

DESIGN	FED. RD. DIV. NO.	PROJECT NO.			
OC	6	C 95-4-74, ETC.			
GRAPHICS	STATE	CONT	SECT	JOB	HIGHWAY NO.
OC	TEXAS	0095	04	074, ETC.	US 80
CHECK	CHECK	DIST	COUNTY		SHEET NO.
OC	FR	DAL	KAUFMAN		1

**FINAL PLANS**

NAME OF CONTRACTOR: \_\_\_\_\_

DATE OF LETTING: \_\_\_\_\_

DATE WORK BEGAN: \_\_\_\_\_

DATE WORK COMPLETED: \_\_\_\_\_

DATE WORK ACCEPTED: \_\_\_\_\_

SUMMARY OF CHANGE ORDERS:

STATE OF TEXAS  
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED  
STATE HIGHWAY IMPROVEMENT

STATE PROJECT NO.  
C 95-4-74, ETC.  
CCSJ: 0095-04-074, ETC.

**US 80**  
**KAUFMAN COUNTY**

DESIGN SPEEDS = N/A (PM)  
ADT (2023) = 34,209  
ADT (2043) = 48,317

FUNCTIONAL CLASSIFICATION: RURAL PRINCIPAL ARTERIAL

**NOTE:**

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014, AND THE CONTRACT PROVISIONS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT: SPECIAL LABOR PROVISIONS FOR STATE PROJECTS (000-008)

CCSJ: 0095-04-074

LIMITS: FROM SP 557 TO W OF BRADSHAW ST

ROADWAY = 17755.30 FT. = 3.363 MI.  
BRIDGE = 260.00 FT. = 0.049 MI.  
TOTAL = 18015.30 FT. = 3.412 MI.

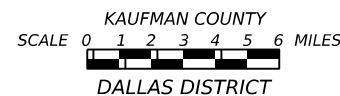
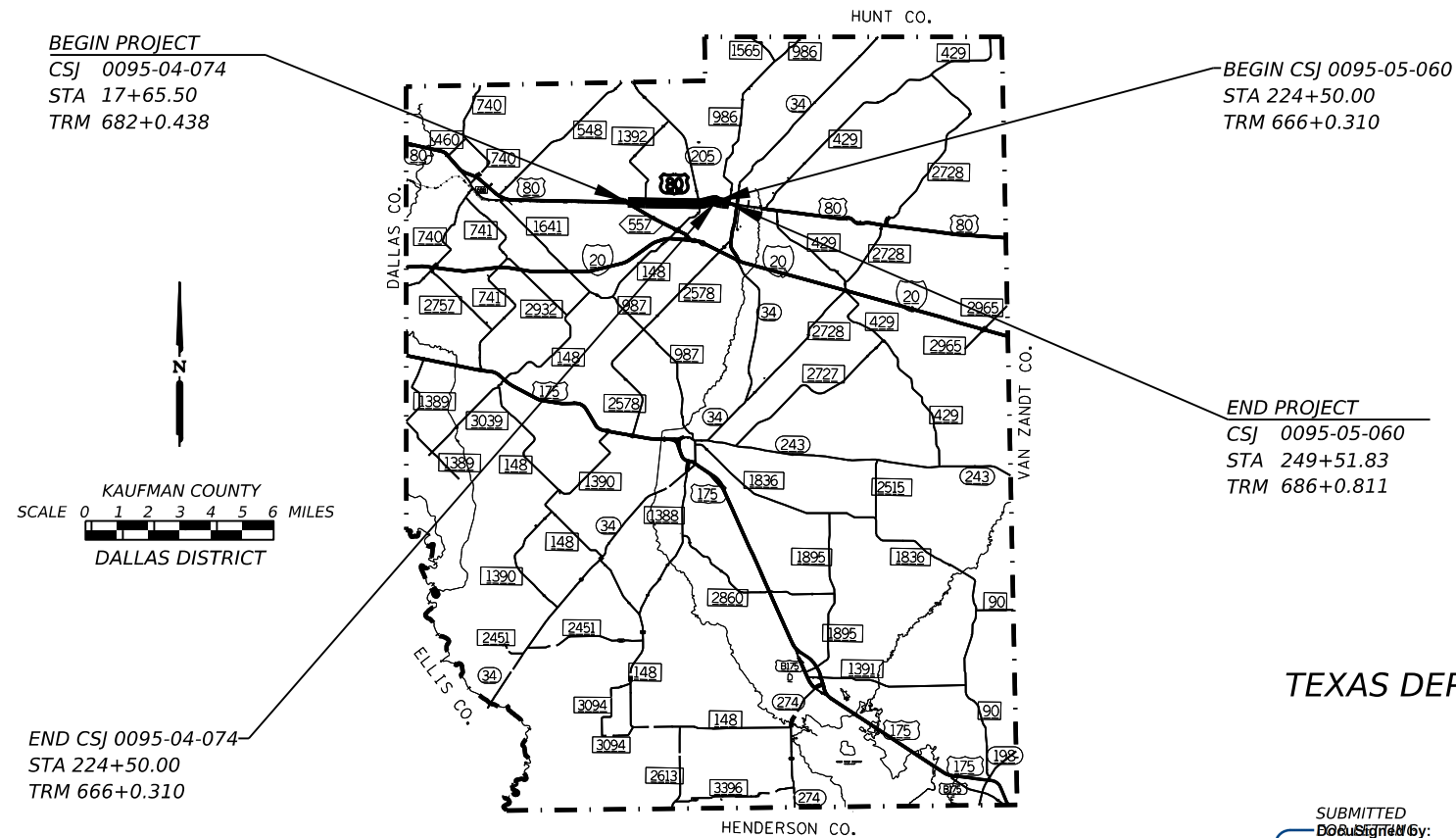
CCSJ: 0095-05-060

LIMITS: FROM W OF BRADSHAW ST TO FM 986

ROADWAY = 2501.83 FT. = 0.474 MI.  
BRIDGE = 0.00 FT. = 0.000 MI.  
TOTAL = 2501.83 FT. = 0.474 MI.

TOTAL LENGTH OF PROJECT =

FOR THE CONSTRUCTION OF REHABILITATION OF EXISTING ROAD  
CONSISTING OF BASE REPAIR, MILL, INLAY AND PAVEMENT MARKINGS



EQUATIONS: NONE  
EXCEPTIONS: STA. 166+37.13 TO STA. 193+06.33  
RAILROAD CROSSINGS: UPRR

WORK WAS COMPLETED ACCORDING  
TO THE PLANS AND CONTRACT.

\_\_\_\_\_, P.E.  
Signature of Registrant & Date

TEXAS DEPARTMENT OF TRANSPORTATION

SUBMITTED  
FOR SIGNATURE BY: 2/21/2023  
*Olmaton Ceesay*, P.E.  
DESIGN ENGINEER

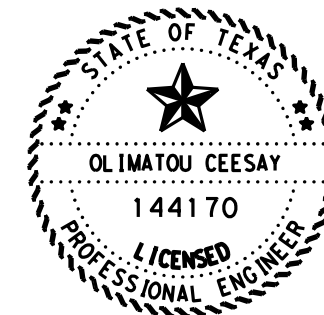
RECOMMENDED  
FOR SIGNATURE BY: 2/23/2023  
*James P. Campbell*, P.E.  
DIRECTOR OF TRANSPORTATION  
PLANNING & DEVELOPMENT

RECOMMENDED  
FOR SIGNATURE BY: 2/23/2023  
*Lane Selman*, P.E.  
DESIGN ENGINEER

APPROVED  
FOR SIGNATURE BY: 2/23/2023  
*Casson Clemens*, P.E.  
DESIGN ENGINEER

# INDEX OF SHEETS

SHEET	DESCRIPTION	SHEET	DESCRIPTION
	<b><u>I. GENERAL</u></b>		<b><u>VIII. TRAFFIC DETAILS</u></b>
1	TITLE SHEET	67-76	PLAN AND PAVEMENT MARKINGS LAYOUT
2	INDEX OF SHEETS		
3	PROJECT LAYOUT		<b>TRAFFIC STANDARDS</b>
4-10	TYPICAL SECTIONS	* 77-79	PM (1)-22 THRU PM (3)-22
11, 11A-11D	GENERAL NOTES	* 80	PM (5)-22
12, 12A	ESTIMATE & QUANTITY	* 81	D & OM (6)-20
13-15	QUANTITY SUMMARY	* 82	D & OM (VIA)-20
		* 83	RS (1)-13
	<b><u>II. TRAFFIC CONTROL PLAN</u></b>		<b><u>IX. RAILROAD</u></b>
16	TRAFFIC CONTROL PLAN - NARRATIVE	* 84	RAILROAD SCOPE OF WORK
	<b>TRAFFIC CONTROL PLAN STANDARDS</b>	* 85-86	RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS
* 17-28	BC (1)-21 THRU BC (12)-21		
* 29	TCP (1-1)-18		
* 30	TCP (1-4)-18		
* 31	TCP (1-5)-18	* 87-88	<b><u>X. ENVIRONMENTAL ISSUES</u></b>
* 32	TCP (1-6)-18	** 89	STORMWATER POLLUTION PREVENTION PLAN (SW3P)
* 33	TCP (2-1)-18	90-99	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC) (DAL)
* 34	TCP (2-4)-18		SW3P LAYOUT
* 35	TCP (2-5)-18		
* 36	TCP (2-6)-18		<b>ENVIRONMENTAL ISSUES STANDARDS</b>
* 37	TCP (3-1)-13	* 100-102	EC (1)-16 THRU EC (3)-16
* 38	TCP (3-2)-13	* 103-105	EC (9)-16
* 39	TCP (3-3)-14	** 106	VEGETATION ESTABLISHMENT SHEET (DAL)
* 40	TCP (3-4)-13	** 107	SW3P SIGN SHEET (DAL)
* 41	TCP (7-1)-13		
* 42	WZ (RS)-22		
* 43	WZ (STPM)-13		
* 44	WZ (UL)-13		
	<b><u>III. ROADWAY DETAILS</u></b>		<b><u>XI. MISCELLANEOUS DETAILS</u></b>
	<b>ROADWAY DETAILS STANDARDS</b>		NONE
** 45	LJD (1-1)-07 (DAL)		
* 46	TE (HMAC)-11		
* 47	GF (31)-19		
* 48	GF (31) DAT-19		
* 49	GF (31) MS-19		
* 50	GF (31) T6-19		
* 51	SGT (10S) 31-16		
* 52	SGT (11S) 31-18		
* 53	SGT (12S) 31-18		
* 54	SGT (15) 31-20		
* 55	RAIL-ADJ(B)-19		
	<b><u>IV. RETAINING WALL DETAILS</u></b>		
	NONE		
	<b><u>V. DRAINAGE DETAILS</u></b>		
	NONE		
	<b><u>VI. UTILITIES</u></b>		
	NONE		
	<b><u>VII. BRIDGE</u></b>		
56-58	BRIDGE /BRIDGE CLASS CULVERT REPAIR PLAN		
59	BRIDGE #1 REPAIR PHOTOS		
60	CULVERT #5 REPAIR PHOTOS		
61	BRIDGE #2 REPAIR PHOTOS		
62	BRIDGE #3 REPAIR PHOTOS		
63	CULVERT #7 REPAIR PHOTOS		
	<b>STRUCTURE STANDARDS</b>		
* 64	CRR		
* 65-66	SRR		



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date

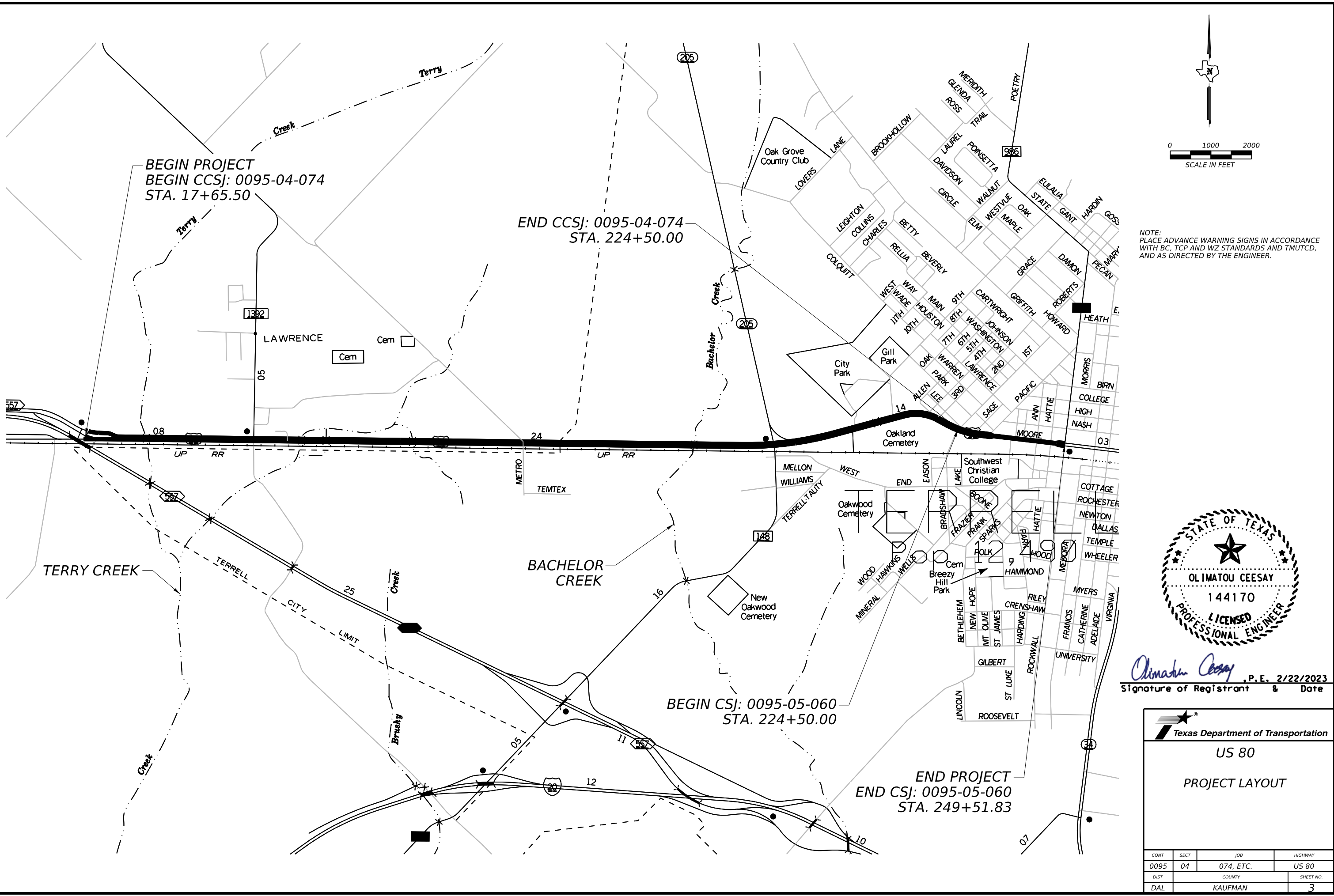
\* STATEWIDE STANDARDS  
 \*\* DALLAS DISTRICT STANDARDS

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

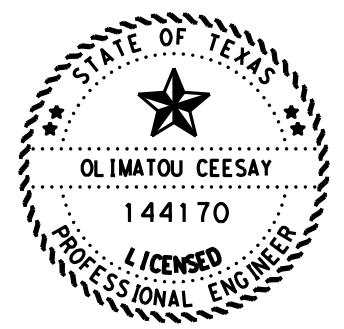
US 80			
INDEX OF SHEETS			
SHEET 1 OF 1			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY		SHEET NO.
DAL	KAUFMAN		2



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NOTE:  
 PLACE ADVANCE WARNING SIGNS IN ACCORDANCE  
 WITH BC, TCP AND WZ STANDARDS AND TMUTCD,  
 AND AS DIRECTED BY THE ENGINEER.



*Olmatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date

<b>US 80</b> <b>PROJECT LAYOUT</b>			
COUNT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY		SHEET NO.
DAL	KAUFMAN		3

CK:  
DW:  
CK:  
DN:

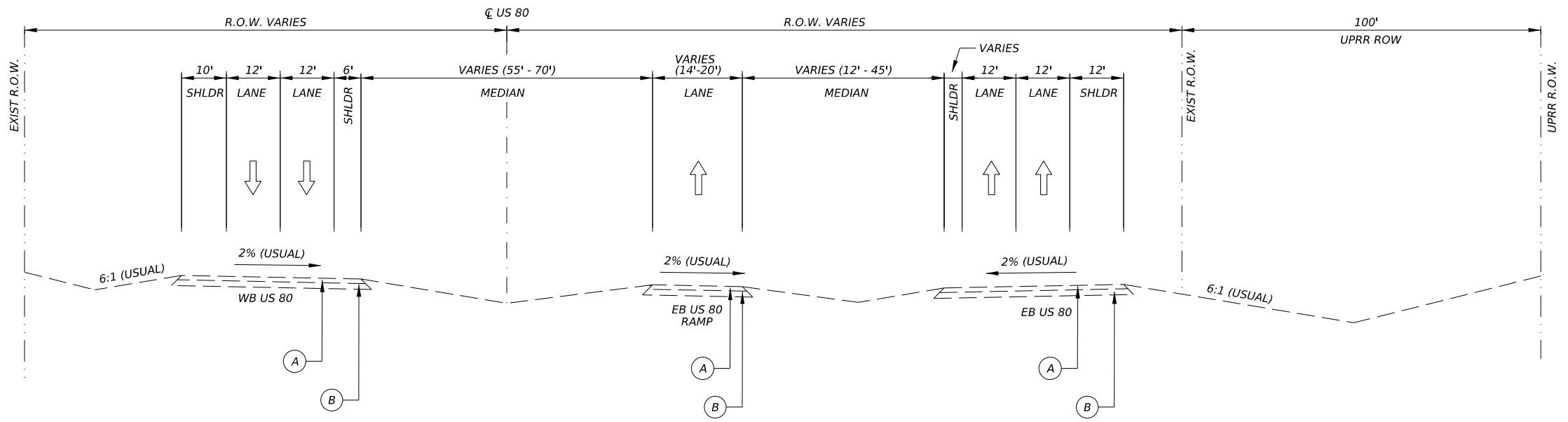
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NOTES:

- FLEXIBLE PAVEMENT STRUCTURE REPAIR (ITEM 351) CONSISTING OF:  
 6" OF REMOVAL (MIN WIDTH 11 TO 12 FT)  
 6" SP-B PG (64-22)  
 AT VARIOUS LOCATIONS AS DIRECTED BY THE ENGINEER. REPAIR AREA SHALL BE FULL LANE WIDTH. DO NOT PLACE A JOINT UNDER THE WHEEL PATH.
- PAVEMENT CROSS SLOPES SHALL MATCH EXISTING CROSS SLOPE UNLESS OTHERWISE NOTED.
- EXISTING MAILBOX WILL REMAIN IN PLACE.
- EXISTING MBGF TO BE REPLACED. SEE US 80 PLAN AND PAVEMENT MARKING SHEETS FOR EXACT LOCATIONS.
- SEE SW3P LAYOUT SHEETS FOR LIMITS OF SOIL DISTURBANCE AND PLACEMENT OF BLOCK SOD FOR FINAL STABILIZATION.

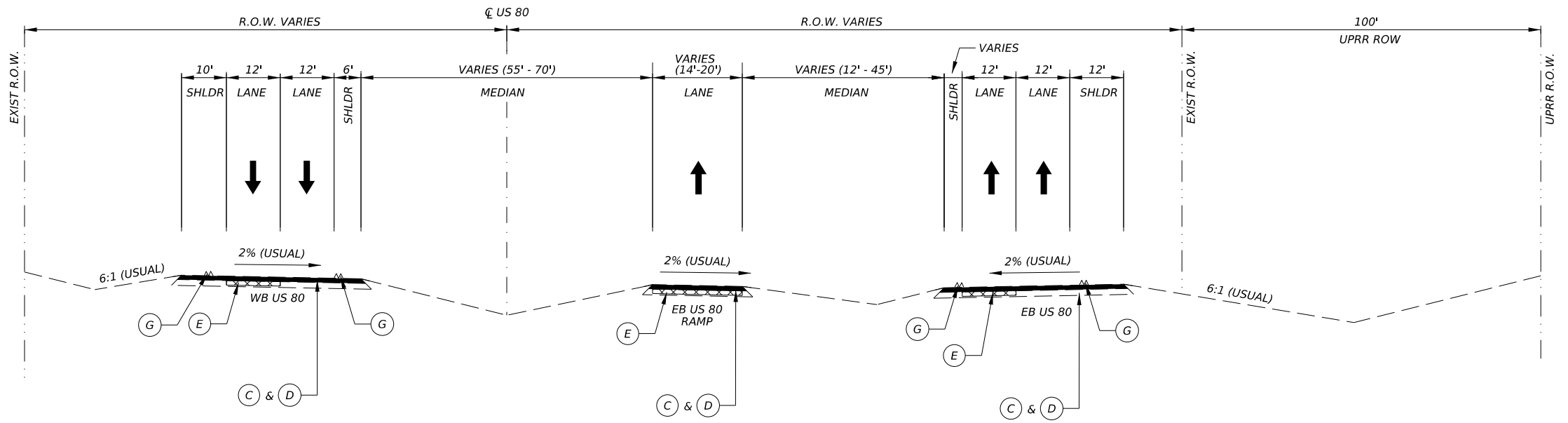
LEGEND

- (A) 4" TO 6" EXIST HMAC
- (B) 10" EXIST BASE (CONCRETE OR CRUSHED CONCRETE)
- (C) 0"-2" MILL
- (D) TACK COAT & 2" INLAY SP-C (SAC B) PG (70-22)
- (E) FLEXIBLE PAVEMENT STRUCTURE REPAIR (SEE DETAIL A)
- (F) BLOCK SOD (SEE NOTE 5)
- (G) SHOULDER RUMBLE STRIPS



**EXISTING TYPICAL SECTION**

CCSJ: 0095-04-074  
 STA. 17+65.50 TO STA. 19+90.00



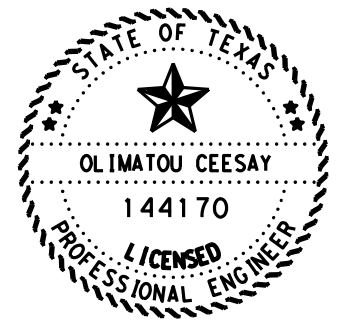
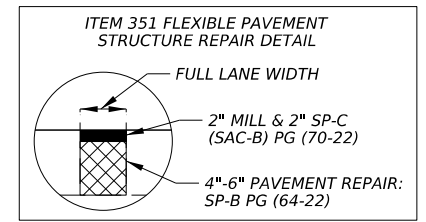
**PROPOSED TYPICAL SECTION**

CCSJ: 0095-04-074  
 STA. 17+65.50 TO STA. 19+90.00

NOTES:

- MILL 0" TO 2" OF EXISTING PAVEMENT (ITEM 354).
- PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR 4"-6" (ITEM 351).
- PLACE TACK COAT (ITEM 3077).
- INLAY 2" SP-C (SAC-B) PG (70-22) ON MAINLANE & SHOULDERS (ITEM 3077).
- CONSTRUCT SHOULDER RUMBLE STRIPS (ITEM 533) AND PAVEMENT MARKINGS (ITEM 666).
- PROPOSED PGL ELEVATION WILL BE THE SAME AS EXISTING.

DETAIL A



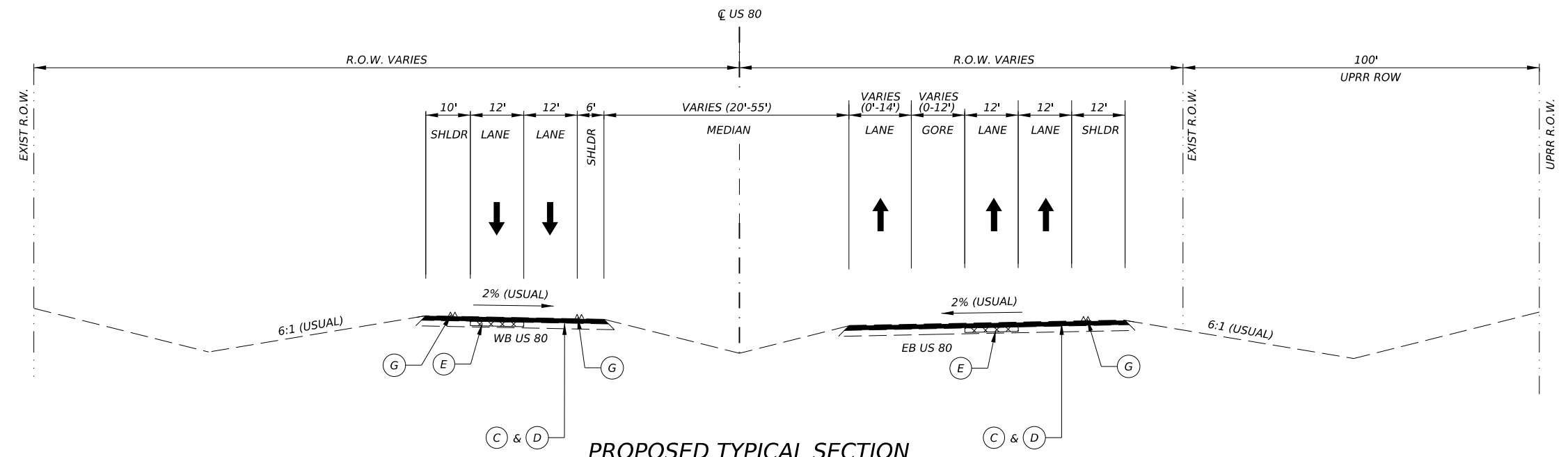
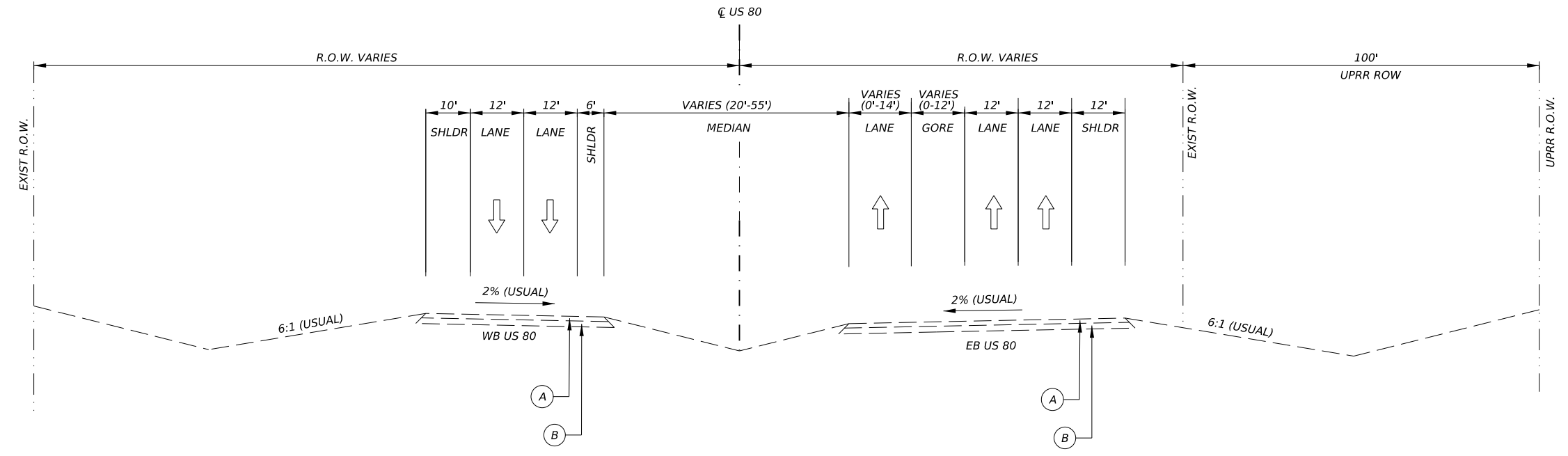
*Olimatou Ceesay* P.E. 2/22/2023  
 Signature of Registrant & Date



US 80		TYPICAL SECTIONS	
SCALE: NTS		SHEET 1 OF 7	
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	4	

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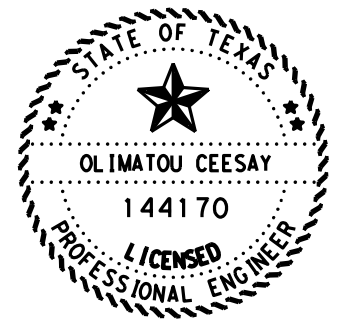
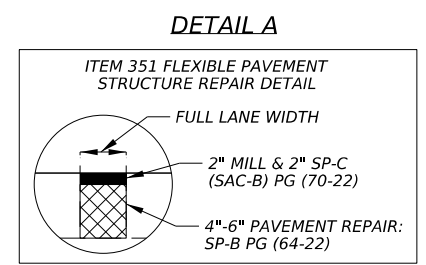
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- NOTES:
- I. MILL 0" TO 2" OF EXISTING PAVEMENT (ITEM 354).
  - II. PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR 4"-6" (ITEM 351).
  - III. PLACE TACK COAT (ITEM 3077).
  - IV. INLAY 2" SP-C (SAC-B) PG (70-22) ON MAINLANE & SHOULDERS (ITEM 3077).
  - V. CONSTRUCT SHOULDER RUMBLE STRIPS (ITEM 533) AND PAVEMENT MARKINGS (ITEM 666).
  - VI. PROPOSED PGL ELEVATION WILL BE THE SAME AS EXISTING.

- NOTES:
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 6" SP-B PG (64-22)  
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  2. PAVEMENT CROSS SLOPES SHALL MATCH EXISTING CROSS SLOPE UNLESS OTHERWISE NOTED.
  3. EXISTING MAILBOX WILL REMAIN IN PLACE.
  4. EXISTING MBGF TO BE REPLACED. SEE US 80 PLAN AND PAVEMENT MARKING SHEETS FOR EXACT LOCATIONS.
  5. SEE SW3P LAYOUT SHEETS FOR LIMITS OF SOIL DISTURBANCE AND PLACEMENT OF BLOCK SOD FOR FINAL STABILIZATION.

- LEGEND
- (A) 4" TO 6" EXIST HMAC
  - (B) 10" EXIST BASE (CONCRETE OR CRUSHED CONCRETE)
  - (C) 0"-2" MILL
  - (D) TACK COAT & 2" INLAY SP-C (SAC B) PG (70-22)
  - (E) FLEXIBLE PAVEMENT STRUCTURE REPAIR (SEE DETAIL A)
  - (F) BLOCK SOD (SEE NOTE 5)
  - (G) SHOULDER RUMBLE STRIPS



*Olimatou Ceesay* P.E. 2/22/2023  
 Signature of Registrant & Date

Texas Department of Transportation

US 80

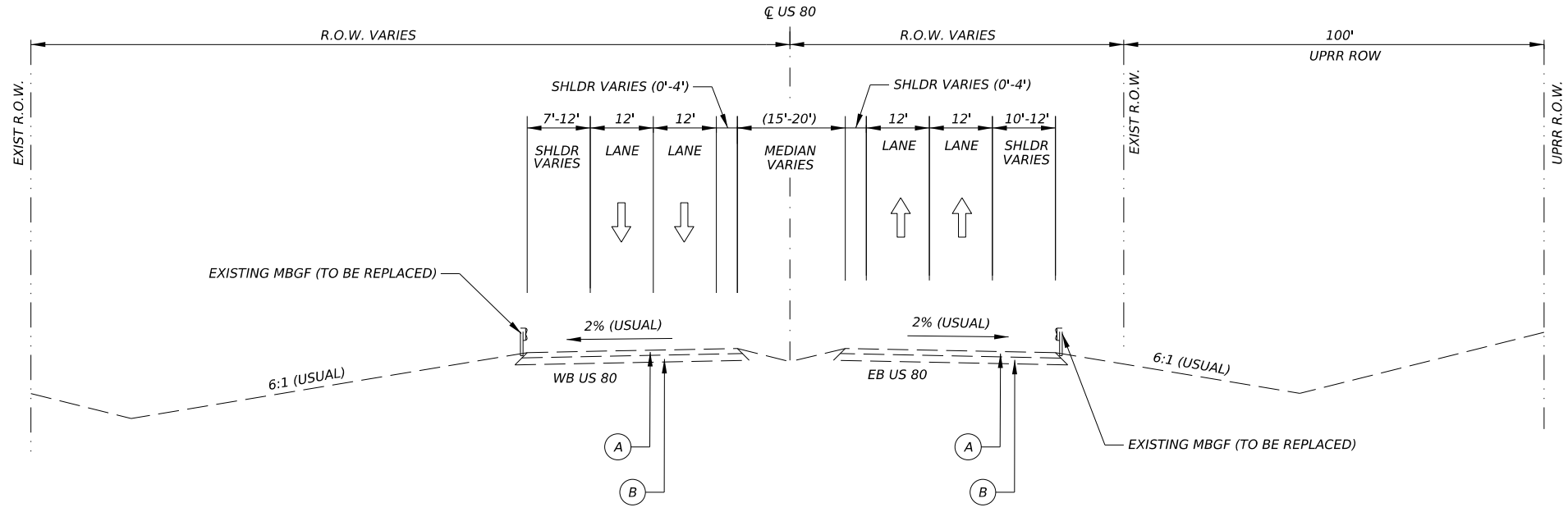
TYPICAL SECTION

SCALE: NTS SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	5	

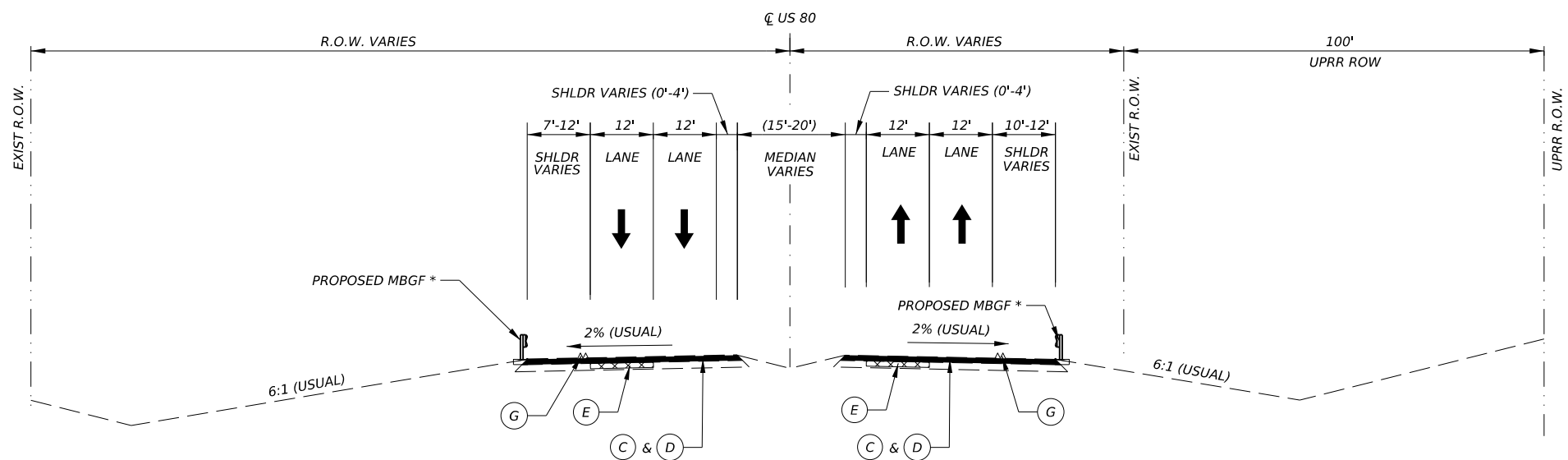
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**EXISTING TYPICAL SECTION**

CCSJ: 0095-04-074  
 STA. 29+00.00 - STA. 32+00.00  
 STA. 34+50.00 - STA. 51+07.00  
 STA. 62+01.77 - STA. 92+55.82  
 STA. 97+55.63 - STA. 120+50.50  
 STA. 125+51.97 - STA. 157+26.26



**PROPOSED TYPICAL SECTION**

CCSJ: 0095-04-074  
 STA. 29+00.00 - STA. 32+00.00  
 STA. 34+50.00 - STA. 51+07.00  
 STA. 62+01.77 - STA. 92+55.82  
 STA. 97+55.63 - STA. 120+50.50  
 STA. 125+51.97 - STA. 157+26.26

**NOTES:**

- I. MILL 0" TO 2" OF EXISTING PAVEMENT (ITEM 354).
- II. PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR 4"-6" (ITEM 351).
- III. PLACE TACK COAT (ITEM 3077).
- IV. INLAY 2" SP-C (SAC-B) PG (70-22) ON MAINLANE & SHOULDERS (ITEM 3077).
- V. REMOVE EX MBGF (ITEM 542) & INSTALL NEW MBGF (ITEM 540).
- VI. CONSTRUCT SHOULDER RUMBLE STRIPS (ITEM 533) AND PAVEMENT MARKINGS (ITEM 666).
- VII. PROPOSED PGL ELEVATION WILL BE THE SAME AS EXISTING.

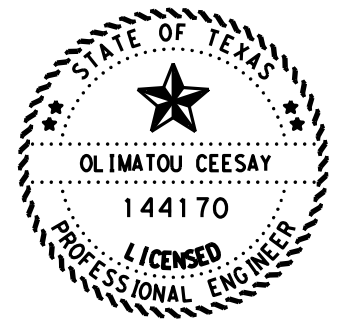
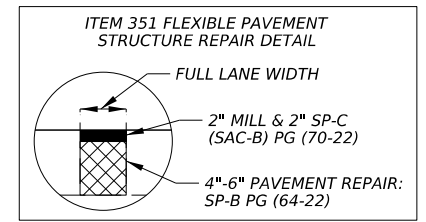
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2. PAVEMENT CROSS SLOPES SHALL MATCH EXISTING CROSS SLOPE UNLESS OTHERWISE NOTED.
3. EXISTING MAILBOX WILL REMAIN IN PLACE.
4. EXISTING MBGF TO BE REPLACED. SEE US 80 PLAN AND PAVEMENT MARKING SHEETS FOR EXACT LOCATIONS.
5. SEE SW3P LAYOUT SHEETS FOR LIMITS OF SOIL DISTURBANCE AND PLACEMENT OF BLOCK SOD FOR FINAL STABILIZATION.

**LEGEND**

- (A) 4" TO 6" EXIST HMAC
- (B) 10" EXIST BASE (CONCRETE OR CRUSHED CONCRETE)
- (C) 0"-2" MILL
- (D) TACK COAT & 2" INLAY SP-C (SAC B) PG (70-22)
- (E) FLEXIBLE PAVEMENT STRUCTURE REPAIR (SEE DETAIL A)
- (F) BLOCK SOD (SEE NOTE 5)
- (G) SHOULDER RUMBLE STRIPS

**DETAIL A**



*Olimatou Ceesay* P.E. 2/22/2023  
 Signature of Registrant & Date

REPLACE EXISTING MBGF  
 STA. 28+16.24 - STA. 30+41.00  
 STA. 31+01.00 - STA. 31+50.45  
 STA. 29+91.84 - STA. 30+41.00  
 STA. 31+01.00 - STA. 32+01.77  
 STA. 66+02.65 - STA. 68+02.56  
 STA. 68+25.86 - STA. 68+75.73  
 STA. 71+14.60 - STA. 72+89.00  
 STA. 73+49.00 - STA. 73+99.22  
 STA. 72+39.89 - STA. 72+89.00  
 STA. 74+48.92 - STA. 73+99.22  
 STA. 92+76.64 - STA. 93+78.00  
 STA. 94+18.00 - STA. 94+68.06  
 STA. 159+33.10 - STA. 159+87.00  
 STA. 160+87.00 - STA. 163+08.15  
 \* (SEE NOTE #4)

Texas Department of Transportation

**US 80**

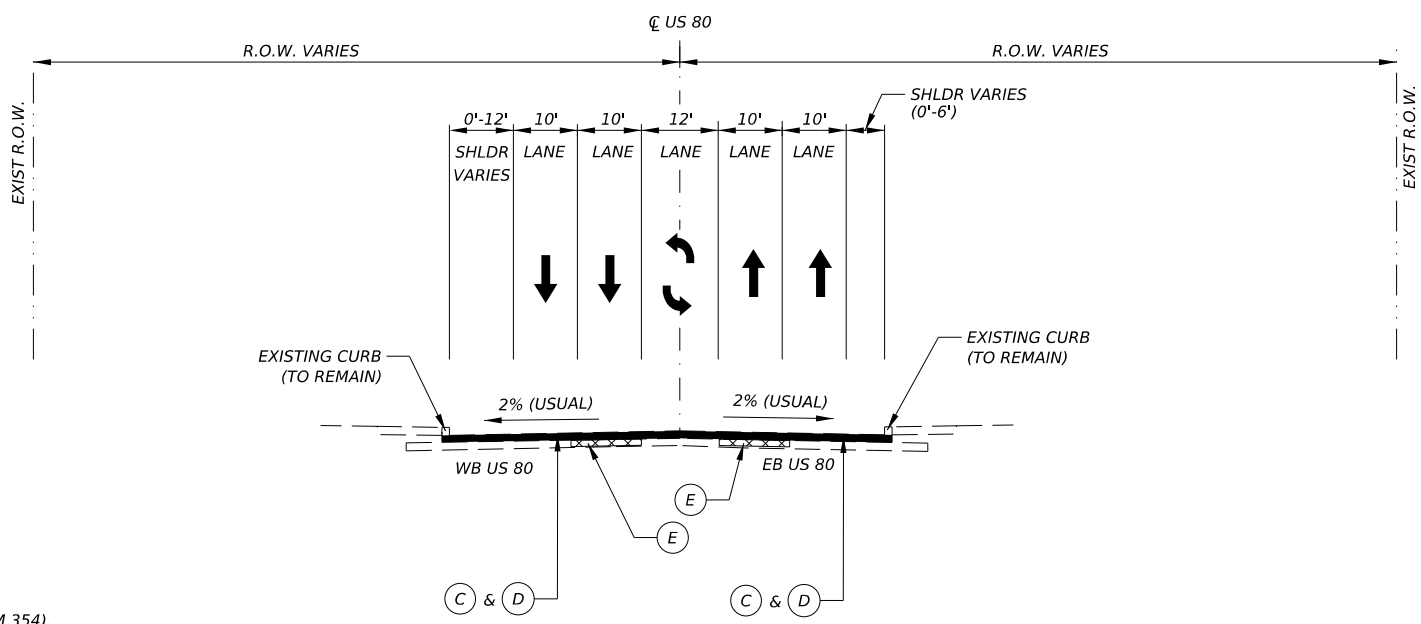
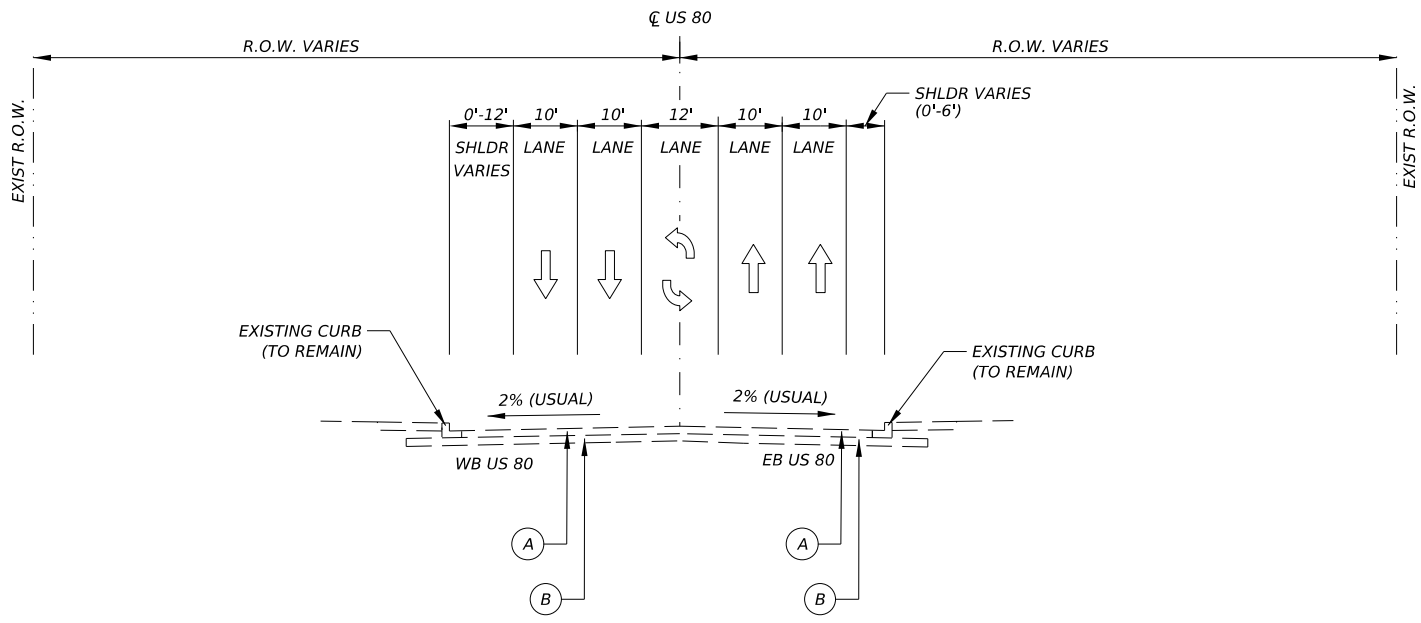
**TYPICAL SECTIONS**

SCALE: NTS SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	6	

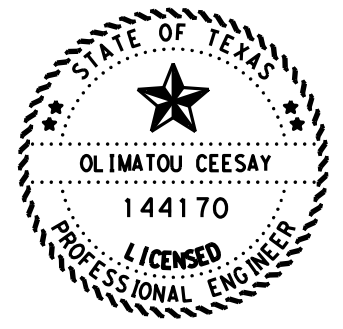
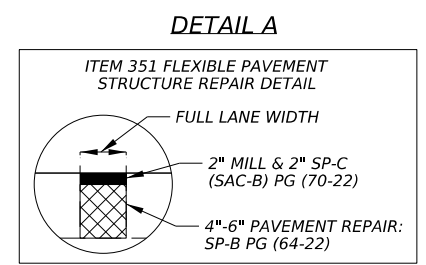
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- NOTES:
- FLEXIBLE PAVEMENT STRUCTURE REPAIR (ITEM 351) CONSISTING OF:  
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  - SEE SW3P LAYOUT SHEETS FOR LIMITS OF SOIL DISTURBANCE AND PLACEMENT OF BLOCK SOD FOR FINAL STABILIZATION.

- LEGEND
- (A) 4" TO 6" EXIST HMAC
  - (B) 10" EXIST BASE (CONCRETE OR CRUSHED CONCRETE)
  - (C) 0"-2" MILL
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  - (E) FLEXIBLE PAVEMENT STRUCTURE REPAIR (SEE DETAIL A)
  - (F) BLOCK SOD (SEE NOTE 5)
  - (G) SHOULDER RUMBLE STRIPS



*Olimatou Ceesay* P.E. 2/22/2023  
 Signature of Registrant & Date

Texas Department of Transportation

US 80

TYPICAL SECTION

SCALE: NTS SHEET 4 OF 7

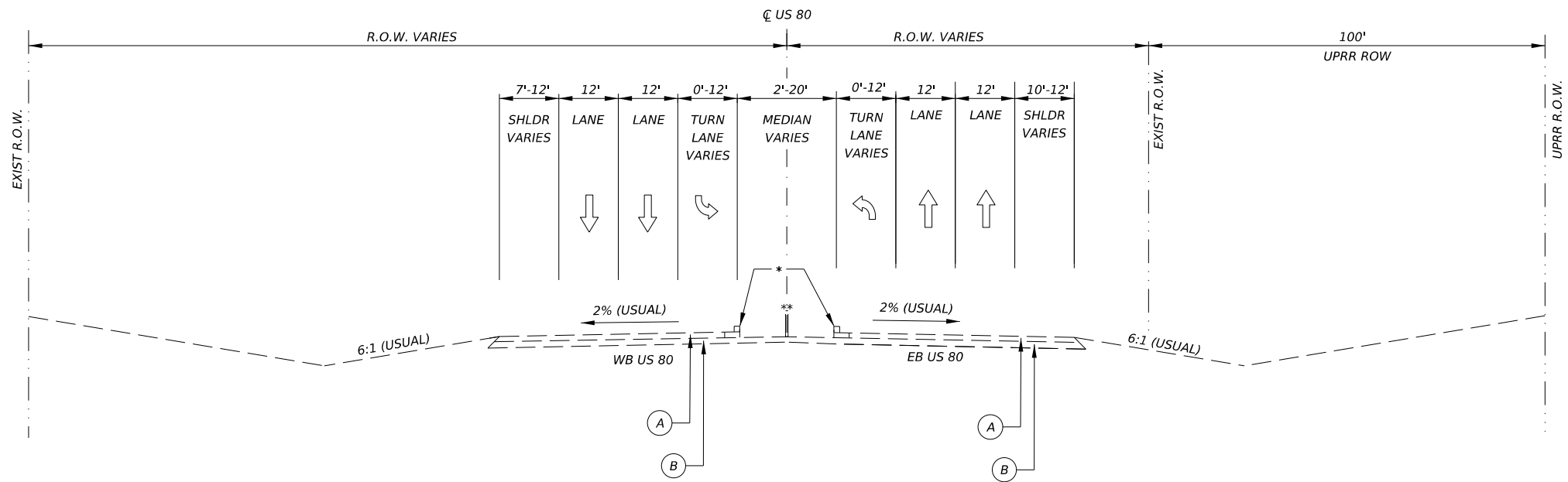
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	7	

- NOTES:
- MILL 0" TO 2" OF EXISTING PAVEMENT (ITEM 354).
  - PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR 4"-6" (ITEM 351).
  - PLACE TACK COAT (ITEM 3077).
  - INLAY 2" SP-C (SAC-B) PG (70-22) ON MAINLANE & SHOULDERS (ITEM 3077).
  - CONSTRUCT SHOULDER RUMBLE STRIPS (ITEM 533) AND PAVEMENT MARKINGS (ITEM 666).
  - PROPOSED PGL ELEVATION WILL BE THE SAME AS EXISTING.



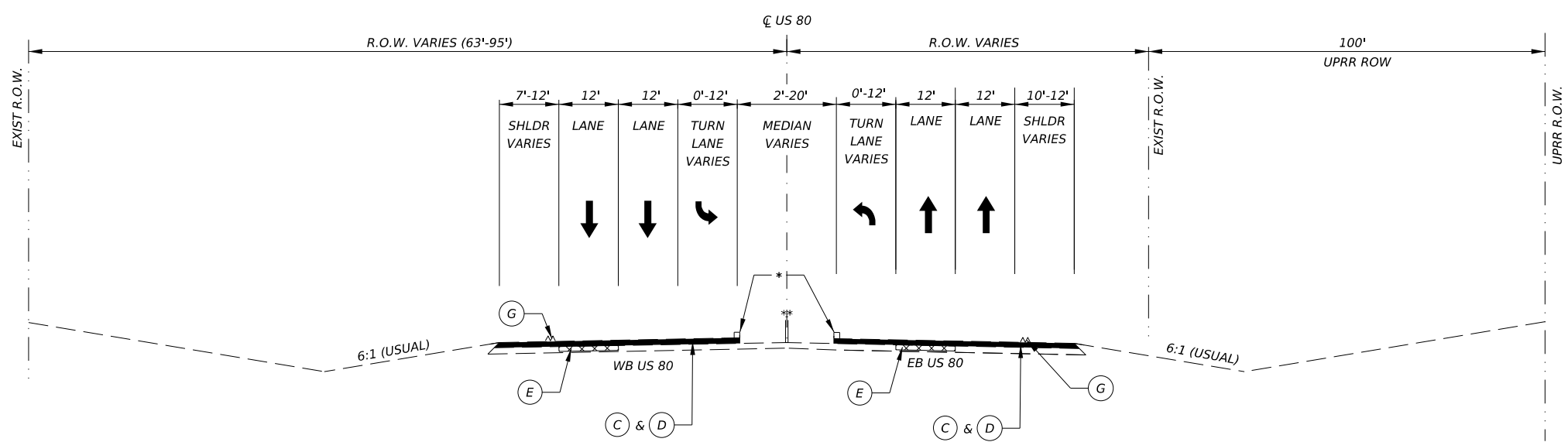
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**EXISTING TYPICAL SECTION**

CCSJ: 0095-04-074  
 STA. 32+00.00 - STA. 34+50.00  
 STA. 51+07.00 - STA. 62+01.77  
 STA. 92+55.82 - STA. 97+55.63  
 STA. 120+50.50 - STA. 125+51.97  
 STA. 193+06.33 - STA. 207+61.88



**PROPOSED TYPICAL SECTION**

CCSJ: 0095-04-074  
 STA. 32+00.00 - STA. 34+50.00  
 STA. 51+07.00 - STA. 62+01.77  
 STA. 92+55.82 - STA. 97+55.63  
 STA. 120+50.50 - STA. 125+51.97  
 STA. 193+06.33 - STA. 207+61.88

- NOTES:
- I. MILL 0" TO 2" OF EXISTING PAVEMENT (ITEM 354).
  - II. PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR 4"-6" (ITEM 351).
  - III. PLACE TACK COAT (ITEM 3077).
  - IV. INLAY 2" SP-C (SAC-B) PG (70-22) ON MAINLANE & SHOULDERS (ITEM 3077).
  - V. REMOVE EX MBGF (ITEM 542) & INSTALL NEW MBGF (ITEM 540). REFER TO SHEET 6 FOR MBGF STATIONS.
  - VI. CONSTRUCT SHOULDER RUMBLE STRIPS (ITEM 533) AND PAVEMENT MARKINGS (ITEM 666).
  - VII. PROPOSED PGL ELEVATION WILL BE THE SAME AS EXISTING.

\* MEDIAN CURB TO REMAIN  
 STA. 51+53.68 - STA. 99+60.37  
 STA. 193+06.33 - STA. 207+61.88

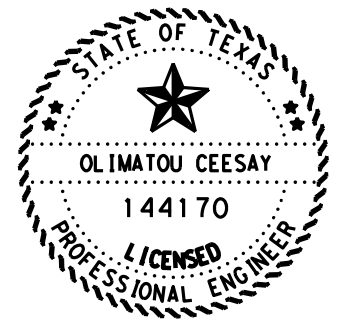
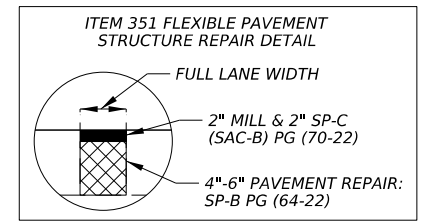
\*\* MEDIAN CABLE BARRIER TO REMAIN  
 STA. 57+34.08 - STA. 99+60.37

- NOTES:
1. FLEXIBLE PAVEMENT STRUCTURE REPAIR (ITEM 351) CONSISTING OF:  
 6" OF REMOVAL (MIN WIDTH 11 TO 12 FT)  
 6" SP-B PG (64-22)  
 AT VARIOUS LOCATIONS AS DIRECTED BY THE ENGINEER. REPAIR AREA SHALL BE FULL LANE WIDTH. DO NOT PLACE A JOINT UNDER THE WHEEL PATH.
  2. PAVEMENT CROSS SLOPES SHALL MATCH EXISTING CROSS SLOPE UNLESS OTHERWISE NOTED.
  3. EXISTING MAILBOX WILL REMAIN IN PLACE.
  4. EXISTING MBGF TO BE REPLACED. SEE US 80 PLAN AND PAVEMENT MARKING SHEETS FOR EXACT LOCATIONS.
  5. SEE SW3P LAYOUT SHEETS FOR LIMITS OF SOIL DISTURBANCE AND PLACEMENT OF BLOCK SOD FOR FINAL STABILIZATION.

**LEGEND**

- (A) 4" TO 6" EXIST HMAC
- (B) 10" EXIST BASE (CONCRETE OR CRUSHED CONCRETE)
- (C) 0"-2" MILL
- (D) TACK COAT & 2" INLAY SP-C (SAC B) PG (70-22)
- (E) FLEXIBLE PAVEMENT STRUCTURE REPAIR (SEE DETAIL A)
- (F) BLOCK SOD (SEE NOTE 5)
- (G) SHOULDER RUMBLE STRIPS

**DETAIL A**



*Olimatou Ceesay* P.E. 2/22/2023  
 Signature of Registrant & Date

Texas Department of Transportation

**US 80**

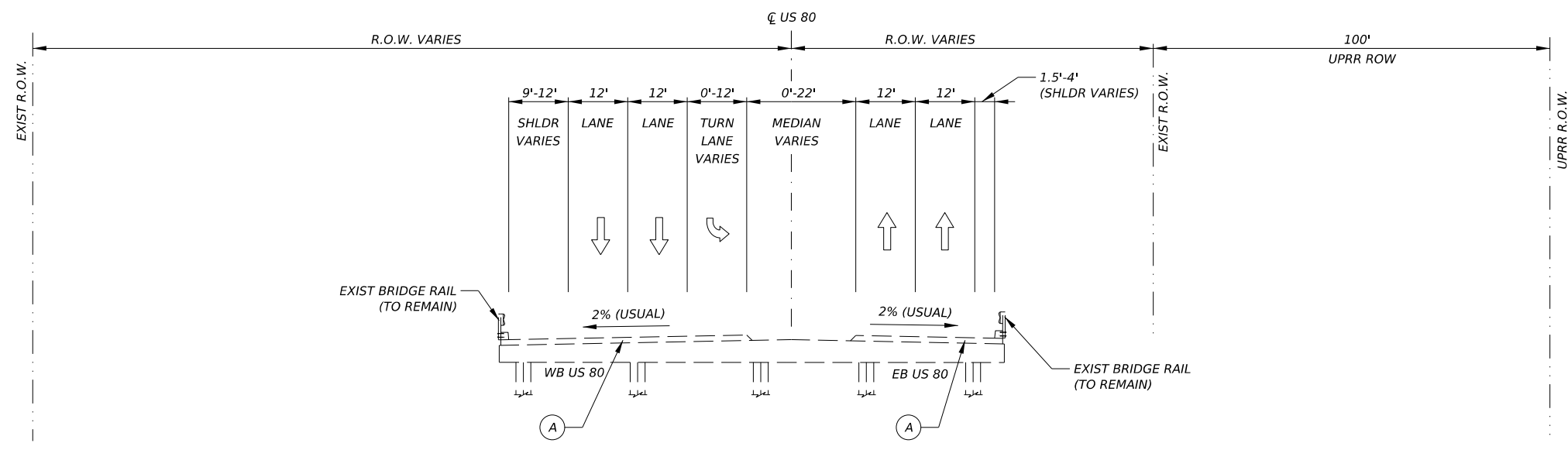
**TYPICAL SECTIONS**

SCALE: NTS SHEET 5 OF 7

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	8	

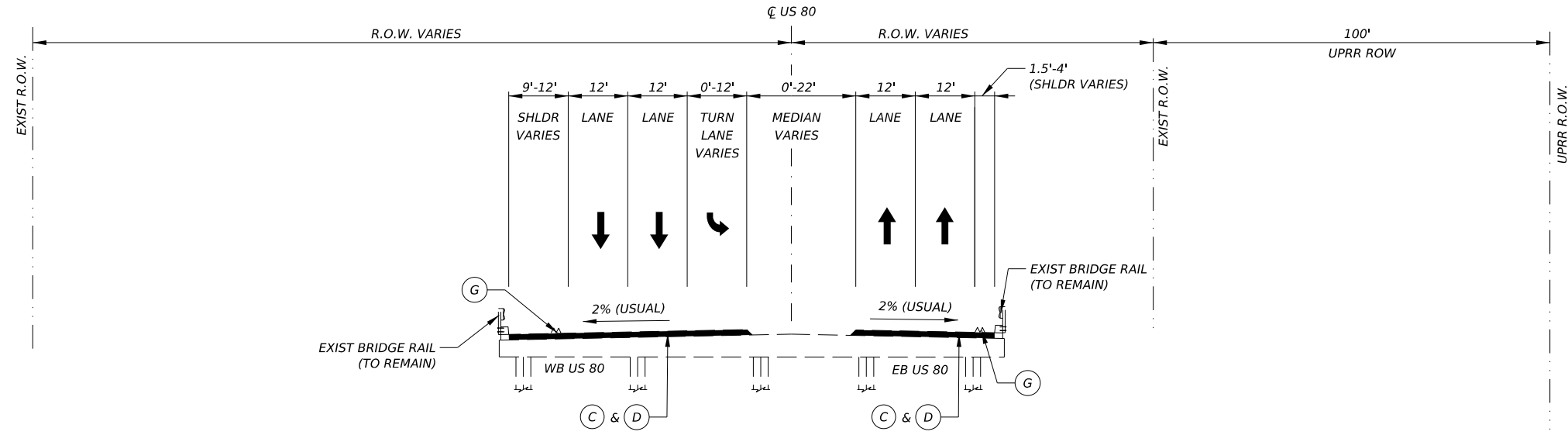
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**EXISTING BRIDGE TYPICAL SECTION**

CCSJ: 0095-04-074  
 STA. 30+41.00 - STA. 31+01.00  
 STA. 72+89.00 - STA. 73+49.00  
 STA. 93+78.00 - STA. 94+18.00



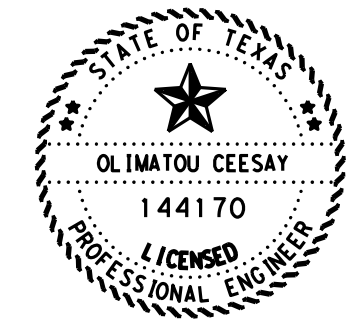
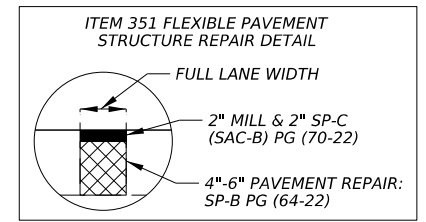
**PROPOSED BRIDGE TYPICAL SECTION**

CCSJ: 0095-04-074  
 STA. 30+41.00 - STA. 31+01.00  
 STA. 72+89.00 - STA. 73+49.00  
 STA. 93+78.00 - STA. 94+18.00  
 STA. 159+87.00 - STA. 160+87.00 (WB ONLY)

- NOTES:
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 6" OF REMOVAL (MIN WIDTH 11 TO 12 FT)  
 6" SP-B PG (64-22)  
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  4. EXISTING MBGF TO BE REPLACED. SEE US 80 PLAN AND PAVEMENT MARKING SHEETS FOR EXACT LOCATIONS.
  5. SEE SW3P LAYOUT SHEETS FOR LIMITS OF SOIL DISTURBANCE AND PLACEMENT OF BLOCK SOD FOR FINAL STABILIZATION.

- LEGEND
- (A) 4" TO 6" EXIST HMAc
  - (B) 10" EXIST BASE (CONCRETE OR CRUSHED CONCRETE)
  - (C) 0"-2" MILL
  - (D) TACK COAT & 2" INLAY SP-C (SAC B) PG (70-22)
  - (E) FLEXIBLE PAVEMENT STRUCTURE REPAIR (SEE DETAIL A)
  - (F) BLOCK SOD (SEE NOTE 5)
  - (G) SHOULDER RUMBLE STRIPS

**DETAIL A**



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date

Texas Department of Transportation

**US 80**

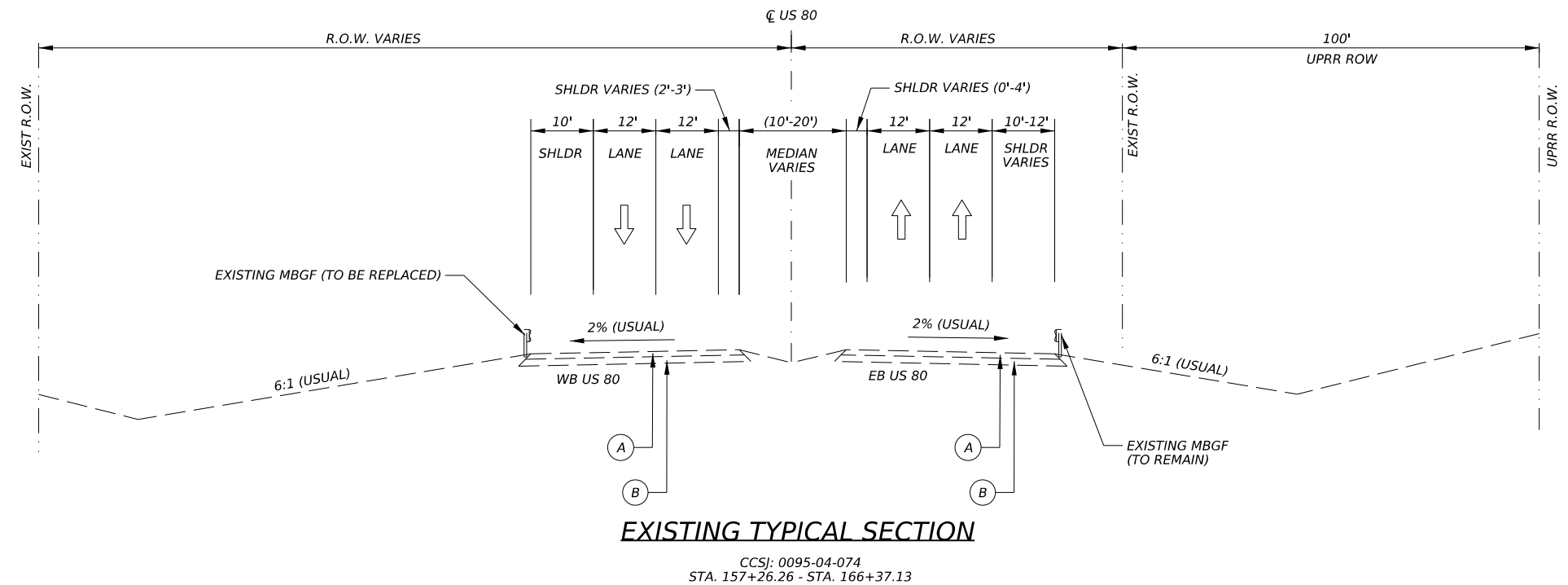
**TYPICAL SECTIONS**

SCALE: NTS		SHEET 6 OF 7	
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST		COUNTY	SHEET NO.
DAL		KAUFMAN	9

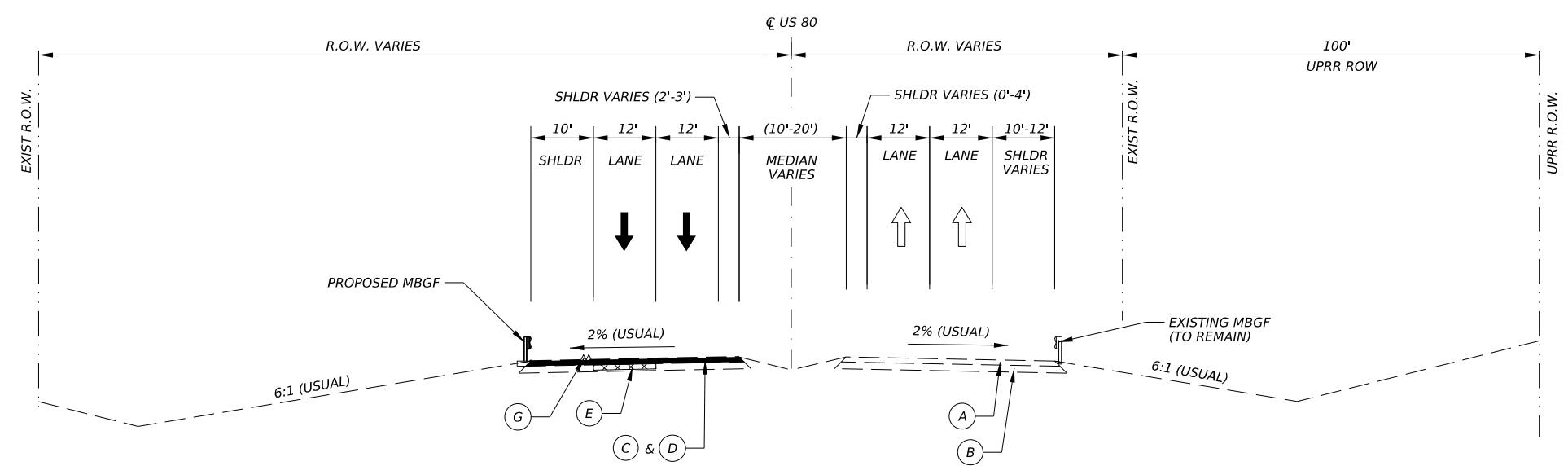
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  - VI. PROPOSED PGL ELEVATION WILL BE THE SAME AS EXISTING.

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**EXISTING TYPICAL SECTION**  
 CCSJ: 0095-04-074  
 STA. 157+26.26 - STA. 166+37.13

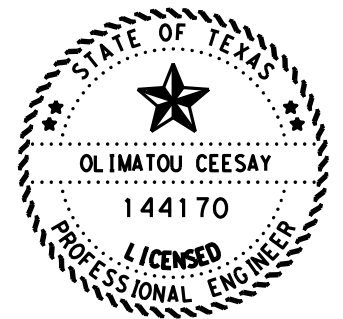
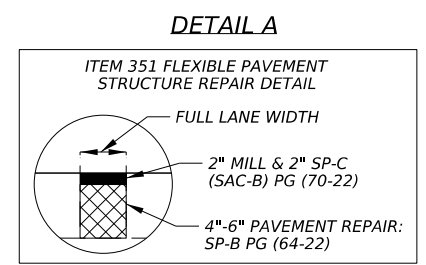


**PROPOSED TYPICAL SECTION**  
 CCSJ: 0095-04-074  
 STA. 157+26.26 - STA. 159+87.00  
 STA. 160+87.00 - STA. 166+37.13  
 NO WORK (STA. 166+37.13 TO STA. 193+06.33)

- NOTES:
- I. MILL 0" TO 2" OF EXISTING PAVEMENT (ITEM 354).
  - II. PERFORM FLEXIBLE PAVEMENT STRUCTURE REPAIR 4"-6" (ITEM 351).
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- LEGEND**
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  - (F) BLOCK SOD (SEE NOTE 5)
  - (G) SHOULDER RUMBLE STRIPS



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date

Texas Department of Transportation

**US 80**

**TYPICAL SECTIONS**

SCALE: NTS SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	10	

County: Kaufman

Highway: US 80

**SPECIFICATION DATA**

Table 1: Soil Constants Requirements				
Item	Description	Plasticity Index		Note
		Max	Min	
132	EMBANKMENT (FINAL)(ORD)(TY C)	40	8	1

Note 1: Material excavated from the project must meet the PI requirements when used in the top 10 feet of embankment that supports the pavement structure or other locations shown in the plans. Do not use shale and obtain approval to incorporate shaley clay produced by the construction project.

Table 2: Basis of Estimate for Permanent Construction					
Item	Description	Thickness	Rate		Quantity
162	Block Sod	N/A	See Specifications		8,098 SY
166 *	Fertilizer (12-6-6)	N/A	500	Lbs./Ac	0.42 Ton
168	Vegetative Watering (Warm)**	N/A	12	MG/Ac/Day	1,206 MG
3077	SP MIXES	See Plans	110	Lbs./SY/In	19,474 Ton
3077	Tack Coat (Undiluted Application Rate)	Milled HMA	0.11	Gal/SY	19,474 Gal
*For contractor's information only					
**Use Summer rate for calculation, adjust for actual field conditions/temperatures as necessary. See Vegetation Establishment Plan Sheet for estimated daily rates.					
Note: (1) Asphalt weight based on 110 Lbs./SY/In					

County: Kaufman

Highway: US 80

Table 3: Basis of Estimate for Temporary Erosion Control Items				
Item	Description	Rate		Quantity
164	Drill Seeding (Temp) (Warm or Cool)	See Specifications		6,075 SY
166*	Fertilizer (12-6-6)	500	Lb/Ac	0.31 Ton
168	Vegetative Watering (Warm)**	12	MG/Ac/Day	905 MG
*For Contractor's Information Only.				
**Use Summer rate for calculation, adjust for Actual Field Conditions/Temperatures as Necessary. See Vegetation Establishment Sheet for estimated daily rates.				

**GENERAL**

The construction, operation and maintenance of the proposed project will be consistent with the state implementation plan as prepared by the Texas Commission on Environmental Quality.

The disturbed area for this project, as shown on the plans is 2.5 acres. However, the Total Disturbed Area (TDA) will establish the required authorization for storm water discharges. The TDA of this project will be determined by the sum of the disturbed area in all project locations in the contract, and all disturbed area on all Project-Specific Locations (PSL) located in the project limits and/or within 1 mile of the project limits. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction site as shown on the plans, according to the TDA of the project. The contractor will obtain any required authorization from the TCEQ for the discharge of storm water from any PSL for construction support activities on or off of the project row according to the TDA of the project. When the TDA for the project exceeds 1 acre, provide a copy of the appropriate application of permit (NOI, or Construction Site Notice) to the engineer, for any PSL located in the project limits or within 1 mile of the project limits. Follow the directives and adhere to all requirements set forth in the TCEQ, Texas Pollution Discharge Elimination System, Construction General Permit (TPDES, CGP).

This project required permitting with environmental resources agencies. There is a high probability that an environmentally sensitive area could be encountered on the contractor designated Project-Specific Locations (PSL) for this project (haul roads, equipment staging areas, borrow pits, disposal sites, field offices, storage areas, parking areas, etc.). Item 7.6 "Project-Specific Locations", provides a listing of regulatory agencies that may need to be contacted regarding this project.

Leave all right of way areas undisturbed until actual construction is to be performed in said areas.

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

Lane Selman, P.E.                      Lane.Selman@txdot.gov  
 Nicholas Wadlington, P.E.        Nicholas.Wadlington@txdot.gov

County: Kaufman

Highway: US 80

Questions may be submitted via the Letting Pre-Bid Q&A web page. This web page can be accessed from the Notice to Contractors dashboard located at the following Address:

<https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors>

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. 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.

**Item 5:**

Underground utilities owned by the Texas Department of Transportation may be present within the Right-Of-Way on this project. For signal, illumination, surveillance, and communications & control maintained by TxDOT, call the TxDOT Traffic Signal Office (214-320-6682) for locates a minimum of 48 hours in advance of excavation. For irrigation systems, call TxDOT Landscape Office (214-320-6205) for locates a minimum of 48 hours in advance of excavation. If city or town owned irrigation facilities are present, call the appropriate department of the local city or town a minimum of 48 hours in advance of excavation. The Contractor is liable for all damages when utilities are damaged due to Contractor's negligence including, but not limited to, repair or replacement at the Contractor's expense.

For the project to be deemed complete, permanently stabilize all unpaved disturbed areas of the project with a vegetative cover at a minimum of 70% density for the control of erosion.

Place construction stakes/station markings at intervals of no more than 100 feet or as directed by the Engineer. Place stakes and markings so as not to interfere with normal construction operations.

Submit all shop drawings, working drawings, or other documents which require review sufficiently in advance of scheduled construction to allow no less than thirty (30) calendar days for review and response.

**Item 7:**

Repair or replace any structures and utilities that might have been damaged by negligence or a failure to have utility locates performed.

Perform all electrical work in accordance with the National Electrical Code and Texas Department of Transportation Specifications.

Consult with appropriate electric company representatives according to their respective area to coordinate electrical services installations.

Holiday restrictions – The Engineer may decide that no lane closures or construction operations shall be allowed during the restricted periods listed in the following holiday schedule. TxDOT has the right to lengthen, shorten, or otherwise modify these restricted periods as actual, or expected, traffic conditions may warrant. Working days will not be charged for these restricted

County: Kaufman

Highway: US 80

periods. No additional compensation will be allowed for these closures (i.e., overhead, delays, stand-by, barricades or any other associated cost impacts).

- New Year's Eve and Day (5 am on December 31 thru 10:00 pm January 1)
- Easter Holiday weekend (5 am on Friday thru 10:00 pm Sunday)
- Memorial Day weekend (5 am on Friday thru 10:00pm Monday)
- Independence Day (5 am on July 3 thru 10:00 pm on July 5)
- Labor Day weekend (5 am on Friday thru 10:00 pm Monday)
- Thanksgiving Holiday (5 am on Wednesday thru 10:00 pm Sunday)
- Christmas Holiday (5 am on December 23 thru 10:00 pm December 26)

No significant traffic generator events identified.

**Item 8:**

This Project will be a Standard Workweek.

Nighttime work is allowed in accordance with Article 8.3.3.

Meet weekly with the engineer to notify him or her of planned work for the upcoming week.

Provide the engineer with a daily work schedule of planned work.

Critical Path Method (CPM) schedule in P6 format will be required for this project. Submit baseline schedule and obtain approval prior to beginning construction. The Estimate will be held if monthly schedule update is not submitted.

**Item 104:**

In those areas where the pavement is not to be overlaid, provide a smooth surface after the curb removal. Planing or grinding is considered an acceptable method at these locations. Measurement and payment is in accordance with this item.

**Items 110 and 132:**

Scarify and loosen the excavated areas, unpaved surface areas, except rock, to a depth of at least 8 inches and compact in accordance with the specifications.

Excavation and embankment for driveways, sleeper slabs, alleys and intersections will not be paid for directly, but will be considered subsidiary to these items.

**Item 132:**

Excavated material from the project site has not been determined to be suitable for embankment. The bidder assumes all risk for the use of excavated materials for embankment and is expected to meet all material requirements for embankment regardless of the source.

Perform Tex-106-E (Plasticity Index) by an approved laboratory on excavated soils from sources outside right of way when used in roadway embankment. Provide the test results at no expense to the department. The engineer will sample and test soils produced by the construction project for specification requirements or material sources specified in the plans.



County: Kaufman

Highway: US 80

Earth embankment Type C, is mainly composed of material other than shale. Furnish material that is free from vegetation or other objectionable material and that conforms to the requirements of Table 1 (Sheet A). If necessary, treat material with lime slurry in accordance with Item 260, "Lime Treatment (Road-Mixed)" in order to meet these requirements. Use Tex-121-E, figure 1, page 4 to calculate the amount of lime required. When lime treated subgrade is specified, 3000 PPM is the maximum allowed sulfate content in the top 3 feet when material comes from borrow source. Follow recommendations of 260.4.4 for mixing and mellowing. The engineer will test material placed or excavated to a depth of one foot below and laterally to one foot outside the proposed treatment limit. Lime treatment of this material will not be paid for directly, but will be considered subsidiary to this item.

Do not use shaley clays in embankment unless approved in writing.

**Item 134:**

Start backfilling pavement edges as soon as possible after the surface course is started.

Backfill and compact the pavement edges to produce a smooth surface adjacent to the pavement with no vertical edges.

Use Type "A" or "B" material to backfill pavement edges as shown in plans. Type "A" or "B" material shall consist of suitable material that when compacted will support the pavement edge. Rap is considered suitable Type "A" or "B" material.

Blade the existing vegetation into a neat wind-row prior to overlay. After placing Ty A or Ty B backfill and placing seeding, the material from the wind-row shall be replaced on the completed slopes. Emulsion shall be placed at a 50/50 solution of water to emulsion over disturbed area. Emulsion rate=0.15 Gal/SY residual. This work, materials and equipment shall be subsidiary to Item 134.

**Item 160:**

Sequence construction operations to salvage topsoil from one location and spread on areas ready to receive topsoil. Keep stockpiling of topsoil to a minimum.

Use fertile clay or loam from the project site not more than six inches below natural grade as topsoil.

**Item 161:**

Provide tickets representing quantity of compost delivered to site.

**Item 301:**

Provide liquid antistripping agents unless otherwise directed. Add the minimum dosage determined by the manufacturer or higher dosage determined by design requirement and try subsequent trials at 0.25% increments.

County: Kaufman

Highway: US 80

**Item 320:**

Use a self-propelled wheel mounted MTV capable of receiving mix from the haul trucks, separate from the paver. It shall have a minimum storage capacity of approximately 25 tons. It shall be equipped with a pivoting discharge conveyor and shall completely and thoroughly remix the material prior to placement. The effectiveness of the MTV's remixing ability is subject to the approval of the Engineer. In addition, the paver shall have a surge storage insert with a minimum capacity of 20 tons.

The use of windrow pick-up equipment is allowed except on the first course of roadway material placed over the subgrade.

**Item 354:**

Remove the loose material from the roadway before opening to traffic.

Patch pavement cut to excessive depth by equipment failure with an approved epoxy material. Re-plane patched area to an acceptable approved ride quality. Payment for these corrections is subsidiary to this item.

Take possession of recycled asphalt pavement from the project and recycle the material.

**Item 400:**

Structural Excavation is not paid for directly but is considered subsidiary to pertinent Items.

When placing concrete storm drain pipe on slopes of greater than 10 percent, provide cement stabilized backfill to a depth shown on the plans.

**Item 421:**

Furnish mix designs to the Engineer in a format compatible to the latest version of the Department's Construction Management System (Site Manager). Mix Design templates will be provided by the Engineer. Strength evaluation using maturity testing, Tex-426-A, may be used for all concrete elements except drilled shafts and mass concrete pours.

Supply the Engineer with a list of certified personnel and copies of their current ACI certificates before beginning production and when personnel changes are made. Supply hard copies of calibration reports for testing equipment when required by the Engineer.

**Item 440:**

Fiber Reinforced Concrete (FRC) can be used as a substitute for Non-Structural Class Reinforced Concrete in Mow-Strip and Rip Rap Items as approved. FRC may also be used for other Non-Structural Class Reinforced Concrete Items as approved.

**Item 500:**

Material On Hand (MOH) will not be used in calculating partial payments for Mobilization.

**Item 502:**

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

County: Kaufman

Highway: US 80

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.

Access will be provided to all business and residences at all times. Where turning radii are limited during phased construction at intersections, provide all weather surfaces such as RAP or base in turning movements to accommodate and to protect the traffic from edge drop-offs. Materials, labor, maintenance and removal for these temporary accesses and radii will not be paid for directly but will be considered subsidiary to the various bid items.

Place barricades and signs in locations that do not obstruct the sight distance of drivers entering the highway from driveways or side streets.

Do not operate or park any equipment/machinery closer than 30 feet from the traveled roadway after sunset unless authorized by the engineer.

When moving unlicensed equipment on or across any pavement or public highways, protect the pavement from all damage using an acceptable method.

As approved by the Engineer, provide uniformed off duty police officers and squad cars during lane or ramp closures, night time work or other situations that indicate a need for additional traffic control to protect the traveling public or the construction workforce. Provide documentation such as payroll, log sheets with signatures and badge number, or invoices from the government entity providing the officers for reimbursement. Complete the weekly tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided. Reimbursement will not be made for coordination fees charged by any party.

Limit lane closures along US 80 to the hours between 9:00 am and 3:30 pm and to the hours between 9:00 pm and 5:00 am. Work in other areas of the project is not restricted to this time frame.

Traffic Control Plans with Lane Closures causing backups of 20 minutes or greater in duration will be modified by the Engineer up to and including removal of the lane closure and adjustment of lane closure times.

Work in other areas of the project is not restricted to this time frame.

Additional lanes may be closed, started earlier, or extended later with written permission of the Engineer.

**Item 506:**

Take all practicable precautions to prevent debris from being discharged into the Waters of Texas or a designated wetland. Install Best Management Practices before demolition begins and maintain them during the demolition. Remove any debris or construction material that

County: Kaufman

Highway: US 80

escapes containment devices and are discharged into the restricted areas, before the next rain event or within 24 hours of the discharge.

If temporary construction stream crossings are allowed under a Nationwide Permit, submit in writing for approval the type and location of each temporary stream crossing. Use temporary bridges, timber mats, or other structurally sound and non-eroding material for temporary stream crossings. A temporary culvert crossing will consist of storm sewer pipes and 4- to 8-inch nominal size rock. Temporary stream crossings must not cause more than minimal changes to the hydraulic flow characteristics of the stream, increase flooding, or cause more than minimal degradation of water quality. Remove the temporary stream crossings in their entirety and return the affected areas to their pre-existing elevation. All work and materials use for temporary construction stream crossings will not be paid for directly but are subsidiary to pertinent items.

Provide SW3P Signs. Obtain from the Engineer a copy of the project's completed TPDES Storm Water Program Construction Site Notice and Contractor Site Notice. Laminate the sheets and bond with adhesive to 36" X 36" plywood sign blanks. Ensure the sheets remain dry. Apply Type C Blue reflective sheeting as the background and add the text "SW3P" in 5" white lettering, centered at the top. Attach the signs to approved temporary mounts and locate at each of the project limits just inside the right of way line at a readable height or as directed by the Engineer. If the sign cannot be placed outside the clear zone, it must adhere to the TMUTCD. SW3P signs, maintenance, and reposting (for replacement or as needed to ensure readability) will be subsidiary to Item 502.

Concrete Washouts are required per the CGP. The Concrete Washout Area(s) structural controls must consist of temporary berms, temporary shallow pits, and/or temporary storage tanks to prevent contaminated runoff and must be lined as to prevent contamination of underlying soil. Ensure pits properly maintained including removal of concrete as not to allow over flow. The location(s) of washout area will be approved by the Engineer. When washout pits are no longer needed, they will be removed and area will be restored to original condition. This work, materials and labor will not be measured or paid for directly but will be subsidiary to Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls."

**Item 540:**

Furnish one type of post throughout the project except as specifically noted in the plans.

**Item 585:**

Use Surface Test Type A on all intersections and driveways.  
Use Surface Test Type B pay adjustment schedule 2 on the travel lanes.

**Item 542:**

Remove and dispose metal beam guard fence removed from this project. The work involved in hauling this material will not be paid for directly, but will be considered subsidiary to this item.

**Item 662 and 672:**

Black adhesive will be used on asphalt pavements and white adhesive will be used on concrete pavements.

County: Kaufman

Highway: US 80

**Item 730:**

At the discretion of the Engineer, mow non-paved areas within the project prior to placement of permanent vegetation. Mow up to two (2) cycles per growing season.

**Item 3077:**

Use aggregate that meets the Surface Aggregate Classification (SAC) requirement of Class B.

Provide PG binder 70-22 in Type SP-C mixture.

**Item 6185:**

The total number of truck mounted attenuators (TMAs) or trailer attenuators (TAs) required when utilizing the traffic control standards are shown in the tables below.

TCP 1 Series	Scenario	Required TMA/TA
(1-1)-18		1
(1-4)-18 / (1-5)-18 / (1-6)-18		1

TCP 2 Series	Scenario	Required TMA/TA
(2-1)-18 / (2-4)-18 / (2-5)-18 / (2-6)-18	All	1

TCP 3 Series	Scenario	Required TMA/TA
(3-1)-13	All	2
(3-2)-13	All	3
(3-3)-14	A   B   D	2
	C	3
(3-4)-13	All	1, unless working inside a twtlt, then 2.

The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMAs/TAs needed for the project. Additional TMAs/TAs used that are not specified in the plans in which the contractor expects compensation will require prior approval from the Engineer.



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0095-04-074

DISTRICT Dallas  
HIGHWAY US 80

COUNTY Kaufman

CONTROL SECTION JOB				0095-04-074		0095-05-060		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00129552		A00129551			
COUNTY				Kaufman		Kaufman			
HIGHWAY				US 80		US 80			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	104-6044	REMOVING CONC (FLUME)	SY	4.000				4.000	
	132-6005	EMBANKMENT (FINAL)(ORD COMP)(TY C)	CY	63.000				63.000	
	134-6004	BACKFILL (TY A OR B)	STA	83.000				83.000	
	161-6017	COMPOST MANUF TOPSOIL (4")	SY	8,098.000				8,098.000	
	162-6002	BLOCK SODDING	SY	8,098.000				8,098.000	
	164-6051	DRILL SEED (TEMP)(WARM OR COOL)	SY	6,075.000				6,075.000	
	168-6001	VEGETATIVE WATERING	MG	2,111.000				2,111.000	
	351-6073	FLEX PAVEMENT STRUCTURE REPAIR (4"-6")	SY	15,155.000		1,705.000		16,860.000	
	354-6002	PLAN & TEXT ASPH CONC PAV(0" TO 2")	SY	159,096.000		17,894.000		176,990.000	
	400-6005	CEM STABIL BKFL	CY	25.000				25.000	
	429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	99.000				99.000	
	432-6002	RIPRAP (CONC)(5 IN)	CY	38.100				38.100	
	432-6033	RIPRAP (STONE PROTECTION)(18 IN)	CY	305.000				305.000	
	432-6044	RIPRAP (CONC)(FLUME)	CY	0.300				0.300	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	200.000				200.000	
	480-6001	CLEAN EXIST CULVERTS	EA	5.000				5.000	
	500-6001	MOBILIZATION	LS	0.900		0.100		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	5.000				5.000	
	506-6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	472.000				472.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	472.000				472.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	492.000				492.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	492.000				492.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	6,061.000				6,061.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	6,061.000				6,061.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	1,308.000		95.000		1,403.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	1,308.000		95.000		1,403.000	
	533-6001	RUMBLE STRIPS (SHOULDER)	LF	24,330.000				24,330.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	1,168.000				1,168.000	
	540-6009	MTL BEAM GD FEN TRANS (T6)	EA	14.000				14.000	
	540-6016	DOWNSTREAM ANCHOR TERMINAL SECTION	EA	11.000				11.000	
	540-6020	MTL W - BEAM GD FEN (LOW FILL CULVERT)	LF	107.000				107.000	
	540-6035	MTL BM GD FEN TRANS (31"-28")	EA	14.000				14.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF	475.000				475.000	
	542-6003	REMOVE DOWNSTREAM ANCHOR TERMINAL	EA	7.000				7.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	11.000				11.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA	7.000				7.000	
	658-6061	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2	EA	39.000				39.000	



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0095-04-074

DISTRICT Dallas  
HIGHWAY US 80

COUNTY Kaufman


CONTROL SECTION JOB				0095-04-074		0095-05-060		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00129552		A00129551			
COUNTY				Kaufman		Kaufman			
HIGHWAY				US 80		US 80			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL	EST.	FINAL		
	662-6109	WK ZN PAV MRK SHT TERM (TAB)TY W	EA	5,499.000		751.000		6,250.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	629.000		501.000		1,130.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	1,853.000		82.000		1,935.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	2,564.000		34.000		2,598.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	17.000		13.000		30.000	
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	15.000		1.000		16.000	
	666-6171	REFL PAV MRK TY II (W) 6" (BRK)	LF	21,383.000		3,128.000		24,511.000	
	666-6174	REFL PAV MRK TY II (W) 6" (SLD)	LF	85,524.000		12,510.000		98,034.000	
	666-6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	2,430.000		160.000		2,590.000	
	666-6182	REFL PAV MRK TY II (W) 24" (SLD)	LF	228.000		68.000		296.000	
	666-6208	REFL PAV MRK TY II (Y) 6" (BRK)	LF	3,147.000		4,498.000		7,645.000	
	666-6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF	68,419.000		10,008.000		78,427.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	8,211.000		1,249.000		9,460.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	37,595.000		4,994.000		42,589.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	3,147.000		4,498.000		7,645.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	33,952.000		5,491.000		39,443.000	
	672-6007	REFL PAV MRKR TY I-C	EA	100.000		5.000		105.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	79.000		506.000		585.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA	414.000		64.000		478.000	
	730-6107	FULL - WIDTH MOWING	CYC	1.000		1.000		2.000	
	760-6001	DITCH CLEANING AND RESHAPING (FOOT)	LF	1,180.000				1,180.000	
	780-6002	CNC CRACK REPAIR (DISCRETE)(INJECT)	LF	37.000				37.000	
	3077-6023	SP MIXESSP-CSAC-B PG70-22	TON	17,504.000		1,970.000		19,474.000	
	3077-6075	TACK COAT	GAL	17,504.000		1,970.000		19,474.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	1.000		1.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	65.000		8.000		73.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	27.000		4.000		31.000	
08		CONTRACTOR FORCE ACCOUNT EROSION CONTROL MAINTENANCE (NON-PARTICIPATING)	LS	1.000				1.000	
		CONTRACTOR FORCE ACCOUNT RAILROAD FLAGGING (NON-PARTICIPATING)	LS	1.000				1.000	
		CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)	LS	1.000				1.000	
		CONTRACTOR FORCE ACCOUNT LAW ENFORCEMENT (NON-PARTICIPATING)	LS	1.000				1.000	



SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS													
LOCATION	LENGTH	662	662	666	666	666	666	666	666	666	6001	6185	6185
		6109	6111	6171	6174	6178	6182	6208	6210	6002	6002	6005	
		WK ZN PAV MRK SHT TERM (TAB)TY W	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	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) 24" (SLD)	REFL PAV MRK TY II (Y) 6" (BRK)	REFL PAV MRK TY II (Y) 6" (SLD)	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)	
STA	STA	FT	EA	EA	LF	LF	LF	LF	LF	EA	DAY	DAY	
CCSJ: 0095-04-074													
17+65.50	39+00.00	2134.50	686		2669	10673	228			8538			
39+00.00	63+00.00	2400.00	766		3000	12000	720			9600			
63+00.00	87+00.00	2400.00	766		3000	12000				9600			
87+00.00	111+00.00	2400.00	766		3000	12000	234			9600			
111+00.00	135+00.00	2400.00	766		3000	12000	456	72		9600	1	65	
135+00.00	157+26.26	2226.26	714		2783	11132				8906			
193+06.33	207+00.00	1393.67	464	279	1743	6969	684			5575			
207+00.00	224+50.00	1750.00	571	350	2188	8750	108	156	3147	7000			
CCSJ: 0095-04-074 TOTALS		17104.43	5499	629	21383	85524	2430	228	3147	68419	1	65	27
CSJ: 0095-05-060													
224+50.00	231+00.00	650.00	195	130	813	3250			1300	2600	1	8	4
231+00.00	249+51.83	1851.83	556	371	2315	9260	160	68	3198	7408			
CSJ: 0095-05-060 TOTALS		2501.83	751	501	3128	12510	160	68	4498	10008	1	8	4
PROJECT TOTALS		19606.26	6250	1130	24511	98034	2590	296	7645	78427	2	73	31

SUMMARY OF ROADWAY ITEMS									
LOCATION	LENGTH	ACP WIDTH	AREA	134	351	354	3077	3077	TACK COAT
				6004	6073	6002	6023	6075	
				BACKFILL (TY A OR B)	FLEXIBLE PAVEMENT STRUCTURE REPAIR (4"-6")	PLAN & TEXT ASPH CONC PAV (0" TO 2")	SP MIXES SP-C SAC-B PG 70-22		
STA	STA	LF	LF	SY	STA	SY	SY	TON	GAL
CCSJ: 0095-04-074									
17+65.50	39+00.00	2134.50	85.00	20159	6	2016	20160	2218	2218
39+00.00	63+00.00	2400.00	80.00	21333		2134	21334	2347	2347
63+00.00	87+00.00	2400.00	72.00	19200	11	1920	19200	2112	2112
87+00.00	111+00.00	2400.00	78.00	20800	5	2080	20800	2288	2288
111+00.00	135+00.00	2400.00	78.00	20800		2080	20800	2288	2288
135+00.00	157+26.26	2226.26	80.00	19789		1979	19789	2177	2177
157+26.26	159+00.00	173.74	37.00	714		72	715	79	79
159+00.00	166+37.13	737.13	37.00	3030	3	304	3031	334	334
193+06.33	207+00.00	1393.67	78.00	12078	6	1208	12079	1329	1329
207+00.00	224+50.00	1750.00	70.00	13611		1362	13612	1498	1498
BACKFILL (25% OF TOTAL STATION) **					52				
ADDITIONAL 5% *							7576	834	834
CCSJ: 0095-04-074 TOTALS		18016	695	151516	83	15155	159096	17504	17504
CSJ: 0095-05-060									
224+50.00	231+00.00	650.00	65.00	4694		470	4695	517	517
231+00.00	249+51.83	1851.83	60.00	12346		1235	12346	1359	1358
ADDITIONAL 5% *							853	94	94
CSJ: 0095-05-060 TOTALS		2502	125	17040		1705	17894	1970	1970
PROJECT TOTALS		20518	820	168556	83	16860	176990	19474	19474

\*\* 25% INCREASE OF TOTAL STATIONS FOR ROADWAY BACKFILL TO ACCOUNT FOR POSSIBLE DIFFERING SITE CONDITIONS.  
 \* 5% INCREASE FOR FOR ITEM 354 AND ITEMS 3077 TO ACCOUNT FOR POSSIBLE DIFFERING SITE CONDITIONS.



**US 80**

**QUANTITY SUMMARY**


SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	13	

SUMMARY OF MBGF ITEMS				CSJ: 0095-04-074										
LOCATION				432	540	540	540	540	540	542	542	544	544	658
				6045	6001	6009	6016	6020	6035	6001	6003	6001	6003	6061
				RIPRAP (MOW STRIP)(4 IN)	MTL W-BEAM GD FEN (TIM POST)	MTL BEAM GD FEN TRANS (T6)	DOWNSTREAM ANCHOR TERMINAL SECTION	MTL W - BEAM GD FEN (LOW FILL CULVERT)	MTL BM GD FEN TRANS (31"-28")	REMOVE METAL BEAM GUARD FENCE	REMOVE DOWNSTREAM ANCHOR TERMINAL	GUARDRAIL END TREATMENT (INSTALL)	GUARDRAIL END TREATMENT (REMOVE)	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2
				CY	LF	EA	EA	LF	EA	LF	EA	EA	EA	EA
NAME	BEGIN STA	END STA	LT OR RT											
BRIDGE #1 (TERRY CREEK)	27+60.71	31+55.18	RT	23	150	2	1		2	50	1	1	1	5
	29+86.96	32+32.22	LT	23	25	2	1		2	50	1	1	1	3
BRIDGE CLASS CULVERT #5	65+47.73	68+80.17	RT	15	125	2	1		2	75	1	1	1	4
	67+76.87	69+26.87	LT	27	127		1	23				1		3
BRIDGE #2 (LAWRENCE CREEK)	70+59.58	74+03.89	RT	15	100	2	1		2	50	1	1	1	4
	72+34.79	75+03.91	LT	23	25	2	1		2	50	1	1	1	3
BRIDGE #3	92+71.71	94+72.92	RT	7	25	2	1		2	100	1	1	1	3
	93+53.00	95+28.00	LT	20	135		1	40				1		3
BRIDGE #4	159+28.06	163+63.16	LT	17	150	2	1		2	100	1	1	1	5
BRIDGE CLASS CULVERT #7	202+15.00	203+90.00	RT	14	153		1	22				1		3
	203+18.00	204+93.00	LT	16	153		1	22				1		3
PROJECT TOTALS				200	1168	14	11	107	14	475	7	11	7	39

SUMMARY OF BRIDGE ITEMS		CSJ: 0095-04-074									
LOCATION		104	132	400	429	432	432	432	480	760	780
		6044	6005	6005	6007	6002	6033	6044	6001	6001	6002
		REMOVING CONC (FLUME)	EMBANKMENT (FINAL)(ORD COMP)(TY C)	CEM STABIL BKFL	CONC STR REPAIR (VERTICAL & OVERHEAD)	RIPRAP (CONC)(5 IN)	RIPRAP (STONE PROTECTION)(18 IN)	RIPRAP (CONC)(FLUME)	CLEAN EXIST CULVERTS	DITCH CLEANING AND RESHAPING (FOOT)	CONC CRCK REPR(DISCRETE)(INJECT)
		SY	CY	CY	SF	CY	CY	CY	EA	LF	LF
NBI: 18-130-0-0095-04-021 STA. 30+71.00			17		26	15	305		1	300	
NBI: 18-130-0-0095-04-022 STA. 68+13.00					13.5				1	280	20
NBI: 18-130-0-0095-04-023 STA. 73+19.00					46				1	200	
NBI: 18-130-0-0095-04-024 STA. 93+98.00					12				1	200	
NBI: 18-130-0-0095-04-026 STA. 203+54.00		4	25	25	1.5	23.1		0.3	1	200	17
ADDITIONAL 50 % *			21								
PROJECT TOTALS		4	63	25	99	38.1	305	0.3	5	1180	37

\* 50% INCREASE FOR ITEM 132, TO ACCOUNT FOR ADDITIONAL QUANTITY THAT MAY BE NEEDED IN NBI: 18-130-0-0095-04-022, NBI: 18-130-0-0095-04-023, AND NBI: 18-130-0-0095-04-024.



**US 80**

**QUANTITY SUMMARY**


SHEET 2 OF 3

COUNT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST		COUNTY	SHEET NO.
DAL		KAUFMAN	14

SUMMARY OF PAVEMENT MARKING ITEMS														
LOCATION	LENGTH	533	666	666	666	666	666	666	666	666	672	672	672	
		6001	6036	6048	6054	6078	6306	6309	6318	6321	6007	6009	6010	
		RUMBLE STRIPS (SHOULDER)	REFL PAV MRK TY I (W)8*(SLD)(10 0MIL)	REFL PAV MRK TY I (W)24*(SLD)(100MIL)	REFL PAV MRK TY I (W)(ARROW)(100MIL)	REFL PAV MRK TY I (W)(WORD)(10 0MIL)	RE PM W/RET REQ TY I (W)6*(BRK)(100MIL)	RE PM W/RET REQ TY I (W)6*(SLD)(10 0MIL)	RE PM W/RET REQ TY I (Y)6*(BRK)(10 0MIL)	RE PM W/RET REQ TY I (Y)6*(SLD)(10 0MIL)	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A	REFL PAV MRKR TY II-C-R	
STA	STA	LF	LF	LF	EA	EA	LF	LF	LF	LF	EA	EA	EA	
CCSJ: 0095-04-074														
17+65.50	39+00.00	2134.50	3162	114	740	1	1	1068	6301		4302	7		54
39+00.00	63+00.00	2400.00	3656	662	221	4	4	1200	5052		4800	35		60
63+00.00	87+00.00	2400.00	4800		1058			1200	6500		4800			60
87+00.00	111+00.00	2400.00	3930	233	374	2	2	1200	5408		4561	12		60
111+00.00	135+00.00	2400.00	4160	230	60	2	2	1166	4681		4658	12		60
135+00.00	159+00.00	2400.00	3884					1114	4453		4321			56
159+00.00	166+37.13	737.13	738					185	738		738			9
193+06.33	207+00.00	1393.67		552	33	5	6	697	2787		2504	30		35
207+00.00	224+50.00	1750.00		62	78	3		381	1675	3147	3268	4	79	20
CCSJ: 0095-04-074 TOTALS		18015.30	24330	1853	2564	17	15	8211	37595	3147	33952	100	79	414
CSJ: 0095-05-060														
224+50.00	231+00.00	650.00				4		325	1300	1300	1300		130	17
231+00.00	249+51.83	1851.83		82	34	9	1	924	3694	3198	4191	5	376	47
CSJ: 0095-05-060 TOTALS		2501.83		82	34	13	1	1249	4994	4498	5491	5	506	64
PROJECT TOTALS		20517.13	24330	1935	2598	30	16	9460	42589	7645	39443	105	585	478

SUMMARY OF EROSION CONTROL ITEMS															
LOCATION	LENGTH	161	162	164	168	506	506	506	506	506	506	506	506	730	
		6017	6002	6051	6001	6003	6011	6020	6024	6038	6039	6041	6043	6107	
		COMPOST MANUF TOPSOIL (4")	BLOCK SODDING	DRILL SEED (TEMP)(WARM OR COOL)	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 3)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTIO N EXITS (INSTALL) (TY 1)	CONSTRUCTIO N EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)	FULL - WIDTH MOWING *	
STA	STA	SY	SY	SY	MG	LF	LF	SY	SY	LF	LF	LF	LF	CYC	
CCSJ: 0095-04-074															
17+65.50	39+00.00	2134.50	1468	1468	1101	383	80	80	156	156	749	749	195	195	
39+00.00	63+00.00	2400.00											330	330	
63+00.00	87+00.00	2400.00	2684	2684	2013	699	140	140	156	156	2820	2820			
87+00.00	111+00.00	2400.00	1135	1135	852	296	70	70	78	78	1018	1018	150	150	
111+00.00	135+00.00	2400.00											300	300	1
135+00.00	159+00.00	2400.00							78	78	35	35	135	135	
159+00.00	166+37.13	737.13	1407	1407	1056	367	130	130			443	443	15	15	
193+06.33	207+00.00	1393.67	1404	1404	1053	366	52	52			626	626	90	90	
207+00.00	224+50.00	1750.00									81	81	30	30	
ADDITIONAL 5%**									24	24	289	289	63	63	
CCSJ: 0095-04-074 TOTALS		2502	8098	8098	6075	2111	472	472	492	492	6061	6061	1308	1308	1
CSJ: 0095-05-060															
224+50.00	231+00.00	650.00											30	30	
231+00.00	249+51.83	1851.83											60	60	1
ADDITIONAL 5%**													5	5	
CSJ: 0095-05-060 TOTALS		2501.83											95	95	1
PROJECT TOTALS		5,004	8,098	8,098	6,075	2,111	472	472	492	492	6,061	6,061	1,403	1,403	2

\* APPROXIMATELY 27 ACRES PER FULL WIDTH MOWING CYCLE (FOR CONTRACTOR'S INFORMATION ONLY).  
 \*\* 5% INCREASE FOR SW3P QUANTITIES TO ACCOUNT FOR REPLACEMENTS DUE TO NORMAL WEAR OR DIFFERING SITE CONDITIONS.



**US 80**

**QUANTITY SUMMARY**

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST		COUNTY	SHEET NO.
DAL		KAUFMAN	15

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## SUGGESTED SEQUENCE OF WORK

### PHASE I - BRIDGE/CULVERT REPAIR

1. ERECT PROJECT SIGNS & ADVANCE WARNING SIGNS IN ACCORDANCE WITH ALL APPLICABLE STANDARDS OR AS DIRECTED BY ENGINEER.
2. PLACE SW3P DEVICES AS PER STANDARD AND AS DIRECTED BY THE ENGINEER. TEMPORARY SW3P EROSION CONTROL MEASURES SHALL ONLY BE PLACED IN AREAS WHERE SOIL DISTURBANCE OR OTHER POTENTIAL POLLUTANT GENERATING ACTIVITIES ARE EXPECTED TO OCCUR WITHIN TWO WEEKS.
3. PERFORM BRIDGE/CULVERT REPAIR WORK, CULVERT CLEANING & DITCH GRADING AS SHOWN IN PLANS.
4. BLOCK SOD AREAS WITH NO FUTURE DISTURBANCE. TEMPORARY DRILL SEED ANY AREA THAT WILL BE RE-DISTURBED AS DIRECTED BY THE ENGINEER AND IN ACCORDANCE WITH DALLAS DISTRICT VEGETATION ESTABLISHMENT STANDARDS.
5. REMOVE TEMPORARY SW3P CONTROL DEVICES AFTER VEGETATION ESTABLISHMENT IN THEIR CONTROL AREA, WHEN AUTHORIZED BY ENGINEER.

### PHASE II - MILL, FLEXIBLE PAVEMENT REPAIR, & INLAY

1. SET BARRICADES & TRAFFIC CONTROL FOR 0-2" MILL AND FLEXIBLE PAVEMENT REPAIR IN ACCORDANCE WITH TCP (1-4), TCP (1-5) & TCP (7-1).
2. PLACE SW3P CONTROL DEVICES AS NEEDED TO PROTECT STORMWATER DRAINAGE FEATURES & RECEIVING WATERS FROM ACTIVITIES IN THEIR RECEIVING AREA.
3. PERFORM 0-2" MILL AS OUTLINED IN THE TYPICAL SECTIONS.
4. PLACE TABS AND TY II STRIPING FOR TEMPORARY PAVEMENT MARKINGS IN ACCORDANCE WITH TCP (3-1), TCP (3-2) & TCP (3-3).
5. PERFORM 6" FLEXIBLE PAVEMENT REPAIR IN ACCORDANCE WITH TCP (1-4), TCP (1-5) & TCP (7-1).
6. PERFORM 2" SP-C INLAY AS SPECIFIED IN THE TYPICAL SECTION AND IN ACCORDANCE WITH TCP(1-4), TCP (1-5) & TCP (7-1). APPLY TACK COAT BEFORE PLACING SUPERPAVE.
7. PLACE TABS AND TY II STRIPING FOR TEMPORARY PAVEMENT MARKINGS IN ACCORDANCE WITH TCP (3-1), TCP (3-2) & TCP (3-3).
8. REMOVE SW3P CONTROL DEVICES AFTER WORK IN THEIR RECEIVING AREA HAS CURED/STABILIZED AND LOOSE MATERIALS CLEANED UP.

### PHASE III - MBGF, SIGNS, BACKFILL, PERMANENT PAVEMENT MARKINGS, SOD, & FINAL CLEAN-UP

1. SET BARRICADES & TRAFFIC CONTROL FOR INSTALATION OF MBGF, SIGNS, BACKFILL, & IN ACCORDANCE WITH TCP (1-1), TCP (1-4), TCP (1-5) OR TCP (2-1) WHEN NEEDED.
2. PLACE SW3P CONTROL DEVICES AS NEEDED TO PROTECT STORMWATER DRAINAGE FEATURES & RECEIVING WATERS FROM ACTIVITIES IN THEIR RECEIVING AREA.
3. REMOVE & INSTALL MBGF, CONSTRUCT MOW STRIPS, AND PLACE RUMBLE STRIPS AS SHOWN IN THE PLANS.
4. REMOVE AND INSTALL SIGNS AS OUTLINED IN THE PLANS.
5. PLACE BACKFILL ALONG PAVEMENT EDGES.
6. INSTALL PERMANENT PAVEMENT MARKINGS & MARKERS, AND RUMBLE STRIPS IN ACCORDANCE WITH TCP (3-1), TCP (3-2) & TCP (3-3).
7. SOD ALL REMAINING DISTURBED AREAS AS DIRECTED BY THE ENGINEER AND IN ACCORDANCE WITH DALLAS DISTRICT VEGETATION ESTABLISHMENT STANDARDS.
8. PERFORM FINAL CLEANUP AS DIRECTED BY THE ENGINEER.
9. TEMPORARY SW3P CONTROL MEASURES SHALL BE REMOVED WITHIN TWO WEEKS OF VEGETATION ESTABLISHMENT IN THEIR CONTROL AREA OR AS APPROVED BY THE ENGINEER.

## TCP GENERAL NOTES

LIMIT THE LENGTH OF DAILY WORK TO THAT AREA OF OPERATION THAT CAN BE COMPLETED IN ONE WORK DAY IN ORDER TO ALLOW FOR TWO-WAY TRAFFIC AT THE END OF WORKDAY. SUCH AREAS MUST NOT EXCEED ONE (1) MILE, UNLESS APPROVED BY THE ENGINEER. WITHIN THE 1 MILE SECTION, ONLY CLOSE OFF THE AREA WHERE ACTUAL WORK IS BEING PERFORMED.

THE CONTRACTOR WILL PROVIDE WRITTEN NOTICE TO THE ENGINEER BEFORE 1:00 PM ON THE BUSINESS DAY PRECEDING PROPOSED LANE CLOSURES. LANE CLOSURES WILL NOT BE PERMITTED WITHOUT THIS NOTIFICATION.

COMPLY WITH TCP (7-1)-13, WHICH INCLUDES PROVISIONS FOR CERTAIN SIGNS TO BE INSTALLED AND TO REMAIN UNTIL PERMANENT PAVEMENT MARKINGS ARE IN PLACE. THESE SIGNS ARE IN ADDITION TO SIGNS THAT MAY BE REQUIRED BY THE VARIOUS TCP AND BC STANDARDS.

THE CONTRACTOR SHALL COVER OR REMOVE ANY CONFLICTING SIGNS OR PAVEMENT MARKINGS DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER AND THIS WORK SHALL BE SUBSIDIARY TO ITEM 502.

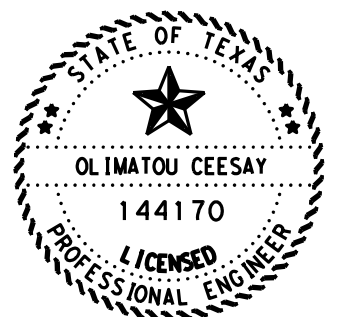
THE CONTRACTOR WILL PROVIDE AND MAINTAIN SKILLED FLAGGERS EQUIPPED WITH TWO-WAY RADIOS TO HANDLE TRAFFIC THROUGH THE WORK AREAS FOR THE SAFETY AND CONVENIENCE OF THE TRAVELING PUBLIC AND CONTRACTOR PERSONNEL.

AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADS) MAY BE USED AT THE CONTRACTOR'S EXPENSE. IF THE CONTRACTOR CHOOSES TO USE AFADS, TCP (1-6) SHALL BE FOLLOWED.

PAY ATTENTION TO OVERHEAD UTILITIES.

MAINTAIN DRIVEWAY AND SIDE STREET ACCESS AT ALL TIMES WITH AN ALL WEATHER SURFACE CONSISTING OF RAP OR BASE. THIS WORK IS SUBSIDIARY TO ITEM 502.

COORDINATE TCP WITH ADJACENT PROJECTS AS DIRECTED BY THE ENGINEER.



*Olmatou Ceesay*, P.E. 2/27/2023  
 Signature of Registrant & Date



US 80  
 TRAFFIC CONTROL PLAN  
 NARRATIVE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	16	

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**BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:**

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

**WORKER SAFETY NOTES:**


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

**COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES**

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

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

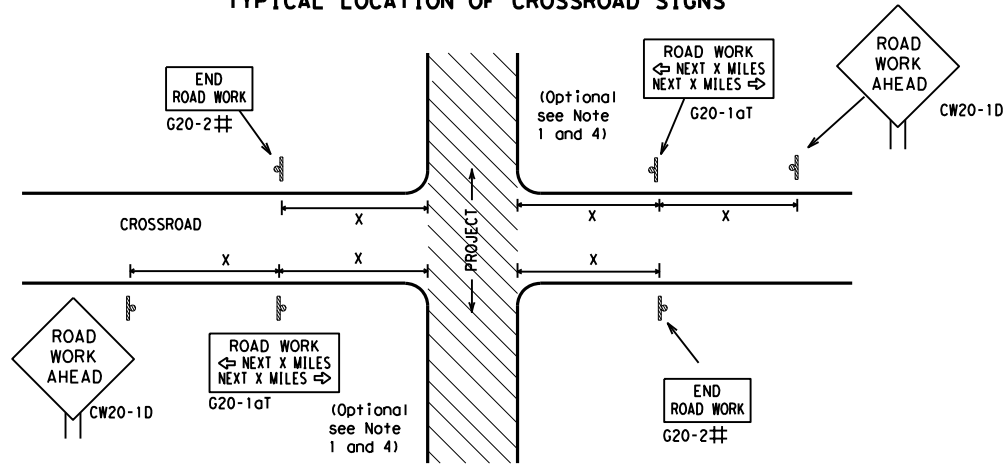
SHEET 1 OF 12

 Texas Department of Transportation		Traffic Safety Division Standard
<p><b>BARRICADE AND CONSTRUCTION          GENERAL NOTES          AND REQUIREMENTS</b></p> <p><b>BC (1) - 21</b></p>		
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© TxDOT November 2002	CONT	SECT
REVISIONS		JOB
4-03 7-13	0095 04	074, ETC.
9-07 8-14	DIST	COUNTY
5-10 5-21	DAL	KAUFMAN
		US 80
		SHEET NO.
		17



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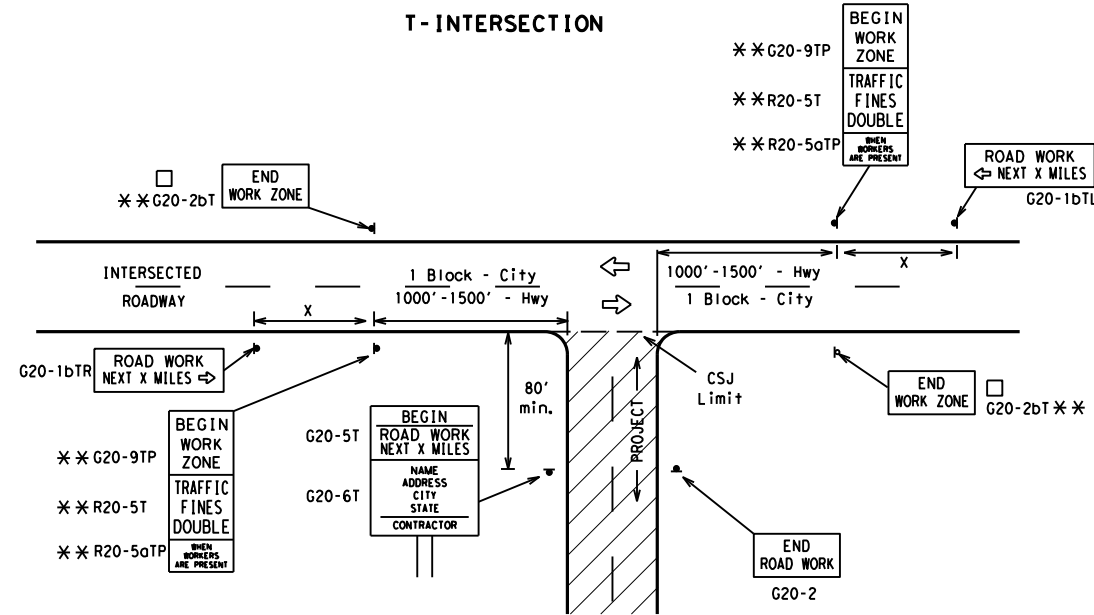
**TYPICAL LOCATION OF CROSSROAD SIGNS**



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

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

**T-INTERSECTION**



**CSJ LIMITS AT T-INTERSECTION**

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

**TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING<sup>1,5,6</sup>**

Sign Number or Series	SIZE		SPACING	
	Conventional Road	Expressway/Freeway	Posted Speed MPH	Sign Δ Spacing "x" Feet (Apprx.)
CW20 <sup>4</sup>	48" x 48"	48" x 48"	30	120
CW21			35	160
CW22			40	240
CW23			45	320
CW25			50	400
CW1, CW2, CW7, CW8, CW9, CW11, CW14	36" x 36"	48" x 48"	55	500 <sup>2</sup>
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12	48" x 48"	48" x 48"	60	600 <sup>2</sup>
			65	700 <sup>2</sup>
			70	800 <sup>2</sup>
			75	900 <sup>2</sup>
			80	1000 <sup>2</sup>
			*	* <sup>3</sup>

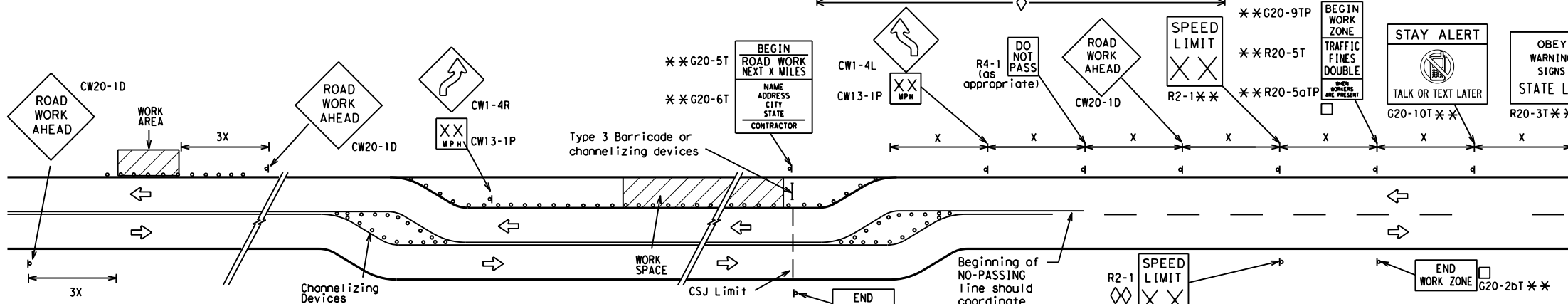
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

**GENERAL NOTES**

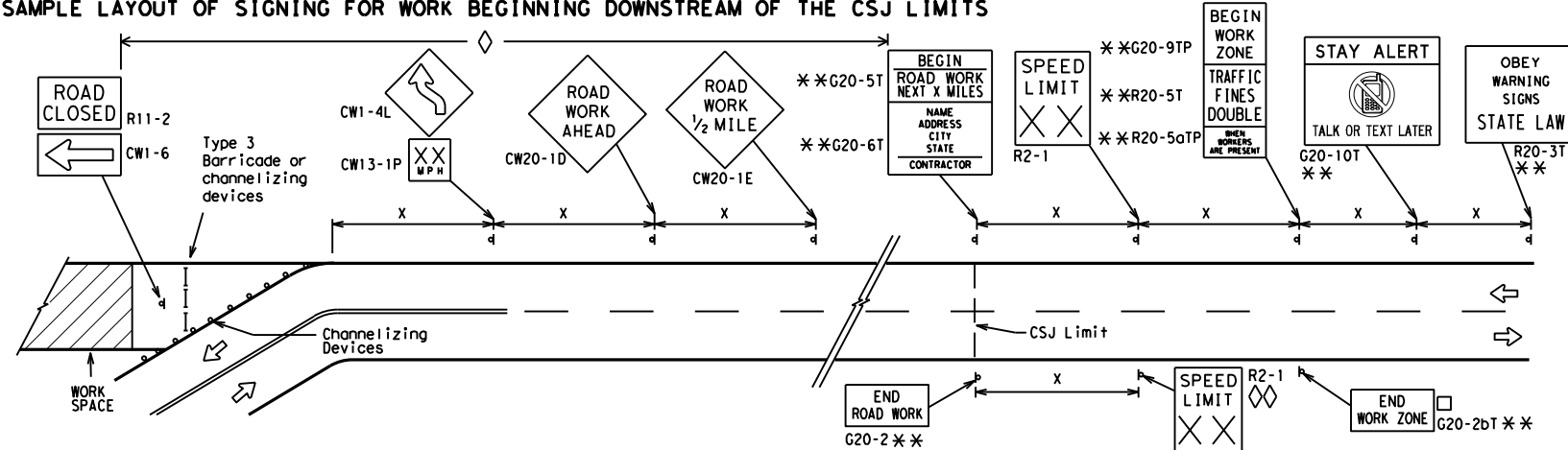
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be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

**WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS**



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

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



**NOTES**

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

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

SHEET 2 OF 12



**BARRICADE AND CONSTRUCTION PROJECT LIMIT**

**BC(2)-21**

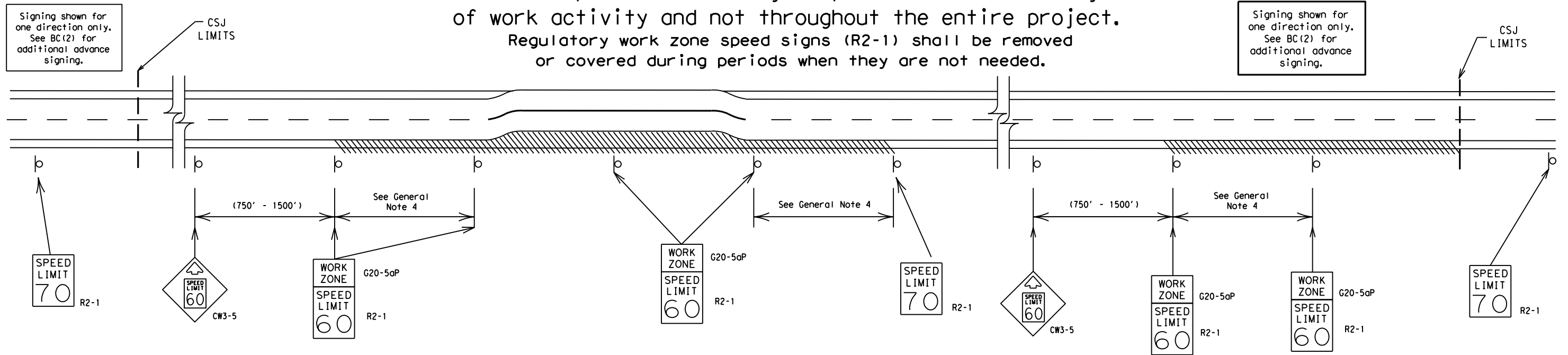
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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS	0095	04	074, ETC.	US 80					
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	DAL	KAUFMAN	18					

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# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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



## GUIDANCE FOR USE:

### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

### SHORT TERM WORK ZONE SPEED LIMITS

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

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

## GENERAL NOTES

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

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

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SHEET 3 OF 12



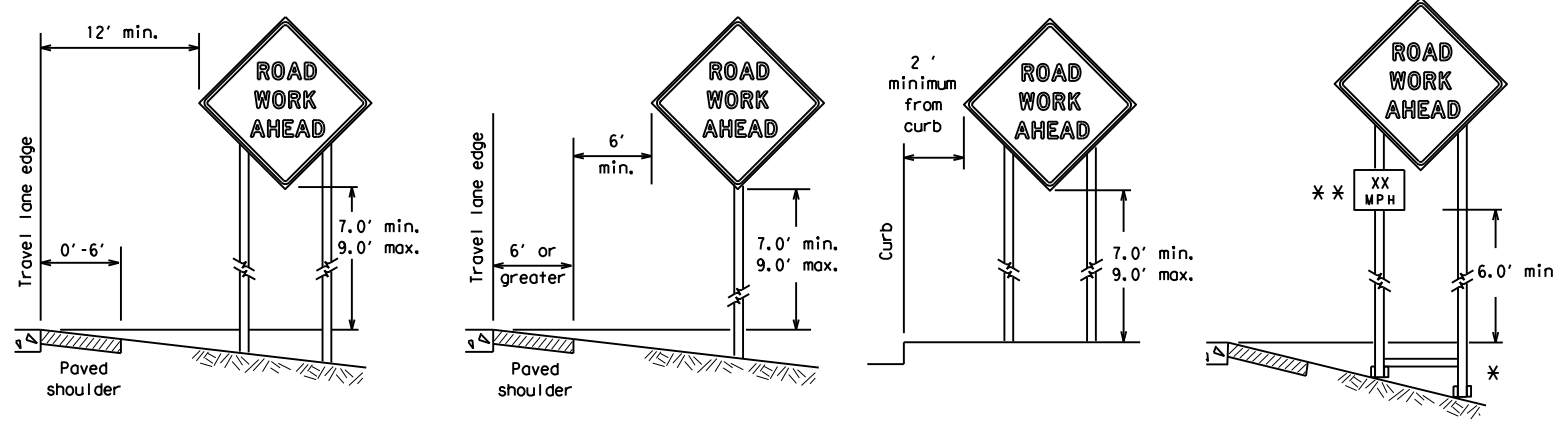
## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

### BC (3) -21

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REVISIONS		0095	04	074, ETC.	US 80
9-07	8-14	DIST	COUNTY	SHEET NO.	
7-13	5-21	DAL	KAUFMAN	19	

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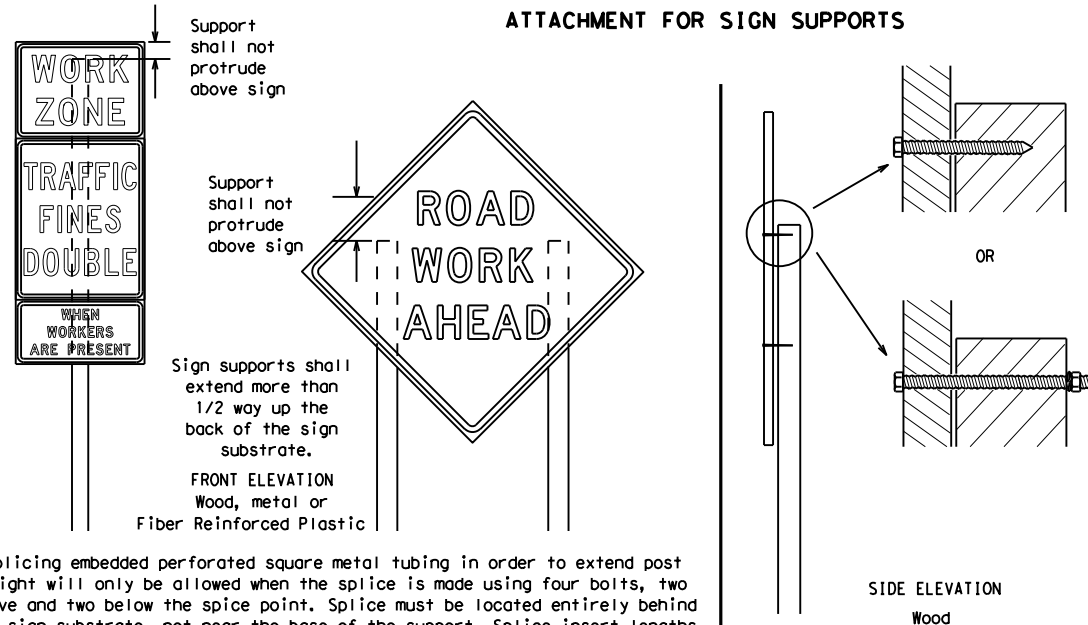
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



\* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

**ATTACHMENT FOR SIGN SUPPORTS**



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

**GENERAL NOTES FOR WORK ZONE SIGNS**

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

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

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

**SIGN MOUNTING HEIGHT**

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

**SIZE OF SIGNS**

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

**SIGN SUBSTRATES**

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

**REFLECTIVE SHEETING**

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

**SIGN LETTERS**

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

**REMOVING OR COVERING**

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

**SIGN SUPPORT WEIGHTS**

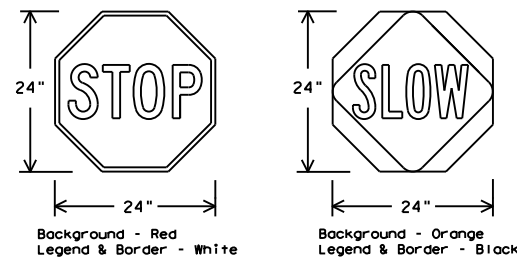
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not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

**FLAGS ON SIGNS**

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

**STOP/SLOW PADDLES**

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



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

**CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS**

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

SHEET 4 OF 12



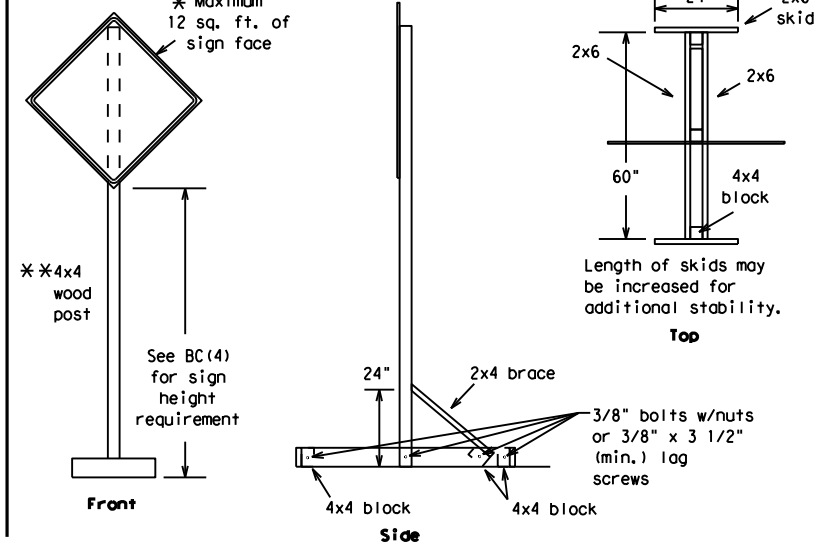
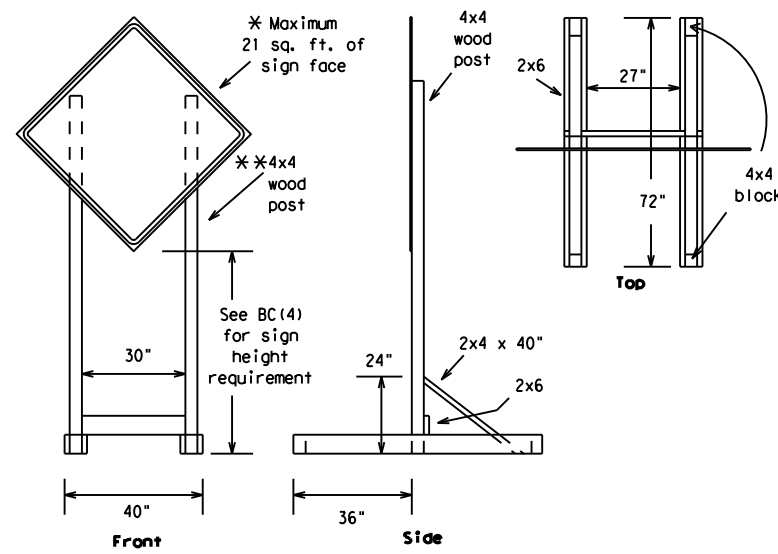
**BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES**

BC (4) - 21

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	OW:	TxDOT	CR:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0095	04	074, ETC.	US 80				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	DAL	KAUFMAN	20					

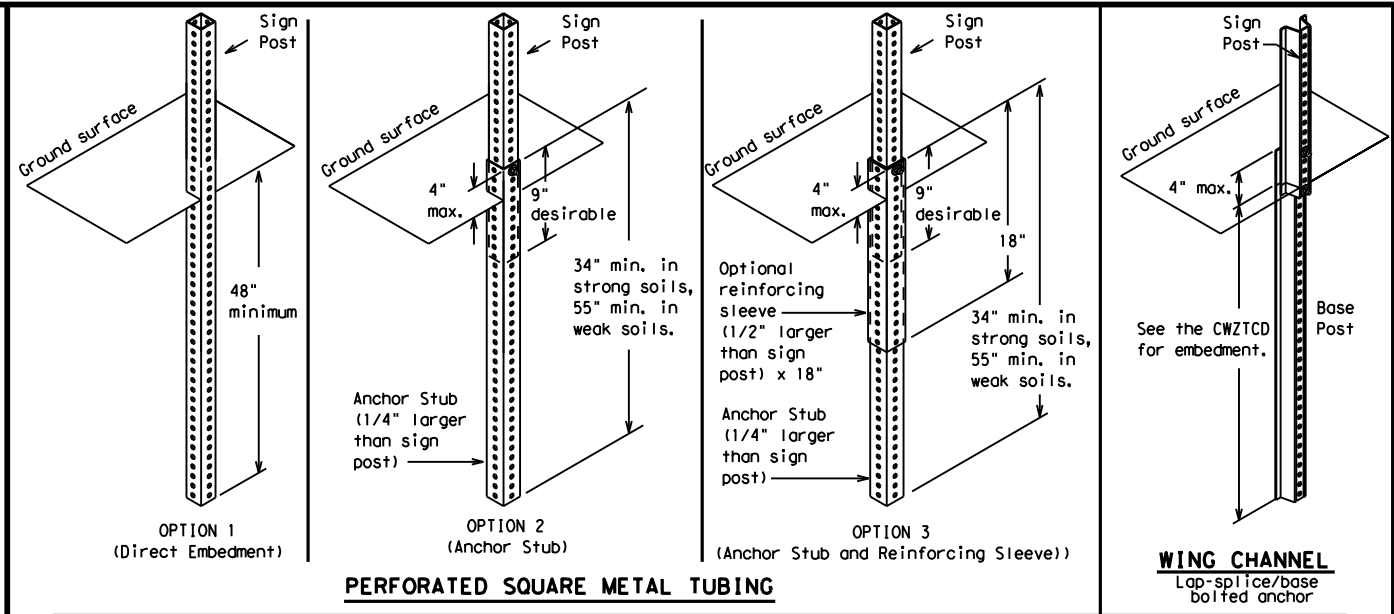
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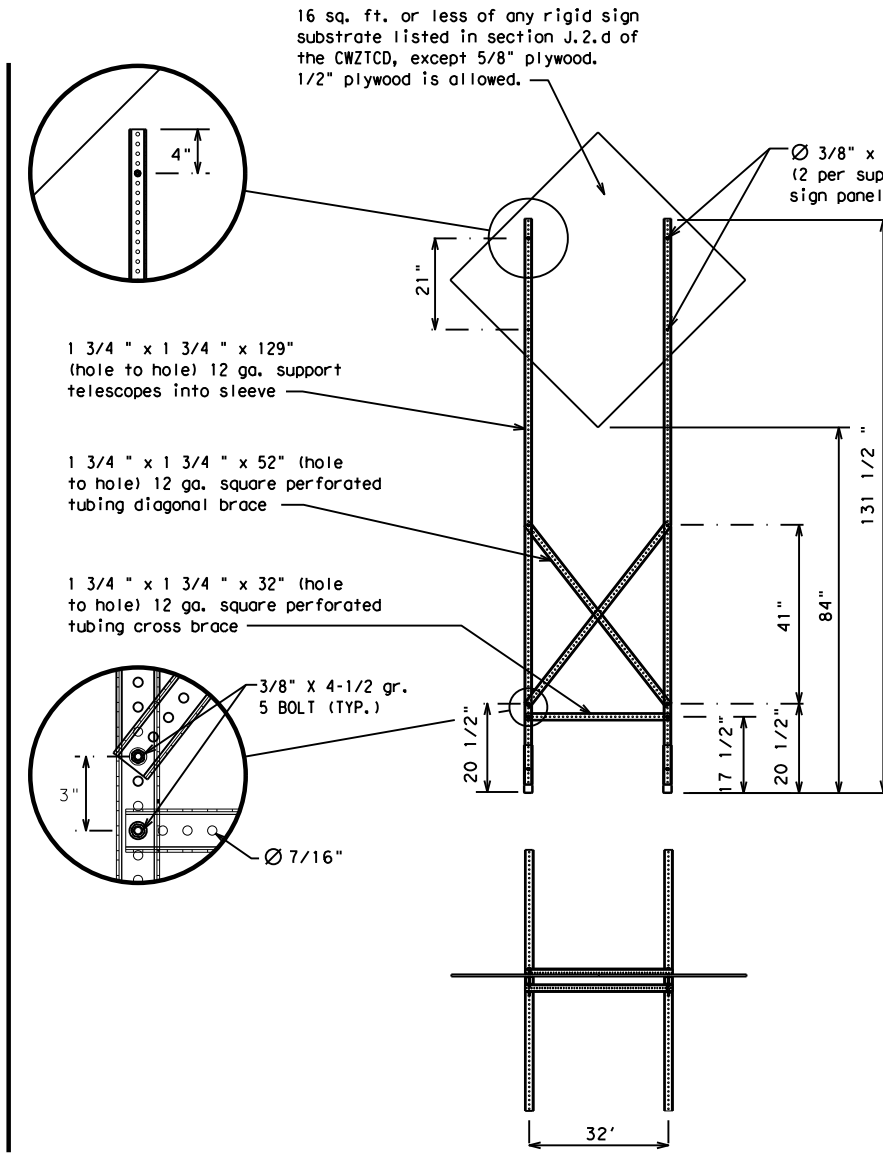
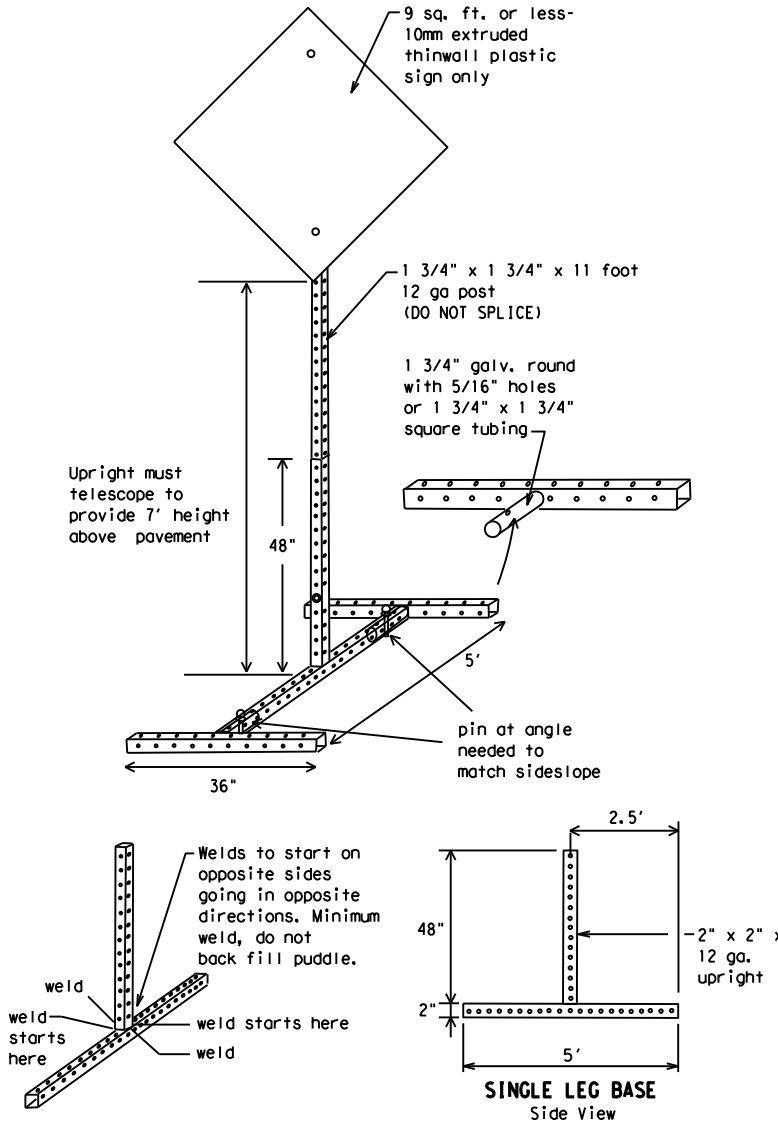
### SKID MOUNTED WOOD SIGN SUPPORTS

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



### GROUND MOUNTED SIGN SUPPORTS

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



### SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

### WEDGE ANCHORS

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

### OTHER DESIGNS

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

### GENERAL NOTES

- 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.
- No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
- When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

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

SHEET 5 OF 12



## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

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© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0095	04	074, ETC.	US 80				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	DAL	KAUFMAN	21					

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

# RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

## PORTABLE CHANGEABLE MESSAGE SIGNS

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

## 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 *	

### Location List

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

### Warning List

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

### \*\* Advance Notice List

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

\*\* See Application Guidelines Note 6.

## APPLICATION GUIDELINES

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

## WORDING ALTERNATIVES

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

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

## FULL MATRIX PCMS SIGNS

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

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DATE: FILE:

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

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



## BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

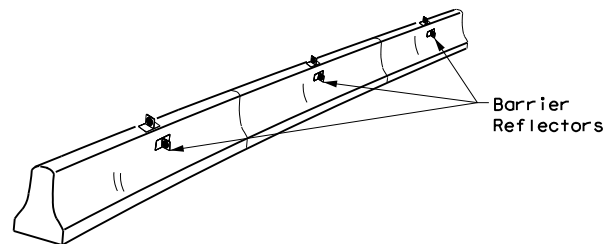
BC (6) - 21

FILE:	bc-21.dgn	DWG: TxDOT	CR: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS		0095	04	074, ETC.	US 80
9-07	8-14	DIST	COUNTY	SHEET NO.	
7-13	5-21	DAL	KAUFMAN	22	



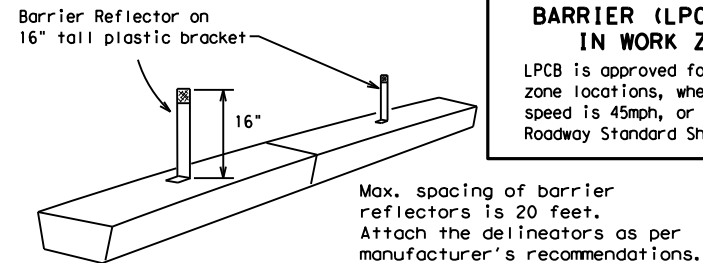
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



**CONCRETE TRAFFIC BARRIER (CTB)**

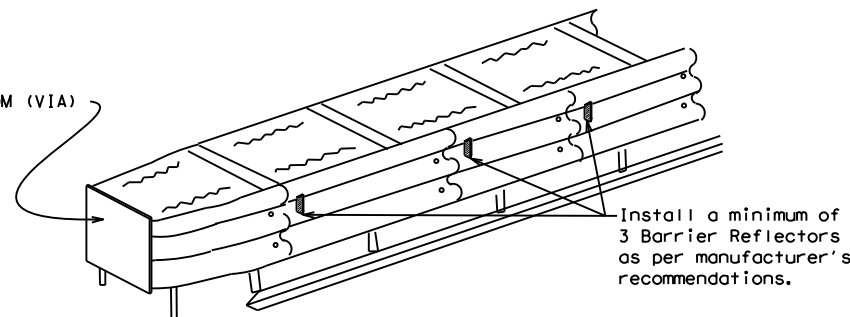
- Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector.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



**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

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

**LOW PROFILE CONCRETE BARRIER (LPCB)**



**DELINEATION OF END TREATMENTS**

**END TREATMENTS FOR CTB'S USED IN WORK ZONES**

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

**BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS**

**WARNING LIGHTS**

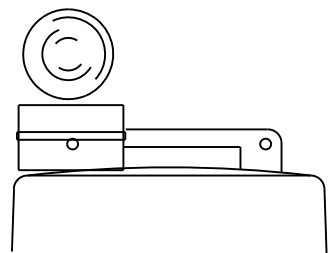
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet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

**WARNING LIGHTS MOUNTED ON PLASTIC DRUMS**

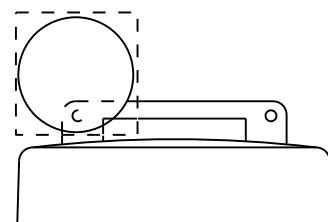
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing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

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

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



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

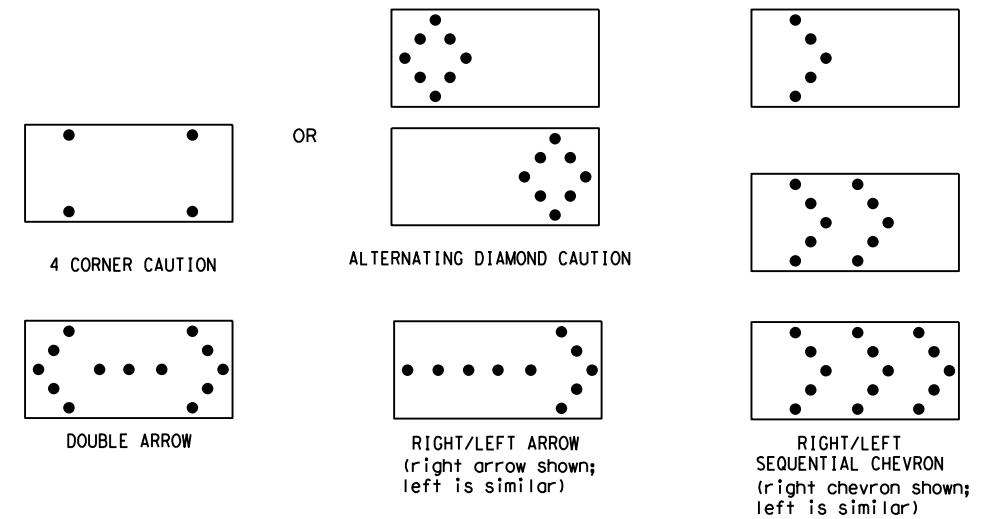


Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

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



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

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

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

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

**FLASHING ARROW BOARDS**

SHEET 7 OF 12

**TRUCK-MOUNTED ATTENUATORS**

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

Texas Department of Transportation  
Traffic Safety Division Standard

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

**BC (7) -21**

FILE:	bc-21.dgn	DW:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0095	04	074, ETC.	US 80				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	DAL	KAUFMAN	23					

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**GENERAL NOTES**

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

**GENERAL DESIGN REQUIREMENTS**

Pre-qualified plastic drums shall meet the following requirements:

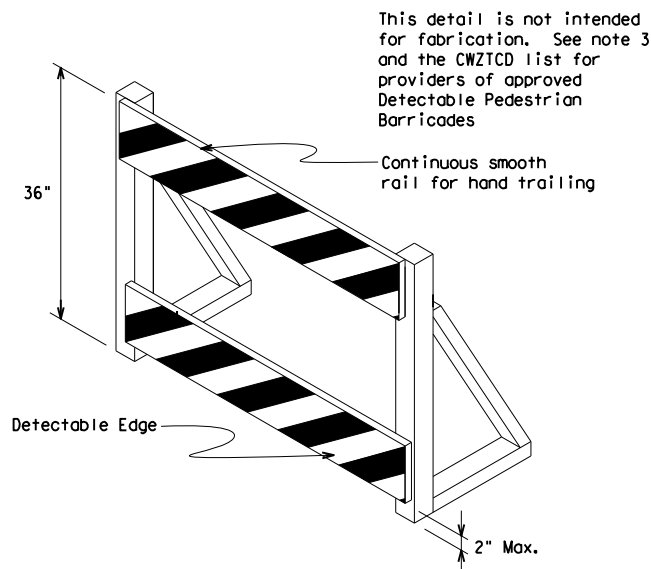
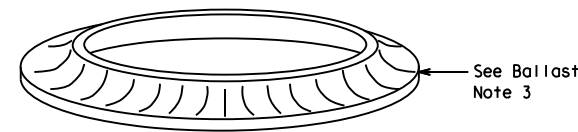
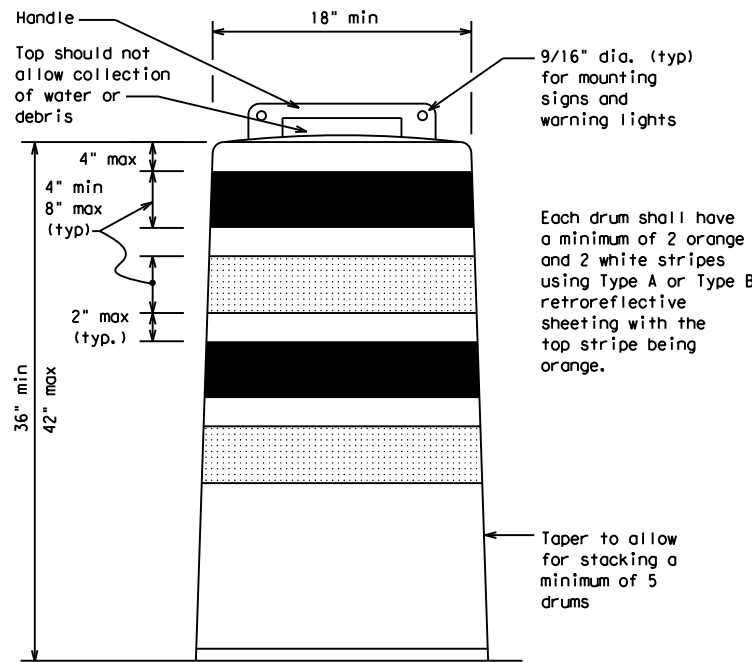
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

**RETROREFLECTIVE SHEETING**

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

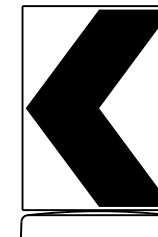
**BALLAST**

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

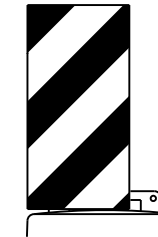


**DETECTABLE PEDESTRIAN BARRICADES**

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



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



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

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

**SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS**

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

SHEET 8 OF 12

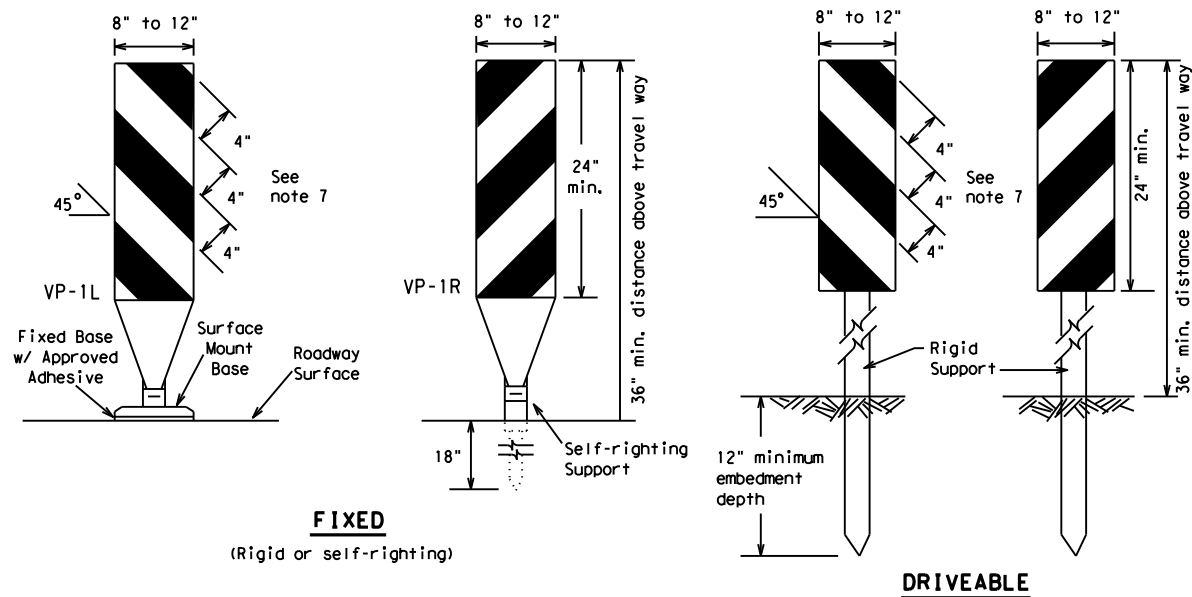


**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (8) - 21**

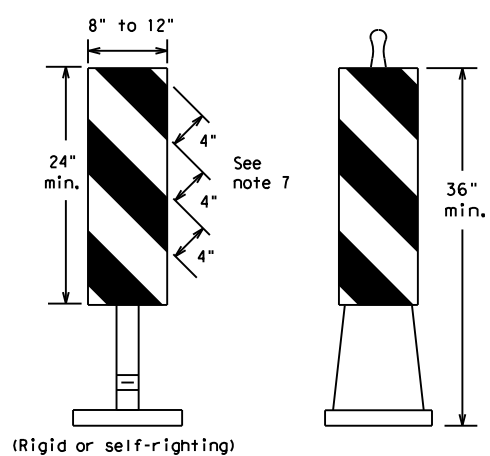
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**FIXED**  
(Rigid or self-righting)

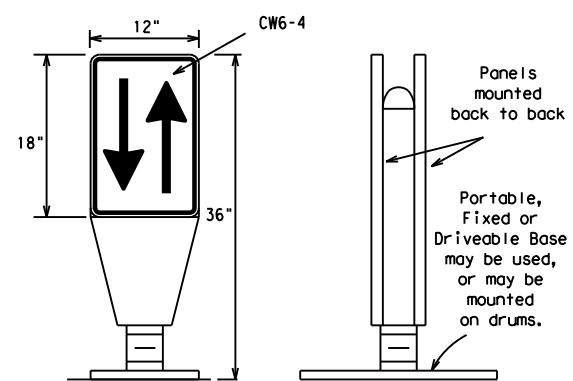
**DRIVEABLE**



**PORTABLE**

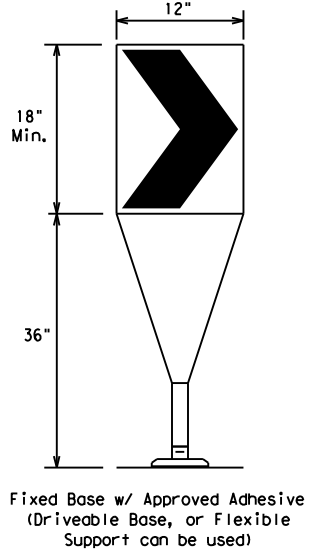
**VERTICAL PANELS (VPs)**

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



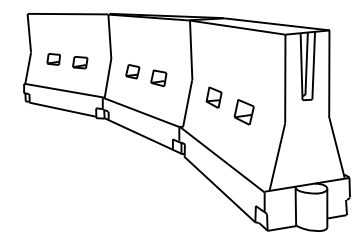
**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

- 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.
- The OTLD may be used in combination with 42" cones or VPs.
- Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
- The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B<sub>FL</sub> or Type C<sub>FL</sub> conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.



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

**CHEVRONS**



**LONGITUDINAL CHANNELIZING DEVICES (LCD)**

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

**WATER BALLASTED SYSTEMS USED AS BARRIERS**

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

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

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

**GENERAL NOTES**

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

Posted Speed	Formula	Minimum Desirable Taper Lengths * *			Suggested Maximum Spacing of Channelizing Devices	
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent
30	L = WS <sup>2</sup> / 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



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (9) - 21**

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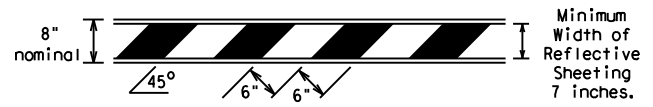
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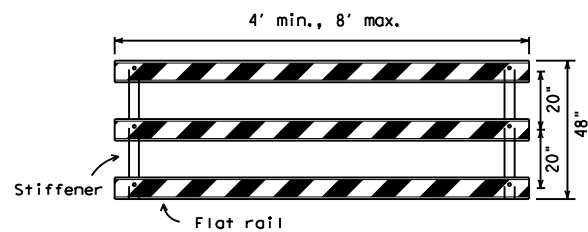
**TYPE 3 BARRICADES**

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

Barricades shall NOT be used as a sign support.



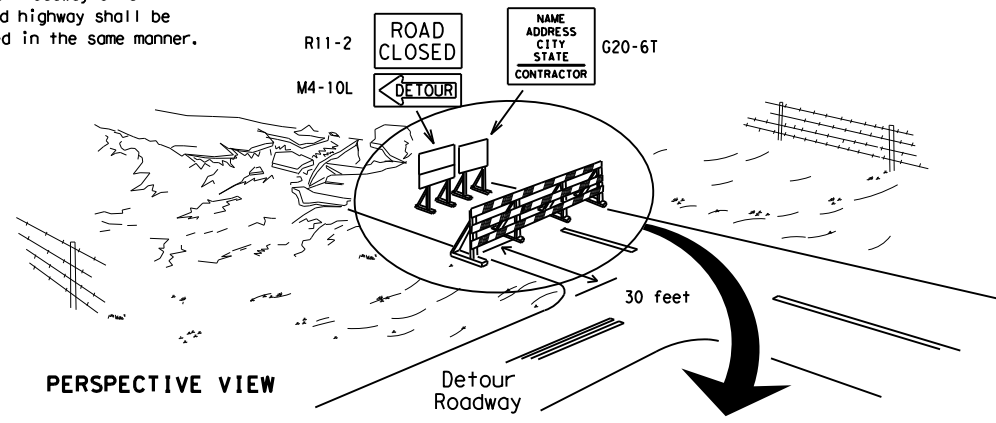
**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



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

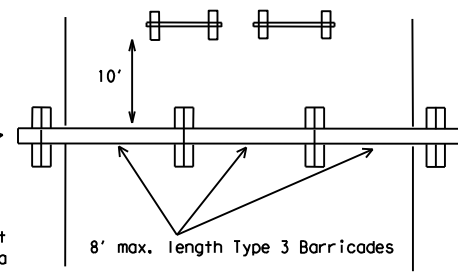
**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**

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



PERSPECTIVE VIEW

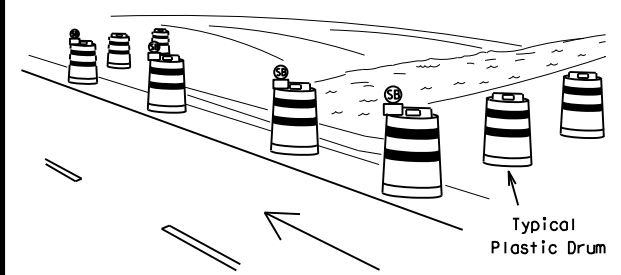
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



PLAN VIEW

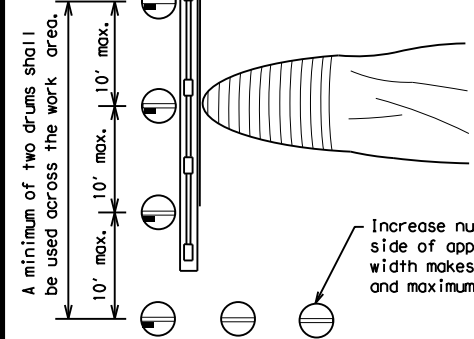
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

**TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION**



PERSPECTIVE VIEW

These drums are not required on one-way roadway



PLAN VIEW

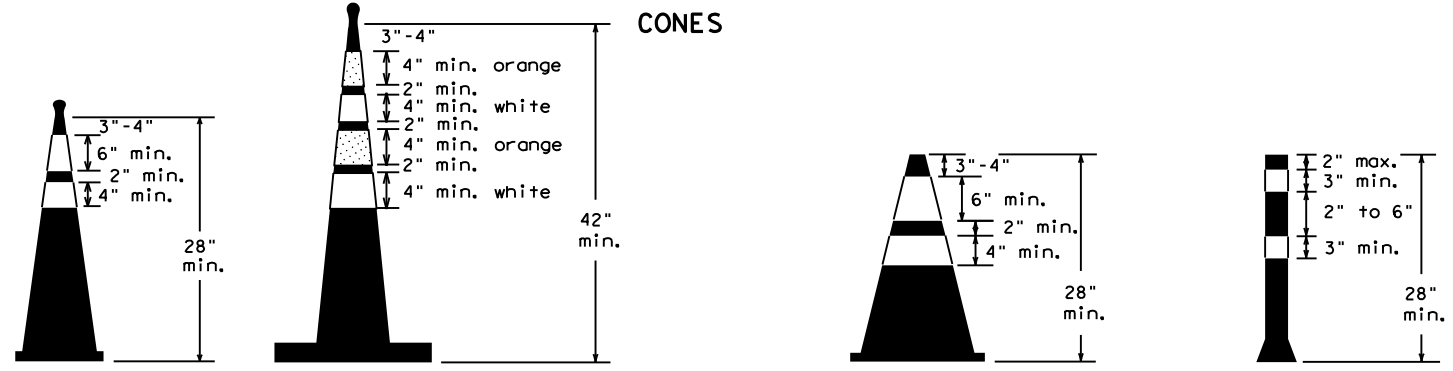
A minimum of two drums shall be used across the work area.

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

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

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

**CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS**

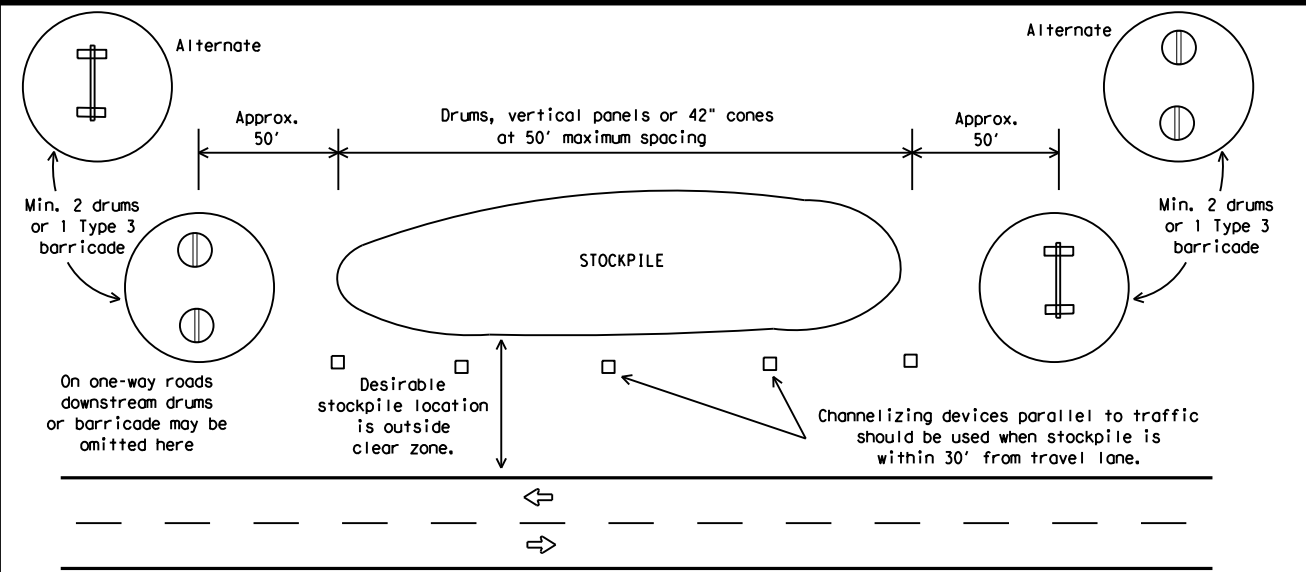


Two-Piece cones

One-Piece cones

Tubular Marker

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



**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**

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



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (10) - 21**

FILE:	bc-21.dgn	DW:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT:	0095	SECT:	04	JOB:	074, ETC.	HIGHWAY:	US 80
REVISIONS		DIST:		COUNTY:		SHEET NO.:			
9-07	8-14	DAL		KAUFMAN				26	
7-13	5-21								

DATE: FILE:

## WORK ZONE PAVEMENT MARKINGS

### GENERAL

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

### RAISED PAVEMENT MARKERS

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

### PREFABRICATED PAVEMENT MARKINGS

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

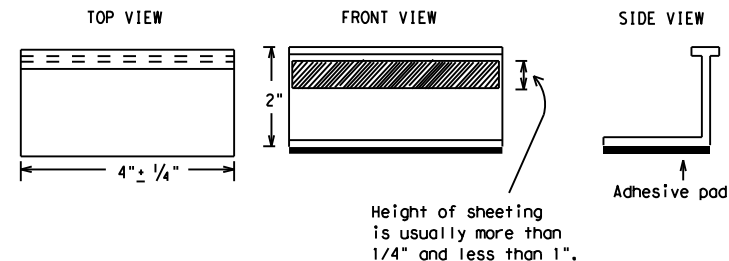
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

### REMOVAL OF PAVEMENT MARKINGS

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

## Temporary Flexible-Reflective Roadway Marker Tabs



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

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

### RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

SHEET 11 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

**BC(11)-21**

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS		0095	04	074, ETC.	US 80
2-98	9-07	5-21			
1-02	7-13				
11-02	8-14				
		DIST	COUNTY		SHEET NO.
		DAL	KAUFMAN		27

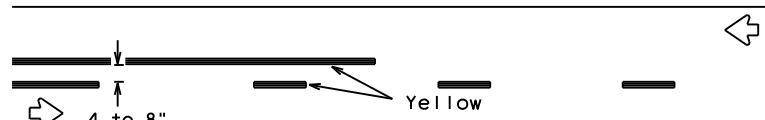
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

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## PAVEMENT MARKING PATTERNS

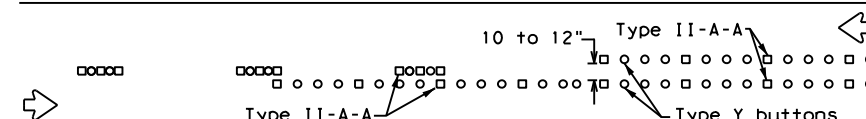


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

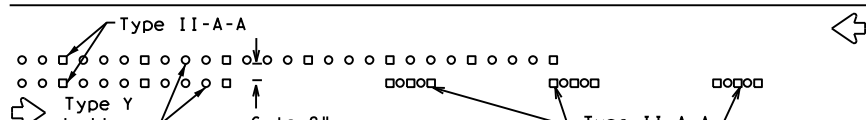


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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.

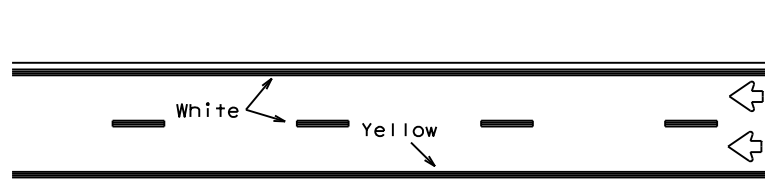


RAISED PAVEMENT MARKERS - PATTERN A



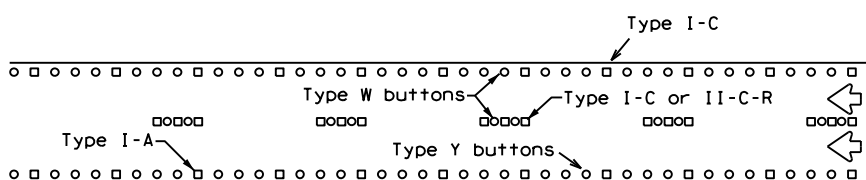
RAISED PAVEMENT MARKERS - PATTERN B

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



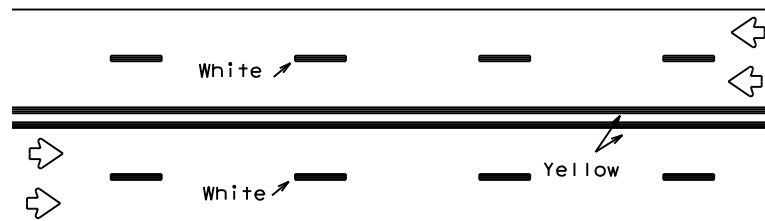
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



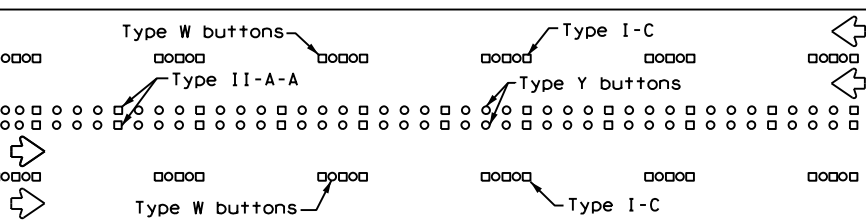
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



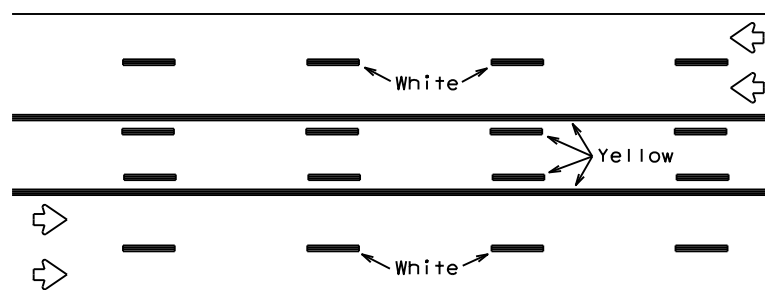
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



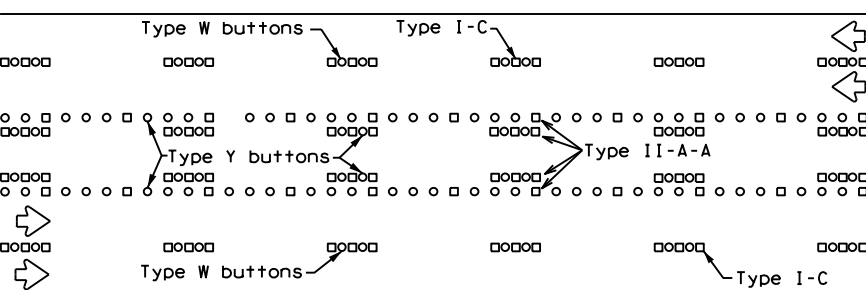
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

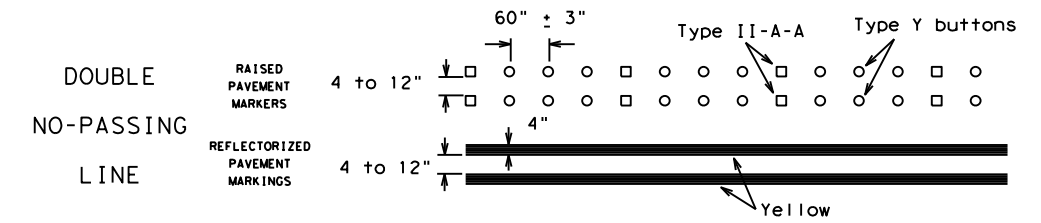
Prefabricated markings may be substituted for reflectORIZED pavement markings.



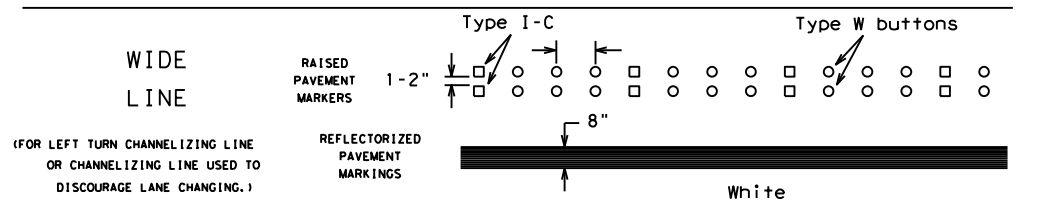
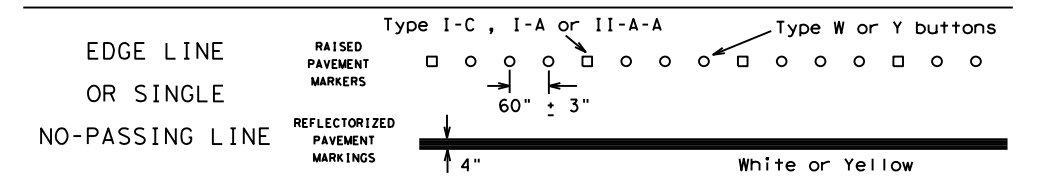
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

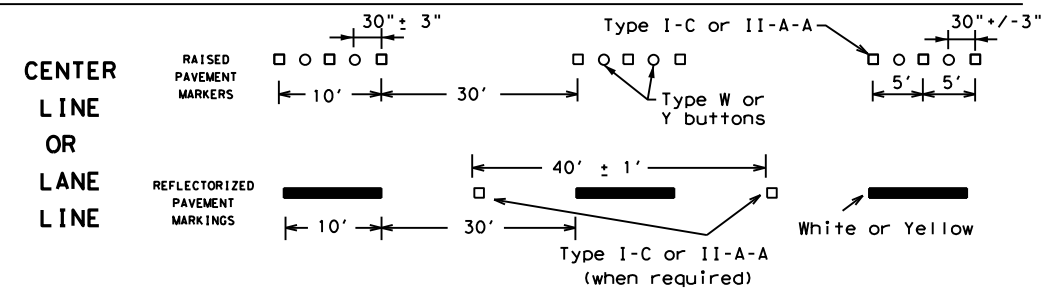
## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



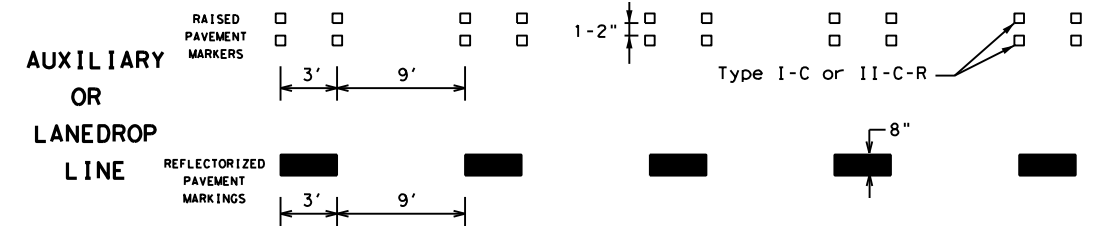
### SOLID LINES



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

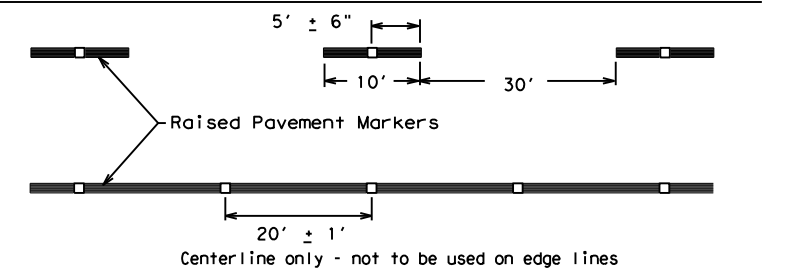


### BROKEN LINES



### REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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."

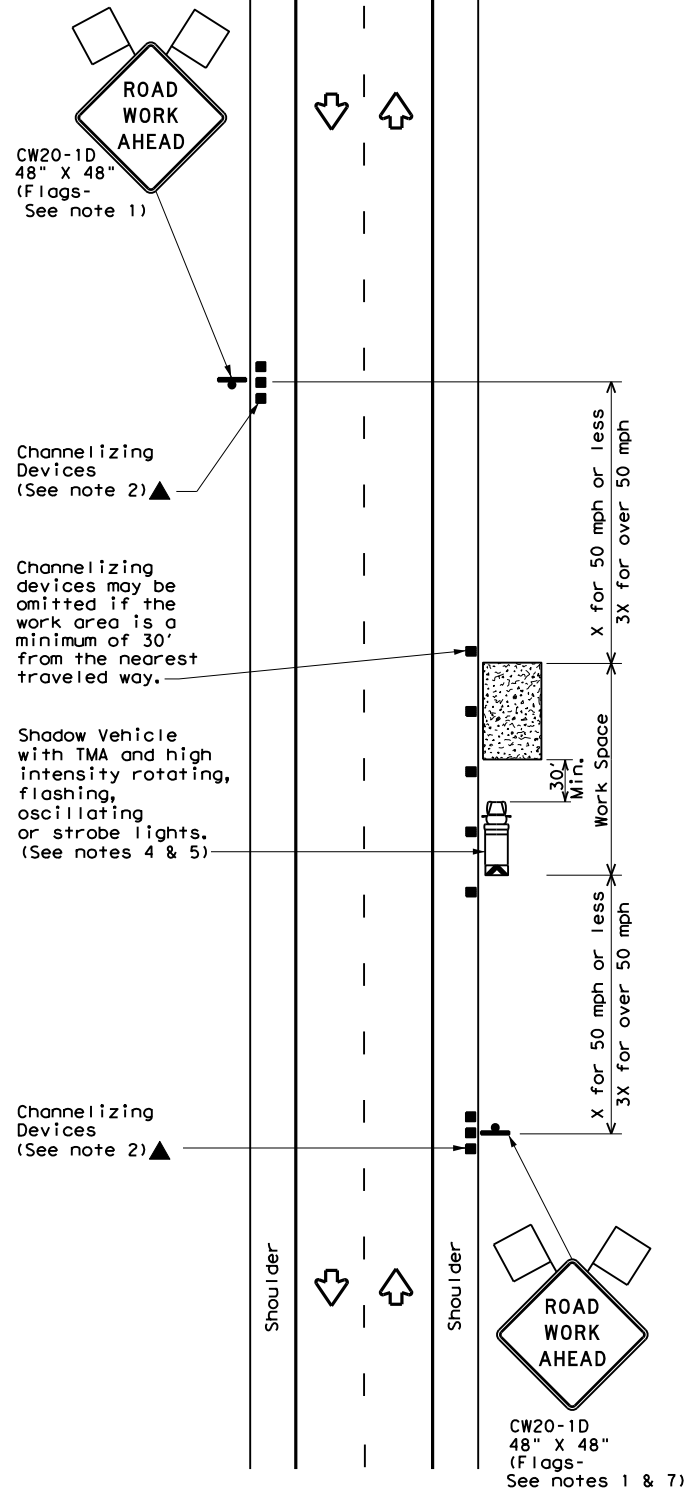
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REVISIONS		0095	04	074, ETC.	US 80					
1-97	9-07	5-21								
2-98	7-13									
11-02	8-14									
DIST	COUNTY	SHEET NO.								
DAL	KAUFMAN	28								

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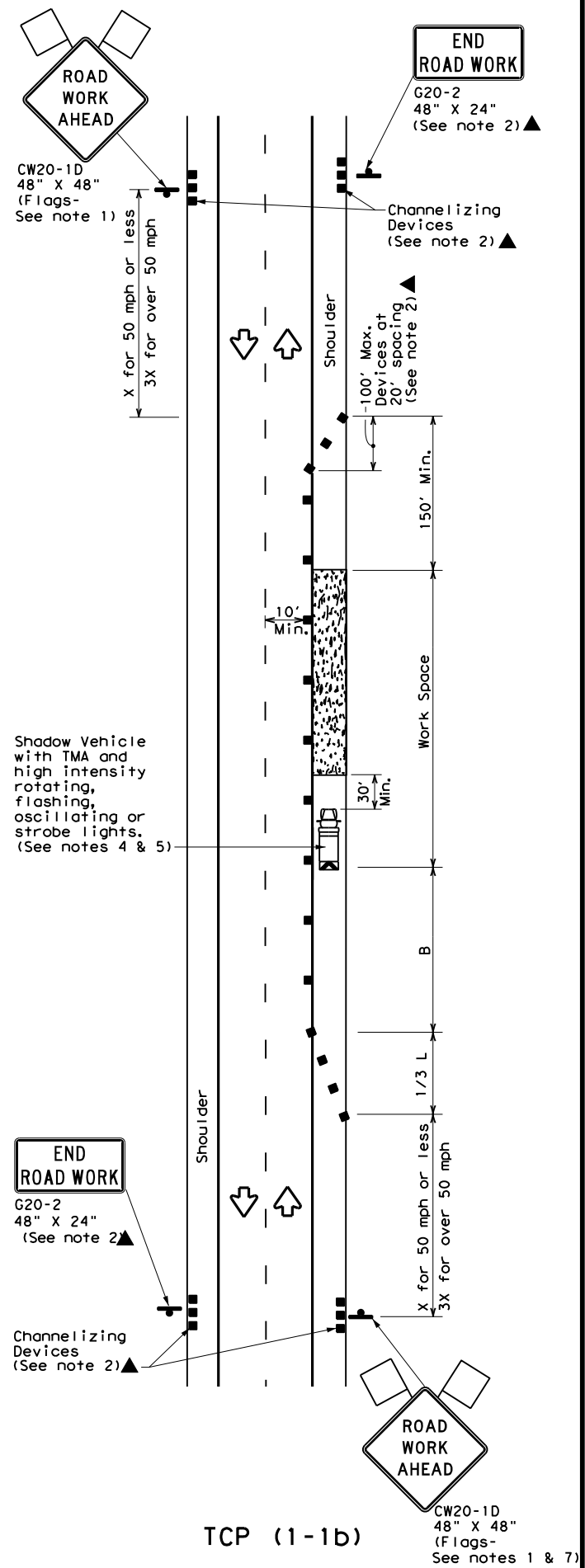


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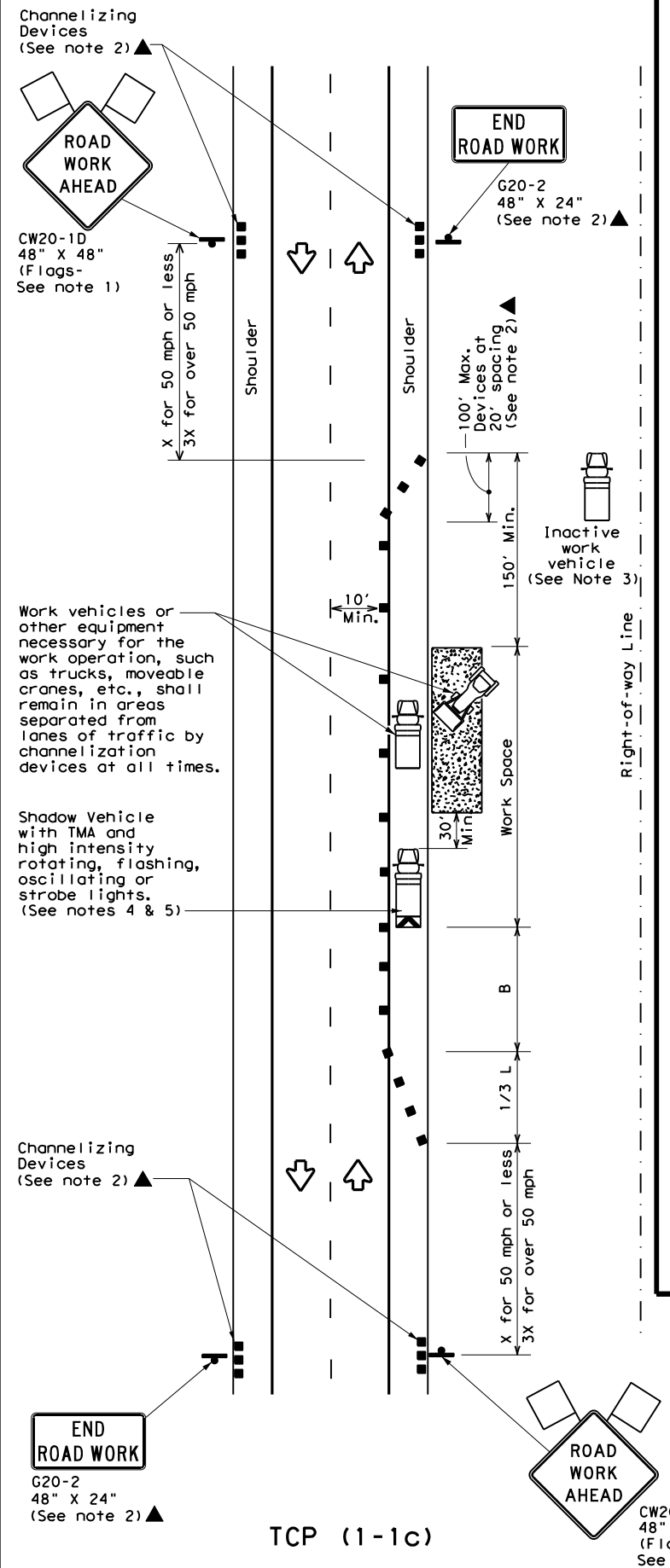
TCP (1-1a)

**WORK SPACE NEAR SHOULDER**  
Conventional Roads



TCP (1-1b)

**WORK SPACE ON SHOULDER**  
Conventional Roads



TCP (1-1c)

**WORK VEHICLES ON SHOULDER**  
Conventional Roads

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

Posted Speed * S	Formula L = WS / 60	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30		150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40		265'	295'	320'	40'	80'	240'	155'
45		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**
- Flags attached to signs where shown are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
  - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
  - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

**TRAFFIC CONTROL PLAN**  
**CONVENTIONAL ROAD**  
**SHOULDER WORK**

**TCP (1-1) - 18**

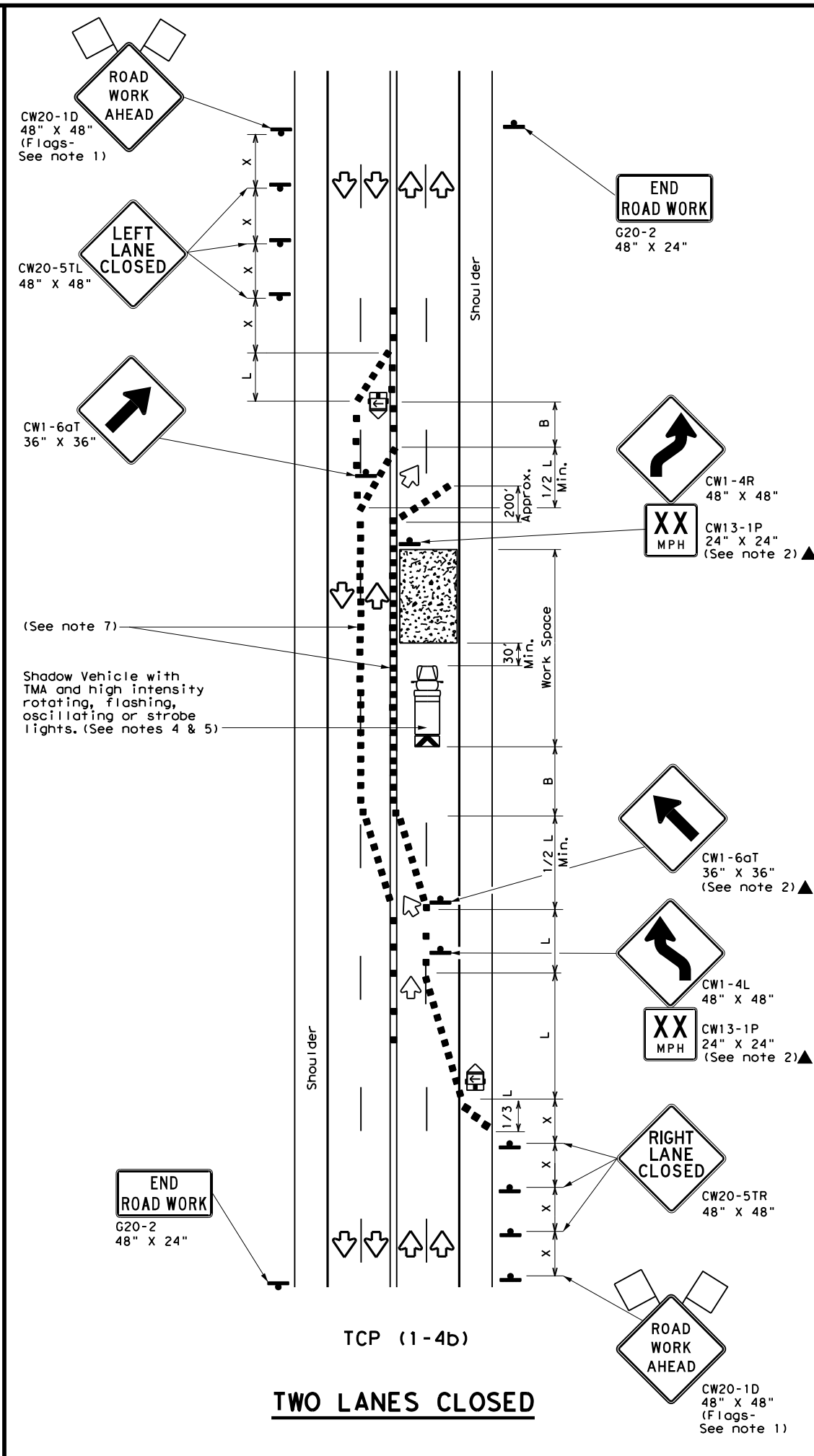
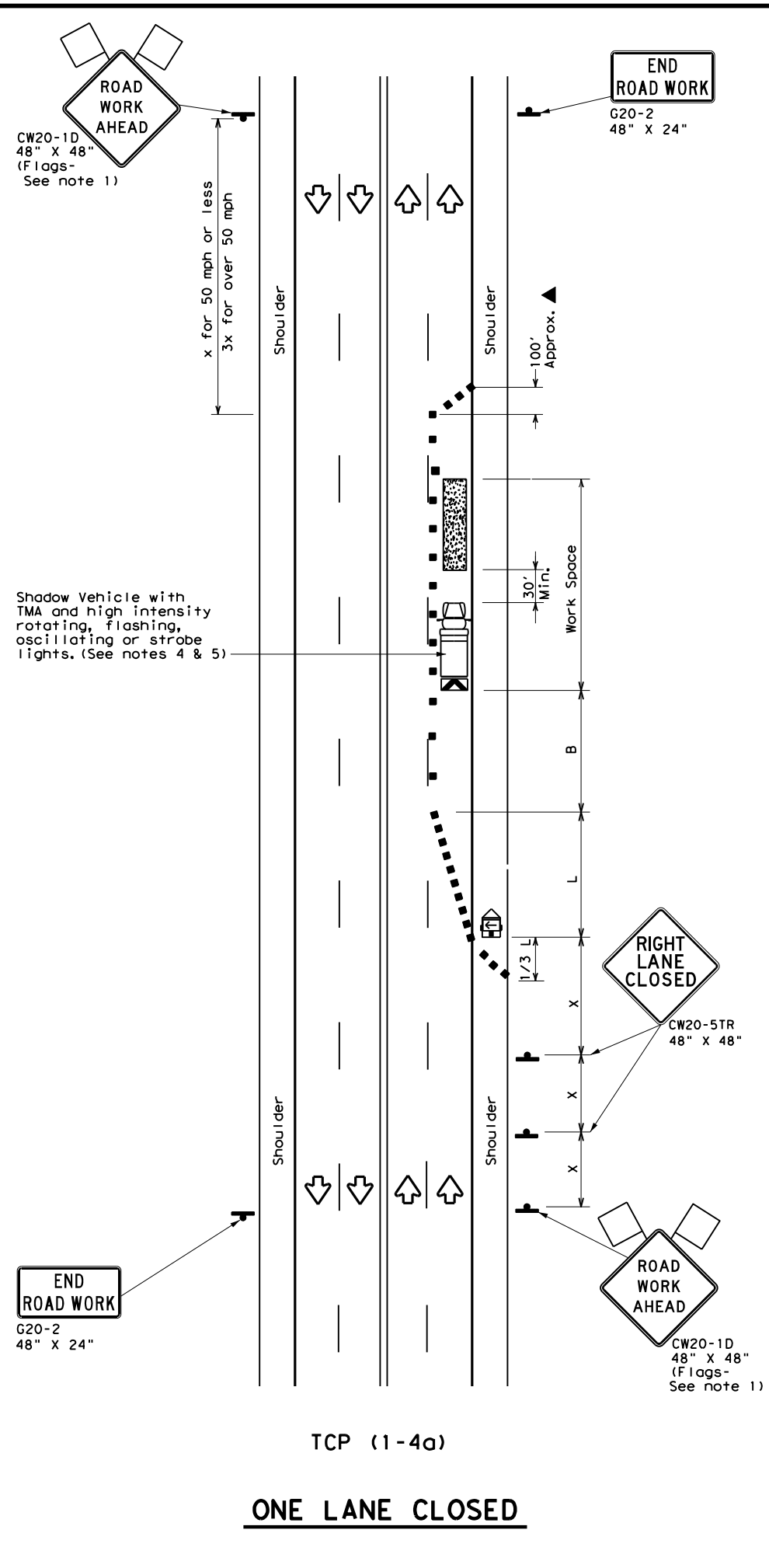
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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2-94 4-98				
8-95 2-12				
1-97 2-18				
	DIST	COUNTY		SHEET NO.
	DAL	KAUFMAN		29

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



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DATE: FILE:



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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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**
- Flags attached to signs where shown are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - The CW20-1D "ROAD WORK AHEAD" sign may be repeated if the visibility of the work zone is less than 1500 feet.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

**TCP (1-4a)**

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 where needed to protect the work space from opposing traffic with the arrow panel placed in the closed lane near the end of the merging taper.

**TCP (1-4b)**

7. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas of conflicting markings, not the entire work zone.

Texas Department of Transportation Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN**  
**LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS**

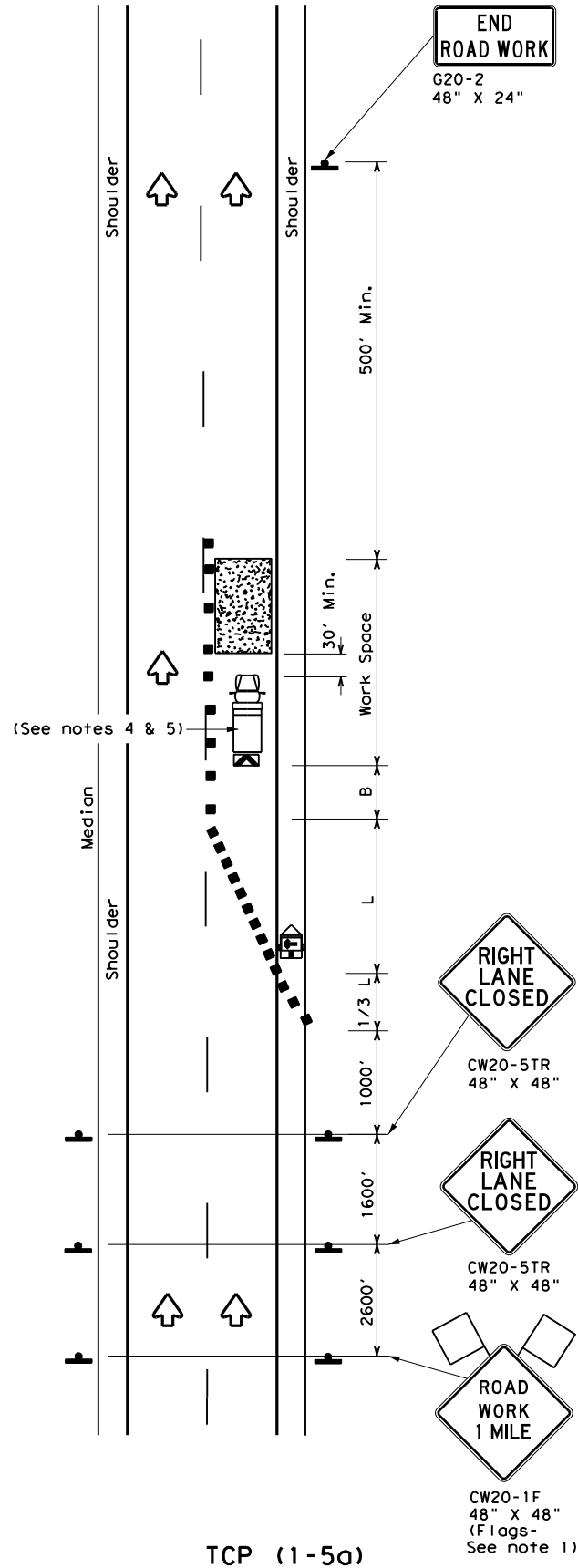
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8-95 2-12				
1-97 2-18				
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	DAL	KAUFMAN	30	

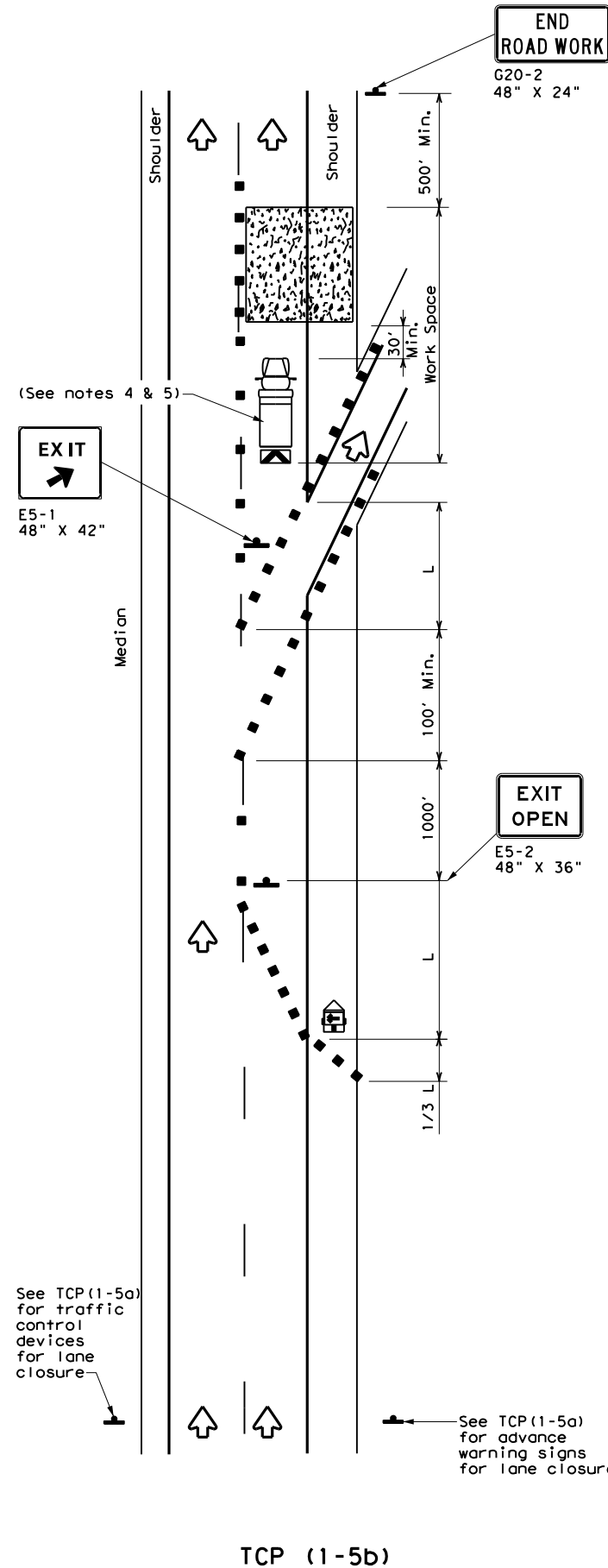
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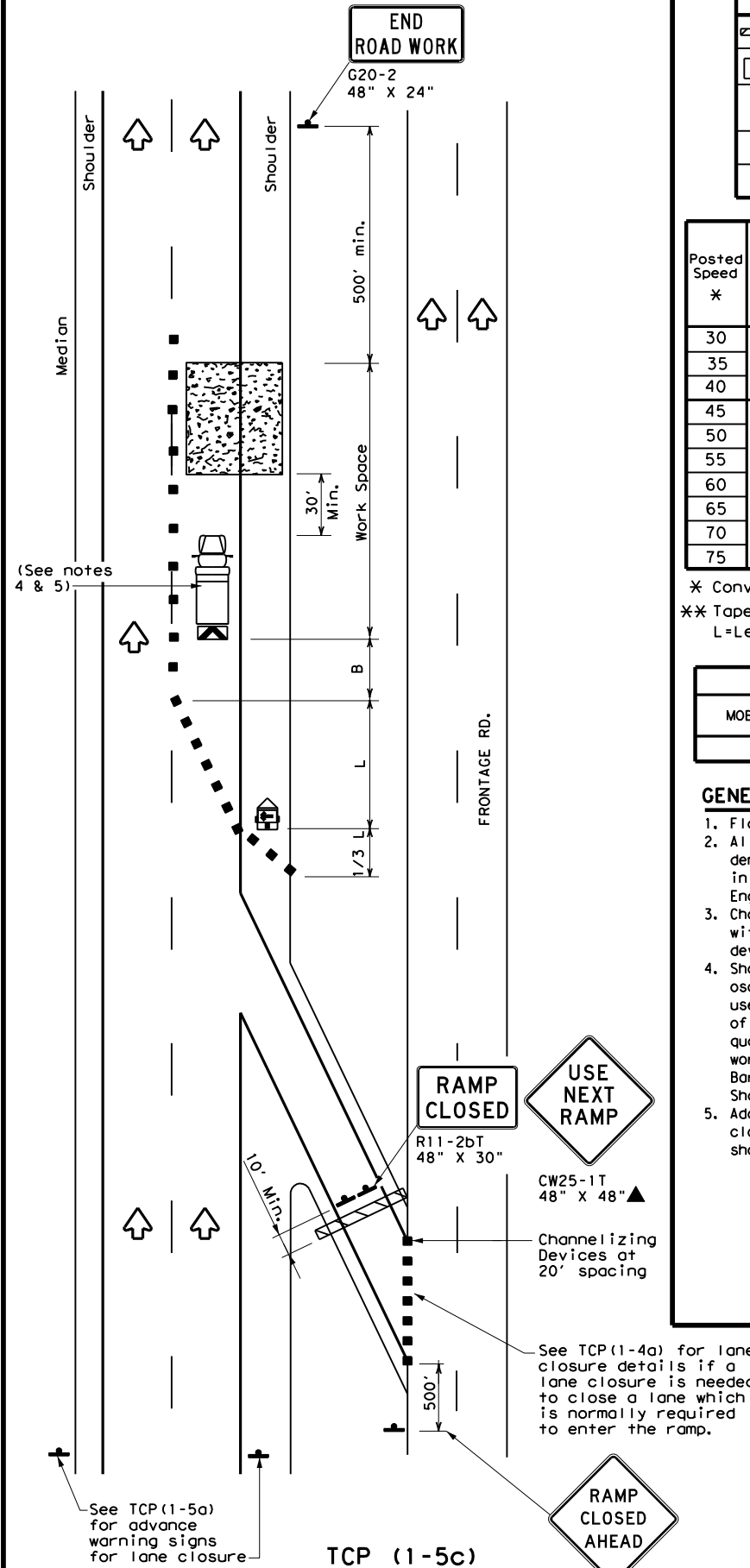
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**ONE LANE CLOSURE**



**LANE CLOSURE NEAR EXIT RAMP**



**LANE CLOSURE NEAR ENTRANCE RAMP**

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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**

- Flags attached to signs where shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- 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.
- 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.
- 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

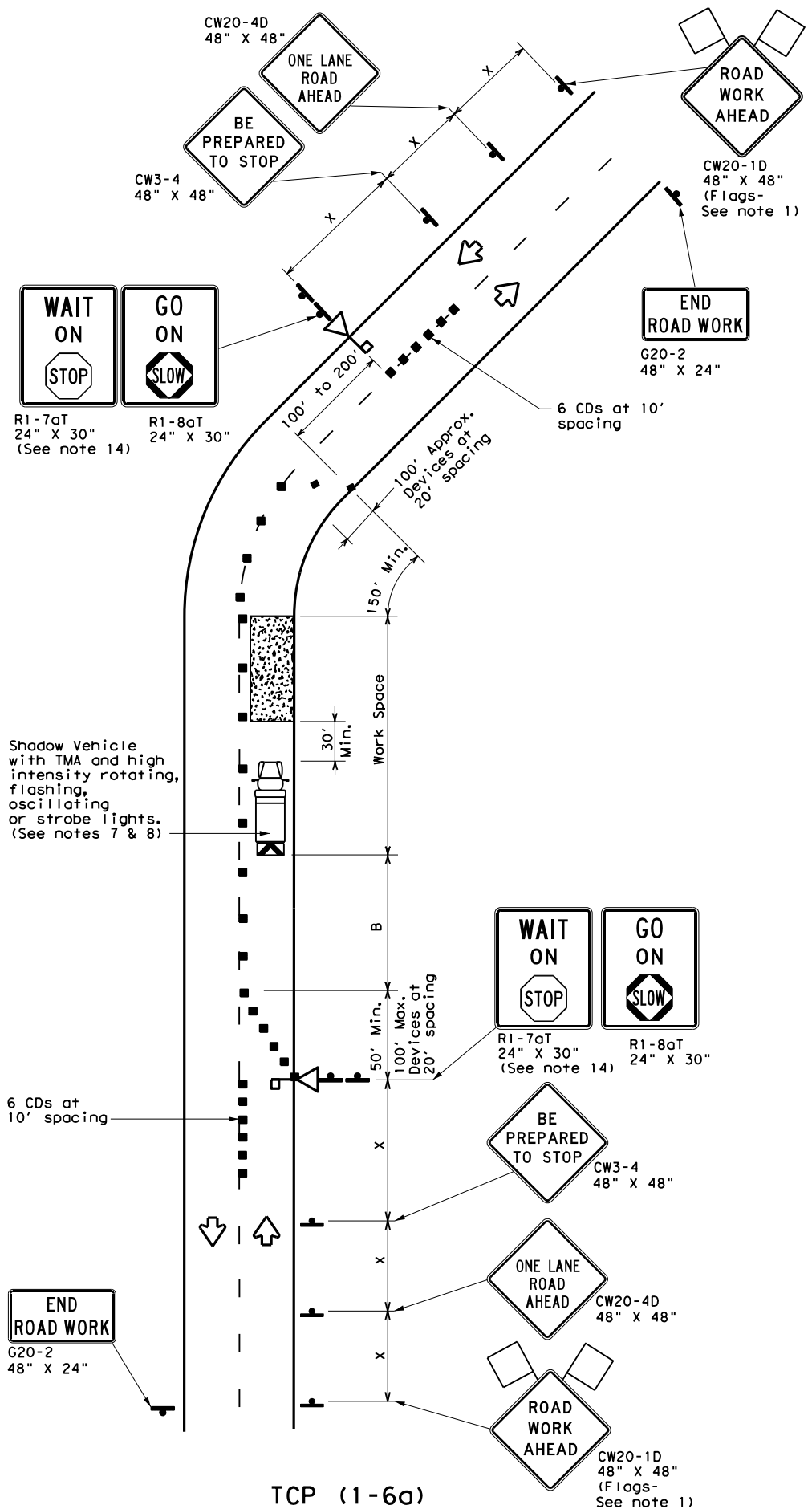
## TRAFFIC CONTROL PLAN LANE CLOSURES FOR DIVIDED HIGHWAYS

### TCP (1-5) - 18

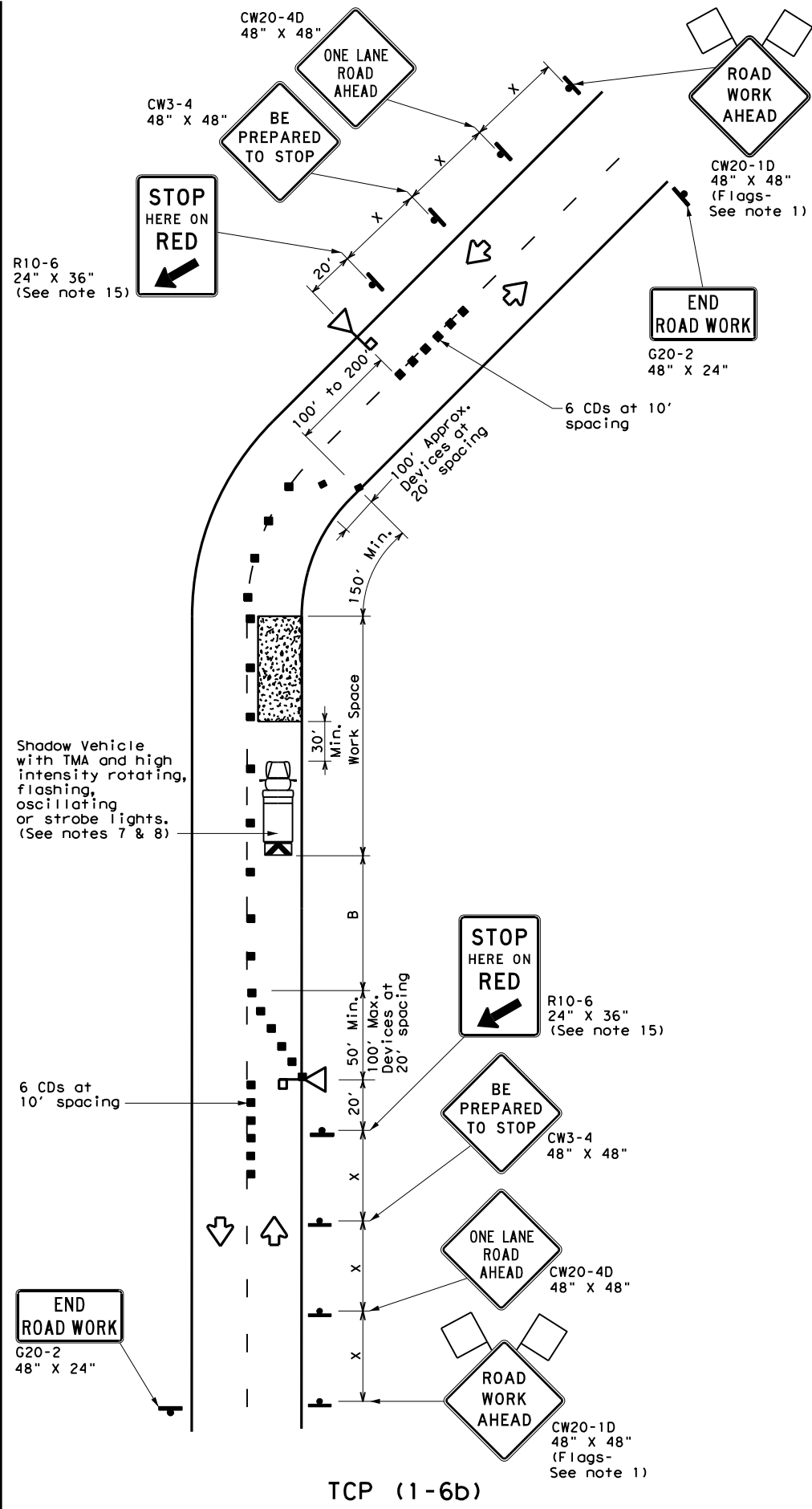
FILE: tcp1-5-18.dgn	DW: _____	CK: _____	DW: _____	CK: _____
© TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
2-18	0095	04	074, ETC.	US 80
	DIST	COUNTY	SHEET NO.	
	DAL	KAUFMAN	31	

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DATE: FILE:



TCP (1-6a)  
ONE LANE TWO-WAY  
CONTROL WITH STOP/SLOW AFADs



TCP (1-6b)  
ONE LANE TWO-WAY CONTROL  
WITH RED/YELLOW LENS AFADs

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Automated Flagger Assistance Device (AFAD)		Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

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

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

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

GENERAL NOTES

- Flags attached to signs where shown are REQUIRED.
- AFADs shall only be used in situations where there is one lane of approaching traffic in the direction to be controlled.
- Adequate stopping sight distance must be provided to each AFAD location for approaching traffic. (See table above).
- Each AFAD shall be operated by a qualified/certified flagger. Flaggers operating AFADs shall not leave them unattended while they are in use.
- One flagger may operate two AFADs only when the flagger has an unobstructed view of both AFADs and of the approaching traffic in both directions.
- When pilot cars are used, a flagger controlling traffic shall be located on each approach. AFADs shall not be operated by the pilot car operator.
- All AFADs shall be equipped with gate arms with an orange or fluorescent red-orange flag attached to the end of the gate arm. The flag shall be a minimum of 16" square.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
- Flaggers should use two-way radios or other methods of communication to control traffic.
- Length of work space should be based on the ability of flaggers to communicate.
- If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the AFAD.
- Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
- The R1-7aT "WAIT ON STOP" sign and the R1-8aT "GO ON SLOW" sign shall be installed at the AFAD location on separate supports or they may be fabricated as one 48" x 30" sign. They shall not obscure the face of the STOP/SLOW AFAD.
- The R10-6 "STOP HERE ON RED" arrow sign shall be offset so as not to obscure the lenses of the AFAD.

Texas Department of Transportation  
 Traffic Operations Division Standard

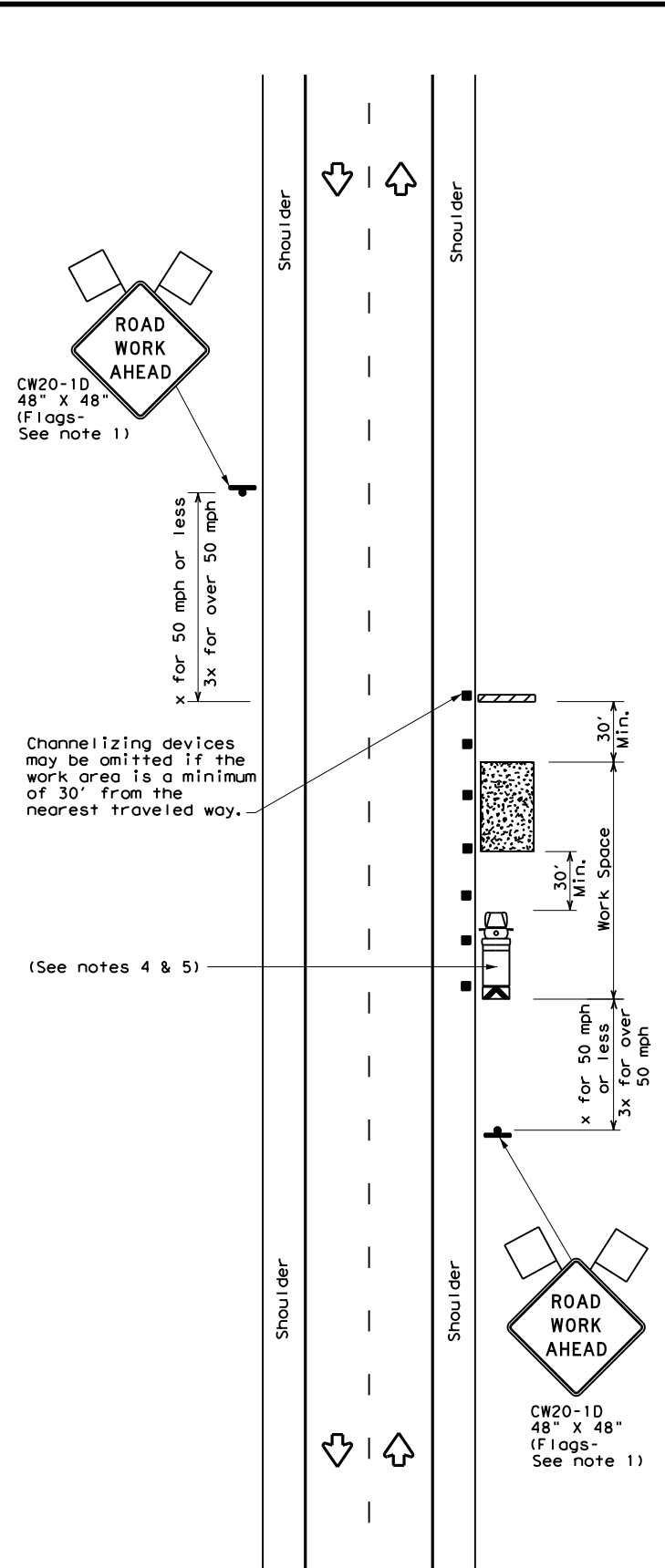
**TRAFFIC CONTROL PLAN  
 AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADs)**

**TCP (1-6) - 18**

FILE: tcp1-6-18.dgn	DN: _____	CK: _____	DW: _____	CK: _____
© TxDOT February 2012	CONT: _____	SECT: _____	JOB: _____	HIGHWAY: _____
2-18	REVISIONS: 0095 04	074, ETC.	US 80	
	DIST: _____	COUNTY: _____	SHEET NO.:	
	DAL	KAUFMAN		32

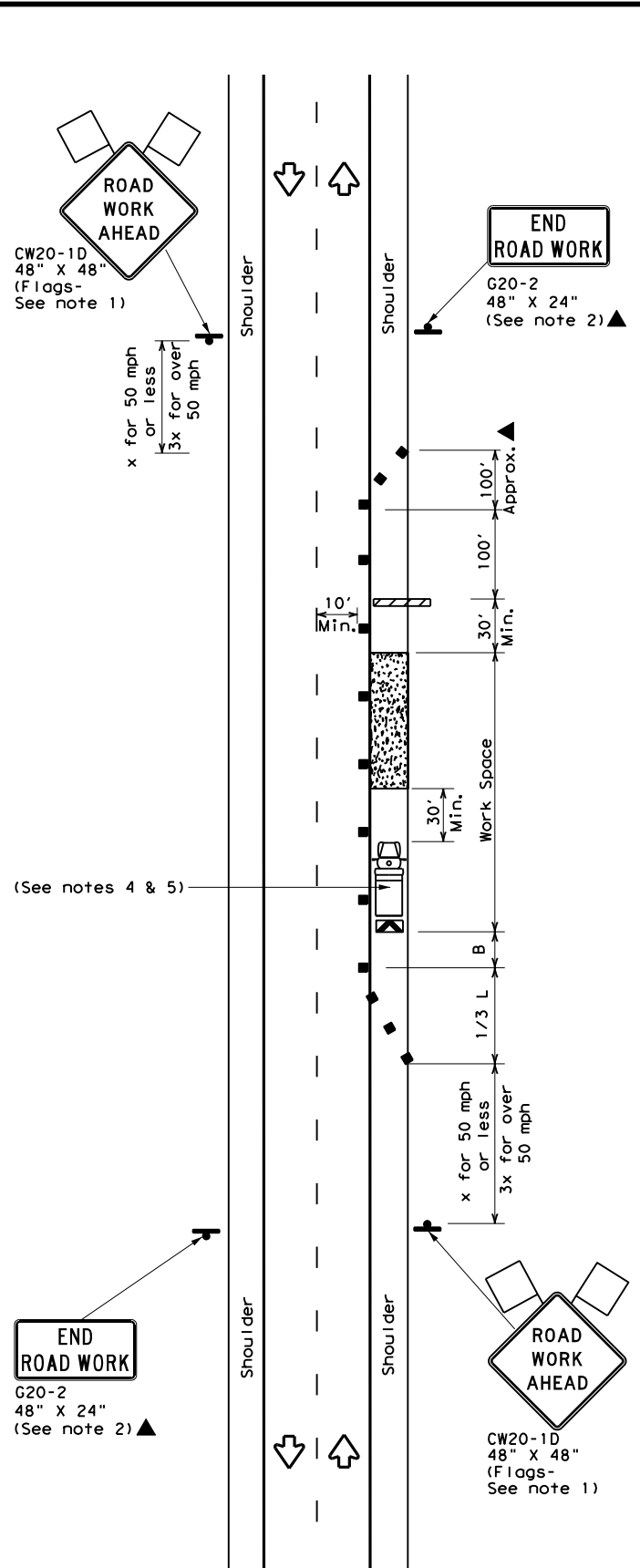
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DATE: \_\_\_\_\_  
FILE: \_\_\_\_\_



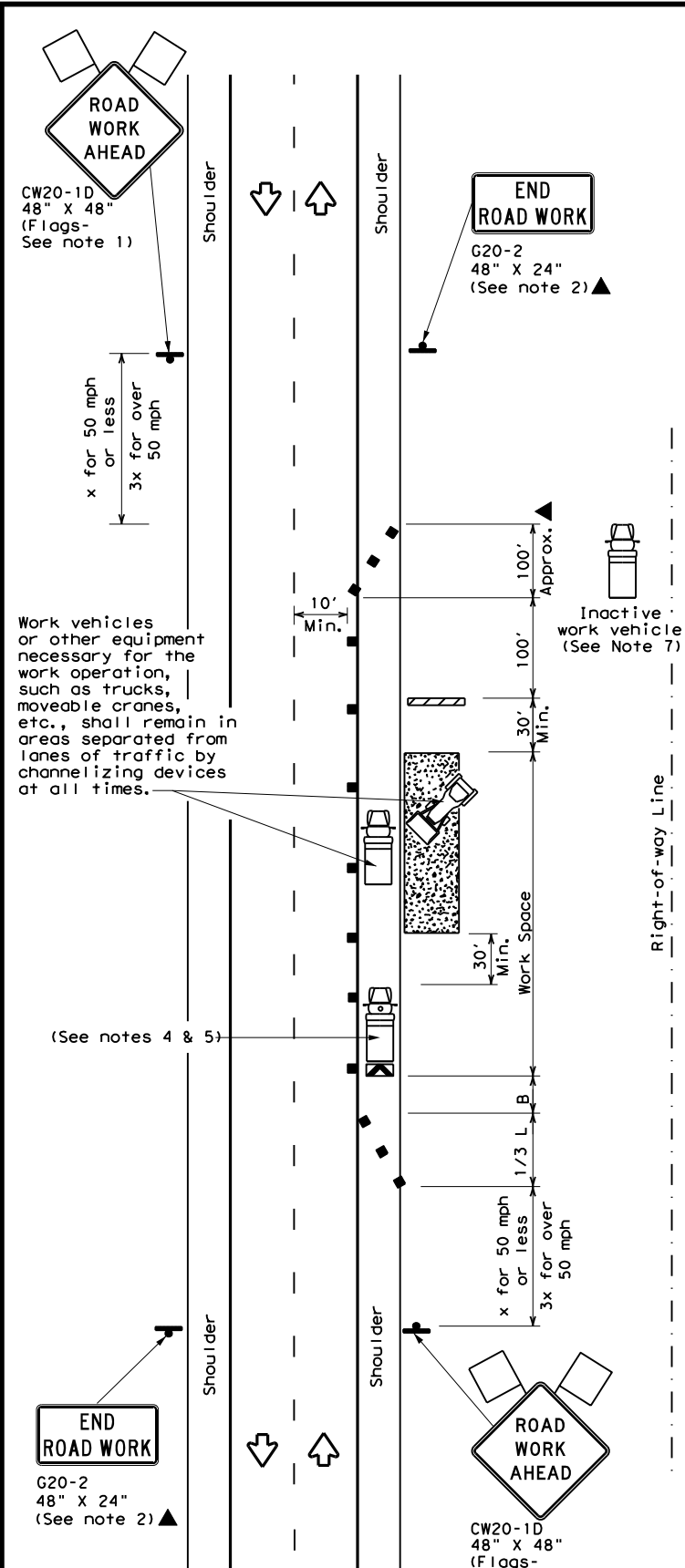
TCP (2-1a)

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	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**
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
  - Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
  - 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.
  - Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
  - See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
  - Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
  - CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.



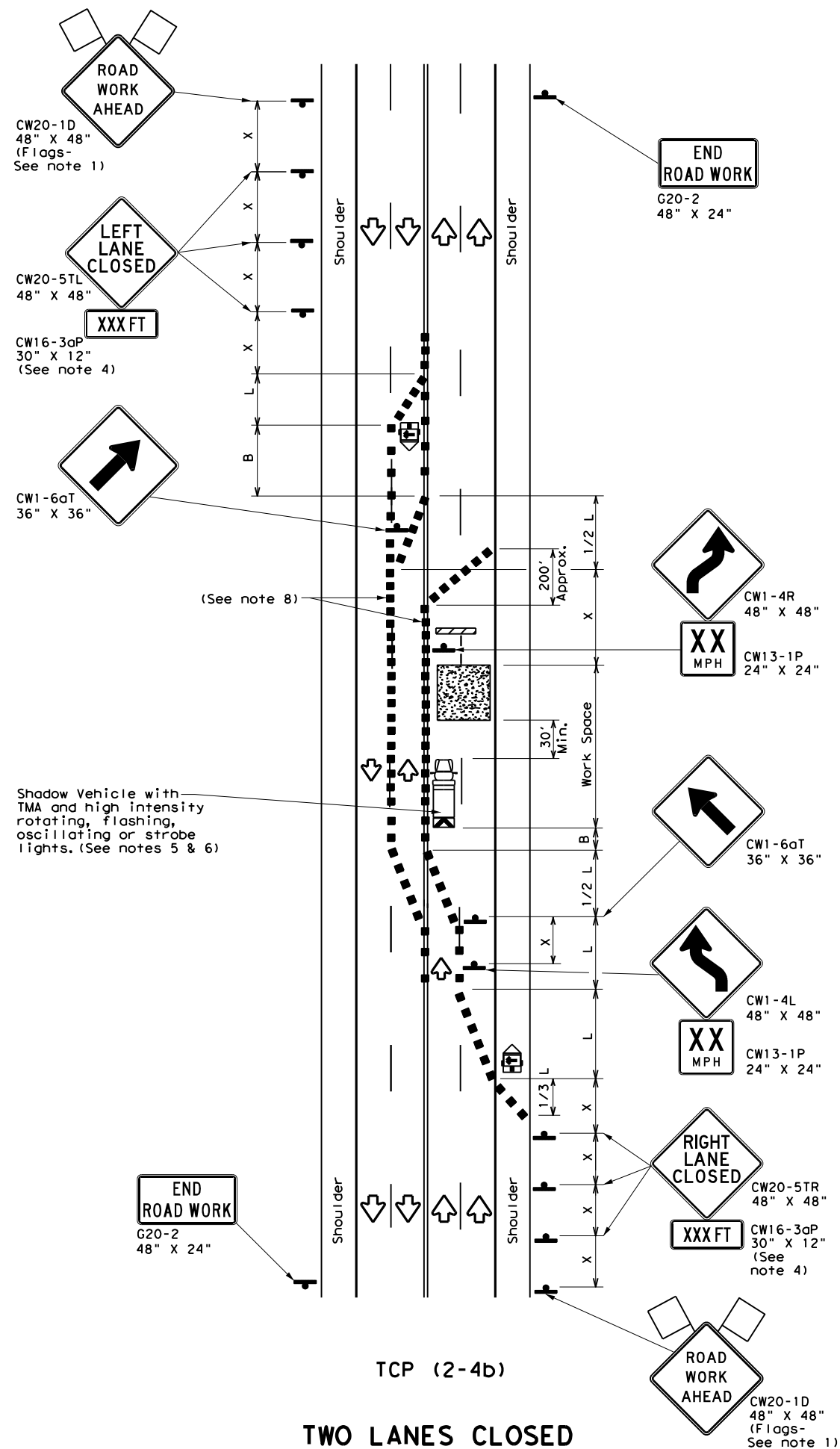
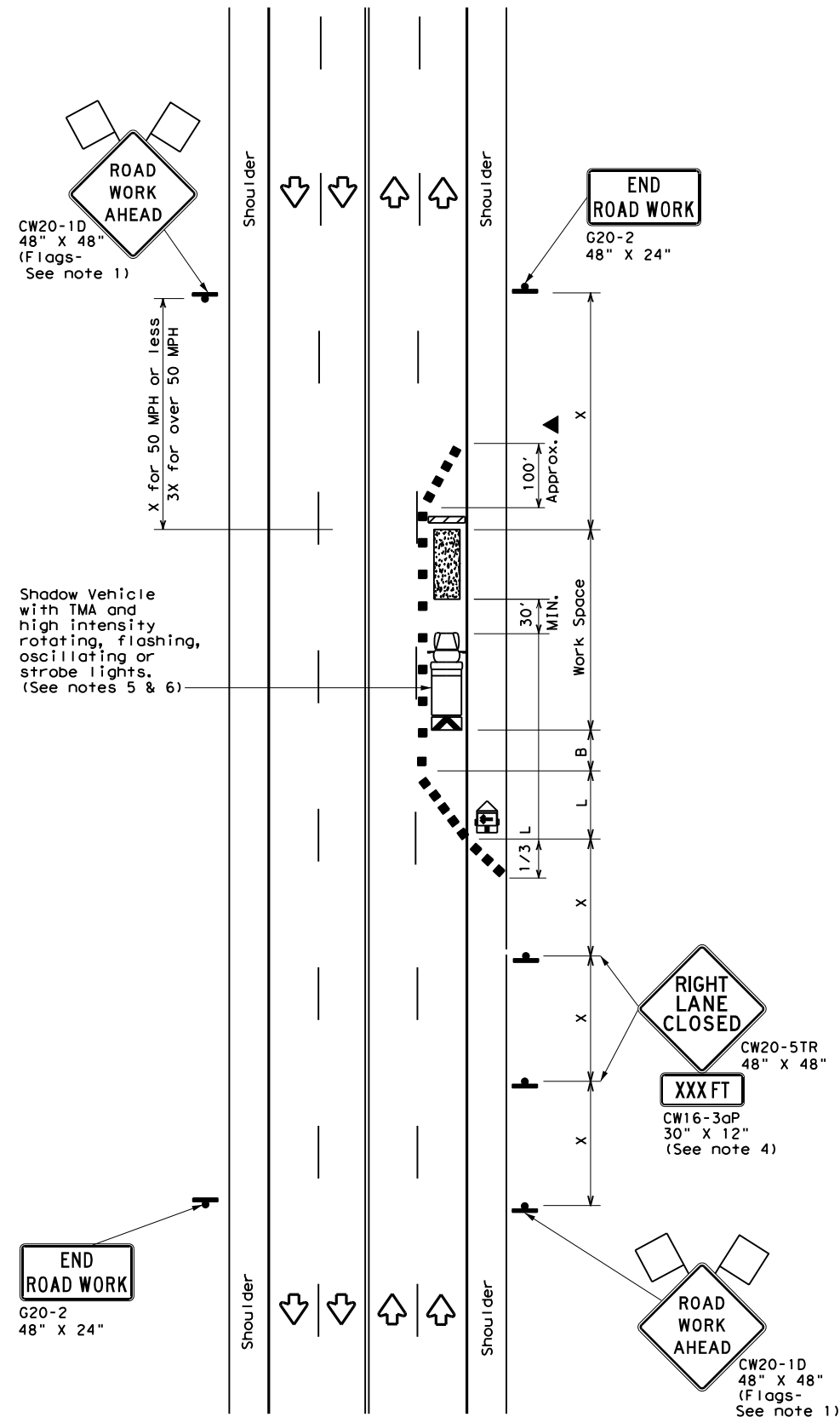
**TRAFFIC CONTROL PLAN**  
**CONVENTIONAL ROAD**  
**SHOULDER WORK**

**TCP (2-1) - 18**

FILE: tcp2-1-18.dgn	DN: _____	CK: _____	DW: _____	CK: _____
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 2-12	DAL	KAUFMAN	33	
1-97 2-18				

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**LEGEND**

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "x" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS <sup>2</sup> / 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**

- Flags attached to signs where shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
- The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
- For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
- A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
- Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

**TCP (2-4a)**

- 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 (2-4b)**

- For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

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 Traffic Operations Division Standard

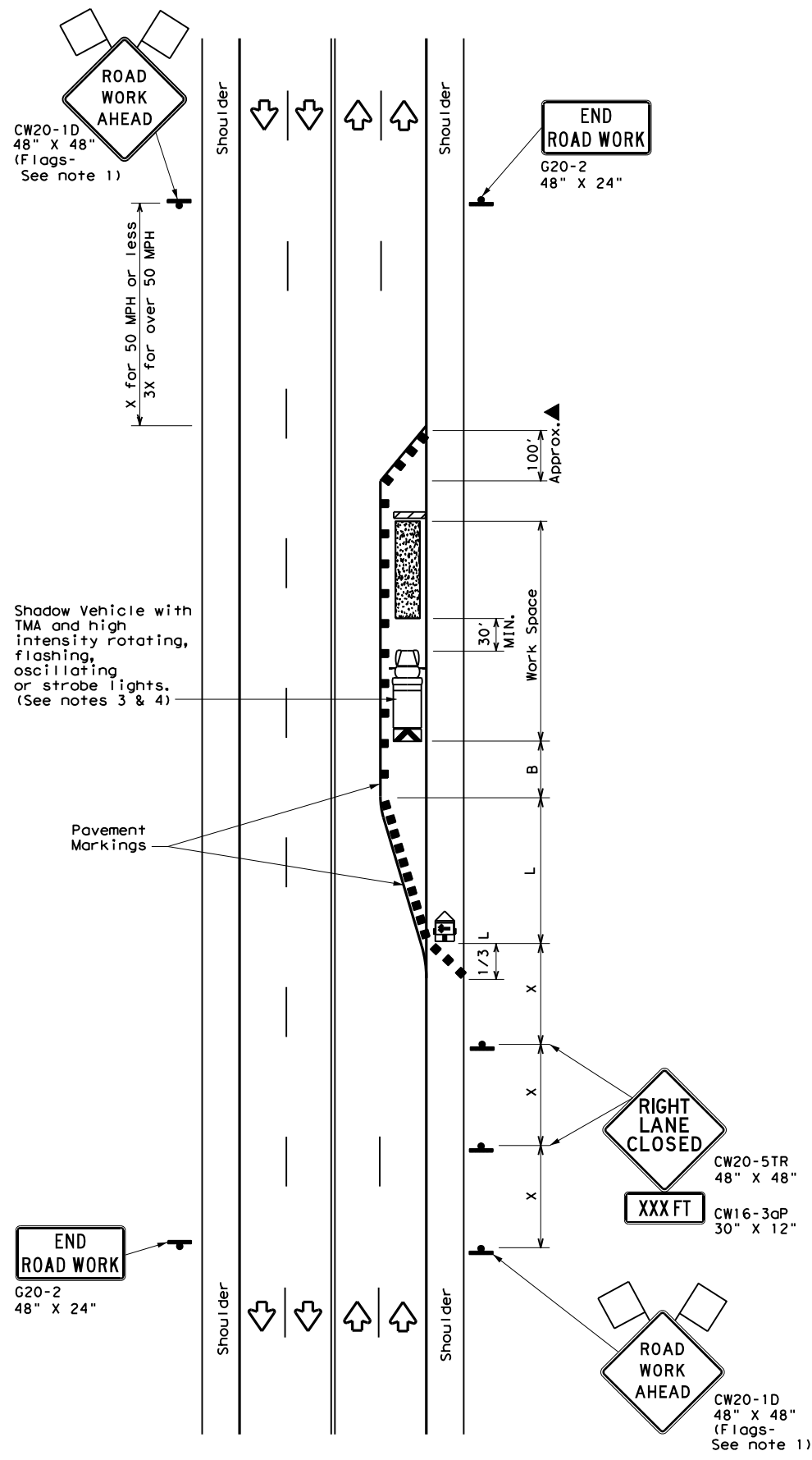
**TRAFFIC CONTROL PLAN  
 LANE CLOSURES ON MULTILANE  
 CONVENTIONAL ROADS**

**TCP (2-4) - 18**

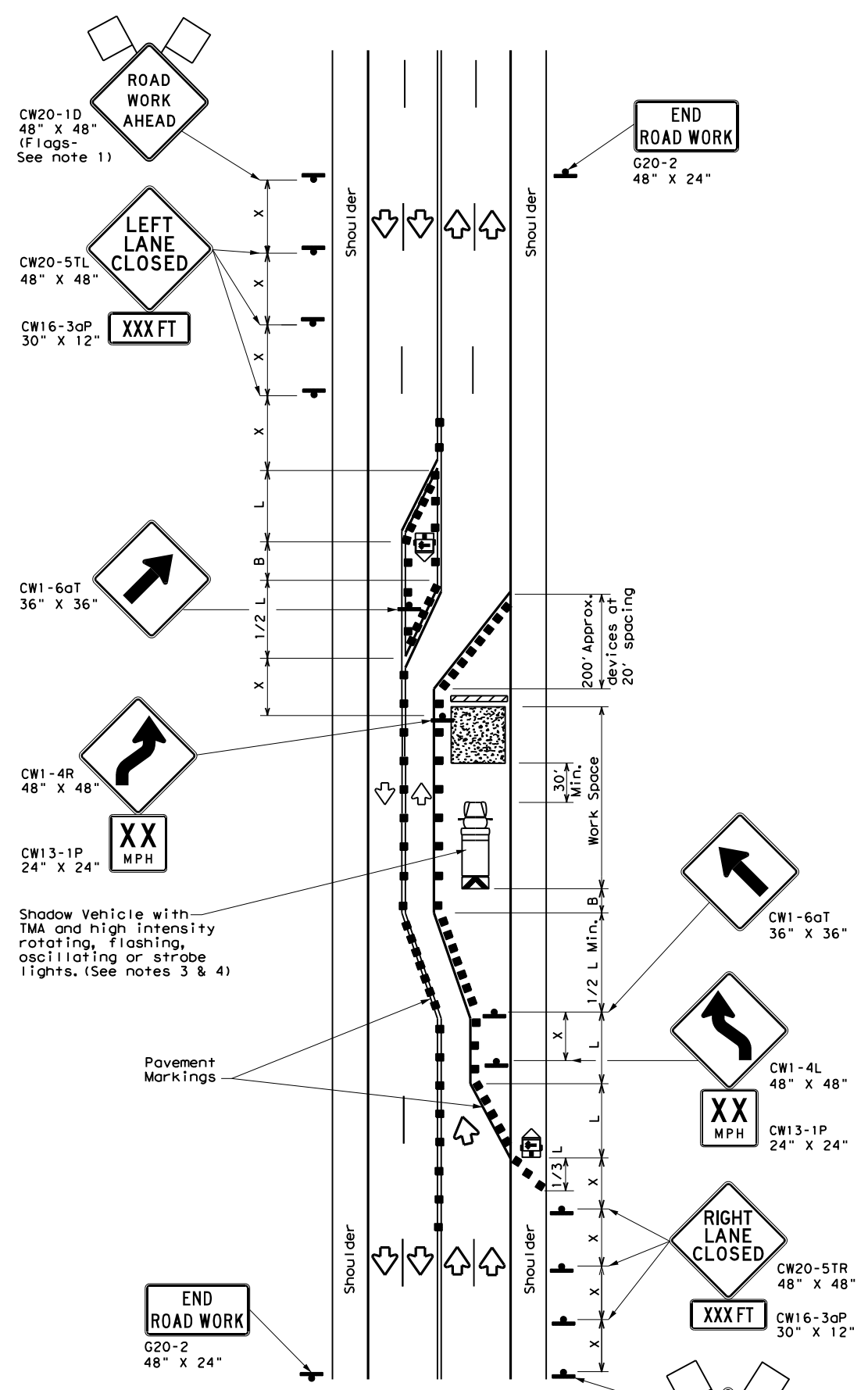
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© TxDOT December 1985	CONT: _____	SECT: _____	JOB: _____	HIGHWAY: _____
REVISIONS	0095	04	074, ETC.	US 80
8-95 3-03	DIST: _____	COUNTY: _____	SHEET NO.:	
1-97 2-12	DAL	KAUFMAN		34
4-98 2-18				

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DATE: FILE:



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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS <sup>2</sup> / 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**
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
  - Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
  - 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)**
- 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)**
- Conflicting pavement markings shall be removed for long-term projects.

Traffic Operations Division Standard

**TRAFFIC CONTROL PLAN  
LONG TERM LANE CLOSURES  
MULTILANE CONVENTIONAL RDS.**

**TCP (2-5) - 18**

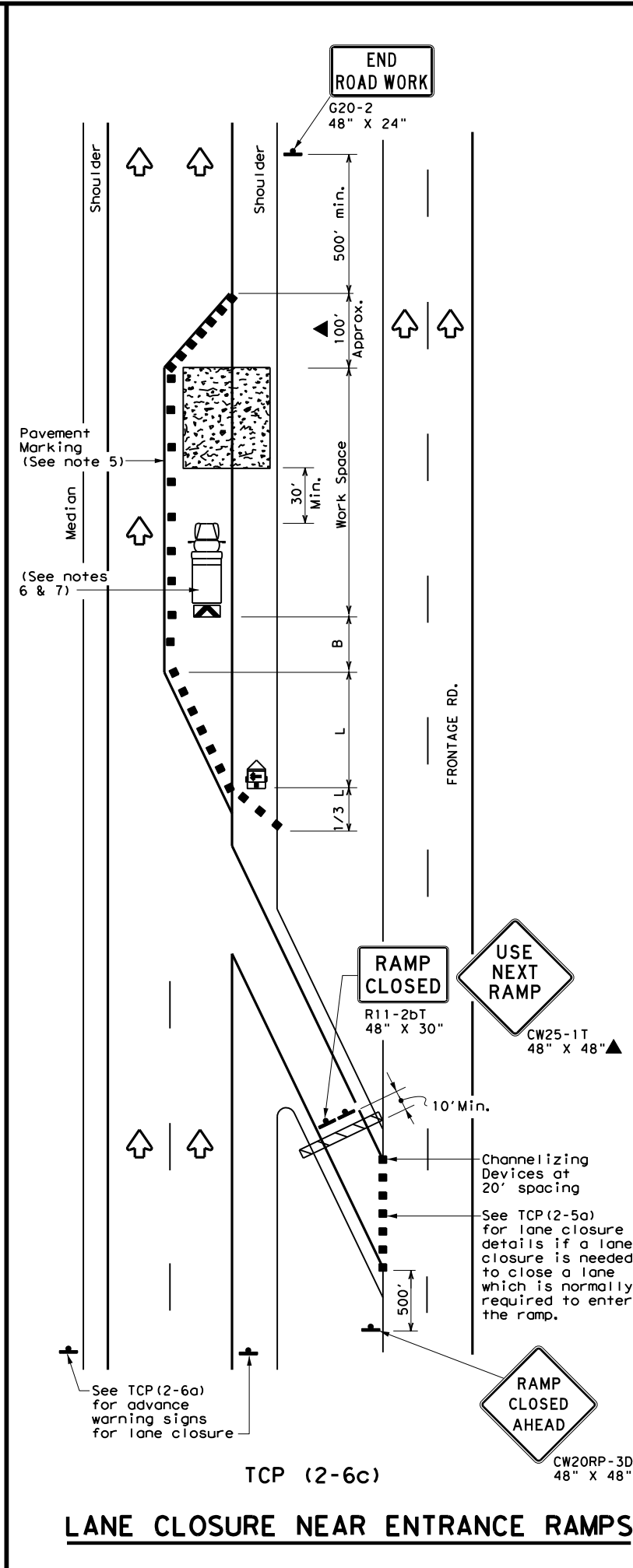
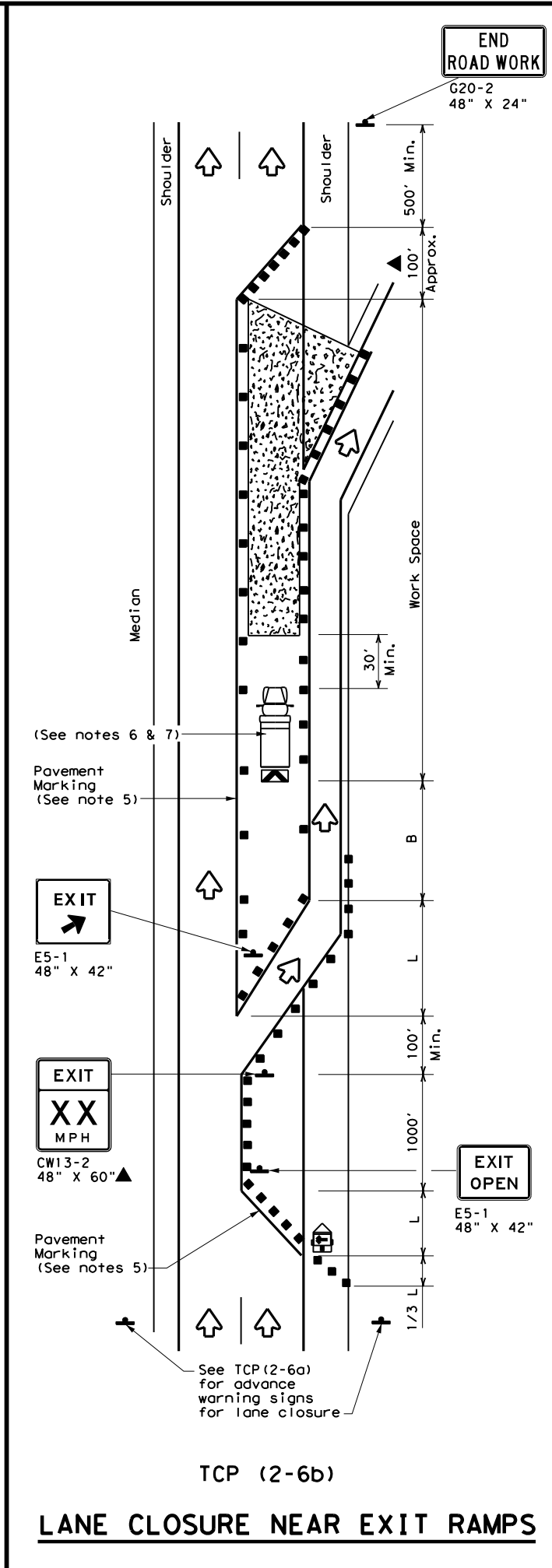
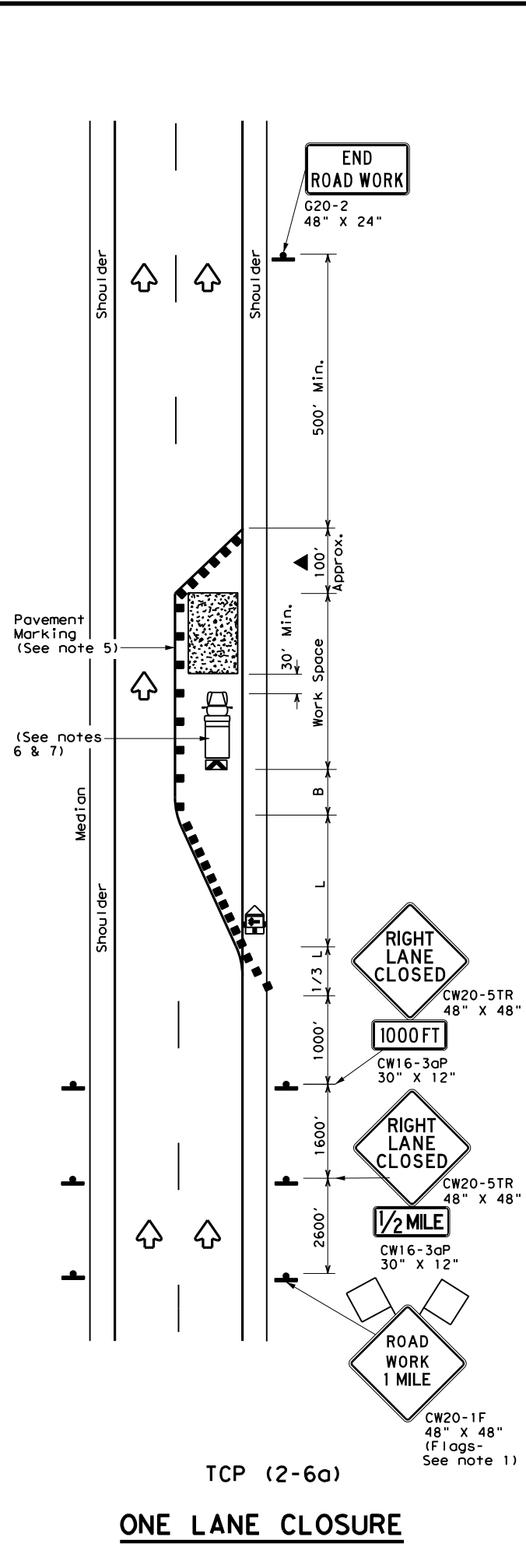
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© TxDOT December 1985	CON: _____	SECT: _____	JOB: _____	HIGHWAY: _____
8-95 2-12 REVISIONS	0095	04	074, ETC.	US 80
1-97 3-03	DIST: _____	COUNTY: _____	SHEET NO. _____	
4-98 2-18	DAL	KAUFMAN	35	

165



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DATE: FILE:



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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'
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**
- Flags attached to signs where shown, are REQUIRED.
  - All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
  - 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.
  - Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on every other channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
  - The placement of pavement markings may be omitted on intermediate-term stationary work zones with the approval of the Engineer.
  - 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.
  - 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

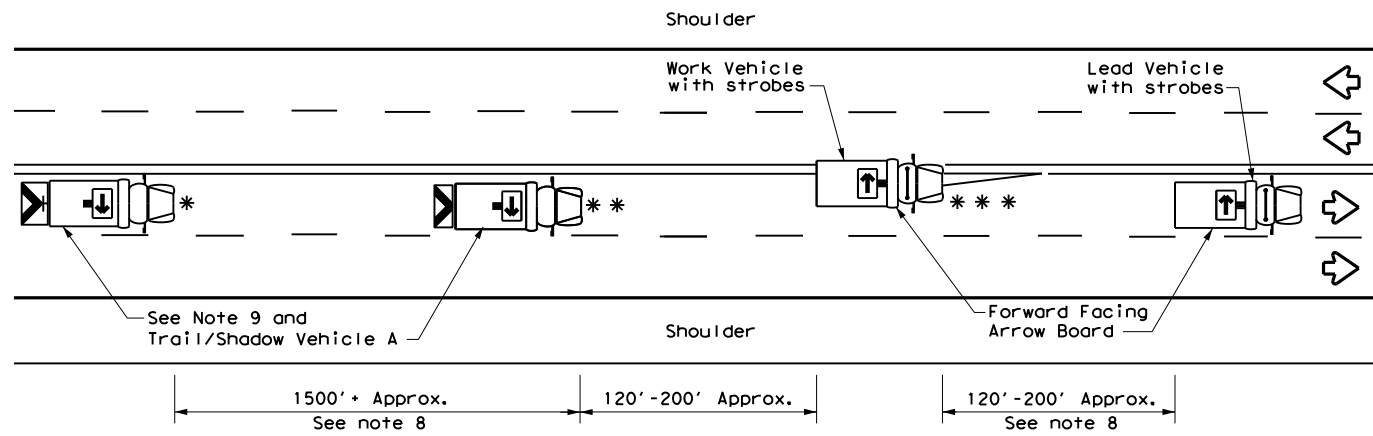
## TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

### TCP (2-6) - 18

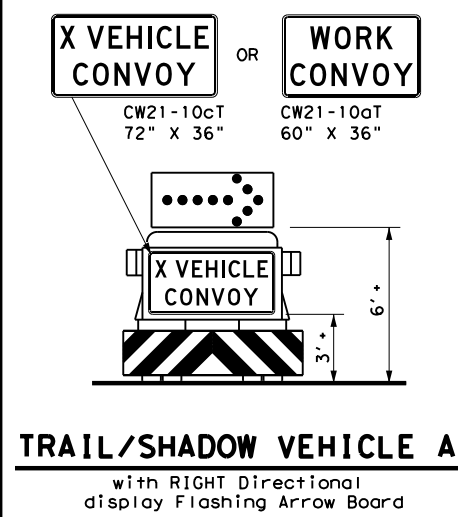
FILE: tcp2-6-18.dgn	DW: _____	CK: _____	DW: _____	CK: _____
© TxDOT December 1985	CONT. 0095	SECT. 04	JOB. 074, ETC.	HIGHWAY. US 80
2-94 4-98	REVISIONS	DIST. COUNTY	SHEET NO.	
8-95 2-12		DAL KAUFMAN	36	
1-97 2-18				

166

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**TCP (3-1a)**  
**UNDIVIDED MULTILANE ROADWAY**



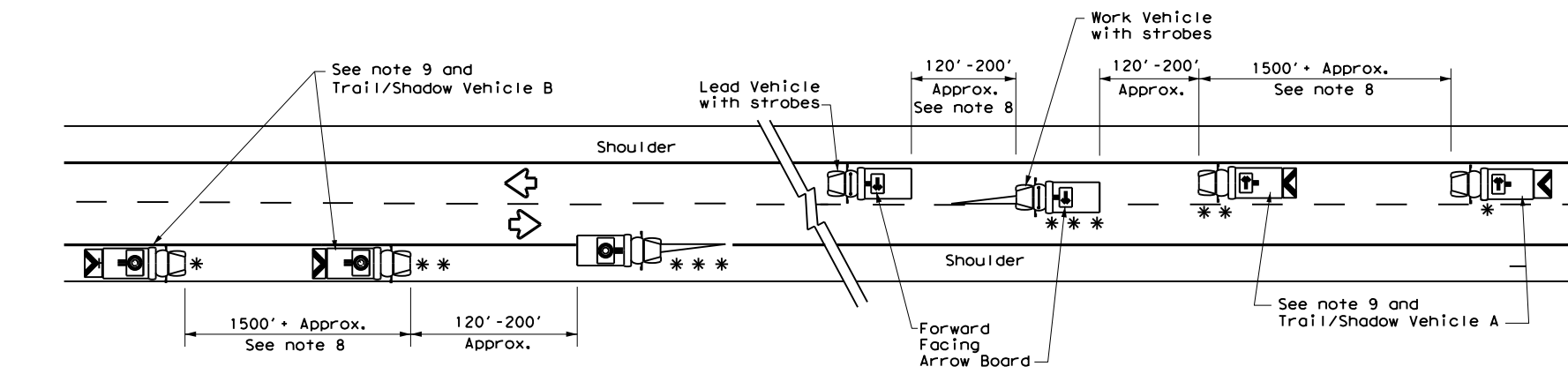
**TRAIL/SHADOW VEHICLE A**  
with RIGHT Directional display Flashing Arrow Board

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)

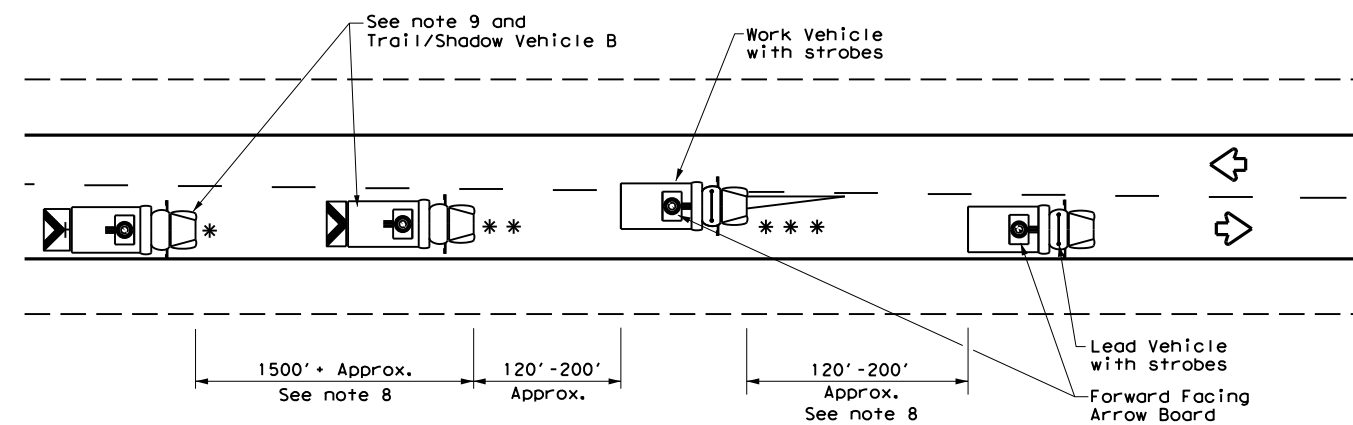
TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
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**GENERAL NOTES**

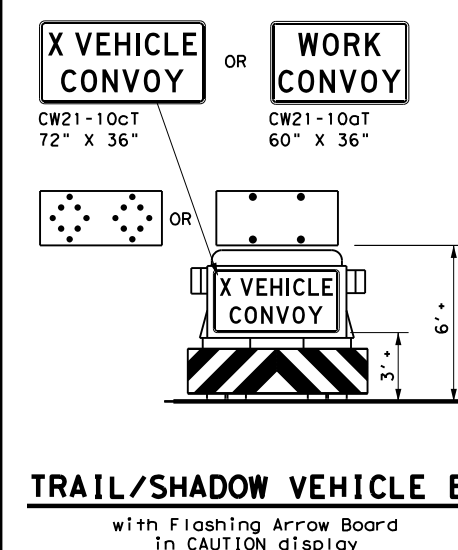
1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic 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 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 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 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. 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.



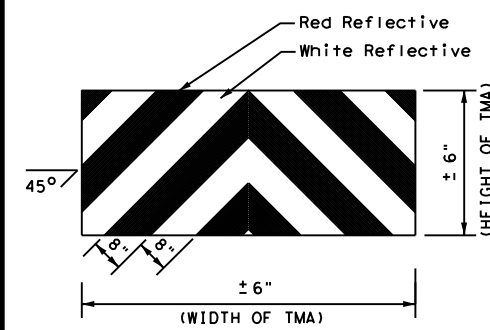
**TCP (3-1b)**  
**TWO-WAY ROADWAY WITH PAVED SHOULDERS**



**TCP (3-1c)**  
**TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS**



**TRAIL/SHADOW VEHICLE B**  
with Flashing Arrow Board in CAUTION display



**STRIPING FOR TMA**

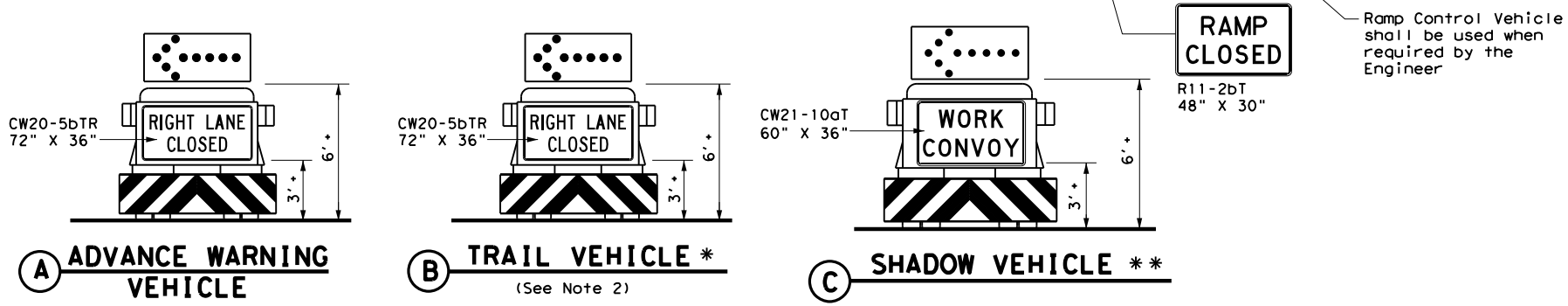
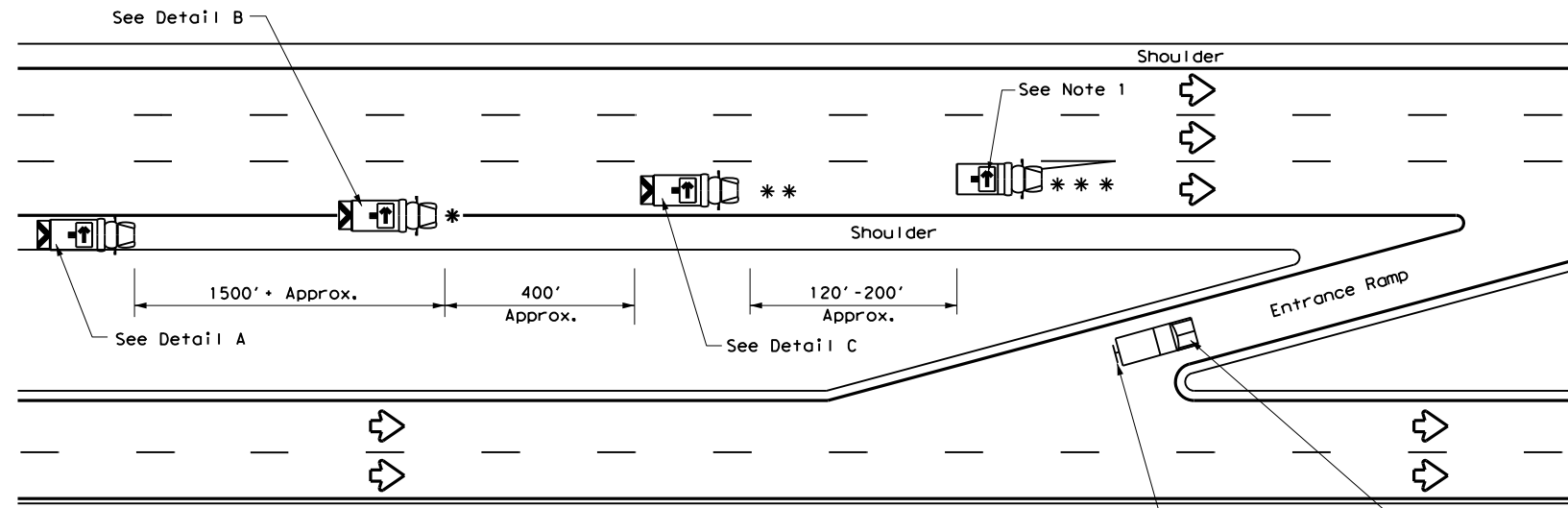
**TRAFFIC CONTROL PLAN  
MOBILE OPERATIONS  
UNDIVIDED HIGHWAYS**

**TCP (3-1) - 13**

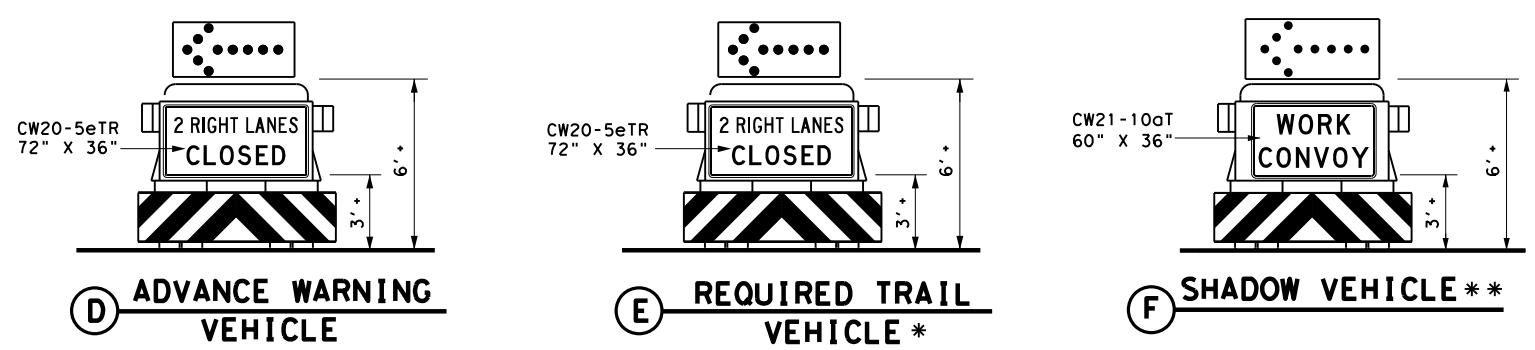
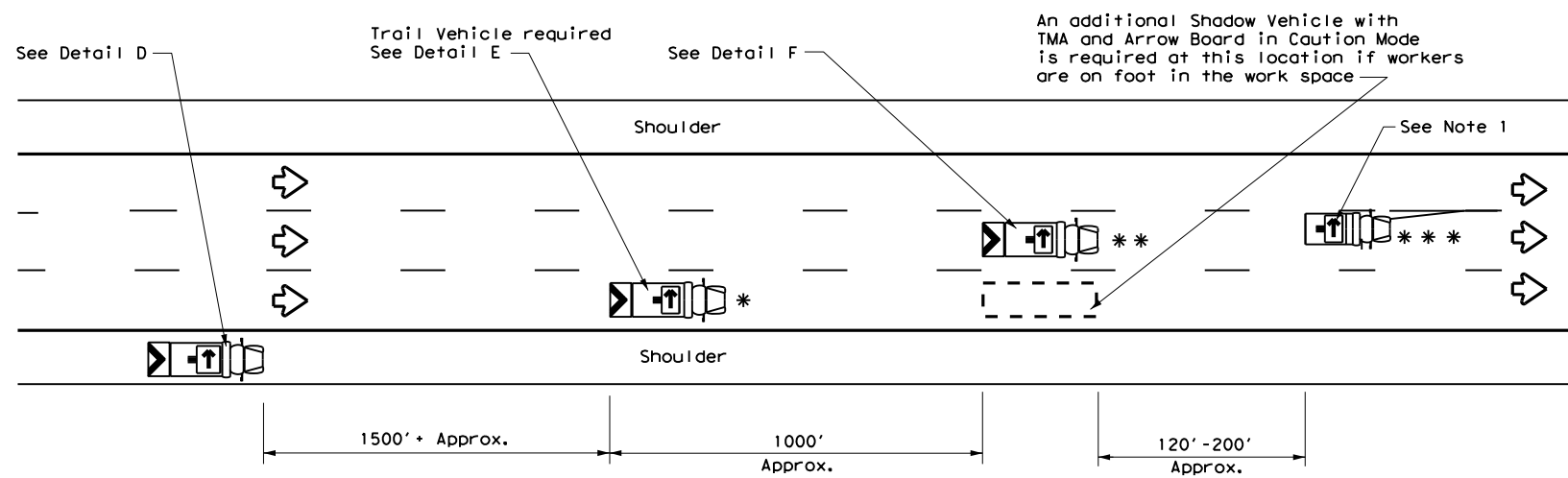
FILE:	tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS		0095	04	074, ETC.	US 80
2-94	4-98	DIST	COUNTY	SHEET NO.	
8-95	7-13	DAL	KAUFMAN	37	
1-97					

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DATE: FILE:



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



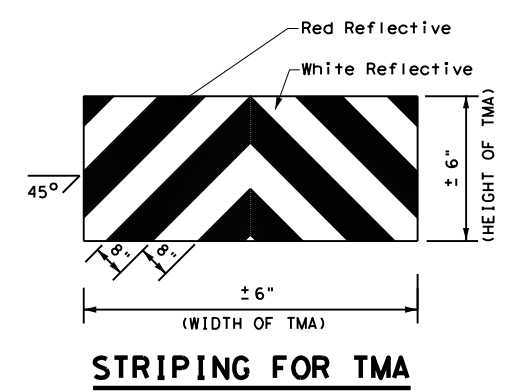
**INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)**

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

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

**GENERAL NOTES**

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



**STRIPING FOR TMA**

Texas Department of Transportation  
Traffic Operations Division Standard

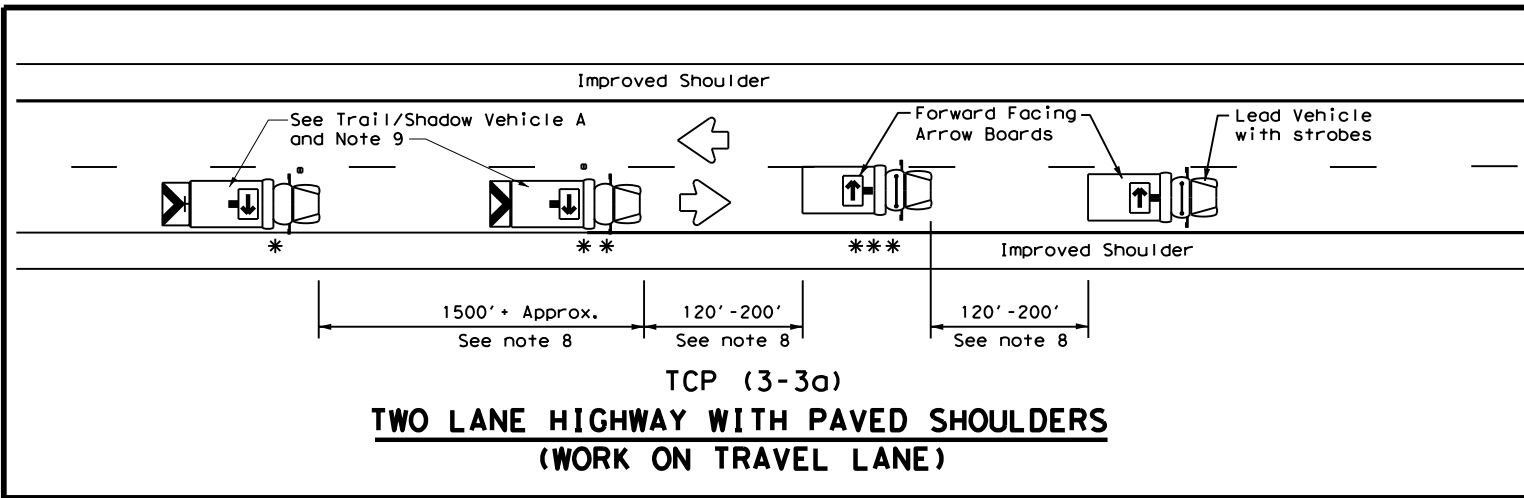
## TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

### TCP(3-2)-13

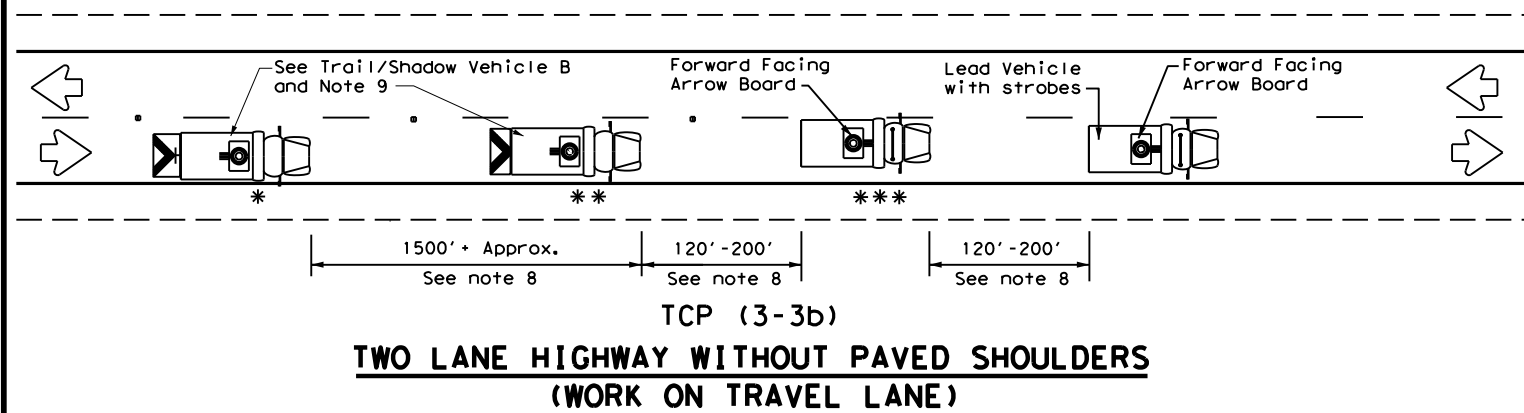
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
2-94 4-98	DIST	COUNTY	SHEET NO.	
8-95 7-13	DAL	KAUFMAN	38	
1-97				

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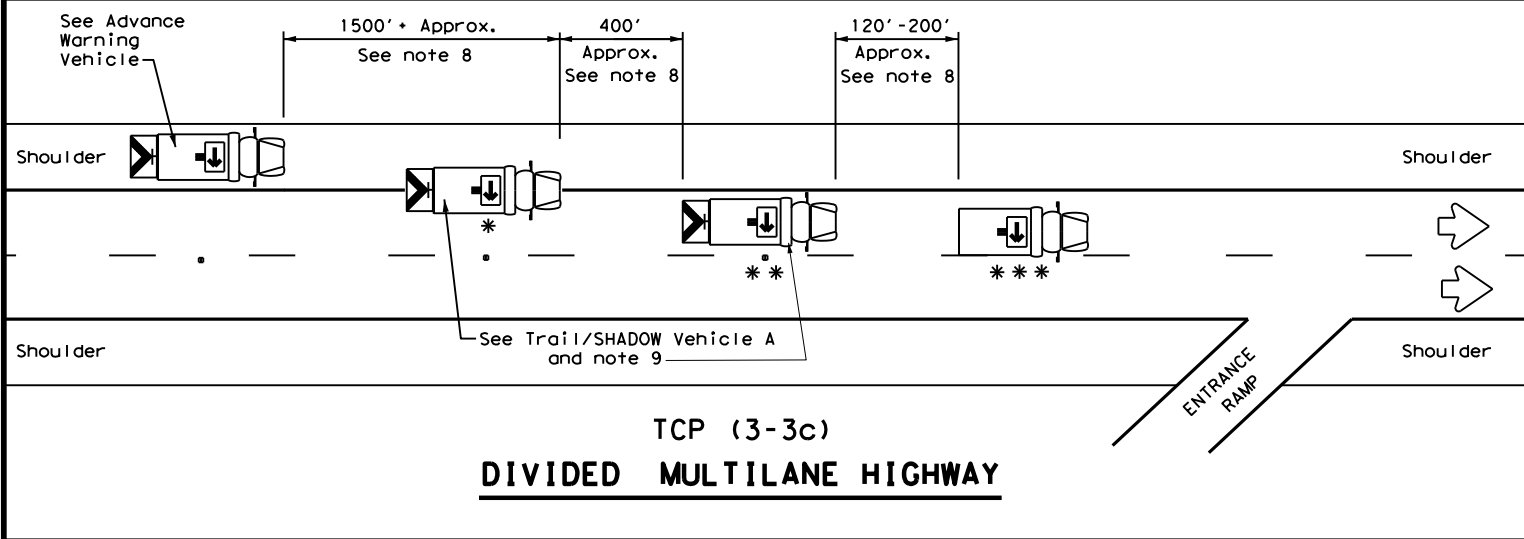
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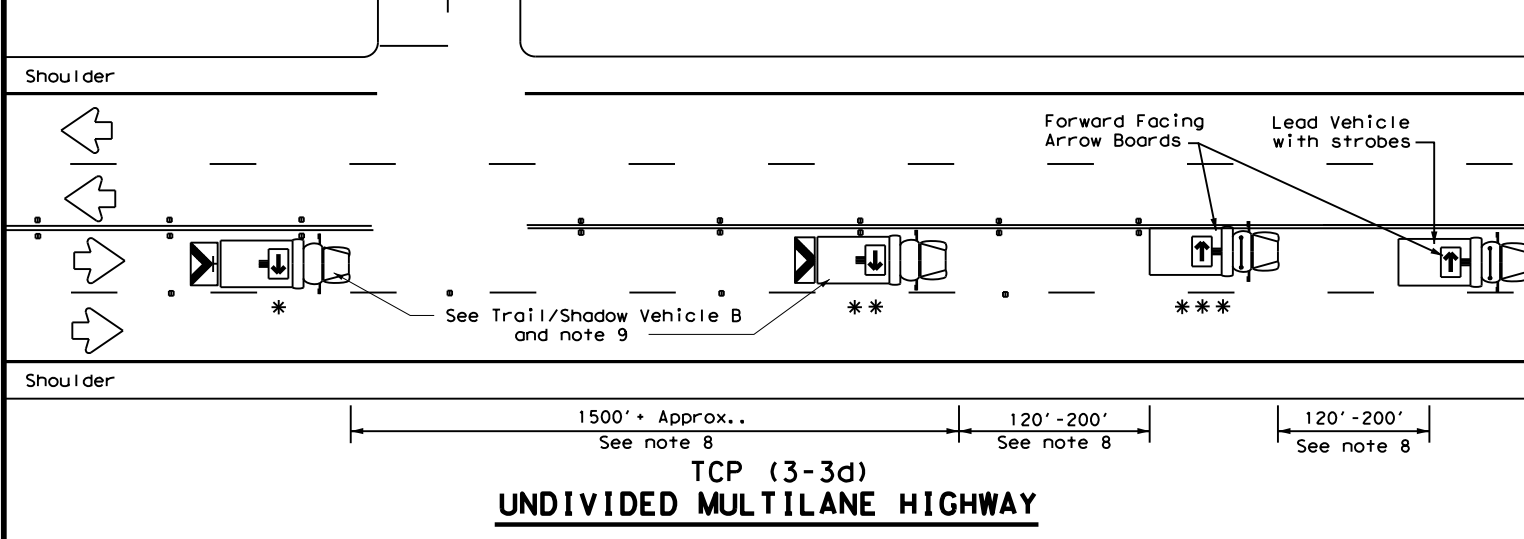
**TCP (3-3a)**  
**TWO LANE HIGHWAY WITH PAVED SHOULDERS**  
**(WORK ON TRAVEL LANE)**



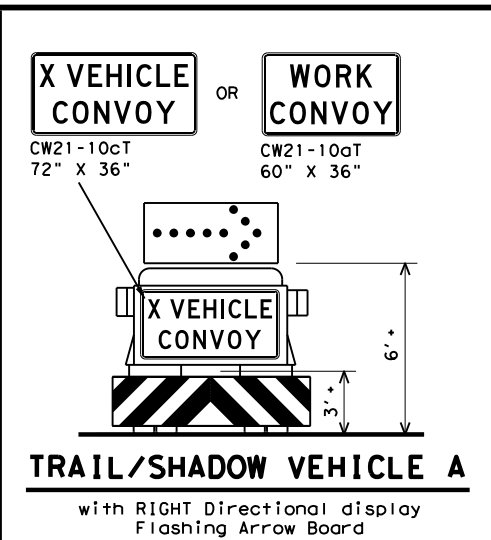
**TCP (3-3b)**  
**TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS**  
**(WORK ON TRAVEL LANE)**



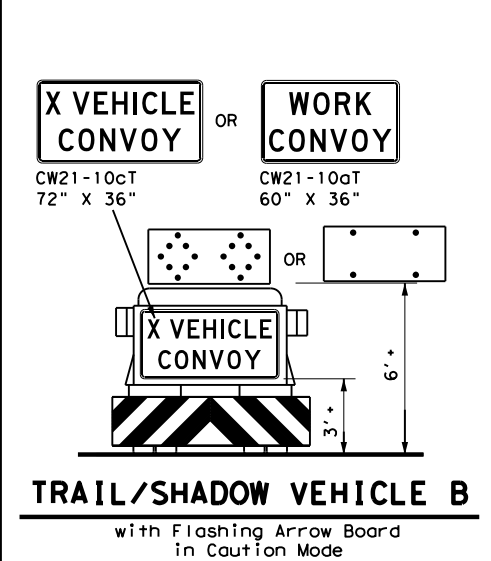
**TCP (3-3c)**  
**DIVIDED MULTILANE HIGHWAY**



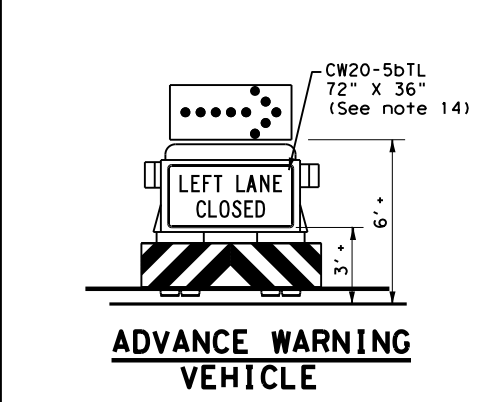
**TCP (3-3d)**  
**UNDIVIDED MULTILANE HIGHWAY**



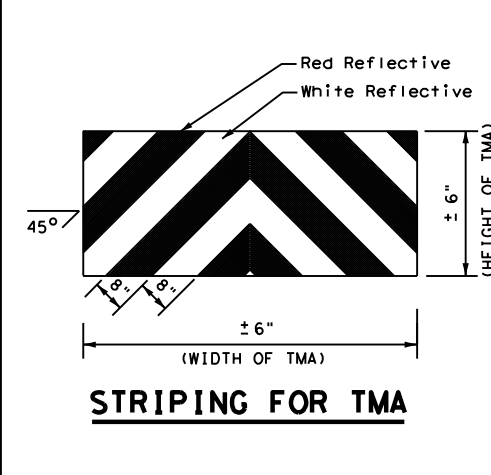
**TRAIL/SHADOW VEHICLE A**  
 with RIGHT Directional display  
 Flashing Arrow Board



**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
		LEFT Directional
		Double Arrow
		CAUTION (Alternating Diamond or 4 Corner Flash)

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

**GENERAL NOTES**

- 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.
- The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
- The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
- 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.
- 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.
- Each vehicle shall have two-way radio communication capability.
- When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
- Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the 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.
- 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.
- 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.
- A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
- For divided highways with three or four lanes in each direction, use TCP(3-2).
- Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
- The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
- 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.

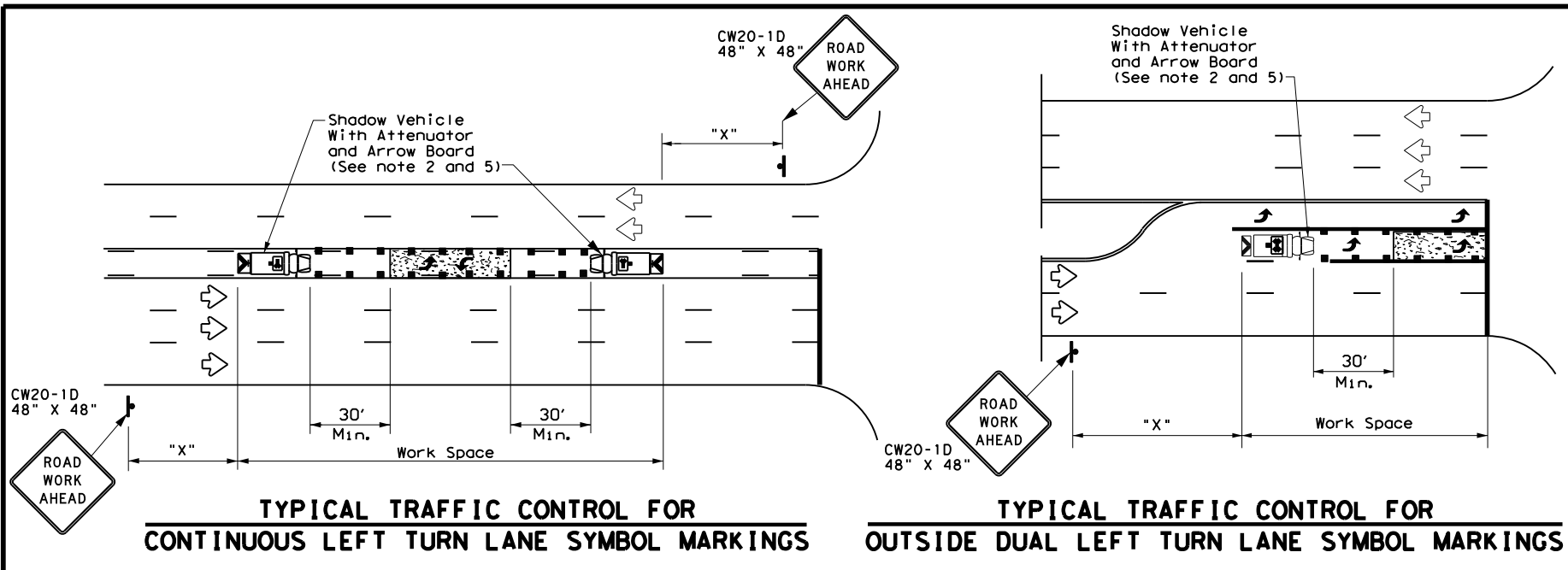
Texas Department of Transportation  
 Traffic Operations Division Standard

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

FILE: tcp3-3.dgn	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13				
1-97 7-14	DAL	KAUFMAN		39

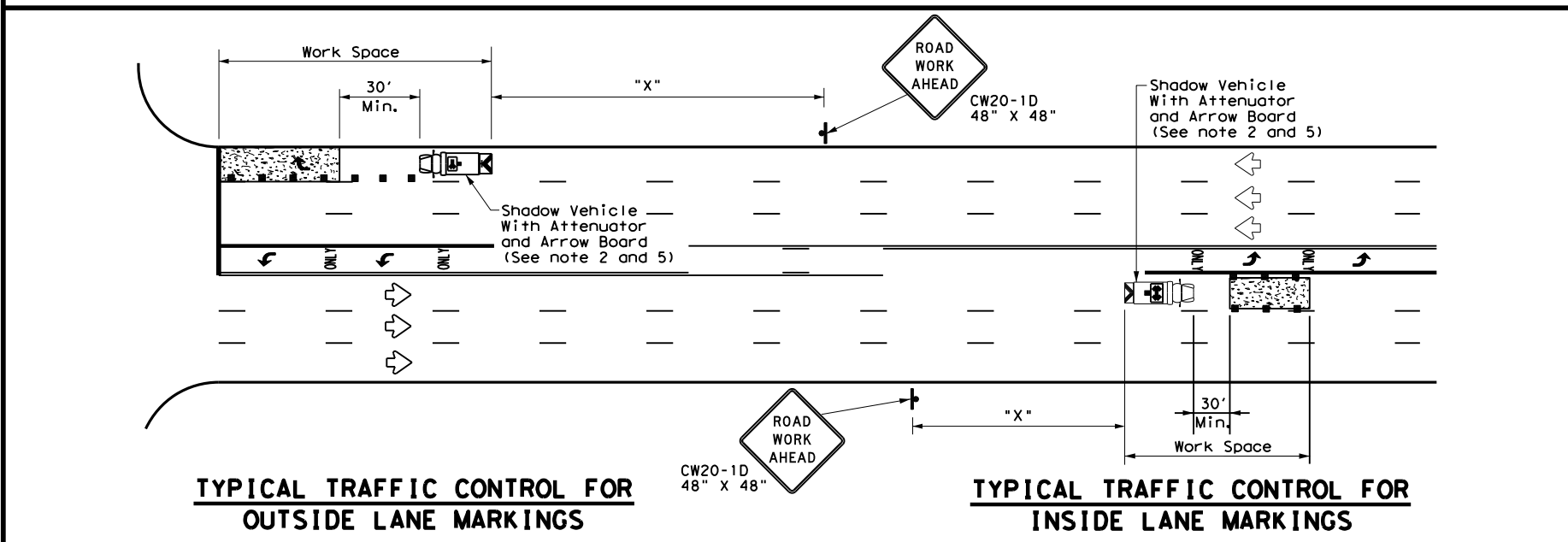
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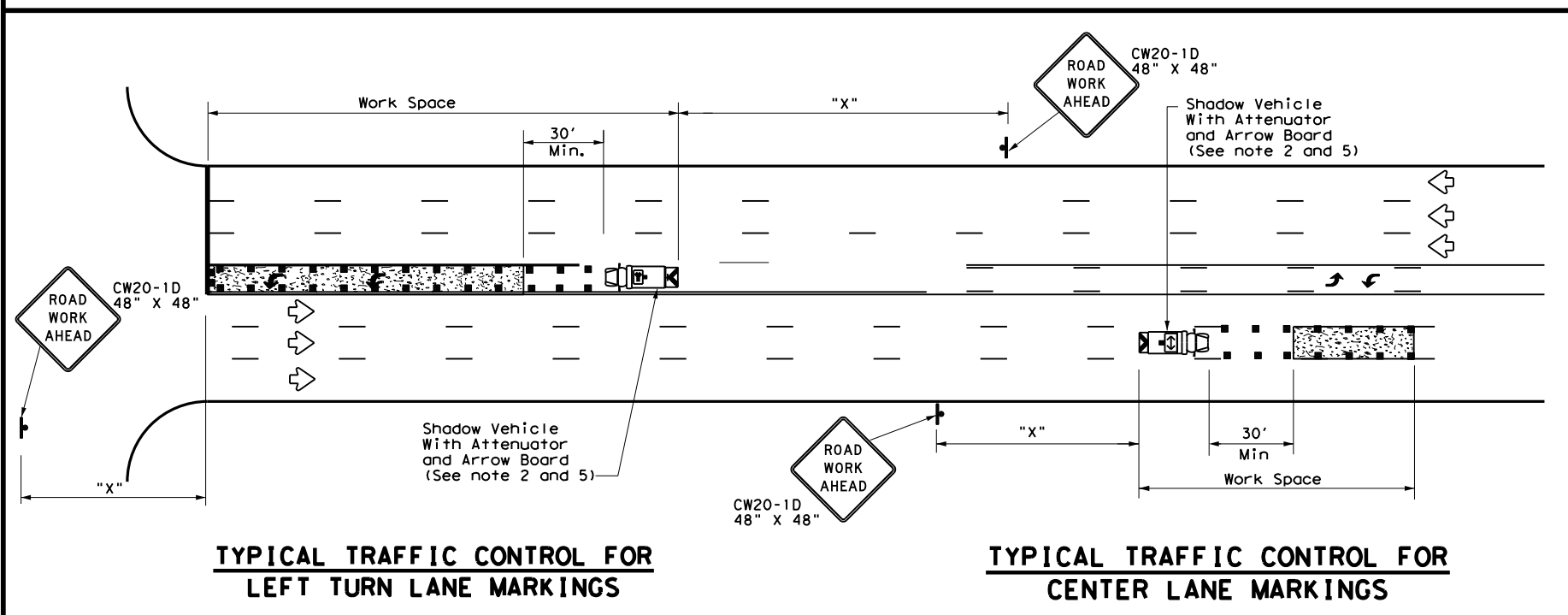
TYPICAL TRAFFIC CONTROL FOR CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

TYPICAL TRAFFIC CONTROL FOR OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR CENTER LANE MARKINGS

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	Channelizing Devices

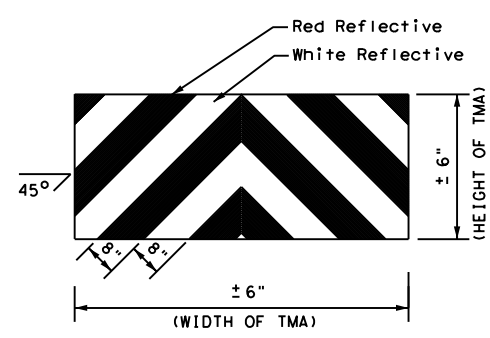
Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS <sup>2</sup> / 60	150'	165'	180'	30'	60'	120'	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. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.
2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.
3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation Traffic Operations Division Standard

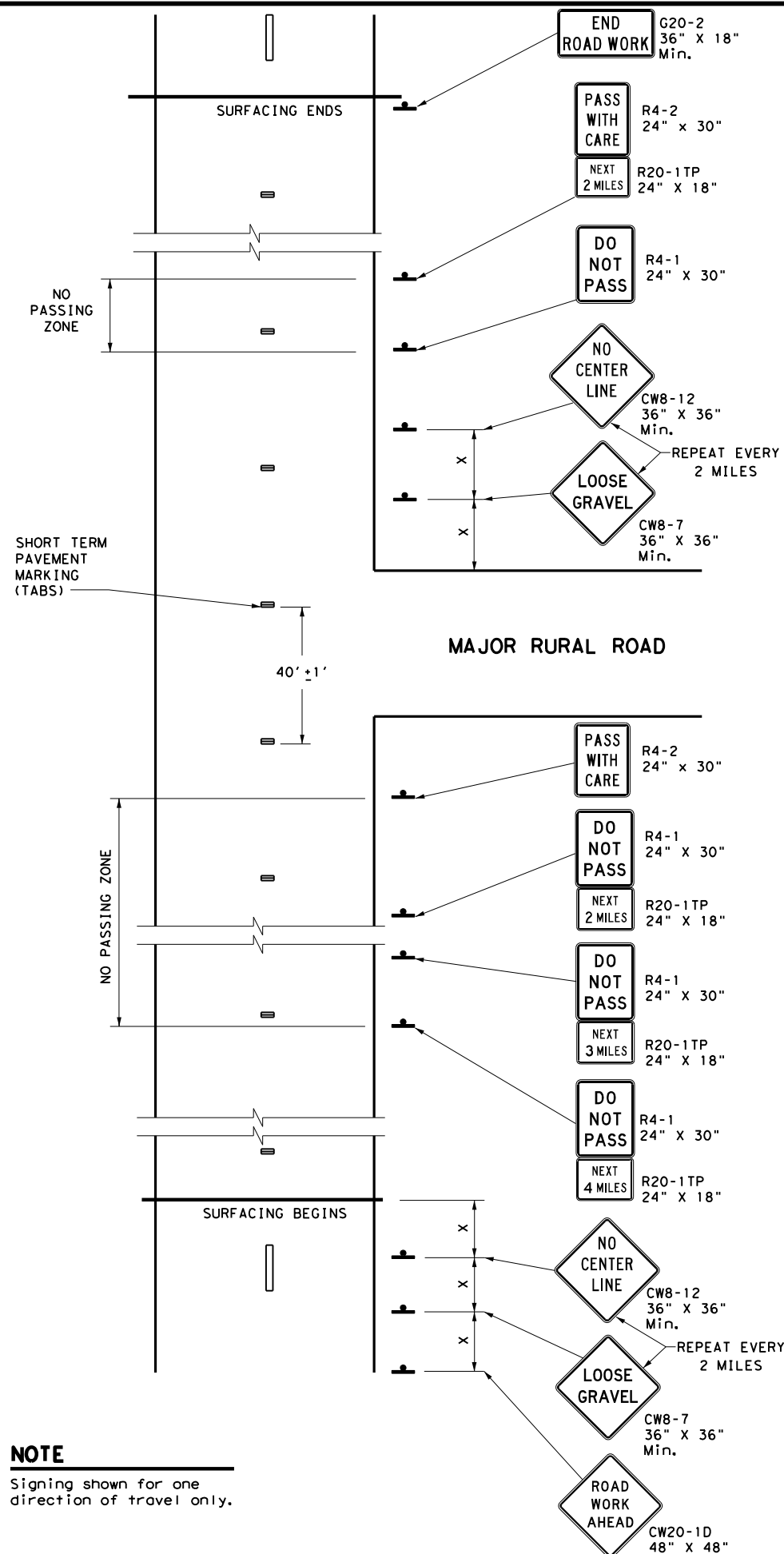
**TRAFFIC CONTROL PLAN MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS**

**TCP(3-4)-13**

FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS	009504	074, ETC.	US 80	
DIST	COUNTY	SHEET NO.		
DAL	KAUFMAN	40		

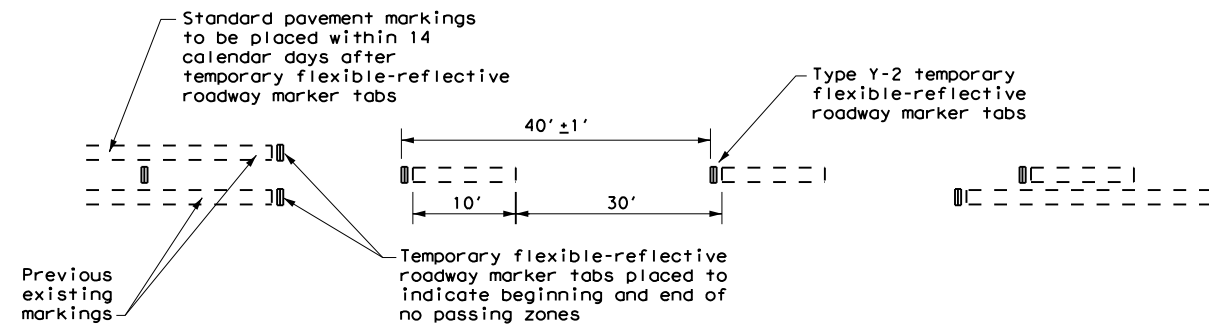
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**NOTE**  
 Signing shown for one direction of travel only.

**NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS**



**TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS**  
 For seal coat, micro-surface or similar operations

**"DO NOT PASS" SIGN (R4-1) and NO-PASSING ZONES**

- A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.
- B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.
- C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.
- D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

**"NO CENTER LINE" SIGN (CW8-12)**

- A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.
- B. At the time construction activity obliterates the existing center line markings (low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.
- C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

**"LOOSE GRAVEL" SIGN (CW8-7)**

- A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.
- B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

**PAVEMENT MARKINGS**

- A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.
- B. Tabs shall not be used to simulate edge lines.
- C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

**COORDINATION OF SIGN LOCATIONS**

- A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.
- B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T) sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

\* Conventional Roads Only

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

**GENERAL NOTES**

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.
3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.
4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".
5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.



**TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS**

**TCP (7-1) - 13**

FILE: fcp7-1.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
© TxDOT March 1991	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
4-92 4-98	DIST	COUNTY	SHEET NO.	
1-97 7-13	DAL	KAUFMAN	41	



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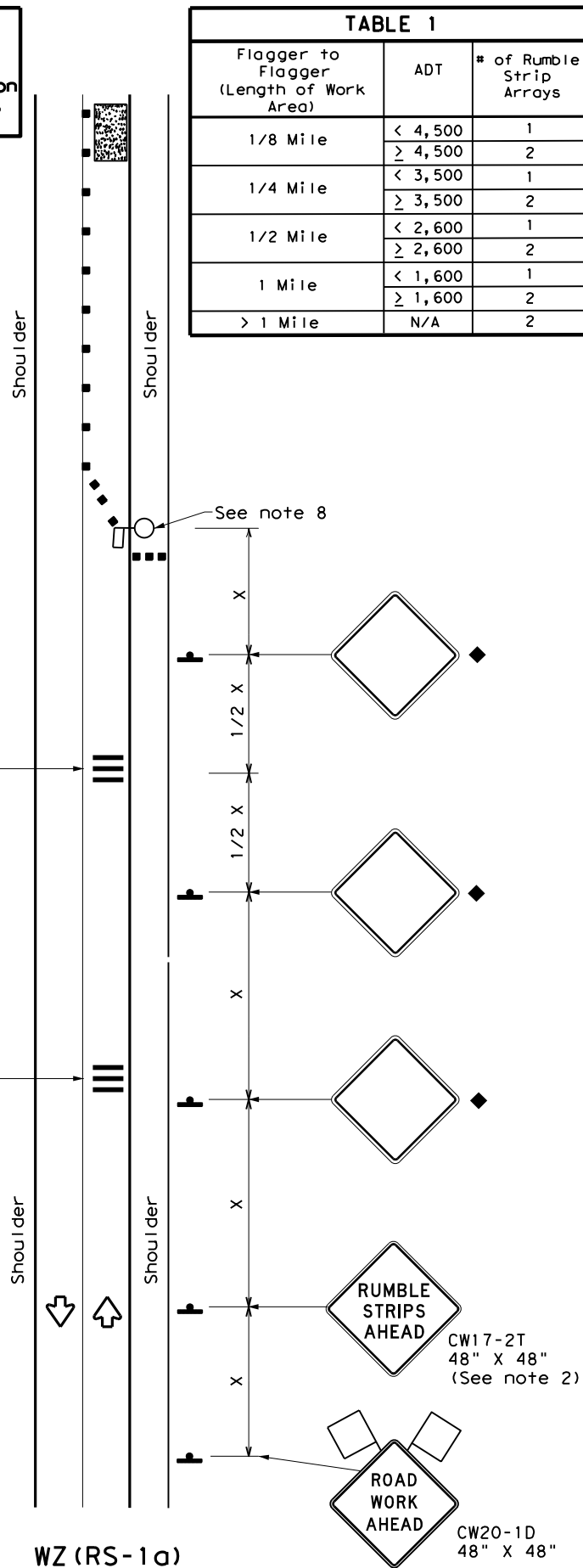
Warning sign and rumble strip sequence in opposite direction is same as below.

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

Rumble Strip Array (See note 1)

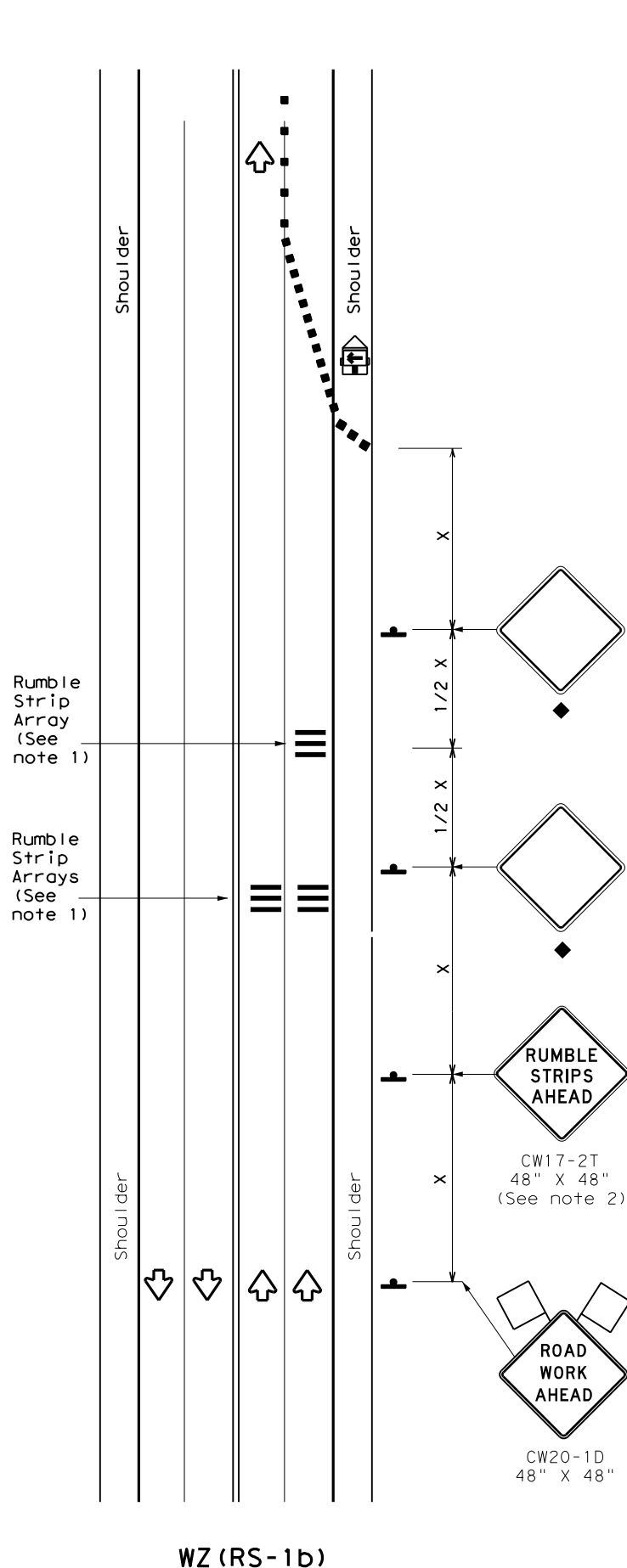
Rumble Strip Array (See note 1)

The second Rumble Strip Array is required when the ADT thresholds in Table 1 indicate the need for 2 Arrays.



WZ (RS-1a)

**RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION**



WZ (RS-1b)

**RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY**

**GENERAL NOTES**

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

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

**LEGEND**

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Channelizing Devices		Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30	L = WS/2	150'	165'	180'	30'	60'	120'	90'
35		205'	225'	245'	35'	70'	160'	120'
40	L = WS	265'	295'	320'	40'	80'	240'	155'
45		325'	365'	390'	45'	90'	300'	195'
50	L = WS	385'	435'	460'	50'	100'	360'	240'
55		445'	505'	530'	55'	110'	420'	295'
60	L = WS	505'	575'	600'	60'	120'	480'	350'
65		565'	645'	670'	65'	130'	540'	410'
70	L = WS	625'	715'	740'	70'	140'	600'	475'
75		685'	785'	810'	75'	150'	660'	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.

\* For posted speeds in excess of 65 MPH, it is recommended that spacing is increased as speed limits increase. Increasing space between rumble strips will improve effectiveness.

**TEMPORARY RUMBLE STRIPS**

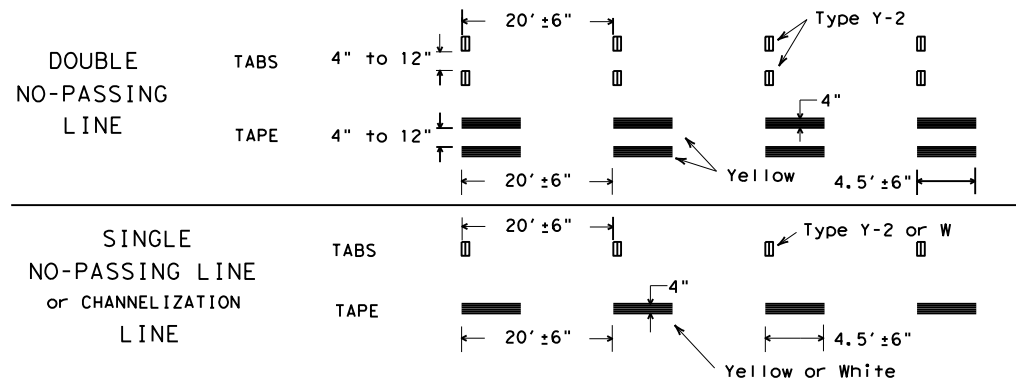
**WZ (RS) - 22**

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
2-14 1-22	DIST	COUNTY	SHEET NO.	
4-16	DAL	KAUFMAN	42	

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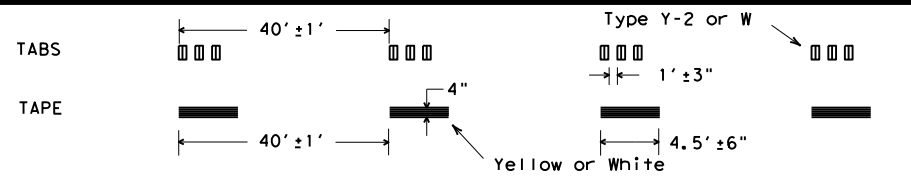
## WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

### SOLID LINES



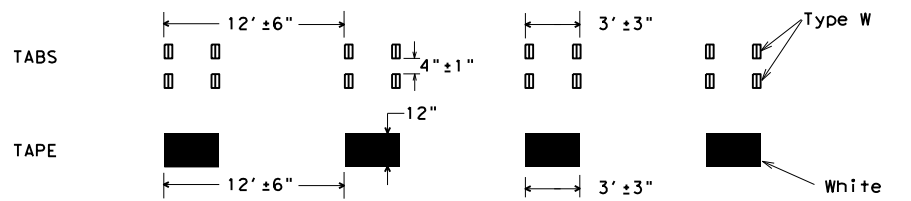
### BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

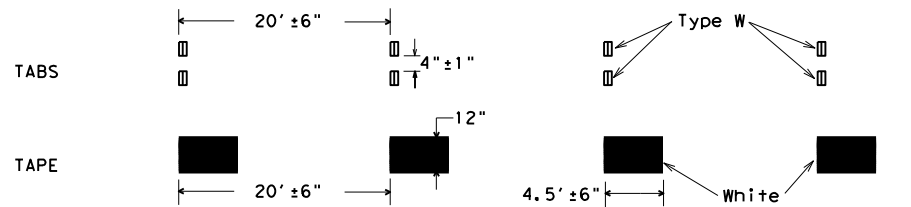


### WIDE DOTTED LINES

(FOR LANE DROP LINES)



### WIDE GORE MARKINGS



#### NOTES:

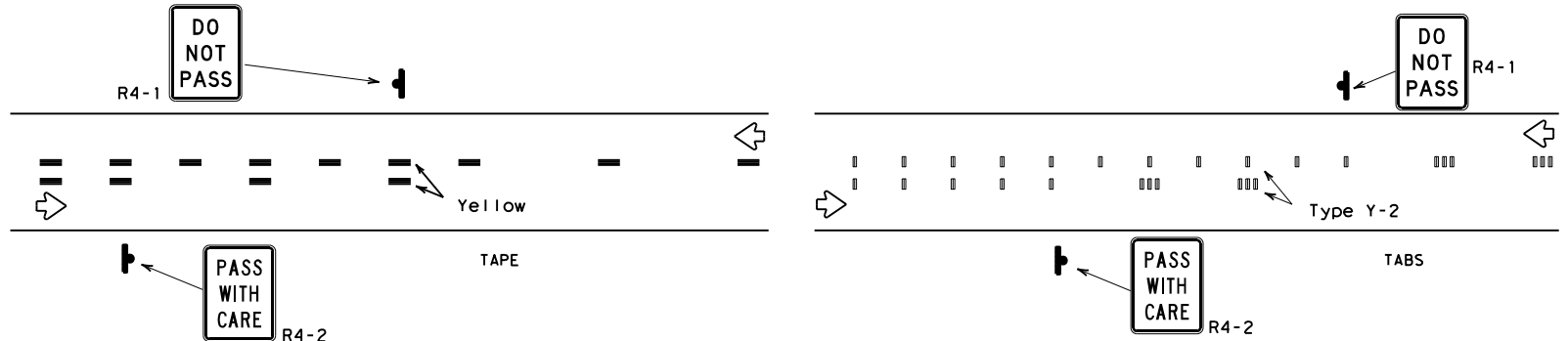
- Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible-reflective roadway marker tabs unless otherwise specified elsewhere in plans.
- Short term pavement markings shall NOT be used to simulate edge lines.
- Dimensions indicated on this sheet are typical 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.
- 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.
- 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.
- 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.
- 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).
- 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)

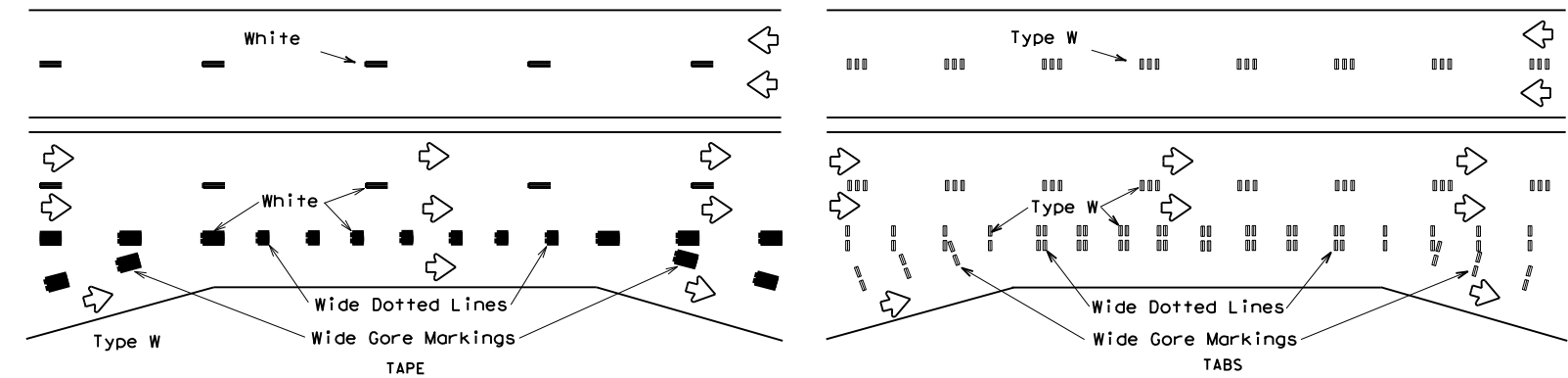
- Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
- Tabs shall meet requirements of Departmental Material Specification DMS-8242.
- 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.
- 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.

DATE:  
FILE:

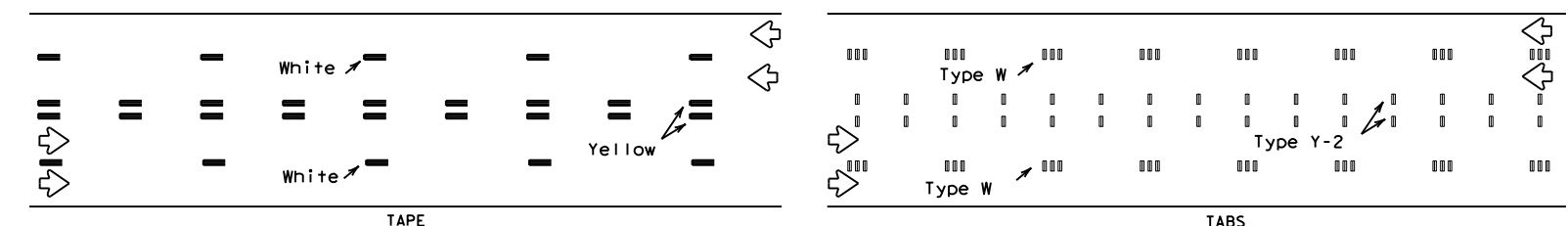
## WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



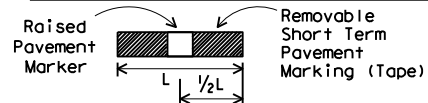
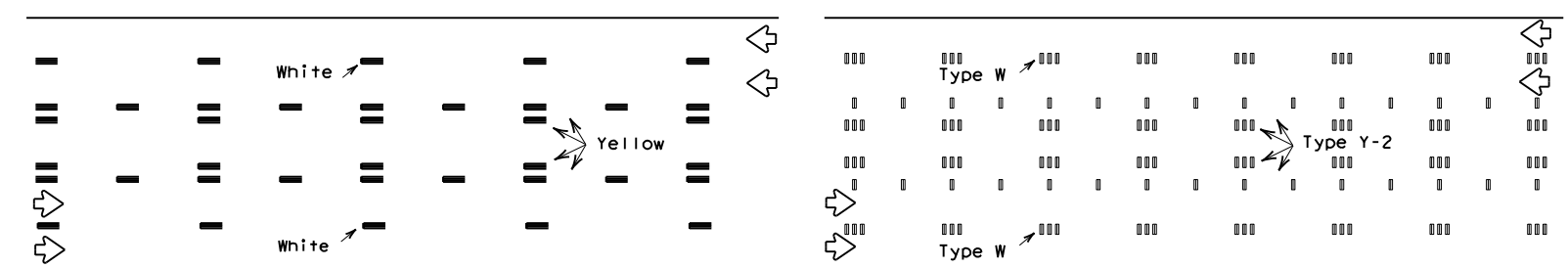
### CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



### LANE LINES FOR DIVIDED HIGHWAY



### LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



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

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

#### RAISED PAVEMENT MARKERS

- 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)

- 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](http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm)



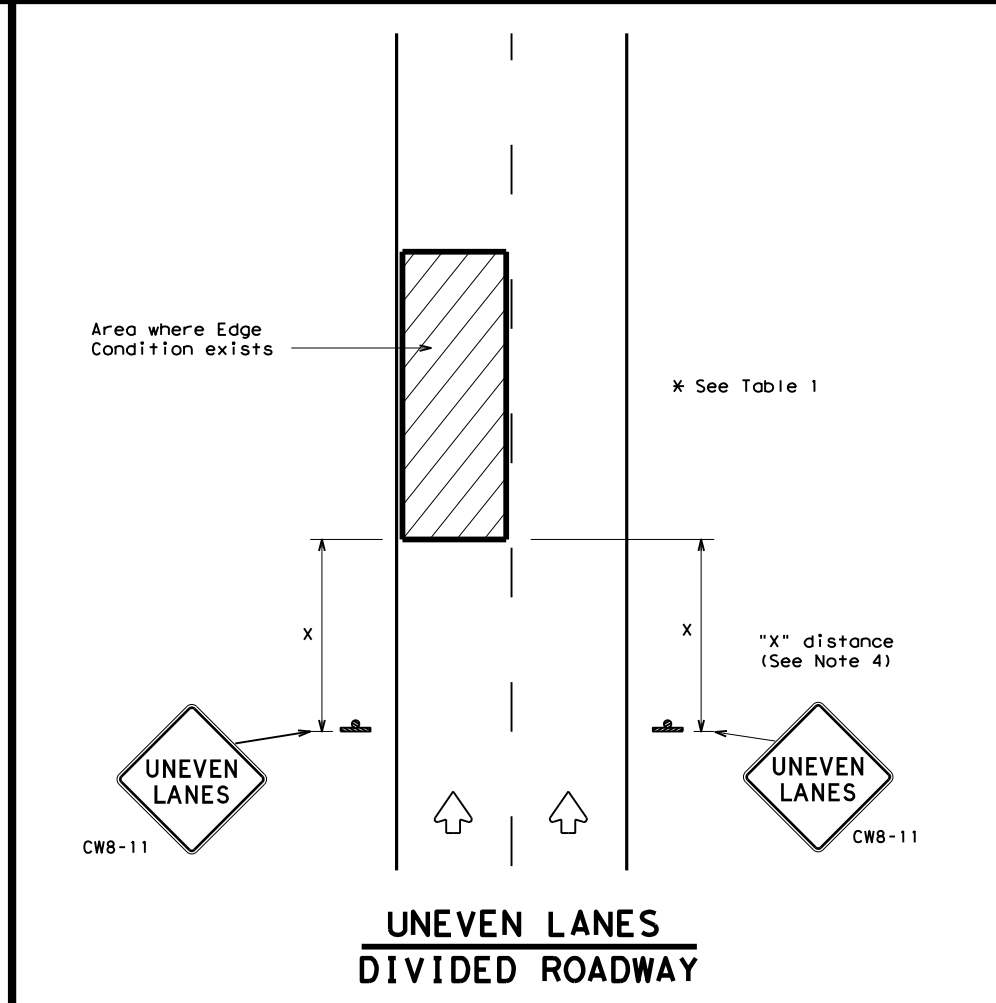
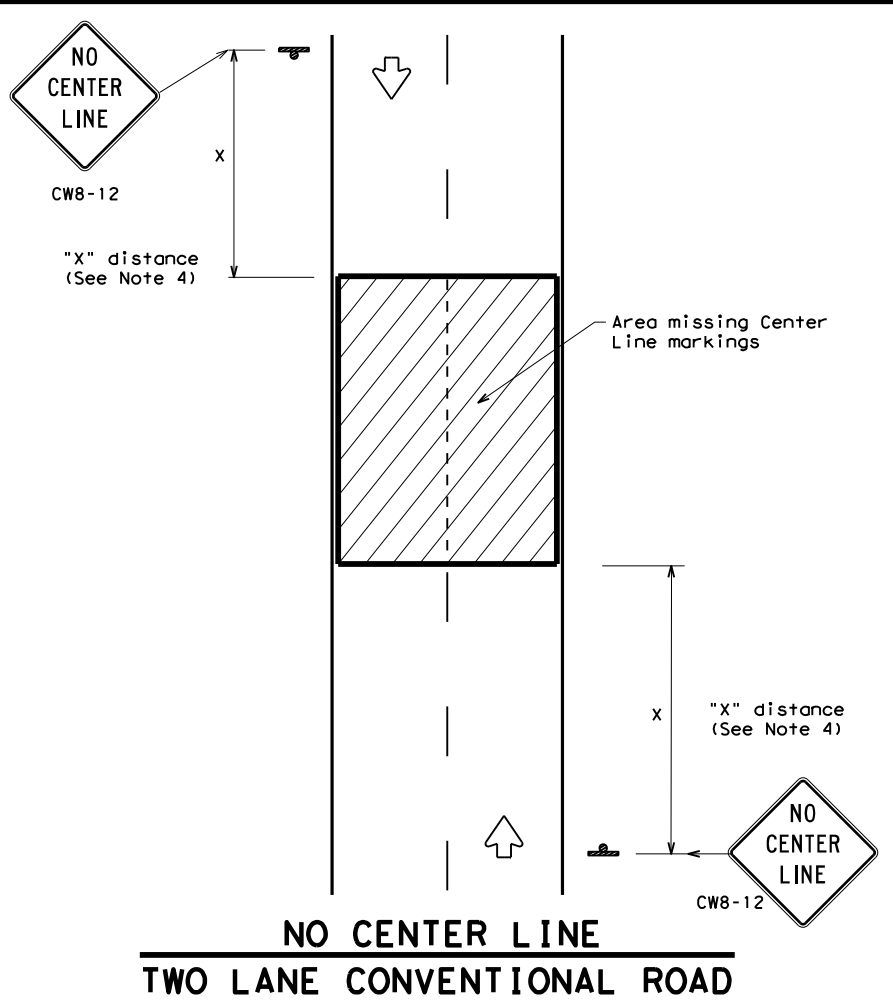
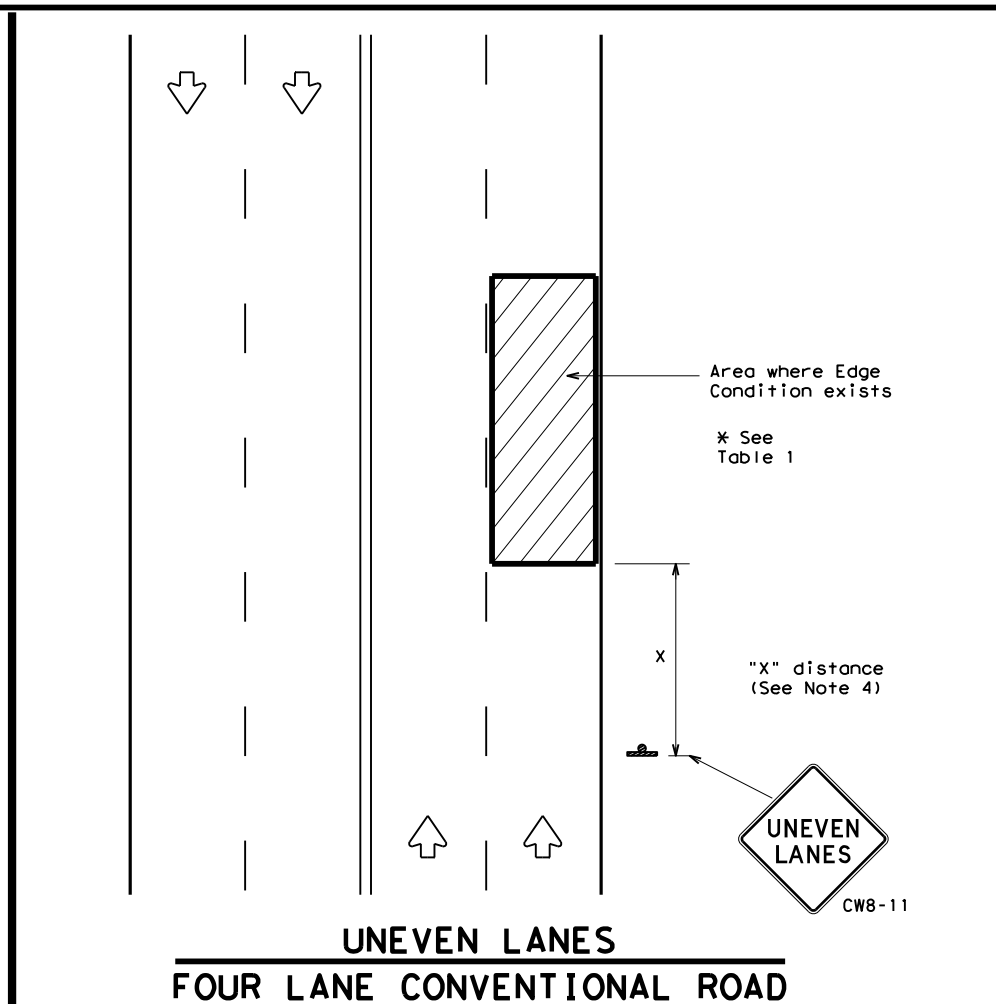
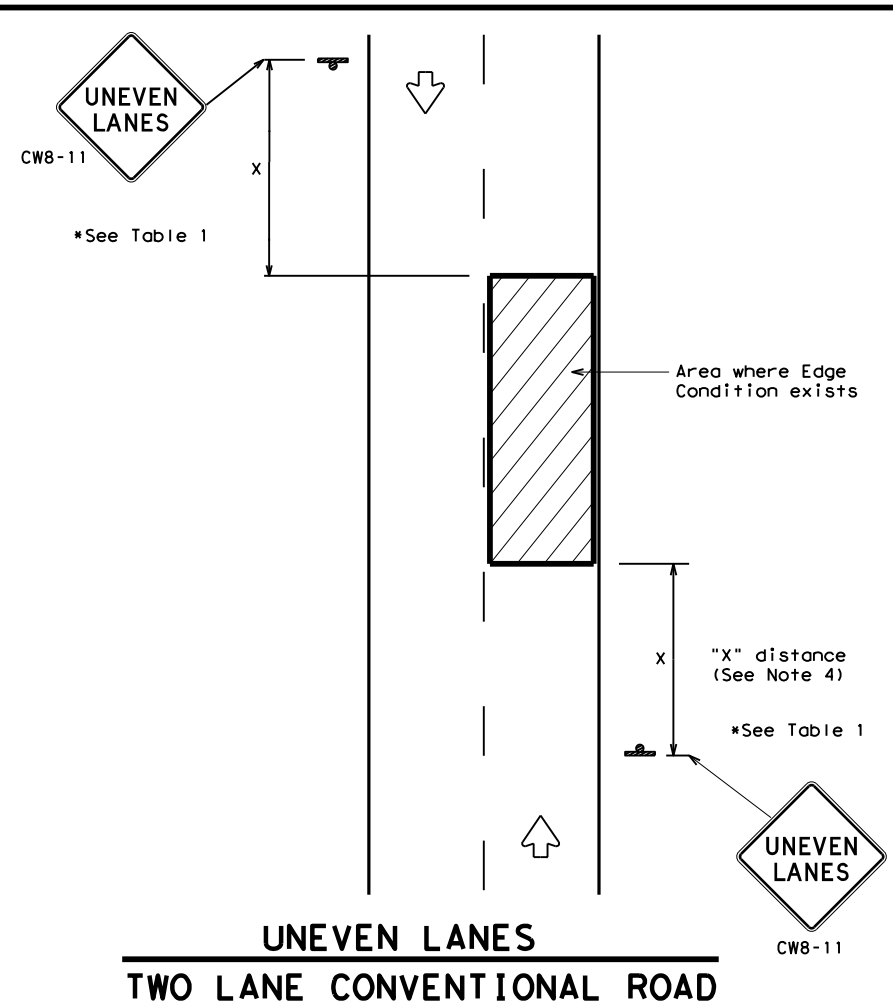
## WORK ZONE SHORT TERM PAVEMENT MARKINGS

### WZ (STPM) - 13

FILE:	wzstpm-13.dgn	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS		0095	04	074, ETC.	US 80
1-97		DIST	COUNTY		SHEET NO.
3-03		DAL	KAUFMAN		43
7-13					

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



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 <sub>FL</sub> OR TYPE C <sub>FL</sub> 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.

Edge Condition	Edge Height (D)	* Warning Devices
①	Less than or equal to: 1/4" (maximum-planing) 1/2" (typical-overlay)	Sign: CW8-11
②	Less than or equal to 3"	Sign: CW8-11
③	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.**

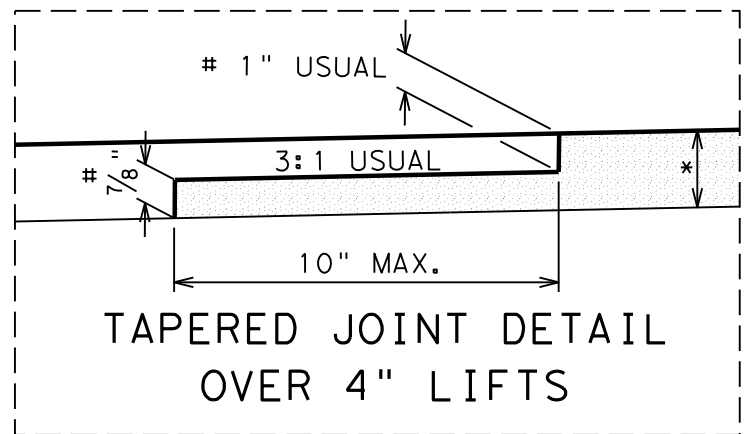
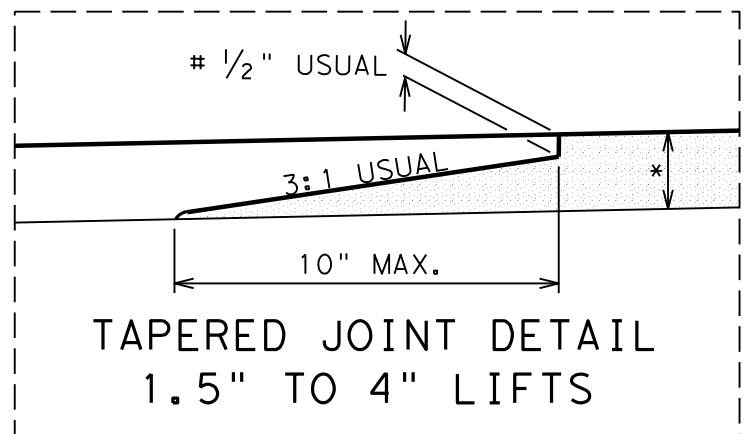
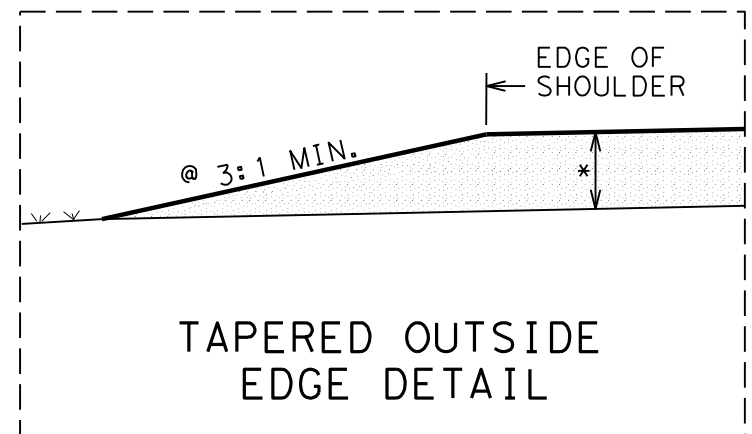
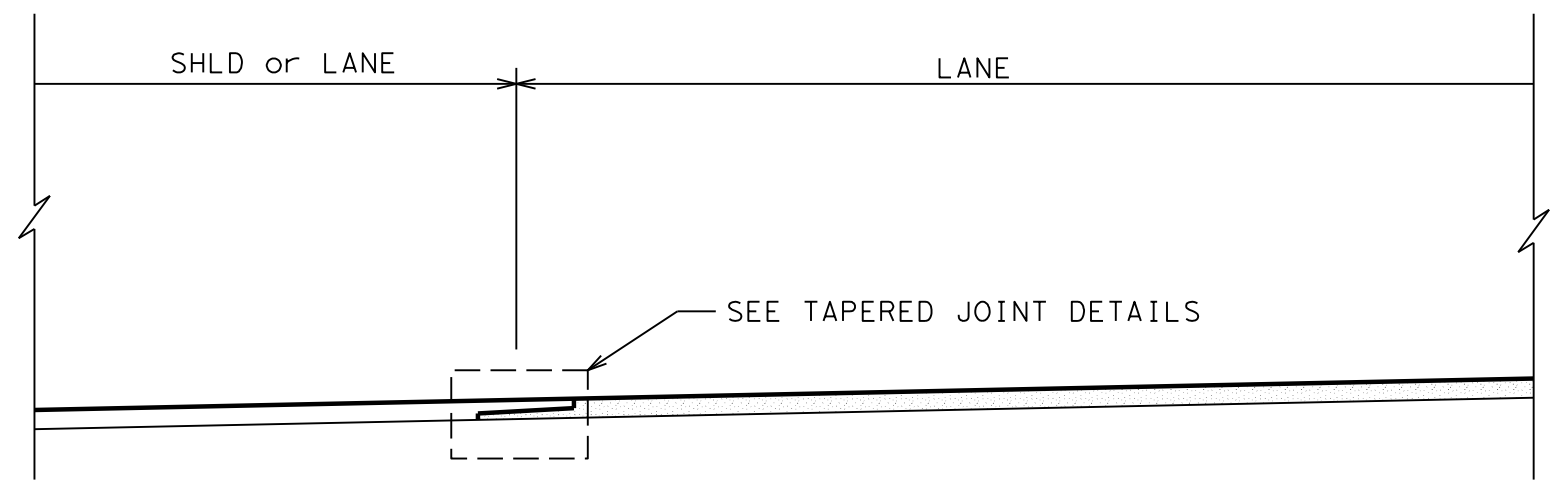
MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"



**SIGNING FOR UNEVEN LANES**

**WZ (UL) - 13**

FILE: wZul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
8-95 2-98 7-13	DIST	COUNTY	SHEET NO.	
1-97 3-03	DAL	KAUFMAN	44	



@ IF BACKFILLED SLOPE IS LESS THAN 3:1,  
COVER WEDGE WITH APPROVED BACKFILL.

\* SEE TYPICAL SECTION FOR DEPTH AND TYPE OF HMA.  
# NOTCH DEPTH SHALL NOT BE LESS THAN NOMINAL AGGREGATE SIZE.

**NOTES:**

1. THE ABOVE DETAILS SHALL BE CONSTRUCTED BY TAPERING THE BITUMINOUS MAT. THE TAPERED PORTION SHALL EXTEND BEYOND THE NORMAL LANE WIDTH AND BE LAID MONOLITHICALLY WITH ADJOINING MAT. THE TAPERED PORTION OF THE MAT SHALL BE CONSTRUCTED BY THE USE OF AN APPROVED STRIKE-OFF DEVICE THAT WILL PROVIDE A UNIFORM SLOPE AND WILL NOT RESTRICT THE MAIN SCREED. CLEAN WEDGE PRIOR TO PLACEMENT OF TACK COAT. TACK COAT SHALL BE APPLIED UNIFORMLY TO THE IN-PLACE TAPER WITH A DISTRIBUTOR BEFORE THE ADJACENT MAT IS PLACED. FINAL DENSITY REQUIREMENTS FOR THE ENTIRE PAVEMENT, INCLUDING THE TAPER AREA, WILL REMAIN UNCHANGED. COMPACTION OF THE INITIAL TAPER SECTION WILL BE REQUIRED AS NEAR TO FINAL DENSITY AS POSSIBLE. ROLL ADJACENT MAT FROM HOT SIDE TO COLD.
2. THE TYPE OF DEVICE TO PRODUCE ABOVE REFERENCED DETAILS SHALL PROVIDE INITIAL COMPACTION EQUIVALENT TO LAYDOWN MACHINE, WITH FINAL DENSITY ADHERING TO NOTE 1, AND BE APPROVED BY THE ENGINEER.
3. HOT MIX MATERIAL AND PLACEMENT SHALL BE PAID FOR UNDER THE PERTINENT ITEM. ANY ADDITIONAL SURFACE PREPARATION, TACK COAT, TACK COAT PLACEMENT, EQUIPMENT, LABOR, TOOLS AND INCIDENTALS TO PRODUCE TAPERED EDGE AND JOINTS AS DESCRIBED ABOVE SHALL BE CONSIDERED SUBSIDIARY TO THE HOT MIX ITEM.
4. THE TAPERED JOINT DETAIL IS NOT INTENDED FOR USE ON 2 WAY 2 LANE ROADBED CENTERLINE WITH LESS THAN 22' OVERALL WIDTH.
5. FULL PAVING OF ALL LANES AND SHOULDRS BY THE END OF EACH DAY PRODUCTION WILL NOT REQUIRE A TAPERED JOINT.

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**HOT MIX EDGE AND  
LONGITUDINAL JOINT DETAILS  
DALLAS DISTRICT STANDARD**

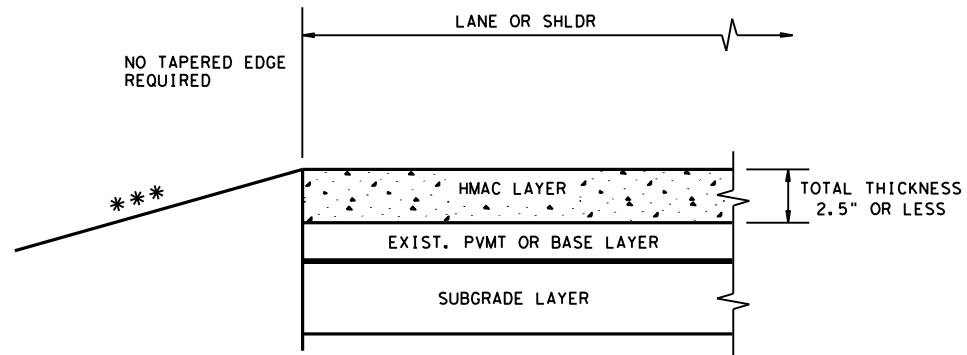
**LJD(1-1)-07**

FED. RD. DIV. NO.	PROJECT NUMBER	SHEET NUMBER
18	(SEE TITLE SHEET)	45
STATE	DISTRICT	COUNTY
TEXAS	DALLAS	KAUFMAN
CONTROL	SECTION	HIGHWAY NUMBER
0095	04	074, ETC. US 80

REVISED ON 9/10/08

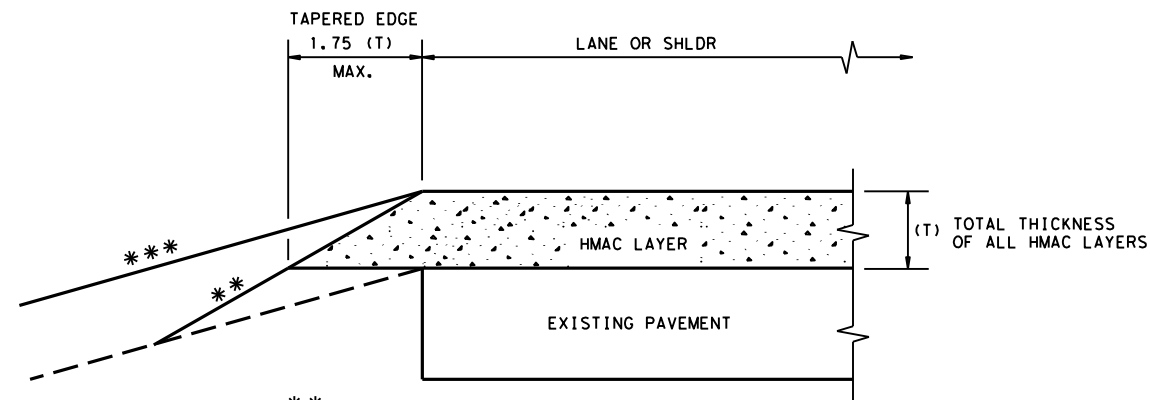
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DATE:  
FILE:



\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

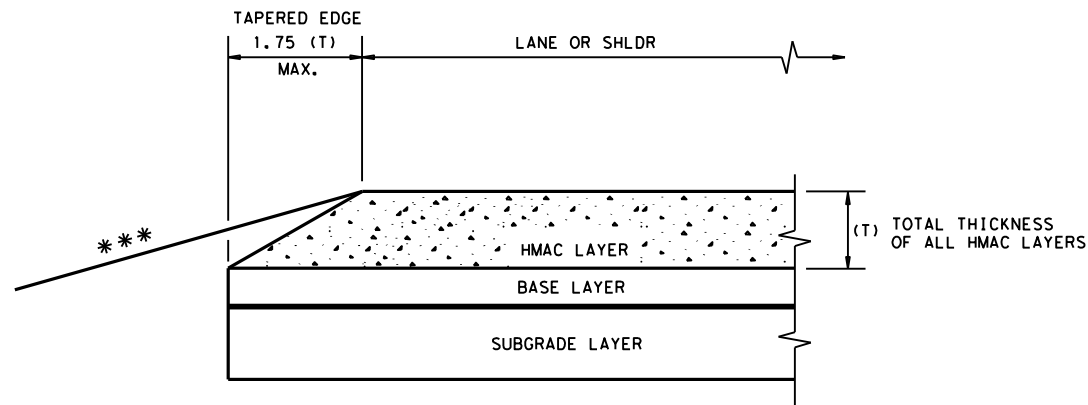
**CONDITION - 1**  
THIN HMAC SURFACES OR HMAC OVERLAY  
WITH THICKNESS OF 2.5" OR LESS



\*\* EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

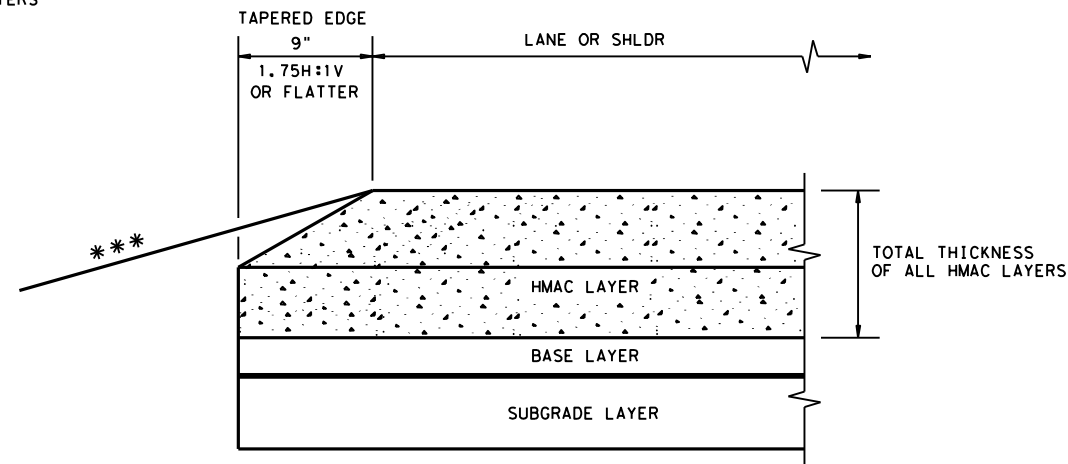
\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

**CONDITION - 2**  
OVERLAY OF EXISTING PAVEMENT  
HMAC THICKNESS 2.5" TO 5"



\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

**CONDITION - 3**  
NEW OR RECONSTRUCTED PAVEMENT  
HMAC THICKNESS 2.5" TO 5"



\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

**CONDITION - 4**  
NEW OR RECONSTRUCTED PAVEMENT  
HMAC THICKNESS 5" OR GREATER

**GENERAL NOTES**

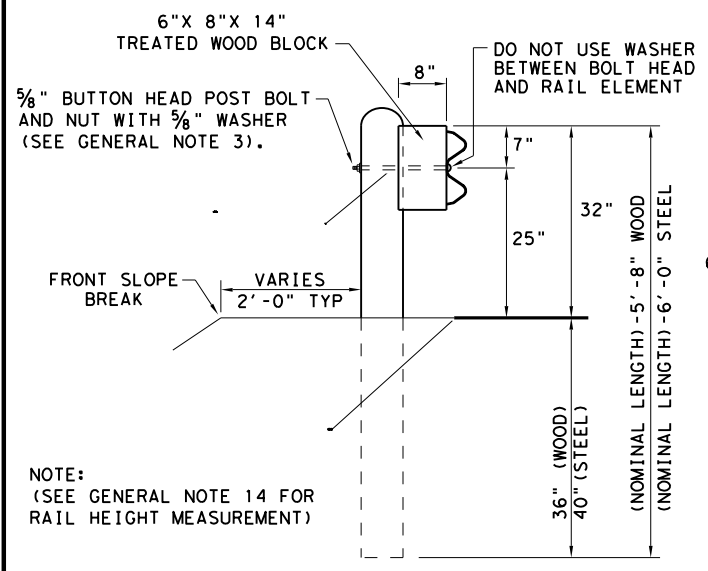
1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

(NOT TO SCALE)

				Design Division Standard	
<b>TAPERED EDGE DETAILS HMAC PAVEMENT</b>					
<b>TE (HMAC) - 11</b>					
FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK: _____	
© TxDOT January 2011	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0095	04	074, ETC.	US 80	
	DIST	COUNTY		SHEET NO.	
	DAL	KAUFMAN		46	

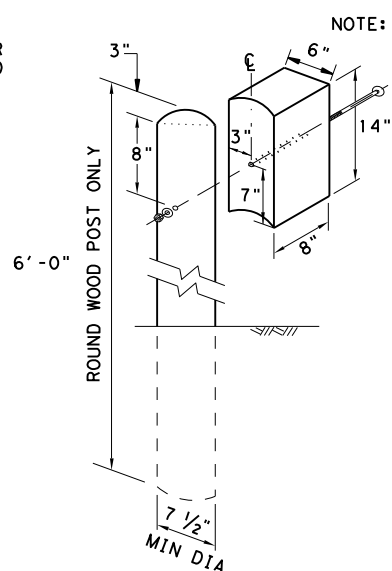
DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.

DATE: FILE:



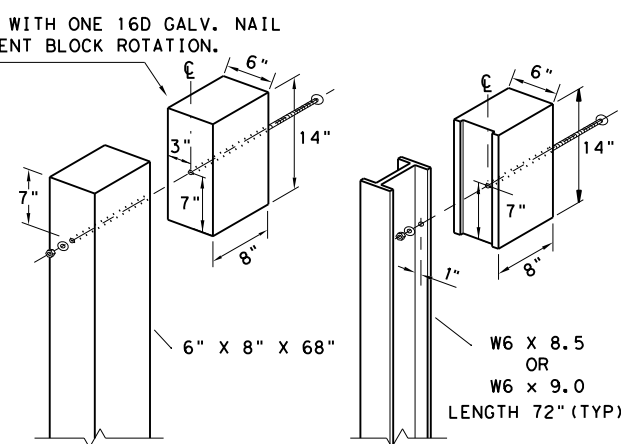
**TYPICAL POST PLACEMENT**

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



**WOOD BLOCK TO ROUND WOOD POST**

NOTE: TOENAIL WITH ONE 16D GALV. NAIL TO PREVENT BLOCK ROTATION.

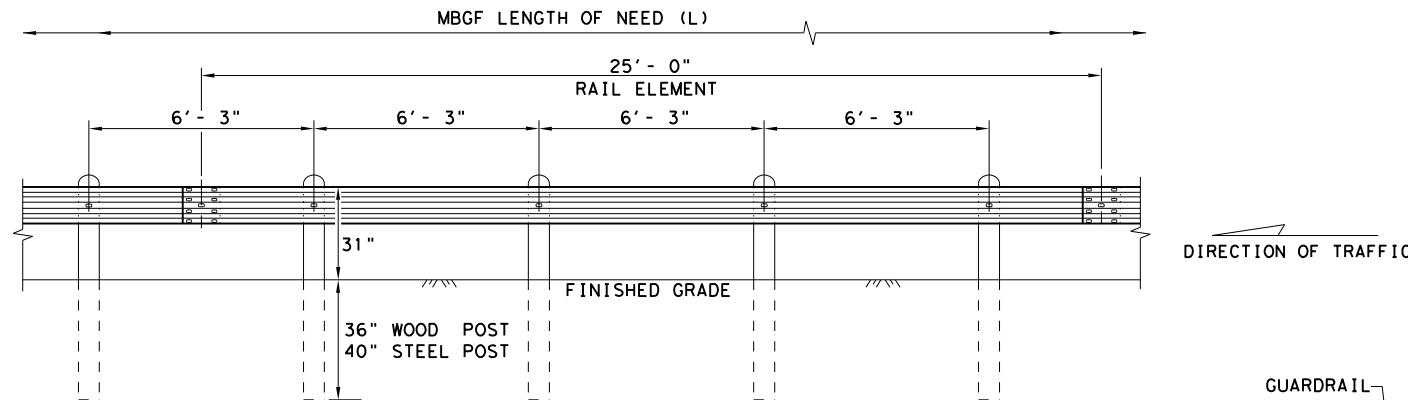


**WOOD BLOCK TO RECTANGULAR WOOD POST**

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

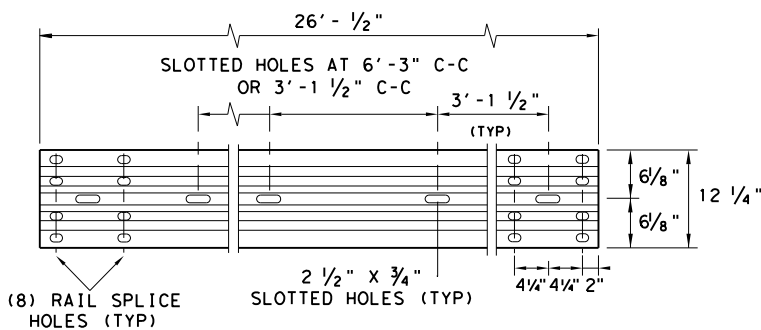
- GENERAL NOTES**
1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
  2. RAIL ELEMENTS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

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



**ELEVATION MID-SPAN RAIL SPLICE**

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



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

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

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

SPLICE BOLT LENGTH

FBB01 = 1 1/4"

FBB02 = 2"

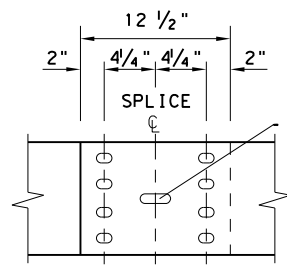
POST & BLOCK LENGTH

FBB03 = 10"

FBB04 = 18"

**BUTTON HEAD BOLT**

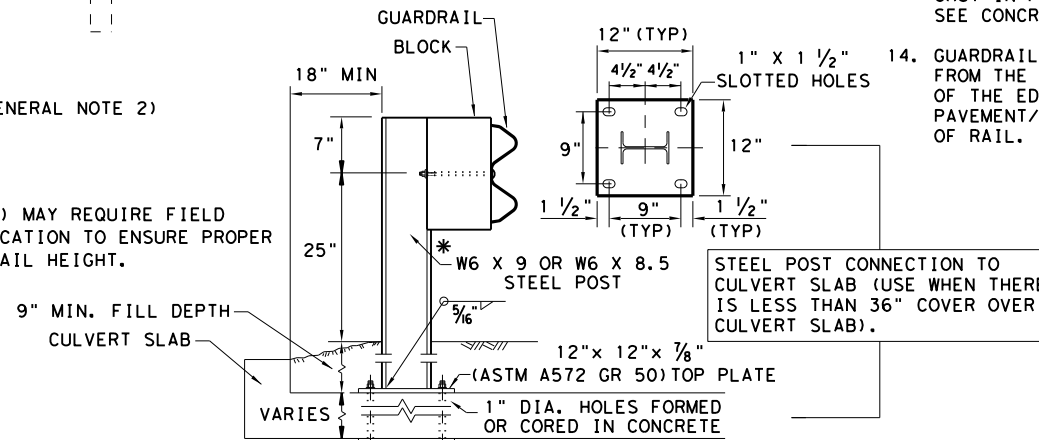
NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



**MID-SPAN RAIL SPLICE DETAIL**

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

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



**LOW FILL CULVERT POST**

12" x 12" x 1/4" (ASTM A36) STEEL BOTTOM PLATE WITH 1" DIA. HOLES REQUIRED WITH BOLT-THROUGH INSTALLATION.

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.

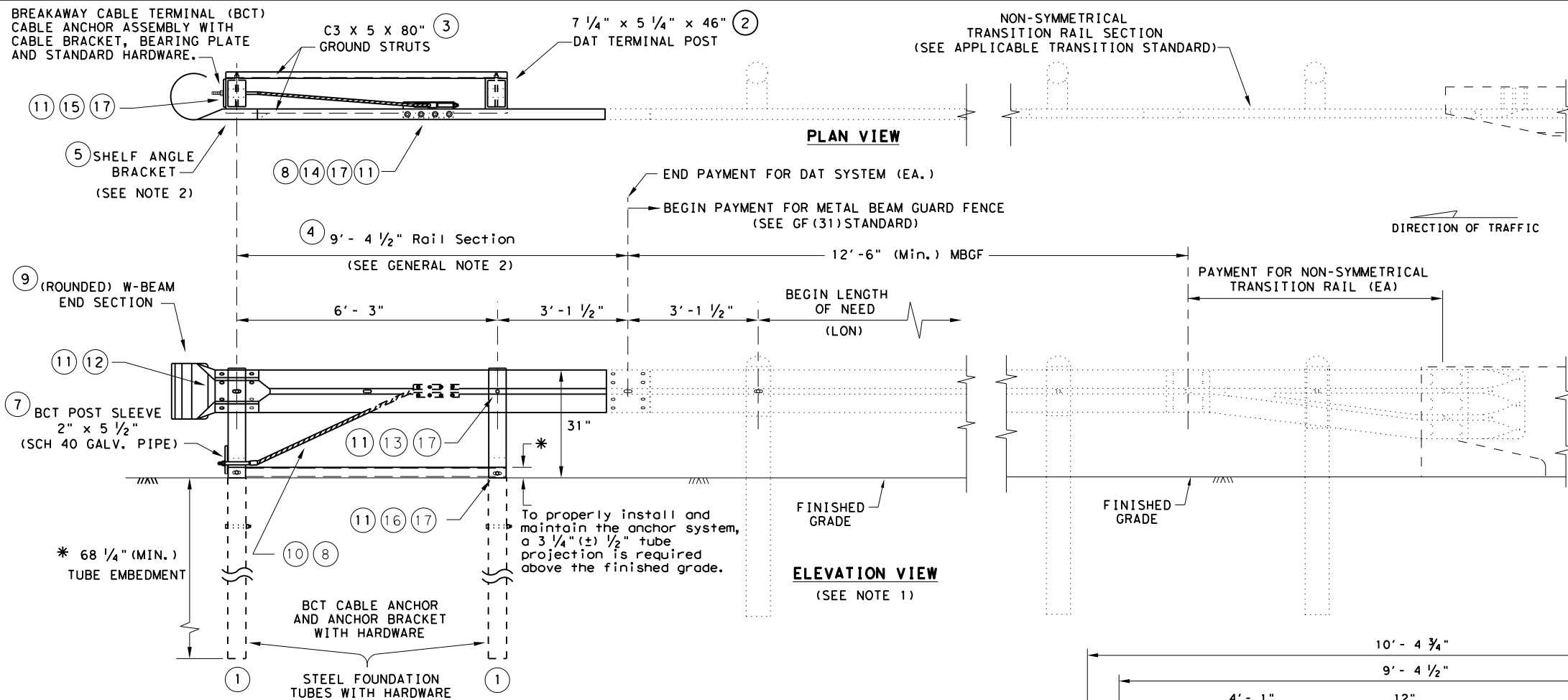
NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

				Design Division Standard
<b>METAL BEAM GUARD FENCE</b> <b>TL-3 MASH COMPLIANT</b> <b>GF(31)-19</b>				
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REVISIONS	0095	04	074, ETC.	US 80
	DIST	COUNTY	SHEET NO.	
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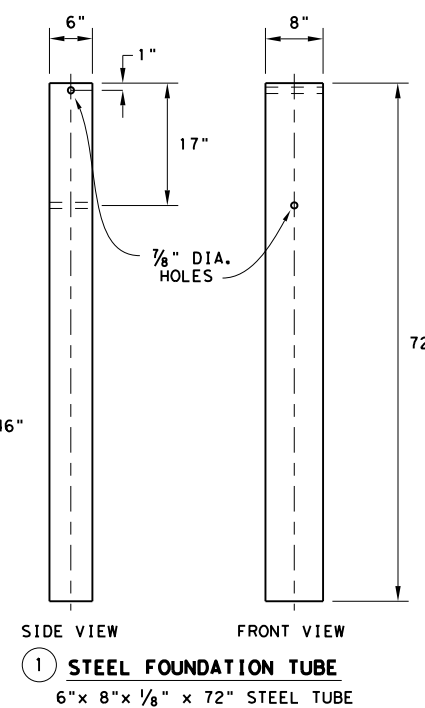
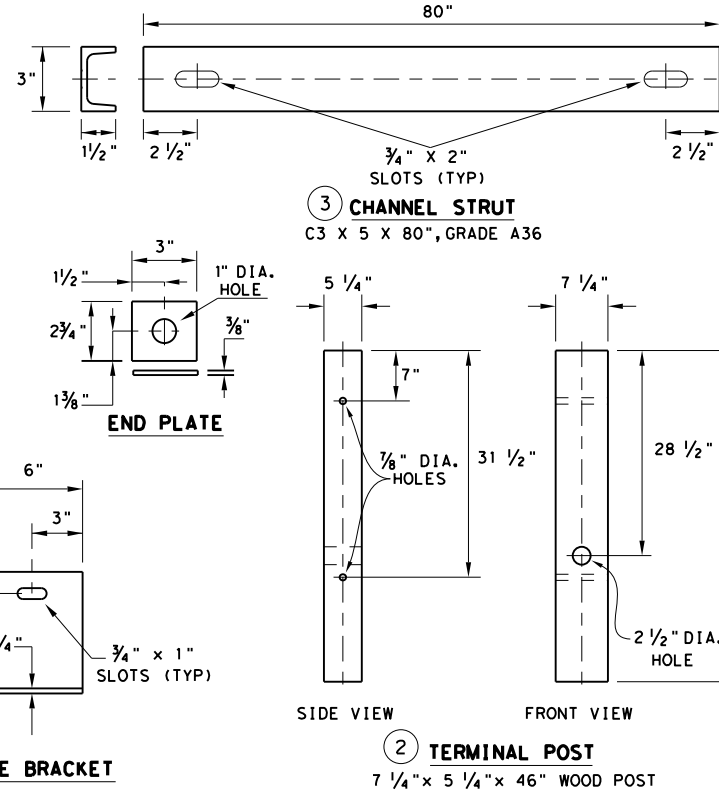
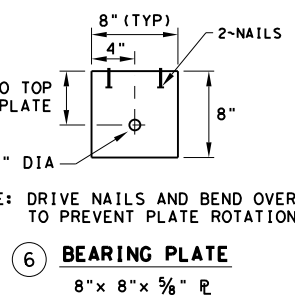
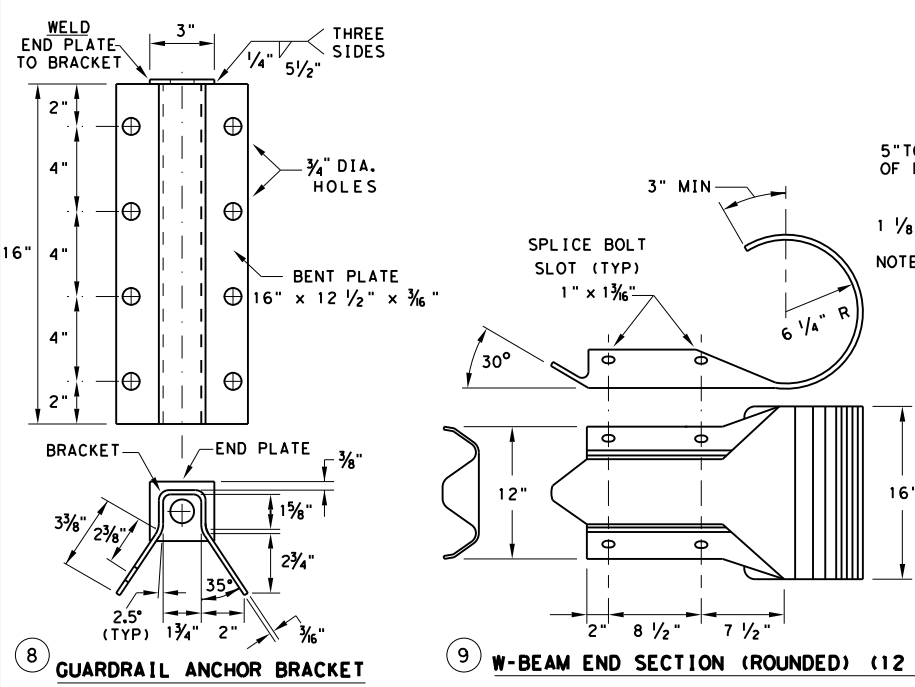
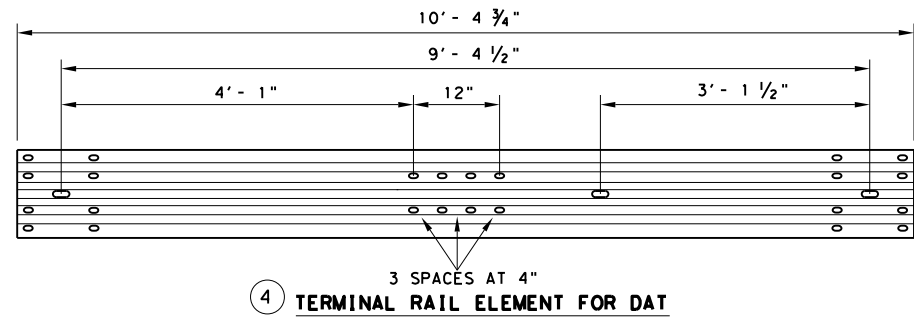


**DOWNSTREAM ANCHOR TERMINAL (DAT)**  
NOTE: ONLY FOR DOWNSTREAM USE, WHEN LOCATED OUTSIDE THE HORIZONTAL CLEARANCE AREA OF OPPOSING TRAFFIC.

- 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



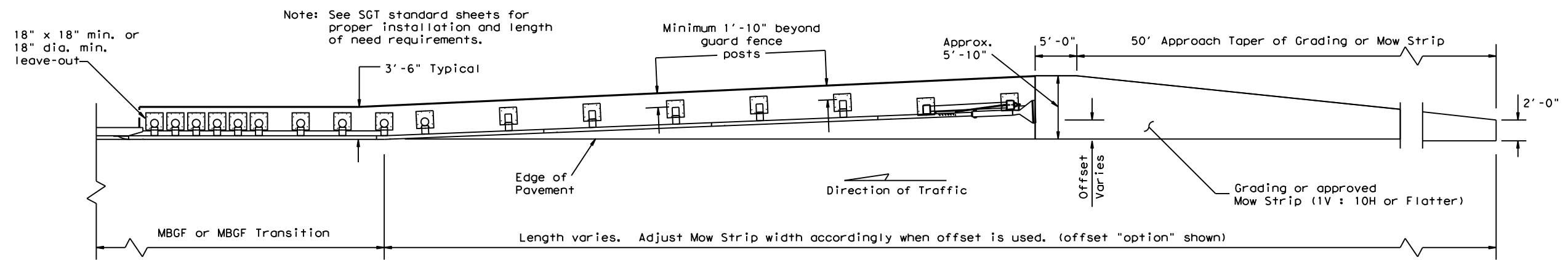
Texas Department of Transportation  
Design Division Standard

**METAL BEAM GUARD FENCE (DOWNSTREAM ANCHOR TERMINAL) TL-3 MASH COMPLIANT GF (31) DAT-19**

FILE: gf31dot19.dgn	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
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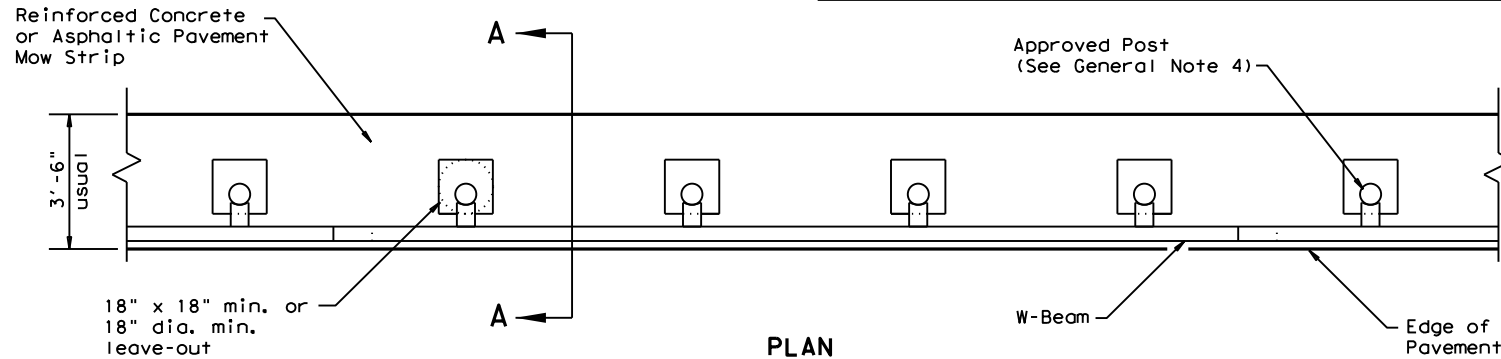
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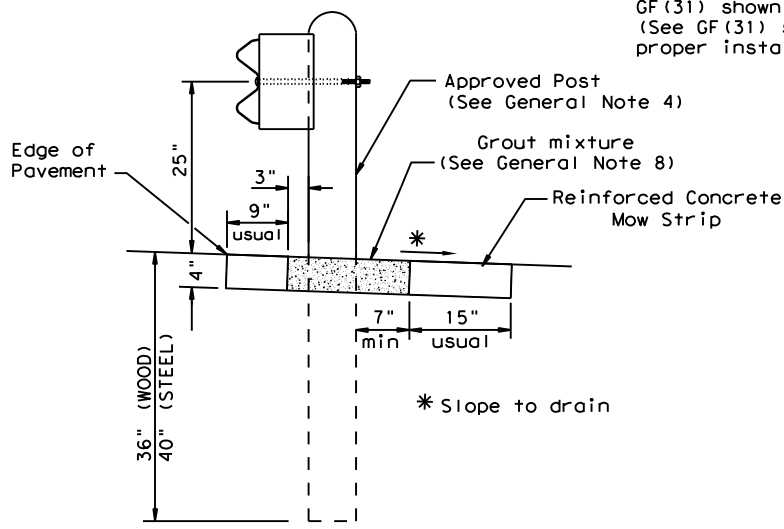
**GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS**

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



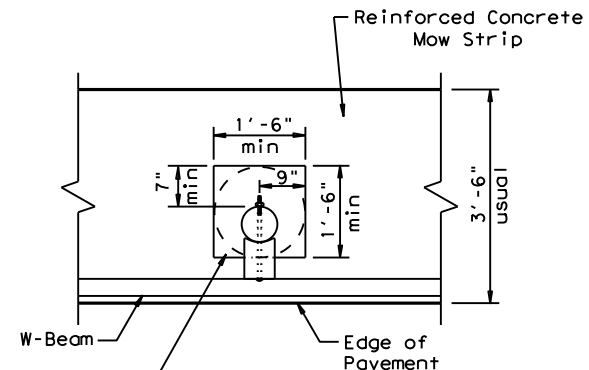
**PLAN**

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



**SECTION A-A**

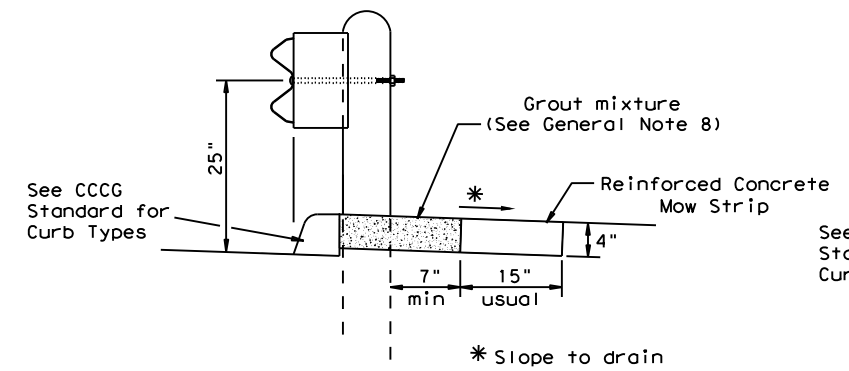
Typical



**MOW STRIP DETAIL**

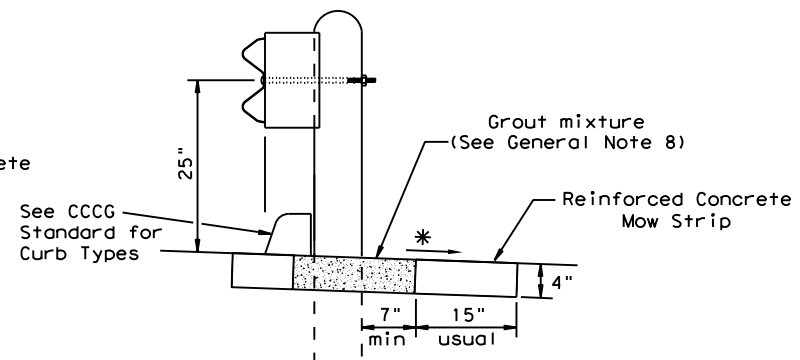
Reinforced Concrete Mow Strip with 18" x 18" Square or 18" Dia. minimum leave-out.

Fill leave-out with Grout mixture (See General Note 8)



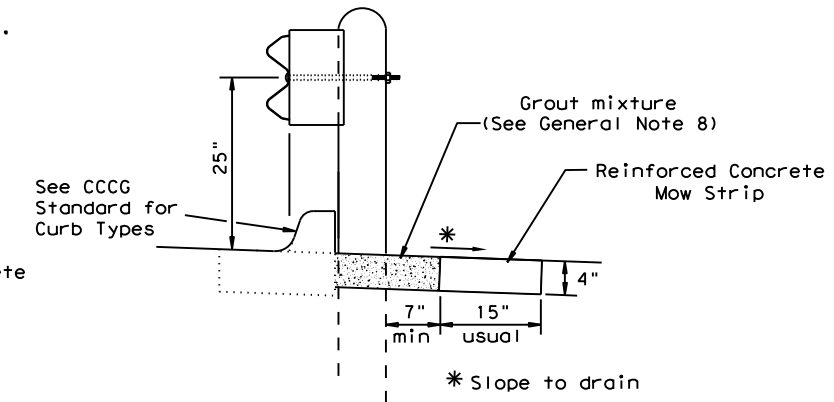
**CURB OPTION (1)**

This option will increase the post embedment throughout the system.



**CURB OPTION (2)**

Curb shown on top of mow strip



**CURB OPTION (3)**

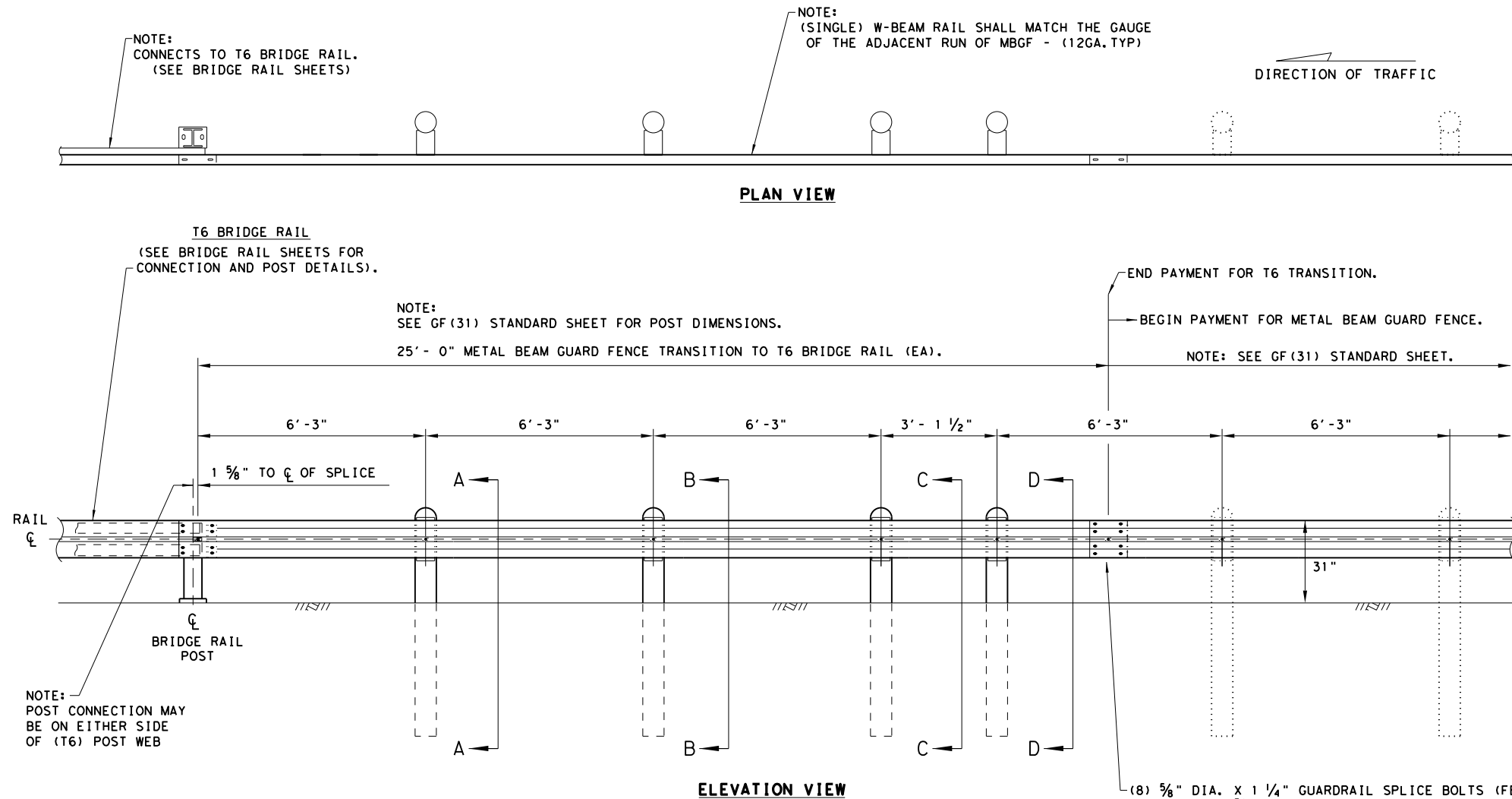
**GENERAL NOTES**

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

		Design Division Standard	
<b>METAL BEAM GUARD FENCE (MOW STRIP)</b> <b>TL-3 MASH COMPLIANT</b> <b>GF(31)MS-19</b>			
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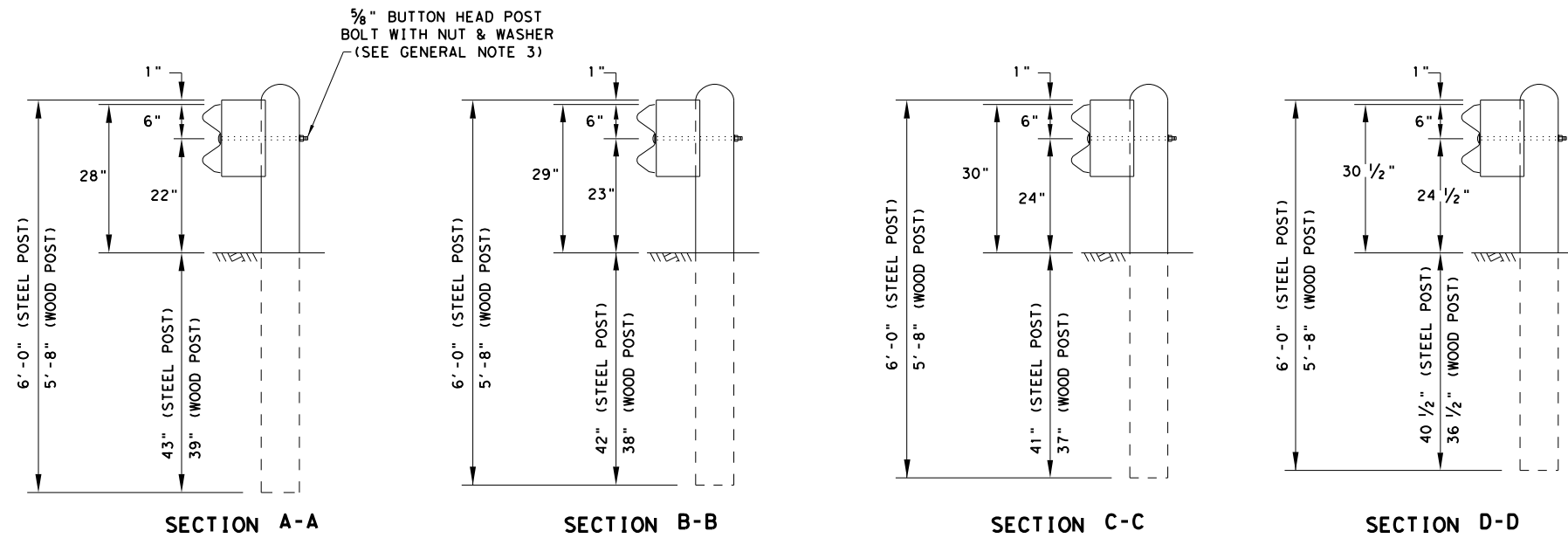
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**GENERAL NOTES**

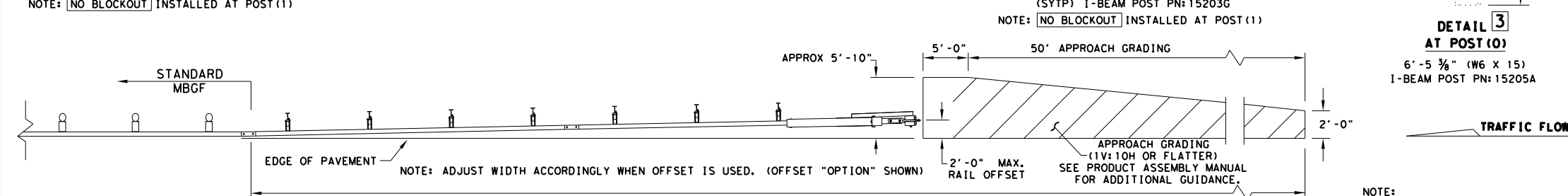
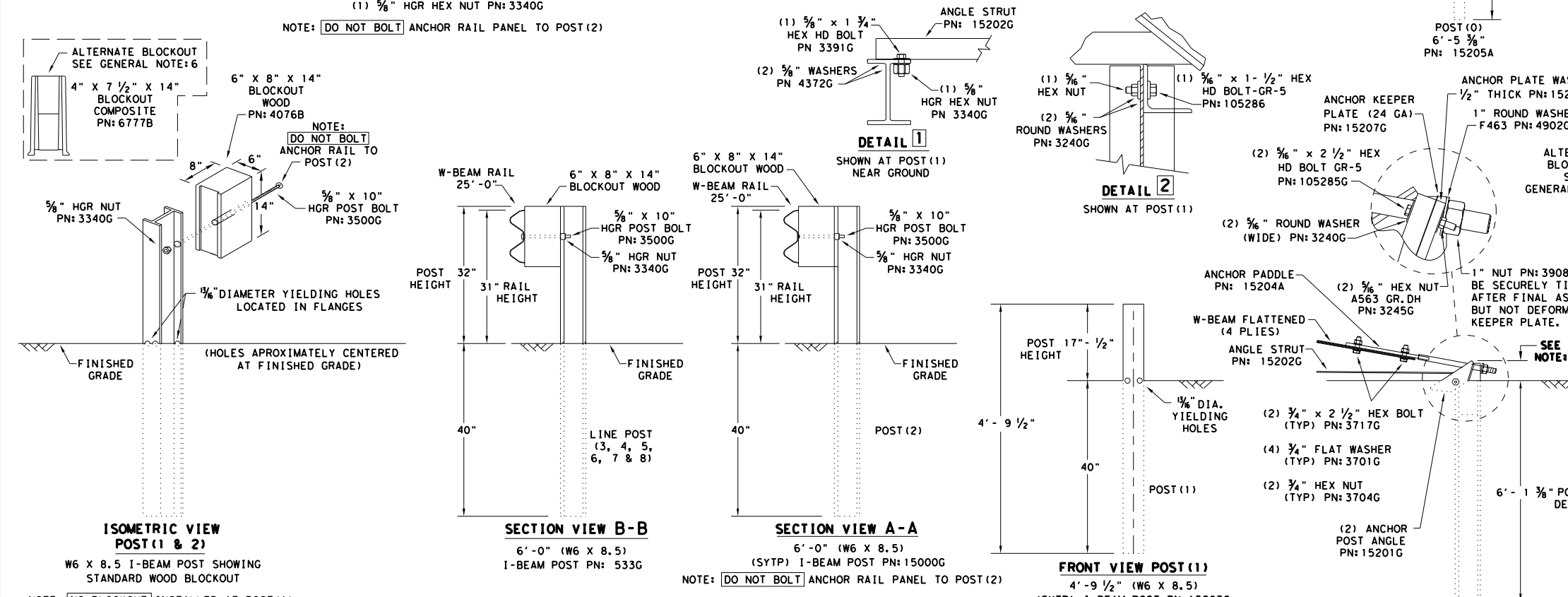
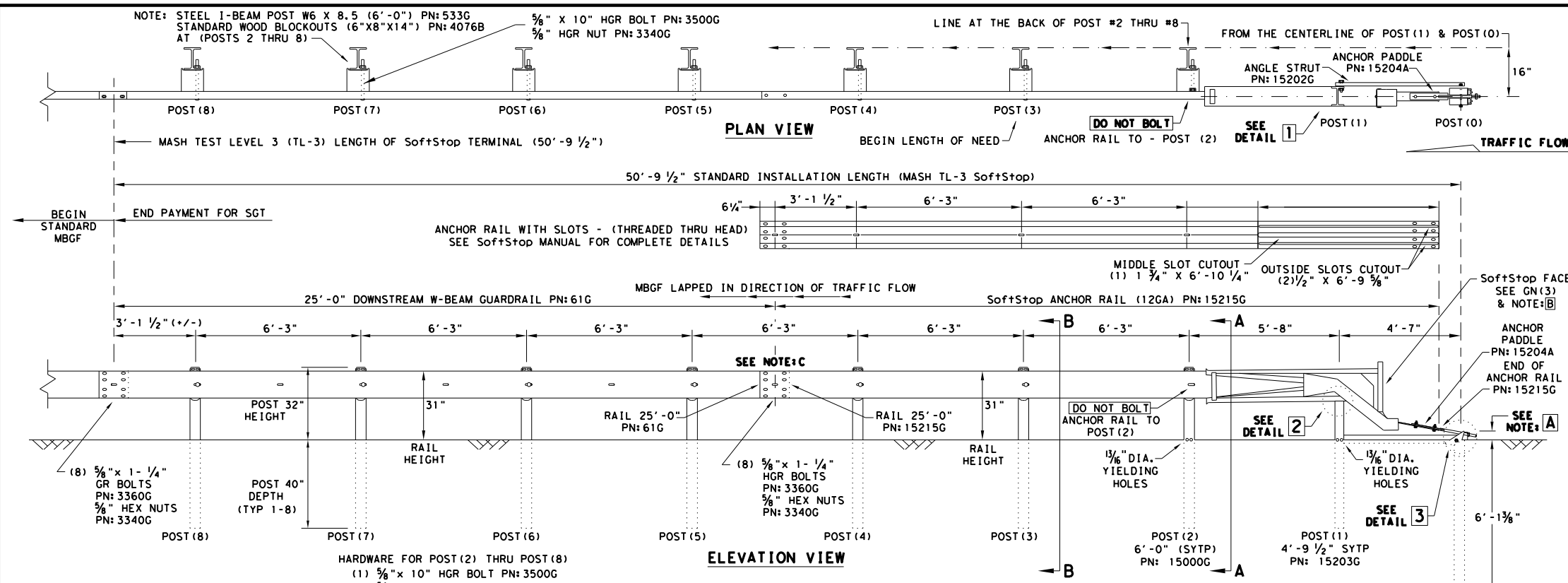
1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENT SHALL MEET THE REQUIREMENTS 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 TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST" BOLTS (ASTM A307 GR.A) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND 5/8" ROUND WASHER (ASTM F436) AND NOT MORE THAN 1" BEYOND IT. BUTTON HEAD "SPLICE" BOLTS (ASTM A307) ARE 5/8" X 1-1/4" WITH 5/8" NUTS (ASTM A563).
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM REQUIRING CONSTRUCTION OF THE TRANSITION.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. WHERE SOLID ROCK IS ENCOUNTERED. CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. 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.
9. REFER TO STANDARD GF (31) & APPLICABLE BRIDGE RAILING STANDARD FOR ADDITIONAL DETAILS.

\* "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



		Design Division Standard	
<b>METAL BEAM GUARD FENCE TRANSITION (T6)</b>			
<b>GF (31) T6-19</b>			
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- GENERAL NOTES**
- 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
  - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE: SoftStop END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL. PN:620237B
  - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
  - 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.
  - IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL AND REFER TO THE LATEST ROADWAY MOW STRIP STANDARD FOR INSTALLATION GUIDANCE.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - IT IS ACCEPTABLE TO INSTALL THE SoftStop IMPACT HEAD PARALLEL TO THE GRADE LINE OR WITH AN UPWARD TILT.
  - DO NOT ATTACH THE SoftStop SYSTEM DIRECTLY TO A RIGID BARRIER.
  - UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE SoftStop SYSTEM BE CURVED.
  - 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 3-3/4" 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 3/8")
15203G	1	POST #1 - (SYTP) (4' - 9 1/2")
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 1/2" X 14")
15204A	1	ANCHOR PADDLE
15207G	1	ANCHOR KEEPER PLATE (24 GA)
15206G	1	ANCHOR PLATE WASHER (1/2" 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	3/4" X 2 1/2" HEX BOLT A325
3701G	4	3/4" ROUND WASHER F436
3704G	2	3/4" HEAVY HEX NUT A563 GR.DH
3360G	16	5/8" X 1 1/4" W-BEAM RAIL SPLICE BOLTS HGR
3340G	25	5/8" W-BEAM RAIL SPLICE NUTS HGR
3500G	7	5/8" X 10" HGR POST BOLT A307
3391G	1	5/8" X 1 3/4" HEX HD BOLT A325
4489G	1	5/8" X 9" HEX HD BOLT A325
4372G	4	5/8" WASHER F436
105285G	2	5/8" X 2 1/2" HEX HD BOLT GR-5
105286G	1	5/8" X 1 1/2" HEX HD BOLT GR-5
3240G	6	5/8" ROUND WASHER (WIDE)
3245G	3	5/8" HEX NUT A563 GR.DH
5852B	1	HIGH INTENSITY REFLECTIVE SHEETING - SEE NOTE:B

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## TRINITY HIGHWAY

### SOFTSTOP END TERMINAL

#### MASH - TL-3

#### SGT (10S) 31-16

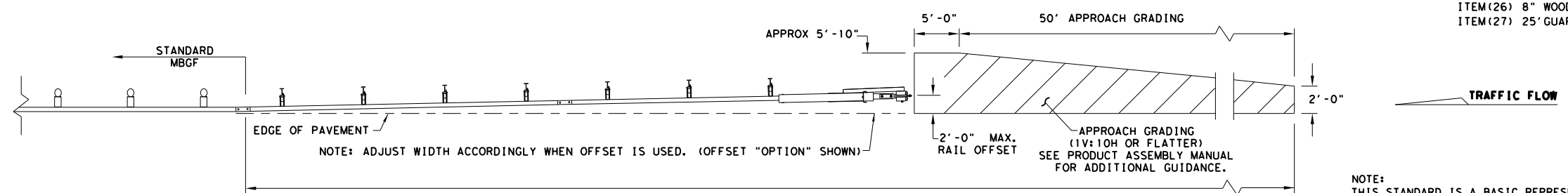
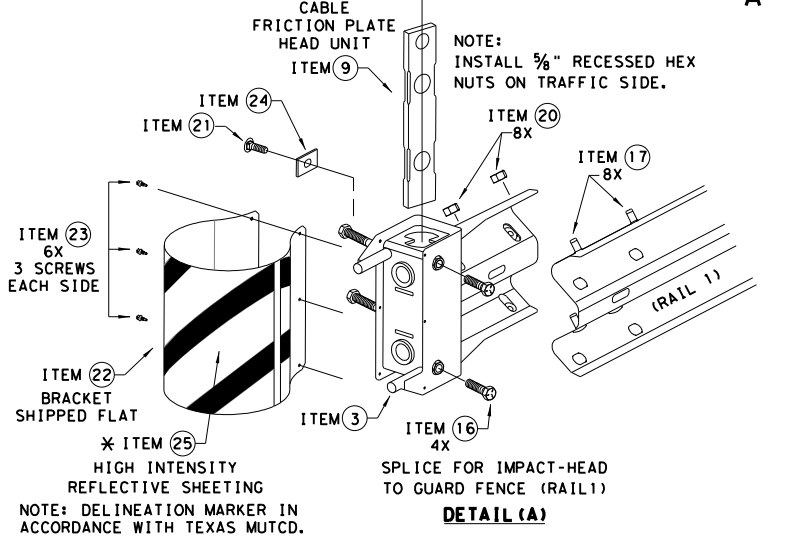
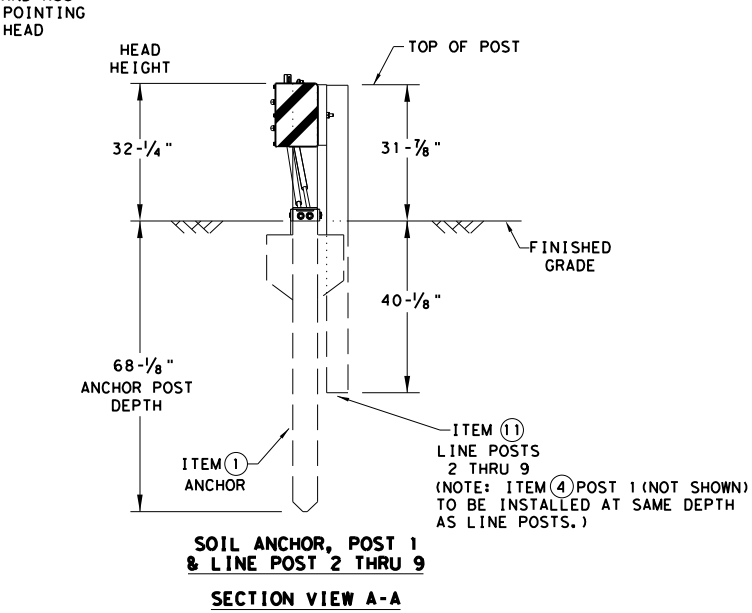
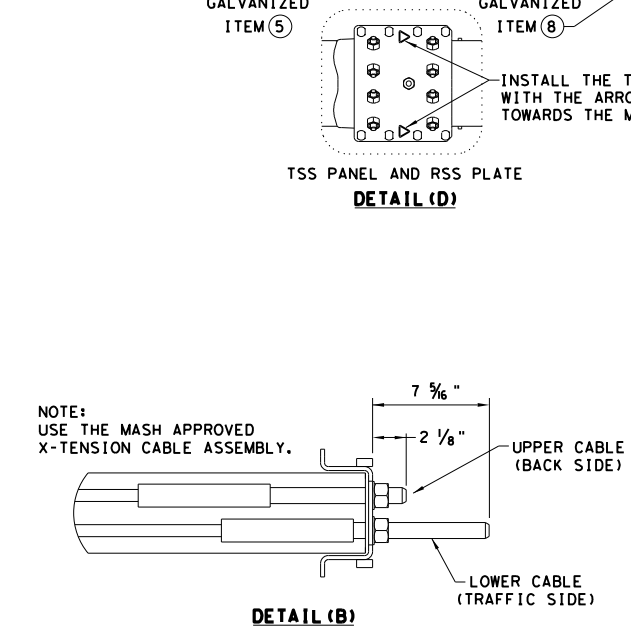
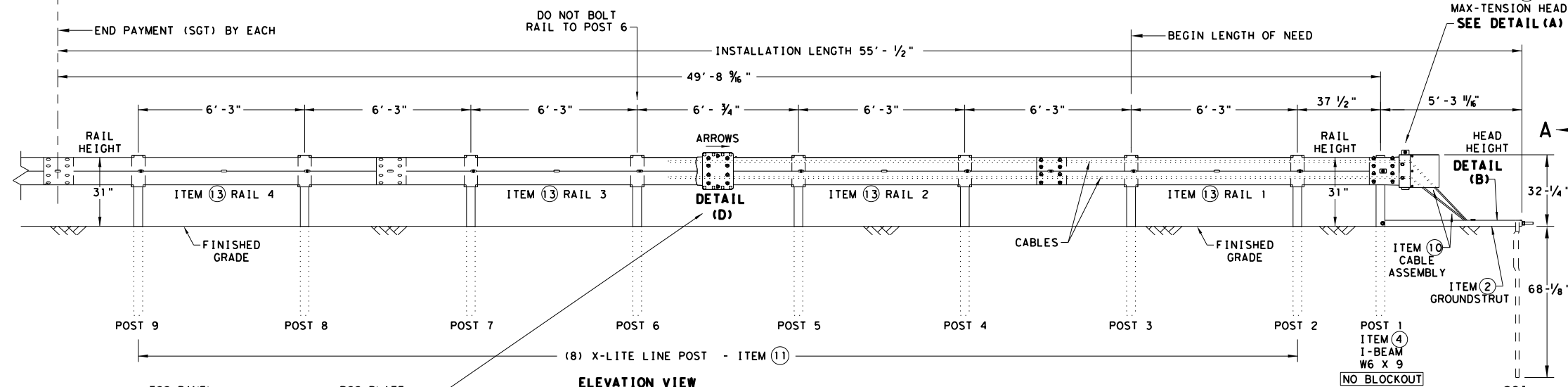
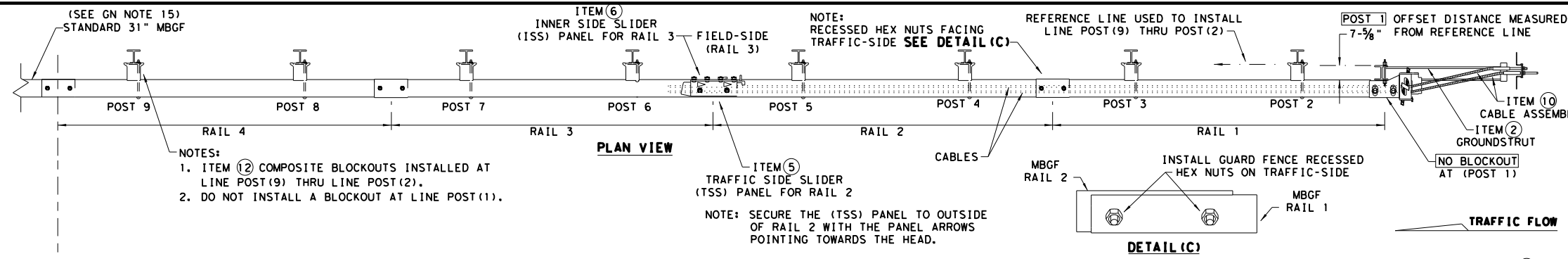
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	DIST	COUNTY		SHEET NO.
	DAL	KAUFMAN		51

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

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- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
  - FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE MAX-TENSION INSTALLATION INSTRUCTION MANUAL, P/N MANMAX REV D (ECN 3516).
  - APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
  - FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TxDOT'S LATEST ROADWAY MOW STRIP STANDARD.
  - ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
  - SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
  - 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.
  - REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
  - IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
  - POSTS SHALL NOT BE SET IN CONCRETE.
  - 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.
  - MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
  - IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
  - THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
  - 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	3/8" 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	3/8" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	3/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	3/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	3/8" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	BSI-2001888	3/8" 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 FWRO3	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

**Texas Department of Transportation**

**Design Division Standard**

**MAX-TENSION END TERMINAL**

**MASH - TL-3**

**SGT (11S) 31-18**

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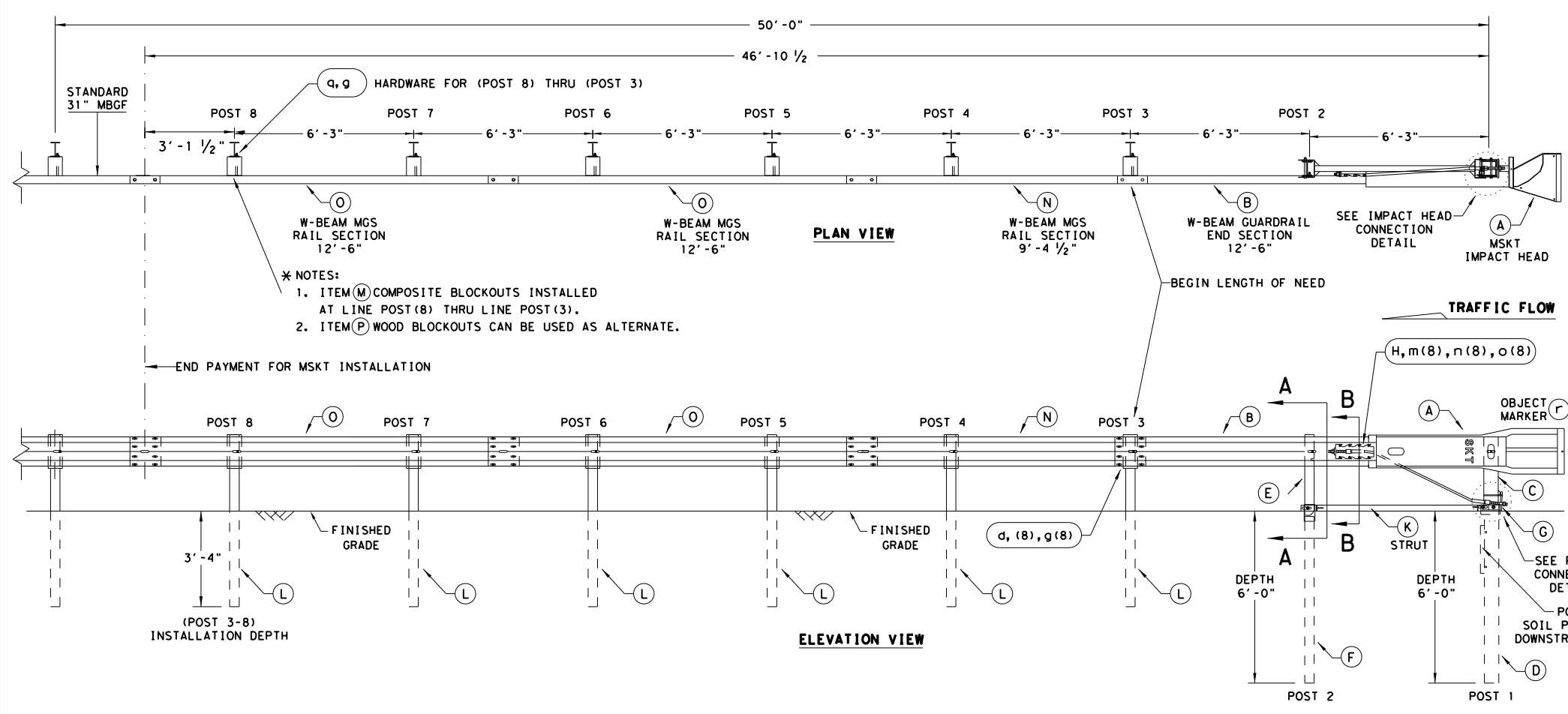
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DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	52	

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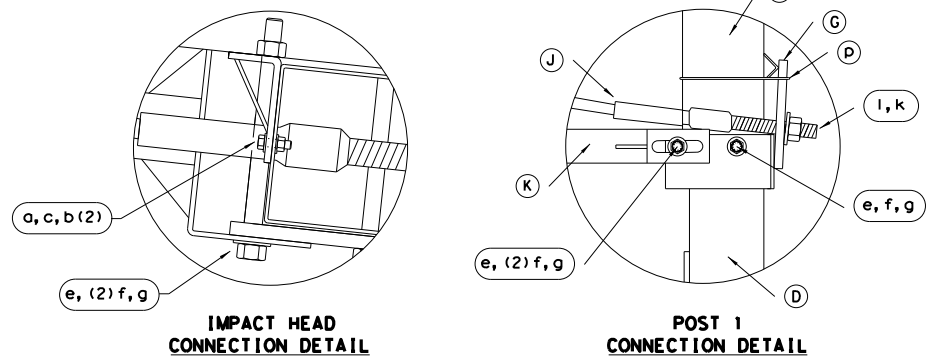
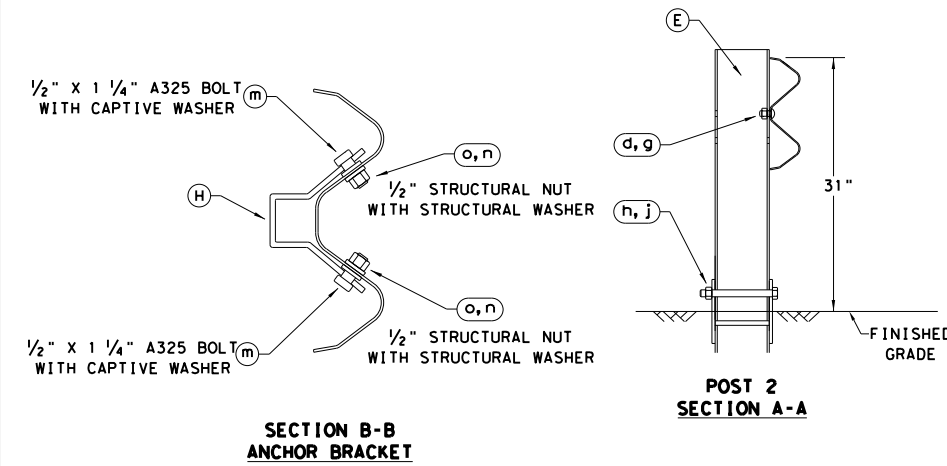
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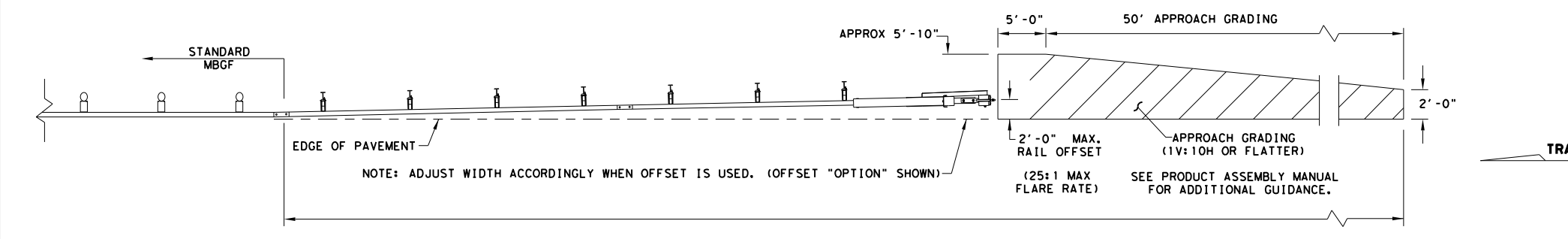
- \* NOTES:**
- ITEM (M) COMPOSITE BLOCKOUTS INSTALLED AT LINE POST (8) THRU LINE POST (3).
  - ITEM (P) WOOD BLOCKOUTS CAN BE USED AS ALTERNATE.

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

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



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



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

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

Design Division Standard

## SINGLE GUARDRAIL TERMINAL

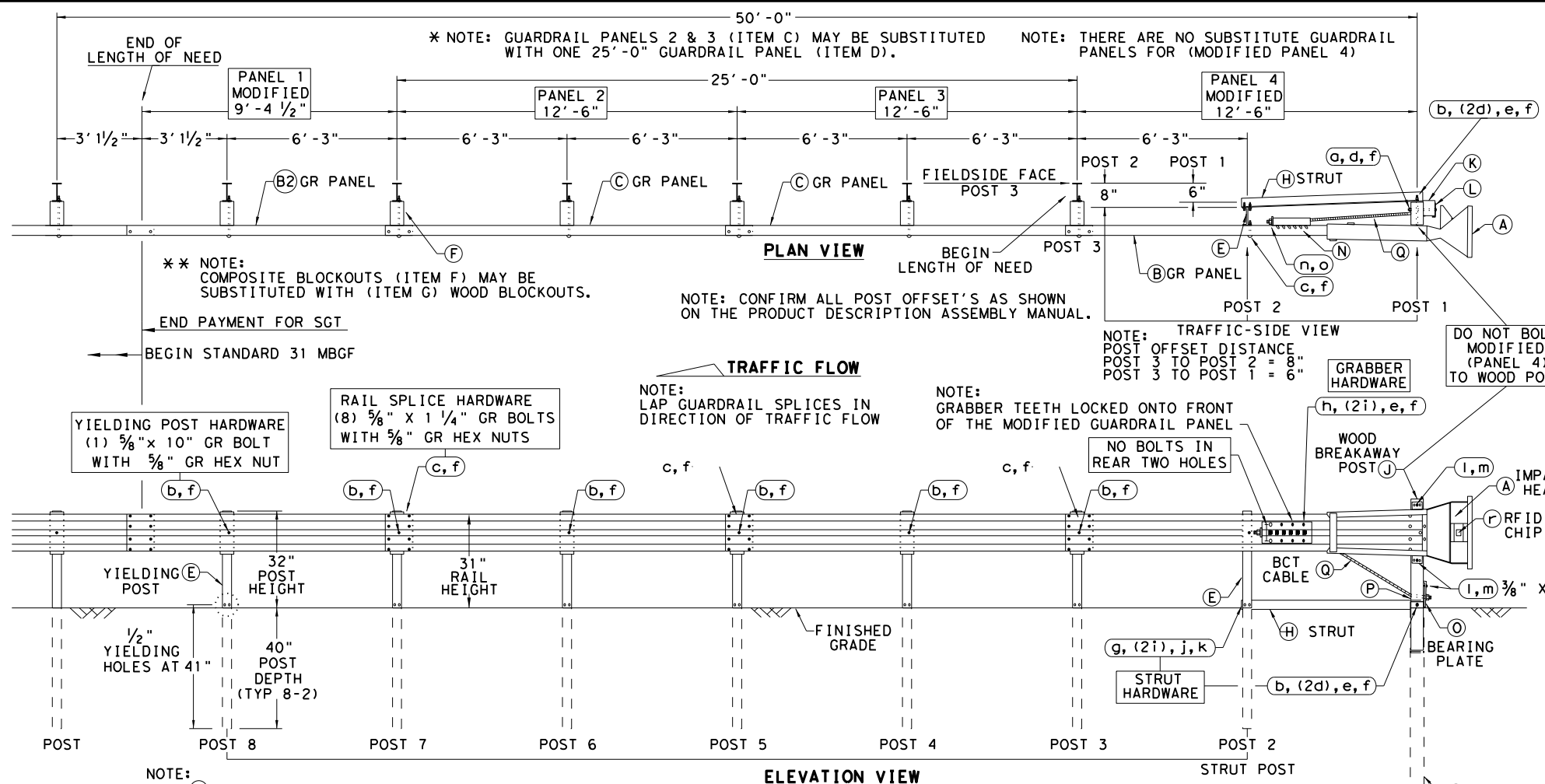
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### SGT (12S) 31-18

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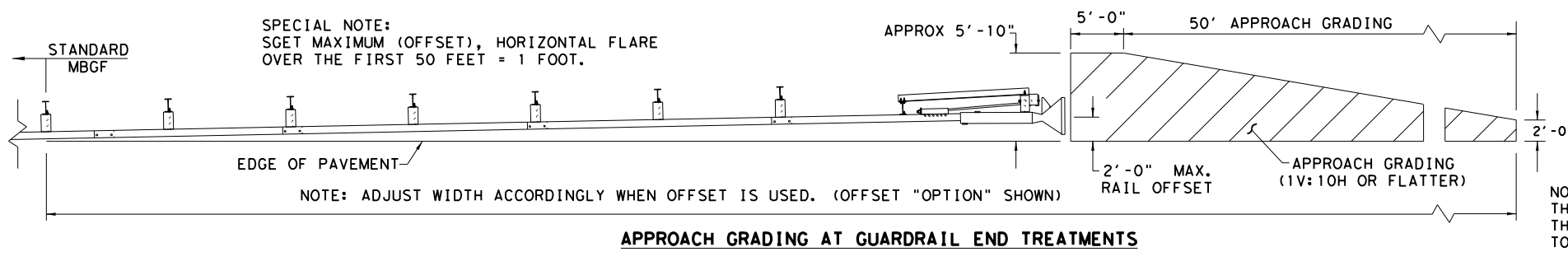
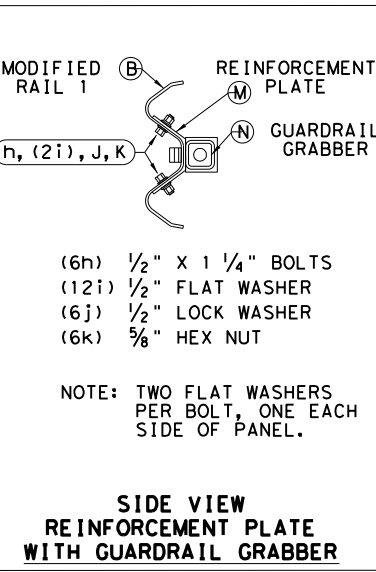
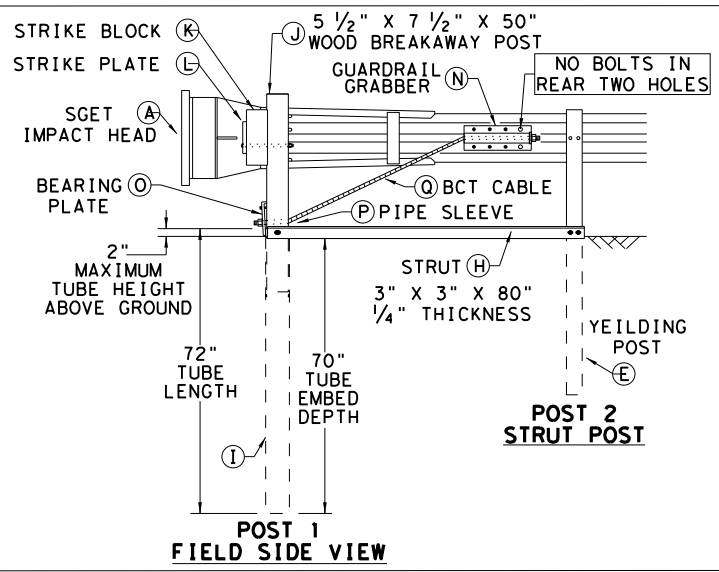
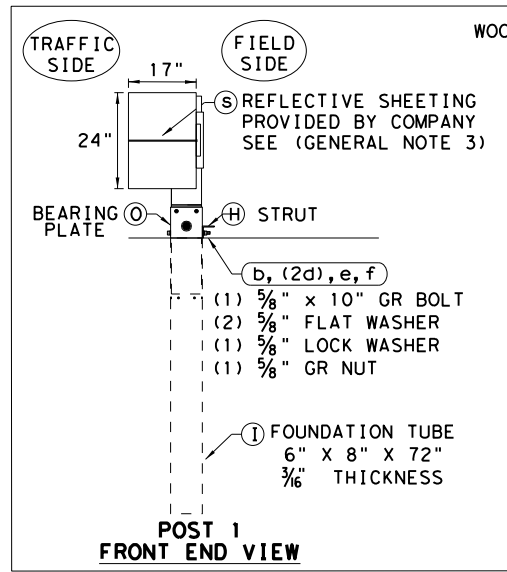
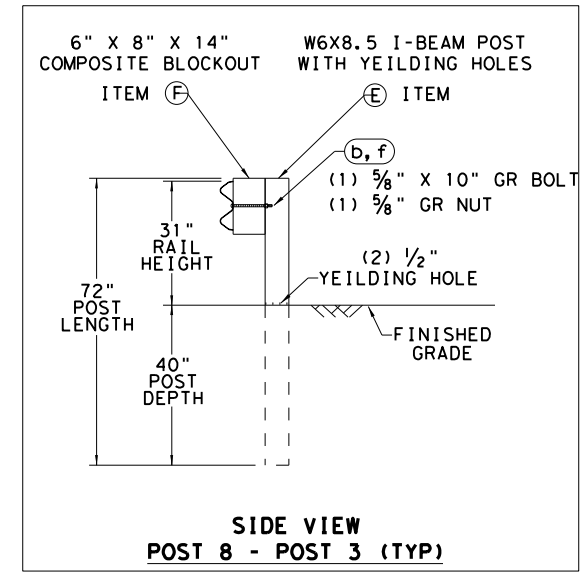


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- ### GENERAL NOTES
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
  - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER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

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CBO8
G	6	WOOD BLOCKOUT 6" X 8" X 14"	WBO8
H	1	STRUT 3" X 3" X 80" X 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" X 3/8"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" X 7 1/2" X 50"	WBRK50
K	1	WOOD STRIKE BLOCK	WSBK14
L	1	STRIKE PLATE 1/4" A36 BENT PLATE	SPLT8
M	1	REINFORCEMENT PLATE 12 GA. GR55	REPLT17
N	1	GUARDRAIL GRABBER 2 1/2" X 2 1/2" X 16 1/2"	GR17
O	1	BEARING PLATE 8" X 8 5/8" X 5/8" A36	BPLT8
P	1	PIPE SLEEVE 4 1/4" X 2 3/8" O.D. (2 1/8" I.D.)	PSLV4
Q	1	BCT CABLE 3/4" X 81" LENGTH	CBL81
SMALL HARDWARE			
q	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPlice BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563HD HDG	1HN563
p	1	18" TO 24" LONG ZIP TIE RATED 175-200LB	ZPT18
q	1	1 1/2" X 4" SCH-40 PVC PIPE	PSPCR4
r	1	RFID CHIP RATED MIL-STD-810F	RFID810F
s	1	IMPACT HEAD REFLECTIVE SHEETING	RS30M



NOTE: THIS STANDARD IS A BASIC REPRESENTATION OF THE SGET TERMINAL SYSTEM AND IS NOT INTENDED TO REPLACE THE MANUFACTURER'S ASSEMBLY MANUAL.

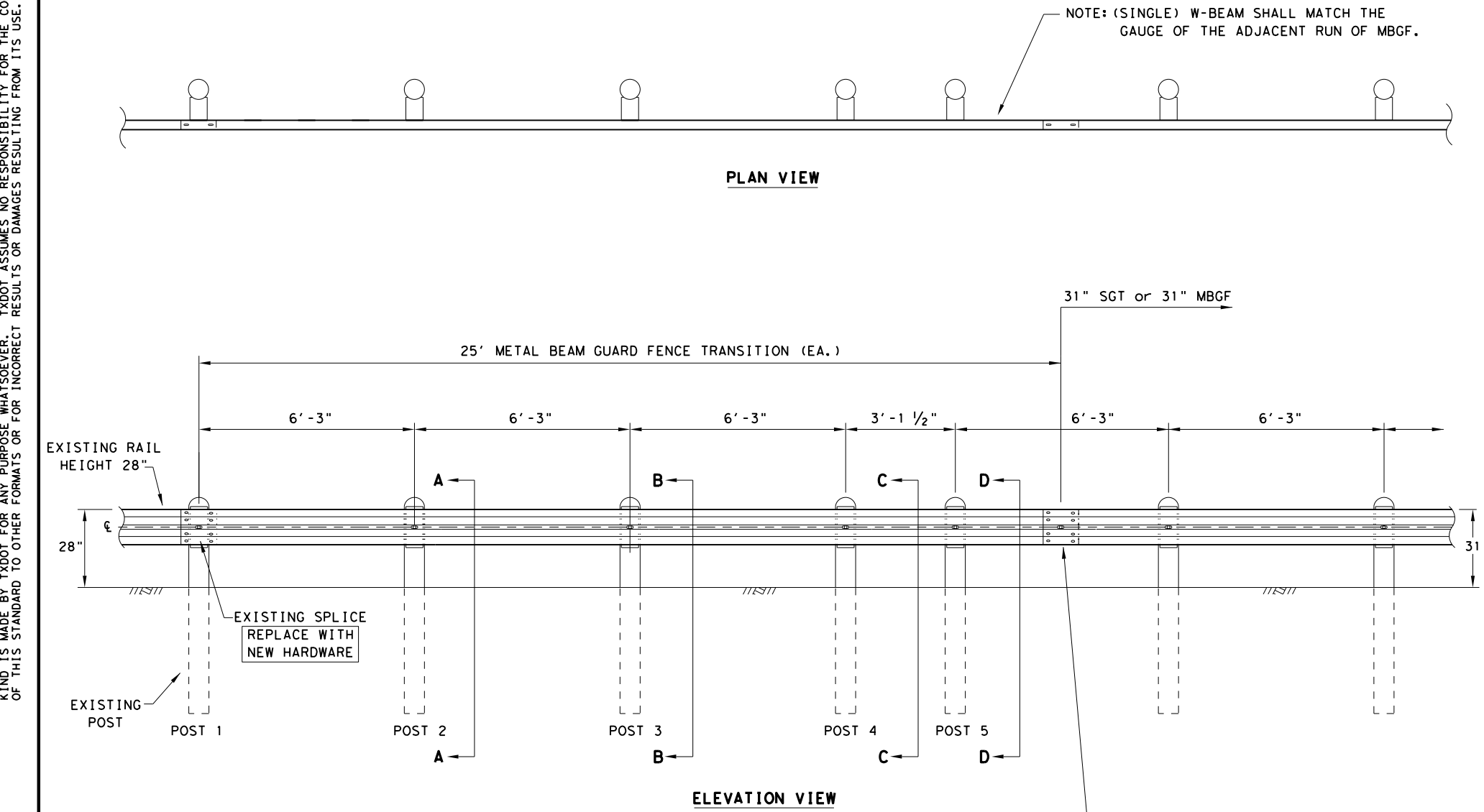
**Texas Department of Transportation**  
Design Division Standard

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

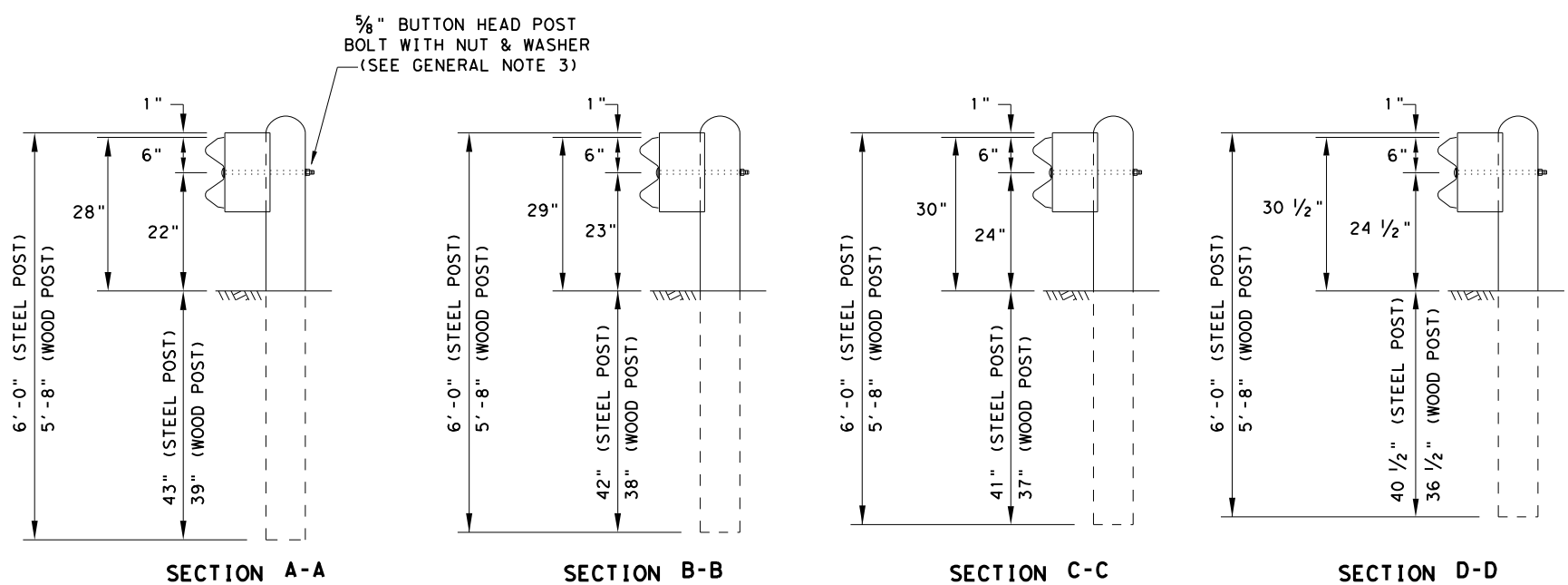
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\* "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



- 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 AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
  2. RAIL ELEMENT 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 TRANSITION SECTIONS OF GUARDRAIL.
  3. BUTTON HEAD "POST" BOLTS (ASTM A307) SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT (ASTM A563) AND 5/8" ROUND WASHER (ASTM F436) AND NOT MORE THAN 1" BEYOND IT. BUTTON HEAD "SPLICE" BOLTS (ASTM A307) ARE 5/8" X 1-1/4" WITH 5/8" NUTS (ASTM A563).
  4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM REQUIRING CONSTRUCTION OF THE TRANSITION.
  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. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. SEE GF(31) STANDARD FOR INSTALLATION GUIDANCE.
  9. POSTS SHALL NOT BE SET IN CONCRETE.
  10. 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.
  11. REFER TO STANDARD GF(31) FOR ADDITIONAL DETAILS.
  12. RAIL HEIGHT ADJUSTMENT IS ASSESSED AT TL-3 MASH COMPLIANT FOR STEEL POST HEIGHT TRANSITION TO 28" STEEL POST GUARDRAIL.

HARDWARE LIST	
QTY	DESCRIPTION
1	25'-0" W-BEAM RAIL ELEMENT 12GA. (TYP)
5	7 1/2" DIA X 6'-0" DOMED ROUND WOOD POSTS (TYP)
5	6" X 8" X 68" RECTANGULAR WOOD POSTS (TYP)
5	W6 X 8.5 OR W6 X 9 X 72" STEEL POSTS (TYP)
5	6" X 8" X 14" WOOD BLOCKS OR COMPOSITE (TYP)
5	5/8" X 18" GUARDRAIL BOLTS AND NUTS (FBB04)
5	5/8" ROUND WASHERS (ASTM F436) (FWC160)
5	5/8" X 10" GUARDRAIL BOLTS AND NUTS (FBB03)
16	5/8" X 1-1/4" GUARDRAIL SPLICE BOLTS WITH DOUBLE RECESSED NUTS (ASTM A563) (FBB01)

POST AND BLOCK-OUT TYPES AVAILABLE

FOR WOOD POST

FOR STEEL POST

NOTE: HARDWARE SHALL MEET THE FOLLOWING REQUIREMENTS.

GUARDRAIL POST BOLTS (ASTM A307 GR. A)  
 GUARDRAIL ROUND WASHERS (ASTM F436)  
 GUARDRAIL DOUBLE RECESSED NUTS (ASTM A563)  
 GUARDRAIL SPLICE BOLTS (ASTM A307 GR. A)  
 GUARDRAIL SPLICE NUTS (ASTM A563)

**Texas Department of Transportation**

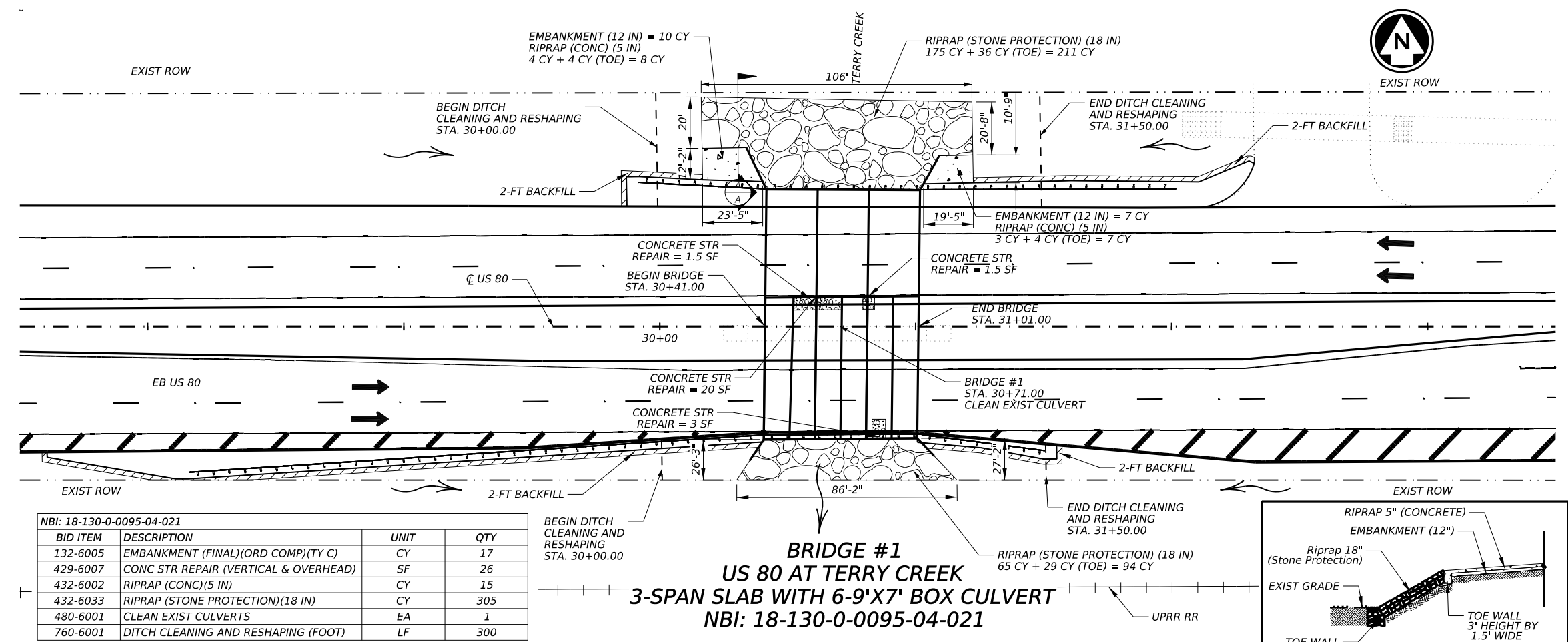
**METAL BEAM GUARD FENCE**  
**RAIL HEIGHT ADJUSTMENT**  
**(28" TO 31")**  
**TL-3 MASH COMPLIANT**  
**RAIL-ADJ(B)-19**

FILE: railadjb19	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
DIST	COUNTY		SHEET NO.	
DAL	KAUFMAN		55	

Design Division Standard

DATE:  
FILE:

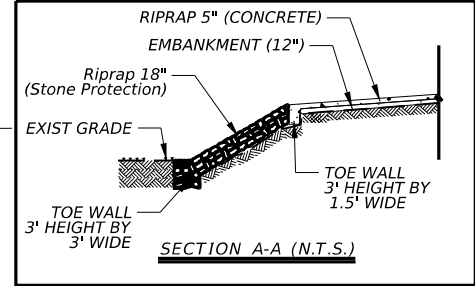
DATE: 2/22/2023 10:09:24 AM  
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**NBI: 18-130-0-0095-04-021**

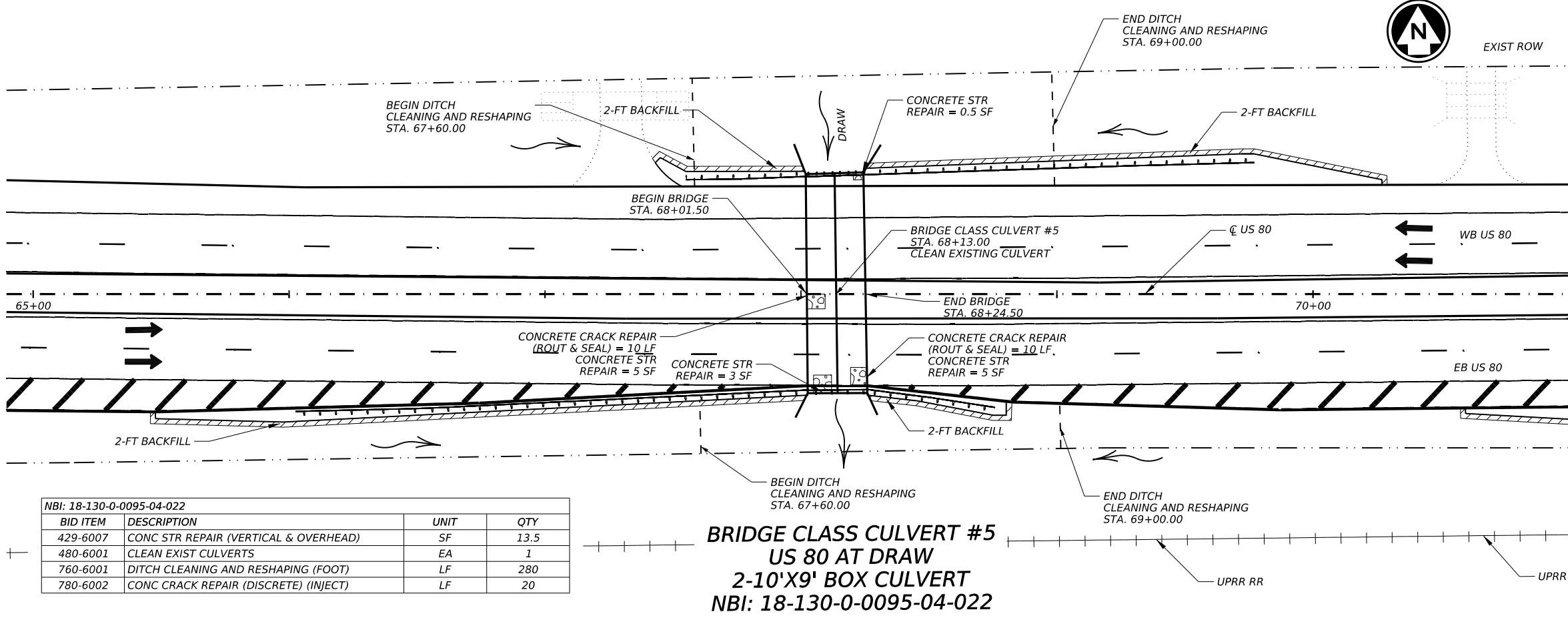
BID ITEM	DESCRIPTION	UNIT	QTY
132-6005	EMBANKMENT (FINAL)(ORD COMP)(TY C)	CY	17
429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	26
432-6002	RIPRAP (CONC)(5 IN)	CY	15
432-6033	RIPRAP (STONE PROTECTION)(18 IN)	CY	305
480-6001	CLEAN EXIST CULVERTS	EA	1
760-6001	DITCH CLEANING AND RESHAPING (FOOT)	LF	300

**BRIDGE #1  
 US 80 AT TERRY CREEK  
 3-SPAN SLAB WITH 6-9'X7' BOX CULVERT  
 NBI: 18-130-0-0095-04-021**



- LEGEND:**
- RIPRAP (CONC) (5 IN)
  - CONCRETE STR REPAIR AREA
  - RIPRAP (STONE COMMON) (DRY) (18 IN)
  - CEM STABIL BKFIL
  - 2-FT WIDE BACKFILL TY (A OR B)
  - DIRECTION OF TRAFFIC
  - DIRECTION OF FLOW
  - EXIST ROW

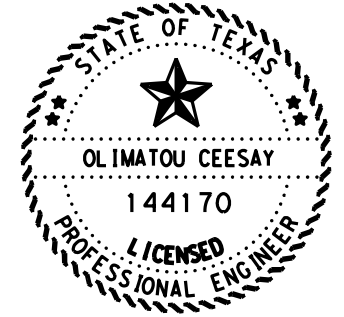
- NOTES:**
- BACKFILL BEHIND MOW STRIP. THE BACKFILL IS PAID UNDER ITEM 134.
  - DITCH CLEANING AND RESHAPING EXTENDS FROM ROW LINE TO EDGE OF PAVEMENT FOR THE LENGTH SHOWN. GRADE DITCH TO FLOW.
  - SEE US 80 BRIDGE/BRIDGE CLASS CULVERT REPAIR PHOTOS FOR FURTHER INFORMATION ON THE CONCRETE STRUCTURE REPAIR.
  - CONCRETE STRUCTURE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH THE TxDOT CONCRETE REPAIR MANUAL, CHAPTER 3 SECTION 2 AND CHAPTER 3 SECTION 5.



**NBI: 18-130-0-0095-04-022**

BID ITEM	DESCRIPTION	UNIT	QTY
429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	13.5
480-6001	CLEAN EXIST CULVERTS	EA	1
760-6001	DITCH CLEANING AND RESHAPING (FOOT)	LF	280
780-6002	CONC CRACK REPAIR (DISCRETE) (INJECT)	LF	20

**BRIDGE CLASS CULVERT #5  
 US 80 AT DRAW  
 2-10'X9' BOX CULVERT  
 NBI: 18-130-0-0095-04-022**



*Olimatou Ceessay*, P.E. 2/22/2023  
 Signature of Registrant & Date

**Texas Department of Transportation**

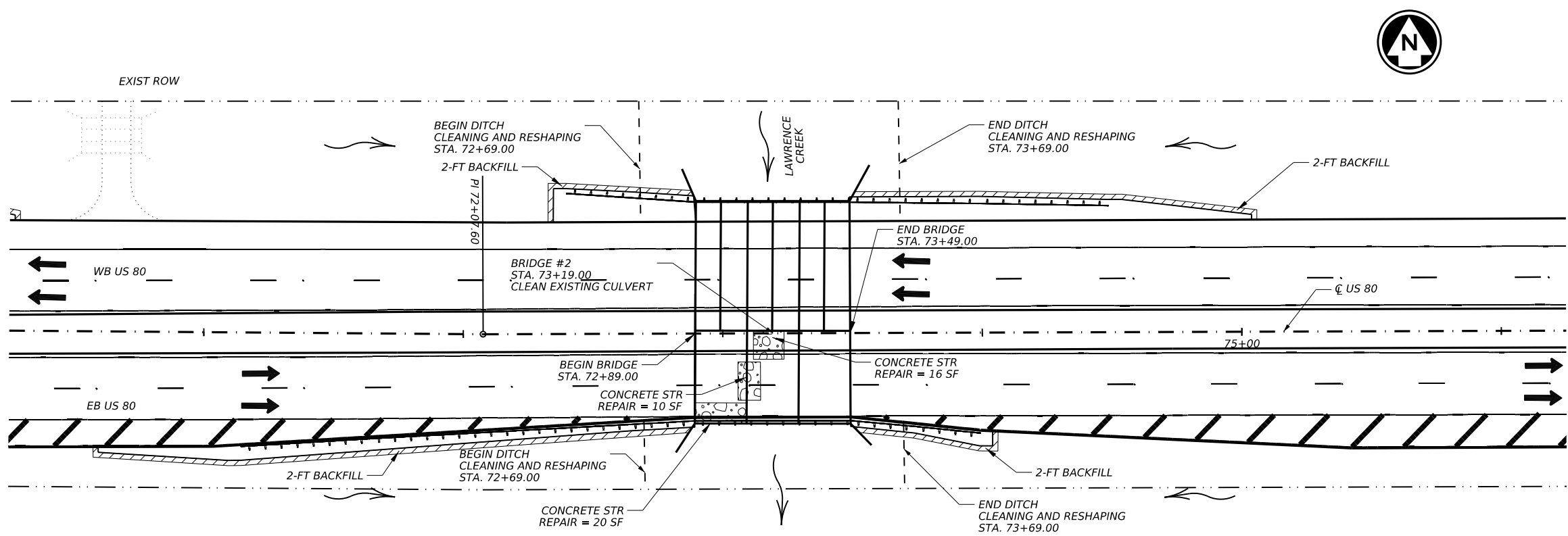
**US 80**

**BRIDGE/BRIDGE CLASS CULVERT REPAIR PLAN**

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	56	

DATE: 2/22/2023 10:09:26 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/7 - Bridge/Bridge Repair.dgn



**BRIDGE #2**  
**US 80 AT LAWRENCE CREEK**  
**3 SPAN SLAB WITH 6-9'X8' BOX CULVERT**  
**NBI: 18-130-0-0095-04-023**

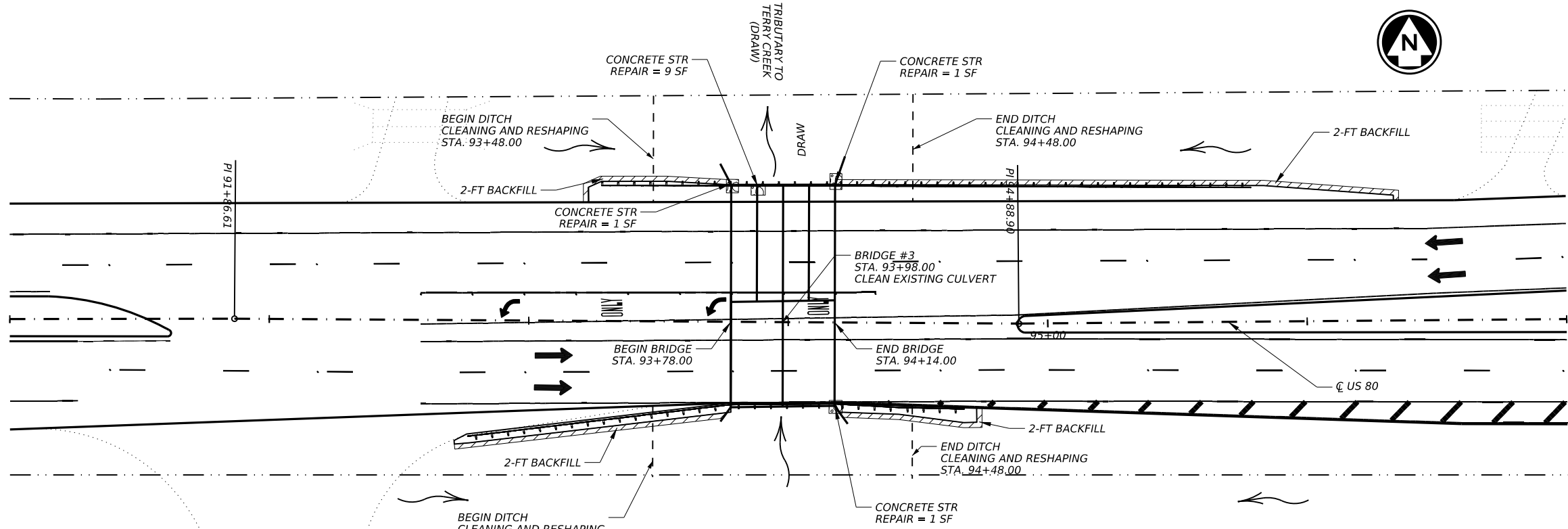
NBI: 18-130-0-0095-04-023			
BID ITEM	DESCRIPTION	UNIT	QTY
429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	46
480-6001	CLEAN EXIST CULVERTS	EA	1
760-6001	DITCH CLEANING AND RESHAPING (FOOT)	LF	200

0 25 50  
SCALE IN FEET

**LEGEND:**

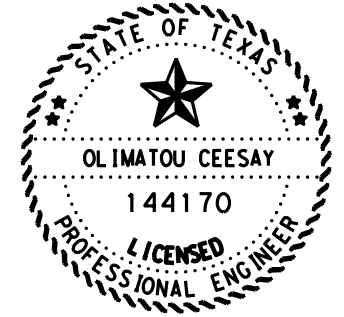
- RIPRAP (CONC) (5 IN)
- CONCRETE STR REPAIR AREA
- RIPRAP (STONE COMMON) (DRY) (18 IN)
- CEM STABIL BKFIL
- 2-FT WIDE BACKFILL TY (A OR B)
- DIRECTION OF TRAFFIC
- DIRECTION OF FLOW
- EXIST ROW

- NOTES:**
- BACKFILL BEHIND MOW STRIP. THE BACKFILL IS PAID UNDER ITEM 134.
  - DITCH CLEANING AND RESHAPING EXTENDS FROM ROW LINE TO EDGE OF PAVEMENT FOR THE LENGTH SHOWN. GRADE DITCH TO FLOW.
  - SEE US 80 BRIDGE/BIDGE CLASS CULVERT REPAIR PHOTOS FOR FURTHER INFORMATION ON THE CONCRETE STRUCTURE REPAIR.
  - CONCRETE STRUCTURE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH THE TxDOT CONCRETE REPAIR MANUAL, CHAPTER 3 SECTION 2 AND CHAPTER 3 SECTION 5.



**BRIDGE #3**  
**US 80 AT DRAW**  
**2-SPAN SLAB WITH 4-9'X6' BOX CULVERT**  
**NBI: 18-130-0-0095-04-024**

NBI: 18-130-0-0095-04-024			
BID ITEM	DESCRIPTION	UNIT	QTY
429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	12
480-6001	CLEAN EXIST CULVERTS	EA	1
760-6001	DITCH CLEANING AND RESHAPING (FOOT)	LF	200



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Texas Department of Transportation

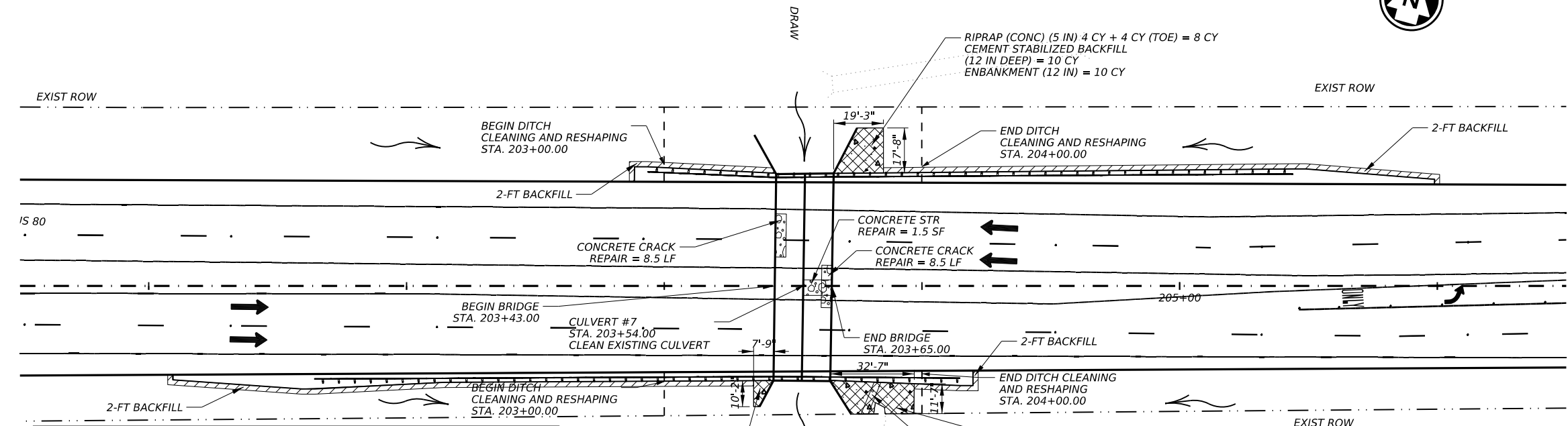
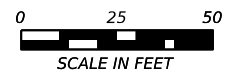
**US 80**

**BRIDGE/BIDGE CLASS CULVERT REPAIR PLAN**

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST		COUNTY	SHEET NO.
DAL		KAUFMAN	57

DATE: 2/22/2023 10:09:28 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/7 - Bridge/Bridge Repair.dgn



NBI: 18-130-0-0095-04-026

BID ITEM	DESCRIPTION	UNIT	QTY
104-6044	REMOVING CONC (FLUME)	SY	4
132-6005	EMBANKMENT (FINAL)(ORD COMP)(TY C)	CY	25
400-6005	CEM STABIL BKFL	CY	25
429-6007	CONC STR REPAIR (VERTICAL & OVERHEAD)	SF	1.5
432-6002	RIPRAP (CONC)(5 IN)	CY	23.1
432-6044	RIPRAP (CONC) (FLUME)	CY	0.3
480-6001	CLEAN EXIST CULVERTS	EA	1
760-6001	DITCH CLEANING AND RESHAPING (FOOT)	LF	200
780-6002	CONC CRACK REPAIR (DISCRETE) (INJECT)	LF	17

RIPRAP (CONC) (5 IN) 0.8 CY  
 + 2 CY (TOE) = 2.8 CY  
 CEMENT STABILIZED BACKFILL  
 (12 IN DEEP) = 2 CY  
 EMBANKMENT (12 IN) = 2 CY

RIPRAP (CONC) (5 IN) 5.3 CY  
 + 7 CY (TOE) = 12.3 CY  
 CEMENT STABILIZED BASE  
 (12 IN DEEP) = 13 CY  
 EMBANKMENT (12 IN) = 13 CY

RIPRAP (CONC) (FLUME) = 0.3 CY  
 REMOVE EXIST CONC (FLUME) = 4 SY

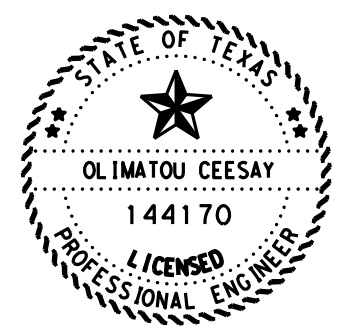
**BRIDGE CLASS CULVERT #7  
 US 80 AT DRAW  
 2-10'X8.5' BOX CULVERT  
 NBI: 18-130-0-0095-04-026**

**LEGEND:**

- RIPRAP (CONC) (5 IN)
- CONCRETE STR REPAIR AREA
- RIPRAP (STONE COMMON) (DRY) (18 IN)
- CEM STABIL BKFL
- 2-FT WIDE BACKFILL TY (A OR B)
- DIRECTION OF TRAFFIC
- DIRECTION OF FLOW
- EXIST ROW

**NOTES:**

1. BACKFILL BEHIND MOW STRIP. THE BACKFILL IS PAID UNDER ITEM 134.
2. DITCH CLEANING AND RESHAPING EXTENDS FROM ROW LINE TO EDGE OF PAVEMENT FOR THE LENGTH SHOWN. GRADE DITCH TO FLOW.
3. SEE US 80 BRIDGE/BIDGE CLASS CULVERT REPAIR PHOTOS FOR FURTHER INFORMATION ON THE CONCRETE STRUCTURE REPAIR.
4. CONCRETE STRUCTURE REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH THE TxDOT CONCRETE REPAIR MANUAL, CHAPTER 3 SECTION 2 AND CHAPTER 3 SECTION 5.
5. REFER TO THE CRR STANDARD FOR FLUME DETAIL.
6. GRADE FLUME TO DRAIN TO THE CHANNEL.
7. EDGE OF FLUME TO MATCH MOWSTRIP ELEVATION.



*Olmatou Ceessay* P.E. 2/22/2023  
 Signature of Registrant & Date



**US 80**  
**BRIDGE/BIDGE CLASS**  
**CULVERT REPAIR PLAN**

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST		COUNTY	SHEET NO.
DAL		KAUFMAN	58



DATE: 2/22/2023 10:09:44 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/7 - Bridge/US 80 BRIDGE AND CULVERT REPAIR PHOTOS



SPALLS WITH EXPOSED REBAR AT SOUTH END OF BENT CAP 2 LOOKING NORTHEAST



EMBANKMENT EROSION BEHIND NW WINGWALL LOOKING SOUTHEAST



SPALLS WITH EXPOSED REBAR ON BOTTOM OF TOP SLAB IN BARREL 4 LOOKING SOUTH



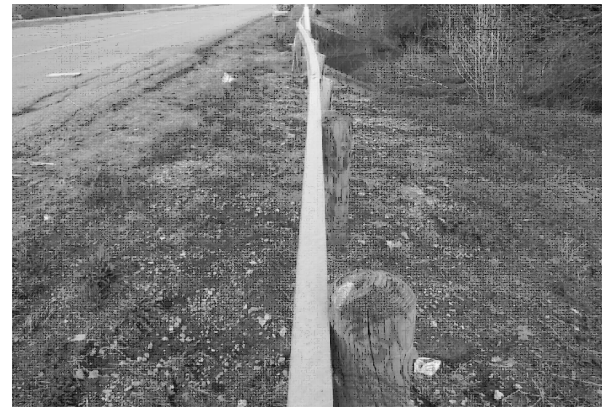
DELAMINATION AND SPALL WITH EXPOSED REBAR ON SLAB SOFFIT IN SPAN 2 AT SOUTH END LOOKING WEST



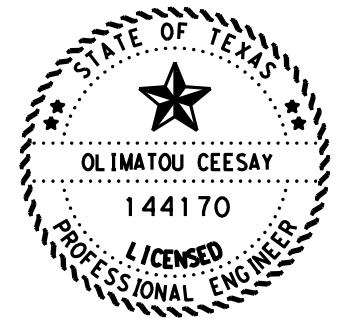
SPALL WITH EXPOSED REBAR AT WEST END OF SOUTH CONCRETE CURB AT MISSING STEEL RAILING POST LOCATION LOOKING NORTH



EMBANKMENT EROSION BEHIND NE WINGWALL LOOKING SOUTHEAST



EROSION AND SETTLEMENT ALONG NE CORNER GUARDFENCE CAUSING MISALIGNMENT OF TIMBER GUARDFENCE POSTS LOOKING WEST



*Olmatou Ceesay*, P.E. 2/22/2023  
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US 80			
BRIDGE #1 (TERRY CREEK) REPAIR PHOTOS STA 30+71 NBI: 18-130-0-0095-04-021			
SHEET 1 OF 5			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY		SHEET NO.
DAL	KAUFMAN		59



DATE: 2/22/2023 10:09:46 AM  
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CK:   
 DW:   
 CK:   
 DW:



CRACKING, DELAMINATION, AND SPALLING WITH EXPOSED REBAR ON TOP SLAB SOFFIT AT SOUTH END OF BARREL 2 LOOKING WEST



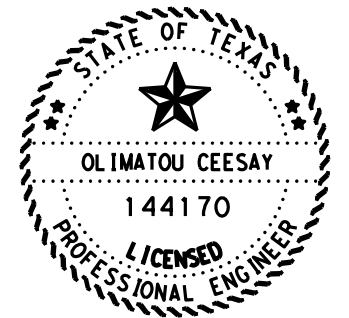
VERTICAL CRACKING AND ROTATION OF EAST ABUTMENT WALL LOOKING SOUTHEAST



VERTICAL CRACKING ON WEST ABUTMENT WALL LOOKING WEST



SPALLING WITH EXPOSED REBAR ON NORTH HEADWALL AT THE NE CORNER LOOKING NORTHWEST



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US 80			
CULVERT #5 REPAIR PHOTOS STA 68+13 NBI: 18-130-0-0095-04-022			
SHEET 2 OF 5			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY		SHEET NO.
DAL	KAUFMAN		60



DATE: 2/22/2023 10:09:48 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/7 - Bridge/US 80 BRIDGE AND CULVERT REPAIR PHOTOS

DW: CK: DW: CK:



SPALL WITH EXPOSED REBAR ON SLAB SOFFIT IN SPAN 2 LOOKING WEST



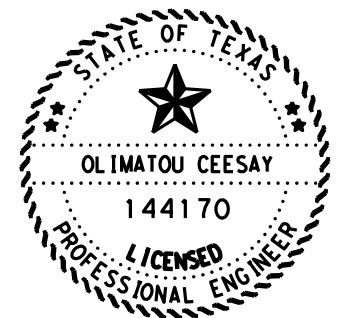
IMPACT DAMAGE TO SOUTH BRIDGE RAILING AND SPALLS WITH EXPOSED ON CONCRETE CURB LOOKING NORTHEAST



EMBANKMENT EROSION BEHIND NE WINGWALL LOOKING NORTHEAST



EMBANKMENT EROSION BEHIND NW WINGWALL LOOKING NORTHWEST



  
 Signature of Registrant & Date **2/22/2023**

 Texas Department of Transportation			
US 80			
BRIDGE #2 (LAWRENCE CREEK) REPAIR PHOTOS			
STA 73+19			
NBI: 18-130-0-0095-04-023			
SHEET 3 OF 5			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY		SHEET NO.
DAL	KAUFMAN		61



DATE: 2/22/2023 10:09:50 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/7 - Bridge/US 80 BRIDGE AND CULVERT REPAIR PHOTOS

DW: CK: DW: CK:



TYPICAL SPALLS WITH EXPOSED REBAR ON SLAB SOFFIT LOOKING WEST



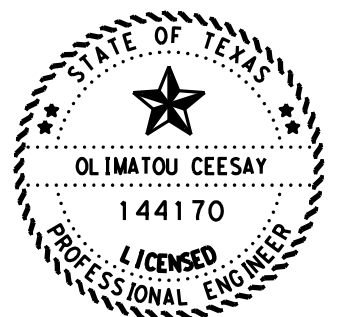
SPALL WITH EXPOSED REBAR ON SLAB SOFFIT AT SOUTH EDGE IN EAST SPAN LOOKING EAST



SPALL WITH EXPOSED REBAR ON TOP OF NE WINGWALL AT HEADWALL INTERFACE LOOKING EAST



SPALL WITH EXPOSED REBAR AT NORTH END OF INTERMEDIATE WALL 2 FROM WEST LOOKING SOUTHEAST



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 Signature of Registrant & Date



US 80  
 BRIDGE #3  
 REPAIR PHOTOS  
 STA 93+98  
 NBI: 18-130-0-0095-04-024

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	62	



DATE: 2/22/2023 10:09:52 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/7 - Bridge/US 80 BRIDGE AND CULVERT REPAIR PHOTOS

DW: CK: DW: CK:



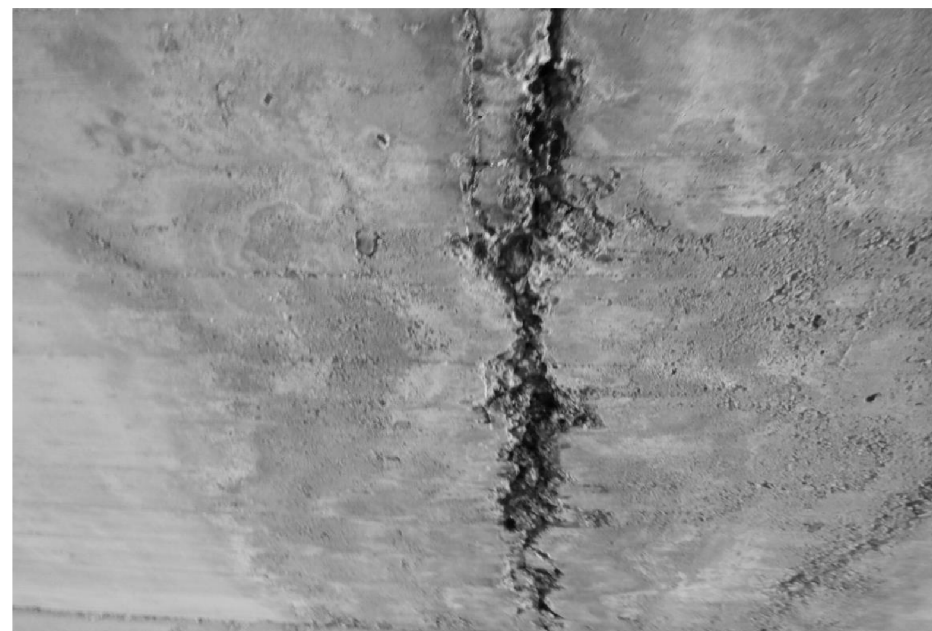
VERTICAL CRACK ON WEST ABUTMENT WALL LOOKING WEST



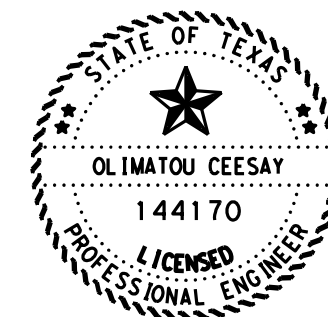
EMBANKMENT EROSION AT SE CULVERT CORNER EXPOSING BEHIND SE WINGWALL AND UNDERMINING CONCRETE DRAINAGE FLUME LOOKING NORTH



EROSION HOLE AT NE BRIDGE CORNER EXPOSING END OF WINGWALL LOOKING SOUTHWEST



CRACKS, SPALLS WITH EXPOSED AND RUSTED REBAR AND EFFLORESCENCE ON BOTTOM OF TOP SLAB IN EAST SPAN ALONG CENTERLINE LOOKING EAST

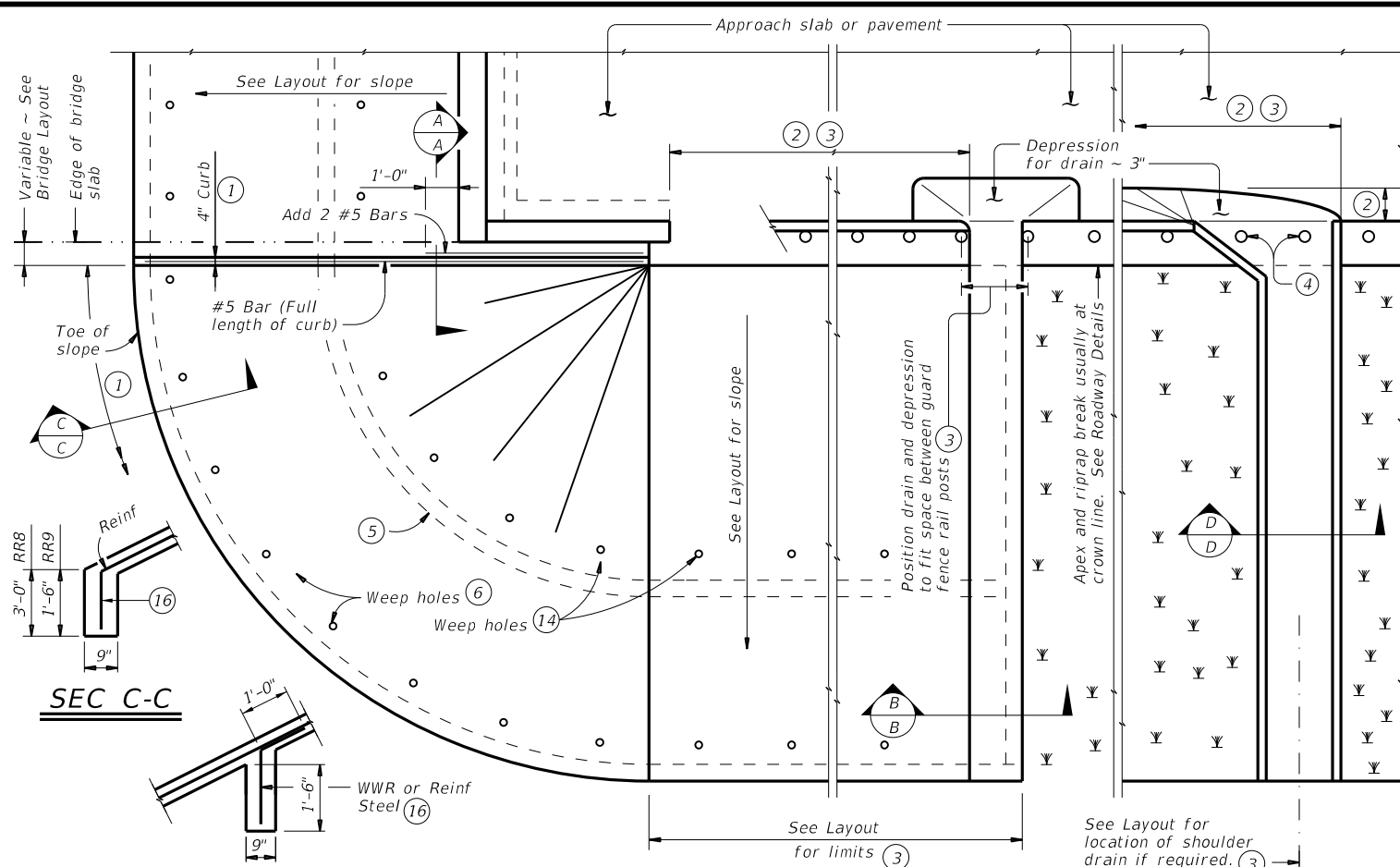


*Olmatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date

US 80			
CULVERT #7			
REPAIR PHOTOS			
STA 203+54			
NBI: 18-130-0-0095-04-026			
SHEET 5 OF 5			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY		SHEET NO.
DAL	KAUFMAN		63

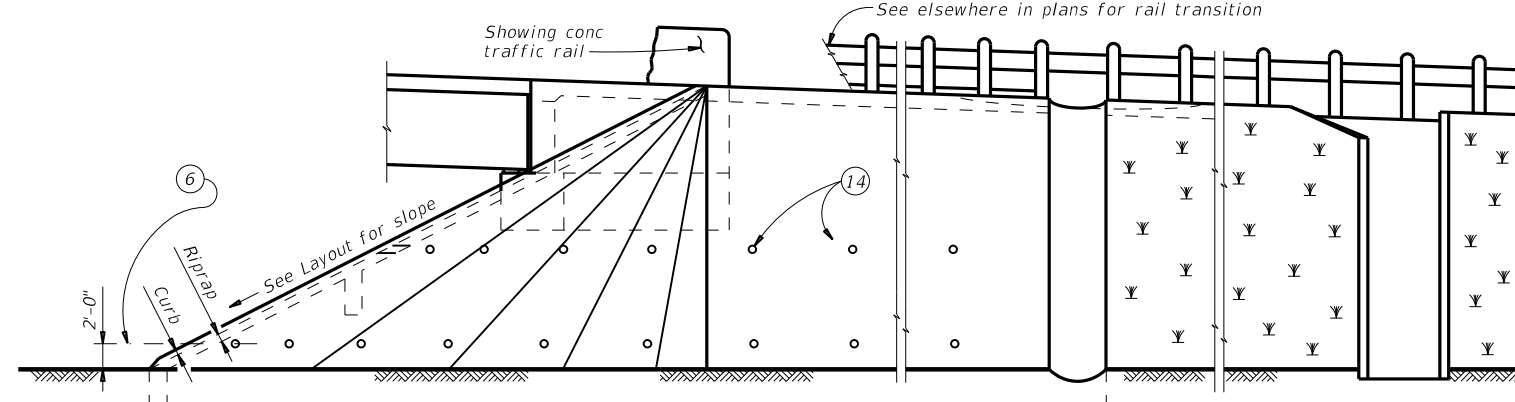
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DATE: FILE:

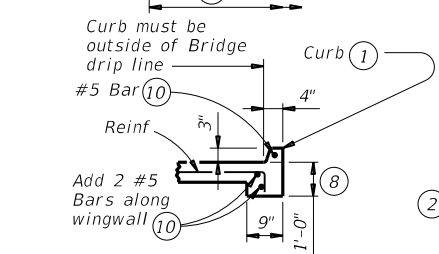


**INTERMEDIATE TOEWALL**

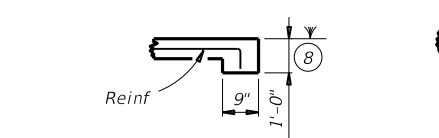
**PLAN**



**ELEVATION**

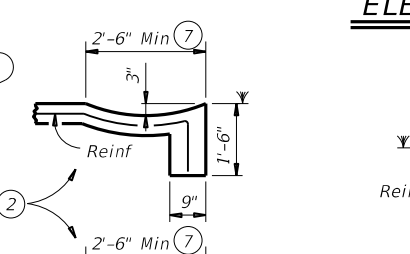


**SEC A-A**



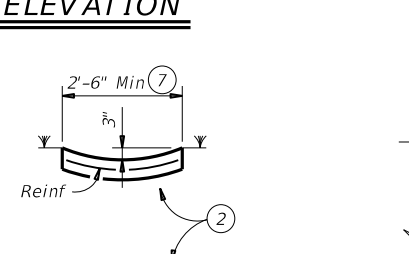
**SEC B-B**

(No drain)



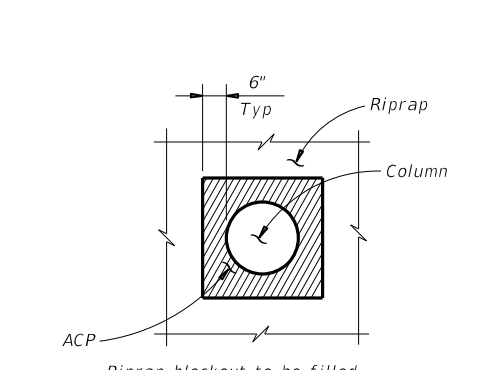
**SEC B-B**

(Shoulder drain integral with riprap)



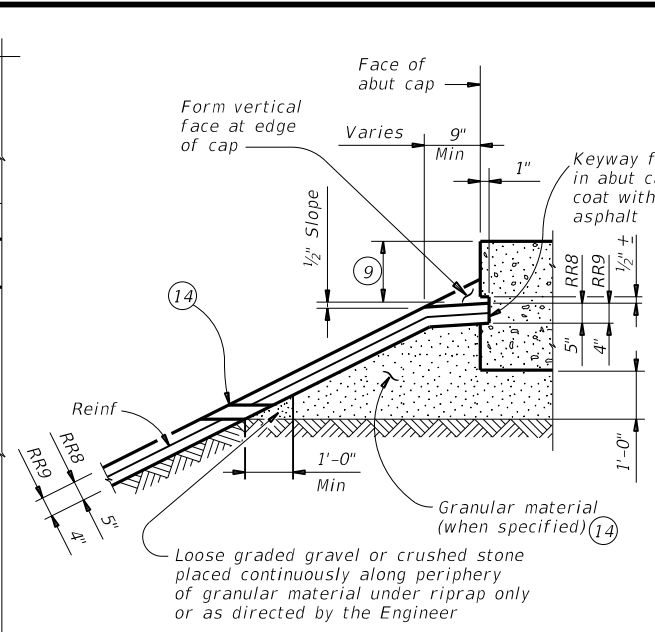
**SEC D-D**

(Shoulder drain)

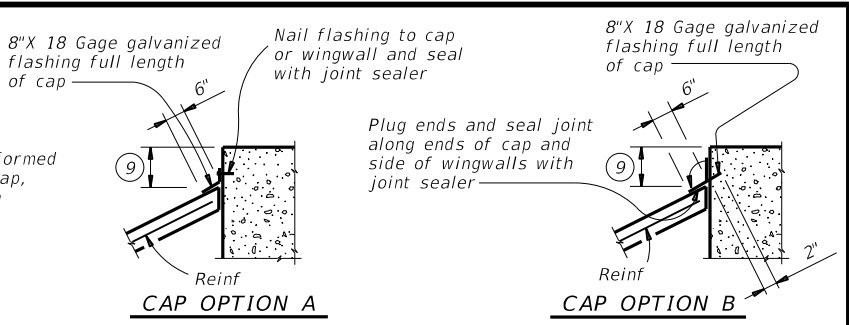


**RIPRAP DETAIL AT COLUMNS**

(As directed by the Engineer)

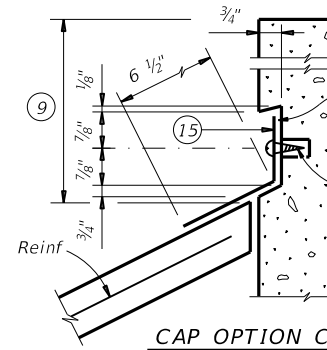


**SHOWING KEYWAY OPTION**



**CAP OPTION A**

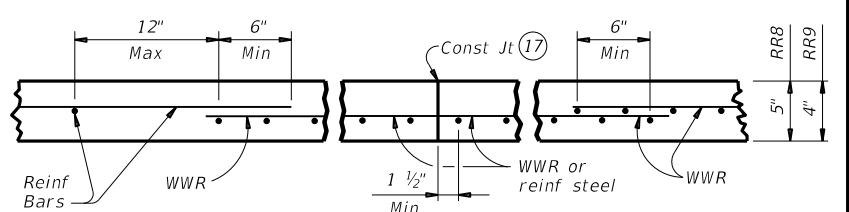
**CAP OPTION B**



**CAP OPTION C**

**SECT THRU RIPRAP AT WINGWALL**

**SECTIONS THRU RIPRAP AT CAP**



**REINFORCEMENT DETAILS**

See General Notes for optional synthetic fiber reinforcement.

- 1 When riprap is shown extended around header on layout, extend slab and toewall as shown and eliminate 4" curb.
- 2 Limits and configuration of drains and depressions are as shown elsewhere in plans or as directed by the Engineer.
- 3 Location of shoulder drain must consider limitations imposed by rail transition. Do not locate shoulder drains at expansion joints between approach slab and concrete pavement.
- 4 See details elsewhere in plans for installation of guard fence posts through concrete riprap.
- 5 Provide intermediate toewall only when designated elsewhere in the plans or included in the specifications.
- 6 Provide lower level of 2" Dia weep holes at 10' c-c backed by 1 CF packet of gravel and galvanized hardware cloth at all locations unless directed by the Engineer to eliminate.
- 7 Use wider or other drain configurations if shown elsewhere in plans or if directed by the Engineer.
- 8 Wall extension may be reduced or modified if approved by the Engineer. Increase wall extension to 1'-6" whenever the optional intermediate toewall is called for in the plans.
- 9 Top of cap to top of riprap dimension varies as directed by the Engineer. Should be 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.
- 10 #5 bars shown are required even when synthetic fiber reinforcing option is selected.
- 11 Provide sealing option for joint between the face of cap and riprap as designated by the Engineer or as shown elsewhere on plans.
- 12 Flashing (shown in Cap Option A) may be used at wingwall in addition to Exp Jt Mat'l if shown on plans or directed by the Engineer.
- 13 Provide #3 reinforcing bars at 18" Spa c-c. Provide Welded Wire Reinforcement (WWR) as 6x6-D2.9xD2.9 or D3xD3. Combinations of WWR and reinforcing bars may be used if both are permitted. Use lap splices of a minimum 6 inches, measured from the transverse wire of WWR, and the ends of reinforcing bars.
- 14 If granular material is specified, provide upper level of 2" Dia weep holes at 10' c-c backed by galvanized hardware cloth.
- 15 8" x 18 Gage Galv Sheet Metal
- 16 Provide WWR or #3 bars, with 1'-0" extension into slope.
- 17 WWR or reinforcing steel is continuous through riprap construction joints. Provide WWR or reinforcing steel that extends 1'-1" minimum into adjacent riprap on each side of construction joint even if synthetic reinforcing fiber is utilized.

**GENERAL NOTES:**

- Provide Class "B" concrete (f'c = 2,000 psi) unless noted elsewhere in plans.
- Provide Grade 60 reinforcing steel.
- Provide deformed welded wire reinforcement (WWR) meeting ASTM A1064, unless otherwise shown.
- Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless specified elsewhere in the plans.
- Optionally synthetic fibers may be used if approved by the Engineer. Provide synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in lieu of steel reinforcing in riprap concrete.
- Install construction joints or grooved joints extending the full slant slope height at intervals of approximately 20 feet unless otherwise directed by the Engineer.
- Hardware cloth, loose grade stone behind weep holes, flashing, or other sealing material are subsidiary to the bid item "Riprap". See Layout for limits of riprap.
- RR8 is to be used on stream crossings.
- RR9 is to be used on other embankments.

**FOR CONTRACTOR'S INFORMATION ONLY:**

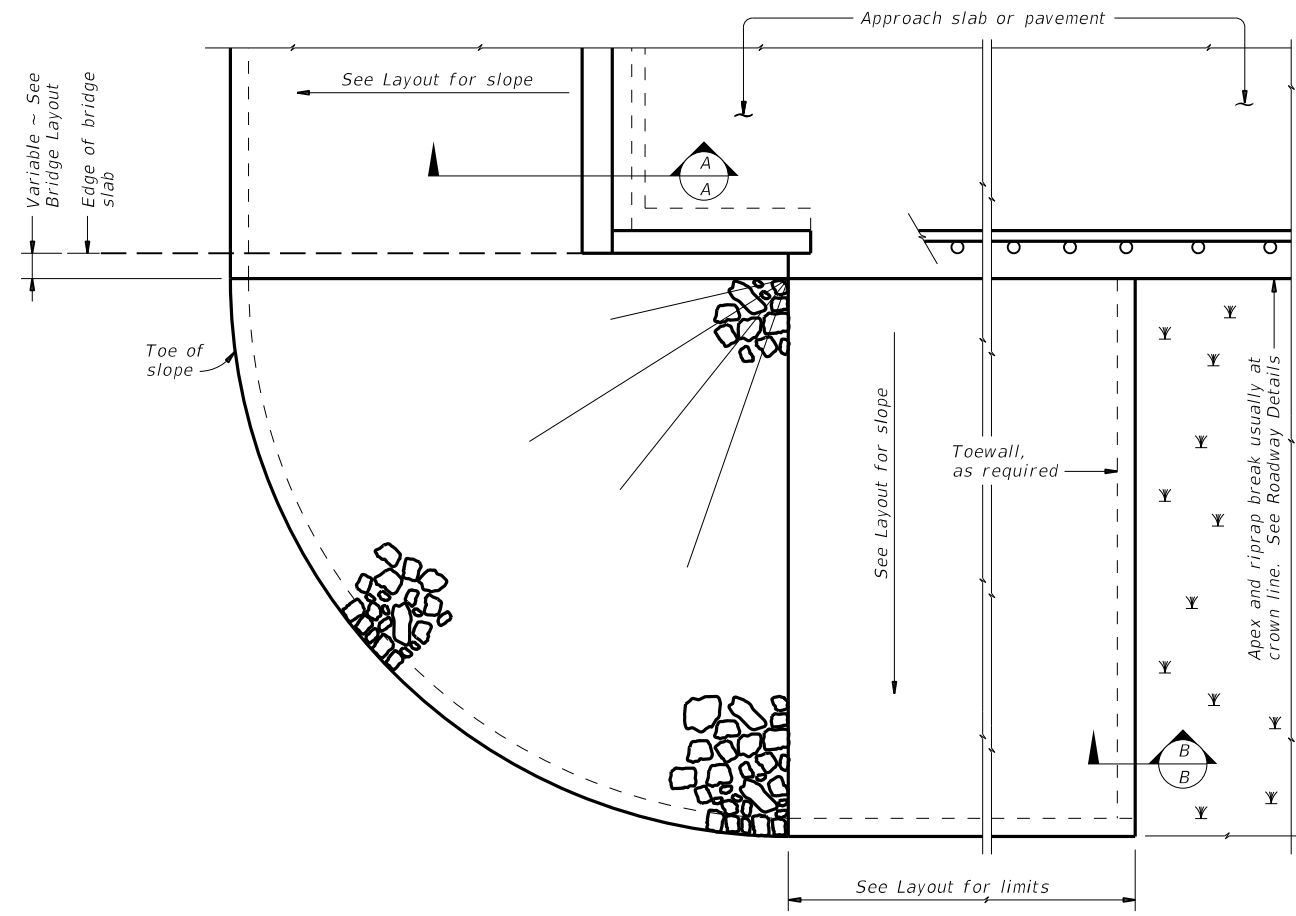
5" of RR8	= 0.015 CY/SF
4" of RR9	= 0.012 CY/SF
#3 Reinf at 18" c-c	= 0.501 Lbs/SF
6x6-D3xD3	= 0.408 Lbs/SF

		<b>Bridge Division Standard</b>	
<b>CONCRETE RIPRAP AND SHOULDER DRAINS EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 &amp; RR9)</b>			
<b>CRR</b>			
FILE: crrside1-19.dgn	DN: TxDOT	CK: TxDOT	OW: TxDOT
©TxDOT April 2019	CONTRACT NO. 0095	SECTION 04	JOB NO. 074, ETC.
DIST. DAL	COUNTY. KAUFMAN	SHEET NO. 64	

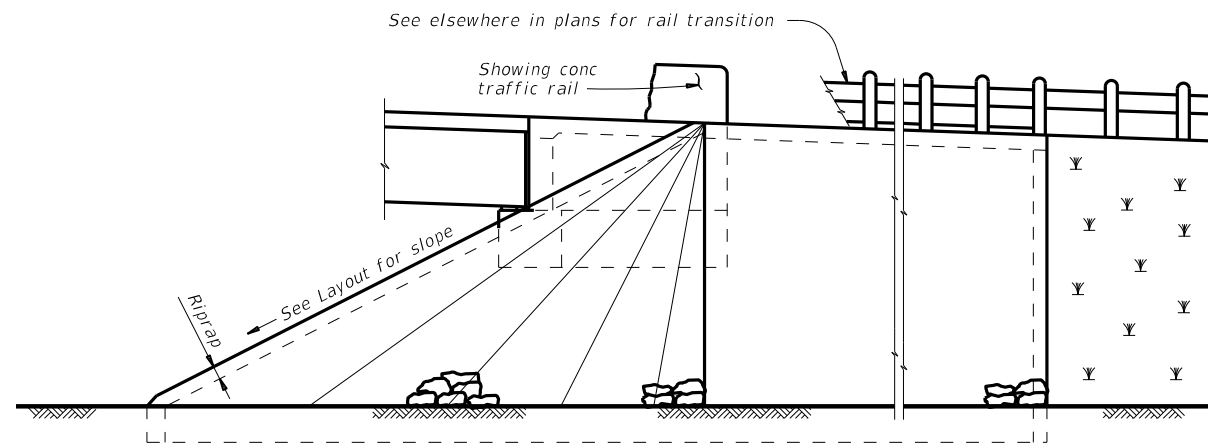


DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

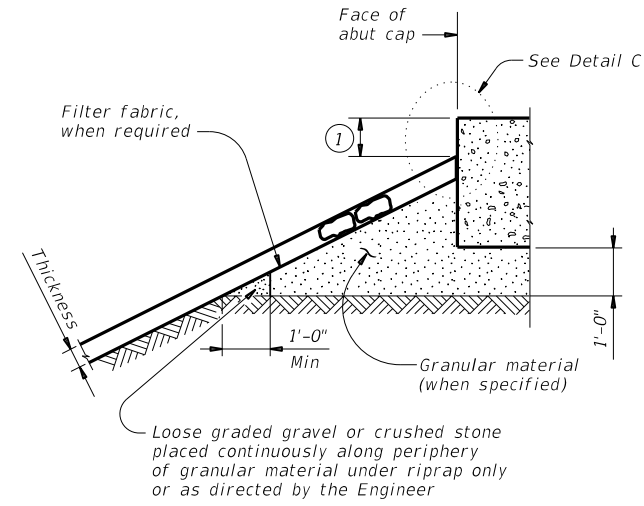
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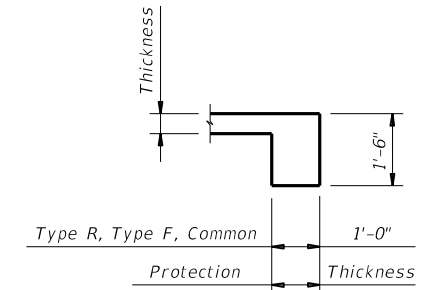
**PLAN**



**ELEVATION**

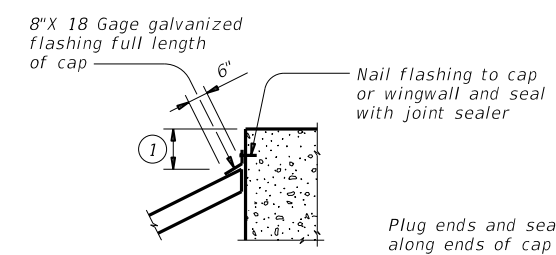


**SECTION A-A AT CAP**

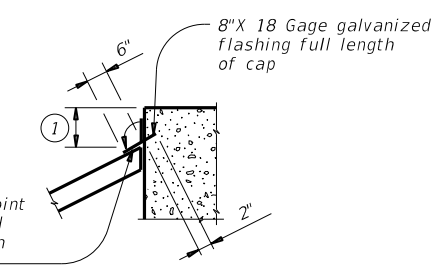


**SECTION B-B**

Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".



**CAP OPTION A**



**CAP OPTION B**

**DETAIL C**

① Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

**GENERAL NOTES:**  
 Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.  
 See elsewhere in plans for locations and details of shoulder drains.

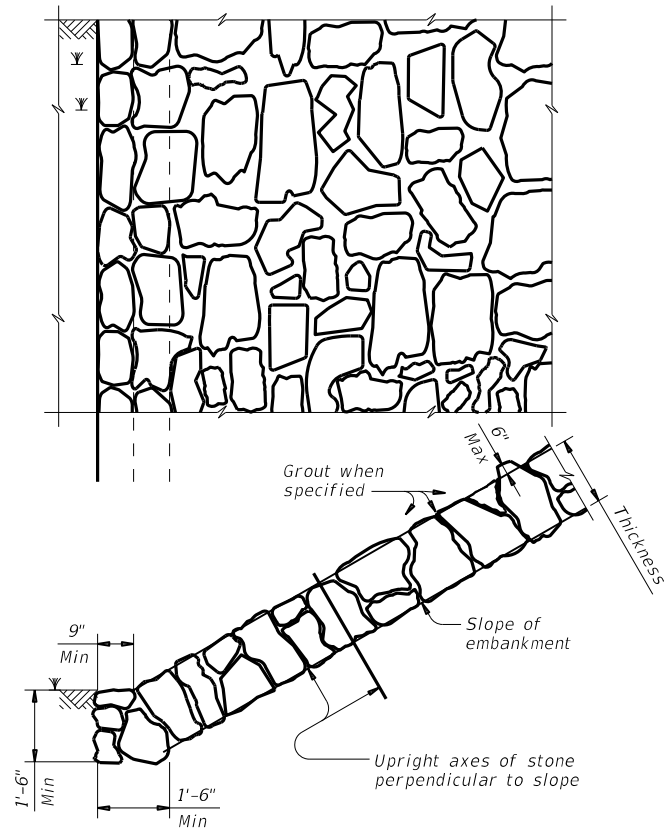
SHEET 1 OF 2

		<b>Bridge Division Standard</b>	
<h2>STONE RIPRAP</h2>			
<h3>SRR</h3>			
FILE: srrstd1-19.dgn	DN: AES	CK: JGD	DW: BWH
©TxDOT April 2019	CONT 04	SECT 074, ETC.	HIGHWAY US 80
REVISIONS		DIST DAL	COUNTY KAUFMAN
		SHEET NO. 65	

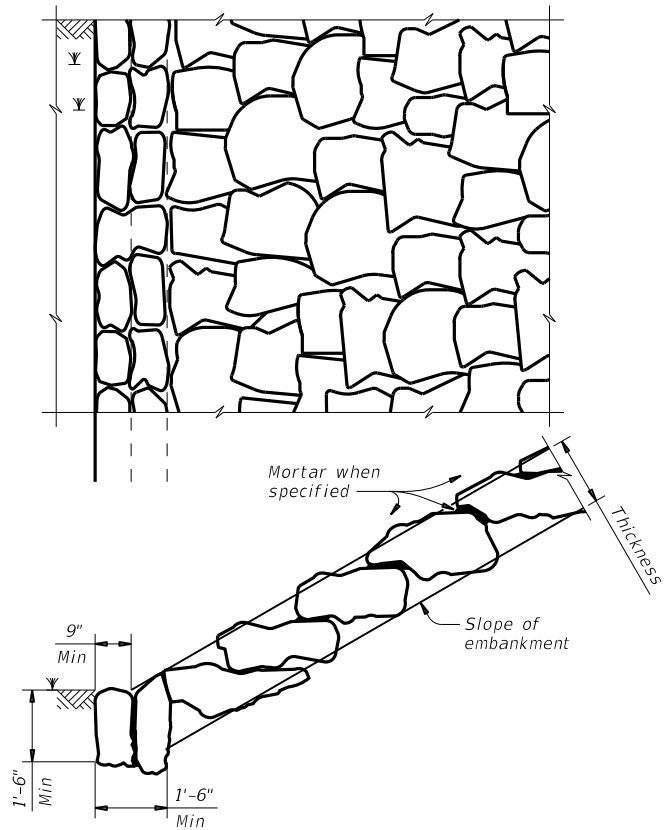


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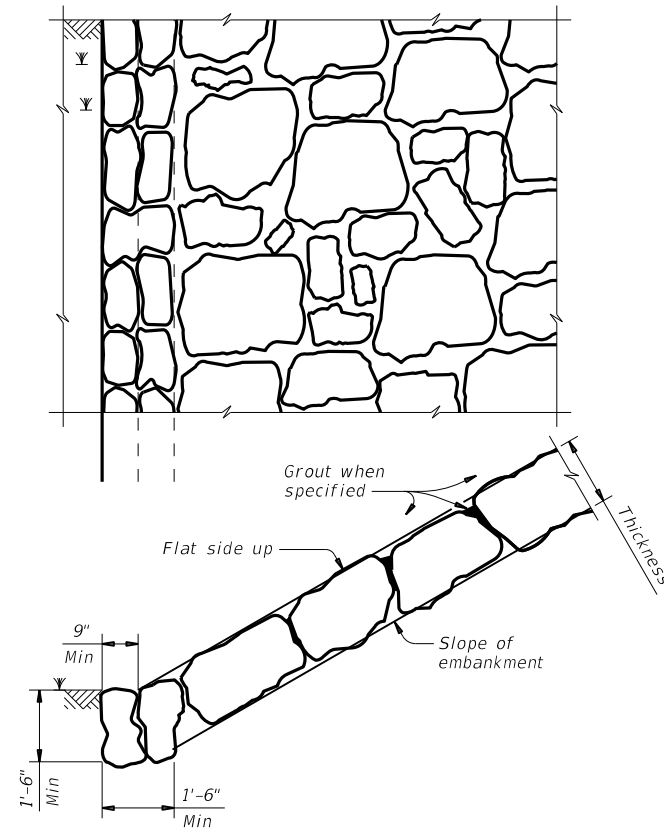
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**FIGURE 1 ~ TYPE R STONE RIPRAP**  
dry or grouted

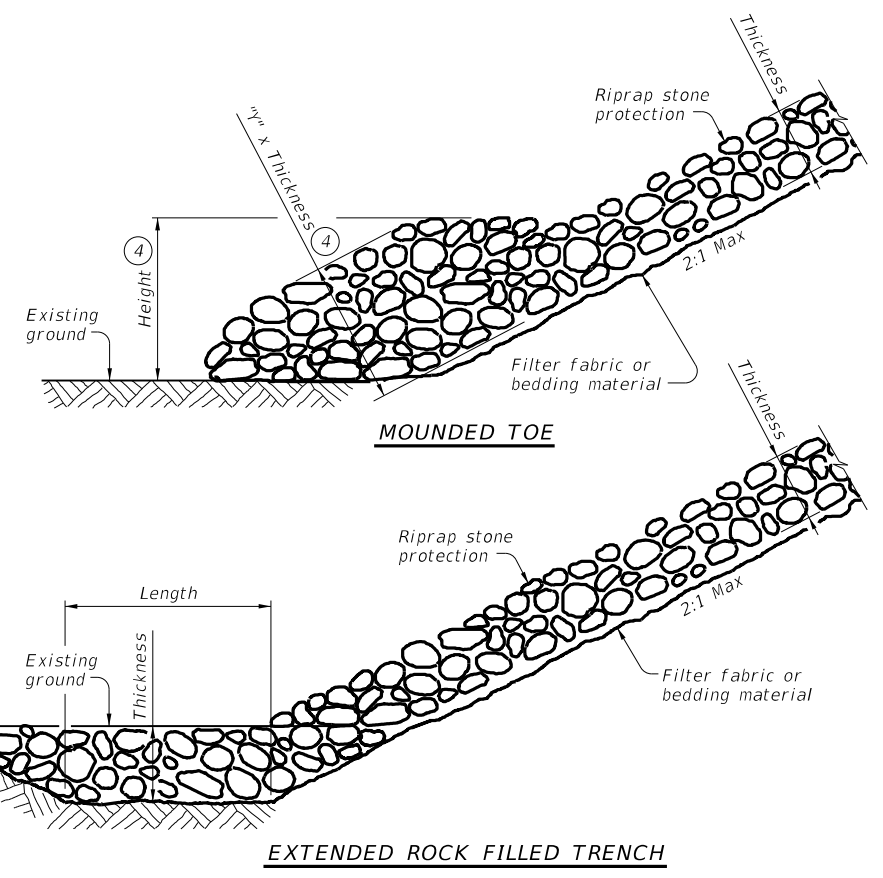


**FIGURE 2 ~ TYPE F STONE RIPRAP**  
dry or mortared

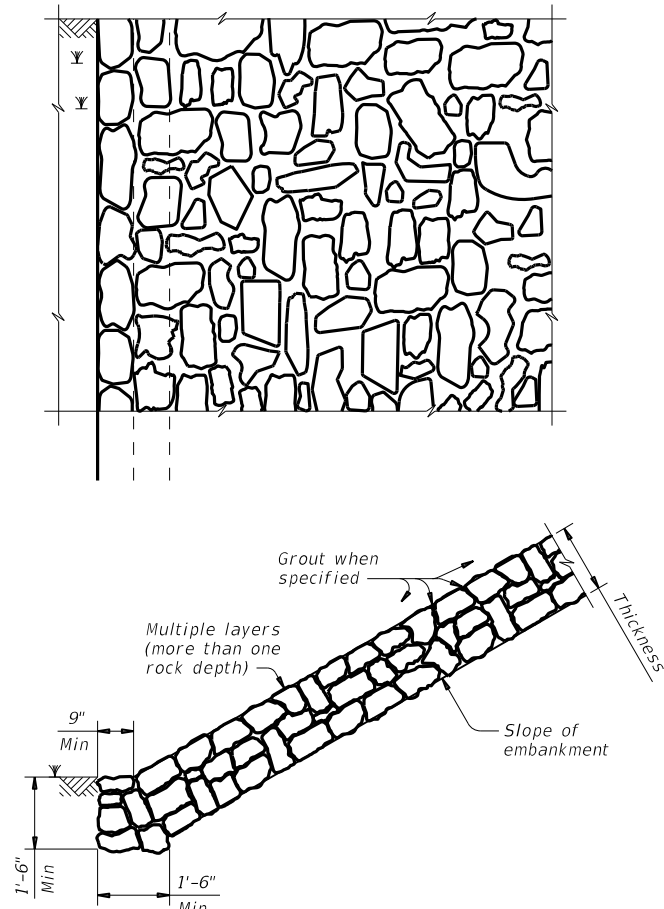


**FIGURE 3 ~ TYPE F STONE RIPRAP**  
grouted

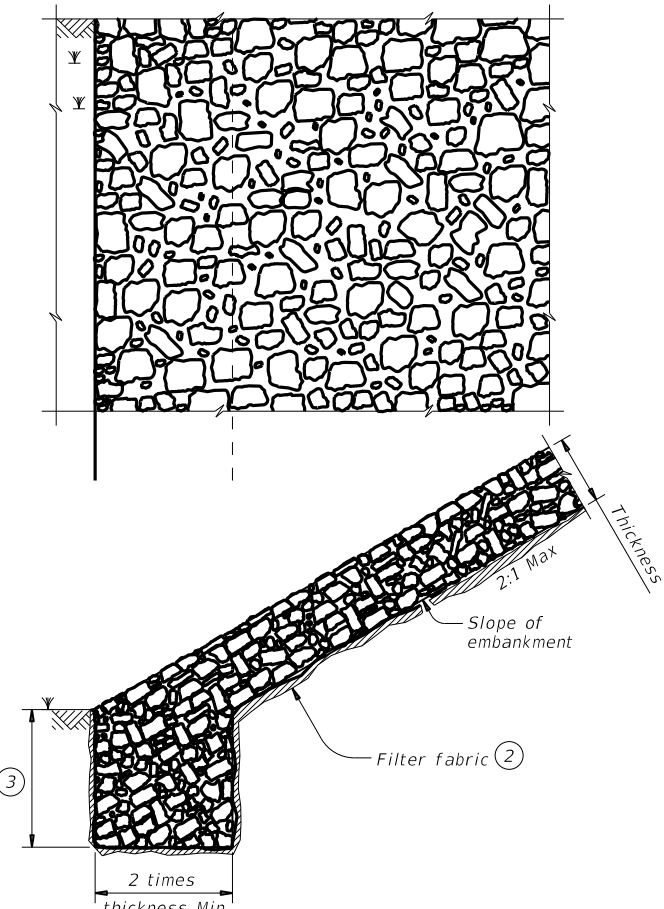
- ② Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.
- ③ Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.
- ④ "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.
- ⑤ List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.  
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



**PROTECTION STONE RIPRAP TOE OPTIONS ⑤**



**FIGURE 4 ~ COMMON STONE RIPRAP**  
dry or grouted



**FIGURE 5 ~ PROTECTION STONE RIPRAP ⑤**

STONE RIPRAP

SRR

FILE: srrside1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
	DIST	COUNTY	SHEET NO.	
	DAL	KAUFMAN	66	

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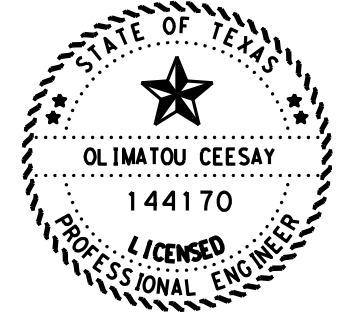
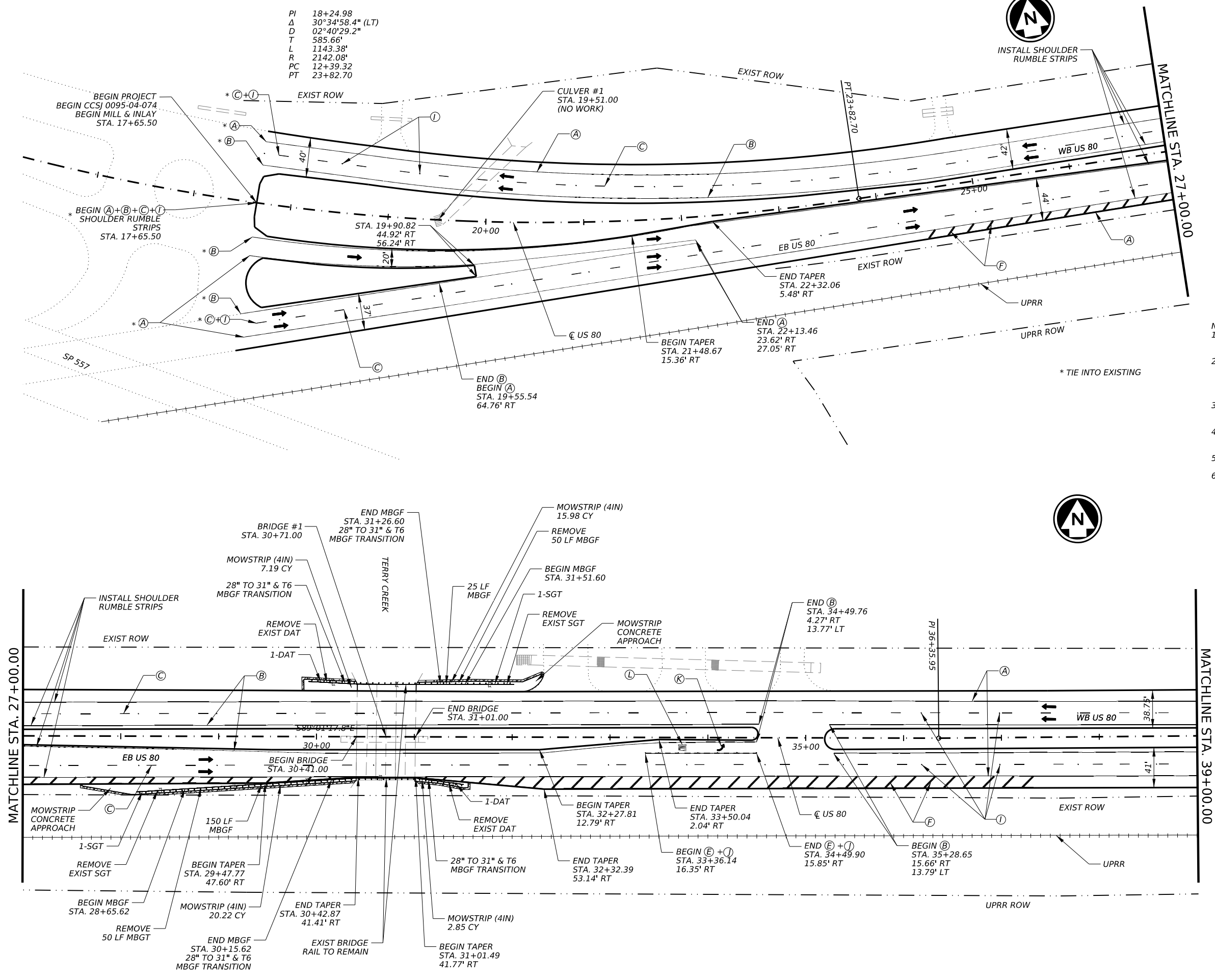


LEGEND:

- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
- (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
- (C) RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)
- (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
- (E) REFL PAV MRK TY I (W) 8"(SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) 24"(SLD)(100MIL)
- (G) REFL PAV MRKR TY II-A-A AT 20'
- (H) REFL PAV MRKR TY II-A-A AT 40'
- (I) REFL PAV MRKR TY II-C-R AT 80'
- (J) REFL PAV MRKR TY I-C AT 20'
- (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
- (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
- ⊕ INSTL DEL ASSM (D-SW) S21 (BRF) GF2

NOTES:

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5. MATCH EXISTING CROSS SLOPE.
6. LIMITS MATCH ADJACENT PROJECT LIMITS FROM STA. 157+26.26 ON THE EB, AND STA. 166+37.13 ON THE WB, TO STA. 193+06.33. ADJACENT PROJECT CCSJ IS 0095-04-069 AND CORRESPONDING STATIONS ARE: STA. 757+50.87, STA. 748+40.80 AND STA. 722+50.00 RESPECTIVELY. CONTRACTOR SHALL COORDINATE WITH ADJACENT PROJECT.



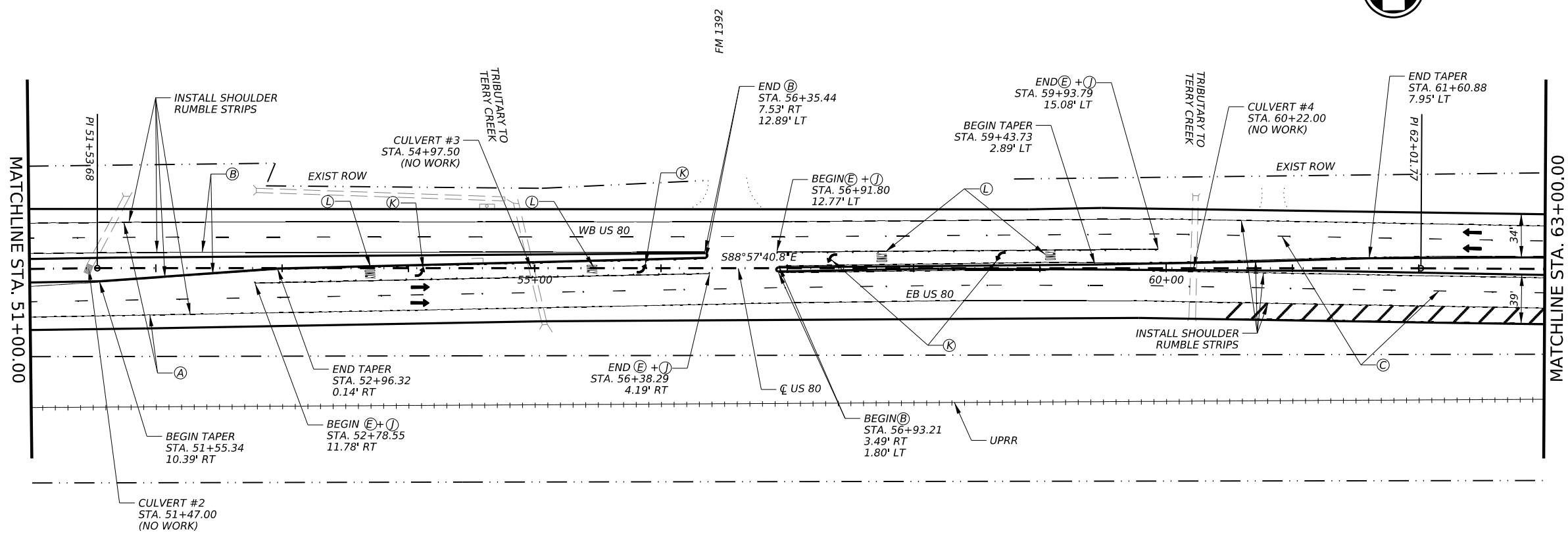
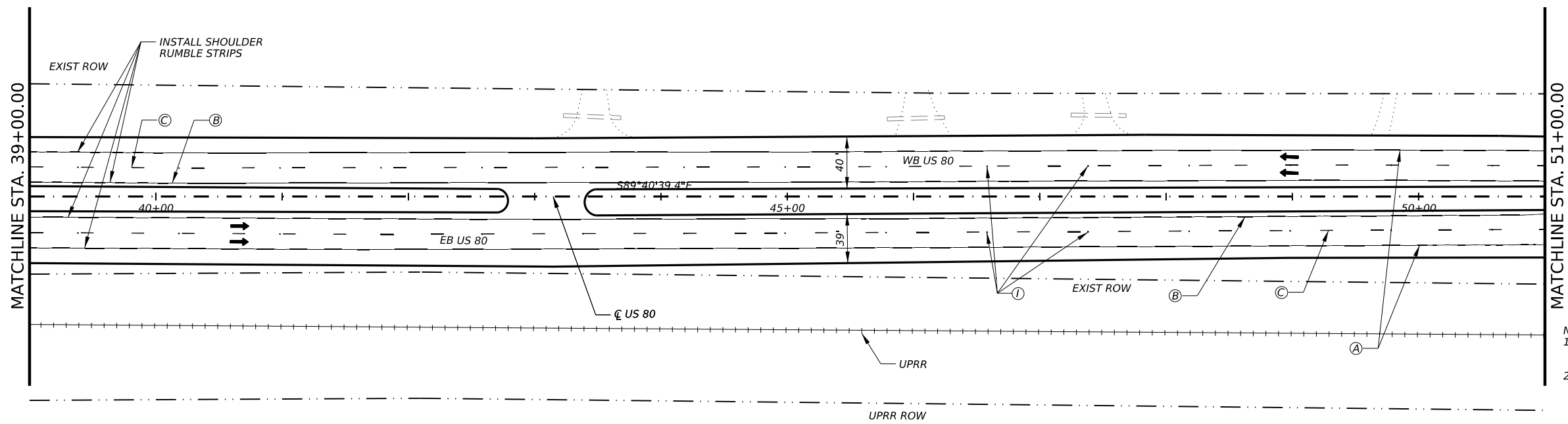
*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date



<b>US 80</b>			
<b>PLAN AND PAVEMENT MARKINGS LAYOUT</b>			
SHEET 1 OF 10			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	67	

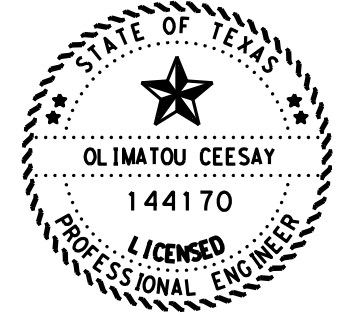
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CK: \_\_\_\_\_  
 DW: \_\_\_\_\_  
 CC: \_\_\_\_\_  
 DN: \_\_\_\_\_



- LEGEND:**
- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
  - (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
  - (C) RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)
  - (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
  - (E) REFL PAV MRK TY I (W) 8"(SLD)(100MIL)
  - (F) REFL PAV MRK TY I (W) 24"(SLD)(100MIL)
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  - (H) REFL PAV MRKR TY II-A-A AT 40'
  - (I) REFL PAV MRKR TY II-C-R AT 80'
  - (J) REFL PAV MRKR TY I-C AT 20'
  - (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
  - (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
  - ⊞ INSTL DEL ASSM (D-SW) S21 (BRF) GF2

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 Signature of Registrant & Date

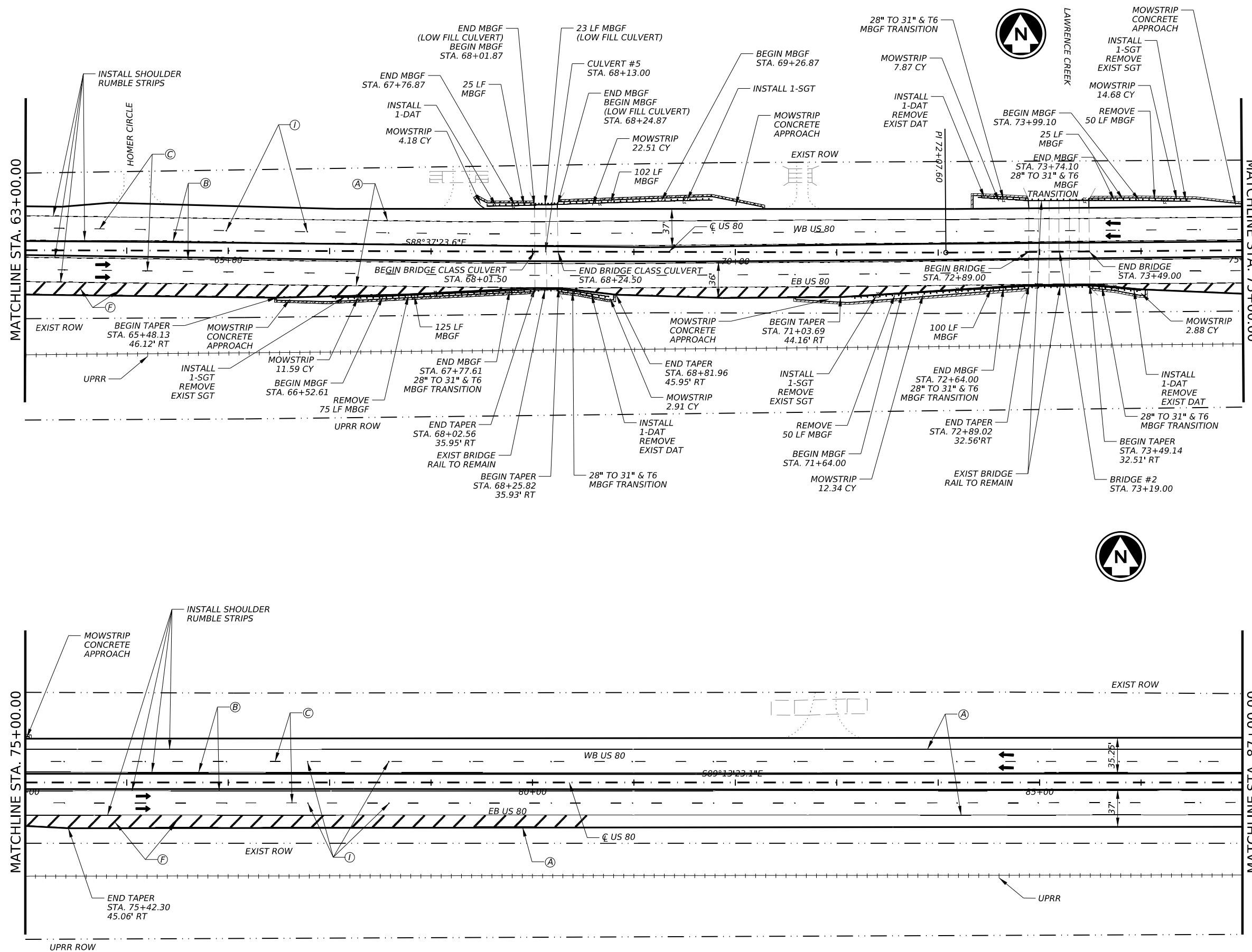


**US 80**  
**PLAN AND PAVEMENT**  
**MARKINGS LAYOUT**

SHEET 2 OF 10

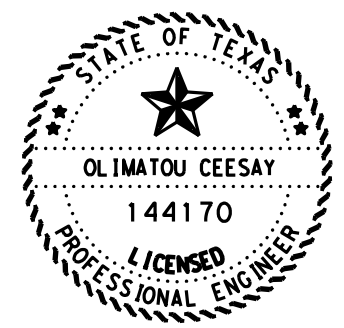
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0095	04	074, ETC.	US 80
DIST		COUNTY	SHEET NO.
DAL		KAUFMAN	68

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- LEGEND:**
- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
  - (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
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  - (E) REFL PAV MRK TY I (W) 8"(SLD)(100MIL)
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  - (I) REFL PAV MRKR TY II-C-R AT 80'
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  - (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
  - (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
  - ⊞ INSTL DEL ASSM (D-SW) S21 (BRF) GF2

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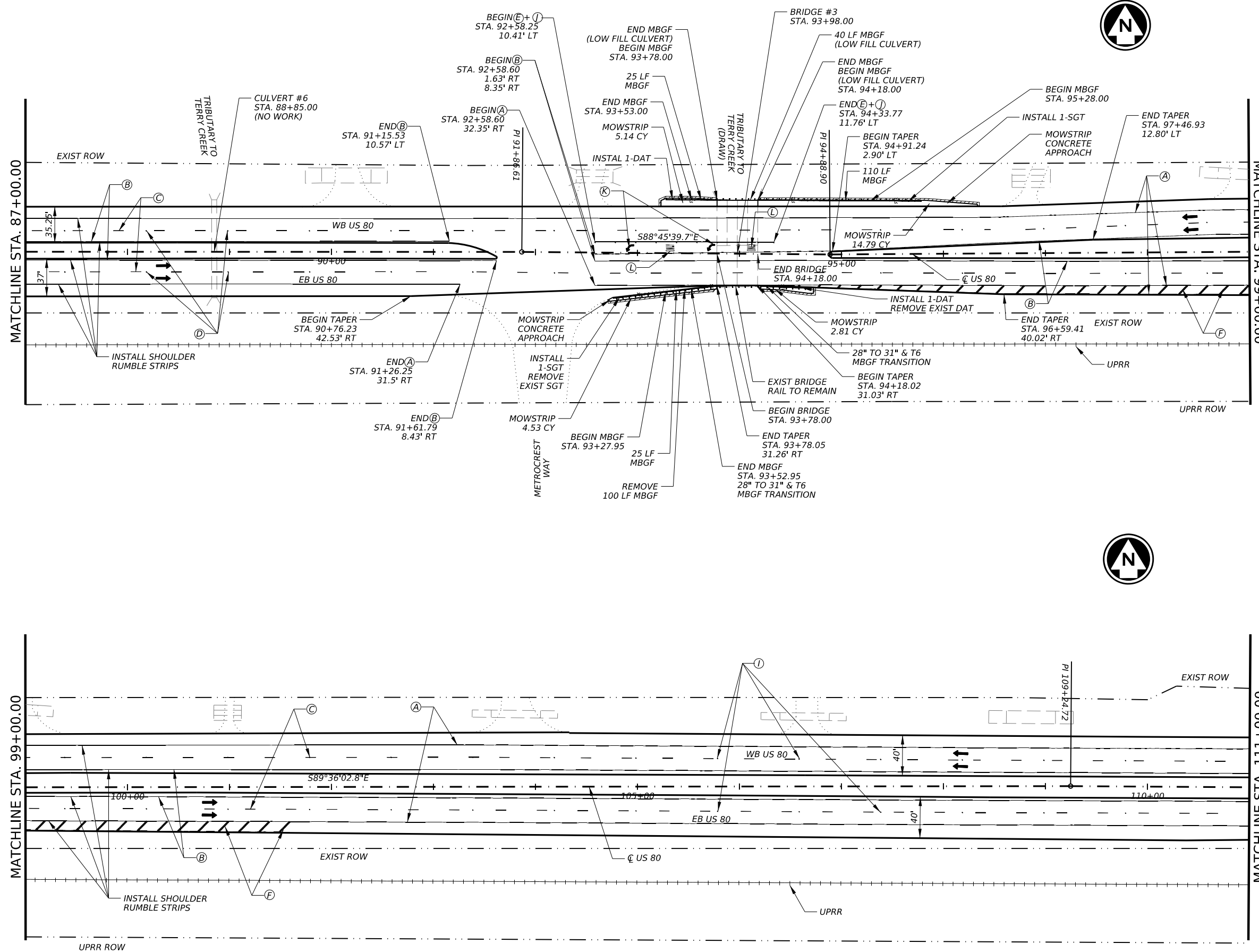
**US 80**  
**PLAN AND PAVEMENT**  
**MARKINGS LAYOUT**

SHEET 3 OF 10

CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	69	

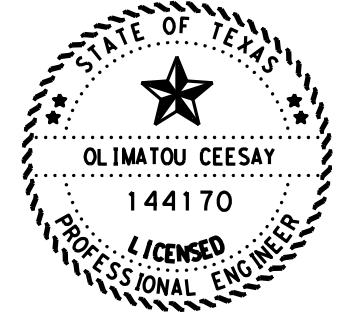


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- LEGEND:**
- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
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  - (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
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  - (J) REFL PAV MRKR TY I-C AT 20'
  - (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
  - (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
  - ⊞ INSTL DEL ASSM (D-SW) S21 (BRF) GF2

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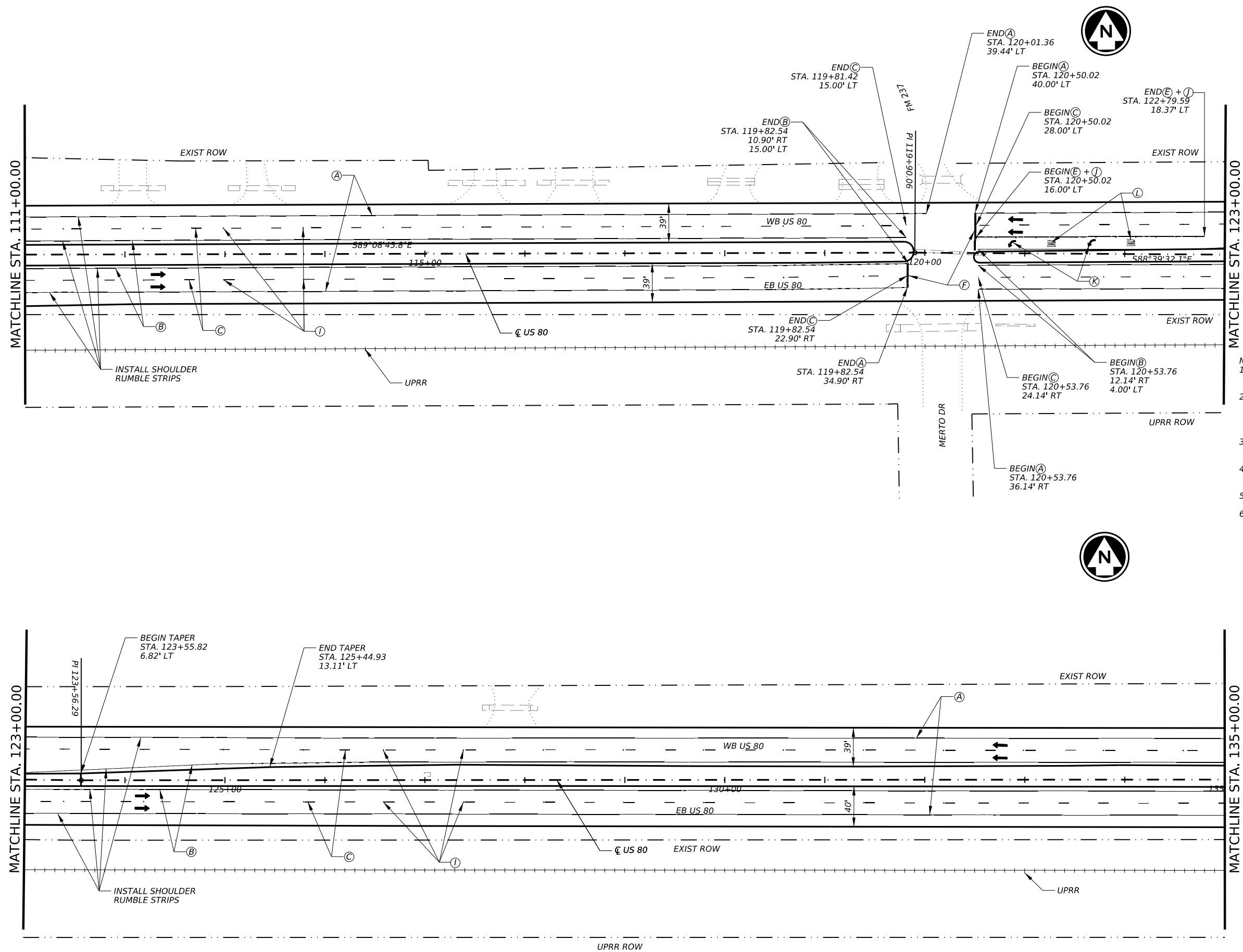


**US 80**  
**PLAN AND PAVEMENT MARKINGS LAYOUT**

SHEET 4 OF 10

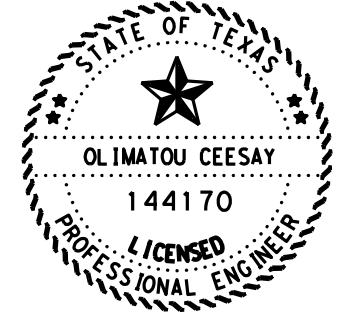
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DAL	KAUFMAN		SHEET NO. 70

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 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/3 - Roadway/US 80 PLAN AND PM LAYOUT



- LEGEND:**
- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
  - (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
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  - (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
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  - (J) REFL PAV MRKR TY I-C AT 20'
  - (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
  - (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
  - ⊕ INSTL DEL ASSM (D-SW) SZ1 (BRF) GF2

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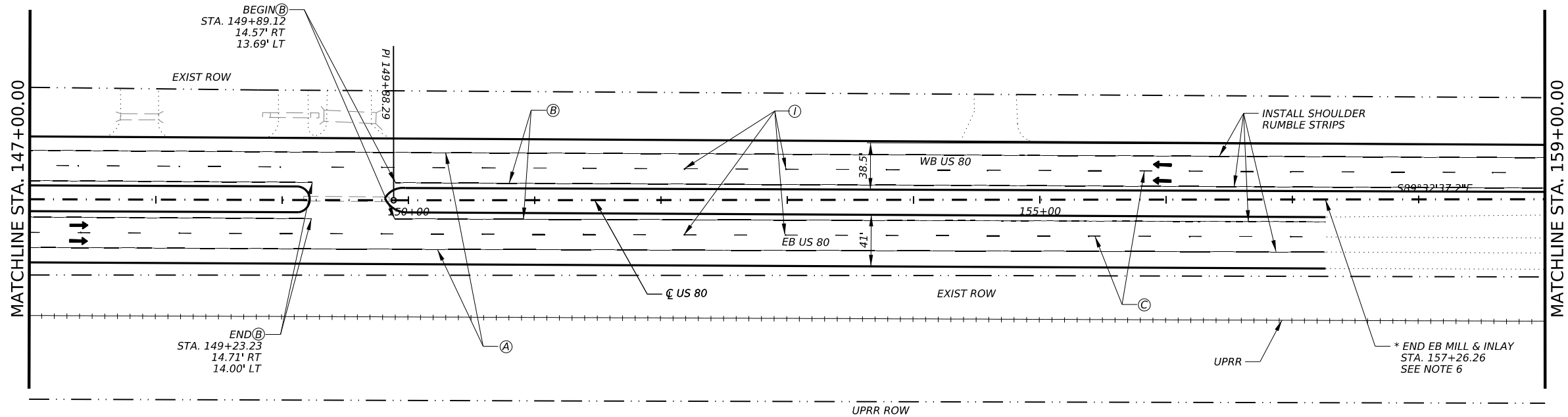
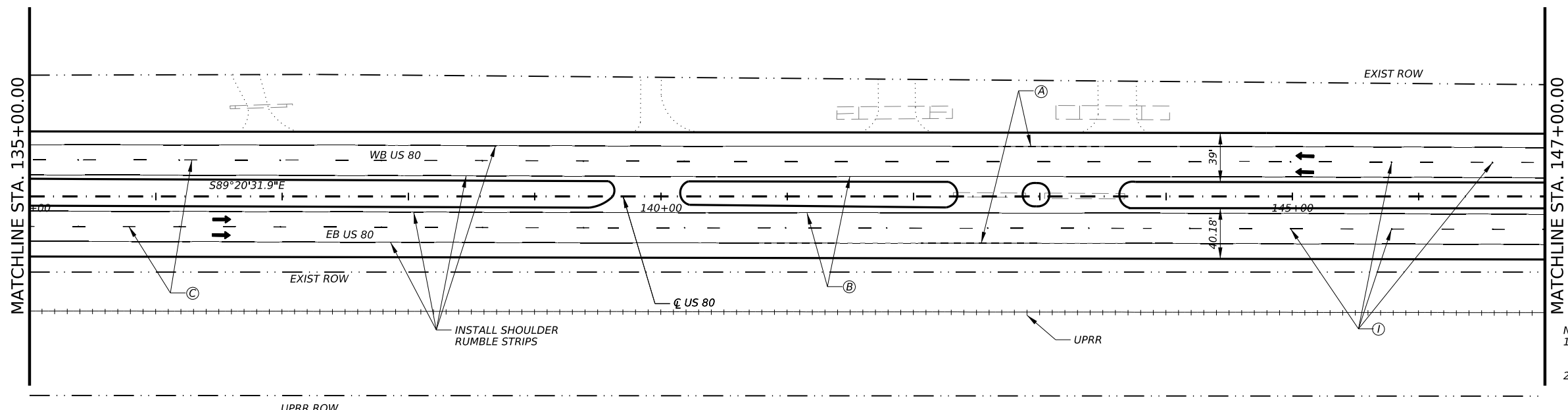
**US 80**  
**PLAN AND PAVEMENT MARKINGS LAYOUT**

SHEET 5 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DAL	KAUFMAN		SHEET NO. 71

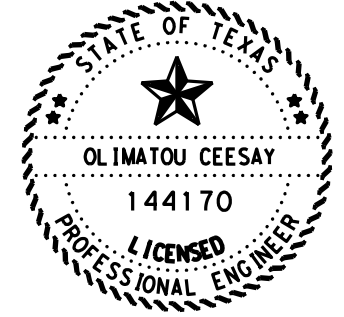


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 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/3 - Roadway/US 80 PLAN AND PM LAYOUT



- LEGEND:**
- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
  - (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
  - (C) RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)
  - (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
  - (E) REFL PAV MRK TY I (W) 8"(SLD)(100MIL)
  - (F) REFL PAV MRK TY I (W) 24"(SLD)(100MIL)
  - (G) REFL PAV MRKR TY II-A-A AT 20'
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  - (J) REFL PAV MRKR TY I-C AT 20'
  - (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
  - (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
  - ⊕ INSTL DEL ASSM (D-SW) SZ1 (BRF) GF2

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  4. NO WORK ON DRIVEWAYS. PROPOSED EDGE OF OF PAVEMENT SHALL MATCH EXISTING.
  5. MATCH EXISTING CROSS SLOPE.
  6. LIMITS MATCH ADJACENT PROJECT LIMITS FROM STA. 157+26.26 ON THE EB, AND STA. 166+37.13 ON THE WB, TO STA. 193+06.33. ADJACENT PROJECT CCSJ IS 0095-04-069 AND CORRESPONDING STATIONS ARE: STA. 757+50.87, STA. 748+40.80 AND STA. 722+50.00 RESPECTIVELY. CONTRACTOR SHALL COORDINATE WITH ADJACENT PROJECT.



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date



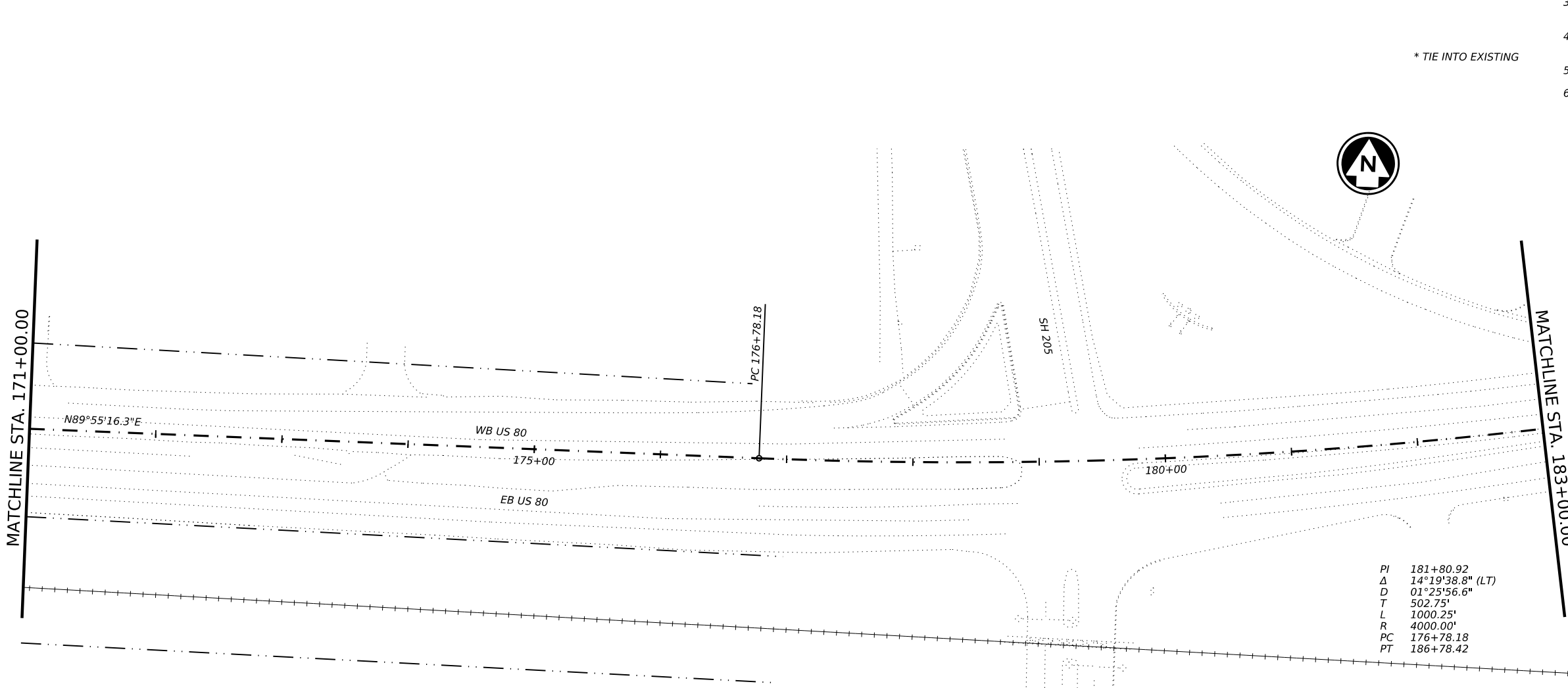
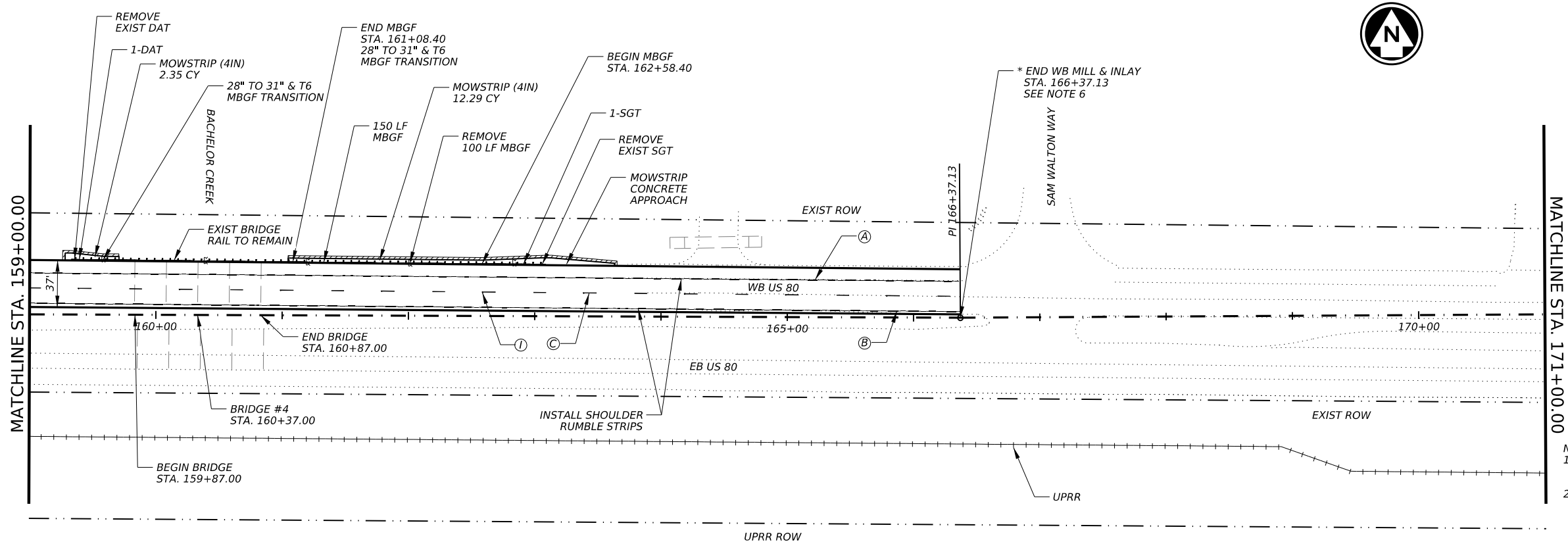
**US 80**  
**PLAN AND PAVEMENT MARKINGS LAYOUT**

SHEET 6 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST		COUNTY	SHEET NO.
DAL		KAUFMAN	72

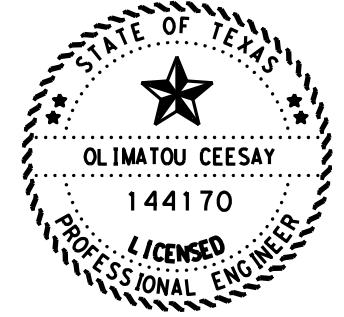
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DATE: 2/22/2023 10:10:51 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/3 - Roadway/US 80 PLAN AND PM LAYOUT



- LEGEND:**
- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
  - (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
  - (C) RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)
  - (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
  - (E) REFL PAV MRK TY I (W) 8"(SLD)(100MIL)
  - (F) REFL PAV MRK TY I (W) 24"(SLD)(100MIL)
  - (G) REFL PAV MRKR TY II-A-A AT 20'
  - (H) REFL PAV MRKR TY II-A-A AT 40'
  - (I) REFL PAV MRKR TY II-C-R AT 80'
  - (J) REFL PAV MRKR TY I-C AT 20'
  - (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
  - (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
  - ⊞ INSTL DEL ASSM (D-SW) S21 (BRF) GF2

- NOTES:**
1. EXISTING SIGNS AND MAILBOXES ARE TO REMAIN IN PLACE.
  2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO AVOID DAMAGING EXISTING SIGNS AND/OR ASSEMBLIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEPARTMENT.
  3. INSTALL OBJECT MARKERS ON HEADERS OF EXISTING STRUCTURE.
  4. NO WORK ON DRIVEWAYS. PROPOSED EDGE OF OF PAVEMENT SHALL MATCH EXISTING.
  5. MATCH EXISTING CROSS SLOPE.
  6. LIMITS MATCH ADJACENT PROJECT LIMITS FROM STA. 157+26.26 ON THE EB, AND STA. 166+37.13 ON THE WB, TO STA. 193+06.33. ADJACENT PROJECT CCSJ IS 0095-04-069 AND CORRESPONDING STATIONS ARE: STA. 757+50.87, STA. 748+40.80 AND STA. 722+50.00 RESPECTIVELY. CONTRACTOR SHALL COORDINATE WITH ADJACENT PROJECT.



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date

PI 181+80.92  
 Δ 14°19'38.8" (LT)  
 D 01°25'56.6"  
 T 502.75'  
 L 1000.25'  
 R 4000.00'  
 PC 176+78.18  
 PT 186+78.42

Texas Department of Transportation

**US 80**

**PLAN AND PAVEMENT MARKINGS LAYOUT**

SHEET 7 OF 10

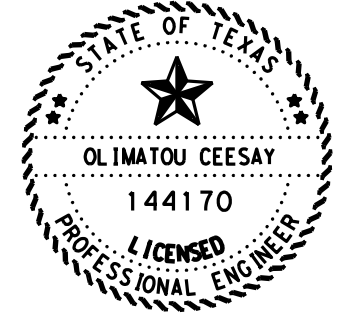
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST		COUNTY	SHEET NO.
DAL		KAUFMAN	73

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- LEGEND:**
- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
  - (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
  - (C) RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)
  - (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
  - (E) REFL PAV MRK TY I (W) 8"(SLD)(100MIL)
  - (F) REFL PAV MRK TY I (W) 24"(SLD)(100MIL)
  - (G) REFL PAV MRKR TY II-A-A AT 20'
  - (H) REFL PAV MRKR TY II-A-A AT 40'
  - (I) REFL PAV MRKR TY II-C-R AT 80'
  - (J) REFL PAV MRKR TY I-C AT 20'
  - (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
  - (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
  - ⊕ INSTL DEL ASSM (D-SW) S21 (BRF) GF2

- NOTES:**
- EXISTING SIGNS AND MAILBOXES ARE TO REMAIN IN PLACE.
  - IT IS THE CONTRACTOR'S RESPONSIBILITY TO AVOID DAMAGING EXISTING SIGNS AND/OR ASSEMBLIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEPARTMENT.
  - INSTALL OBJECT MARKERS ON HEADERS OF EXISTING STRUCTURE.
  - NO WORK ON DRIVEWAYS. PROPOSED EDGE OF OF PAVEMENT SHALL MATCH EXISTING.
  - MATCH EXISTING CROSS SLOPE.
  - LIMITS MATCH ADJACENT PROJECT LIMITS FROM STA. 157+26.26 ON THE EB, AND STA. 166+37.13 ON THE WB, TO STA. 193+06.33. ADJACENT PROJECT CCSJ IS 0095-04-069 AND CORRESPONDING STATIONS ARE: STA. 757+50.87, STA. 748+40.80 AND STA. 722+50.00 RESPECTIVELY. CONTRACTOR SHALL COORDINATE WITH ADJACENT PROJECT.



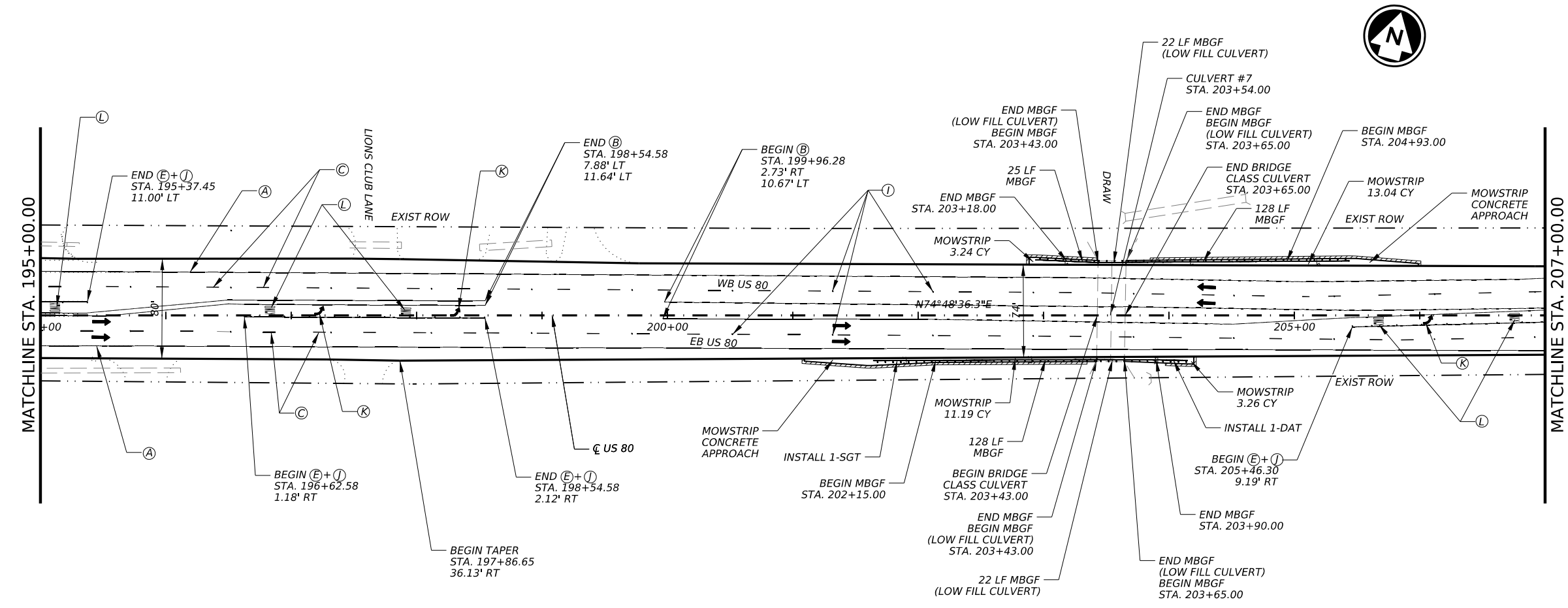
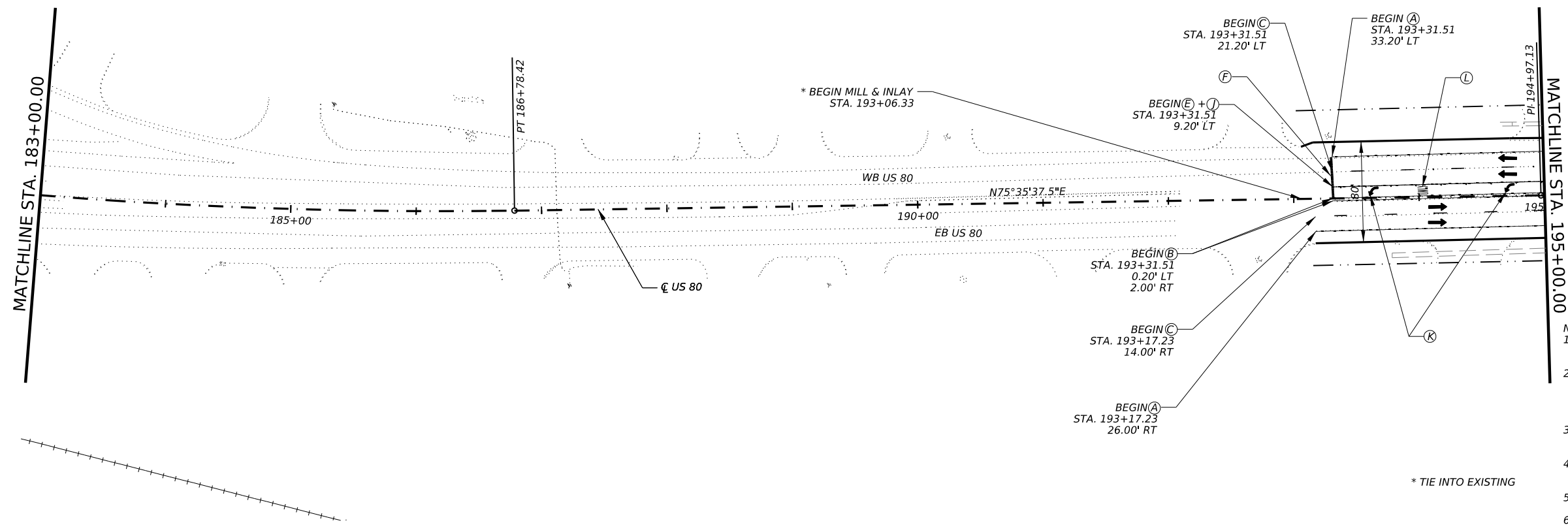
*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date



**US 80**  
**PLAN AND PAVEMENT**  
**MARKINGS LAYOUT**

SHEET 8 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	74	



\* TIE INTO EXISTING

DATE: 2/22/2023 10:10:53 AM  
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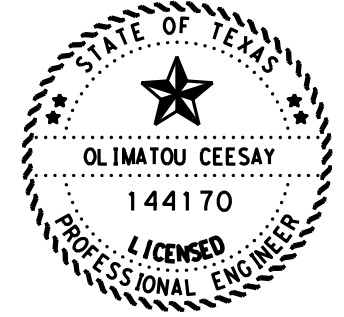
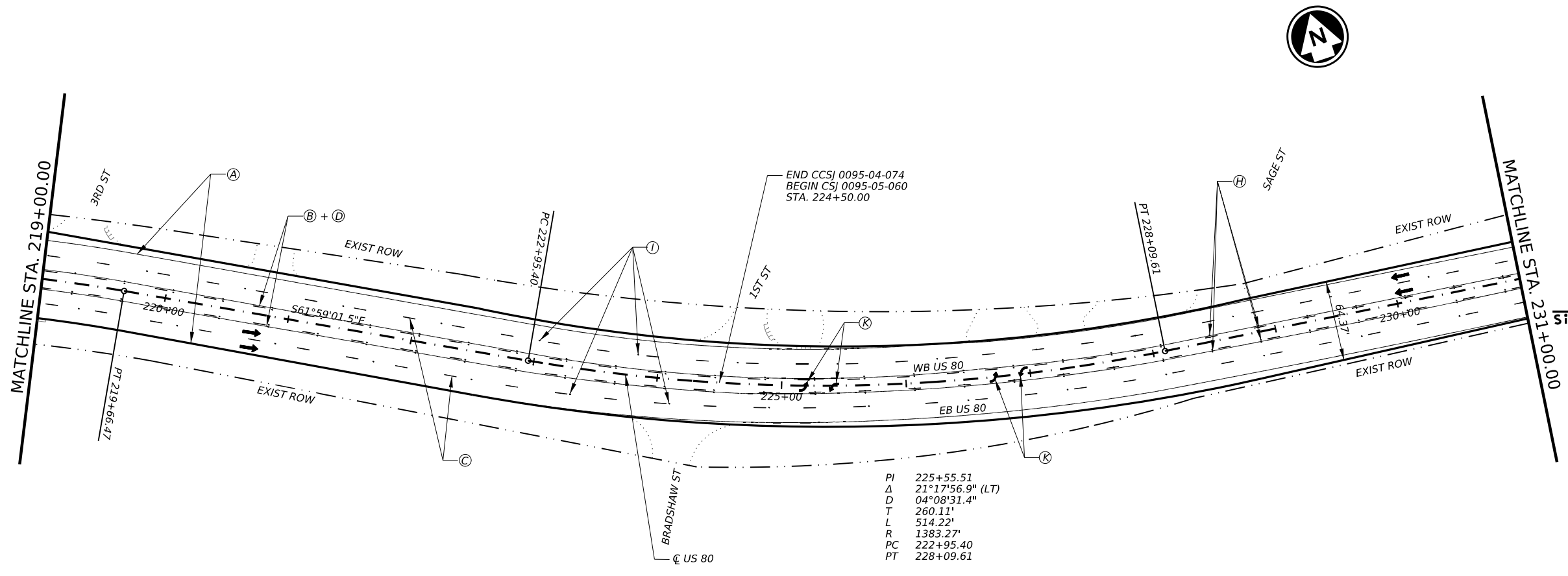
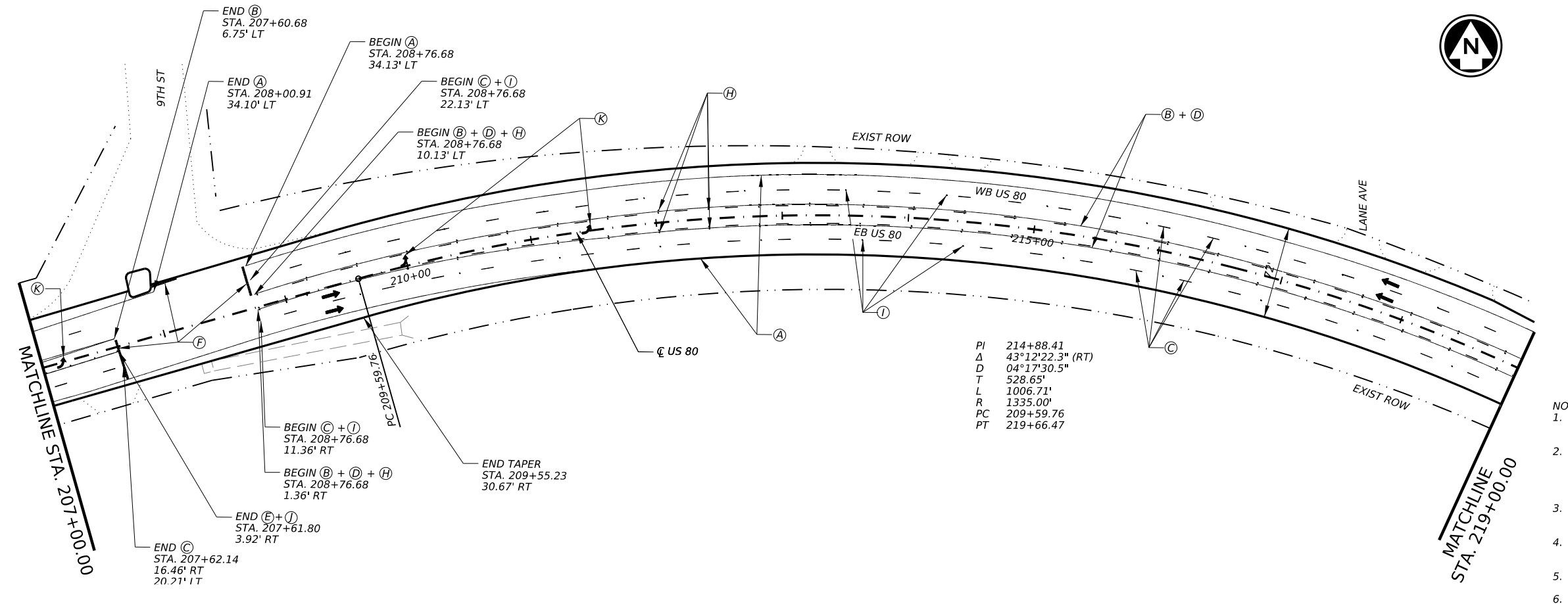


**LEGEND:**

- (A) RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)
- (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
- (C) RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)
- (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
- (E) REFL PAV MRK TY I (W) 8"(SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) 24"(SLD)(100MIL)
- (G) REFL PAV MRKR TY II-A-A AT 20'
- (H) REFL PAV MRKR TY II-A-A AT 40'
- (I) REFL PAV MRKR TY II-C-R AT 80'
- (J) REFL PAV MRKR TY I-C AT 20'
- (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
- (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
- ☒ INSTL DEL ASSM (D-SW) S21 (BRF) GF2

**NOTES:**

1. EXISTING SIGNS AND MAILBOXES ARE TO REMAIN IN PLACE.
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*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date



**US 80  
 PLAN AND PAVEMENT  
 MARKINGS LAYOUT**

SHEET 9 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	75	



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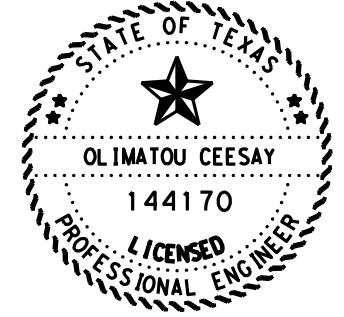
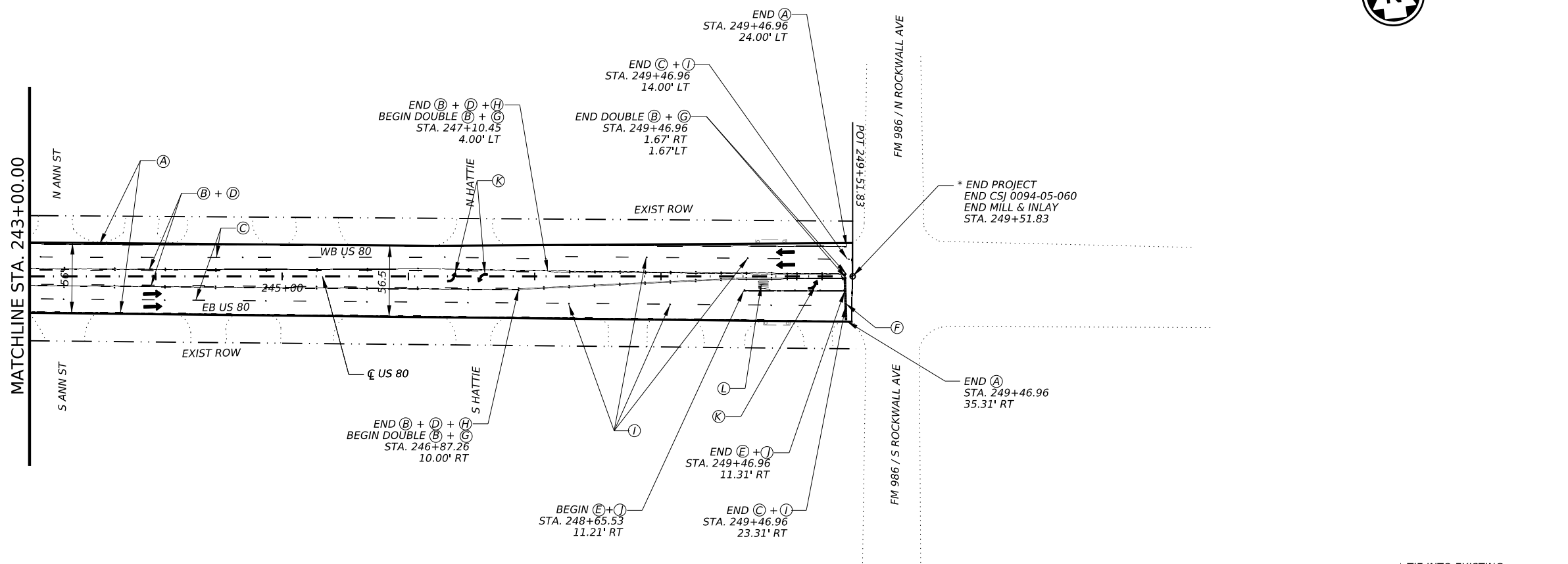
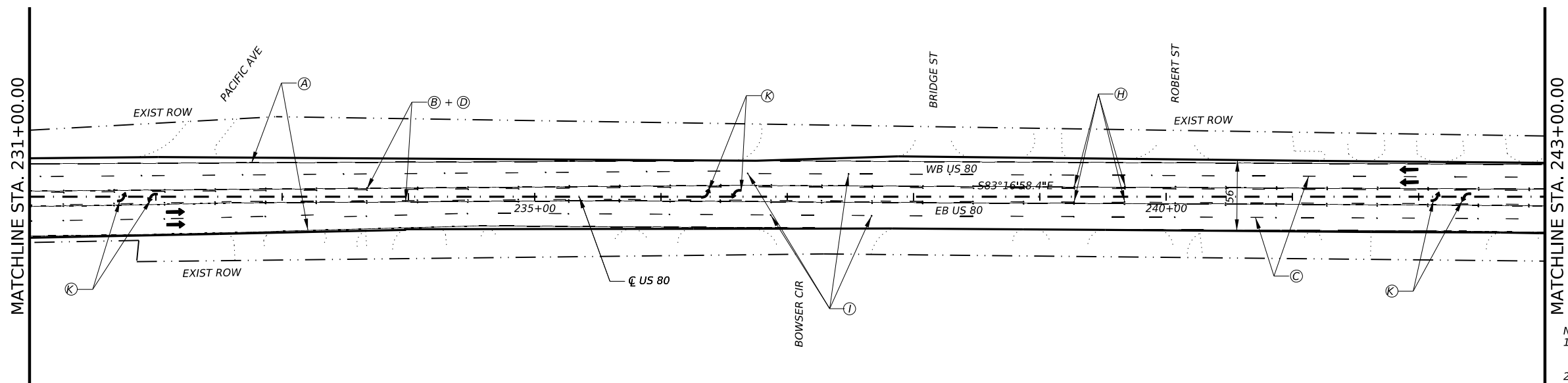


**LEGEND:**

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- (B) RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)
- (C) RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)
- (D) RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)
- (E) REFL PAV MRK TY I (W) 8"(SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) 24"(SLD)(100MIL)
- (G) REFL PAV MRKR TY II-A-A AT 20'
- (H) REFL PAV MRKR TY II-A-A AT 40'
- (I) REFL PAV MRKR TY II-C-R AT 80'
- (J) REFL PAV MRKR TY I-C AT 20'
- (K) REFL PAV MRKR TY I (W)(ARROW)(100MIL)
- (L) REFL PAV MRKR TY I (W)(WORD)(100MIL)
- ⊕ INSTL DEL ASSM (D-SW) SZ1 (BRF) GF2

**NOTES:**

1. EXISTING SIGNS AND MAILBOXES ARE TO REMAIN IN PLACE.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO AVOID DAMAGING EXISTING SIGNS AND/OR ASSEMBLIES SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEPARTMENT.
3. INSTALL OBJECT MARKERS ON HEADERS OF EXISTING STRUCTURE.
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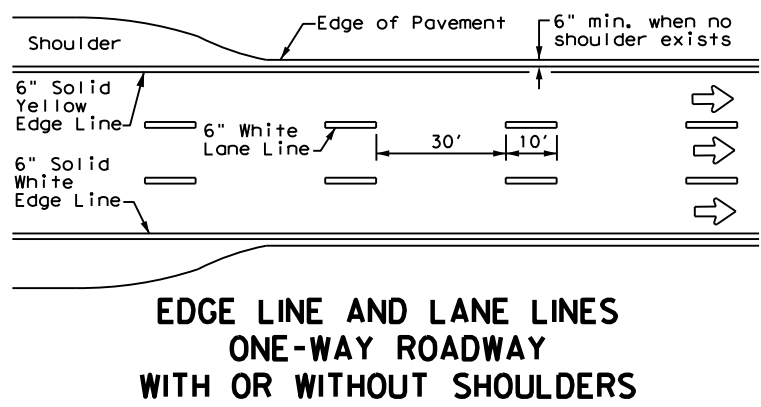
*Olimatou Ceasay*, P.E. 2/22/2023  
 Signature of Registrant & Date



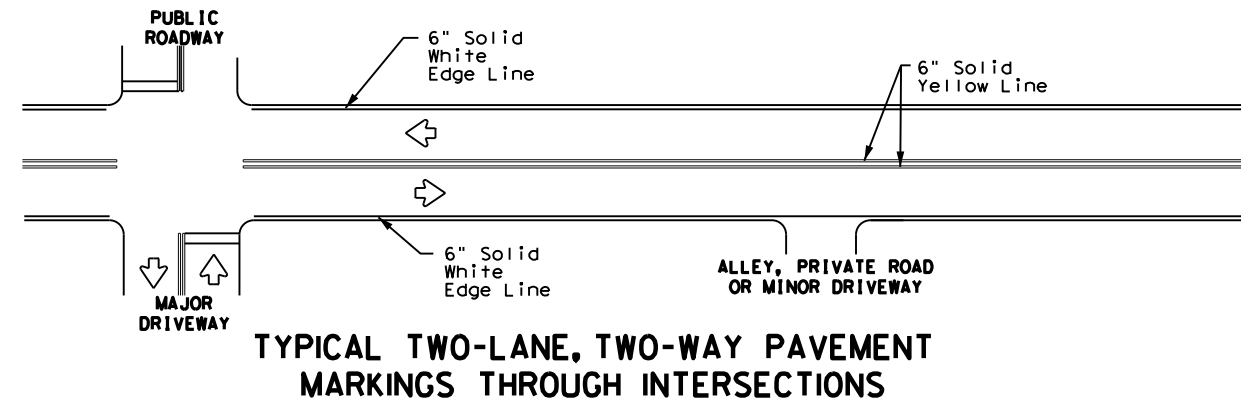
US 80			
PLAN AND PAVEMENT MARKINGS LAYOUT			
SHEET 10 OF 10			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	76	

\* TIE INTO EXISTING

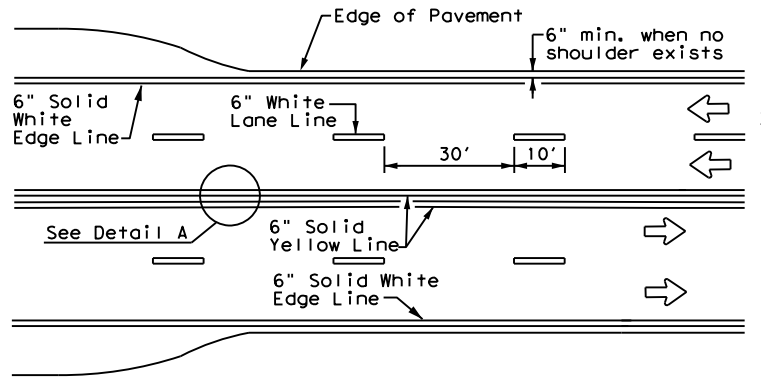
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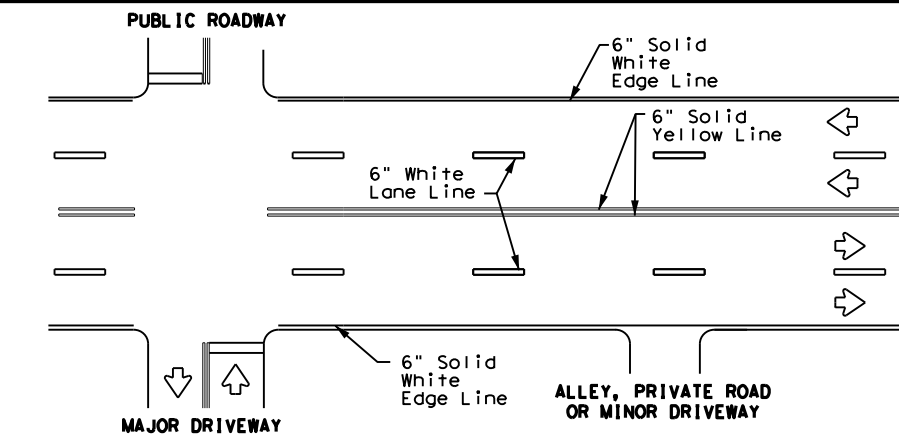
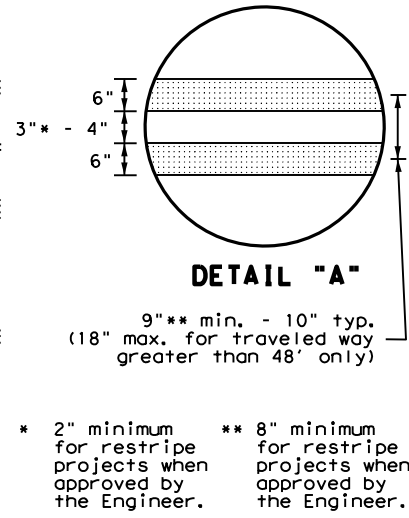
**EDGE LINE AND LANE LINES  
ONE-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



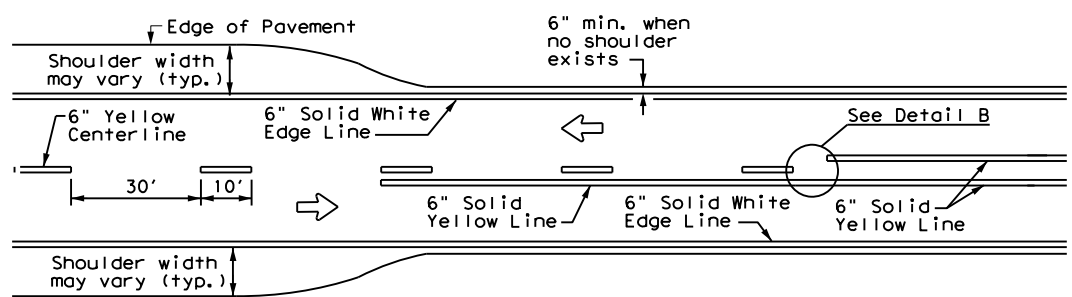
**TYPICAL TWO-LANE, TWO-WAY PAVEMENT  
MARKINGS THROUGH INTERSECTIONS**



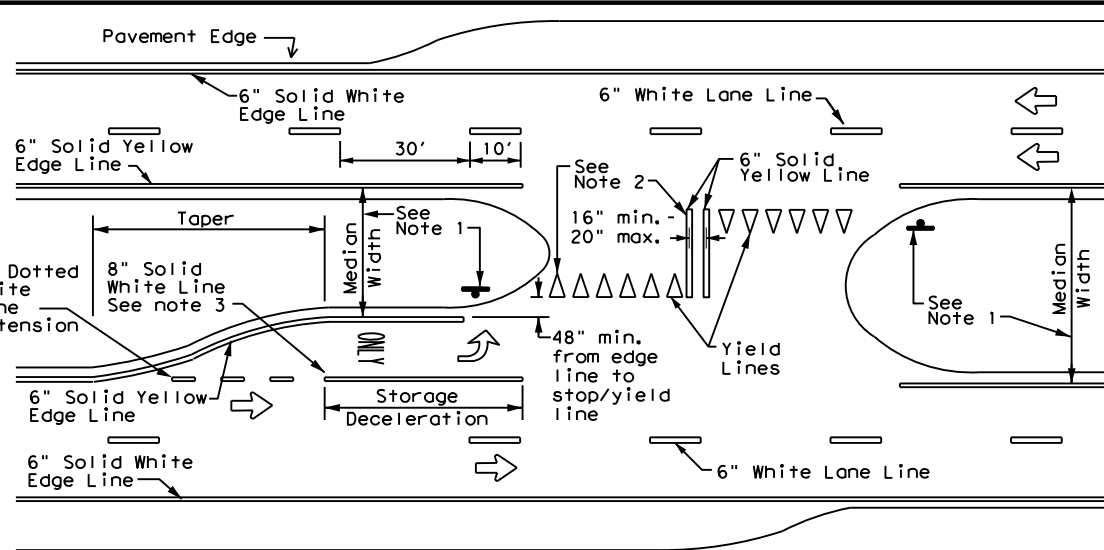
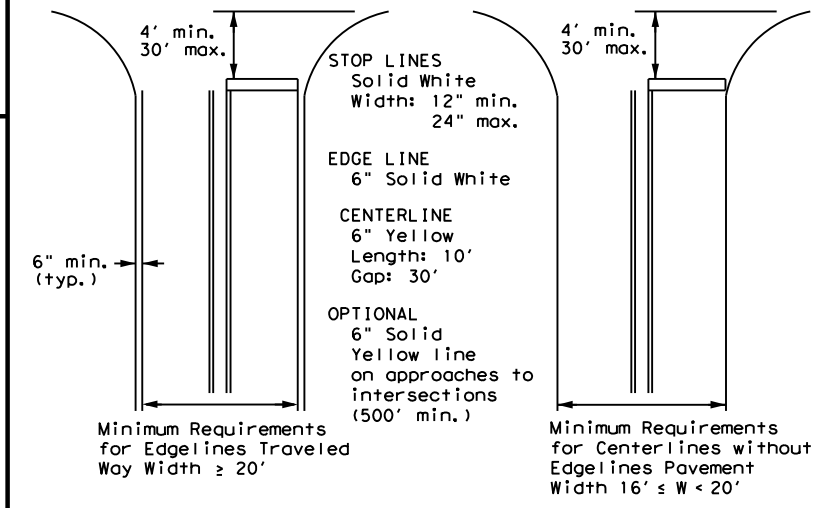
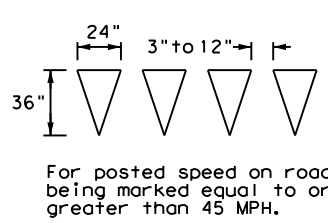
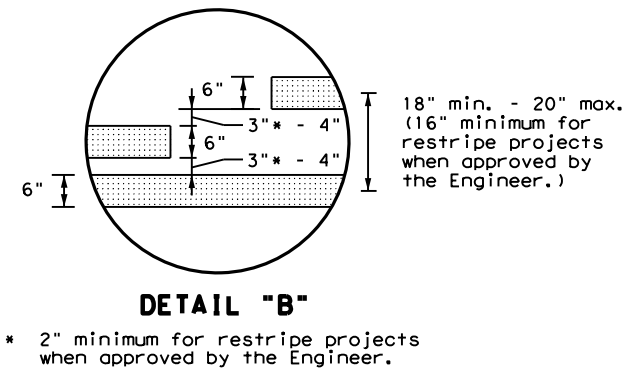
**CENTERLINE AND LANE LINES  
FOUR LANE TWO-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



**TYPICAL MULTI-LANE, TWO-WAY PAVEMENT  
MARKINGS THROUGH INTERSECTIONS**



**TWO LANE TWO-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



**FOUR LANE DIVIDED ROADWAY CROSSOVERS**

**NOTES**

- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
- Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

**GENERAL NOTES**

- Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
- The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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

**TYPICAL STANDARD  
PAVEMENT MARKINGS**

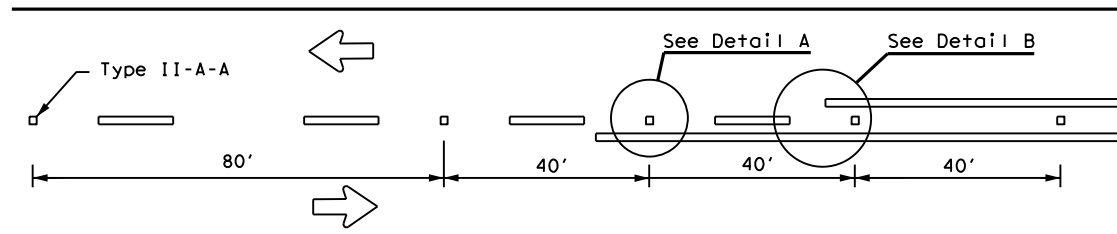
**PM(1) - 22**

FILE:	pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT	December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS		0095	04	074, ETC.	US 80
11-78	8-00 6-20	DIST	COUNTY		SHEET NO.
8-95	3-03 12-22	DAL	KAUFMAN		77
5-00	2-12				

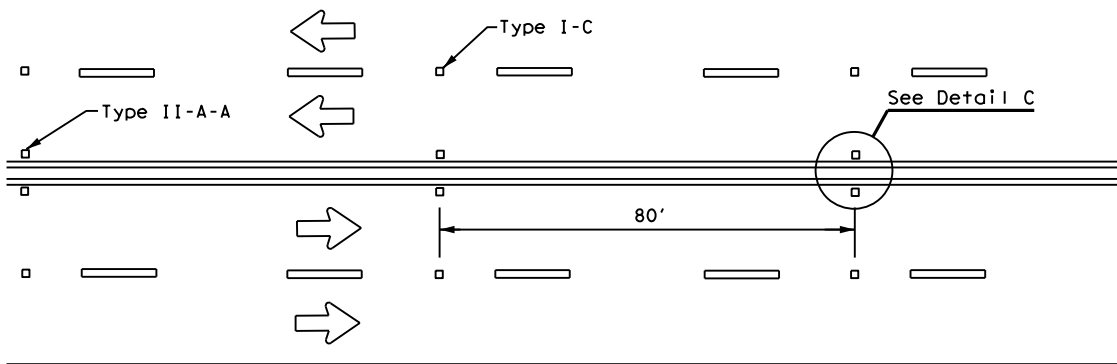
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# REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

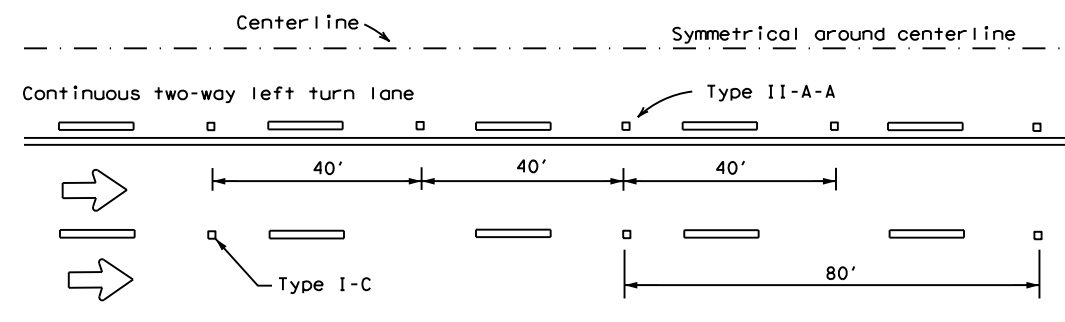
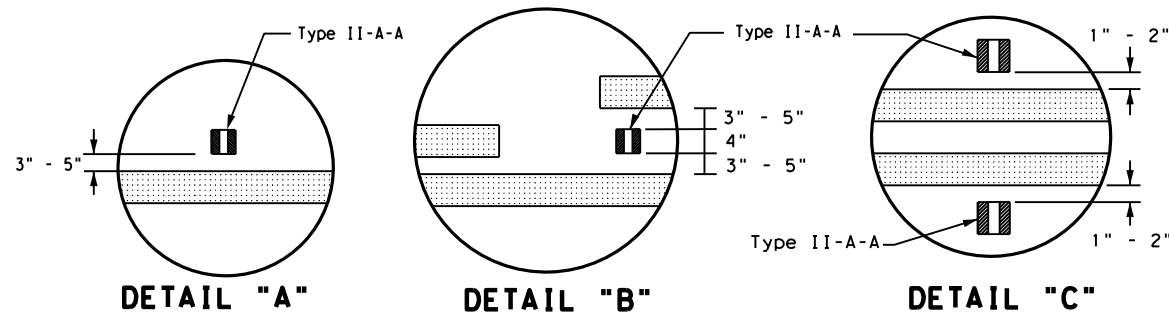
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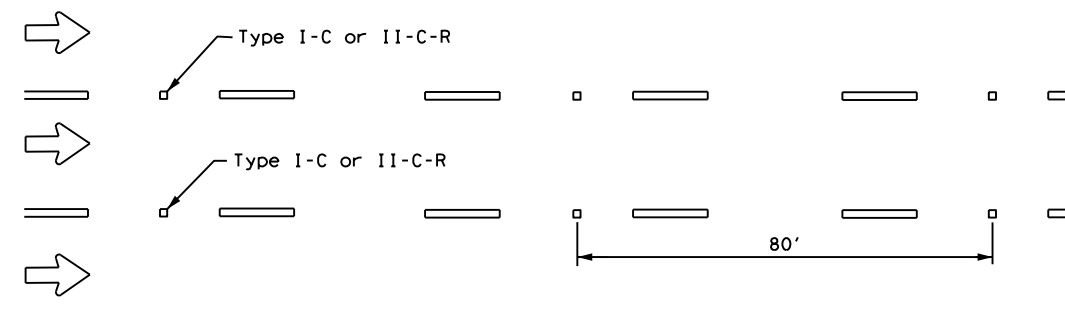
**CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS**



**CENTERLINE & LANE LINES  
FOR FOUR LANE TWO-WAY ROADWAYS**

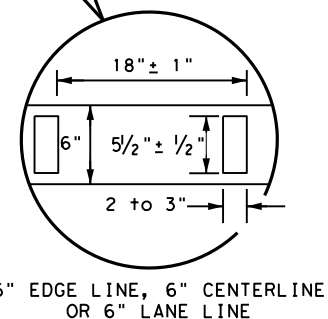
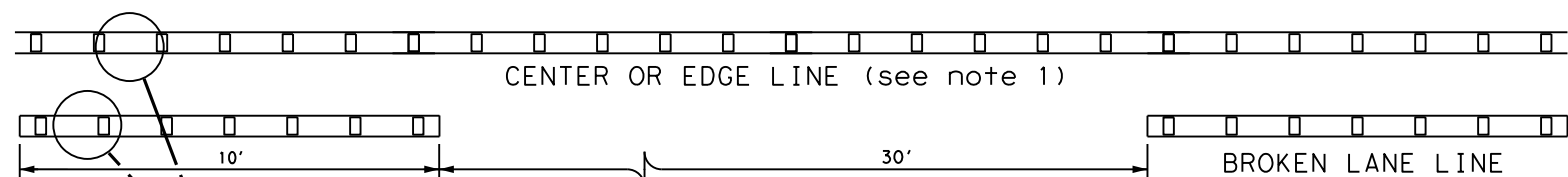


**CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE**



**LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)**

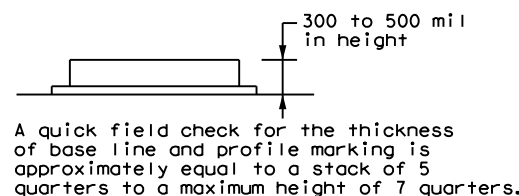
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.  
See Note 3.



**REFLECTORIZED PROFILE  
PATTERN DETAIL**

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

6" EDGE LINE, 6" CENTERLINE  
OR 6" LANE LINE



**NOTES**

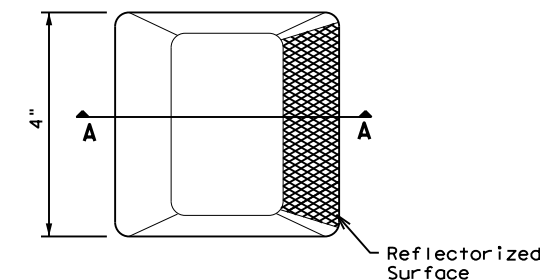
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

**GENERAL NOTES**

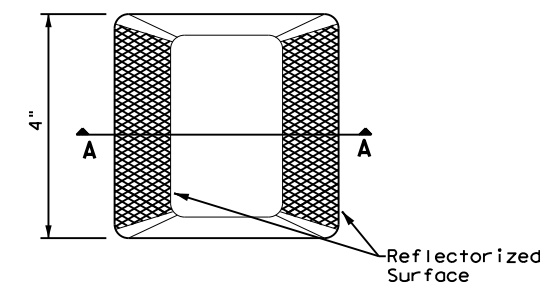
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

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

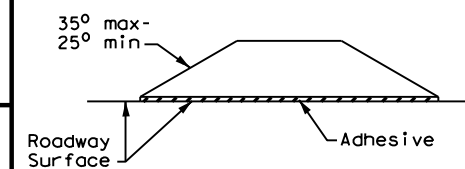
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



**Type I (Top View)**



**Type II (Top View)**



**SECTION A**

**RAISED PAVEMENT MARKERS**



**POSITION GUIDANCE USING  
RAISED MARKERS  
REFLECTORIZED PROFILE  
MARKINGS  
PM(2) - 22**

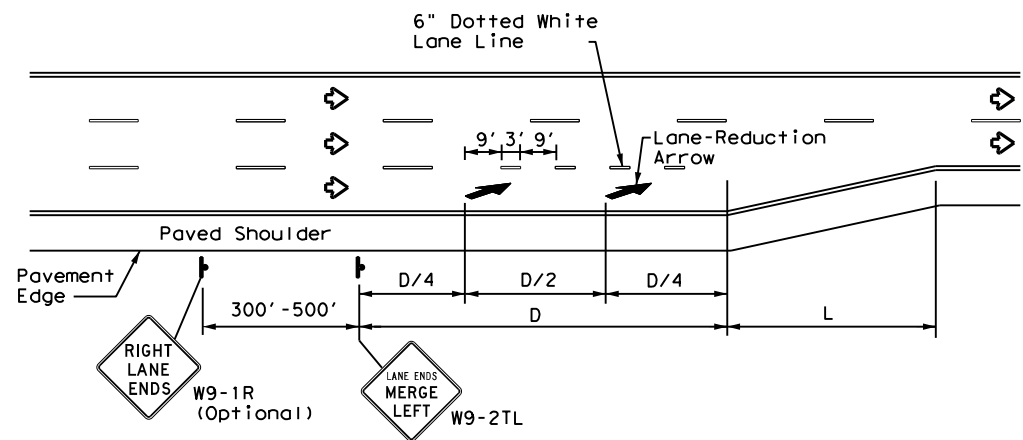
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© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
4-77 8-00 6-20	DIST	COUNTY	SHEET NO.	
4-92 2-10 12-22	DAL	KAUFMAN	78	
5-00 2-12				

DATE: FILE:



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DATE: FILE:



**LANE REDUCTION**

**NOTES**

- Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
- On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
- Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
- For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

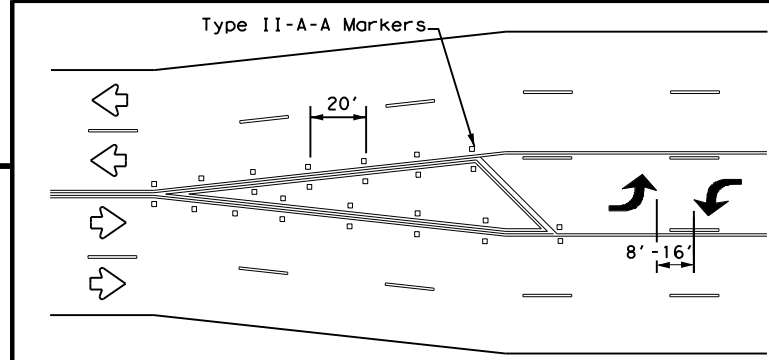
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

**GENERAL NOTES**

- Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
- When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
- Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
- Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

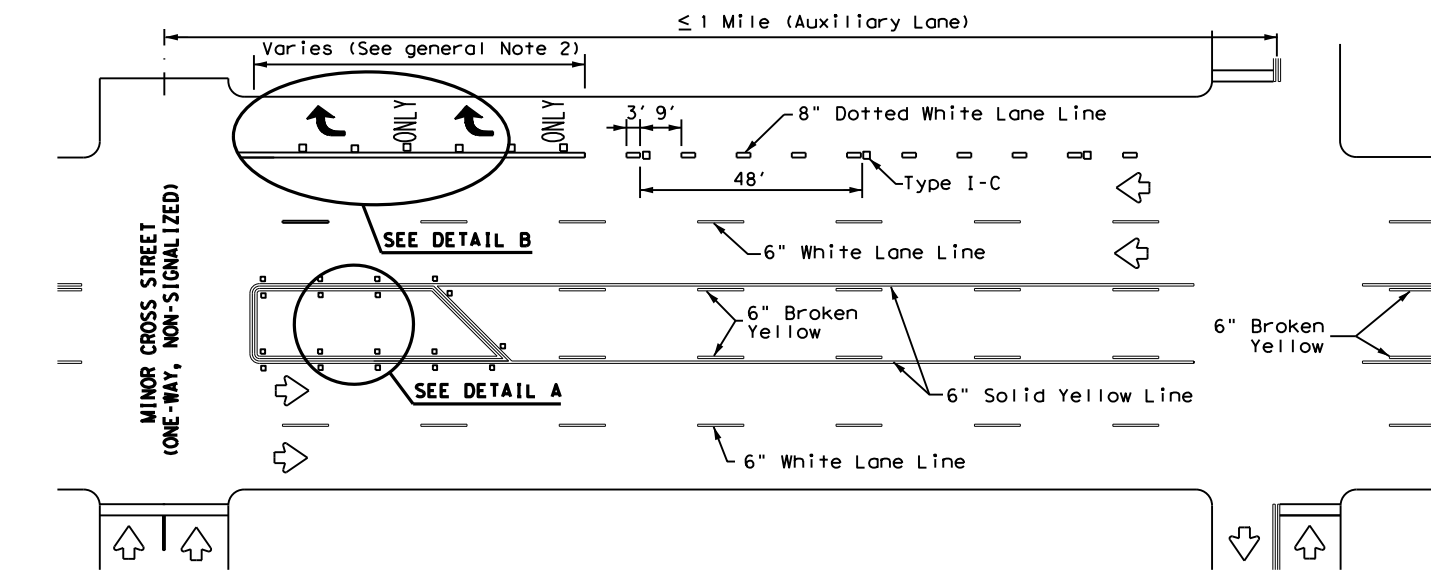
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

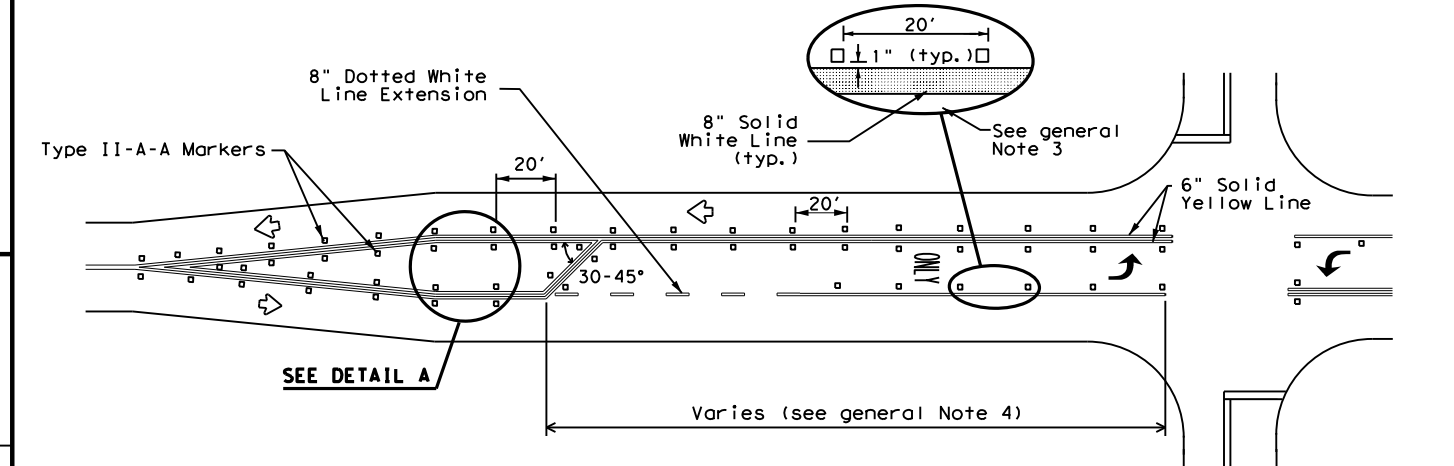


A two-way left-turn (TWLTL) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

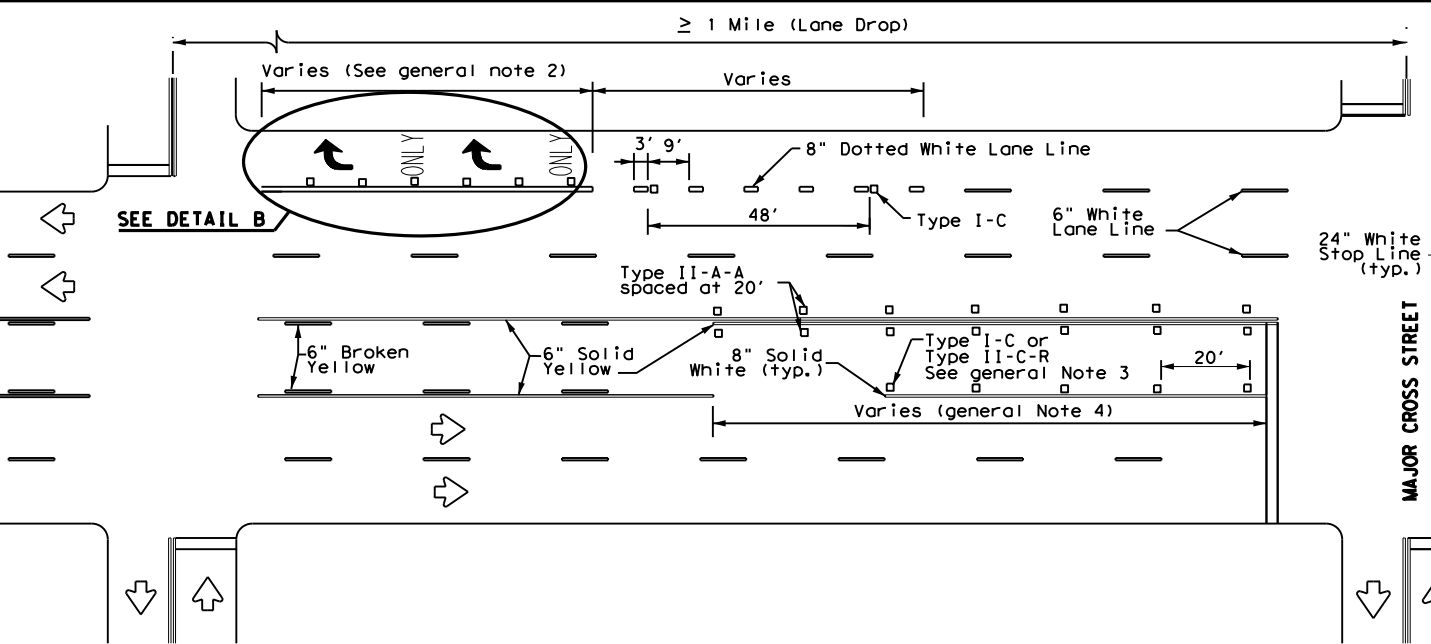
**TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY**



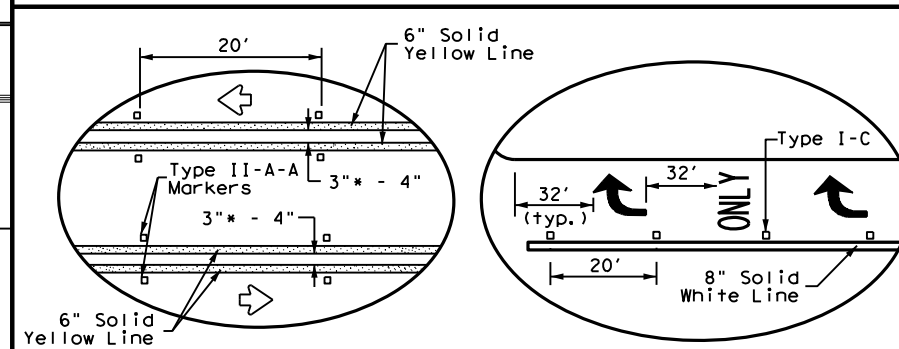
**TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE**



**TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS**



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



**DETAIL A**

**DETAIL B**

\* 2" minimum allowed for restripe projects when approved by the Engineer.

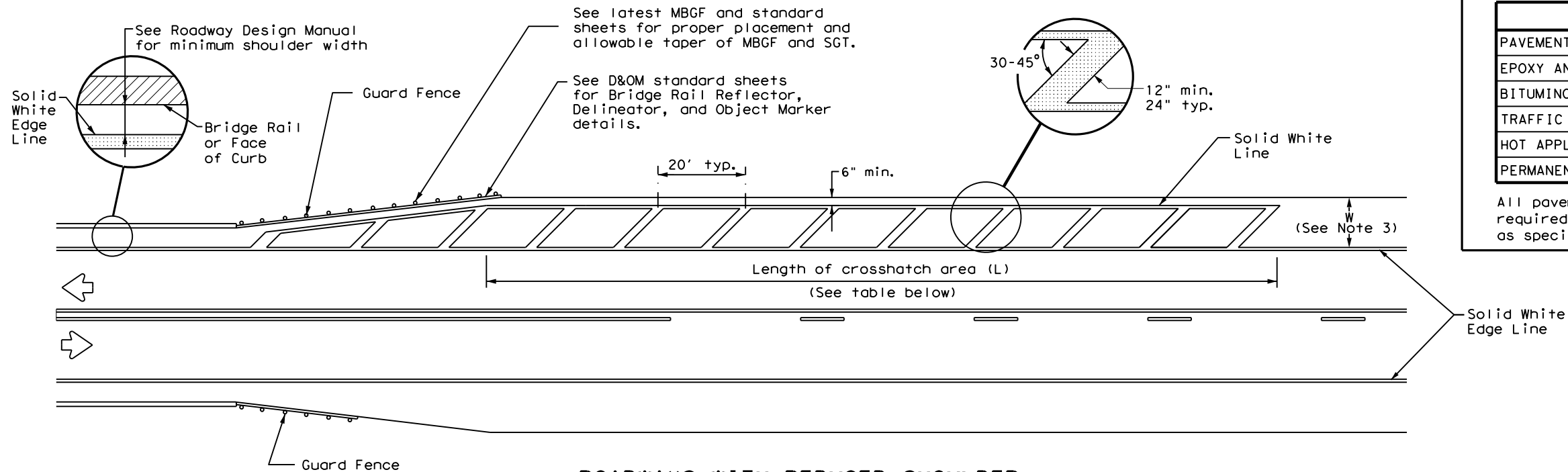
Texas Department of Transportation  
Traffic Safety Division Standard

**TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3) - 22**

FILE: pm3-22.dgn	DN: _____	CK: _____	DW: _____	CK: _____
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
4-98 3-03 6-20	DIST	COUNTY	SHEET NO.	
5-00 2-10 12-22	DAL	KAUFMAN	79	
8-00 2-12				

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DATE:  
FILE:



**ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT**

CROSSHATCH LENGTH (L)	
Posted Speed (MPH)	L (ft)
30	300 ft
35	
40	
45	
50	500 ft
55	
60	
65	
70	
75	

**NOTES**

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 4 inches from the bridge rail or face of curb or 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions.
2. No-passing zone on bridge approach is optional. If used, the no-passing zone shall be a minimum 500 feet long from the beginning of the bridge.
3. The crosshatching should be required if the shoulder width in advance of the bridge is 4 feet or wider and a reduction of at least 3 feet in shoulder width across the bridge occurs.
4. On divided highways, review both the right and left shoulder widths for the need for narrow bridge pavement markings.

**MATERIAL SPECIFICATIONS**

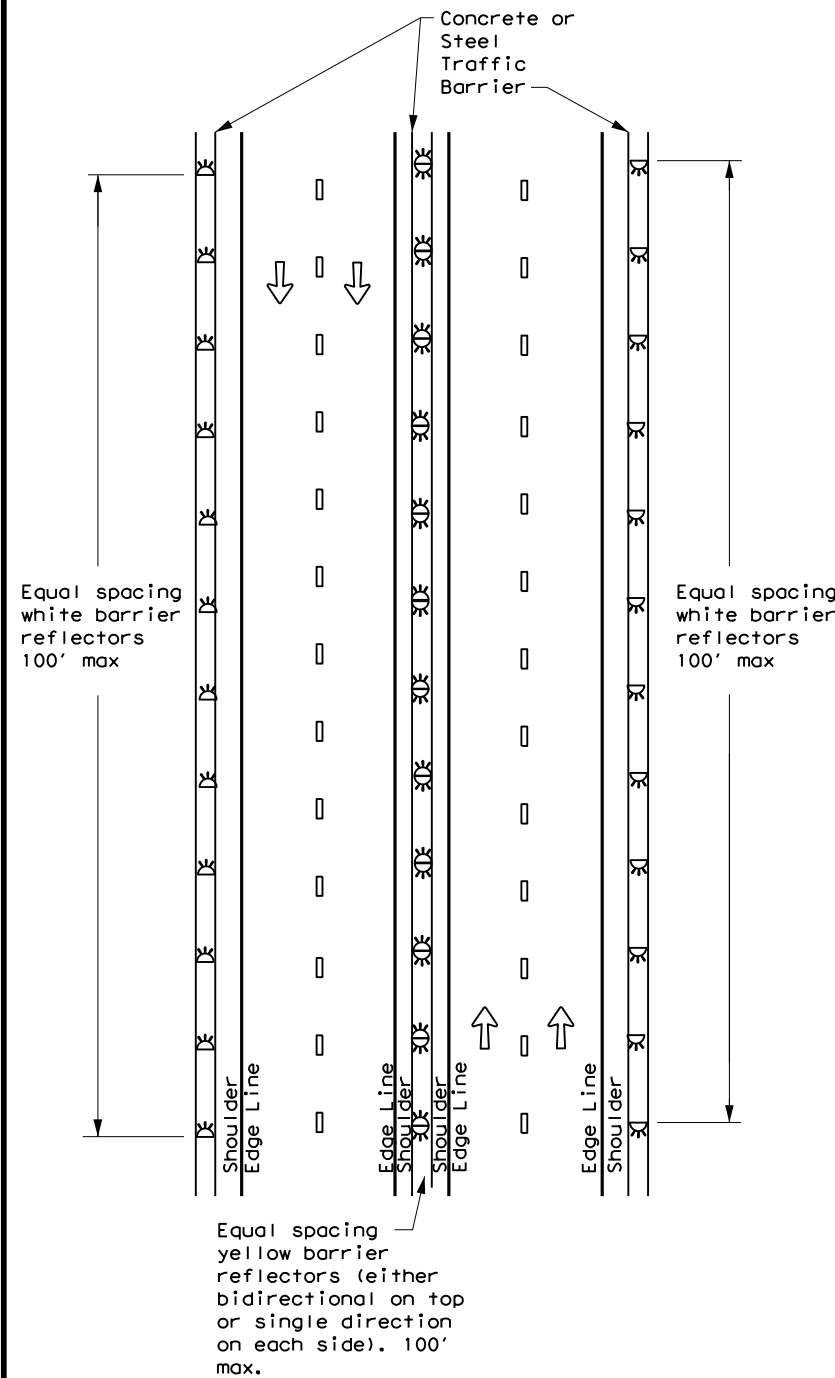
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

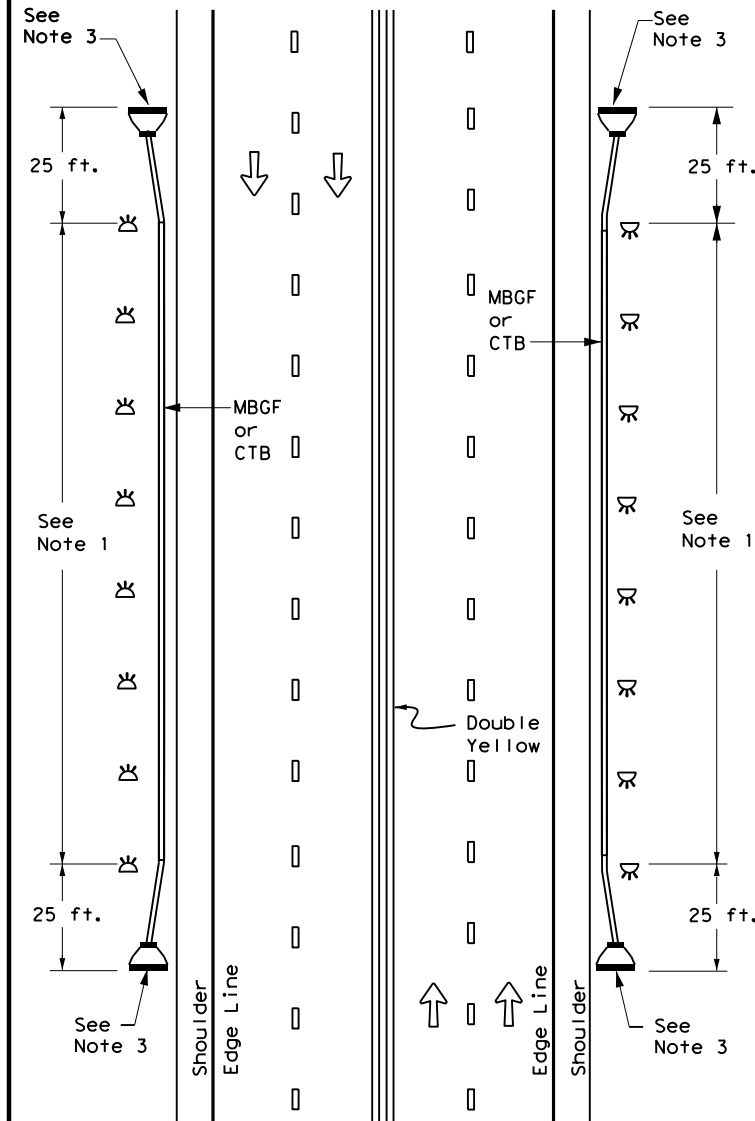
				<b>Texas Department of Transportation</b>		<i>Traffic Safety Division Standard</i>	
<b>PAVEMENT MARKINGS FOR ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT</b>							
<b>PM(5) - 22</b>							
FILE: pm5-22.dgn	DN: IxDOT	CK: IxDOT	DW: IxDOT	CR: IxDOT			
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY			
REVISIONS	0095	04	074, ETC.	US 80			
	DIST	COUNTY		SHEET NO.			
	DAL	KAUFMAN		80			

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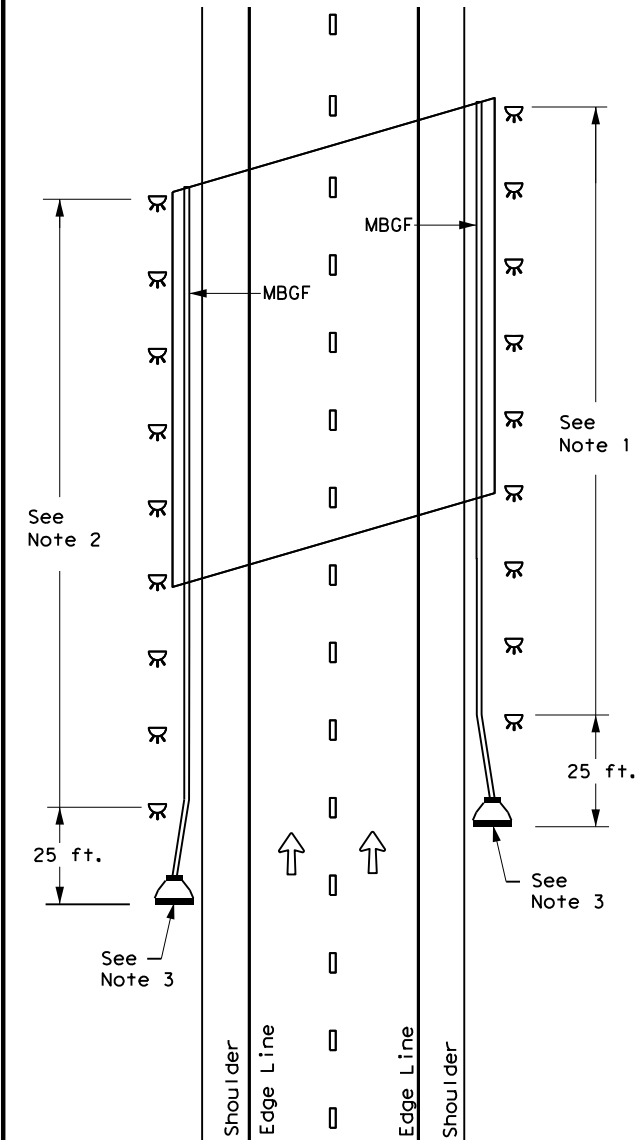
### CONTINUOUS CONCRETE OR STEEL BARRIER



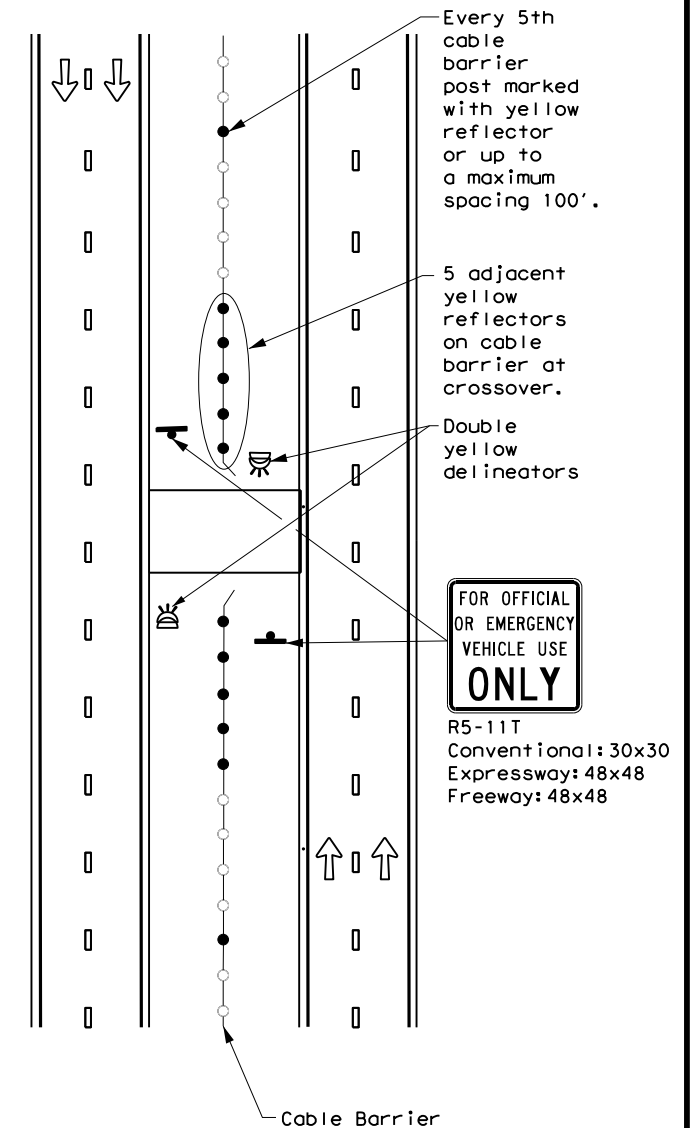
### MULTI-LANE UNDIVIDED, TWO-WAY ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



### DIVIDED ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



### EMERGENCY CROSSOVER



#### NOTES

1. Equal spacing (100' max), but not less than 3 single directional white barrier reflectors or delineators. On Continuous Barrier, equal spacing (100' max.)
2. Equal spacing (100' max), but not less than 3 single directional yellow barrier reflectors or delineators.
3. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

#### LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	Traffic Flow



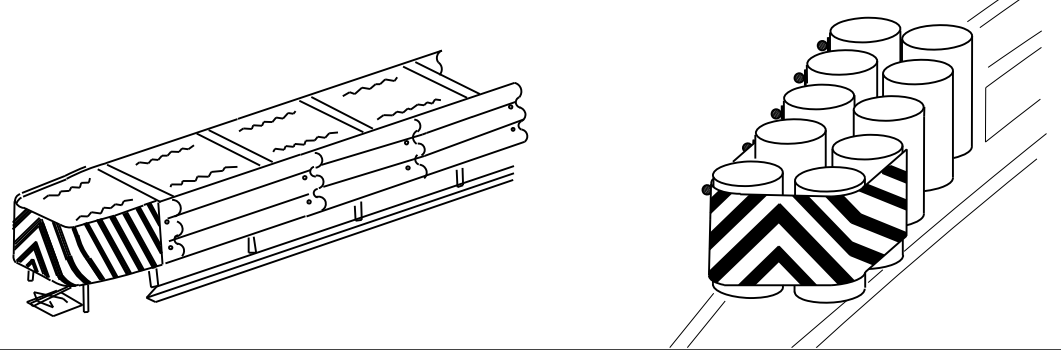
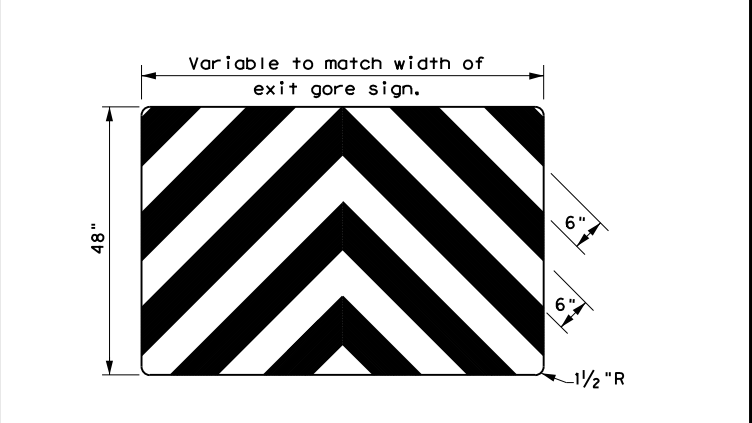
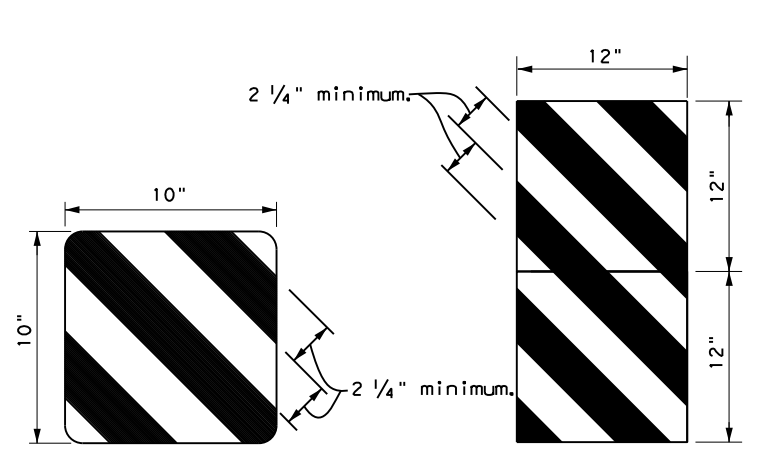
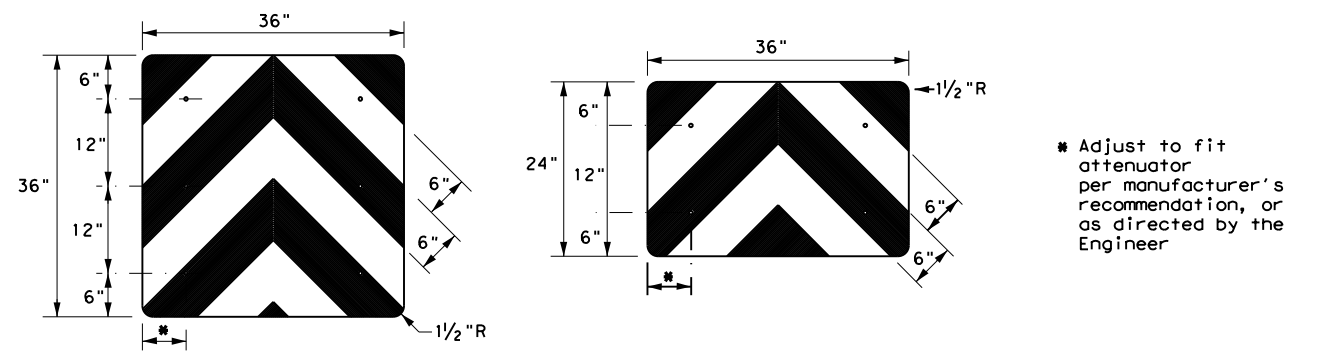
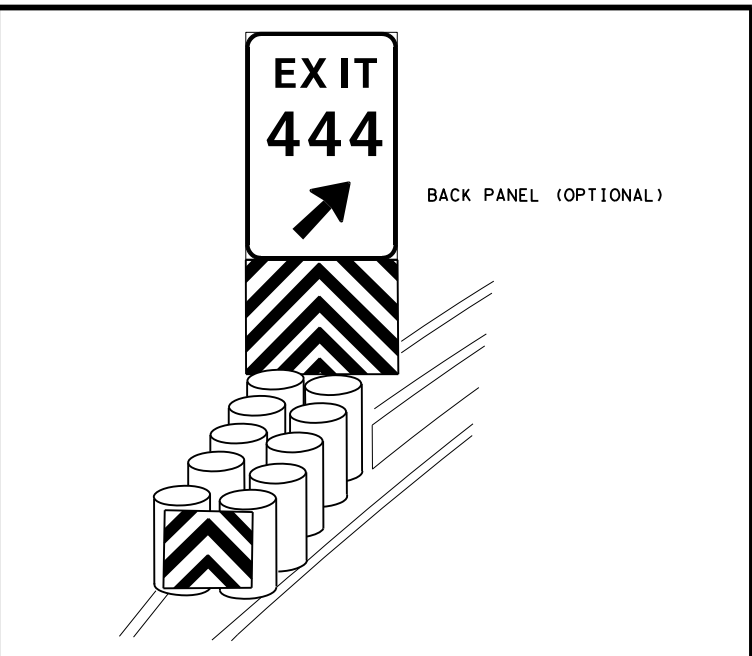
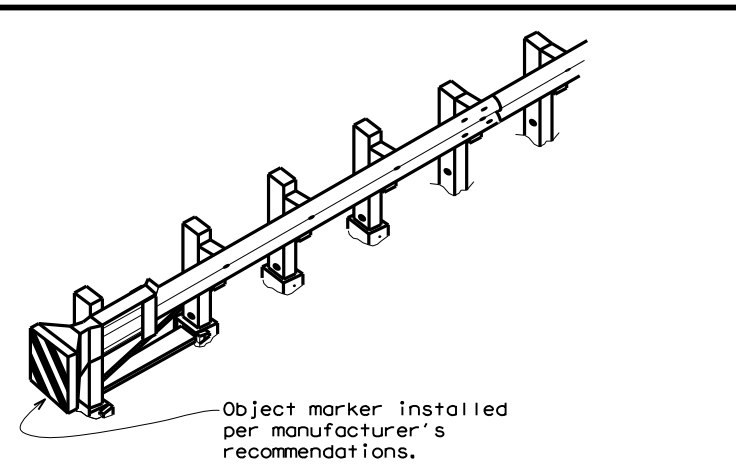
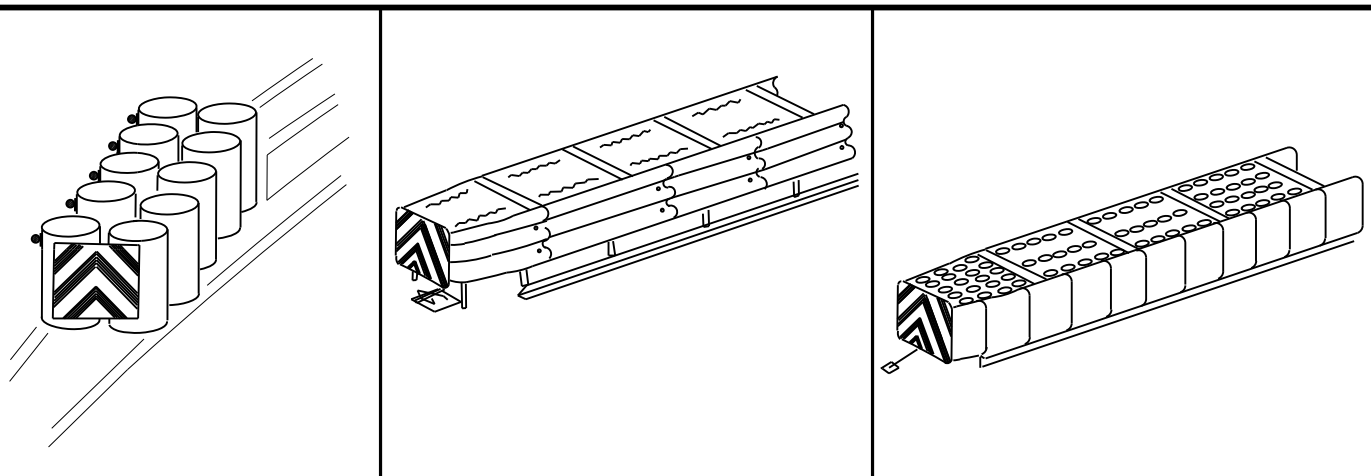
## DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

### D & OM(6)-20

FILE: dom6-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
7-20	REVISIONS	0095 04	074, ETC.	US 80
	DIST	COUNTY	SHEET NO.	
	DAL	KAUFMAN	81	

DATE:  
FILE:

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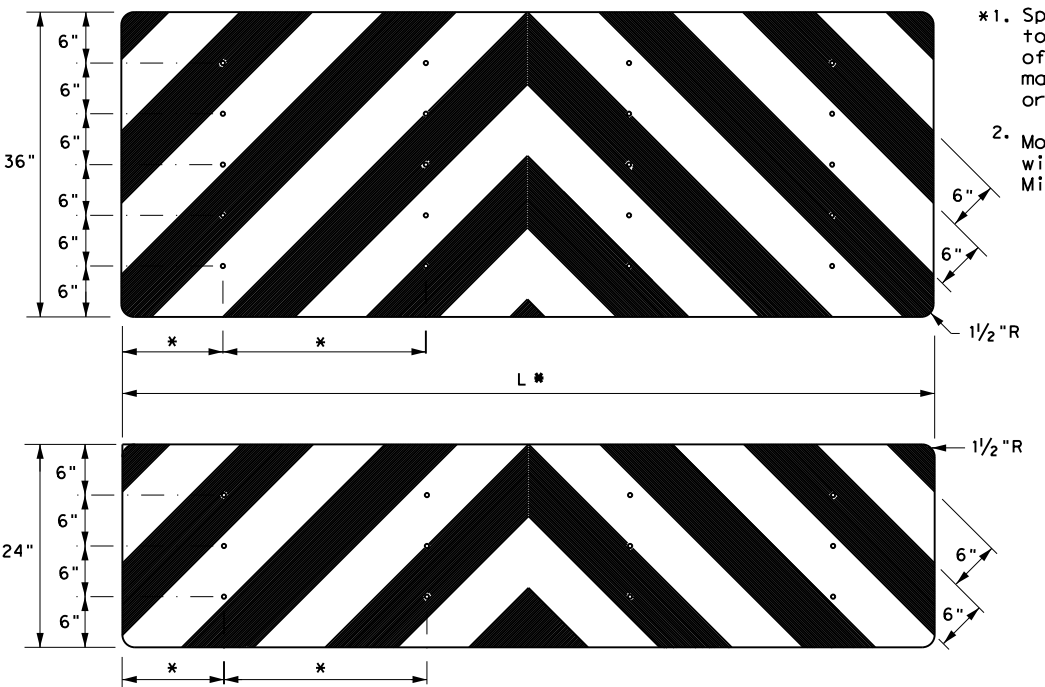
OBJECT MARKERS SMALLER THAN 3 FT<sup>2</sup>

**NOTES**

- 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.
- 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.
- 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 1/4".
- 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.
- Object Marker at nose of attenuator is subsidiary to the attenuator.
- See D & OM (1-4) for required barrier reflectors.

**NOTES**

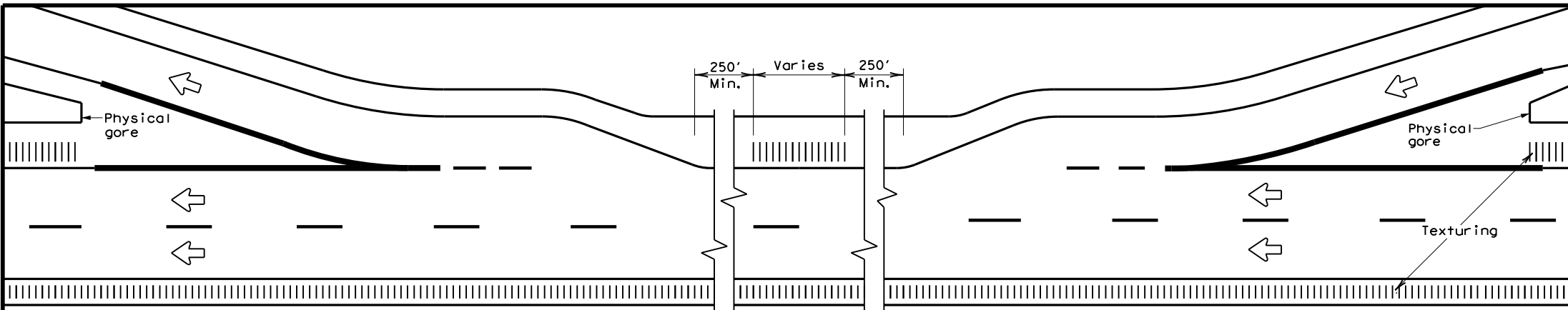
- Spacing should be adjusted to attach through centerline of drum, per attenuator manufacturer's recommendation, or as directed by the Engineer.
- Mounting should be flush with top of attenuator. Minimum size 96" x 24".



		<b>Traffic Safety Division Standard</b>	
<b>DELINEATOR &amp; OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS</b> <b>D &amp; OM(VIA) -20</b>			
FILE: <u>domvia20.dgn</u>	DN: TXDOT	CK: TXDOT	DW: TXDOT
© TXDOT December 1989	CONT: 0095	SECT: 04	JOB: 074, ETC.
REVISIONS	DIST: COUNTY		HIGHWAY: US 80
4-92 8-04	DAL		SHEET NO. 82
8-95 3-15	KAUFMAN		
4-98 7-20			
20G			

DATE:  
FILE:

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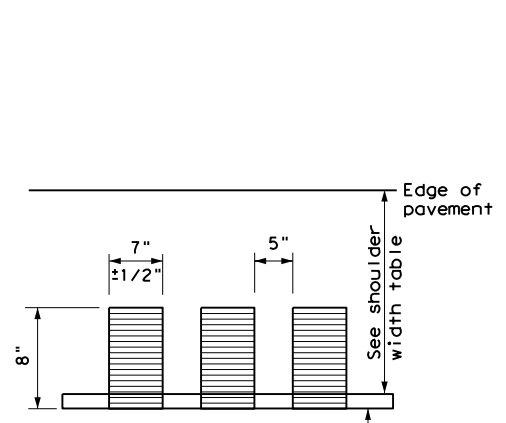
TYPICAL RUMBLE STRIP PLACEMENT AT EXIT AND ENTRANCE RAMP

**GENERAL NOTES**

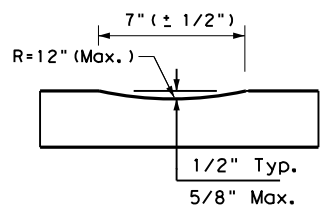
- Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
  - Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
  - Use Standard Sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
  - See the table below for determining what options may be used for edgeline rumble strips.
- WHEN INSTALLING MILLED DEPRESSION EDGELINE RUMBLE STRIPS:**
- See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Operations Division.
  - Pavement markings can be applied over milled shoulder rumble strips to create an edgeline rumble strip.
  - Breaks in edgeline rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections and driveways with high usage of large trucks when installed on conventional highways.
  - Rumble strips shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
  - Consideration should be given to noise levels when edgeline rumble strips are installed near residential areas, schools, churches, etc. A minimum of 3/8 inches depth of milled rumble strip may be considered in these areas.
  - On roadways with high bicycle activity, consideration should be given before the installation of edgeline rumble strips. Things to consider include size of rumble strips, rumble strip material and location of rumble strips on the shoulder. If the designer determines that gaps are needed in the rumble strips due to bicycle use of the road, then follow the requirement shown in FHWA Technical Advisory T5040.39, or latest version. A detail of the spacing shall be included in the plans.

**WHEN INSTALLING RAISED OR PROFILE EDGELINE RUMBLE STRIPS:**

- Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per the manufacturer's recommendations.
- Non-reflective traffic buttons shall be placed adjacent to the pavement marking delineating the edgeline when used as a rumble strip. The color of the button should match the color of the adjacent edgeline marking (white or yellow). The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
- Non-reflective traffic buttons shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
- Breaks in edgeline rumble strips using raised traffic buttons shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossing, intersections and driveways with high usage of large trucks when installed on conventional highways.
- The minimum distance between the edgeline and the buttons should be used if the shoulder is less than 8 feet in width.
- Raised profile thermoplastic markings used as edgelines may substitute for buttons.

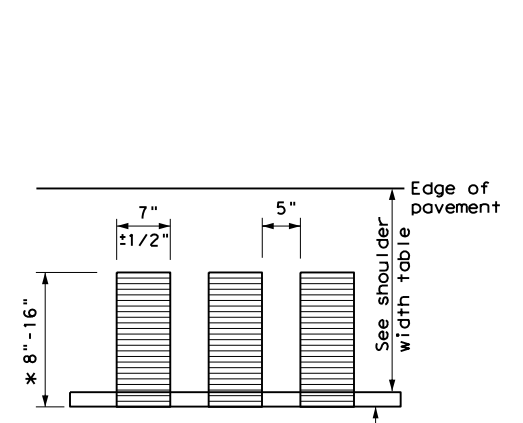


PLAN VIEW



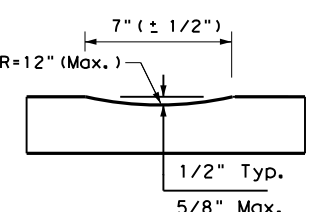
PROFILE VIEW  
OPTION 1

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



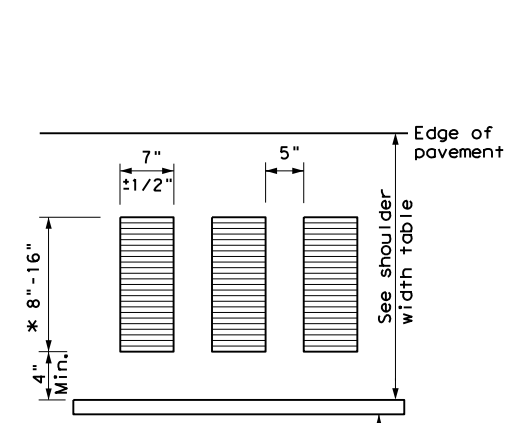
PLAN VIEW

\* This distance may vary based on width of shoulder



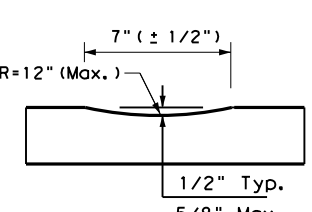
PROFILE VIEW  
OPTION 2

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



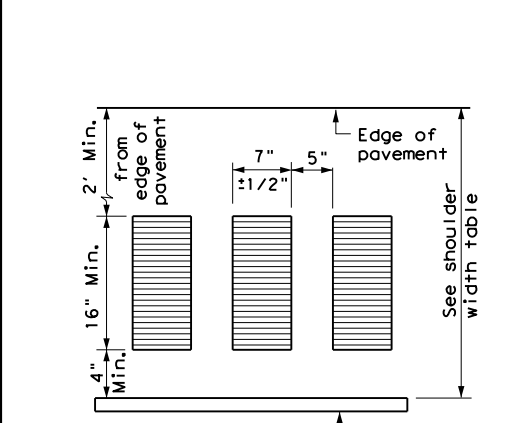
PLAN VIEW

\* This distance may vary based on width of shoulder

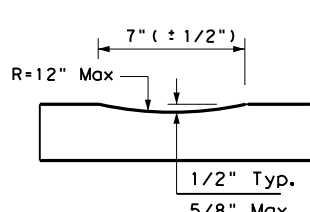


PROFILE VIEW  
OPTION 3

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)

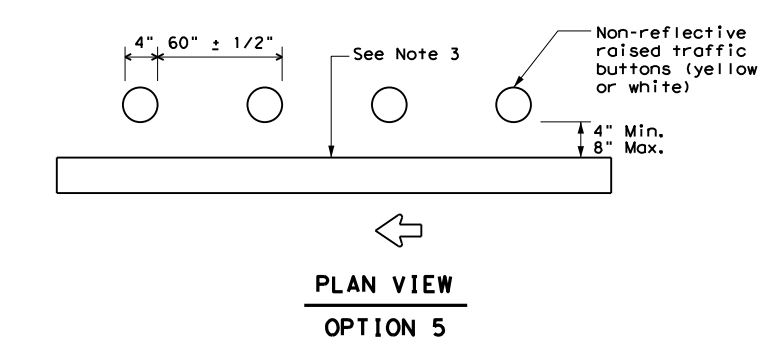


PLAN VIEW



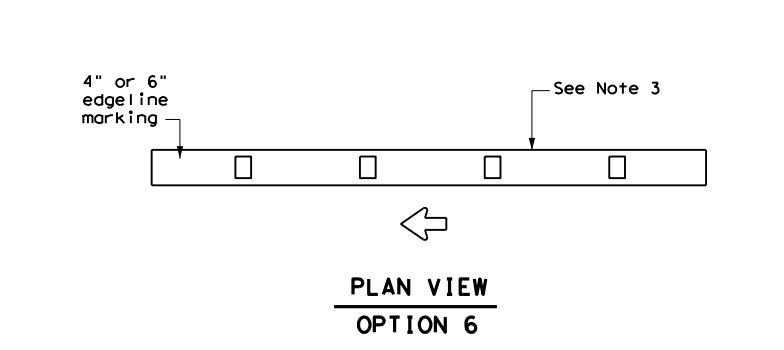
PROFILE VIEW  
OPTION 4

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



PLAN VIEW  
OPTION 5

RAISED EDGELINE RUMBLE STRIPS



PLAN VIEW  
OPTION 6

PROFILE EDGELINE MARKINGS

SHOULDER WIDTH TABLE		
EQUAL TO OR LESS THAN 2 FEET	GREATER THAN 2 FEET LESS THAN 4 FEET	EQUAL TO OR GREATER THAN 4 FEET
Option 1, 5 OR 6	Option 1, 2, 3, 5 or 6	Option 2, 4, 5 OR 6

**EDGELINE RUMBLE STRIPS ON FREEWAYS AND DIVIDED HIGHWAYS RS(1)-13**

FILE: rs(1)-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT April 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0095	04	074, ETC.	US 80
2-10	DIST	COUNTY	SHEET NO.	
10-13	DAL	KAUFMAN	83	

DATE: FILE:

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

**I. WORK AT CROSSING LOCATIONS (AT GRADE, HIGHWAY OVERPASS, HIGHWAY UNDERPASS, PEDESTRIAN, OR CLOSED/ABANDONED)**

DOT #: 794788Y  
 Crossing Type: AT-GRADE  
 RR Company Owning Track at Crossing: UPRR  
 Operating RR Company at Track: UPRR  
 RR MP: 185.220  
 RR Subdivision: MINEOLA  
 City: TERRELL  
 County: KAUFMAN  
 CSJ at this Crossing: 0095-04-074  
 Highway/Roadway name crossing the railroad: METRO AVE  
 # of regularly scheduled trains per day at this crossing: 20  
 # of switching movements per day at this crossing: 0  
 % of estimated contract cost of work within railroad ROW: <1%

Scope of Work at this Crossing to Be Performed by State Contractor:  
 \_\_\_\_\_  
There will be no work in the RR ROW. But there might be traffic control devices in the RR ROW.  
 \_\_\_\_\_

Scope of Work at this Crossing to Be Performed by Railroad Company:  
NONE.  
 \_\_\_\_\_

\*\* Choose: Highway Overpass, Highway Underpass, At Grade, Pedestrian, or Closed/Abandoned

**II. OTHER PROJECT WORK WITHIN RAILROAD RIGHTS-OF-WAY (ROW)**

NONE.  
 \_\_\_\_\_

**III. FLAGGING & INSPECTION**

# of Days of Railroad Flagging Expected: 1  
 On this project, night or weekend flagging is:  
 Expected  
 Not Expected  
 Flagging services will be provided by:  
 Railroad Company: TxDOT will pay flagging invoices  
 Outside Party: Contractor will pay flagging invoices, to be reimbursed by TxDOT  
 Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30 day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:  
 UPRR - UP.info@railpros.com  
 Call Center 877-315-0513, Select #1 for flagging  
 BNSF - BNSF.info@railpros.com  
 Call Center 877-315-0513, Select #1 for flagging  
 KCS - KCS.info@railpros.com  
 Call Center 877-315-0513, Select #1 for flagging  
 - Bottom Line On-Track Safety Services  
 bottomline076@aol.com, 903-767-7630

OTHERS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD**

On this project, construction work to be performed by a railroad company is:  
 Required  
 Not Required

Coordinate with TxDOT for any work to be performed by the Railroad Company. TxDOT must issue a work order for any work done by the Railroad Company prior to the work being performed.

**V. RAILROAD INSURANCE REQUIREMENTS**

Railroad reference number shall be provided by TxDOT CST or DO.  
 The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.  
 Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several Railroad Companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

No direct compensation will be made to the Contractor for providing the insurance coverages shown below or any deductibles. These costs are incidental to the various bid items.

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	\$500,000 / \$500,000 / \$500,000
Commercial General Liability	\$2,000,000 / \$4,000,000
Business Automobile	\$2,000,000 combined single limit

Railroad Protective Liability	
<input type="checkbox"/> Not Required	
<input checked="" type="checkbox"/> Non - Bridge Projects	\$2,000,000 / \$6,000,000
<input type="checkbox"/> Bridge Projects	\$5,000,000 / \$10,000,000
<input type="checkbox"/> Other	

**VI. CONTRACTOR'S RIGHT OF ENTRY (ROE) AGREEMENT**

On this project, an ROE agreement is:

Not Required  
 Required: TxDOT CST to assist in obtaining with the UPRR (see Item 5, Article 8.3)  
 Required: UPRR Maintenance Consent Letter. TxDOT CST to assist.  
 Required: Contractor to obtain (see Item 5, Article 8.4)  
 With the following railroad companies: UPRR

To view previously approved ROE Agreement templates agreed upon between the State and Railroad, see:

<http://www.txdot.gov/inside-txdot/division/rail/samples.html>

Approved ROE Agreement templates are not to be modified by the Contractor.

Contractor shall not operate within Railroad Right of Way without an executed Construction & Maintenance Agreement between the State and the Railroad and an executed ROE agreement between the Contractor and the Railroad if required on project.

Contractor must incorporate Construction Inspection into anticipated construction schedule.

Not Required  
 Required: Contact Information for Construction Inspection:  
 \_\_\_\_\_  
 \_\_\_\_\_

**VII. RAILROAD COORDINATION MEETING**

On this project, a Railroad Coordination Meeting is:

Not Required  
 Required

See Item 5, Article 8.1 for more details.

**VIII. SUBCONTRACTORS**

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are required to maintain the same insurance coverage as required of the Contractor.

**IX. EMERGENCY NOTIFICATION**

**In Case of Railroad Emergency**  
**Call Railroad Emergency Line**  
**at 800-848-8715**  
**Location: DOT# 794788Y**  
**RR Milepost 185.220**  
**Subdivision MINEOLA**

<span style="font-weight: bold; font-size: small;">Texas Department of Transportation</span>				Rail Division	
RAILROAD SCOPE OF WORK					
PROJECT SPECIFIC DETAILS					
FILE:	RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:
© TxDOT	June 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	009504	074	US	80	9/2021
DIST	COUNTY		SHEET NO.		
DAL	KAUFMAN		84		



**PART 1 - GENERAL**

**1.01 DESCRIPTION**

This project includes construction work within the right of way and/or properties of the Railroad and adjacent to its tracks, wire lines and other facilities. These sheets describe the minimum special requirements for coordination with the Railroad when working upon, over or under Railroad Right of Way or when impacting current or future Railroad operations. Coordinate with the Railroad while performing the work outlined herein, and afford the same cooperation with the Railroad as with TxDOT. Complete all submittals and work in accordance with TxDOT Standard Specifications, Railroad Guidelines and AREMA recommendations as modified by these minimum special requirements or as directed in writing by the Railroad Designated Representative.

For purposes of this project, the Railroad Designated Representative is the person or persons designated by the Railroad Manager of Industry and Public Projects to handle specific tasks related to the project.

**1.02 REQUEST FOR INFORMATION / CLARIFICATION**

Submit Requests for Information ("RFI") involving work within any Railroad Right of Way to the TxDOT Engineer. The TxDOT Engineer will submit the RFI to the Railroad Designated Representative for review and approval for RFI's corresponding to work within Railroad Right of Way. Allow six (6) weeks total time for review and approval, which includes four (4) weeks for review and approval by the Railroad.

**1.03 PLANS / SPECIFICATIONS**

TxDOT has received written Railroad approval of the plans and specifications for this project. Any revisions or changes in the plans after award of the Contract must have the approval of TxDOT and the Railroad.

**PART 2 - UTILITIES AND FIBER OPTIC**

Construct all utility installations in accordance with current AREMA recommendations, Railroad, TxDOT and owning utility specifications and requirements. Railroad general guidelines can be found on the Railroad website or by contacting the Railroad Designated Representative.

**PART 3 - CONSTRUCTION**

**3.01 GENERAL**

- A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.
- B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.
- C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.
- D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.
- E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.
- F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.
- G. All permanent clearances shall be verified before project closing.

**3.02 RAILROAD OPERATIONS**

- A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.
- B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. Railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.
- C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:
  - 1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.
  - 2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

**3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES**

- A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.
- B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.
- C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.
- D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
  - 1. Exactly what the work entails.
  - 2. The days and hours that work will be performed.
  - 3. The exact location of work, and proximity to the tracks.
  - 4. The type of window requested and the amount of time requested.
  - 5. The designated contact person.
 Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.
- E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

**3.04 INSURANCE**

Do not begin work upon or over Railroad Right of Way until furnishing the Railroad with the insurance policies, binders, certificates and endorsements required by the "Contractor's Right of Entry Agreement", and until the Railroad Designated Representative has advised TxDOT that such insurance is in accordance with the Agreement.

**3.05 RAILROAD SAFETY ORIENTATION**

- A. Complete the railroad course "Orientation for Contractor's Safety", and maintain current registration prior to working on railroad property. This course is required to be completed annually by Contractor and Subcontractor personnel working on site.
 

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."
- B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

**3.06 COOPERATION**

The Railroad will cooperate with Contractor so that work may be conducted in an efficient manner, and will cooperate with Contractor in enabling use of Railroad Right of Way in performing the work.


**3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES**

Abide by the following minimum temporary clearances during the course of construction:  
A. 15' - 0" (BNSF) (UPRR) and 14' - 0" (KCS) horizontal from centerline of track  
B. 22' (KCS) and 21' - 6" (UPRR & BNSF) vertically above top of rail.

For construction clearance less than listed above, obtain local Railroad Operating Unit review and approval.

**3.08 APPROVAL OF REDUCED CLEARANCES**

- A. Maintain minimum track clearances during construction as specified in Section 3.07.
- B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.
- C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

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<b>RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS</b>					
FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT	
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REVISIONS March 2020	0095	04	074	US 80	
	DIST	COUNTY		SHEET NO.	
	18	KAUFMAN		85	

**3.09 MAINTENANCE OF RAILROAD FACILITIES**

- A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.
- B. Perform all such maintenance and repair of damages due to the Contractor's operations at Contractor's expense.
- C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

**3.10 SITE INSPECTIONS BY RAILROAD'S DESIGNATED REPRESENTATIVE**

- A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
  1. Pre-construction meetings.
  2. Pile driving/drilling of caissons or drilled shafts.
  3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
  4. Erection of precast concrete or steel bridge superstructure.
  5. Placement of waterproofing (prior to placing ballast on bridge deck).
  6. Completion of the bridge structure.
- B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.
- C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

**3.11 RAILROAD REPRESENTATIVES**

Railroad representatives, conductors, flag person or watch person will be provided by the Railroad at expense of TxDOT to protect Railroad facilities, property and movements of its trains or engines. In general, the Railroad will furnish such personnel or other protective services as follows:

- A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.
- B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.
- C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.
- D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.
- E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

**3.12 COMMUNICATIONS AND SIGNAL LINES**

If required, the Railroad will rearrange its communications and signal lines, its grade crossing warning devices, train signals and tracks, and facilities that are in use and maintained by the Railroad's forces in connection with its operation at expense of TxDOT. This work by the Railroad will be done by its own forces and it is not a part of the Work under this Contract.

**3.13 TRAFFIC CONTROL**

Coordinate any operations that control traffic across or around railroad facilities with the Railroad Designated Representative.

**3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK**

- A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".
- B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

UPRR 1-800-336-9193  
7:00 AM to 9:00 PM CST Monday-Friday except holidays,  
staffed 24 hrs/day for emergencies  
48 hrs notice required

BNSF 1-800-533-2891  
24 hour number  
5 working days notice required

KCS 1-800-344-8377  
Texas One Call, a 24 hour number  
48 hrs notice required, excluding weekends and holidays

If a telecommunications system is buried anywhere on or near railroad property, coordinate with TxDOT, the Railroad and the Telecommunication Company(ies) to arrange for relocation or protective measures prior to beginning work on or near railroad property. Refer to the project General Notes for additional information.


- C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of 1/4 inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

**3.15 RAILROAD FLAGGING**

Per the Right of Entry Agreement for flagging, notify the Railroad Representative at least 10 working days in advance of Contractor's work and at least 30 working days in advance of any Contractor's work in which any person or equipment will be within 25 feet of nearest rail or as specified in the Contractor Right of Entry (CROE).

**3.16 CLEANING OF RIGHT-OF-WAY**

When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

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<b>RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS</b>					
FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
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REVISIONS	0095	04	074	US 80	
March 2020	DIST	COUNTY		SHEET NO.	
	18	KAUFMAN		86	

**STORMWATER POLLUTION PREVENTION PLAN (SWP3):**

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

**1.0 SITE/PROJECT DESCRIPTION**

**1.1 PROJECT CONTROL SECTION JOB (CSJ):**  
0095-04-074, ETC. (US 80)

**1.2 PROJECT LIMITS:**

From: SP 557

To: FM 986 (ROCKWALL AVE)

**1.3 PROJECT COORDINATES:**

BEGIN: (Lat) 32.7386056, (Long) -96.3555715

END: (Lat) 32.7368182, (Long) -96.2806734

**1.4 TOTAL PROJECT AREA (Acres): 60**

**1.5 TOTAL AREA TO BE DISTURBED (Acres): 2.5**

**1.6 NATURE OF CONSTRUCTION ACTIVITY:**

BASE REPAIR, MILL, INLAY AND PAVEMENT MARKINGS

**1.7 MAJOR SOIL TYPES:**

Soil Type	Description
Wilson Silt Loam, 1-3% slopes	Silt loam and clay, moderately well drained, and very high rate of runoff
Lufkin-Rader Complex	Clay, fine sandy loam, and sandy clay loam moderately well drained, and high rate of runoff
Kaufman Clay, 0-1% slopes, frequently flooded	100% clay, moderately well drained, and high rate of runoff
Burleson Clay, 0-1% slopes	100% clay, moderately well drained, and high rate of runoff
Mabank Fine Sandy Loam, 0-1% slopes	Fine sandy loam and clay, moderately well drained, and high rate of runoff
Wilson Silt Loam, 1-3% slopes	Silt loam and silty clay, moderately well drained, and high rate of runoff
Burleson Clay, 1-3% slopes	100% clay, moderately well drained, and high rate of runoff

Soil is moderately well drained. Gently sloping to moderately steep. The general area around the project has an existing vegetation of approximately 90% density of mostly grasses.

**1.8 PROJECT SPECIFIC LOCATIONS (PSLs):**

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- PSLs determined during preconstruction meeting
- PSLs determined during construction
- No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

**1.9 CONSTRUCTION ACTIVITIES:**

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- Mobilization
- Install sediment and erosion controls
- Blade existing topsoil into windrows, prep ROW, clear and grub
- Remove existing pavement
- Grading operations, excavation, and embankment
- Excavate and prepare subgrade for proposed pavement widening
- Remove existing culverts, safety end treatments (SETs)
- Remove existing metal beam guard fence (MBGF), bridge rail
- Install proposed pavement per plans
- Install culverts, culvert extensions, SETs
- Install mow strip, MBGF, bridge rail
- Place flex base
- Rework slopes, grade ditches
- Blade windrowed material back across slopes
- Revegetation of unpaved areas
- Achieve site stabilization and remove sediment and erosion control measures
- Other: Culvert clean-out.

Other: \_\_\_\_\_

Other: \_\_\_\_\_

**1.10 POTENTIAL POLLUTANTS AND SOURCES:**

- Sediment laden stormwater from stormwater conveyance over disturbed area
- Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- Solvents, paints, adhesives, etc. from various construction activities
- Transported soils from offsite vehicle tracking
- Construction debris and waste from various construction activities
- Contaminated water from excavation or dewatering pump-out water
- Sanitary waste from onsite restroom facilities
- Trash from various construction activities/receptacles
- Long-term stockpiles of material and waste
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.11 RECEIVING WATERS:**

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
Terry Creek and its tributaries	* Flows to Big Brushy Creek then to Kings Creek Segment ID: 0818C
Lawrence Creek	* Flows to Kings Creek Segment ID: 0818C
Bachelor Creek	* Flows to Kings Creek Segment ID: 0818C

\* Segment 0818C is impaired by Bacteria in water (Recreation Use).

**1.12 ROLES AND RESPONSIBILITIES: TxDOT**

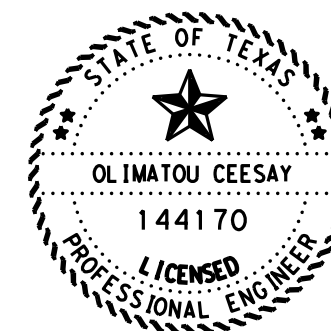
- Development of plans and specifications
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Perform SWP3 inspections
- Maintain SWP3 records and update to reflect daily operations
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR**

- Day To Day Operational Control
- Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- Post Construction Site Notice
- Submit NOI/CSN to local MS4
- Maintain schedule of major construction activities
- Install, maintain and modify BMPs
- Complete and submit Notice of Termination to TCEQ
- Maintain SWP3 records for 3 years
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:**

MS4 Entity
Kaufman County, Phase II MS4 contact: Kathy Morris, Public Works Director



*Olmatou Ceesay*, P.E. 2/22/2023  
Signature of Registrant & Date

**STORMWATER POLLUTION PREVENTION PLAN (SWP3)**

© 2023 Sheet 1 of 2  
Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
	SEE TITLE SHEET			87
STATE	STATE DIST.	COUNTY		
TEXAS	DAL	KAUFMAN		
CONT.	SECT.	JOB	HIGHWAY NO.	
0095	04	074, ETC.	US 80	

**STORMWATER POLLUTION PREVENTION PLAN (SWP3):**

**2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE**

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

**2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:**

**T / P**

- Protection of Existing Vegetation
- Vegetated Buffer Zones
- Soil Retention Blankets
- Geotextiles
- Mulching/ Hydromulching
- Soil Surface Treatments
- Temporary Seeding
- Permanent Planting, Sodding or Seeding
- Biodegradable Erosion Control Logs
- Rock Filter Dams/ Rock Check Dams
- Vertical Tracking
- Interceptor Swale
- Riprap
- Diversion Dike
- Temporary Pipe Slope Drain
- Embankment for Erosion Control
- Paved Flumes
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**2.2 SEDIMENT CONTROL BMPs:**

**T / P**

- Biodegradable Erosion Control Logs
- Dewatering Controls
- Inlet Protection
- Rock Filter Dams/ Rock Check Dams
- Sandbag Berms
- Sediment Control Fence
- Stabilized Construction Exit
- Floating Turbidity Barrier
- Vegetated Buffer Zones
- Vegetated Filter Strips
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

**T / P**

- Sediment Trap
  - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - 3,600 cubic feet of storage per acre drained
- Sedimentation Basin
  - Not required (<10 acres disturbed)
  - Required (>10 acres) and implemented.
    - Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - 3,600 cubic feet of storage per acre drained
  - Required (>10 acres), but not feasible due to:
    - Available area/Site geometry
    - Site slope/Drainage patterns
    - Site soils/Geotechnical factors
    - Public safety
    - Other: \_\_\_\_\_

**2.3 PERMANENT CONTROLS:**

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
Riprap (stone protction)	30+16.25	31+22.05
Riprap (concrete)	203+34.69	203+96.73
Riprap (flume)	203+76.51	203+84.14

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

**2.4 OFFSITE VEHICLE TRACKING CONTROLS:**

- Excess dirt/mud on road removed daily
- Haul roads dampened for dust control
- Loaded haul trucks to be covered with tarpaulin
- Stabilized construction exit

**2.5 POLLUTION PREVENTION MEASURES:**

- Chemical Management
- Concrete and Materials Waste Management
- Debris and Trash Management
- Dust Control
- Sanitary Facilities
- Other: ~~Avoid strong portable sanitary units, concrete washouts or chemicals within 50 feet upgradient of a receiving water or drainage conveyance without adequate pollution controls.~~
- Other: ~~Maintain paved surfaces and adjacent properties free of project sedimentation and loose materials.~~

**2.6 VEGETATED BUFFER ZONES:**

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To
Terry Creek: Bridge/Culvert repair, MBGF and Mow strip installation. BMPs: SCF and RFD.	30+41.00	31+01.00
Tributary to Terry Creek (Draw): Bridge/Culvert repair, MBGF and Mow strip installation. BMPs: SCF and RFD.	68+01.50	68+24.50
Lawrence Creek: Bridge/Culvert repair, MBGF and Mow strip installation. BMPs: SCF and RFD.	72+89.00	73+49.00
Tributary to Terry Creek: BMP: ECL.	88+82.50	88+87.50
Tributary to Terry Creek (Draw): Bridge/Culvert repair, MBGF and Mow strip installation. BMPs: SCF and RFD.	93+78.00	94+14.00
Bachelor Creek: MBGF and Mow strip installation. BMPs: SCF and RFD.	159+87.00	160+87.00

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

**2.7 ALLOWABLE NON-STORMWATER DISCHARGES:**

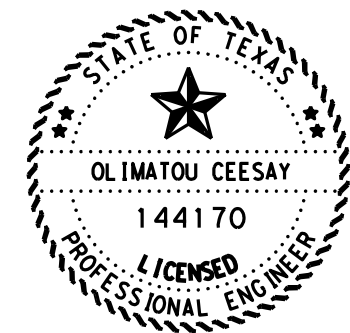
- Fire hydrant flushings
- Irrigation drainage
- Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- Potable water sources
- Springs
- Uncontaminated groundwater
- Water used to wash vehicles or control dust
- Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

**2.8 INSPECTIONS:**

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

**2.9 MAINTENANCE:**

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.



*Olmatou Ceesay*, P.E. 2/22/2023  
Signature of Registrant & Date

**STORMWATER POLLUTION PREVENTION PLAN (SWP3)**

© 2023 Sheet 2 of 2

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
	SEE TITLE SHEET			88
STATE	STATE DIST.	COUNTY		
TEXAS	DAL	KAUFMAN		
CONT.	SECT.	JOB	HIGHWAY NO.	
0095	04	074, ETC.	US 80	



**DISCLAIMER:**  
 The use of this standard is governed by the "Texas Engineering Practice Act".  
 No warranty of any kind is made by TxDOT for any purpose whatsoever.  
 TxDOT assumes no responsibility for the conversion of this standard to other  
 formats or for incorrect results or damage resulting from its use.

**Notes To Designer:**  
 1. Do not alter Sheet Design or Font style, size or weight - match text attributes.  
 2. If additional space is needed for a numbered section, fence and adjust sections up or down  
 as needed for proportioning and readability but do not relocate from its relative position.  
 3. All areas should be addressed thoroughly and verify the necessary pay items are set up to  
 support actions needed.  
 Filled Out: XX/XX/XXXX  
 Prepared By: Name/Section

**I. STORMWATER POLLUTION PREVENTION PLAN-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 adjacent MS 4 Operator(s) that receive discharges from this project. They need to be notified prior to construction activities.  
 (Note: Leave blank only if no adjacent MS 4 Operator(s) are affected.)

1. Kaufman County, Phase II MS4 contact Kathy Morris, Public Works Director
- 2.

No Action Required       Required Action

Action Number:

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. No equipment is allowed in any stream channel below the ordinary High Water Mark except on approved temporary stream crossings or drill pads.

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# 3(a)

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. Non-reportable crossings authorized under NWP 14:
- Bridge - Sta 30+71 - US 80 at Terry Creek - Stream impacts
  - Bridge - Sta 73+19 - US 80 at Lawrence Creek - Stream impacts
  - Bridge - Sta 93+98 - US 80 at Draw - Stream impacts
  - Culvert - Sta 68+13 - US 80 at Draw - Stream impacts
  - Culvert - Sta 203+54 - US 80 at Draw - Stream impacts

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 for applicable 401 General Conditions:  
 (Note: If CORP Permit not required, do not check boxes.)

Erosion	Sedimentation	Post-Construction TSS
<input checked="" type="checkbox"/> Temporary Vegetation	<input checked="" type="checkbox"/> Silt Fence	<input type="checkbox"/> Vegetative Filter Strips
<input type="checkbox"/> Blankets/Matting	<input type="checkbox"/> Rock Berm	<input type="checkbox"/> Retention/Irrigation Systems
<input type="checkbox"/> Mulch	<input type="checkbox"/> Triangular Filter Dike	<input type="checkbox"/> Extended Detention Basin
<input type="checkbox"/> Sodding	<input type="checkbox"/> Sand Bag Berm	<input type="checkbox"/> Constructed Wetlands
<input type="checkbox"/> Interceptor Swale	<input type="checkbox"/> Straw Bale Dike	<input type="checkbox"/> Wet Basin
<input type="checkbox"/> Diversion Dike	<input type="checkbox"/> Brush Berms	<input type="checkbox"/> Erosion Control Compost
<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Erosion Control Compost	<input type="checkbox"/> Mulch Filter Berm and Socks
<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Mulch Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks
<input type="checkbox"/> Compost Filter Berm and Socks	<input type="checkbox"/> Compost Filter Berm and Socks	<input checked="" type="checkbox"/> Vegetation Lined Ditches
	<input type="checkbox"/> Stone Outlet Sediment Traps	<input type="checkbox"/> Sand Filter Systems
	<input type="checkbox"/> Sediment Basins	<input type="checkbox"/> Grassy Swales

**III. CULTURAL RESOURCES**

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

No Action Required       Required Action

Action Number:

- 1.

**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 Number:

- 1.

**V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS TREATY ACT.**

No Action Required       Required Action

Action Number:

1. The following species could occur in the project area: Woodhouse's toad, slender glass lizard, western chicken turtle, western hognose snake, western massasauga. Follow the BMPs and Special Notes listed below to protect these species.
2. Contractor to implement the following BMPs from "Beneficial Management Practices: Avoiding, Minimizing, and Mitigating Impacts of Transportation Projects on State Natural Resources" available at <https://ftp.txdot.gov/pub/txdot-info/env/toolkit/300-01-bmp.pdf>
  - a. Section 2.6.1 Aquatic Amphibian and Reptile BMP (barrier fencing not required)
  - b. Section 2.6.2 Terrestrial Amphibian and Reptile BMP
  - c. Section 1.4 Water Quality BMP
  - d. Section 1.2 Vegetation BMP

**Special Notes:**

1. Avoid harming all wildlife species if encountered and allow them to safely leave the project site. Due diligence should be used to avoid killing or harming any wildlife species in the implementation of transportation projects.
2. 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 immediated area, and contact the Engineer immediately.
3. The Migratory Bird Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade or transport any migratory bird, nest, young, feather or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations. The contractor would remove all old migratory bird nests from any structure or trees where work would be done from October 1 to February 15. In addition, the contractor would be prepared to prevent migratory birds from building nest(s) between February 15 to October 1. In the event that migratory birds are encountered on-site during project construction, efforts to avoid adverse impacts on protected birds, active nests, eggs and/or young would be observed.

**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 Corp 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 Safety Data Sheets (SDS) 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 SDS. In the event of a spill, take actions to mitigate the spill as indicated in the SDS, 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, canisters, barrels, etc.
- \* Undesirable smells or odors
- \* Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation(s) or replacement(s) (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 Number:

1. US 80 over Draw (NBI 181300009504024 ) at STA 93+98 - Silver LBP (72,200 ppm) on metal bridge rail.  
 US 80 over Lawrence Creek (NBI 181300009504023) at STA 73+19 - Silver LBP (18,100 ppm) on westbound side metal bridge rails.  
 US 80 over Terry Creek (NBI 181300009504021) at STA 30+71 - Silver LBP (29,300 ppm) LBP on metal bridge rail.  
 No abatement required - Contractor can unbolt segmented sections.

**VII. OTHER ENVIRONMENTAL ISSUES**

(includes regional issues such as Edwards Aquifer District, etc.)

No Action Required       Required Action

Action Number:

- 1.

**GENERAL NOTE:**

Any change orders and/or deviations from the final design must be reported to the Engineer prior to commencement of construction activities, as additional environmental clearance may be required.



**ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)**

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 80
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	Kaufman	SHEET NO.
CONTROL	SECTION	JOB	
0095	04	074, etc.	89



DATE: 2/22/2023 10:14:00 AM  
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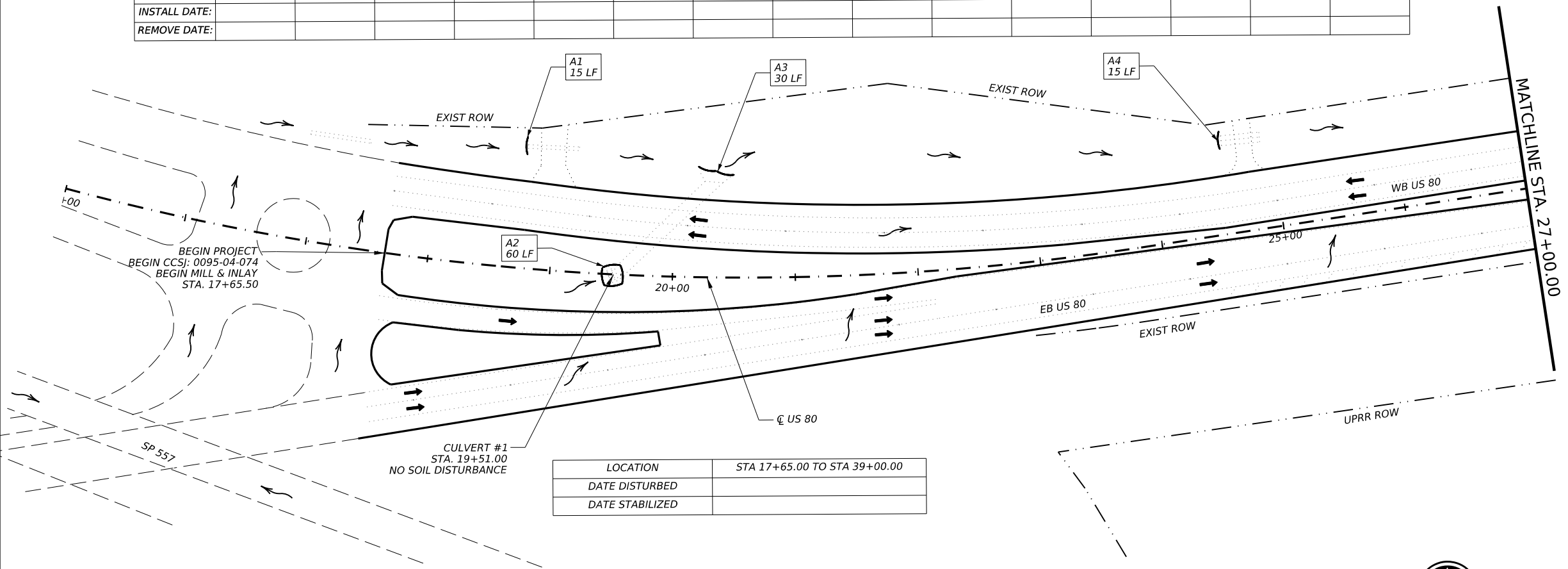
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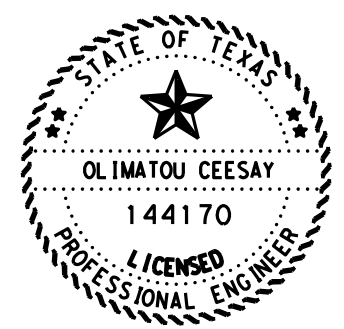
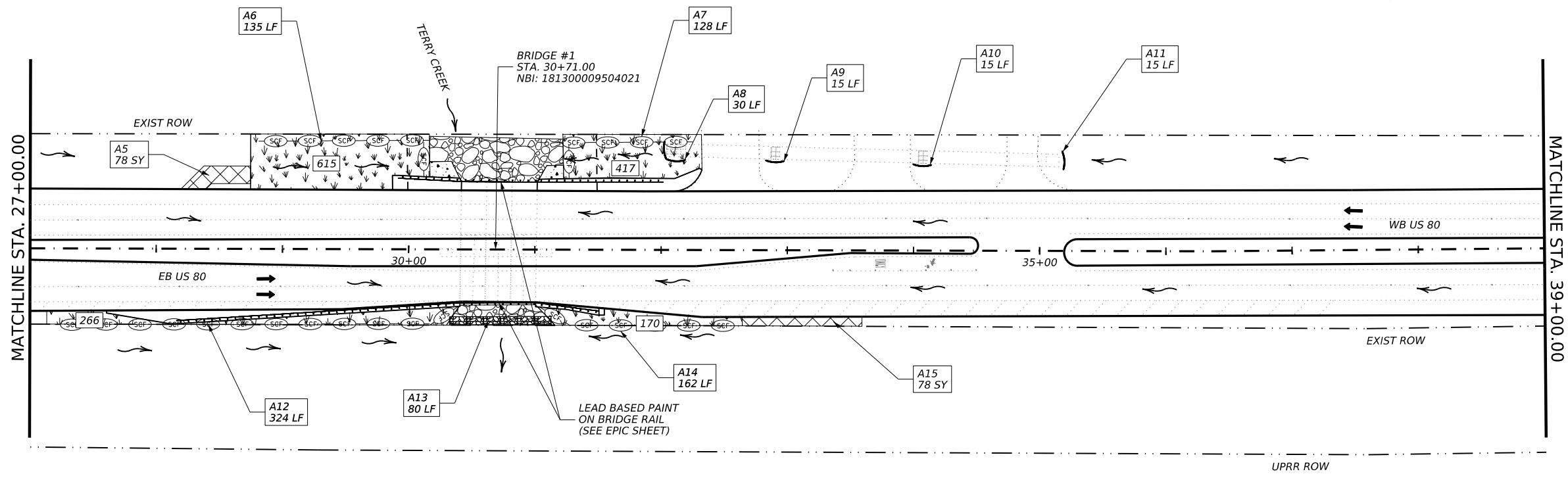
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- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)
- EROSION CONTROL LOG
- BLOCK SOD (SY)
- DIRECTION OF FLOW
- CONSTRUCTION ENTRANCE/EXIT

- NOTES:
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  - PROTECT TREES AND THEIR ROOTS, IF AT ALL POSSIBLE. PRESERVE CREEKSIDE VEGETATION TO THE EXTENT PRACTICABLE.
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  - SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.



LOCATION	STA 17+65.00 TO STA 39+00.00
DATE DISTURBED	
DATE STABILIZED	



Signature of Registrant: *Olimatu Ceesay*, P.E. 2/22/2023  
 Date



US 80  
 SW3P LAYOUT

SHEET 1 OF 10

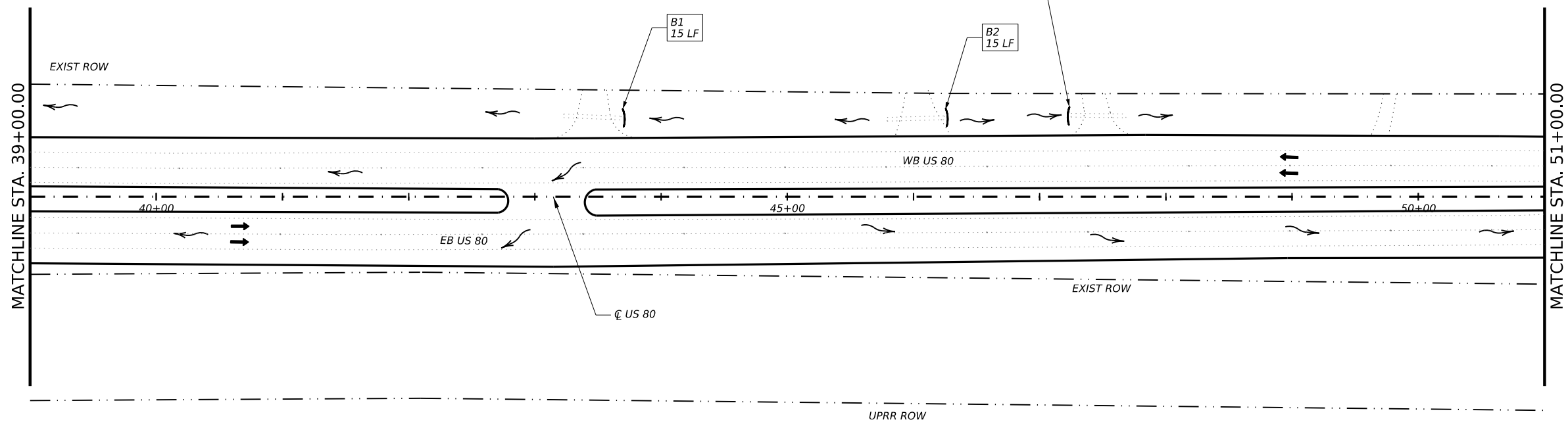
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0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	90	

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DATE STABILIZED	

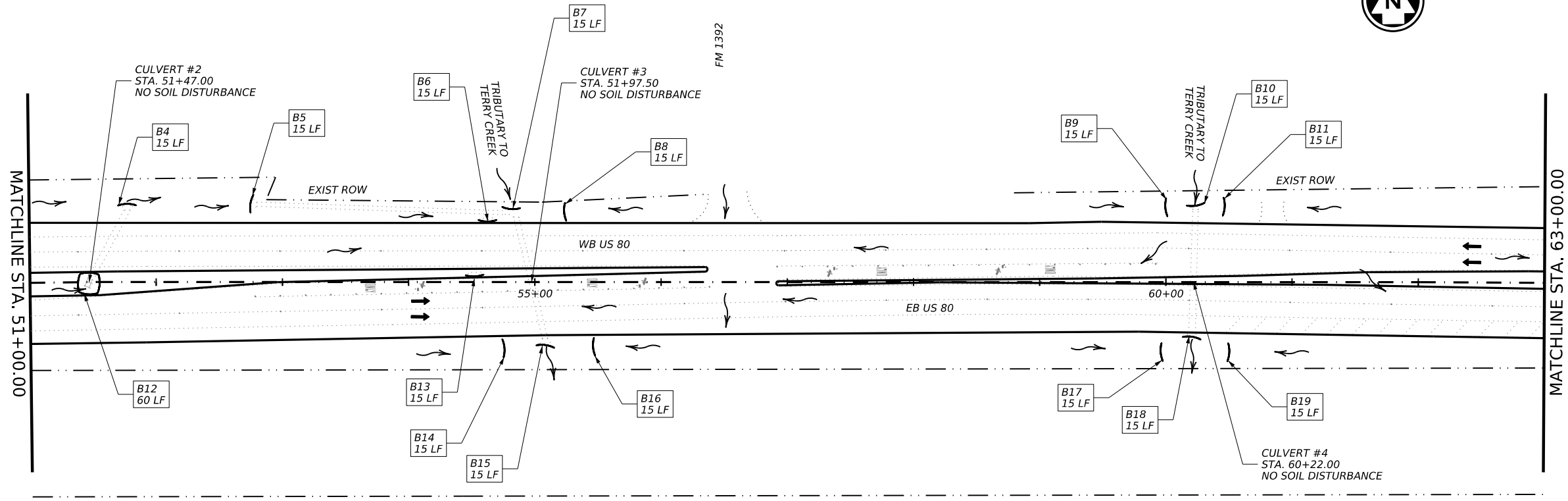


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  - EROSION CONTROL LOG
  - BLOCK SOD (SY)
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  - CONSTRUCTION ENTRANCE/EXIT

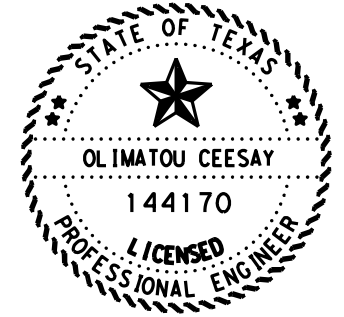


BMP	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10
INSTALL DATE:										
REMOVE DATE:										

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BMP	B11	B12	B13	B14	B15	B16	B17	B18	B19
INSTALL DATE:									
REMOVE DATE:									



*Olmatou Ceasay*, P.E. 2/22/2023  
 Signature of Registrant & Date

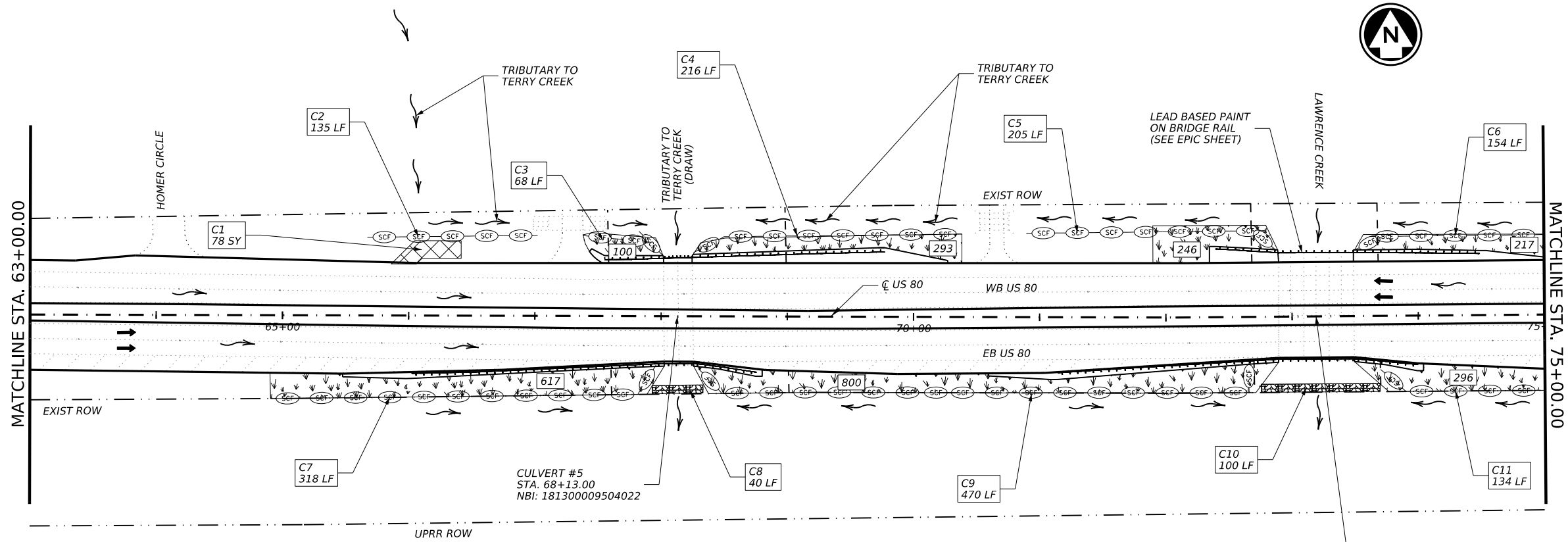


<b>US 80</b>			
<b>SW3P LAYOUT</b>			
SHEET 2 OF 10			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	91	

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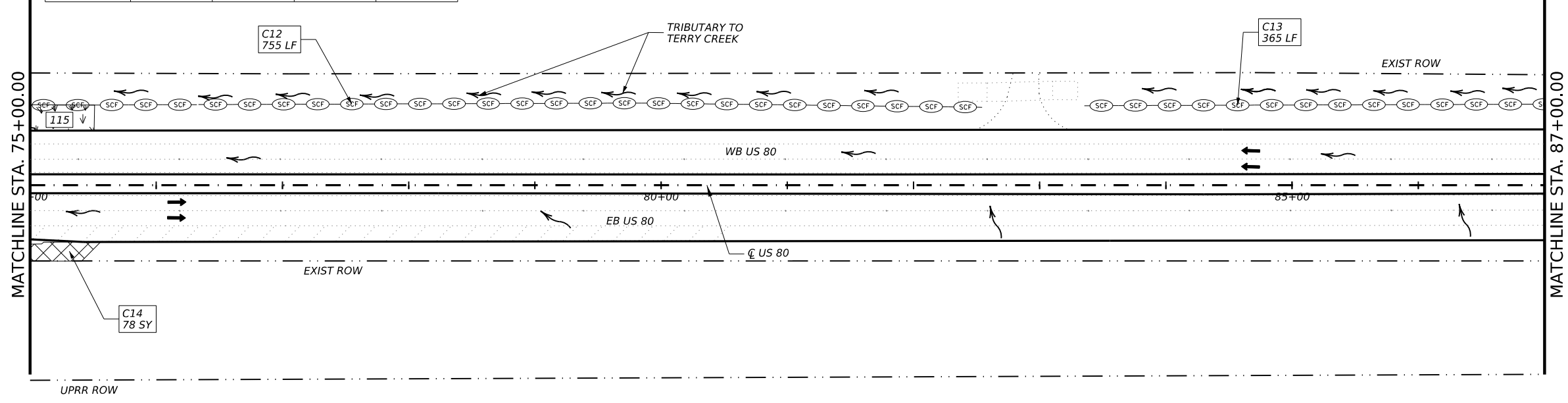
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  - ROCK FILTER DAM (TY 3)
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  - BLOCK SOD (SY)
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  - CONSTRUCTION ENTRANCE/EXIT



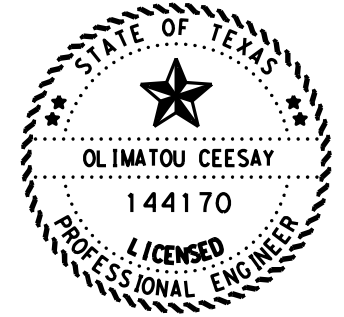
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BMP	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
INSTALL DATE:										
REMOVE DATE:										

BMP	C11	C12	C13	C14
INSTALL DATE:				
REMOVE DATE:				



LOCATION	STA 63+00.00 TO STA 87+00.00
DATE DISTURBED	
DATE STABILIZED	



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date



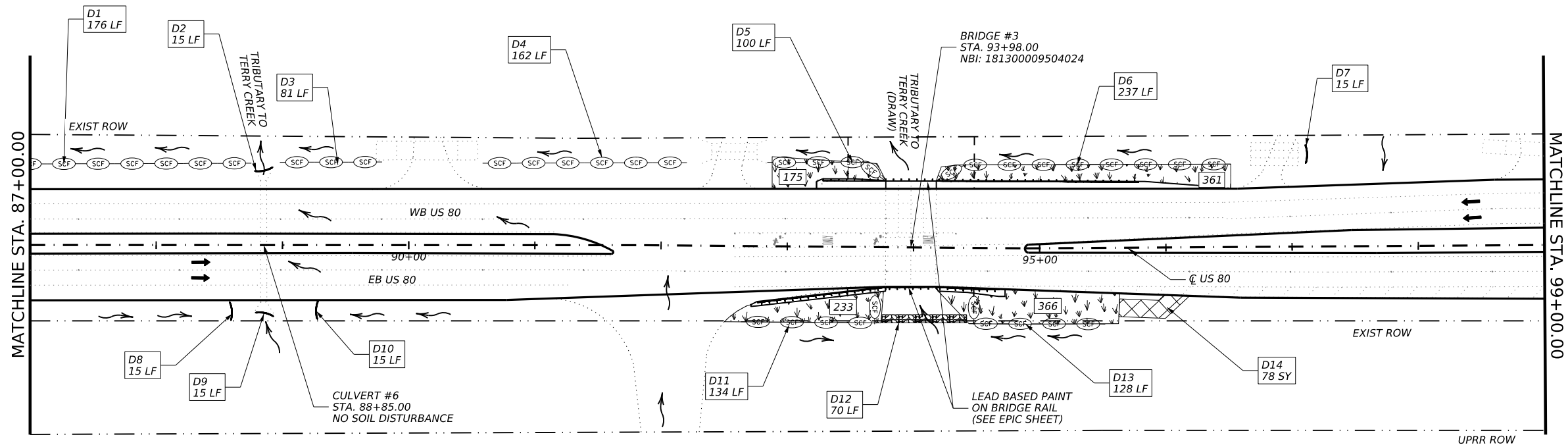
**US 80**

**SW3P LAYOUT**

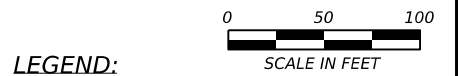
SHEET 3 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	92	

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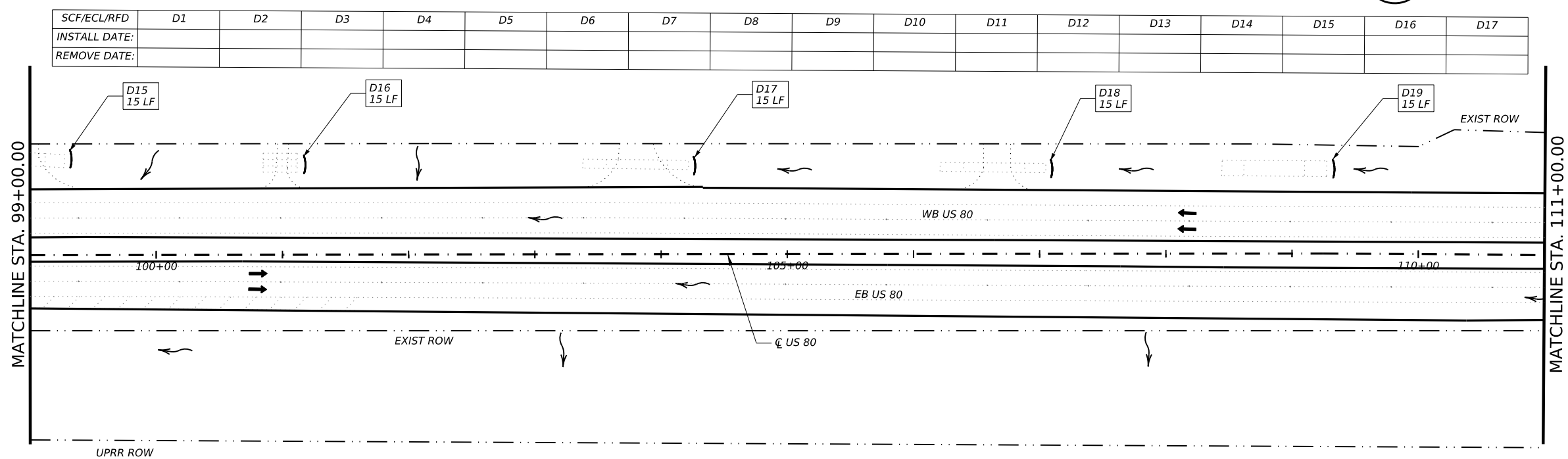


LOCATION	STA 87+00.00 TO STA 111+00.00
DATE DISTURBED	
DATE STABILIZED	



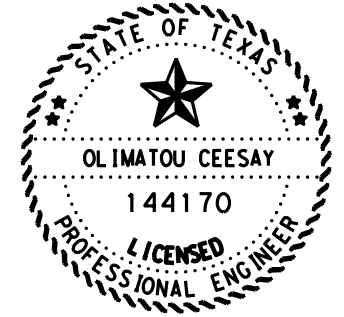
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SCF/ECL/RFD	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17
INSTALL DATE:																	
REMOVE DATE:																	

SCF/ECL/RFD	D18	D19
INSTALL DATE:		
REMOVE DATE:		



*Olimatu Ceasay*, P.E. 2/22/2023  
 Signature of Registrant & Date



**US 80**

**SW3P LAYOUT**

SHEET 4 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	93	



DATE: 2/22/2023 10:14:05 AM  
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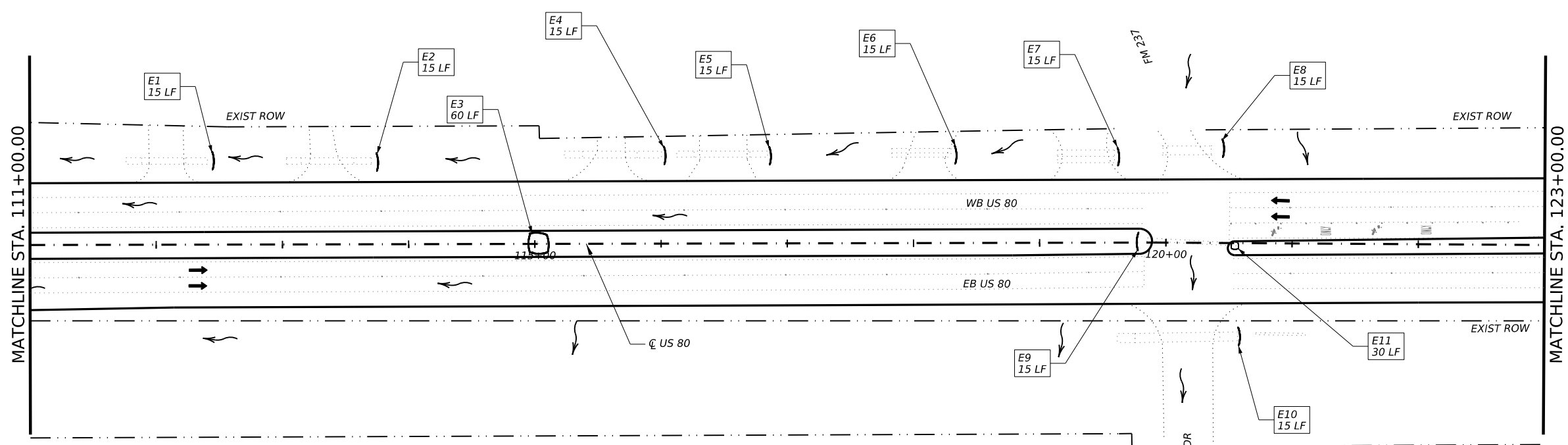


LEGEND:

- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)
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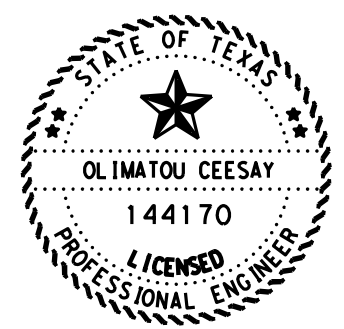
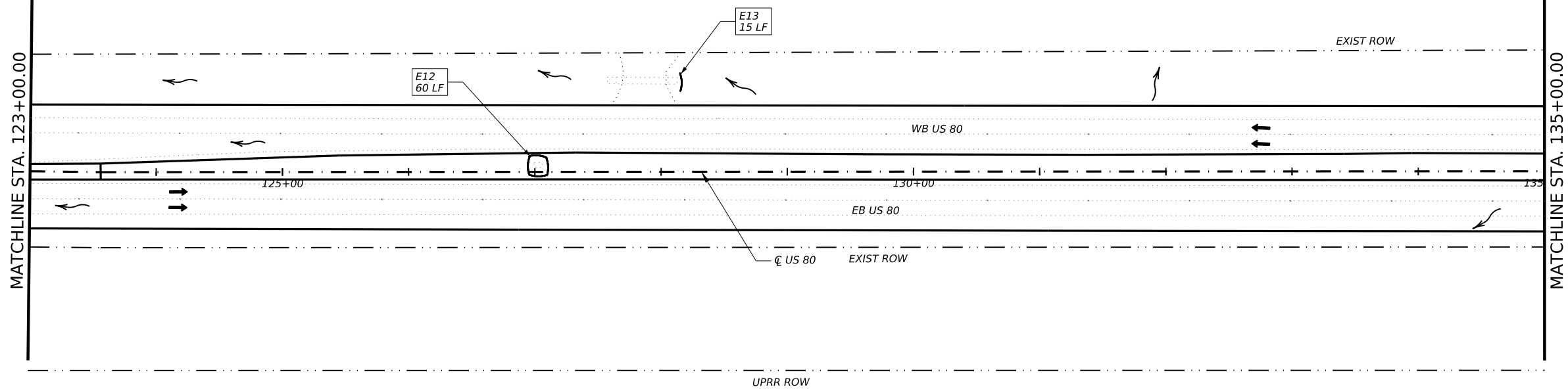
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6. ADJUST BMPs AS NEEDED TO PROTECT DRAINAGE FEATURES, WATERS, AND DOWNSLOPE PERIMETERS, AS AUTHORIZED OR DIRECTED BY ENGINEER.
7. REMOVE LITTER & CONSTRUCTION DEBRIS DAILY AND AS NEEDED OR AS DIRECTED BY THE ENGINEER. THIS WORK IS SUBSIDIARY TO VARIOUS EROSION CONTROL ITEMS (ITEM 506).
8. REMOVE SEDIMENT FROM BMP WHEN IT REDUCES BMPs CAPACITY BY 40%. ALWAYS PROVIDE CONSISTENT DRAINAGE OR AS DIRECTED BY THE ENGINEER IN THE FIELD.
9. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.



LOCATION	STA 111+00.00 TO STA 135+00.00
DATE DISTURBED	
DATE STABILIZED	

SCF/ECL/RFD	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13
INSTALL DATE:													
REMOVE DATE:													



*Olimatu Ceasay*, P.E. 2/22/2023  
 Signature of Registrant & Date



US 80  
 SW3P LAYOUT

SHEET 5 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	94	



DATE: 2/22/2023 10:14:06 AM  
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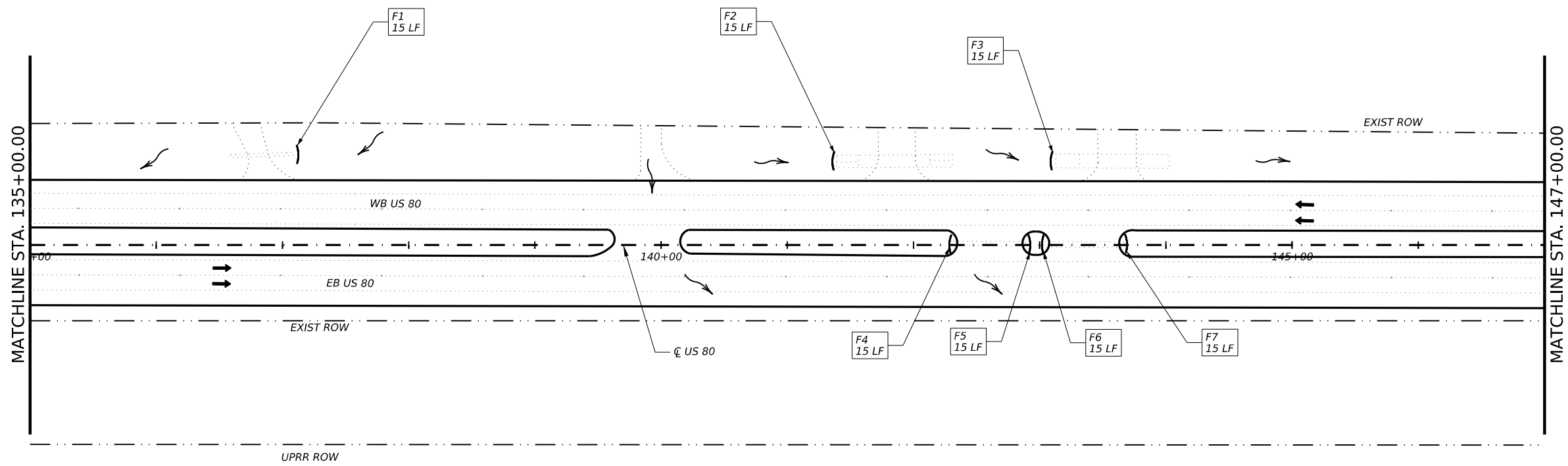


LEGEND:

- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)
- EROSION CONTROL LOG
- BLOCK SOD (SY)
- DIRECTION OF FLOW
- CONSTRUCTION ENTRANCE/EXIT

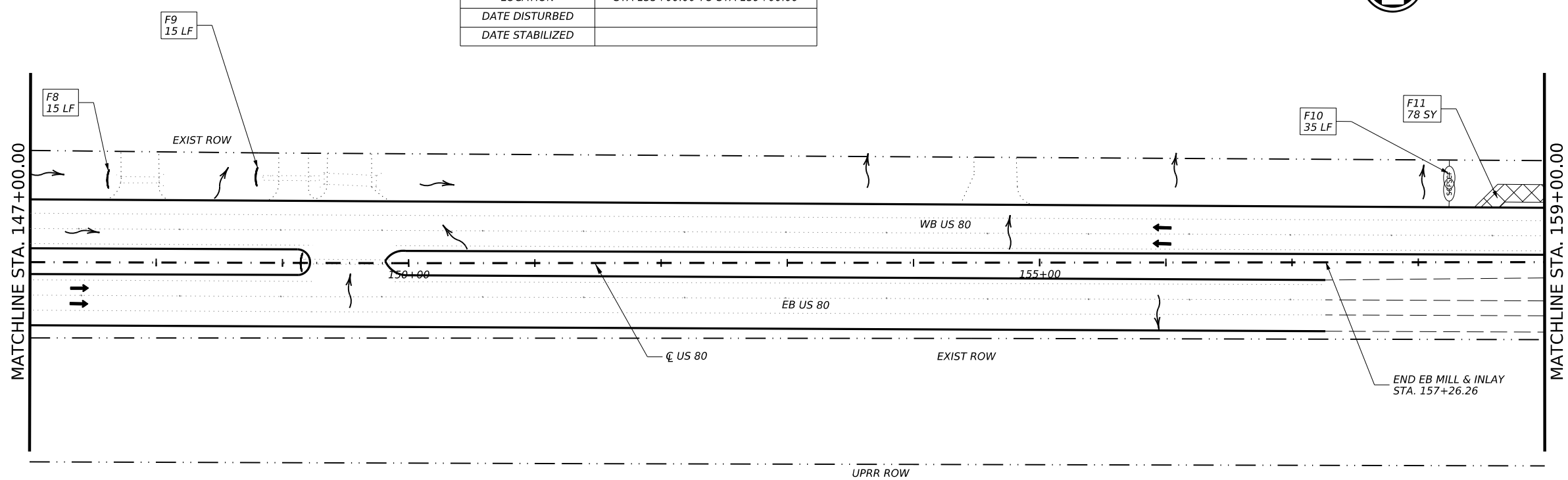
NOTES:

1. BMPs SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING OR POTENTIAL POLLUTANT GENERATING ACTIVITIES IN THAT AREA.
2. PROTECT TREES AND THEIR ROOTS, IF AT ALL POSSIBLE. PRESERVE CREEKSIDE VEGETATION TO THE EXTENT PRACTICABLE.
3. CONTRACTOR TO PLACE AND MAINTAIN SW3P MEASURES APPLICABLE TO EACH PHASE OF CONSTRUCTION.
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7. REMOVE LITTER & CONSTRUCTION DEBRIS DAILY AND AS NEEDED OR AS DIRECTED BY THE ENGINEER. THIS WORK IS SUBSIDIARY TO VARIOUS EROSION CONTROL ITEMS (ITEM 506).
8. REMOVE SEDIMENT FROM BMP WHEN IT REDUCES BMPs CAPACITY BY 40%. ALWAYS PROVIDE CONSISTENT DRAINAGE OR AS DIRECTED BY THE ENGINEER IN THE FIELD.
9. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.

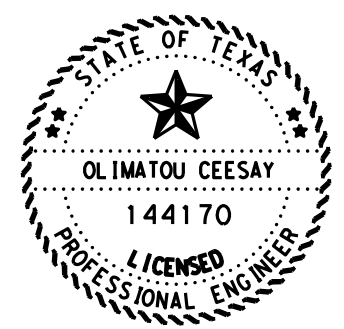


SCF/ECL/RFD	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11
INSTALL DATE:											
REMOVE DATE:											

LOCATION	STA 135+00.00 TO STA 159+00.00
DATE DISTURBED	
DATE STABILIZED	



NO WORK IS PLANNED EB FROM STA. 157+26.26 TO STA. 159+00.00. THEREFORE, NO POTENTIAL PROJECT POLLUTANTS ARE ANTICIPATED TO AFFECT THESE LIMITS.



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date



**US 80**

**SW3P LAYOUT**

SHEET 6 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DAL	KAUFMAN		SHEET NO. 95

DATE: 2/22/2023 10:14:07 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/9 - Environmental/SW3P\_LAYOUT.dgn

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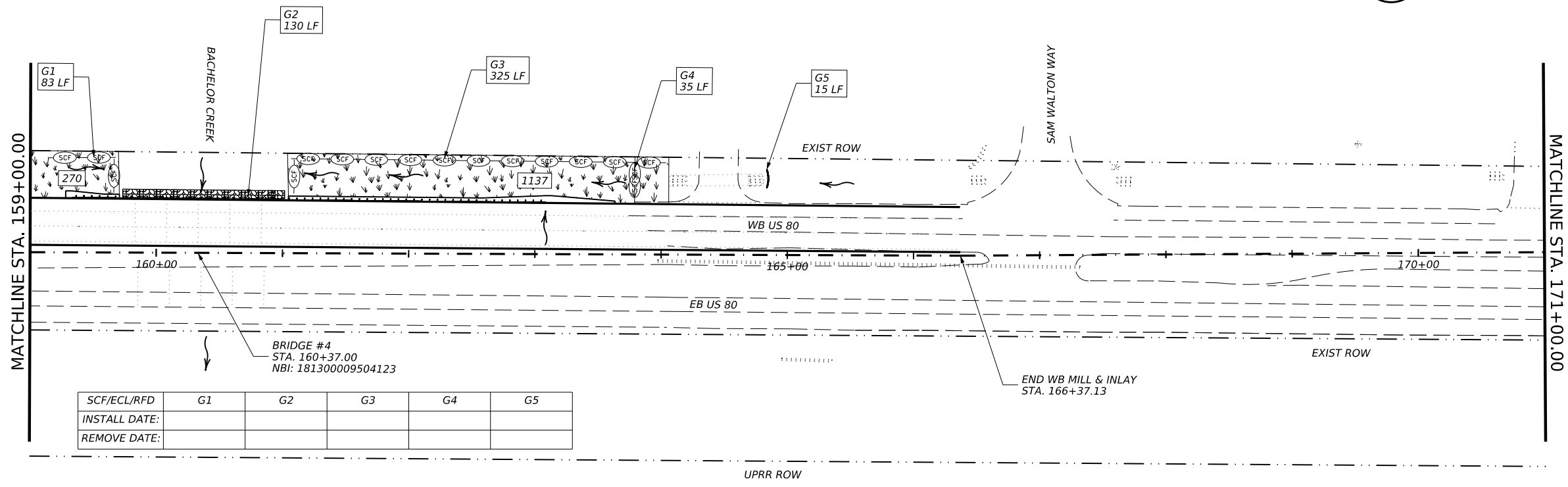


**LEGEND:**

- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)
- EROSION CONTROL LOG
- BLOCK SOD (SY)
- DIRECTION OF FLOW
- CONSTRUCTION ENTRANCE/EXIT

**NOTES:**

1. BMPs SHALL NOT BE INSTALLED IN THEIR CONTROL AREA ANY SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING OR POTENTIAL POLLUTANT GENERATING ACTIVITIES IN THAT AREA.
2. PROTECT TREES AND THEIR ROOTS, IF AT ALL POSSIBLE. PRESERVE CREEKSIDE VEGETATION TO THE EXTENT PRACTICABLE.
3. CONTRACTOR TO PLACE AND MAINTAIN SW3P MEASURES APPLICABLE TO EACH PHASE OF CONSTRUCTION.
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8. REMOVE SEDIMENT FROM BMP WHEN IT REDUCES BMPs CAPACITY BY 40%. ALWAYS PROVIDE CONSISTENT DRAINAGE OR AS DIRECTED BY THE ENGINEER IN THE FIELD.
9. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.

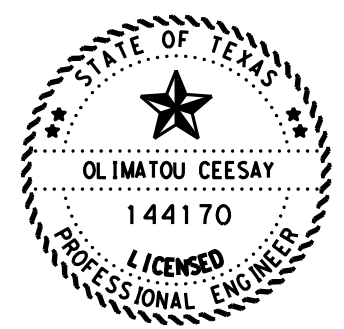
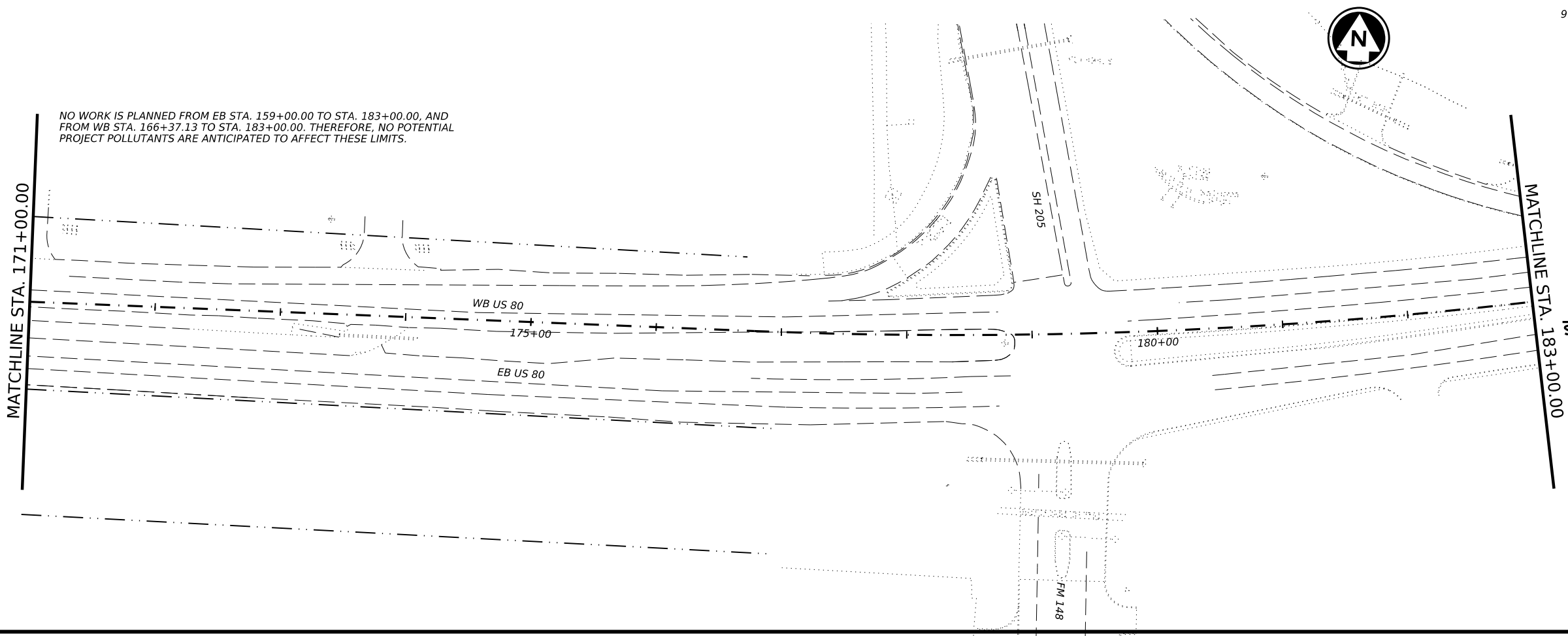


BRIDGE #4  
 STA. 160+37.00  
 NBI: 181300009504123

SCF/ECL/RFD	G1	G2	G3	G4	G5
INSTALL DATE:					
REMOVE DATE:					

LOCATION	STA 159+00.00 TO STA 166+37.13
DATE DISTURBED	
DATE STABILIZED	

NO WORK IS PLANNED FROM EB STA. 159+00.00 TO STA. 183+00.00, AND FROM WB STA. 166+37.13 TO STA. 183+00.00. THEREFORE, NO POTENTIAL PROJECT POLLUTANTS ARE ANTICIPATED TO AFFECT THESE LIMITS.



*Olimatu Ceasay*, P.E. 2/22/2023  
 Signature of Registrant & Date



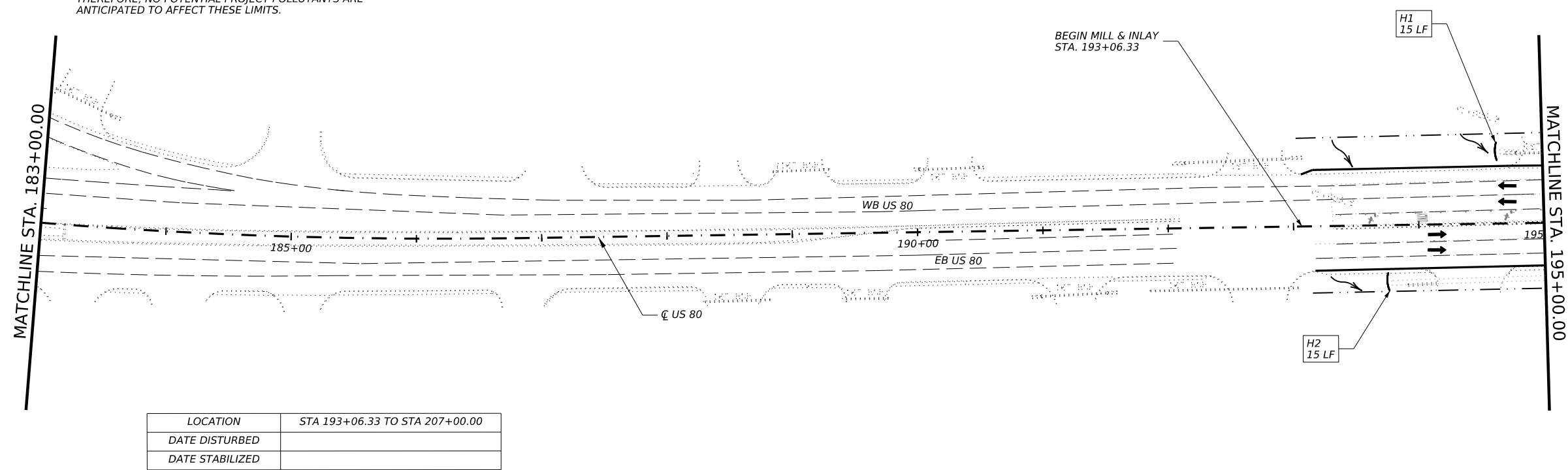
US 80			
SW3P LAYOUT			
SHEET 7 OF 10			
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	96	

DATE: 2/22/2023 10:14:08 AM  
 FILE: \\txdot-projectwiseonline.com\TXDOT5\Documents\18 - DAL\Design Projects\9504074\4 - Design\Plan Set\9 - Environmental\SW3P\_LAYOUT.dgn

NO WORK IS PLANNED FROM STA. 183+00.00 TO STA. 193+06.33.  
 THEREFORE, NO POTENTIAL PROJECT POLLUTANTS ARE ANTICIPATED TO AFFECT THESE LIMITS.



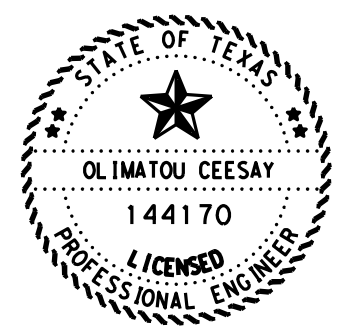
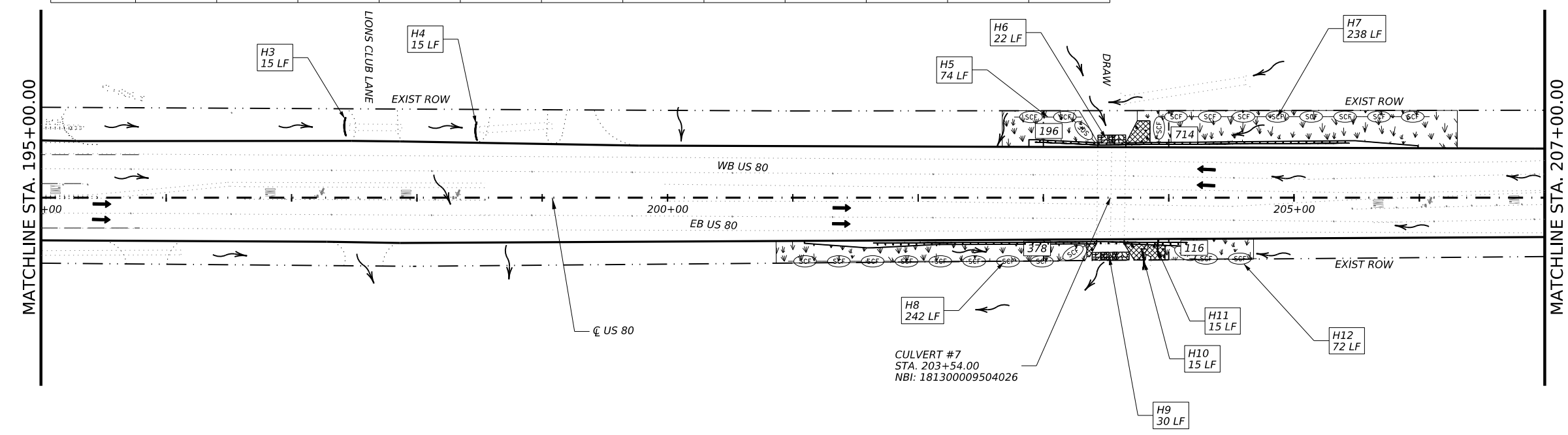
- LEGEND:**
- SEDIMENT CONTROL FENCE
  - ROCK FILTER DAM (TY 3)
  - EROSION CONTROL LOG
  - BLOCK SOD (SY)
  - DIRECTION OF FLOW
  - CONSTRUCTION ENTRANCE/EXIT



- NOTES:**
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  - PROTECT TREES AND THEIR ROOTS, IF AT ALL POSSIBLE. PRESERVE CREEKSIDE VEGETATION TO THE EXTENT PRACTICABLE.
  - CONTRACTOR TO PLACE AND MAINTAIN SW3P MEASURES APPLICABLE TO EACH PHASE OF CONSTRUCTION.
  - ADD OR ADJUST BMPs AS NEEDED TO MINIMIZE SOIL DISTURBANCE AND PROTECT STORMWATER QUALITY AND ENVIRONMENTAL FEATURES, AS AUTHORIZED BY THE ENGINEER IN THE FIELD.
  - CONSTRUCTION EXITS TO BE PLACED AT LOCATIONS APPROVED BY THE ENGINEER.
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  - REMOVE SEDIMENT FROM BMP WHEN IT REDUCES BMPs CAPACITY BY 40%. ALWAYS PROVIDE CONSISTENT DRAINAGE OR AS DIRECTED BY THE ENGINEER IN THE FIELD.
  - SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.

LOCATION	STA 193+06.33 TO STA 207+00.00
DATE DISTURBED	
DATE STABILIZED	

BMP	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
INSTALL DATE:												
REMOVE DATE:												



*Olimatou Ceesay*  
 Signature of Registrant & Date P.E. 2/22/2023



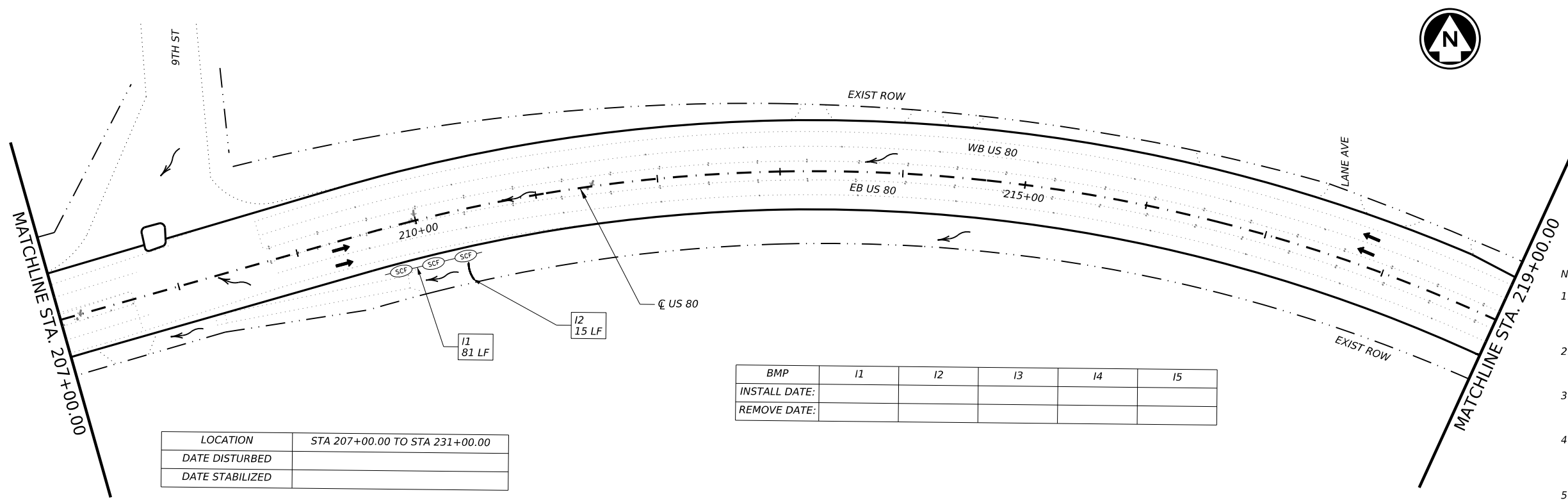
**US 80**

**SW3P LAYOUT**

SHEET 8 OF 10

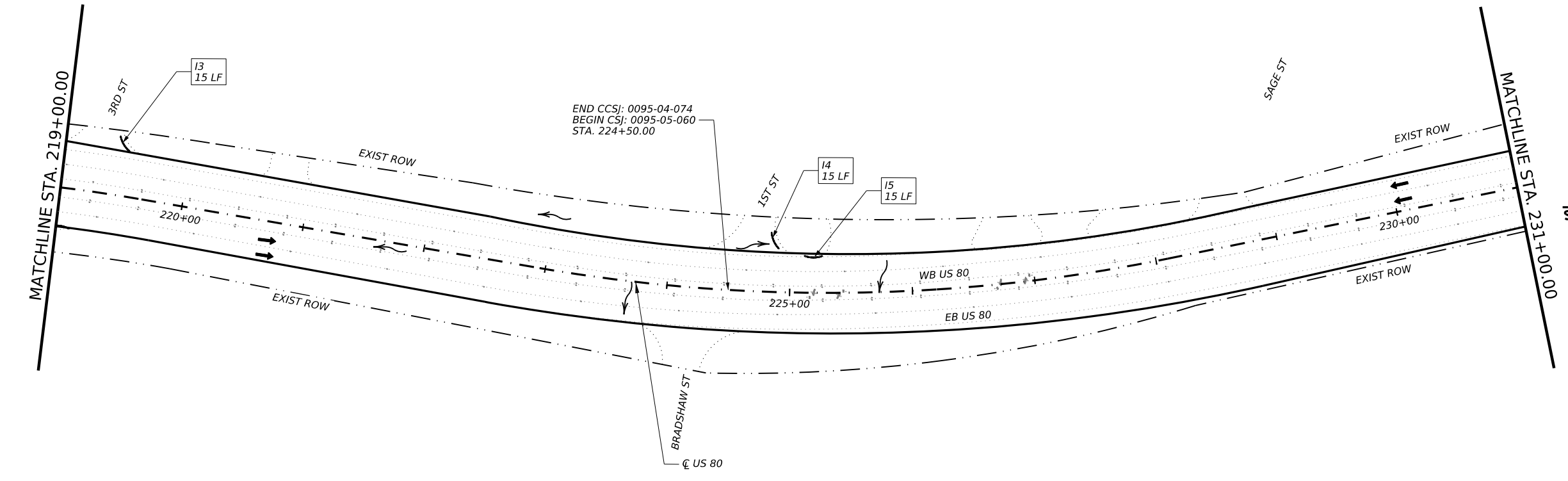
CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	97	

DATE: 2/22/2023 10:14:09 AM  
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LOCATION	STA 207+00.00 TO STA 231+00.00
DATE DISTURBED	
DATE STABILIZED	

BMP	I1	I2	I3	I4	I5
INSTALL DATE:					
REMOVE DATE:					

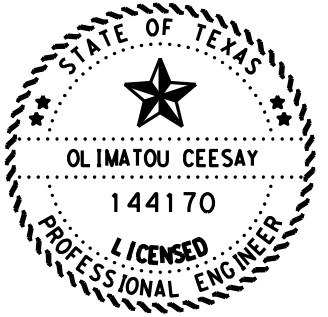


**LEGEND:**

- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)
- EROSION CONTROL LOG
- BLOCK SOD (SY)
- DIRECTION OF FLOW
- CONSTRUCTION ENTRANCE/EXIT

**NOTES:**

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9. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date



**US 80**  
**SW3P LAYOUT**

SHEET 9 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	98	

DATE: 2/22/2023 10:14:10 AM  
 FILE: pw://txdot.projectwiseonline.com:TXDOT5/Documents/18 - DAL/Design Projects/9504074/4 - Design/Plan Set/9 - Environmental/SW3P\_LAYOUT.dgn

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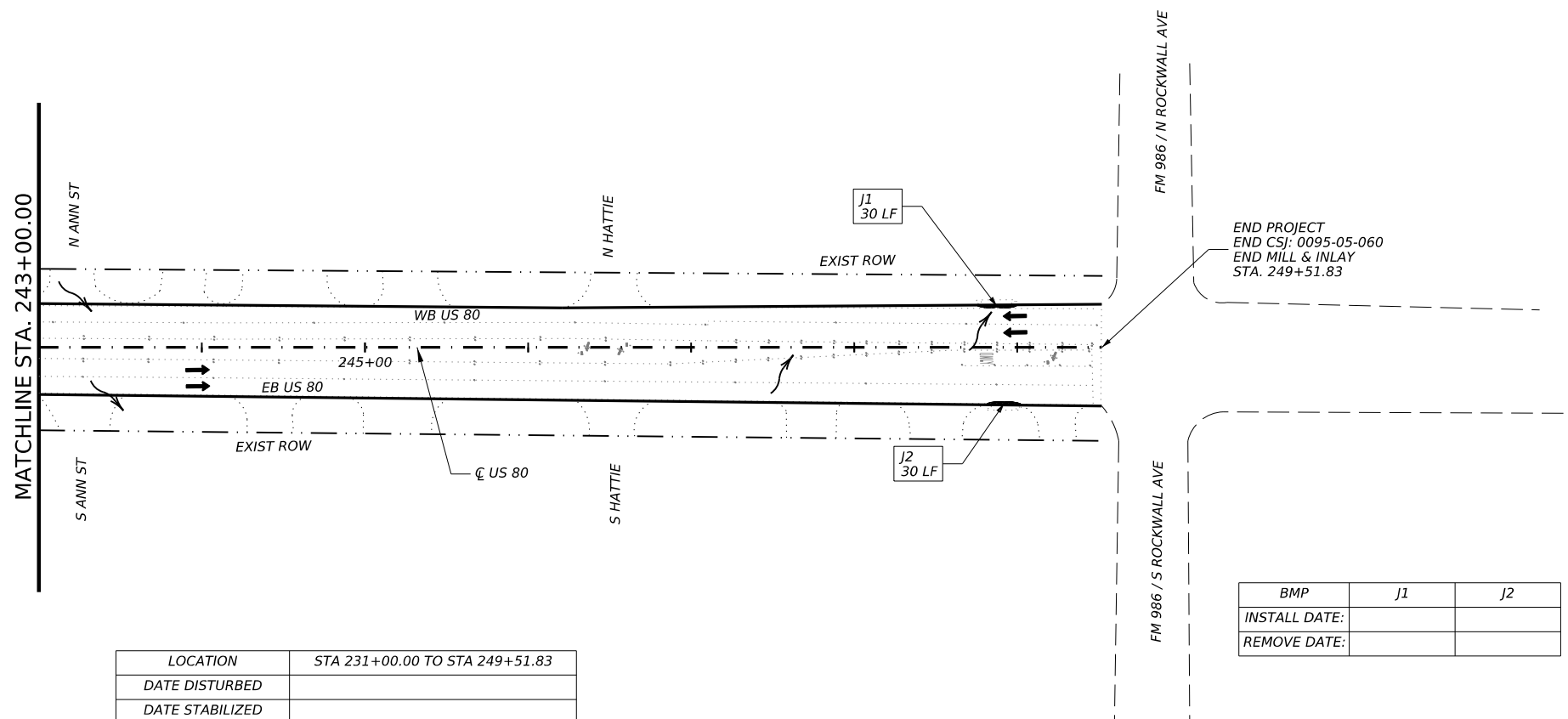
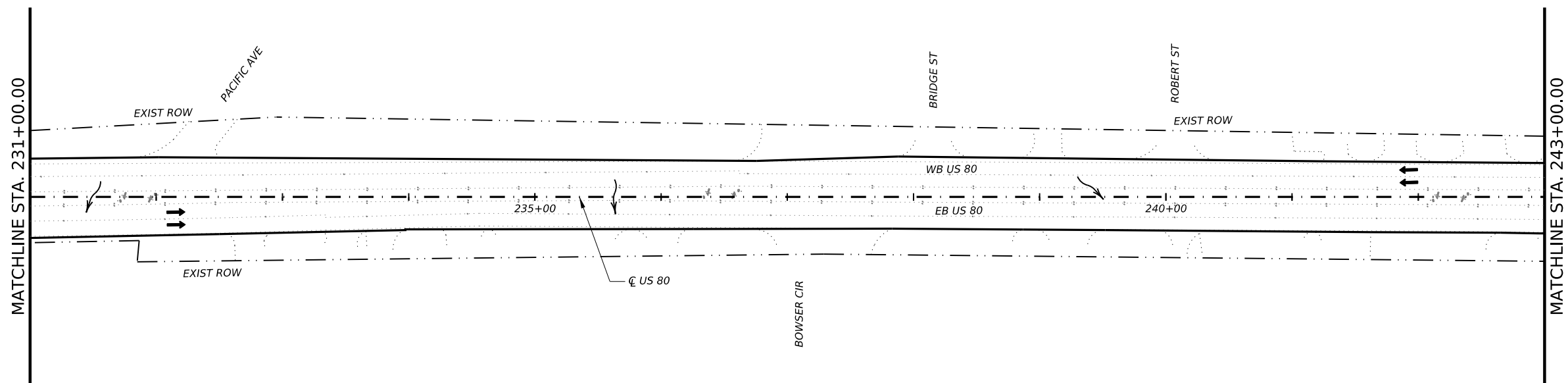


**LEGEND:**

- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)
- EROSION CONTROL LOG
- BLOCK SOD (SY)
- DIRECTION OF FLOW
- CONSTRUCTION ENTRANCE/EXIT

**NOTES:**

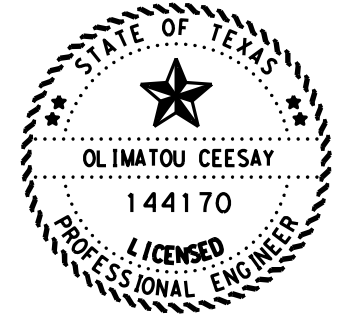
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END PROJECT  
 END CSJ: 0095-05-060  
 END MILL & INLAY  
 STA. 249+51.83

BMP	J1	J2
INSTALL DATE:		
REMOVE DATE:		

LOCATION	STA 231+00.00 TO STA 249+51.83
DATE DISTURBED	
DATE STABILIZED	



*Olimatou Ceesay*, P.E. 2/22/2023  
 Signature of Registrant & Date



**US 80**

**SW3P LAYOUT**

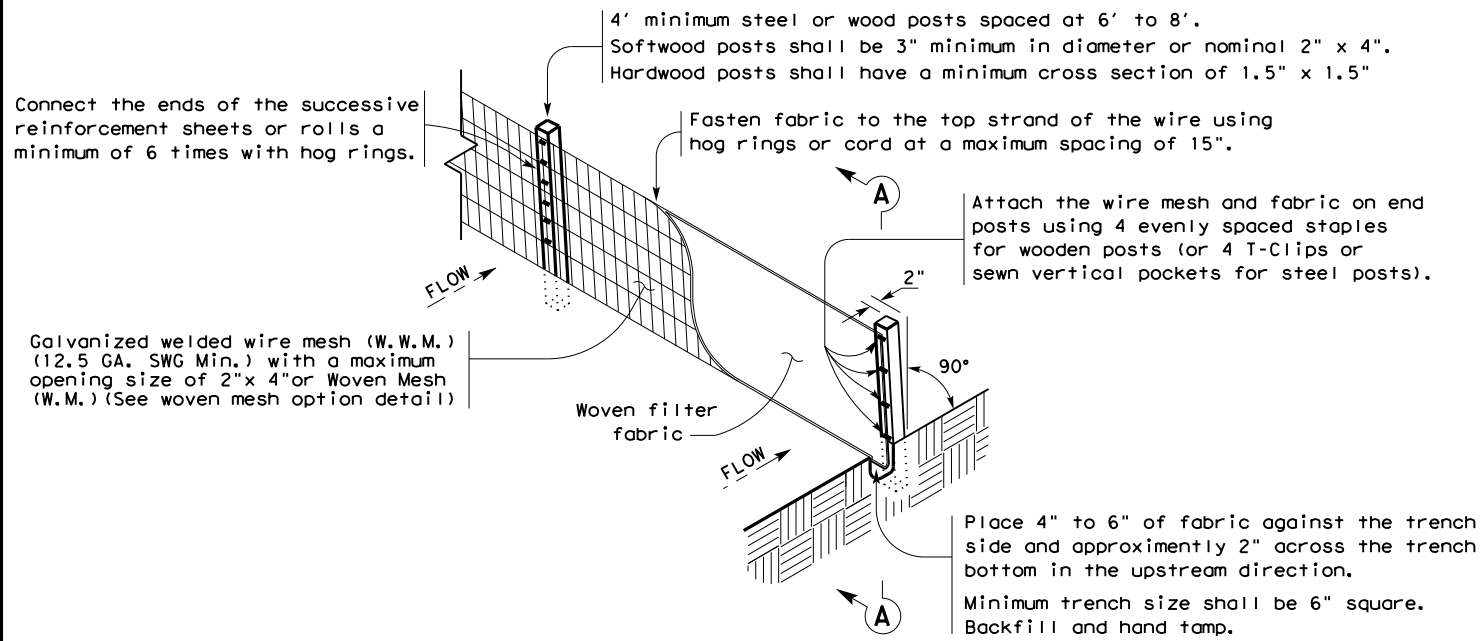
SHEET 10 OF 10

CONT	SECT	JOB	HIGHWAY
0095	04	074, ETC.	US 80
DIST	COUNTY	SHEET NO.	
DAL	KAUFMAN	99	



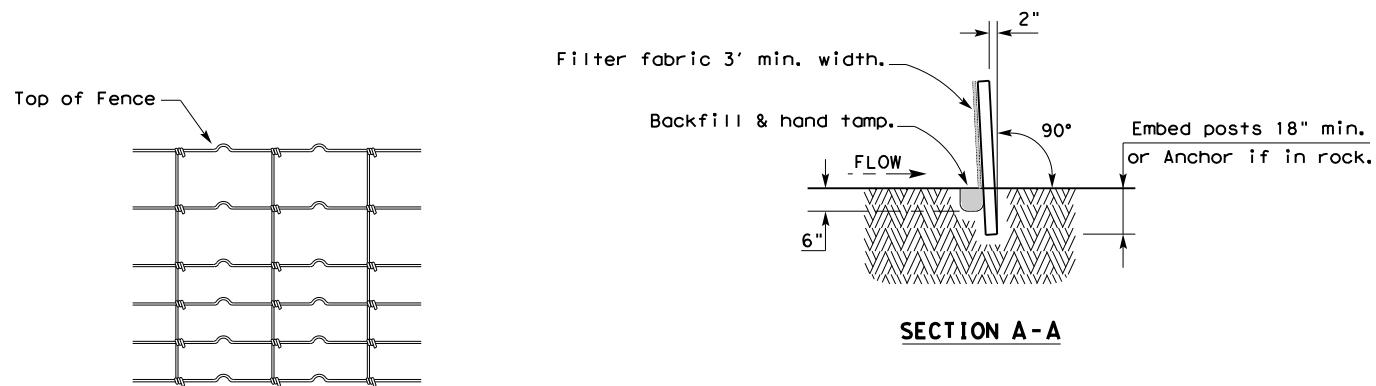
DISCLAIMER: This standard is made by TxDOT for any purpose whatsoever. The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE  
FILE



**TEMPORARY SEDIMENT CONTROL FENCE**

SCF



**HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL**

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

**SEDIMENT CONTROL FENCE USAGE GUIDELINES**

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

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

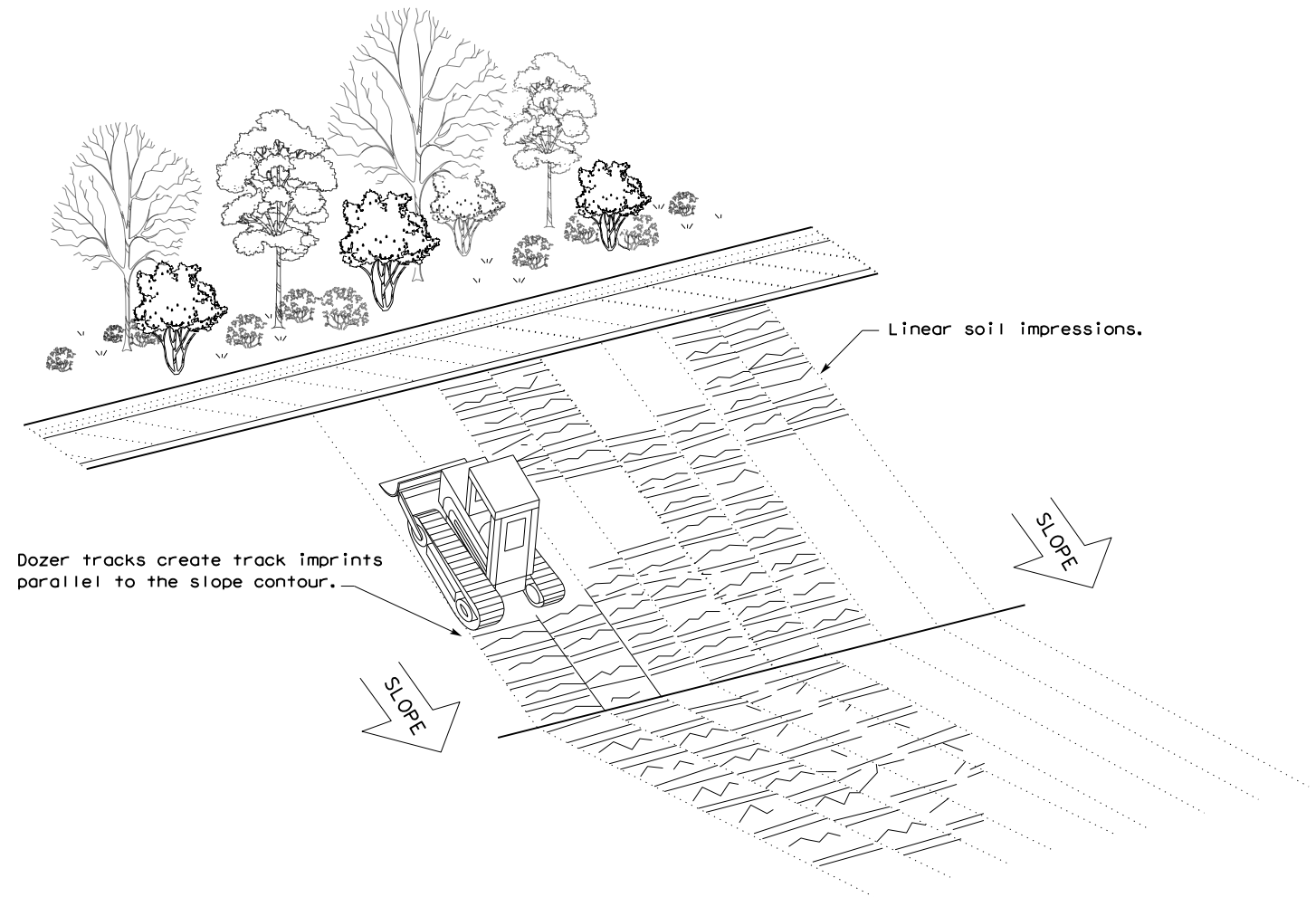
**LEGEND**

Sediment Control Fence

SCF

**GENERAL NOTES**

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

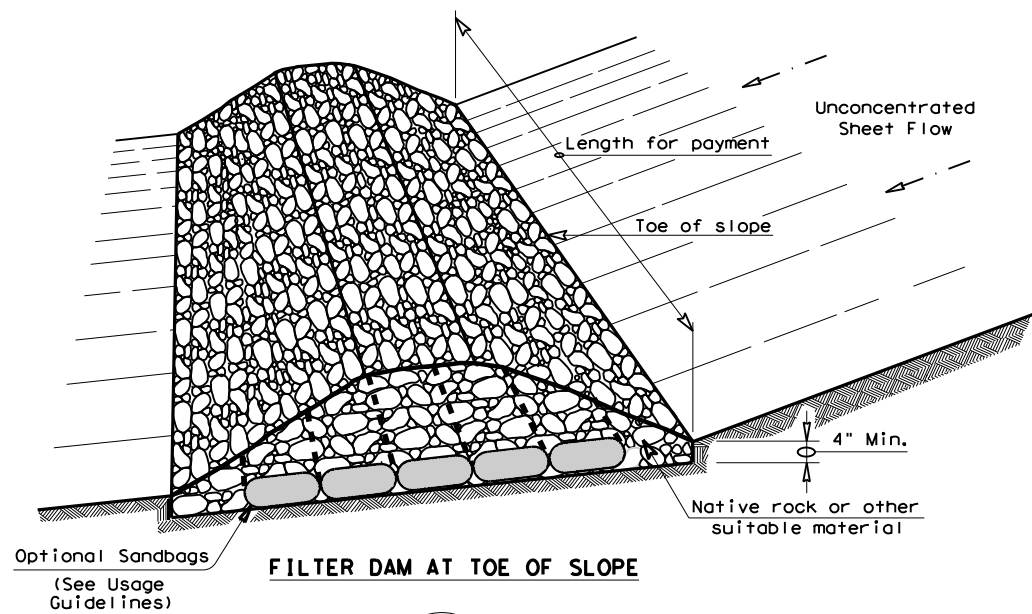


**VERTICAL TRACKING**

				Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES FENCE &amp; VERTICAL TRACKING</b> <b>EC(1)-16</b>					
FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0095	04	074, ETC.	US 80	
	DIST	COUNTY		SHEET NO.	
	DAL	KAUFMAN		100	

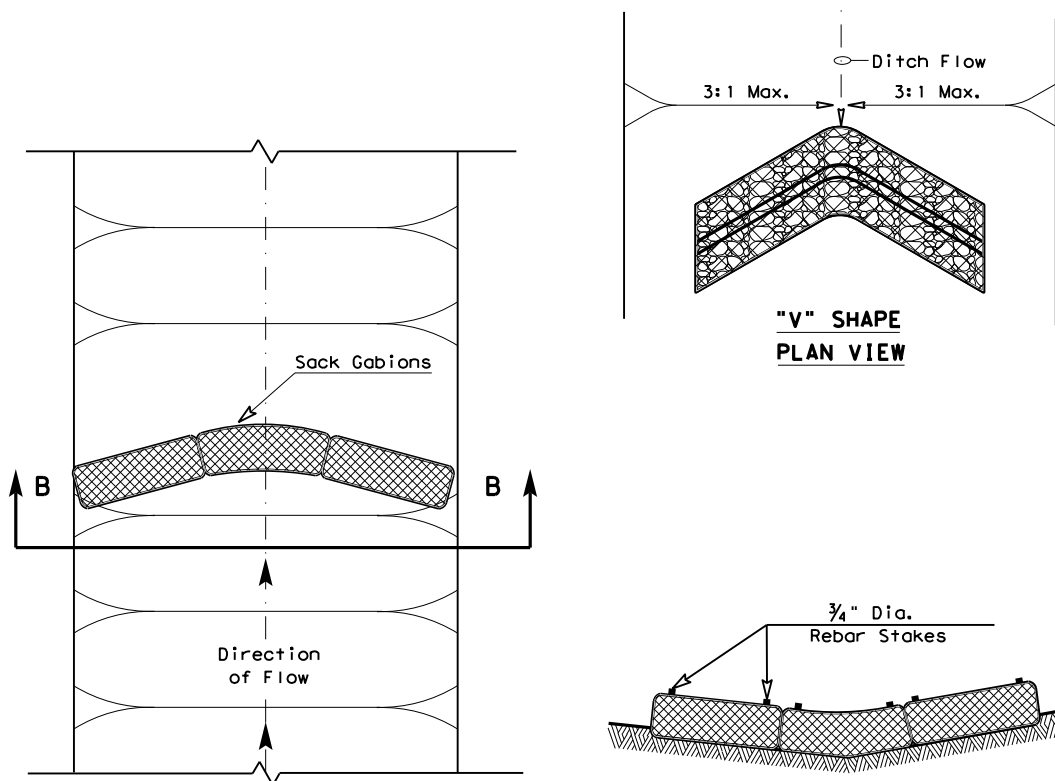
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



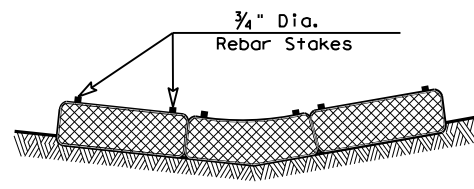
**FILTER DAM AT TOE OF SLOPE**

(RFD1)

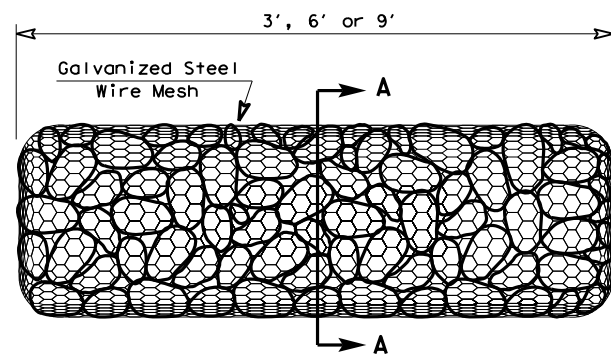


**"V" SHAPE PLAN VIEW**

**PLAN VIEW**

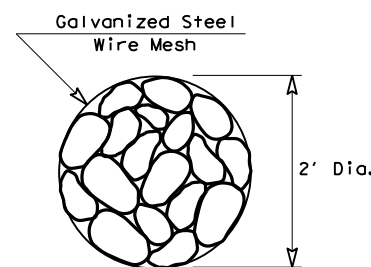


**SECTION B-B**

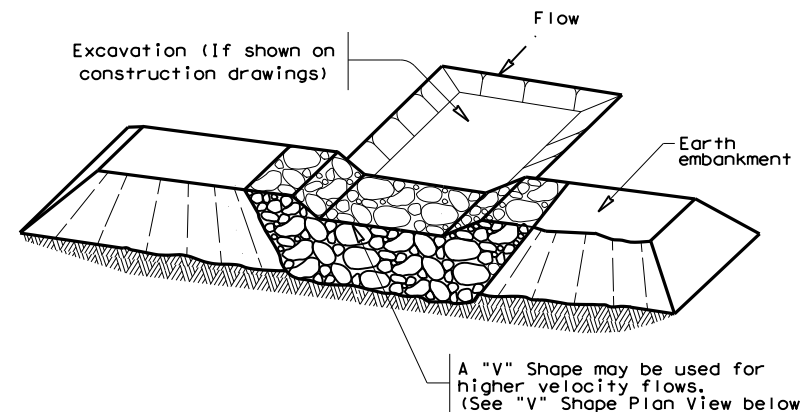


**TYPE 4 (SACK GABIONS)**

(RFD4)

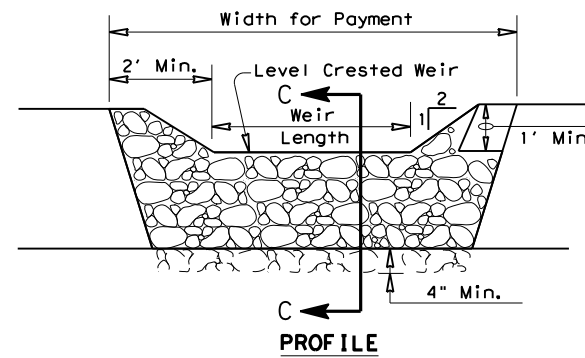


**SECTION A-A**

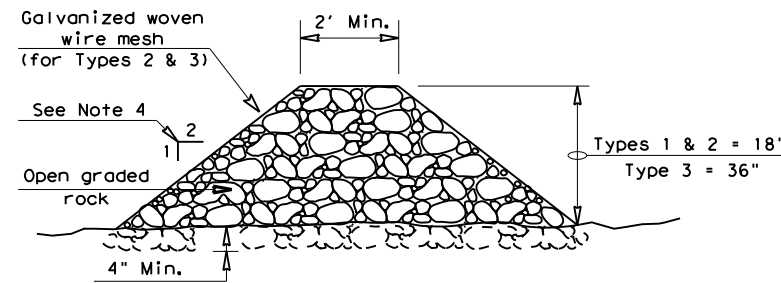


**FILTER DAM AT SEDIMENT TRAP**

(RFD1) OR (RFD2)



**PROFILE**



**SECTION C-C**

**ROCK FILTER DAM USAGE GUIDELINES**

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT<sup>2</sup> of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

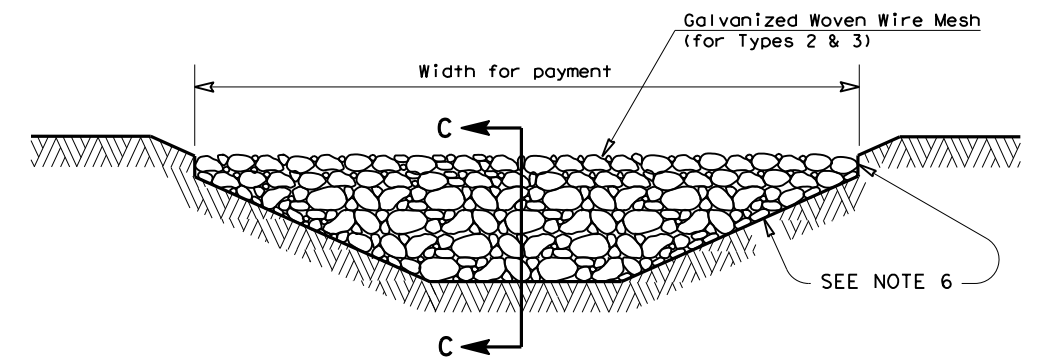
**Type 1 (18" high with no wire mesh) (3" to 6" aggregate):** Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximately 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

**Type 2 (18" high with wire mesh) (3" to 6" aggregate):** Type 2 may be used in ditches and at dike or swale outlets.

**Type 3 (36" high with wire mesh) (4" to 8" aggregate):** Type 3 may be used in stream flow and should be secured to the stream bed.

**Type 4 (Sack gabions) (3" to 6" aggregate):** Type 4 May be used in ditches and smaller channels to form an erosion control dam.

**Type 5:** Provide rock filter dams as shown on plans.



**FILTER DAM AT CHANNEL SECTIONS**

(RFD1) OR (RFD2) OR (RFD3)

**GENERAL NOTES**

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with 3/4" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 1/2" x 3 1/4".
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

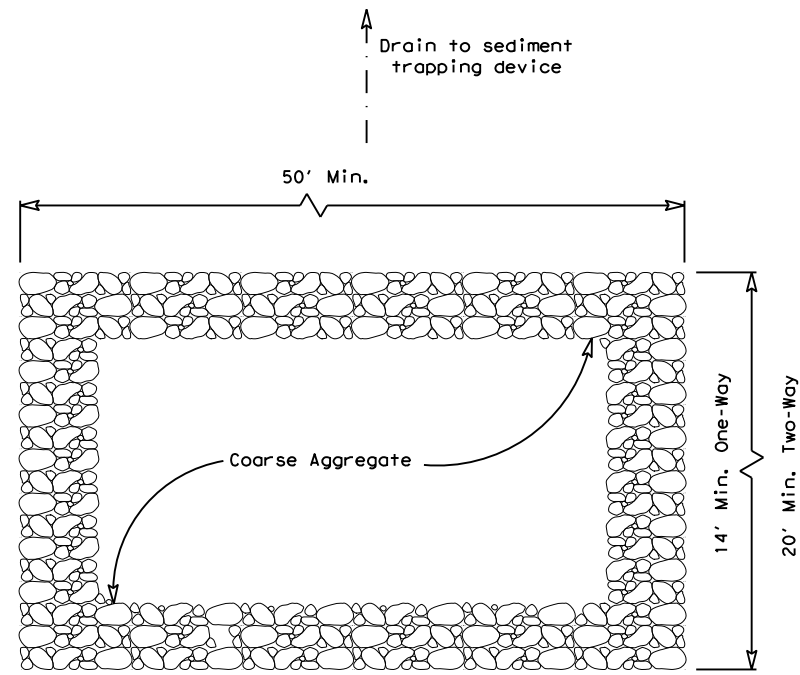
**PLAN SHEET LEGEND**

- Type 1 Rock Filter Dam (RFD1)
- Type 2 Rock Filter Dam (RFD2)
- Type 3 Rock Filter Dam (RFD3)
- Type 4 Rock Filter Dam (RFD4)

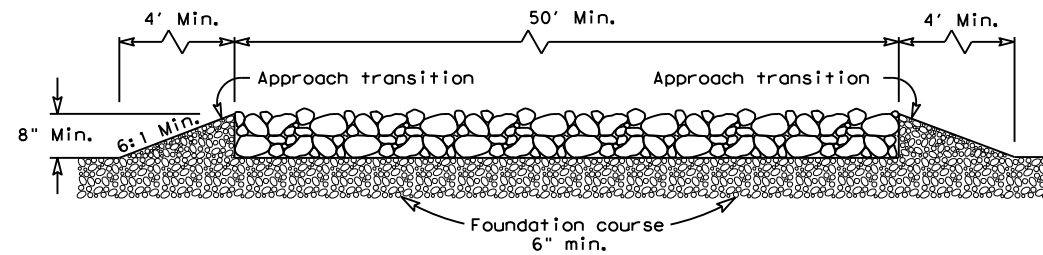
		Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>ROCK FILTER DAMS</b> <b>EC(2)-16</b>			
FILE: ec216	DN: TxDOT	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT: 0095	SECT: 04	JOB: 074, ETC.
REVISIONS	DIST: DAL	COUNTY: KAUFMAN	HIGHWAY: US 80
			SHEET NO.: 101

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PLAN VIEW

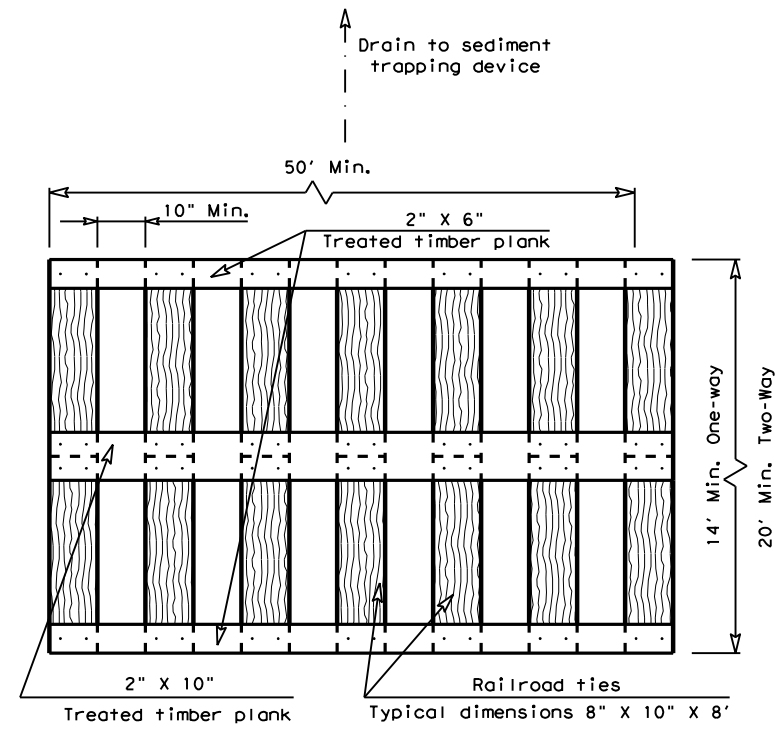


ELEVATION VIEW

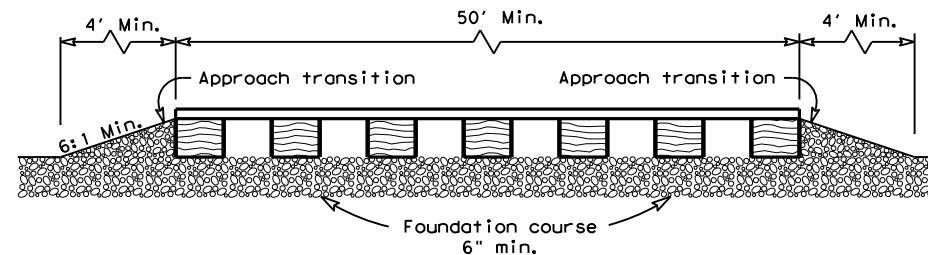
CONSTRUCTION EXIT (TYPE 1)  
 ROCK CONSTRUCTION (LONG TERM)

**GENERAL NOTES (TYPE 1)**

- The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
- The coarse aggregate should be open graded with a size of 4" to 8".
- The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
- The construction exit shall be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW

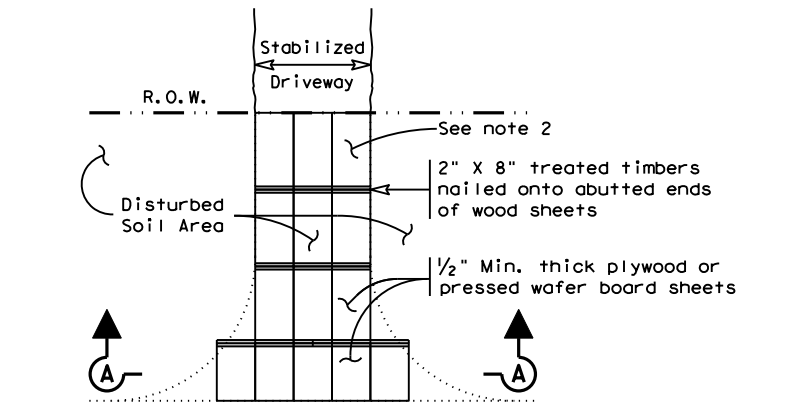


ELEVATION VIEW

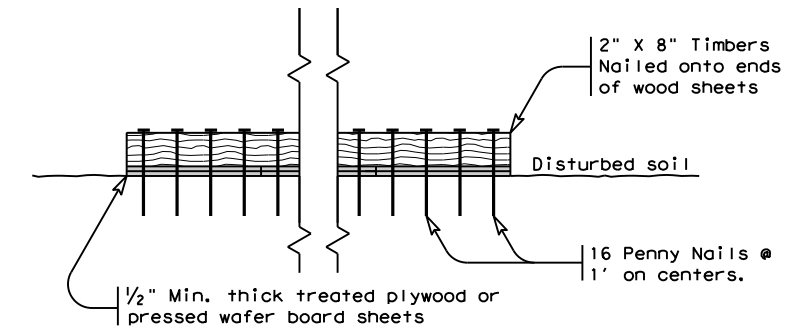
CONSTRUCTION EXIT (TYPE 2)  
 TIMBER CONSTRUCTION (LONG TERM)

**GENERAL NOTES (TYPE 2)**

- The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
- The treated timber planks shall be attached to the railroad ties with 1/2" x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
- The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
- The construction exit should be graded to allow drainage to a sediment trapping device.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.
- Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.



PLAN VIEW



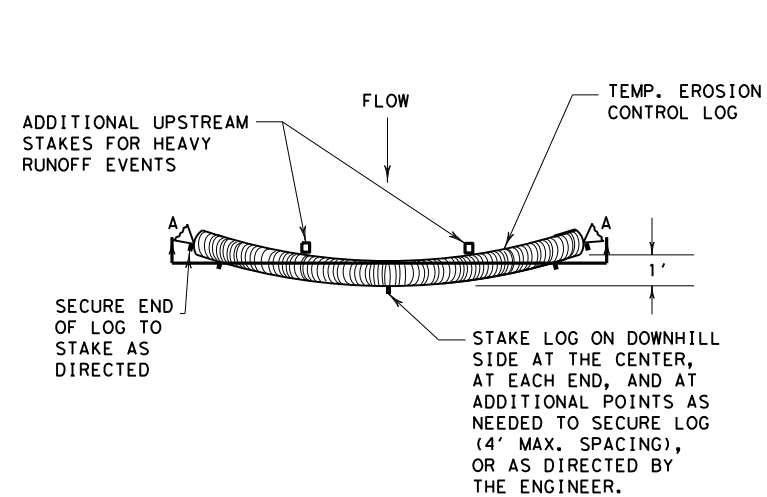
SECTION A-A  
 CONSTRUCTION EXIT (TYPE 3)  
 SHORT TERM

**GENERAL NOTES (TYPE 3)**

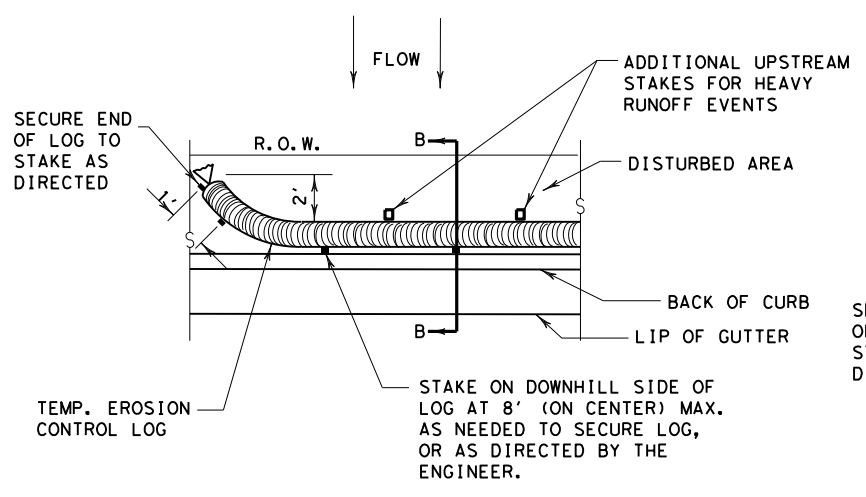
- The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
- The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
- The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
- The guidelines shown hereon are suggestions only and may be modified by the Engineer.

				Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>CONSTRUCTION EXITS</b> <b>EC(3)-16</b>					
FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
	0095	04	074, ETC.	US 80	
	DIST	COUNTY	SHEET NO.		
	DAL	KAUFMAN	102		

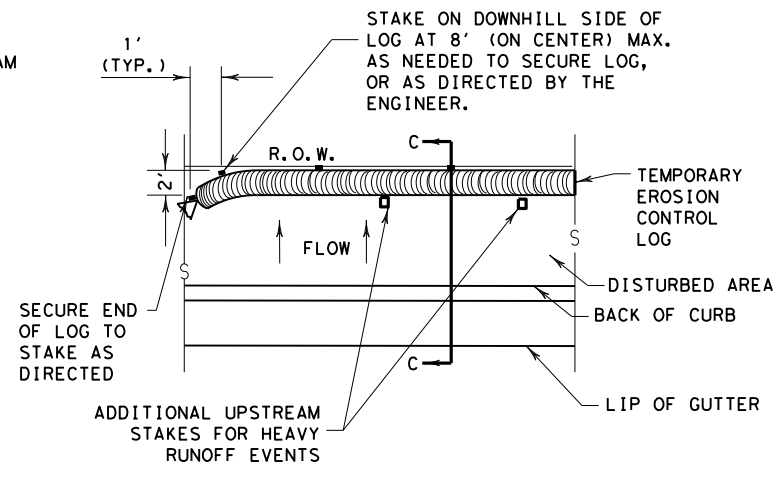
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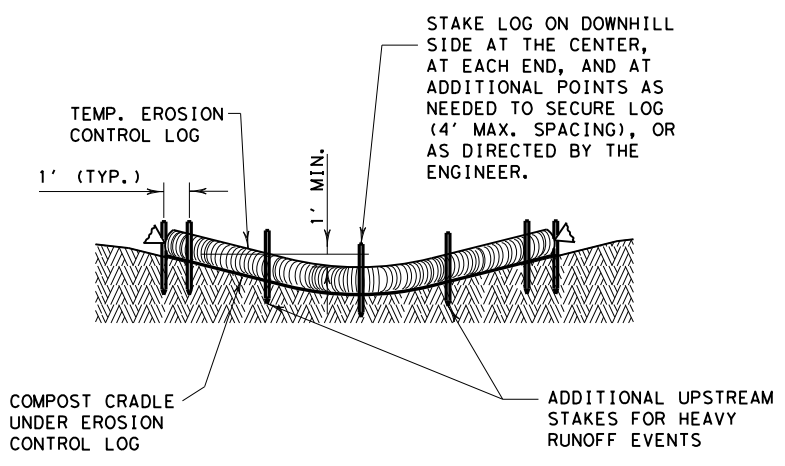
PLAN VIEW



PLAN VIEW



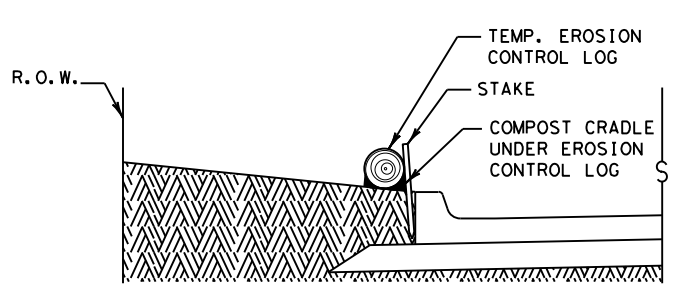
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

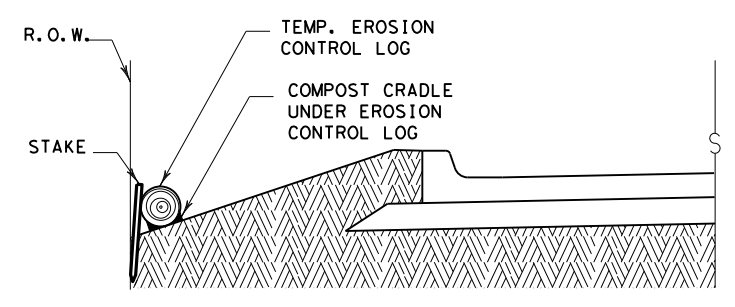
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

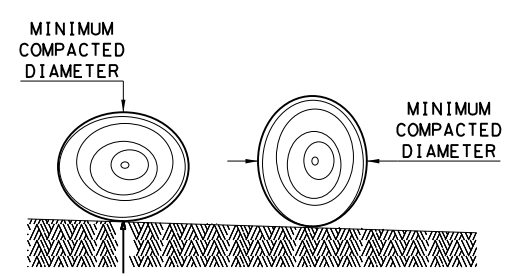
CL-BOC



SECTION C-C

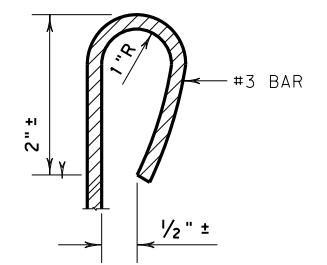
EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

- LEGEND**
- CL-D EROSION CONTROL LOG DAM
  - CL-BOC EROSION CONTROL LOG AT BACK OF CURB
  - CL-ROW EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
  - CL-SST EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
  - CL-SSL EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
  - CL-DI EROSION CONTROL LOG AT DROP INLET
  - CL-CI EROSION CONTROL LOG AT CURB INLET
  - CL-GI EROSION CONTROL LOG AT CURB & GRATE INLET



REBAR STAKE DETAIL

**SEDIMENT BASIN & TRAP USAGE GUIDELINES**

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

**Log Traps:** The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

**GENERAL NOTES:**

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

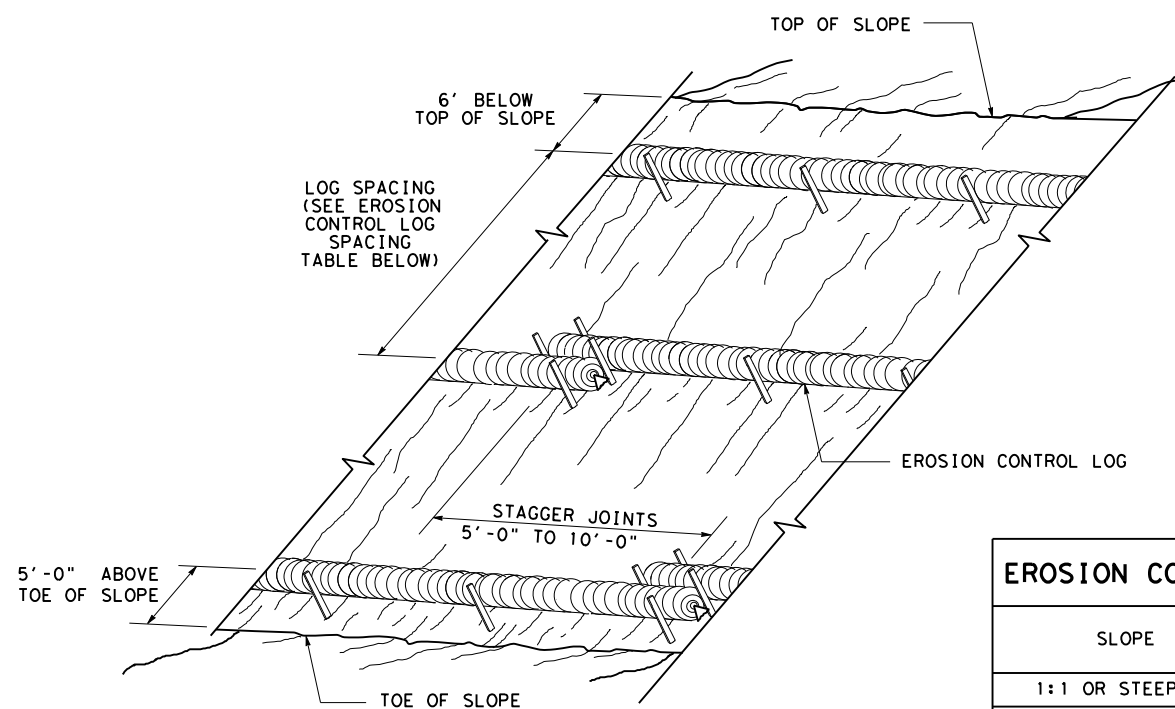
SHEET 1 OF 3

		<b>Design Division Standard</b>	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b>			
<b>EROSION CONTROL LOG</b>			
<b>EC (9) - 16</b>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0095	04	074, ETC.
	DIST	COUNTY	SHEET NO.
	DAL	KAUFMAN	103

DATE: FILE:

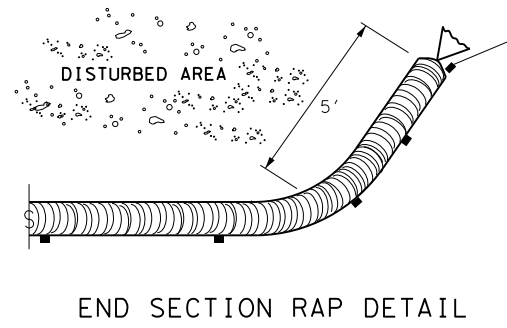
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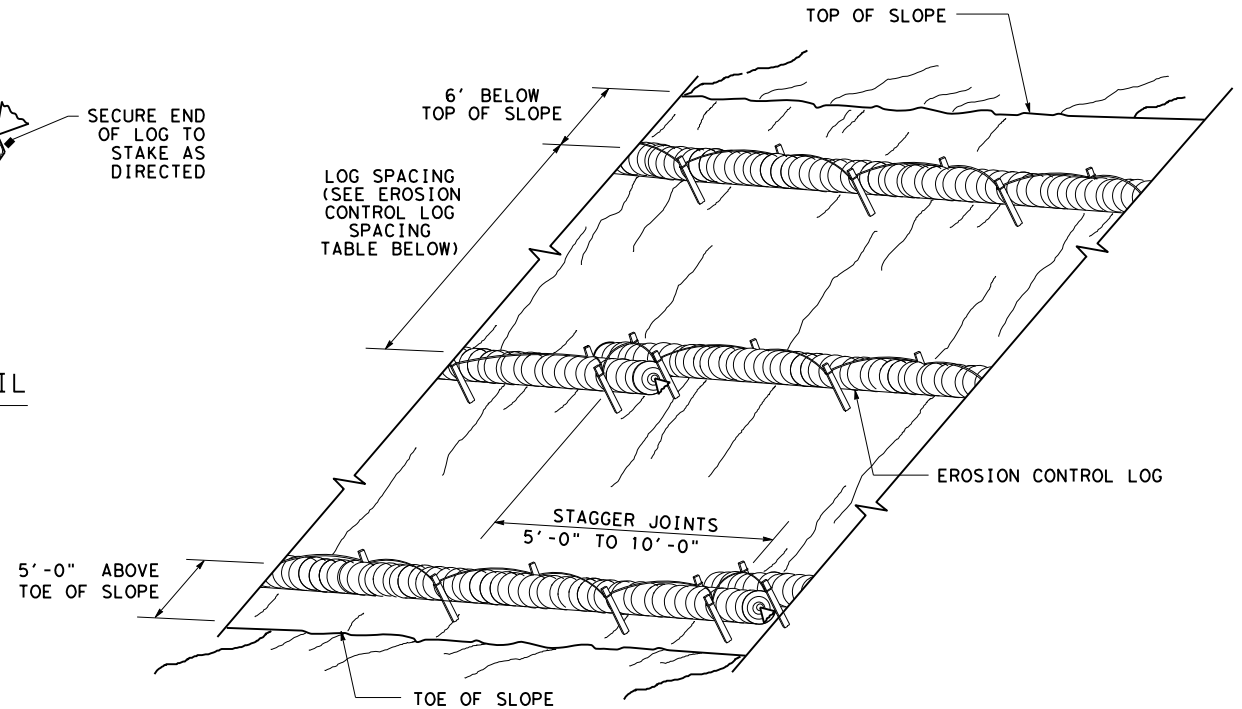


**EROSION CONTROL LOGS ON SLOPES  
STAKE AND TRENCHING ANCHORING**

CL-SST



**END SECTION RAP DETAIL**

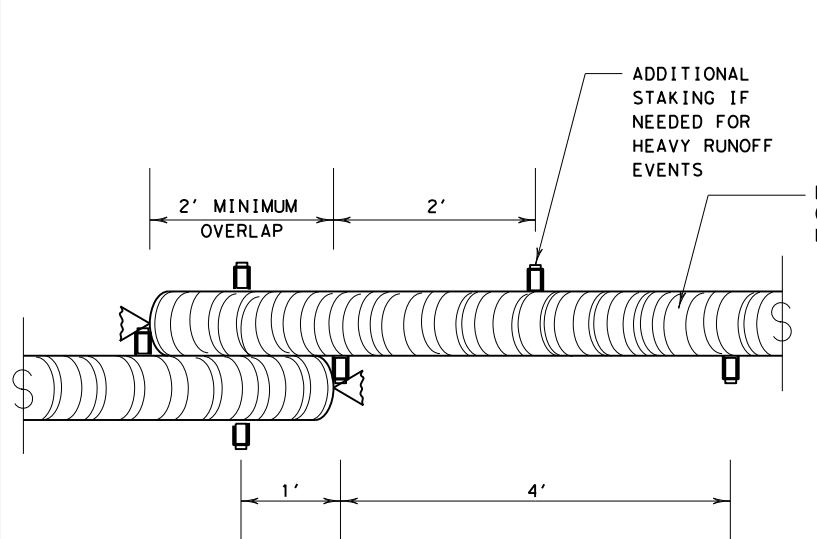


**EROSION CONTROL LOGS ON SLOPES  
STAKE AND LASHING ANCHORING**

CL-SSL

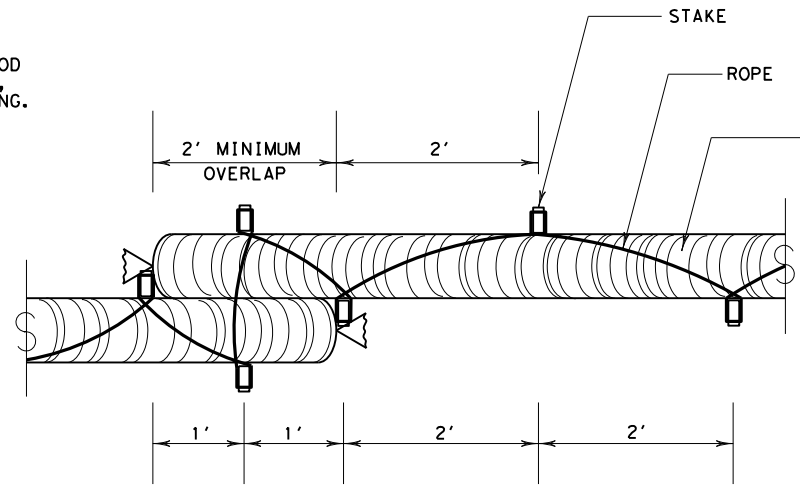
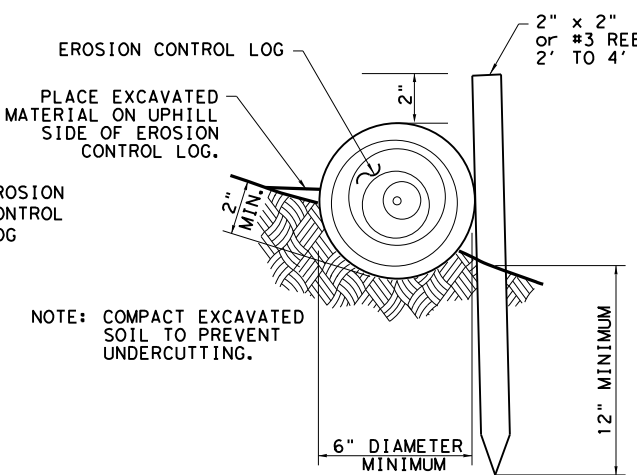
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

\* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:  
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;  
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



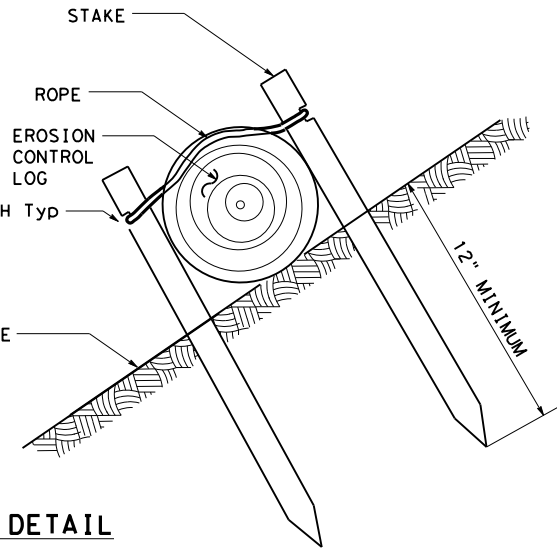
**STAKE AND TRENCHING ANCHORING DETAIL**

CL-SST

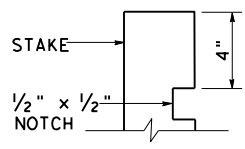


**STAKE AND LASHING ANCHORING DETAIL**

CL-SSL



TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"



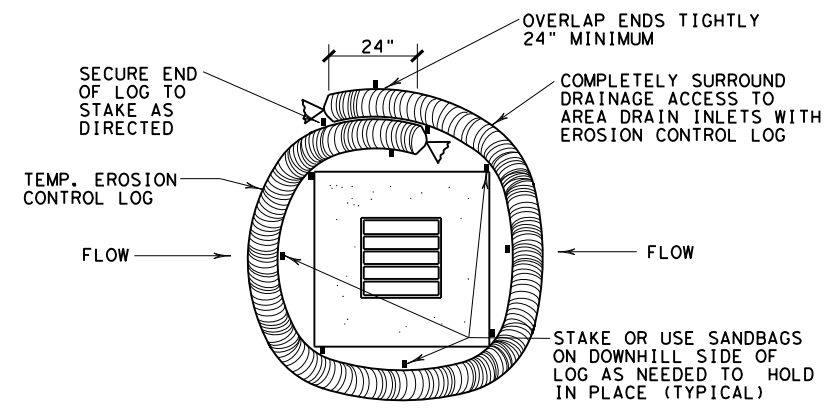
**STAKE NOTCH DETAIL**

SHEET 2 OF 3

		Design Division Standard	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG EC (9) - 16</b>			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0095	04	074, ETC.
DIST	COUNTY		SHEET NO.
DAL	KAUFMAN		104

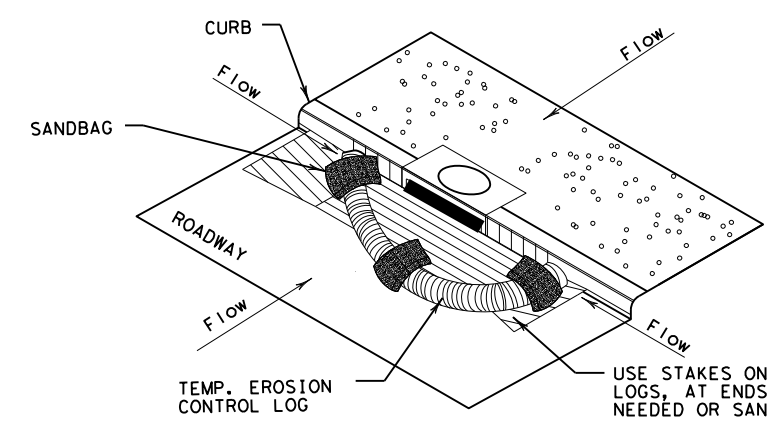


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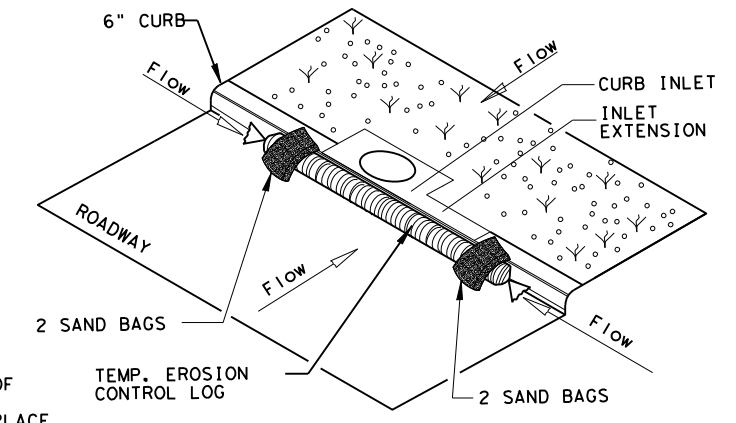
**EROSION CONTROL LOG AT DROP INLET**

CL-DI



**EROSION CONTROL LOG AT CURB INLET**

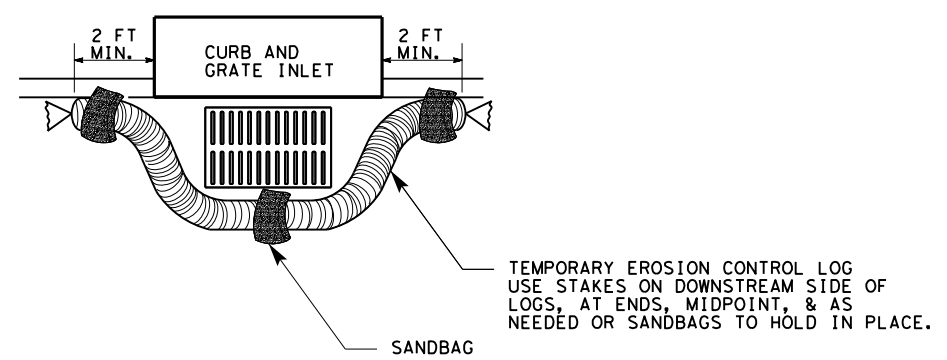
CL-CI



**EROSION CONTROL LOG AT CURB INLET**

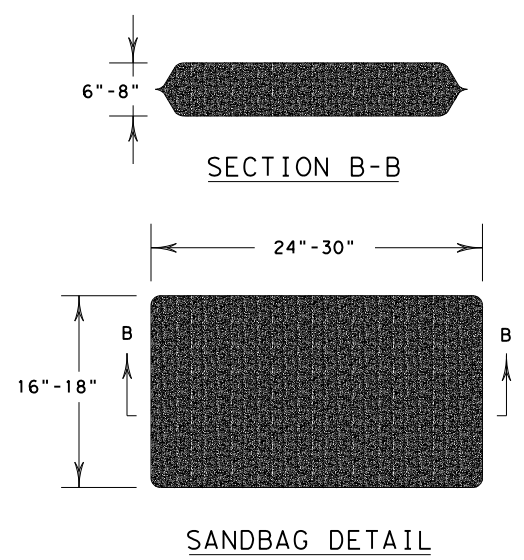
CL-CI

NOTE:  
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



**EROSION CONTROL LOG AT CURB & GRADE INLET**

CL-GI



SHEET 3 OF 3

		<i>Design Division Standard</i>	
<b>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</b> <b>EROSION CONTROL LOG</b> <b>EC (9) - 16</b>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
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REVISIONS	0095	04	074, ETC.
	DIST	COUNTY	SHEET NO.
	DAL	KAUFMAN	105

DATE:  
FILE:

USER ID

**SURFACE PREPARATION** ITEM 160\* TOPSOIL SY / ITEM 161\* COMPOST MANUF. TOPSOIL (BOS) (4") SY

**SURFACE PREPARATION**

Prepare planting area surface BEFORE placing Topsoil, Compost, Fertilizer, Seed and/or Sod. Once project area has been completed to final lines, grade and compaction, remove objectionable materials from planting area surface and cultivate existing surface to a depth of 4 inches, unless otherwise specified or directed.

Refer to Items 160 and 161 of TxDOT 2014 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.

**TOPSOIL NOTES:**

- When Topsoil is specified under Item 160, use suitable material salvaged from the project ROW in accordance with Item 160 specifications, and/or secure additional good material from approved sources.
- Topsoil shall include only the top 6 inches of its native surface, and be easily cultivated, fertile, erosion-resistant and free of objectionable materials.
- Topsoil obtained from sites outside of the ROW must come from approved sources and have a pH between 5.5 and 8.5 su.
- Place Topsoil on pre-cultivated surface, spread to a uniform loose cover at thickness specified, and shape per plans. Water and roll the finished surface with a light roller or other suitable equipment per Item 160.3; do not over-compact.

**COMPOST NOTES:**

- When Compost Manufactured Topsoil (4") is specified under Item 161, use compost meeting all requirements of Item 161.2 and Table 1. Provide quality control (QC) documentation and obtain Engineer approval prior to compost delivery.
- Contractor shall provide tickets/invoices that document material type, quantity and placement for all compost delivered.
- Additional topsoil may be required to be imported to achieve the compost/topsoil mix ratio. Topsoil must meet Item 160 specifications.

**APPLICATION OF COMPOST MANUFACTURED TOPSOIL (4")**

AFTER Surface Preparation, uniformly spread a 1-inch layer of compost on-grade with 3 inches topsoil over pre-cultivated planting area. (25% compost and 75% topsoil = 1" compost and 3" topsoil.) Then mix compost and topsoil together by cultivating the compost into the topsoil (by till or disk) to a 4-inch (4") depth. Roll the finished surface with a light corrugated drum; do not over-compact.

**FERTILIZER** ITEM 166\* FERTILIZER AC

**SOIL ANALYSIS FOR FERTILIZER APPLICATION RATE**

Unless otherwise stated in the plans, Contractor shall perform at least one soil analysis on each project before fertilization, and submit results to Engineer with recommended fertilizer rates based on soil analysis. Engineer may direct sample location(s). Soil analysis may be waived if both compost and sod are used on entire project.

**FERTILIZER NOTES:**

- Refer to Item 166 of TxDOT 2014 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
- Apply fertilizer BEFORE seeding, or AFTER placing sod.
- Use fertilizer containing nitrogen (N), phosphoric acid (P) and potash (K) nutrients, unless otherwise specified. At least 50% of the Nitrogen component shall be a slow-release sulfur-coated urea as described in Item 166.3. Do not apply more than 60 lbs Nitrogen per acre without Engineer concurrence.
- Deliver fertilizer in bags, clearly labeled to show contents, unless otherwise specified or approved prior to delivery. When non-bagged, loose fertilizer is approved, provide documentation for each load of material delivered, to validate authenticity of the material.
- Apply fertilizer uniformly, as a dry, granular material, essentially dust-free, and do not mix with water for application as a slurry.
- When both temporary and permanent seeding are specified for the same area, apply half of the required fertilizer before the temporary seeding operation and the other half before the permanent seeding operation.

**SEEDING FOR EROSION CONTROL** ITEM 164\* DRILL SEEDING AC

RECOMMENDED PLANTING SEASON	PERMANENT RURAL SEED MIX ITEM 164 - DRILL SEEDING (PERM) (RURAL) (CLAY)	PERMANENT URBAN SEED MIX ITEM 164 - DRILL SEEDING (PERM) (URBAN) (CLAY)	TEMPORARY DRILL SEED MIX ITEM 164 - DRILL SEEDING (TEMP) (WARM OR COOL)
<b>WARM SEASON</b> Mar. 15th, April, May, June, July, August, Sept. 15th	Green Sprangletop (Van Horn) - 1.0 lbs/AC Sideoats Grama (Haskell) - 1.0 lbs/AC Texas Grama (Atascosa) - 1.0 lbs/AC Hairy Grama (Chaparral) - 0.4 lbs/AC Shortspike Windmillgrass (Welder) - 0.2 lbs/AC Little Bluestem (OK Select) - 0.8 lbs/AC Purple Prairie Clover (Cuero) - 0.6 lbs/AC Engelmann Daisy (Eldorado) - 0.75 lbs/AC Illinois Bundlesflower - 1.3 lbs/AC Awnless Bushsunflower (Plateau) - 0.2 lbs/AC	Green Sprangletop (Leptochloa dubia) - 0.3 lbs/AC Sideoats Grama (El Reno) (Bouteloua curtipendula) - 3.6 lbs/AC Buffalograss (Texoka) (Buchloe dactyloides) - 1.6 lbs/AC Bermudagrass (Cynodon dactylon) - 2.4 lbs/AC	Foxtail Millet (Setaria italica) - 34 lbs/AC
<b>COOL SEASON</b> Sept 16th, Oct, Nov, Dec, Jan, Feb, Mar 14th			Pure Live Seed Rate** Tall Fescue (Festuca arundinaceae) - 4.5 lbs/AC Western Wheatgrass (Agropyron smithii) - 5.6 lbs/AC Red Winter Wheat (Triticum aestivum) - 34 lbs/AC Cereal Rye - 34 lbs/AC

**SEEDING NOTES:**

- When seeding is specified under Item 164, refer to TxDOT 2014 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown. Materials and construction shall meet specifications.
- Conduct seeding upon completion of each applicable construction stage (dependent upon planting season requirements), without compensation for additional move-ins.
- Place seed AFTER preparing planting area surface. Refer to Surface Preparation detail in this sheet, as well as Topsoil Item 160 and Compost Manufactured Topsoil Item 161 when specified. Apply fertilizer per Item 166 BEFORE seeding, per specifications and this sheet, to help drill the fertilizer into the soil.
- When temporary grasses are well-established and more than 2 inches tall, mow planting area before seeding permanent grasses; mowing for this purpose will be subsidiary. When vegetation is not already well-established, cultivate planting area to a depth as described in Item 164.3, before temporary seeding and before permanent seeding.
- Seed material must be appropriate to the location, soil type and season. Use the seed mix species and pure live seed rates designated in Tables 1-4 of the TxDOT 2014 Standard Specifications\* for Item 164, unless otherwise specified.
- All seed shall meet labeling, delivery, analysis, and testing requirements described in Item 164.2.1. Deliver seed in labeled, unopened bags or containers to Engineer prior to planting.
- Uniformly plant seed over the designated planting area, along the contour of slopes, and drill seed to a depth as described in Item 164.3.4.
- Hydroseeding may be allowed, when specified or Engineer concurs.
- Implement and continue Vegetative Watering per the schedule, rate and volume specified under Item 168.

**TXDOT REFERENCE MATERIALS:**

- "STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES" 2014
- "A GUIDANCE TO ROADSIDE VEGETATION ESTABLISHMENT" 2004
- ONLINE TRAINING COURSE: MNT415 REVEGETATION DURING CONSTRUCTION
- DALLAS DISTRICT "VEGETATION ESTABLISHMENT GUIDELINES"

**SODDING FOR EROSION CONTROL** ITEM 162\* BLOCK SOD (BERMUDA) SY

BLOCK OR ROLL SOD	COMMON NAME	BOTANICAL NAME
	Common Bermuda Grass	Cynodon dactylon

**SODDING NOTES:**

- Refer to Item 162 of TxDOT 2014 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
- Place sod between the average date of the last freeze in the Spring and 6 weeks before the average date of the first freeze in the Fall, per the Texas Almanac for the project area.
- Place sod only AFTER soil surface preparation is complete as detailed in this sheet. Dry soil may require pre-watering.
- Place all sod (blocks or rolls) within 24 hours of delivery to the site, and keep moist from the time it is dug up until it is planted. Sod with dried roots will not be accepted.
- Place sod with joints alternating on each row to prevent all joints from lining up, and place blocks firmly against adjacent blocks. Roll, tamp and trim sod per Item 162.3.
- Place fertilizer promptly AFTER sodding operation is complete in each area.
- Water sod immediately following placement, and continue Vegetative Watering per Item 168.

**VEGETATIVE WATERING FOR ESTABLISHING SEED AND SOD** ITEM 168\* VEGETATIVE WATERING MG

SEASON (Usual Months)	RATE	TIME SCHEDULE	TOTAL WATER ESTIMATE
SPRING & FALL (March, April, May, October)	7,000 gallons/acre per working day	Vegetative watering for seed shall begin on the day after rainfall described below and continue for 60 consecutive working days; vegetative watering for sod shall begin on the day the sod is placed and continue for a minimum of 15 consecutive working days.	420,000 gallons/acre (60 working days)
SUMMER (June, July, August, September)	12,000 gallons/acre per working day		720,000 gallons/acre (60 working days)
WINTER (November through February)	1,000 gallons/acre per working day	Vegetative watering for seed and/or sod shall begin on the day after placement for 15 consecutive working days	15,000 gallons/acre (15 working days)

Notes: Rate and frequency may be adjusted, with the approval of the Engineer, to meet site conditions (especially with sod). For informational purposes only: 1,000 gallons equals 1 MG

**VEGETATIVE WATERING NOTES:**

- Refer to Item 168 of TxDOT 2014 Standard Specifications\* for specifications, dimensions, volumes, and measurements that have been modified or not shown in plans. Materials and construction shall meet all specifications.
- Use clean water free of industrial waste and other substances harmful to vegetation growth, per Item 168.2.
- Use Vegetative Watering to keep the seed bed moist during germination; not to provide initial watering. After drill seeding, postpone watering operations until site receives at least 1/2-inch of natural rainfall in a single day. Delay watering operations for warm season grasses until soil temperature exceeds 70 degrees F.
- For sod, water immediately.
- All water distribution equipment shall be furnished and operated to provide water at a uniform and controllable rate. Use a metering device on all watering equipment.
- Evenly distribute water over entire area designated for seeding and/or sodding, using even spray patterns that do not disturb seed bed and/or dislodge seed from seed bed.
- Do not water between the hours of 12:00 p.m. and 6:00 p.m. when daytime temperatures exceed 95 degrees F.
- After initial establishment period, continue intermittent watering of newly established seed or sod at a rate of approximately 1-inch water/week, during summer months until end of contract.
- If 1/4-inch or more of rainfall occurs on site on any given working day, no vegetative watering will be needed on that working day. (Note: 1/4-inch rain equals 7,000 gallons of water per acre.)
- Should the Contractor fail to apply the specified amount of water within the time allowed, any seed or sod in poor condition shall be replaced, fertilized, and watered at Contractor's expense.

**ROADSIDE MOWING** ITEM 730\* PROJECT MAINTENANCE AC

**MOWING NOTES:**

- During project construction, once seed is established, use mowing to promote permanent grasses by mowing any remaining temporary grasses.
- Also mow established turf and ROW grasses in designated areas of project limits as specified or directed by Engineer.
- Remove litter and debris prior to mowing.
- Do not mow on wet ground when soil rutting can occur.
- Hand-trim around obstructions and stormwater control devices as needed.
- Maintain paved surfaces free of tracked soils and clipped vegetation.

**SEQUENCE OF WORK:**

- CULTIVATE SURFACE SOIL.
- PREPARE / PLACE TOPSOIL, OR
- PREPARE / PLACE COMPOST MANUFACTURED TOPSOIL.
- APPLY FERTILIZER AND THEN PLACE SEEDING, OR
- PLACE SOD AND THEN APPLY FERTILIZER.
- CONDUCT VEGETATIVE WATERING.
- CONDUCT ROADSIDE MOWING, AS DIRECTED.



**VEGETATION ESTABLISHMENT SHEET**  
(DALLAS DISTRICT)

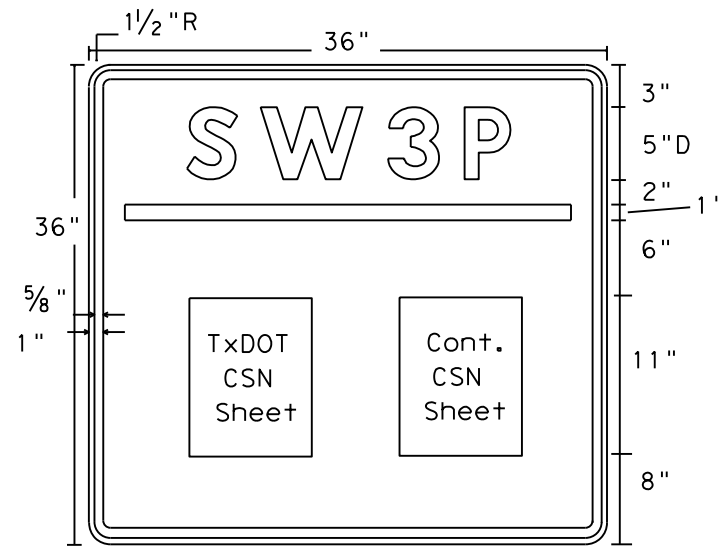
TEMPLATE REVISION DATE: 02/21/19

DESIGN CPB	FED. RD. DIV. NO. 6	FEDERAL AID PROJECT NO. (See Title Sheet)		HIGHWAY NO. US 80
GRAPHICS XXX	STATE TEXAS	DISTRICT DALLAS	COUNTY KAUFMAN	SHEET NO. 106
CHECK OC	CONTROL 0095	SECTION 04	JOB 074, ETC.	

DATE

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LEVELS DISPLAYED	1
PATH:	



**SW3P SIGN**  
TxDOT & Contractor  
Construction Site Note  
(CSN)

**Sign Dimensions**

36" X 36"

- Letters - White
- Numbers - White
- Border - White
- Background - Blue

**GENERAL NOTES:**

1. The alphabets and lateral spacing between letters and numerals shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways", (TMUTCD) latest edition, and the "Compliant Work Zone Traffic Control Devices List". Lateral spacing of text shall provide a balanced appearance. All materials shall conform to Department Specifications.
2. Legend and border may be applied by reverse screening process with transparent colored ink, cut-out white reflective sheeting applied to colored background or combination thereof. Background shall be reflective sheeting Type C.
3. CSN Sheets will be laminated and attached to the sign with an adhesive. Ensure sheets remain dry. (See Figure 1).
4. SW3P Signs should be placed just inside the ROW line at the project limits at a readable height. It may be placed perpendicular or parallel to ROW line. If the sign cannot be placed outside the clear zone, it will be mounted per TMUTCD requirements.
5. Final location of the signs will be as approved by the Engineer.

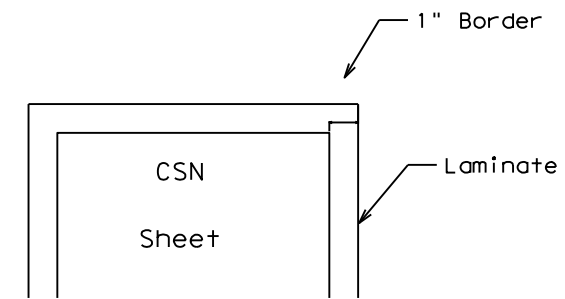
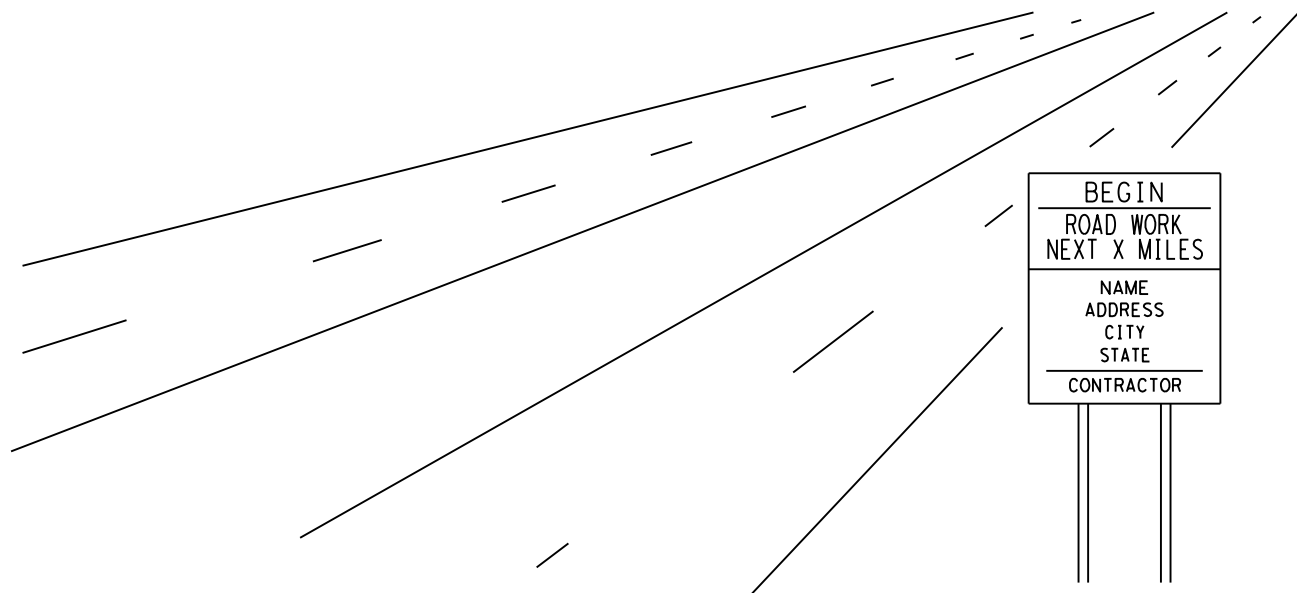


Figure 1

DEPARTMENT MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
FLAT SURFACE REFLECTIVE SHEETING	DMS-8300
VINYL NON-REFLECTIVE DECAL SHEETING	DMS-8320

COLOR	USAGE	REFLECTIVE SHEETING OR OTHER MATERIAL
BLUE	BACKGROUND	TYPE C (FLUORESCENT PRISMATIC)
WHITE	LEGEND & BORDERS	VINYL NON-REFLECTIVE DECAL SHEETING

Texas Department of Transportation  
DALLAS DISTRICT STANDARD

**SW3P SIGN SHEET**

FILE#	DW: TxDOT	CR: OC	DW:	CR:
©TxDOT 2016	DISTRICT	PROJECT NO.		SHEET
	18	(SEE TITLE SHEET)		107
REVISION DATE: 10-16-15	COUNTY	CONTROL	SECT	JOB
	KAUFMAN	0095	04	074, ETC.
				HIGHWAY
				US 80