

STATE OF TEXAS

DEPARTMENT OF TRANSPORTATION

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.	
6		1	
STATE	STATE DIST.	COUNTY	
TEXAS	ATL	TITUS	
CONT.	SECT.	JOB	HIGHWAY NO.
0610	03	095	IH 30

INDEX OF SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS

PLANS OF PROPOSED STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT
PROJECT NO.
CSJ: 0610-03-095
TITUS COUNTY
IH 30

LIMITS FROM: 1.6 MI W OF US 67, WB
TO: 1.0 MI W OF US 67, WB

NET LENGTH OF ROADWAY = 6,859.19 FT = 1.299 MI
NET LENGTH OF BRIDGE = 0.00 FT = 0.000 MI
NET LENGTH OF PROJECT = 6,859.19 FT = 1.299 MI

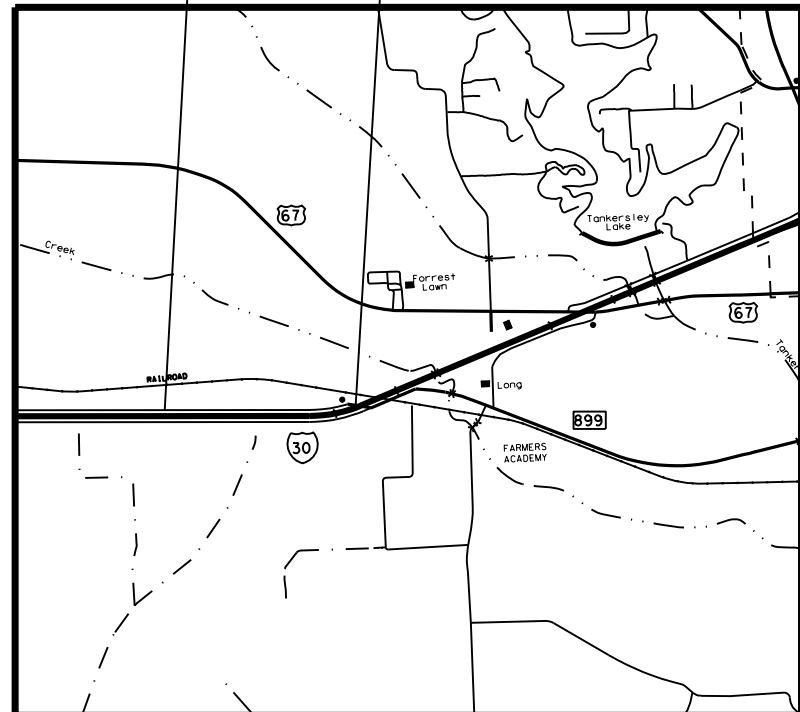
RAMP DESIGN SPEED = 50 MPH
CMV STATION DESIGN SPEED = 15 MPH
AREA OF DISTURBED SOIL = 17.76 AC
ADT(2022) = 29,892
ADT(2042) = 53,208
ACCESSIBILITY STANDARDS = PROWAG

REGISTERED ACCESSIBILITY SPECIALIST INSPECTION REQUIRED
TDLR NO.

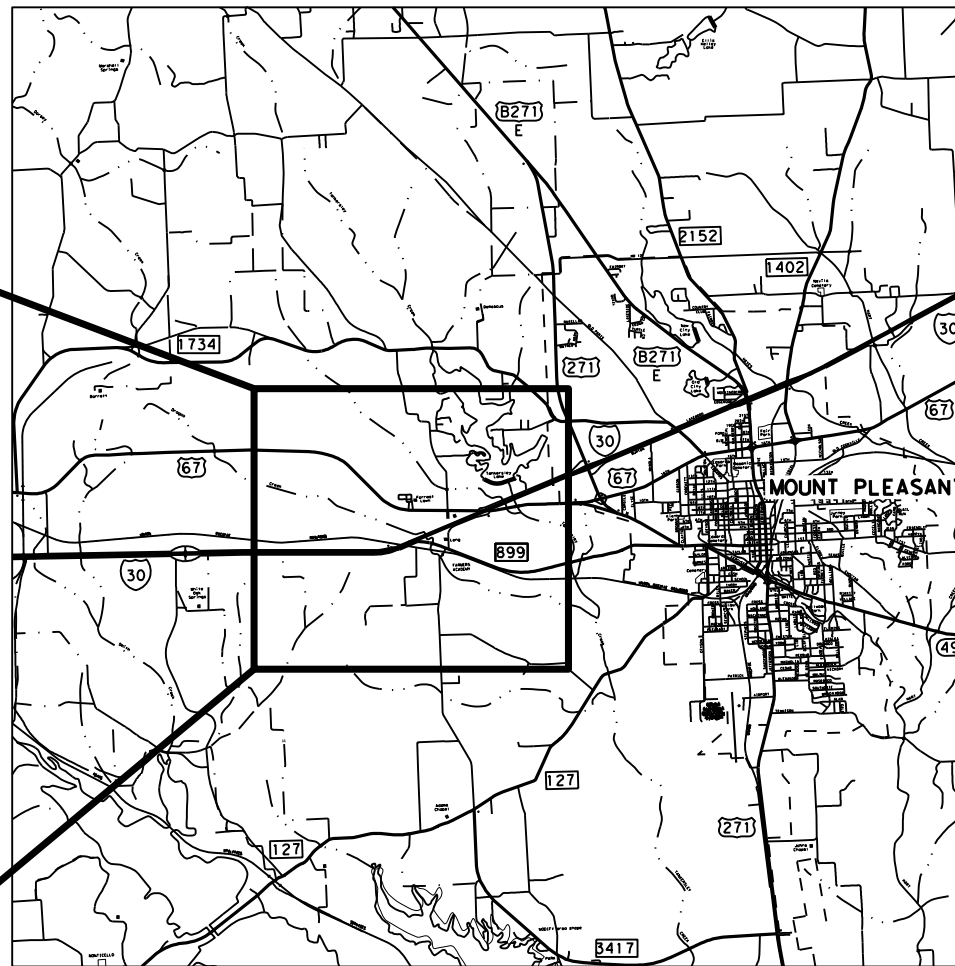
FOR WORK CONSISTING OF CONSTRUCTING WEIGH STATION AND RAMPS

BEGIN PROJECT
CSJ: 0610-03-095
STA 217+45.86
48.52' LT
REF MRK: 157+0.014

END PROJECT
CSJ: 0610-03-095
STA 286+05.05
28.10' LT
REF MRK: 158+0.465



1.25" = 1 MILE



1" = 2 MILES

THE CONTRACTOR SHALL MAKE HIS OWN INVESTIGATIONS AND ARRANGEMENTS FOR DELIVERY OF MATERIALS.

CONSTRUCTION SIGN AND BARRICADE PLACEMENT SHALL BE IN ACCORDANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AS SHOWN ON THE BC STANDARDS, AND AS SPECIFIED HEREIN OR AS DIRECTED.

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 2023)

EXCEPTIONS: NONE
EQUATIONS: NONE
R. R. CROSSINGS: NONE

90% PLANS

LETTING DATE: _____
DATE CONTRACTOR BEGAN WORK: _____
DATE WORK WAS ACCEPTED: _____
FINAL CONTRACT COST: \$ _____
CONTRACTOR: _____

FINAL PLANS STATEMENT:

THE CONSTRUCTION WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS.

P. E. _____
DATE _____

AREA ENGINEER _____

SUBMITTED FOR LETTING

PROJECT MANAGER

RECOMMENDED FOR LETTING

DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

APPROVED FOR LETTING

DISTRICT ENGINEER

FILE LOCATION

http://www.txdot.gov/inside-txdot/district/san-antonio/specinfo.html

COUNTY: TITUS PROJ. NO. 0610-03-095
HWY. NO. IH 30 LETTING DATE 01/01/2028
DATE ACCEPTED

LEVELS DISPLAYED	1
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Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\General\1163504Index01.dgn

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1	TITLE SHEET
2	INDEX OF SHEETS
3	EXISTING TYPICAL SECTIONS
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8	GENERAL NOTES
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10-16	SUMMARY OF QUANTITIES
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SHEET NO.	DESCRIPTION
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THE STANDARD SHEETS SPECIFICALLY SHOWN WITH PRECEDING (*) HAVE BEEN SELECTED BY MY OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024

REV. NO.	DATE	DESCRIPTION	BY

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

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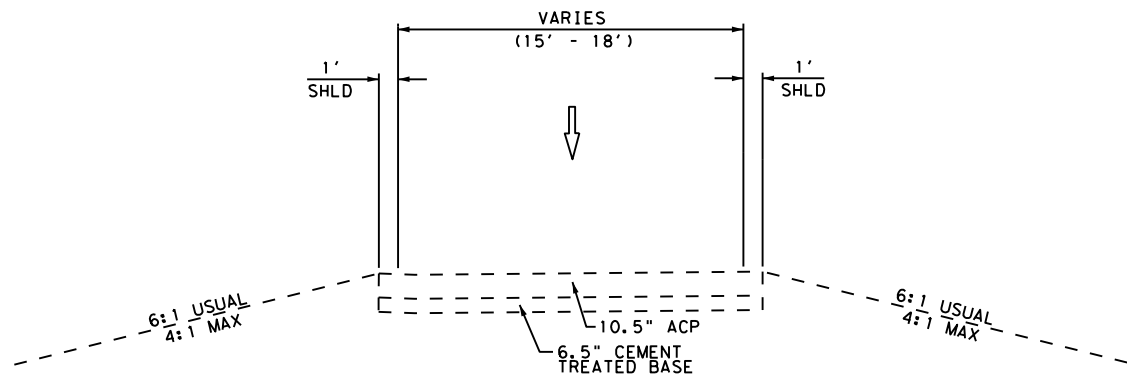
WB IH 30 CMV STATION

INDEX OF SHEETS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	2

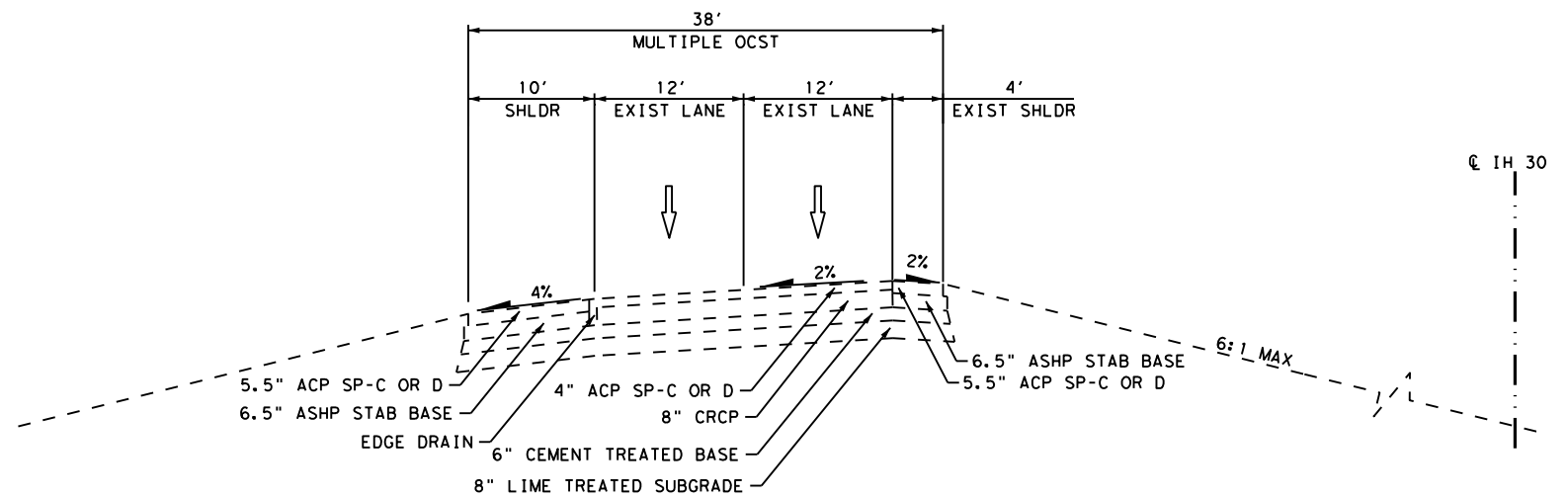
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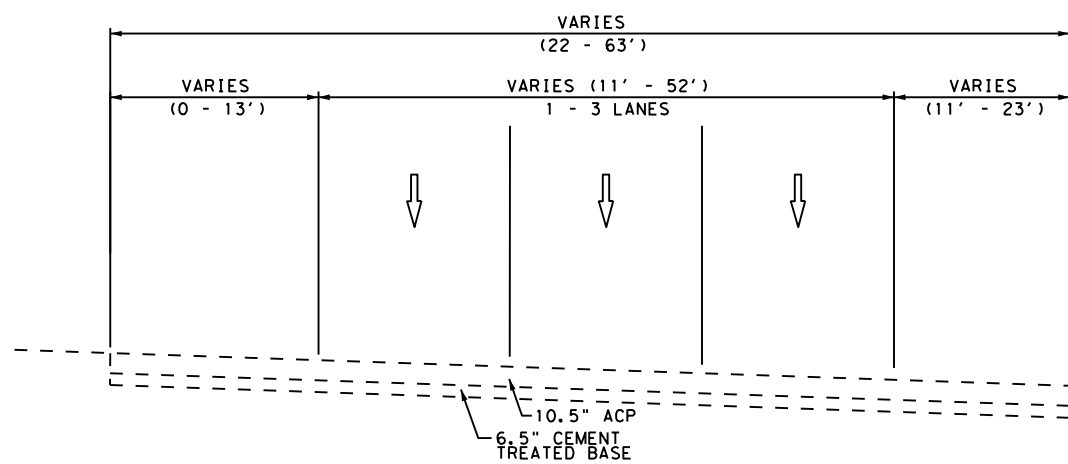
**EXISTING TYPICAL SECTION
RAMP SECTION**
NTS

STA 26+83 TO STA 32+00
STA 37+36 TO STA 42+97
STA 54+78 TO STA 56+71



**EXISTING TYPICAL SECTION
WB IH 30**
NTS

STA 6+45 TO STA 75+00



**EXISTING TYPICAL SECTION
CMV STATION**
NTS

STA 32+00 TO STA 37+36
STA 42+97 TO STA 54+71

DESIGN

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ENGINEER: STEVEN J. TATE
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APPROVAL

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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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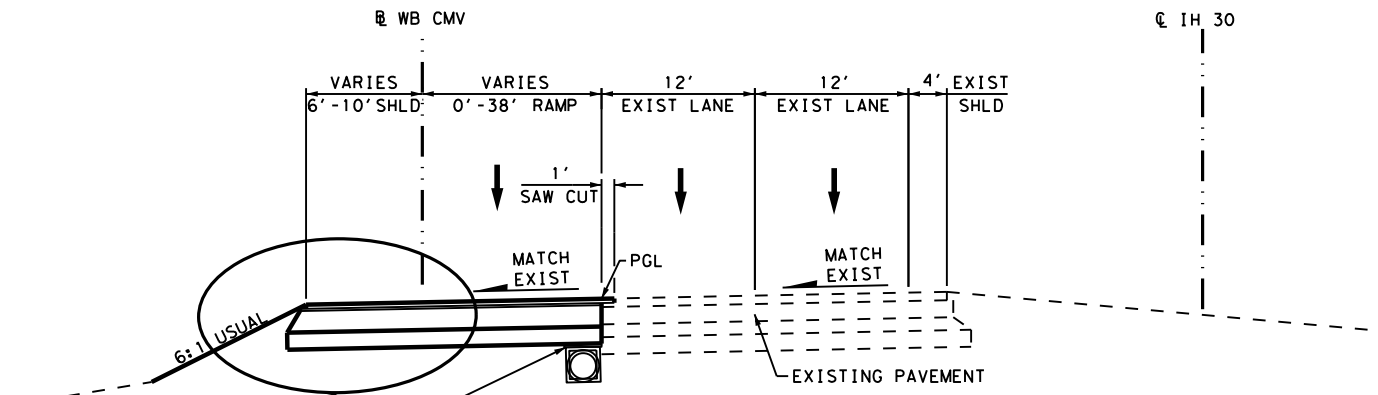
**WB IH 30 CMV STATION
EXISTING
TYPICAL SECTIONS**

SHEET 1 OF 1

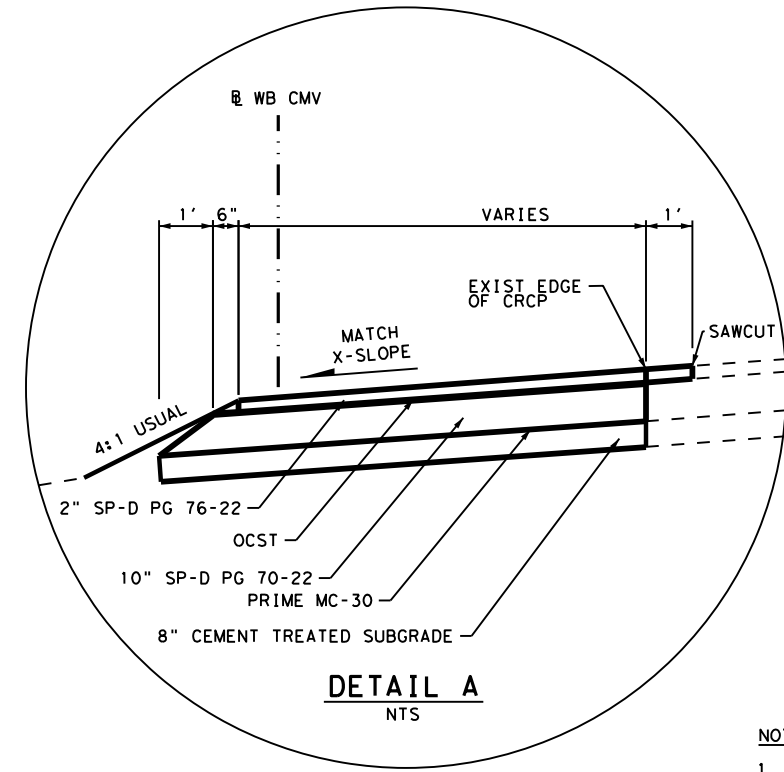
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DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	ATL	TITUS	0610	03	095	3

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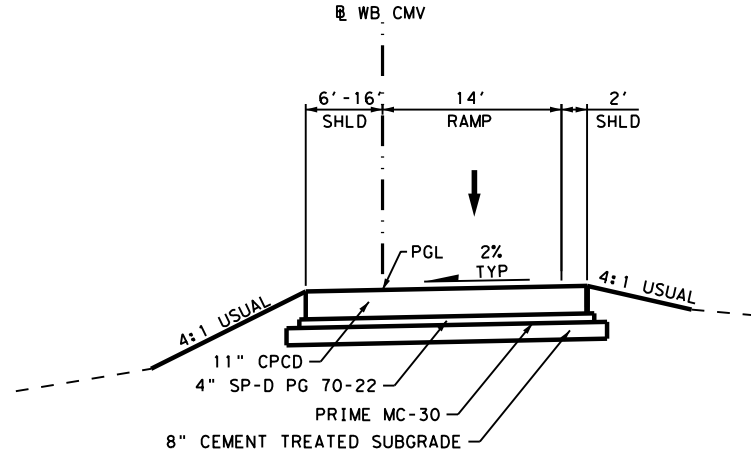


**PROPOSED TYPICAL SECTION
IH 30 WIDENING**
NTS
STA 6+45 TO STA 22+26
STA 64+88 TO STA 74+82



DETAIL A
NTS

- NOTES**
1. SP-D SHALL BE APPLIED IN 2" LIFTS.
 2. TACK COAT SHALL BE APPLIED IN BETWEEN LIFTS OF HMA.
 3. EOT=EDGE OF TRAVEL, I.E. PAINT STRIPE.



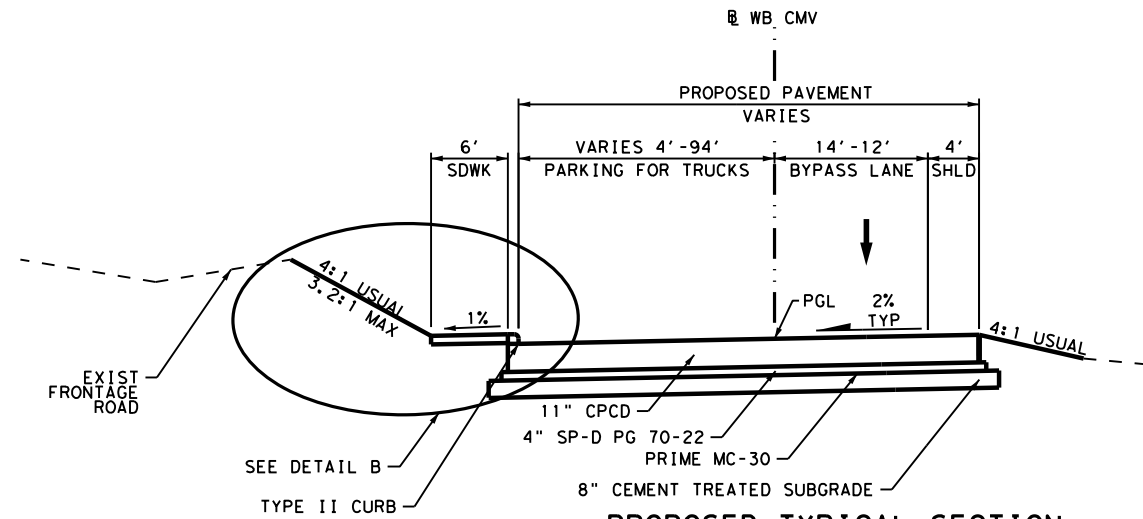
**PROPOSED TYPICAL SECTION
RAMP SECTION**
NTS
STA 22+26 TO STA 27+05
STA 61+93 TO STA 64+88

DESIGN

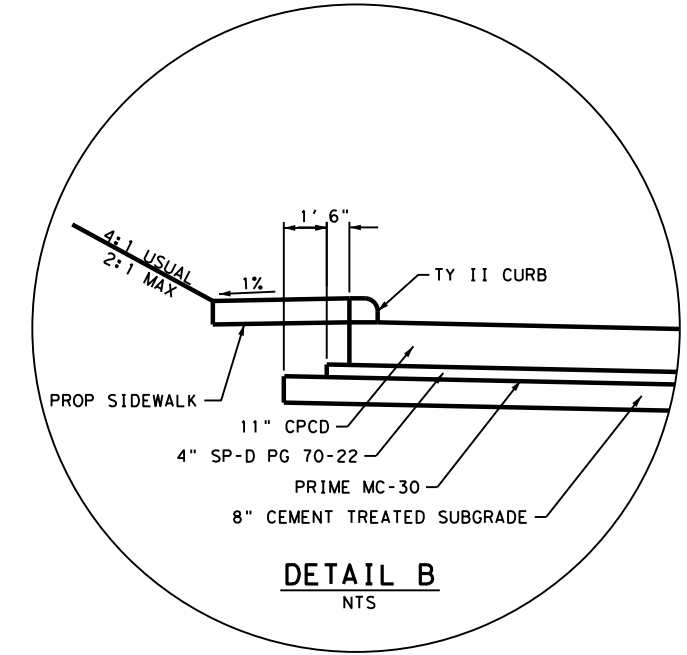
INTERIM REVIEW
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ENGINEER: STEVEN J. TATE
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ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/4/2024



**PROPOSED TYPICAL SECTION
TRUCK PARKING SECTION**
NTS
STA 27+05 TO STA 39+30



DETAIL B
NTS

NOTE: PROPOSED CURB FROM STA 28+51 TO STA 29+20.
PROPOSED SIDEWALK AND CURB FROM APPROXIMATELY STA 29+20 TO STA 54+59.

REV. NO.	DATE	DESCRIPTION	BY

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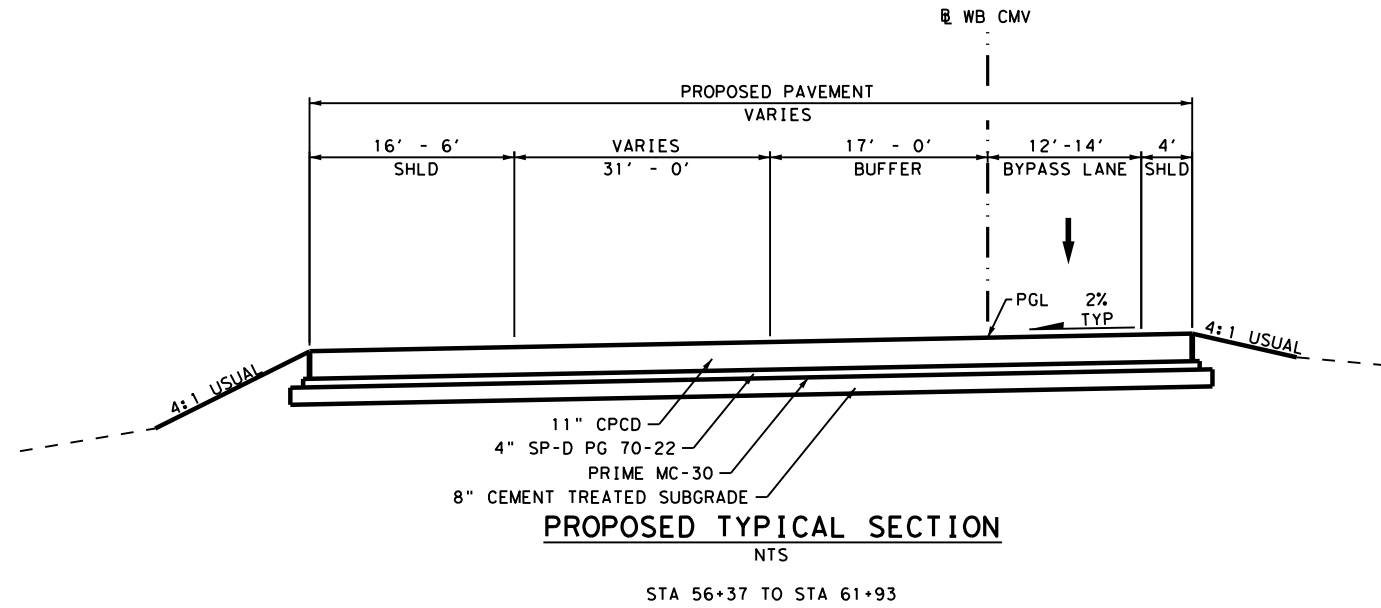
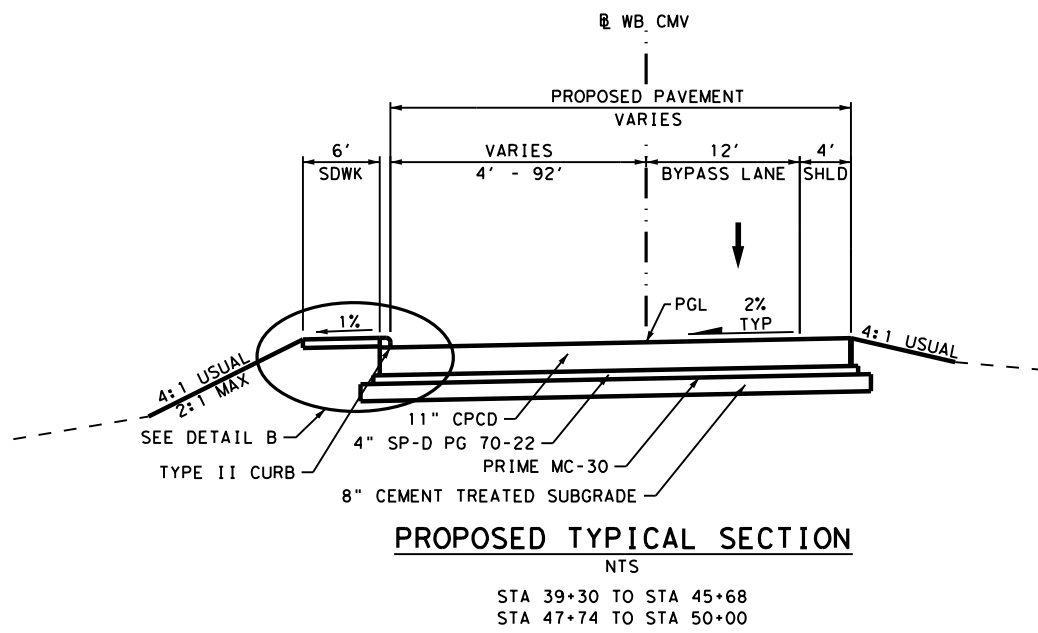
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**WB IH 30 CMV STATION
PROPOSED
TYPICAL SECTIONS**

SHEET 1 OF 4

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	ATL	TITUS	0610	03
			095	4

Plotted on: 6/4/2024



NOTES

1. SP-D SHALL BE APPLIED IN 2" LIFTS.
2. TACK COAT SHALL BE APPLIED IN BETWEEN LIFTS OF HMA.
3. EOT=EDGE OF TRAVEL, I.E. PAINT STRIPE.

DESIGN

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REV. NO.	DATE	DESCRIPTION	BY

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 #1002800

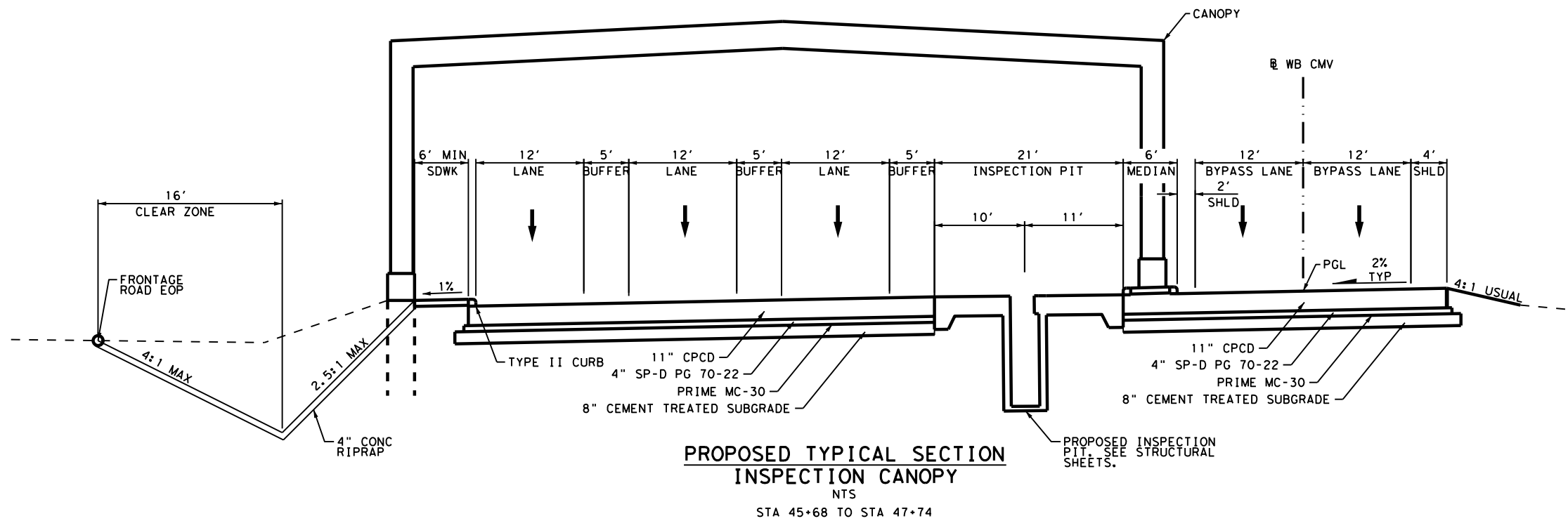
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WB IH 30 CMV STATION
PROPOSED TYPICAL SECTIONS

SHEET 2 OF 4

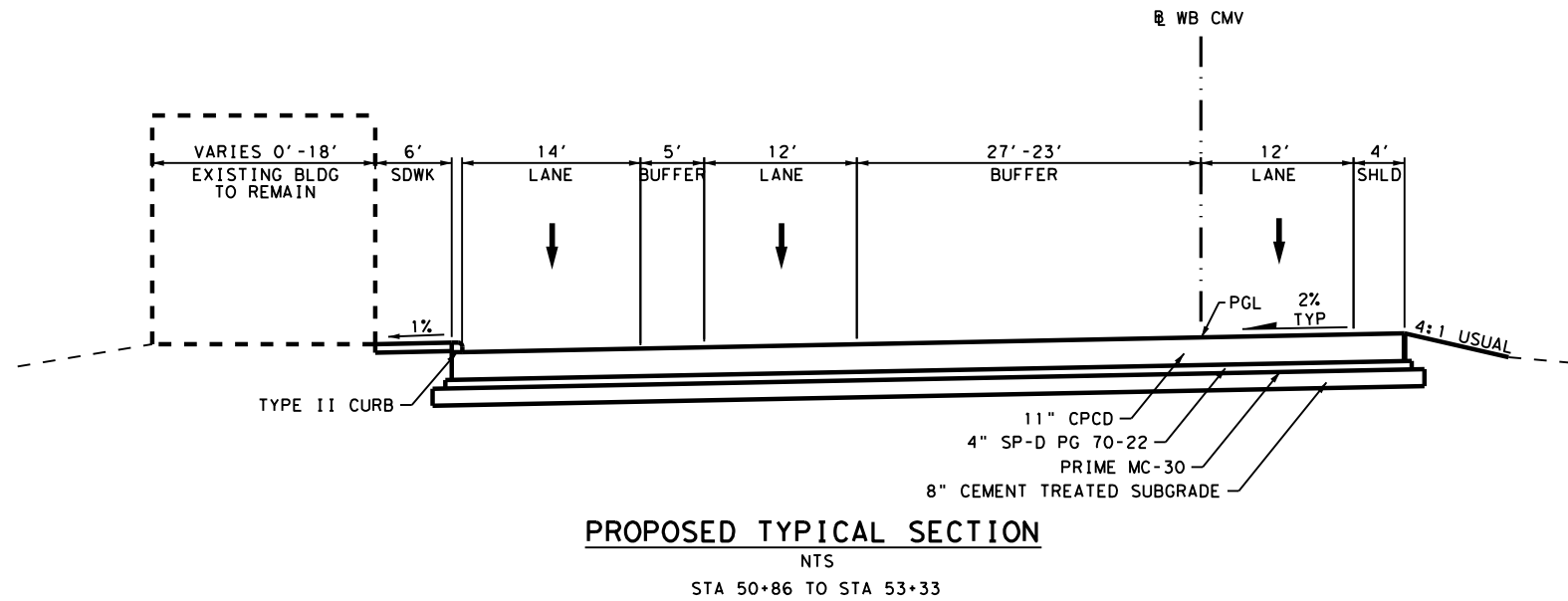
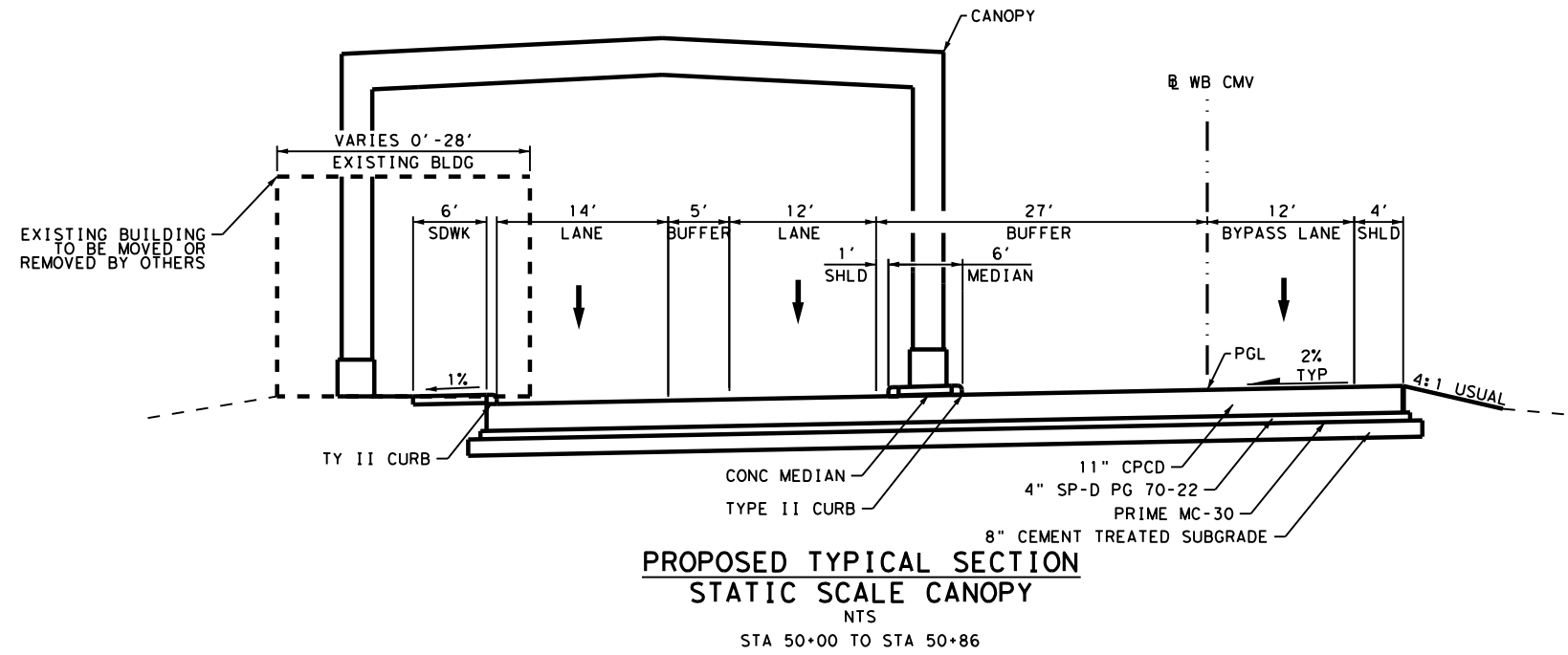
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CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	5

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1. SP-D SHALL BE APPLIED IN 2" LIFTS.
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SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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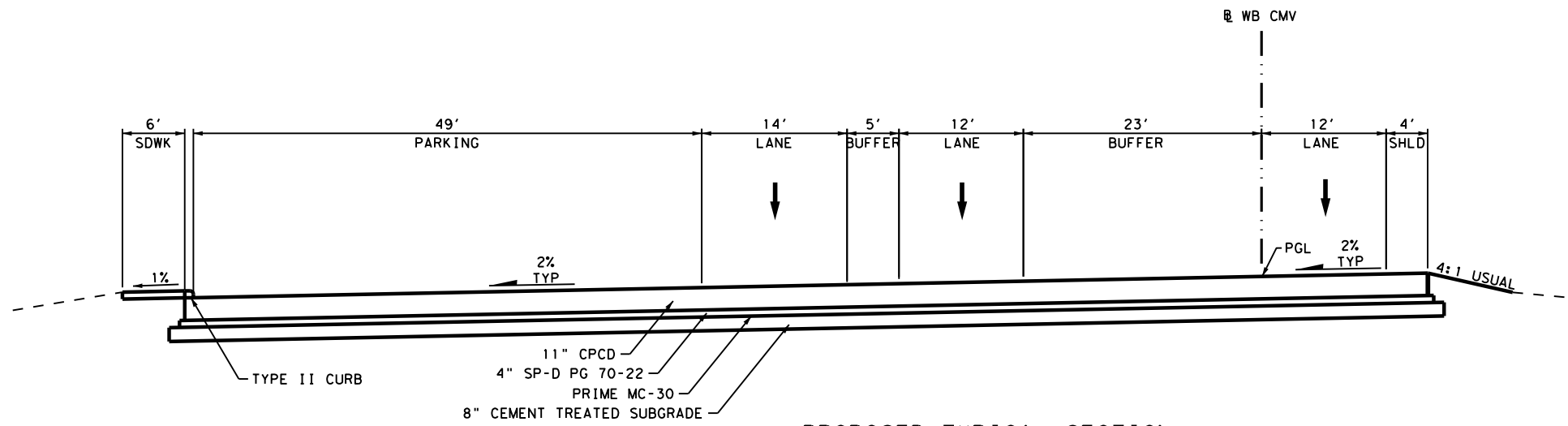

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WB IH 30 CMV STATION
PROPOSED
TYPICAL SECTIONS

SHEET 3 OF 4

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CHK:	6	TEXAS		IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK:	ATL	TITUS	0610	03
DWG:			095	6

Plotted on: 6/4/2024



**PROPOSED TYPICAL SECTION
DPS VEHICLE PARKING SECTION**
NTS
STA 53+33 TO STA 54+84

NOTES

1. SP-D SHALL BE APPLIED IN 2" LIFTS.
2. TACK COAT SHALL BE APPLIED IN BETWEEN LIFTS OF HMA.
3. EOT=EDGE OF TRAVEL, I.E. PAINT STRIPE.

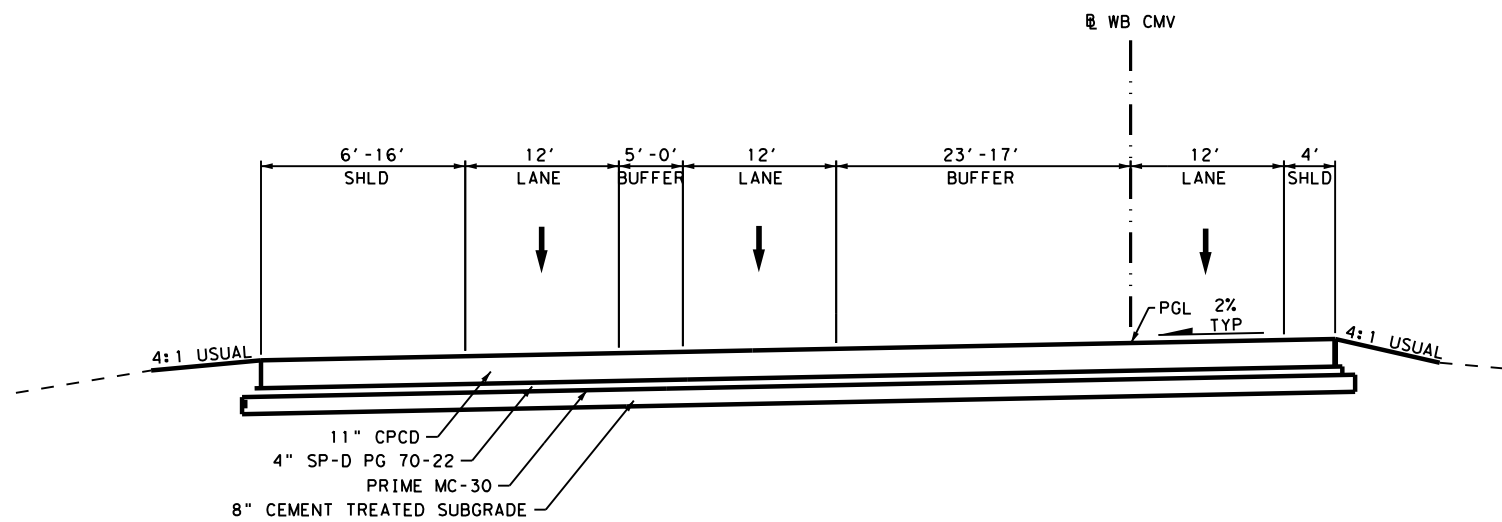
DESIGN

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ENGINEER: JAMES A. LUTZ
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PROPOSED TYPICAL SECTION
NTS
STA 54+84 TO STA 56+37

REV. NO.	DATE	DESCRIPTION	BY



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 #1002800





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**WB IH 30 CMV STATION
PROPOSED
TYPICAL SECTIONS**

SHEET 4 OF 4

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	7



Plotted on: 6/4/2024

Design Filename: P:\116\35\04\Design\Civil\General\1163504GenNotes.dgn

REV. NO.	DATE	DESCRIPTION	BY			
 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						
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WB IH 30 CMV STATION GENERAL NOTES						
DGN:	FED. NO. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	8

TO BE COMPLETED AT FINAL PLANS

REV. NO.	DATE	DESCRIPTION	BY

 <p>PAPE-DAWSON ENGINEERS</p> <p>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</p>						
 <p>Texas Department of Transportation ©2024</p>						
WB IH 30 CMV STATION ESTIMATE & QUANTITY						
DGN:	FED. NO. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	9


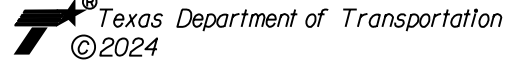
SUMMARY OF TCP QUANTITIES

ITEM	0512	0512	0512	0545	0545	0545	0662	0677	6079
DESC	6001	6025	6049	6003	6005	6019	6057	6002	6003
TCP	PORT CTB (FUR & INST) (SGL SLOPE) (TY 1)	PORT CTB (MOVE) (SGL SLP) (TY 1)	PORT CTB (REMOVE) (SGL SLP) (TY 1)	CRASH CUSH ATTEN (MOVE & RESET)	CRASH CUSH ATTEN (REMOVE)	CRASH CUSH ATTEN (INSTL) (S) (N) (TL3)	WK ZN PAV MRK REMOV (TRAF BTN) TY W	ELIM EXT PAV MRK & MRKS (6")	AUTO PORT SMRT TRF MONITOR SYS (PLAN 2)
SHT NO	LF	LF	LF	EA	EA	EA	LF	LF	DAY
25	1890					1	2045	512	
26							2000	500	
27	80						2000	500	
28	1270				1	1	2015	504	
29							494	124	45
30		351	351				1710		
31		1329	1329	1	1				
32	440	1560	2000						
33	1000		1000						
GEN									
TOTALS	4680	3240	4680	1	2	2	10264	2140	45

ITEM	6185	6185
DESC	6002	6005
TCP	TMA (STATIONARY)	TMA (MOBILE OPERATION)
SHT NO	DAY	DAY
25		
26		
27		
28		
29		
30		
31		
32		
33		
GEN	10	10
TOTALS	10	10

NOTES:

- ITEM 0662-6057 PLACEMENT BASED ON STANDARD BC(12)-21.

REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>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</p>			
 <p>Texas Department of Transportation ©2024</p>			
<p>WB IH 30 CMV STATION</p> <p>SUMMARY OF QUANTITIES</p>			
DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK:	6	TEXAS	
DWG:	DIST.	COUNTY	CONT. NO.
CHK:	ATL	TITUS	0610
			SECT. NO.
			03
			JOB NO.
			095
			SHEET NO.
			10

Plotted on: 6/5/2024

Design File name: P:\116\35\04\Design\Civil\Summary\1163504TCPSummary.dgn

SUMMARY OF ROADWAY QUANTITIES

SEE NOTE 1

ITEM	0100	0104	0104	0110	0132	0275	0275	0310	
DESC	6002	6023	6054	6001	6001	6001	6010	6009	
ROADWAY	PREPARING ROW	REMOVING CONC (CTB)	REMOVING CONCRETE (MOW STRIP)	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (ORD COMP) (TY A)	CEMENT	CEMENT TREAT (SUBGRADE) (8")	PRIME COAT (MC-30)	
SHT NO	STA	LF	LF	CY	CY	TON	SY	GAL	
						30 LB/SY		0.25 GAL/SY	
66	PLAN AND PROFILE	8.6		390	300	29	1898	475	
67	PLAN AND PROFILE	10.0		820	2563	47	3026	757	
68	PLAN AND PROFILE	10.0	47	12356	3144	152	10078	2520	
69	PLAN AND PROFILE	10.0	34	8569	5883	110	7269	1818	
70	PLAN AND PROFILE	10.0	84	4111	8824	164	10923	2731	
71	PLAN AND PROFILE	10.0		4595	360	79	5240	1311	
72	PLAN AND PROFILE	9.8		485	650	37	2458	615	
73	EDGE DRAIN LAYOUT								
TOTALS		68.4	165	485	31491	22726	618	40892	10227

SEE NOTE 2

SEE NOTE 3

ITEM	0316	0316	0354	0360	0432	0432	0450	0471
DESC	6017	6222	6045	6021	6001	6045	6048	6003
ROADWAY	ASPH (AC-20-5TR)	AGGR (TY-PB GR-3 SAC-B)	PLANE ASPH CONC PAV (2")	CONC PVMT (JOINTED - CPCD) (11")	RIPRAP (CONC) (4 IN)	RIPRAP (MOW STRIP) (4 IN)	RAIL (HANDRAIL) (TY B)	GRATE & FRAME
SHT NO	GAL	CY	SY	SY	CY	CY	LF	EA
	0.4 GAL/SY	90 SY/CY						
66	PLAN AND PROFILE	720	20	1152				
67	PLAN AND PROFILE	875	25	1265	668	5		
68	PLAN AND PROFILE				9740			
69	PLAN AND PROFILE				6929	37		
70	PLAN AND PROFILE				10574	12	138	54
71	PLAN AND PROFILE	24	1	19	4858		273	36
72	PLAN AND PROFILE	941	27	1278				
73	EDGE DRAIN LAYOUT					8		
TOTALS	2560	73	3714	32769	44	49	411	90

ITEM	0481	0496	0529	0529	0531	0531	0531	0531
DESC	6023	6041	6002	6020	6001	6005	6009	6032
ROADWAY	PIPE (PVC) (SCH 80) (6 IN)	REMOV STR (LARGE)	CONC CURB (TY II)	CONC CURB & GUTTER (ARMOR CURB)	CONC SIDEWALKS (4")	CURB RAMPS (TY 2)	CURB RAMPS (TY 6)	CONC SIDEWALKS (SPECIAL) (TYPE A)
SHT NO	LF	EA	LF	LF	SY	EA	EA	SY
66	PLAN AND PROFILE							
67	PLAN AND PROFILE							
68	PLAN AND PROFILE			615		364	1	
69	PLAN AND PROFILE			954	84	636	1	56
70	PLAN AND PROFILE		1	947	56	632	1	38
71	PLAN AND PROFILE							
72	PLAN AND PROFILE							
73	EDGE DRAIN LAYOUT	600						
TOTALS	600	1	2516	140	1632	4	1	94

ITEM	0536	0540	0542	0542	0542	0544	0550	0550
DESC	6002	6001	6001	6003	6004	6001	6001	6011
ROADWAY	CONC MEDIAN	MTL W-BEAM GD FEN (TIM POST)	REMOVE METAL BEAM GUARD FENCE	REMOVE DOWNSTREAM ANCHOR TERMINAL	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	GUARDRAIL END TREATMENT (INSTALL)	CHAIN LINK FENCE (INSTALL) (6')	CHAIN LINK FENCE GATE (INSTALL) (6' X4')
SHT NO	SY	LF	LF	EA	EA	EA	LF	EA
66	PLAN AND PROFILE							
67	PLAN AND PROFILE							
68	PLAN AND PROFILE		725				1	
69	PLAN AND PROFILE		150				1	
70	PLAN AND PROFILE	193					384	4
71	PLAN AND PROFILE							
72	PLAN AND PROFILE			425	1	1		
73	EDGE DRAIN LAYOUT							
TOTALS	193	875	425	1	1	2	384	4


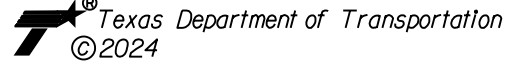
SEE NOTE 3

SEE NOTE 3

ITEM	0550	0556	0752	3021	3076	3077	3077	4020	5084
DESC	6013	6008	6015	6001	6066	6051	6064	6001	6001
ROADWAY	CHAIN LINK FENCE GATE (INSTALL) (6' X10')	PIPE UNDERDRAINS (TY 8) (6")	TREE AND BRUSH REMOVAL	WIDE FLANGE PAVEMENT TERMINALS	TACK COAT	SP MIXES SP-D PG70-22	SP MIXES SP-D PG76-22	PERMEABLE CONCRETE EDGE DRAIN	FIXED BOLLARD
SHT NO	EA	LF	AC	LF	GAL	TON	TON	LF	EA
						110 LB/SY/IN	110 LB/SY/IN		
66	PLAN AND PROFILE				721	990	193		
67	PLAN AND PROFILE				875	1356	236		
68	PLAN AND PROFILE					2168			
69	PLAN AND PROFILE					1546			
70	PLAN AND PROFILE	4		0.17		2347			10
71	PLAN AND PROFILE			0.52	22	25	6		
72	PLAN AND PROFILE			1.10		941	1293	252	
73	EDGE DRAIN LAYOUT							2585	
TOTALS	4	2585	1.79	44	2562	10826	687	2585	10

NOTES:

- ALL PAVEMENT REMOVAL IS CONSIDERED SUBSIDIARY TO ITEM 110. ADDITIONAL HATCHING SHOWN ON PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
- PAVEMENT MILL SHALL BE FROM SAWCUT TO EXISTING EDGE OF PAVEMENT.
- SEE EDGE DRAIN FOR DETAILS.

REV. NO.	DATE	DESCRIPTION	BY
 <p>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 #1002800</p>			
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<p>WB IH 30 CMV STATION</p>			
<p>SUMMARY OF QUANTITIES</p>			
DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:
CHK:	6	TEXAS	
DWG:	DIST.:	COUNTY:	CONT. NO.:
CHK:	ATL	TITUS	0610
			SECT. NO.:
			03
			JOB NO.:
			095
			SHEET NO.:
			11

Plotted on: 6/4/2024

Design File Name: P:\116\35\04\Design\Civil\Summary\1163504RDWYSummary.dgn

SUMMARY OF DRAINAGE QUANTITIES

ITEM	0110	0401	0402	0420	0432	0432	0432	0464	0464
DESC	6002	6001	6001	6071	6001	6031	6036	6003	6005
DRAINAGE	EXCAVATION (CHANNEL)	FLOWABLE BACKFILL	TRENCH EXCAVATION PROTECTION	CL C CONC (COLLAR)	RIPRAP (CONC) (4 IN)	RIPRAP (STONE PROTECTION) (12 IN)	RIPRAP (STONE PROTECTION) (30 IN)	RC PIPE (CL III) (18 IN)	RC PIPE (CL III) (24 IN)
SHT NO	CY	CY	LF	EA	CY	CY	CY	LF	LF
101	STORM DRAIN PLAN AND PROFILE	3	715		130				
102	STORM DRAIN PLAN AND PROFILE		300		98		56		
103	STORM DRAIN PLAN AND PROFILE			2	208			94	
104	STORM DRAIN PLAN AND PROFILE								
108	CULVERT A-4 LAYOUT		30						87
109	CULVERT A-6 LAYOUT			1					
110	CULVERT B-1 LAYOUT		23			3			
111	CULVERT B-4 LAYOUT	60				5			77
TOTALS	60	3	1068	3	436	8	56	94	164


ITEM	0464	0464	0465	0465	0465	0465	0467	0467	0467
DESC	6008	6009	6022	6024	6558	6561	6001	6363	6394
DRAINAGE	RC PIPE (CL III) (36 IN)	RC PIPE (CL III) (42 IN)	INLET (COMPL) (PCO) (5FT) (LEFT)	INLET (COMPL) (PCO) (5FT) (BOTH)	INL (CMP) (PAZD-CZ) (FG) (3FTX3FT-3FTX3FT)	INL (CMP) (PAZD-CZ) (FG) (5FTX5FT-3FTX3FT)	SET (PIPE RUNNER ASSEMBLY)	SET (TY II) (18 IN) (RCP) (6: 1) (P)	SET (TY II) (24 IN) (RCP) (6: 1) (C)
SHT NO	LF	LF	EA	EA	EA	EA	EA	EA	EA
101	STORM DRAIN PLAN AND PROFILE	714	2			2			
102	STORM DRAIN PLAN AND PROFILE		1	1					
103	STORM DRAIN PLAN AND PROFILE							2	
104	STORM DRAIN PLAN AND PROFILE								
108	CULVERT A-4 LAYOUT						1		
109	CULVERT A-6 LAYOUT						1		
110	CULVERT B-1 LAYOUT	24							
111	CULVERT B-4 LAYOUT				1				1
TOTALS	738	389	3	1	1	2	2	2	1

ITEM	0467	0467	0496	0496	0496
DESC	6450	6466	6004	6006	6007
DRAINAGE	SET (TY II) (36 IN) (RCP) (4: 1) (C)	SET (TY II) (42 IN) (RCP) (6: 1) (P)	REMOV STR (SET)	REMOV STR (HEADWALL)	REMOV STR (PIPE)
SHT NO	EA	EA	EA	EA	LF
101	STORM DRAIN PLAN AND PROFILE		2	2	40
102	STORM DRAIN PLAN AND PROFILE	1			
103	STORM DRAIN PLAN AND PROFILE			2	
104	STORM DRAIN PLAN AND PROFILE			2	50
108	CULVERT A-4 LAYOUT				
109	CULVERT A-6 LAYOUT			1	4
110	CULVERT B-1 LAYOUT	1		1	8
111	CULVERT B-4 LAYOUT				
TOTALS	1	1	2	8	102

Plotted on: 6/4/2024

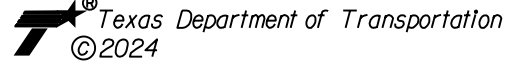
Design File name: P:\116\35\04\Design\Civil\Summary\1163504DRNSummary.dgn

REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



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WB IH 30 CMV STATION

SUMMARY OF QUANTITIES

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	12

SUMMARY OF ILLUMINATION AND CONDUIT QUANTITIES

ITEM	0416	0416	0432	0610	0610	0613	0618	0618
DESC	6026	6029	6001	6009	6288	6005	6046	6047
ILLUMINATION	DRILL SHAFT (HIGH MAST POLE) (60 IN)	DRILL SHAFT (RDWY ILL POLE) (30 IN)	RIPRAP (CONC) (4 IN)	REMOVE RD IL ASM (TRANS-BASE)	IN RD IL (TY SA) 50T-10 (400W EQ) LED	HI MST IL POLE (150 FT) (80 MPH)	CONDT (PVC) (SCH 80) (2")	CONDT (PVC) (SCH 80) (2") (BORE)
SHT NO	LF	LF	CY	EA	EA	EA	LF	LF
127	ILLUMINATION AND CONDUIT LAYOUT	64		6.0	2	2	1012	
128	ILLUMINATION AND CONDUIT LAYOUT		120		11	12	2734	
129	ILLUMINATION AND CONDUIT LAYOUT		90		9	9	5041	214
130	ILLUMINATION AND CONDUIT LAYOUT	32		3.0		1	1538	
TOTALS		96	210	9.0	22	21	10325	214

ITEM	0618	0620	0620	0624	0628	0628	6156
DESC	6070	6007	6008	6002	6011	6040	6002
ILLUMINATION	CONDT (RM) (2")	ELEC CONDR (NO. 8) BARE	ELEC CONDR (NO. 8) INSULATED	GROUND BOX TY A (122311)W/APRON	ELC SRV TY A 120/240 060 (NS) SS (E) TP (O)	ELC SRV TY A 240/480 060 (NS) SS (E) EX (O)	LED HI MST IL ASM (6 FIXT) (ASYM) (TY A)
SHT NO	LF	LF	LF	EA	EA	EA	EA
127	ILLUMINATION AND CONDUIT LAYOUT		1312	2624	1	1	2
128	ILLUMINATION AND CONDUIT LAYOUT		2734	5468	1		
129	ILLUMINATION AND CONDUIT LAYOUT		3163	6326	17	1	
130	ILLUMINATION AND CONDUIT LAYOUT	1200	183	366	10	1	1
TOTALS	1200	7392	14784	29	1	2	3

SUMMARY OF SIGNING AND PAVEMENT MARKING QUANTITIES

ITEM	0636	0644	0644	0644	0644	0647	0647
DESC	6002	6001	6004	6037	6060	6001	6003
SIGNING	ALUMINUM SIGNS (TY G)	IN SM RD SN SUP&AM TY10BWG (1) SA (P)	IN SM RD SN SUP&AM TY10BWG (1) SA (T)	IN SM RD SN SUP&AM TY80 (1) SA (U-WC)	IN SM RD SN SUP&AM TY7T (1) WS (P)	INSTALL LRSS (STRUCT STEEL)	REMOVE LRSA
SHT NO	SF	EA	EA	EA	EA	LB	EA
132	SIGNING & PAVEMENT MARKINGS PLAN						
133	SIGNING & PAVEMENT MARKINGS PLAN		1		2		
134	SIGNING & PAVEMENT MARKINGS PLAN	28	2		2	192	
135	SIGNING & PAVEMENT MARKINGS PLAN	105	1		1	678	3
TOTALS	133	3	1	1	4	870	3

ITEM	0658	0658	0666	0666	0666	0666	0666
DESC	6062	6081	6018	6036	6042	6048	6090
SIGNING	INSTL DEL ASSM (D-SW) SZ 1 (BRF) GF 2 (B1)	INSTL DEL ASSM (D-SW) SZ 1 (WFL) GND (B1)	REFL PAV MRK TY I (W) 6" (DOT) (100MIL)	REFL PAV MRK TY I (W) 8" (SLD) (100MIL)	REFL PAV MRK TY I (W) 12" (SLD) (100MIL)	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	REF PAV MRK TY I (W) (MED NOSE) (100MIL)
SHT NO	EA	EA	LF	LF	LF	LF	EA
132	SIGNING & PAVEMENT MARKINGS PLAN		114	1338	300		
133	SIGNING & PAVEMENT MARKINGS PLAN	10	5	234	34	1360	
134	SIGNING & PAVEMENT MARKINGS PLAN		2	42	2964	1203	6
135	SIGNING & PAVEMENT MARKINGS PLAN		9	456	430		
TOTALS	10	34	390	4792	730	2563	6

ITEM	0666	0666	0666	0666	0666	0666	0666
DESC	6225	6226	6228	6230	6233	6241	6306
SIGNING	PAVEMENT SEALER 6"	PAVEMENT SEALER 8"	PAVEMENT SEALER 12"	PAVEMENT SEALER 24"	PAVEMENT SEALER (MED NOSE)	PAVEMENT SEALER (SYMBOL)	RE PM W/RET REQ TY I (W) 6" (BRK) (100MIL)
SHT NO	LF	LF	LF	LF	EA	EA	LF
132	SIGNING & PAVEMENT MARKINGS PLAN	2740	1338	300			510
133	SIGNING & PAVEMENT MARKINGS PLAN	9176	34		1360		590
134	SIGNING & PAVEMENT MARKINGS PLAN	6499	2964		1203	6	740
135	SIGNING & PAVEMENT MARKINGS PLAN	1612	456	430			630
TOTALS	20027	4792	730	2563	6	2	2470

ITEM	0666	0666	0668	0668	0672	0678	0678
DESC	6309	6321	6010	6090	6010	6002	6004
SIGNING	RE PM W/RET REQ TY I (W) 6" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y) 6" (SLD) (100MIL)	PREFAB PAV MRK TY B (W) (6") (BRK) CNTST	PREFAB PAV MRK TY C (W) (SYMBOL)	REFL PAV MRKR TY 11-C-R	PAV SURF PREP FOR MRK (6")	PAV SURF PREP FOR MRK (8")
SHT NO	LF	LF	LF	EA	EA	LF	LF
132	SIGNING & PAVEMENT MARKINGS PLAN	1856	260		117	2740	1338
133	SIGNING & PAVEMENT MARKINGS PLAN	6352	2000	372	51	9176	34
134	SIGNING & PAVEMENT MARKINGS PLAN	3729	1988	276	2	6499	2964
135	SIGNING & PAVEMENT MARKINGS PLAN	982			76	1612	456
TOTALS	12919	4248	648	2	433	20027	4792

ITEM	0678	0678	0678	0678	0682	0685
DESC	6006	6008	6021	6024	6003	6001
SIGNING	PAV SURF PREP FOR MRK (12")	PAV SURF PREP FOR MRK (24")	PAV SURF PREP FOR MRK (SYMBOL)	PAV SURF PREP FOR MRK (MED NOSE)	VEH SIG SEC (12") LED (YEL)	INSTALL RDSB FLASH BEACON ASSEMBLY
SHT NO	LF	LF	EA	EA	EA	EA
132	SIGNING & PAVEMENT MARKINGS PLAN	300				
133	SIGNING & PAVEMENT MARKINGS PLAN		1360			
134	SIGNING & PAVEMENT MARKINGS PLAN		1203	2	6	2
135	SIGNING & PAVEMENT MARKINGS PLAN	430			2	1
TOTALS	730	2563	2	6	4	2

REV. NO.	DATE	DESCRIPTION	BY

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

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WB IH 30 CMV STATION

SUMMARY OF QUANTITIES

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	13

Plotted on: 6/4/2024

Design File Name: P:\116\35\04\Design\Civil\Summary\1163504SGNSummary.dgn


Plotted on: 3/6/2024

Design File name: S:\Transportation\19-204C TxDOT-PD IH30 CMV Inspection Facility\CAD\01-Sheets\Quantity Summary.dgn


ITEM	ITEM 247-6053	ITEM 400-6010	ITEM 401-6001	ITEM 402-6001	ITEM 416-6004	ITEM 420-6037	ITEM 420-6128	ITEM 442-6007	ITEM 5086-6001
STRUCTURAL SUMMARY	FLEX BASE (CMP IN PLC) (TY D)XGR 1-2(FINAL POS)	STRUCT EXCAV (SPECIAL)	FLOWABLE BACKFILL	TRENCH EXC. PROTECTION	DRILL SHAFT (36 IN)	CL C CONC (COLUMN)	CL K CONC (MISC)	STR STEEL (MISC NON-BRIDGE)	PRE-ENGINEERED METAL BUILDING/ CANOPY
	CY	CY	CY	LF	LF	CY	CY	LB	LS
PRE-ENGINEERED METAL CANOPY, 200 FT x 85 FT	700	875	40	120.0	720	22.6	147.6	5510	1.0
PRE-ENGINEERED METAL CANOPY, 80 FT x 45 FT					360	10.6			1.0
TOTAL	700	875	40	120.0	1080	40.4	147.6	5510	2.0

90% SUBMITTAL
DOCUMENT INCOMPLETE: NOT INTENDED
FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SIDNEY A. MIELKE, P.E.
P.E. SERIAL No. : 60799
DATE: 3-5-2024


REV. NO.	DATE	DESCRIPTION	BY



SEA STRUCTURAL
ENGINEERING
ASSOCIATES
TEXAS REGISTERED ENGINEERING FIRM F-499



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



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WB IH 30 CMV STATION

SUMMARY OF QUANTITIES

SHEET 7 OF 7

DIST.	FED. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
ATL	6	TEXAS		IH 30
DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.
ATL	TITUS	0610	03	095
				SHEET NO.
				14

SUMMARY OF ELECTRICAL QUANTITIES

Plotted on: 3/21/2024

Design File name: At:\36000s\36999\001\CADD\Sheet\SRCH\36999_104_SUMMARY OF QUANTITIES.dgn

ITEM	0690	0690	0618	0618	0618	0618	0618	0618	0618
CODE	6001	6009	6072	6070	6066	6064	6027	6023	6021
DESCRIPTION	REMOVAL OF CONDUIT	REMOVAL OF CABLES	CONDT (RM) (2 1/2")	CONDT (RM) (2")	CONDT (RM) (1 1/4")	CONDT (RM) (1")	CONDT (PVC) (SCH 40)(2 1/2")	CONDT (PVC) (SCH 40)(2")	CONDT (PVC) (SCH 40)(1 1/4")
UNIT	LF	LF	LF	LF	LF	LF	LF	LF	LF
TSD1 FEEDER					10				340
TSD2 FEEDER					10				110
DPS2 FEEDER (SERVICE ENTRANCE)			11				30		
CT METERING						1			
TOTALS + 10% CONTINGENCY	0	0	12	0	22	1	33	0	495

ITEM	0620	0620	0620	0620	0620	0624
CODE	6029	6024	6018	6015	6009	6001
DESCRIPTION	ELEC CONDR (NO.350KCM) INSULATED	ELEC CONDR (NO.3/0) INSULATED	ELEC CONDR (NO.1) INSULATED	ELEC CONDR (NO.2) BARE	ELEC CONDR (NO.6) BARE	GROUND BOX TY A (122311)
UNIT	LF	LF	LF	LF	LF	EA
TSD1 FEEDER			1050		350	1
TSD2 FEEDER			390		130	
DPS2 FEEDER (SERVICE ENTRANCE)	240			5	5	
CT METERING						
TOTALS + 10% CONTINGENCY	264	0	1584	6	534	1

NOTES:
 1. ALL ELECTRICAL ITEMS AND QUANTITIES ARE SUBSIDIARY TO ITEM 5086 AND ARE CONSIDERED FOR CONTRACTORS INFORMATION ONLY



1201 NORTH BOWSER ROAD
 RICHARDSON, TX 75081-2275
 (214) 346-6200
 TBPELS ENGINEERING FIRM #312

REV. NO.	DATE	DESCRIPTION	BY



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



WB IH 30 CMV STATION

SUMMARY OF QUANTITIES

SHEET 1 OF 1

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN#	6	TEXAS				IH 30
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	15

SUMMARY OF SW3P QUANTITIES

SHT NO	ROADWAY	ITEM	0164	0164	0164	0168	0506	0506	0506
		DESC	6001	6009	6011	6001	6001	6011	6020
		*FERTILIZER	BROADCAST SEED (PERM) (RURAL) (SANDY)	BROADCAST SEED (TEMP) (WARM)	BROADCAST SEED (TEMP) (COOL)	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 1)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY 1)
	TON	SY	SY	SY	MG	LF	LF	SY	
		300 LB PER 5000 SY				80 MG PER 5000 SY			
207	SWP3 PLAN	0.2	6490	1623	1623	160.0			112
208	SWP3 PLAN	0.4	14362	3591	3591	240.0	95	95	
209	SWP3 PLAN	0.5	15688	3922	3922	320.0	150	150	
210	SWP3 PLAN	0.2	7354	1839	1839	160.0			
	TOTALS	1.3	43894	10975	10975	880.0	245	245	112

* FOR CONTRACTOR INFORMATION ONLY.

SHT NO	ROADWAY	ITEM	0506	0506	0506	0506	0506
		DESC	6024	6038	6039	6040	6043
		CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTR) (8")	BIODEG EROSN CONT LOGS (REMOVE)	
	SY	LF	LF	LF	LF		
207	SWP3 PLAN	112	30	30			
208	SWP3 PLAN				289	289	
209	SWP3 PLAN				114	114	
210	SWP3 PLAN						
	TOTALS	112	30	30	403	403	

Plotted on: 6/7/2024

Design Filename: P:\116\35\04\Design\Civil\Summaries\1163504SW3PSummary.dgn

REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson Engineers
 SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
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WB IH 30 CMV STATION

SUMMARY OF QUANTITIES

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	16

SUMMARY OF SMALL SIGNS

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DATE: 6/4/2024 1:55:59 PM
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PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)				BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)	
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		
										PREFABRICATED		1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels
133	2-1	W4-1R	MERGING TRAFFIC	48" X 48"		X	10BWG	1	SA	T		
	2-2	R2-1	SPEED LIMIT 15	30" X 36"	X		TWT	1	WS	P		
	2-3	R2-1	SPEED LIMIT 15	30" X 36"	X		TWT	1	WS	P		
134	3-1	R2-1	SPEED LIMIT 15	30" X 36"	X		TWT	1	WS	P		
	3-2	R8-X	NO PARKING OFFICIAL USE ONLY	30" X 24"		X	10BWG	1	SA	P		
	3-3	R8-X	NO PARKING OFFICIAL USE ONLY	30" X 24"		X	10BWG	1	SA	P		
	3-4	R2-1X	MAINTAIN 15 M.P.H.	30" X 36"	X		TWT	1	WS	P		
135	4-1	R5-X	MAINTAIN 200 FT BETWEEN TRUCKS	30" X 24"		X	10BWG	1	SA	P		
	4-2	W13-2	EXIT 50 MPH	48" X 60"		X	S80	1	SA	U	WC	

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.
<http://www.txdot.gov/>

- NOTE:**
- Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
 - For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS) Standard Sheet.
 - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD (GEN).

Texas Department of Transportation
Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

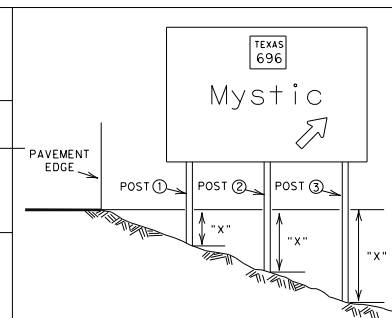
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© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
4-16	DIST	COUNTY	SHEET NO.	
8-16	ATL	TITUS	17	

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SUMMARY OF LARGE SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN BACK-GROUND COLOR	SIGN TEXT	SIGN DIMENSIONS	PLAQUES, & OTHER ATTACHMENTS		BACKGROUND SUBSTRATE (SQ FT)		TYPE OF MOUNT	"X" DIMENSION			GALVANIZED STRUCTURAL STEEL				DRILLED SHAFT					
					DIRECT APPLY	* ALUMINUM (TYPE A)	GROUND MOUNT (TYPE G)	OVERHEAD (TYPE O)		post ①	post ②	post ③	SIZE	post ①	post ②	post ③	TOTAL WEIGHT LBS.	NON-REINF 12"φ	LINEAR FEET REINFORCED			
															24"φ	30"φ	36"φ					
134	LGS1	GREEN		66" X 60"			27.5		321				S3X5.7	11.81	16.71		191.86	7				
135	LGS2	GREEN		96" X 60"			40		321	1.35	1.49		S4X7.7	13.06	13.20		272.6	7				
135	LGS3	GREEN		78" X 60"			32.5		321	0.88	1.26		S3X5.7	12.39	12.97		203.49	7				
135	LGS4	GREEN		78" X 60"			32.5		321	0.77	1.10		S3X5.7	12.48	12.81		201.95	7				
PAGE TOTALS							132.5			PAGE TOTALS							869.9	28				



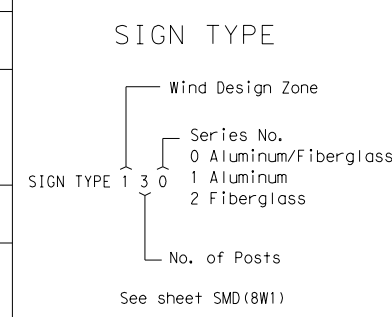
⊙ The "x" dimension is the elevation difference at the post between the ground and the edge of pavement or top of curb.

Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.

The post lengths listed here are approximations. The corrected post lengths will be furnished by the Contractor after the stud posts are placed.

Tower heights shall be verified with the Engineer before fabrication.

* This column is for aluminum Type A and not direct apply. Direct apply is subsidiary to the sign.



SUMMARY OF LARGE SIGNS
SOLS

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DN. #	TxDOT	REVISIONS
11-93	1-04	
8-95	9-08	
5-01		

CONT	SECT	JOB	HIGHWAY
0610	03	095	IH 30
DIST	COUNTY	SHEET NO.	
ATL	TITUS	18	

19

DETOURS, BARRICADES, WARNING SIGNS, SEQUENCE OF WORK, ETC.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC", OF THE STANDARD SPECIFICATIONS. CONTRACTOR TO FOLLOW SEQUENCE OF WORK, UNLESS OTHERWISE APPROVED. IN ADDITION TO THESE REQUIREMENTS, THE FOLLOWING PROVISIONS SHALL ALSO GOVERN ON THIS CONTRACT:

1. SEQUENCE OF WORK

SEQUENCE NOTES:

1. PLACE TEMPORARY QUEUE DETECTION SYSTEM IN ACCORDANCE WITH TXDOT WZ-ITS(3)-19 OR AS DIRECTED BY THE ENGINEER. THE TEMPORARY QUEUE DETECTION SYSTEM SHALL BE UTILIZED FOR PHASE I ONLY.
2. PLACE ADVANCE WARNING AND WORK ZONE SIGNS IN ACCORDANCE WITH BC STANDARD SHEETS AND THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICE (TMUTCD), TCP SHEETS, AND AS DIRECTED BY THE ENGINEER.
3. COVER ALL EXISTING CMV STATION SIGNAGE PRIOR TO PHASE I. THIS WORK IS SUBSIDIARY TO ITEM 502.
4. PLACE SWP3 DEVICES AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.
5. IF UNPROTECTED BY BARRIER, DROP OFF CONDITIONS GREATER THAN 2" MUST HAVE A MINIMUM 3:1 SLOPE AT THE END OF EACH DAY.

PHASE I:

- a. PHASE I UTILIZES MILESTONE COMPLETION. SEE ITEM 8 IN THE GENERAL NOTES FOR ADDITIONAL INFORMATION.
- b. CLOSE OUTSIDE WB LANE USING TXDOT STANDARD TCP(6-1a).
- c. INSTALL WZPM, PCTB, AND CRASH CUSHIONS AS SHOWN ON PHASE I TCP SHEETS.
- d. REMOVE EXISTING MBGF, CONSTRUCT EDGE DRAIN AND PAVEMENT WIDENING THROUGH RAMP GORES AS SHOWN IN THE PLANS. ALL TREE REMOVAL, EMBANKMENT/GRADING TO BE COMPLETE IN PHASE II.
- e. ONCE ALL OF PHASE I WORK IS COMPLETE, MOVE PCTB INTO PHASE II CONFIGURATION AND REMOVE WZPM. INSTALL 6" (W) (BRK) PERMANENT PM FOR WB MAIN LANES AND OPEN OUTSIDE WB LANE.

PHASE II:

- a. ADJUST WORK ZONE SIGNS BASED ON TXDOT STANDARD TCP(5-1)-18.
- b. INSTALL ADDITIONAL PCTB AS NEEDED FOR PHASE II CONFIGURATION.
- c. REMOVE TREES, CONSTRUCT CULVERTS, PAVEMENT, CANOPIES, INSPECTION PIT, ILLUMINATION, ELECTRICAL ITEMS, DITCHES, AND GRADING.
- d. UTILIZE TXDOT STANDARD TCP(1-2) OR TCP(2-2) FOR ACTIVITY NEAR FRONTAGE ROAD.
- f. ONCE ALL OF PHASE II ITEMS ARE COMPLETE, REMOVE PCTB AND REOPEN OUTSIDE WB SHOULDER.

PHASE III:

- a. PLACE PERMANENT SIGNING AS SHOWN IN THE PLANS.
- b. PLACE PERMANENT PAVEMENT MARKINGS AS SHOWN IN PLANS.
- c. PERFORM FINAL CLEAN-UP OPERATIONS.

DESIGN

INTERIM REVIEW	
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.	
ENGINEER:	STEVEN J. TATE
P.E. SERIAL NO:	131443
DATE:	6/3/2024

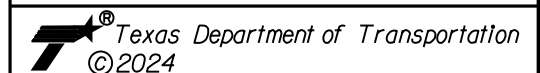
APPROVAL

INTERIM REVIEW	
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ENGINEER:	JAMES A. LUTZ
P.E. SERIAL NO:	84722
DATE:	6/3/2024

REV. NO.	DATE	DESCRIPTION	BY



SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1002800



WB IH 30 CMV STATION

**TRAFFIC CONTROL PLAN
 NARRATIVE**

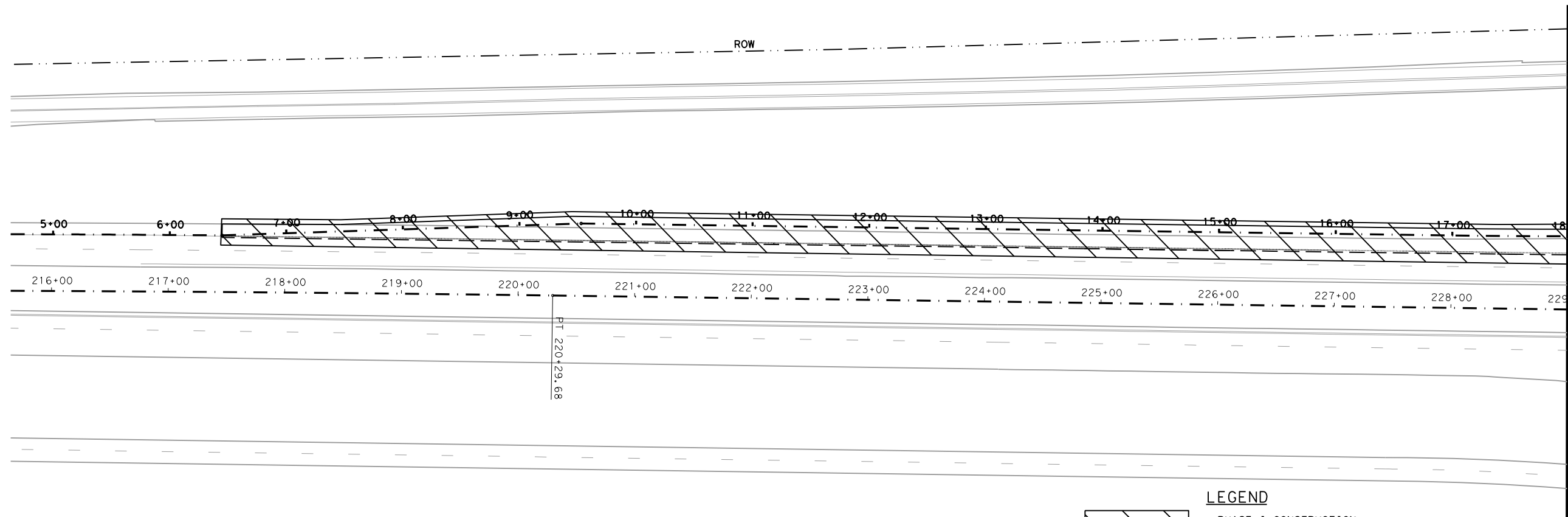
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DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	ATL	TITUS	0610	03	095	19

Plotted on: 6/3/2024

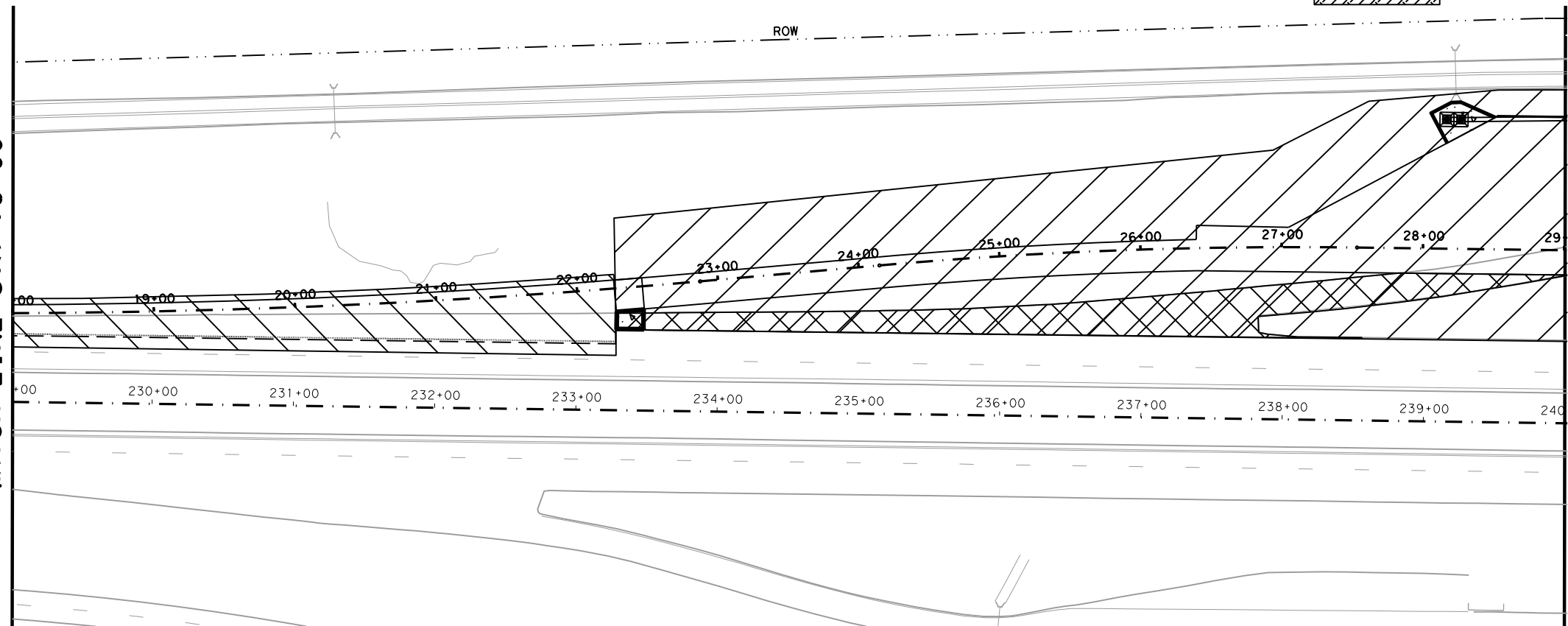
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Plotted on: 6/3/2024

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MATCH LINE STA 18+00



MATCH LINE STA 18+00

MATCH LINE STA 29+00



LEGEND

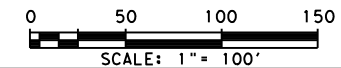
	PHASE 1 CONSTRUCTION
	PHASE 2 CONSTRUCTION
	PAVEMENT REMOVAL
	TREE REMOVAL

DESIGN

INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



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WB IH 30 CMV STATION

TRAFFIC CONTROL PLAN
 OVERALL PHASING LAYOUT

SHEET 1 OF 3

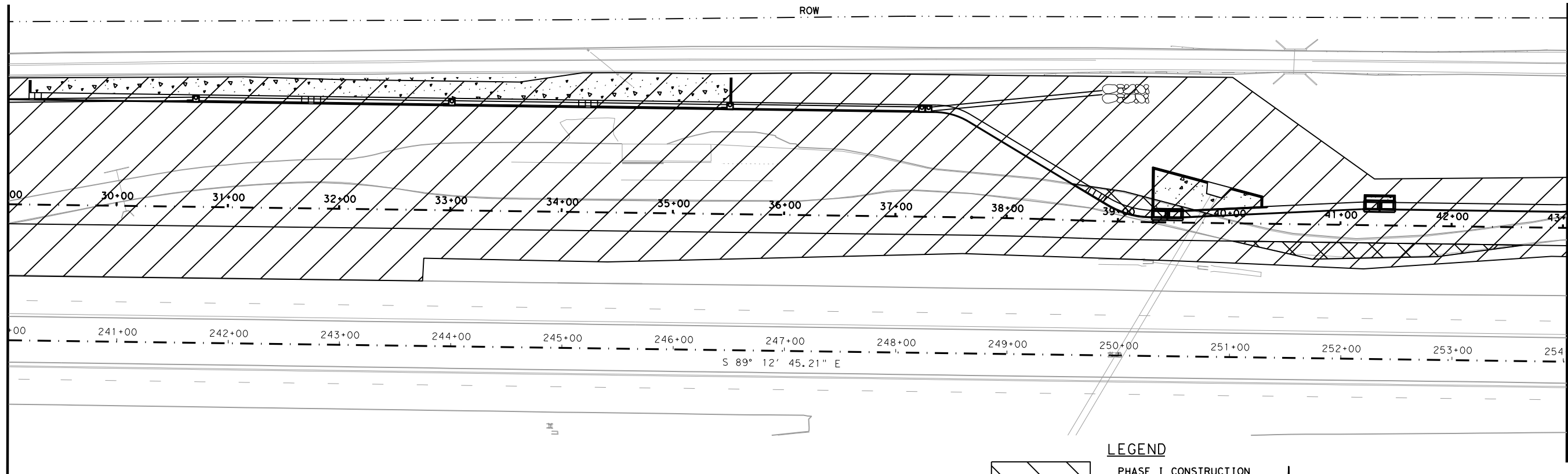
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CHK:	ATL	TITUS	0610	03
			095	20

Plotted on: 6/3/2024

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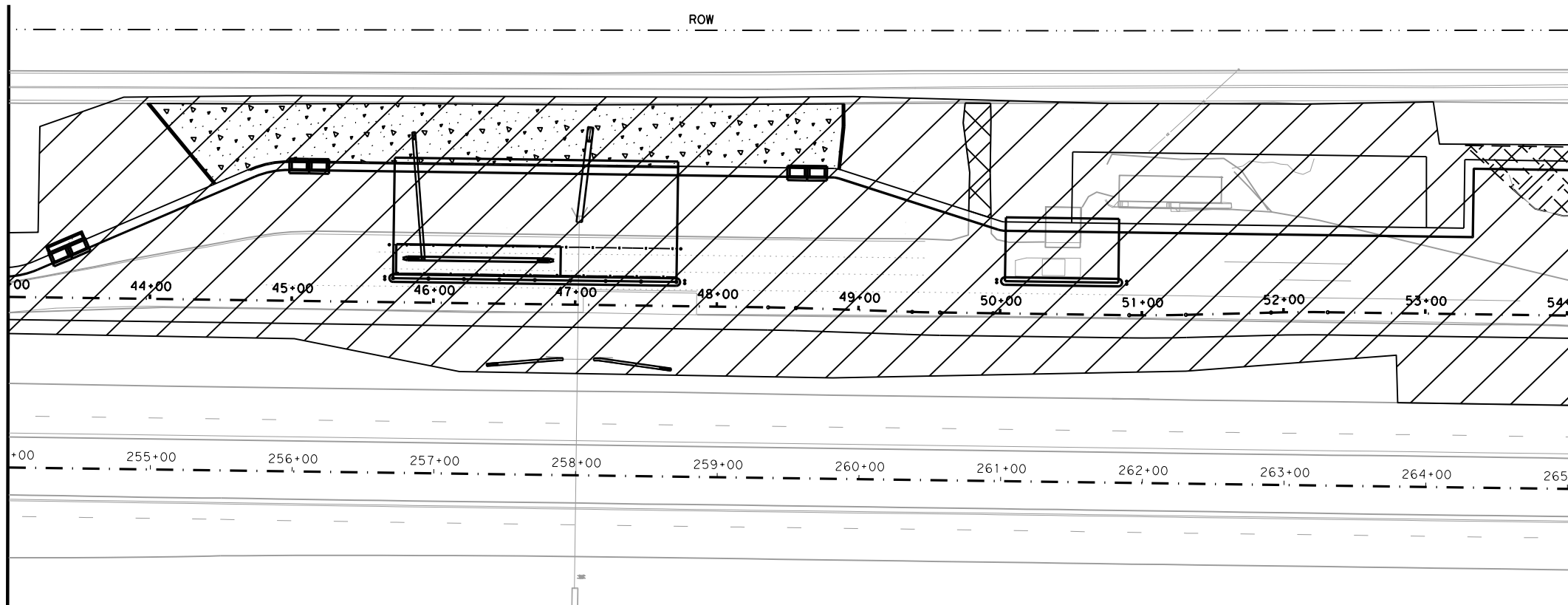
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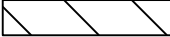





MATCH LINE STA 43+00

MATCH LINE STA 54+00



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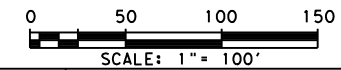
-  PHASE 1 CONSTRUCTION
-  PHASE 2 CONSTRUCTION
-  PAVEMENT REMOVAL
-  TREE REMOVAL

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

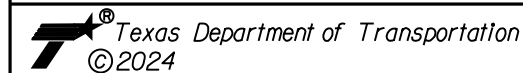
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



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WB IH 30 CMV STATION

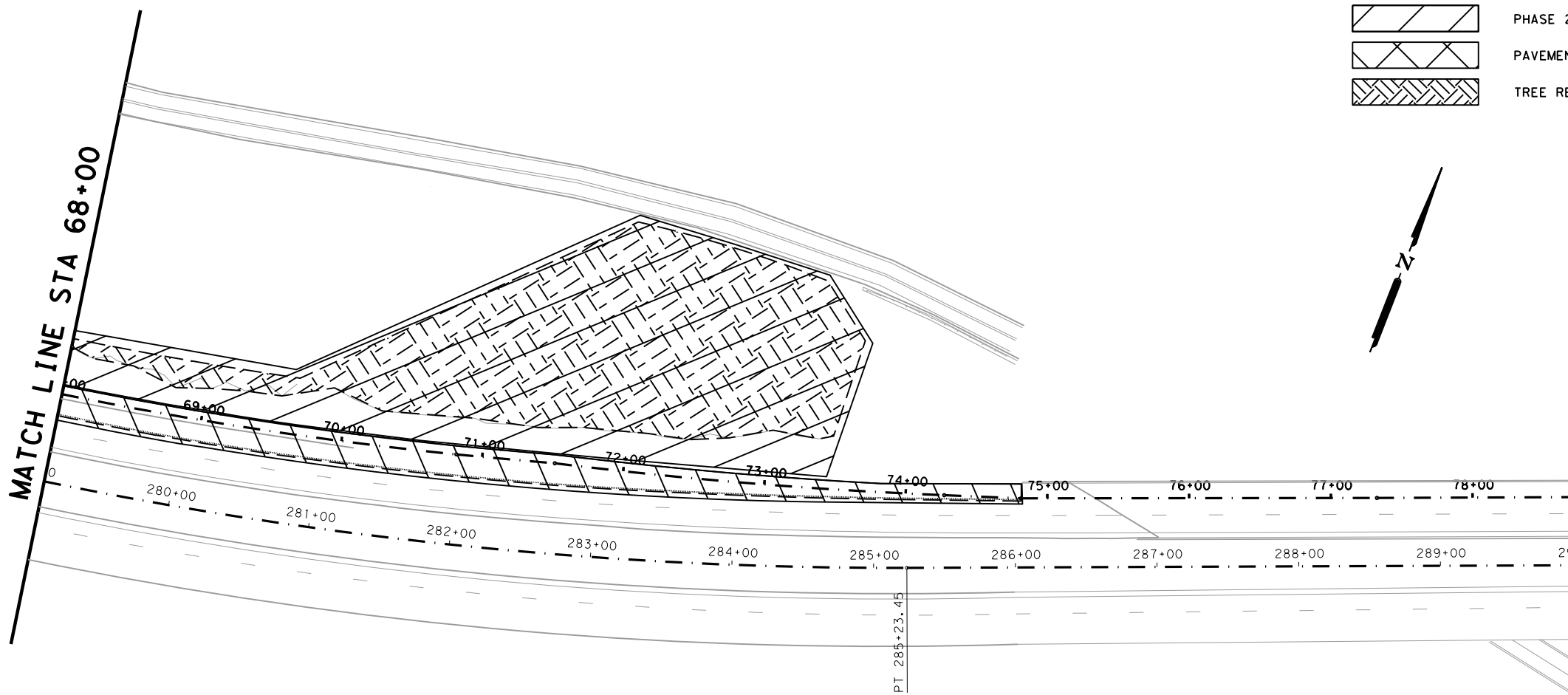
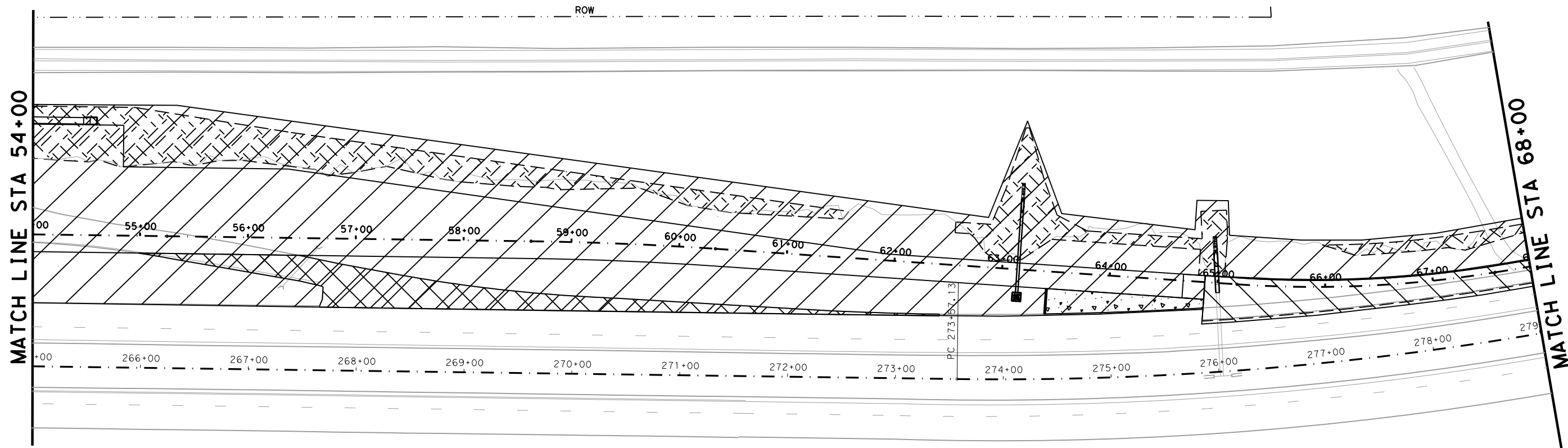
**TRAFFIC CONTROL PLAN
 OVERALL PHASING LAYOUT**

SHEET 2 OF 3

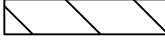
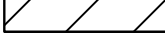
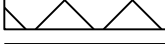
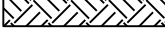
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CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	21

Plotted on: 6/3/2024

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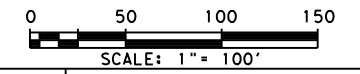


LEGEND

-  PHASE 1 CONSTRUCTION
-  PHASE 2 CONSTRUCTION
-  PAVEMENT REMOVAL
-  TREE REMOVAL

DESIGN
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL
INTERIM REVIEW
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson ENGINEERS

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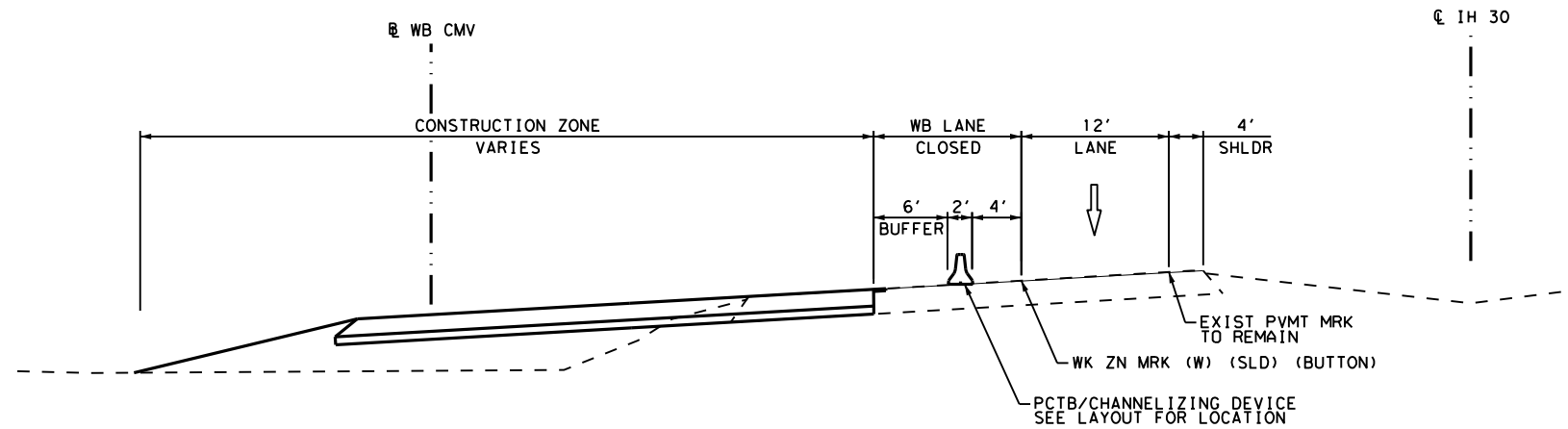
WB IH 30 CMV STATION

**TRAFFIC CONTROL PLAN
 OVERALL PHASING LAYOUT**

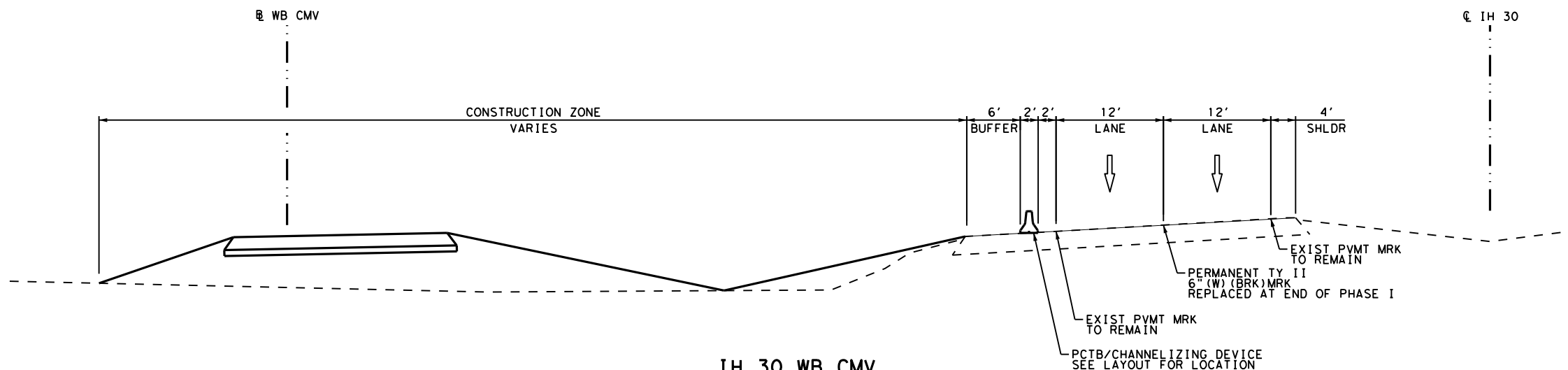
SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	ATL	TITUS	0610	03	095	22

Plotted on: 6/3/2024



**IH 30 WB CMV
TCP TYPICAL SECTION PHASE I**
N. T. S.
STA 6+45 TO STA 23+74
STA 64+88 TO STA 74+95



**IH 30 WB CMV
TCP TYPICAL SECTION PHASE II**
N. T. S.
STA 23+74 TO STA 32+00
STA 55+00 TO STA 64+88

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P. E. SERIAL NO: 131443
DATE: 6/3/2024

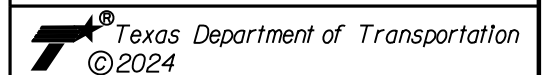
APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P. E. SERIAL NO: 84722
DATE: 6/3/2024

REV. NO.	DATE	DESCRIPTION	BY



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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1002800



WB IH 30 CMV STATION

TCP TYPICAL SECTIONS

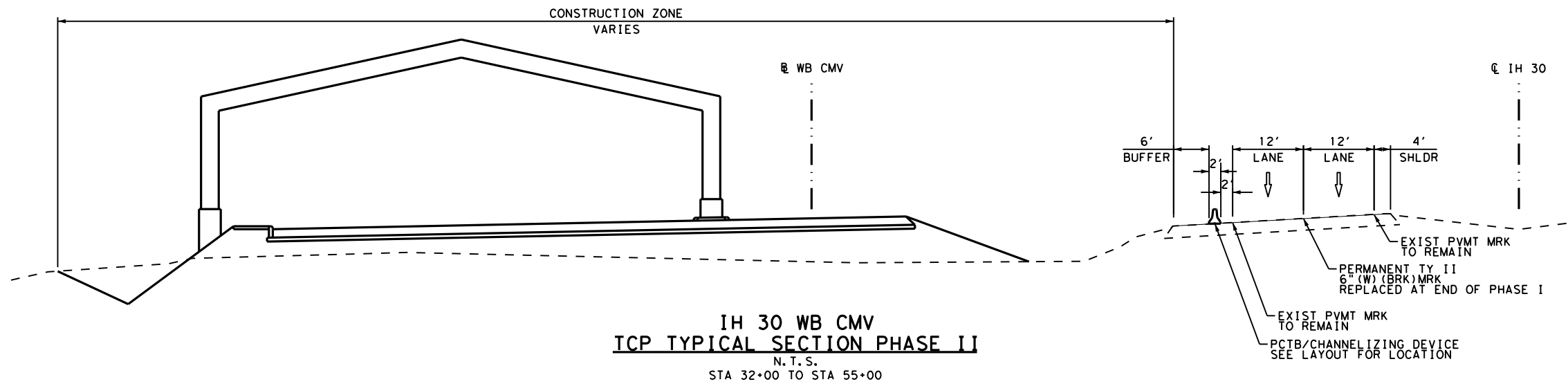
SHEET 1 OF 2

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	DIV. NO.:	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	23

Design Filename: P:\116\35\04\Design\Civil\TCP\1163504_tcp_ttyp_01.dgn

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\TCP\1163504_tcp_02.dgn



DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 6/3/2024

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/3/2024

REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



WB IH 30 CMV STATION

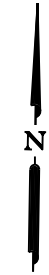
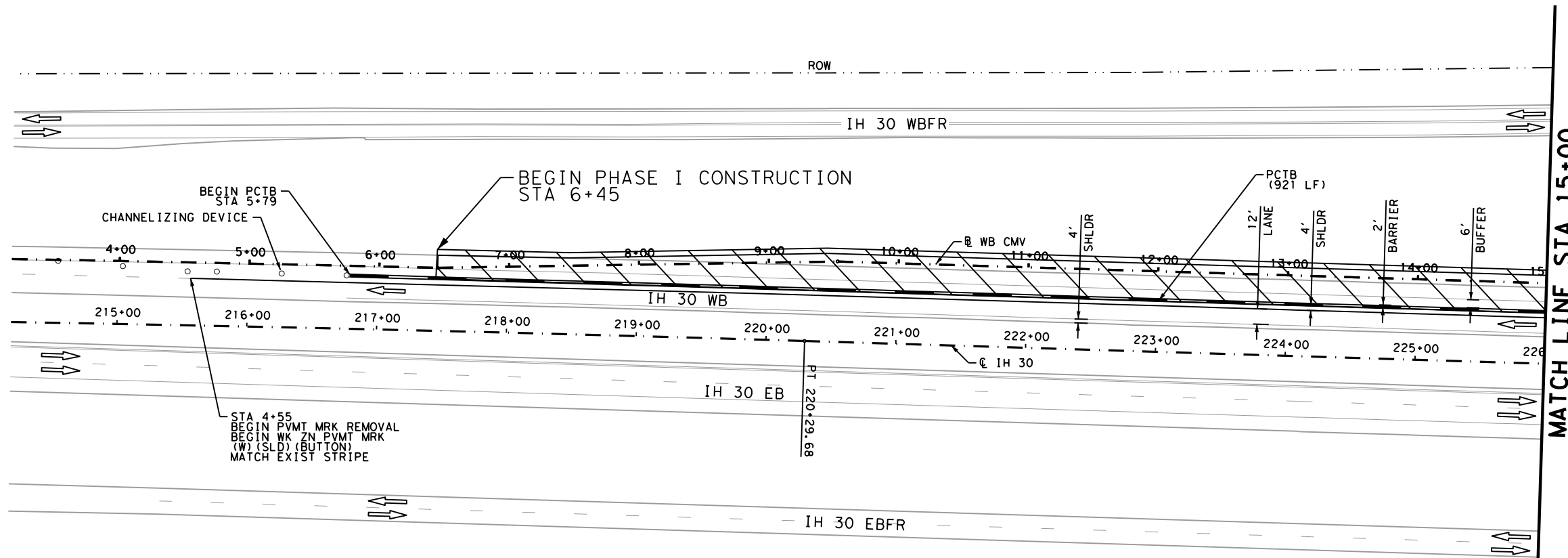
TCP TYPICAL SECTIONS

SHEET 2 OF 2

DGN:	FED. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CHK	6	TEXAS		IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK	ATL	TITUS	0610	03
DWG:			095	24

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\TCP\1163504+cpPH101.dgn



LEGEND

- PHASE I CONSTRUCTION
- BARRIER
- TYPE III BARRICADE
- BARRELS
- SIGN
- TRAFFIC FLOW ARROWS

NOTES:

- FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.

DESIGN

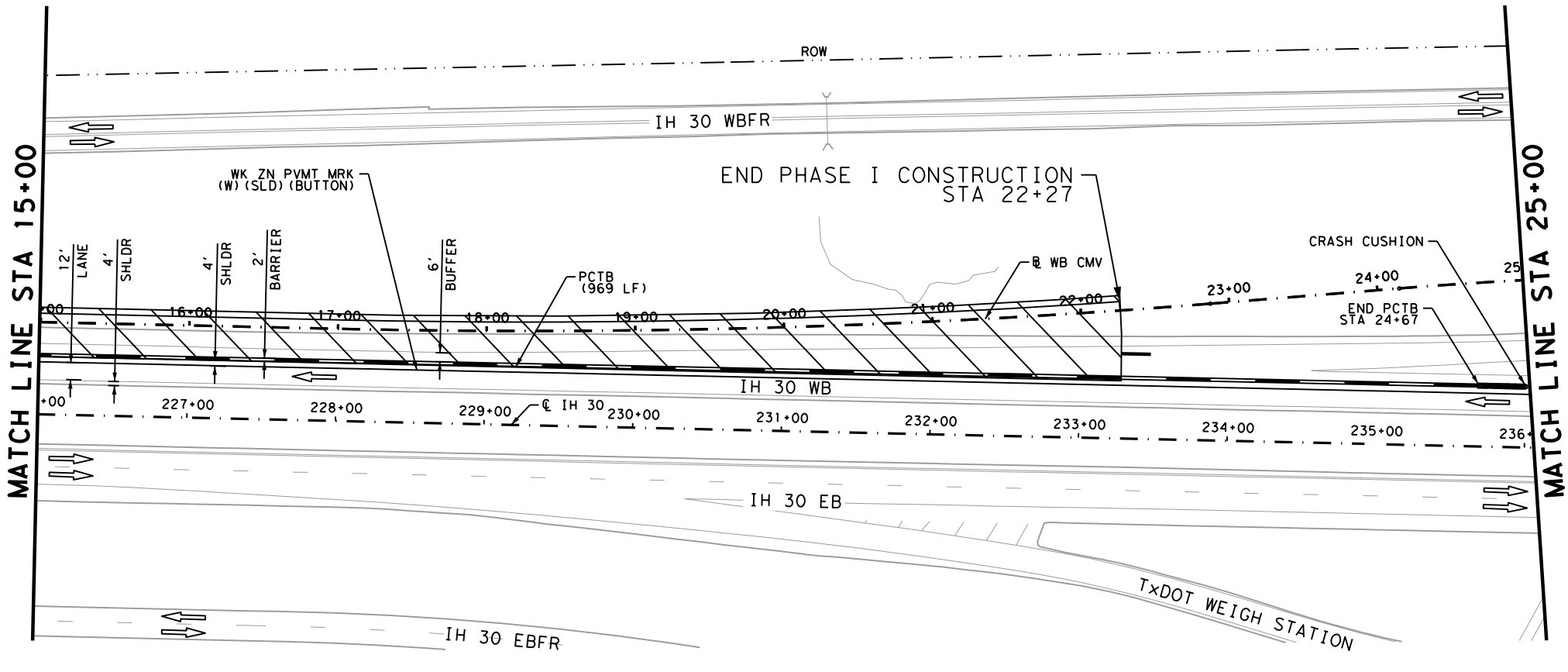
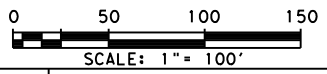
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

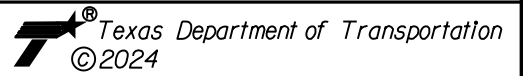
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



WB IH 30 CMV STATION
TRAFFIC CONTROL PLAN
PHASE I

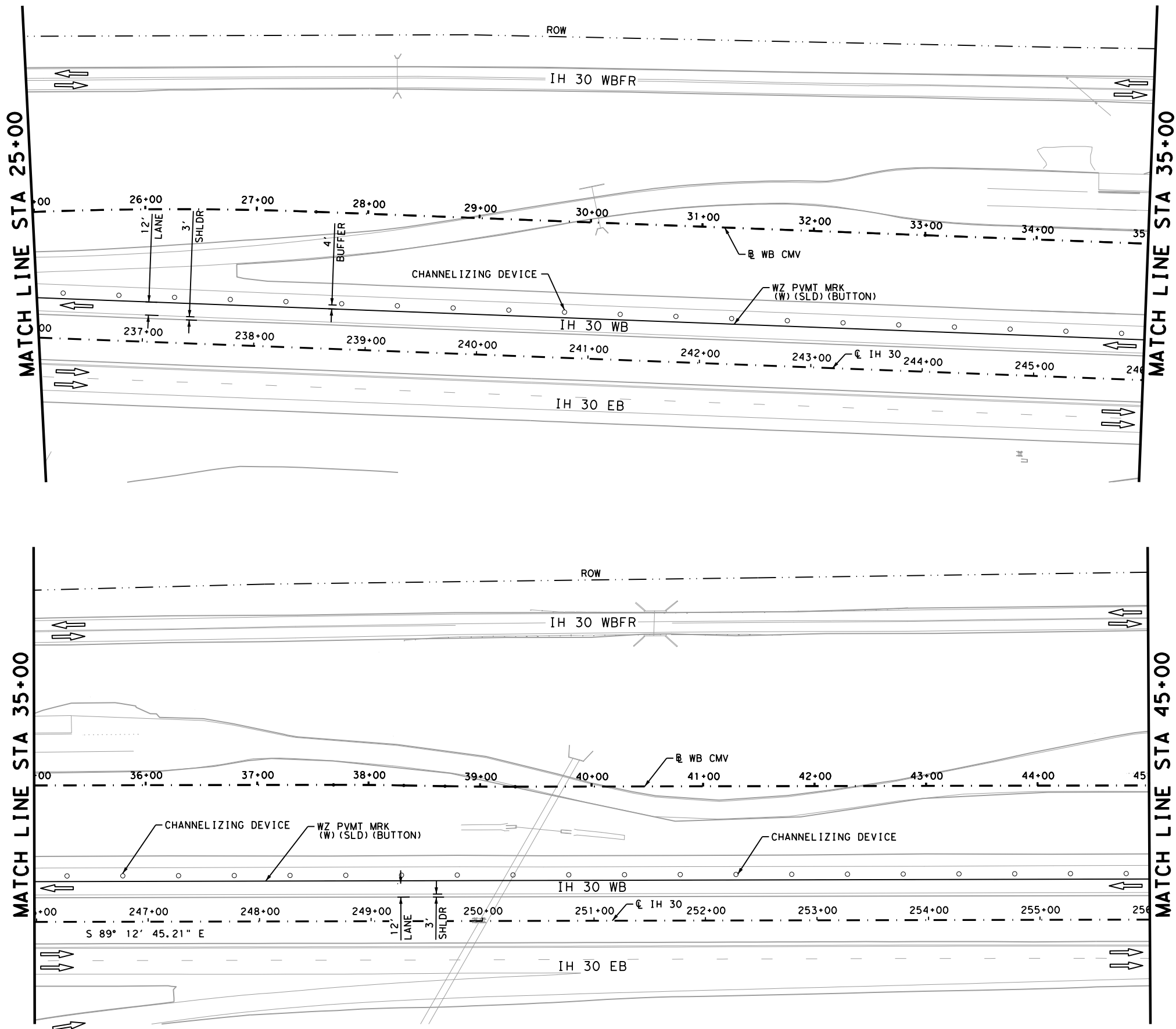
BEGIN PROJECT TO STA 25+00

SHEET 1 OF 5

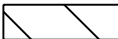





CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DGN:	ATL:	TITUS:	0610:	03:
DWG:			095:	25:

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\TDCP\1163504\cpPH102.dgn



LEGEND

-  PHASE I CONSTRUCTION
-  BARRIER
-  TYPE III BARRICADE
-  BARRELS
-  SIGN
-  TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.

DESIGN

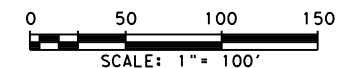
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

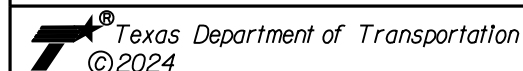
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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



**WB IH 30 CMV STATION
 TRAFFIC CONTROL PLAN
 PHASE I**

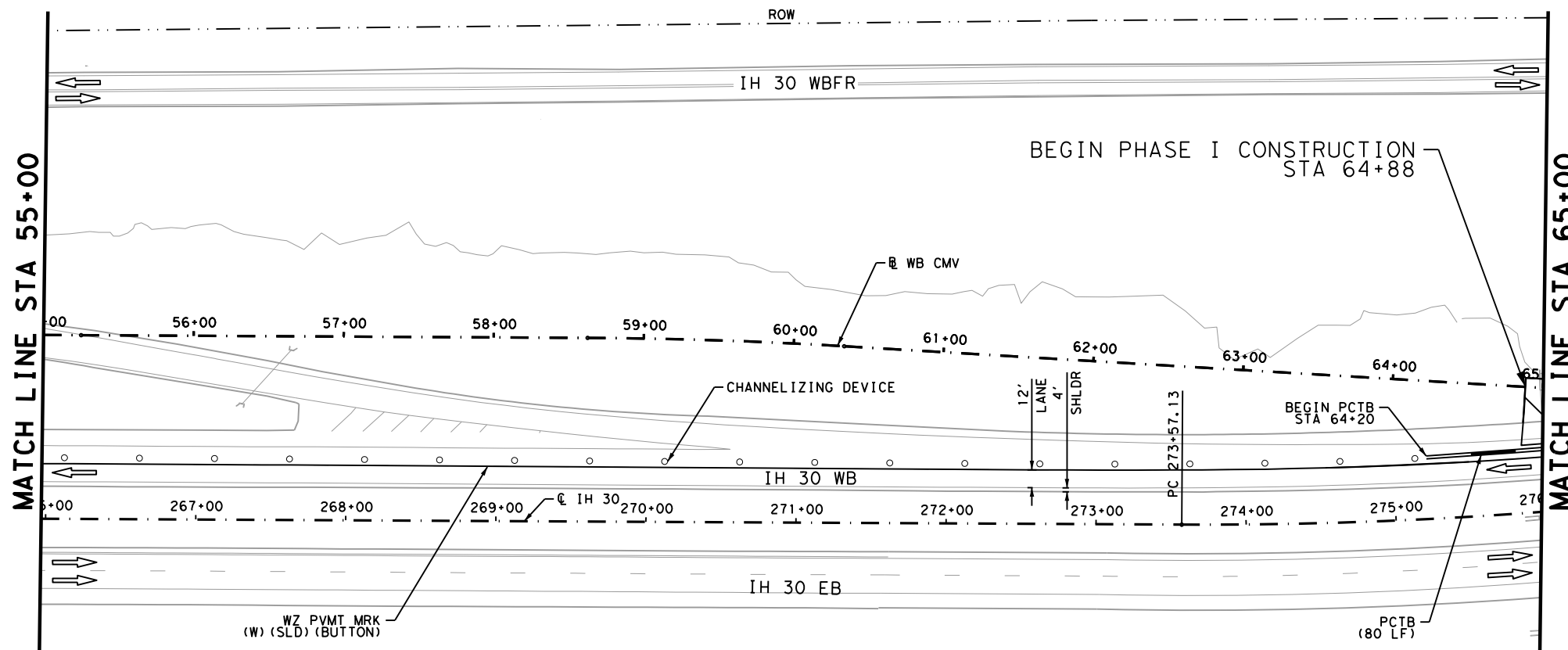
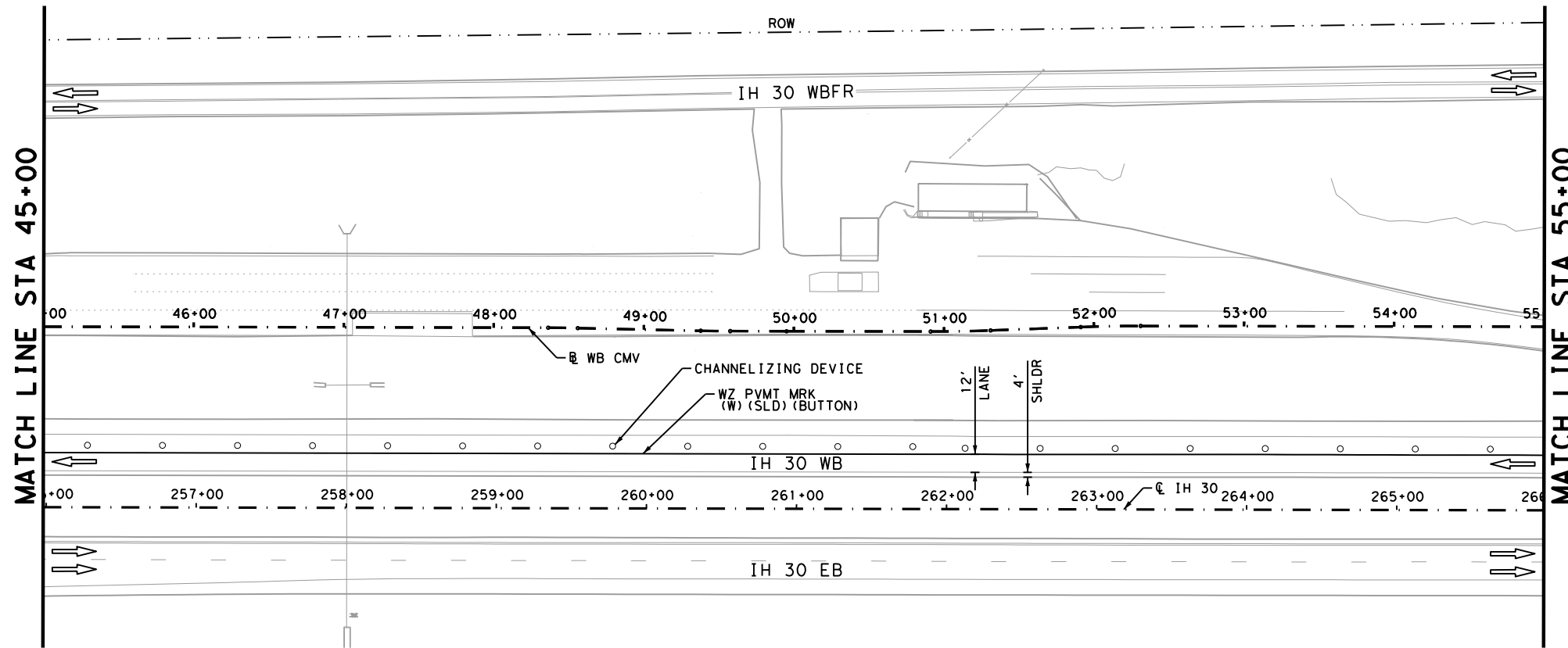
STA 25+00 TO STA 45+00

SHEET 2 OF 5

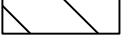





DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	26

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\TCP\1163504\cpPH103.dgn



LEGEND

-  PHASE I CONSTRUCTION
-  BARRIER
-  TYPE III BARRICADE
-  BARRELS
-  SIGN
-  TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.

DESIGN

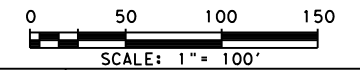
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

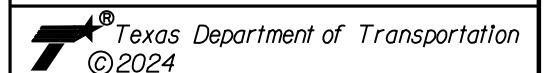
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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



**WB IH 30 CMV STATION
 TRAFFIC CONTROL PLAN
 PHASE I**

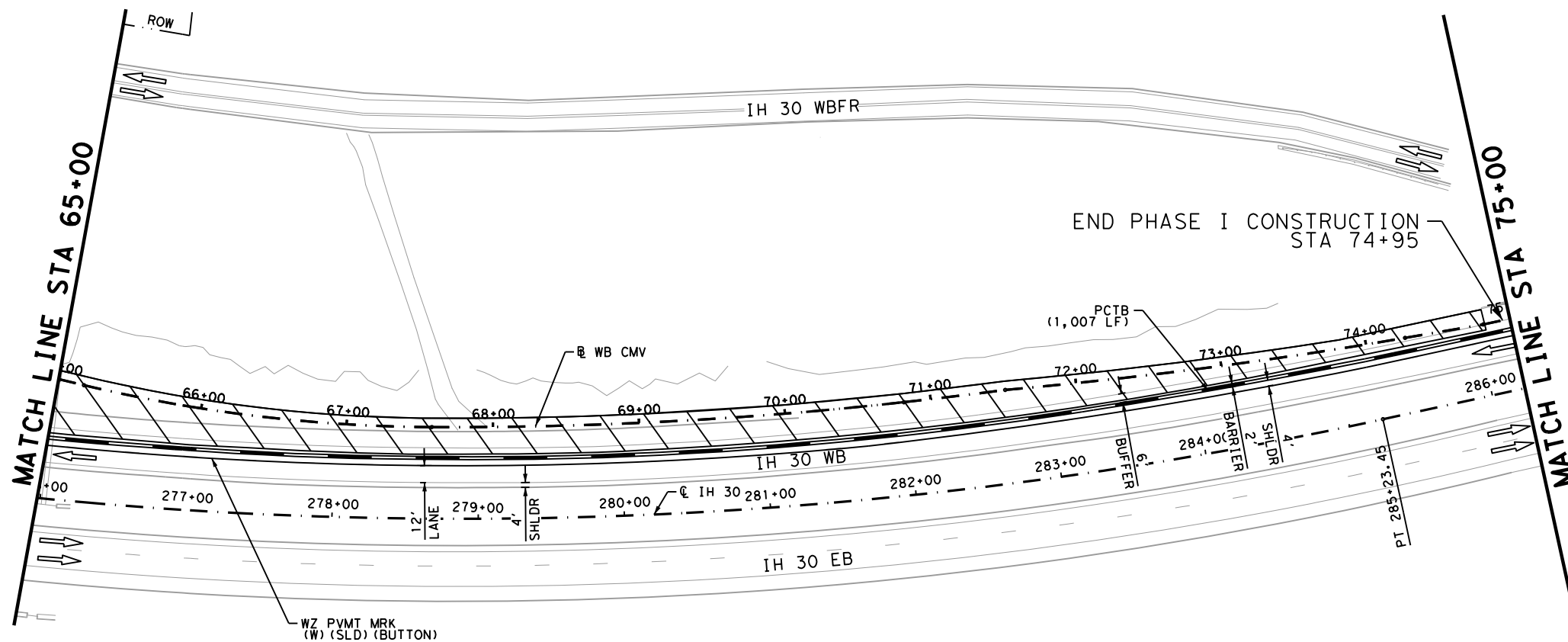
STA 45+00 TO STA 65+00

SHEET 3 OF 5

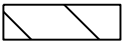





DGN:	FED. NO. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	27

Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\TCP\1163504+cpPH104.dgn



LEGEND

-  PHASE I CONSTRUCTION
-  BARRIER
-  TYPE III BARRICADE
-  BARRELS
-  SIGN
-  TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.

DESIGN

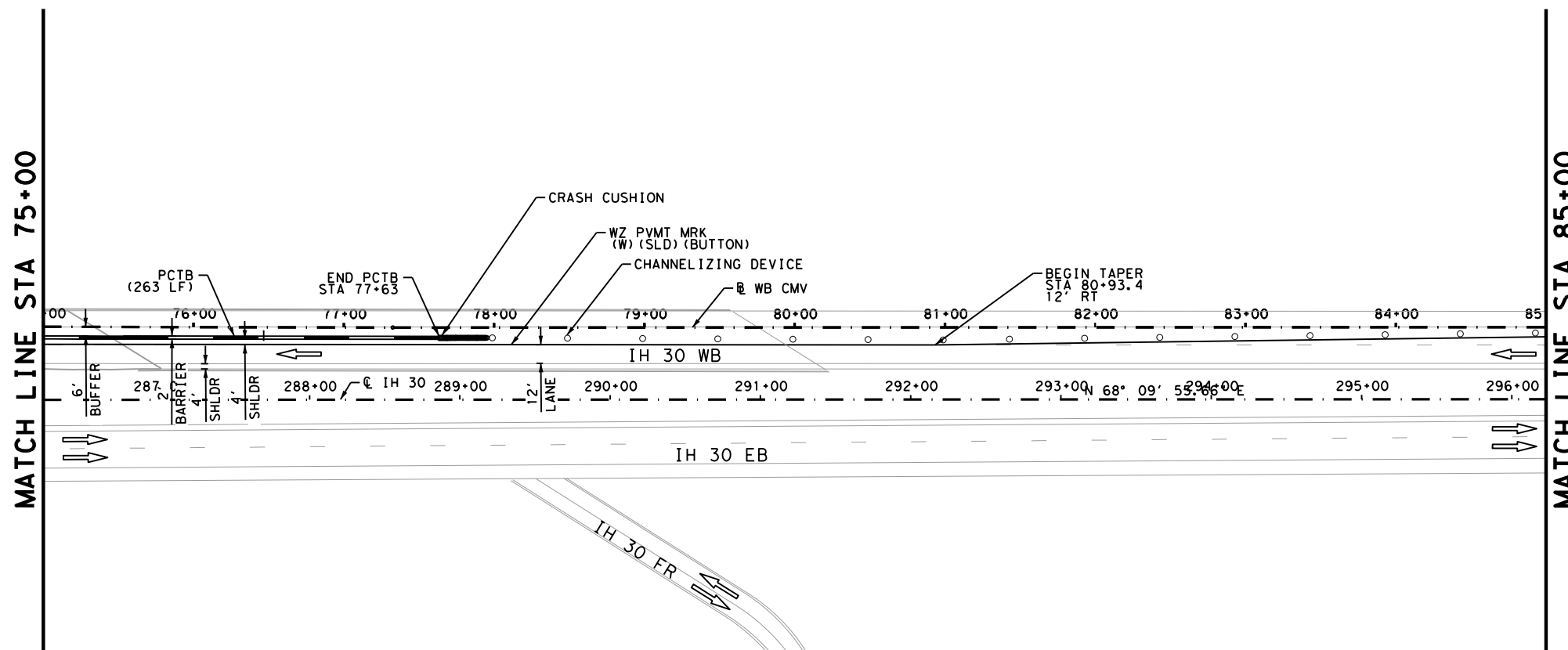
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024


APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

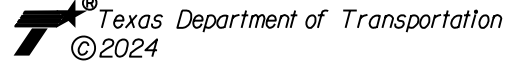


REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



Texas Department of Transportation
 ©2024

WB IH 30 CMV STATION
TRAFFIC CONTROL PLAN
PHASE I

STA 65+00 TO STA 85+00

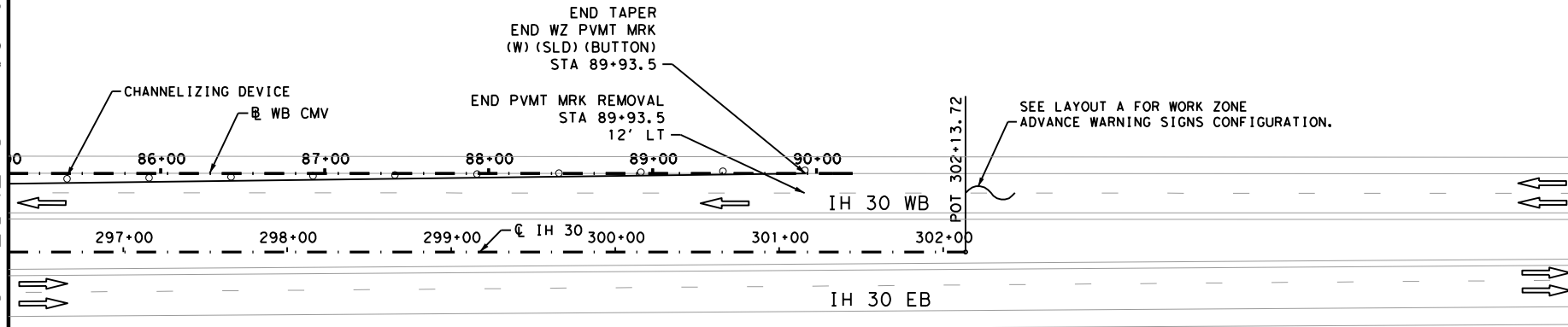
SHEET 4 OF 5

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	28

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\TCP\1163504\cpPH105.dgn

MATCH LINE STA 85+00

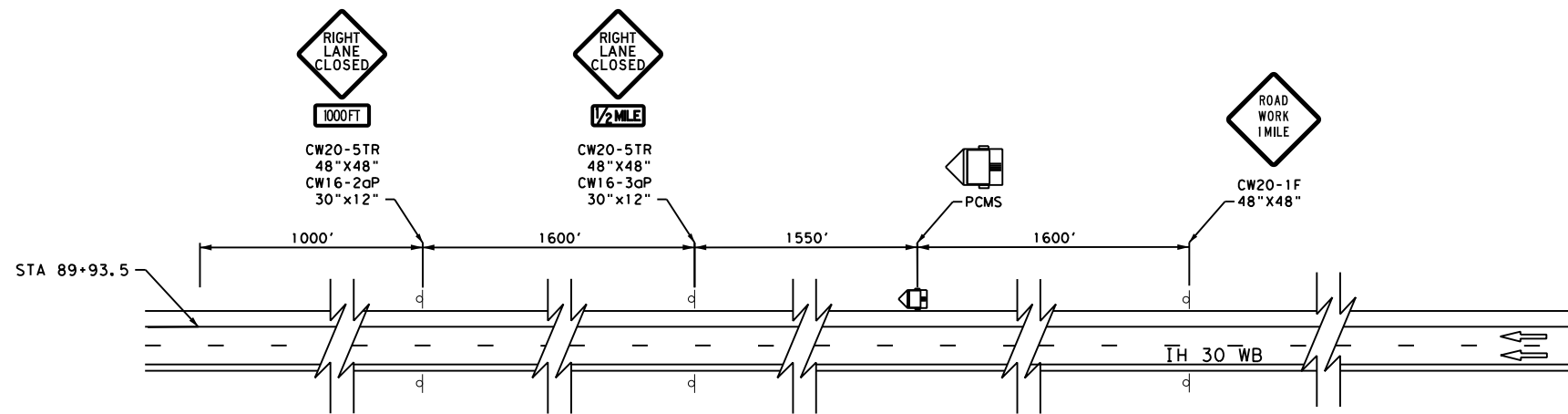


LEGEND

- PHASE I CONSTRUCTION
- BARRIER
- TYPE III BARRICADE
- BARRELS
- SIGN
- TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.



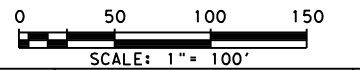
LAYOUT A
NTS

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 6/3/2024

APPROVAL

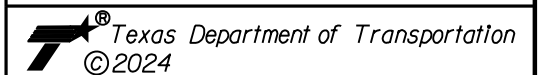
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



WB IH 30 CMV STATION
TRAFFIC CONTROL PLAN
PHASE I

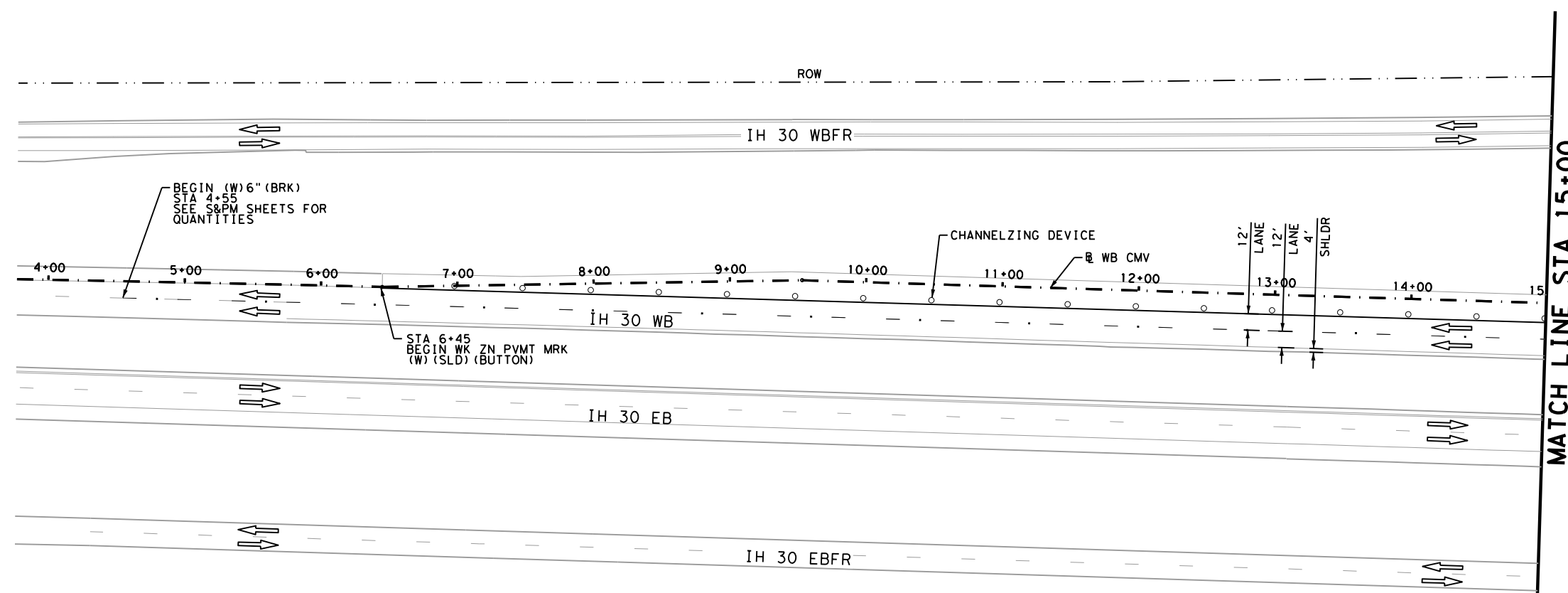
STA 85+00 TO END PROJECT

SHEET 5 OF 5

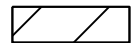







DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	29

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\TCP\1163504+cpPH201.dgn

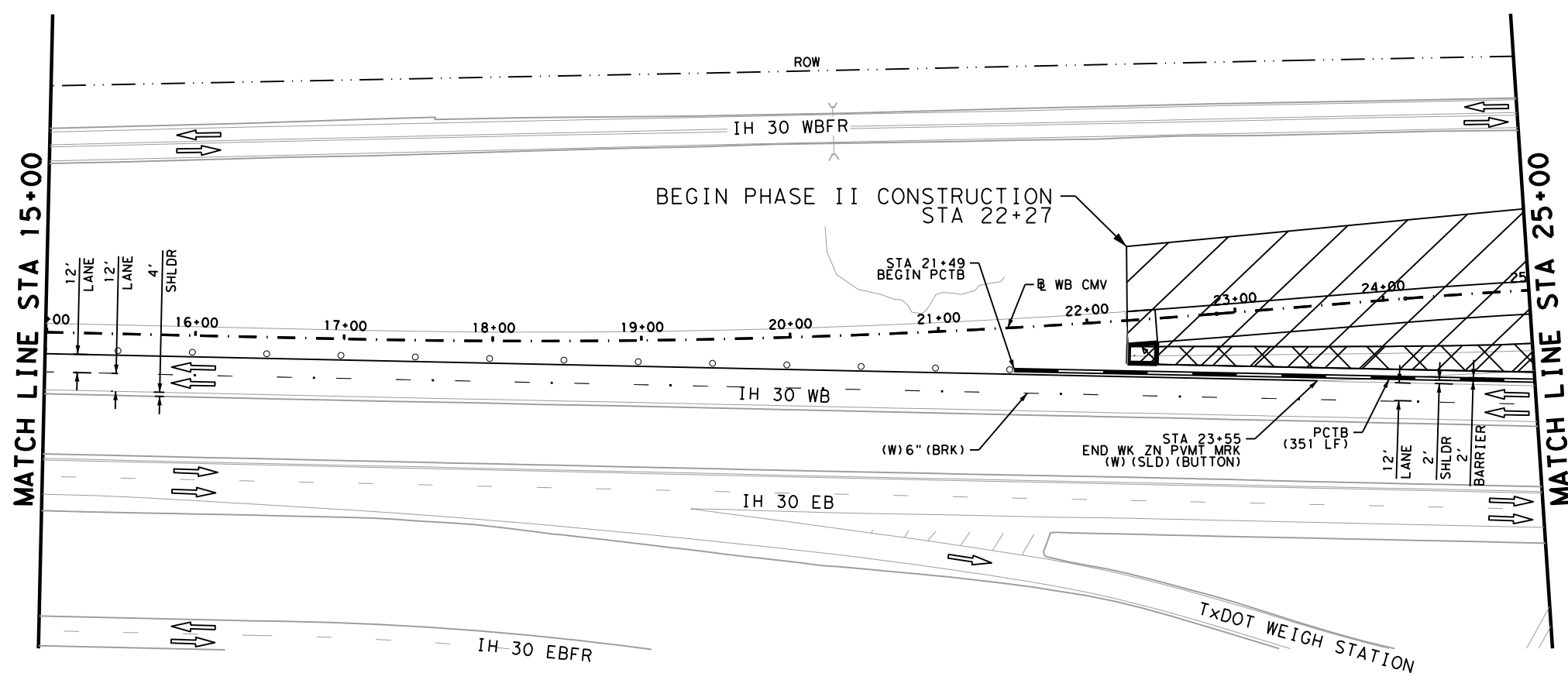


LEGEND

-  PHASE II CONSTRUCTION
-  PAVEMENT REMOVAL
-  TREE REMOVAL
-  BARRIER
-  TYPE III BARRICADE
-  BARRELS
-  SIGN
-  TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.



DESIGN

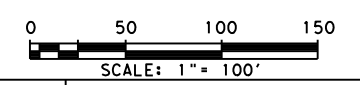
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

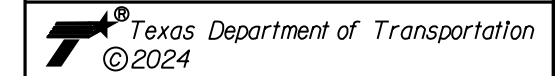
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY

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



**WB IH 30 CMV STATION
 TRAFFIC CONTROL PLAN
 PHASE II**

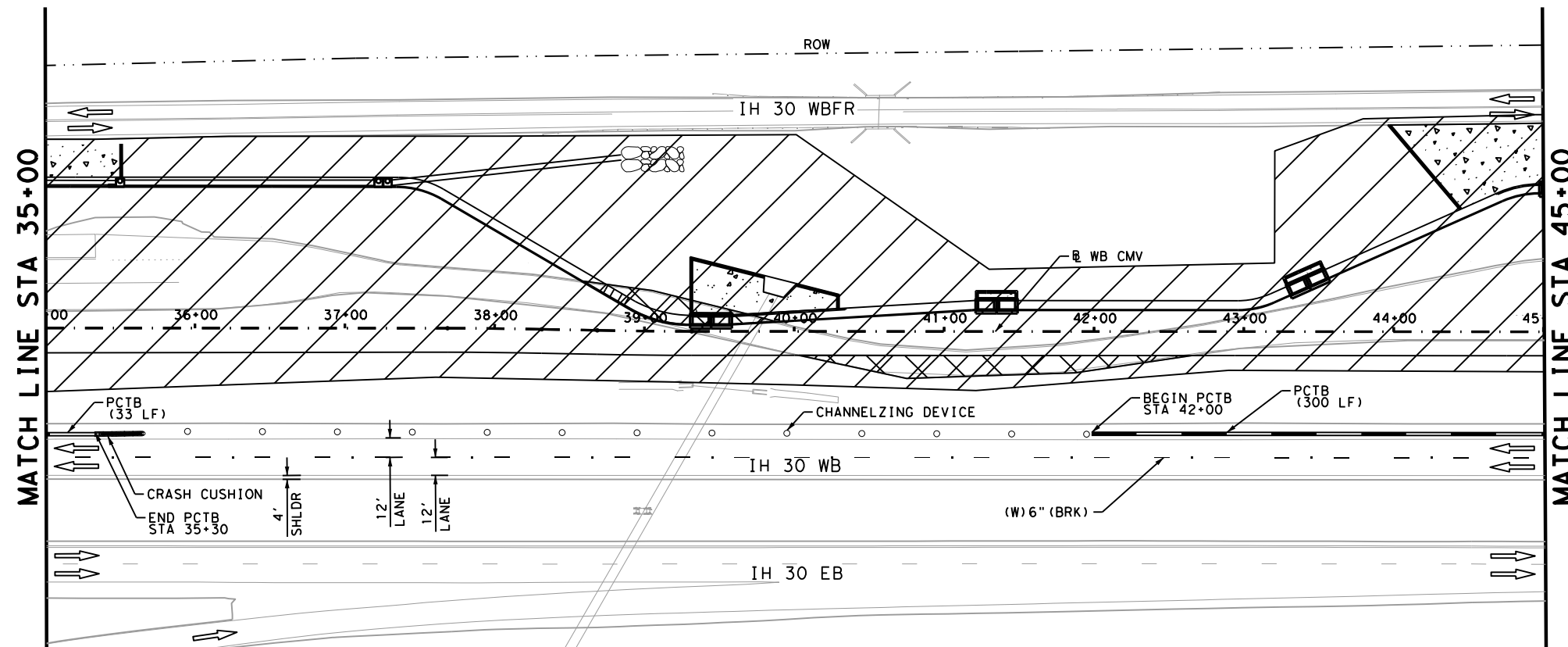
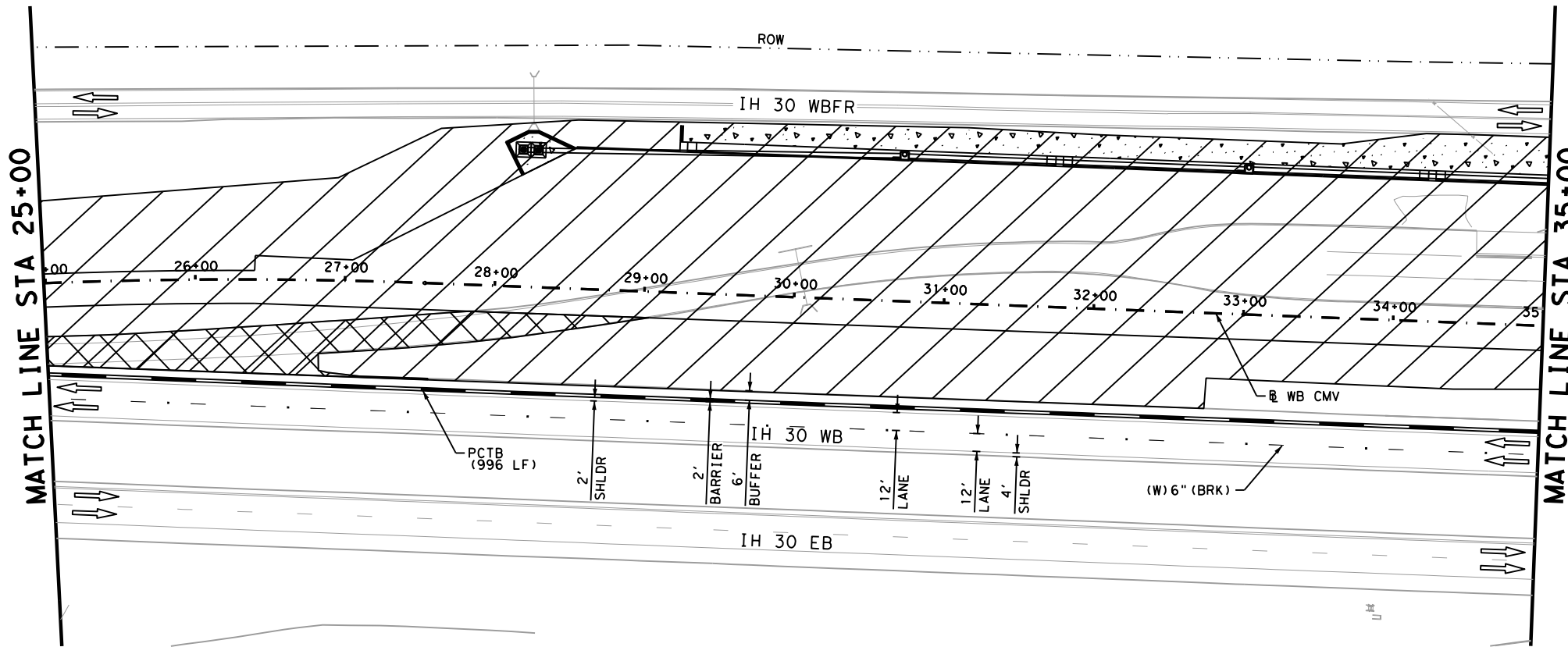
BEGIN PROJECT TO STA 25+00

SHEET 1 OF 5

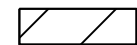







CHK	FED. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	6	TEXAS		IH 30		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	ATL	TITUS	0610	03	095	30

Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\TCP\1163504\cpPH202.dgn



LEGEND

-  PHASE II CONSTRUCTION
-  PAVEMENT REMOVAL
-  TREE REMOVAL
-  BARRIER
-  TYPE III BARRICADE
-  BARRELS
-  SIGN
-  TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.

DESIGN

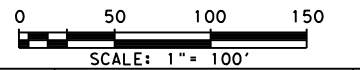
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

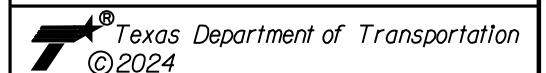
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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



**WB IH 30 CMV STATION
 TRAFFIC CONTROL PLAN
 PHASE II**

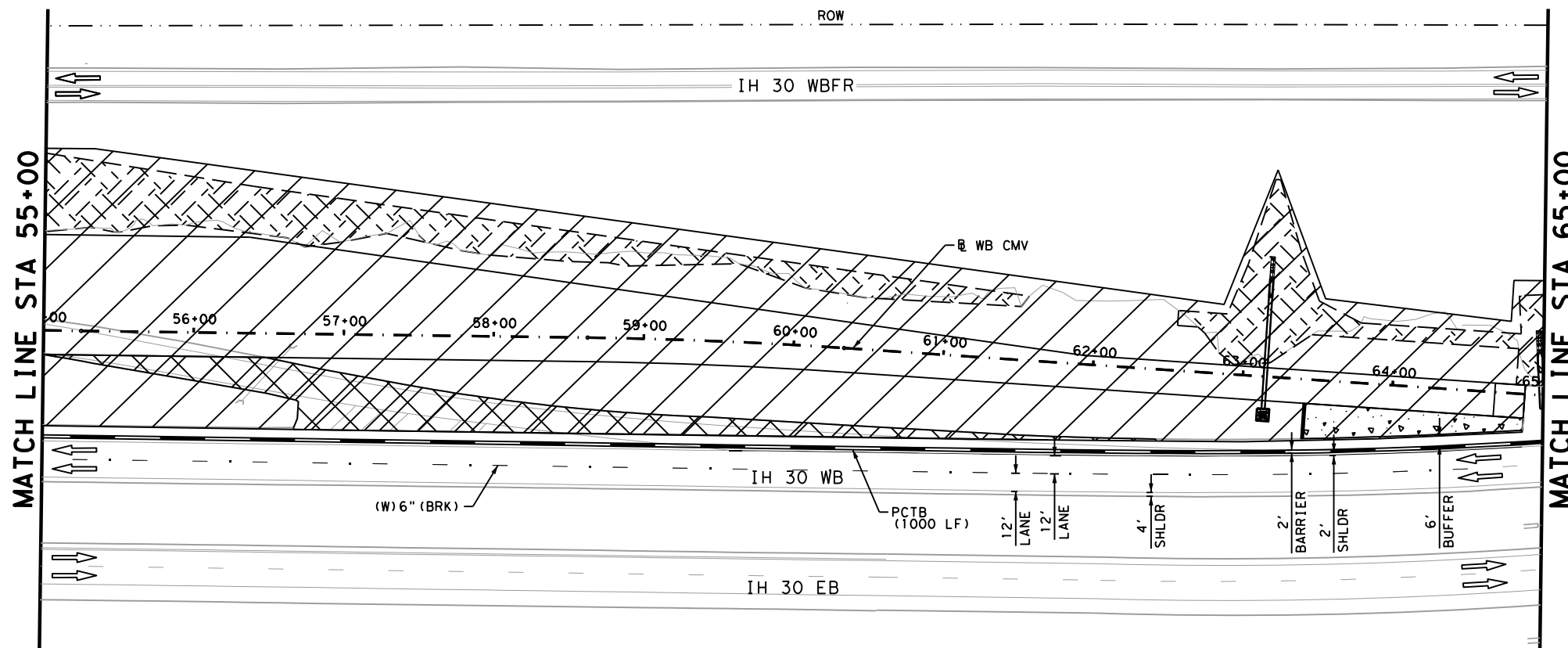
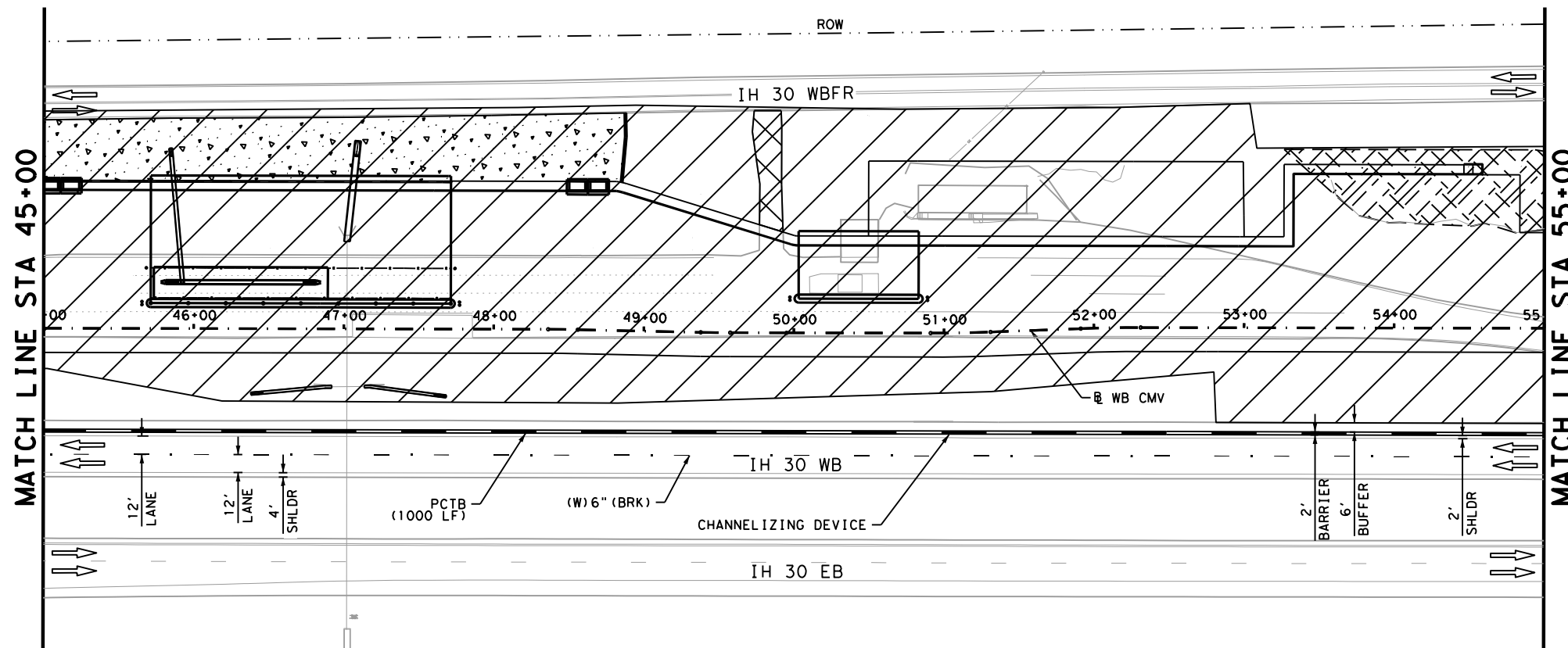
STA 25+00 TO STA 45+00

SHEET 2 OF 5

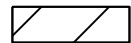







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CHK DCN:	ATL	TITUS	0610	03	095	31

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\TCP\1163504+cpPH203.dgn



LEGEND

-  PHASE II CONSTRUCTION
-  PAVEMENT REMOVAL
-  TREE REMOVAL
-  BARRIER
-  TYPE III BARRICADE
-  BARRELS
-  SIGN
-  TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.

DESIGN

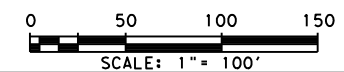
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

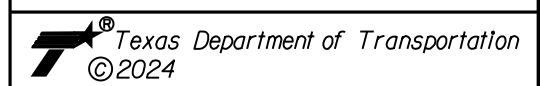
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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**WB IH 30 CMV STATION
 TRAFFIC CONTROL PLAN
 PHASE II**

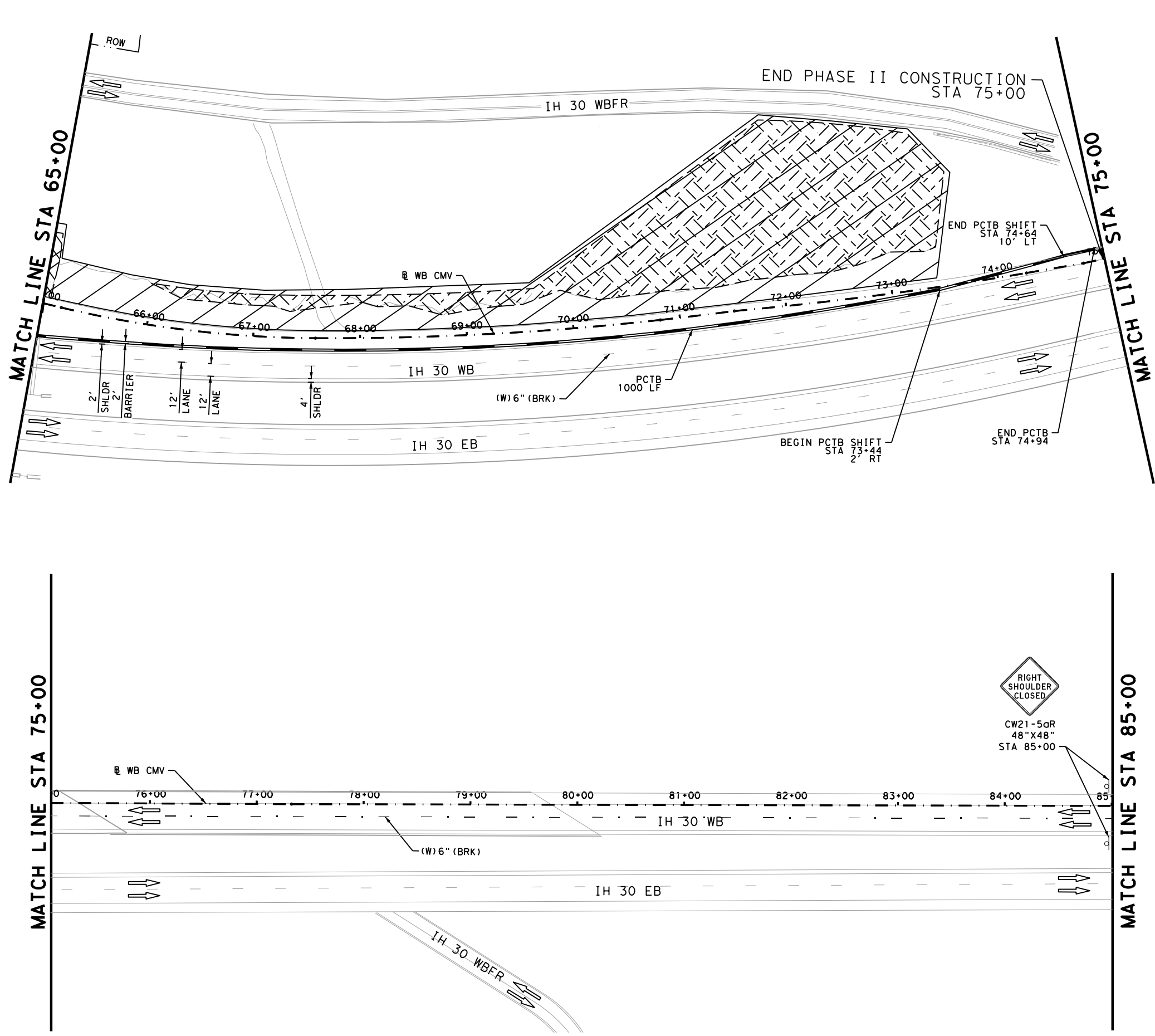
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SHEET 3 OF 5

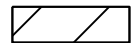
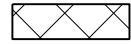






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Plotted on: 6/3/2024

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LEGEND

-  PHASE II CONSTRUCTION
-  PAVEMENT REMOVAL
-  TREE REMOVAL
-  BARRIER
-  TYPE III BARRICADE
-  BARRELS
-  SIGN
-  TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.

DESIGN

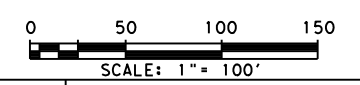
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 ENGINEER: STEVEN J. TATE
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 DATE: 6/3/2024

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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



CW21-50R
48" X 48"
STA 85+00

REV. NO.	DATE	DESCRIPTION	BY



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**WB IH 30 CMV STATION
TRAFFIC CONTROL PLAN
PHASE II**

STA 65+00 TO STA 85+00

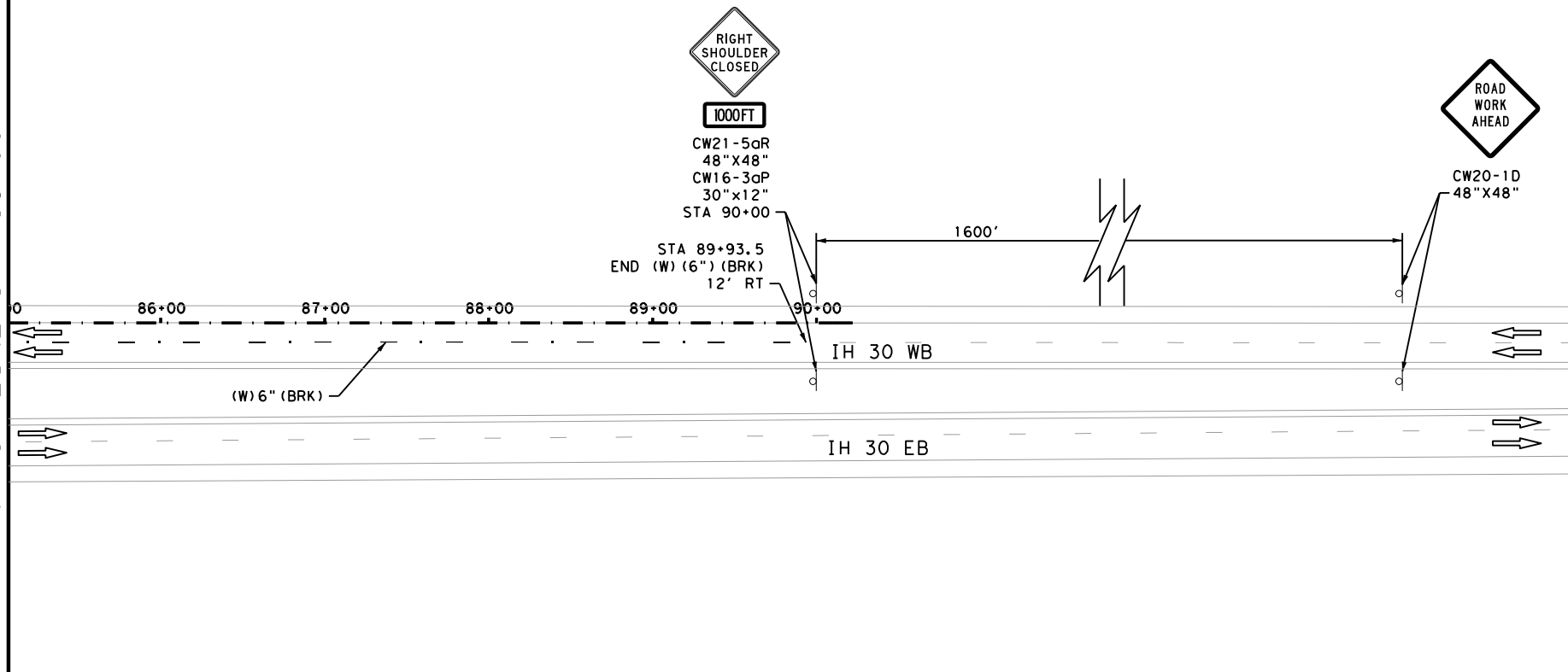
SHEET 4 OF 5

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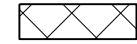






Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\TCP\1163504\cpPH205.dgn

MATCH LINE STA 85+00



LEGEND

-  PHASE II CONSTRUCTION
-  PAVEMENT REMOVAL
-  TREE REMOVAL
-  BARRIER
-  TYPE III BARRICADE
-  BARRELS
-  SIGN
-  TRAFFIC FLOW ARROWS

NOTES:

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.

DESIGN

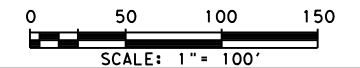
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1002800



**WB IH 30 CMV STATION
 TRAFFIC CONTROL PLAN
 PHASE II**

STA 85+00 TO END PROJECT

SHEET 5 OF 5

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	34

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Design File Name: P:\116.35\04\Design\Civi\Standards\TCP\1163504_CCSS1.dgn

LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION											
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE / RESET	FROM LOC. #	L	L	R	R	S	S		
													MOVE / RESET	FROM LOC. #	N	W	N	W	N	W				
1	1	25	WB IH 30 CMV STATION	STA 24+67	TL-3	WB	EXIST PAV	-	PCTB	24"	42"		1									1		
2	1	28	WB IH 30 CMV STATION	STA 77+63	TL-3	WB	EXIST PAV	-	PCTB	24"	42"		1	1								1		
3	2	31	WB IH 30 CMV STATION	STA 35+30	TL-3	WB	EXIST PAV	-	PCTB	24"	42"			1	1	1						1		
TOTALS													2	2	1									

LEGEND:
 L=LOW MAINTENANCE
 R=REUSABLE
 S=SACRIFICIAL
 N=NARROW
 W=WIDE

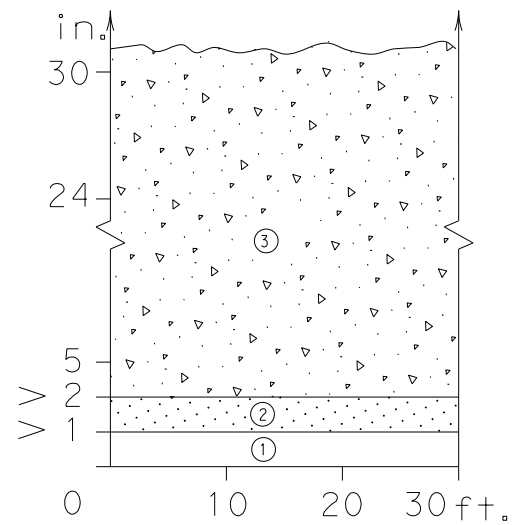
FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
<http://www.dot.state.tx.us/insdot/orgchart/cmd/cserve/standard/rdwylse.htm>

CRASH CUSHION SUMMARY SHEET

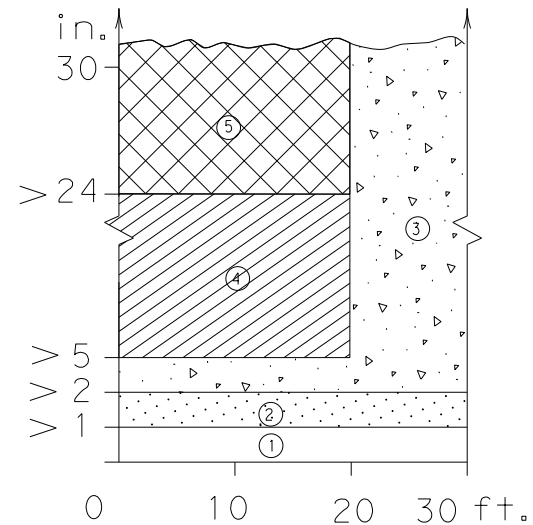
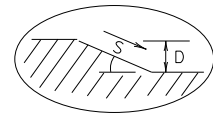
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© TxDOT	CONT	SECT	JOB
REVISIONS	0610	03	095
	DIST	COUNTY	
	ATL	TITUS	
	FEDERAL AID PROJECT	SHEET NO.	
		35	

DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

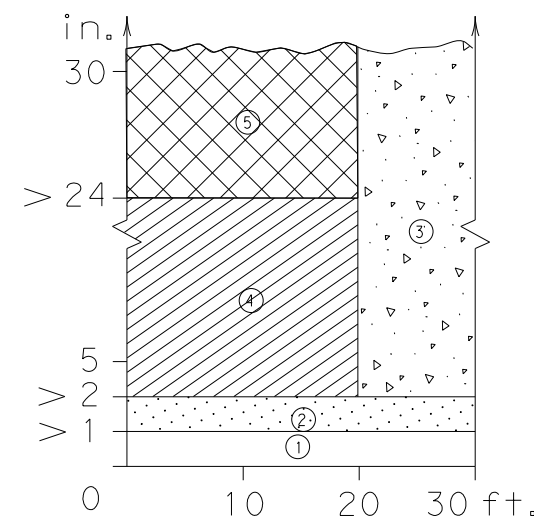
Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet



Edge Condition I
S = (3:1) (or flatter)



Edge Condition II
S = ((2.99):1) to (1:1)



Edge Condition III
S is steeper than (1:1)

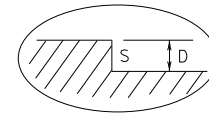
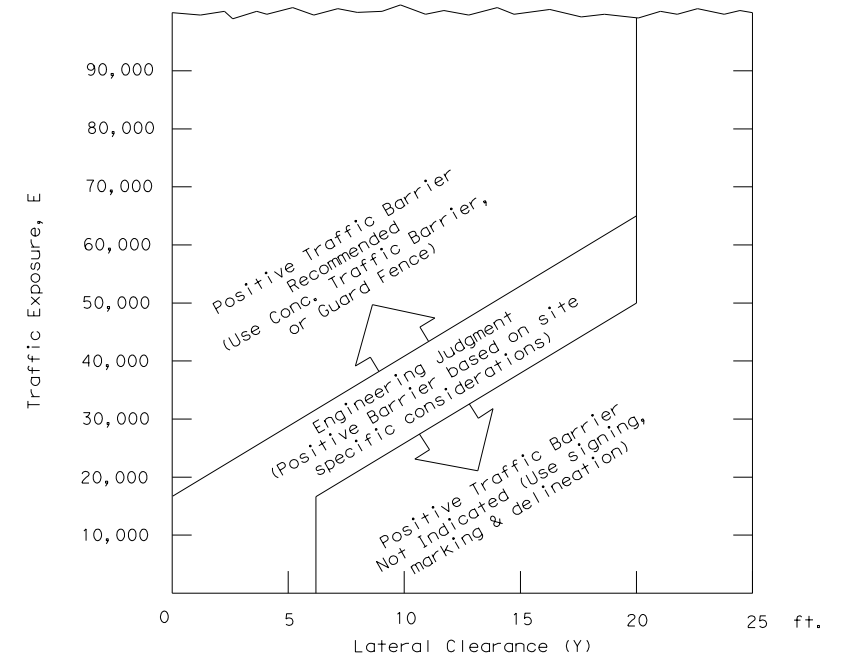


FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 ([hatched box])



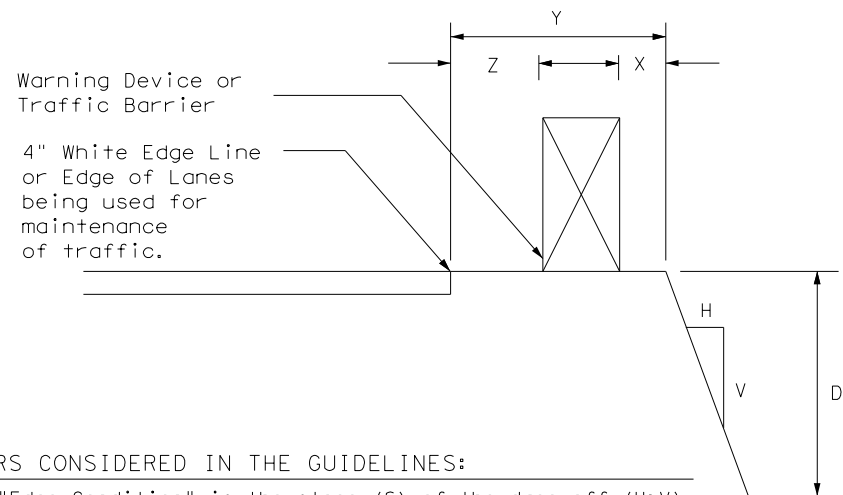
- E = ADT x T
Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.
- Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.
- An approved end treatment should be provided for any positive barrier end located within the clear zone.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

Zone	Treatment Types Guidelines:
①	No treatment
②	CW 8-11 "Uneven Lanes" signs.
③	CW 8-9a Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
④	CW8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge slope to that of the profered Edge Condition I.
⑤	Check indications (Figure-1) for possitive barrier. Where positive barrier is not indicated, the treatment shown above for Zone-4 may be used after consideration of other applicable factors.

Edge Condition Notes:

- Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.
- Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exceeds 24 inches, the possibility for rollover is greater in most vehicles.
- Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.
- Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.



FACTORS CONSIDERED IN THE GUIDELINES:

- The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height" is the depth of the drop-off "D".
- Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.
- In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.
- The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.
- If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

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Engineer's Seal INTERIM REVIEW DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION. ENGINEER: STEVEN J. TATE P.E. SERIAL NO: 131443 DATE: 6/3/2024		Texas Department of Transportation Traffic Safety Division Standard	
TREATMENT FOR VARIOUS EDGE CONDITIONS		FILE: edgecon.dgn DWN: August 2000 CONT SECT JOB HIGHWAY 0610 03 095 IH 30 REVISIONS 03-01 08-01 9-21 DIST COUNTY SHEET NO. ATL TITUS 36	

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.
11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.
12. The Engineer has the final decision on the location of all traffic control devices.
13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:



1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel," or equivalent revisions, and labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.
2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.
2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS) "
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

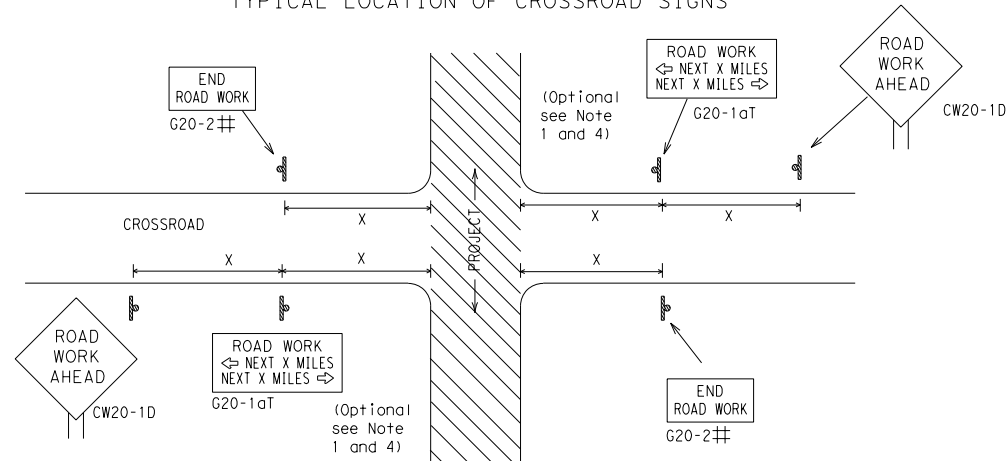
SHEET 1 OF 12

			
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS			
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		095	IH 30
REVISIONS		DIST	COUNTY
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9-07	8-14		
5-10	5-21	ATL	TITUS
			SHEET NO.
			37

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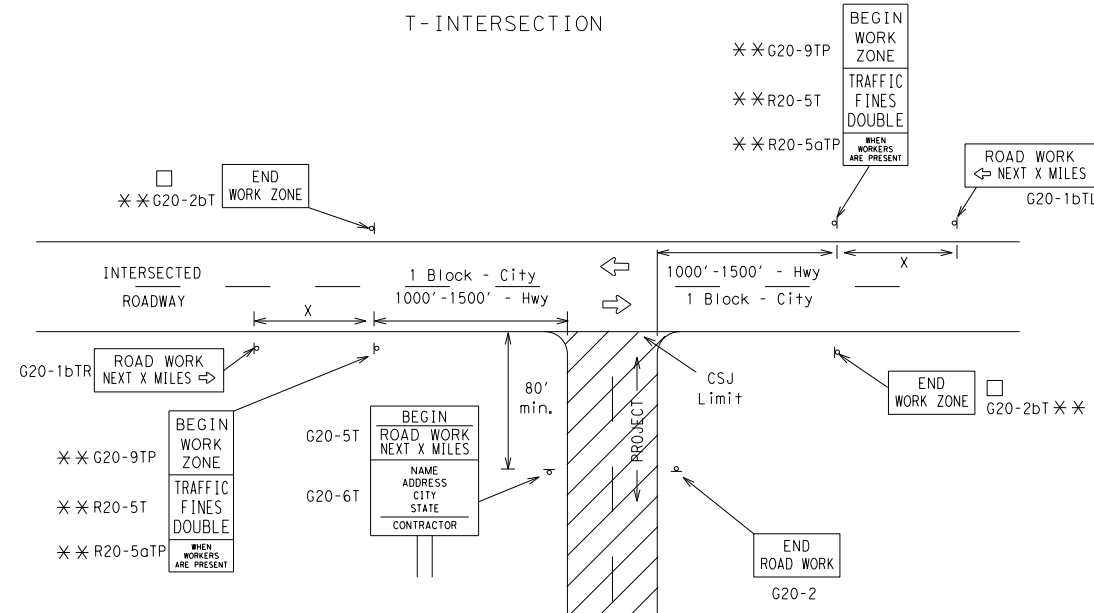
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TYPICAL LOCATION OF CROSSROAD SIGNS



- # May be mounted on back of "ROAD WORK AHEAD" (CW20-1D) sign with approval of Engineer. (See note 2 below)
- The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D) sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
 - The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK" (G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume as per TMUTCD Part 5. This information shall be shown in the plans.
 - Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
 - The "ROAD WORK NEXT X MILES" (G20-1aT) sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
 - Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
 - When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

- The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
- If construction closes the road at a T-intersection, the Contractor shall place the "CONTRACTOR NAME" (G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow (G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR) signs shall be replaced by the detour signing called for in the plans.

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING^{1,5,6}

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Spacing "x" (Feet (Apprx.))
CW20 ⁴	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25			50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14	48" x 48"	48" x 48"	55	500 ²
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12			60	600 ²
			65	700 ²
			70	800 ²
			75	900 ²
	80	1000 ²		
	*	*	*	* ³

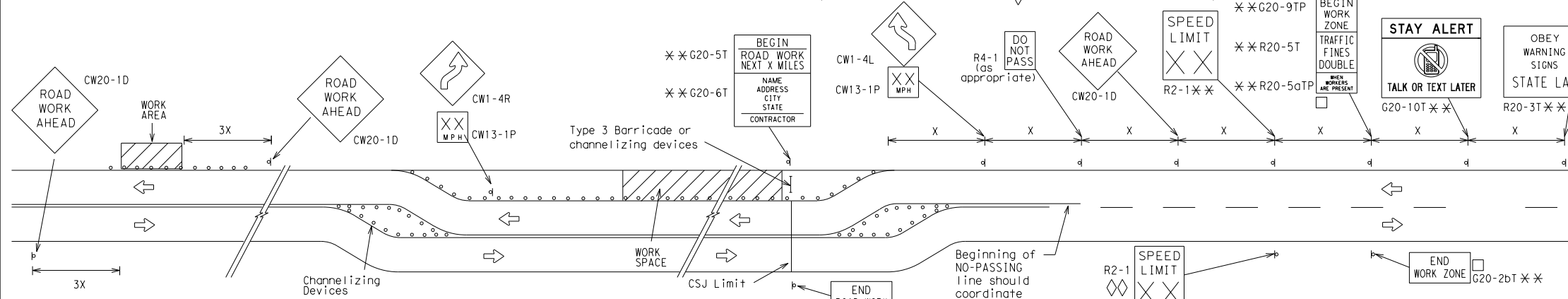
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

GENERAL NOTES

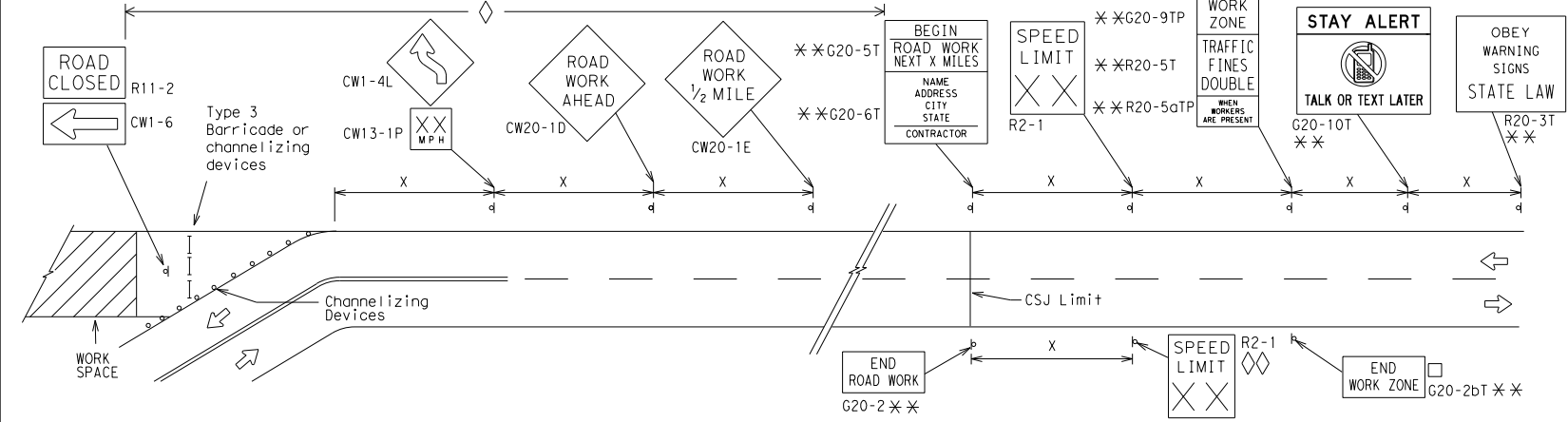
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
- Only diamond shaped warning sign sizes are indicated.
- See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

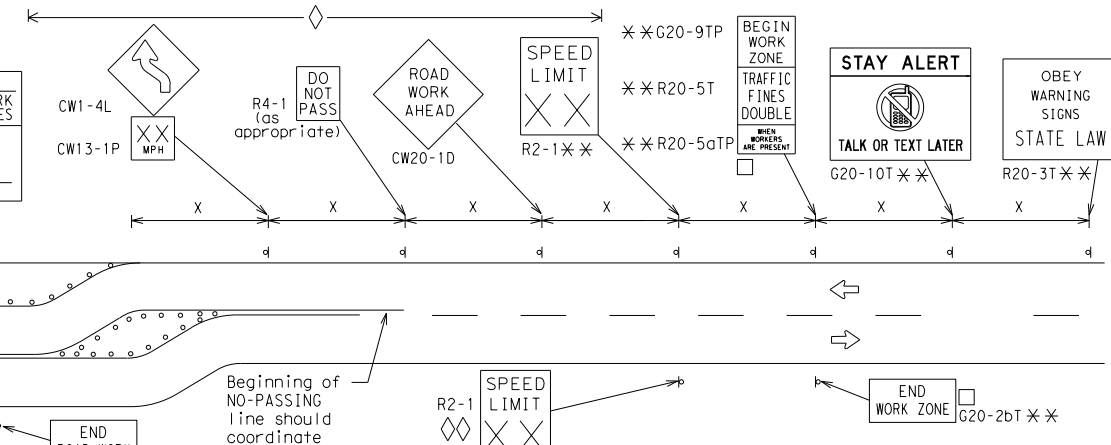


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD" (CW20-1D) signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



NOTES

- The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES" (G20-5T) sign for each specific project. This distance shall replace the "x" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.
- The "BEGIN WORK ZONE" (G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.
- CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.
- Area for placement of "ROAD WORK AHEAD" (CW20-1D) sign and other signs or devices as called for on the Traffic Control Plan.
- Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND	
—	Type 3 Barricade
○ ○ ○	Channelizing Devices
■	Sign
X	See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements.

SHEET 2 OF 12



BARRICADE AND CONSTRUCTION PROJECT LIMIT

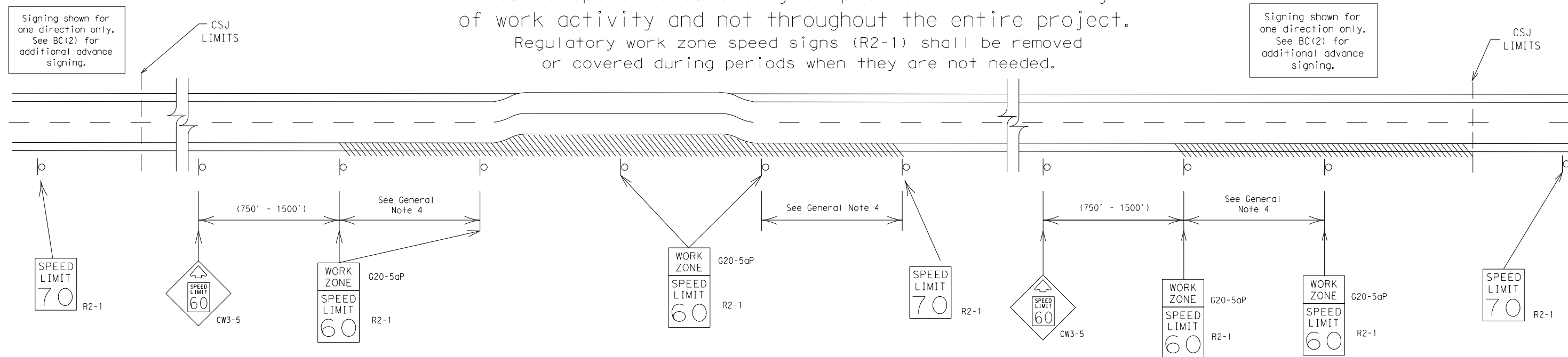
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© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project. Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

- rough road or damaged pavement surface
- substantial alteration of roadway geometrics (diversions)
- construction detours
- grade
- width
- other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the traveled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered. (See Removing or Covering on BC(4)).

GENERAL NOTES

- Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
- Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
- Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
- Frequency of work zone speed limit signs should be:

40 mph and greater	0.2 to 2 miles
35 mph and less	0.2 to 1 mile
- Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
- Fabrication, erection and maintenance of the "ADVANCE SPEED LIMIT" (CW3-5) sign, "WORK ZONE" (G20-5aP) plaque and the "SPEED LIMIT" (R2-1) signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
- Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
- Techniques that may help reduce traffic speeds include but are not limited to:
 - Law enforcement.
 - Flagger stationed next to sign.
 - Portable changeable message sign (PCMS).
 - Low-power (drone) radar transmitter.
 - Speed monitor trailers or signs.
- Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
- For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

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SHEET 3 OF 12



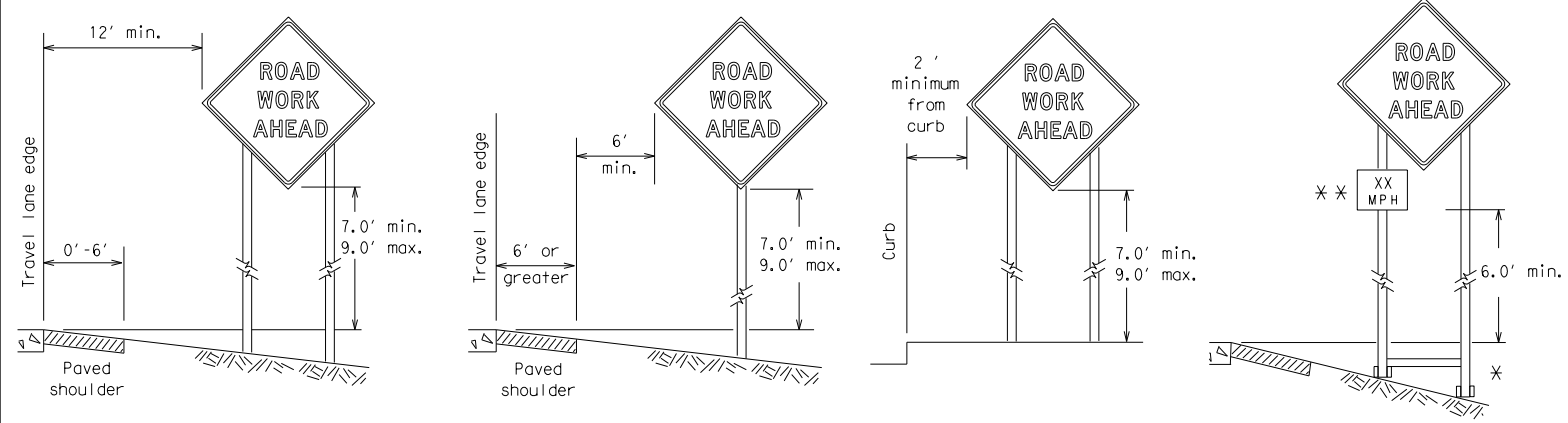
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) - 21

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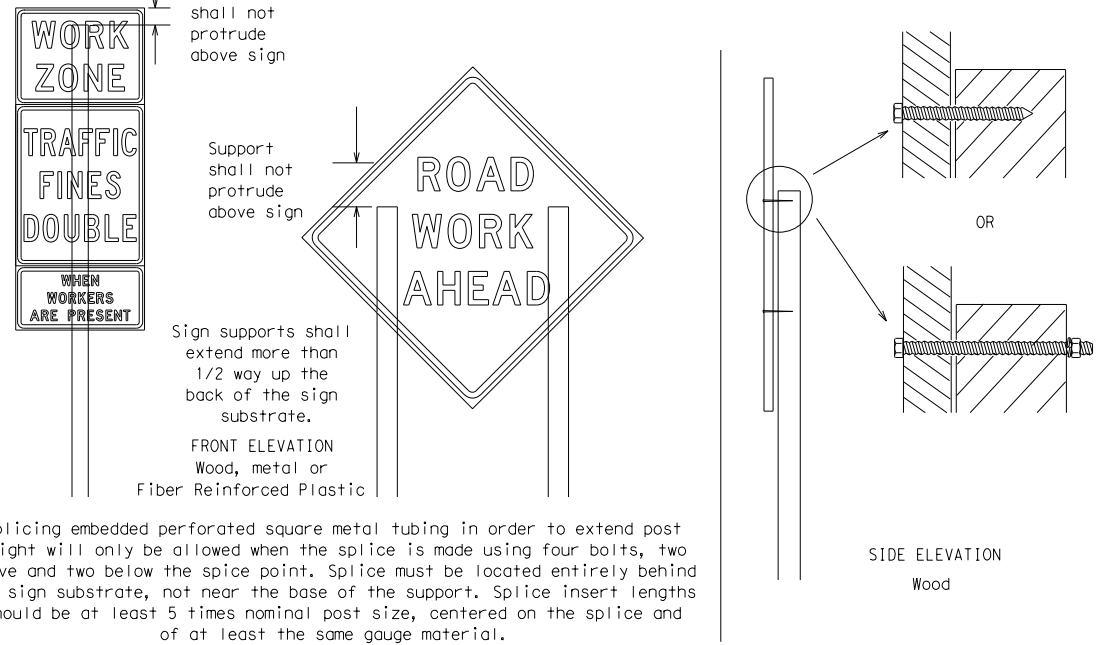
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TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.
 ** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the splice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

GENERAL NOTES FOR WORK ZONE SIGNS

- Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
- Wooden sign posts shall be painted white.
- Barricades shall NOT be used as sign supports.
- All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
- The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
- The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
- The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
- Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
- The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

- The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
 - Long-term stationary - work that occupies a location more than 3 days.
 - Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
 - Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
 - Short, duration - work that occupies a location up to 1 hour.
 - Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

- The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
- The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
- Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
- Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
- Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

SIZE OF SIGNS

- The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

SIGN SUBSTRATES

- The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
- "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
- All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

REFLECTIVE SHEETING

- All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
- White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
- Orange sheeting, meeting the requirements of DMS-8300 Type B_{FL} or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

- All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

REMOVING OR COVERING

- When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
- Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
- Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
- When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
- Burlap shall NOT be used to cover signs.
- Duct tape or other adhesive material shall NOT be affixed to a sign face.
- Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

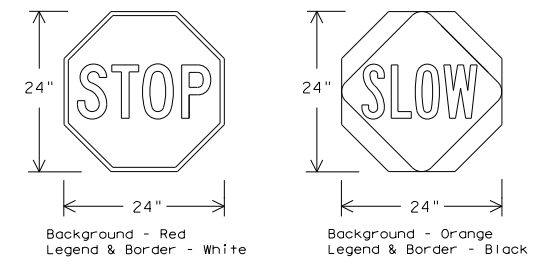
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
- Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
- Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
- Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
- Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
- Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

- Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

STOP/SLOW PADDLES

- STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
- STOP/SLOW paddles shall be retroreflectorized when used at night.
- STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
- Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.



SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

- Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, specific service (LOGO), or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
- When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
- When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
- If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
- If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
- Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.



BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

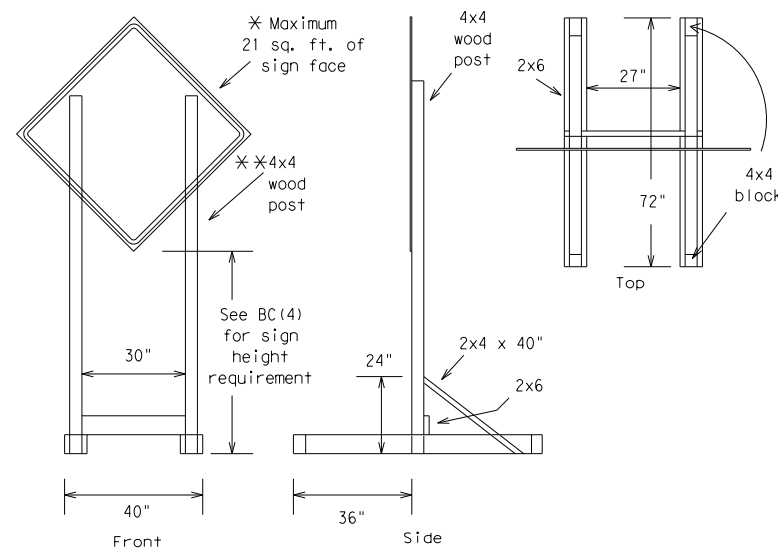
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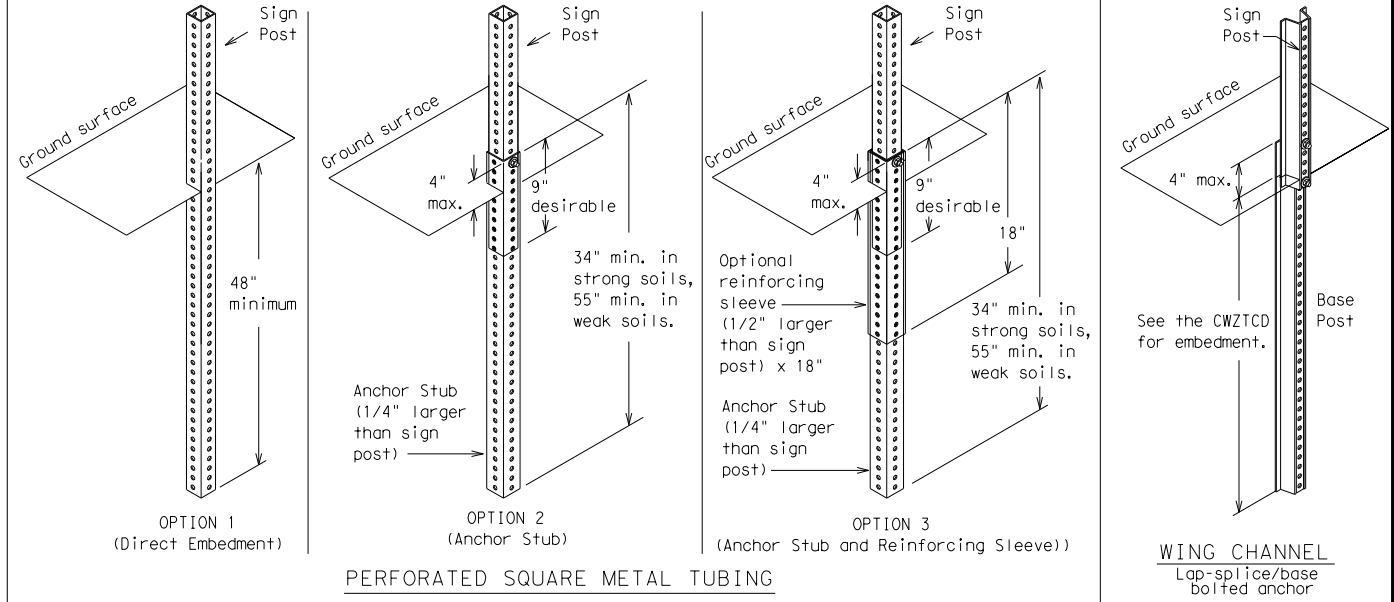
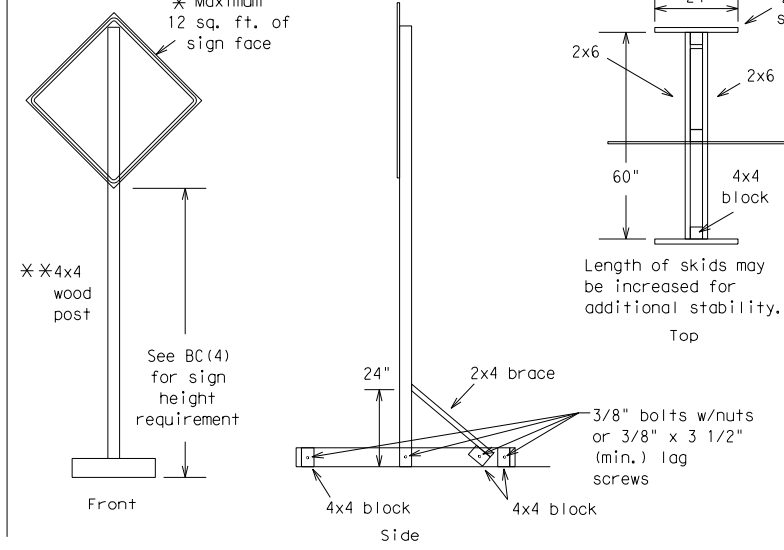
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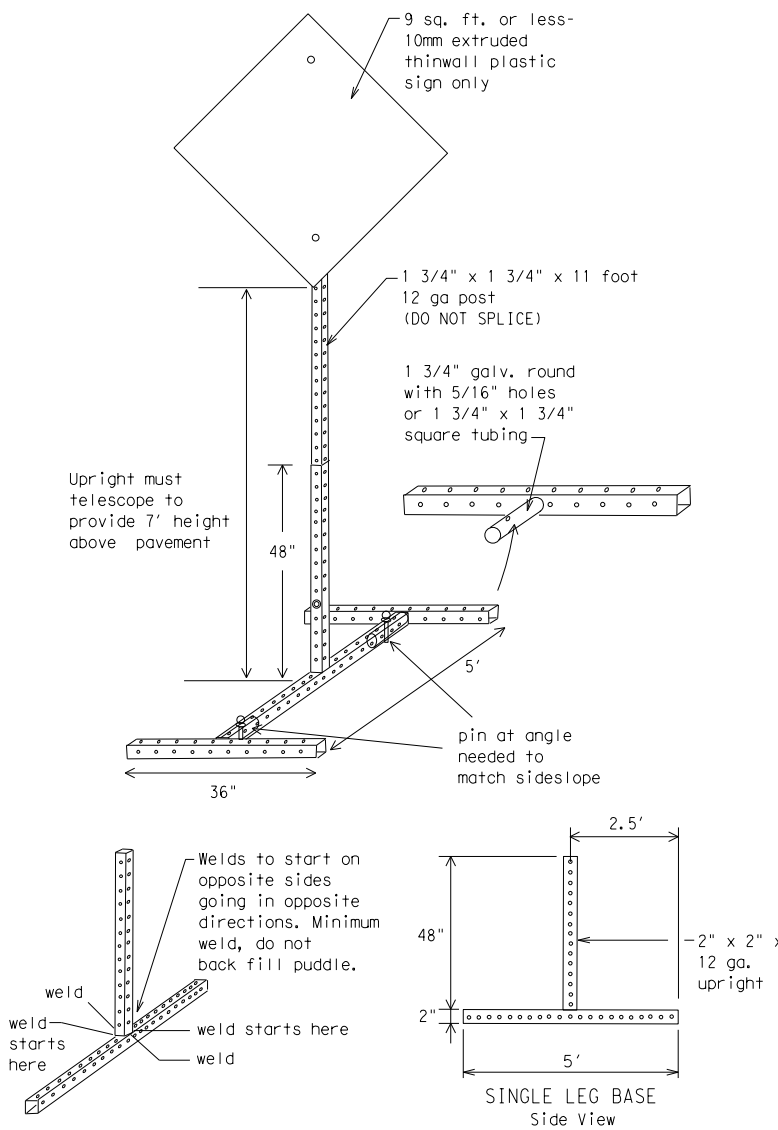
SKID MOUNTED WOOD SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



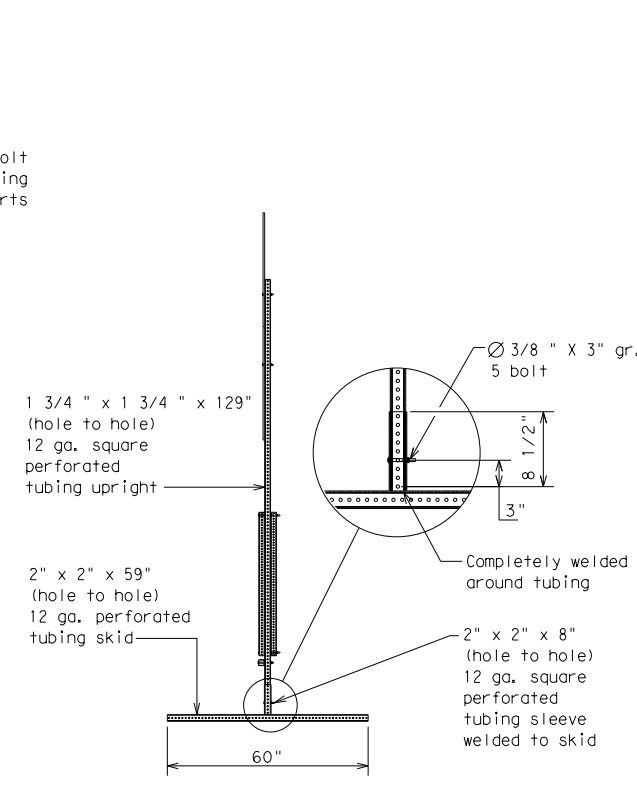
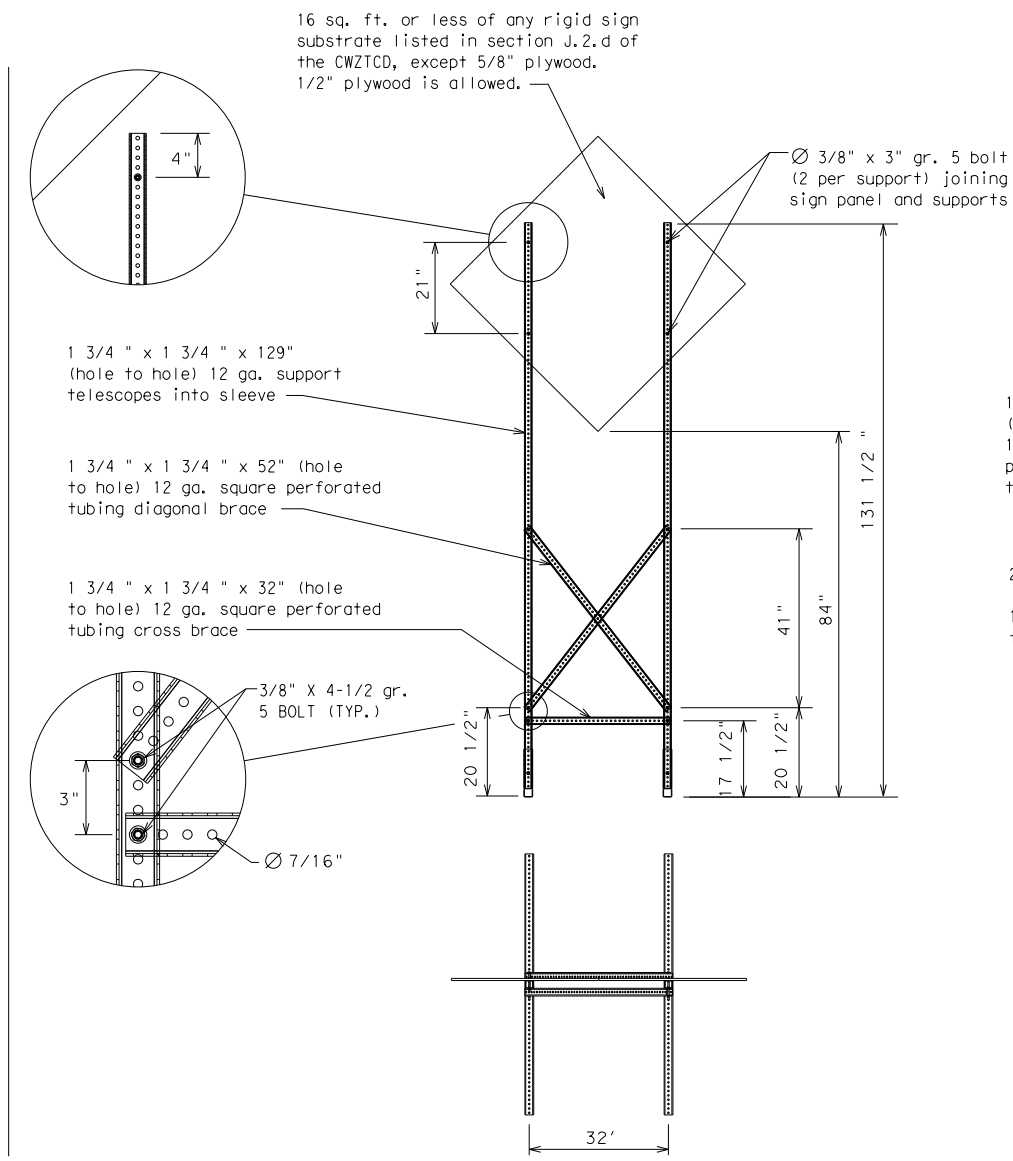
GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support. The maximum sign square footage shall adhere to the manufacturer's recommendation. Two post installations can be used for larger signs.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS



WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

- * See BC(4) for definition of "Work Duration."
- ** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.
- See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12



BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

PORTABLE CHANGEABLE MESSAGE SIGNS

- The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
- Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
- Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
- Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
- Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
- When in use, the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
- The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
- The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
- Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
- Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
- Do not use the word "Danger" in message.
- Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
- Do not display messages that scroll horizontally or vertically across the face of the sign.
- The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
- PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
- Each line of text should be centered on the message board rather than left or right justified.
- If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

WORD OR PHRASE	ABBREVIATION	WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD	Major	MAJ
Alternate	ALT	Miles	MI
Avenue	AVE	Miles Per Hour	MPH
Best Route	BEST RTE	Minor	MNR
Boulevard	BLVD	Monday	MON
Bridge	BRDG	Normal	NORM
Cannot	CANT	North	N
Center	CTR	Northbound	(route) N
Construction Ahead	CONST AHD	Parking	PKING
CROSSING	XING	Road	RD
Detour Route	DETOUR RTE	Right Lane	RT LN
Do Not	DONT	Saturday	SAT
East	E	Service Road	SERV RD
Eastbound	(route) E	Shoulder	SHLDR
Emergency	EMER	Slippery	SLIP
Emergency Vehicle	EMER VEH	South	S
Entrance, Enter	ENT	Southbound	(route) S
Express Lane	EXP LN	Speed	SPD
Expressway	EXPWY	Street	ST
XXXX Feet	XXXX FT	Sunday	SUN
Fog Ahead	FOG AHD	Telephone	PHONE
Freeway	FRWY, FWY	Temporary	TEMP
Freeway Blocked	FWY BLKD	Thursday	THURS
Friday	FRI	To Downtown	TO DWNTN
Hazardous Driving	HAZ DRIVING	Traffic	TRAF
Hazardous Material	HAZMAT	Travelers	TRVLR
High-Occupancy Vehicle	HOV	Tuesday	TUES
Highway	Hwy	Time Minutes	TIME MIN
Hour(s)	HR, HRS	Upper Level	UPR LEVEL
Information	INFO	Vehicles (s)	VEH, VEHS
It Is	ITS	Warning	WARN
Junction	JCT	Wednesday	WED
Left	LFT	Weight Limit	WT LIMIT
Left Lane	LFT LN	West	W
Lane Closed	LN CLOSED	Westbound	(route) W
Lower Level	LWR LEVEL	Wet Pavement	WET PVMT
Maintenance	MAINT	Will Not	WONT

Roadway designation # IH-number, US-number, SH-number, FM-number

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

FREEWAY CLOSED X MILE
ROAD CLOSED AT SH XXX
ROAD CLSD AT FM XXXX
RIGHT X LANES CLOSED
CENTER LANE CLOSED
NIGHT LANE CLOSURES
VARIOUS LANES CLOSED
EXIT CLOSED
MALL DRIVEWAY CLOSED
XXXXXXXX BLVD CLOSED

Other Condition List

FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

MERGE RIGHT	FORM X LINES RIGHT
DETOUR NEXT X EXITS	USE XXXXX RD EXIT
USE EXIT XXX	USE EXIT I-XX NORTH
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N
TRUCKS USE US XXX N	WATCH FOR TRUCKS
WATCH FOR TRUCKS	EXPECT DELAYS
EXPECT DELAYS	PREPARE TO STOP
REDUCE SPEED XXX FT	END SHOULDER USE
USE OTHER ROUTES	WATCH FOR WORKERS
STAY IN LANE	

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXXX TO XXXXXXX
US XXX TO FM XXXX

Warning List

SPEED LIMIT XX MPH
MAXIMUM SPEED XX MPH
MINIMUM SPEED XX MPH
ADVISORY SPEED XX MPH
RIGHT LANE EXIT
USE CAUTION
DRIVE SAFELY
DRIVE WITH CARE

** Advance Notice List

TUE-FRI XX AM- X PM
APR XX- XX X PM-X AM
BEGINS MONDAY
BEGINS MAY XX
MAY X-X XX PM - XX AM
NEXT FRI-SUN
XX AM TO XX PM
NEXT TUE AUG XX
TONIGHT XX PM- XX AM

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

- Only 1 or 2 phases are to be used on a PCMS.
- The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
- A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
- A Location Phase is necessary only if a distance or location is not included in the first phase selected.
- If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
- For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

WORDING ALTERNATIVES

- The words RIGHT, LEFT and ALL can be interchanged as appropriate.
- Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
- EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
- Highway names and numbers replaced as appropriate.
- ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
- AHEAD may be used instead of distances if necessary.
- FT and MI, MILE and MILES interchanged as appropriate.
- AT, BEFORE and PAST interchanged as needed.
- Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

FULL MATRIX PCMS SIGNS

- When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
- When symbol signs, such as the "Flagger Symbol" (CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
- When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
- A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.

<p>BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)</p> <p>BC (6) -21</p>			
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©TxDOT	November 2002	CONT:	SECT:
REVISIONS		0610	03
9-07	8-14	095	IH 30
7-13	5-21	DIST:	COUNTY:
		ATL	TITUS
			SHEET NO. 42

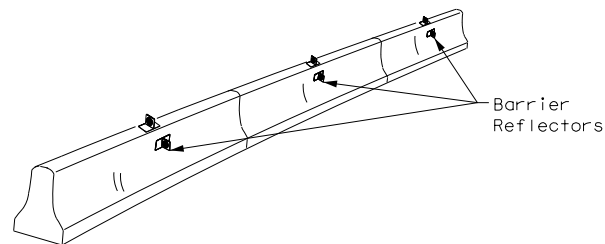
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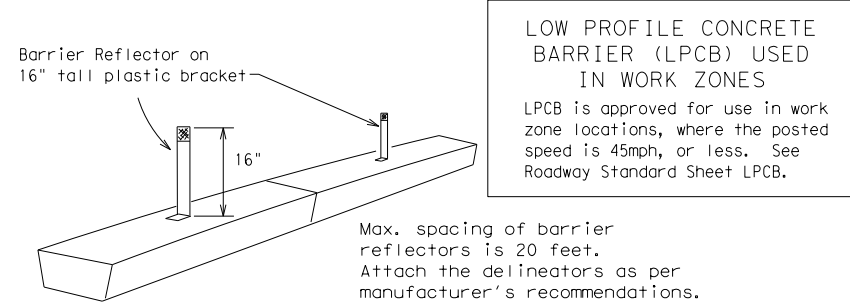
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



CONCRETE TRAFFIC BARRIER (CTB)

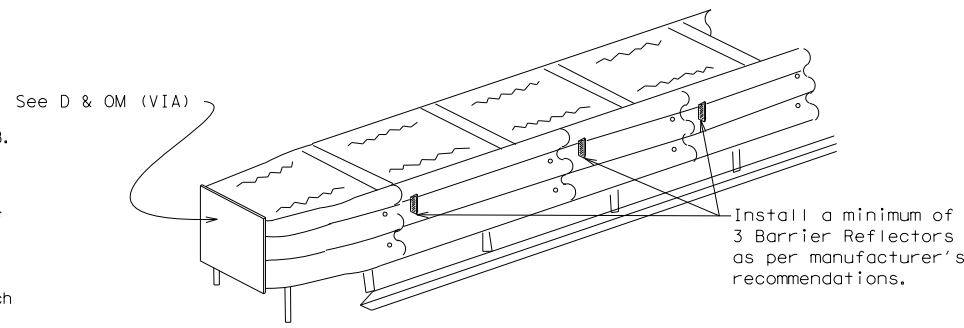


LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

LOW PROFILE CONCRETE BARRIER (LPCB)

- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
- Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional) while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
- When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
- Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
- Maximum spacing of Barrier Reflectors is forty (40) feet.
- Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
- Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
- Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
- Single slope barriers shall be delineated as shown on the above detail.

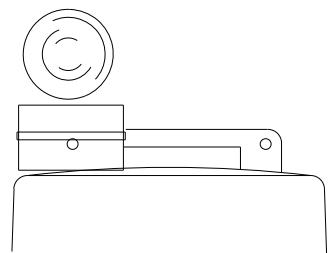


DELINEATION OF END TREATMENTS

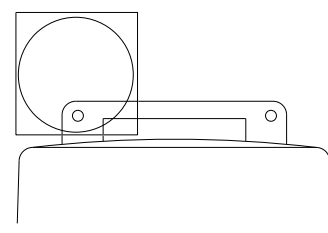
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the appropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

WARNING LIGHTS

- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B_{FL} or C_{FL} Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
- Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
- The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
- When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
- When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
- The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

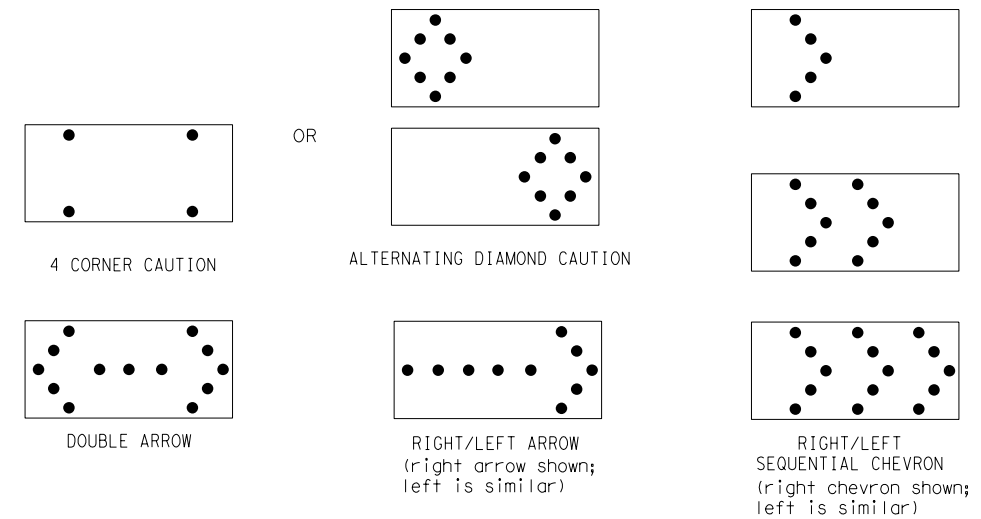
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
- Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
- Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
- Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
- The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

- A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
- The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
- The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
- Round reflectors shall be fully reflectorized, including the area where attached to the drum.
- Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
- The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
- When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
- The warning reflector should be mounted on the side of the handle nearest approaching traffic.
- The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

- The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
- Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
- The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
- The Flashing Arrow Board should be able to display the following symbols:



- The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
- The straight line caution display is NOT ALLOWED.
- The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
- Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
- The sequential arrow display is NOT ALLOWED.
- The flashing arrow display is the TxDOT standard; however, the sequential chevron display may be used during daylight operations.
- The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
- A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
- A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
- Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION
 Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

- Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
- Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
- Refer to the CWZTCD for a list of approved TMAs.
- TMAs are required on freeways unless otherwise noted in the plans.
- A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
- The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION
 ARROW PANEL, REFLECTORS,
 WARNING LIGHTS & ATTENUATOR

BC (7) -21

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© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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7-13	5-21	DIST	COUNTY	SHEET NO.
		ATL	TITUS	43

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GENERAL NOTES

- For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
- For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections, one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
- For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
- Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
- The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

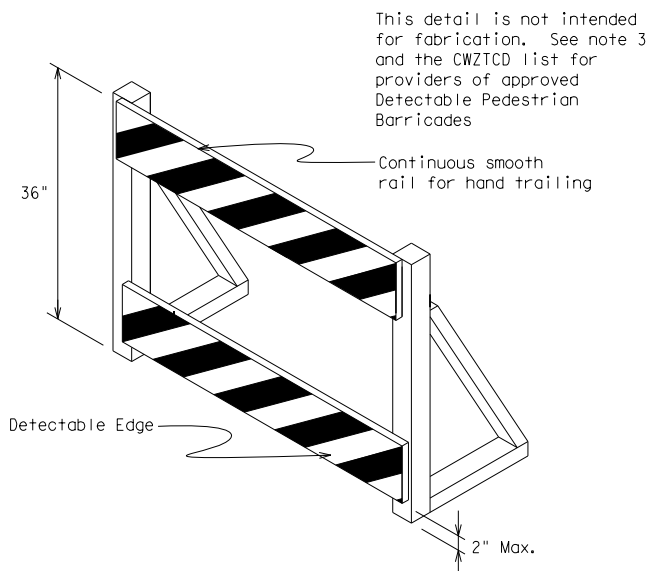
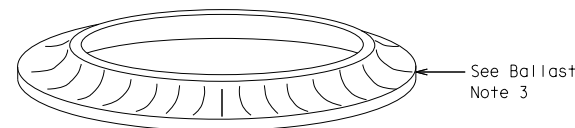
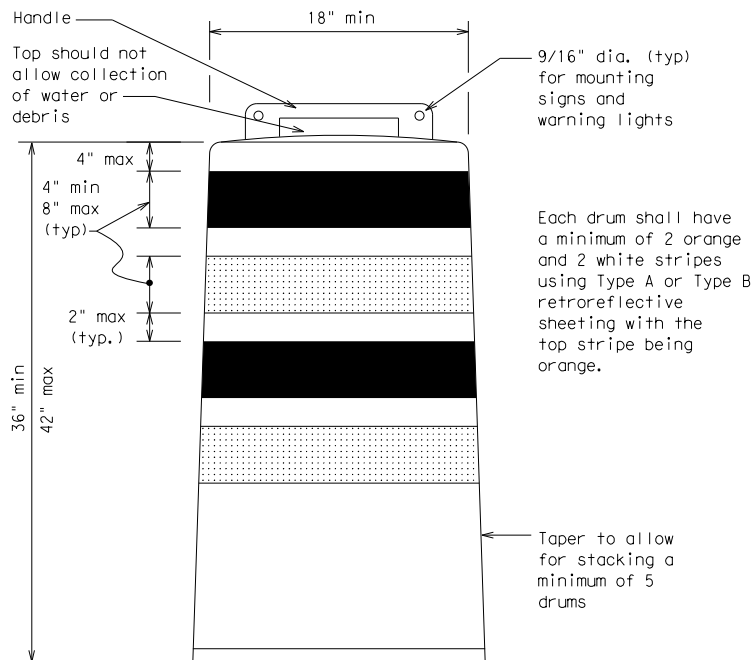
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
- Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
- Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
- The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
- The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
- Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
- Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
- Drum body shall have a maximum unballasted weight of 11 lbs.
- Drum and base shall be marked with manufacturer's name and model number.

RETROREFLECTIVE SHEETING

- The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
- The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

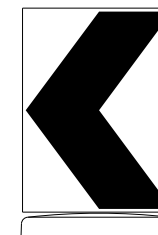
BALLAST

- Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
- Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
- Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
- The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
- When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
- Ballast shall not be placed on top of drums.
- Adhesives may be used to secure base of drums to pavement.

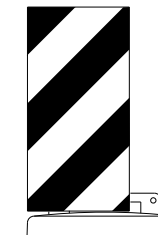


DETECTABLE PEDESTRIAN BARRICADES

- When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
- Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
- Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
- Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
- Warning lights shall not be attached to detectable pedestrian barricades.
- Detectable pedestrian barricades should use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane
Divider, Driveway sign D70a, Keep Right
R4 series or other signs as approved
by Engineer



12" x 24"
Vertical Panel
mount with diagonals
sloping down towards
travel way

Plywood, Aluminum or Metal sign
substrates shall NOT be used on
plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

- Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
- Chevrons and other work zone signs with an orange background shall be manufactured with Type B_{FL} or Type C_{FL} Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
- Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A or Type B. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
- Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
- Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
- Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
- Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations, they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
- R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12



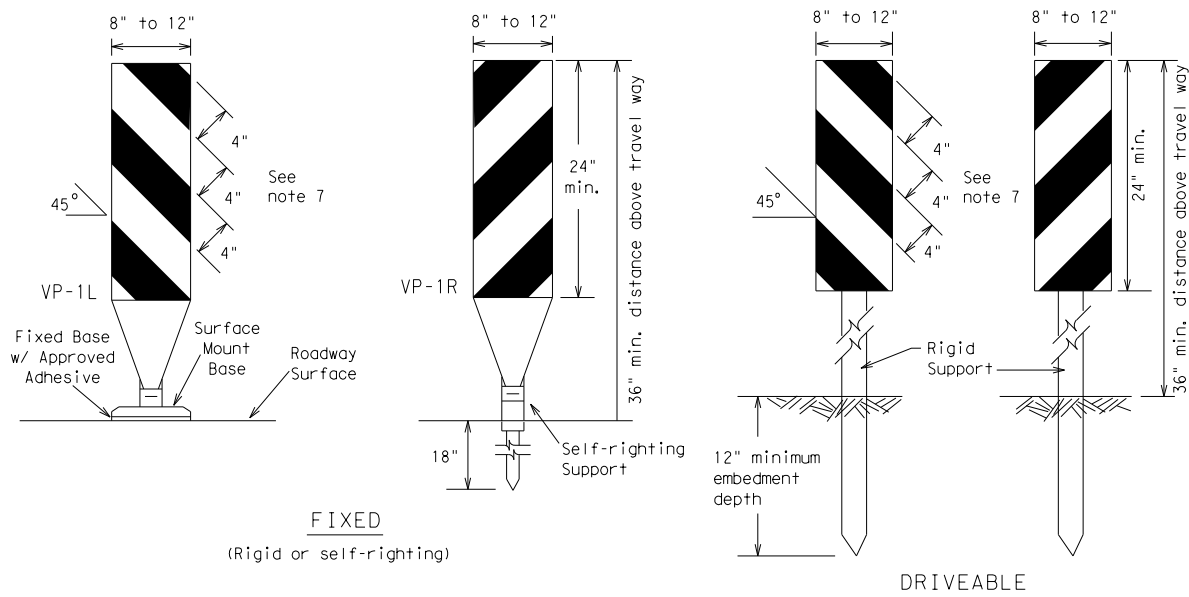
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (8) - 21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0610	03	095	IH 30				
4-03	8-14	DIST	COUNTY		SHEET NO.				
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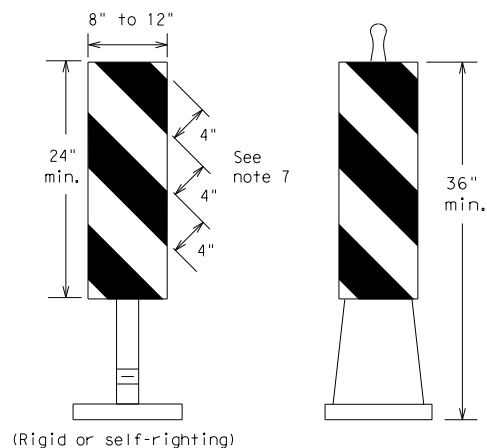
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FIXED
(Rigid or self-righting)

DRIVEABLE

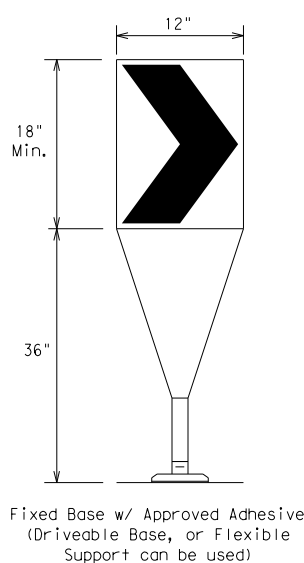


(Rigid or self-righting)

PORTABLE

VERTICAL PANELS (VPs)

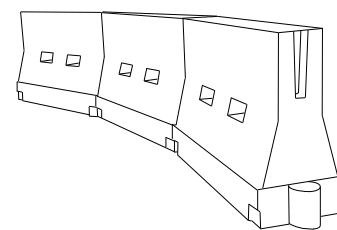
- Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
- VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use VP's for drop-offs.
- VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
- VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
- Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- Sheeting for the VP's shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
- Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.



Fixed Base w/ Approved Adhesive
(Driveable Base, or Flexible Support can be used)

- The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
- Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
- Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
- To be effective, the chevron should be visible for at least 500 feet.
- Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
- For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

- LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
- LCDs may be used instead of a line of cones or drums.
- LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
- LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
- LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10). Place reflective sheeting near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

- Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate Manual for Assessing Safety Hardware (MASH) crashworthiness requirements based on roadway speed and barrier application.
- Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
- Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
- Water ballasted systems used as barriers shall not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
- When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

GENERAL NOTES

- Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
- Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
- The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
- Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
- Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
- The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.

Posted Speed	Formula	Minimum Desirable Taper Lengths * X			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = WS ² / 60	150'	165'	180'	30'	60'
35		205'	225'	245'	35'	70'
40		265'	295'	320'	40'	80'
45	L = WS	450'	495'	540'	45'	90'
50		500'	550'	600'	50'	100'
55		550'	605'	660'	55'	110'
60		600'	660'	720'	60'	120'
65		650'	715'	780'	65'	130'
70		700'	770'	840'	70'	140'
75		750'	825'	900'	75'	150'
80		800'	880'	960'	80'	160'

*X Taper lengths have been rounded off.
 L=Length of Taper (FT.) W=Width of Offset (FT.)
 S=Posted Speed (MPH)

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (9) - 21

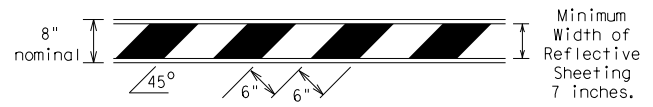
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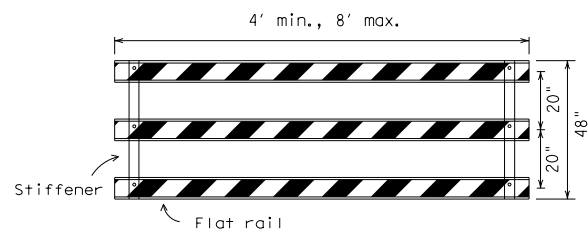
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road, striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



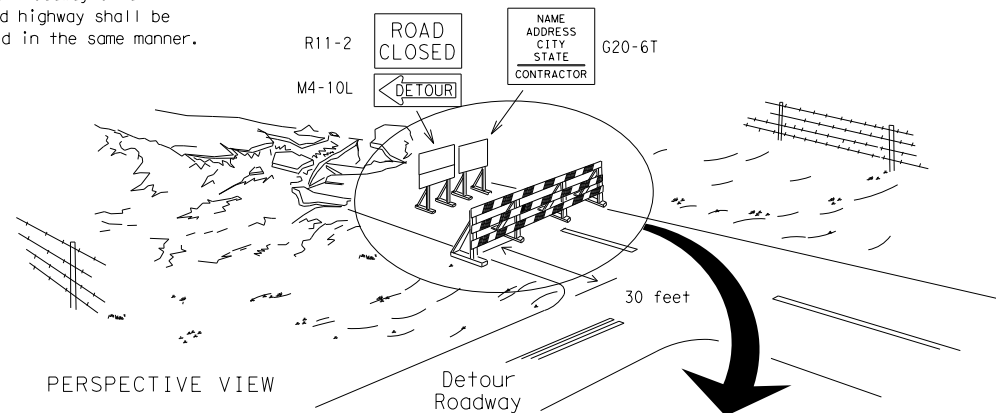
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

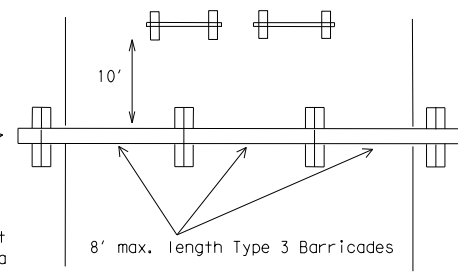
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

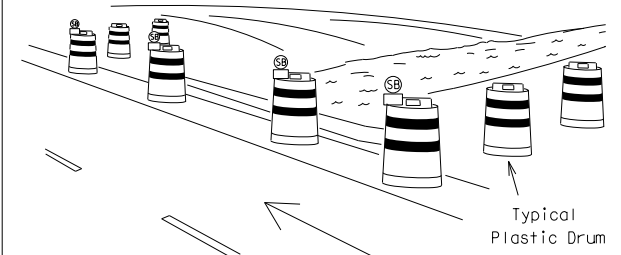
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



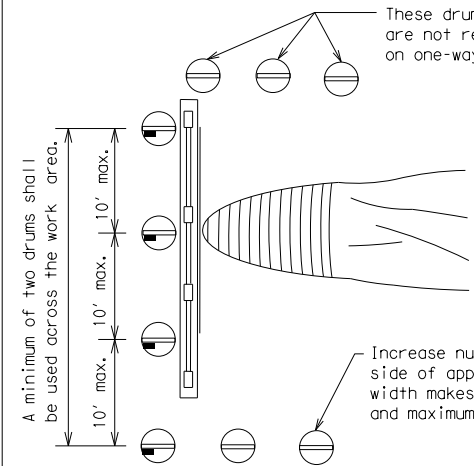
PLAN VIEW

1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW



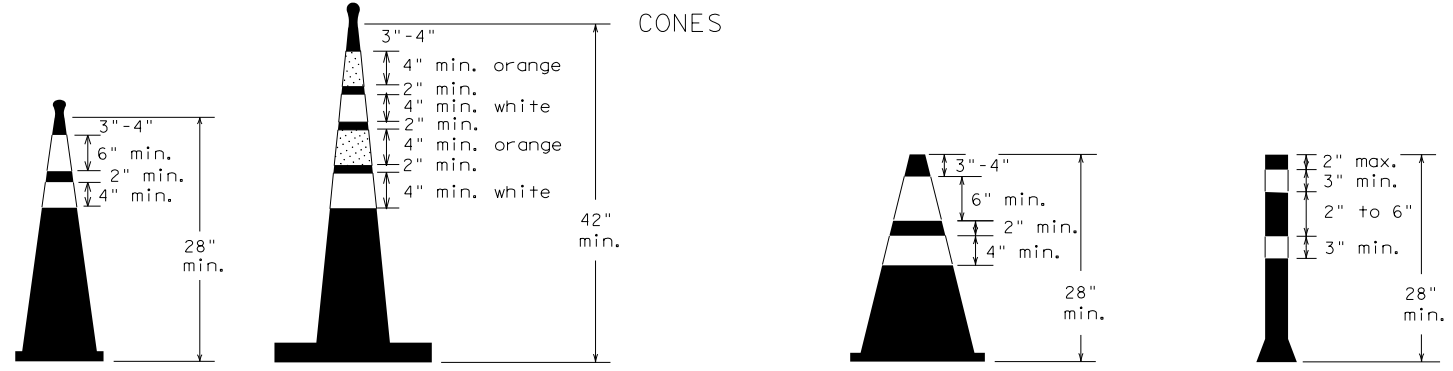
PLAN VIEW

1. Where positive redirection capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.

LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
	Steady burn warning light or yellow warning reflector

Increase number of plastic drums on the side of approaching traffic if the crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

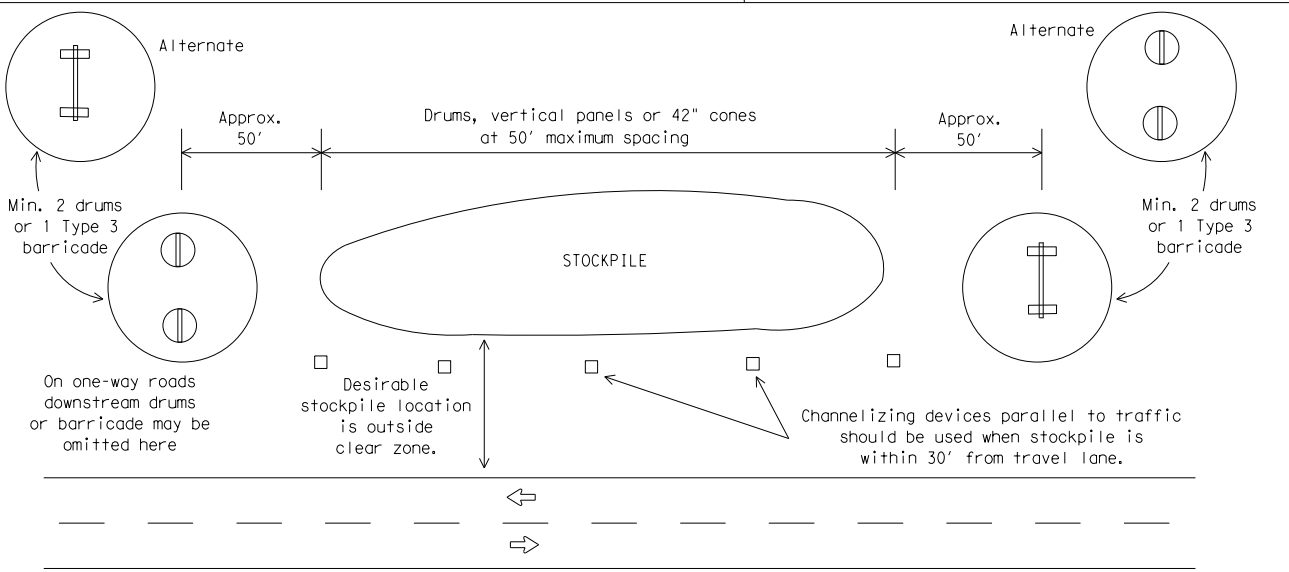


Two-Piece cones

One-Piece cones

Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A or Type B.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.



BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC (10) -21

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WORK ZONE PAVEMENT MARKINGS

GENERAL

- The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
- Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
- Additional supplemental pavement marking details may be found in the plans or specifications.
- Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
- When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
- When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
- All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

- Raised pavement markers are to be placed according to the patterns on BC(12).
- All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

PREFABRICATED PAVEMENT MARKINGS

- Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
- Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

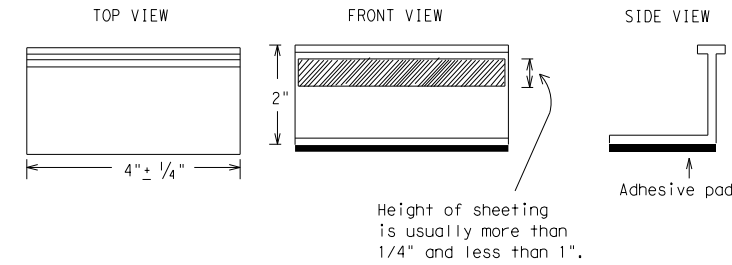
MAINTAINING WORK ZONE PAVEMENT MARKINGS

- The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
- Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
- The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
- Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

REMOVAL OF PAVEMENT MARKINGS

- Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
- The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
- Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
- The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
- Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
- Blast cleaning may be used but will not be required unless specifically shown in the plans.
- Over-painting of the markings SHALL NOT BE permitted.
- Removal of raised pavement markers shall be as directed by the Engineer.
- Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
- Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

Temporary Flexible-Reflective Roadway Marker Tabs



STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE

- Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
- Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
 - Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
 - Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
- Small design variances may be noted between tab manufacturers.
- See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

- Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
- All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
- Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
 YELLOW - (two amber reflective surfaces with yellow body).
 WHITE - (one silver reflective surface with white body).

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
TRAFFIC BUTTONS	DMS-4300
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS	DMS-8241
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS	DMS-8242

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).

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SHEET 11 OF 12

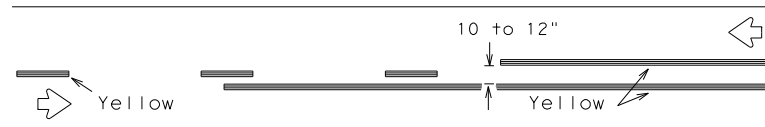


BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

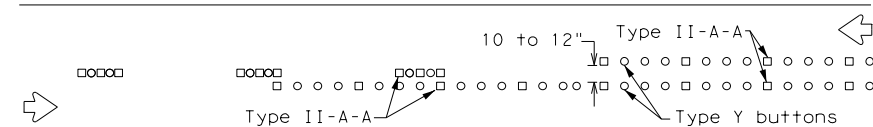
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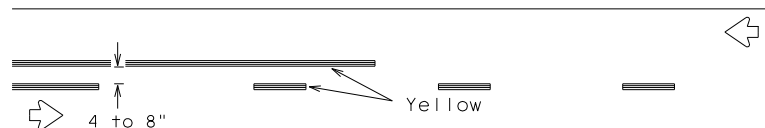
PAVEMENT MARKING PATTERNS



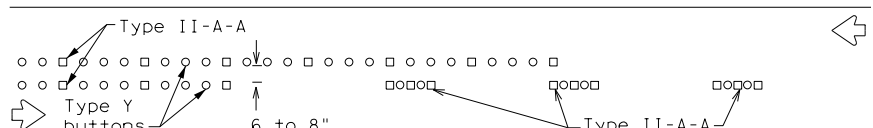
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



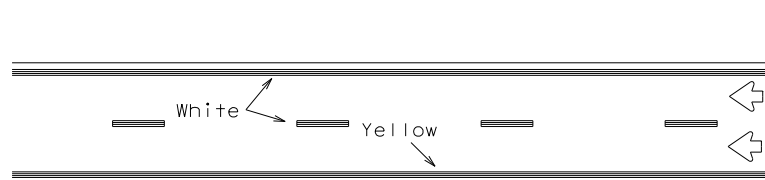
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



RAISED PAVEMENT MARKERS - PATTERN B

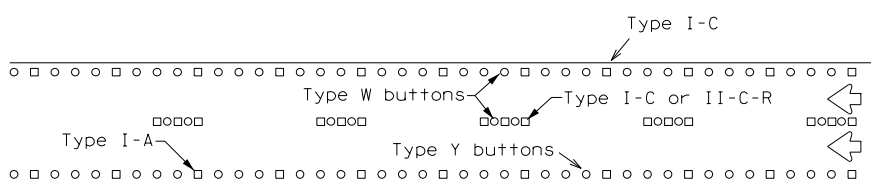
Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer. Prefabricated markings may be substituted for reflectorized pavement markings.

CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS

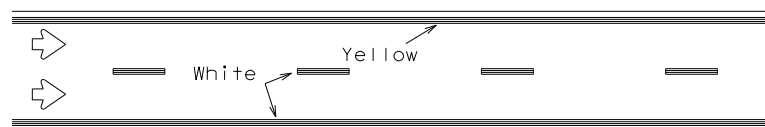


REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.

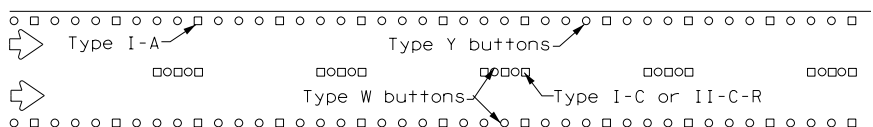


RAISED PAVEMENT MARKERS



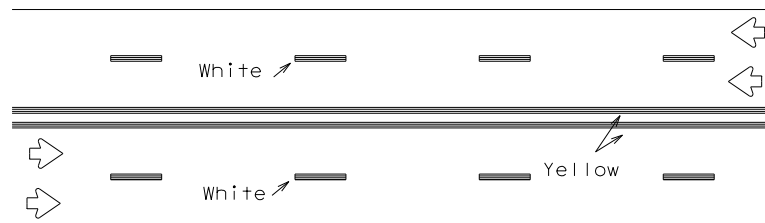
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



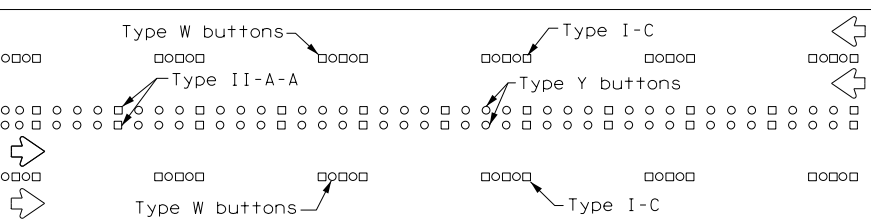
RAISED PAVEMENT MARKERS

EDGE & LANE LINES FOR DIVIDED HIGHWAY



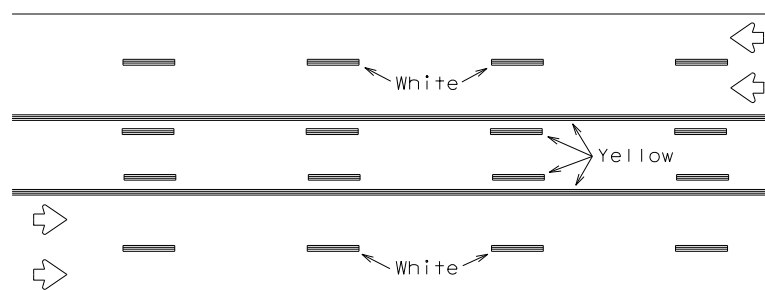
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectorized pavement markings.



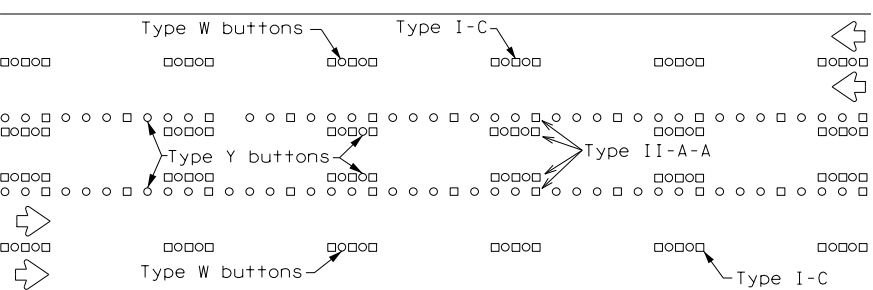
RAISED PAVEMENT MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

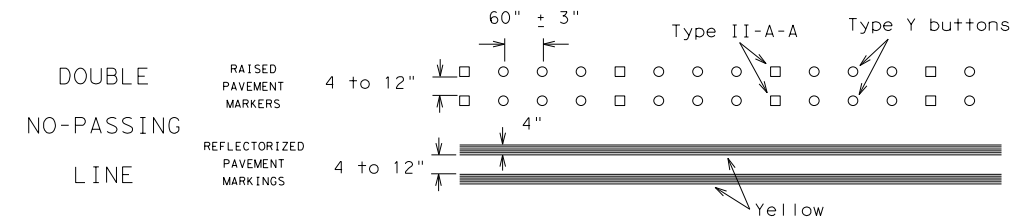
Prefabricated markings may be substituted for reflectorized pavement markings.



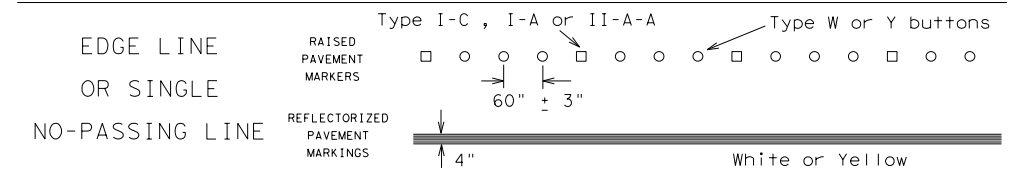
RAISED PAVEMENT MARKERS

TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



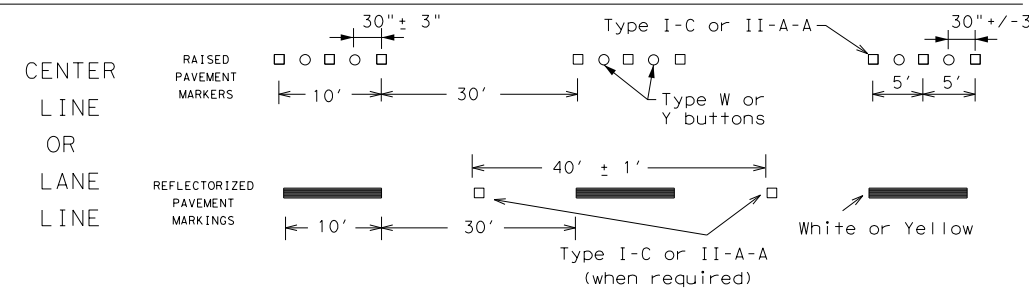
SOLID LINES



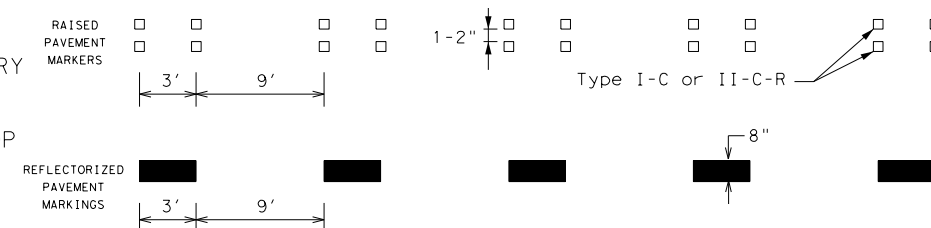
WIDE LINE



BROKEN LINES

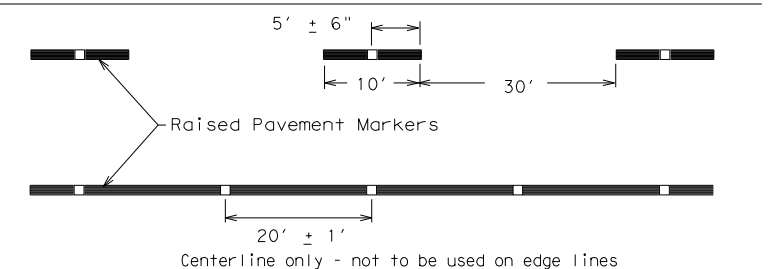


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



SHEET 12 OF 12



BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC (12) - 21

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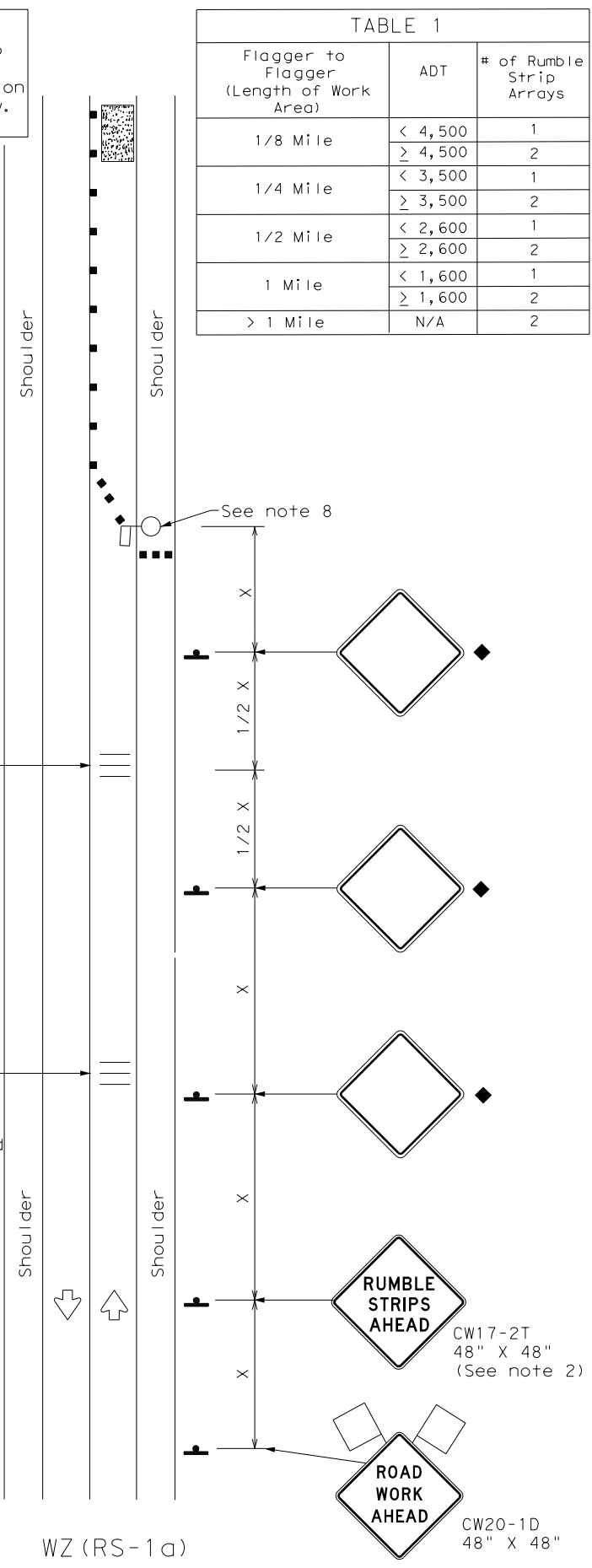
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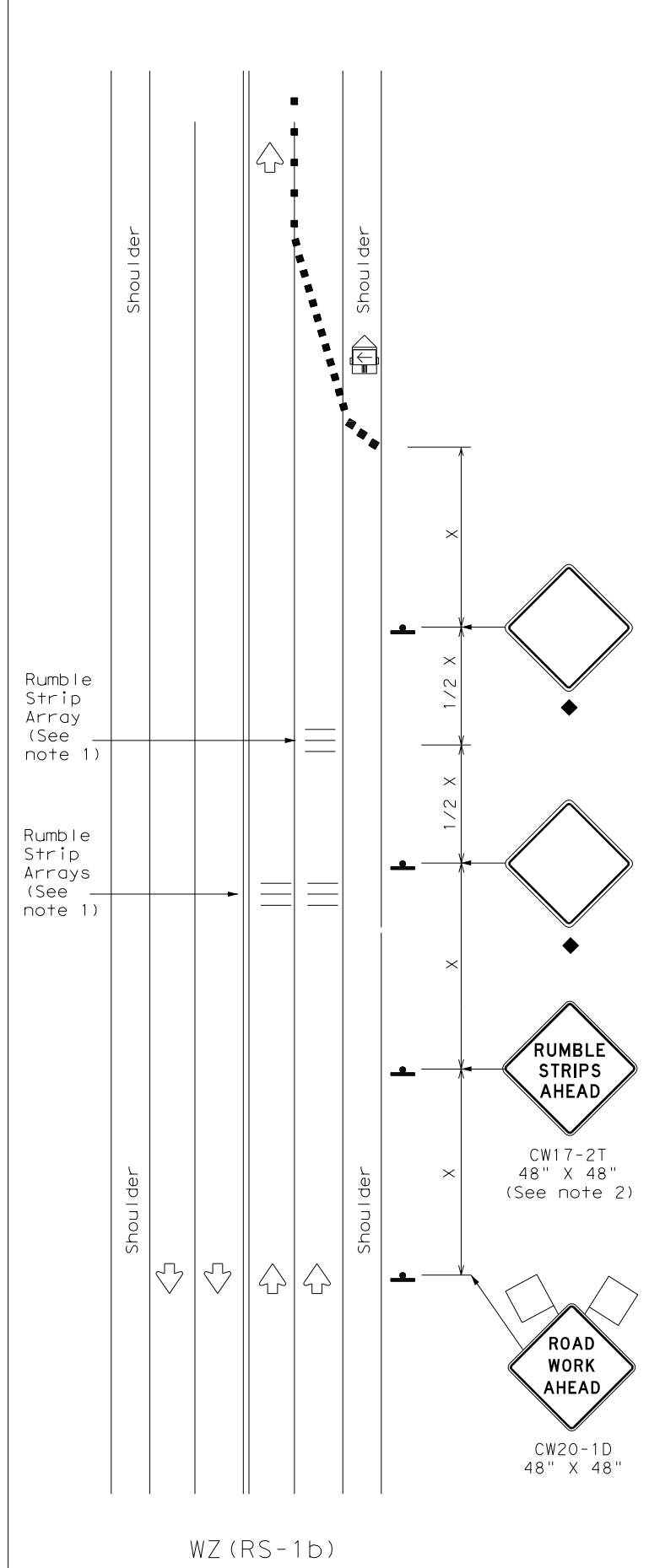
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Warning sign and rumble strip sequence in opposite direction is same as below.

Flagger to Flagger (Length of Work Area)	ADT	# of Rumble Strip Arrays
1/8 Mile	< 4,500	1
	≥ 4,500	2
1/4 Mile	< 3,500	1
	≥ 3,500	2
1/2 Mile	< 2,600	1
	≥ 2,600	2
1 Mile	< 1,600	1
	≥ 1,600	2
> 1 Mile	N/A	2



RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

- Each Rumble Strip Array should consist of three rumble strips spaced center to center at the spacing shown in Table 2, placed transverse across the lane at locations shown.
- The CW17-2T "RUMBLE STRIPS AHEAD" sign should be located after the CW20-1D "ROAD WORK AHEAD" sign and spaced as shown. If traffic is observed to be queuing, or is expected to queue beyond the Rumble Strips, the CW17-2T sign and the first Rumble Strip Array may be located upstream of the CW20-1D sign as necessary to provide needed warning.
- Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
- Remove Temporary Rumble Strips before removing the advanced warning signs.
- Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
- Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
- This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
- The one-lane two-way application may utilize a flagger, an Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
- Replace defective Temporary Rumble Strips as directed by the Engineer.
- Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35' +

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Panel		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS ² / 60	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45	L = WS	450'	495'	540'	45'	90'	320'	195'
50		500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60		600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70	700'	770'	840'	70'	140'	800'	475'	
75	750'	825'	900'	75'	150'	900'	540'	

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L=Length of Taper (FT) W=Width of Offset (FT)
 S=Posted Speed (MPH)

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

◆ Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.
 * For posted speeds in excess of 65 MPH, it is recommended that spacing is increased as speed limits increase. Increasing space between rumble strips will improve effectiveness.

Texas Department of Transportation
 Traffic Safety Division Standard

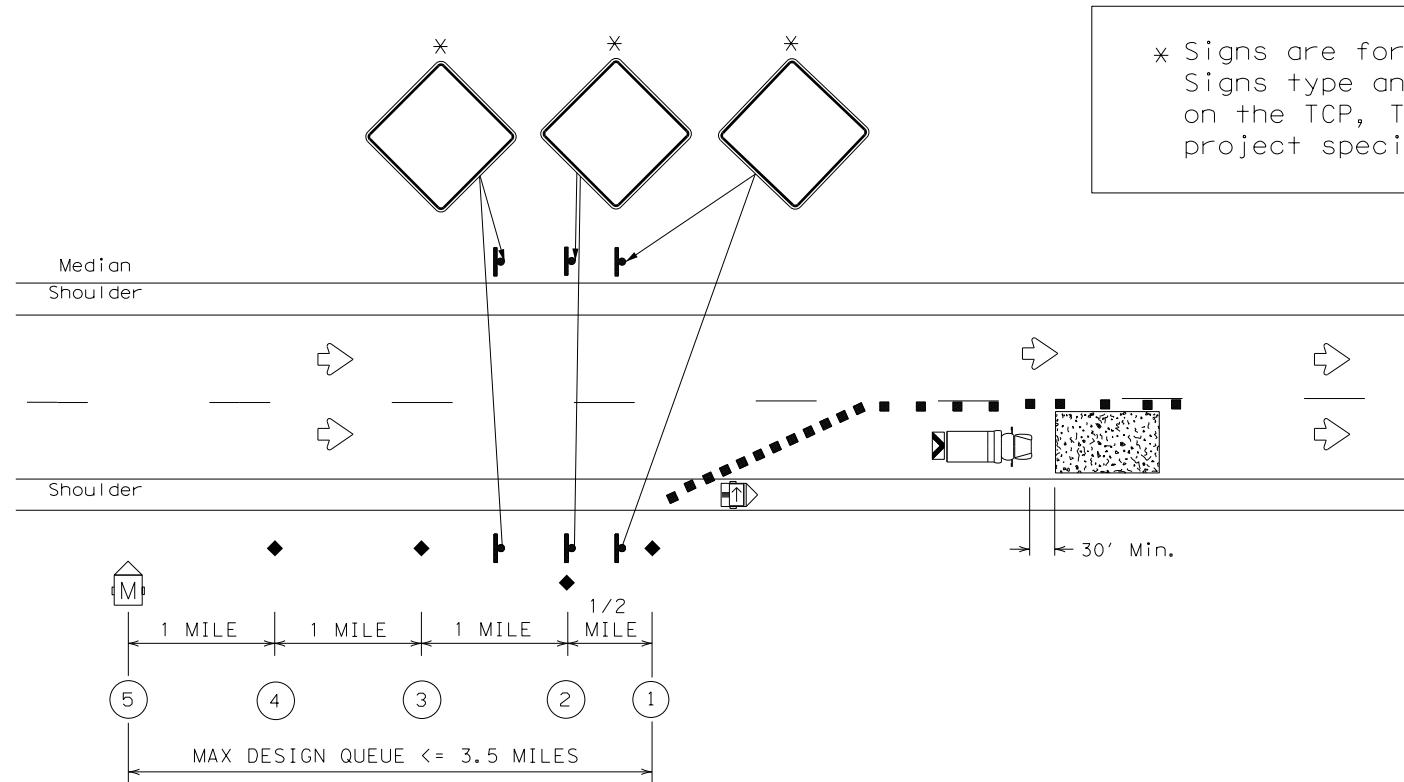
TEMPORARY RUMBLE STRIPS

WZ (RS) - 22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
2-14 1-22	DIST	COUNTY	SHEET NO.	
4-16	ATL	TITUS	49	

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Type 2 - QUEUE DETECTION SYSTEM

(Max Design Queue <= 3.5 Miles)

OPERATIONAL GUIDELINE FOR PCMS MESSAGES				
Message at ⑤	Last 5 MIN Speed Averages V (MPH)			
	Sensor at ④	Sensor at ③	Sensor at ②	Sensor at ①
ROAD WORK AHEAD	> 45	> 45	> 45	> 45
SLOW TRAFFIC 3 MILES	> 45	> 45	> 45	25 < V < 45
SLOW TRAFFIC 2 MILES	> 45	> 45	25 < V < 45	25 < V < 45
SLOW TRAFFIC 1 MILE	> 45	25 < V < 45	25 < V < 45	25 < V < 45
SLOW TRAFFIC AHEAD	25 < V < 45	25 < V < 45	25 < V < 45	25 < V < 45
STOPPED TRAFFIC 3 MILES	> 25	> 25	> 25	<= 25
STOPPED TRAFFIC 2 MILES	> 25	> 25	<= 25	<= 25
STOPPED TRAFFIC 1 MILE	> 25	<= 25	<= 25	<= 25
STOPPED TRAFFIC AHEAD	<= 25	<= 25	<= 25	<= 25

LEGEND			
	Work Area		Traffic Flow
	Sign		Portable Traffic Sensor
	Channelizing Devices		Truck Mounted Attenuator (TMA)
	Location		Flag
	Heavy Work Vehicle		Trailer Mounted Flashing Arrow Board
	Portable Changeable Message Sign (PCMS)		

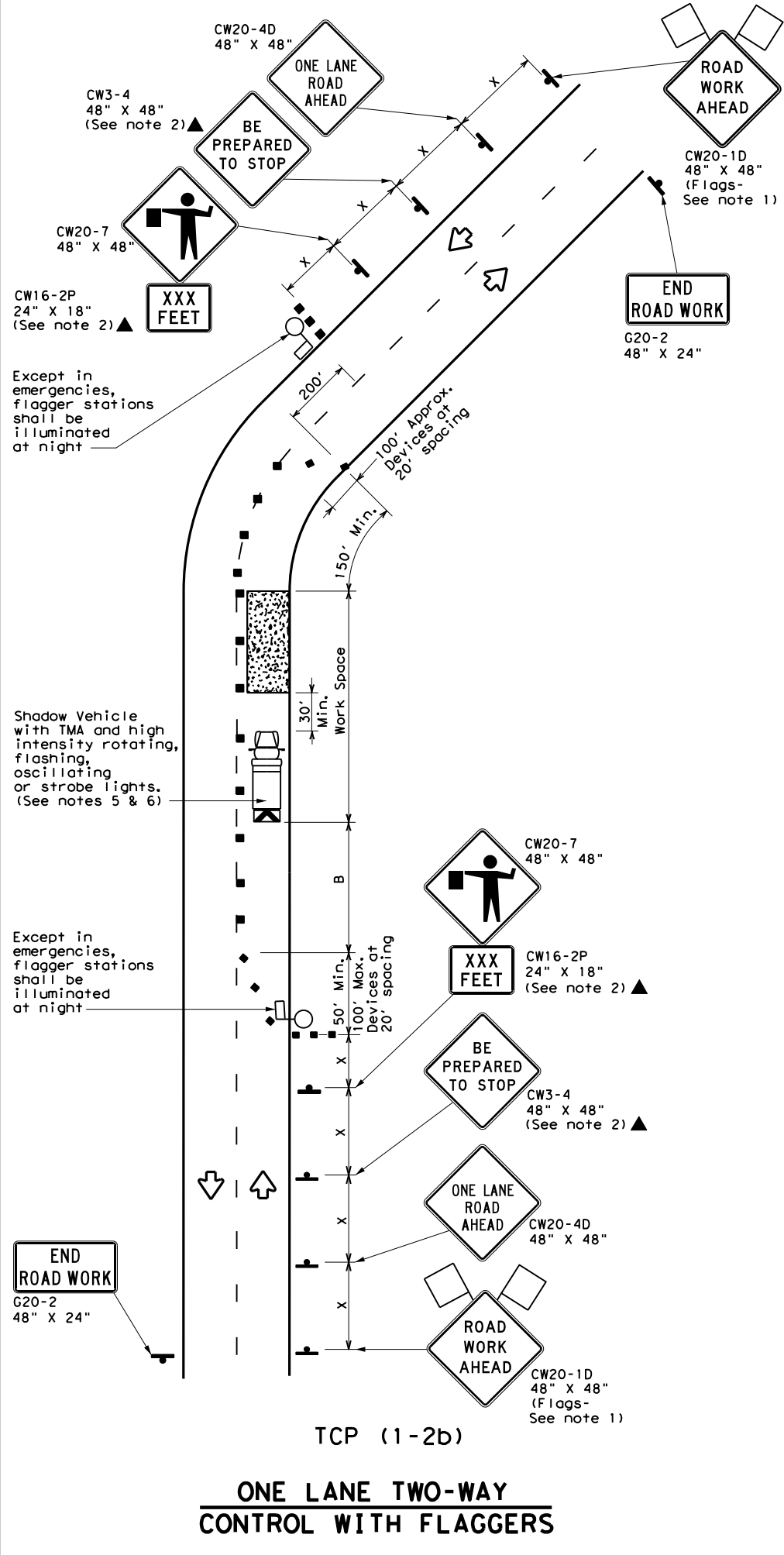
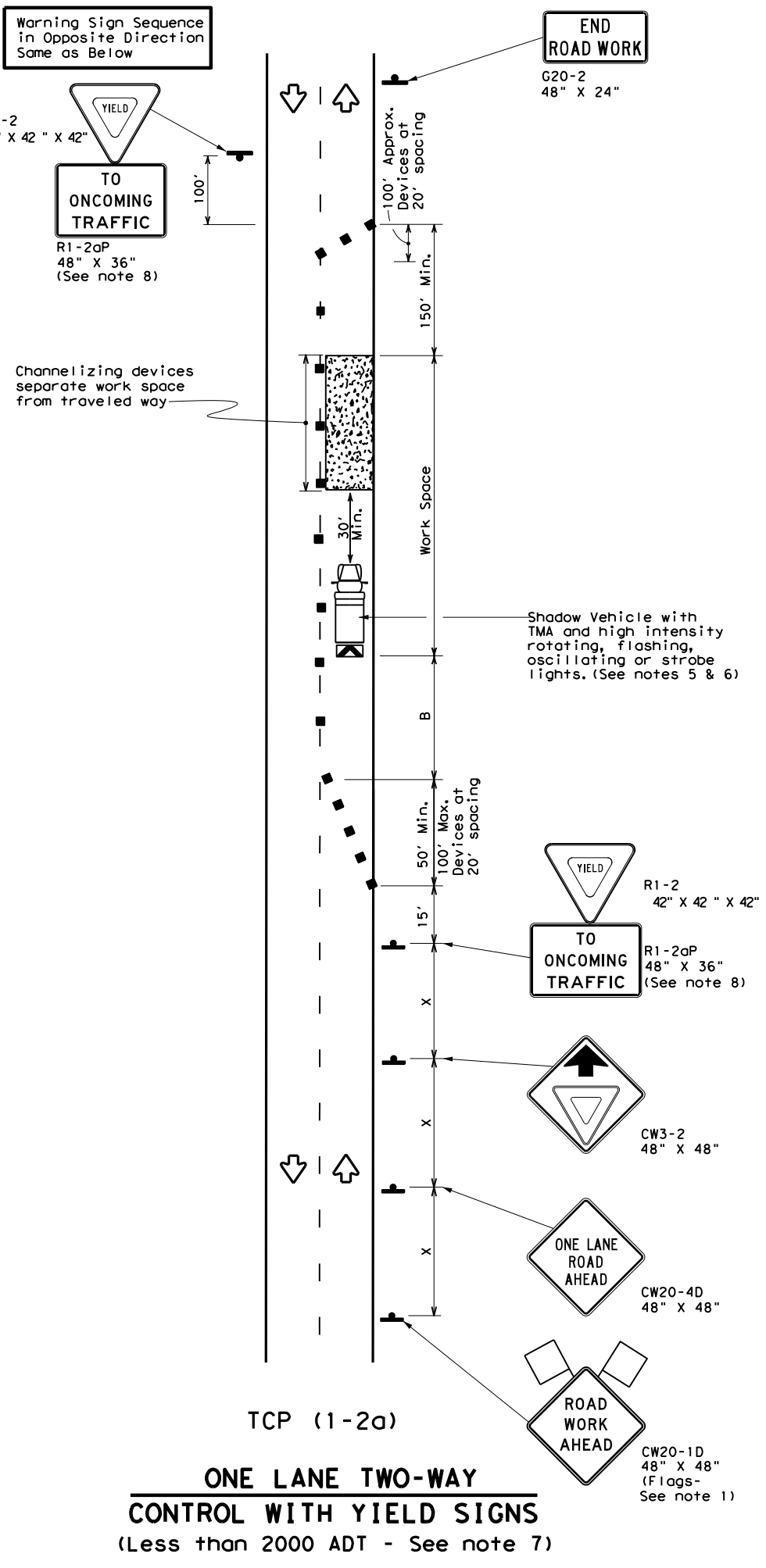
GENERAL NOTES

1. Unless project conditions and manufacturer's specifications dictate otherwise, the number of PCMS, static signs and spacing of sensors will be as shown in the plans.
2. Temporary Queue Detection System devices shall be operational only while work is actually in progress or a definite need exists.
3. Refer to TCP and BC Traffic Engineering Standard sheets for additional information regarding the type and placement of temporary traffic control devices.
4. The viewing angle of the sensors should not be blocked.
5. Sensor at location ① may be mounted on the Flashing Arrow Board Trailer in the taper if spacing is adequate.
6. Pay item should be paid under Special Specification "Temporary Queue Detection System".

		Traffic Safety Division Standard	
TEMPORARY QUEUE DETECTION SYSTEM TYPE 2			
(Queue <= 3.5 Miles)			
WZ-ITS(3)-19			
FILE: wz-its(3)-19.dgn	DN:	CK:	DW:
©TxDOT February 2019	CONT	SECT	JOB
REVISIONS	0610	03	095
DIST	COUNTY		SHEET NO.
ATL	TITUS		50

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LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent			
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
- Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

- R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
- R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

- Flaggers should use two-way radios or other methods of communication to control traffic.
- Length of work space should be based on the ability of flaggers to communicate.
- If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
- Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
- Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation Traffic Operations Division Standard

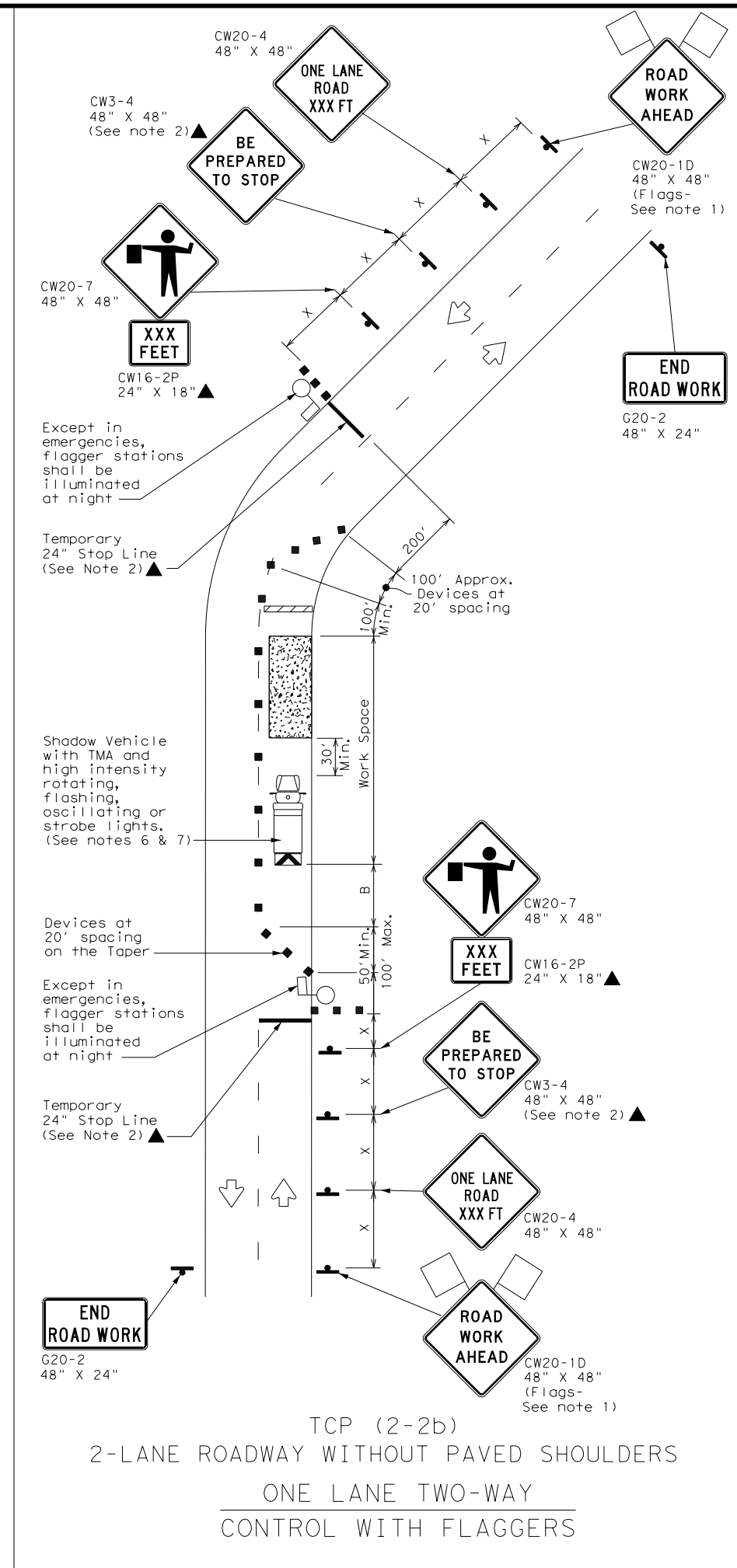
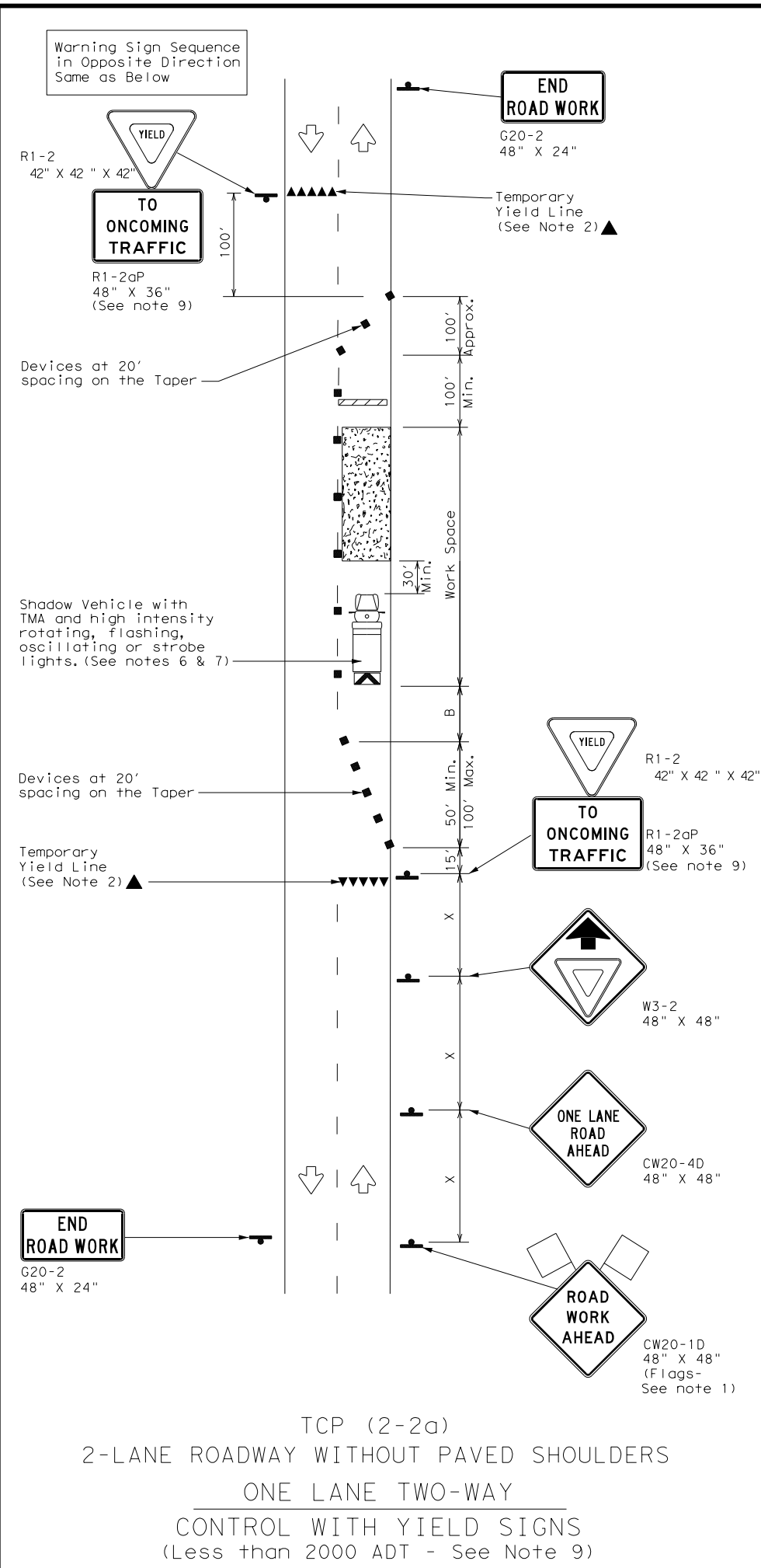
TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP (1-2) - 18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
4-90 4-98	DIST	COUNTY	SHEET NO.	
2-94 2-12	ATL	TITUS	51	
1-97 2-18				

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LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent			
30	L = WS ² / 60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L = WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE

MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES

- Flags attached to signs where shown, are REQUIRED.
 - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
 - The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
 - Flaggers should use two-way radios or other methods of communication to control traffic.
 - Length of work space should be based on the ability of flaggers to communicate.
 - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
 - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
- TCP (2-2a)
- The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
 - The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.
- TCP (2-2b)
- Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
 - If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
 - Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

Texas Department of Transportation
 Traffic Operations Division Standard

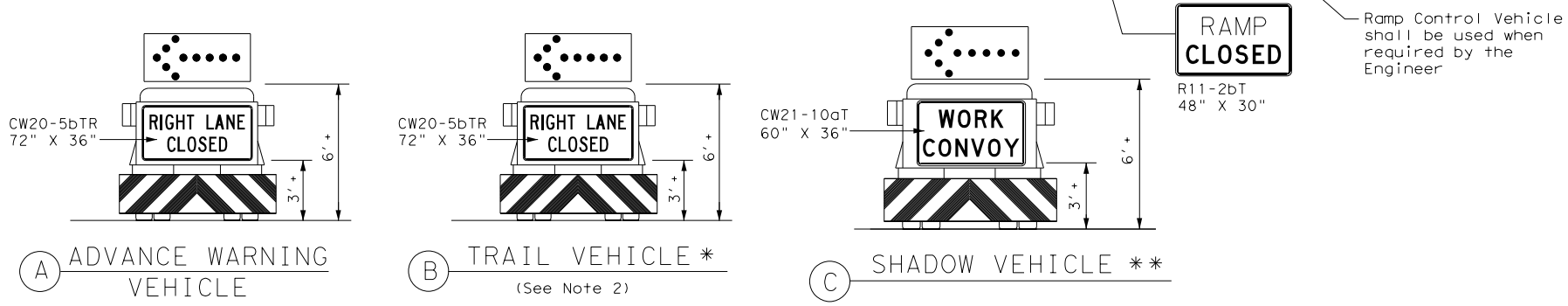
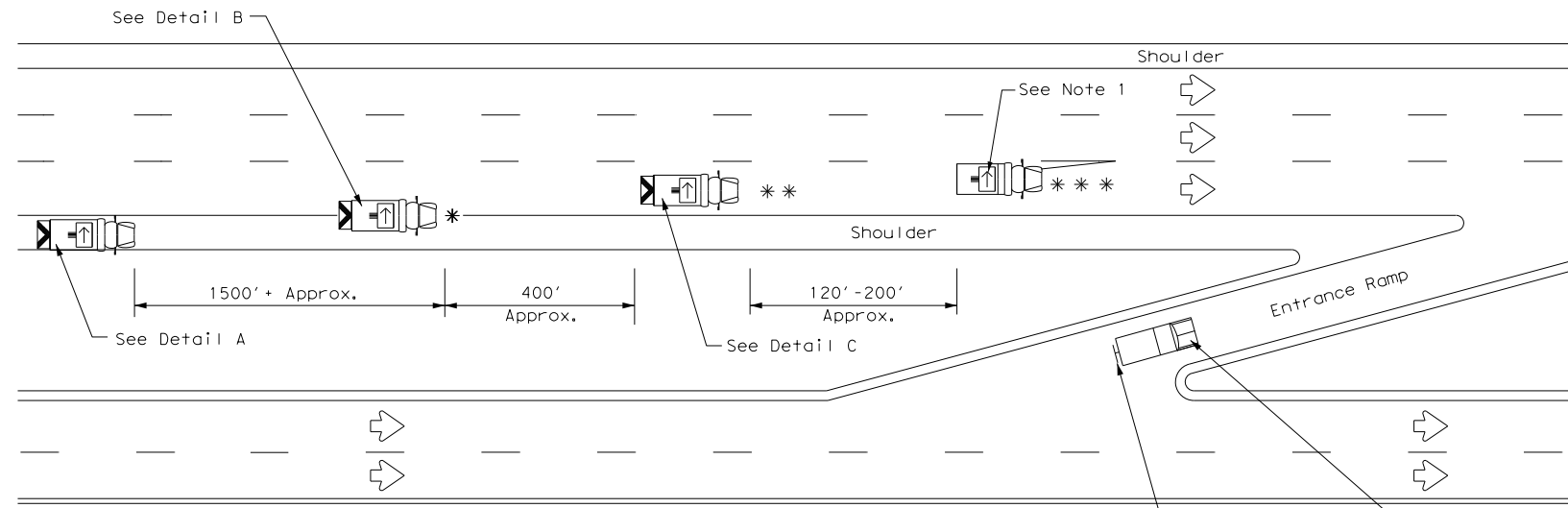
TRAFFIC CONTROL PLAN
 ONE-LANE TWO-WAY
 TRAFFIC CONTROL

TCP (2-2) - 18

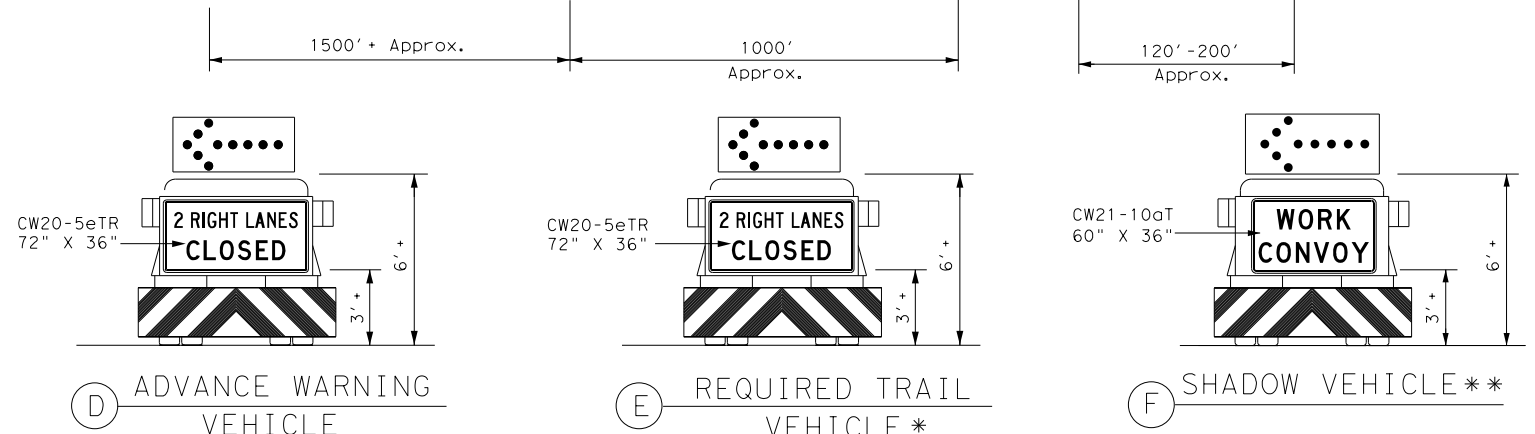
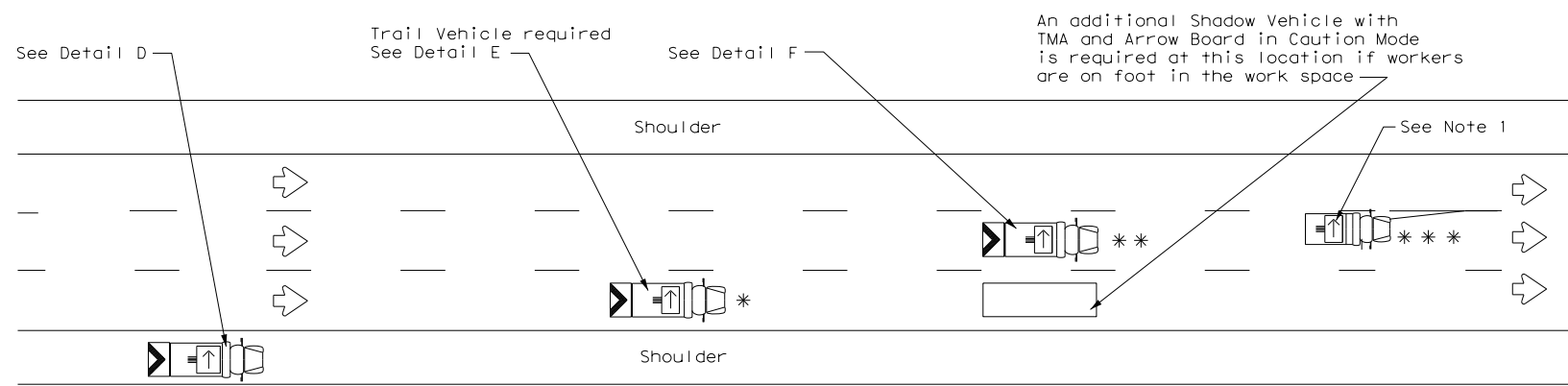
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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8-95 3-03	DIST	COUNTY	SHEET NO.	
1-97 2-12	ATL	TITUS	52	
4-98 2-18				

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RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP (3-2a)



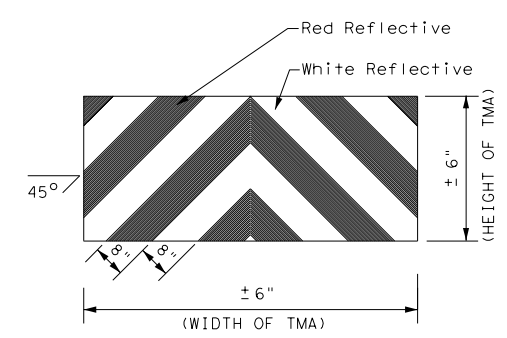
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP (3-2b)

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle	→	RIGHT Directional
☐	Heavy Work Vehicle	←	LEFT Directional
▲	Truck Mounted Attenuator (TMA)	↔	Double Arrow
↶	Traffic Flow	⊠	CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

- ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
- For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
- The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
- The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
- Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
- Each vehicle shall have two-way radio communication capability.
- When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
- Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE may vary according to terrain, work activity and other factors.
- Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
- The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board, must be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
- Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
- The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
- Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
- The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.

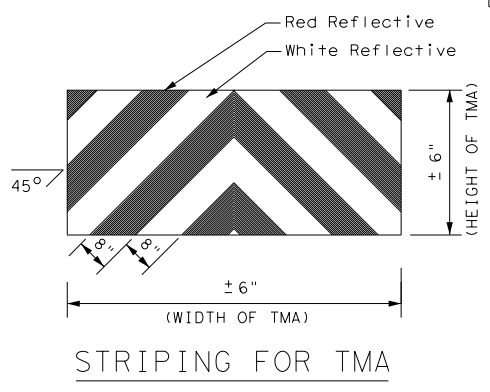
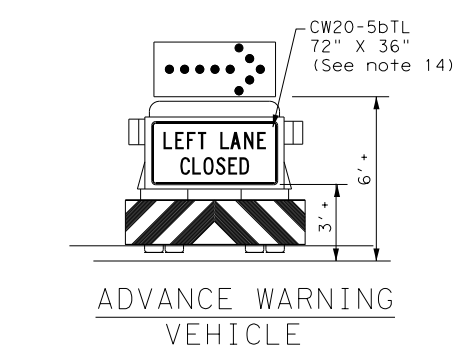
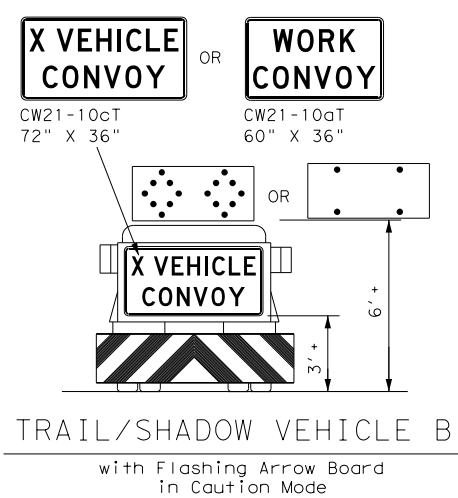
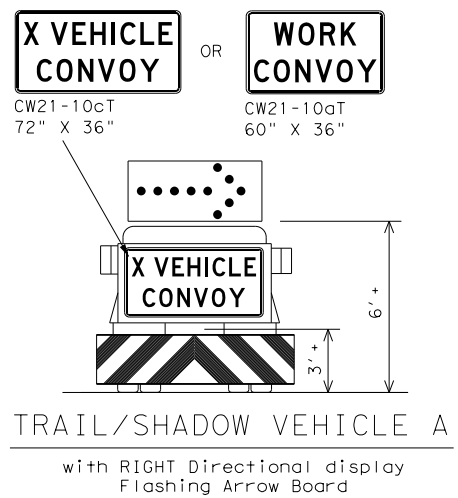
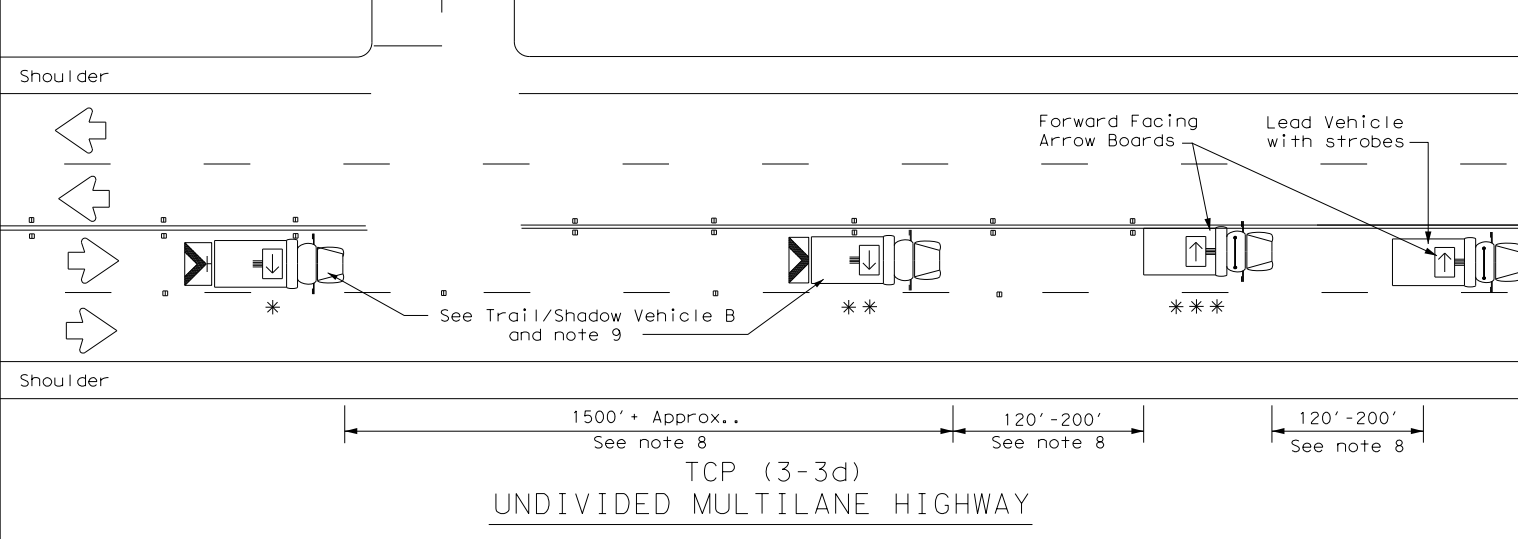
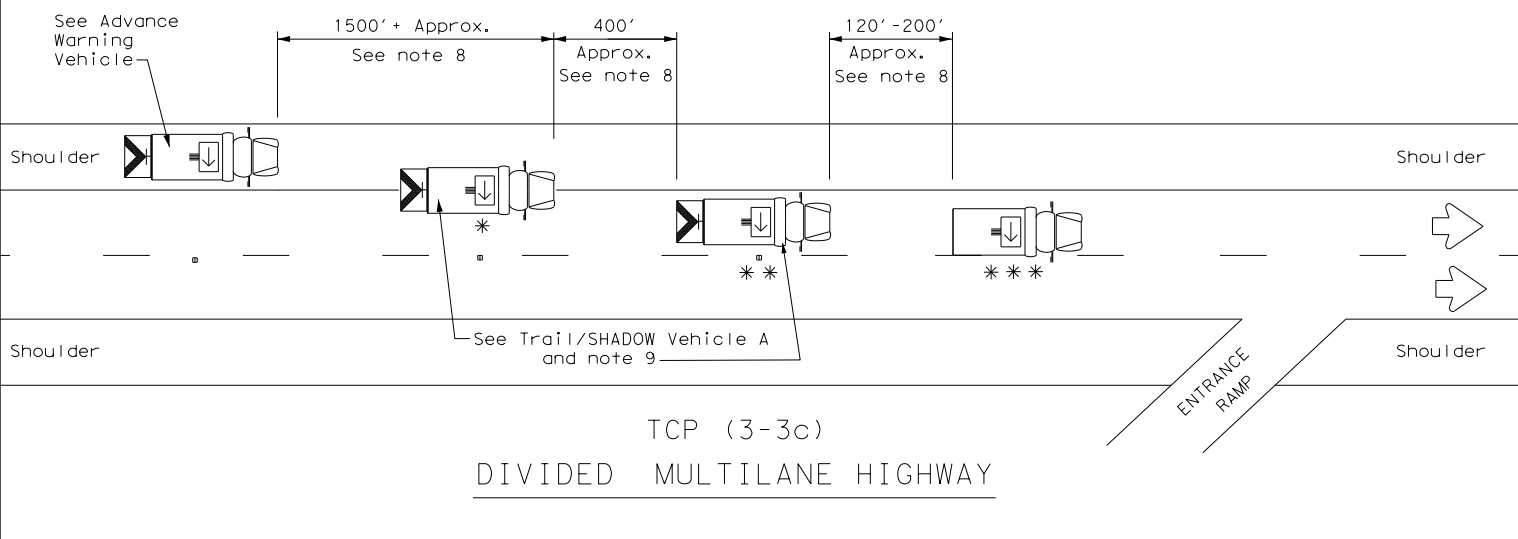
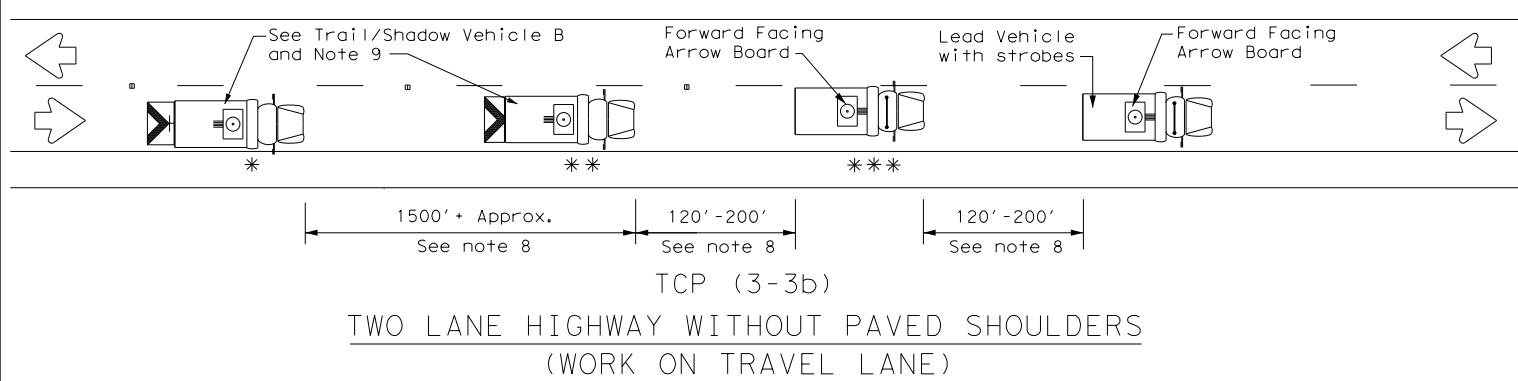
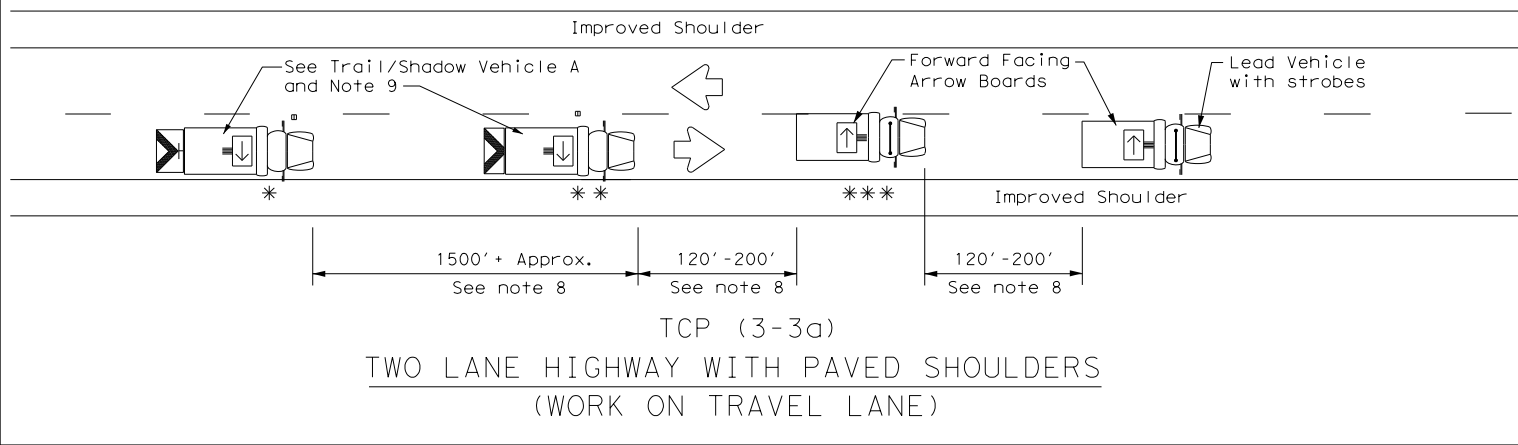


STRIPING FOR TMA

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS			
TCP (3-2) - 13			
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© TxDOT December 1985	CONT	SECT	JOB
REVISIONS	0610	03	095
2-94 4-98			
8-95 7-13			
1-97			
	DIST	COUNTY	SHEET NO.
	ATL	TITUS	53

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LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
** *	Work Vehicle	→	RIGHT Directional
←	Heavy Work Vehicle	←	LEFT Directional
↔	Truck Mounted Attenuator (TMA)	↔	Double Arrow
⬇	Traffic Flow	⬇	CAUTION (Alternating Diamond or 4 Corner Flash)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓				

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

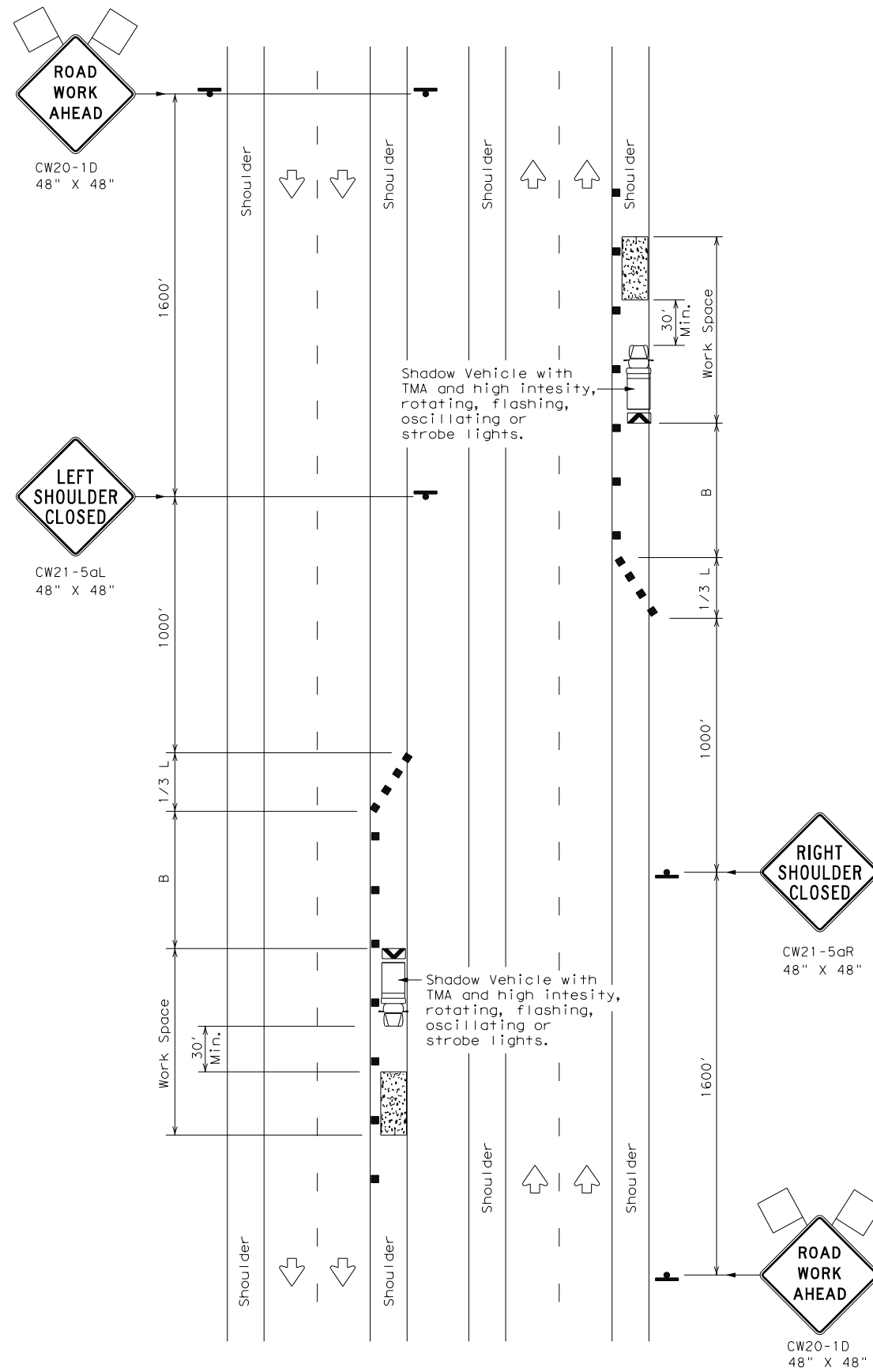
Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN
 MOBILE OPERATIONS
 RAISED PAVEMENT
 MARKER INSTALLATION/
 REMOVAL
 TCP (3-3) - 14**

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	ATL	TITUS	54	
1-97 7-14				

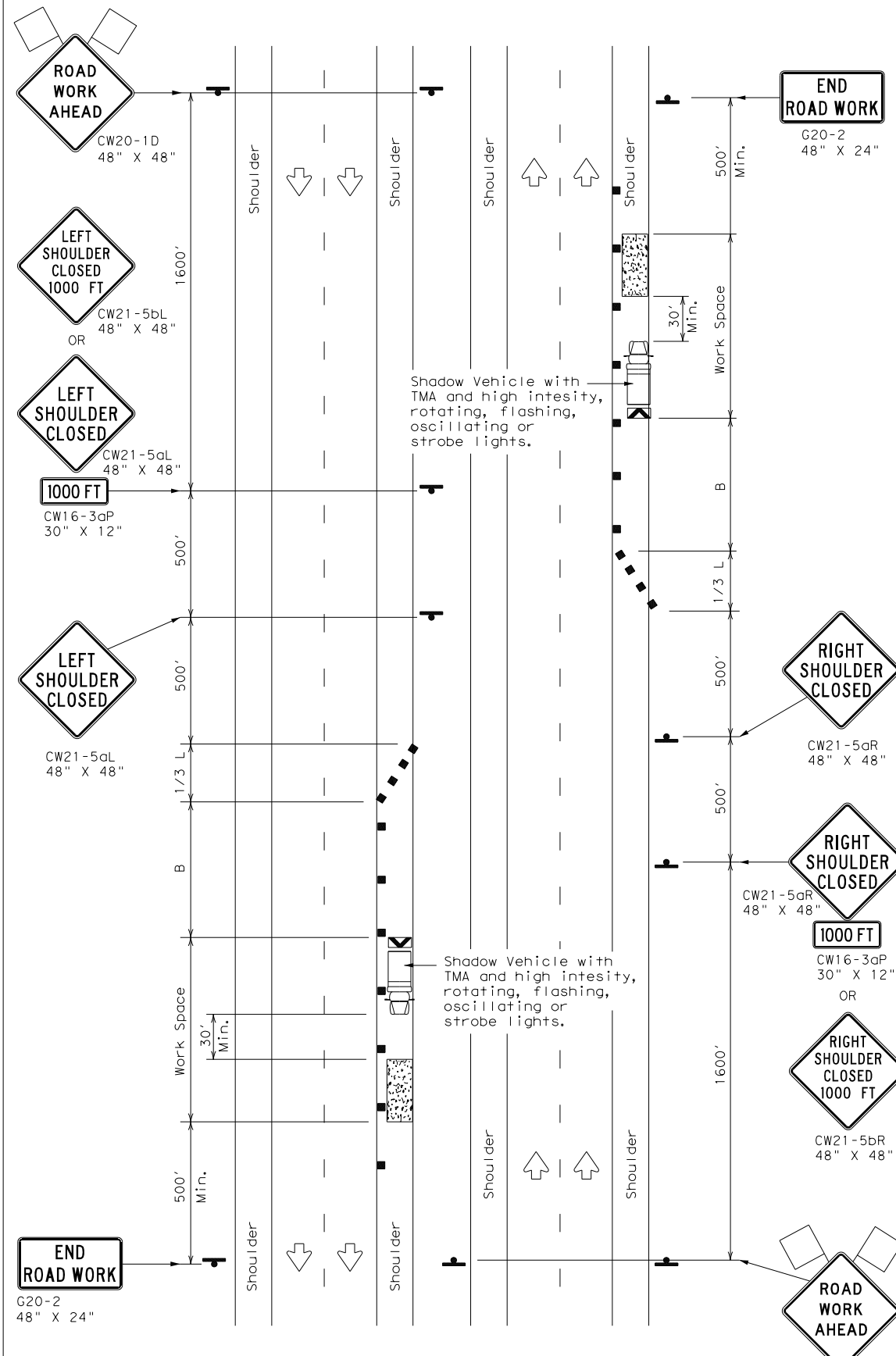
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TCP (5-1a)

WORK AREA ON SHOULDER



TCP (5-1b)

WORK AREA ON SHOULDER

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths * X			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	90'
35		205'	225'	245'	35'	70'	120'
40		265'	295'	320'	40'	80'	155'
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

* Conventional Roads Only
 ** Taper lengths have been rounded off.
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	TCP (5-1a)	TCP (5-1b)	TCP (5-1b)	

GENERAL NOTES

1. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the performance or quality of the work. Type 3 barricades or drums may be substituted when workers on foot are no longer present when approved by the Engineer.
2. 28" tall or taller one-piece cones will be allowed only for Short Duration or Short Term stationary operations when workers are present to maintain the devices upright and in proper location. Intermediate Term stationary work areas should use Drums, Vertical Panels or 42" tall two-piece cones.

Texas Department of Transportation
 Traffic Operations Division Standard

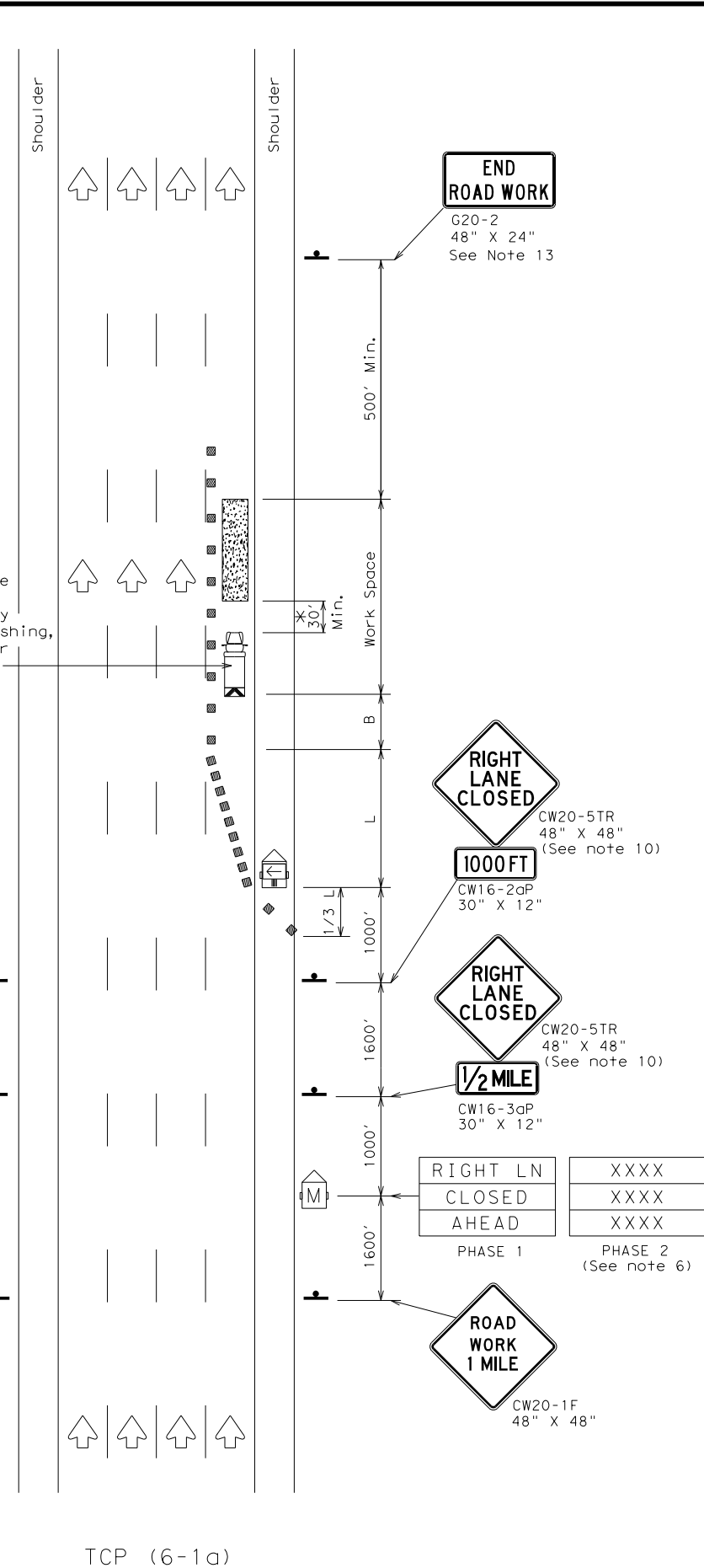
**TRAFFIC CONTROL PLAN
 SHOULDER WORK FOR
 FREEWAYS / EXPRESSWAYS**

TCP (5-1) - 18

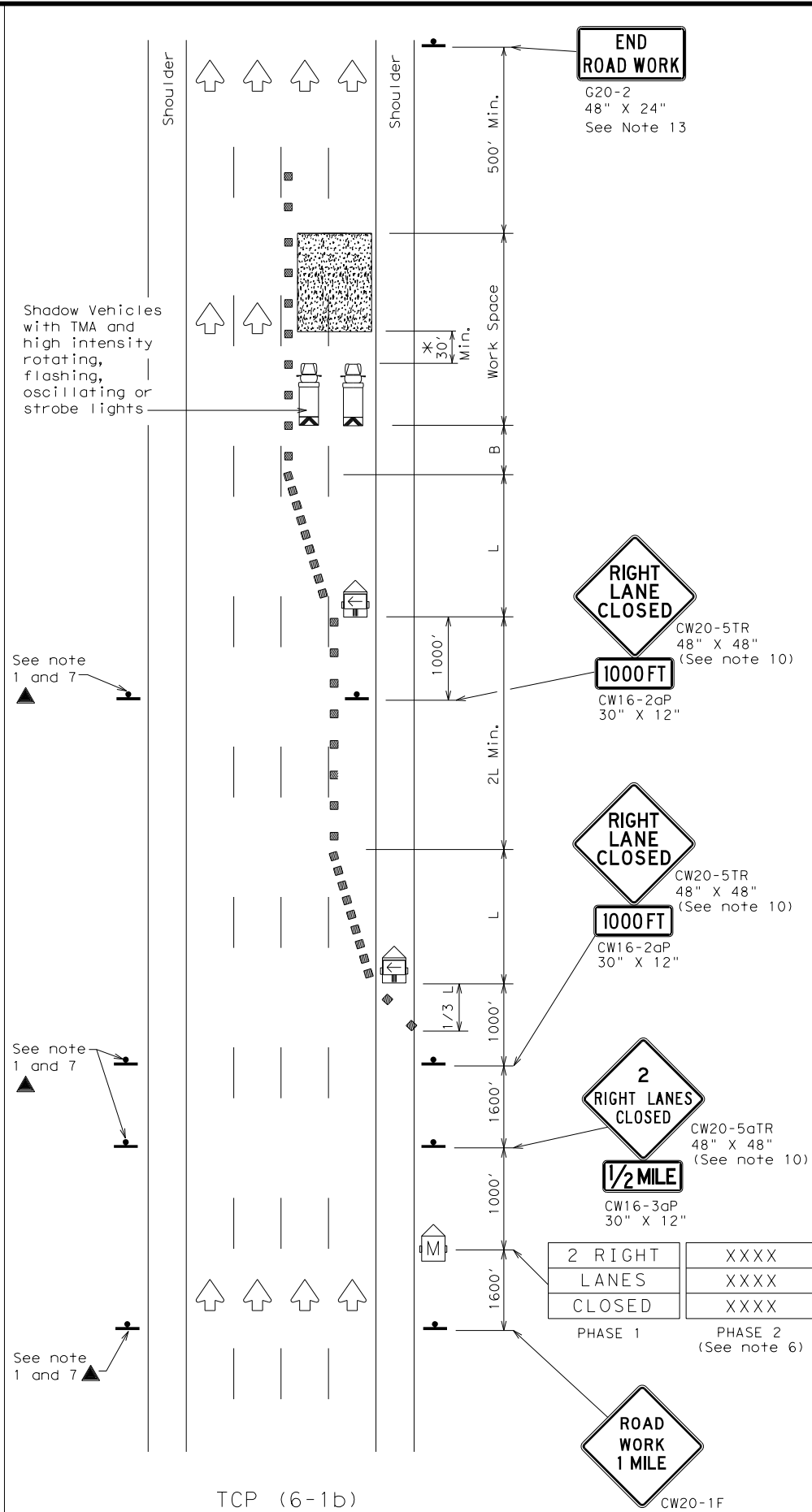
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© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
2-18	REVISIONS	0610 03	095	IH 30
	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	55	

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TCP (6-1a)
 TYPICAL FREEWAY
 ONE LANE CLOSURE



TCP (6-1b)
 TYPICAL FREEWAY
 TWO LANE CLOSURE

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed	Formula	Minimum Desirable Taper Lengths "L"			Suggested Maximum Spacing of Channelizing Devices		Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent	
45	L = WS	450'	495'	540'	45'	90'	195'
50		500'	550'	600'	50'	100'	240'
55		550'	605'	660'	55'	110'	295'
60		600'	660'	720'	60'	120'	350'
65		650'	715'	780'	65'	130'	410'
70		700'	770'	840'	70'	140'	475'
75		750'	825'	900'	75'	150'	540'
80		800'	880'	960'	80'	160'	615'

** Taper lengths have been rounded off.
 L=Length of Taper (FT) W=Width of Offset (FT) S=Posted Speed (MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓	✓	

GENERAL NOTES

- All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
- Drums or 42" cones are the typical channelizing devices. For Intermediate Term Stationary work, drums shall be used on tapers with drums or 42" cones used on tangent sections. Other channelizing devices may be used as directed by the Engineer.
- All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
- The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
- Static message boards or changeable message signs stating the date and duration of ramp or freeway lane closures shall be placed a minimum of seven (7) calendar days in advance of the actual closure.
- Phase 2 of the PCMS message should include appropriate information formatted as shown on BC(6), such as "MERGE LEFT," recommended advisory speed, delay information, or other specific warnings.
- Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
- The number of closed lanes may be increased provided the spacing of traffic control devices, taper lengths and tangent lengths meet the requirements of the TMUTCD.
- Warning signs for intermediate term stationary work should be mounted at 7' to the bottom of the sign.
- Warning signs shown shall be appropriately altered for left lane closures. When signs are mounted at 1' height for short term stationary or short duration work, sign versions shown in the SHSD for Texas with distances on the sign face rather than mounted on a plaque below the sign may be used.
- When possible, PCMS units should be located in advance of the last available exit ramp prior to the lane closure to allow motorists an alternate route. They may also be relocated to improve advance warning in case of unanticipated queuing or congestion.
- For Intermediate Term Stationary work at night, floodlights should be used to illuminate the work area and equipment crossings. Floodlights shall not produce a disabling glare condition for road users or workers.
- The END ROAD WORK (G20-2) sign may be omitted when it conflicts with G20-2 signs already in place on the project.

* A shadow vehicle equipped with a Truck Mounted Attenuator is typically required. A shadow vehicle equipped with a TMA shall be used if it can be positioned 30' to 100' in advance of the area of crew exposure without adversely affecting the work performance.



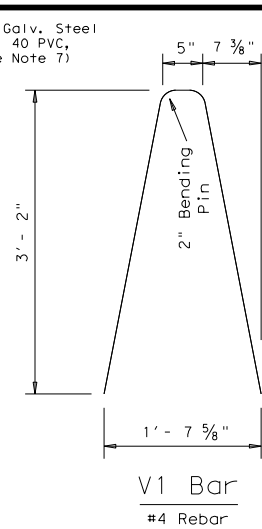
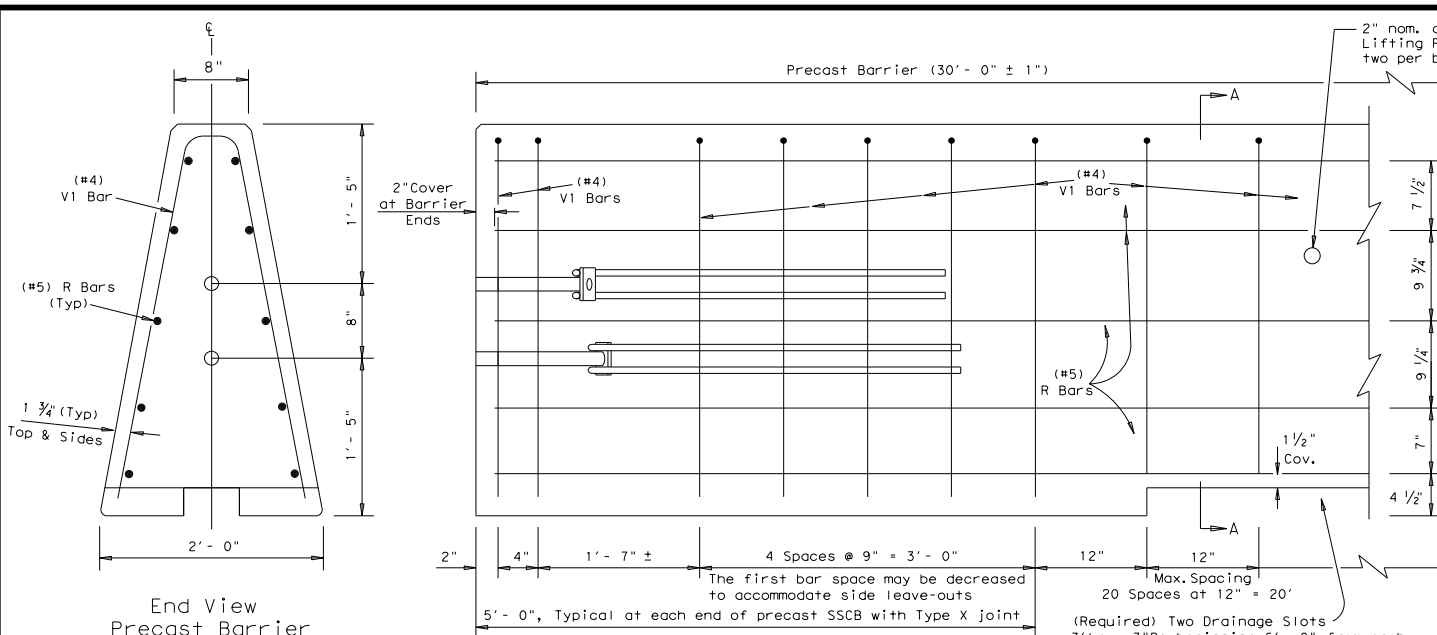
TRAFFIC CONTROL PLAN
 FREEWAY LANE CLOSURES

TCP (6-1) - 12

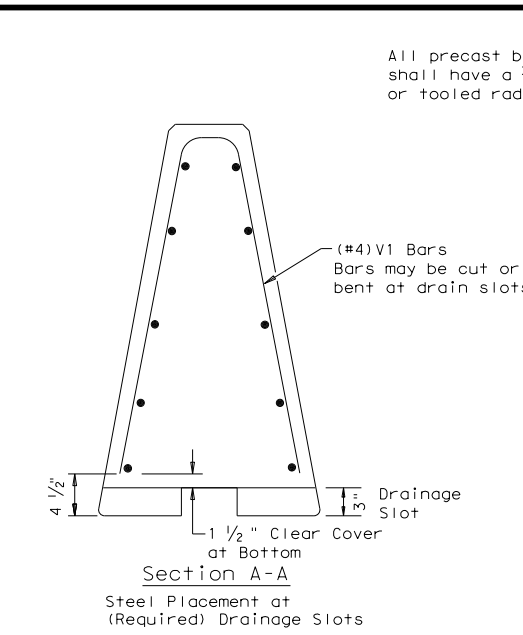
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©TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY				
8-12	REVISIONS	0610	03	095	IH 30				
		DIST	COUNTY		SHEET NO.				
		ATL	TITUS		56				

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Note:
 V1 Bars above the drainage slots may be bent to accommodate 1 1/2" clear cover as directed by the Engineer.



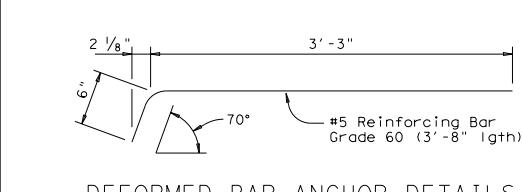
All precast barrier edges shall have a 3/4" chamfer or tooled radius.

Single Slope Concrete Traffic Barrier

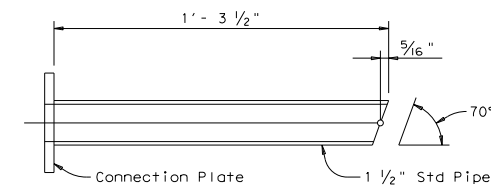
Precast SSCB barrier may be connected to cast-in-place SSBC. The joint connection "Types" may be used in the cast-in-place barrier, to match the precast barrier connection.

General Notes

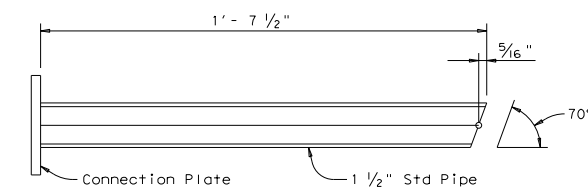
- Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
- Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
- Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
- All precast barrier edges shall have a 3/4" chamfer or a tooled radius.
- All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier pavement.
- Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.
- Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
- Surface finishing and grouting (where required) shall be two parts sand and one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items.
- All steel assemblies shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."



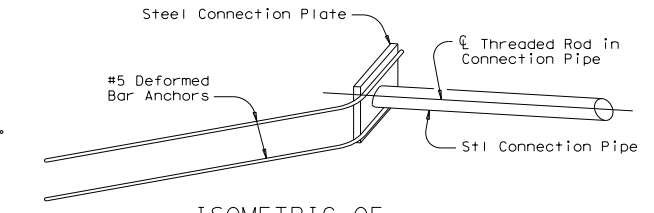
Two (2) Bars required per assembly.
 Eight (8) required per Joint.



One (1) Steel Pipe required per Upper Assembly.
 Two (2) required per Joint.

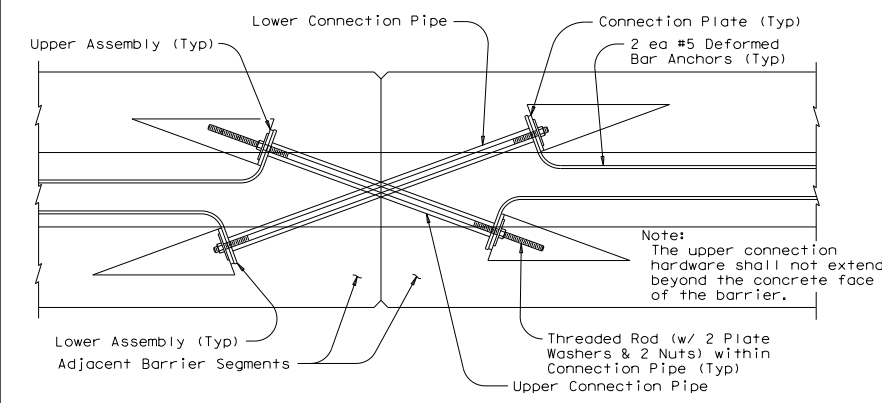


One (1) Steel Pipe required per Lower Assembly.
 Two (2) required per Joint.



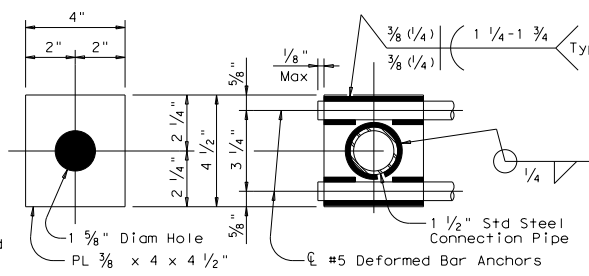
ISOMETRIC OF TYPICAL WELDED ASSEMBLY

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.



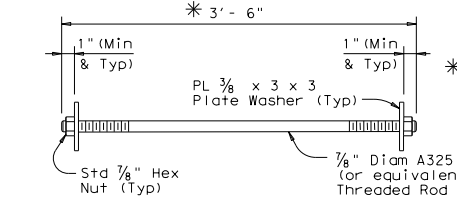
TYPE X JOINT INSTALLATION DETAIL

Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.



CONNECTION PLATE DETAILS

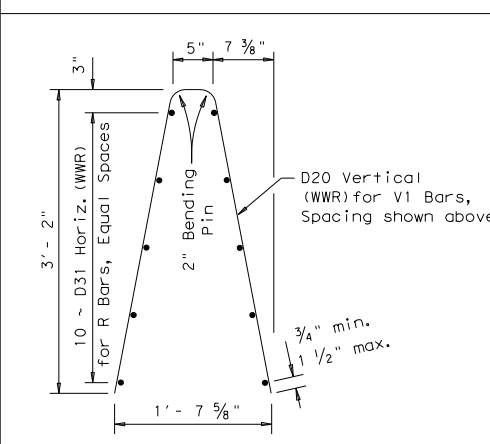
One (1) Plate required per assembly.
 Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.



CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (or Equivalent Hex Hd. Bolts) (w/ Two (2) PL 3/8" x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

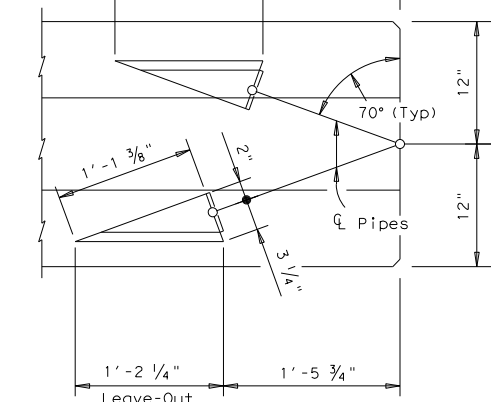
Weight of one precast 30 ft. (SSCB) segment = Approx. 10.5 Tons or 717 lbs per ft.



Welded Wire Reinforcement (WWR) Option for Bars R and V1

(WWR) General Notes

- Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
- Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
- All reinforcement shall comply with Item 440, "Reinforcing Steel."
- Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



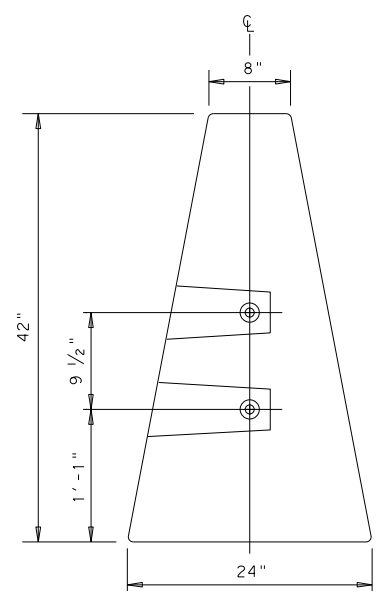
BARRIER PLAN AT JOINT

SHEET 1 OF 2

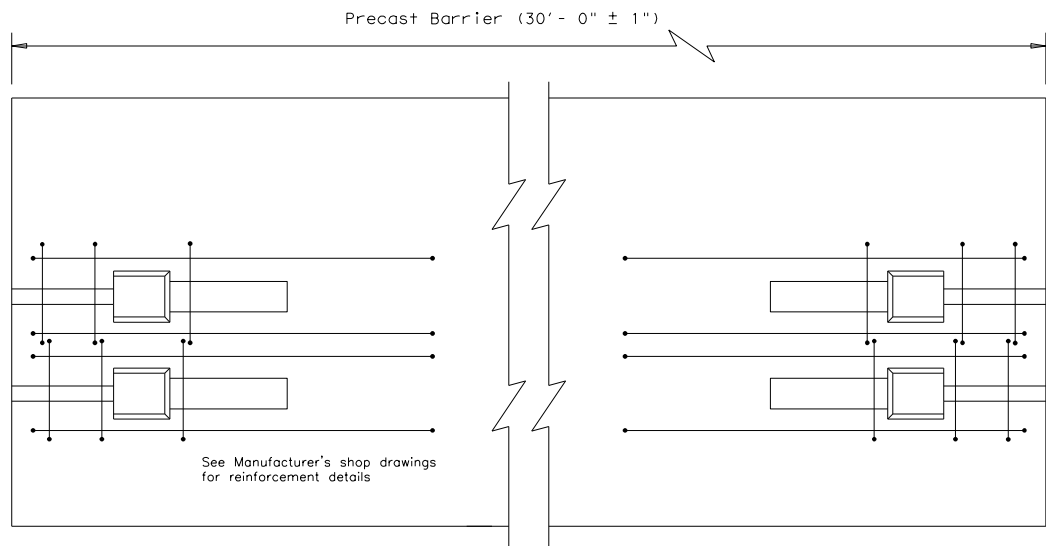
		Design Division Standard	
SINGLE SLOPE CONCRETE BARRIER			
PRECAST BARRIER (TYPE 1)			
SSCB(2)-10			
FILE: sscb210.dgn	DN: TxDOT	CR: AM	DW: BD
© TxDOT December 2010	CONT	SECT	JOB
REVISIONS	0610	03	095
DIST	COUNTY	SHEET NO.	
ATL	TITUS	57	

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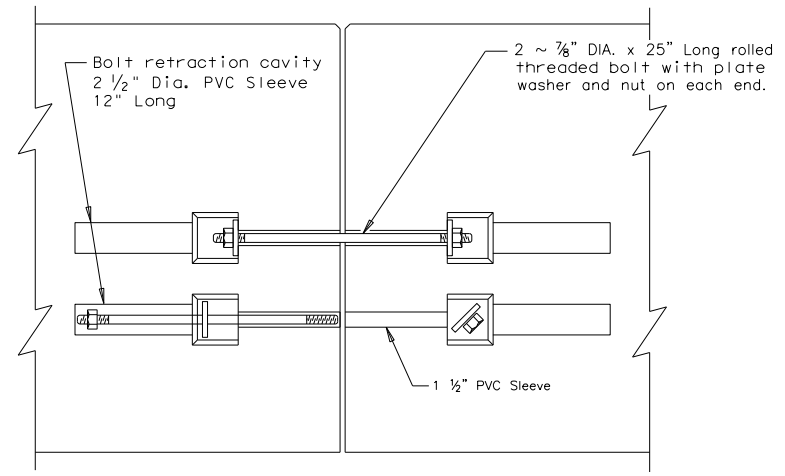
DATE: 6/3/2024
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END VIEW
 "QUICK-BOLT" POCKET LOCATIONS

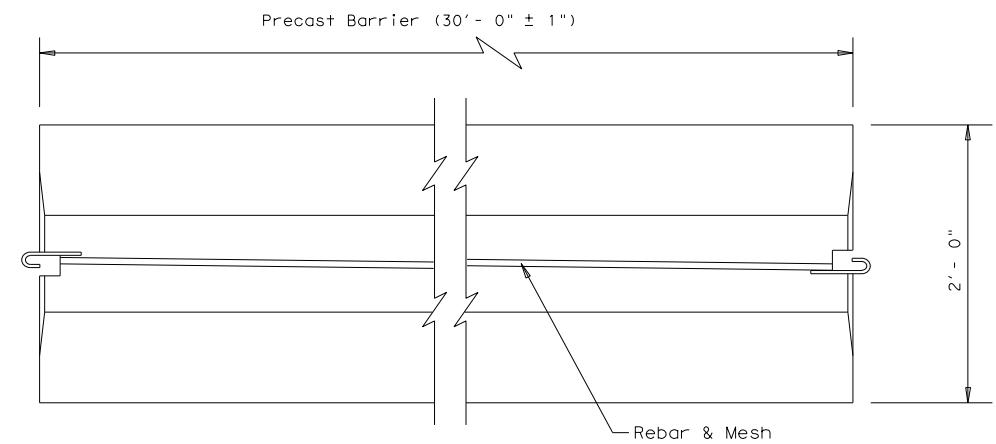


ELEVATION VIEW
 "QUICK-BOLT" (SSCB)
 See Manufacturer's shop drawing for additional details

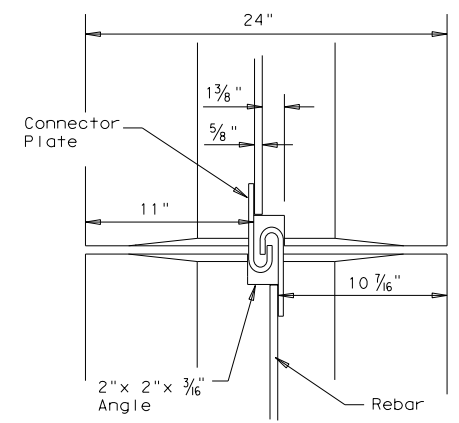


ELEVATION VIEW SHOWING JOINT CONNECTION
 "QUICK-BOLT"

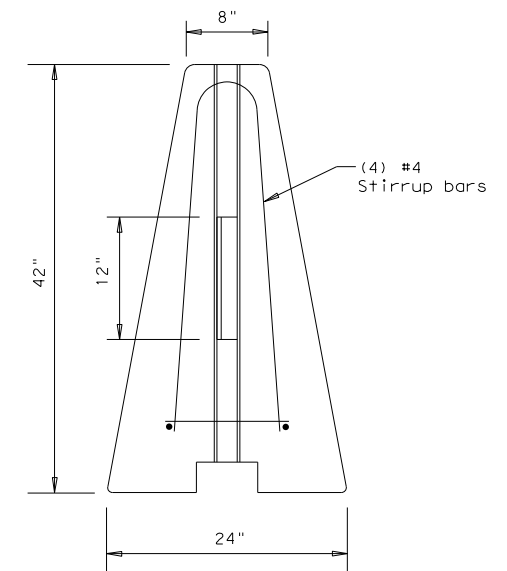
Joint Connection (Type Q)



TOP VIEW
 PRECAST (SSCB) WITH J-J HOOKS
 See Manufacturer's shop drawing for additional details



VIEW FROM ABOVE
 J-J HOOK CONNECTION



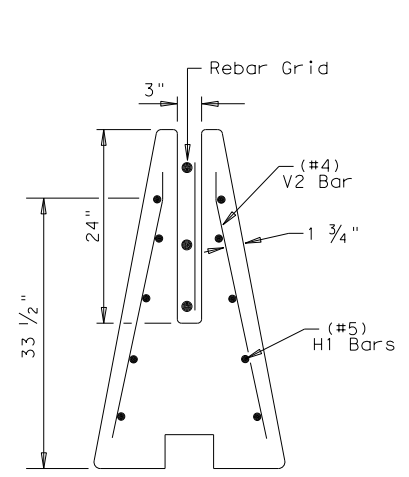
END VIEW

Proprietary Joint Connections (SSCB)

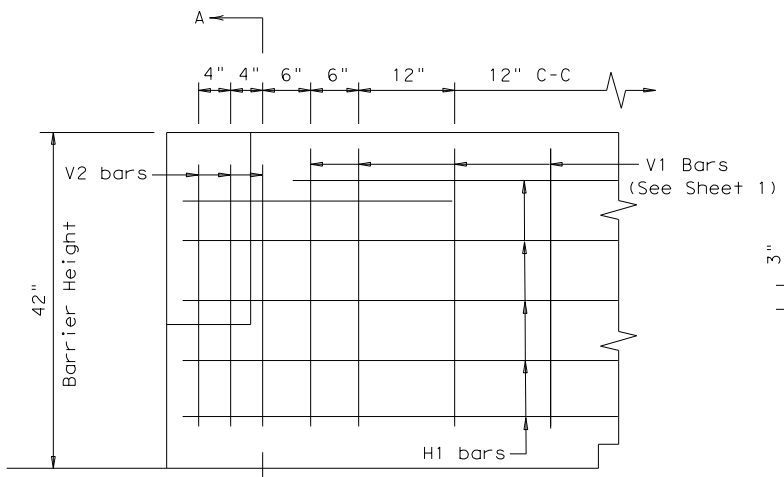
Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
 Quick-Bolt by Bexar Concrete, (210)497-3773

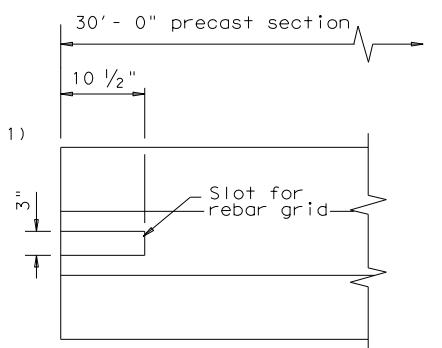
If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.



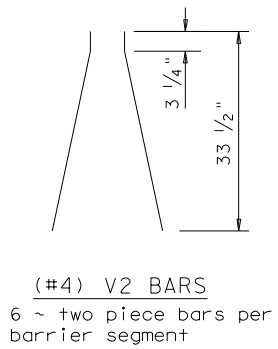
SECTION A-A
 Showing (Type R)
 Rebar Grid



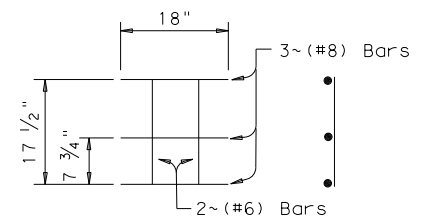
ELEVATION
 V1 Bars (See Sheet 1)



TOP VIEW
 JOINT CONNECTION
 Typical at both ends of barrier segment



(#4) V2 BARS
 6 ~ two piece bars per barrier segment



WELDED REBAR GRID

Joint Connection (Type R)



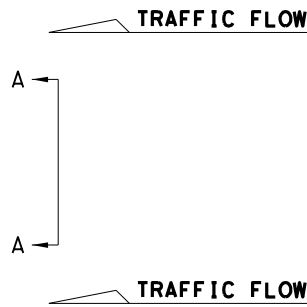
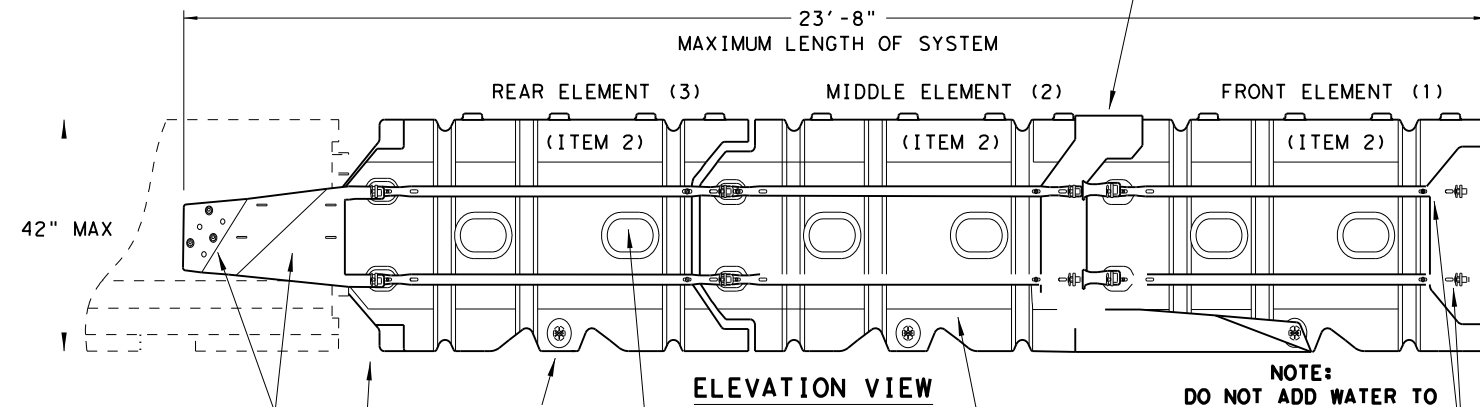
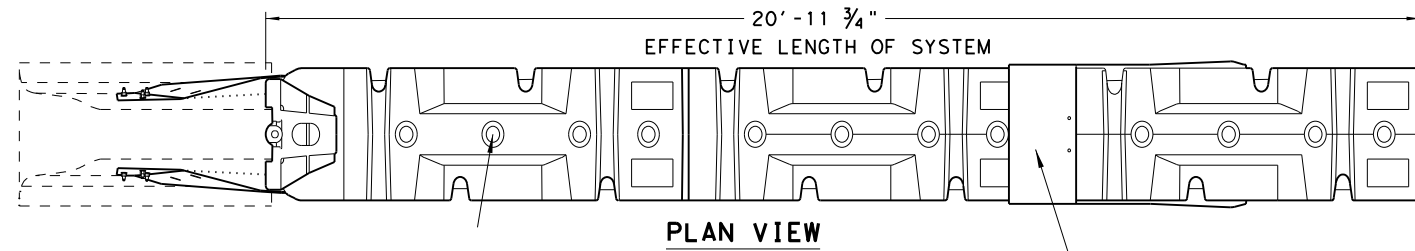
SINGLE SLOPE CONCRETE BARRIER
PRECAST BARRIER (TYPE 1)
SSCB(2) - 10

FILE: sscb210.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
DIST	COUNTY	SHEET NO.		
ATL	TITUS	58		

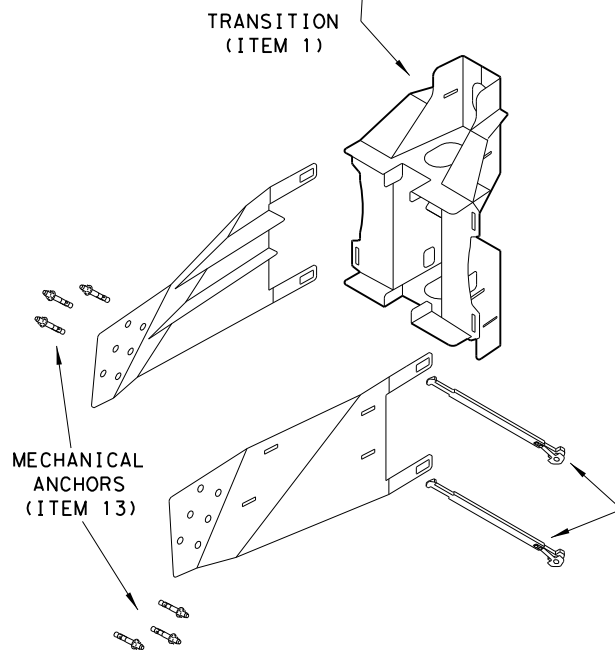
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SYSTEM SHOWN - ABSORB-M TL-3



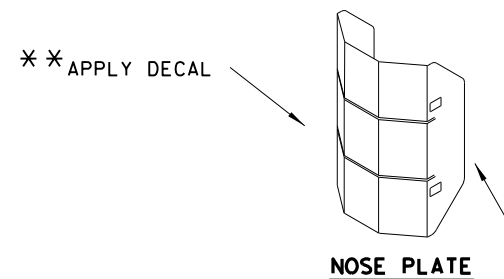
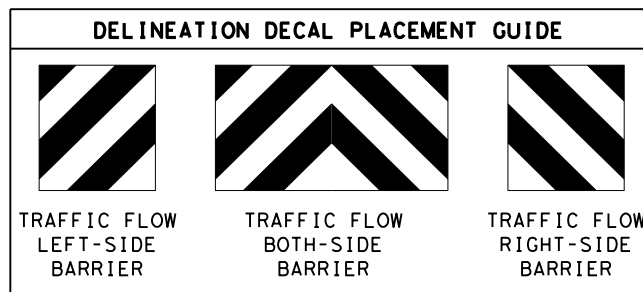
NOTE:
DO NOT ADD WATER TO FRONT ELEMENT TL-2 OR TL-3 UNITS



TEST LEVEL	NUMBER OF ELEMENTS	EFFECTIVE LENGTH	MAXIMUM LENGTH
TL-2	2	14' - 7 3/4"	17' - 4"
TL-3	3	20' - 11 3/4"	23' - 8"

BILL OF MATERIALS (BOM) ABSORB-M TL-3 & TL-2 SYSTEMS			QTY	QTY
ITEM #	PART NUMBER	PART DESCRIPTION	TL-2 SYSTEM	TL-3 SYSTEM
1	BSI-1809036-00	TRANSITION - (GALV)	1	1
2	BSI-1808002-00	PRE-ASSEMBLED ABSORBING (ELEMENTS)	2	3
3	BSI-4004598	FILL CAPS	8	12
4	BSI-4004599	DRAIN PLUGS	2	3
5	BSI-1809053-00	TENSION STRAP - (GALV)	8	12
6	BSI-2001998	C-SCR FH 3/8-16 X 1 1/2 GR5 PLT	8	12
7	BSI-2001999	C-SCR FH 3/8-16 X 1 GR5 PLT	8	12
8	BSI-1809035-00	MIDNOSE - (GALV)	1	1
9	BSI-1808014-00	NOSE PLATE	1	1
10	BSI-1809037-00	TRANSITION STRAP (LEFT-HAND) - (GALV)	1	1
11	BSI-1809038-00	TRANSITION STRAP (RIGHT-HAND) - (GALV)	1	1
12	BSI-1808005-00	PIN ASSEMBLY	8	10
13	BSI-2002001	ANC MECH 5/8-11X5 (GALV)	6	6
14	ABSORB-M	INSTALLATION AND INSTRUCTIONS MANUAL	1	1

* COMPONENTS PRE-ASSEMBLED WITH ELEMENT ASSEMBLY



** NOTE: (PROVIDED BY OTHERS) ENGINEER OR CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE CORRECT DECAL PER TRAFFIC FLOW, LEFT, RIGHT OR BOTH-SIDES.

NOTE: APPLY A HIGH REFLECTIVE DECAL TO THE NOSE PLATE. DELINEATION DECAL ORIENTATION IS SHOWN ON THE CONSTRUCTION PLAN SET AND SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD FOR (TRAFFIC CONTROL DEVICES). DECALS ARE AVAILABLE FOR TRAFFIC FLOW ON THE LEFT-SIDE, BOTH -SIDES AND RIGHT-SIDE.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

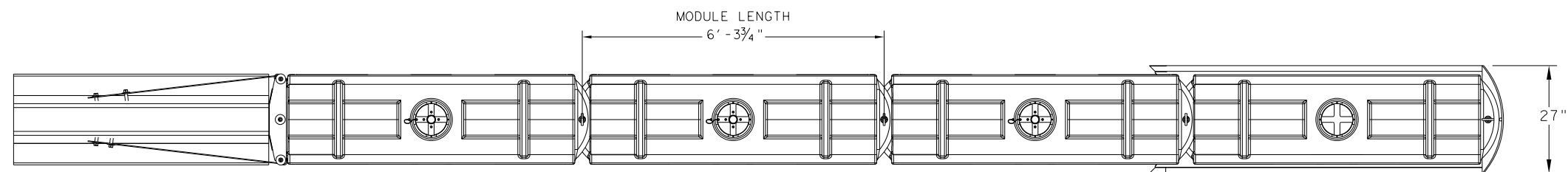
GENERAL NOTES

- FOR SPECIFIC INFORMATION REGARDING THE INSTALLATION AND TECHNICAL GUIDANCE, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800. 180 RIVER ROAD, RIO VISTA, CA 94571
- THE ABSORB-M SYSTEM IS ONLY APPROVED FOR USE IN (TEMPORARY WORK ZONE) LOCATIONS.
- THE ABSORB-M IS A WATER FILLED NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO A FOUNDATION AND CAN BE INSTALLED ON TOP OF CONCRETE, ASPHALT, OR ANY SURFACE CAPABLE OF BEARING THE WEIGHT OF THE SYSTEM.
- MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
- THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
- THE ABSORB-M SHOULD BE LOCATED APPROXIMATELY PARALLEL WITH THE BARRIER.
- THE USE OF THE ABSORB-M IS RESTRICTED TO A BARRIER HEIGHT OF UP TO 42 INCHES.
- DO NOT ADD WATER TO FRONT ELEMENT (TL-2 OR TL-3 UNIT).

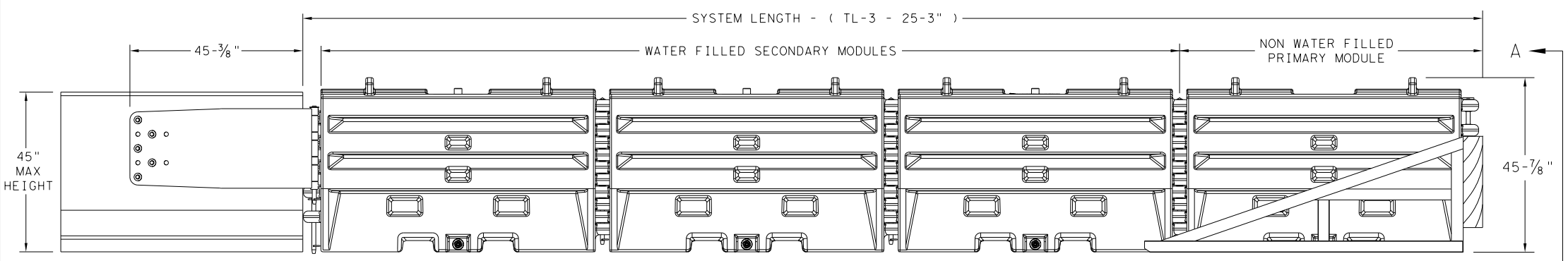
SACRIFICIAL

		Design Division Standard	
LINDSAY TRANSPORTATION SOLUTIONS CRASH CUSHION (MASH TL-3 & TL-2) TEMPORARY - WORK ZONE ABSORB (M) - 19			
FILE: absorbm19	DN: TxDOT	CK: KM	DW: VP
© TXDOT: JULY 2019	CONT SECT	JOB	HIGHWAY
REVISIONS	0610 03	095	IH 30
DIST	COUNTY	SHEET NO.	
ATL	TITUS	59	

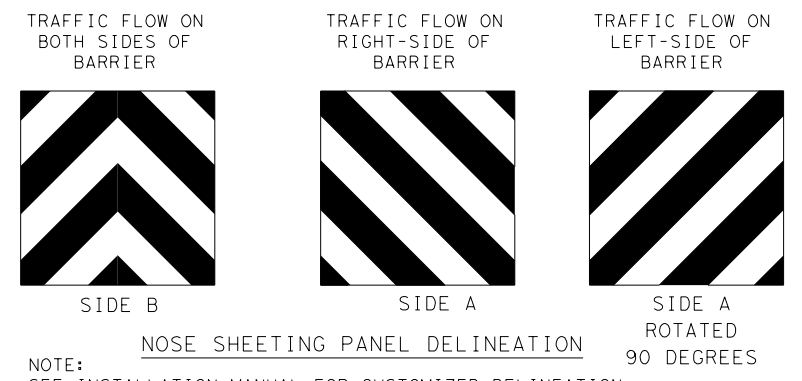
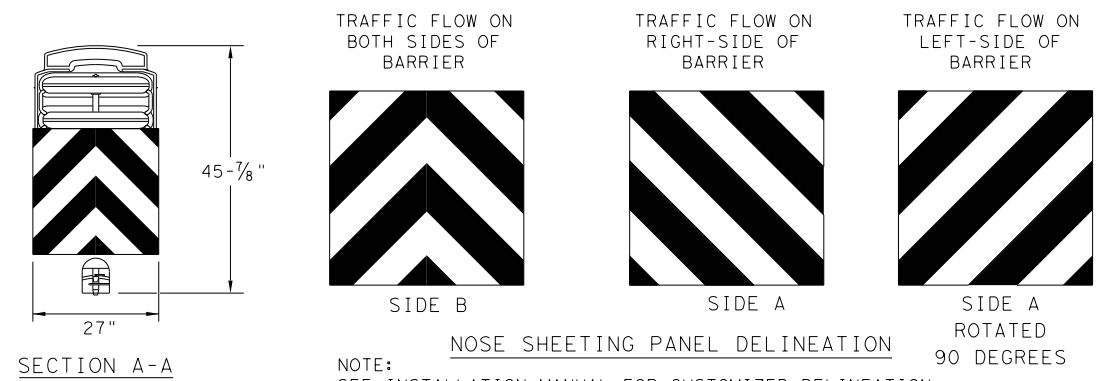
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.
 DATE: 6/3/2024
 FILE: P:\116\35\04\Design\Civil\Standards\TCP\sled19.dgn



PLAN VIEW



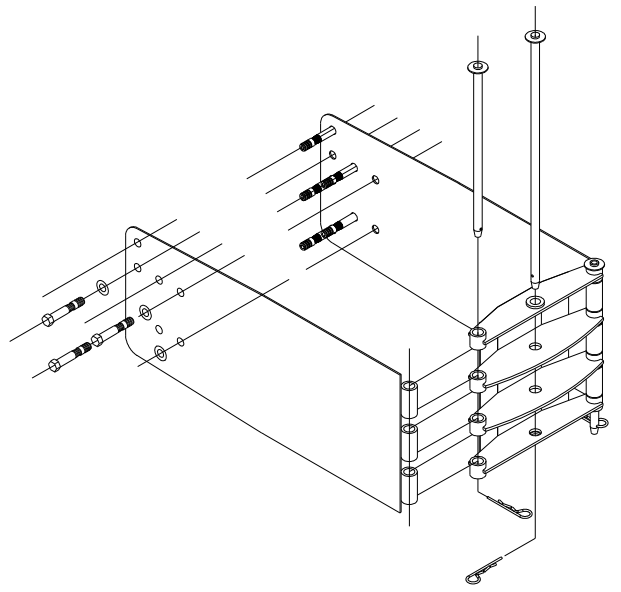
ELEVATION VIEW



NOTE:
SEE INSTALLATION MANUAL FOR CUSTOMIZED DELINEATION NOSE SHEETING FOR DECAL PLACEMENT.

TEST LEVEL	NUMBER OF SECONDARY MODULES	SYSTEM LENGTH
TL-3	3	25' 3"

TRANSITION OPTIONS
SLED TRANSITION TO CONCRETE TRAFFIC BARRIER (TEMPORARY OR PERMANENT)
SLED TRANSITION TO STEEL TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO PLASTIC TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO W-BEAM OR THRIE BEAM GUARD RAIL (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO CONCRETE BRIDGE ABUTMENT



SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

NOTE:
SEE MANUFACTURER'S INSTALLATION MANUAL FOR FURTHER DETAILS.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SLED, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

GENERAL NOTES

- REFER TO THE INSTALLATION MANUAL FOR SPECIFIC SYSTEM ASSEMBLY AND MODULE ORIENTATION. FOR ADDITIONAL INFORMATION, CONTACT TRAFFIX, INC. AT (949) 361-5663.
- THE SLED SYSTEM IS A MASH APPROVED TEST LEVEL 3 (TL-3) CRASH CUSHION APPROVED FOR USE IN TEMPORARY WORK ZONES. THE SLED SYSTEM IS A NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO THE GROUND AND CAN BE INSTALLED ON CONCRETE, ASPHALT, GRAVEL OR COMPACTED SOIL.
- MAXIMUM PERMISSIBLE CROSS SLOPE IS 8° (DEGREES) (14%).
- THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
- THE SLED SYSTEM CAN BE ATTACHED TO:
 - CONCRETE BARRIER, TEMPORARY OR PERMANENT, 45" MAXIMUM HEIGHT
 - STEEL BARRIER
 - PLASTIC BARRIER
 - CONCRETE BRIDGE ABUTMENTS
 - W-BEAM GUARD RAIL
 - THRIE BEAM GUARD RAIL

BILL OF MATERIAL		
PART NUMBER	DESCRIPTION	QTY: TL-3
45131	TRANSITION FRAME, GALVANIZED	1
45150	TRANSITION PANEL, GALVANIZED	2
45147-CP	TRANSITION SHORT DROP PIN W/ KEEPER PIN, GALVANIZED	2
45148-CP	TRANSITION LONG DROP PIN W/ KEEPER PIN, GALVANIZED	1
45050	ANCHOR BOLTS	9
12060	WASHER, 3/4" ID X 2" OD	9
45044-Y	SLED YELLOW WATER FILLED MODULE	3
45044-YH	SLED YELLOW "NO FILL" MODULE	1
45044-S	CIS (CONTAINMENT IMPACT SLED), GALVANIZED	1
45043-CP	T-PIN W/ KEEPER PIN	4
18009-B-I	FILL CAP W/ "DRIVE BY" FLOAT INDICATOR	3
45033-RC-B	DRAIN PLUG	3
45032-DPT	DRAIN PLUG REMOVAL TOOL	1



**SLED
 CRASH CUSHION
 TL-3 MASH COMPLIANT
 (TEMPORARY, WORK ZONE)
 SLED-19**

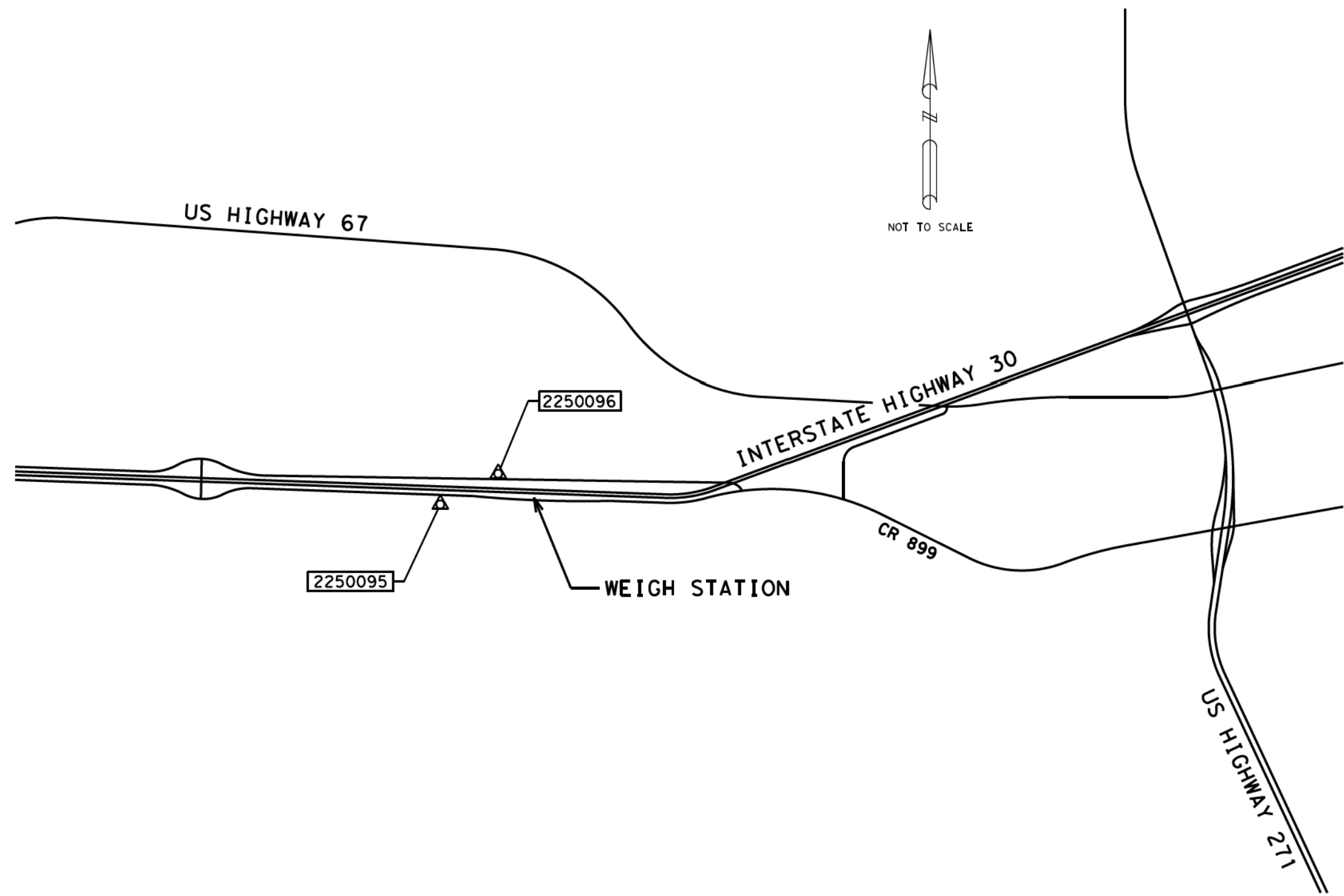
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© TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
DIST	COUNTY		SHEET NO.	
ATL	TITUS		60	

SACRIFICIAL

STMS 7/20/2022 Pope Dawson Eng'g, 113.09 Dept. of Public Safety Commercial Vehicle Inspection Facility In Titus Co Control VPC Vehicle Inspection Facility INDEX SHEET.dgn
 Design Filename: P:\116\35\04\Design\Civil\Roadway\1163504surveycontrol.dgn
 Plotted on: 6/3/2024

SURVEY CONTROL POINTS								
CONTROL POINT	SURFACE COORDINATES		GRID COORDINATES		LATITUDE	LONGITUDE	ELEVATION	DESCRIPTION
	NORTHING	EASTING	NORTHING	EASTING				
2250095	7,122,502.1695	3,022,801.2115	7,121,647.5718	3,022,438.5189	33°09'30.14953"	95°03'19.19072"	437.347	FOUND 3-1/4" TxDOT ALUMINUM DISK ON A 5/8" IRON ROD IN CONC FLUSH W/ GROUND
2250096	7,122,861.7611	3,024,112.7280	7,122,007.1202	3,023,749.8780	33°09'33.27966"	95°03'03.63329"	408.637	FOUND 3-1/4" TxDOT ALUMINUM DISK ON A 5/8" IRON ROD IN CONC FLUSH W/ GROUND

- NOTES:**
- ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS NORTH CENTRAL ZONE (4202), NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00012
 - ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (MOUNT PLEASANT), BASED ON THREE AVERAGED 180 EPOCH OBSERVATIONS
 - UNIT OF MEASURE IS U.S. SURVEY FOOT
 - VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (MOUNT PLEASANT)
 - FIELD SURVEYS WERE PERFORMED DURING JUNE 2017



I HERBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY MULTIPLE GPS OBSERVATIONS ACCESSING THE STATE VIRTUAL REFERENCE SYSTEM IN JULY 2017, AND IS CORRECTLY SHOWN HEREON.

PRELIMINARY
 FOR REVIEW ONLY
 Not for construction, bidding, or permit purposes.

LPA LPA & ASSOCIATES, INC.
 3320 BELT LINE ROAD
 FARMERS BRANCH, TX 75234
 TBPELS FIRM NO. F-782, 10140700

Engineer: **CHRISTOPHER R. FREEMAN**
 License No. 5701 Date 7/20/2022

LTRA 3320 BELT LINE ROAD
 FARMERS BRANCH, TX 75234
 TBPELS FIRM NO. F-782, 10140700

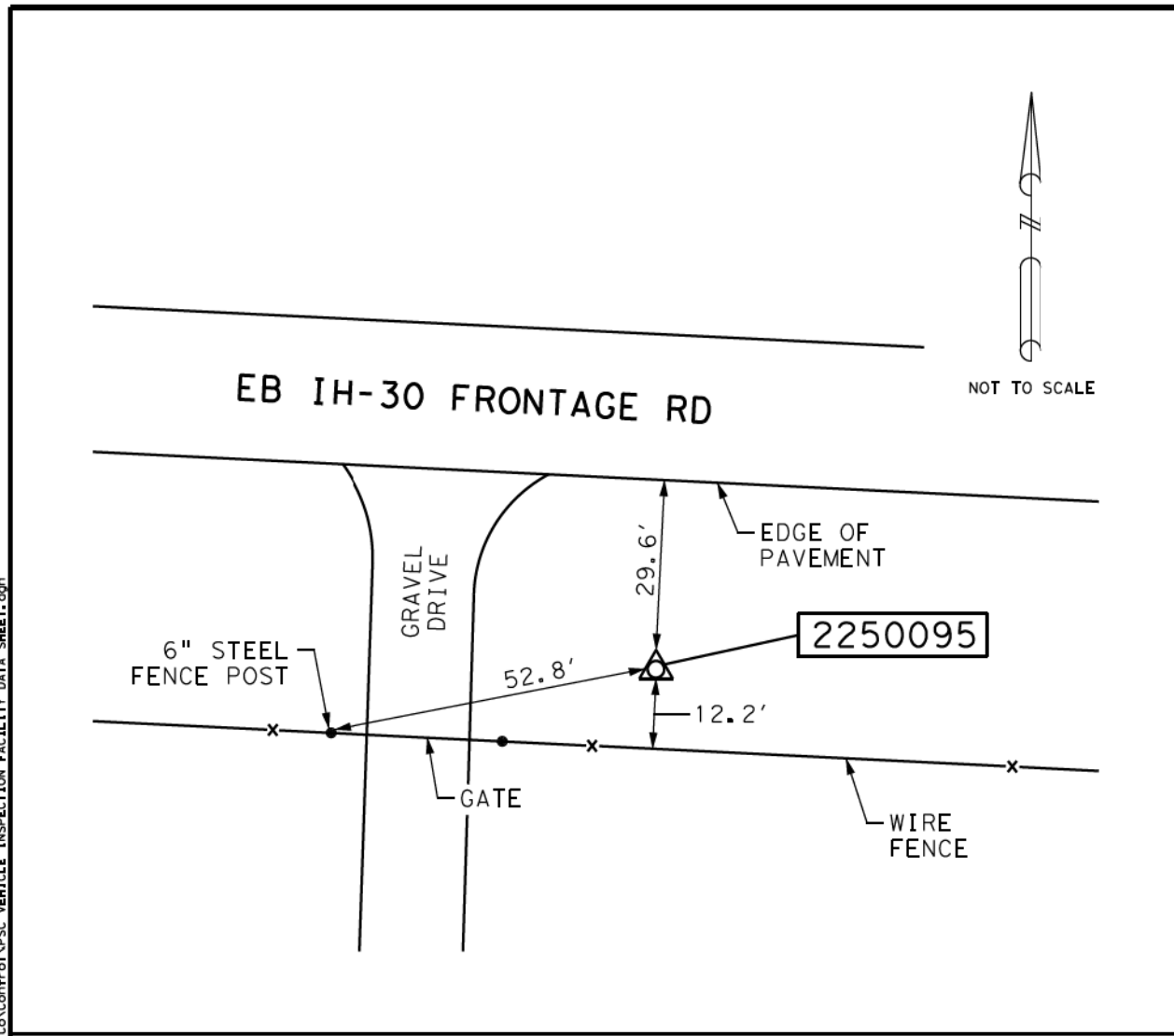
Texas Department of Transportation ©2022

**PUBLIC SAFETY
 COMMERCIAL VEHICLE
 INSPECTION FACILITY
 SURVEY CONTROL INDEX**

FED RD DIV NO.	FEDERAL AID PROJECT	HIGHWAY
6		IH 30
STATE	DISTRICT	COUNTY
TEXAS	ATLANTA	TITUS
CONTROL	SECTION	JOB
0610	03	095

SHEET NO. 61

7/20/2022
 04_11131
 Pope Dawson Eng'g 19.113.09 Dept. of Public Safety Commercial Vehicle Inspection Facility In Titus Co Control VPC Vehicle Inspection Facility Data SHEET.dgn



CONTROL POINT: 2250095

APPROXIMATE LOCATION:
 FROM THE WEIGH STATION LOCATED ON THE EASTBOUND SIDE OF IH-30 NEAR MILE MARKER 157, GO 3 TENTHS OF A MILE WEST ALONG THE FRONTAGE ROAD LOCATED ON THE SOUTH SIDE OF IH-30 TO A MONUMENT

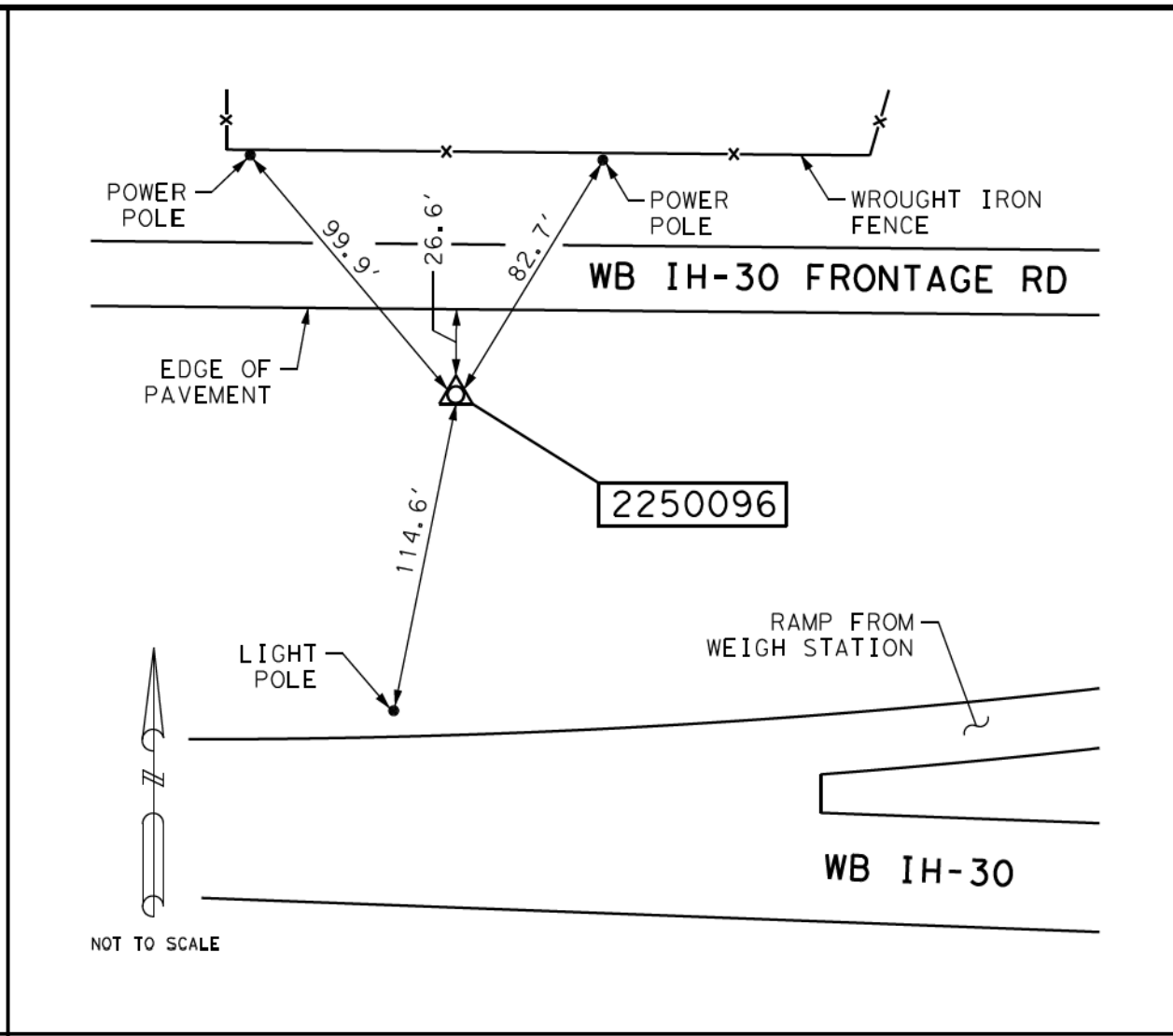
MONUMENT:
 SET A TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" IRON ROD SET IN CONCRETE FLUSH WITH THE GROUND

SURFACE COORDINATES, US SURVEY FEET TEXAS STATE PLANE COORDINATE SYSTEM NAD 83 (2011), NORTH CENTRAL ZONE 4202 DERIVED FROM THE TxDOT VRS NETWORK (MOUNT PLEASANT)
 COMBINED SURFACE ADJUSTMENT FACTOR: 1.00012

SURFACE COORDINATES:	GRID COORDINATES:
NORTHING: 7,122,502.1695	NORTHING: 7,121,647.5718
EASTING: 3,022,801.2115	EASTING: 3,022,438.5189
ELEVATION: 437.347	ELEVATION: 437.347

LATITUDE: 33° 09' 30.14953"
 LONGITUDE: 95° 03' 19.19072"

ELEVATION IS NAVD 88, BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VRS NETWORK (MOUNT PLEASANT)



CONTROL POINT: 2250096

APPROXIMATE LOCATION:
 FROM THE WEIGH STATION LOCATED ON THE WESTBOUND SIDE OF IH-30 NEAR MILE MARKER 157, GO 5 TENTHS OF A MILE WEST ALONG THE FRONTAGE ROAD LOCATED ON THE NORTH SIDE OF IH-30 TO A MONUMENT

MONUMENT:
 SET A TxDOT 3-1/4" ALUMINUM DISK ON A 5/8" IRON ROD SET IN CONCRETE FLUSH WITH THE GROUND

SURFACE COORDINATES, US SURVEY FEET TEXAS STATE PLANE COORDINATE SYSTEM NAD 83 (2011), NORTH CENTRAL ZONE 4202 DERIVED FROM THE TxDOT VRS NETWORK (MOUNT PLEASANT)
 COMBINED SURFACE ADJUSTMENT FACTOR: 1.00012

SURFACE COORDINATES:	GRID COORDINATES:
NORTHING: 7,122,861.7611	NORTHING: 7,122,007.1202
EASTING: 3,024,112.7280	EASTING: 3,023,749.8780
ELEVATION: 408.637	ELEVATION: 408.637

LATITUDE: 33° 09' 33.27966"
 LONGITUDE: 95° 03' 03.63329"

ELEVATION IS NAVD 88, BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VRS NETWORK (MOUNT PLEASANT)


NOTES:

- ALL BEARINGS AND COORDINATES ARE REFERENCED TO THE TEXAS COORDINATE SYSTEM OF 1983 TEXAS NORTH CENTRAL ZONE (4202), NORTH AMERICAN DATUM OF 1983 (NAD83) 2011 ADJUSTMENT, EPOCH 2010 (GEOID 12A). ALL DISTANCES AND COORDINATES ARE SURFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.00012
- ALL HORIZONTAL CONTROL OF THIS PROJECT WAS ESTABLISHED BY TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (MOUNT PLEASANT), BASED ON THREE AVERAGED 180 EPOCH OBSERVATIONS
- UNIT OF MEASURE IS U.S. SURVEY FOOT
- VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), BASED ON THREE 180 EPOCH OBSERVATIONS UTILIZING THE TxDOT VIRTUAL REFERENCE SYSTEM NETWORK (MOUNT PLEASANT)
- FIELD SURVEYS WERE PERFORMED DURING JUNE 2017


I HERBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY MULTIPLE GPS OBSERVATIONS ACCESSING THE STATE VIRTUAL REFERENCE SYSTEM IN JULY 2017, AND IS CORRECTLY SHOWN HEREON.

PRELIMINARY


FOR REVIEW ONLY
 Not for construction, bidding, or permit purposes.


 LTRA
 3320 BELT LINE ROAD
 FARMERS BRANCH, TX 75234
 TBP.ELS FIRM NO. F-782, 10140700

Engineer: **CHRISTOPHER R. FREEMAN**
 License No. 5701 Date: 7/20/2022


 3320 BELT LINE ROAD
 FARMERS BRANCH, TX 75234
 TBP.ELS FIRM NO. F-782, 10140700

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 Texas Department of Transportation

**PUBLIC SAFETY
 COMMERCIAL VEHICLE
 INSPECTION FACILITY
 SURVEY CONTROL DATA**

FED RD DIV NO.	FEDERAL AID PROJECT	HIGHWAY
6		IH 30
STATE	DISTRICT	COUNTY
TEXAS	ATLANTA	TITUS
CONTROL	SECTION	JOB
0610	03	095
		SHEET NO.
		62

WB CMV ALIGNMENT

Beginning chain WB CMV3 description

Curve Data

Curve WB CMV31
 P.I. Station 4+23.22 N 7,122,740.86 E 3,021,988.66
 Delta = 0° 33' 11.98" (RT)
 Degree = 0° 07' 29.39"
 Tangent = 221.63
 Length = 443.26
 Radius = 45,898.63
 External = 0.54
 Long Chord = 443.26
 Mid. Ord. = 0.54
 P.C. Station 2+01.58 N 7,122,740.40 E 3,021,767.03
 P.T. Station 6+44.85 N 7,122,739.19 E 3,022,210.29
 C.C. N 7,076,841.86 E 3,021,864.23
 Back = N 89° 52' 43.19" E
 Ahead = S 89° 34' 04.83" E
 Chord Bear = S 89° 50' 40.82" E

Course from PT WB CMV31 to WBCMV156 N 88° 06' 56.08" E Dist 308.10

Point WBCMV156 N 7,122,749.33 E 3,022,518.22 Sta 9+52.95

Course from WBCMV156 to PC WB CMV32 S 89° 12' 45.21" E Dist 749.86

Curve Data

Curve WB CMV32
 P.I. Station 19+95.36 N 7,122,735.00 E 3,023,560.54
 Delta = 5° 52' 34.68" (LT)
 Degree = 1° 00' 18.68"
 Tangent = 292.55
 Length = 584.60
 Radius = 5,700.00
 External = 7.50
 Long Chord = 584.34
 Mid. Ord. = 7.49
 P.C. Station 17+02.81 N 7,122,739.02 E 3,023,268.01
 P.T. Station 22+87.41 N 7,122,760.95 E 3,023,851.94
 C.C. N 7,128,438.48 E 3,023,346.35
 Back = S 89° 12' 45.21" E
 Ahead = N 84° 54' 40.11" E
 Chord Bear = N 87° 50' 57.45" E

Course from PT WB CMV32 to PC WB CMV33 N 84° 54' 40.11" E Dist 127.45

Curve Data

Curve WB CMV33
 P.I. Station 25+84.23 N 7,122,787.28 E 3,024,147.60
 Delta = 5° 52' 34.89" (RT)
 Degree = 1° 44' 10.45"
 Tangent = 169.38
 Length = 338.45
 Radius = 3,300.00
 External = 4.34
 Long Chord = 338.31
 Mid. Ord. = 4.34
 P.C. Station 24+14.86 N 7,122,772.25 E 3,023,978.89
 P.T. Station 27+53.31 N 7,122,784.95 E 3,024,316.96
 C.C. N 7,119,485.26 E 3,024,271.60
 Back = N 84° 54' 40.11" E
 Ahead = S 89° 12' 45.00" E
 Chord Bear = N 87° 50' 57.56" E

Course from PT WB CMV33 to WBCMV157 S 89° 12' 45.00" E Dist 546.69

Point WBCMV157 N 7,122,777.44 E 3,024,863.60 Sta 33+00.00

Course from WBCMV157 to PC WB CMV34 S 89° 12' 45.00" E Dist 468.50

Curve Data

Curve WB CMV34
 P.I. Station 38+00.00 N 7,122,770.56 E 3,025,363.55
 Delta = 1° 08' 44.75" (RT)
 Degree = 1° 49' 08.09"
 Tangent = 31.50
 Length = 62.99
 Radius = 3,150.00
 External = 0.16
 Long Chord = 62.99
 Mid. Ord. = 0.16
 P.C. Station 37+68.50 N 7,122,771.00 E 3,025,332.05
 P.T. Station 38+31.49 N 7,122,769.50 E 3,025,395.03
 C.C. N 7,119,621.29 E 3,025,288.76
 Back = S 89° 12' 45.00" E
 Ahead = S 88° 04' 00.25" E
 Chord Bear = S 88° 38' 22.63" E

Course from PT WB CMV34 to PC WB CMV35 S 88° 04' 00.25" E Dist 37.03

Curve Data

Curve WB CMV35
 P.I. Station 39+00.02 N 7,122,767.19 E 3,025,463.51
 Delta = 1° 08' 44.75" (LT)
 Degree = 1° 49' 08.09"
 Tangent = 31.50
 Length = 62.99
 Radius = 3,150.00
 External = 0.16
 Long Chord = 62.99
 Mid. Ord. = 0.16
 P.C. Station 38+68.52 N 7,122,768.25 E 3,025,432.03
 P.T. Station 39+31.51 N 7,122,766.76 E 3,025,495.01
 C.C. N 7,125,916.46 E 3,025,538.30
 Back = S 88° 04' 00.25" E
 Ahead = S 89° 12' 45.00" E
 Chord Bear = S 88° 38' 22.63" E

Course from PT WB CMV35 to PC WB CMV36 S 89° 12' 45.00" E Dist 904.75

Curve Data

Curve WB CMV36
 P.I. Station 48+46.11 N 7,122,754.19 E 3,026,409.51
 Delta = 1° 07' 38.98" (RT)
 Degree = 5° 43' 46.48"
 Tangent = 9.84
 Length = 19.68
 Radius = 1,000.00
 External = 0.05
 Long Chord = 19.68
 Mid. Ord. = 0.05
 P.C. Station 48+36.27 N 7,122,754.32 E 3,026,399.67
 P.T. Station 48+55.94 N 7,122,753.86 E 3,026,419.35
 C.C. N 7,121,754.42 E 3,026,385.93
 Back = S 89° 12' 45.00" E
 Ahead = S 88° 05' 06.02" E
 Chord Bear = S 88° 38' 55.51" E

Course from PT WB CMV36 to PC WB CMV37 S 88° 05' 06.02" E Dist 81.96

Curve Data

Curve WB CMV37
 P.I. Station 49+47.75 N 7,122,750.79 E 3,026,511.10
 Delta = 1° 07' 38.98" (LT)
 Degree = 5° 43' 46.48"
 Tangent = 9.84
 Length = 19.68
 Radius = 1,000.00
 External = 0.05
 Long Chord = 19.68
 Mid. Ord. = 0.05
 P.C. Station 49+37.91 N 7,122,751.12 E 3,026,501.26
 P.T. Station 49+57.58 N 7,122,750.65 E 3,026,520.93
 C.C. N 7,123,750.56 E 3,026,534.68
 Back = S 88° 05' 06.02" E
 Ahead = S 89° 12' 45.00" E
 Chord Bear = S 88° 38' 55.51" E

Course from PT WB CMV37 to WBCMV158 S 89° 12' 45.00" E Dist 37.51

Point WBCMV158 N 7,122,750.14 E 3,026,558.44 Sta 49+95.09

Course from WBCMV158 to PC WB CMV38 S 89° 12' 45.00" E Dist 96.02

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

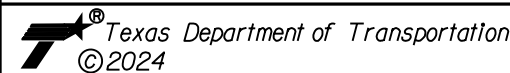
APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

REV. NO.	DATE	DESCRIPTION	BY



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



WB IH 30 CMV STATION
HORIZONTAL ALIGNMENT
DATA

SHEET 1 OF 3

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	63

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\Roadway\1163504HAD01.dgn

WB CMV ALIGNMENT (CONT.)

Plotted on: 6/3/2024

Curve Data			

Curve WB CMV38			
P.I. Station	51+11.10	N	7,122,748.55 E
Delta	= 2° 17' 26.20"	(LT)	
Degree	= 5° 43' 46.48"		
Tangent	= 19.99		
Length	= 39.98		
Radius	= 1,000.00		
External	= 0.20		
Long Chord	= 39.98		
Mid. Ord.	= 0.20		
P.C. Station	50+91.11	N	7,122,748.82 E
P.T. Station	51+31.09	N	7,122,749.07 E
C.C.		N	7,123,748.73 E
Back	= S 89° 12' 45.00"	E	
Ahead	= N 88° 29' 48.80"	E	
Chord Bear	= N 89° 38' 31.90"	E	

Course from PT WB CMV38 to PC WB CMV39 N 88° 29' 48.80" E Dist 60.10

Curve Data			

Curve WB CMV39			
P.I. Station	52+11.17	N	7,122,751.17 E
Delta	= 2° 17' 26.20"	(RT)	
Degree	= 5° 43' 46.48"		
Tangent	= 19.99		
Length	= 39.98		
Radius	= 1,000.00		
External	= 0.20		
Long Chord	= 39.98		
Mid. Ord.	= 0.20		
P.C. Station	51+91.18	N	7,122,750.65 E
P.T. Station	52+31.16	N	7,122,750.90 E
C.C.		N	7,121,750.99 E
Back	= N 88° 29' 48.80"	E	
Ahead	= S 89° 12' 45.00"	E	
Chord Bear	= N 89° 38' 31.90"	E	

Course from PT WB CMV39 to WBCM159 S 89° 12' 45.00" E Dist 293.86

Point WBCM159 N 7,122,746.86 E 3,027,088.31 Sta 55+25.03

Course from WBCM159 to PC WB CMV310 S 89° 12' 45.00" E Dist 337.54

Curve Data			

Curve WB CMV310			
P.I. Station	59+48.13	N	7,122,741.04 E
Delta	= 3° 06' 43.23"	(RT)	
Degree	= 1° 49' 08.09"		
Tangent	= 85.57		
Length	= 171.09		
Radius	= 3,150.00		
External	= 1.16		
Long Chord	= 171.07		
Mid. Ord.	= 1.16		
P.C. Station	58+62.57	N	7,122,742.22 E
P.T. Station	60+33.66	N	7,122,735.22 E
C.C.		N	7,119,592.51 E
Back	= S 89° 12' 45.00"	E	
Ahead	= S 86° 06' 01.76"	E	
Chord Bear	= S 87° 39' 23.38"	E	

Course from PT WB CMV310 to PC WB CMV311 S 86° 06' 01.76" E Dist 484.59

Curve Data			

Curve WB CMV311			
P.I. Station	66+38.78	N	7,122,694.07 E
Delta	= 13° 05' 49.23"	(LT)	
Degree	= 5° 27' 24.27"		
Tangent	= 120.53		
Length	= 240.02		
Radius	= 1,050.00		
External	= 6.90		
Long Chord	= 239.49		
Mid. Ord.	= 6.85		
P.C. Station	65+18.25	N	7,122,702.27 E
P.T. Station	67+58.27	N	7,122,713.34 E
C.C.		N	7,123,749.84 E
Back	= S 86° 06' 01.76"	E	
Ahead	= N 80° 48' 09.00"	E	
Chord Bear	= N 87° 21' 03.62"	E	

Curve Data			

Curve WB CMV312			
P.I. Station	69+20.14	N	7,122,739.21 E
Delta	= 6° 39' 02.56"	(LT)	
Degree	= 2° 03' 23.62"		
Tangent	= 161.88		
Length	= 323.39		
Radius	= 2,786.00		
External	= 4.70		
Long Chord	= 323.21		
Mid. Ord.	= 4.69		
P.C. Station	67+58.27	N	7,122,713.34 E
P.T. Station	70+81.66	N	7,122,783.42 E
C.C.		N	7,125,463.52 E
Back	= N 80° 48' 09.00"	E	
Ahead	= N 74° 09' 06.45"	E	
Chord Bear	= N 77° 28' 37.72"	E	

Curve Data			

Curve WB CMV313			
P.I. Station	71+16.54	N	7,122,792.94 E
Delta	= 1° 10' 50.40"	(LT)	
Degree	= 1° 41' 31.70"		
Tangent	= 34.89		
Length	= 69.77		
Radius	= 3,386.00		
External	= 0.18		
Long Chord	= 69.77		
Mid. Ord.	= 0.18		
P.C. Station	70+81.66	N	7,122,783.42 E
P.T. Station	71+51.43	N	7,122,803.16 E
C.C.		N	7,126,040.71 E
Back	= N 74° 09' 06.45"	E	
Ahead	= N 72° 58' 16.05"	E	
Chord Bear	= N 73° 33' 41.25"	E	

Curve Data			

Curve WB CMV314			
P.I. Station	72+89.38	N	7,122,837.94 E
Delta	= 4° 38' 48.64"	(LT)	
Degree	= 1° 41' 06.61"		
Tangent	= 137.95		
Length	= 275.75		
Radius	= 3,400.00		
External	= 2.80		
Long Chord	= 275.67		
Mid. Ord.	= 2.80		
P.C. Station	71+51.43	N	7,122,803.16 E
P.T. Station	74+27.18	N	7,122,883.42 E
C.C.		N	7,126,093.34 E
Back	= N 75° 23' 52.95"	E	
Ahead	= N 70° 45' 04.31"	E	
Chord Bear	= N 73° 04' 28.63"	E	

Course from PT WB CMV314 to WBCM160	N	70° 45' 04.31"	E	Dist 54.18
Point WBCM160	N	7,122,901.28 E	3,029,016.78 Sta	74+81.36
Course from WBCM160 to WBCM161	N	68° 19' 05.25"	E	Dist 251.19
Point WBCM161	N	7,122,994.08 E	3,029,250.20 Sta	77+32.55
Course from WBCM161 to WBCM162	N	68° 09' 55.66"	E	Dist 1,277.47
Point WBCM162	N	7,123,469.21 E	3,030,436.03 Sta	90+10.02
Course from WBCM162 to WBCM163	N	68° 09' 55.66"	E	Dist 16.88
Point WBCM163	N	7,123,475.49 E	3,030,451.70 Sta	90+26.90

Curve Data			

Ending chain WB CMV3 description			

DESIGN

INTERIM REVIEW


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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW


DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

REV. NO.	DATE	DESCRIPTION	BY



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


 Texas Department of Transportation
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**WB IH 30 CMV STATION
HORIZONTAL ALIGNMENT
DATA**

SHEET 2 OF 3

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	64

Design Filename: P:\116\35\04\Design\Civil\Roadway\1163504HAD02.dgn

☉ IH 30 ALIGNMENT

Beginning chain IH30 description
Feature: Road_Centerline

Point IH301 N 7,122,688.92 E 3,021,060.07 Sta 205+96.00

Course from IH301 to PC IH30_3 N 89° 45' 01" E Dist 603.83

Curve Data

Curve IH30_3
P.I. Station 216+14.77 N 7,122,693.36 E 3,022,078.83
Delta = 1° 02' 14" (RT)
Degree = 0° 07' 30"
Tangent = 414.93
Length = 829.84
Radius = 45,836.62
External = 1.88
Long Chord = 829.83
Mid. Ord. = 1.88
P.C. Station 211+99.83 N 7,122,691.55 E 3,021,663.90
P.T. Station 220+29.68 N 7,122,687.66 E 3,022,493.72
C.C. N 7,076,855.36 E 3,021,863.79
Back = N 89° 45' 01" E
Ahead = S 89° 12' 45" E
Chord Bear = S 89° 43' 52" E

Course from PT IH30_3 to PC IH30_6 S 89° 12' 45" E Dist 5,327.46

Curve Data

Curve IH30_6
P.I. Station 279+47.99 N 7,122,606.32 E 3,028,411.47
Delta = 22° 37' 19" (LT)
Degree = 1° 56' 23"
Tangent = 590.86
Length = 1,166.32
Radius = 2,954.00
External = 58.51
Long Chord = 1,158.76
Mid. Ord. = 57.38
P.C. Station 273+57.13 N 7,122,614.44 E 3,027,820.67
P.T. Station 285+23.45 N 7,122,826.08 E 3,028,959.94
C.C. N 7,125,568.16 E 3,027,861.27
Back = S 89° 12' 45" E
Ahead = N 68° 09' 56" E
Chord Bear = N 79° 28' 35" E

Course from PT IH30_6 to IH308 N 68° 09' 56" E Dist 1,690.26

Point IH308 N 7,123,454.73 E 3,030,528.95 Sta 302+13.72

Ending chain IH30 description

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\Roadway\1163504HAD03.dgn

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR
PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 6/3/2024

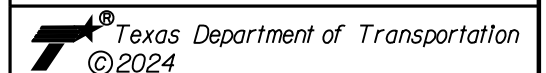
APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR
PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/3/2024

REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



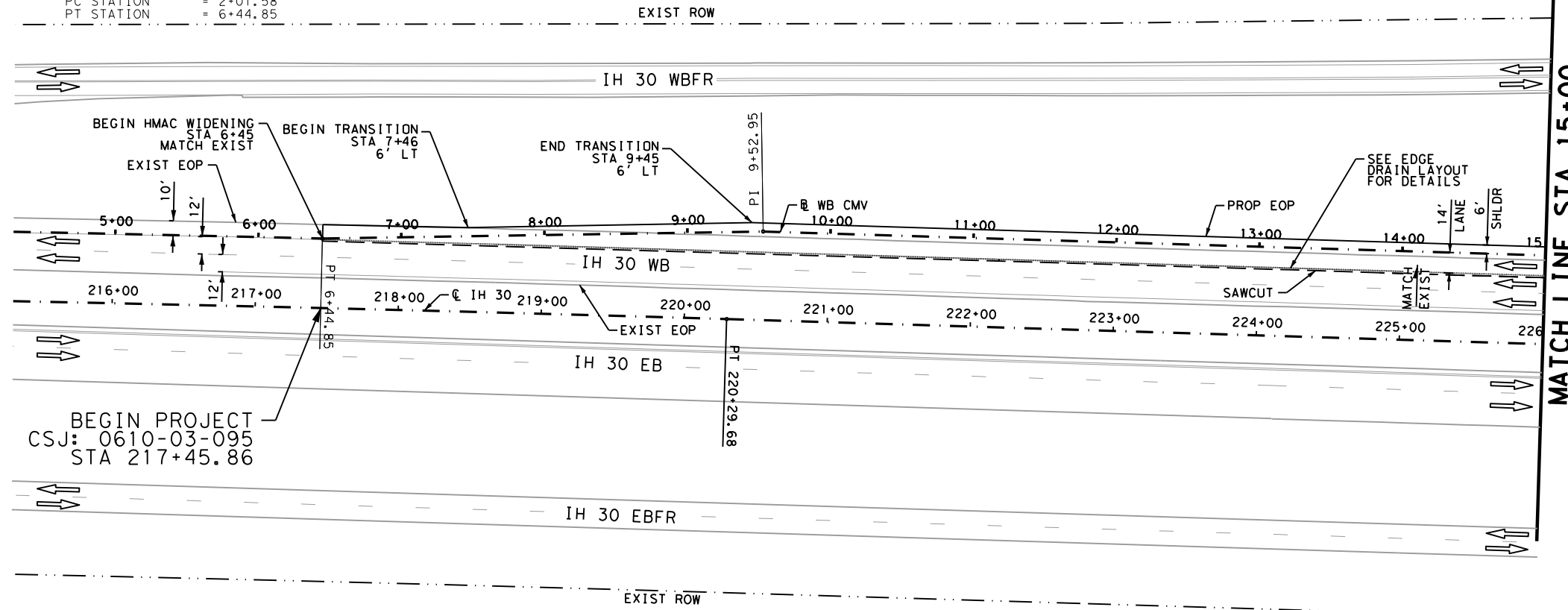
WB IH 30 CMV STATION
HORIZONTAL ALIGNMENT
DATA

SHEET 3 OF 3

DGN:	FED. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CHK DGN:	6	TEXAS		IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK DWG:	ATL	TITUS	0610	03
			095	65

Plotted on: 6/4/2024

PI STATION = 4+23.22
 DELTA = 0° 33' 11.98" (RT)
 DEGREE OF CURVE = 0° 07' 29.39"
 TANGENT = 221.63
 LENGTH = 443.26
 RADIUS = 45,898.63
 PC STATION = 2+01.58
 PT STATION = 6+44.85



LEGEND

- TRAFFIC FLOW ARROW
- DITCH FLOW LINE
- SAWCUT
- EDGE DRAIN
- EXIST ROW
- 4" CONC RIPRAP
- TREE REMOVAL

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. CONTRACTOR WILL NEED TO FIELD VERIFY ALL UTILITIES.
3. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
4. ALL PAVEMENT REMOVAL IS CONSIDERED SUBSIDIARY TO ITEM 110 "EXCAVATION". ADDITIONAL HATCHING SHOWN ON PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
5. SEE DRAINAGE DETAILS FOR SIDEWALK TY-A, RIPRAP AND CONTROL DETAILS

DESIGN

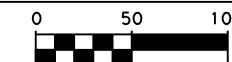
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024

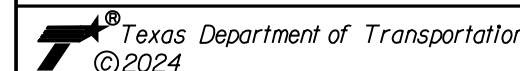


SCALE: PLAN 1" = 100' PROFILE: 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



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

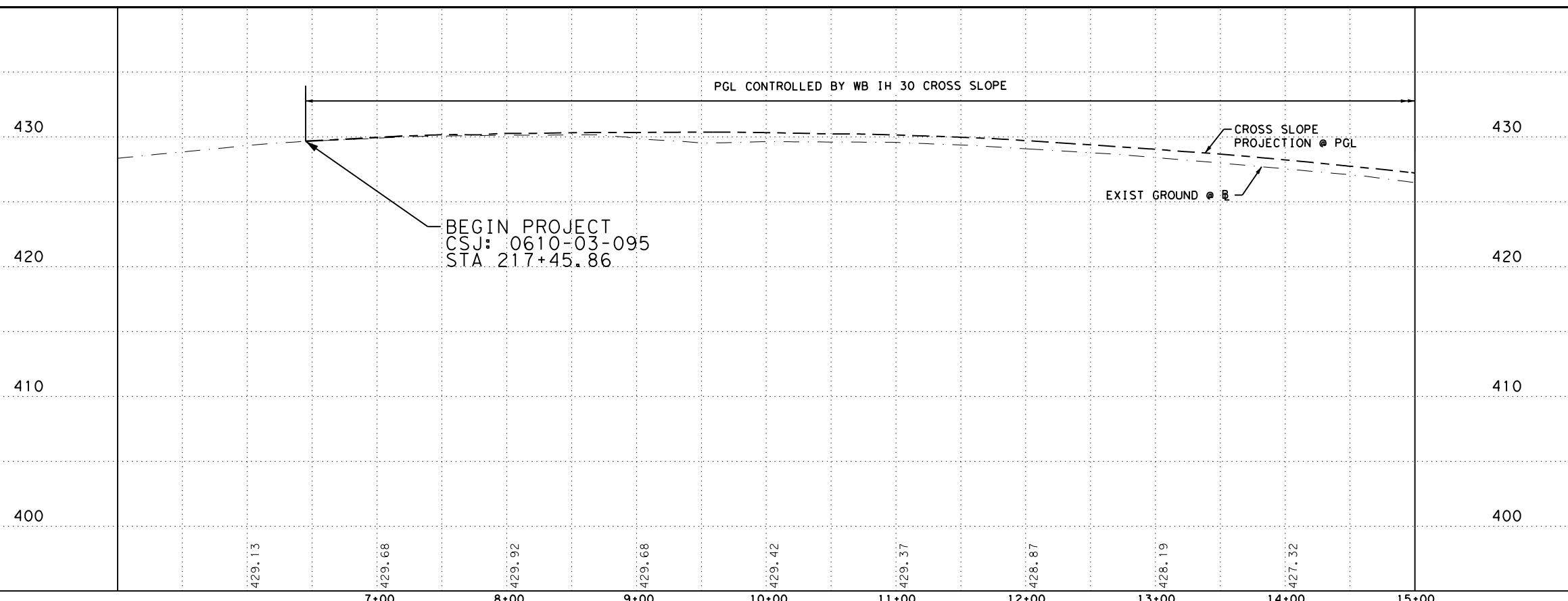


**WB IH 30 CMV STATION
 PLAN AND PROFILE**

BEGIN PROJECT TO STA 15+00

SHEET 1 OF 7

Design File name: P:\116\35\04\Design\Civil\Roadway\1163504pp01.dgn

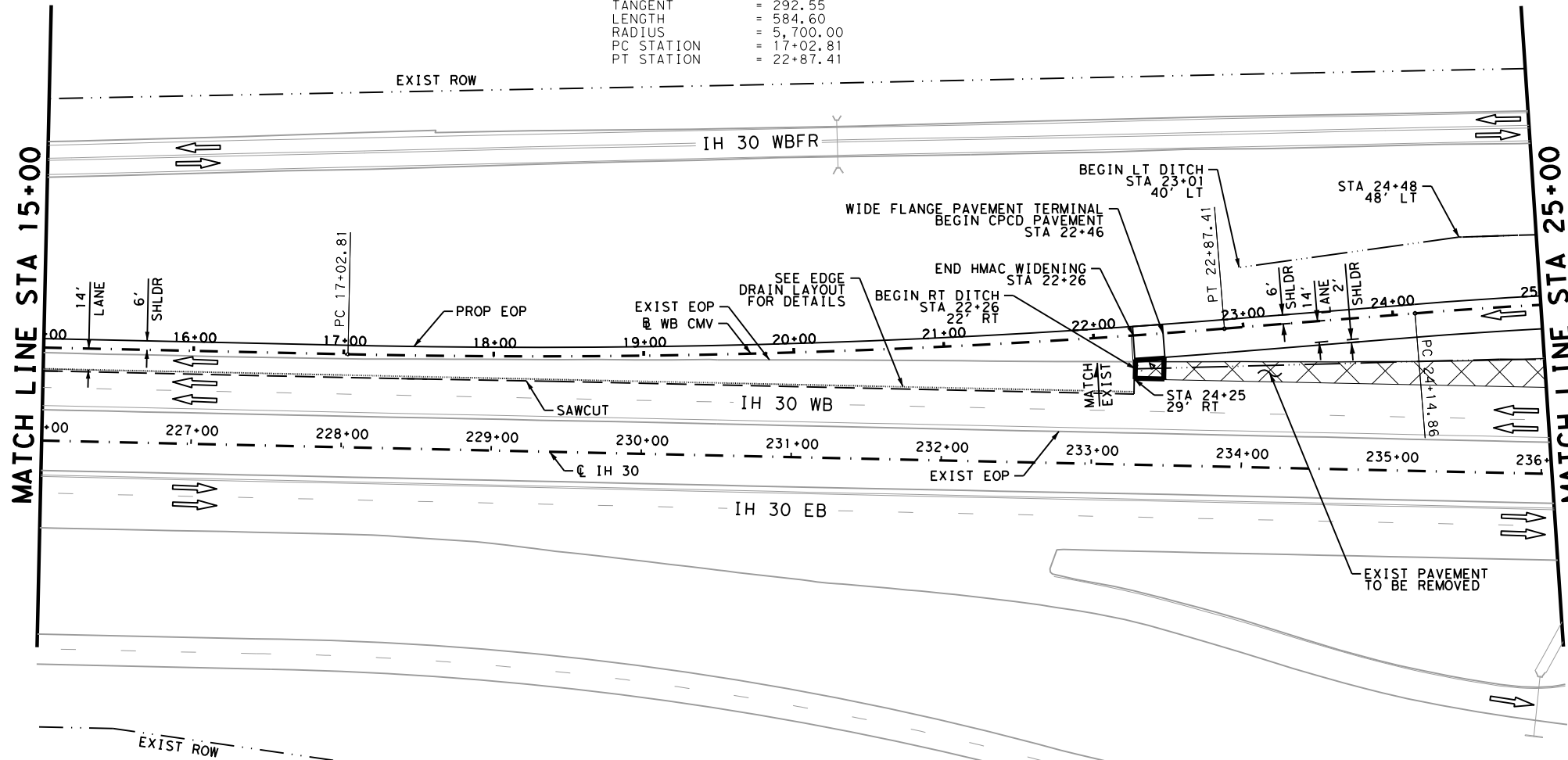


CHK DGN:	FED. NO. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
	6	TEXAS		IH 30
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	ATL	TITUS	0610	03
				JOB NO.:
				095
				SHEET NO.:
				66

Plotted on: 6/4/2024

Design File name: P:\116.35\04\Design\Civil\Roadway\1163504pp02.dgn

PI STATION = 19+95.36
 DELTA = 5° 52' 34.68" (LT)
 DEGREE OF CURVE = 1° 00' 18.68"
 TANGENT = 292.55
 LENGTH = 584.60
 RADIUS = 5,700.00
 PC STATION = 17+02.81
 PT STATION = 22+87.41



LEGEND

- TRAFFIC FLOW ARROW
- DITCH FLOW LINE
- SAWCUT
- EDGE DRAIN
- EXIST ROW
- 4" CONC RIPRAP
- TREE REMOVAL

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. CONTRACTOR WILL NEED TO FIELD VERIFY ALL UTILITIES.
3. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
4. ALL PAVEMENT REMOVAL IS CONSIDERED SUBSIDIARY TO ITEM 110 "EXCAVATION". ADDITIONAL HATCHING SHOWN ON PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
5. SEE DRAINAGE DETAILS FOR SIDEWALK TY-A, RIPRAP AND CONTROL DETAILS

DESIGN

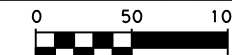
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024

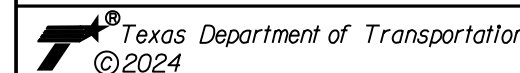


SCALE: PLAN 1" = 100' PROFILE: 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



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 #1002800

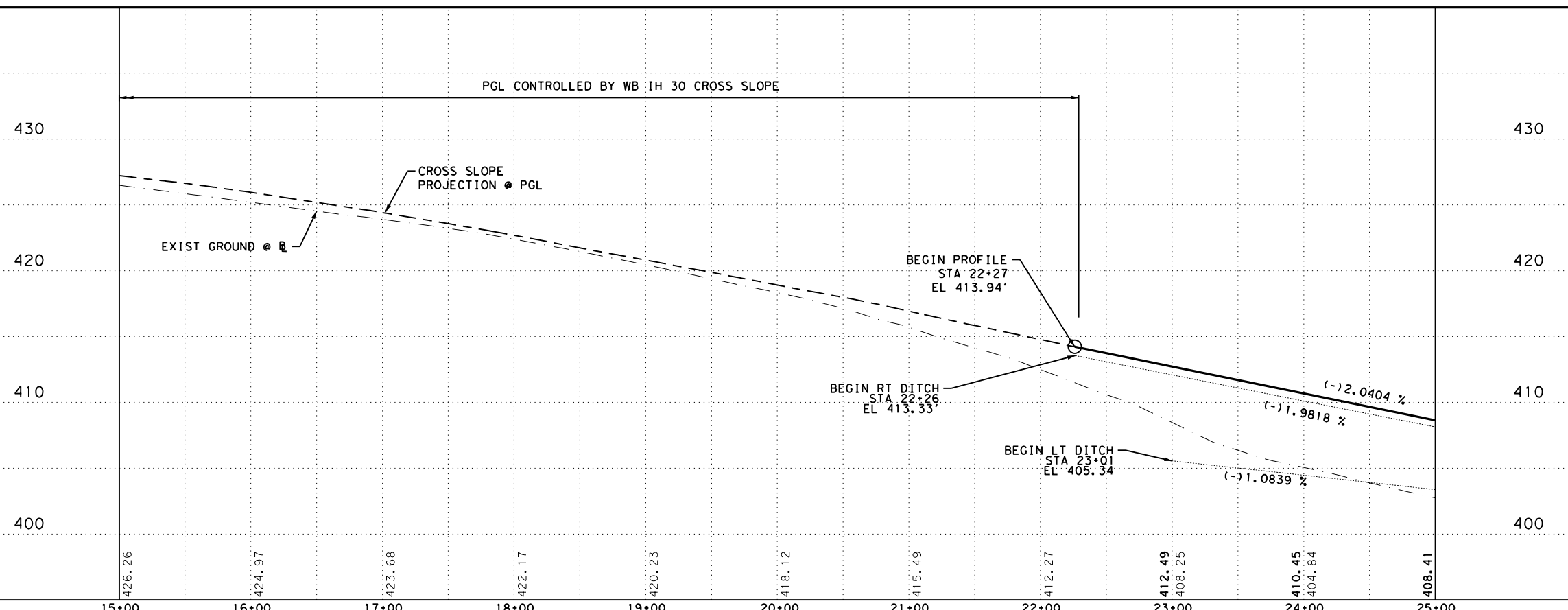


**WB IH 30 CMV STATION
 PLAN AND PROFILE**

STA 15+00 TO STA 25+00

SHEET 2 OF 7

CHK	FED. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
DGN:	6	TEXAS		IH 30		
CHK	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
DWG:	ATL	TITUS	0610	03	095	67



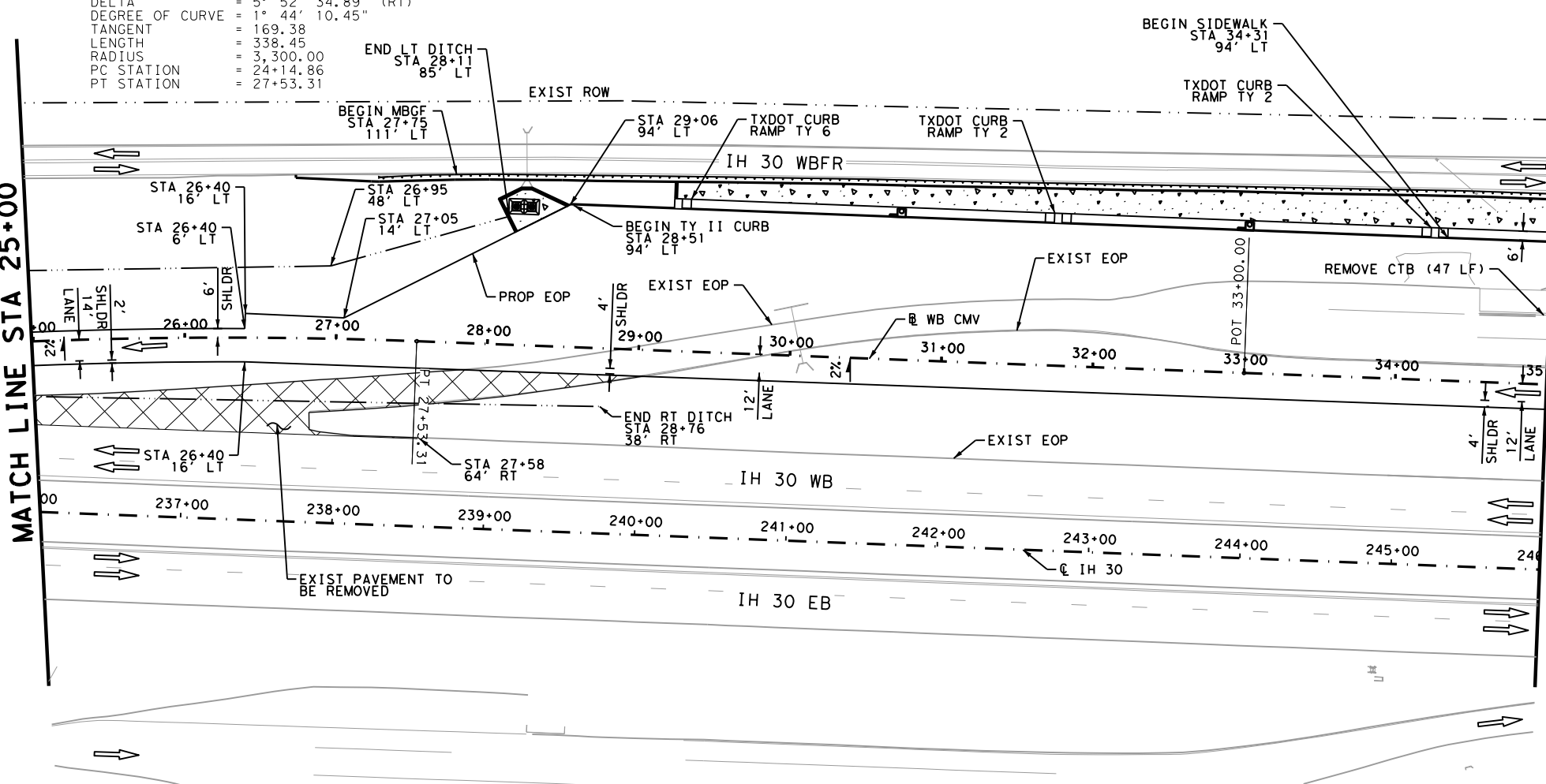
Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Roadway\1163504pp03.dgn

PI STATION = 25+84.23
 DELTA = 5° 52' 34.89" (RT)
 DEGREE OF CURVE = 1° 44' 10.45"
 TANGENT = 169.38
 LENGTH = 338.45
 RADIUS = 3,300.00
 PC STATION = 24+14.86
 PT STATION = 27+53.31

MATCH LINE STA 25+00

MATCH LINE STA 35+00



LEGEND

- ← TRAFFIC FLOW ARROW
- DITCH FLOW LINE
- - - SAWCUT
- EDGE DRAIN
- - - EXIST ROW
- ▣ 4" CONC RIPRAP
- ▣ TREE REMOVAL

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. CONTRACTOR WILL NEED TO FIELD VERIFY ALL UTILITIES.
3. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
4. ALL PAVEMENT REMOVAL IS CONSIDERED SUBSIDIARY TO ITEM 110 "EXCAVATION". ADDITIONAL HATCHING SHOWN ON PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
5. SEE DRAINAGE DETAILS FOR SIDEWALK TY-A, RIPRAP AND CONTROL DETAILS

DESIGN

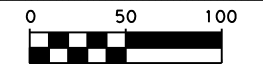
INTERIM REVIEW

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



SCALE: PLAN 1" = 100' PROFILE: 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



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

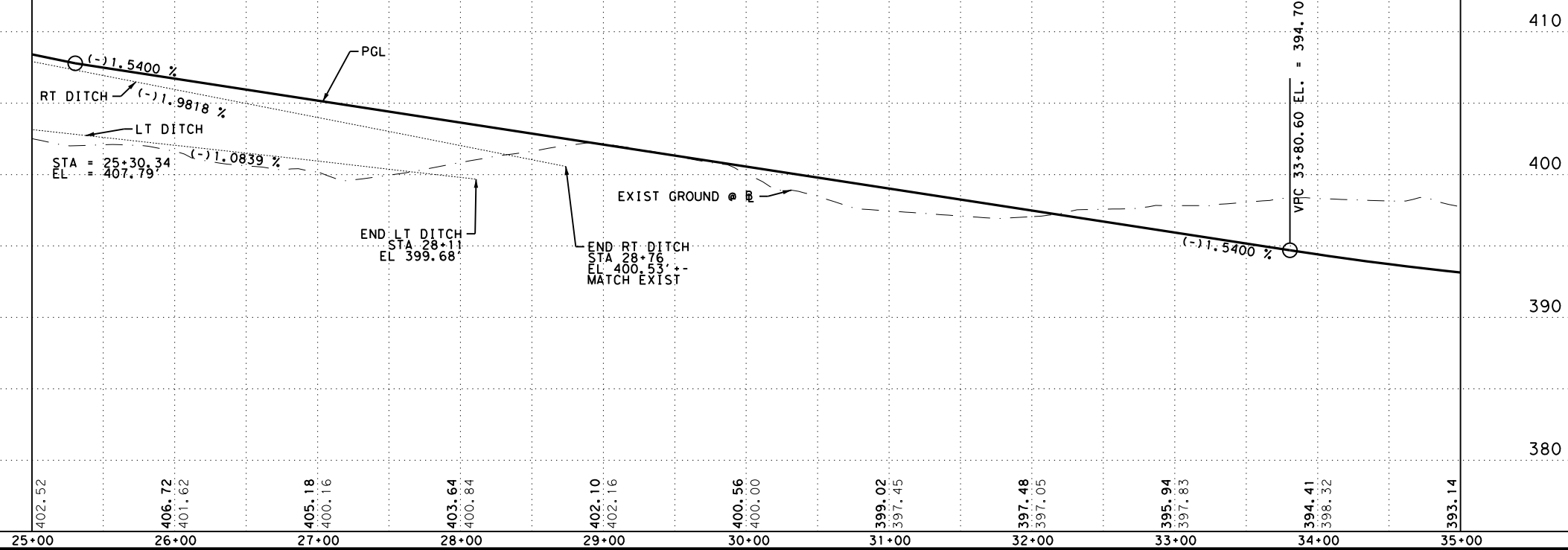


**WB IH 30 CMV STATION
 PLAN AND PROFILE**

STA 25+00 TO STA 35+00

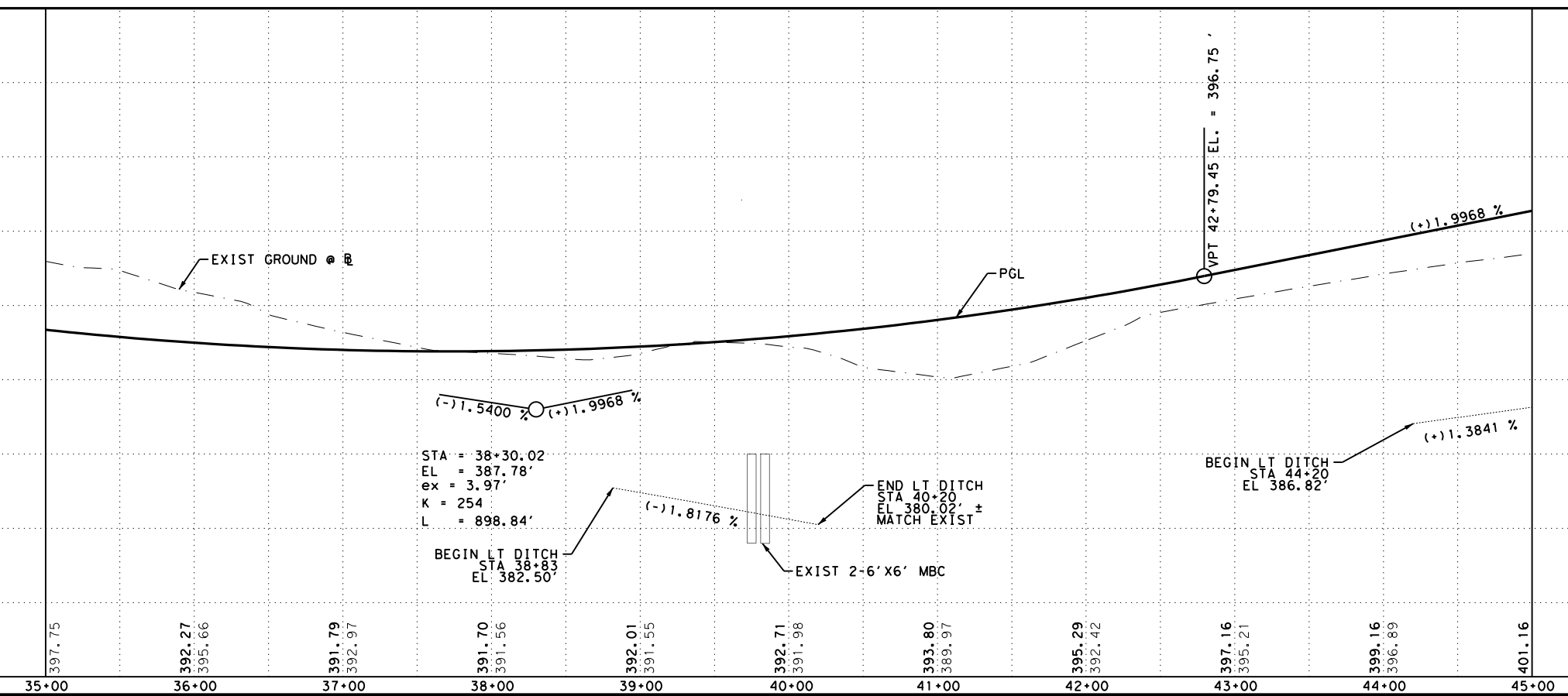
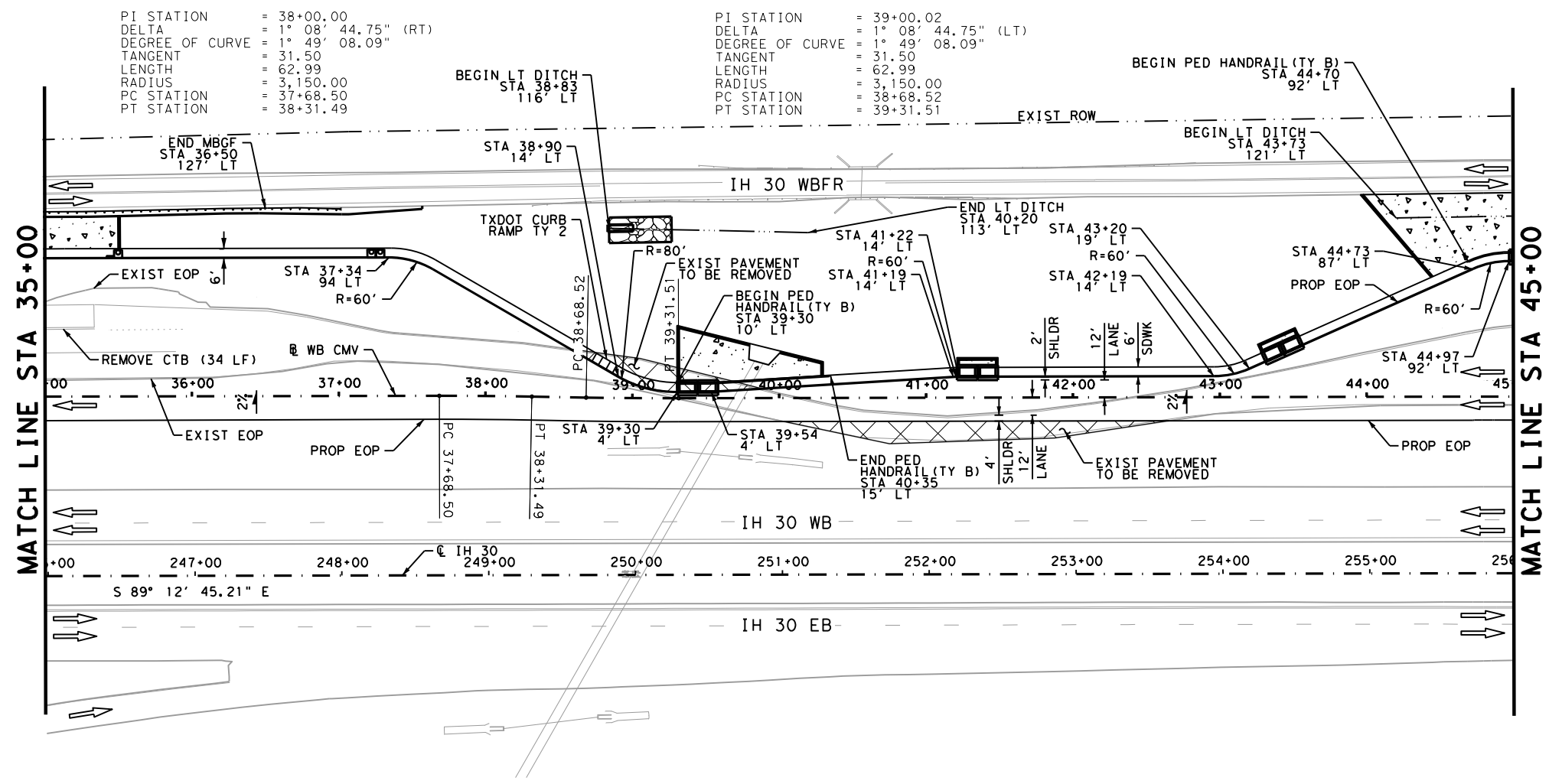
SHEET 3 OF 7

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	ATL	TITUS	0610	03
			JOB NO.:	SHEET NO.:
			095	68



Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Roadway\1163504pp04.dgn



LEGEND

- ← TRAFFIC FLOW ARROW
- DITCH FLOW LINE
- - - SAWCUT
- EDGE DRAIN
- - - EXIST ROW
- ▣ 4" CONC RIPRAP
- ▨ TREE REMOVAL

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. CONTRACTOR WILL NEED TO FIELD VERIFY ALL UTILITIES.
3. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
4. ALL PAVEMENT REMOVAL IS CONSIDERED SUBSIDIARY TO ITEM 110 "EXCAVATION". ADDITIONAL HATCHING SHOWN ON PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
5. SEE DRAINAGE DETAILS FOR SIDEWALK TY-A, RIPRAP AND CONTROL DETAILS

DESIGN

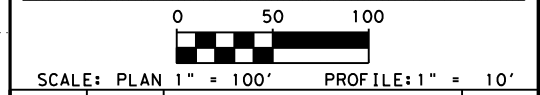
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY

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

Texas Department of Transportation
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WB IH 30 CMV STATION

PLAN AND PROFILE

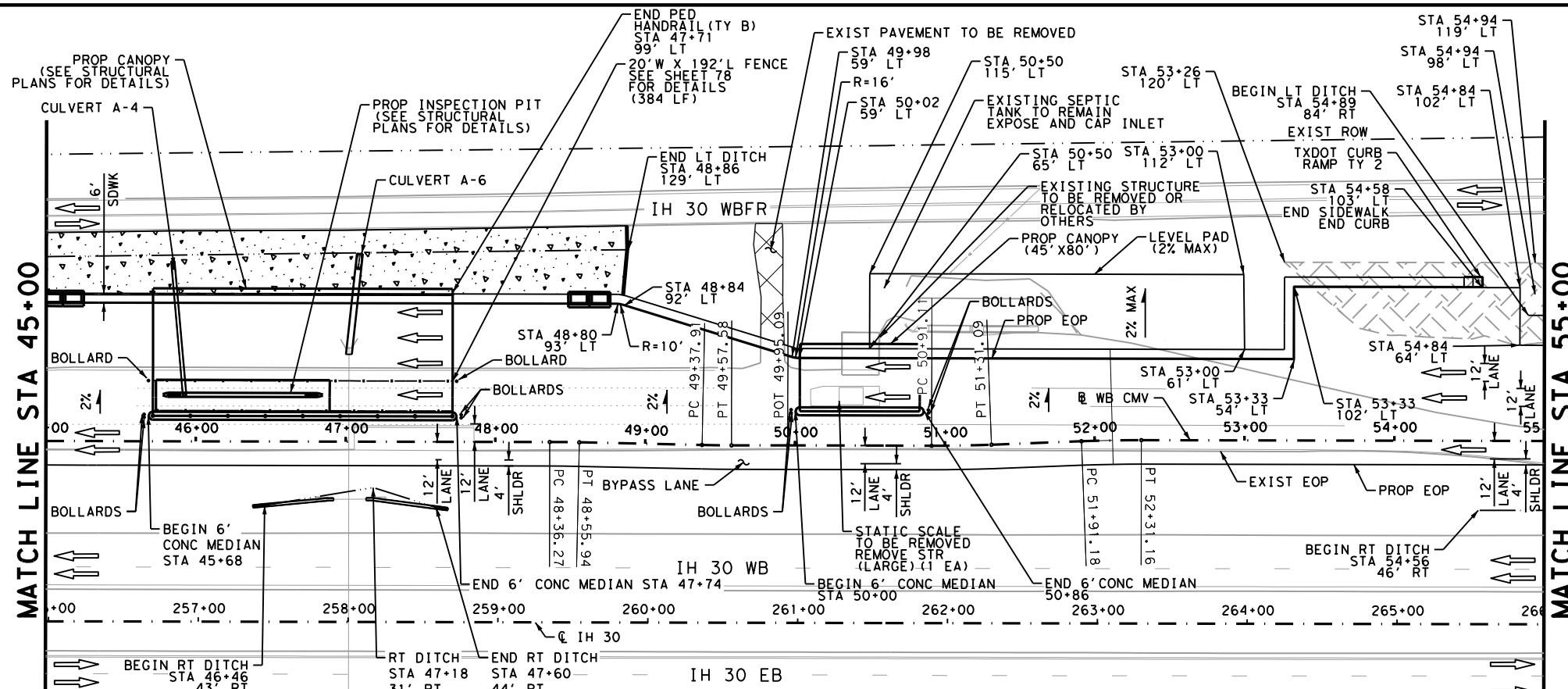
STA 35+00 TO STA 45+00

SHEET 4 OF 7

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	69

Plotted on: 6/4/2024

Design File name: P:\116.35\04\Design\Civil\Roadway\1163504pp05.dgn



PI STATION = 48+46.11	PI STATION = 49+47.75	PI STATION = 51+11.10	PI STATION = 52+11.17
DELTA = 1° 07' 38.98" (RT)	DELTA = 1° 07' 38.98" (LT)	DELTA = 2° 17' 26.20" (LT)	DELTA = 2° 17' 26.20" (RT)
DEGREE OF CURVE = 5° 43' 46.48"	DEGREE OF CURVE = 5° 43' 46.48"	DEGREE OF CURVE = 5° 43' 46.48"	DEGREE OF CURVE = 5° 43' 46.48"
TANGENT = 9.84	TANGENT = 9.84	TANGENT = 19.99	TANGENT = 19.99
LENGTH = 19.68	LENGTH = 19.68	LENGTH = 39.98	LENGTH = 39.98
RADIUS = 1,000.00	RADIUS = 1,000.00	RADIUS = 1,000.00	RADIUS = 1,000.00
PC STATION = 48+36.27	PC STATION = 49+37.91	PC STATION = 50+91.11	PC STATION = 51+91.18
PT STATION = 48+55.94	PT STATION = 49+57.58	PT STATION = 51+31.09	PT STATION = 52+31.16

LEGEND

- ← TRAFFIC FLOW ARROW
- DITCH FLOW LINE
- - - SAWCUT
- EDGE DRAIN
- - - EXIST ROW
- ▢ 4" CONC RIPRAP
- ▨ TREE REMOVAL

- NOTES**
- SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
 - CONTRACTOR WILL NEED TO FIELD VERIFY ALL UTILITIES.
 - SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
 - ALL PAVEMENT REMOVAL IS CONSIDERED SUBSIDIARY TO ITEM 110 "EXCAVATION". ADDITIONAL HATCHING SHOWN ON PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
 - SEE DRAINAGE DETAILS FOR SIDEWALK TY-A, RIPRAP AND CONTROL DETAILS

DESIGN

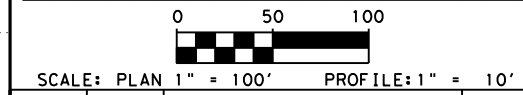
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

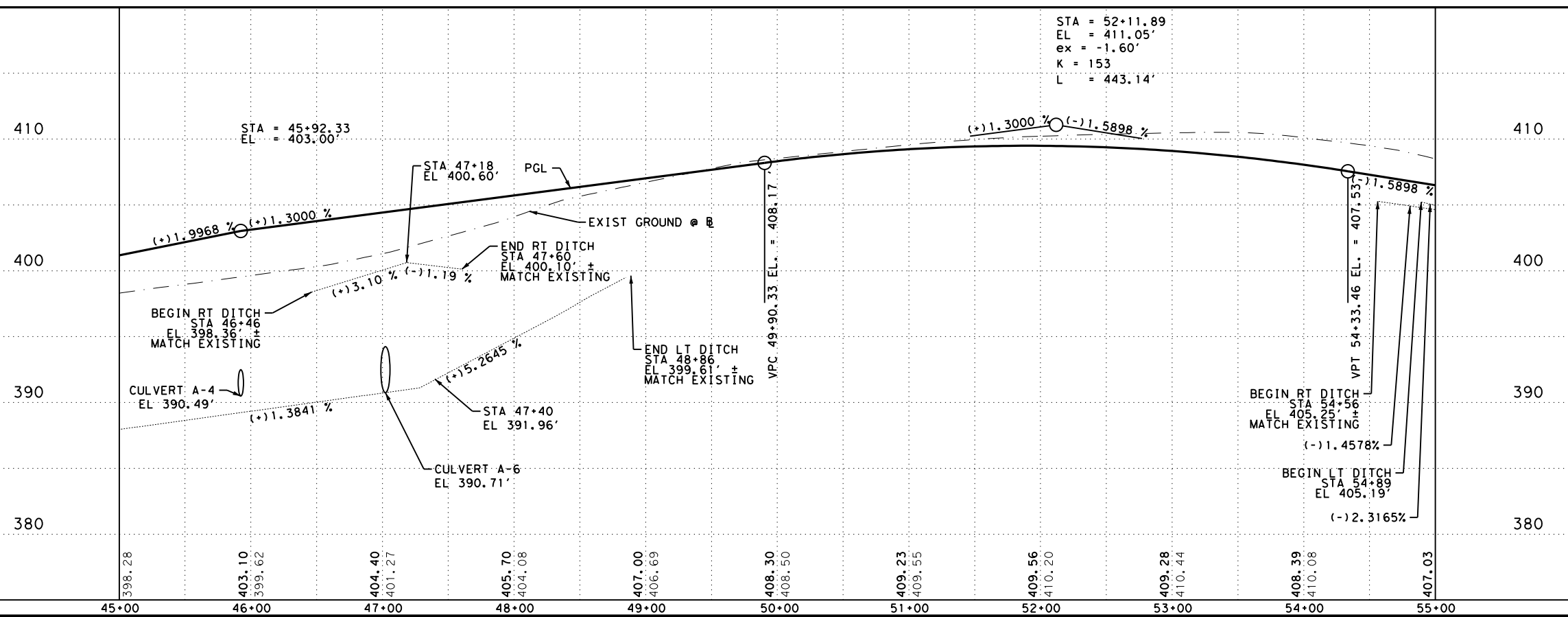
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation
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WB IH 30 CMV STATION
PLAN AND PROFILE
 STA 45+00 TO STA 55+00

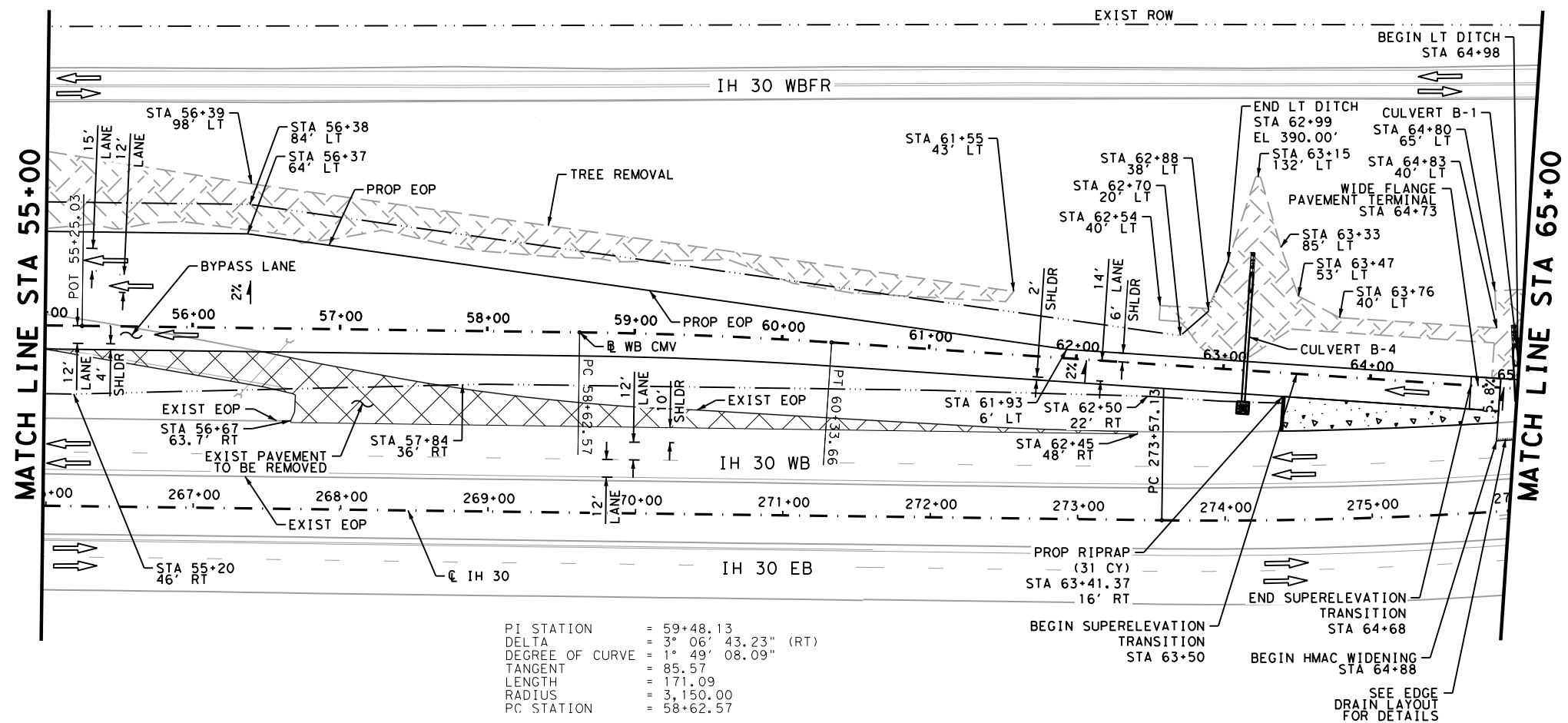
SHEET 5 OF 7

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	70



Plotted on: 6/4/2024

Design File name: P:\116.35\04\Design\Civil\Roadway\1163504pp06.dgn



PI STATION = 59+48.13
 DELTA = 3° 06' 43.23" (RT)
 DEGREE OF CURVE = 1° 49' 08.09"
 TANGENT = 85.57
 LENGTH = 171.09
 RADIUS = 3,150.00
 PC STATION = 58+62.57

LEGEND

- ← TRAFFIC FLOW ARROW
- DITCH FLOW LINE
- - - SAWCUT
- EDGE DRAIN
- - - EXIST ROW
- ▣ 4" CONC RIPRAP
- ▨ TREE REMOVAL

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. CONTRACTOR WILL NEED TO FIELD VERIFY ALL UTILITIES.
3. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
4. ALL PAVEMENT REMOVAL IS CONSIDERED SUBSIDIARY TO ITEM 110 "EXCAVATION". ADDITIONAL HATCHING SHOWN ON PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
5. SEE DRAINAGE DETAILS FOR SIDEWALK TY-A, RIPRAP AND CONTROL DETAILS

DESIGN

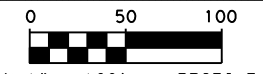
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY

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 #1002800

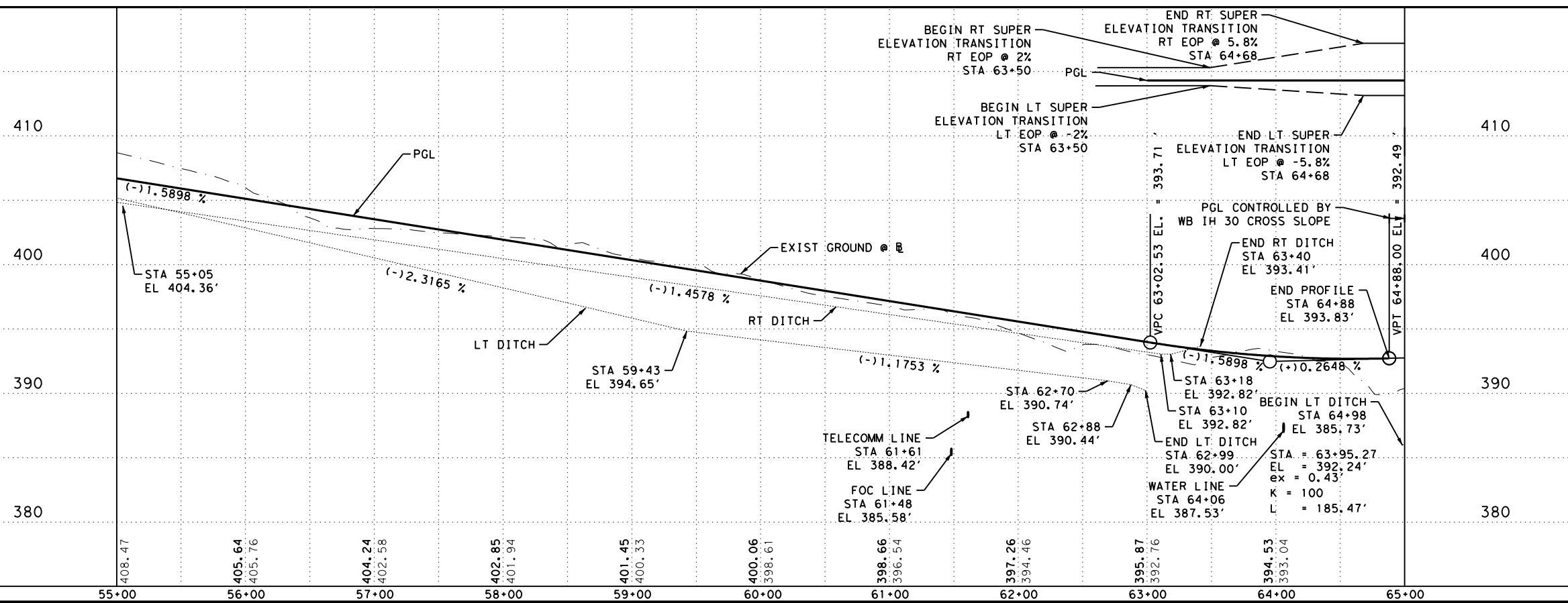
Texas Department of Transportation
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WB IH 30 CMV STATION

PLAN AND PROFILE

STA 55+00 TO STA 65+00

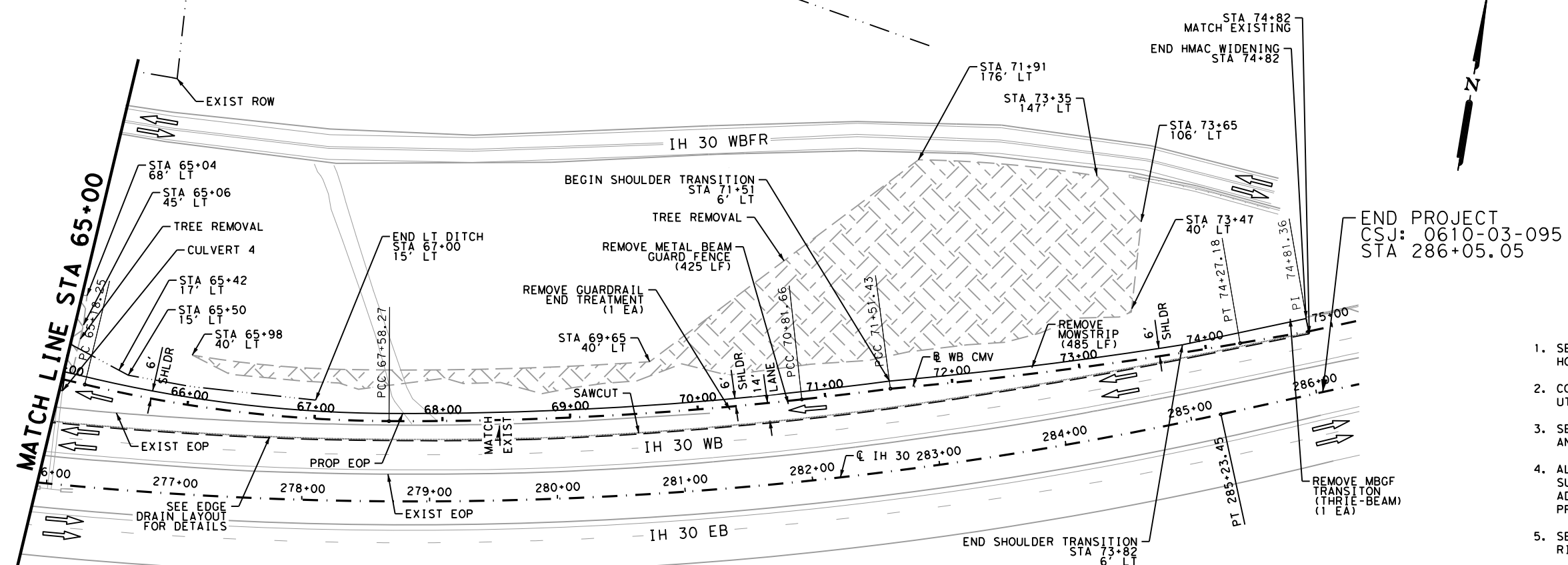
SHEET 6 OF 7



DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	6	TEXAS		IH 30		
DGN#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK	ATL	TITUS	0610	03	095	71

Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Roadway\1163504pp07.dgn



LEGEND

- ← TRAFFIC FLOW ARROW
- DITCH FLOW LINE
- - - SAWCUT
- EDGE DRAIN
- EXIST ROW
- ▣ 4" CONC RIPRAP
- ▨ TREE REMOVAL

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. CONTRACTOR WILL NEED TO FIELD VERIFY ALL UTILITIES.
3. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
4. ALL PAVEMENT REMOVAL IS CONSIDERED SUBSIDIARY TO ITEM 110 "EXCAVATION". ADDITIONAL HATCHING SHOWN ON PLANS IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
5. SEE DRAINAGE DETAILS FOR SIDEWALK TY-A, RIPRAP AND CONTROL DETAILS

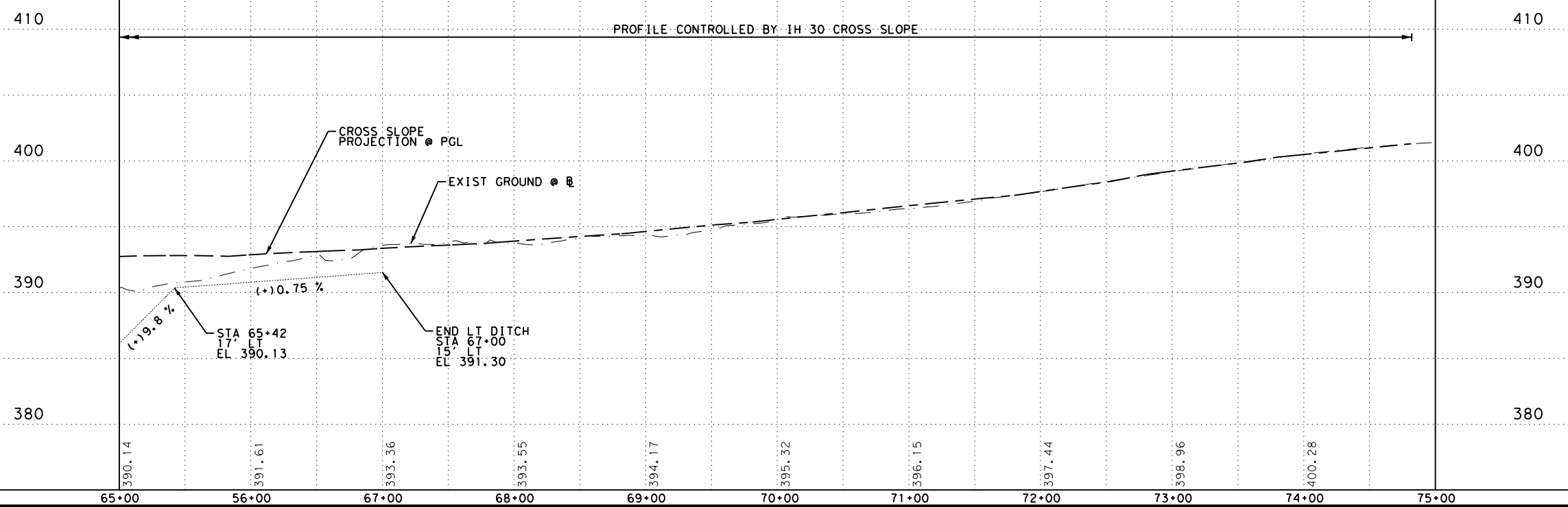
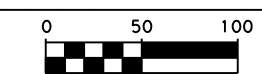
PI STATION	DELTA	DEGREE OF CURVE	TANGENT	LENGTH	RADIUS	PC STATION	PT STATION
66+38.78	13° 05' 49.23" (LT)	5° 27' 24.27"	120.53	240.02	1,050.00	65+18.25	67+58.27
69+20.14	6° 39' 02.56" (LT)	2° 03' 23.62"	161.88	323.39	2,786.00	67+58.27	70+81.66
71+16.54	1° 10' 50.40" (LT)	1° 41' 31.70"	34.89	69.77	3,386.00	70+81.66	71+51.43
72+89.38	4° 38' 48.64" (LT)	1° 41' 06.61"	137.95	275.75	3,400.00	71+51.43	74+27.18

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY

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

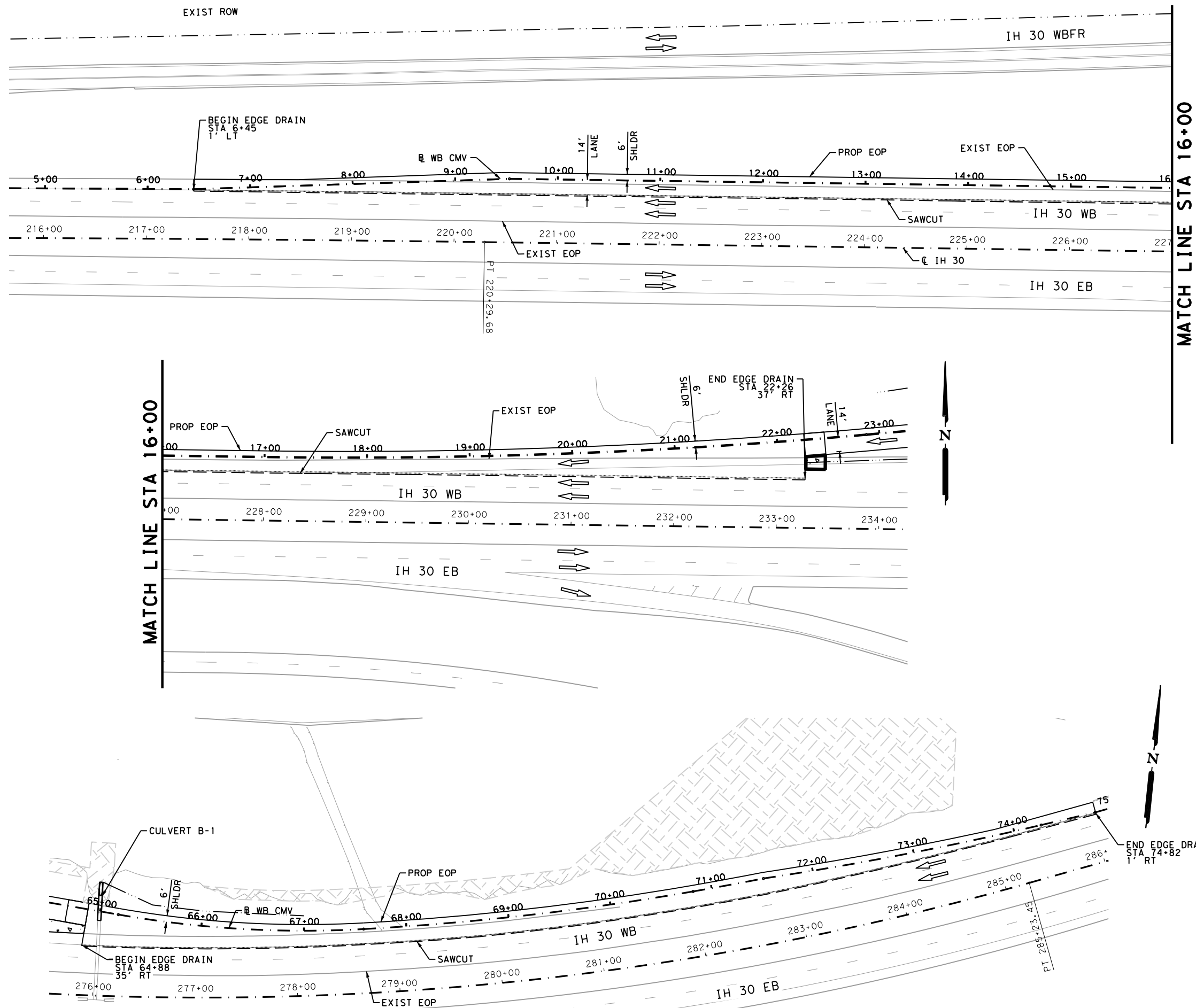
Texas Department of Transportation
 © 2024

WB IH 30 CMV STATION
PLAN AND PROFILE
 STA 65+00 TO END PROJECT
 SHEET 7 OF 7

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN#	6	TEXAS		IH 30		
DGN#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DGN#	ATL	TITUS	0610	03	095	72

Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Roadway\1163504_EdgeDrainLayout.dgn



N

N

N

LEGEND

- ← TRAFFIC FLOW ARROW
- EDGE DRAIN
- - - DITCH FLOW LINE
- EXIST ROW

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. CONTRACTOR WILL NEED TO FIELD VERIFY ALL UTILITIES.
3. UNDERDRAIN OUTFALL LOCATIONS TO BE IDENTIFIED IN THE FIELD AND ADJUSTED PER THE ENGINEER'S DIRECTION. UP TO SIX OUTFALLS MAY BE PLACED.
4. SEE EDGE DRAIN DETAILS FOR ADDITIONAL CONSTRUCTION INFORMATION.

DESIGN

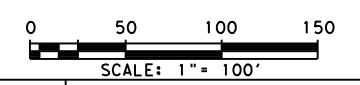
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



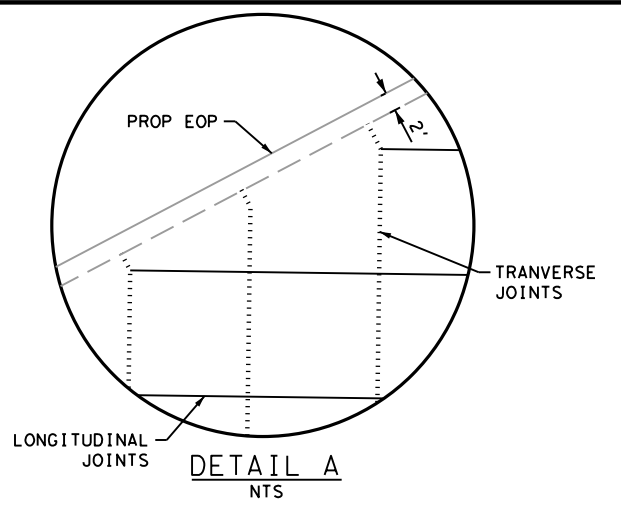
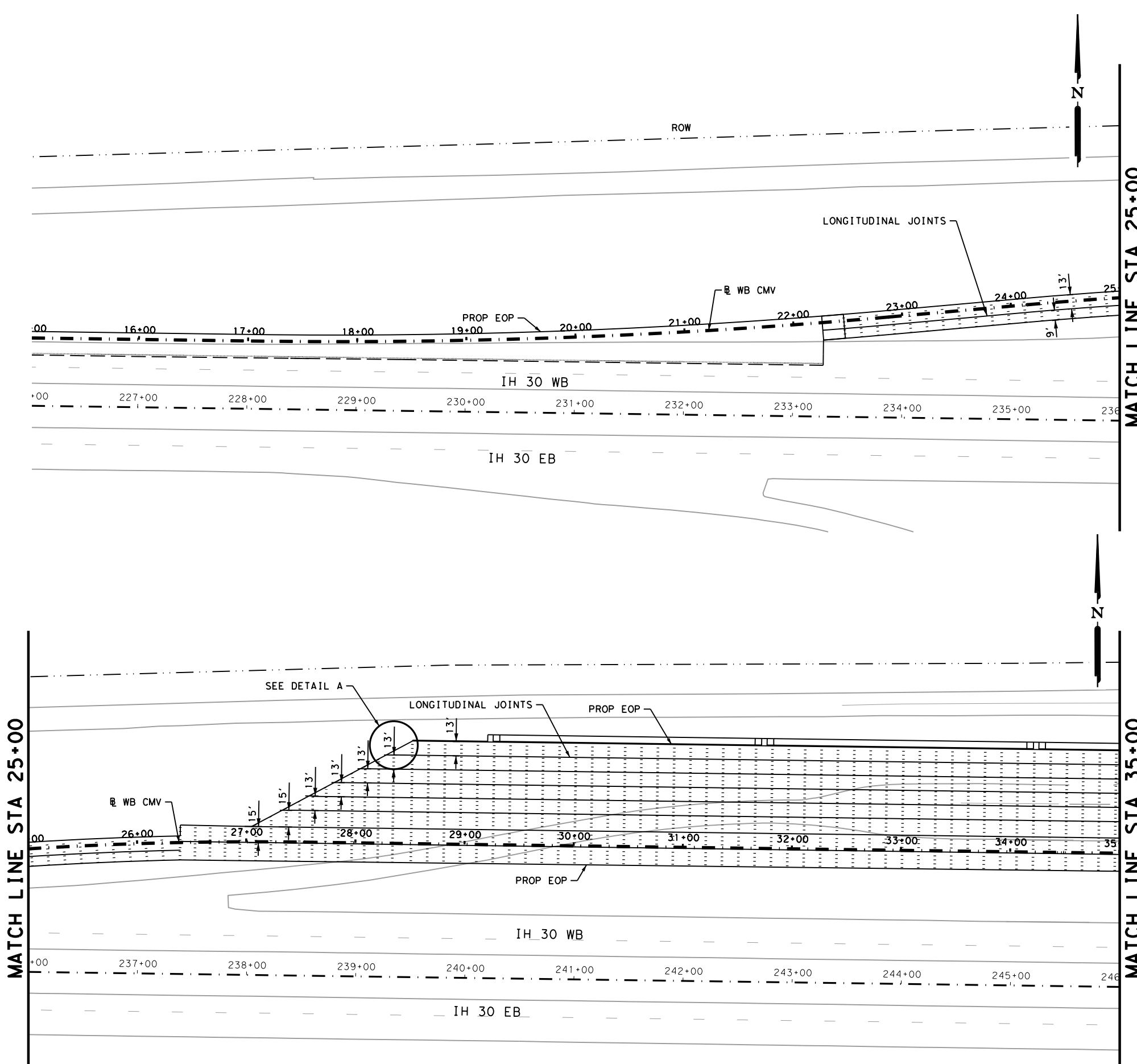
**WB IH 30 CMV STATION
EDGE DRAIN
LAYOUT**

SHEET 1 OF 1

DGN:	FED. NO. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	73

Plotted on: 6/4/2024

Design Filename: P:\116\35\04\Design\Civil\Roadway\1163504_JointDet01.dgn



LEGEND

- TRANSVERSE JOINTS
- LONGITUDINAL JOINTS

NOTES

1. SEE SHEET CPCD-14 FOR ADDITIONAL DETAILS.
2. SEE SHEET JS-14 FOR JOINT DETAILS.
3. PROPOSED CHANGES IN THE JOINT LAYOUT MUST BE SUBMITTED FOR APPROVAL.

DESIGN

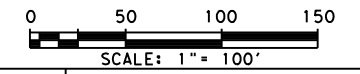
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY



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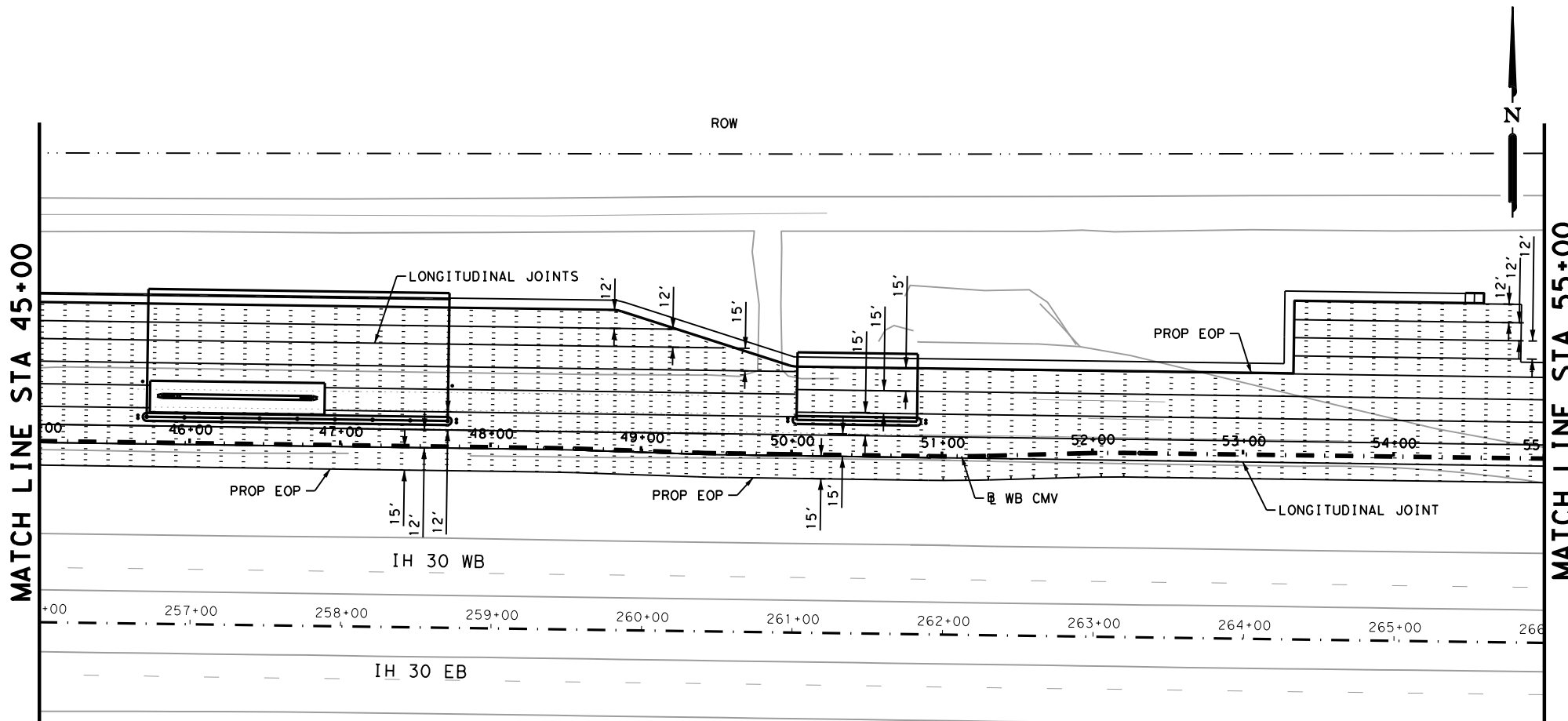
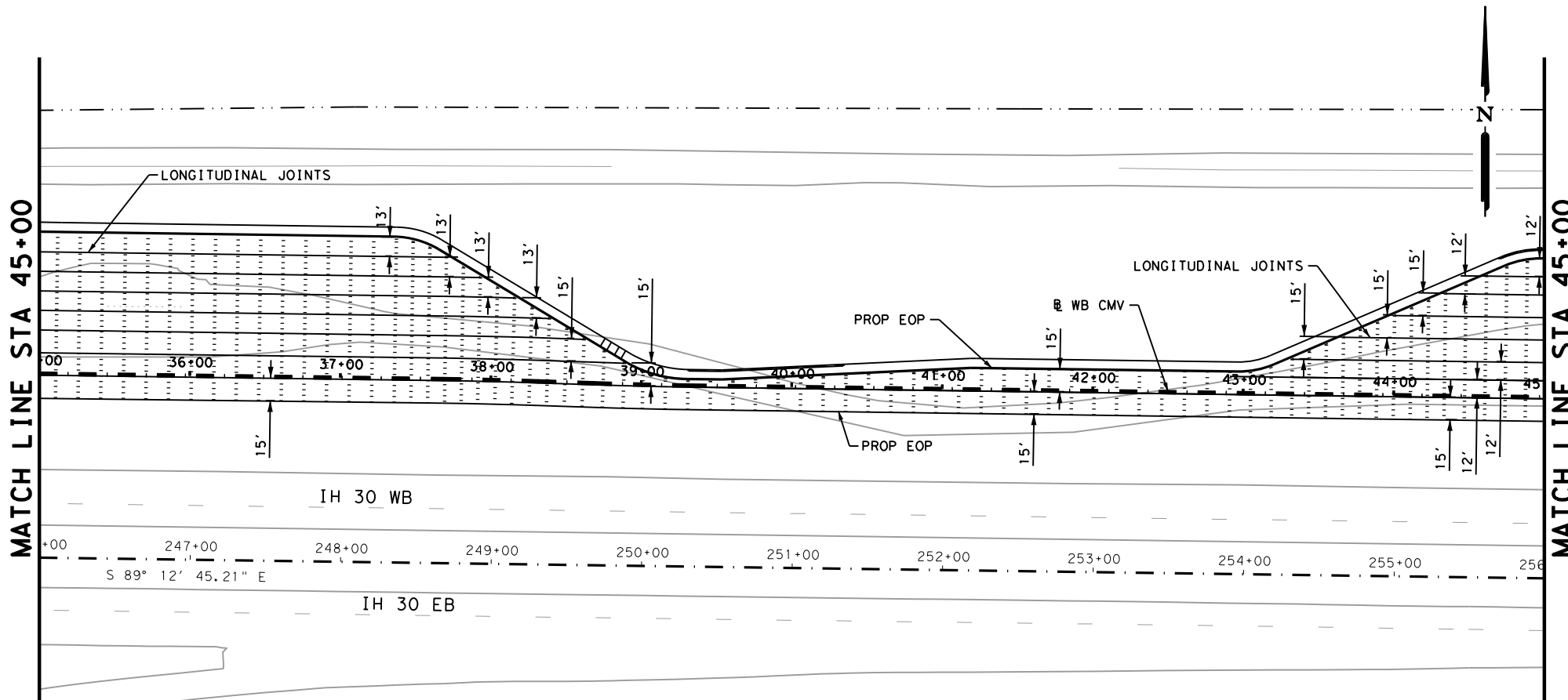
**WB IH 30 CMV STATION
 CONCRETE JOINT DETAILS**

SHEET 1 OF 3

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	DIV. NO.:	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	74

Plotted on: 6/4/2024

Design Filename: P:\116\35\04\Design\Civil\Roadway\1163504_JointDet02.dgn



LEGEND

- TRANSVERSE JOINTS
- LONGITUDINAL JOINTS

NOTES

1. SEE SHEET CPCD-14 FOR ADDITIONAL DETAILS.
2. SEE SHEET JS-14 FOR JOINT DETAILS.
3. PROPOSED CHANGES IN THE JOINT LAYOUT MUST BE SUBMITTED FOR APPROVAL.

DESIGN

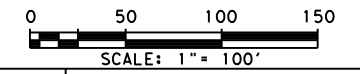
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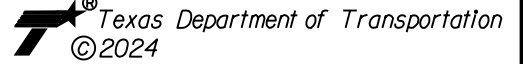
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

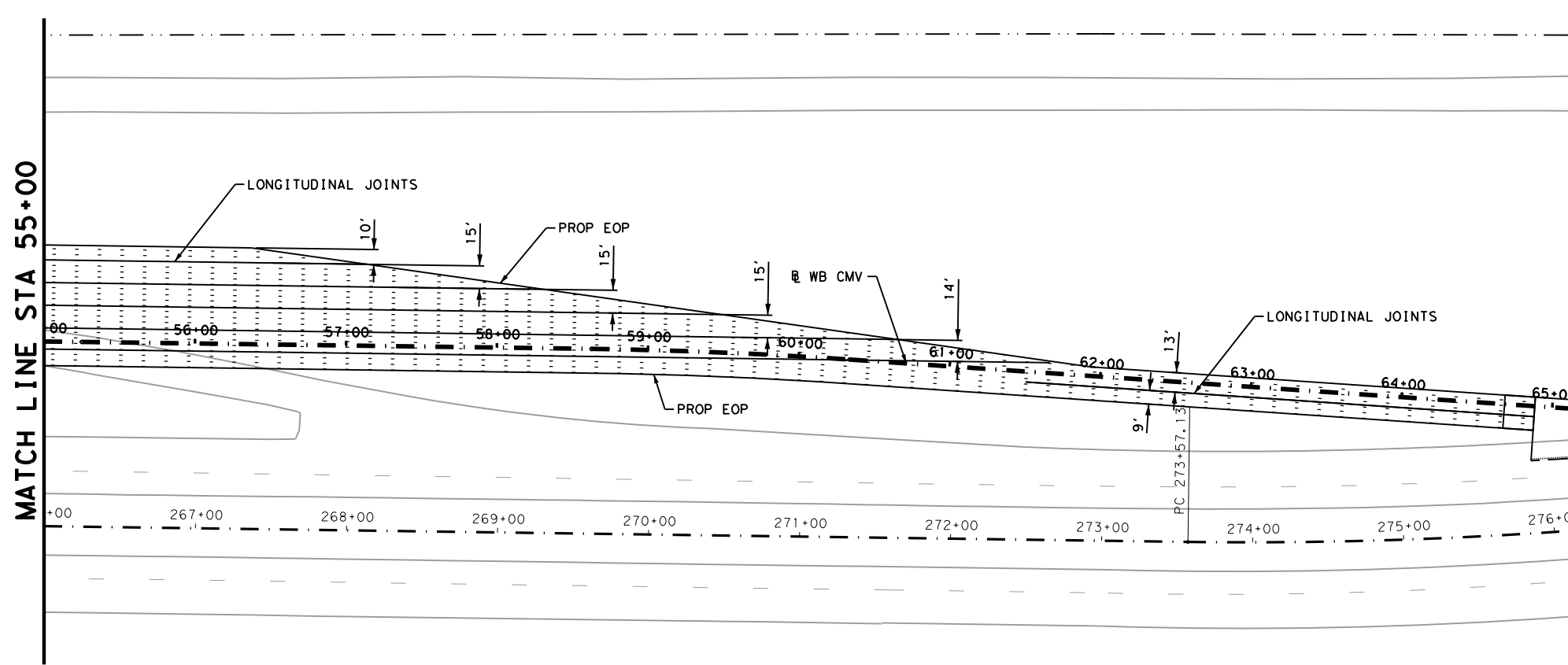
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY
 <p>PAPE-DAWSON ENGINEERS</p> <p>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 #1002800</p>			
 <p>Texas Department of Transportation ©2024</p>			
<p>WB IH 30 CMV STATION</p> <p>CONCRETE JOINT DETAILS</p>			
SHEET 2 OF 3			
DCN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.
CHK:	6	TEXAS	IH 30
DWG:	DIST.	COUNTY	CONT. NO. SECT. NO. JOB NO.
CHK:	ATL	TITUS	0610 03 095
DWG:			75

Plotted on: 6/4/2024

Design Filename: P:\116\35\04\Design\Civil\Roadway\1163504_JointDet03.dgn



LEGEND

- TRANSVERSE JOINTS
- LONGITUDINAL JOINTS

NOTES

1. SEE SHEET CPCD-14 FOR ADDITIONAL DETAILS.
2. SEE SHEET JS-14 FOR JOINT DETAILS.
3. PROPOSED CHANGES IN THE JOINT LAYOUT MUST BE SUBMITTED FOR APPROVAL.

DESIGN

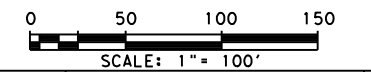
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

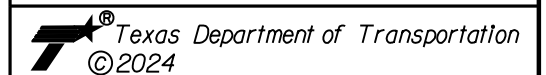
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY



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 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1002800



WB IH 30 CMV STATION
CONCRETE JOINT DETAILS

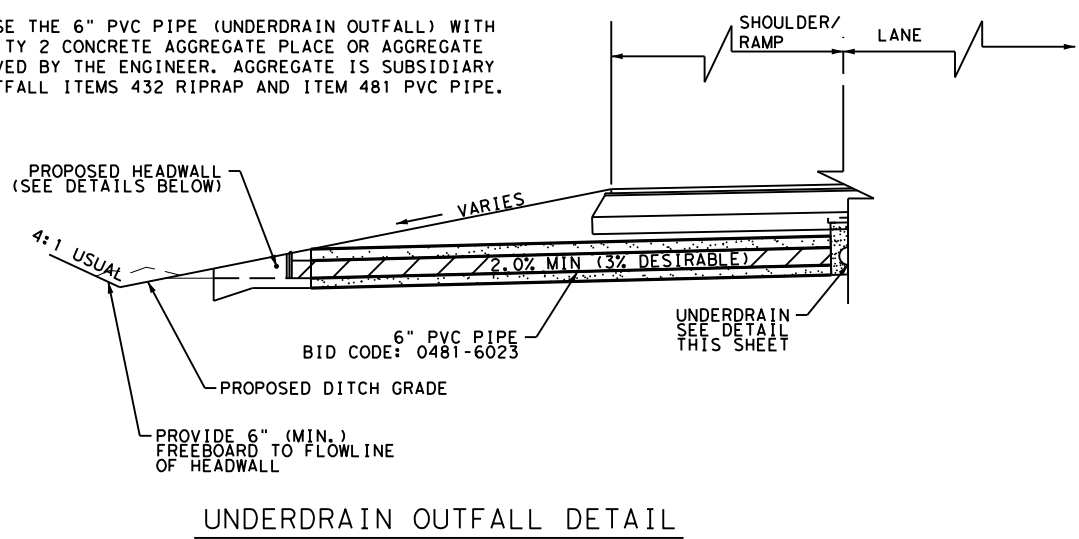
SHEET 3 OF 3

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	76

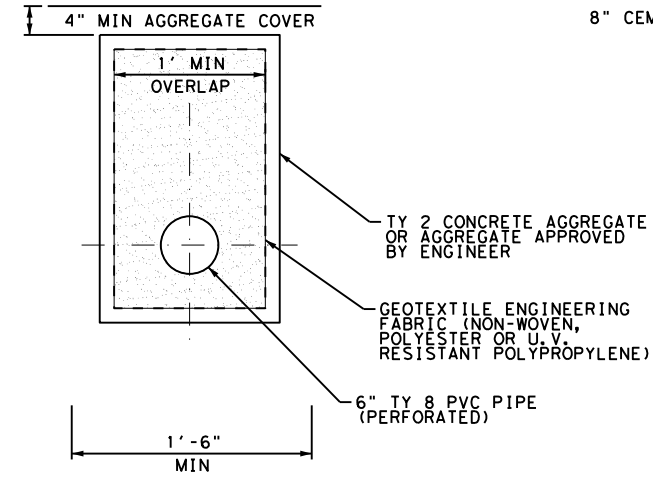
Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Roadway\1163504_EdgeDrainDets.dgn

NOTE:
ENCLOSE THE 6" PVC PIPE (UNDERDRAIN OUTFALL) WITH 6" OF TY 2 CONCRETE AGGREGATE PLACE OR AGGREGATE APPROVED BY THE ENGINEER. AGGREGATE IS SUBSIDIARY TO OUTFALL ITEMS 432 RIPRAP AND ITEM 481 PVC PIPE.

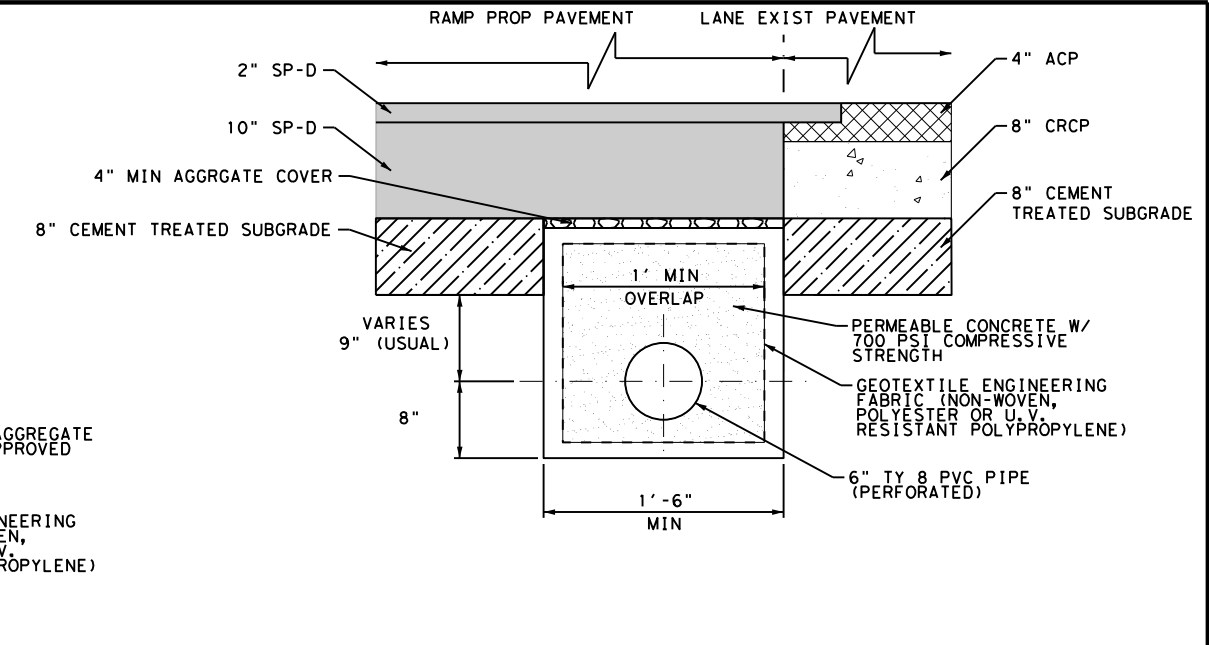


UNDERDRAIN OUTFALL DETAIL



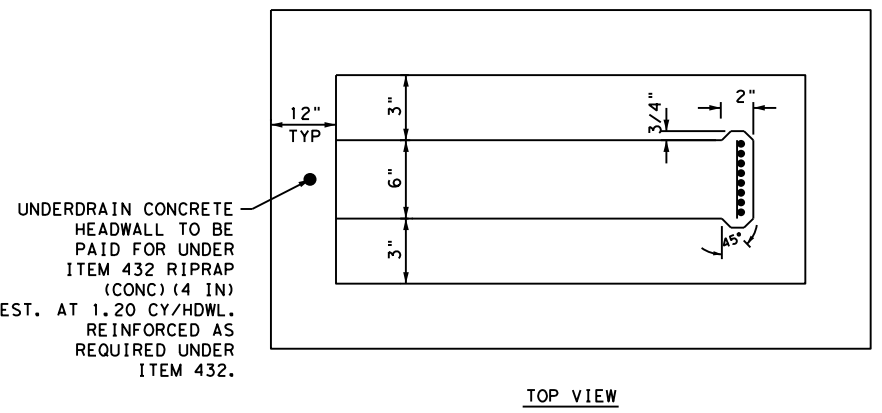
UNDERDRAIN DETAIL

NOTE:
THIS UNDERDRAIN DETAIL IS INTENDED FOR BID CODE: 0556-6008. THIS UNDERDRAIN IS INTENDED TO BE LOCATED AT POOR OR WET SUBGRADE AREAS AS APPROVED BY THE ENGINEER.

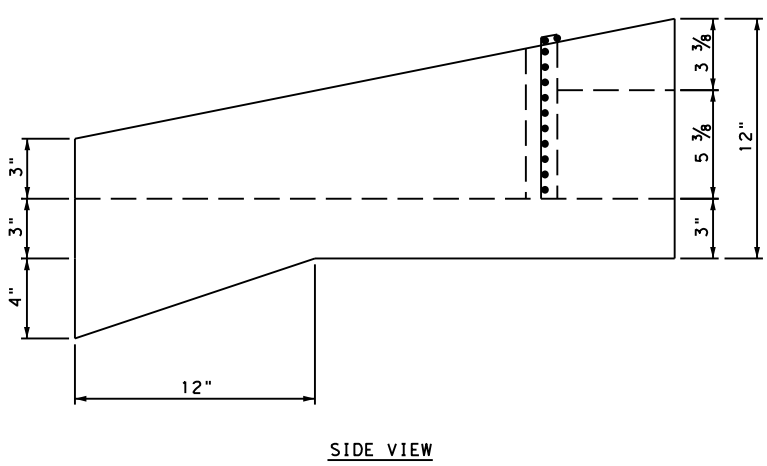


UNDERDRAIN DETAIL PERMEABLE CONCRETE EDGE DRAIN

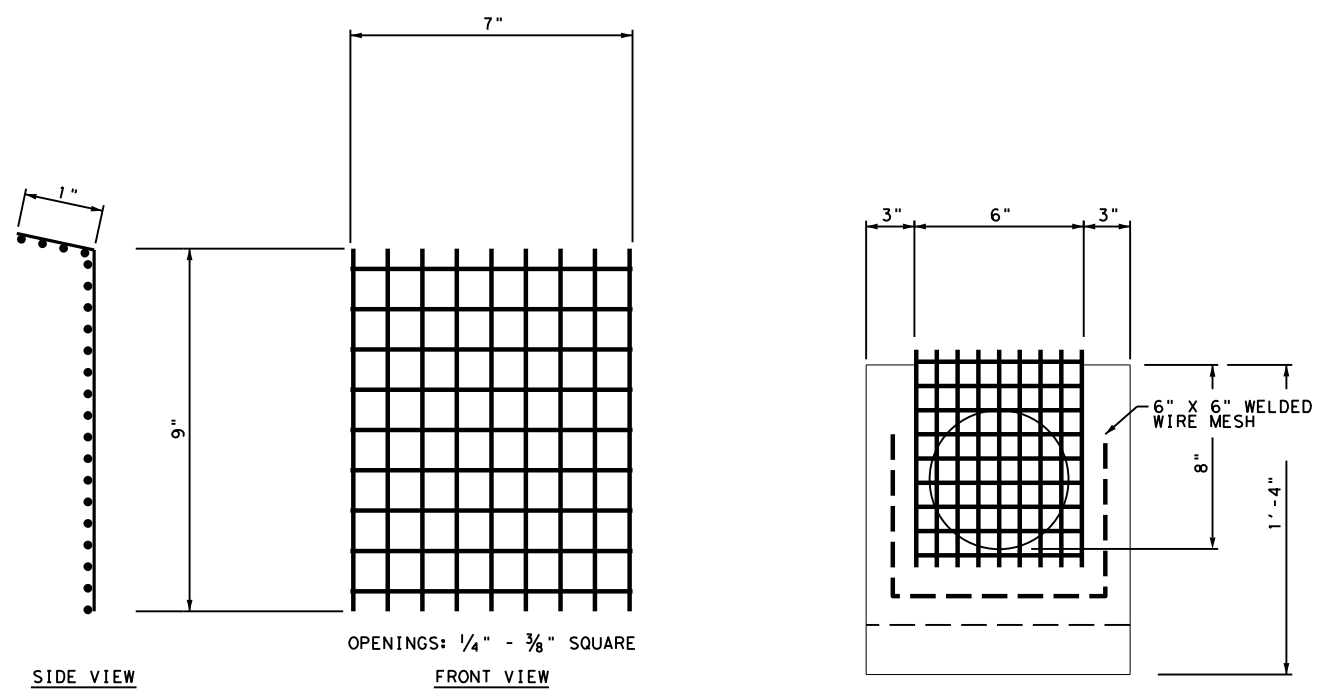
NOTE:
THIS UNDERDRAIN DETAIL (PERMEABLE CONCRETE EDGE DRAIN) IS INTENDED FOR BID CODE: 4020-6001. THE LOCATIONS OF THE PERMEABLE CONCRETE EDGE DRAIN ARE CALLED OUT ON EDGE DRAIN LAYOUT.



TOP VIEW



SIDE VIEW



NOTE: ALL RODENT SHIELDS TO BE GALVANIZED

UNDERDRAIN CONCRETE HEADWALL DETAILS

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JAMES A. LUTZ

P.E. SERIAL NO: 84722

DATE: 6/3/2024

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

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 #1002800

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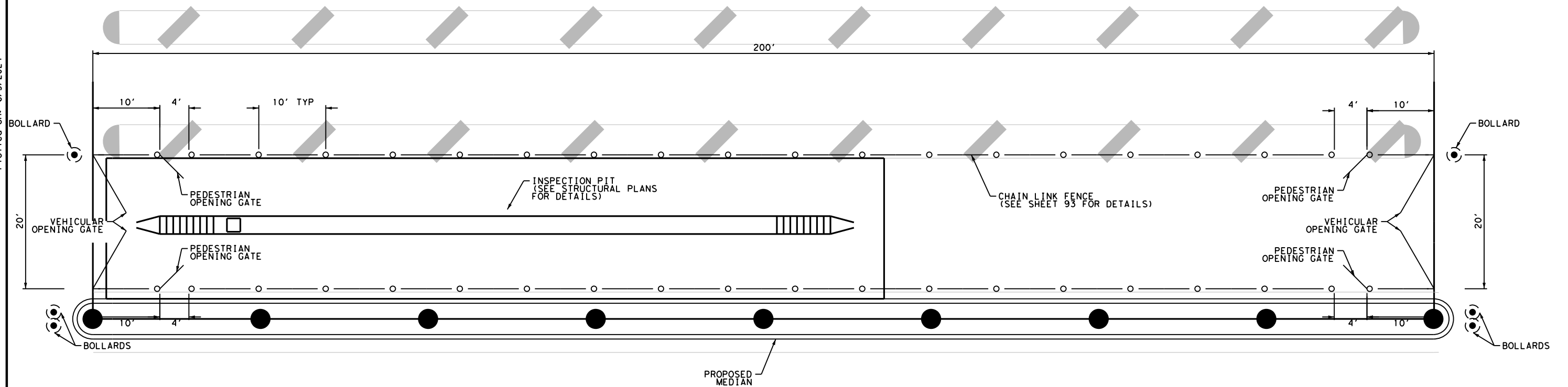
WB IH 30 CMV STATION

EDGE DRAIN DETAILS

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN#	6	TEXAS		IH 30		
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	77

Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Roadway\1163504_ChainLinkFence.dgn



CHAIN LINK FENCE PLAN

NOT TO SCALE

DESIGN


INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

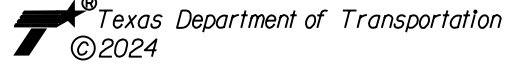
INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY



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 #1002800

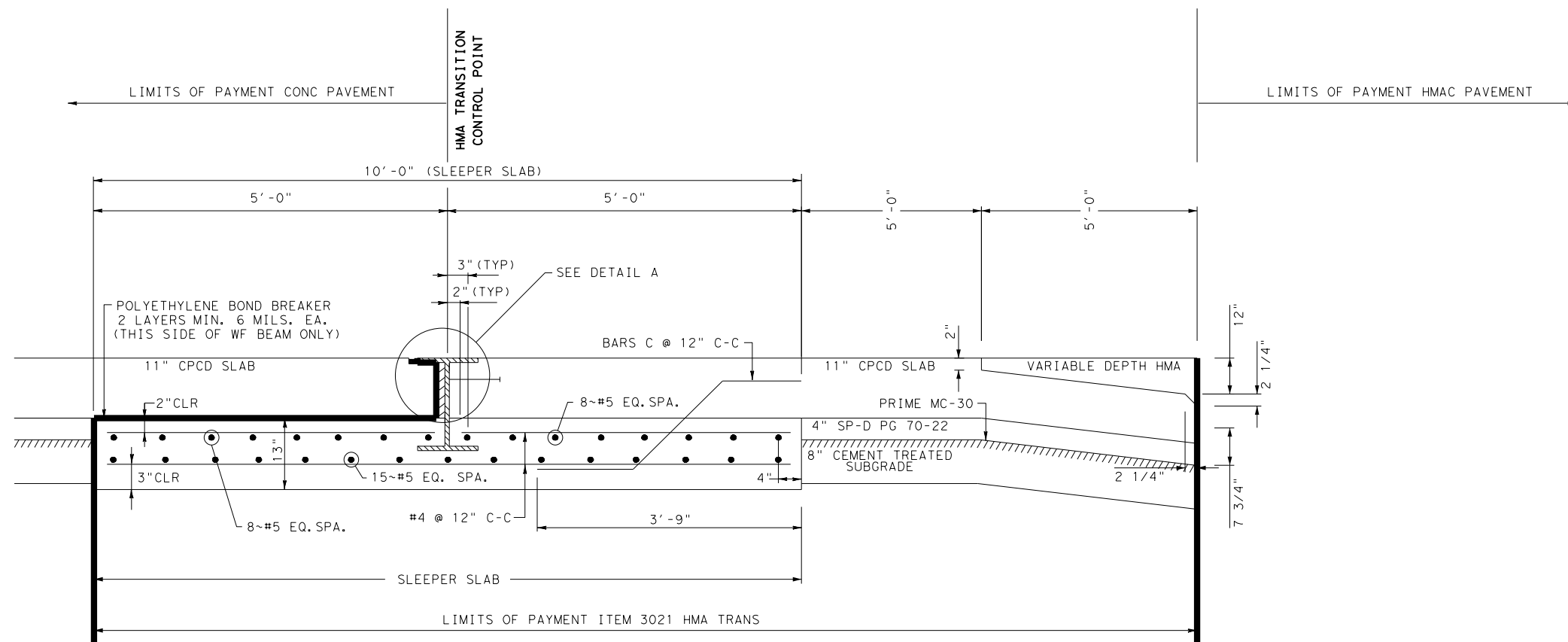


©2024
WB IH 30 CMV STATION
CHAIN LINK FENCE PLAN

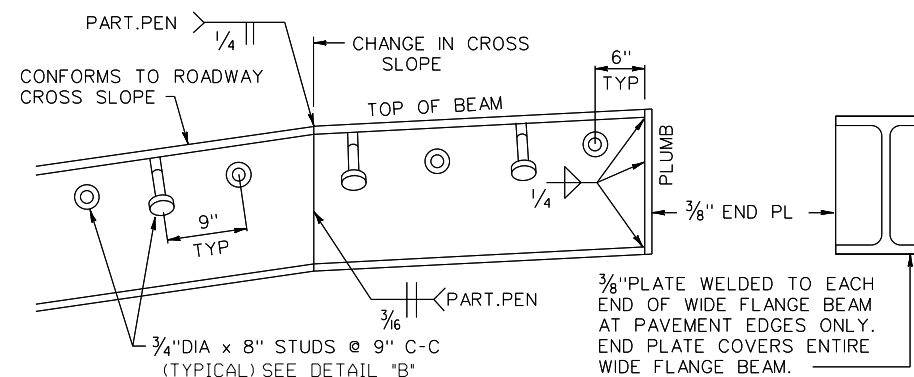
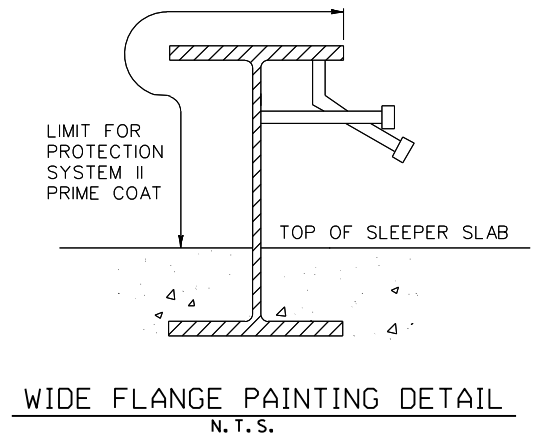
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CHK DGN:	6	TEXAS		IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK DWG:	ATL	TITUS	0610	03
			JOB NO.	SHEET NO.
			095	78

Plotted on: 6/3/2024

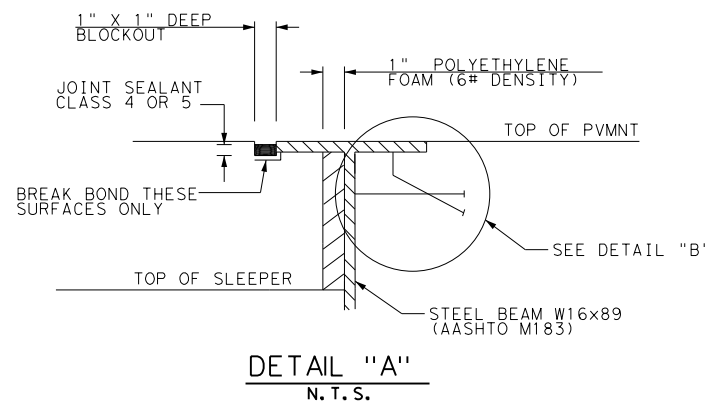
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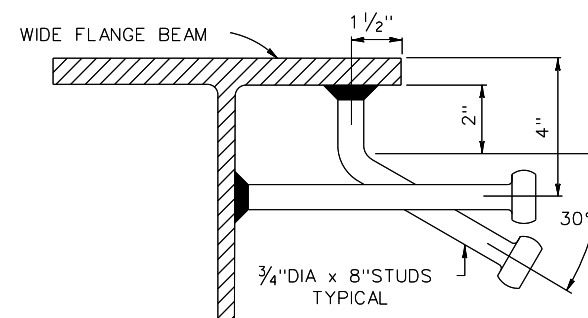
TYPICAL APPROACH SLAB SECTION FOR CONCRETE TO HMA TRANSITION
N. T. S.



WIDE FLANGE DETAIL
N. T. S.



DETAIL "A"
N. T. S.



DETAIL "B"
N. T. S.

NOTE:
STUDS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION. ANY STUD WHICH IS DISLODGED IN SHIPPING OR CAN BE DISLODGED BY HAMMER SHALL BE REPLACED.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P. E. SERIAL NO: 131443
DATE: 6/3/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P. E. SERIAL NO: 84722
DATE: 6/3/2024

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

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

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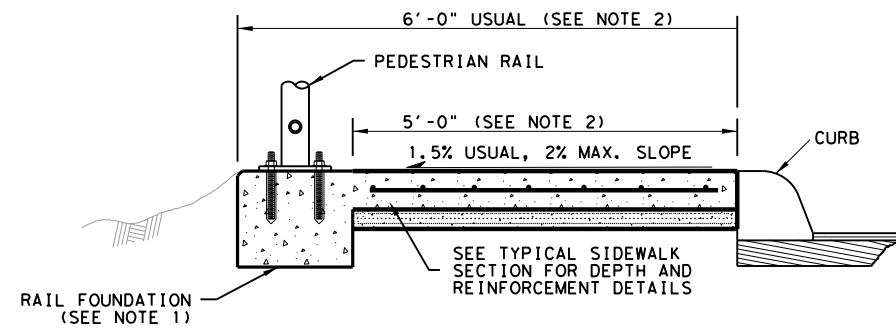
WB IH 30 CMV STATION

HMAC TRANSITION DETAIL

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	ATL	TITUS	0610	03	095	79

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\Roadway\1163504_MiscellaneousDet.dgn



TYPICAL SIDEWALK SECTION WITH PEDESTRIAN RAIL

NOT TO SCALE

NOTES:

1. SEE PEDESTRIAN HANDRAIL DETAILS STANDARD "PRD-13" FOR MORE INFORMATION. CONCRETE RAIL FOUNDATION TO BE POURED WITH THE SIDEWALK BUT PAYMENT IS SUBSIDIARY TO ITEM 450 "RAILING".
2. CLEAR SIDEWALK WIDTH EXCLUDING THE PEDESTRIAN RAIL FOUNDATION SHALL BE 5' UNLESS OTHERWISE SPECIFIED IN THE PLANS.

DESIGN

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

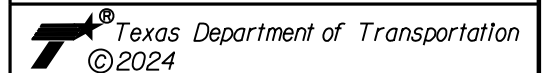
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



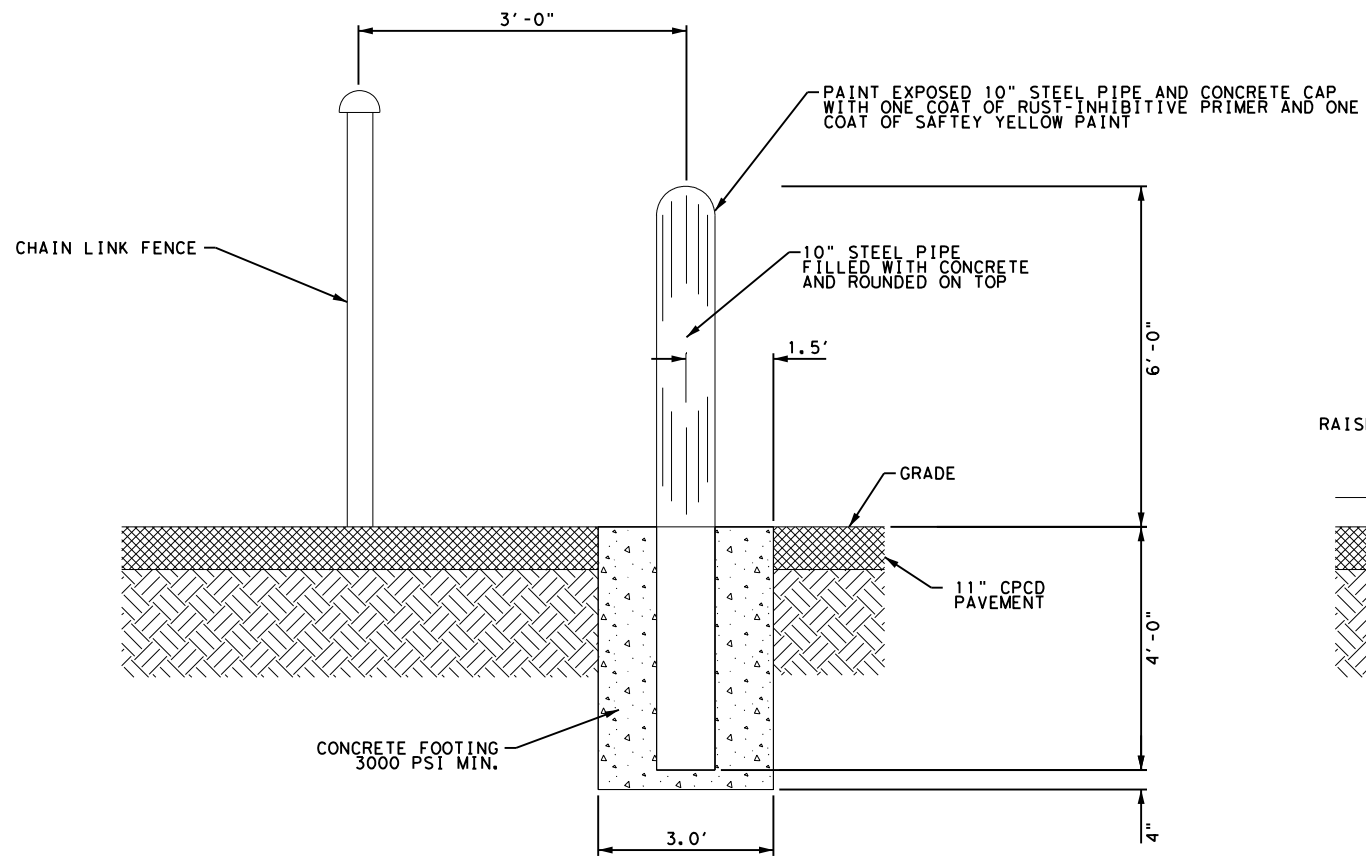
WB IH 30 CMV STATION
MISCELLANEOUS DETAILS

SHEET 1 OF 2

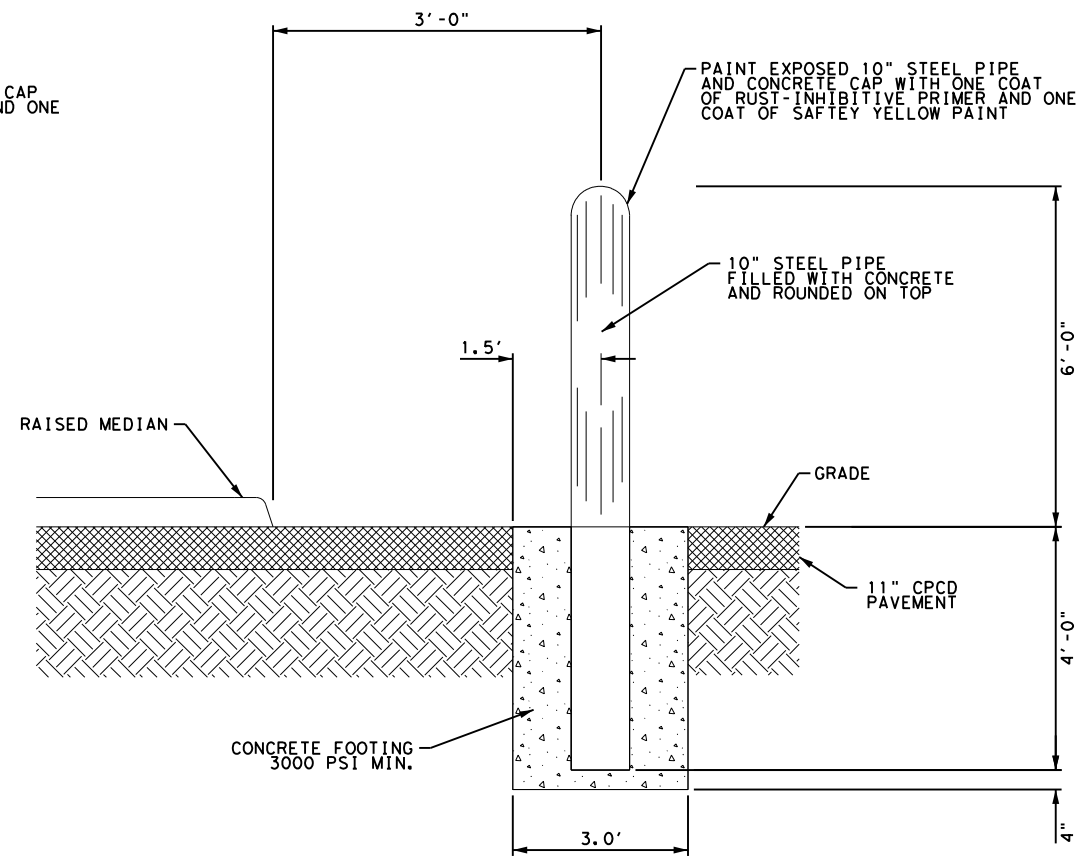
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Plotted on: 6/3/2024

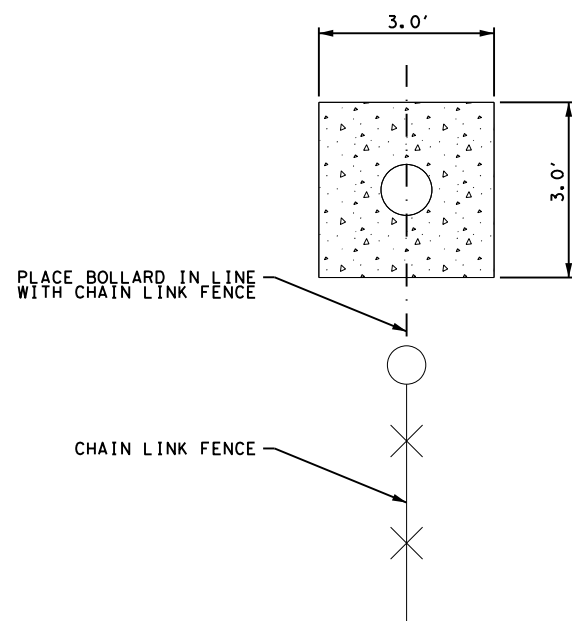
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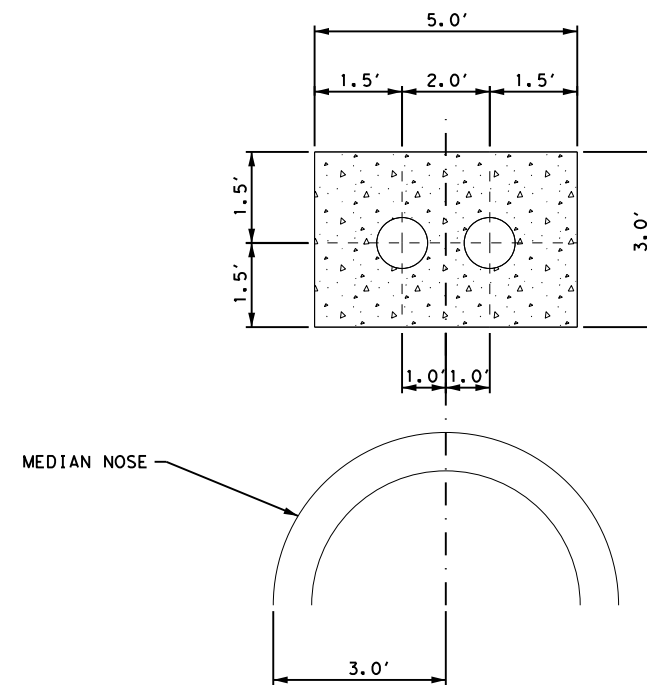
BOLLARD AT FENCE POST DETAIL
NOT TO SCALE



BOLLARD AT MEDIAN DETAIL
NOT TO SCALE



BOLLARD AT FENCE POST PLAN DETAIL
NOT TO SCALE



BOLLARD AT MEDIAN PLAN DETAIL
NOT TO SCALE

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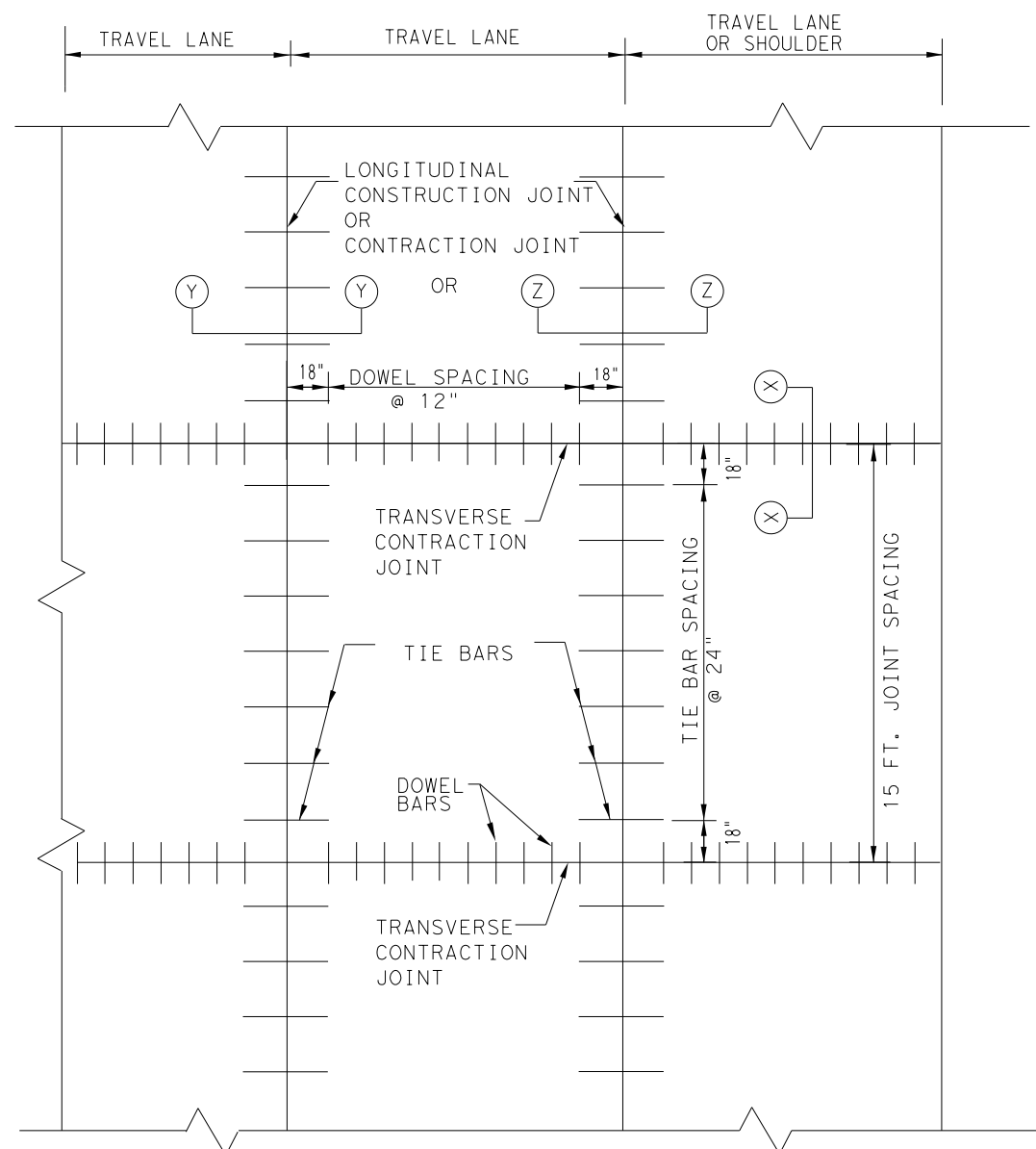
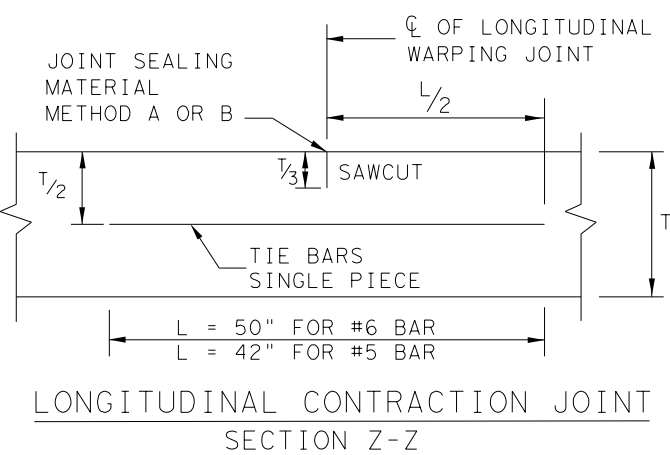
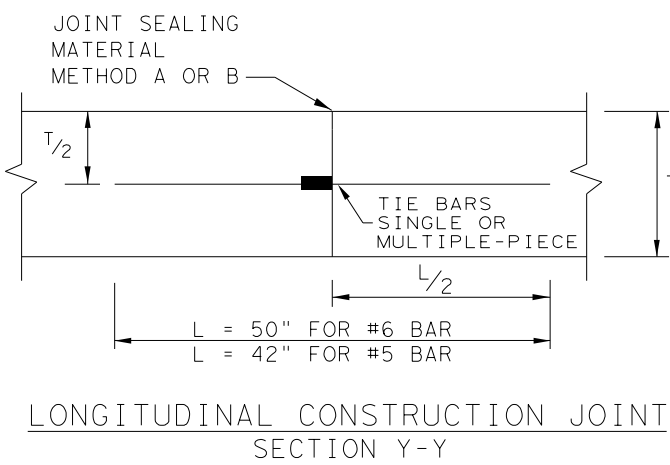
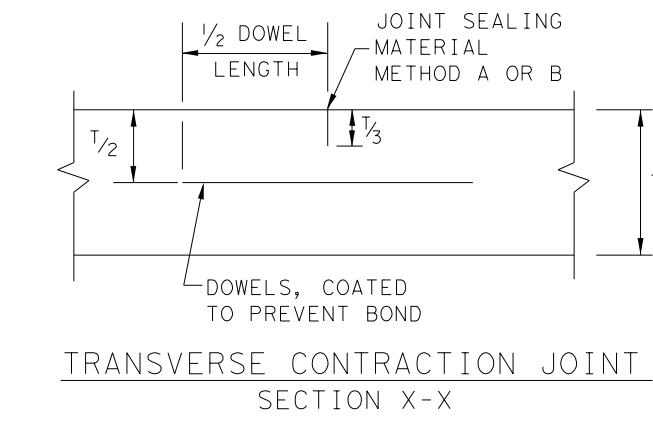
WB IH 30 CMV STATION
MISCELLANEOUS DETAILS

SHEET 2 OF 2

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
	6	TEXAS		IH 30		
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
	ATL	TITUS	0610	03	095	81

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TYPICAL PAVEMENT LAYOUT
 PLAN VIEW (NOT TO SCALE)

SLAB THICKNESS T (IN.)	BAR DIA. AND LENGTH	AVERAGE SPACING (IN.)
6 to 7.5	1" X 18"	12
8 to 10	1 1/4" X 18"	12
>= 10.5	1 1/2" X 18"	12

SLAB THICKNESS T (IN.)	BAR SIZE	AVERAGE SPACING (IN.)
6 to 7.5	#5	24
>= 8	#6	24

GENERAL NOTES

1. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS AND THE CROWN CROSS-SLOPE SHALL BE SHOWN ELSEWHERE IN THE PLANS. PAVEMENTS WIDER THAN 100 FT. WITHOUT A FREE LONGITUDINAL JOINT ARE NOT COVERED BY THIS STANDARD.
2. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND LOAD TRANSFER DEVICES REFER TO THE GOVERNING SPECIFICATION FOR "CONCRETE PAVEMENT".
3. THE SPACING BETWEEN TRANSVERSE CONTRACTION JOINTS SHALL BE 15 FT. UNLESS OTHERWISE SHOWN IN THE PLANS.
4. TRANSVERSE CONSTRUCTION JOINTS MAY BE FORMED BY USE OF METAL OR WOOD FORMS EQUAL IN DEPTH TO THE DEPTH OF PAVEMENT, OR BY METHODS APPROVED BY THE ENGINEER.
5. USE HAND-OPERATED IMMERSION VIBRATORS TO CONSOLIDATE THE CONCRETE ADJACENT TO ALL THE FORMED JOINTS.
6. PAVEMENT WIDTHS OF MORE THAN 15 FT. SHALL HAVE A LONGITUDINAL JOINT (SECTION Z-Z OR SECTION Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6 IN. OF THE LANE LINE UNLESS THE JOINT LOCATION IS SHOWN ELSEWHERE ON THE PLANS.
7. THE JOINT BETWEEN OUTSIDE LANE AND SHOULDER SHALL BE A LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) UNLESS OTHERWISE SHOWN IN THE PLANS. THE SAW CUT DEPTH FOR THE LONGITUDINAL CONTRACTION JOINT (SECTION Z-Z) SHALL BE ONE THIRD OF THE SLAB THICKNESS (T/3).
8. WHEN TYING CONCRETE GUTTER AT A LONGITUDINAL JOINT, THE TIE BAR LENGTH OR POSITION MAY BE ADJUSTED. PROVIDE 3 IN. OF CONCRETE COVER FROM THE BACK OF GUTTER TO THE END OF TIE BAR.
9. REPLACE MISSING OR DAMAGED TIE BARS WITHOUT ADDITIONAL COMPENSATION BY DRILLING MIN. 10 IN. DEEP AND GROUTING TIE BARS WITH TYPE III, CLASS C EPOXY. MEET THE PULL-OUT TEST REQUIREMENTS IN ITEM 361.
10. WHEN AN MONOLITHIC CURB IS SPECIFIED, THE JOINT IN THE CURB SHALL COINCIDE WITH PAVEMENT JOINTS AND MAY BE FORMED BY ANY MEANS APPROVED BY THE ENGINEER.
11. DOWEL BAR PLACEMENT TOLERANCE SHALL BE +/- 1/4 IN. HORIZONTALLY AND VERTICALLY UNLESS OTHERWISE SPECIFIED. WHERE DOWEL BAR BASKETS ARE USED, REMOVE THE SHIPPING WIRES.
12. THE DETAIL FOR JOINT SEALANT AND RESERVOIR IS SHOWN ON STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."

SHEET 1 OF 2

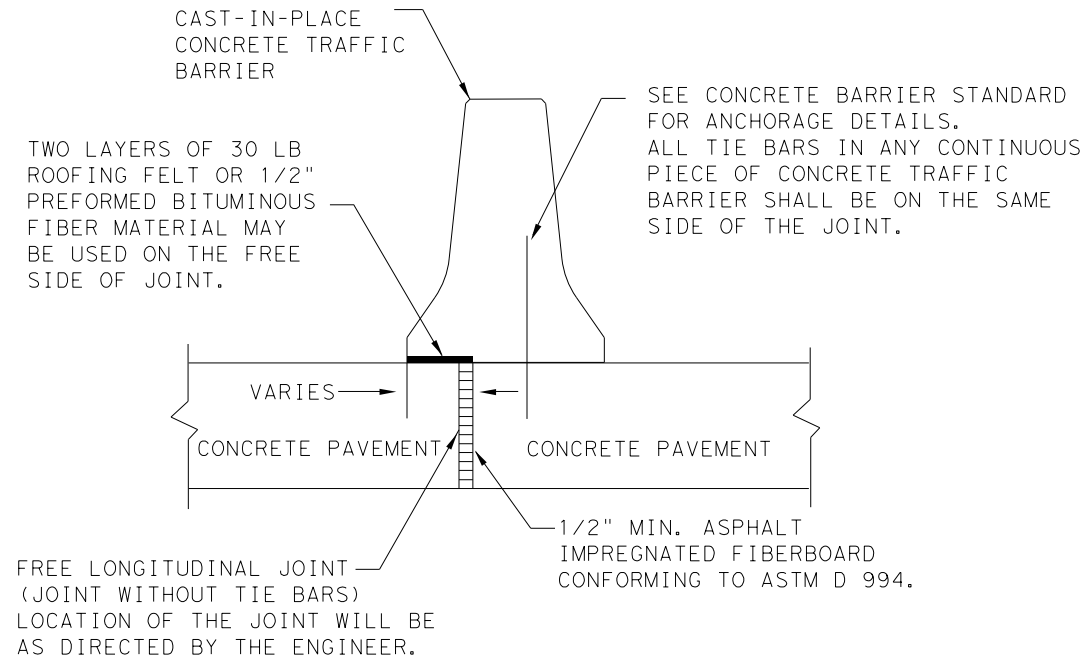
Design Division Standard

**CONCRETE PAVEMENT DETAILS
 CONTRACTION DESIGN
 T-6 to 12 INCHES
 CPCD-14**

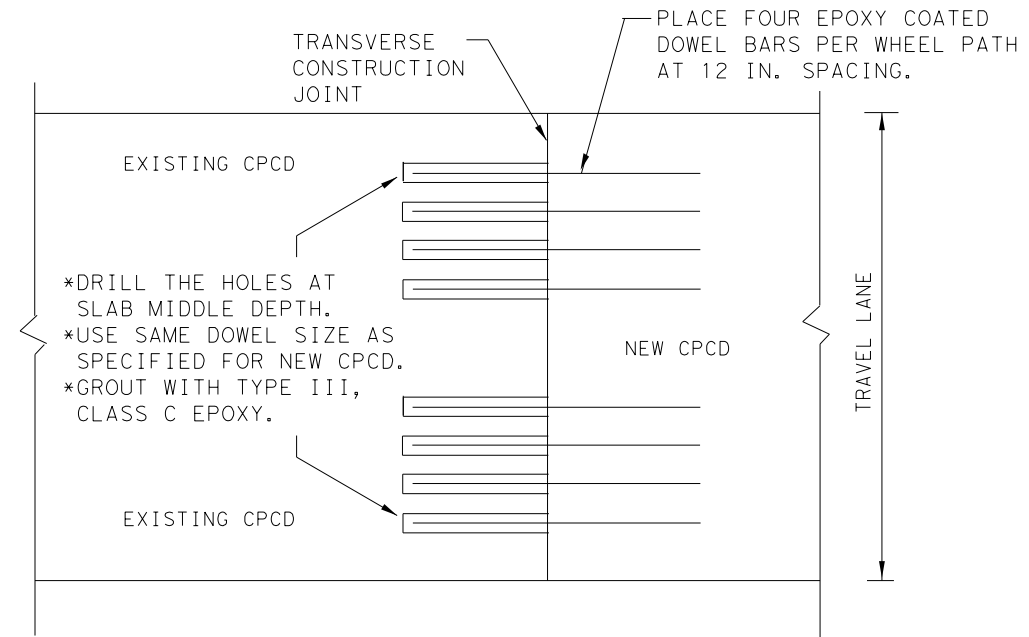
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REVISIONS	0610	03	095	IH 30
	DIST	COUNTY	SHEET NO.	
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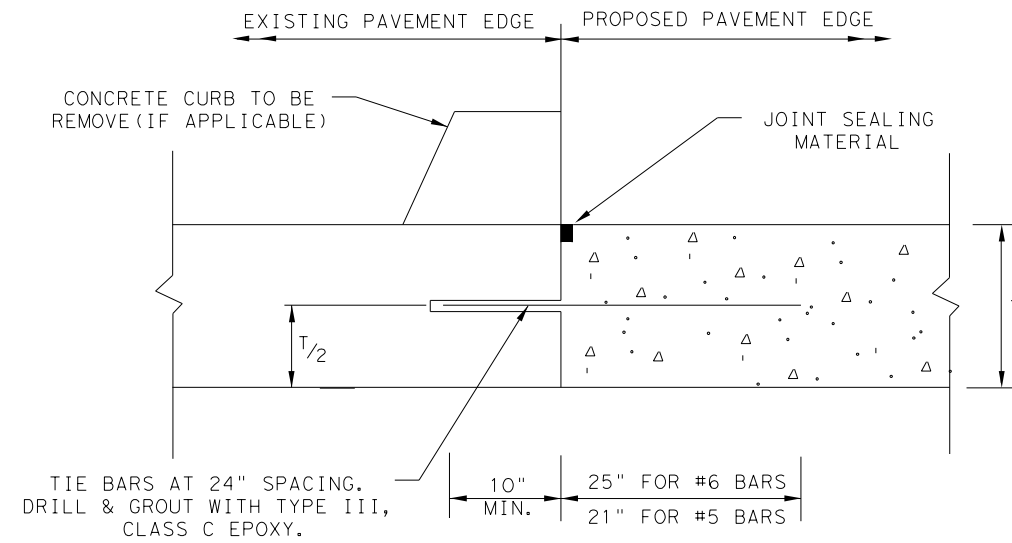
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FREE LONGITUDINAL JOINT DETAIL

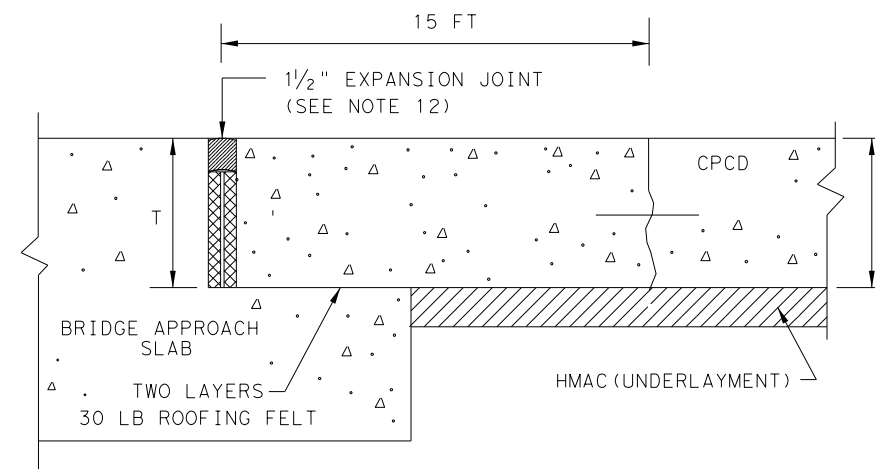


TRANSVERSE JOINT DETAIL
 EXISTING CPCD TO NEW CPCD
 PLAN VIEW (NOT TO SCALE)



1. BEFORE WIDENING WORK, DEMONSTRATE THAT THE BOND STRENGTH OF THE EPOXY-GROUTED TIE BARS MEETS THE REQUIREMENTS OF PULL-OUT TEST SPECIFIED IN ITEM 361.
2. SPACE TIE BARS AT 24" SPACING. USE #6 BARS FOR 8" AND THICKER SLABS, USE #5 BARS FOR LESS THAN 8" THICK SLABS.
3. THE TRANSVERSE JOINTS OF PROPOSED PAVEMENT SHALL COINCIDE WITH EXISTING PAVEMENT JOINTS UNLESS OTHERWISE SHOWN ON THE PLANS.

LONGITUDINAL WIDENING JOINT DETAIL



TRANSVERSE EXPANSION JOINT DETAIL
 AT BRIDGE APPROACH

SHEET 2 OF 2



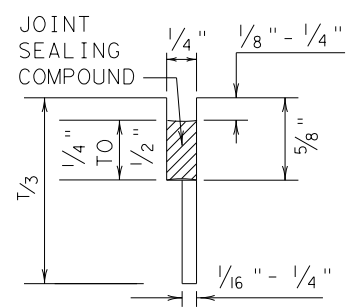
**CONCRETE PAVEMENT DETAILS
 CONTRACTION DESIGN
 T-6 to 12 INCHES**

CPCD-14

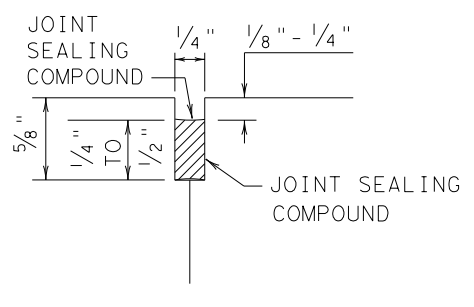
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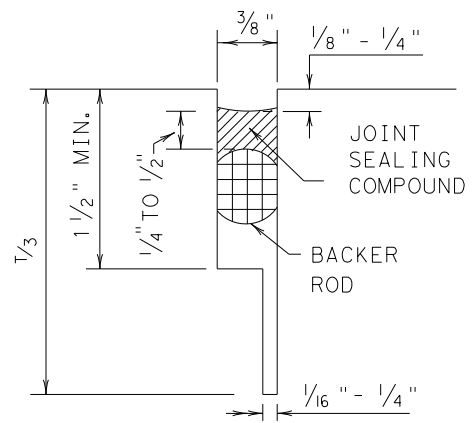
METHOD B: JOINT SEALING COMPOUND



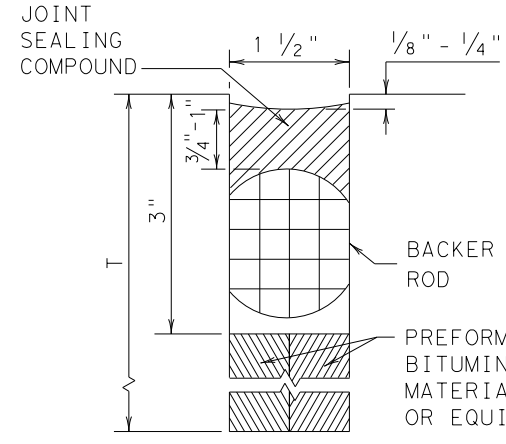
LONGITUDINAL SAWED CONTRACTION JOINT



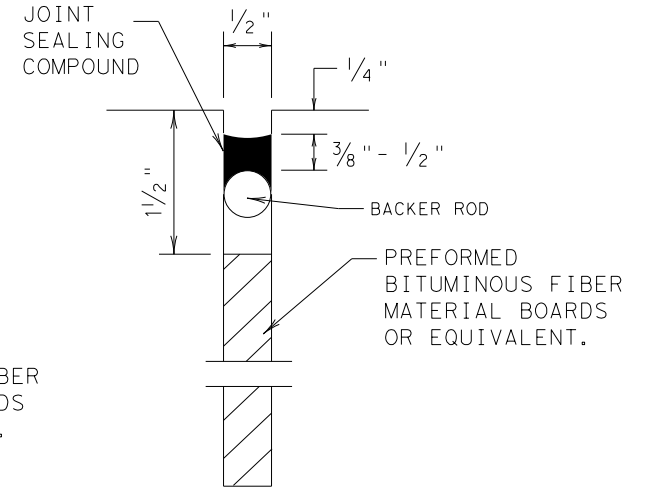
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

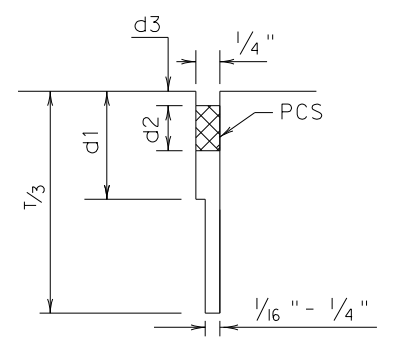


TRANSVERSE FORMED EXPANSION JOINT

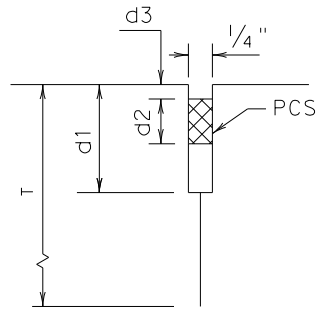


FORMED ISOLATION JOINT

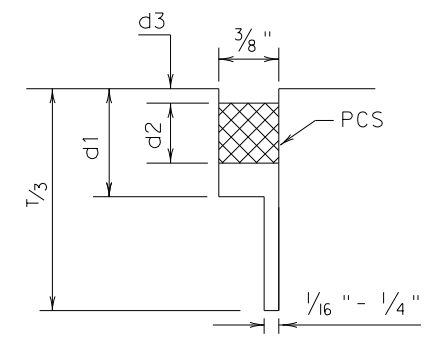
METHOD A: PREFORMED COMPRESSION SEALS (PCS) (DMS-6310 CLASS 6)



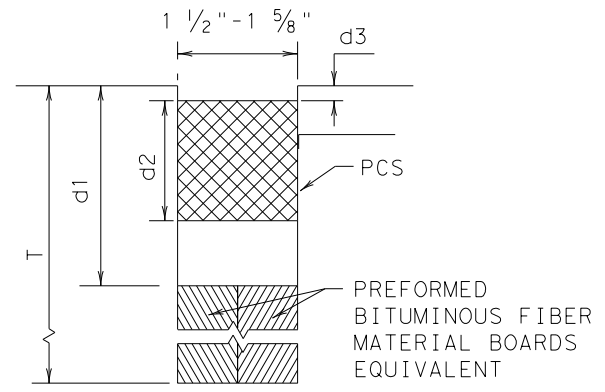
LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

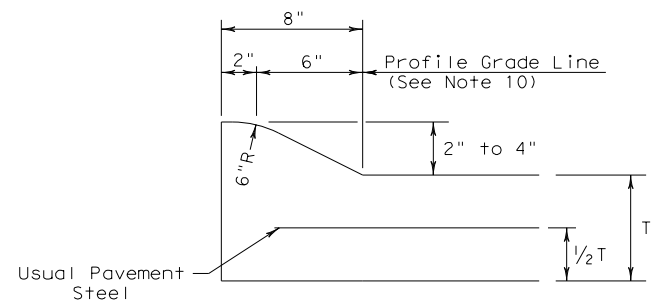
GENERAL NOTES

- UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
- THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
- THE JOINT RESERVOIR FOR SEALANT OR PCS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND THE SAWED JOINTS.
- DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
- REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
- FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
- FOR TRANSVERSE SAWED CONTRACTION, TRANSVERSE FORMED EXPANSION JOINT, AND ISOLATION JOINT USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4,5,7,OR 8 FOR MAINTAINING EXISTING JOINTS.
- THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
- ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

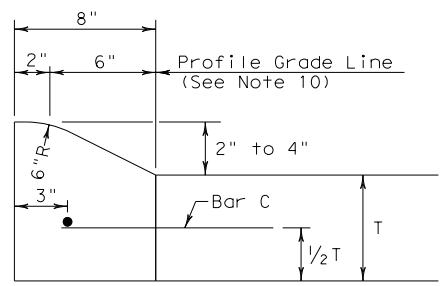
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CONCRETE PAVING DETAILS JOINT SEALS JS-14			
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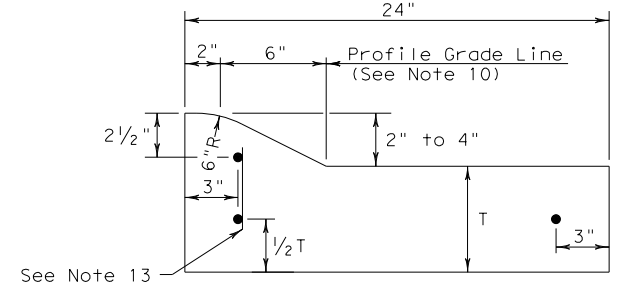
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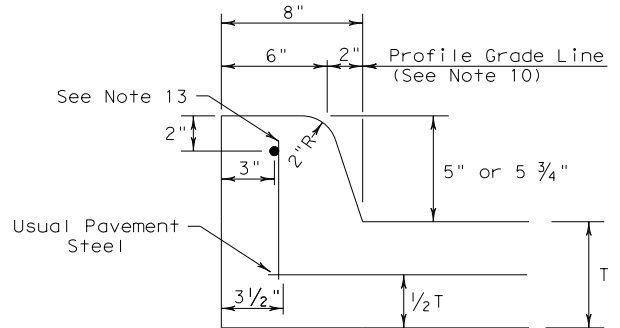
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 2" - 4" HEIGHT



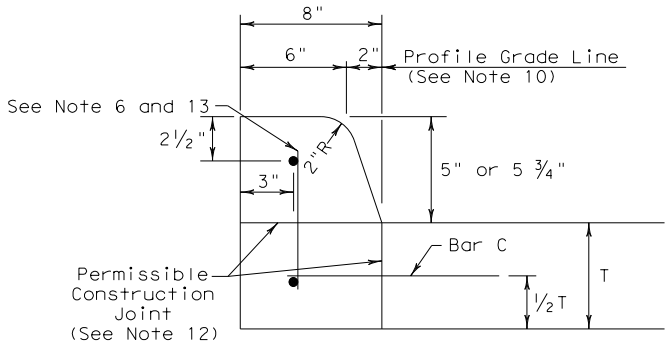
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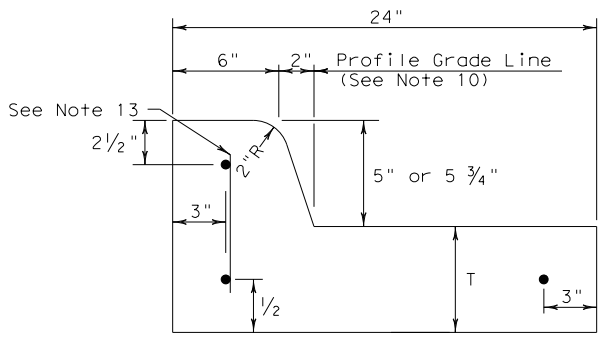
TYPE I CURB AND GUTTER
 2" - 4" HEIGHT



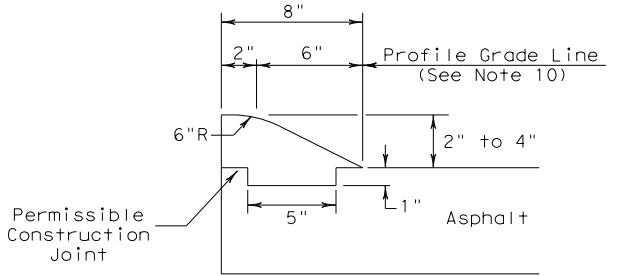
TYPE II CURB (MONOLITHIC)
 5" - 5 3/4" HEIGHT



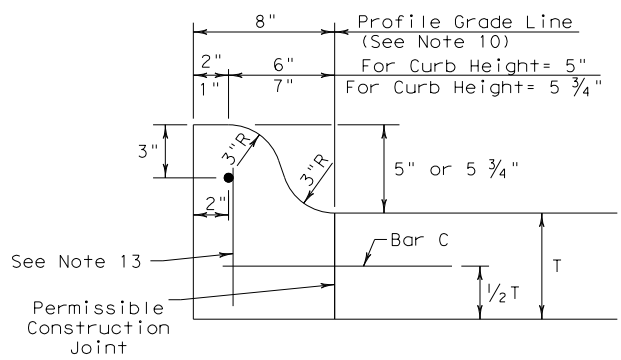
TYPE II CURB
 5" - 5 3/4" HEIGHT



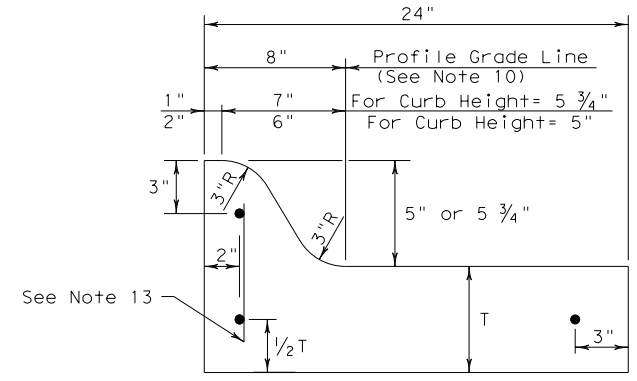
TYPE II CURB AND GUTTER
 5" - 5 3/4" HEIGHT



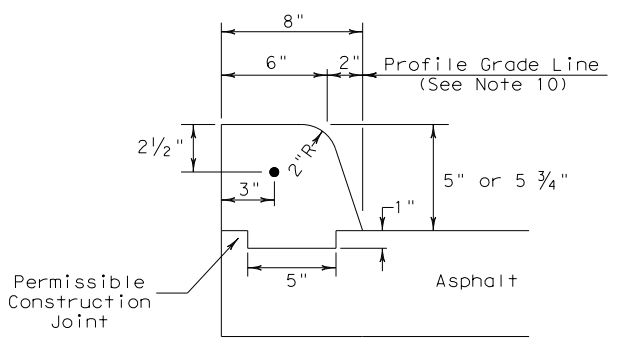
TYPE III CURB (KEYED)
 2" - 4" HEIGHT



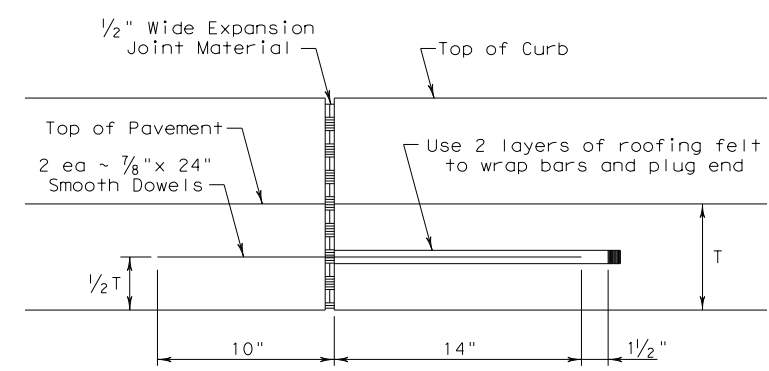
TYPE IIa CURB
 5" - 5 3/4" HEIGHT



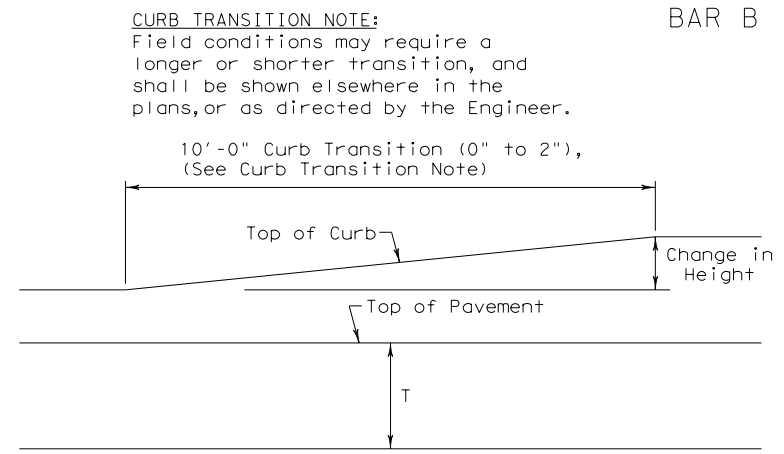
TYPE IIa CURB AND GUTTER
 5" - 5 3/4" HEIGHT



TYPE IV CURB (KEYED)
 5" - 5 3/4" HEIGHT



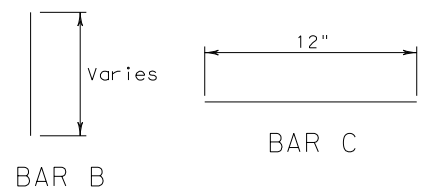
EXPANSION JOINT DETAIL



CURB TRANSITION
 Note: To be paid for as Highest Curb

GENERAL NOTES

- All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
- Concrete shall be Class A.
- When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
- Round exposed sharp edges with a rounding tool, to a minimum radius of 1/4 inch.
- All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
- Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
- Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
- Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C-C.
- Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
- Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
- One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
- When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
- Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.

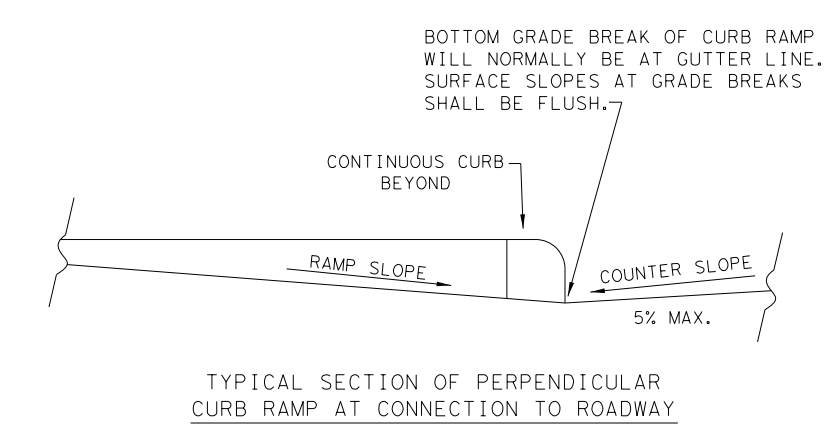
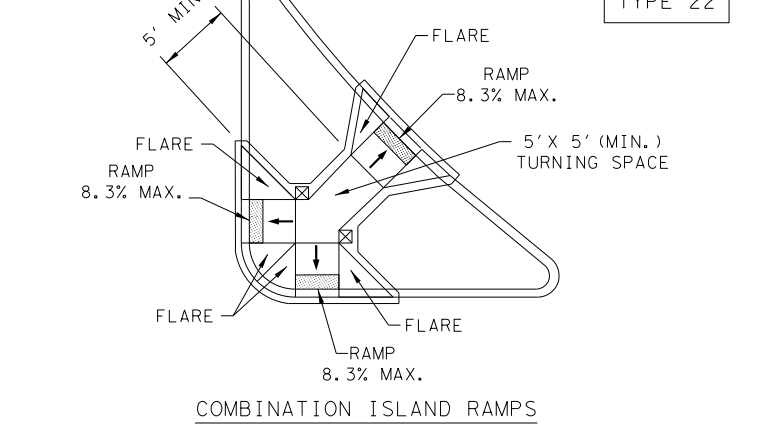
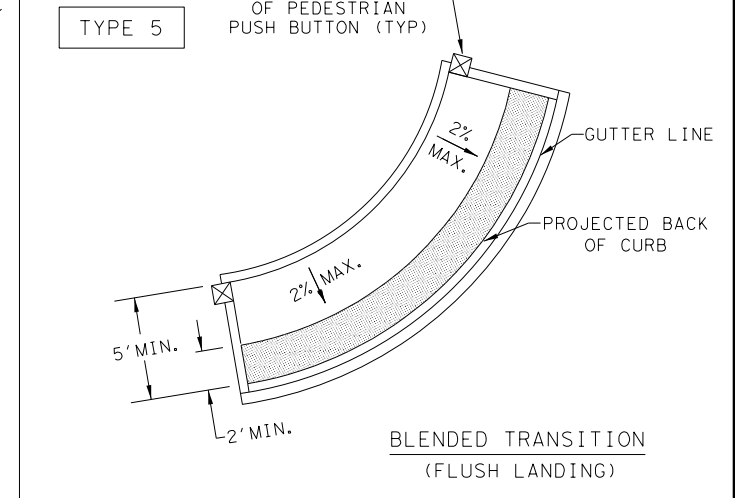
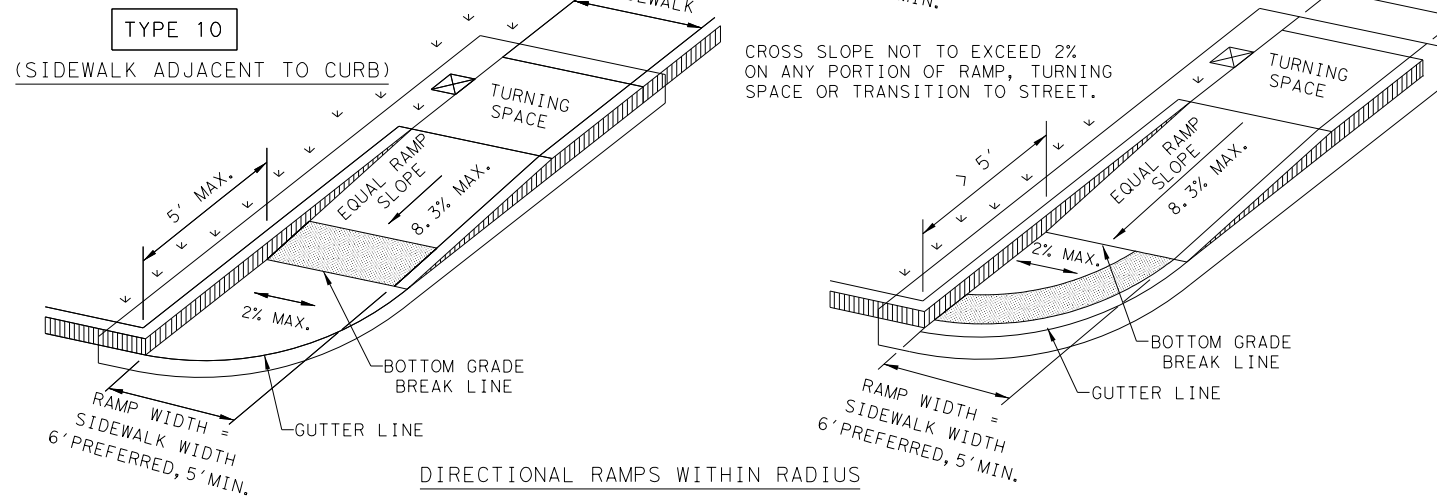
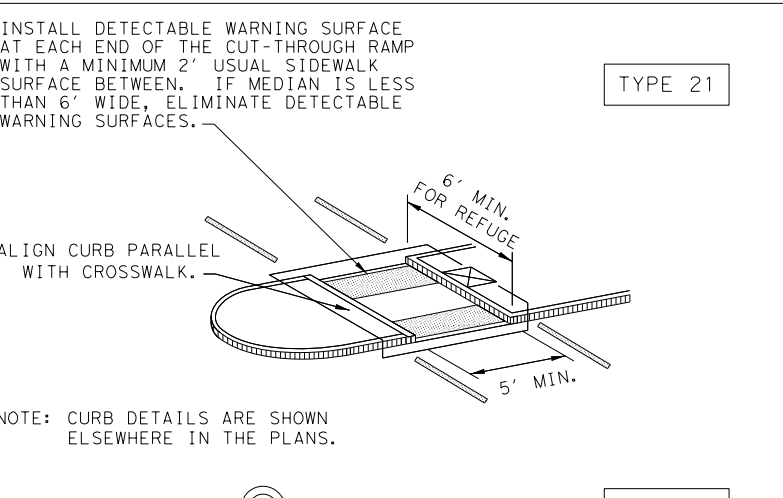
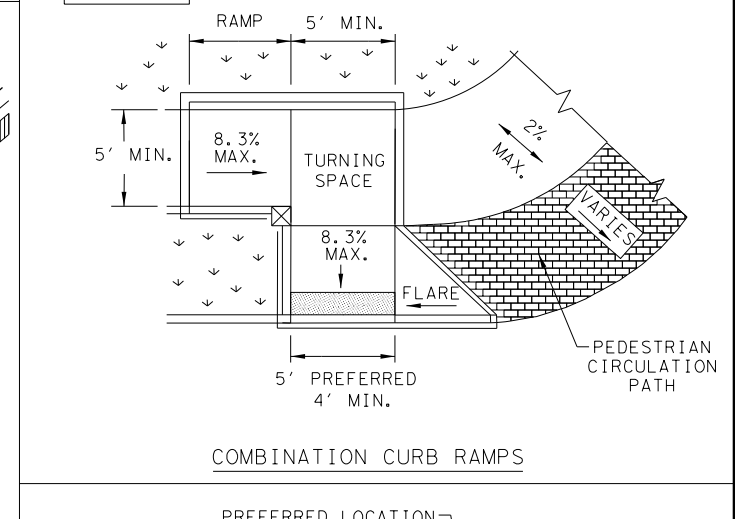
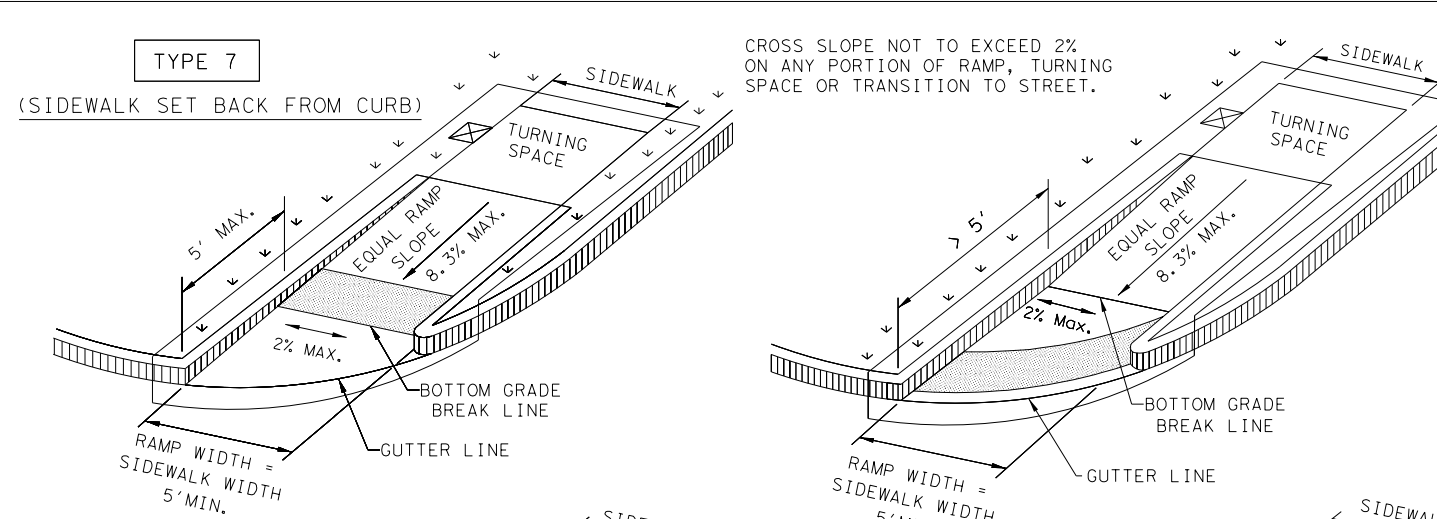
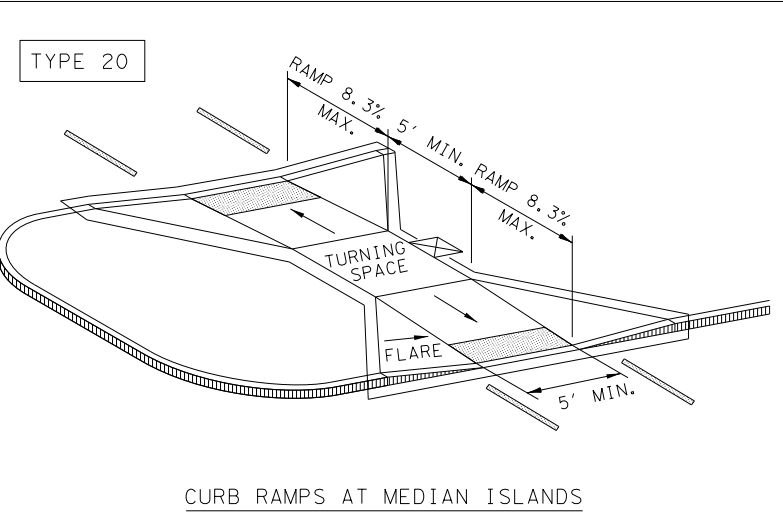
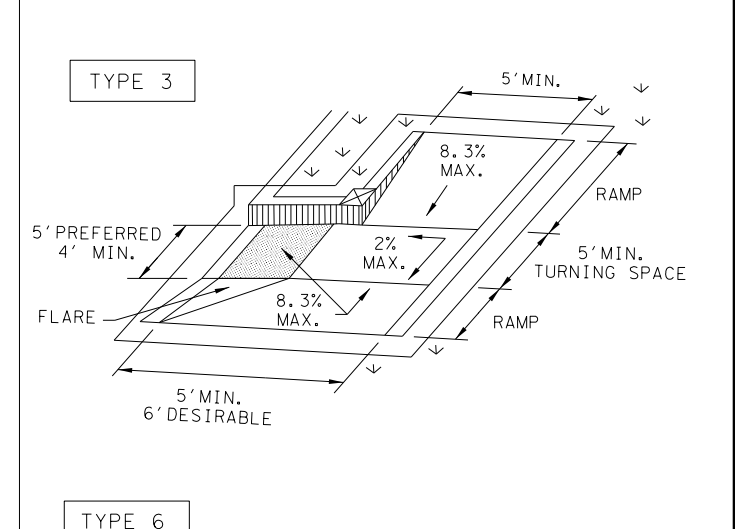
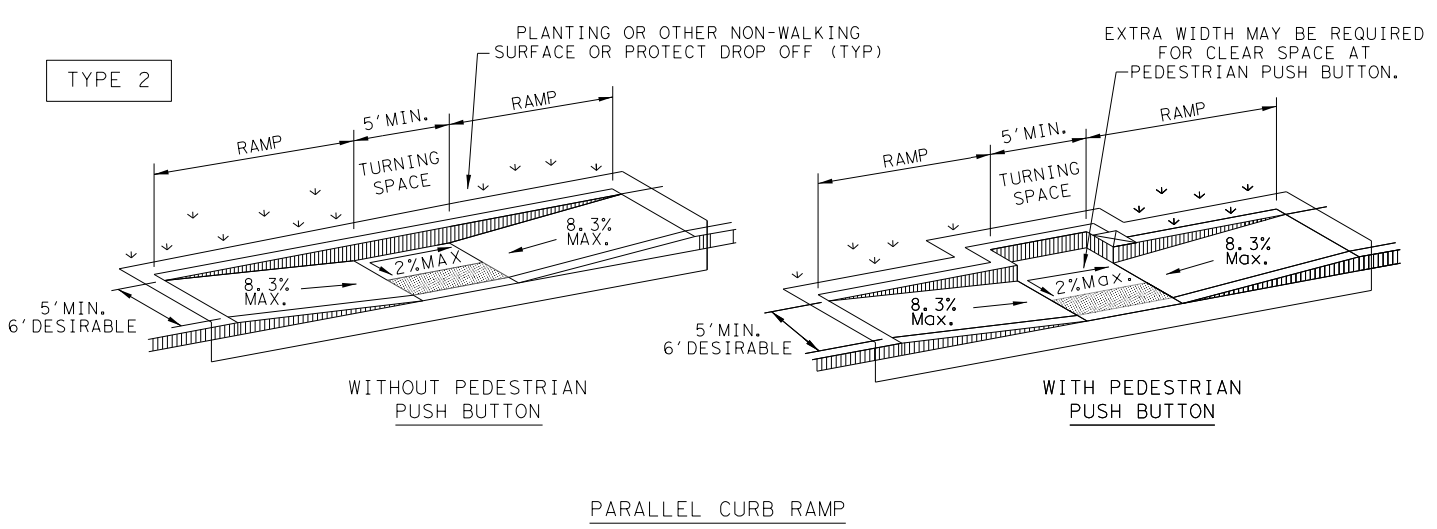
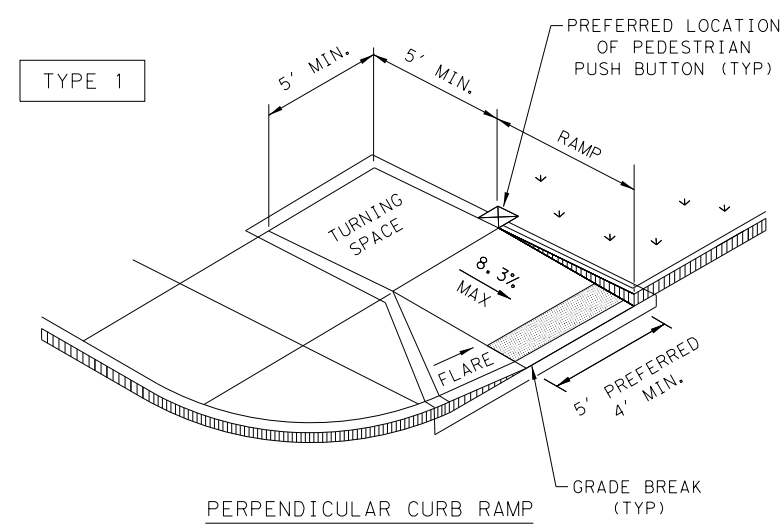


CURB TRANSITION NOTE:
 Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.

				Design Division Standard	
<h2>CONCRETE CURB AND GUTTER</h2>					
<h3>CCCG-22</h3>					
FILE: cccg21.dgn	DN: TxDOT	CK: AN	DW: CS	CK: KM	
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0610	03	095	IH 30	
	DIST	COUNTY		SHEET NO.	
	ATL	TITUS		85	

DATE: 6/3/2024
 FILE: P:\116\35\04\Design\Civil\Standards\Roadway\ped18.dgn

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NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

Detectable Warning Surface: [Symbol]

Grade Break: [Symbol]

Ramp Limits of Payment: [Symbol]

Gutter Line: [Symbol]

SHEET 1 OF 4

Texas Department of Transportation
 Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISED 08, 2005	0610	03	095	IH 30
REVISED 06, 2012	DIST	COUNTY		SHEET NO.
REVISED 01, 2018	ATL	TITUS		86

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DATE: 6/3/2024
 FILE: P:\116\35\04\Design\Civil\Standards\Roadway\ped18.dgn

GENERAL NOTES

CURB RAMP

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5' x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5' x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4' x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5' x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicable standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

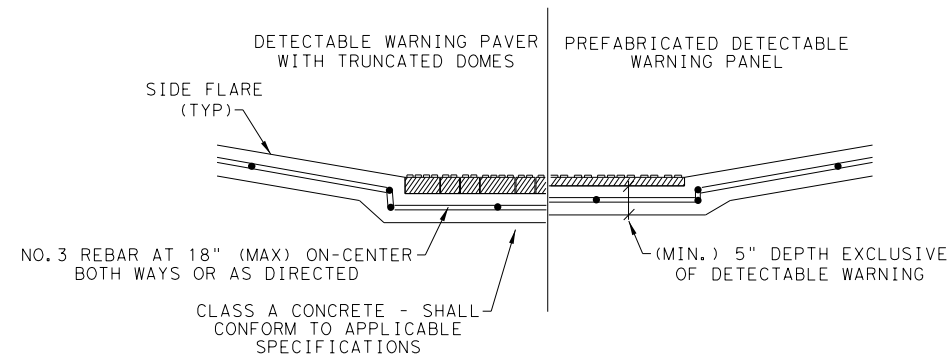
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

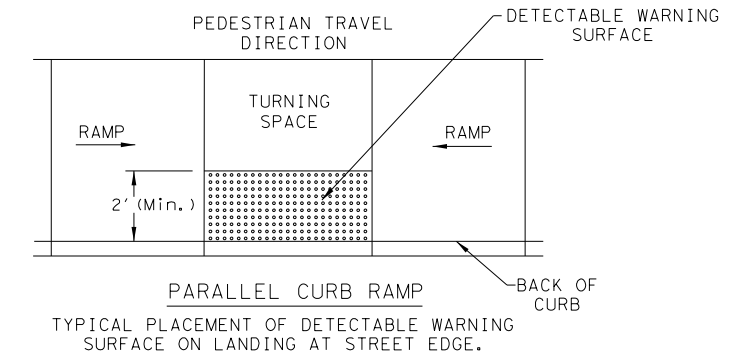
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.

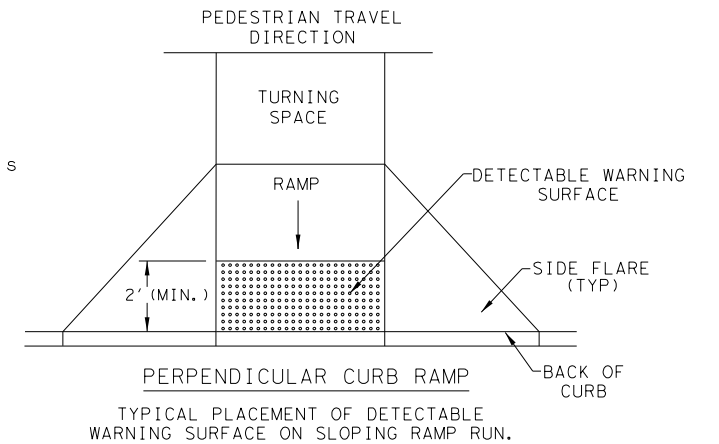


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

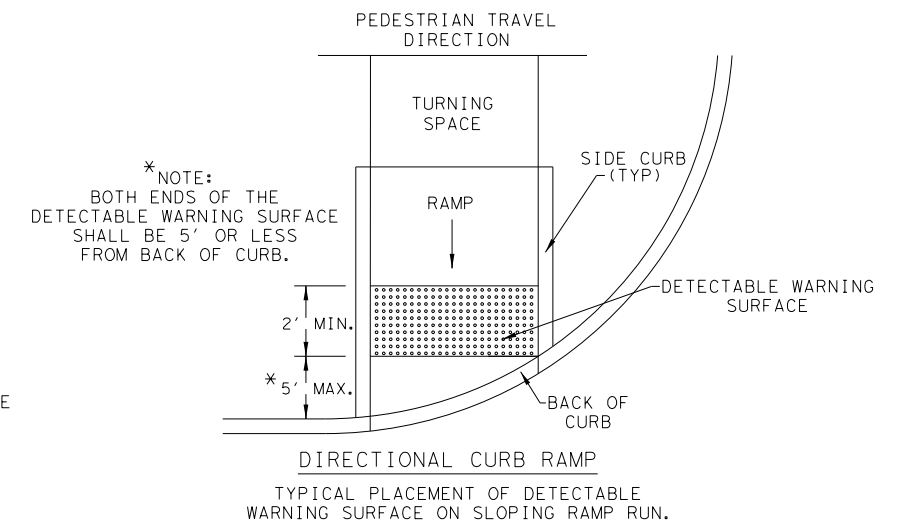
DETECTABLE WARNING SURFACE DETAILS



PARALLEL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

* NOTE:
BOTH ENDS OF THE
DETECTABLE WARNING SURFACE
SHALL BE 5' OR LESS
FROM BACK OF CURB.

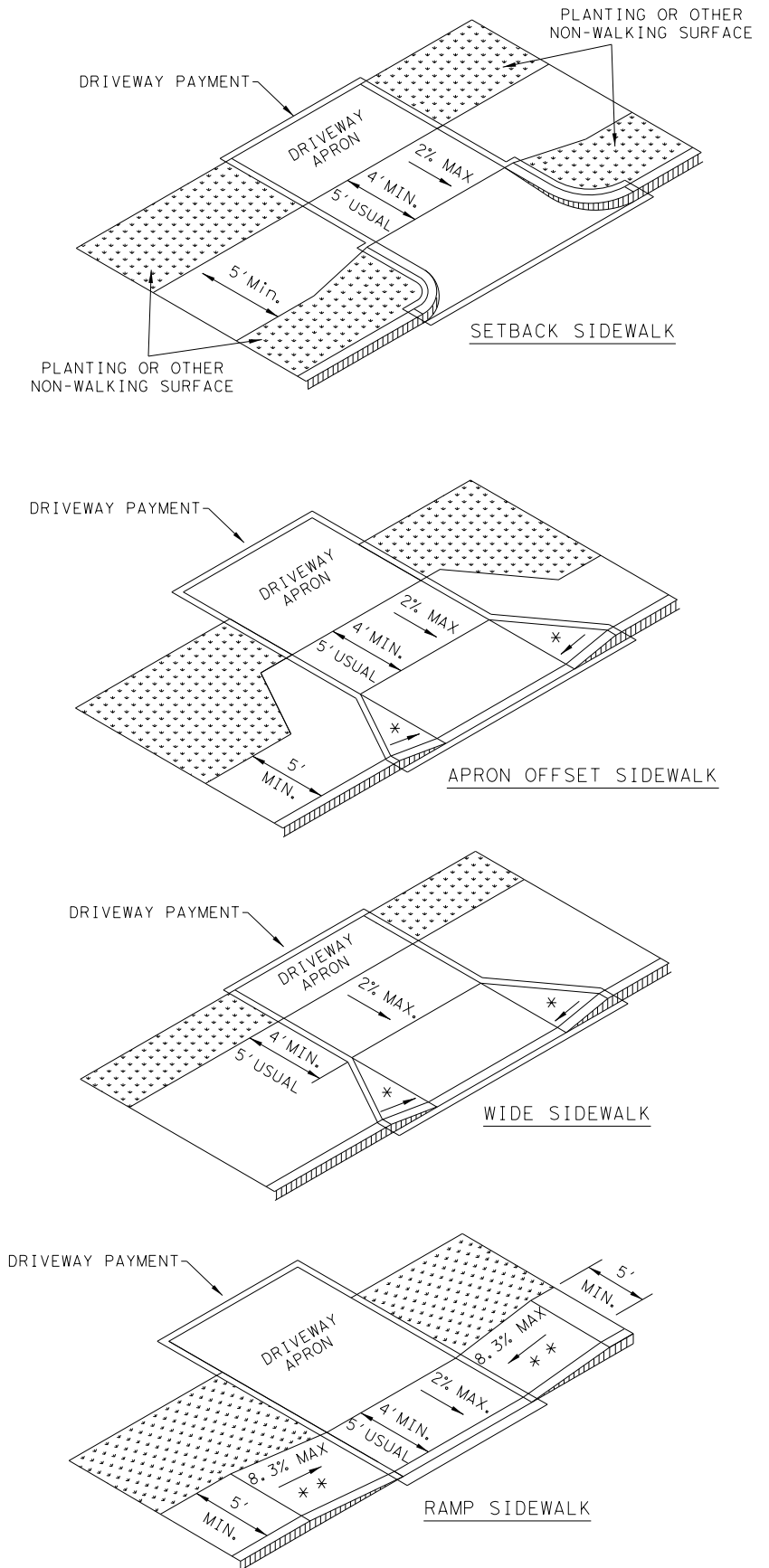
SHEET 2 OF 4

Texas Department of Transportation		Design Division Standard	
PEDESTRIAN FACILITIES CURB RAMP			
PED-18			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CONT	SECT	JOB
REVISIONS	0610	03	095
REVISED 08, 2005	DIST	COUNTY	SHEET NO.
REVISED 06, 2012	ATL	TITUS	87
REVISED 01, 2018			

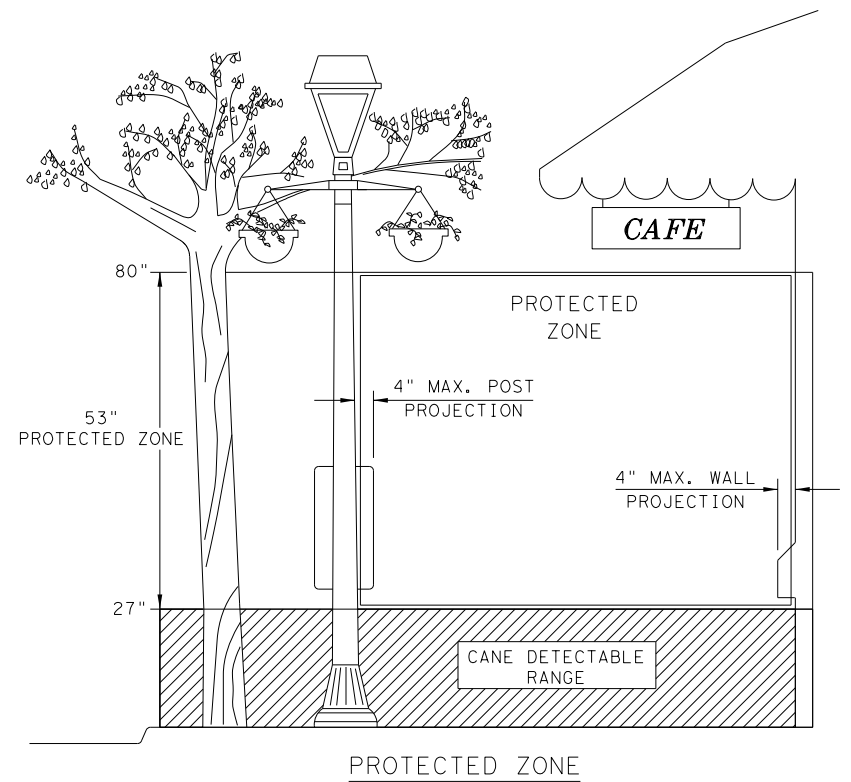
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DATE: 6/3/2024
 FILE: P:\116\35\04\Design\Civil\Standards\Roadway\ped18.dgn

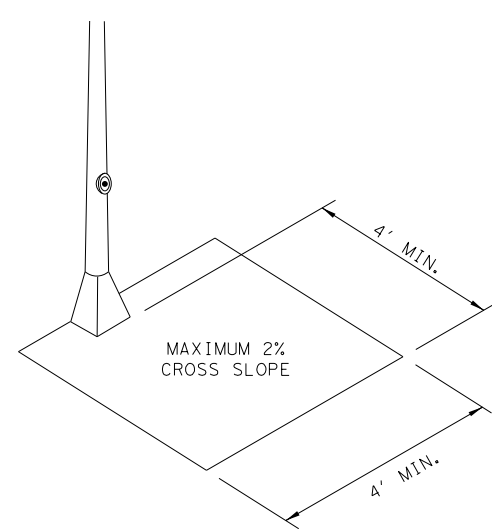
SIDEWALK TREATMENT AT DRIVEWAYS



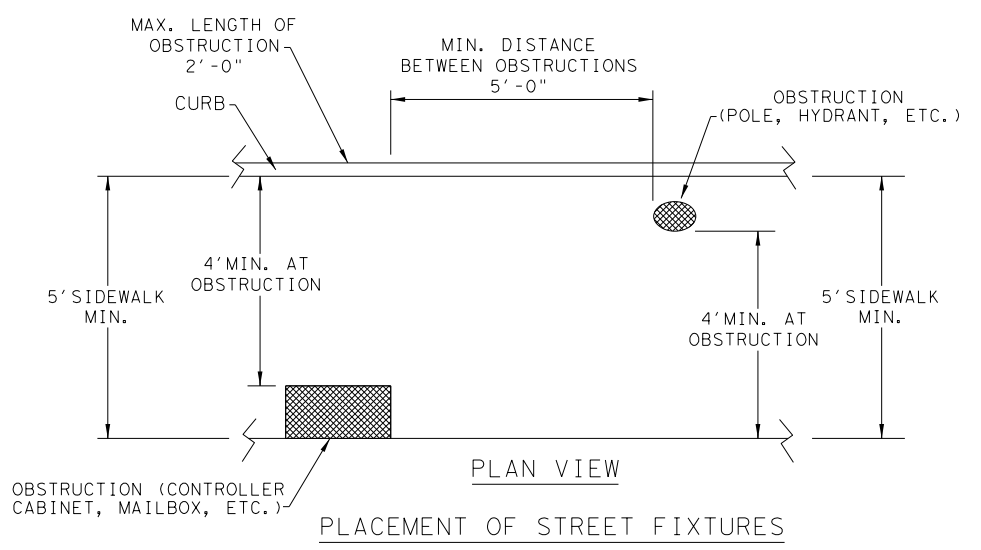
NOTES:
 * WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.
 * * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.



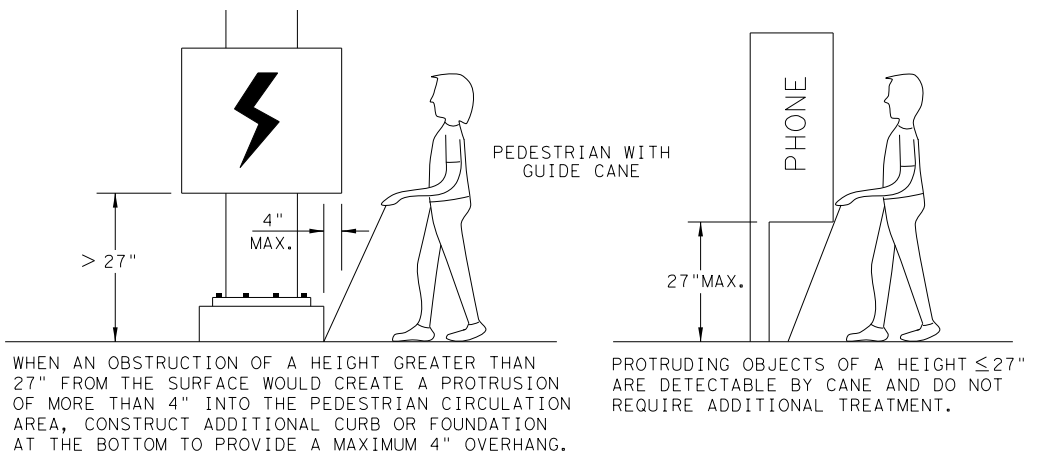
NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



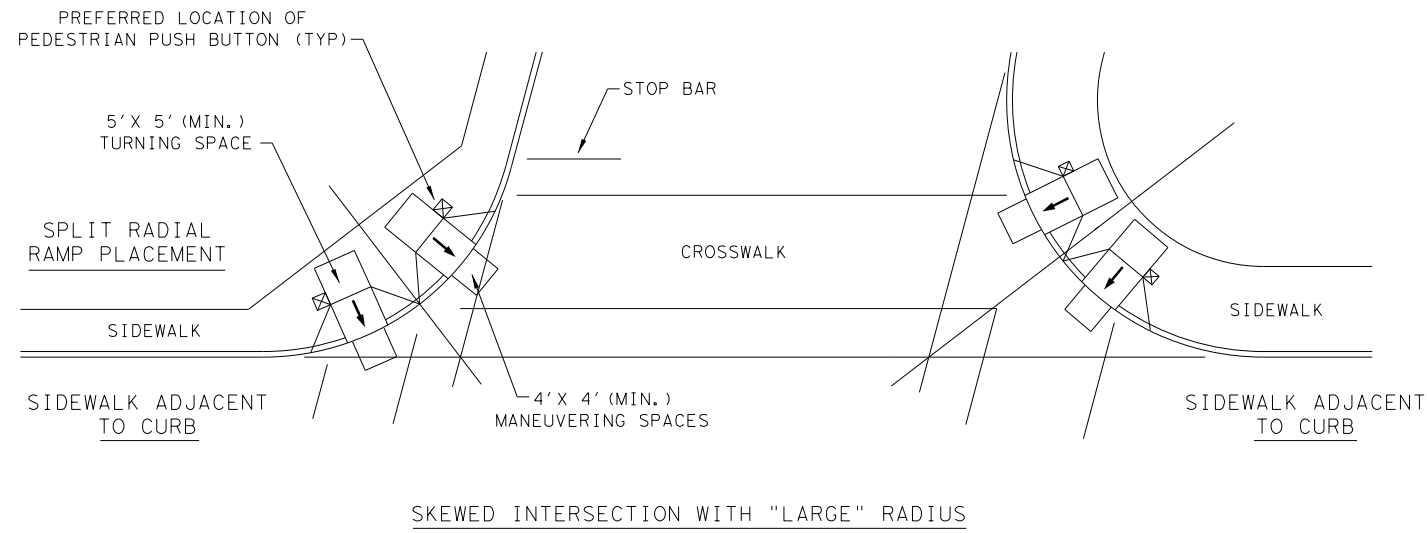
DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

		Design Division Standard	
<h2>PEDESTRIAN FACILITIES</h2> <h3>CURB RAMPS</h3> <h1>PED-18</h1>			
FILE: ped18	DN: TxDOT	DW: VP	CK: KM
© TxDOT: MARCH, 2002	CONT	SECT	JOB
REVISIONS	0610	03	095
REVISOR	DIST	COUNTY	SHEET NO.
ATL	TITUS		88

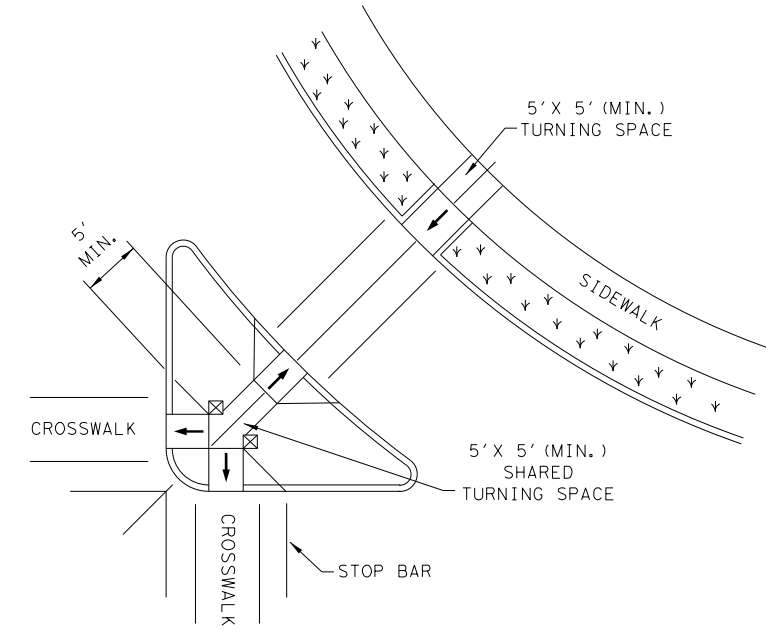
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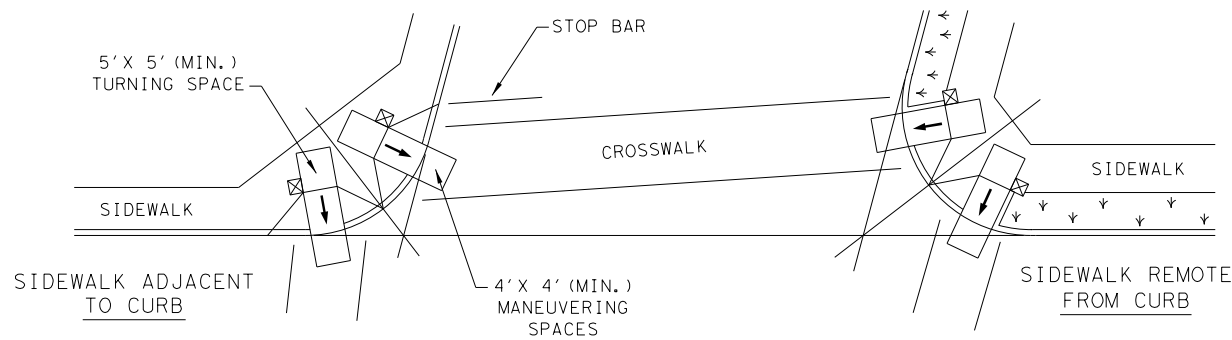
TYPICAL CROSSING LAYOUTS
 SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



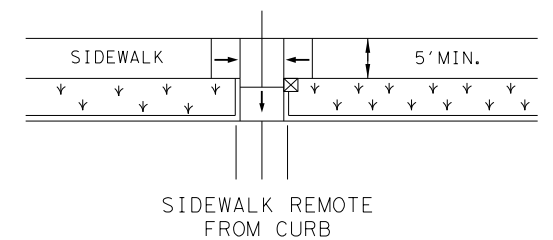
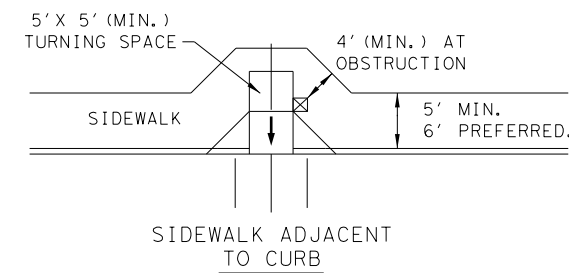
SKewed INTERSECTION WITH "LARGE" RADIUS



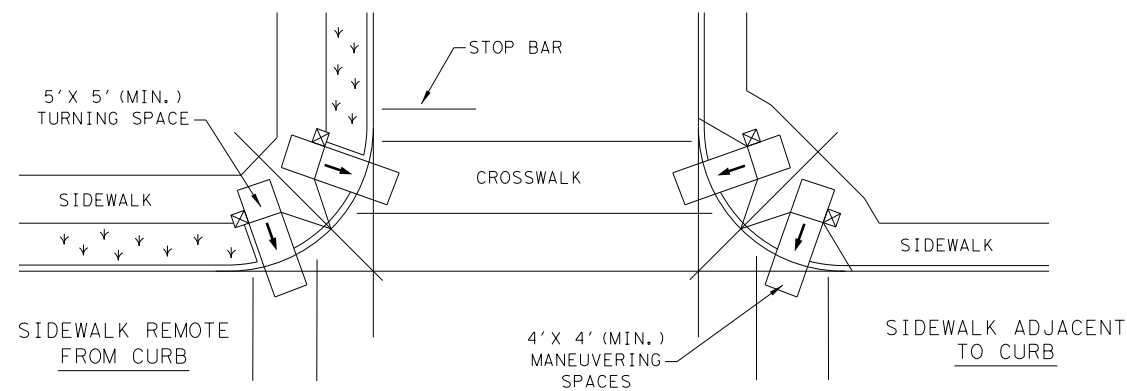
AT INTERSECTION W/FREE RIGHT TURN & ISLAND



SKewed INTERSECTION WITH "SMALL" RADIUS



MID-BLOCK PLACEMENT PERPENDICULAR RAMPS



NORMAL INTERSECTION WITH "SMALL" RADIUS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH. ↙ ↘ ↙ ↘ ↙ ↘

SHEET 4 OF 4



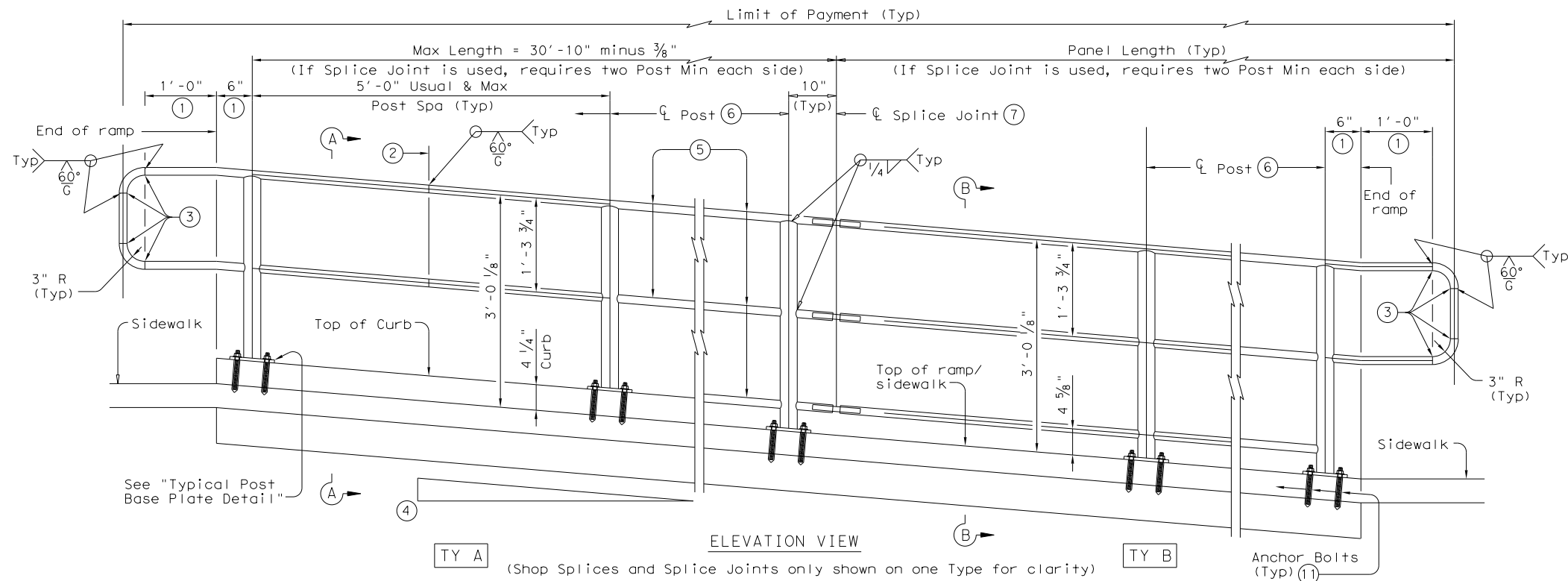
PEDESTRIAN FACILITIES
 CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
REVISED 08, 2005	DIST	COUNTY	SHEET NO.	
REVISED 06, 2012	ATL	TITUS	89	
REVISED 01, 2018				

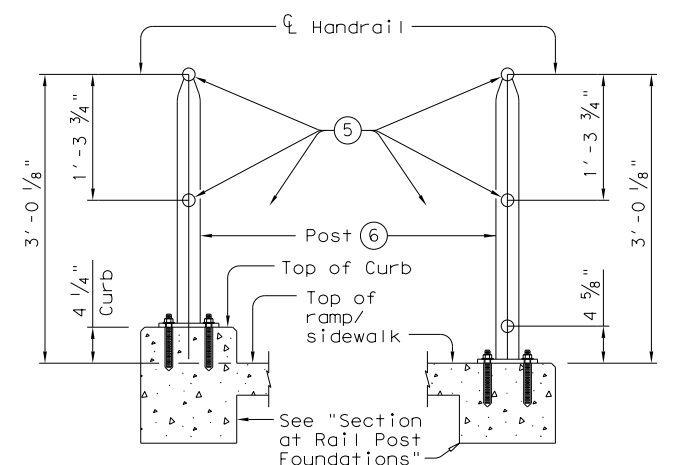
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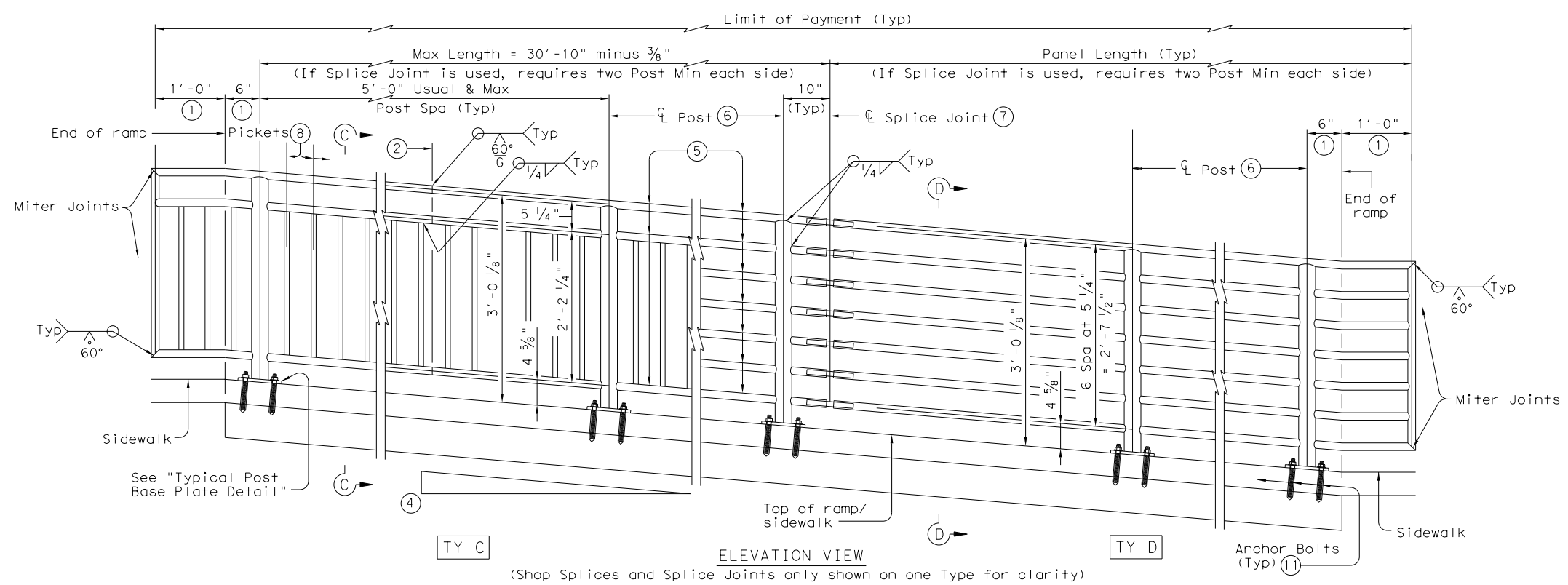


TY A (Shop Splices and Splice Joints only shown on one Type for clarity)

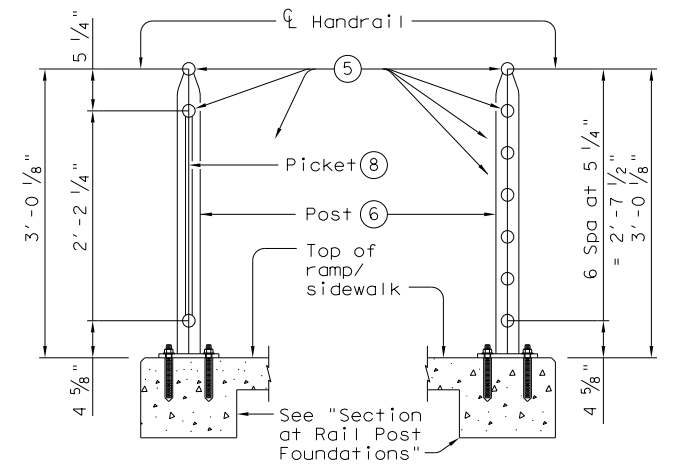
RECOMMENDED USAGE ⑨ ⑩	
Dropoff Height/Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



SECTION A-A (Showing Handrail TY A) SECTION B-B (Showing Handrail TY B)



TY C (Shop Splices and Splice Joints only shown on one Type for clarity)



SECTION C-C (Showing Handrail TY C) SECTION D-D (Showing Handrail TY D)

- ① Parallel to ground.
- ② One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ③ Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ④ See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
- ⑤ 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- ⑥ 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
- ⑦ See "Handrail Fabrication Details" for Splice Joints.
- ⑧ 5/8" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
- ⑨ When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
- ⑩ Not to be used on bridges.
- ⑪ See "General Notes" for anchor bolt information.

SHEET 1 OF 3



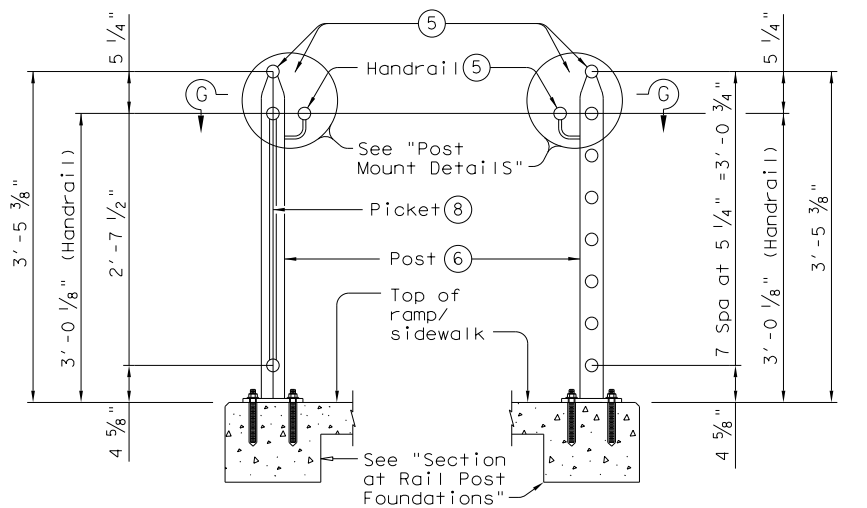
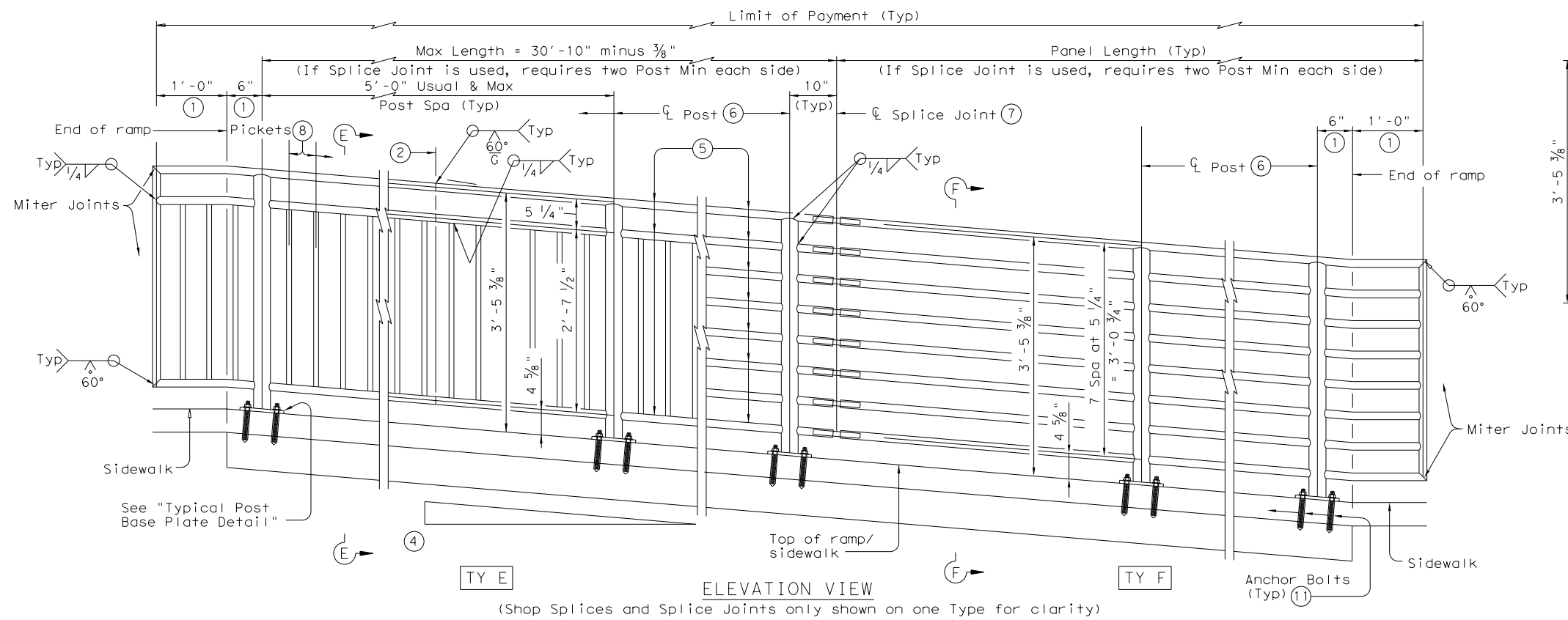
PEDESTRIAN HANDRAIL DETAILS

PRD-13

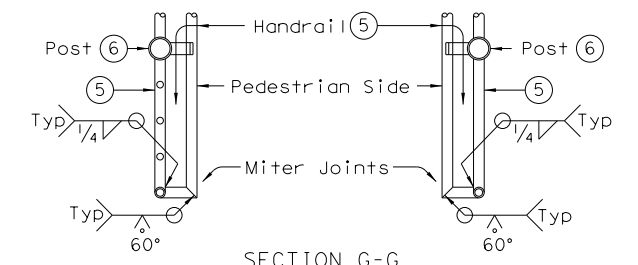
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© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	90	

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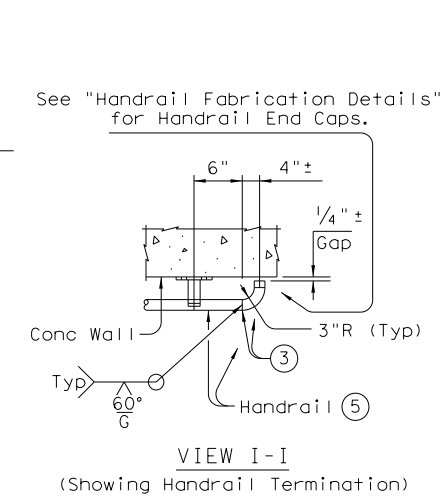
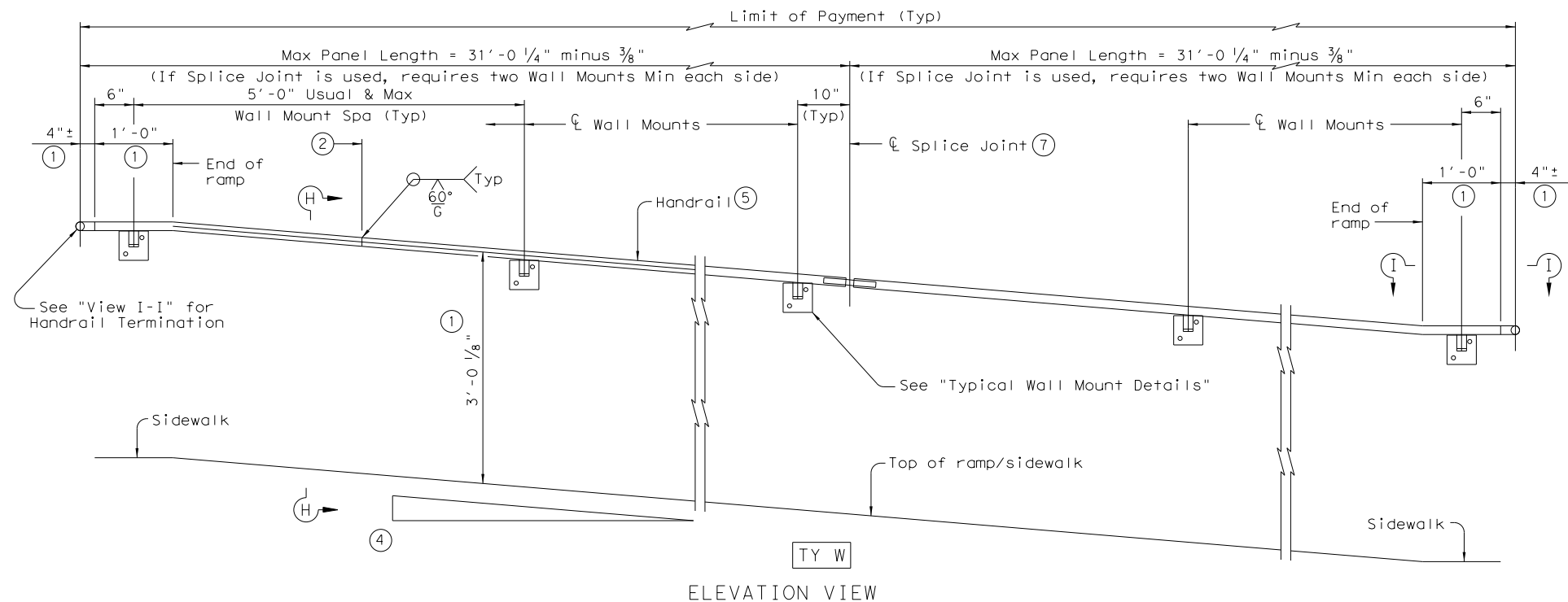
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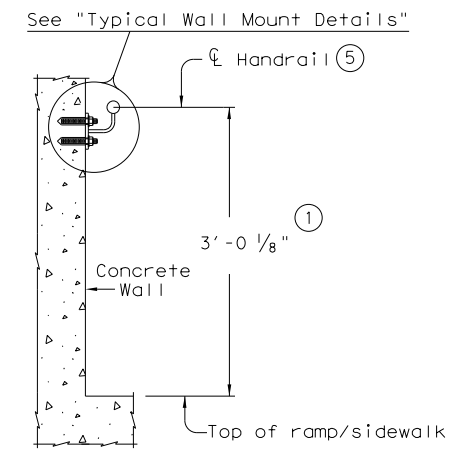
SECTION E-E (Showing Handrail TY E)
 SECTION F-F (Showing Handrail TY F)



SECTION G-G (Showing Handrail Termination)



VIEW I-I (Showing Handrail Termination)



SECTION H-H (Showing Handrail TY W)

- ① Parallel to ground.
- ② One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ③ Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
- ④ See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
- ⑤ 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.

- ⑥ 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
- ⑦ See "Handrail Fabrication Details" for Splice Joints.
- ⑧ 1/2" Dia. Round Bar equal spacing at 4 1/2" Max. Plumb all pickets.
- ⑪ See "General Notes" for anchor bolt information.

SHEET 2 OF 3



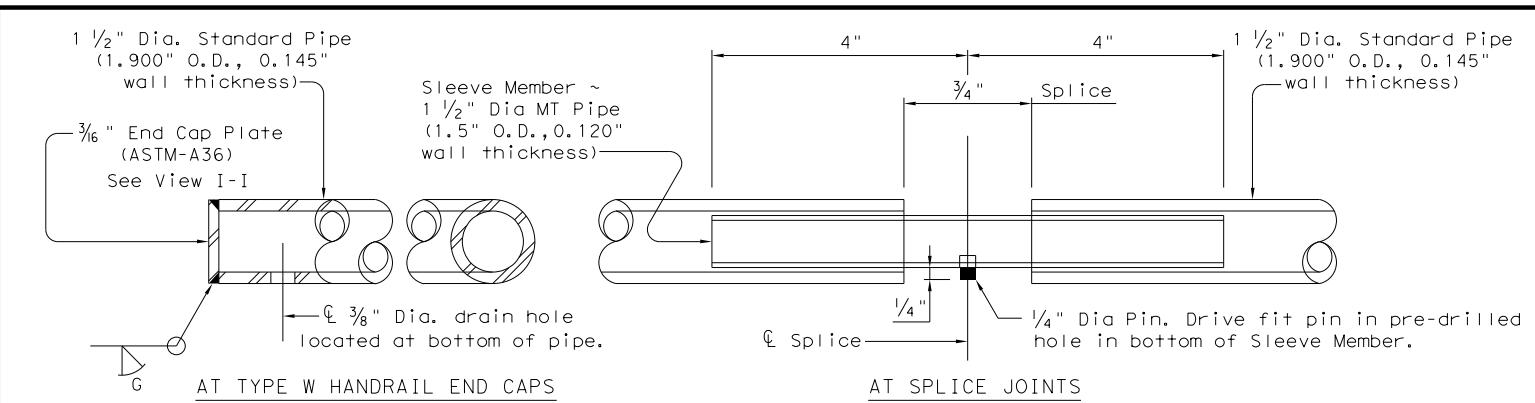
PEDESTRIAN HANDRAIL DETAILS

PRD-13

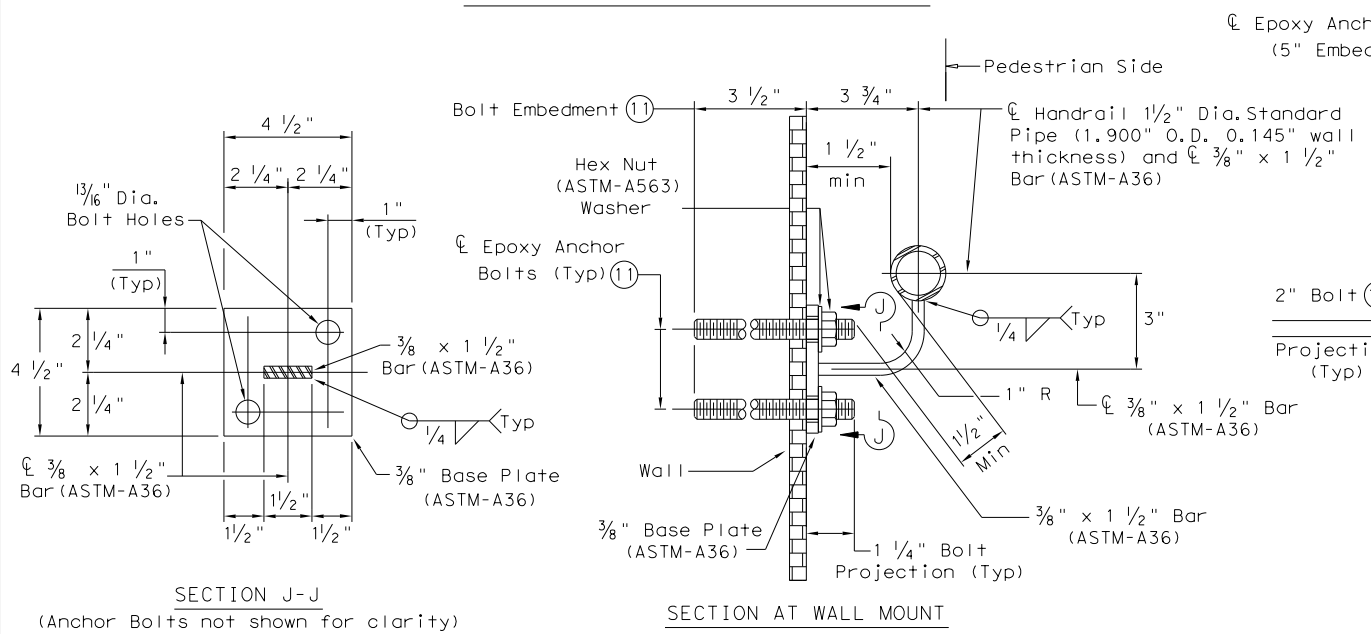
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© TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
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REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	91	

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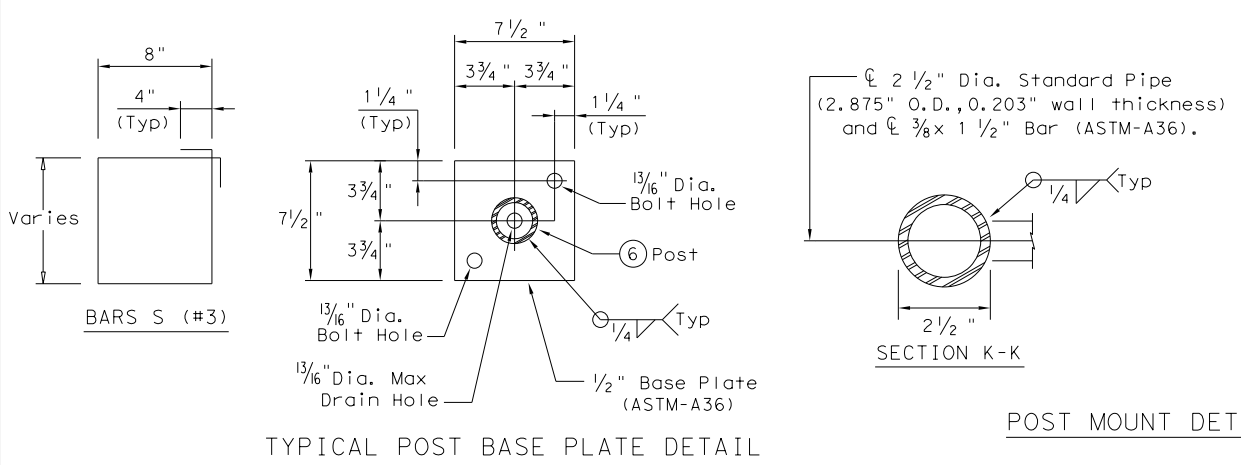


HANDRAIL FABRICATION DETAILS



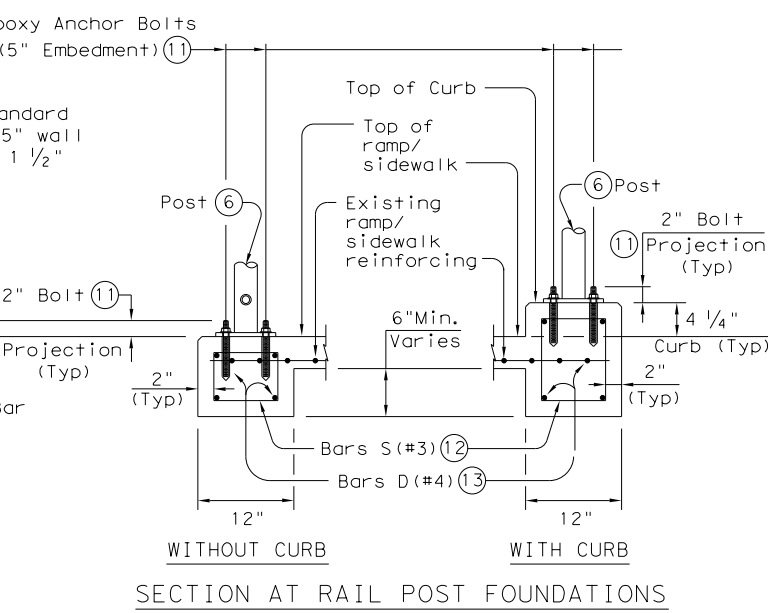
TYPICAL WALL MOUNT DETAILS

- (5) 1 1/2" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 1/2" Dia. pipe for galvanizing drainage and venting.
- (6) 2 1/2" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diameter of top rail. Provide holes as needed in post for galvanizing drainage and venting.
- (11) See "General Notes" for anchor bolt information.
- (12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).
- (13) Provide 1 1/2" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.

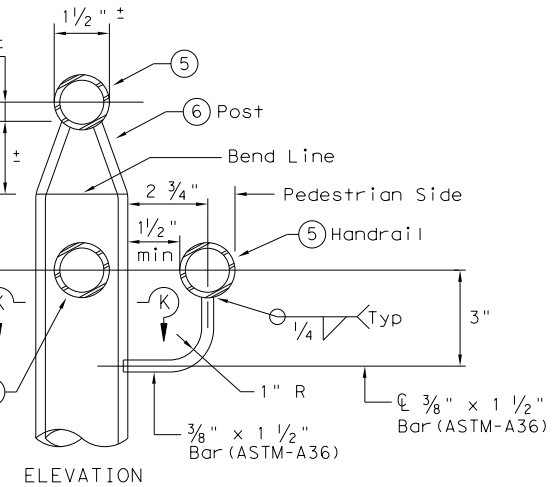
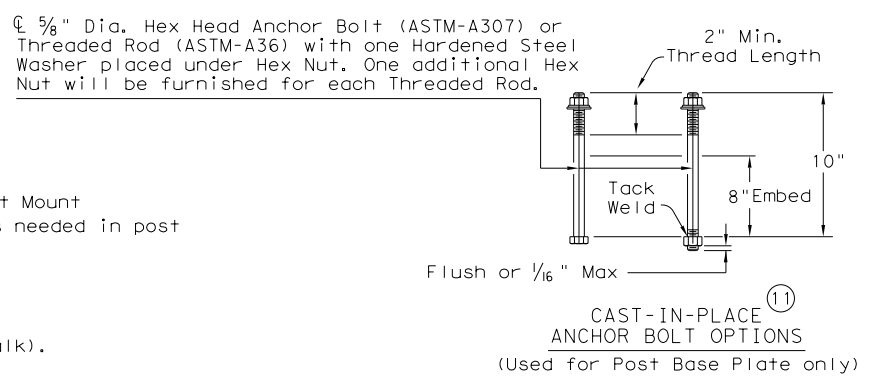


TYPICAL POST BASE PLATE DETAIL

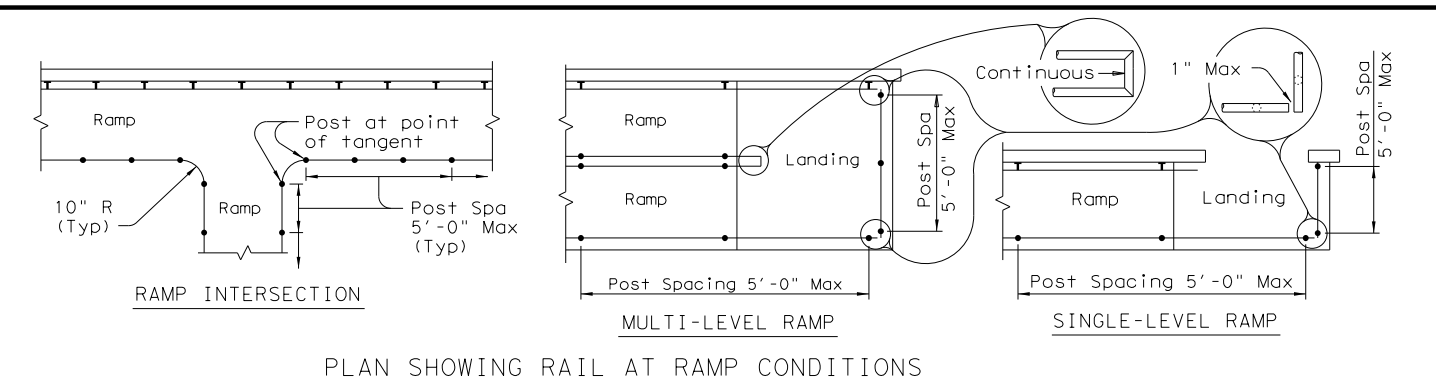
POST MOUNT DETAILS



SECTION AT RAIL POST FOUNDATIONS



ELEVATION



PLAN SHOWING RAIL AT RAMP CONDITIONS

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated #4 = 1'-5" Epoxy coated #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be 5/8" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. 3/8" Dia. threaded rod embedment depth for wall mounts is 3 1/2" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxyes and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be 5/8" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately 1/8" by grinding.

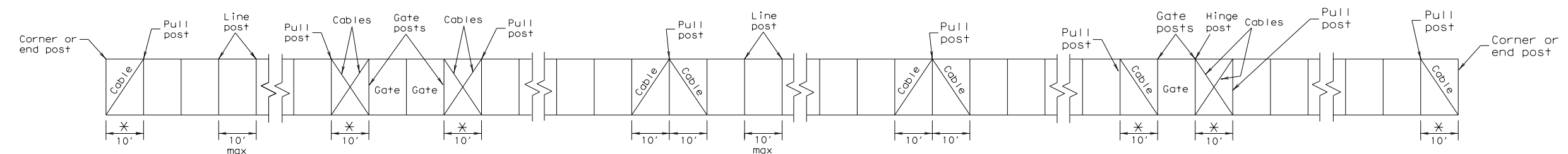


PEDESTRIAN HANDRAIL DETAILS
PRD-13

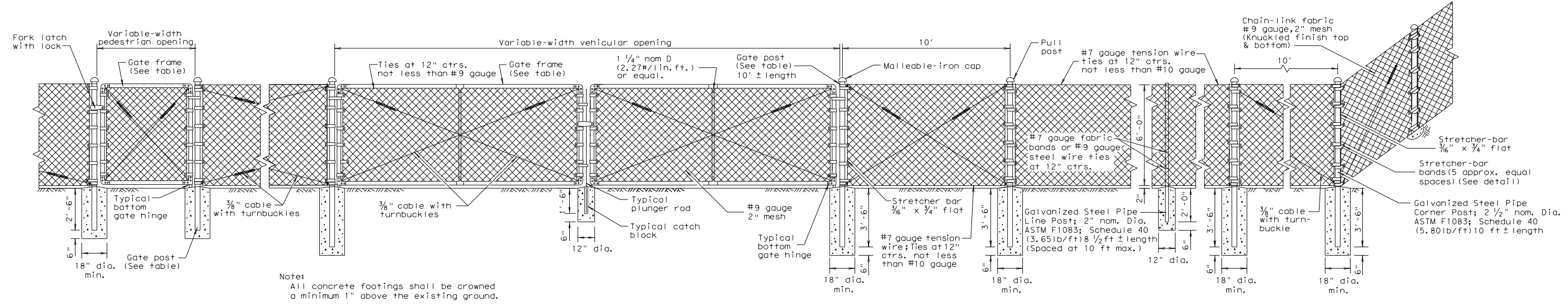
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©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
REVISED MAY, 2013 (VP)	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	92	

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TYPICAL CABLE AND POST ARRANGEMENT



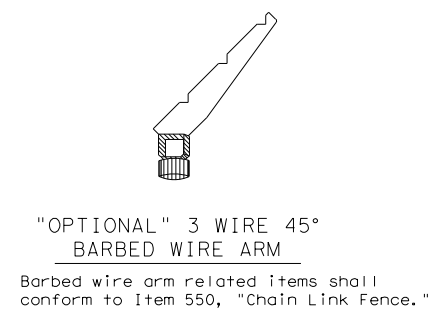
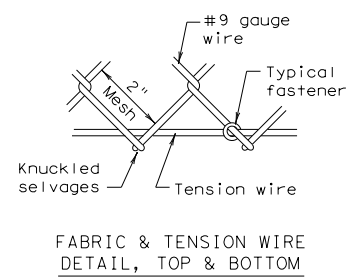
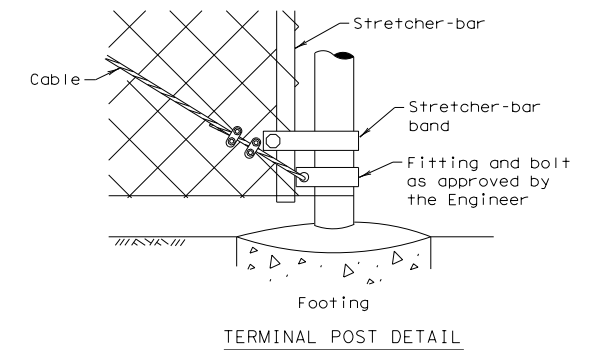
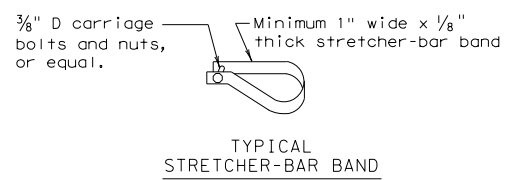
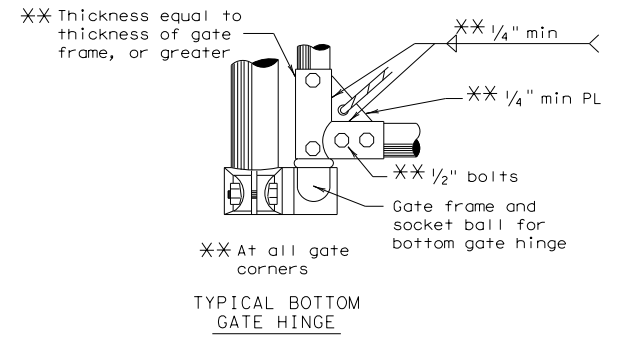
Note:
 All concrete footings shall be crowned a minimum 1" above the existing ground.

CHAIN-LINK BARRIER FENCE (6 FT.)

Foundation designs shown are "minimums" for a 6 ft. fence. Taller fences may require larger foundation designs.

GENERAL NOTES

1. Items hereon shall conform to Item 550, "Chain Link Fence."
2. Typical installation plan may vary as shown elsewhere on the plans or as directed by the Engineer. Location of gates shown elsewhere on plans.
3. Gate-frame members shall be bolted, at frame corners, to joint fittings with four 1/2" bolts per joint.
4. All cable connections are to be made with two 3/8" cable clamps.
5. All pull posts and end posts and their foundations shall have the same respective dimensions as those shown for corner post.
6. All pull post shall be furnished with two stretcher bars.
7. One end of each turnbuckle may be attached directly to fittings with a clevis.
8. Concrete footings are to be crowned at the top to shed water.



GATE (TYPES AND SIZES)			
Single Inclusive		Double Inclusive	
Up to 6'		Up to 12'	
Over 6' to 12'		Over 12' to 26'	
Over 12' to 18'		Over 26' to 36'	
Over 18'		Over 36'	
GATE FRAME (WEIGHT)		GATE POST (WEIGHT)	
SIZE	WT./LIN. FT.	SIZE	WT./LIN. FT.
1 1/2" nom dia.	2.72 Lbs. or equal	2 1/2" nom dia. or equal	5.79 Lbs.
		3 1/2" nom dia. or equal	9.11 Lbs.
		6" nom dia.	18.97 Lbs.
		8" nom dia.	24.70 Lbs.

Design Division Standard

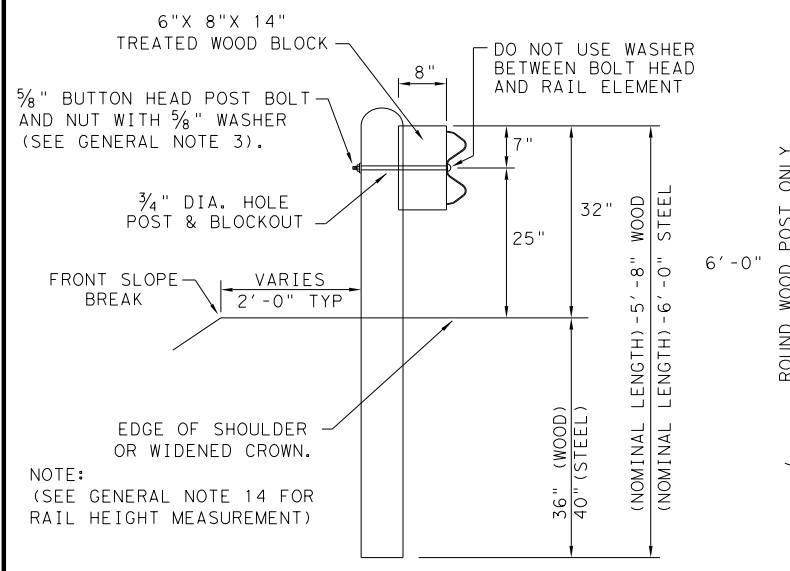
CHAIN LINK FENCE

CLF-10

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© TxDOT 1996	CONT	SECT	JOB	HIGHWAY
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ATL	TITUS		93	

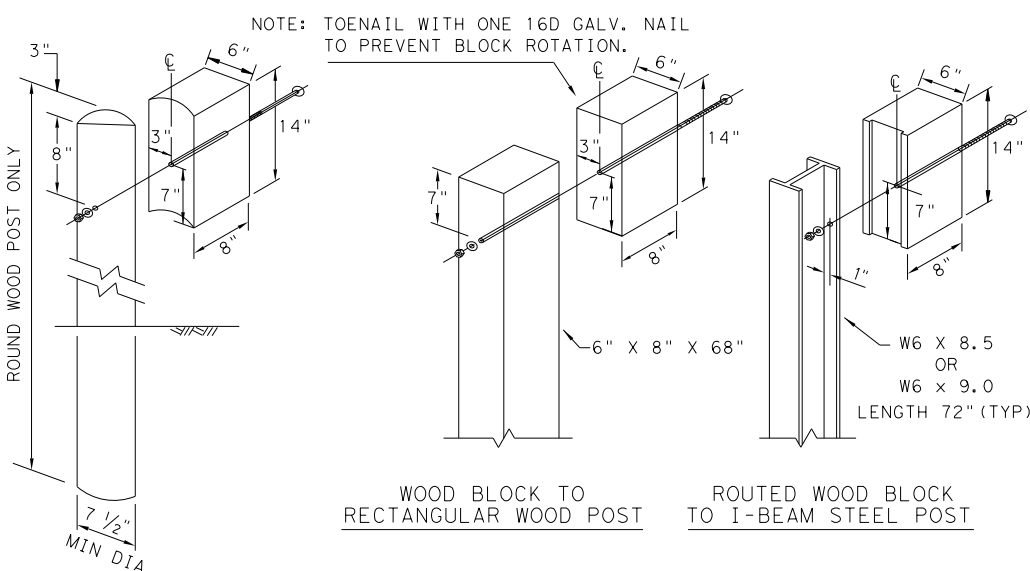
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TYPICAL POST PLACEMENT

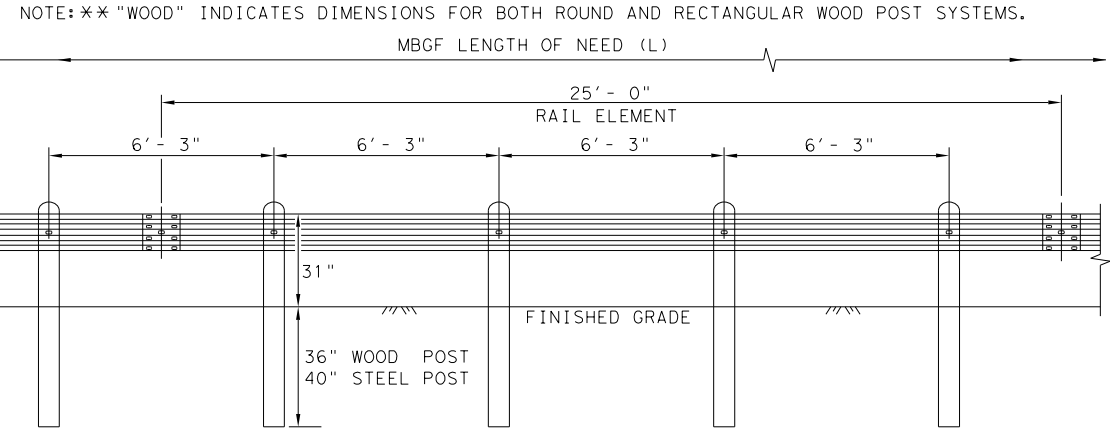
NOTE: (SEE GENERAL NOTE 14 FOR RAIL HEIGHT MEASUREMENT)



WOOD BLOCK TO ROUND WOOD POST
 ROUTED WOOD BLOCK TO I-BEAM STEEL POST

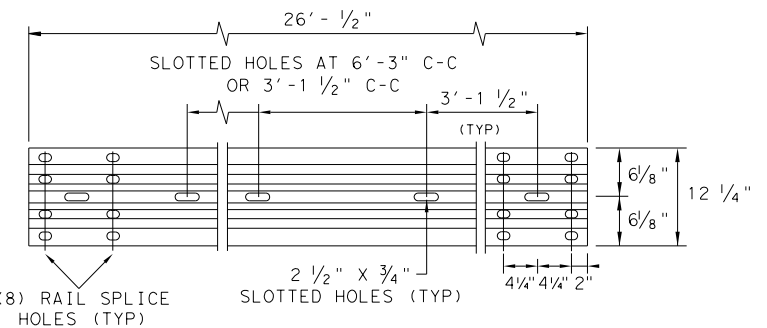
GENERAL NOTES

1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'-0", OR 12'-6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 1/2" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND 5/8" WASHER (FWC16G) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.



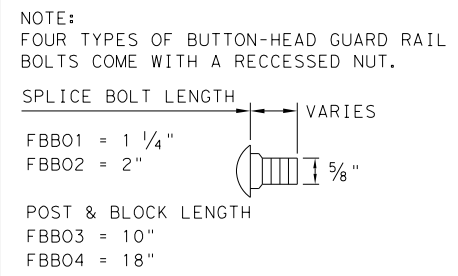
ELEVATION MID-SPAN RAIL SPLICE

SHOWING A 25'-0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



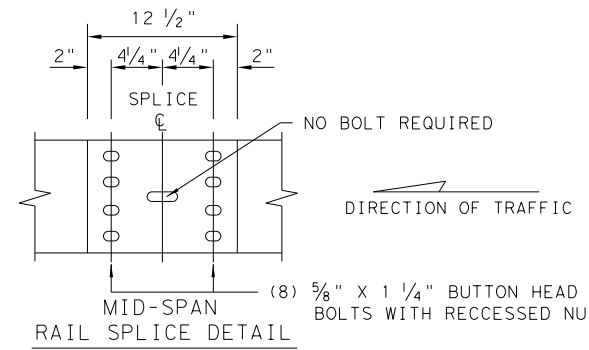
ELEVATION 25'-0" (NOM.) W-BEAM SECTION

NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES. SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.



BUTTON HEAD BOLT

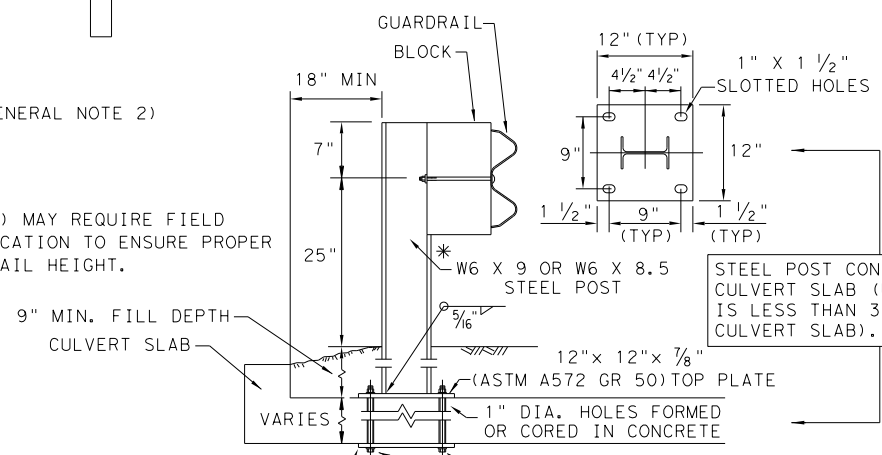
NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



MID-SPAN RAIL SPLICE DETAIL

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.

* POST(S) MAY REQUIRE FIELD MODIFICATION TO ENSURE PROPER GUARDRAIL HEIGHT.



LOW FILL CULVERT POST

- NOTE: TWO INSTALLATION OPTIONS.
1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. 7/8" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS. NOTE: BOLT LENGTH = SLAB PLUS 2 1/4" MIN.
 2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE 7/8" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS 1/4" MIN. BEYOND NUT.

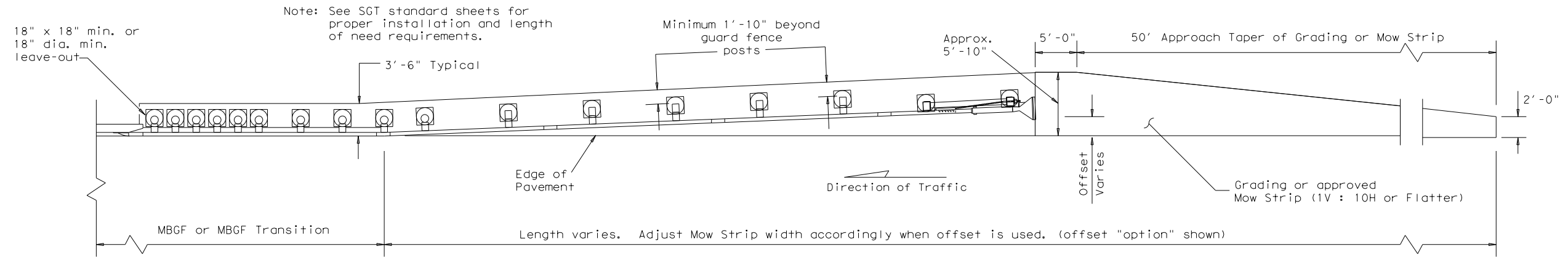
NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

NOTE: TRANSITIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS. SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS. SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

				Design Division Standard
<h2>METAL BEAM GUARD FENCE</h2> <h3>TL-3 MASH COMPLIANT</h3> <h1>GF(31)-19</h1>				
FILE: gcf3119.dgn	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
©TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
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	ATL	TITUS		94

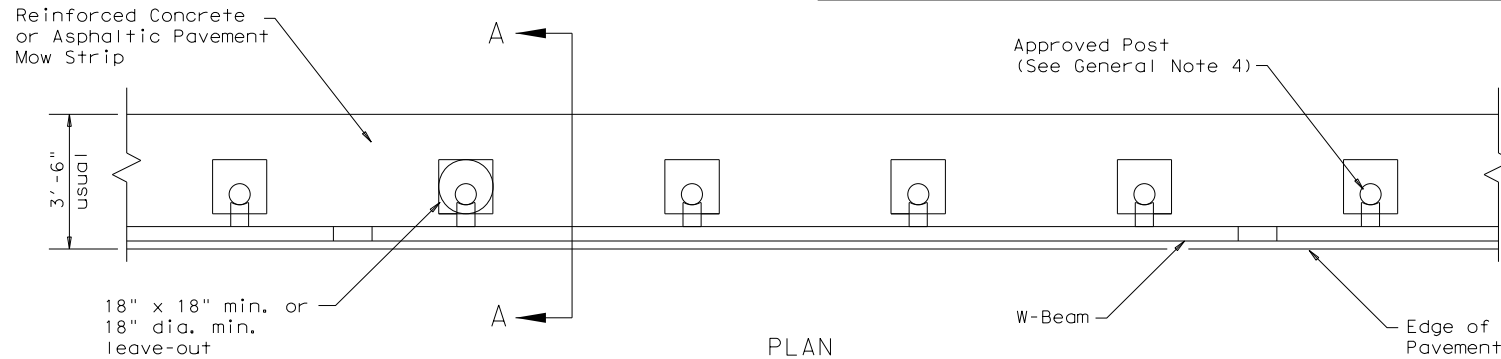
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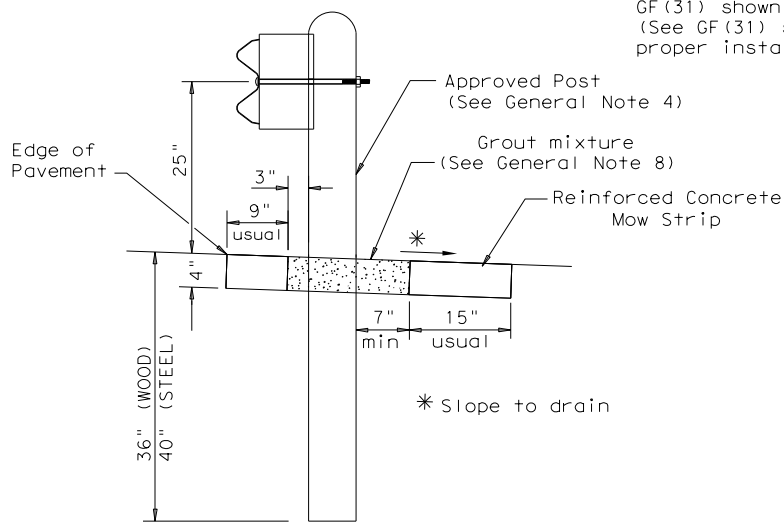
GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS

Note: Site Condition(s)
 Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.
 Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.



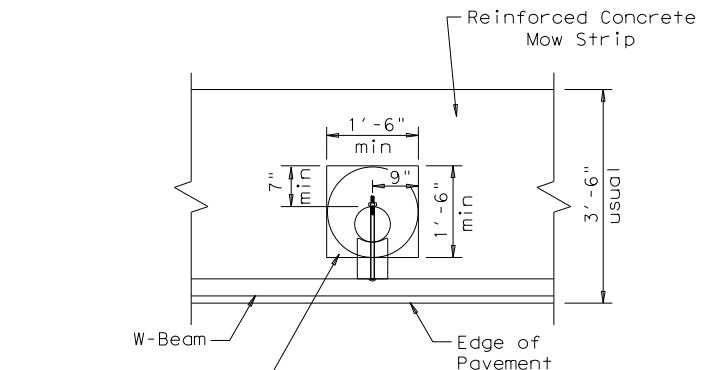
PLAN

GF(31) shown with Mow Strip
 (See GF(31) standard sheet for proper installation)



SECTION A-A

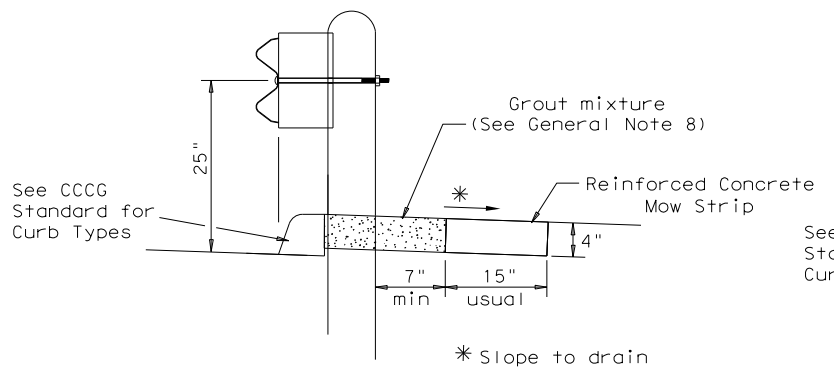
Typical



MOW STRIP DETAIL

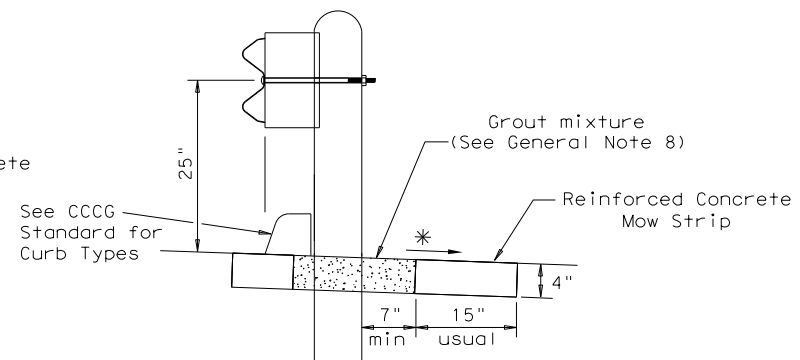
Reinforced Concrete Mow Strip with 18" x 18" Square or 18" Dia. minimum leave-out.

- GENERAL NOTES**
1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
 2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
 3. The leave-out behind the post shall be a minimum of 7".
 4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 1/2" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
 5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
 6. Thickness of the mow strip will be 4".
 7. The limits of payment for reinforced concrete will include leave-outs for the posts.
 8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.



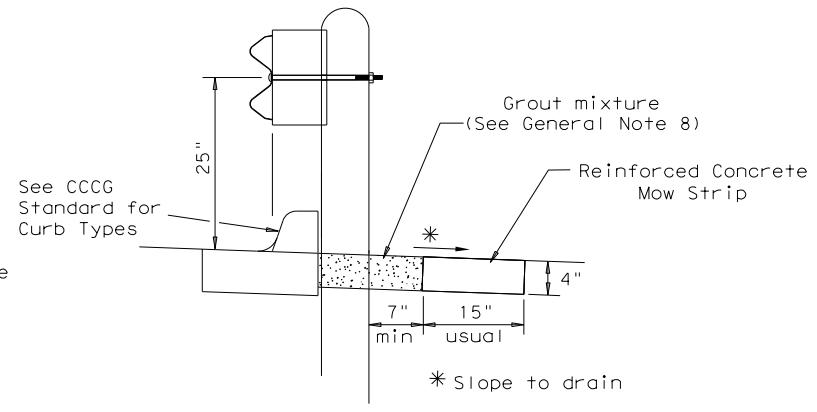
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

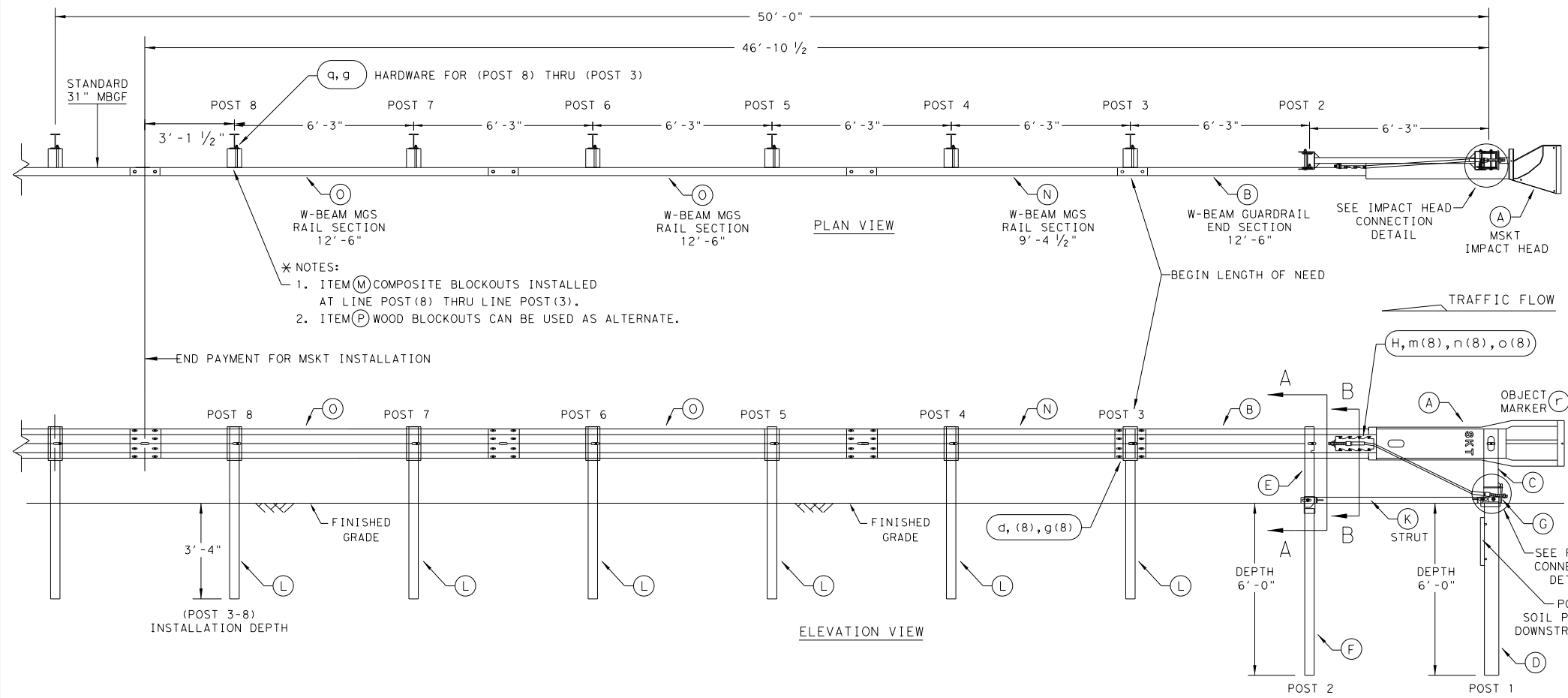
Curb shown on top of mow strip



CURB OPTION (3)

				Design Division Standard
METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT GF(31)MS-19				
FILE: gf31ms19.dgn	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
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REVISIONS	0610	03	095	IH 30
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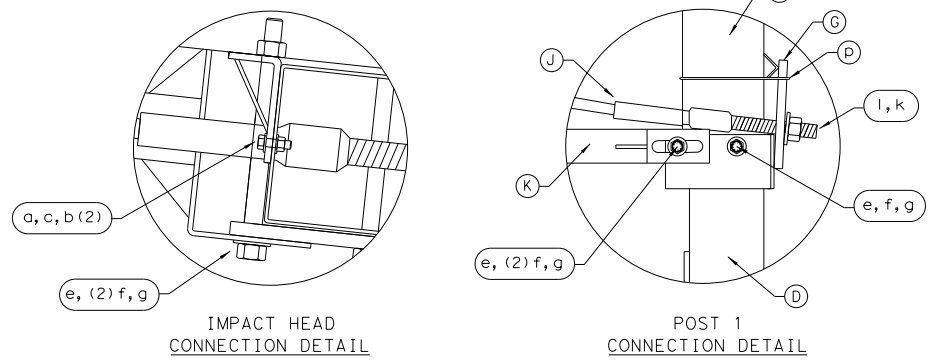
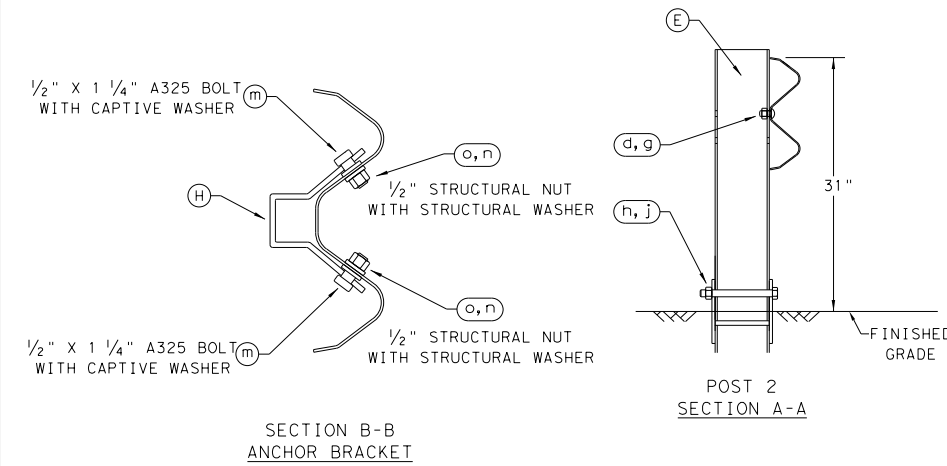
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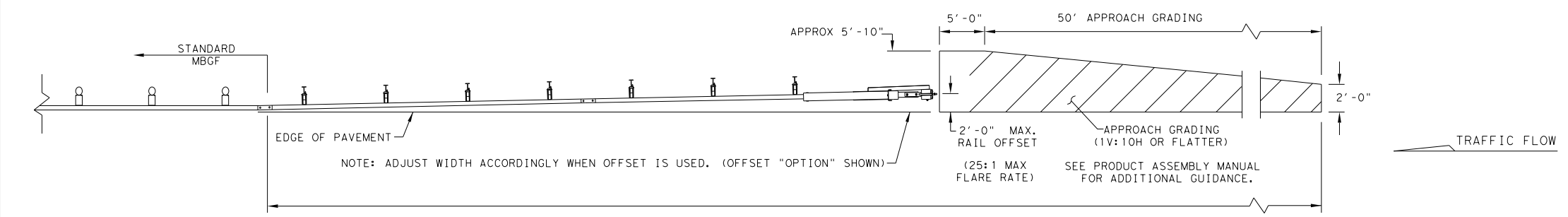
- NOTES:
- ITEM (M) COMPOSITE BLOCKOUTS INSTALLED AT LINE POST (8) THRU LINE POST (3).
 - ITEM (P) WOOD BLOCKOUTS CAN BE USED AS ALTERNATE.

- GENERAL NOTES
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
 - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE: MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION-062717).
 - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
 - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
 - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
 - SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
 - A COMPOSITE MATERIAL BLOCKOUTS THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS OF SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
 - IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, & REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
 - POSTS SHALL NOT BE SET IN CONCRETE.
 - SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
 - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
 - A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCRANCHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
 - THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
 - A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POSTS 3-8 TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST. SPECIAL DRIVING CAP TO BE USED ON LOWER POSTS 1 & 2 TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Go.	SF1303
C	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
D	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
E	1	POST 2 - ASSEMBLY TOP	UHP2A
F	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
G	1	BEARING PLATE	E750
H	1	CABLE ANCHOR BOX	S760
J	1	BCT CABLE ANCHOR ASSEMBLY	E770
K	1	GROUND STRUT	MS785
L	6	W6X9 OR W6X8.5 STEEL POST	P621
M	6	COMPOSITE BLOCKOUTS	CBSP-14
N	1	W-BEAM MGS RAIL SECTION (9'-4 1/2")	G12025
O	2	W-BEAM MGS RAIL SECTION (12'-6")	G1203A
P	6	WOOD BLOCKOUT 6" X 8" X 14"	P675
Q	1	W-BEAM MGS RAIL SECTION (25'-0")	G1209
SMALL HARDWARE			
a	2	5/8" x 1" HEX BOLT (GRD 5)	B5160104A
b	4	5/8" WASHER	W0516
c	2	5/8" HEX NUT	N0516
d	25	5/8" Dia. x 1 1/4" SPLICE BOLT (POST 2)	B580122
e	2	5/8" Dia. x 9" HEX BOLT (GRD A449)	B580904A
f	3	5/8" WASHER	W050
g	33	5/8" Dia. H.G.R NUT	N050
h	1	3/4" Dia. x 8 1/2" HEX BOLT (GRD A449)	B340854A
j	1	3/4" Dia. HEX NUT	N030
k	2	1 ANCHOR CABLE HEX NUT	N100
l	2	1 ANCHOR CABLE WASHER	W100
m	8	1/2" x 1 1/4" A325 BOLT WITH CAPTIVE WASHER	SB12A
n	8	1/2" STRUCTURAL NUTS	N012A
o	8	1 1/8" O.D. x 3/8" I.D. STRUCTURAL WASHERS	W012A
p	1	BEARING PLATE RETAINER TIE	CT-100ST
q	6	5/8" x 10" H.G.R. BOLT	B581002
r	1	OBJECT MARKER 18" X 18"	E3151



ALTERNATIVE ITEMS NOT SHOWN. * *
 * ITEM (P) 8" WOOD-BLOCKOUT
 * * ITEM (Q) 25' GUARD FENCE PANEL



NOTE: TxDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE MSKT END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

Texas Department of Transportation

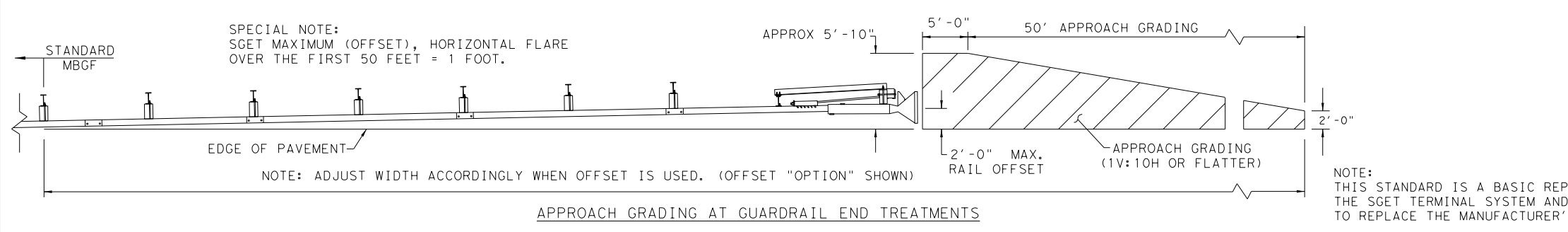
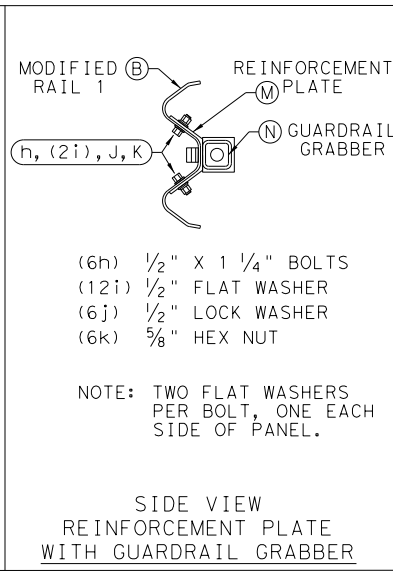
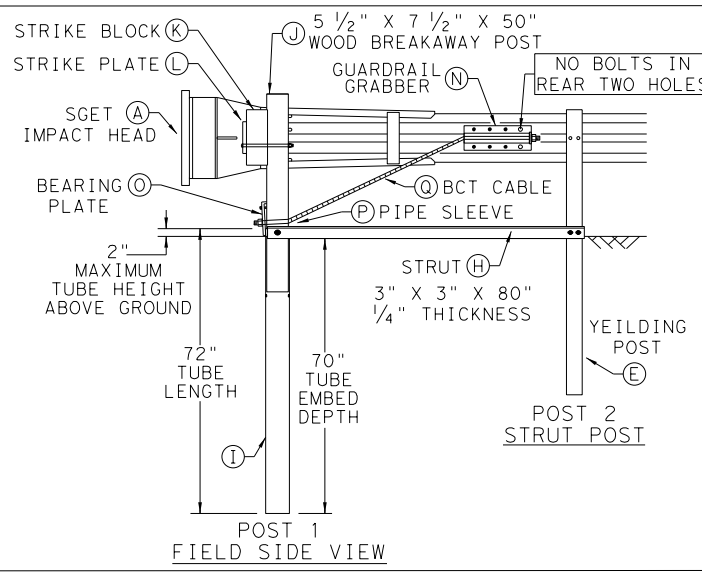
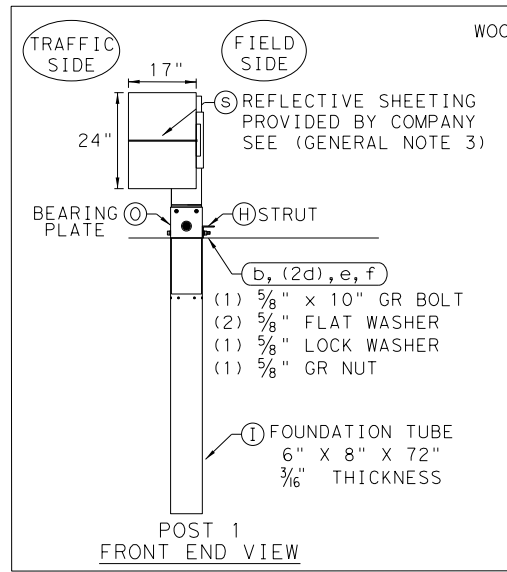
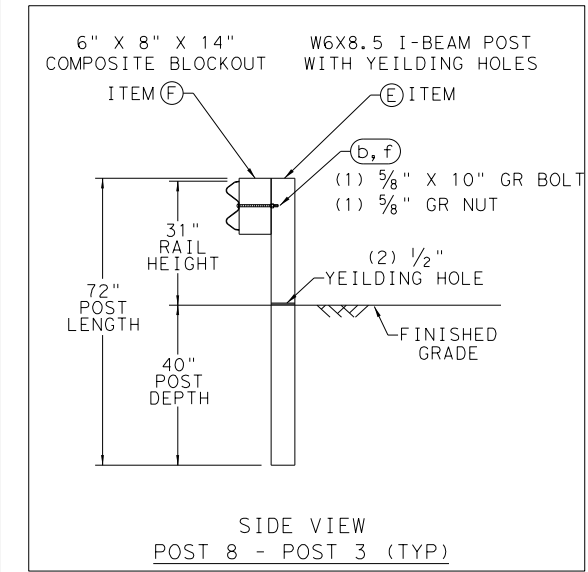
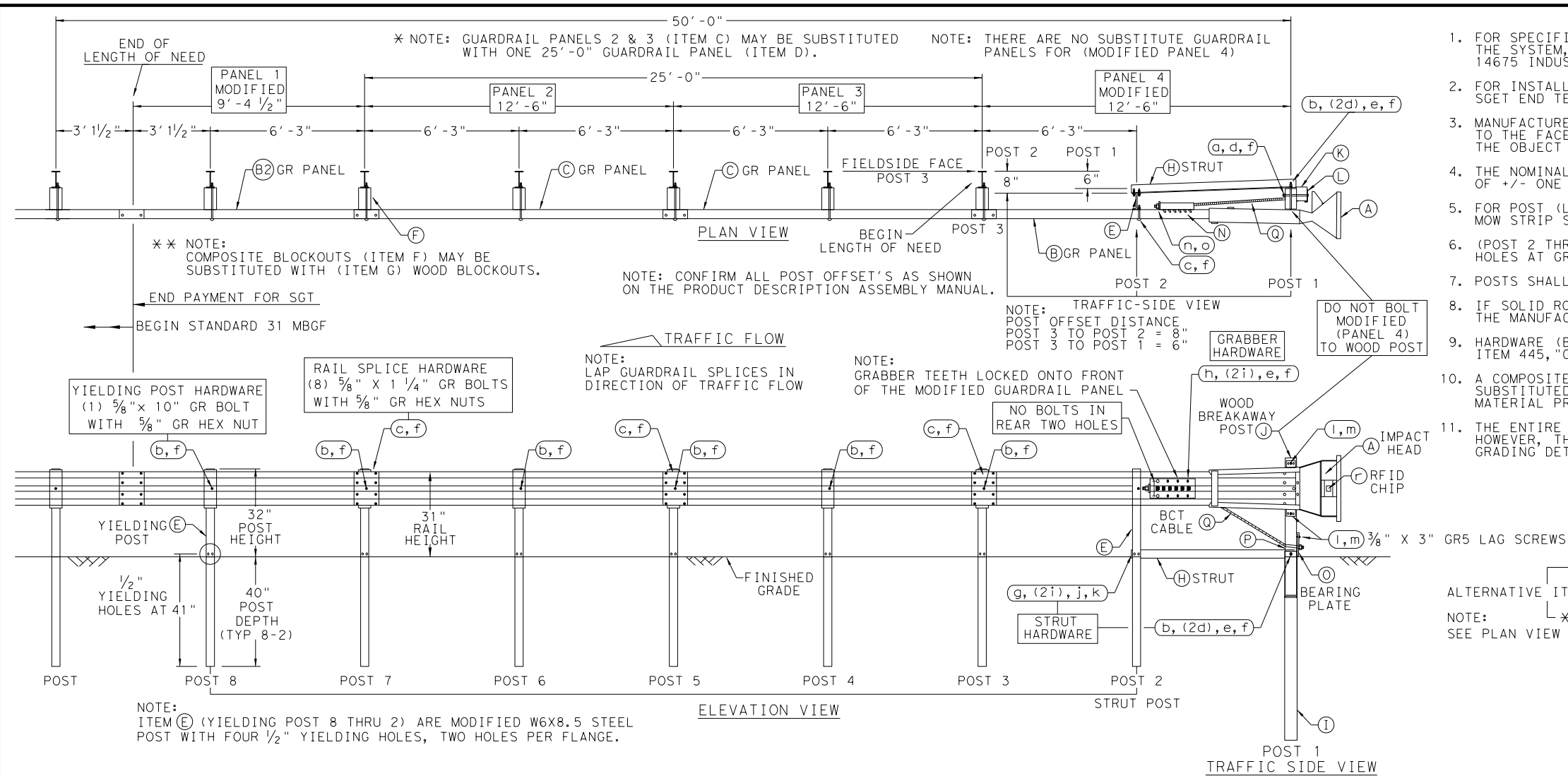
Design Division Standard

SINGLE GUARDRAIL TERMINAL
MSKT-MASH-TL-3

SGT (12S) 31-18

FILE: sgt12s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL
© TxDOT: APRIL 2018	CONT SECT	JOB	HIGHWAY	
REVISIONS		0610 03	095	IH 30
DIST	COUNTY	SHEET NO.		
ATL	TITUS	96		

DATE: 6/3/2024
 FILE: P:\16\35\04\Des\ign\Civil\Standards\Roadway\sgt153120.dgn
 DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
 - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL.
 - MANUFACTURER WILL APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" TO THE FACE PLATE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. THE OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
 - THE NOMINAL HEIGHT OF THE GUARDRAIL BEAM IS 31 INCHES WITH A TOLERANCE OF +/- ONE INCH.
 - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
 - (POST 2 THROUGH POST 8) ARE MODIFIED STEEL-YIELDING POSTS WITH YIELDING HOLES AT GROUND LEVEL. THERE ARE NO SUBSTITUTE POSTS.
 - POSTS SHALL NOT BE SET IN CONCRETE.
 - IF SOLID ROCK IS ENCOUNTERED FOR ANY OF THE POSTS IN THE SYSTEM, CONTACT THE MANUFACTURER FOR SPECIFIC INSTALLATION GUIDANCE.
 - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
 - A COMPOSITE MATERIAL BLOCKOUT THAT MEETS DMS-7210 REQUIREMENTS MAY BE SUBSTITUTED FOR AN APPROVED WOOD BLOCKOUT. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST (MPL) FOR CERTIFIED PRODUCERS.
 - THE ENTIRE SYSTEM MUST BE INSTALLED IN A STRAIGHT LINE WITHOUT ANY CURVE. HOWEVER, THE SYSTEM CAN BE OFFSET BY TWO FEET AS SHOWN ON THE APPROACH GRADING DETAIL TO HELP OFF-SET THE IMPACT HEAD FROM SHOULDER OF THE ROAD.

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
H	1	STRUT 3" X 3" X 80" X 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" X 3/16"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" X 7 1/2" X 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBLK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GGR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81
SMALL HARDWARE			
a	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPLICE BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563HD HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M

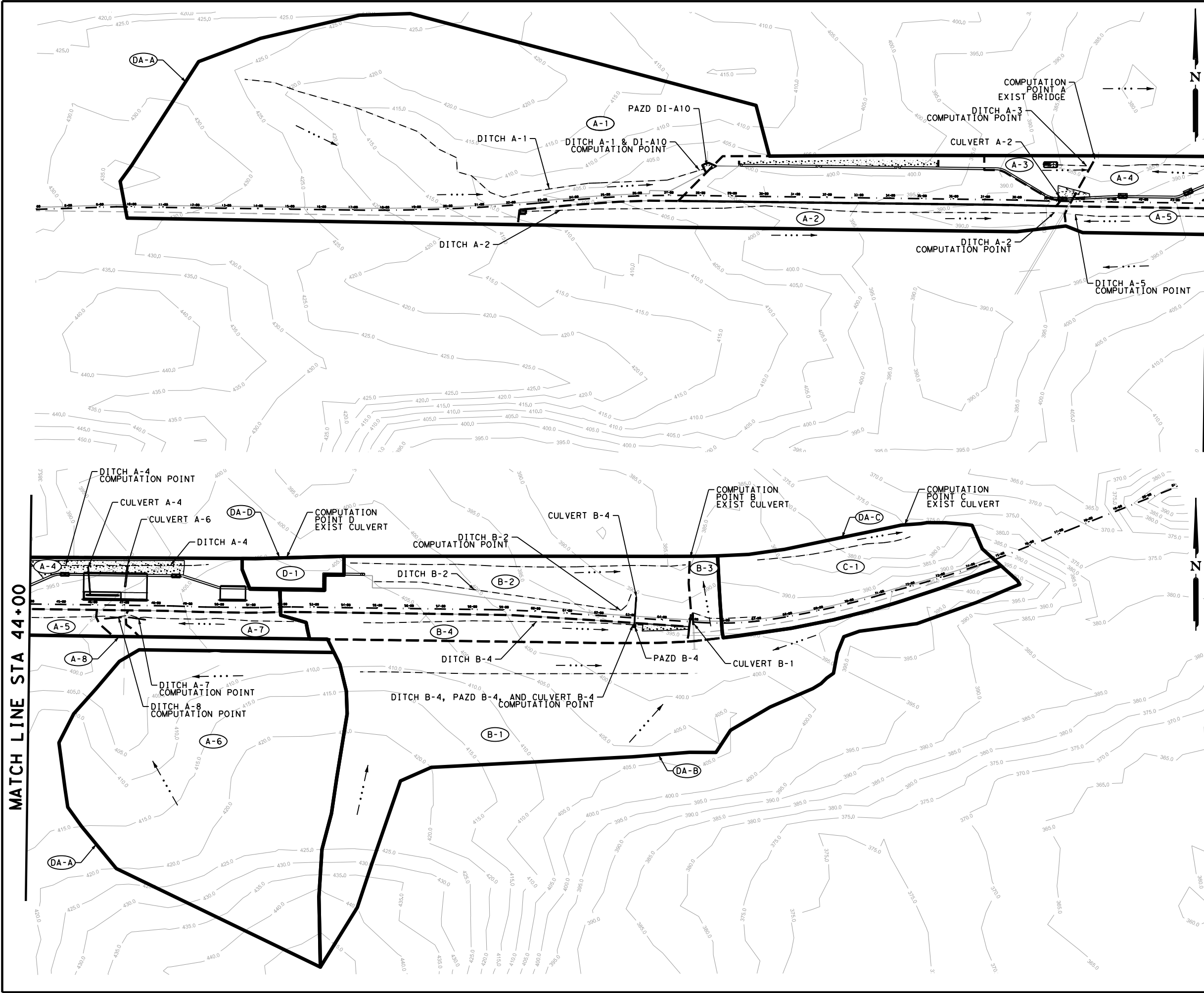
Design Division Standard

SPIG INDUSTRY, LLC
 SINGLE GUARDRAIL TERMINAL
 SGET - TL-3 - MASH
 SGT (15) 31-20

FILE: sgt153120.dgn	DN: TXDOT	CK: KM	DW: VP	CK: VP
© TXDOT: APRIL 2020	CONT: 03	SECT: 095	JOB: IH 30	HIGHWAY: 97
REVISIONS	0610	03	095	IH 30
DIST: ATL	COUNTY: TITUS	SHEET NO.: 97		

Plotted on: 6/3/2024

Design File name: P:\116.35\04\Design\Civil\Drainage\1163504DRN_AREA_MAP01.dgn



MATCH LINE STA 44+00

MATCH LINE STA 44+00

LEGEND

- DRAINAGE AREA BOUNDARY
- INTERIOR DRAINAGE AREA BOUNDARY
- EXISTING CONTOUR
- FLOW ARROW
- X-X DRAINAGE AREA ID
- DITCH FLOW LINE

DESIGN

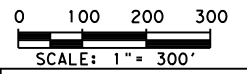
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY

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

Texas Department of Transportation
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**WB IH 30 CMV STATION
 PROPOSED DRAINAGE
 AREA MAP**

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CHK DGN#	6	TEXAS		IH 30
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK DWG#	ATL	TITUS	0610	03
			095	98

Plotted on: 6/3/2024

PROPOSED DRAINAGE RUNOFF COEFFICIENTS							RATIONAL METHOD				
DISCHARGE TO	DRAINAGE AREA	IMPERVIOUS (ACRES)	COMMERICAL (ACRES)	UNDEVELOPED (ACRES)	TOTAL AREA	COMPOSITE RUNOFF COEFFICIENT (C)	Tc	I10	I100	Q 10	Q 100
		0.95	0.80	0.35	ACRES		MIN	IN/HR	CFS		
COMP A	DA-A	11.85	1.09	38.50	51.44	0.50	20.25	4.80	6.89	123.5	177.3
PAZD DA-A10 & DITCH A-1	A-1	2.65	1.09	18.63	22.37	0.45	18.87	4.97	7.14	50.1	71.9
DITCH A-2	A-2	1.41	0.00	1.71	3.12	0.63	19.61	4.87	7.00	9.6	13.8
DITCH A-3	A-1+A-3	6.14	0.00	20.43	26.57	0.49	10.00	6.56	9.38	85.5	122.2
DITCH A-4	A-4	2.25	0.00	2.00	4.25	0.67	11.93	6.12	8.76	17.5	25.0
DITCH A-5	A-5	0.60	0.00	0.67	1.27	0.81	10.00	6.12	8.76	6.3	9.0
CULVERT A-6	A-6+A-7+A-8	1.44	0.00	15.01	16.45	0.41	12.79	5.94	8.51	40.1	57.4
DITCH A-7	A-7	0.50	0.00	0.66	1.16	0.61	10.00	6.14	8.81	4.3	6.2
DITCH A-8	A-8	0.08	0.00	0.11	0.19	0.61	10.00	6.14	8.81	0.7	1.0
COMP D	D-1	0.05	0.00	0.61	0.66	0.40	10.00	6.56	9.38	1.8	2.5
COMP B	DA-B	4.92	0.00	16.14	21.88	0.51	17.06	5.22	7.49	58.3	83.6
CULVERT B-1	B-1	2.85	0.00	12.67	15.52	0.47	16.31	5.33	7.65	38.9	55.9
DITCH B-2	B-2	1.66	0.00	3.42	5.08	0.55	19.61	4.87	7.00	13.6	19.6
DITCH, PAZD & CULVERT B-4	B-4	1.08	0.00	0.98	2.06	0.67	10.00	6.56	9.38	9.1	13.0
COMP C	C-1	1.04	0.00	3.48	4.52	0.49	10.00	6.56	9.38	14.6	20.8

NOTES

- C-VALUES CALCULATED USING 2019 TXDOT HYDRAULIC DESIGN MANUAL TABLE 4-10 & 4-11.
- TIME OF CONCENTRATION CALCULATED USING TXDOT HYDRAULIC DESIGN MANUAL EQUATION 4-16.
- 10 MINUTE MINIMUM USED FOR TIME OF CONCENTRATION.
- INTENSITIES FOUND USING TXDOT EDB-2019 SPREADSHEET INCLUDING ATLAS-14 DATA.

DESIGN

INTERIM REVIEW

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

DITCH COMPUTATIONS - RATIONAL METHOD												
DITCH	DRAINAGE AREAS	COMPUTATION LOCATION		LONGITUD. SLOPE (%)	DITCH DEPTH (ft)	N-VALUE	FRONT SLOPE (H:1)	BACK SLOPE (H:1)	DITCH FLOW VELOCITY (FT/S)		DITCH FLOW DEPTH (FT)	
		STA.	O. S.						V10	V100	D10	D100
A1	A1	28+11	85' LT	1.08	2.31	0.035	5	4	3.87	4.24	1.70	1.94
A2	A2	28+70	39' RT	2.45	3.18	0.035	7	8	2.21	3.36	0.40	0.74
A3	A1+A3	39+00	116' LT	1.81	2.79	0.035	4	6	5.23	5.74	1.81	2.06
A4	A4	44+83	123' LT	1.52	1.67	0.015	2	10	5.85	6.43	0.70	0.79
A5	A5	39+15	46' RT	1.02	4.81	0.035	4	4	2.25	2.49	0.79	0.90
A7	A7	47+60	44' RT	1.49	3.42	0.035	4	4	2.44	2.66	0.67	0.77
A8	A8	46+40	43' RT	2.92	3.35	0.035	4	4	1.96	2.13	0.30	0.34
B2	B2	62+97	20' LT	1.27	1.81	0.035	4	4	2.95	3.24	1.07	1.23
B4	B4	62+85	27' RT	1.41	1.17	0.035	4	4	2.86	3.13	0.89	1.02

REV. NO.	DATE	DESCRIPTION	BY



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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1002800



WB IH 30 CMV STATION

PROPOSED DRAINAGE CALCULATIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	99

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Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Drainage\1163504DRN_DC01.dgn

CURB INLET COMPUTATIONS															
INLET				DRAINAGE AREA NO	Q10 FROM AREA CFS	CARRY OVER FLOW CFS	TOTAL CFS	LONGITUDINAL ROAD SLOPE FT/FT	DEPTH OF FLOW FT	ALLOWABLE PONDED WIDTH FT	PONDED WIDTH FT	LENGTH INLET REQ'D FT	LENGTH INLET ACTUAL FT	BY PASS FLOW CFS	REMARKS
NO	TYPE	CONTROL	STATION												
CI-A1	PCO W/1 EXT (Left) (5x5)	94.00'LT	30+70.00	CI-A1	5.3		5.3	0.0154	0.24	98.00	12.16	21.3	9.5	1.84	C.O. TO CI-A2
CI-A2	PCO W/1 EXT (Left) (5x5)	94.00'LT	33+00.00	CI-A2	4.9	1.84	6.7	0.0154	0.27	98.00	13.28	24.3	9.5	2.76	C.O. TO CI-A3
CI-A3	PCO W/1 EXT (Left) (5x5)	94.00'LT	35+50.00	CI-A3	5.6	2.76	8.4	0.0075	0.33	98.00	16.51	23.3	9.5	3.27	C.O. TO CI-A4
CI-A4	2- PCO (5x5)	94.00'LT	37+25.49	CI-A4	5.7	3.27	9.0	---	0.46	98.00	22.74	0.0	10.0		*SUMP
CI-A5	SIDEWALK (TYPE A)	4.68'LT	39+44.45	CI-A5	0.7		0.7	0.0050	0.14	8.00	6.99	5.9	20.0		
CI-A6	SIDEWALK (TYPE A)	14.00'LT	41+35.00	CI-A6	1.0		1.0	0.0100	0.14	18.00	6.94	8.3	20.0		
CI-A7	SIDEWALK (TYPE A)	31.25'LT	43+45.48	CI-A7	2.0	0.23	2.2	0.0100	0.19	33.00	9.51	13.1	20.0		
CI-A8	SIDEWALK (TYPE A)	92.68'LT	45+10.86	CI-A8	5.7		5.7	0.0150	0.25	96.00	12.52	24.0	20.0	0.23	C.O. TO CI-A7

INLET RUNOFF COMPUTATIONS - RATIONAL METHOD									
AREA - ID	AREA (ac)	C	CA	Tc (MIN)	I10 (IN/HR)	Q10 (CFS)	I100 (IN/HR)	Q100 (CFS)	TO INLET
CI-A1	0.85	0.95	0.81	10	6.56	5.3	9.38	7.6	CI-A1
CI-A2	0.79	0.95	0.75	10	6.56	4.9	9.38	7.0	CI-A2
CI-A3	0.90	0.95	0.86	10	6.56	5.6	9.38	8.0	CI-A3
CI-A4	0.91	0.95	0.87	10	6.56	5.7	9.38	8.1	CI-A4
CI-A5	0.11	0.95	0.11	10	6.56	0.7	9.38	1.0	CI-A5
CI-A6	0.15	0.95	0.15	10	6.56	1.0	9.38	1.4	CI-A6
CI-A7	0.32	0.95	0.30	10	6.56	2.0	9.38	2.8	CI-A7
CI-A8	0.91	0.95	0.87	10	6.56	5.7	9.38	8.1	CI-A8
CI-A9	0.61	0.95	0.58	10	6.56	3.8	9.38	5.4	CI-A9

PAZD-CZ INLET COMPUTATIONS									
INLET	SIZE	EQUATION COEFFICIENT	INLET HEAD FT	Q1	Q2	Q10	Q100	Q2>Q10?	Q2>Q100?
				CFS	CFS	CFS	CFS		
DI-A10	2-5'X5'	0.67	1.0	6.05	96.80	50.1	71.9	YES	YES
B-4	3'X3'	0.67	1.0	3.36	26.88	9.1	13.0	YES	YES

Q1: INLET CAPACITY FOR SINGLE OPENING
Q2: INLET CAPACITY FOR ALL 8 OPENINGS


- * NOTES:
 1. GRATE ON TOP OF INLET WAS IGNORED IN CAPACITY ANALYSIS.
 2. CAPACITY CALCULATED USING 2019 TXDOT HYDRAULIC DESIGN MANUAL EQUATION 10-16.

STORM DRAIN COMPUTATIONS																		
LINE #	FROM	TO	LENGTH (FT)	TC (MIN)	CUMULATIVE AREA (ACRE)	I10 (in/hr)	Q10 (CFS)	DESIGN										
								STR SIZE	SHAPE	MATERIAL	# OF BARRELS	MANNING'S N	SLOPE %	CAP (CFS)	VEL (FT/SEC)	HGL UPSTREAM	HGL DOWNSTREAM	FREQ (YR)
A1	DI-A10	CI-A1	239	18.83	23.22	4.97	50.0	36" RCP	Circular	Concrete	1.00	0.012	0.50	55.0	8.6	394.3	397.2	10
A2	CI-A1	CI-A2	225	19.30	24.00	4.91	51.3	36" RCP	Circular	Concrete	1.00	0.012	0.50	55.0	8.7	390.8	392.2	10
A3	CI-A2	CI-A3	245	19.80	24.90	4.85	53.4	36" RCP	Circular	Concrete	1.00	0.012	0.50	55.0	8.9	387.4	388.9	10
A4	CI-A3	CI-A4	167	20.20	25.82	4.80	56.4	42" RCP	Circular	Concrete	1.00	0.012	0.30	64.2	8.1	386.0	386.8	10
A5	CI-A4	OF-A	154	20.55	25.82	---	63.2	42" RCP	Circular	Concrete	1.00	0.012	0.30	64.2	8.6	385.0	386.0	10

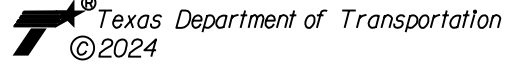
DESIGN
INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

REV. NO.	DATE	DESCRIPTION	BY



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



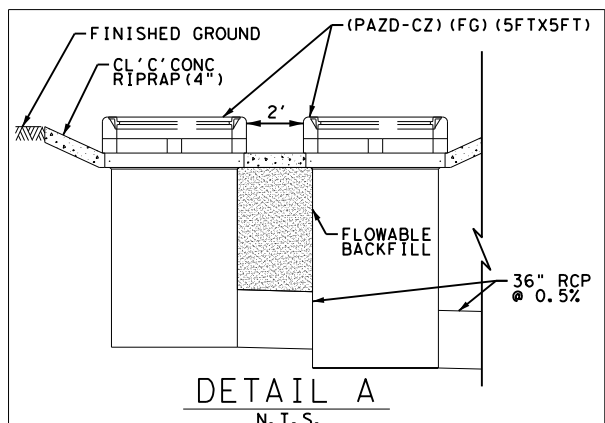
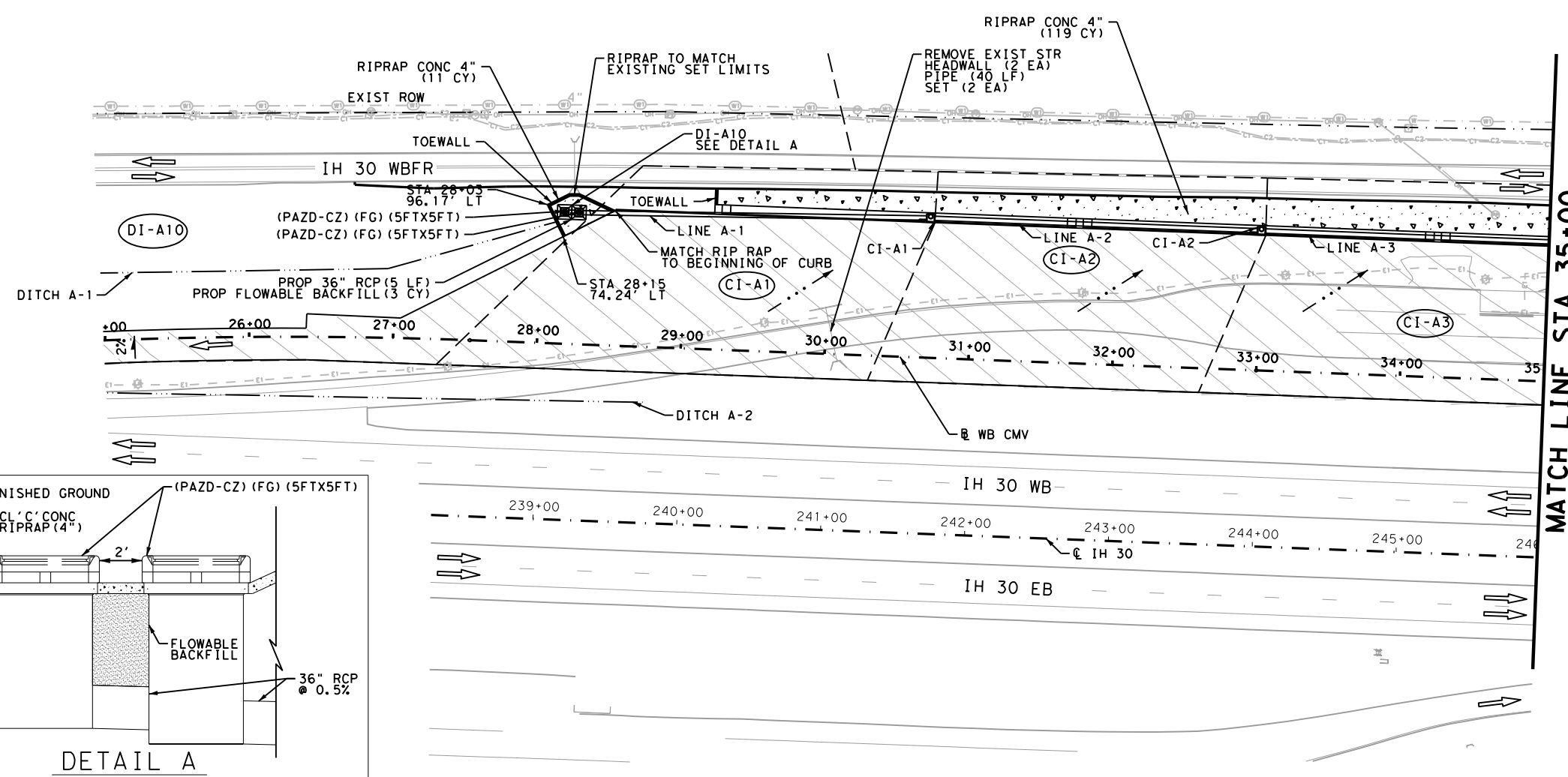
Texas Department of Transportation
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WB IH 30 CMV STATION
PROPOSED DRAINAGE
CALCULATIONS

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	100

Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Drainage\PAZD\1163504drn03.dgn



LEGEND

- ROW
- INTERNAL DRAINAGE AREA
- PROPOSED CONTOURS
- FLOW ARROW
- (CI-XX) CURB INLET DRAINAGE AREA
- PROPOSED DITCH FLOW LINE

NOTES

1. ALL CONC RIPRAP SHALL HAVE 8" X 12" TOE WALL
2. PRECAST BASE TO BE GROUTED TO PROVIDE POSITIVE DRAINAGE. SUBSIDIARY TO INLET ITEMS.

DESIGN

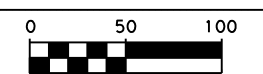
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

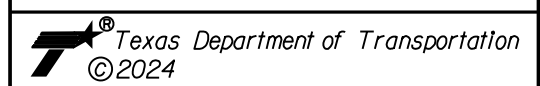
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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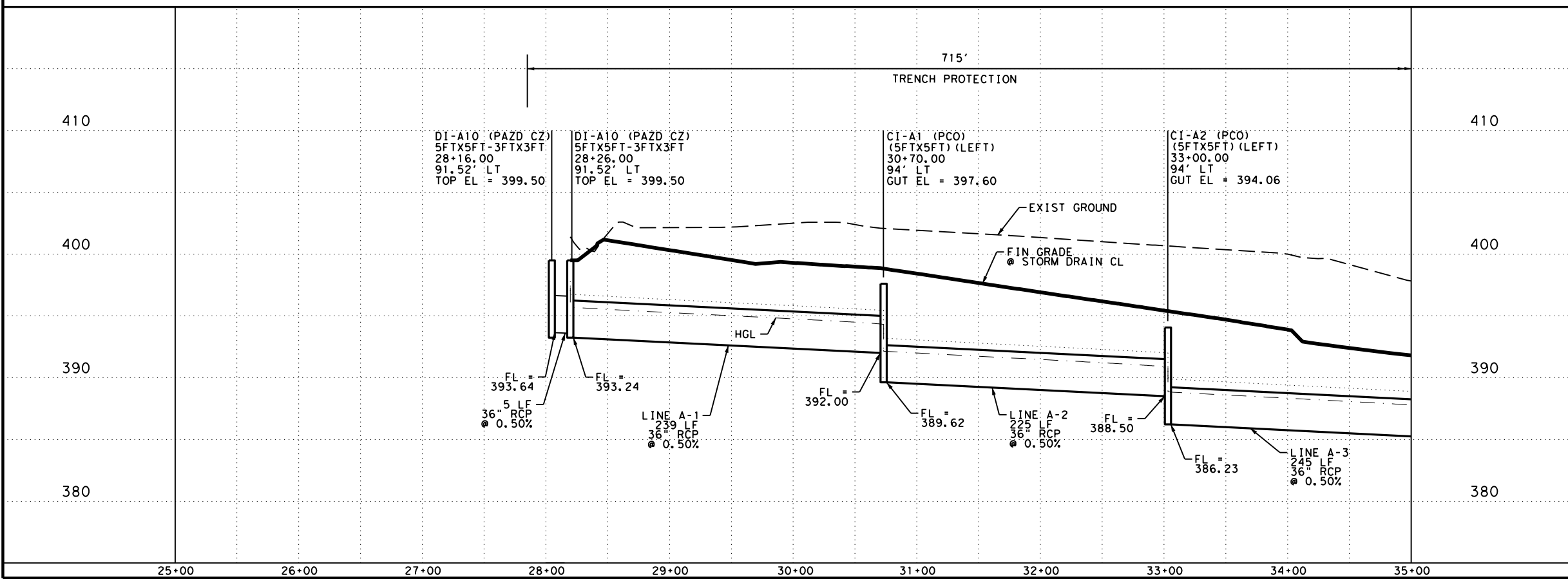


**WB IH 30 CMV STATION
 STORM DRAIN
 PLAN AND PROFILE**

STA 25+00 TO STA 35+00

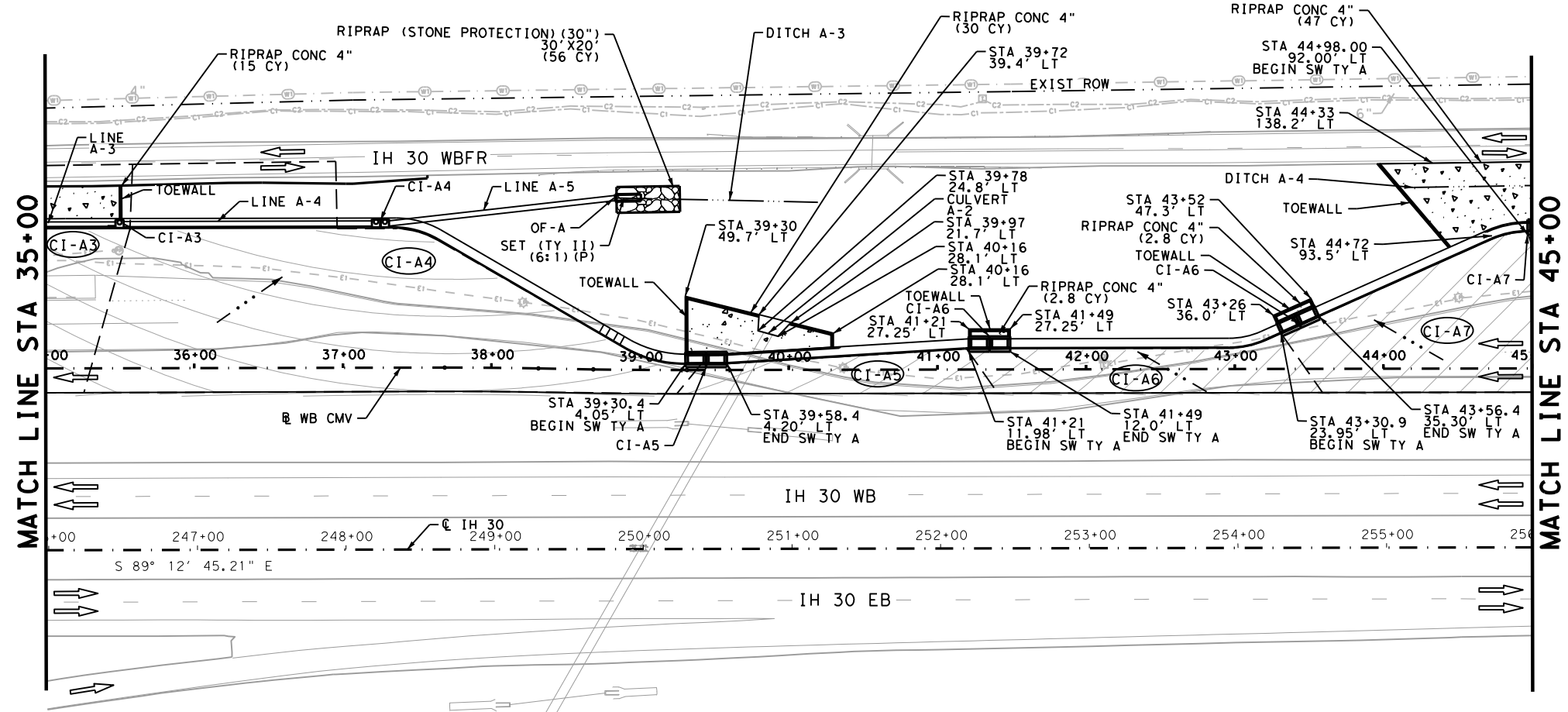
SHEET 1 OF 4

DGN:	FED. NO. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	101



Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Drainage\WP&P\1163504drn04.dgn



LEGEND

- ROW
- INTERNAL DRAINAGE AREA
- PROPOSED CONTOURS
- FLOW ARROW
- CI-XX CURB INLET DRAINAGE AREA
- PROPOSED DITCH FLOW LINE

NOTES

1. ALL CONC RIPRAP SHALL HAVE 8" X 12" TOE WALL
2. PRECAST BASE TO BE GROUDED TO PROVIDE POSITIVE DRAINAGE. SUBSIDIARY TO INLET ITEMS.

DESIGN

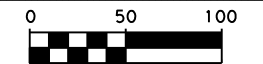
INTERIM REVIEW

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



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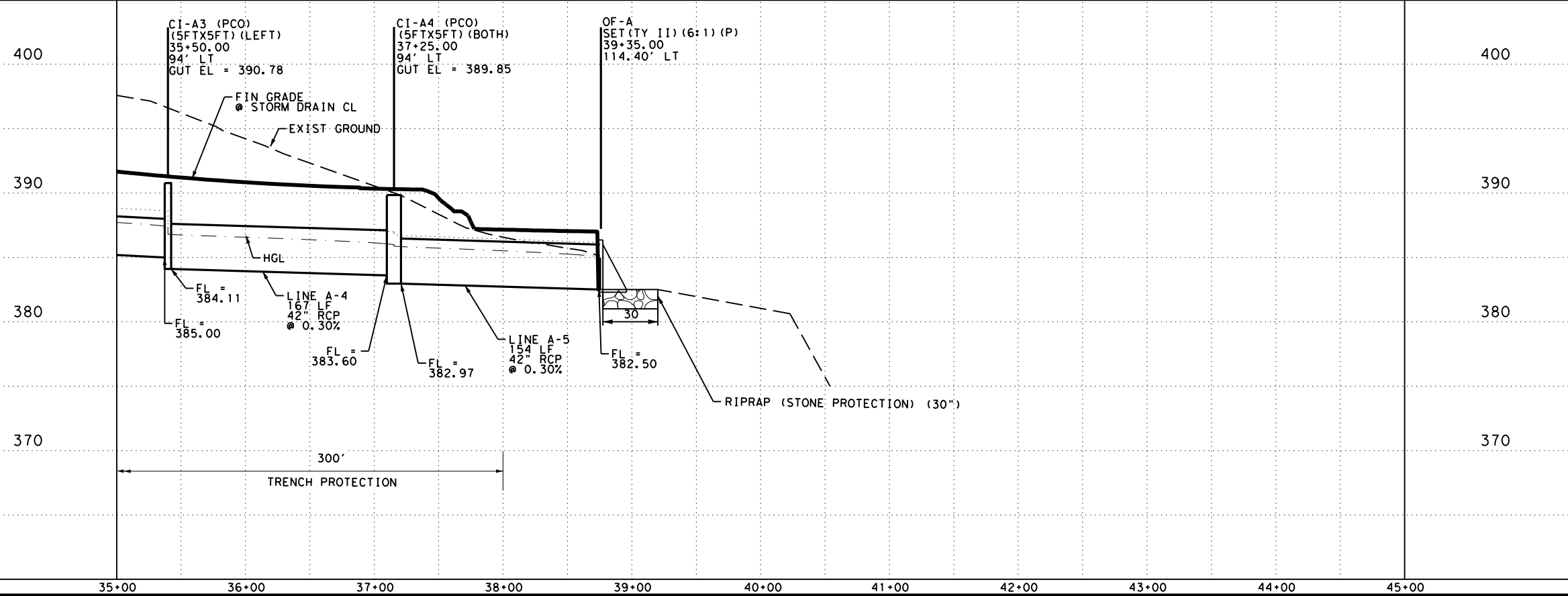


**WB IH 30 CMV STATION
 STORM DRAIN
 PLAN AND PROFILE**

STA 35+00 TO STA 45+00

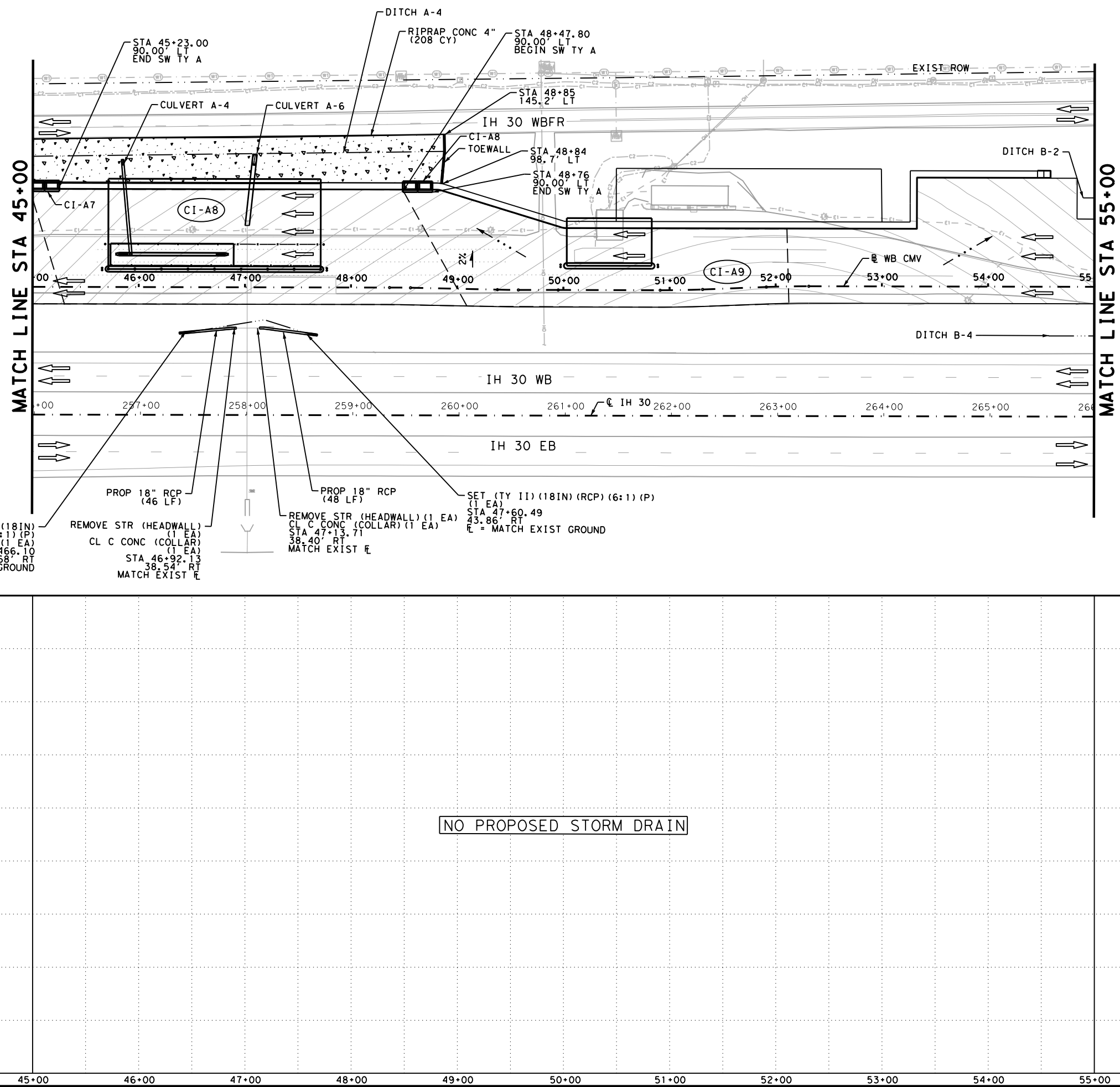
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CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	102



Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Drainage\WP\1163504drn05.dgn



LEGEND

- ROW
- - - INTERNAL DRAINAGE AREA
- PROPOSED CONTOURS
- > FLOW ARROW
- (CI-XX) CURB INLET DRAINAGE AREA
- PROPOSED DITCH FLOW LINE

NOTES

1. ALL CONC RIPRAP SHALL HAVE 8" X 12" TOE WALL
2. PRECAST BASE TO BE GROUTED TO PROVIDE POSITIVE DRAINAGE. SUBSIDIARY TO INLET ITEMS.

DESIGN

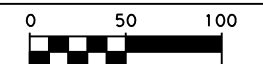
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

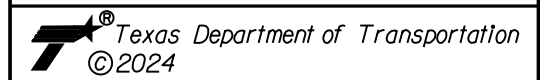


SCALE: PLAN 1" = 100' PROFILE: 1" = 10'

REV. NO.	DATE	DESCRIPTION	BY



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**WB IH 30 CMV STATION
 STORM DRAIN
 PLAN AND PROFILE**

STA 45+00 TO STA 55+00

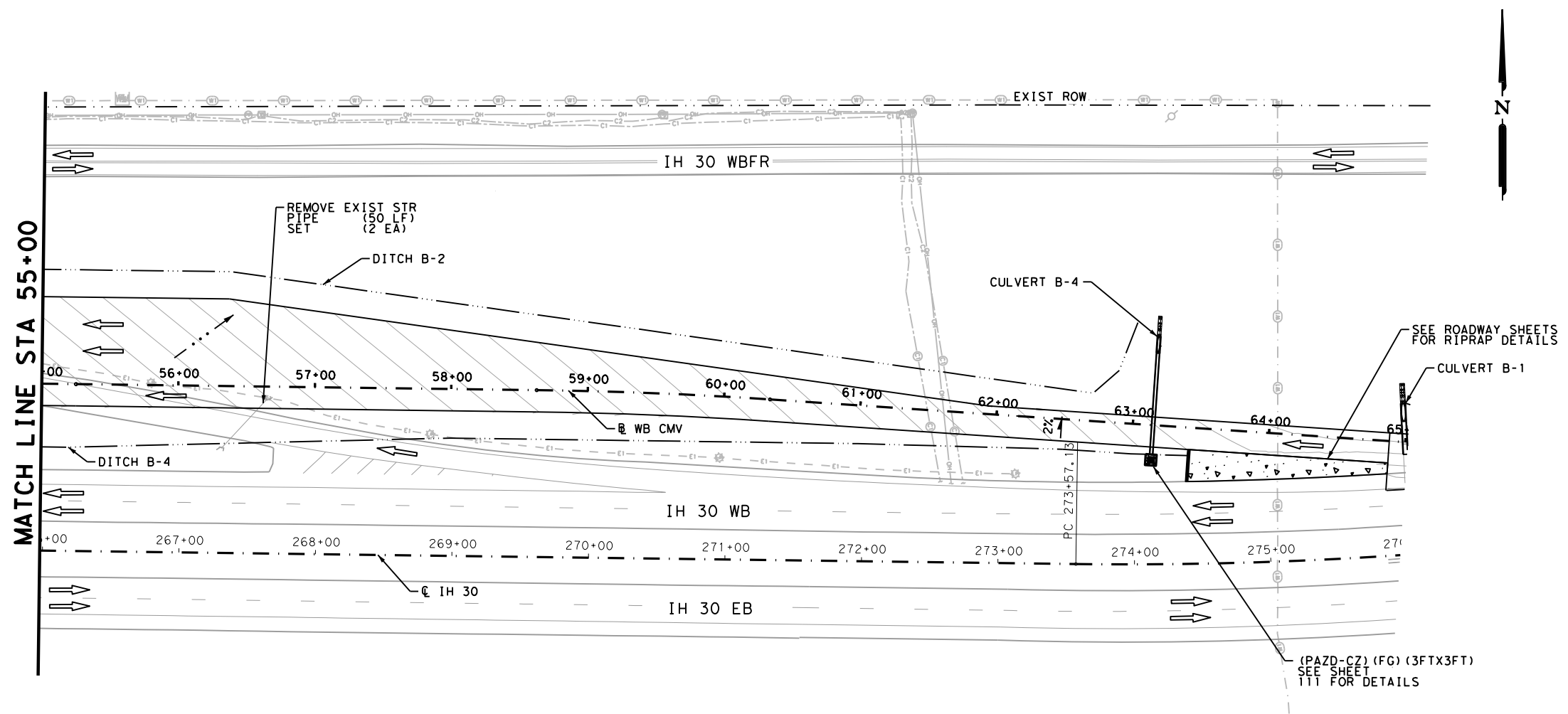
SHEET 3 OF 4

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	103

NO PROPOSED STORM DRAIN

Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Drainage\WP\1163504drn06.dgn



LEGEND

- ROW
- INTERNAL DRAINAGE AREA
- PROPOSED CONTOURS
- FLOW ARROW
- CI-XX CURB INLET DRAINAGE AREA
- PROPOSED DITCH FLOW LINE

NOTES

1. ALL CONC RIPRAP SHALL HAVE 8" X 12" TOE WALL
2. PRECAST BASE TO BE GROUTED TO PROVIDE POSITIVE DRAINAGE. SUBSIDIARY TO INLET ITEMS.

DESIGN

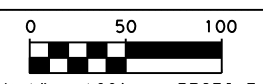
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



SEE CULVERT B-4 LAYOUT FOR LATERAL DRAINAGE

REV. NO.	DATE	DESCRIPTION	BY

Pape-Dawson ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
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 TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #1002800

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**WB IH 30 CMV STATION
STORM DRAIN
PLAN AND PROFILE**

STA 55+00 TO STA 65+00

SHEET 4 OF 4

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.	HIGHWAY NO.
CHK:	6	TEXAS		IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK:	ATL	TITUS	0610	03
DWG:			095	104

55+00 56+00 57+00 58+00 59+00 60+00 61+00 62+00 63+00 64+00 65+00

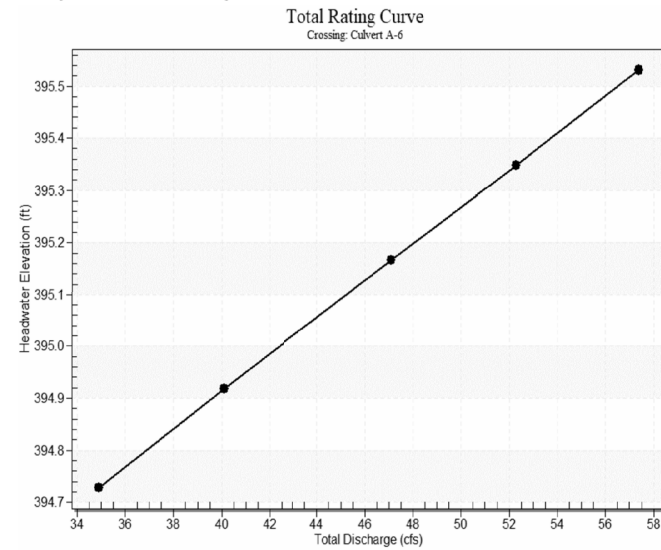
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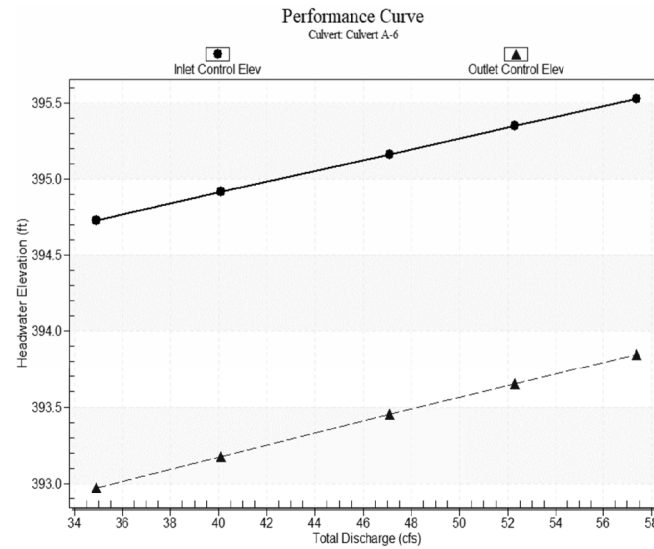
Table 1 - Summary of Culvert Flows at Crossing: Culvert A-6

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert A-6 Discharge (cfs)	Culvert A-4 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
394.73	5 year	34.90	32.53	2.37	0.00	6
394.92	10 year	40.10	36.52	3.58	0.00	3
395.17	25 year	47.10	41.69	5.41	0.00	3
395.35	50 year	52.30	45.34	6.96	0.00	3
395.53	100 year	57.40	48.78	8.62	0.00	4
402.86	Overtopping	165.60	126.83	38.77	0.00	Overtopping

Rating Curve Plot for Crossing: Culvert A-6



Culvert Performance Curve Plot: Culvert A-6



Tailwater Data for Crossing: Culvert A-6

Table 2 - Downstream Channel Rating Curve (Crossing: Culvert A-6)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
34.90	392.10	1.27	9.38	1.10	2.07
40.10	392.17	1.34	9.71	1.15	2.09
47.10	392.25	1.42	10.10	1.23	2.11
52.30	392.31	1.48	10.37	1.27	2.12
57.40	392.36	1.53	10.62	1.32	2.14

Tailwater Channel Data - Culvert A-6

Tailwater Channel Option: Triangular Channel

Side Slope (H:V): 2.30 (:1)

Channel Slope: 0.0138

Channel Manning's n: 0.0130

Channel Invert Elevation: 390.83 ft

Roadway Data for Crossing: Culvert A-6

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 60.00 ft

Crest Elevation: 402.86 ft

Roadway Surface: Paved

Roadway Top Width: 40.00 ft

Culvert Data: Culvert A-6

Table 1 - Culvert Summary Table: Culvert A-6

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	34.90 cfs	32.53 cfs	394.73	2.66	0.898	1-S2n	1.16	1.77	1.25	1.27	10.51	9.38
10 year	40.10 cfs	36.52 cfs	394.92	2.85	1.105	1-S2n	1.24	1.88	1.34	1.34	10.80	9.71
25 year	47.10 cfs	41.69 cfs	395.17	3.10	1.382	1-S2n	1.33	2.01	1.45	1.42	11.11	10.10
50 year	52.30 cfs	45.34 cfs	395.35	3.28	1.583	1-S2n	1.39	2.10	1.52	1.48	11.33	10.37
100 year	57.40 cfs	48.78 cfs	395.53	3.46	1.779	1-S2n	1.45	2.18	1.58	1.53	11.54	10.62

Culvert Barrel Data

Culvert Barrel Type: Straight Culvert

Inlet Elevation (invert): 392.07 ft,

Outlet Elevation (invert): 390.83 ft

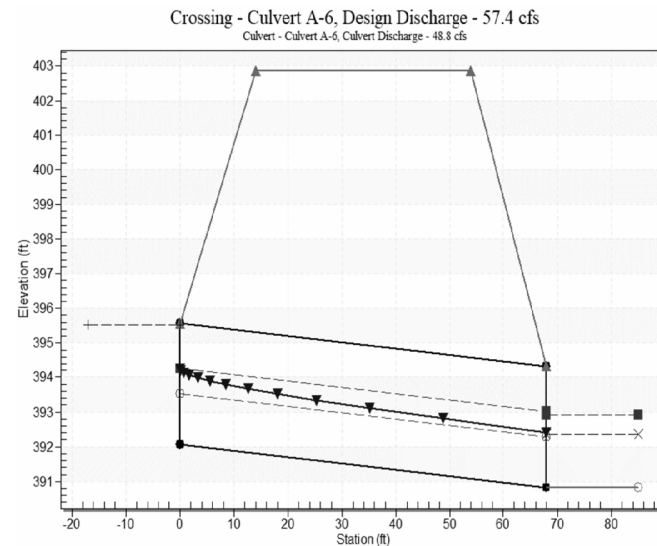
Culvert Length: 68.01 ft,

Culvert Slope: 0.0182

Crossing Discharge Data

Discharge Selection Method: Recurrence

Water Surface Profile Plot for Culvert: Culvert A-6



Site Data - Culvert A-6

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 392.07 ft

Outlet Station: 68.00 ft

Outlet Elevation: 390.83 ft

Number of Barrels: 1

Culvert Data Summary - Culvert A-6

Barrel Shape: Circular

Barrel Diameter: 3.50 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Mitered to Conform to Slope (Ke=0.7)

Inlet Depression: None

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P. E. SERIAL NO: 131443
DATE: 6/3/2024

APPROVAL

INTERIM REVIEW
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ENGINEER: JAMES A. LUTZ
P. E. SERIAL NO: 84722
DATE: 6/3/2024

REV. NO.	DATE	DESCRIPTION	BY

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WB IH 30 CMV STATION
 HYDRAULIC DATA
 SHEET CULVERT A-6

DGN#	FED. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN#	6	TEXAS				IH 30
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	105

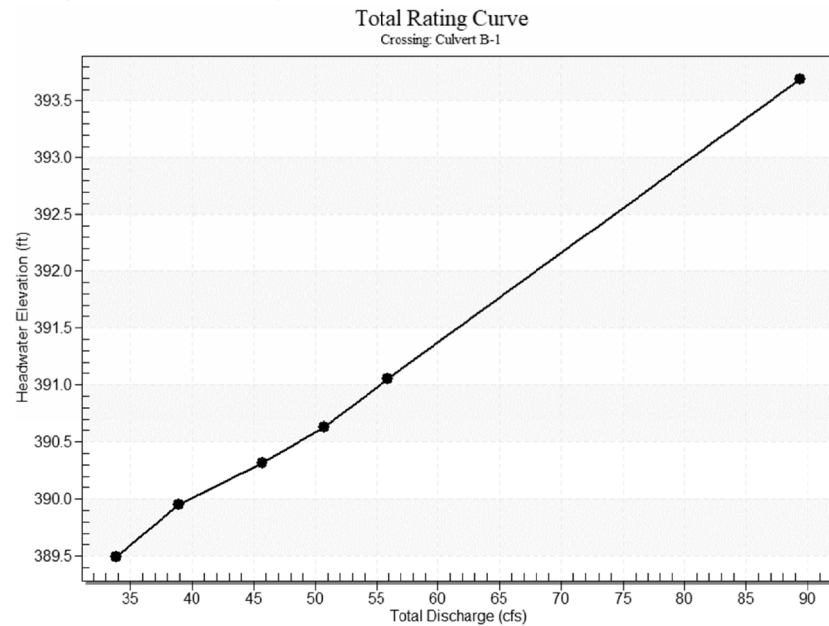
Plotted on: 6/3/2024

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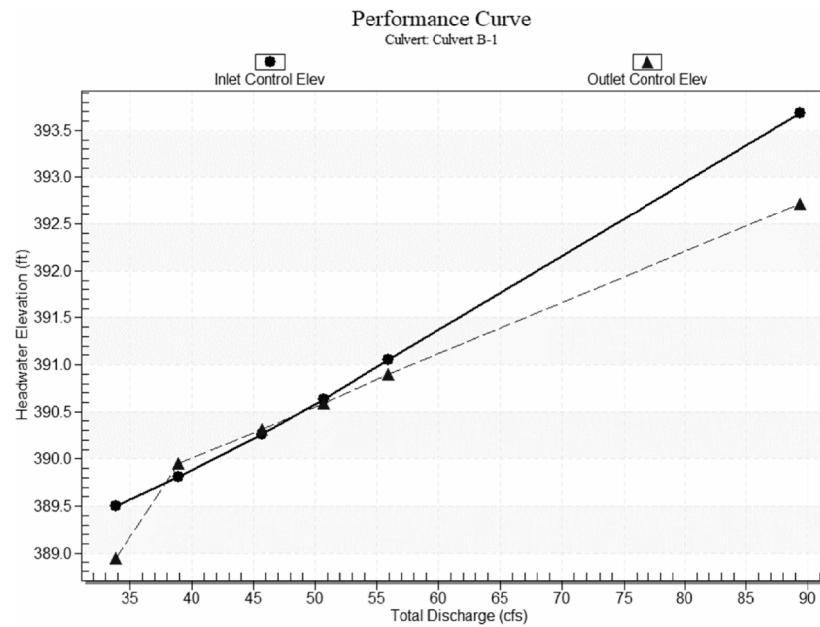
Table 1 - Summary of Culvert Flows at Crossing: Culvert B-1

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert B-1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
389.50	5 year	33.80	33.80	0.00	1
389.95	10 year	38.90	38.90	0.00	1
390.32	25 year	45.70	45.70	0.00	1
390.63	50 year	50.70	50.70	0.00	1
391.06	100 year	55.90	55.90	0.00	1
393.41	Overtopping	78.09	78.09	0.00	Overtopping

Rating Curve Plot for Crossing: Culvert B-1



Culvert Performance Curve Plot: Culvert B-1



Tailwater Data for Crossing: Culvert B-1

Table 2 - Downstream Channel Rating Curve (Crossing: Culvert B-1)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
33.80	388.23	1.77	2.71	0.55	0.51
38.90	388.32	1.86	2.81	0.58	0.51
45.70	388.44	1.98	2.92	0.62	0.52
50.70	388.52	2.06	3.00	0.64	0.52
55.90	388.59	2.13	3.07	0.67	0.52

Tailwater Channel Data - Culvert B-1

Tailwater Channel Option: Triangular Channel

Side Slope (H:V): 4.00 (:1)

Channel Slope: 0.0050

Channel Manning's n: 0.0350

Channel Invert Elevation: 386.46 ft

Roadway Data for Crossing: Culvert B-1

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 21.00 ft

Crest Elevation: 393.41 ft

Roadway Surface: Paved

Roadway Top Width: 16.00 ft

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P. E. SERIAL NO: 131443
DATE: 6/3/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P. E. SERIAL NO: 84722
DATE: 6/3/2024

Culvert Data: Culvert B-1

Table 1 - Culvert Summary Table: Culvert B-1

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	33.80 cfs	33.80 cfs	389.50	2.92	2.362	1-S2n	1.88	1.89	1.88	1.77	7.27	2.71
10 year	38.90 cfs	38.90 cfs	389.95	3.23	3.372	7-M2c	2.07	2.03	2.03	1.86	7.64	2.81
25 year	45.70 cfs	45.70 cfs	390.32	3.68	3.736	7-M2c	2.37	2.20	2.20	1.98	8.22	2.92
50 year	50.70 cfs	50.70 cfs	390.63	4.05	4.014	7-M2c	3.00	2.32	2.32	2.06	8.66	3.00
100 year	55.90 cfs	55.90 cfs	391.06	4.48	4.318	7-M2c	3.00	2.42	2.42	2.13	9.13	3.07

Culvert Barrel Data

Culvert Barrel Type: Straight Culvert

Inlet Elevation (invert): 386.58 ft,

Outlet Elevation (invert): 386.46 ft

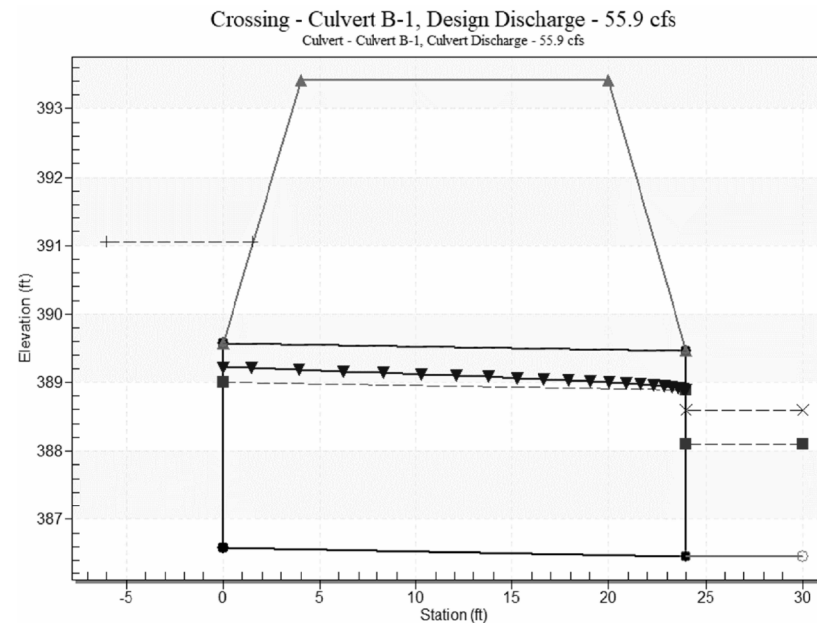
Culvert Length: 24.00 ft,

Culvert Slope: 0.0050

Crossing Discharge Data

Discharge Selection Method: Recurrence

Water Surface Profile Plot for Culvert: Culvert B-1



Culvert Data Summary - Culvert B-1

Barrel Shape: Circular

Barrel Diameter: 3.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Site Data - Culvert B-1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 386.58 ft

Outlet Station: 24.00 ft

Outlet Elevation: 386.46 ft

Number of Barrels: 1

REV. NO.	DATE	DESCRIPTION	BY

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WB IH 30 CMV STATION
HYDRAULIC DATA
SHEET CULVERT B-1

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN#	6	TEXAS				IH 30
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	106

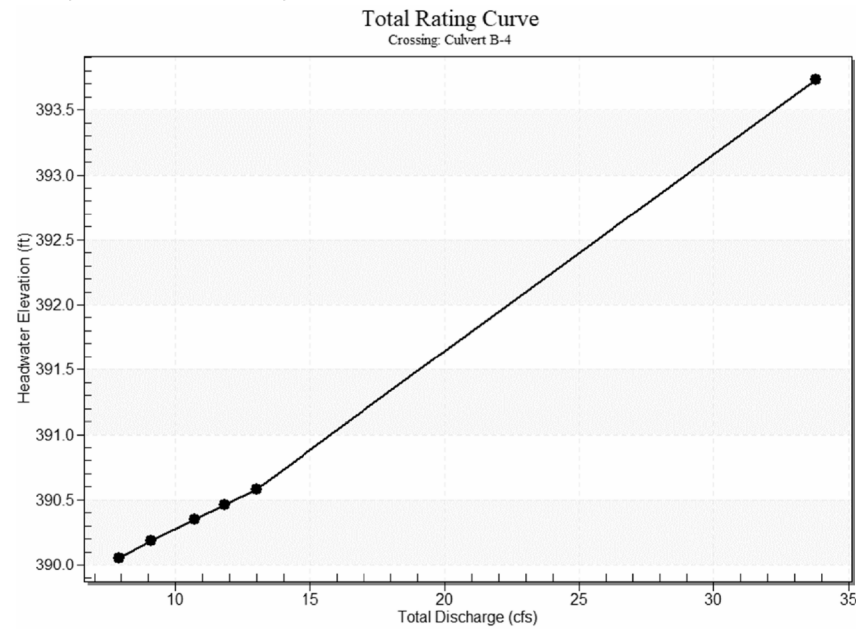
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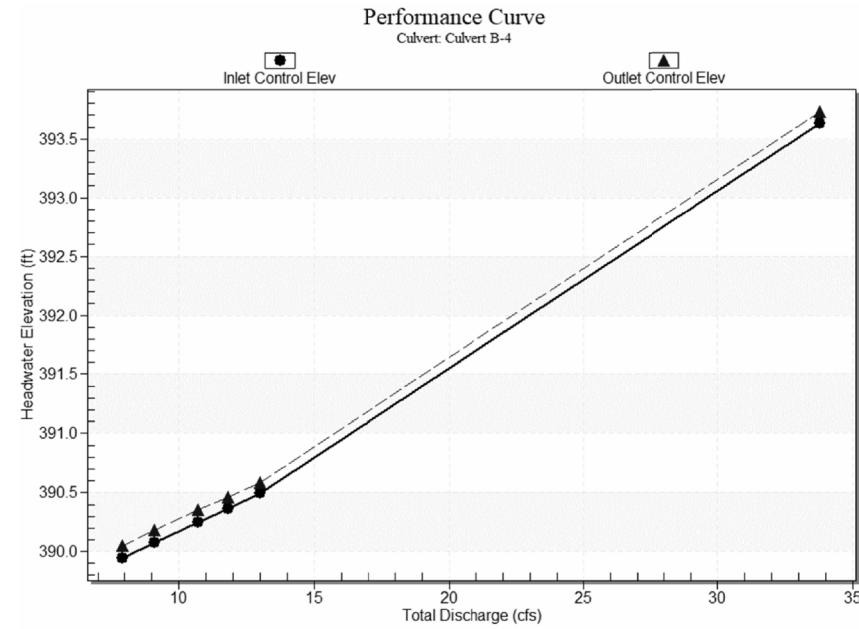
Table 1 - Summary of Culvert Flows at Crossing: Culvert B-4

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Culvert B-4 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
390.05	5 year	7.90	7.90	0.00	1
390.19	10 year	9.10	9.10	0.00	1
390.35	25 year	10.70	10.70	0.00	1
390.46	50 year	11.80	11.80	0.00	1
390.58	100 year	13.00	13.00	0.00	1
393.65	Overtopping	30.51	30.51	0.00	Overtopping

Rating Curve Plot for Crossing: Culvert B-4



Culvert Performance Curve Plot: Culvert B-4



Water Surface Profile Plot for Culvert: Culvert B-4

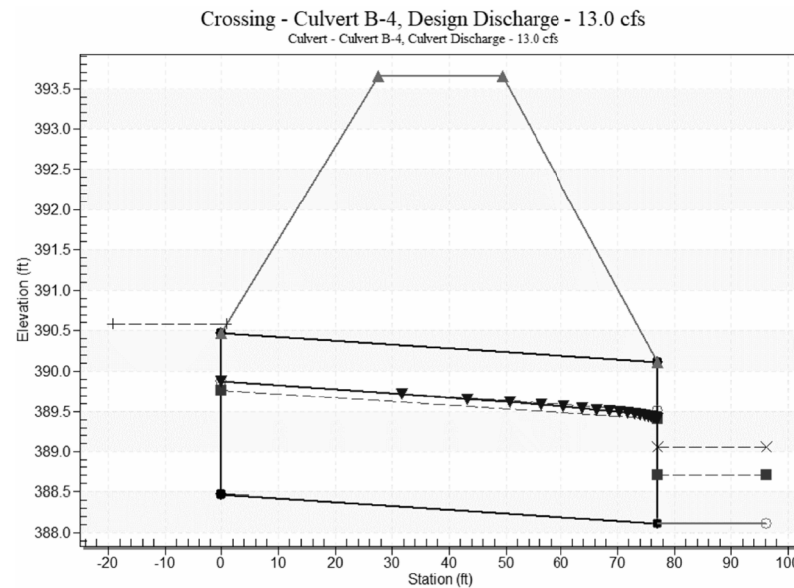


Table 1 - Culvert Summary Table: Culvert B-4

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
5 year	7.90 cfs	7.90 cfs	390.05	1.47	1.584	2-M2c	1.01	1.00	1.00	0.76	5.03	1.40
10 year	9.10 cfs	9.10 cfs	390.19	1.60	1.715	2-M2c	1.10	1.08	1.08	0.81	5.28	1.45
25 year	10.70 cfs	10.70 cfs	390.35	1.78	1.882	2-M2c	1.22	1.17	1.17	0.87	5.59	1.51
50 year	11.80 cfs	11.80 cfs	390.46	1.89	1.993	2-M2c	1.31	1.23	1.23	0.91	5.80	1.55
100 year	13.00 cfs	13.00 cfs	390.58	2.02	2.114	7-M2c	1.40	1.30	1.30	0.95	6.03	1.59

Culvert Barrel Data

Culvert Barrel Type: Straight Culvert

Inlet Elevation (invert): 388.47 ft,

Outlet Elevation (invert): 388.11 ft

Culvert Length: 77.00 ft,

Culvert Slope: 0.0047

Crossing Discharge Data

Discharge Selection Method: Recurrence

Site Data - Culvert B-4

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 388.47 ft

Outlet Station: 77.00 ft

Outlet Elevation: 388.11 ft

Number of Barrels: 1

Culvert Data Summary - Culvert B-4

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0130

Culvert Type: Straight

Inlet Configuration: Square Edge with Headwall

Inlet Depression: None

Tailwater Data for Crossing: Culvert B-4

Table 2 - Downstream Channel Rating Curve (Crossing: Culvert B-4)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
7.90	388.87	0.76	1.40	0.14	0.36
9.10	388.92	0.81	1.45	0.15	0.36
10.70	388.98	0.87	1.51	0.16	0.37
11.80	389.02	0.91	1.55	0.17	0.37
13.00	389.06	0.95	1.59	0.18	0.37

Tailwater Channel Data - Culvert B-4

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 2.85 ft

Side Slope (H:V): 6.00 (:1)

Channel Slope: 0.0030

Channel Manning's n: 0.0350

Channel Invert Elevation: 388.11 ft

Roadway Data for Crossing: Culvert B-4

Roadway Profile Shape: Constant Roadway Elevation

Crest Length: 44.00 ft

Crest Elevation: 393.65 ft

Roadway Surface: Paved

Roadway Top Width: 22.00 ft

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
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P. E. SERIAL NO: 131443
DATE: 6/3/2024

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INTERIM REVIEW
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ENGINEER: JAMES A. LUTZ
P. E. SERIAL NO: 84722
DATE: 6/3/2024

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HYDRAULIC DATA

SHEET CULVERT B-4

DGN:	FED. NO. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	ATL	TITUS	0610	03	095	107

Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Drainage\1163504DRN_CLVA-4.dgn

MITER PIPE TO MATCH AND FORM TO RIPRAP SLOPE. SUBSIDIARY TO ITEM 0464. NO SEPARATE PAY.

STA 45+84.48
120.27' LT

87 LF 24" RCP

CULVERT A-4
STA 45+92.34
32.3' LT

PROP INSPECTION PIT

WB CMV

EXIST EOP

PROP EOP

EXIST EOP

5' 12' 5' 12' 5' 12' 5' 20' 9' 12' 12' 4'
LANE LANE LANE LANE LANE LANE SHLDR

PROP EOP

EXIST EOP

NOTES

- 1. CULVERT NOT ANALYZED. NO DRAINAGE AREA.

DESIGN

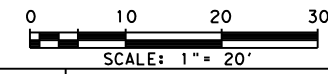
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

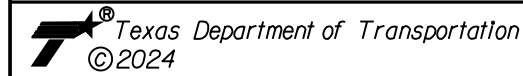
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ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY



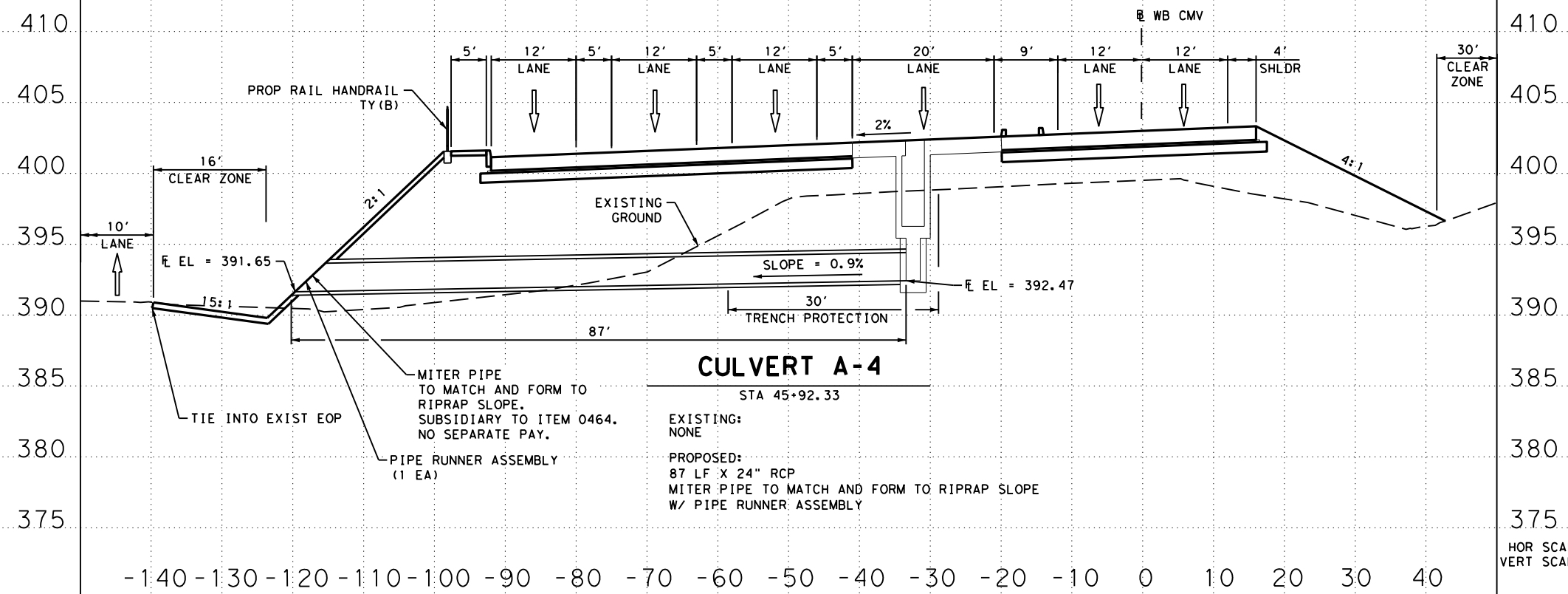
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2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



WB IH 30 CMV STATION
CULVERT A-4
LAYOUT

SHEET 1 OF 4

CHK DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
DWG:	6	TEXAS		IH 30
CHK DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
	ATL	TITUS	0610	03
			095	108



CULVERT A-4
STA 45+92.33
EXISTING: NONE
PROPOSED: 87 LF X 24" RCP
MITER PIPE TO MATCH AND FORM TO RIPRAP SLOPE W/ PIPE RUNNER ASSEMBLY

HOR SCALE: 1" = 20'
VERT SCALE: 1" = 10'

Plotted on: 6/4/2024

MITER PIPE TO MATCH AND FORM TO RIPRAP SLOPE. SUBSIDIARY TO ITEM 0464. NO SEPARATE PAY.

STA 47+09.31
125.80' LT

PIPE RUNNER ASSEMBLY

PROP LT DITCH
SEE RDWY PLANS FOR DETAILS

5' 12' 5' 12' 5' 12' 5' 20' 9' 12' 12' 4'
LANE LANE LANE LANE LANE LANE SHLDR

EXIST EOP

PROP EOP

83.9°

68 LF 42" RCP

STA 47+02.09
58.22' LT

PROP INSPECTION PIT

PROP EOP

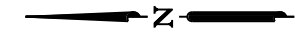
WB CMV

CULVERT A-6
STA 47+02.09'

EXIST EOP

EXISTING 42" RCP

PROP RT DITCH
SEE RDWY PLANS FOR DETAILS



NOTES

- 1. REMOVE EXISTING CULVERTS TO NEAREST JOINTS.

DESIGN

INTERIM REVIEW

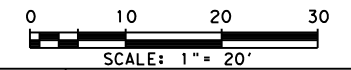
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DATE: 6/4/2024

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ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/4/2024

Q10	40.10 CFS
V10	10.80 FPS
Q100	57.40 CFS
V100	11.54 FPS



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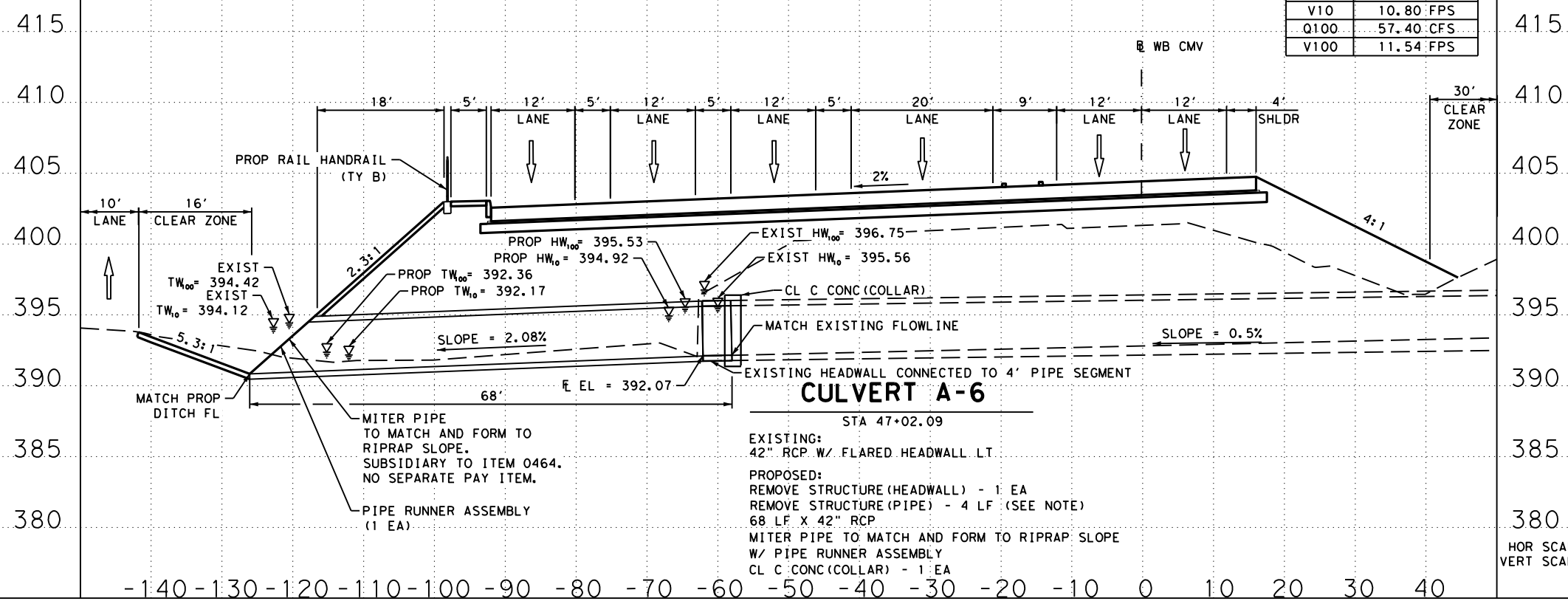
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CULVERT A-6 LAYOUT

SHEET 2 OF 4

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CHK:	6	TEXAS		IH 30
DN:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DN:			JOB NO.:	SHEET NO.:
CHK:			095	109

Design Filename: P:\116\35\04\Design\Civil\Drainage\1163504DRN_CLVA-6.dgn



PROP RAIL HANDRAIL (TY B)

10' LANE
16' CLEAR ZONE

EXIST TW₁₀₀ = 394.42
EXIST TW₀ = 394.12

PROP TW₁₀₀ = 392.36
PROP TW₀ = 392.17

PROP HW₁₀₀ = 395.53
PROP HW₀ = 394.92

EXIST HW₁₀₀ = 396.75
EXIST HW₀ = 395.56

CL C CONC (COLLAR)

MATCH EXISTING FLOWLINE

EXISTING HEADWALL CONNECTED TO 4' PIPE SEGMENT

CULVERT A-6

STA 47+02.09

EXISTING: 42" RCP W/ FLARED HEADWALL LT

PROPOSED: REMOVE STRUCTURE (HEADWALL) - 1 EA
REMOVE STRUCTURE (PIPE) - 4 LF (SEE NOTE)
68 LF X 42" RCP

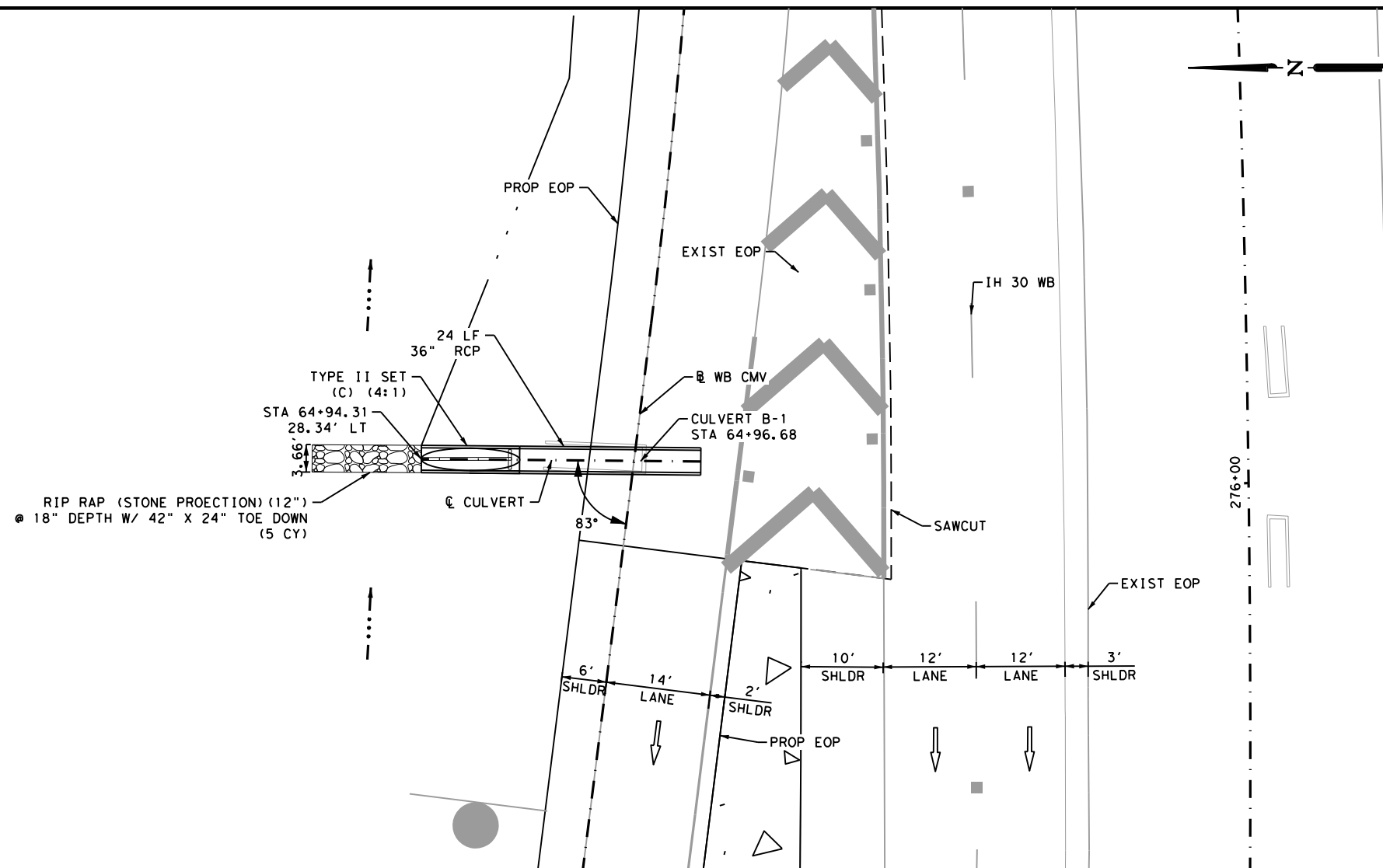
MITER PIPE TO MATCH AND FORM TO RIPRAP SLOPE W/ PIPE RUNNER ASSEMBLY
CL C CONC (COLLAR) - 1 EA

MITER PIPE TO MATCH AND FORM TO RIPRAP SLOPE. SUBSIDIARY TO ITEM 0464. NO SEPARATE PAY ITEM.
PIPE RUNNER ASSEMBLY (1 EA)

HOR SCALE: 1" = 20'
VERT SCALE: 1" = 10'

Plotted on: 6/3/2024

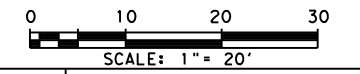
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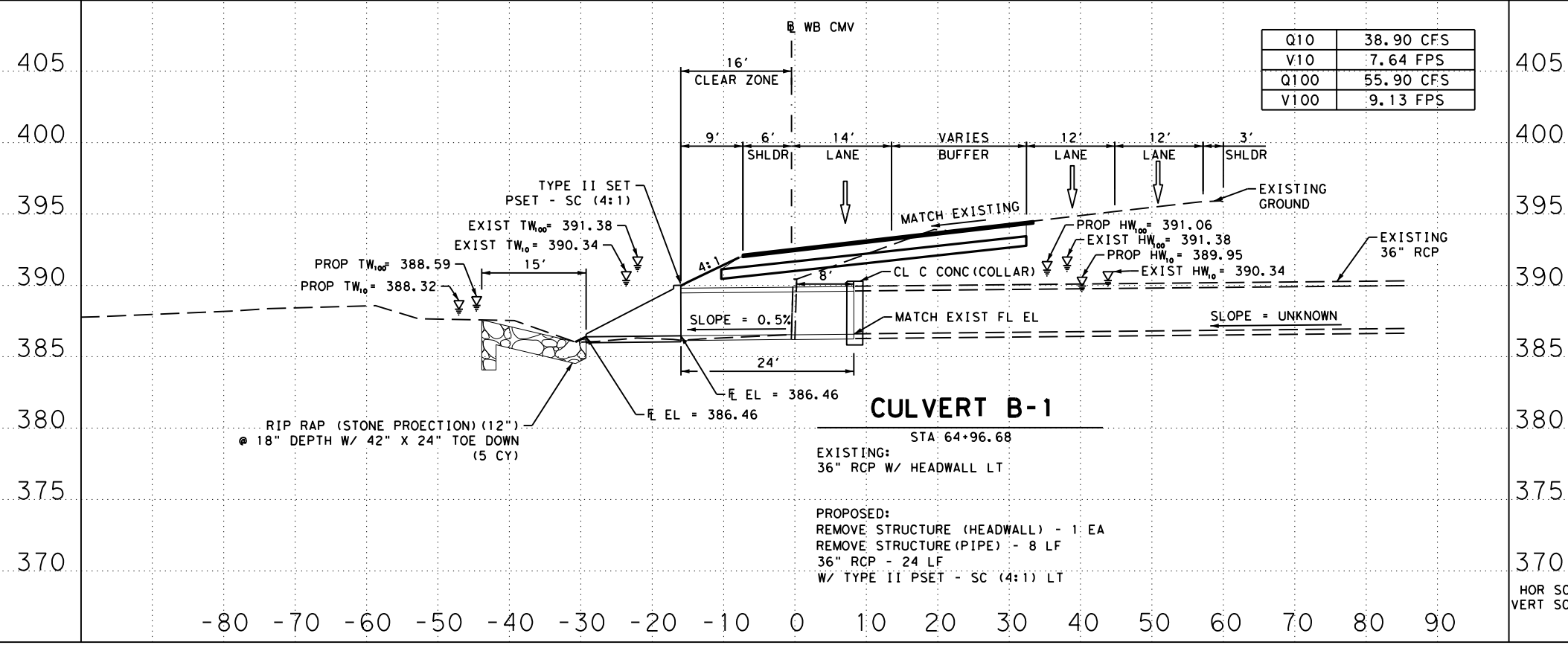
NOTES
 1. REMOVE EXISTING CULVERTS TO NEAREST JOINTS.

DESIGN
 INTERIM REVIEW
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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

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 DATE: 6/3/2024



Q10	38.90 CFS
V10	7.64 FPS
Q100	55.90 CFS
V100	9.13 FPS



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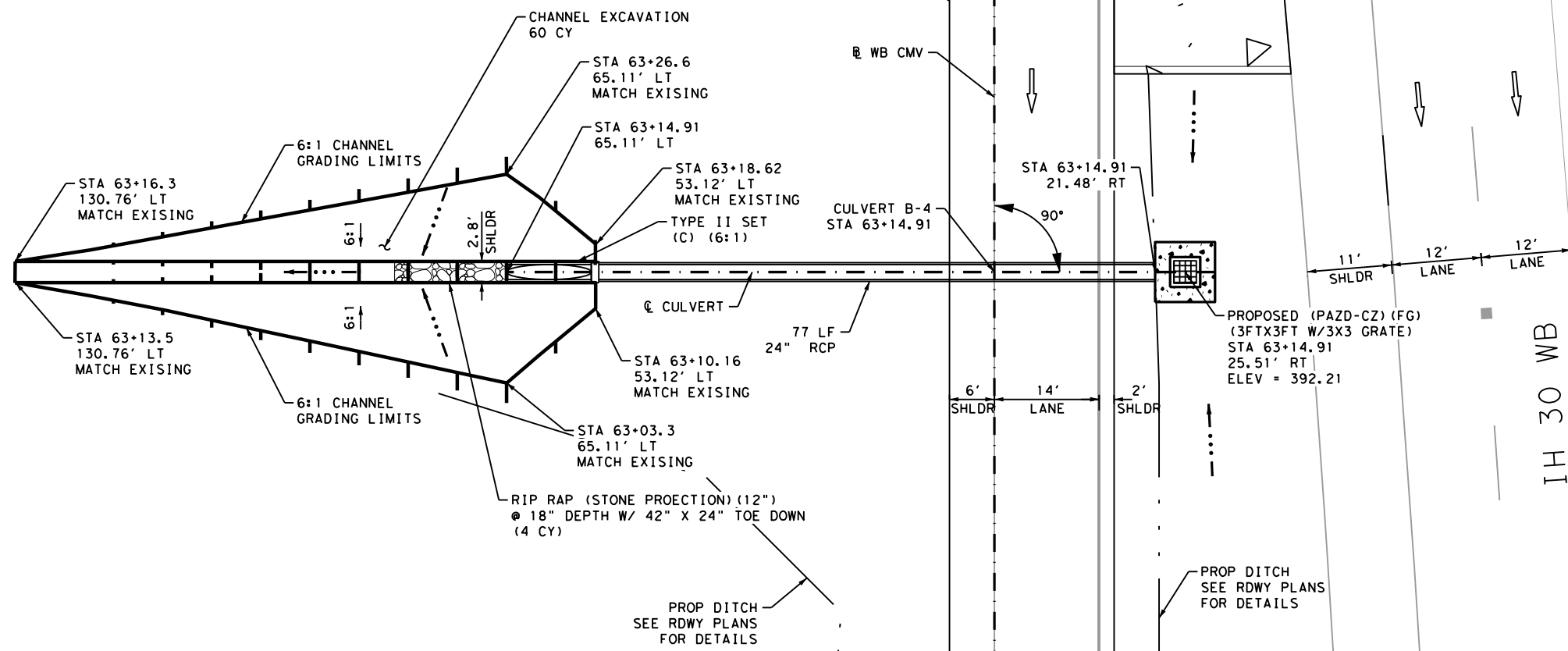
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WB IH 30 CMV STATION
CULVERT B-1 LAYOUT

SHEET 3 OF 4

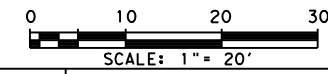
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CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	110

Plotted on: 6/3/2024



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 P.E. SERIAL NO: 84722
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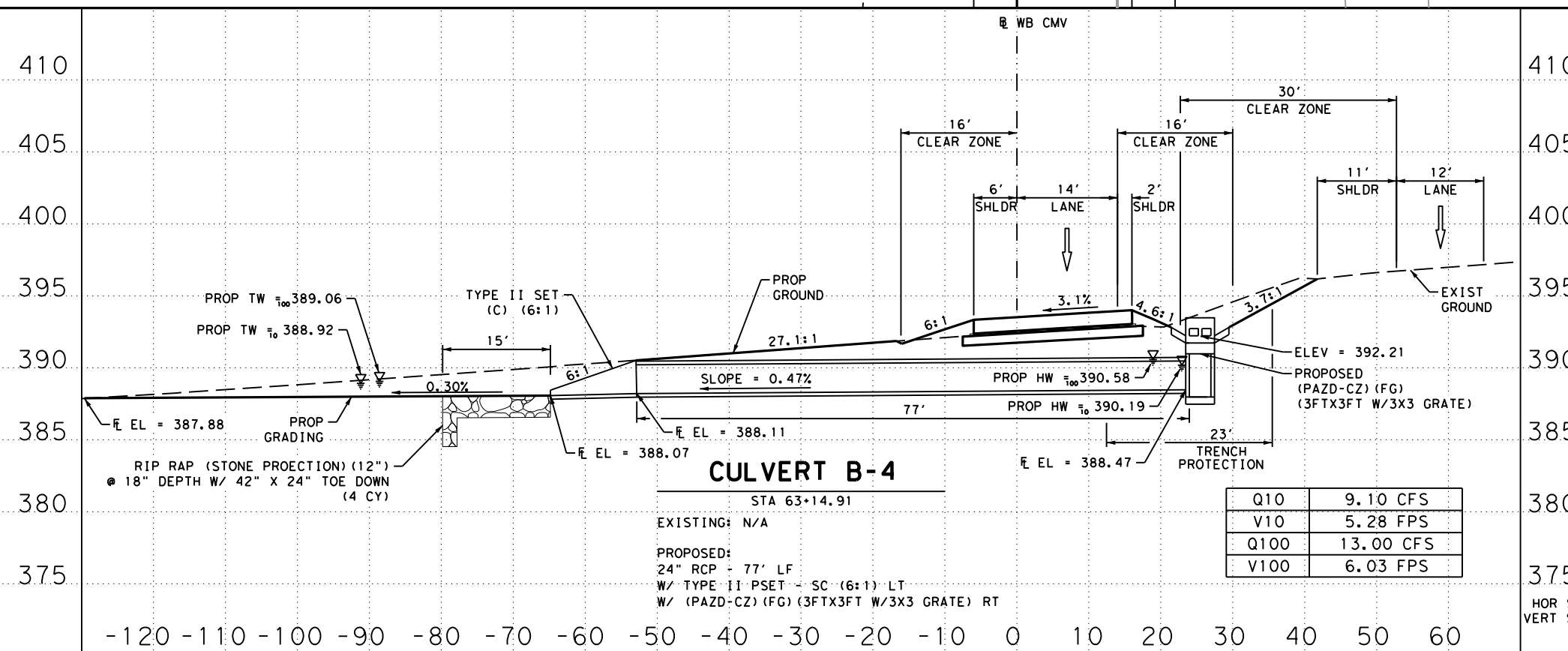
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**WB IH 30 CMV STATION
 CULVERT B-4
 LAYOUT**

SHEET 4 OF 4



Q10	9.10 CFS
V10	5.28 FPS
Q100	13.00 CFS
V100	6.03 FPS

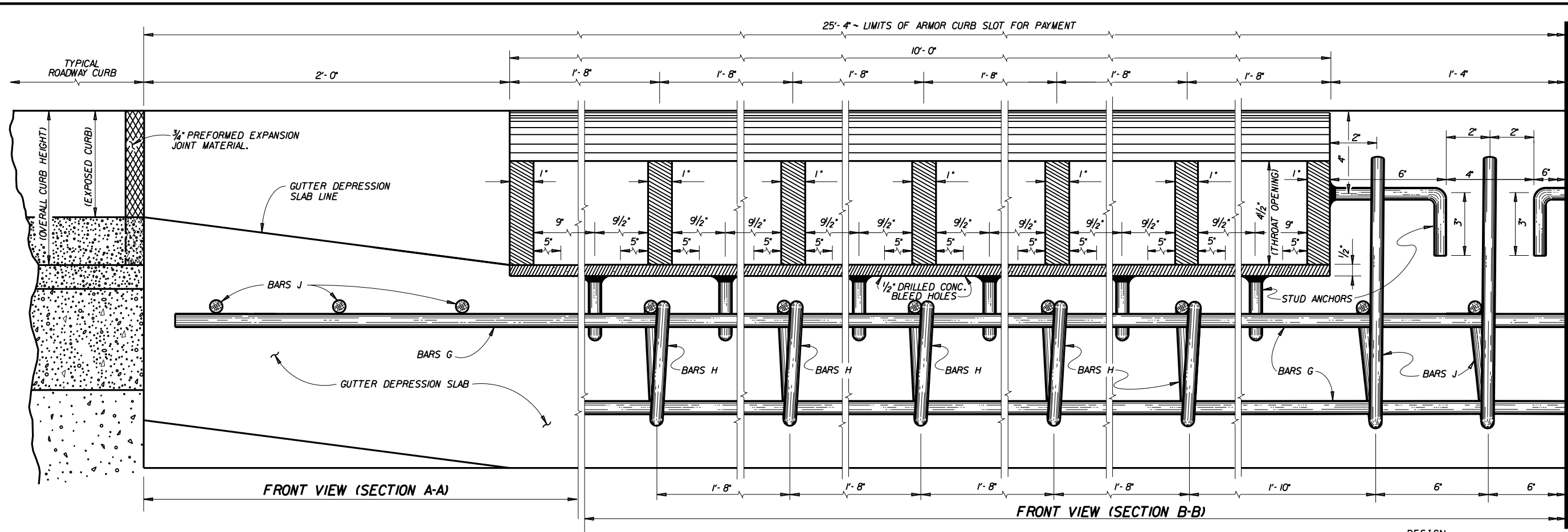
HOR SCALE: 1" = 20'
 VERT SCALE: 1" = 10'

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CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	ATL	TITUS	0610	03	095	111

Plotted on: 6/3/2024

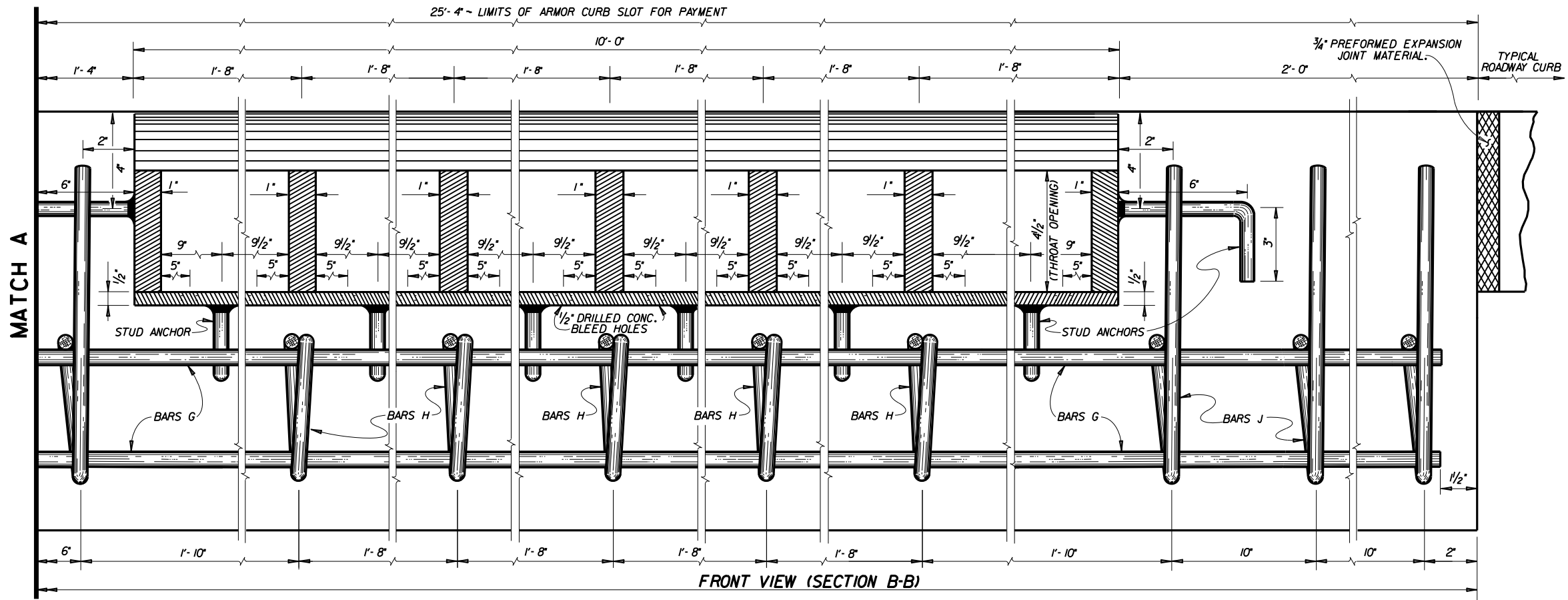
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MATCH A

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 DATE: 6/3/2024



MATCH A

NOT TO SCALE

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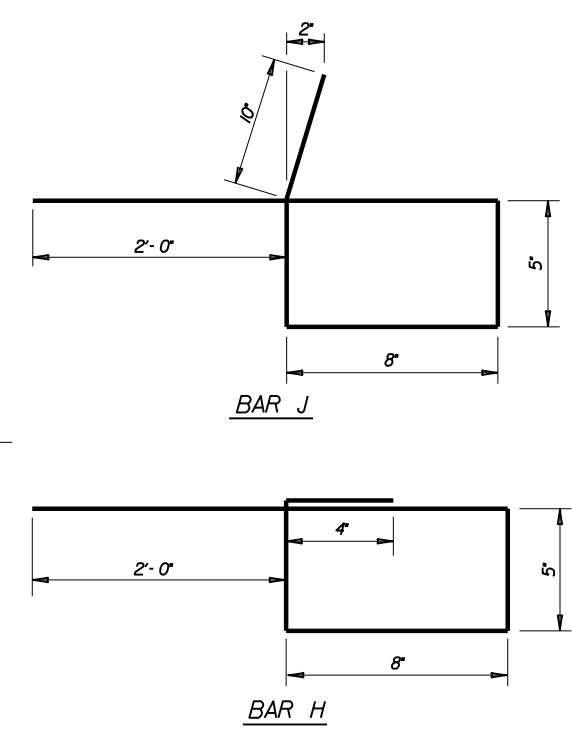
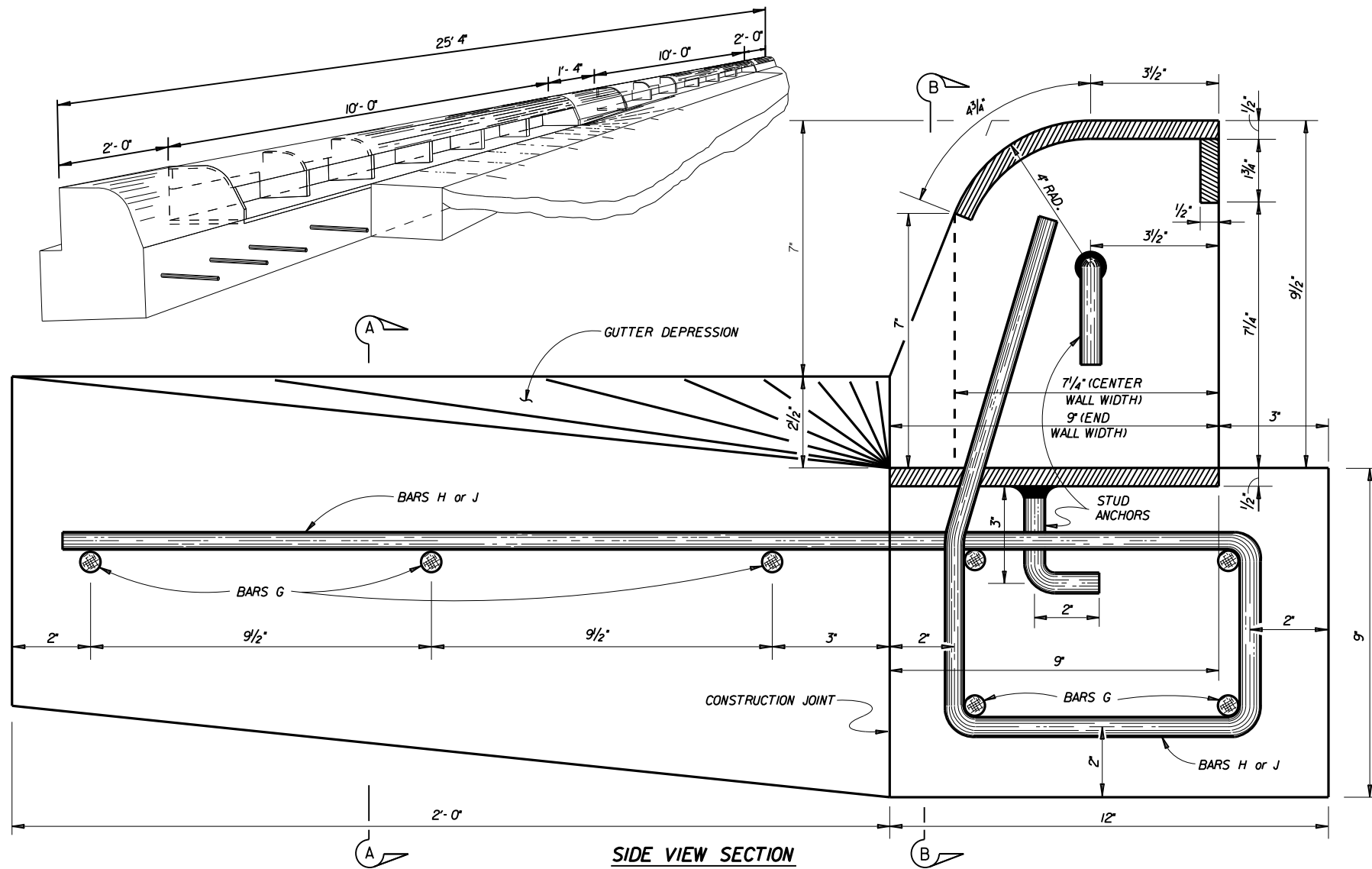
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 WB IH 30 CMV STATION
ARMOR CURB DETAIL

SHEET 1 OF 2

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CH1	6	TEXAS		IH 30		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CH1	ATL	TITUS	0610	03	095	112

Plotted on: 6/3/2024

Design File name: P:\116\35\04\Design\Civil\Drainage\163504ARMORDET02.dgn



**ESTIMATED QUANTITIES
FOR REINFORCING STEEL**

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'-9"	64
H	10	#4	1'-8"	4'-6"	30
J	9	#4	8'	5'-0"	30
TOTAL WEIGHT *				LBS.	124
EST. CONCRETE FOR FOUNDATION *				C.Y.	0.80
EST. CONCRETE FOR GUTTER DEPRESSION *C.Y.					1.41

STRUCTURAL STEEL FOR ARMOR CURB SLOT

STUD ANCHORS (1/2" DIA.)	LBS.	7.0
STEEL PLATE	LBS.	902
TOTAL WEIGHT *	LBS.	977.0

* FOR CONTRACTORS INFO ONLY.

GENERAL NOTES:
 ALL CONCRETE SHALL BE CL. "A".
 ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
 ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.
 ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED.
 ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.
 THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.

DESIGN

INTERIM REVIEW

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ARMOR CURB DETAIL

SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
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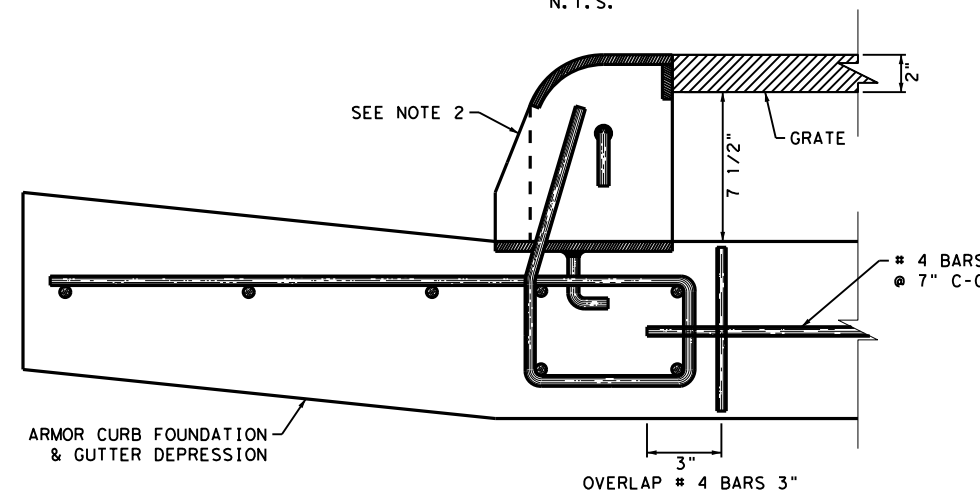
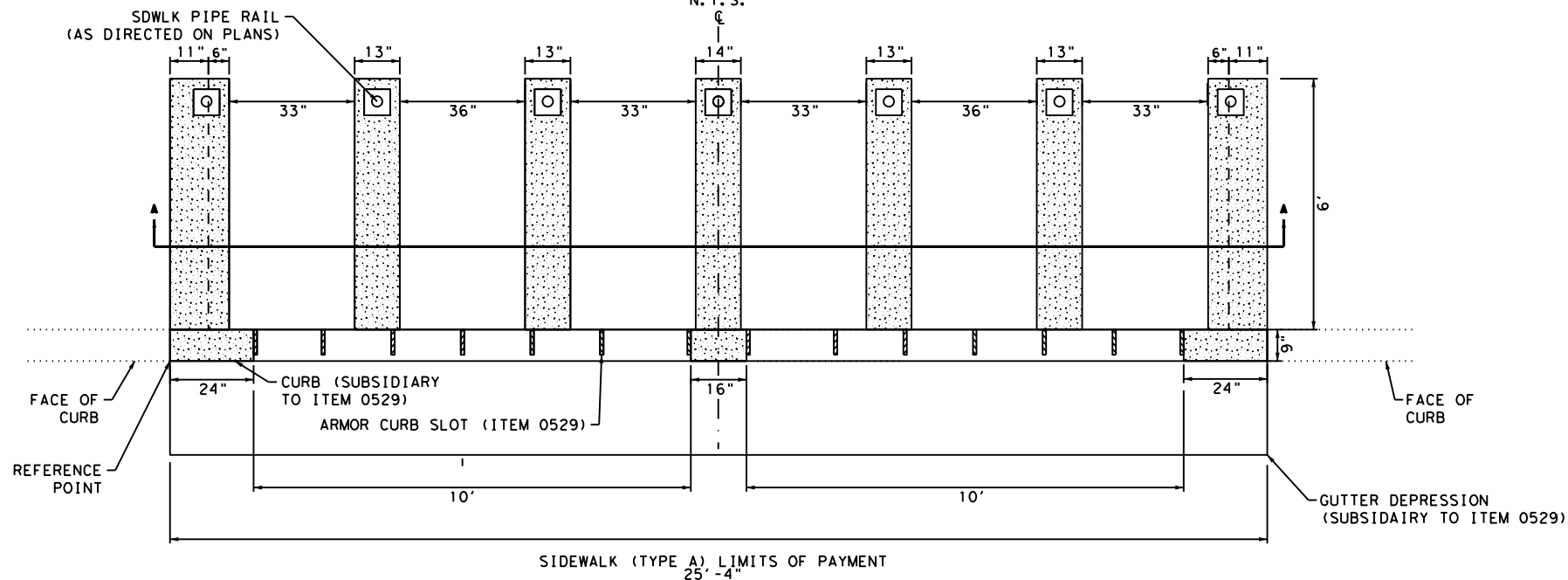
SIDEWALK (TYPE A) DETAIL

ARMOR CURB SLOT DETAIL

N. T. S.

PLAN

(SEE NOTE 1)
N. T. S.



NOTES:

- 1) SIDEWALK (TY A) IS PAID SEPARATELY UNDER THE FOLLOWING PAY ITEMS UNLESS OTHERWISE SHOWN:
 ITEM 0471-6003 GRATE & FRAME
 ITEM 0529-6020 CONC CURB & GUTTER (ARMOR CURB)
 ITEM 0531-6032 CONC SIDEWALKS (SPECIAL) (TYPE A)
- 2) SEE ARMOR CURB DETAIL FOR ADDITIONAL INFORMATION

NOTE: GRATE AND FRAMES NOT SHOWN IN PLAN VIEW FOR CLARITY

DESIGN

INTERIM REVIEW

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 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

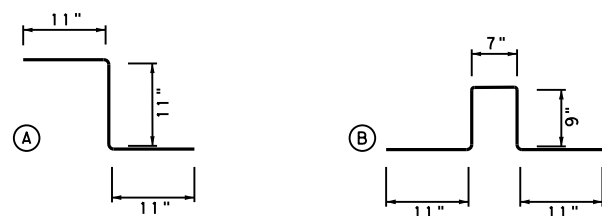
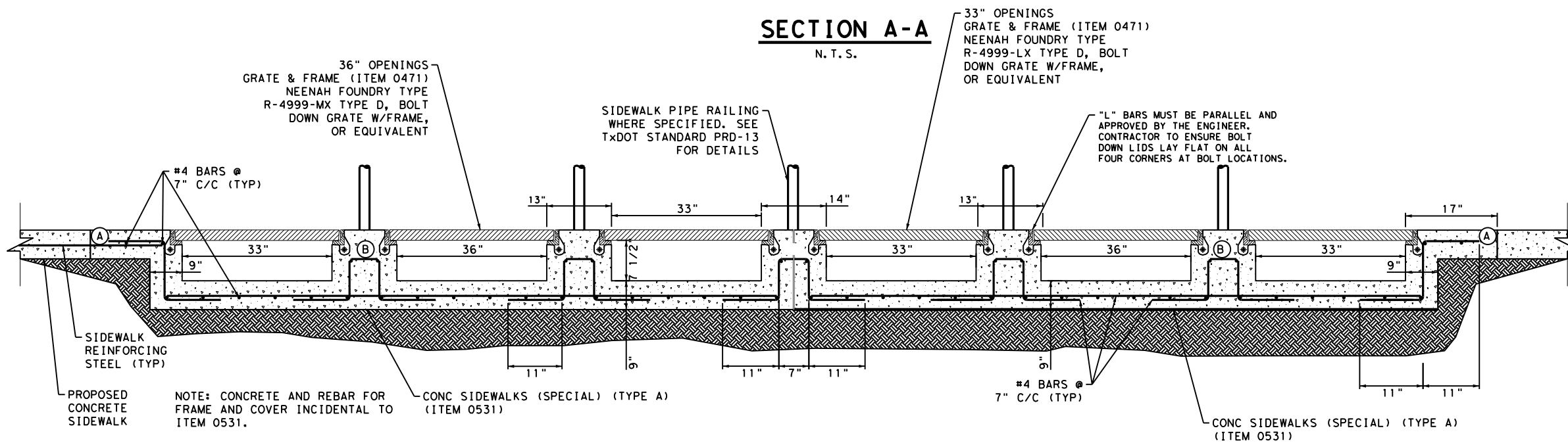
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

SECTION A-A

N. T. S.



BAR	SIZE	SPAN	NO.
A	#4	2'-9"	20
B	#4	3'-11"	20

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY

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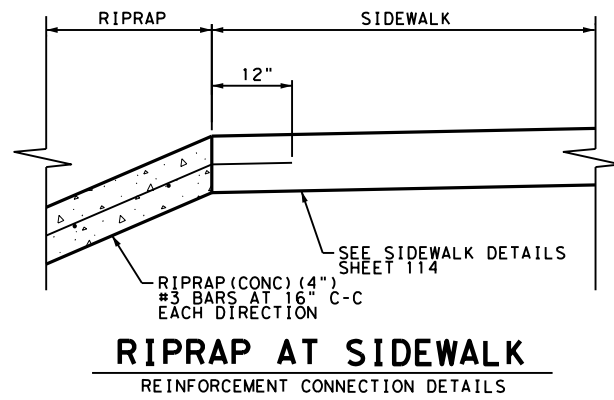
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SIDEWALK (TYPE A) DETAIL

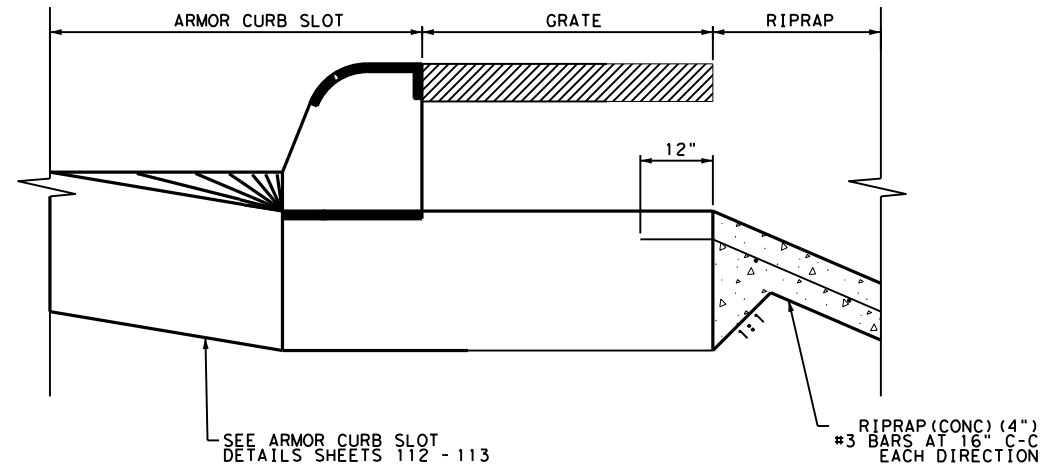
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CHK	6	TEXAS		IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.
CHK	ATL	TITUS	0610	03
DWG:			095	114

Plotted on: 6/3/2024

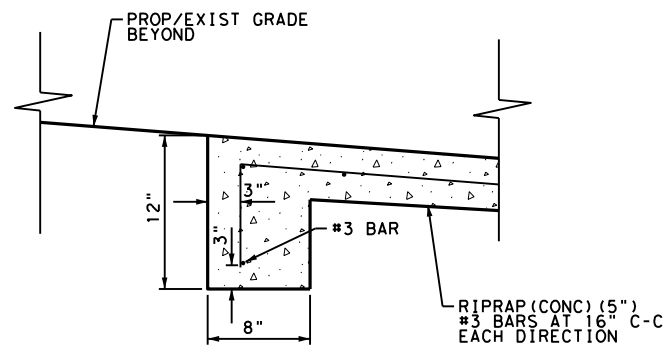
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RIPRAP AT SIDEWALK
REINFORCEMENT CONNECTION DETAILS



RIPRAP AT ARMOR CURB SLOT
REINFORCEMENT CONNECTION DETAILS



RIPRAP TOEDOWN

DESIGN

INTERIM REVIEW
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P.E. SERIAL NO: 131443
DATE: 6/3/2024

APPROVAL

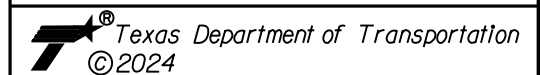
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/3/2024

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	BY



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 #1002800

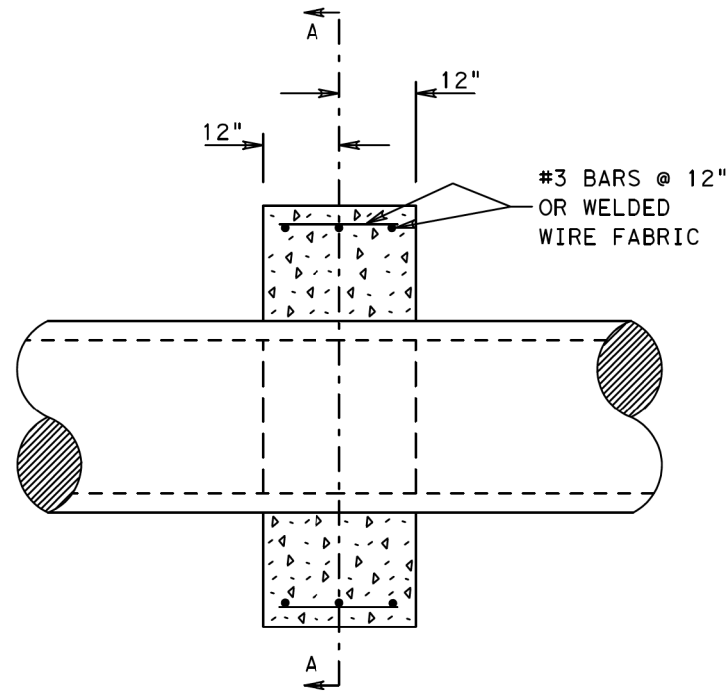


WB IH 30 CMV STATION

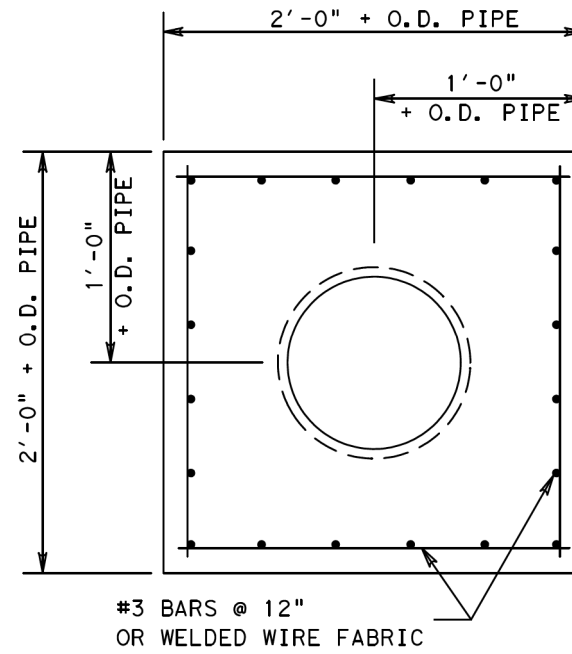
RIPRAP DETAILS

SHEET 1 OF 1

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	115



STRAIGHT DRAINAGE PIPE



SECTION A-A

NOTES :

1. ALL CONCRETE SHALL BE CLASS "A".
2. ALL REINFORCING STEEL SHALL HAVE A MINIMUM COVER OF 3 INCHES.
3. COLLAR MAY BE USED FOR CORRUGATED METAL OR REINFORCED CONCRETE PIPES.
4. PIPES MAY BE PLACED ON ANY SIDE AS INDICATED IN THE PLANS.

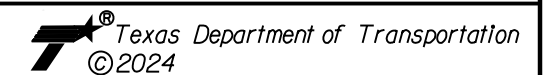
DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW
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 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024

DETAIL FOR CONCRETE COLLARS
FOR DRAINAGE PIPE CONNECTIONS
AND DRAINAGE PIPE JUNCTIONS

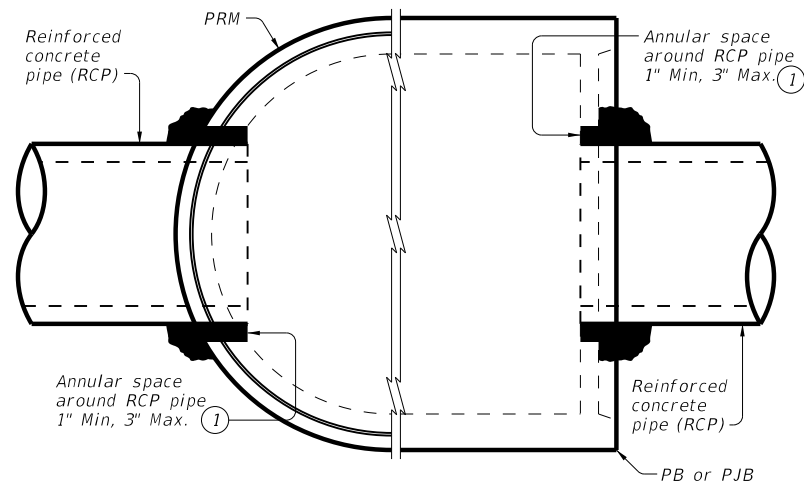


CONCRETE PIPE COLLAR
 AND CONNECTION DETAIL

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	FILE NO.	SHEET NO.
6			116
STATE	STATE DIST. NO.	COUNTY	CONT. SECT. JOB HIGHWAY NO.
TEXAS		TITUS	IH 30

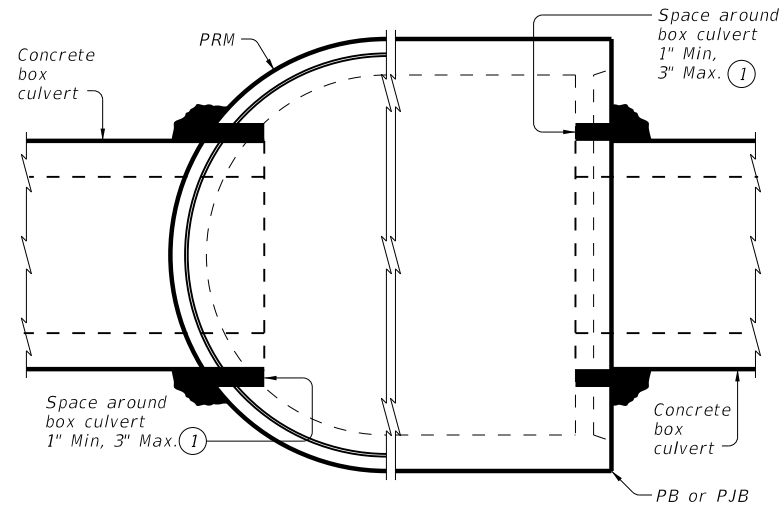
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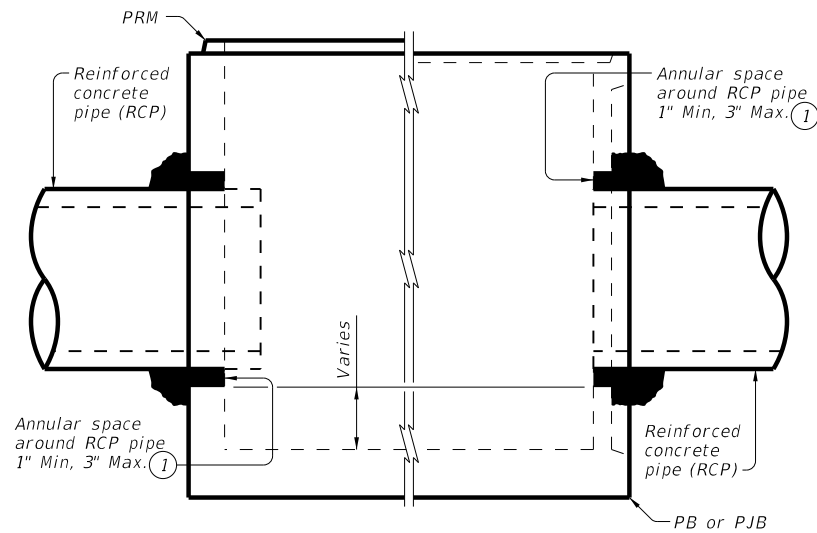
PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE
PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF PLAN



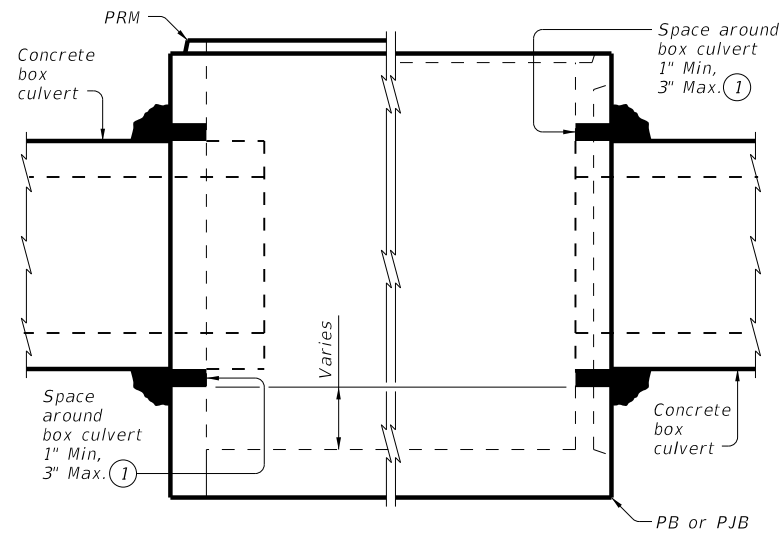
PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE
PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF PLAN



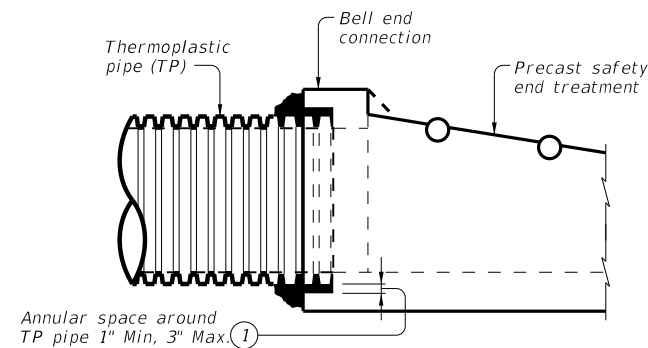
PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE
PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE
PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

① Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application."

CONSTRUCTION NOTES:

Do not grout rubber gasket joints without Manufacturer's recommendations.
Do not use bricks, masonry blocks, native stone, or similar materials in conjunction with grouted connections when filling void spaces around pipes or box culverts.

MATERIAL NOTES:

Provide grouted connections in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application."

GENERAL NOTES:

See applicable standards for notes and details not shown:
Precast Base (PB)
Precast Junction Box (PJB)
Precast Round Manhole (PRM)
Precast Safety End Treatments C/D Square (PSET-SC)
Precast Safety End Treatments P/D Square (PSET-SP)
Provide Concrete Box Culverts in accordance with Item 462 "Concrete Box Culverts and Drains."
Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464 "Reinforced Concrete Pipe."
Provide Thermoplastic Pipe (TP) in accordance with Special Specification Thermoplastic Pipe.
Payment for grouted connections is considered subsidiary to other bid items.



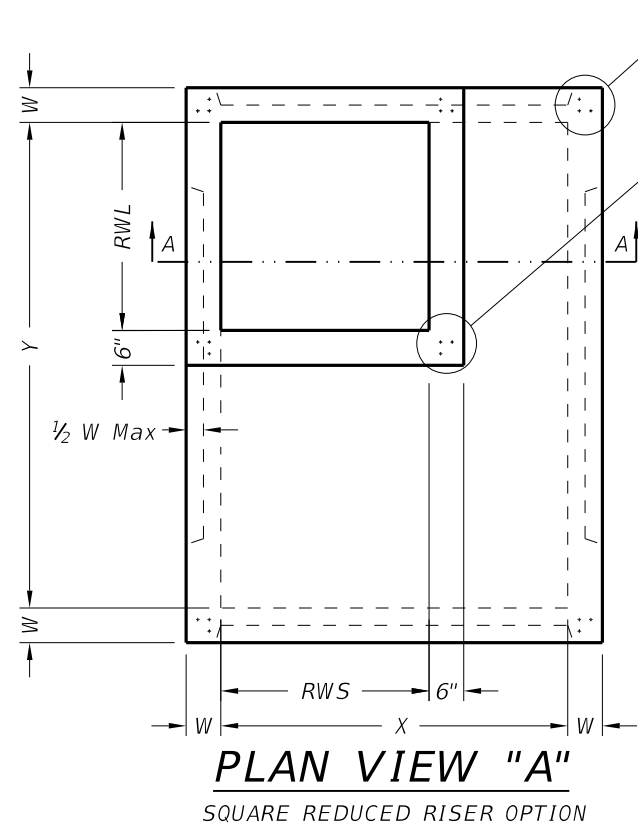
PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC

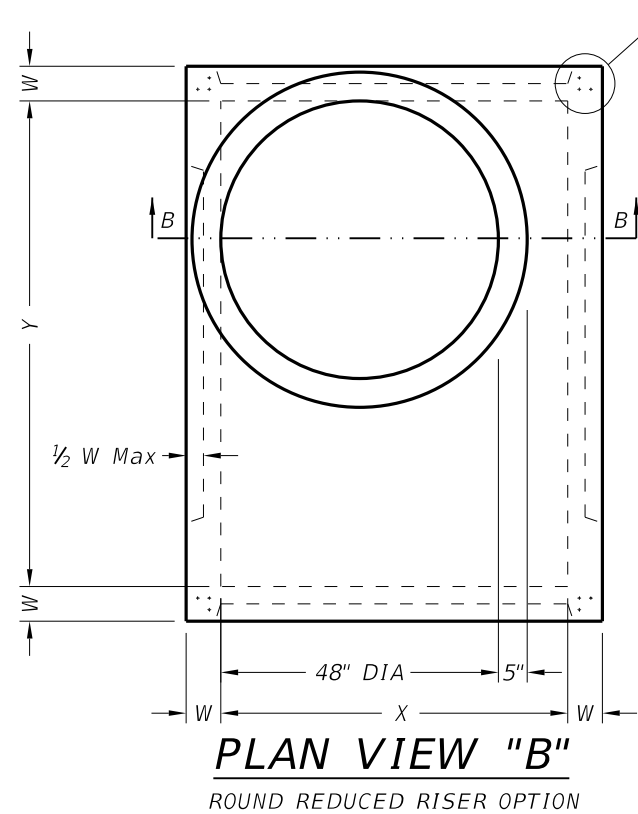
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REVISIONS	0610	03	095	IH 30
	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	117	

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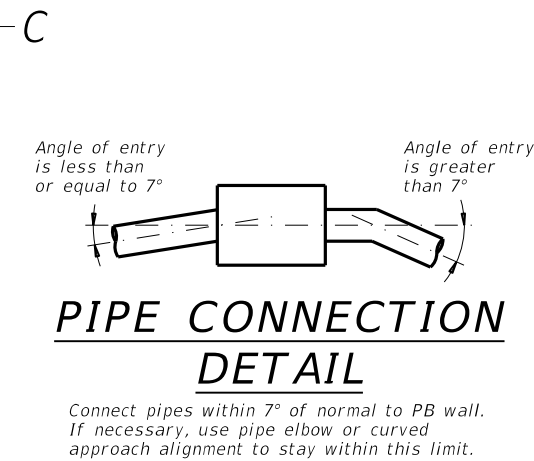
PLAN VIEW "A"
 SQUARE REDUCED RISER OPTION



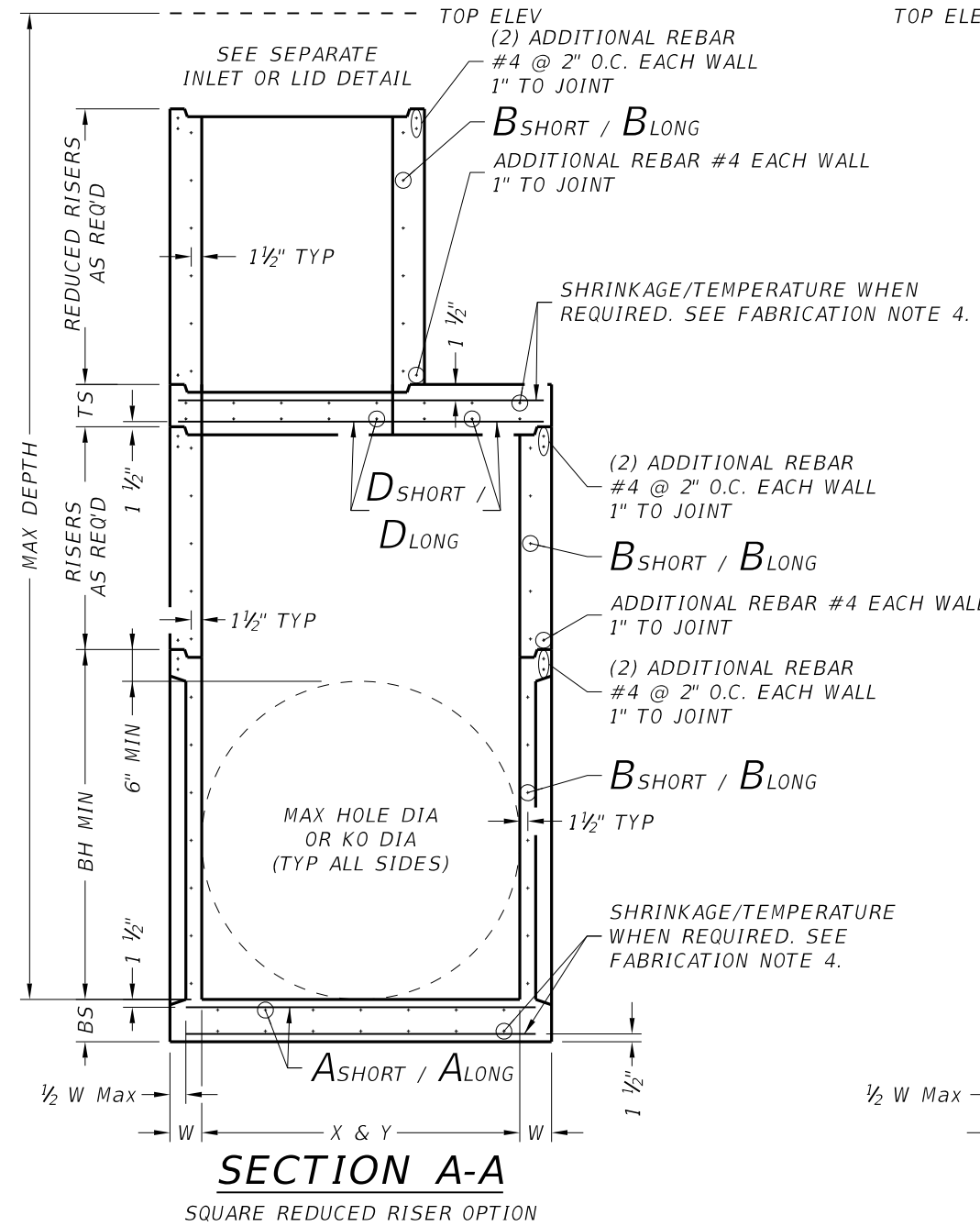
PLAN VIEW "B"
 ROUND REDUCED RISER OPTION

C (3) VERTICAL REBAR IN BASE & RISERS
 #4 @ 2" O.C. EACH CORNER
 2" TO CORNER

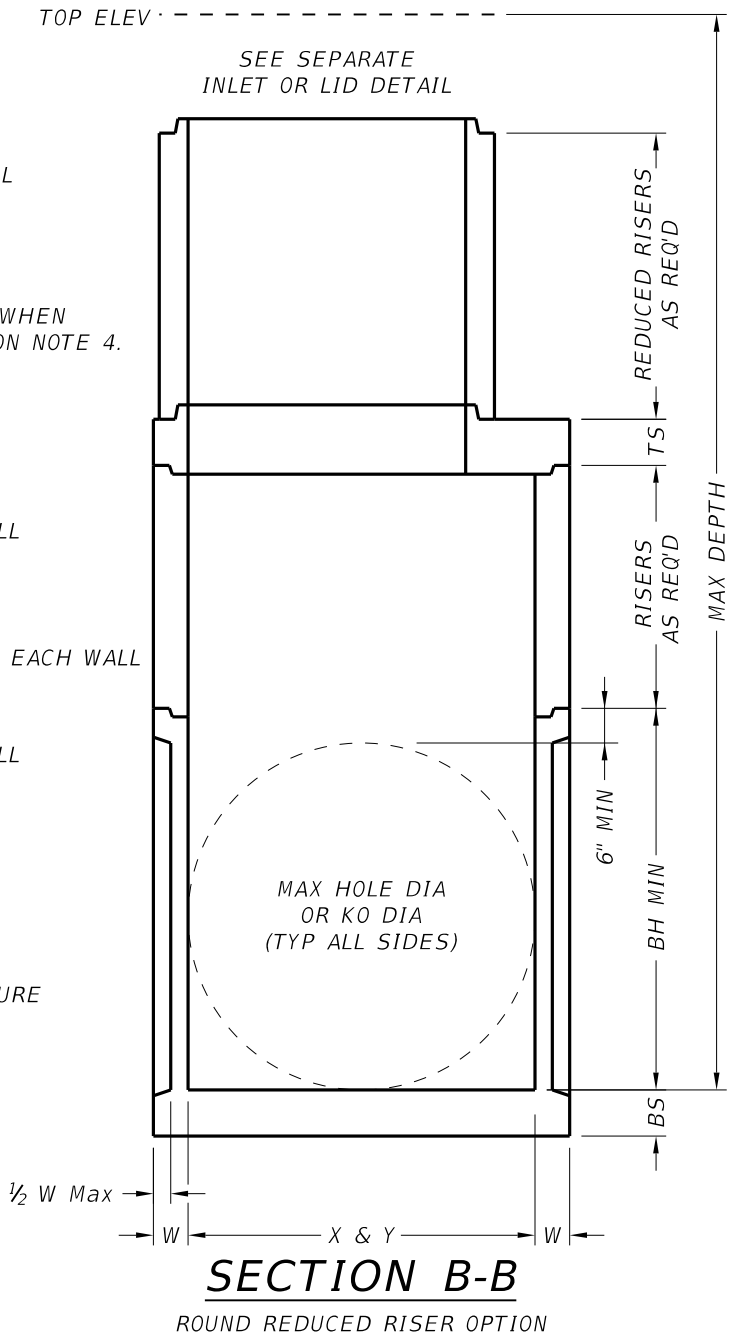
F (3) VERTICAL REBAR IN REDUCED RISERS
 #4 @ 2" O.C. EACH CORNER
 2" TO CORNER



PIPE CONNECTION DETAIL



SECTION A-A
 SQUARE REDUCED RISER OPTION



SECTION B-B
 ROUND REDUCED RISER OPTION

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 1/2" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

INSTALLATION NOTES:

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

GENERAL NOTES:

1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING



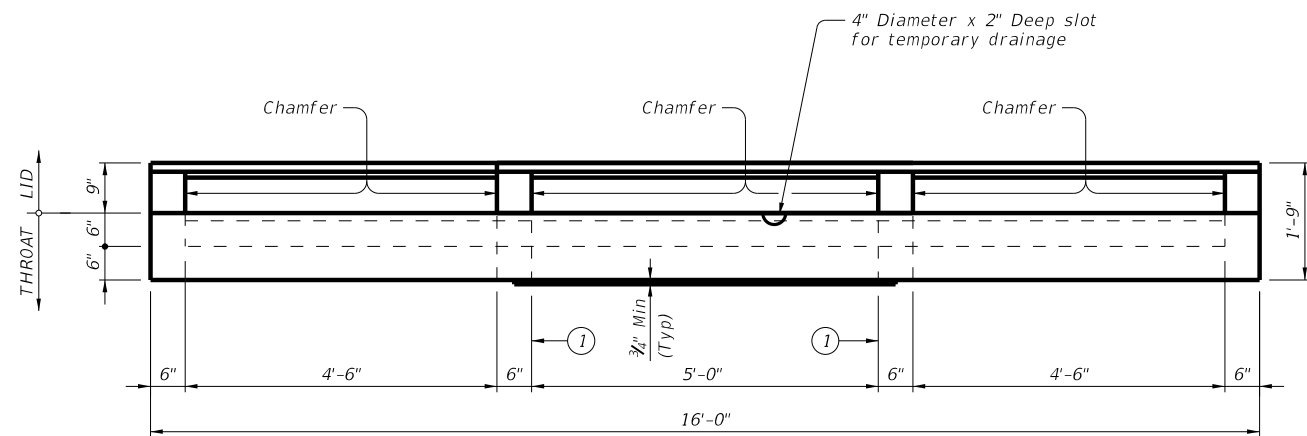
PRECAST BASE

PB

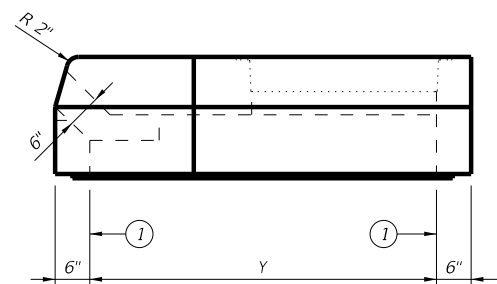
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REVISIONS	0610	03	095	IH 30
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	ATL	TITUS	118	

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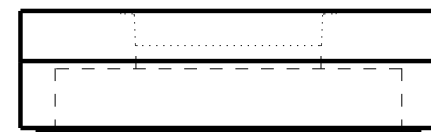
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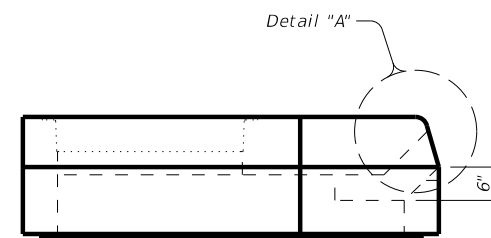
FRONT VIEW
 (Showing left and right extensions)



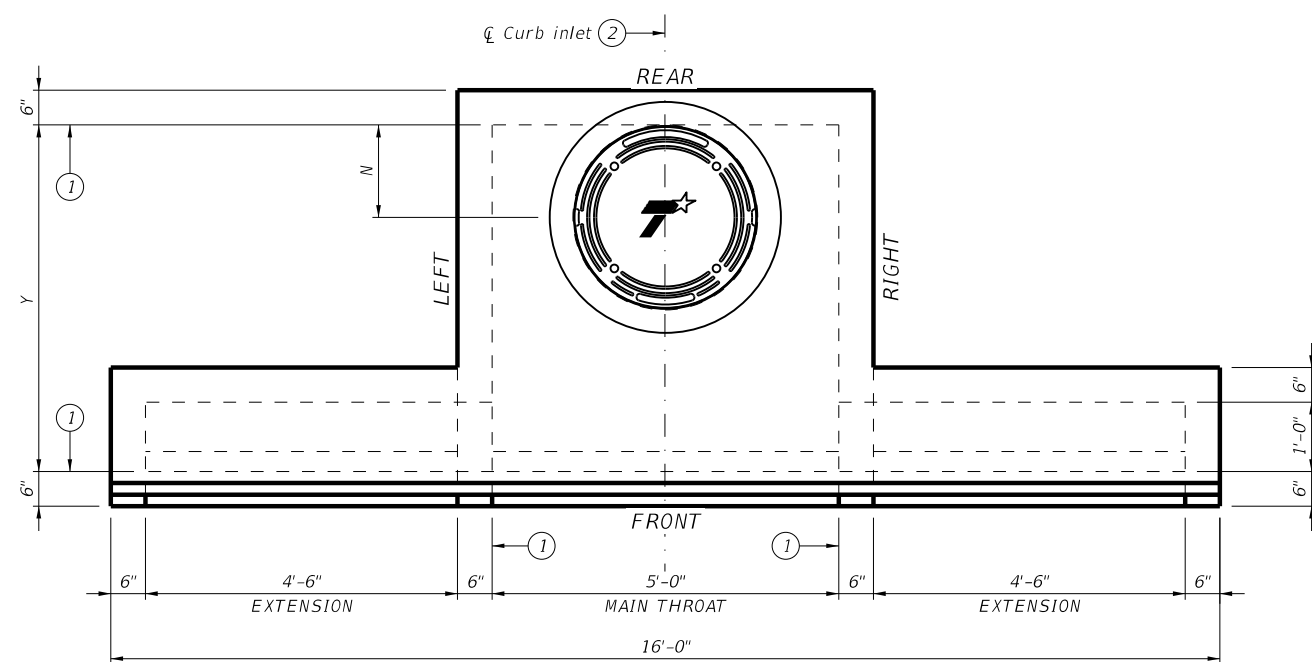
RIGHT VIEW



REAR VIEW
 (Extensions not shown)

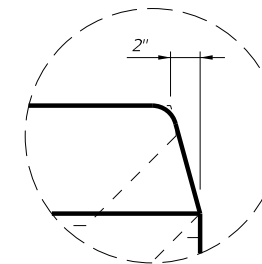


LEFT VIEW



PLAN VIEW
 (Showing left and right extensions)

- ① Matches inside face of wall of precast base or riser below inlet.
- ② Reference point is located where the CL of the main throat intersects the normal gutter line. See Curb and Gutter Transition Details for PCO Inlet (CGT-PCO) standard for more information.



DETAIL "A"

HS20 LOADING

SHEET 1 OF 2



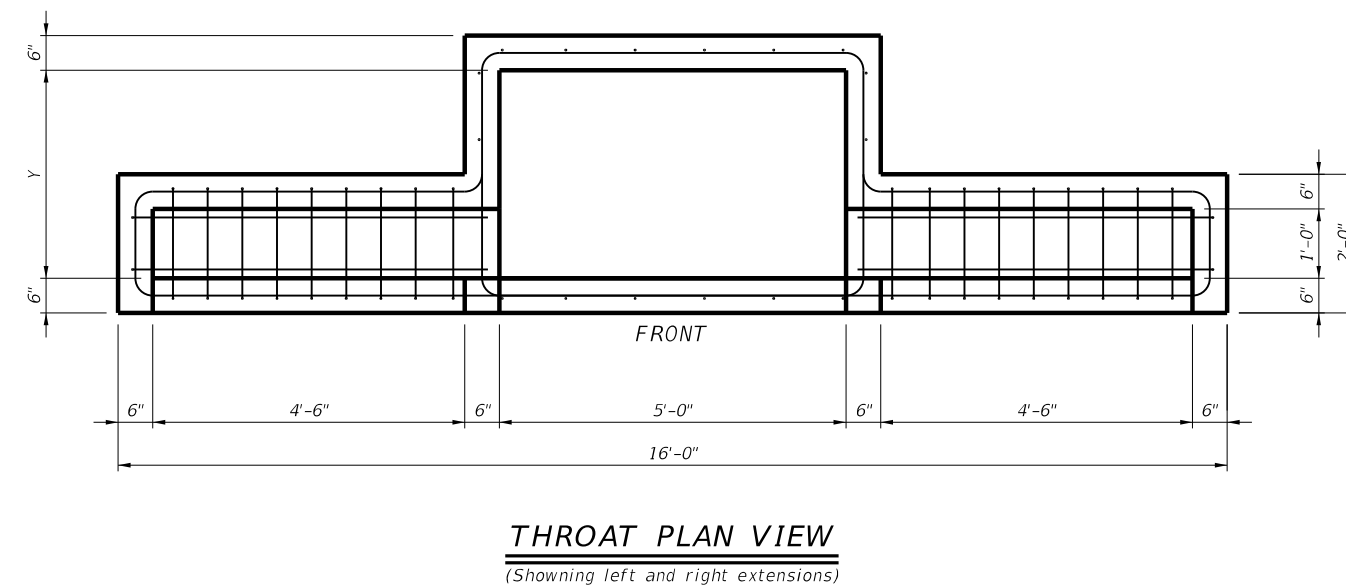
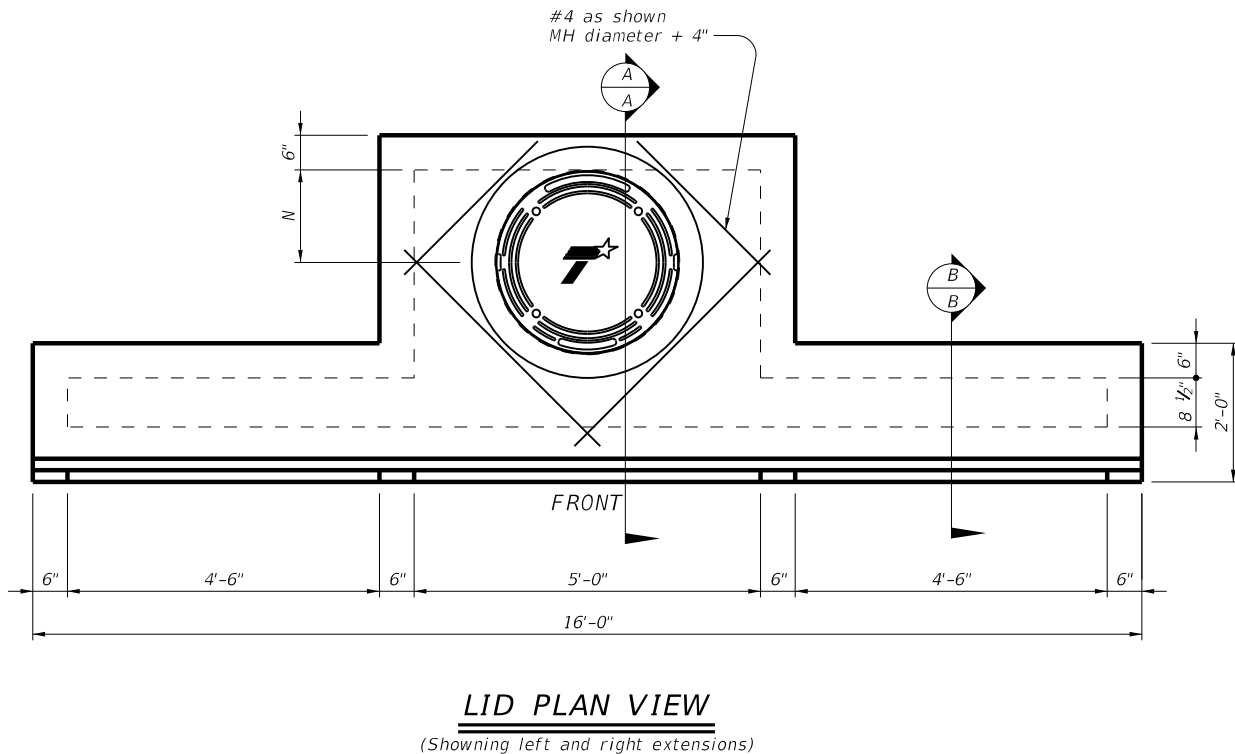
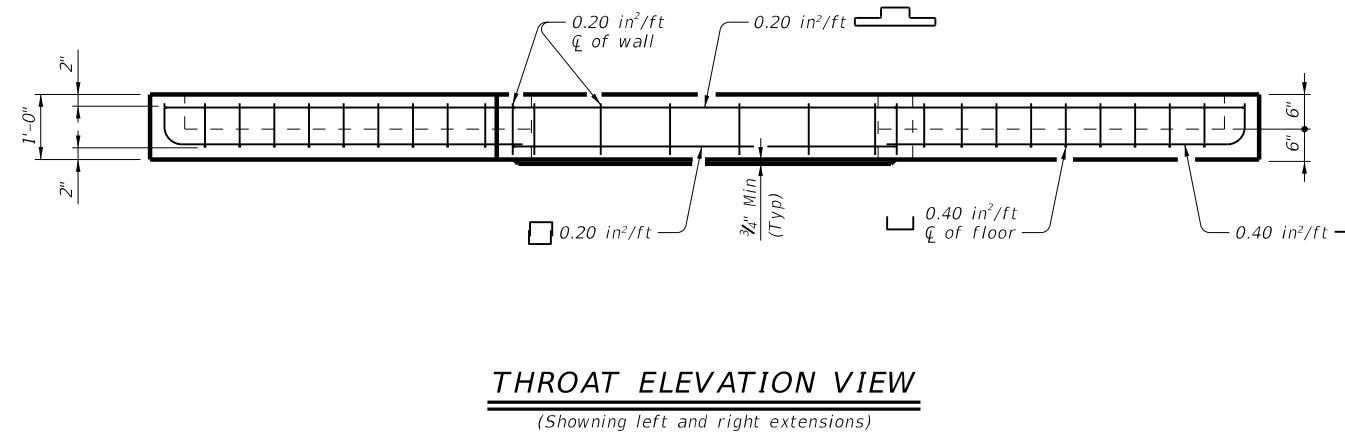
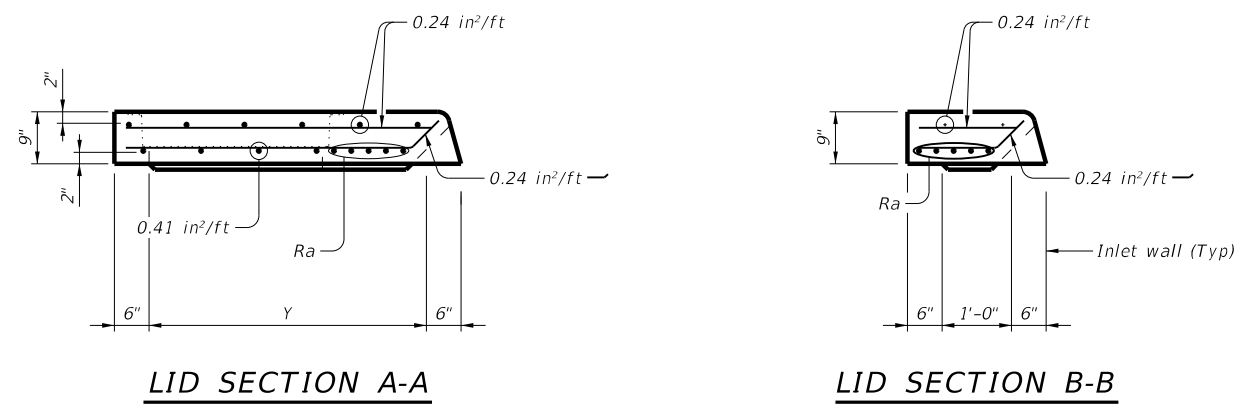
**PRECAST CURB INLET
 OUTSIDE ROADWAY**

PCO

FILE: CD-PCO-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
06-2023: Added reference point.	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	119	

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 FILE: P:\116\35\04\Design\Civil\Standards\Drainage\CD-PCO-23.dgn



- FABRICATION NOTES:**
1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
 2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
 3. Extensions may be right, left, both or none. Provide extensions as specified elsewhere in the plans.
 4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4". Lid may employ a butt joint with dowels at the Contractor's option.
 5. Provide lifting devices in conformance with Manufacturer's recommendations.
 6. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.
 7. Chamfer vertical edges of inlet lid 3/4" as shown in Front View, sheet 1.

- INSTALLATION NOTES:**
1. Inlet throat and lid are not intended for direct traffic. Do not place in roadway.
 2. Seal tongue and groove joints and butt joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
 3. Do not grout rubber gasket joints without Manufacturer's recommendation.

- GENERAL NOTES:**
1. Designed according to ASTM C913.
 2. Open area of main throat = 360 sq in. Open area of one extension throat = 324 sq in.
 3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, size, and extension placement. Extensions are subsidiary to inlet.

Cover dimensions are clear dimensions, unless noted otherwise.

Size (Y)	N	MH Dia*	Ra
3'	9"	18"	(4) #5 Additional
4'	16"	32"	(4) #5 Additional
5'	16"	32"	(4) #5 Additional
6'	16"	32"	(4) #5 Additional

*Nominal ring and cover size.

HS20 LOADING SHEET 2 OF 2

Texas Department of Transportation
 Bridge Division Standard

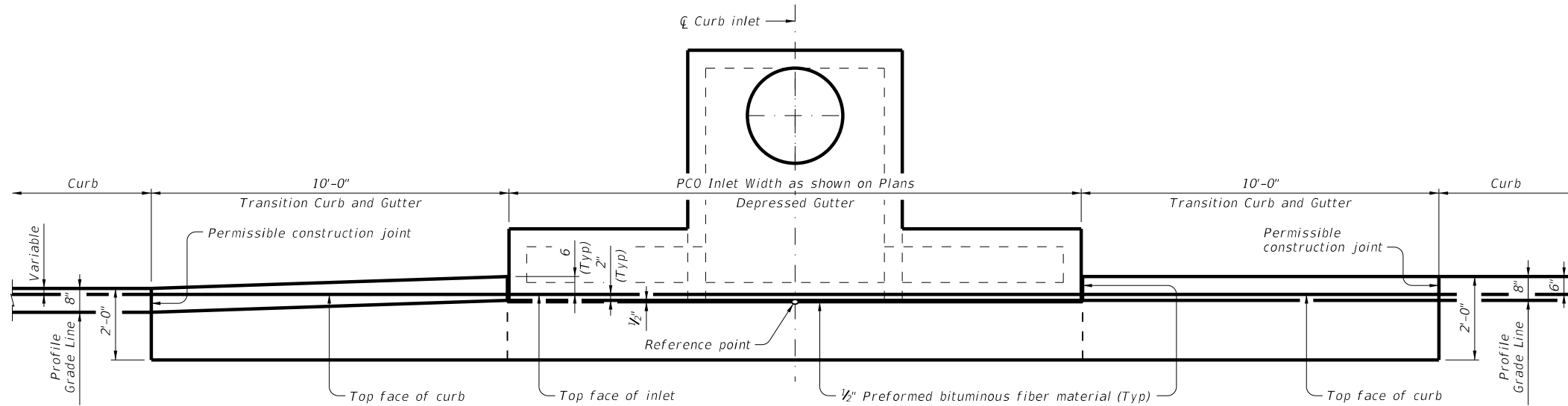
**PRECAST CURB INLET
 OUTSIDE ROADWAY**

PCO

FILE: CD-PCO-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
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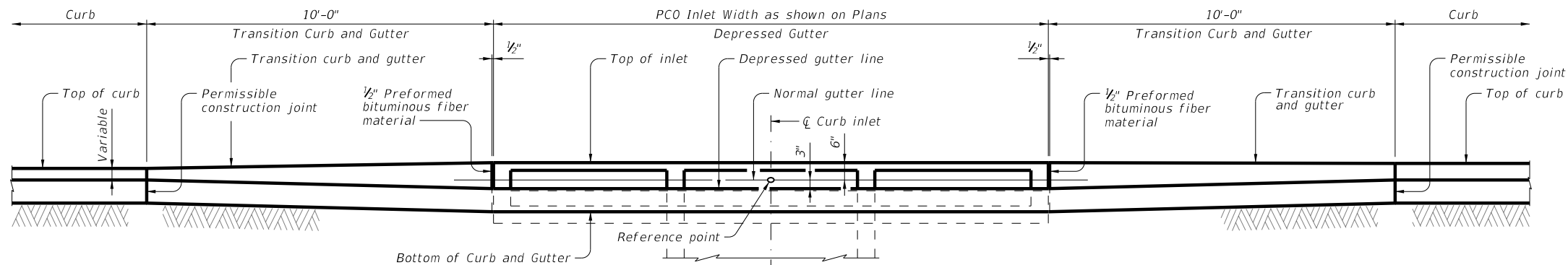
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SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

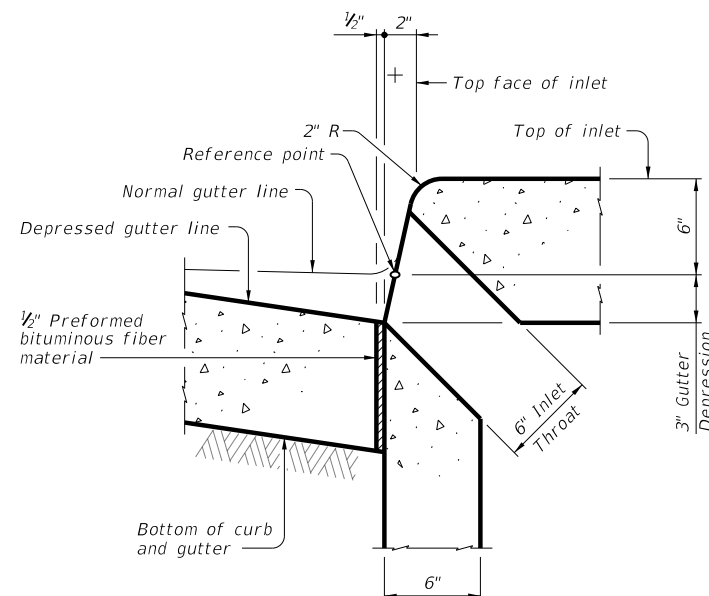
PLAN



SHOWING TYPE I, IIa & III Curb and Gutter

SHOWING TYPE II & IV Curb and Gutter

ELEVATION



SECTION AT GUTTER AND INLET

(Reinforcing steel not shown for clarity.)

CONSTRUCTION NOTES:
 Align top face of curb with PCO Inlet as shown.

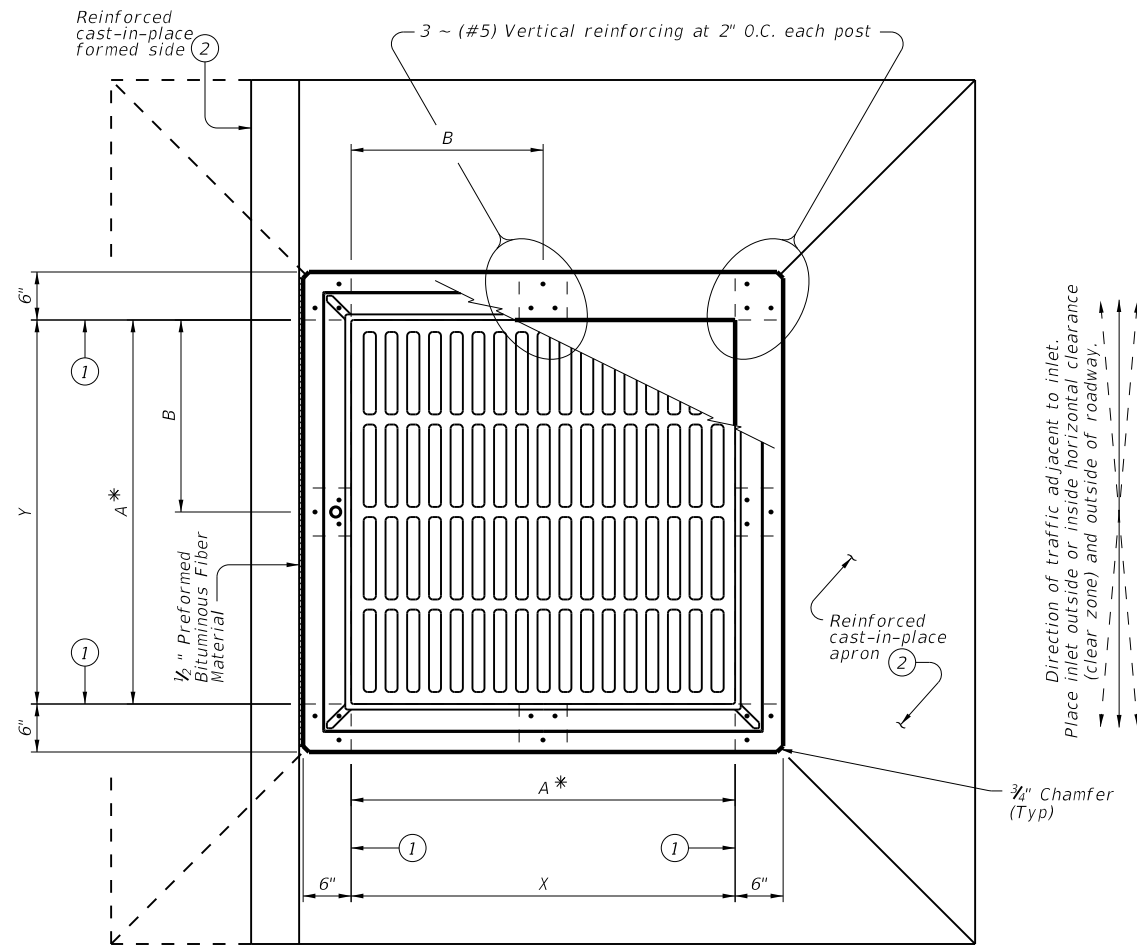
MATERIAL NOTES:
 Provide 1/2" preformed bituminous fiber material.

GENERAL NOTES:
 Reference point is located where the centerline of the main throat intersects the normal gutter line.
 See Precast Curb Inlet Outside Roadway (PCO) standard for details and notes not shown.
 See Concrete Curb and Curb and Gutter (CCCG-22) standard for details and notes not shown.
 Curb and Gutter Transitions is paid for and in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
 Preformed bituminous fiber material is subsidiary to PCO Inlet.

				Bridge Division Standard	
<h2>CURB AND GUTTER TRANSITION DETAILS FOR PCO INLET</h2>					
<h3>CGT-PCO</h3>					
FILE: CD-CGT-PCO-23.dgn	DN: TxDOT	CK: AES	DW: JTR	CK: AES	
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0610	03	095	IH 30	
06-2023: Added reference point.	DIST	COUNTY	SHEET NO.		
	ATL	TITUS	121		

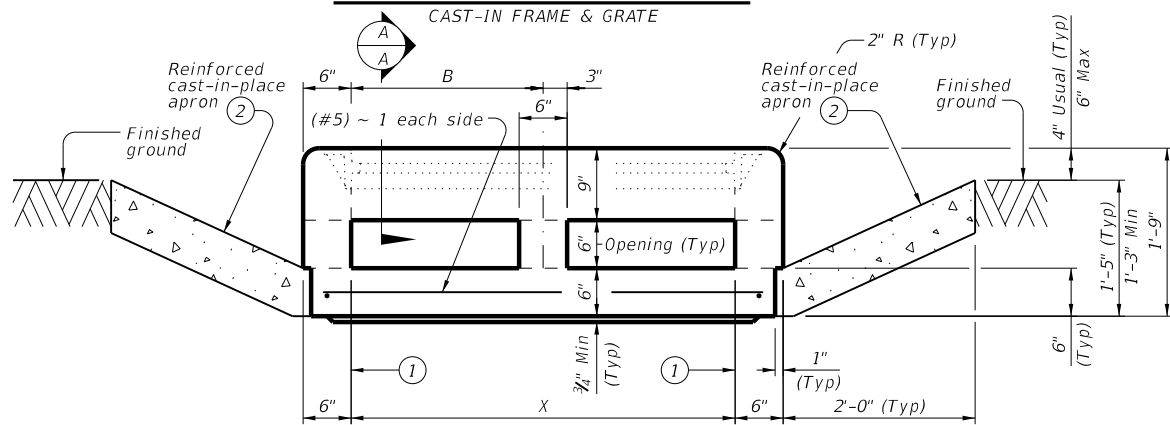
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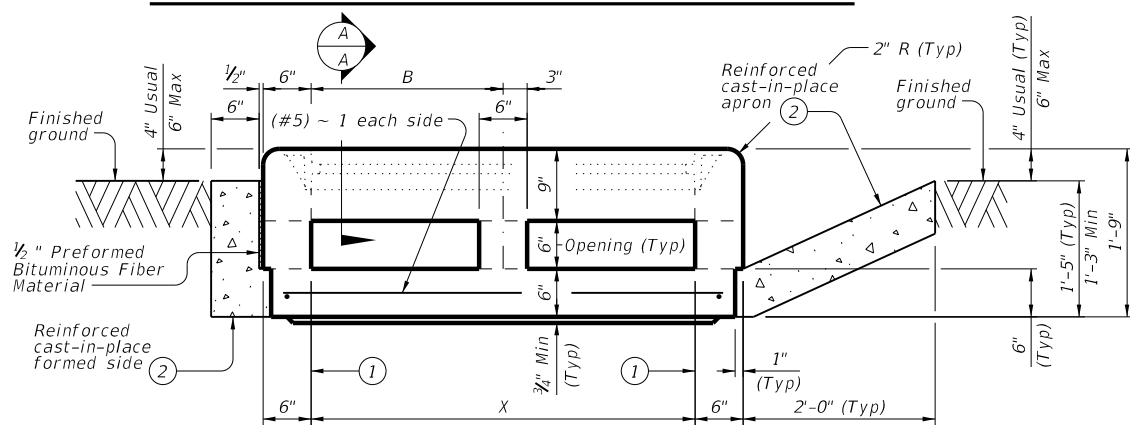


PLAN VIEW ~ STYLE 'FG' ③

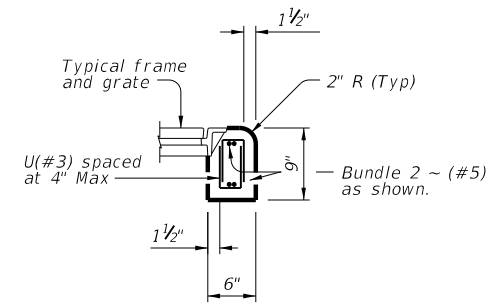
CAST-IN FRAME & GRATE



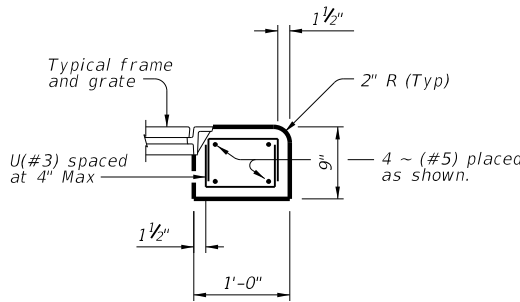
ELEVATION VIEW WITHOUT FORMED SIDE ④



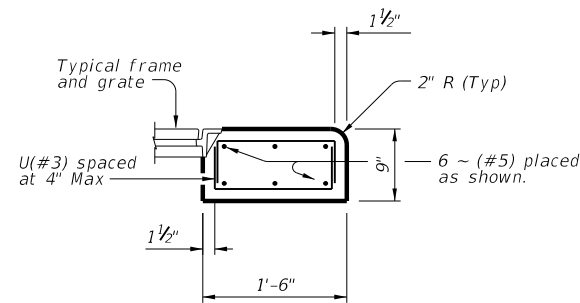
ELEVATION VIEW WITH FORMED SIDE ④



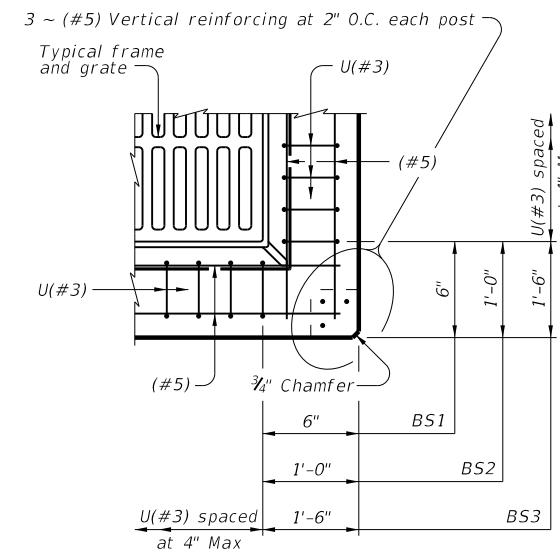
SECTION A-A ~ BS1



SECTION A-A ~ BS2

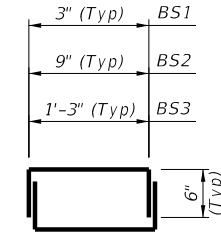


SECTION A-A ~ BS3



TYPICAL CORNER REINFORCING PLAN DETAIL

Showing BS2 other beam sections similar.



BARS U (#3)
 Showing one complete bar.

Style	Size (X x Y)	A x A *	B x B	Beam Section
FG	3'x3'	3'x3'	1.5'x1.5'	BS1
FG	4'x4'	3'x3'	2'x2'	BS2
FG	4'x4'	4'x4'	2'x2'	BS1
FG	5'x5'	3'x3'	2.5'x2.5'	BS3
FG	5'x5'	4'x4'	2.5'x2.5'	BS2

*Nominal frame/grate size.

- ① Matches inside face of wall of precast base or riser below inlet.
- ② Construct cast-in-place reinforced concrete with or without formed side. Place formed side/sides as directed elsewhere in the plans. Formed sides may only be used on sides parallel to traffic. Use Class "C" concrete. Apron and formed side reinforcing not shown for clarity. Apron and formed side are subsidiary to PAZD-CZ. Apron is 2'-0" width around precast zone drain, unless an optional formed side is used. For apron and formed side, provide (#4) reinforcing at 12" O.C.
- ③ Top slab reinforcing not shown for clarity.
- ④ Top slab reinforcing and post reinforcing not shown for clarity.

FABRICATION NOTES:

- Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
- Provide Grade 60 reinforcing steel or equivalent area of WWR.
- Provide clear cover of 3/4" to reinforcing from bottom of slab and 2" to reinforcing from top of slab for structural reinforcement.
- Provide 1 1/2" end cover on (#5) reinforcing.
- Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
- Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

- Precast Area Zone Drain within Clear Zone (PAZD-CZ) is for use in ditches and medians outside and inside of the horizontal clearance (clear zone). PAZD-CZ is never placed in the roadway.
- Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
- Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

- Designed according to ASTM C913.
- Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

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

HL93 LOADING



PRECAST AREA ZONE DRAIN WITHIN CLEAR ZONE

PAZD-CZ

FILE: CD-PAZD-CZ-20.dgn	DN: SDC	CK: TAR	DW: JTR	CK: SDC
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REVISIONS	0610 03	095	IH 30	
	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	122	

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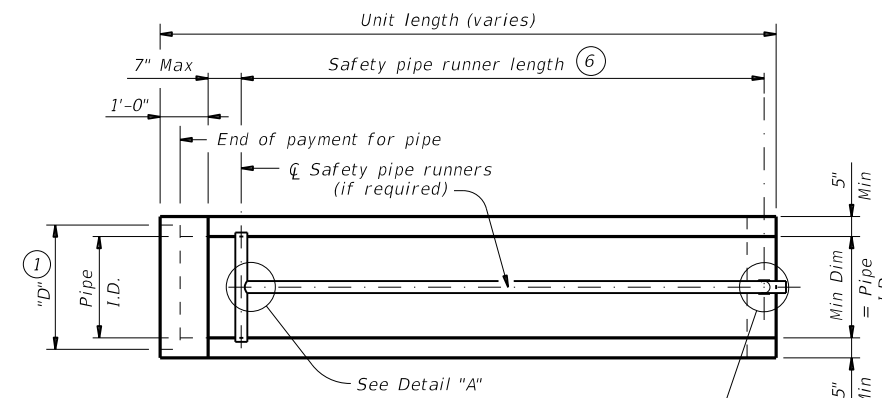
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REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (8)	"D" (1)	Slope	Min Length of Unit	Single Pipe		Multiple Pipes	
						Skew	Pipe Runners Required	Skew	Pipe Runners Required
12"	2"	1.15"	17.00"	3:1	2' - 11"	≤ 45°	No	≤ 45°	No
				4:1	3' - 6"				
				6:1	4' - 9"				
15"	2 1/4"	1.30"	20.50"	3:1	3' - 8"	≤ 45°	No	≤ 45°	No
				4:1	4' - 7"				
				6:1	6' - 5"				
18"	2 1/2"	1.60"	24.00"	3:1	4' - 6"	≤ 45°	No	≤ 45°	No
				4:1	5' - 8"				
				6:1	8' - 0"				
24"	3"	1.95"	31.00"	3:1	6' - 2"	≤ 45°	No	= 30°	No
				4:1	7' - 10"				
				6:1	11' - 3"				
30"	3 1/2"	2.65"	38.50"	3:1	7' - 10"	= 15°	No	= 15°	No
				4:1	10' - 1"				
				6:1	14' - 8"				
36"	4"	2.75"	45.50"	3:1	9' - 5"	= 0°	No	≥ 0°	Yes
				4:1	12' - 3"				
				6:1	17' - 11"				
42"	4 1/2"	2.7"	52.50"	3:1	11' - 1"	≥ 0°	Yes	≥ 0°	Yes
				4:1	14' - 5"				
				6:1	21' - 2"				

SAFETY PIPE RUNNER DIMENSIONS

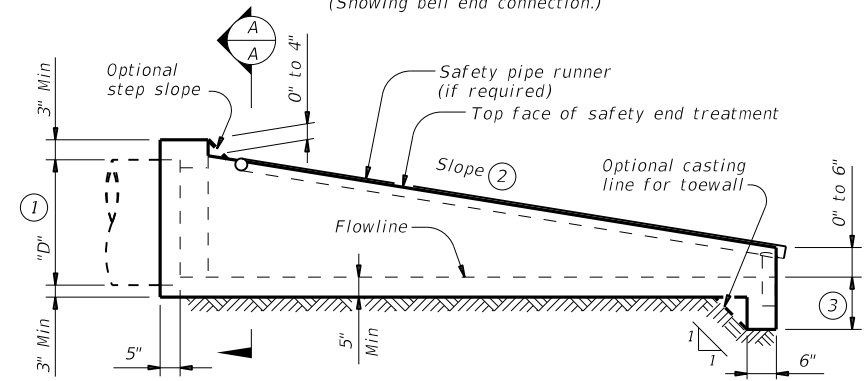
Max Safety Pipe Runner Length	Required Pipe Runner Size		
	Pipe Size	Pipe O.D.	Pipe I.D.
11' - 2"	3" STD	3.500"	3.068"
15' - 6"	3 1/2" STD	4.000"	3.548"
20' - 10"	4" STD	4.500"	4.026"
35' - 4"	5" STD	5.563"	5.047"



Pocket is to be formed to fit O.D. of pipe support post if safety pipe runners are used.

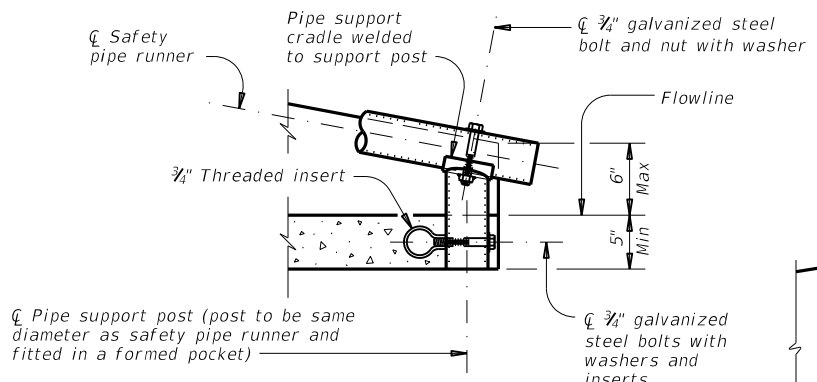
PLAN

(Showing bell end connection.)



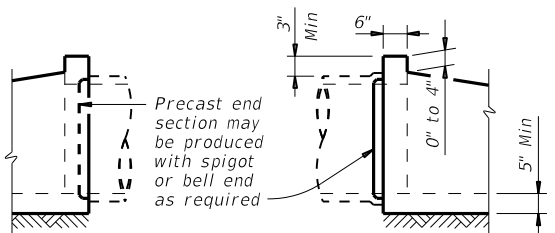
LONGITUDINAL ELEVATION

(Showing bell end connection.)



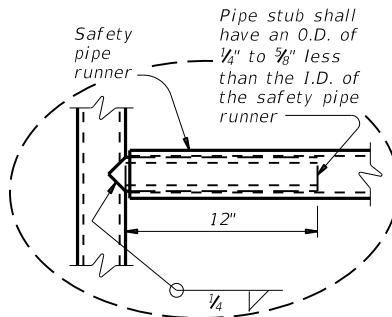
END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

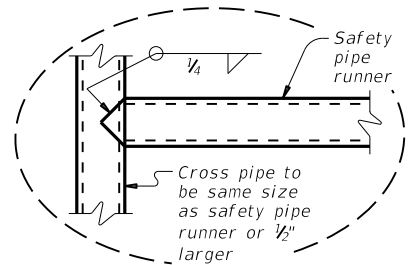


OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment)



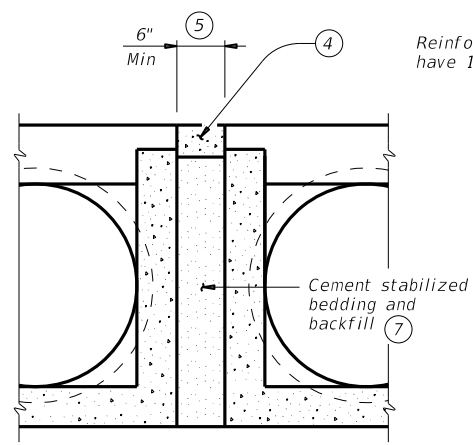
OPTION A



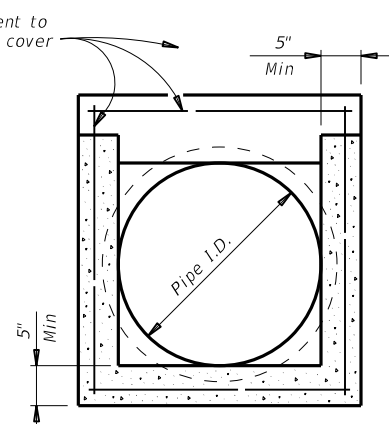
OPTION B

DETAIL A

(If required)

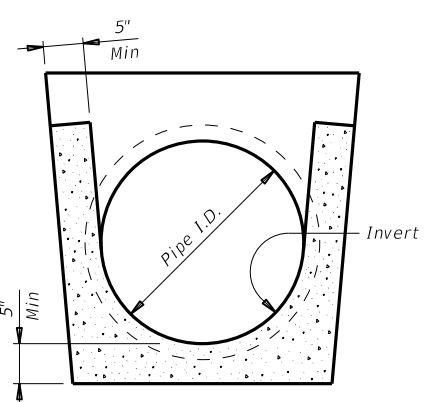


MULTIPLE PIPE INSTALLATION

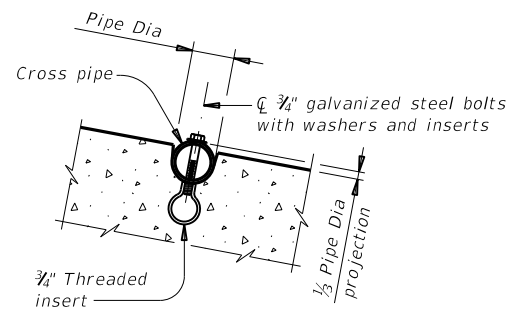


OPTION WITH SQUARE BOTTOM

SECTION A-A



OPTION WITH INVERT BOTTOM



INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)

- (1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.
- (2) Slope as shown elsewhere in plans. Slope of 3:1 or flatter is required for vehicle safety.
- (3) Toewall to be used only when dimension is shown elsewhere in the plans.
- (4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."
- (5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
- (6) Measured along slope.
- (7) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
- (8) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below:

- A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).
- B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor, the next larger size of safety end treatment may be furnished as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 1,800 Lbs at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

Provide safety pipe runners, cross pipes, pipe support posts, and pipe stubs meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464 "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

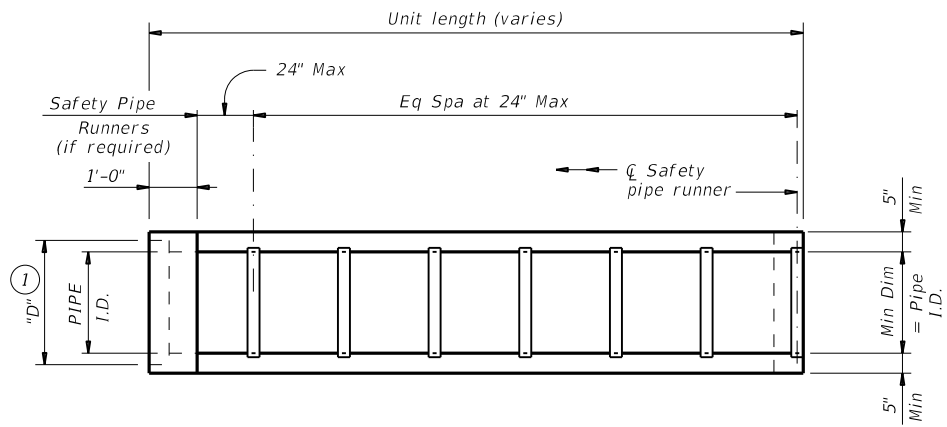
PRECAST SAFETY END TREATMENT TYPE II ~ CROSS DRAINAGE

PSET-SC

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	0610	03	095	IH 30
DIST	COUNTY		SHEET NO.	
ATL	TITUS		123	

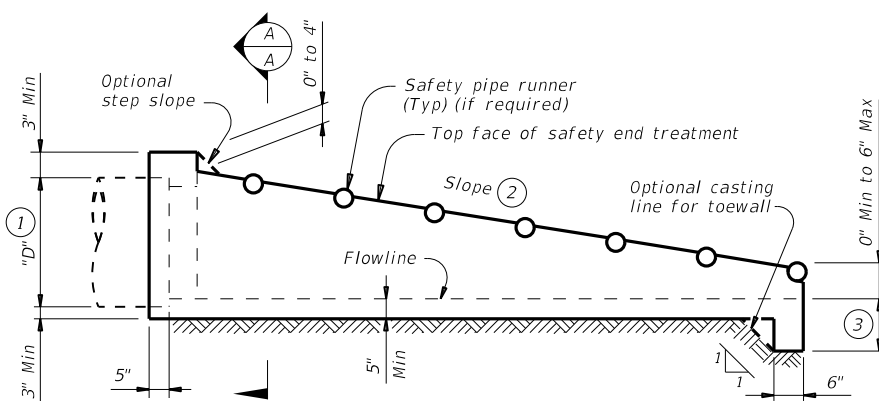
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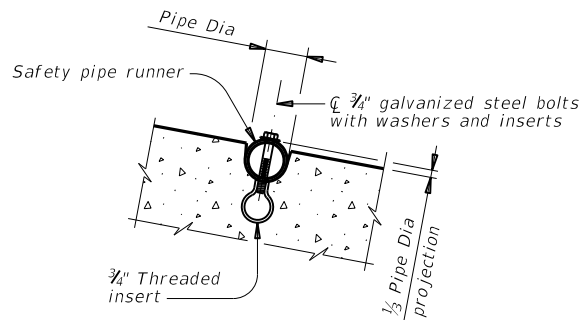
PLAN

(Showing bell end connection.)



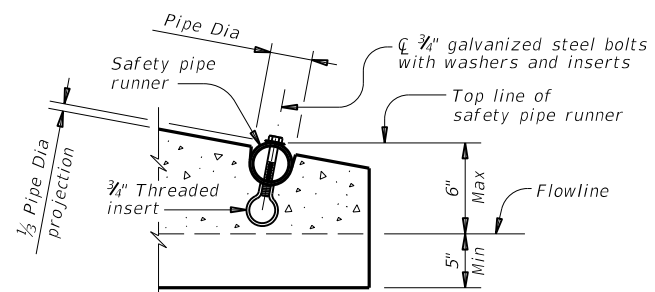
LONGITUDINAL ELEVATION

(Showing bell end connection.)

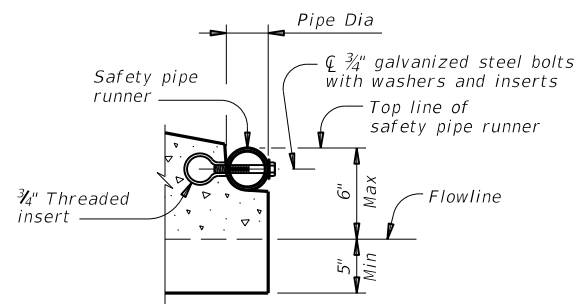


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



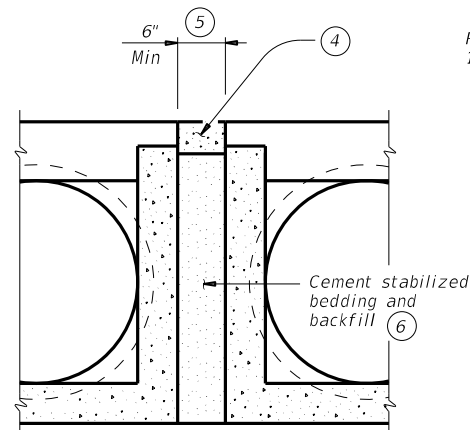
OPTION A



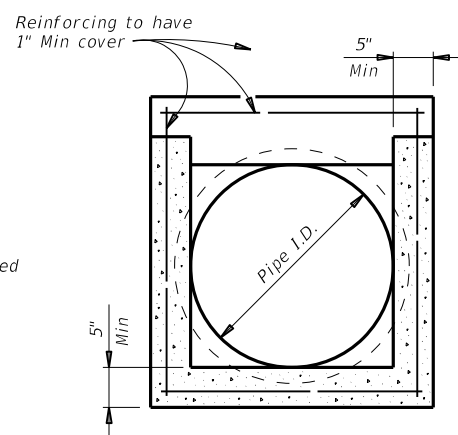
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)

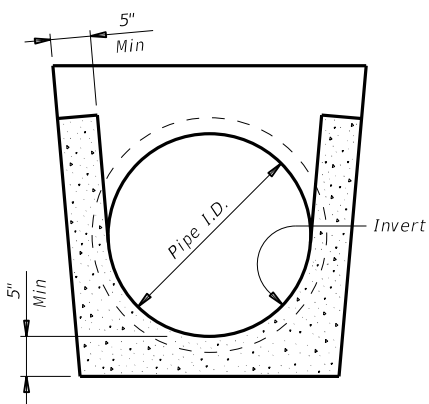


MULTIPLE PIPE INSTALLATION

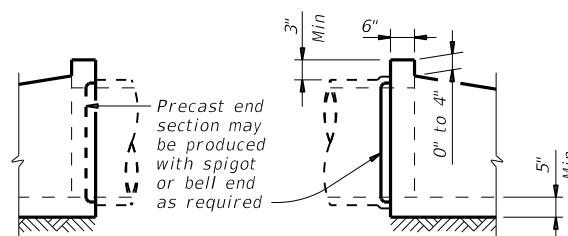


OPTION WITH SQUARE BOTTOM

SECTION A-A



OPTION WITH INVERT BOTTOM



OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4' - 9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 1/4"	1.30"	20.50"	6:1	6' - 5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 1/2"	1.60"	24.00"	6:1	8' - 0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' - 3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 1/2"	2.65"	38.50"	6:1	14' - 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' - 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 1/2"	2.7"	52.50"	6:1	21' - 2"	Yes	Yes	4" STD	4.500"	4.026"

- Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.
- Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
- Toewall to be used only when dimension is shown elsewhere in the plans.
- Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."
- Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
- Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
- Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment."
 When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.
 Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.
 Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below:
 A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).
 B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).
 At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.
 Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.
 Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.
 Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.
 Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation Bridge Division Standard

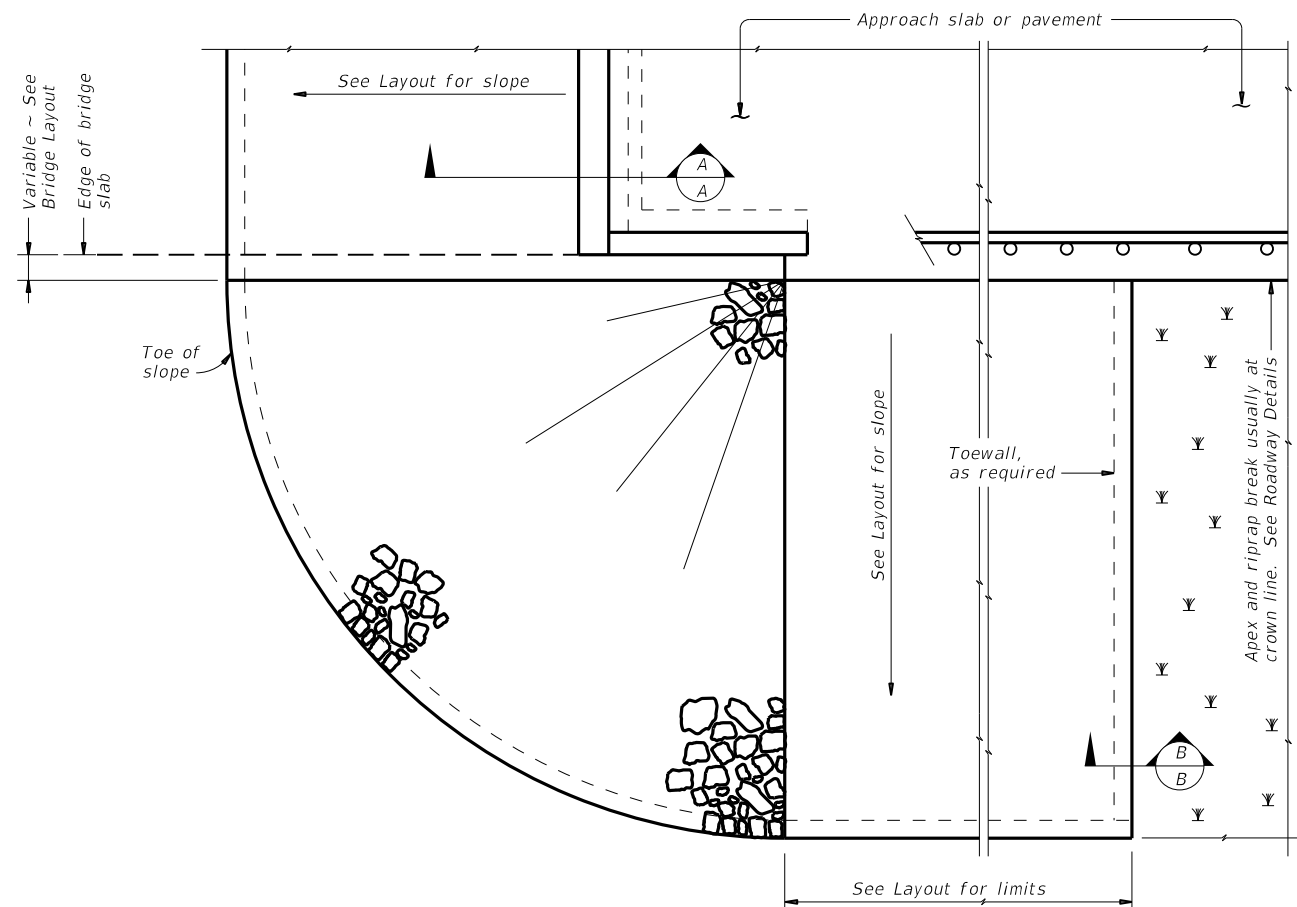
PRECAST SAFETY END TREATMENT
 TYPE II ~ PARALLEL DRAINAGE

PSET-SP

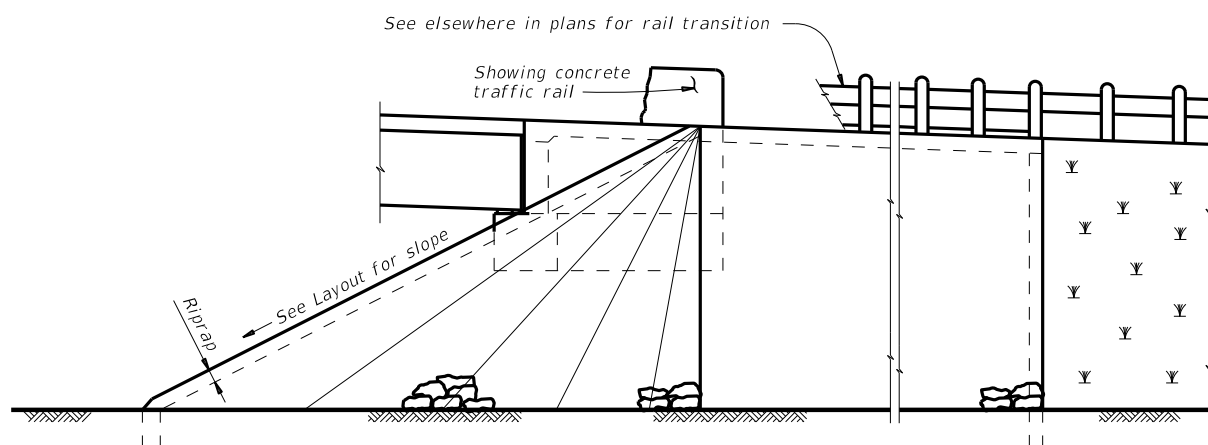
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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	0610	03	095	IH 30
DIST	COUNTY		SHEET NO.	
ATL	TITUS		124	

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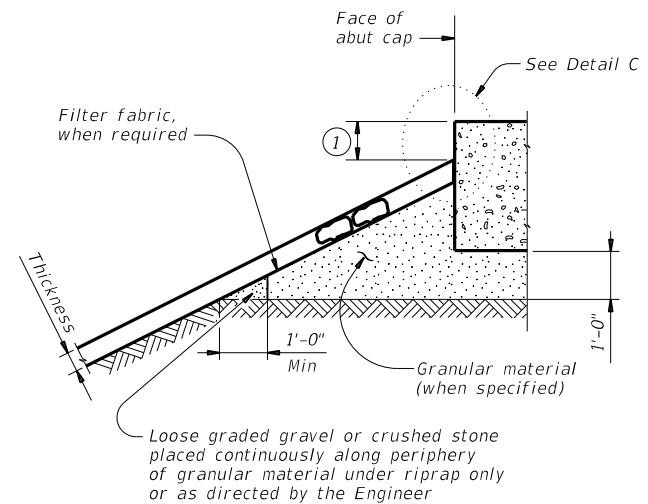
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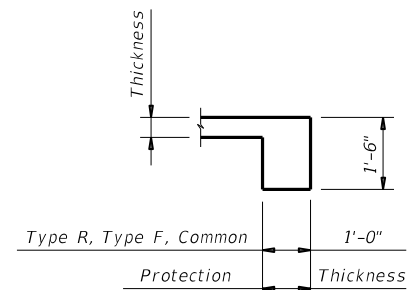
PLAN



ELEVATION

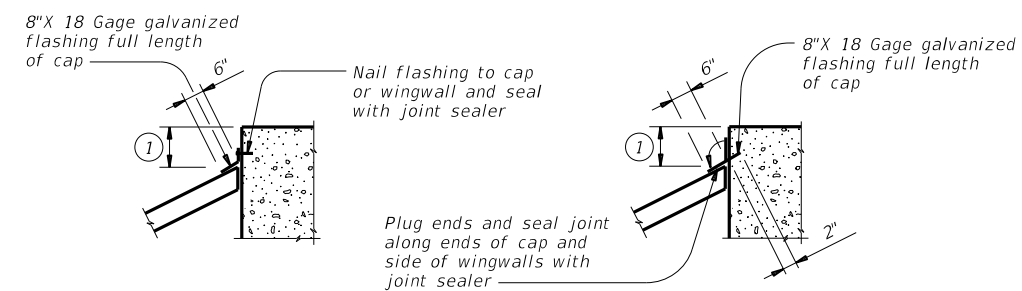


SECTION A-A AT CAP



SECTION B-B

Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".



CAP OPTION A

CAP OPTION B

DETAIL C

① Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

GENERAL NOTES:

Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.
 See elsewhere in plans for locations and details of shoulder drains.

SHEET 1 OF 2

		Bridge Division Standard	
<h2>STONE RIPRAP</h2>			
<h3>SRR</h3>			
FILE: WS-SRR-19.dgn	DN: AES	CK: JGD	DW: BWH
©TxDOT	April 2019	REVISIONS	HIGHWAY
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	0610	03	095
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	ATL	TITUS	125

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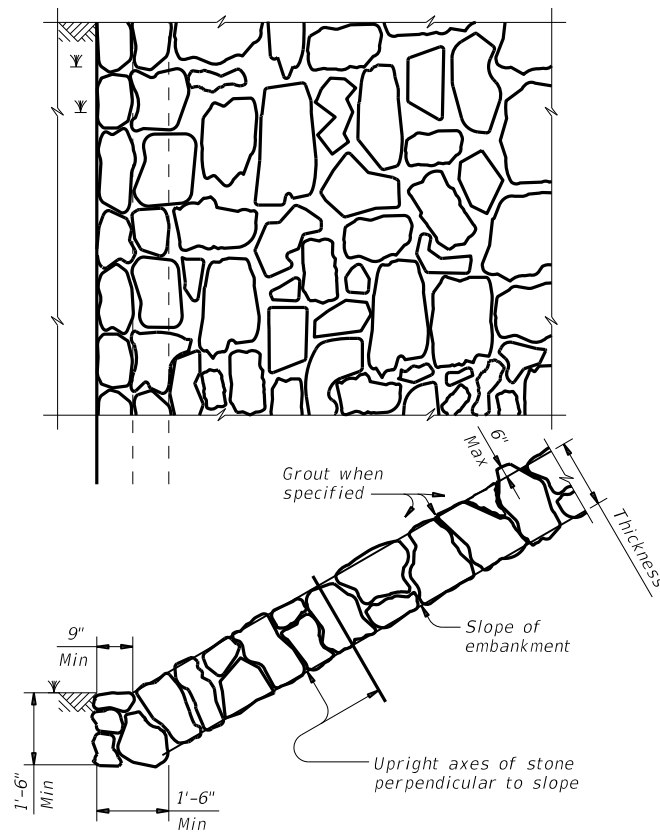


FIGURE 1 ~ TYPE R STONE RIPRAP
 dry or grouted

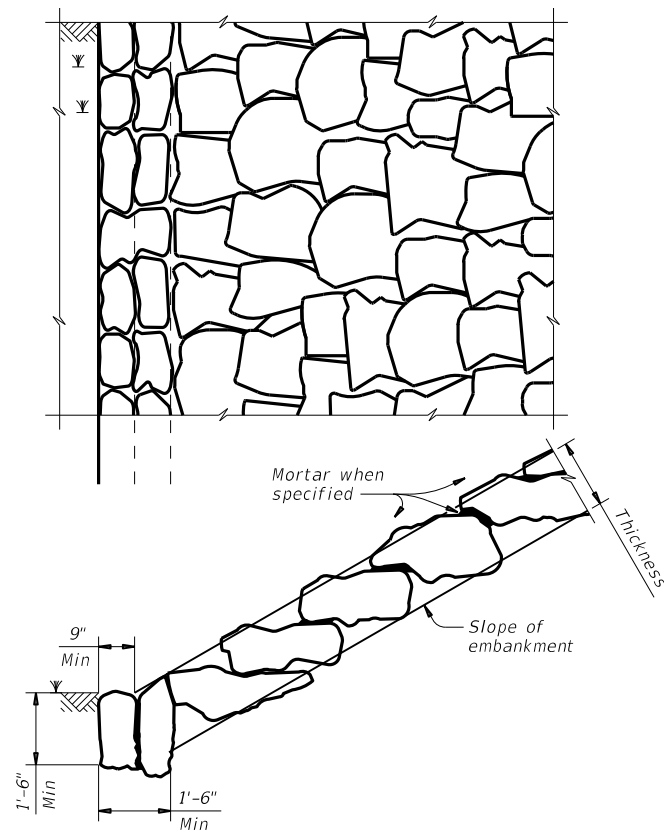


FIGURE 2 ~ TYPE F STONE RIPRAP
 dry or mortared

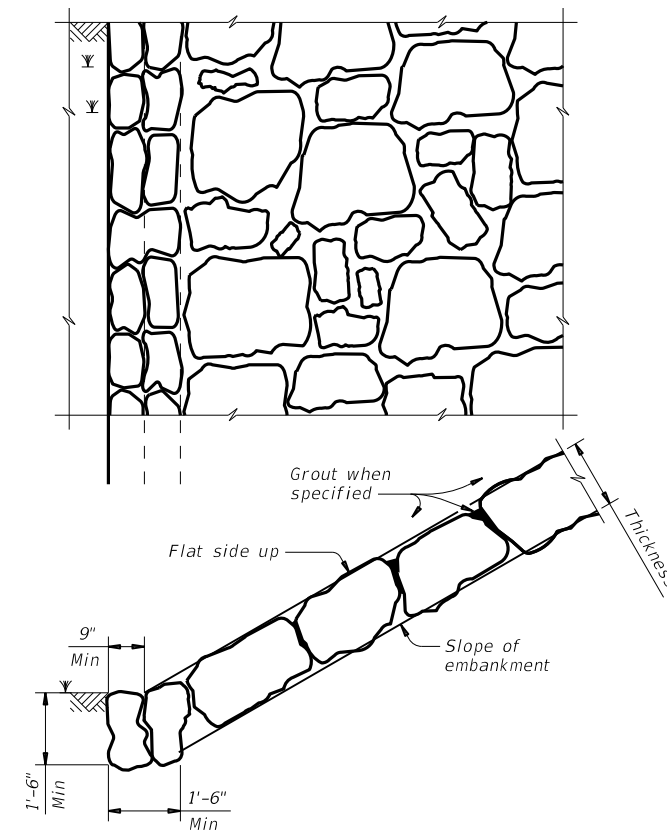


FIGURE 3 ~ TYPE F STONE RIPRAP
 grouted

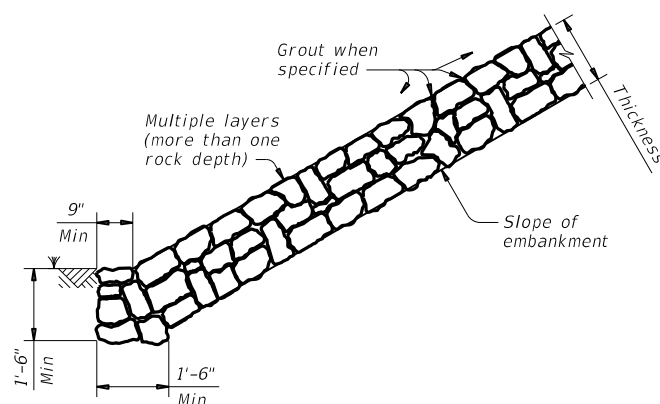
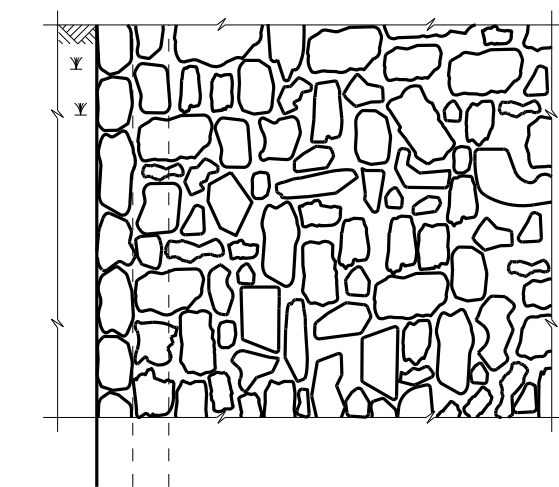


FIGURE 4 ~ COMMON STONE RIPRAP
 dry or grouted

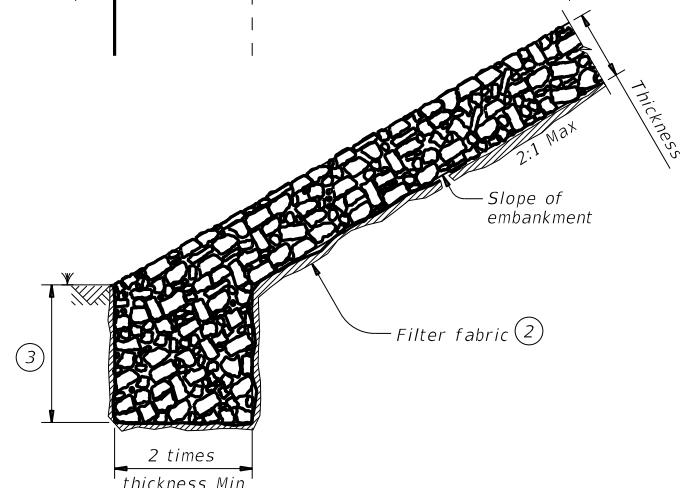
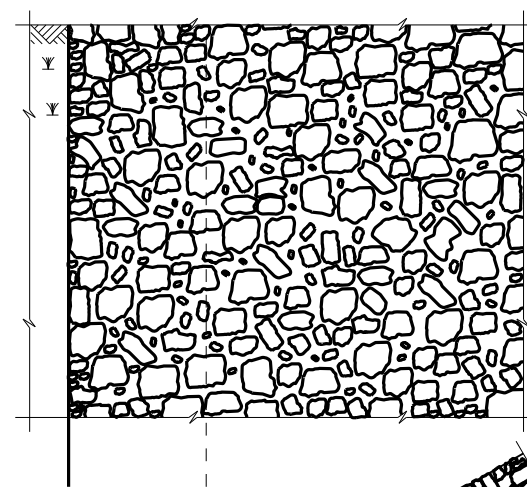
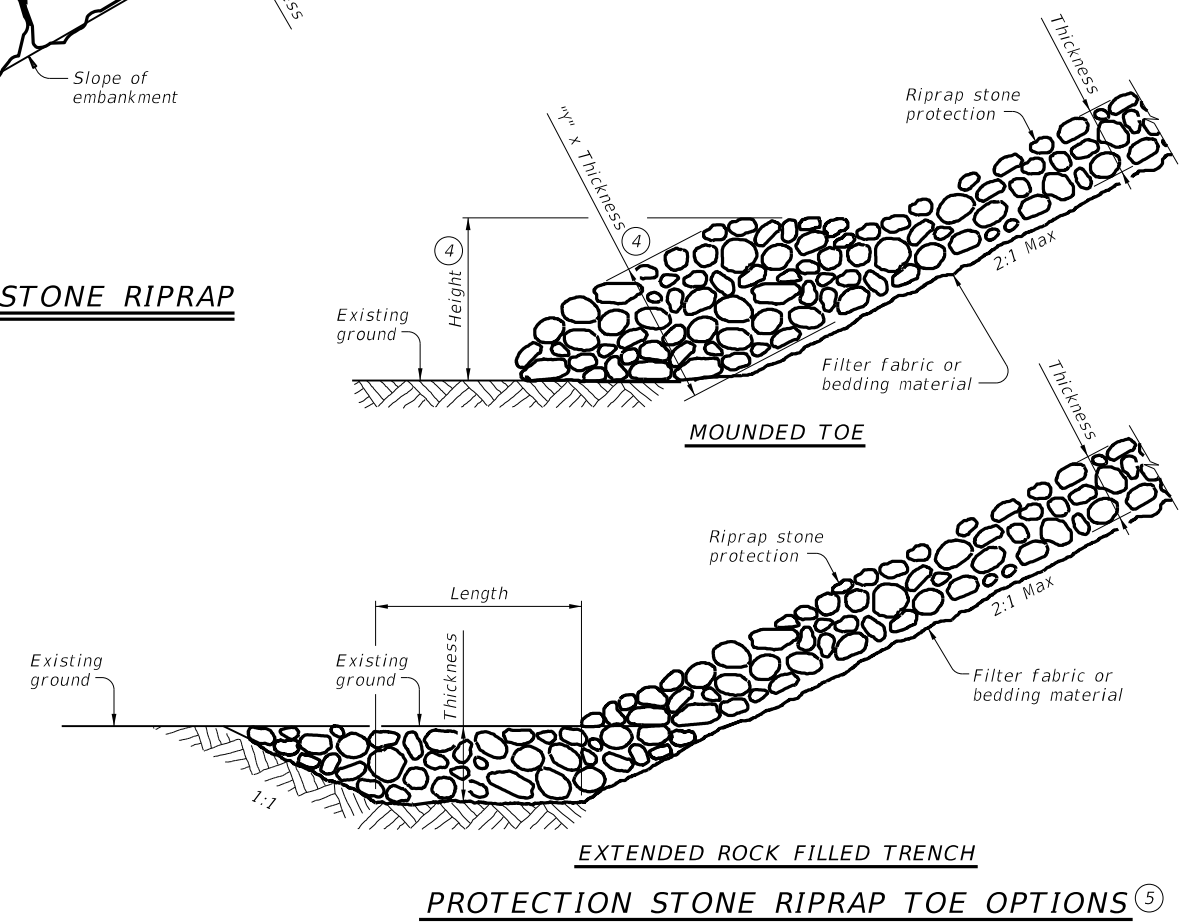


FIGURE 5 ~ PROTECTION STONE RIPRAP

- ② Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.
- ③ Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.
- ④ "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.
- ⑤ List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.
 Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



PROTECTION STONE RIPRAP TOE OPTIONS

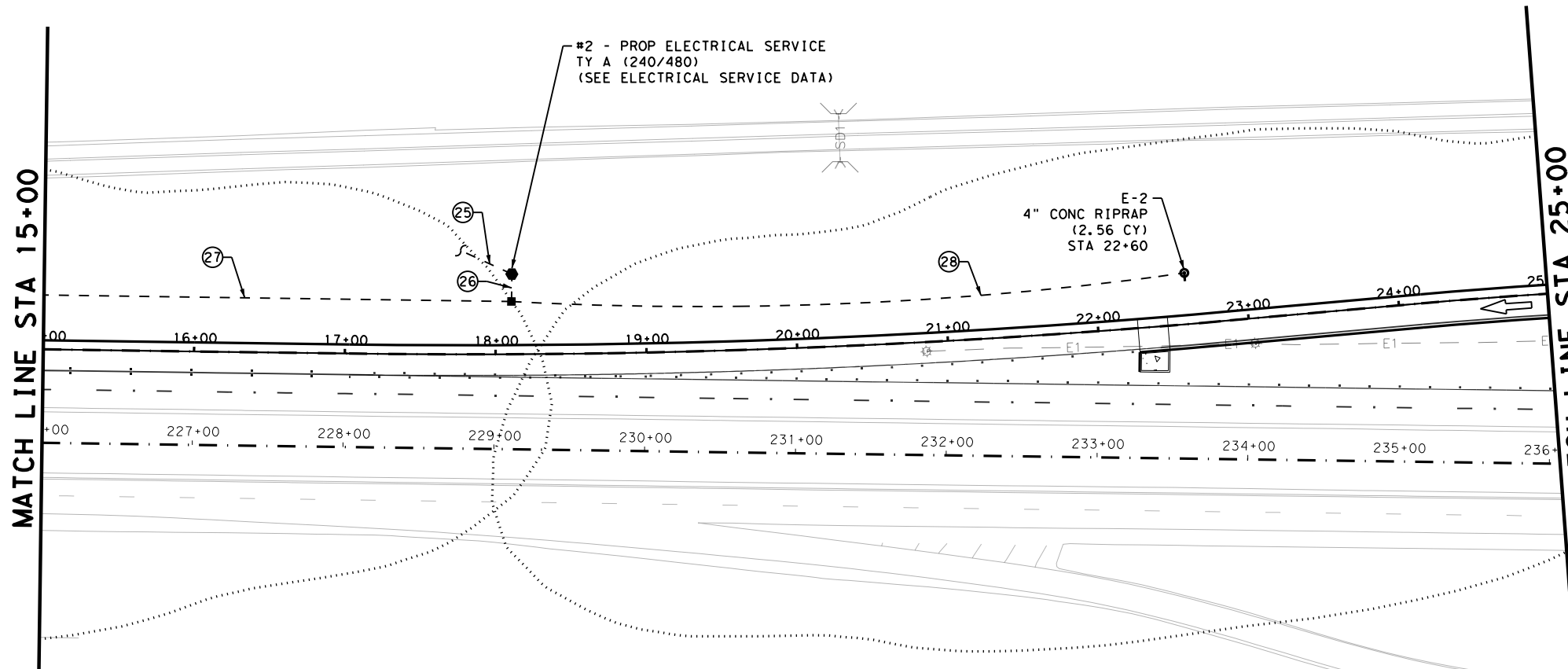
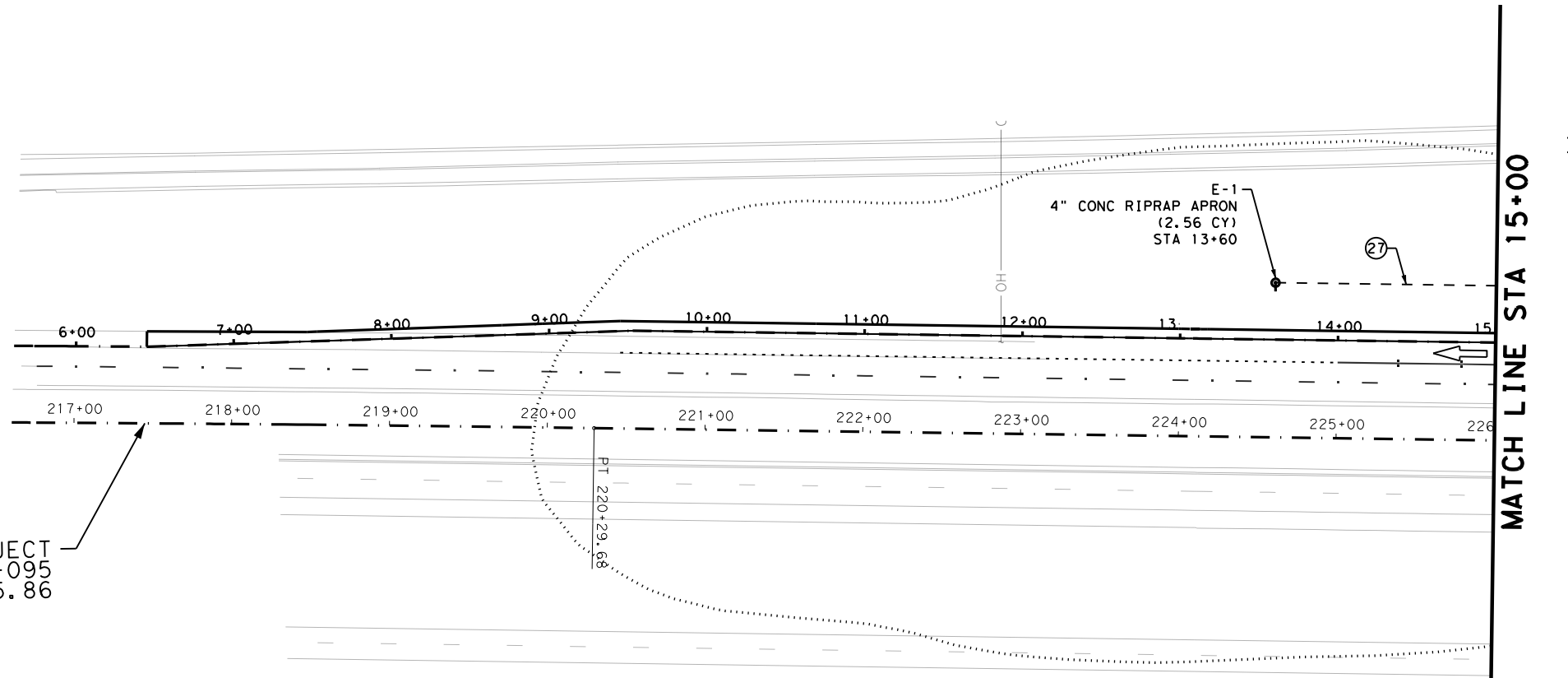
SHEET 2 OF 2

		Bridge Division Standard	
<h2>STONE RIPRAP</h2>			
<h3>SRR</h3>			
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©TxDOT April 2019 REVISIONS	CONT SECT	JOB	HIGHWAY
	0610 03	095	IH 30
	DIST	COUNTY	SHEET NO.
	ATL	TITUS	126

Plotted on: 6/4/2024

Design Filename: P:\116\35\04\Design\Civil\Traffic\1163504_ILLUM01.dgn

BEGIN PROJECT
CSJ: 0610-03-095
STA 217+45.86



LEGEND

- PROPOSED EOP
- TRAFFIC FLOW ARROWS
- PROPOSED 2" CONDUIT PVC SCHD 80
- PROPOSED 2" CONDUIT PVC SCHD 80 (BORE)
- ILLUMINATION LIGHTING AREA (0.2 fc)
- CONDUIT RUN NUMBER
- SINGLE ARM ILLUMINATION ASSEMBLY
- PROPOSED GROUND BOX TY A
- HIGH MAST (W/ AIMING ARROW)

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JUSTIN W. CLARK
P.E. SERIAL NO: 118715
DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

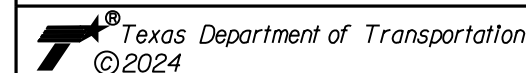
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY



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



**WB IH 30 CMV STATION
ILLUMINATION AND
CONDUIT LAYOUT**

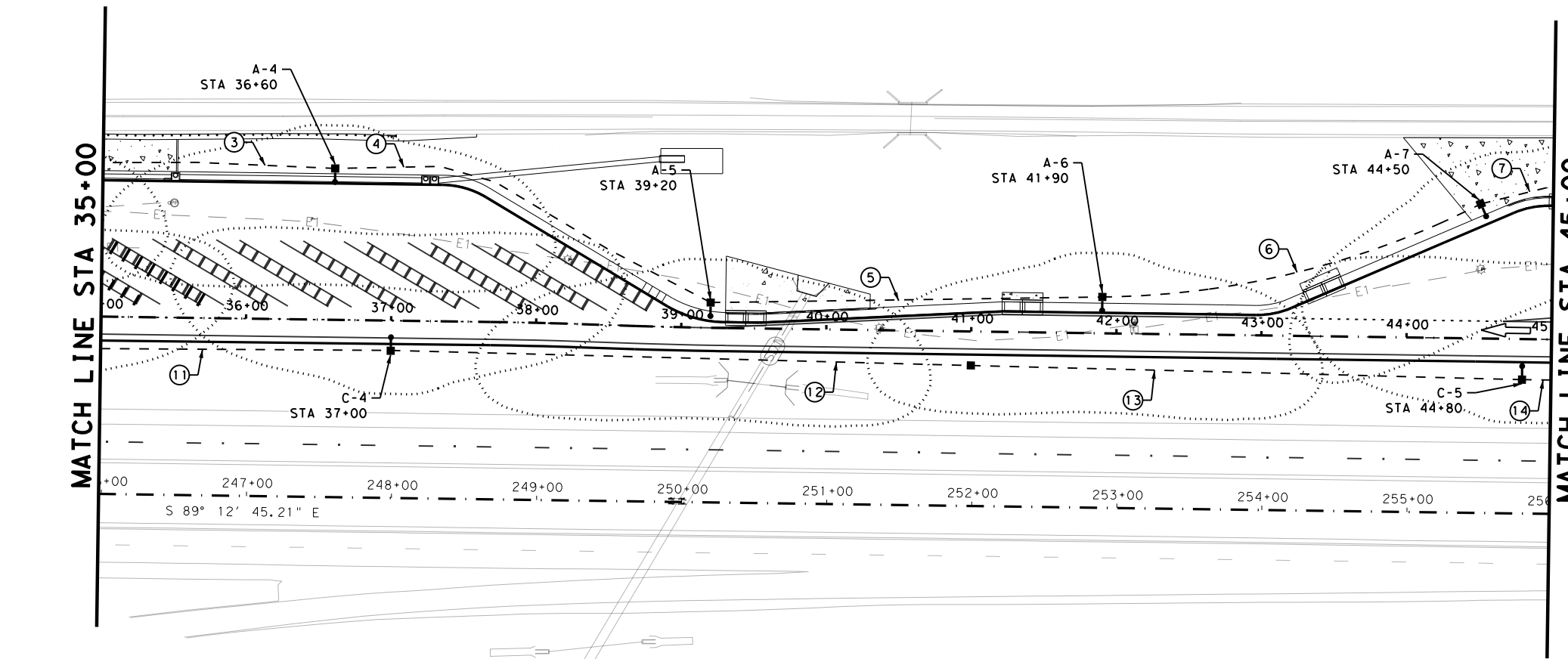
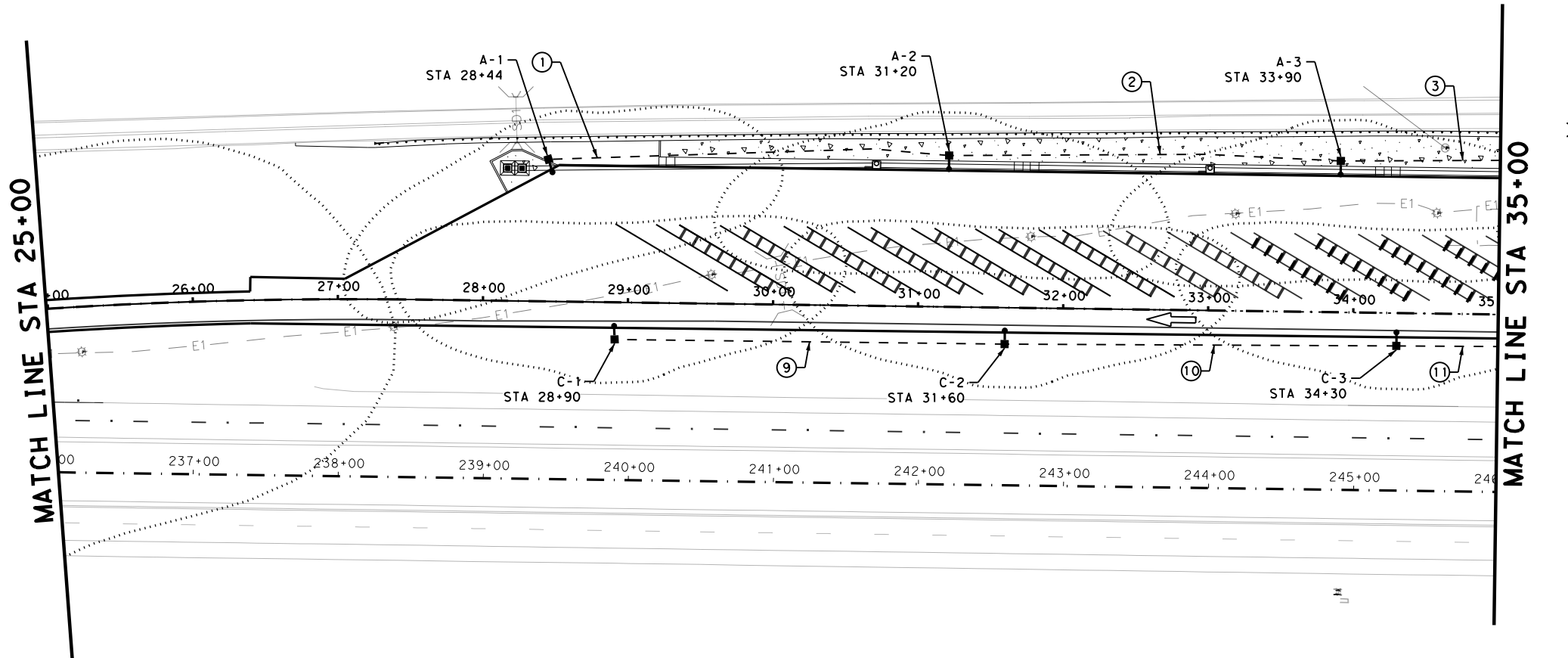
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SHEET 1 OF 4

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CHK	ATL	TITUS	0610	03	095	127

Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Traffic\1163504_ILLUM02.dgn



LEGEND

- PROPOSED EOP
- ← TRAFFIC FLOW ARROWS
- - - PROPOSED 2" CONDUIT PVC SCHD 80
- == PROPOSED 2" CONDUIT PVC SCHD 80 (BORE)
- ILLUMINATION LIGHTING AREA (0.2 fc)
- ⊗ CONDUIT RUN NUMBER
- SINGLE ARM ILLUMINATION ASSEMBLY
- PROPOSED GROUND BOX TY A
- ⊙ HIGH MAST (W/ AIMING ARROW)

DESIGN

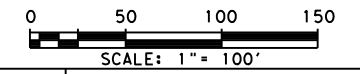
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JUSTIN W. CLARK
 P.E. SERIAL NO: 118715
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY



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



**WB IH 30 CMV STATION
ILLUMINATION AND
CONDUIT LAYOUT**

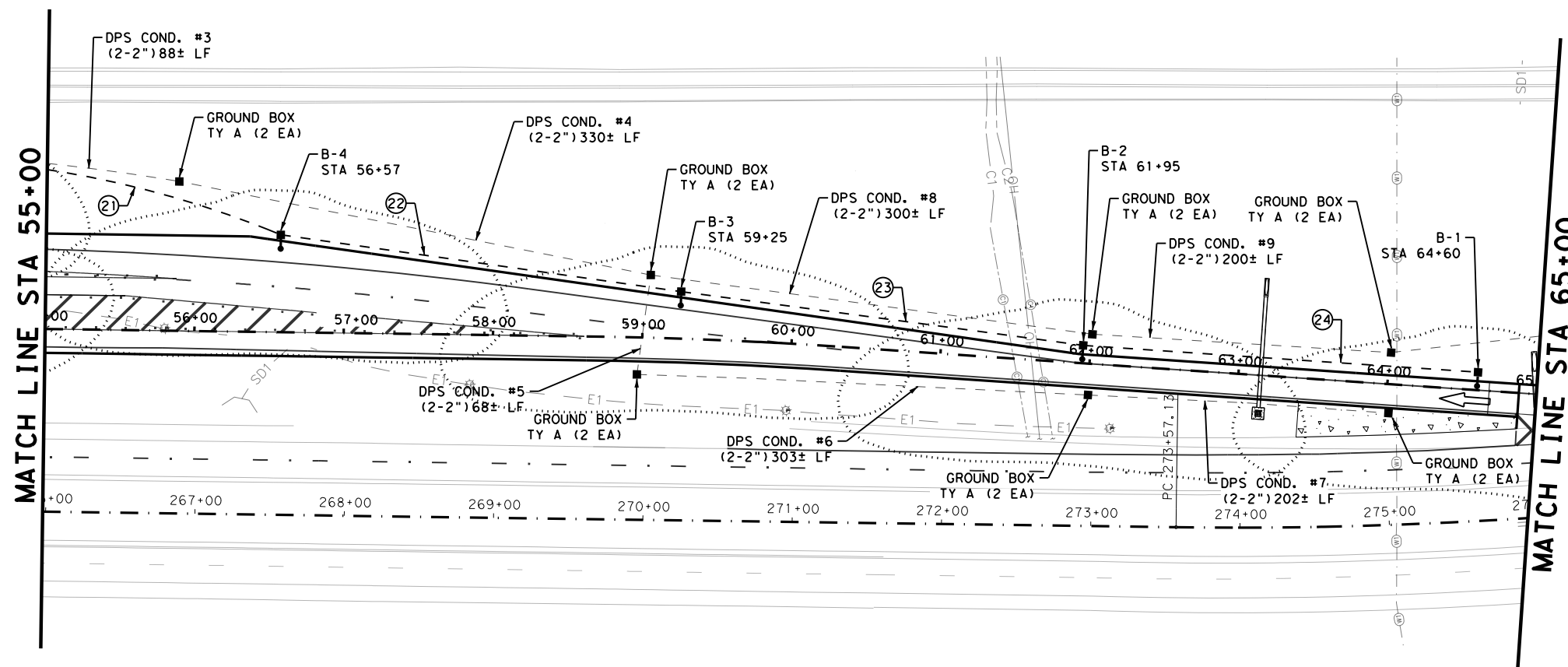
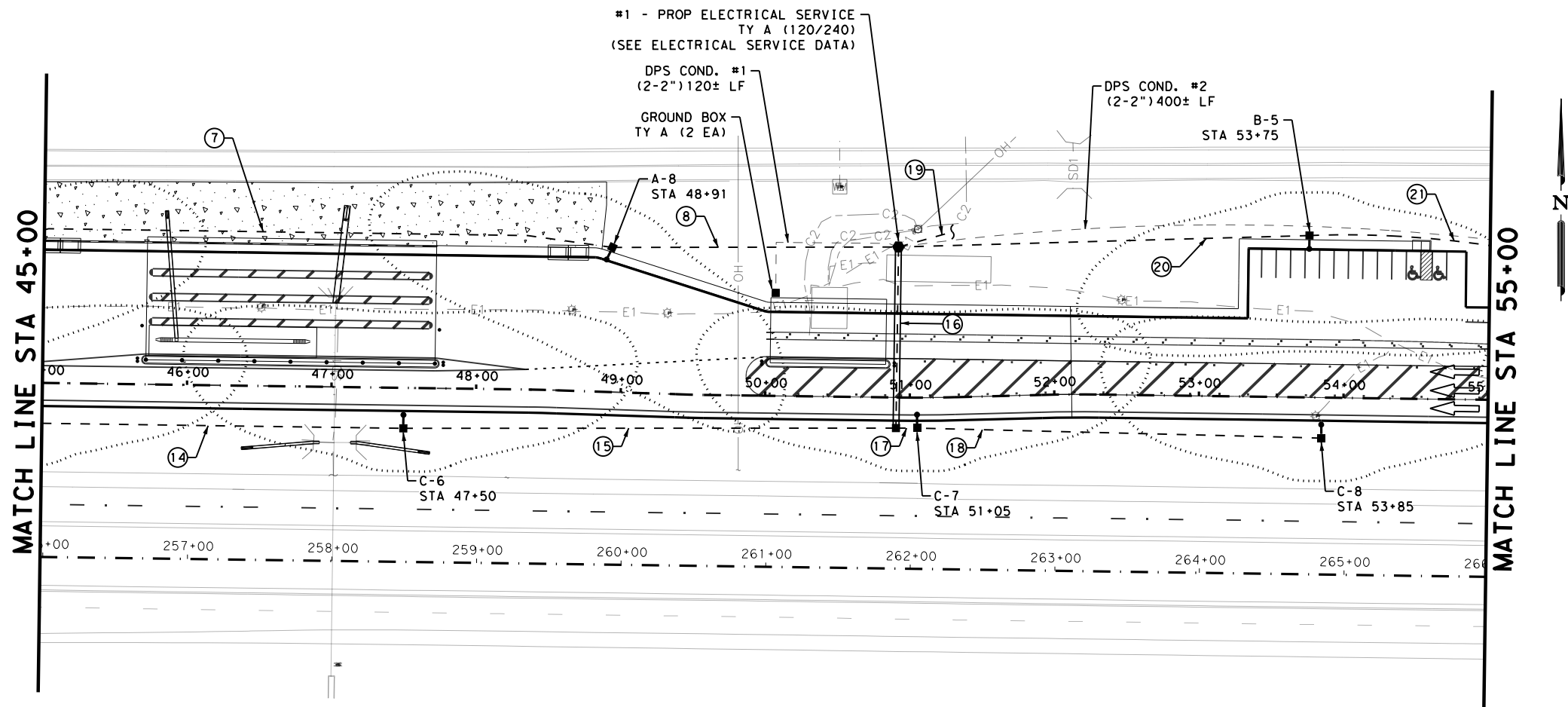
STA 25+00 TO STA 45+00

SHEET 2 OF 4

DGN:	FED. NO. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	128

Plotted on: 6/4/2024

Design Filename: P:\116\35\04\Design\Civil\Traffic\1163504_ILLUM03.dgn



LEGEND

- PROPOSED EOP
- TRAFFIC FLOW ARROWS
- PROPOSED 2" CONDUIT PVC SCHD 80
- PROPOSED 2" CONDUIT PVC SCHD 80 (BORE)
- ILLUMINATION LIGHTING AREA (0.2 fc)
- CONDUIT RUN NUMBER
- SINGLE ARM ILLUMINATION ASSEMBLY
- PROPOSED GROUND BOX TY A
- HIGH MAST (W/ AIMING ARROW)

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JUSTIN W. CLARK
 P.E. SERIAL NO: 118715
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

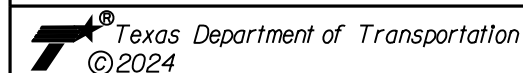
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



**WB IH 30 CMV STATION
ILLUMINATION AND
CONDUIT LAYOUT**

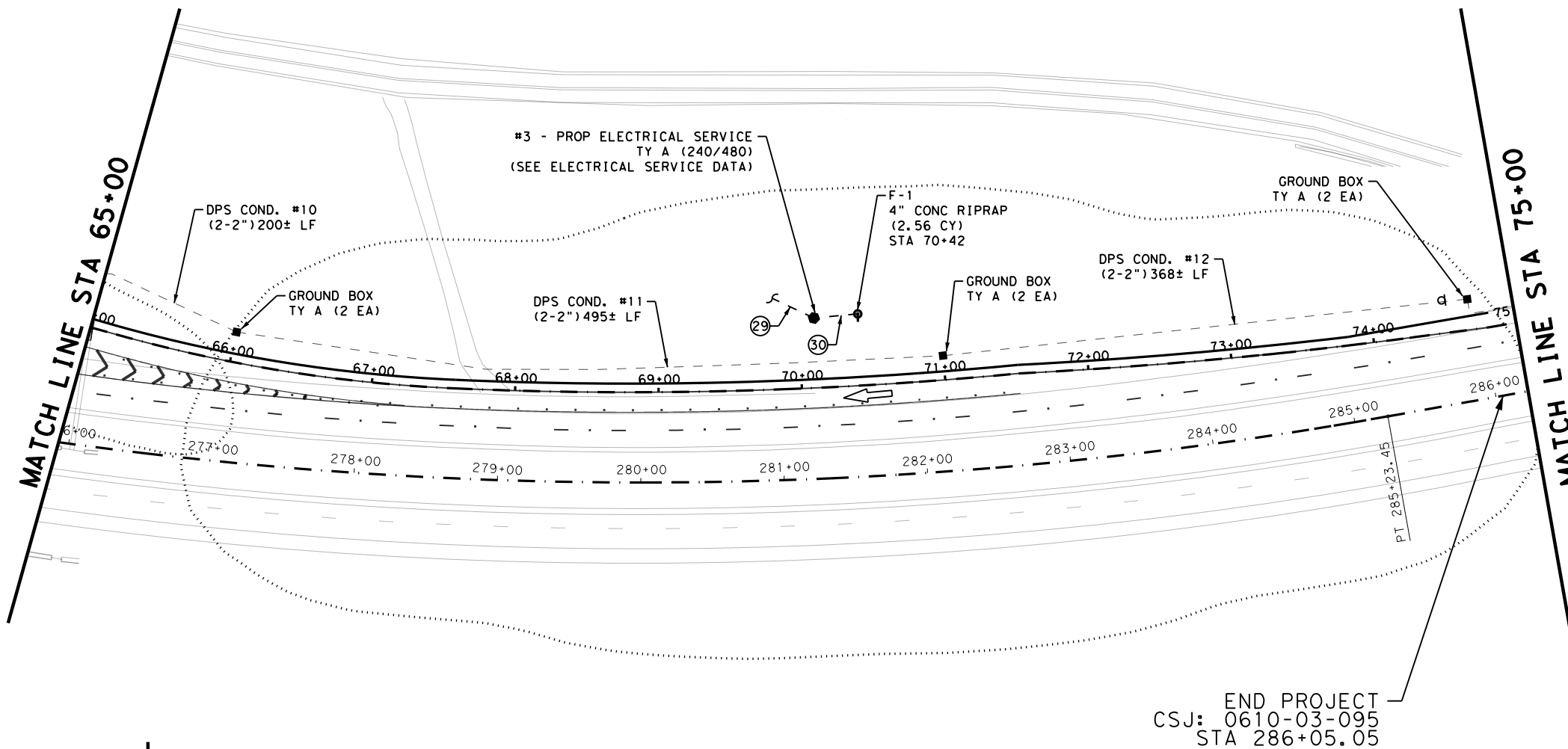
STA 45+00 TO STA 65+00

SHEET 3 OF 4

DGN:	FED. NO. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	129

Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Traffic\1163504_ILLUM04.dgn



- PROPOSED EOP
- ← TRAFFIC FLOW ARROWS
- - - PROPOSED 2" CONDUIT PVC SCHD 80
- - - PROPOSED 2" CONDUIT PVC SCHD 80 (BORE)
- ILLUMINATION LIGHTING AREA (0.2 fc)
- (XX) CONDUIT RUN NUMBER
- SINGLE ARM ILLUMINATION ASSEMBLY
- PROPOSED GROUND BOX TY A
- ⊙ HIGH MAST (W/ AIMING ARROW)

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JUSTIN W. CLARK
 P.E. SERIAL NO: 118715
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

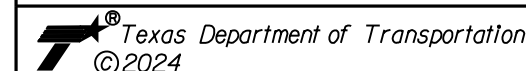
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY



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



**WB IH 30 CMV STATION
 ILLUMINATION AND
 CONDUIT LAYOUT**

STA 65+00 TO END PROJECT

SHEET 4 OF 4

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:		
CHK DGN:	6	TEXAS		IH 30		
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	ATL	TITUS	0610	03	095	130

Plotted on: 6/4/2024

CONDUIT AND CONDUCTOR SCHEDULE										
SERVICE NO.	CONDUIT				CONDUCTOR					CONDITION
	RUN NO.	CONDT (PVC) (SCHD 80) (2")	CONDT (PVC) (SCHD 80) (2") (BORE)	# COND	ELEC CONDR (NO. 8) BARE	# BARE	ELEC CONDR (NO. 8) INSULATED	# INSUL	RUN LENGTH	
1	1	280		1	308	1	616	2	276	PROPOSED
1	2	270		1	297	1	594	2	270	PROPOSED
1	3	270		1	297	1	594	2	270	PROPOSED
1	4	285		1	314	1	627	2	281	PROPOSED
1	5	270		1	297	1	594	2	270	PROPOSED
1	6	275		1	303	1	605	2	271	PROPOSED
1	7	445		1	490	1	979	2	445	PROPOSED
1	8	200		1	220	1	440	2	198	PROPOSED
1	9	270		1	297	1	594	2	268	PROPOSED
1	10	270		1	297	1	594	2	270	PROPOSED
1	11	270		1	297	1	594	2	270	PROPOSED
1	12	400		1	440	1	880	2	400	PROPOSED
1	13	380		1	418	1	836	2	380	PROPOSED
1	14	270		1	297	1	594	2	270	PROPOSED
1	15	345		1	380	1	759	2	341	PROPOSED
1	16		125	1	138	1	0	2	125	PROPOSED
1	17	15		1	17	1	33	2	14	PROPOSED
1	18	280		1	308	1	616	2	279	PROPOSED
1	19	TO BE PULLED BY ELECTRIC UTILITY COMPANY								PROPOSED
1	20	285		1	314	1	0	2	284	PROPOSED
1	21	290		1	319	1	0	2	288	PROPOSED
1	22	270		1	297	1	594	2	270	PROPOSED
1	23	275		1	303	1	605	2	271	PROPOSED
1	24	265		1	292	1	583	2	265	PROPOSED
2	25	TO BE PULLED BY ELECTRIC UTILITY COMPANY								PROPOSED
2	26	20		1	22	1	44	2	18	PROPOSED
2	27	450		1	495	1	990	2	450	PROPOSED
2	28	450		1	495	1	990	2	448	PROPOSED
3	29	TO BE PULLED BY ELECTRIC UTILITY COMPANY								PROPOSED
3	30	30		1	33	1	66	2	30	PROPOSED
TOTAL + 10% CONTINGENCY		7843	138		7981		14421			

DESIGN


INTERIM REVIEW
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 ENGINEER: JUSTIN W. CLARK
 P.E. SERIAL NO: 118715
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024

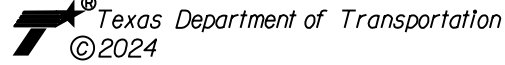
ILLUMINATION ASSEMBLY LOCATIONS				
LIGHT NO.	STATION	BASELINE	OFFSET	TYPE & SIZE
A-1	28+50	WB_CMV	104.11' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
A-2	31+20	WB_CMV	104.33' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
A-3	33+90	WB_CMV	104.33' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
A-4	36+60	WB_CMV	104.33' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
A-5	39+20	WB_CMV	17.45' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
A-6	41+90	WB_CMV	25.00' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
A-7	44+50	WB_CMV	92.78' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
A-8	48+91	WB_CMV	100.00' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
B-1	64+60	WB_CMV	12.00' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
B-2	61+95	WB_CMV	12.00' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
B-3	59+25	WB_CMV	31.51' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
B-4	56+57	WB_CMV	65.22' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
B-5	53+75	WB_CMV	111.96' LT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
C-1	28+90	WB_CMV	21.71' RT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
C-2	31+60	WB_CMV	25.05' RT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
C-3	34+30	WB_CMV	22.58' RT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
C-4	37+00	WB_CMV	20.62' RT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
C-5	44+80	WB_CMV	28.00' RT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
C-6	47+50	WB_CMV	28.00' RT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
C-7	51+05	WB_CMV	21.00' RT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
C-8	53+85	WB_CMV	28.00' RT	IN RD IL (TY SA) 50T-10 (400W EQ) LED
E-1	13+60	WB_CMV	36.00' LT	LED HI MST IL ASM (6-400W) (ASYM) (TY A)
E-2	22+60	WB_CMV	34.00' LT	LED HI MST IL ASM (6-400W) (ASYM) (TY A)
F-1	70+42	WB_CMV	50.00' LT	LED HI MST IL ASM (6-400W) (ASYM) (TY A)

REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



Texas Department of Transportation
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WB IH 30 CMV STATION

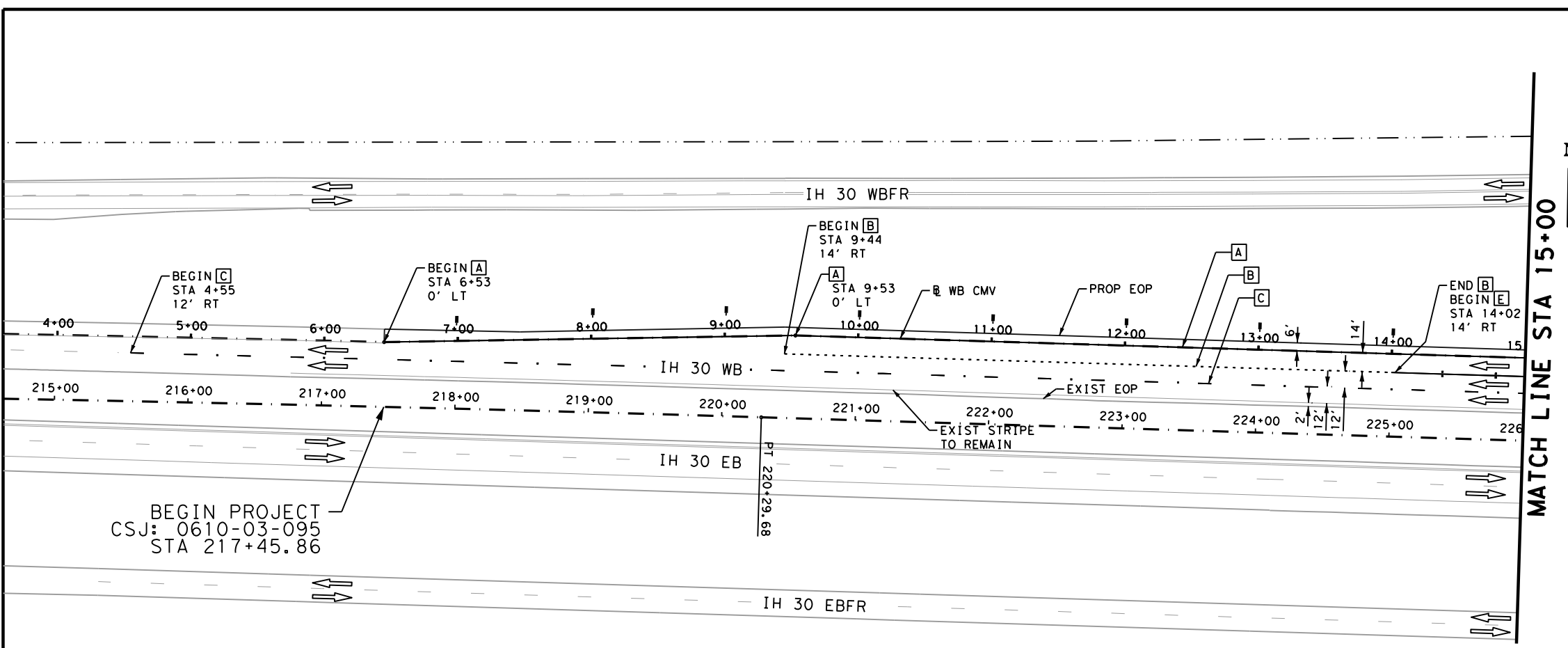
ILLUMINATION ASSEMBLY LOCATIONS, CONDUIT, & CONDUCTOR SUMMARY

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	131

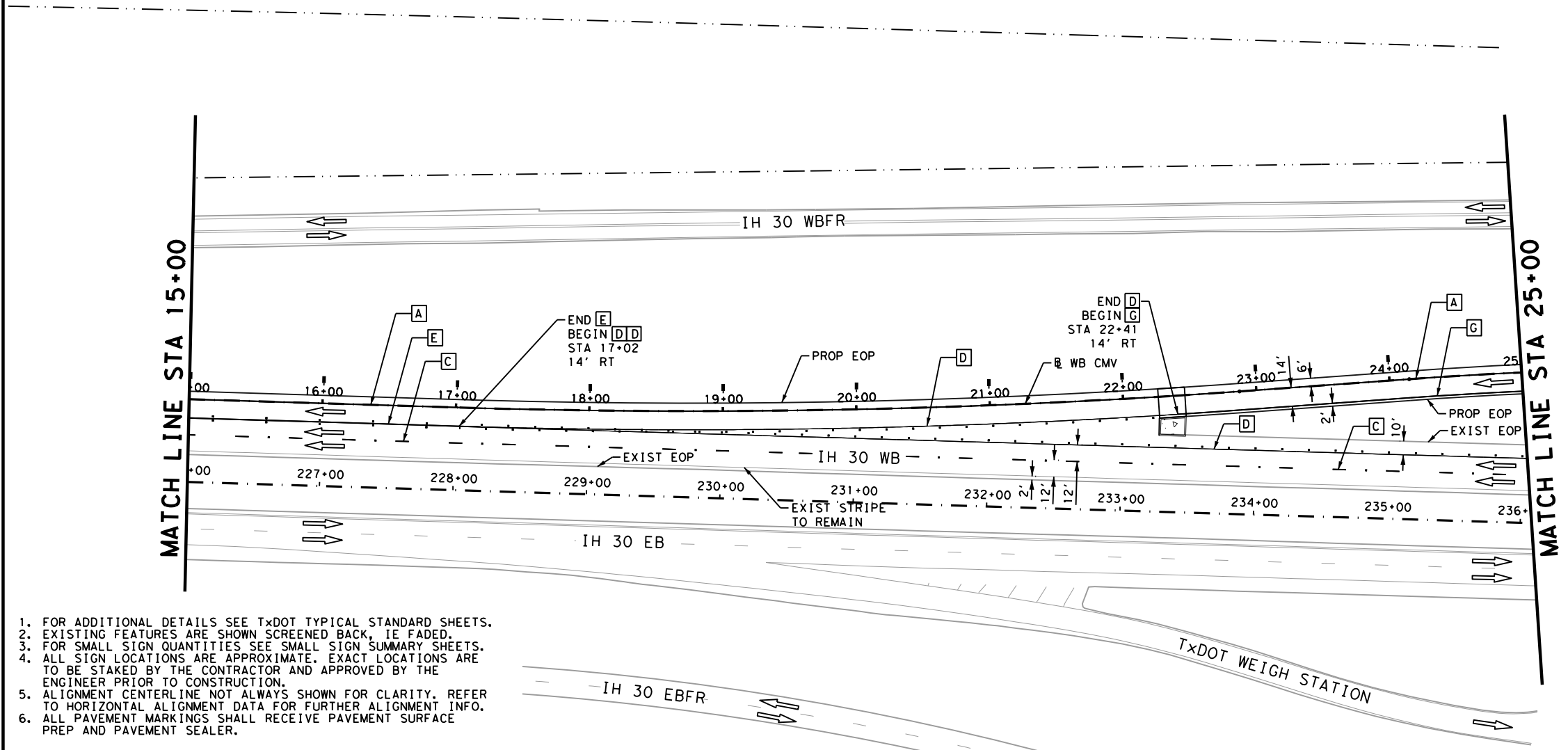
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Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Traffic\1163504_PW01.dgn



MATCH LINE STA 15+00



MATCH LINE STA 25+00

LEGEND

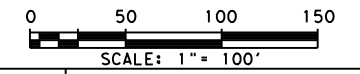
- [A] 6" SLD (W) STRIPE
- [B] 6" DOT (W) STRIPE W/ TY II C-R @ 48'
- [C] 6" BRK (W) STRIPE W/ TY II C-R @ 80'
- [D] 8" SLD (W) STRIPE W/ TY II C-R @ 20'
- [E] 12" SLD (W) STRIPE W/ SYM TY II C-R @ 40'
- [F] 10" CONTRAST LANE LINE
- [G] 6" SLD (Y) STRIPE
- [H] 24" SLD (W) STRIPE
- [I] MEDIAN NOSE (W)
- TRAFFIC FLOW ARROW
- PROPOSED SIGN
- EXISTING SIGN
- DEL ASSM(D-SW) SZ 1(WFLX)GND(BI)
- DEL ASSM(D-SW) SZ 1(BRF)GF2(BI)
- SMALL SIGN DESIGNATION
- LARGE SIGN DESIGNATION

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY

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 #1002800

Texas Department of Transportation
 ©2024

WB IH 30 CMV STATION
SIGNING & PAVEMENT MARKINGS PLAN
 BEGIN PROJECT TO STA 25+00

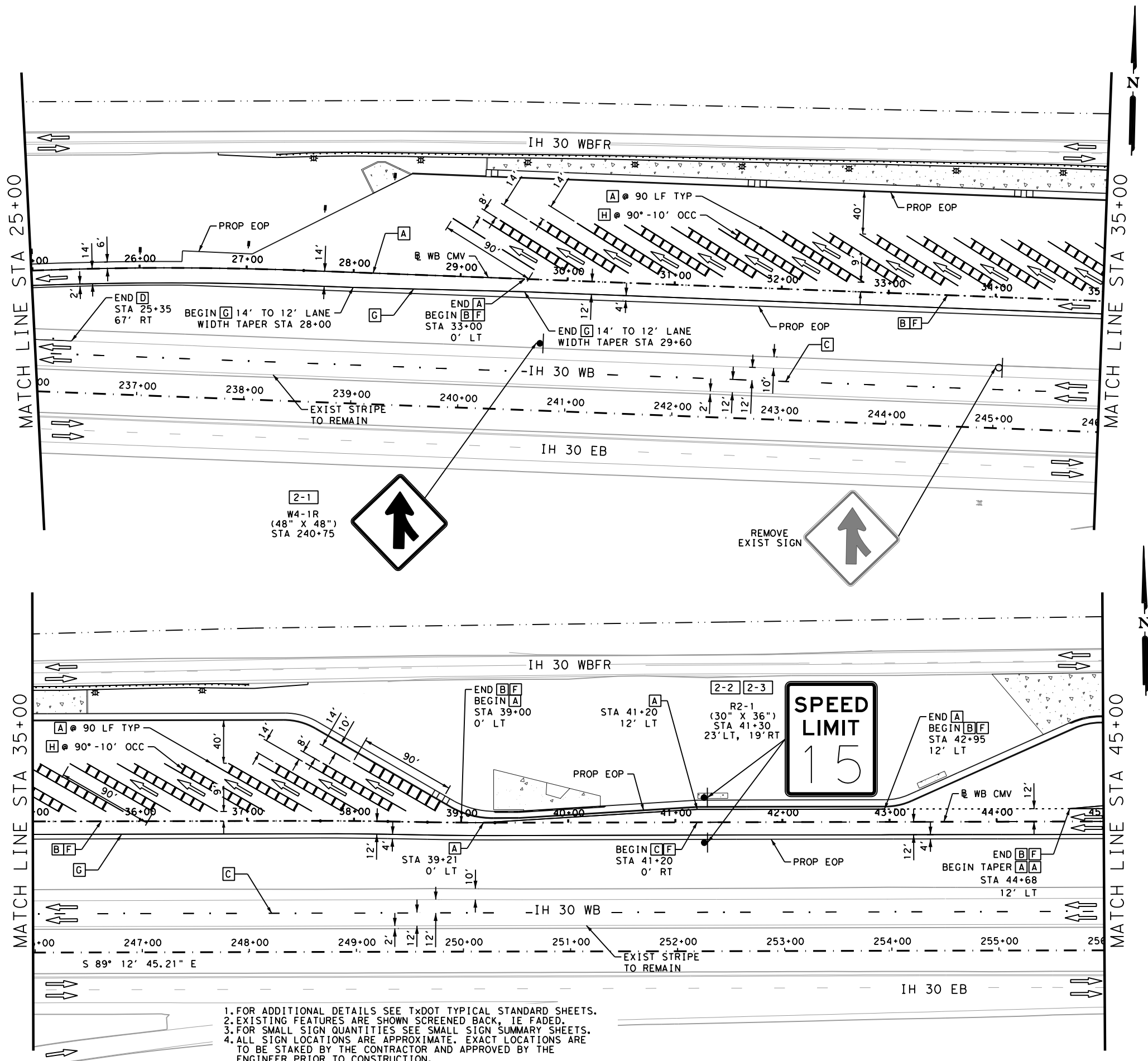
SHEET 1 OF 4

- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
- EXISTING FEATURES ARE SHOWN SCREENED BACK, IE FADED.
- FOR SMALL SIGN QUANTITIES SEE SMALL SIGN SUMMARY SHEETS.
- ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- ALIGNMENT CENTERLINE NOT ALWAYS SHOWN FOR CLARITY. REFER TO HORIZONTAL ALIGNMENT DATA FOR FURTHER ALIGNMENT INFO.
- ALL PAVEMENT MARKINGS SHALL RECEIVE PAVEMENT SURFACE PREP AND PAVEMENT SEALER.

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	132

Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Traffic\1163504_PW02.dgn



LEGEND

- | | | | |
|-----|------------------------|-------|------------------------|
| [A] | 6" SLD (W) STRIPE | [I] | MEDIAN NOSE (W) |
| [B] | 6" DOT (W) STRIPE | ← | TRAFFIC FLOW |
| [C] | 6" BRK (W) STRIPE | → | ARROW |
| [D] | 8" SLD (W) STRIPE | ● | PROPOSED SIGN |
| [E] | 12" SLD (W) STRIPE | ○ | EXISTING SIGN |
| [F] | W/ SYM TY II C-R @ 40' | ⬇ | DEL ASSM(D-SW) |
| [G] | 6" SLD (Y) STRIPE | ⬆ | SZ 1 (WFLX)GND(BI) |
| [H] | 24" SLD (W) STRIPE | ⬇ | DEL ASSM(D-SW) |
| | | ⬆ | SZ 1 (BRF)GF2(BI) |
| | | [1-1] | SMALL SIGN DESIGNATION |
| | | [L-X] | LARGE SIGN DESIGNATION |

DESIGN

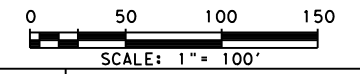
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY



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 #1002800



WB IH 30 CMV STATION

SIGNING & PAVEMENT MARKINGS PLAN

STA 25+00 TO STA 45+00

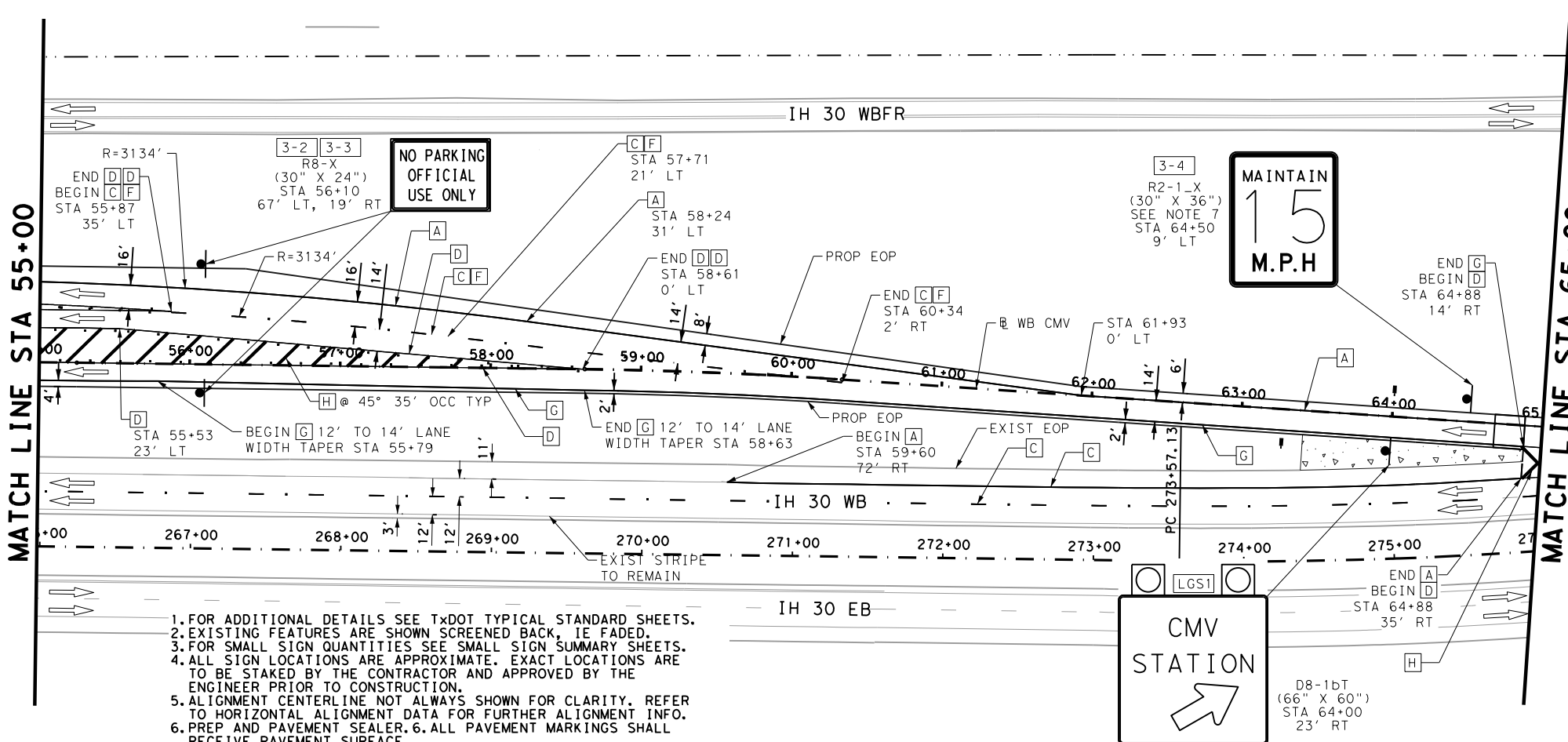
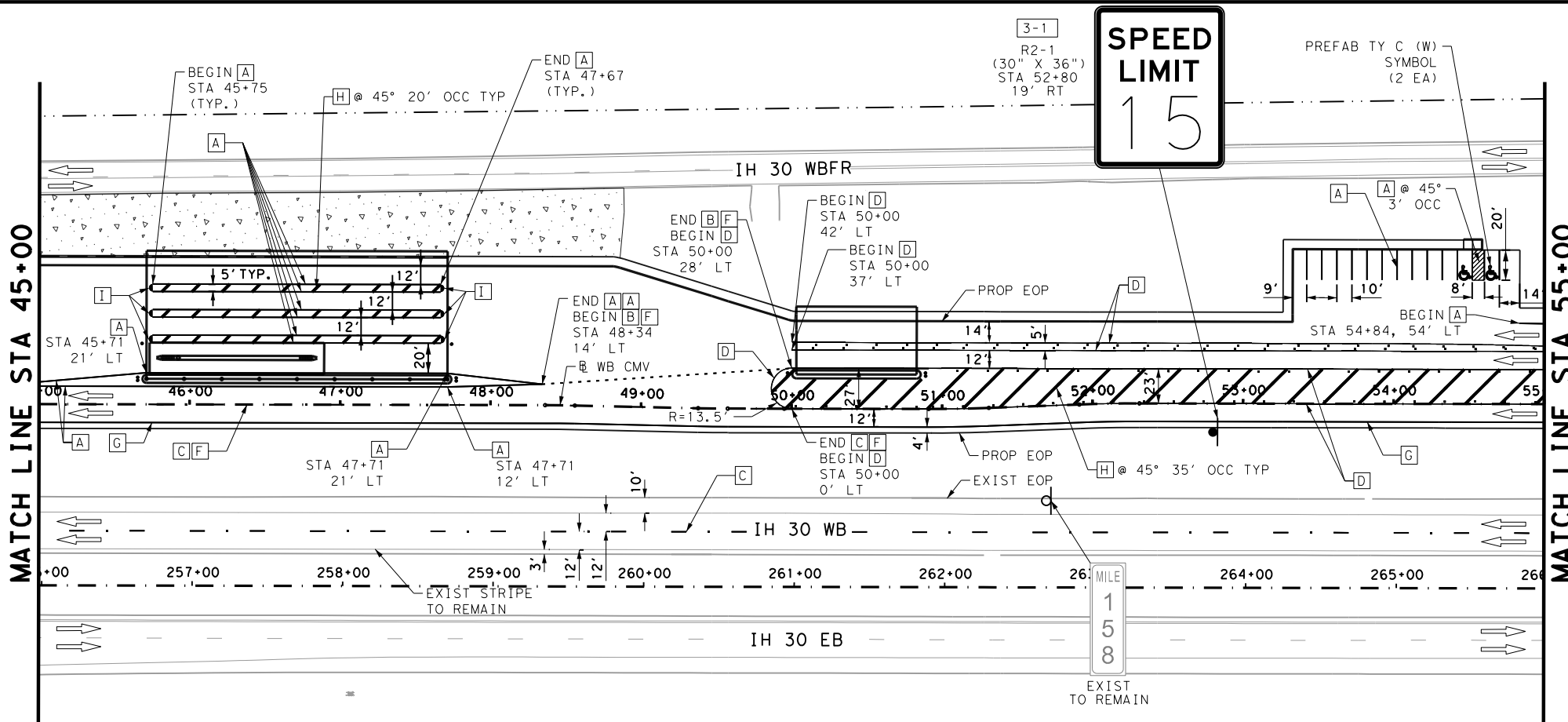
SHEET 2 OF 4

- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
- EXISTING FEATURES ARE SHOWN SCREENED BACK, IE FADED.
- FOR SMALL SIGN QUANTITIES SEE SMALL SIGN SUMMARY SHEETS.
- ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- ALIGNMENT CENTERLINE NOT ALWAYS SHOWN FOR CLARITY. REFER TO HORIZONTAL ALIGNMENT DATA FOR FURTHER ALIGNMENT INFO.
- ALL PAVEMENT MARKINGS SHALL RECEIVE PAVEMENT SURFACE PREP AND PAVEMENT SEALER.

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	133

Plotted on: 6/4/2024

Design File name: P:\116\35\04\Design\Civil\Traffic\1163504_PW03.dgn



LEGEND

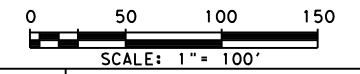
- [A] 6" SLD (W) STRIPE
- [B] 6" DOT (W) STRIPE
- [C] 6" BRK (W) STRIPE
- [D] 8" SLD (W) STRIPE
- [E] 12" SLD (W) STRIPE
- [F] W/ SYM TY II C-R @ 40'
- [G] 6" SLD (Y) STRIPE
- [H] 24" SLD (W) STRIPE
- [I] MEDIAN NOSE (W)
- ← TRAFFIC FLOW ARROW
- PROPOSED SIGN
- EXISTING SIGN
- ⬇ DEL ASSM(D-SW) SZ 1 (WFLX)GND(BI)
- ⬆ DEL ASSM(D-SW) SZ 1 (BRF)GF2(BI)
- ⊗ DEL ASSM(D-SW) SZ 1 (BRF)GF2(BI)
- [1-1] SMALL SIGN DESIGNATION
- [L-X] LARGE SIGN DESIGNATION

DESIGN

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/4/2024

APPROVAL

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY

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

Texas Department of Transportation
 ©2024

WB IH 30 CMV STATION

SIGNING & PAVEMENT MARKINGS PLAN

STA 45+00 TO STA 65+00

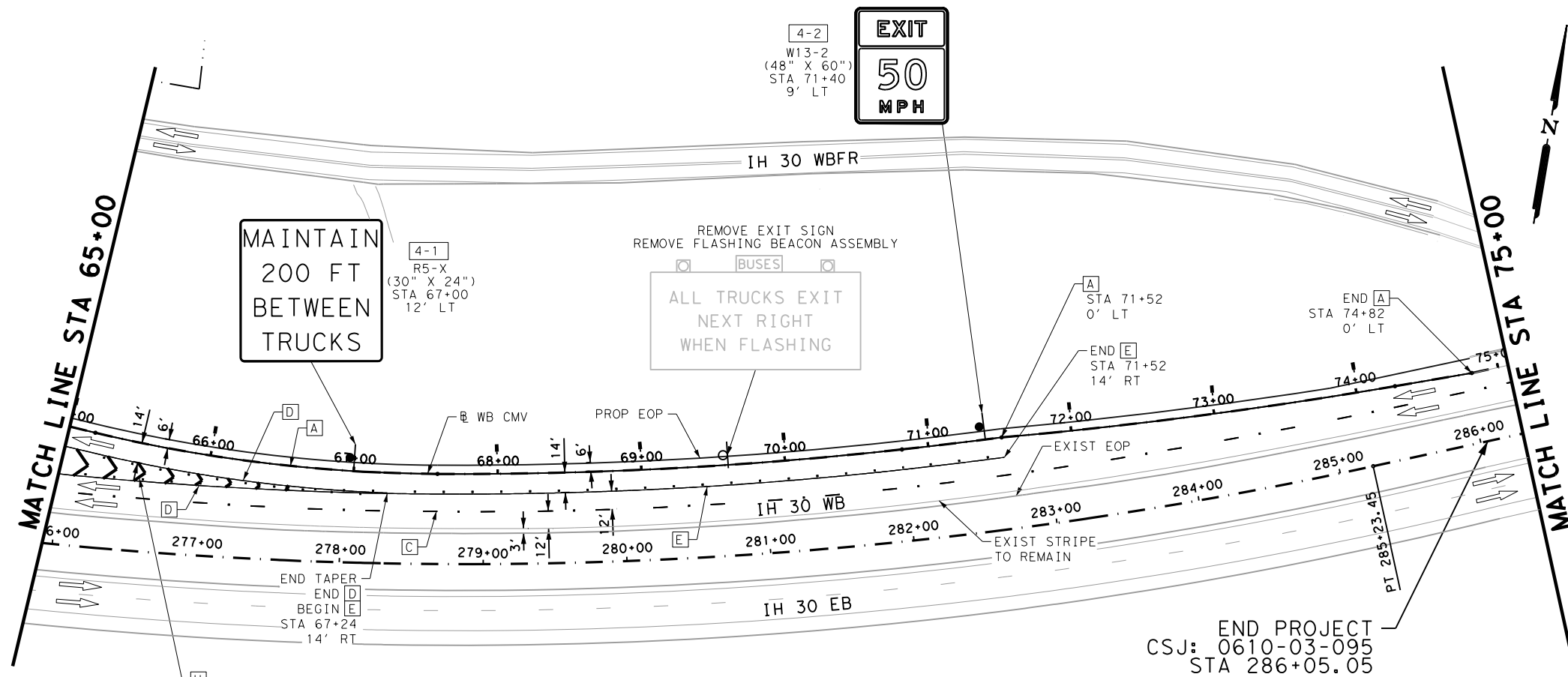
SHEET 3 OF 4

DGN:	FED. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK DGN:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK DWG:	ATL	TITUS	0610	03
			095	134

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK, IE FADED.
3. FOR SMALL SIGN QUANTITIES SEE SMALL SIGN SUMMARY SHEETS.
4. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
5. ALIGNMENT CENTERLINE NOT ALWAYS SHOWN FOR CLARITY. REFER TO HORIZONTAL ALIGNMENT DATA FOR FURTHER ALIGNMENT INFO.
6. PREP AND PAVEMENT SEALER. 6. ALL PAVEMENT MARKINGS SHALL RECEIVE PAVEMENT SURFACE.
7. SPEED POSTED ON SIGN TO BE DETERMINED ACCORDING TO WIM MANUFACTURER RECOMENDATION.

Plotted on: 6/4/2024

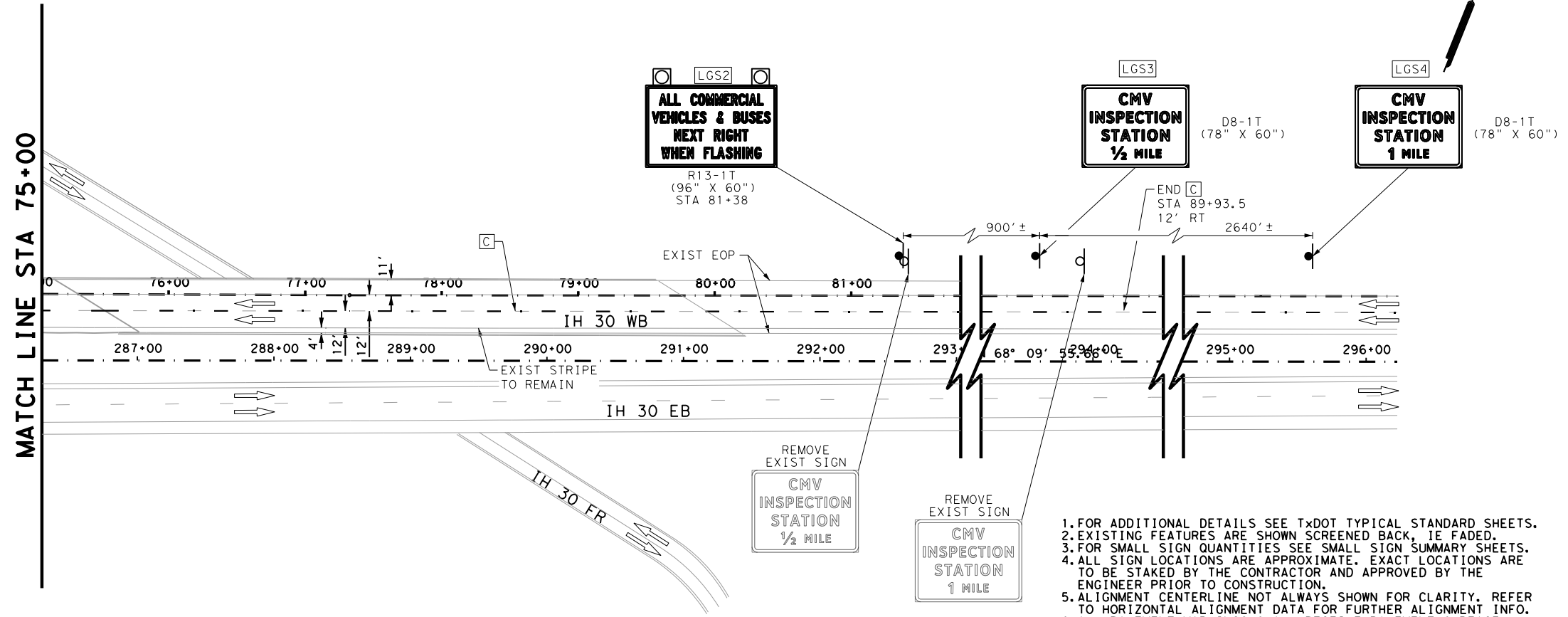
Design File name: P:\116\35\04\Design\Civil\Traffic\1163504_PW04.dgn



LEGEND

- [A] 6" SLD (W) STRIPE
- [B] 6" DOT (W) STRIPE
- [C] 6" BRK (W) STRIPE
- [D] 8" SLD (W) STRIPE
- [E] 12" SLD (W) STRIPE
- [F] W/ SYM TY II C-R @ 40'
- [G] 10" CONTRAST LANE LINE
- [H] 6" SLD (Y) STRIPE
- [I] 24" SLD (W) STRIPE
- [I] MEDIAN NOSE (W)
- TRAFFIC FLOW ARROW
- PROPOSED SIGN
- EXISTING SIGN
- DEL ASSM (D-SW) SZ 1 (WFLX) GND (B1)
- DEL ASSM (D-SW) SZ 1 (BRF) GF2 (B1)
- SMALL SIGN DESIGNATION
- LARGE SIGN DESIGNATION

END PROJECT
CSJ: 0610-03-095
STA 286+05.05



DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 6/4/2024

APPROVAL

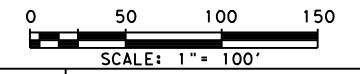
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JAMES A. LUTZ

P.E. SERIAL NO: 84722

DATE: 6/4/2024



REV. NO.	DATE	DESCRIPTION	BY

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

Texas Department of Transportation
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WB IH 30 CMV STATION

SIGNING & PAVEMENT MARKINGS PLAN

STA 65+00 TO END PROJECT

SHEET 4 OF 4

- FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
- EXISTING FEATURES ARE SHOWN SCREENED BACK, IE FADED.
- FOR SMALL SIGN QUANTITIES SEE SMALL SIGN SUMMARY SHEETS.
- ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- ALIGNMENT CENTERLINE NOT ALWAYS SHOWN FOR CLARITY. REFER TO HORIZONTAL ALIGNMENT DATA FOR FURTHER ALIGNMENT INFO.
- ALL PAVEMENT MARKINGS SHALL RECEIVE PAVEMENT SURFACE PREP AND PAVEMENT SEALER.

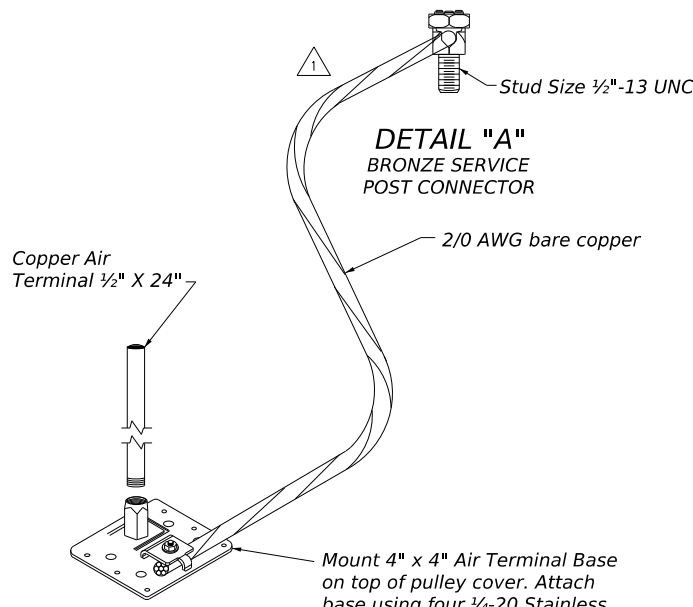
DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN#	6	TEXAS		IH 30		
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	135

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DATE: 6/3/2024 1:55:57 PM
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NOTES:

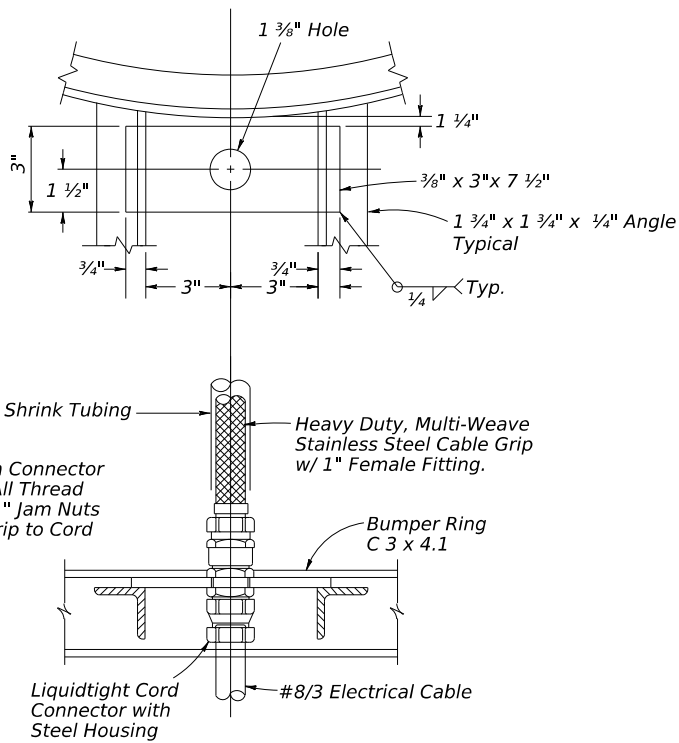
1. Assemble and erect pole, ring, and ring support so that Reference Line is parallel to center line of roadway or as shown in the plans.
2. Place fixtures on ring to provide a min. clearance of 7" between fixtures.



DETAIL "B"
AIR TERMINAL BASE

NOTE:

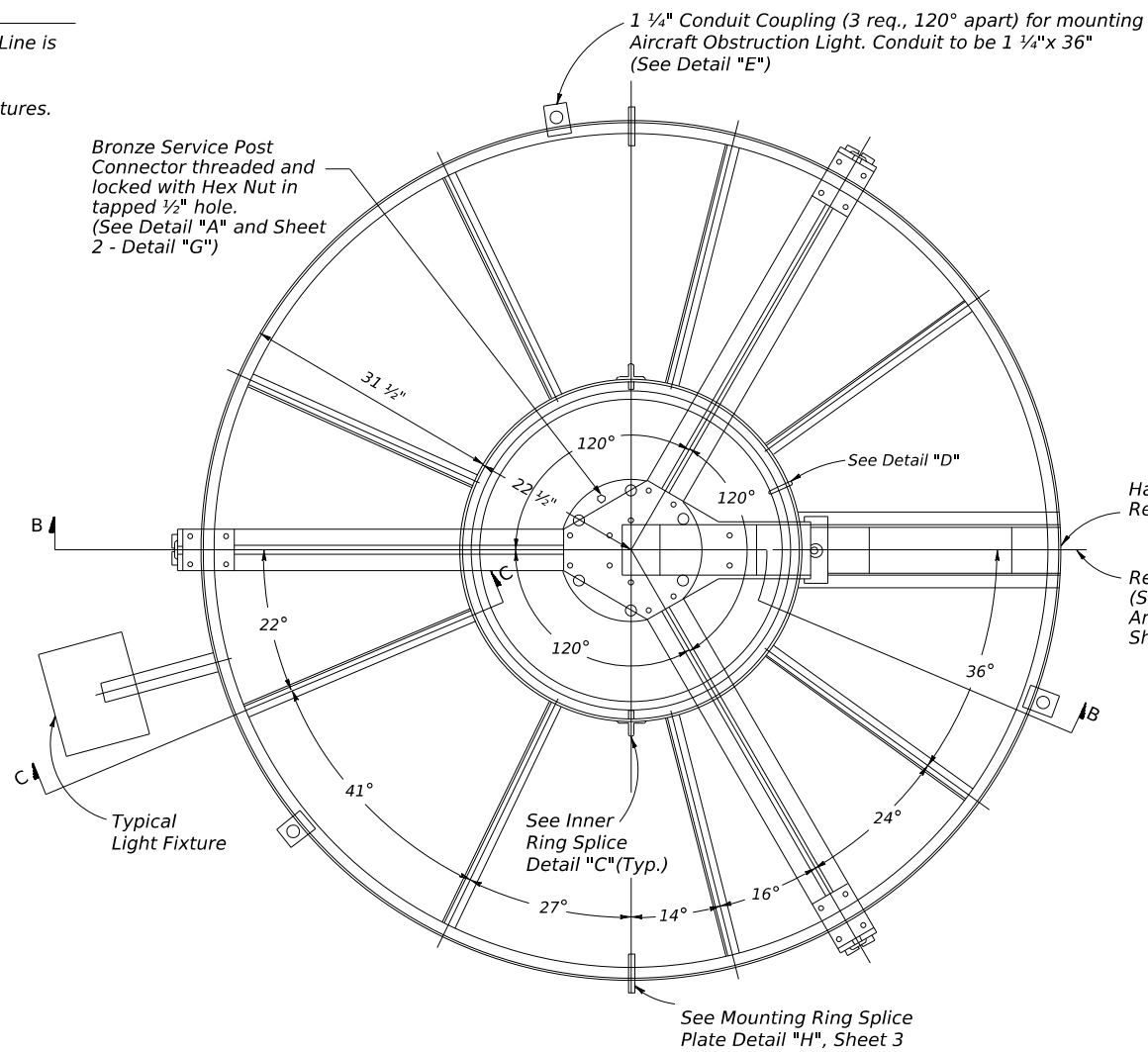
All lightning protection materials and components shall comply in size and composition with NFPA-780 requirements for this type of structure.



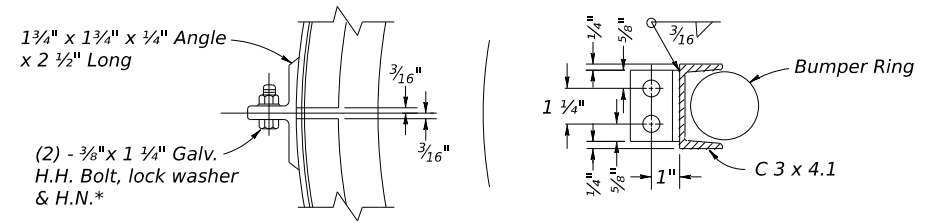
SECTION D-D

NOTE:

1. Cover cable grip with heat shrink or cold shrink tubing for entire length of cable grip. Stainless steel bands are no longer used to hold cable grip.

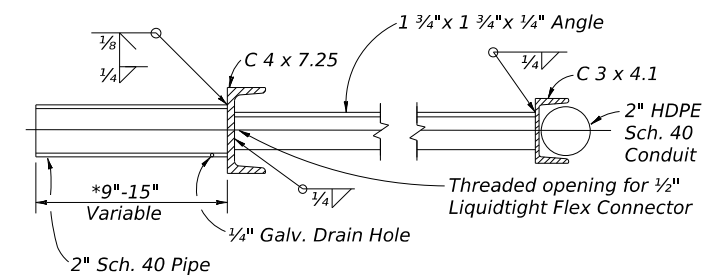


LIGHT MOUNTING RING & SUPPORT ASSEMBLY



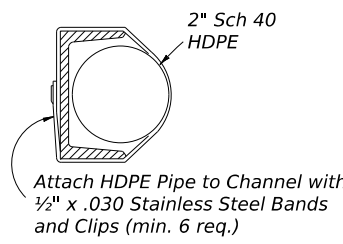
DETAIL "C"
INNER RING SPLICE

* Note: Torque bolts to 30 foot pounds or as recommended by the manufacturer



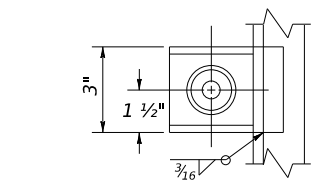
SECTION C-C

* Note: Determine tenon length according to required clearance and fixture used.

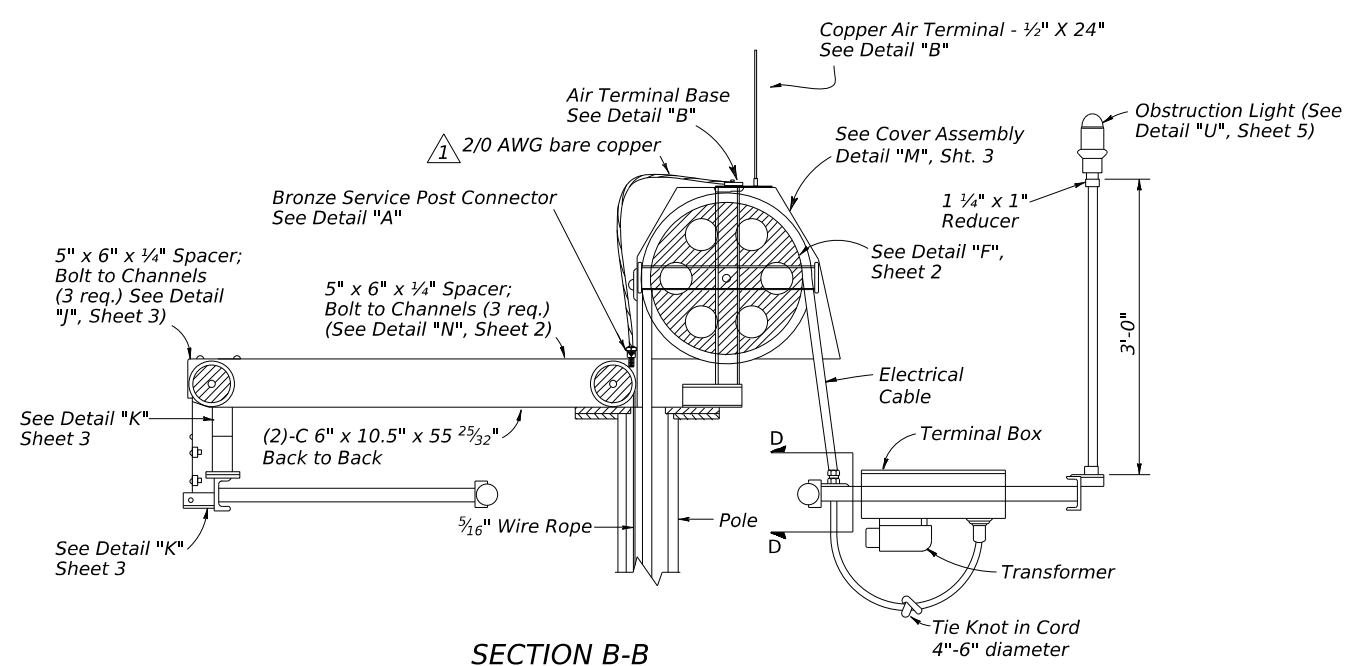


DETAIL "D"

BUMPER RING ATTACHMENT



DETAIL "E"
CONDUIT ATTACHMENT FOR OBSTRUCTION LIGHTS. TYPICAL (3) PLACES

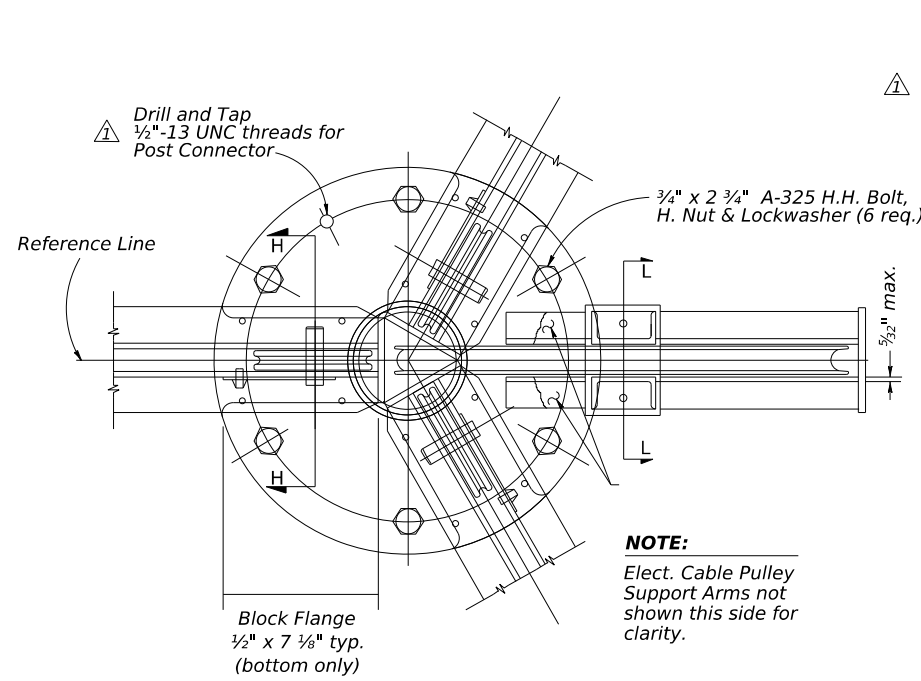


SECTION B-B

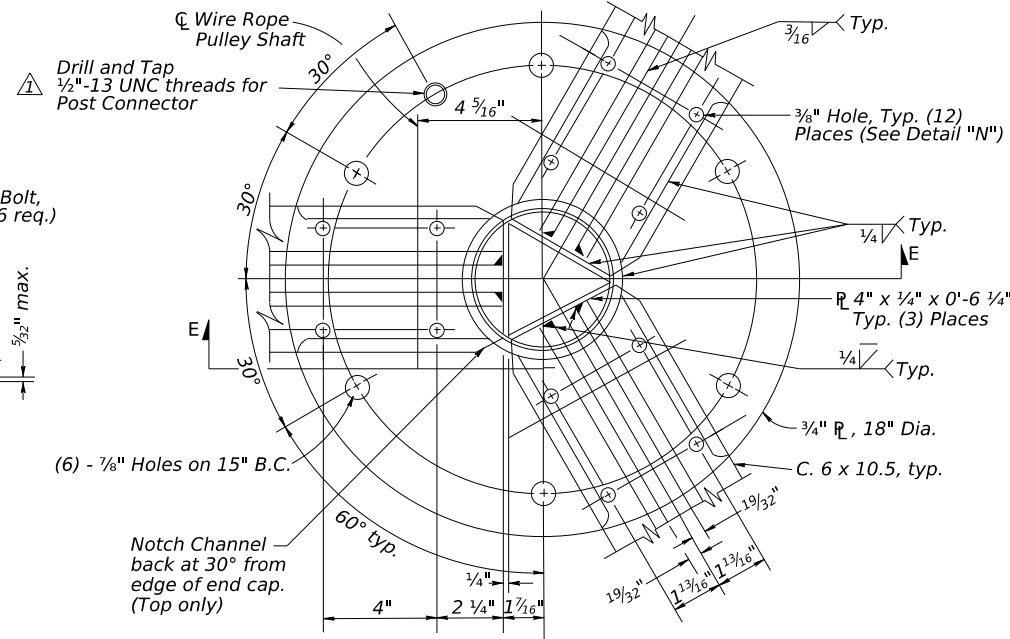
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©TxDOT	February 2024	CONT:	SECT:	JOB:	HIGHWAY
REVISIONS 1-86 5-87 2-24 5-86 10-87 4-87 4-96		0610 03 DIST: COUNTY: SHEET NO.	095 IH 30 TITUS 136		
76A					

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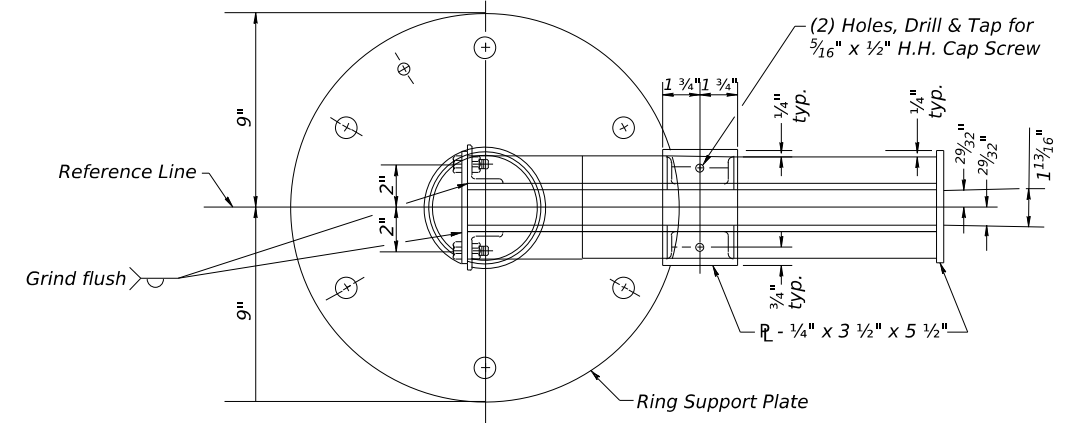
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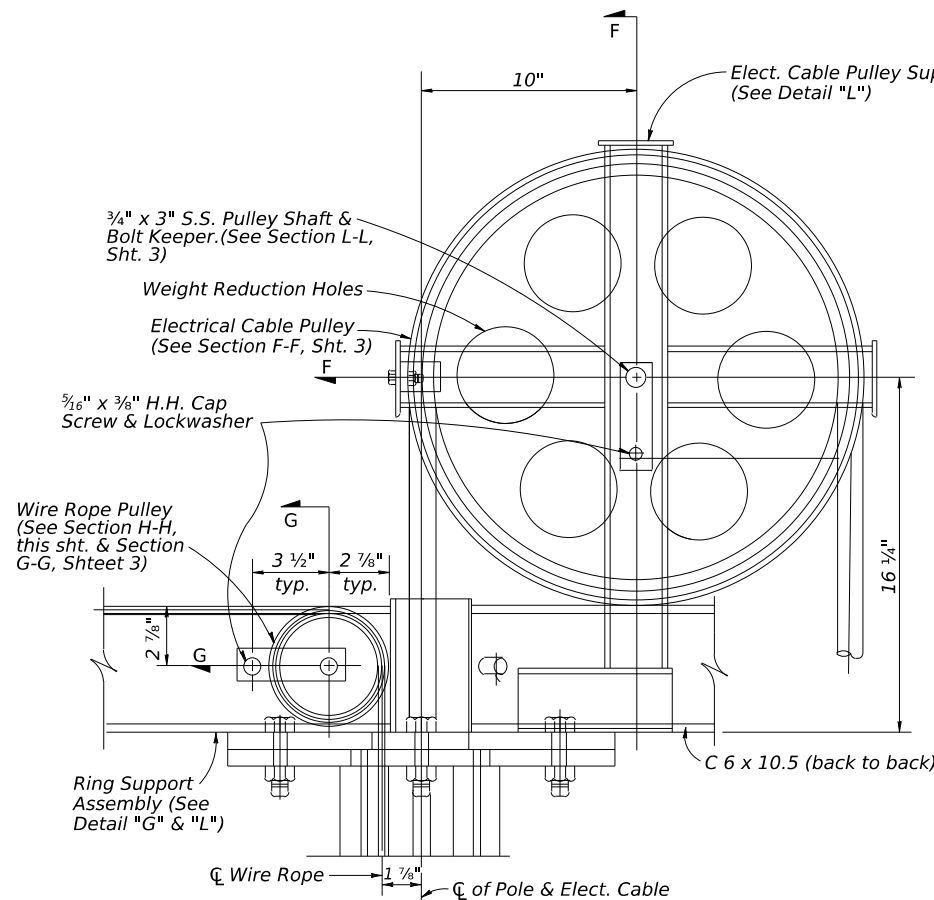
PLAN VIEW



DETAIL "G"
 TOP PLATE CONNECTION
 (LESS ELECT. CABLE PULLEY SUPPORT)
 (See DETAIL "L")

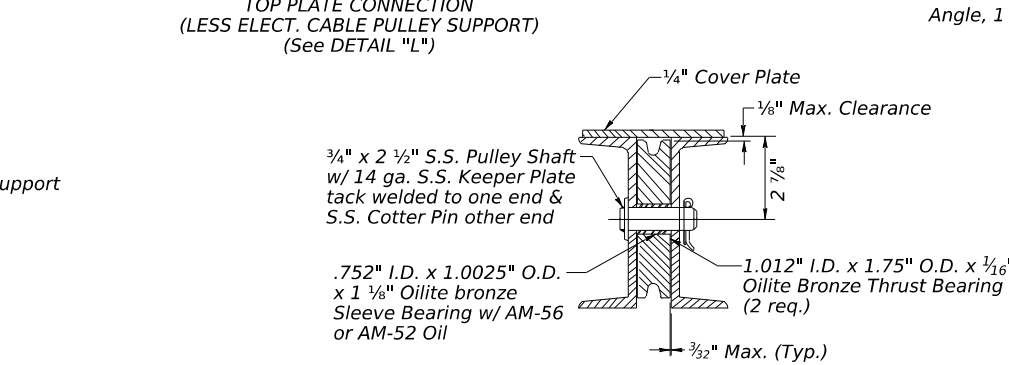


PLAN VIEW



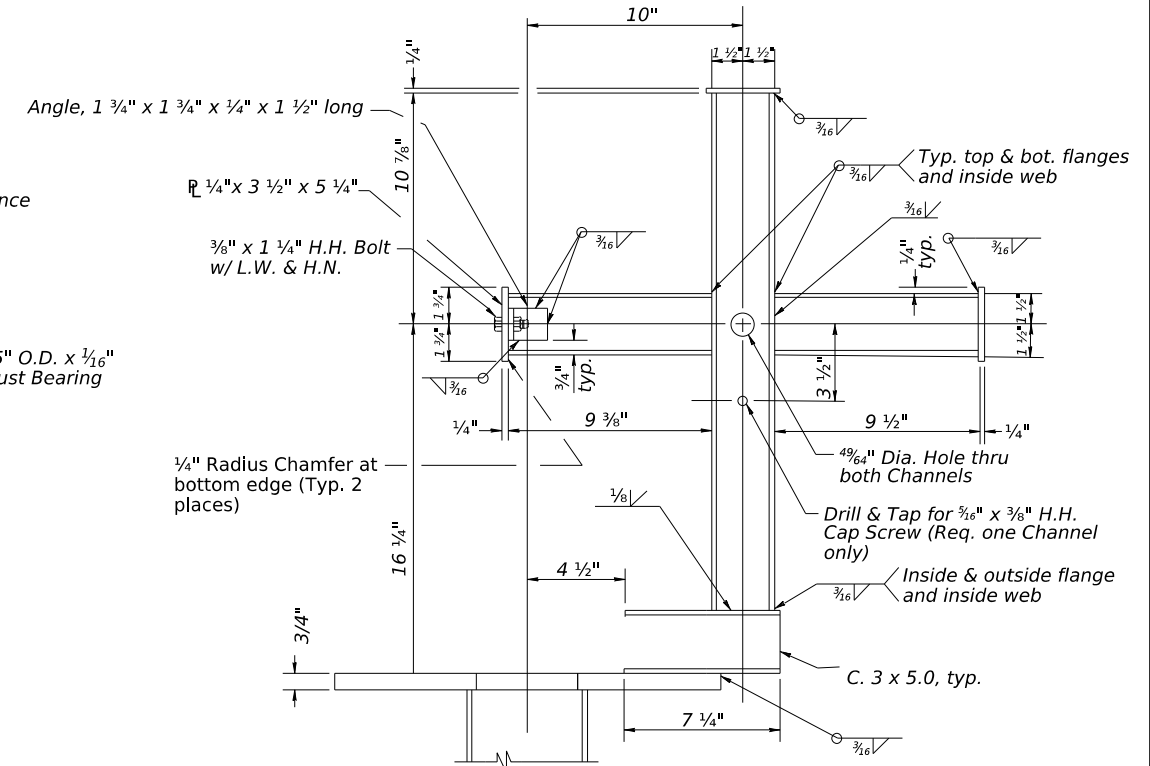
DETAIL "F"

RING SUPPORT ASSEMBLY
 (near side Support Arm & Elect. Cable Pulley Cover not shown for clarity)



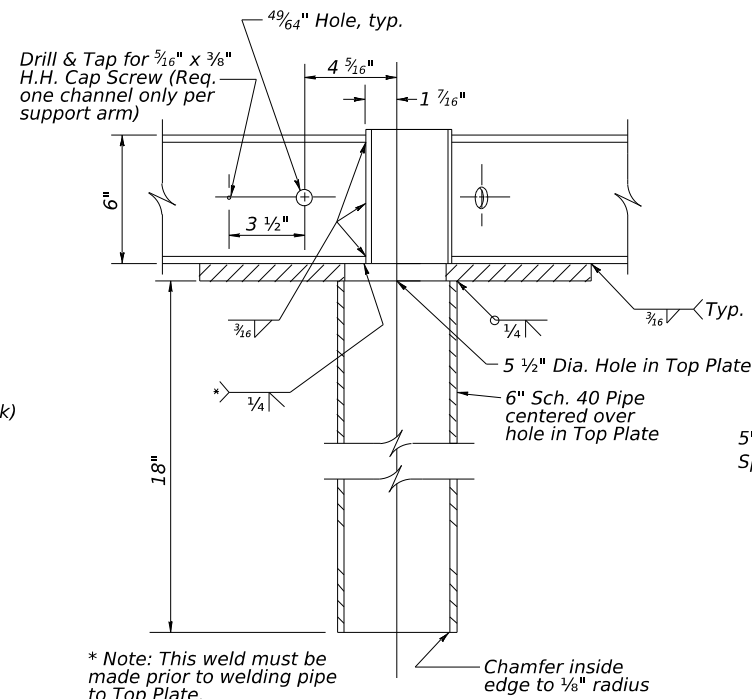
SECTION "H-H"

PULLEY MOUNTING FOR RING SUPPORT ARMS

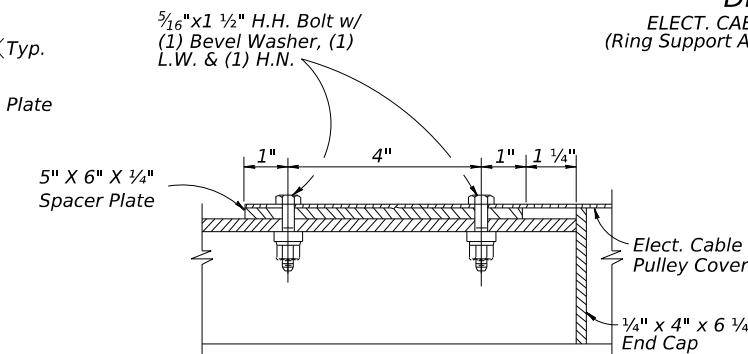


DETAIL "L"

ELECT. CABLE PULLEY SUPPORT
 (Ring Support Arms not shown for clarity)



SECTION "E - E"



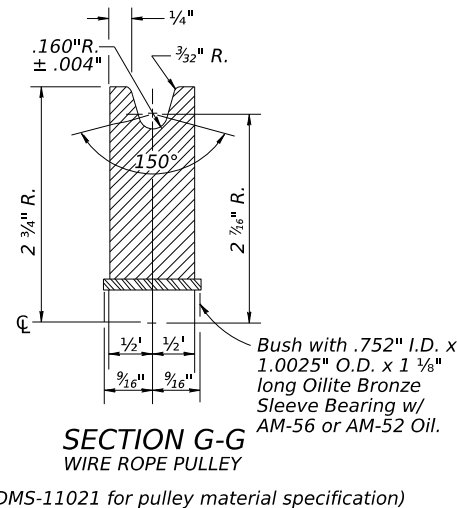
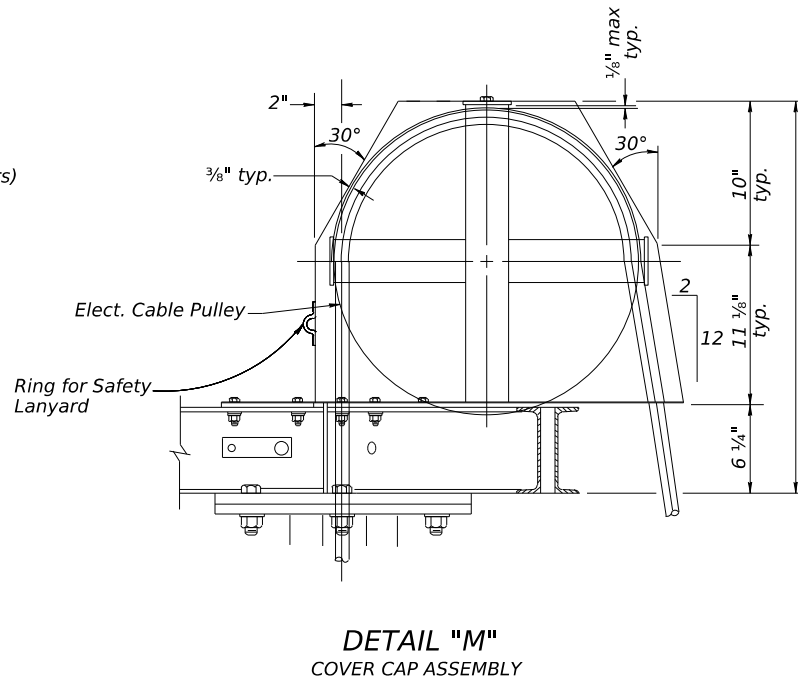
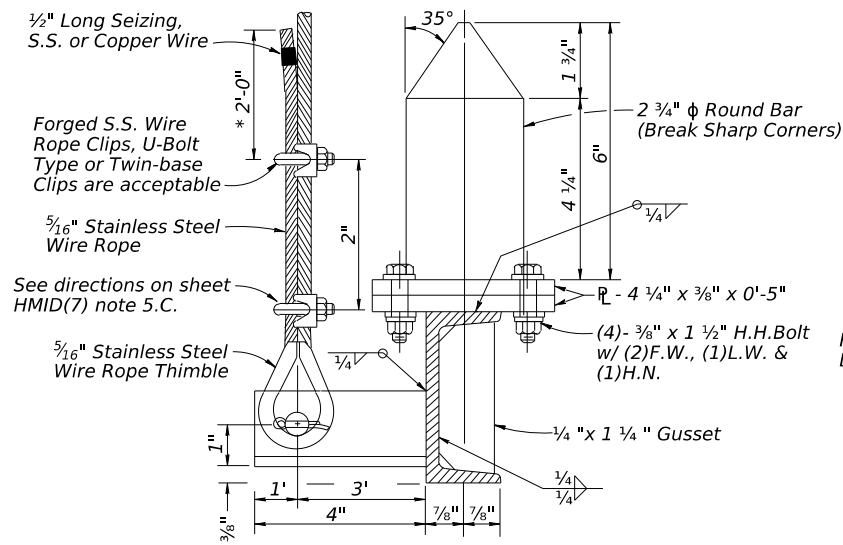
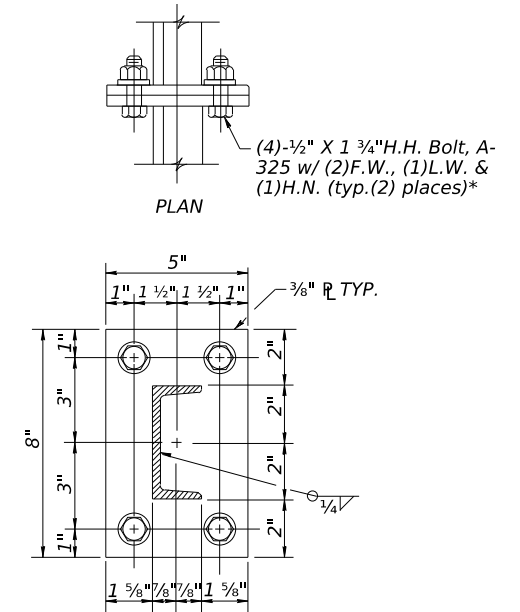
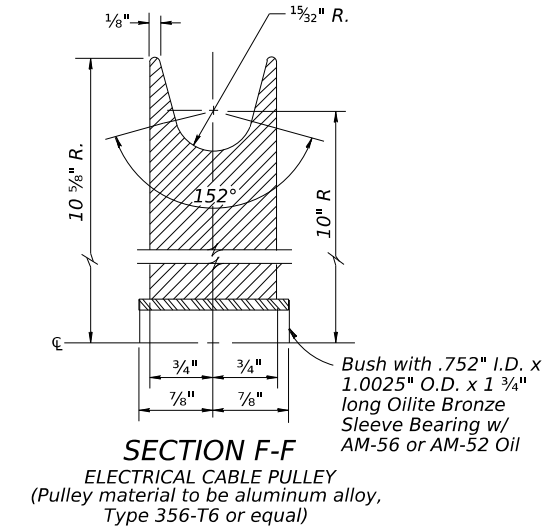
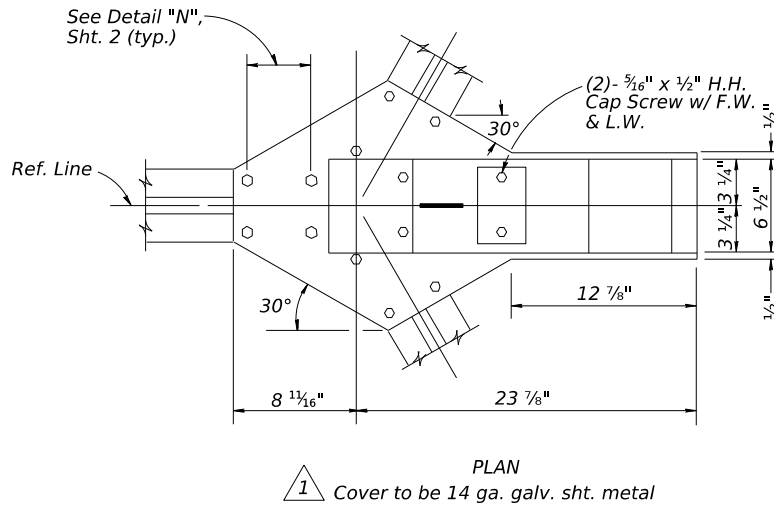
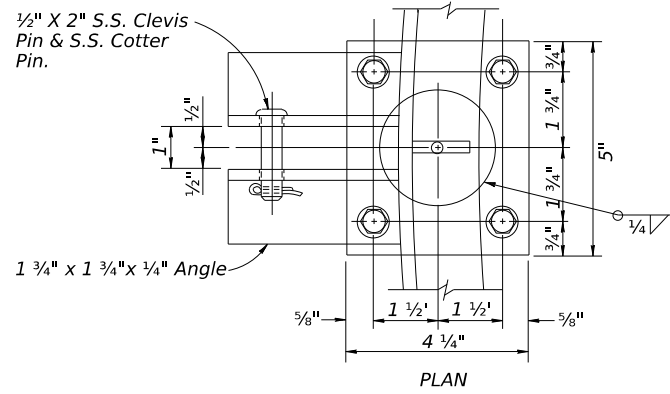
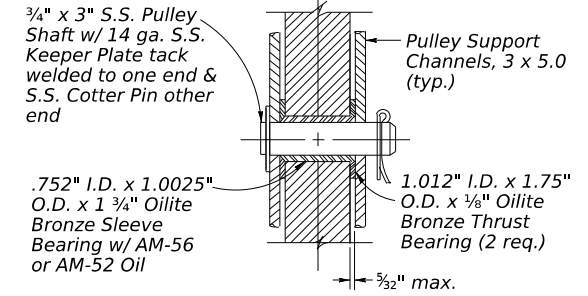
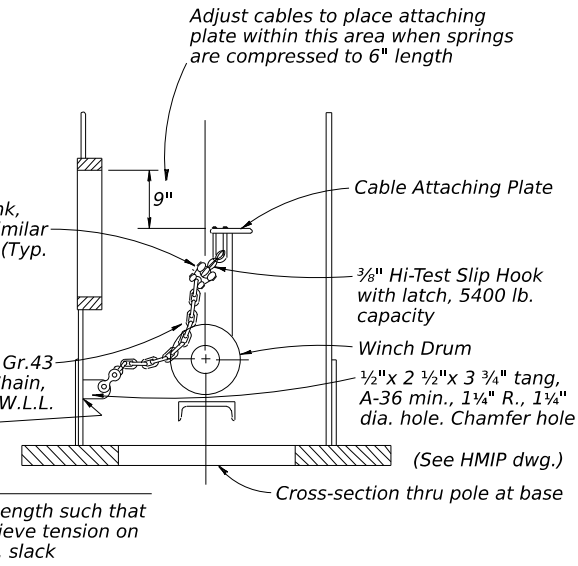
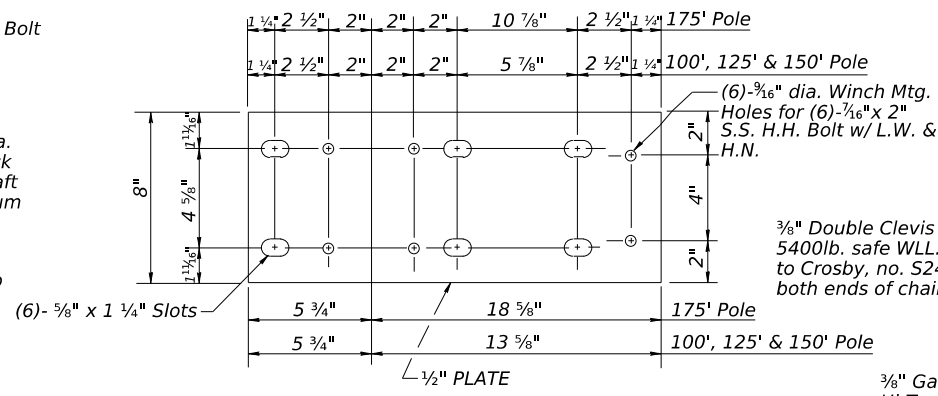
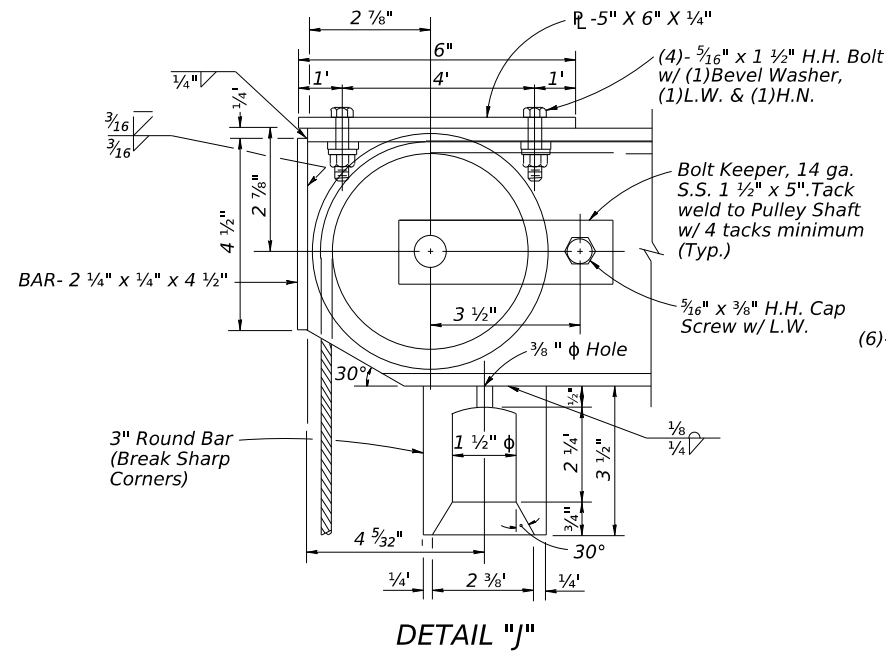
DETAIL "N"

		Traffic Safety Division Standard	
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©TxDOT February 2024	CONT	SECT	JOB
REVISIONS	0610	03	095
1-86 5-87 2-24	DIST	COUNTY	SHEET NO.
4-86 12-87	ATL	TITUS	IH 30
5-86 4-96			137

Revised Hole Size For Lightning Rod

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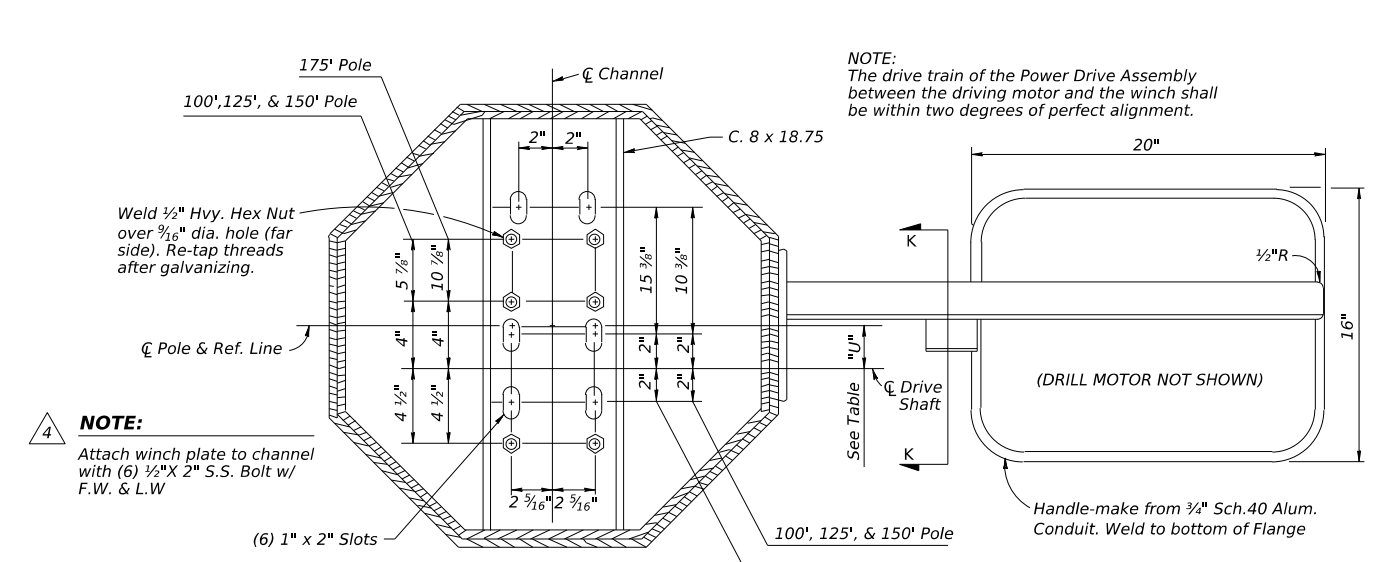
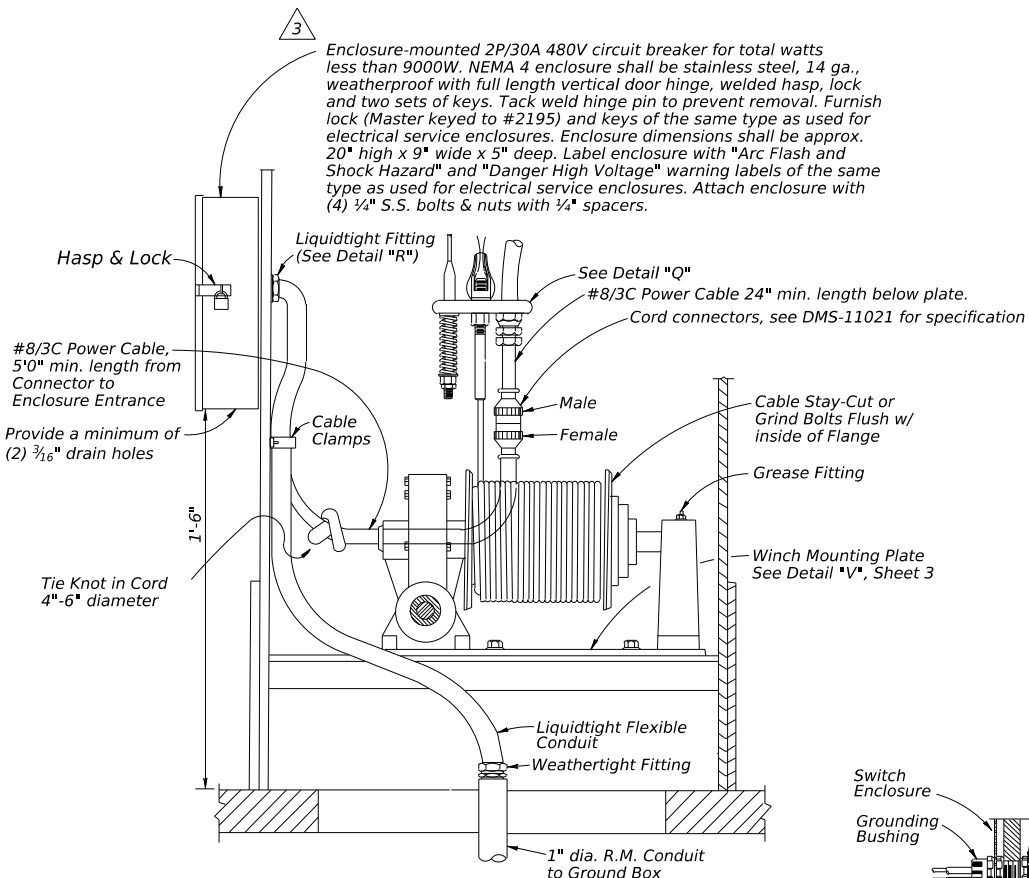
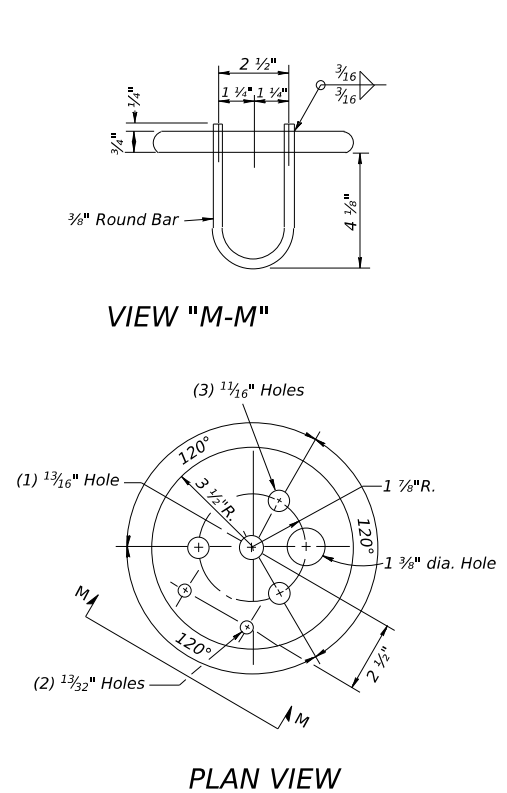


* Note: Torque bolts to 70 foot pounds or as recommended by the manufacturer

		Traffic Safety Division Standard	
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1-86 10-88	DIST	COUNTY	SHEET NO.
5-86 4-96	ATL	TITUS	138
10-86 2-24			
76C			

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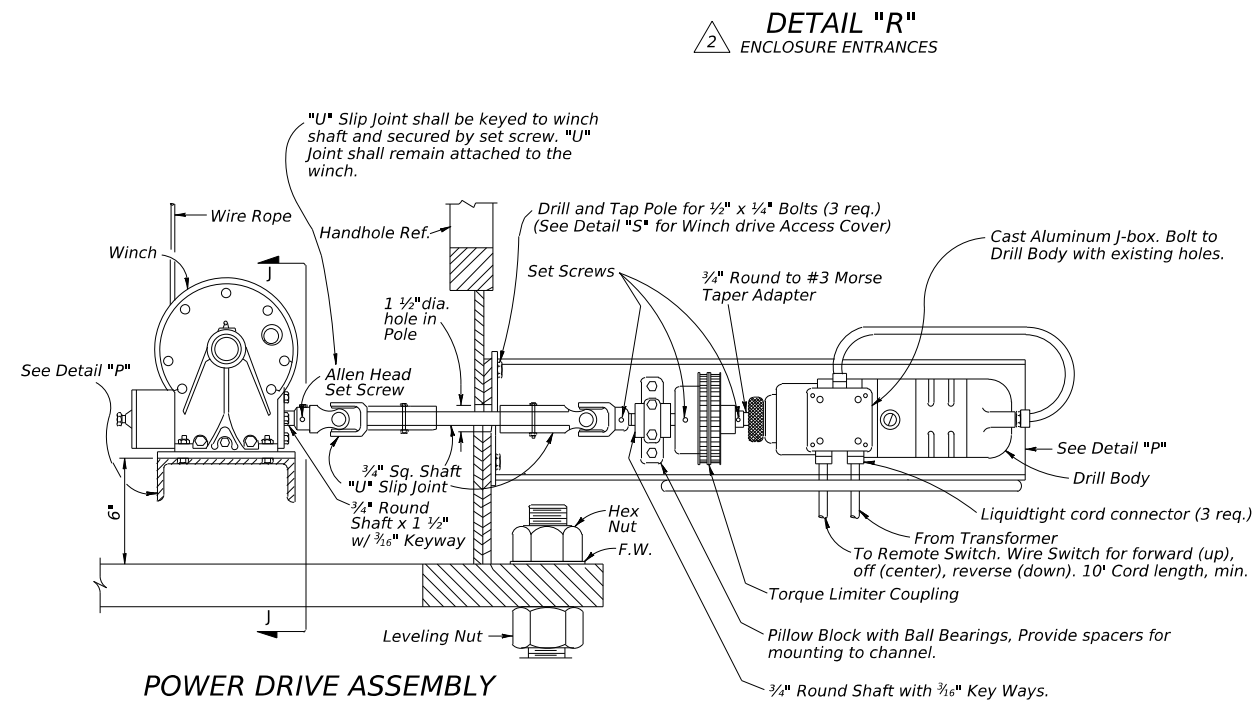
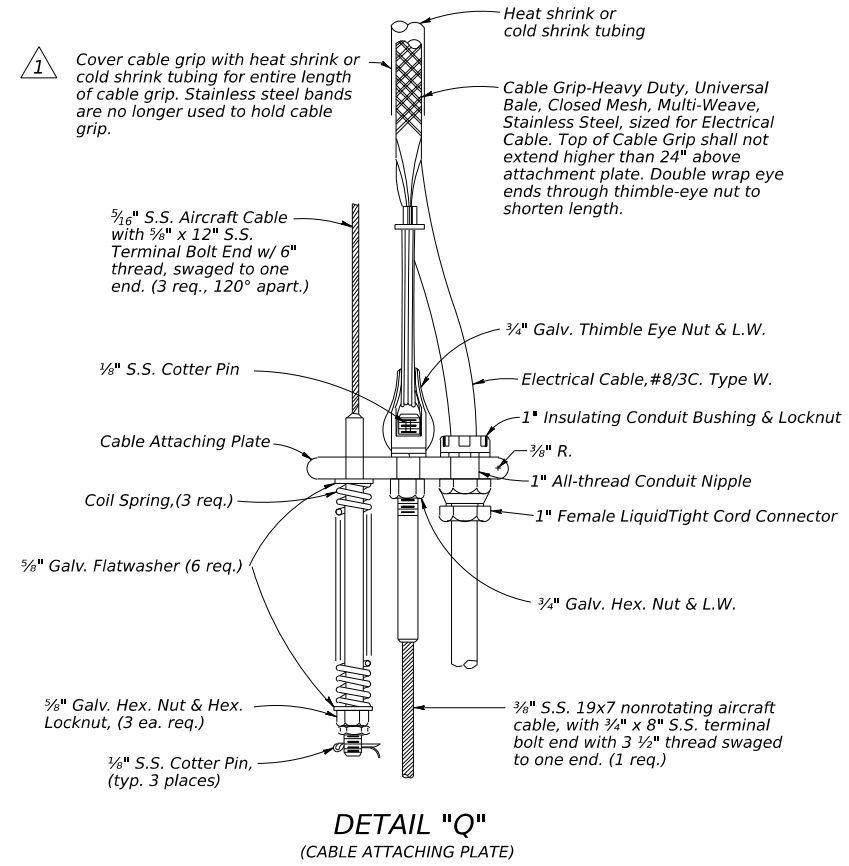
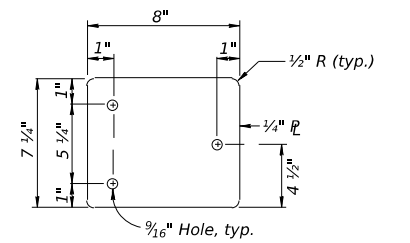
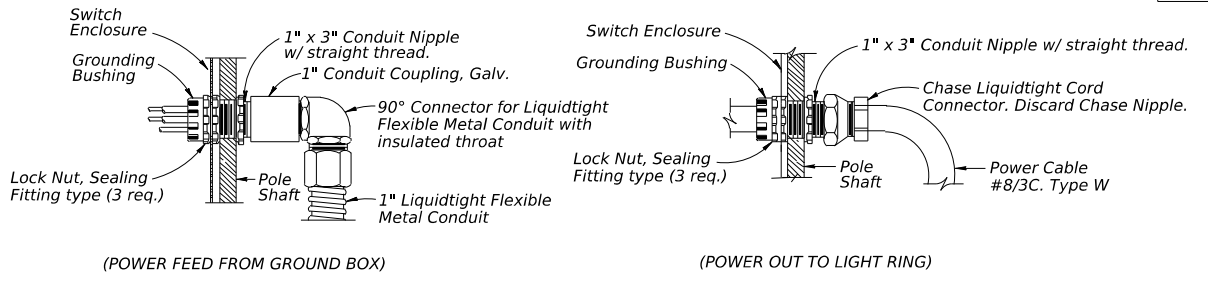
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NOTE: The drive train of the Power Drive Assembly between the driving motor and the winch shall be within two degrees of perfect alignment.

TABLE OF "U" DIMENSIONS

Pole Ht. Ft.	8 Sided 80 MPH	8 Sided 100 MPH	12 Sided 80 MPH	12 Sided 100 MPH
100	3 1/2"	3 1/2"	2 1/2"	2 1/2"
125	3 1/2"	3 1/2"	2 1/2"	2 1/2"
150	3 1/2"	3 1/2"	2 1/2"	2 1/2"
175	4 1/2"	4 1/2"	3 1/2"	3 1/2"



- 1 Revised Cable Grip
- 2 Revised Bushings
- 3 Revised Enclosure
- 4 Revised Bolts

Texas Department of Transportation Traffic Safety Division Standard

HIGH MAST ILLUMINATION DETAILS

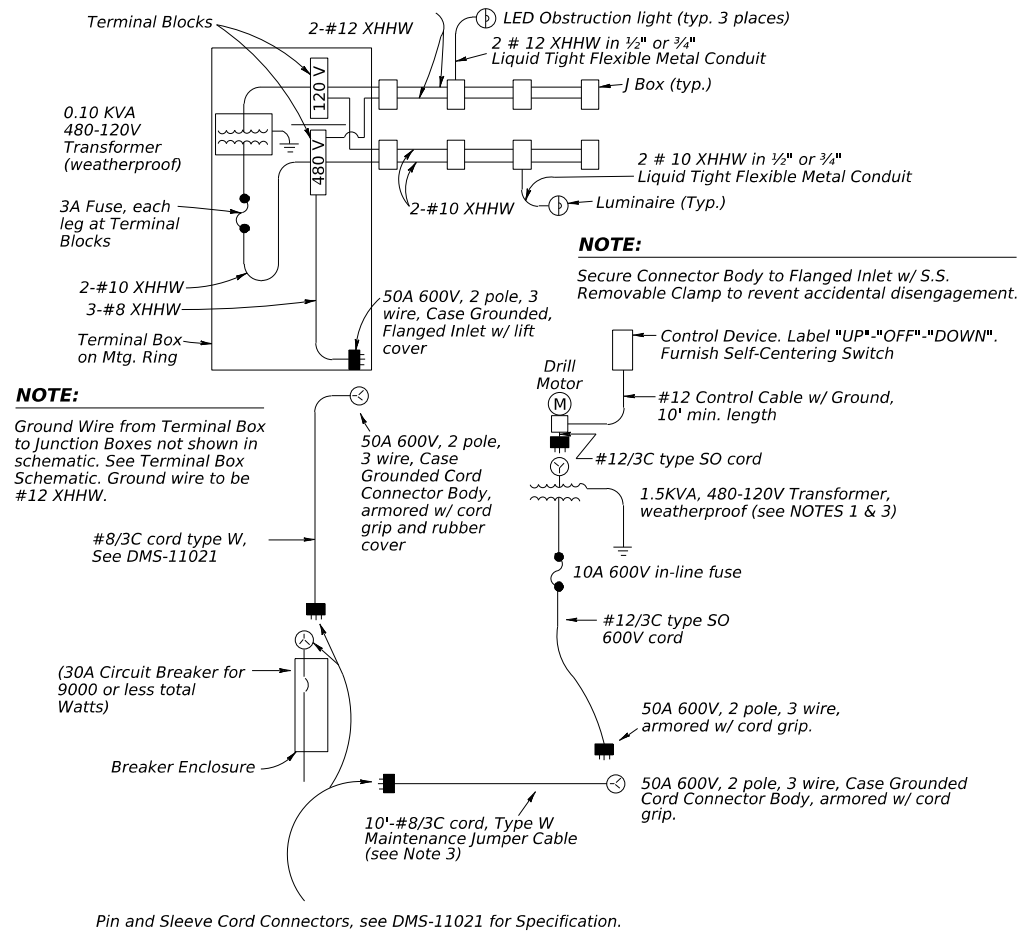
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© TxDOT February 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610 03		095	IH 30
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5-86 4-89 2-24				
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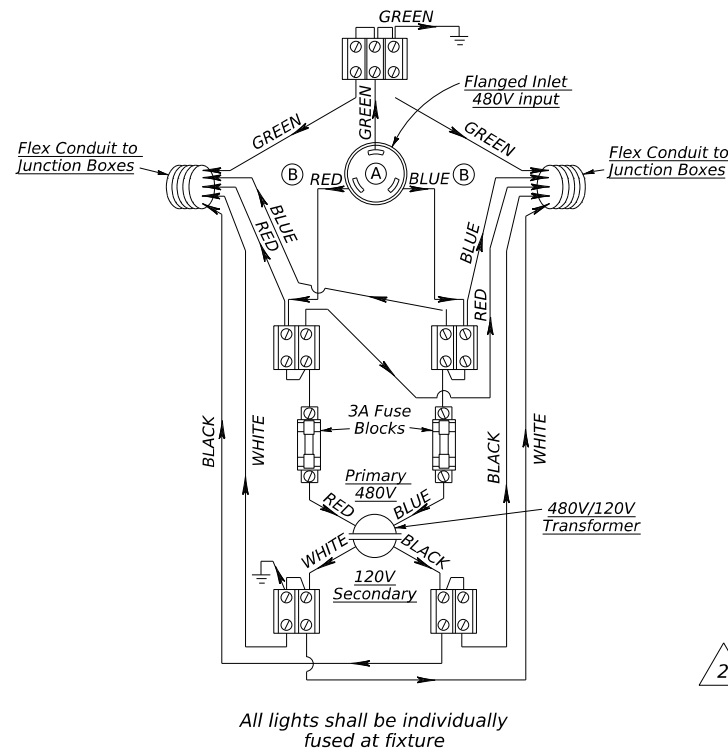
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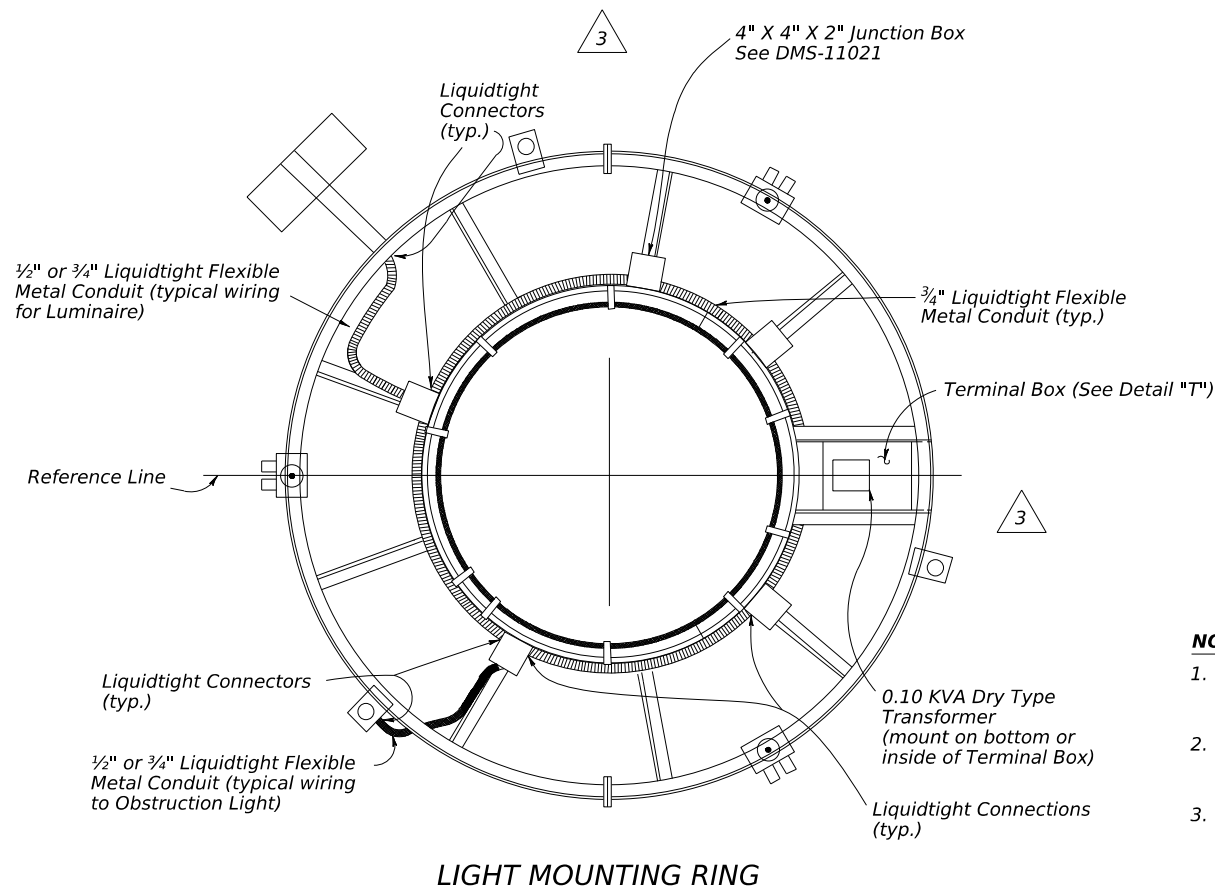
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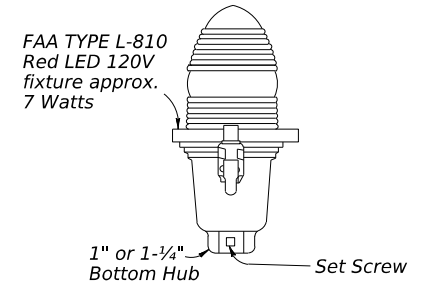
ONE-LINE SCHEMATIC



TERMINAL BOX SCHEMATIC



LIGHT MOUNTING RING



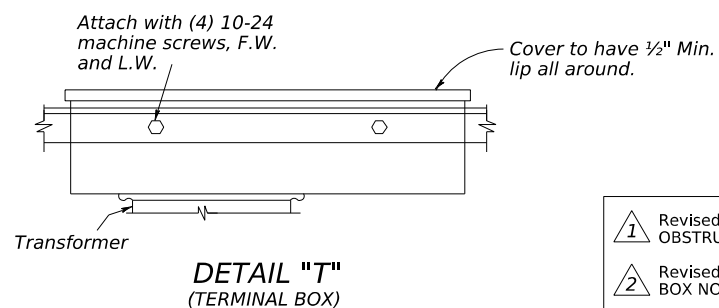
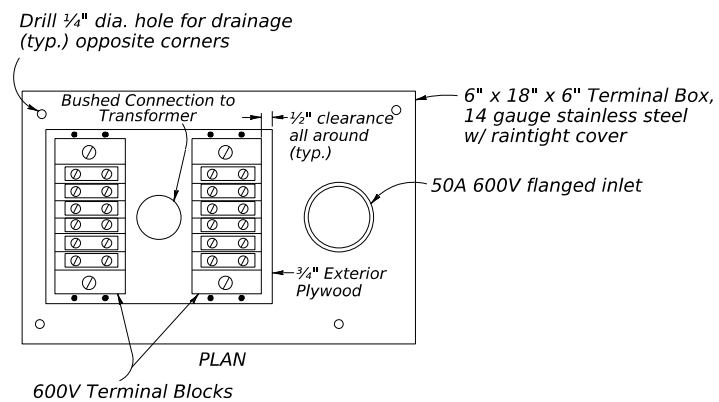
DETAIL "U" (OBSTRUCTION LIGHT)

NOTES:

1. Provide handle on 1.5 KVA Transformer for portability. (see ONE-LINE SCHEMATIC)
2. Conduit entries into terminal box shall be into side of the box.
3. A minimum of one (1) maintenance jumper cable shall be supplied for each project. Supply (1) portable transformer for each power drive unit required for project.
4. Strap LFMC within 12" of each box and at intervals not to exceed 4 1/2 feet. If strapping of LFMC within 12 in of Luminaire is not possible, then the strapping distance may be increased up to 3 ft from luminaire.

TERMINAL BOX NOTES:

1. Obstruction light color code: from secondary side of the transformer throughout circuit to socket, WHITE-NEUTRAL, BLACK-LOAD.
2. Power supply cord to flanged inlet: GREEN-GROUND, WHITE-LINE, BLACK-LINE. From flanged inlet (A) to terminal blocks: GREEN-GROUND, RED-LINE, BLUE-LINE. From there, all 480V circuit wires to be RED and BLUE to junction boxes.
3. Wire size from power supply to 480V terminal blocks shall be #8 AWG - see (B) on terminal box schematic.
4. Wire size from 480V terminal blocks to junction boxes for luminaires shall be #10 AWG.
5. Wire size from 120V terminal blocks to junction boxes for obstruction lights shall be #12 AWG.
6. Mount terminal blocks on 3/4" exterior grade plywood.

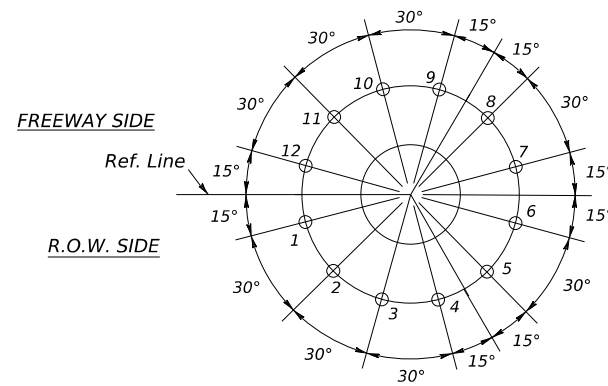


- 1 Revised OBSTRUCTION LIGHT
- 2 Revised TERMINAL BOX NOTES
- 3 Revised RING LFMC

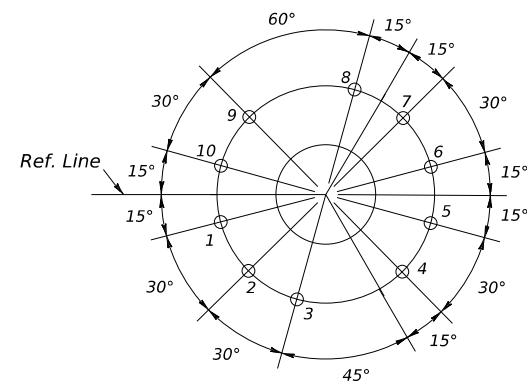
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© TxDOT February 2024	CONT	SECT	JOB
REVISIONS	0610	03	095
1-86 10-88 2-24	DIST	COUNTY	SHEET NO.
6-87 10-93	ATL	TITUS	140
11-87 4-96			
76E			

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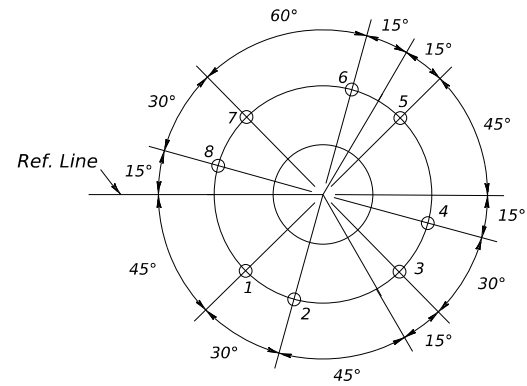
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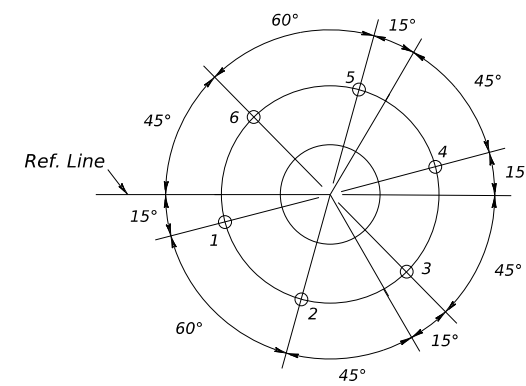
12-LIGHT SETTING



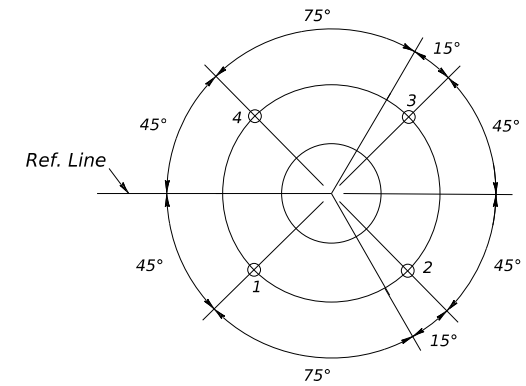
10-LIGHT SETTING



8-LIGHT SETTING



6-LIGHT SETTING



4-LIGHT SETTING

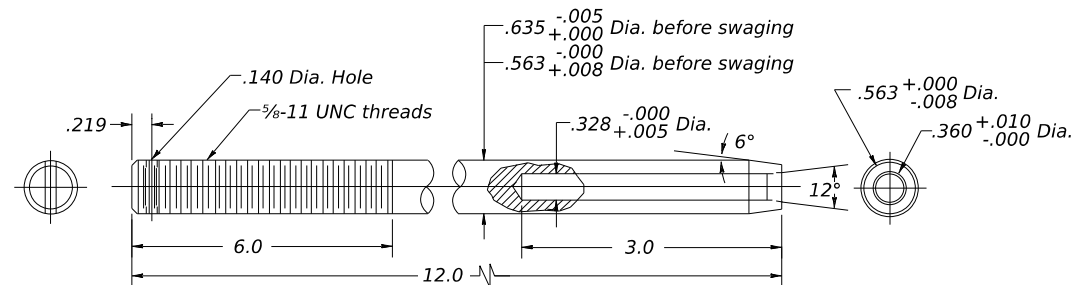
LUMINAIRE ARRANGEMENTS



NOTE:

Aircraft obstruction light locations not shown. Three are required, located approximately 120° apart. Locations will vary dependent on the light setting used.

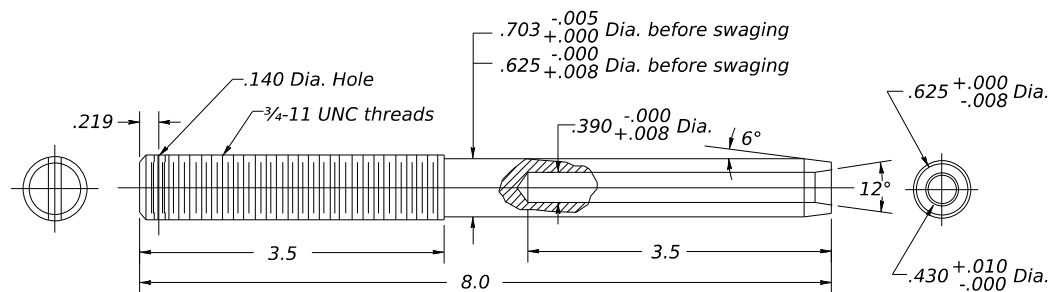
Note: Min. Swage Length = 2.06
Max. Swage Length = 2.94



TERMINAL FOR 5/16" WIRE ROPE

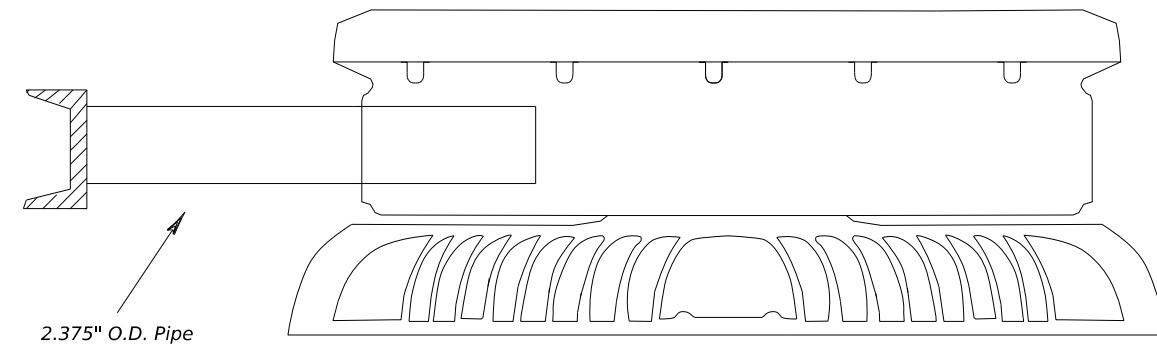
Material: Stainless Steel, Type 303SE or 304 with 115,000 P.S.I. max. ultimate tensile strength

Note: Min. Swage Length = 3.12
Max. Swage Length = 3.44



TERMINAL FOR 3/8" WIRE ROPE

Material: Stainless Steel, TYPE 303SE or 304 with 115,000 P.S.I. max. ultimate tensile strength



LUMINAIRE MOUNTING ASSEMBLY (TYP.)

NOTE:

For Type A, B, and C luminaires, orient optics of each fixture in the same direction, as shown on the plans, to properly illuminate the adjacent roadway(s). For type S luminaires, orient all optics radially from the center.

1 Added alternate luminaire arrangements

				Traffic Safety Division Standard	
<h2>HIGH MAST ILLUMINATION DETAILS</h2> <h3>HMID(6)-24</h3>					
FILE:	hmid-24.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	February 2024	CONT:	0610	SECT:	03
REVISIONS		JOB:	095	HIGHWAY:	IH 30
1-86	4-96	DIST:	TITUS	COUNTY:	
10-93	3-03				SHEET NO.
10-95	2-24				141
76F					

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DATE: 6/3/2024 1:56:02 PM
 FILE: P:\116\35\04\Design\Civil\Standards\illumination\hmid-24.dgn

1. GENERAL

A. All material shall be in accordance with the applicable sections of the NEC. All conduit and conductors shall meet the requirements of Items 618 and 620. Heat shrink tubing, for use with cable grips and cable splicing, shall meet the requirements of Item 620. Luminaires shall meet the requirements of Item 614 and DMS-11020. High mast kit materials shall meet the requirements of Item 614 and DMS-11021.

B. Obstruction Lights

1. When obstruction lights are required by layout sheets, summary sheets, or general notes; control the entire high mast assembly with an FAA-approved photocell - mounted inside the service enclosure. Control luminaires with a photo control installed on each fixture. This will allow operation of obstruction lights at twilight and luminaires during darkness. Submit alternate control methods for approval.
 - a) Provide service enclosure mounted photocell (FAA photocell) that turns on at light levels below 35 foot-candles and turns off above 58 foot-candles. FAA photocell shall be rated for operation at 240 volts. Install a permanent placard on the inside of the service enclosure door, to indicate that an FAA approved photocell is required.
 - b) Install a one foot-candle photocell, rated for the operating voltage, in the photocell receptacle of each fixture. Provide photocells that turn on at light levels below 1.0 foot-candle (plus or minus 0.5), and turn off at 2 foot-candles higher than this level.
2. When obstruction lights are not required, eliminate the 3 obstruction light fixtures, 3 mounting posts, 480/120 volt transformer, 120 volt wiring, fixture-mounted photocells, FAA photocell, and 3 mounting post support connections shown on detail "E", sheet 1.

2. TESTING

A. After the high mast assembly has been completely assembled, the Engineer may require the Contractor to fully lower and raise each high mast ring one time to demonstrate proper operation of the lowering mechanism or for inspection of the ring or fixtures. If any malfunction occurs, correct the problem at the Contractor's expense and repeat the lowering test.

3. WINCH

A. Any winch that is operated without oil shall be considered damaged and shall be replaced by the Contractor at the Contractor's expense.

4. POWER DRIVE ASSEMBLY (ONE ONLY FOR THIS CONTRACT UNLESS OTHERWISE SHOWN ELSEWHERE ON THE PLANS)

A. Torque Limiter Coupling

1. Run-in the torque limiter coupling for 4 minutes at approximately 60 RPM at a torque setting of 70% to 80% of spring rating. Provide written certification that run-in has been accomplished.
2. After run-in, set the torque limiter coupling to a torque limit of 35 pound-feet or as directed by the Engineer. Demonstrate the proper setting of the coupling to the Engineer.

5. CONSTRUCTION METHODS

A. Fabrication

1. Drill (do not punch) all holes supporting pulley shafts prior to galvanizing.
2. Fabricate mounting rings and ring support assemblies with the use of jigs that have been inspected and approved by Materials and Tests Division (MTD) personnel.
3. Manufacturer shall proof test wire rope terminals to 40% of the rated strength of the wire rope. Furnish manufacturer's certification of proof test to the Engineer. Permanently incise manufacturer's logo on wire rope terminal.

B. Wire Rope Installation

1. Deliver wire rope on a reel from the manufacturer.
2. Use extreme care to prevent wire rope from kinking, nicking, or from sustaining other damage during installation. Do not install rope by pulling from flat coil, instead carefully unroll its full length or place on a horizontal axis and unreel according to wire rope industry standards. Before installation, inspect the wire rope for kinks, nicks, and flaws. Reject, if defects are found.
3. For right-lay wire rope, attach the rope to the drum on the end opposite the winch gear train. Wind rope on the drum so that the free end comes off the backside of the drum during normal operation of the winch. Carefully unroll wire rope as stated above. Ensure that all layers lay full and tight on drum.
4. Install all wire rope only under direct supervision of the Engineer or his authorized representative. Do not remove wire rope from the manufacturer's reel until authorized by the Engineer. Install wire rope on winch in accordance with the above and accepted industry practice. Install the three hoist cables from the top end of the pole.
5. Provide winch cable of sufficient length to leave a minimum of one full layer of cable on the drum when the fixture mounting ring is in the full down position.
6. Inspect wire rope for damage, kinks, and fraying, whenever ring is lowered.

C. Wire Rope Clips Installation

1. Turn back approx. 2' 3" of rope, measured from the top of thimble. Apply seizing to pigtail end of wire rope prior to cutting to length. See detail "K", Sheet 3. Apply first clip approx. 3" from the top of thimble with U-bolt over dead end and live end in clip saddle. Tighten nuts evenly to 30 foot-pounds of torque, or as recommended by manufacturer.
2. Install second clip as near thimble as possible, take out slack and torque nuts evenly to 30 foot-pounds or as recommended by manufacturer.
3. After final erection and assembly of the pole and high mast assembly, retighten nuts to required torque.

D. Light Ring and Luminaire Installation

1. Prior to mounting luminaires to the light ring, ensure the ring is level. Install luminaires level on the light ring.
2. Orient all Type A, B, or C luminaires on each ring in the same direction, as shown on plans. Orient Type S luminaires radially from the center.

E. Operation and Maintenance

1. When lowering ring, protect hardware and equipment at the base of the pole from damage.
2. Follow safe work practices when servicing the ring, luminaires, and associated equipment.
3. Inspect wire rope for damage, kinks, and fraying.

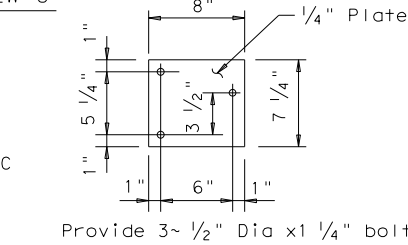
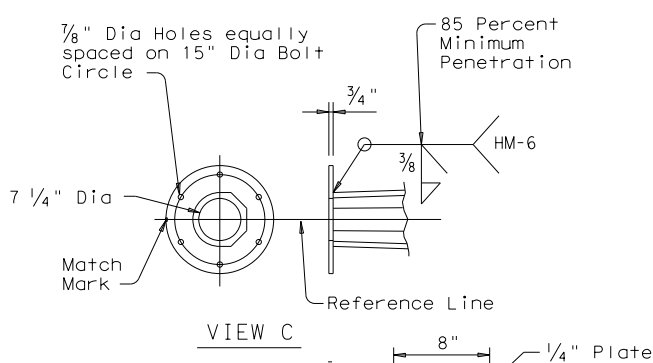
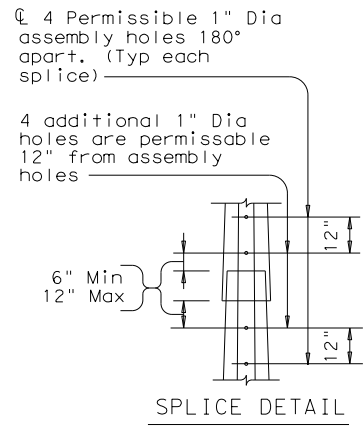


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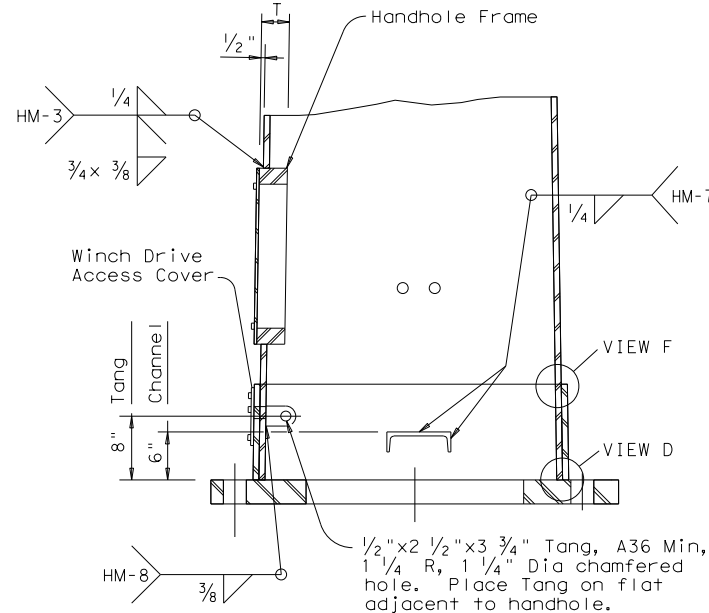
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<h1>HIGH MAST ILLUMINATION DETAILS</h1> <h2>HMID(7)-24</h2>					
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© TxDOT	February 2024	CONT:	0610	SECT:	03
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1-86	4-96	ATL	TITUS		142
9-91	3-03				
10-93	2-24				
76G					

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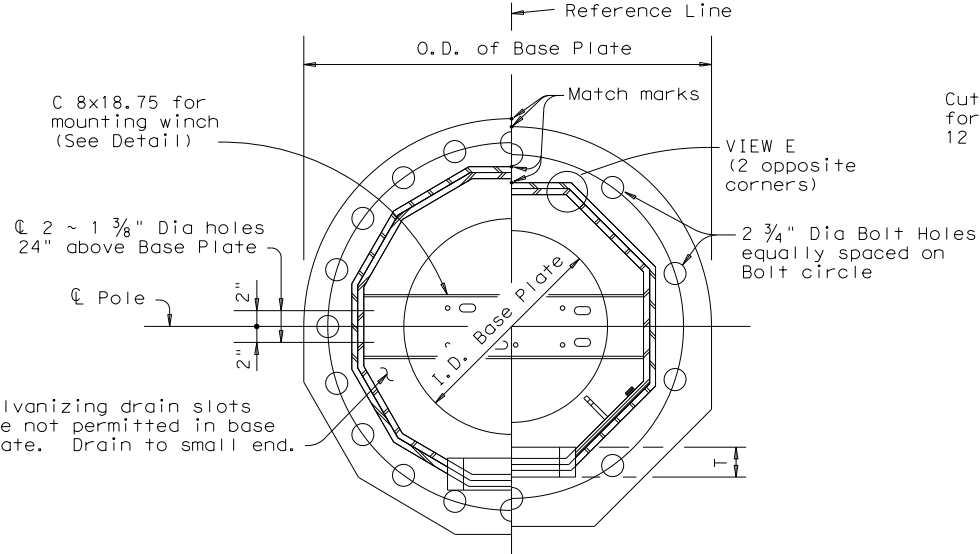
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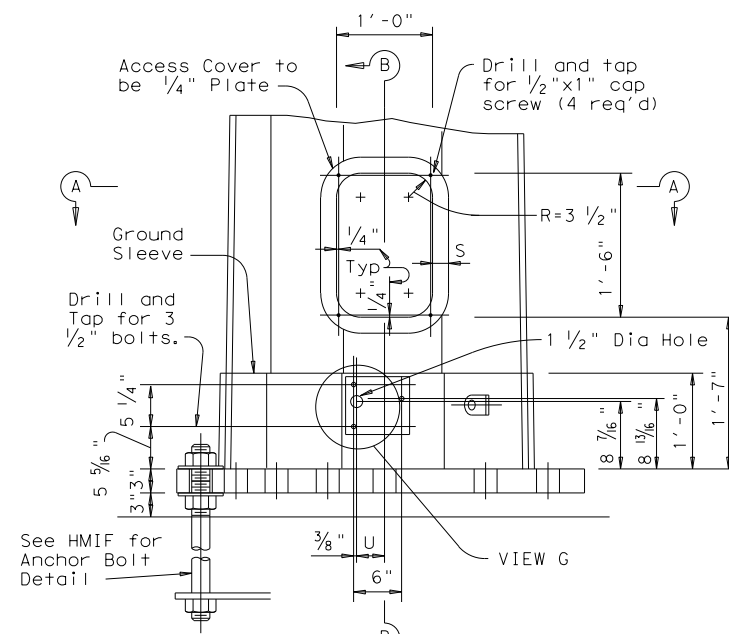
WINCH DRIVE ACCESS COVER



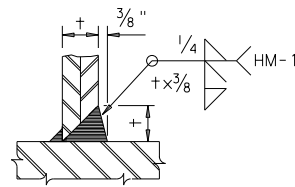
SECTION B-B



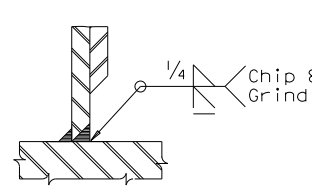
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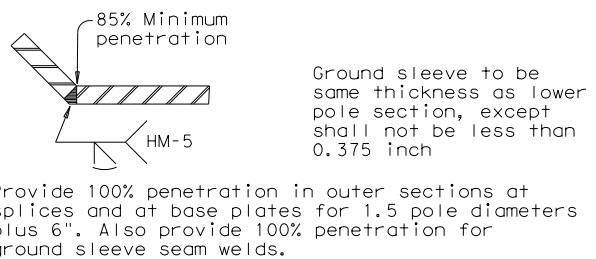
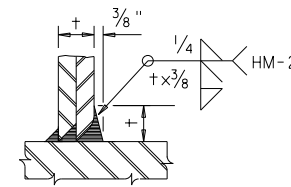
ELEV OF POLE BASE



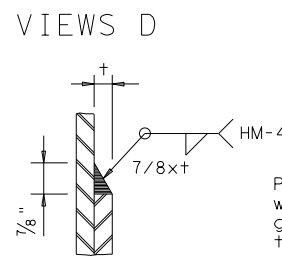
OPTIONAL WELD STEP 1
 (a) Prepare Shaft and ground sleeve.
 (b) Weld shaft to base plate, chip and grind flush (1/8" max radius.)



OPTIONAL WELD STEP 2
 (c) Position ground sleeve.
 (d) Weld to base plate with tapered reinforcement.



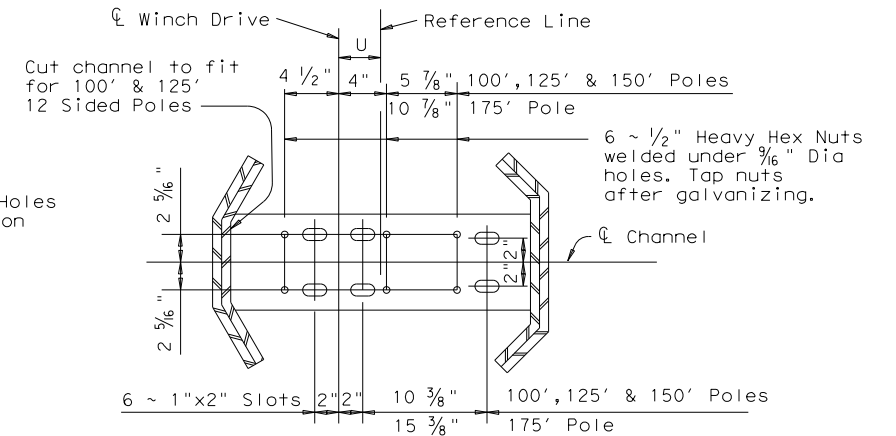
VIEW E



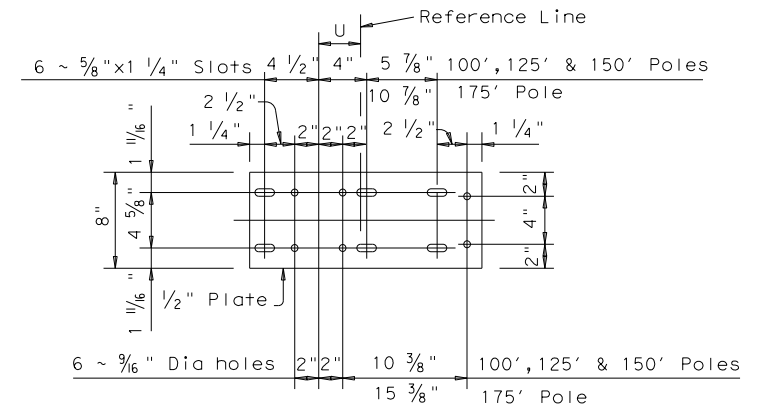
VIEW F

Provide welded and ground filler or cover plate where winch drive conflicts with bend line in ground sleeve for the 8 sided, 80 mph, 100' pole, the 12 sided, 100 mph, 100' pole, and the 12 sided, 80 mph, 175', 125' and 100' poles.

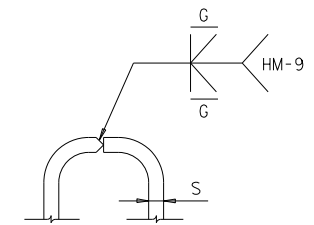
VIEW G



WINCH MOUNTING CHANNEL



WINCH MOUNTING PLATE



A bent and welded handhole frame is permissible. Heating, bending, and finish grinding must be approved with the HM-9 weld procedure.

OPTIONAL HANDHOLE FRAME

SHEET 1 OF 2

		Traffic Operations Division Standard	
<h3>HIGH MAST ILLUMINATION POLES</h3> <h2>100' - 125' - 150' - 175'</h2> <h3>HMIP(1)-16</h3>			
FILE: hmip-16.dgn	DN:	CK:	DW:
© TxDOT August 1995	CONT	SECT	HIGHWAY
REVISIONS	0610	03	095 IH 30
5-98	DIST	COUNTY	SHEET NO.
8-16	ATL	TITUS	143

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TABLE OF VARIABLE POLE DIMENSIONS												
8 SIDED POLE							12 SIDED POLE					
Ht (ft)	Section	Diameter (Inches)		Thickness (inches)	Length (feet)	Splice (inches)	Diameter (Inches)		Thickness (inches)	Length (feet)	Splice (inches)	
		Bottom	Top				Bottom	Top				
80 MPH DESIGNS	175	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36
		C	22.250	16.583	.375	35.42	32	32.625	23.583	.313	51.67	48
		D	25.375	20.948	.438	27.67	36	36.250	31.175	.375	29.00	~
		E	28.375	23.895	.500	28.00	41					
		F	31.250	26.703	.500	28.42	~					
	150	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36
		C	22.250	16.583	.375	35.42	32	32.625	23.583	.313	51.67	~
		D	25.375	20.948	.438	27.67	36					
		E	28.375	23.895	.500	28.00	~					
	125	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.92	25	24.858	15.817	.313	51.67	36
		C	22.250	16.583	.375	35.67	32	28.250	23.583	.313	26.67	~
		D	25.375	20.948	.438	27.67	~					
	100	A	13.083	7.750	.250	33.33	19	16.792	7.750	.250	51.67	24
		B	17.792	12.205	.375	34.67	25	24.625	15.817	.313	50.33	~
		C	22.250	16.583	.375	35.67	~					
100 MPH DESIGNS	175	A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	33.750	24.176	.438	51.75	49
		D	29.000	23.680	.500	28.00	42	37.375	31.995	.500	29.08	~
		E	32.625	27.210	.563	28.50	47					
		F	36.125	30.631	.563	28.92	~					
	150	A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	33.750	24.176	.438	51.75	~
		D	29.00	23.680	.500	28.00	42					
		E	32.625	27.210	.563	28.50	~					
	125	A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.747	16.173	.438	51.75	37
		C	25.250	18.473	.438	35.67	36	29.125	24.176	.438	26.75	~
		D	29.00	23.680	.500	28.00	~					
	100	A	14.208	7.875	.313	33.33	20	17.433	7.875	.375	51.67	25
		B	19.792	13.142	.375	35.00	28	25.500	16.173	.375	50.42	~
		C	25.250	18.473	.438	35.67	~					

Diameters are measured across the flats.

MATERIALS	
Polygonal Shafts Ground Sleeves	ASTM A709 Grade 50 A572 Grade 50 ① ②
Base Plate and Handhole Frame	ASTM A709 Grade 50 A572 Grade 50 ① A633 Grade C ①
Miscellaneous Steel	ASTM A36 or equal

- ① ASTM A572 and A633 may have higher yield strength but shall not have less elongation than the grade indicated.
- ② The silicon content of all steel shall be controlled to ensure high quality galvanizing and to avoid discoloration.


TABLE OF VARIABLE BASE DIMENSIONS							
Ht (ft)	O.D. (inches)	I.D. (inches)	Bolt Cir (inches)	No. Bolts	S (inches)	T (inches)	U (inches)
80 MPH DESIGNS							
8 SIDED POLE							
175'	47	22	41	16	2.00	3.75	4.50
150'	44	18	38	12	2.00	4.00	3.50
125'	41	16	35	8	2.00	4.50	3.50
100'	37	14	31	6	2.00	5.00	3.50
12 SIDED POLE							
175'	50	24	44	12	1.75	3.50	3.50
150'	47	22	41	10	1.75	3.50	2.50
125'	42	18	36	8	1.75	3.75	2.50
100'	38	13	32	6	1.75	4.00	2.50
100 MPH DESIGNS							
8 SIDED POLE							
175'	52	27	46	20	1.75	3.50	4.50
150'	49	23	43	16	1.75	4.00	3.50
125'	45	21	39	12	1.75	4.50	3.50
100'	40	17	34	10	1.75	4.50	3.50
12 SIDED POLE							
175'	52	27	46	16	1.75	3.25	3.50
150'	50	25	44	12	1.75	3.50	2.50
125'	46	22	40	10	1.75	3.75	2.50
100'	42	19	36	6	1.75	4.00	2.50

NOTE: Base Plate may be round or with 8 or 12 equal segments matching the pole.

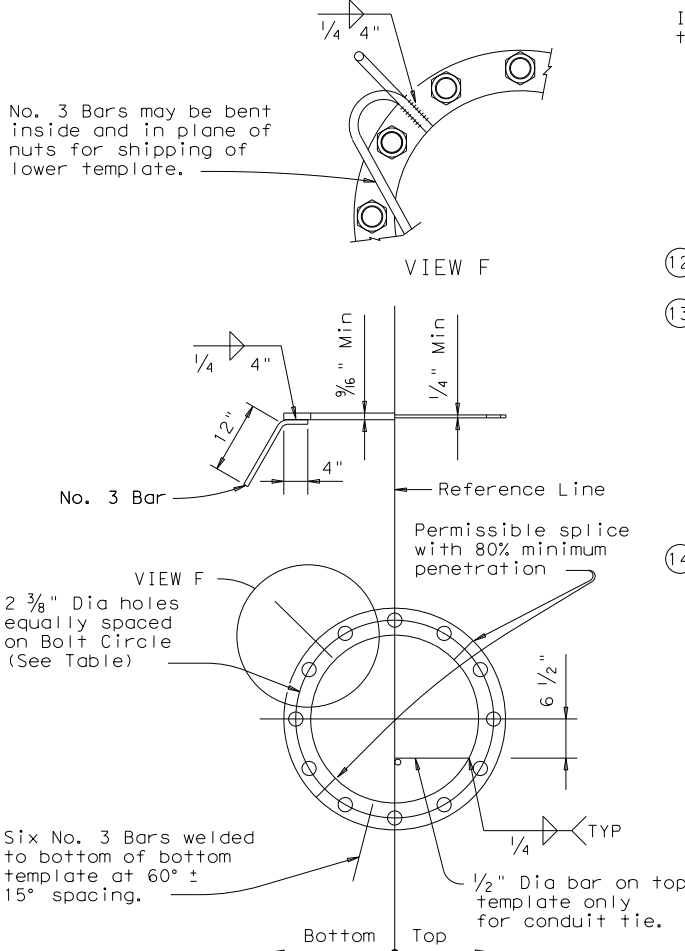
GENERAL NOTES:

- Design conforms to AASHTO 1994 Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals and Interim Revisions thereto. The Design Wind Speed is 80 mph or 100 mph.
- The required design height and wind speed shall be as shown elsewhere in the plans.
- Each pole section, top flange plate and base plate shall be permanently marked on the reference line. The required mark locations are shown on the baseplate, top plate, and foundation plan details. These marks shall be used in pole assembly and erection alignment. The reference line and anchor bolt orientation shall be parallel to roadway centerline unless otherwise shown on Lighting Layouts.

SHEET 2 OF 2

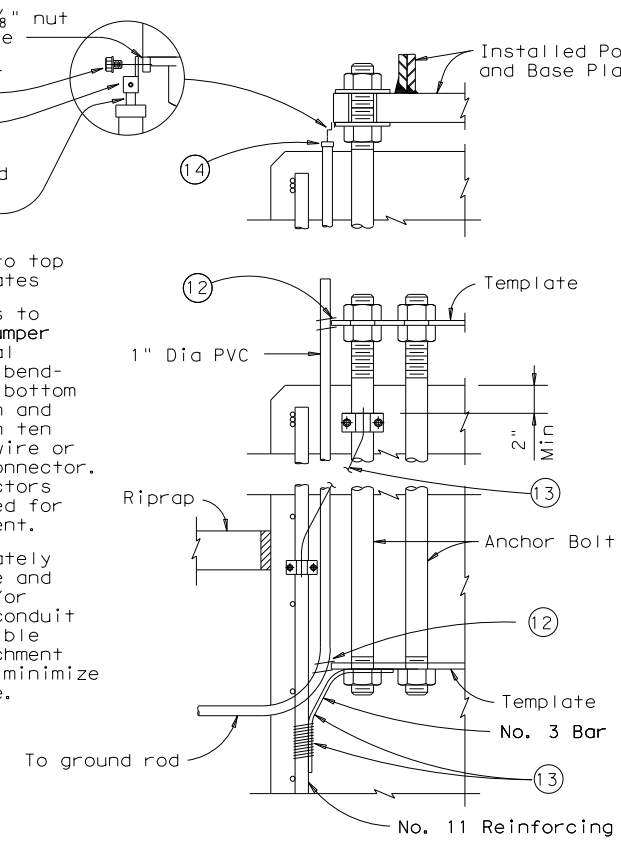
				Traffic Operations Division Standard	
HIGH MAST ILLUMINATION POLES 100' - 125' - 150' - 175'					
HMIP (2) - 16					
FILE: hmip-16.dgn	DN:	CK:	DW:	CK:	
© TxDOT August 1995	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0610	03	095	IH 30	
5-98	DIST	COUNTY	SHEET NO.		
8-16	ATL	TITUS	144		

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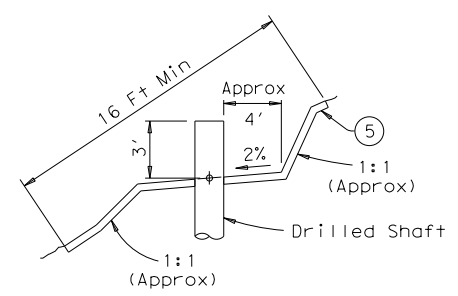
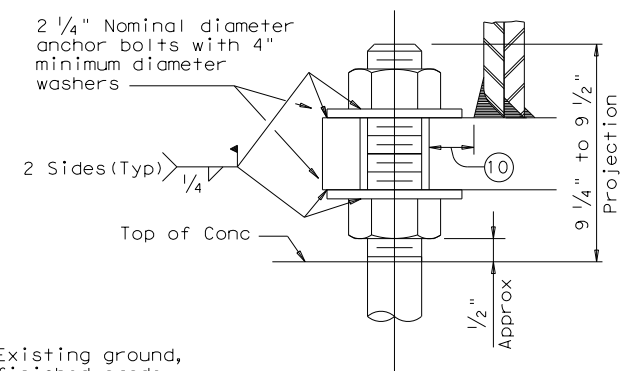


ANCHOR BOLT TEMPLATES

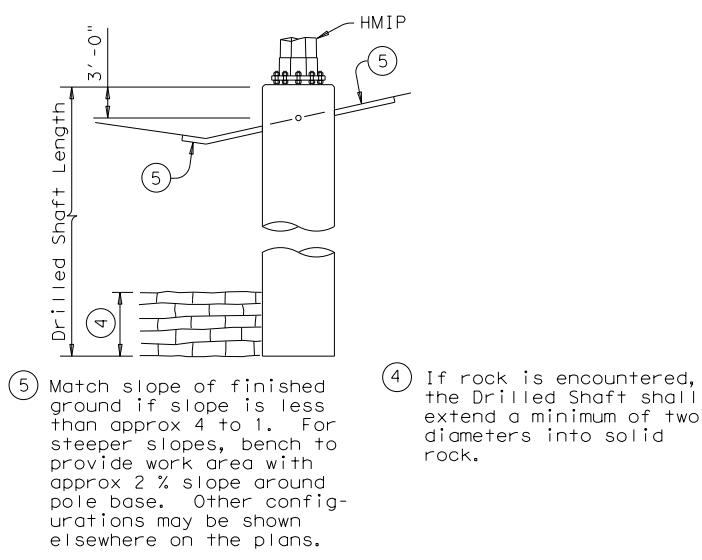
LIGHTNING PROTECTION SYSTEM



- ② Place ground box cover flush with riprap.
- ⑩ If, due to tolerances in fabrication, the anchor bolt hole to ground sleeve weld is less than approx 1/8", clipped 1/2" thick washers shall be supplied at those

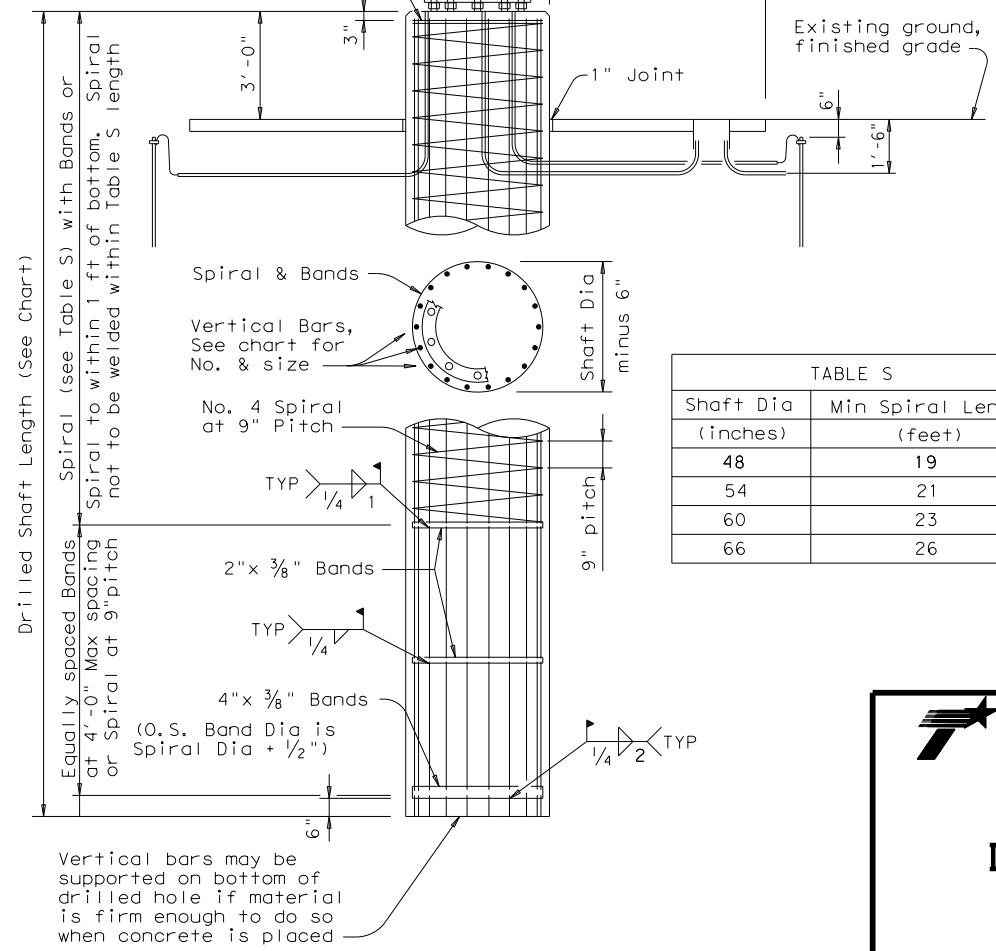


RIPRAP ON SLOPES



ANCHOR BOLT ASSEMBLY

(See Anchor Bolt Table for number of bolts required)



Drilled Shaft Length (See Chart)

Equally spaced Bands at 4'-0" Max spacing or Spiral at 9" pitch

Spiral (see Table S) with Bands or Spiral to within 1 ft of bottom. Spiral not to be welded within Table S length

Shaft Dia (inches)	Min Spiral Length (feet)
48	19
54	21
60	23
66	26

Vertical bars may be supported on bottom of drilled hole if material is firm enough to do so when concrete is placed

DRILLED SHAFT FOUNDATION DETAIL

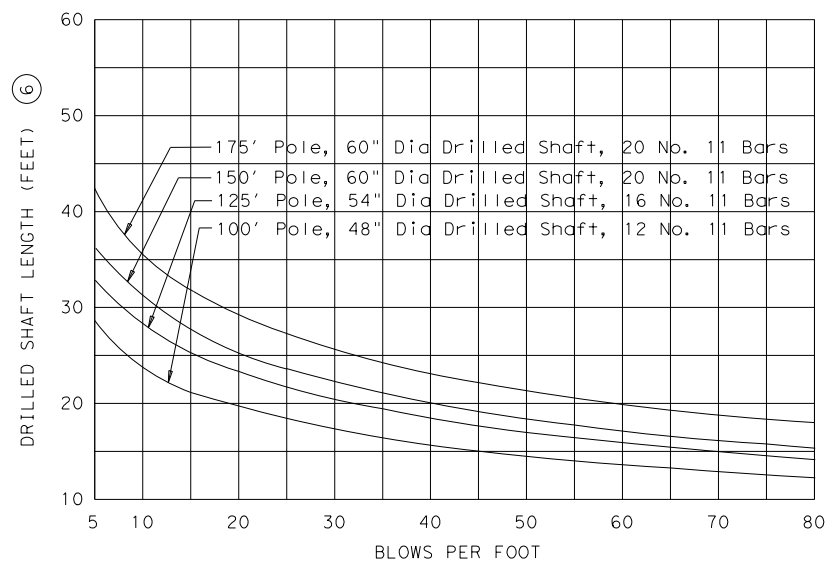
Texas Department of Transportation
 Traffic Operations Division
HIGH MAST ILLUMINATION POLE FOUNDATIONS
SHEET 1 OF 2 HMIF (1) -98

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11-97	REVISIONS	CONT	SECT	JOB	HIGHWAY
5-98	Anchor Bolt Circle Dia	0610	03	095	IH 30
ATL		DIST	COUNTY		SHEET NO.
		ATL	TITUS		145

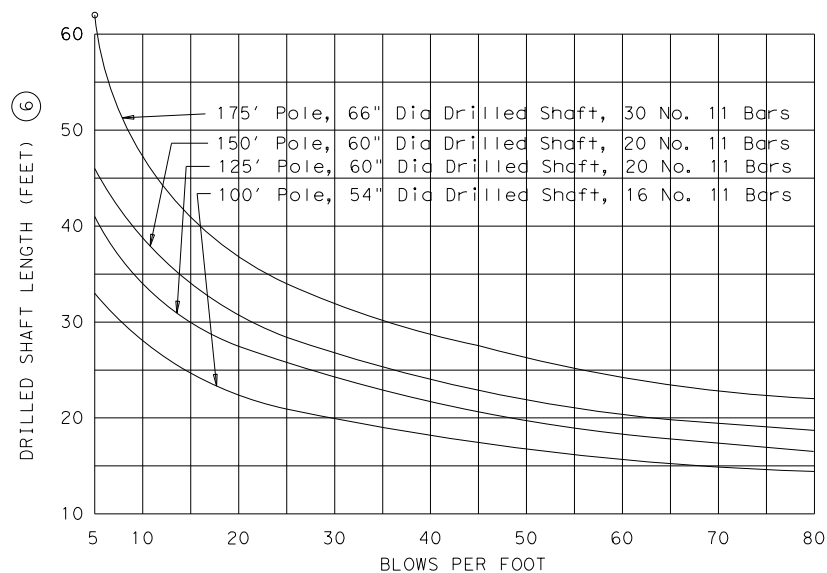
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⑥ Includes normal 3 Ft exposure. Shafts with more than 3 Ft exposure must have additional length.



Do not extrapolate below 5 Blows/Ft. A special design will be required for soil less than 5 Blows/Ft.



Do not extrapolate below 5 Blows/Ft. A special design will be required for soil less than 5 Blows/Ft.

TEXAS CONE PENETROMETER TEST TABLES

NOTE: Use average "N" value over the top third of the embedded shaft. Ignore the top 2' of soil.

ANCHOR BOLT TABLE						
Pole Height (feet)	Bolt Diameter (inches)	Bolt Length (feet)	Bolt Templates		No. of Bolts	Bolt Cir Dia (inches)
			O D (inches)	I D (inches)		
8 SIDED POLE						
175	2.25	4.83	45.5	36.5	16	41
150	2.25	4.83	42.5	33.5	12	38
125	2.25	4.83	39.5	30.5	8	35
100	2.25	4.83	35.5	26.5	6	31
12 SIDED POLE						
175	2.25	4.83	48.5	39.5	12	44
150	2.25	4.83	45.5	36.5	10	41
125	2.25	4.83	40.5	31.5	8	36
100	2.25	4.83	36.5	27.5	6	32
8 SIDED POLE						
175	2.25	4.83	50.5	41.5	20	46
150	2.25	4.83	47.5	38.5	16	43
125	2.25	4.83	43.5	34.5	12	39
100	2.25	4.83	38.5	29.5	10	34
12 SIDED POLE						
175	2.25	4.83	50.5	41.5	16	46
150	2.25	4.83	48.5	39.5	12	44
125	2.25	4.83	44.5	35.5	10	40
100	2.25	4.83	40.5	31.5	6	36

MISCELLANEOUS QUANTITIES - ONE HMIF			
Shaft Diameter (in) ⑦	48	54	60
Concrete Riprap (CY)	2.33	2.44	2.56
Reinforcing (Lbs) ⑧	94	99	103
Ground Box (ea)	1	1	1
R O W Marker (ea) ⑨	1	1	1

- ⑦ See elsewhere on plans for length of Drilled Shaft required.
- ⑧ For Contractors information only.
- ⑨ Designated elsewhere on plans if required.

GENERAL NOTES:

- Unless otherwise noted, the welded steel bands may be replaced with spiral as shown on the foundation details.
- Anchor bolts shall be placed in foundation so there are always two bolts on reference line.
- Drilled shaft lengths as determined from the foundation design chart or other acceptable methods are to be as shown elsewhere on the plans.
- ODSR may not be used for HMIF drilled shafts.
- Concrete for drilled shafts shall be Class C.
- Repair welded areas with zinc-rich paint.
- All Anchor Bolts, Nuts and Washers shall be galvanized in accordance with Item 445, "Galvanizing".

Texas Department of Transportation
 Traffic Operations Division

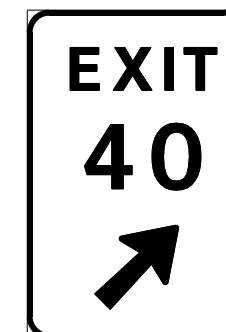
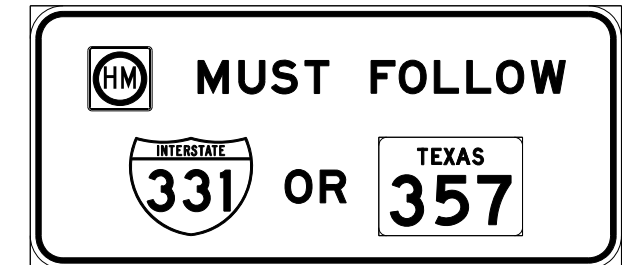
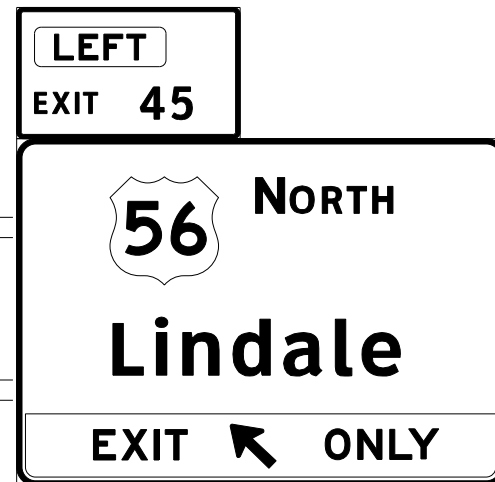
HIGH MAST ILLUMINATION POLE FOUNDATIONS

SHEET 2 OF 2 HMIF (2) - 98

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REVISIONS		CONT	SECT	JOB		HIGHWAY	
5-98 - Anchor Bolt Circle Dia		0610	03	095		IH 30	
DIST		COUNTY			SHEET NO.		
ATL		TITUS			146		

REQUIREMENTS FOR OVERHEAD AND LARGE GROUND-MOUNTED SIGNS

TYPICAL EXAMPLES



GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign summary sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Black legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F). White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white FHWA lettering, when not specified in the SHSD or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be cut-out white sheeting applied to colored background sheeting.
6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius need not be trimmed or rounded if fabricated from an extruded material.
7. Sign substrate for ground-mounted signs shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative. Sign substrate for overhead signs shall be any material that meets DMS-7110. Exit Number Panels attached above the parent sign shall be made with the same substrate and sheeting as the parent sign.
8. Mounting details of attachments to parent sign face are shown on Standard Plan Sheet TSR(5). Mounting details of exit number panels above parent sign are shown in the "SMD series" Standard Plan Sheets.
9. Background sheeting shall be applied to the substrate per sheeting manufacturer's recommendations. Sheeting will not be allowed to bridge the horizontal gap between panels.
10. Cut all legend, symbols, borders, and direct applied sign attachments at panel joints.

DEPARTMENTAL MATERIAL SPECIFICATIONS

ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>

SHEETING REQUIREMENTS

USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE B OR C SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM

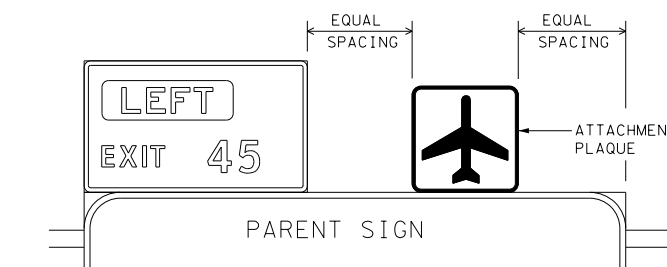
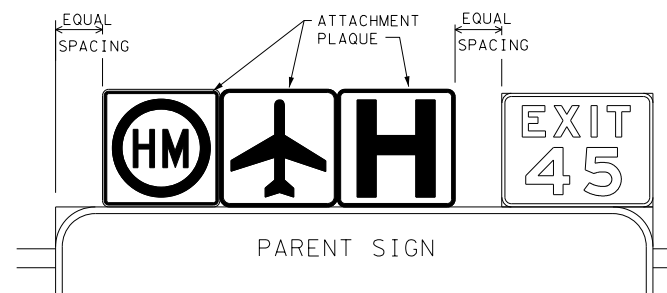
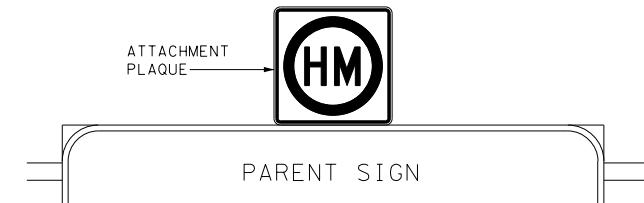
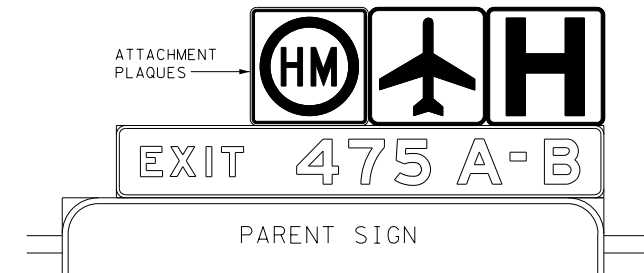
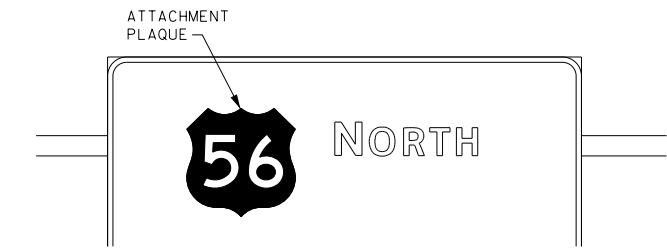
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 FILE: P:\16\35\04\Design\Civil\Standards\Signing\tsr1-13.dgn

				Traffic Operations Division Standard	
<h2>TYPICAL SIGN REQUIREMENTS</h2> <h3>TSR(1) - 13</h3>					
FILE:	fsr1-13.dgn	DN:	TxDOT	CK:	TxDOT
©TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS		0610	03	095	IH 30
12-03	7-13	DIST	COUNTY	SHEET NO.	
9-08		ATL	TITUS	147	

REQUIREMENTS FOR ATTACHMENTS TO OVERHEAD AND LARGE GROUND MOUNTED SIGNS

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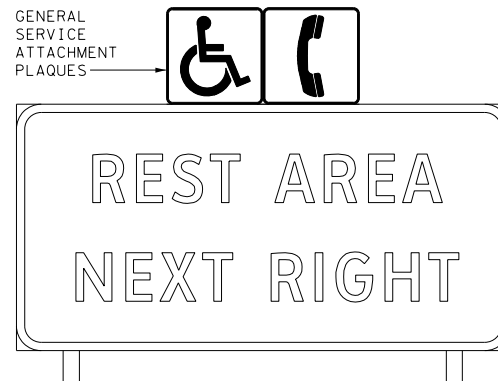
TYPICAL EXAMPLES

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B OR C SHEETING

GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Route Marker legends (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to white background sheeting, or combination thereof.
- Route markers and other attachments within the parent sign face shall be direct applied unless otherwise specified in the plans. Attachments not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
- General Service Plaques shall be 0.080 inch thick and Routing Plaques shall be 0.100 inch thick.
- The priority for Routing Plaques shall be (left to right) Hazardous Material, Airport then Hospital. See examples for mounting location.
- Mounting details of attachments to parent signs face are shown on Standard Plan Sheet TSR(5). Mounting details of sign plaque attachments above and below parent sign are shown in the "SMD series" Standard Plan Sheets.
- Plaques shall be horizontally centered at the top of the parent sign. If an exit number panel exists, the plaque shall be centered between the edge of the parent sign and the edge of the exit number panel. The plaque may be placed above the exit number panel when there is insufficient space.



TYPICAL EXAMPLES

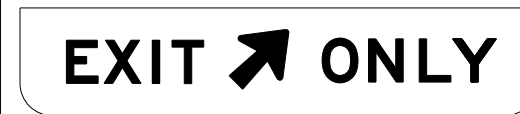
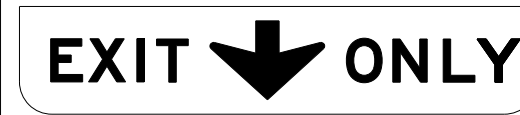
REQUIREMENTS FOR EXIT ONLY AND LEFT EXIT PANELS

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

SHEETING REQUIREMENTS FOR OVERHEAD EXIT PANELS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLUORESCENT YELLOW	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND	BLACK	ACRYLIC NON-REFLECTIVE FILM

GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD). Individual panel sizes shown in the plans may be adjusted to fit actual parent sign sizes if necessary.
- Exit Panel legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets E Series.
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend shall be applied by screening process or cut-out acrylic non-reflective black film to yellow background sheeting, or combination thereof.
- Exit Only and Left Exit panels within the parent sign face shall be direct applied unless otherwise specified in the plans. Panels not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
- Mounting details of Exit Only and Left Exit panel attachments to parent signs face are shown on Standard Plan Sheet TSR(5).



TYPICAL EXAMPLES

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>

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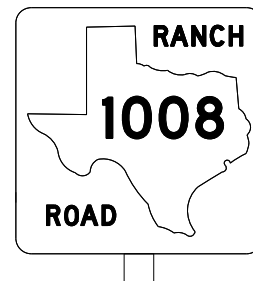
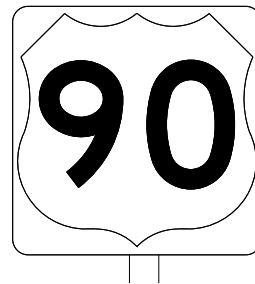
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<h3>TSR(2) - 13</h3>			
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©TxDOT	October 2003	CK:	TxDOT
REVISIONS		OW:	TxDOT
		CK:	TxDOT
12-03	7-13	CONT	SECT
9-08		0610	03
		JOB	HIGHWAY
		095	IH 30
		DIST	COUNTY
		ATL	TITUS
		SHEET NO.	148

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REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

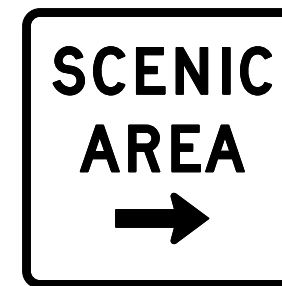
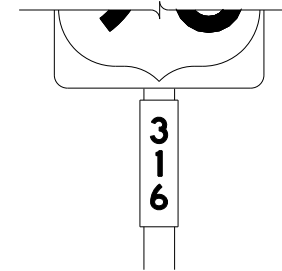
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

- Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
- Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>

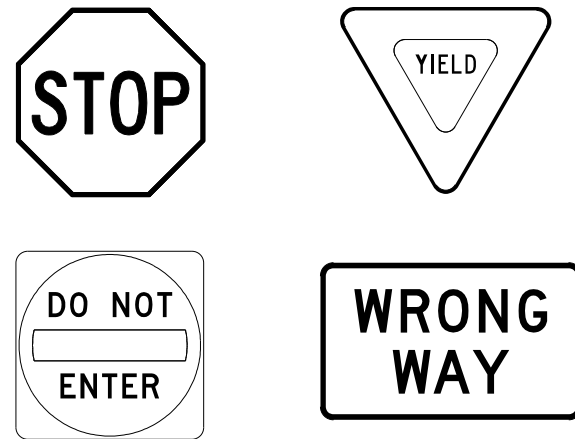
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©TxDOT	October 2003	CK:	TxDOT
REVISIONS		OW:	TxDOT
		CON:	0610
		SECT:	03
		JOB:	095
		HIGHWAY:	IH 30
12-03	7-13	DIST:	ATL
9-08		COUNTY:	TITUS
		SHEET NO.:	149

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REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

GENERAL NOTES

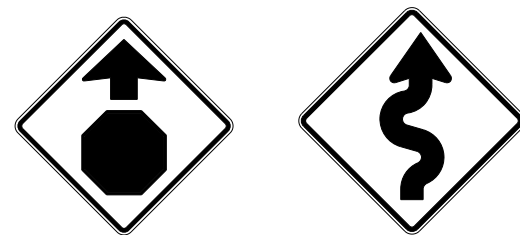
- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B _{FL} OR C _{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

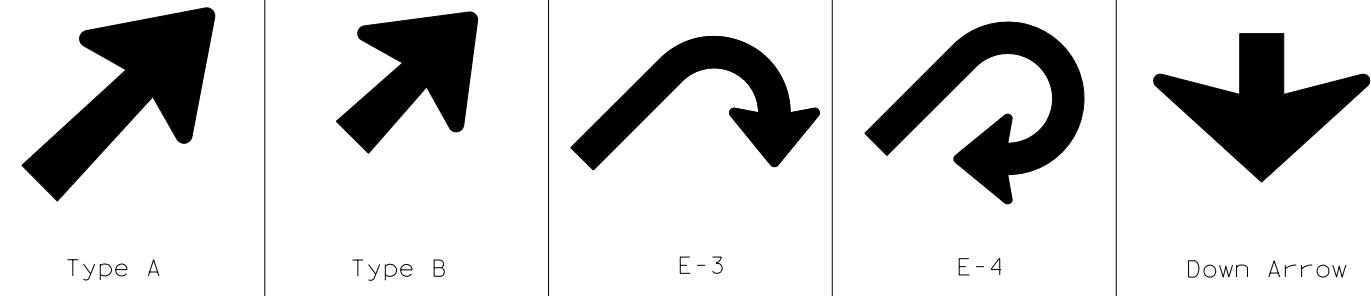
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<h3>TSR (4) - 13</h3>			
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© TxDOT	October 2003	CK:	TxDOT
REVISIONS		DW:	TxDOT
12-03	7-13	CONT	SECT
9-08		0610	03
		JOB	HIGHWAY
		095	IH 30
		DIST	COUNTY
		ATL	TITUS
		SHEET NO.	150

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ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



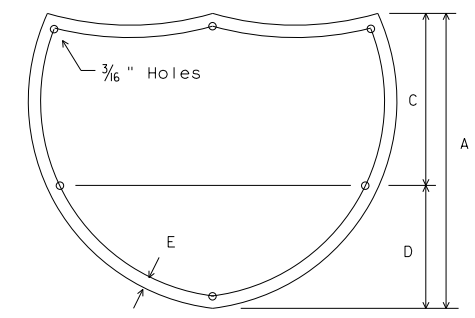
TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

NOTE
 Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

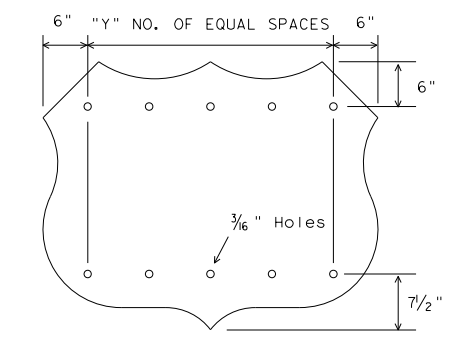
The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:
<http://www.txdot.gov/>

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



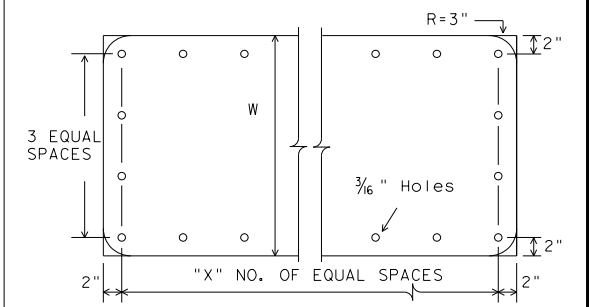
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



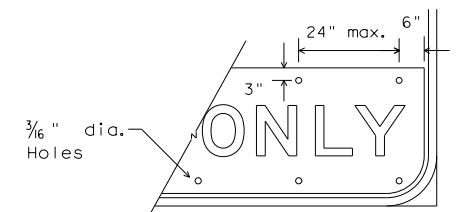
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



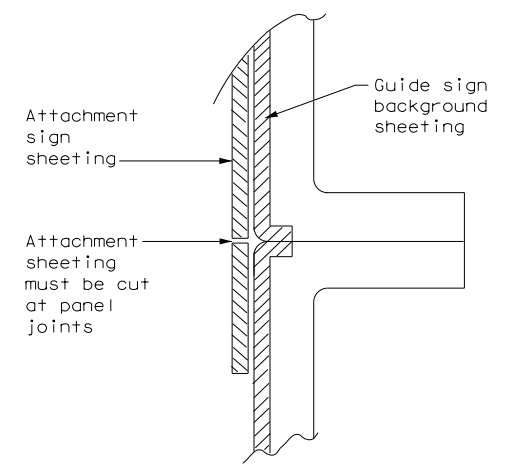
STATE ROUTE MARKERS

No. of Digits	W	X
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4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

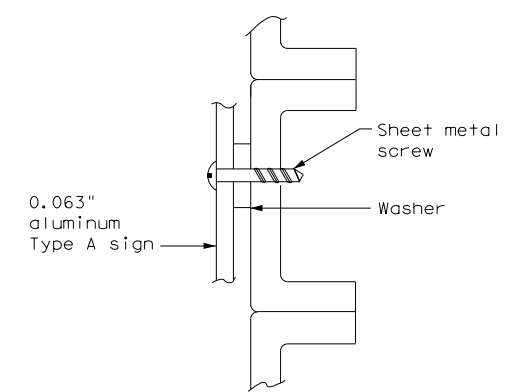


EXIT ONLY PANEL

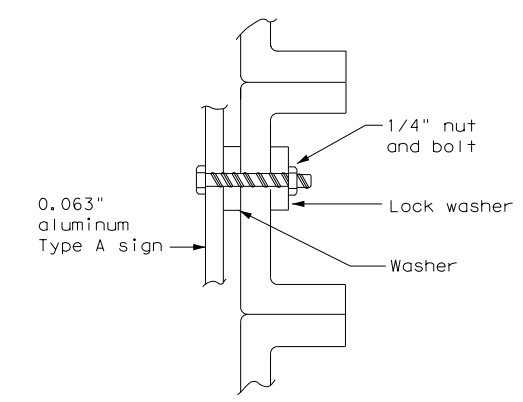
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



DIRECT APPLIED ATTACHMENT



SCREW ATTACHMENT

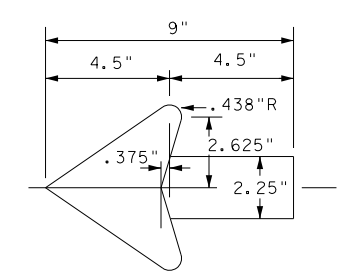


NUT/BOLT ATTACHMENT

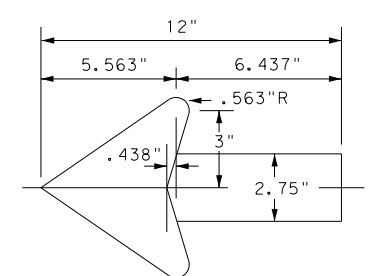
- NOTE:
- Sheeting for legend, symbols, and borders must be cut at panel joints.
 - Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".

- NOTE:
- Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.



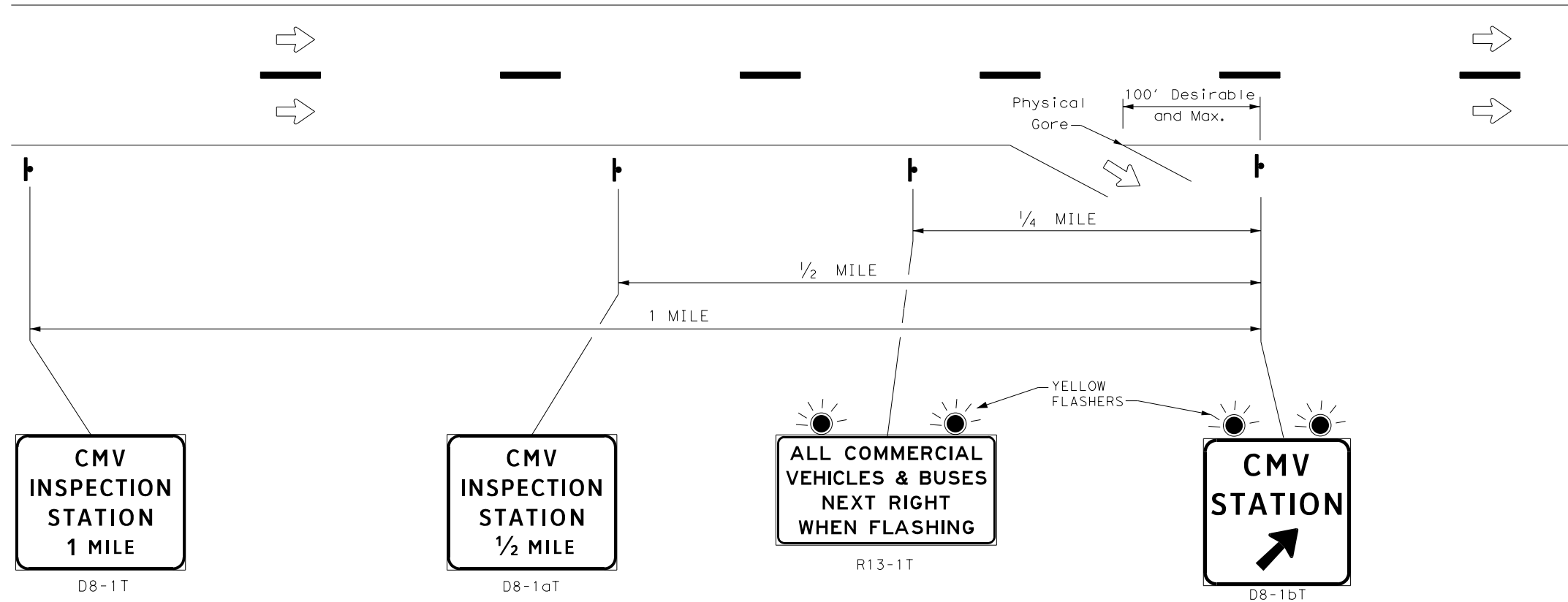
TYPICAL SIGN REQUIREMENTS

TSR (5) - 13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	ATL	TITUS	151	

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LEGEND	
	Sign
	Traffic Flow

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

HIGHWAY SIGN SIZES		
Nomenclature	Conventional	Expressway/ Freeway
R13-1T	96x48	156x78
D8-1T	78x60	120x96
D8-1aT	78x60	120x96
D8-1bT	60x60	66x66

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

CMV INSPECTION STATION SIGNING FOR CONVENTIONAL HIGHWAYS, EXPRESSWAYS AND FREEWAYS

GENERAL NOTES

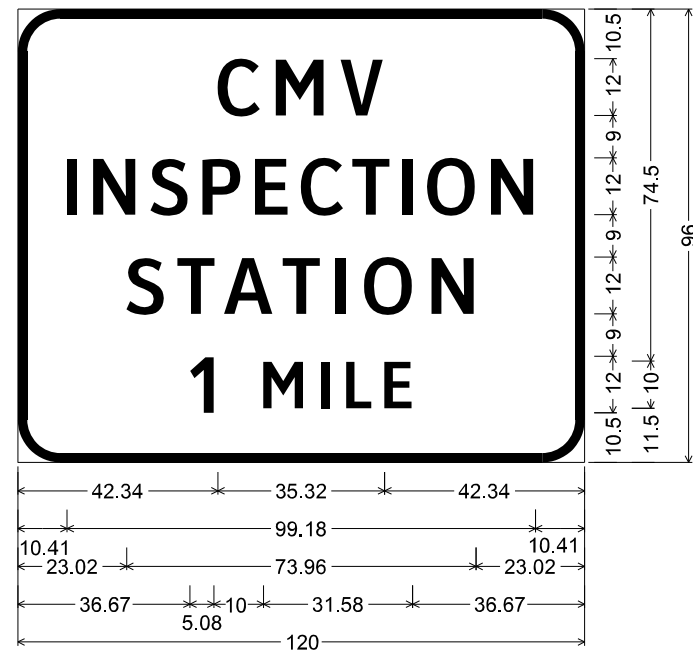
- Signs to be furnished shall conform to the tables on this standard sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Black legends shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F). White legends shall use the Clearview Alphabet.
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legends shall provide a balanced appearance when spacing is not shown.
- White legends shall be cut-out white sheeting applied to green background sheeting. Black legends shall be applied by screening process, cut-out acrylic non-reflective film or combination thereof.
- Sign substrate shall be any material that meets the Department Material Specification requirements for permanent sign substrates.
- Mounting and electrical details are shown in the "SMD" and "ED" series Standard Plan Sheets.

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	GREEN	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM

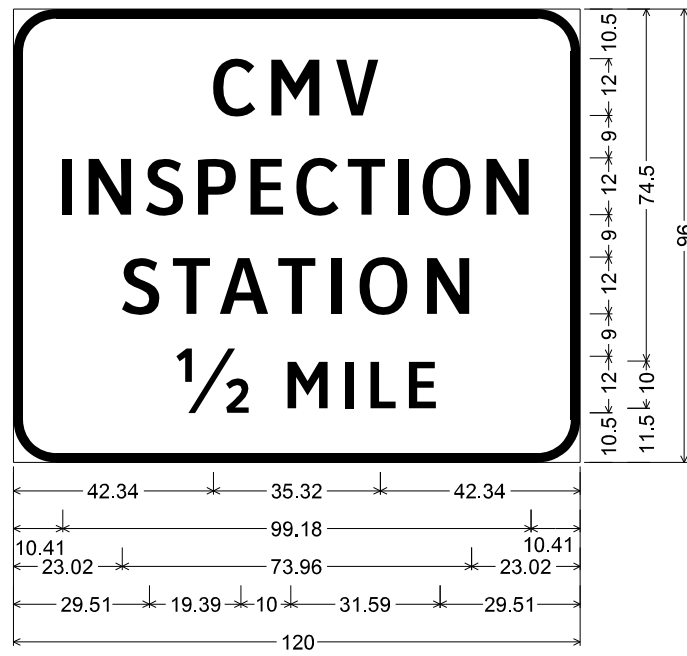
		Traffic Safety Division Standard	
<h1>CMV INSPECTION STATION SIGNING</h1>			
<h2>CMV-19</h2>			
FILE: cmv-19.dgn	DN:	CK:	DW: CK:
© TxDOT February 2010	CONT	SECT	JOB
REVISIONS	0610	03	095
9-19	DIST	COUNTY	SHEET NO.
	ATL	TITUS	152

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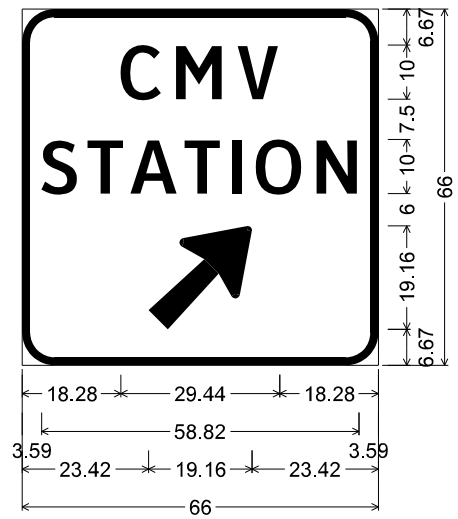
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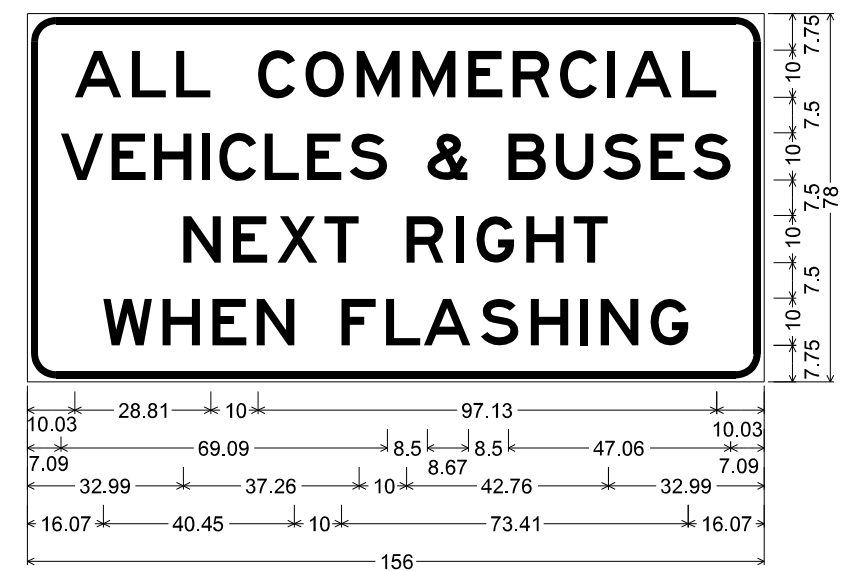
Identifier : D8-1T_120x96;
 9.00" Radius, 2.00" Border, White on Green;
 [CMV] ClearviewHwy-4-W;
 [INSPECTION] ClearviewHwy-4-W 80% spacing;
 [STATION] ClearviewHwy-4-W;
 [1 MILE] ClearviewHwy-4-W;



Identifier : D8-1aT_120x96;
 9.00" Radius, 2.00" Border, White on Green;
 [CMV] ClearviewHwy-4-W;
 [INSPECTION] ClearviewHwy-4-W 80% spacing;
 [STATION] ClearviewHwy-4-W;
 [1/2 MILE] ClearviewHwy-4-W;

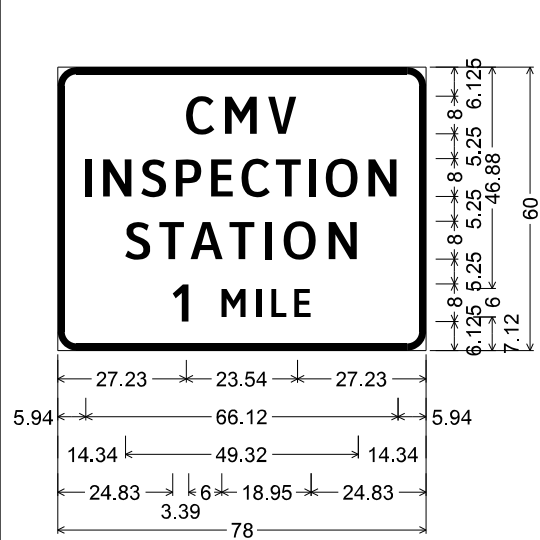


Identifier : D8-1bT_66x66;
 6.00" Radius, 1.50" Border, White on Green;
 [CMV] ClearviewHwy-4-W;
 [STATION] ClearviewHwy-4-W 80% spacing;
 Arrow A-1 - 24.25" 45°;

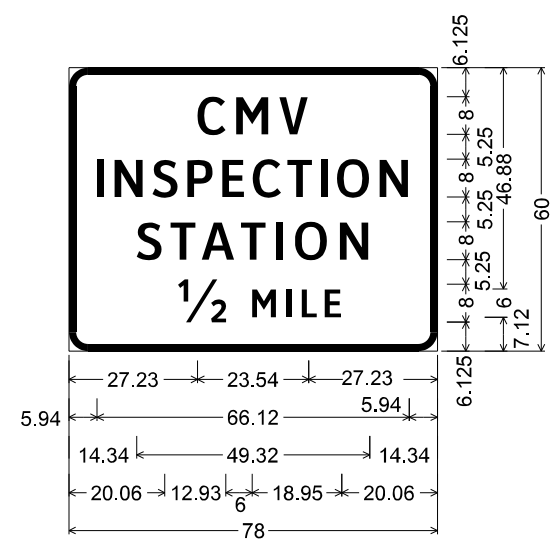


Identifier : R13-1T(2)_156x78;
 6.00" Radius, 1.50" Border, 0.75" Indent, Black on White;
 [ALL COMMERCIAL] E; [VEHICLES & BUSES] E 80% spacing;
 [NEXT RIGHT] E; [WHEN FLASHING] E;

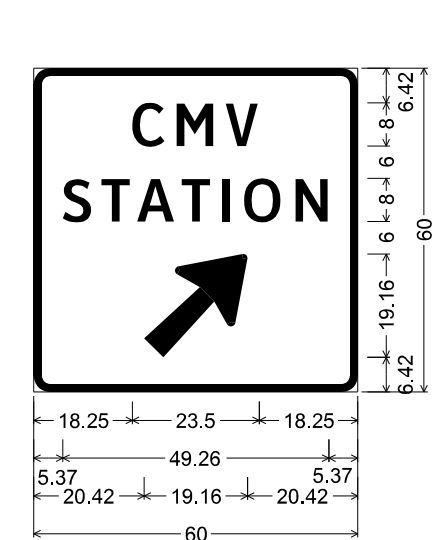
EXPRESSWAY/FREEWAY SIGN DETAILS



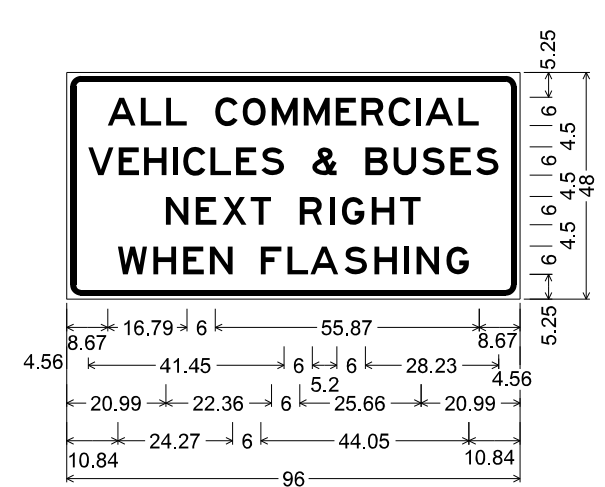
Identifier : D8-1T_78x60;
 4.00" Radius, 1.50" Border, White on Green;
 [CMV] ClearviewHwy-4-W;
 [INSPECTION] ClearviewHwy-4-W 80% spacing;
 [STATION] ClearviewHwy-4-W;
 [1 MILE] ClearviewHwy-4-W;



Identifier : D8-1aT_78x60;
 4.00" Radius, 1.50" Border, White on Green;
 [CMV] ClearviewHwy-4-W;
 [INSPECTION] ClearviewHwy-4-W 80% spacing;
 [STATION] ClearviewHwy-4-W;
 [1/2 MILE] ClearviewHwy-4-W;



Identifier : D8-1bT_60x60;
 3.00" Radius, 1.50" Border, White on Green;
 [CMV] ClearviewHwy-4-W;
 [STATION] ClearviewHwy-4-W;
 Arrow A-1 - 24.25" 45°;



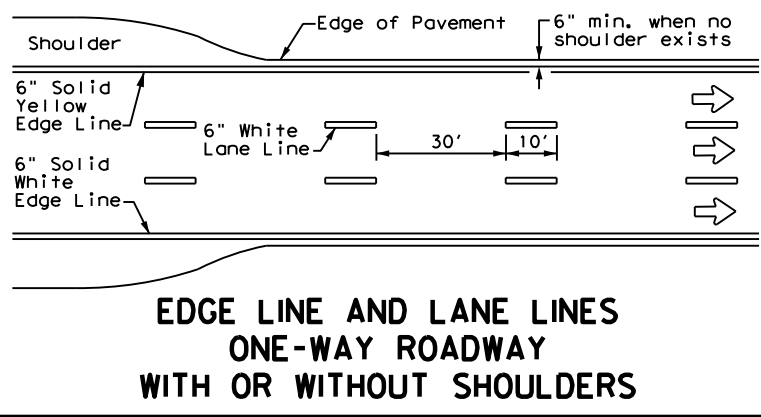
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 [VEHICLES & BUSES] E 80% spacing;
 [NEXT RIGHT] E; [WHEN FLASHING] E;

CONVENTIONAL HIGHWAY SIGN DETAILS

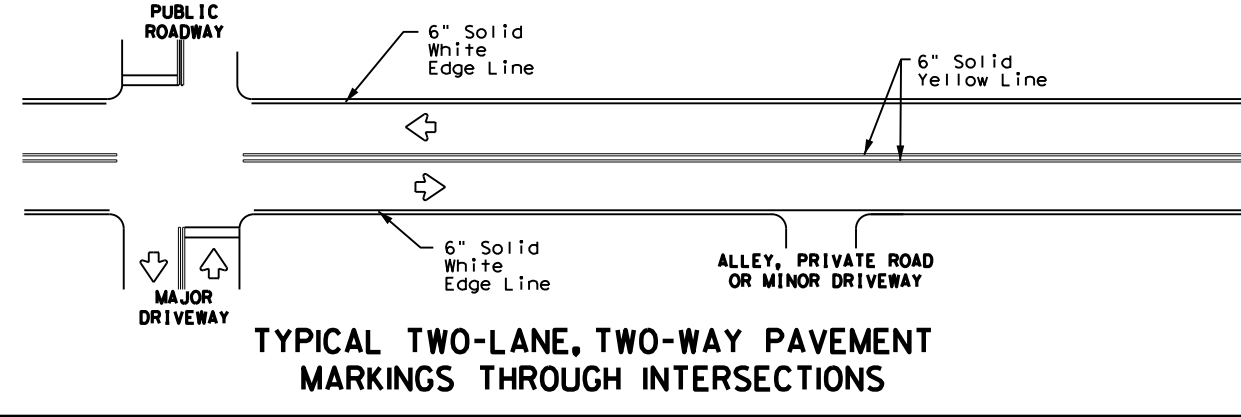
<h2>CMV INSPECTION STATION SIGN DETAILS</h2> <h3>CMV (SD) - 19</h3>			
FILE: cmv (sd) 19.dgn	DN:	CK:	DW:
© TxDOT September 2019	CONT	SECT	JOB
REVISIONS	0610	03	095
	DIST	COUNTY	SHEET NO.
	ATL	TITUS	153

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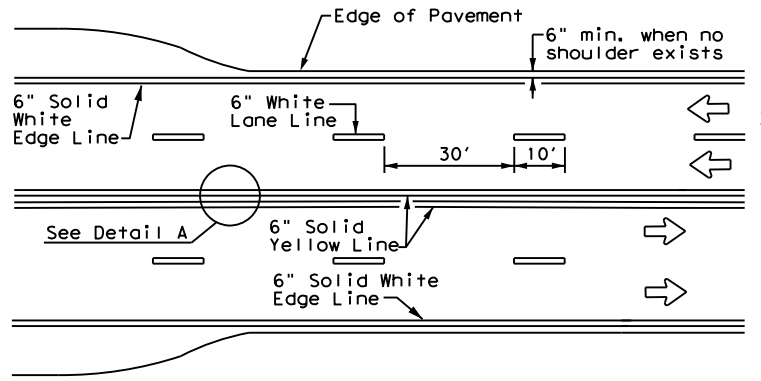
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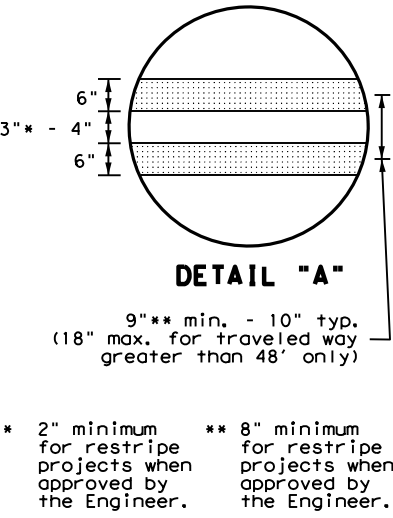
**EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



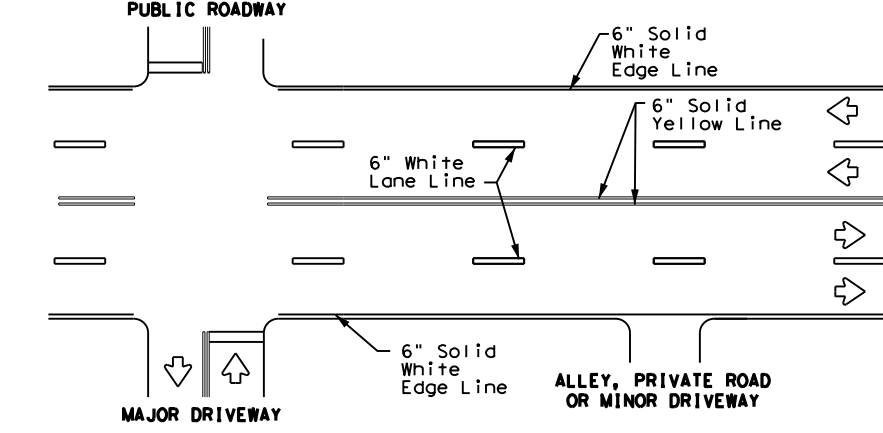
**TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



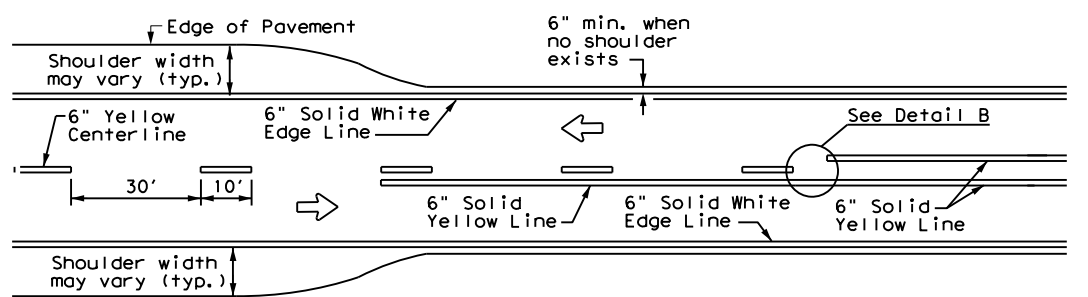
**CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



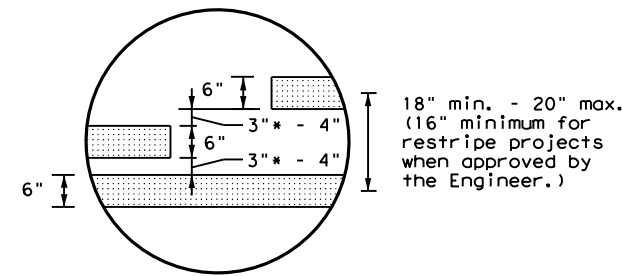
* 2" minimum for restripe projects when approved by the Engineer.
 ** 8" minimum for restripe projects when approved by the Engineer.



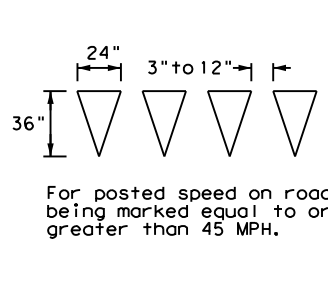
**TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS**



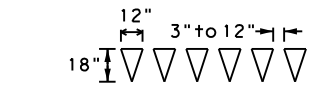
**TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS**



* 2" minimum for restripe projects when approved by the Engineer.



YIELD LINES

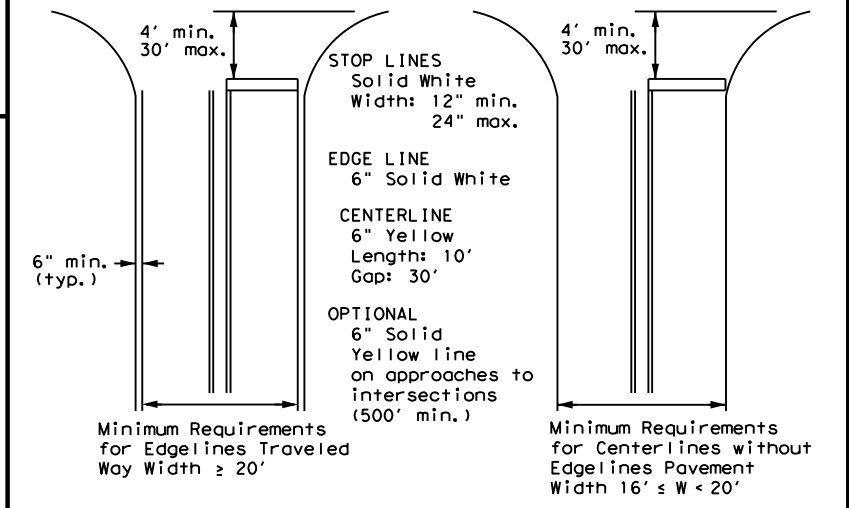


For posted speed on road being marked equal to or less than 40 MPH.

- GENERAL NOTES**
- Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
 - The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

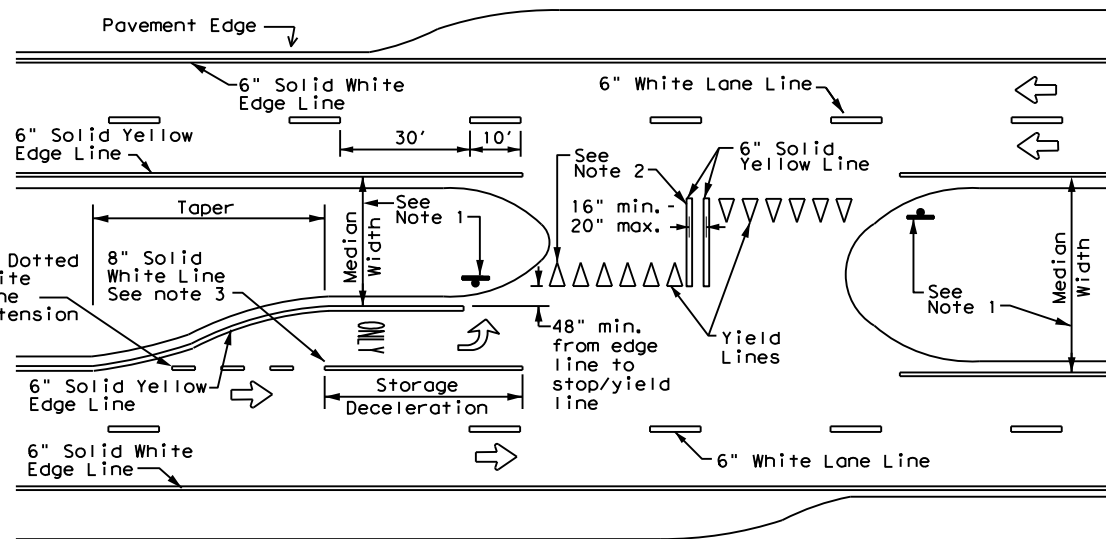


NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

**GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE**
 Based on Traveled Way and Pavement Widths for Undivided Roadways

NOTES

- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
- Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

Texas Department of Transportation
 Traffic Safety Division Standard

**TYPICAL STANDARD
PAVEMENT MARKINGS**

PM(1) - 22

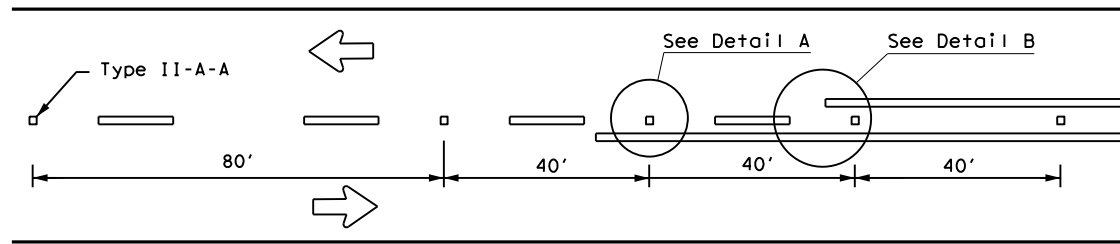
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© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
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11-78 8-00 6-20	DIST	COUNTY	SHEET NO.	
8-95 3-03 12-22	ATL	TITUS	154	
5-00 2-12				

22A

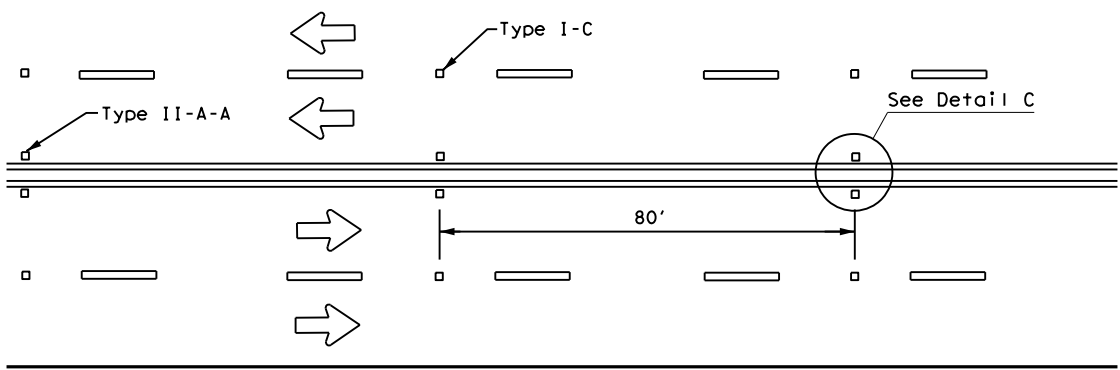
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

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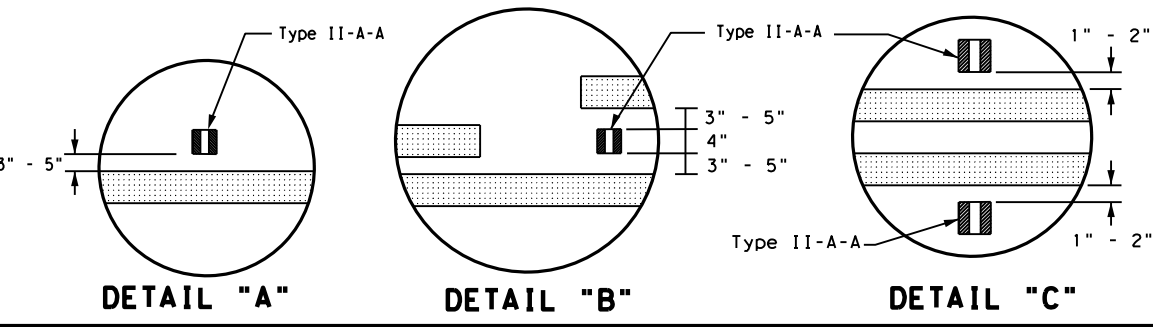
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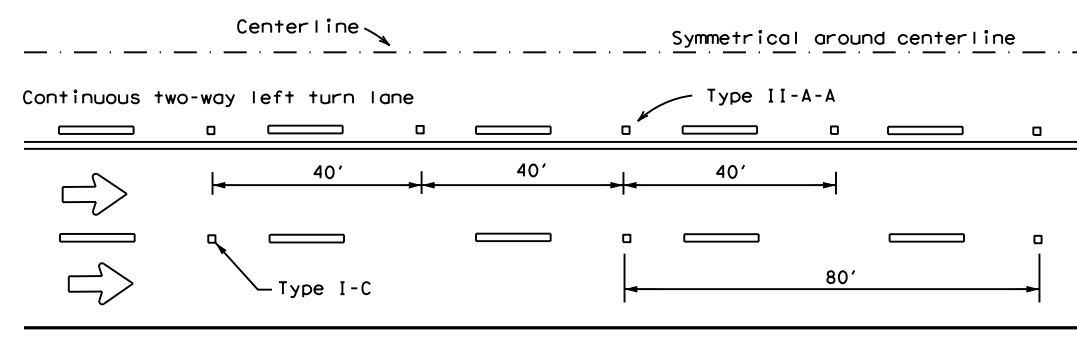
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



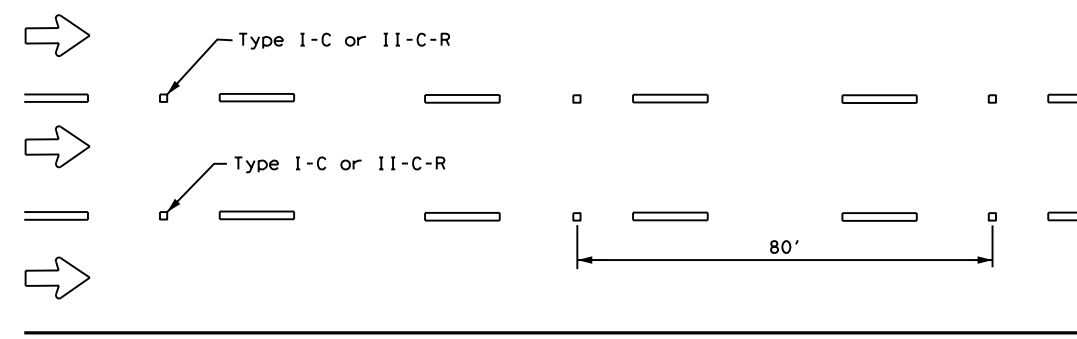
**CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY ROADWAYS**



DETAIL "A" DETAIL "B" DETAIL "C"

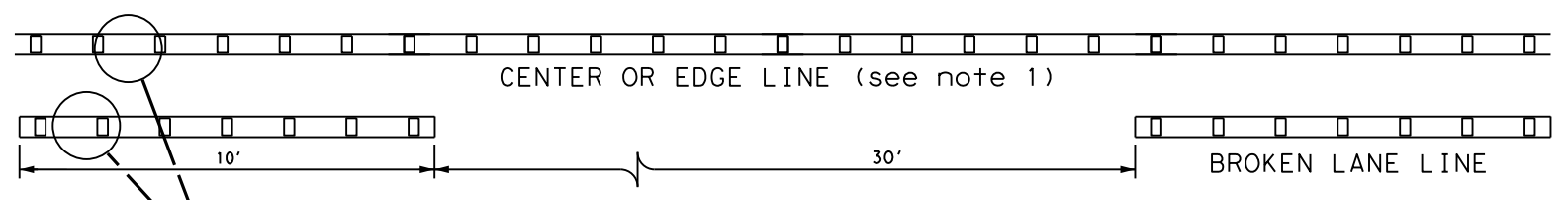


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

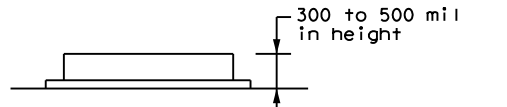


LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.
See Note 3.



**REFLECTORIZED PROFILE
PATTERN DETAIL**
USING REFLECTIVE PROFILE PAVEMENT MARKINGS



A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

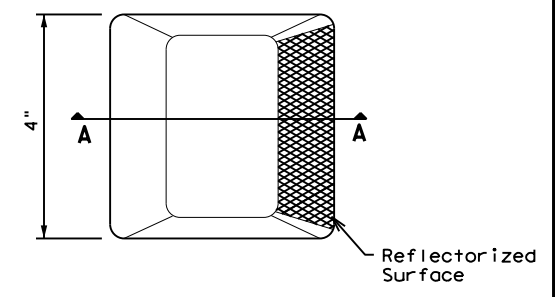
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

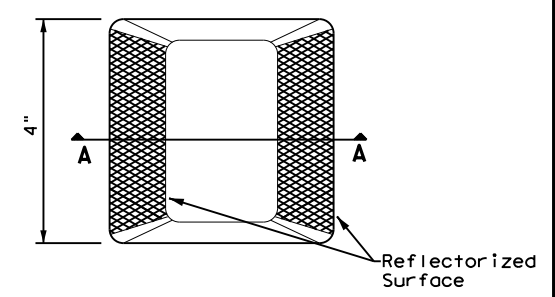
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

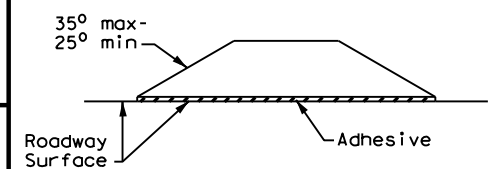
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

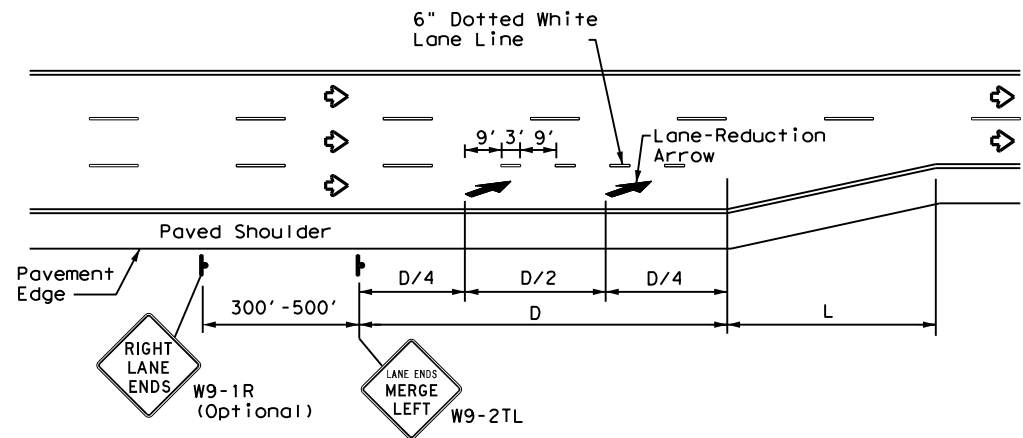


**POSITION GUIDANCE USING
RAISED MARKERS
REFLECTORIZED PROFILE
MARKINGS
PM(2) - 22**

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
4-77 8-00 6-20	DIST	COUNTY	SHEET NO.	
4-92 2-10 12-22	ATL	TITUS	155	
5-00 2-12				

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DATE: 6/3/2024 1:56:17 PM
 FILE: P:\116\35\04\Design\Civil\Standards\PavementMarkers\pm3-22.dgn



LANE REDUCTION

NOTES

- Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
- On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
- Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
- For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

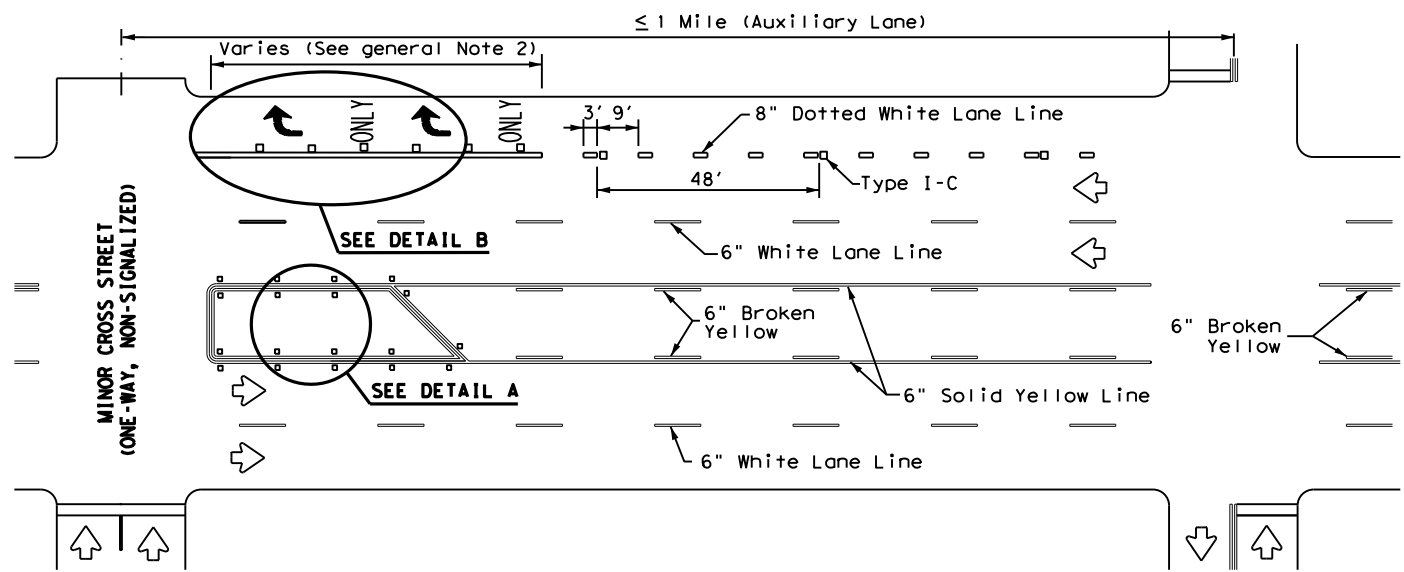
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

GENERAL NOTES

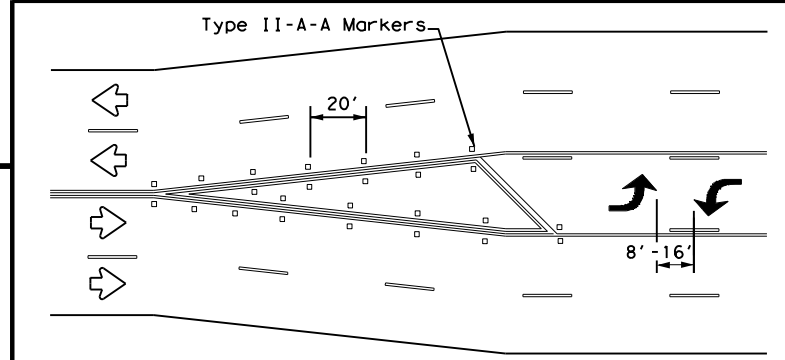
- Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
- When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
- Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

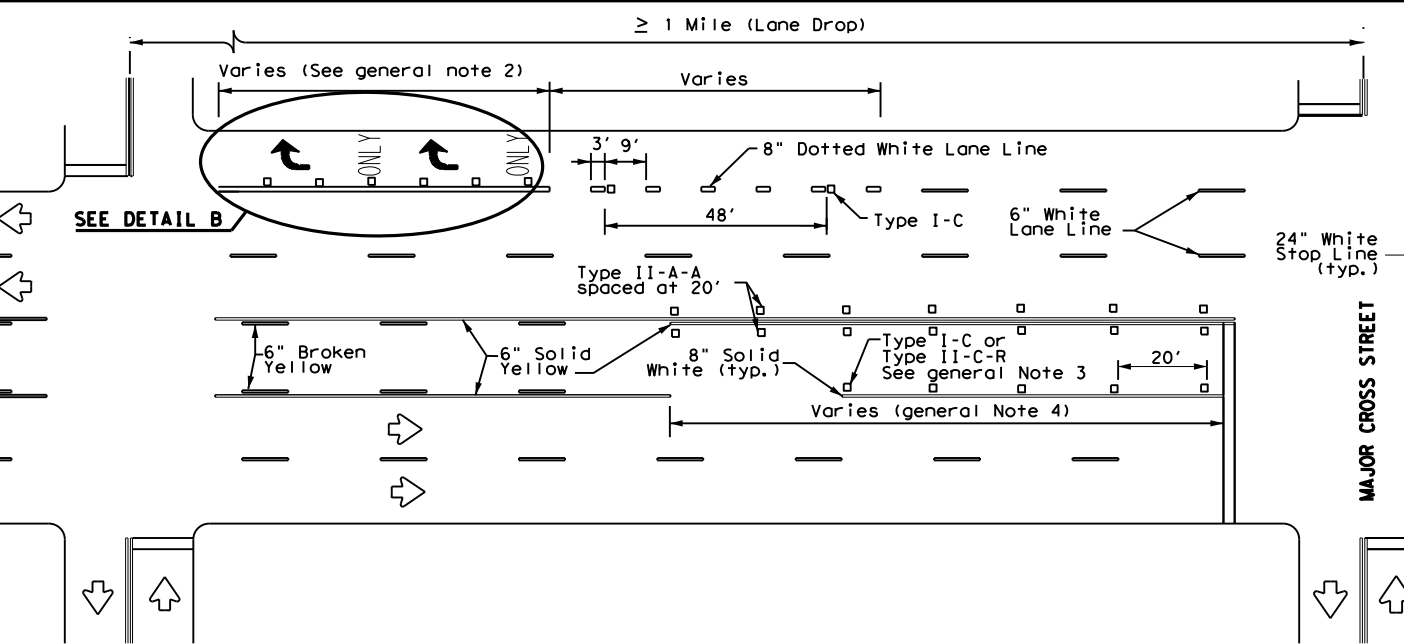


TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE

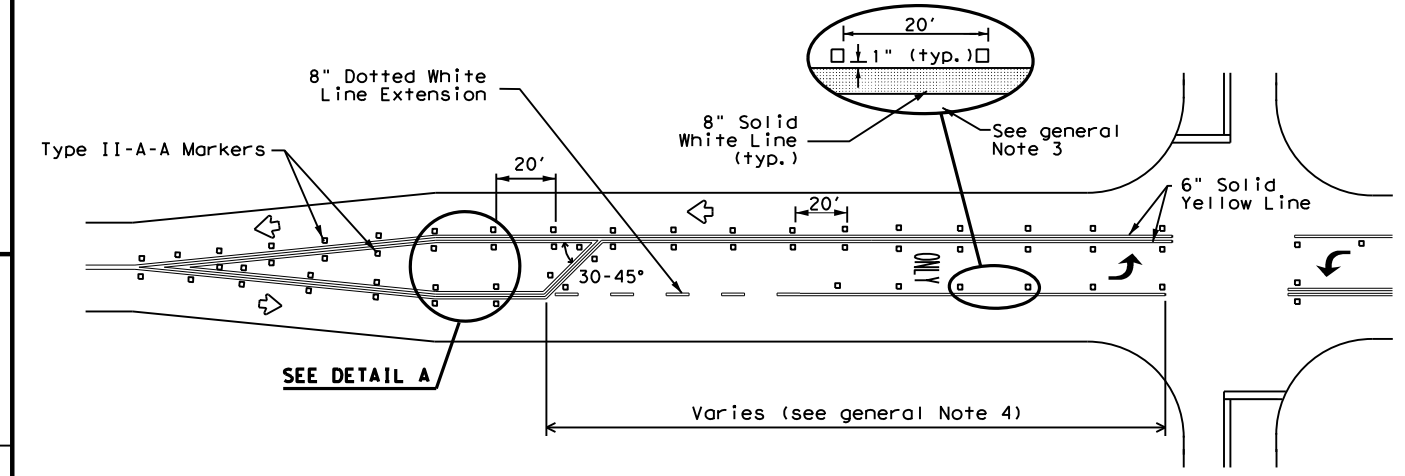


A two-way left-turn (TWLTL) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

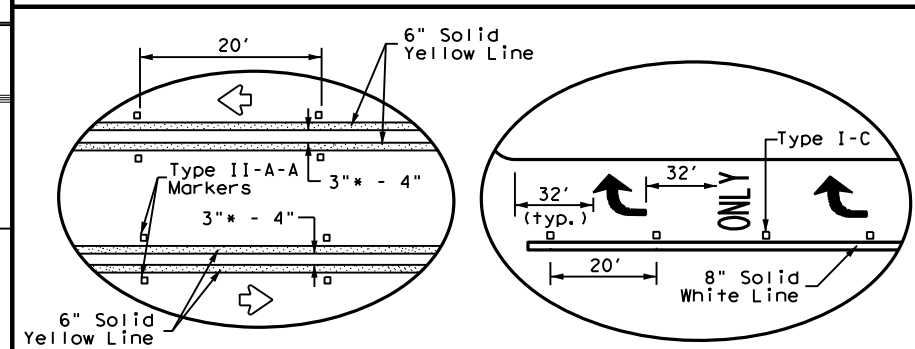
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A

DETAIL B

* 2" minimum allowed for restripe projects when approved by the Engineer.

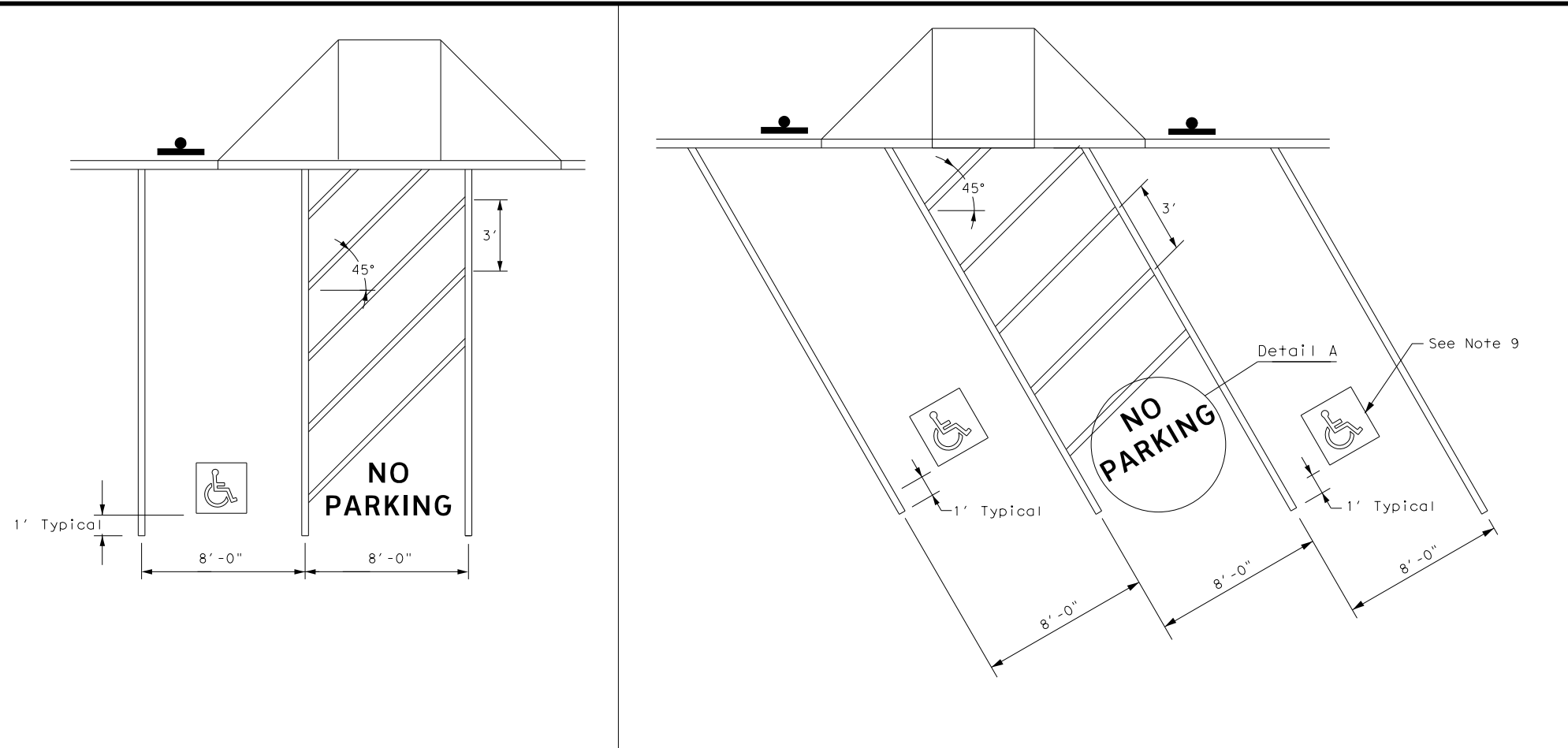
Texas Department of Transportation
 Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3) - 22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
4-98 3-03 6-20	DIST	COUNTY	SHEET NO.	
5-00 2-10 12-22	ATL	TITUS	156	
8-00 2-12				

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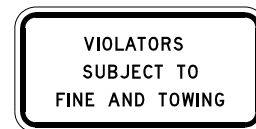
PERPENDICULAR OR ANGLED ACCESSIBLE PARKING SPACE DIMENSIONS



R7-8T



R7-8P



R7-8aPT

ACCESSIBLE PARKING SIGNS



Detail A

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
SIGN FACE MATERIALS	DMS-8300

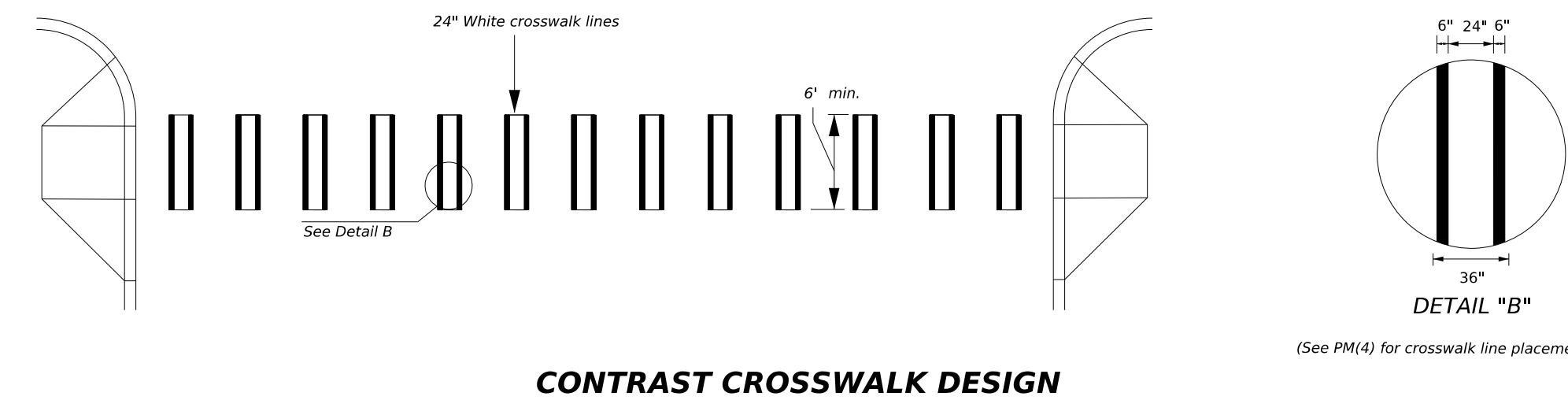
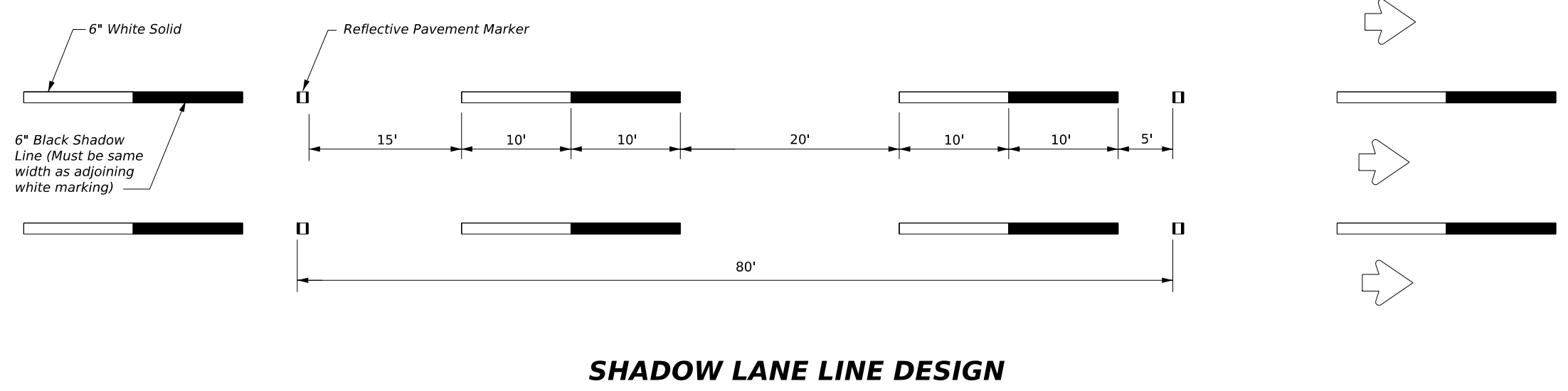
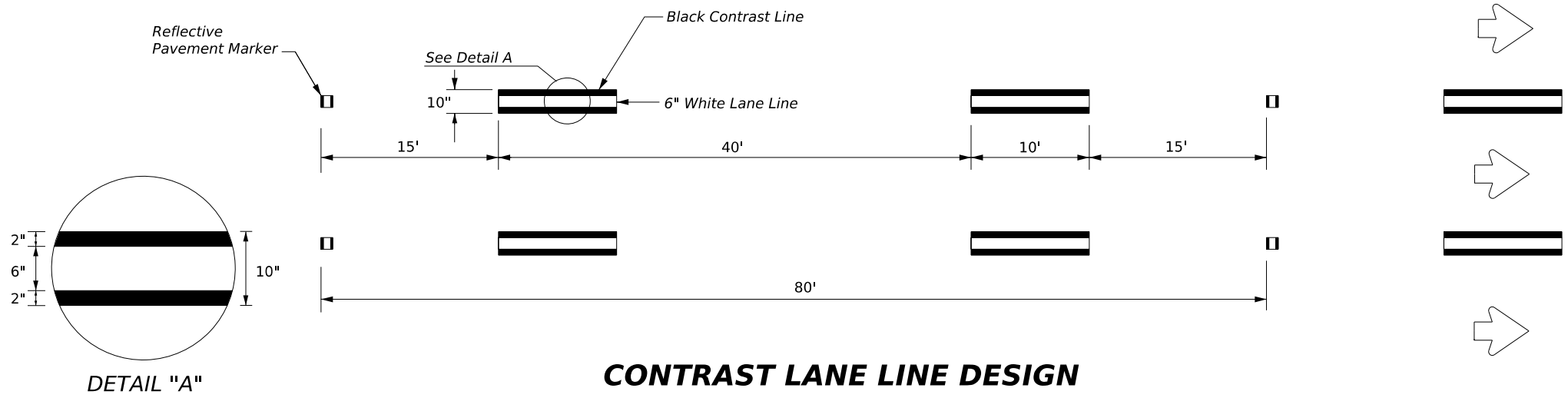
GENERAL NOTES:

- All paved accessible parking space limit lines shall be 4" solid white lines.
- Paved accessible parking spaces must include a white International Symbol of Accessibility applied conspicuously on the surface in a color that contrasts the pavement. A blue background with white border may supplement the symbol for additional contrast.
- The words "NO PARKING" must be applied on any access aisle adjacent to the parking space. The words must be white, applied:
 - in all capital letters.
 - centered within each access aisle adjacent to the parking space.
- RESERVED PARKING (R7-8T) sign including the International Symbol of Accessibility.
 - shall be REQUIRED for each accessible parking space.
 - shall NOT be placed between two accessible parking spaces.
 - shall NOT be placed in a location that restricts movement of wheelchairs within the adjacent sidewalk.
 - shall have a mounting height of 7 feet to the bottom of the sign.
- A sign identifying the consequences of parking illegally in a paved accessible parking space. Must:
 - at a minimum state "VIOLATORS SUBJECT TO FINE AND TOWING" (Plaque) (R7-8aPT).
 - be mounted on a pole, post, wall or freestanding board.
 - be no more than eight inches (8") below sign R7-8T a sign required by the Texas Accessibility Standards, 502.6.
 - be installed so that the bottom edge of the sign is no lower than 48 inches and no higher than 80 inches above the ground level.
- Signs identifying van parking spaces shall contain the designation "VAN ACCESSIBLE" (R7-8P) Signs shall be 60 inches minimum above the ground level measured to the bottom of the sign.
- Perpendicular or angled parking spaces shall be 8 feet wide minimum with an access aisle 8 feet minimum wide (van accessible). Two parking spaces are permitted to share a common access aisle.
- Access aisles shall be at street level, extend the full length of the parking space they serve, follow ADA surface requirements, and marked to discourage parking in the access aisle. Curb ramps shall connect the access aisle to the adjacent pedestrian access route. Curb ramps shall not be located within the access aisle.
- International Symbol of Accessibility Parking Space Marking and sign details can be found in The Standard Highway Sign Designs for Texas (SHSD) at the following website. <http://www.txdot.gov/>

				Traffic Safety Division Standard	
PAVEMENT MARKINGS AND SIGNING FOR ACCESSIBLE PARKING					
PM(AP) -21					
FILE:	pm(ap)-21	DN:	TxDOT	CK:	TxDOT
© TxDOT	July 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS		0610	03	095	IH 30
DIST	COUNTY	SHEET NO.			
ATL	TITUS	157			

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DATE: 6/3/2024 1:56:19 PM
FILE: P:\116\35\04\Standards\PavementMarkers\cpm(1)-23.dgn



- GENERAL NOTES**
1. Contrast and Shadow markings may only be used on concrete pavements.
 2. Contrast and Shadow markings shall not be used on edge lines.
 3. Contrast lane lines shall be permanent prefabricated pavement markings meeting DMS 8240.
 4. Shadow lane line designs shall be a liquid markings system approved by TxDOT.
 5. All raised reflective pavement markers placed in broken lines shall be placed in line with and midway between the white stripes.
 6. See PM(2) for raised reflective pavement markings installation details.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



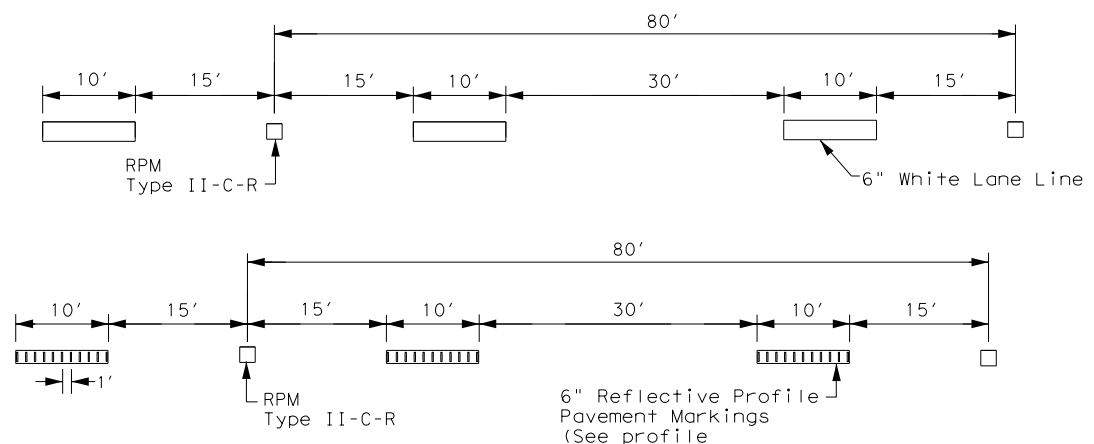
CONTRAST AND SHADOW PAVEMENT MARKINGS

CPM(1)-23

FILE: CPM(1)-23.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
5-14	DIST	COUNTY	SHEET NO.	
2-23	ATL	TITUS	158	

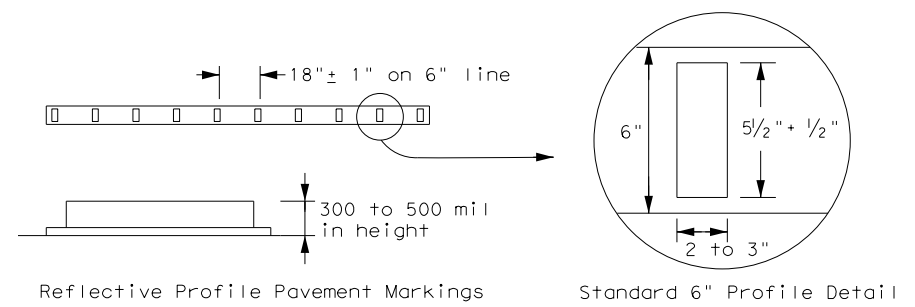
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DATE: 6/3/2024 1:56:20 PM
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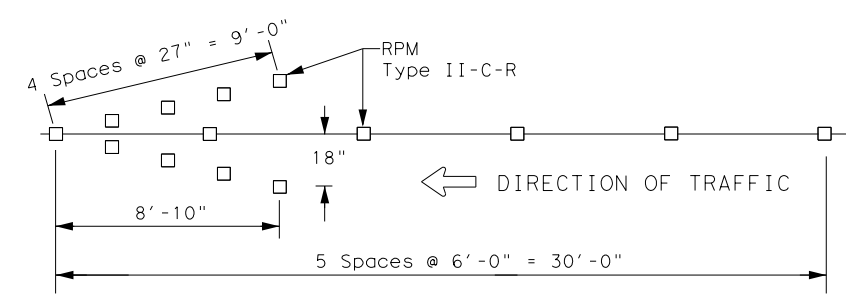
NOTE
 ReflectORIZED raised pavement markers Type II-C-R shall be spaced on 80' centers with the clear face toward normal traffic and the red face toward wrong way traffic. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.

TRAFFIC LANE LINES PAVEMENT MARKING



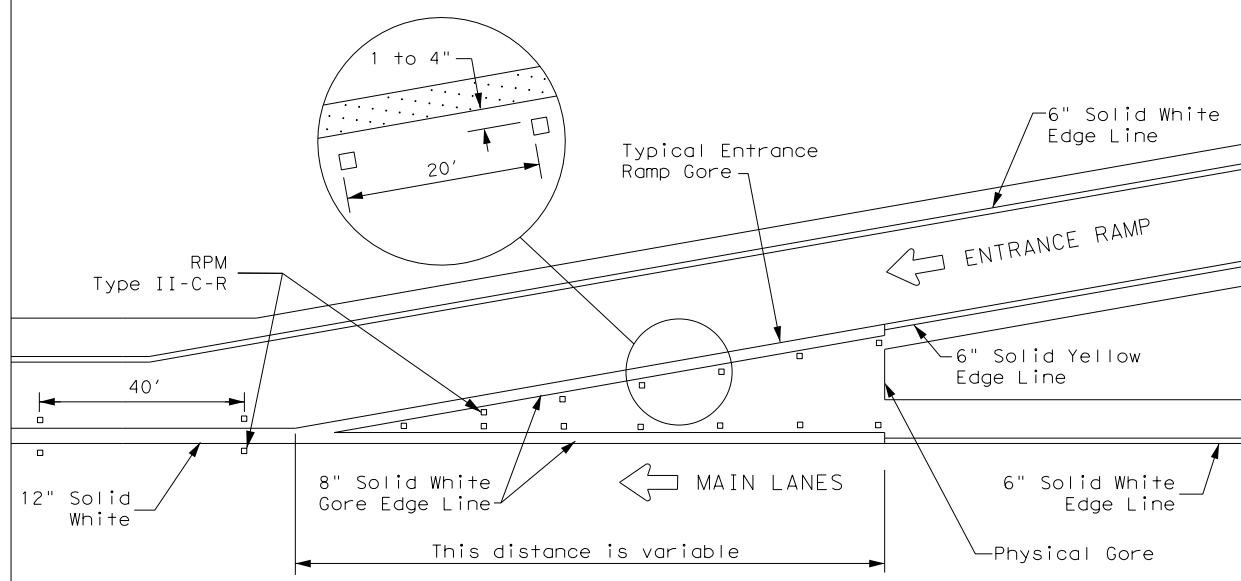
NOTE
 Edge lines should typically be 6" wide and the materials shall be as specified in the plans. See details above if reflective profile pavement markings are to be used.

EDGE LINE PAVEMENT MARKINGS

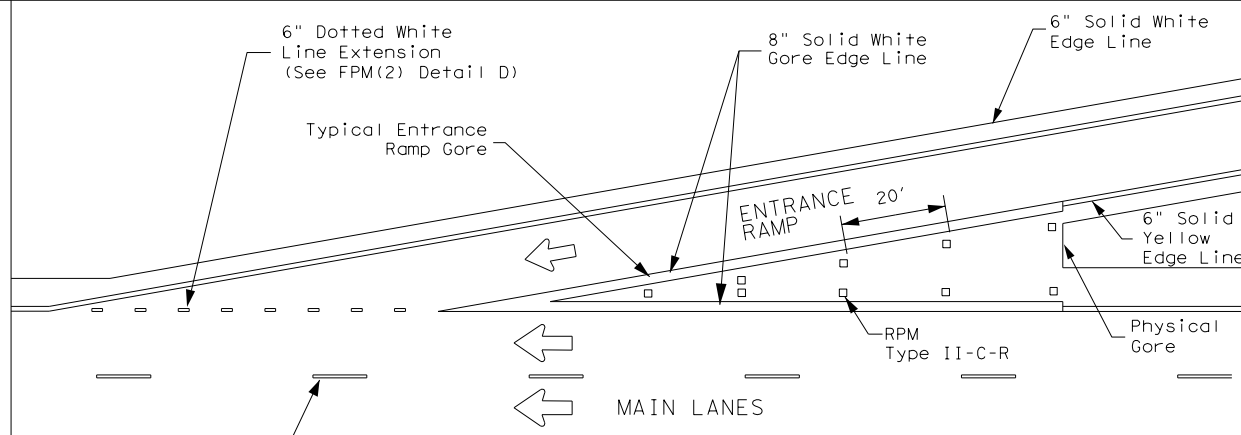


NOTES
 1. ReflectORIZED raised pavement markers Type-II-C-R in the wrong way arrow shall have the clear face toward normal traffic and the red face toward the wrong way traffic.
 2. Red reflectORIZED wrong way arrows, not to exceed two, may be placed on exit ramps. Locations of the arrows shall be as shown in the plans or as directed by the engineer.

WRONG WAY ARROW

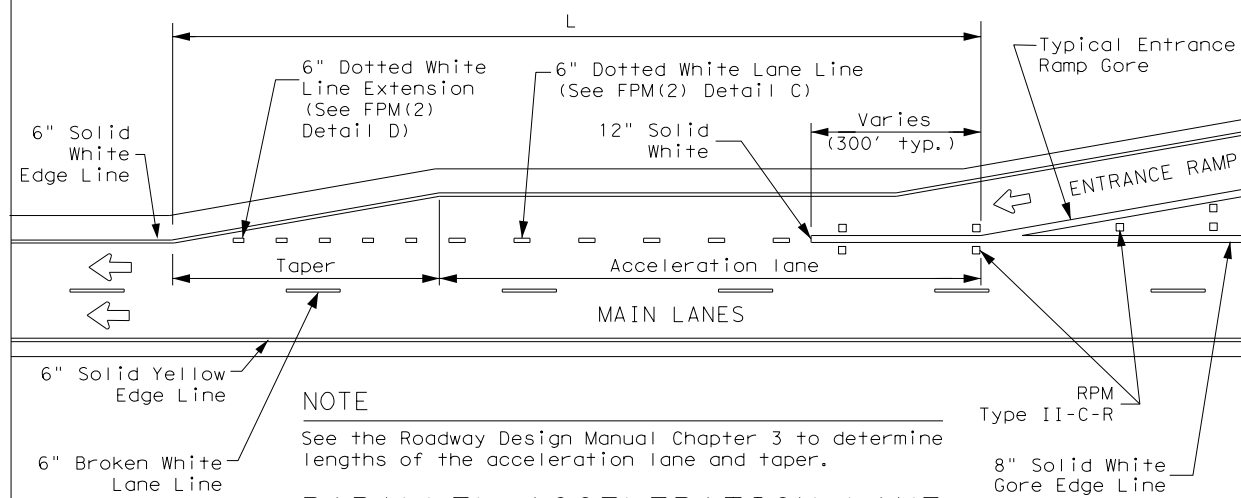


TYPICAL ENTRANCE RAMP GORE MARKING



NOTE
 See the Roadway Design Manual Chapter 3 to determine if a tapered acceleration lane may be used.

TAPERED ACCELERATION LANE



NOTE
 See the Roadway Design Manual Chapter 3 to determine lengths of the acceleration lane and taper.

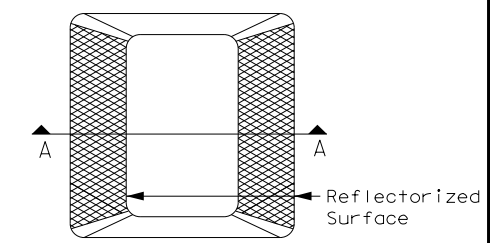
PARALLEL ACCELERATION LANE

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

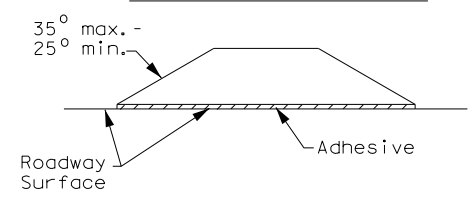
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

LEGEND	
←	Traffic flow
↩	Pavement marking arrows (white)
□	ReflectORIZED Raised Markers (RPM) Type II-C-R

GENERAL NOTE
 On concrete pavements the raised pavement markers shall be placed to one side of the longitudinal joints.



Type II (Top View)



SECTION A

REFLECTORIZED RAISED PAVEMENT MARKER (RPM)

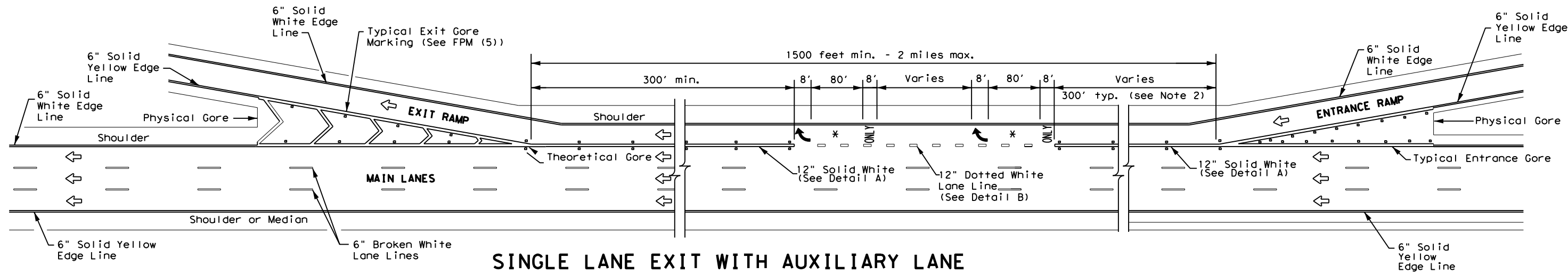


TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS
FPM(1)-22

FILE: fpm(1)-22.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
5-74 8-00 2-12	DIST	COUNTY	SHEET NO.	
4-92 2-08 10-22	ATL	TITUS	159	
5-00 2-10				

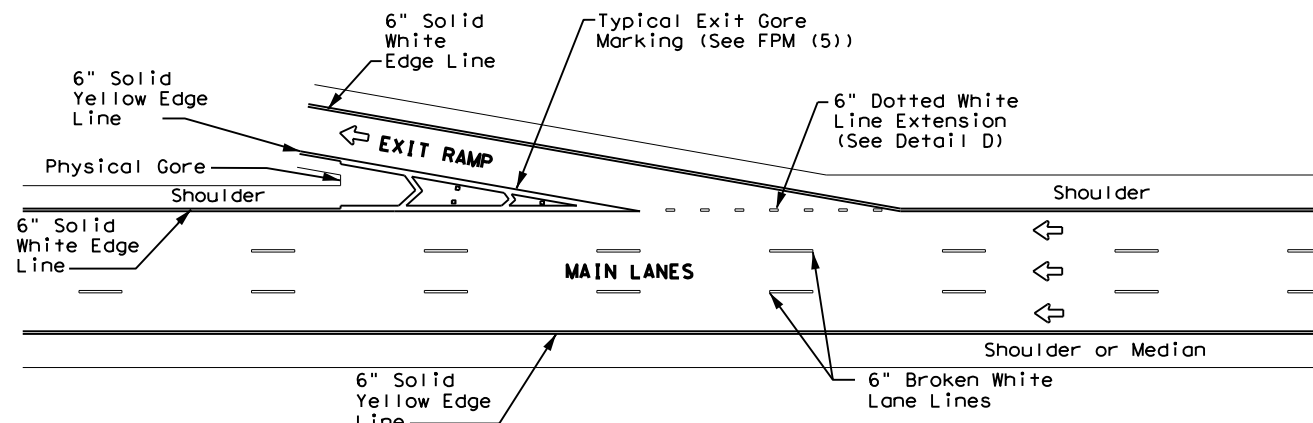
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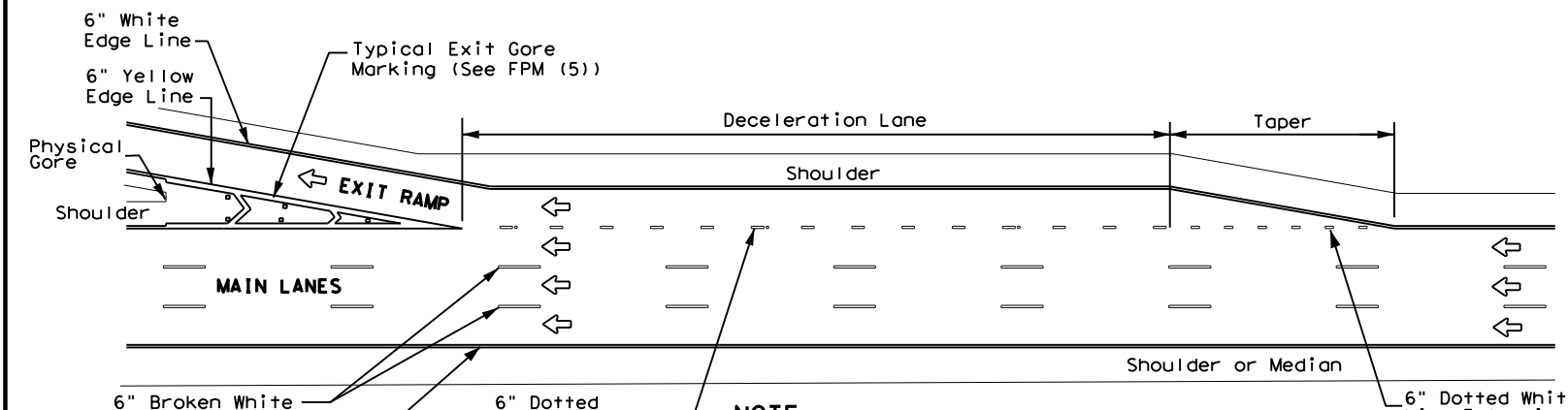
SINGLE LANE EXIT WITH AUXILIARY LANE

(See Note 2)



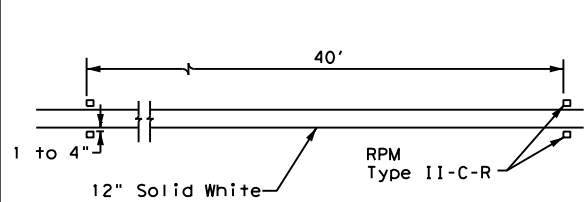
TAPERED DECELERATION LANE

NOTE
 Reference Roadway Design Manual Chapter 3 to determine if tapered deceleration lane may be used.

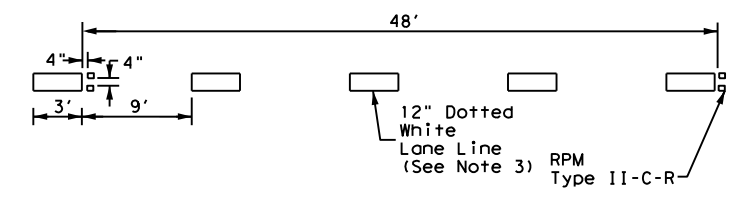


PARALLEL DECELERATION LANE

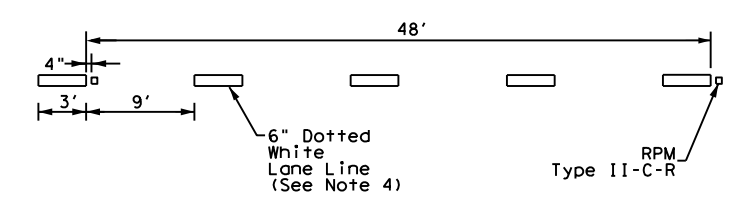
NOTE
 Reference Roadway Design Manual Chapter 3 to determine length of deceleration lane and taper.



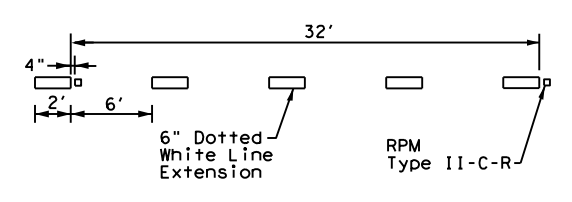
DETAIL A



DETAIL B



DETAIL C



DETAIL D

GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Normal (6") dotted lane line (see Detail C) is used at parallel acceleration and deceleration lanes.
5. See FPM(1) for traffic lane line pavement marking details.

LEGEND

←	Traffic flow
↩	Pavement marking arrows (white)
□	Reflectorized Raised Markers (RPM) Type II-C-R
✱	Arrow markings are optional, however "ONLY" is required if arrow is used

MATERIAL SPECIFICATIONS

PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS ENTRANCE AND EXIT RAMP

FPM(2)-22

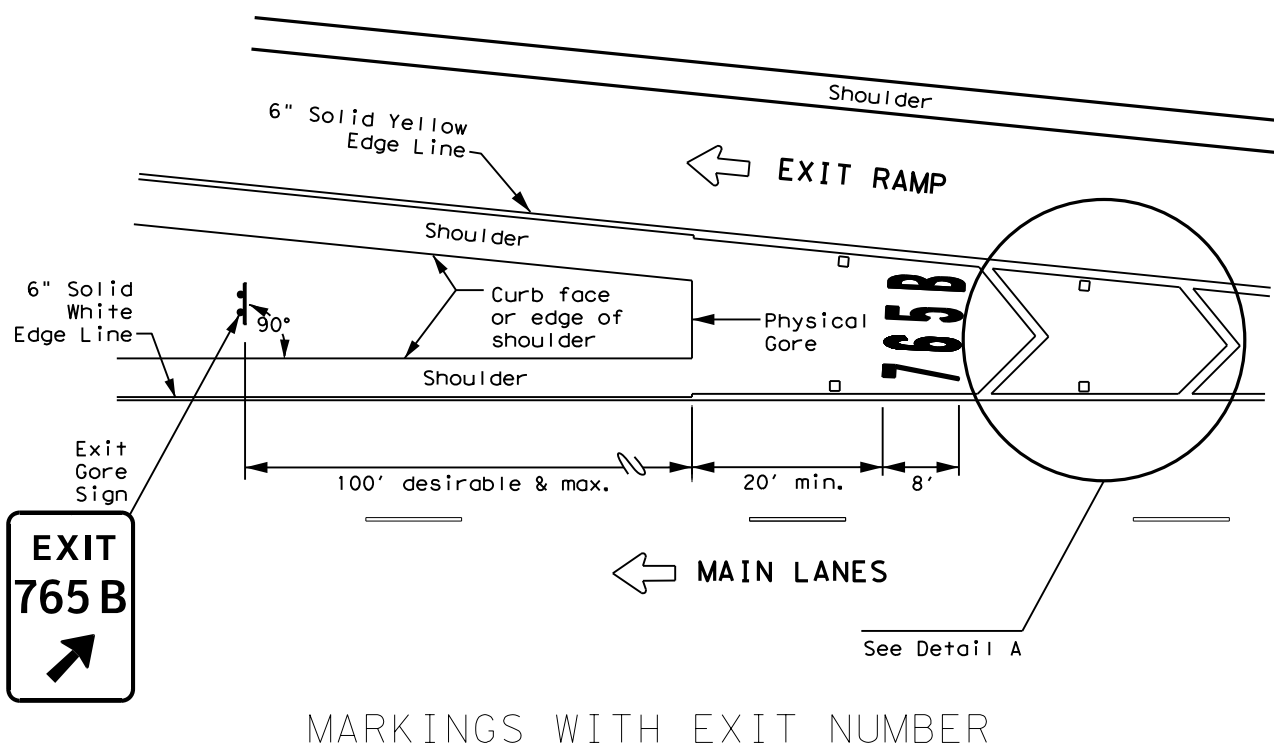
FILE: fpm(2)-22.dgn	DN:	CK:	DW:	CK:
©TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
2-77 5-00 2-12	DIST	COUNTY	SHEET NO.	
4-92 8-00 10-22	ATL	TITUS	160	
8-95 2-10				

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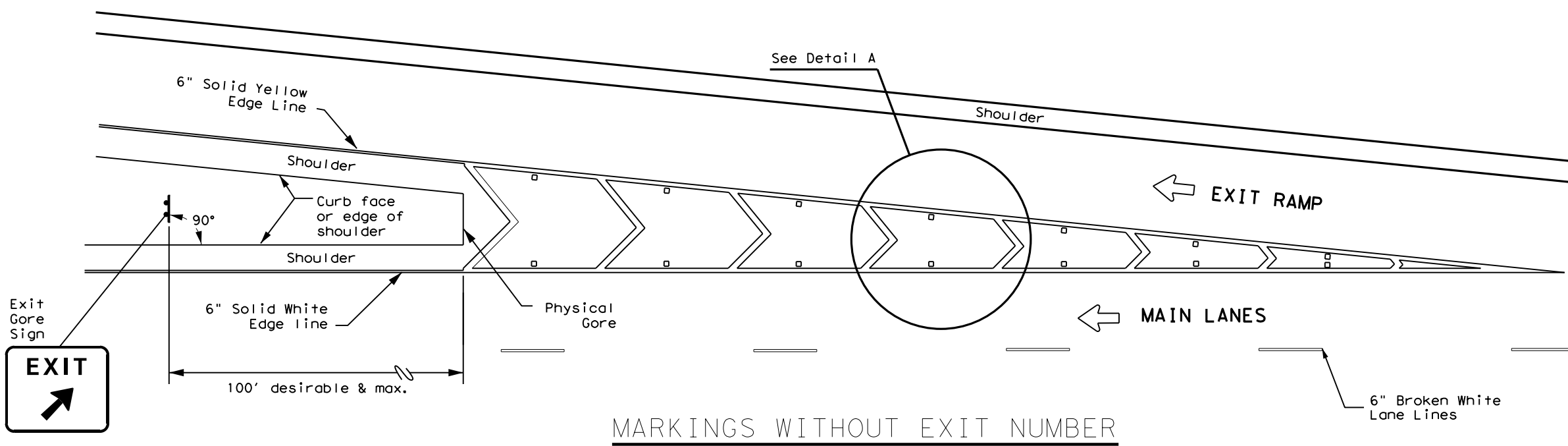
DATE: 6/3/2024 1:56:22 PM
 FILE: P:\116\35\04\Design\Civil\Standards\PavementMarkers\Fpm(5)-22.dgn

EXIT NUMBER PAVEMENT MARKING NOTES

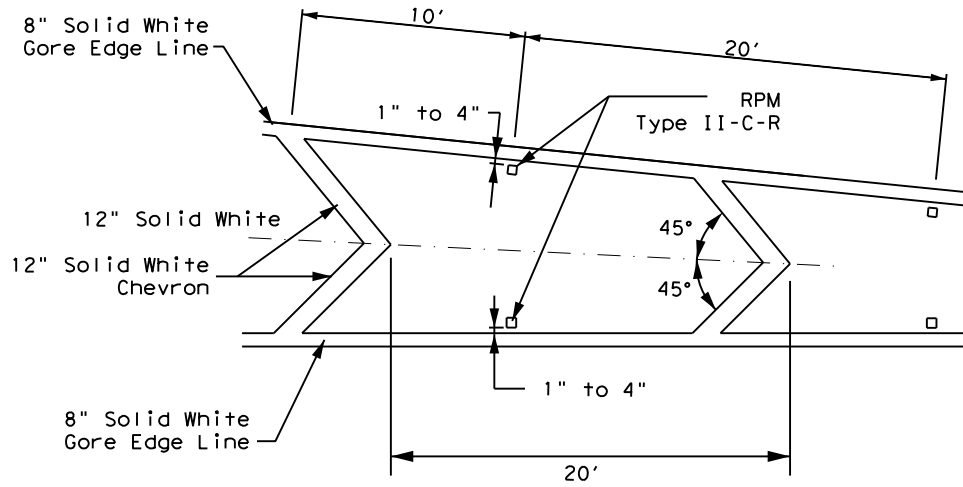
1. Minimum 8 foot white exit number pavement markings should be used, unless otherwise noted.
2. Spacing between letters and numbers should be approximately 4 inches.
3. Pavement markings are to be located as specified elsewhere in the plans.
4. Numbers and Letters details can be found in the Standard Highway Design for Texas (SHSD) Section 12 at <http://www.txdot.gov>



MARKINGS WITH EXIT NUMBER



MARKINGS WITHOUT EXIT NUMBER



NOTES

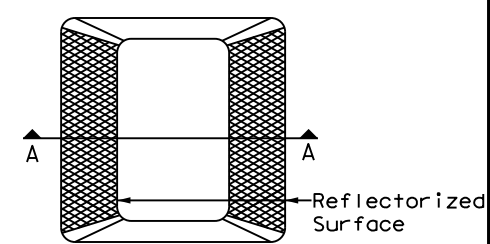
1. Raised pavement markers shall be centered between each chevron or neutral area line.
2. For more information, see ReflectORIZED Raised Pavement Marker Detail.

DETAIL A

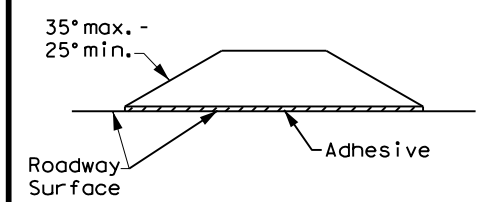
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

LEGEND	
←	Traffic flow
□	ReflectORIZED Raised Markers (RPM) Type II-C-R



Type II (Top View)



SECTION A

REFLECTORIZED RAISED PAVEMENT MARKER (RPM)



EXIT GORE PAVEMENT MARKINGS

FPM(5) - 22

FILE: fpm(5)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
9-19	DIST	COUNTY	SHEET NO.	
10-22	ATL	TITUS	161	

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

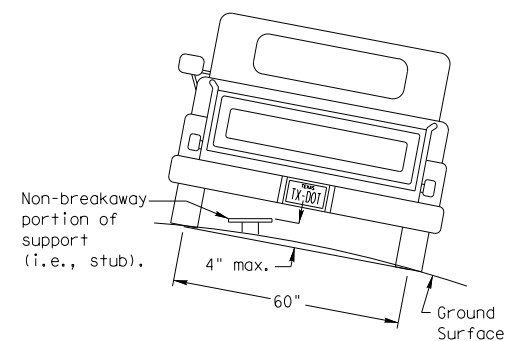
Post Type _____
 FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
 TWT = Thin-Walled Tubing (see SMD(TWT))
 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
 S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2) _____

Anchor Type _____
 UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
 UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
 WS = Wedge Anchor Steel - (see SMD(TWT))
 WP = Wedge Anchor Plastic (see SMD(TWT))
 SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
 SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation
 P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
 T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
 U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
 IF REQUIRED
 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
 BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
 WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
 EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

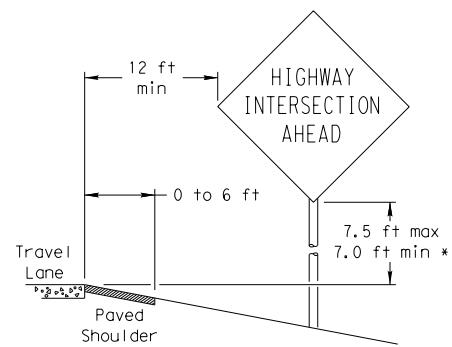
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

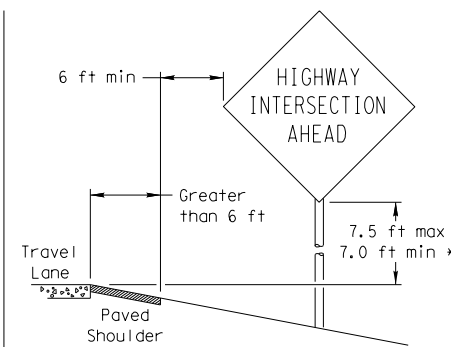
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

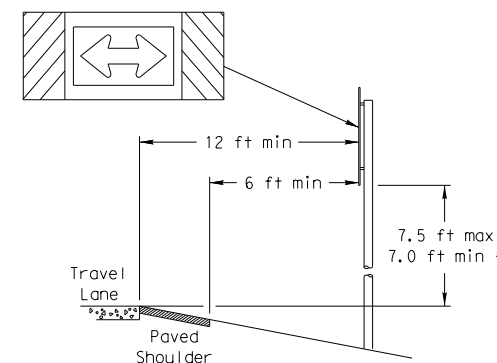
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



GREATER THAN 6 FT. WIDE

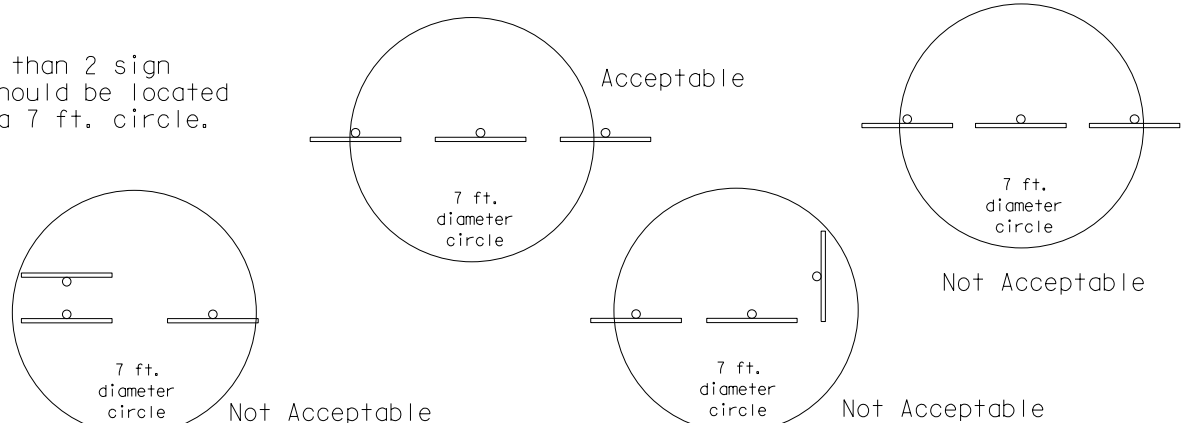
When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

T-INTERSECTION

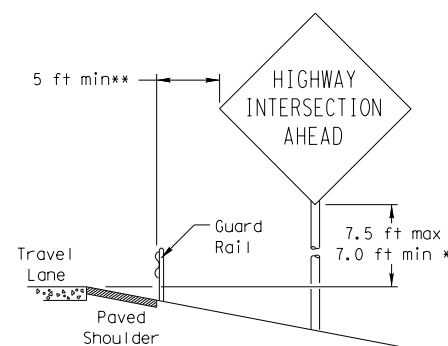


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

No more than 2 sign posts should be located within a 7 ft. circle.

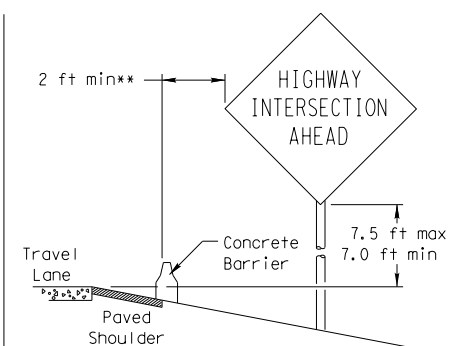


BEHIND BARRIER



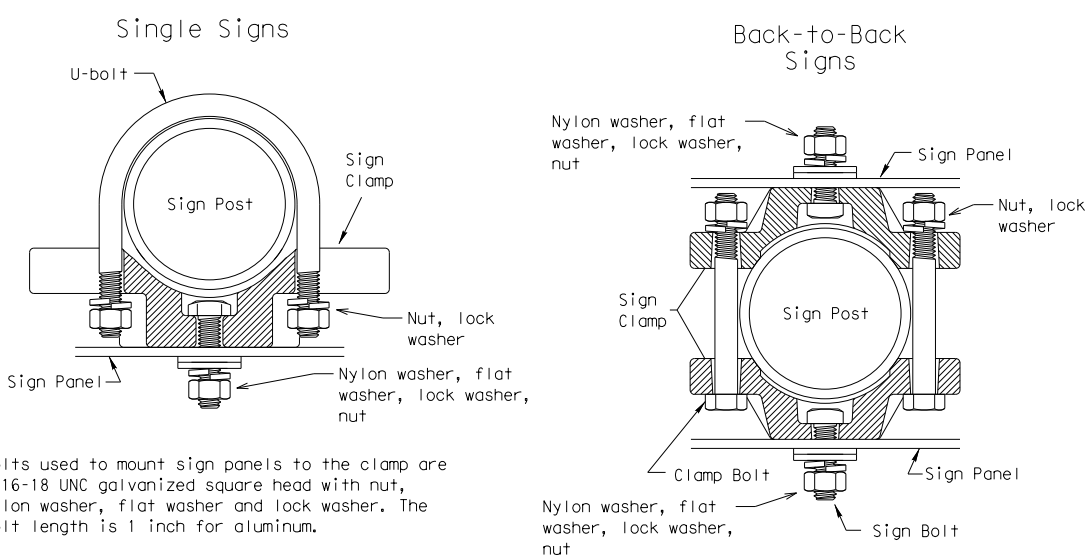
BEHIND GUARDRAIL

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.



BEHIND CONCRETE BARRIER

TYPICAL SIGN ATTACHMENT DETAIL



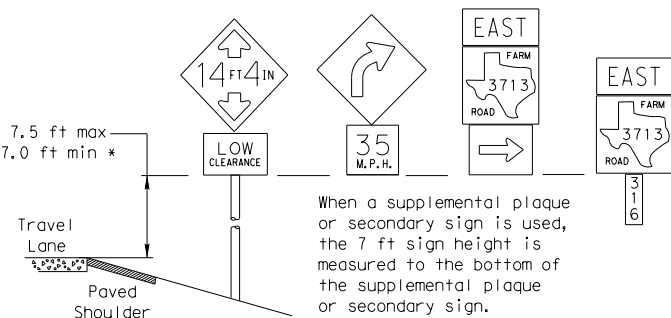
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

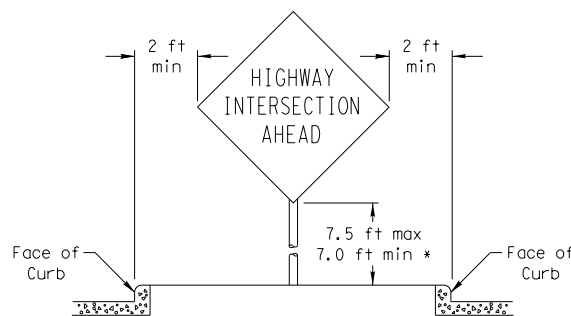
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES

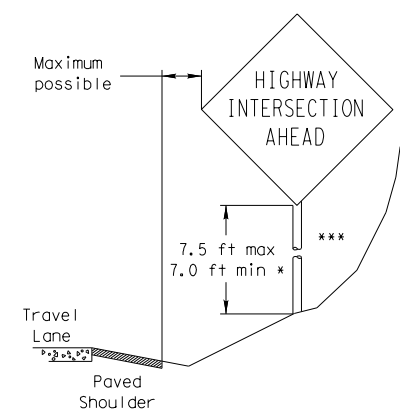


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



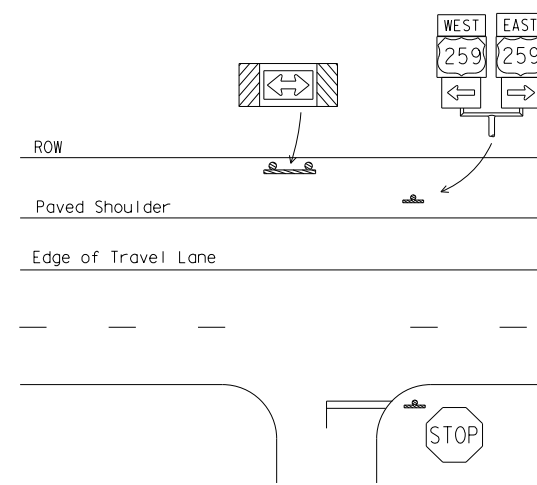
RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
- (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
<http://www.txdot.gov/publications/traffic.htm>



SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

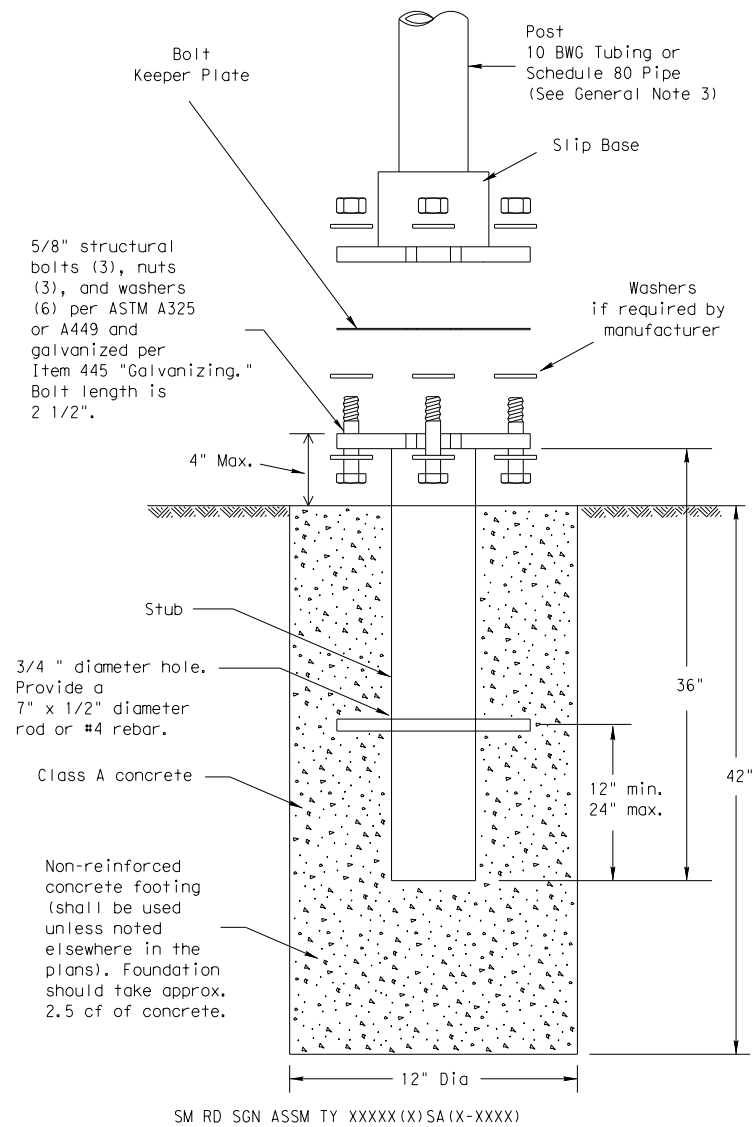
SMD (GEN) - 08

© TxDOT July 2002		DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
		0610	03	095	IH 30
		DIST	COUNTY		SHEET NO.
		ATL	TITUS		162

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TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

- Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
- Material used as post with this system shall conform to the following specifications:
 - 10 BWG Tubing (2.875" outside diameter)
 - 0.134" nominal wall thickness
 - Seamless or electric-resistance welded steel tubing or pipe
 - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
 - Other steels may be used if they meet the following:
 - 55,000 PSI minimum yield strength
 - 70,000 PSI minimum tensile strength
 - 20% minimum elongation in 2"
 - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
 - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
 - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
 - Schedule 80 Pipe (2.875" outside diameter)
 - 0.276" nominal wall thickness
 - Steel tubing per ASTM A500 Gr C
 - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
 - 46,000 PSI minimum yield strength
 - 62,000 PSI minimum tensile strength
 - 21% minimum elongation in 2"
 - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
 - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
 - Galvanization per ASTM A123
- See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

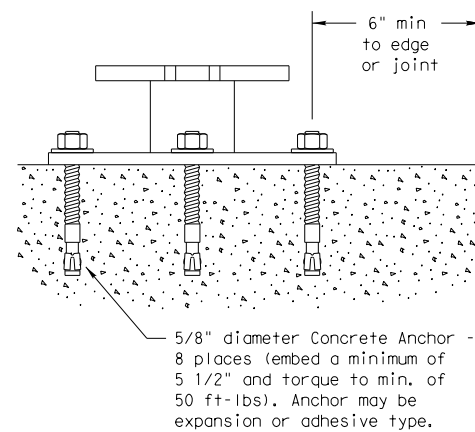
Foundation

- Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
- The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
- Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
- Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
- The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support

- Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
- Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxyes and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

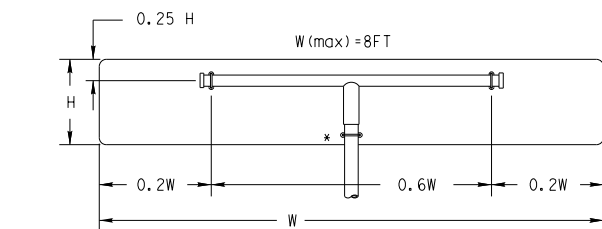
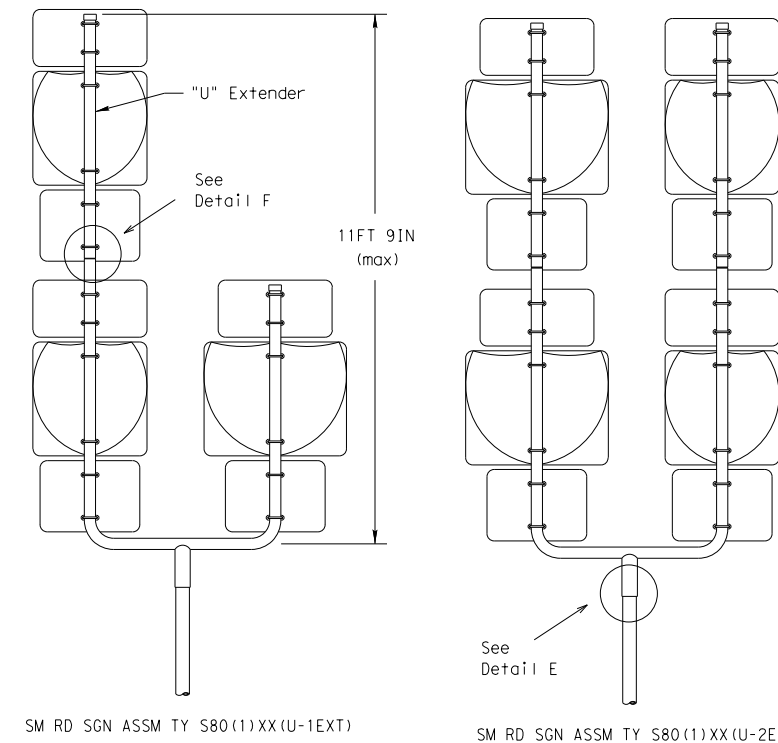
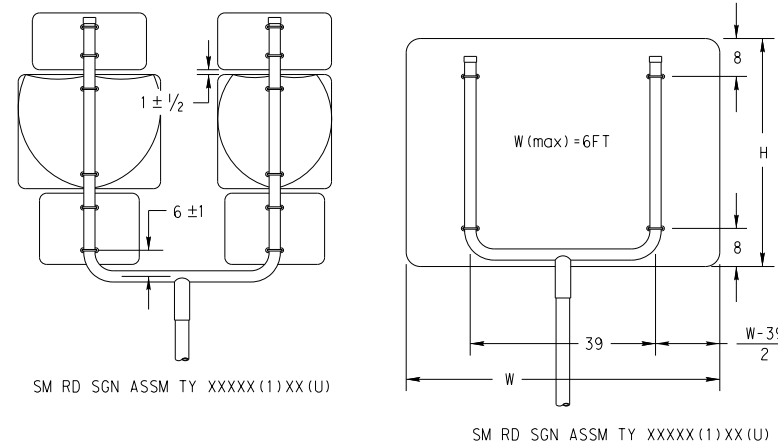
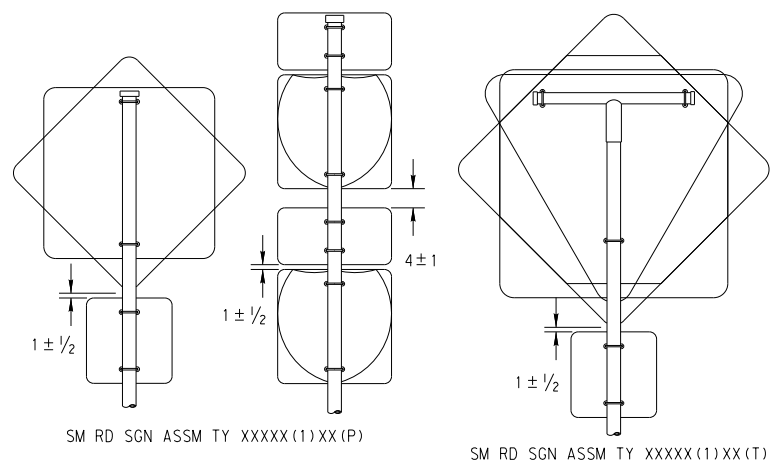


SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD(SLIP-1)-08

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9-08	REVISIONS		CONT	SECT	JOB	HIGHWAY
			0610	03	095	IH 30
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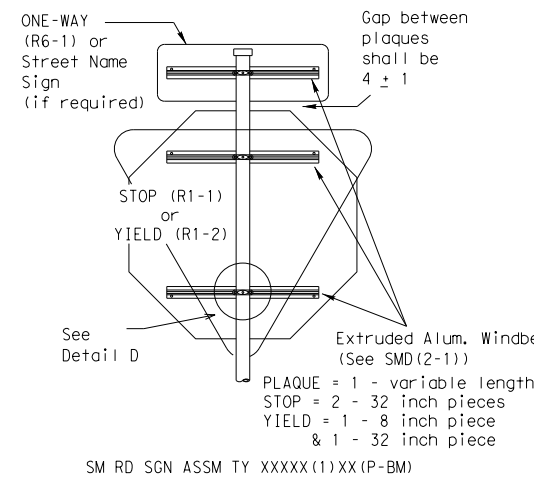
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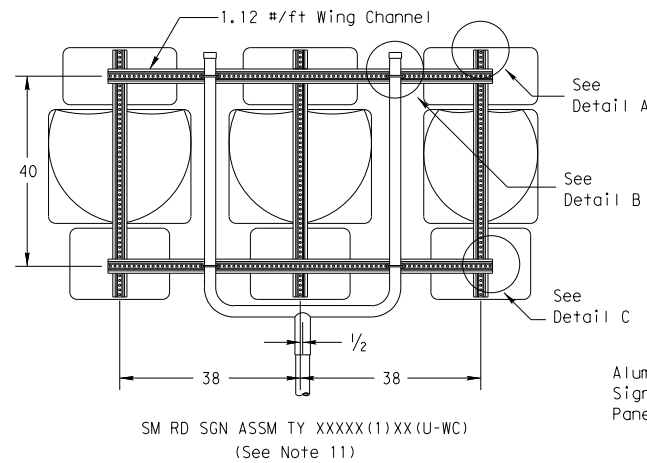


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 (* - See Note 12)

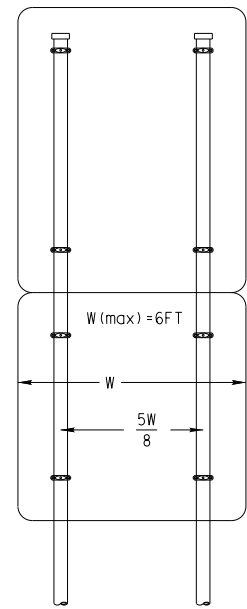
All dimensions are in english unless detailed otherwise.



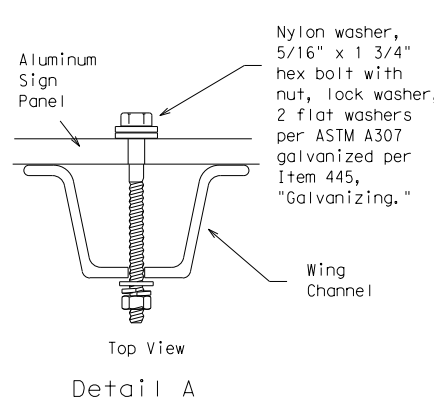
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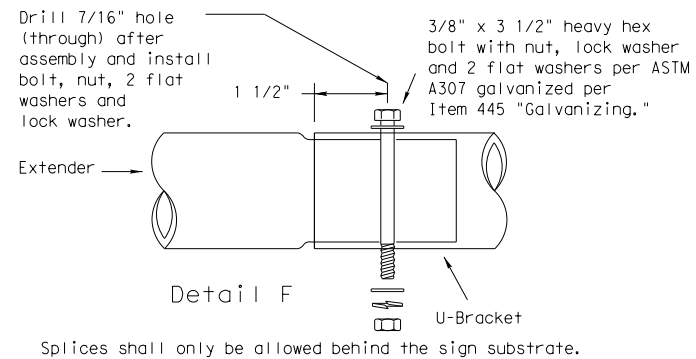
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 (See Note 11)



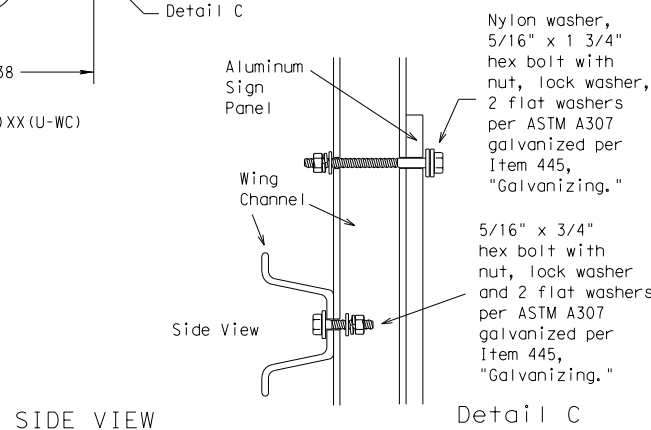
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Detail A

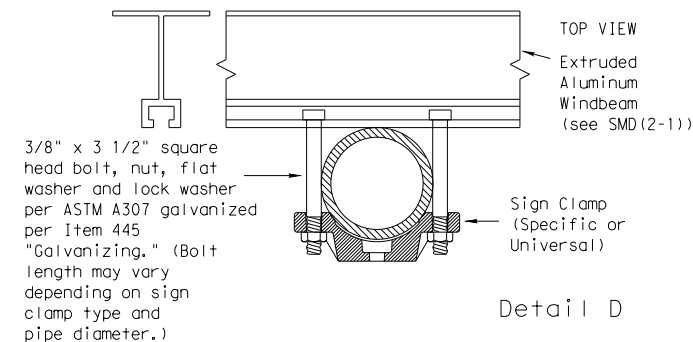


Splices shall only be allowed behind the sign substrate.



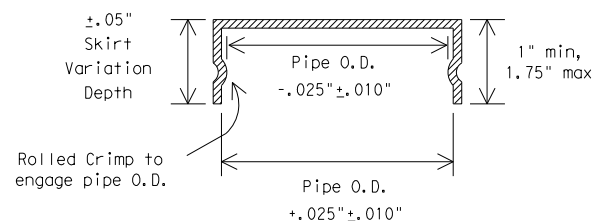
SIDE VIEW

Detail C

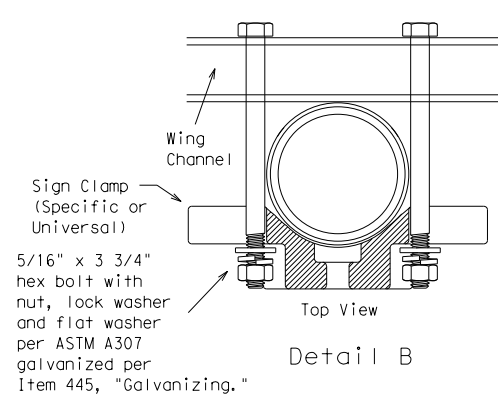


Detail D

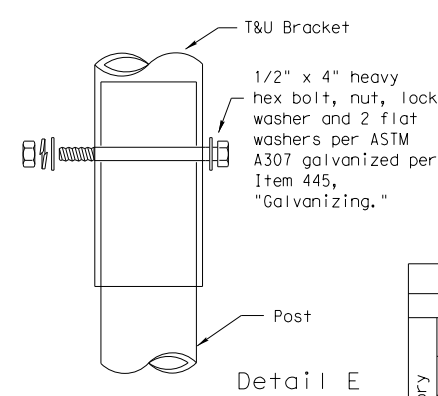
FRICION CAP DETAIL



Rolled Crimp to engage pipe O.D.



Detail B



Detail E

GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |
- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

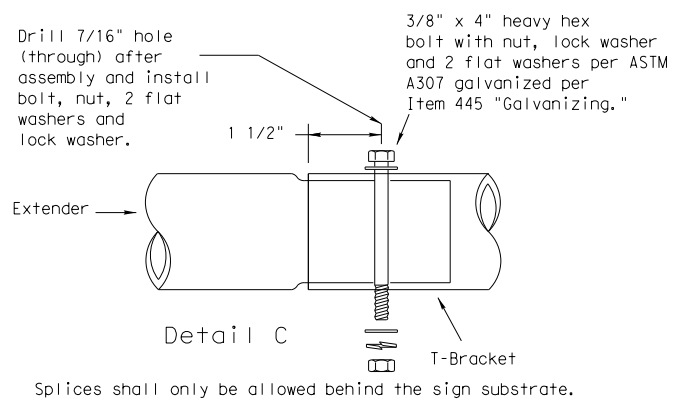
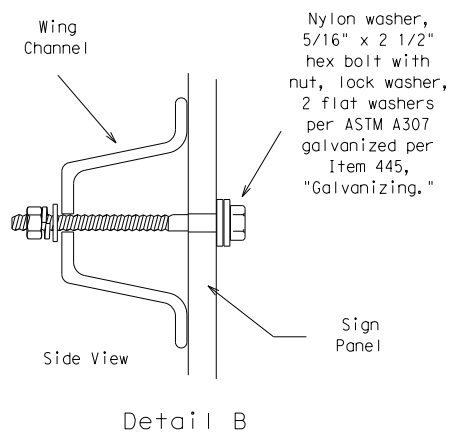
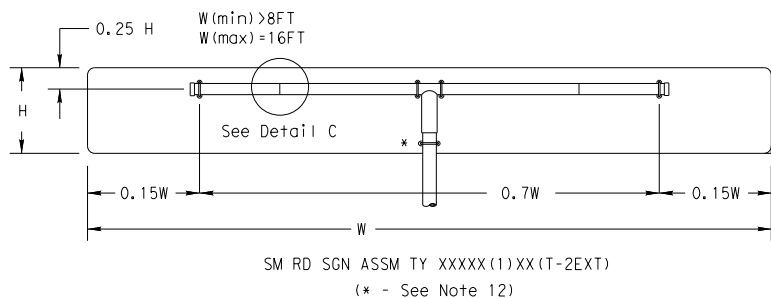


**SIGN MOUNTING DETAILS
 SMALL ROADSIDE SIGNS
 TRIANGULAR SLIPBASE SYSTEM
 SMD(SLIP-2)-08**

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		DIST	COUNTY	SHEET NO.	
		ATL	TITUS	164	

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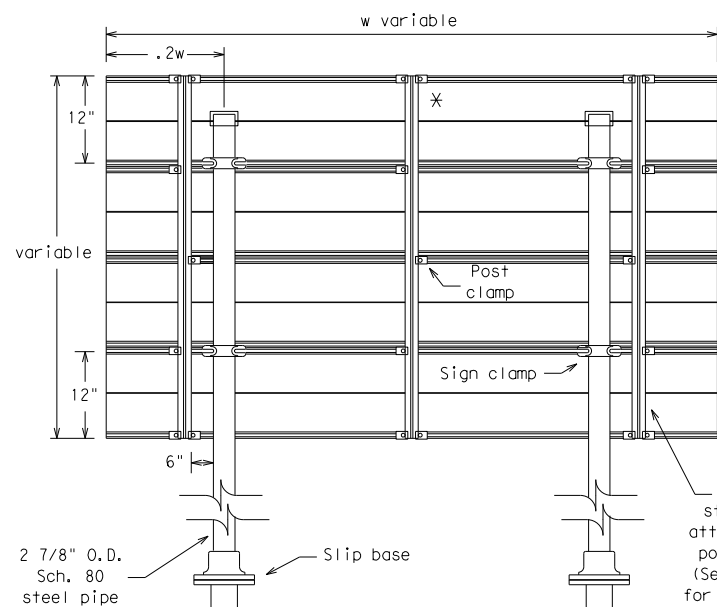
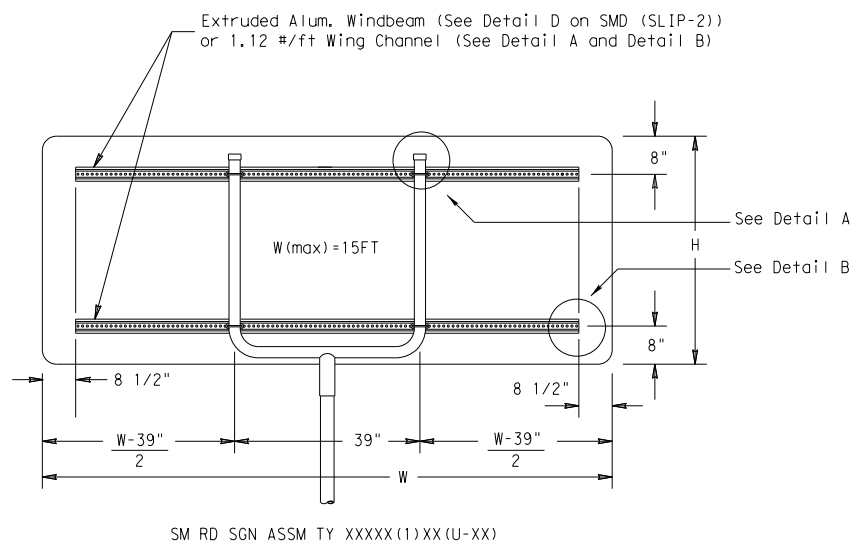
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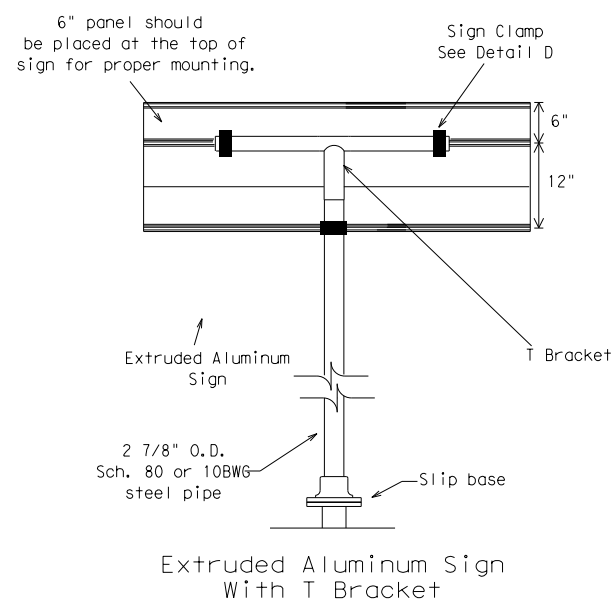
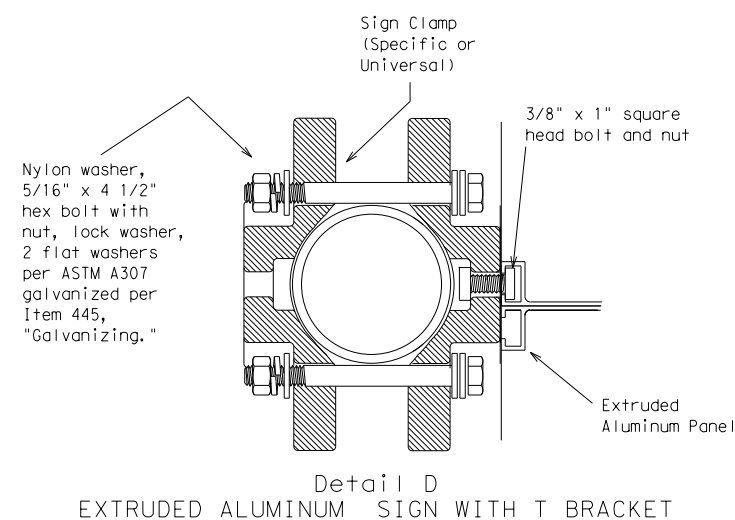
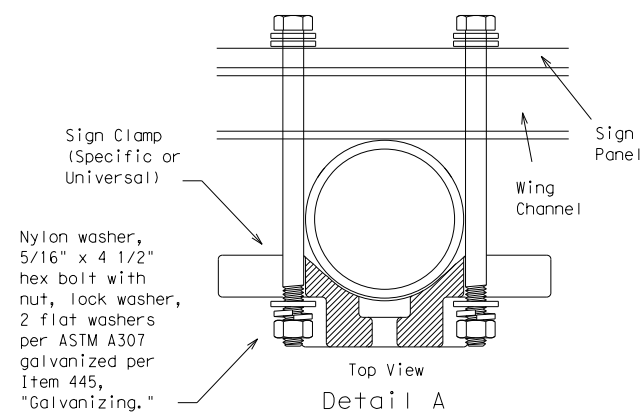
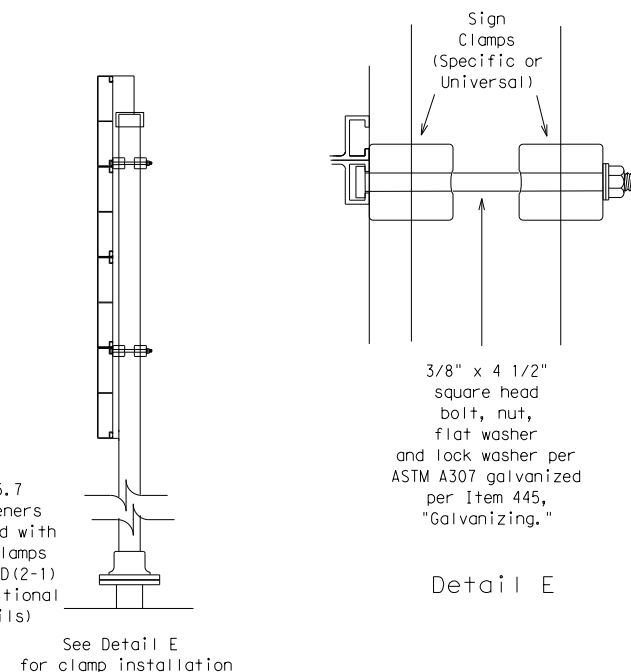
Splices shall only be allowed behind the sign substrate.

GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG | 1 | 16 SF |
| 10 BWG | 2 | 32 SF |
| Sch 80 | 1 | 32 SF |
| Sch 80 | 2 | 64 SF |
- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Sign blanks shall be the sizes and shapes shown on the plans.
- Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.



* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



Use Extruded Alum. Windbeam as stiffeners See SMD (2-1) for additional details
 See Detail E for clamp installation

		REQUIRED SUPPORT	
		SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)	
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)	
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)	
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)	
Warning	48x60-inch signs	TY S80(1)XX(T)	
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)	
	48x60-inch signs	TY S80(1)XX(T)	
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)	
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)	
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)	

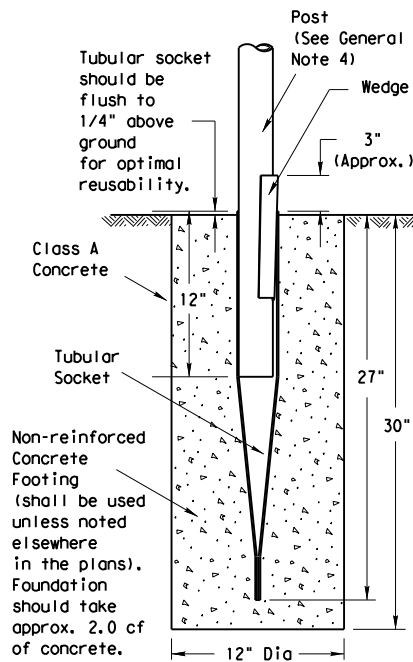


**SIGN MOUNTING DETAILS
 SMALL ROADSIDE SIGNS
 TRIANGULAR SLIPBASE SYSTEM
 SMD (SLIP-3) -08**

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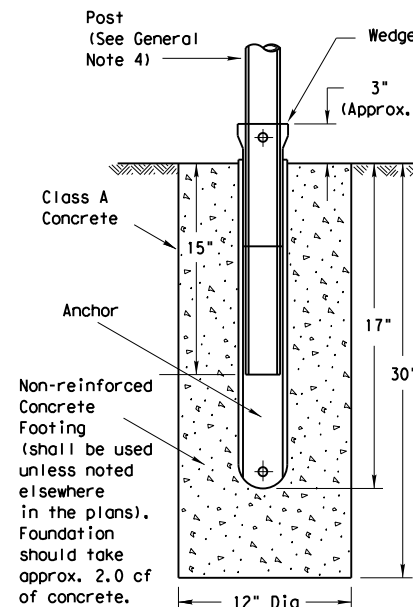
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Wedge Anchor Steel System



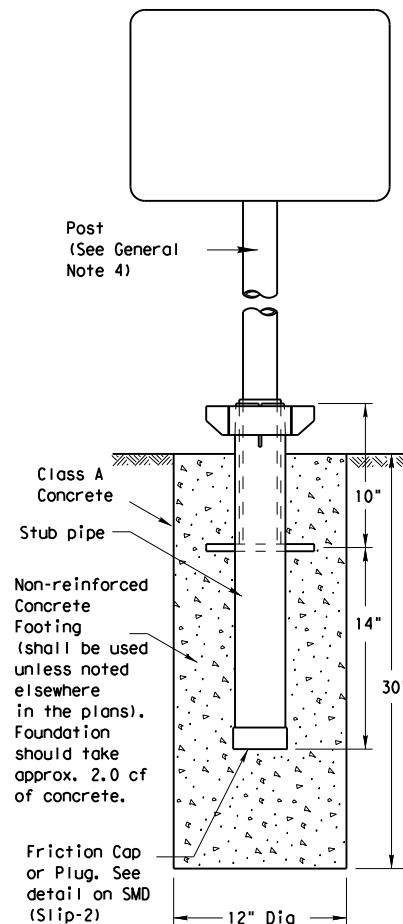
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

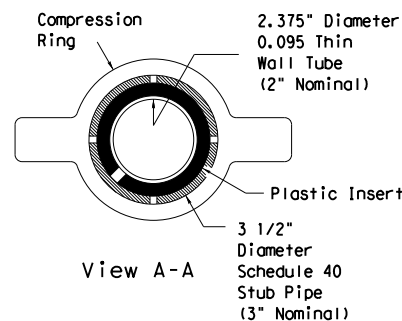
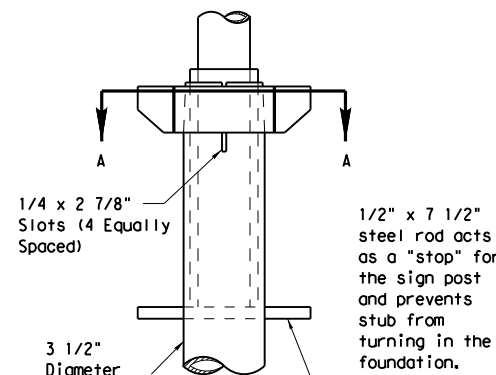


SMD RD SGN ASSM TY TWT(X)WP(X)

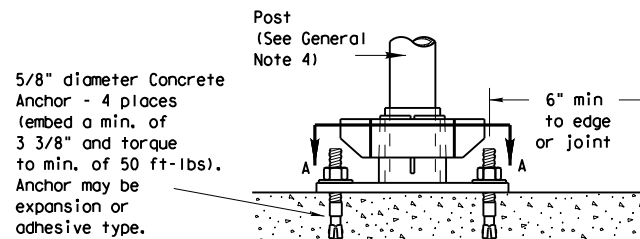
Universal Anchor System with Thin-Walled Tubing Post



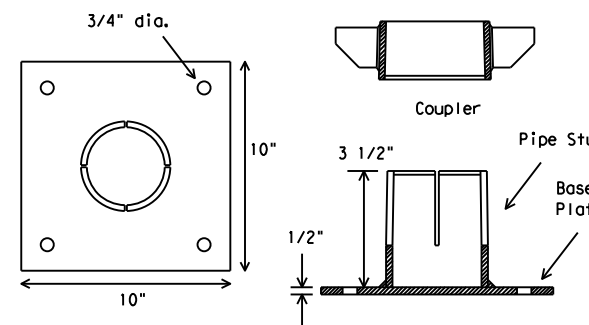
SM RD SGN ASSM TY TWT(X)UA(P)



Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10\"/>

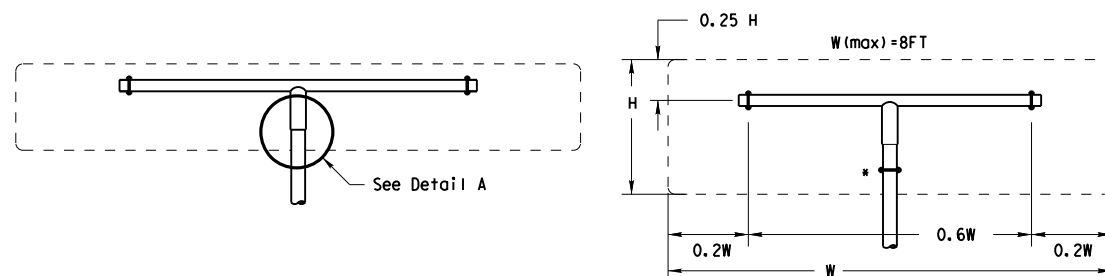


Concrete anchor consists of 5/8\"/>

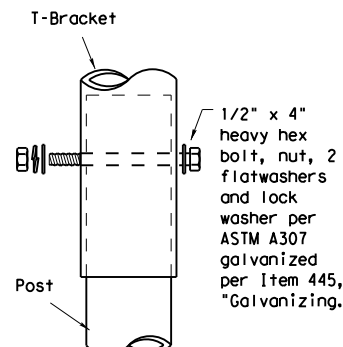


SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)



9/16\"/>

NOTE
The devices shall be installed per manufacturer's recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

- The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
- The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
- Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer_list.htm
- Material used as post with this system shall conform to the following specifications:
13 BWG Tubing (2.375\"/>

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18\"/>

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

- Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18\"/>

Texas Department of Transportation
Traffic Operations Division

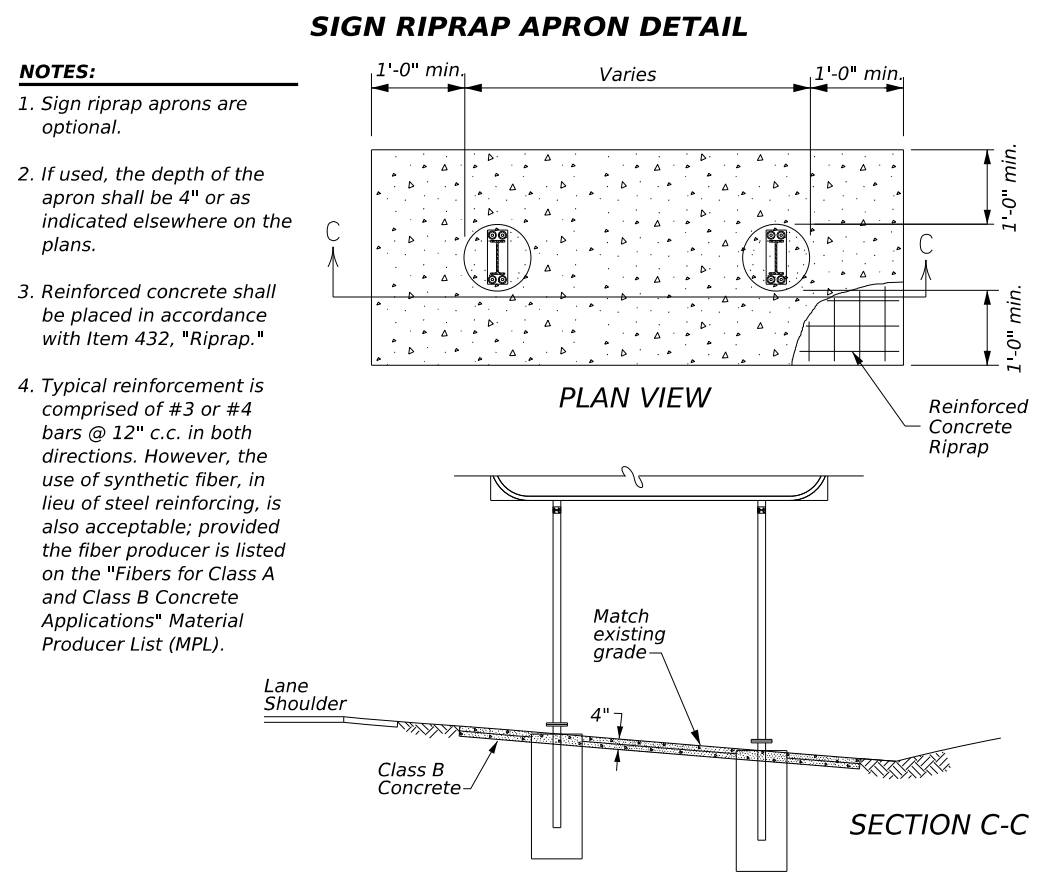
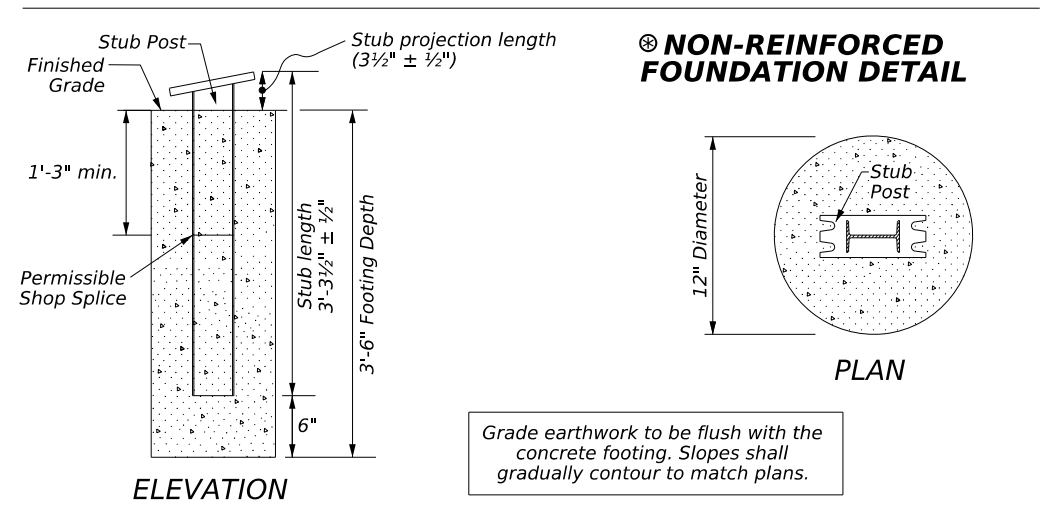
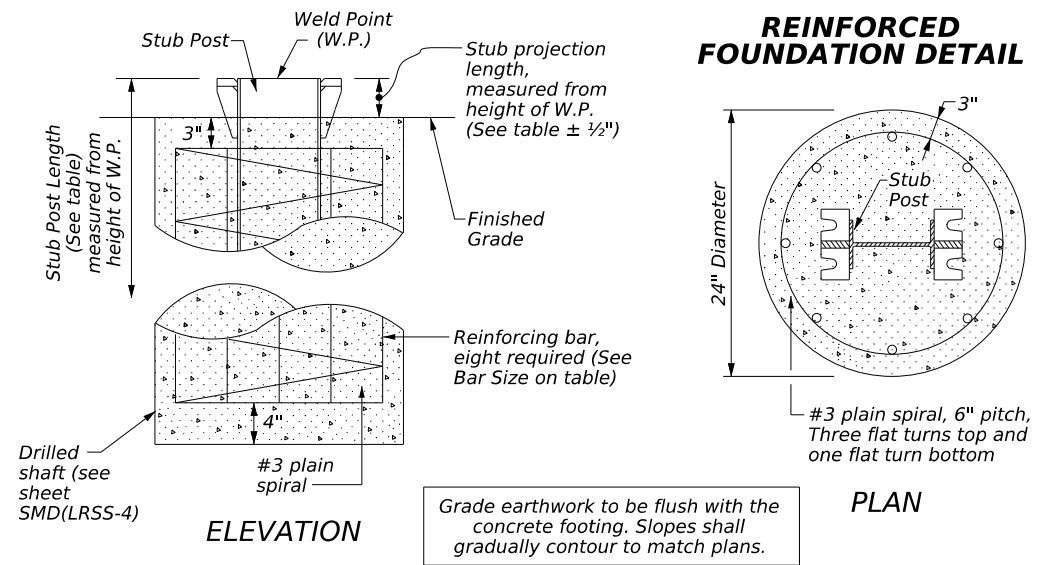
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST SMD(TWT) - 08

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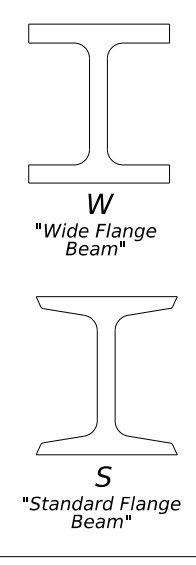
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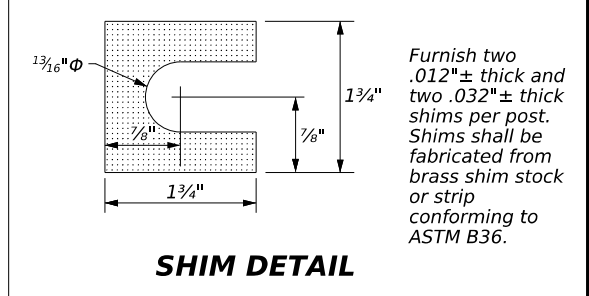
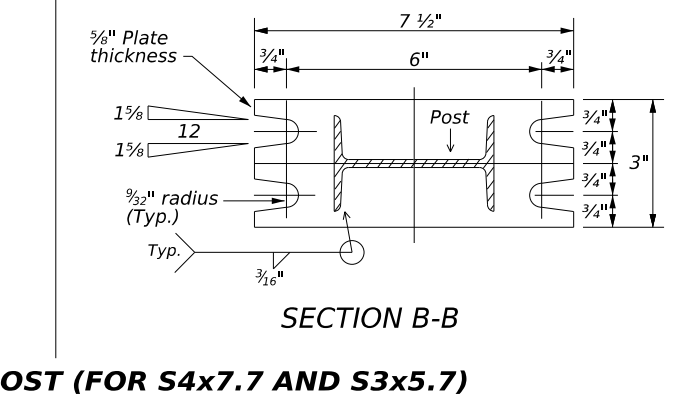
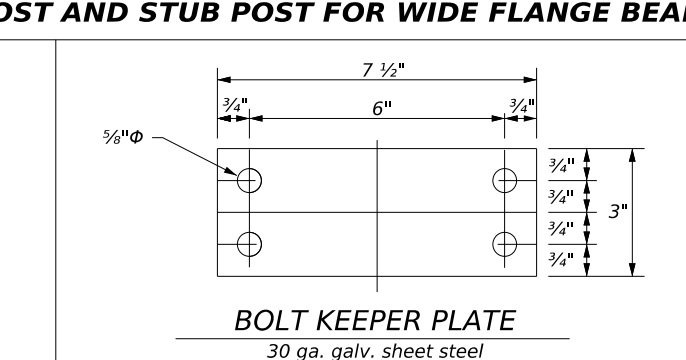
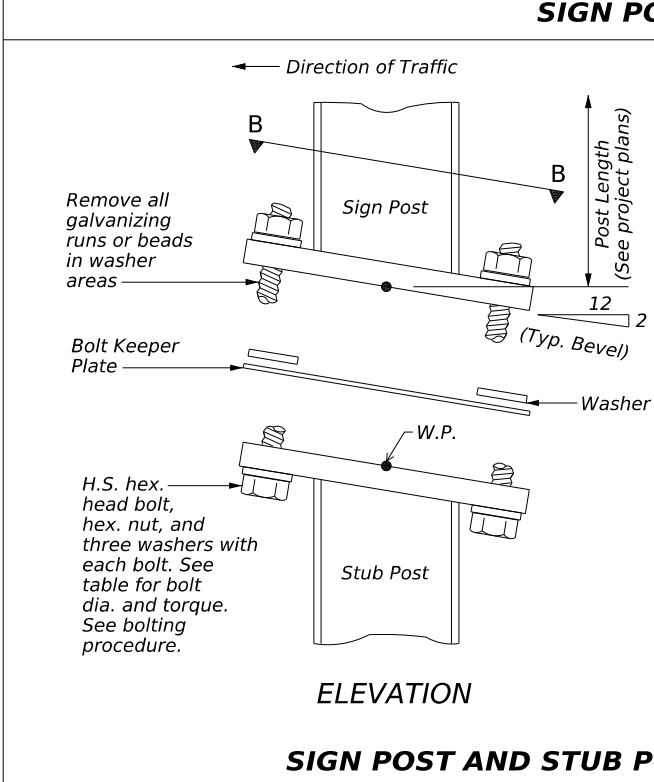
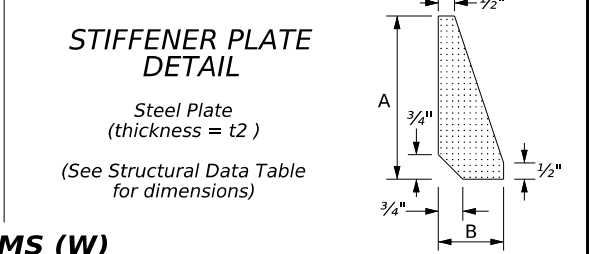
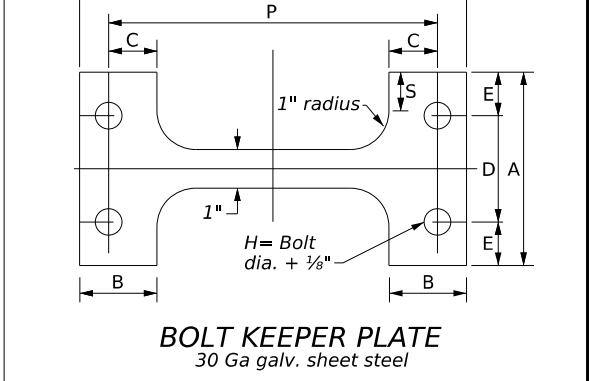
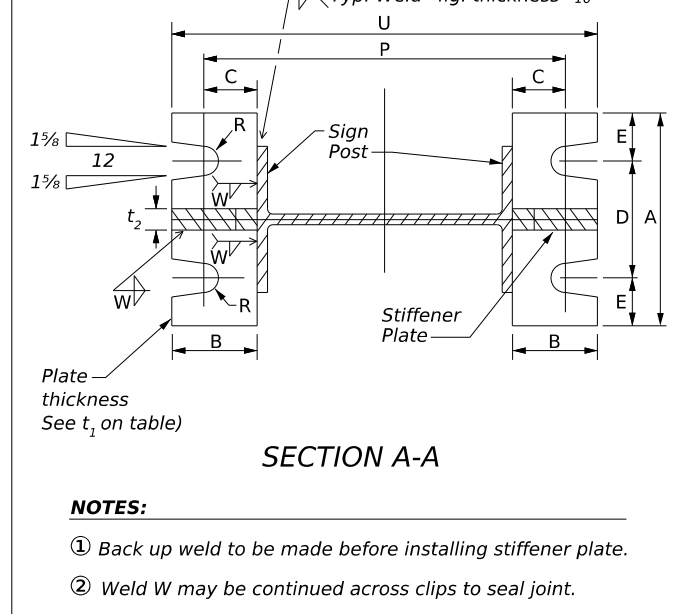
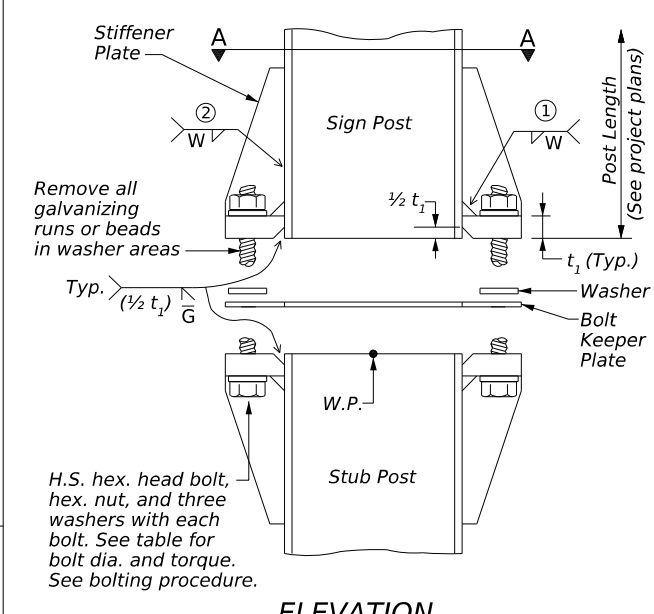


BOLTING PROCEDURE FOR ASSEMBLY OF BASE CONNECTION

1. Assemble sign post, BOLT KEEPER PLATE and stub post with bolts and three flat washers per bolt, as shown.
2. Shim as required, to plumb post.
3. Tighten all bolts to the maximum possible with a 12 to 15 inch wrench to clean bolt threads and to bed washers and shims.
4. Loosen each bolt in sequence and retighten bolts in a systematic order, to the prescribed torque. Do not overtighten.
5. To prevent nut loosening, burr threads of bolt at junction with nut using a center punch.



DIMENSIONS	BASE CONNECTION										BOLT KEEPER PLATE			FOUNDATION					
	Post Size	Bolt Size & Torque	A	B	C	D	E	t ₁	t ₂	W	R	P	S	U	Stub length	Stub projection	Drill Shaft diameter	Bar Size	Concrete Type
W12x26	3/4" Φ x 3 1/2"	15"												16 3/4"	3'-0"	2 1/2"	24"	#11	C
W10x22	7/8" Φ x 3 1/2" 740-750 inch pounds 62-63 foot pounds	12 7/8"	6"	2 1/4"	1 3/8"	3 1/2"	1 1/4"	1"	3/4"	5/16"	1 3/32"	1 1/2"		14 5/8"	3'-0"	2 1/2"		#9	
W8x21		11"												12 3/4"	3'-0"	2 1/2"		#8	
W8x18	5/8" Φ x 2 3/4"	10 5/8"												12 3/8"	2'-6"	3"	#7		
W6x15	4/8" Φ x 2 3/4" 440-450 inch pounds 36-38 foot pounds	8 1/2"	5"	2"	1 1/4"	2 3/4"	1 1/8"	3/4"	1/2"	1/4"	1 1/32"	1"		10"	2'-6"	3"	#6		
W6x9		8 5/8"												9 7/8"	2'-0"	3"	#5		
S4x7.7	1/2" Φ x 2 3/4" 440-450 inch pounds 36-38 foot pounds		See Sign Post Stub (S4x7.7 and S3x5.7)										See Sign Post Stub (S4x7.7 and S3x5.7)	3'-3 1/2"	3 1/2"	12"	Non-reinforced	A	
S3x5.7																			



Texas Department of Transportation Traffic Safety Division Standard

SIGN MOUNTING DETAILS LARGE ROADSIDE SIGNS FOUNDATION & STUB

SMD(2-1)-24

FILE: smd(2-1)-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	May 2024	CONV	SECT	JOB
REVISIONS	0610	03	095	IH 30
8-95 5-24 4-98 9-08	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	167	

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LATERAL CLEARANCE NOTES:

1. Lateral clearances of signs mounted on the median side of the main lanes are the same as shown, where space will permit. Where a sign is to be located behind guardrail, an allowable minimum clearance of 5' may be used, measured from the face of the guardrail to the near edge of sign.
2. * 6' minimum and desirable may be used only in areas of limited lateral clearance and when approved by the Engineer.

POST SPACING NOTES:

1. Post spacing on a two post sign may be varied a maximum of ±10% of the total sign width to fit field conditions.
2. Post spacing on a three post sign may be varied a maximum of ±5% of the total sign width to fit field conditions.

SIGN HEIGHT NOTES:

1. ** The 8'-6" maximum may be exceeded when placing signs on extreme slopes. In these conditions, a 7' minimum from natural ground to bottom of sign must be maintained.

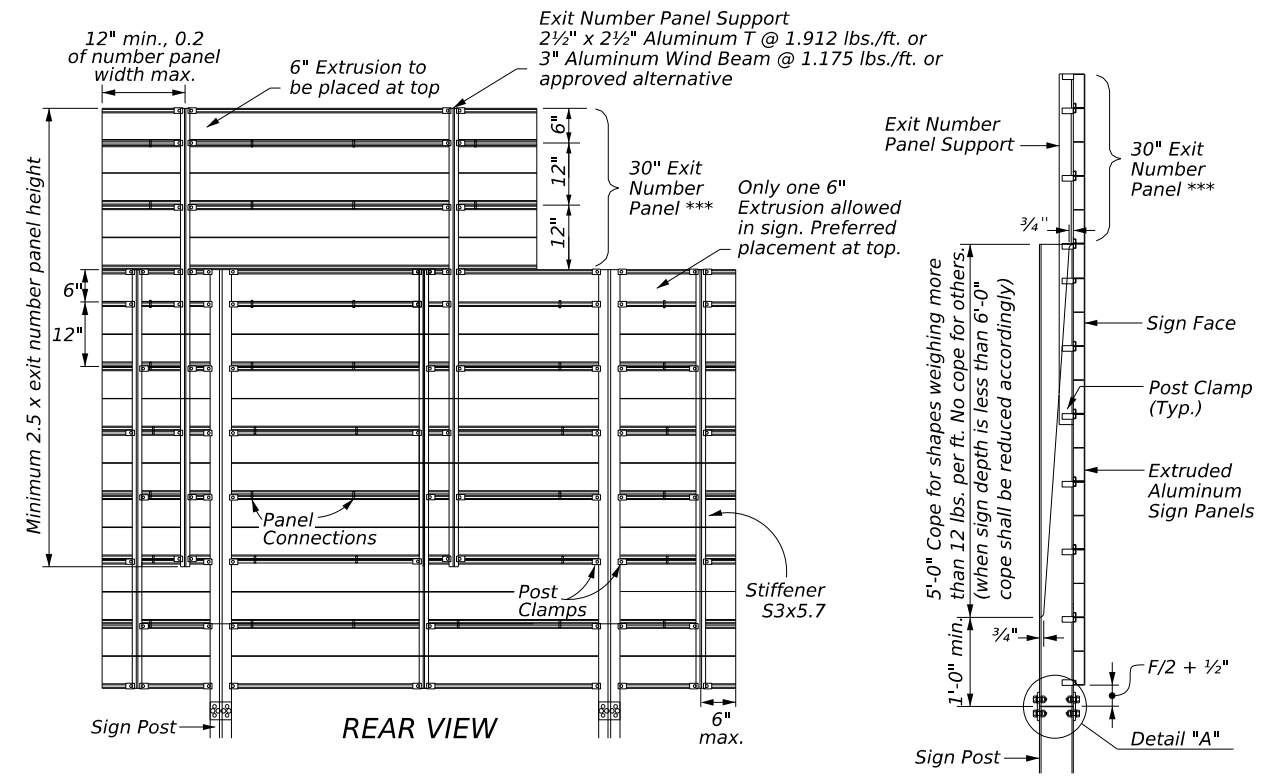
GENERAL NOTES:

1. Exit number panel supports shall be ASTM A36 structural steel galvanized after fabrication, or ASTM B221 aluminum alloy 6061-T6 or approved alternative.
2. In accordance with DMS-7120, High-Strength (H.S.) Bolts, Nuts, and Washers shall be galvanized per ASTM Designation: B695 Class 50, or A153 Class C or D.
3. Posts, parent sign panels, and exit number panels shall comply with notes on sheets SMD(2-1) and SMD(2-3).
4. Signs (such as exit number panels) attached above a parent sign shall be made of the same type material as the parent sign. General Service and Routing sign plaques may be fabricated from flat sheet aluminum.
5. Exit number panel supports and other connection hardware required to fasten exit number panel to parent sign shall be subsidiary to "Aluminum Signs".
6. Signs to be furnished shall be detailed elsewhere in the plans. Refer to the "Typical Sign Requirements" standard for additional information.
7. *** Alternate exit number panel heights may be used, in accordance with the "Standard Highway Sign Designs for Texas (SHSD)".

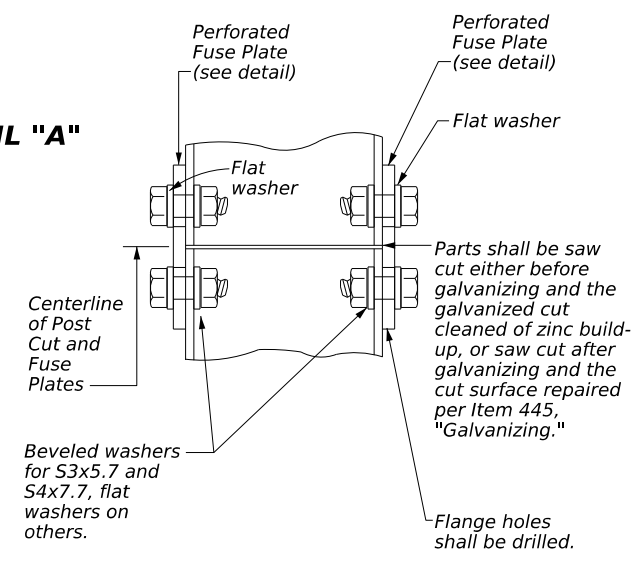
DEPARTMENTAL MATERIAL SPECIFICATIONS

ALUMINUM SIGN BLANKS	DMS-7110
SIGN HARDWARE	DMS-7120

ALUMINUM PARENT SIGN & EXIT NUMBER PANEL MOUNTING DETAILS



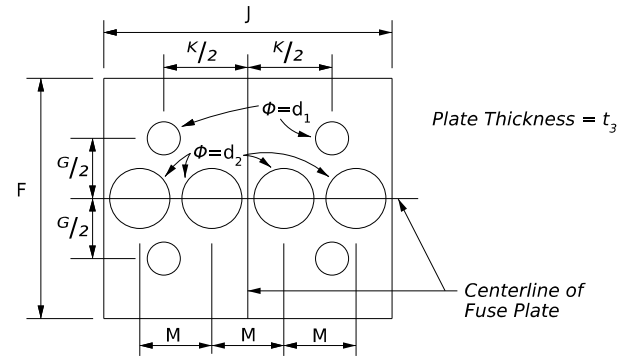
DETAIL "A"



STRUCTURAL DATA TABLE

DIMENSIONS	PERFORATED FUSE PLATE											
	Post Size	F	G	J	K	M	d ₁	d ₂	t ₃	Bolt Dia.	Wt. (ea.) (lbs.)	Bolt length
W12x26	6"	3"	6 1/2"	3 1/2"	1 3/8"	1 3/16"	1 1/16"	1/2"	3/4"	3/8"	4.47	2 1/4"
W10x22	6"	3"	5 3/4"	2 3/4"	1 3/8"	1 3/16"	1 1/8"	1/2"	3/4"	3/8"	4.03	2 1/4"
W8x21	5 1/2"	2 1/2"	5 1/4"	2 3/4"	1 1/4"	1 3/16"	1"	1/2"	3/4"	3/8"	3.35	2 1/4"
W8x18	5"	2 1/2"	5 1/4"	2 3/4"	1 1/4"	1 1/16"	1 1/16"	3/8"	3/8"	3/8"	2.26	2 1/4"
W6x15	5"	2 1/2"	6"	3 1/2"	1 1/2"	1 1/16"	1 1/4"	3/8"	3/8"	3/8"	2.51	2 1/4"
W6x9	4 3/4"	2"	4"	2 1/4"	1"	5/16"	3/4"	1/4"	1/2"	1/2"	1.01	1 1/2"
S4x7.7	3 3/4"	1 1/2"	2 5/8"	1 1/2"	5/8"	5/16"	3/8"	1/4"	1/2"	1/2"	0.60	1 1/2"
S3x5.7												

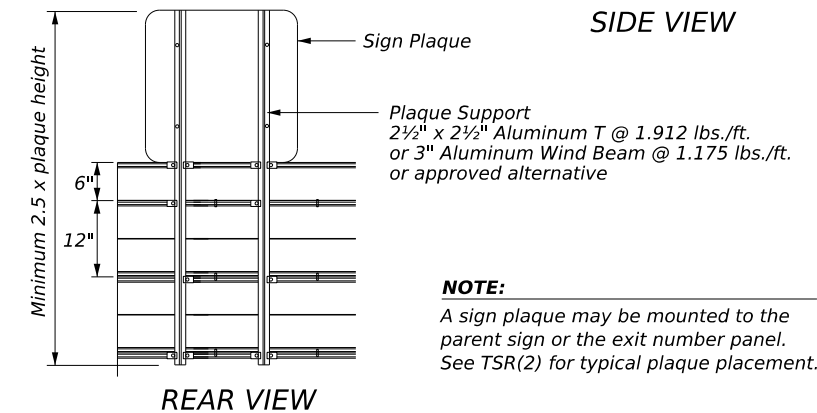
PERFORATED FUSE PLATE DETAIL



NOTE:

Use H.S. hex head bolts, hex head nut, and bevel or flat washer (where req'd) under nut. All holes shall be drilled, sub-punched, and reamed. All plate cuts shall preferably be saw cuts. However, flame cutting will be permitted, provided all edges are ground. Metal projecting beyond the plane of the plate face will not be permitted. Steel fuse plates shall conform to the requirements of ASTM A36. ASTM A572 Grade 50 or ASTM A588 may be substituted for A36 at the option of the fabricator. Mill test reports shall be submitted for Fuse Plates. Steel used shall have an ultimate tensile strength not to exceed 80 KSI. For alternative Fuse Plates, contact the Traffic Safety Division.

SIGN PLAQUE MOUNTING DETAIL



NOTE:

A sign plaque may be mounted to the parent sign or the exit number panel. See TSR(2) for typical plaque placement.

Texas Department of Transportation

Traffic Safety Division Standard

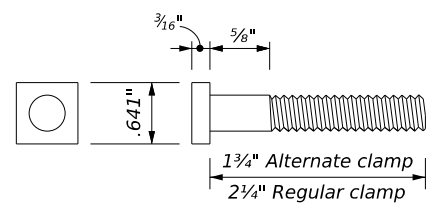
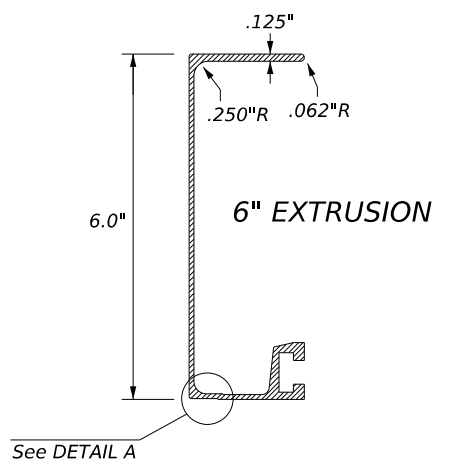
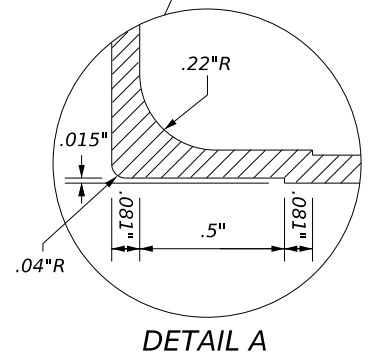
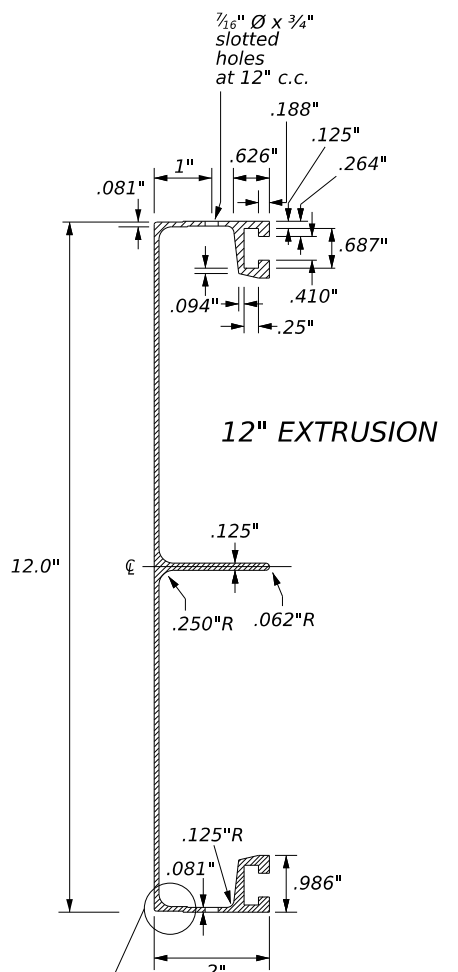
SIGN MOUNTING DETAILS
LARGE ROADSIDE SIGNS
EXTRUDED ALUMINUM
SMD(2-2)-24

FILE: smd(2-2)-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CC: TxDOT
© TxDOT	May 2024	CONV	SECT	JOB
REVISIONS	0610	03	095	HIGHWAY
8-95		DIST	COUNTY	SHEET NO.
9-08		ATL	TITUS	168
5-24				

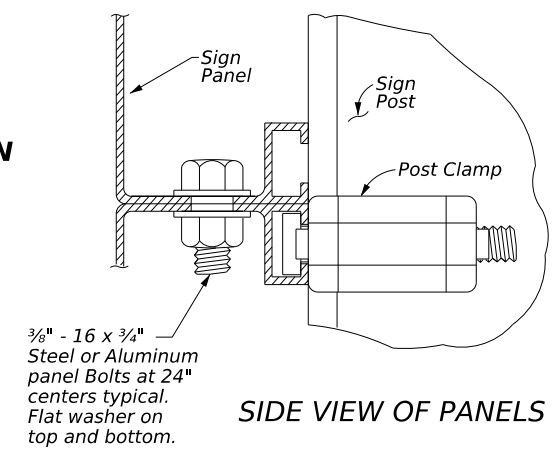
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ALUMINUM SIGN PANEL EXTRUSION DETAILS



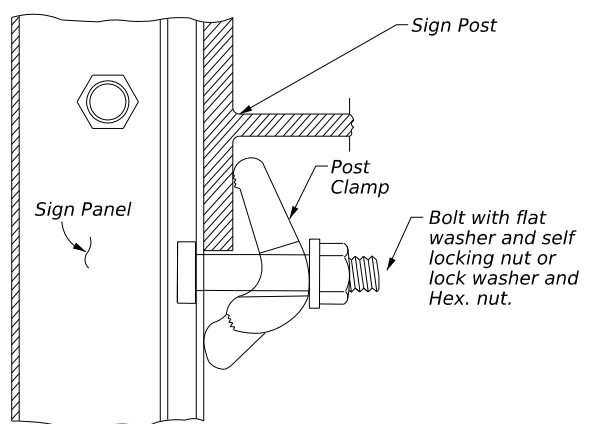
PANEL CONNECTION DETAIL



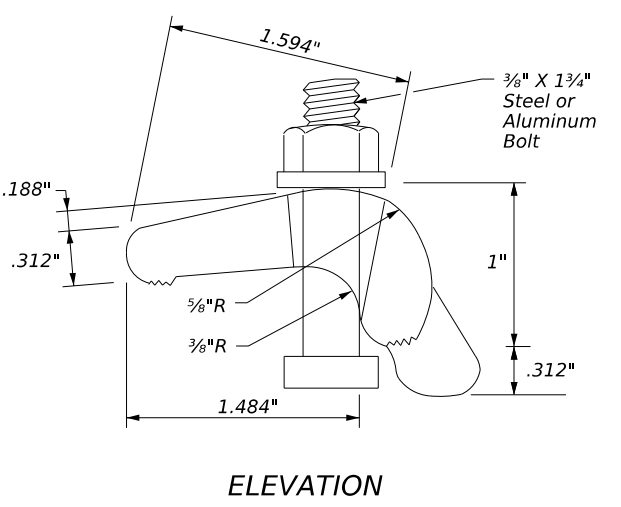
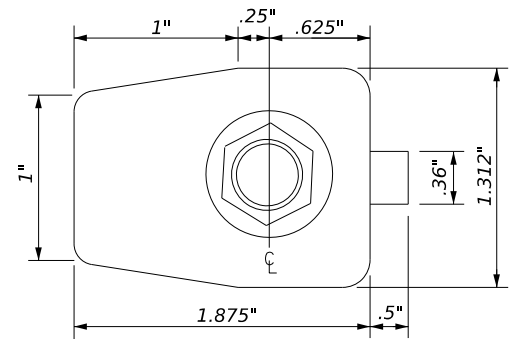
- GENERAL NOTES:**
- Design conforms with the 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (Large Roadside Signs with a 25-year Mean Recurrence Interval, MRI, and Overhead Signs with a 50-year MRI).
 - Materials and fabrication shall conform to the requirements of the Department Material Specifications.
 - Structural steel shall be "low-alloy steel" for non-bridge structures per Item 442, "Metal For Structures."

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN HARDWARE	DMS-7120

POST CONNECTION DETAIL



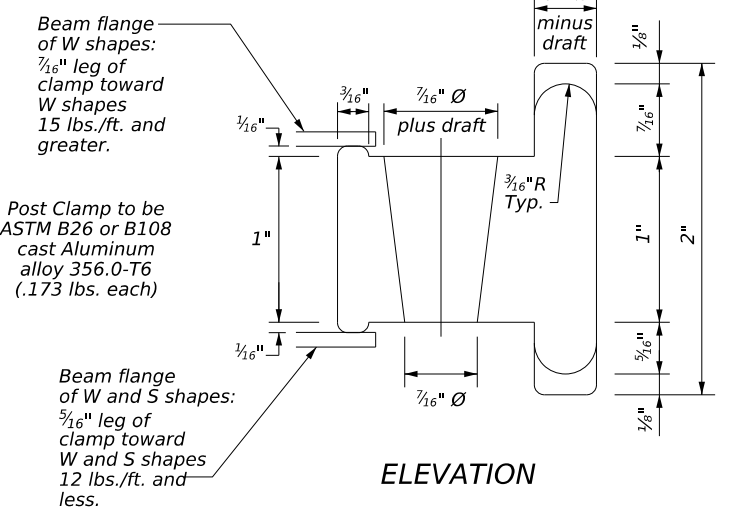
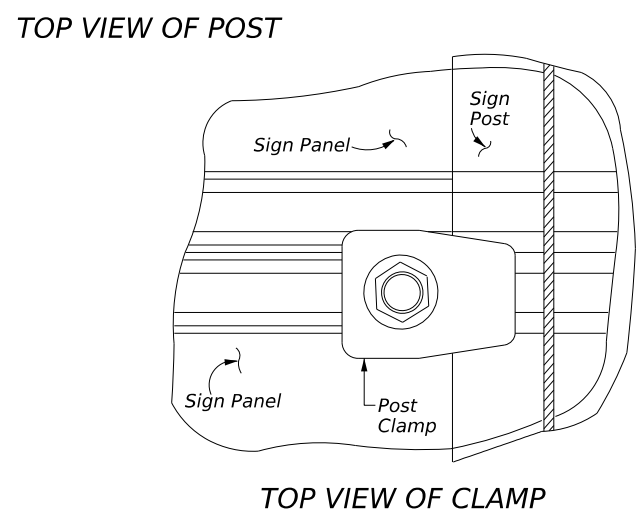
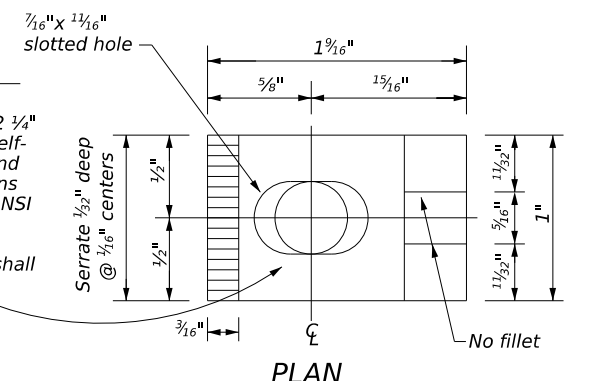
REGULAR POST CLAMP DETAIL



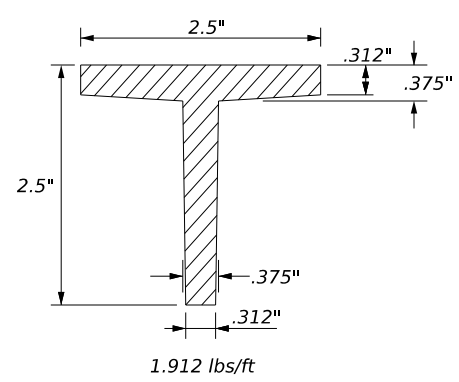
ALTERNATE POST CLAMP DETAIL

NOTE:

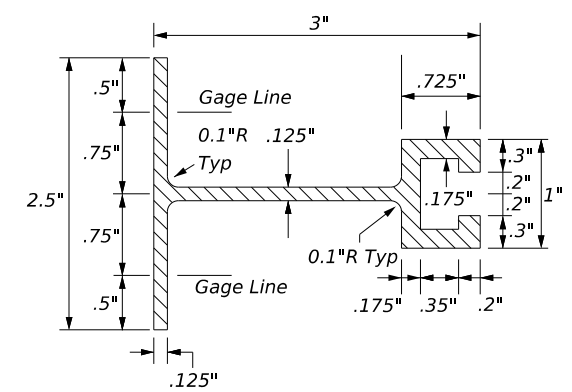
Centerline of hole for $\frac{3}{8}$ " diameter squarehead bolt x $2\frac{1}{4}$ " long with a flat washer and self-locking nut, or lock washer and hex. nut. Bolt head dimensions shall be in accordance with ANSI B 18.2.1 as referred to in the AISC Manual of steel construction. Bolt assembly shall be galvanized.



ALUMINUM T SECTION OR APPROVED ALTERNATIVE



WINDBEAM CROSS SECTION
 Windbeam to be extruded aluminum (1.175 lbs./ft.) or approved alternative

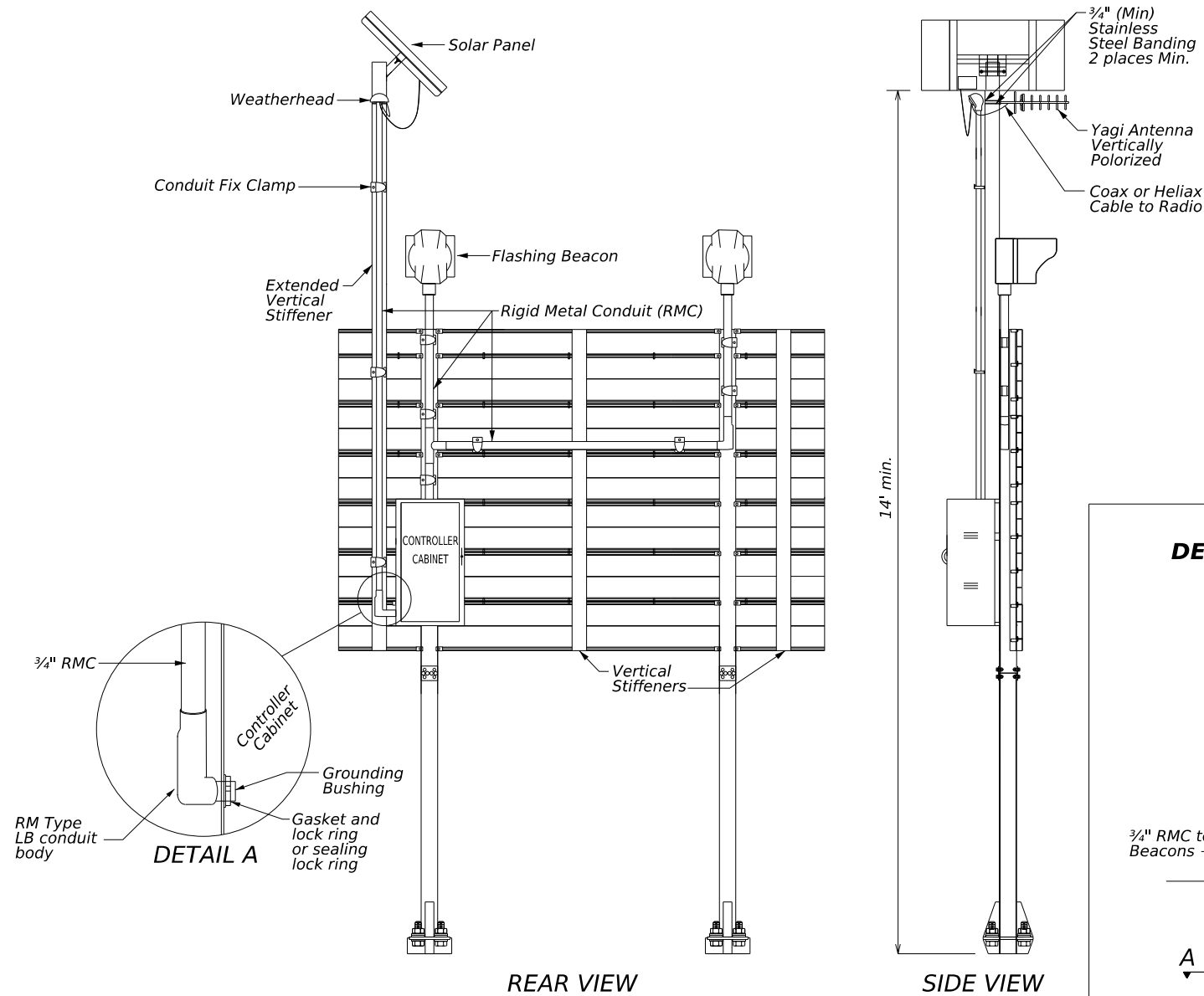


SIGN MOUNTING DETAILS SIGN PANELS & HARDWARE EXTRUDED ALUMINUM SMD(2-3)-24

FILE: smd(2-3)-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 2024	CONT	SECT	JOB	HIGHWAY
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2001 9-08 5-24	DIST	COUNTY	SHEET NO.	
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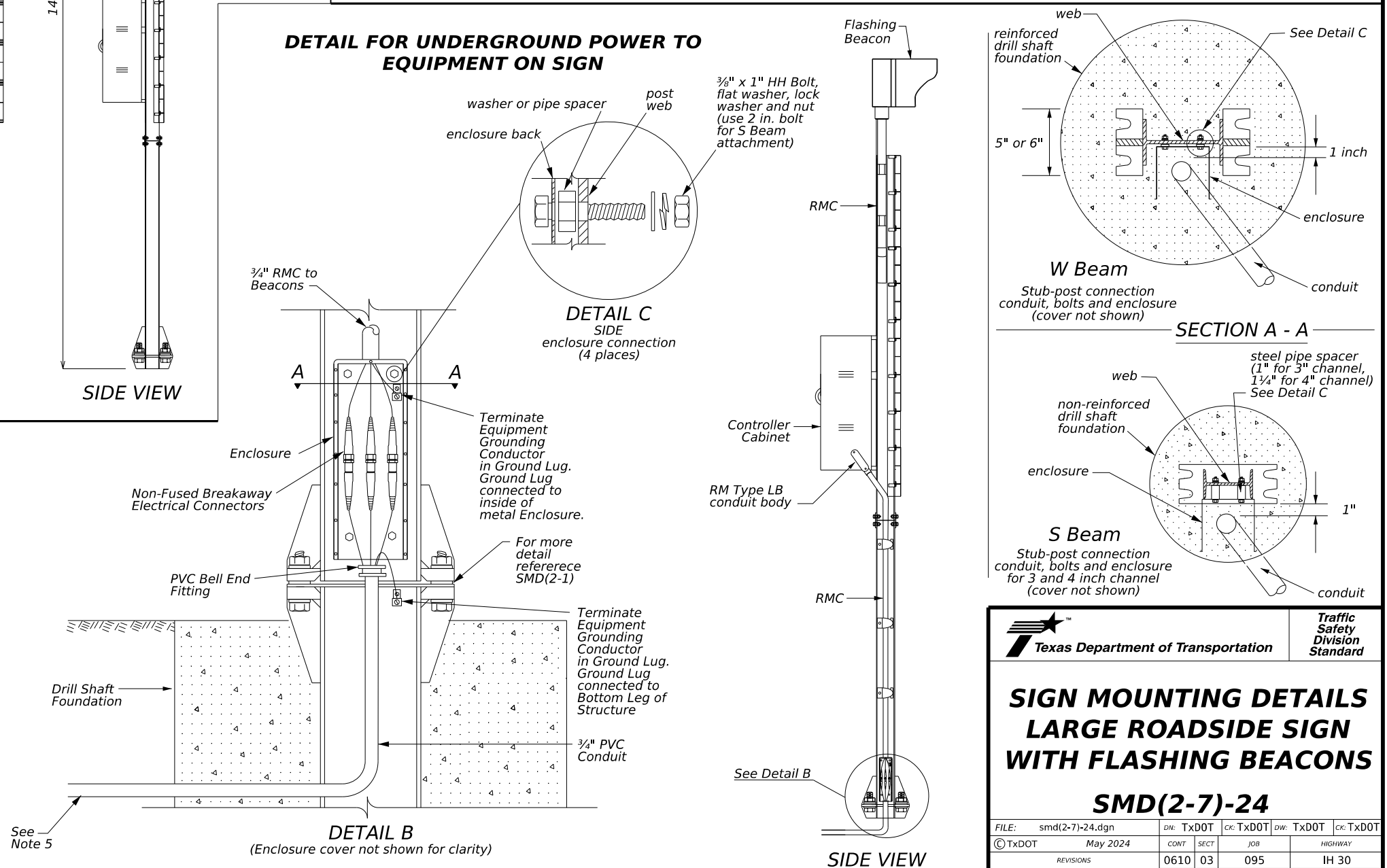
DETAIL FOR SOLAR PANEL POWER TO EQUIPMENT ON SIGN



GENERAL NOTES:

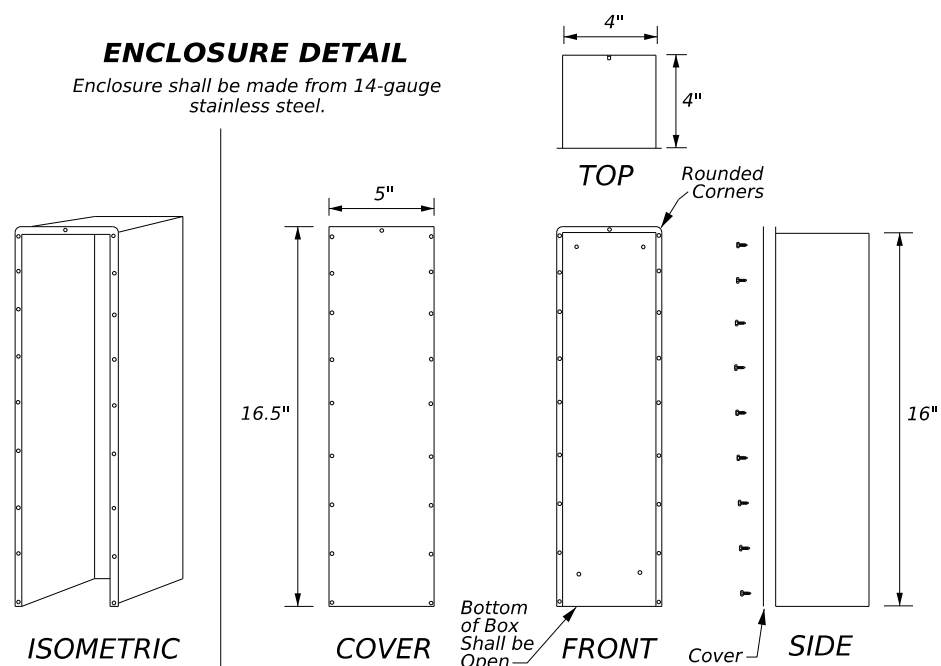
1. Install batteries for solar power system in the controller cabinet. Wire batteries according to manufacturer's recommendations. Provide the number of batteries, as required by the manufacturer.
2. Install LB conduit body and other conduit entries in the bottom third of the cabinet. See Detail A.
3. Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to the structure.
4. For underground power feed, install conduit and enclosure on the inside web of the support farthest from roadway.
5. See Electrical Details (ED) standard for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
6. Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, the solar panel shall be mounted a minimum of 14' above grade.
7. Mount antennas to provide the highest level of reliability between sending and receiving units.
8. Perform a path study, to determine the exact mounting location of antennas by the radio supplier.
9. Install antennas as detailed or as directed by the spread spectrum radio supplier.
10. Furnish mounting brackets for antennas attached to vertical pipe, as recommended by spread spectrum radio supplier.
11. Use 3/4" stainless steel banding material for installing antenna mounts.
12. Grade earthwork such that it is flush with the concrete footing. Slopes shall gradually contour to match plans.

DETAIL FOR UNDERGROUND POWER TO EQUIPMENT ON SIGN



ENCLOSURE DETAIL

Enclosure shall be made from 14-gauge stainless steel.



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Texas Department of Transportation Traffic Safety Division Standard

SIGN MOUNTING DETAILS LARGE ROADSIDE SIGN WITH FLASHING BEACONS

SMD(2-7)-24

FILE: smd(2-7)-24.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 2024	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
4-98 5-24	DIST	COUNTY	SHEET NO.	
11-98	ATL	TITUS	170	
11-01				

27G

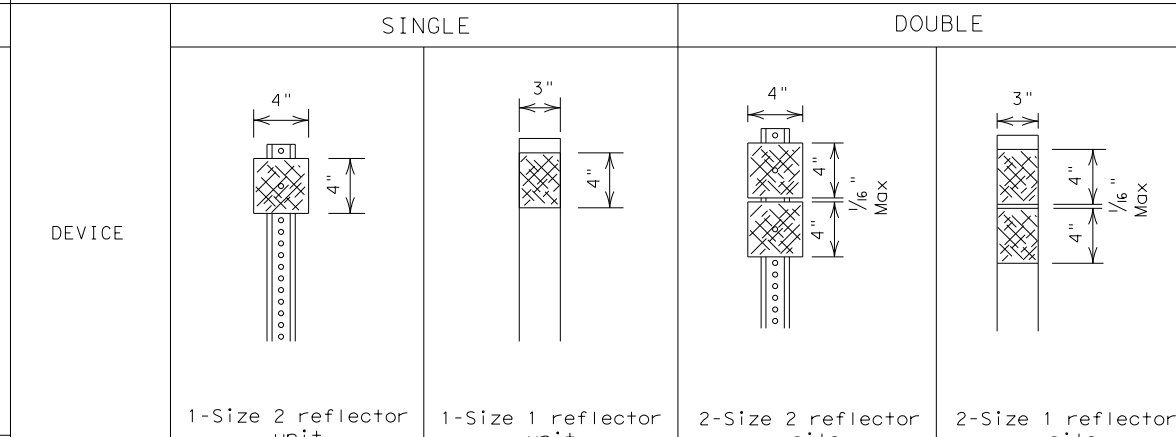
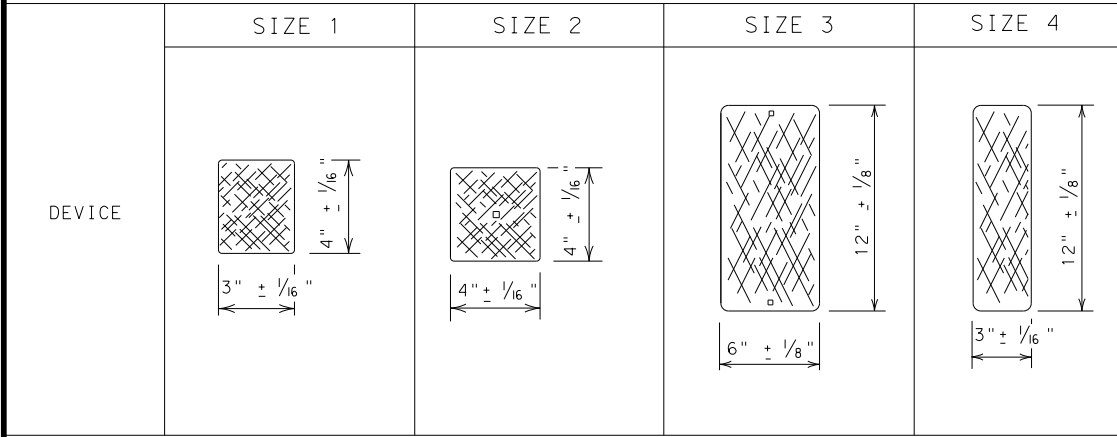
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REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

DELINEATORS

D & OM DESCRIPTIVE CODES



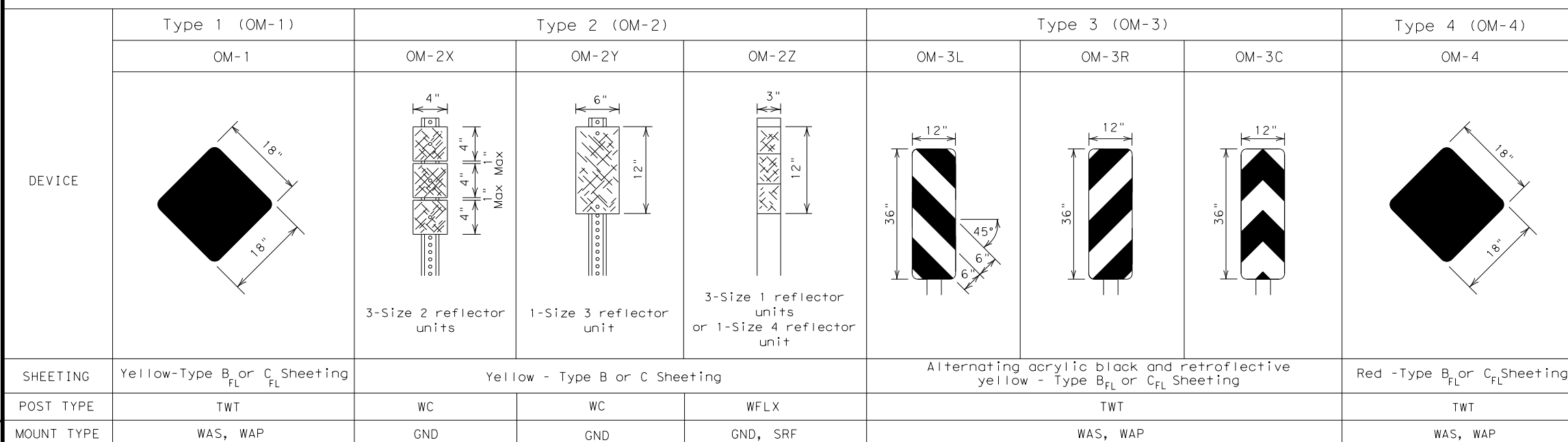
INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX (XX)
 NUMBER OF REFLECTORS
 S = Single
 D = Double
 COLOR OF REFLECTORS
 W = White
 Y = Yellow
 R = Red
 REFLECTOR UNIT SIZE
 1 or 2
 TYPE OF POST OR DELINEATOR
 WC = Wing Channel Post
 YFLX = Yellow Flexible Post
 WFLX = White Flexible Post
 BRF = Barrier Reflector
 TYPE OF MOUNT
 GND = Embedded (drivable or set in concrete)
 CTB = Concrete Barrier Mount
 GF1 or GF2 = Guard Fence Attachment
 SRF = Surface Mount

SHEETING Yellow, White or Red Type B or C reflective sheeting
NOTE
 1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx).
 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.

SHEETING Yellow, White or Red Type B or C Reflective Sheeting
POST TYPE WC, YFLX, WFLX
MOUNT TYPE GND, GND, SRF, GND, SRF

DIRECTION
 If Required
 BI = Bi-Directional
 BR = Bi-Directional with red on back
INSTL OM ASSM (OM-XX) (XXXX)XXX (XX)

OBJECT MARKERS



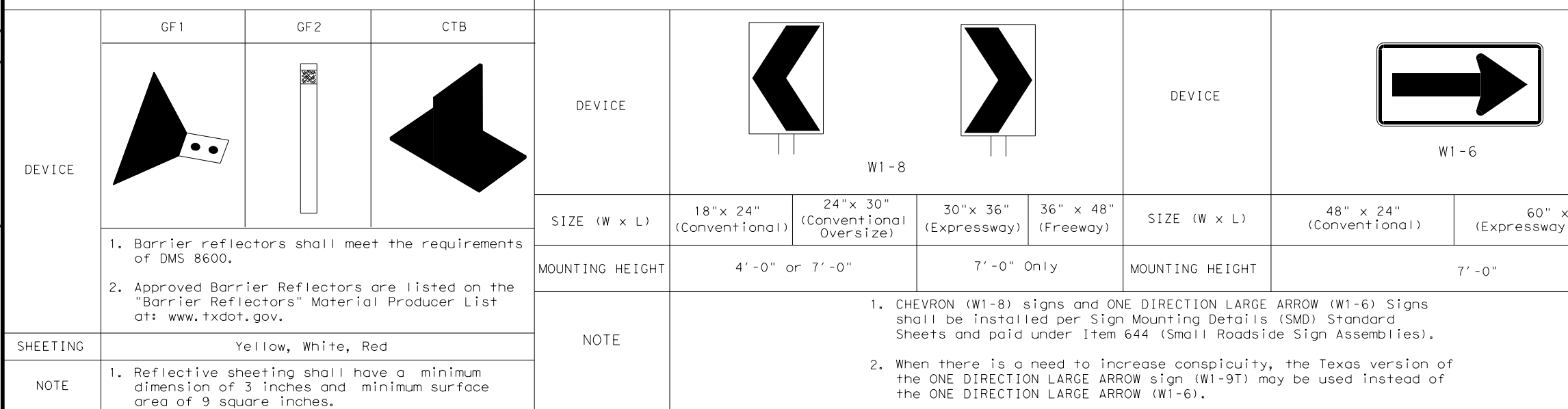
TYPE OF OBJECT MARKER 1, 2, 3, or 4
NUMBER OF REFLECTORS OR DIRECTION
 X = 3-Size 2 reflector units (Type 2 only)
 Y = 1-Size 3 reflector unit (Type 2 only)
 Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
 L = Left Side (Type 3 Object Marker only)
 R = Right Side (Type 3 Object Marker only)
 C = Center (Type 3 Object Marker only)
TYPE OF POST
 WC = Wing Channel Post
 WFLX = White Flexible Post
 TWT = Thin Walled Tubing
TYPE OF MOUNT
 GND = Embedded (drivable)
 SRF = Surface Mount
 WAS = Wedge Anchor Steel
 WAP = Wedge Anchor Plastic
DIRECTION
 If Required
 BI = Bi-Directional

DEPARTMENTAL MATERIAL SPECIFICATIONS	
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

CHEVRONS

ONE DIRECTION LARGE ARROW



NOTE:
 Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION D & OM(1)-20			
FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT
© TXDOT August 2004	CONT	SECT	JOB
REVISIONS	0610	03	095
10-09 3-15	DIST	COUNTY	SHEET NO.
4-10 7-20	ATL	TITUS	171

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POST TYPE AND SUPPORT FOUNDATION DETAILS

TYPE OF BARRIER MOUNTS

WING CHANNEL (WC)

FLEXIBLE POSTS (YFLX, WFLX)

WEDGE ANCHOR SYSTEMS

GUARD FENCE ATTACHMENT

GND

GND

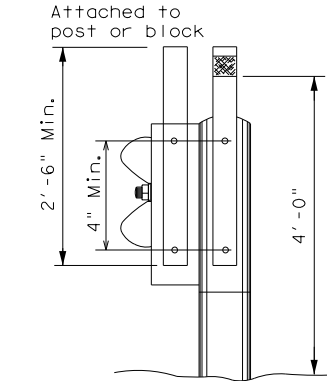
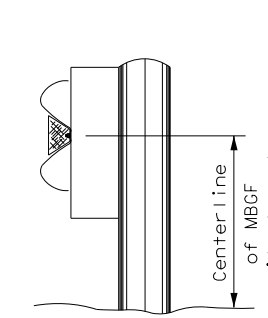
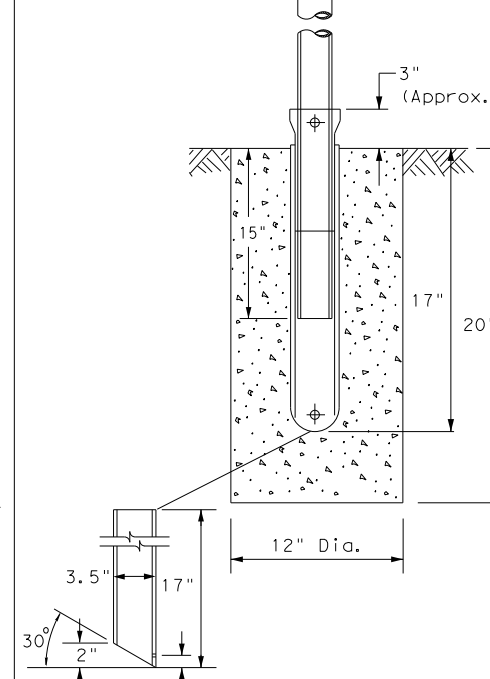
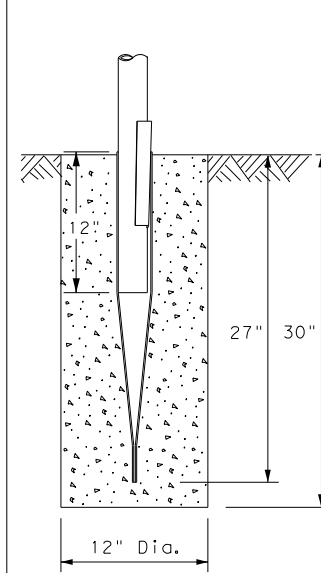
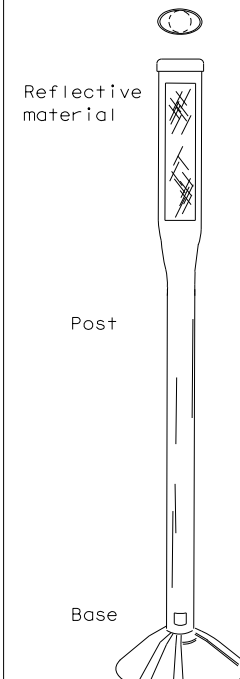
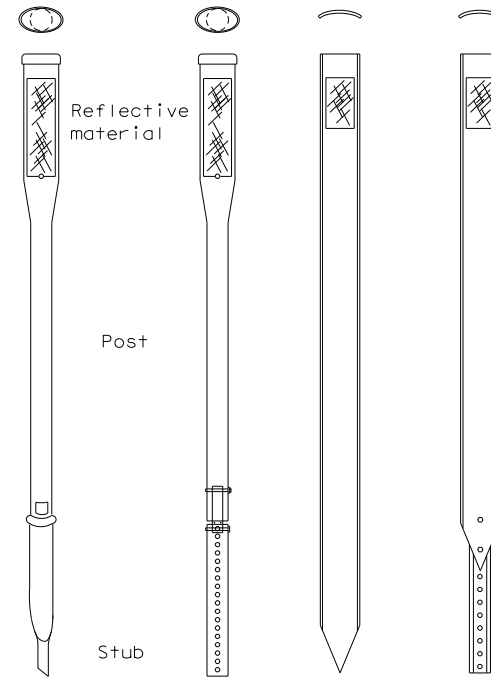
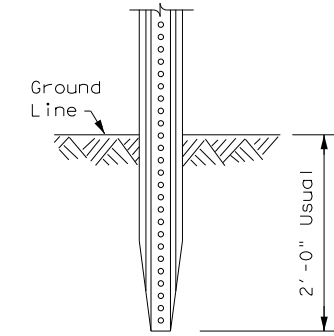
SRF

WAS

WAP

GF 1

GF 2



NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

NOTE

1. Install per manufacturer's recommendations.

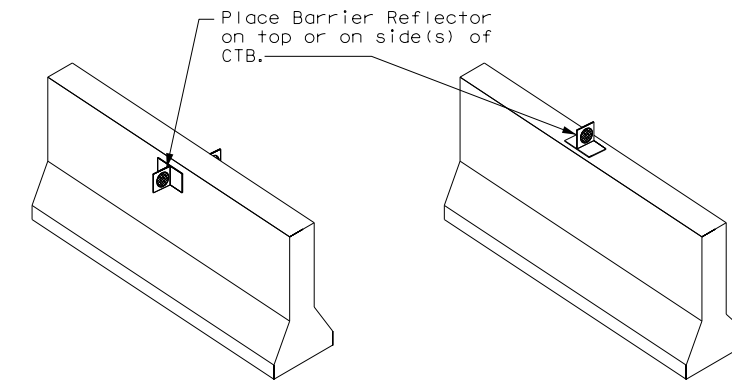
EMBEDDED

SURFACE MOUNT

STEEL

PLASTIC

CONCRETE TRAFFIC BARRIER (CTB)



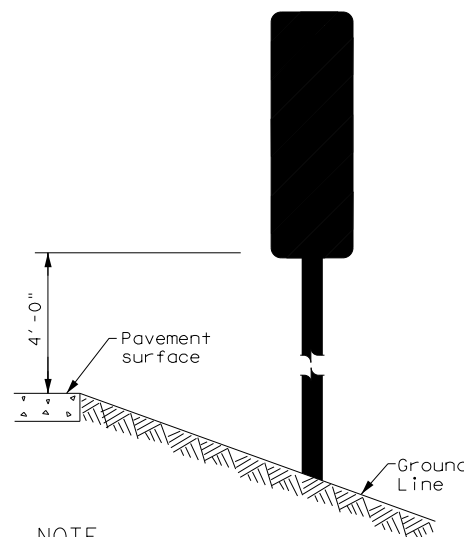
GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

TYPES 1,3, AND 4 OBJECT MARKERS AND CHEVRONS

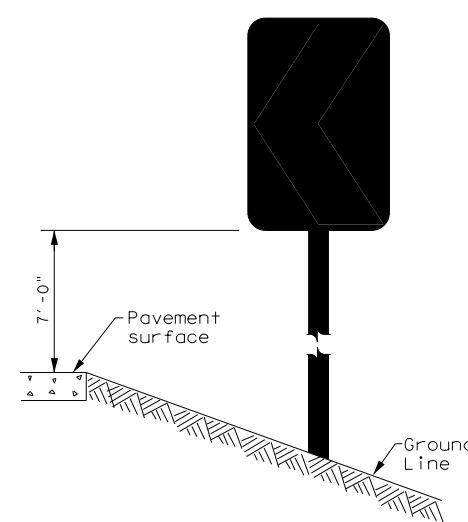
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN

DELINEATORS AND TYPE 2 OBJECT MARKERS



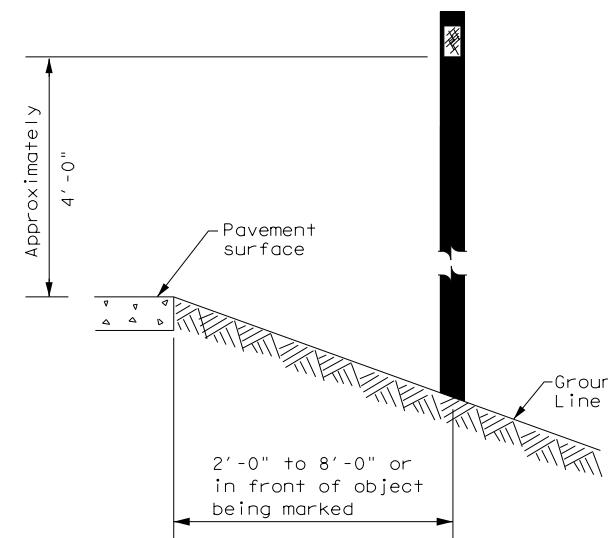
NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.



See general notes 1, 2 and 3.

		Traffic Safety Division Standard	
<p>DELINEATOR & OBJECT MARKER INSTALLATION</p> <p>D & OM(2)-20</p>			
FILE: dom2-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT August 2004	CONT	SECT	JOB
REVISIONS	0610	03	095
10-09 3-15	DIST	COUNTY	HIGHWAY
4-10 7-20	ATL	TITUS	IH 30
			SHEET NO. 172

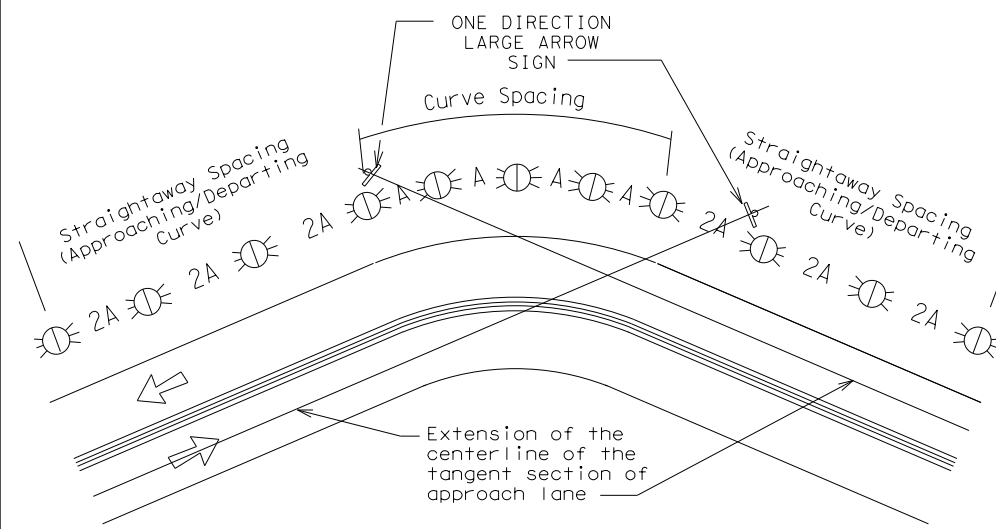
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 FILE: P:\116\35\04\Design\Civil\Standards\Signing\dom3-20.dgn

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	● RPMs	● RPMs
15 MPH & 20 MPH	● RPMs and One Direction Large Arrow sign	● RPMs and Chevrons; or ● RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	● RPMs and Chevrons; or ● RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	● RPMs and Chevrons

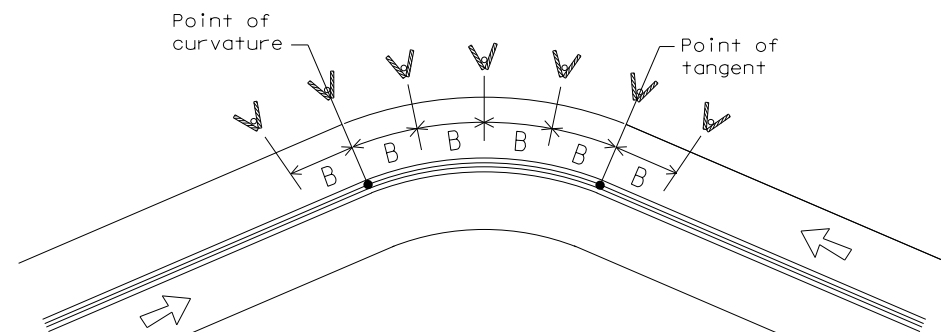
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN				
Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN			
Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp. Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete) and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100' max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100' max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

- Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
- Barrier reflectors may be used to replace required delineators.
- Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign



DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

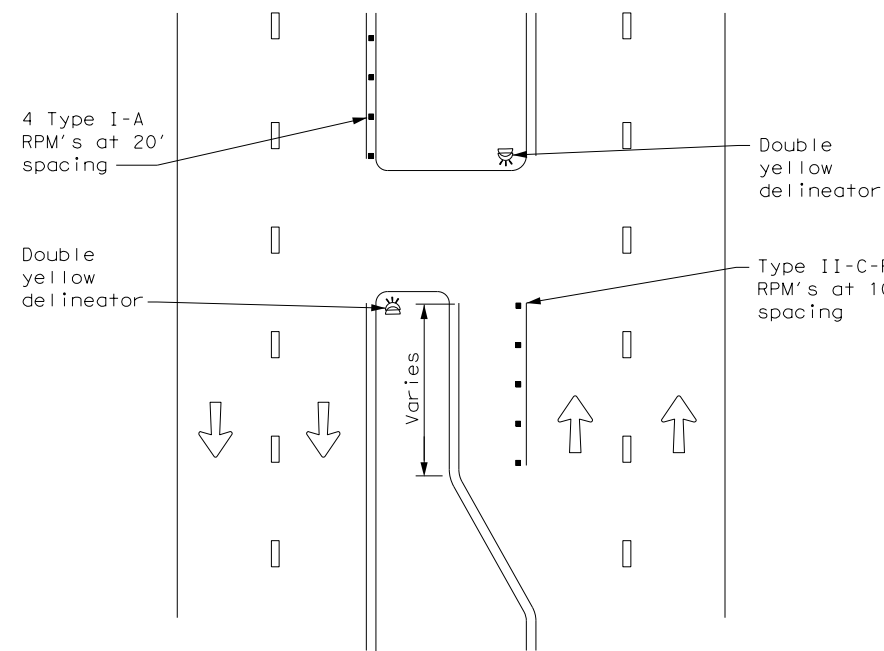
D & OM(3) -20

FILE: dom3-20.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT	CR: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
3-15 8-15	DIST	COUNTY	SHEET NO.	
8-15 7-20	ATL	TITUS	173	

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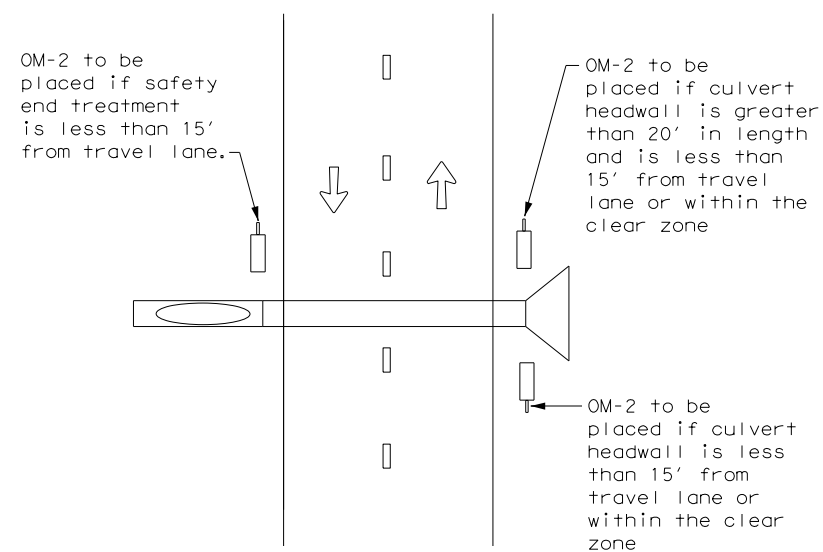
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CROSSOVERS



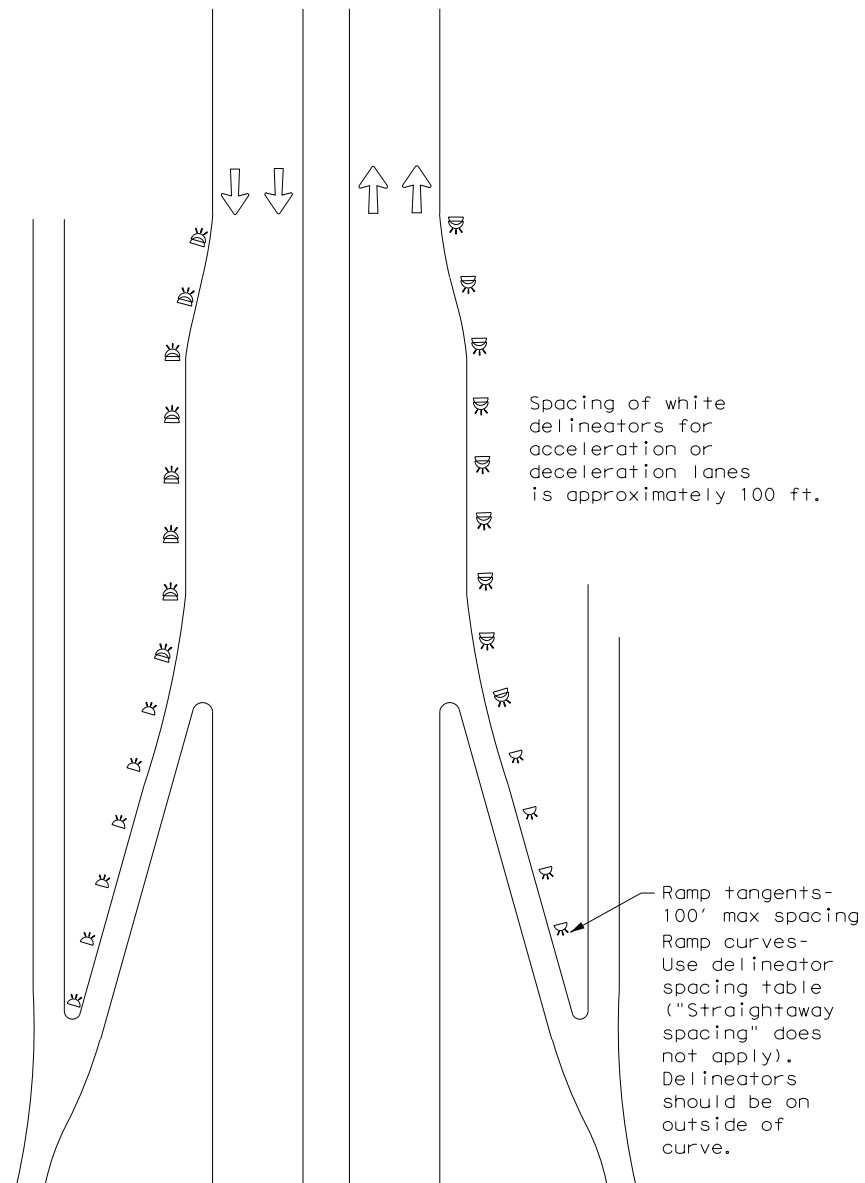
DETAIL 1

FOR CULVERTS WITHOUT MBGF



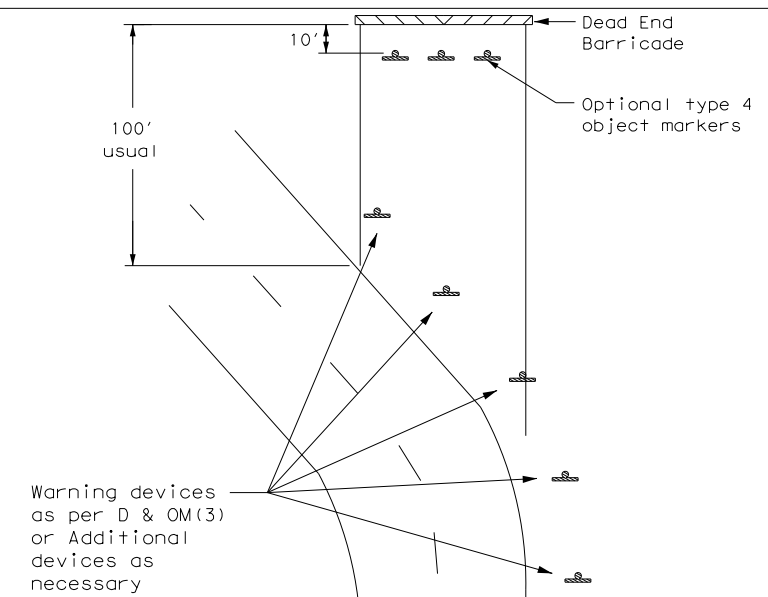
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



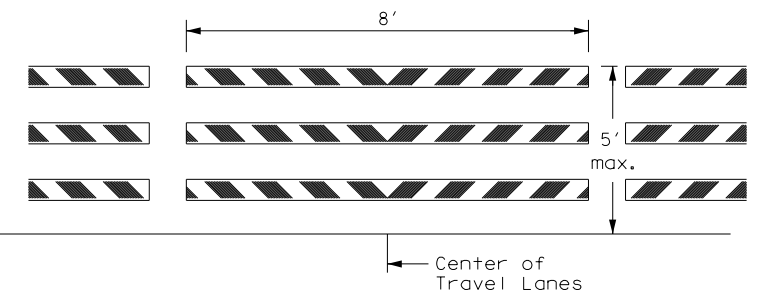
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

- Barricade striping shall be red and white reflective sheeting for all permanent road closures.
- Barricade striping is red and white sloping toward the center of the roadway.
- Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

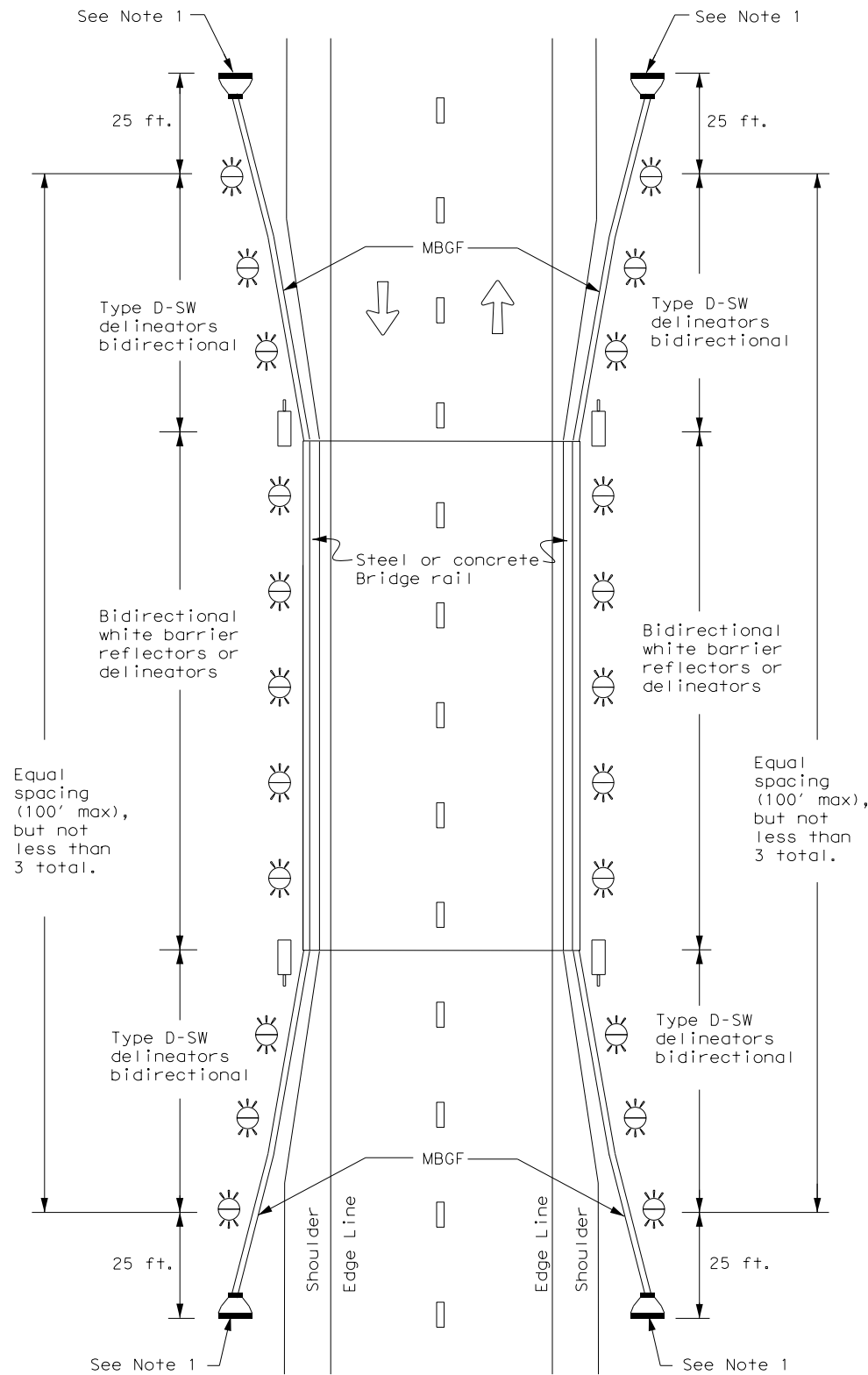


DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4) - 20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CR: TXDOT
© TXDOT August 2004	CONT	SECT	JOB	HIGHWAY
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3-15	DIST	COUNTY	SHEET NO.	
7-20	ATL	TITUS	174	

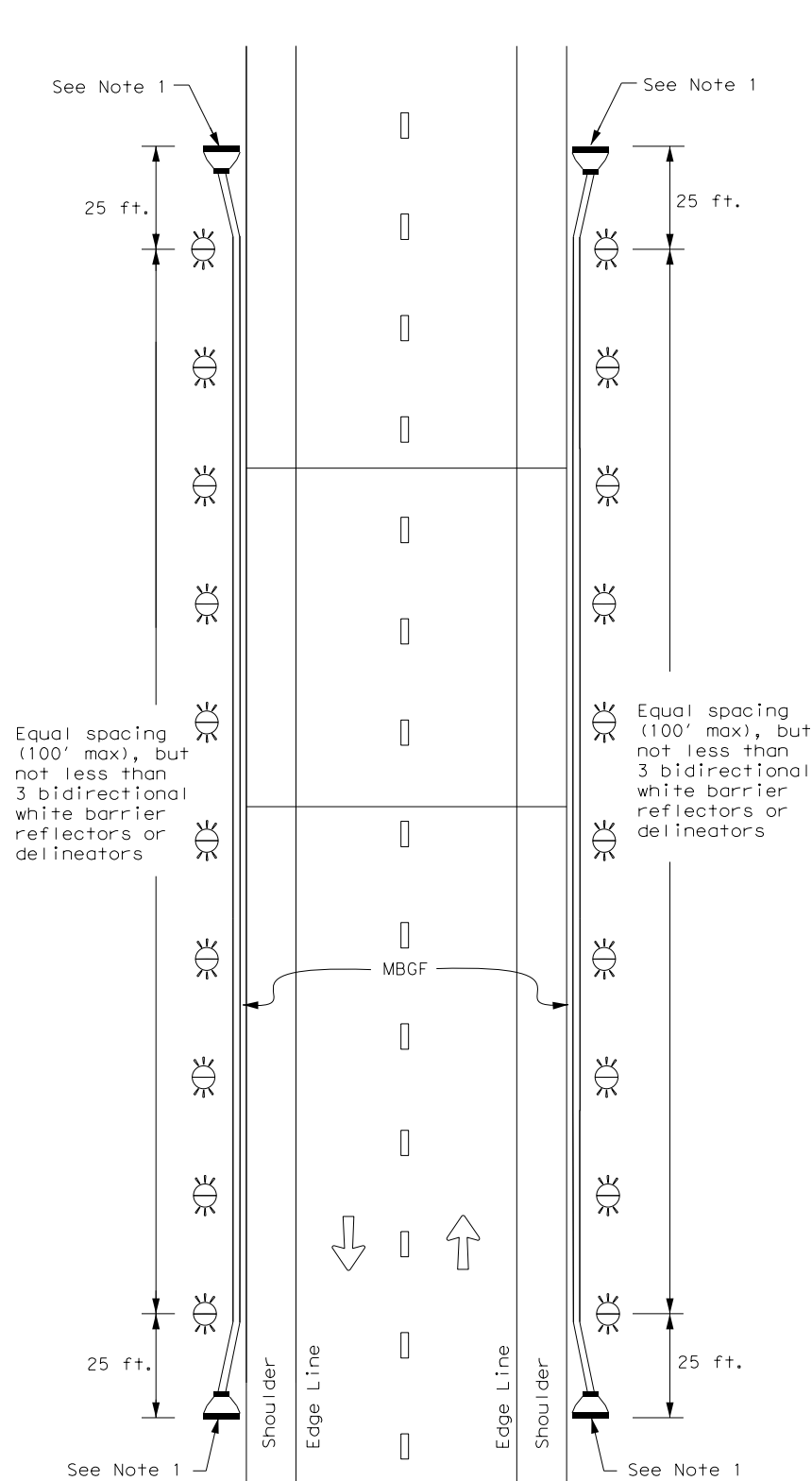
**TWO-WAY, TWO LANE ROADWAY
WITH REDUCED WIDTH APPROACH RAIL**



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

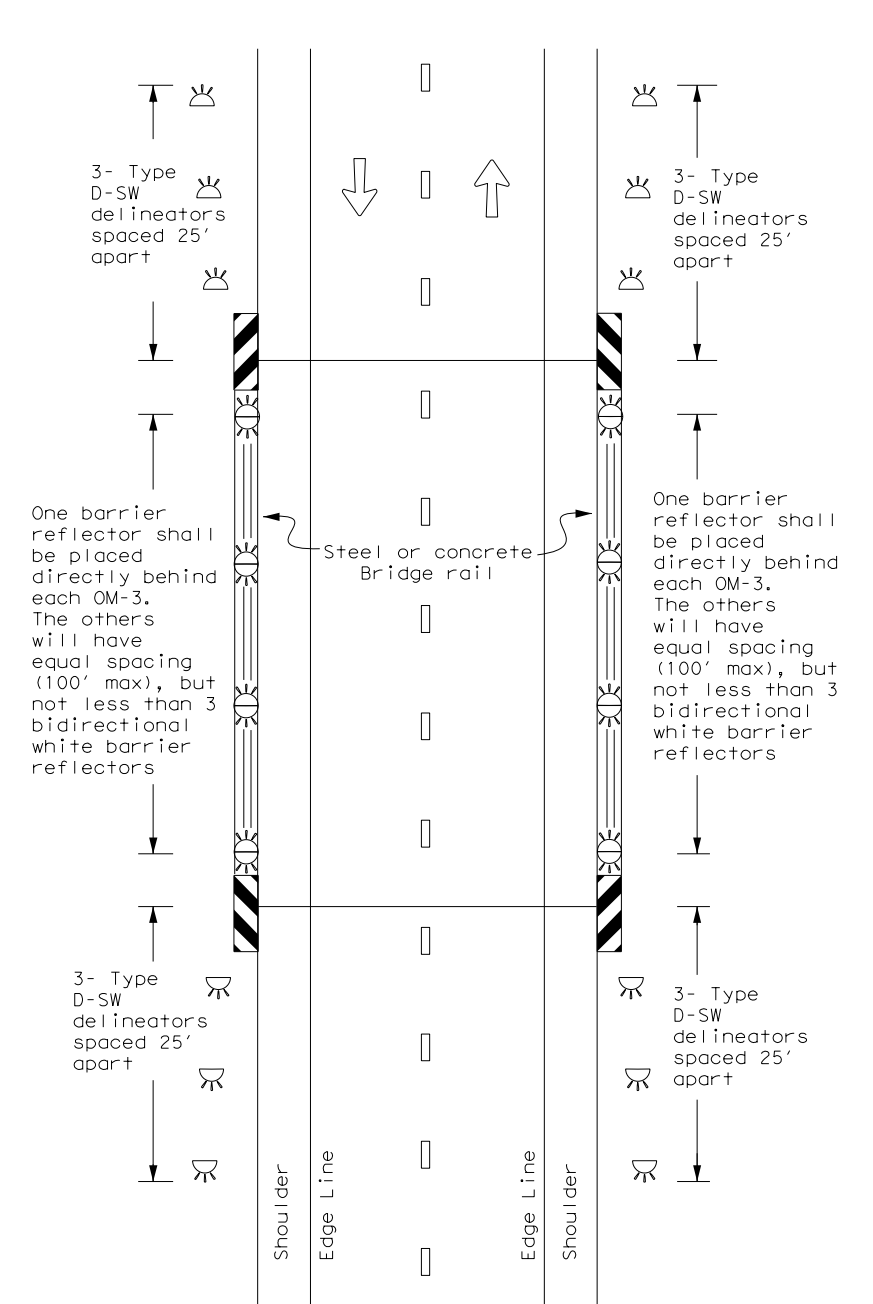
**TWO-WAY, TWO LANE ROADWAY
WITH METAL BEAM GUARD FENCE (MBGF)**



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

**TWO-WAY, TWO LANE ROADWAY
BRIDGE WITH NO APPROACH RAIL**



LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation
Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5) - 20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
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	ATL	TITUS	175	

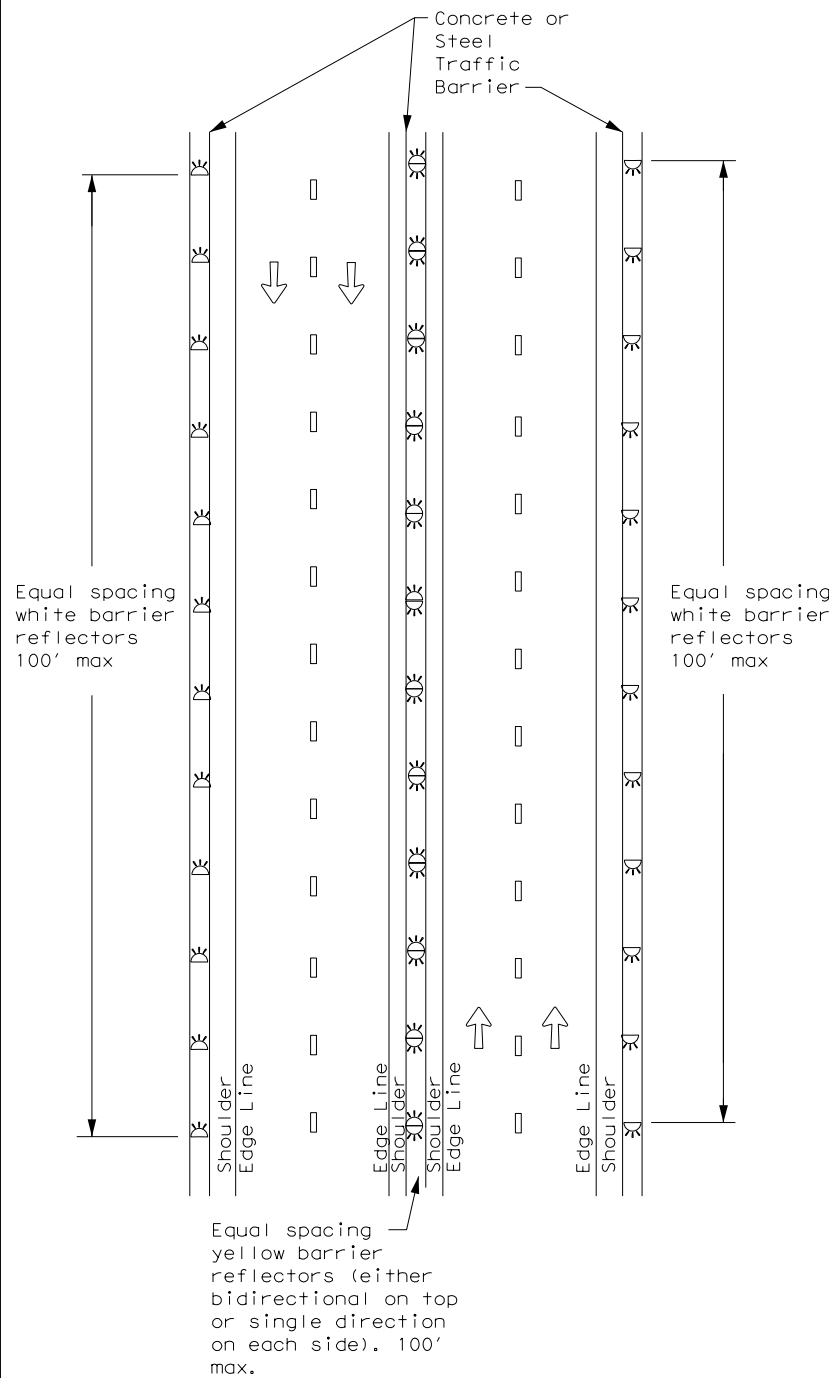
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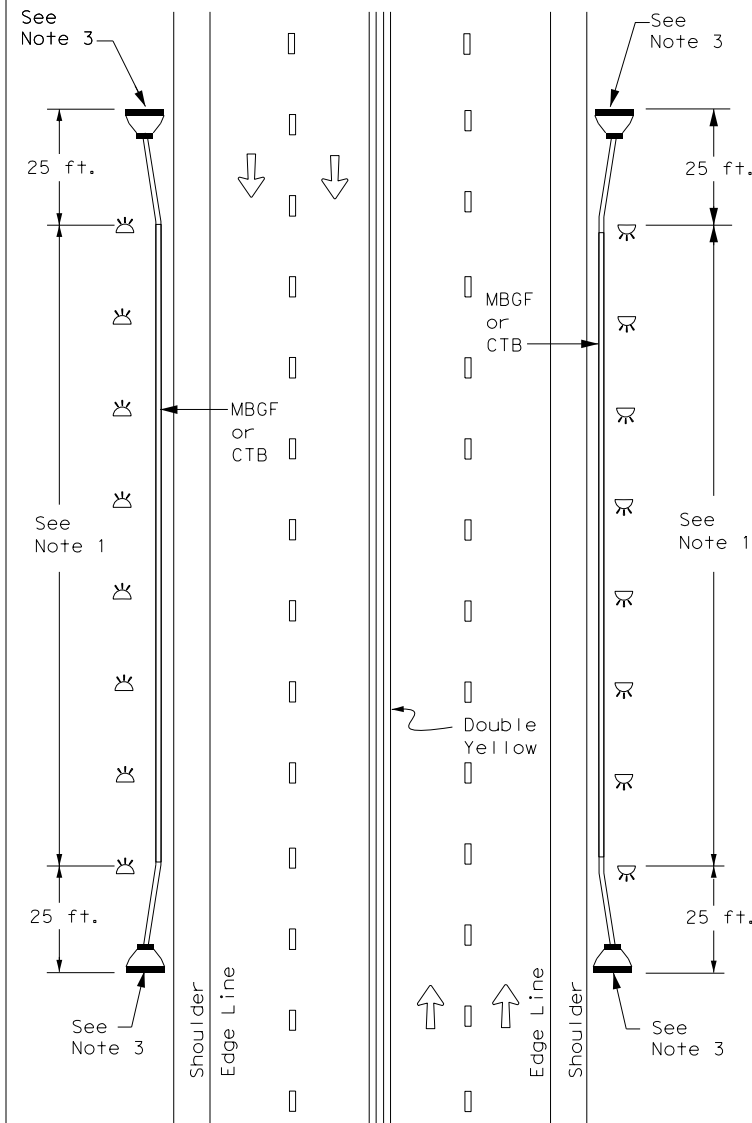
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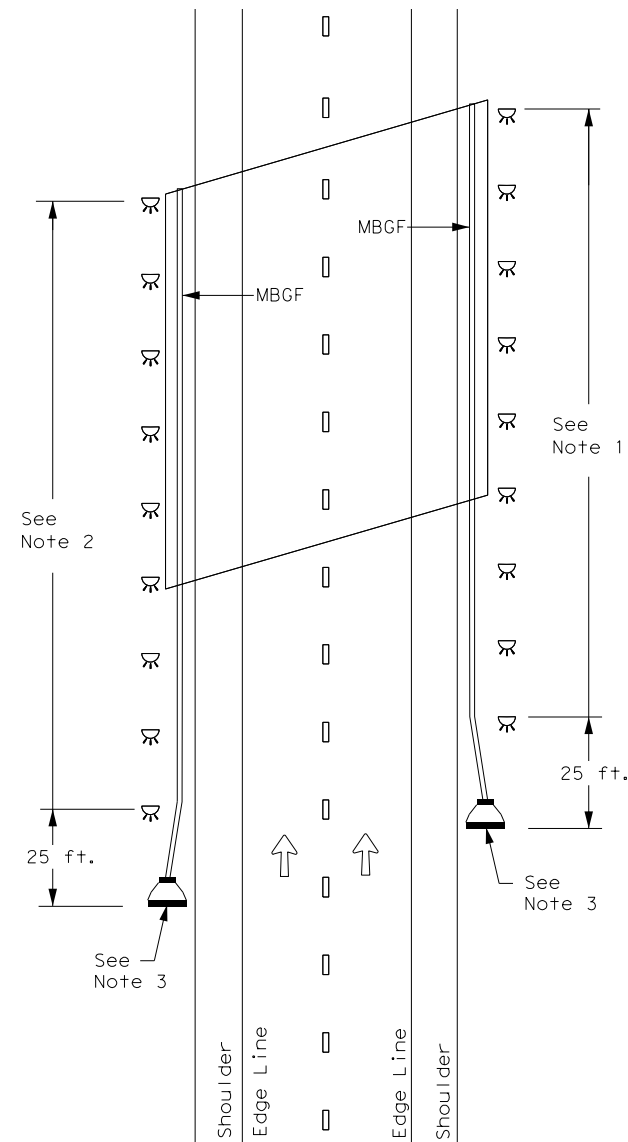
CONTINUOUS CONCRETE OR STEEL BARRIER



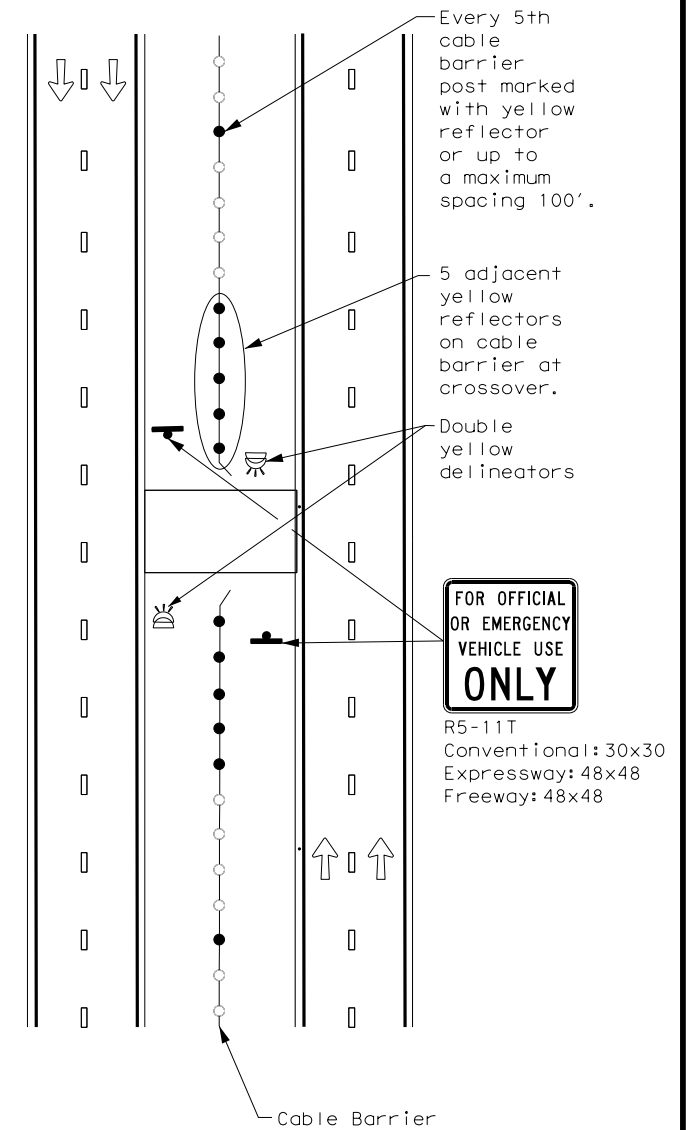
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



EMERGENCY CROSSOVER



NOTES

1. Equal spacing (100' max), but not less than 3 single directional white barrier reflectors or delineators. On Continuous Barrier, equal spacing (100' max.)
2. Equal spacing (100' max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow

Texas Department of Transportation
 Traffic Safety Division Standard

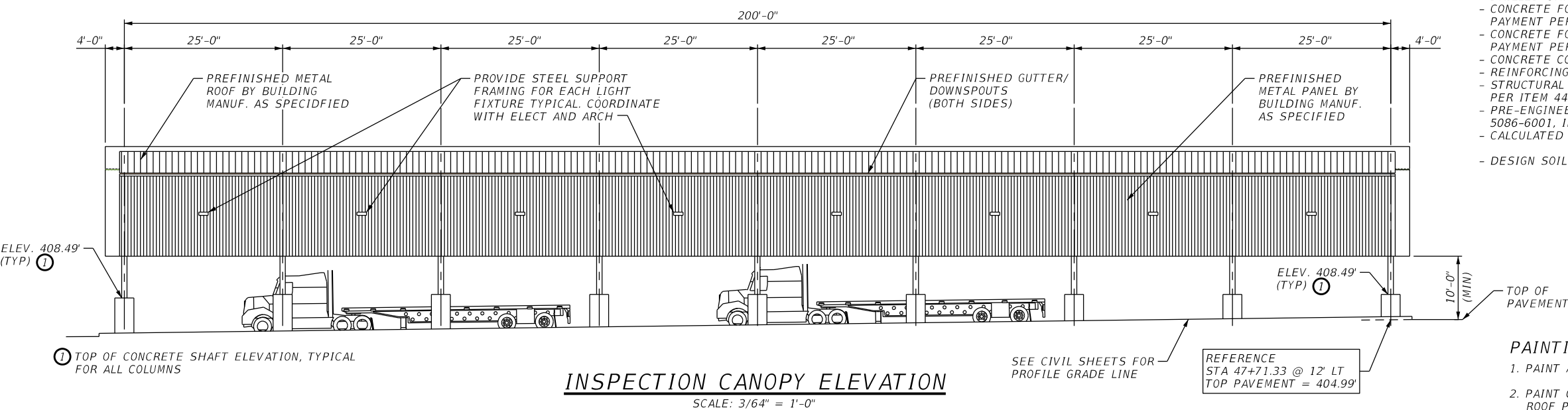
DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(6) - 20

FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
7-20	0610	03	095	IH 30
	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	176	

Plotted on: 3/11/2024

Design File name: S:\Transportation\19-204C TxDOT-PD IH30 CMV Inspection Facility\CAD\01-Sheets\Inspection Canopy - 1.dgn



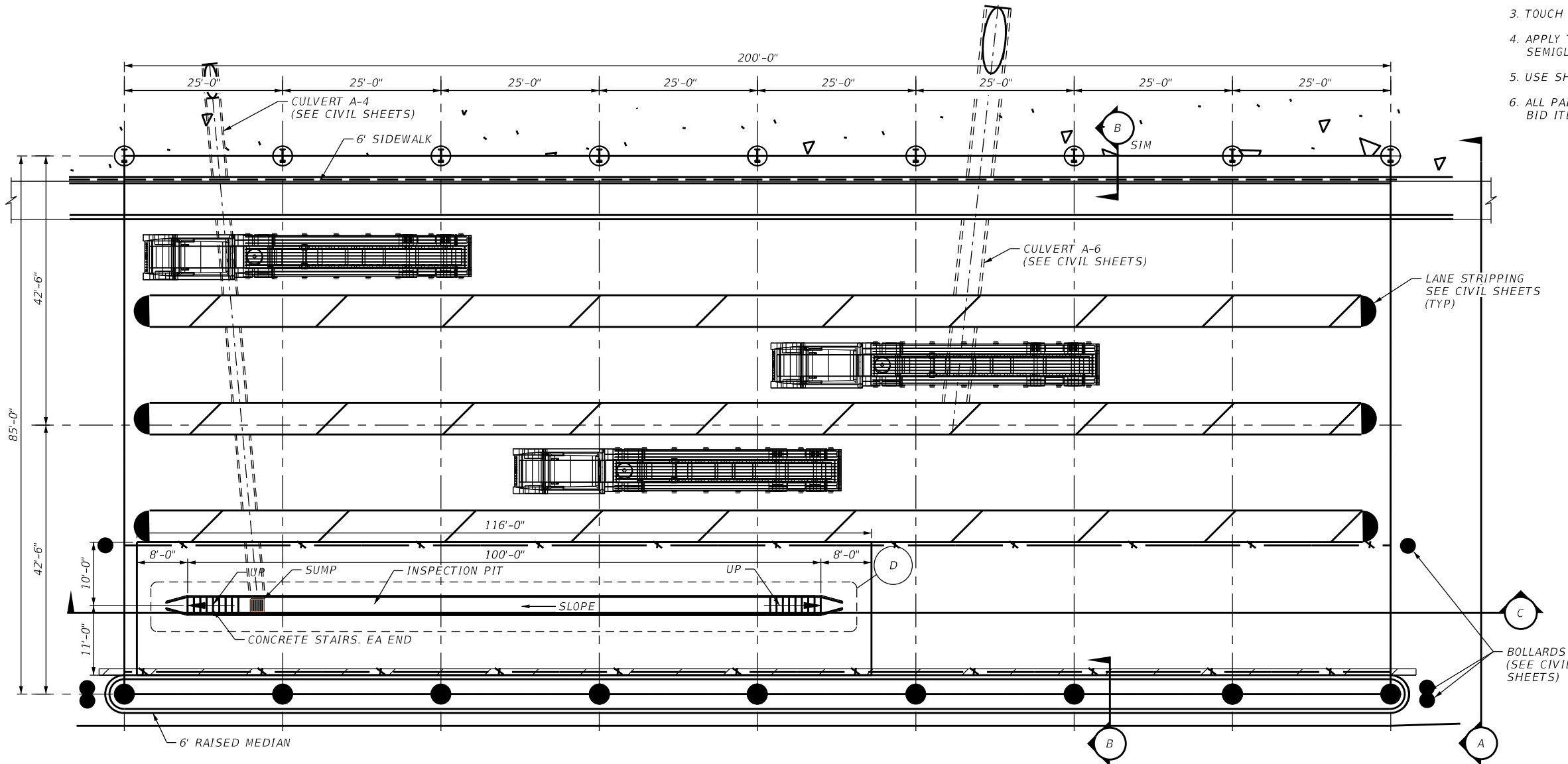
INSPECTION CANOPY ELEVATION

SCALE: 3/64" = 1'-0"

- GENERAL NOTES:**
- DRILLED SHAFT PER ITEM 416, INCLUDING PAYMENT
 - CONCRETE FOR COLUMNS SHALL BE CLASS "C" PER ITEM 421, PAYMENT PER ITEM 420.
 - CONCRETE FOR PIT SHALL BE CLASS "K" PER ITEM 421, PAYMENT PER ITEM 420.
 - CONCRETE CONSTRUCTION PER ITEM 420
 - REINFORCING SHALL BE GR. 60, PER ITEM 440
 - STRUCTURAL STEEL AND OTHER METALS USED FOR THE CONSTRUCTION PER ITEM 441 AND ITEM 442, PAYMENT PER ITEM 442
 - PRE-ENGINEERED METAL CANOPY PER SPECIAL SPECIFICATION 5086-6001, INCLUDING PAYMENT. DESIGN ROOF LIVE LOAD: 20 psf
 - CALCULATED FOUNDATION LOADS: 32 TONS/DRILLED SHAFT VERTICAL, 14 TONS/DRILLED SHAFT LATERAL
 - DESIGN SOIL BEARING CAPACITY 3,000 PSF (FOOTING ON FLOWABLE FILL), 2,500 PSF (FOOTING ON 5' MIN. SELECT FILL)

CLASS "K" CONCRETE
 MIN f'c = 4000 psi
 MAX w/c RATIO = 0.40
 COARSE AGGR. GRADE 2-5
 CEMENT TYPES = 1/II
 MIX DESIGN: 1-8

- PAINTING NOTES:**
1. PAINT ALL EXPOSED SHOP STEEL STRUCTURES.
 2. PAINT COLUMNS AND PURLINS BEFORE INSTALLING ROOF PANELS AND SIDING.
 3. TOUCH UP STEEL STRUCTURE AS NEEDED WITH PRIMER.
 4. APPLY TWO COLOR COATS OF LOW VOC ALKYD ENAMEL, SEMIGLOSS.
 5. USE SHERWIN WILLIAMS (INDUSTRIAL GRADE) OR EQUIVALENT.
 6. ALL PAINTING IS SUBSIDIARY TO METAL BUILDING/CANOPY BID ITEM.



INSPECTION CANOPY FOUNDATION PLAN

SCALE: 3/64" = 1'-0"

90% SUBMITTAL
 DOCUMENT INCOMPLETE: NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: SIDNEY A. MIELKE, P.E.
 P.E. SERIAL No. 60799
 DATE: 3-5-2024

REV. NO.	DATE	DESCRIPTION	BY

STRUCTURAL ENGINEERING ASSOCIATES
 TEXAS REGISTERED ENGINEERING FIRM #499

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

Texas Department of Transportation
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WB IH 30 CMV STATION

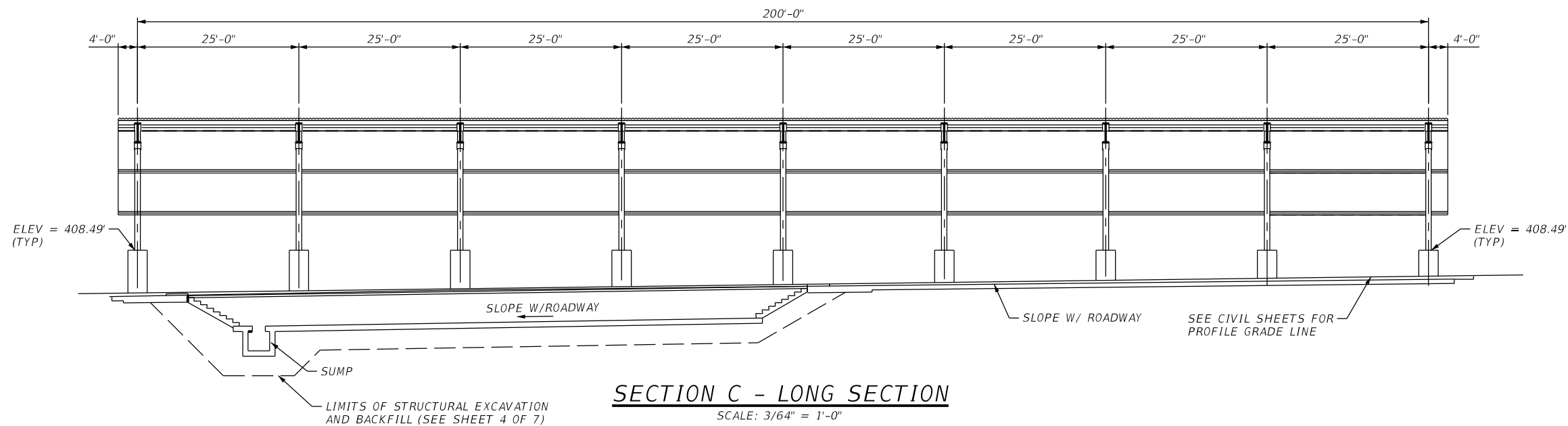
PRE-ENGINEERED METAL INSPECTION CANOPY PLAN AND ELEVATION

SHEET 1 OF 7

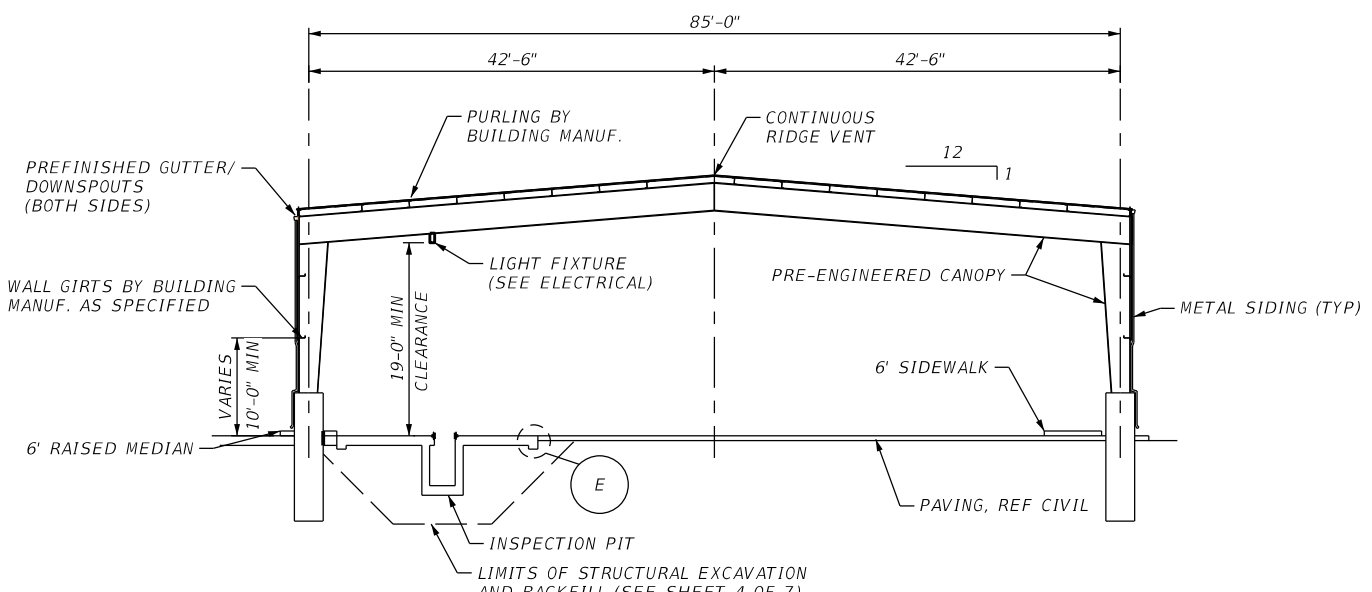
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ATL	6	TEXAS	0610 03	IH 30	
DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
ATL	TITUS	0610	03	095	177

Plotted on: 3/6/2024

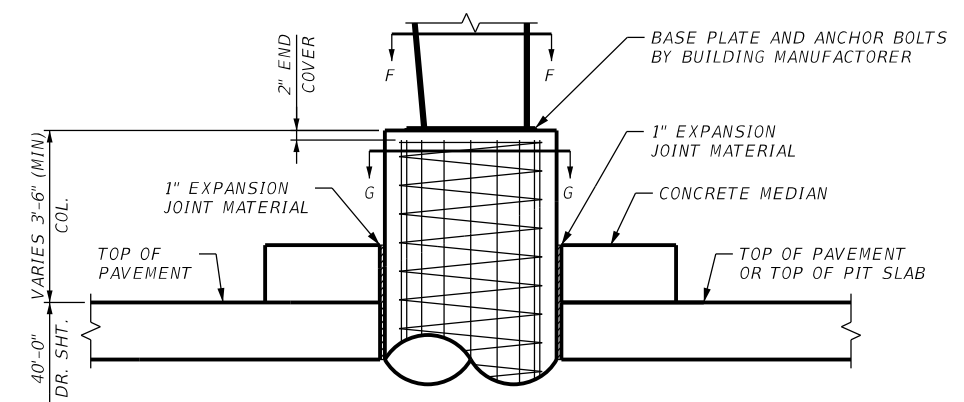
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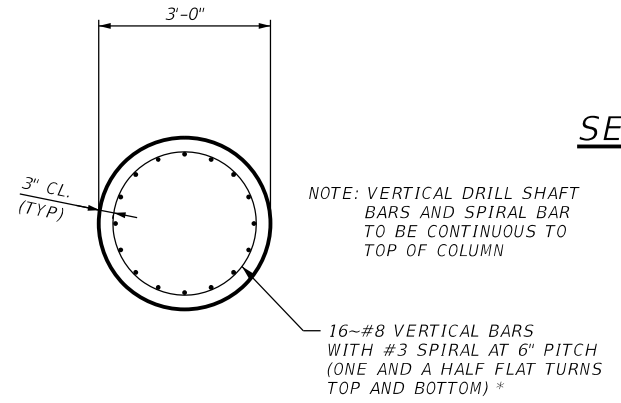
SECTION C - LONG SECTION
SCALE: 3/64" = 1'-0"



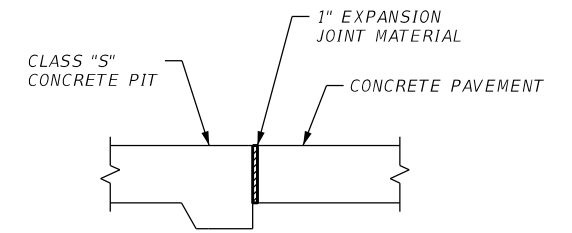
SECTION A - INSPECTION CANOPY SECTION
SCALE: 3/64" = 1'-0"



SECTION B - COLUMN TO PIER DETAIL
SCALE: 3/8" = 1'-0"



SECTION G-G
SCALE: 3/8" = 1'-0"



SECTION E - PIT TO PAVEMENT JOINT
SCALE: 3/8" = 1'-0"

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DOCUMENT INCOMPLETE: NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SIDNEY A. MIELKE, P.E.
P.E. SERIAL NO.: 60799
DATE: 3-5-2024

REV. NO.	DATE	DESCRIPTION	BY

STRUCTURAL ENGINEERING ASSOCIATES
TEXAS REGISTERED ENGINEERING FIRM #499

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

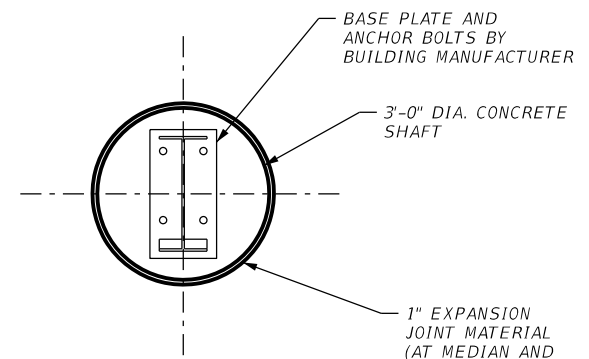
Texas Department of Transportation
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WB IH 30 CMV STATION

PRE-ENGINEERED METAL INSPECTION CANOPY DETAILS

SHEET 2 OF 7

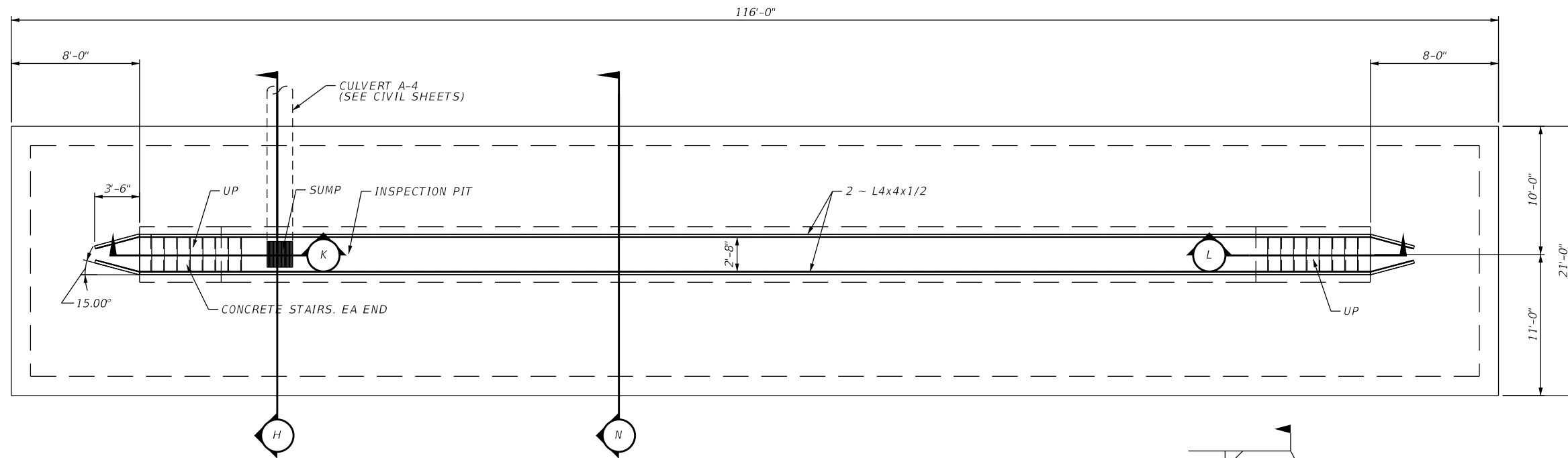
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ATL	6	TEXAS		IH 30
DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.
ATL	TITUS	0610	03	095



SECTION F-F
SCALE: 3/8" = 1'-0"

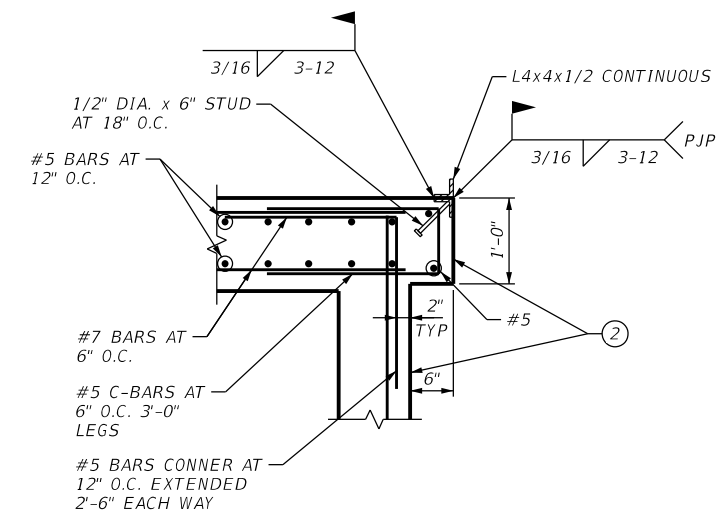
Plotted on: 3/6/2024

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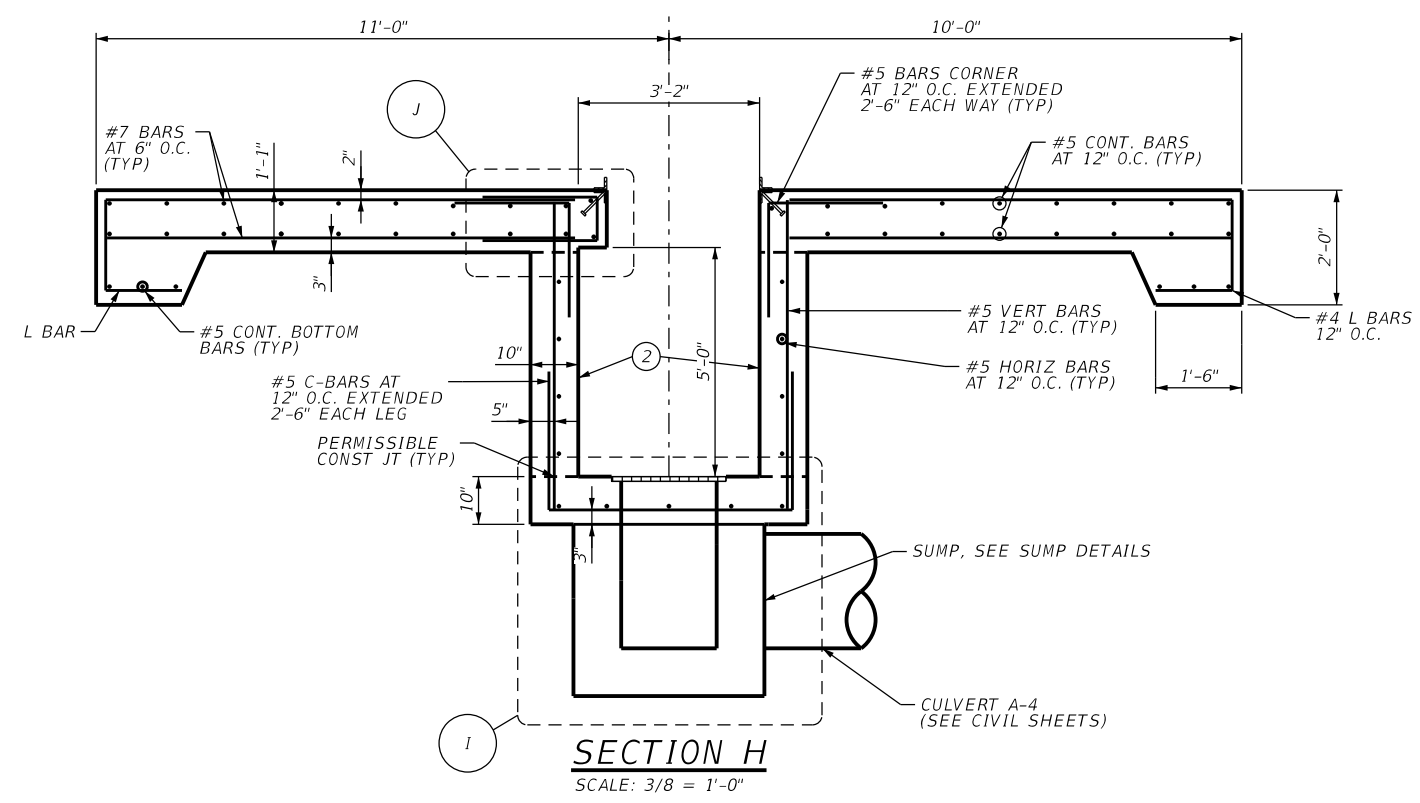


DETAIL D - INSPECTION PIT PLAN
SCALE: 3/64" = 1'-0"

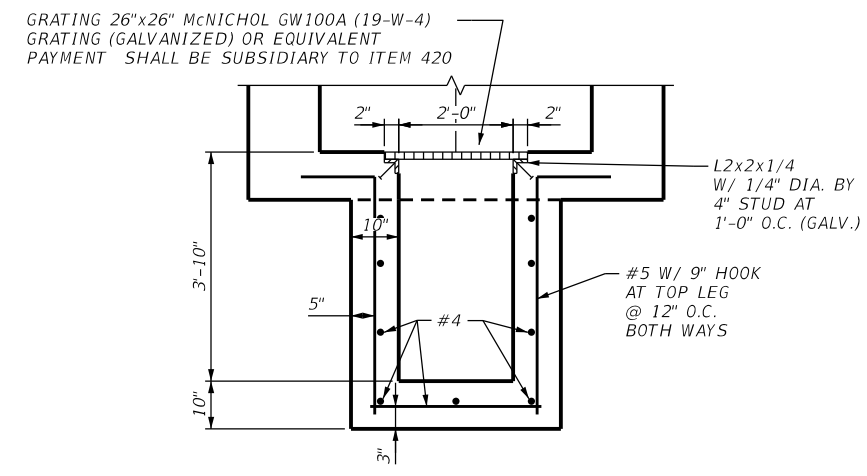
- ① PAINT EXPOSED STR. STEEL SURFACES PER ITEM 446, SYSTEM II. PROVIDE APPEARANCE COAT FEDERAL STANDARD 595C COLOR 13591 (YELLOW). COST TO BE SUBSIDIARY TO ITEM 442.
- ② PAINT EXPOSED VERTICAL SURFACES OF INSPECTION PIT PER ITEM 427, CONCRETE PAINT PROVIDE APPEARANCE COAT FEDERAL STANDARD 595C COLOR 27925 (WHITE). COST TO BE SUBSIDIARY TO ITEM 420.



DETAIL J
SCALE: 3/8" = 1'-0"



SECTION H
SCALE: 3/8" = 1'-0"



DETAIL I - SUMP DETAILS
SCALE: 3/8" = 1'-0"

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DOCUMENT INCOMPLETE: NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SIDNEY A. MIELKE, P.E.
P.E. SERIAL No. 60799
DATE: 3-5-2024

REV. NO.	DATE	DESCRIPTION	BY

STRUCTURAL ENGINEERING ASSOCIATES
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TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

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WB IH 30 CMV STATION

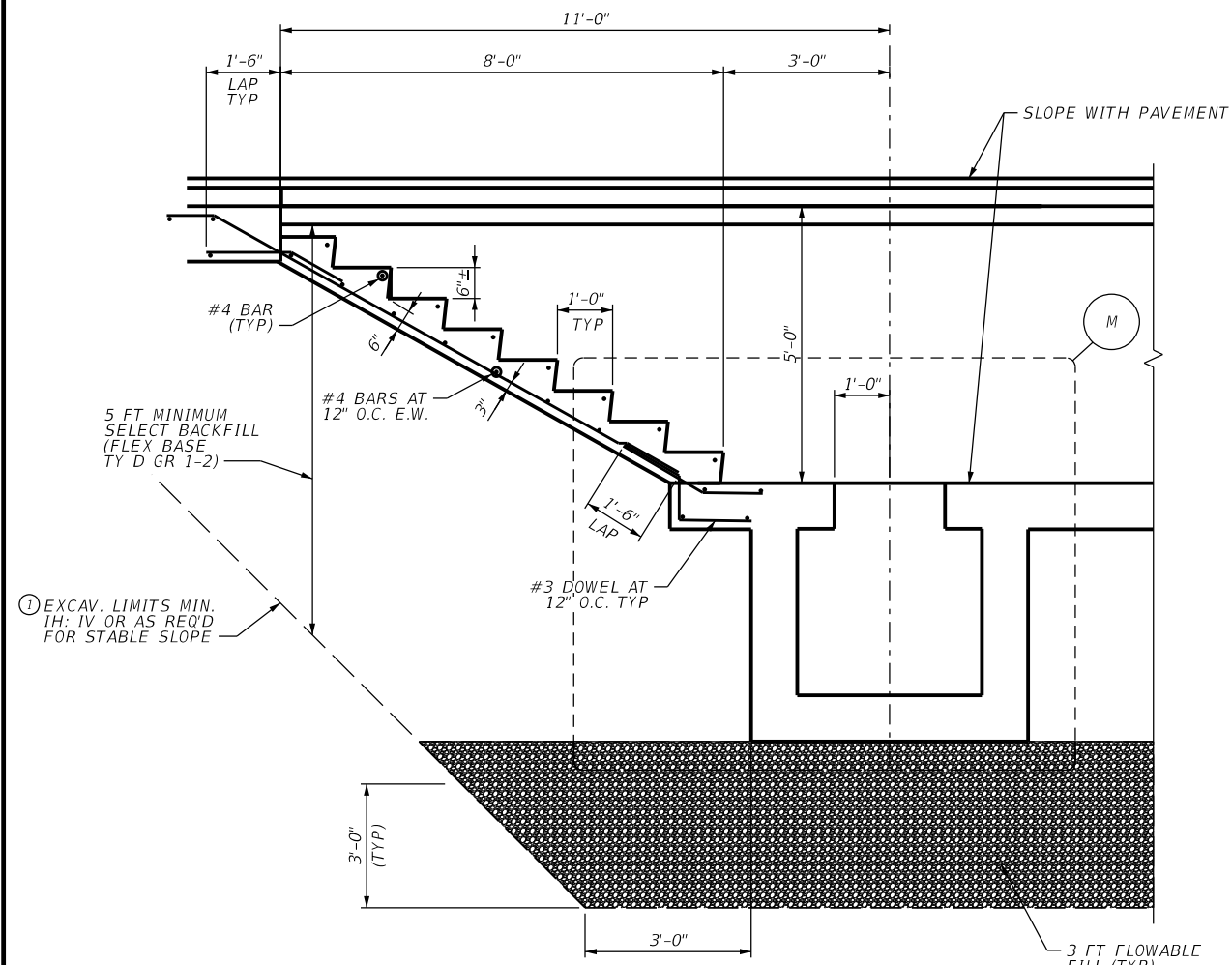
PRE-ENGINEERED METAL INSPECTION CANOPY INSPECTION PIT DETAILS

SHEET 3 OF 7

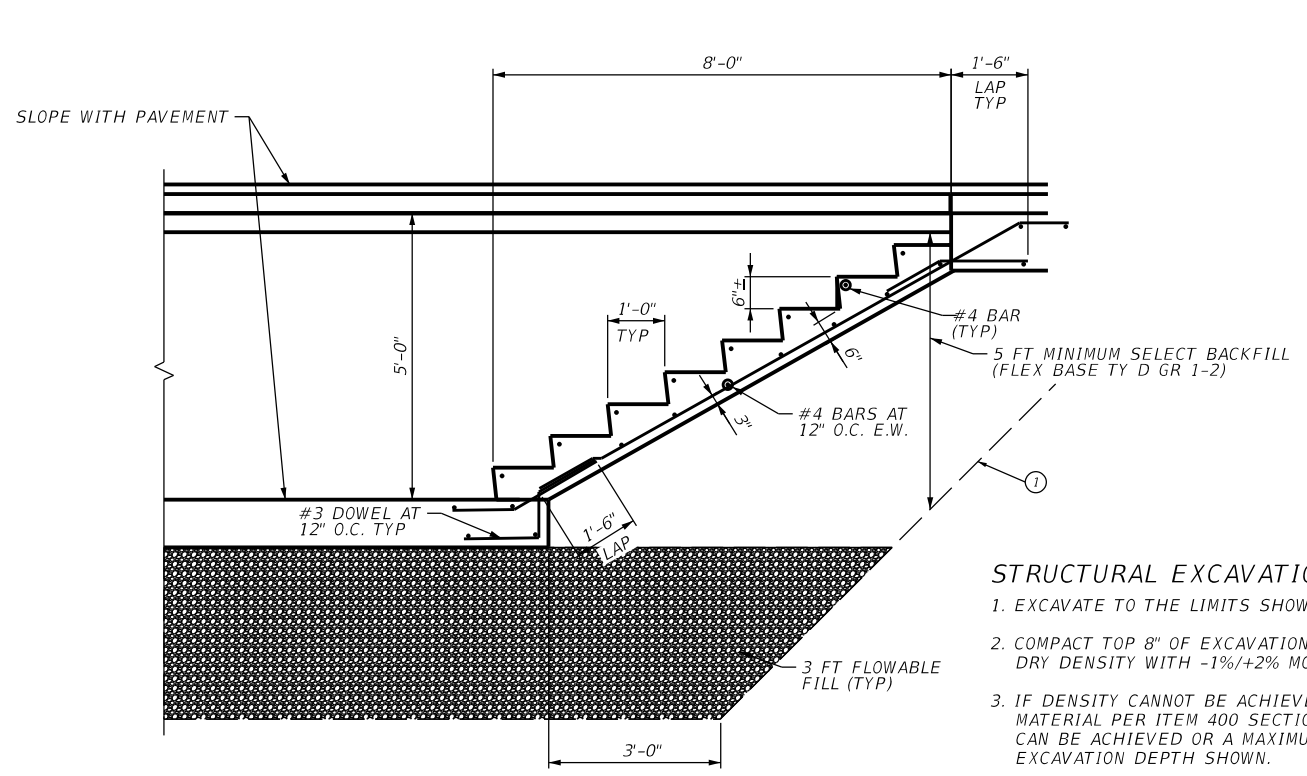
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ATL	6	TEXAS		IH 30
DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.
ATL	TITUS	0610	03	095
DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.
ATL	TITUS	0610	03	095
DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.
ATL	TITUS	0610	03	095

Plotted on: 3/6/2024

Design File name: S:\Transportation\19-204C TxDOT-PD IH30 CMV Inspection Facility\CAD\01-Sheets\Inspection Canopy - 4.dgn



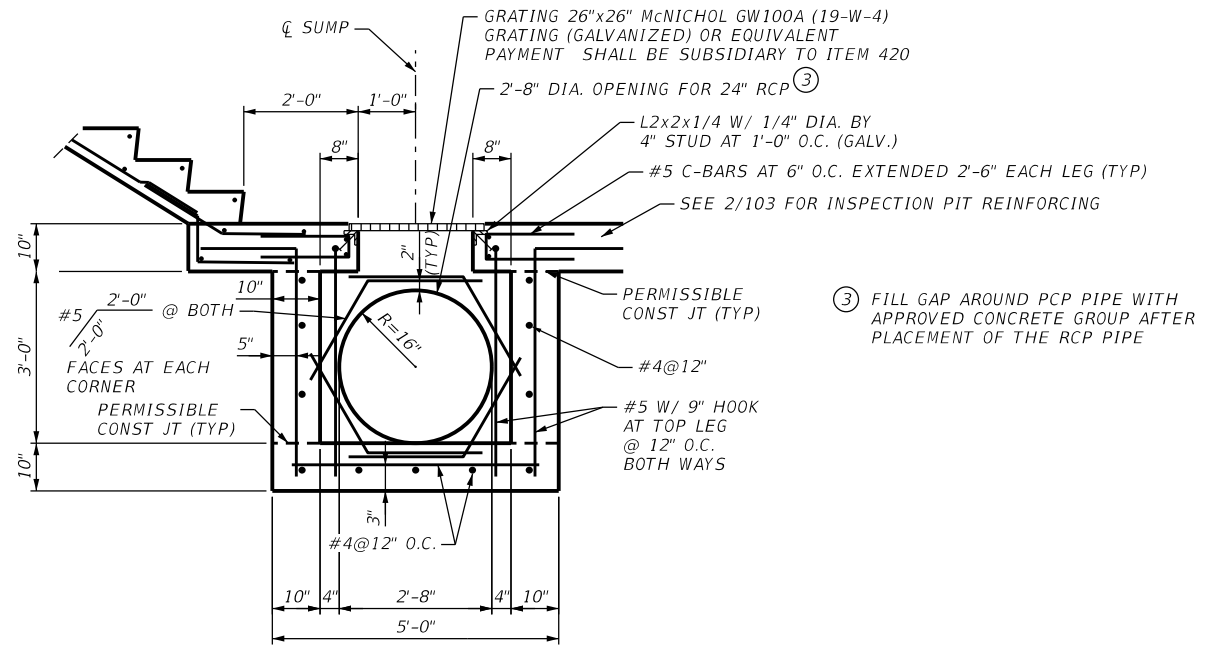
SECTION K - PIT SECTION
SCALE: 3/8 = 1'-0"



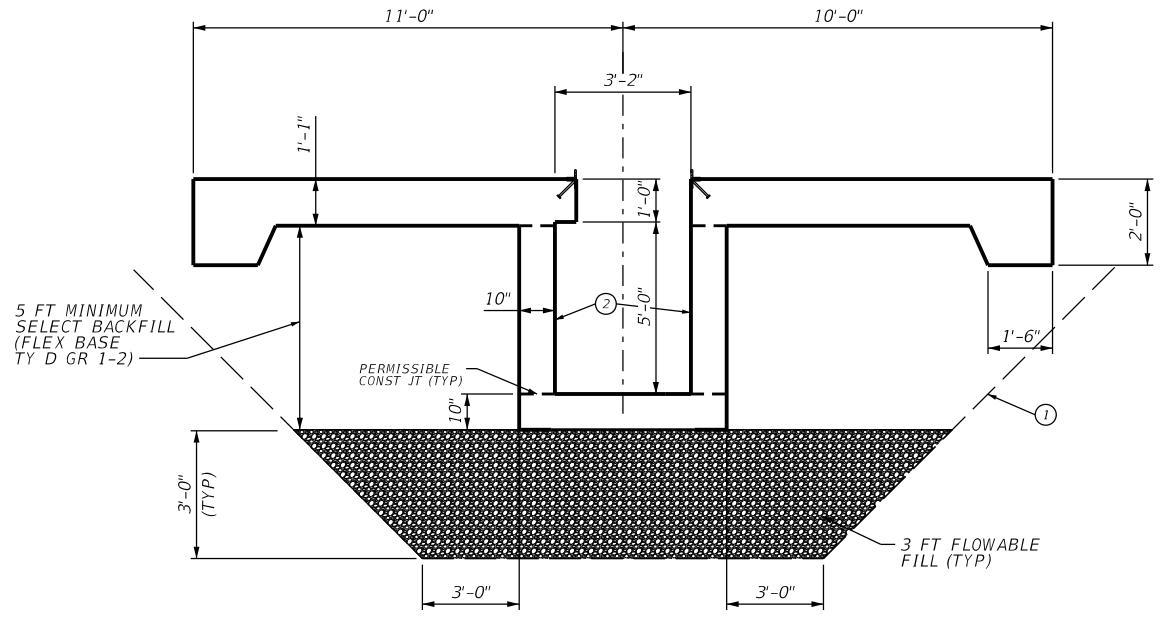
SECTION L - PIT SECTION
SCALE: 3/8 = 1'-0"

- STRUCTURAL EXCAVATION NOTES:**
- EXCAVATE TO THE LIMITS SHOWN.
 - COMPACT TOP 8" OF EXCAVATION SUBGRADE TO 98% MAX DRY DENSITY WITH -1%/+2% MOISTURE.
 - IF DENSITY CANNOT BE ACHIEVED, REMOVE ADDITIONAL MATERIAL PER ITEM 400 SECTION 3.1.4.1 UNTIL DENSITY CAN BE ACHIEVED OR A MAXIMUM OF 2 FEET BELOW EXCAVATION DEPTH SHOWN.
 - PLACE FLOWABLE FILL AS SHOWN TO BOTTOM OF PIT SLAB OR SUMP.
 - CONSTRUCT PIT PER DETAILS.
 - BACKFILL PIT WITH FLEX BASE (TY DXGR 1-2) COMPACTED TO 98% MAX. DRY DENSITY IN MAXIMUM 8" THICK LIFTS, TO PIT SLAB SUBGRADE LEVEL.

90% SUBMITTAL
DOCUMENT INCOMPLETE: NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SIDNEY A. MIELKE, P.E.
P.E. SERIAL NO.: 60799
DATE: 3-5-2024



DETAIL M - SUMP DETAILS
SCALE: 3/8 = 1'-0"



SECTION N

REV. NO.	DATE	DESCRIPTION	BY

SEA STRUCTURAL ENGINEERING ASSOCIATES
TEXAS REGISTERED ENGINEERING FIRM #499

PAPE-DAWSON ENGINEERS
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PRE-ENGINEERED METAL INSPECTION CANOPY INSPECTION PIT DETAILS

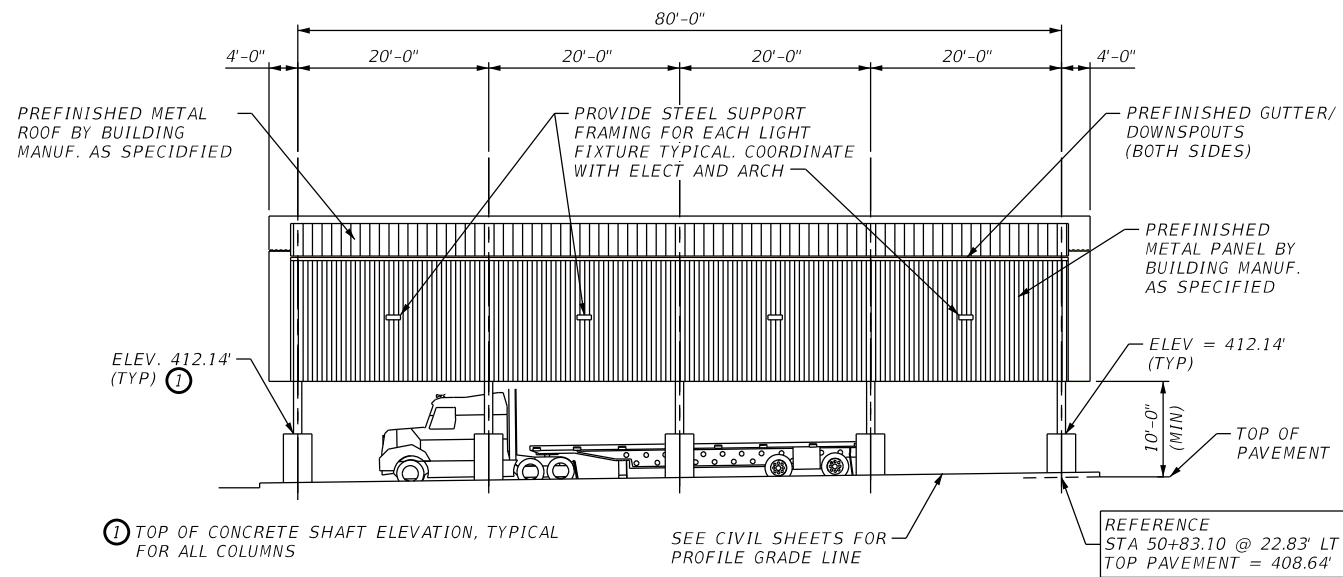
SHEET 4 OF 7

DIST.	FED. DIST. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.
ATL	6	TEXAS		IH 30

DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
ATL	TITUS	0610	03	095	180

Plotted on: 3/11/2024

Design File name: S:\Transportation\19-204C TxDOT-PD IH30 CMV Inspection Facility\CAD\01-Sheets\Static Scale Canopy - 1.dgn



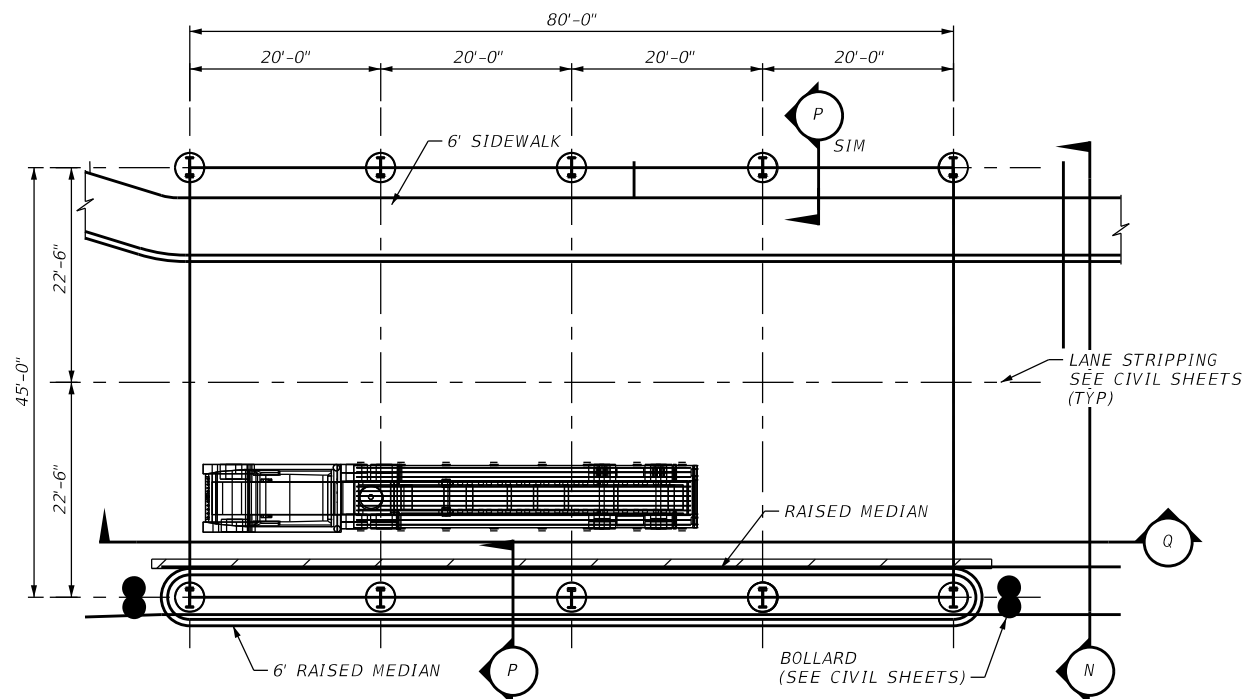
STATIC SCALE CANOPY ELEVATION
SCALE: 3/64" = 1'-0"

GENERAL NOTES:

- DRILLED SHAFT PER ITEM 416, INCLUDING PAYMENT
- CONCRETE FOR COLUMNS SHALL BE CLASS "C" PER ITEM 421, PAYMENT PER ITEM 420.
- CONCRETE CONSTRUCTION PER ITEM 420
- REINFORCING SHALL BE GR. 60, PER ITEM 440
- STRUCTURAL STEEL AND OTHER METALS USED FOR THE CONSTRUCTION PER ITEM 441 AND ITEM 442, PAYMENT PER ITEM 442
- PRE-ENGINEERED METAL CANOPY PER SPECIAL SPECIFICATION 5086-6001, INCLUDING PAYMENT. ROOF LIVE LOAD: 20 psf
- CALCULATED FOUNDATION LOADS: 14.0 TONS/DRILLED SHAFT VERTICAL
4.0 TONS/DRILLED SHAFT LATERAL
- DESIGN SOIL BEARING CAPACITY 3,000 PSF (FOOTING ON FLOWABLE FILL)
2,500 PSF (FOOTING ON 5' MIN. SELECT FILL)

PAINTING NOTES:

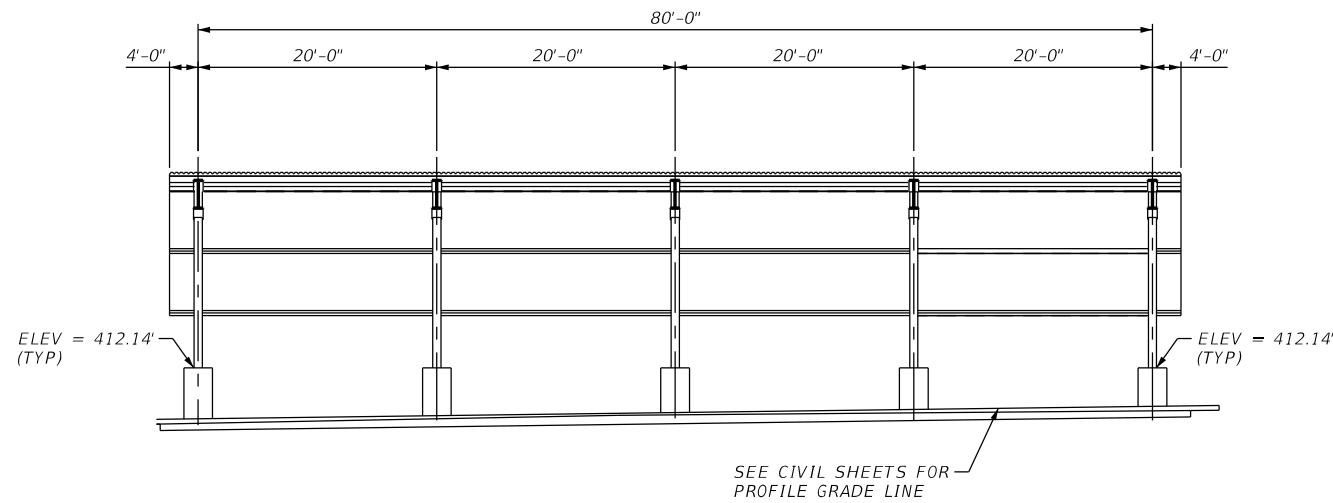
1. PAINT ALL EXPOSED SHOP STEEL STRUCTURES.
2. PAINT COLUMNS AND PURLINS BEFORE INSTALLING ROOF PANELS AND SIDING.
3. TOUCH UP STEEL STRUCTURE AS NEEDED WITH PRIMER.
4. APPLY TWO COLOR COATS OF LOW VOC ALKYD ENAMEL, SEMIGLOSS.
5. USE SHERWIN WILLIAMS (INDUSTRIAL GRADE) OR EQUIVALENT.
6. ALL PAINTING IS SUBSIDIARY TO METAL BUILDING/CANOPY BID ITEM.



STATIC SCALE CANOPY FOUNDATION PLAN
SCALE: 3/64" = 1'-0"

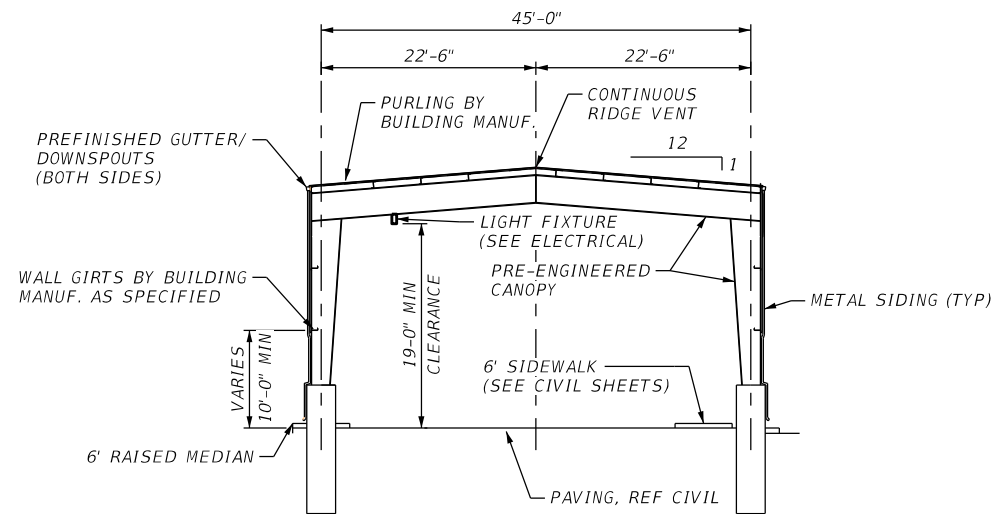
90% SUBMITTAL
DOCUMENT INCOMPLETE: NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SIDNEY A. MIELKE, P.E.
P.E. SERIAL No.: 60799
DATE: 3-5-2024

REV. NO.	DATE	DESCRIPTION	BY		
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					
WB IH 30 CMV STATION					
PRE-ENGINEERED METAL STATIC SCALE CANOPY PLAN AND ELEVATION					
SHEET 5 OF 7					
DIST.	FED. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.	
ATL	6	TEXAS		IH 30	
DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
ATL	TITUS	0610	03	095	181



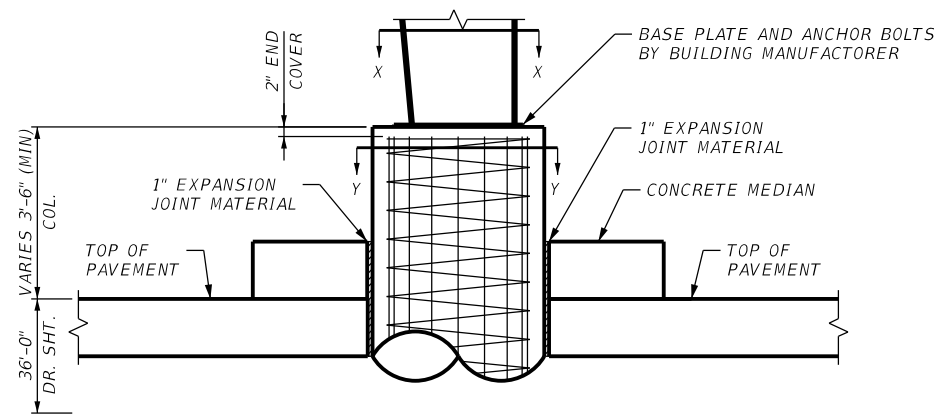
DETAIL Q - LONG SECTION

SCALE: 3/64" = 1'-0"



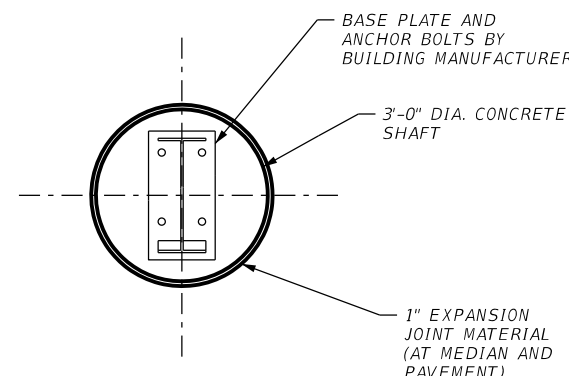
DETAIL N - STATIC SCALE CANOPY TYPICAL SECTION

SCALE: 3/64" = 1'-0"



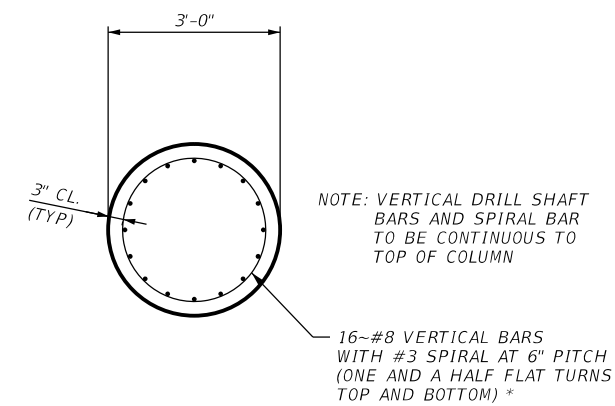
SECTION P - COLUMN TO PIER DETAIL

SCALE: 3/8 = 1'-0"



SECTION X-X

SCALE: 3/8 = 1'-0"



SECTION Y-Y

SCALE: 3/8 = 1'-0"

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 ENGINEER: SIDNEY A. MIELKE, P.E.
 P.E. SERIAL No.: 60799
 DATE: 3-5-2024

REV. NO.	DATE	DESCRIPTION	BY
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			
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SHEET 6 OF 7			
DIST.	FED. NO.	STATE	FEDERAL AID PROJECT NO.
ATL	6	TEXAS	0610
DIST.	COUNTY	CONT. NO.	SECT. NO.
TITUS	0610	03	095
DIST.	JOB NO.	SHEET NO.	
			182

Plotted on: 3/21/2024

Design File name: A:\36000s\36999\01\CADD\Sheet\SRCH\36999_095_GENERAL NOTES.dgn

ELECTRICAL LEGEND

POWER		LIGHTING	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SINGLE RECEPTACLE		HIGH BAY LIGHTING FIXTURE
	DUPLEX RECEPTACLE		FLOOD LIGHTING FIXTURE
	QUADRUPLEX RECEPTACLE		PIT LIGHTING FIXTURE
	DUPLEX RECEPTACLE GFI		ROADWAY LIGHTING FIXTURE (BY OTHERS)
	SPLIT WIRED DUPLEX RECEPTACLE		SINGLE POLE SINGLE THROW SWITCH
	ISOLATED GROUND RECEPTACLE		LOW VOLTAGE CONTROL SWITCH
	SPECIAL RECEPTACLE		THREE WAY SWITCH
	FLOOR RECEPTACLE FLUSH MOUNTED		MANUAL MOTOR STARTER HP RATED
	WALL MOUNTED JUNCTION BOX		POWER POLE
	TIME CLOCK		POWER POLE W/ TWO RECESSED RECEPTACLES
	CEILING MOUNTED JUNCTION BOX		
	DISCONNECT, FUSED		
	DISCONNECT, NON-FUSED		
	LIGHTING CONTACTOR		
	MECH. HELD MULTIPOLE CONTACTOR		
	HAND OFF AUTO SELECTOR SWITCH		
	PUSH BUTTON		
	BELL/BUZZER		
	ENCLOSED CIRCUIT BREAKER		
	LOW VOLTAGE PANEL		
	ELECTRICAL EQUIPMENT RACK		
	TRANSFORMER		
	OVERHEAD HIGHMAST POLE AND FIXTURE BY OTHERS		
	SURGE PROTECTIVE DEVICE		
	PROPOSED NEW TY A ELECTRICAL SERVICE		
	UTILITY POLE		
	OVERHEAD ELECTRICAL UTILITY LINES		
	UNDERGROUND ELECTRICAL UTILITY LINES		
	UNDERGROUND TELECOM CONDUIT		

GENERAL ELECTRICAL NOTES

- STUDY THE COMPLETE CONTRACT DOCUMENTS TO DETERMINE THE FULL SCOPE OF WORK AND TO IDENTIFY WORK PERFORMED BY OTHER TRADES. THE ELECTRICAL CONSTRUCTION WILL BE COORDINATED WITH THE WORK OF OTHER TRADES. EXAMINE THE SITE TO DETERMINE CONDITIONS THAT WILL AFFECT THE WORK AND INCLUDE ALL WORK RELATED TO THE SITE CONDITIONS IN THE BID PROPOSAL. PERFORM THE WORK WITH COMPETENT MECHANICS, SKILLED IN THEIR TRADES, TIMELY PLACING ALL MATERIALS AS THE CONSTRUCTION PROGRESSES.
- THE BIDDER SHALL VISIT THE SITE OF THE PROPOSED WORK AND SHALL FULLY INFORM HIMSELF REGARDING THE FACILITIES. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR WORK OR MATERIALS OMITTED FROM BIDDER'S CONTRACT PROPOSAL DUE TO HIS FAILURE TO INFORM HIMSELF BY SUCH INVESTIGATION.
- EXISTING UTILITY LOCATIONS SHOWN ARE GENERALLY SCHEMATIC IN NATURE AND MAY NOT ACCURATELY REFLECT THE SIZE AND LOCATION OF EACH PARTICULAR UTILITY. CONTRACTOR WILL ASSUME RESPONSIBILITY FOR FACILITIES, WHETHER SHOWN OR NOT.
- THE CONTRACTOR WILL PROTECT EXISTING PROPERTY FROM DAMAGE. ANY DAMAGES THAT MAY OCCUR TO REAL PROPERTY OR EXISTING IMPROVEMENTS SHALL BE RESTORED BY THE CONTRACTOR TO AT LEAST THE SAME CONDITION THAT THE REAL PROPERTY OR EXISTING IMPROVEMENTS WERE IN PRIOR TO THE DAMAGES. THIS RESTORATION WILL BE SUBJECT TO THE RESPECTIVE OWNER'S APPROVAL. RESTORATION OF EXISTING CONDITIONS WILL NOT BE A BASIS FOR ADDITIONAL COMPENSATION TO THE CONTRACTOR.
- THE CONTRACTOR WILL COORDINATE HIS WORK WITH THE CONSTRUCTION MANAGER, GENERAL CONTRACTOR, AND ALL OTHER TRADES, AND WILL CONTACT ALL UTILITY COMPANIES (I.E. ELECTRICAL, TELEPHONE, CABLE, ETC.) AS NECESSARY TO CONFIRM, SCHEDULE, AND COORDINATE ELECTRICAL SERVICE ENTRANCES, NEW SERVICE ENTRANCE SUPPORT STRUCTURES, AND NEW ILLUMINATION ASSEMBLIES AS INDICATED ON THESE DRAWINGS, WITH EXISTING SITE CONDITIONS, EXISTING UTILITIES AND ALL OTHER UTILITY COMPANY REQUIREMENTS.
- COORDINATE ALL ELECTRICAL SERVICE ENTRANCE REQUIREMENTS WITH SWEPSCO ELECTRIC PRIOR TO ANY CONSTRUCTION. UTILITY CO. CONTACT: JASON R. MARTIN PHONE: 903-767-2438 E-MAIL: JRMARTIN1@AEP.COM
- ANY BRANCH CIRCUITING ROUTED UNDER ROADWAY WILL BE INSTALLED IN CONDUIT SLEEVES THAT EXTEND A MINIMUM OF 3'-0" BEYOND PAVEMENT.
- ALL BRANCH CIRCUITS, CONDUITS, AND DUCT BANK SYSTEMS WILL BE GROUPED TOGETHER AND ROUTED BELOW GRADE TO THEIR RESPECTIVE TERMINATION POINTS, IN A SINGLE TRENCH, WHERE POSSIBLE.
- THE ELECTRICAL CONTRACTOR WILL BE RESPONSIBLE FOR ALL EXCAVATION, TRENCHING, AND BACK FILL REQUIRED FOR ALL ELECTRICAL WORK SHOWN ON PLAN DRAWINGS. CONDUIT AND RACEWAY SYSTEM ROUTING INDICATED IS DIAGRAMMATIC OR SCHEMATIC AND SHALL BE CONSIDERED AS RECOMMENDED ROUTING ONLY. EXACT TRENCH AND CONDUIT/RACEWAY SYSTEM ROUTING INDICATED SHALL BE FIELD COORDINATED AND VERIFIED WITH ALL CIVIL, STRUCTURAL, MECHANICAL, AND PLUMBING DRAWINGS AND ALL OTHER TRADES PRIOR TO BEGINNING WORK. PROVIDE ALL EXCAVATION AND BACK FILL AS NECESSARY FOR THE INSTALLATION OF SPECIFIED WORK AND INCIDENTAL TO THE PAY ITEMS.
- DO NOT SCALE DIMENSIONS OR DISTANCES FROM THE DRAWING TO DETERMINE MATERIAL QUANTITIES AND LABOR NEEDS FOR THE WORK SHOWN.
- THE LOCATIONS OF ELECTRICAL ITEMS ON THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO GIVE COMPLETE AND ACCURATE DETAIL IN REGARDS TO LOCATION. THE EXACT LOCATION SHOULD BE DETERMINED BY ACTUAL MEASUREMENTS AT THE BUILDING AND WILL IN ALL CASES BE SUBJECT TO THE APPROVAL OF THE ENGINEER. THE ENGINEER RESERVES THE RIGHT TO MAKE ANY REASONABLE CHANGES ON THE LOCATIONS INDICATED WITHOUT ANY ADDITIONAL COST.
- THE ELECTRICAL SYSTEM SHALL BE GROUNDED IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE. ALL ELECTRICAL SYSTEMS RECEPTACLES, CABINETS, JUNCTION BOXES, MOTOR FRAMES, MISCELLANEOUS EQUIPMENT, ETC. SHALL BE GROUNDED BY A GREEN-WIRE GROUND CONDUCTOR. METAL CONDUIT SHALL NOT BE USED AS THE ONLY EQUIPMENT GROUNDING CONDUCTOR.
- THE MINIMUM CONDUIT SIZE FOR ELECTRICAL CIRCUITS SHALL BE 3/4". ALL CONDUIT EMERGING FROM FINISHED GRADE TO ABOVE FINISHED GRADE OF 6' SHALL BE RMC FOR PHYSICAL PROTECTION. EMT MAY BE USED FOR EXTERIOR USE ABOVE 6' BUT SHALL REQUIRE RAIN TIGHT FITTINGS.
- THE ELECTRICAL CONTRACTOR SHALL GUARANTEE AGAINST DEFECTS IN ANY OR ALL MATERIALS, EQUIPMENT, OR WORKMANSHIP FURNISHED BY OTHERS AND SHALL MAKE GOOD, REPAIR, OR REPLACE, AT HIS OWN EXPENSE ANY DEFECTIVE WORK MATERIAL, OR PART WHICH MAY BECOME EVIDENT WITHIN A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE WORK. NECESSARY SERVICE AND ADJUSTMENT DURING THE EARLY STAGES OF OPERATION AFTER OCCUPANCY SHALL BE PROVIDED BY THE CONTRACTOR WITHOUT ADDITIONAL COST TO THE OWNER.
- ALL ELECTRICAL WIRING AND WIRING TERMINATIONS INCLUDING BREAKERS SHALL BE RATED FOR 90°C.

ELECTRICAL ABBREVIATIONS

AC - ABOVE COUNTER	FACP - FIRE ALARM CONTROL PANEL	N, (N) - NEW
AF - AMPERE FUSE SIZE	FCU - FAN COIL UNIT	N/A - NOT APPLICABLE
AS - AMPERE SWITCH FRAME SIZE	FIXT - FIXTURE	NIC - NOT IN CONTRACT
AFF - ABOVE FINISHED FLOOR	FLUOR - FLUORESCENT	NO. OR # - NUMBER
AFFC - ABOVE FINISHED ACCESSIBLE CEILING	FLR - FLOOR	OC - ON CENTER
AFG/AG - ABOVE FINISHED GRADE	FT OR ' - FOOT, FEET	OD - OUTSIDE DIAMETER
AHP - ACR FAULT PROTECTION	FUT - FUTURE	P - POLE
AHU - AIR HANDLING UNIT	G/GND/GRD - GROUND	PB - PULL BOX
A/I - ANALOG INPUT	GEN - GENERATOR	PLBG - PLUMBING
APPROX - APPROXIMATE	GFI/GFCI - GROUND FAULT CIRCUIT INTERRUPTER PROTECTION	PNL - PANEL
ARCH - ARCHITECTURAL	GRS - RIGID GALVANIZED STEEL	PWR - POWER
ATS - AUTOMATIC TRANSFER SWITCH	HOA - HAND OFF AUTOMATIC	RECEPT - RECEPTACLE
AWG - AMERICAN WIRE GAUGE	HP - HORSE POWER	RTU - REMOTE TERMINAL UNIT
BLDG - BUILDING	HV - HIGH VOLTAGE	SER - SERVICE ENTRANCE RATED
C - CONDUIT	HVAC - HEATING, VENTILATION AND AIR CONDITIONING	SF OR SQFT - SQUARE FEET
CB - CIRCUIT BREAKER	ID - INSIDE DIAMETER	SS - SAFETY SWITCHES
CCTV - CLOSED CIRCUIT TELEVISION	IN OR " - INCH	STRL - STRUCTURAL
CKT - CIRCUIT	INCAND - INCANDESCENT	SWBD - SWITCHBOARD
CLG - CEILING	J, JB, J BOX - JUNCTION BOX	SWGR - SWITCHGEAR
CONT - CONTINUATION	KVA - KILOVOLT - AMPERE	TELE - TELEPHONE
CU - COPPER	LB - CONDUIT BODY	THRU - THROUGH
DB - DIRECT BURIED	LTS - LIGHTS	TYP - TYPICAL
DE - DEMO	LTG - LIGHTING	UGE - UNDERGROUND ELECTRICAL
DEMO - DEMOLISHED	LV - LOW VOLTAGE	UIT - UNIT HEATER
D/I - DIGITAL INPUT	M - METER	UNO - UNLESS NOTED OTHERWISE
D/O - DIGITAL OUTPUT	MATV - MASTER ANTENNA TELEVISION	UPS - UNINTERRUPTIBLE POWER SUPPLY
DIA - DIAMETER	MAX - MAXIMUM	V - VOLTAGE
DN - DOWN	MCB - MAIN CIRCUIT BREAKER	W/ - WITH
DWG/DWG'S - DRAWING/DRAWINGS	MCC - MOTOR CONTROL CENTER	WC - WATER CLOSET
EX, EXIST - EXISTING	MDP - MAIN DISTRIBUTION PANEL	WHM - WATT-HOUR METER
EC - EMPTY CONDUIT	MIN - MINIMUM	W/O - WITHOUT
ELECT - ELECTRICAL	MLO - MAIN LUGS ONLY	WP - WEATHERPROOF
ELEV - ELEVATION	MH - MAN HOLE	XFMR - TRANSFORMER
EMERG - EMERGENCY	MTD - MOUNTED	* - PHASE
EQ - EQUAL	MTG - MOUNTING	3R - NEMA 3R RATED
EST - ELEVATED STORAGE TANK	MSB - MAIN SWITCHBOARD	
EWV - ELECTRIC WATER COOLER		
EWH - ELECTRIC WATER HEATER		
*F - DEGREES FAHRENHEIT		
FA - FIRE ALARM		
FAAP - FIRE ALARM COMMUNI		

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: RAY PEYNADO
P.E. SERIAL NO: 125390
DATE: 02/16/2024



1201 NORTH BOWSER ROAD
RICHARDSON, TX 75081-2275
(214) 346-6200
TBPCLS ENGINEERING FIRM #312

REV. NO.	DATE	DESCRIPTION	BY



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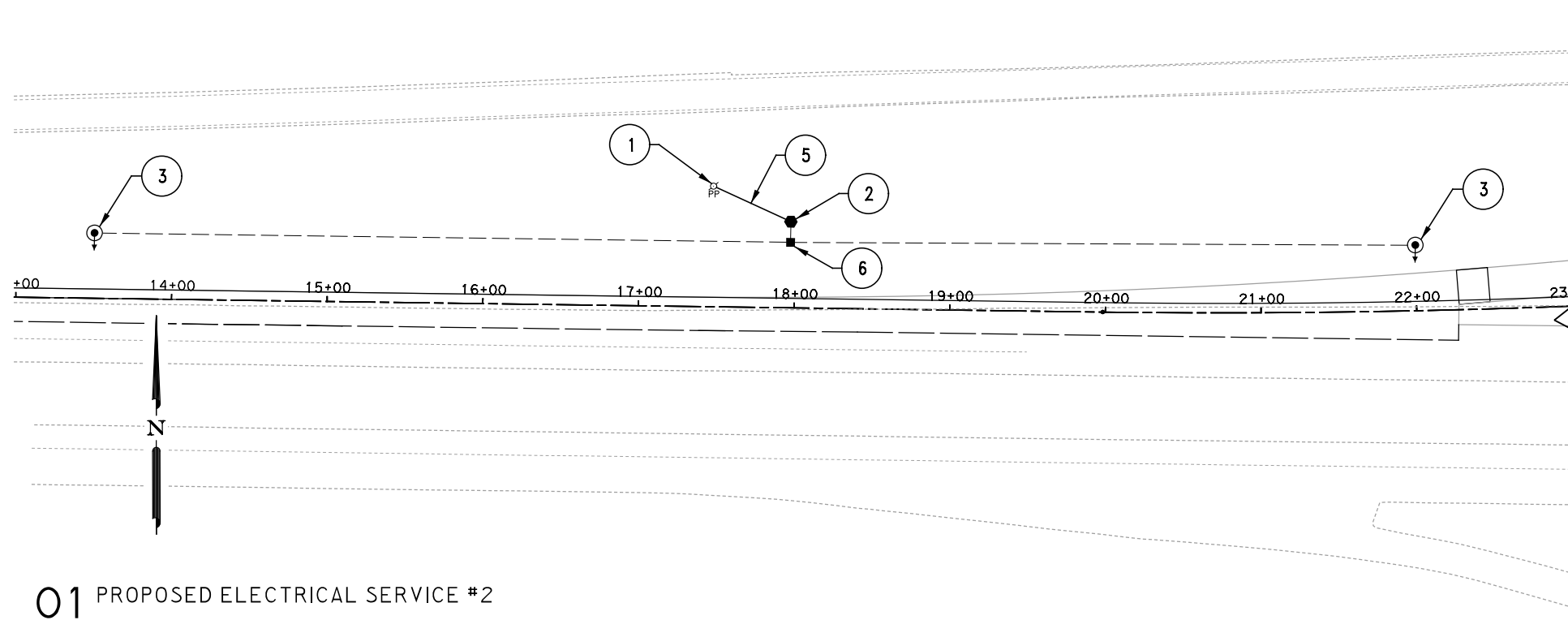
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ELECTRICAL NOTES, LEGEND, AND ABBREVIATION

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.		HIGHWAY NO.
CHK DGN:	6	TEXAS			IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO. SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095 183

Plotted on: 3/21/2024

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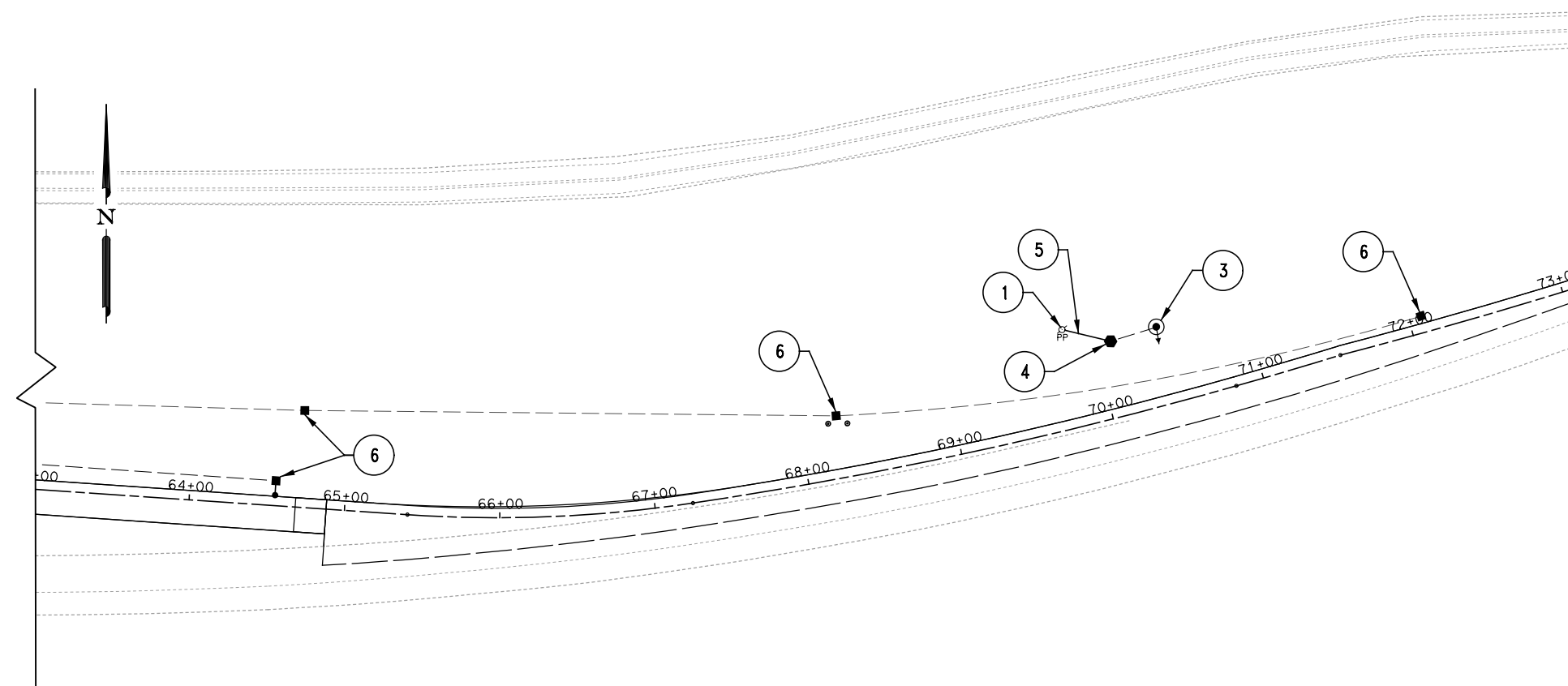


01 PROPOSED ELECTRICAL SERVICE #2

GENERAL NOTES:
 A. REFER TO ILLUMINATION AND CONDUIT LAYOUT SHEETS FOR MORE INFORMATION.

KEYNOTES BY SYMBOL: #

1. PROPOSED NEW UTILITY POWER POLE.
2. PROPOSED NEW ELECTRICAL SERVICE #2. REFER TO ELECTRICAL SERVICE DATA ON ELECTRICAL SCHEDULE SHEET FOR INFORMATION. REFER TO TXDOT ED(5)-14 FOR ADDITIONAL DETAILS.
3. HIGH MAST LIGHTING AND BRANCH CIRCUITING. REFER TO ILLUMINATION SHEETS.
4. PROPOSED NEW ELECTRICAL SERVICE #3. REFER TO ELECTRICAL SERVICE DATA ON ELECTRICAL SCHEDULE SHEET FOR INFORMATION. REFER TO TXDOT ED(5)-14 FOR ADDITIONAL DETAILS.
5. OVERHEAD LINE FROM UTILITY POWER POLE TO STEEL SERVICE POLE. COORDINATE LOCATIONS WITH UTILITY COMPANY.
6. ROADWAY LIGHTING AND BRANCH CIRCUITING. REFER TO ILLUMINATION SHEETS.



02 PROPOSED ELECTRICAL SERVICE #3

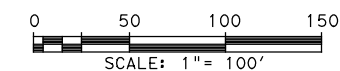
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 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: RAY PEYNADO
 P. E. SERIAL NO: 125390
 DATE: 02/16/2024



REV. NO.	DATE	DESCRIPTION	BY



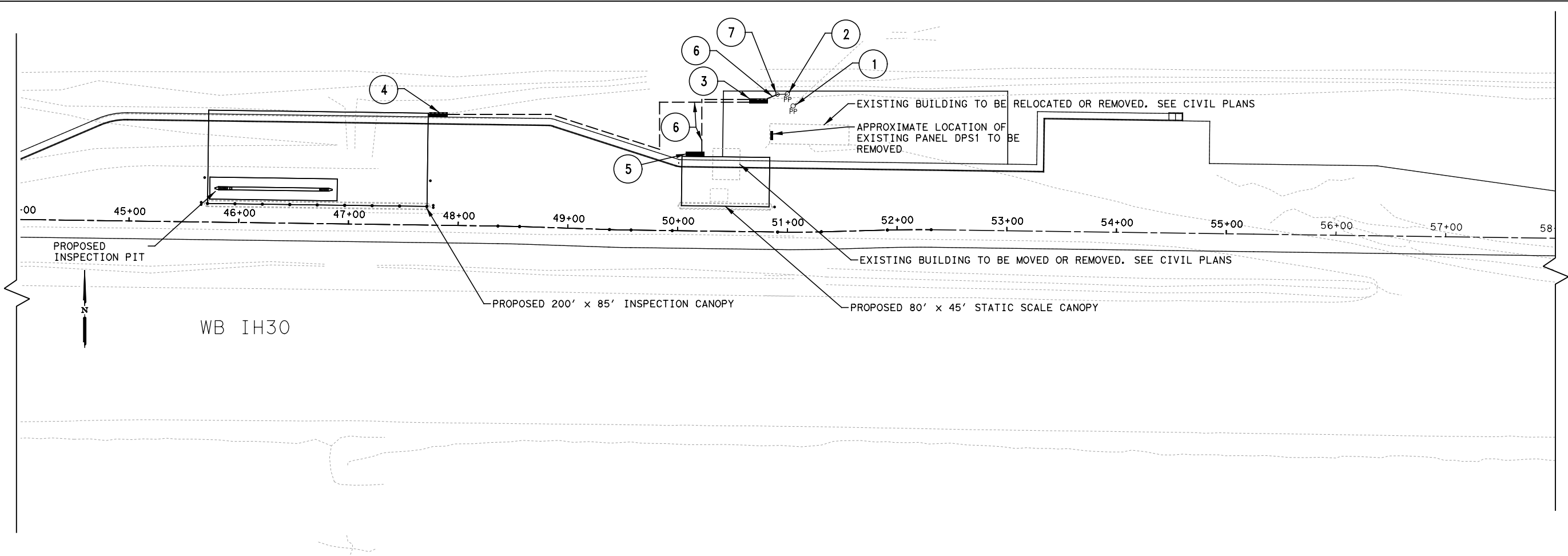
WB IH 30 CMV STATION
 ELECTRICAL SERVICE LOCATIONS



DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:			HIGHWAY NO.:
CHK DGN:	6	TEXAS				IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:	JOB NO.:	SHEET NO.:
CHK DWG:	ATL	TITUS	0610	03	095	184

Plotted on: 3/21/2024

Design File name: At:\36000s\36999\001\CADD\Sheet\SRCH\36999_097_SITE_PLAN.dgn



KEYNOTES BY SYMBOL: #

1. EXISTING UTILITY POLE SERVICE. REFER TO RISER DIAGRAM SHEET FOR ADDITIONAL DETAILS.
2. PROPOSED NEW UTILITY POLE. REFER TO RISER DIAGRAM SHEET FOR ADDITIONAL DETAILS.
3. PROPOSED NEW ELECTRICAL EQUIPMENT RACK. REFER TO RISER DIAGRAM SHEET FOR ADDITIONAL DETAILS.
4. PROPOSED NEW CANOPY ELECTRICAL EQUIPMENT RACK FOR INSPECTION STATION. REFER TO RISER DIAGRAM SHEET FOR ADDITIONAL DETAILS.
5. PROPOSED NEW CANOPY ELECTRICAL EQUIPMENT RACK FOR STATIC SCALE STATION. REFER TO RISER DIAGRAM SHEET FOR ADDITIONAL DETAILS.
6. ROUTE FEEDERS UNDERGROUND. COORDINATE ROUTING WITH OTHER INSTALLATIONS. REFER TO RISER DIAGRAM SHEET FOR ADDITIONAL DETAILS.
7. UTILITY SECONDARY PEDESTAL.

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 ENGINEER: RAY PEYNADO
 P. E. SERIAL NO: 125390
 DATE: 02/16/2024



REV. NO.	DATE	DESCRIPTION	BY

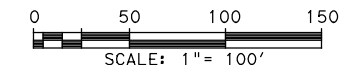


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WB IH 30 CMV STATION

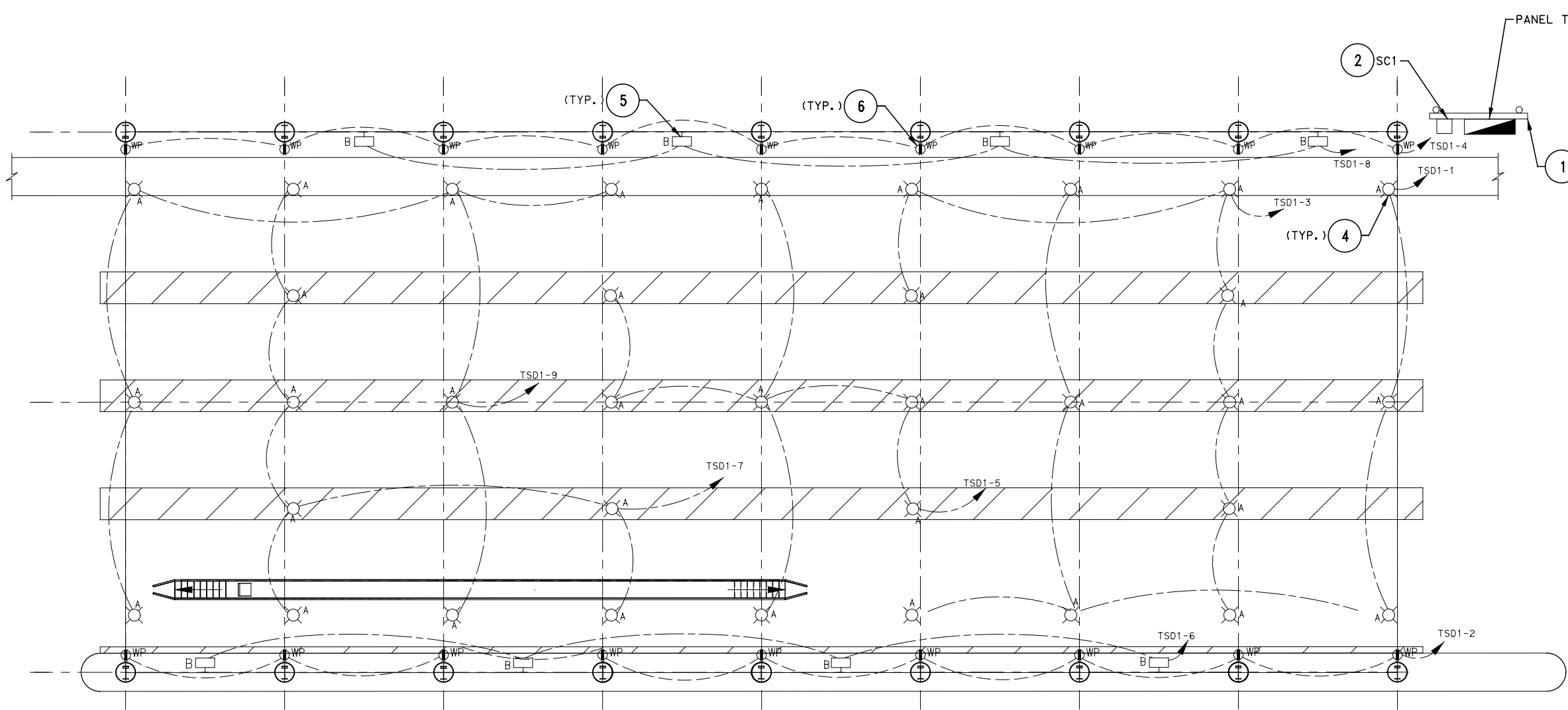
ELECTRICAL LAYOUT



DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN#	6	TEXAS				IH 30
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	185

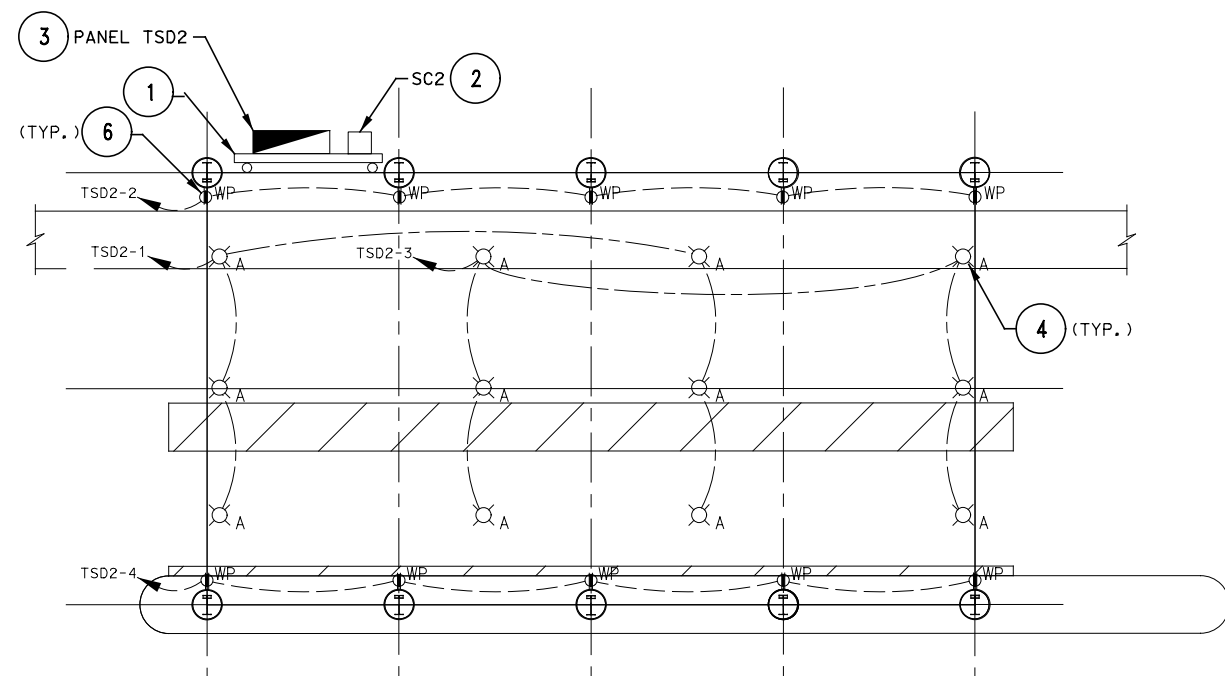
Plotted on: 3/21/2024

Design File name: A:\36000s\36999\001\CADD\Sheet\srch\36999_098_ENLARGED CANOPY.dgn



- KEYNOTES BY SYMBOL: #**
1. PROVIDE AND INSTALL A GALVANIZED STEEL FRAME TO SUPPORT NEW INSPECTION FACILITY ELECTRICAL EQUIPMENT. FRAME SHALL BE SUPPORTED UPRIGHT BY 2" SCHD 40 RIGID METAL PIPES WITH A MINIMUM OF 2' DRILL SHAFT FOUNDATIONS. ALL WELDS AND CUTS SHALL BE FILED TO A SMOOTHED FINISH. COAT THE ENDS OF FRAME AND SUPPORT MEMBERS WITH GALVANIZED COMPOUND PAINT IN ACCORDANCE WITH SPECIFICATION ITEM 445. ALL NUTS, BOLTS AND WASHERS SHALL BE MADE OF STAINLESS STEEL OR RUST PROOF MATERIAL. LOCATION OF ELECTRICAL RACK IS APPROXIMATE. COORDINATE IN FIELD WITH ENGINEER FOR FINAL PLACEMENT.
 2. PROVIDE AND RACK MOUNT A NEW 20"x 20"x 8" NEMA 3R CABINET WITH HINGED DOORS FOR LIGHT SWITCHES. ROUTE ALL LIGHTING CIRCUITS THROUGH CABINETS AND LABEL CABINET.
 3. PROVIDE A NEW 125 AMP, 120/240V, WITH 100 AMP MCB ELECTRICAL PANEL FOR NEW CANOPY FACILITY POWER.
 4. PROVIDE PENDANT MOUNTED HI BAY LIGHT FIXTURES AS SHOWN ON ELECTRICAL SCHEDULES. MOUNT FIXTURES AT A MINIMUM CLEARANCE OF 19' AFG. REFER TO LIGHTING FIXTURE DATA FOR TYPE, SIZE, AND MOUNTING INFORMATION.
 5. PROVIDE GIRDER MOUNTED FLOOD LIGHT FIXTURES AS SHOWN ON ELECTRICAL SCHEDULES. MOUNT FIXTURES AT A MINIMUM CLEARANCE OF 14' AFG. REFER TO LIGHTING FIXTURE DATA FOR TYPE, SIZE AND MOUNTING INFORMATION.
 6. PROVIDE COLUMN MOUNTED WEATHERPROOF GFCI OUTLETS AS SHOWN ON ELECTRICAL AND LIGHTING PLAN SHEET. MOUNT OUTLETS AT A MINIMUM CLEARANCE OF 48" AFG.

01 PROPOSED INSPECTION CANOPY ELECTRICAL AND LIGHTING PLAN
SCALE: 1" = 20'



02 STATIC SCALE CANOPY ELECTRICAL AND LIGHTING PLAN
SCALE: 1" = 20'

GENERAL NOTES:
A. REFER TO INSPECTION AND STATIC SCALE CANOPY LIGHTING SECTIONS FOR SECTION DETAILS.
B. REFER TO SEA (STRUCTURAL ENGINEERING ASSOCIATES) DRAWINGS FOR ADDITIONAL INFORMATIONS.

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: RAY PEYNADO
P. E. SERIAL NO: 125390
DATE: 02/16/2024



REV. NO.	DATE	DESCRIPTION	BY



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



WB IH 30 CMV STATION
INSPECTION AND STATIC CANOPY ELECTRICAL & LIGHTING PLAN



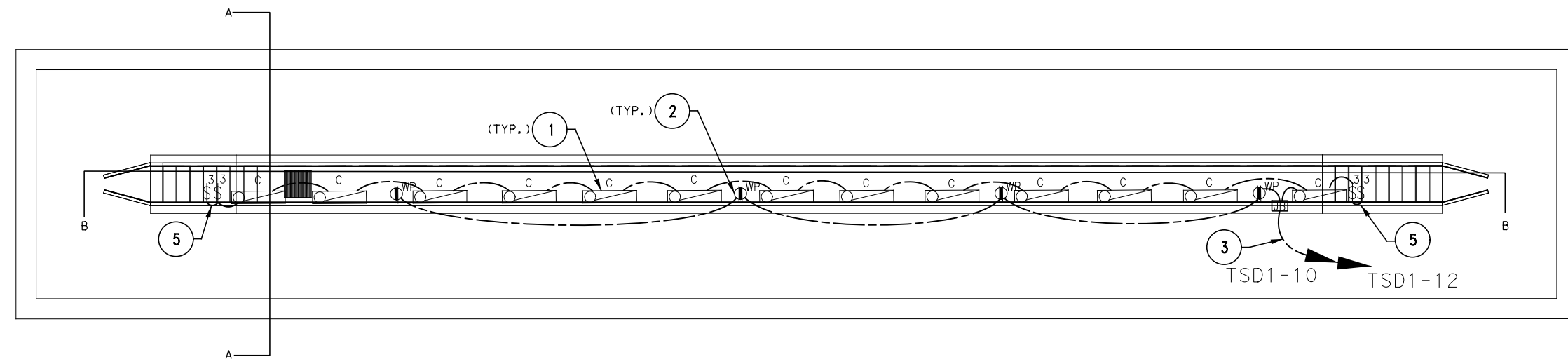
DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN#	6	TEXAS		IH 30		
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	186

Plotted on: 3/21/2024

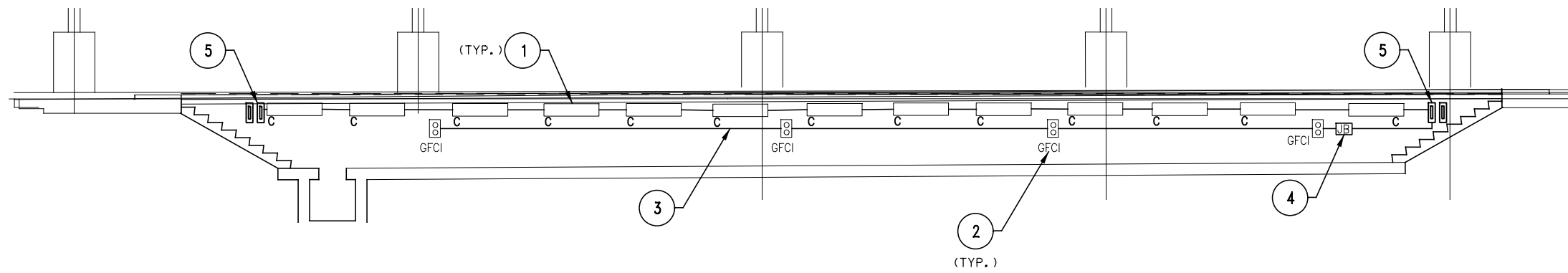
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KEYNOTES BY SYMBOL: #

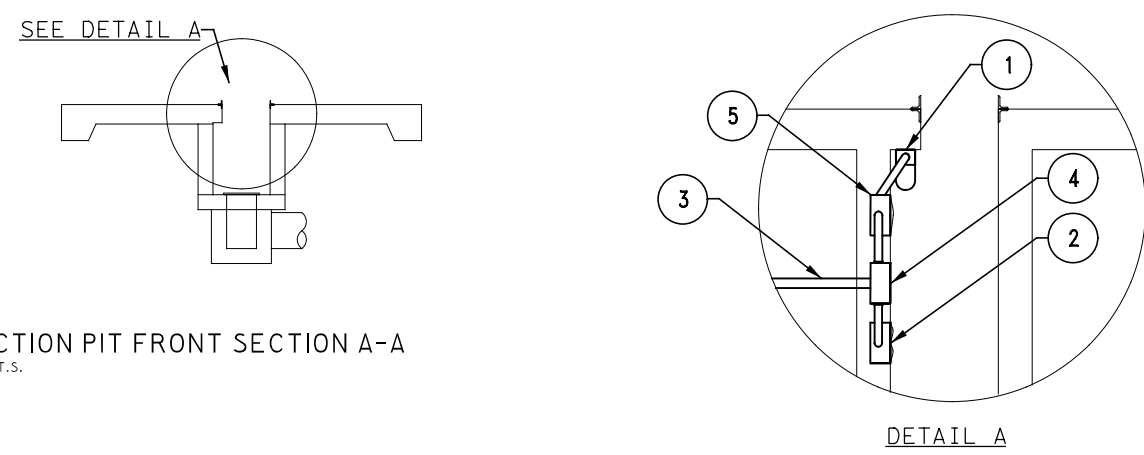
1. PROVIDE AND INSTALL PIT LIGHT FIXTURES (TYPE "C") SURFACE MOUNTED UNDERNEATH THE PIT LEDGE.
2. INSTALL 1-1 GANG RECEPTACLE BOX MOUNTED AT APPROXIMATE LOCATIONS SHOWN. FINAL PLACEMENT SHALL BE DETERMINED IN THE FIELD. PROVIDE GFCI RECEPTACLES AT EACH LOCATION WITH WEATHERPROOF COVERS.
3. ROUTE CIRCUITS UNDERGROUND VIA 3/4" PVC CONDUIT TO NEW ELECTRICAL EQUIPMENT LOCATION. STUB-UP CONDUIT BENEATH NEW ELECTRICAL EQUIPMENT AND MAKE CONNECTIONS USING RMC AND RAIN TIGHT FITTINGS ABOVE FINISHED GRADE. REFER TO ELECTRICAL SCHEDULE, PANELBOARD 'TSD1' FOR ADDITIONAL INFORMATION.
4. PROVIDE AND INSTALL RECESSED 6x6x4 JUNCTION BOX AT APPROXIMATE LOCATIONS SHOWN ON DETAIL FOR PIT LIGHTS AND RECEPTACLES. FINAL PLACEMENT WILL BE DETERMINED IN THE FIELD AND INSTALLED AS TO NOT INTERFERE WITH THE STRUCTURAL INTEGRITY OF THE PIT. PROVIDE WEATHER PROOF COVER. REFER TO INSPECTION PIT SIDE SECTION AND DETAIL A FOR ADDITIONAL INFORMATION.
5. INSTALL 1-2 GANG SWITCH BOX RECESSED MOUNTED AT EACH END OF PIT ADJACENT TO STAIRS. FINAL PLACEMENT SHALL BE DETERMINED IN THE FIELD. PROVIDE WEATHERPROOF 2-3 WAY SWITCHES AT EACH END FOR SWITCHING PIT LIGHTS. ONE SET OF 3-WAY SWITCHES SHALL CONTROL EVERY OTHER LIGHT FIXTURE. FOLLOW SAME CIRCUIT SWITCHING PATTERN FOR SUBSEQUENT 3-WAY SET.



01 INSPECTION PIT ELECTRICAL AND LIGHTING PLAN
SCALE: N.T.S.



02 INSPECTION PIT SIDE SECTION B-B
SCALE: N.T.S.



03 INSPECTION PIT FRONT SECTION A-A
SCALE: N.T.S.

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: RAY PEYNADO
P. E. SERIAL NO: 125390
DATE: 02/16/2024

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RICHARDSON, TX 75081-2275
(214) 346-6200
TBPELS ENGINEERING FIRM #312

REV. NO.	DATE	DESCRIPTION	BY

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

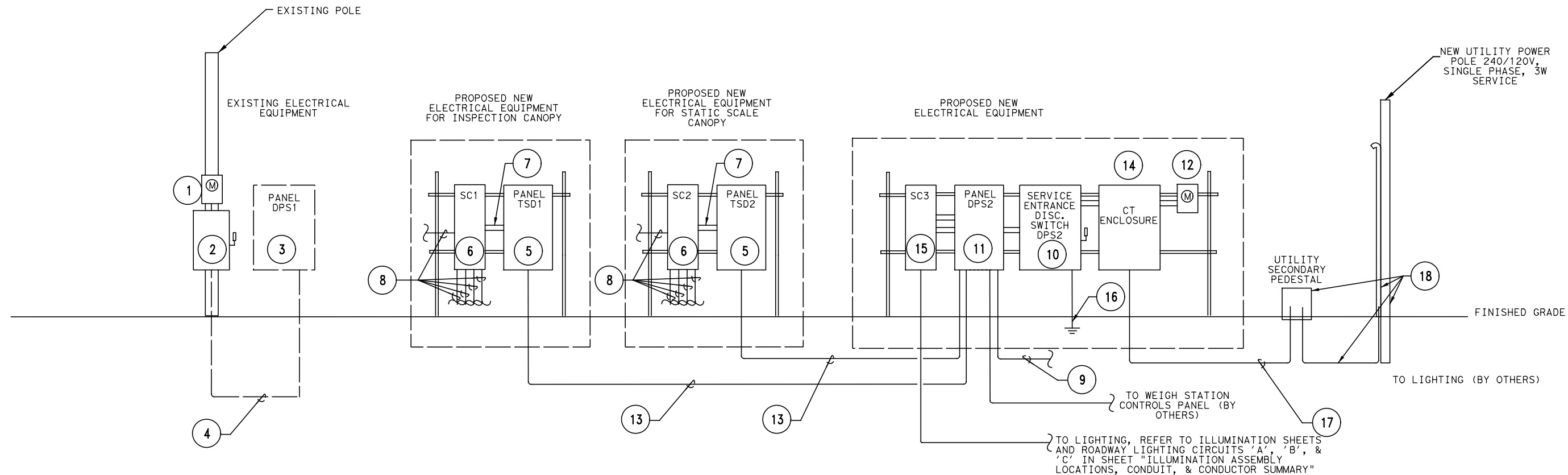
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WB IH 30 CMV STATION
INSPECTION PIT
ELECTRICAL AND
LIGHTING PLAN

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN#	6	TEXAS				IH 30
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	187

Plotted on: 3/21/2024

Design File name: A:\36000s\36999\001\CADD\Sheet\srCH\36999_100_RISER.dgn



NOTES:

- A. ALL CONDUITS 6'-0" ABOVE FINISHED GRADE TO 1'-0" BELOW GRADE SHALL BE RIGID METALLIC CONDUIT. BELOW GRADE RIGID METALLIC CONDUIT TO BE WRAPPED BY CORROSION PROTECTION TAPE APPROVED FOR USE ON ELECTRICAL CONDUITS.
- B. ALL CONDUITS BELOW GRADE SHALL BE SCH 40 PVC AT DEPTHS REQUIRED BY NEC.
- C. ALL CONDUCTORS SHALL BE UL LISTED, AWG SIZE AS SHOWN ON PLANS AND WITH TYPE THWN INSULATION, UNLESS SHOWN OTHERWISE ON THE PLANS.
- D. SURGE SUPPRESSION DEVICE (SPD) UL 1449 CLASS 1 GRADE A TO BE PLACED AT NEW INSPECTION STATION AND NEW WEIGH STATION ELECTRICAL PANELS TSD1 AND TSD2.
- E. LEAVE SUFFICIENT LENGTH OF WIRE TO TERMINATE OR SPLICE IN DISCONNECTS, PANELS AND BOXES WITHOUT A SPLICE DURING WIRE PULLS.
- F. PROVIDE AND INSTALL 10" WIDE x 8" LONG, WHITE ON RED PHENOLIC NAMEPLATE OR PLACARD WITH THE ONE-LINE DIAGRAM DESIGN, THIS SHEET AND PLACE AT EVERY ELECTRICAL LOCATION.

KEYNOTES BY SYMBOL: #

- 1. EXISTING METER TO BE REMOVED.
- 2. EXISTING DISCONNECT SWITCH TO BE REMOVED.
- 3. EXISTING PANEL DPS1, TO BE REMOVED.
- 4. EXISTING UNDERGROUND CONDUIT AND CONDUCTORS TO BE REMOVED.
- 5. PROVIDE NEW 125A PANEL MOUNTED ON RACK.
- 6. PROVIDE 20"x20"x8" NEMA 3R, HINGED LOCKABLE CABINET TO ACCOMMODATE LIGHTING CONTROL SYSTEM FOR CANOPY LIGHTING. PENDANT MOUNT AND FLOOD LIGHTS WILL BE CONTROLLED BY (2) SEPARATE SWITCHES AS SHOWN ON LIGHTING PLAN.
- 7. NEW RMC NIPPLE WITH SCALING LOCKNUTS. REFER TO PANEL SCHEDULE ON ELECTRICAL SCHEDULES FOR CANOPY AND PIT LIGHT CIRCUIT INFORMATION, BRANCH CIRCUIT NUMBERS AND SIZES.
- 8. PROVIDE 3/4" RMC CONDUITS ABOVE FINISHED GRADE FOR LIGHTING AND RECEPTACLES. CONVERT CONDUIT TO PVC UNDERGROUND.
- 9. PROVIDE 2" CONDUIT UNDERGROUND TO PROPOSED DPS OFFICE BUILDING LOCATION.
- 10. PROVIDE NEW SERVICE ENTRANCE RATED FUSED DISCONNECT SWITCH, 600A, 600AF, 240V, 2P, S/N, NEMA 3R.
- 11. PROVIDE NEW 600A PANEL DPS2 MOUNTED ON RACK.
- 12. NEW METER PER UTILITY COMPANY'S REQUIREMENTS.

- 13. PROVIDE NEW FEEDER CONDUIT AND CONDUCTORS; 3#1, 1#6, 1-1'4"C.
- 14. PROVIDE CT ENCLOSURE PER ELECTRIC UTILITY COMPANY REQUIREMENTS.
- 15. PROVIDE 20"x20"x8" NEMA 3R, HINGED LOCKABLE CABINET TO ACCOMMODATE LIGHTING CONTROL SYSTEM FOR LIGHTING (REFER TO ILLUMINATION SHEETS).
- 16. SERVICE GROUND PER NEC 250.
- 17. TWO SET OF 3#350 IN 2-1/2"C, FROM PEDESTAL TO SERVICE DISCONNECT VIA CT ENCLOSURE.
- 18. PROVIDED BY ELECTRIC UTILITY.

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: RAY PEYNADO
P. E. SERIAL NO: 125390
DATE: 02/16/2024



REV. NO.	DATE	DESCRIPTION	BY



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

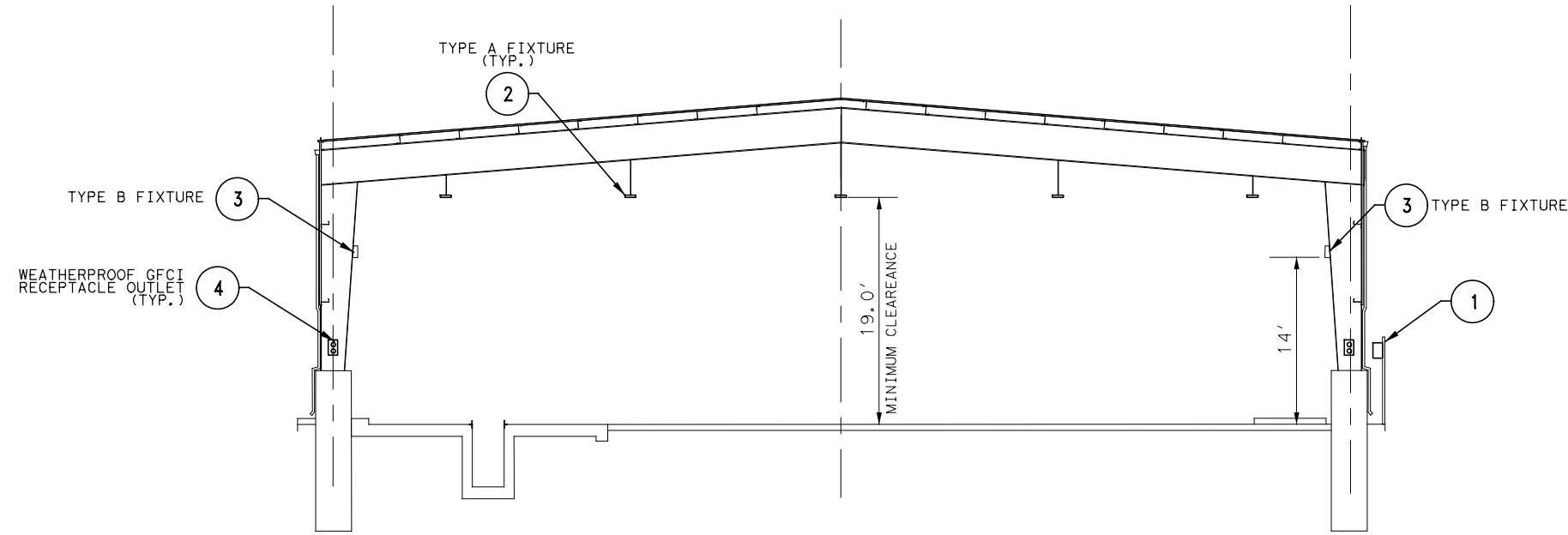


WB IH 30 CMV STATION
RISER
DIAGRAM

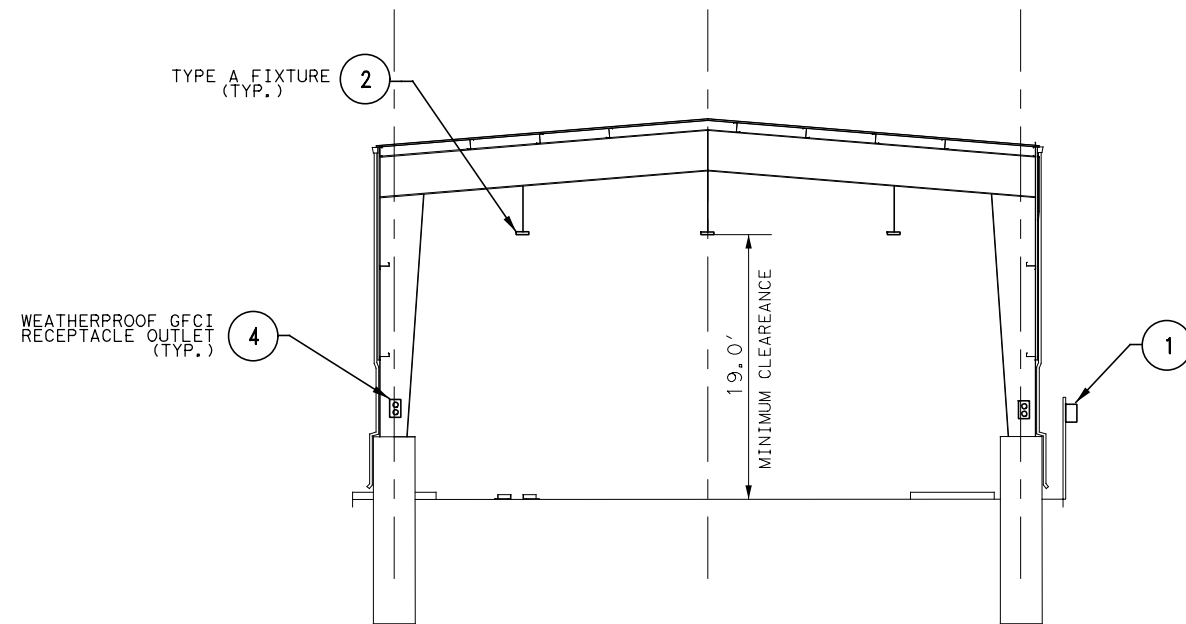
DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN#	6	TEXAS				IH 30
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	188

Plotted on: 3/21/2024

Design File name: A:\36000s\36999\001\CADD\Sheet\SRCH\36999_101_SECTION VIEWS.dgn



01 PROPOSED INSPECTION CANOPY ELECTRICAL LIGHTING SECTION
SCALE: N.T.S.



02 PROPOSED STATIC SCALE CANOPY ELECTRICAL & LIGHTING SECTION
SCALE: N.T.S.

KEYNOTES BY SYMBOL: #

1. PROVIDE AND INSTALL A GALVANIZED STEEL FRAME TO SUPPORT NEW INSPECTION FACILITY ELECTRICAL EQUIPMENT. FRAME SHALL BE SUPPORTED UPRIGHT BY 2" RIGID METAL PIPES WITH A MINIMUM OF 2' DRILL SHAFT FOUNDATIONS. ALL WELDS AND CUTS SHALL BE FILED TO A SMOOTH FINISH. COAT THE ENDS OF FRAME AND SUPPORT MEMBERS WITH GALVANIZED COMPOUND PAINT. ALL NUTS, BOLTS AND WASHERS SHALL BE MADE OF STAINLESS STEEL OR RUST PROOF MATERIAL. LOCATION OF RACK IS APPROXIMATE. COORDINATE IN FIELD WITH ENGINEER FOR FINAL PLACEMENT.

2. PROVIDE PENDANTS MOUNTED HIGH BAY LIGHT FIXTURES AS SHOWN ON ELECTRICAL AND LIGHTING FIXTURE SCHEDULE. MOUNT FIXTURES AS SHOWN ON ELECTRICAL AND LIGHTING SCHEDULE. MOUNT FIXTURES AT A MINIMUM CLEARANCE OF 19' AFG. REFER TO LIGHTING SCHEDULE FOR TYPE, SIZE AND MOUNTING INFORMATION.

3. PROVIDE GIRDER MOUNTED FLOOD LIGHT FIXTURES AS SHOWN ON ELECTRICAL AND LIGHTING SCHEDULE. MOUNT FIXTURES AT A MINIMUM CLEARANCE OF 14' AFG. REFER TO LIGHTING FIXTURE SCHEDULE FOR TYPE, SIZE AND MOUNTING INFORMATION.

4. PROVIDE COLUMN MOUNTED WEATHER PROOF GFCI OUTLETS AS SHOWN ON ELECTRICAL AND LIGHTING PLAN SHEET. MOUNT OUTLETS AT A MINIMUM CLEARANCE OF 48" AFG. REFER TO SYMBOLS LEGEND AND GENERAL NOTES ON SHEET 095 FOR ADDITIONAL INFORMATION.

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: RAY PEYNADO
P. E. SERIAL NO: 125390
DATE: 02/16/2024

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(214) 346-6200
TBPELS ENGINEERING FIRM #312

REV. NO.	DATE	DESCRIPTION	BY

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

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WB IH 30 CMV STATION
INSPECTION AND
STATIC SCALE
CANOPY LIGHTING
SECTIONS

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN#	6	TEXAS				IH 30
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	189

Plotted on: 3/21/2024

Design File name: At:\36000s\36999\001\CADD\Sheet\SRCH\36999_102_SCHEDULES.dgn

LIGHTING FIXTURE SCHEDULE									
TYPE	MANUFACTURER	MODEL NUMBER	MOUNTING HEIGHT	LAMPS	WATTS	TEMP.	VOLTAGE	DESCRIPTION	
A	ALS	HB-150-40-PC-Finish-UD-MOUNT-HB-P OR EQUIVALENT	19'	LED	150	4000K	120/277	LED BAY LIGHT WITH CLEAR LENS, IP66, PENDANT MOUNT, 24390 LUMEN, (CONTRACTOR TO COORDINATE WITH OWNER FOR COLOR SELECTION)	
B	STONCO	FL80-NW-G1-T-FL-8-BZ OR EQUIVALENT	14'	LED	80	4000K	120/277	LED FLOODLIGHT, WITH TRUNNION MOUNTING KIT, BRONZE COLOR, IP66	
C	LINMORE LED	HD20S-A1-06K-4N-40-80-BC-LV-MLT-SSLCH-HZLOC OR EQUIVALENT		LED	40	4000K	120/277	SURFACE MOUNTED PIT FIXTURE, CLASS I DIVISION II, CLEAR RIBBED LENS	

ELECTRICAL SERVICE DATA													
ELECT SERV NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION (SEE ED (5) -14)	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT SWITCH AMP/FUSE	CKT. BKR. POLE/AMP	TWO-POLE CONTACTOR AMPS	PANEL BD. / LOADCENTER AMP RATING	CIRCUIT	BRANCH CKT. BKR. POLE/AMPS	BRANCH CIRCUIT AMPS	KVA LOAD
#1	ELECTRICAL LAYOUT	CUSTOM 600A 120240V 1PH 3W SERVICE TO SERVE BUILDINGS, CANOPIES, & ROADWAY LIGHTING REFER TO RISER DIAGRAM	(2) 2-1/2"	(2) 350KCMIL	600	600/600	N/A	N/A	NOTES 1 & 2	NOTE 1	NOTE1	NOTE 1	NOTE 1
#2	ELECTRICAL SERVICE	ELEC SRV TY A 240/480 060 (SS) SS (E) SP (O)	1-1/4"	3/#6	60	N/A	2P/60	30	60	E	2P/15	5	2
#3	ELECTRICAL SERVICE	ELEC SRV TY A 240/480 060 (SS) SS (E) SP (O)	1-1/4"	3/#6	60	N/A	2P/60	30	60	F	2P/15	3	1

- NOTES:
 1. SEE PANELBOARD SCHEDULES "DPS2", "TSD1", & "TSD2".
 2. SEE ELECTRICAL RISER DIAGRAM.

PANELBOARD SCHEDULE DPS2														
DESIGNATION	FEEDER NO.	POLES & AMPS	LOAD, VA			C	P	C	LOAD, VA			POLES & AMPS	FEEDER NO.	DESIGNATION
			LTG.	RECPT.	OTHER				LTG.	RECPT.	OTHER			
FUTURE PANELBOARD	3	2/200				1	A	2				2/125	4	TSD1 NEW PANELBOARD
PROPOSED DPS OFFICE	3	2/200				3	C	4				2/125	4	TSD2 NEW PANELBOARD
						5	A	6						
						7	C	8						
SPARE		2/20				9	A	10				1/20		WEIGH STATION CONTROL PANEL
						11	C	12				1/20		SPARE
ROADWAY LTG CKT A	5	2/40	740			13	A	14				1/20		SPARE
			740			15	C	16				1/20		SPARE
ROADWAY LTG CKT B	5	2/40	463			17	A	18						SPACE
			463			19	C	20						SPACE
ROADWAY LTG CKT C	5	2/40	740			21	A	22						SPACE
			740			23	C	24						SPACE
SPACE						25	A	26						SPACE
SPACE						27	C	28						SPACE
SPACE						29	A	30						SPACE
SPACE						31	C	32						SPACE
SECTION SUB-TOTALS			3886	0	0				0	0	13970			SECTION SUB-TOTALS

CATEGORY	CONN. KVA	LOAD AMPS	DESIGN DIV.	LOAD KVA	AMPS
LIGHTING:	12.1	50.4	1.25	15.1	63.0
RECEPTACLE:	5.8	24.0	1.00	5.8	24.0
MOTORS:	0.0	0.0	1.00	0.0	0.0
SPECIAL LOADS:	0.0	0.0	1.00	0.0	0.0
ELECTRIC HEATING:	0.0	0.0	1.00	0.0	0.0
WATER HEATING:	0.0	0.0	1.00	0.0	0.0
TOTAL:	17.9	74.4		20.9	87.0

MOUNTING:	SURFACE
VOLTS:	120/240
PHASE/WIRE:	1/3
MAINS SIZE:	600 AMPS
MAINS TYPE:	MLO
BUSS TYPE:	COPPER
BRKR TYPE:	BOLT-IN
AIC (RMS):	65,000
A Pha	9.4 Connected Kva
C Pha	8.5 Connected Kva

REMARKS:
FEEDER NO.:
1 = 2 #12, #12G - 3/4"C
2 = 2 #10, #10G - 3/4"C
3 = 3 #3/0, #6G - 2"C
4 = 3 #1, #16G, 1-1/4"C
5 = 2 #8, #10G - 1"C

- NOTE:
 1. FOR ROADWAY LIGHTING CIRCUITS 'A', 'B', & 'C', REFER TO "ILLUMINATION AND CONDUIT LAYOUT" AND ILLUMINATION ASSEMBLY LOCATIONS, CONDUIT, & CONDUCTOR SUMMARY SHEETS".

INTERIM REVIEW
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 ENGINEER: RAY PEYNADO
 P. E. SERIAL NO: 125390
 DATE: 02/16/2024



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 RICHARDSON, TX 75081-2275
 (214) 346-6200
 TBPELS ENGINEERING FIRM #312

REV. NO.	DATE	DESCRIPTION	BY



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



WB IH 30 CMV STATION
 ELECTRICAL
 SCHEDULES

SHEET 1 OF 2

DGN:	FED. RD. DIV. NO.:	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	190

Plotted on: 3/21/2024

Design File name: A:\36000s\36999\001\CADD\Sheet\srch\36999_103_SCHEDULES.dgn

PANELBOARD SCHEDULE TSD1														
DESIGNATION	FEEDER NO.	POLES & AMPS	LOAD, VA			C K	P H	C K	LOAD, VA			POLES & AMPS	FEEDER NO.	DESIGNATION
			LTG.	RECPT.	OTHER				LTG.	RECPT.	OTHER			
CANOPY HI-BAY LTG	1	1/20	1050			1	A	2			1620	1/20	2	GFCI RECEPTS SOUTH
CANOPY HI-BAY LTG	1	1/20	1050			3	C	4			1620	1/20	2	GFCI RECEPTS NORTH
CANOPY HI-BAY LTG	1	1/20	1050			5	A	6	320			1/20	1	FLOOD LIGHT SOUTH
CANOPY HI-BAY LTG	1	1/20	1050			7	C	8	320			1/20	1	FLOOD LIGHT NORTH
CANOPY HI-BAY LTG	1	1/20	1050			9	A	10	520			1/20	1	PIT LIGHTS
SPARE		1/20				11	C	12		720		1/20	2	PIT RECEPTS
SPARE		1/20				13	A	14				1/20		SPARE
SPARE		1/20				15	C	16				1/20		SPARE
SPARE		1/20				17	A	18				1/20		SPARE
SPARE		1/20				19	C	20				1/20		SPARE
SPARE		1/20				21	A	22				1/20		SPARE
SPARE		1/20				23	C	24				1/20		SPARE
SPARE		1/20				25	A	26				1/20		SPARE
SPARE		1/20				27	C	28				1/20		SPARE
SPARE		1/20				29	A	30				1/20		SPARE
SPACE		1/20				31	C	32				1/20		SPACE
SECTION SUB-TOTALS			5250	0	0				1160	3960	0	SECTION SUB-TOTALS		

CATEGORY	CONN. KVA	LOAD AMPS	DESIGN LOAD		MOUNTING:		SURFACE		REMARKS:
			DIV.	KVA	AMPS	VOLTS:	120/240		
LIGHTING:	6.4	26.7	1.25	8.0	33.4	PHASE/WIRE:	1/3		
RECEPTACLE:	4.0	16.5	1.00	4.0	16.5	MAINS SIZE:	125 AMPS		
MOTORS:	0.0	0.0	1.00	0.0	0.0	MAINS TYPE:	MCB		
SPECIAL LOADS:	0.0	0.0	1.00	0.0	0.0	BUSS TYPE:	COPPER		
ELECTRIC HEATING:	0.0	0.0	1.00	0.0	0.0	BRKR TYPE:	BOLT-IN		
WATER HEATING:	0.0	0.0	1.00	0.0	0.0	A. I. C. (RMS):	30,000		
TOTAL:	10.4	43.2		12.0	49.9	A Pha	5.6 Connected Kva		
						C Pha	4.8 Connected Kva		

PANELBOARD SCHEDULE TSD2														
DESIGNATION	FEEDER NO.	POLES & AMPS	LOAD, VA			C K	P H	C K	LOAD, VA			POLES & AMPS	FEEDER NO.	DESIGNATION
			LTG.	RECPT.	OTHER				LTG.	RECPT.	OTHER			
CANOPY HI-BAY LTG	1	1/20	900			1	A	2			900	1/20	2	RECEPTACLES
CANOPY HI-BAY LTG	1	1/20	900			3	C	4			900	1/20	2	RECEPTACLES
SPARE		1/20				5	A	6				1/20		SPARE
SPARE		1/20				7	C	8				1/20		SPARE
SPARE		1/20				9	A	10				1/20		SPARE
SPARE		1/20				11	C	12				1/20		SPARE
SPARE		1/20				13	A	14				1/20		SPARE
SPARE		1/20				15	C	16				1/20		SPARE
SPARE		1/20				17	A	18				1/20		SPARE
SPARE		1/20				19	C	20				1/20		SPARE
SPARE		1/20				21	A	22				1/20		SPARE
SPARE		1/20				23	C	24				1/20		SPARE
SECTION SUB-TOTALS			0	0	0				0	0	0	SECTION SUB-TOTALS		

CATEGORY	CONN. KVA	LOAD AMPS	DESIGN LOAD		MOUNTING:		SURFACE		REMARKS:
			DIV.	KVA	AMPS	VOLTS:	120/240		
LIGHTING:	1.8	7.5	1.25	2.3	9.4	PHASE/WIRE:	1/3		
RECEPTACLE:	1.8	7.5	1.00	1.8	7.5	MAINS SIZE:	125 AMPS		
MOTORS:	0.0	0.0	1.00	0.0	0.0	MAINS TYPE:	MCB		
SPECIAL LOADS:	0.0	0.0	1.00	0.0	0.0	BUSS TYPE:	COPPER		
ELECTRIC HEATING:	0.0	0.0	1.00	0.0	0.0	BRKR TYPE:	BOLT-IN		
WATER HEATING:	0.0	0.0	1.00	0.0	0.0	A. I. C. (RMS):	30,000		
TOTAL:	3.6	15.0		4.1	16.9	A Phase	1.8 Connected Kva		
						C Phase	1.8 Connected Kva		

INTERIM REVIEW
 DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: RAY PEYNADO
 P. E. SERIAL NO: 125390
 DATE: 02/16/2024



1201 NORTH BOWSER ROAD
 RICHARDSON, TX 75081-2275
 (214) 346-6200
 TBPELS ENGINEERING FIRM #312

REV. NO.	DATE	DESCRIPTION	BY



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

Texas Department of Transportation
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WB IH 30 CMV STATION
 ELECTRICAL SCHEDULES

SHEET 2 OF 2

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				IH 30
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	ATL	TITUS	0610	03	095	191

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GENERAL NOTES FOR ALL ELECTRICAL WORK

- The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.
- Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.
- Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is 1/2 in. or less in diameter.
- Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.
- Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.
- When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

- Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.
- Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.
- Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.


AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

- Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.
- Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.
- Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.
- Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

- Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.
- When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.
- Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

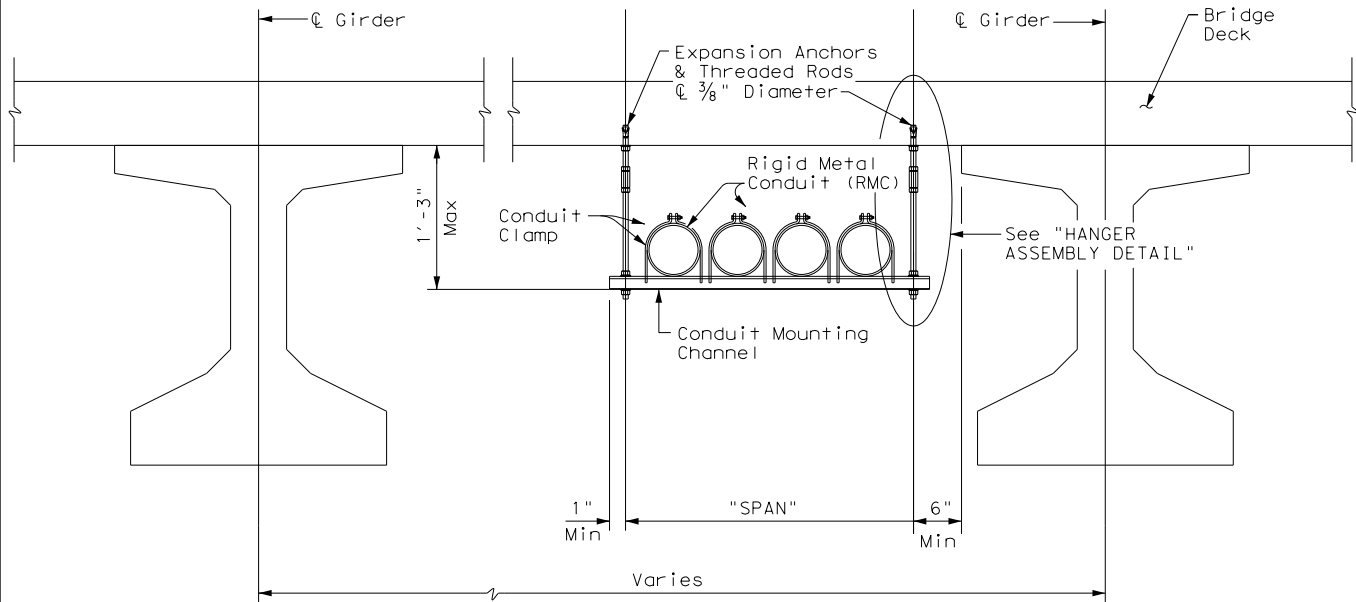
B. CONSTRUCTION METHODS

- Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.
- Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.
- Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.
- Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.
- When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."
- Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.
- During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.
- Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.
- Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.
- Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.
- At all electrical services, install a 6 AWG solid copper grounding electrode conductor.
- Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).
- Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.
- File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

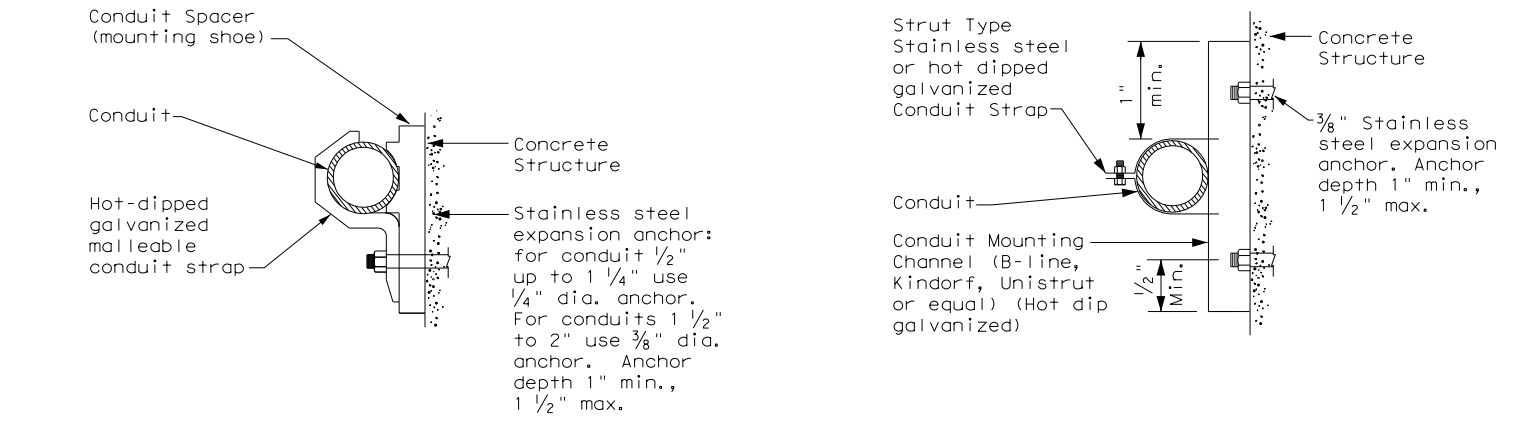
				Traffic Operations Division Standard	
<h1>ELECTRICAL DETAILS CONDUITS & NOTES</h1>					
<h2>ED(1) - 14</h2>					
FILE:	ed1-14.dgn	DWG:	CK:	DW:	CK:
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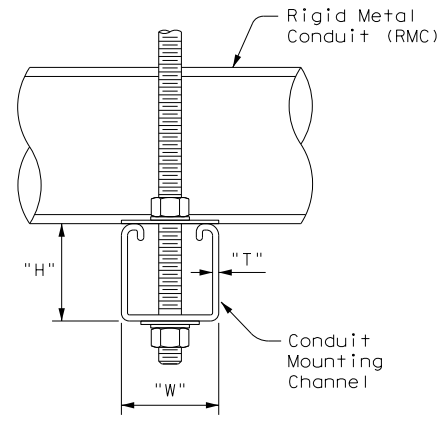
CONDUIT HANGING DETAIL



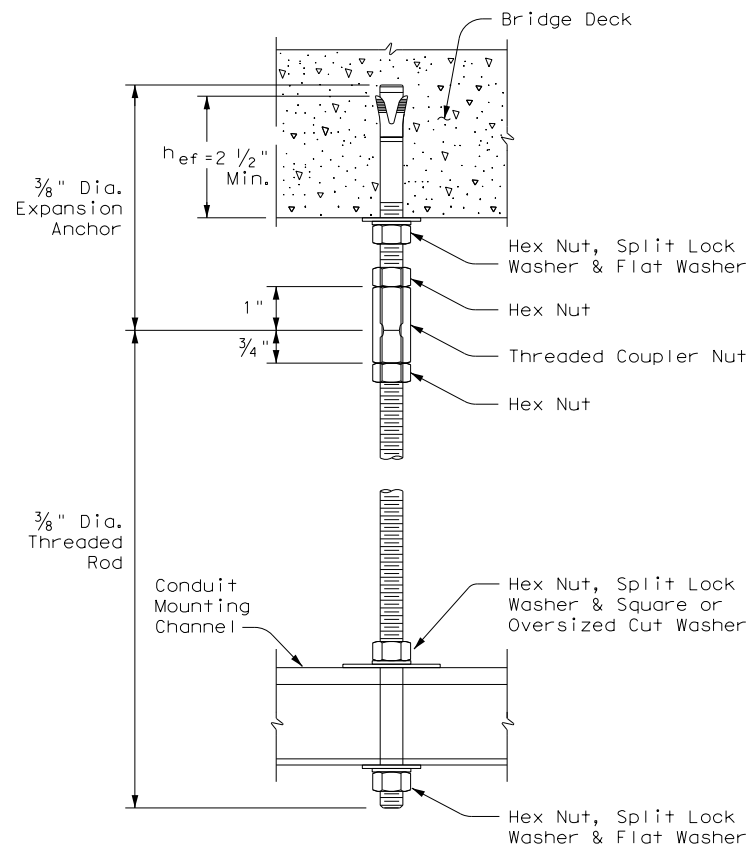
CONDUIT MOUNTING OPTIONS
 Attachment to concrete surfaces
 See ED(1)B.2

CONDUIT MOUNTING CHANNEL		
"SPAN"	"W" x "H"	"T"
less than 2'	1 5/8" x 1 3/8"	12 Ga.
2'-0" to 2'-6"	1 5/8" x 1 5/8"	12 Ga.
>2'-6" to 3'-0"	1 5/8" x 2 7/16"	12 Ga.

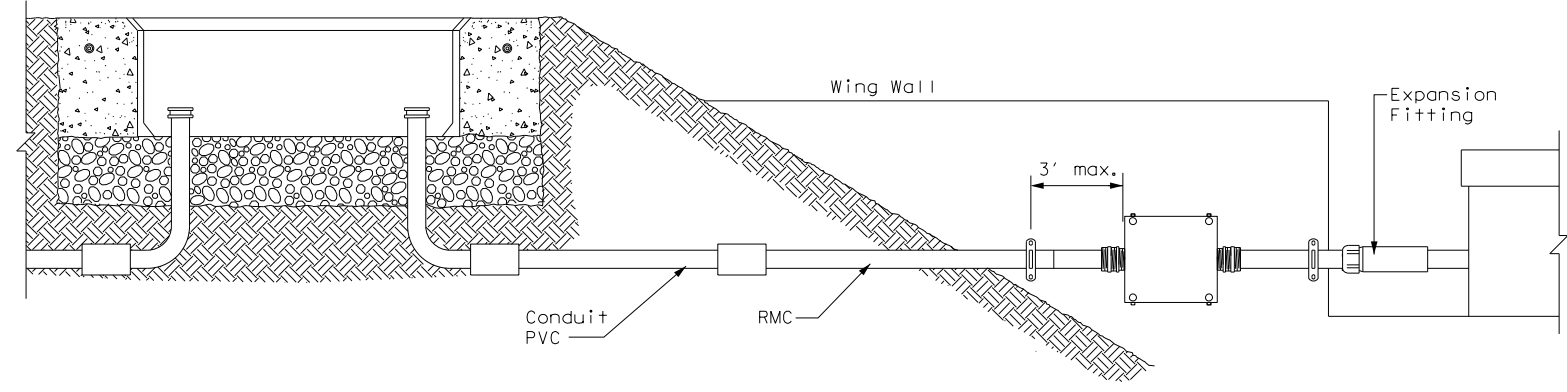
Channels with round or short slotted hole patterns are allowed, if the load carrying capacity is not reduced by more than 15%.



HANGER ASSEMBLY DETAIL



ELECTRIC CONDUIT TO BRIDGE DECK ATTACHMENT



TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL

EXPANSION ANCHOR NOTES FOR BRIDGE DECK ATTACHMENT

1. Use torque controlled mechanical expansion anchors that are approved for use in cracked concrete by the International Code Council, Evaluation Service (ICC-ES). The chosen anchor product shall have a designated ICC-ES Evaluation Report number, and its approval status shall be maintained on the ICC-ES website under Division 031600 for Concrete Anchors.
2. Unless otherwise approved by the Engineer: do not use adhesive anchors; do not use expansion anchors that are not included in the ICC-ES approval list; and do not use expansion anchors that are only approved for use in uncracked concrete.
3. Use anchors manufactured with stainless steel expansion wedges. Anchors manufactured with carbon steel expansion wedges are not allowed. Anchor bodies can be either zinc-plated carbon steel or stainless steel. For application in marine environment, both the anchor body and expansion wedge shall be stainless steel.
4. Install anchors as shown on the plans and in accordance with the anchor manufacturer's published installation instructions. Arrange a field demonstration test to evaluate the procedures and tools. The test shall be witnessed and approved by the Engineer prior to furnishing anchors on the structure.
5. Prior to hole drilling, use rebar locator to ensure clearing of existing deck strands or reinforcement. Install anchors to ensure a minimum effective embedment depth, (h_{ef}), as shown. Increase (h_{ef}) as needed to ensure sufficient thread length for proper torquing and tightening of anchors.
6. Use anchors of minimum 1600 Lbs tensile capacity (minimum of steel, concrete breakout, and concrete pullout strengths as determined by ACI 318 Appendix D) at the required minimum embedment depth (h_{ef}). No lateral loads shall be introduced after conduit installation.

		Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS CONDUIT SUPPORTS</h2>			
<h3>ED(2) - 14</h3>			
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REVISIONS	0610	03	095
	DIST	COUNTY	SHEET NO.
	ATL	TITUS	193

ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.
2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.
3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.
4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.
2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.
3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.
4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.
5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.
6. Support conductors in illumination poles with a J-hook at the top of the pole.
7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.
8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.
9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.
10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.
11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.
2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.
3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.
4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.
5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

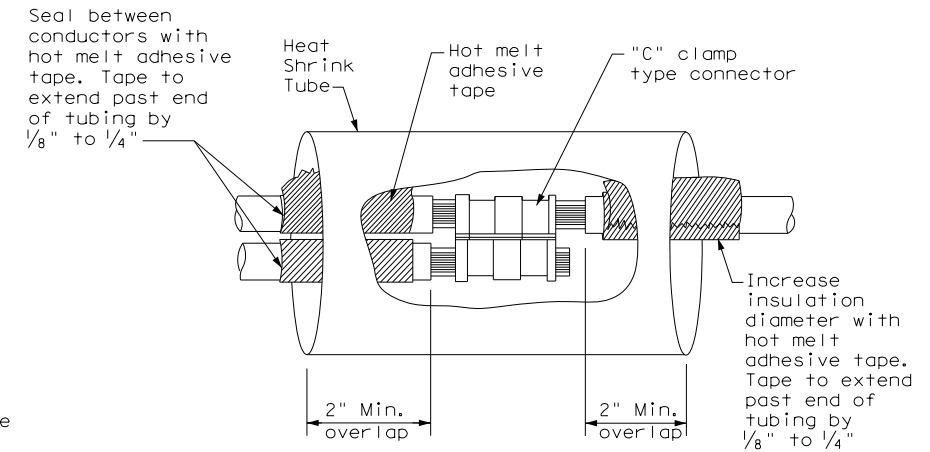
GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

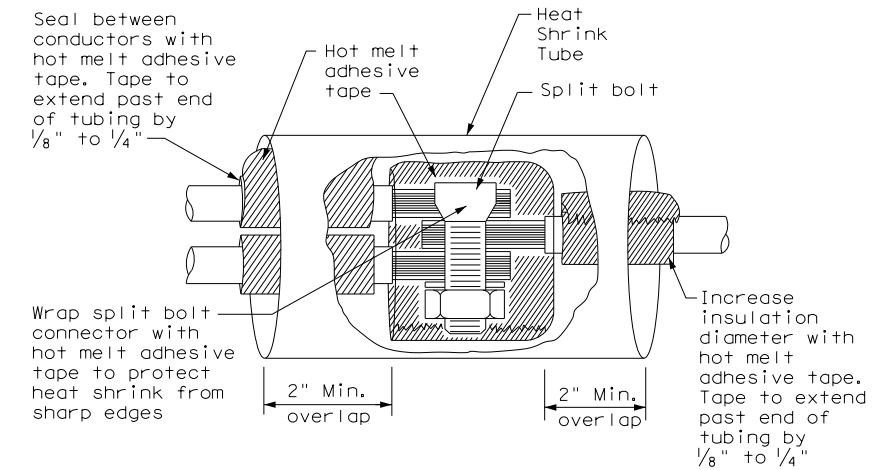
1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

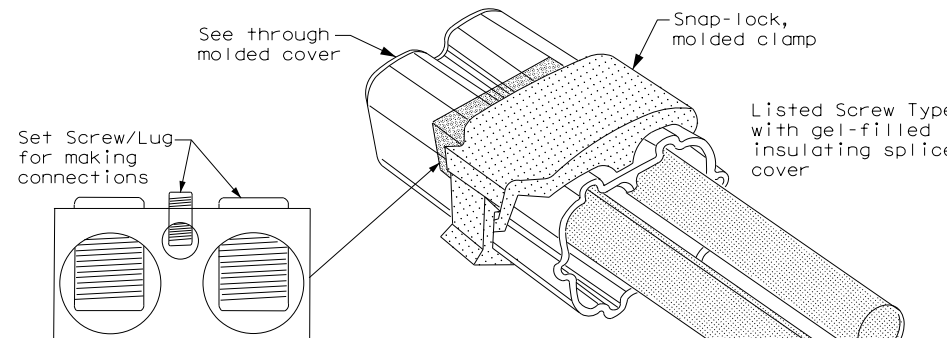
1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.
2. Do not place ground rods in the same drilled hole as a timber pole.
3. Install ground rods so the imprinted part number is at the upper end of the rod.
4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

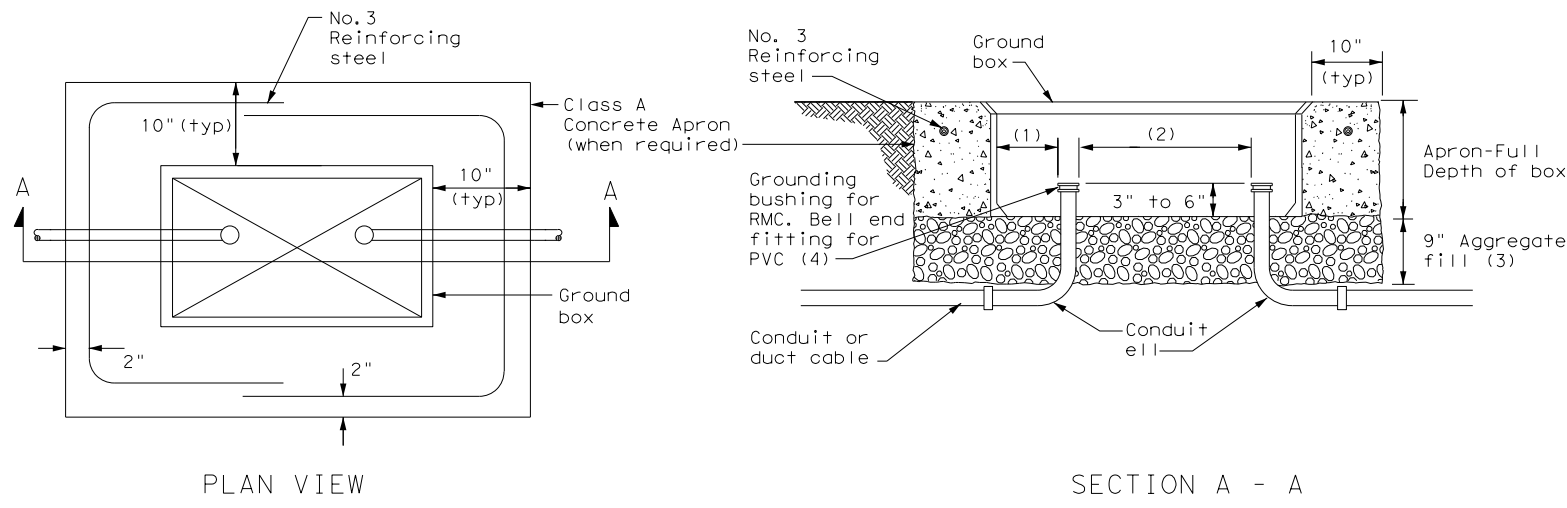
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		Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS CONDUCTORS</h2>			
<h3>ED(3) - 14</h3>			
FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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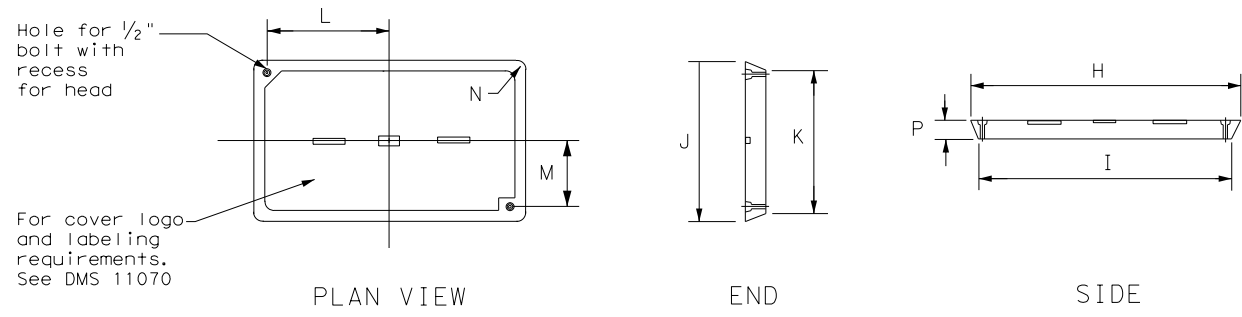


APRON FOR GROUND BOX

- (1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.
- (2) Maintain sufficient space between conduits to allow for proper installation of bushing.
- (3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.
- (4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."
2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.
3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.
4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.
2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.
3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.
4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.
5. Temporarily seal all conduits in the ground box until conductors are installed.
6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.
7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.
8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.
9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.
10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.
11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

				Traffic Operations Division Standard	
<h2>ELECTRICAL DETAILS GROUND BOXES</h2> <h3>ED(4) - 14</h3>					
FILE:	ed4-14.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	October 2014	CONT:	0610	SECT:	03
REVISIONS		JOB:	095	HIGHWAY:	IH 30
DIST:	ATL	COUNTY:	TITUS	SHEET NO.:	195

ELECTRICAL SERVICES NOTES

- Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.
- Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services," DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.
- Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.
- Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.
- The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.
- Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.
- When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.
- Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.
- All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.
- Provide rigid metal conduit (RMC) for all conduits on service, except for the 1/2 in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.
- Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.
- Ensure all mounting hardware and installation details of services conform to utility company specifications.
- For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 1/2 in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.
- When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 1/2 in. x 11 in. before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.
- Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

- Provide threaded hub for all conduit entries into the top of enclosure.
- Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.
- Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.
- Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

- Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.
- When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

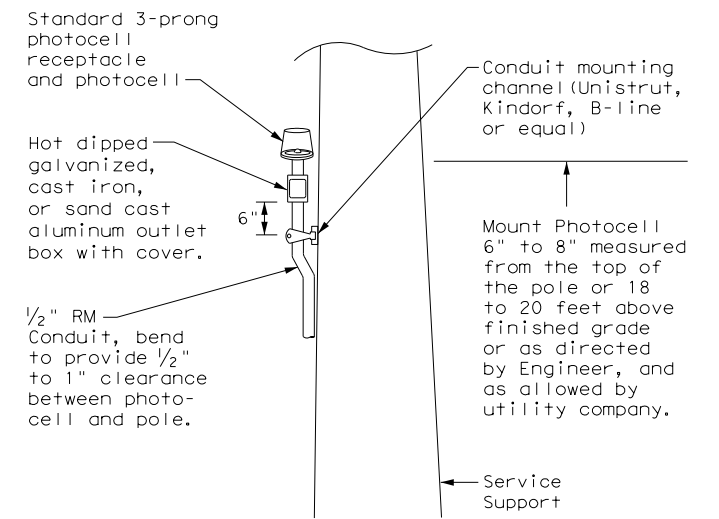
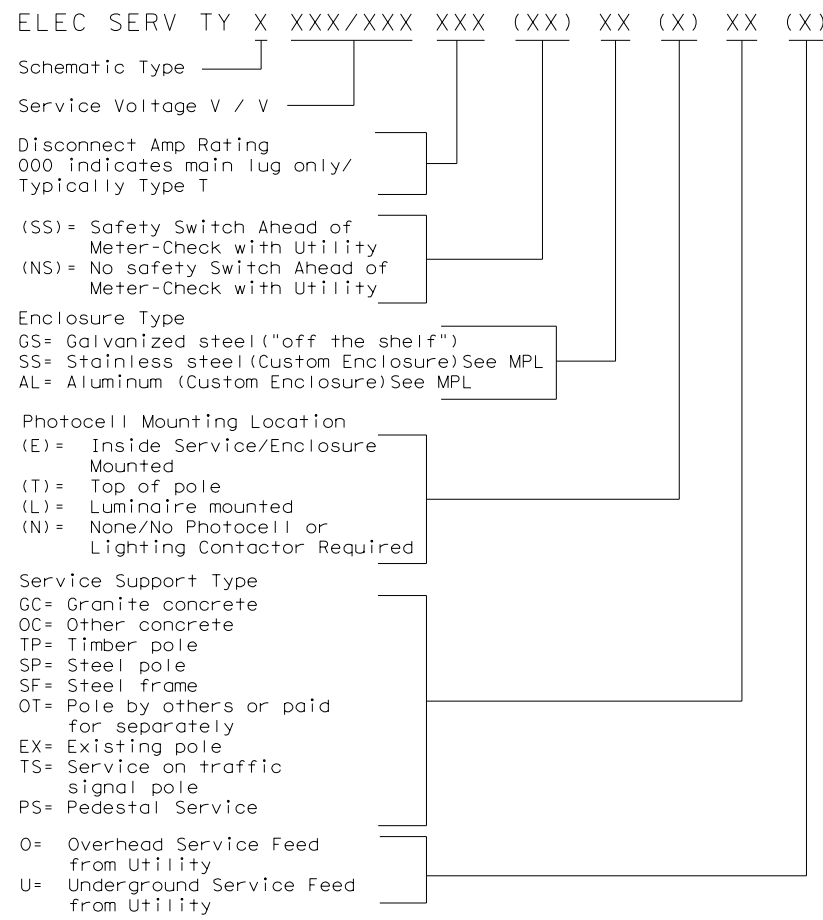
PHOTOELECTRIC CONTROL

- Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

* ELECTRICAL SERVICE DATA												
Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit *xS Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 1/4"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 1/4"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.
 ** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National Electrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

Texas Department of Transportation Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE NOTES & DATA

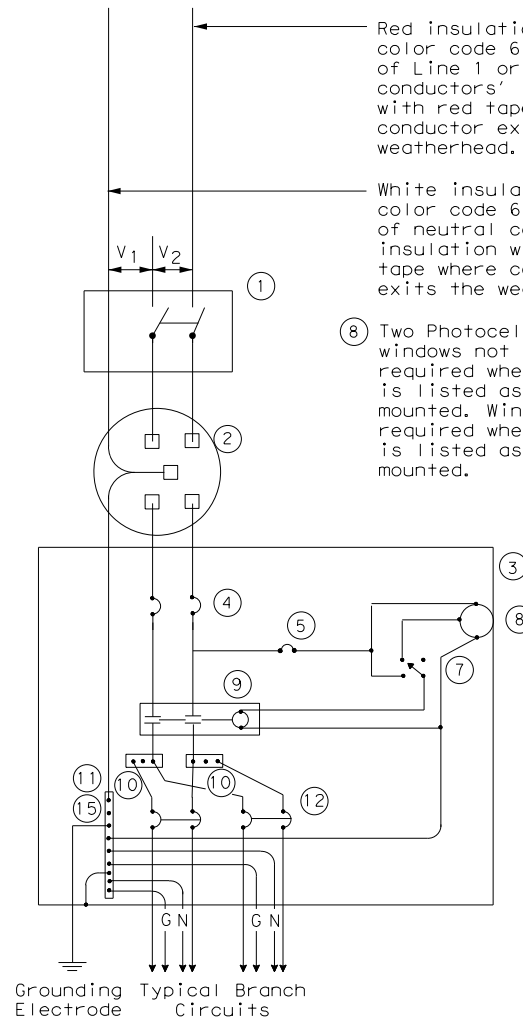
ED(5) - 14

FILE: ed5-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT	
© TxDOT October 2014	CONT	SECT	JOB	HIGHWAY	
REVISIONS		0610	03	095	IH 30
DIST	COUNTY		SHEET NO.		
ATL	TITUS		196		

DATE: 6/3/2024 1:56:49 PM
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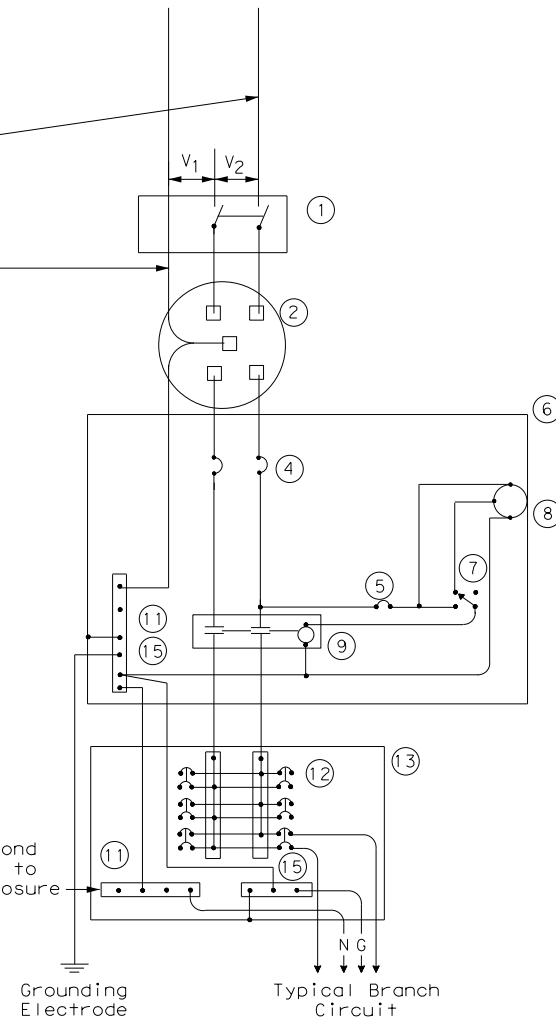


SCHEMATIC TYPE A
THREE WIRE

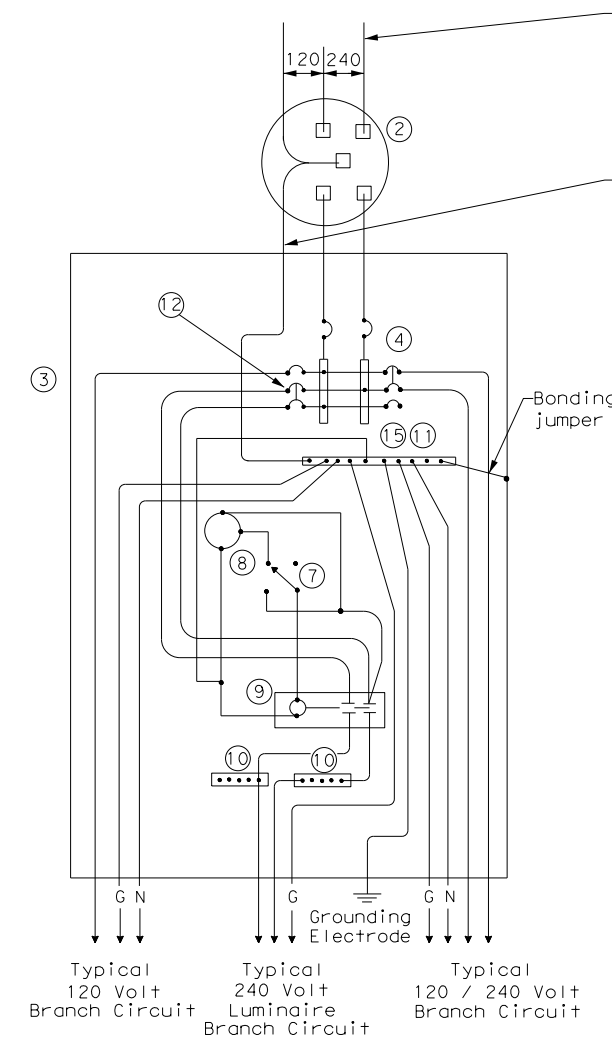
Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.
 White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.
 (8) Two Photocell viewing windows not shown but required when photocell is listed as enclosure mounted. Windows not required when photocell is listed as pole top mounted.

Do not bond this bus to the enclosure

WIRING LEGEND	
—	Power Wiring
- - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

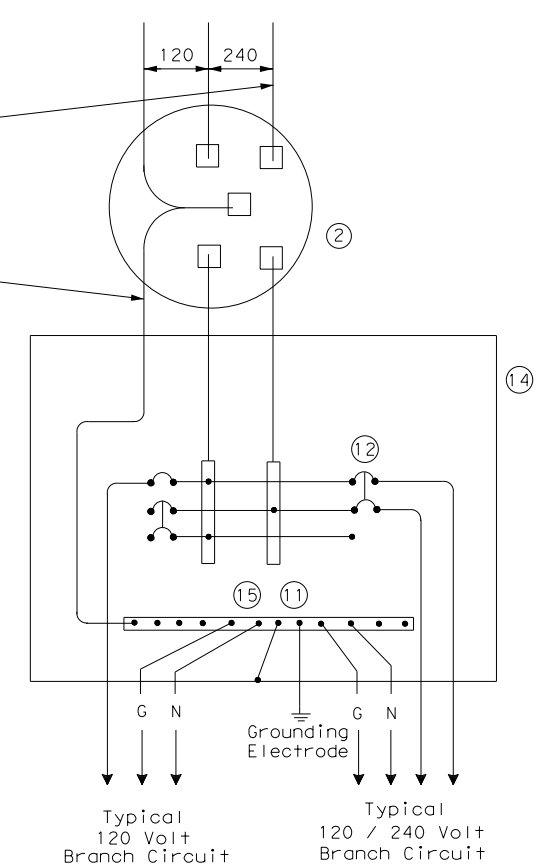


SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE

Red insulation or color code 6" length of Line 1 or Line 2 conductors' insulation with red tape where conductor exits the weatherhead.
 White insulation or color code 6" length of neutral conductors' insulation with white tape where conductor exits the weatherhead.



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE
Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

				Traffic Operations Division Standard	
ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES					
ED(6) - 14					
FILE:	ed6-14.dgn	DN:	TxDOT	CK:	TxDOT
© TxDOT	October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS		0610	03	095	IH 30
DIST	COUNTY	SHEET NO.			
ATL	TITUS	197			

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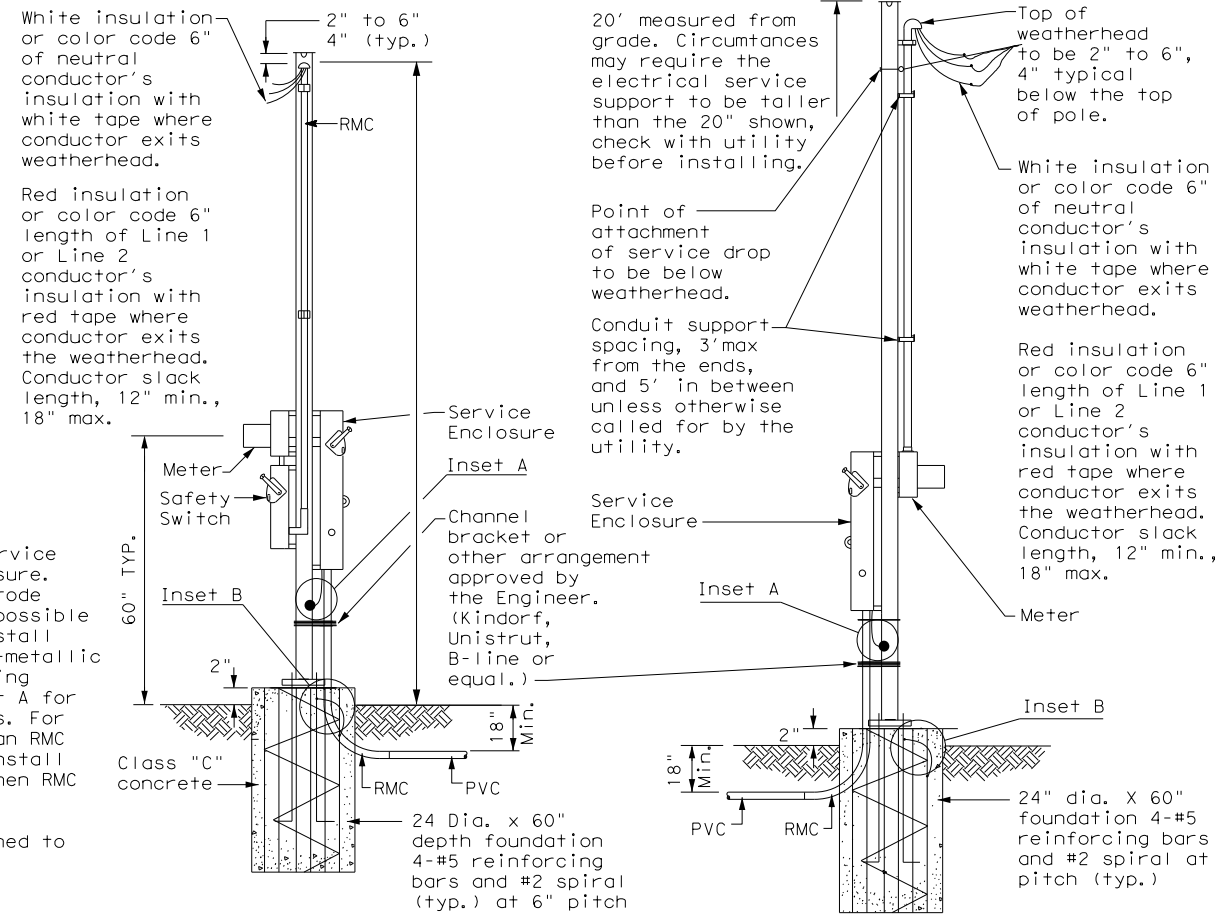
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SUPPORT TYPE STEEL POLE (SP) AND STEEL FRAME (SF)

- Provide steel pole and steel frame supports as per TxDOT Departmental Material Specification (DMS)11080 "Electrical Services." Mount all equipment and conduit on 12 gauge galvanized steel or stainless steel channel strut, 1 1/2 in. or 1 3/8 in. wide by 1 in. up to 3 3/4 in. deep Unistrut, Kindorf, B-line or equal. Bolt or weld all channel and hardware to vertical members as approved. Do not stack channel. File smooth and paint field cut ends of all channel with zinc-rich paint before installing.
- Provide poles for overhead service with an eyebolt or similar fitting for attachment of the service drop to the pole in conformance with the electric utility provider's specifications.
- Provide and install galvanized 3/4 in. x 18 in. x 4 in. (dia. x length x hook length) anchor bolts for underground service supports. Provide and install galvanized 3/4 in. x 56 in. x 4 in. anchor bolts for overhead service supports. Ensure anchor bolts have 3 in of thread, with 3 1/4 in. to 3 1/2 in. of the exposed anchor bolt projecting above finished foundation. Provide and install leveling nuts for all anchor bolts.
- Bond one of the anchor bolts to the rebar cage with 6 AWG bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. See Inset B.
- Furnish and install rigid metallic ells in all steel pole and steel frame foundations for all conduits entering the service from underground.
- Use class C concrete for foundations. Ensure reinforcing steel is Grade 60 with 3" of unobstructed concrete cover.
- Drill and tap steel poles and frames for 1/2 in. X 13 UNC tank ground fitting. For steel pole service supports, provide and install tank ground fitting 4 in. to 6 in. below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. For steel frame service supports, provide and install tank ground fitting on steel frame post. Install service grounding electrode conductor in a non-metallic conduit or tubing from the enclosure to the steel frame post. Connect electrical service grounding electrode conductor to the tank ground fitting. See steel frame and steel pole details and Inset A for more information. Size service entrance conduit and branch circuit conduit as shown in the plans. For underground conduit runs from the electrical service, extend RMC from the service enclosure to an RMC elbow, and then connect the schedule type and size of conduit shown in the plans. Provide and install grounding bushings where RMC terminates in the enclosure. Grounding bushings are not required when RMC is fitted into a sealing hub or threaded boss.
- If Steel pole or frame is painted, bond each separate painted piece with a bonding jumper attached to a tapped hole.
- Provide 1/4" - 20 machine screws for bonding. Do not use sheet metal screws. Remove all non-conductive material at contact points. Terminate bonding jumpers with listed devices. Install minimum size 6 AWG stranded copper bonding jumpers. Make up all threaded bonding connections wrench tight.
- Avoid contact of the service drop and service entrance conductors with the metal pole to prevent abrasion of the insulated conductors.
- Shop drawings are not required for service support structure unless specifically stated elsewhere or directed by the Engineer.

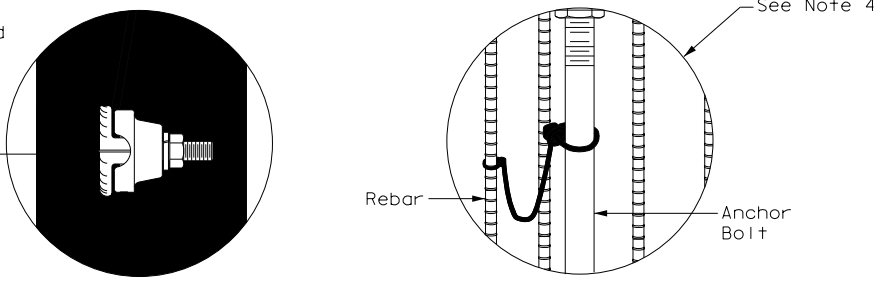
White insulation or color code 6" of neutral conductor's insulation with white tape where conductor exits weatherhead.

Red insulation or color code 6" length of Line 1 or Line 2 conductor's insulation with red tape where conductor exits the weatherhead. Conductor slack length, 12" min., 18" max.

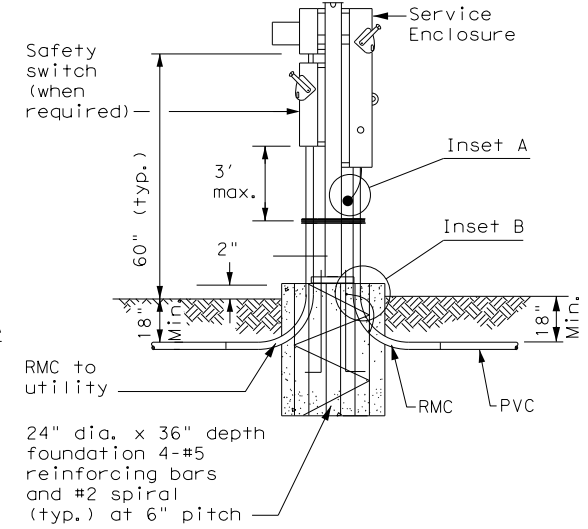


WITH SAFETY SWITCH
WITHOUT SAFETY SWITCH
SERVICE SUPPORT TYPE SP (O) - OVERHEAD SERVICE

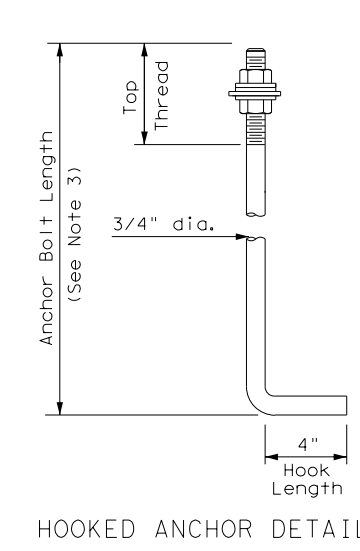
Drill, tap, and thread 1/2" X 13 UNC. Install tank ground fitting, connect electrical service grounding electrode conductor. See Note 7.



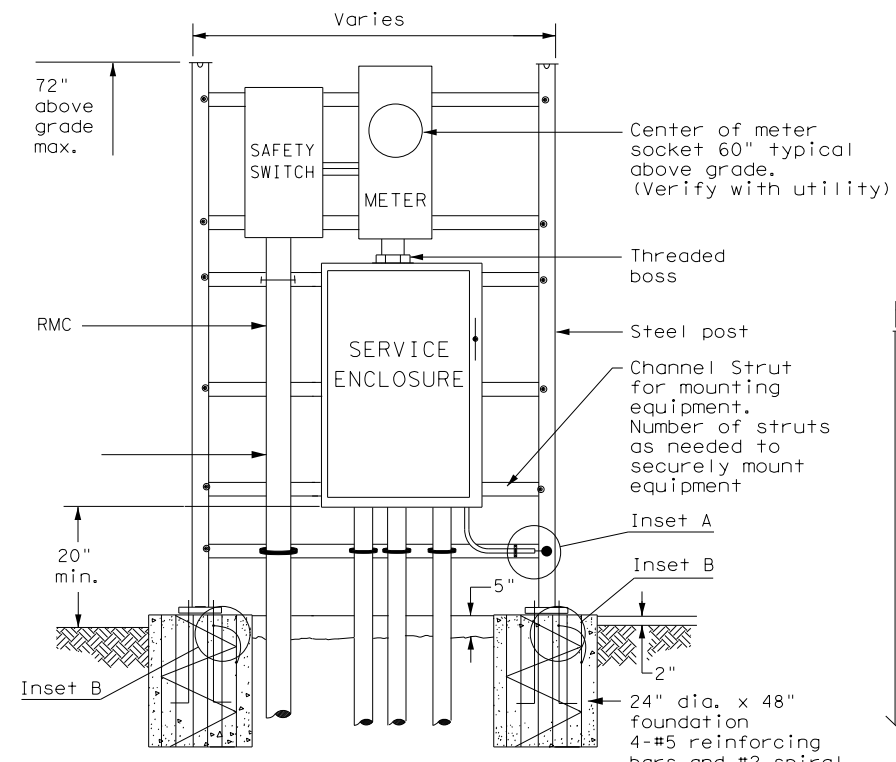
FRONT VIEW INSET A
INSET B



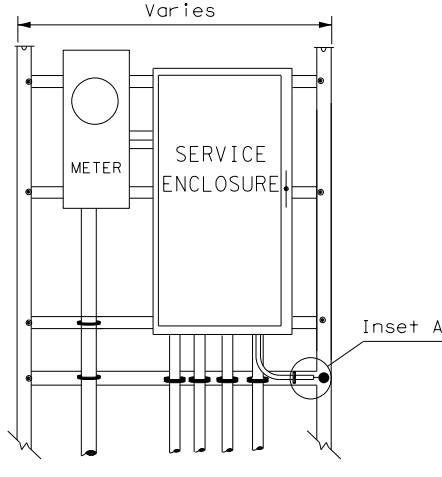
WITH SAFETY SWITCH
SERVICE SUPPORT TYPE SP (U) - UNDERGROUND SERVICE



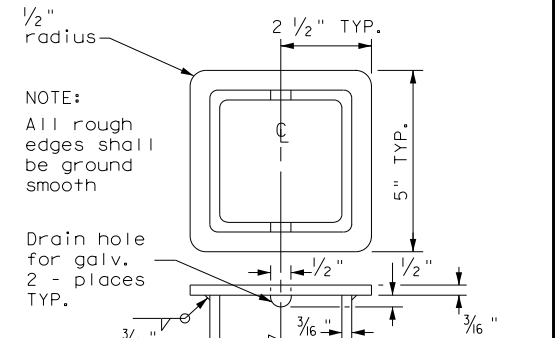
HOOKED ANCHOR DETAIL



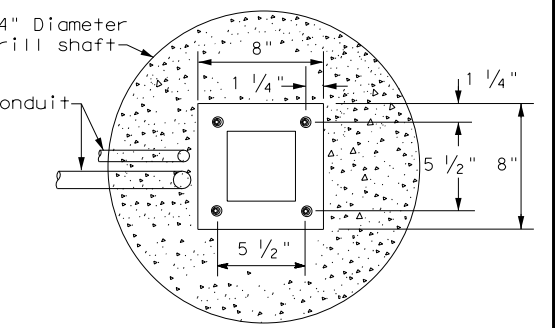
WITH SAFETY SWITCH
FRONT VIEW
SERVICE SUPPORT TYPE SF (U) - UNDERGROUND SERVICE



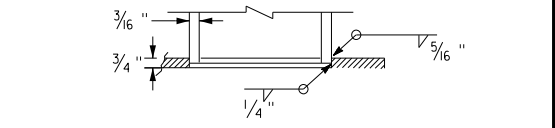
WITHOUT SAFETY SWITCH



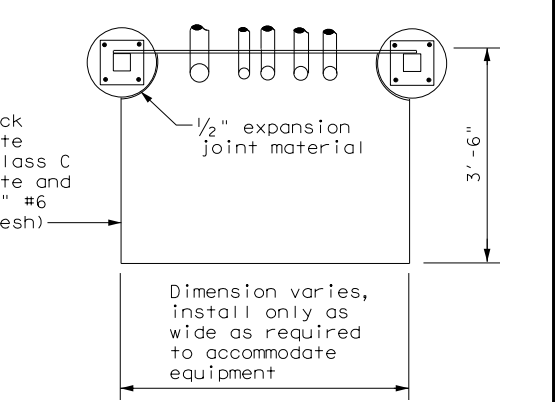
POLE TOP PLATE



BASE PLATE DETAIL



BOTTOM OF POLE



TOP VIEW
SERVICE SUPPORT TY SF (O) & SF (U)

		Traffic Operations Division Standard	
ELECTRICAL DETAILS SERVICE SUPPORT TYPES SF & SP ED(7)-14			
FILE: ed7-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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REVISIONS			HIGHWAY: IH 30
	DIST: ATL	COUNTY: TITUS	SHEET NO.: 198

ROADWAY ILLUMINATION ASSEMBLY NOTES

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1. Details apply to roadway lighting installations bid or referenced under Item 610, "Roadway Illumination Assemblies." Provide, furnish, and install all other materials not shown on the plans which may be necessary for complete and proper construction. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the State such warranties or guarantees.
2. The locations of poles and fixtures may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
3. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association, Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection.
4. Provide Roadway Illumination Light Fixtures as per TxDOT Departmental Material Specification (DMS) 11010, Item 610, and as shown on the Material Producers List (MPL) for Roadway Illumination and Electrical Supplies.
5. Fabricate steel roadway illumination poles in accordance with Roadway Illumination Poles (RIP) standards and Item 610. Poles fabricated according to RIP standards do not require shop drawing submittals.
 - a. Alternate designs to RIP standards or the use of aluminum to fabricate poles will require the submission of shop drawings electronically. For instructions on submitting shop drawings electronically see "Guide to Electronic Shop Drawing Submittal" on the TxDOT web site.
 - b. Limitations on use of the RIP standard: The RIP standard details were developed for installations in locations where the 3-second gust basic maximum wind speed is 110 mph, and where the elevation of the base of the pole is less than (i.e. not more than) 25' above the elevation of the surrounding terrain, in accordance with the "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," 6th Edition (2013) of the AASHTO Design Specifications. For poles to be installed in regions where the maximum basic wind speed exceeds 110 mph or to be mounted more than 25' above the surrounding terrain, provide poles meeting the following requirements:
 - i. Submittals. Following the electronic shop drawing submittal process (see Guide to Electronic Shop Drawing Submittal on the TxDOT web site), submit to the Engineer for approval fabrication drawings and calculations for the poles, sealed by a Texas licensed professional engineer (P.E.).
 - ii. Luminaire Structural Support Requirements. Provide light poles, arms, and anchor bolt assemblies with a 25 year design life to safely resist dead loads, ice loads and the required basic wind speeds at the location of installation in accordance with the 6th edition (2013) of the AASHTO Design Specifications. For transformer base poles, include transformer base and connecting hardware in calculations and shop drawing submittals. Structurally test all transformer bases to resist the theoretical plastic moment capacity of the pole. Submit certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished with the shop drawings. Show breakaway base model number, manufacturer's name, and logo on shop drawings. Include on manufacturer's shop drawings the ASTM designations for all materials to be used.
6. For both transformer and shoe-base type illumination poles, provide and install double-pole breakaway fuse holders as specified by DMS-11040. Breakaway fuse holders are listed on the MPL for Roadway Illumination and Electrical Supplies under Items 610 & 620. Provide 10 amp time delay fuses for breakaway connectors in light poles, or inside the light fixture for underpass luminaires. In each pole, connect luminaires to the breakaway connector with continuous stranded 12 AWG copper conductors as listed on the MPL. Bond all equipment grounding conductors together and to the ground lug in the transformer base or hand hole.
7. Tighten anchor bolts for shoe base, concrete traffic barrier base, and bridge mount roadway illumination poles, in accordance with Item 449.
8. Install T-Base with following procedure:
 - a. Anchor Bolt Tightening.
 - i. Coat the threads of the anchor bolts with electrically conductive lubricant.
 - ii. Place the T-base over the anchor bolts. Foundation must be level and flat. The maximum permissible gap under any one corner of the T-base is 1/8" before nuts are tightened.
 - iii. Coat the bearing surfaces of the nuts and washers with electrically conductive lubricant. Install (1) 1/2" hold down washer, (1) lock washer, and (1) nut on each anchor bolt. Turn the nuts onto the bolts so that each is hand-tight against the washer.
 - iv. Using a torque wrench, tighten each nut to 150 ft-lb. Uniform contact is required between the foundation and the T-base in the corner regions of the T-base, and all corner gaps must be closed after applying torque. If a gap still exists after torquing to 150 ft-lbs, continue torquing each bolt incrementally until gap is closed or maximum allowable torque of 250 ft. pound is reached, whichever comes first. If 250 ft-lbs is not enough to close the gap the foundation must be leveled. Gaps along the straight sides of the T-bases and the foundation are permissible. Ensure that no high point of contact occurs between the straight sides of the T-base and the foundation.
 - v. Check top of T-base for level. If not level then foundation must be leveled.
 - b. Top Bolt Procedure
 - i. Erect pole over T-base with crane. Coat bolts, nuts, washers, and lock washers with electrically conductive lubricant.

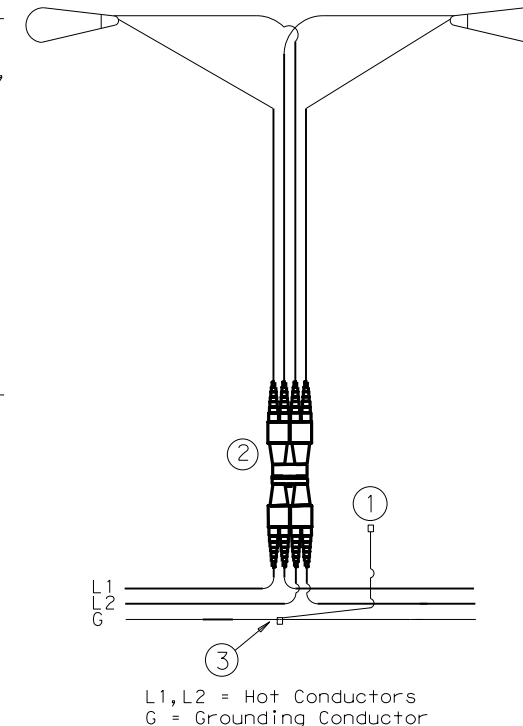
- ii. Install bolts and 1/2" connecting washers from the inside of the T-base, thread up through the pole base. Install flat washers, lock washers and nuts snug tight according to Item 447, "Structural Bolting."
- iii. Tighten each nut to 150 ft-lb. using a torque wrench.
- c. Level and Plumb
 - i. Ensure pole is plumb and mast arm is perpendicular to the roadway according to plans to within 5 degrees.
9. Construct luminaire pole foundations in accordance with Item 416, "Drilled Shaft Foundations," and TxDOT standard sheet RID(2).
10. Provide and install underpass luminaires in accordance with Item 610, DMS-11010, and TxDOT standard sheet RID(3). Typical luminaire size for underpass luminaires is 150W HPS or 150W EQ LED.
11. Mount luminaires on arms level as shown by the luminaire level indicator.
12. Orient luminaires perpendicular to the roadway intended to be lit unless otherwise shown on the plans.

Wiring Diagram Notes:

- ① Use 1/2 in. -13 UNC threaded, copper or tin-plated copper, pole bonding connector, sized appropriately for conductors, bonded to T-base, or use ground lug in handhole as available.
- ② Use pre-qualified two-pole breakaway connectors for all luminaire pole installations. For luminaires fed by a circuit with a neutral conductor, use double pole breakaway connectors with the neutral side unfused and marked white.
- ③ Split Bolt or other connector.

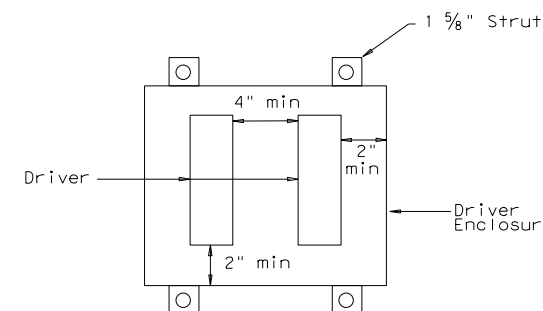
Decorative LED Lighting Notes:

1. LED Drivers in Remote Outdoor enclosures (for drivers that do not include an enclosure as part of a factory assembly):
 - a. Provide NEMA 3R outdoor enclosure or as approved.
 - b. Install enclosure at least 12" above ground or other horizontal surface. Mount vertically or on ceiling, and avoid direct sun where possible.
 - c. Install drivers with at least 2 inches of space from enclosure walls.
 - d. For multiple drivers in an enclosure, provide at least 4 inches side to side and 1 inch end to end from other drivers or electronic equipment
 - e. For drivers mounted on back wall of enclosure, mount enclosure on 1 5/8" strut or other standoff to dissipate heat, or mount driver to side of the enclosure or to the metal cover.
 - f. Provide remote drivers with a maximum of 100 watts
 - g. Provide drivers with documentation of 100,000 hr lifetime at Tcase of 65C or higher.



TYPICAL WIRING DIAGRAM

LUMINAIRES SERVED AT 480V ON 240/480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR 120/240 VOLT SERVICE.

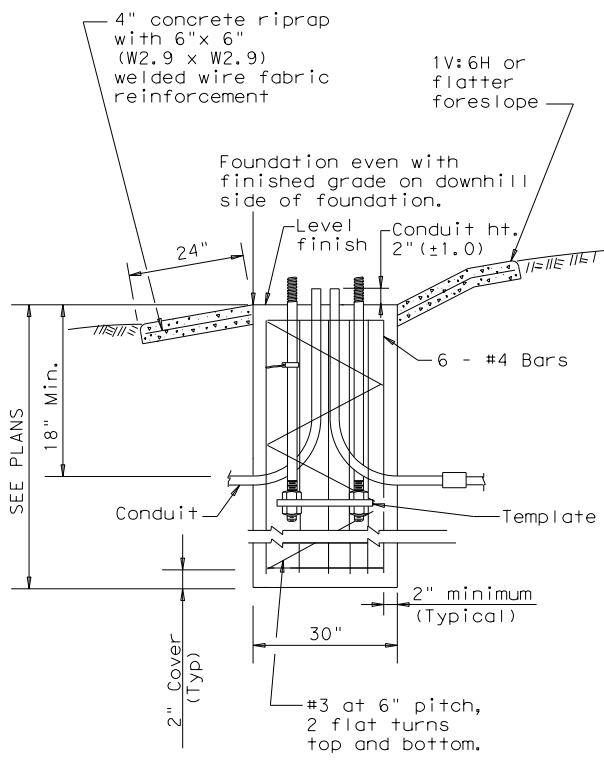


Driver Spacing In Remote Enclosure

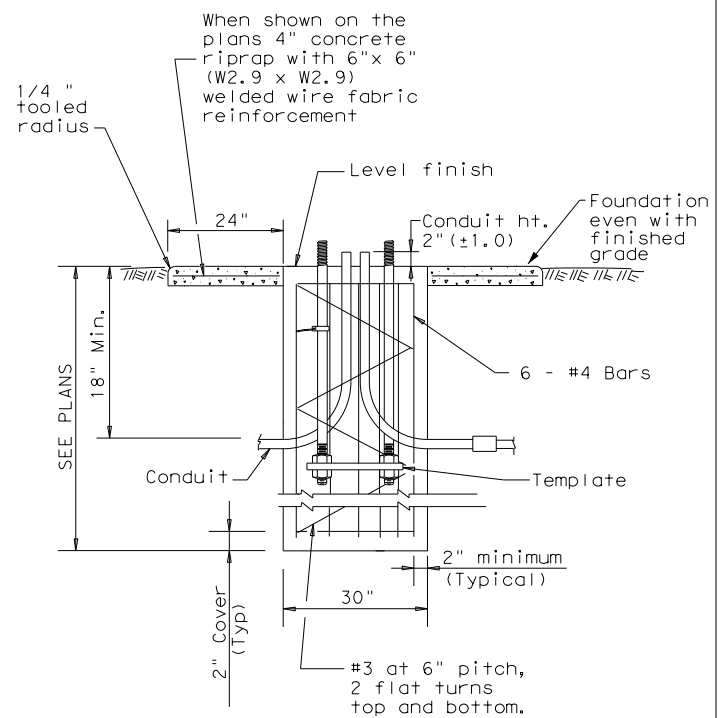
		Traffic Safety Division Standard	
<h1>ROADWAY ILLUMINATION DETAILS</h1>			
<h2>RID(1)-20</h2>			
FILE: rid1-20.dgn	DN:	CK:	DW:
© TxDOT January 2007	CONT	SECT	JOB
REVISIONS	0610	03	095
7-17	DIST	COUNTY	SHEET NO.
12-20	ATL	TITUS	199

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SECTION A-A
SHOWING SLOPED GRADE



SECTION A-A
SHOWING CONSTANT GRADE

TABLE 1

ANCHOR BOLTS

POLE MOUNTING HEIGHT	BOLT CIRCLE		ANCHOR BOLT SIZE
	Shoe Base	T-Base	
<40 ft.	13 in.	14 in.	1 in. x 30 in.
40-50 ft.	15 in.	17 1/4 in.	1 1/4 in. x 30 in.

TABLE 2

RECOMMENDED FOUNDATION LENGTHS (See note 1)

MOUNTING HEIGHT	TEXAS CONE PENETROMETER N Blows/ft		
	10	15	40
≤20 ft.	6'	6'	6'
>20 ft. to 30 ft.	8'	6'	6'
>30 ft. to 40 ft.	8'	8'	6'
>40 ft. to 50 ft.	10'	8'	6'

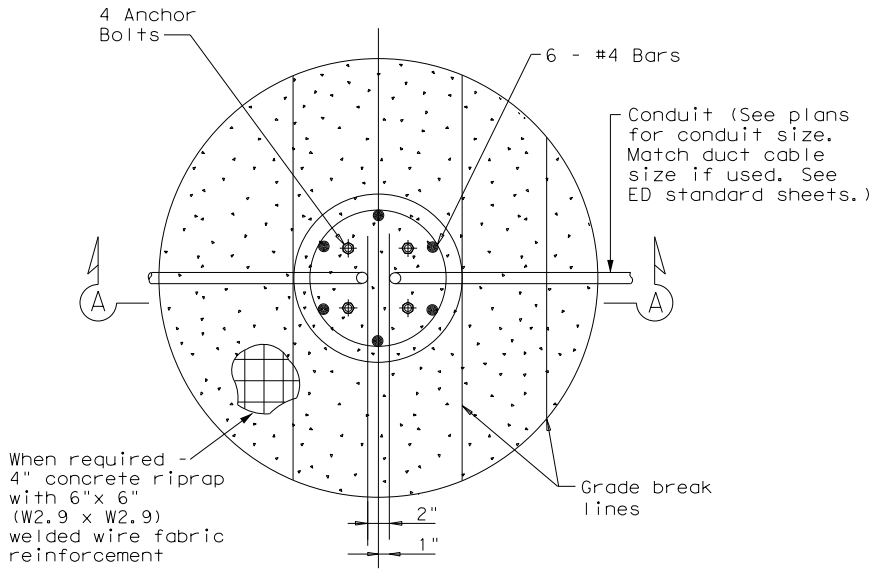
TABLE 3

PAY QUANTITY OF RIPRAP PER FOUNDATION (Install only when shown on the plans)

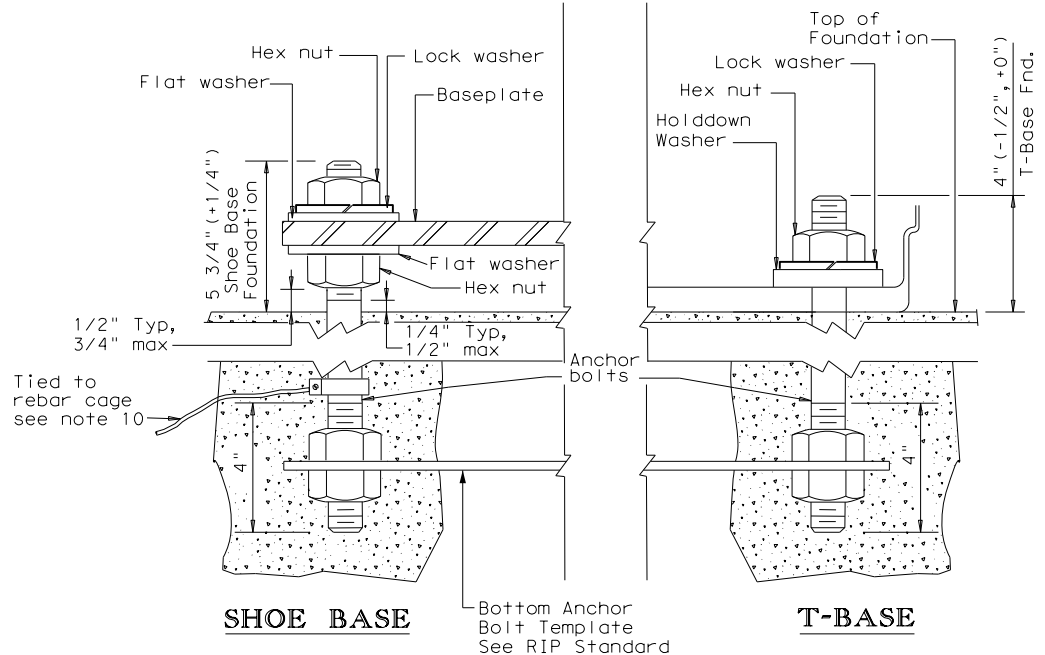
Foundation Diameter	RIPRAP DIAMETER	RIPRAP (CONC) (CL B)
30 in.	78 in.	0.35 CY

GENERAL NOTES:

1. "Recommended Foundation Lengths" table is for information purposes only. Foundation lengths shall be as shown on the plans, or as directed by the Engineer. Foundations will be paid for under Item 416, "Drilled Shaft Foundations," unless otherwise shown on the plans.
2. Erect roadway illumination assembly poles plumb and true. Form and level the top 6" of the foundation so the pole will be plumb. Use leveling nuts to plumb shoe base poles. Do not use shims or leveling nuts under transformer bases. Do not grout between baseplate and the foundation.
3. Ensure Class 2A and 2B fit for anchor bolts and nuts. Tap and chase nuts after galvanizing. Anchor bolt body with rolled threads need not be full size.
4. Use appropriate class of concrete as specified in Items 416 and 432. Concrete for riprap may be upgraded to Class C at no extra cost to the Department.
5. Place riprap around the foundation when called for elsewhere in the plans. Riprap will be paid for under Item 432.
6. Locate breakaway roadway illumination assemblies as shown in the placement table, unless otherwise dimensioned on the plans. Protect non-breakaway illumination assemblies from vehicular impact (i.e. 2.5 ft. behind guard rail or mounted on traffic barrier), or located outside the clear zone, except that 2.5 ft. from curb face is minimum desired for light poles on city streets, 45 mph or less. See Roadway Design Manual for further information.
7. Use 4 hold down and 4 connecting washers on transformer base poles as recommended by the manufacturer and supplied with base.
8. Install a minimum of 2 conduits in each foundation. See lighting layout sheets for locations of foundations with more than 2 conduits. Cap unused conduits in foundations on both ends.
9. Conduit location in foundations is critical for breakaway devices. Place conduits 2 in. apart on centerline as shown.
10. Bond anchor bolt to rebar cage with #6 bare stranded copper conductor. Use listed mechanical connectors rated for embedment in concrete. The bonded steel in the foundation creates a concrete encased grounding electrode which replaces the ground rod.
11. Grade earthwork around T-base foundations even with the finished grade as shown in Section A-A to ensure proper function of the breakaway device. Use riprap on T-base foundations that are located on sloped grades, and as shown on the plans for level grades.



FOUNDATION DETAIL



ANCHOR BOLT DETAIL

TABLE 4

BREAKAWAY POLE PLACEMENT (See note 6)

ROADWAY FUNCTIONAL CLASSIFICATION	** POLE OFFSET (DISTANCE TO FACE OF TRANSFORMER BASE)
Freeway Mainlanes (roadway with full control of access)	15 ft. (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft. minimum (15 ft. desirable) from curb face
All others	10 ft. minimum*(15 ft. desirable) from lane edge

* or as close to ROW line as is practical

** provide 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on the other travel lanes. See design guidelines.

Texas Department of Transportation
 Traffic Safety Division Standard

ROADWAY ILLUMINATION DETAILS (RDWY ILLUM FOUNDATIONS) RID(2)-20

FILE: rid2-20.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
1-11	DIST	COUNTY	SHEET NO.	
7-17	ATL	TITUS	200	
12-20				

SHIPPING PARTS LIST - POLES AND LUMINAIRE ARMS

Nominal Mounting Ht. (ft)	Shoe Base					T-Base					CSB/SSCB Mounted					
	Designation				Quantity	Designation				Quantity	Designation				Quantity	
	Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire		Pole	A1	A2	Luminaire		
20	(Type SA 20 S - 4)			(150W EQ) LED		(Type SA 20 T - 4)			(150W EQ) LED							
	(Type SA 20 S - 4 - 4)			(150W EQ) LED		(Type SA 20 T - 4 - 4)			(150W EQ) LED							
30	(Type SA 30 S - 4)			(250W EQ) LED		(Type SA 30 T - 4)			(250W EQ) LED			(Type SP 28 S - 4)		(250W EQ) LED		
	(Type SA 30 S - 4 - 4)			(250W EQ) LED		(Type SA 30 T - 4 - 4)			(250W EQ) LED			(Type SP 28 S - 4 - 4)		(250W EQ) LED		
	(Type SA 30 S - 8)			(250W EQ) LED		(Type SA 30 T - 8)			(250W EQ) LED			(Type SP 28 S - 8)		(250W EQ) LED		
	(Type SA 30 S - 8 - 8)			(250W EQ) LED		(Type SA 30 T - 8 - 8)			(250W EQ) LED			(Type SP 28 S - 8 - 8)		(250W EQ) LED		
40	(Type SA 40 S - 4)			(250W EQ) LED		(Type SA 40 T - 4)			(250W EQ) LED			(Type SP 38 S - 4)		(250W EQ) LED		
	(Type SA 40 S - 4 - 4)			(250W EQ) LED		(Type SA 40 T - 4 - 4)			(250W EQ) LED			(Type SP 38 S - 4 - 4)		(250W EQ) LED		
	(Type SA 40 S - 8)			(250W EQ) LED		(Type SA 40 T - 8)			(250W EQ) LED			(Type SP 38 S - 8)		(250W EQ) LED		
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	(Type SA 40 S - 10)			(250W EQ) LED		(Type SA 40 T - 10)			(250W EQ) LED			(Type SP 38 S - 10)		(250W EQ) LED		
	(Type SA 40 S - 10 - 10)			(250W EQ) LED		(Type SA 40 T - 10 - 10)			(250W EQ) LED			(Type SP 38 S - 10 - 10)		(250W EQ) LED		
	(Type SA 40 S - 12)			(250W EQ) LED		(Type SA 40 T - 12)			(250W EQ) LED			(Type SP 38 S - 12)		(250W EQ) LED		
	(Type SA 40 S - 12 - 12)			(250W EQ) LED		(Type SA 40 T - 12 - 12)			(250W EQ) LED			(Type SP 38 S - 12 - 12)		(250W EQ) LED		
50	(Type SA 50 S - 4)			(400W EQ) LED		(Type SA 50 T - 4)			(400W EQ) LED			(Type SP 48 S - 4)		(400W EQ) LED		
	(Type SA 50 S - 4 - 4)			(400W EQ) LED		(Type SA 50 T - 4 - 4)			(400W EQ) LED			(Type SP 48 S - 4 - 4)		(400W EQ) LED		
	(Type SA 50 S - 8)			(400W EQ) LED		(Type SA 50 T - 8)			(400W EQ) LED			(Type SP 48 S - 8)		(400W EQ) LED		
	(Type SA 50 S - 8 - 8)			(400W EQ) LED		(Type SA 50 T - 8 - 8)			(400W EQ) LED			(Type SP 48 S - 8 - 8)		(400W EQ) LED		
	(Type SA 50 S - 10)			(400W EQ) LED		(Type SA 50 T - 10)			(400W EQ) LED	17		(Type SP 48 S - 10)		(400W EQ) LED		
	(Type SA 50 S - 10 - 10)			(400W EQ) LED		(Type SA 50 T - 10 - 10)			(400W EQ) LED			(Type SP 48 S - 10 - 10)		(400W EQ) LED		
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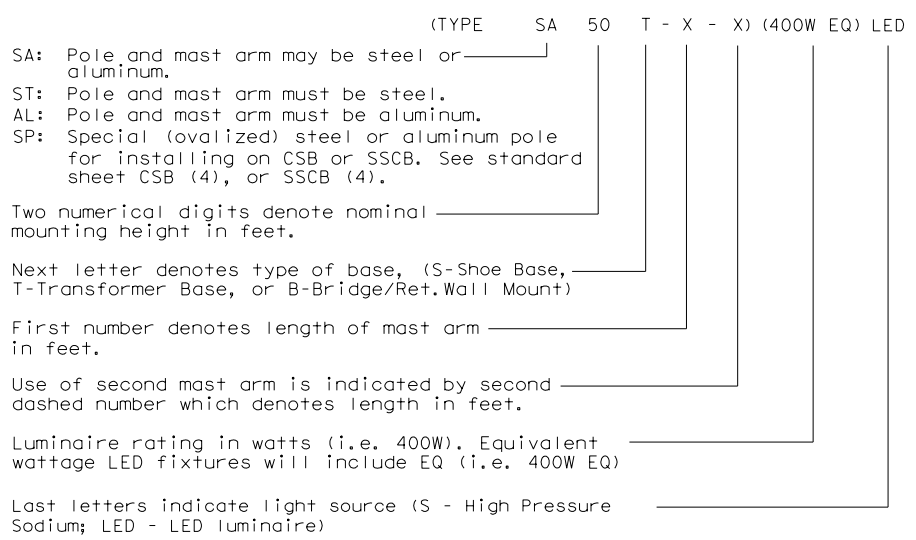
OTHER				
Designation				Quantity
Pole	A1	A2	Luminaire	

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GENERAL NOTES:

- All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Where manufacturers provide warranties or guarantees as a customary trade practice, furnish to the Department such warranties or guarantees.
- The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Install or remove poles and luminaires located near overhead electrical lines using established industry and utility safety practices and in accordance with laws governing such work. Consult with the appropriate utility company prior to beginning such work.
- Standard Steel Pole Designs. Steel poles fabricated in accordance with the details and dimensions shown herein, shall be considered standard designs. Submission of shop drawings and design calculations for standard designs is not required.
- Optional Steel Pole Designs. Multi-sided steel poles may be allowed as optional designs, if steel poles are permitted or required, pending approval by the Department as outlined below.
 - Shop Drawings. Optional designs require submission of shop drawings and design calculations bearing the seal of an engineer licensed in the State of Texas, in accordance with Item 441, "Steel Structures." The Department may elect to pre-approve some shop drawings for optionally designed poles. Submission of shop drawings and design calculations is not required for structures fabricated in accordance with the details of shop drawings on the pre-approved list maintained by the TxDOT Traffic Operations Division. Any deviation from the pre-approved shop drawings will require submission of shop drawings of the complete assembly and design calculations as described above.
 - Structural Support Design for Luminaires. Lighting support structures shall be designed for a 25 year design life in accordance with the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. All poles shall be designed for 110 mph 3-second gust wind speeds. The Gust Factor, G, and Wind Importance Factor, Ir, shall be applied as per the AASHTO Specifications assuming a 25-year design life. The design wind pressure for hurricane wind velocities greater than 100 mph shall not be less than the design wind pressure using 100 mph with the non-hurricane Wind Importance Factor, Ir, value. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. All transformer bases shall have been structurally tested to resist the theoretical plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with the shop drawings. Shop drawings shall show breakaway base model number, and manufacturer's name and logo. Manufacturer's shop drawings shall include the ASTM designations for all materials to be used.
 - Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 60-pound luminaire having an effective projected area of 1.6 square feet.
 - Anchor Bolt Assembly. Anchor bolt assemblies for optionally designed poles shall be the same as those shown herein.
- Aluminum Pole Designs. Aluminum pole designs may be allowed, if aluminum poles are permitted or required, pending approval by the Department as outlined below.
 - Meet all of the requirements stated above for optional steel pole designs and the following:
 - Aluminum poles shall be fabricated in accordance with "Structural Welding Code-Aluminum" AWS D1.2.
 - Aluminum pole designs shall use the same anchor bolt assembly and be subject to the same geometric restraints and other requirements for steel poles specified herein.
 - Aluminum poles shall be equipped with vibration mitigation devices, as approved by the engineer.
 - Pole components shall be constructed using the following material:
 - Shaft: ASTM B221 or B241 Alloy 6063-T6, ASTM B209 Alloy 5086-H34, ASTM B221 Alloy 6005-T5.
 - Base Flange: ASTM B26 Alloy 356.0-T6 or ASTM B108 Alloy 356.0-T6 (Yield strength test required).
 - Mast Arm Fitting: ASTM B209 Alloy 6061-T6 or ASTM B221 Alloy 6005-T5.
 - Mast Arms: ASTM B241 Alloy 6061-T6 or Alloy 6063-T6.
 - Pole Cap: ASTM B209 Alloy 5086-H32 or ASTM B108 or B26 Alloy 356.0-T6.
 - Bolts: Stainless Steel AISI 300 series. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.
- Special Designs. Poles with architectural treatments shall meet the requirements shown elsewhere in the plans.
- Luminaire Mounting Height. Actual luminaire mounting height shall be the nominal mounting height given on RIP(2) for all pole-arm combinations except for poles with 4 ft. luminaire arms, which shall be 3'-0" lower than the nominal height, unless otherwise shown or directed.

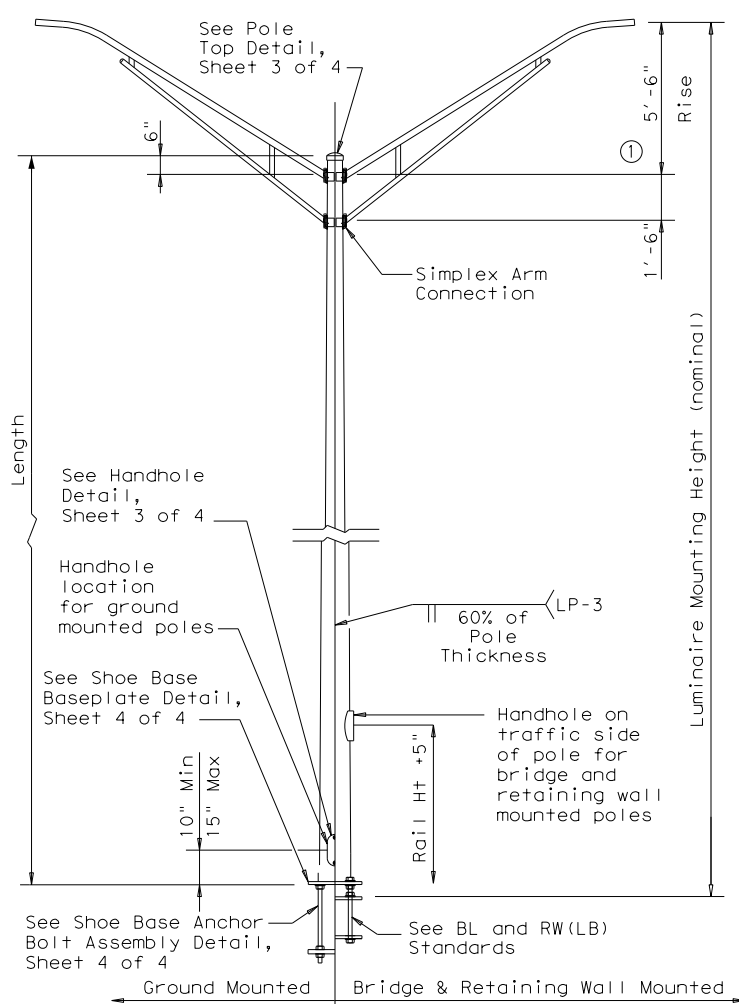
EXPLANATION OF ROADWAY ILLUMINATION ASSEMBLY DESIGNATIONS



 Texas Department of Transportation	Traffic Safety Division Standard
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FILE: rip-19.dgn	DN: CK: DW: CK:
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REVISIONS	0610 03 095 IH 30
7-17	DIST COUNTY SHEET NO.
12-19	ATL TITUS 201

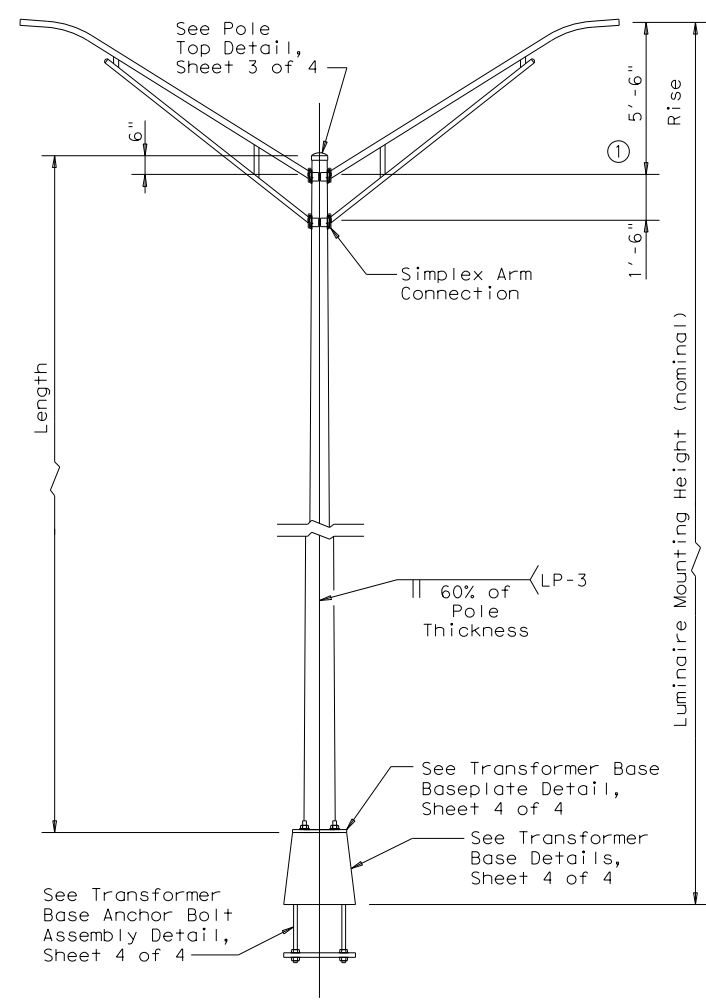
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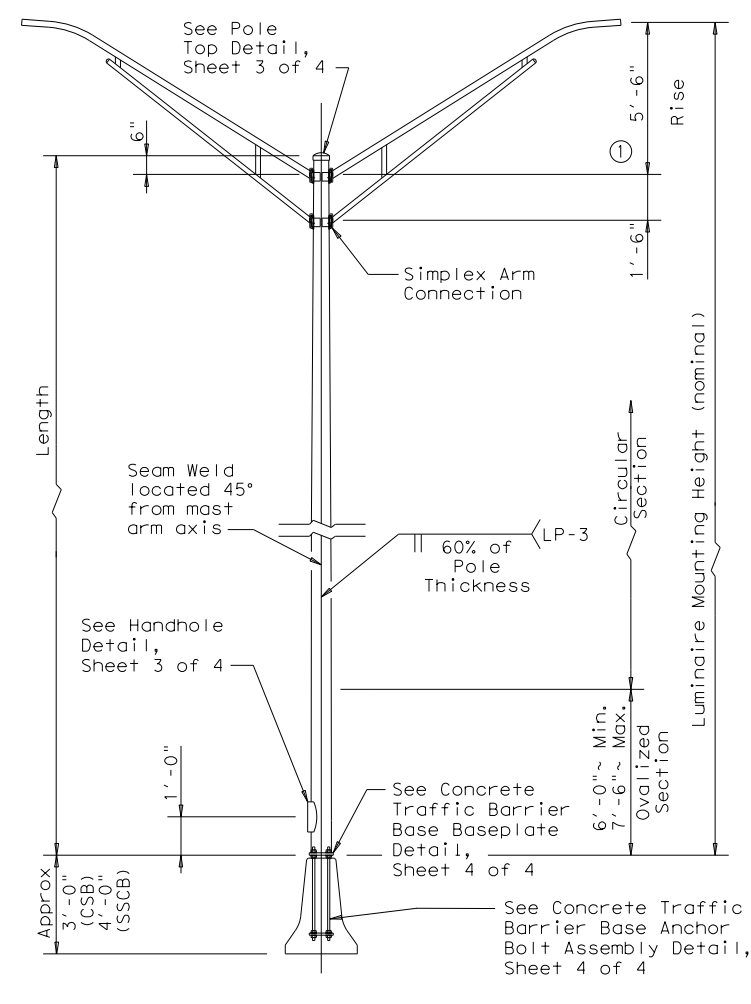
SHOE BASE POLE

Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	4.90	15.00	0.1196	7.1
30.00	7.50	4.00	25.00	0.1196	13.2
31.00-39.00	8.00	4.36-3.24	26.00-34.00	0.1196	20.7
40.00	8.50	3.60	35.00	0.1196	20.7
50.00	10.50	4.20	45.00	0.1196	30.3



TRANSFORMER BASE POLE

Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)
20.00	7.00	5.11	13.50	0.1196	7.1
30.00	7.50	4.21	23.50	0.1196	13.2
31.00-39.00	8.00	4.57-3.45	24.50-32.50	0.1196	20.7
40.00	8.50	3.81	33.50	0.1196	20.7
50.00	10.00	3.91	43.50	0.1196	30.3



CONCRETE TRAFFIC BARRIER BASE POLE

CONCRETE TRAFFIC BARRIER BASE POLE (CSB/SSCB)						
Luminaire Mounting Height (Nominal) (ft)	Base Diameter (in)	Top Diameter (in)	Length (ft)	Pole Thickness (in)	Design Moment (K-ft)	
					About C of Rail	Perp. to Rail
28.00	9.00	5.78	23.00	0.1196	10.3	13.2
38.00	9.00	4.38	33.00	0.1196	16.6	20.8
48.00	10.50	4.48	43.00	0.1345	25.1	30.5

GENERAL NOTES:

- Designs conform to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto. Design 3-Second Gust Wind Speed equals 110 mph with a 1.14 gust factor. A wind importance factor of 0.80 is applied to adjust the wind speed to a 25 year recurrence interval. Design moments listed in tables assume base of pole is 25' above natural ground level.
- Structures are designed to support two 12' luminaire mast arms and luminaires. Mast arms are designed to support a 60-pound luminaire having an effective projected area of 1.6 square feet.
- Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Do not submit shop drawings for roadway illumination pole assemblies fabricated in accordance with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of these sheets and the Specifications. In the absence of specified fabrication tolerances, dimensions shall be within the tolerances generally obtainable in normal fabrication practice.
- For mounting heights between values shown in the tables, use base diameter and thickness values for the larger height.
- Unless otherwise noted, all steel parts shall be galvanized in accordance with Item 445, "Galvanizing."
- Steel poles shall be fabricated in accordance with Item 441, "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration. All welding shall be in accordance with AWS D1.1, Structural Welding Code-Steel.
- Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint.
- Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.
- Lubricate and tighten anchor bolts, when erecting shoe base poles and concrete traffic barrier base poles, in accordance with Item 449, "Anchor Bolts."
- All poles, except Transformer Base Poles, shall have hand holes with reinforcing frames and covers. For ground mounted shoe base poles, hand holes shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on a concrete traffic barrier with one luminaire arm, hand holes shall be located 180 degrees from luminaire arm. For poles mounted on a concrete traffic barrier with two luminaire arms, all hand holes shall be on the same side of the barrier. For poles mounted on a bridge lighting bracket or a retaining wall lighting bracket, hand hole shall be on traffic side of the pole, at a height that will clear the barrier.
- The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, and other damaged galvanized areas on poles and mast arms shall be repaired in accordance with Item 445, "Galvanizing."
- Pole length is based on a 5'-6" luminaire arm rise. 4 ft. luminaire arms have a 2'-6" rise. A pole with 4 ft. luminaire arms will have an actual mounting height 3'-0" less than the nominal mounting height. Increasing the pole length to meet the nominal mounting height is allowed, but unnecessary unless otherwise directed by the engineer.
- Erect transformer base poles in accordance with sheet RID(1).

MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (ksi)
Pole Shaft (0.14"/ft. Taper)	A572 Gr 50, A595 Gr A, A1011 HSLAS Gr 50 Cl 2 ③, or A1008 HSLAS Gr 50 Cl 2	50
Base Plate and Handhole Frame	A572 Gr.50, or A36	36
T-Base Connecting Bolts	F3125 Gr A325	92
Anchor Bolts	F1554 Gr 55, A193-B7 or A321	55 105
Anchor Bolt Templates	A36	36
Heavy Hex (H.H.) Nuts	A194 Gr 2H, or A563 Gr DH	
Flat Washers	F436	

NOTES:

- 2'-6" rise for 4 ft. luminaire arms.
- Before ovalized as shown on Concrete Traffic Barrier Base Baseplate details, Sheet 4 of 4.
- A1011 SS Gr 50 may be used instead of HSLAS, provided the material meets the elongation requirements for HSLAS.

POLE ASSEMBLY FABRICATION TOLERANCES TABLE

DIMENSION	TOLERANCE
Shaft length	+1"
I.D. of outside piece of slip fitting pieces	+1/8", -1/16"
O.D. of inside piece of slip fitting pieces	+1/32", -1/8"
Shaft diameter: other	+3/16"
Out of "round"	1/4"
Straightness of shaft	±1/4" in 10 ft
Twist in multi-sided shaft	4° in 50 ft
Perpendicular to baseplate	1/8" in 24"
Pole centered on baseplate	±1/4"
Location of Attachments	±1/4"
Bolt hole spacing	±1/16"

SHEET 2 OF 4

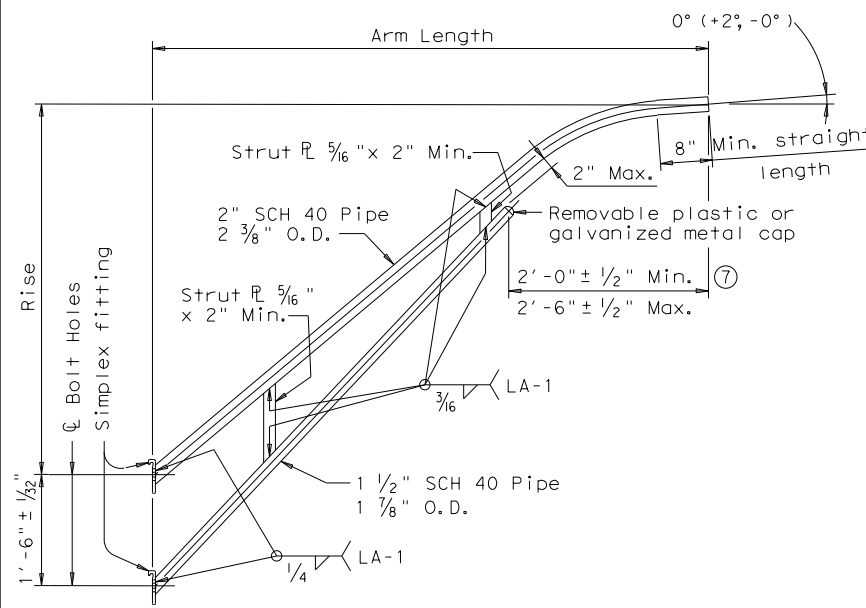


**ROADWAY ILLUMINATION POLES
RIP(2)-19**

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
© TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
7-17	DIST	COUNTY	SHEET NO.	
12-19	ATL	TITUS	202	

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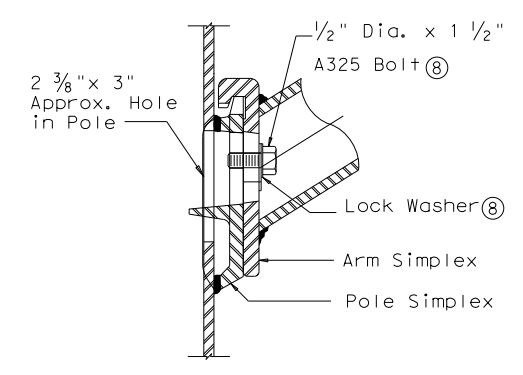
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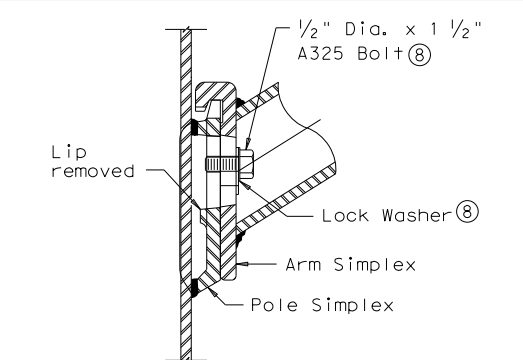
LUMINAIRE ARM

LUMINAIRE ARM DIMENSIONS		
Nominal Arm Length	Arm Length	Rise
4'-0"	3'-6"	2'-6"
6'-0"	5'-6"	5'-6"
8'-0"	7'-6"	5'-6"
10'-0"	9'-6"	5'-6"
12'-0"	11'-6"	5'-6"

ARM ASSEMBLY FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Arm Length	±1"
Arm Rise	±1"
Deviation from flat	1/8" in 12"
Spacing between holes	±1/32"

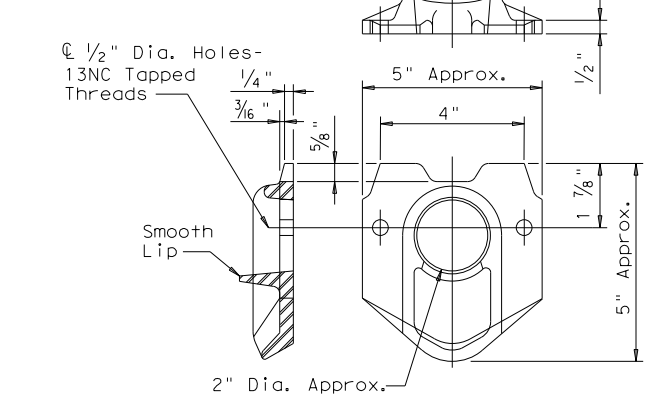


UPPER SIMPLEX FITTING
(Gusset not shown for clarity)

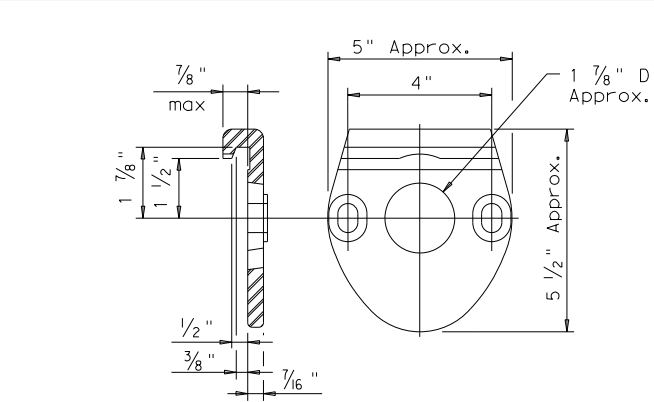


LOWER SIMPLEX FITTING
(Gusset not shown for clarity)

SECTION B-B



POLE SIMPLEX DETAIL



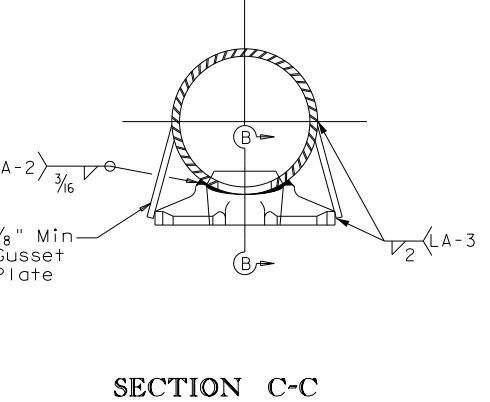
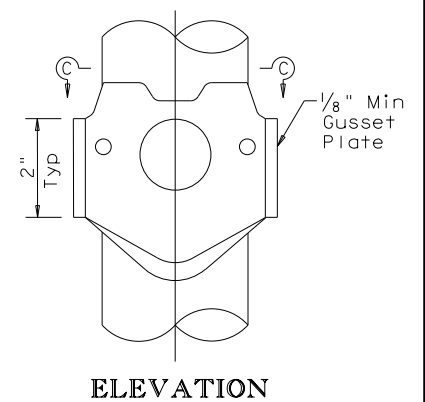
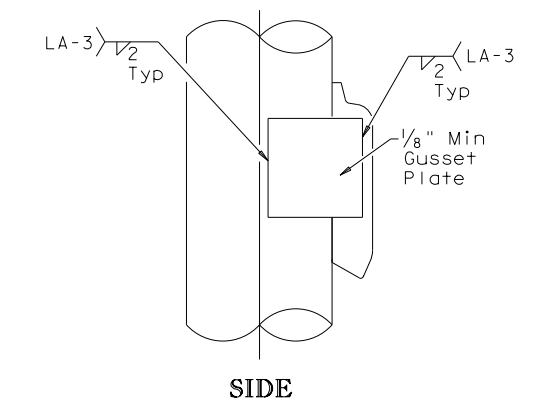
ARM SIMPLEX DETAIL

NOTES:

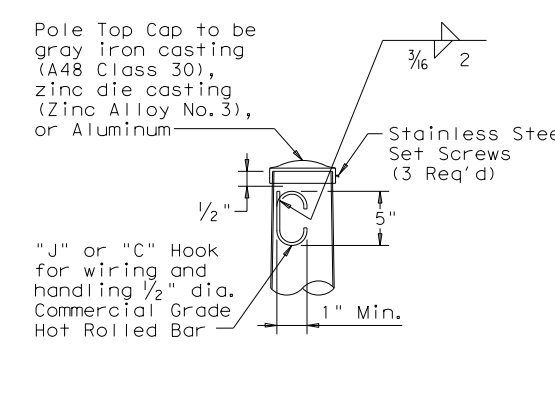
- ④ Any of the materials listed for plates may be used where the drawings do not specify a particular ASTM designation.
- ⑤ A576 must be suitable for forging and also meet minimum tensile strength of 65 ksi, minimum yield of 35 ksi, and elongation in 2 inches of 22 percent.
- ⑥ A572, A1008 HSLAS-F, and A1011 HSLAS-F materials may have higher yield strengths but shall not have less elongation than the grade indicated.
- ⑦ Dimensional limits are given to show acceptable variation in design. All of a Fabricator's production of a particular arm length shall have the same dimensions within specified tolerances.
- ⑧ Each pole simplex fitting shall be supplied with 2 bolts and 2 lock washers of the size specified. The bolts and lock washers shall be secured to the pole with the other hardware items called for in the plans.
- ⑨ Proposed deviations in arm simplex dimensions or materials must be submitted to the Department for approval.
- ⑩ A welded handhole frame is permissible. Maximum of two (2) CJP weld splices is allowed.

MATERIALS

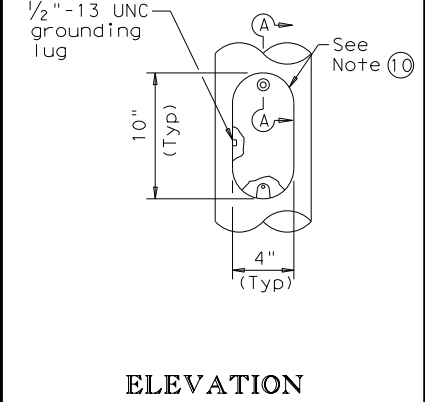
Pole or Arm Simplex	ASTM A27 Gr 65-35 or Gr 70-36, A148 Gr 80-50, A576 Gr 1021 ⑤, or A36 (Arm only)
Arm Pipes	ASTM A53 Gr A or B, A500 Gr B, A501, A 1008 HSLAS-F Gr 50 ⑥, or A1011 HSLAS-F Gr 50 ⑥
Arm Struts and Gusset Plates ④	ASTM A36, A572 Gr 50 ⑥, or A588
Misc.	ASTM designations as noted



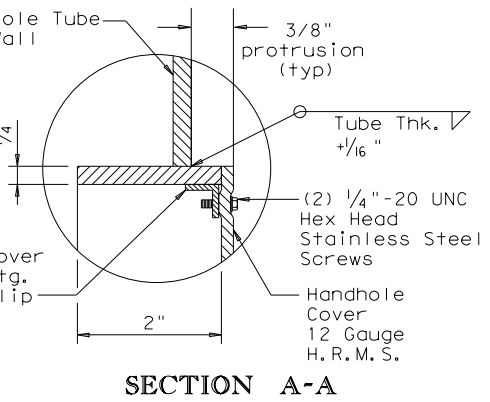
SIMPLEX ATTACHMENT DETAIL



POLE TOP



ELEVATION



SECTION A-A

HANDHOLE

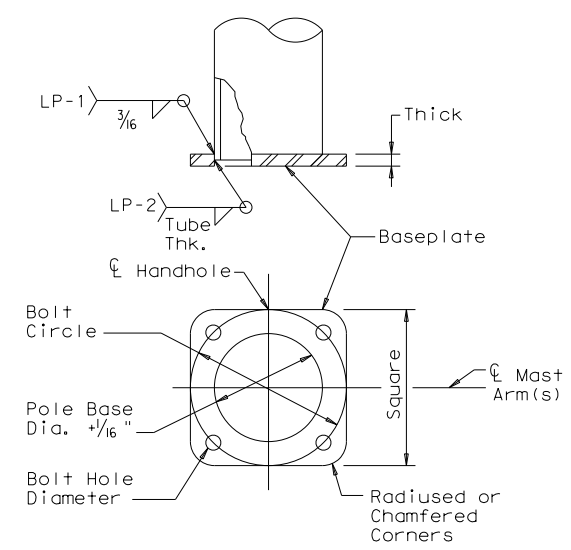
SHEET 3 OF 4



ROADWAY ILLUMINATION POLES
RIP(3)-19

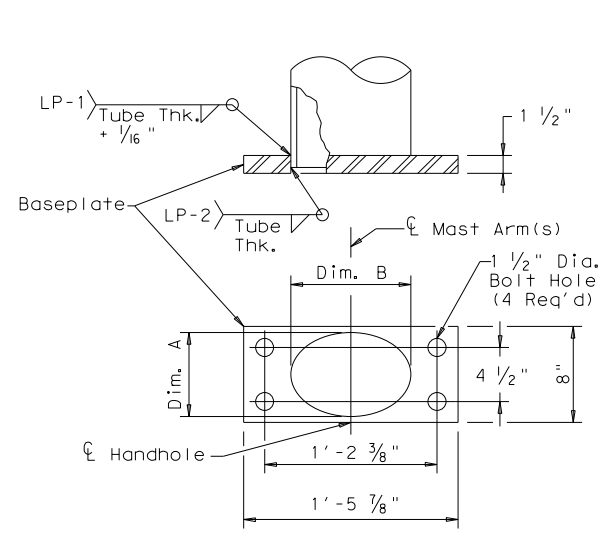
FILE: rip-19.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
7-17	DIST	COUNTY	SHEET NO.	
12-19	ATL	TITUS	203	

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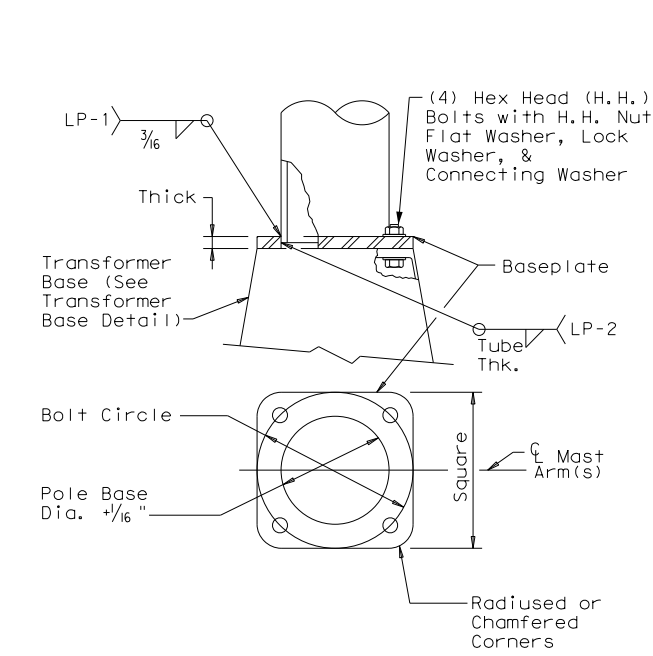
SHOE BASE BASEPLATE

SHOE BASE BASEPLATE TABLE				
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	BOLT HOLE DIAMETER
20' - 39'	13"	13"	1 1/4"	1 1/4"
40'	15"	15"	1 1/4"	1 1/2"
50'	15"	15"	1 1/2"	1 1/2"



CONCRETE TRAFFIC BARRIER BASE BASEPLATE

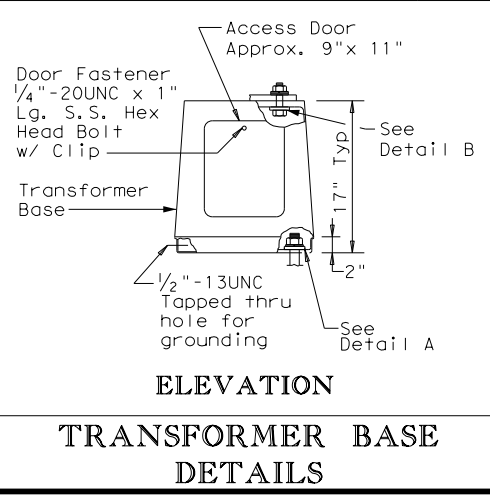
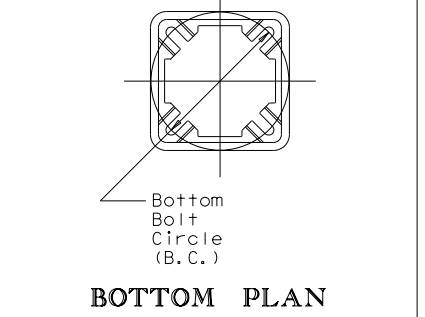
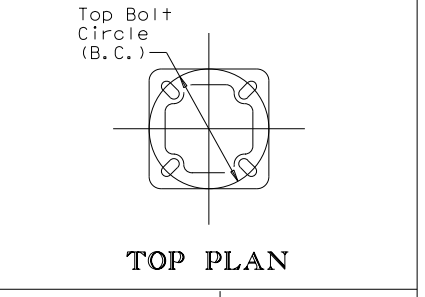
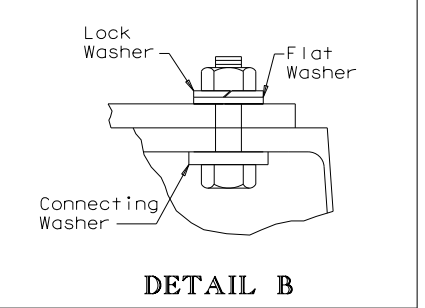
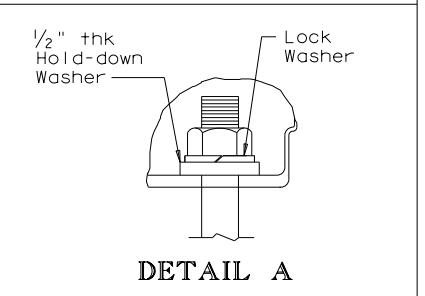
CONCRETE TRAFFIC BARRIER BASE BASEPLATE TABLE			
MOUNTING HEIGHTS (nominal)	POLE DIA. (12)	DIM. A	DIM. B
28' - 38'	9"	7" ± 1/4"	10" ± 1/4"
48'	10 1/2"	7" ± 1/4"	13" ± 1/4"



TRANSFORMER BASE BASEPLATE

TRANSFORMER BASE BASEPLATE TABLE						
MOUNTING HEIGHTS (nominal)	BOLT CIRCLE	SQUARE	THICK	CONNECTING BOLT DIA.	BOLT HOLE DIAMETER	TRANSFORMER BASE TYPE
20' - 39'	13"	13"	1 1/4"	1"	1 1/4"	A
40'	15"	15"	1 1/4"	1 1/4"	1 1/2"	B
50'	15"	15"	1 1/2"	1 1/4"	1 1/2"	B

TRANSFORMER BASE TABLE		
TYPE	TOP B.C.	BTM. B.C.
A	13"	14"
B	15"	17 1/4"



TRANSFORMER BASE DETAILS

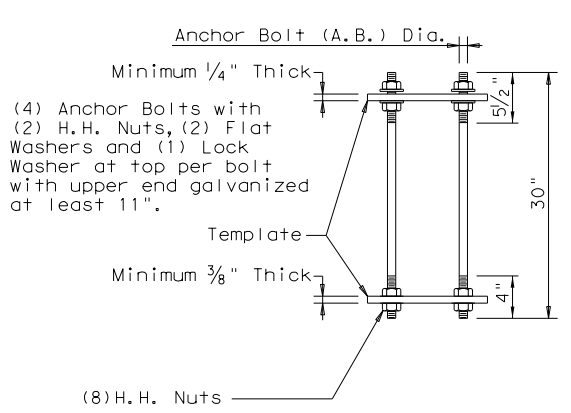
GENERAL NOTES:

- For mounting heights between those shown in the table, use the values in the table for the larger mounting height.
- All breakaway bases shall meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 6th Edition (2013) and Interim Revisions thereto, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to resist 150% of the design moment.
- Transformer bases shall be cast from aluminum, ASTM B108 or B26 Alloy 356.0-T6, or other material approved by the Engineer. Four Hex Head (H.H.) bolts with four H.H. nuts, four lock washers, four flat washers, and connecting and hold-down washers as recommended by the manufacturer, galvanized to ASTM A153 Class C or D, or B695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A563 grade DH galvanized.
- Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.
- Doors for transformer bases shall be made of plastic, fiberglass or other non-metallic material approved by the Engineer and shall be attached with stainless steel screws or bolts. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

NOTES:

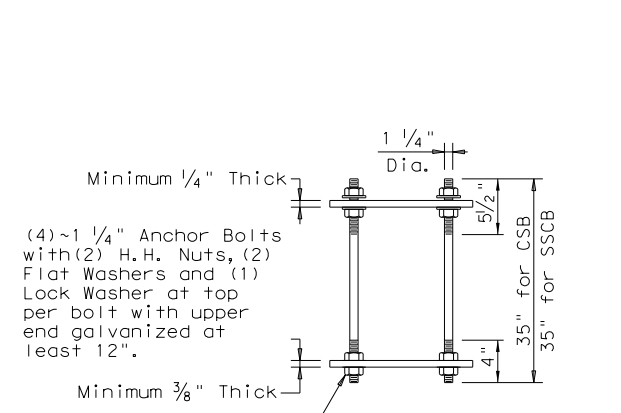
- Anchor Bolt Templates do not need to be galvanized.
- Pole diameter before ovalized.

ANCHOR BOLT FABRICATION TOLERANCES TABLE	
DIMENSION	TOLERANCE
Length	± 1/2"
Threaded length	± 1/2"
Galvanized length (if required)	- 1/4"



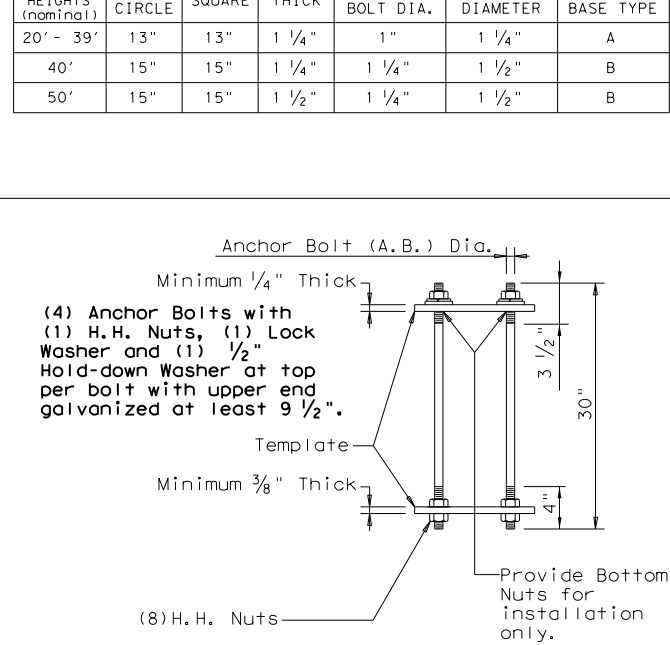
SHOE BASE ANCHOR BOLT ASSEMBLY

SHOE BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	13"	11"	1 1/16"
40' - 50'	1 1/4"	15"	12 1/2"	1 5/16"



CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY

CONCRETE TRAFFIC BARRIER BASE ANCHOR BOLT ASSEMBLY TABLE				
MOUNTING HEIGHTS (nominal)	A.B. Dia.	BOLT CIRCLE DIAMETER	CTR. HOLE DIAMETER	BOLT HOLE DIAMETER
20' - 39'	1"	14"	12"	1 1/16"
40' - 50'	1 1/4"	17 1/4"	14 3/4"	1 5/16"



TRANSFORMER BASE ANCHOR BOLT ASSEMBLY

SHEET 4 OF 4

Texas Department of Transportation

Traffic Safety Division Standard

ROADWAY ILLUMINATION POLES

RIP(4)-19

FILE: rip-19.dgn	DN:	CK:	DW:	CK:
©TxDOT January 2007	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
7-17	DIST	COUNTY	SHEET NO.	
12-19	ATL	TITUS	204	

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

0610-03-095

1.2 PROJECT LIMITS:

From: 1.7 MI W OF US 67, WB

To: 1.0 MI W OF US 67, WB

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 33.158801, (Long) -95.053262

END: (Lat) 33.158532, (Long) -95.046483

1.4 TOTAL PROJECT AREA (Acres): 37.22

1.5 TOTAL AREA TO BE DISTURBED (Acres): 17.76

1.6 NATURE OF CONSTRUCTION ACTIVITY:

WORK CONSISTING OF CONSTRUCTING WEIGH STATION AND RAMPS AND ACCOMODATE TRUCK PARKING.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
FRB, FREESTONE FINE SANDY LOAM, 1% TO 3% SLOPES	STA 6+90.67 TO STA 35+00, STA 47+00 TO STA 75+00, LOAM, MODERATELY WELL-DRAINED, MEDIUM RATE OF RUNOFF
NA, NAHATCHE LOAM, 0% TO 1% SLOPES	STA 40+00 TO STA 44+00, LOAM, SOMEWHAT POORLY DRAINED, HIGH RATE OF RUNOFF
WoE, WOODTELL FINE SANDY LOAM, 2% TO 5% SLOPES	STA 35+00 TO STA 40+00, STA 44+00 TO 47+00, LOAM, WELL-DRAINED, VERY HIGH RATE OF RUNOFF

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- PSLs determined during preconstruction meeting
- PSLs determined during construction
- No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- Mobilization
- Install sediment and erosion controls
- Blade existing topsoil into windrows, prep ROW, clear and grub
- Remove existing pavement, other removal items
- Grading operations, excavation, and embankment
- Excavate and prepare subgrade for proposed pavement widening
- Remove existing culverts, safety end treatments (SETs)
- Install culverts, culvert extensions, SETs
- Place flex base
- Install proposed pavement per plans
- Rework slopes, grade ditches
- Blade windrowed material back across slopes
- Revegetation of unpaved areas
- Achieve site stabilization and remove sediment and erosion control measures

- Other: _____
- Other: _____
- Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- Sediment laden stormwater from stormwater conveyance over disturbed area
- Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- Solvents, paints, adhesives, etc. from various construction activities
- Transported soils from offsite vehicle tracking
- Construction debris and waste from various construction activities
- Contaminated water from excavation or dewatering pump-out water
- Sanitary waste from onsite restroom facilities
- Trash from various construction activities/receptacles
- Long-term stockpiles of material and waste
- Other: _____
- Other: _____
- Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
UNNAMED TRIBUTARY 0404R	DRAGOO CREEK (0404O)
NO TMDLs OR I-PLANS WERE IDENTIFIED.	

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- Development of plans and specifications
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: _____
- Other: _____
- Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- Day To Day Operational Control
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: _____
- Other: _____
- Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity
NO MS4S RECEIVE STORMWATER DISCHARGE FROM THE SITE.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)



Sheet 1 of 2

FED. DIV. NO.	PROJECT NO.			SHEET NO.
6				205
STATE	STATE DIST.	COUNTY		
TEXAS	ATL	TITUS		
CONT.	SECT.	JOB	HI GHWAY NO.	
0610	03	095	IH 30	

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- Protection of Existing Vegetation
- Vegetated Buffer Zones
- Soil Retention Blankets
- Geotextiles
- Mulching/ Hydromulching
- Soil Surface Treatments
- Temporary Seeding
- Permanent Planting, Sodding or Seeding
- Biodegradable Erosion Control Logs
- Rock Filter Dams/ Rock Check Dams
- Vertical Tracking
- Interceptor Swale
- Riprap
- Diversion Dike
- Temporary Pipe Slope Drain
- Embankment for Erosion Control
- Paved Flumes
- Other: _____
- Other: _____
- Other: _____
- Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- Biodegradable Erosion Control Logs
- Dewatering Controls
- Inlet Protection
- Rock Filter Dams/ Rock Check Dams
- Sandbag Berms
- Sediment Control Fence
- Stabilized Construction Exit
- Floating Turbidity Barrier
- Vegetated Buffer Zones
- Vegetated Filter Strips
- Other: _____
- Other: _____
- Other: _____
- Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- Sediment Trap
 - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
 - 3,600 cubic feet of storage per acre drained
- Sedimentation Basin
 - Not required (<10 acres disturbed)
 - Required (>10 acres) and implemented.
 - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
 - 3,600 cubic feet of storage per acre drained
- Required (>10 acres), but not feasible due to:
 - Available area/Site geometry
 - Site slope/Drainage patterns
 - Site soils/Geotechnical factors
 - Public safety
 - Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
RIPRAP (MULTIPLE LOCATIONS)	STA 39+30	STA 48+84
SEED & SOD	STA 09+42	STA 74+81

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- Excess dirt/mud on road removed daily
- Haul roads dampened for dust control
- Loaded haul trucks to be covered with tarpaulin
- Stabilized construction exit
- Other: _____
- Other: _____
- Other: _____
- Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- Chemical Management
- Concrete and Materials Waste Management
- Debris and Trash Management
- Dust Control
- Sanitary Facilities
- Other: _____
- Other: _____
- Other: _____
- Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- Fire hydrant flushings
- Irrigation drainage
- Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- Potable water sources
- Springs
- Uncontaminated groundwater
- Water used to wash vehicles or control dust
- Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

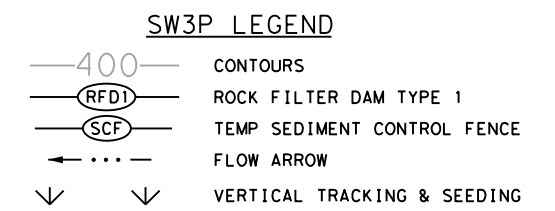
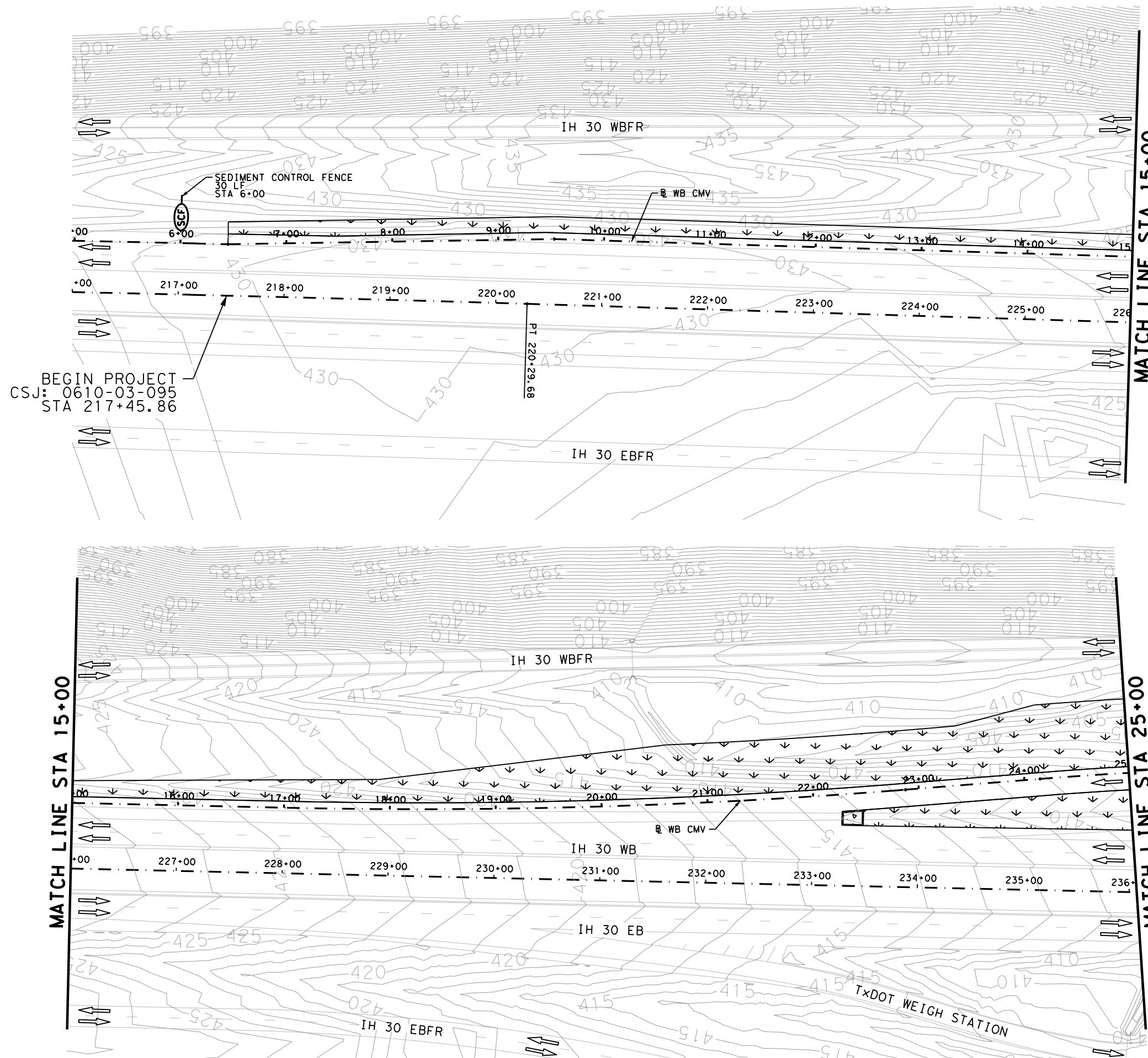


Sheet 2 of 2

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6				206
STATE	STATE DIST.	COUNTY		
TEXAS	ATL	TITUS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0610	03	095	IH 30	

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\SW3P\1163504_SW3P01.dgn



- SW3P NOTES**
- REFER TO TXDOT SW3P STANDARD SHEETS FOR DETAILS.
 - INSTALLED MEASURES SHALL REMAIN IN PLACE AND BE INSPECTED WEEKLY. ALL ITEMS SHALL BE MAINTAINED AND REPAIRED THROUGHOUT DURATION OF USE.
 - SW3P MEASURES SHOWN ARE MINIMUM REQUIREMENTS BASED UPON PROJECT DESIGN. INSTALLATION OF SW3P MEASURES WILL BE SHOWN AND MODIFIED TO ACCOMMODATE ACTUAL FIELD CONDITIONS.
 - CONSTRUCTION EXITS SHALL BE FIELD LOCATED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
 - VERTICAL TRACKING WILL NOT BE MEASURED OR PAID FOR DIRECTLY BUT IS CONSIDERED SUBSIDIARY TO ITEM 506.

DESIGN

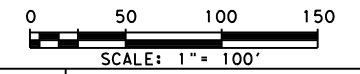
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY

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

Texas Department of Transportation
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WB IH 30 CMV STATION

SWP3 PLAN

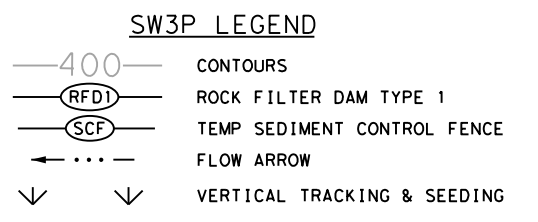
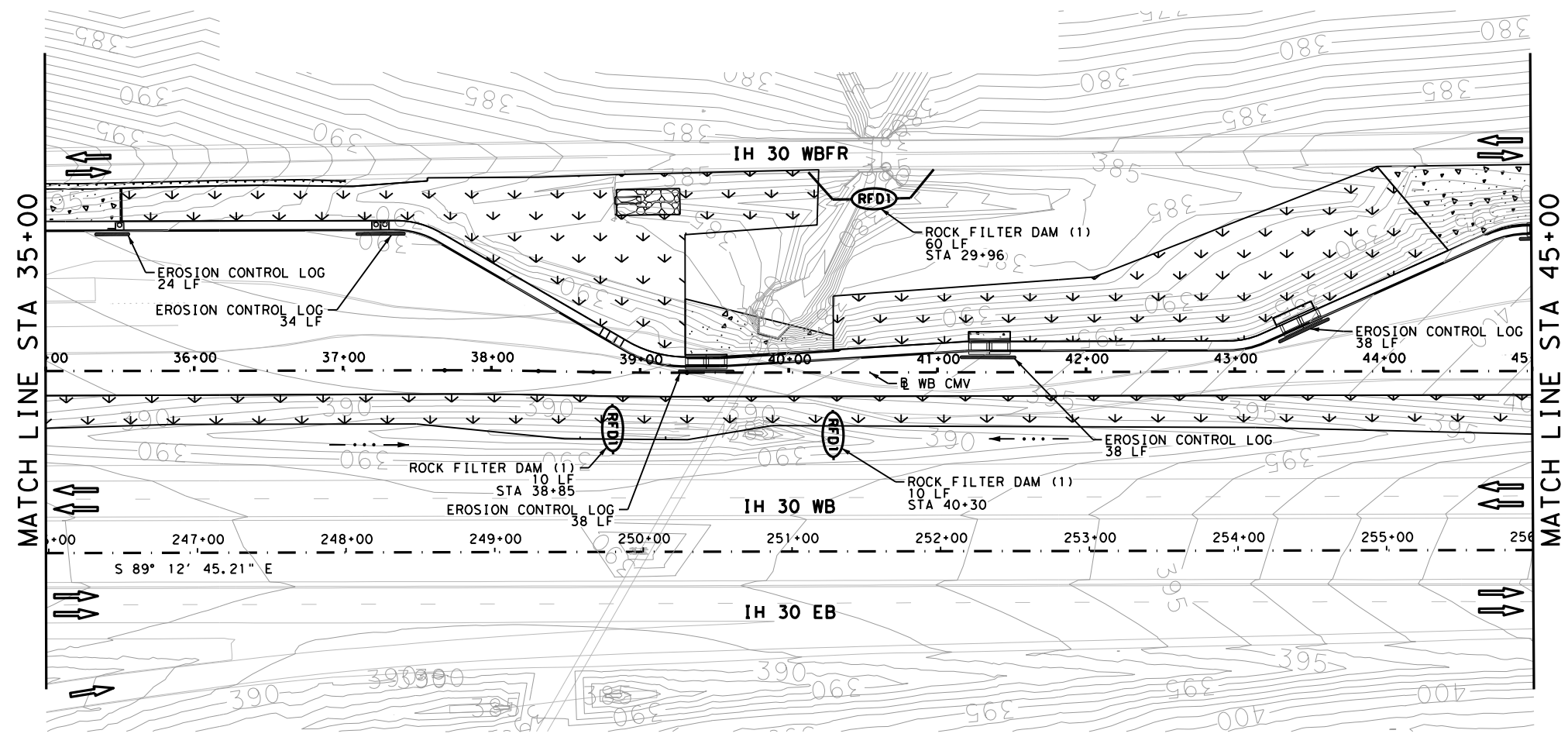
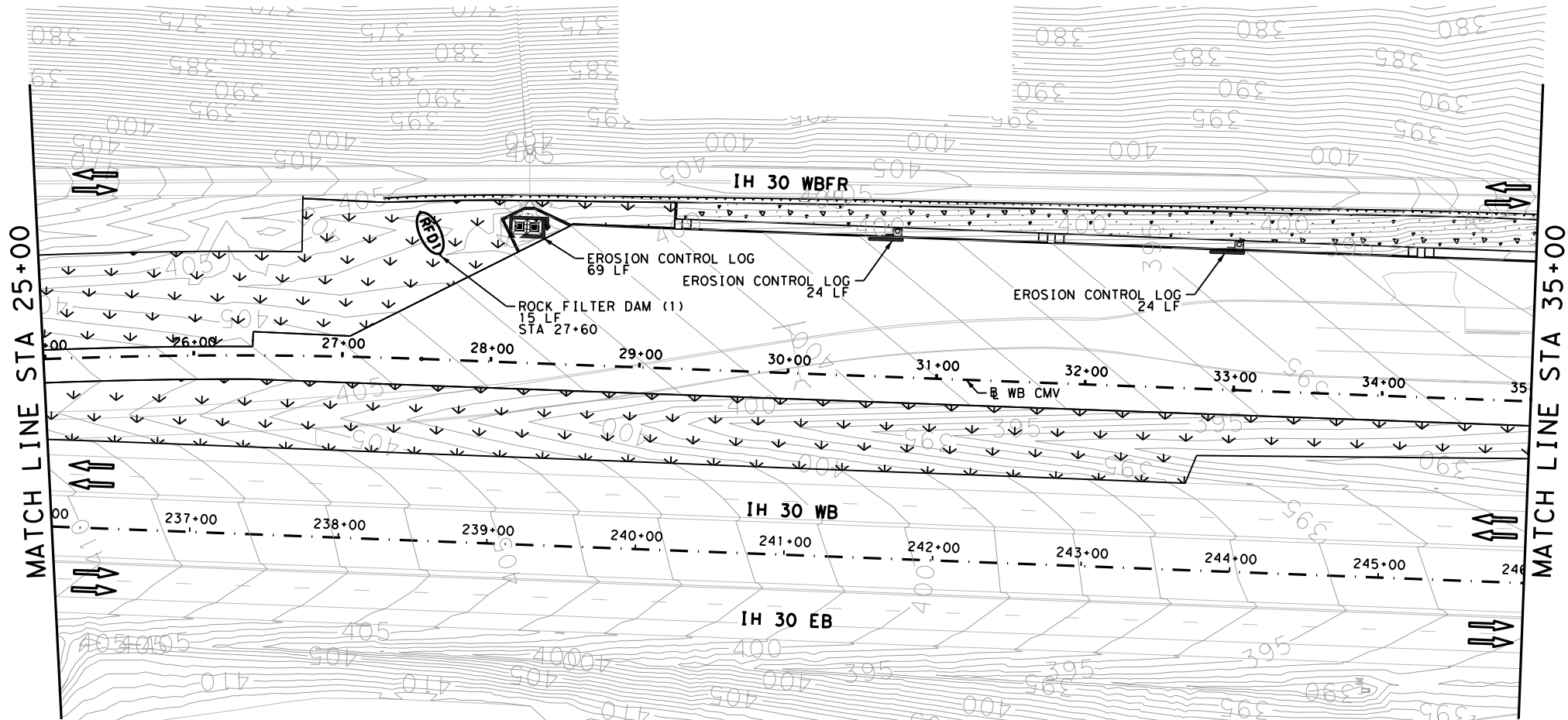
BEGIN PROJECT TO STA 25+00

SHEET 1 OF 4

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CHK DGN#	6	TEXAS		IH 30		
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG#	ATL	TITUS	0610	03	095	207

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\SW3P\1163504_SW3P02.dgn



- SW3P NOTES**
- REFER TO TXDOT SW3P STANDARD SHEETS FOR DETAILS.
 - INSTALLED MEASURES SHALL REMAIN IN PLACE AND BE INSPECTED WEEKLY. ALL ITEMS SHALL BE MAINTAINED AND REPAIRED THROUGHOUT DURATION OF USE.
 - SW3P MEASURES SHOWN ARE MINIMUM REQUIREMENTS BASED UPON PROJECT DESIGN. INSTALLATION OF SW3P MEASURES WILL BE SHOWN AND MODIFIED TO ACCOMMODATE ACTUAL FIELD CONDITIONS.
 - CONSTRUCTION EXITS SHALL BE FIELD LOCATED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
 - VERTICAL TRACKING WILL NOT BE MEASURED OR PAID FOR DIRECTLY BUT IS CONSIDERED SUBSIDIARY TO ITEM 506.

DESIGN

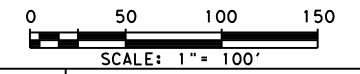
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: STEVEN J. TATE
 P.E. SERIAL NO: 131443
 DATE: 6/3/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
 ENGINEER: JAMES A. LUTZ
 P.E. SERIAL NO: 84722
 DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY

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 #1002800

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SWP3 PLAN

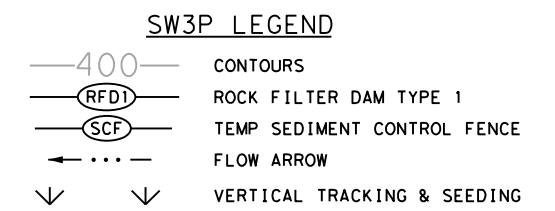
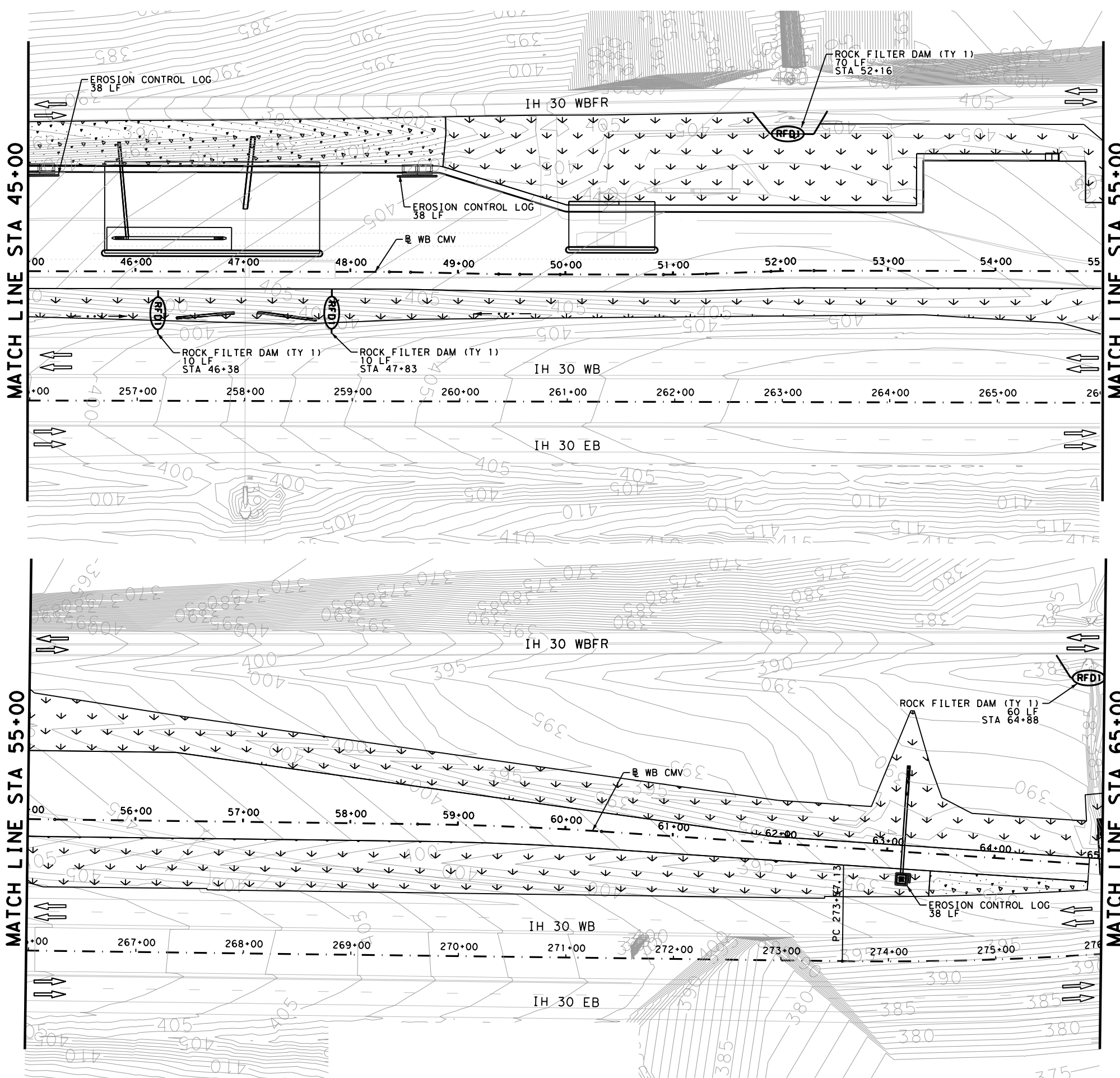
STA 25+00 TO STA 45+00

SHEET 2 OF 4

DGN#	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.	HIGHWAY NO.		
CH#	6	TEXAS		IH 30		
DWG#	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CH#	ATL	TITUS	0610	03	095	208

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\SW3P\1163504_SW3P03.dgn



- SW3P NOTES**
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DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: STEVEN J. TATE

P.E. SERIAL NO: 131443

DATE: 6/3/2024

APPROVAL

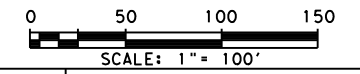
INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.

ENGINEER: JAMES A. LUTZ

P.E. SERIAL NO: 84722

DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
 2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
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SWP3 PLAN

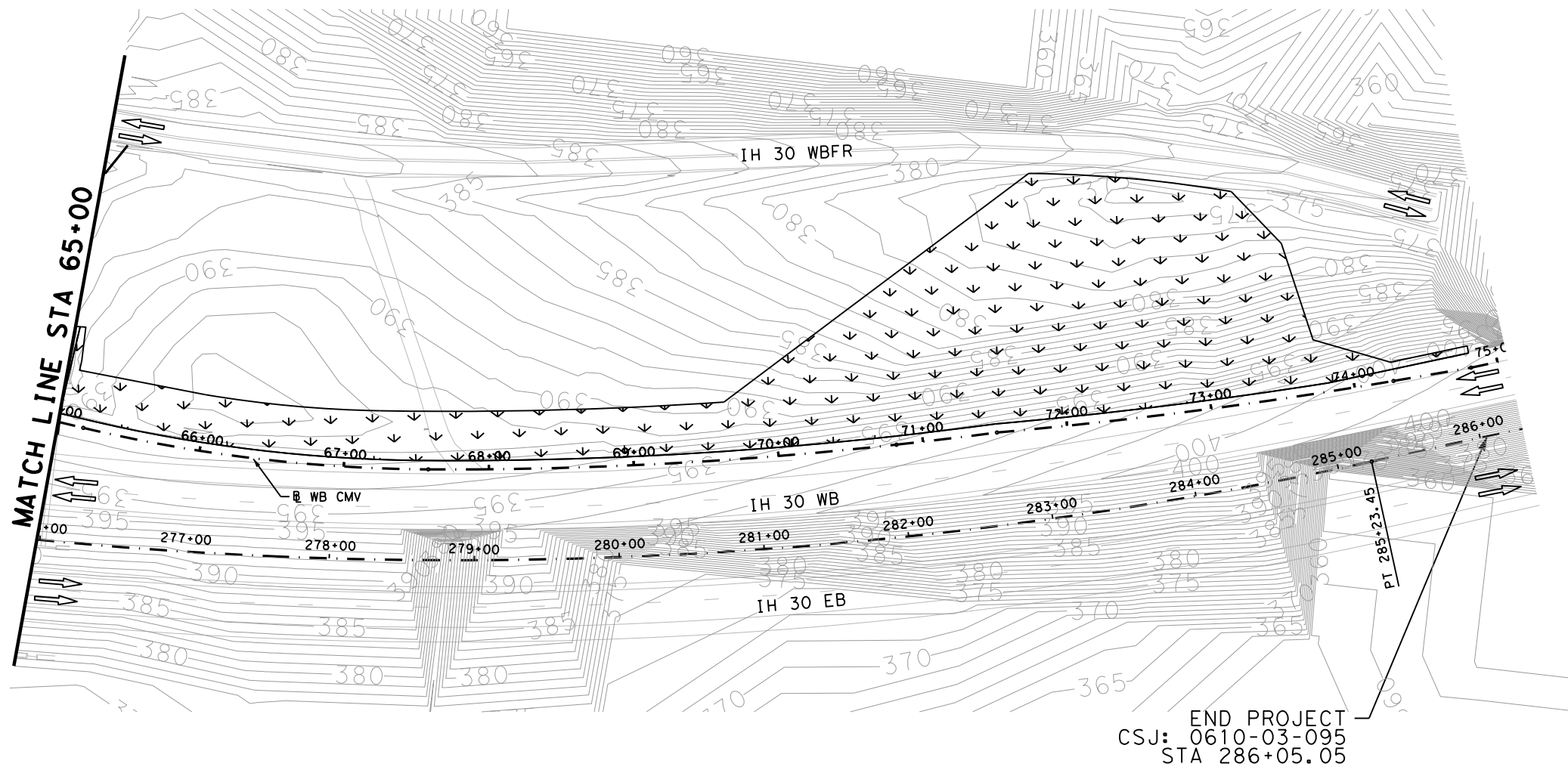
STA 45+00 TO STA 65+00

SHEET 3 OF 4

DGN:	FED. RD. DIV. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	6	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	209

Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\SW3P\1163504_SW3P04.dgn



SW3P LEGEND

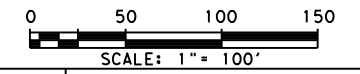
	400	CONTOURS
	(RFD1)	ROCK FILTER DAM TYPE 1
	(SCF)	TEMP SEDIMENT CONTROL FENCE
	← ... →	FLOW ARROW
	∇ ∇	VERTICAL TRACKING & SEEDING

- SW3P NOTES**
- REFER TO TXDOT SW3P STANDARD SHEETS FOR DETAILS.
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END PROJECT
CSJ: 0610-03-095
STA 286+05.05

DESIGN
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: STEVEN J. TATE
P.E. SERIAL NO: 131443
DATE: 6/3/2024

APPROVAL
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: JAMES A. LUTZ
P.E. SERIAL NO: 84722
DATE: 6/3/2024



REV. NO.	DATE	DESCRIPTION	BY

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

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WB IH 30 CMV STATION

SWP3 PLAN

STA 65+00 TO END PROJECT

SHEET 4 OF 4

DGN:	FED. NO.:	STATE:	FEDERAL AID PROJECT NO.:	HIGHWAY NO.:
CHK:	DIV. NO.:	TEXAS		IH 30
DWG:	DIST.:	COUNTY:	CONT. NO.:	SECT. NO.:
CHK:	ATL	TITUS	0610	03
DWG:			095	210

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Plotted on: 6/3/2024

Design Filename: P:\116\35\04\Design\Civil\SW3P\1163504_EPIC.dgn

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

No Action Required Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

- No Permit Required
- Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
- Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
- Individual 404 Permit Required
- Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

- 1.
- 2.
- 3.
- 4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
<input type="checkbox"/> Temporary Vegetation	<input type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

No Action Required Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

No Action Required Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

No Action Required Required Action

Action No.

- 1.
- 2.
- 3.
- 4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

BMP: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CGP: Construction General Permit	SW3P: Storm Water Pollution Prevention Plan
DSHS: Texas Department of State Health Services	PCN: Pre-Construction Notification
FHWA: Federal Highway Administration	PSL: Project Specific Location
MOA: Memorandum of Agreement	TCEQ: Texas Commission on Environmental Quality
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MBTA: Migratory Bird Treaty Act	TxDOT: Texas Department of Transportation
NOT: Notice of Termination	T&E: Threatened and Endangered Species
NWP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- * Dead or distressed vegetation (not identified as normal)
- * Trash piles, drums, canister, barrels, etc.
- * Undesirable smells or odors
- * Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

Yes No

If "No", then no further action is required.

If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

Yes No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

No Action Required Required Action

Action No.

- 1.
- 2.
- 3.


VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

No Action Required Required Action

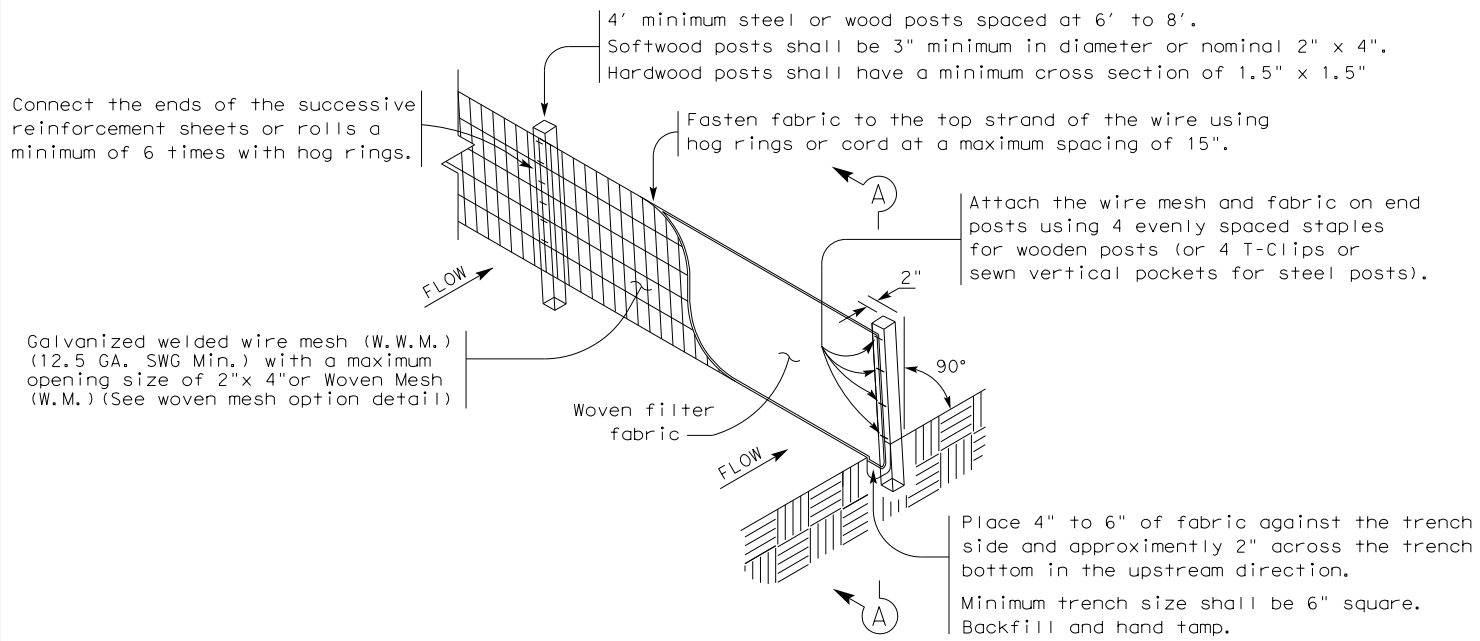
Action No.

- 1.
- 2.
- 3.

				Design Division Standard	
<p>ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS EPIC</p>					
FILE: epic.dgn	DN: TxDOT	CR: RG	DW: VP	CR: AR	
© TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
12-12-2011 (DS) REVISIONS	0610	03	095	IH	30
05-07-14 ADDED NOTE SECTION IV.	DIST	COUNTY		SHEET NO.	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	ATL	TITUS		211	

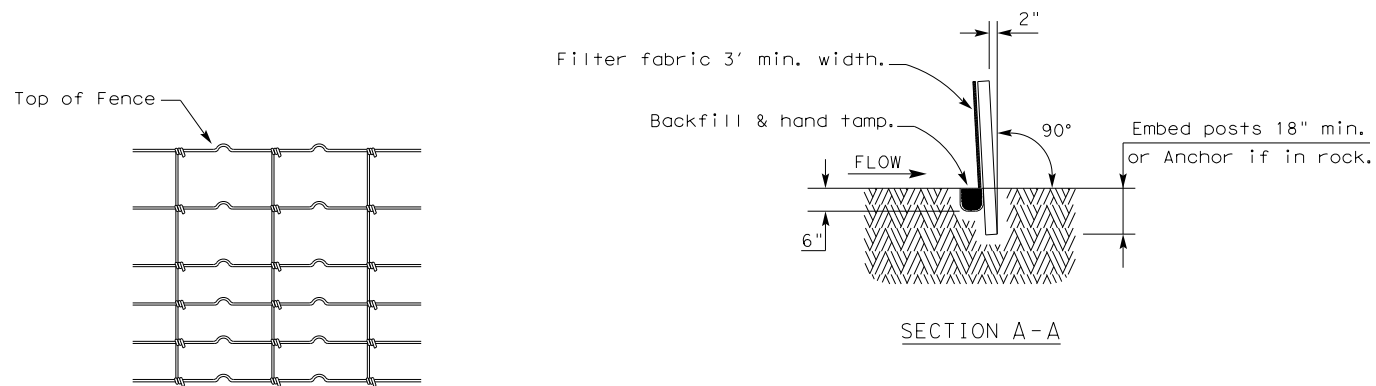
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DATE: 6/3/2024
 FILE: P:\1116\35\04\Design\Civil\Standards\SW3P\ec116.dgn



TEMPORARY SEDIMENT CONTROL FENCE

SCF



HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA. SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT². Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

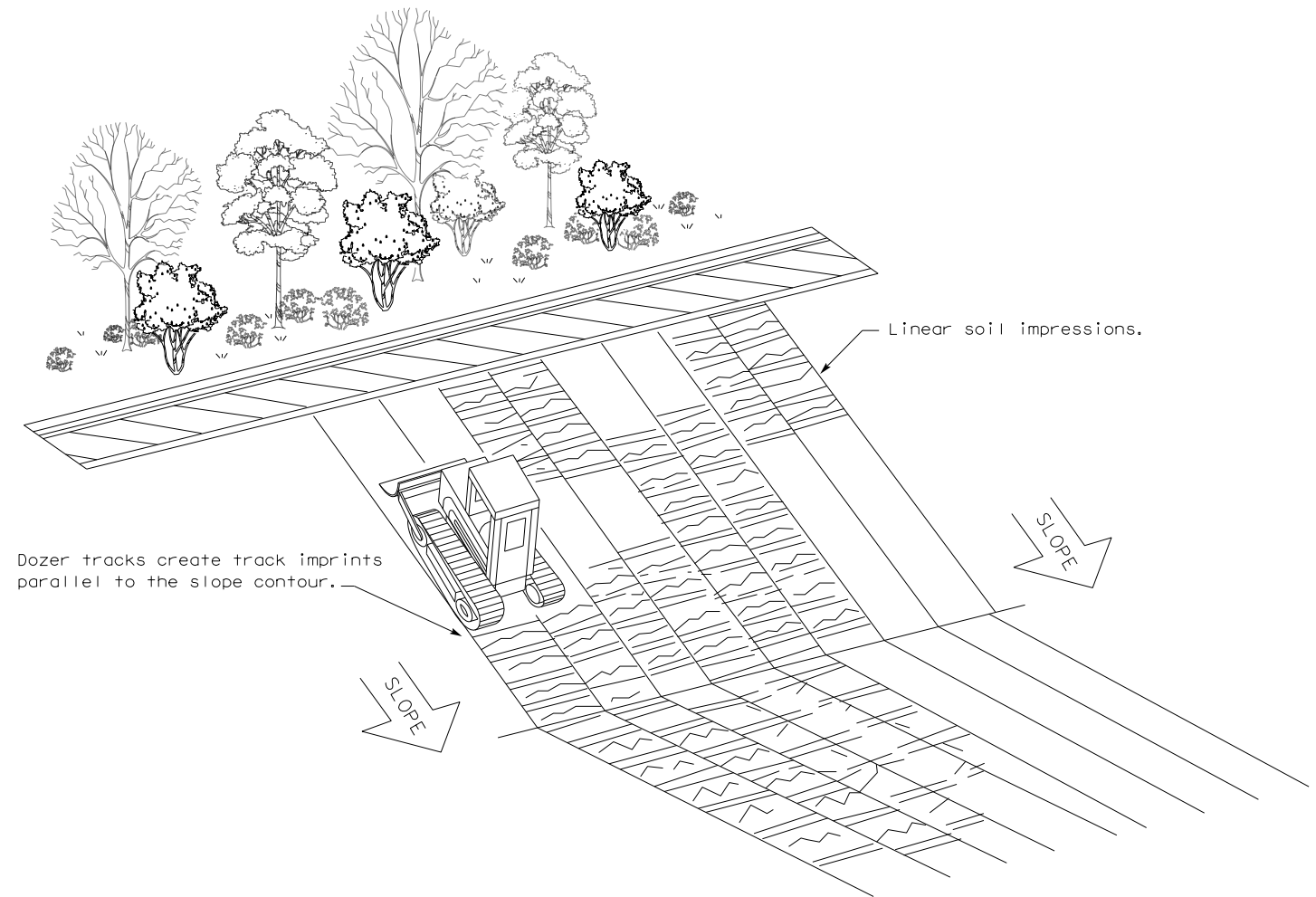
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continuous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.

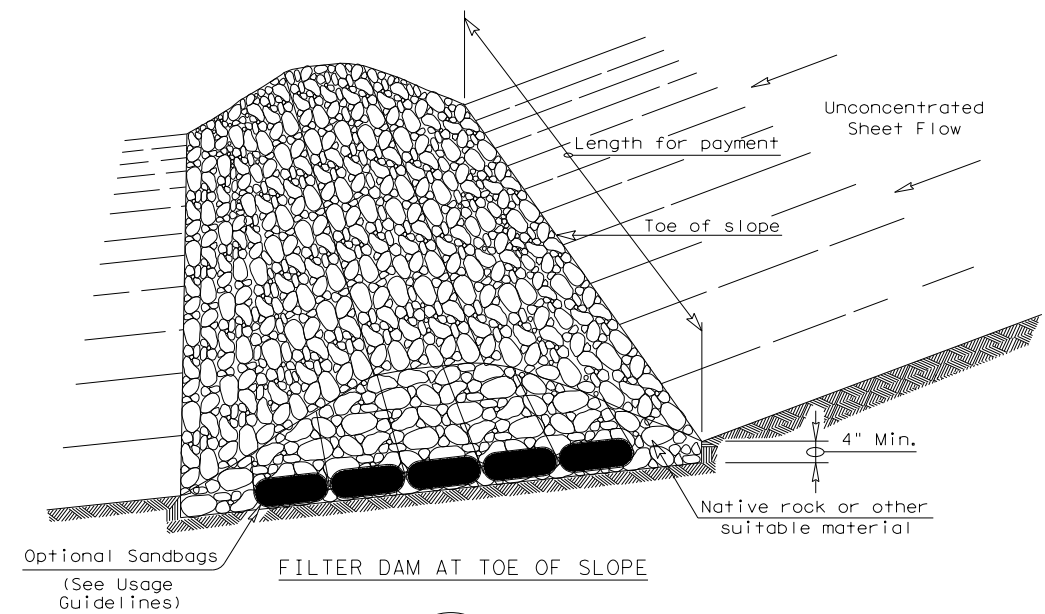


VERTICAL TRACKING

				Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE & VERTICAL TRACKING EC(1)-16					
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0610	03	095	IH 30	
	DIST	COUNTY	SHEET NO.		
	ATL	TITUS	212		

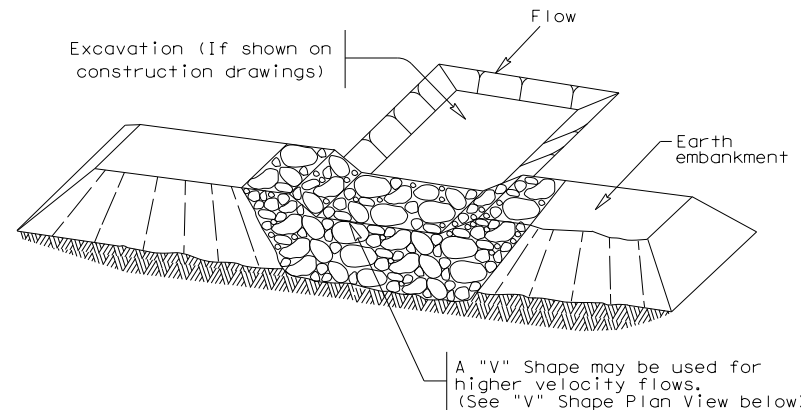
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 FILE: P:\116\35\04\Design\Civil\Standards\SW3P\ec216.dgn



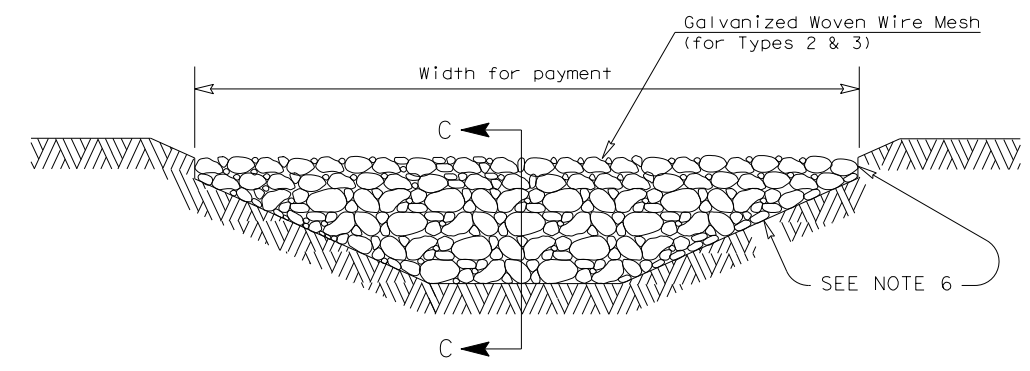
FILTER DAM AT TOE OF SLOPE

RFD1



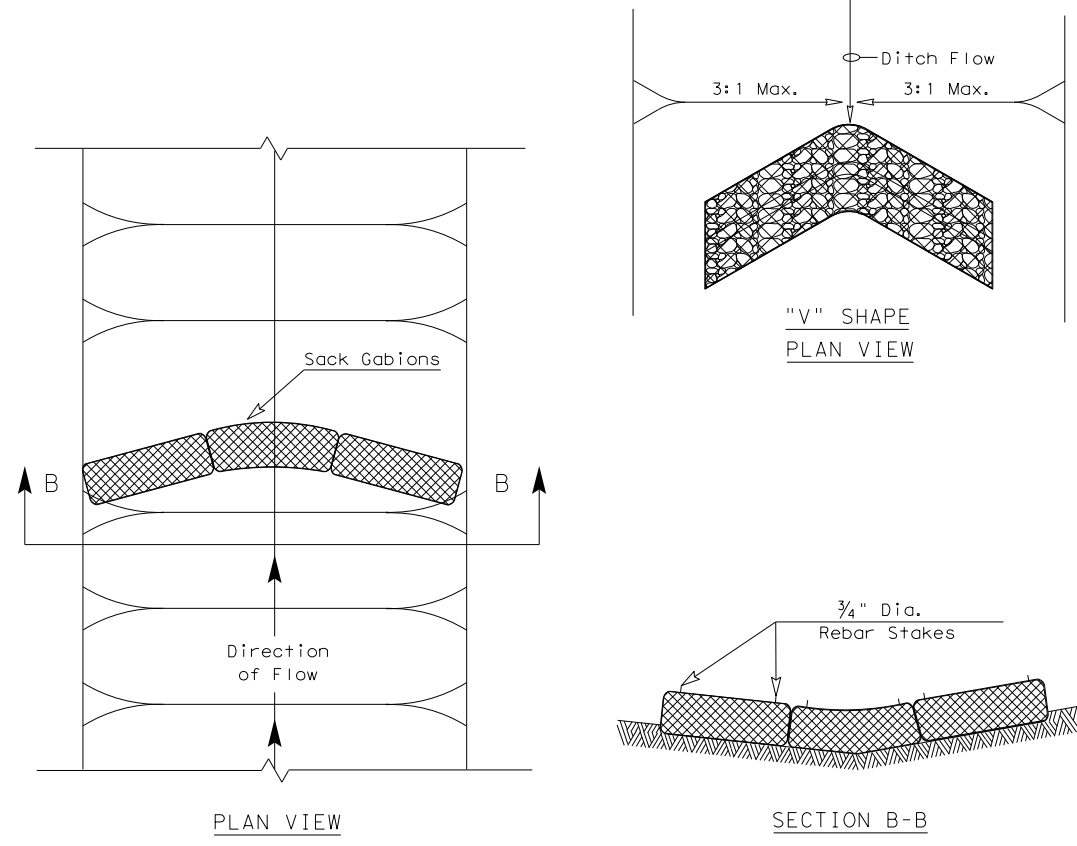
FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



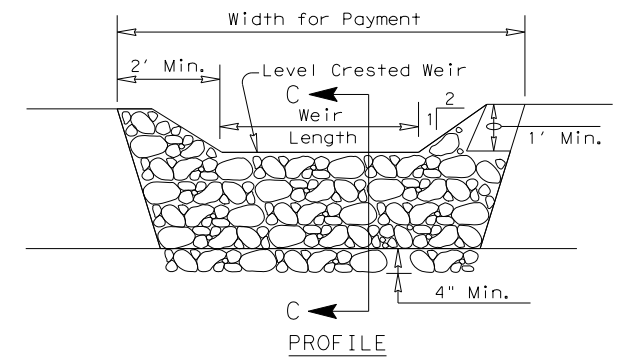
FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

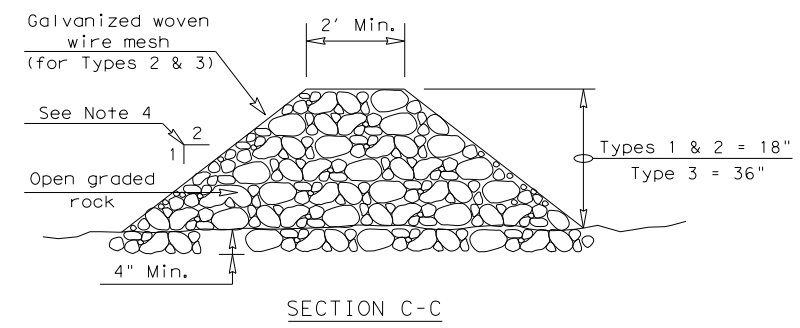


PLAN VIEW

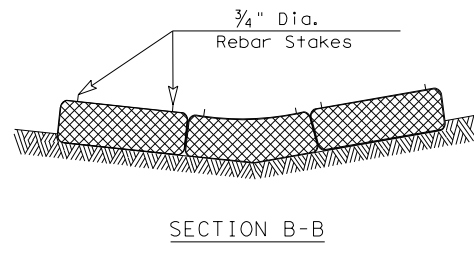
"V" SHAPE PLAN VIEW



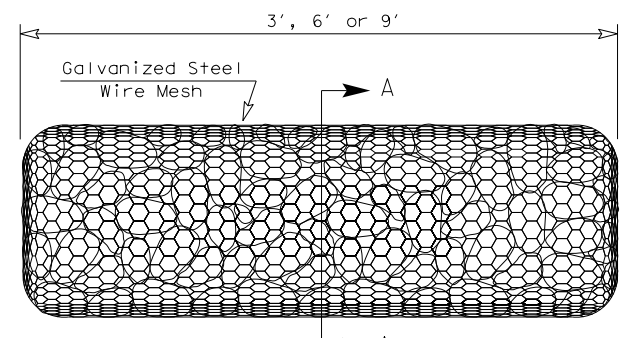
PROFILE



SECTION C-C

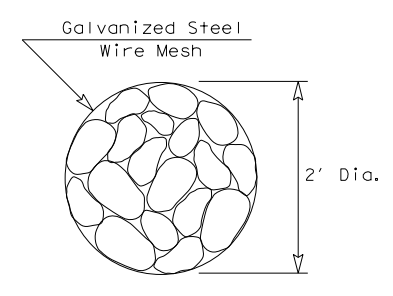


SECTION B-B



TYPE 4 (SACK GABIONS)

RFD4



SECTION A-A

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT² of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximately 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 1/2" x 3 1/4".
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

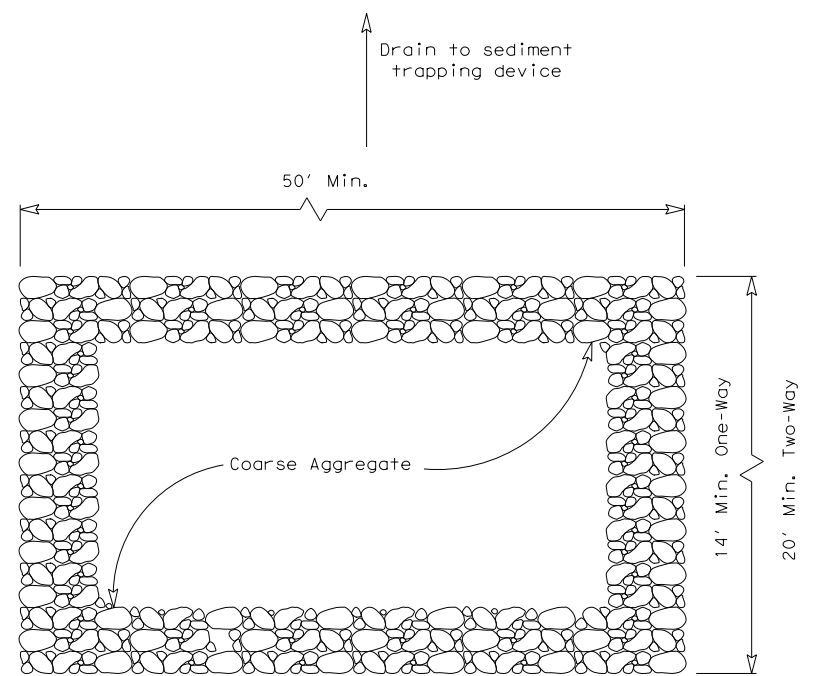
PLAN SHEET LEGEND

- Type 1 Rock Filter Dam — RFD1
- Type 2 Rock Filter Dam — RFD2
- Type 3 Rock Filter Dam — RFD3
- Type 4 Rock Filter Dam — RFD4

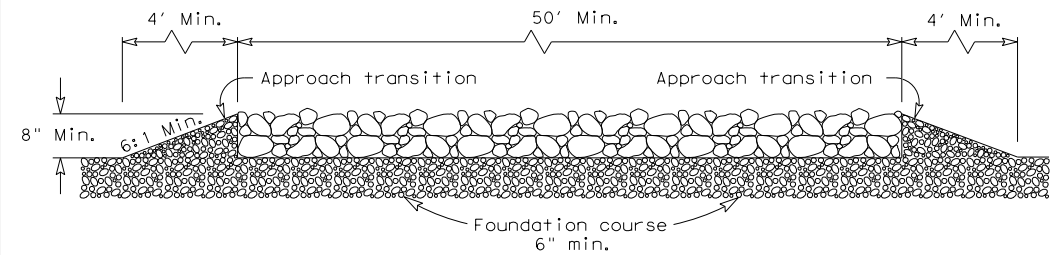
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES ROCK FILTER DAMS EC(2) - 16			
FILE: ec216	DN: TxDOT	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT: 0610	SECT: 03	JOB: 095
REVISIONS	DIST: ATL	COUNTY: TITUS	HIGHWAY: IH 30
			SHEET NO.: 213

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DATE: 6/3/2024
 FILE: P:\116\35\04\Design\Civil\Standards\SW3P\ec316.dgn



PLAN VIEW

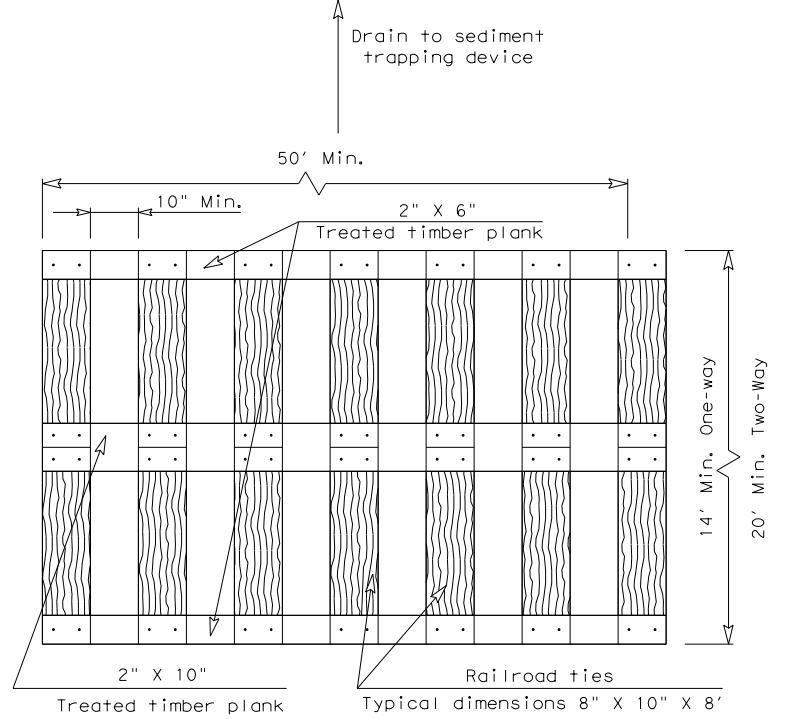


ELEVATION VIEW

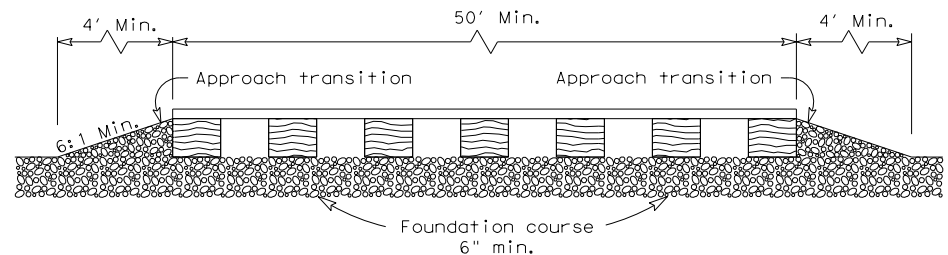
CONSTRUCTION EXIT (TYPE 1)
 ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

- The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
- The coarse aggregate should be open graded with a size of 4" to 8".
- The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW

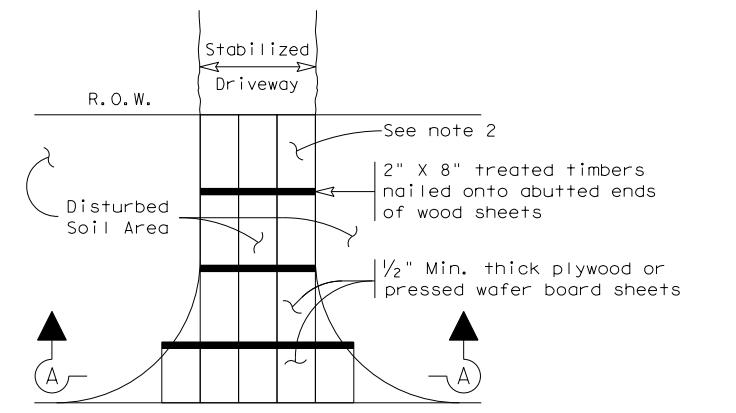


ELEVATION VIEW

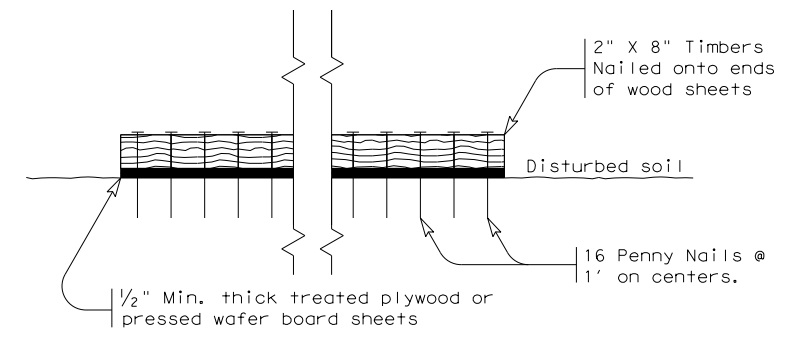
CONSTRUCTION EXIT (TYPE 2)
 TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

- The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
- The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit should be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



Paved Roadway
 PLAN VIEW



SECTION A-A
 CONSTRUCTION EXIT (TYPE 3)
 SHORT TERM

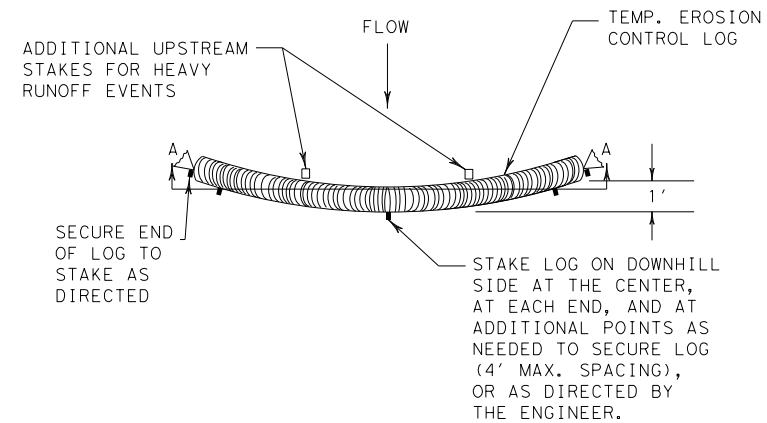
GENERAL NOTES (TYPE 3)

- The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
- The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.

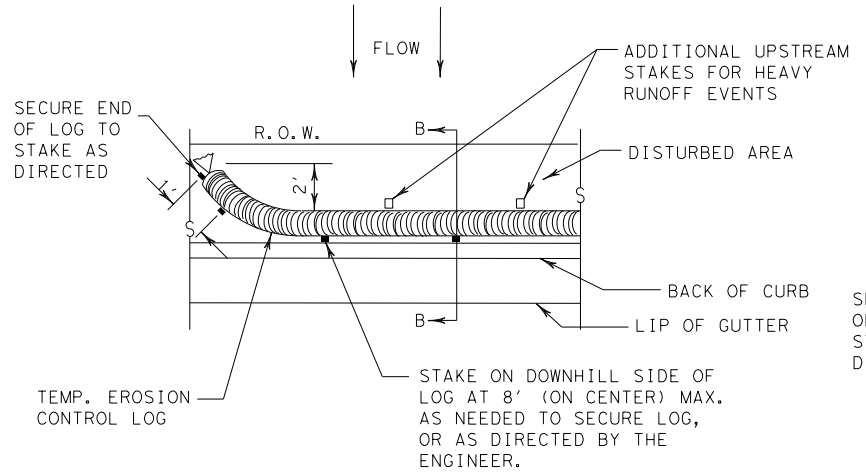
		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES CONSTRUCTION EXITS EC(3)-16			
FILE: ec316	DN: TxDOT	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0610	03	095
	DIST	COUNTY	SHEET NO.
	ATL	TITUS	214

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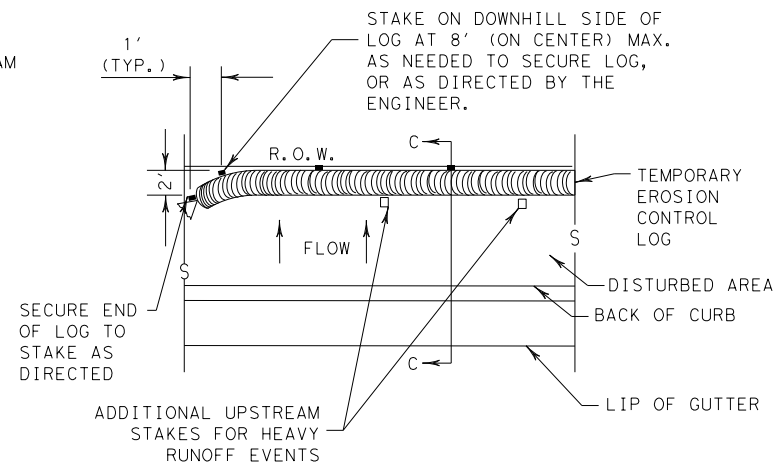
DATE: 6/3/2024
 FILE: P:\1116\35\04\Design\Civil\Standards\SW3P\ec916_1.dgn



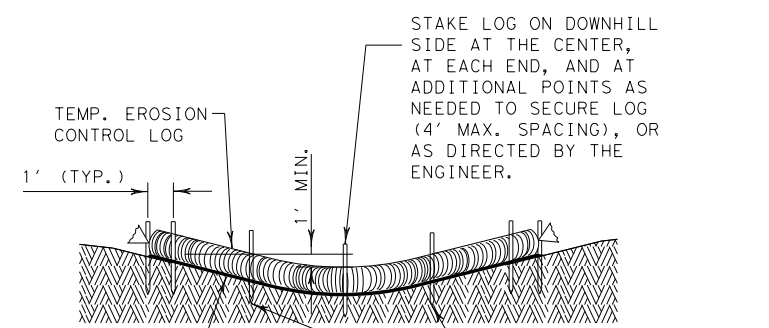
PLAN VIEW



PLAN VIEW



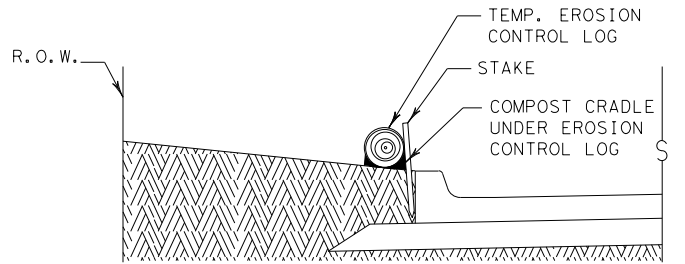
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

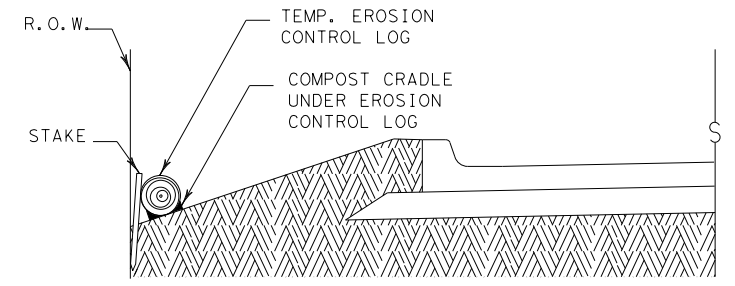
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

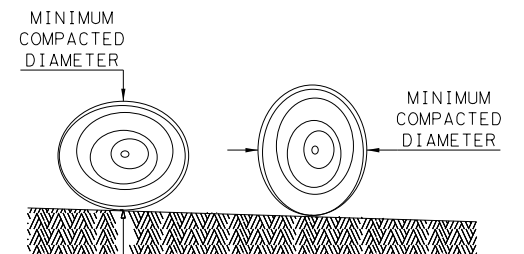
CL-BOC



SECTION C-C

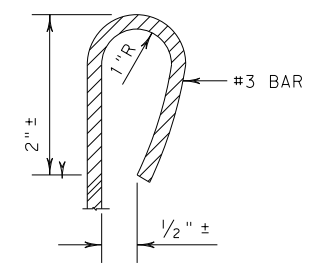
EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

- LEGEND
- CL-D EROSION CONTROL LOG DAM
 - CL-BOC EROSION CONTROL LOG AT BACK OF CURB
 - CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
 - CL-SST EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
 - CL-SSL EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
 - CL-DI EROSION CONTROL LOG AT DROP INLET
 - CL-CI EROSION CONTROL LOG AT CURB INLET
 - CL-GI EROSION CONTROL LOG AT CURB & GRATE INLET



REBAR STAKE DETAIL

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

GENERAL NOTES:

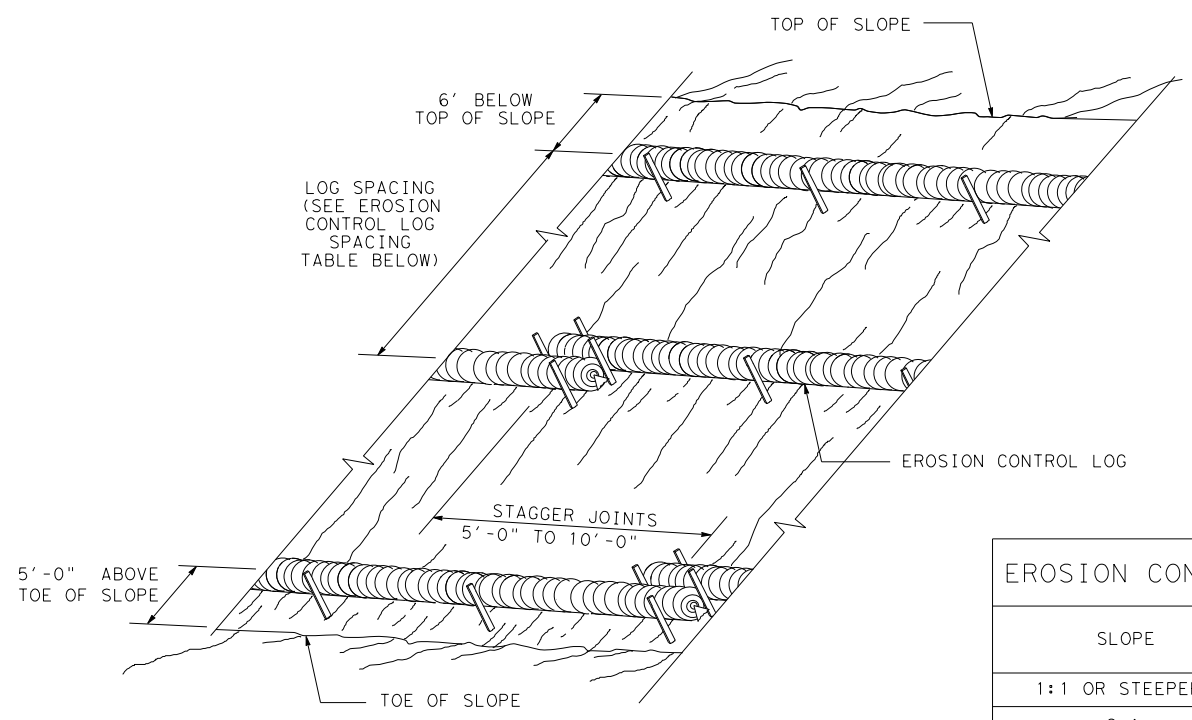
1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SHEET 1 OF 3

		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0610	03	095
	DIST	COUNTY	SHEET NO.
	ATL	TITUS	215

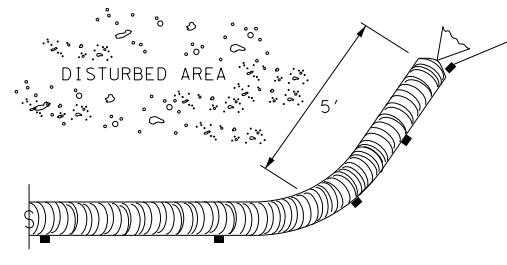
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 FILE: P:\1116\35\04\Design\Civil\Standards\SW3P\ec916-2.dgn



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

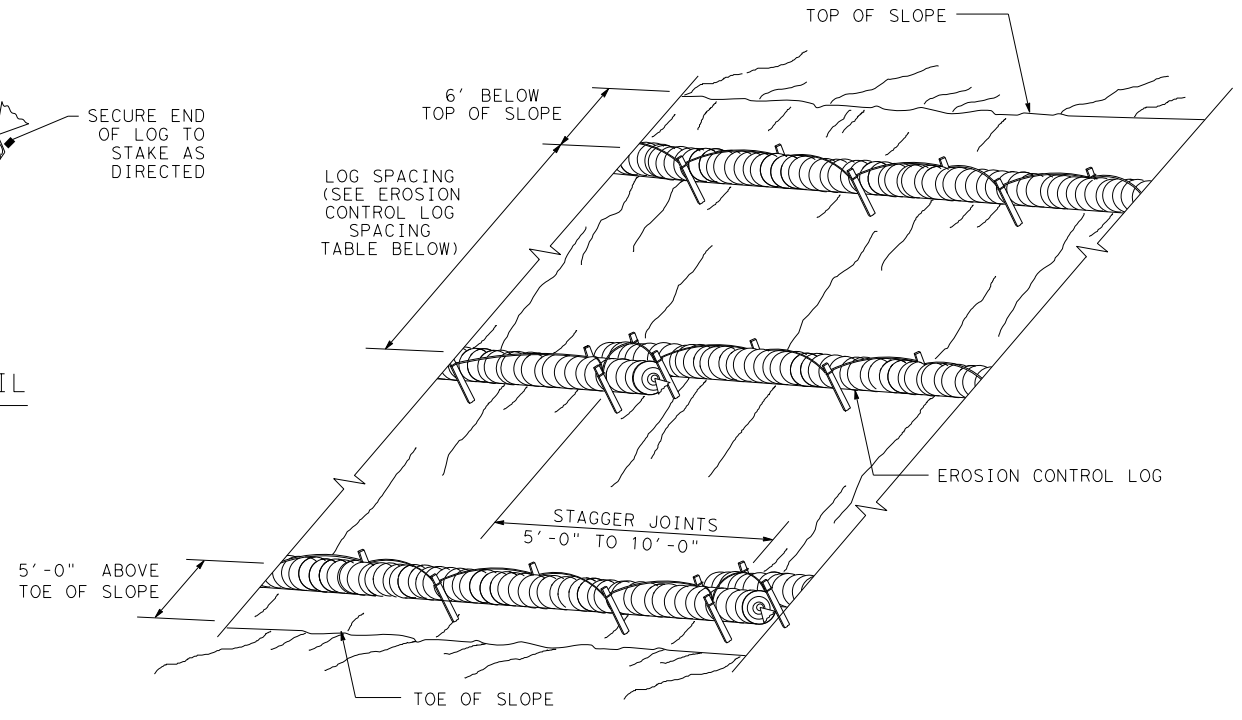
CL-SST



END SECTION RAP DETAIL

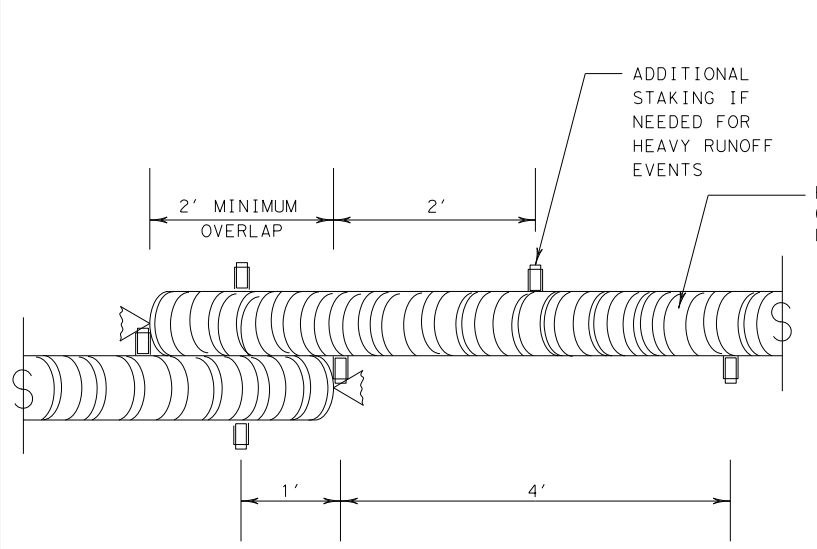
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
 SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
 HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



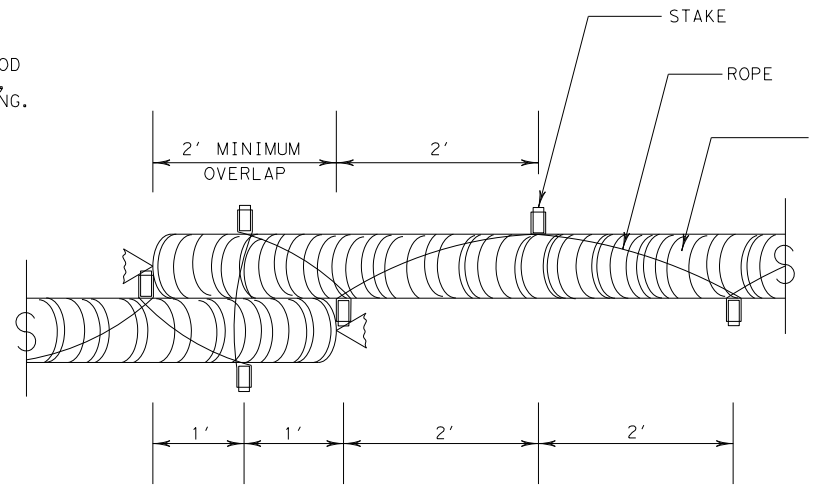
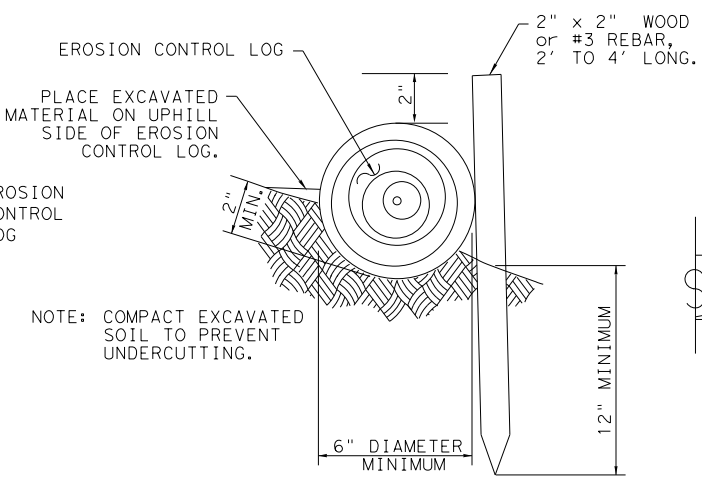
EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL



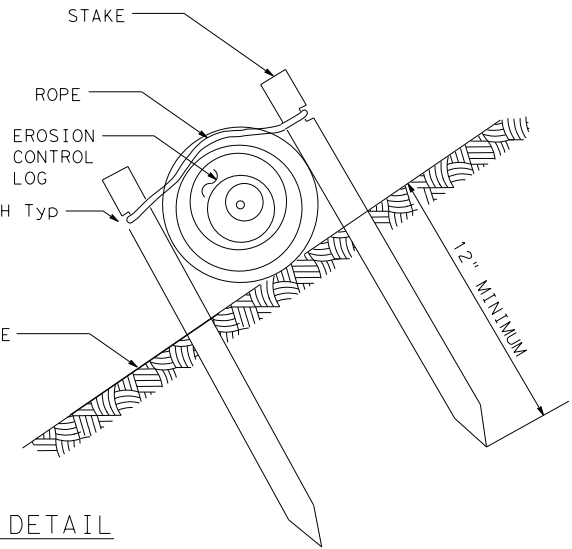
STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

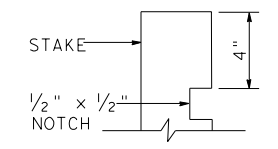


STAKE AND LASHING ANCHORING DETAIL

CL-SSL



TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"

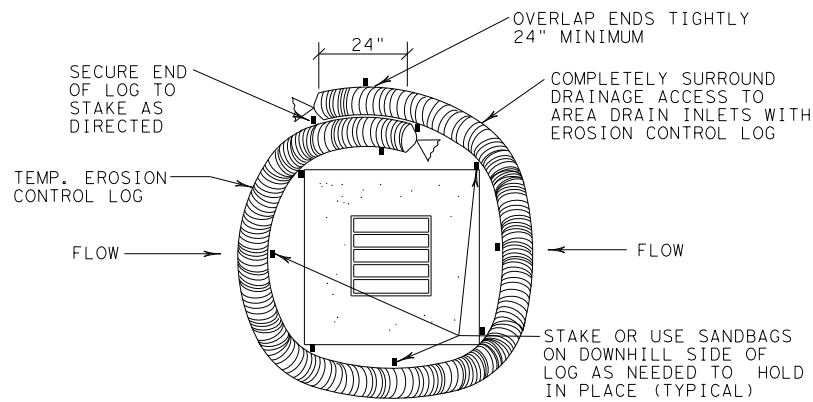


STAKE NOTCH DETAIL

		Design Division Standard	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0610	03	095
DIST	COUNTY		SHEET NO.
ATL	TITUS		216

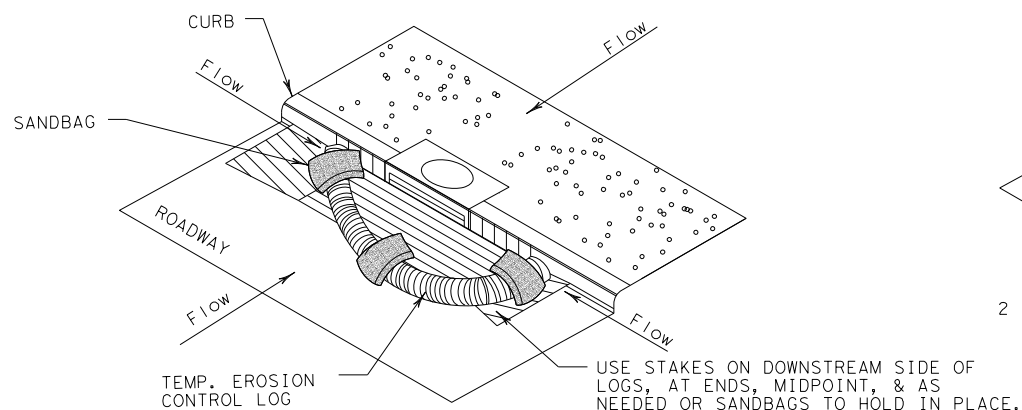
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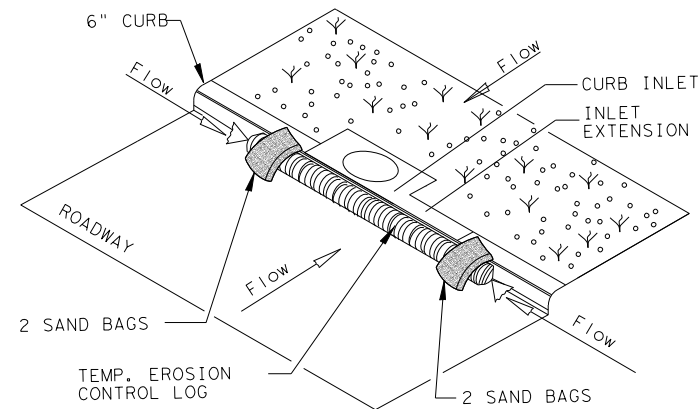
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

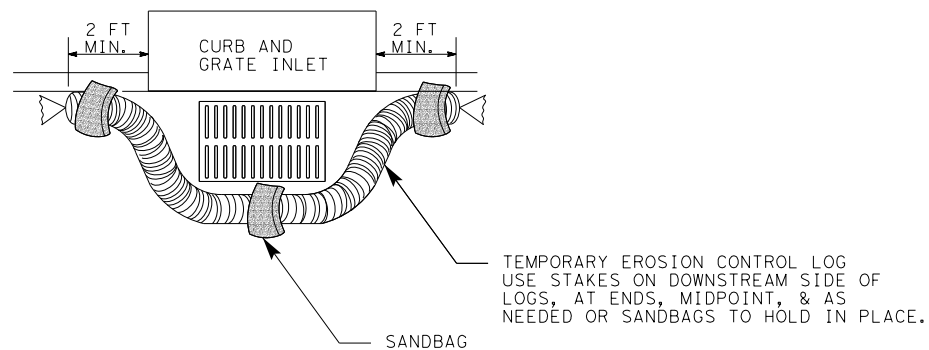
CL-CI



EROSION CONTROL LOG AT CURB INLET

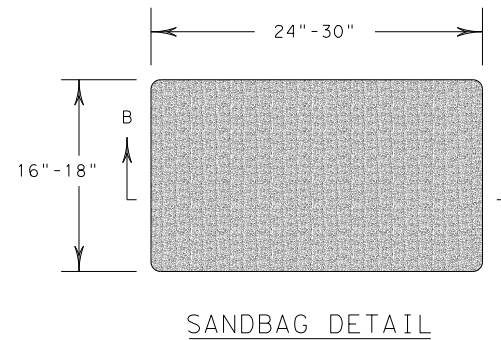
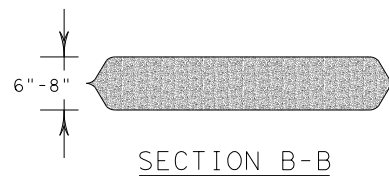
CL-CI

NOTE:
 EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SHEET 3 OF 3



**TEMPORARY EROSION,
 SEDIMENT AND WATER
 POLLUTION CONTROL MEASURES
 EROSION CONTROL LOG
 EC (9) - 16**

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0610	03	095	IH 30
	DIST	COUNTY	SHEET NO.	
	ATL	TITUS	217	