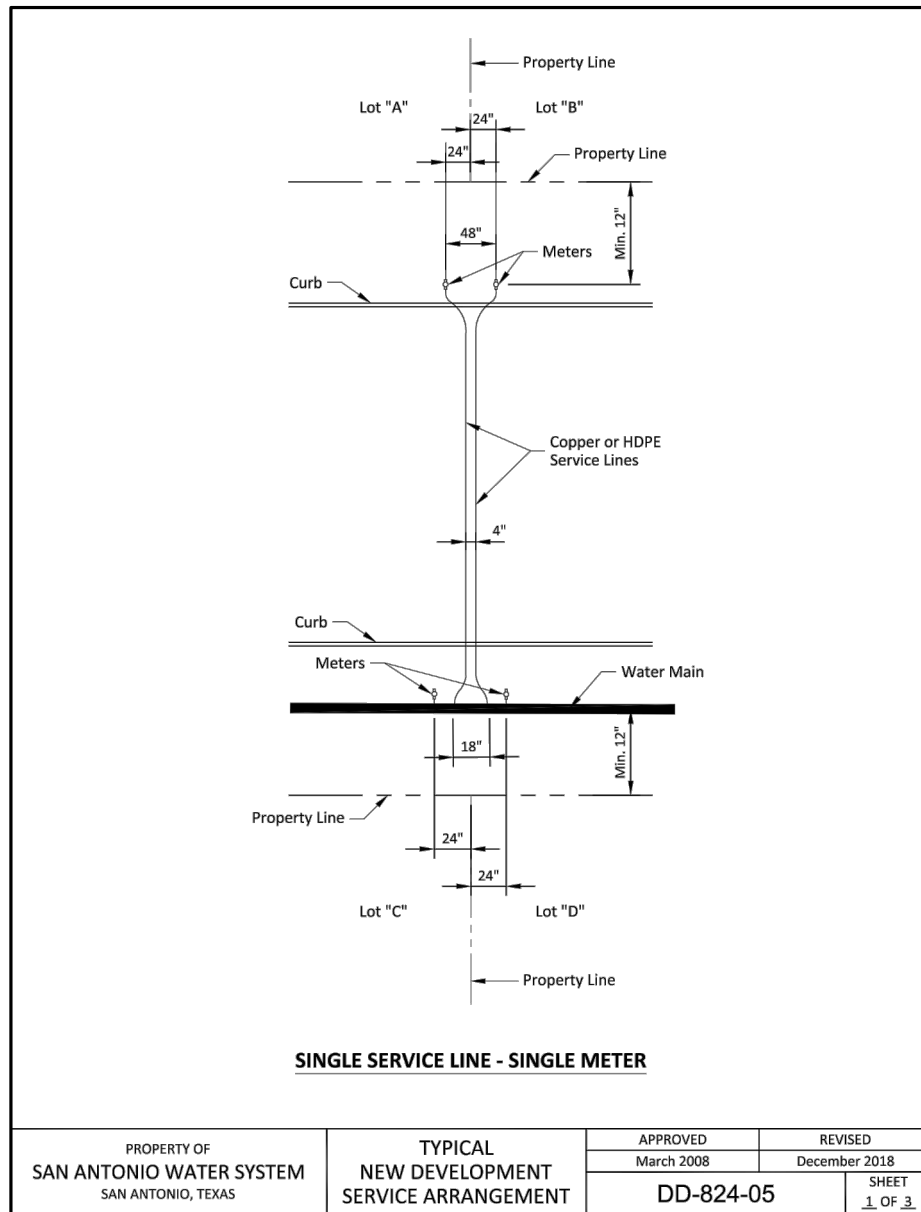
WATER DISTRIBUTION NOTES

PLAT NO.	22-118006B1
JOB NO.	12361-09
DATE	NOVEMBER 2023
DESIGNER	EDK
CHECKED	MG DRAWN
SHAFT	C5.10



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**PAPE-DAWSON ENGINEERS**

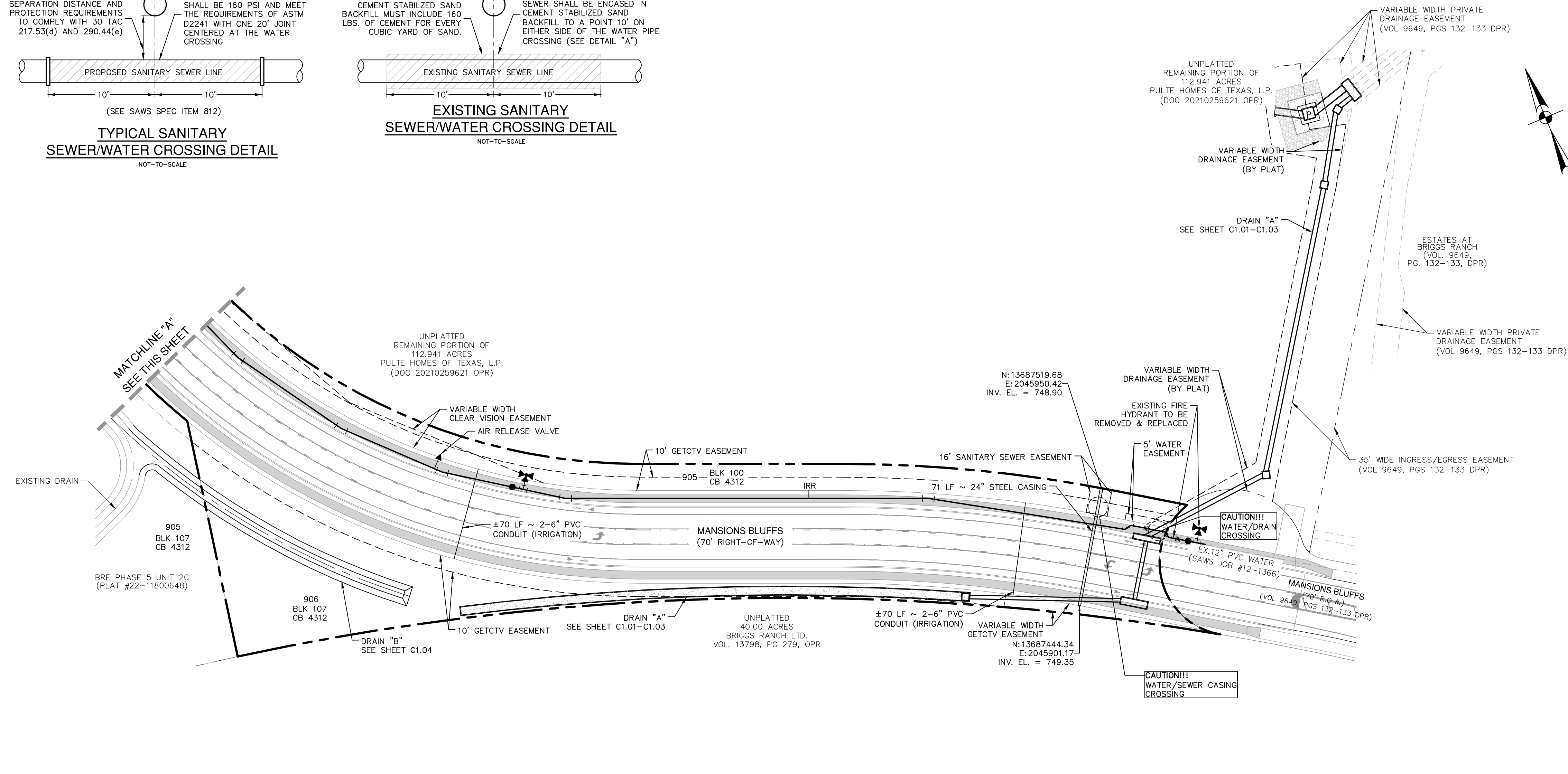
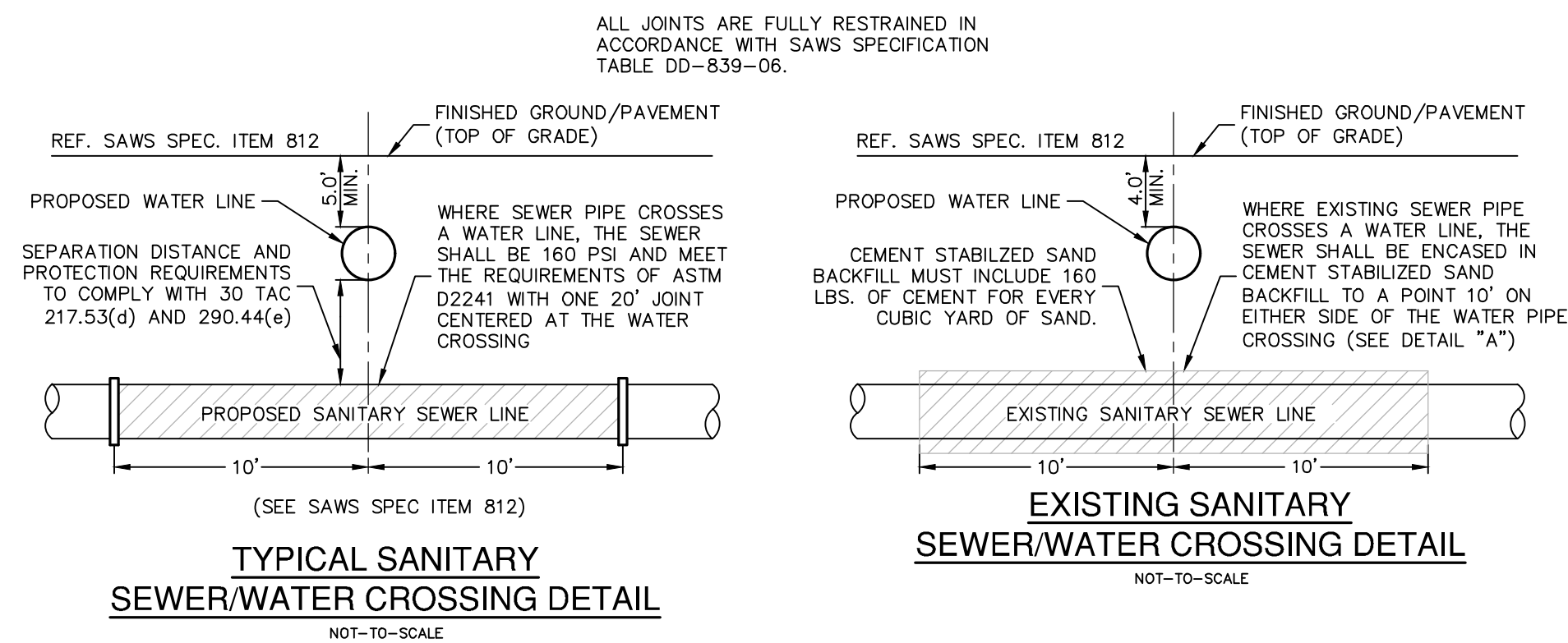
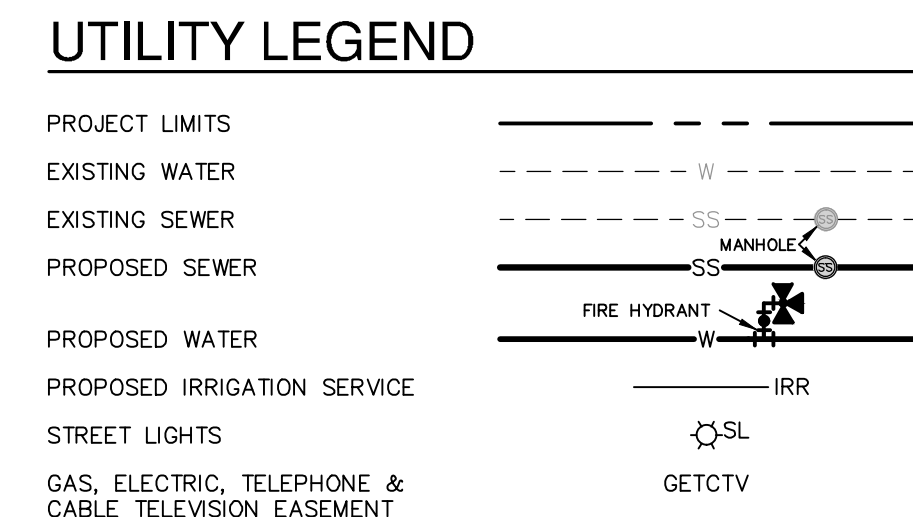
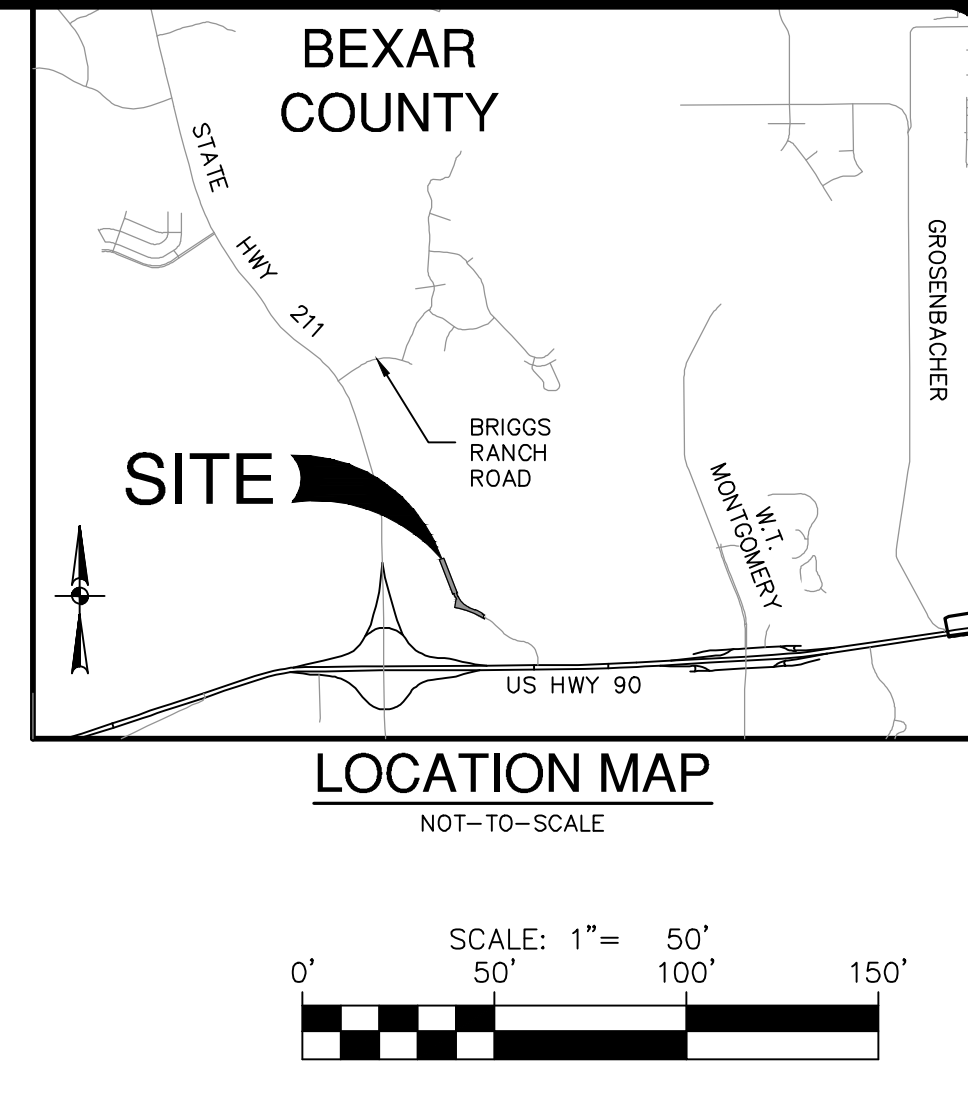
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**BRE PHASE 5 - COLLECTOR PHASE 2A**  
SAN ANTONIO, TEXAS

WATER DISTRIBUTION DETAILS

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE: NOVEMBER 2023  
DESIGNER: EDK  
CHECKED: MG DRAWN: NA  
SHEET C5.20





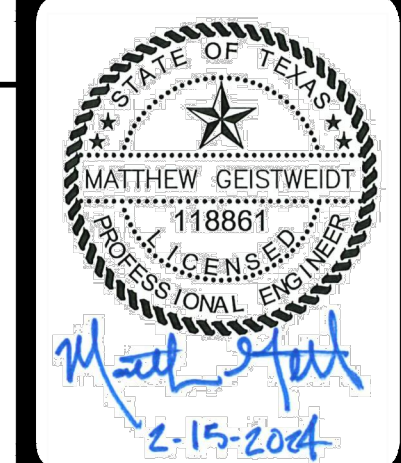
- ## CONDUIT NOTES:
1. CONTRACTOR SHALL INSTALL PERMANENT MARKERS IN PROPOSED CURBS WHERE CONDUITS CROSS THE ROADWAY (BOTH SIDES).
  2. CONDUITS SHALL BE PVC WITH MINIMUM BURST OF 36 INCHES BELOW PROPOSED FINISHED GRADE. SCHEDULE 80 TO BE USED FOR CPS CONDUITS, ALL OTHER CONDUITS ARE SCHEDULE 40.
  3. 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 CROSSINGS SHALL BE INSTALLED TO MEET OR EXCEED DESIGN REQUIREMENTS FOR THE UTILITY AGENCY WHICH THE UTILITY SERVICE PROVIDER, 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

## **TRENCH EXCAVATION SAFETY PROTECTION:**

CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/ GEOTECHNICAL/ SAFETY/EQUIPMENT CONSULTANT, SHALL PROVIDE THE FOLLOWING INFORMATION TO THE OWNER AND 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 SHALL GUARANTEE THAT THESE SAFETY 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 PROVIDE THE FOLLOWING INFORMATION TO THE OWNER IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

**CAUTION!!**

CONTRACTOR SHALL BE REQUIRED TO LOCATE ALL PUBLIC OR PRIVATE UTILITY INCLUDING BUT NOT LIMITING TO: WATER, SEWER, TELEPHONE AND FIBER OPTIC LINES, SITE LIGHTING ELECTRIC, SECONDARY ELECTRIC, PRIMARY ELECTRIC DUCTBANKS, LANDSCAPE IRRIGATION FACILITIES, AND GAS LINES. AN UTILITY CONTRACTS SHALL BE OBTAINED FROM THE COMMUNICATIONS ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION. 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 RESPONSIBILITY OF THE CONTRACTOR AND THE REPAIR SHALL BE AT CONTRACTOR'S SOLE EXPENSE WHETHER THE UTILITY IS SHOWN ON THESE PLANS OR NOT.

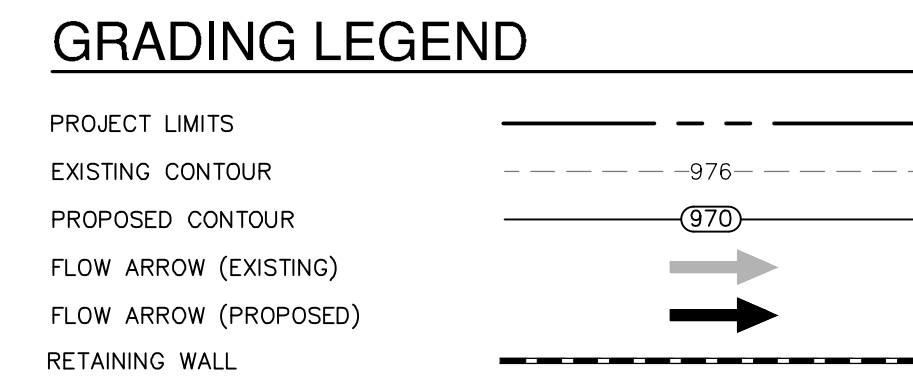
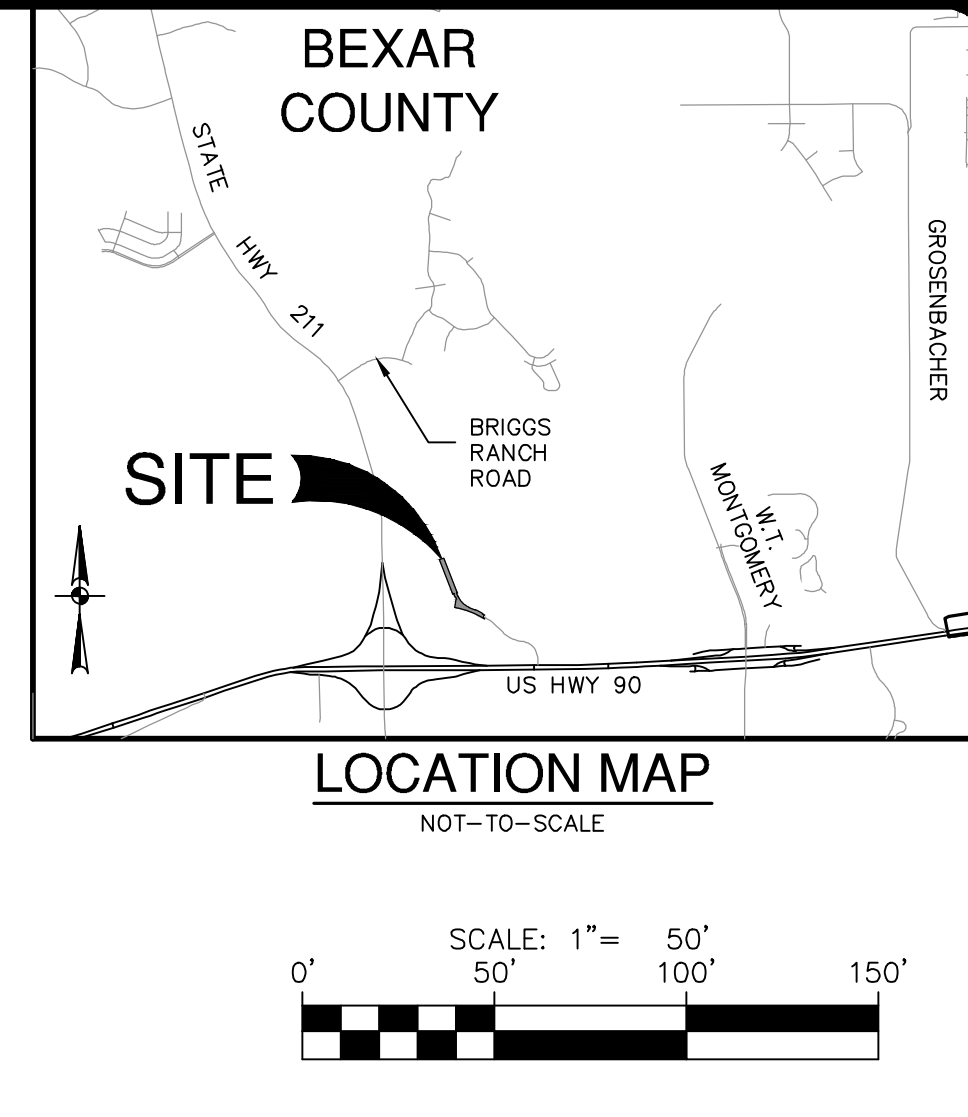
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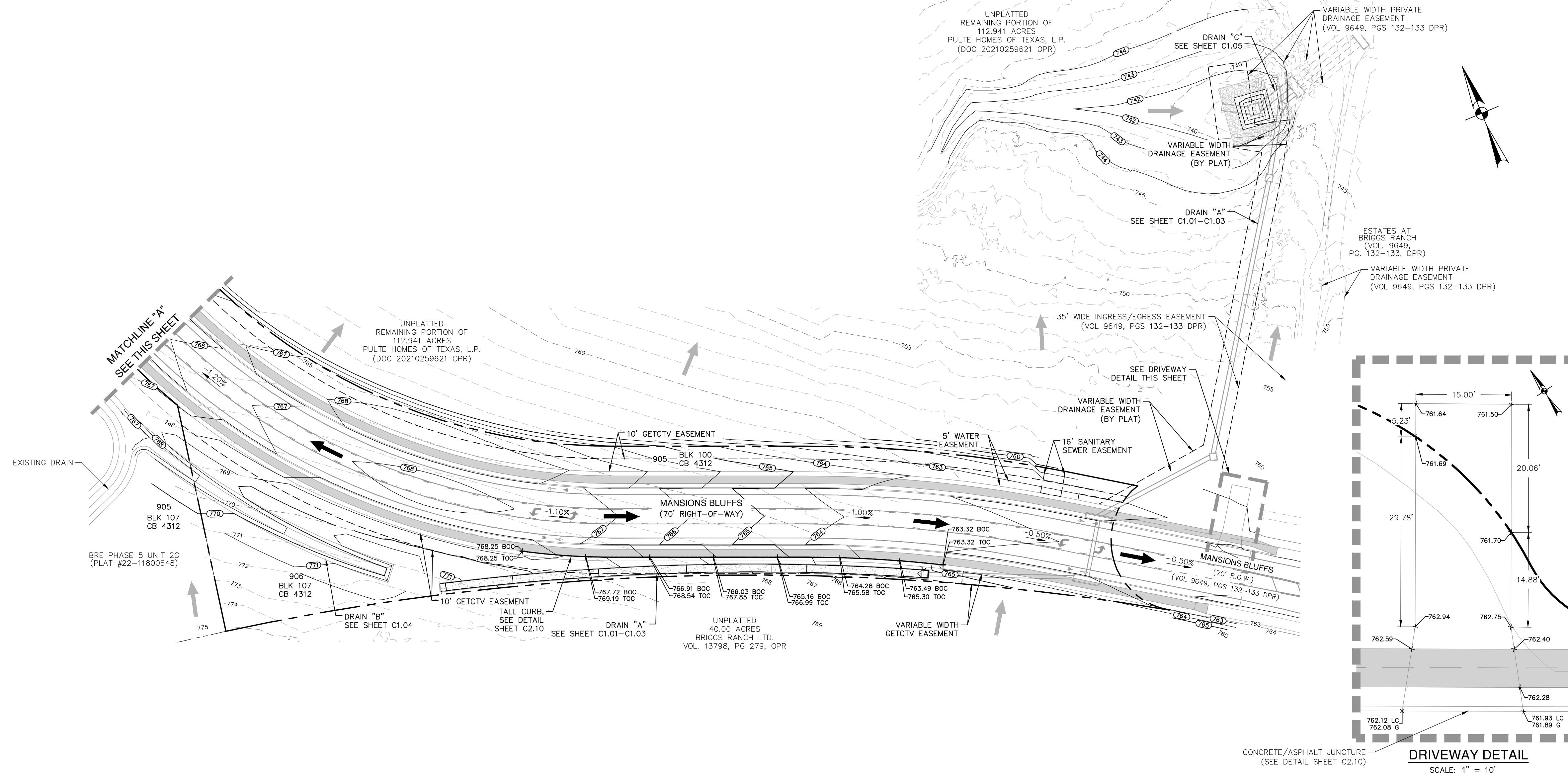
SECTION 5 - COLLECTOR PHASE 2A  
SAN ANTONIO, TEXAS  
OVERALL UTILITY PLAN

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE NOVEMBER 2023  
DESIGNER EDK  
CHECKED MG DRAWN NA  
SHEET C6.00





1. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THIS SCOPE OF WORK WHERE NOT SPECIFICALLY COVERED IN THE SPECIFICATIONS OF GEOTECHNICAL REPORT SHALL CONFORM TO ALL APPLICABLE CITY, COUNTY AND STATE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION).
2. SITE PREPARATION, GRADING, EXCAVATION AND FILL SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT GEOTECHNICAL REPORT AND SPECIFICATIONS.
3. ALL SELECT FILL MATERIAL PROVIDED SHALL BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACING AND COMPACTING.
4. ALL ELEVATIONS AND PROPOSED CONTOURS SHOWN ON THIS GRADING PLAN REFLECT FINISHED GRADES. THE THICKNESS OF PAVING, BASE, GRASS, TOPSOIL, AND MULCH MUST BE SUBTRACTED TO OBTAIN SUBGRADE ELEVATIONS.
5. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY ARISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR CONSTRUCTION OF THIS PROJECT.
6. THE CONTRACTOR SHALL VERIFY THE SUITABILITY OF ALL EXISTING AND PROPOSED SITE CONDITIONS INCLUDING GRADES AND DIMENSIONS BEFORE COMMENCING ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
8. THE CONTRACTOR SHALL REMOVE TOP SOIL, GRASS, ROOTS, DEBRIS, ETC. AND DISPOSE OFF SITE THOSE MATERIALS NOT SUITABLE FOR EMBANKMENT AND TOPSOIL. CLEAN STRIPPINGS AND TOPSOIL MAY BE STOCKPILED ON SITE FOR REUSE IN A LOCATION SPECIFIED BY THE OWNER.
9. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE STABILIZATION AND LANDSCAPED AREAS SHALL BE REVEGETATED IN ACCORDANCE WITH PERMITS, SPECIFICATIONS AND TYPES/SWMP REQUIREMENTS. REFERENCE THE LANDSCAPE ARCHITECT'S PLAN, IF APPLICABLE.
10. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS (USE OF SILT FENCES, ETC.) TO KEEP DRAINAGE AND SILT FROM WASHING ONTO ADJACENT PROPOSED STREETS, OR DRAINAGE WAYS. CONTRACTOR SHALL IMMEDIATELY REMOVE SILT/DEBRIS WHICH WASHES OFFSITE OR INTO EXISTING STORM DRAIN SYSTEMS. (SEE SWPPP PLANS & TPEOS BOOK).
11. THE CONTRACTOR SHALL OBTAIN GRASSES SHOWN HEREON WITHIN +/- ONE-TENTH (0.10) FOOT.
12. IN PROPOSED PAVING AREAS, STREET DESIGN PLANS SHALL CONTROL ALL EARTH'S SLOPES. SLOPES SHALL BE A MAXIMUM OF 3:1 AND A MINIMUM OF 1:0% UNLESS OTHERWISE SHOWN.
13. THE CONTRACTOR SHALL PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING SITE AND PROPOSED IMPROVEMENTS.
14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER, CONDITION ANY DAMAGE DONE TO EXISTING TREES, BUILDINGS, UTILITIES, FENCES, PAVEMENT, CURBS, OR DRIVEWAYS (NO SEPARATE PAY ITEMS).



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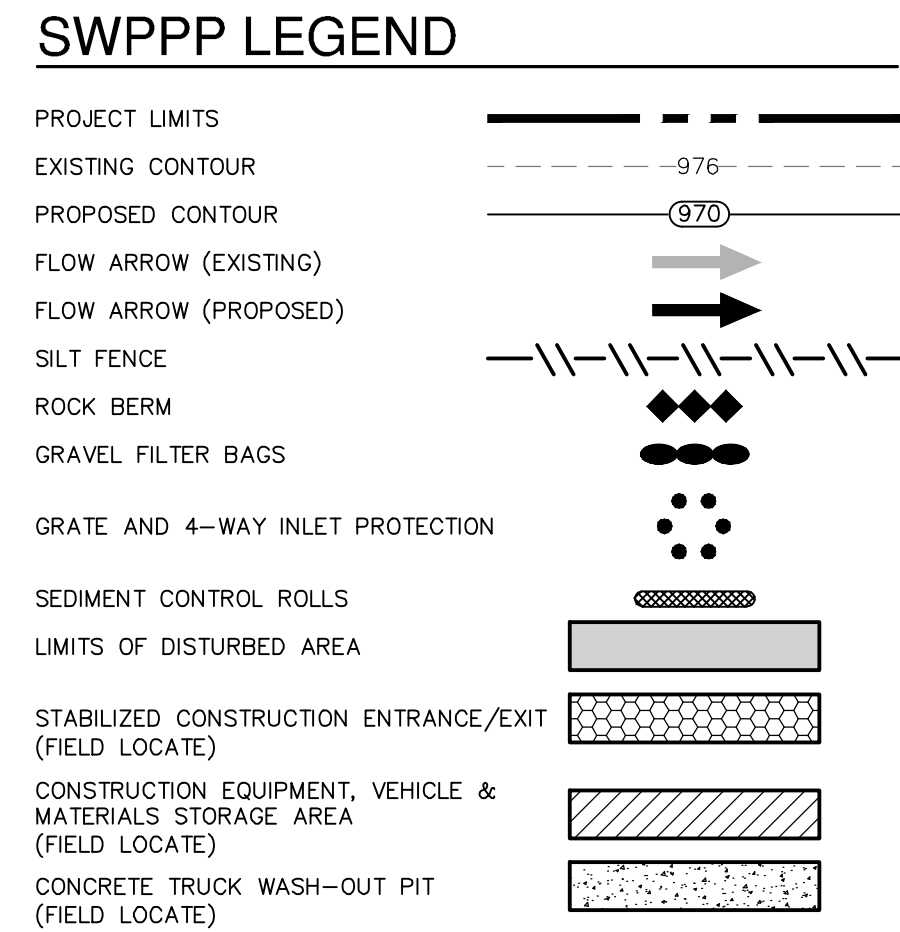
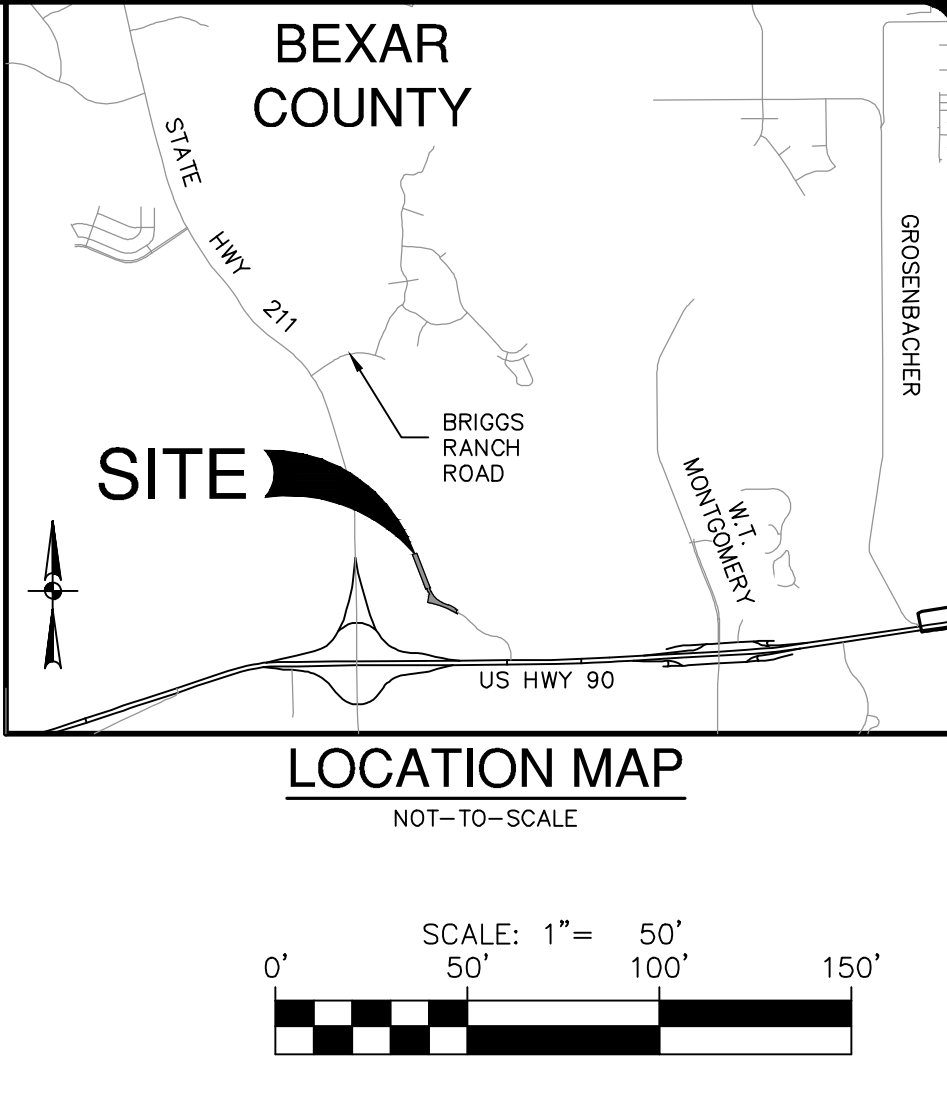
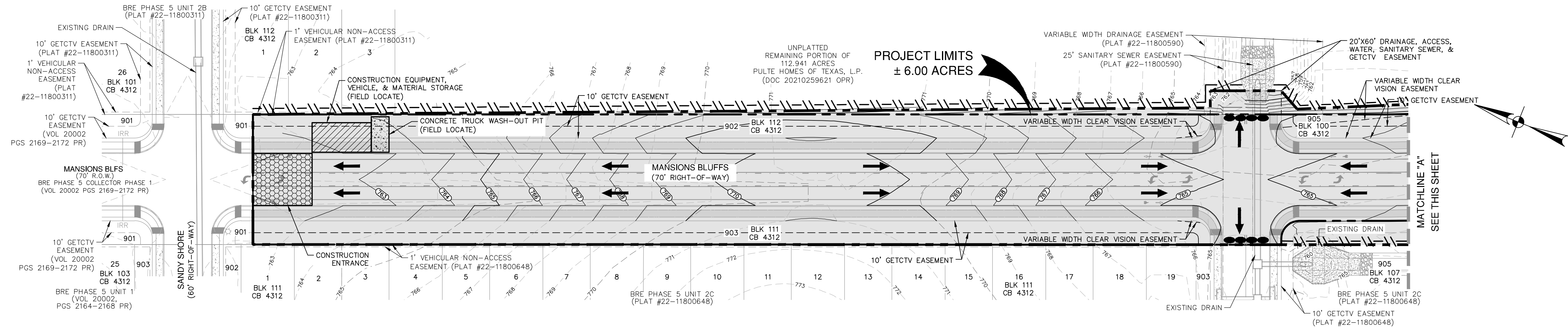
**SECTION 5 - COLLECTOR PHASE 2A**  
**SAN ANTONIO, TEXAS**  
**OVERALL GRADING PLAN**

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE NOVEMBER 2023  
DESIGNER EDK  
CHECKED MG DRAWN NA  
SHEET C7.00



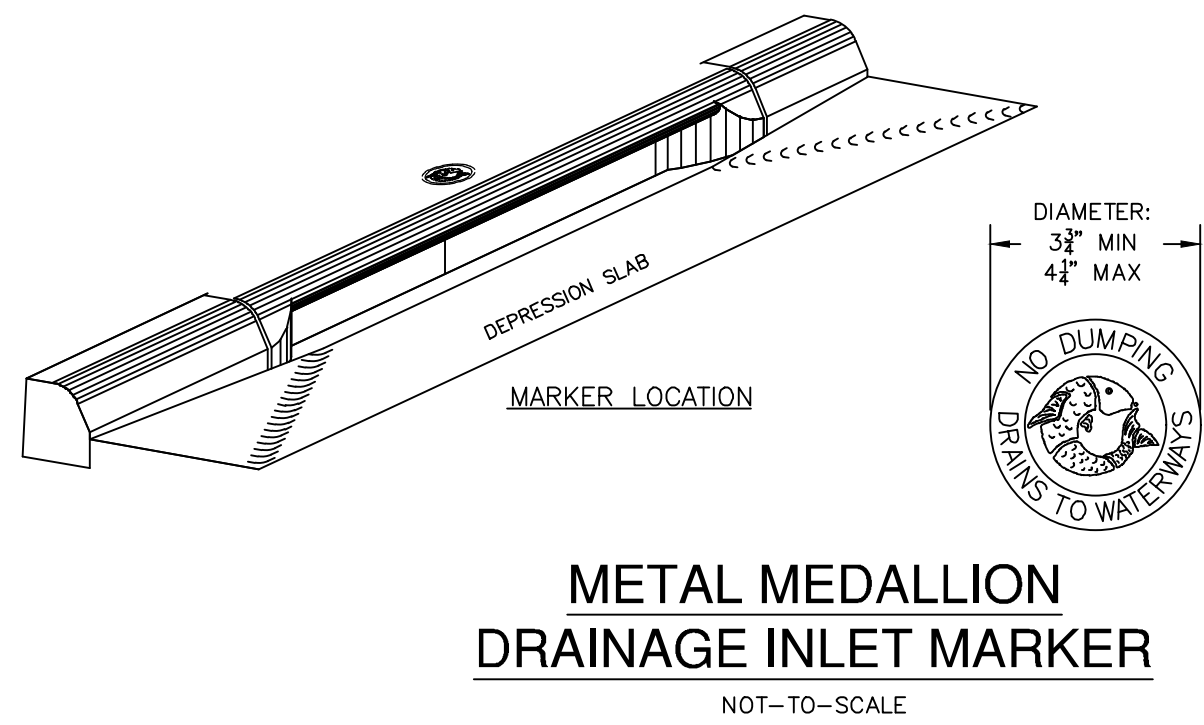
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- ### GENERAL NOTES
- DO NOT DISTURB VEGETATED AREAS (TREES, GRASS, WEEDS, BRUSH, ETC.) ANY MORE THAN NECESSARY FOR CONSTRUCTION.
  - CONSTRUCTION ENTRANCE/EXIT LOCATION, CONCRETE WASH-OUT PIT, AND CONSTRUCTION EQUIPMENT AND MATERIAL STORAGE YARD TO 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 DENOTES LIMITS OF DISTURBED AREAS. OTHER AREAS WITHIN THE PROJECT LIMITS WITH THE EXCEPTION OF A CONSTRUCTION EQUIPMENT 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.

SWP3 MODIFICATIONS		
DATE	SIGNATURE	DESCRIPTION



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**BRE PHASE 5 - COLLECTOR PHASE 2A**  
SAN ANTONIO, TEXAS  
**STORM WATER POLLUTION PREVENTION PLAN**

PLAT NO. 22-11800681  
JOB NO. 12361-09  
DATE NOVEMBER 2023  
DESIGNER EDK  
CHECKED MG DRAWN NA  
SHEET C8.00

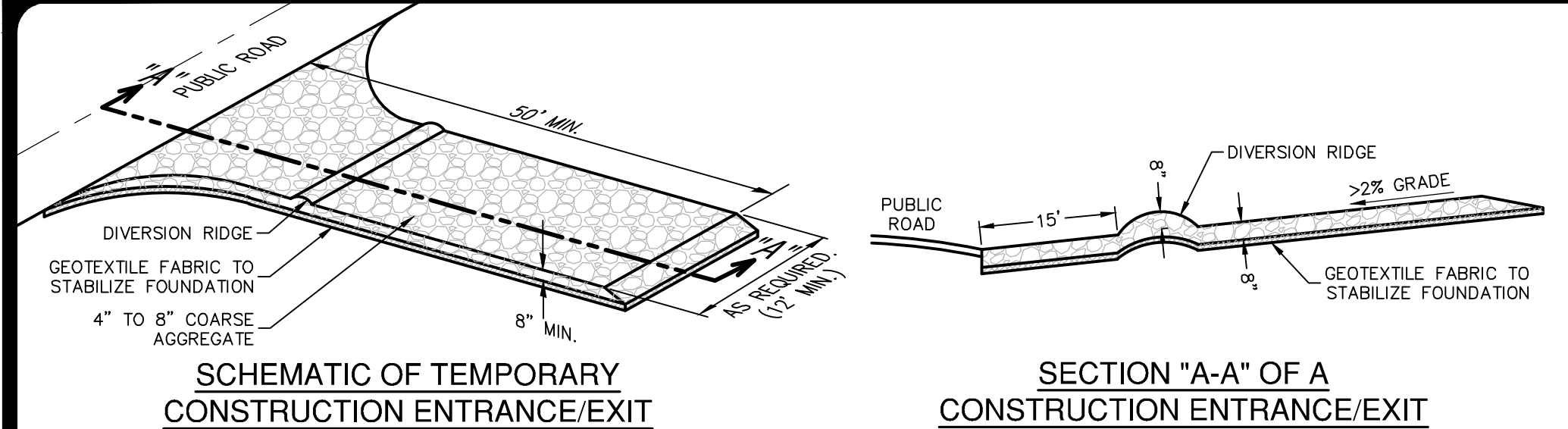
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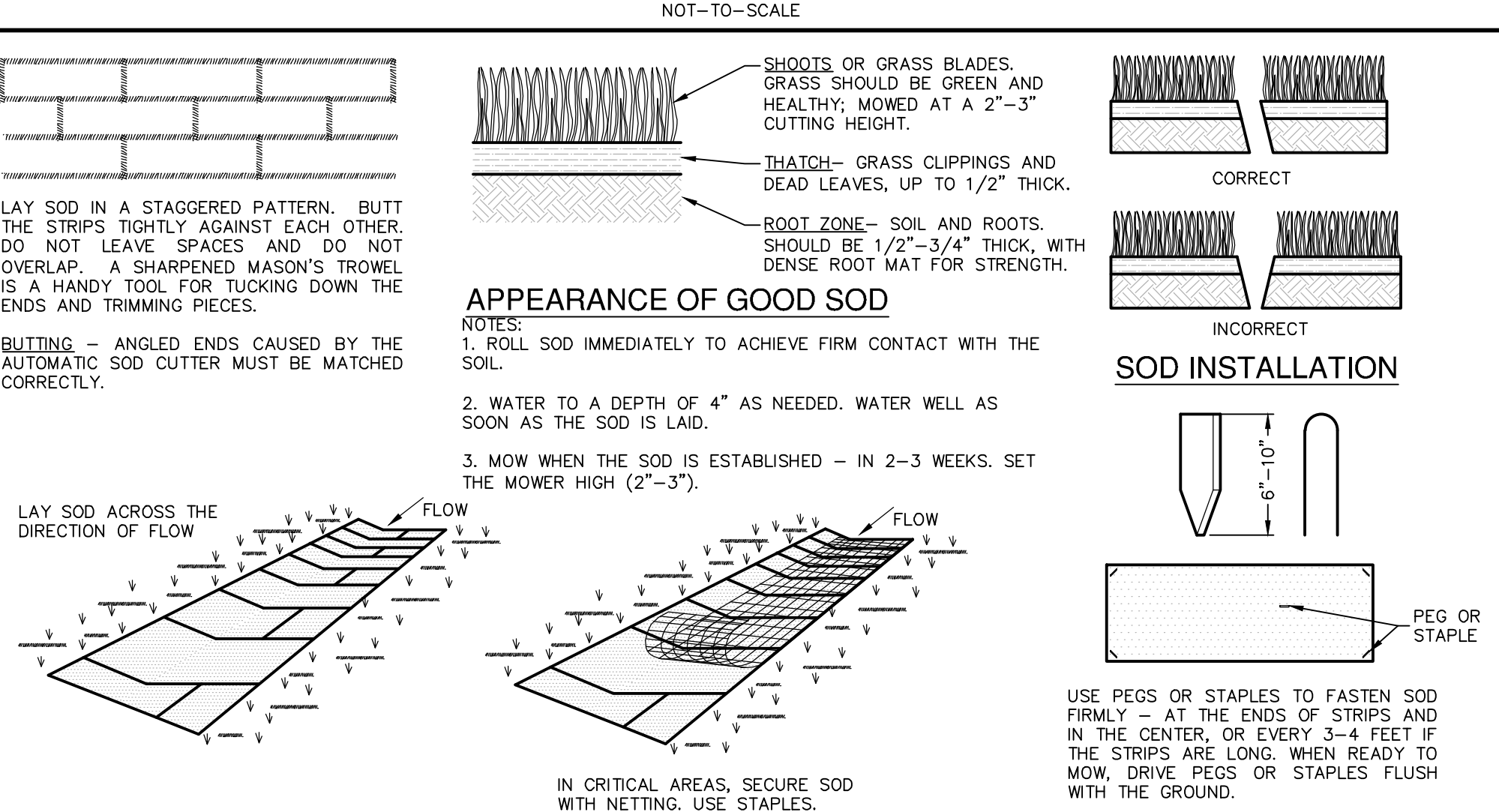
MATERIALS

1. THE AGGREGATE SHOULD CONSIST OF 4-INCH TO 8-INCH WASHED STONE OVER A STABLE FOUNDATION AS SPECIFIED IN THE PLAN.
2. THE AGGREGATE SHOULD BE PLACED WITH A MINIMUM THICKNESS OF 8-INCHES.
3. THE GEOTEXTILE FABRIC SHOULD BE DESIGNED SPECIFICALLY FOR USE AS A SOIL FILTRATION MEDIA WITH AN APPROXIMATE WEIGHT OF 6 OZ/YD<sup>2</sup>, A MULLEN BURST RATING OF 140 LB/IN<sup>2</sup>, AND AN EQUIVALENT OPENING SIZE GREATER THAN A NUMBER 50 SIEVE.
4. IF A WASHING FACILITY IS REQUIRED, A LEVEL AREA WITH A MINIMUM OF 4-INCH DIAMETER WASHED STONE OR COMMERCIAL ROCK SHOULD BE INCLUDED IN THE PLANS. DIVERT WASTEWATER TO A SEDIMENT TRAP OR BASIN.

INSTALLATION

1. AVOID CURVES ON PUBLIC ROADS AND STEEP SLOPES. REMOVE VEGETATION AND OTHER OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA. GRADE CROWN FOUNDATION FOR POSITIVE DRAINAGE.
2. THE MINIMUM WIDTH OF THE ENTRANCE/EXIT SHOULD BE 12 FEET OR THE FULL WIDTH OF EXIT ROADWAY, WHICHEVER IS GREATER.
3. THE CONSTRUCTION ENTRANCE SHOULD BE AT LEAST 50 FEET LONG.
4. IF THE SLOPE TOWARD THE ROAD EXCEEDS 2%, CONSTRUCT A RIDGE, 6-INCHES TO 8-INCHES HIGH WITH 3:1 (H:V) SIDE SLOPES, ACROSS THE FOUNDATION APPROXIMATELY 15 FEET FROM THE ENTRANCE TO DIVERT RUNOFF AWAY FROM THE PUBLIC ROAD.
5. PLACE GEOTEXTILE FABRIC AND GRADE FOUNDATION TO IMPROVE STABILITY, ESPECIALLY WHERE WET CONDITIONS ARE ANTICIPATED.
6. PLACE STONE TO DIMENSIONS AND GRADE SHOWN ON PLANS. LEAVE SURFACE SMOOTH AND SLOPE FOR DRAINAGE.
7. DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN.
8. INSTALL PIPE UNDER PAD AS NEEDED TO MAINTAIN PROPER PUBLIC ROAD DRAINAGE.

STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL



MATERIALS

1. SOD SHOULD BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 3/4" INCH (± 1/4" INCH) AT THE TIME OF CUTTING. THIS THICKNESS SHOULD EXCLUDE SHOOT GROWTH AND THATCH.
2. PIECES OF SOD SHOULD BE CUT TO THE SUPPLIER'S STANDARD WIDTH AND LENGTH, WITH A MAXIMUM ALLOWABLE DEVIATION IN ANY DIMENSION OF 5%. TORN OR UNEVEN PADS SHOULD NOT BE ACCEPTABLE.
3. STANDARD SIZE SECTIONS OF SOD SHOULD BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED FROM A FIRM GRASP ON ONE END OF THE SECTION.
4. SOD SHOULD BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS.

SITE PREPARATION

1. PRIOR TO SOIL PREPARATION, AREAS TO BE SODDED SHOULD BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLAN.
2. THE SURFACE SHOULD BE CLEARED OF ALL TRASH, DEBRIS AND OF ALL ROOTS, BRUSH, WIRE, GRADE STAKES AND OTHER OBJECTS THAT WOULD INTERFERE WITH PLANTING, FERTILIZING OR MAINTENANCE OPERATIONS.
3. FERTILIZE ACCORDING TO SOIL TESTS. FERTILIZER NEEDS CAN BE DETERMINED BY A SOIL TESTING LABORATORY OR REGIONAL RECOMMENDATIONS CAN BE MADE BY COUNTY AGRICULTURAL EXTENSION AGENTS. FERTILIZER SHOULD BE WORKED INTO THE SOIL TO A DEPTH OF 3 INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. ON SLOPING LAND, THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE CONTOUR.

INSTALLATION IN CHANNELS

1. SOD STRIPS IN WATERWAYS SHOULD BE LAID PERPENDICULAR TO THE DIRECTION OF FLOW. CARE SHOULD BE TAKEN TO BUTT ENDS OF STRIPS TIGHTLY (SEE FIGURE ABOVE).
2. AFTER ROLLING OR TAMPING, SOD SHOULD BE PEGGED OR STAPLED TO RESIST WASHOUT DURING THE ESTABLISHMENT PERIOD. MESH OR OTHER NETTING MAY BE PEGGED OVER THE SOD FOR EXTRA PROTECTION IN CRITICAL AREAS.

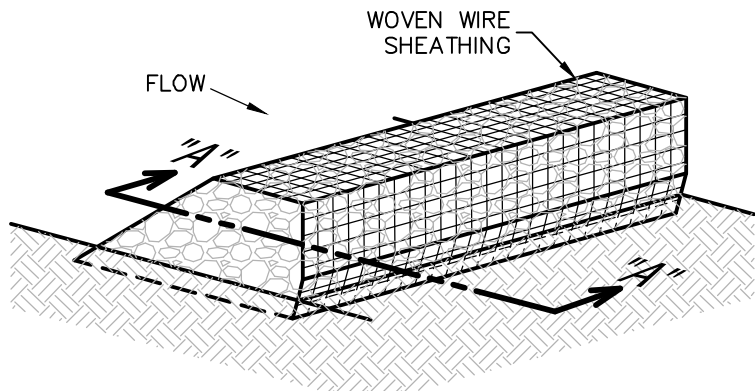
SOD INSTALLATION DETAIL

NOT-TO-SCALE

COMMON TROUBLE POINTS

1. INADEQUATE RUNOFF CONTROL-SEDIMENT WASHES ONTO PUBLIC ROAD.
  2. STONE TOO SMALL OR GEOTEXTILE FABRIC ABSENT, RESULTS IN MUDDY CONDITION AS STONE IS PRESSED INTO SOIL.
  3. PAD TOO SHORT FOR HEAVY CONSTRUCTION TRAFFIC-EXTEND PAD BEYOND THE MINIMUM 50-FOOT LENGTH AS NECESSARY.
  4. PAD NOT FLARED SUFFICIENTLY AT ROAD SURFACE, RESULTS IN MUD BEING TRACKED ON TO ROAD AND POSSIBLE DAMAGE TO ROAD.
  5. UNSTABLE FOUNDATION - USE GEOTEXTILE FABRIC UNDER PAD AND/OR IMPROVE FOUNDATION DRAINAGE.
- INSPECTION AND MAINTENANCE GUIDELINES**
1. THE ENTRANCE SHOULD BE MAINTAINED IN A CONDITION, WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
  2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY SHOULD BE REMOVED IMMEDIATELY BY CONTRACTOR.
  3. WHEN NECESSARY, WHEELS SHOULD BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
  4. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
  5. ALL SEDIMENT SHOULD BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATER COURSE BY USING APPROVED METHODS.

ISOMETRIC PLAN VIEW



ROCK BERMS

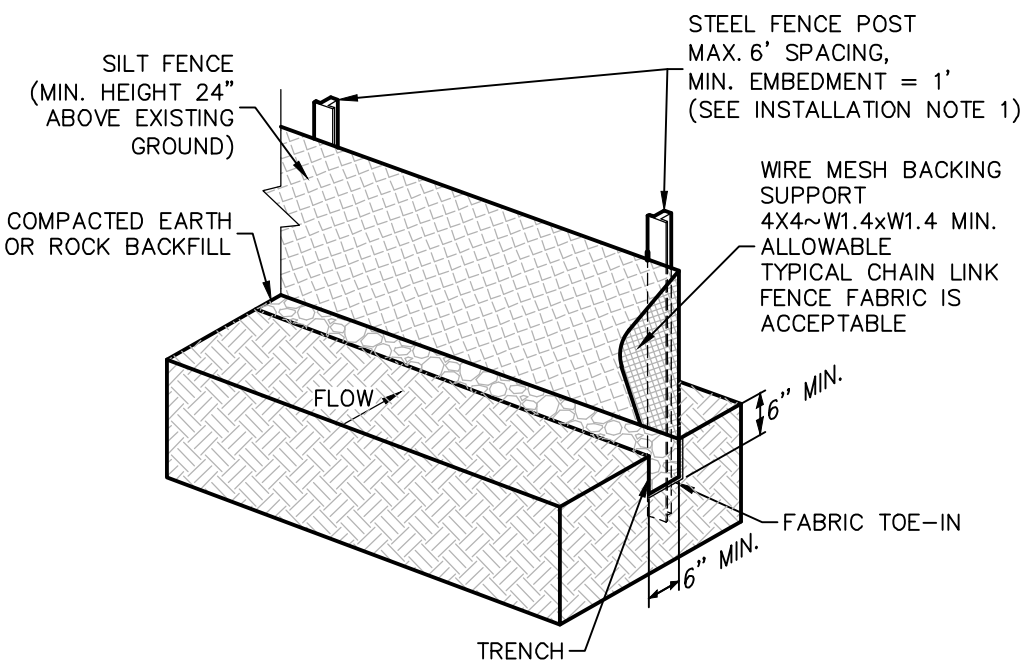
THE PURPOSE OF A ROCK BERM IS TO SERVE AS A CHECK DAM IN AREAS OF CONCENTRATED FLOW, TO INTERCEPT SEDIMENT-LADEN RUNOFF, DETAIN THE SEDIMENT AND RELEASE THE WATER IN SHEET FLOW. THE ROCK BERM SHOULD BE USED WHEN THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 5 ACRES. ROCK BERMS ARE USED IN AREAS WHERE THE VOLUME OF RUNOFF IS TOO GREAT FOR A SILT FENCE TO CONTAIN. THEY ARE LESS EFFECTIVE FOR SEDIMENT REMOVAL THAN SILT FENCES, PARTICULARLY FOR FINE PARTICLES, BUT ARE ABLE TO WITHSTAND HIGHER FLOWS THAN A SILT FENCE. AS SUCH, ROCK BERMS ARE OFTEN USED IN AREAS OF CHANNEL FLOWS (DITCHES, GULLIES, ETC.). ROCK BERMS ARE MOST EFFECTIVE AT REDUCING BED LOAD IN CHANNELS AND SHOULD NOT BE SUBSTITUTED FOR OTHER EROSION AND SEDIMENT CONTROL MEASURES FARTHER UP THE WATERSHED.

INSPECTION AND MAINTENANCE GUIDELINES

1. INSPECTION SHOULD BE MADE WEEKLY AND AFTER EACH RAINFALL BY THE RESPONSIBLE PARTY. FOR INSTALLATIONS IN STREAMBEDS, ADDITIONAL DAILY INSPECTIONS SHOULD BE MADE.
2. REMOVE SEDIMENT AND OTHER DEBRIS WHEN BUILDUP REACHES 6 INCHES AND DISPOSE OF THE ACCUMULATED SILT IN AN APPROVED MANNER THAT WILL NOT CAUSE ANY ADDITIONAL SILTATION.
3. REPAIR ANY LOOSE WIRE SHEATHING.
4. THE BERM SHOULD BE RESHAPED AS NEEDED DURING INSPECTION.
5. THE BERM SHOULD BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION ALONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
6. THE ROCK BERM SHOULD BE LEFT IN PLACE UNTIL ALL UPSTREAM AREAS ARE STABILIZED AND ACCUMULATED SILT REMOVED.

ROCK BERM DETAIL

NOT-TO-SCALE



ISOMETRIC PLAN VIEW

SILT FENCE

A SILT FENCE IS A BARRIER CONSISTING OF GEOTEXTILE FABRIC SUPPORTED BY METAL POSTS TO PREVENT SOIL AND SEDIMENT LOSS FROM A SITE. WHEN PROPERLY USED, SILT FENCES CAN BE HIGHLY EFFECTIVE AT CONTROLLING SEDIMENT FROM DISTURBED AREAS. THEY CAUSE RUNOFF TO POND, ALLOWING HEAVIER SOLIDS TO SETTLE OUT. IF NOT PROPERLY INSTALLED, SILT FENCES ARE NOT LIKELY TO BE EFFECTIVE.

THE PURPOSE OF A SILT FENCE IS TO INTERCEPT AND DETAIN WATER-BORN SEDIMENT FROM UNPROTECTED AREAS OF A LIMITED EXTENT. SILT FENCE IS USED DURING THE PERIOD OF CONSTRUCTION NEAR THE PERIMETER OF A DISTURBED AREA TO INTERCEPT SEDIMENT WHILE ALLOWING WATER TO PERCOLATE THROUGH. THIS FENCE SHOULD REMAIN IN PLACE UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. SILT FENCE SHOULD NOT BE USED WHERE THERE IS A CONCENTRATION OF WATER IN A CHANNEL OR DRAINAGE WAY. IF CONCENTRATED FLOW OCCURS AFTER INSTALLATION, CORRECTIVE ACTION MUST BE TAKEN SUCH AS PLACING A ROCK BERM IN THE AREAS OF CONCENTRATED FLOW.

SILT FENCING WITHIN THE SITE MAY BE TEMPORARILY MOVED DURING THE DAY TO ALLOW CONSTRUCTION ACTIVITY PROVIDED IT IS REPLACED AND PROPERLY ANCHORED TO THE GROUND AT THE END OF THE DAY. SILT FENCES ON THE PERIMETER OF THE SITE OR AROUND DRAINAGE WAYS SHOULD NOT BE MOVED AT ANY TIME.

MATERIALS

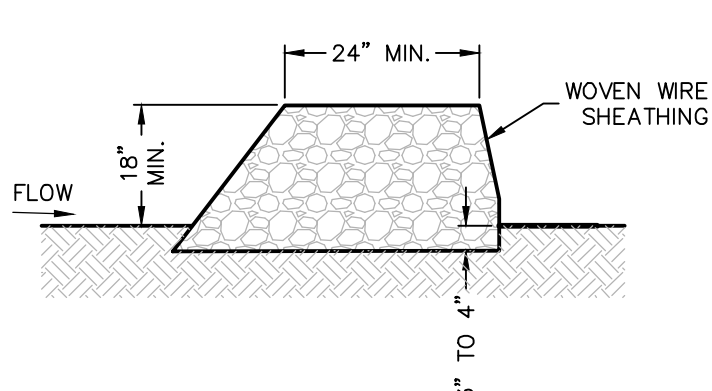
1. SILT FENCE MATERIAL SHOULD BE POLYPROPYLENE, POLYETHYLENE, OR POLYAMIDE WOVEN OR NONWOVEN FABRIC. THE FABRIC SHOULD BE 36 INCHES, WITH A MINIMUM UNIT WEIGHT OF 4.5 OZ/YD, MULLEN BURST STRENGTH EXCEEDING 190 LB/IN<sup>2</sup>, ULTRAVIOLET STABILITY EXCEEDING 70%, AND MINIMUM APPARENT OPENING SIZE OF U.S. SIEVE NUMBER 30.
2. FENCE POSTS SHOULD BE MADE OF HOT ROLLED STEEL, AT LEAST 4 FEET LONG WITH TEE OR Y-BAR CROSS SECTION, SURFACE PAINTED OR GALVANIZED, MINIMUM WEIGHT 1.25 LB/FT, AND BRINELL HARDNESS EXCEEDING 140.
3. WOVEN WIRE BACKING TO SUPPORT THE FABRIC SHOULD BE GALVANIZED 2" X 4" WELDED WIRE, 12 GAUGE MINIMUM.

INSTALLATION

1. STEEL POSTS, WHICH SUPPORT THE SILT FENCE, SHOULD BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POSTS MUST BE EMBEDDED A MINIMUM OF 1-FOOT DEEP AND SPACED NOT MORE THAN 8 FEET ON CENTER, WHERE WATER CONCENTRATES, THE MAXIMUM SPACING SHOULD BE 6 FEET.
2. LAY OUT FENCING DOWN-SLOPE OF DISTURBED AREA, FOLLOWING THE CONTOUR AS CLOSELY AS POSSIBLE. THE FENCE SHOULD BE SITED SO THAT THE MAXIMUM DRAINAGE AREA IS ¼ ACRE/100 FEET OF FENCE.

SILT FENCE DETAIL

NOT-TO-SCALE



SECTION "A-A"

MATERIALS

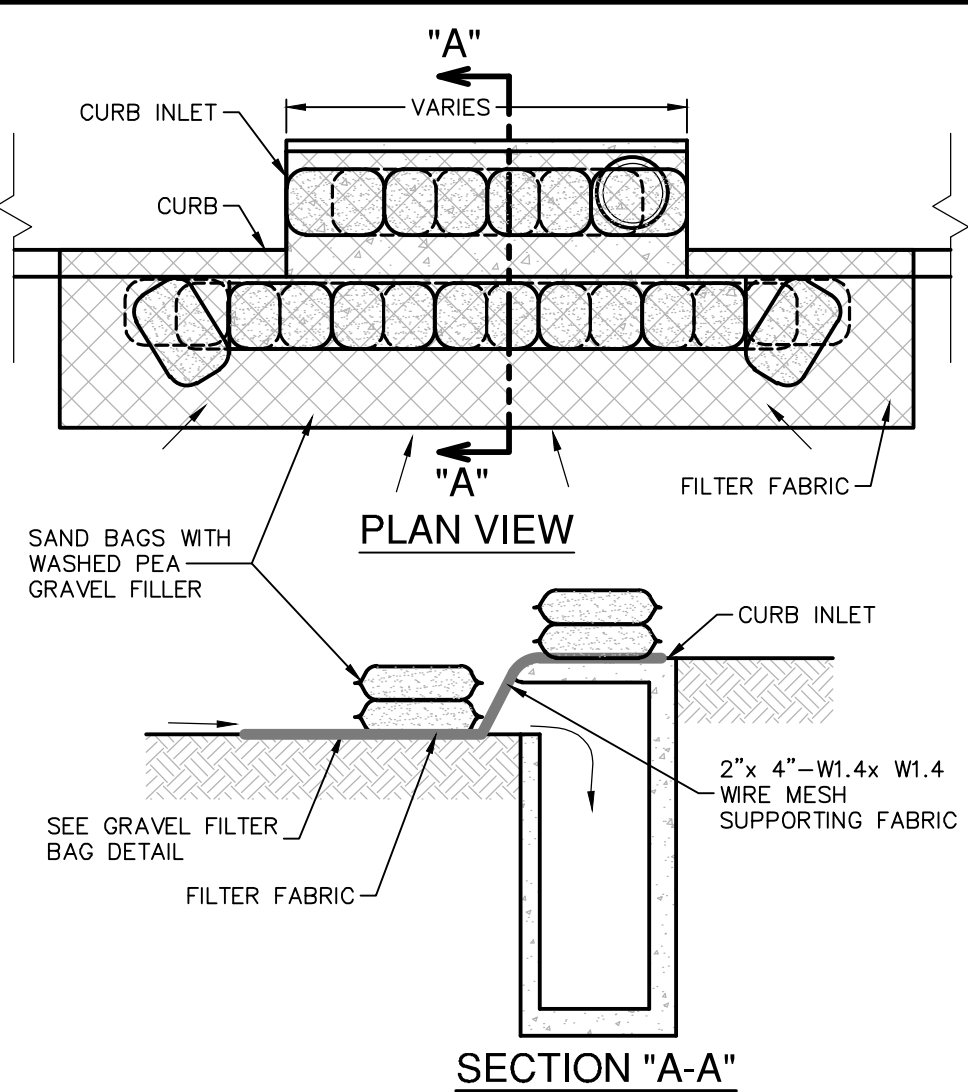
1. THE BERM STRUCTURE SHOULD BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM OPENING OF 1 INCH AND A MINIMUM WIRE DIAMETER OF 20 GAUGE GALVANIZED AND SHOULD BE SECURED WITH SHOAT RINGS.
2. CLEAN, OPEN GRADED 3-INCH TO 5-INCH DIAMETER ROCK SHOULD BE USED, EXCEPT IN AREAS WHERE HIGH VELOCITIES OR LARGE VOLUMES OF FLOW ARE EXPECTED, WHERE 5-INCH TO 8-INCH DIAMETER ROCKS MAY BE USED.

INSTALLATION

1. LAY OUT THE WOVEN WIRE SHEATHING PERPENDICULAR TO THE FLOW LINE. THE SHEATHING SHOULD BE 20 GAUGE WOVEN WIRE MESH WITH 1 INCH OPENINGS.
2. BERM SHOULD HAVE A TOP WIDTH OF 2 FEET MINIMUM WITH SIDE SLOPES BEING 2:1 (H:V) OR FLATTER.
3. PLACE THE ROCK ALONG THE SHEATHING AS SHOWN IN THE DIAGRAM TO A HEIGHT NOT LESS THAN 18".
4. WRAP THE WIRE SHEATHING AROUND THE ROCK AND SECURE WITH TIE WIRE SO THAT THE ENDS OF THE SHEATHING OVERLAP AT LEAST 2 INCHES, AND THE BERM RETAINS ITS SHAPE WHEN WALKED UPON.
5. BERM SHOULD BE BUILT ALONG THE CONTOUR AT ZERO PERCENT GRADE OR AS NEAR AS POSSIBLE.
6. THE ENDS OF THE BERM SHOULD BE TIED INTO EXISTING UPSLOPE GRADE AND THE BERM SHOULD BE BURIED IN A TRENCH APPROXIMATELY 3 TO 4 INCHES DEEP TO PREVENT FAILURE OF THE CONTROL.

COMMON TROUBLE POINTS

1. INSUFFICIENT BERM HEIGHT OR LENGTH (RUNOFF QUICKLY ESCAPES OVER THE TOP OR AROUND THE SIDES OF BERM).
2. BERM NOT INSTALLED PERPENDICULAR TO FLOW LINE (RUNOFF ESCAPING AROUND ONE SIDE).

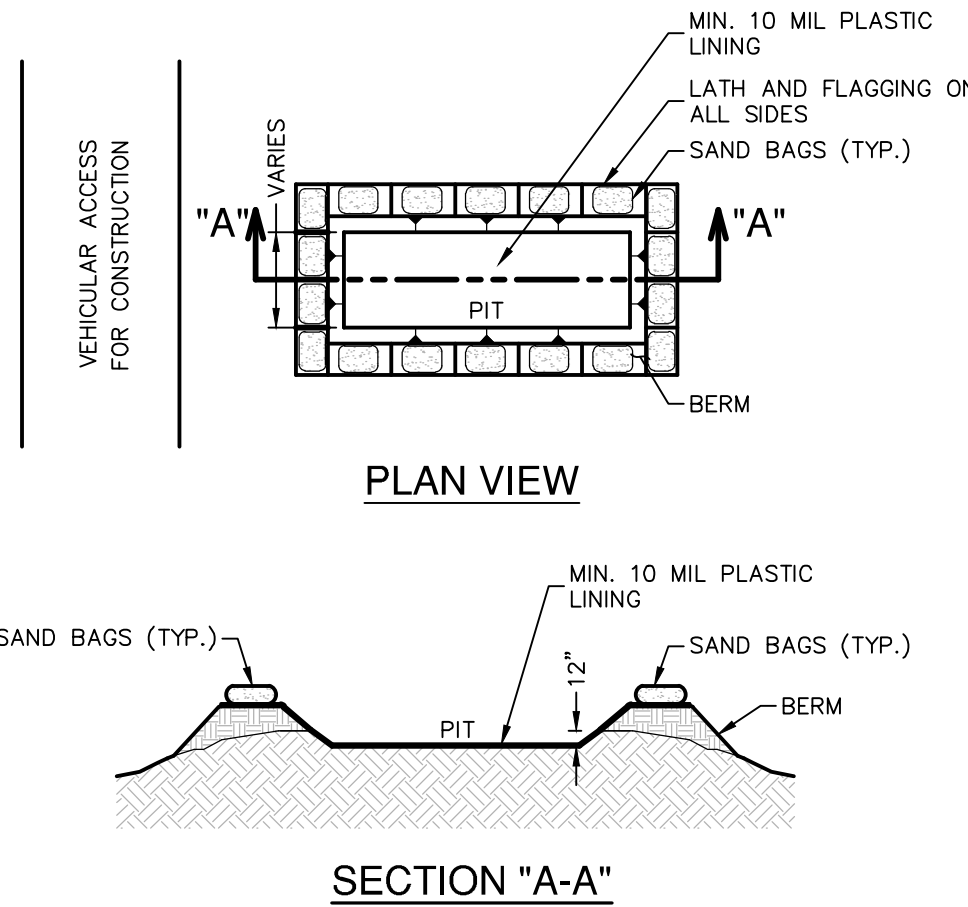


GENERAL NOTES

1. CONTRACTOR TO INSTALL 2"x4"-W1.4xW1.4 WIRE MESH SUPPORTING FILTER FABRIC OVER THE INLET OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CUPS OR WIRE TIES AT THIS LOCATION. SAND BAGS FILLED WITH WASHED PEA GRAVEL SHOULD BE PLACED ON TOP OF WIRE MESH ON TOP OF THE INLET AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SANDBAGS FILLED WITH WASHED PEA GRAVEL SHOULD ALSO BE PLACED ALONG THE GUTTER AS SHOWN ON THIS DETAIL TO HOLD WIRE MESH IN PLACE. SAND BAGS TO BE STACKED TO FORM A CONTINUOUS BARRIER AROUND INLETS.
2. THE BAGS SHOULD BE TIGHTLY ABUTTED AGAINST EACH OTHER TO PREVENT RUNOFF FROM FLOWING BETWEEN THE BAGS.
3. CHECK PLACEMENT OF DEVICE TO PREVENT GAPS BETWEEN DEVICE AND CURB.
4. INSPECT FILTER FABRIC AND PATCH OR REPLACE IF TORN OR MISSING.
5. STRUCTURES SHOULD BE REMOVED AND THE AREA STABILIZED ONLY AFTER THE REMAINING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BAGGED GRAVEL CURB INLET PROTECTION DETAIL

NOT-TO-SCALE



1. DETAIL ABOVE ILLUSTRATES MINIMUM DIMENSIONS. PIT CAN BE INCREASED IN SIZE DEPENDING ON EXPECTED FREQUENCY OF USE.
2. WASHOUT PIT SHALL BE LOCATED IN AN AREA EASILY ACCESSIBLE TO CONSTRUCTION TRAFFIC.
3. WASHOUT PIT SHALL NOT BE LOCATED IN AREAS SUBJECT TO INUNDATION FROM STORM WATER RUNOFF.
4. LOCATE WASHOUT AREA AT LEAST 50 FEET FROM SENSITIVE FEATURES, STORM DRAINS, OPEN DITCHES OR WATER BODIES.
5. TEMPORARY CONCRETE WASHOUT FACILITY SHOULD BE CONSTRUCTED WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.

MATERIALS

PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL IN POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.

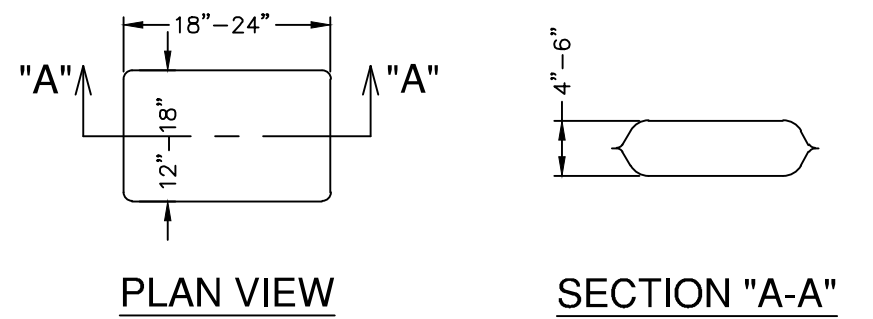
MAINTENANCE

1. WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF.
2. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.
3. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCES CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

CONCRETE TRUCK WASHOUT

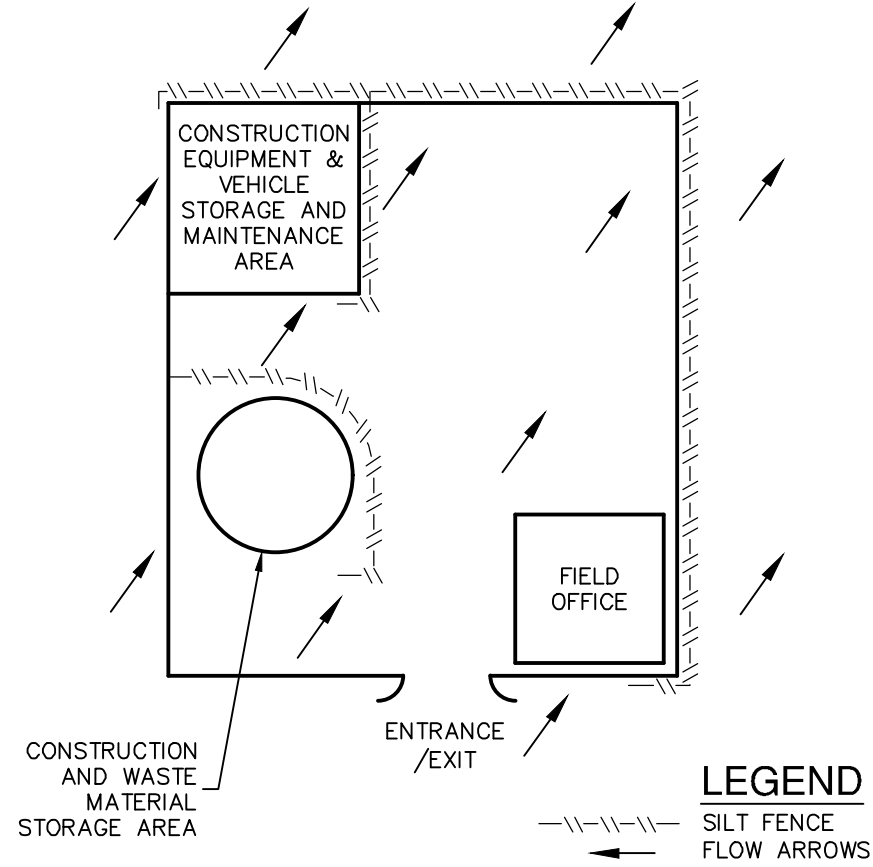
PIT DETAIL

NOT-TO-SCALE



GRAVEL FILTER BAG DETAIL

NOT-TO-SCALE



CONSTRUCTION STAGING AREA

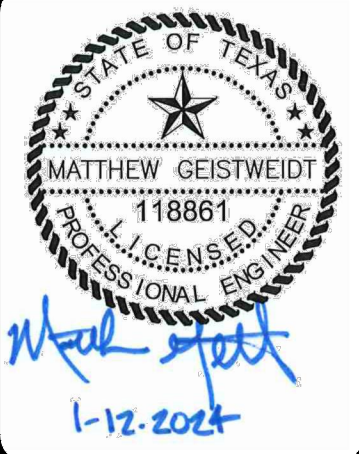
NOT-TO-SCALE

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 3

DATE	
NO.	
REVISION	



**PAPE-DAWSON ENGINEERS**

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

BRE PHASE 5 - COLLECTOR PHASE 2A

SAN ANTONIO, TEXAS

STORM WATER POLLUTION PREVENTION DETAILS

PLAT NO.	22-11800681
JOB NO.	12361-09
DATE	NOVEMBER 2023
DESIGNER	EDK
CHECKED	MG
DRAWN	NA
SHEET	C8.10