CONT	SECT	JOB	HIGHWAY
6340	46	001	SH 130
DIST	COUNTY		SHEET NO.
AUS	TRAVIS		1

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY ROUTINE MAINTENANCE

PROJECT NUMBER
RMC 634046001

NET LENGTH OF PROJECT = 14.26 MILES

TRAVIS COUNTY
SH 130 SEGMENT 2

FROM: US 79
TO: US 290

WORK DESCRIPTION: MAINLANE CONCRETE REPAIR AND OVERLAY

BEGIN PROJECT (SH 130)
CSJ: 6340-46-001
STA 695+00
REF MRKR: 422+1.548

END PROJECT (SH 130)
CSJ: 6340-46-001
STA 1460+00
REF MRKR: 436+1.655

LOCATION MAP NOT TO SCALE

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT.

FINAL PLANS

DATE OF LETTING: _____

DATE WORK BEGAN: _____

DATE WORK COMPLETED AND ACCEPTED: _____

FINAL CONTRACT COST: $_____

CONTRACTOR: _____

LIST OF APPROVED CHANGE ORDERS:

I CERTIFY THAT THIS PROJECT WAS CONSTRUCTED IN SUBSTANTIAL COMPLIANCE WITH THE FINAL AS-BUILT PLANS AND SPECIFICATIONS.

_____ P.E. _____
AREA ENGINEER DATE

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

APPROVED FOR LETTING: 2/14/2023

DocuSigned by:
Omar X. De Leon, P.E.
D18DBE2B94AF4FA...

DIRECTOR OF MAINTENANCE

100%
SUBMITTAL

STATE OF TEXAS
JORGE L. VILLALTA
107817
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

* THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE WITH AN * HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

JORGE L. VILLALTA , 11/2/2020

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0068 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

INDEX OF SHEETS

SHEET 1 OF 1

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		2

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100%
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SUMMARY OF ROADWAY ITEMS

LOCATION	DESCRIPTION		104 6054	168 6001	180 6001	316 6017	316 6240	361 6007	354 6069	432 6045	454 6008	454 6009	540 6001	540 6003	542 6001	542 6003	544 6001	544 6003	3079 6024	3081 6009
			REMOVING CONCRETE (MOW STRIP)	VEGETATIVE WATERING	WILDFLOWER SEEDING	ASPH (AC-20-5TR)	AGGR (TY-PD GR-4 SAC-B)	FULL-DEPTH REPAIR CRCP 13"	PLANE CONC PAV (0" TO 2-1/2")	RIPRAP (MOW STRIP) (4 IN)	HEADER TYPE EXPANSION JOINT	JOINT SEALANT	MTL W-BEAM GD FEN (TIM POST)	MTL THRIE-BEAM GD FEN (TIM POST)	REMOVE METAL BEAM GUARD FENCE	REMOVE DOWNSTREAM ANCHOR TERMINAL	GUARDRAIL END TREATMENT (INSTALL)	GUARDRAIL END TREATMENT (REMOVE)	PFC-C HPG) SAC A	TOM-F (PG76-22 SAC A
			LF	MG	AC	GAL	CY	SY	SY	CY	CF	LF	LF	LF	LF	EA	EA	EA	TON	TON
LAYOUT SHEET	BEGIN STATION	END STATION																		
1 OF 32	BEGIN	719+00.00	454	16	22					30	14	128	275	38	264	0	1	1		
2 OF 32	719+00.00	743+00.00	1,057	11	14					61	5	43	1,000	114	867	1	9	9		
3 OF 32	743+00.00	767+00.00	772	6	8					35	23	212	400	76	582	1	9	9		
4 OF 32	767+00.00	791+00.00	375	12	16					28			225		185		8	8		
5 OF 32	791+00.00	815+00.00	231	15	20					28	18	168	225	38	41		8			
6 OF 32	815+00.00	839+00.00		16	22												8			
7 OF 32	839+00.00	863+00.00		13	17												8			
8 OF 32	863+00.00	887+00.00	946	11	14					55			850	76	756	1	9	9		
9 OF 32	887+00.00	911+00.00	551	13	18					35			400	3	361		8	8		
10 OF 32	911+00.00	935+00.00	409	11	15					28			225	2	219		8	8		
11 OF 32	935+00.00	959+00.00	749	14	19					46	19	176	650	76	559	2	14	14		
12 OF 32	959+00.00	983+00.00		16	22								0				8	8		
13 OF 32	983+00.00	1007+00.00	351	9	12					25			175		161	2	10	10		
14 OF 32	1007+00.00	1031+00.00	562	13	17					35	19	177	400	38	372	4	12	12		
15 OF 32	1031+00.00	1055+00.00	675	15	20					39	7	59	500	38	485		8	8		
16 OF 32	1055+00.00	1079+00.00	288	12	16					22			100		98	1	9	9		
17 OF 32	1079+00.00	1103+00.00	702	13	17					43			575	38	512	5	13	13		
18 OF 32	1103+00.00	1127+00.00	1,163	15	20					62	25	240	1,025		973	2	10	10		
19 OF 32	1127+00.00	1151+00.00	470	15	20					31			300	0	280	2	10	10		
20 OF 32	1151+00.00	1175+00.00	713	10	13					43			575	76	523	4	12	12		
21 OF 32	1175+00.00	1199+00.00	388	11	14					28	8	76	225		198	2	10	10		
22 OF 32	1199+00.00	1223+00.00	290	8	11					22	28	264	100	19	100		8	8		
23 OF 32	1223+00.00	1247+00.00		6	8												8			
24 OF 32	1247+00.00	1271+00.00		5	6												8			
25 OF 32	1271+00.00	1295+00.00		5	6												8			
26 OF 32	1295+00.00	1319+00.00		14	19												8			
27 OF 32	1319+00.00	1343+00.00	391	13	18					33	18	168	350	38	201		8	8		
28 OF 32	1343+00.00	1367+00.00	711	10	13					48	12	111	700	38	521	4	12	12		
29 OF 32	1367+00.00	1391+00.00	378	5	6					26	12	108	200	19	188		8	8		
30 OF 32	1391+00.00	1415+00.00	328	11	14					24	23	216	150	19	138		8	8		
31 OF 32	1415+00.00	1439+00.00		13	17												8			
32 OF 32	1439+00.00	END	298	6	8					23			125		108	1	9	9		
PROJECT TOTAL	S		13252	363	482	346,712	8,255	400	10618	850	231	2146	9750	746	8692	32	285	221	66,860	54,484

SUMMARY OF TRAFFIC CONTROL PLAN QUANTITIES

DESCRIPTION	502 6001	662 6109	662 6110	6001 6002	6185 6002	6185 6003
	BARRICADES, SIGNS AND TRAFFIC HANDLING	WK ZN PAV MRK SHT TERM (TAB)TY W	WK ZN PAV MRK SHT TERM (TAB)TY Y	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	MO	EA	EA	EA	DAY	HR
TOTAL	6	29491	8111	2	15	120

SUMMARY OF ROADWAY ITEMS

DESCRIPTION	3004 6001	361 6022	720 6003	3084 6001	4136 6001
	CONTINOUS DIAMOND GRINDING CONC PVMT	HALF - DEPTH REPAIR CRCP (13")	SPALLING REPAIR (POLYMERIC) (SEMIRIGID)	BONDING COURSE	REPAIR OF CONCRETE PAVEMENT (PRECAST)
	SY	SY	GAL	GAL	SY
TOTAL	500,000	1200	5670	79,249	810

SUMMARY OF SW3P QUANTITIES

DESCRIPTION	506 6040	506 6043
	BIODEG EROSN CONT LOGS (INSTL) (8")	BIODEG EROSN CONT LOGS (REMOVE)
	LF	LF
TOTAL	1000	1000

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Texas Department of Transportation

SH 130

QUANTITY SUMMARY

SHEET 1 OF 3

DN:	CC	CO. HIGHWAY DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	3

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SUMMARY OF PAVEMENT MARKING ITEMS

STRIPING LAYOUT SHEET NO.	DESCRIPTION		658 6061	658 6064	666 6036	666 6039	666 6042	666 6048	666 6054	666 6075	666 6078	666 6138	666 6141	666 6171	666 6174	666 6178	666 6179
			INSTL DEL ASSM (D-SW)SZ 1 (BRF)GF2	INSTL DEL ASSM (D-SY)SZ 1 (BRF)GF2	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	REFL PAV MRK TY I (W)12"(LNDP) (100MIL)	REFL PAV MRK TY I (W)12"(SLD) (100MIL)	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	REFL PAV MRK TY I (W)(ARROW)(100MIL)	REFL PAV MRK TY I (W)(NUMBER) (100MIL)	REFL PAV MRK TY I (W)(WORD)(100MIL)	REFL PAV MRK TY I (Y)8"(SLD)(100MIL)	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	REFL PAV MRK TY II (W) 6" (BRK)	REFL PAV MRK TY II (W) 6" (SLD)	REFL PAV MRK TY II (W) 8" (SLD)	REFL PAV MRK TY II (W) 12" (LNDP)
			EA	EA	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF	LF
LAYOUT SHEET	BEGIN STATION	END STATION															
SH 130 (THROUGHTOUT PROJECT)																	
1 OF 32	BEGIN	719+00												320	1394		
2 OF 32	719+00	743+00	26	20	1165		882		1	1	1			1210	4497	1165	
3 OF 32	743+00	767+00	12	7	2546	148	1166		5	1	5			900	4995	2546	148
4 OF 32	767+00	791+00	4	5	630	2755	384							1200	5953	630	2755
5 OF 32	791+00	815+00	1	6										1200	4802		
6 OF 32	815+00	839+00												1200	4801		
7 OF 32	839+00	863+00												1190	4798		
8 OF 32	863+00	887+00	26	9	2132		1066		1	1	1			1200	5176	2132	
9 OF 32	887+00	911+00	12	4	1912	170	836		2	1	2			1970	5329	1912	170
10 OF 32	911+00	935+00	6	6	1478	1616	1188		1	1	1			1260	6050	1478	1616
11 OF 32	935+00	959+00	7	2	1822	455	568							1800	7566	1822	455
12 OF 32	959+00	983+00	1	1	1822		568			1				1200	5166	1822	
13 OF 32	983+00	1007+00	4	3	844		882		3	1	3			1870	5734	844	
14 OF 32	1007+00	1031+00	9	8	1612	1887	610		1		1			2400	4800	1612	1887
15 OF 32	1031+00	1055+00	10	4	933	1830	561		1	1	1			2790	6339	933	1830
16 OF 32	1055+00	1079+00	4		497	810	553		2		2			3000	4802	497	810
17 OF 32	1079+00	1103+00	20	6	1226	4580	882		2	1	2			3000	5116	1226	4580
18 OF 32	1103+00	1127+00	13	16		770								3600	4800		770
19 OF 32	1127+00	1151+00	6	4	2246		956							2520	5153	2246	
20 OF 32	1151+00	1175+00	14	14	163		126			1		150	86	2540	4948	163	
21 OF 32	1175+00	1199+00	4	7	1988		946		1	1	1	150	103	2400	5290	1988	
22 OF 32	1199+00	1223+00	4	3	709	700	594		1		1			2870	5494	709	700
23 OF 32	1223+00	1247+00			1999	305	913			1				2700	4143	1999	305
24 OF 32	1247+00	1271+00				590								2400	4802		590
25 OF 32	1271+00	1295+00												2400	4801		
26 OF 32	1295+00	1319+00												2400	4802		
27 OF 32	1319+00	1343+00	11	11										2400	4801		
28 OF 32	1343+00	1367+00	16	11	2330		867		1	1	1			2420	4866	2330	
29 OF 32	1367+00	1391+00	6	5	2285	278	927		2		2			3730	5305	2285	278
30 OF 32	1391+00	1415+00	7	16	1447	1514	794	54	3	1	2			2820	9512	1447	1514
31 OF 32	1415+00	1439+00			1911	1818	1283							2110	6538	1911	1818
32 OF 32	1439+00	END	4	20										1010	2550		
SH 130 TOTAL			227	188	33697	20226	17552	54	27	14	26	300	189	66030	165123	33697	20226

ENTECH CIVIL ENGINEERS INC
F-6932
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281-945-0069 PH
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Texas Department of Transportation

SH 130

QUANTITY SUMMARY

SHEET 2 OF 3

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	4

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SUMMARY OF PAVEMENT MARKING ITEMS

STRIPING LAYOUT SHEET NO.	DESCRIPTION		666 6180 REFL PAV MRK TY II (W) 12" (SLD) LF	666 6182 REFL PAV MRK TY II (W) 24" (SLD) LF	666 6184 REFL PAV MRK TY II (W) (ARROW) EA	666 6191 REFL PAV MRK TY II (W) (NUMBER) EA	666 6192 REFL PAV MRK TY II (W) (WORD) EA	666 6210 REFL PAV MRK TY II (Y) 6" (SLD) LF	666 6211 REFL PAV MRK TY II (Y) 8" (SLD) LF	666 6212 REFL PAV MRK TY II (Y) 12" (SLD) LF	666 6306 RE PM W/RET REQ TY I (W) 6"(BRK) (100MIL) LF	666 6343 REF PROF PAV MRK TY I(W)6"(SLD) (100MIL) LF	666 6347 REF PROF PAV MRK TY I(Y)6"(SLD) (100MIL) LF	672 6010 REFL PAV MRKR TY II-C-R EA
LAYOUT SHEET	BEGIN STATION	END STATION												
SH 130 (THROUGHTOUT PROJECT)														
1 OF 32	BEGIN	719+00						1394			320	1394	1394	33
2 OF 32	719+00	743+00	882		1	1	1	4497			1210	4497	5095	219
3 OF 32	743+00	767+00	1166		5	1	5	4995			900	4995	2597	392
4 OF 32	767+00	791+00	384					5953			1200	5953	5953	152
5 OF 32	791+00	815+00						4802			1200	4802	4801	121
6 OF 32	815+00	839+00						4801			1200	4801	4801	120
7 OF 32	839+00	863+00						4798			1190	4798	4802	121
8 OF 32	863+00	887+00	1066		1	1	1	5176			1200	5176	5183	252
9 OF 32	887+00	911+00	836		2	1	2	5329			1970	5329	5275	322
10 OF 32	911+00	935+00	1188		1	1	1	6050			1260	6050	6050	254
11 OF 32	935+00	959+00	568					7566			1800	7566	7546	286
12 OF 32	959+00	983+00	568			1		5166			1200	5166	5146	226
13 OF 32	983+00	1007+00	882		3	1	3	5734			1870	5734	5732	329
14 OF 32	1007+00	1031+00	610		1		1	4800			2400	4800	4800	284
15 OF 32	1031+00	1055+00	561		1	1	1	6339			2790	6339	6335	371
16 OF 32	1055+00	1079+00	553		2		2	4802			3000	4802	4801	559
17 OF 32	1079+00	1103+00	882		2	1	2	5116			3000	5116	5110	424
18 OF 32	1103+00	1127+00						4800			3600	4800	4800	360
19 OF 32	1127+00	1151+00	956					5153			2520	5153	5152	541
20 OF 32	1151+00	1175+00	126			1		4948	150	86	2540	4948	4800	289
21 OF 32	1175+00	1199+00	946		1	1	1	5290	150	103	2400	5290	5138	393
22 OF 32	1199+00	1223+00	594		1		1	5494			2870	5494	5497	354
23 OF 32	1223+00	1247+00	913			1		4143			2700	4143	3731	413
24 OF 32	1247+00	1271+00						4802			2400	4802	4802	240
25 OF 32	1271+00	1295+00						4801			2400	4801	4802	240
26 OF 32	1295+00	1319+00						4802			2400	4802	4802	240
27 OF 32	1319+00	1343+00						4801			2400	4801	4800	240
28 OF 32	1343+00	1367+00	867		1	1	1	4866			2420	4866	4860	375
29 OF 32	1367+00	1391+00	927		2		2	5305			3730	5305	5304	572
30 OF 32	1391+00	1415+00	794	54	3	1	2	9512			2820	9512	9505	474
31 OF 32	1415+00	1439+00	1283					6538			2110	6538	6248	363
32 OF 32	1439+00	END						2550			1010	2550	2550	101
SH 130 TOTAL			17552	54	27	14	26	165123	300	189	66030	165123	162212	9660

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ENTECH
CIVIL ENGINEERS INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

QUANTITY
SUMMARY

SHEET 3 OF 3

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	5

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Estimate & Quantity Sheet

CONTROLLING PROJECT ID 6340-46-001 **DISTRICT** Austin **COUNTY** Travis
HIGHWAY SH0130

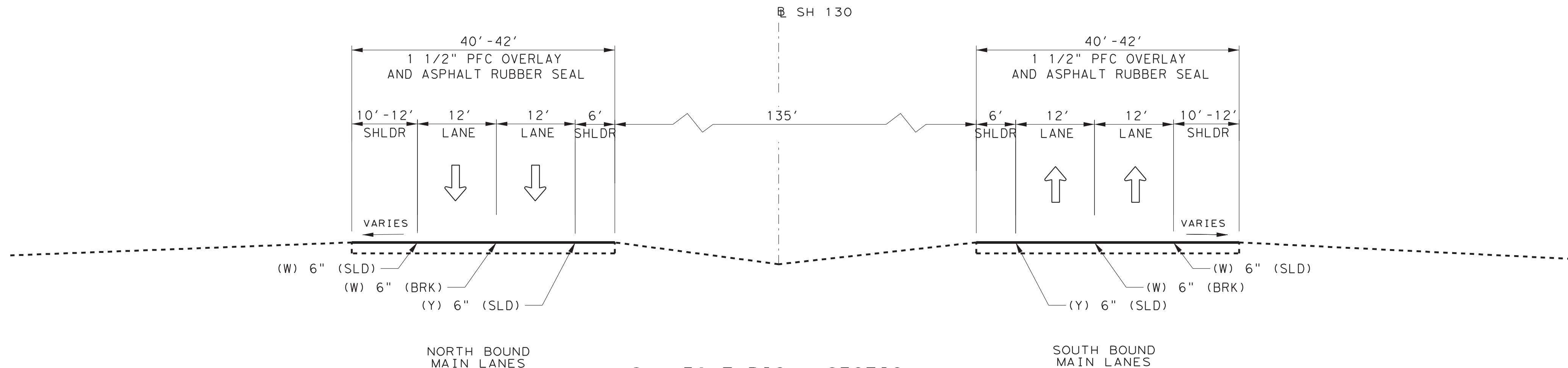
							TOTAL EST.	TOTAL FINAL
			CONTROL SECTION JOB		**6340-46-001**			
			PROJECT ID		**A00157385**			
			COUNTY		**Travis**			
			HIGHWAY		**SH0130**			
ALT	**BID CODE**	**DESCRIPTION**		**UNIT**	EST.	FINAL		
	104-6054	REMOVING CONCRETE(MOW STRIP)		LF	13,252.000		13,252.000	
	168-6001	VEGETATIVE WATERING		MG	363.000		363.000	
	180-6001	WILDFLOWER SEEDING		AC	482.000		482.000	
	316-6017	ASPH (AC-20-5TR)		GAL	346,712.000		346,712.000	
	316-6240	AGGR(TY-PD GR-4 SAC-B)		CY	8,255.000		8,255.000	
	354-6069	PLANE ASPH CONC PAV (0"- 2 1/2")		SY	10,618.000		10,618.000	
	361-6007	FULL - DEPTH REPAIR CRCP (13")		SY	400.000		400.000	
	361-6022	HALF - DEPTH REPAIR CRCP (13")		SY	1,200.000		1,200.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)		CY	850.000		850.000	
	454-6008	HEADER TYPE EXPANSION JOINT		CF	231.000		231.000	
	454-6009	JOINT SEALANT		LF	2,146.000		2,146.000	
	500-6001	MOBILIZATION		LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING		MO	6.000		6.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")		LF	1,000.000		1,000.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)		LF	1,000.000		1,000.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)		LF	9,750.000		9,750.000	
	540-6003	MTL THRIE-BEAM GD FEN (TIM POST)		LF	746.000		746.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE		LF	8,692.000		8,692.000	
	542-6003	REMOVE DOWNSTREAM ANCHOR TERMINAL		EA	32.000		32.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)		EA	285.000		285.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)		EA	221.000		221.000	
	658-6061	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2		EA	227.000		227.000	
	658-6064	INSTL DEL ASSM (D-SY)SZ 1(BRF)GF2		EA	188.000		188.000	
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W		EA	29,491.000		29,491.000	
	662-6110	WK ZN PAV MRK SHT TERM (TAB)TY Y		EA	8,111.000		8,111.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)		LF	33,697.000		33,697.000	
	666-6039	REFL PAV MRK TY I (W)12"(LNDP)(100MIL)		LF	20,226.000		20,226.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)		LF	17,552.000		17,552.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)		LF	54.000		54.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)		EA	27.000		27.000	
	666-6075	REFL PAV MRK TY I (W)(NUMBER)(100MIL)		EA	14.000		14.000	
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)		EA	26.000		26.000	
	666-6138	REFL PAV MRK TY I (Y)8"(SLD)(100MIL)		LF	300.000		300.000	
	666-6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)		LF	189.000		189.000	
	666-6171	REFL PAV MRK TY II (W) 6" (BRK)		LF	66,030.000		66,030.000	
	666-6174	REFL PAV MRK TY II (W) 6" (SLD)		LF	165,123.000		165,123.000	
	666-6178	REFL PAV MRK TY II (W) 8" (SLD)		LF	33,697.000		33,697.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 6340-46-001 **DISTRICT** Austin **COUNTY** Travis
HIGHWAY SH0130

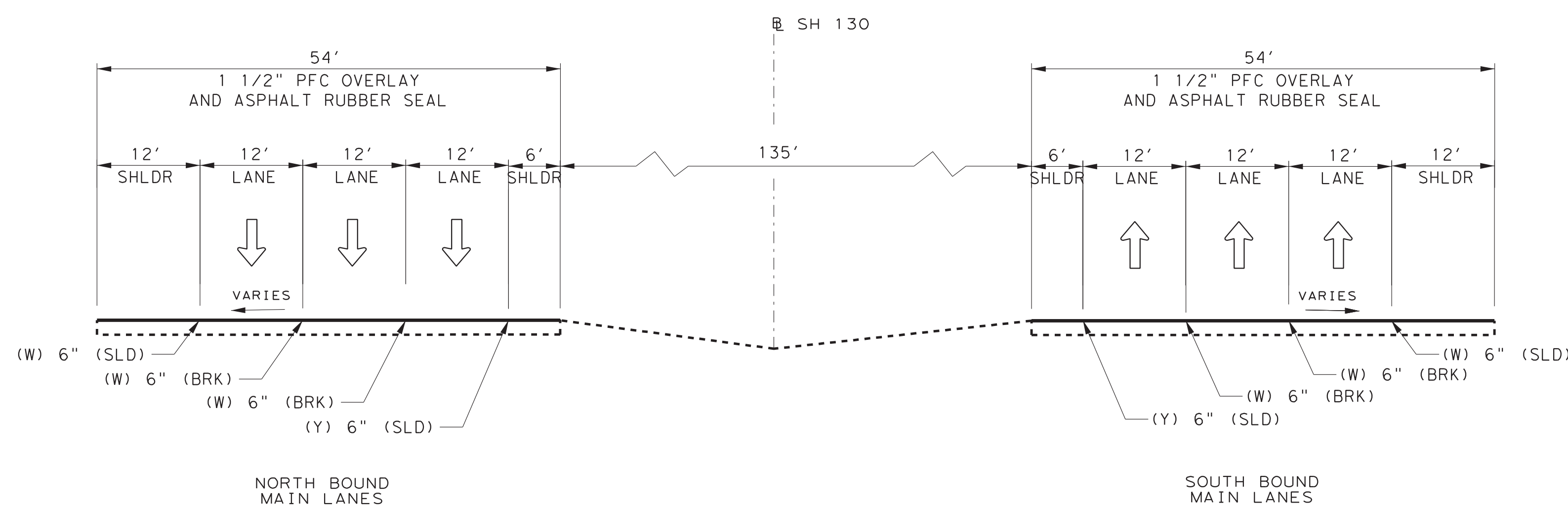
						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**6340-46-001**			
		PROJECT ID		**A00157385**			
		COUNTY		**Travis**			
		HIGHWAY		**SH0130**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	666-6179	REFL PAV MRK TY II (W) 12" (LNDP)	LF	20,226.000		20,226.000	
	666-6180	REFL PAV MRK TY II (W) 12" (SLD)	LF	17,552.000		17,552.000	
	666-6182	REFL PAV MRK TY II (W) 24" (SLD)	LF	54.000		54.000	
	666-6184	REFL PAV MRK TY II (W) (ARROW)	EA	27.000		27.000	
	666-6191	REFL PAV MRK TY II (W) (NUMBER)	EA	14.000		14.000	
	666-6192	REFL PAV MRK TY II (W) (WORD)	EA	26.000		26.000	
	666-6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF	165,123.000		165,123.000	
	666-6211	REFL PAV MRK TY II (Y) 8" (SLD)	LF	300.000		300.000	
	666-6212	REFL PAV MRK TY II (Y) 12" (SLD)	LF	189.000		189.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	66,030.000		66,030.000	
	666-6343	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	LF	165,123.000		165,123.000	
	666-6347	REF PROF PAV MRK TY I(Y)6"(SLD)(100MIL)	LF	162,212.000		162,212.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA	9,660.000		9,660.000	
	720-6003	SPALLING REPAIR (POLYMERIC) (SEMIRIGID)	GAL	5,670.000		5,670.000	
	3004-6001	CONTINUOUS DIAMOND GRINDING CONC PVMT	SY	500,000.000		500,000.000	
	3079-6024	PFC-C HPG SAC-A	TON	66,860.000		66,860.000	
	3081-6009	TOM-F PG76-22 SAC-A	TON	54,484.000		54,484.000	
	3084-6001	BONDING COURSE	GAL	79,249.000		79,249.000	
	4136-6001	REPAIR OF CONCRETE PAVEMENT (PRECAST)	SY	810.000		810.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	15.000		15.000	
	6185-6003	TMA (MOBILE OPERATION)	HR	120.000		120.000	

100% SUBMITTAL



SH 130 TYPICAL SECTION

BEGIN PROJECT TO STA 736+17
STA 772+04 TO STA 878+66
STA 920+93 TO STA 977+19



SH 130 TYPICAL SECTION

STA 736+17 TO STA 772+04
STA 878+66 TO STA 920+93
STA 976+41 TO STA 985+00
STA 1152+56 TO STA 1195+34
STA 1247+00 TO STA 1359+73
STA 1412+78 TO END PROJECT

NOTES:

1. SEE "ROADWAY LAYOUT" SHEETS FOR LONGITUDINAL LIMITS OF OVERLAY
2. SEE "ROADWAY LAYOUT" SHEETS FOR RAIL ADJUSTMENT LOCATIONS.

STATE OF TEXAS
JORGE L. VILLALTA
107817
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

SCALE: N.T.S.

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

TYPICAL SECTIONS

SHEET 1 OF 2

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	7

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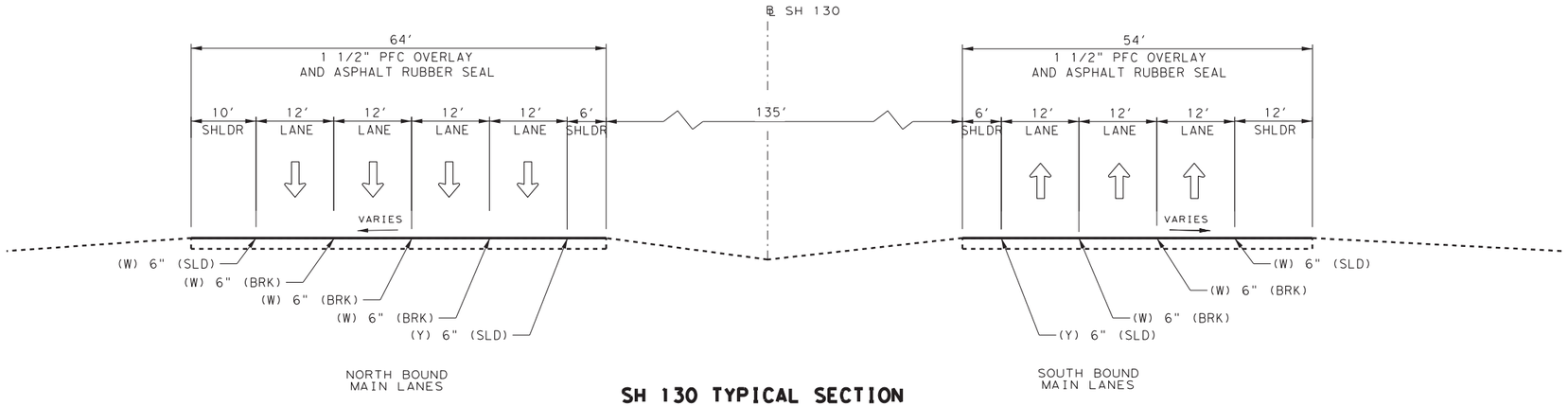
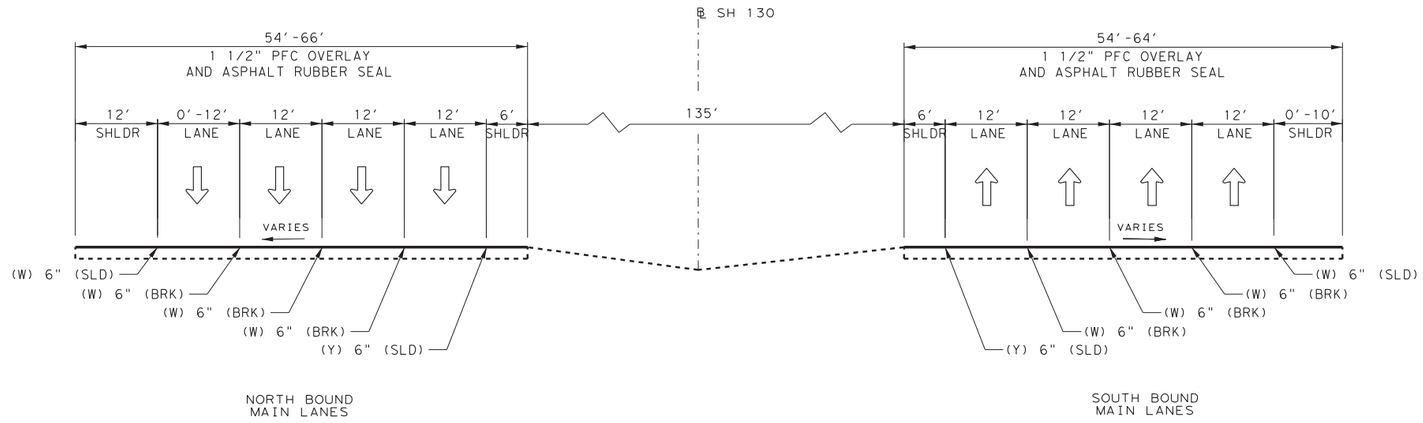


SH 130 TYPICAL SECTION

STA 985+00 TO STA 1152+56



SH 130 TYPICAL SECTION

STA 1195+34 TO STA 1247+00
STA 1359+73 TO STA 1412+78

NOTES:

1. SEE "ROADWAY LAYOUT" SHEETS FOR LONGITUDINAL LIMITS OF OVERLAY
2. SEE "ROADWAY LAYOUT" SHEETS FOR RAIL ADJUSTMENT LOCATIONS.

STATE OF TEXAS
JORGE L. VILLALTA
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LICENSED
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11/02/2020

SCALE: N.T.S.

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

TYPICAL SECTIONS

SHEET 2 OF 2

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	CC	6	TEXAS				SH 130
CK DN:	JV	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	CC	AUS	TRAVIS	6340	46	001	8
CK DW:	JV						

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GENERAL NOTES:

The following standard detail sheet or sheets have been modified:

Modified Standards

FMP(1)-12(MOD THRU FPM(4)-12(MOD)

GENERAL
Contractor questions on this project are to be addressed to the following individual(s):

District Maintenance Omar.DeLeon@txdot.gov

Questions and requests for documents will be accepted via the Letting Pre-Bid Q&A web page. All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:
https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

The Letting Pre-Bid Q&A web page for each project can be accessed by using the dashboard to navigate to the project you are interested in by scrolling or filtering the dashboard using the controls on the left. Hover over the blue hyperlink for the project you want to view the Q&A for and click on the link in the window that pops up.

Written notice will be given to begin work on this project.

Work must begin within seven (7) calendar days after such notification. Time charges will begin when work begins regardless if it falls within seven (7) calendar days of the notification to begin work.

The contractor will have **"eighty-four" (**84**)** working days to complete all work under this contract.

Work under this contract shall consist of **"Concrete repair, Overlay and Pavement Markings with MBGF upgrade"** at various locations in **"Travis County"**

References to manufacturer's trade name or catalog numbers are for the purpose of identification only. Similar materials from other manufacturers are permitted if they are of equal quality, comply with the specifications for this project, and are approved.

Project Number: RMC 634046001 **Sheet:9**
County: Travis **Control: 6340-46-001**
Highway: SH 130

If work is performed at Contractor's option, when inclement weather is impending, and the work is damaged by subsequent precipitation, the Contractor is responsible for all costs associated with replacing the work, if required.

Equip all construction equipment used in roadway work with highly visible omnidirectional flashing warning lights.

Intelligent Transportation Systems (ITS) Infrastructure may exist within the limits of this project and that the system must remain operational throughout construction. The exact location of ITS Infrastructure is not known. Contact the TxDOT Area Engineer's or Inspection Team's Office for the location(s) at least 48 hours before commencing any work that might affect present ITS Infrastructure. Use caution if working in these areas to avoid damaging or interfering with existing facilities. Repair any damage to this system within 8 hours of occurrence at no cost to the Department. In the event of system damage, notify TxDOT/CTECC at (512) 974-0883 within one hour of occurrence. Failure of the Contractor to repair damage to any infrastructure that conveys any corridor information to TxDOT/CTECC will result in the Contractor being billed for the full cost of emergency repairs.

Use a self-contained vacuum broom to sweep the roadway and keep it free of sediment as directed. The contractor will be responsible for any sweeping above and beyond the normal maintenance required to keep fugitive sediment off the roadway as directed by the Engineer.
Damage to existing pipes and SET's due to Contractor operations will be repaired at Contractor's expense.

All locations used for storing construction equipment, materials, and stockpiles of any type, within the right of way, will be as directed. Use of right of way for these purposes will be restricted to those locations where driver sight distance to businesses and side street intersections is not obstructed and at other locations where an unsightly appearance will not exist. The Contractor will not have exclusive use of right of way but will cooperate in the use of the right of way with the city/county and various public utility companies as required.

During evacuation periods for Hurricane events the Contractor will cooperate with Department for the restricting of Lane Closures and arranging for Traffic Control to facilitate Coastal Evacuation Efforts.

ITEM 5 – CONTROL OF THE WORK
Place construction stakes at intervals of no more than 100 ft. This work is subsidiary.

Provide a 48 hour advance email notice to AUS_Locate@txdot.gov to request illumination, traffic signal, ITS, or toll equipment utility locates.

ITEM 6 - CONTROL OF MATERIALS

The Contractor is responsible for furnishing all materials included in this contract. Materials provided by Contractor will be new unless otherwise shown on the plans or approved. The Contractor must receive approval from the Engineer prior to ordering materials for this contract.

Give a minimum of 1 business day notice for materials, which require inspection at the Plant.

ITEM 7 – LEGAL RELATIONS AND RESPONSIBILITIES
Roadway closures during key dates and/or special events are prohibited. See notes for Item 502 for the key dates and/or special events.

Refer to the Environmental Permits, Issues for additional requirements and permits.

When any abandoned well is encountered, cease construction operations in this area and notify the Engineer who will coordinate the proper plugging procedures. A water well driller licensed in the State of Texas must be used to plug a well.

Perform maintenance of vehicles or equipment at designated maintenance sites. Keep a spill kit on-site during fueling and maintenance. This work is subsidiary.

Maintain positive drainage for permanent and temporary work for the duration of the project. Be responsible for any items associated with the temporary or interim drainage and all related maintenance. This work is subsidiary.

Suspend all activities near any significant recharge features, such as sinkholes, caves, or any other subterranean openings that are discovered during construction or core sampling. Do not proceed until the designated Geologist or TCEQ representative is present to evaluate and approve remedial action.

Locate aboveground storage tanks kept on-site for construction purposes in a contained area as to not allow any exposure to soils. The containment will be sized to capture 150% of the total capacity of the storage tanks.

Law Enforcement Personnel.
Submit charge summary and invoices using the Department forms.

Patrol vehicles must be clearly marked to correspond with the officer's agency and equipped with appropriate lights to identify them as law enforcement. For patrol vehicles not owned by a law enforcement agency, markings will be retroreflective and legible from 100 ft. from both sides and the rear of the vehicle. Lights will be high intensity and visible from all angles.

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site.
If the Contractor has a field office, provide an office location for a supervisory officer when event requires a supervising officer. This work is subsidiary.

A maximum combined rate of $70 per hour for the law enforcement personnel and the patrol vehicle will be allowed. Any scheduling fee is subsidiary per Standard Specification 502.4.2.

Cancel law enforcement personnel when the event is canceled. Cancellation, minimums or "show up" fees will not be paid when cancellation is made 12 hours prior to beginning of the event.

Project Number: RMC 634046001 **Sheet:9A**
County: Travis **Control: 6340-46-001**
Highway: SH 130

Failure to cancel within 12 hours will not be cause for payment for cancellation, minimums, or "show up" time. Payment of actual "show up" time to the event site due to cancellation will be on a case-by-case basis at a maximum of 2 hours per officer.

Alterations to the cancellation and maximum rate must be approved by the Engineer or pre-determined by official policy of the officer's governing authority.

ITEM 8 – PROSECUTION AND PROGRESS

Lane Closure Assessment Fee.
The monthly estimate will be deducted a cumulative, lane closure assessment fee per 15-minute interval according to the following schedule for each lane closed or obstructed that extends beyond the allowable closure time.

Main Lanes (IH, SH and US Routes)
00-15 minutes $5,500.
16-30 minutes $12,500.
31-45 minutes $22,000.
46-60 minutes $33,000.
61+ minutes - $11,000 per 15-minute period added to all previous periods.

Frontage Roads (IH, SH and US Routes)
00-15 minutes $1,500.
16-30 minutes $2,500.
31-45 minutes $4,000.
46-60 minutes $7,000.
61+ minutes - $11,000 per 15-minute period added to all previous periods.
The fee is cumulative. For example, one lane of traffic on the frontage road of IH 35 is closed for 45 minutes will incur an assessment fee of 1 lane closed x ($1,500+$2,500+$4,000) = $8,000.

ITEM 160 - TOPSOIL
Off-site topsoil will have a minimum PI of 25.

No Sandy Loam allowed.

Obtain approval of the actual depth of the topsoil sources for both on-site and off-site sources.

Construct topsoil stockpiles of no more than five (5) feet in height.

It is permissible to use topsoil dikes for erosion control berms within the right of way, as directed.

Seed or track slopes within 14 days of placement.

Salvage topsoil from sites of excavation and embankment. Maximum salvage depth is 6 inches.

Windrowing of topsoil obtained from the Right of Way (ROW) is not allowed.

ITEM 168 – VEGETATIVE WATERING
Water all areas of project to be seeded or sodded.

Maintain the seedbed in a condition favorable for the growth of grass. Watering can be postponed immediately after a rainfall on the site of ½ inch or greater but will be resumed before the soil dries out. Continue watering until final acceptance.

Vegetative watering rates and quantities are based on ¼ inch of watering per week over a 3-month watering cycle. The actual rates used and paid for will be as directed and will be based on prevailing weather conditions to maintain the seedbed.

Obtain water at a source that is metered (furnish a current certification of the meter being used) or furnish the manufacturer's specifications showing the tank capacity for each truck used. Notify the Engineer, each day that watering takes place, before watering, so that meter readings or truck counts can be verified.

ITEM 180 – WILDFLOWER SEEDING

Common Name	Scientific Name	lb. PLS/acre
Illinois Bundleflower	*Desmanthus Illinoensis*	6.0
Indian Blanket	*Gaillardia Pulchella*	6.0
Lemon Mint	*Mondarda Citriodora*	1.0
Bluebonnet	*Lupinus Texensis*	12.0
Pink Evening Primrose	*Oenothera Speciosa*	1.0
Black-Eyed Susan	*Rudbecia Hirta*	1.0
Indian Paintbrush	*Castilleja Miniata*	1.0
Partridge Pea	*Cassia (Chamaecrista)Fasiculata*	8.0
Plains Coreopsis	*Coreopsis Tinctoria*	1.0

ITEM 300s – SURFACE COURSES AND PAVEMENTS
Asphalt season is May 1 thru September 15. Emulsified Asphalt season is April 1 thru October 15. The latest work start date for asphalt season is August 1.

ITEM 316 – SEAL COAT
Ensure that all underseals are covered by HMACP before exposing to traffic for roadways listed in Table 1 of Item 502 or ADT greater than 5,000.

ITEM 340/3078 THRU 348/3082 - HOT-MIX ASPHALT PAVEMENT

Ensure placement sequence to avoid excess distance of longitudinal joint lap back not to exceed one day's production rates.

Submit any proposed adjustments or changes to a JMF before production of the new JMF.

Project Number: RMC 634046001 **Sheet:9B**
County: Travis **Control: 6340-46-001**
Highway: SH 130

Irregularities will require the replacement of a full lane width using an asphalt paver. Replace the entire sublot if the irregularities are greater than 40% of the sublot area.
Lime or an approved anti-stripping agent must be used when crushed gravel is utilized to meet a SAC "A" requirement.

No RAS is allowed in surface courses.

The Hamburg Wheel Test will have a minimum rut depth of 3mm.

Use the SGC for design and production testing of all mixtures.

When using substitute binders, mold specimens for mix design and production at the temperature required for the substitute binder used to produce the HMA.

The Hamburg Wheel minimum number of passes for PG 64 or lower is reduced to 7,000.

The Engineer may accept Hamburg Wheel test results for production and placement if no more than 1of the 5 most recent tests is below the specified number of passes and the failing test is no more than 2,000 passes below the specified number of passes.

Produce mixture with a Department approved WMA additive or process to facilitate compaction when the haul distance is greater than 40 miles or when the air temperature is 70°F and falling.

Produce the PFC mixture with a Department approved WMA additive. WMA processes such as water or foaming process are not allowed for this mix. Maximum production temperature is 305 F, unless otherwise approved by the Engineer.

Table 4
WMA Incentive Maximum Production Temperature

• High-Temperature Binder Grade[1]	• Maximum Production Temperature
PG 64	285˚F
PG 70	295˚F
PG 76	305˚F

1. The high-temperature binder grade refers to the high-temperature grade of the virgin asphalt binder used to produce the mixture.

ITEM 354 - PLANING AND TEXTURING PAVEMENT
Contractor retains ownership of materials.

Taper permanent transverse faces 50 ft. per 1 in. Taper temporary transverse faces 25 ft. per 1 in. Taper permanent longitudinal faces 6 ft. per 1 in. HMA may be used as temporary tapers. Provide minimum 1 in. butt joints at bridge ends and paving ends. This work is subsidiary.

ITEM 432 - RIPRAP
Mow strip riprap will be 4 in. and all other riprap will be 5 in. unless otherwise shown on the plans or in the pay items.

Saw-cut existing riprap then epoxy 12 in. long No. 3 or No. 4 bars 6 in. deep at a maximum spacing of 18 in. in each direction to tie new riprap to existing riprap. This work is subsidiary.

For cement-stabilized riprap, provide Type A Grade 5 flexible base. Compressive strengths for Item 247 are waived.

ITEM 454 - BRIDGE EXPANSION JOINTS

Apply protection System II in accordance with Item 446 to armor joint.
For Header-Type Expansion Joints, go to the following TxDOT website for approved systems:
https://www.txdot.gov/inside-txdot/division/bridge/approved-systems/expansion-joints.html

http://ftp.dot.state.tx.us/pub/txdot-info/cmd/mpl/polyconc.pdf

For Asphalt-Plug Expansion Joints, go to the following TxDOT website for approved systems:
https://www.txdot.gov/inside-txdot/division/bridge/approved-systems/expansion-joints.html

http://ftp.dot.state.tx.us/pub/txdot-info/cmd/mpl/jtsealrs.pdf

ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING

Table 1

Roadway	Limits	Allowable Closure Time
SH130	US 79 to US 290	8 P to 5 A
All	Within 200' of a signalized intersection	9 P to 5 A
All	All (Full Closure, see allowable work below)	11 P to 4 A

Table 3 (Mobile Operations)

Roadway	Allowable Sun Night thru Fri Noon	Allowable Sat thru Sun Morn
Within Austin City Limits	10 A to 2 P and 7 P to 6 A	7 P to 10 A
Outside Austin City Limits	9 A to 3 P and 7 P to 7 A	6 P to 11 A
AADT over 50,000	8 P to 6 A	8 P to 10 A

For roadways without defined allowable closure times, nighttime lane closures will be allowed from 7 P to 6 A. Unless stated, daytime or Friday night lane closures will not be allowed and one lane in each direction will remain open at all times for all roadways.

No closures will be allowed on the weekends, working day prior, and working day after the National Holidays defined in the Standard Specifications, Good Friday, and Easter weekend. Closures the Sunday of the Super Bowl will not be allowed from 1 P to 11 P. No closures will be allowed on Friday and the weekends for projects within 20 miles of Formula 1 at COTA, ACL Fest, SXSW, ROT Rally, UT home football games (includes games not on a Friday or weekend), sales tax holiday, Dell Match Play (includes Thursday) or other special events that could be impacted by the construction. All lanes will be open by noon of the day before these special events.

To account for directional traffic volumes, begin and end times of closures may be shifted equally by the Engineer. The closure duration will remain. Added compensation is not allowed.

Project Number: RMC 634046001 **Sheet:9C**
County: Travis **Control: 6340-46-001**
Highway: SH 130

Submit an emailed request for a lane closure (LCN) to TxDOT. The email will be submitted in the format provided. Receive concurrence prior to implementation. Submit a cancellation of lane closures a minimum of 18 hours prior to implementation. Blanket requests for extended periods are not allowed. Max duration of a request is 2 weeks prior to requiring resubmittal. Provide 2 hour notice prior to implementation and immediately upon removal of the closure.

For roadways listed in Table 1: Submit the request 96 hours prior to implementation.

For roadways not listed in Table 1: Submit the request a minimum of 48 hours prior to the closure and by the following deadline immediately prior to the closure: 11A on Tuesday or 11A on Friday.

Cancellations of accepted closures (not applicable to full closures or detours) due to weather will not require resubmission in accordance with the above restrictions if the work is completed during the next allowable closure time.

Closures that conflict with adjacent contractor will be prioritized according to critical path work per latest schedule. Conflicting critical path or non-critical work will be approved for first LCN submitted. Denial of a closure due to prioritization or other reasons will not be reason for time suspension, delay, overhead, etc.

Cover, relocate or remove existing signs that conflict with traffic control. Install all permanent signs, delineation, and object markers required for the operation of the roadway before opening to traffic. Use of temporary mounts is allowed or may be required until the permanent mounts are installed or not impacted by construction. Maintain the temporary mounts. This work is subsidiary.

Meet with the Engineer prior to lane closures to ensure that sufficient equipment, materials, devices, and workers will be used. Take immediate action to modify traffic control, if at any time the queue becomes greater than 20 minutes. Have a contingency plan of how modification will occur. Consider inclement weather prior to implementing the lane closures. Do not set up traffic control when the pavement is wet.

Place a 28-inch cone, meeting requirements of BC (10), on top of foundations that have protruding studs. This work is subsidiary.

Edge condition treatment types must be in accordance with the TxDOT standard. Installation and removal of a safety slope is subsidiary.

The Contractor Force Account "Safety Contingency" that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

ITEM 506 - TEMPORARY EROSION, SEDIMENTATION, AND ENV CONTROLS
Install, maintain, remove erosion, sedimentation and environmental control measures in areas of the right of way utilized by the contractor that are outside the limits of disturbance required for construction. Permanently stabilize the area. This work is subsidiary.

Consider the SW3P for this project to consist of the following items, as directed:
Temporary Sediment Control Fence, Rock Filter Dams, Construction Exits, and Earthwork for Erosion and Sediment Control.

ITEM 540, 542, & 544 - METAL BEAM GUARD FENCE AND GUARDRAIL END TREATMENTS
Furnish round timber posts for guard fence. Steel posts for low fill culverts are subsidiary. Stake the locations for approval prior to installation. Adjust the limits of the fence to meet field conditions. Install delineators before opening the road to traffic.

Retain all materials.
Remove, replace, and install mow strip block out material. Construct new block outs and backfill unused block outs with class B concrete.

Repair of mow strip damage, not caused by contractor negligence, and installation of new mow strip will be paid with appropriate bid items. Backfill and shoulder up of area around fence and mow strip will be paid using embankment item.

ITEM 585 - RIDE QUALITY FOR PAVEMENT SURFACES
We recommend adding general notes requiring the Contractor to profile the project in advance, to identify grinding locations based on a pre-overlay IRI of **75** in/mi and provide Engineer with a plan for further approval.

Use Surface Test Type B Pay Schedule 2 to evaluate ride quality of travel lanes, including service roads.

ITEM 658 – DELINEATOR AND OBJECT MARKER ASSEMBLIES
Perform work under this item concurrently with metal beam guard fence work.

Install reflector units on guard rail assemblies after the rails have been installed. Use Type (BRF) barrier reflectors in accordance to the standards.

ITEM 662 - WORK ZONE PAVEMENT MARKINGS
Notify the Engineer at least 24 hours in advance of work for this item.

Maintain removable and short-term markings daily. Remove within 48 hours after permanent striping has been completed.
Item 668 is not allowed for use as Item 662.

ITEM 666 - RETROREFLECTORIZED PAVEMENT MARKINGS
Notify the Engineer at least 24 hr. before beginning work.

Project Number: RMC 634046001 **Sheet:9D**
County: Travis **Control: 6340-46-001**
Highway: SH 130

Replace missing or damaged tabs nightly. Failure to maintain tabs or place longitudinal markings by deadline will require nightly placement of longitudinal markings.

Place longitudinal markings no later than 7 calendar days after placement of the surface.

ITEM 677 - ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS
Dispose of removed materials and debris at locations off the right of way.

Remove pavement markings on concrete surfaces by a water blasting method.

ITEM 3066/3084 – BONDING COURSE
The minimum application rates are listed in Table BC. The Engineer may adjust the application rate taking into consideration the existing pavement surface conditions.

Table BC

Material	Minimum Application Rate (gal. per square yard)
TRAIL – Emulsified Asphalt	0.06
TRAIL – Hot Asphalt	0.12
Spray Applied Underseal Membrane	0.10

ITEM 6001 – PORTABLE CHANGEABLE MESSAGE SIGN
Provide 2 PCMS. Provide a replacement within 12 hours. PCMS will be available for traffic control, event notices, roadway conditions, service announcements, etc.

Place PCMS 10 calendar days prior to begin work stating “Road Work Begin Soon, Contact 832-7000 For Info”.
Place PCMS at time of LCN request. Place the PCMS at the expected end of queue caused by the closure. When the closure is active, revise the message to reflect the actual condition during the closure, such as “RIGHT LN CLOSED XXX FT”.

ITEM 6185 – TRUCK MOUNTED ATTENUATOR AND TRAILER ATTENUATOR
The TMA/TA used for installation/removal of traffic control for a work area will be subsidiary to the TMA/TA used to perform the work.

The contractor will be responsible for determining if one or more operations will be ongoing at the same time to determine the total number of TMA/TA required for the work. TMA/TAs paid by the day is full compensation for all worksite locations during an entire day.

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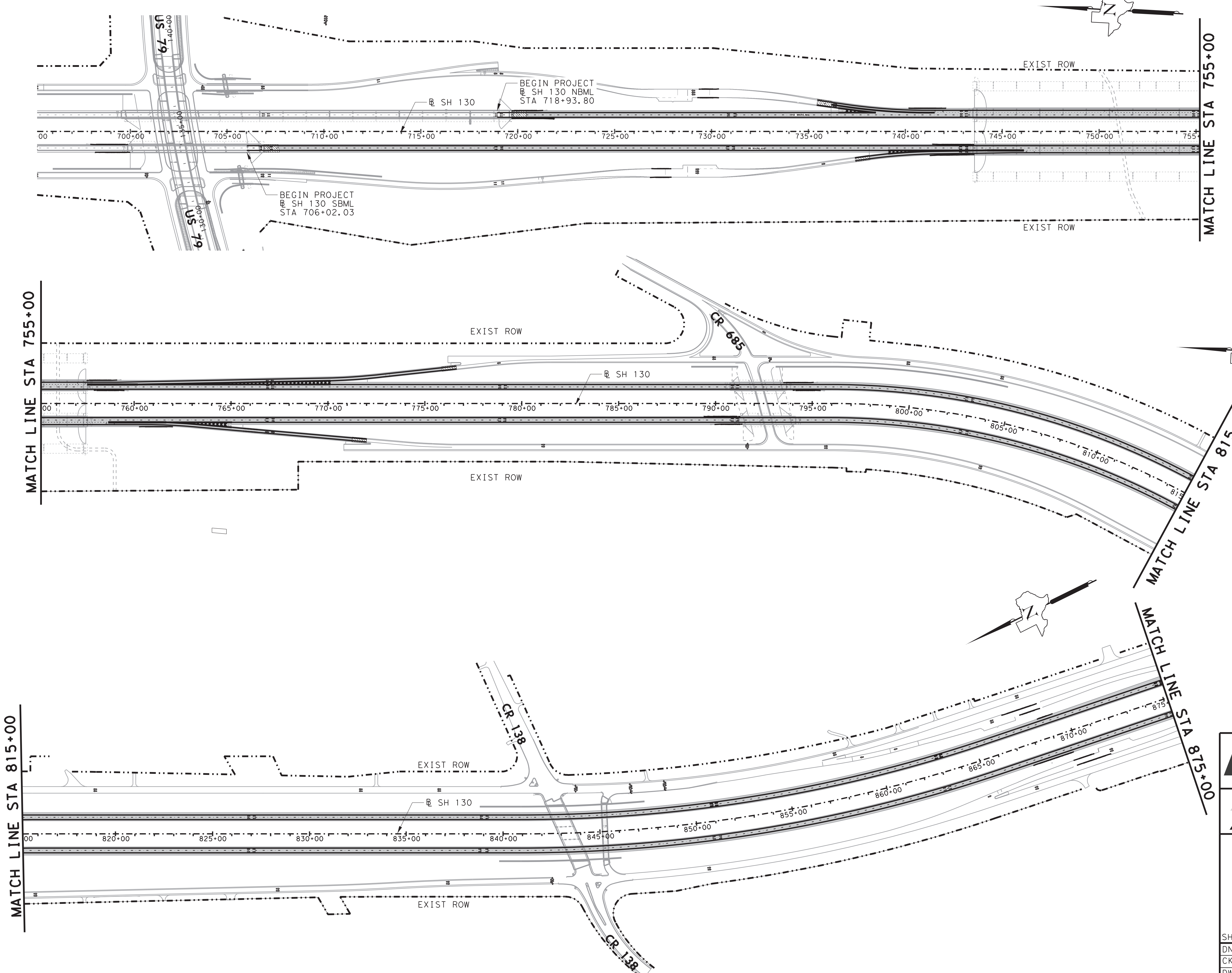

NOTES:

1. SEE THE "ROADWAY LAYOUT" SHEETS FOR THE BEGIN END LIMITS OF THE TOLL ZONES AND BRIDGES, AND FOR THE BEGIN/END OF MILLING, HMAC PFC OVERLAY.
2. AN OVERLAY IS NOT PROPOSED FOR THE TOLL ZONES.
3. SEE THE "ROADWAY DETAILS" SHEET FOR SURFACE TAPER DETAIL FOR THE BUTT JOINT TRANSITION AT PROJECT ENDS, TOLL ZONE ENDS AT RAMP/FRONTAGE ROAD INTERFACES.
4. SEE "STRIPING LAYOUT SHEETS" FOR PAVEMENT MARKINGS AND LIMITS FOR STRIPING.

STATE OF TEXAS
JORGE L. VILLALTA
107817
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

0 125 250 500
SCALE: 1"=500'

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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

PROJECT LAYOUT

SHEET 1 OF 5

		FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	CC	6	TEXAS				SH 130
CK DN:	JV	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	CC	AUS	TRAVIS	6340	46	001	10
CK DW:	JV						

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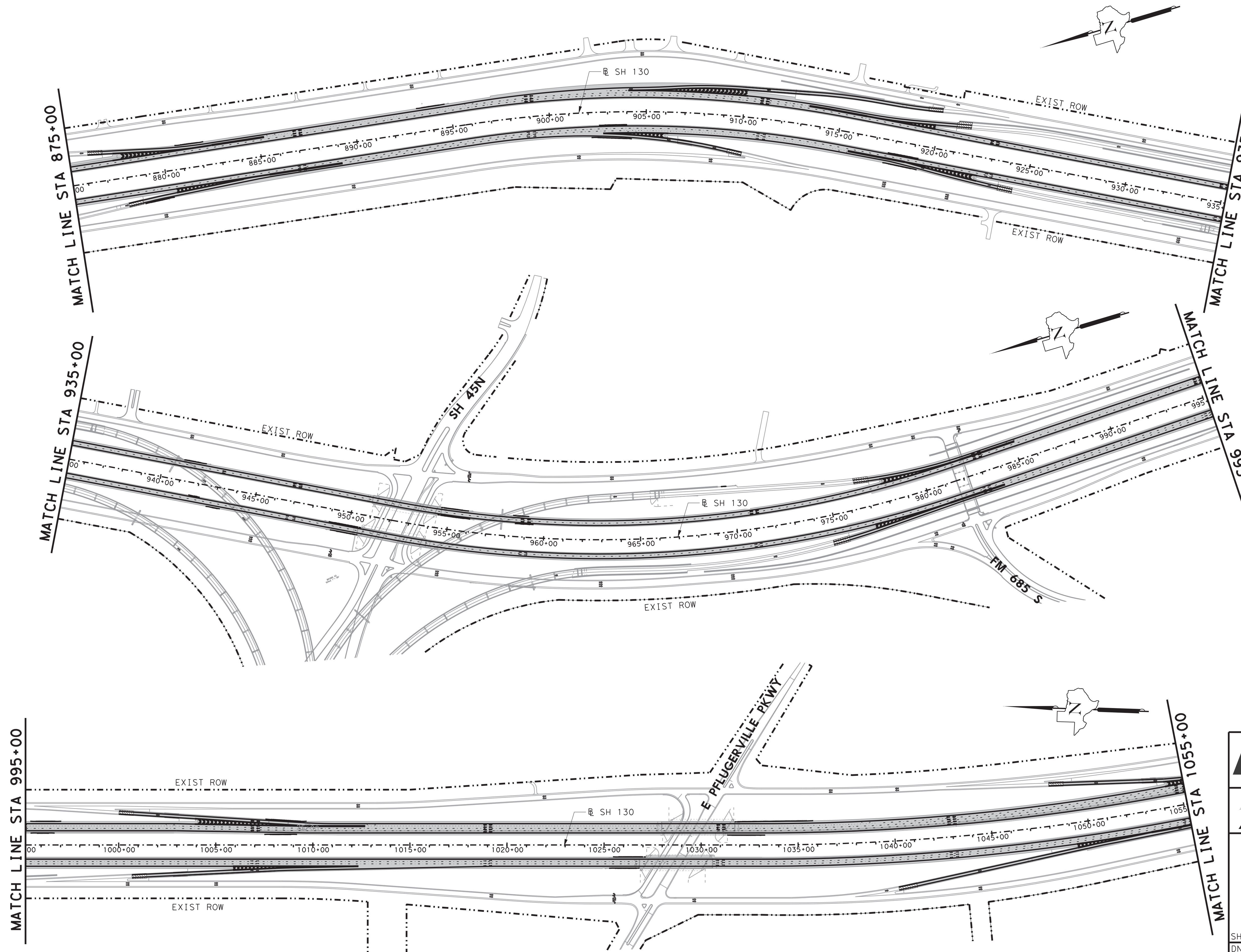

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SH 130

PROJECT LAYOUT

SHEET 2 OF 5

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	11

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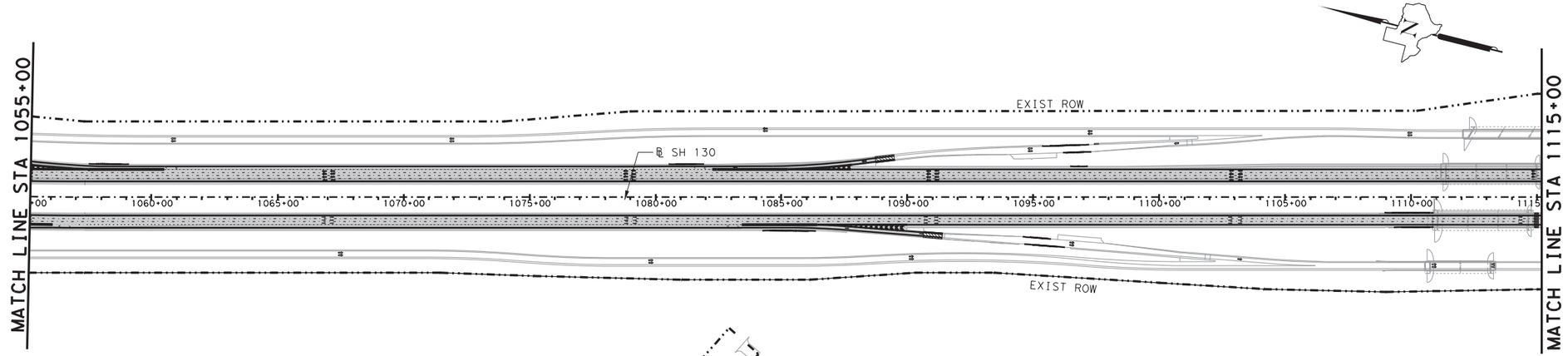

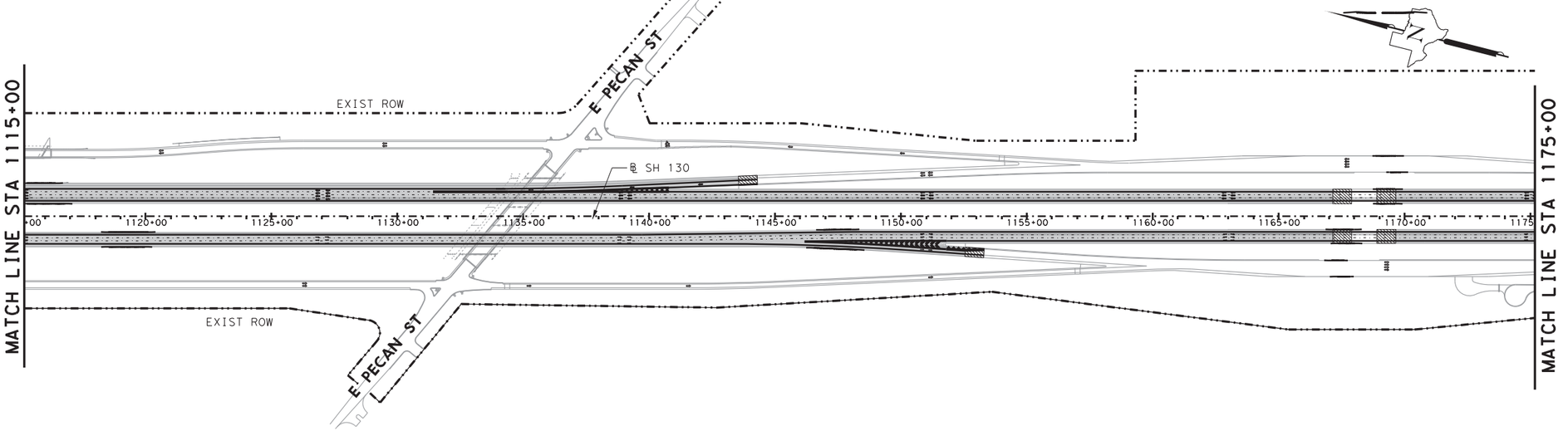

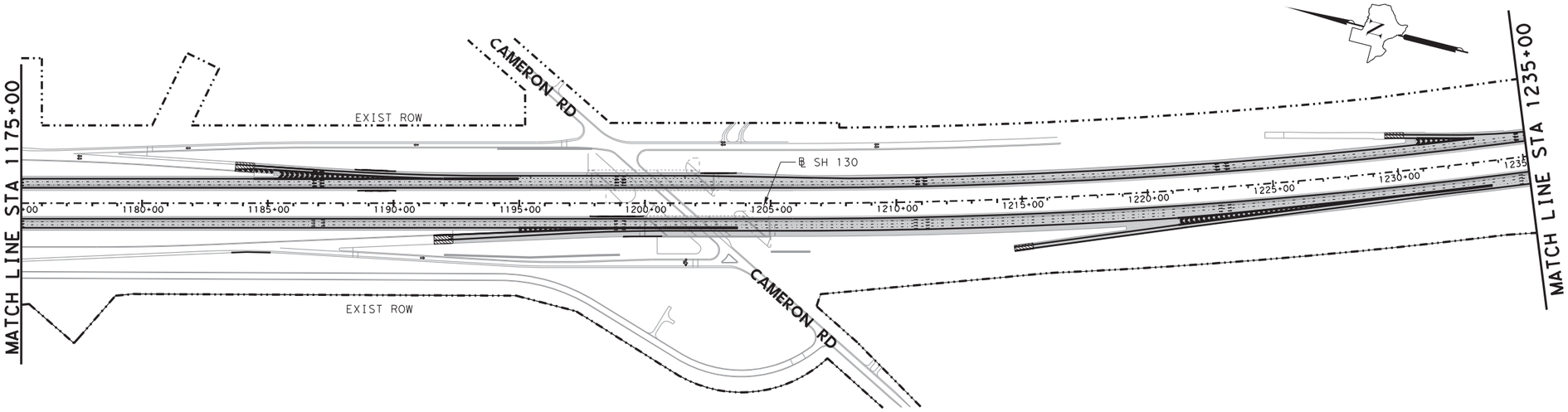

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SH 130

PROJECT LAYOUT

SHEET 3 OF 5

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	12

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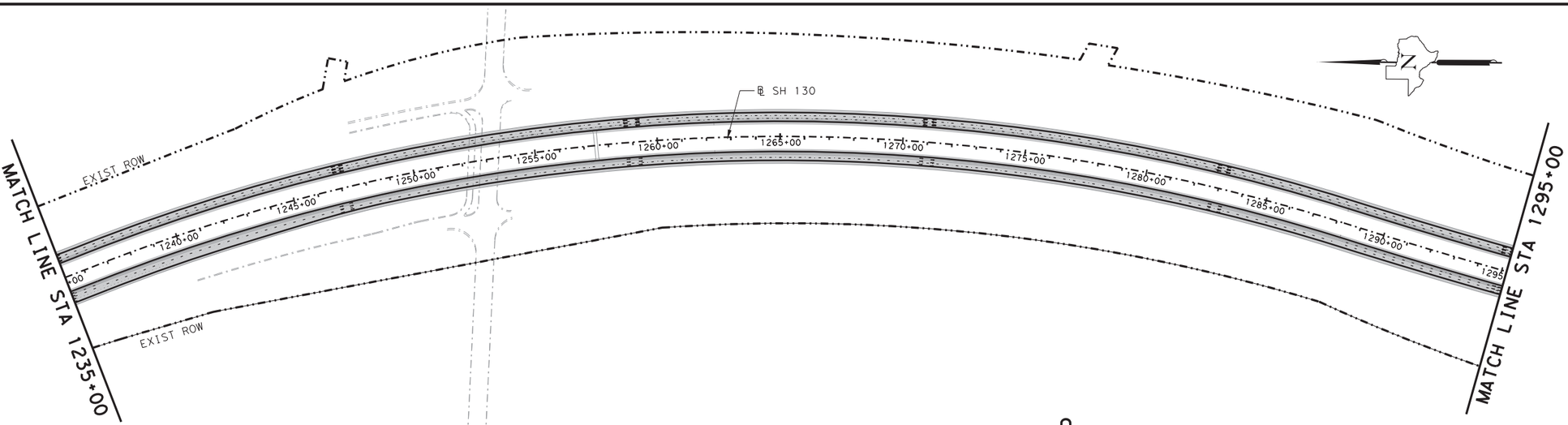

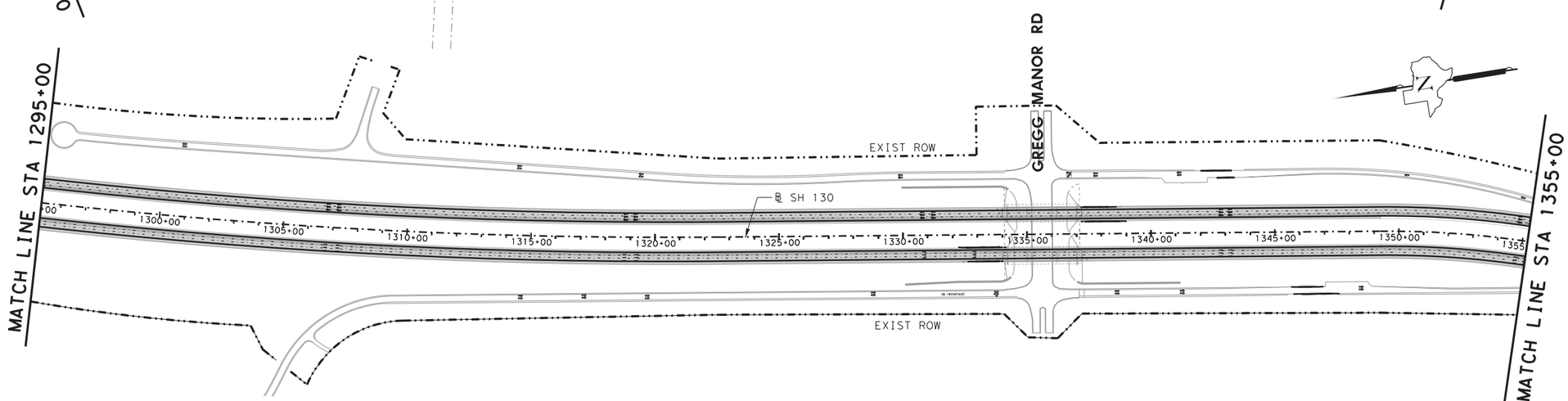

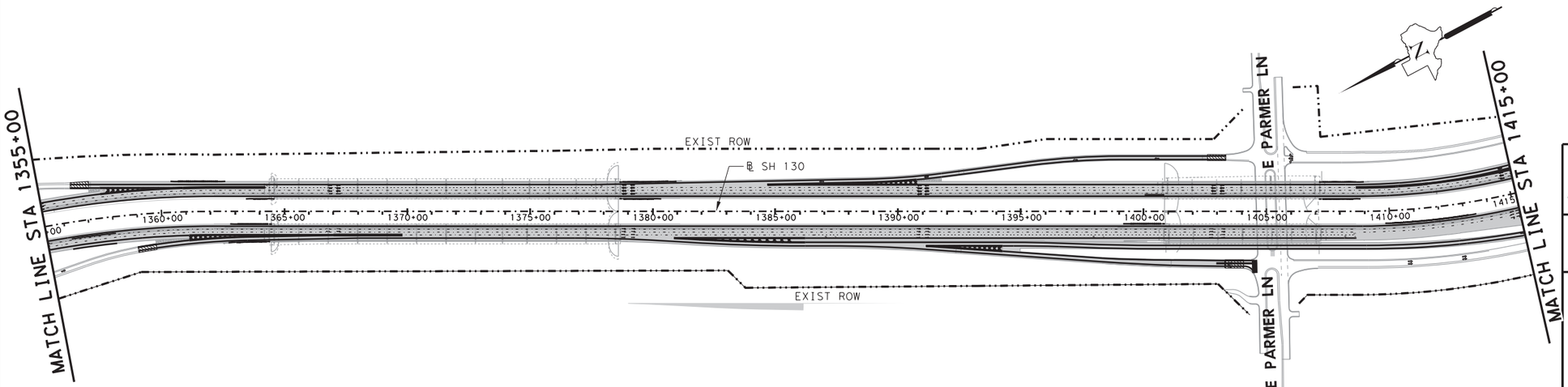

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SH 130

PROJECT LAYOUT

SHEET 4 OF 5

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		13

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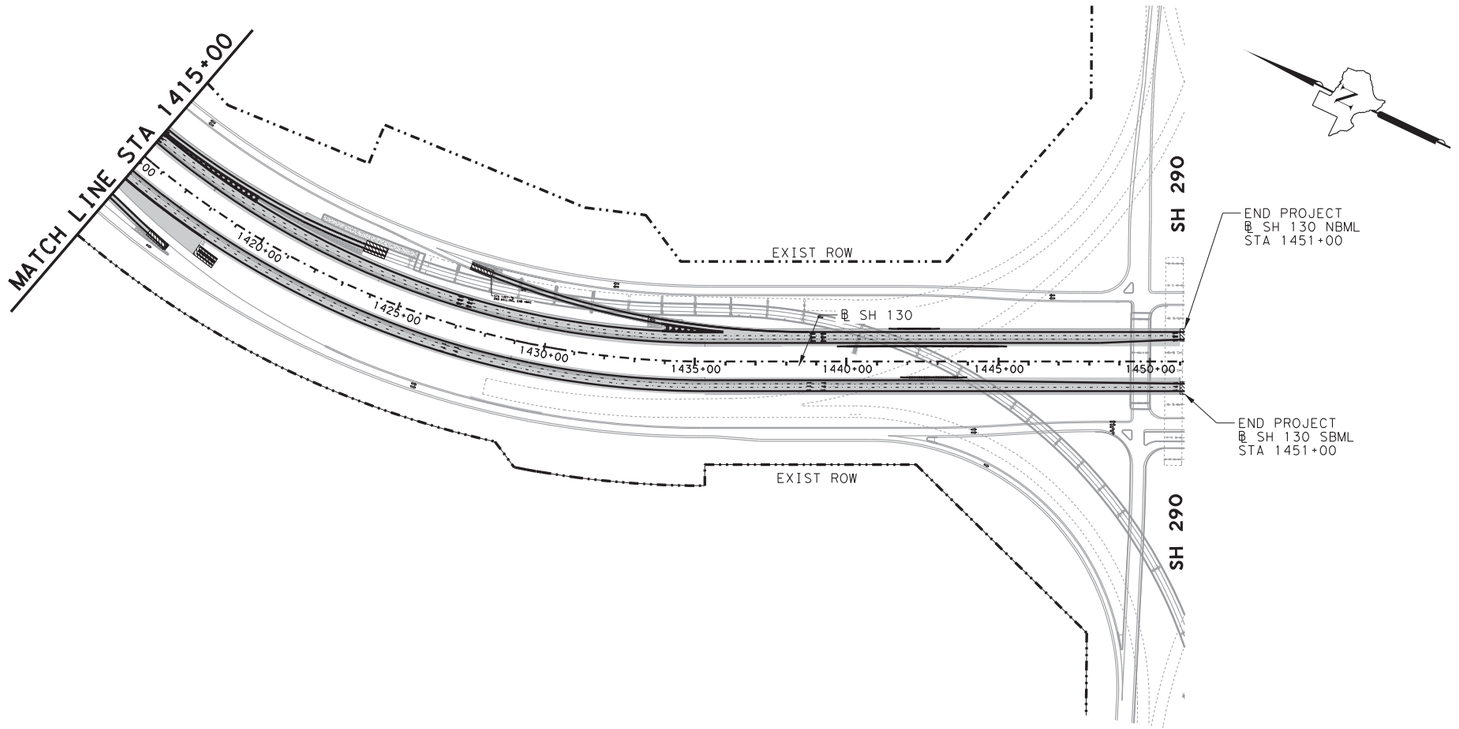

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SH 130

PROJECT LAYOUT

SHEET 5 OF 5

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	14

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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. IN ADDITION TO THESE REQUIREMENTS, THE FOLLOWING PROVISIONS SHALL ALSO GOVERN ON THIS CONTRACT:

1. GENERAL

1. TRAFFIC MUST BE HANDLED THROUGHOUT THE PROJECT DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING A SAFE AND COMFORTABLE PASSAGE FOR VEHICULAR AND PEDESTRIAN TRAFFIC WITH MINIMAL INCONVENIENCE TO THE PUBLIC, AS SHOWN IN THE PLANS OR AS DIRECTED / APPROVED BY THE ENGINEER.

2. THE CONTRACTOR MAY PROPOSE/RECOMMEND MODIFICATIONS TO THE SEQUENCE OF WORK FOR CONSIDERATION BY THE ENGINEER. ANY MAJOR RECOMMENDED MODIFICATIONS BY THE CONTRACTOR SHALL INCLUDE ANY CHANGES TO THE VARIOUS BID ITEMS, IMPACT TO TRAFFIC, EFFECT OF OVERALL PROJECT IN TIME AND COST, ETC. IF THIS PROPOSAL IS IMPLEMENTED, THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING DETAILED PLAN SHEETS TO BE SEALED BY A LICENSED PROFESSIONAL ENGINEER FOR INCLUSION IN THE CHANGE ORDER. THE CONTRACTOR CANNOT PROCEED WITH ANY CONSTRUCTION OPERATIONS BASED ON A REVISED PHASE/SEQUENCE UNTIL WRITTEN APPROVAL IS OBTAINED FROM THE ENGINEER. IF AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE AND COMFORTABLE MOVEMENT, THE CONTRACTOR WILL IMMEDIATELY CHANGE THEIR OPERATION TO CORRECT THE UNSATISFACTORY CONDITION.

3. DO NOT STORE ANY CONSTRUCTION MATERIAL OR EQUIPMENT AT ANY LOCATION THAT WILL CONSTITUTE A HAZARD AND WILL ENDANGER TRAFFIC.

4. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.

5. CONTRACTOR IS TO MAINTAIN POSITIVE DRAINAGE AT ALL TIMES.

6. ALL SEQUENCE OF WORK ON THIS PROJECT SHALL BE COORDINATED TO COINCIDE WITH ANY PROJECTS WITHIN OR ADJACENT TO THIS PROJECT.

7. THE CONTRACTOR SHALL INSTALL AND MAINTAIN AN ADEQUATE NUMBER OF BARRICADES, WARNING AND DIRECTIONAL SIGNS TO DELINEATE TRAFFIC FOR CLOSURES. THE CONTRACTOR MAY, WITH THE APPROVAL AND/ OR AS DIRECTED BY THE ENGINEER, BE REQUIRED TO VARY THE NUMBER AND LOCATION OF SIGNS AND BARRICADES FROM THAT INDICATED ON THE PLANS.

8. COVER PERMANENT SIGNS IN CONFLICT TO TRAFFIC PHASING. THIS IS SUBSIDIARY TO ITEM 502.

9. CONTRACTOR RESPONSIBLE FOR DAMAGE TO ANY MAILBOXES OR ANY APPURTENANCES WITHIN THE PROJECT LIMITS.

2. SEQUENCE OF WORK

GENERAL NOTES / BARRICADES AND WARNING SIGNS

1. PLACE SIGNS, BARRICADES, WORK ZONE PAVEMENT MARKINGS AND TRAFFIC HANDLING DEVICES IN ACCORDANCE WITH TMUTCD FOR PHASE I AS SHOWN ON TRAFFIC CONTROL TYPICAL SECTIONS, PER APPLICABLE "BC" STANDARDS, "TCP" STANDARDS AND/OR AS DIRECTED BY THE ENGINEER.

PHASE 1 PLACE PERMANENT STRIPING, OVERLAY, MBGF REPLACEMENTS

1. INSTALL WORKZONE MARKERS AS NEEDED.

2. REPLACE MBGF ALONG THE SH130 CORRIDOR, AS SHOWN ON THE PLANS.

3. PLACE OVERLAY OPERATIONS.

4. PLACE FINAL STRIPING ALONG SH 130 CORRIDOR.

5. DO NOT OVERLAY AHEAD OF PAVING OPERATIONS. WORK ON SEGMENTS THAT CAN BE COMPLETED DURING DAYTIME WORK OPERATIONS AND OPEN TO NORMAL TRAFFIC DURING OVERNIGHT HOURS. UTILIZING MOBILE OPERATION PROCEDURES.

3. SAFETY

1. THE CONTRACTOR WILL PROVIDE, CONSTRUCT AND MAINTAIN BARRICADES AND SIGNS IN ACCORDANCE WITH STATE STANDARDS BC (1-12)-14. ANY SIGNS REQUIRED THAT ARE NOT DETAILED IN THE STANDARD SHEETS SHALL BE IN CONFORMANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND THE "STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS."

2. BARRICADES AND WARNING SIGNS SHALL BE PLACED AS INDICATED ON THE STANDARDS. THIS SHALL BE CONSIDERED THE MINIMUM REQUIREMENT TO PROVIDE FOR THE SAFETY OF TRAFFIC DURING CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN OTHER SUCH BARRICADES AND SIGNS DEEMED NECESSARY BY THE ENGINEER OR AS DIRECTED BY FIELD CONDITIONS, TO PROVIDE FOR THE SAFETY OF THE TRAVELING PUBLIC AND THE CONTRACTOR'S PERSONNEL.

3. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT OR OTHER MATERIALS DURING HAULING OPERATIONS. IF THE CONTRACTOR DOES NOT MAINTAIN A CLEAN ROADWAY, THEY SHALL CEASE ALL CONSTRUCTION OPERATIONS, WHEN DIRECTED BY THE ENGINEER, TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE ENGINEER.

4. HAULING EQUIPMENT

1. THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVEMENTED SURFACES. WHERE THE CONTRACTOR DESIRES TO MOVE ANY EQUIPMENT NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS, ON OR ACROSS PAVEMENT, THEY SHALL PROTECT THE PAVEMENT FROM DAMAGE AS DIRECTED/APPROVED BY THE ENGINEER.

5. FINAL CLEANUP

1. UPON COMPLETION OF THE WORK AND BEFORE FINAL ACCEPTANCE AND FINAL PAYMENT IS MADE, THE CONTRACTOR SHALL CLEAR AND REMOVE FROM THE SITE ALL SURPLUS AND DISCARDED MATERIALS AND DEBRIS OF EVERY KIND AND LEAVE THE ENTIRE PROJECT IN A SMOOTH, NEAT AND SIGHTLY CONDITION.

6. PAYMENT

1. ALL BARRICADES AND SIGNS SHALL BE SUBSIDIARY TO ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING. ALL EROSION AND SEDIMENT CONTROL DEVICES WILL BE PAID FOR UNDER ITEM 506 TEMPORARY EROSION, SEDIMENTATION, ENVIRONMENTAL CONTROLS, AND BIODEGRADABLE EROSION CONTROL LOGS. ALL WORK ZONE PAVEMENT MARKINGS WILL BE PAID FOR UNDER ITEM 662 WORK ZONE PAVEMENT MARKINGS. ALL OTHER WORK AND MATERIALS SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS UNLESS INDICATED IN THE PLANS.

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11/02/2020

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Texas Department of Transportation

SH 130

SEQUENCE OF WORK

SHEET 1 OF 1

DN:	RA	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	ABS	6	TEXAS					SH 130
DW:	RA	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	ABS	AUS	TRAVIS	6340	46	001		15

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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. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

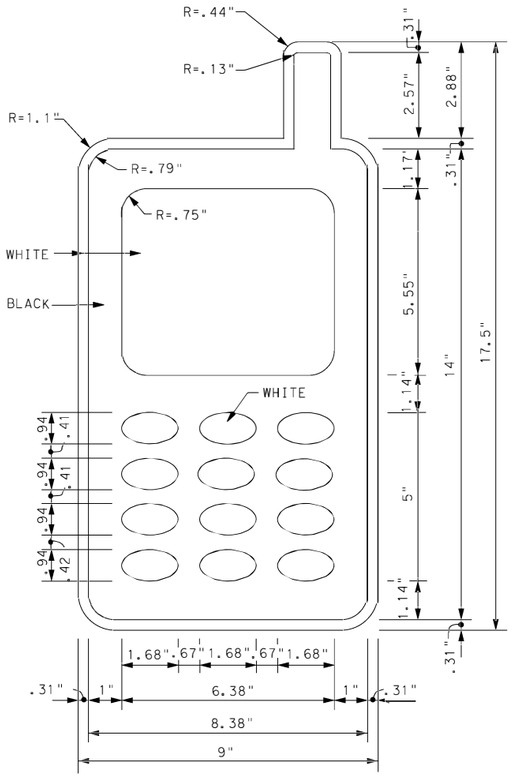
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

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 APPAREL 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.



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3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange; [TALK OR TEXT LATER] Font: C specified length;

SIGN DETAIL (G20-10T)

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH130
4-03 5-10 8-14	DIST	COUNTY		SHEET NO.
9-07 7-13	AUS	TRAVIS		16

DATE: DATE TIME
FILE: DOCUMENT NAME

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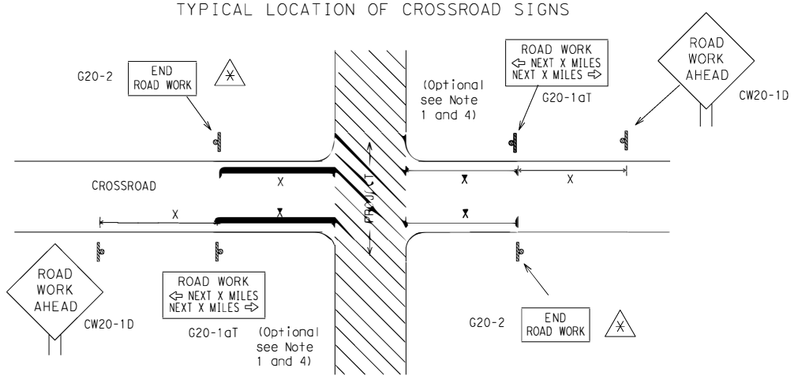
DATE: DATE TIME
FILE: DOCUMENT NAME

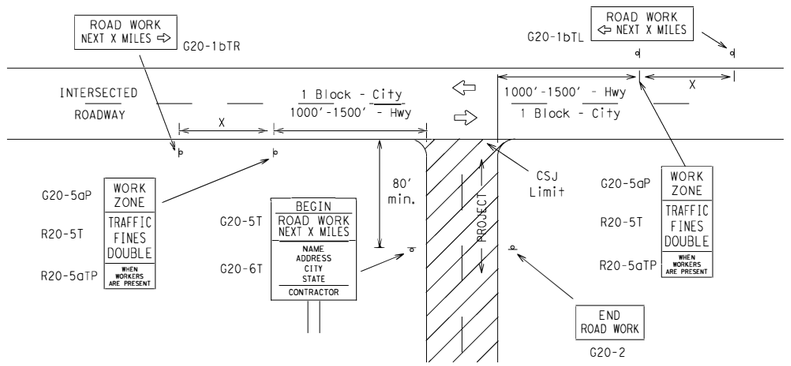
TYPICAL LOCATION OF CROSSROAD SIGNS



(*) May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. 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.
2. 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. This information shall be shown in the plans.
3. 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.
4. 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.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. 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

1. 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.
2. 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]

SIZE

Sign Number or Series	Conventional Road	Expressway/ Freeway
CW20[4], CW21, CW22, CW23, CW25	48" x 48"	48" x 48"
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"

SPACING

Posted Speed	Sign Spacing "X" (Δ)
MPH	Feet (Apprx.)
30	120
35	160
40	240
45	320
50	400
55	500[2]
60	600[2]
65	700[2]
70	800[2]
75	900[2]
80	1000[2]
*	*[3]

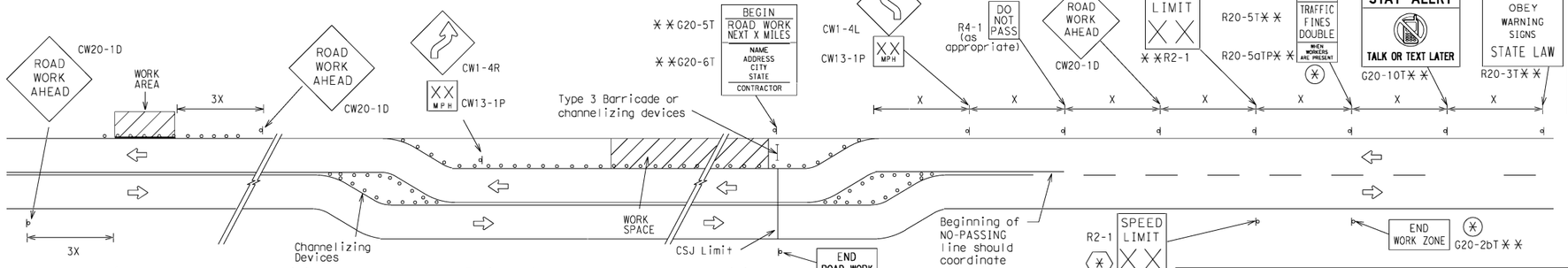
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

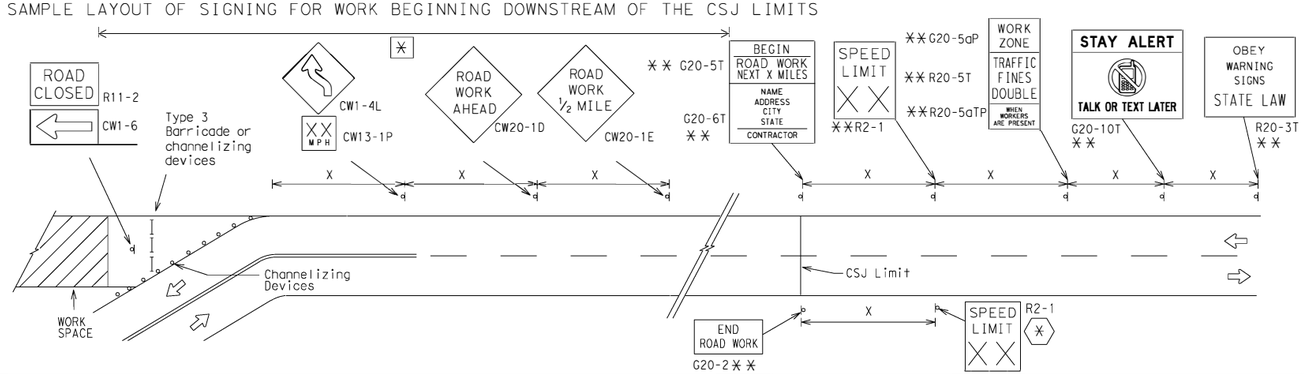
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. 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.

** Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

[*] 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.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

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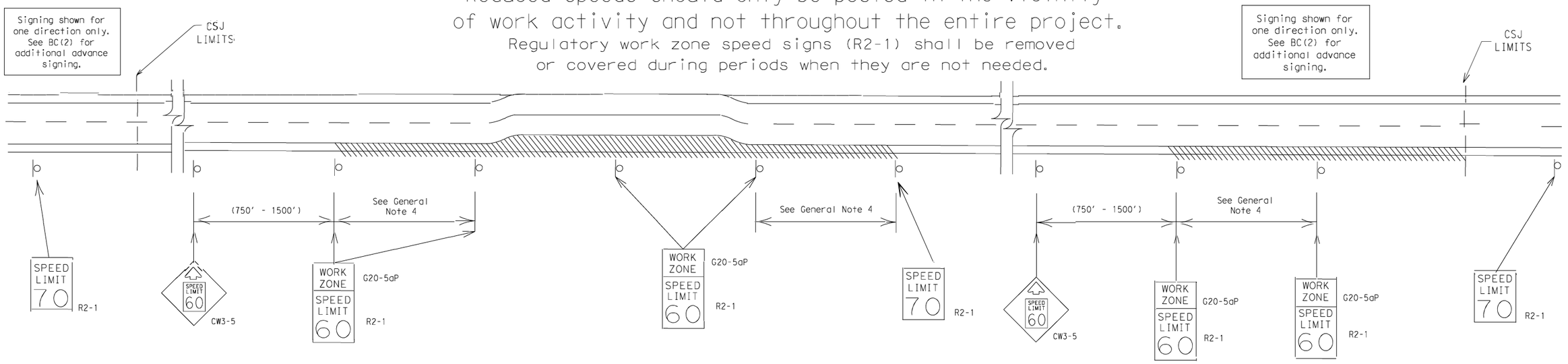
7-13	AUS	TRAVIS		17

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:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) 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 travelled 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

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. 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
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. 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.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. 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.

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

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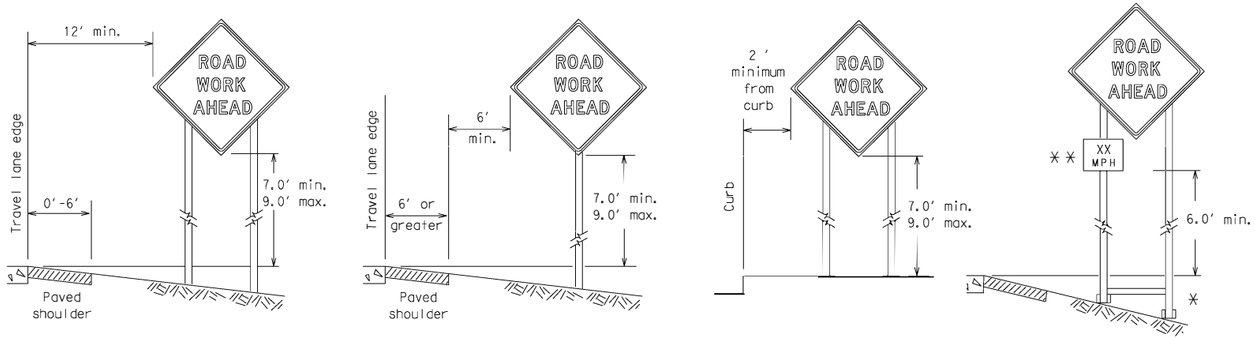
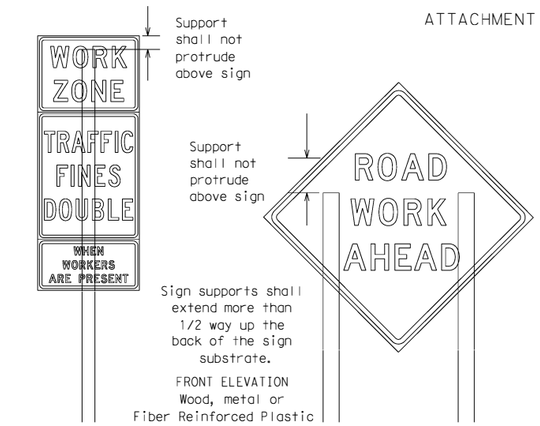
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



⁎ 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.

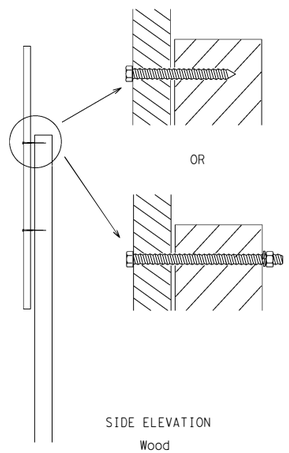
⁎⁎ When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or Fiber Reinforced Plastic

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 spice 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.



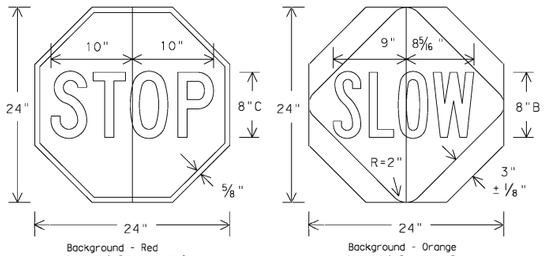
SIDE ELEVATION
Wood

Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. 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.



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. 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, 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.
2. 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.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. 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.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. 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.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. 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.
5. 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.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). 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.
7. 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.
8. 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.
9. 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)

1. 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.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. 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.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

SIGN MOUNTING HEIGHT

1. 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.
2. 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.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. 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.
5. 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

1. 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

1. 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.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. 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

1. 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).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. 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

1. 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

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. 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.
3. 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.
4. 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.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. 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.
7. 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.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

FLAGS ON SIGNS

1. 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.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-14

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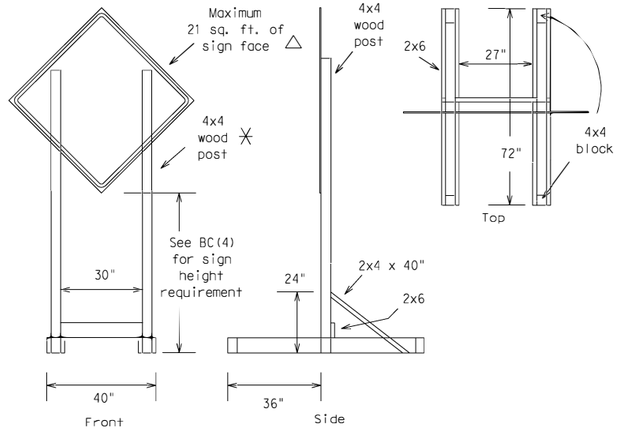
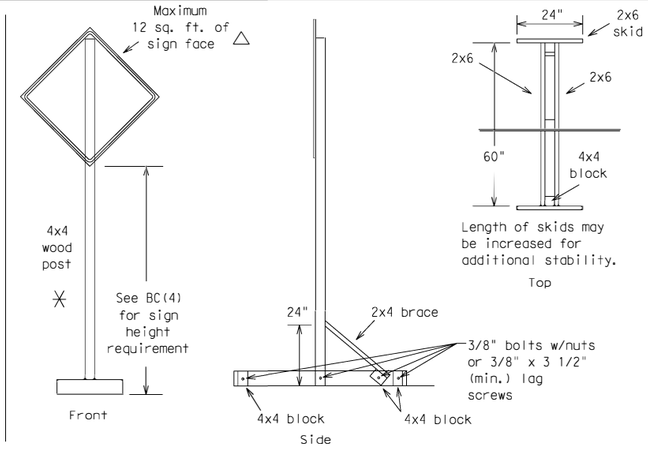
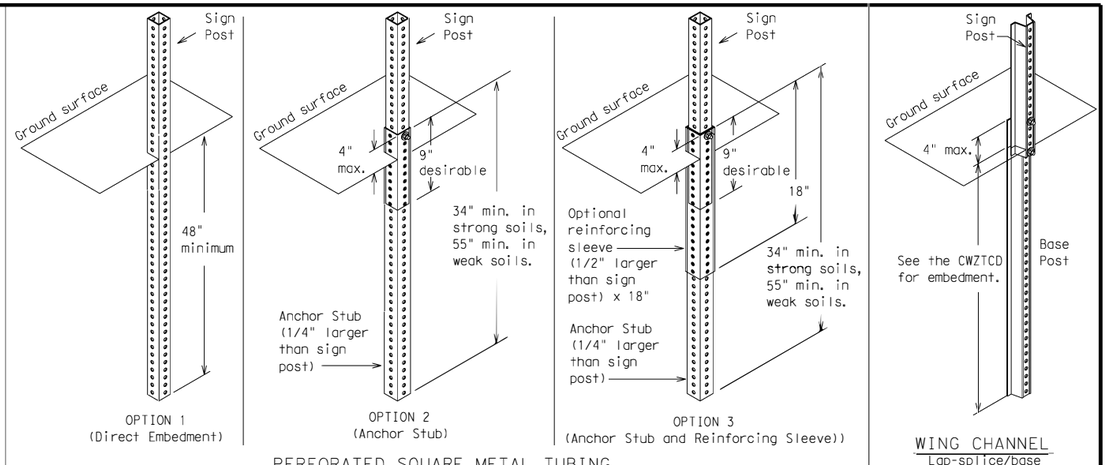




SKID MOUNTED WOOD SIGN SUPPORTS

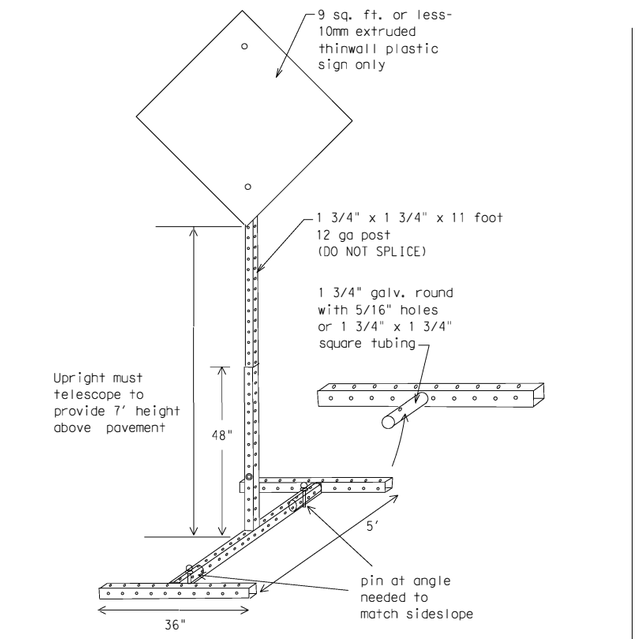
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

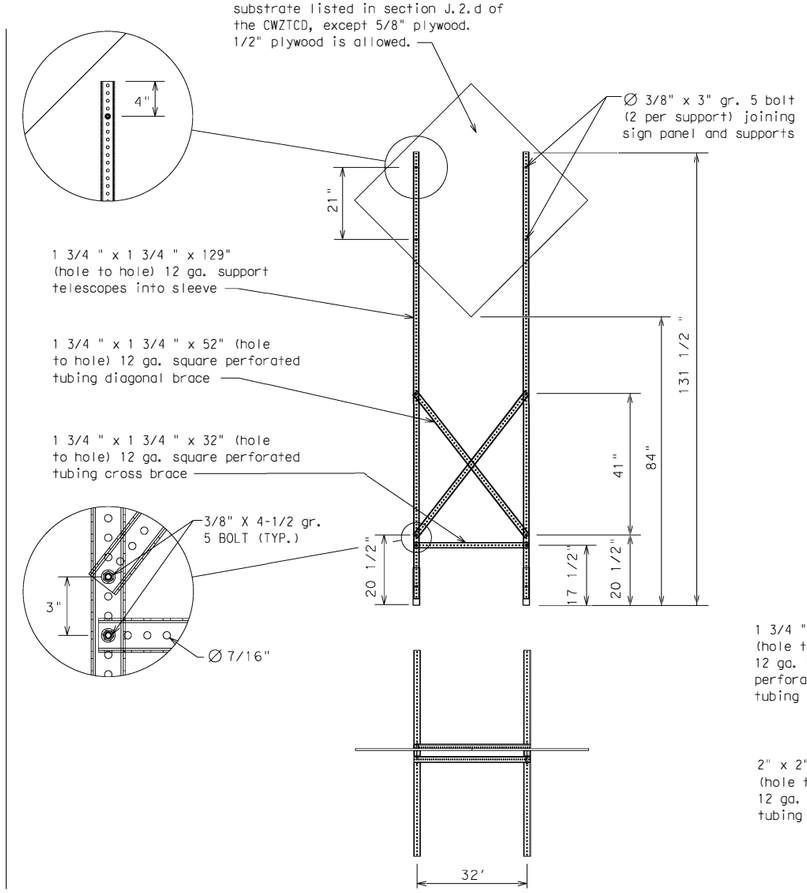


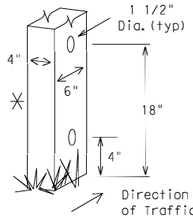
PERFORATED SQUARE METAL TUBING

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.

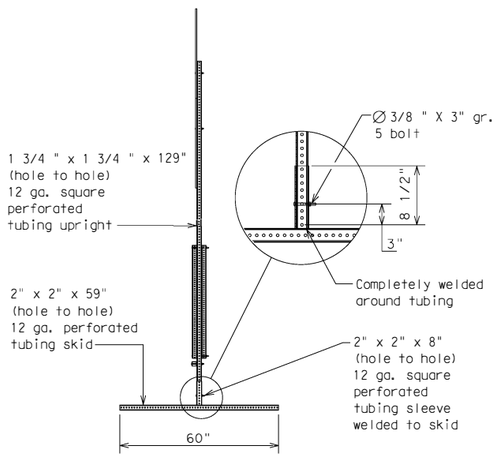






Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND 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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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REVISIONS	6340	46	001	SH 130
9-07 8-14	DIST	COUNTY		SHEET NO.
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SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. 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.
3. 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.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. 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.
8. 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.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. 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.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. 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.
15. 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.
16. Each line of text should be centered on the message board rather than left or right justified.
17. 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
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
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	FRONTAGE ROAD CLOSED
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT
RIGHT X LANES CLOSED	RIGHT X LANES OPEN
CENTER LANE CLOSED	DAYTIME LANE CLOSURES
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE
EXIT CLOSED	RIGHT LN TO BE CLOSED
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI
XXXXXXXX BLVD CLOSED	

Other Condition List

ROADWORK XXX FT	ROAD REPAIRS XXXX FT
FLAGGER XXXX FT	LANE NARROWS XXXX FT
RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
DETOUR X MILE	ROUGH ROAD XXXX FT
ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
BUMP XXXX FT	US XXX EXIT X MILES
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 *	

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

Location List

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

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. 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.
6. 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

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. 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

1. 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.
2. 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.
3. 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.
4. 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.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

FILE:	bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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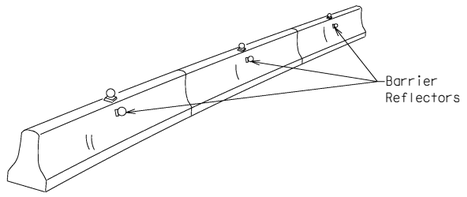
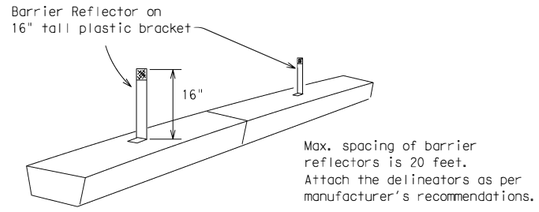
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

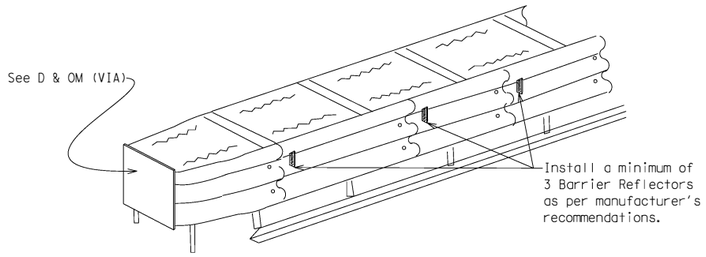


CONCRETE TRAFFIC BARRIER (CTB)

3. 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.
4. 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.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.



LOW PROFILE CONCRETE BARRIER (LPCB)

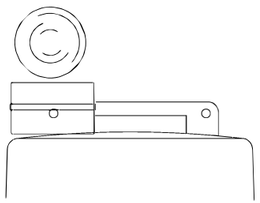


DELINEATION OF END TREATMENTS

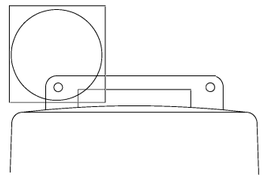
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. 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

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. 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.
4. 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".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. 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.
7. 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.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

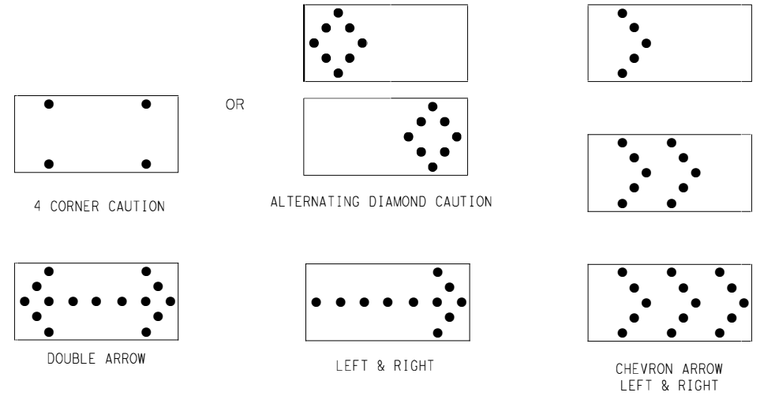
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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.
4. 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.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. 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

1. 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.
2. 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.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. 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.
6. 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.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. 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.

1. 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.
2. 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.
3. 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.
4. The Flashing Arrow Board should be able to display the following symbols:



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

LEFT & RIGHT

CHEVRON ARROW
LEFT & RIGHT

5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. 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.
8. 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.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. 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.
14. 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

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. 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.
6. 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 Operations Division Standard

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

BC(7)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	6340	46	001	SH 130
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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. 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.
3. 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.
4. 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).
5. 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.
6. 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:

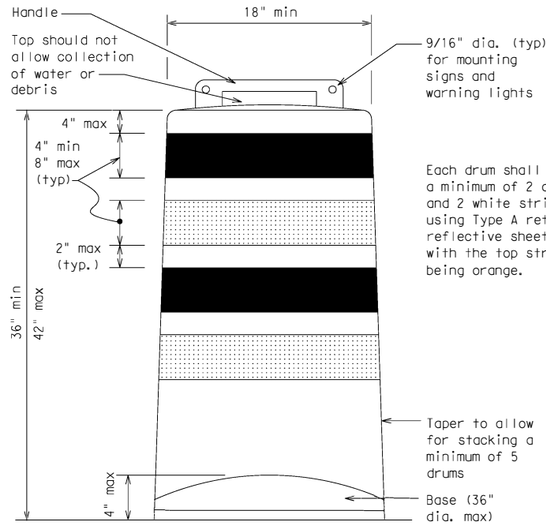
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

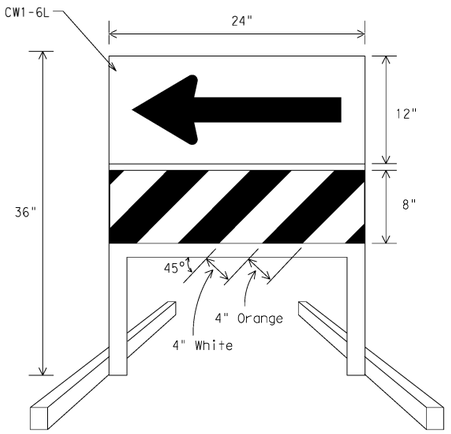
RETROREFLECTIVE SHEETING

1. 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 reflective sheeting shall be supplied unless otherwise specified in the plans.
2. 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

1. 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.
2. 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.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. 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.
5. 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.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.





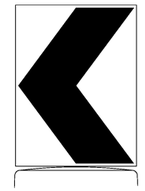
DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B_{FL} or Type C_{FL} Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

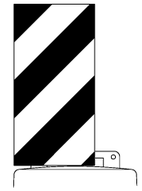
This detail is not intended for fabrication. See note 3 and the CWZTCD list for providers of approved Detectable Pedestrian Barricades

DETECTABLE PEDESTRIAN BARRICADES

1. 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.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
3. 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.
4. 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 for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades may 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

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. 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.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. 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.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. 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.
8. 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.

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

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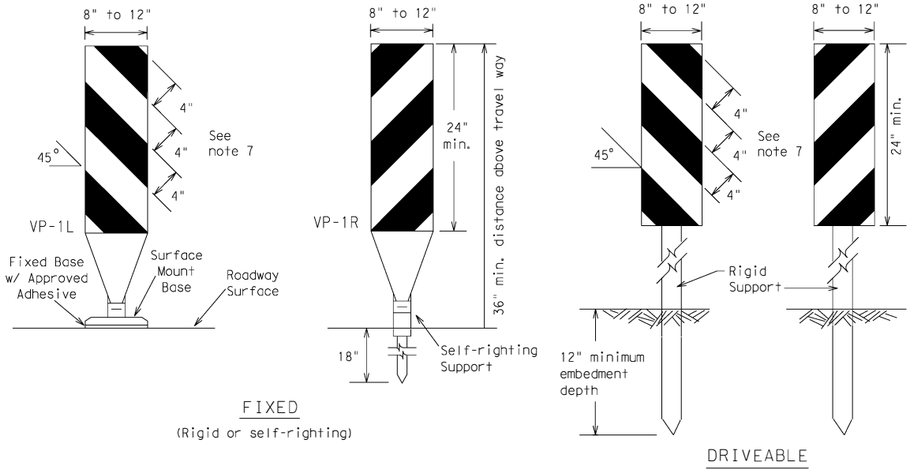
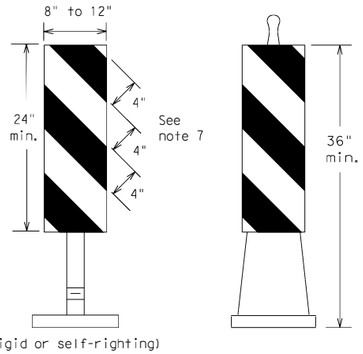


FIXED
(Rigid or self-righting)

DRIVEABLE

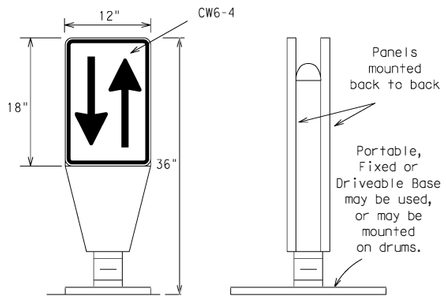


(Rigid or self-righting)

PORTABLE

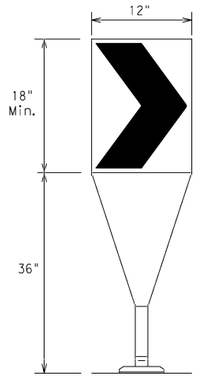
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. 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.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD 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.

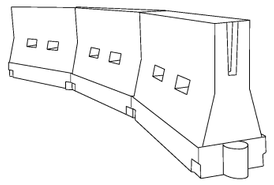
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. 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.
3. 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.
4. To be effective, the chevron should be visible for at least 500 feet.
5. 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.
6. 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)

1. 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.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. 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) placed near the top of the LCD along the full length of the device.

WATER BALLASTED SYSTEMS USED AS BARRIERS

1. 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 NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. 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.
3. 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.
4. Water ballasted systems used as barriers should 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.
5. 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

1. 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).
2. 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.
3. 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).
4. 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.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. 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.
7. 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 * * 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent
30	$L = \frac{WS^2}{60}$	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′

* * 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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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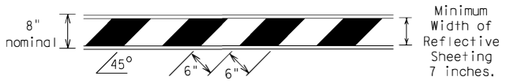
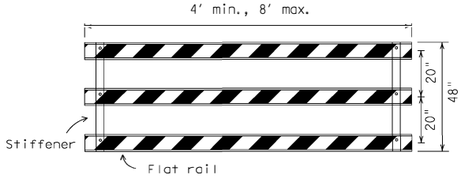
TYPE 3 BARRICADES

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 conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



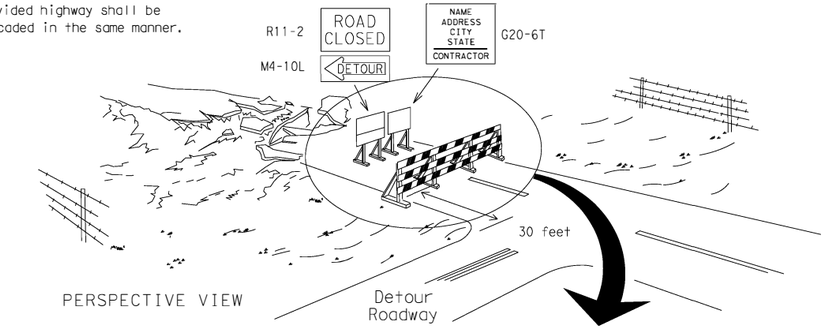
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

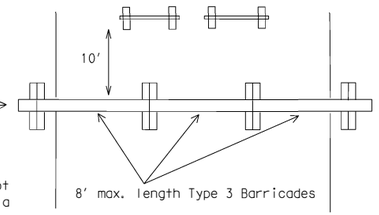
Each roadway of a divided highway shall be barricaded in the same manner.



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.

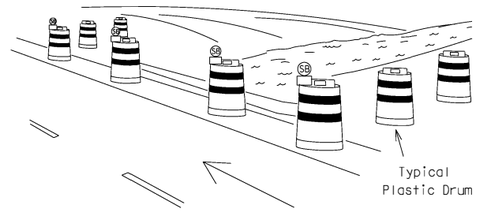
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

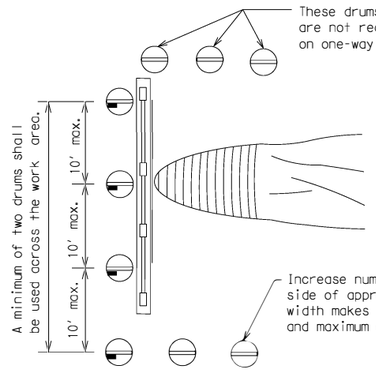
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

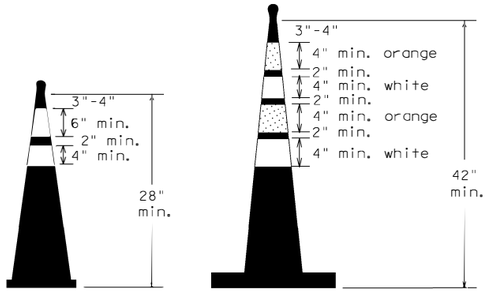
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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
SB	Steady burn warning light or yellow warning reflector

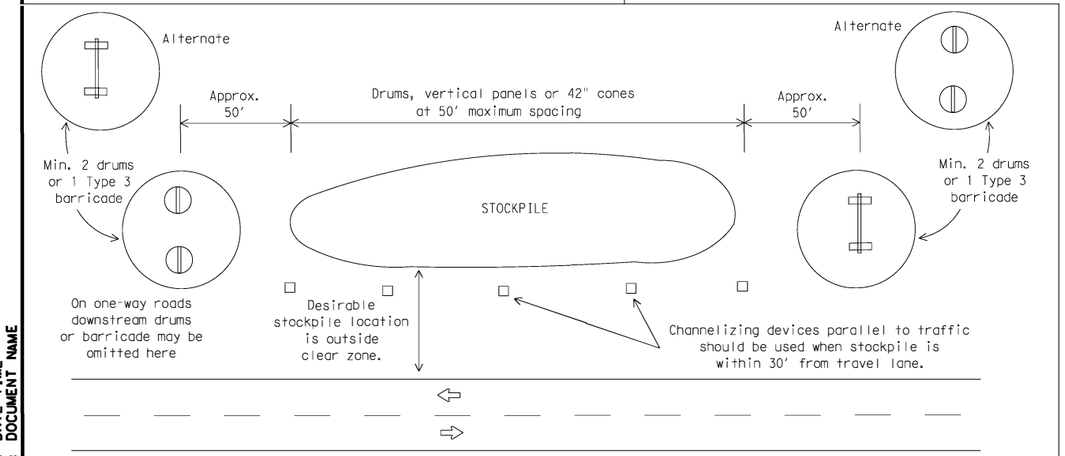
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



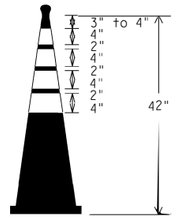
28" Cones shall have a minimum weight of 9 1/2 lbs.
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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 used at night 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.
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.



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

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BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

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WORK ZONE PAVEMENT MARKINGS

GENERAL

1. 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.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. 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).
6. 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.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. 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

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

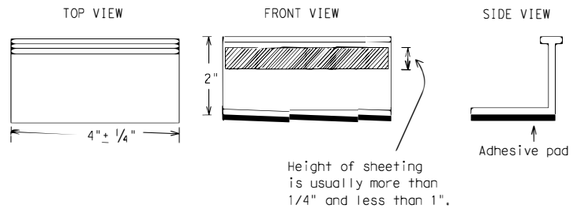
MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. 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.
3. 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.
4. 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

1. 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.
2. 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.
3. 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".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. 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.
10. 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

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. 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.
   A. 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.
   B. 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.
3. Small design variances may be noted between tab manufacturers.
4. 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

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. 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).

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

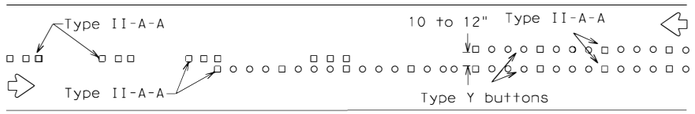
FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
2-98 9-07	DIST	COUNTY		SHEET NO.
1-02 7-13	AUS	TRAVIS		26
11-02 8-14				

105

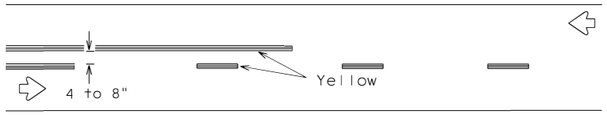
DATE: DATE TIME
FILE: DOCUMENT NAME

PAVEMENT MARKING PATTERNS

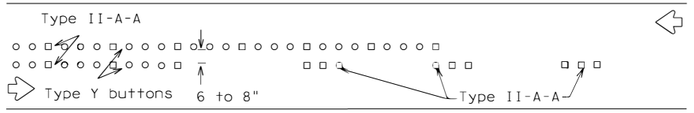
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



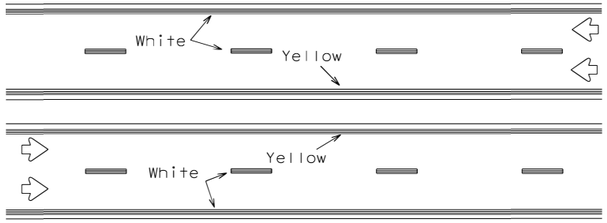
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



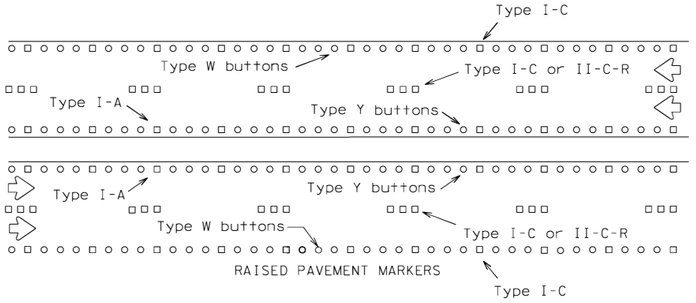
RAISED PAVEMENT MARKERS - PATTERN B

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



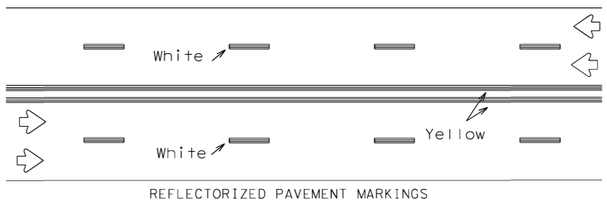
REFLECTORIZED PAVEMENT MARKINGS



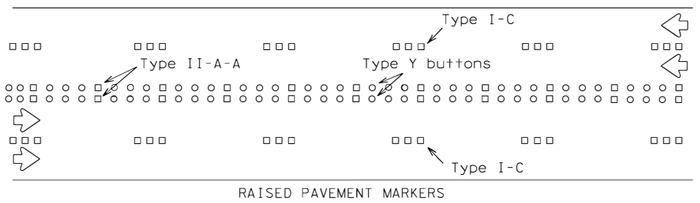
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



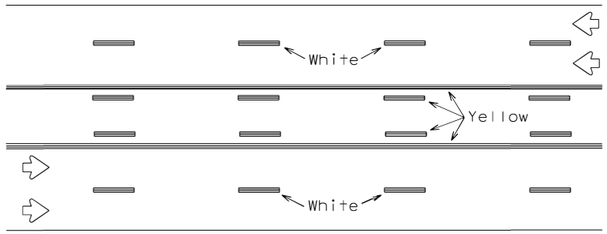
REFLECTORIZED PAVEMENT MARKINGS



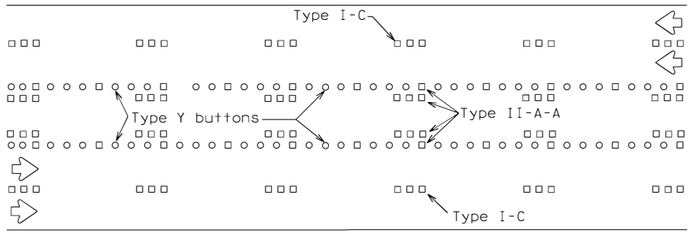
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

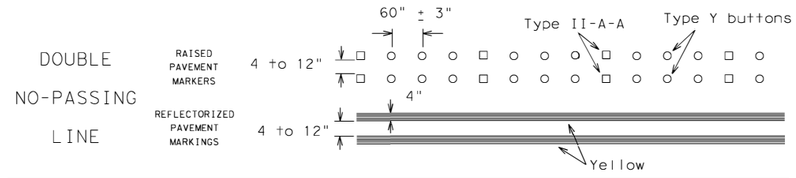
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

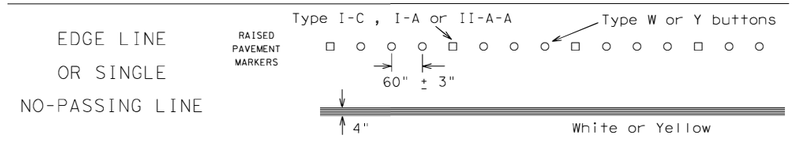
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

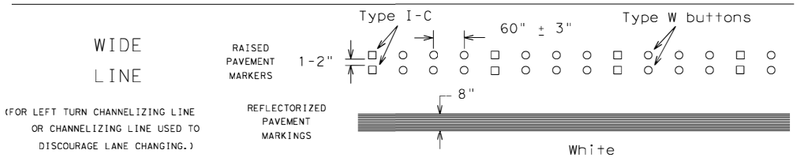


EDGE LINE OR SINGLE NO-PASSING LINE



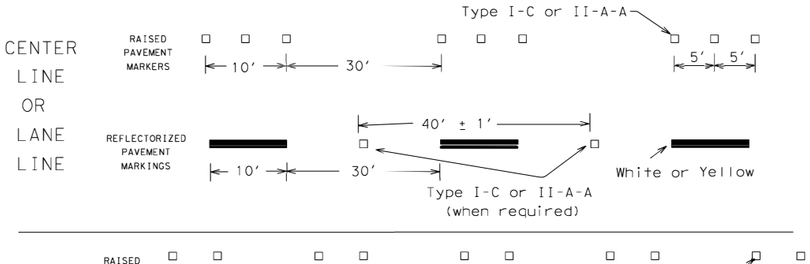
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)

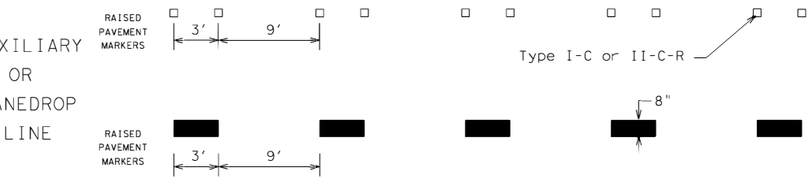


BROKEN LINES

CENTER LINE OR LANE LINE

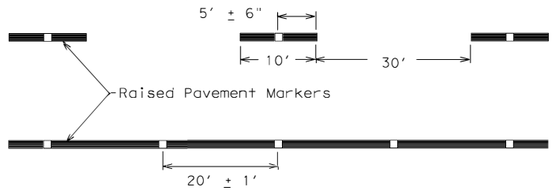


AUXILIARY OR LANEDROP LINE



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.



Centerline only - not to be used on edge lines

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

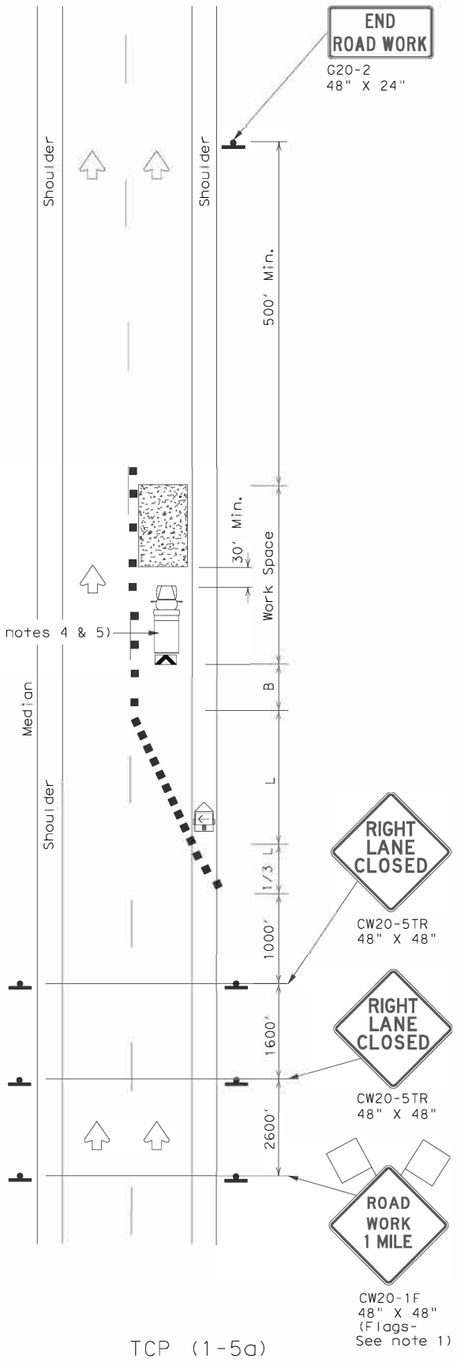
BC(12)-14

FILE: bc-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
1-97 9-07	DIST	COUNTY		SHEET NO.
2-98 7-13	AUS	TRAVIS		27
11-02 8-14				

106

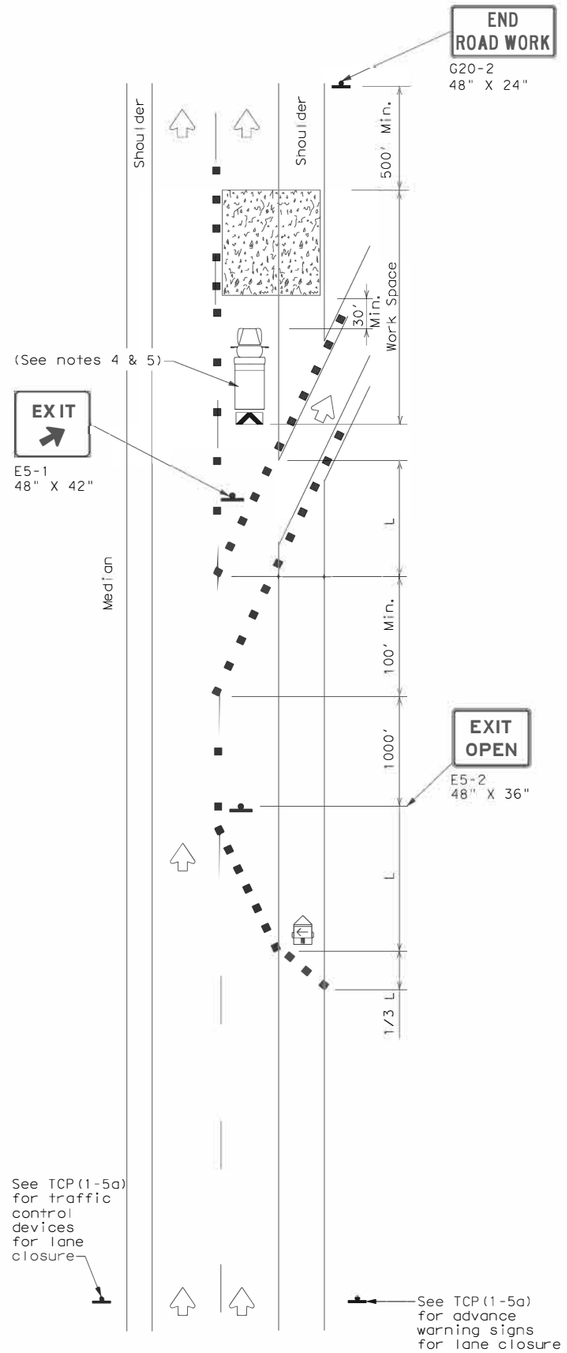
DATE: DATE TIME
FILE: DOCUMENT NAME

DATE:
FILE:



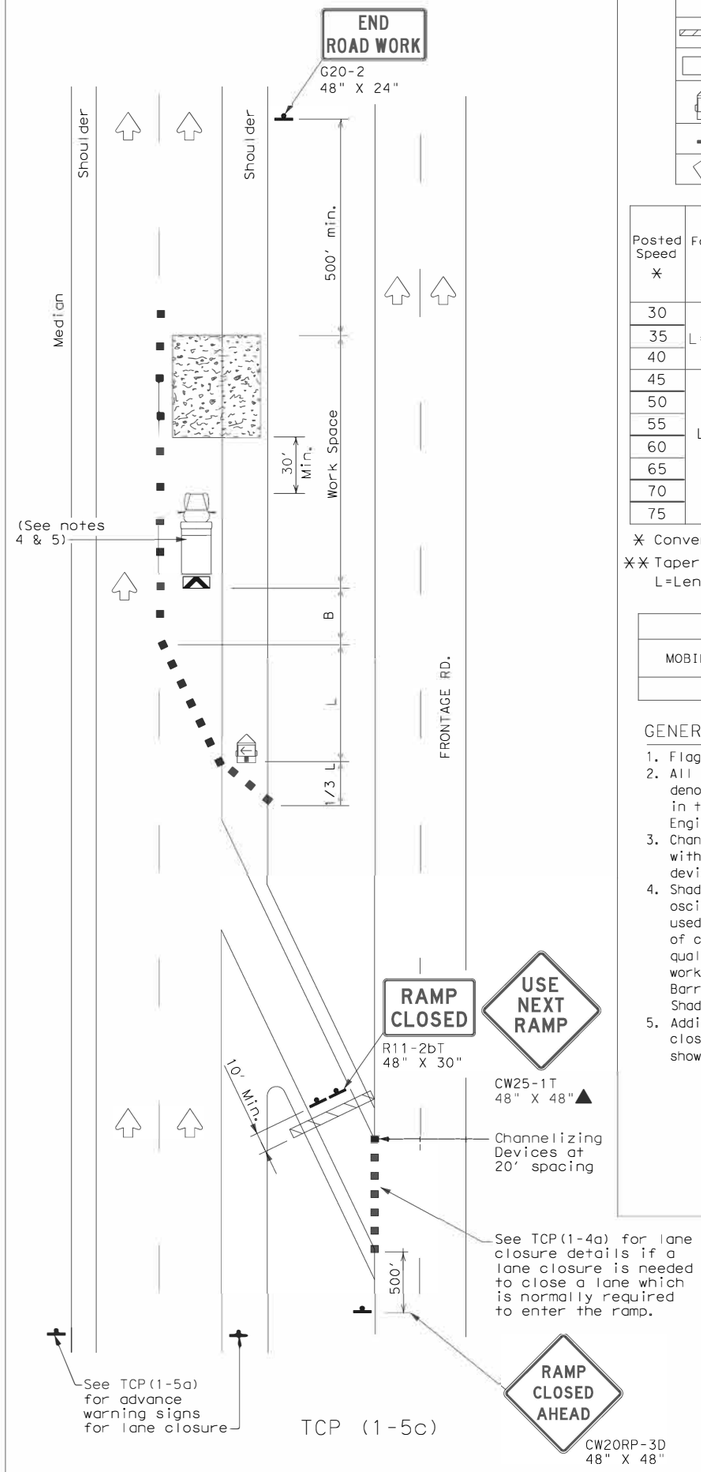
TCP (1-5a)

ONE LANE CLOSURE



TCP (1-5b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (1-5c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	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)

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. 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.
3. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. 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.
5. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES FOR DIVIDED HIGHWAYS

TCP(1-5)-18

FILE: tcp1-5-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		28

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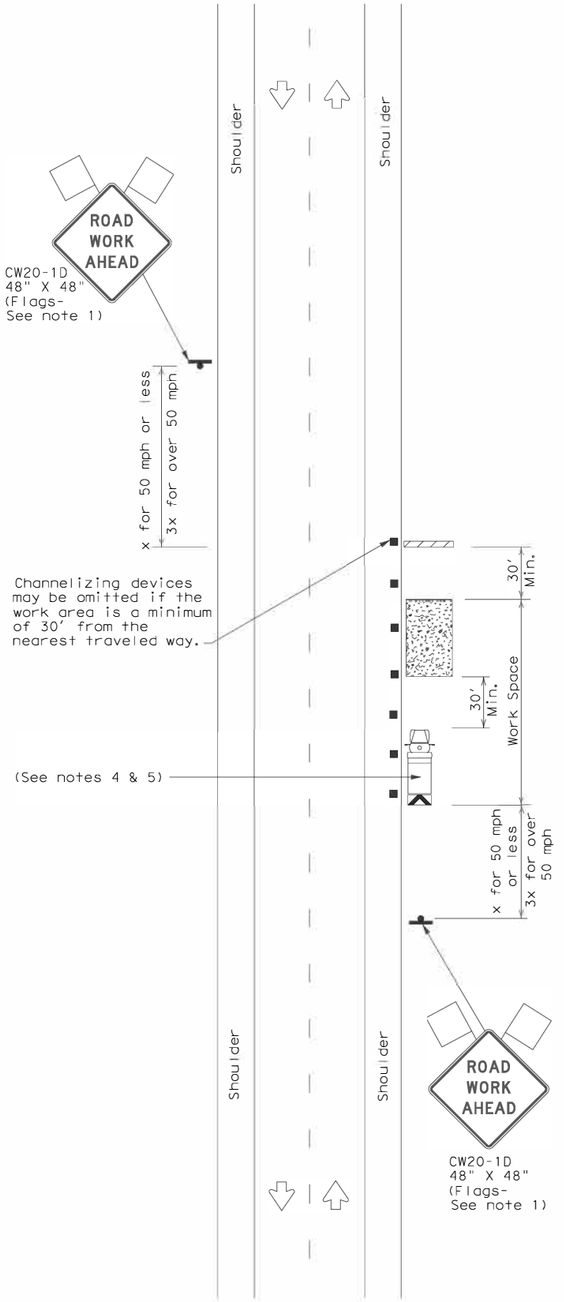
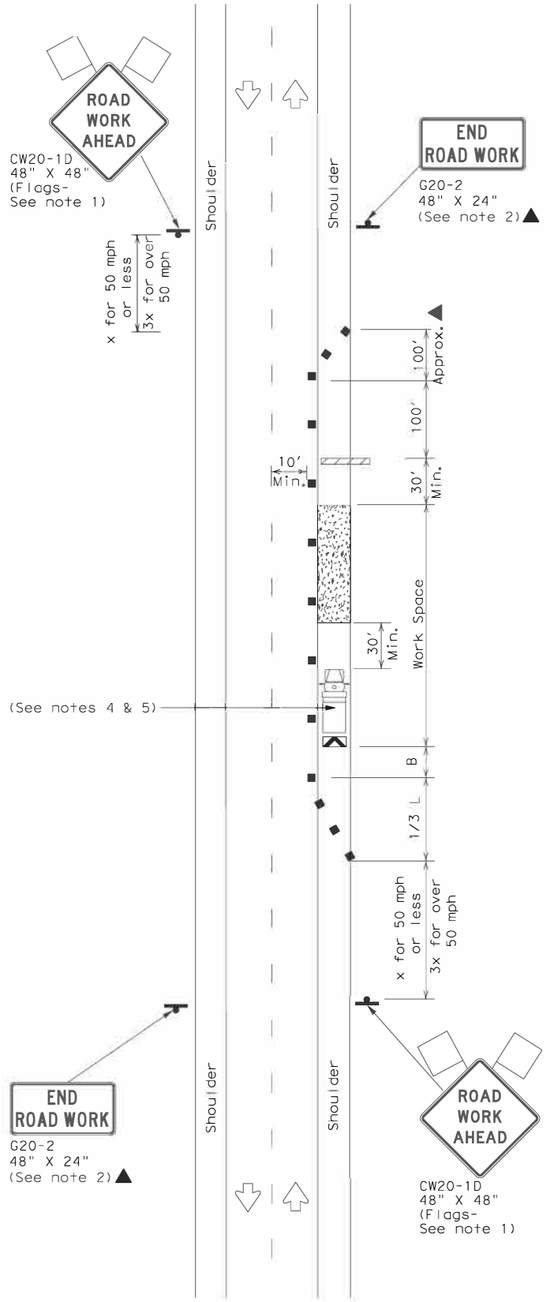


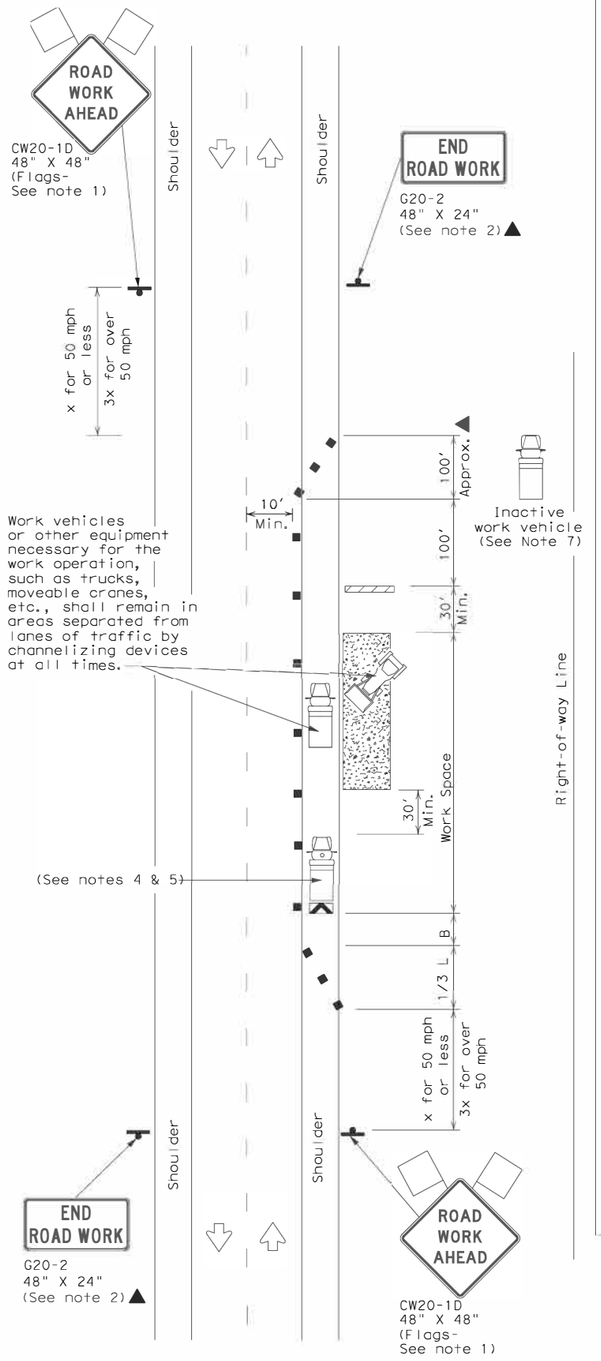
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	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)

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. 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.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW21-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	AUS	TRAVIS		29
1-97 2-18				

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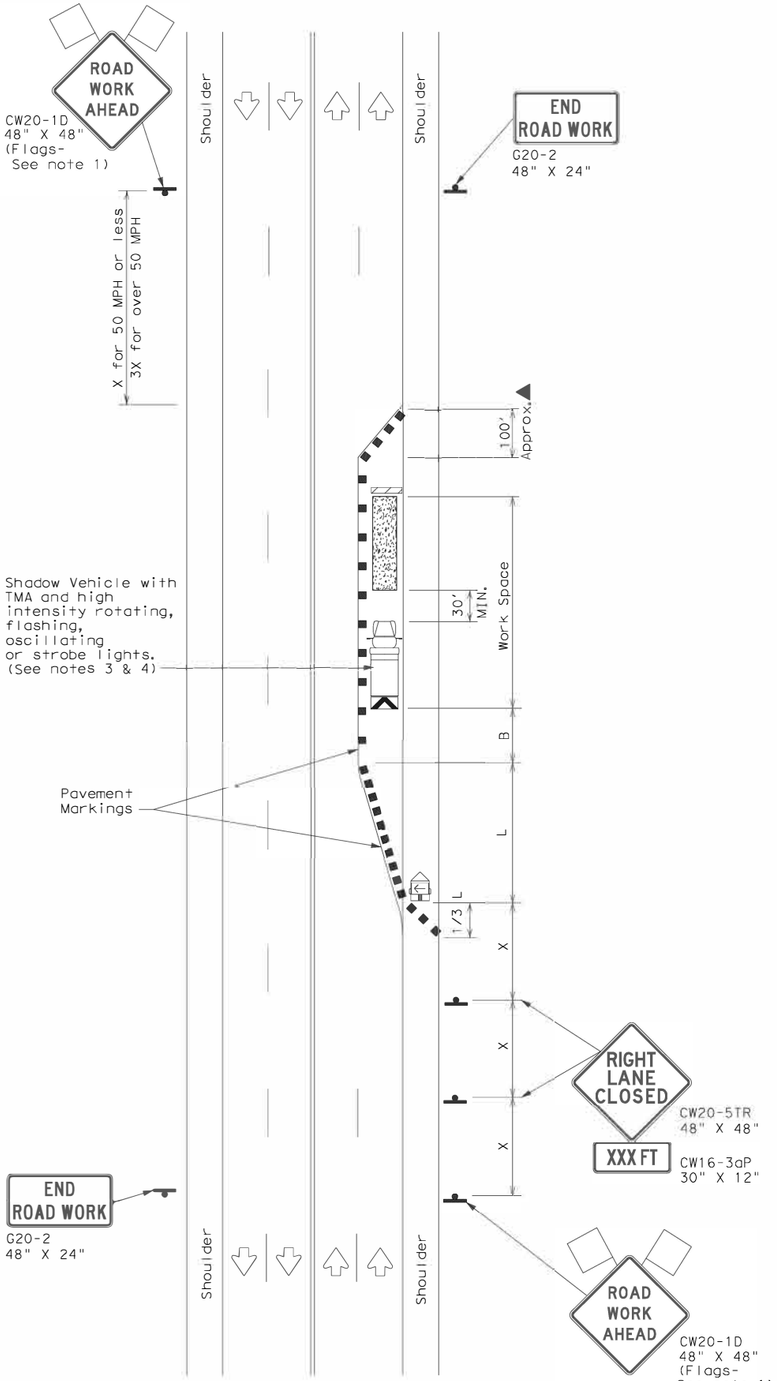
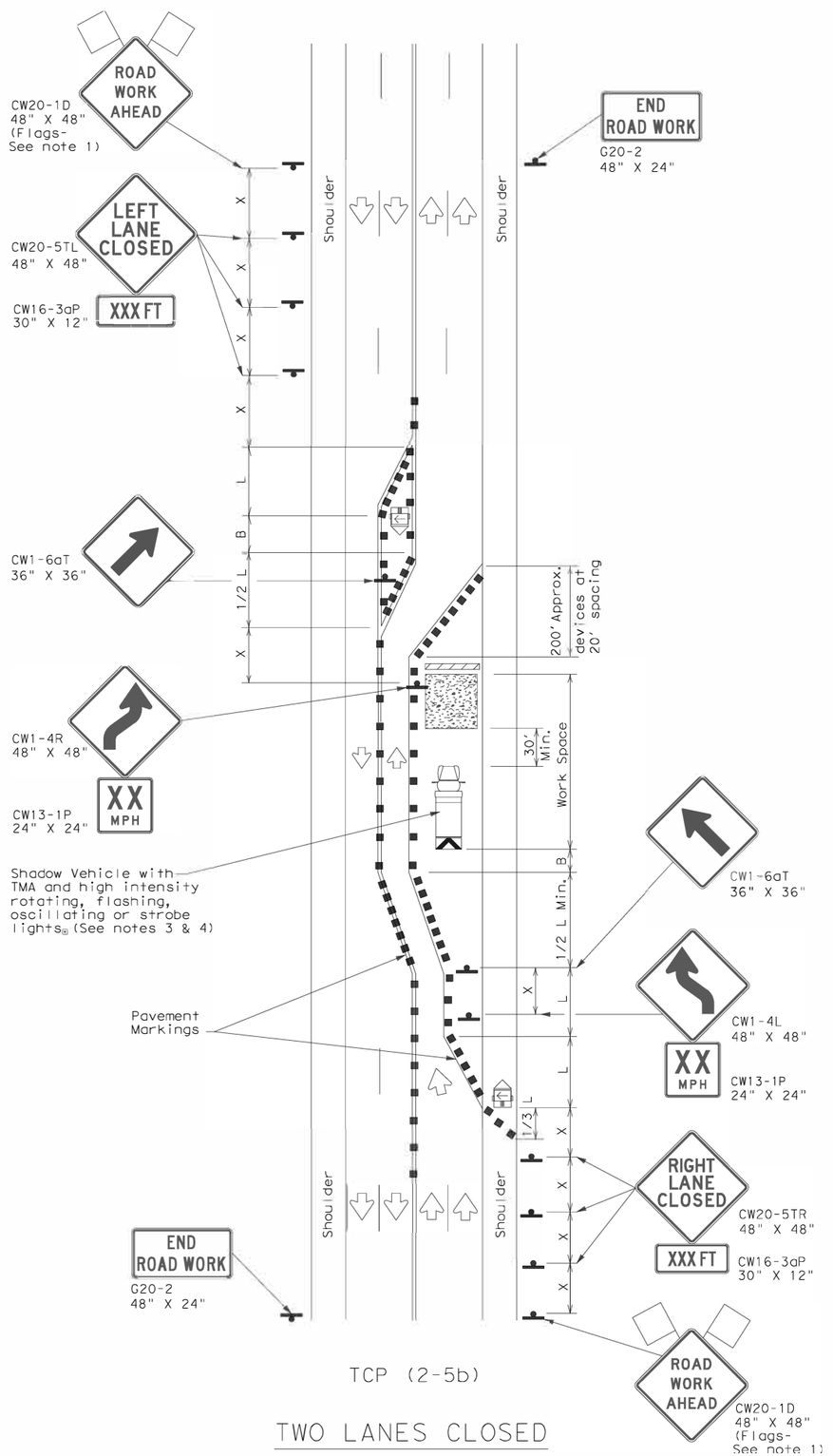


TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	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)

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. 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.
3. 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 substitutued for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

6. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED" signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic, with the arrow board placed in the closed lane near the end of the merging taper.

TCP (2-5b)

7. Conflicting pavement markings shall be removed for long-term projects.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

FILE: tcp2-5-18.dgn	DN:	CK:	DW:	CK:
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REVISIONS 8-95 2-12	6340	46	001	SH 130
1-97 3-03	DIST	COUNTY		SHEET NO.
4-98 2-18	AUS	TRAVIS		30

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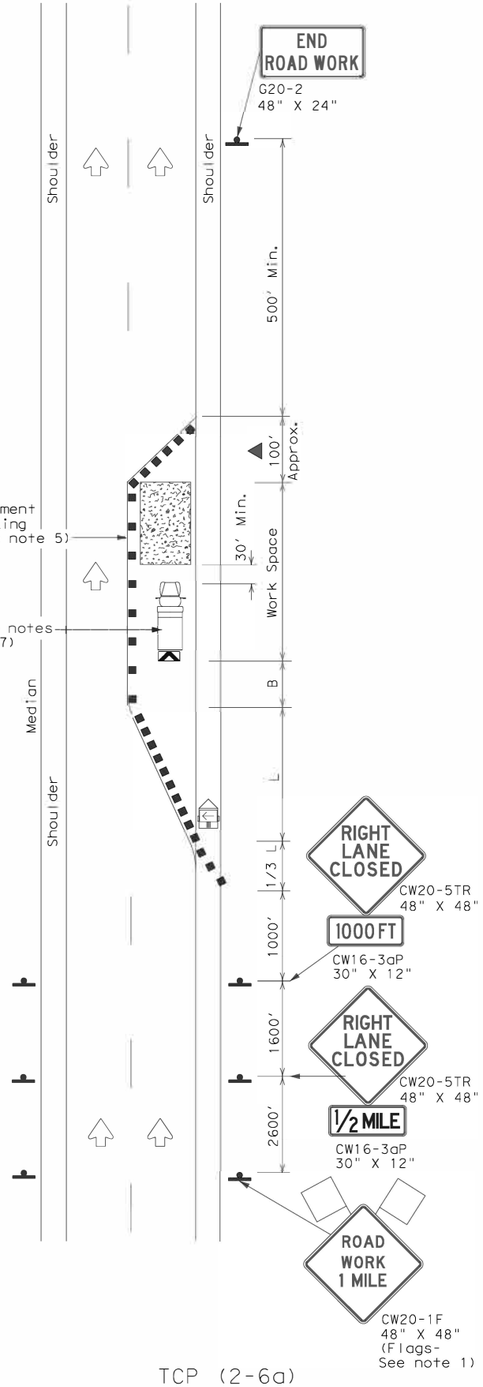
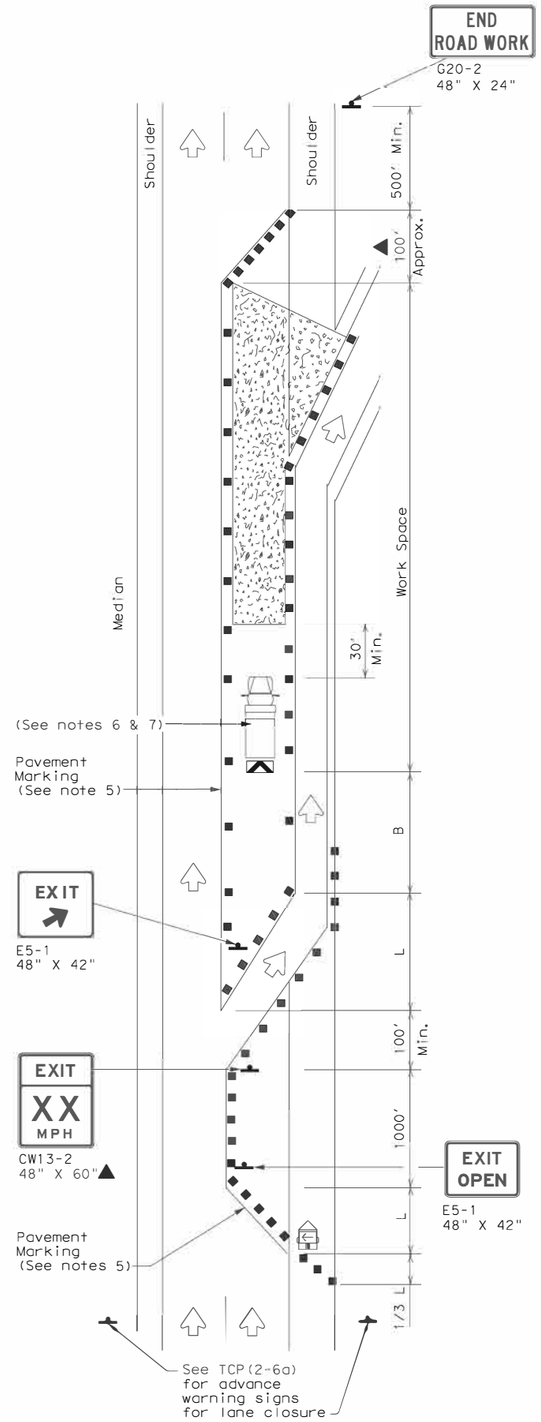


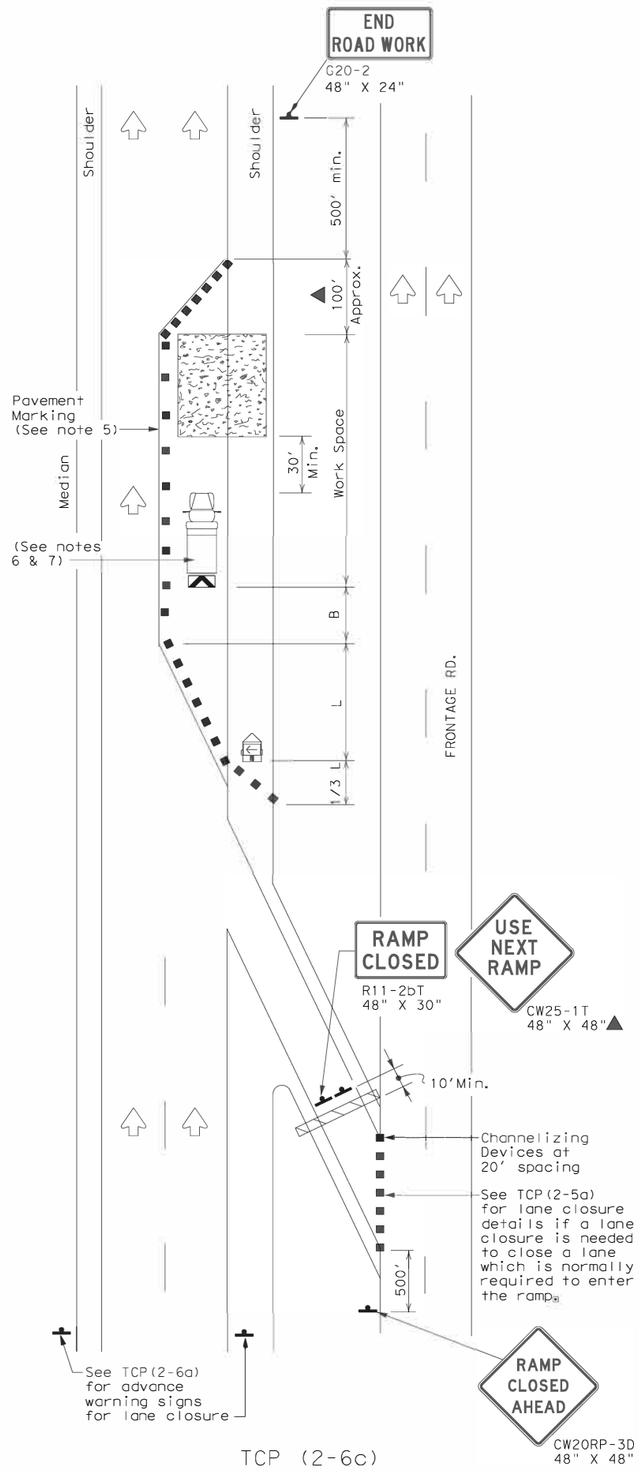
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L=\frac{WS^2}{60}$	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)

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. 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.
3. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on everyother channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. 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.
7. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

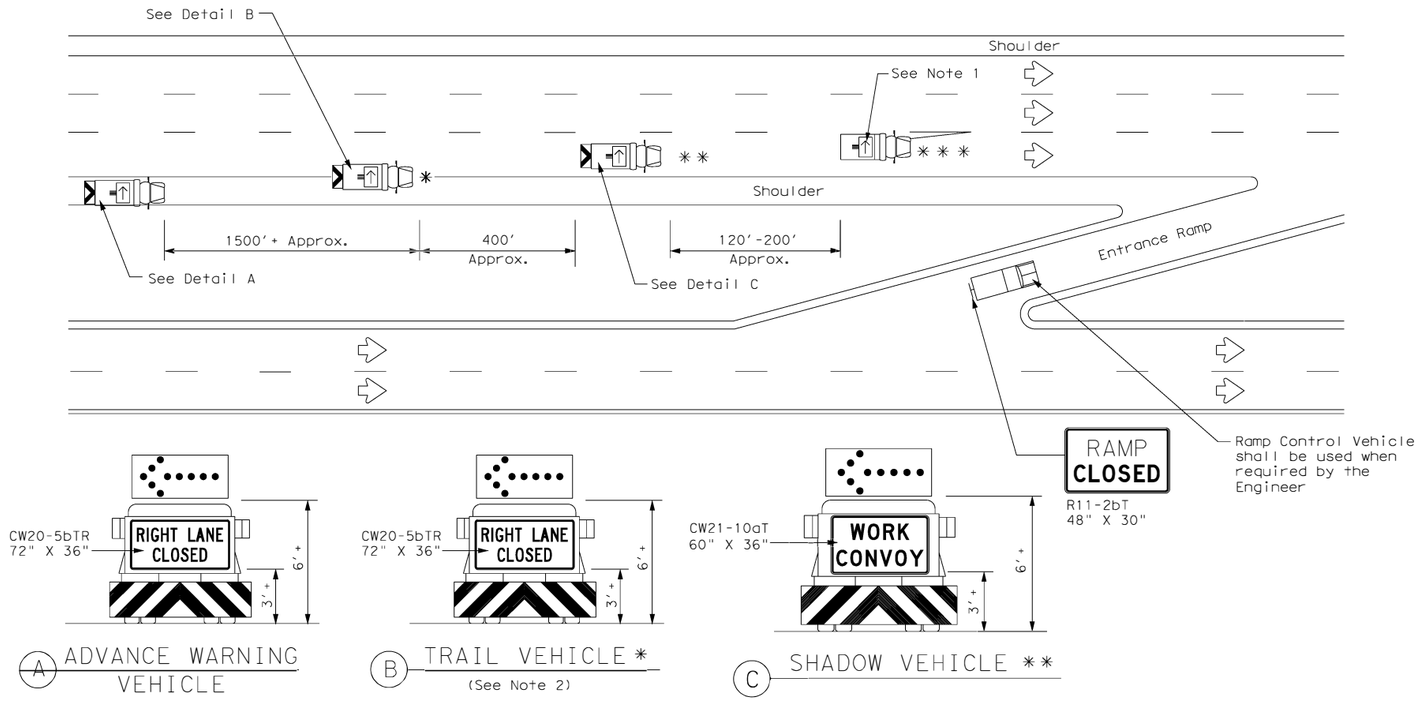
Texas Department of Transportation

Traffic Operations Division Standard

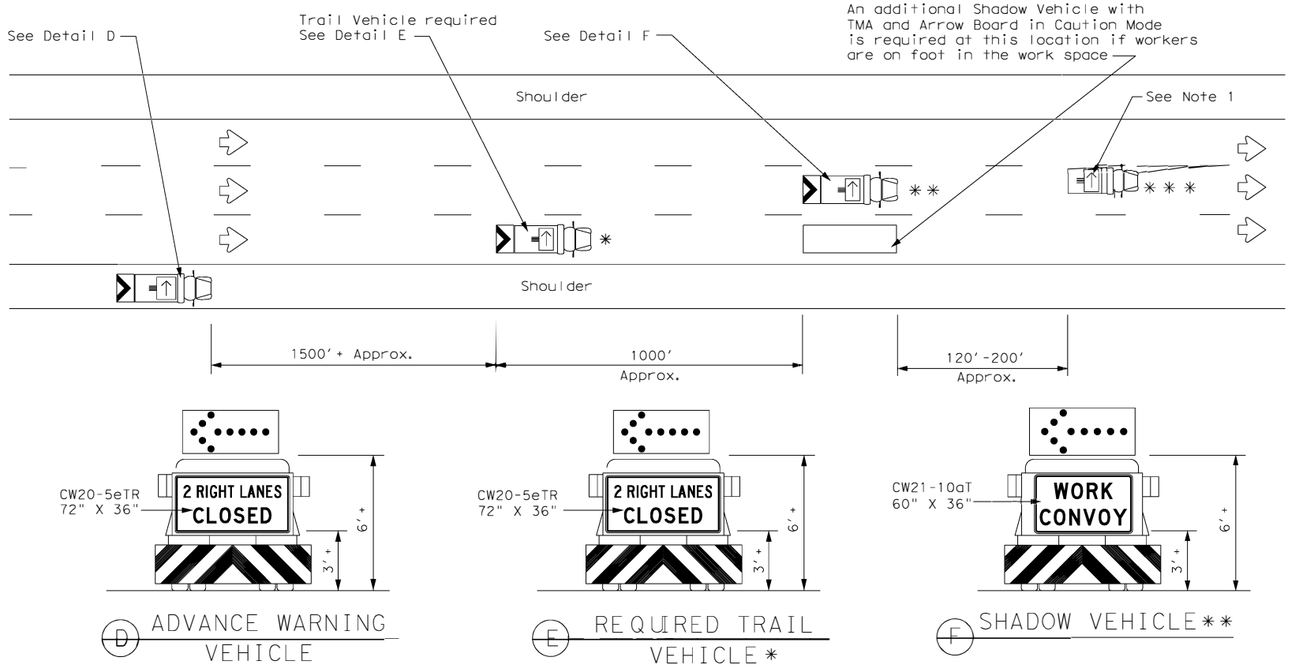
TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		31



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



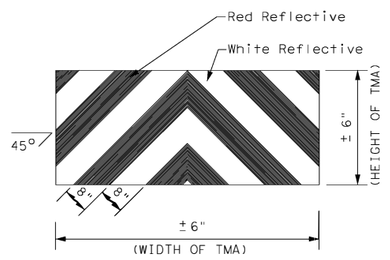
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

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

1. 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.
2. 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.
3. 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.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
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 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.
9. Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. 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.
11. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
12. 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.
13. Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

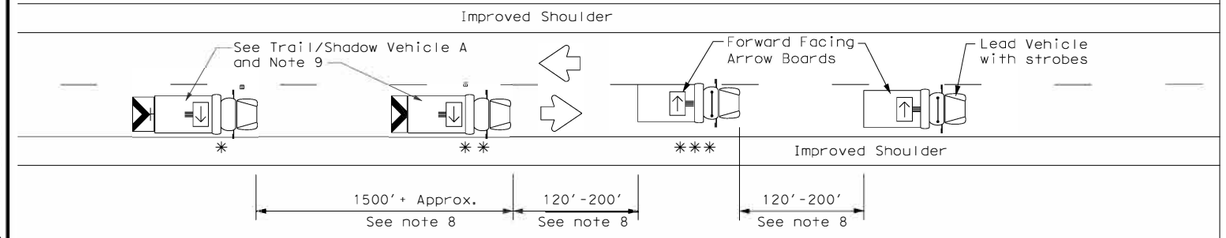
TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

TCP(3-2)-13

FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		32

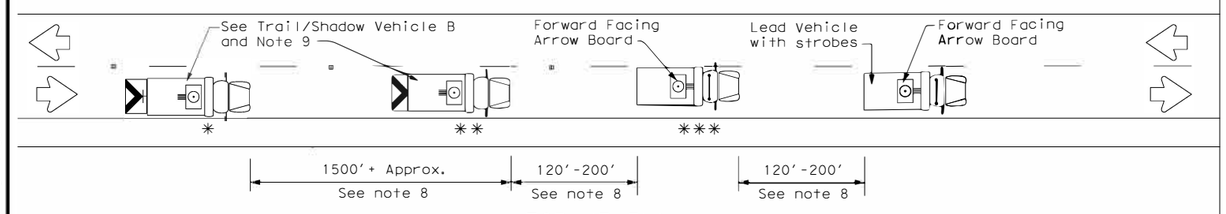
TP6

DATE:
FILE:



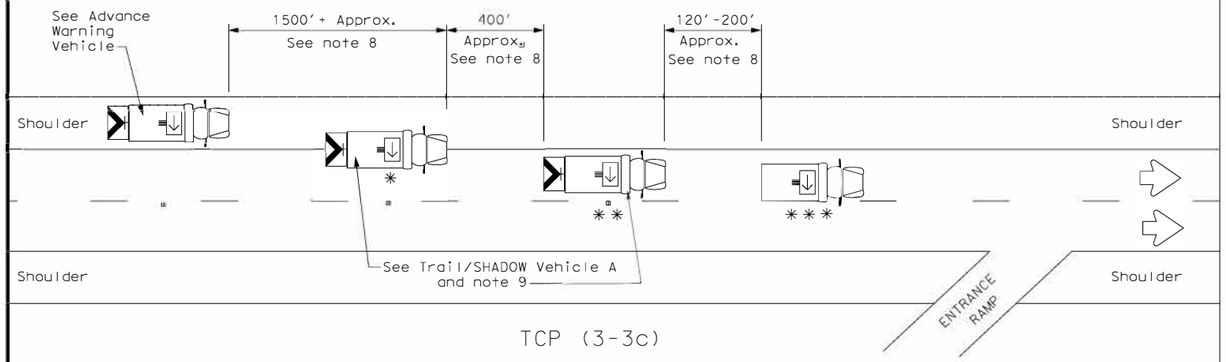
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS
(WORK ON TRAVEL LANE)



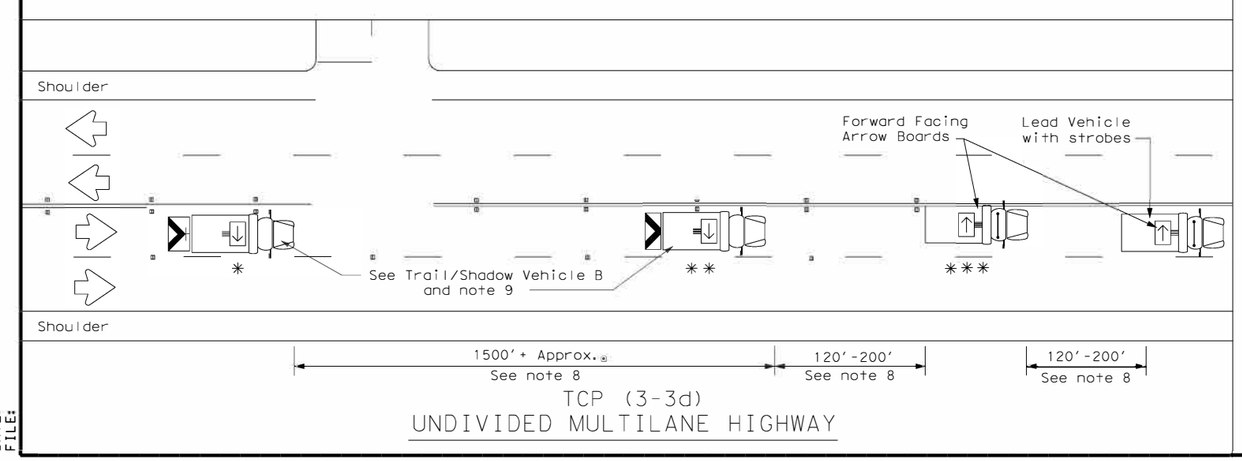
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS
(WORK ON TRAVEL LANE)



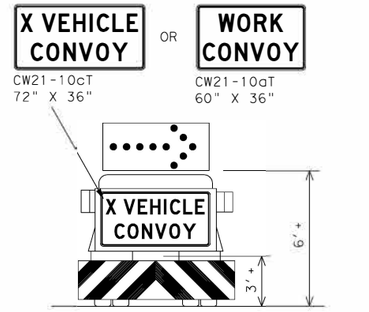
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



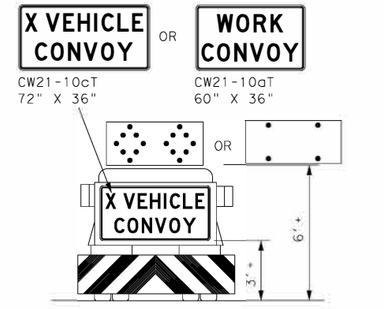
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



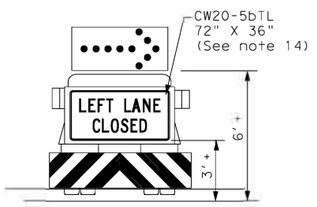
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

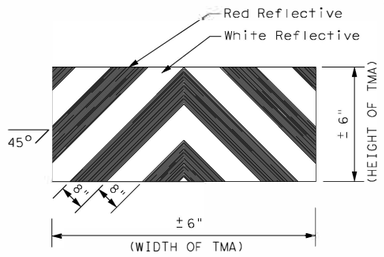


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING
VEHICLE



STRIPING FOR TMA

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	6340	46	001	SH 130
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	AUS	TRAVIS		33
1-97 7-14				

DATE:
FILE:

DATE:
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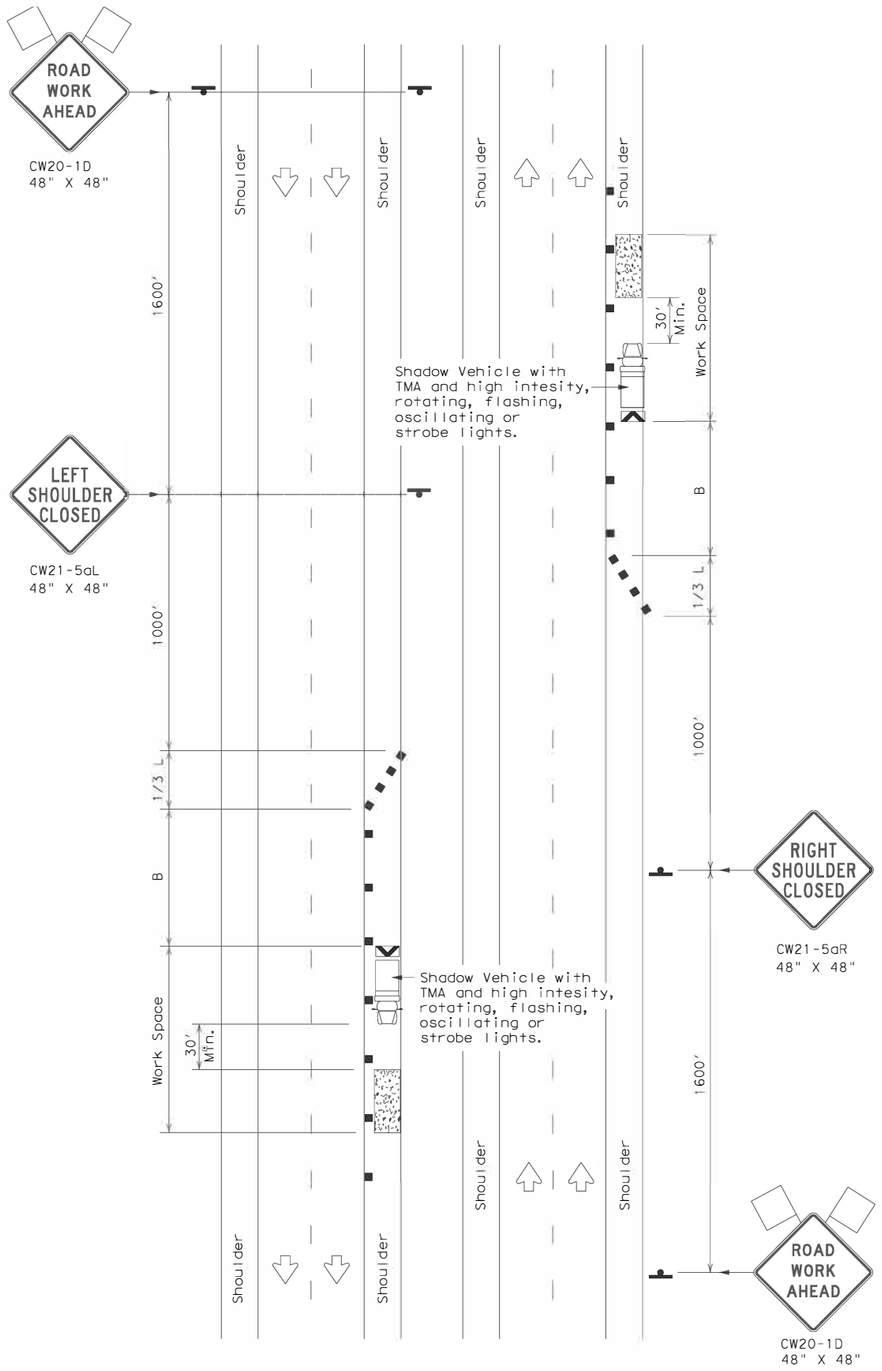
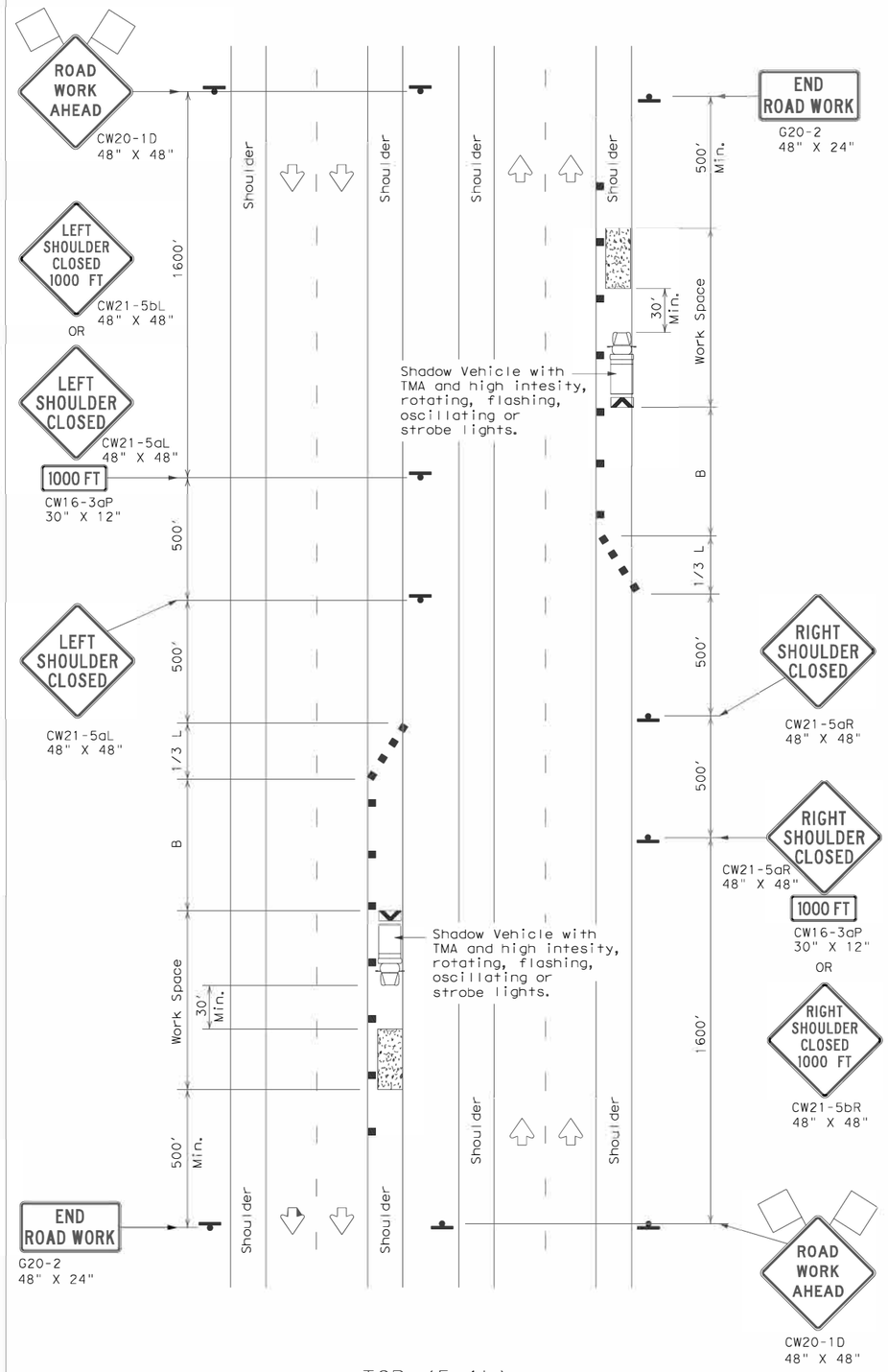


TCP (5-1a)

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 **			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 effecting 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

FILE: tcp5-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
2-18	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		34

DATE:
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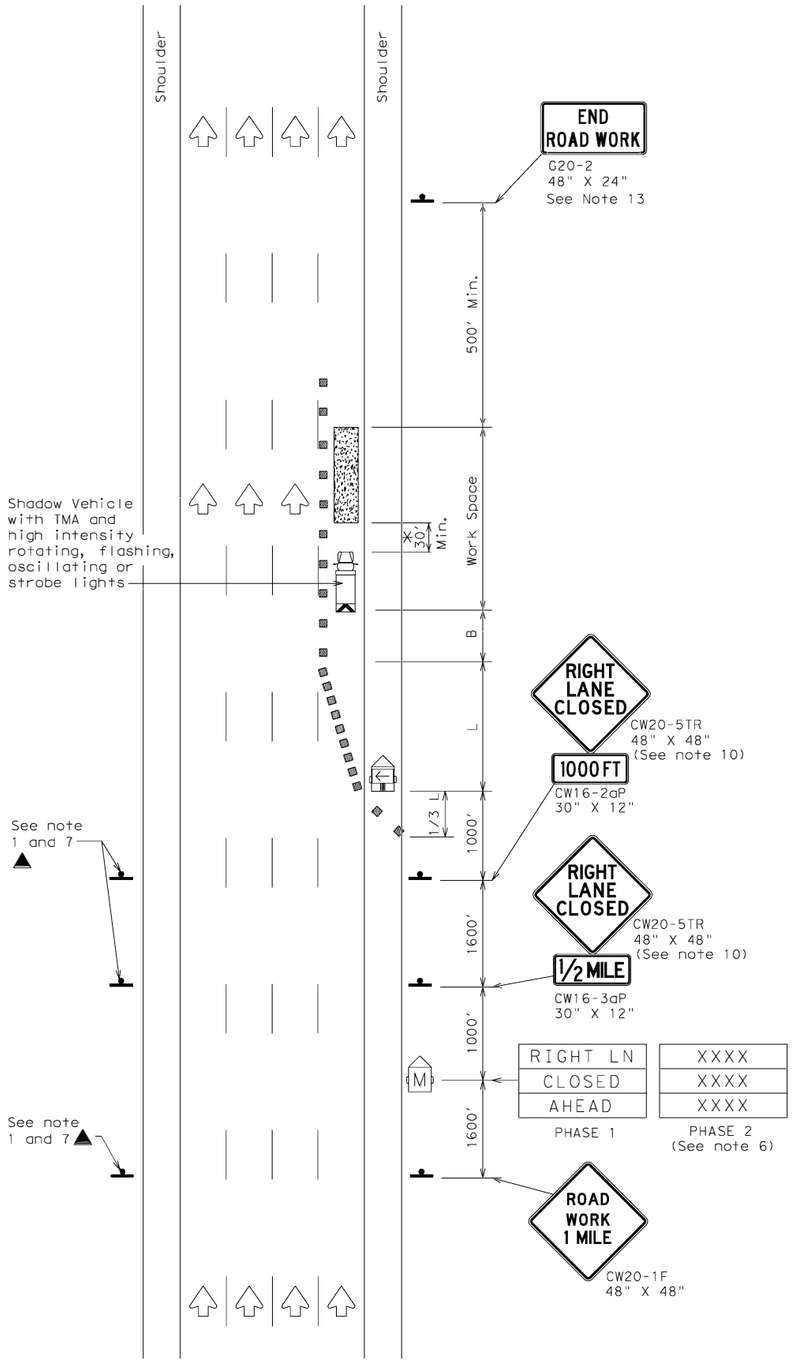
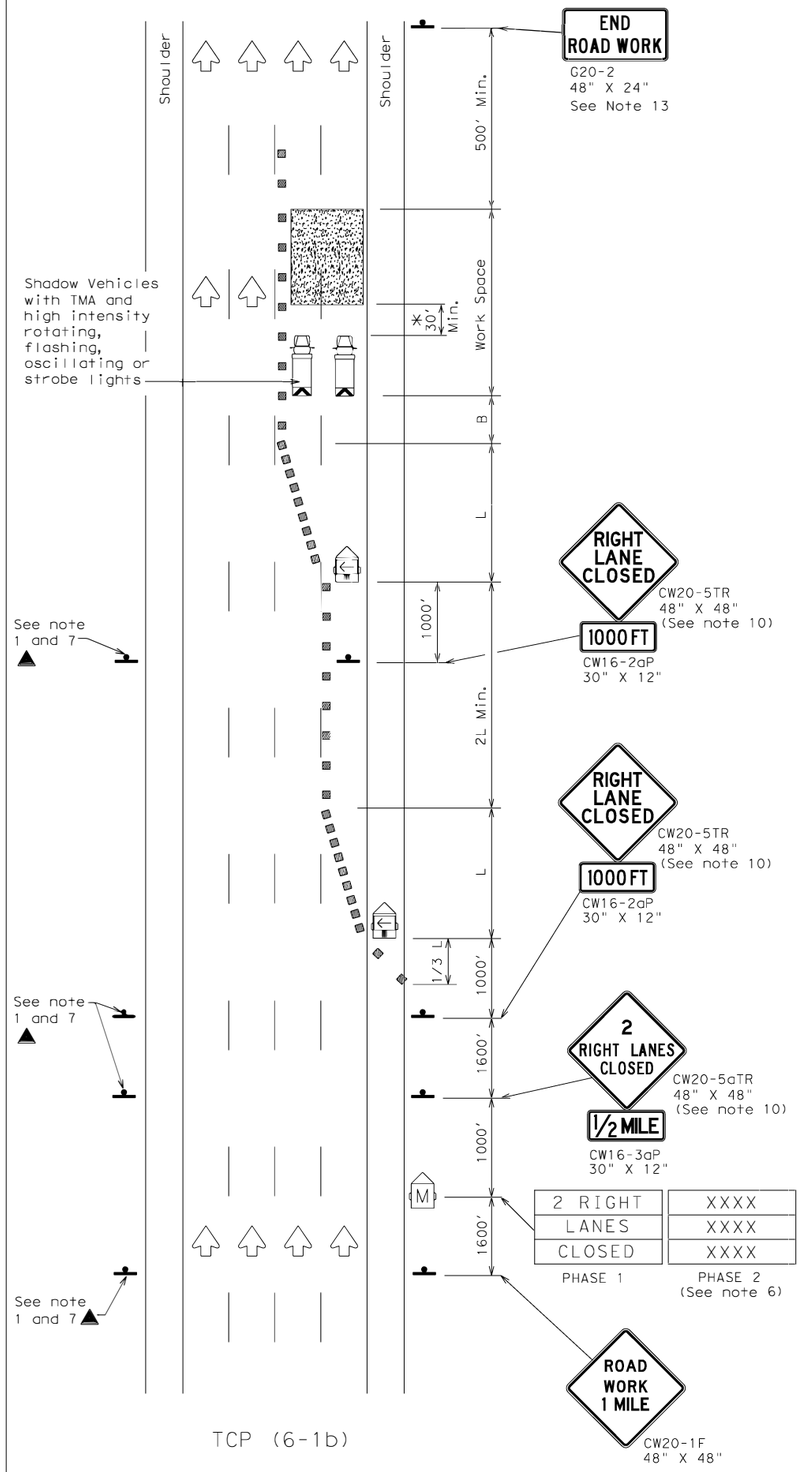


TCP (6-1a)

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	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
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

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. 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.
3. All construction signs and barricades placed during any phase of work shall remain in place until removal is approved by the Engineer.
4. The Engineer may direct the Contractor to furnish additional signs and barricades as required to maintain traffic flow, detours and motorist safety during construction.
5. 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.
6. 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.
7. Duplicate construction warning signs should be erected on the medians side of freeways where median width will permit and traffic volume justifies the signing.
8. 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.
9. Warning signs for intermediate term stationary work should be mounted at 7' to the bottom of the sign.
10. 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.
11. 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.
12. 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.
13. 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.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
FREEWAY LANE CLOSURES

TCP(6-1)-12

FILE: tcp6-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		35

DATE:
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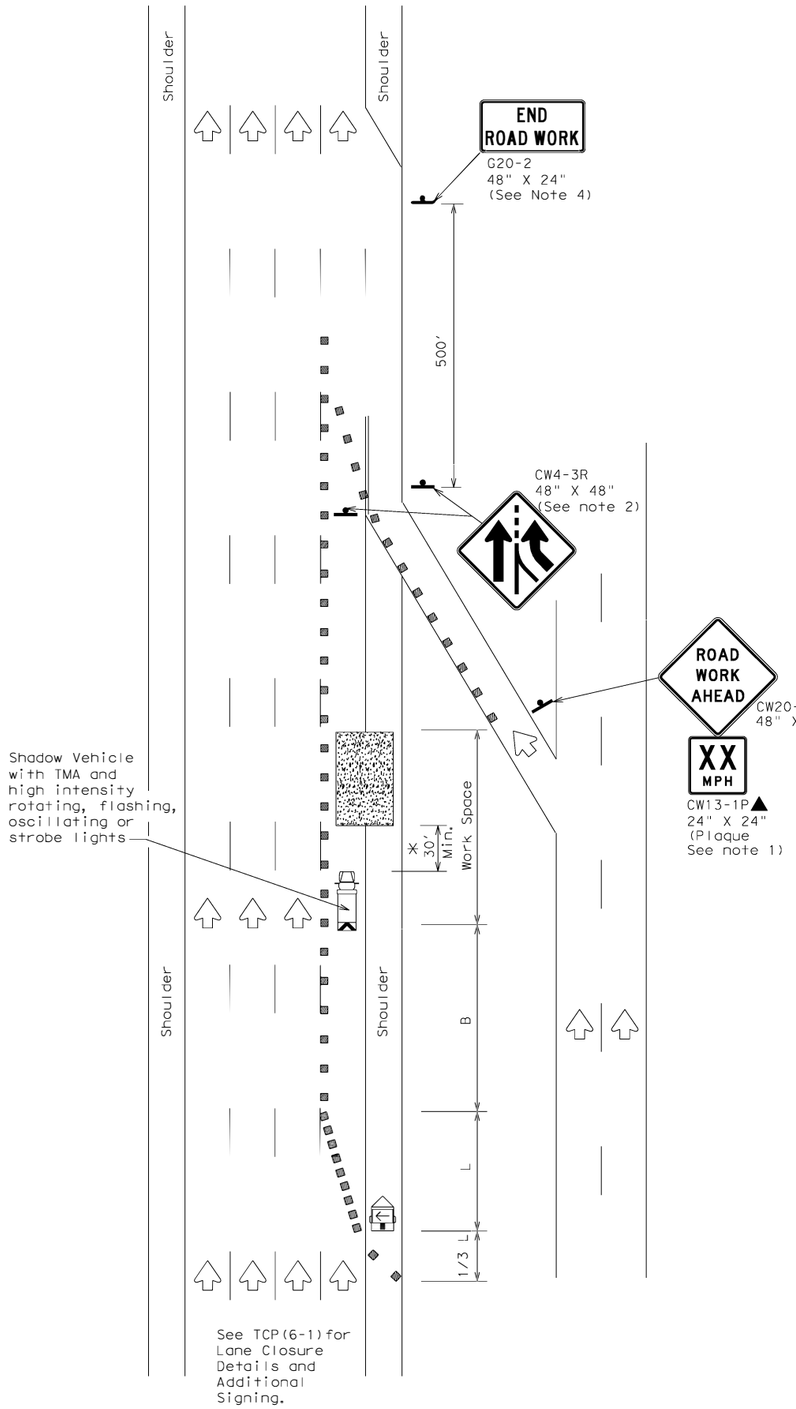
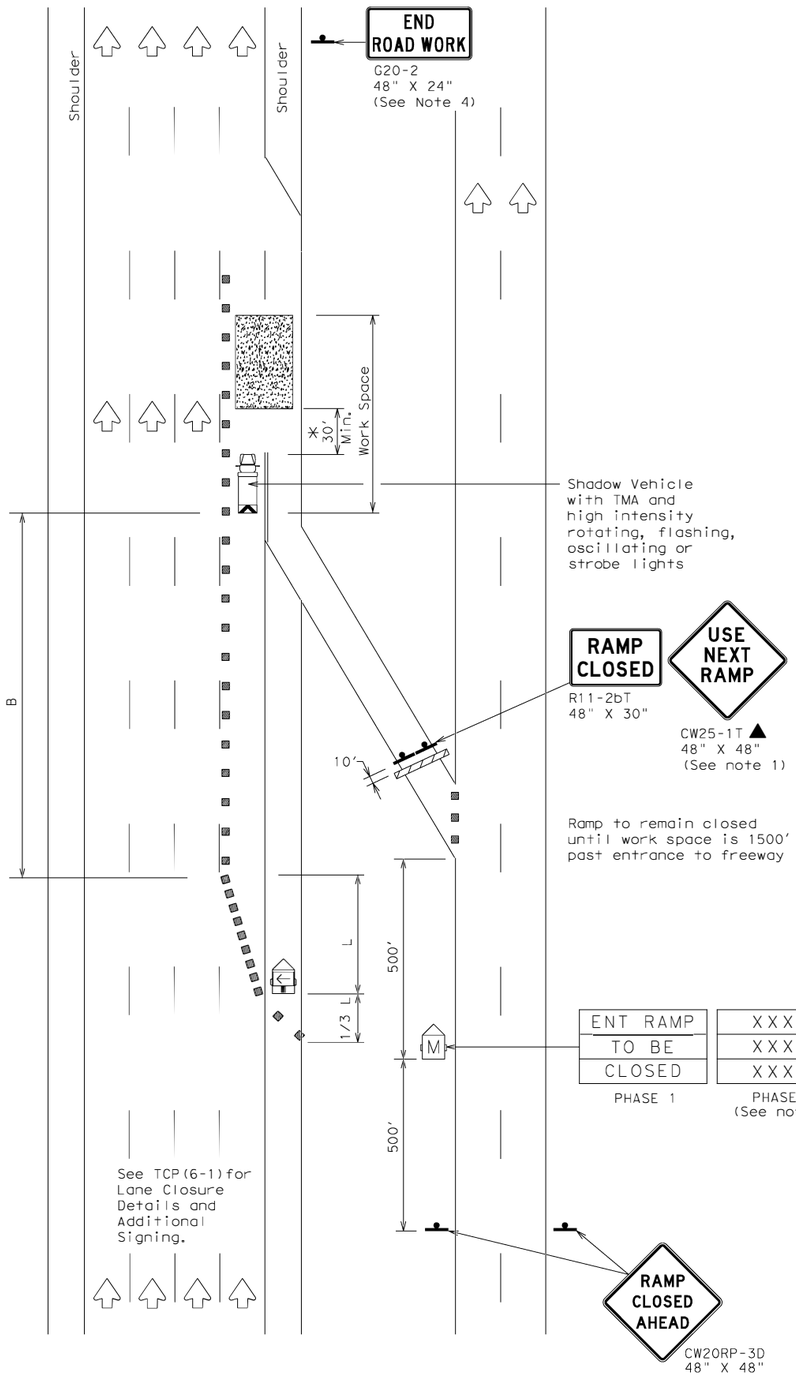


TCP (6-2a)

ENTRANCE RAMP OPEN
WORK WITHIN 500' OF RAMP



TCP (6-2b)

ENTRANCE RAMP CLOSED

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
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

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. ADDED LANE Symbol (CW4-3) sign may be omitted when sign between ramp and mainlane can be seen from both roadways.
3. See "Advance Notice List" on BC(6) for recommended date and time formatting options for PCMS Phase 2 message.
4. 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.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

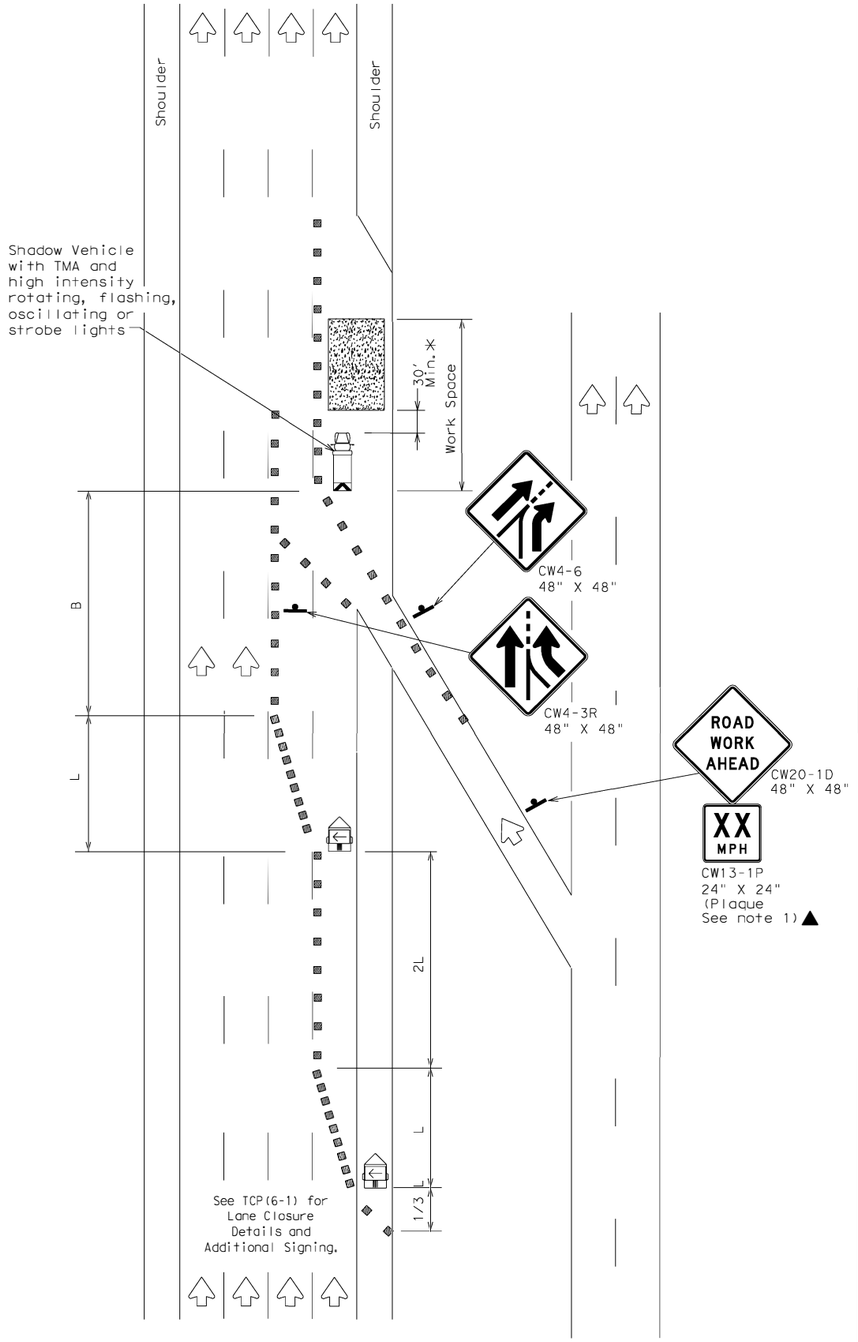
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA NEAR RAMP

TCP(6-2)-12

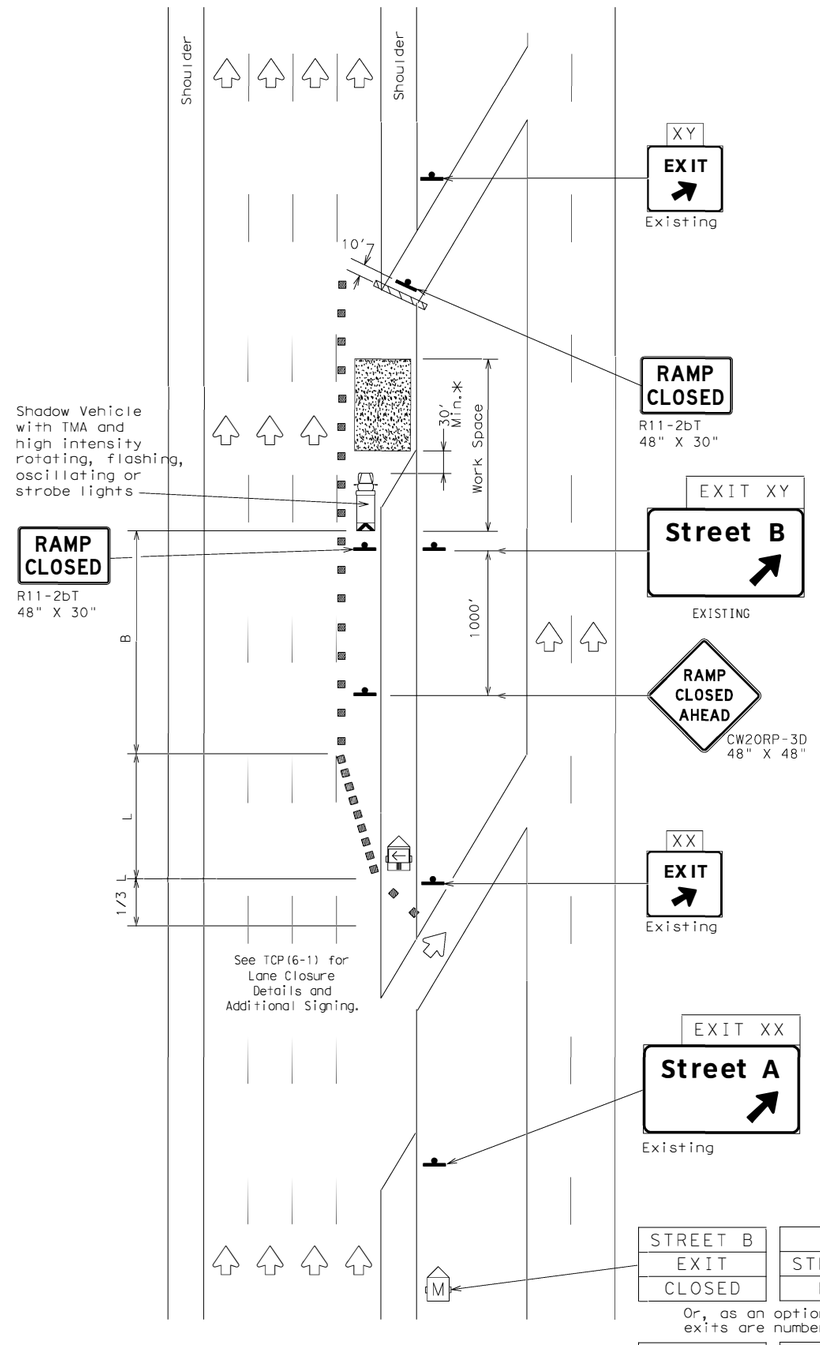
FILE: tcp6-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	AUS	TRAVIS		36

DATE:
FILE:



TCP (6-3a)

ENTRANCE RAMP OPEN



STREET B	USE
EXIT	STREET A
CLOSED	EXIT

Or, as an option when exits are numbered

EXIT XY	USE
CLOSED	EXIT XX

Place 1 mile (approx.) in advance of Street A exit.

TCP (6-3b)

EXIT RAMP CLOSED

TRAFFIC EXITS PRIOR TO CLOSED RAMP

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	(M)	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:

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.

✳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.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

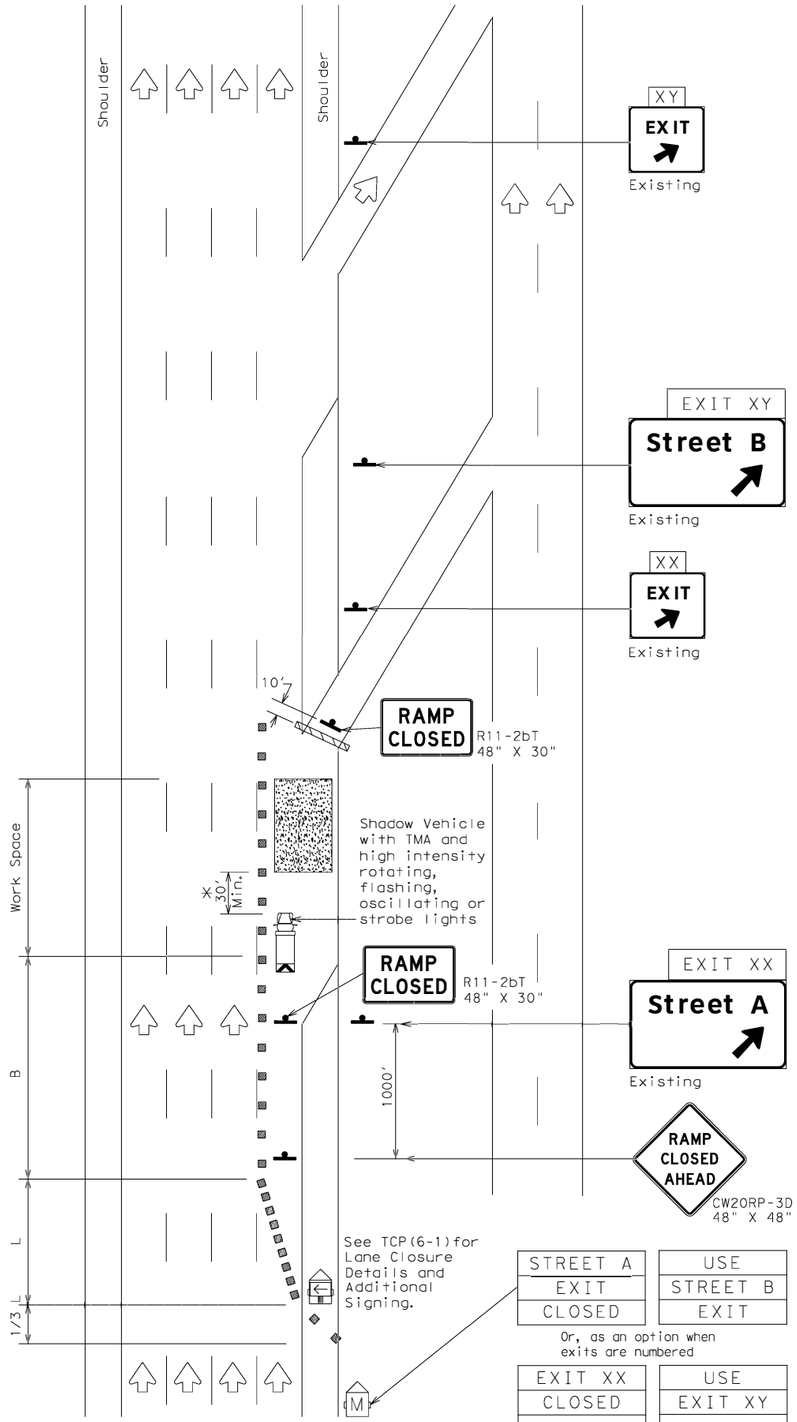
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND RAMP

TCP(6-3)-12

FILE: tcp6-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	AUS	TRAVIS		37

DATE:
FILE:



STREET A	USE
EXIT	STREET B
CLOSED	EXIT

Or, as an option when exits are numbered

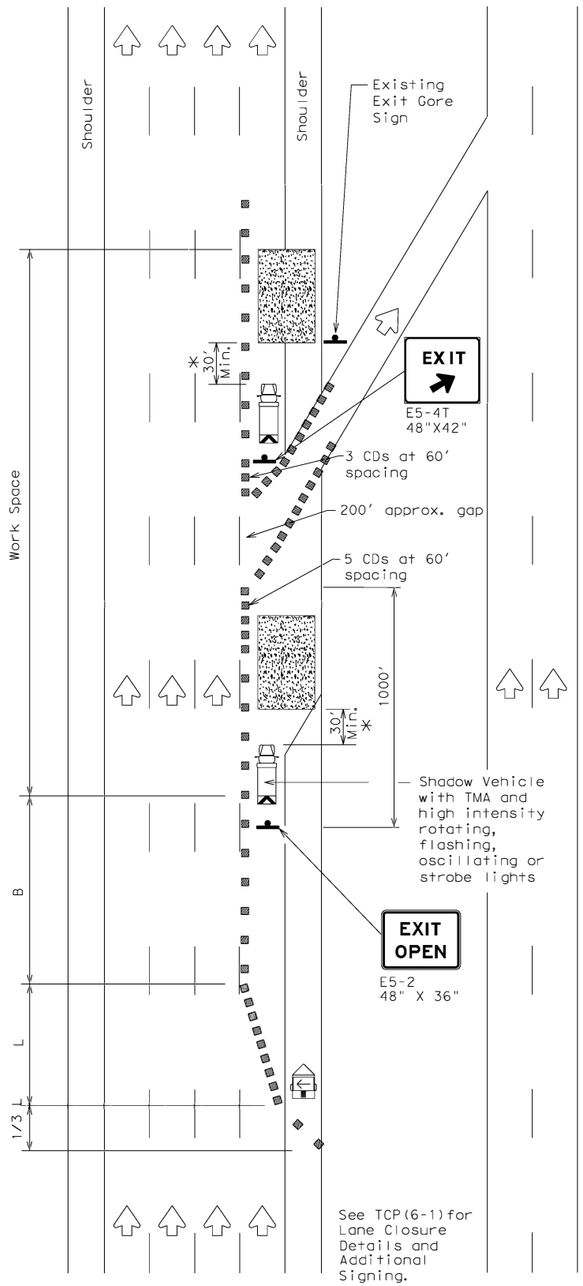
EXIT XX	USE
CLOSED	EXIT XY

Place 1 mile (approx.) in advance of closed ramp.

TCP (6-4a)

EXIT RAMP CLOSED

TRAFFIC EXITS PAST CLOSED RAMP



TCP (6-4b)

EXIT RAMP OPEN

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	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

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. See BC Standards for sign details.

* 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.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA AT EXIT RAMP

TCP(6-4)-12

FILE: tcp6-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1994	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	AUS	TRAVIS		38

DATE:
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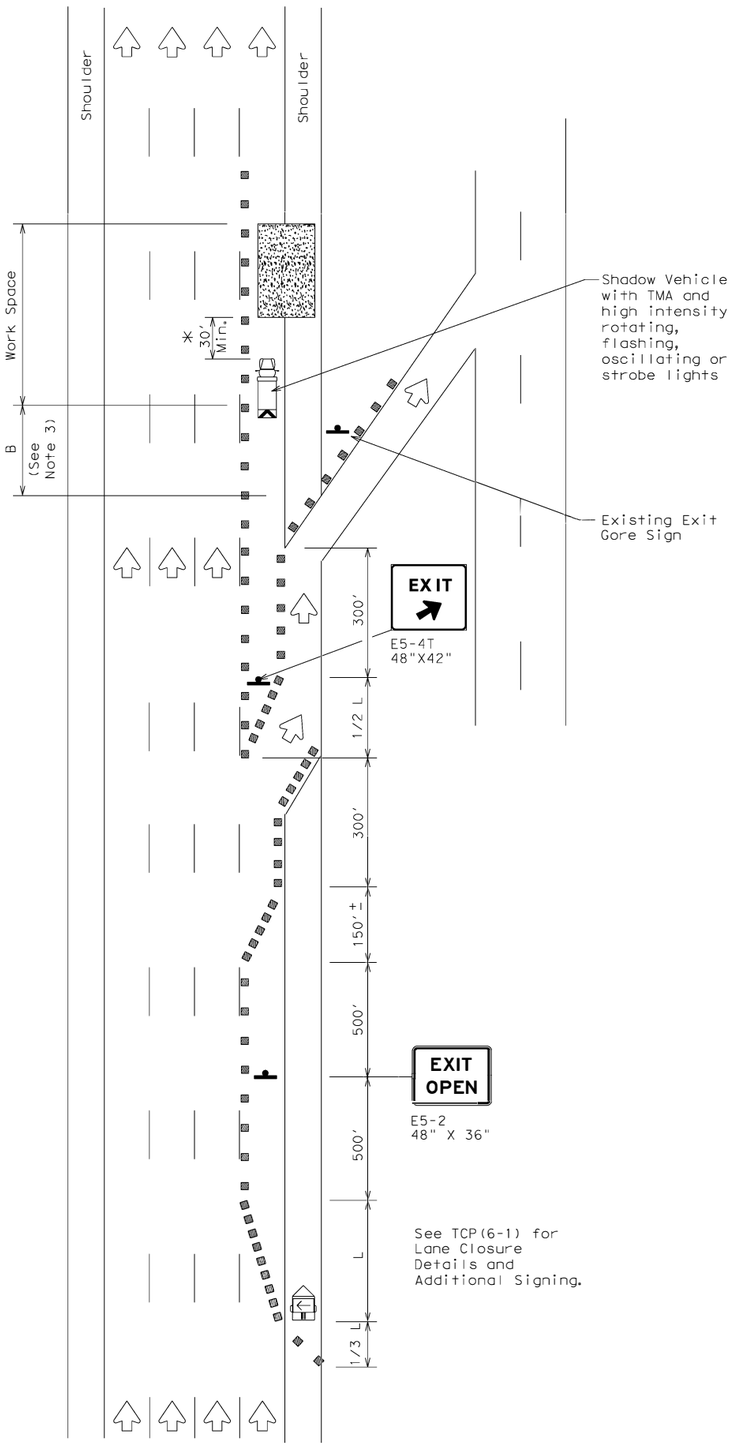
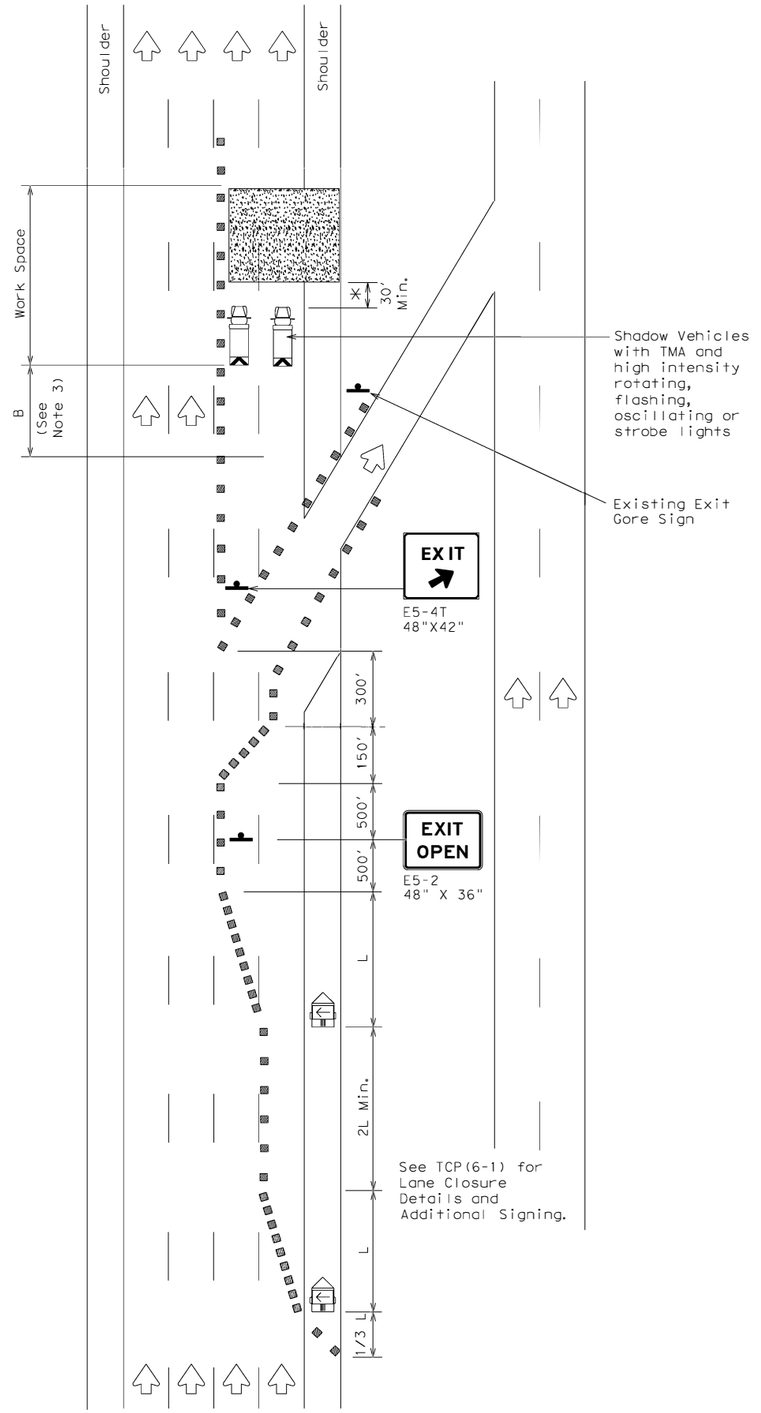


TCP (6-5a)

EXIT RAMP OPEN



TCP (6-5b)

EXIT RAMP OPEN
TWO LANE CLOSURE WITHIN
1500' PAST EXIT RAMP

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

Posted Speed	Formula	Minimum Desirable Taper Lengths "L" ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices: On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
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

1. All traffic control devices illustrated are REQUIRED. Devices denoted with the triangle symbol may be omitted when stated elsewhere in the plans.
2. See BC standards for sign details.
3. If adequate longitudinal buffer length "B" does not exist between the work space and the exit ramp, consideration should be given to closing the ramp.

* 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.

Additional requirements for lane closures and advance signing shall be as shown on TCP (6-1) or as directed by the Engineer.

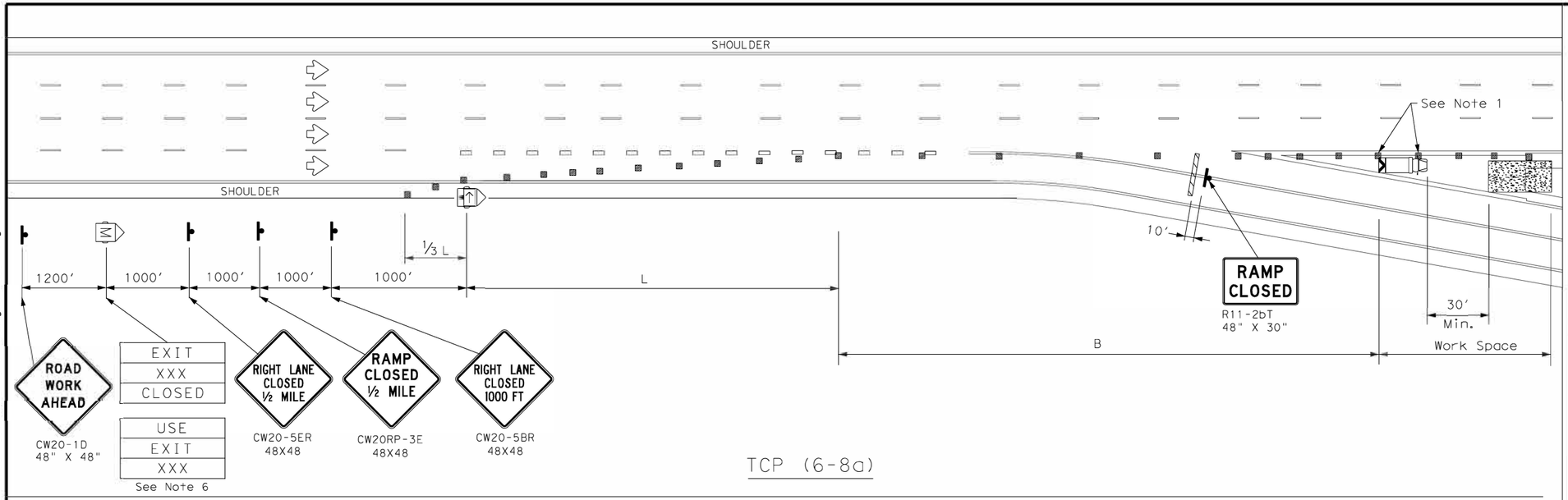
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
WORK AREA BEYOND EXIT RAMP

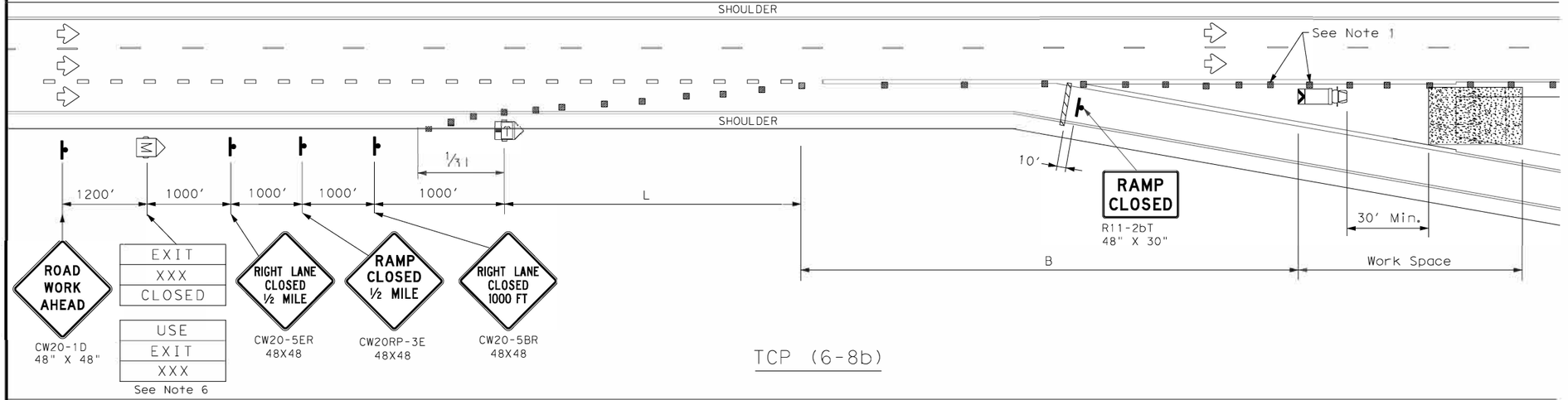
TCP(6-5)-12

FILE: tcp6-5.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT Feburary 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
1-97 8-98	DIST	COUNTY		SHEET NO.
4-98 8-12	AUS	TRAVIS		39

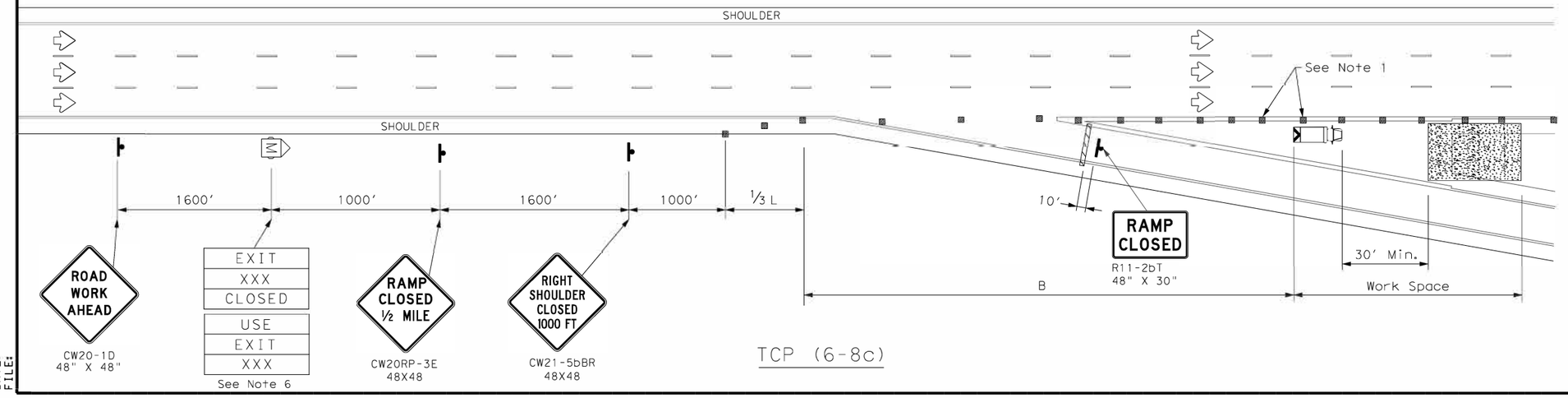
2b5205



TCP (6-8a)



TCP (6-8b)



TCP (6-8c)

DATE:
FILE:

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	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" ** 10′ Offset	11′ Offset	12′ Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Suggested Longitudinal Buffer Space "B"
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

1. Place channelizing devices in the gore at 20′ spacing.
2. See the Standard Highway Sign Design for Texas (SHSD) for sign details.
3. The PCMS may be omitted when a permanent DMS sign is available in an appropriate location to display a similar message as called for on the PCMS.
4. When it is determined that a through lane should be closed in addition to the exit ramp, refer to TCP(6-4) for traffic control details.
5. Truck mounted attenuator is required.
6. The PCMS may be omitted if replaced with a "RAMP CLOSED" AHEAD (CW20RP-3D) Sign.
7. Roadway ADT should be greater than 10,000.

Texas Department of Transportation

Traffic Operations Division Standard

WORK IN EXIT GORE FOR ADT GREATER THAN 10,000

TCP(6-8)-14

FILE: tcp6-8.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		40

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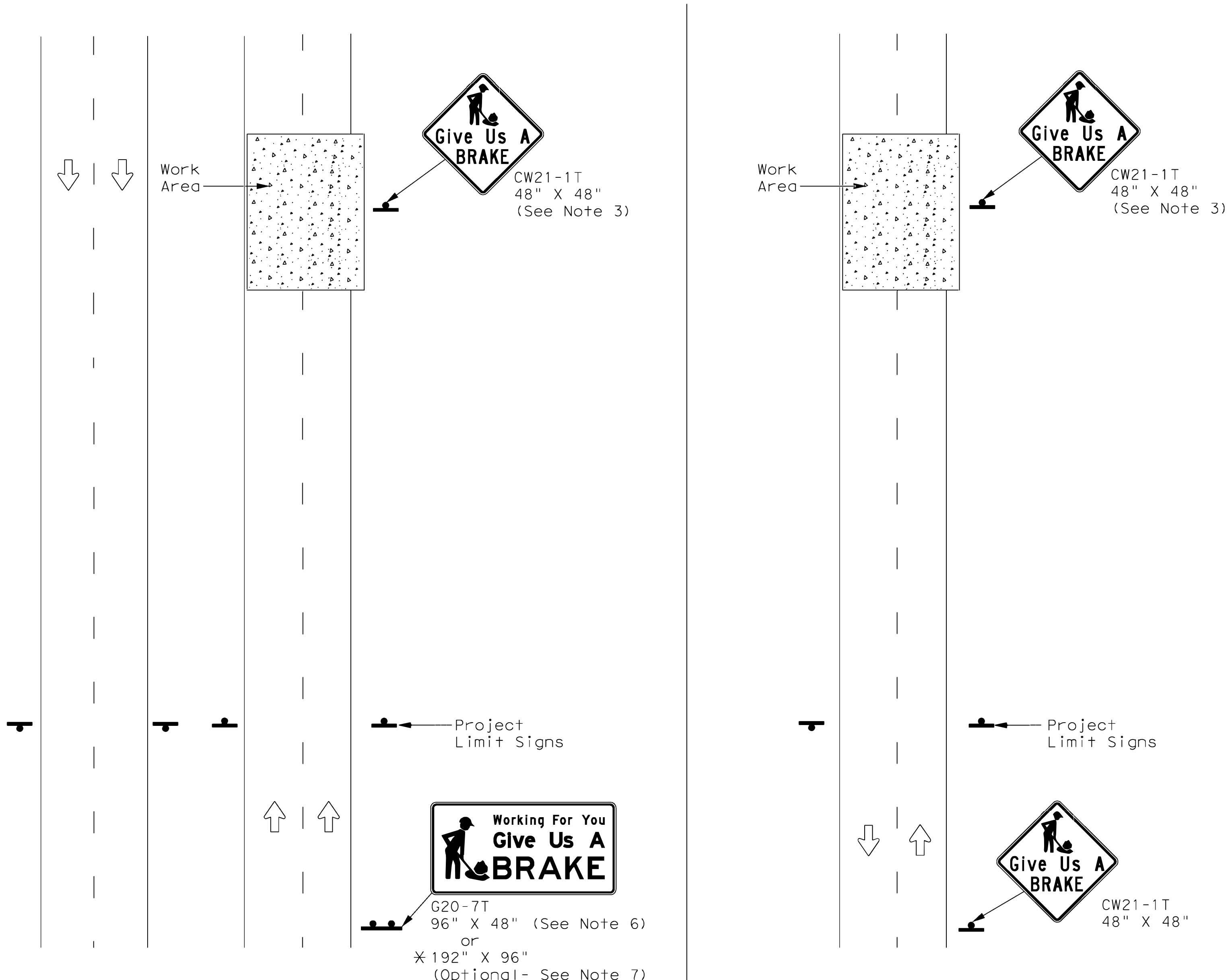

DIVIDED HIGHWAY

UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

✱ When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL Size	(LF) ①	(LF) ②	DRILLED SHAFT 24" DIA. (LF)
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND

Symbol	Meaning
┸	Sign
┸┸	Large Sign
⇦	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS

PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.

2. Sign locations shall be approved by the Engineer.

3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.

4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.

5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."

6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.

7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   - Item 636 - Aluminum Signs
   - Item 647 - Large Roadside Sign Supports and Assemblies.
   - Item 416 - Drilled Shaft Foundations

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.

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	6340	46	001	SH 130
6-96 5-98 7-13	DIST		COUNTY	SHEET NO.
8-96 3-03	AUS		TRAVIS	41

161

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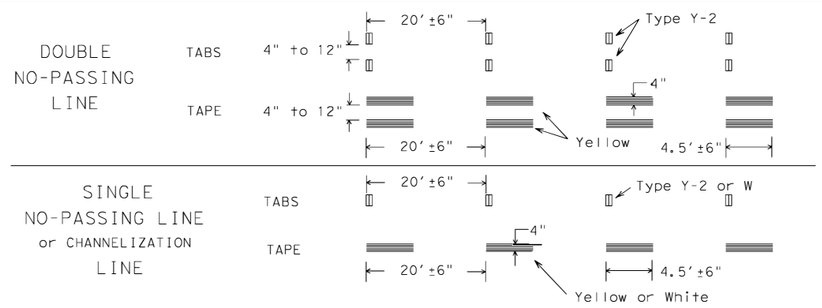
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



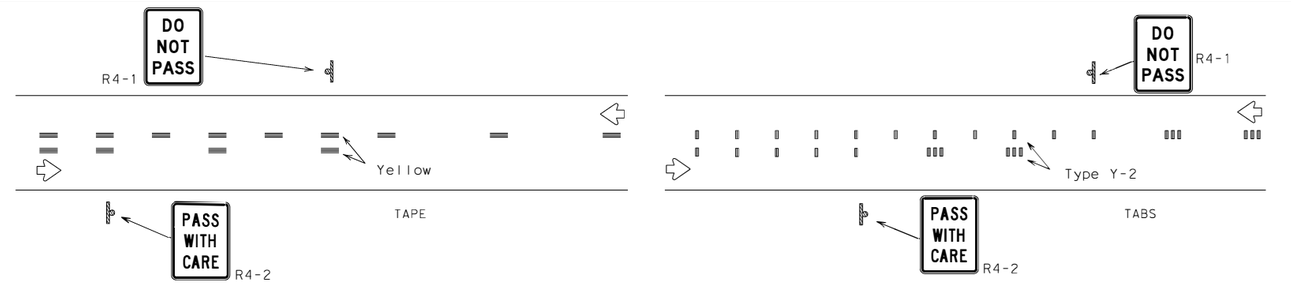
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible-reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

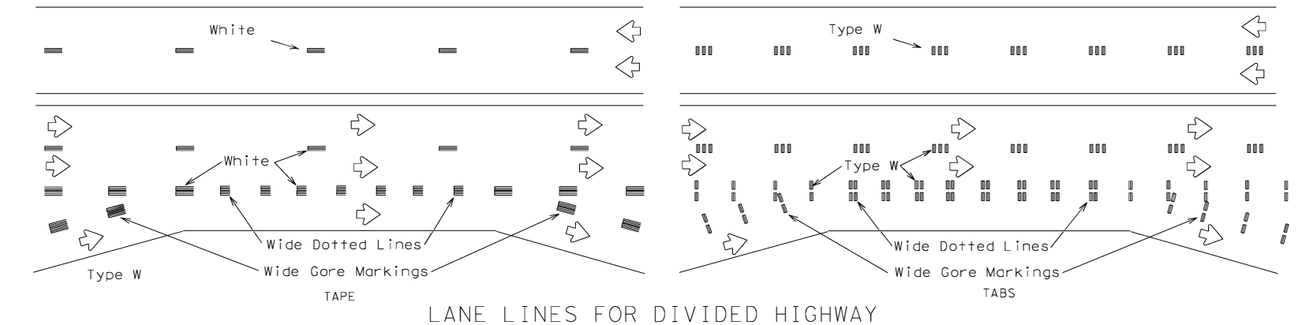
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

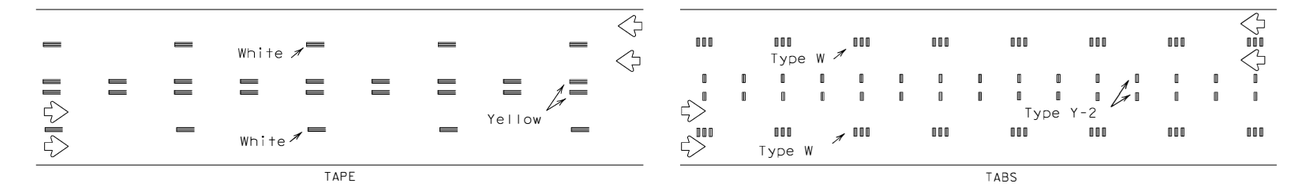
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



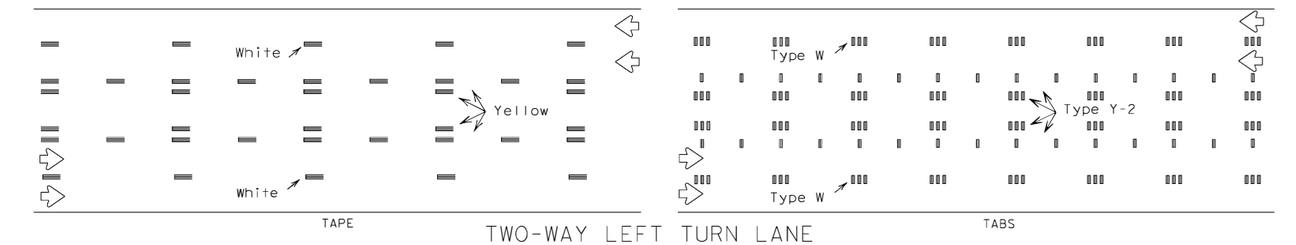
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



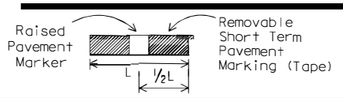
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Costruction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:
   http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-13

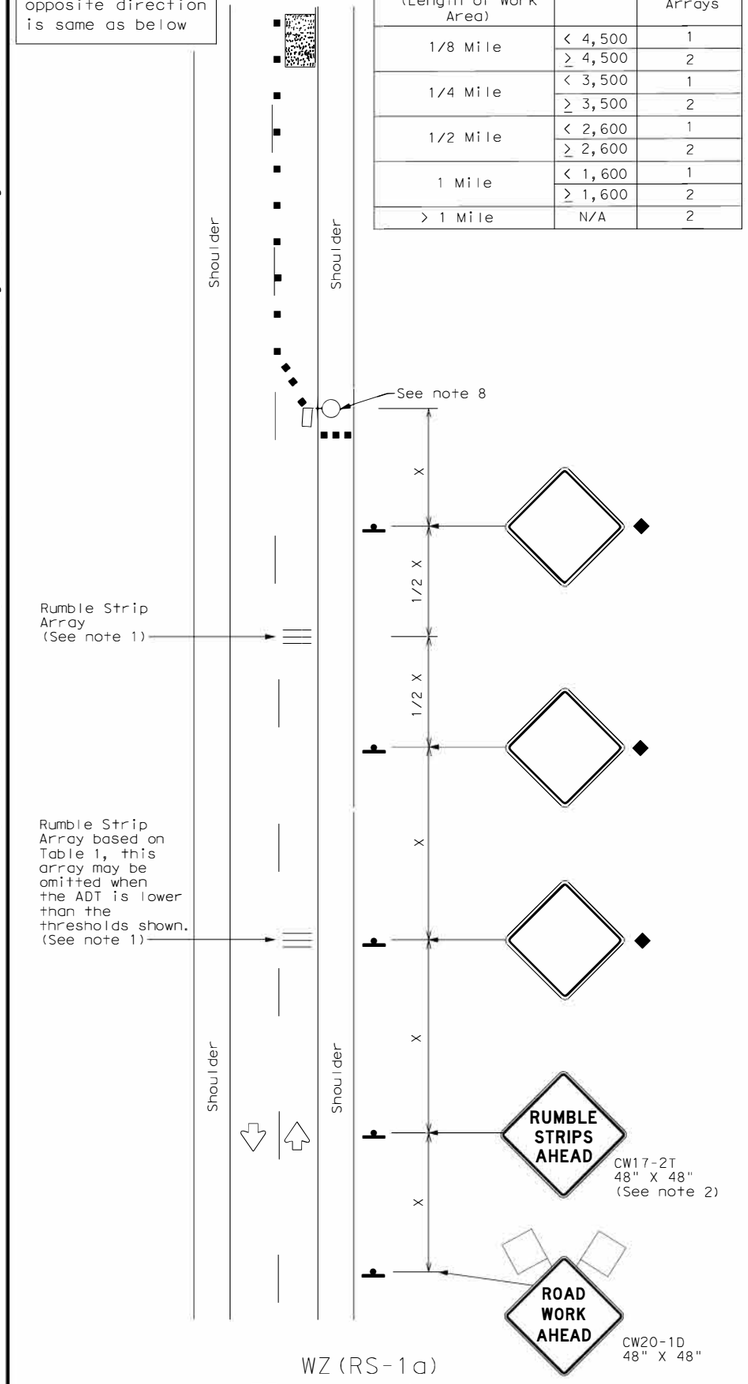
FILE:	wzstpm-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS		6340	46	001	SH 130
1-97		DIST	COUNTY		SHEET NO.
3-03		AUS	TRAVIS		42
7-13					

111

DATE:
FILE:

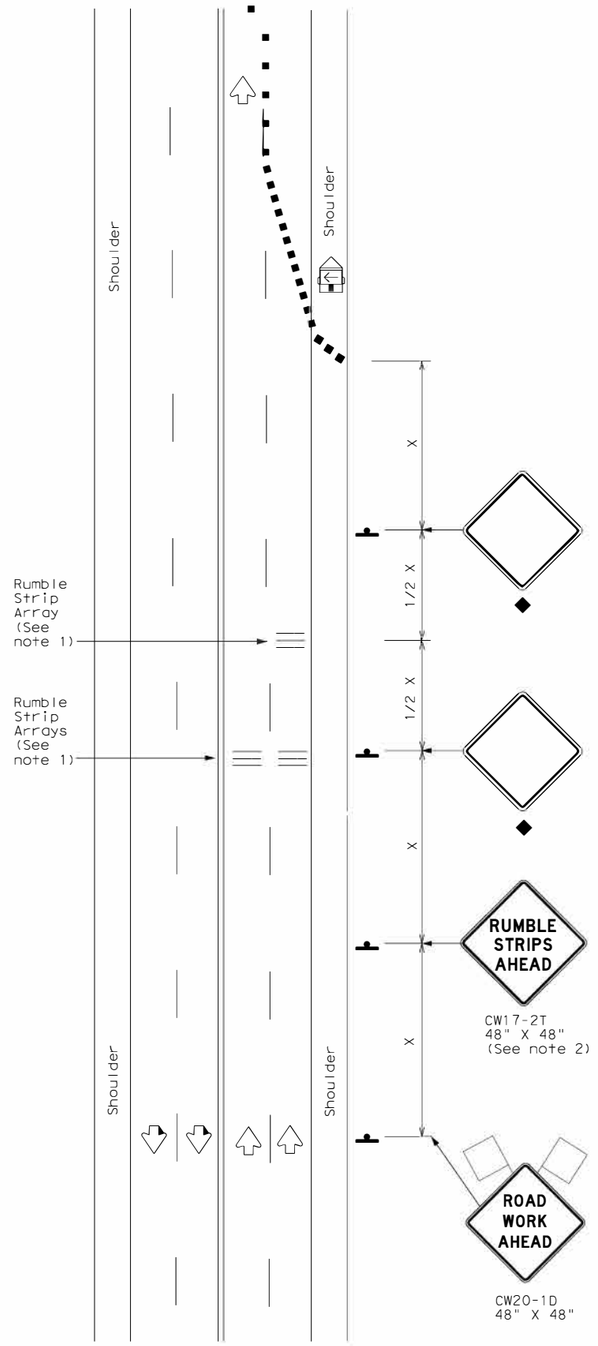
Warning sign and rumble strip sequence in opposite direction is same as below

TABLE 1		
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



WZ(RS-1a)
75 mph or Less

RUMBLE STRIPS ON ONE-LANE
TWO-WAY APPLICATION



WZ(RS-1b)
75 mph or Less

RUMBLE STRIPS FOR LANE CLOSURE
ON CONVENTIONAL ROADWAY

GENERAL NOTES

1. 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.
2. 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.
3. Temporary Rumble Strips will be considered subsidiary to Item 502, and shall be a product listed on the Compliant Work Zone Traffic Control Devices.
4. Removal of the Temporary Rumble Strips should be accomplished before removing the advance warning signs.
5. Temporary Rumble Strips should not be used on horizontal curves, loose gravel, soft or bleeding asphalt, heavily rutted pavements or unpaved surfaces.
6. Temporary Rumble Strips shall be installed and maintained as per manufacturer's recommendations.
7. This standard sheet shall be used in conjunction with other appropriate TCP standard, TMUTCD typical application or project specific detail for the project.
8. The one-lane two-way application may utilize a flagger, an AFAD or a portable traffic signal.
9. Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment.

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
30	$L = \frac{WS^2}{60}$	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)

TYPICAL USAGE				
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.

TABLE 2	
Speed	Approximate distance between strips in an Array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
> 55 MPH	20'

Texas Department of Transportation

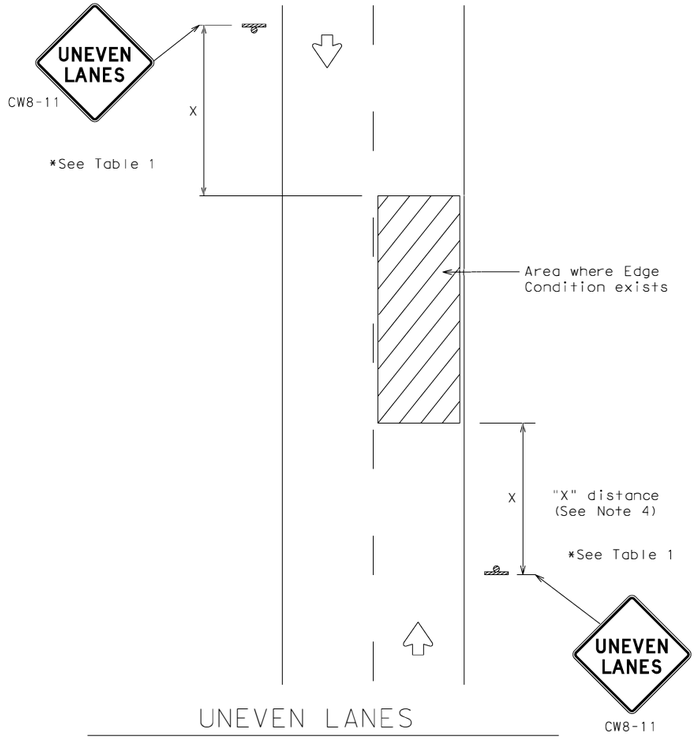
Traffic Operations Division Standard

TEMPORARY RUMBLE STRIPS

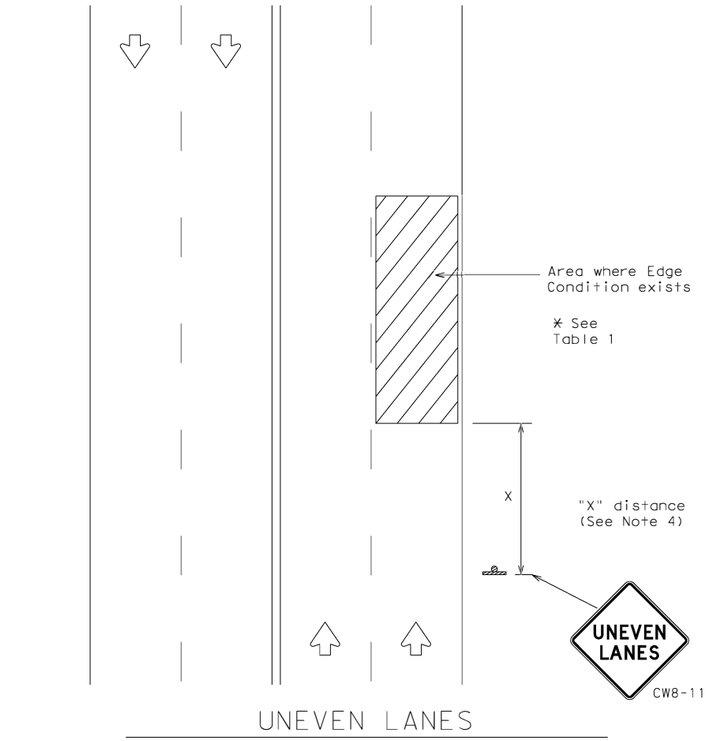
WZ(RS)-16

FILE: wzrs16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	53	001	SH 130
2-14	DIST	COUNTY		SHEET NO.
4-16	AUS	TRAVIS		43

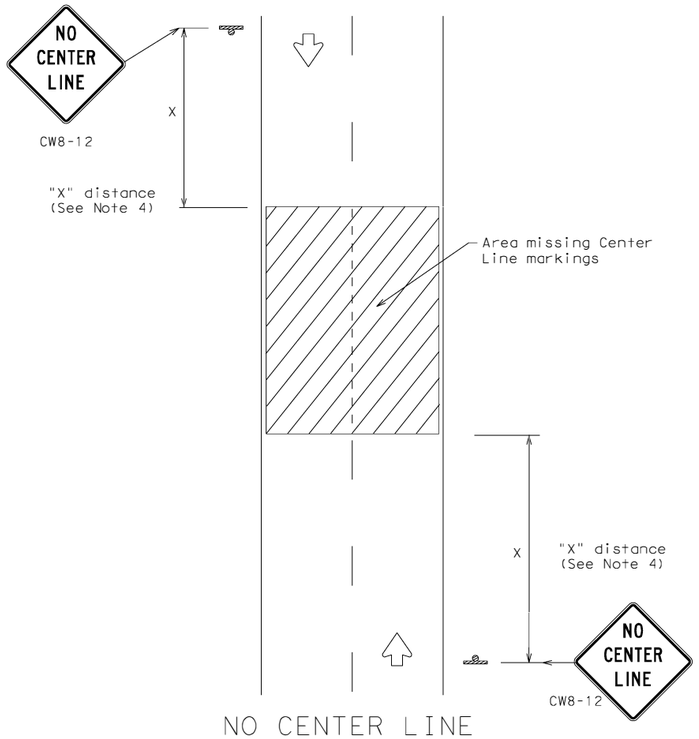
DATE:
FILE:



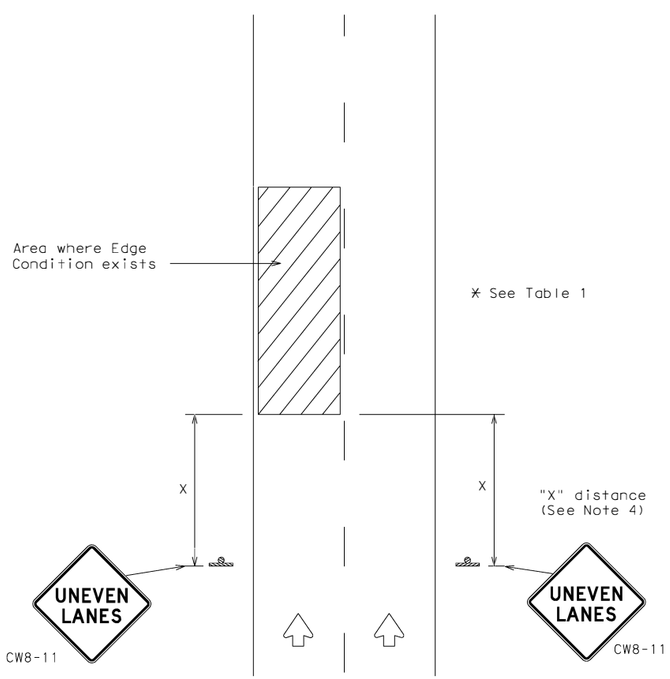
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

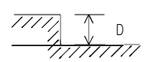
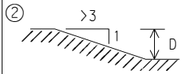
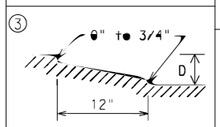
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL} SHEETING
BLACK	LEGEND & BORDERS	ACRYLIC NON-REFLECTIVE SHEETING

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	53	001	SH 130
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	AUS	TRAVIS		44

112

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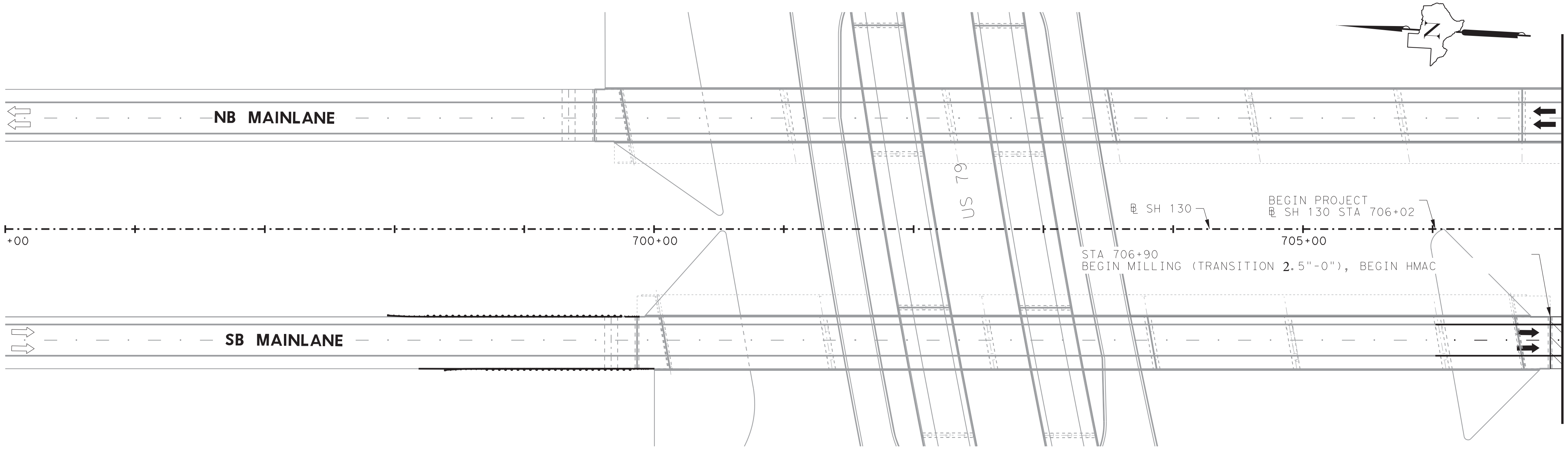

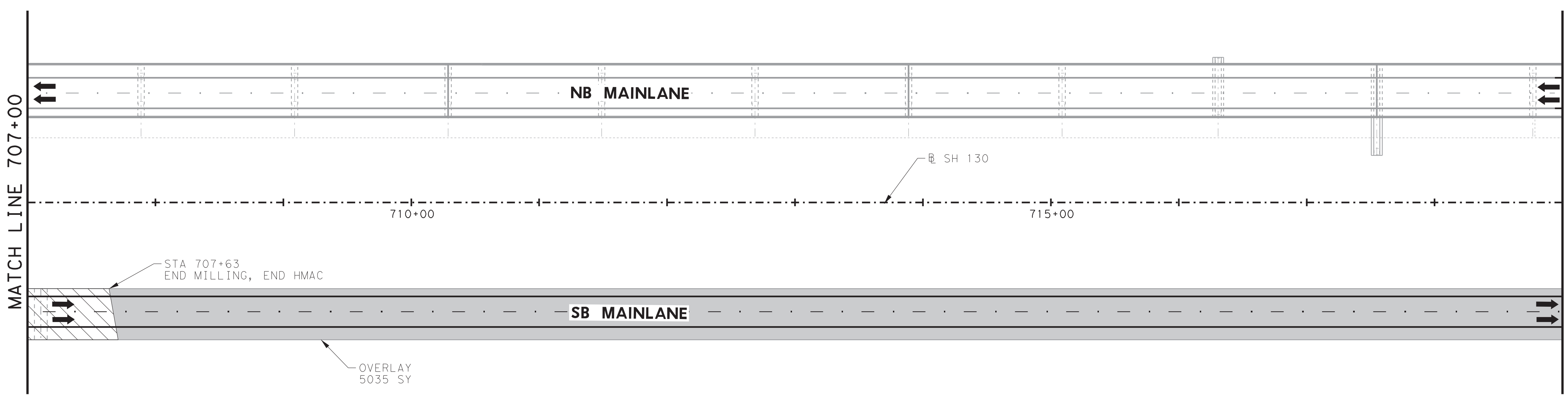

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED
PROFESSIONAL ENGINEER

OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 1 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
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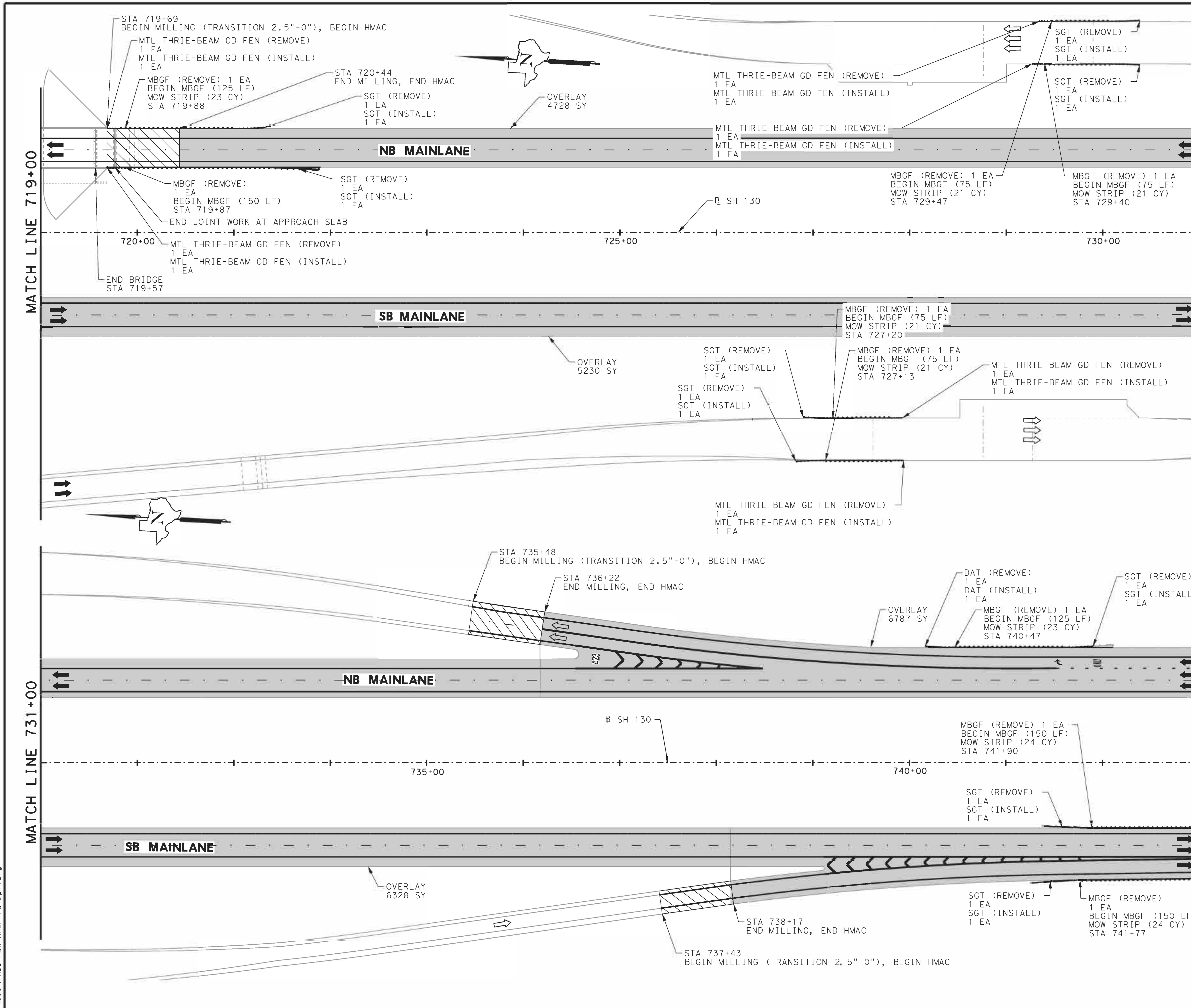

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LEGEND

OVERLAY

NOTES:

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ROADWAY LAYOUT

SHEET 2 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
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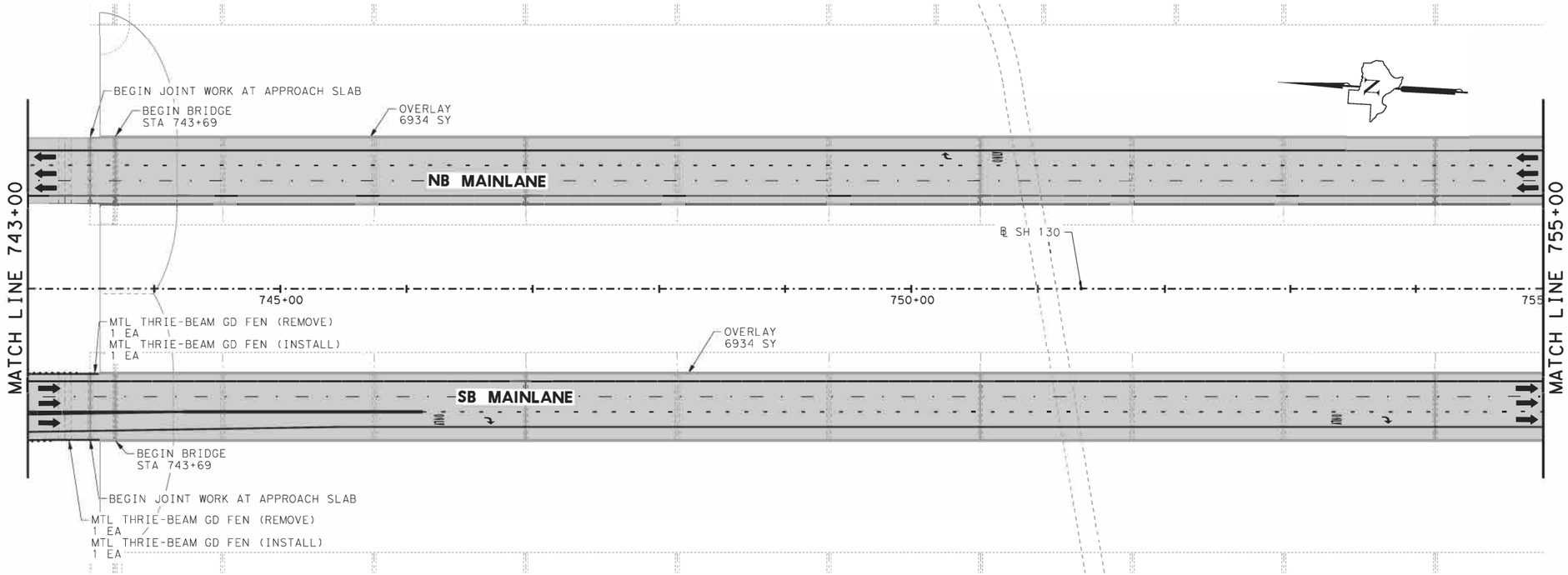

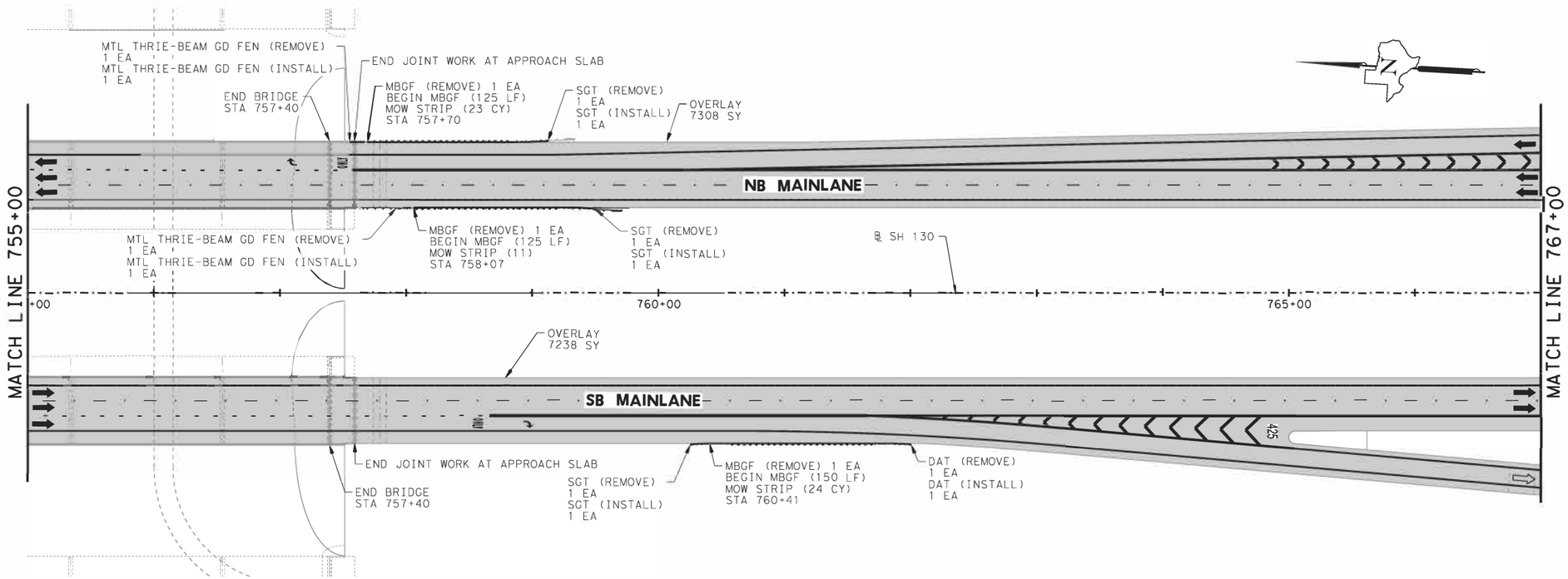

LEGEND

OVERLAY

NOTES:

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ROADWAY LAYOUT

SHEET 3 OF 32

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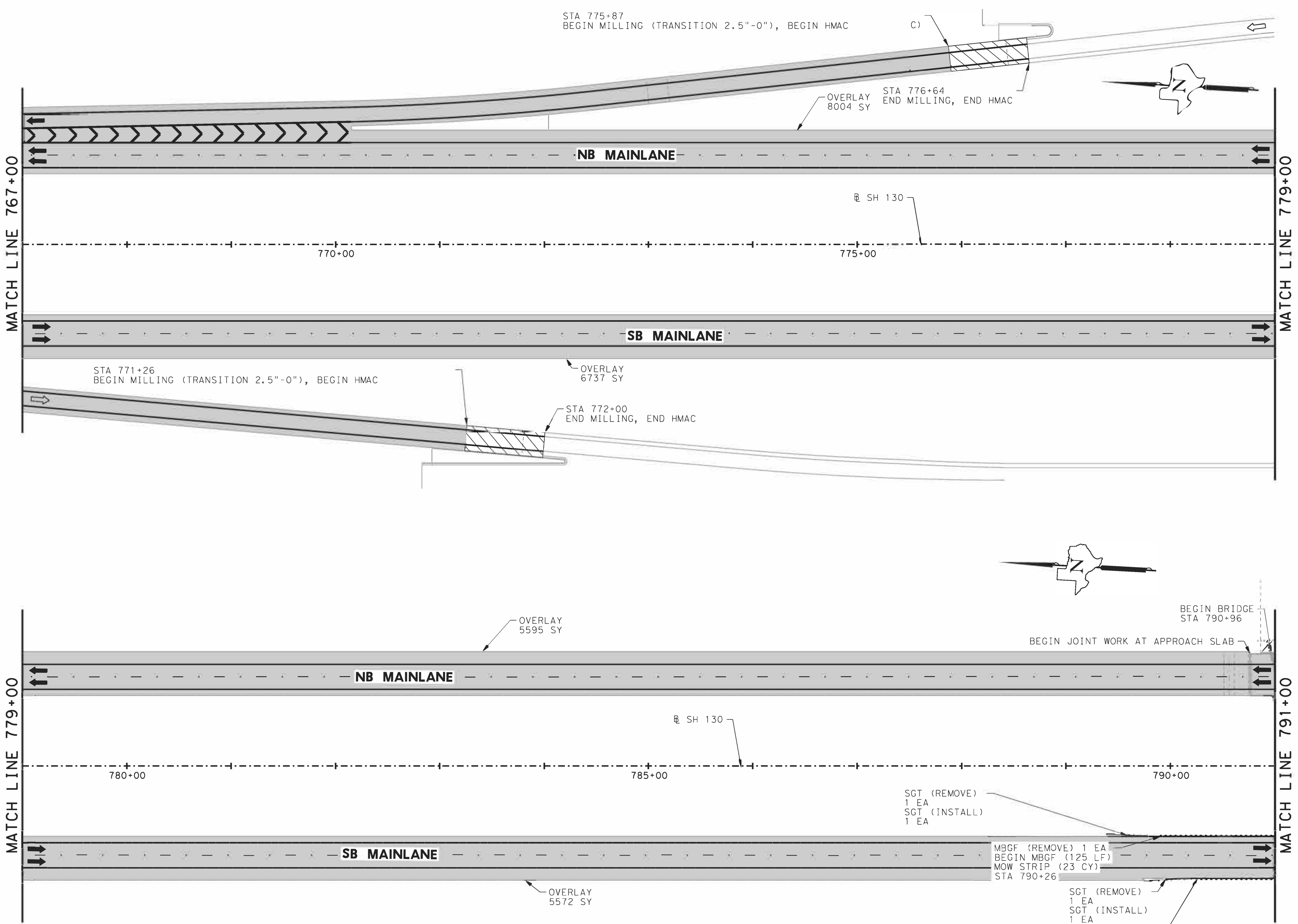

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ROADWAY LAYOUT

SHEET 4 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
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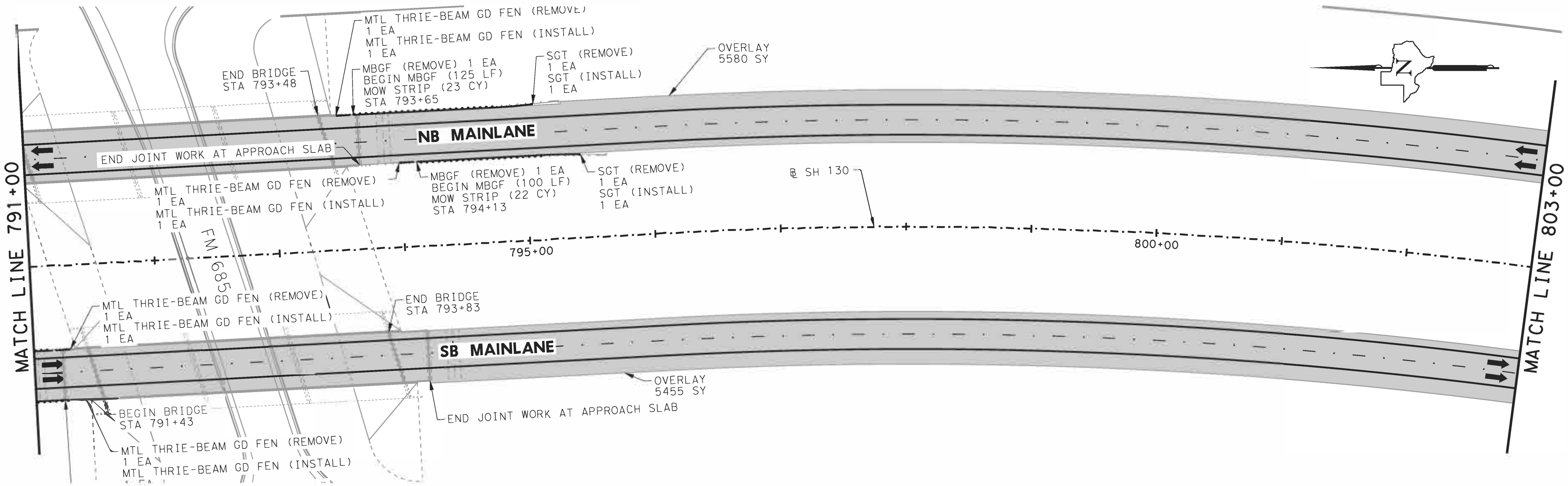

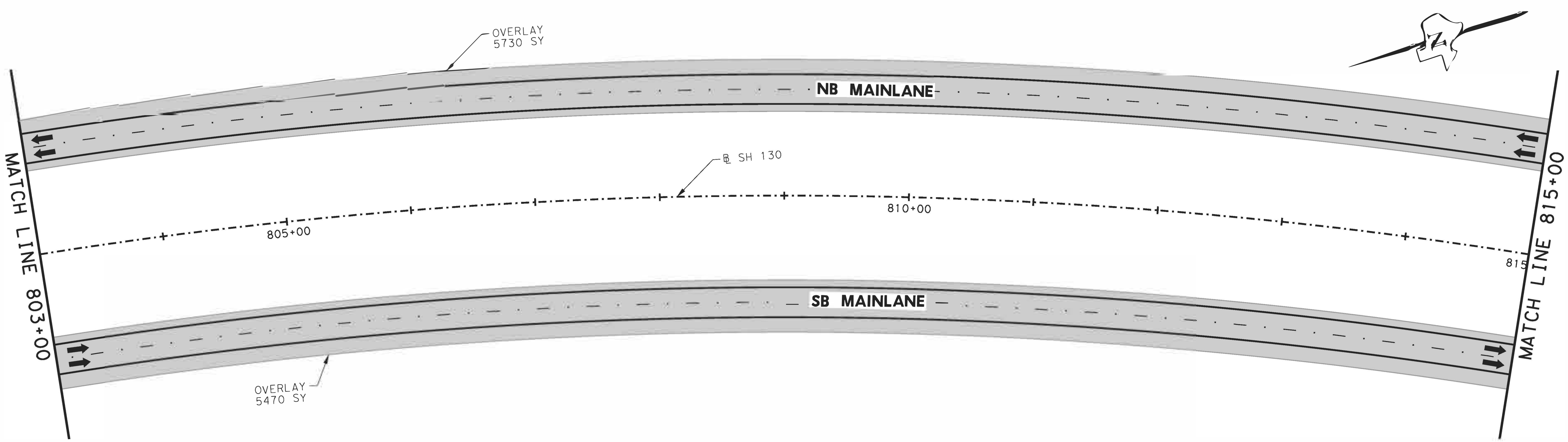

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NOTES:

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ROADWAY LAYOUT

SHEET 5 OF 32

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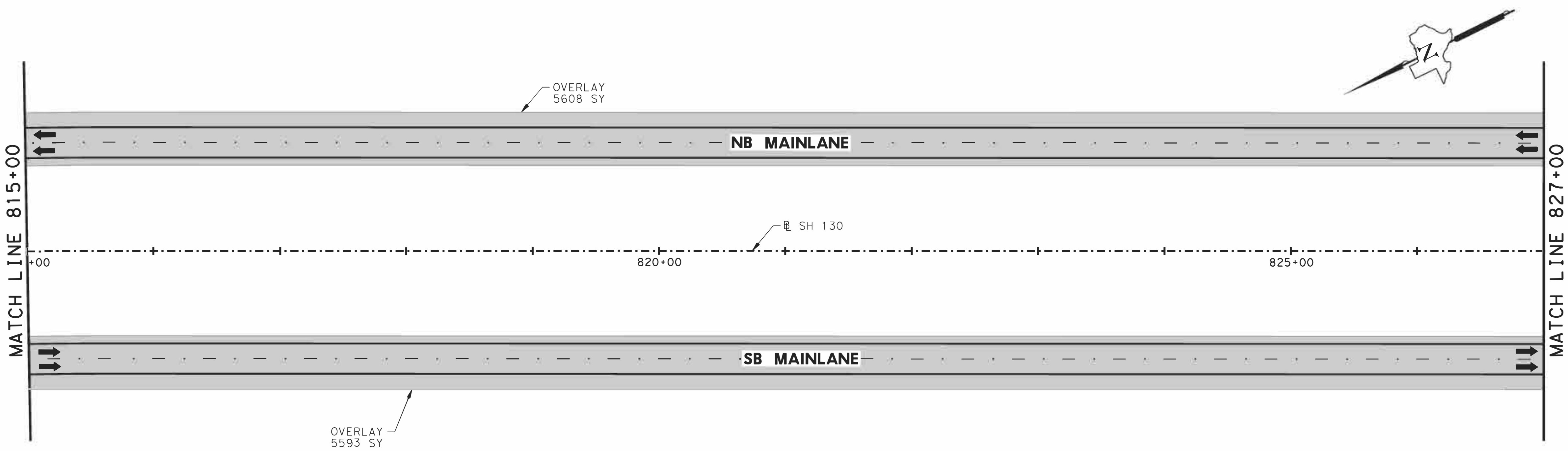

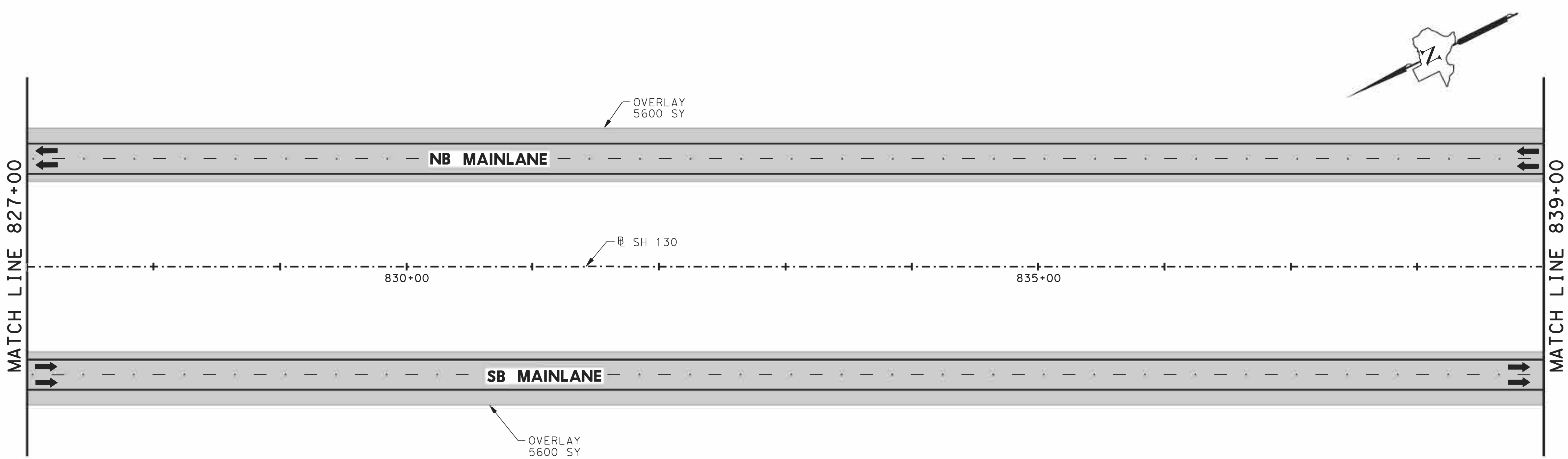

LEGEND

OVERLAY

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0 25 50 100

SCALE: 1"=100'

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ROADWAY LAYOUT

SHEET 6 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
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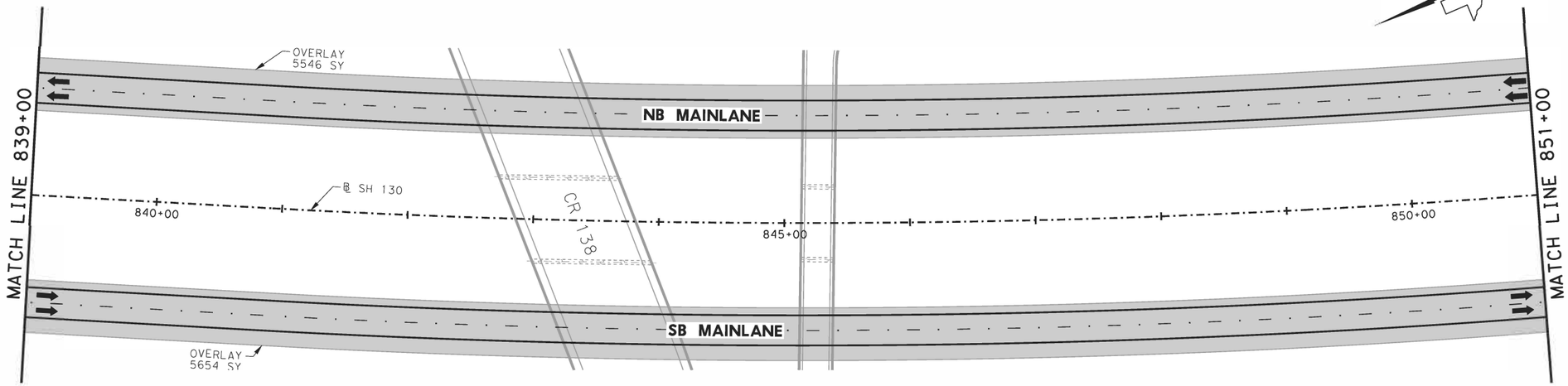

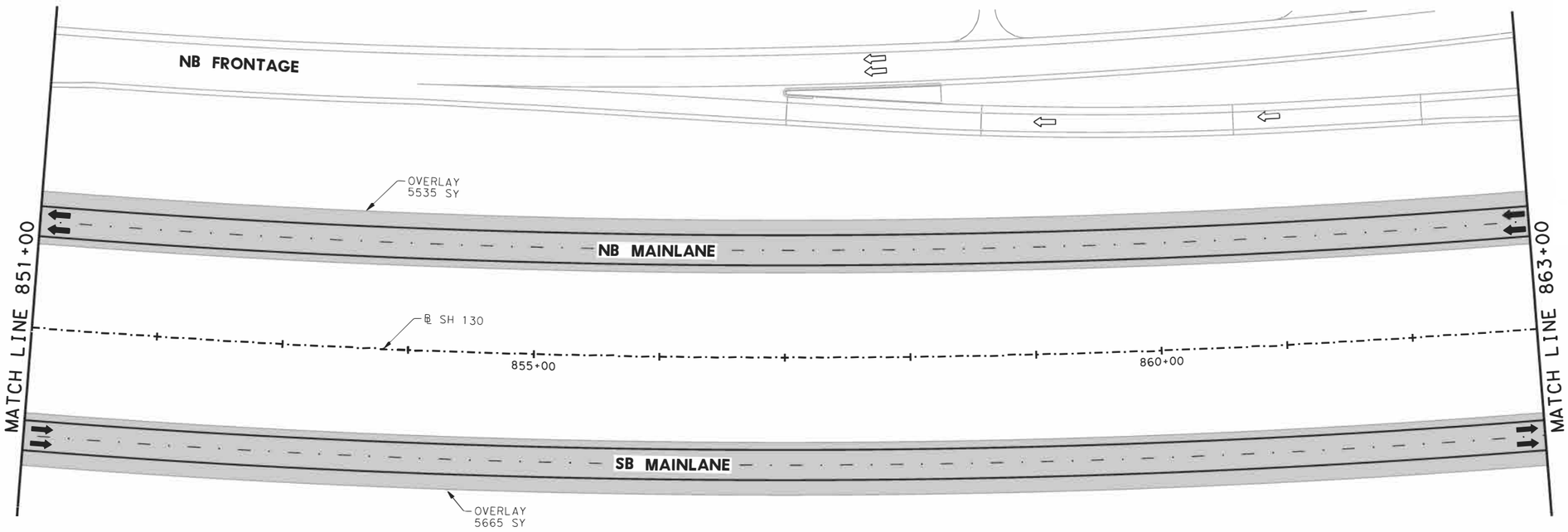

LEGEND

OVERLAY

NOTES:

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STATE OF TEXAS
OMAR XAVIER DE LEON
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OXD P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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281-945-0081 FX

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SH 130

ROADWAY LAYOUT

SHEET 7 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
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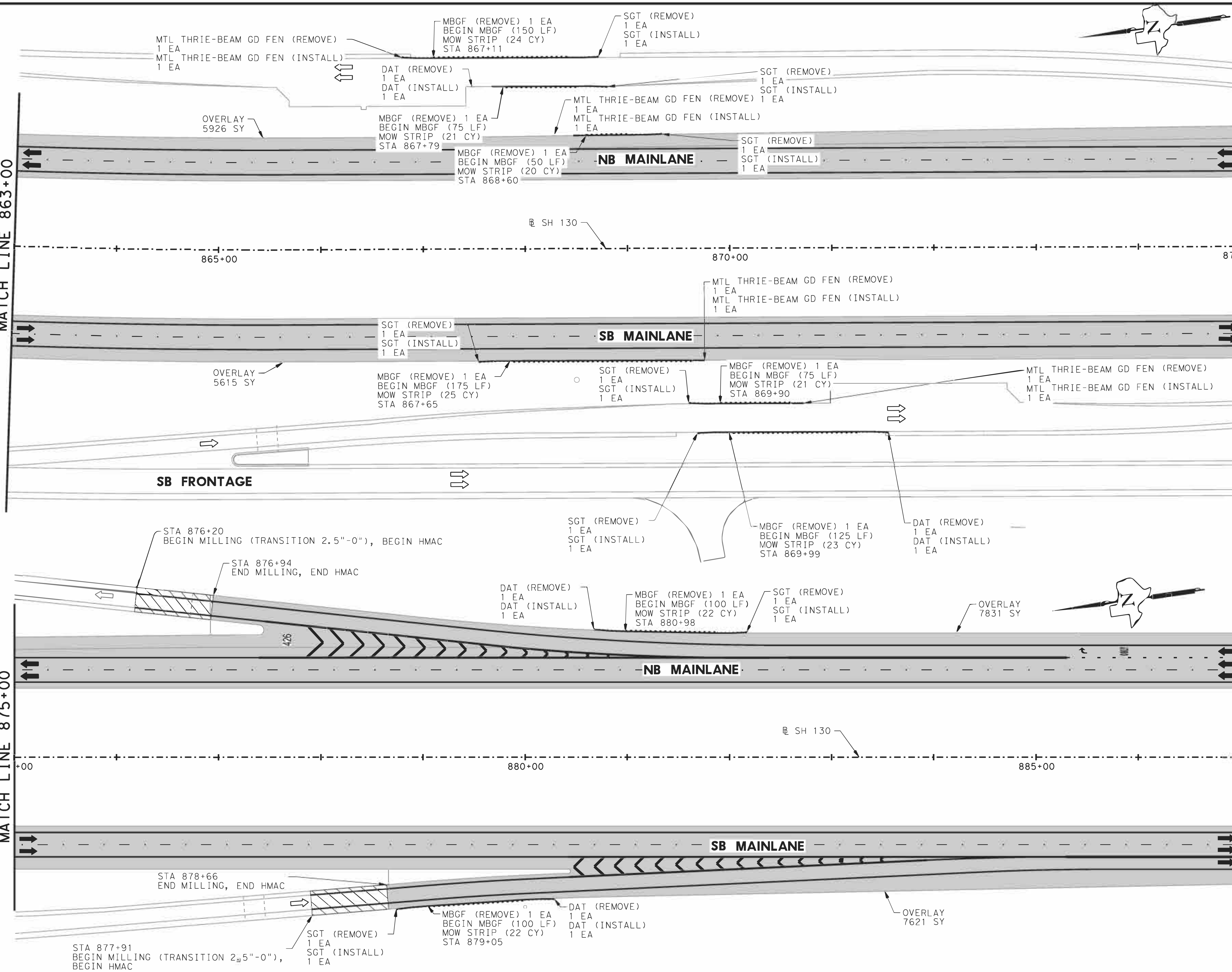

LEGEND

OVERLAY

NOTES:

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2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED PROFESSIONAL ENGINEER

P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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F-6932
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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 8 OF 32

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	CC	6	TEXAS				SH 130
CK DN:	JV	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	CC	AUS	TRAVIS	6340	46	001	52
CK DW:	JV						

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shernandez 11/2/2020 10:28:14 AM
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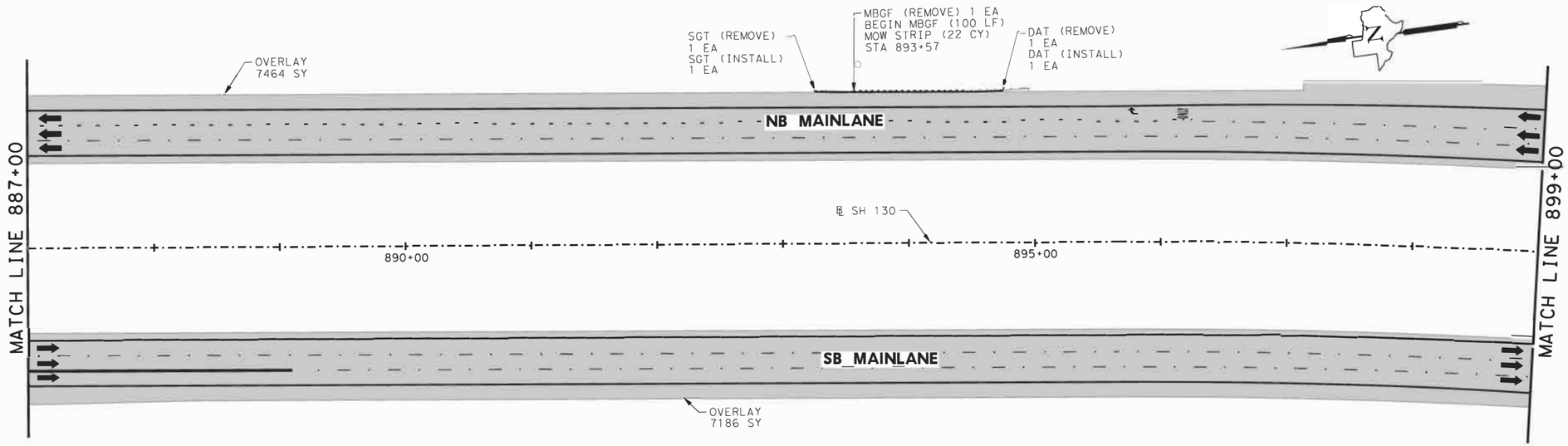

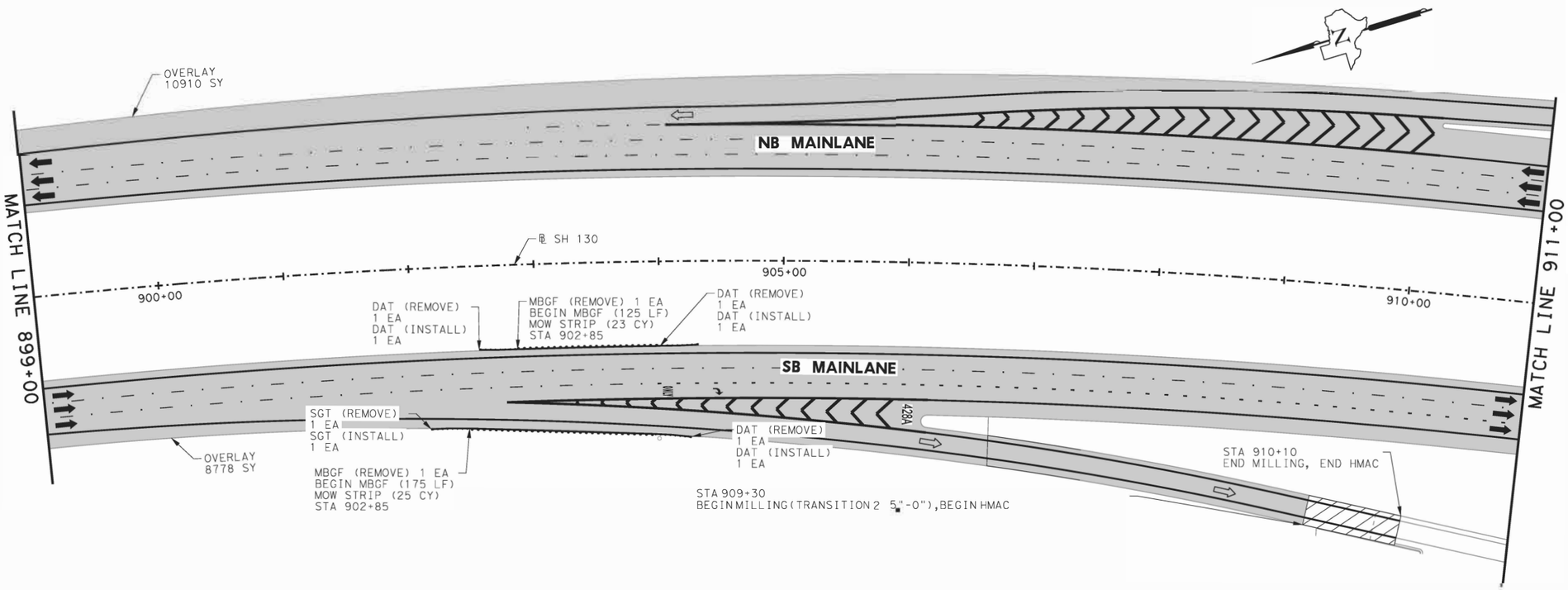

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED
PROFESSIONAL ENGINEER

OXD P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

ENTECH
CIVIL ENGINEERS INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 9 OF 32

DN:	CC
CK DN:	JV
DW:	CC
CK DW:	JV

FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS				SH 130
STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
AUS	TRAVIS	6340	46	001	53

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shernandez
11/2/2020 10:28:15 AM
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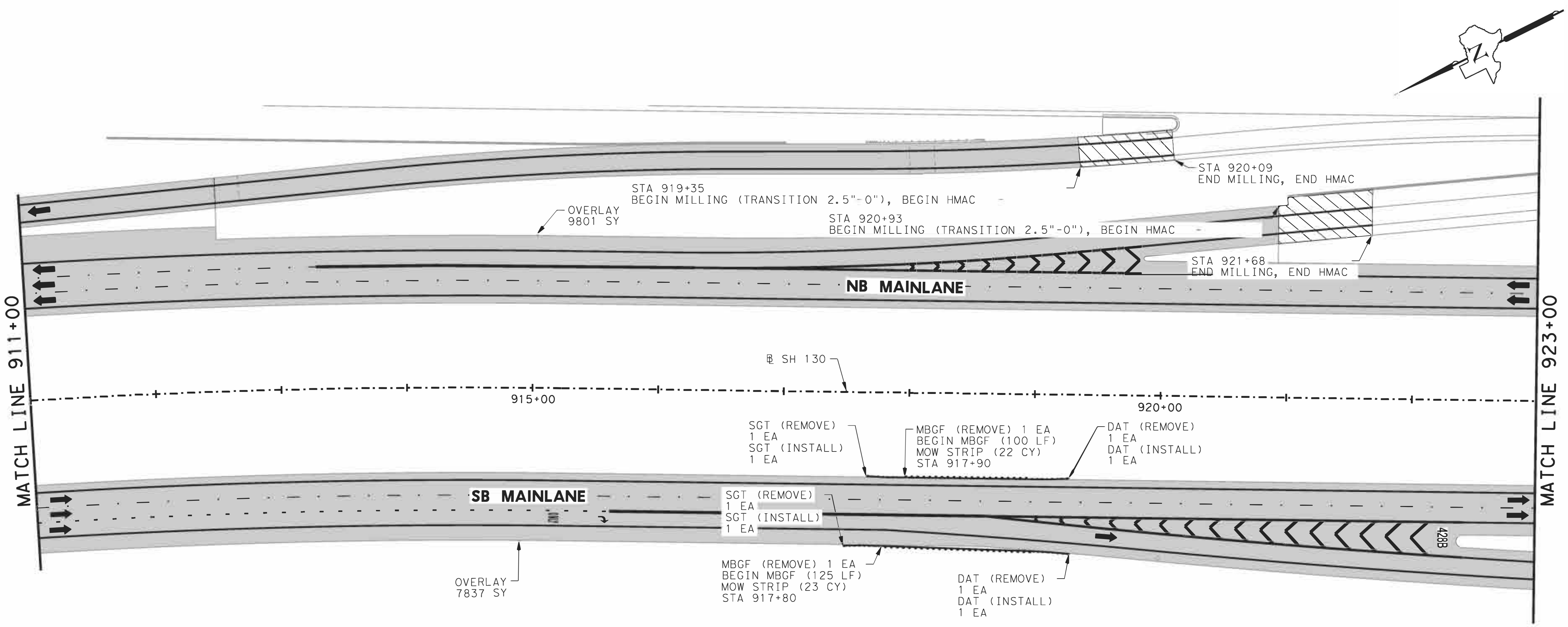

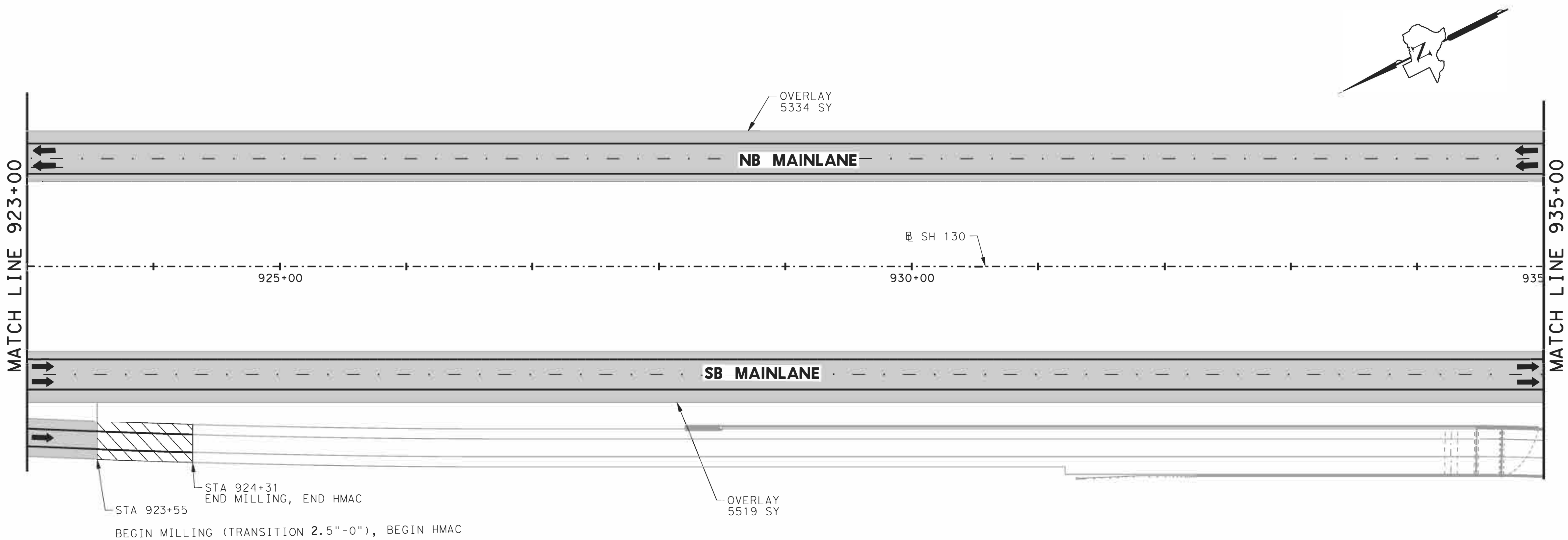

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
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0 25 50 100
SCALE: 1"=100'

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281-945-0081 FX

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SH 130

ROADWAY LAYOUT

SHEET 10 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	54

shernandez
11/2/2020 10:28:17 AM
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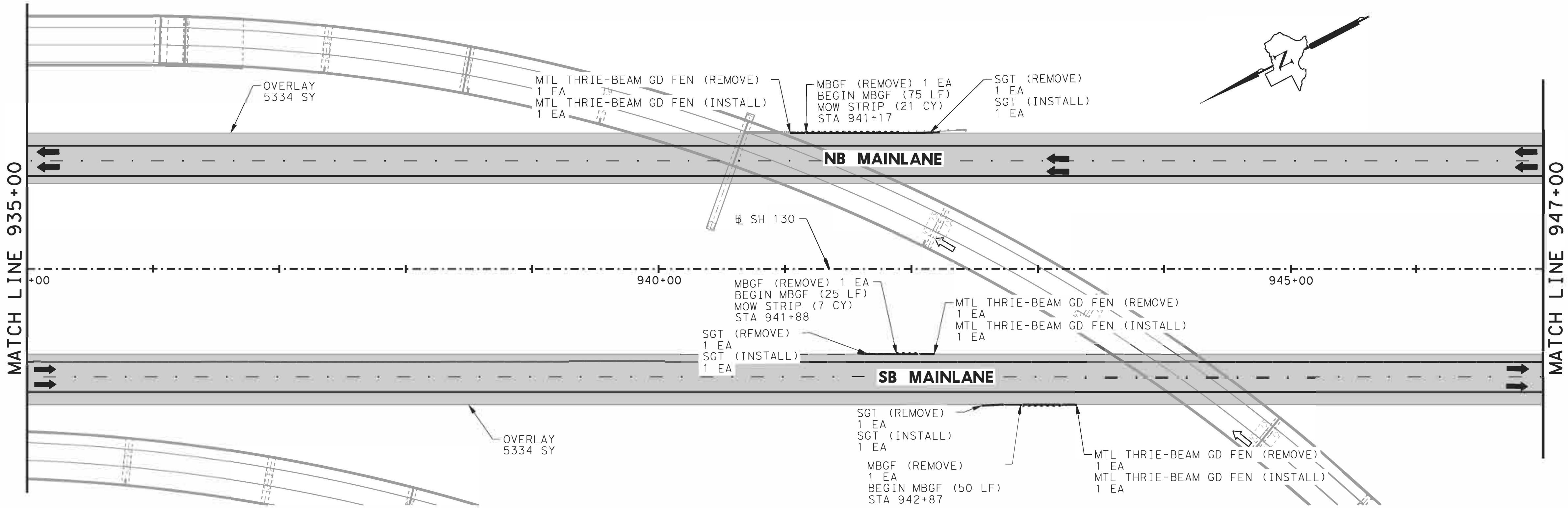

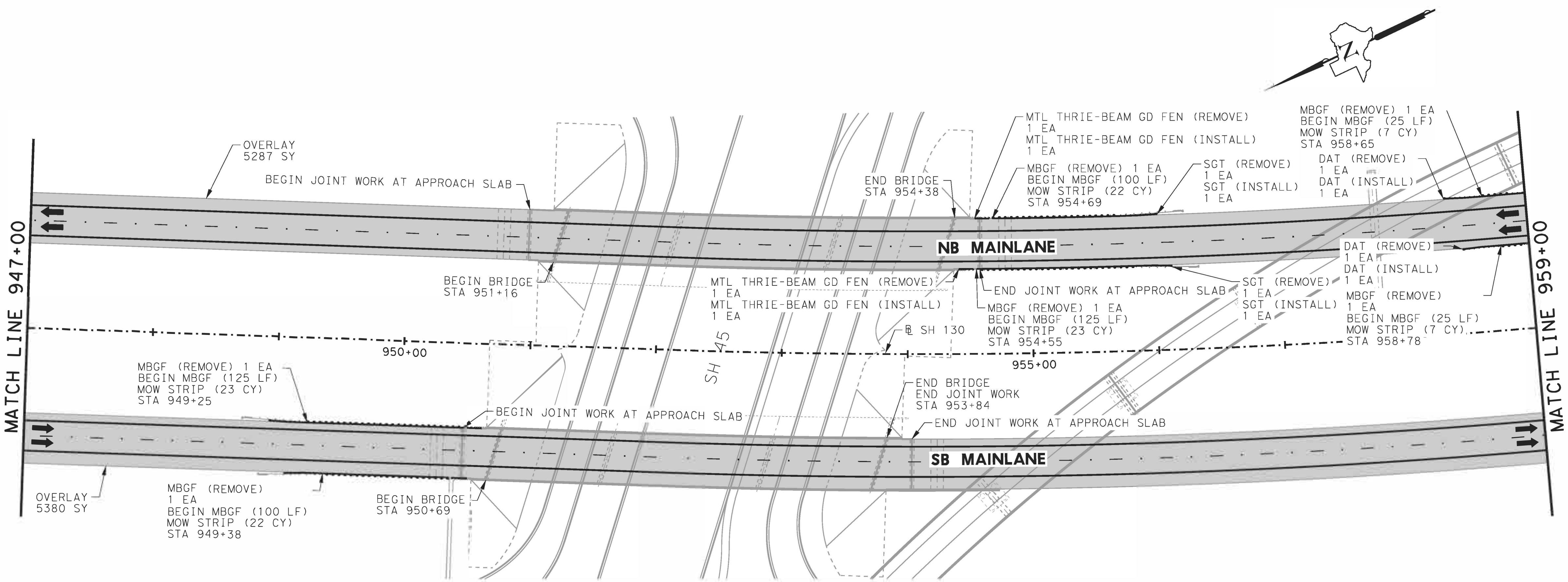

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

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0 25 50 100
SCALE: 1"=100'

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SH 130

ROADWAY LAYOUT

SHEET 11 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	55

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shernandez
11/2/2020 10:28:18 AM
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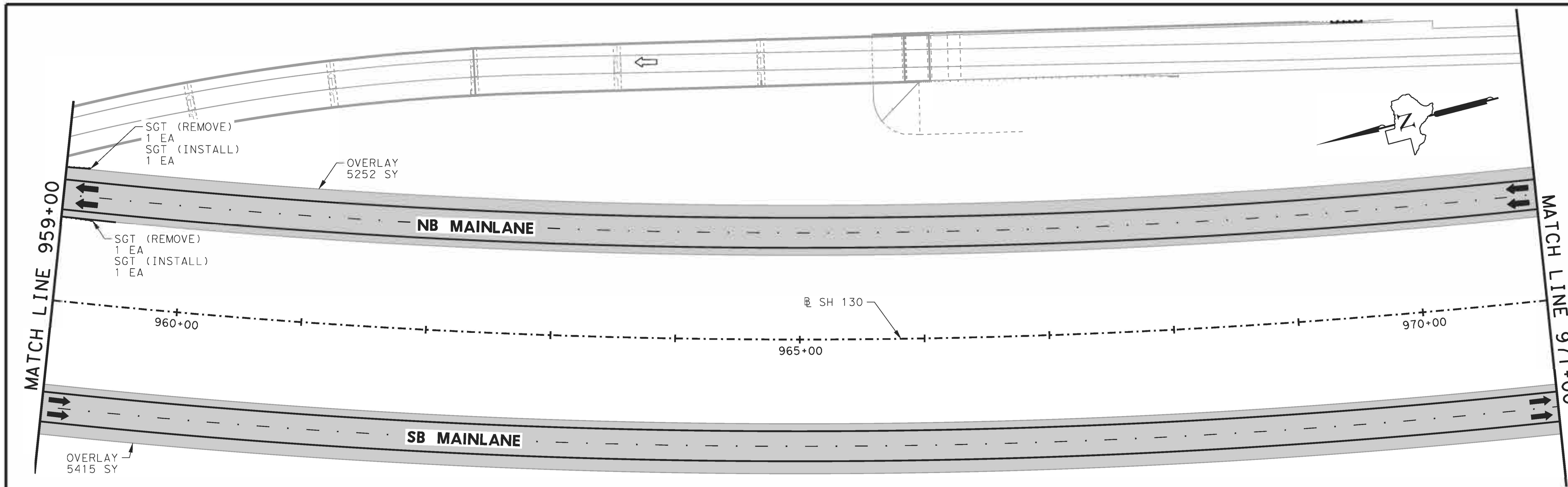
100% SUBMITTAL

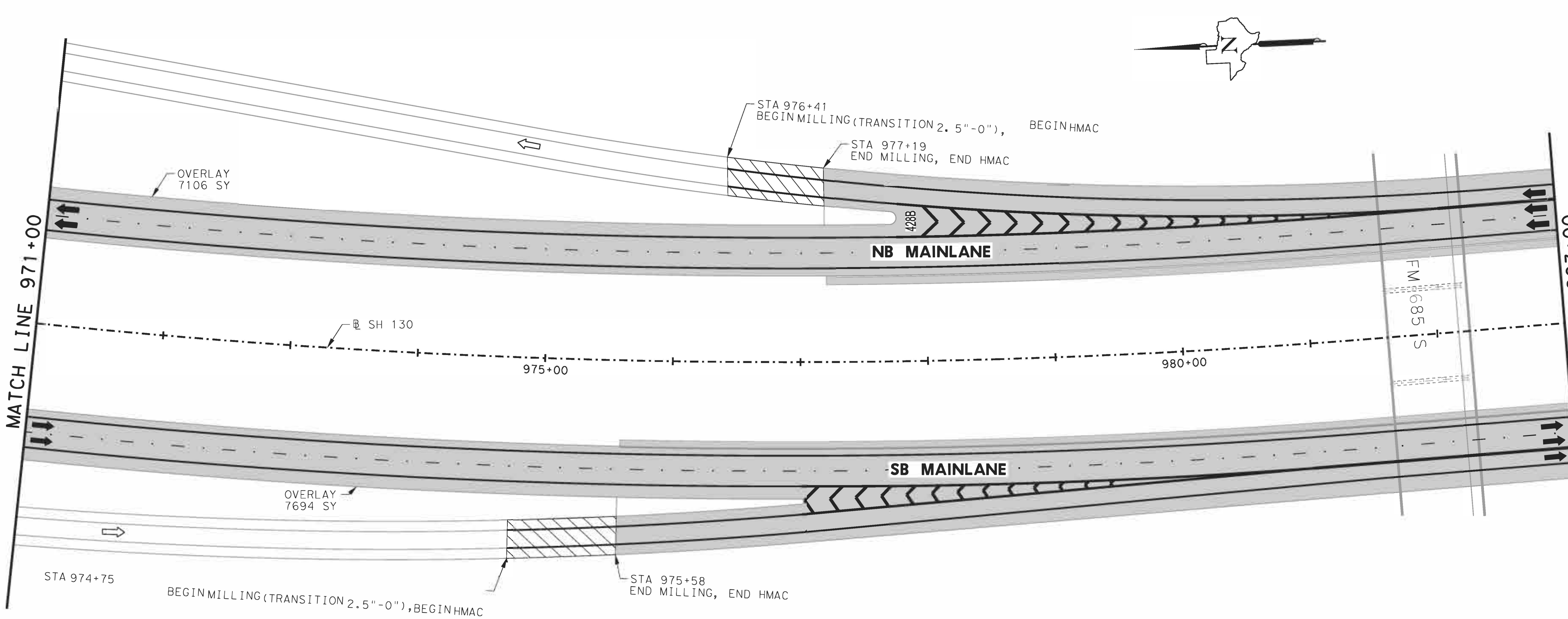


LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL



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0 25 50 100
SCALE: 1"=100'

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...\TXDOT-BW-HALF*PDF.pltcfg

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SH 130

ROADWAY LAYOUT

SHEET 12 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	56

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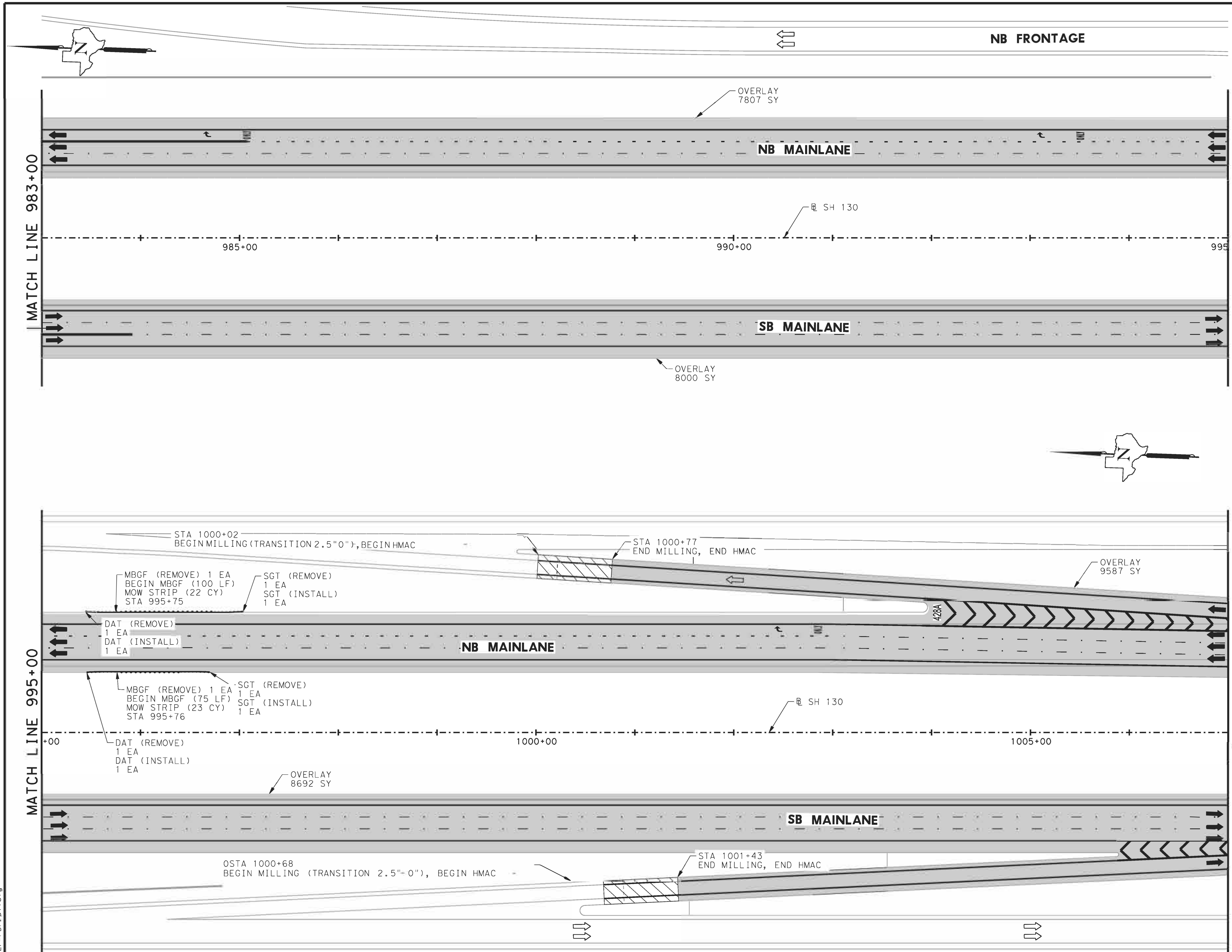
100% SUBMITTAL



LEGEND

1.5" PFC OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
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0 25 50 100
SCALE: 1"=100'

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SH 130

ROADWAY LAYOUT

SHEET 13 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	57

...\SH 130\SH130*RDPY00*013.dgn

shernandez 11/2/2020 10:28:22 AM
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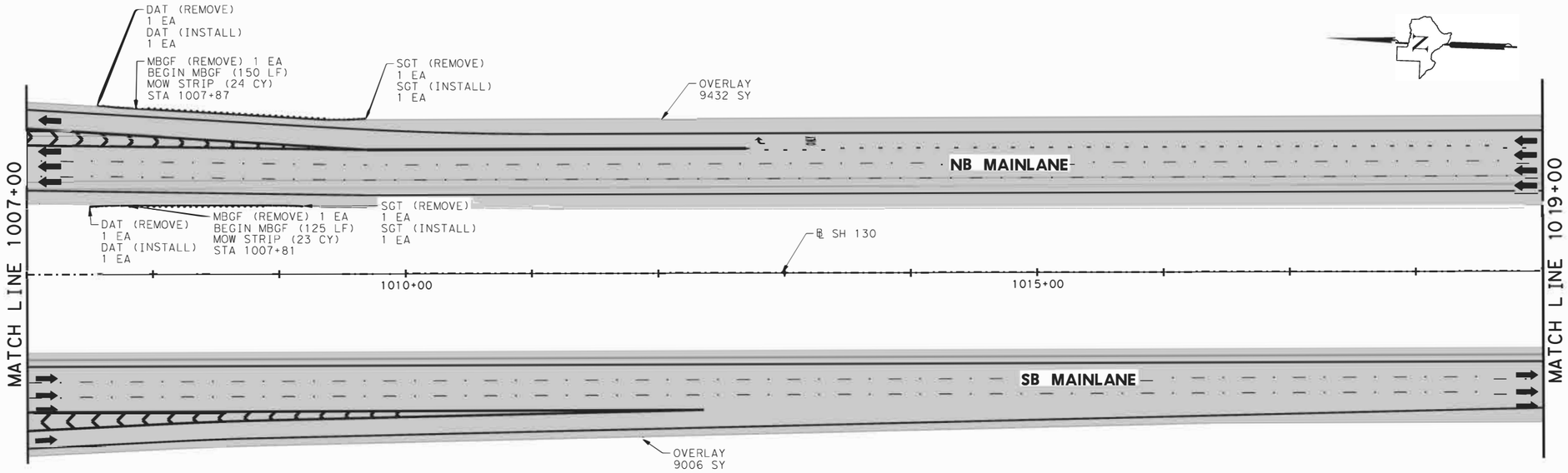

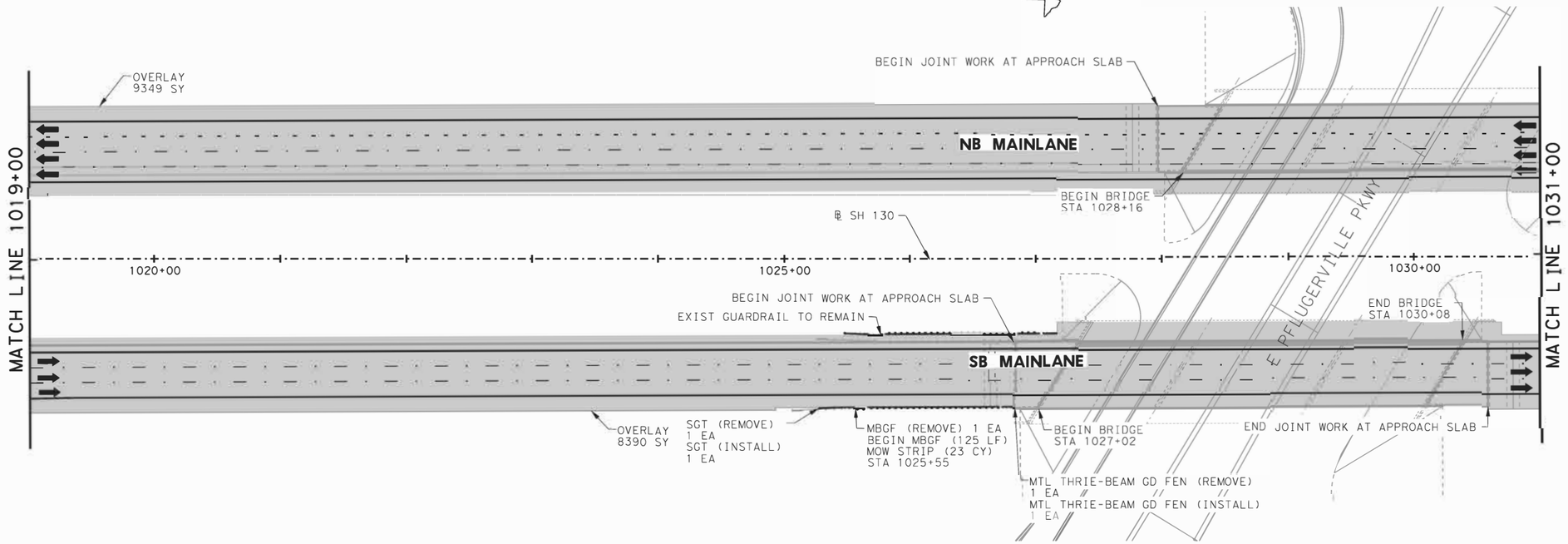

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

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0 25 50 100
SCALE: 1"=100'

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SH 130

ROADWAY LAYOUT

SHEET 14 OF 32

DN:	CC
CK DN:	JV
DW:	CC
CK DW:	JV

FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS				SH 130
STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
AUS	TRAVIS	6340	46	001	58

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shernandez
11/2/2020 10:28:24 AM
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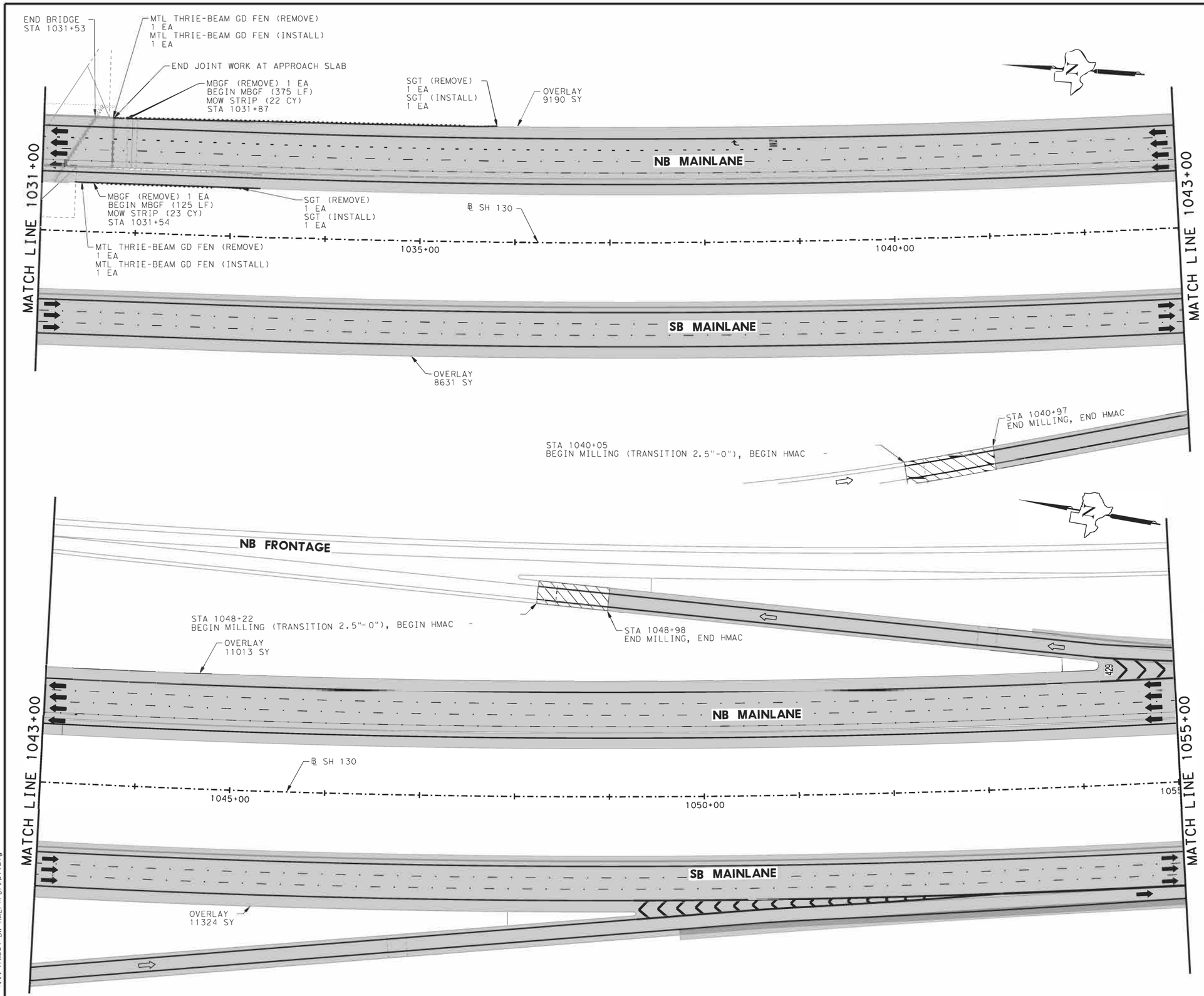

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

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0 25 50 100
SCALE: 1"=100'

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281-945-0081 FX

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SH 130

ROADWAY LAYOUT

SHEET 15 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	59

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shernandez
11/25/2020
10:28:26 AM
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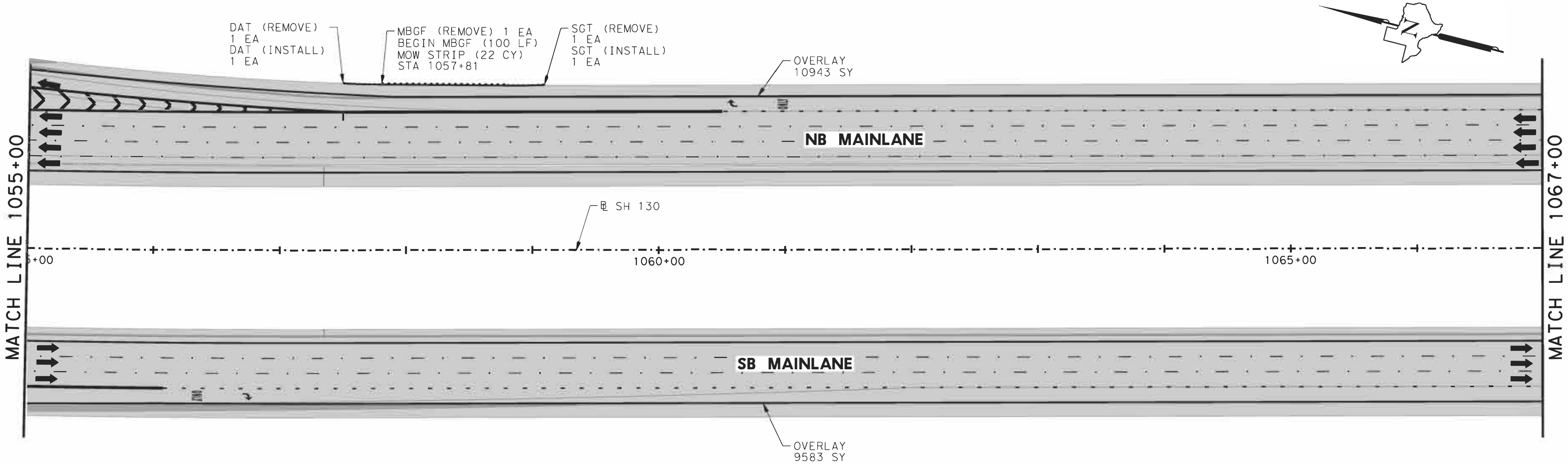

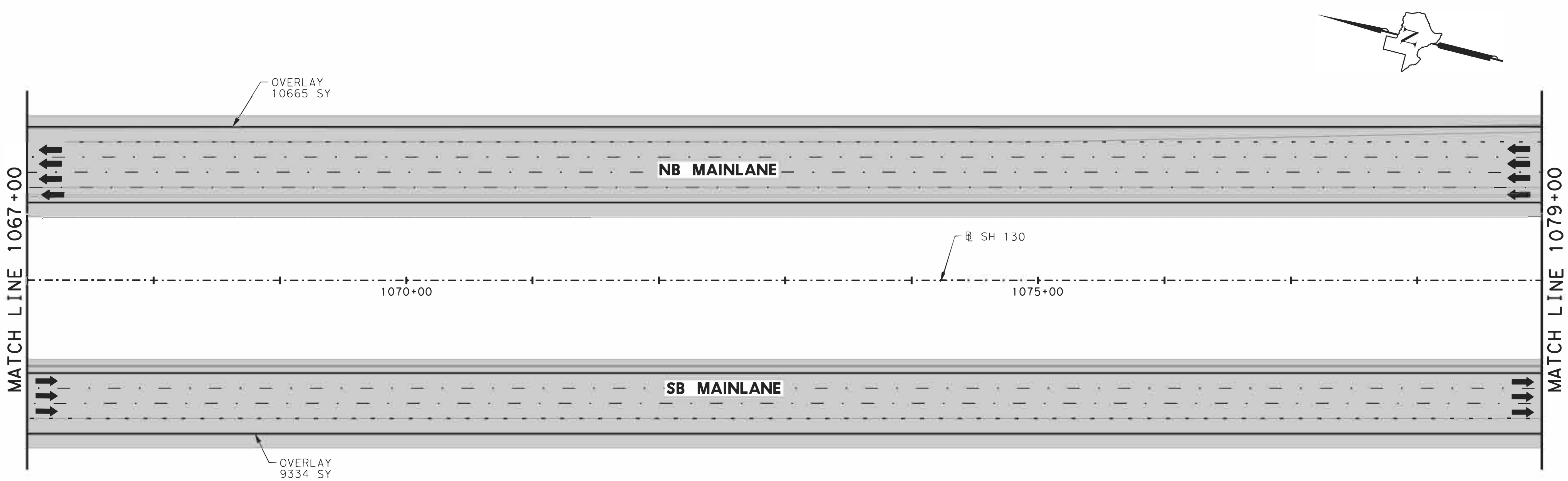

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED PROFESSIONAL ENGINEER
OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 16 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	60

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shernandez
11/2/2020 10:28:28 AM
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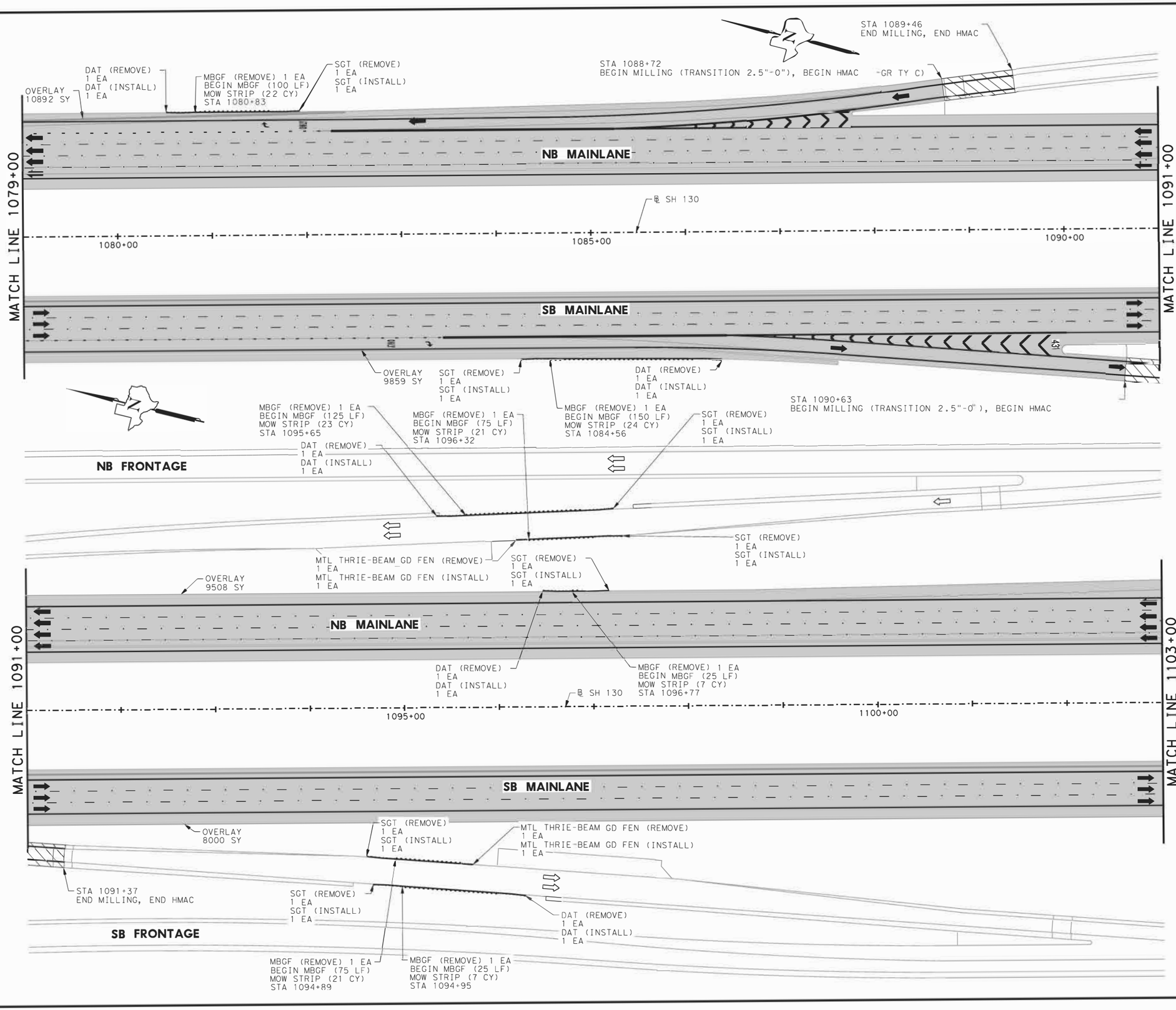

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
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2/28/23

0 25 50 100
SCALE: 1"=100'

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Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 Fx

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 17 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.					HIGHWAY NO.
CK DN:	JV	6	TEXAS						SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.			SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001			61

...\SH 130\SH130*RDPY00*017.dgn

shernandez
11/2/2020 10:28:29 AM
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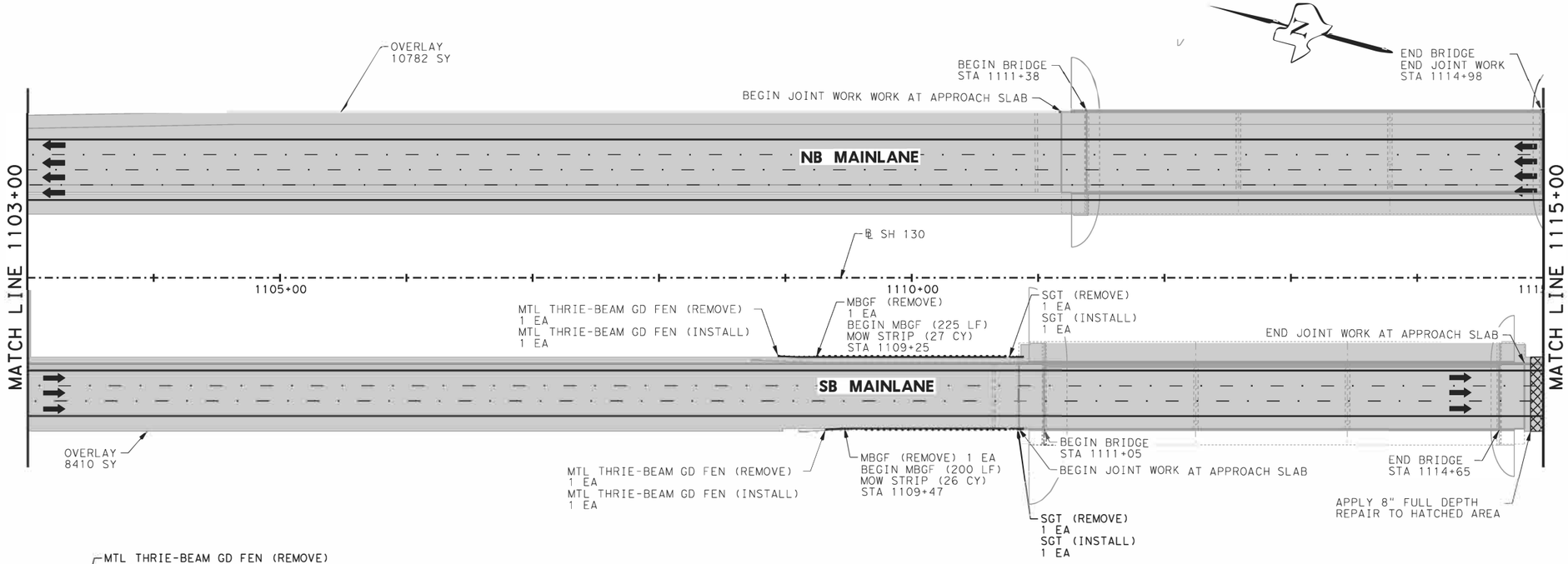

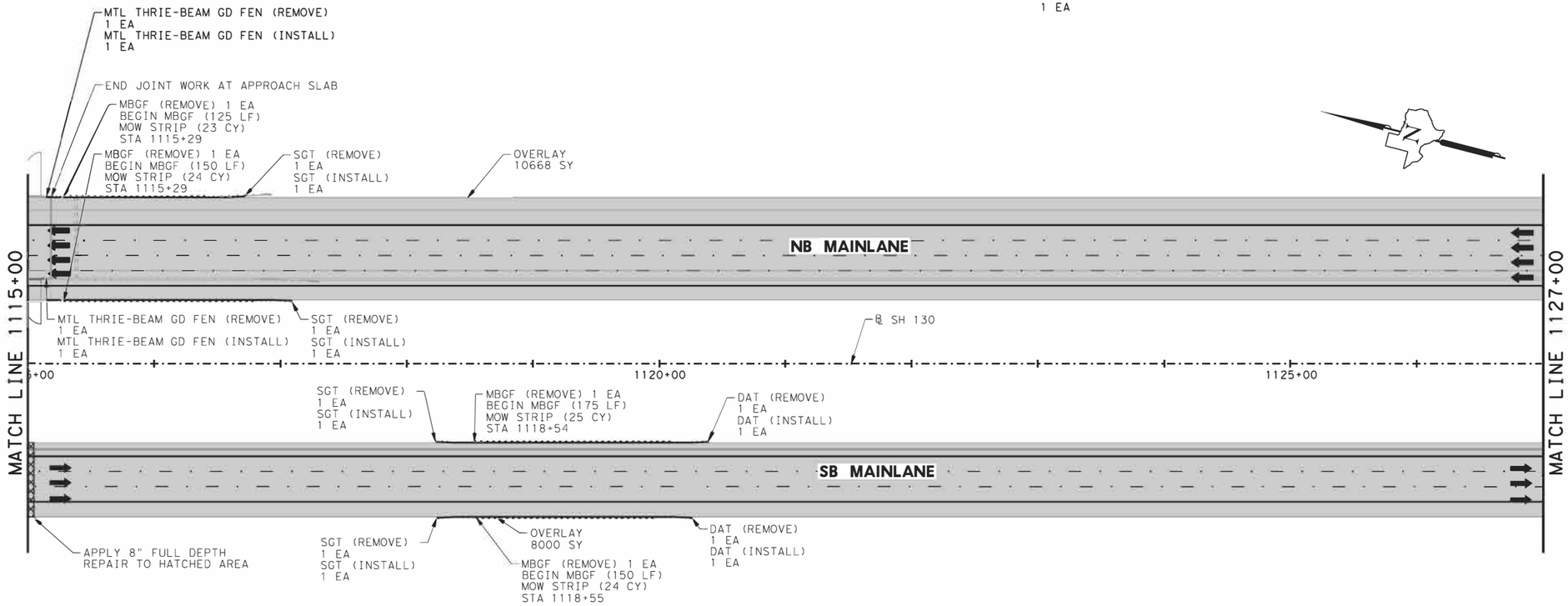

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
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2/28/23

0 25 50 100
SCALE: 1"=100'

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SH 130

ROADWAY LAYOUT

SHEET 18 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		62

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shernandez
11/2/2020 10:28:31 AM
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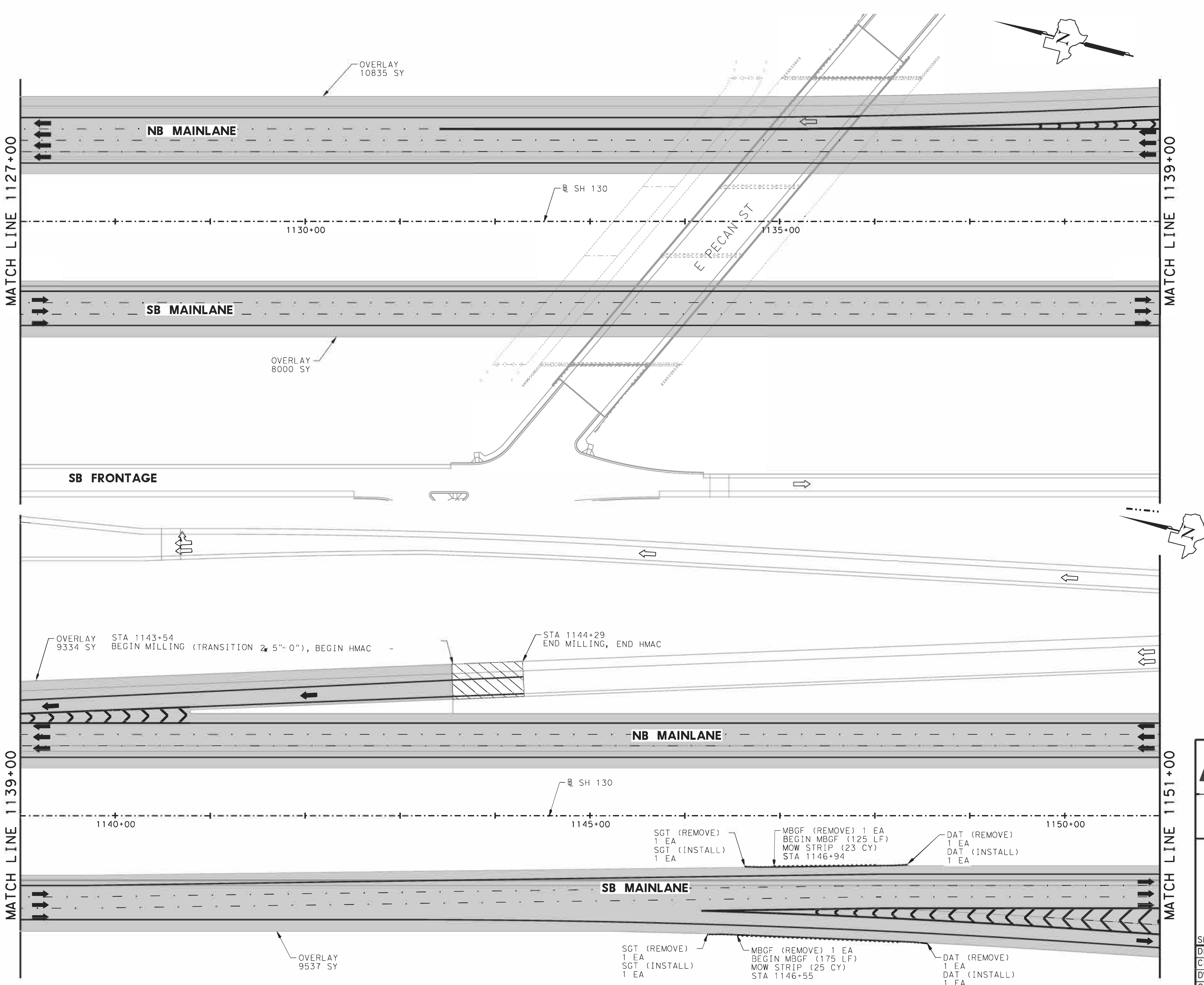

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
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2/28/23

0 25 50 100
SCALE: 1"=100'

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Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 19 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	63

...\SH 130\SH130*RDPY00*019.dgn

shernandez
11/2/2020 10:28:33 AM
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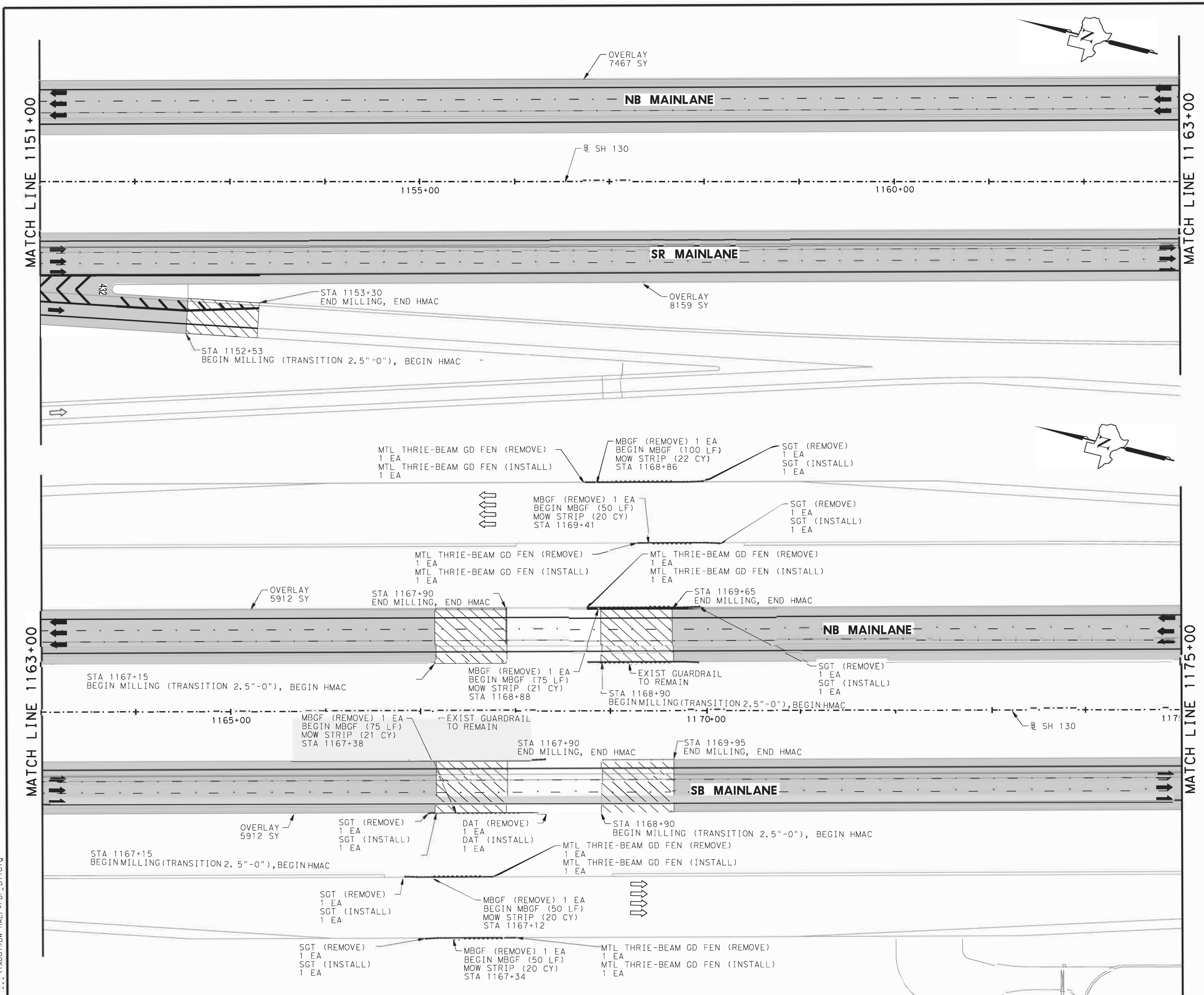
100% SUBMITTAL



MATCH LINE 1151+00
MATCH LINE 1163+00
OVERLAY 7467 SY
NB MAINLANE
℄ SH 130
1155+00
1160+00
SB MAINLANE
432
STA 1153+30 END MILLING, END HMAC
OVERLAY 8159 SY
STA 1152+53 BEGIN MILLING (TRANSITION 2.5"-0"), BEGIN HMAC
MATCH LINE 1163+00
MATCH LINE 1175+00
MTL THRIE-BEAM GD FEN (REMOVE) 1 EA MTL THRIE-BEAM GD FEN (INSTALL) 1 EA
MBGF (REMOVE) 1 EA BEGIN MBGF (100 LF) MOW STRIP (22 CY) STA 1168+86
SGT (REMOVE) 1 EA SGT (INSTALL) 1 EA
MBGF (REMOVE) 1 EA BEGIN MBGF (50 LF) MOW STRIP (20 CY) STA 1169+41
SGT (REMOVE) 1 EA SGT (INSTALL) 1 EA
MTL THRIE-BEAM GD FEN (REMOVE) 1 EA MTL THRIE-BEAM GD FEN (INSTALL) 1 EA
MTL THRIE-BEAM GD FEN (REMOVE) 1 EA MTL THRIE-BEAM GD FEN (INSTALL) 1 EA
OVERLAY 5912 SY
STA 1167+90 END MILLING, END HMAC
STA 1169+65 END MILLING, END HMAC
NB MAINLANE
STA 1167+15 BEGIN MILLING (TRANSITION 2.5"-0"), BEGIN HMAC
MBGF (REMOVE) 1 EA BEGIN MBGF (75 LF) MOW STRIP (21 CY) STA 1168+88
EXIST GUARDRAIL TO REMAIN
STA 1168+90 BEGIN MILLING (TRANSITION 2.5"-0"), BEGIN HMAC
SGT (REMOVE) 1 EA SGT (INSTALL) 1 EA
1165+00
11 70+00
℄ SH 130
MBGF (REMOVE) 1 EA BEGIN MBGF (75 LF) MOW STRIP (21 CY) STA 1167+38
EXIST GUARDRAIL TO REMAIN
STA 1167+90 END MILLING, END HMAC
STA 1169+95 END MILLING, END HMAC
SB MAINLANE
OVERLAY 5912 SY
SGT (REMOVE) 1 EA SGT (INSTALL) 1 EA
DAT (REMOVE) 1 EA DAT (INSTALL) 1 EA
STA 1168+90 BEGIN MILLING (TRANSITION 2.5"-0"), BEGIN HMAC
STA 1167+15 BEGIN MILLING (TRANSITION 2. 5"-0"), BEGIN HMAC
MTL THRIE-BEAM GD FEN (REMOVE) 1 EA MTL THRIE-BEAM GD FEN (INSTALL) 1 EA
SGT (REMOVE) 1 EA SGT (INSTALL) 1 EA
MBGF (REMOVE) 1 EA BEGIN MBGF (50 LF) MOW STRIP (20 CY) STA 1167+12
SGT (REMOVE) 1 EA SGT (INSTALL) 1 EA
MBGF (REMOVE) 1 EA BEGIN MBGF (50 LF) MOW STRIP (20 CY) STA 1167+34
MTL THRIE-BEAM GD FEN (REMOVE) 1 EA MTL THRIE-BEAM GD FEN (INSTALL) 1 EA

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
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STATE OF TEXAS
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OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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Houston, Texas, 77094
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281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 20 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	64

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sfernandez
11/2/2020 10:28:35 AM
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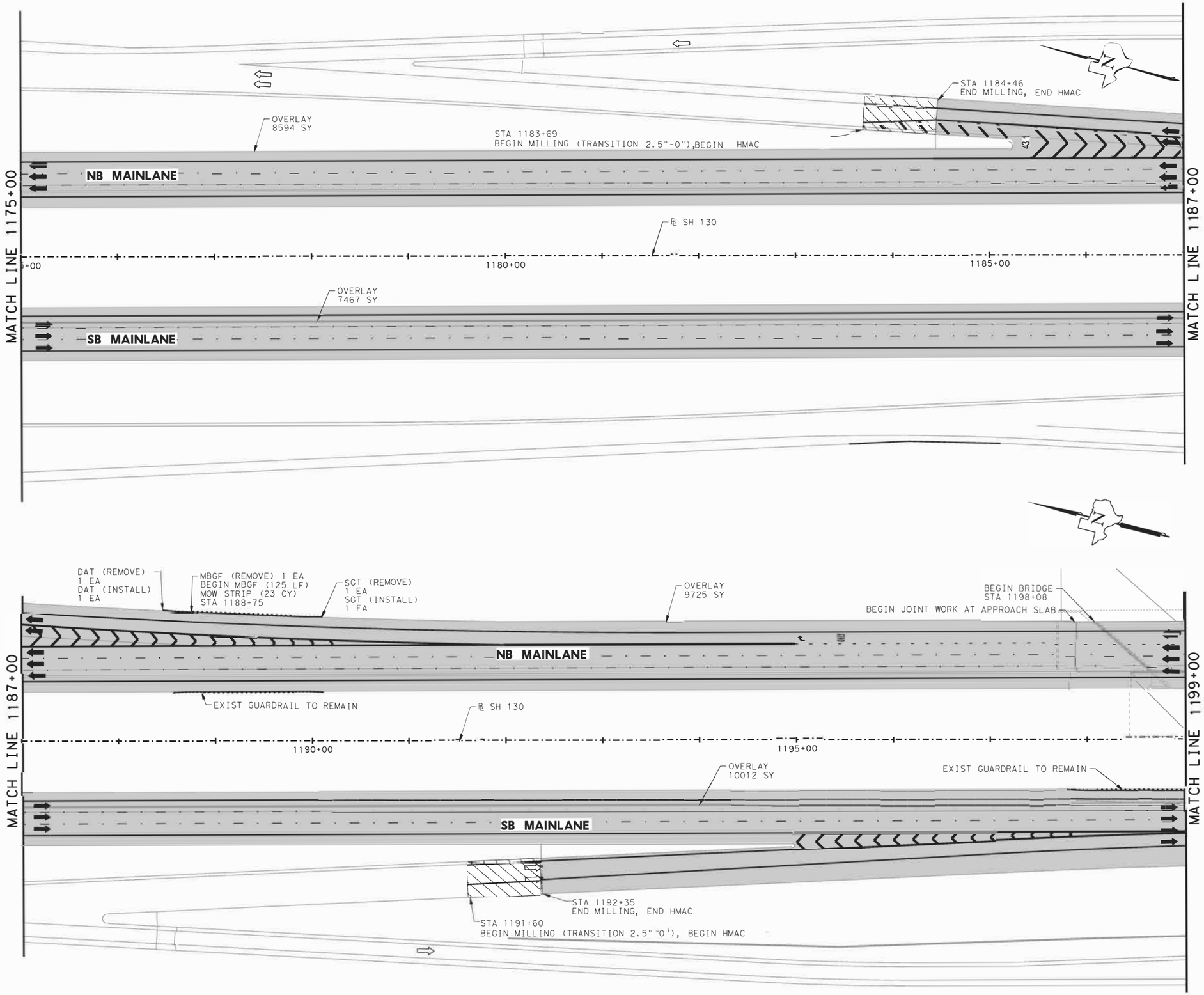

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED
PROFESSIONAL ENGINEER

OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

ENTECH
CIVIL ENGINEERS INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0068 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 21 OF 32

DN:	CC
CK DN:	JV
DW:	CC
CK DW:	JV

FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
6	TEXAS					SH 130
STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
AUS	TRAVIS	6340	46	001		65

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shernandez
11/2/2020
10:28:37 AM
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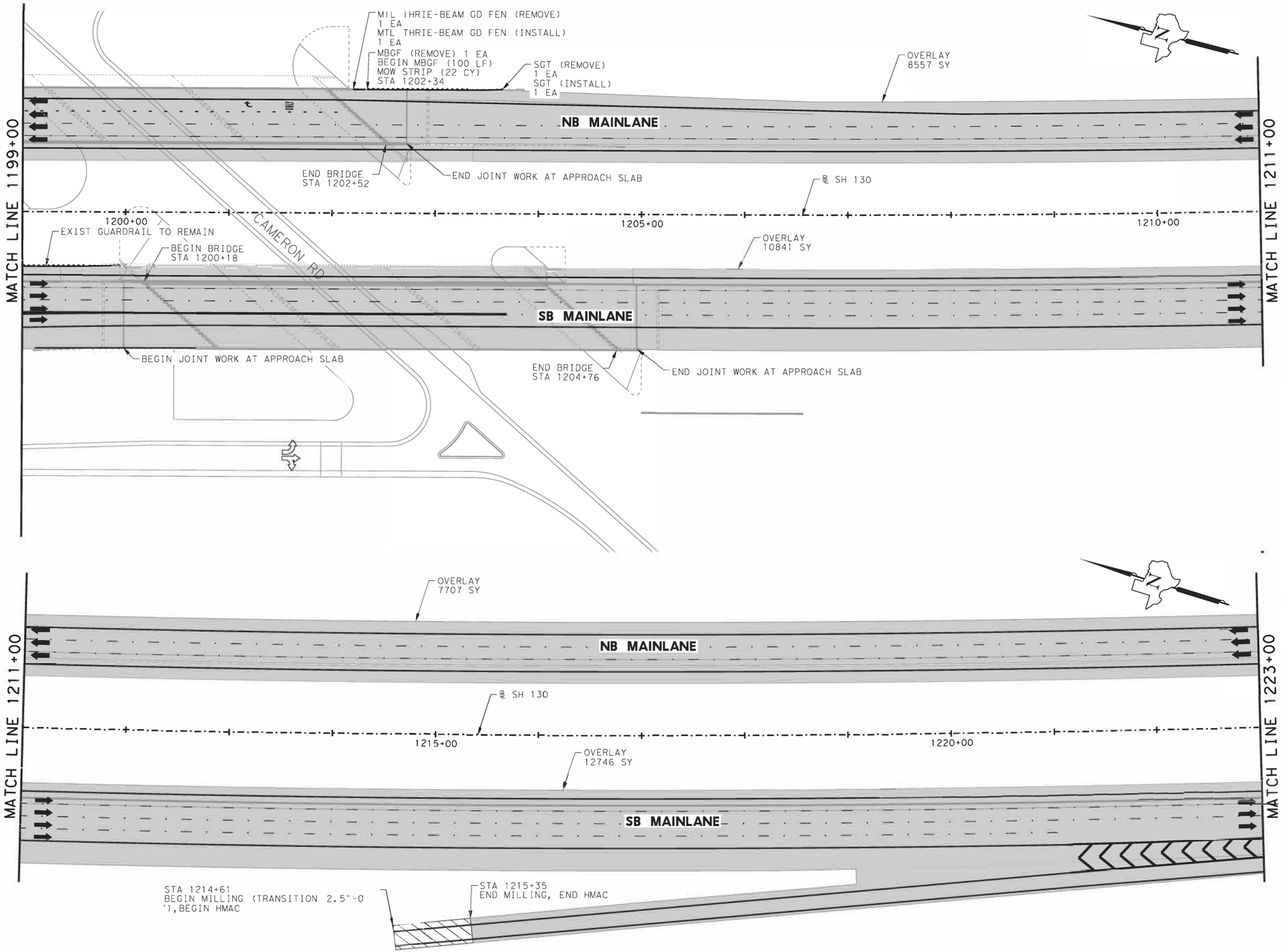

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
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OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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15021 Katy Freeway, Suite 500
Houston, Texas, 77094
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281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 22 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	66

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shernandez
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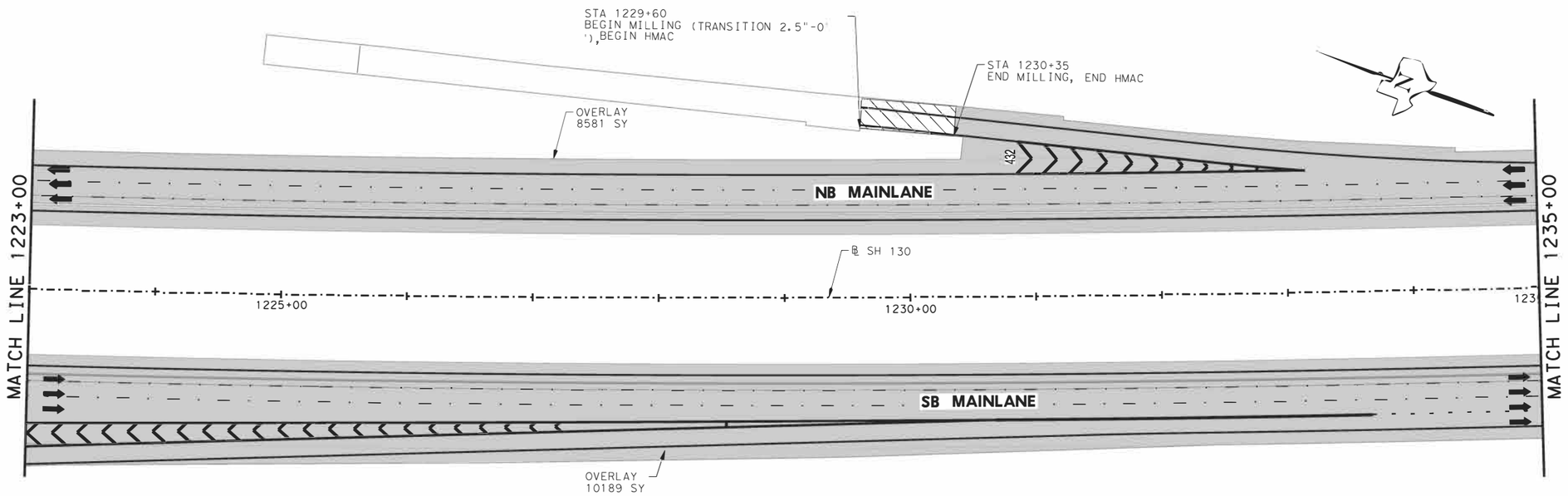

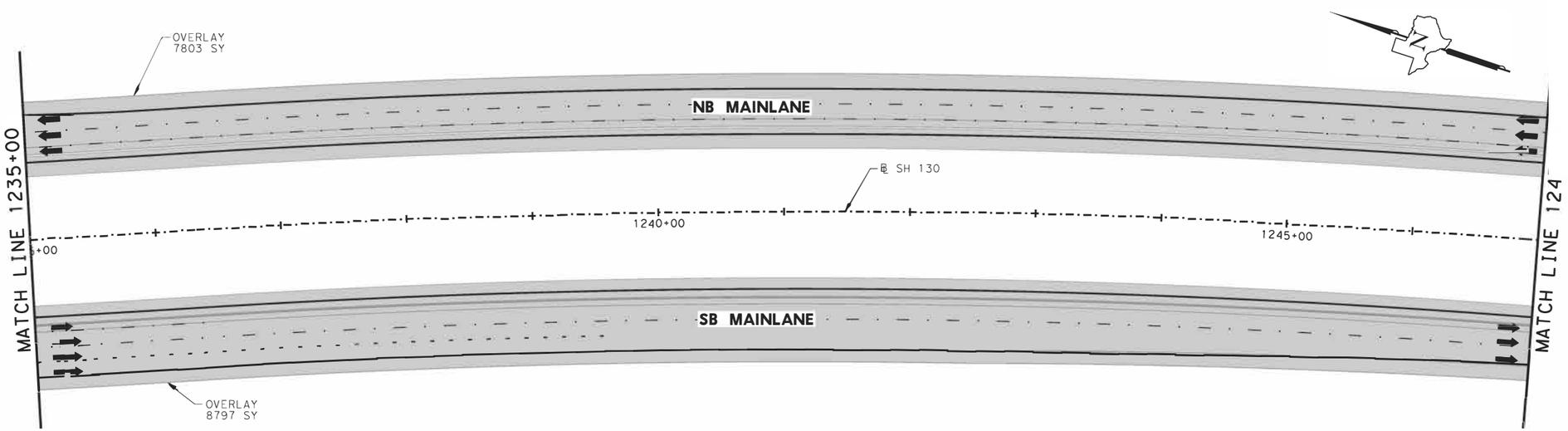

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED
PROFESSIONAL ENGINEER

OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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15021 Katy Freeway,
Suite 500
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281-945-0068 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 23 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	67

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shernandez
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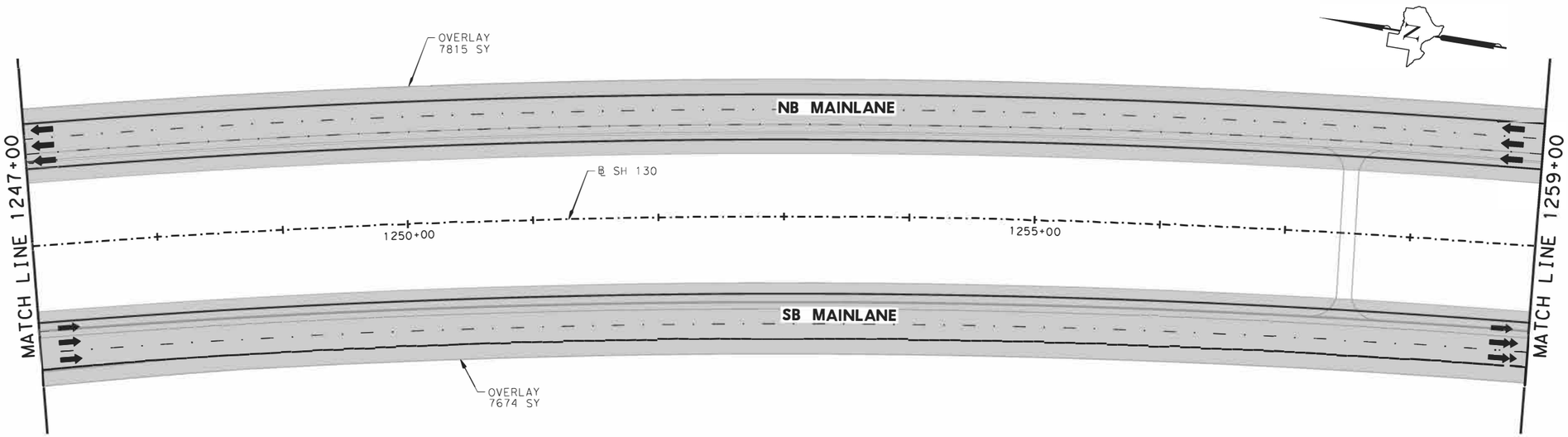

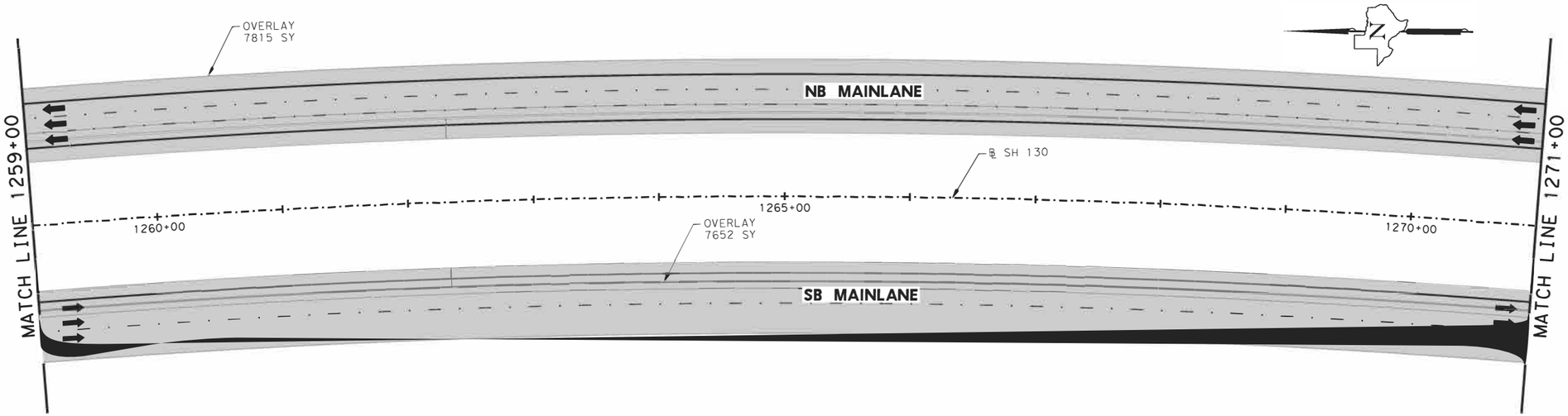

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
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OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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Suite 500
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281-945-0068 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 24 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		68

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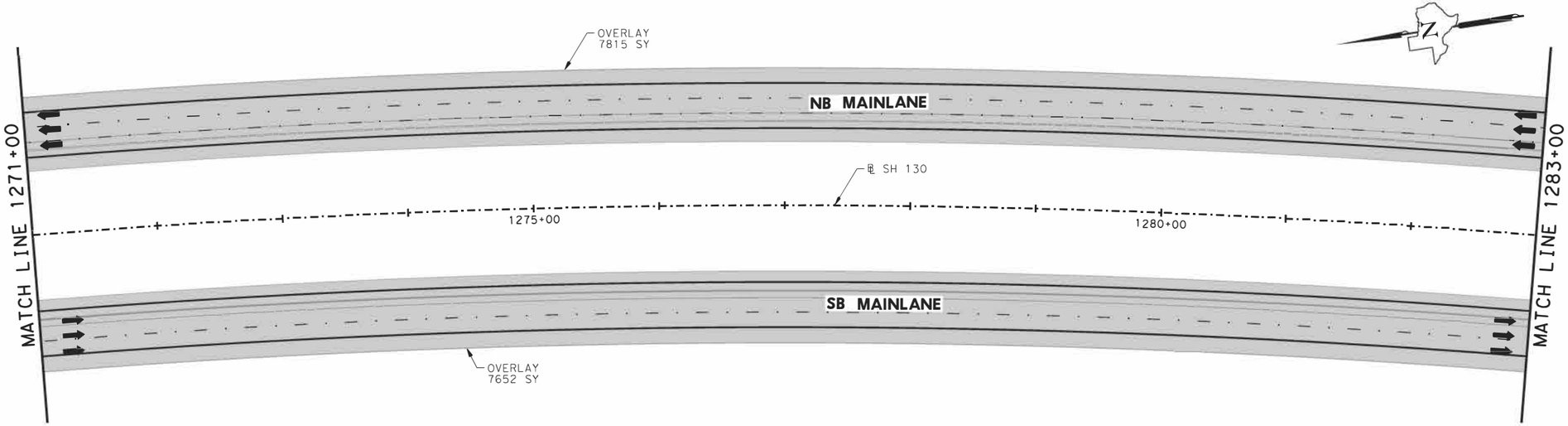

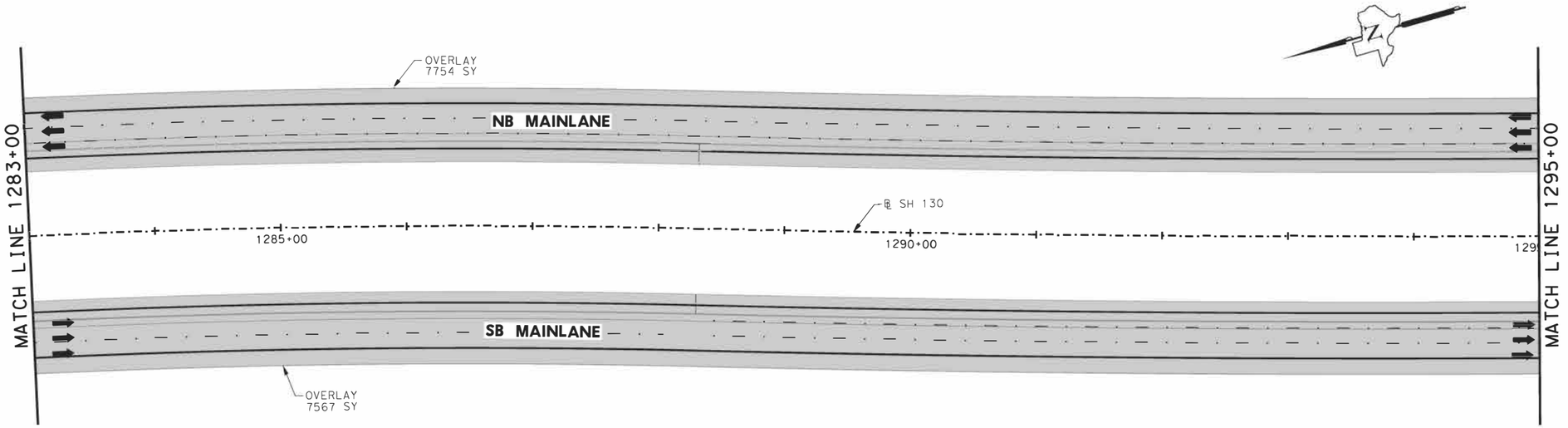

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED
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OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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281-945-0081 FX

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SH 130

ROADWAY LAYOUT

SHEET 25 OF 32

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	CC	6	TEXAS				SH 130
CK DN:	JV	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	CC	AUS	TRAVIS	6340	46	001	69
CK DW:	JV						

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11/28/2022 10:28:58 AM
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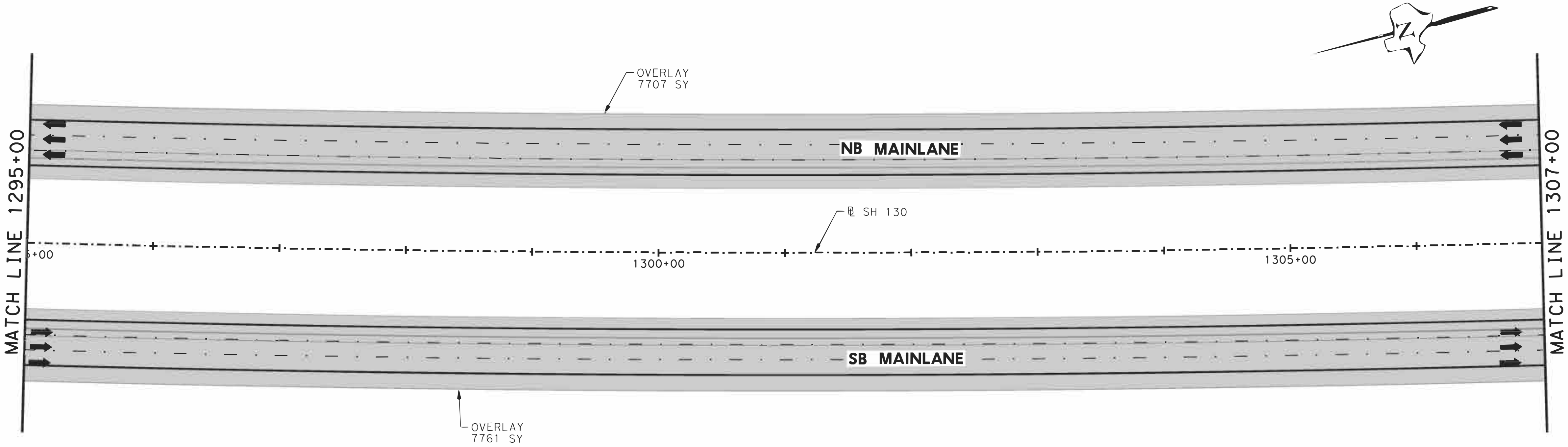

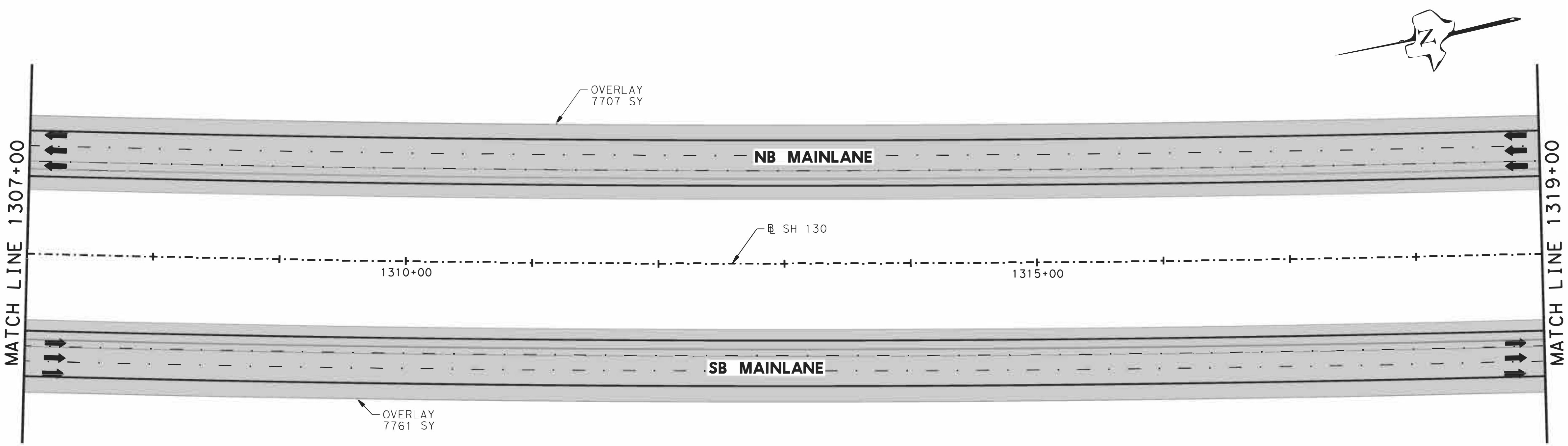

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
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OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 26 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	70

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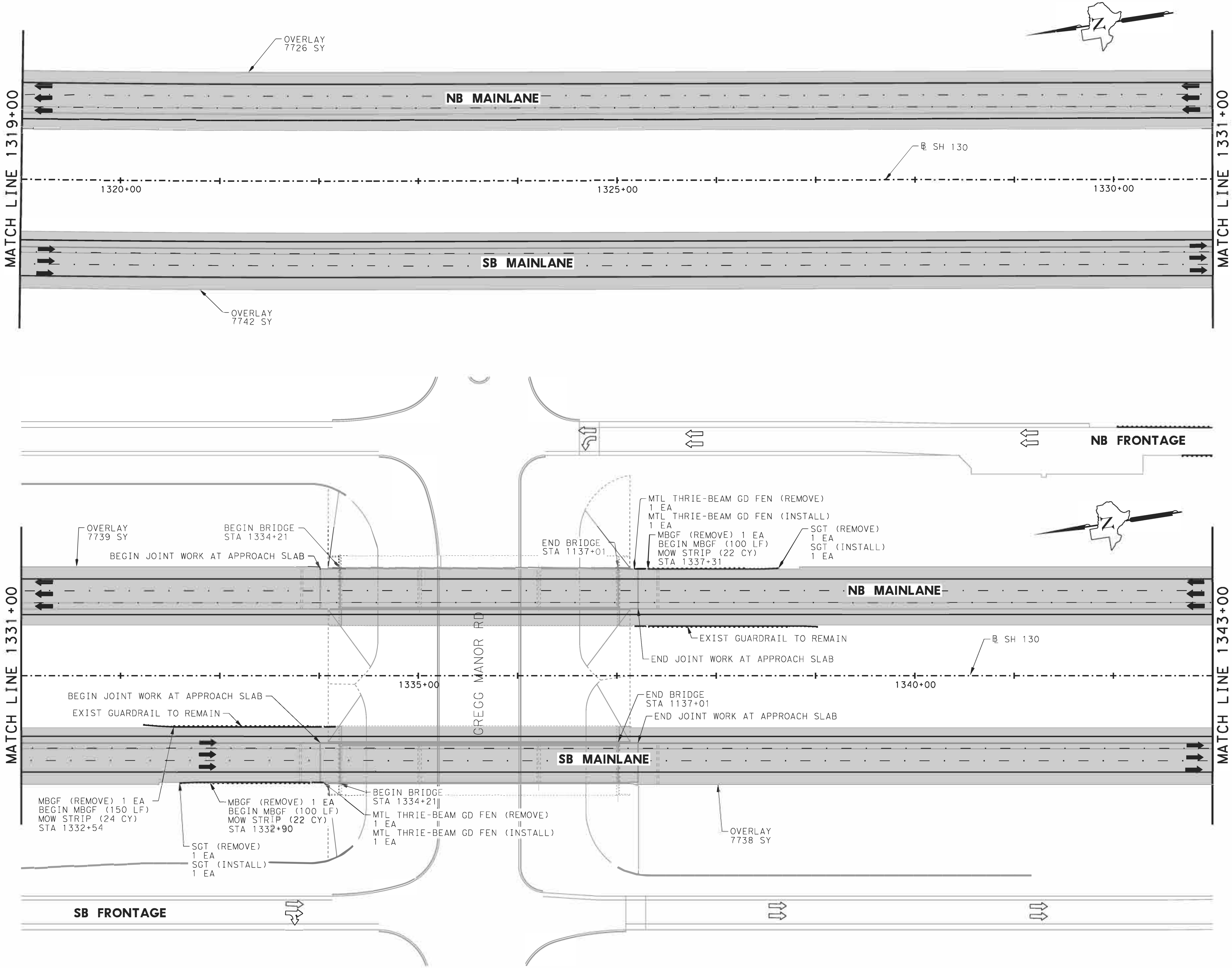
100% SUBMITTAL

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL



STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED PROFESSIONAL ENGINEER
OXDL P.E. 2/28/23

0 25 50 100
SCALE: 1"=100'

ENTECH CIVIL ENGINEERS INC
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15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 27 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	71

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shernandez
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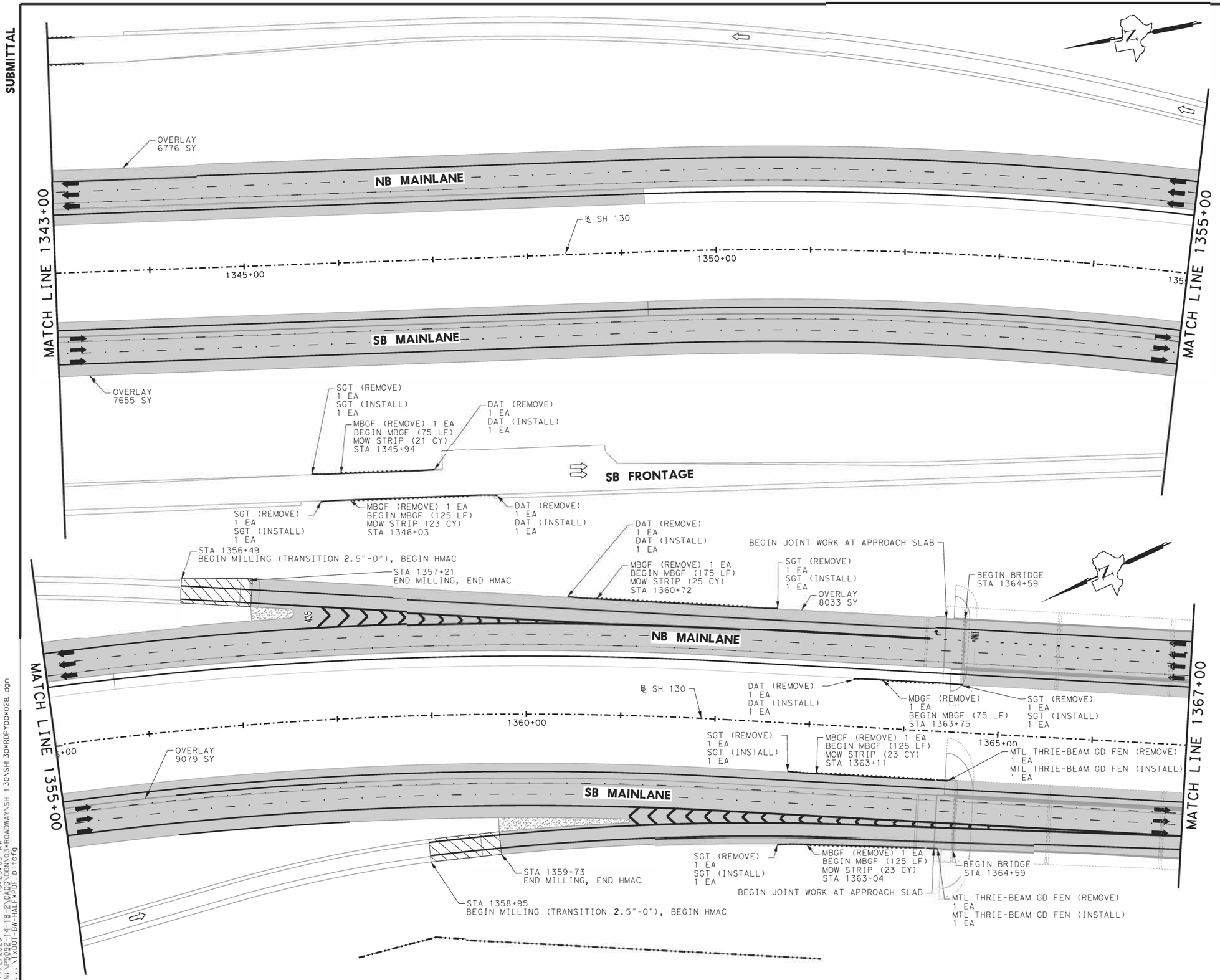

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED
PROFESSIONAL ENGINEER
OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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CIVIL ENGINEERS INC
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15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 28 OF 32

DN:	CC
CK DN:	JV
DW:	CC
CK DW:	JV

FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
6	TEXAS				SH 130
STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
AUS	TRAVIS	6340	46	001	72

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sfernandez
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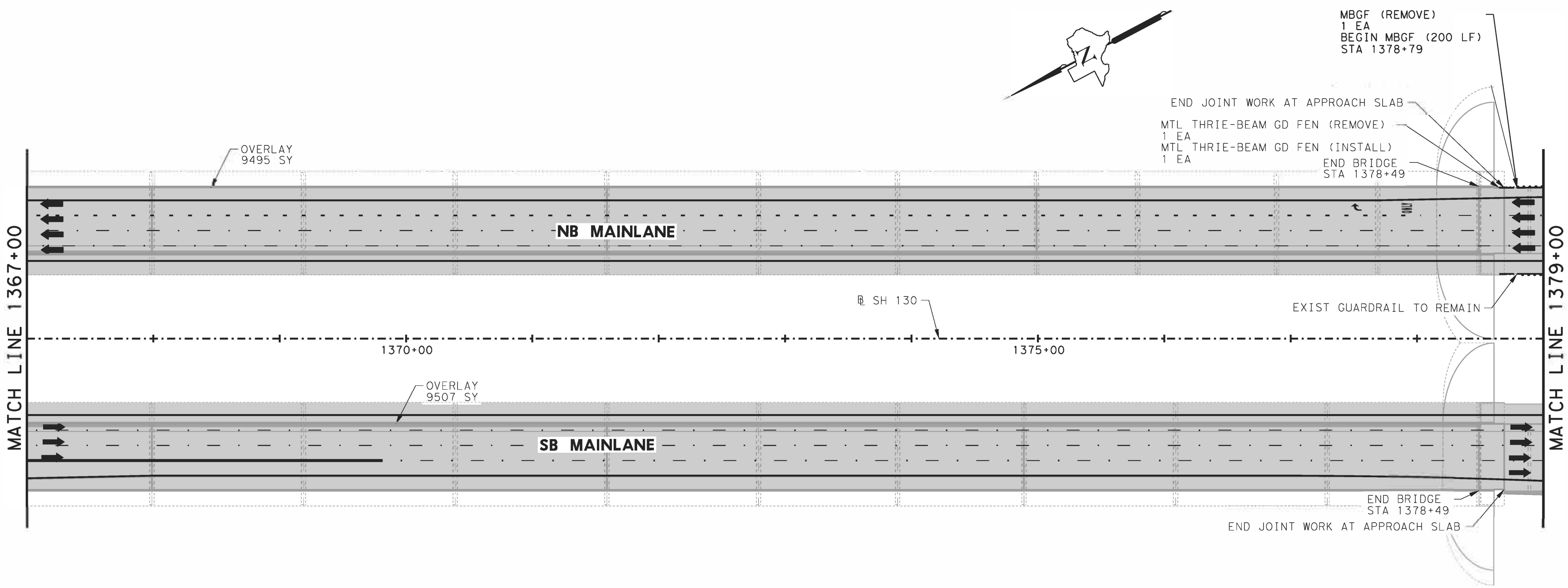
100% SUBMITTAL

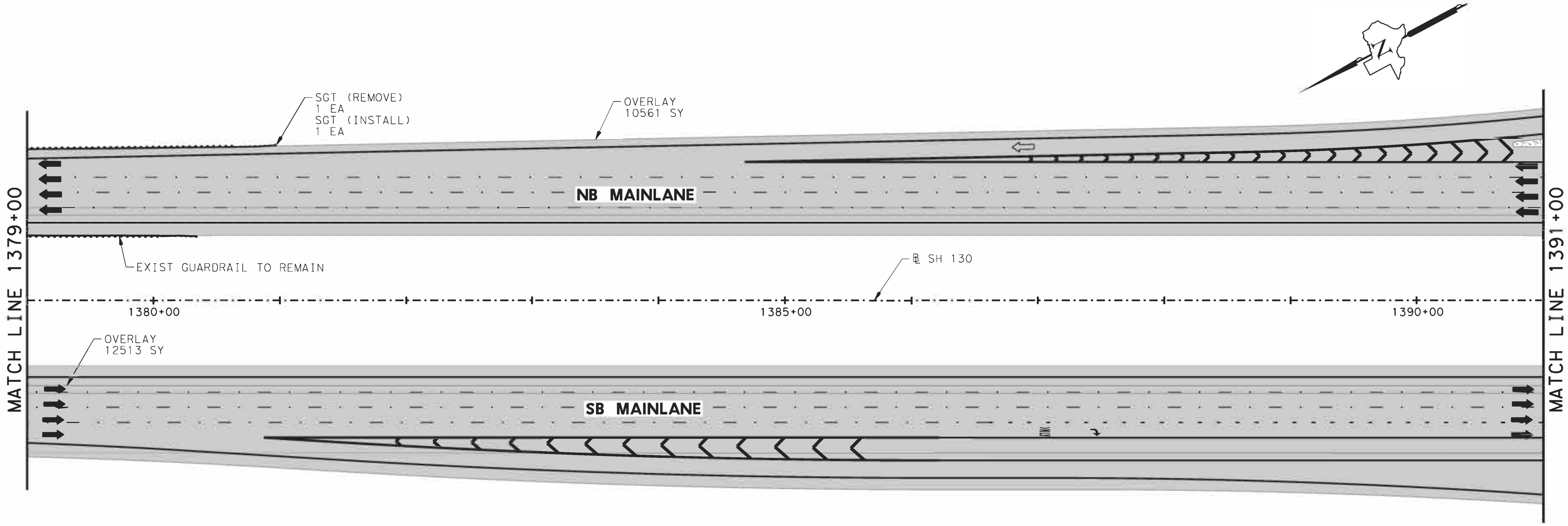
LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL





STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED
PROFESSIONAL ENGINEER

OXDL P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

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15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 29 OF 32

DN: CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN: JV	6	TEXAS					SH 130
DW: CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW: JV	AUS	TRAVIS	6340	46	001		73

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shernandez
11/2/2020 10:29:05 AM
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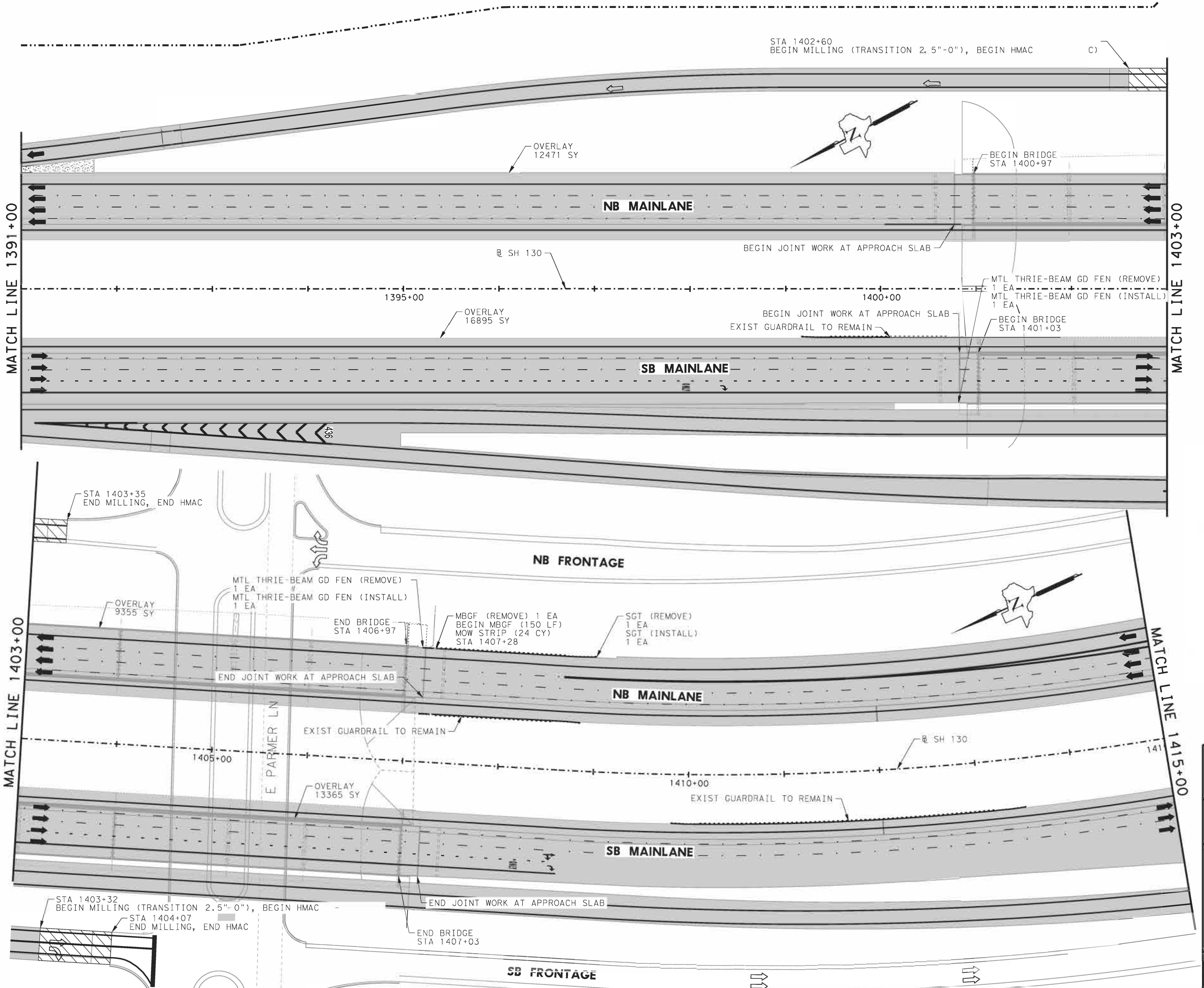

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
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OXDL P.E.
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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 30 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	74

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shernandez
11/2/2020 10:29:07 AM
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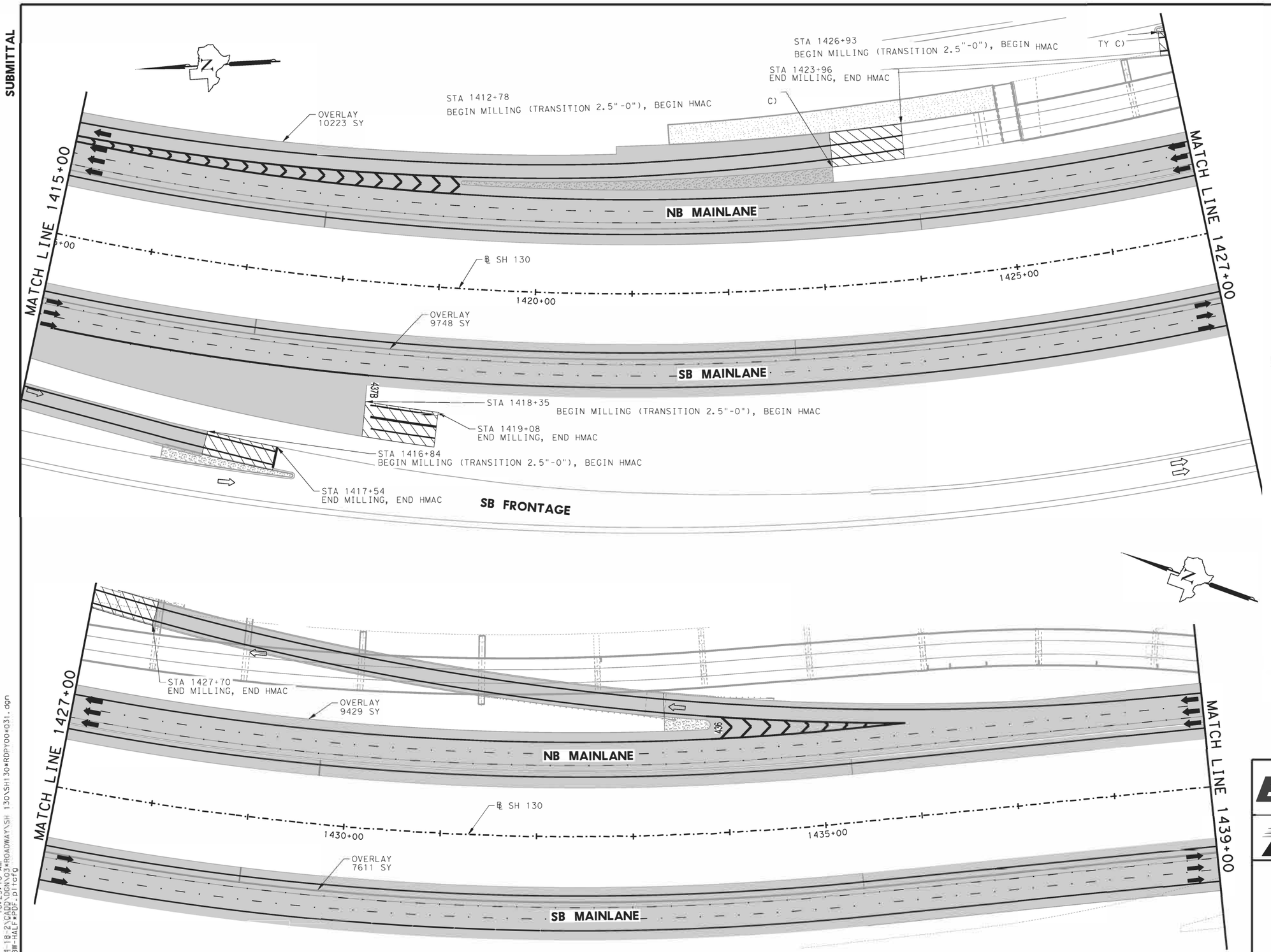

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED
PROFESSIONAL ENGINEER

OXD P.E.
2/28/23

0 25 50 100
SCALE: 1"=100'

ENTECH
CIVIL ENGINEERS INC
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Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

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SH 130

ROADWAY LAYOUT

SHEET 31 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		75

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shernandez
11/26/2020 10:28:10 AM
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...\TxDOT-BW-HALF-PDF.pltcfg

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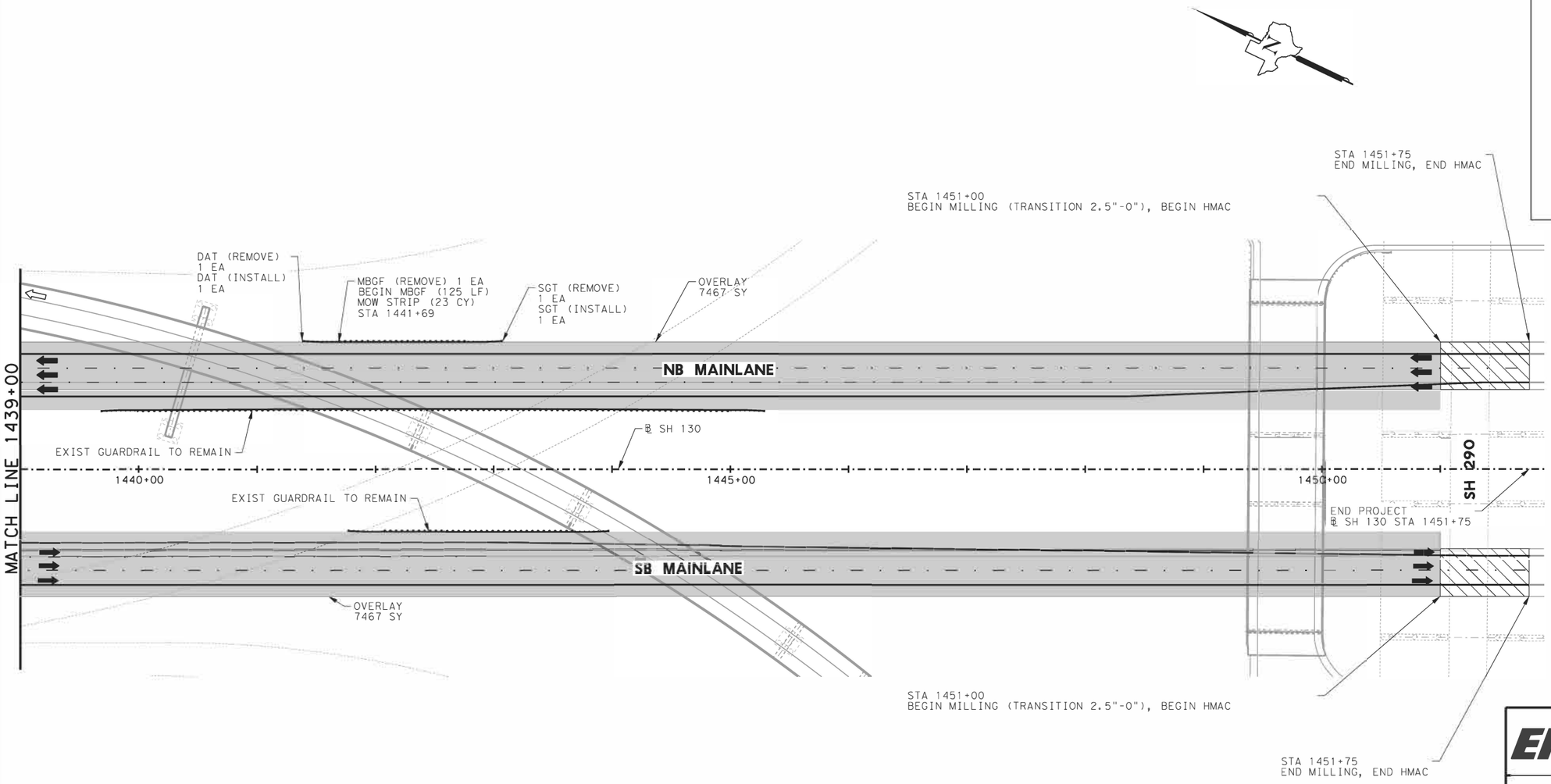
SUBMITTAL

LEGEND

OVERLAY

NOTES:

1. DEPICTED MBGF IS BASED ON BEST AVAILABLE DATA. CONFIRM DIMENSIONS IN FIELD PRIOR TO ADJUSTMENTS/REPLACEMENTS
2. REFER TO "ROADWAY DETAILS" SHEET FOR MILLING TRANSITION TAPER DETAIL



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SCALE: 1"=100'

STATE OF TEXAS
OMAR XAVIER DE LEON
103473
LICENSED PROFESSIONAL ENGINEER
P.E.
2/28/23

ENTECH CIVIL ENGINEERS INC
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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY LAYOUT

SHEET 32 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		76

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snernandez
11/26/2021 10:29:12 AM
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F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

ROADWAY DETAIL

SHEET 1 OF 1

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		77

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shernandez
11/26/2020 10:29:13 AM
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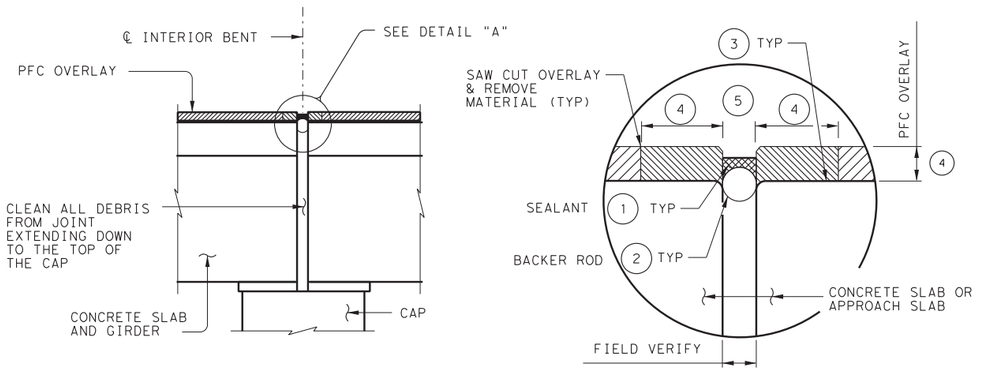

DETAIL "A"

EXPANSION JOINT HEADER

(ACP OVERLAY WITH JOINTS > 100 FT APART)

PROCEDURE:

1. SAW CUT OVERLAY TO TOP OF DECK AND REMOVE ALL ASPHALTIC MATERIAL TO EXPOSE JOIN. CLEAN JOINT OPENING OF ALL OLD EXPANSION MATERIALS/DEVICES, DIRT, AND ALL OTHER DELETERIOUS MATERIALS IN ACCORDANCE WITH ITEM 454 "HEADER-TYPE EXPANSION JOINT" AND "SEALANT. CLEAN OUT JOINT FULL DEPTH

2. REMOVE ANY UNSOUND STEEL OR CONCRETE AND REPAIR IN ACCORDANCE WITH ITEM 429 "CONCRETE STRUCTURE REPAIR" AND ITEM 785 "BRIDGE JOINT REPAIR AND REPLACEMENT". USE HEADER MATERIAL AS REPAIR MATERIAL ONLY WHEN APPROVED.

3. SURFACES WHERE HEADER MATERIAL IS TO BE PLACED MUST BE CLEAN AND DRY IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. PLACE HEADER MATERIAL IN ACCORDANCE WITH NOTES ④ & ⑤ .

4. PLACE BACKER ROD ② INTO JOINT OPENING 1" BELOW TOP OF HEADER MATERIAL.

5. SEAL THE JOINT WITH CLASS 1 SEALANT. RECESS SEAL 1/2" BELOW TOP OF HEADER MATERIAL IN TRAVEL LANES AND 1/8" BELOW TOP OF HEADER MATERIAL IN SHOULDERS.

(1) USE CLASS 1 COLD APPLIED SEALAND AND PRIMER IN ACCORDANCE WITH DMS-6310, "JOINT SEALANTS AND FILLERS". PREPARE JOINT AND SEAL IN ACCORDANCE WITH ITEM 438 "CLEANING AND SEALING EXIST JOINTS (CL 1)" OR ITEM 454 "JOINT SEALANT".

(2) BACKER ROD MUST BE 25% LARGER THAN JOINT OPENING AND MUST BE COMPATIBLE WITH THE SEALANT.

(3) USE CLASS 2 COLD APPLIED SEALANT IN ACCORDANCE WITH DMS-6310, "JOINT SEALANT AND FILLERS" PREPARE JOINT AND SEAL IN ACCORDANCE WITH ITEM 438 "CLEANING AND SEALING EXIST JOINTS (CL 2)".

(4) MATCH EXISTING JOINT OPENING OR SET AT THE MINIMUM SHOWN BELOW OR AS DIRECTED BY THE ENGINEER.

1" AT 70°F WHEN DISTANCE BETWEEN JOINTS IS 150 FEET OR LESS.
2" AT 70°F WHEN DISTANCE BETWEEN JOINTS IS GREATER THAN 150 FEET.

(5) USE HEADER MATERIAL IN ACCORDANCE WITH DMS-6140, "POLYMER CONCRETE FOR BRIDGE JOINT SYSTEMS". HEADER MATERIAL PROPERTIES SHALL BE AS SPECIFIED IN THE PLANS. MATCH THE THICKNESS OF HEADER WITH THE THICKNESS OF THE OVERLAY. THE THICKNESS OF THE OVERLAY IS APPROXIMATELY 2.25" BUT MAY VARY. IF THE THICKNESS OF THE OVERLAY EXCEEDS 3.25", SET THE WIDTH OF THE HEADER AT ONE AND A HALF TIMES THE THICKNESS OF HT OVERLAY BUT SHOULD NOT BE GREATER THAN 8" UNLESS APPROVED BY THE ENGINEER.
PLACE HEADER MATERIAL FLUSH WITH ROADWAY SURFACE. DO NOT CANTILEVER HEADER MATERIAL OVER THE JOINT OPENING.

GENERAL NOTES

CLEANING EXISTING JOINT OPENING (FULL DEPTH) OF ALL DEBRIS, PROVIDING AND PLACING BACKER ROD, SAW-CUTTING JOINT OPENING, AND SEALING JOINT IS PAID FOR BY ITEM 438, "CLEANING AND SEALING JOINTS EXISTING JOINTS" OF THE SEALANT TYPE SPECIFIED AND MEASURED BUT THE LINEAR FOOT OF JOINT PLACED OR, IN THE CASE OF EXPANSION JOINT HEADERS, BY ITEM 454, "HEADER TYPE EXPANSION JOINT", MEASURED BY THE CUBIC FOOT OF HEADER MATERIAL AND ITEM 454, "JOINT SEALANT", MEASURED BY THE LINEAR FOOT OF SEALANT PLACED.

EXTEND SEALANT UP INTO RAIL OR CURB 3 INCHES ON LOW SIDE OR SIDES OF DECK.

REPAIR OF DAMAGED CONCRETE CAUSED BY THE CONTRACTOR MUST BE REPAIRED AT THE CONTRACTOR'S EXPENSE IN ACCORDANCE WITH ITEM 429, "CONCRETE STRUCTURE REPAIR".

STATE OF TEXAS
JORGE L. VILLALTA
107817
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

EXPANSION JOINT HEADER DETAILS

SHEET 1 OF 1

DN: CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN: JV	6	TEXAS					SH 130
DW: CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW: JV	AUS	TRAVIS	6340	46	001		78

...\SEGMENT*2*EXPANSION*JOINT*HEADER*DETAIL.dgn

shernandez
11/2/2020 10:29:14 AM
N:\6340-14-18-2\CAD\DGN\0*GENERAL\SH 130\SEGMENT*2*EXPANSION*JOINT*HEADER*DETAIL.dgn
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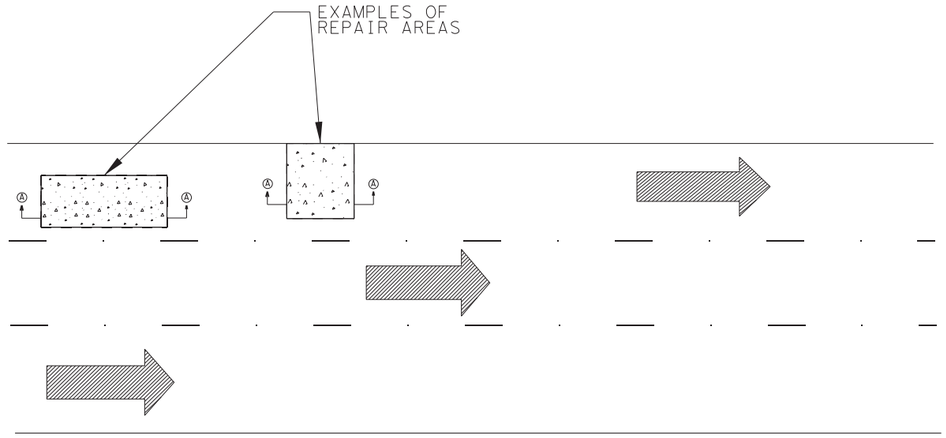
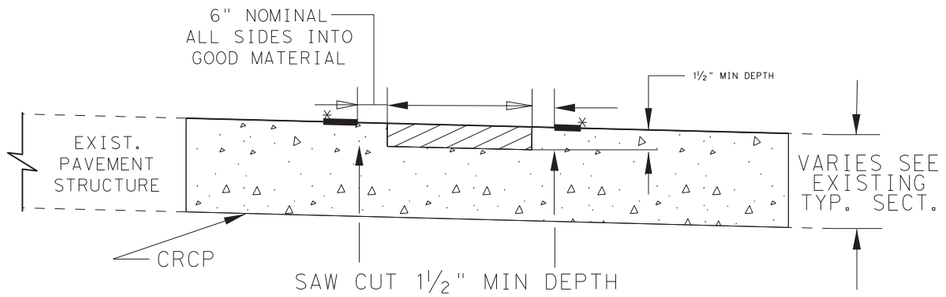


PLAN VIEW

NTS

NOTES

1. FURNISH MATERIAL PER ITEM 720 AND INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. REPAIR AREAS ARE DEFINED IN THE PLANS.
3. IF THE CONTRACTOR, DUE TO UNFORSEEN CIRCUMSTANCES, IS UNABLE TO COMPLETE A SECTION BEFORE THE END OF THE WORKDAY THE CONTRACTOR WILL APPLY ACP MATERIAL TO FILL THE VOID. PLACEMENT AND REMOVAL OF ACP MATERIAL WILL BE AT THE CONTRACTOR'S EXPENSE.
4. THE NUMBER OF LANES AND THICKNESS OF PAVEMENT MAY VARY FROM THAT SHOWN ON THIS DETAIL.
5. REPAIR AREAS MAY BE LONGITUDINAL OR TRANSVERSE AND MAY COVER ONE OR MORE LANES. OTHER CONFIGURATIONS SHOULD BE EXPECTED, OR AS DIRECTED BY THE ENGINEER.
6. SPALL REPAIR ON CONCRETE PAVEMENT WILL BE PAID FOR UNDER ITEM 720, "SPALLING REPAIR (POLYMERIC) (SEMIRIGID)".
7. USE 1X6 BOARD TO AVOID SPREADING PATCHING MATERIAL OUTSIDE THE PERIMETER BOUNDARIES OF THE SPALL REPAIR. THIS ITEM WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED INCIDENTAL TO THE VARIOUS BID ITEMS.



OR

SAW CUT NOT REQUIRED IF UTILIZING MILLING EQUIPMENT

SECTION A-A

NTS

PLAN DETAIL A-A

NTS

STATE OF TEXAS
BRENDA DINORAH GUERRA
104993
LICENSED
PROFESSIONAL ENGINEER

Brenda D Guerra

05/28/2019

Austin District Maintenance

Texas Department of Transportation

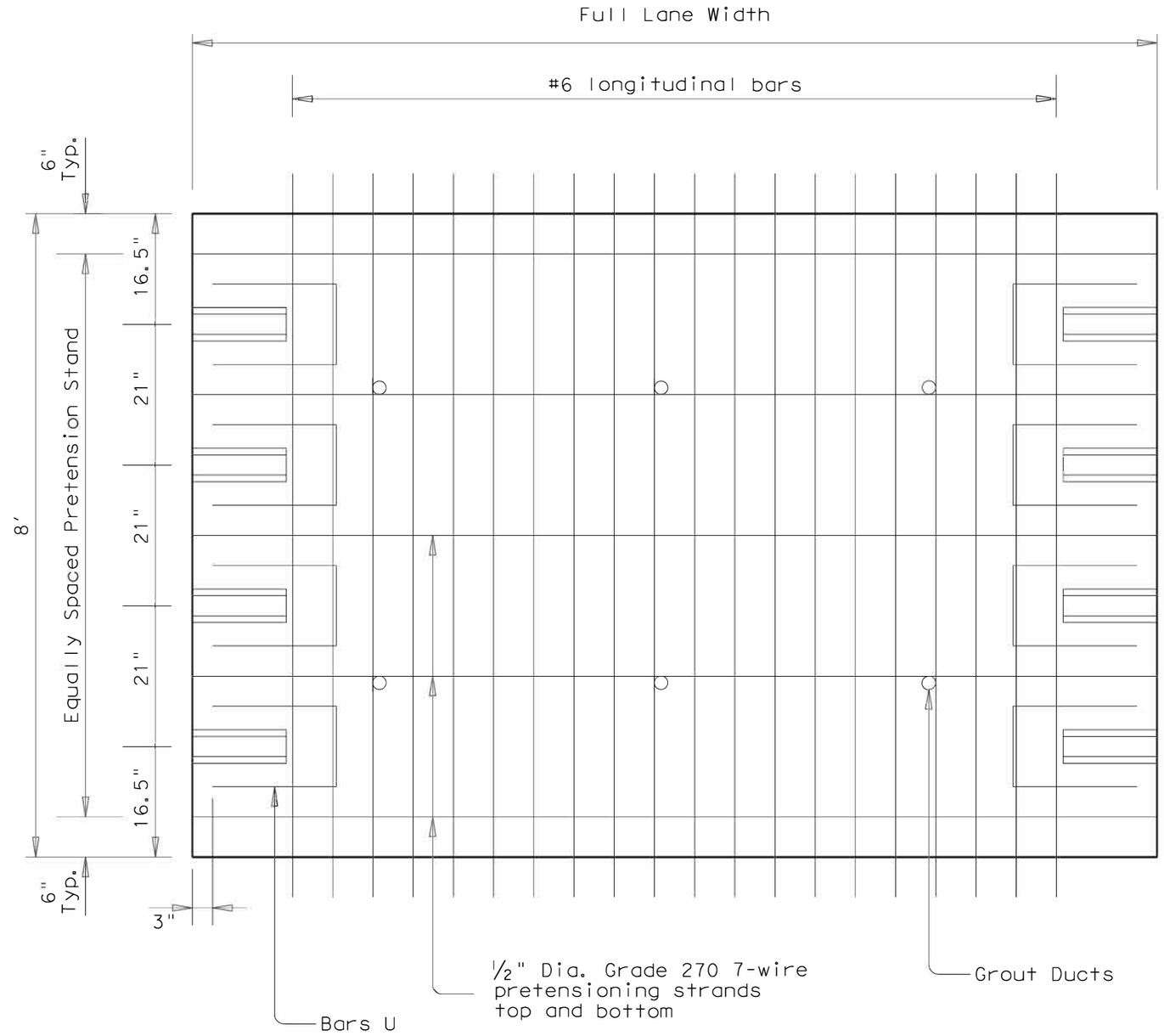
RIGID PAVEMENT POTHOLE REPAIR

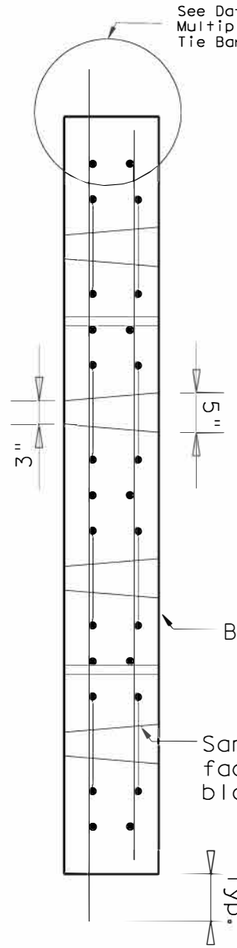
SCALE: N.T.S. SHEET 1 OF 1

©$YEAR$	CONT	SECT	JOB	HIGHWAY
	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	14	TRAVIS		79

DATE: $DATE$ $TIME$
FILE: $FILE$

TABLE OF STRAND AND BAR SPACING		
Slab Thickness	No. of Strand	Max. Spacing of Long. Steel
10" to 11.5"	8	7"
12" to 13"	10	6"





GENERAL NOTES:

PANEL SHOP DRAWINGS WILL BE SUBMITTED AND REVIEWED BY MATERIALS AND TESTS DIVISION'S RIGID PAVEMENT AND CONCRETE MATERIALS SECTION.

PANELS WILL BE FABRICATED 1/2" THINNER THAN EXISTING CONCRETE PAVEMENT.

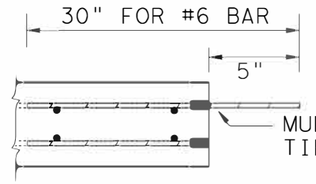
PROVISIONS SHALL BE MADE FOR LIFTING PANELS USING DOG-BONE TYPE ANCHOR SYSTEM. THE LOCATION OF THE ANCHORS SHALL BE BETWEEN 0.207L AND 0.25L (APPROXIMATE QUARTER POINTS), WITH A MINIMUM 4 ANCHORS.

USE CLASS H CONCRETE. MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT RELEASE AND 5000 PSI AT 28 DAYS.

ALL PLAIN REINFORCEMENTS SHALL BE GRADE 60 AS PER ITEM 440, "REINFORCING STEEL."

ALL 7-WIRE STRAND SHALL BE GRADE 270 (LOW RELAXATION) AS PER ITEM 426, "PRESTRESSING." STRESS STRAND TO 31 KIPS EACH.

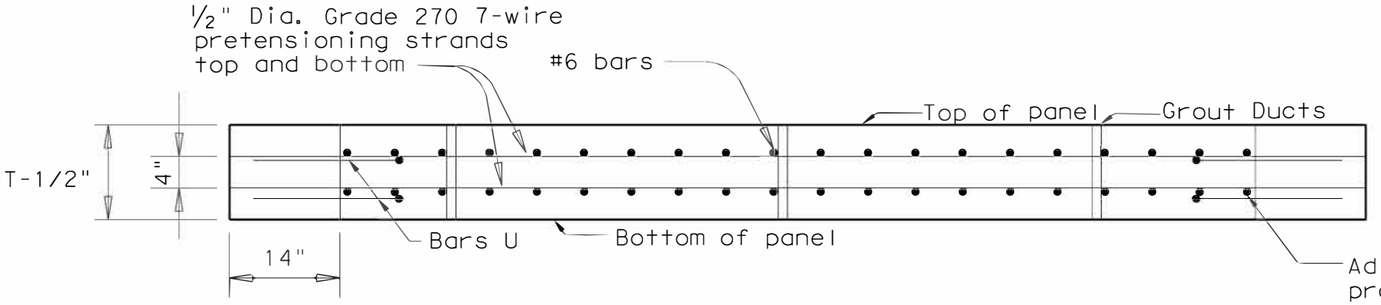
PRECAST CONCRETE MANUFACTURER TO PROVIDE A PANEL LEVELING SYSTEM.

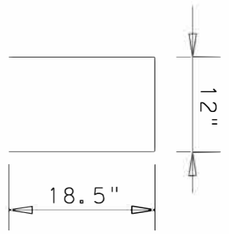


Bottom Multiple Piece Tie Bar only needed when multiple panels are placed adjacent to each other for continuous repairs.

Detail A

Multiple-Piece Tie Bar





Bar U

Texas Department of Transportation

PRECAST PAVEMENT PANEL FOR CRCP REPAIR

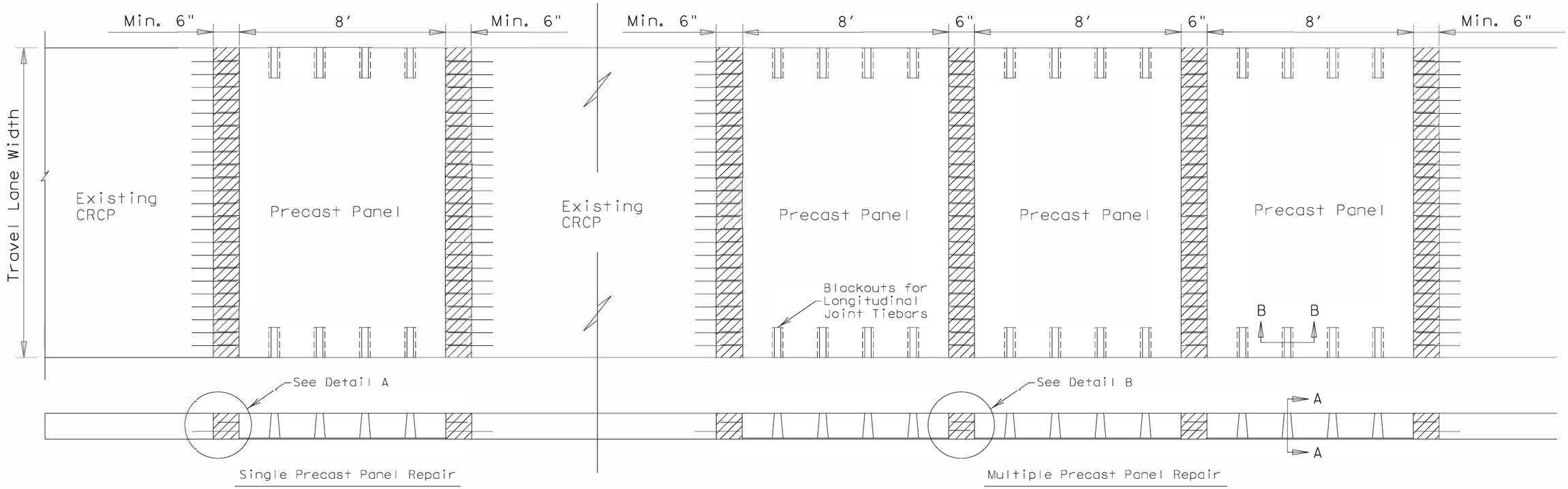
FILE:	DN:	CK:	DW:	CK:	
© TxDOT	DISTRICT	FEDERAL AID PROJECT			SHEET
REVISIONS	AUS				80
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	TRAVIS		6359	53	001	SH130

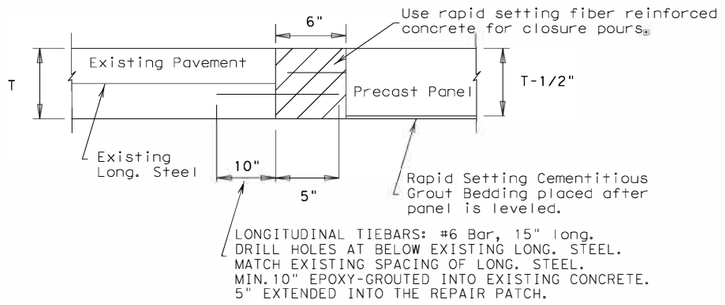
FILE:
DATE:

PATH:

LEVELS DISPLAYED

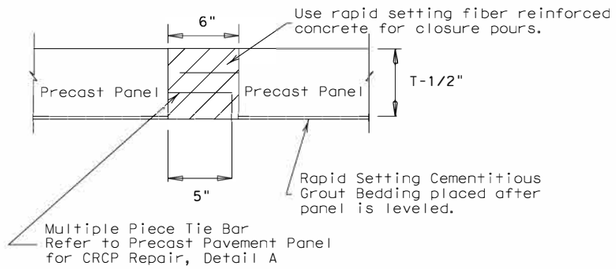
1	2	3	4	5	6	7	8	9	10	11	21	31	41	51	61	
7	8	9	20	21	22	32	42	52	62	72	82	92	93	03	13	
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63		





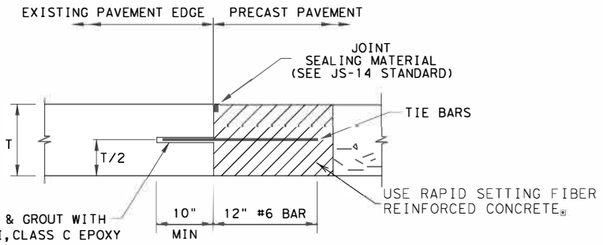
Detail A

SINGLE PANEL CLOSURE DETAIL



Detail B

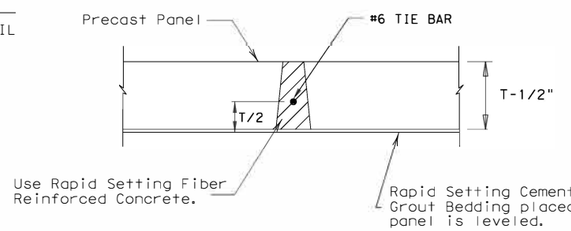
MULTIPLE PANEL CLOSURE DETAIL



1. DEMONSTRATE THAT THE BOND STRENGTH OF THE EPOXY-GROUTED TIE BARS MEETS THE REQUIRMENTS OF PULL-OUT TEST SPECIFIED IN ITEM 361.
2. USE #6 TIE BARS.

LONGITUDINAL JOINT DETAIL

SECTION A-A



1. SEE "PRECAST PAVEMENT PANEL FOR CRCP REPAIR" SHEET FOR BLOCKOUT DETAILS

LONGITUDINAL JOINT DETAIL

SECTION B-B

FILE:
DATE:

LEVELS DISPLAYED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	PATH=
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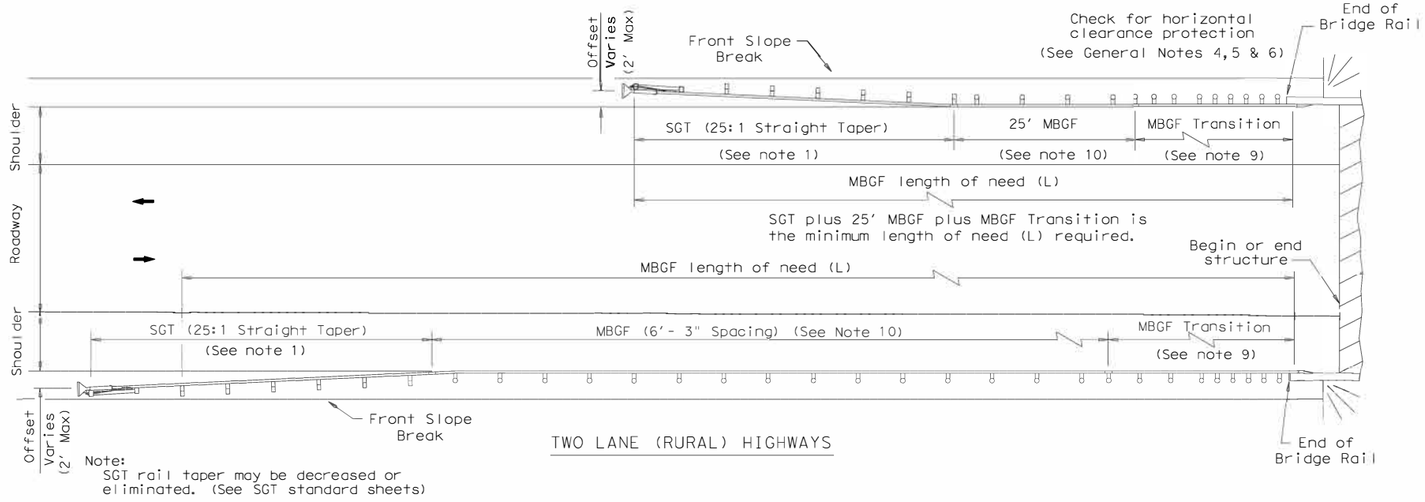
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63		

Texas Department of Transportation

PRECAST PAVEMENT LAYOUT FOR CRCP REPAIR

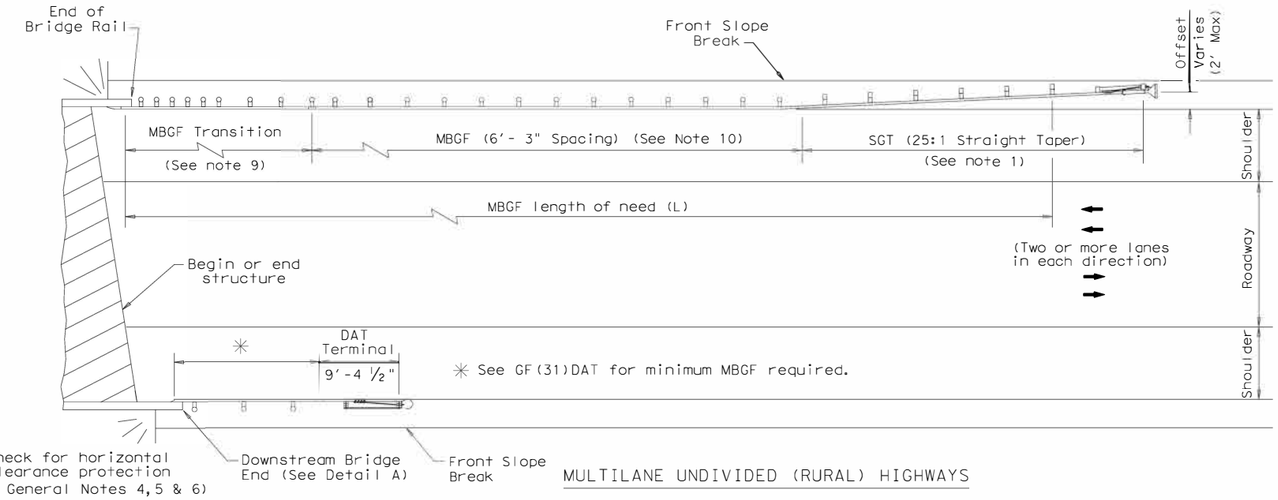
FILE:	DN:	CK:	DW:	CK:	
© TxDOT	DISTRICT	FEDERAL AID PROJECT			SHEET
REVISIONS	AUS				81
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	TRAVIS		6359	53	001	SH130

DATE:
FILE:

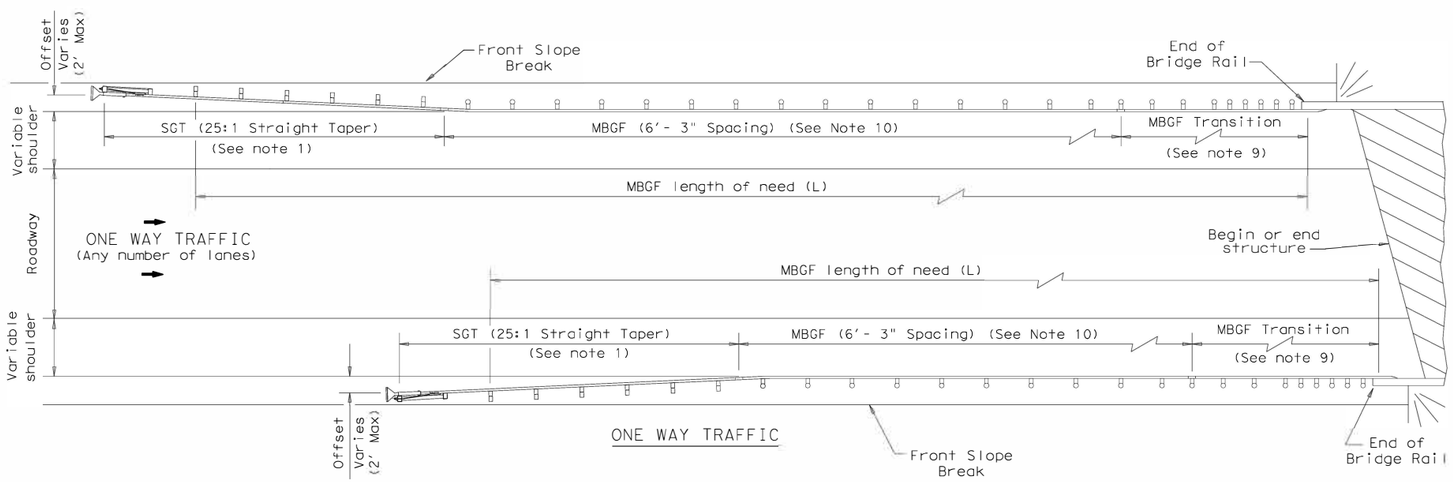


TWO LANE (RURAL) HIGHWAYS

Note:
SGT rail taper may be decreased or eliminated. (See SGT standard sheets)



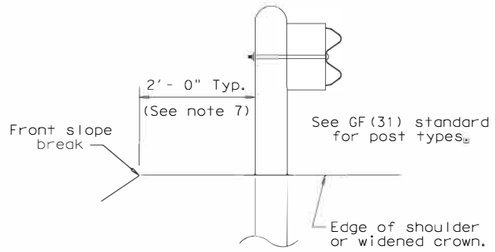
MULTILANE UNDIVIDED (RURAL) HIGHWAYS



ONE WAY TRAFFIC

GENERAL NOTES

1. For more detail: See GF(31), SGT( )31, GF(31)TR, and GF(31)TL2 standard sheets.
2. Quantities of metal beam guard fence (MBGF) at individual bridge ends are as shown in the plans.
3. Use average daily traffic (ADT) for the current year to determine MBGF length of need in accordance with the Roadway Design Manual unless otherwise specified. Where significant traffic volume growth is anticipated on low volume (0-750 ADT) highways, use length determinations for the higher volume category.
4. MBGF may not be required to shield departure end of bridge unless other obstacles within the horizontal clearance limits or opposing traffic indicate a MBGF consideration.
5. Downstream anchor terminals (DAT) are only for downstream end anchorage use, outside the horizontal clearance area of opposing traffic.
6. Direct connection of MBGF to concrete rails are only for downstream rail connections outside the horizontal clearance area of opposing traffic. (This requires a minimum of three standard line posts plus the DAT terminal, See Detail A)
7. The crown shall be widened to accommodate MBGF. Typically the "front slope" break should be 2'- 0" from the back of the MBGF post. This applies to new construction on new alignment or where existing roadway cross section is to be widened to increase roadway width. This does not apply to rehabilitation work where existing roadway crown width is to be retained (See Typical Cross Section at MBGF).
8. For restrictive bridge widths: The MBGF should be properly transitioned from the existing bridge rail to the adjoining MBGF (See MBGF Transition Standards). Metal beam guard fence at these bridge location(s) shall be flared at the rate of 25:1 or flatter, and be of the length necessary to locate the terminal end at the 2 ft. "maximum" offset from the shoulder edge in the approach direction.
9. Transition length and post spacing will vary depending on the transition type. Transition type will be shown elsewhere in the plans.
10. A minimum 25' length of MBGF will be required.



TYPICAL CROSS SECTION AT MBGF

Note:
All rail elements shall be lapped in the direction of adjacent traffic.

DETAIL A
Showing Downstream Rail Attachment

Texas Department of Transportation

Design Division Standard

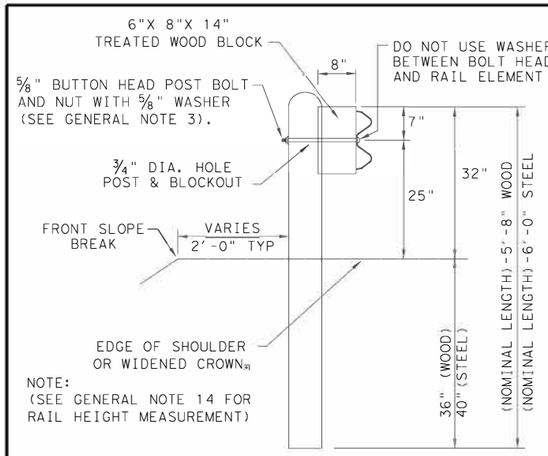
BRIDGE END DETAILS

(METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS)

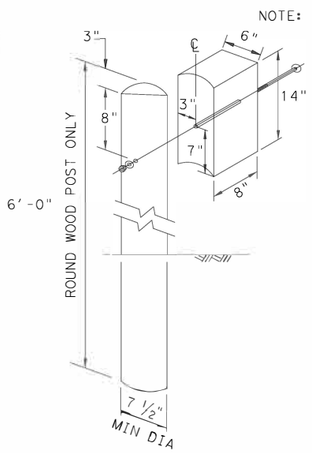
BED-14

FILE: bed14.dgn	DN: TxDOT	CK: AM	DW: BD/VP	CK: CGL
© TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
REVISED APRIL 2014 SEE (MEMO 0414)	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		82

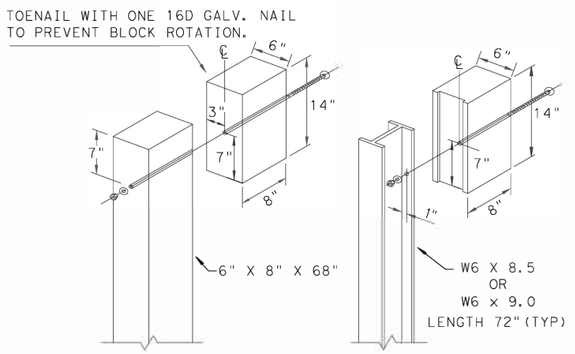
DATE: 11/2/2020
FILE: N:\P5092-14-18-2\CADD\DGN\03_ROADWAY\SH 130\StdDetails\SHI30_001_gf3119.dgn



TYPICAL POST PLACEMENT



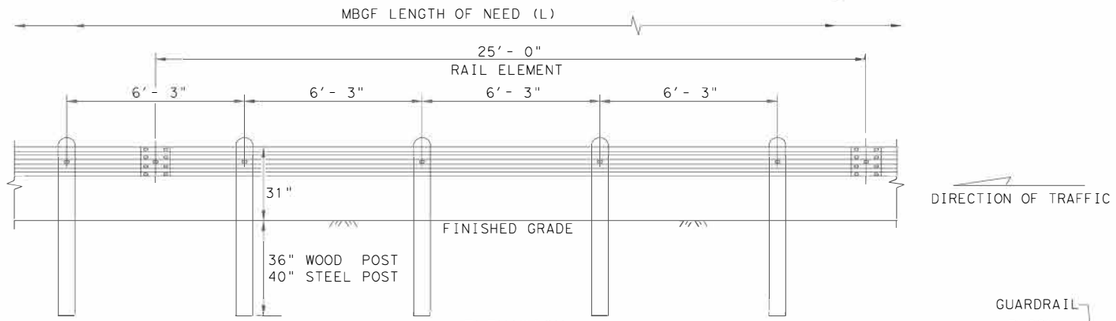
WOOD BLOCK TO
ROUND WOOD POST



WOOD BLOCK TO
RECTANGULAR WOOD POST

ROUTED WOOD BLOCK
TO I-BEAM STEEL POST

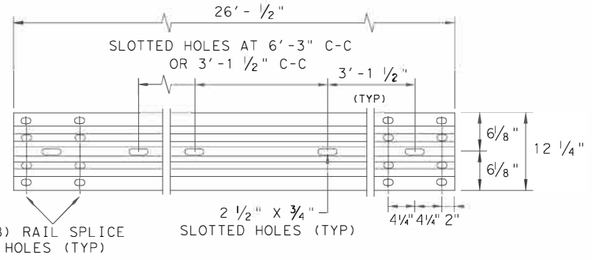
NOTE: ✱✱ "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



ELEVATION
MID-SPAN RAIL SPLICE

DIRECTION OF TRAFFIC

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.

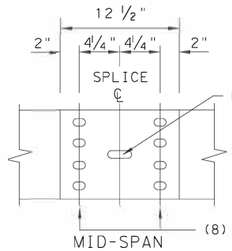
NOTE:
FOUR TYPES OF BUTTON-HEAD GUARD RAIL
BOLTS COME WITH A RECCESSED NUT.

SPLICE BOLT LENGTH
FBB01 = 1 1/4"
FBB02 = 2"
VARIES
5/8"

POST & BLOCK LENGTH
FBB03 = 10"
FBB04 = 18"

BUTTON HEAD BOLT

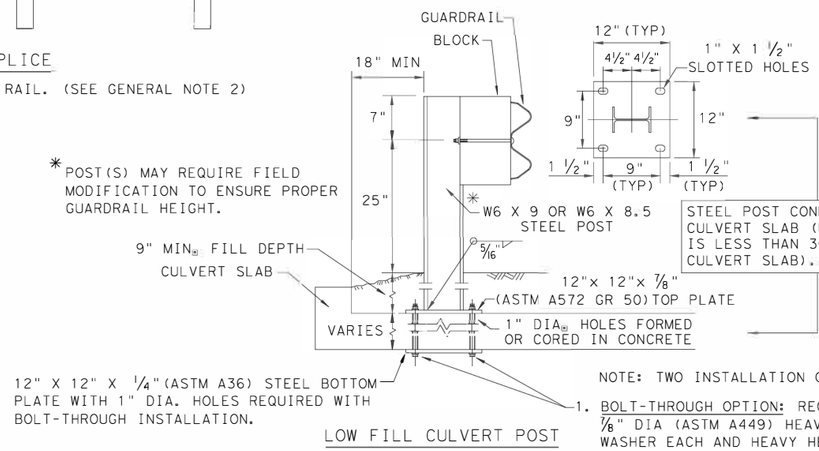
NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



MID-SPAN
RAIL SPLICE DETAIL

DIRECTION OF TRAFFIC

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



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.

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 (FWC16a) 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.

NOTE: TRANSISTIONS 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.

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

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©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY	
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	DIST	COUNTY		SHEET NO.	
	AUS	TRAVIS		83	

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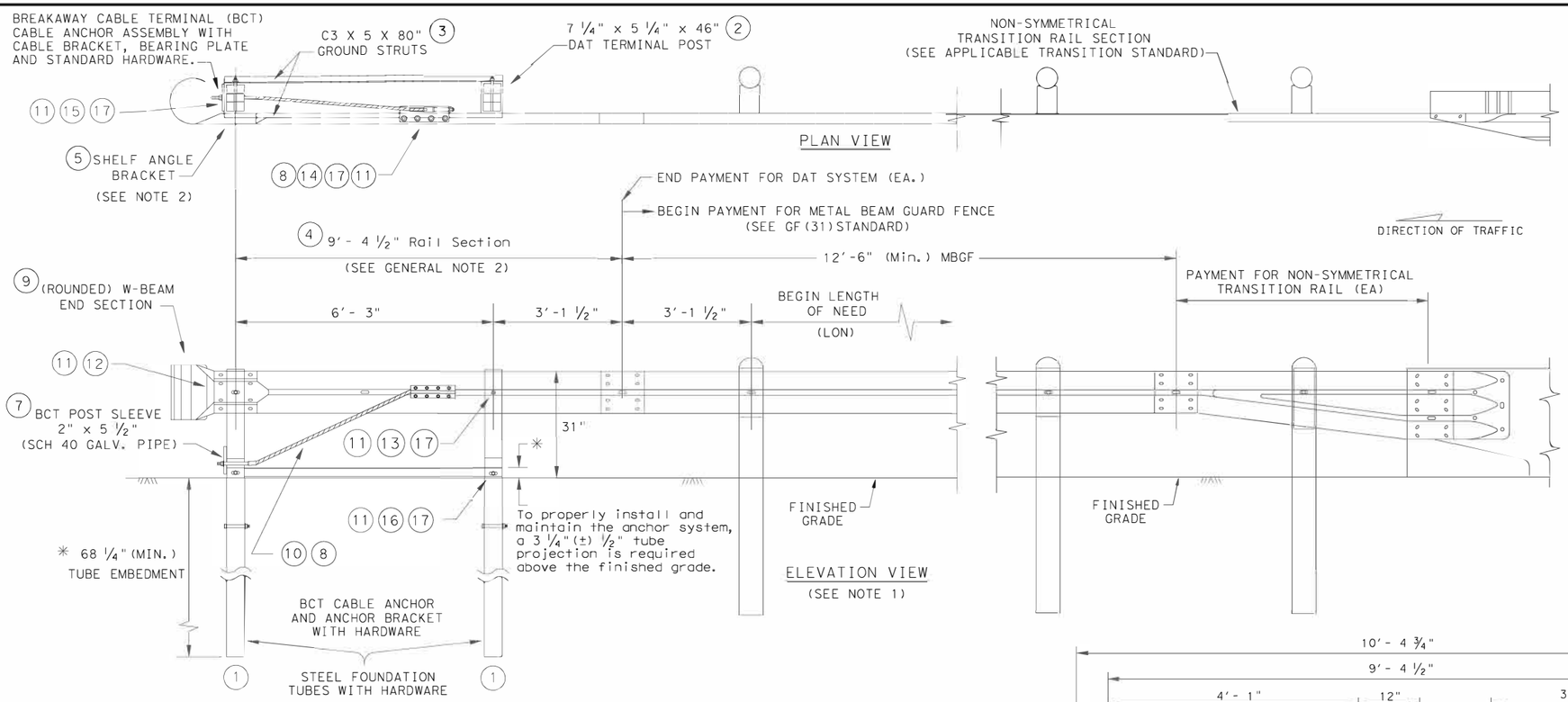


DOWNSTREAM ANCHOR TERMINAL (DAT)

NOTE: ONLY FOR DOWNSTREAM USE, WHEN LOCATED OUTSIDE THE HORIZONTAL CLEARANCE AREA OF OPPOSING TRAFFIC.

GENERAL NOTES

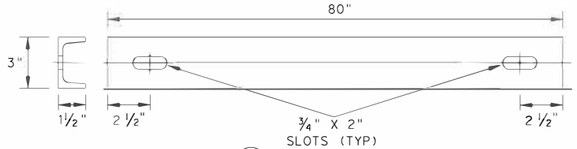
1. THE DETAIL SHOWN IS THE MINIMUM LENGTH OF NEED (LON) FOR A DOWNSTREAM ANCHOR TERMINAL (DAT) CONNECTED TO A CONCRETE RAIL.
2. THE RAIL SECTION AT THE END POST IS SUPPORTED BY THE SHELF ANGLE BRACKET. THE RAIL ELEMENT IS NOT ATTACHED TO THE END POST.
3. THE FOUNDATION TUBES SHALL NOT PROJECT MORE THAN 3 3/4" ABOVE THE FINISHED GRADE.
4. ALL HARDWARE FOR DAT SHALL BE ASTM A307 UNLESS OTHERWISE SHOWN.
5. REFER TO GF(31) SHEET FOR TERMINAL CONNECTION DETAILS.

MOW STRIP INSTALLATION

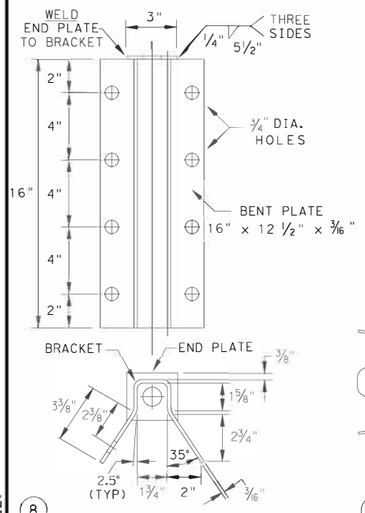
IF A MOW STRIP IS REQUIRED WITH THE DAT INSTALLATION THE LEAVE-OUT AREA AROUND THE STEEL FOUNDATION TUBES AND THE TWO CHANNEL STRUTS MAY BE OMITTED. THIS WILL REQUIRE A FULL POUR AT THE FOUNDATION TUBES.

#	(DAT) PARTS LIST	QTY
(1)	STEEL FOUNDATION TUBE	2
(2)	DAT TERMINAL POST	2
(3)	CHANNEL STRUT	2
(4)	TERMINAL RAIL ELEMENT	1
(5)	SHELF ANGLE BRACKET	1
(6)	BCT BEARING PLATE	1
(7)	BCT POST SLEEVE	1
(8)	GUARDRAIL ANCHOR BRACKET	1
(9)	(ROUNDED) W-BEAM END SECTION	1
(10)	BCT CABLE ANCHOR	1
(11)	RECESSED NUT, GUARDRAIL	20
(12)	1 1/4" BUTTON HEAD BOLT	4
(13)	10" BUTTON HEAD BOLT	2
(14)	5/8" X 2" HEX HEAD BOLT	8
(15)	5/8" X 8" HEX HEAD BOLT	4
(16)	5/8" X 10" HEX HEAD BOLT	2
(17)	5/8" FLAT WASHER	18

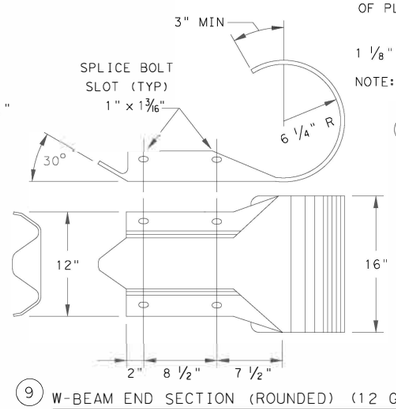
(4) TERMINAL RAIL ELEMENT FOR DAT



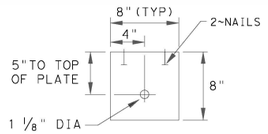
(3) CHANNEL STRUT
C3 X 5 X 80", GRADE A36



(8) GUARDRAIL ANCHOR BRACKET

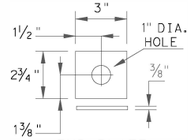


(9) W-BEAM END SECTION (ROUNDED) (12 GA.)

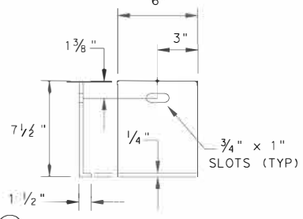


NOTE: DRIVE NAILS AND BEND OVER TO PREVENT PLATE ROTATION

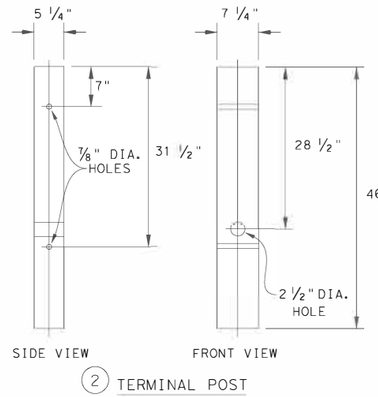
(6) BEARING PLATE
8"x 8"x 5/8" ℞



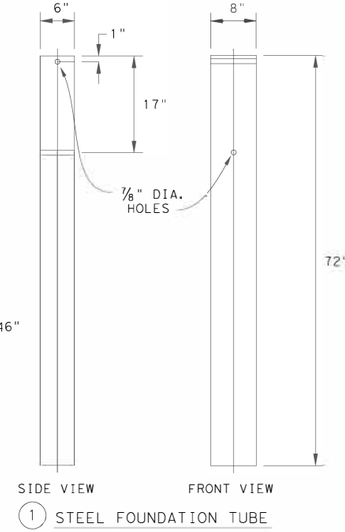
END PLATE



(5) SHELF ANGLE BRACKET



(2) TERMINAL POST
7 1/4"x 5 1/4"x 46" WOOD POST



(1) STEEL FOUNDATION TUBE
6"x 8"x 1/8" x 72" STEEL TUBE

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE
(DOWNSTREAM ANCHOR TERMINAL)
TL-3 MASH COMPLIANT

GF(31)DAT-19

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	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		84

DATE:
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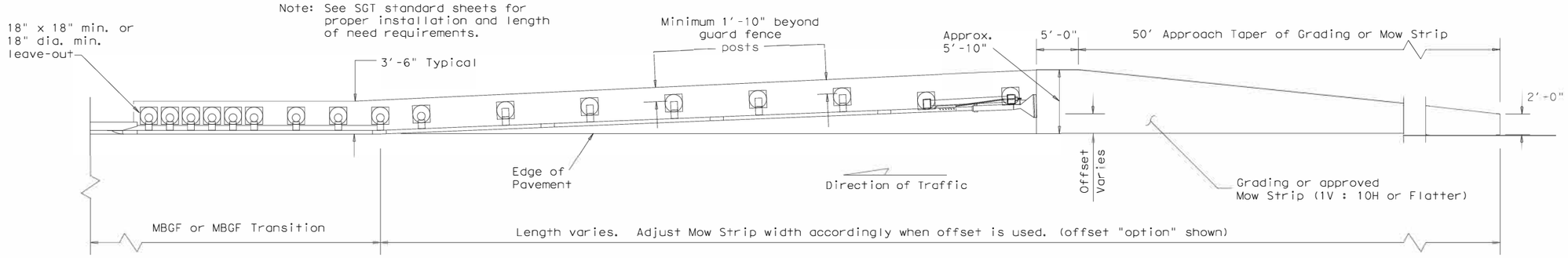
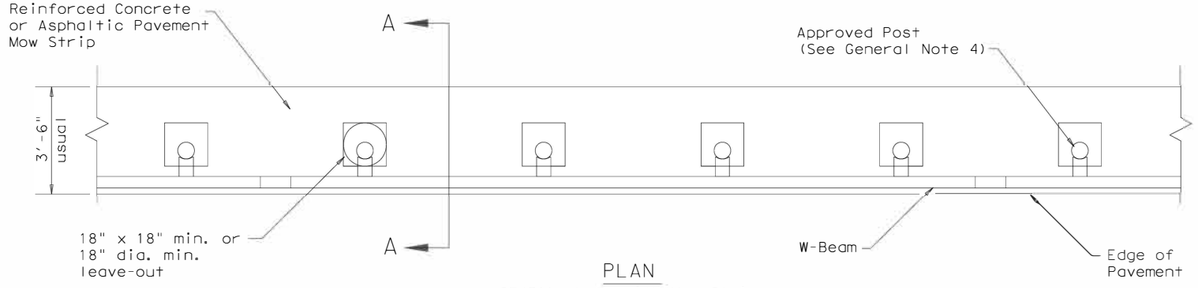
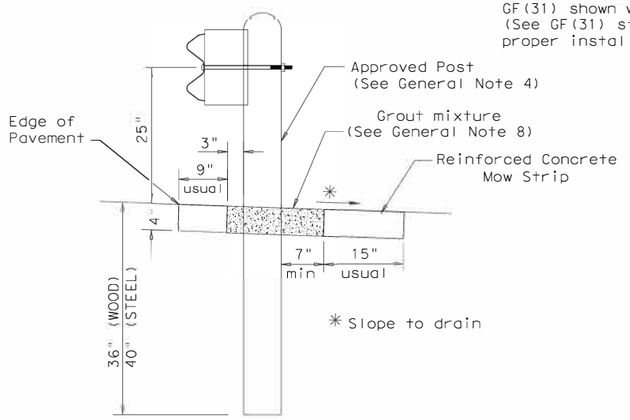


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



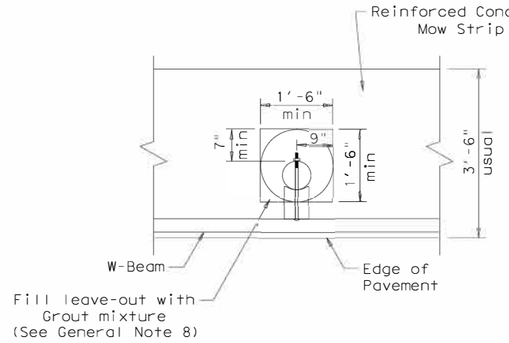
PLAN

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



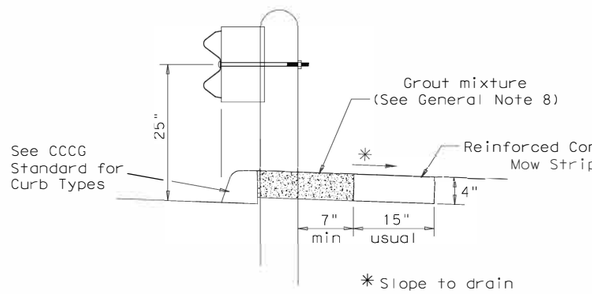
SECTION A-A

Typical



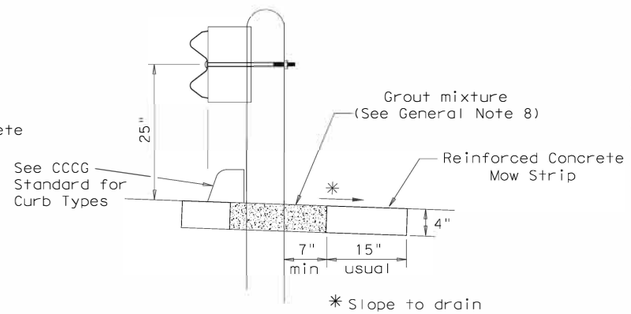
MOW STRIP DETAIL

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



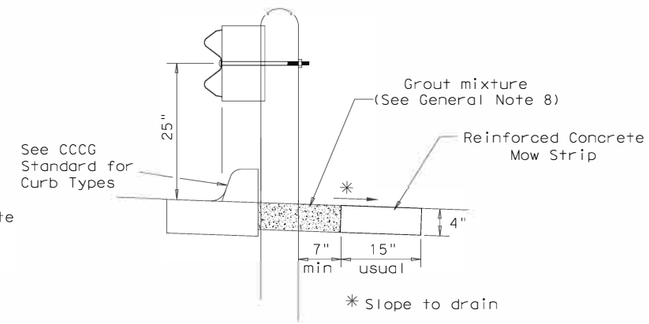
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

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.

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 ½" 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.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE (MOW STRIP) TL-3 MASH COMPLIANT

GF(31)MS-19

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	AUS	TRAVIS		85

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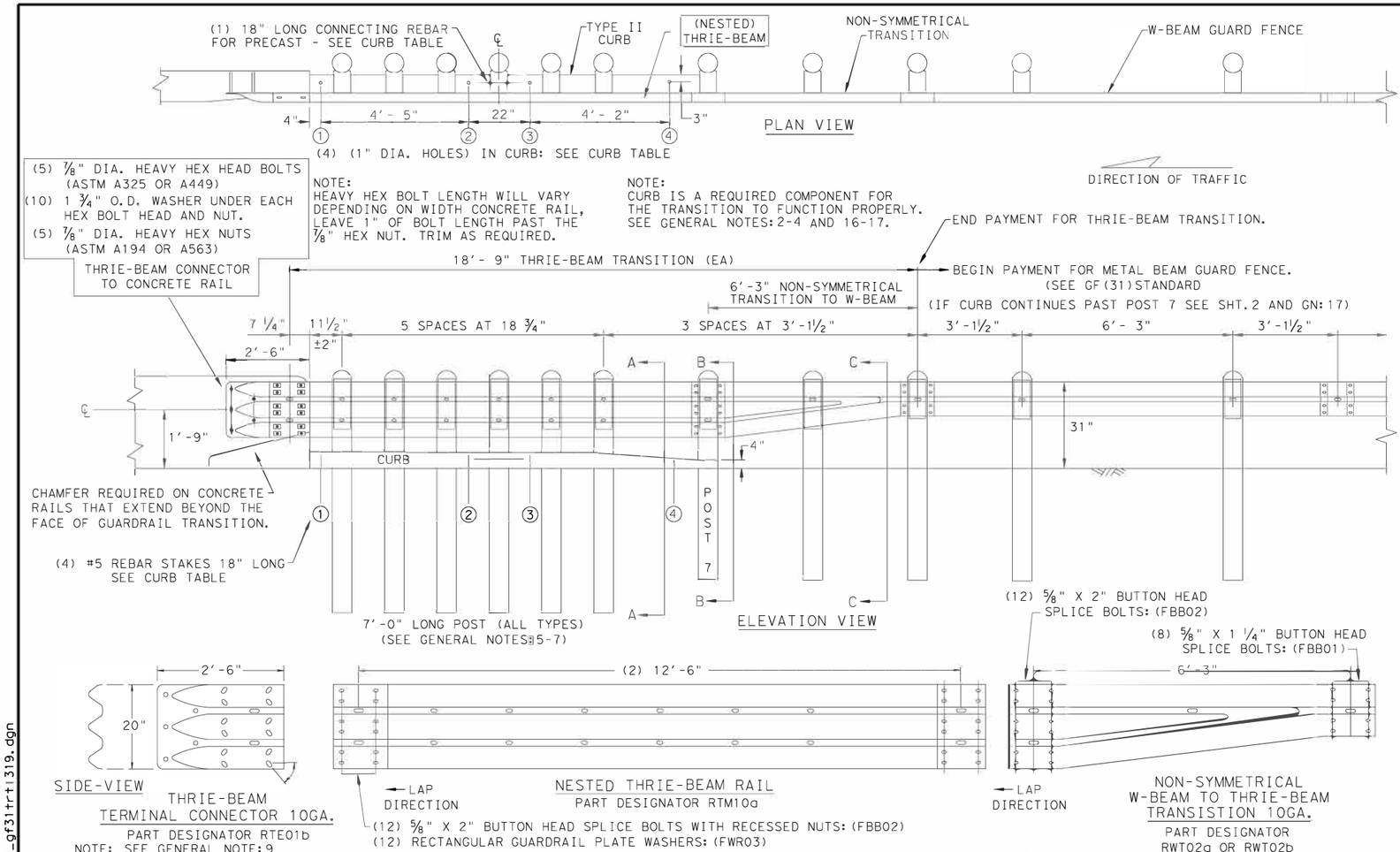


GENERAL NOTES

1. CONTACT THE DESIGN DIVISION FOR DRAINAGE CUT OUT OPTIONS NEEDED WITHIN THE CURB SECTION OF THE THRIE-BEAM TRANSITION. (512) 416-2678
2. CONCRETE CURB MAY BE CAST-IN-PLACE OR PRECAST AS SHOWN ON THIS SHEET. WHEN USED IN CONJUNCTION WITH THE THRIE-BEAM TRANSITIONS, CURB SHALL BE TYPE II (5- 3/4") HEIGHT; SEE CURRENT CCCG STANDARD SHEET FOR FURTHER DETAILS. IF OTHER CURB HEIGHTS ARE SHOWN IN THE PLANS IN CONJUNCTION WITH THE TRANSITION, THE CURB HEIGHT MAY BE FROM 4" TO 8" WITH A RELATIVELY VERTICAL FACE. CONCRETE CURB SHALL BE CONTINUOUS TO THE SEVENTH POST UNLESS OTHERWISE SHOWN IN THE PLANS. SEE GENERAL NOTE: 17 FOR CIRCUMSTANCES WHERE CURB CONTINUES PAST POST 7.
3. CONCRETE CURB TYPE II SUBSIDIARY TO "METAL BEAM GUARD FENCE TRANSITION". IF NO ADDITIONAL CURB IS INDICATED BEYOND THE TRANSITION, THEN ANY CURB HEIGHT GREATER THAN 4" WILL BE TAPERED DOWN BEGINNING AT THE LAST 7 FT. POST TO A MAXIMUM HEIGHT OF 4" AT POST 7. IF SHOWN ELSEWHERE IN THE PLANS, ADDITIONAL CURB UNDERNEATH GUARDRAIL WILL BE PAID FOR BY THE LINEAR FOOT.
4. UNLESS OTHERWISE SHOWN IN THE PLANS, TRANSITIONS SHALL BE PLACED WITH THE BLOCKOUT FACE IN FRONT OF OR DIRECTLY ABOVE THE CURB FACE. SEE SECTION A-A.
5. FOR ROUND WOOD POST SYSTEMS, ALL ROUND WOOD POSTS SHALL BE 7 1/2" DIA. MINIMUM THROUGHOUT THE THRIE-BEAM TRANSITION.
6. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. REFER TO GF(31) STANDARD SHEET.
7. THE POST LENGTH SHALL BE MARKED ON ALL 7'- 0" LONG POSTS BY THE MANUFACTURER. THE MARK SHALL BE LOCATED WITHIN THE TOP 1 FT. REGION OF THE POST, AT LEAST 5/8" IN HEIGHT, AND VISIBLE AFTER INSTALLATION. WOODEN POSTS SHALL BE MARKED WITH A BRAND, AND STEEL POSTS WITH A STENCIL BEFORE GALVANIZING.
8. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
9. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE THRIE-BEAM TERMINAL CONNECTOR AND THE THRIE-BEAM TRANSITION TO W-BEAM SHALL BE OF THE SAME MATERIAL, BUT SHALL NOT BE LESS THAN 10 GAUGE. CONTRACTOR SHALL VERIFY THAT THE LOCATIONS OF BOLT HOLES MATCH THOSE IN THE THRIE-BEAM TERMINAL CONNECTOR PRIOR TO ORDERING MATERIALS.
10. 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 (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
11. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
12. CROWN SHALL BE WIDENED TO ACCOMMODATE TRANSITIONS.
13. WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
14. 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. TXDOT'S CONSTRUCTION DIVISION MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL CAN FURNISH COMPOSITE MATERIAL BLOCKS.
15. REFER TO GF(31)STANDARD SHEET & BRIDGE RAILING DETAILS FOR ADDITIONAL DETAILS.
16. THE INSTALLATION OF THE TYPE II CURB IS CRITICAL FOR THE PERFORMANCE OF THE THRIE-BEAM TRANSITION SYSTEM. THE CURB PREVENTS (VEHICLE WHEEL SNAGGING) AT THE CONCRETE RAIL AND IS REQUIRED TO MEET MASH CRASH TEST CRITERIA.
17. IF CURB EXTENDS BEYOND POST 7, 25' OF NESTED W-BEAM GUARDRAIL SHALL BE INSTALLED BEYOND THE PAY LIMITS OF THRIE-BEAM TRANSITION SECTION, (SEE SHT.2). PAYMENT FOR THIS 25' SECTION WILL BE BY LINEAR FOOT, PAY ITEM "0540 6XXX MTL W-BEAM GD FEN (NESTED)(TIM POST)" OR "540 6XXX MTL W-BEAM GD FEN (NESTED)(STEEL POST)" AS APPLICABLE FOR POST TYPE. SEE SHT.2 FOR ADDITIONAL INFORMATION.

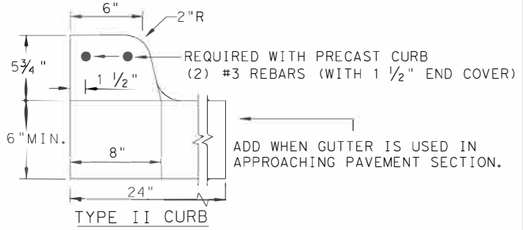
THRIE-BEAM TERMINAL - CURB TABLE

PRECAST CURB FULL LENGTH EQUALS 12'- 2"
THE PRECAST CURB MAY BE FORMED INTO TWO SECTIONS.

CURB (1) LENGTH 5'- 8"
CURB (2) LENGTH 6'- 6"
TAPER CURB (2) TO A HEIGHT OF 4" AT POST 7

CONNECTING PRECAST CURB SECTIONS (1) & (2):
FORM OR CORE (1" DIA. HOLE 9" LONG) INTO EACH CURB END.
USE (1) #5 GR.60 REBAR 18" LONG TO CONNECT BOTH CURBS.

SECURING PRECAST OR CAST-IN-PLACE TO FINISHED GRADE:
FORM OR CORE FOUR (1" DIA. HOLES), SEE BOTH VIEWS FOR HOLE LOCATIONS. DRIVE (4) #5 GR.60 REBAR STAKES 18" LONG INTO THE GROUND AND 1/2" BELOW TOP OF CURB. FILL HOLES WITH APPROVED GROUT MIXTURE.



TYPE II CURB

NOTE: OPTIONS FOR TYPE II CURB:
1. PRECAST
2. CAST-IN-PLACE

* NOTES: NOT NEEDED FOR CAST-IN-PLACE.
SEE TYPE II CURB DETAIL FOR REBAR AND COVER REQUIREMENTS.
PERCUSSION DRILLING IS NOT PERMITTED WITH:
TYPE II CURB, BRIDGE RAIL OR CONCRETE TRAFFIC RAIL.

TYPE II CURB DETAILS

HIGH-SPEED TRANSITION

SHEET 1 OF 2

Texas Department of Transportation — Design Division Standard

METAL BEAM GUARD FENCE THRIE-BEAM TRANSITION TL-3 MASH COMPLIANT

GF(31)TR TL3-19

FILE: gf31trt1319.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
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REVISIONS	6340	46	001	SH 130
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	AUS	TRAVIS		86

DATE: 11/2/2020
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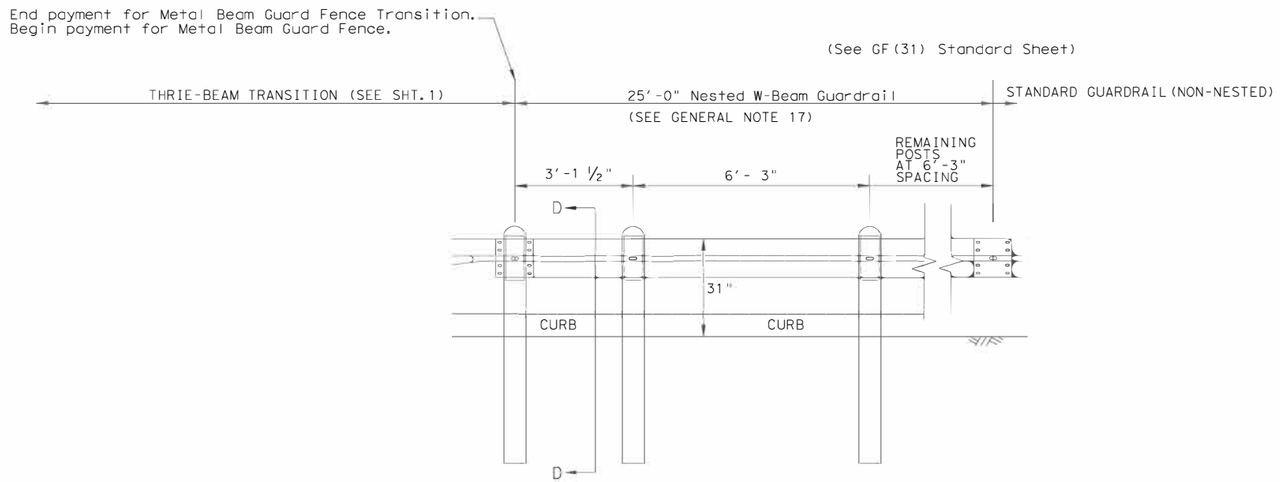
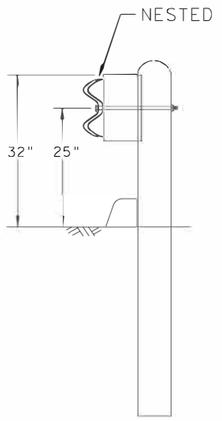
REQUIRED ALTERNATIVE FOR CONTINUOUS CURB EXTENDING PAST POST 7 (SEE SHT. 1 GENERAL NOTE 17)





SECTION D-D

HIGH-SPEED TRANSITION

Texas Department of Transportation | Design Division Standard

METAL BEAM GUARD FENCE THRIE-BEAM TRANSITION TL-3 MASH COMPLIANT

GF(31)TR TL3-19

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	AUS	TRAVIS		87

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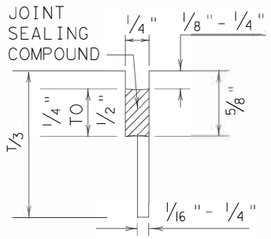
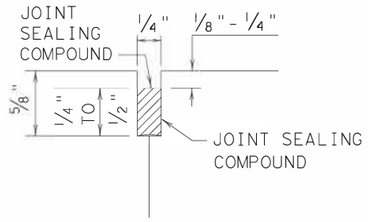
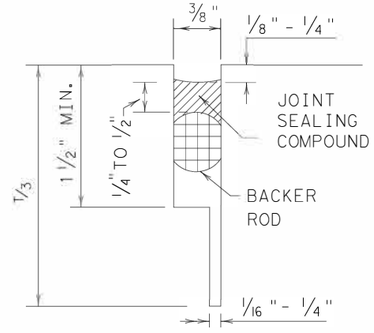
METHOD B: JOINT SEALING COMPOUND



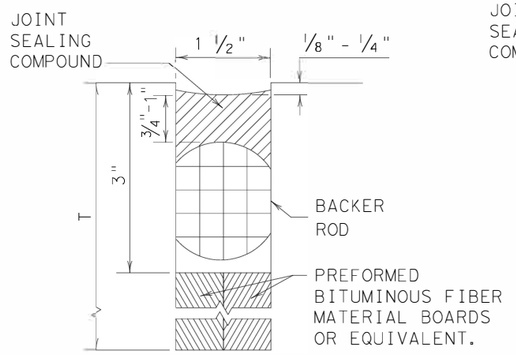
LONGITUDINAL SAWED CONTRACTION JOINT



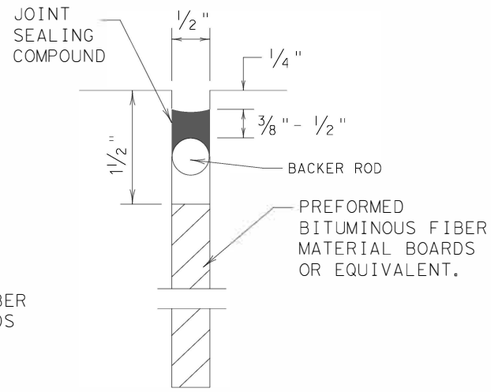
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

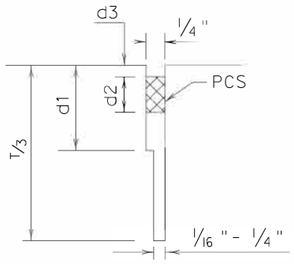


TRANSVERSE FORMED EXPANSION JOINT

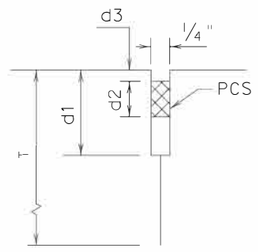


FORMED ISOLATION JOINT

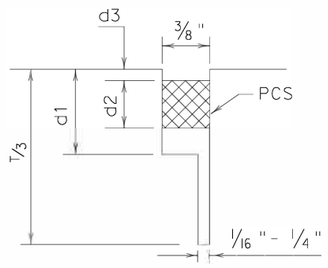
METHOD A: PREFORMED COMPRESSION SEALS (PCS) (DMS-6310 CLASS 6)



LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



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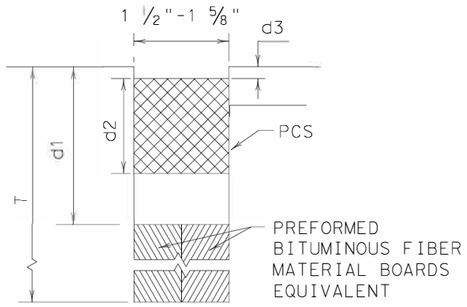


TRANSVERSE FORMED EXPANSION JOINT

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. 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.
4. DIMENSIONS d1, d2, AND d3 SHOWN IN METHOD A SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURER'S RECOMMENDATION.
5. REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR THE CLASSIFICATIONS.
6. FOR SAWED LONGITUDINAL JOINT, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLAN OR APPROVED.
7. 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.
8. 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)".
9. 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.

Texas Department of Transportation

Design Division Standard

CONCRETE PAVING DETAILS

JOINT SEALS

JS-14

FILE: js14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		88

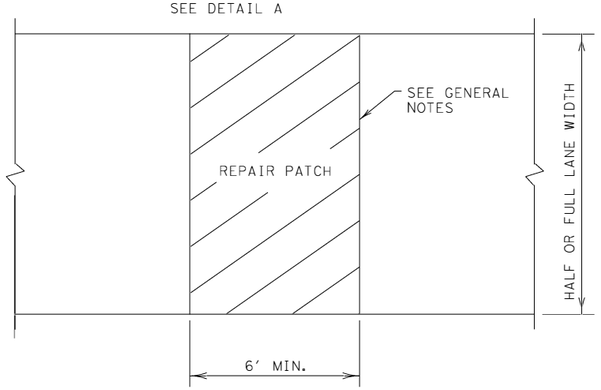
DATE: 11/2/2020
FILE: N:\P5092-14-18-2\CADD\DGN\03_ROADWAY\SH 130\StdDetails\SH130_001_repcp14.dgn

TABLE NO.1 STEEL BAR SIZE AND SPACING						
TYPE PAVEMENT	SLAB THICKNESS AND BAR SIZE		LONGITUDINAL*		TRANSVERSE*	
			REGULAR BARS	TIEBARS	BARS	TIEBARS
	T (IN.)	BAR SIZE	SPACING (IN.)	SPACING (IN.)	SPACING (IN.)	SPACING (IN.)
CRCP	6.0	#5	7.5	7.5	24	24
	6.5		7.0	7.0		
	7.0		6.5	6.5		
	7.5		6.0	6.0		
	8.0	#6	9.0	9.0	24	24
	8.5		8.5	8.5		
	9.0		8.0	8.0		
	9.5		7.5	7.5		
	10.0		7.0	7.0		
	10.5		6.75	6.75		
	11.0		6.5	6.5		
	11.5		6.25	6.25		
	≥12.0		6.0	6.0		
JRCP	<8.0	#5	24.0	12.0	24	24
	≥8.0	#6	24.0	12.0	24	24
CPCD	<8.0	#5	NONE	12.0	NONE	24
	≥8.0	#6	NONE	12.0	NONE	24

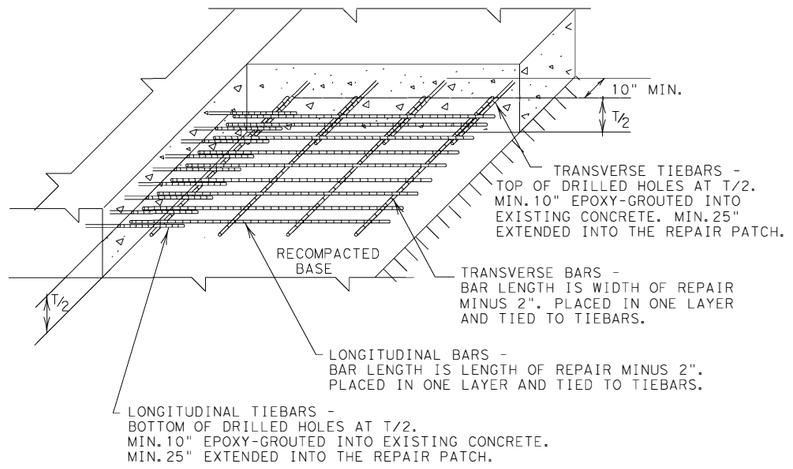
* USE 12" SPACING AS FIRST AND LAST SPACING AT END OR SIDE FOR ALL BARS.

GENERAL NOTES

1. ITEM 361, "REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
2. MULTIPLE PIECE TIEBARS SHALL BE USED WHEN THE REPAIR AREA MUST BE PLACED IN TWO STAGES DUE TO SEQUENCE OF CONSTRUCTION.
3. FULL DEPTH SAW CUTS SHALL BE MADE AROUND THE PERIMETER OF THE AREA TO BE REPAIRED. THE CUT SHALL BE MADE AT A RIGHT ANGLE TO THE PAVEMENT EDGE AND TO THE CENTER LINE OF THE PAVEMENT.
4. AT LEAST ONE LONGITUDINAL FULL DEPTH SAW CUT SHALL BE AT AN EXISTING LONGITUDINAL JOINT.
5. ADDITIONAL SAW CUTS MAY BE REQUIRED WITHIN THE AREA OF THE REPAIR TO FACILITATE REMOVAL OF THE CONCRETE OR TO ALLEVIATE BINDING OF THE FULL DEPTH SAW CUT AT THE REPAIR EDGE.
6. THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
7. EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



PLAN VIEW

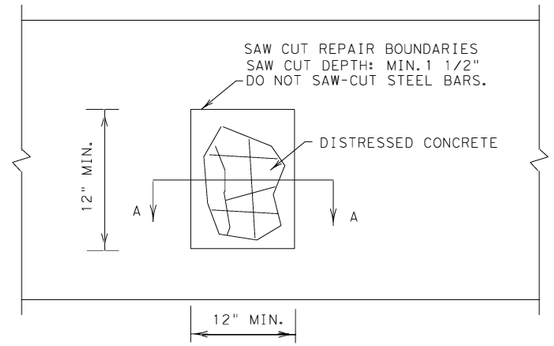


DETAIL A
GROUTED TIEBARS & REINFORCEMENT

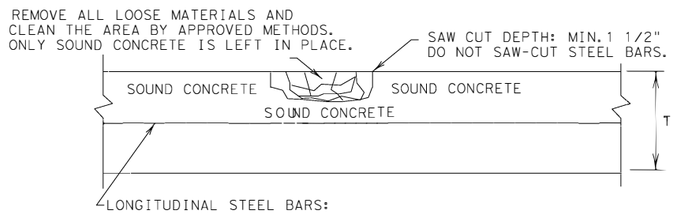
FULL-DEPTH REPAIR OF CRCP, JRCP, AND CPCD

GENERAL NOTES

1. ITEM 361, "REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
2. THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
3. EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."



PLAN VIEW



LONGITUDINAL STEEL BARS:

*REPAIR AREAS MAY BE ADJUSTED AFTER REMOVING DISTRESSED CONCRETE. SWITCH THE HALF-DEPTH REPAIR TO FULL-DEPTH REPAIR IF EXPOSED EXISTING LONGITUDINAL BARS ARE DEFICIENT, AS APPROVED. COMPENSATION WILL BE MADE FOR UNEXPECTED VOLUMES OF REPAIR AREAS OR CHANGES IN SCOPE OF WORK.

*INCREASE THE REPAIR AREA AND PERFORM A FULL-DEPTH REPAIR AS DIRECTED IF LONGITUDINAL STEEL BARS WERE DAMAGED BY THE REMOVAL OPERATIONS. NO ADDITIONAL COMPENSATION WILL BE MADE.

SECTION A-A

HALF-DEPTH REPAIR

Texas Department of Transportation | Design Division Standard

REPAIR OF CONCRETE PAVEMENT

REPCP-14

FILE: repcp14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
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REVISIONS	6359	53	001	SH 130
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	AUS	TRAVIS		89

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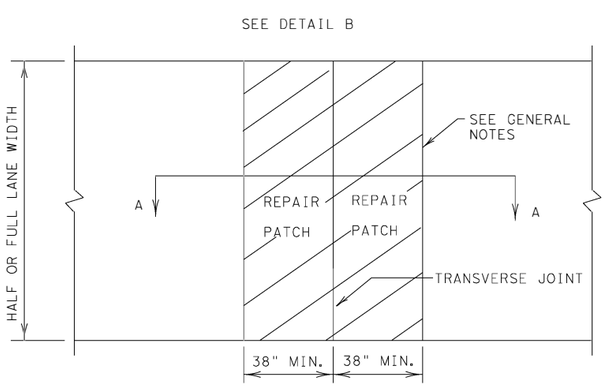
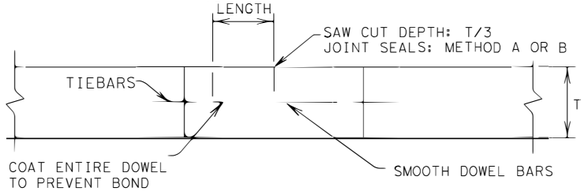
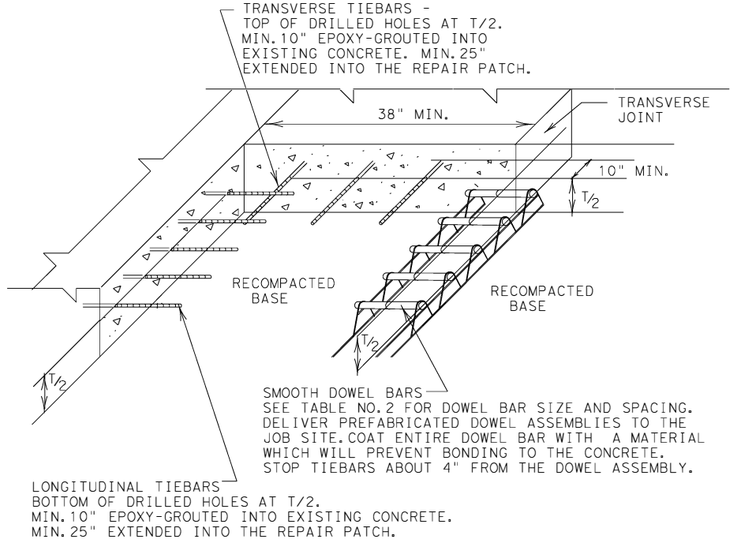


PLAN VIEW



SECTION A-A



DETAIL B
GROUTED TIEBARS & DOWELS

GENERAL NOTES

1. ITEM 361, "REPAIR OF CONCRETE PAVEMENT" SHALL GOVERN FOR THIS WORK.
2. MULTIPLE PIECE TIEBARS SHALL BE USED WHEN THE REPAIR AREA MUST BE PLACED IN TWO STAGES DUE TO SEQUENCE OF CONSTRUCTION.
3. FULL DEPTH SAW CUTS SHALL BE MADE AROUND THE PERIMETER OF THE AREA TO BE REPAIRED. THE CUT SHALL BE MADE AT A RIGHT ANGLE TO THE PAVEMENT EDGE AND TO THE CENTER LINE OF THE PAVEMENT.
4. AT LEAST ONE LONGITUDINAL FULL DEPTH SAW CUT SHALL BE AT AN EXISTING LONGITUDINAL JOINT.
5. ADDITIONAL SAW CUTS MAY BE REQUIRED WITHIN THE AREA OF THE REPAIR TO FACILITATE REMOVAL OF THE CONCRETE OR TO ALLEVIATE BINDING OF THE FULL DEPTH SAW CUT AT THE REPAIR EDGE.
6. THE SAW CUTS WHICH EXTEND OUTSIDE THE AREA OF THE REPAIR WILL BE CLEANED AND FILLED WITH A CEMENTITIOUS GROUT APPROVED BY THE ENGINEER.
7. EXISTING LONGITUDINAL AND TRANSVERSE JOINTS REMOVED DUE TO REPAIR OPERATION SHOULD BE RESTORED IN ACCORDANCE WITH STANDARD SHEET "CONCRETE PAVING DETAILS, JOINT SEALS."
8. 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.

TABLE NO. 2 DOWELS (SMOOTH BARS)			
PAVEMENT THICKNESS (INCHES)	SIZE AND DIA.	LENGTH (IN.)	SPACING (IN.)
<10	#8 (1 IN.)	18.0	12.0
≥10	#10 (1 1/4 IN.)		

REPAIR OF TRANSVERSE JOINT OF CPCD

SHEET 2 OF 2

Texas Department of Transportation | Design Division Standard

REPAIR OF CONCRETE PAVEMENT

REPCP-14

FILE: repcp14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		90

DATE: 11/2/2020
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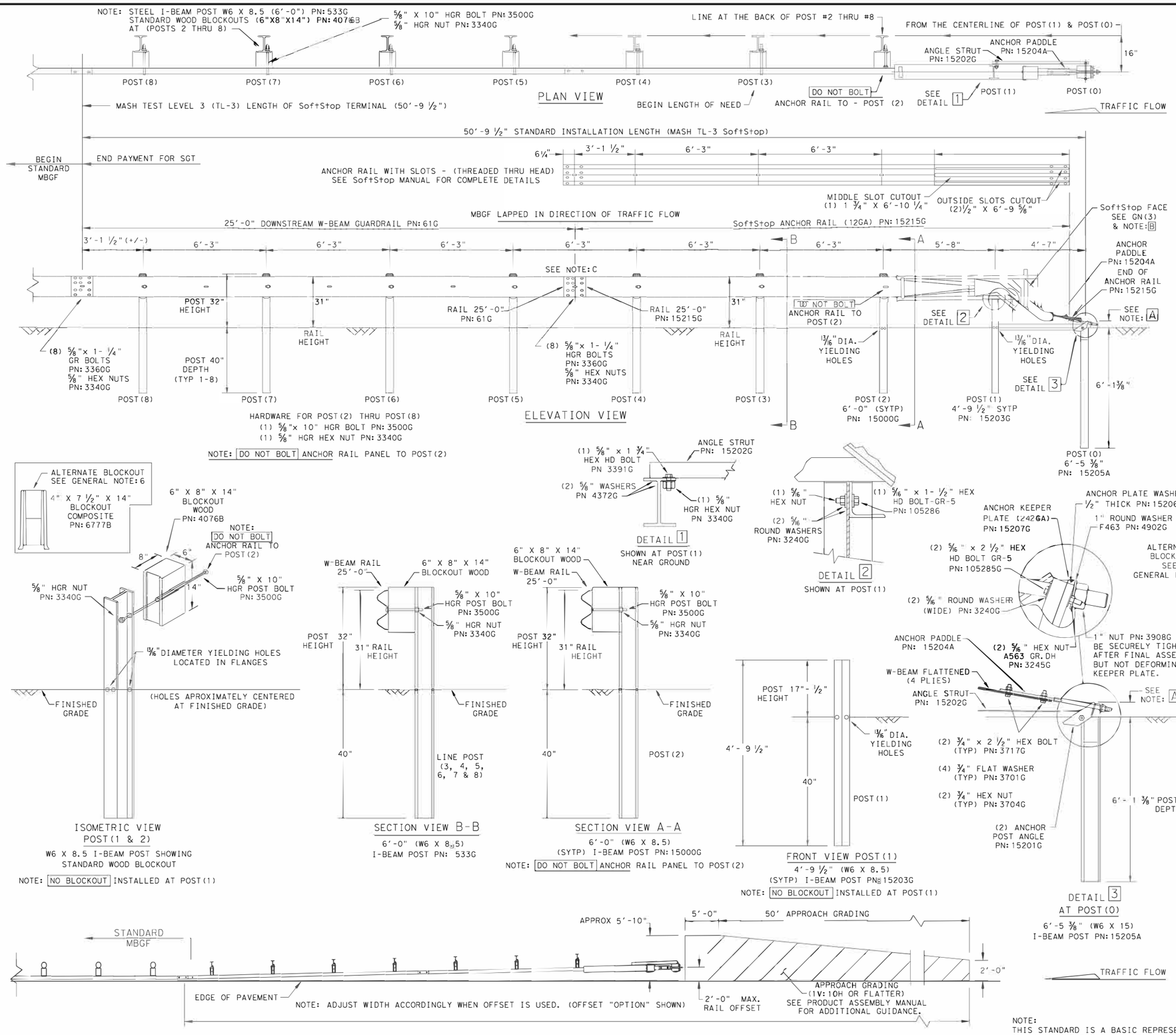

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: TRINITY HIGHWAY AT 1(888)323-6374. 2525 N. STEMMONS FREEWAY, DALLAS, TX 75207
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; SoftStop END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL. PN: 620237B
3. 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.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. A COMPOSITE MATERIAL BLOCKOUT 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.
7. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
8. POSTS SHALL NOT BE SET IN CONCRETE.
9. IT IS ACCEPTABLE TO INSTALL THE SoftStop IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT.
10. DO NOT ATTACH THE SoftStop SYSTEM DIRECTLY TO A RIGID BARRIER.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.

NOTE: A	THE INSTALLATION HEIGHT OF FULLY ASSEMBLED ANCHOR POST WILL VARY FROM 3-¾" MIN. TO 4" MAX. ABOVE FINISHED GRADE.
NOTE: B	PART PN: 5852B RIGHT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING) PART PN: 5851B LEFT-SIDE (HIGH INTENSITY REFLECTIVE SHEETING)
NOTE: C	W-BEAM SPLICE LOCATED BETWEEN LINE POST(4) AND LINE POST(5) GUARDRAIL PANEL 25'-0" PN: 61G ANCHOR RAIL 25'-0" PN: 15215G LAP GUARDRAIL IN DIRECTION OF TRAFFIC FLOW.

PART	QTY	MAIN SYSTEM COMPONENTS
620237B	1	PRODUCT DESCRIPTION ASSEMBLY MANUAL (LATEST REV.)
15208A	1	SoftStop HEAD (SEE MANUAL FOR RIGHT-LEFT APPROACH)
15215G	1	SoftStop ANCHOR RAIL (12GA) WITH CUTOUT SLOTS
61G	1	SoftStop DOWNSTREAM W-BEAM RAIL (12GA) (25'- 0")
15205A	1	POST #0 - ANCHOR POST (6'- 5 ⅜")
15203G	1	POST #1 - (SYTP) (4'- 9 ½")
15000G	1	POST #2 - (SYTP) (6'- 0")
533G	6	POST #3 THRU #8 - I-BEAM (W6 x 8.5) (6'- 0")
4076B	7	BLOCKOUT - WOOD (ROUTED) (6" x 8" x 14")
6777B	7	BLOCKOUT - COMPOSITE (4" x 7 ½" x 14")
15204A	1	ANCHOR PADDLE
15207G	1	ANCHOR KEEPER PLATE (24 GA)
15206G	1	ANCHOR PLATE WASHER (½" THICK)
15201G	2	ANCHOR POST ANGLE (10" LONG)
15202G	1	ANGLE STRUT
		HARDWARE
4902G	1	1" ROUND WASHER F436
3908G	1	1" HEAVY HEX NUT A563 GR.DH
3717G	2	¾" x 2 ½" HEX BOLT A325
3701G	4	¾" ROUND WASHER F436
3704G	2	¾" HEAVY HEX NUT A563 GR.DH
3360G	16	⅝" x 1 ¼" W-BEAM RAIL SPLICE BOLTS HGR
3340G	25	⅝" W-BEAM RAIL SPLICE NUTS HGR
3500G	7	⅝" x 10" HGR POST BOLT A307
3391G	1	⅝" x 1 ¾" HEX HD BOLT A325
4489G	1	⅝" x 9" HEX HD BOLT A325
4372G	4	⅝" WASHER F436
105285G	2	⅝" x 2 ½" HEX HD BOLT GR-5
105286G	1	⅝" x 1 ½" HEX HD BOLT GR-5
3240G	6	⅝" ROUND WASHER (WIDE)
3245G	3	⅝" HEX NUT A563 GR.DH
5852B	1	HIGH INTENSITY REFLECTIVE SHEETING - SEE NOTE: B

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

Texas Department of Transportation

Design Division Standard

TRINITY HIGHWAY
SOFTSTOP END TERMINAL
MASH - TL-3
SGT(10S)31-16

FILE: sgt10s3116	DN: TxDOT	CK: KM	DW: VP	CK: MB/VP
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
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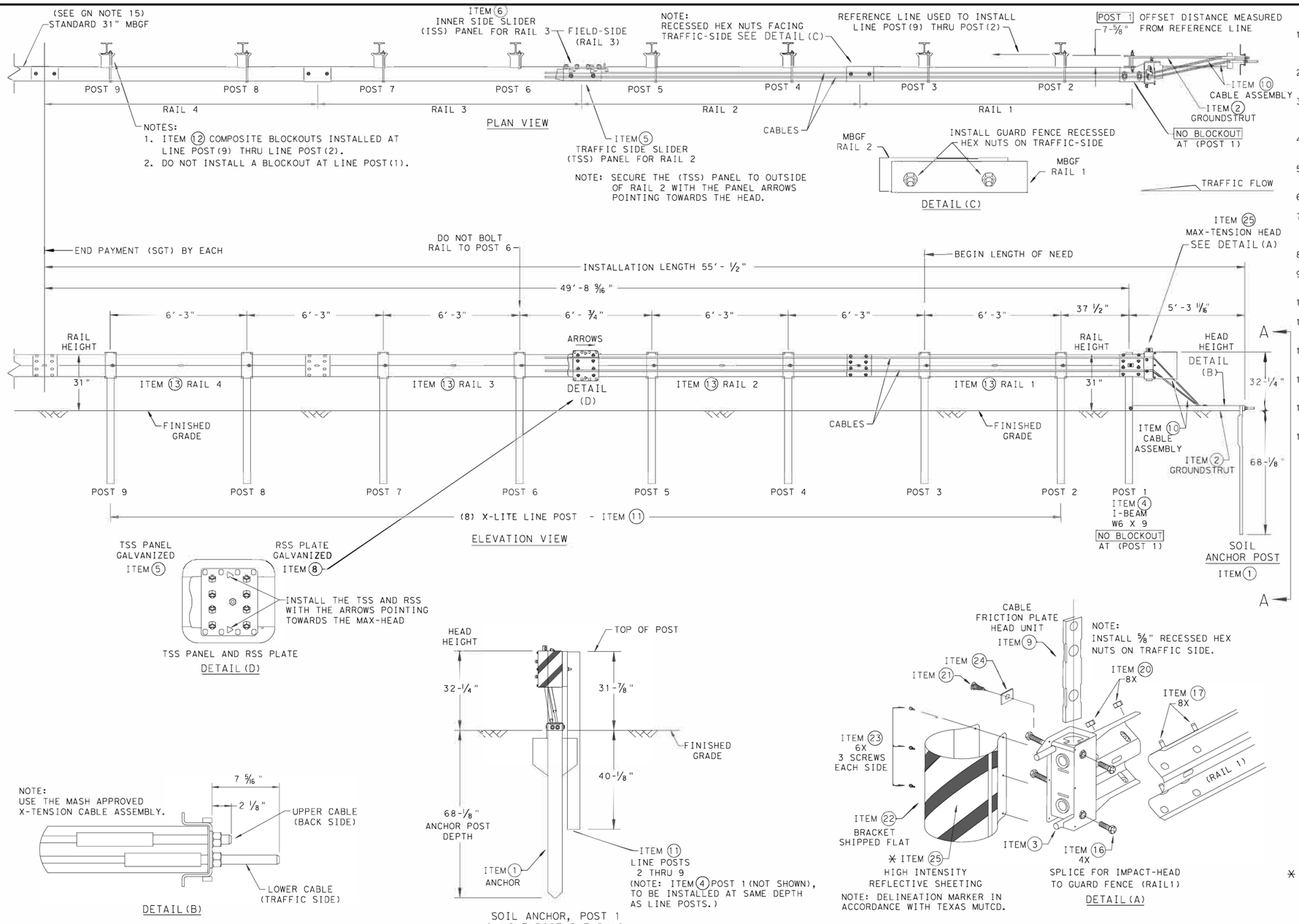

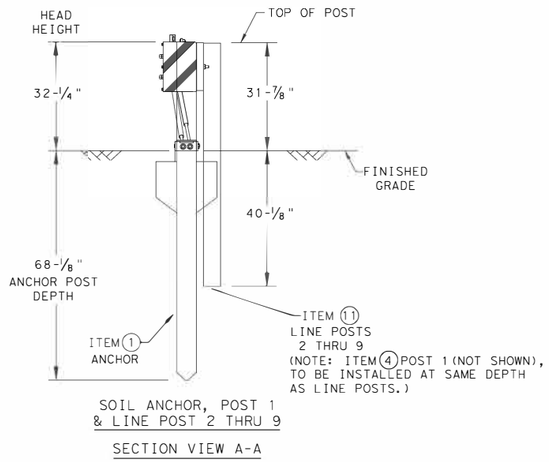

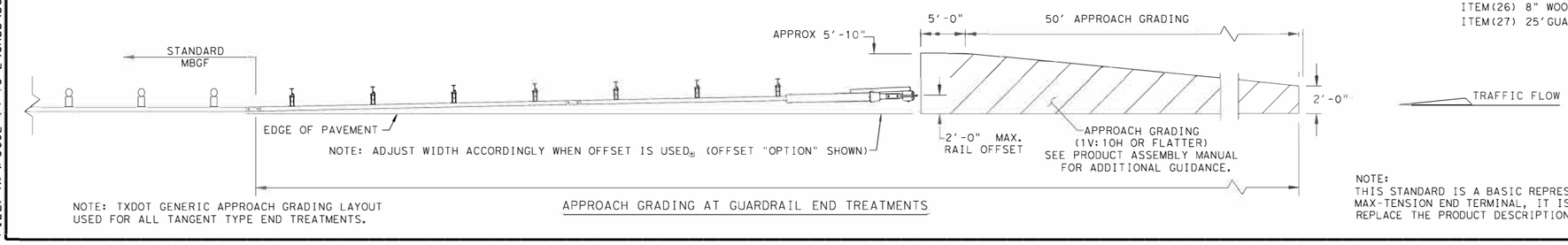

NOTE: TXDOT GENERIC APPROACH GRADING LAYOUT USED FOR ALL TANGENT TYPE END TREATMENTS.

APPROACH GRADING AT GUARDRAIL END TREATMENTS

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
2. FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE; MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N MANMAX REV D (ECN 3516).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURE'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
7. COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST(MPL)FOR CERTIFIED PRODUCERS.
8. REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
9. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
10. POSTS SHALL NOT BE SET IN CONCRETE.
11. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
12. MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
13. IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
14. THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
15. A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BSI-1610063-00	W6x9 I-BEAM POST 6FT.-GALVANIZED	1
5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BSI-1610066-00	TOOTH - GEOMET	1
8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BSI-1012078-00	X-LITE LINE POST-GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BSI-1102027-00	X-LITE SQUARE WASHER	1
15	BSI-2001886	5/8" X 7" THREAD BOLT HH (GR.5) GEOMET	1
16	BSI-2001885	3/4" X 3" ALL-THREAD BOLT HH (GR.5) GEOMET	4
17	4001115	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2) MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	5/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" RECESSED GUARD FENCE NUT (GR.2) MGAL	59
21	BSI-2001888	5/8" X 2" ALL THREAD BOLT (GR.5) GEOMET	1
22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BSI-2001887	1/4" X 3/4" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWR03	1
* 25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
** 26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
** 27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL, 8-SPACE, 12GA.	2
28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

* TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.

** ALTERNATIVE ITEMS NOT SHOWN.
ITEM(26) 8" WOOD-BLOCKOUTS
ITEM(27) 25'GUARD FENCE PANELS

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

Texas Department of Transportation

Design Division Standard

MAX-TENSION END TERMINAL
MASH - TL-3
SGT(11S)31-18

FILE: sgt11s3118.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK: CL
© TxDOT: FEBRUARY 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		92

DATE: 11/2/2020
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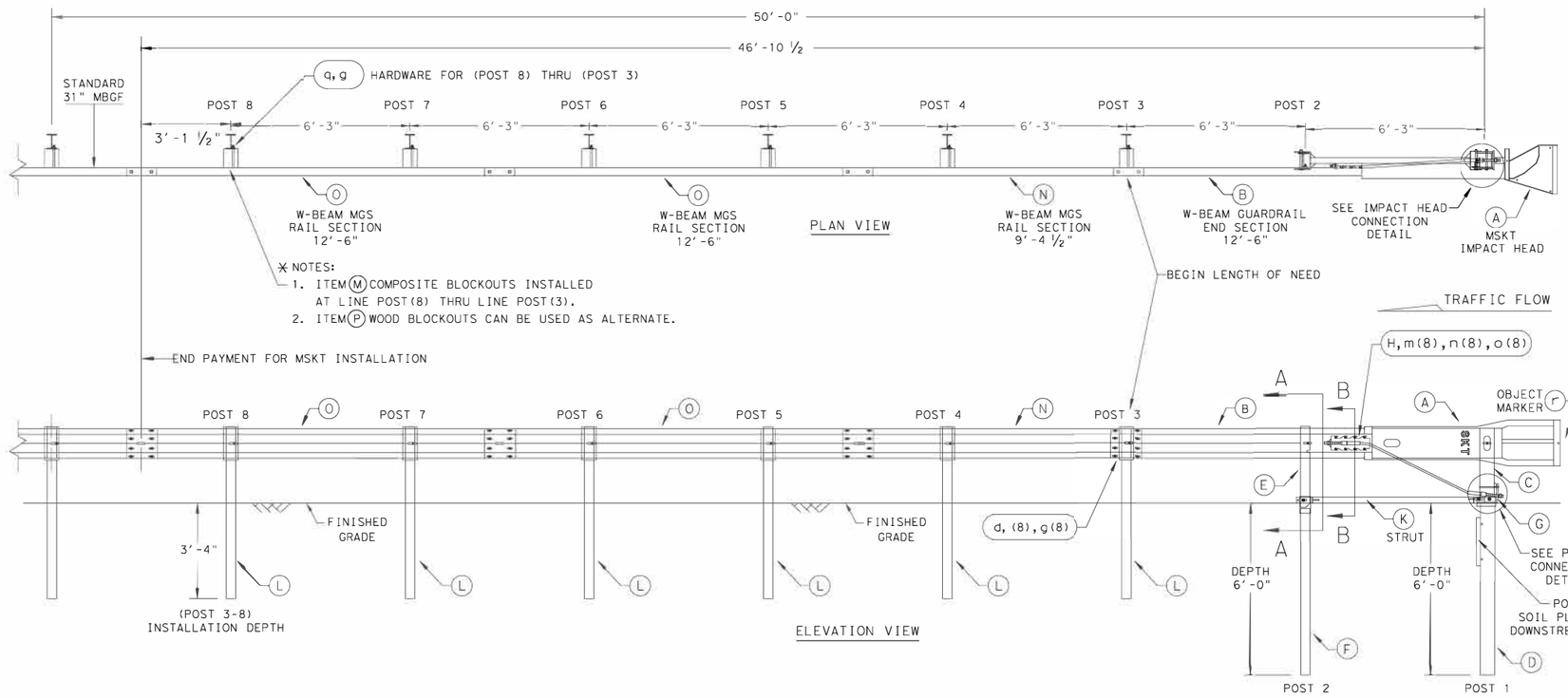
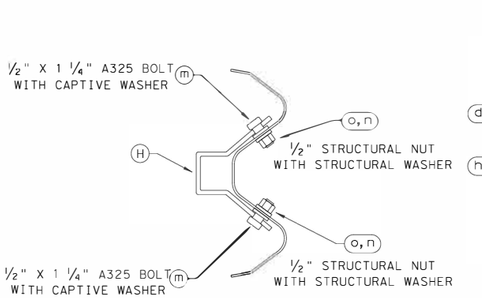
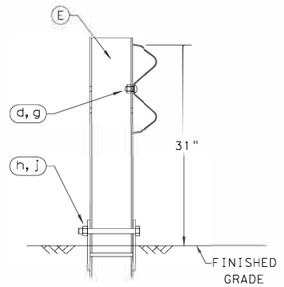
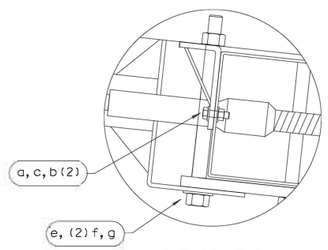
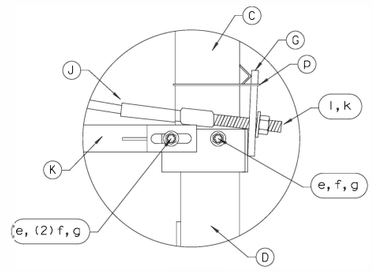


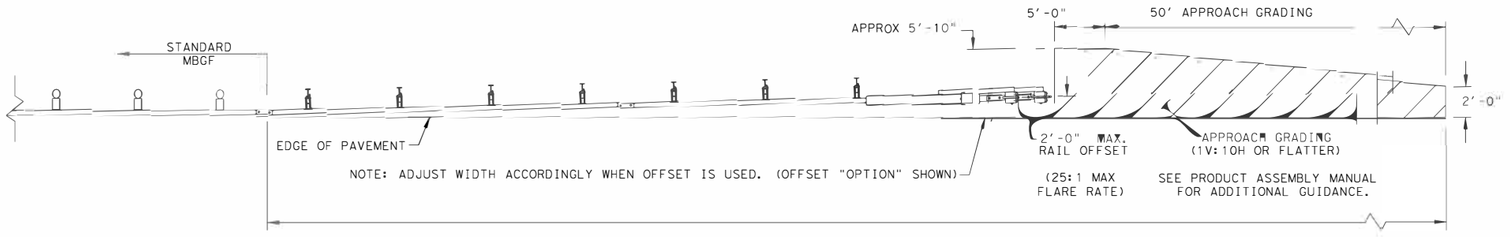
NOTE: SEE (GENERAL NOTE 14) FOR DRIVING CAP INFORMATION.











APPROACH GRADING AT GUARDRAIL END TREATMENTS

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.

GENERAL NOTES

1. 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
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE; MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION~062717).
3. 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.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POSTS WITH COMPOSITE BLOCKOUTS.
7. 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.
8. 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.
9. POSTS SHALL NOT BE SET IN CONCRETE.
10. SYSTEM MUST BE ATTACHED TO STANDARD 31" MBGF.
11. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
12. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
13. THE SYSTEM IS SHOWN WITH TWO 12'-6" MBGF PANELS, ONE 25'-0" MBGF PANEL IS ALSO ALLOWED IN THEIR PLACE.
14. 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.

SEE NOTES: ✳

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM NUMBERS
A	1	MSKT IMPACT HEAD	MS3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	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 1/16" O.D. x 9/16" 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

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
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	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		93

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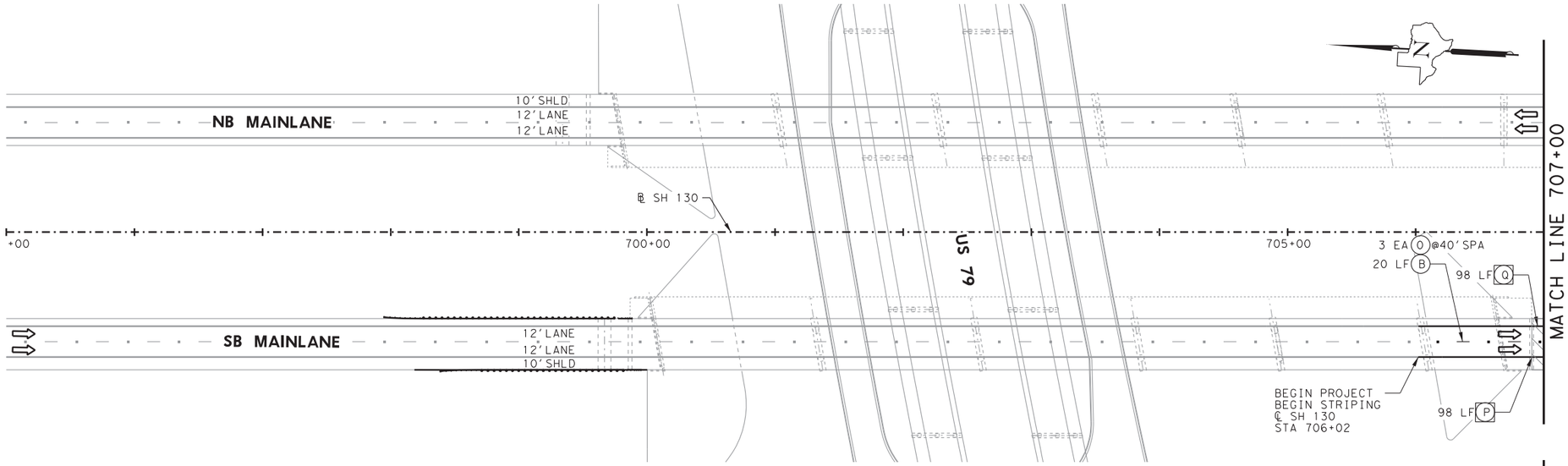

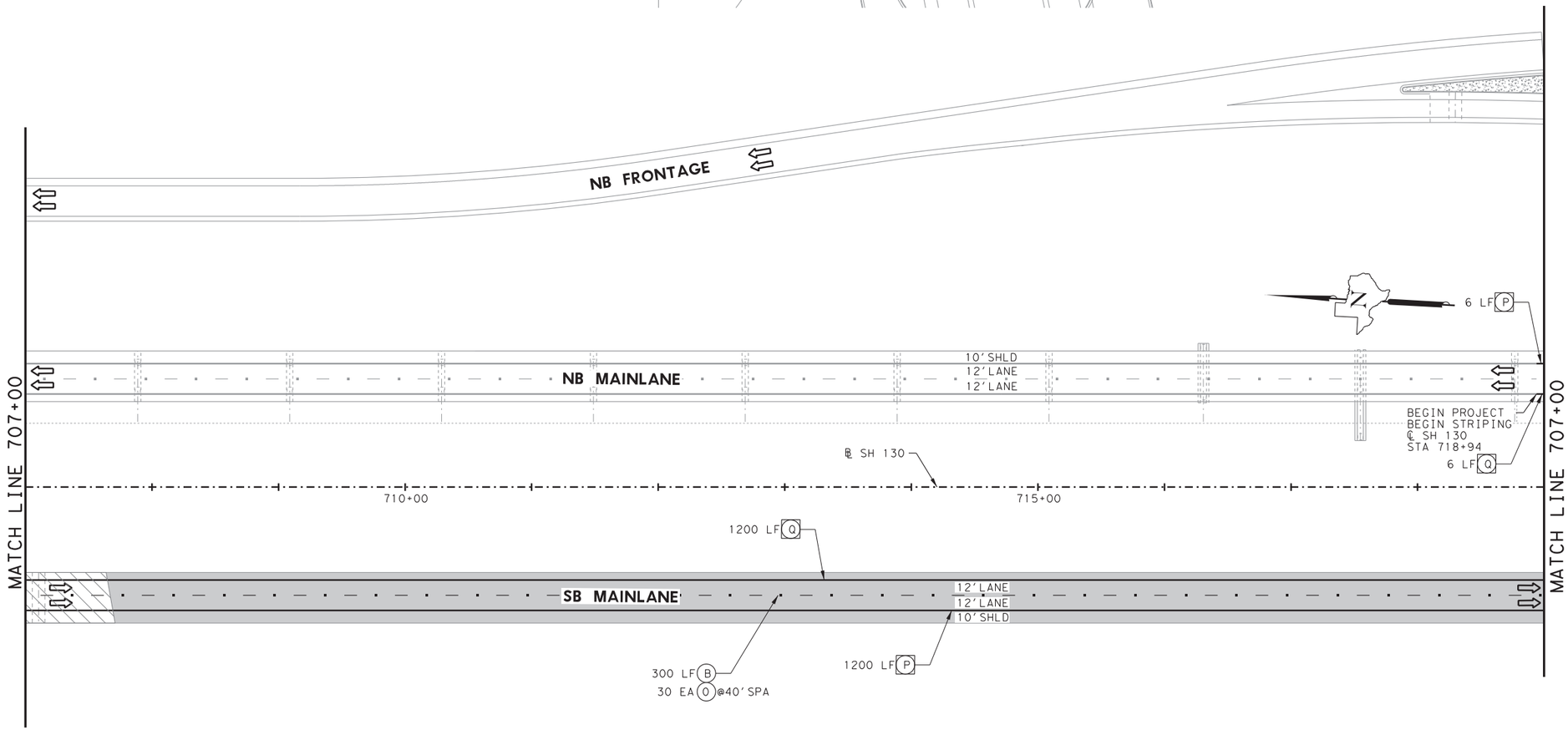

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
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- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
2. THE CONTRACTOR WILL USE TYPE I AND TYPE II PAVEMENT MARKINGS WHEN PLACING ALL PERMANENT STRIPES.

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

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SCALE: 1"=100'

ENTECH
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281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 1 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
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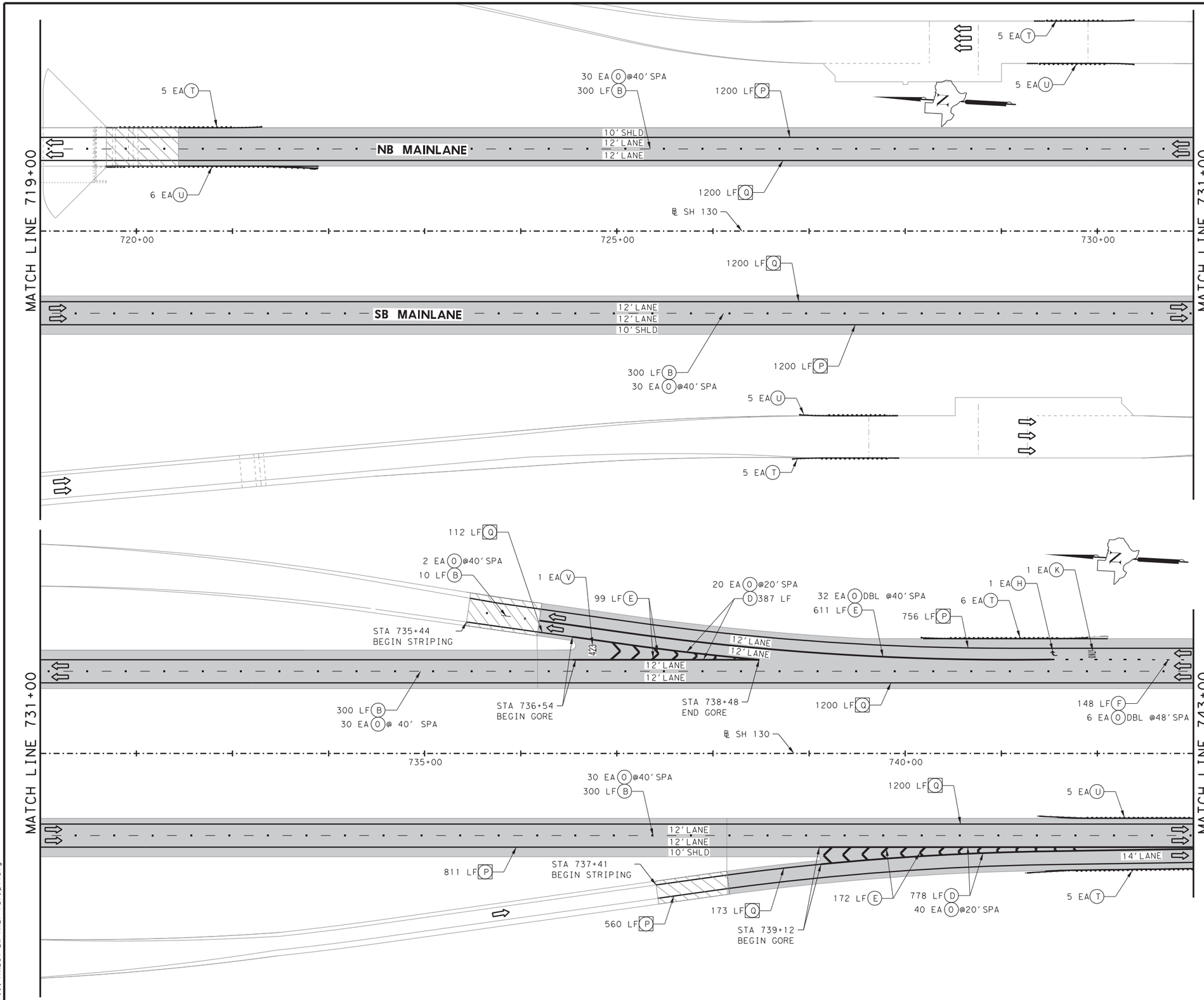

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SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 2 OF 32

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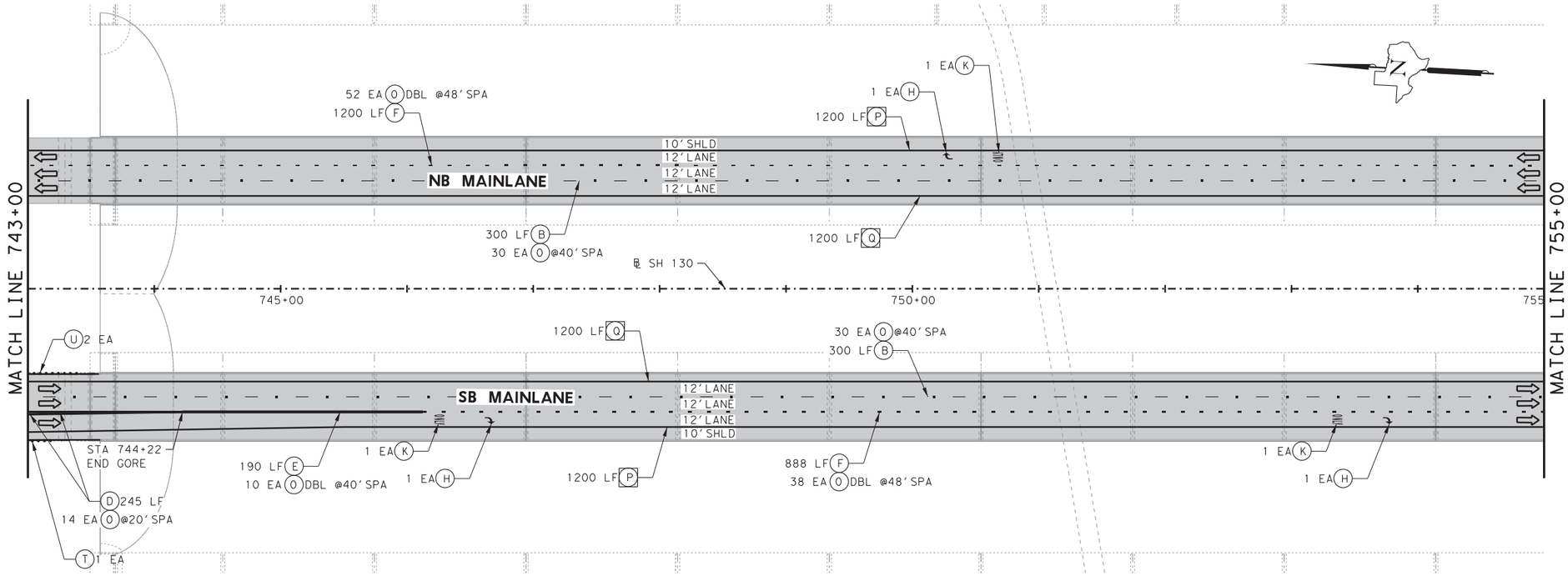

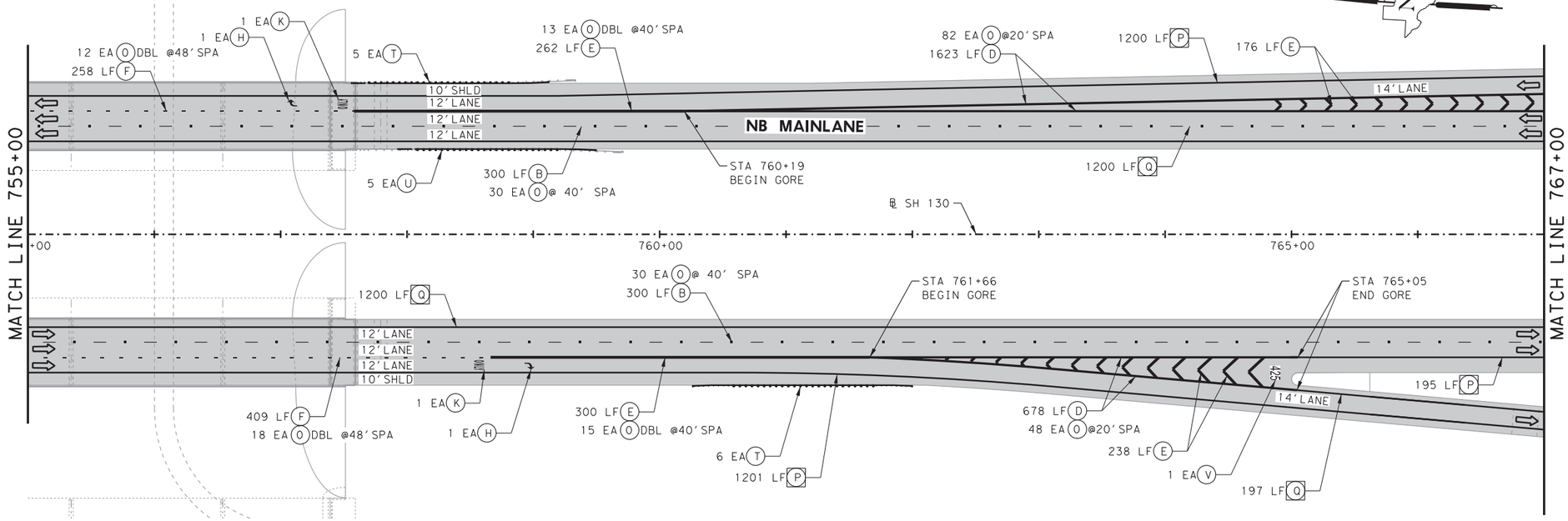

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 3 OF 32

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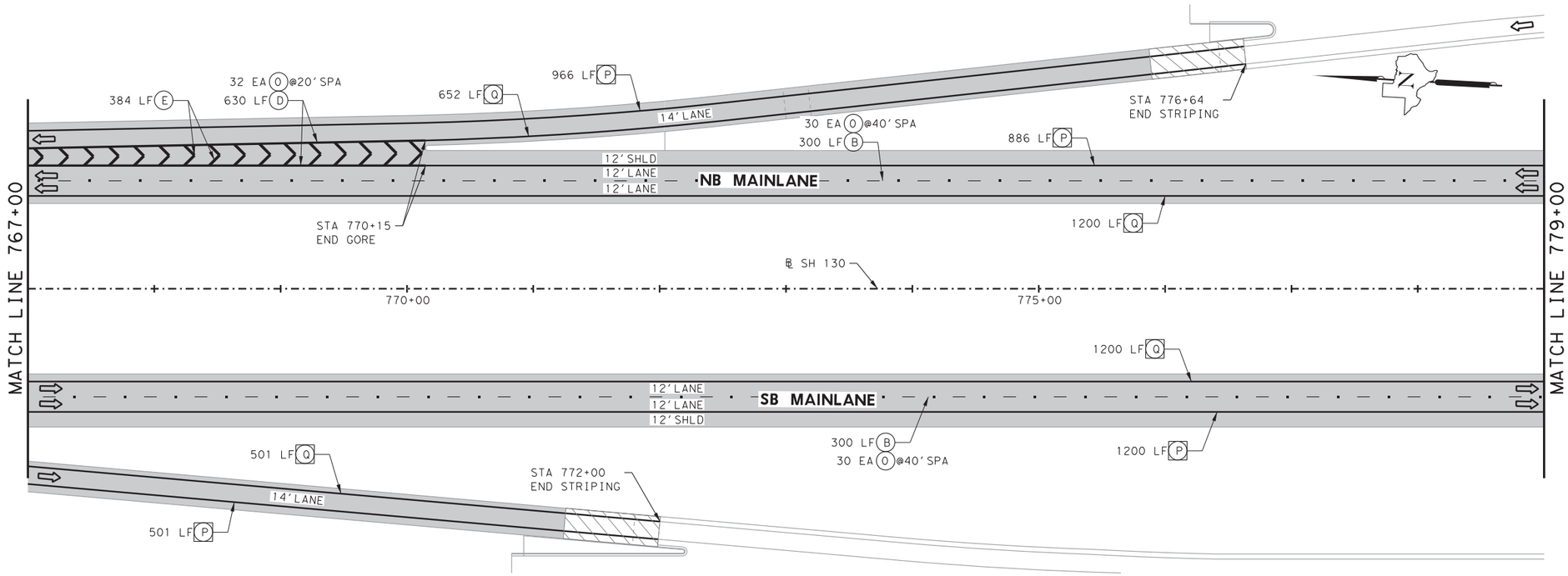

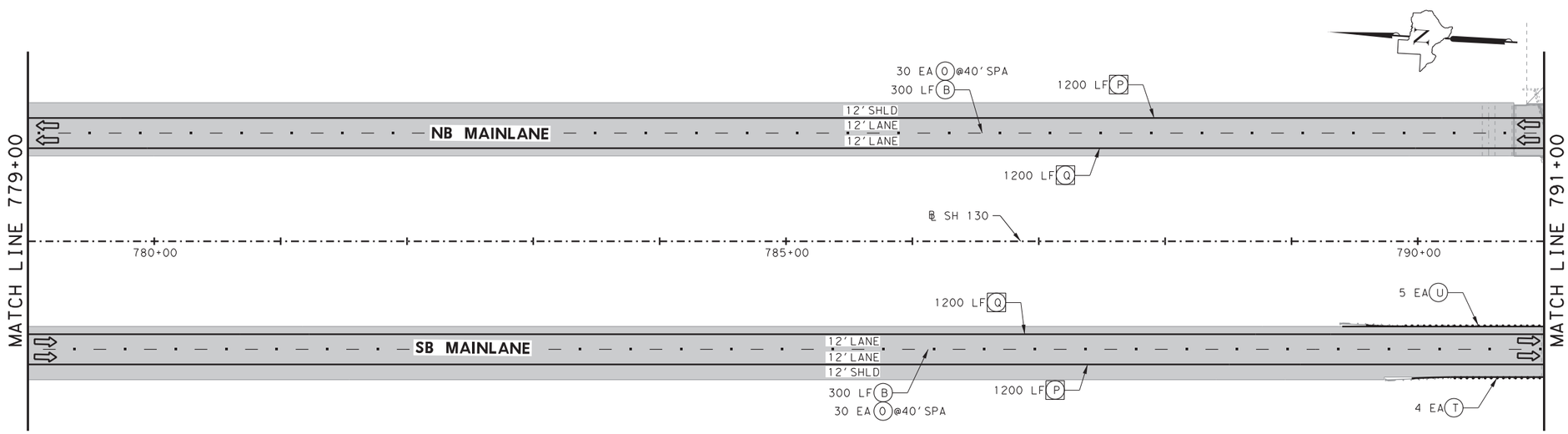

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- ⇦ DIRECTION OF TRAFFIC FLOW

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11/02/2020

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SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 4 OF 32

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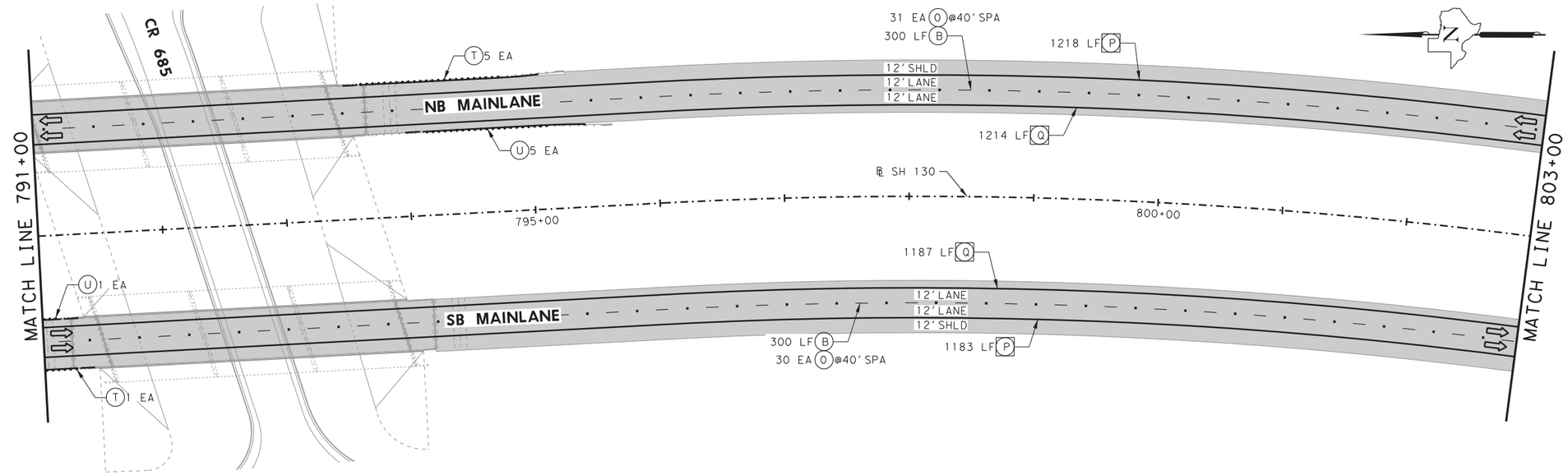

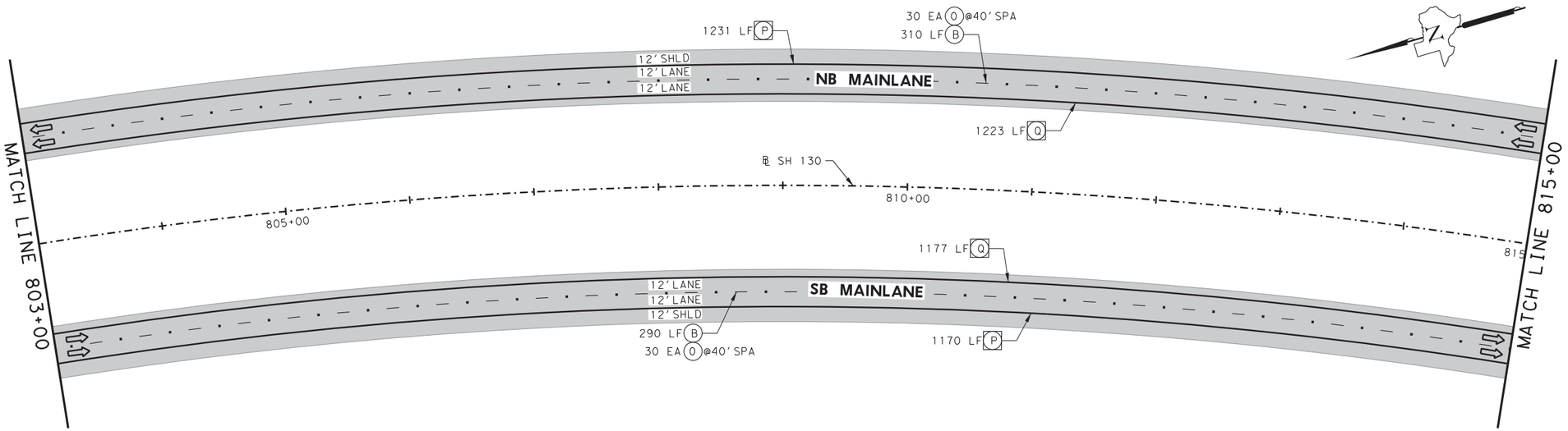

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▭ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
2. THE CONTRACTOR WILL USE TYPE I AND TYPE II PAVEMENT MARKINGS WHEN PLACING ALL PERMANENT STRIPES.

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

0 25 50 100
SCALE: 1"=100'

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 5 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	98

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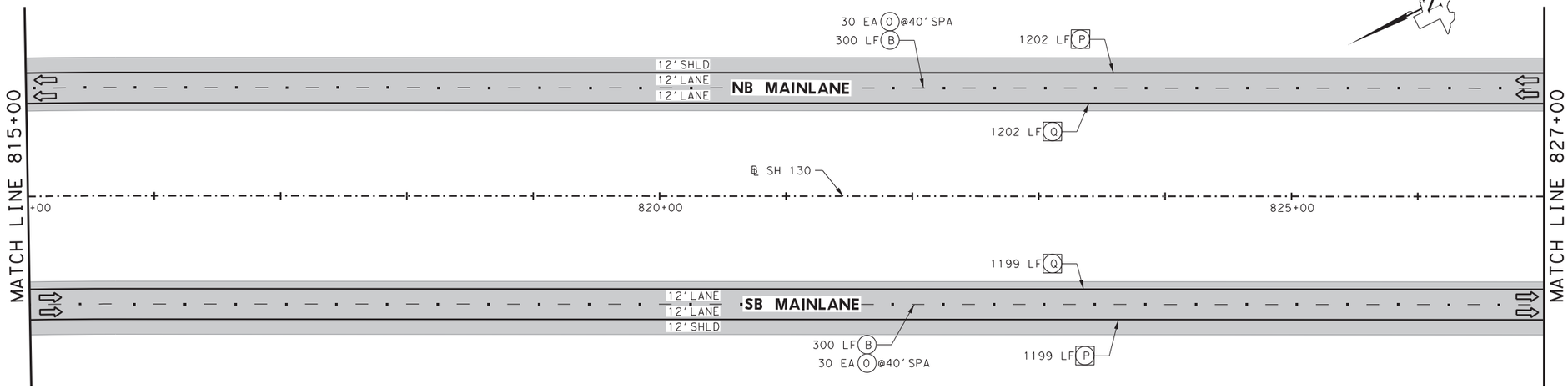

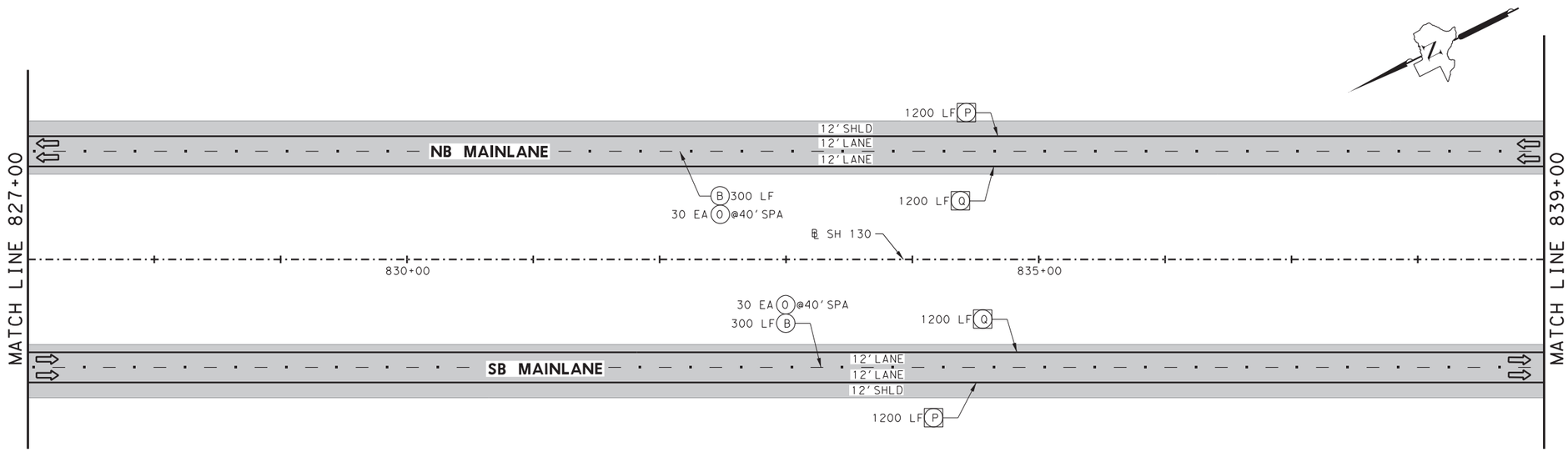

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
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- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
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- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
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- (P) REFL PROF PAV MRK (W)(6")(SLD)
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- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
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- (U) (D-SY)SZ 1(BRF)GF2
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- ⇦ DIRECTION OF TRAFFIC FLOW

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0 25 50 100
SCALE: 1"=100'

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15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 6 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	99

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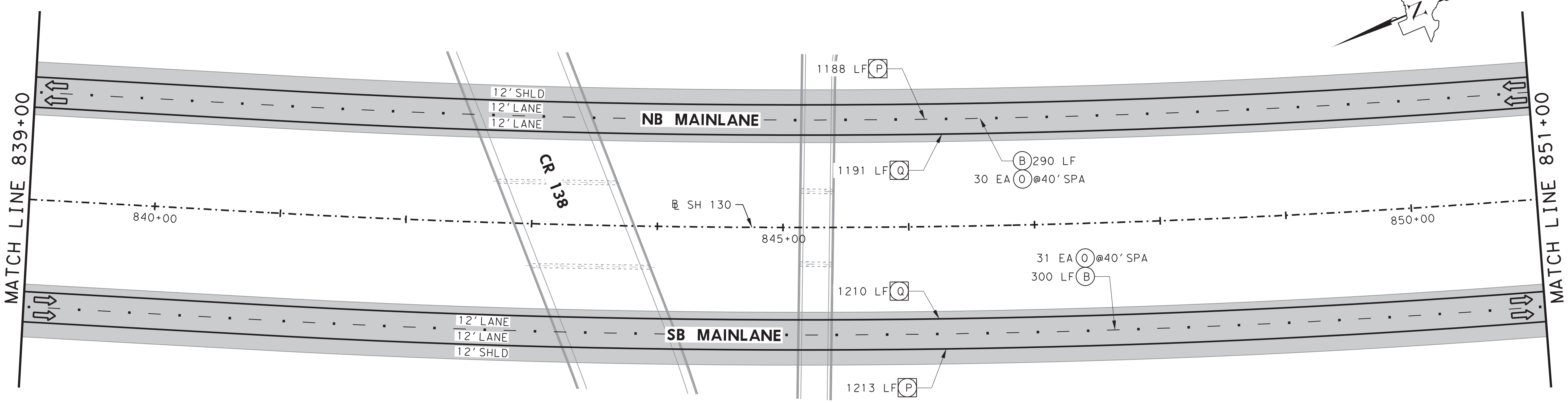

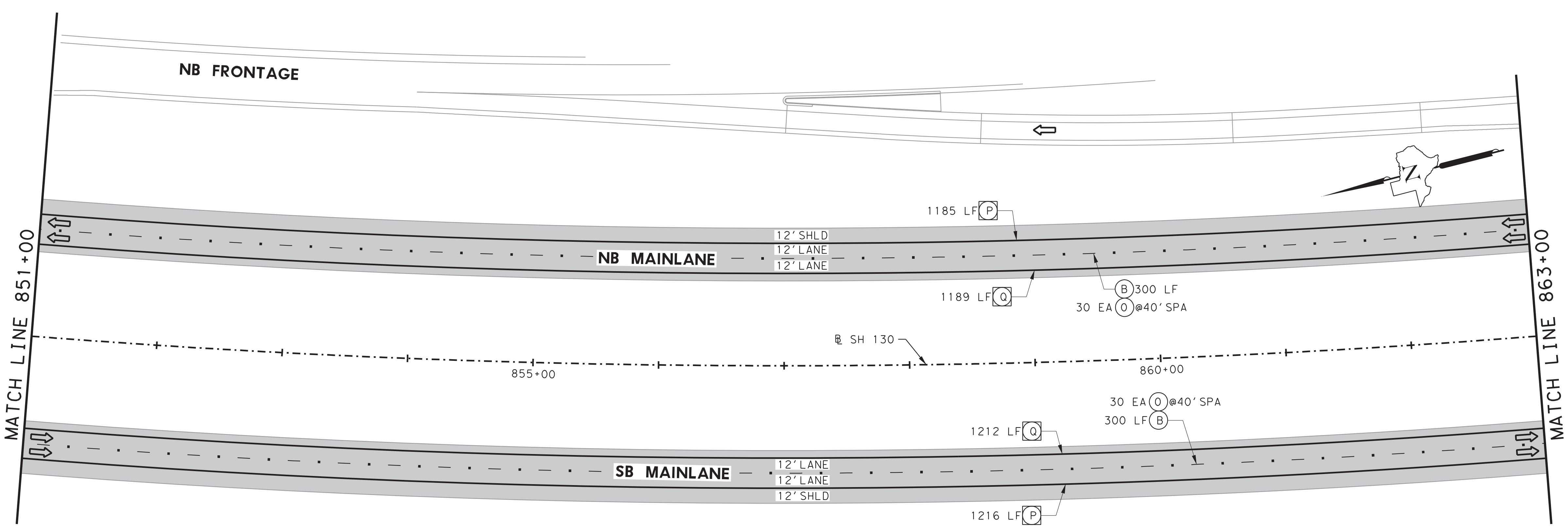

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
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- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
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- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 7 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	100

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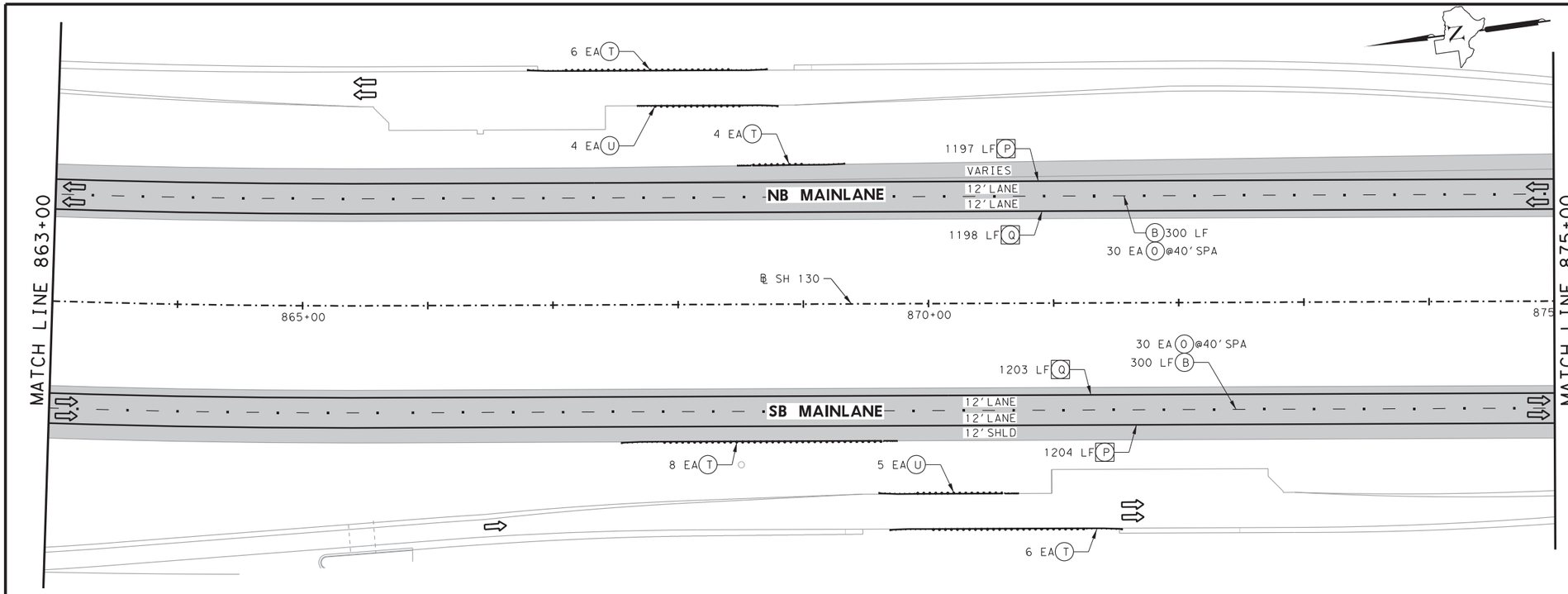

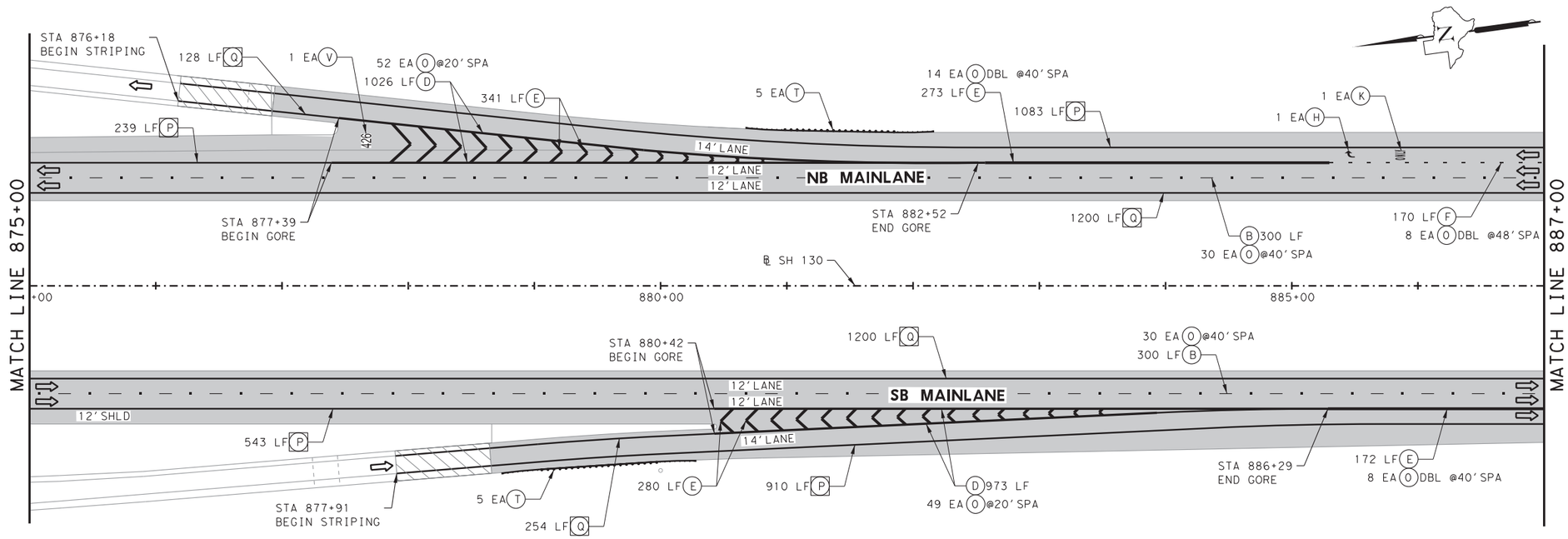

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
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- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
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- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
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- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ⬚ DENOTES REFL PAV MRK TY I & TY II
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11/02/2020

0 25 50 100
SCALE: 1"=100'

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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 8 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	101

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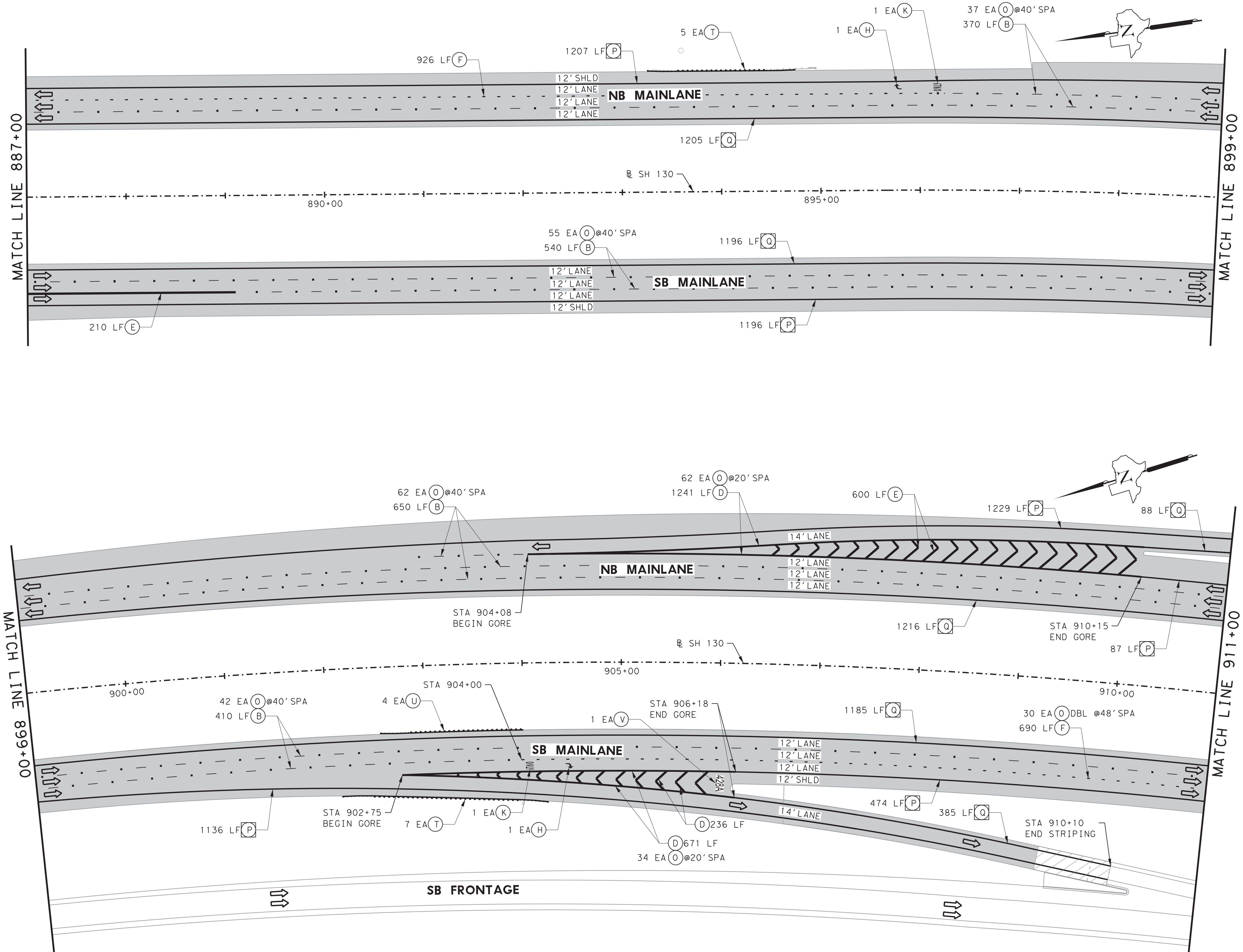

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
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- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
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- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
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- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
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STATE OF TEXAS
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11/02/2020

0 25 50 100
SCALE: 1"=100'

ENTECH CIVIL ENGINEERS, INC
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15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 9 OF 32

DN:	CC	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	102

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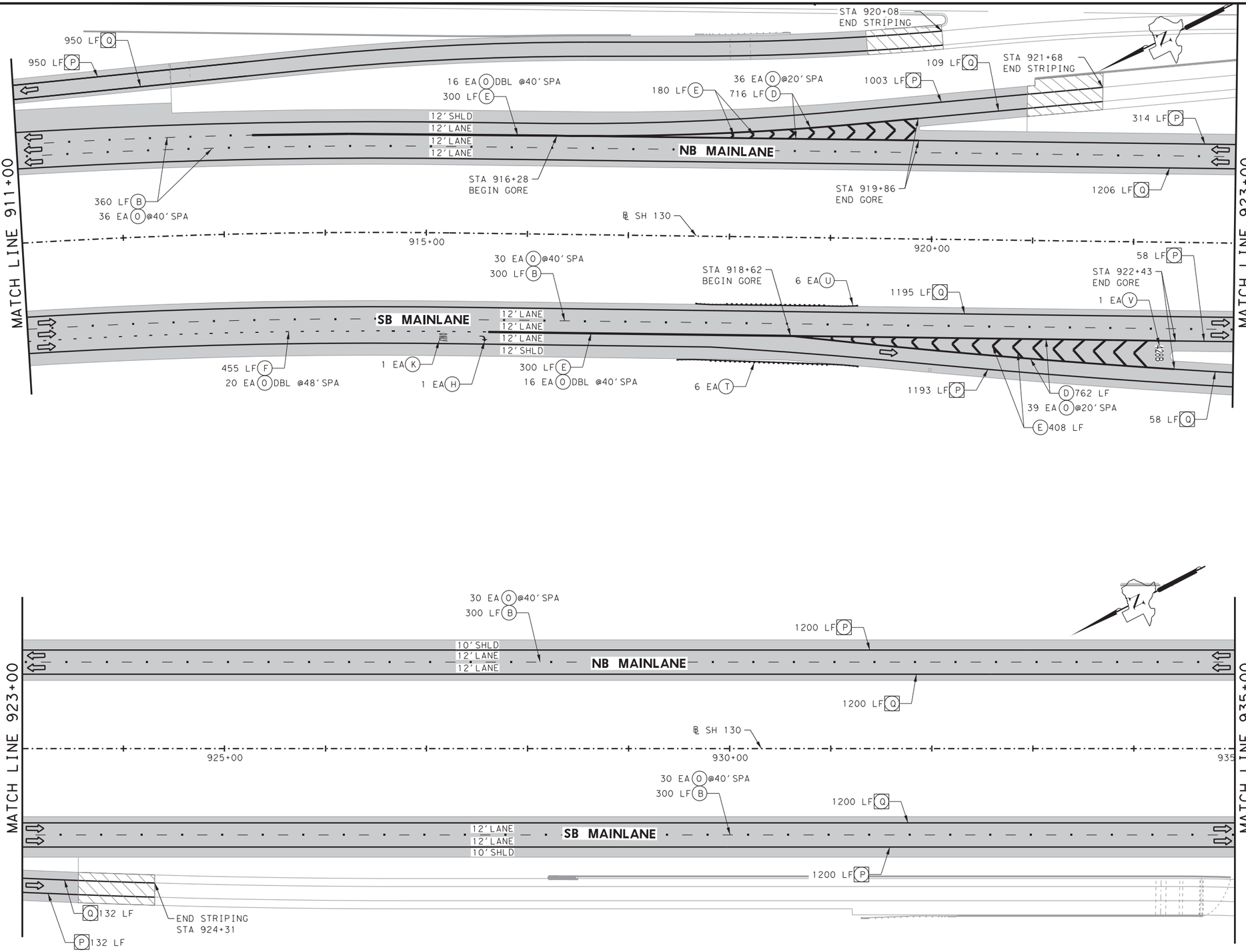

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
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- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
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0 25 50 100
SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 10 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	103

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shernandez
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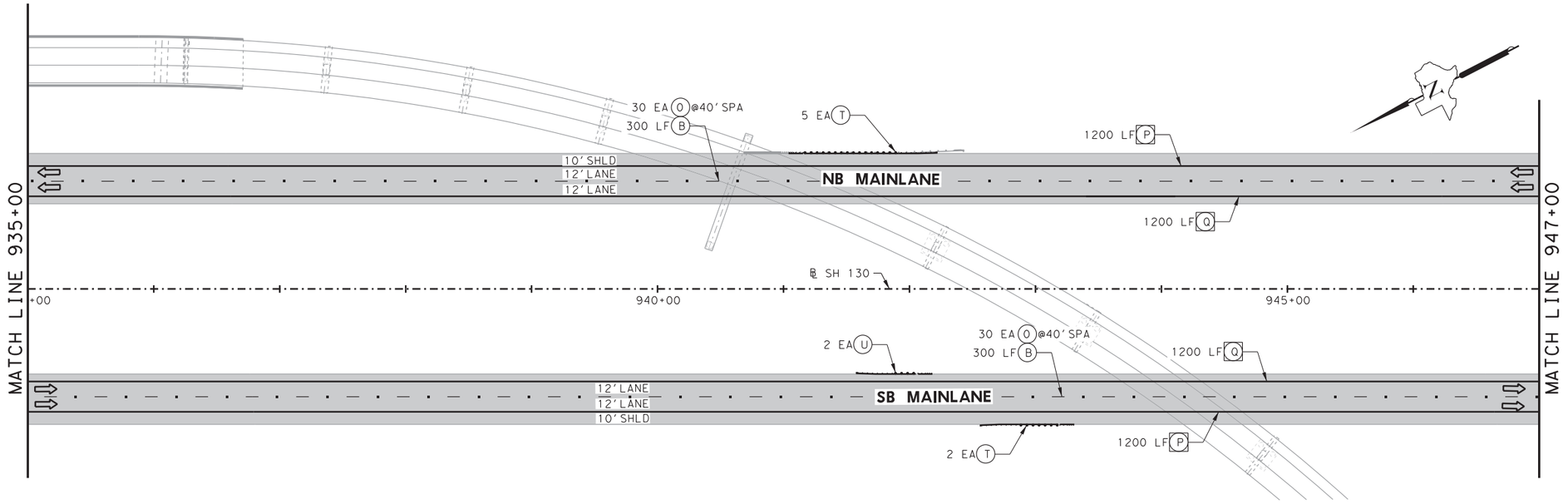

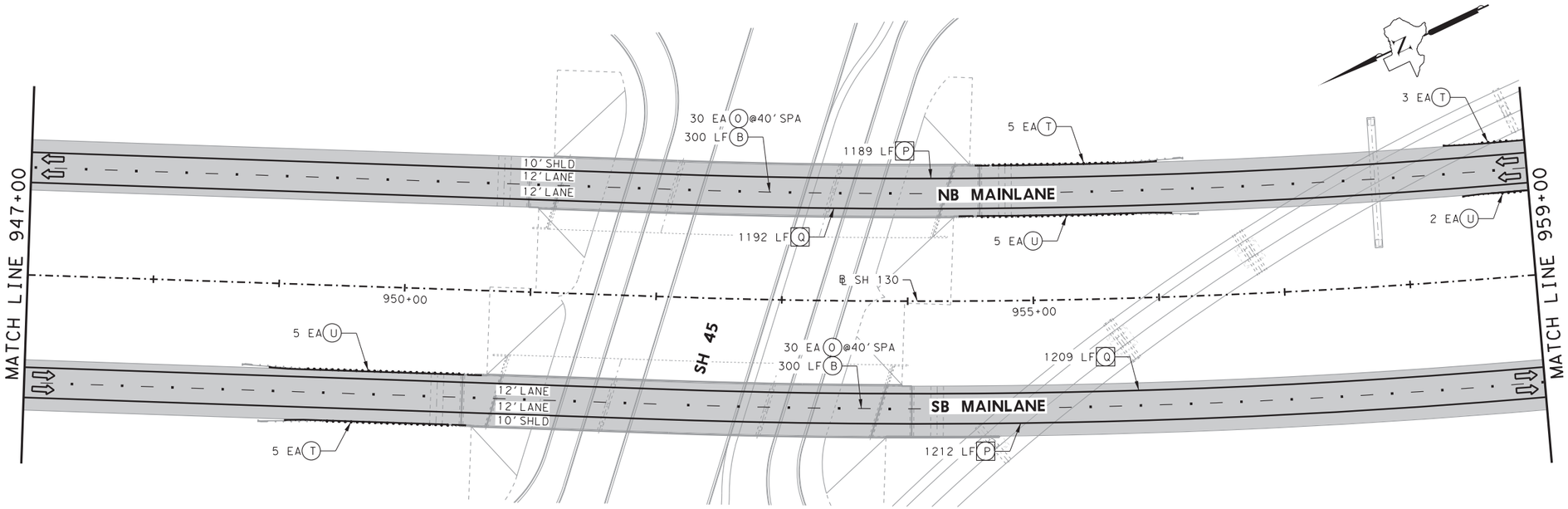

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
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SCALE: 1"=100'

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 11 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	104

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shernandez
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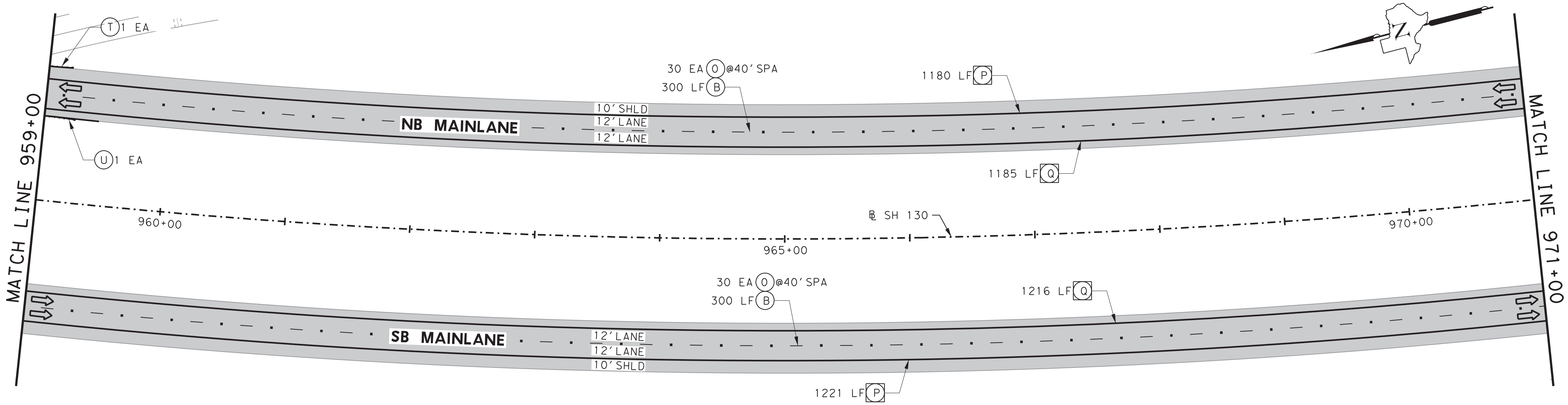

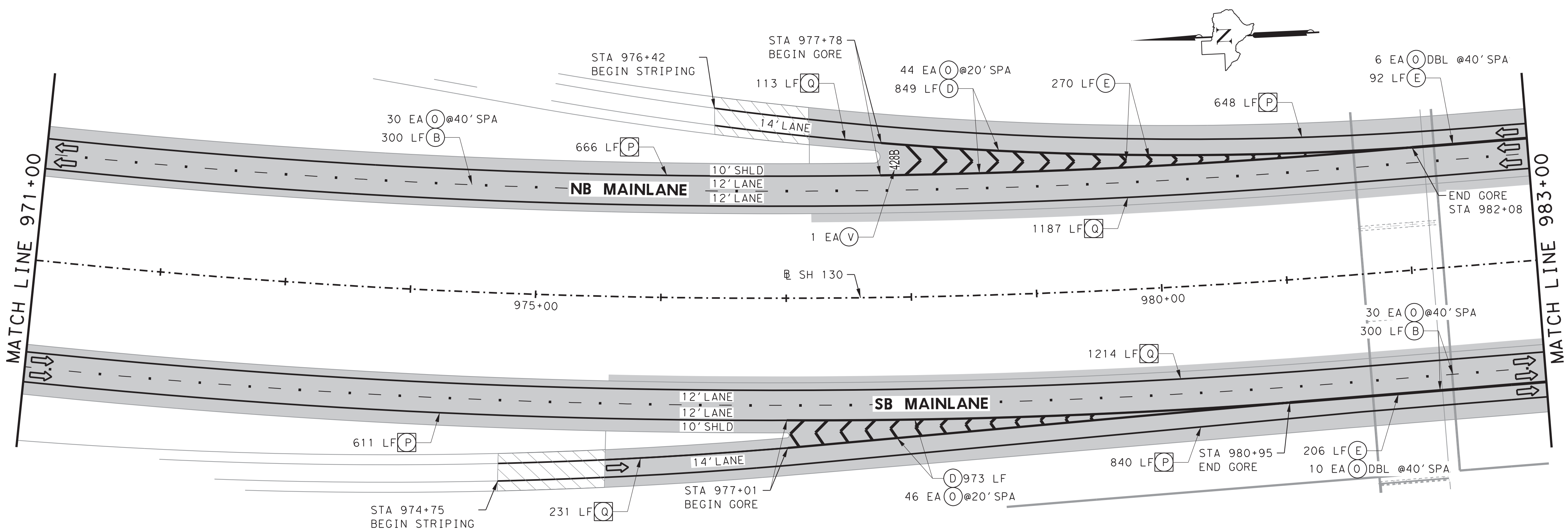

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:

1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
2. THE CONTRACTOR WILL USE TYPE I AND TYPE II PAVEMENT MARKINGS WHEN PLACING ALL PERMANENT STRIPES.

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

0 25 50 100
SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 12 OF 32

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	CC	6	TEXAS				SH 130
CK DN:	JV	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	CC	AUS	TRAVIS	6340	46	001	105
CK DW:	JV						

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11/2/2020 10:30:00 AM
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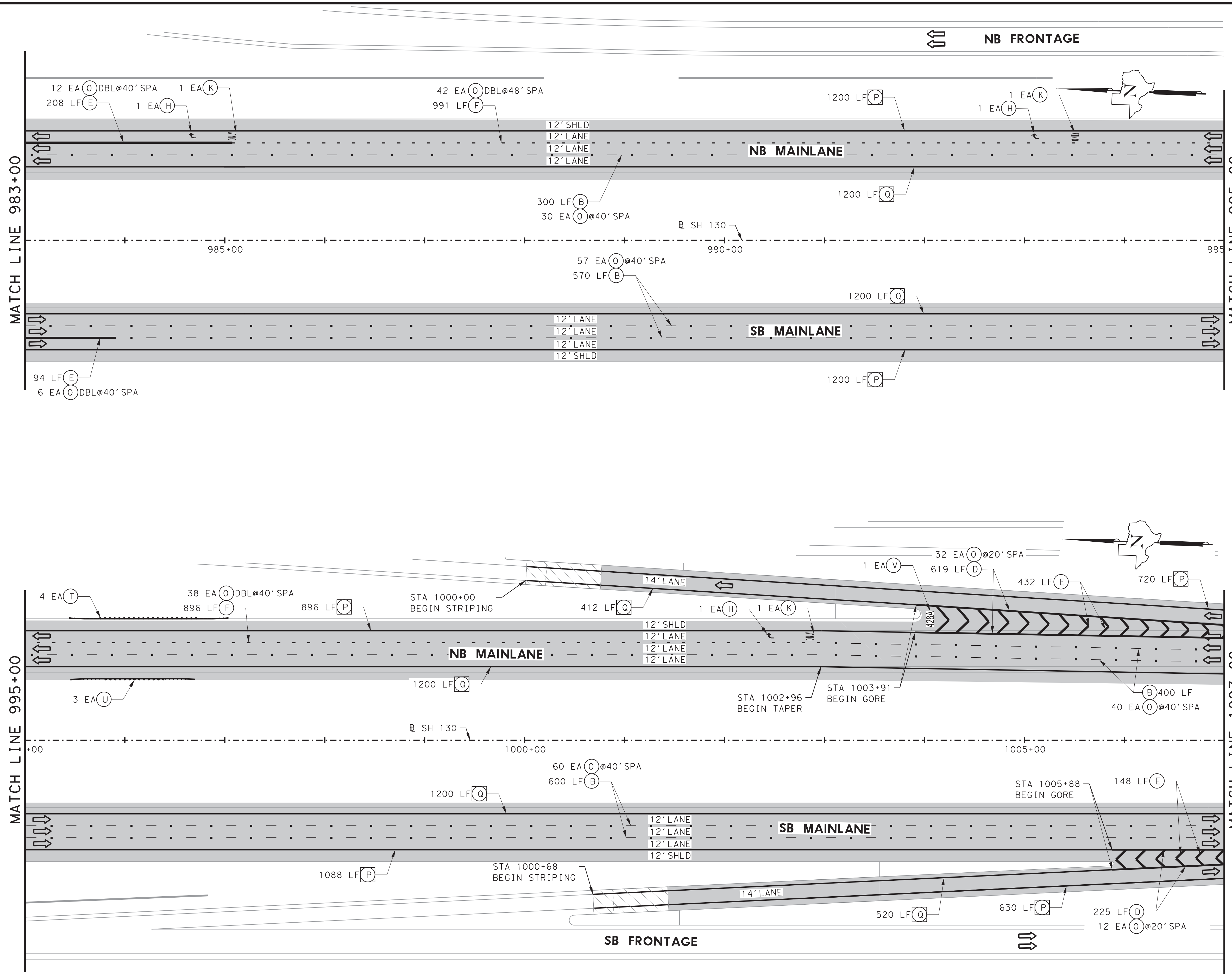

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
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11/02/2020

0 25 50 100
SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 13 OF 32

		FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
DN:	CC	6	TEXAS				SH 130
CK DN:	JV	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
DW:	CC	AUS	TRAVIS	6340	46	001	106
CK DW:	JV						

shernandez
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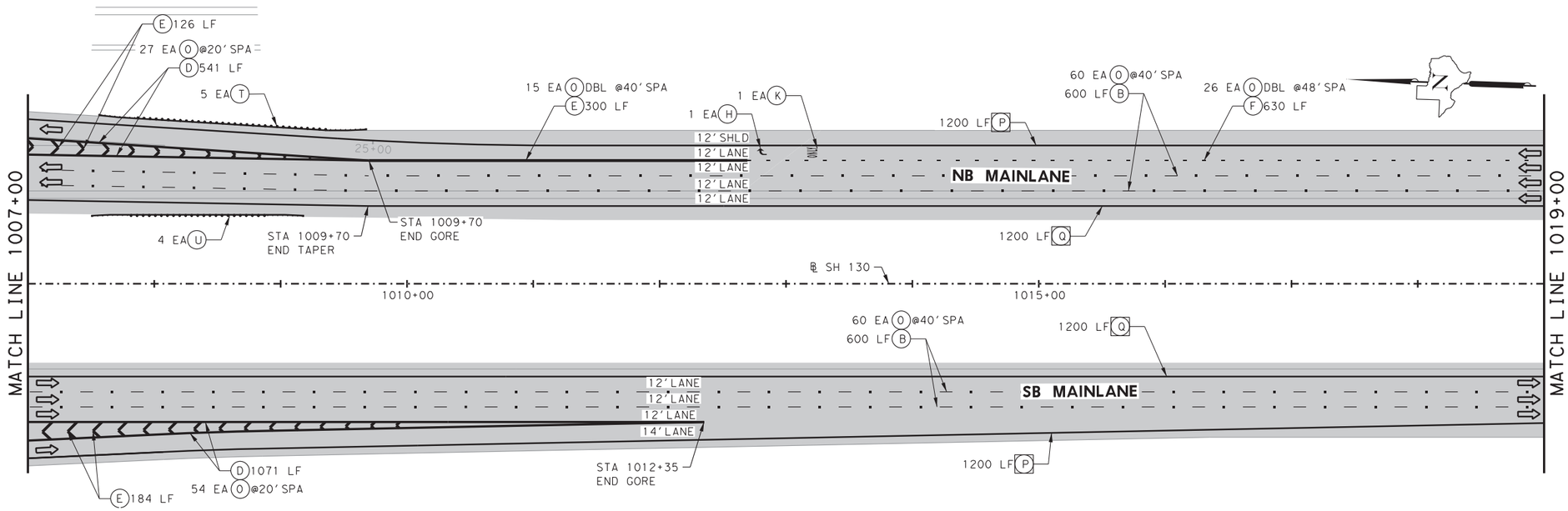

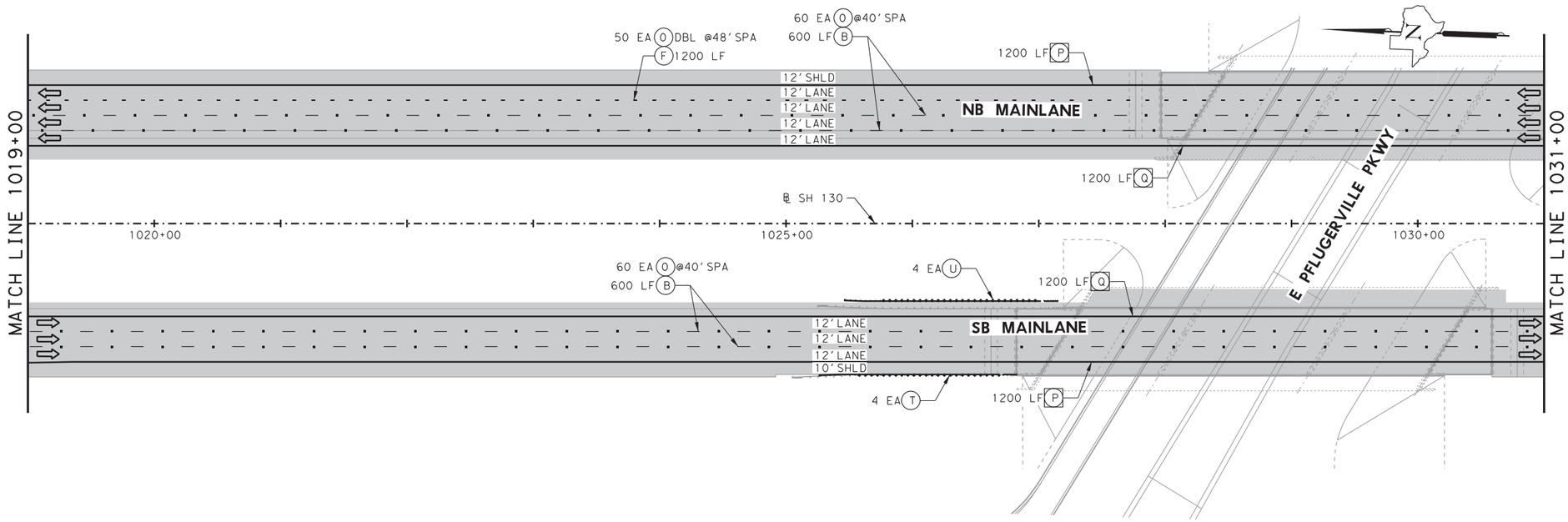

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
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- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
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- ⇦ DIRECTION OF TRAFFIC FLOW

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11/02/2020

0 25 50 100
SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 14 OF 32

DN: CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN: JV	6	TEXAS				SH 130
DW: CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW: JV	AUS	TRAVIS	6340	46	001	107

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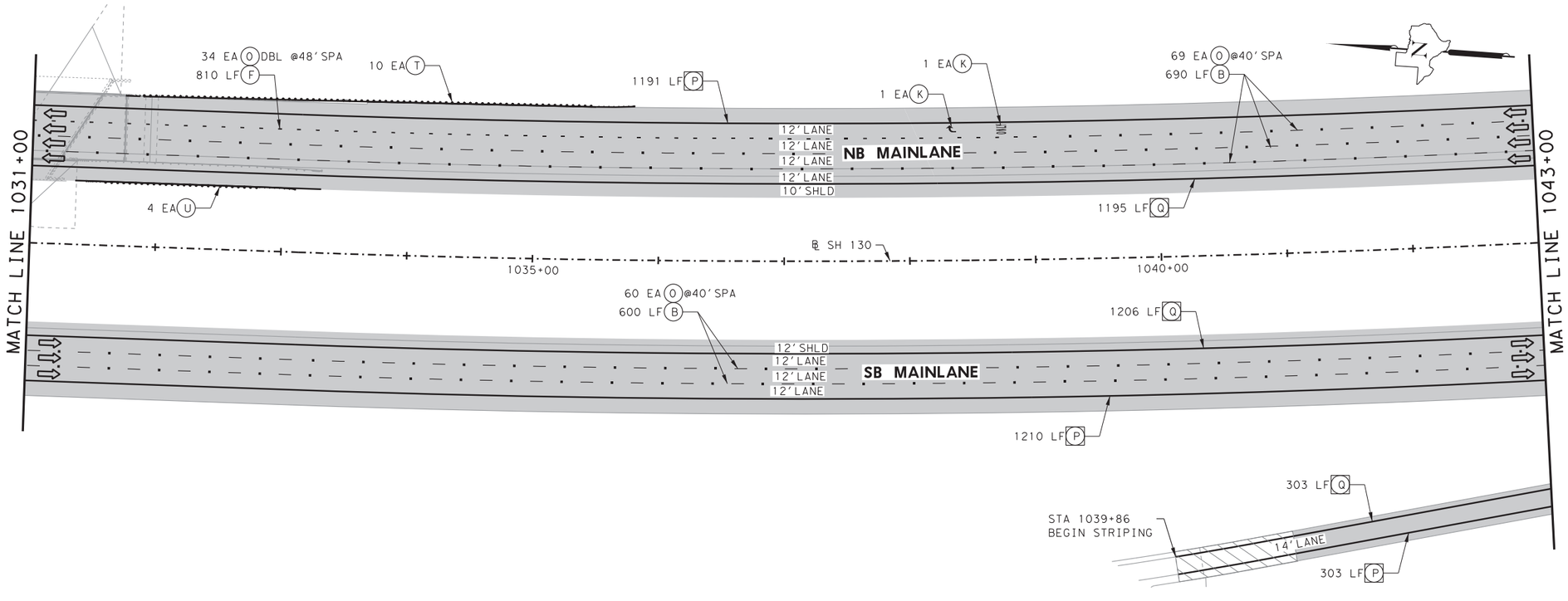

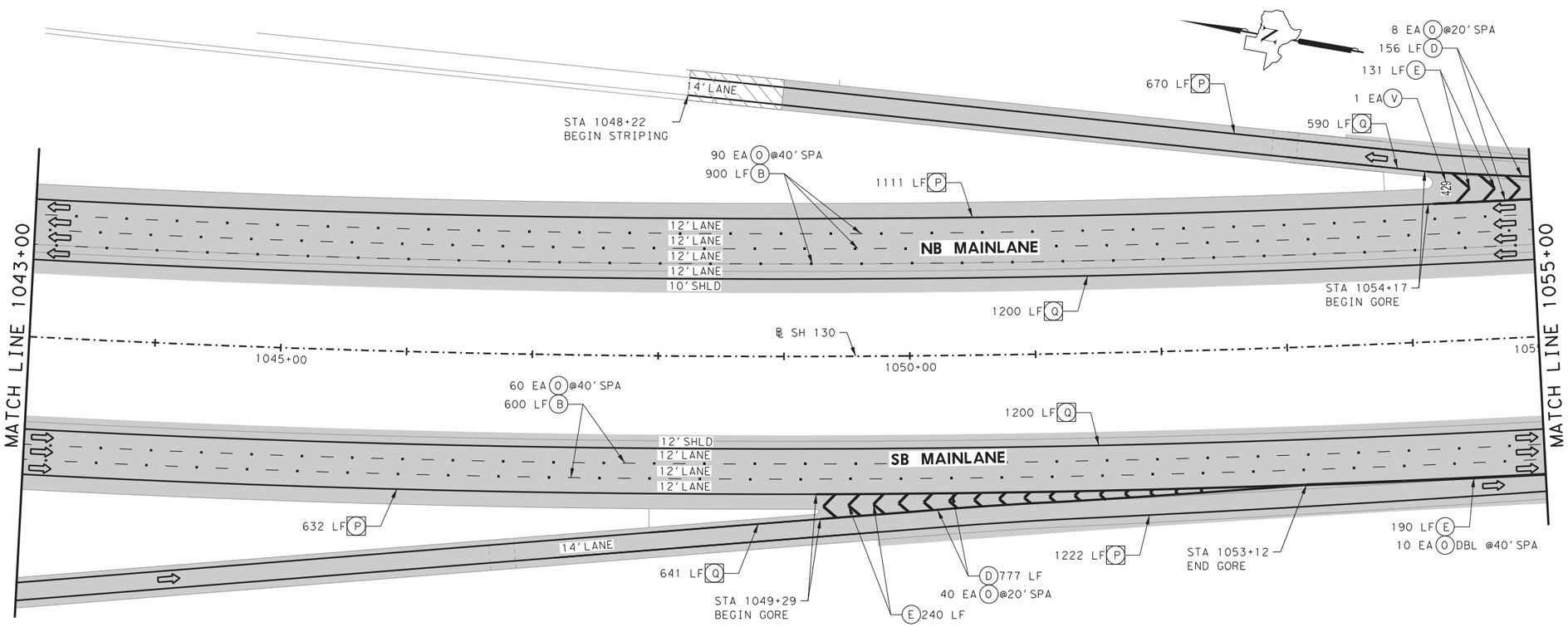

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
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- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
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STATE OF TEXAS
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PROFESSIONAL ENGINEER

11/02/2020

0 25 50 100
SCALE: 1"=100'

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15021 Katy Freeway,
Suite 500
Houston, Texas, 77094
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281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 15 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		108

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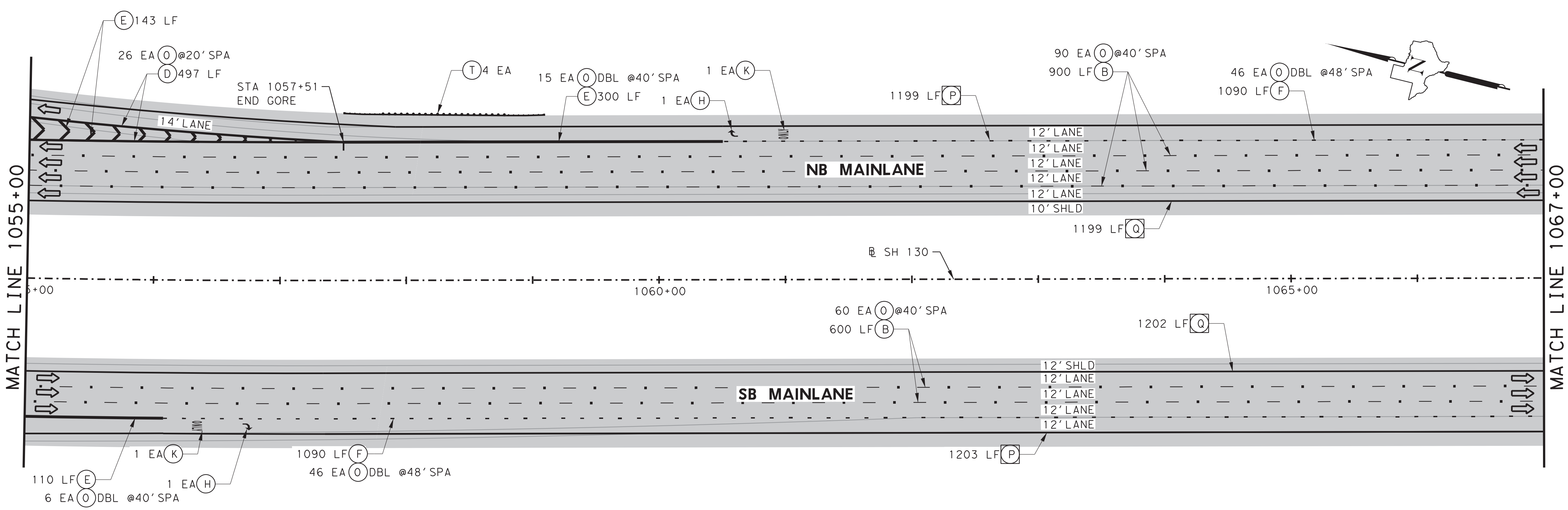

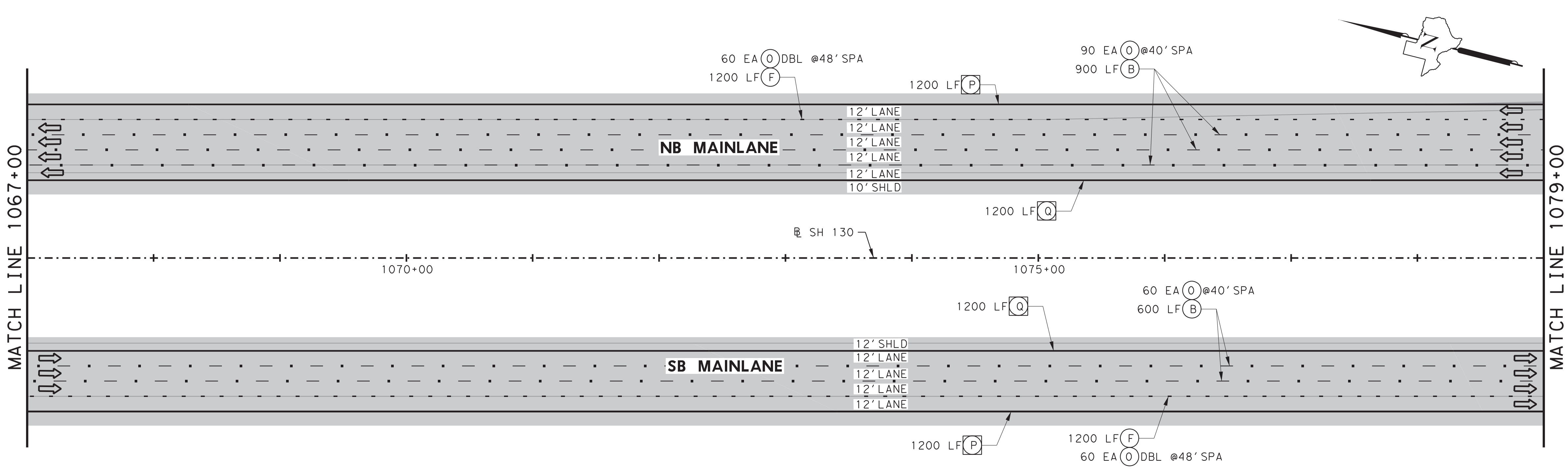

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
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11/02/2020

0 25 50 100
SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 16 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001	109

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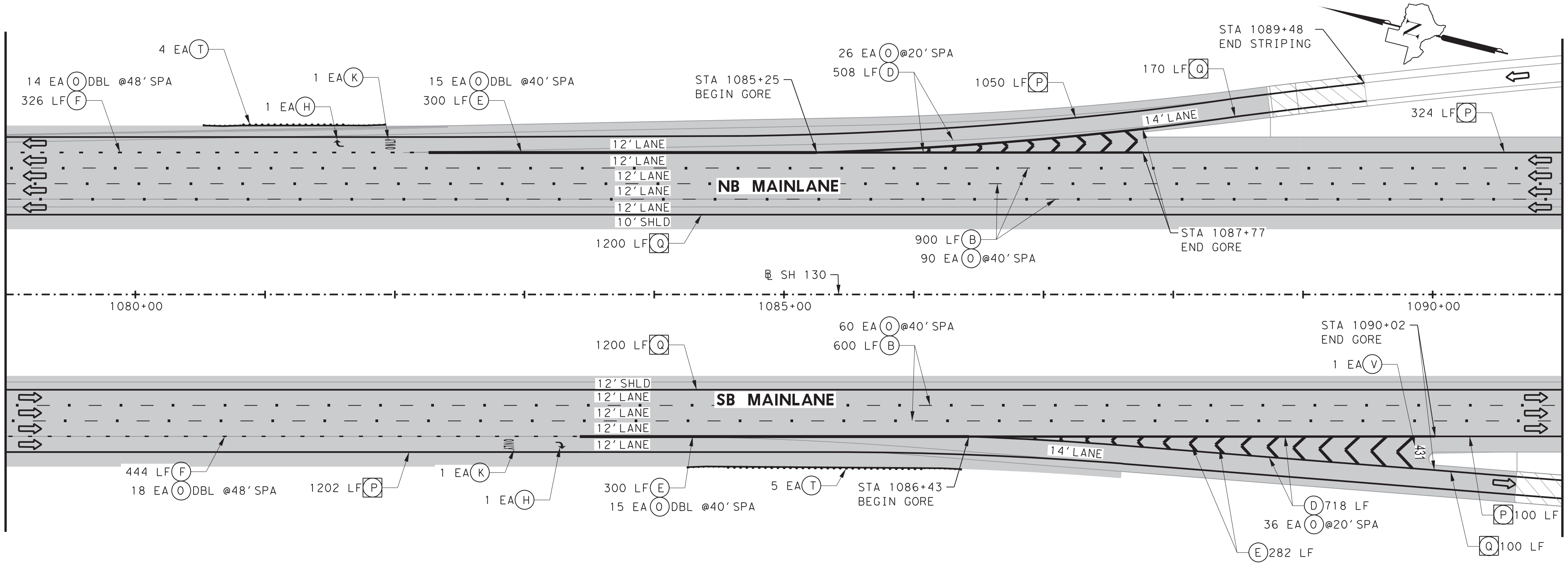

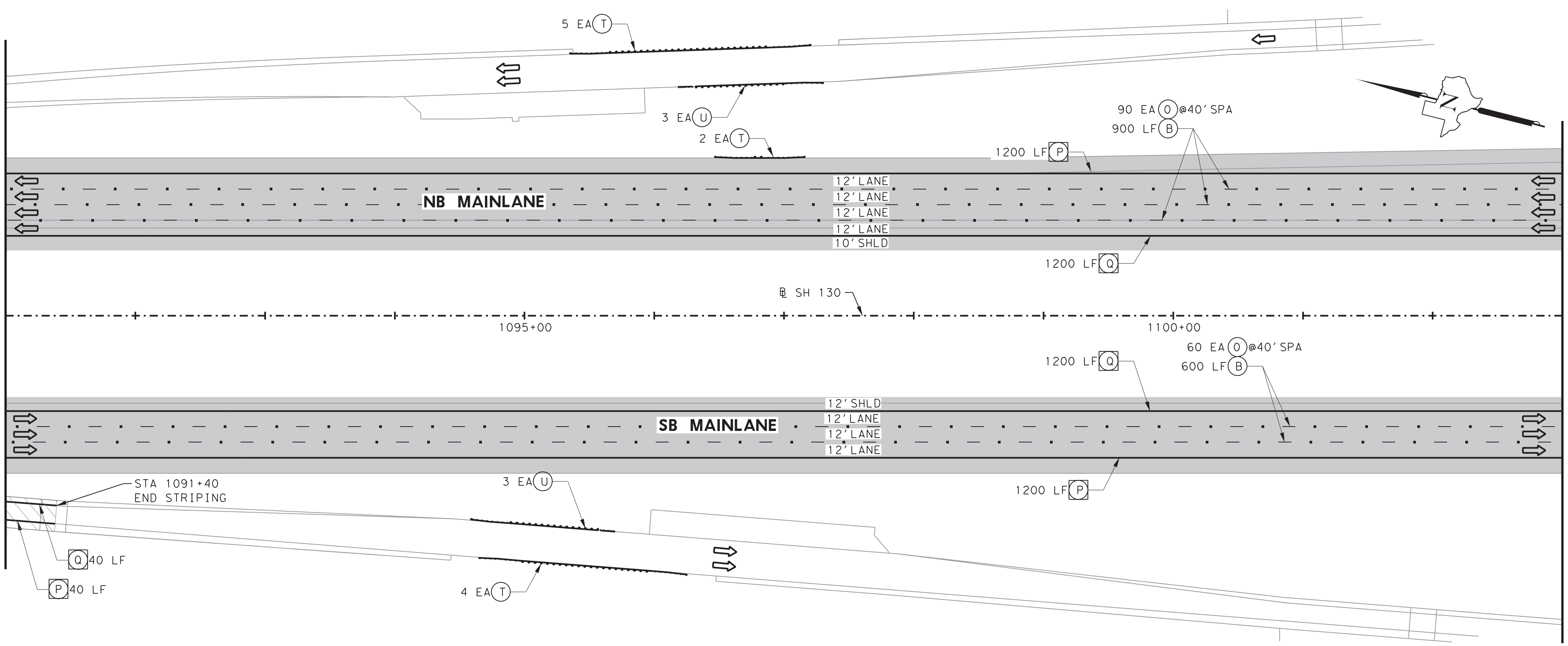

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
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11/02/2020

0 25 50 100
SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 17 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6350	46	001	110

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shernandez
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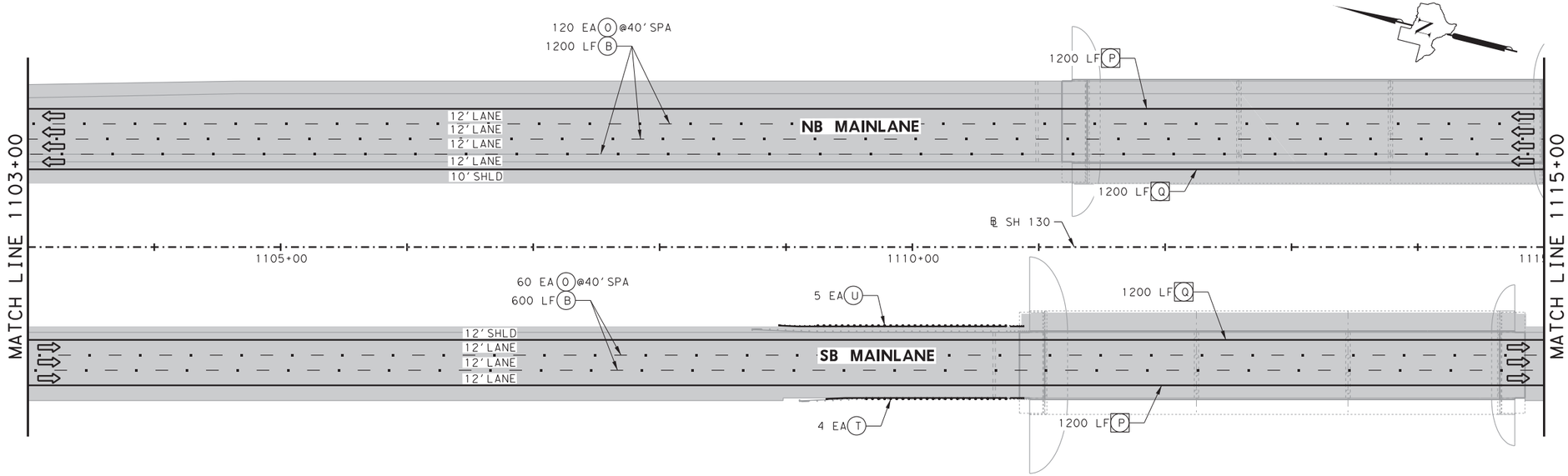

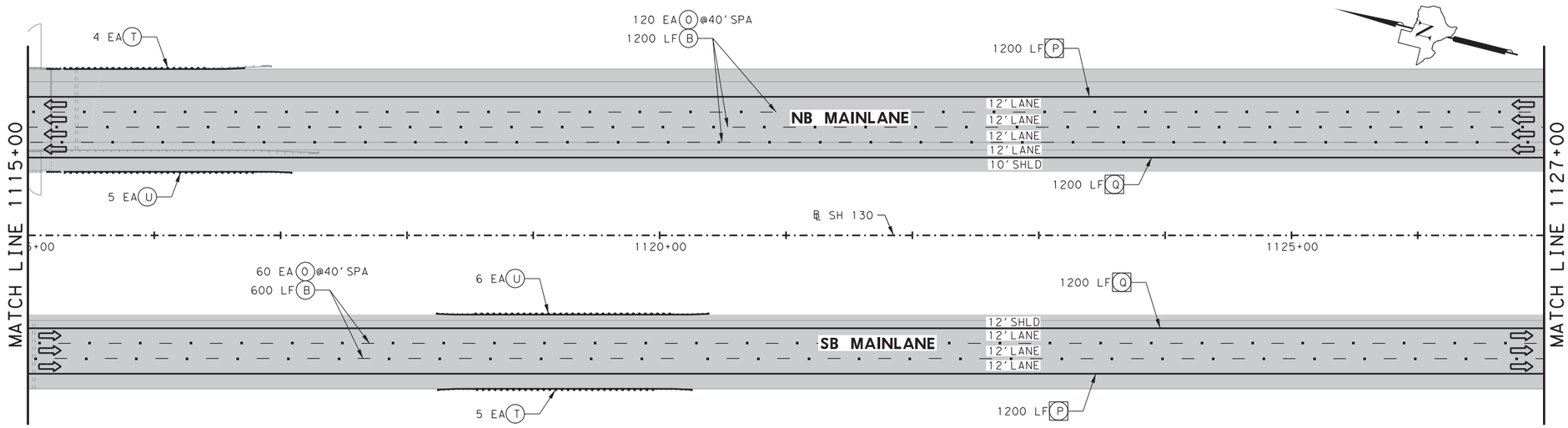

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
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- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
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- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
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- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
2. THE CONTRACTOR WILL USE TYPE I AND TYPE II PAVEMENT MARKINGS WHEN PLACING ALL PERMANENT STRIPES.

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

0 25 50 100
SCALE: 1"=100'

ENTECH
CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 18 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		111

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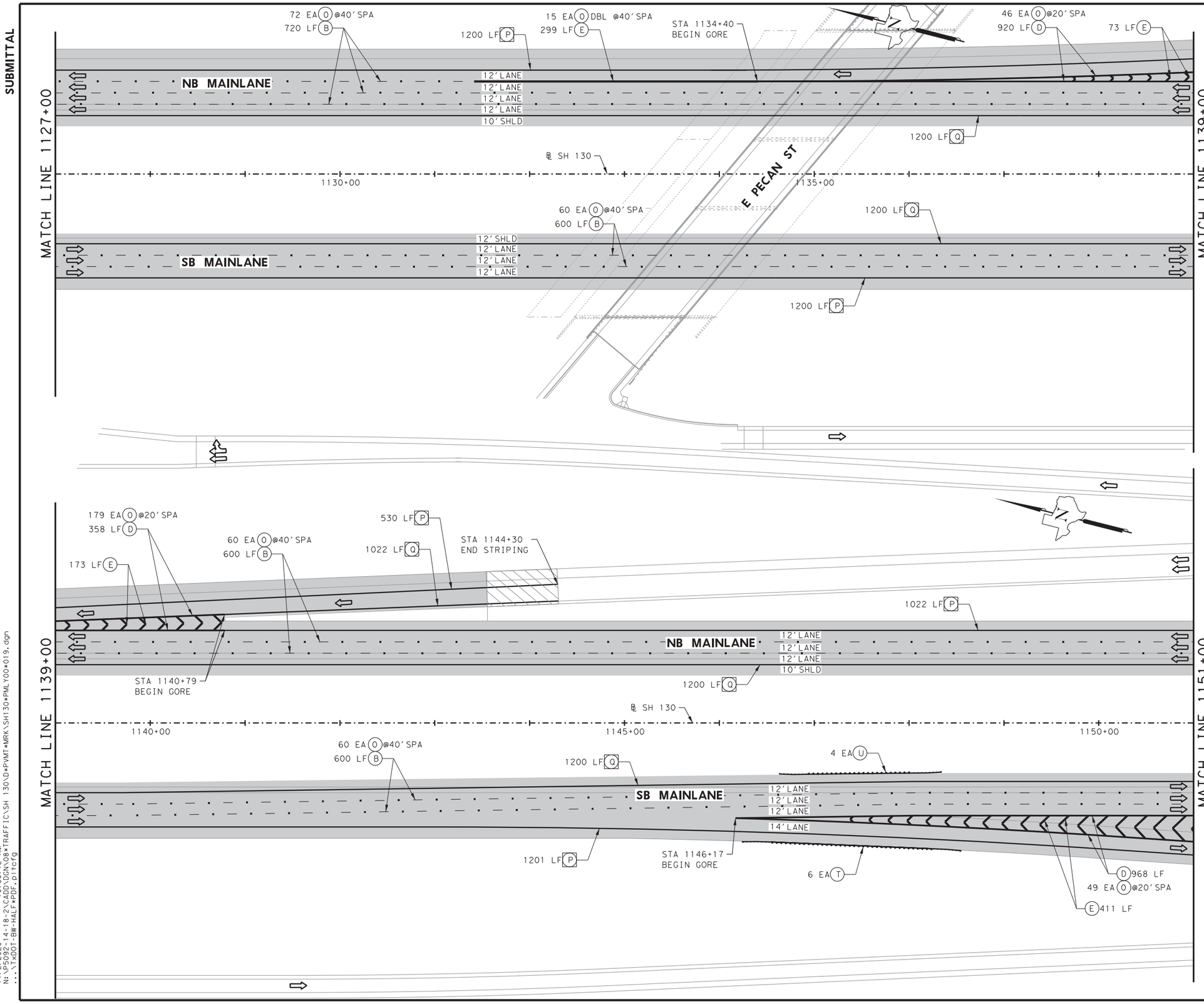

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
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11/02/2020

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SCALE: 1"=100'

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281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 19 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		112

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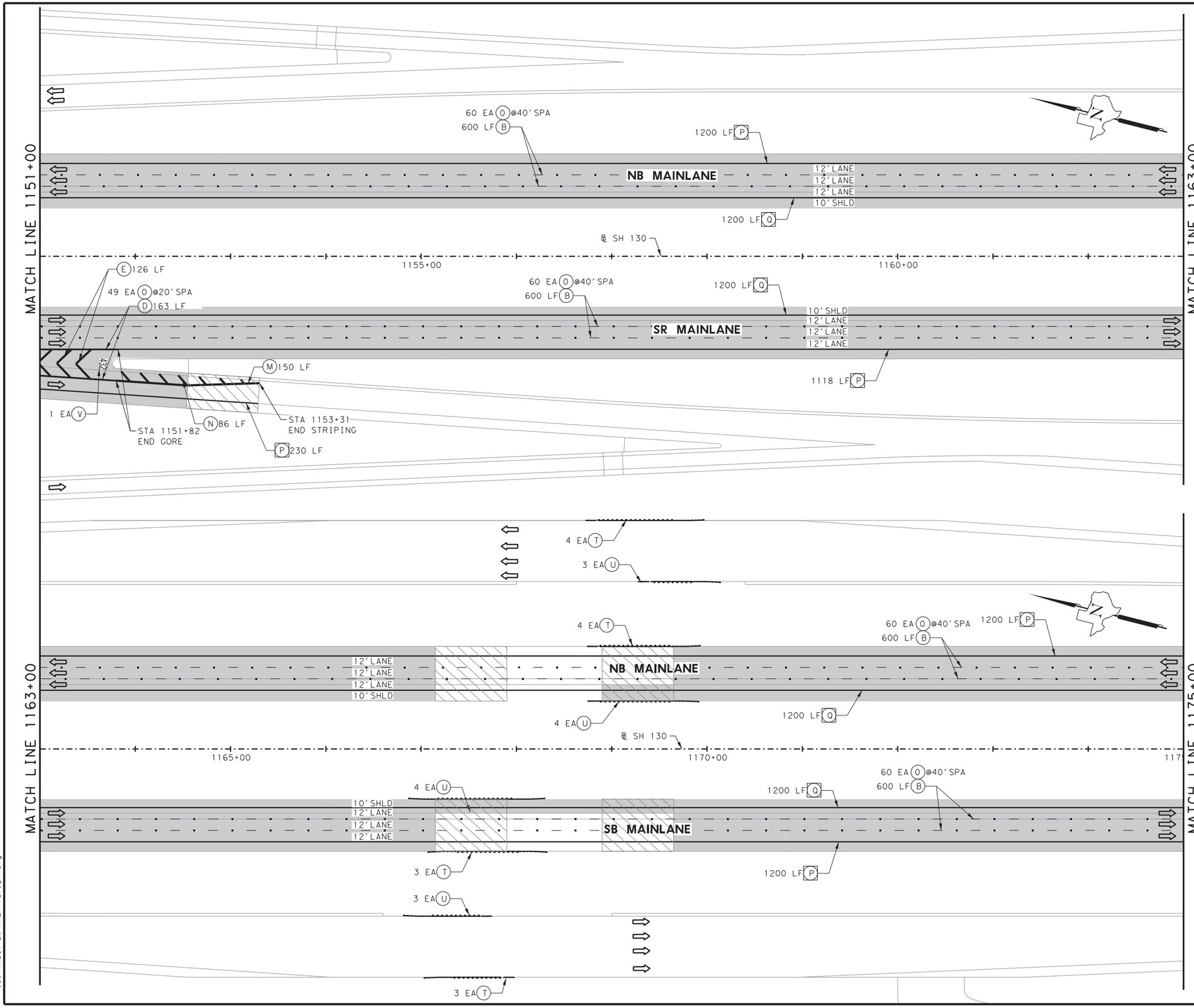

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
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STATE OF TEXAS
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11/02/2020

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SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 20 OF 32

DN: CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN: JV	6	TEXAS				SH 130
DW: CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW: JV	AUS	TRAVIS	6340	46	001	113

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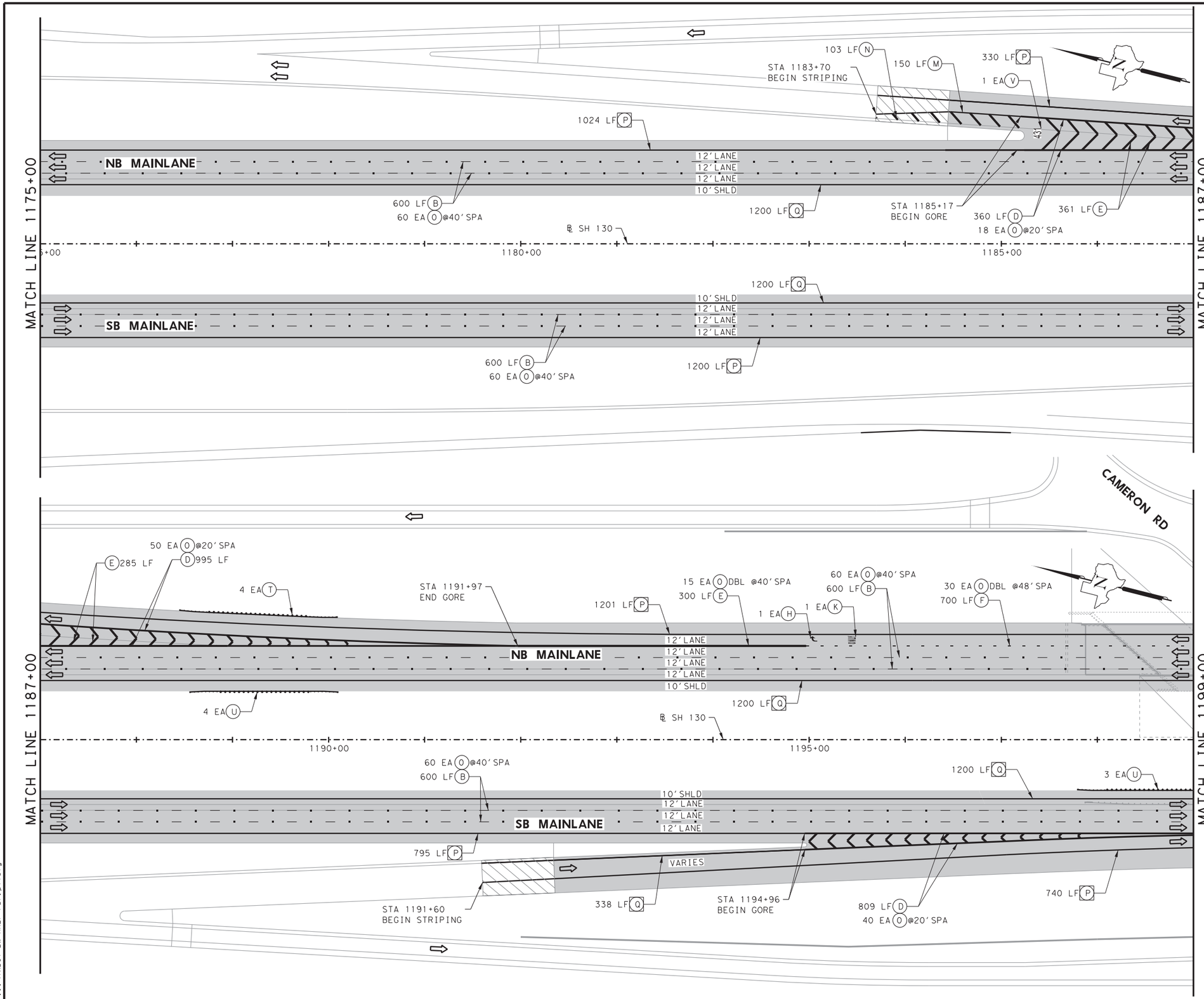

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
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STATE OF TEXAS
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11/02/2020

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SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 21 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	114

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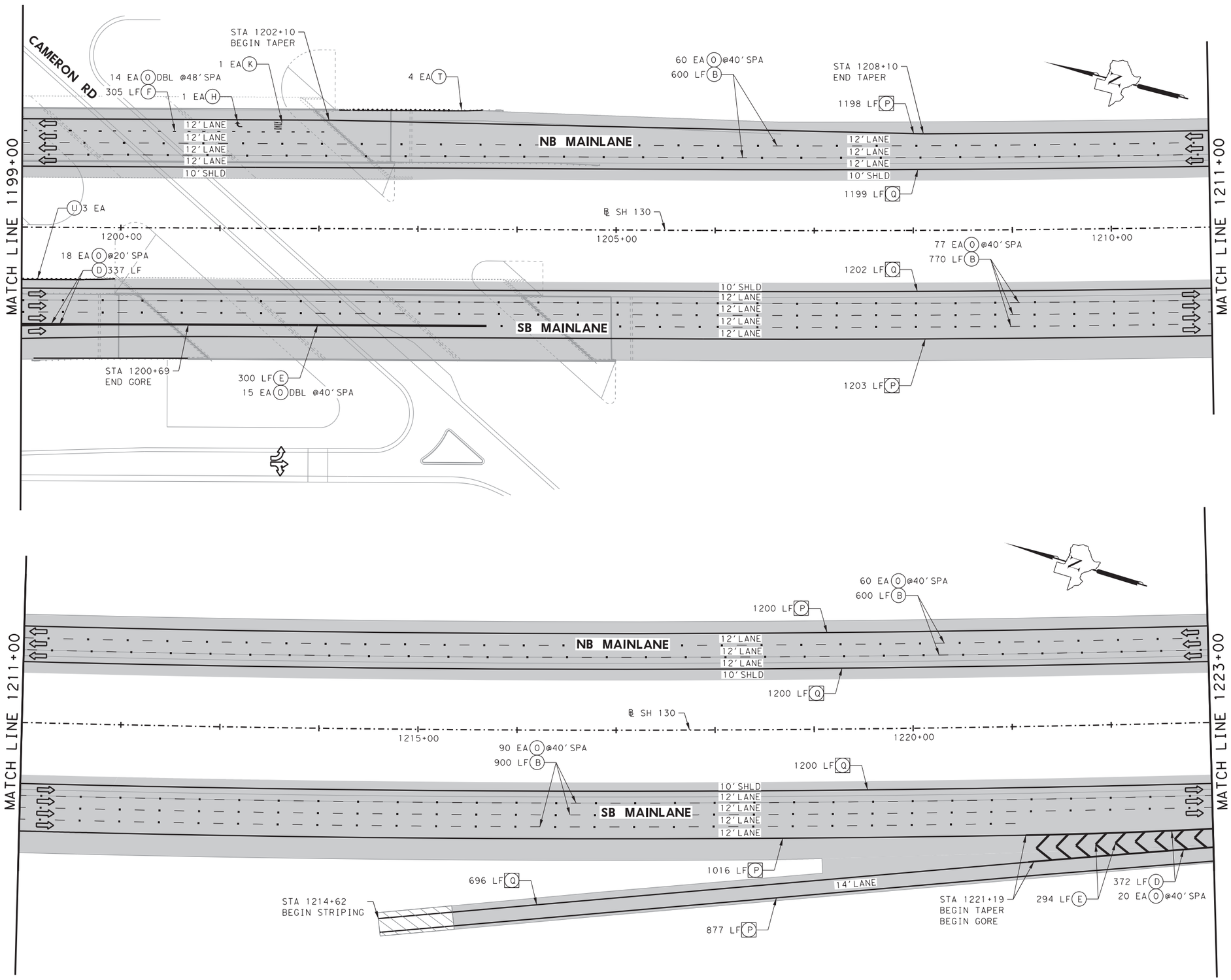

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
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- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
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STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

0 25 50 100
SCALE: 1"=100'

ENTECH
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Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 22 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		115

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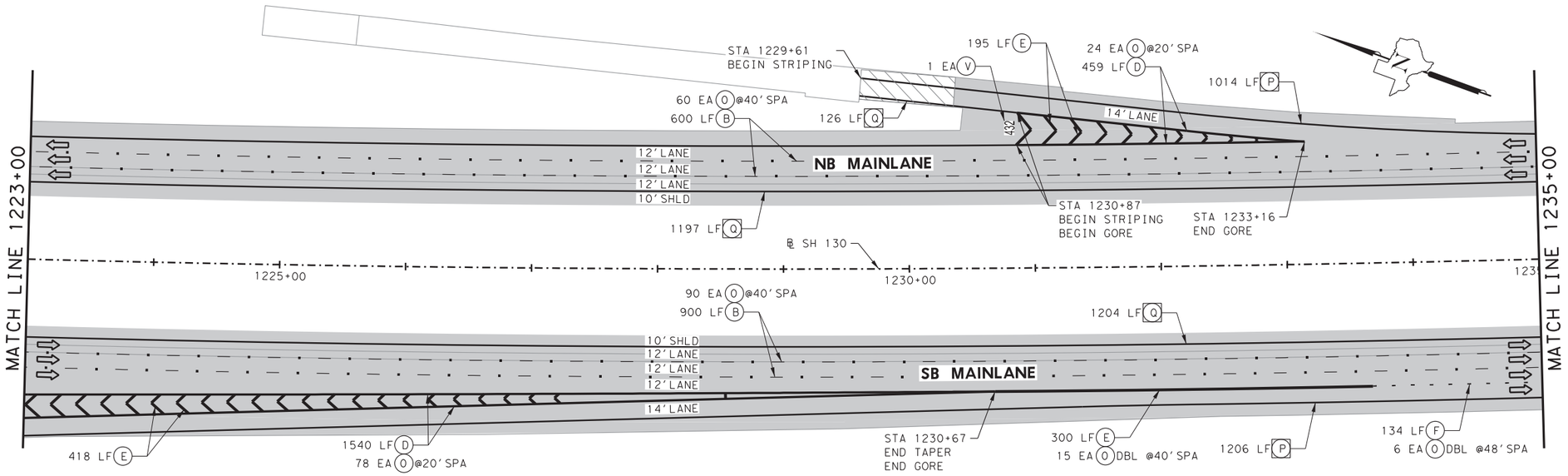

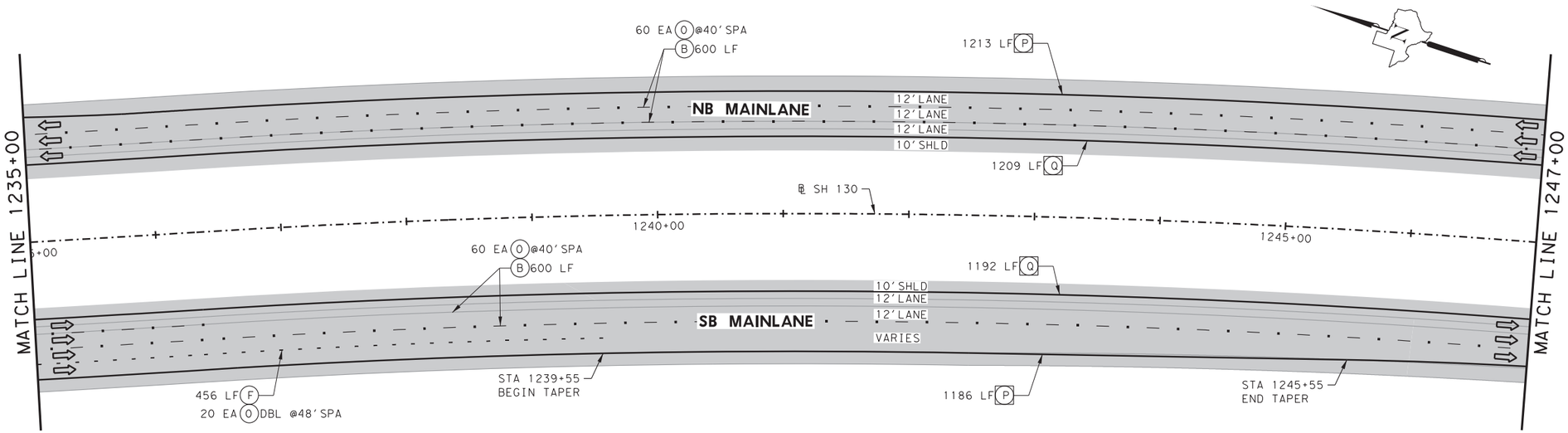

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
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- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
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SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 23 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		116

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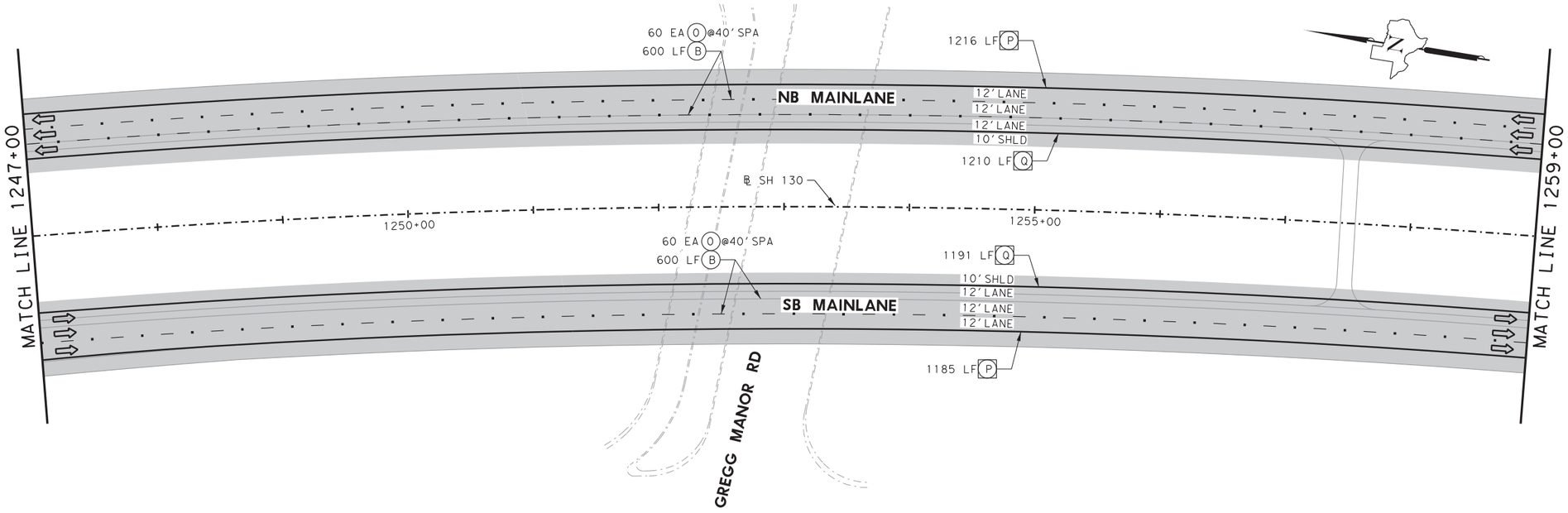

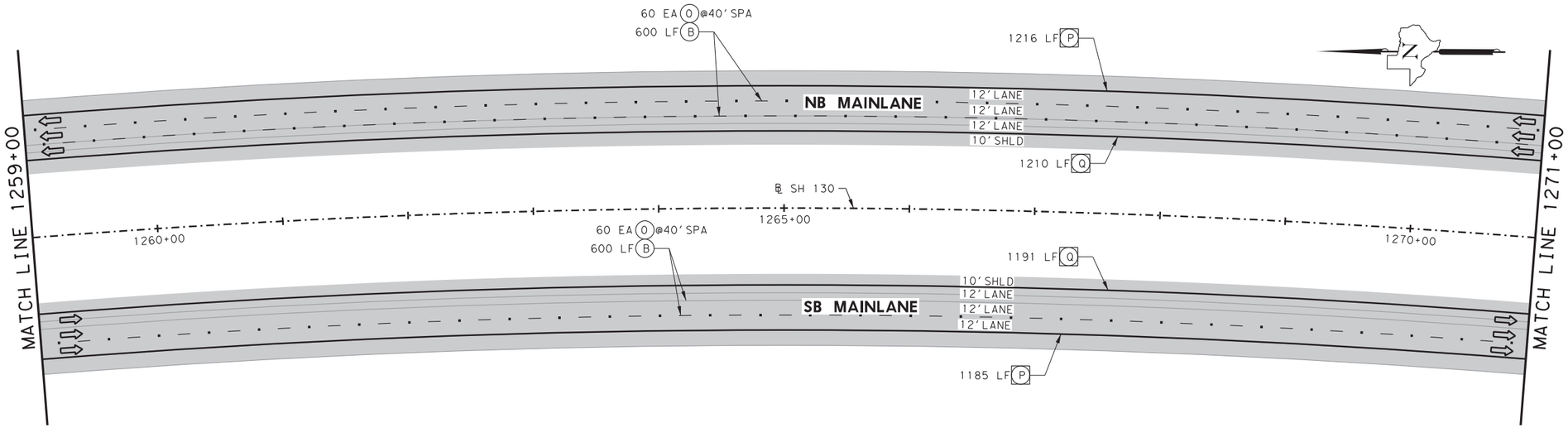

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
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- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
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- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
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0 25 50 100
SCALE: 1"=100'

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281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 24 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		117

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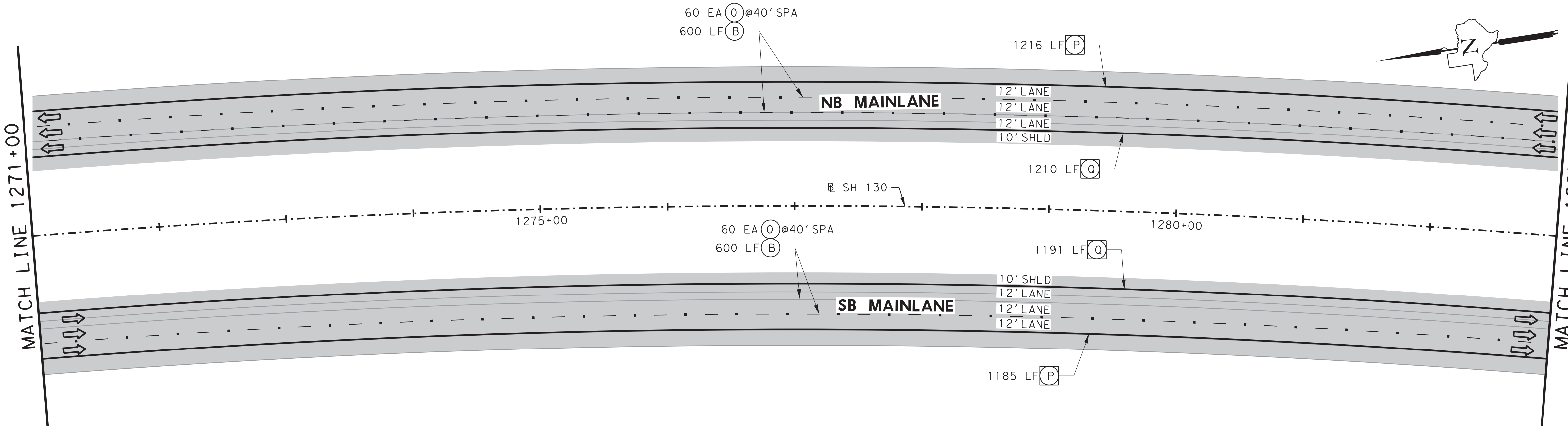

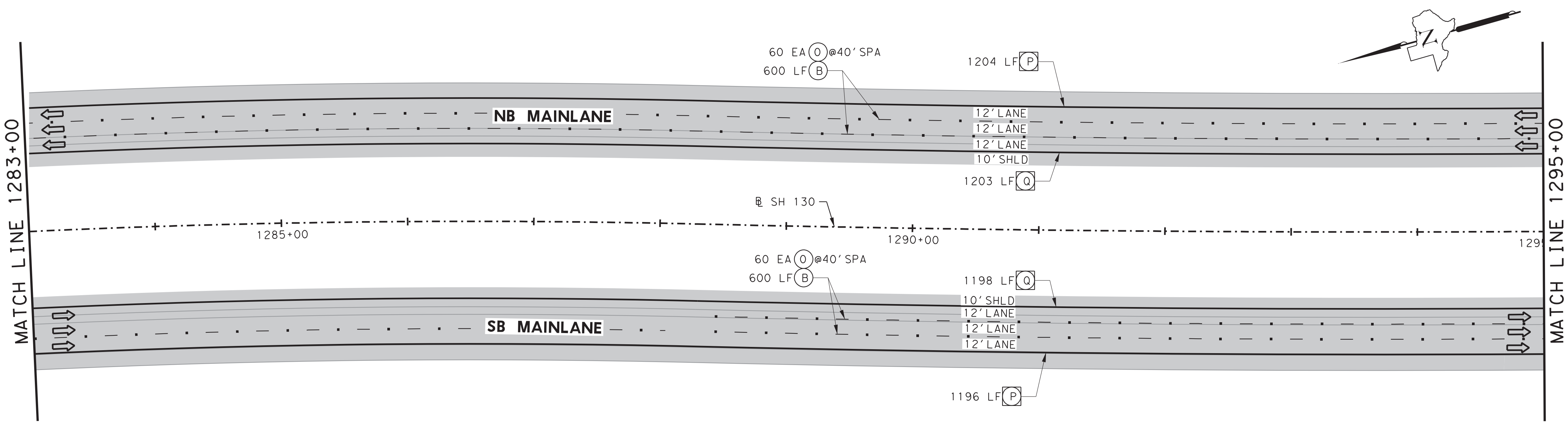

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
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- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
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- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ☐ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
2. THE CONTRACTOR WILL USE TYPE I AND TYPE II PAVEMENT MARKINGS WHEN PLACING ALL PERMANENT STRIPES.

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

0 25 50 100
SCALE: 1"=100'

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 25 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	118

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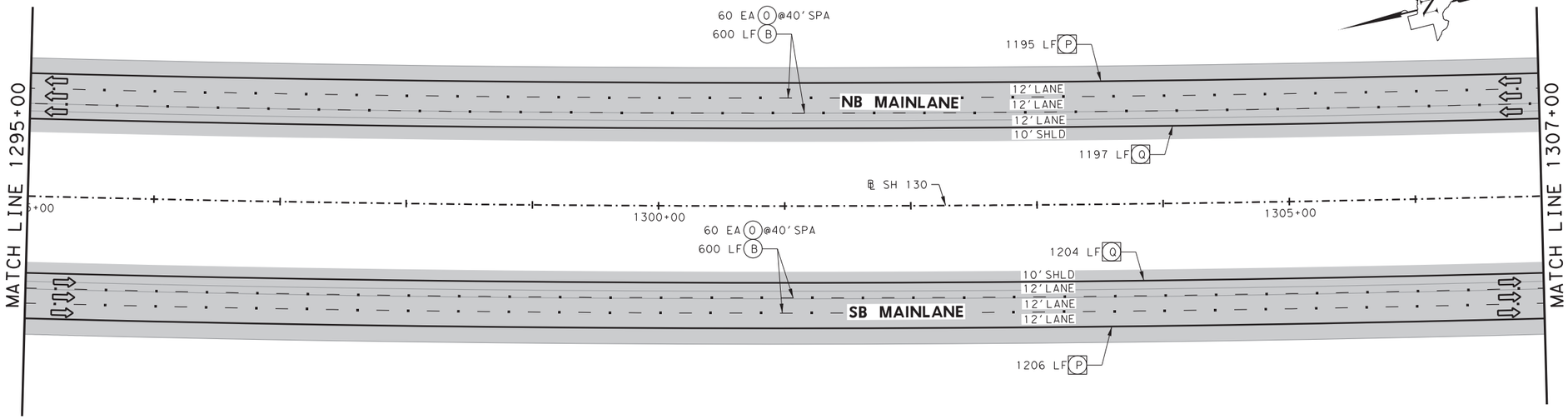

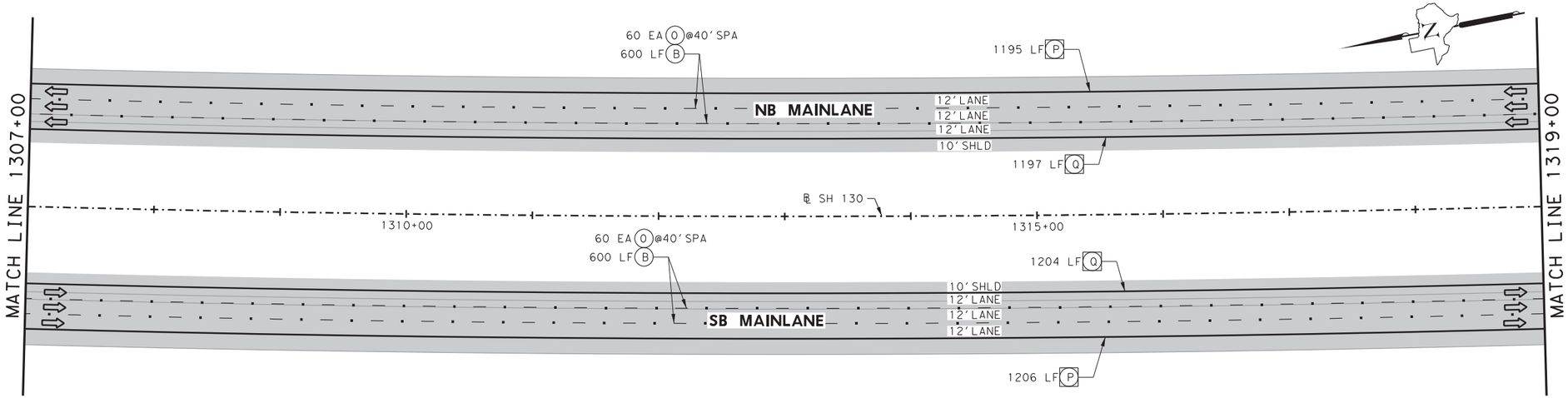

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ◯ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
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11/02/2020

0 25 50 100
SCALE: 1"=100'

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281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 26 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	119

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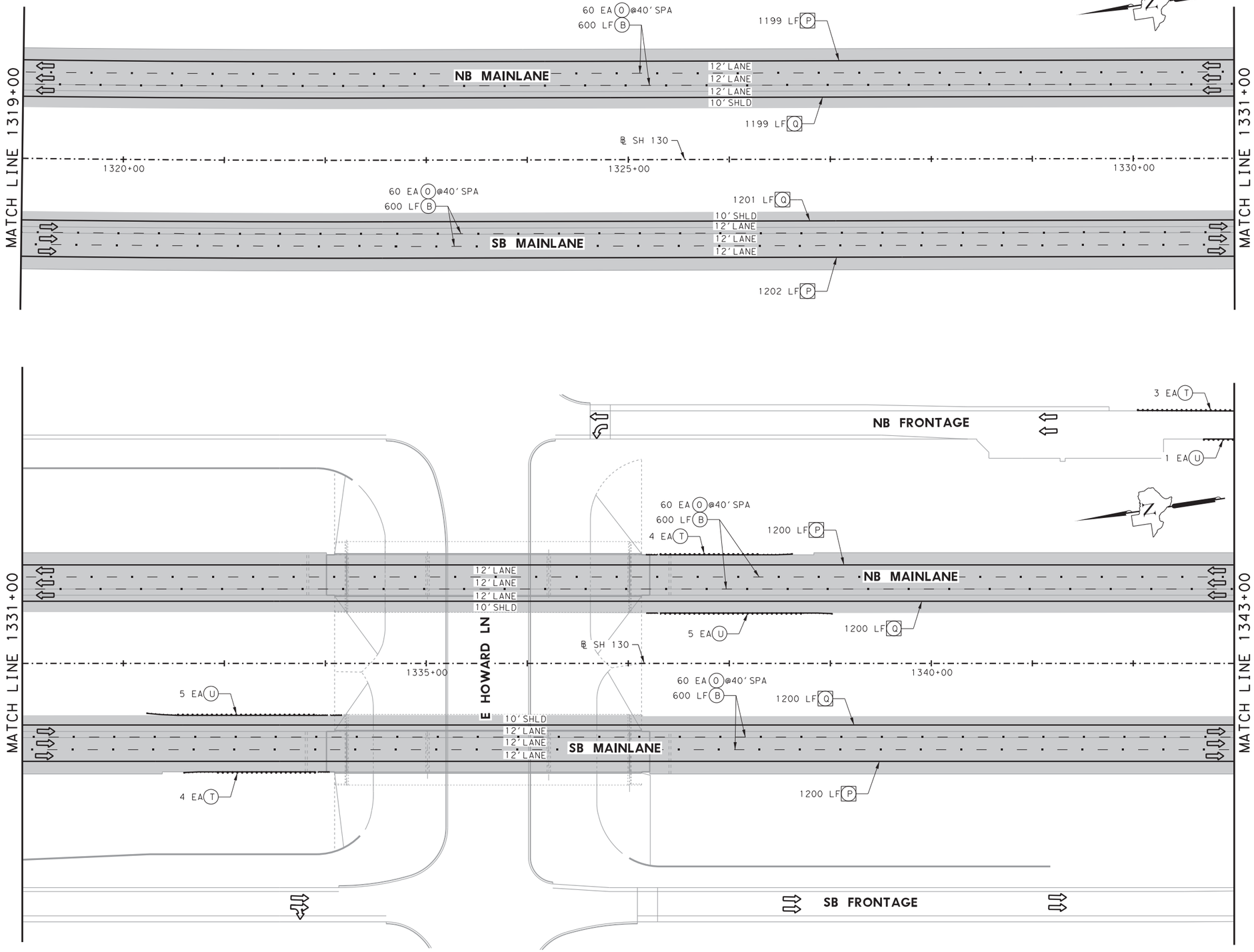

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
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SCALE: 1"=100'

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281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 27 OF 32

DN: CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN: JV	6	TEXAS				SH 130
DW: CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW: JV	AUS	TRAVIS	6340	46	001	120

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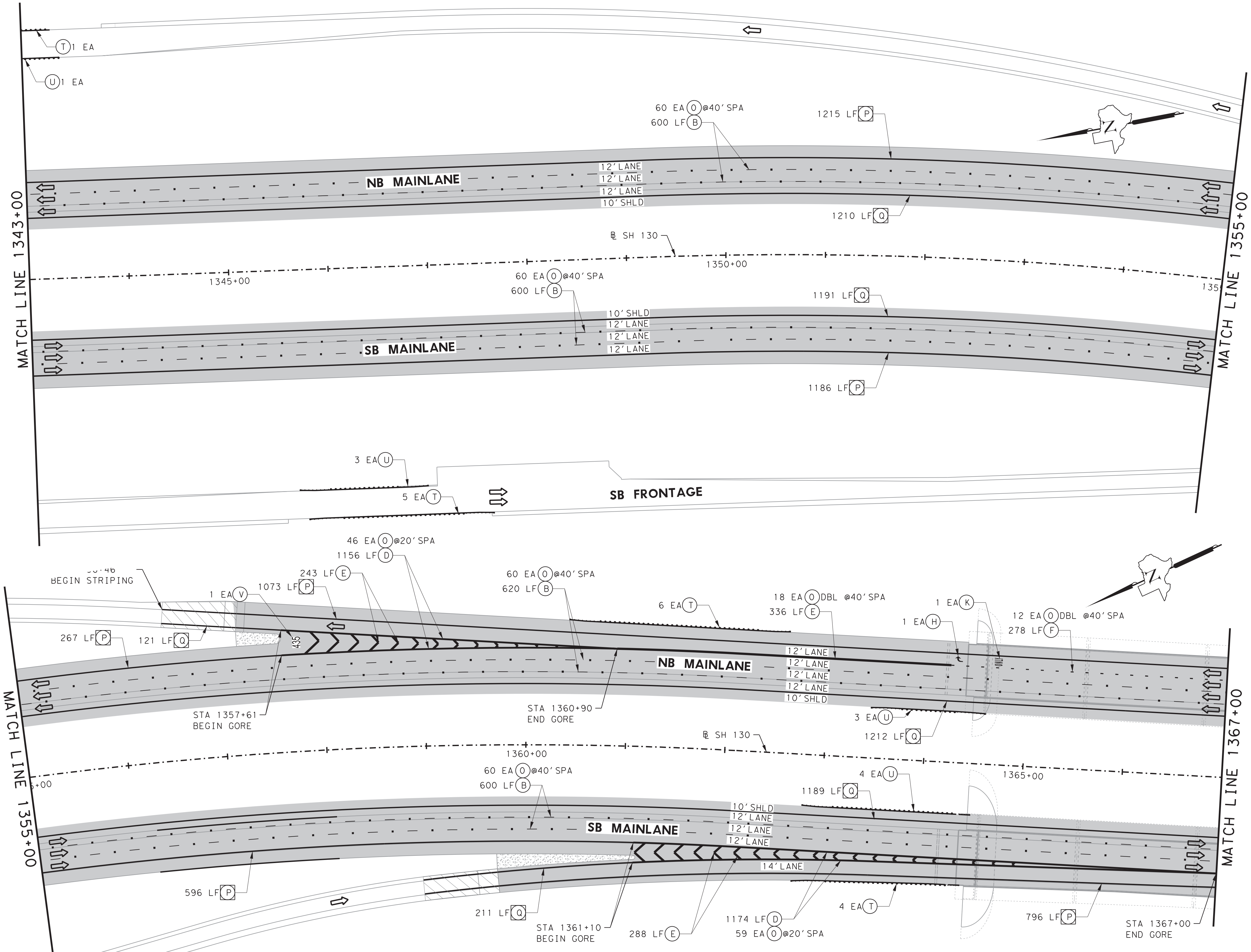

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
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11/02/2020

0 25 50 100
SCALE: 1"=100'

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15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 28 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	121

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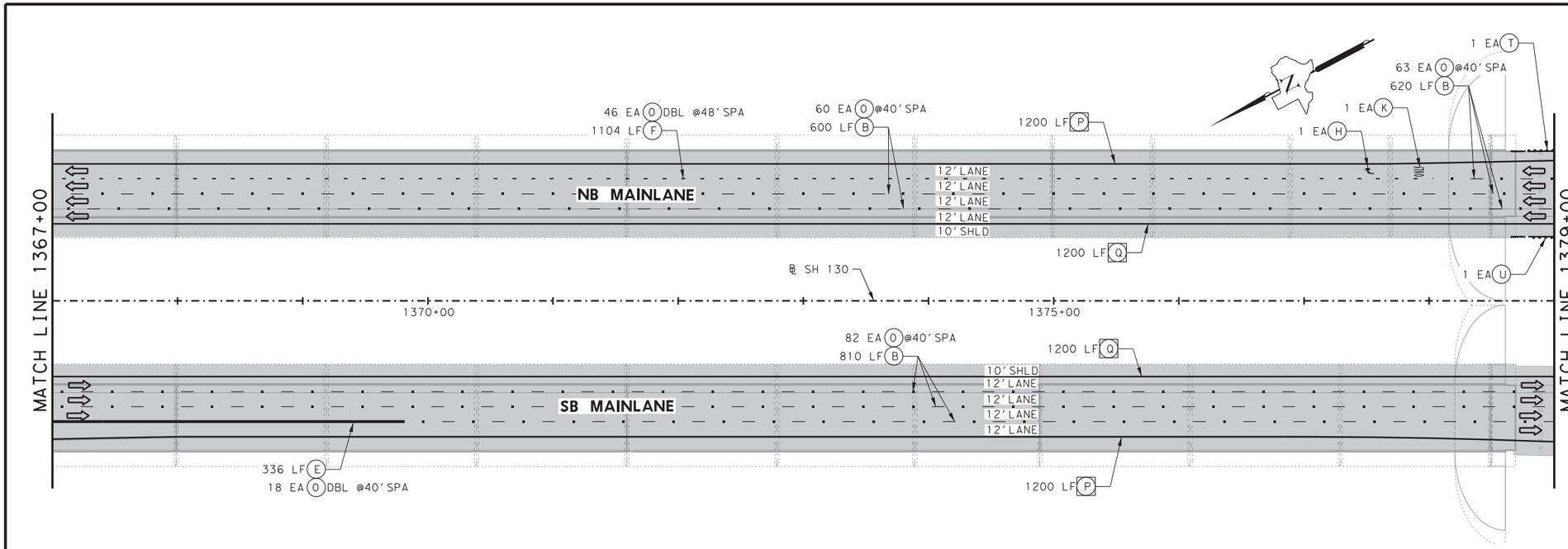

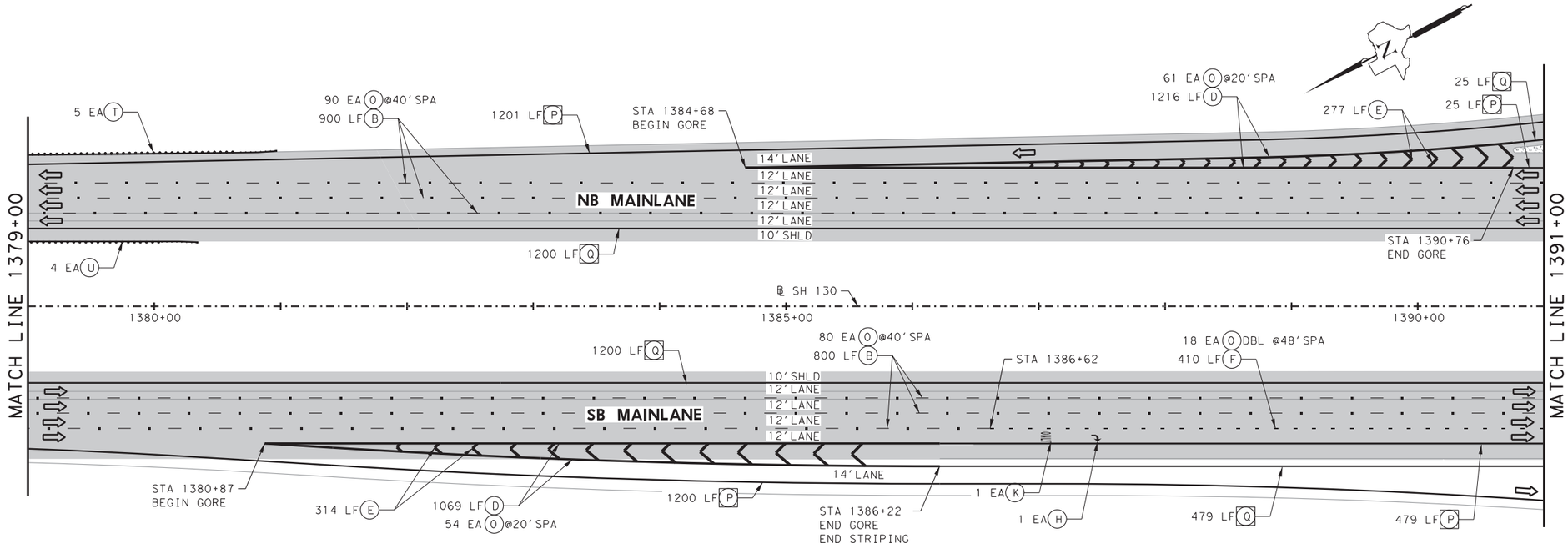

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
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- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
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- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
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STATE OF TEXAS
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11/02/2020

0 25 50 100
SCALE: 1"=100'

ENTECH
CIVIL ENGINEERS, INC
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15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 29 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		122

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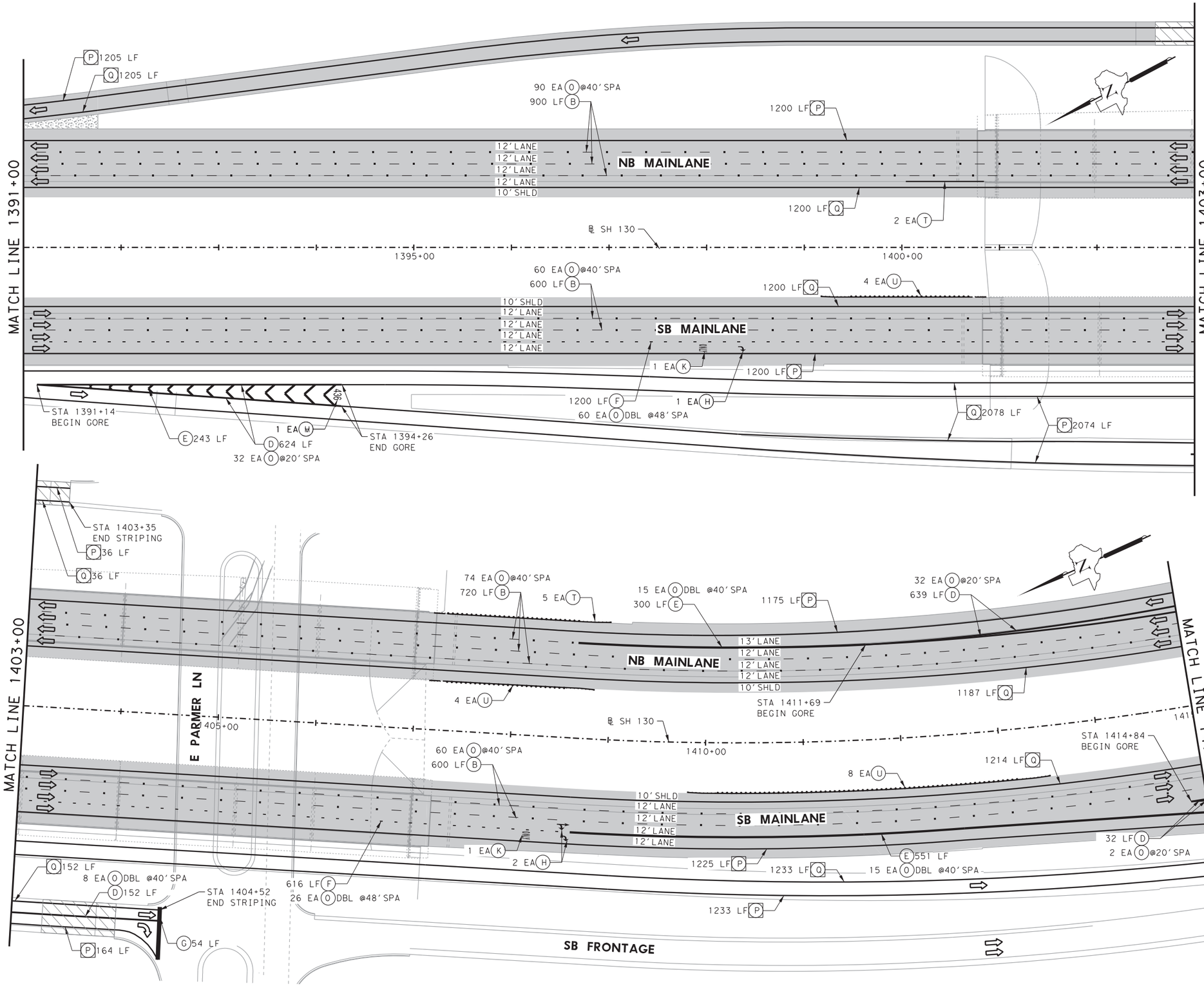

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
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- ⇦ DIRECTION OF TRAFFIC FLOW

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SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 30 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.					HIGHWAY NO.
CK DN:	JV	6	TEXAS						SH 130
DW:	CC	STATE DIST.	COUNTY		CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS		6340	46	001		123

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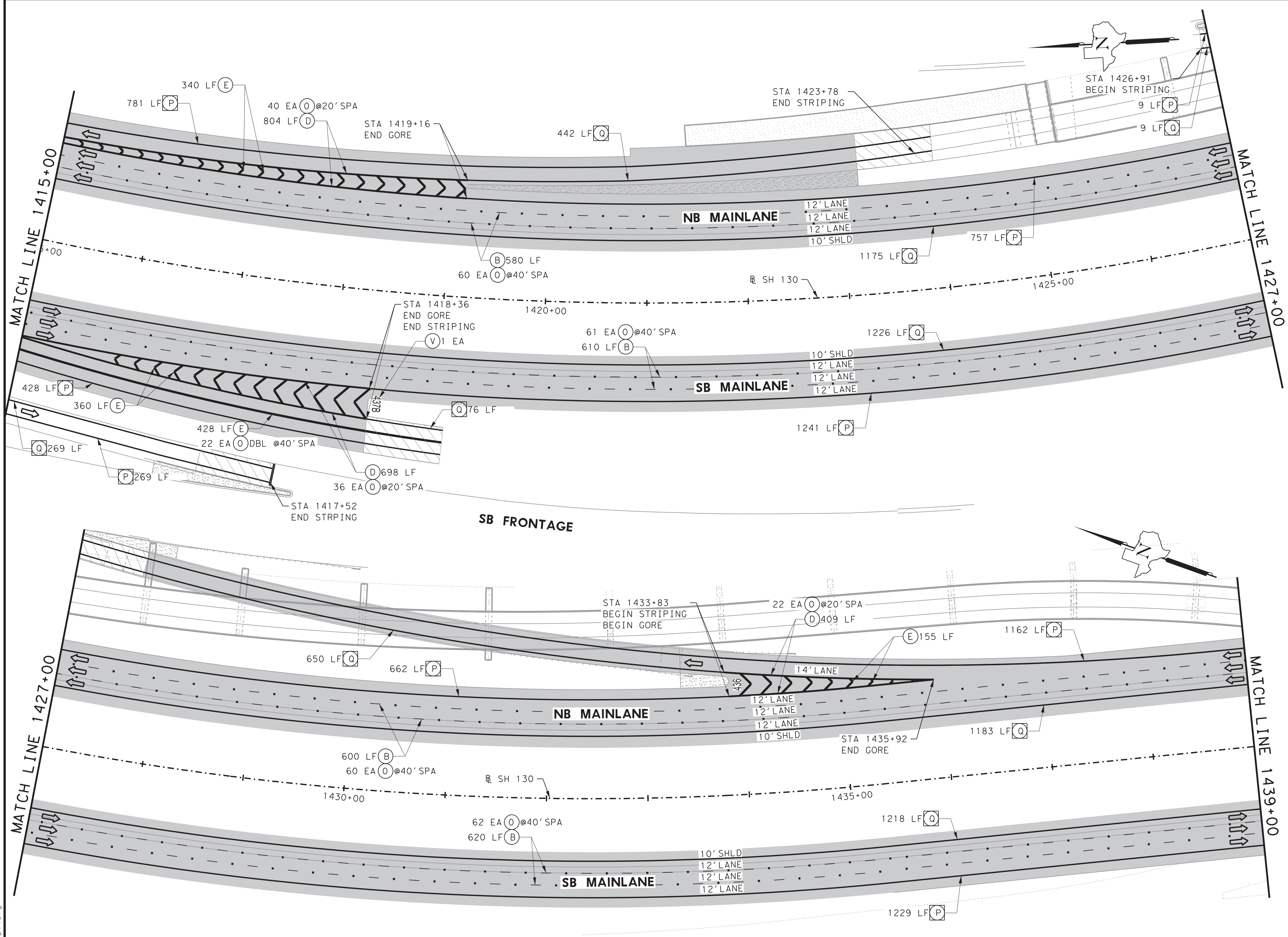

LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
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- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
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- (P) REFL PROF PAV MRK (W)(6")(SLD)
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- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
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- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ⬡ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:
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0 25 50 100
SCALE: 1"=100'

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Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 31 OF 32

DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK DN:	JV	6	TEXAS				SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001	124

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shernandez
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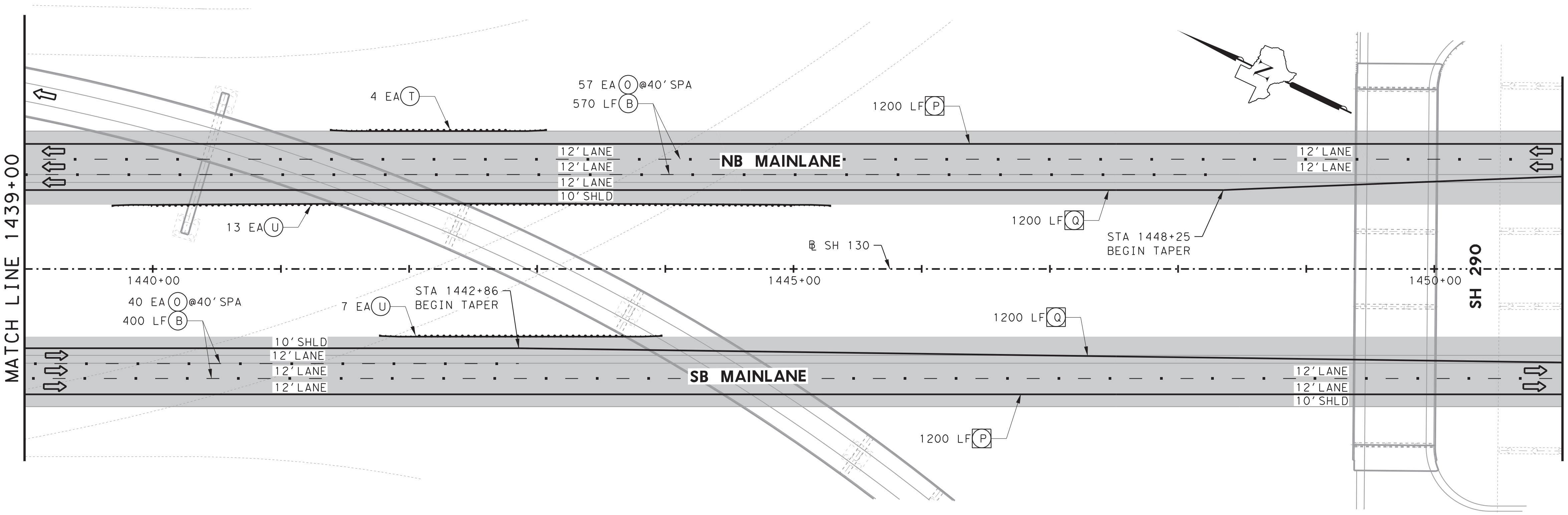
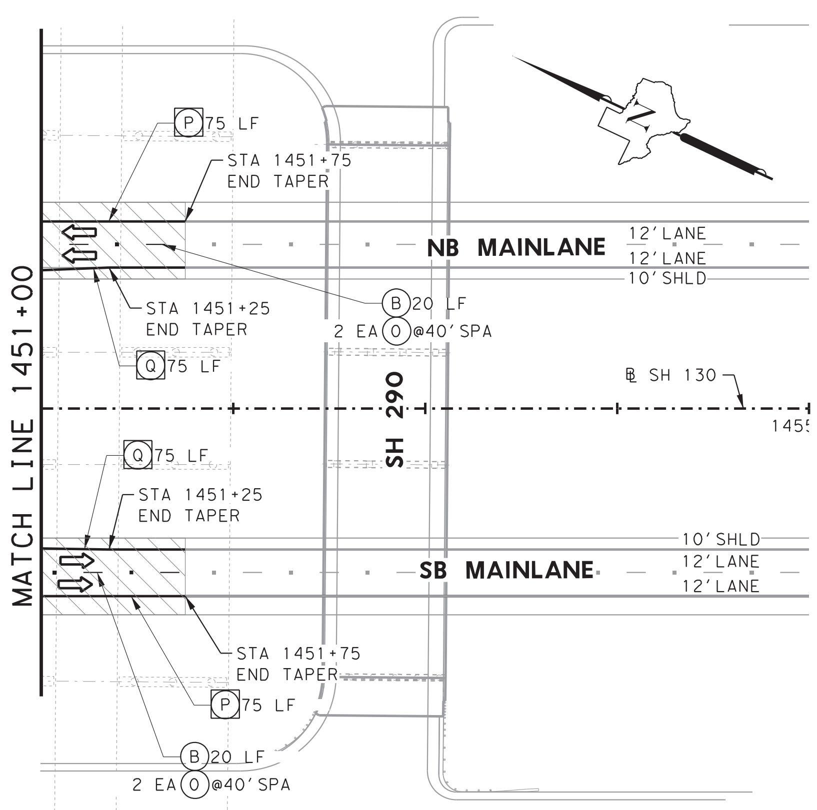




LEGEND:

- (A) RE PM W/RET REQ TY I & II (W) 6" (SLD)
- (B) RE PM W/RET REQ TY I & II (W) 6" (BRK)
- (C) REFL PAV MRK TY I & II (W)(6")(DOT)
- (D) REFL PAV MRK TY I & II (W)(8")(SLD)
- (E) REFL PAV MRK TY I & II (W)(12")(SLD)
- (F) REFL PAV MRK TY I & II (W)(12")(LNDP)
- (G) REFL PAV MRK TY I & II (W)(24")(SLD)
- (H) REFL PAV MRK TY I & II (W)(ARROW)
- (I) REFL PAV MRK TY I & II (W)(DBL ARROW)
- (J) REFL PAV MRK TY I & II (W)(LNDP ARW)
- (K) REFL PAV MRK TY I & II (W)(WORD)
- (L) REFL PAV MRK TY I & II (Y)(6")(SLD)
- (M) REFL PAV MRK TY I & II (Y)(8")(SLD)
- (N) REFL PAV MRK TY I & II (Y)(12")(SLD)
- (O) REFL PAV MRK TY II-C-R
- (P) REFL PROF PAV MRK (W)(6")(SLD)
- (Q) REFL PROF PAV MRK (Y)(6")(SLD)
- (R) PREFB PV MK W/WNTY TY B(W)6"(BRK)CNTST
- (S) FLEX POST @ 10' SPA
- (T) (D-SW)SZ 1(BRF)GF2
- (U) (D-SY)SZ 1(BRF)GF2
- (V) REFL PAV MRK TY I & II (W)(NUMBER)
- ▢ DENOTES REFL PAV MRK TY I & TY II
- ⇦ DIRECTION OF TRAFFIC FLOW

NOTES:

1. ALL PAVEMENT MARKINGS WILL BE PLACED ACCORDING TO TXDOT'S FREEWAY PAVEMENT MARKING STANDARD SHEETS.
2. THE CONTRACTOR WILL USE TYPE I AND TYPE II PAVEMENT MARKINGS WHEN PLACING ALL PERMANENT STRIPES.

STATE OF TEXAS
VICTOR M. IRACHETA
84689
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

0 25 50 100
SCALE: 1"=100'

ENTECH CIVIL ENGINEERS, INC
F-6932
15021 Katy Freeway, Suite 500
Houston, Texas, 77094
281-945-0069 PH
281-945-0081 FX

Texas Department of Transportation

SH 130

STRIPING LAYOUT

SHEET 32 OF 32

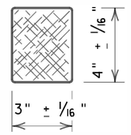
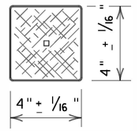
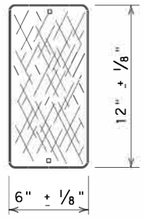
DN:	CC	FED.RD. DIV.NO.	STATE	PROJECT NO.				HIGHWAY NO.
CK DN:	JV	6	TEXAS					SH 130
DW:	CC	STATE DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CK DW:	JV	AUS	TRAVIS	6340	46	001		125

shernandez
11/2/2020 10:30:34 AM
N:\P5092-14-18-2\CADD\DGN\08*TRAFFIC\SH 130\D*PVMT*MRK\SH130*PMLY00*032.dgn
...\TXDOT-BW-HALF*PDF.pltcfg

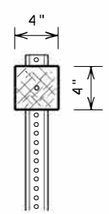
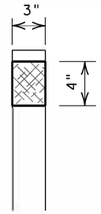
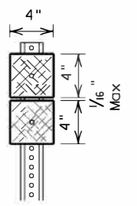
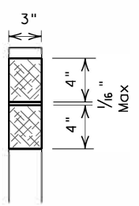
...\SH130*PMLY00*032.dgn

DATE: 11/2/2020
FILE: N:\PS092-14-18-2\CADD\DGN\08_TRAFFICS\SH 130\D_PVMT_MRK\StdDetails\dom1-20.dgn

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
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.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

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

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

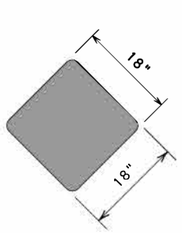
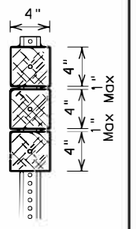
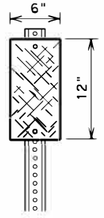
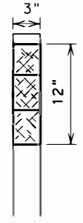
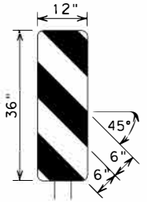
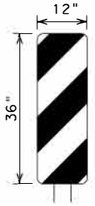
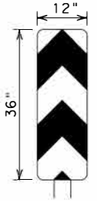
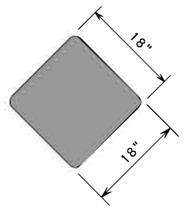
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

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

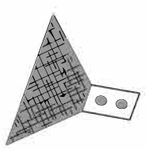
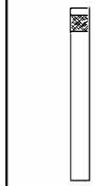
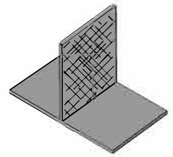
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

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)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE	 W1-8			
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	
NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).			

ONE DIRECTION LARGE ARROW

DEVICE	 W1-6	
SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

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.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	AUS	TRAVIS		126

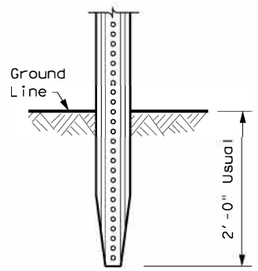
20A

DATE: 11/2/2020
FILE: N:\P5092-14-18-2\CADD\DGN\08_TRAFFIC\SH 130\D_PVMT_MRK\StdDetails\dom2-20.dgn

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

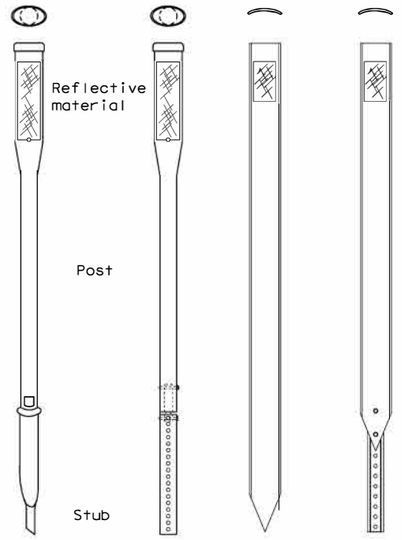


NOTES

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.

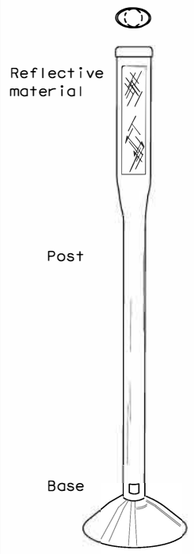
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



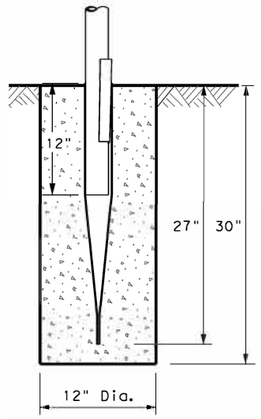
SURFACE MOUNT

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.

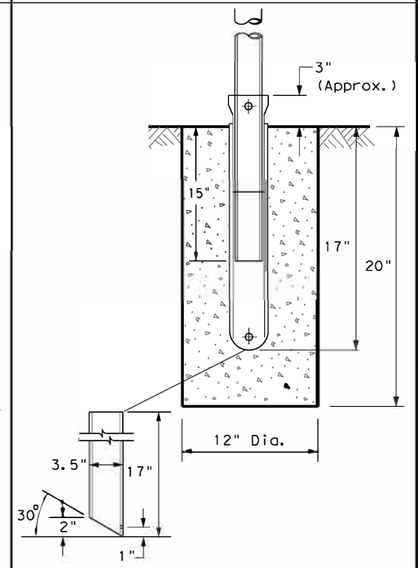
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

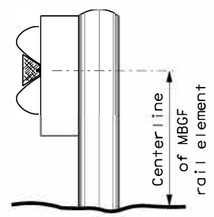
NOTE

1. Install per manufacturer's recommendations.

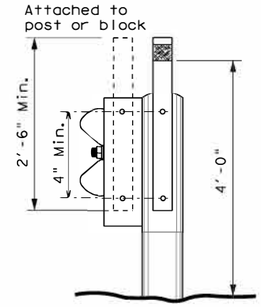
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

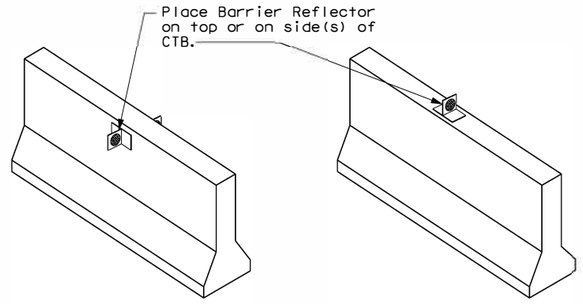
GF1



GF2



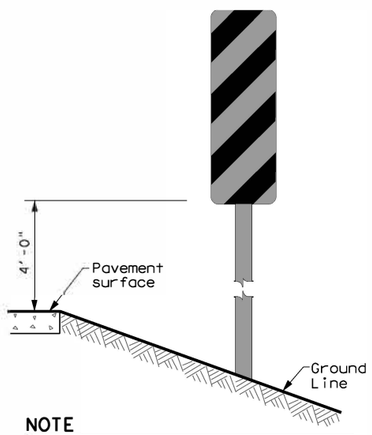
CONCRETE TRAFFIC BARRIER (CTB)



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.

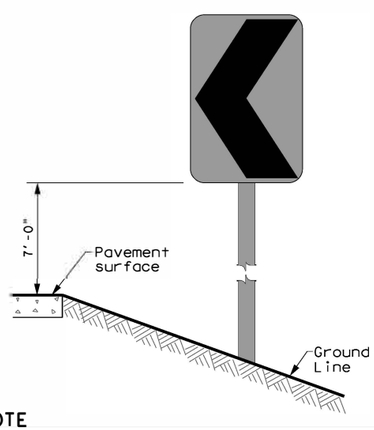
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

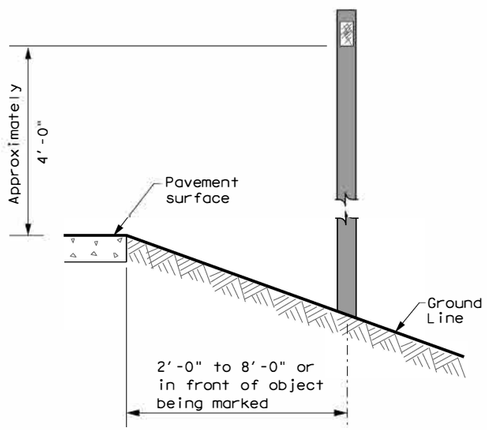
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	AUS	TRAVIS		127

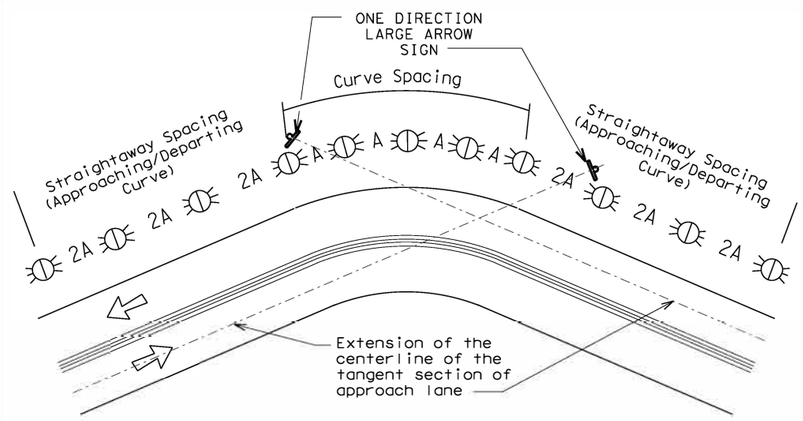
20B

DATE: 11/2/2020
FILE: N:\P5092-14-18-2\CADD\DGN\08_TRAFFIC\SH 130\D_PVMT_MRK\StdDetails\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

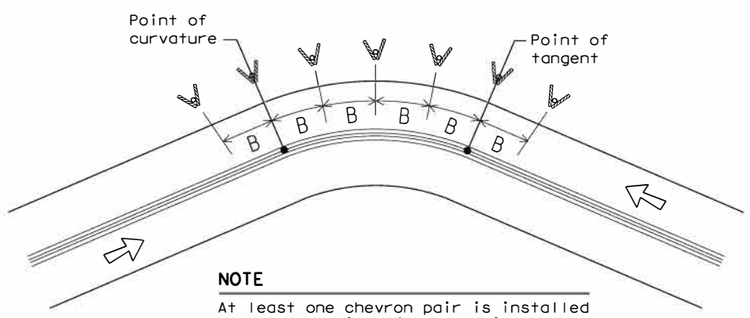
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



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

1. 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.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

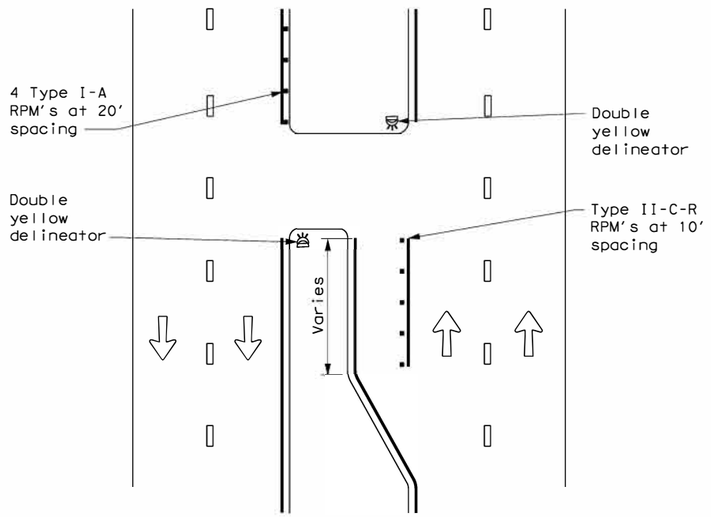
D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20	AUS	TRAVIS		128

20C

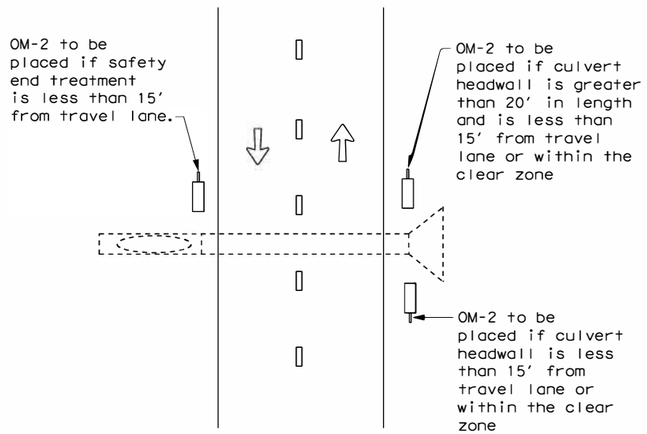
DATE: 11/2/2020
FILE: N:\P5092-14-18-2\CADD\DGN\08_TRAFFIC\SH 130\D_PVMT_MRK\StdDetails\dom4-20.dgn

CROSSOVERS



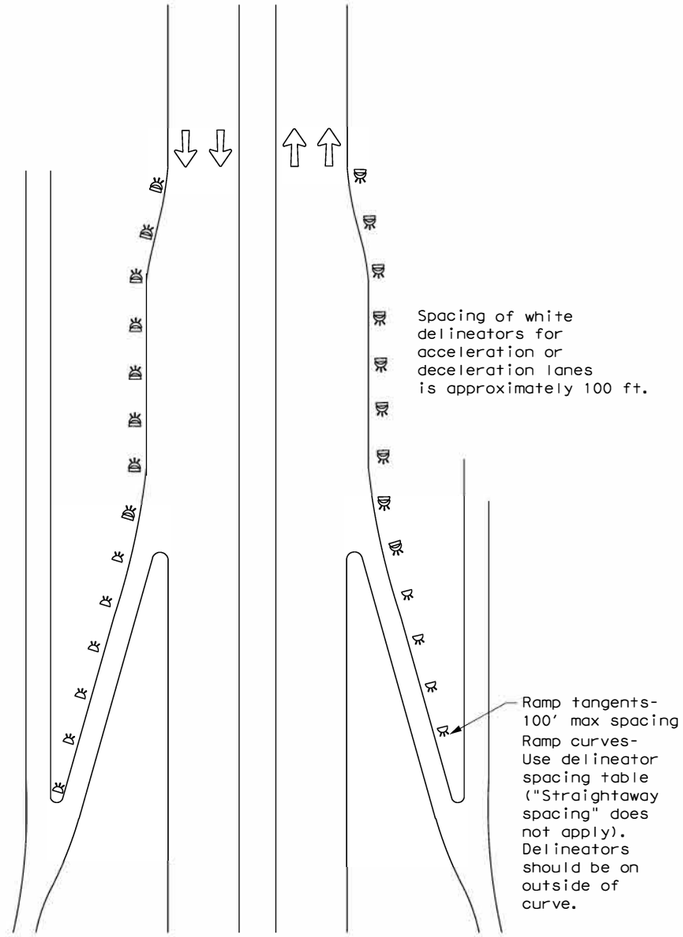
DETAIL 1

FOR CULVERTS WITHOUT MBGF



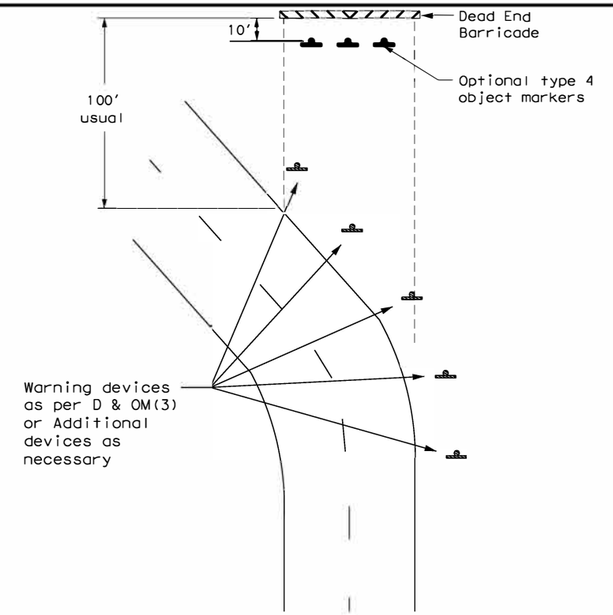
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



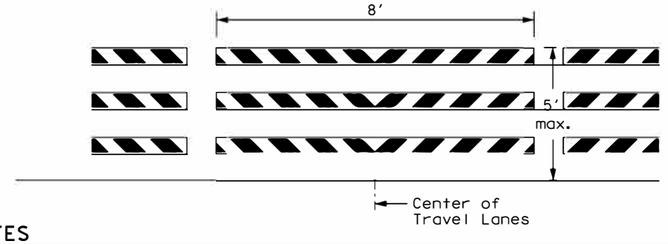
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. 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

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

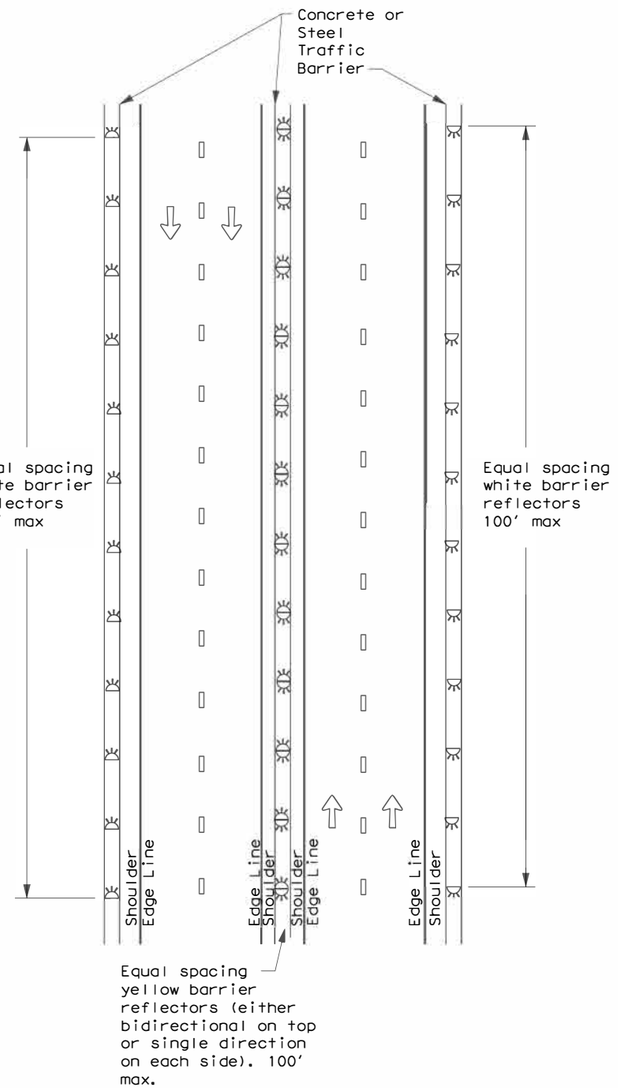
D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
3-15	DIST	COUNTY		SHEET NO.
7-20	AUS	TRAVIS		129

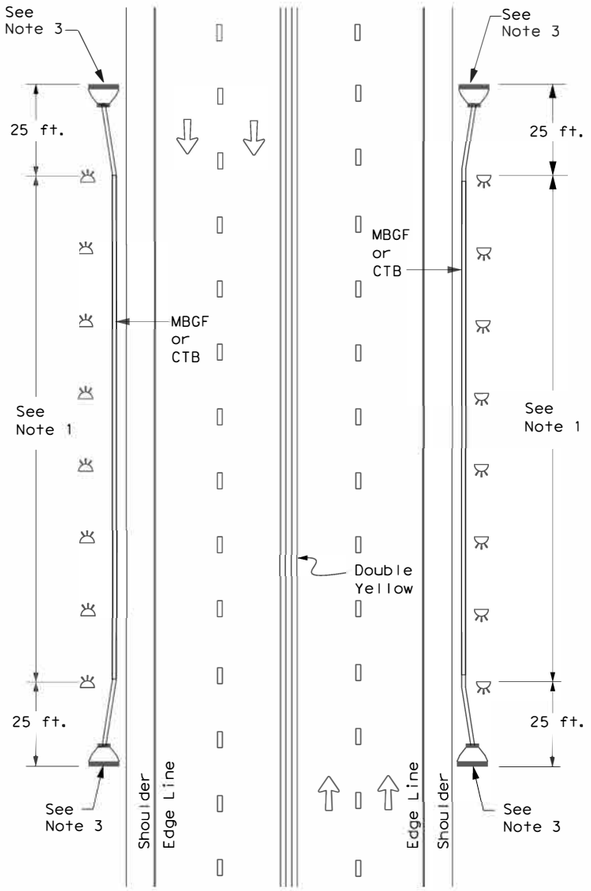
20D

DATE: 11/2/2020
FILE: N:\P5092-14-18-2\CADD\DGN\08_TRAFFIC\SH 130\D_PVMT_MRK\StdDetails\dom6-20.dgn

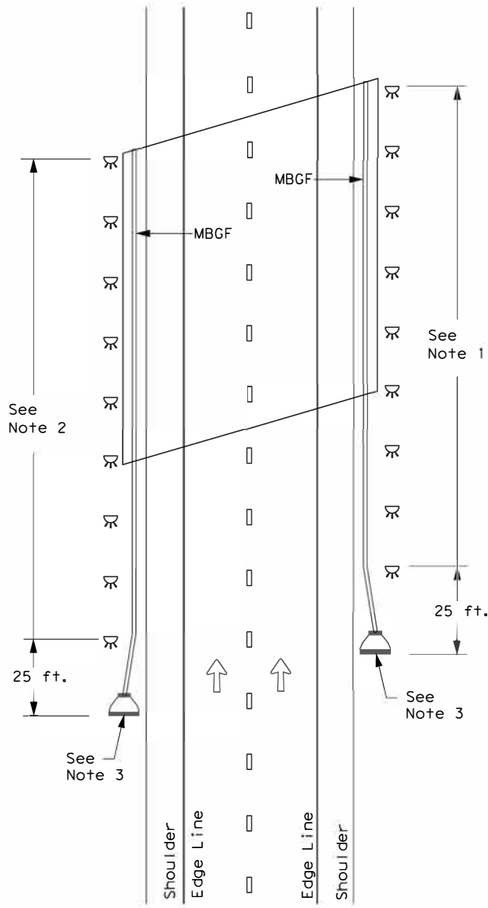
CONTINUOUS CONCRETE OR STEEL BARRIER



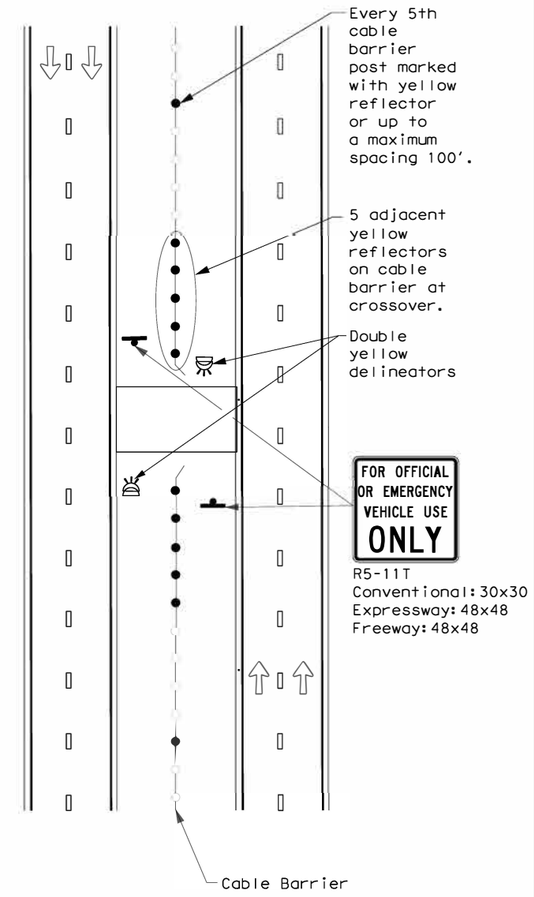
MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



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 Continuos 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	CK: TxDOT
©TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
7-20	DIST	COUNTY		SHEET NO.
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DATE: 11/2/2020
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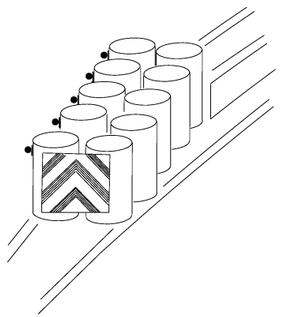
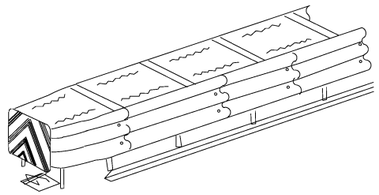
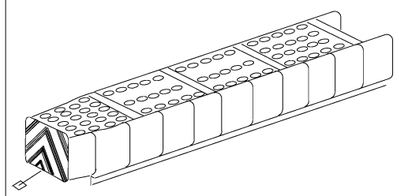
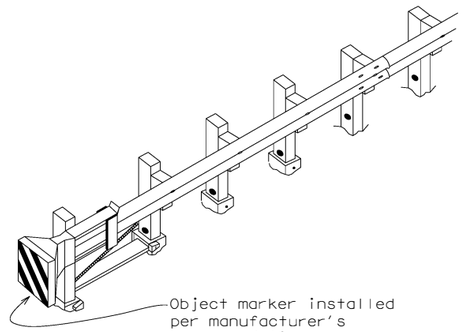
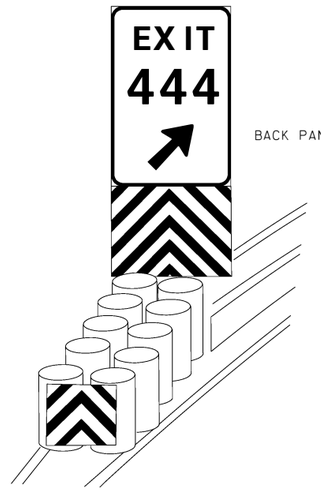
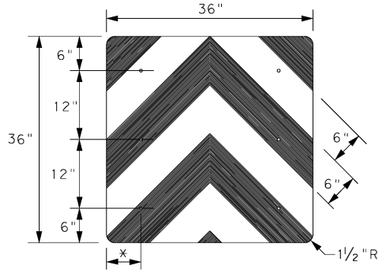


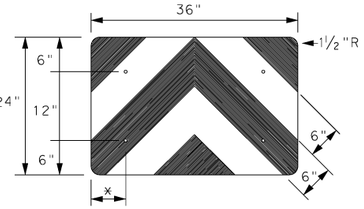




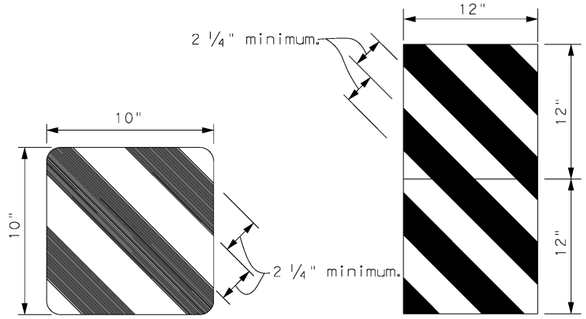




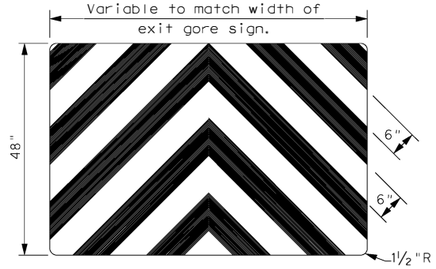


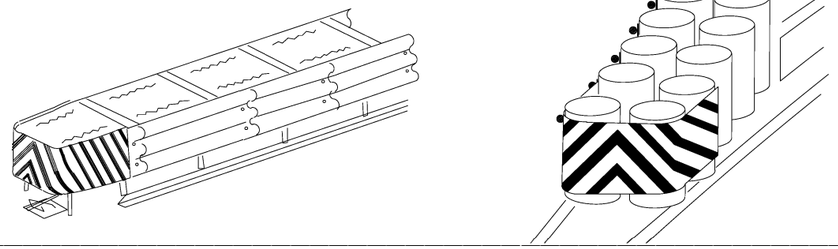


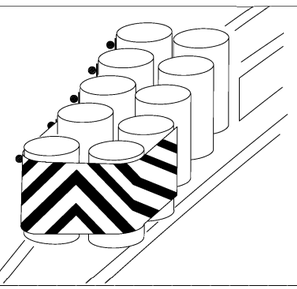
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

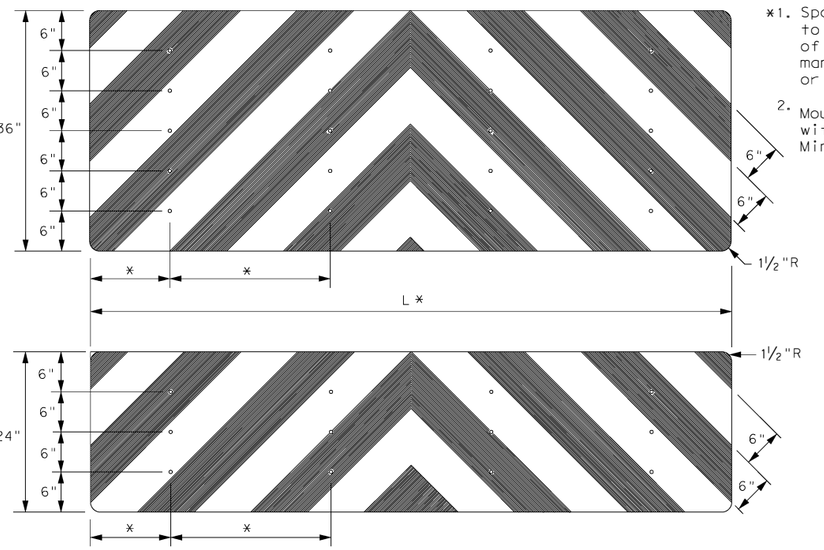


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

*1. Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturers recommendation, or as directed by the Engineer.

2. Mounting should be flush with top of attenuator. Minimum size 96" x 24".

NOTES

1. Object Markers shall conform to the Texas MUTCD and meet the color and reflectivity requirement of Department Material Specification DMS 8300. Background shall be yellow reflective sheeting (Type B or C) and Chevron shall be black.

2. Object Markers may be fabricated from adhesive backed reflective sheeting applied directly to guardrail end treatment, or applied directly to an "end cap" as per the manufacturer's recommendation. Direct applied sheeting shall provide a smooth surface and have no wrinkles, air bubbles, cuts or tears. A radius at the corners is not required for direct applied sheeting.

3. Object Marker size may be reduced to fit smaller devices. Width of alternating black and yellow stripes are typically 6". Object Markers smaller than 3ft may have reduced width stripes of a minimum of 2 ¼".

4. Pop rivets, screws, or nuts and bolts may be used to attach object markers and reflectors. Holes, slots or other openings may be cut or drilled through object markers to allow cable or other attachments.

5. Object Marker at nose of attenuator is subsidiary to the attenuator.

6. See D & OM (1-4) for required barrier reflectors.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
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4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	AUS	TRAVIS		131
4-98 7-20				

20C

DATE: 11/2/2020 10:30:42 AM
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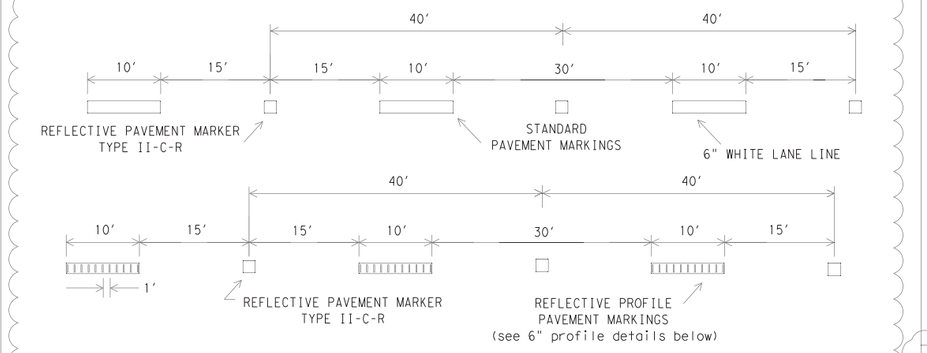
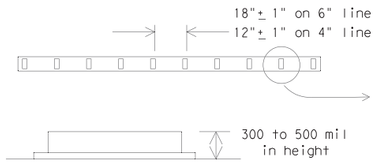


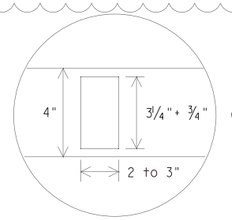
PAVEMENT MARKERS (REFL) TYPE II-C-R SHALL BE SPACED ON 40' CENTERS WITH THE CLEAR FACE TOWARD NORMAL TRAFFIC AND THE RED FACE TOWARD WRONG WAY TRAFFIC.

TRAFFIC LANE LINES PAVEMENT MARKING DETAILS

EDGELINES SHOULD TYPICALLY BE 6" WIDE AND THE MATERIALS SHALL BE AS SPECIFIED IN THE PLANS. IF RAISED PROFILE PAVEMENT MARKINGS ARE USED SEE DETAILS BELOW.

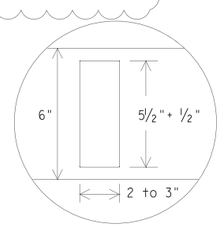


REFLECTIVE PROFILE PAVEMENT MARKINGS



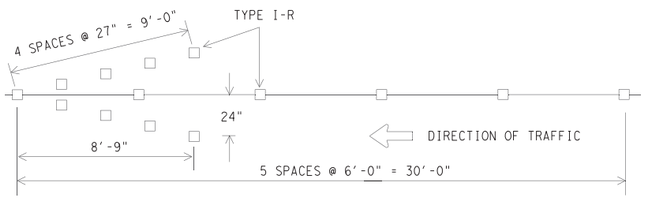
STANDARD 4" PROFILE DETAIL

OR



OPTIONAL 6" PROFILE DETAIL

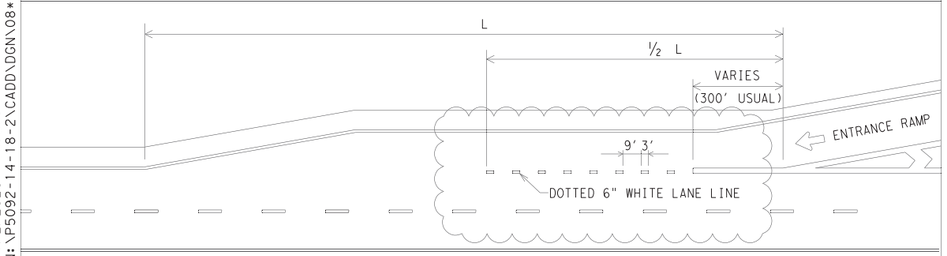
EDGELINE PAVEMENT MARKINGS



ALL RAISED MARKERS IN THE WRONG WAY ARROW SHALL BE TYPE I-R REFLECTORIZED PAVEMENT MARKERS WITH THE REFLECTORIZED SURFACE FACING THE WRONG WAY TRAFFIC. TYPE II-C-R SHALL NOT BE USED.

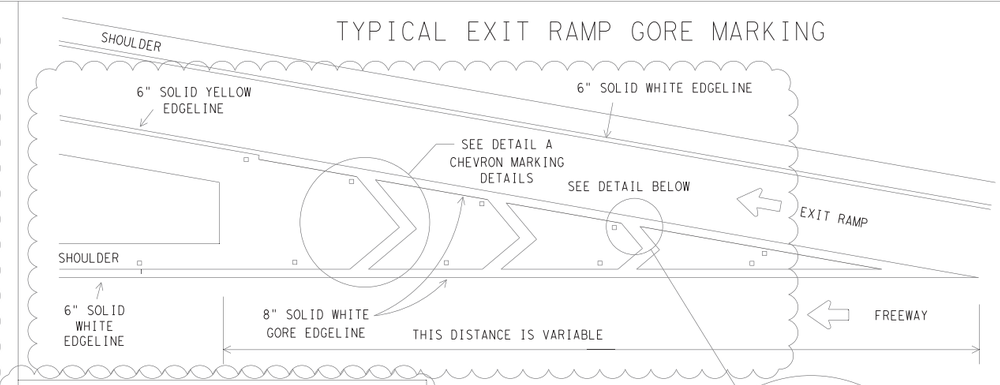
REFLECTORIZED WRONG WAY ARROWS, NOT TO EXCEED TWO, MAY BE PLACED ON EXIT RAMPS. LOCATION OF THE ARROWS SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER.

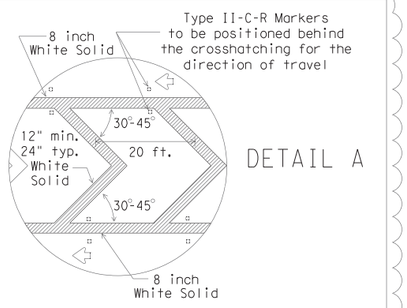
WRONG WAY ARROW DETAIL



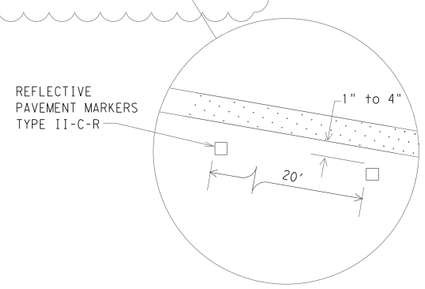
PARALLEL ACCELERATION LANE

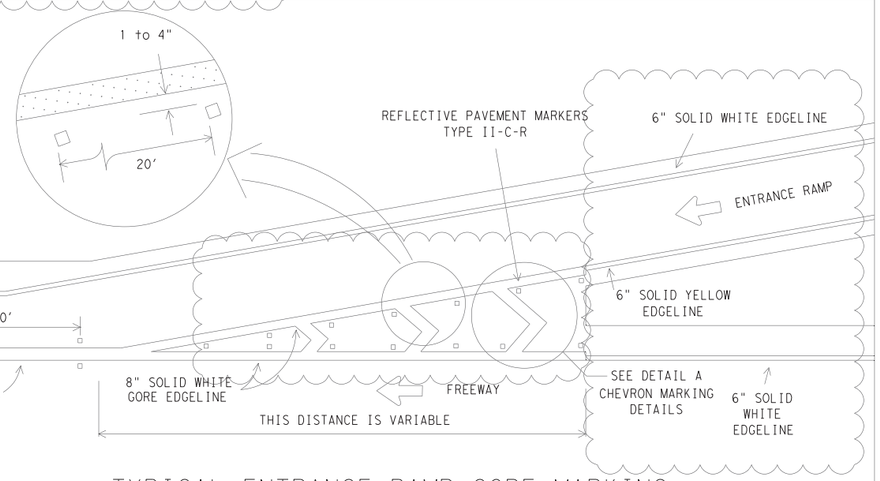
TYPICAL EXIT RAMP GORE MARKING



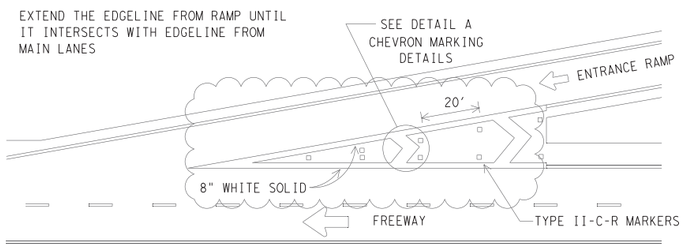


DETAIL A





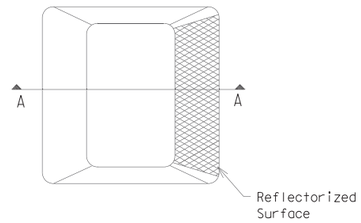
TYPICAL ENTRANCE RAMP GORE MARKING



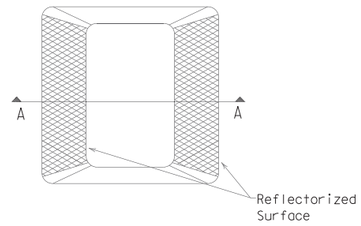
TAPERED ACCELERATION LANE

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

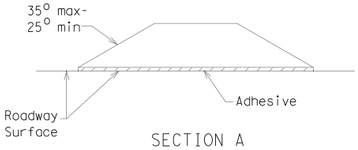
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

STATE OF TEXAS
JORGE L. VILLALTA
107817
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS

FPM(1)-12(MOD)

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS		CONT	SECT	JOB	HIGHWAY
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5-00	2-12	DIST	COUNTY		SHEET NO.
8-00		AUS	TRAVIS		132
2-08					

23A

DATE: 11/2/2020 10:30:43 AM
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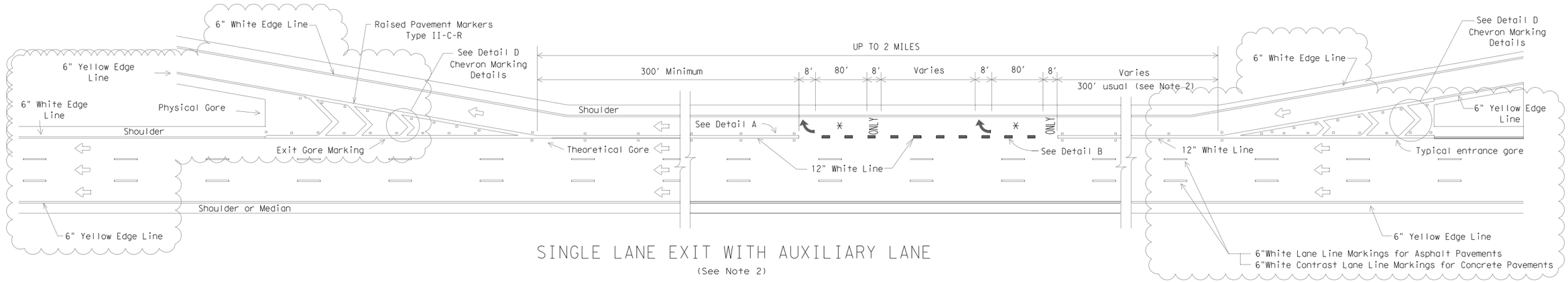
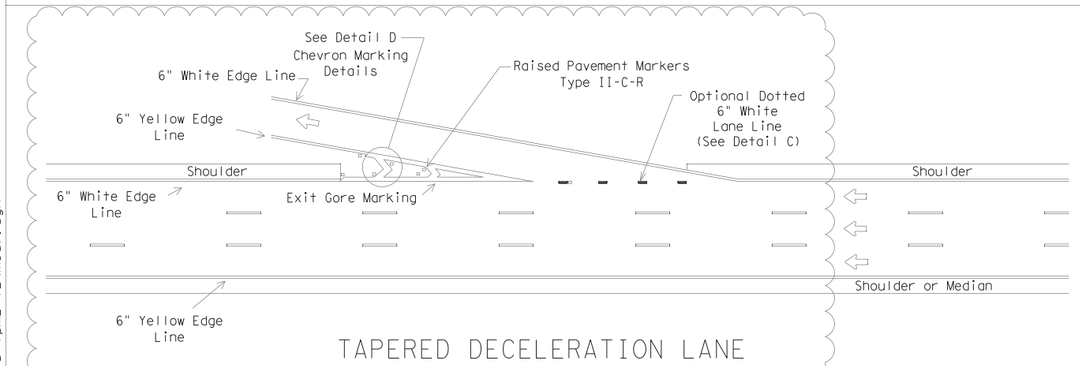
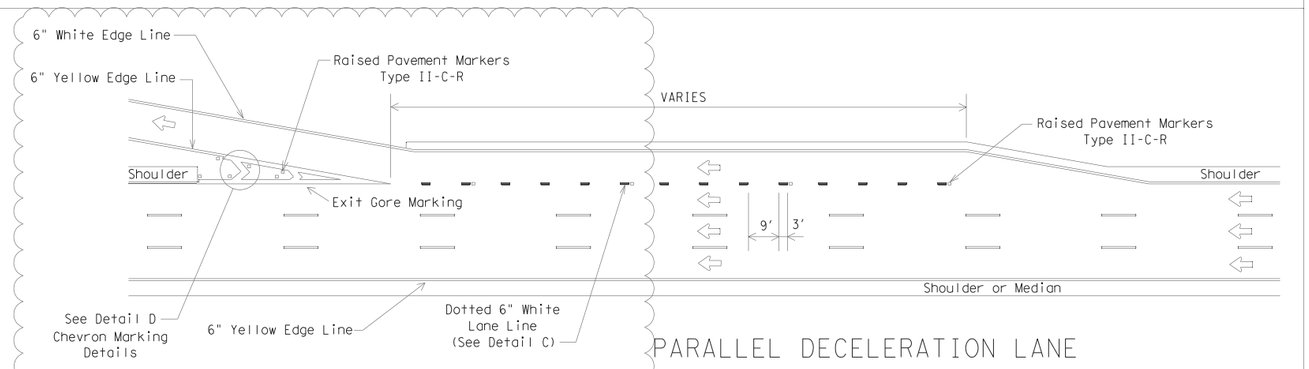


SINGLE LANE EXIT WITH AUXILIARY LANE

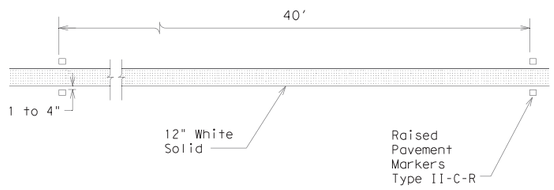
(See Note 2)



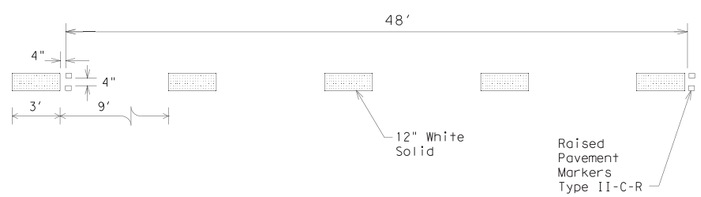
TAPERED DECELERATION LANE



PARALLEL DECELERATION LANE

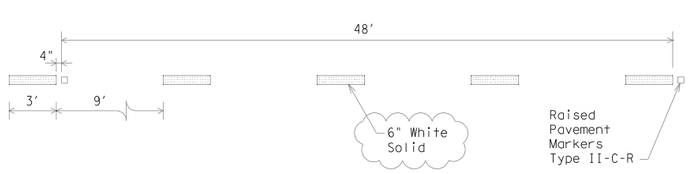


DETAIL A



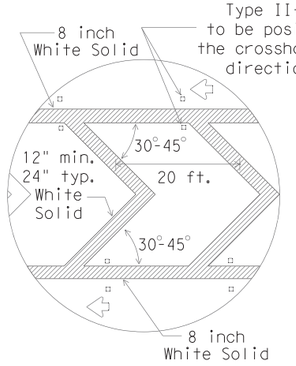
DETAIL B

Wide (12") Dotted Lane Line (See Note 3)



DETAIL C

Normal (6") Dotted Lane Line (See Note 4)



DETAIL D

LEGEND	
⇦	Denotes direction of traffic.
↱	Pavement marking arrows (white)
✳	Arrow markings are optional, however "ONLY" is required if arrow is used

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 from a lane drop at normal exit ramp and from an auxiliary lane between an entrance and exit ramp.
4. Normal (6") Dotted Lane Line (See Detail C) is used at parallel acceleration and deceleration lanes.

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.

STATE OF TEXAS
JORGE L. VILLALTA
107817
LICENSED PROFESSIONAL ENGINEER

11/02/2020

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS ENTRANCE AND EXIT RAMPS

FPM(2)-12(MOD)

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
4-92 2-10
8-95 2-12
5-00
8-00

CONT	SECT	JOB	HIGHWAY
6340	46	001	SH 130

DIST	COUNTY	SHEET NO.
AUS	TRAVIS	133

23B

DATE: 11/2/2020 10:30:44 AM
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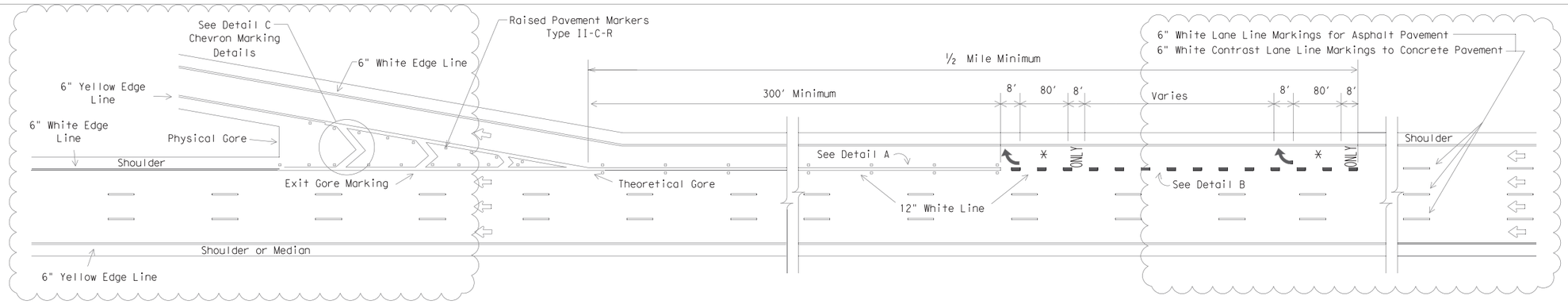
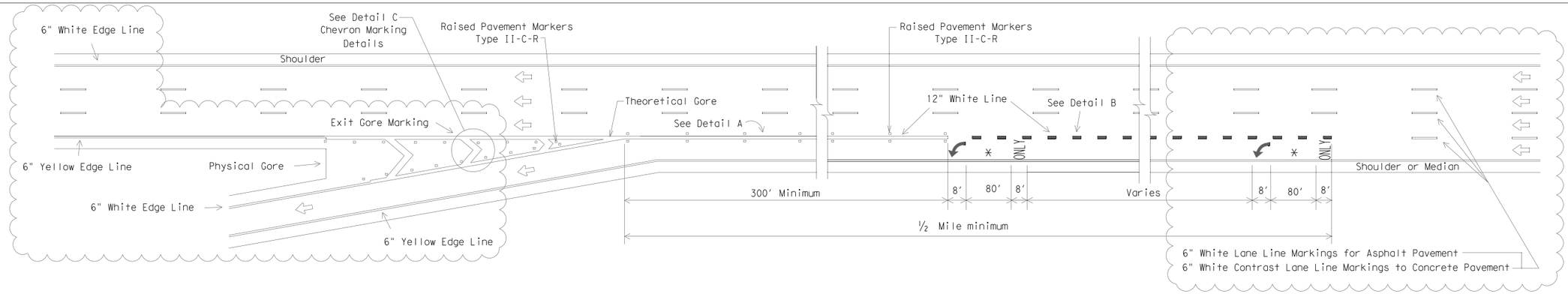
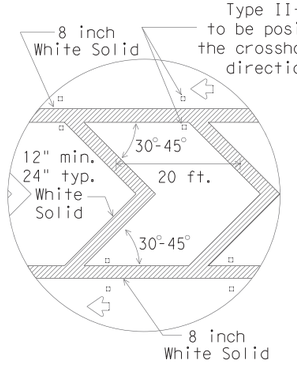


SINGLE LANE EXIT - LANE DROP OR EXIT ONLY



SINGLE LANE EXIT - LANE DROP OR EXIT ONLY (LEFTHAND)



DETAIL C

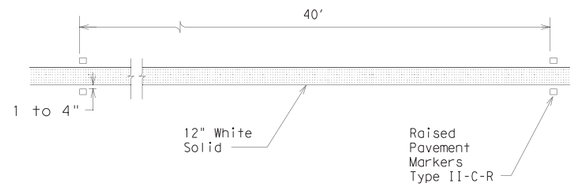
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

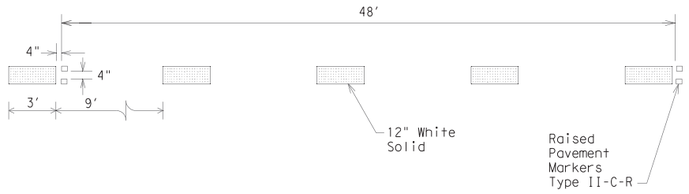
LEGEND	
⇦	Denotes direction of traffic.
⇗	Pavement marking arrows (white)
✳	Arrow markings are optional, however "ONLY" is required if arrow is used

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 from a lane drop at normal exit ramp and from an auxiliary lane between an entrance and exit ramp.



DETAIL A



DETAIL B

Wide (12") Dotted Lane Line (See Note 3)

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STATE OF TEXAS

11/02/2020

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS LANE DROP (EXIT ONLY) EXIT RAMPS

FPM(3)-12(MOD)

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
5-00
8-00
2-10
2-12
23C

CONT	SECT	JOB	HIGHWAY
6340	46	001	SH 130
DIST	COUNTY		SHEET NO.
AUS	TRAVIS		134

DATE: 11/2/2020 10:30:46 AM
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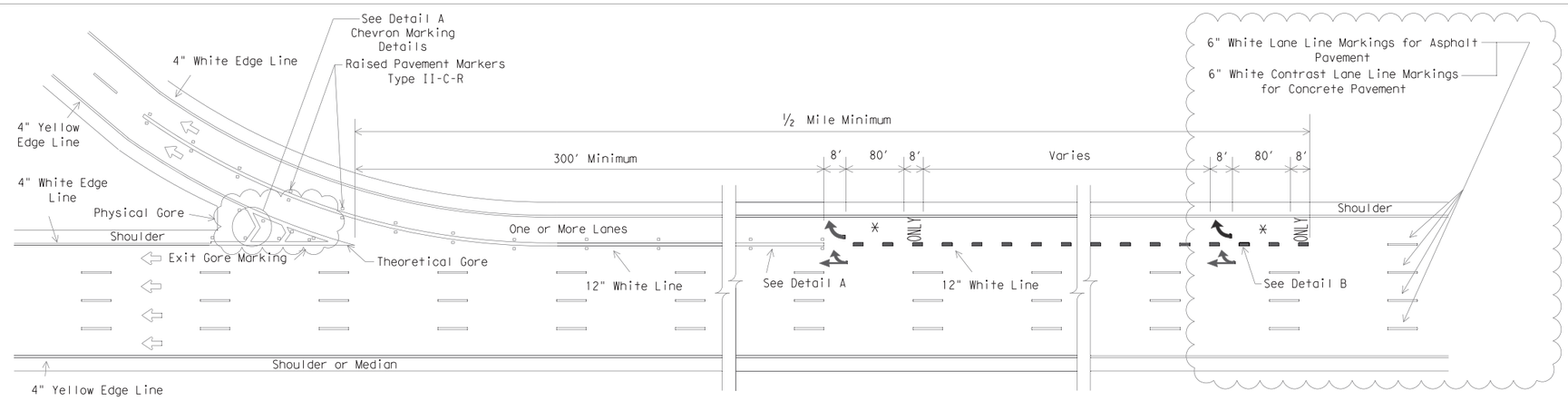
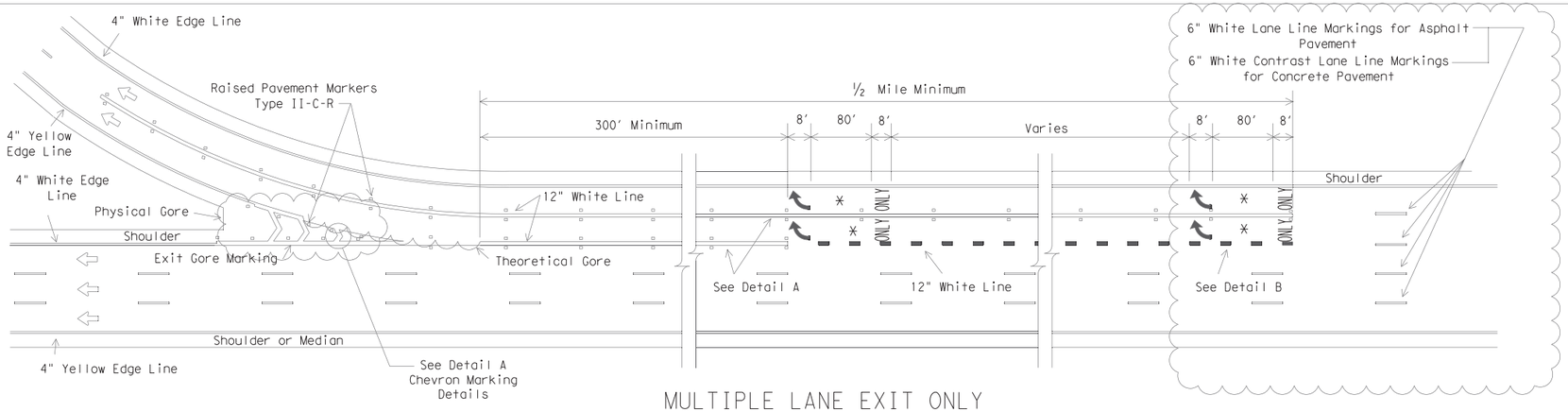
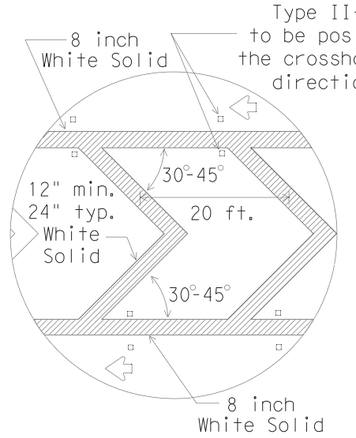


MULTIPLE LANE EXIT - EXIT ONLY WITH OPTION LANE



MULTIPLE LANE EXIT ONLY

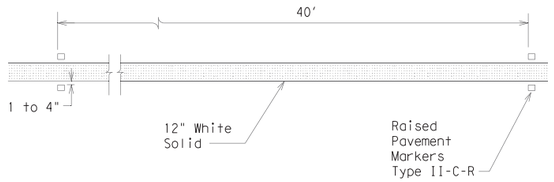


DETAIL A

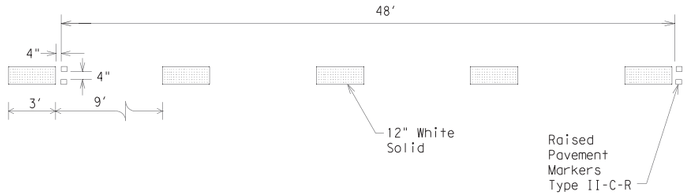
LEGEND	
⇦	Denotes direction of traffic
↱	Pavement marking arrow (white)
↰ ↑	Optional Pavement Marking Arrows (white)
✳	Arrow markings are optional, however "ONLY" is required if arrow is used

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 from a lane drop at normal exit ramp and from an auxiliary lane between an entrance and exit ramp.



DETAIL A



DETAIL B

Wide (12") Dotted Lane Line (See Note 3)

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.

STATE OF TEXAS
JORGE L. VILLALTA
107817
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS LANE DROP (EXIT ONLY) DETAILS

FPM(4)-12(MOD)

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

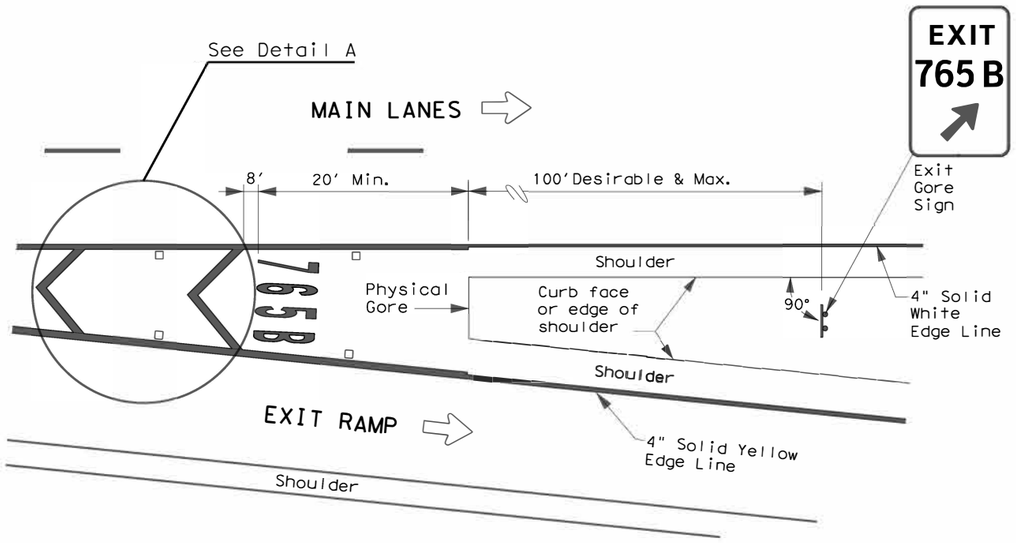
REVISIONS
5-00
8-00
2-10
2-12
23D

CONT	SECT	JOB	HIGHWAY
6340	46	001	SH 130
DIST	COUNTY		SHEET NO.
AUS	TRAVIS		135

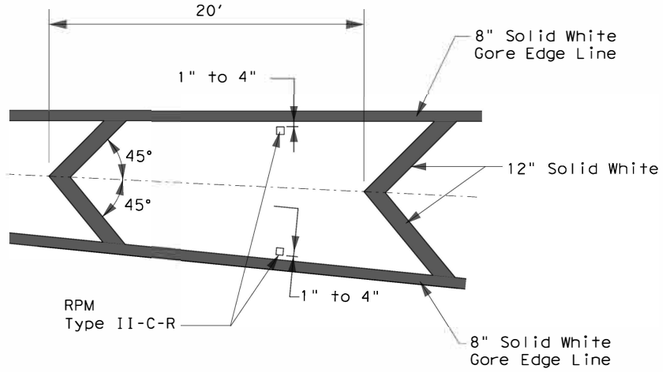
DATE: 11/2/2020 10:30:47 AM
FILE: N:\P5092-14-18-2\CADD\DGN\08=TRAFFIC\SH 130\D=PVMT=MRK\StdDetails\SHF30#003 #fpm5419.dgn

EXIT NUMBER PAVEMENT MARKING NOTES

1. Minimum 8 foot white 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. All pavement marking materials shall meet the required Departmental Material Specifications or as specified in these plans.
5. Numbers and Letters details can be found in the Standard Highway Design for Texas (SHSD) Chapter 12 at http://www.txdot.gov



MARKINGS WITH EXIT NUMBER



NOTES

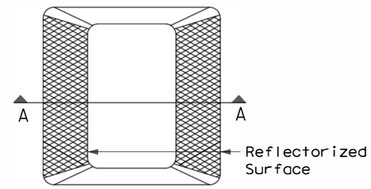
1. Raised pavement markers shall be centered between chevron or gore lines.
2. For more information, see Reflectorized Raised Pavement Marker Detail.

DETAIL A

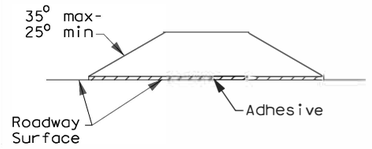
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

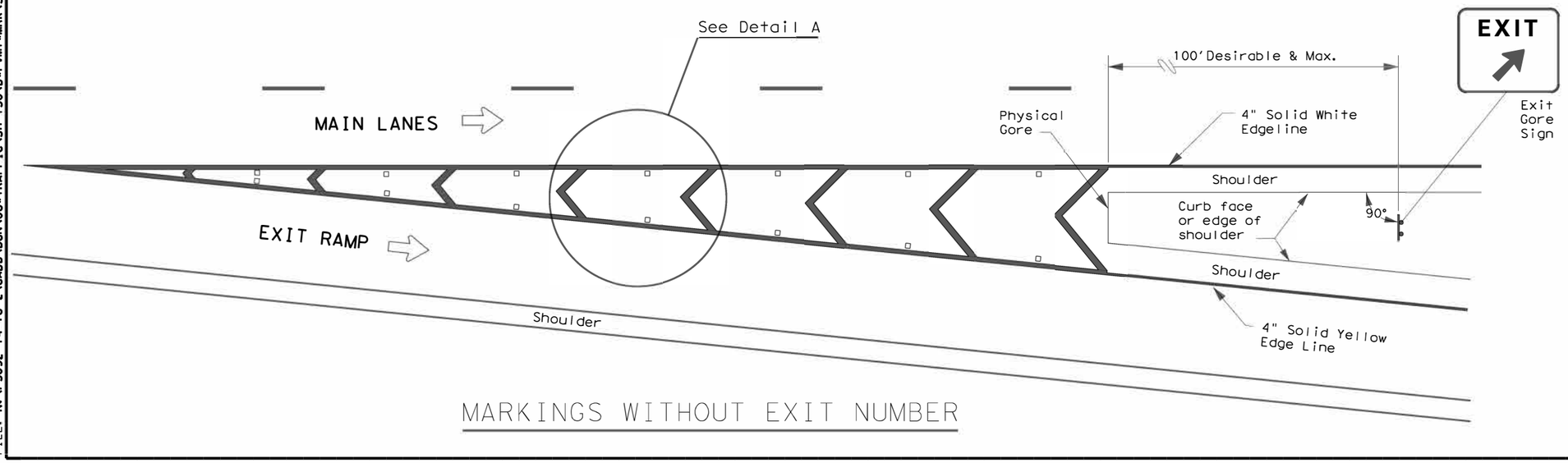


Type II (Top View)



SECTION A

REFLECTORIZED RAISED PAVEMENT MARKER (RPM)



MARKINGS WITHOUT EXIT NUMBER

Texas Department of Transportation — Traffic Safety Division Standard

EXIT GORE PAVEMENT MARKINGS

FPM(5)-19

FILE: fpm(5)-19.dgn	DN:	CK:	DW:	CK:
© TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
	DIST	COUNTY		SHEET NO.
	AUS	TRAVIS		136

23F

DATE: 11/2/2020 10:30:48 AM
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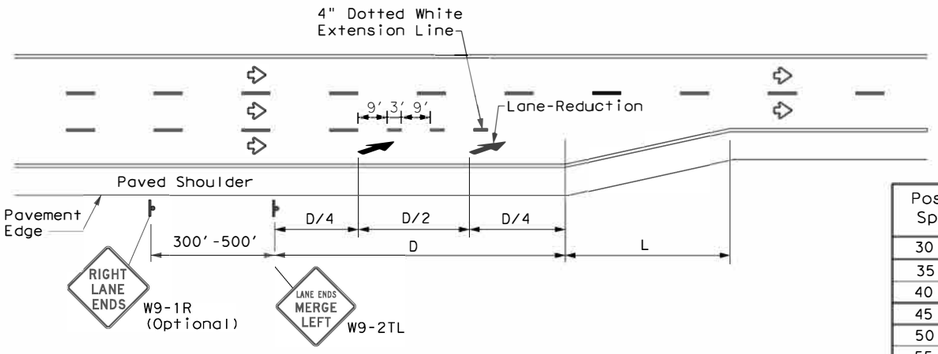
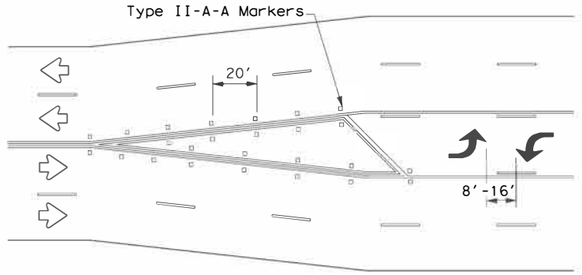


LANE REDUCTION

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	

NOTES

1. 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.
2. On divided highways, an additional W9-1R "RIGHT LANE ENDS" sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. 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.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.



A two-way left-turn (TWLT) 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.

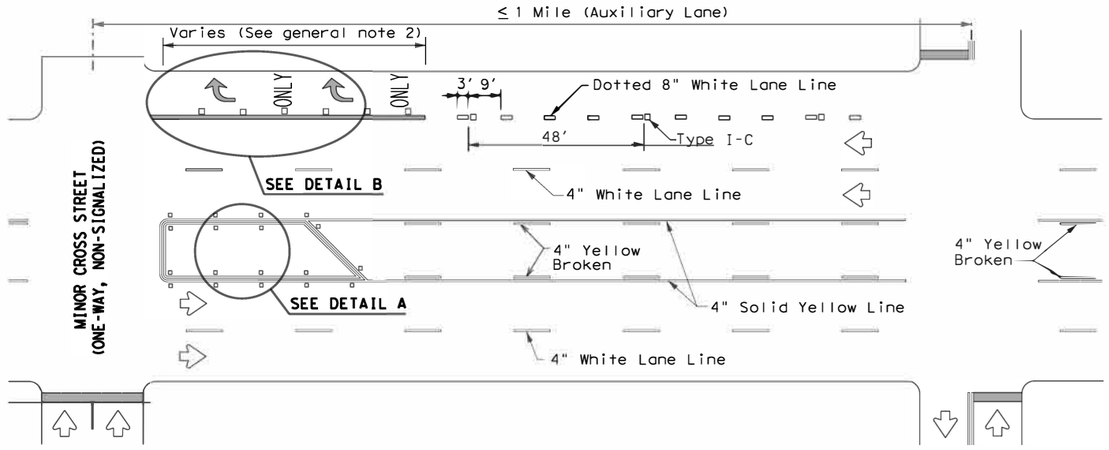
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

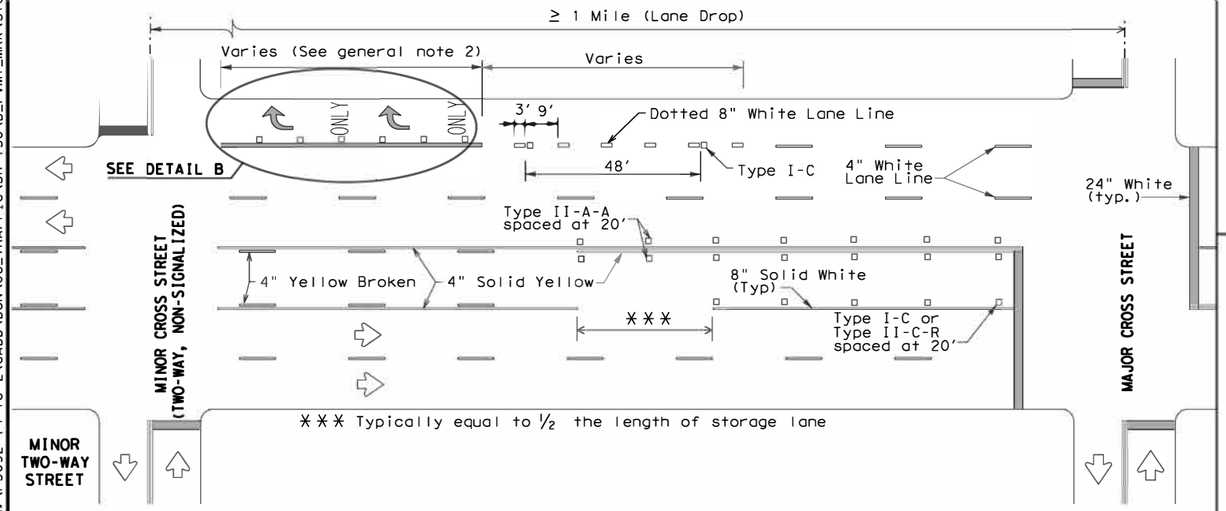
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. 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.
3. 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.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

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

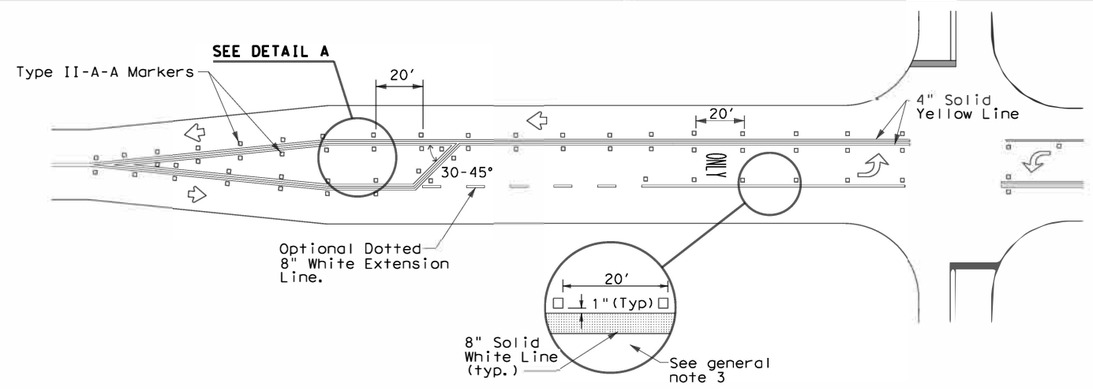
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



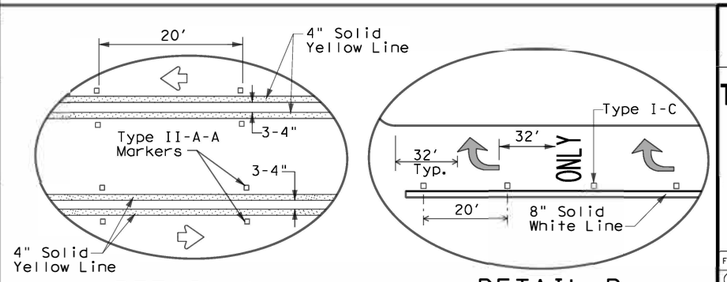
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	6340	46	001	SH 130
5-00 2-10	DIST	COUNTY		SHEET NO.
8-00 2-12	AUS	TRAVIS		137
3-03 6-20				

22D

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
☐ Temporary Vegetation	☒ Silt Fence	☐ Vegetative Filter Strips
☐ Blankets/Matting	☒ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☒ Sodding	☒ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☒ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ 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.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	6340	46	001	SH 130	
	DIST	COUNTY		SHEET NO.	
	AUS	TRAVIS		138	

DATE: DATE TIME
FILE: DOCUMENT NAME

SITE DESCRIPTION

PROJECT LIMITS: FROM: US 79,
TO: US 290,

PROJECT DESCRIPTION: CONCRETE REPAIR, OVERLAY AND STRIPING, MBGF UPGRADES

MAJOR SOIL DISTURBING ACTIVITIES: N/A

TOTAL PROJECT AREA: 0 acres

TOTAL AREA TO BE DISTURBED: 0 ACRES (0%)

WEIGHTED RUNOFF COEFFICIENT:
(AFTER CONSTRUCTION):

EXISTING CONDITION OF SOIL & VEGETATIVE
COVER AND % OF EXISTING VEGETATIVE COVER: N/A

NAME OF RECEIVING WATERS: N/A

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

__T__ TEMPORARY SEEDING
__P__ PERMANENT PLANTING, SODDING, OR SEEDING
____ MULCHING
____ SOIL RETENTION BLANKET
____ BUFFER ZONES
____ PRESERVATION OF NATURAL RESOURCES

OTHER:

STRUCTURAL PRACTICES:

__T__ SILT FENCES
__T__ HAY BALES
____ ROCK BERMS
____ DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
____ DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
____ DIVERSION DIKE AND SWALE COMBINATIONS
____ PIPE SLOPE DRAINS
____ PAVED FLUMES
____ ROCK BEDDING AT CONSTRUCTION EXIT
____ TIMBER MATTING AT CONSTRUCTION EXIT
____ CHANNEL LINERS
____ SEDIMENT TRAPS
____ SEDIMENT BASINS
____ STORM INLET SEDIMENT TRAP
____ STONE OUTLET STRUCTURES
____ CURBS AND GUTTERS
____ STORM SEWERS
____ VELOCITY CONTROL DEVICES
____ EROSION CONTROL LOGS

OTHER:

NARRATIVE - SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

N/A

STORM WATER MANAGEMENT: SEE PROJECT LAYOUT AND STRIPING LAYOUT SHEETS

OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE: All erosion and sediment controls will be maintained in good working order. If a repair is necessary it will be done at the earliest date possible, but no later than 7 calendar days after the surrounding exposed ground has dried sufficiently to prevent further damage from heavy equipment. The area adjacent to creeks and drainageways shall have priority followed by devices protecting storm sewer inlets.

INSPECTION: All inspections will be performed by a TxDOT inspector per one of the options below as directed by the Area Engineer
1. At least every 7 calendar days
2. At least every 14 days or after 0.5 inches or more of rainfall
An inspection and maintenance report should be made for each inspection. Based on the inspection results, the controls shall be revised according to the inspection report.

WASTE MATERIALS: The dumpster used to store all waste material will meet all state and local city solid waste management regulations. All trash and construction debris will be deposited in the dumpster. The dumpster will be emptied as necessary or as required by local regulation and the trash will be hauled to a local dump. No construction waste material will be buried on site.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING): In the event of a spill which may be considered hazardous, the Houston District Safety Office shall be contacted immediately at 713-802-5962.

SANITARY WASTE: All Sanitary Waste will be collected from the portable units as necessary or as required by local regulations by a licensed sanitary waste management contractor.

OFFSITE VEHICLE TRACKING:

____ HAUL ROADS DAMPENED FOR DUST CONTROL
____ LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
____ EXCESS DIRT ON ROAD REMOVED DAILY
____ STABILIZED CONSTRUCTION ENTRANCE

OTHER:

REMARKS: Disposal areas, stockpiles, and haul roads shall be constructed in a manner that will minimize and control the sediment that may enter receiving waterways. Disposal areas shall not be located in any waterway, waterbody or streambed. Construction staging areas and vehicle maintenance areas shall be constructed by the contractor in a manner which minimizes the runoff of all pollutants. All waterways shall be cleared as soon as practical of temporary embankments, temporary bridges, matting, falsework, piling, debris, and other obstructions placed during construction operations that are not part of the finished work.

STATE OF TEXAS
JORGE L. VILLALTA
107817
LICENSED
PROFESSIONAL ENGINEER

11/02/2020

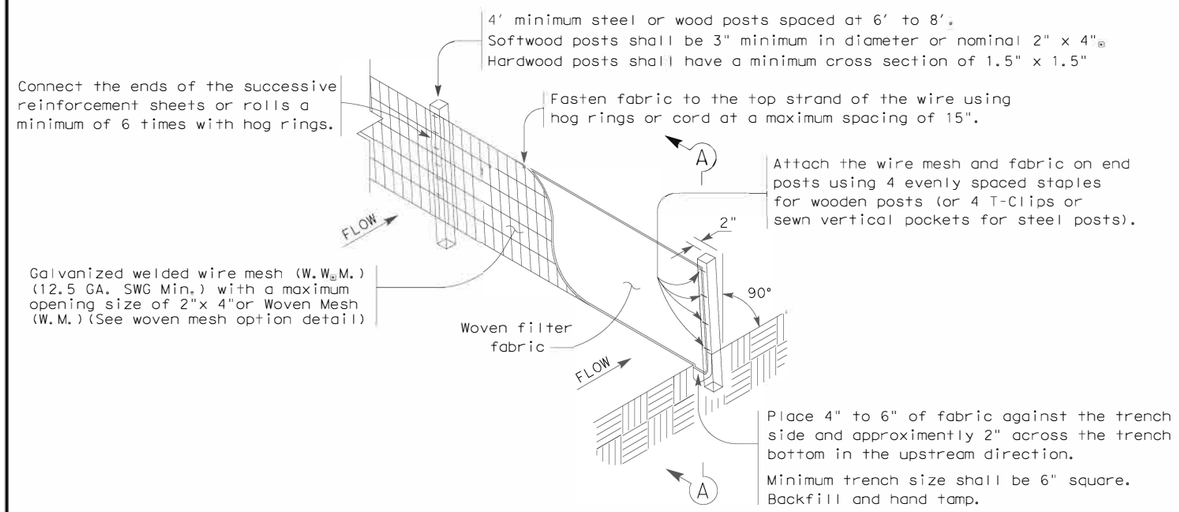
Texas Department of Transportation
Houston District

TxDOT STORM WATER POLLUTION PREVENTION PLAN

SWP3

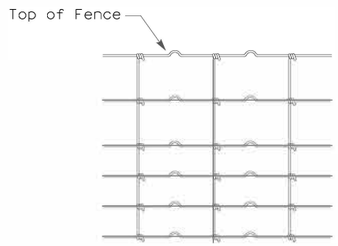
FILE: STDG1.DGN	DN: TxDot	CK: TxDot	DW: TxDot	CK: TxDot
© TxDOT JANUARY 2007	DIST	FED REG	PROJECT NO.	SHEET
REVISIONS	AUS	6		139
9/2010 INSPECTION NOTE 9/2013 INSPECTION NOTE 11/2013 SW3P TO SWP3 03/2015 2014 SPECS	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	TRAVIS		6340	46	001	SH 130

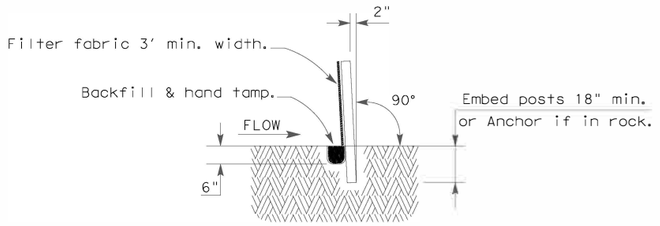
STD G-1



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

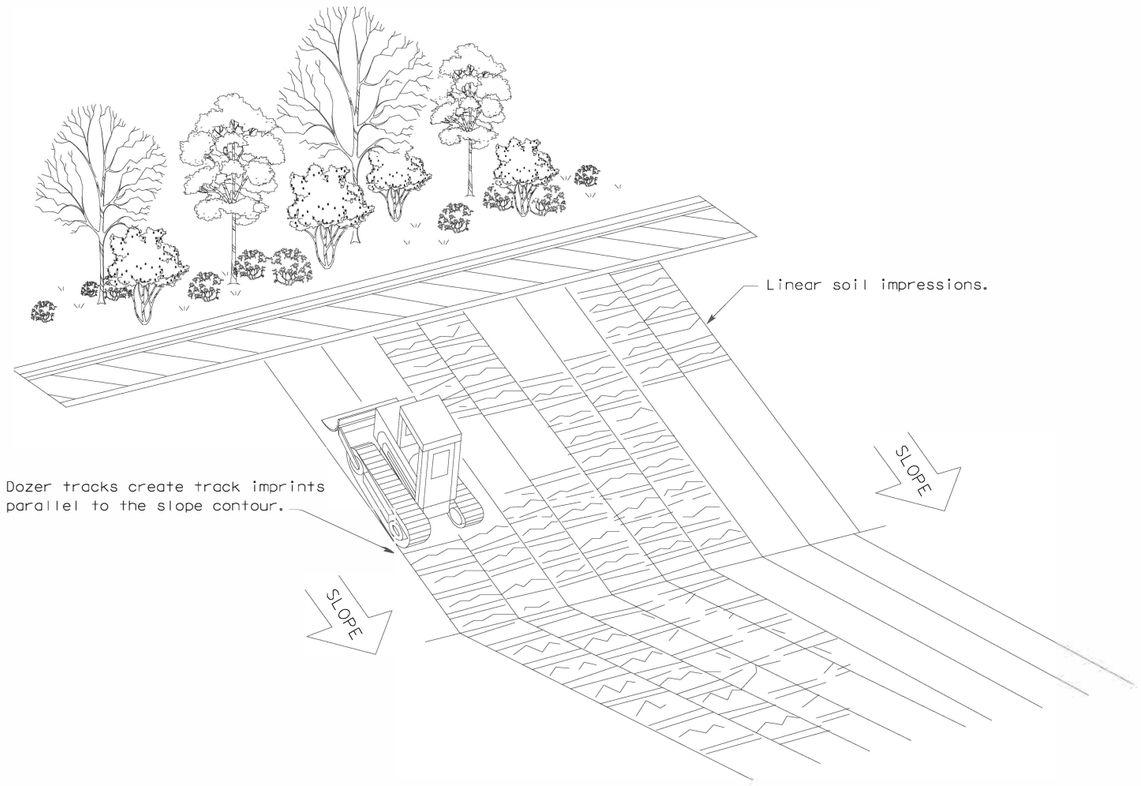
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	6340	46	001		SH 130	
	DIST	COUNTY			SHEET NO.	
	AUS	TRAVIS			140	

DATE
FILE

CK:
DW:
CK:
DN:

SB - Spall Repair

Roadway Layout Sheet No.	Approx. Station	Distress Type	Repair Type	Latitude	Longitude
1	710+53	Spalled Cracks	Spall Repair	30.53615380	-97.57651594
2	732+55	Spalled Cracks	Spall Repair	30.53010632	-97.57630471
5	803+20	Spalled Cracks	Spall Repair	30.51070316	-97.57583574
5	805+33	Spalled Cracks	Spall Repair	30.51012560	-97.57596241
6	829+45	Spalled Cracks	Spall Repair	30.50410398	-97.57914035
6	831+91	Spalled Cracks	Spall Repair	30.50350486	-97.57950557
6	838+15	Spalled Cracks	Spall Repair	30.50198745	-97.58043045
7	840+14	Spalled Cracks	Spall Repair	30.50150695	-97.58071962
7	859+83	Spalled Cracks	Spall Repair	30.49646391	-97.58294019
7	860+64	Spalled Cracks	Spall Repair	30.49624414	-97.58299907
8	882+16	Spalled Cracks	Spall Repair	30.49041287	-97.58414325
9	896+30	Spalled Cracks	Spall Repair	30.48657962	-97.58485697
12	974+75	Spalled Cracks	Spall Repair	30.46688864	-97.59459892
13	1004+98	Spalled Cracks	Spall Repair	30.45858550	-97.59461733
14	1011+06	Spalled Cracks	Spall Repair	30.45691465	-97.59459516
14	1011+38	Spalled Cracks	Spall Repair	30.45682436	-97.59459406
14	1019+27	Spalled Cracks	Spall Repair	30.45465708	-97.59456346
15	1046+87	Spalled Cracks	Spall Repair	30.44708396	-97.59420948
16	1066+58	Spalled Cracks	Spall Repair	30.44177415	-97.59298581
16	1067+40	Spalled Cracks	Spall Repair	30.44155379	-97.59292864
16	1067+57	Spalled Cracks	Spall Repair	30.44150972	-97.59291716
16	1072+33	Spalled Cracks	Spall Repair	30.44023228	-97.59258361
19	1137+54	Spalled Cracks	Spall Repair	30.42274774	-97.58801786
19	1145+25	Spalled Cracks	Spall Repair	30.42068199	-97.58745415
31	1432+65	Spalled Cracks	Spall Repair	30.34520508	-97.59376742
32	1450+90	Spalled Cracks	Spall Repair	30.34060313	-97.59137218

NB - Spall Repair

Roadway Layout Sheet No.	Approx. Station	Distress Type	Repair Type	Latitude	Longitude
5	808+13	Spalled Cracks	Spall Repair	30.50937869	-97.57565460
5	808+31	Spalled Cracks	Spall Repair	30.50933099	-97.57571585
5	810+29	Spalled Cracks	Spall Repair	30.50881615	-97.57590635
6	826+19	Spalled Cracks	Spall Repair	30.50489900	-97.57809477
6	827+00	Spalled Cracks	Spall Repair	30.50469953	-97.57821710
6	827+49	Spalled Cracks	Spall Repair	30.50457961	-97.57829009
6	829+29	Spalled Cracks	Spall Repair	30.50413948	-97.57855686
7	840+49	Spalled Cracks	Spall Repair	30.50142242	-97.58021344
8	866+12	Spalled Cracks	Spall Repair	30.49476641	-97.58280790
9	898+64	Spalled Cracks	Spall Repair	30.48594358	-97.58447234
9	900+29	Spalled Cracks	Spall Repair	30.48550409	-97.58458903
9	906+36	Spalled Cracks	Spall Repair	30.48390554	-97.58514007
9	906+84	Spalled Cracks	Spall Repair	30.48378156	-97.58523419
9	908+83	Spalled Cracks	Spall Repair	30.48327300	-97.58541801
12	964+66	Spalled Cracks	Spall Repair	30.46960579	-97.59345978
17	1094+01	Spalled Cracks	Spall Repair	30.43441828	-97.59057801
19	1135+57	Spalled Cracks	Spall Repair	30.42327289	-97.58762825
23	1234+98	Spalled Cracks	Spall Repair	30.39675408	-97.58013352
24	1258+79	Spalled Cracks	Spall Repair	30.39038428	-97.57853215
28	1362+45	Spalled Cracks	Spall Repair	30.36265453	-97.58531287
31	1422+76	Spalled Cracks	Spall Repair	30.34787296	-97.59370715
31	1433+47	Spalled Cracks	Spall Repair	30.34499011	-97.59313175
32	1442+75	Spalled Cracks	Spall Repair	30.34265129	-97.59190665

NB - Full Depth Repair

Roadway Layout Sheet No.	Approx. Station	Distress Type	Repair Type	Latitude	Longitude
2	726+82	Concrete Patches	Full Depth Repair	30.53167942	-97.57584581
2	730+27	Concrete Patches	Full Depth Repair	30.53073124	-97.57581582
2	731+09	Concrete Patches	Full Depth Repair	30.53050541	-97.57580874
2	736+68	Concrete Patches	Full Depth Repair	30.52897067	-97.57575549
5	800+10	Concrete Patches	Full Depth Repair	30.51154759	-97.57520529
5	800+92	Concrete Patches	Full Depth Repair	30.51132316	-97.57522736
6	818+31	Concrete Patches	Full Depth Repair	30.50681536	-97.57692452
7	840+82	Concrete Patches	Full Depth Repair	30.50134206	-97.58026240
7	846+55	Concrete Patches	Full Depth Repair	30.49991592	-97.58110307
7	846+71	Concrete Patches	Full Depth Repair	30.49987458	-97.58112419
12	961+54	Concrete Patches	Full Depth Repair	30.47042269	-97.59315243
12	965+49	Concrete Patches	Full Depth Repair	30.46938861	-97.59353196
12	965+65	Concrete Patches	Full Depth Repair	30.46934502	-97.59354597
12	965+98	Concrete Patches	Full Depth Repair	30.46925774	-97.59357342
12	969+93	Concrete Patches	Full Depth Repair	30.46820019	-97.59385491
15	1042+42	Concrete Patches	Full Depth Repair	30.44830075	-97.59385597
17	1082+84	Concrete Patches	Full Depth Repair	30.43741606	-97.59131663
17	1086+78	Concrete Patches	Full Depth Repair	30.43635835	-97.59104282
17	1097+94	Concrete Patches	Full Depth Repair	30.43336283	-97.59026070
18	1105+50	Concrete Patches	Full Depth Repair	30.43133662	-97.58973003
18	1123+09	Concrete Patches	Full Depth Repair	30.42662218	-97.58850194
21	1177+48	Concrete Patches	Full Depth Repair	30.41203707	-97.58469729
21	1188+82	Concrete Patches	Full Depth Repair	30.40899565	-97.58390366
21	1189+98	Concrete Patches	Full Depth Repair	30.40868740	-97.58382209
23	1234+81	Concrete Patches	Full Depth Repair	30.39679845	-97.58010792
23	1234+98	Concrete Patches	Full Depth Repair	30.39675596	-97.58009023
23	1239+24	Concrete Patches	Full Depth Repair	30.39564794	-97.57964367
23	1246+96	Concrete Patches	Full Depth Repair	30.39360145	-97.57900601
26	1314+46	Concrete Patches	Full Depth Repair	30.37545935	-97.58190769
27	1322+35	Concrete Patches	Full Depth Repair	30.37333111	-97.58238744
30	1411+67	Concrete Patches	Full Depth Repair	30.35083401	-97.59290063
30	1412+33	Concrete Patches	Full Depth Repair	30.35066806	-97.59298491
30	1413+14	Concrete Patches	Full Depth Repair	30.35045848	-97.59308439
30	1413+31	Concrete Patches	Full Depth Repair	30.35041631	-97.59310357
31	1420+89	Concrete Patches	Full Depth Repair	30.34838976	-97.59363781

SB - Full Depth Repair

Roadway Layout Sheet No.	Approx. Station	Distress Type	Repair Type	Latitude	Longitude
2	726+17	Concrete Patches	Full Depth Repair	30.53185735	-97.57641034
2	736+52	Concrete Patches	Full Depth Repair	30.52901400	-97.57630997
4	775+77	Concrete Patches	Full Depth Repair	30.51823193	-97.57593640
5	802+05	Concrete Patches	Full Depth Repair	30.51101624	-97.57583291
5	803+69	Concrete Patches	Full Depth Repair	30.51056897	-97.57590848
5	804+02	Concrete Patches	Full Depth Repair	30.51047990	-97.57592651
5	810+59	Concrete Patches	Full Depth Repair	30.50873718	-97.57647831
6	832+24	Concrete Patches	Full Depth Repair	30.50342639	-97.57960300
6	838+15	Concrete Patches	Full Depth Repair	30.50198783	-97.58047673
7	847+66	Concrete Patches	Full Depth Repair	30.49963547	-97.58179307
9	904+16	Concrete Patches	Full Depth Repair	30.48447640	-97.58550032
10	913+36	Concrete Patches	Full Depth Repair	30.48214007	-97.58661896
11	957+86	Concrete Patches	Full Depth Repair	30.47136829	-97.59331722
12	960+65	Concrete Patches	Full Depth Repair	30.47065528	-97.59364134
12	963+12	Concrete Patches	Full Depth Repair	30.47001329	-97.59389050
12	963+94	Concrete Patches	Full Depth Repair	30.46979792	-97.59396805
12	970+18	Concrete Patches	Full Depth Repair	30.46813298	-97.59443445
15	1038+33	Concrete Patches	Full Depth Repair	30.44941966	-97.59445976
20	1169+06	Concrete Patches	Full Depth Repair	30.41429807	-97.58577606
21	1179+65	Concrete Patches	Full Depth Repair	30.41145630	-97.58511896
21	1184+75	Concrete Patches	Full Depth Repair	30.41009079	-97.58476107
21	1187+21	Concrete Patches	Full Depth Repair	30.40943003	-97.58458831
21	1193+46	Concrete Patches	Full Depth Repair	30.40775572	-97.58415083
25	1294+74	Concrete Patches	Full Depth Repair	30.38070509	-97.58081554
28	1353+85	Concrete Patches	Full Depth Repair	30.36482501	-97.58478570
30	1410+19	Concrete Patches	Full Depth Repair	30.35120466	-97.59320989
30	1411+18	Concrete Patches	Full Depth Repair	30.35095941	-97.59334063
31	1419+88	Concrete Patches	Full Depth Repair	30.34866469	-97.59406968

SH 130
REPAIR SUMMARY TABLE

FOR CONTRACTOR INFORMATION ONLY

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
			SH 130
DIST	COUNTY		SHEET NO.
AUS	Travis		141

DATE: 02/14/2023 09:06 AM
FILE: DOCUMENT NAME

CK:
DW:
CK:
DN:

NB - Half Depth Repair

Roadway Layout Sheet No.	Approx. Station	Distress Type	Repair Type	Latitude	Longitude
2	728+47	Asphalt Patches	Half Depth Repair	30.53122789	-97.57583120
2	731+26	Asphalt Patches	Half Depth Repair	30.53046025	-97.57580727
2	731+42	Asphalt Patches	Half Depth Repair	30.53041512	-97.57580581
2	732+41	Asphalt Patches	Half Depth Repair	30.53014423	-97.57579695
2	732+74	Asphalt Patches	Half Depth Repair	30.53005394	-97.57579381
2	734+38	Asphalt Patches	Half Depth Repair	30.52960247	-97.57577790
2	735+04	Asphalt Patches	Half Depth Repair	30.52942188	-97.57577187
3	762+49	Asphalt Patches	Half Depth Repair	30.52188140	-97.57549993
3	762+98	Asphalt Patches	Half Depth Repair	30.52174604	-97.57549542
3	765+61	Horizontal Cracks	Half Depth Repair	30.52102378	-97.57547076
3	766+10	Horizontal Cracks	Half Depth Repair	30.52088838	-97.57546602
3	766+60	Horizontal Cracks	Half Depth Repair	30.52075301	-97.57546132
5	798+96	Horizontal Cracks	Half Depth Repair	30.51186268	-97.57518367
5	801+74	Asphalt Patches	Half Depth Repair	30.51109914	-97.57525493
5	804+37	Asphalt Patches	Half Depth Repair	30.51038628	-97.57537873
5	805+02	Asphalt Patches	Half Depth Repair	30.51020919	-97.57541815
5	805+19	Asphalt Patches	Half Depth Repair	30.51016509	-97.57542866
5	805+84	Horizontal Cracks	Half Depth Repair	30.50998902	-97.57547280
6	821+60	Asphalt Patches	Half Depth Repair	30.50601585	-97.57740996
6	825+86	Asphalt Patches	Half Depth Repair	30.50497870	-97.57804571
6	838+18	Horizontal Cracks	Half Depth Repair	30.50198263	-97.57987161
7	844+11	Horizontal Cracks	Half Depth Repair	30.50052896	-97.58073324
9	895+37	Asphalt Patches	Half Depth Repair	30.48683123	-97.58428584
9	896+35	Asphalt Patches	Half Depth Repair	30.48656387	-97.58433647
10	925+26	Asphalt Patches	Half Depth Repair	30.47926558	-97.58781208
10	928+86	Horizontal Cracks	Half Depth Repair	30.47839428	-97.58836540
10	934+95	Asphalt Patches	Half Depth Repair	30.47692830	-97.58929310
12	967+63	Horizontal Cracks	Half Depth Repair	30.46881926	-97.59370112
12	968+12	Horizontal Cracks	Half Depth Repair	30.46868702	-97.59373648
13	986+53	Horizontal Cracks	Half Depth Repair	30.46365286	-97.59416740
13	993+27	Horizontal Cracks	Half Depth Repair	30.46180080	-97.59414790
15	1038+63	Asphalt Patches	Half Depth Repair	30.44933698	-97.59394866
15	1040+27	Asphalt Patches	Half Depth Repair	30.44888607	-97.59391361
15	1041+75	Horizontal Cracks	Half Depth Repair	30.44848092	-97.59387491
15	1043+57	Asphalt Patches	Half Depth Repair	30.44798586	-97.59381981
15	1044+38	Horizontal Cracks	Half Depth Repair	30.44776353	-97.59383325
15	1044+39	Asphalt Patches	Half Depth Repair	30.44776132	-97.59379096
15	1051+62	Asphalt Patches	Half Depth Repair	30.44579407	-97.59346404
15	1052+61	Asphalt Patches	Half Depth Repair	30.44552708	-97.59340956
16	1055+73	Asphalt Patches	Half Depth Repair	30.44468474	-97.59321671
16	1056+72	Asphalt Patches	Half Depth Repair	30.44442002	-97.59314899
16	1057+37	Asphalt Patches	Half Depth Repair	30.44424385	-97.59310336
16	1057+53	Asphalt Patches	Half Depth Repair	30.44420106	-97.59313056
16	1059+00	Asphalt Patches	Half Depth Repair	30.44380423	-97.59302814
16	1066+40	Horizontal Cracks	Half Depth Repair	30.44182128	-97.59246836
16	1069+37	Asphalt Patches	Half Depth Repair	30.44102825	-97.59226167
16	1073+31	Asphalt Patches	Half Depth Repair	30.43997093	-97.59198643
17	1079+06	Asphalt Patches	Half Depth Repair	30.43842755	-97.59162412
17	1079+88	Asphalt Patches	Half Depth Repair	30.43820884	-97.59152426
17	1083+99	Asphalt Patches	Half Depth Repair	30.43710570	-97.59127990
17	1087+93	Asphalt Patches	Half Depth Repair	30.43604983	-97.59096326
17	1095+48	Asphalt Patches	Half Depth Repair	30.43402375	-97.59043242
19	1144+29	Asphalt Patches	Half Depth Repair	30.42093747	-97.58701771
19	1145+77	Asphalt Patches	Half Depth Repair	30.42054063	-97.58691474
19	1147+08	Asphalt Patches	Half Depth Repair	30.42018802	-97.58682284
19	1148+73	Asphalt Patches	Half Depth Repair	30.41974744	-97.58670766
19	1149+39	Asphalt Patches	Half Depth Repair	30.41957121	-97.58666130
19	1150+54	Asphalt Patches	Half Depth Repair	30.41926277	-97.58658021
20	1153+83	Asphalt Patches	Half Depth Repair	30.41838089	-97.58635089
20	1154+15	Asphalt Patches	Half Depth Repair	30.41829277	-97.58632823
20	1162+04	Horizontal Cracks	Half Depth Repair	30.41617723	-97.58577983
20	1164+67	Horizontal Cracks	Half Depth Repair	30.41547276	-97.58559405
20	1174+03	Asphalt Patches	Half Depth Repair	30.41296245	-97.58493709
21	1175+68	Asphalt Patches	Half Depth Repair	30.41252186	-97.58482192
21	1175+84	Asphalt Patches	Half Depth Repair	30.41247778	-97.58481044
21	1183+07	Asphalt Patches	Half Depth Repair	30.41053861	-97.58430627
21	1187+67	Asphalt Patches	Half Depth Repair	30.40930436	-97.58398491
22	1206+90	Asphalt Patches	Half Depth Repair	30.40415191	-97.58263780
22	1209+36	Horizontal Cracks	Half Depth Repair	30.40349232	-97.58245792
22	1210+82	Horizontal Cracks	Half Depth Repair	30.40310049	-97.58238817
23	1242+37	Asphalt Patches	Half Depth Repair	30.39482753	-97.57935768
24	1249+26	Horizontal Cracks	Half Depth Repair	30.39298222	-97.57886202
25	1277+83	Asphalt Patches	Half Depth Repair	30.38517531	-97.57891190
26	1315+12	Asphalt Patches	Half Depth Repair	30.37528260	-97.58195102
27	1322+84	Asphalt Patches	Half Depth Repair	30.37319762	-97.58241405
27	1323+83	Asphalt Patches	Half Depth Repair	30.37293077	-97.58246748
29	1385+43	Horizontal Cracks	Half Depth Repair	30.35714758	-97.58884143
30	1411+34	Asphalt Patches	Half Depth Repair	30.35091633	-97.59285683
30	1414+13	Horizontal Cracks	Half Depth Repair	30.35020339	-97.59319410
30	1414+29	Horizontal Cracks	Half Depth Repair	30.35016047	-97.59321113

NB - Half Depth Repair

31	1425+00	Asphalt Patches	Half Depth Repair	30.34725835	-97.59365616
31	1425+57	Horizontal Cracks	Half Depth Repair	30.34710306	-97.59368249
31	1426+16	Asphalt Patches	Half Depth Repair	30.34694239	-97.59362532
31	1426+82	Asphalt Patches	Half Depth Repair	30.34676252	-97.59360054
31	1427+47	Asphalt Patches	Half Depth Repair	30.34658333	-97.59357142
31	1431+10	Asphalt Patches	Half Depth Repair	30.34561025	-97.59333016
32	1445+21	Asphalt Patches	Half Depth Repair	30.34203272	-97.59158915
32	1445+71	Asphalt Patches	Half Depth Repair	30.34190912	-97.59152524

SB - Half Depth Repair

Roadway Layout Sheet No.	Approx. Station	Distress Type	Repair Type	Latitude	Longitude
1	711+71	Asphalt Patches	Half Depth Repair	30.53583081	-97.57654902
2	721+90	Asphalt Patches	Half Depth Repair	30.53303118	-97.57645104
2	725+19	Asphalt Patches	Half Depth Repair	30.53212831	-97.57641977
2	726+80	Horizontal Cracks	Half Depth Repair	30.53168594	-97.57635887
2	729+42	Horizontal Cracks	Half Depth Repair	30.53096378	-97.57633549
2	729+59	Horizontal Cracks	Half Depth Repair	30.53091866	-97.57633396
3	765+59	Asphalt Patches	Half Depth Repair	30.52102883	-97.57603217
4	784+30	Horizontal Cracks	Half Depth Repair	30.51588970	-97.57580820
5	797+11	Asphalt Patches	Half Depth Repair	30.51236884	-97.57573703
5	799+08	Asphalt Patches	Half Depth Repair	30.51182664	-97.57574970
5	800+24	Asphalt Patches	Half Depth Repair	30.51151080	-97.57577372
5	801+55	Asphalt Patches	Half Depth Repair	30.51115089	-97.57581449
5	801+72	Horizontal Cracks	Half Depth Repair	30.51110634	-97.57577075
5	808+95	Horizontal Cracks	Half Depth Repair	30.50916345	-97.57625573
5	809+44	Asphalt Patches	Half Depth Repair	30.50903609	-97.57635685
5	809+93	Asphalt Patches	Half Depth Repair	30.50890743	-97.57640769
5	810+44	Horizontal Cracks	Half Depth Repair	30.50877804	-97.57640818
5	811+74	Asphalt Patches	Half Depth Repair	30.50844195	-97.57661036
5	813+07	Asphalt Patches	Half Depth Repair	30.50810908	-97.57677468
6	817+64	Horizontal Cracks	Half Depth Repair	30.50697906	-97.57738496
6	819+27	Asphalt Patches	Half Depth Repair	30.50658036	-97.57767795
6	820+10	Asphalt Patches	Half Depth Repair	30.50638117	-97.57780080
6	829+44	Asphalt Patches	Half Depth Repair	30.50410488	-97.57918762
6	831+25	Asphalt Patches	Half Depth Repair	30.50366559	-97.57945589
7	840+13	Asphalt Patches	Half Depth Repair	30.50150903	-97.58076919
7	840+62	Asphalt Patches	Half Depth Repair	30.50138921	-97.58084187
7	852+26	Asphalt Patches	Half Depth Repair	30.49845497	-97.58231266
8	870+49	Asphalt Patches	Half Depth Repair	30.49358137	-97.58360043
9	894+98	Horizontal Cracks	Half Depth Repair	30.48693599	-97.58478854
10	911+56	Asphalt Patches	Half Depth Repair	30.48258572	-97.58636396
10	912+38	Asphalt Patches	Half Depth Repair	30.48238237	-97.58647782
10	914+67	Asphalt Patches	Half Depth Repair	30.48181995	-97.58681368
10	915+67	Horizontal Cracks	Half Depth Repair	30.48157827	-97.58691199
10	915+98	Asphalt Patches	Half Depth Repair	30.48150295	-97.58701429
10	932+88	Asphalt Patches	Half Depth Repair	30.47742526	-97.58959900
11	958+03	Asphalt Patches	Half Depth Repair	30.47132707	-97.59333761
12	975+92	Asphalt Patches	Half Depth Repair	30.46656945	-97.59468246
12	979+20	Asphalt Patches	Half Depth Repair	30.46566854	-97.59474078
13	986+90	Horizontal Cracks	Half Depth Repair	30.46355383	-97.59468595
13	990+51	Horizontal Cracks	Half Depth Repair	30.46256019	-97.59467341
13	1005+80	Horizontal Cracks	Half Depth Repair	30.45835978	-97.59461387
15	1047+06	Horizontal Cracks	Half Depth Repair	30.44703138	-97.59428586
16	1060+05	Asphalt Patches	Half Depth Repair	30.44352578	-97.59353063

DATE: 02/14/2023 09:06 AM
FILE: DOCUMENT NAME

SH 130
REPAIR SUMMARY TABLE

FOR CONTRACTOR INFORMATION ONLY

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
			SH 130
DIST	COUNTY		SHEET NO.
AUS	Travis		142