

STATE OF TEXAS  
DEPARTMENT OF TRANSPORTATION

DESIGN CPM	FED. RD. DIV. NO.	FEDERAL PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	F 2B24(322)		US 287
CHECK CPM	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK CPM	TEXAS	DALLAS	ELLIS	1
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

FINAL PLANS

NAME OF CONTRACTOR: \_\_\_\_\_  
DATE OF LETTING: \_\_\_\_\_  
DATE WORK BEGAN: \_\_\_\_\_  
DATE WORK COMPLETED: \_\_\_\_\_  
DATE WORK ACCEPTED: \_\_\_\_\_  
SUMMARY OF CHANGE ORDERS:

PLANS OF PROPOSED  
STATE HIGHWAY IMPROVEMENT

FEDERAL PROJECT  
F 2B24(322)  
CSJ: 0172-05-129

US 287  
ELLIS COUNTY

LIMITS: NORTH OF WALNUT GROVE RD TO BUS 287R

ROADWAY 19,700.00 FT = 3.731 MI  
BRIDGE 0.00 FT = 0.000 MI  
TOTAL 19,700.00 FT = 3.731 MI

FOR THE CONSTRUCTION OF: SAFETY IMPROVEMENT PROJECTS  
CONSISTING OF: REMOVE CROSSOVERS AND INSTALL U-TURN INTERSECTIONS

DESIGN SPEEDS AND FUNCTIONAL CLASSIFICATIONS

ROADWAY	FUNCTIONAL CLASSIFICATION	DESIGN SPEED
US 287	URBAN ARTERIAL	60 MPH

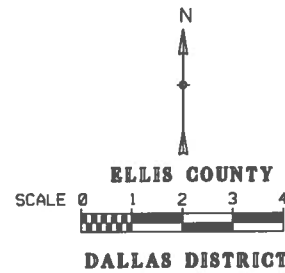
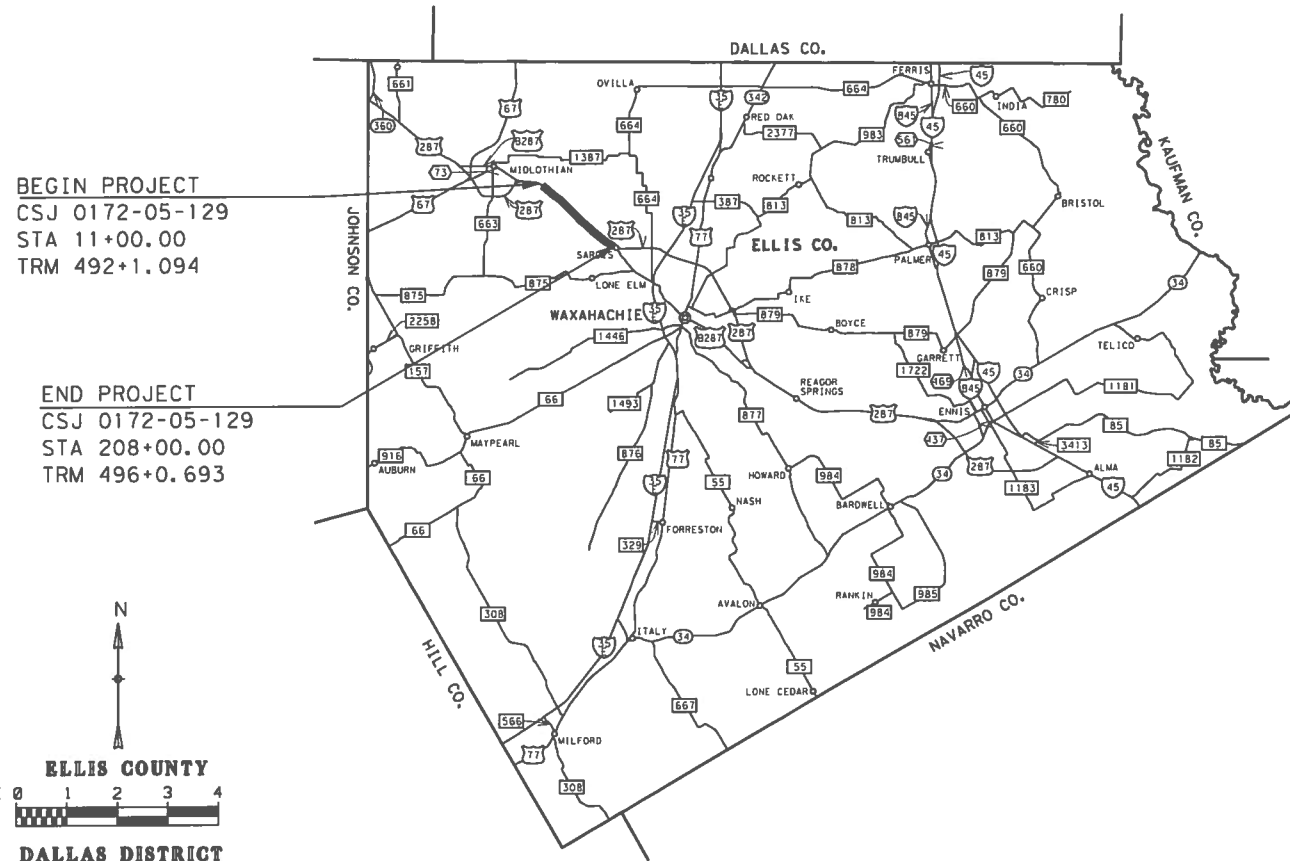
US 287 (2022) ADT = 50,161 (2042) ADT = 88,283

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: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 23, 2023)

 **BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

SUBMITTED FOR LETTING **2024-05-10**  
 , P.E.  
PROJECT MANAGER  
BRIDGEFARMER & ASSOCIATES, INC.





WORK WAS COMPLETED ACCORDING TO THE PLANS AND CONTRACT.


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

EXCEPTIONS: STA 31+00.00 TO STA 61+00.00  
EQUATIONS: NONE  
RR CROSSINGS: NONE

® Texas Department of Transportation  
2024

RECOMMENDED FOR LETTING 5/30/2024  
 , P.E.  
9869166860 OF TRANSPORTATION  
PLANNING & DEVELOPMENT

RECOMMENDED FOR LETTING 5/30/2024  
 , P.E.  
4A97FFA3D854C ENGINEER

APPROVED FOR LETTING 5/30/2024  
 , P.E.  
A879E0B70CD8464 ENGINEER

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2	INDEX OF SHEETS
3 - 4	PROJECT LAYOUT
5	EXISTING TYPICAL SECTIONS
6 - 9	PROPOSED TYPICAL SECTIONS
10, 10A - 10E	GENERAL NOTES
11, 11A - 11B	ESTIMATE & QUANTITY SHEETS
12	SUMMARY OF TCP QUANTITIES
13	SUMMARY OF ROADWAY QUANTITIES
14	SUMMARY OF REMOVAL QUANTITIES
15 - 16	SUMMARY OF EARTHWORK QUANTITIES
17	SUMMARY OF DRAINAGE QUANTITIES
18	SUMMARY OF SIGN QUANTITIES
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28	SUMMARY OF PAVEMENT MARKING QUANTITIES
29	SUMMARY OF SW3P QUANTITIES

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# 86	TCP(2-6)-18
# 87	TCP(3-2)-13
# 88	TCP(3-3)-14
# 89	TCP(5-1)-18
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# 92	TCP(S-4)-08A
# 93	TCP(S-5)-08
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# 95	WZ (RCD)-13
# 96	WZ(STPM)-23
# 97	WZ(UL)-13

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# 162	GBRLTR (TL4)-14
# 163	GF(31)-19
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# 165 - 166	GF(31)TR TL3-20
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# 171	SGT (10S) 31-16
# 172	SGT (11S) 31-18
# 173	SGT (12S) 31-18
# 174	SGT (15) 31-20
# 175	TE (HMAC)-11

SHEET	DESCRIPTION
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### **IV. RETAINING WALL DETAILS**

NONE

### **V. DRAINAGE DETAILS**

176 - 195	DRAINAGE AREA MAPS & PLAN & PROFILE
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210 - 212	MISC. DRAINAGE DETAILS

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# 220	PSET-SP
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# 223 - 224	SETP-CD
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### **VI. UTILITIES**

NONE

### **VII. BRIDGE DETAILS**

NONE

### **VIII. TRAFFIC DETAILS**

#### **SIGN AND PAVEMENT MARKING PLANS**

226 - 245	PROPOSED SIGNING & PAVEMENT MARKING PLAN
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#### **SIGN AND PAVEMENT MARKING STANDARDS**

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# 298 - 300	EC(9)-16
# 301	SW3P SIGN SHEET (DAL)
# 302	VEGETATION ESTABLISHMENT SHEET (DAL)



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

*Christopher P. Myrick* P.E. 2024-05-30  
SIGNATURE OF REGISTRANT DATE

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## INDEX OF SHEETS

SHEET 1 OF 1

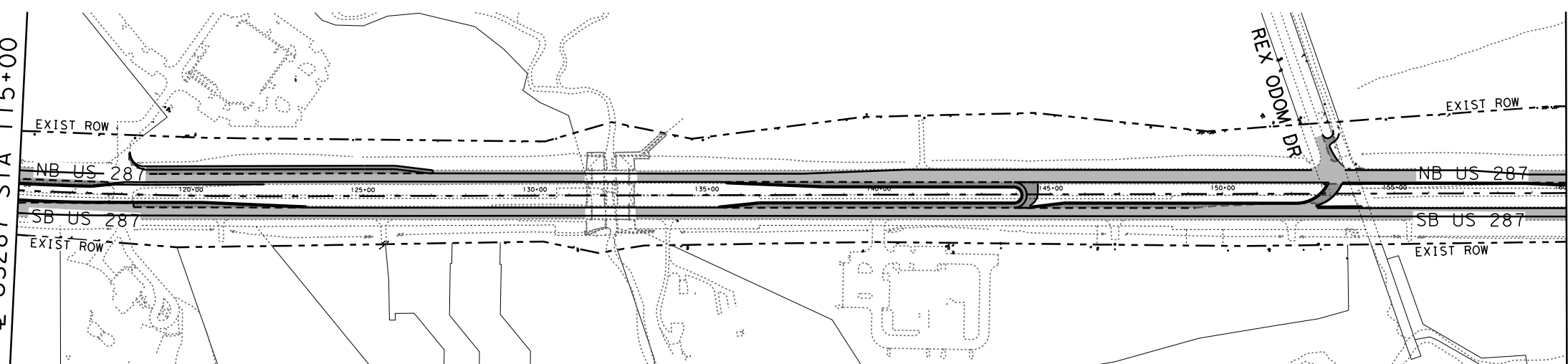
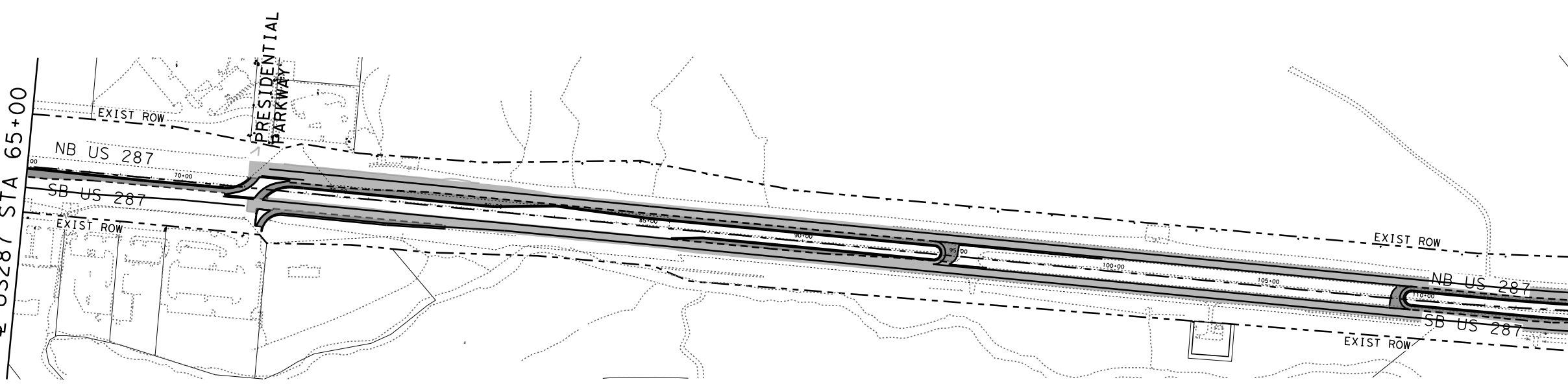
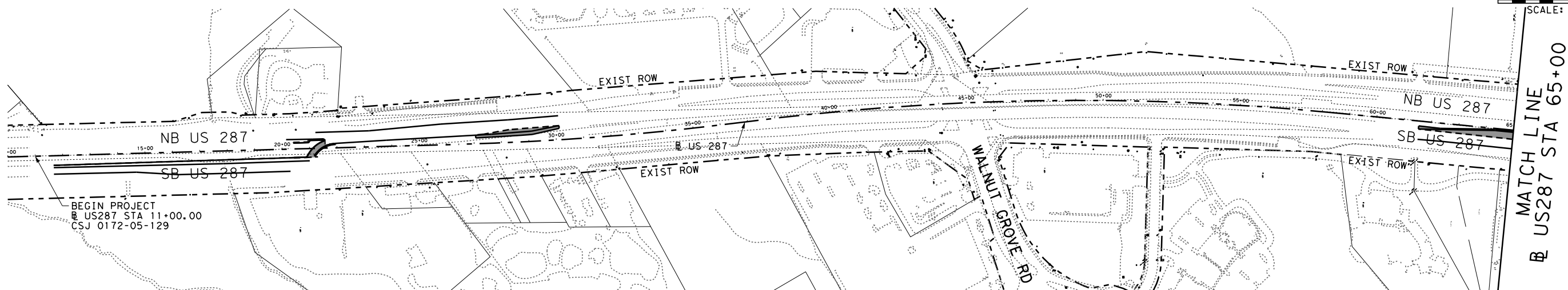
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GRAPHICS	CPM	STATE	DISTRICT	COUNTY
CHECK	CPM	TEXAS	DALLAS	ELLIS
CHECK	CPM	CONTROL	SECTION	JOB
CPM	0172	05	129	2

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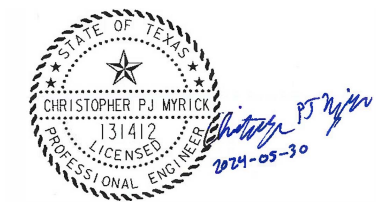
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LEGEND

- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROJECT LAYOUT**

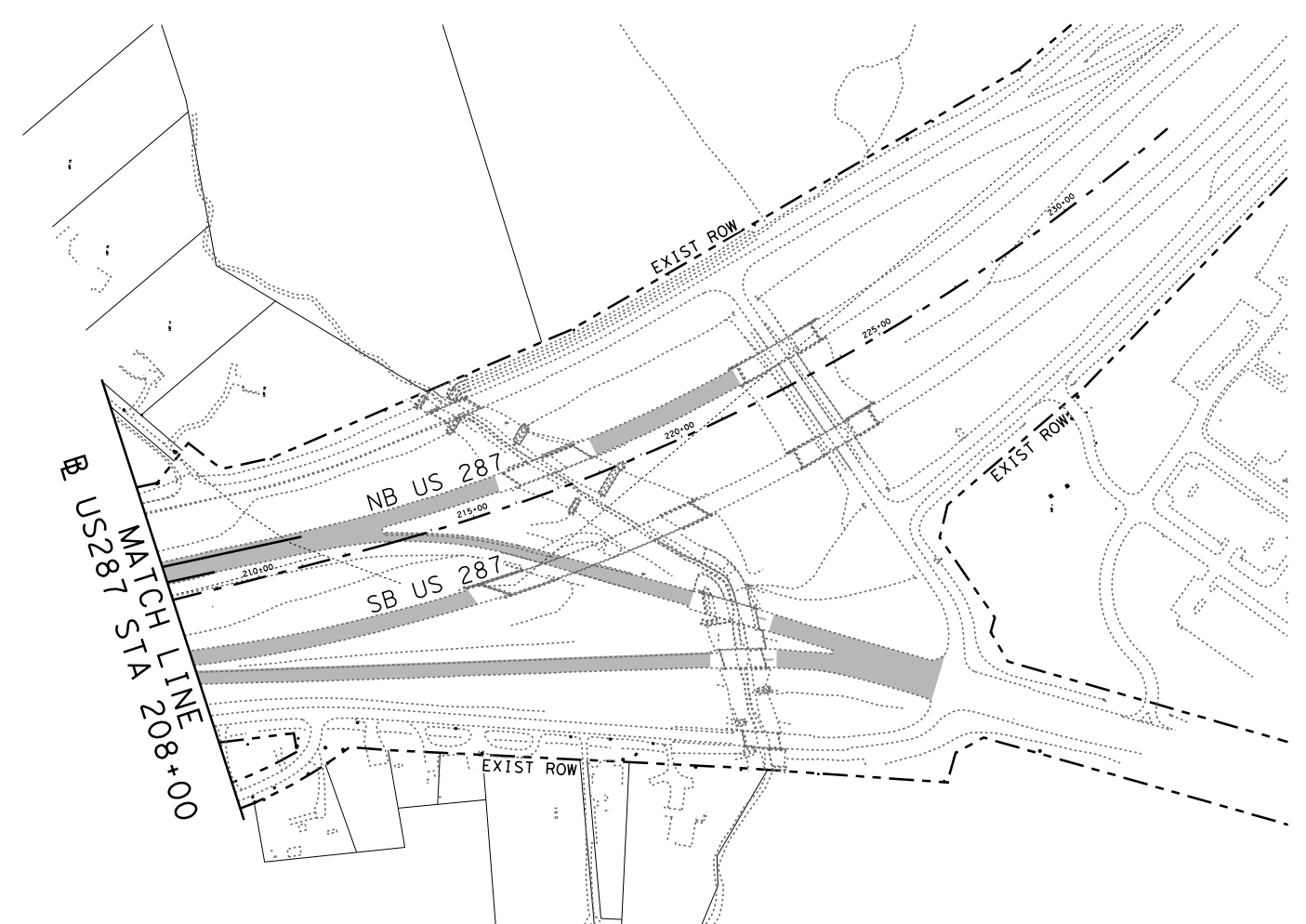
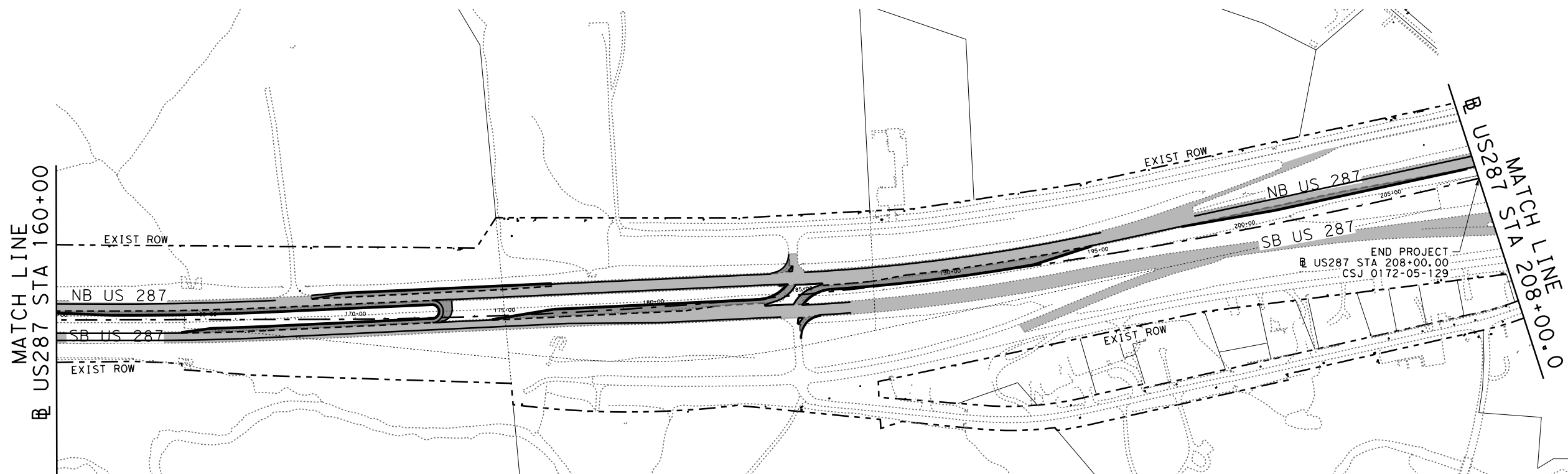
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CHECK CPM	STATE	DISTRICT	COUNTY
CHECK SA	TEXAS	DALLAS	ELLIS
	CONTROL	SECTION	JOB
	0172	05	129

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SCALE: 1" = 400'



### LEGEND

- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")



*Christopher P.J. Myrick*  
05/10/24

NO.	DATE	DESCRIPTION	APPROV.

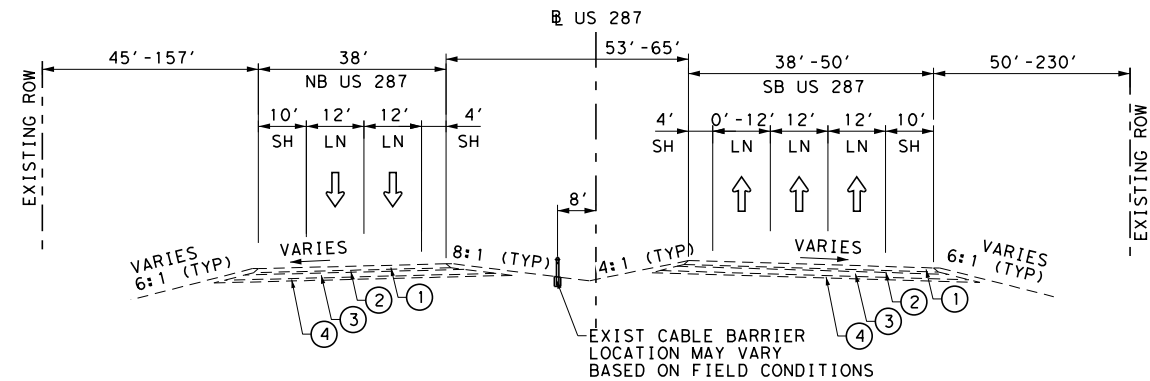
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 PROJECT LAYOUT

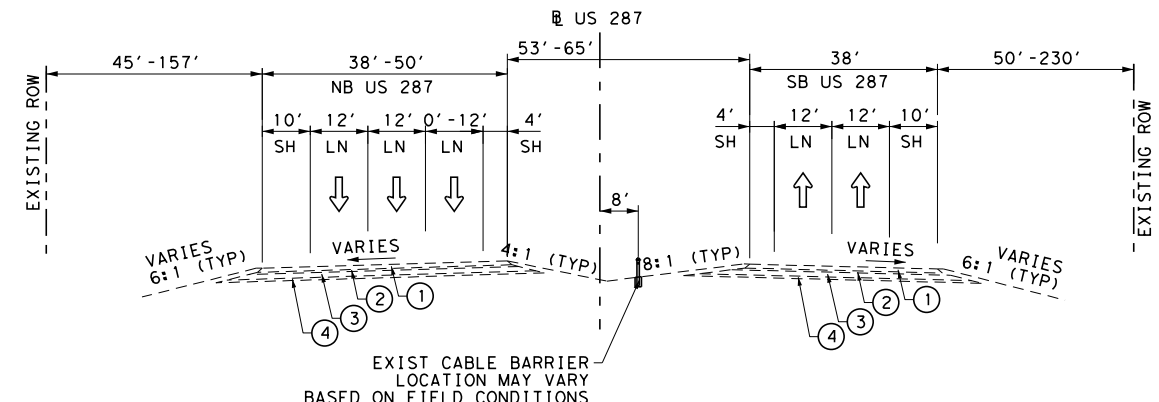
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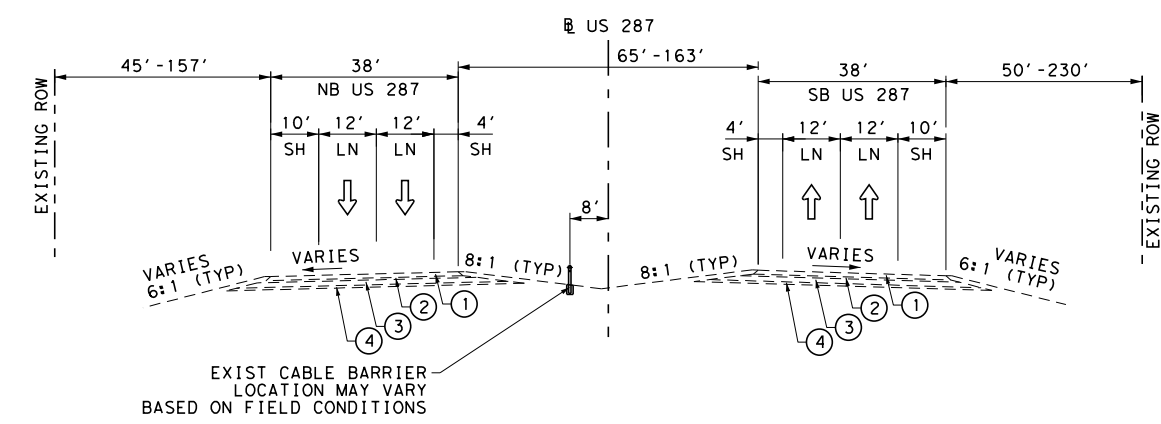
**EXISTING US 287 TYPICAL SECTION**

STA 11+66 TO STA 20+91  
 STA 65+66 TO STA 72+36  
 STA 90+71 TO STA 95+38  
 STA 114+20 TO STA 118+08  
 STA 149+21 TO STA 153+47  
 STA 181+07 TO STA 184+73



**EXISTING US 287 TYPICAL SECTION**

STA 20+91 TO STA 28+30  
 STA 72+36 TO STA 77+87  
 STA 118+08 TO STA 122+14  
 STA 153+47 TO STA 158+06  
 STA 184+73 TO STA 188+62



**EXISTING US 287 TYPICAL SECTION**

STA 28+30 TO STA 65+66  
 STA 77+87 TO STA 90+71  
 STA 99+63 TO STA 114+20  
 STA 122+14 TO STA 149+21  
 STA 158+06 TO STA 181+07  
 STA 188+62 TO STA 209+10

**TYPICAL SECTION LEGEND**

- ① 10" HMAC
- ② 5" ASPHALT STABILIZED BASE
- ③ 12" FOUNDATION COURSE
- ④ 6" LIME TREATED SUBGRADE (EXIST @ 5%)
- ⑤ 2" SP MIXES SP-C SAC-A PG70-22
- ⑥ 10" SP MIXES SP-B PG64-22
- ⑦ 0-2" SP MIXES SP-C SAC-A PG64-22 (LEVEL-UP)
- ⑧ 4" TY 1 CURB AND GUTTER
- ⑨ BACKFILL (2') TYPE A OR B

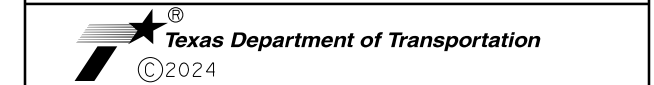
**NOTES:**

1. THE LOCATION OF THE CABLE BARRIER MAY BE LOCATED ON EITHER SIDE OF THE DITCH FLOWLINE. THE CABLE BARRIER MAY BE ADJUSTED FOR FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
2. SEE CABLE BARRIER STANDARDS FOR DETAILS NOT SHOWN.
3. WIRE ROPE/CABLE SAFETY SYSTEM WILL BEGIN AND END 50' MINIMUM FROM TURN AROUND.
4. UPON COMPLETION OF THE INSTALLATION OF WIRE ROPE/CABLE SAFETY SYSTEM, CONSTRUCT 3' WIDE MOW STRIP TO THE LENGTH SHOWN ELSEWHERE ON PLANS.
5. MOW STRIP SHALL BE REINFORCED CONCRETE WITH STEEL WIRE MESH.
6. CONTRACTOR TO PROVIDE TACK COAT BETWEEN EACH LIFT OF SUPERPAVE AND BETWEEN SUPERPAVE LAYERS.
7. PAVEMENT DESIGN PROVIDED BY OTHERS.



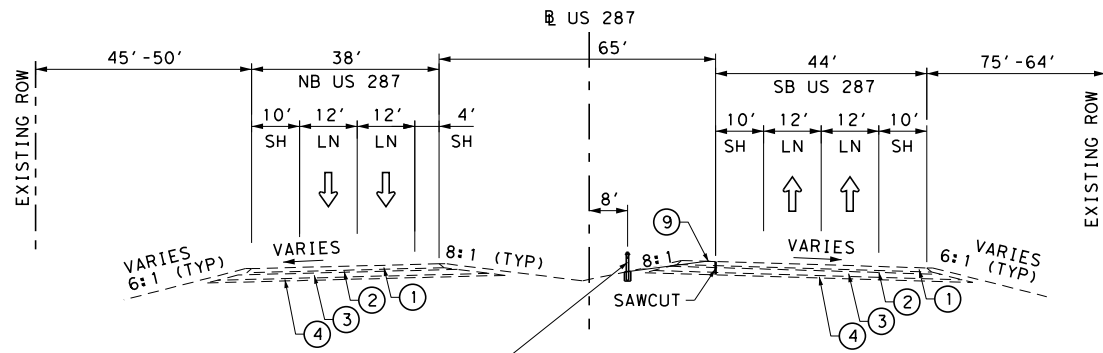
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**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
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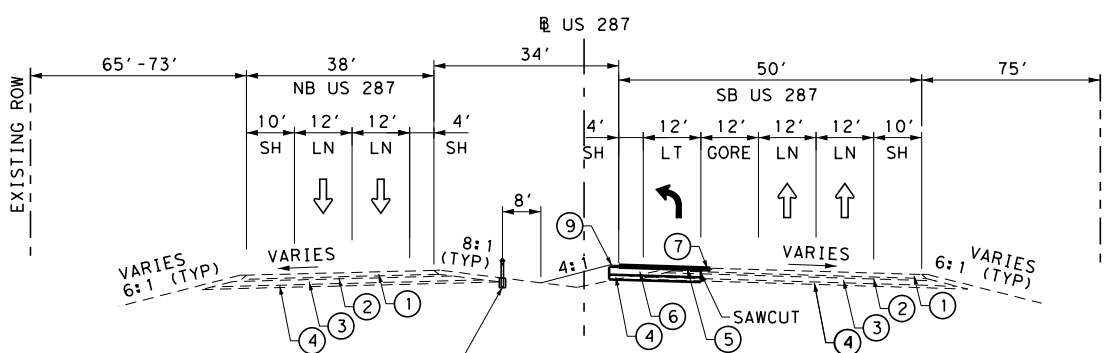


**US 287 EXISTING TYPICAL SECTIONS**

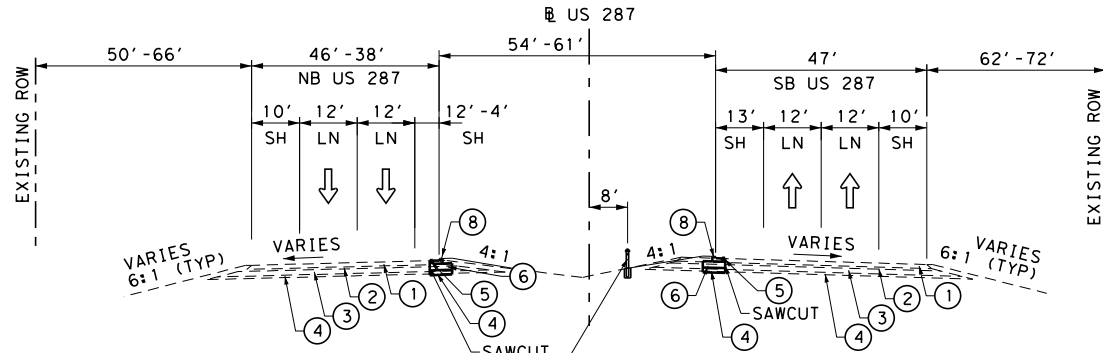
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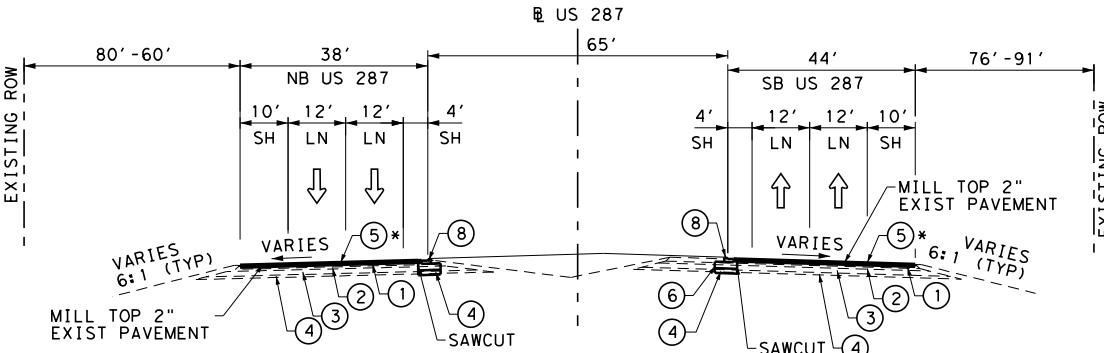
**PROPOSED US 287 TYPICAL SECTION**  
STA 11+66 TO STA 20+42



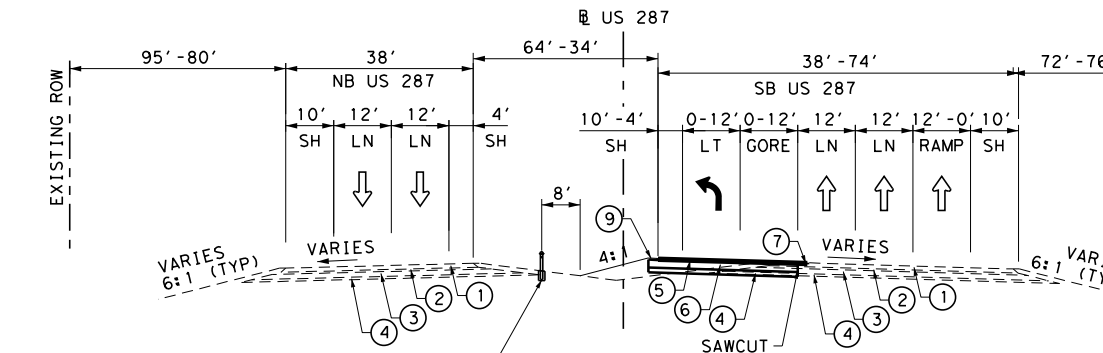
**PROPOSED US 287 TYPICAL SECTION**  
STA 67+17 TO STA 71+40



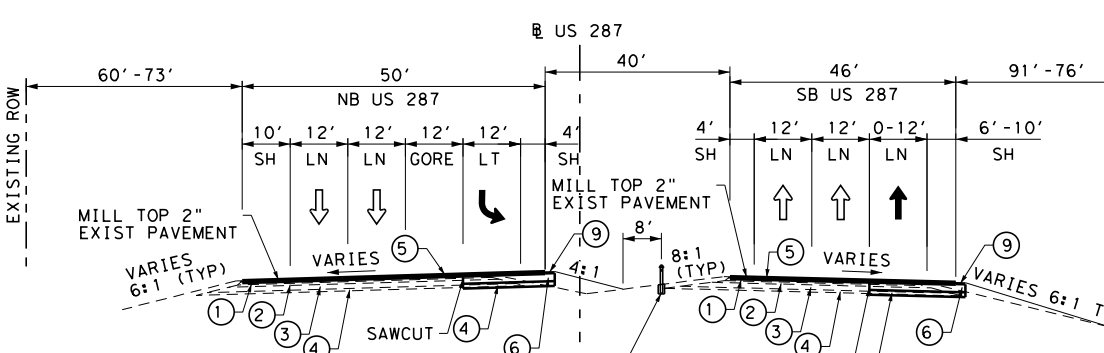
**PROPOSED US 287 TYPICAL SECTION**  
STA 20+42 TO STA 21+95



**PROPOSED US 287 TYPICAL SECTION**  
STA 71+40 TO STA 73+42  
\*(NO OVERLAY STA 71+40 TO STA 72+08)



**PROPOSED US 287 TYPICAL SECTION**  
STA 61+54 TO STA 67+17

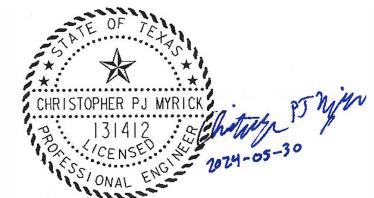


**PROPOSED US 287 TYPICAL SECTION**  
STA 73+42 TO STA 80+01

**TYPICAL SECTION LEGEND**

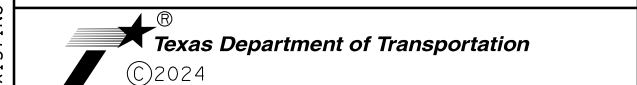
- ① 10" HMAC
- ② 5" ASPHALT STABILIZED BASE
- ③ 12" FOUNDATION COURSE
- ④ 6" LIME TREATED SUBGRADE (EXIST @ 5%)
- ⑤ 2" SP MIXES SP-C SAC-A PG70-22
- ⑥ 10" SP MIXES SP-B PG64-22
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- ⑧ 4" TY 1 CURB AND GUTTER
- ⑨ BACKFILL (2') TYPE A OR B

- NOTES:**
1. THE LOCATION OF THE CABLE BARRIER MAY BE LOCATED ON EITHER SIDE OF THE DITCH FLOWLINE. THE CABLE BARRIER MAY BE ADJUSTED FOR FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
  2. SEE CABLE BARRIER STANDARDS FOR DETAILS NOT SHOWN.
  3. WIRE ROPE/CABLE SAFETY SYSTEM WILL BEGIN AND END 50' MINIMUM FROM TURN AROUND.
  4. UPON COMPLETION OF THE INSTALLATION OF WIRE ROPE/CABLE SAFETY SYSTEM, CONSTRUCT 3' WIDE MOW STIP TO THE LENGTH SHOWN ELSEWHERE ON PLANS.
  5. MOW STRIP SHALL BE REINFORCED CONCRETE WITH STEEL WIRE MESH.
  6. CONTRACTOR TO PROVIDE TACK COAT BETWEEN EACH LIFT OF SUPERPAVE AND BETWEEN SUPERPAVE LAYERS.
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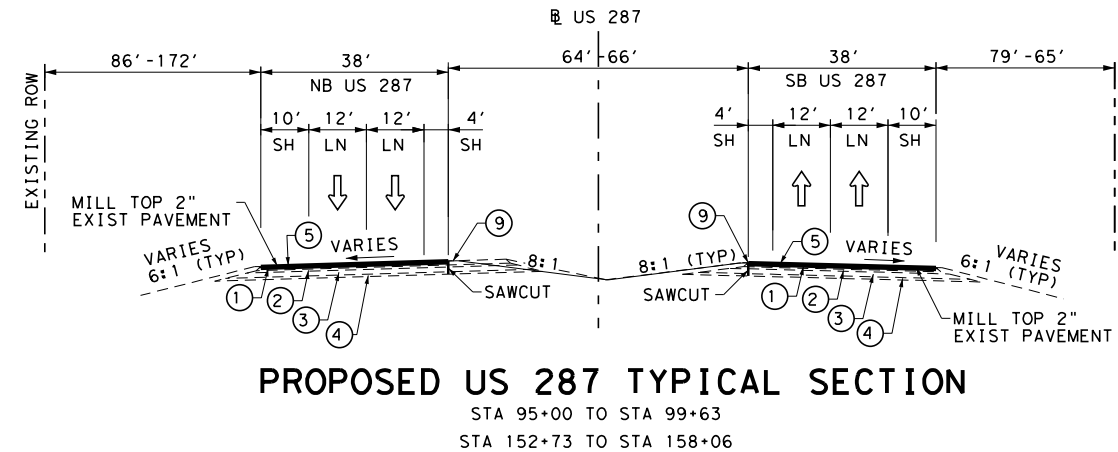
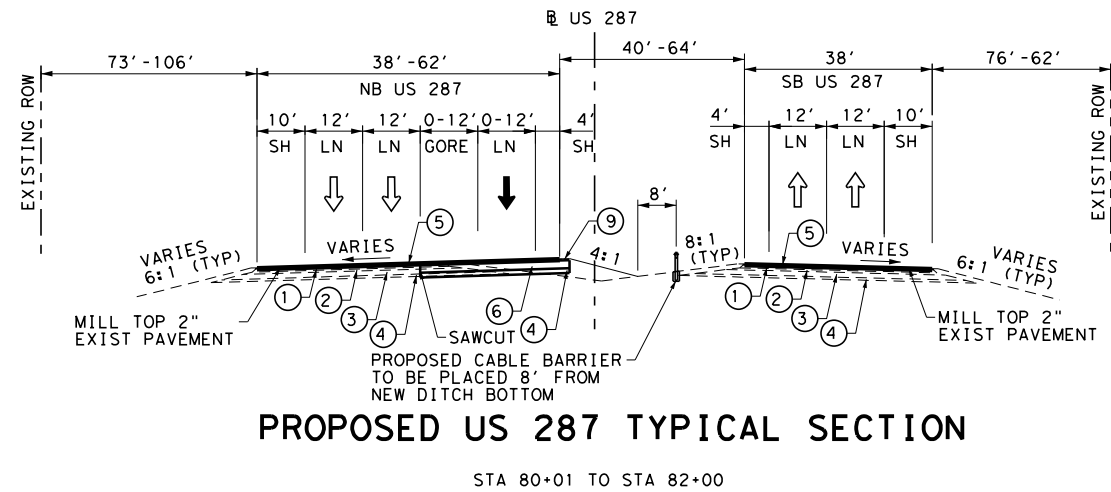
**US 287  
PROPOSED TYPICAL SECTIONS**

SCALE: N. T. S.		SHEET 1 OF 4	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
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CHECK CPM	0172	05	129
			6

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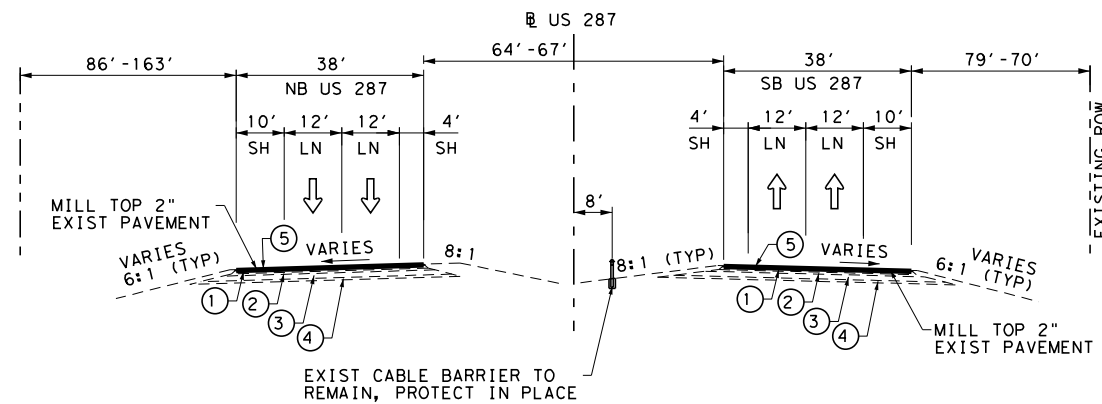
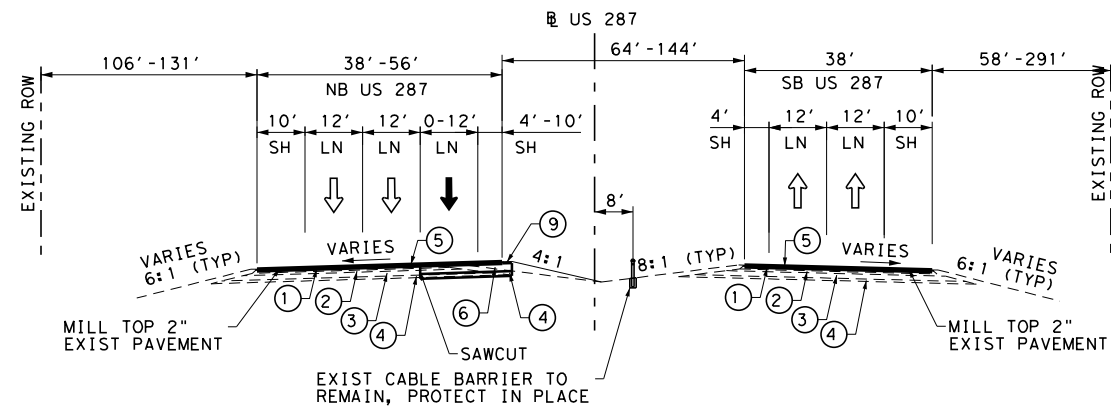


### TYPICAL SECTION LEGEND

- ① 10" HMAC
- ② 5" ASPHALT STABILIZED BASE
- ③ 12" FOUNDATION COURSE
- ④ 6" LIME TREATED SUBGRADE (EXIST @ 5%)
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### NOTES:

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7. PAVEMENT DESIGN PROVIDED BY OTHERS.



### PROPOSED US 287 TYPICAL SECTION

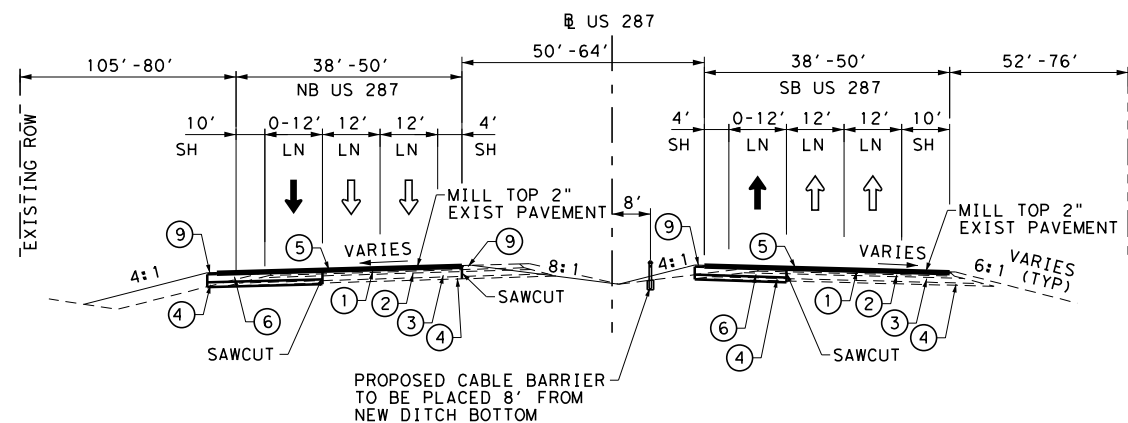
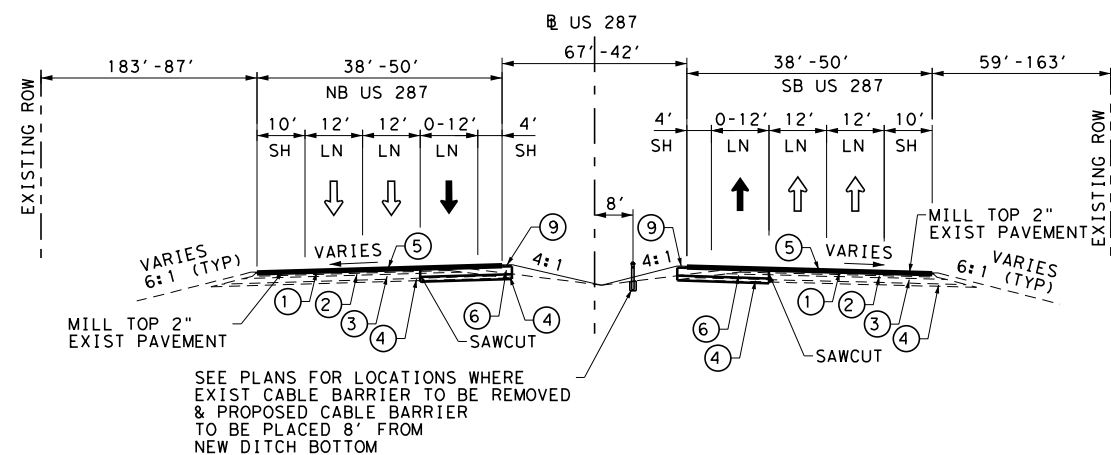
### PROPOSED US 287 TYPICAL SECTION

NB US 287  
STA 27+07 TO STA 30+13

STA 82+00 TO STA 85+79  
STA 158+06 TO STA 164+17  
STA 197+90 TO STA 207+68

NB US 287  
STA 82+00 TO STA 85+79  
STA 127+05 TO STA 131+47  
STA 132+99 TO STA 135+58

SB US 287  
STA 99+63 TO STA 108+94  
STA 123+38 TO STA 131+48  
STA 132+97 TO STA 135+36  
STA 172+86 TO STA 174+57

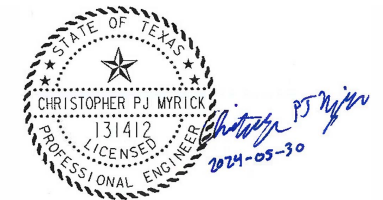


### PROPOSED US 287 TYPICAL SECTION

### PROPOSED US 287 TYPICAL SECTION

STA 85+79 TO STA 95+00  
STA 108+94 TO STA 117+83  
STA 135+36 TO STA 144+41  
STA 164+17 TO STA 168+54

STA 117+83 TO STA 127+05



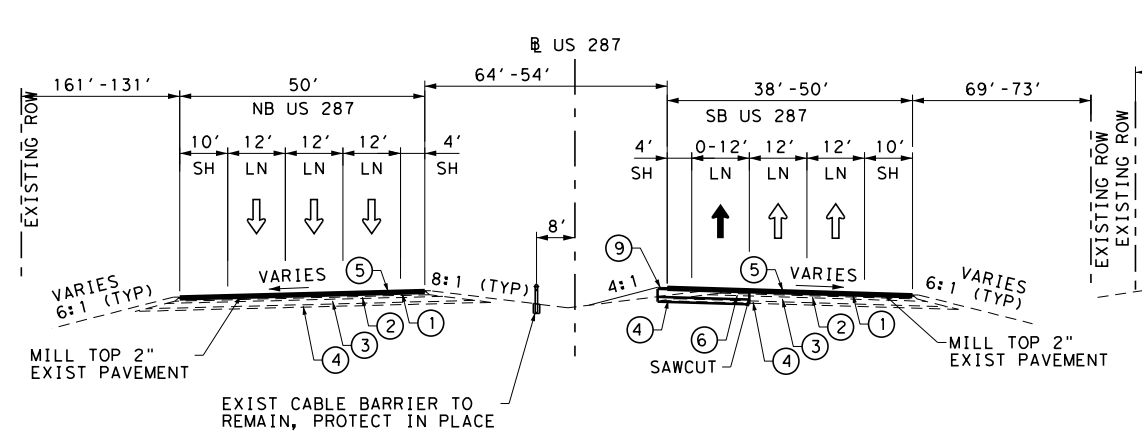
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CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



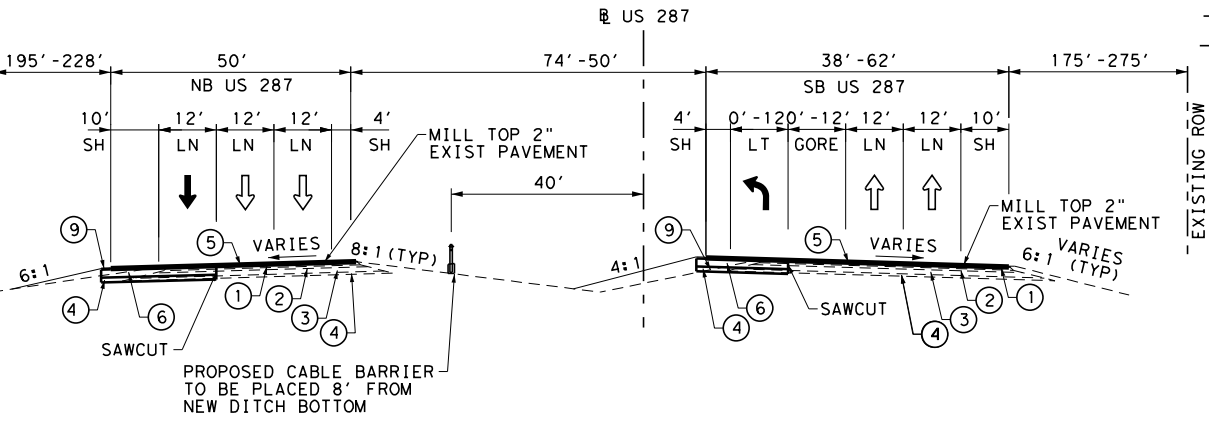
## US 287 PROPOSED TYPICAL SECTIONS

SCALE: N. T. S.		SHEET 2 OF 4	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			SHEET NO. 7



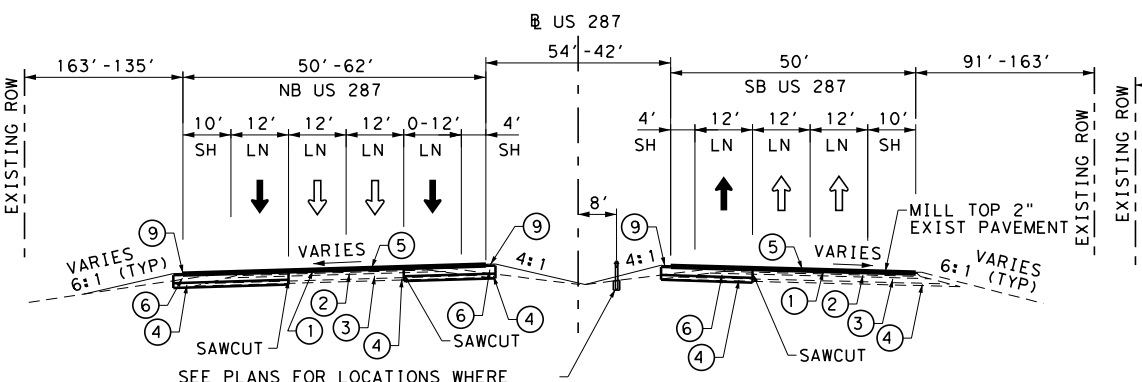
**PROPOSED US 287 TYPICAL SECTION**

STA 144+41 TO STA 152+73



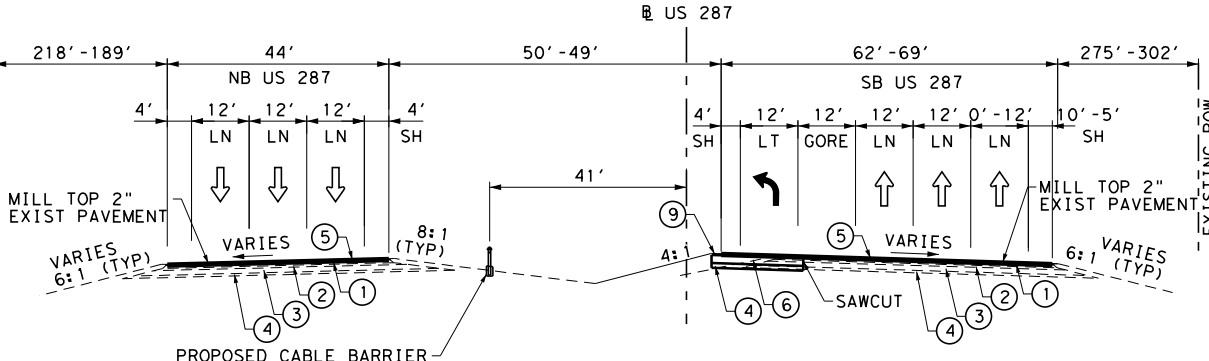
**PROPOSED US 287 TYPICAL SECTION**

STA 174+59 TO STA 176+63



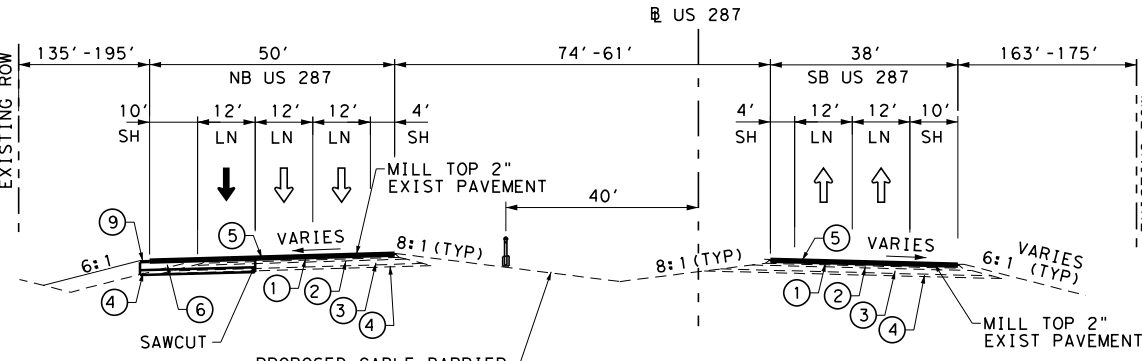
**PROPOSED US 287 TYPICAL SECTION**

STA 168+54 TO STA 172+86



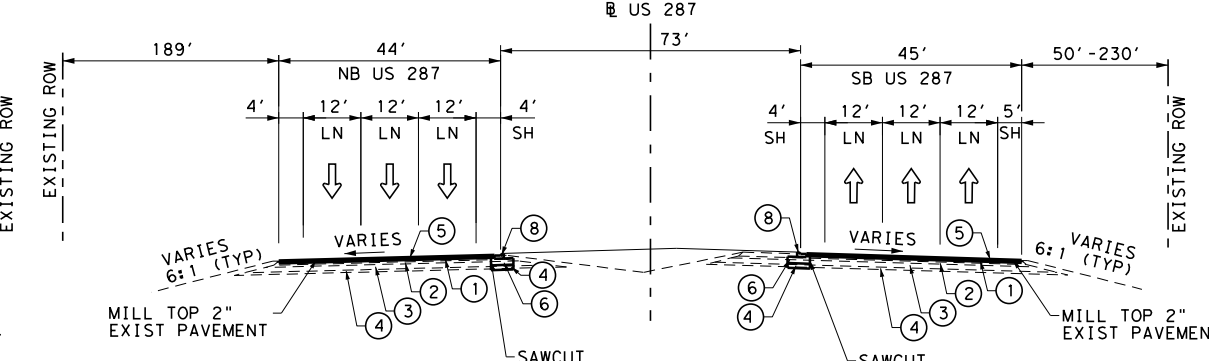
**PROPOSED US 287 TYPICAL SECTION**

STA 176+63 TO STA 183+72



**PROPOSED US 287 TYPICAL SECTION**

STA 172+86 TO STA 174+59



**PROPOSED US 287 TYPICAL SECTION**

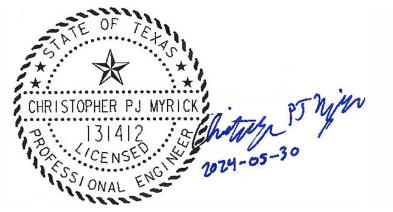
STA 183+72 TO STA 185+71

**TYPICAL SECTION LEGEND**

- ① 10" HMAC
- ② 5" ASPHALT STABILIZED BASE
- ③ 12" FOUNDATION COURSE
- ④ 6" LIME TREATED SUBGRADE (EXIST @ 5%)
- ⑤ 2" SP MIXES SP-C SAC-A PG70-22
- ⑥ 10" SP MIXES SP-B PG64-22
- ⑦ 0-2" SP MIXES SP-C SAC-A PG64-22 (LEVEL-UP)
- ⑧ 4" TY 1 CURB AND GUTTER
- ⑨ BACKFILL (2') TYPE A OR B

**NOTES:**

1. THE LOCATION OF THE CABLE BARRIER MAY BE LOCATED ON EITHER SIDE OF THE DITCH FLOWLINE. THE CABLE BARRIER MAY BE ADJUSTED FOR FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
2. SEE CABLE BARRIER STANDARDS FOR DETAILS NOT SHOWN.
3. WIRE ROPE/CABLE SAFETY SYSTEM WILL BEGIN AND END 50' MINIMUM FROM TURN AROUND.
4. UPON COMPLETION OF THE INSTALLATION OF WIRE ROPE/CABLE SAFETY SYSTEM, CONSTRUCT 3' WIDE MOW STIP TO THE LENGTH SHOWN ELSEWHERE ON PLANS.
5. MOW STRIP SHALL BE REINFORCED CONCRETE WITH STEEL WIRE MESH.
6. CONTRACTOR TO PROVIDE TACK COAT BETWEEN EACH LIFT OF SUPERPAVE AND BETWEEN SUPERPAVE LAYERS.
7. PAVEMENT DESIGN PROVIDED BY OTHERS.



NO.	DATE	DESCRIPTION	APPROV.

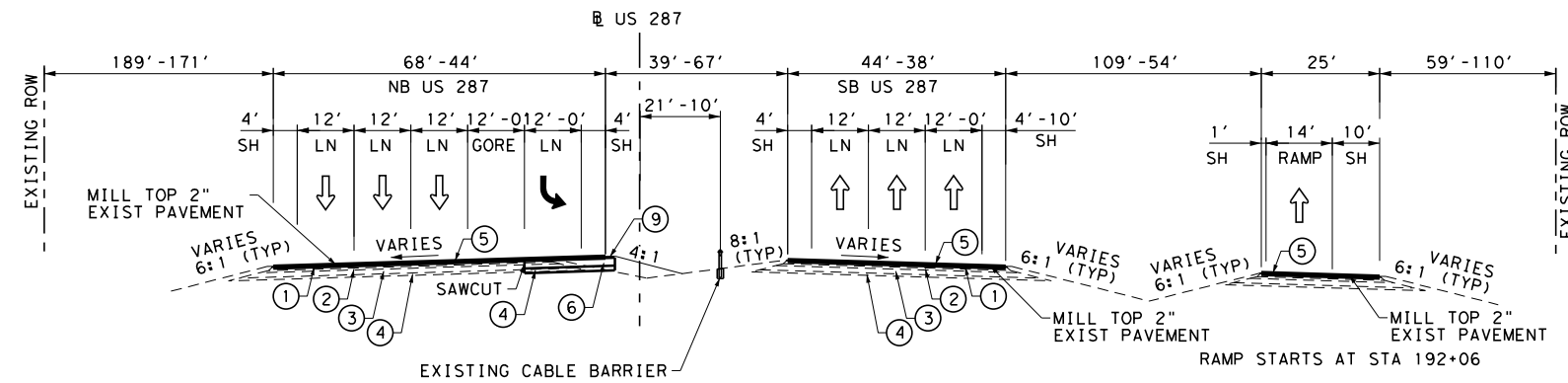
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287 PROPOSED TYPICAL SECTIONS**

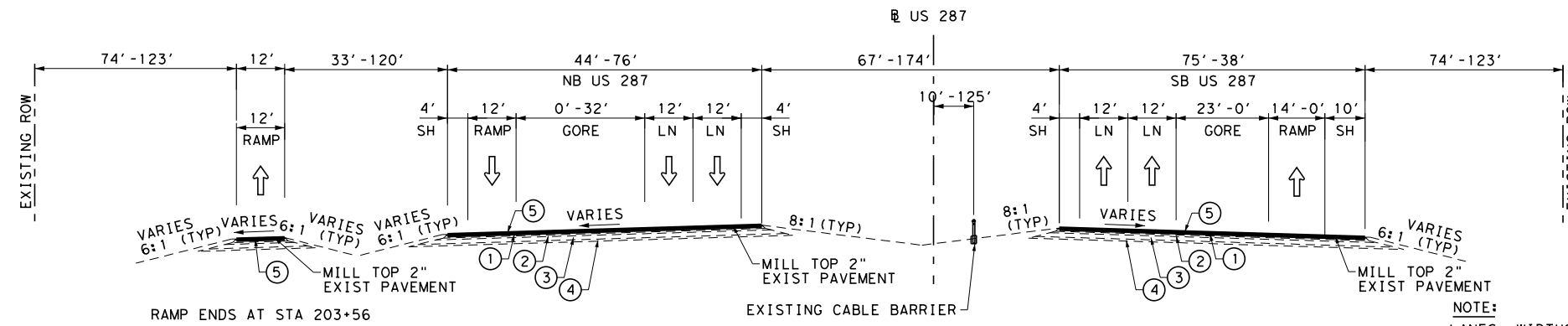
SCALE: N. T. S.		SHEET 3 OF 4	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			8





**PROPOSED US 287 TYPICAL SECTION**

STA 185+71 TO STA 194+82



**PROPOSED US 287 TYPICAL SECTION**

NB US 287  
STA 194+82 TO 197+90  
STA 207+68 TO END OF PROJECT

SB US 287  
STA 194+82 TO END OF PROJECT

NOTE:  
LANES, WIDTHS AND DIMENSIONS OF THIS TYPICAL SECTION ARE NOT EXACT AND ARE ONLY TO SHOW MILL AND OVERLAY FOR THE FULL WIDTH OF THE EXISTING ROADWAY.

**TYPICAL SECTION LEGEND**

- ① 10" HMAC
- ② 5" ASPHALT STABILIZED BASE
- ③ 12" FOUNDATION COURSE
- ④ 6" LIME TREATED SUBGRADE (EXIST @ 5%)
- ⑤ 2" SP MIXES SP-C SAC-A PG70-22
- ⑥ 10" SP MIXES SP-B PG64-22
- ⑦ 0-2" SP MIXES SP-C SAC-A PG64-22 (LEVEL-UP)
- ⑧ 4" TY 1 CURB AND GUTTER
- ⑨ BACKFILL (2') TYPE A OR B

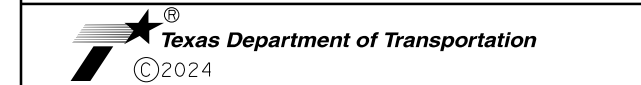
**NOTES:**

1. THE LOCATION OF THE CABLE BARRIER MAY BE LOCATED ON EITHER SIDE OF THE DITCH FLOWLINE. THE CABLE BARRIER MAY BE ADJUSTED FOR FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
2. SEE CABLE BARRIER STANDARDS FOR DETAILS NOT SHOWN.
3. WIRE ROPE/CABLE SAFETY SYSTEM WILL BEGIN AND END 50' MINIMUM FROM TURN AROUND.
4. UPON COMPLETION OF THE INSTALLATION OF WIRE ROPE/CABLE SAFETY SYSTEM, CONSTRUCT 3' WIDE MOW STIP TO THE LENGTH SHOWN ELSEWHERE ON PLANS.
5. MOW STRIP SHALL BE REINFORCED CONCRETE WITH STEEL WIRE MESH.
6. CONTRACTOR TO PROVIDE TACK COAT BETWEEN EACH LIFT OF SUPERPAVE AND BETWEEN SUPERPAVE LAYERS.
7. PAVEMENT DESIGN PROVIDED BY OTHERS.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED TYPICAL SECTIONS**

SCALE: N. T. S. SHEET 4 OF 4

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	9
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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**SPECIFICATION DATA**

Table 1: Soil Constants Requirements				
Item	Description	Plasticity Index		Note
		Max	Min	
132	EMBANKMENT (FINAL)(DENS CONT)(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
164	CELL FBR MLCH SEED(PERM)(RURAL)(CLAY)	N/A	See Specifications		61,099 SY
166 *	Fertilizer (12-6-6)	N/A	500	Lbs./Ac	3.14 Ton
168	Vegetative Watering (Warm)**	N/A	12	MG/Ac/Day	9,090 MG
3077	SP MIXES SP-B PG64-22	See Plans	110	Lbs./SY/ln	20,646 Ton
	SP MIXES SP-C SAC-A PG64-22	See Plans	110	Lbs./SY/ln	48 Ton
	SP MIXES SP-C SAC-A PG70-22	See Plans	110	Lbs./SY/ln	18,752 Ton
3077	Tack Coat (Undiluted Application Rate)	New HMA	0.06	Gal/SY	21,876 Gal
		Milled HMA	0.11		

\*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) Base material weight based on 1.50 Ton/CY (dry- compacted)  
 (2) Asphalt weight based on 110 Lbs./SY/ln  
 (3) Subgrade weight based on 1.50Ton/CY (dry-compacted)

**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 12.56 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

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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 formal consultation and permits 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.

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address: <https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors> or Contractor questions on this project are to be addressed to the following individual(s):

Juan Paredes                      Juan.Paredes@txdot.gov  
 Elecia Moore                      Elecia.Moore@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individuals.

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.

Cross sections may be requested by posting a question to the above Letting Pre-Bid Q&A web page. This data is for non-construction purposes only and it is the responsibility of the prospective bidder to validate the enclosed data with appropriate plans, specifications and estimate for the project(s).

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**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 6:**

To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit an original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

Refer to the Buy America Material Classification Sheet for clarification on material categorization.

The Buy America Material Classification Sheet is located at the below link.  
<https://www.txdot.gov/business/resources/materials/buy-america-material-classification-sheet.html> for clarification on material categorization.

**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

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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 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.

Per SP008-045, this project includes lane assessment fees. See Table 502-1 in Item 502.

Per SP008-055, this project includes a 60-day delay start for material procurement. This is a convenience delay.

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 100:**

Remove the existing roadway small signs, delineators and object markers as shown on the plans, or as directed, during construction within the right of way. Small sign, delineator and object marker removals are subsidiary to this Item.

The limits of preparing right of way will be measured from Sta. 11+00.00 to Sta. 208+00.00 along the centerline of construction.

**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.

Sawing of concrete is not paid for directly, but is considered subsidiary to this item.

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**Items 105 and 354:**

Saw existing asphalt along neat lines where portions are to be left in place temporarily or permanently. Sawing is not paid for directly, but is subsidiary to this item.

**Item 105:**

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

Properly dispose of unsalvageable material at your own expense.

**Item 110:**

Excavated shale is not an acceptable material for embankment.

**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.

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.

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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 161:**

Provide tickets representing quantity of compost delivered to site.

**Item 260:**

Furnish and distribute MS-2 smoothly and evenly at the rate of 0.20 gallons per square yard to cure lime, as directed.

Provide Hydrated Lime, Commercial Lime, or Quicklime Slurry and apply lime by slurry placement method.

**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.

**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.

**Item 400:**

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

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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.

Provide a digital hydraulic compression testing Machine and accessories. The machine shall have a minimum testing range of 2500 pounds force to 250,000 pounds force with a hydraulic switching valve to allow for rapid advancing, hold, controlled advancing and rapid retracting. The machine shall have a load cell to measure compressive forces within the testing range and shall be calibrated and verified in accordance with ASTM latest version. The Machine can meet or exceed the following when approved by the Engineer:

ELE International ACCU-TEK250 Digital Compression Tester including accessories or Forney F-250EX Standard Compression Machine including accessories or TxDOT approved equal.

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 464:**

The concrete collars and the connections of pipes to existing or proposed concrete boxes or pipe will not be paid for directly but will be considered subsidiary to the various bid items.

At locations where storm drains dead-end, plug with a concrete plug of a thickness equal to 1 ½ inches per foot of diameter of pipe with a minimum thickness of 3 inches. The cost of the plugs shall be included in the unit price bid per foot of the various storm drain pipes.

**Item 465:**

All manholes, junction boxes and inlets will require inverts unless otherwise directed.

**Item 479:**

Accept ownership of inlet grates and manhole covers and properly dispose of them outside the limits of the right of way in accordance with federal, state and local regulations.

Submit a plan detailing proposed methods of handling phased construction at manholes and water valves.

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Payment for the phase construction will be considered subsidiary to this item.

**Item 496:**

Concrete pavement removed as a result of removing the inlets will not be paid for directly but will be considered as subsidiary to Item 496.

Inlet grates and manhole covers become the property of the contractor for disposal.

**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 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.

Provide written proposed lane closure information by 1:00 pm on the business day prior to the proposed closures. Do not close lanes when this requirement is not met.

When excavation is required next to a pavement lane carrying traffic and the widening is not completed by the end of the work day, backfill against the edge of the pavement with at least a 3:1 slope using an acceptable material to support vehicular traffic. Carefully remove and dispose of this material when work resumes. Backfilling pavement edges, and the materials required for the work will be subsidiary to this item.

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, provide escort vehicles in front of and behind unlicensed equipment and protect the pavement from all damage using an acceptable method.

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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.

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

The Contractor may begin closing 1 Lane of the *NBML/SBML's* at 9 PM. The Contractor must have all the *NBML/SBML's* open by 6 AM. Full Freeway closures are not allowed unless otherwise approved in writing by the Engineer.

The lane closure disincentive fee is shown on the following table. The fee applies to the Contractor for closures that are outside the times specified above for each hour, regardless of the length of the lane closure or obstruction.

Main Lane Disincentive

*No. of ML's Closed	**Cost Deduction/Hr
1	\$ 1,000.00

\*Main Lanes include all Thru lanes including HOV/Managed Lanes

\*\*Deducted costs will be prorated by rounding up to the nearest 15-minute increment

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

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

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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 529:**

Provide grooved joints at 10-foot intervals and 3/4 inch expansion joint material for doweled curb at the same locations as on the existing pavement.

For Curb and Gutter sections, provide grooved joints at 10-foot intervals and 3/4 inch expansion joint material at a maximum of 50-foot centers and at all radius points and inlets.

Curb and Gutter transitions will be paid for by the foot at the unit price for the corresponding curb or curb and gutter section.

Saw joints at the same location as on the existing pavement.

**Item 540:**

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

**Item 644:**

Provide two (2) sets of shop drawings for signs. The shop drawings shall conform to the details shown on the plans. The shop drawings shall show the details of the panels, wind beams, stiffeners, joint backing plates, splices, fasteners, brackets, and sign support connections. The shop drawings shall show letter types and sizes, interline spacing and message arrangements.

Affix a sign identification decal to the back of all signs in accordance with Item 643.

Prior to taking elevations to determine lengths for fabrication of sign posts and/or sign support towers, obtain verification of all proposed locations.

All sign mounts shall have a clamp base system for all small roadside sign assemblies.

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A 3 inch strip of red reflective sheeting shall be placed on all Do Not Enter sign assemblies. This sheeting shall be placed directly below the Do Not Enter sign for the entire length of the sign post facing wrong way traffic. This work will be considered subsidiary to Item 644.

**Item 677:**

A water blasting method approved by the Engineer will be the only method allowed for the removal of permanent and temporary pavement markings except on a sealcoat surface. A 2 foot wide sealcoat will be required on sealcoat surfaces to eliminate permanent and temporary pavement markings.

**Item 3077:**

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

Provide PG binder 64-22 in Type SP-B and SP-C mixtures.

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

TCP 3 Series	Scenario	Required TMA/TA
(3-2)-13	All	3
(3-3)-14	A   B   D	2
	C	3

TCP 5 Series	Scenario	Required TMA/TA
(5-1)-18	A   B	1

TCP 6 Series	Scenario	Required TMA/TA
(6-3)-12	All	1

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.

The TMA/TA used for installation/removal of traffic control for a work area will be subsidiary to the TMA/TA used to perform the work.



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0172-05-129

DISTRICT Dallas  
HIGHWAY US 287

COUNTY Ellis

CONTROL SECTION JOB				0172-05-129		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00196902			
COUNTY				Ellis			
HIGHWAY				US 287			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	104-6009	REMOVING CONC (RIPRAP)	SY	2,466.000		2,466.000	
	105-6008	REMOVING STAB BASE AND ASPH PAV (6")	SY	212.000		212.000	
	105-6159	REMOVING STAB BASE & ASPH PAV (18"-22")	SY	16,198.000		16,198.000	
	110-6001	EXCAVATION (ROADWAY)	CY	2,695.000		2,695.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	15,209.000		15,209.000	
	134-6004	BACKFILL (TY A OR B)	STA	168.000		168.000	
	161-6017	COMPOST MANUF TOPSOIL (4")	SY	61,099.000		61,099.000	
	164-6023	CELL FBR MLCH SEED(PERM)(RURAL)(CLAY)	SY	61,099.000		61,099.000	
	168-6001	VEGETATIVE WATERING	MG	9,090.000		9,090.000	
	260-6006	LIME TRT (EXST MATL) (6")	SY	37,548.000		37,548.000	
	260-6016	LIME (HYD, COM, OR QK(SLURRY))	TON	473.000		473.000	
	354-6021	PLANE ASPH CONC PAV(0" TO 2")	SY	137,676.000		137,676.000	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	340.000		340.000	
	432-6001	RIPRAP (CONC)(4 IN)	CY	118.000		118.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	288.000		288.000	
	464-6005	RC PIPE (CL III)(24 IN)	LF	651.000		651.000	
	464-6007	RC PIPE (CL III)(30 IN)	LF	43.000		43.000	
	464-6018	RC PIPE (CL IV)(24 IN)	LF	109.000		109.000	
	465-6128	INLET (COMPL)(PSL)(FG)(4FTX4FT-4FTX4FT)	EA	9.000		9.000	
	465-6560	INL(CMP)(PAZD-CZ)(FG)(4FTX4FT-4FTX4FT)	EA	2.000		2.000	
	467-6390	SET (TY II) (24 IN) (RCP) (4: 1) (C)	EA	4.000		4.000	
	467-6395	SET (TY II) (24 IN) (RCP) (6: 1) (P)	EA	12.000		12.000	
	479-6006	ADJUSTING INLET (CAP)	EA	5.000		5.000	
	496-6004	REMOV STR (SET)	EA	12.000		12.000	
	496-6007	REMOV STR (PIPE)	LF	311.000		311.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	9.000		9.000	
	506-6001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF	798.000		798.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	798.000		798.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	1,297.000		1,297.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	1,297.000		1,297.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	2,754.000		2,754.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	2,754.000		2,754.000	
	506-6040	BIODEG EROSN CONT LOGS (INSTL) (8")	LF	578.000		578.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	578.000		578.000	
	529-6007	CONC CURB & GUTTER (TY I)	LF	1,688.000		1,688.000	
	533-6003	RUMBLE STRIPS (SHOULDER) ASPHALT	LF	55,799.000		55,799.000	

DISTRICT	COUNTY	CCSJ	SHEET
Dallas	Ellis	0172-05-129	11





# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0172-05-129

DISTRICT Dallas  
HIGHWAY US 287

COUNTY Ellis

CONTROL SECTION JOB				0172-05-129		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00196902			
COUNTY				Ellis			
HIGHWAY				US 287			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	540-6002	MTL W-BEAM GD FEN (STEEL POST)	LF	300.000		300.000	
	542-6002	REMOVE TERMINAL ANCHOR SECTION	EA	1.000		1.000	
	543-6002	CABLE BARRIER SYSTEM (TL-4)	LF	6,251.000		6,251.000	
	543-6020	CABLE BARRIER TERMINAL SECTION (TL-4)	EA	17.000		17.000	
	543-6021	REMOVE CABLE BARRIER	LF	7,359.000		7,359.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	1.000		1.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	67.000		67.000	
	644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	15.000		15.000	
	644-6009	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	EA	9.000		9.000	
	644-6012	IN SM RD SN SUP&AM TY10BWG(1)SB(T)	EA	5.000		5.000	
	644-6028	IN SM RD SN SUP&AM TYS80(1)SA(P-BM)	EA	1.000		1.000	
	644-6039	IN SM RD SN SUP&AM TYS80(1)SB(P)	EA	3.000		3.000	
	644-6040	IN SM RD SN SUP&AM TYS80(1)SB(P-BM)	EA	1.000		1.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	3.000		3.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	53.000		53.000	
	658-6060	REMOVE DELIN & OBJECT MARKER ASSMS	EA	17.000		17.000	
	658-6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	27.000		27.000	
	662-6005	WK ZN PAV MRK NON-REMOV (W)6"(BRK)	LF	7,300.000		7,300.000	
	662-6006	WK ZN PAV MRK NON-REMOV (W)6"(DOT)	LF	75.000		75.000	
	662-6008	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	LF	33,608.000		33,608.000	
	662-6012	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	LF	14,056.000		14,056.000	
	662-6013	WK ZN PAV MRK NON-REMOV (W)12"(LNDP)	LF	1,716.000		1,716.000	
	662-6014	WK ZN PAV MRK NON-REMOV (W)12"(SLD)	LF	1,750.000		1,750.000	
	662-6017	WK ZN PAV MRK NON-REMOV (W)(ARROW)	EA	37.000		37.000	
	662-6026	WK ZN PAV MRK NON-REMOV (W)(UTURN ARW)	EA	16.000		16.000	
	662-6029	WK ZN PAV MRK NON-REMOV(W)(WORD)	EA	26.000		26.000	
	662-6037	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	LF	34,490.000		34,490.000	
	662-6052	WK ZN PAV MRK REMOV (REFL) TY II-C-R	EA	651.000		651.000	
	666-6018	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF	75.000		75.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	16,150.000		16,150.000	
	666-6039	REFL PAV MRK TY I (W)12"(LNDP)(100MIL)	LF	1,722.000		1,722.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	6,229.000		6,229.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	808.000		808.000	
	666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	35.000		35.000	
	666-6063	REFL PAV MRK TY I(W)(UTURN ARW)(100MIL)	EA	16.000		16.000	
	666-6072	REFL PAV MRK TY I(W)(LNDP ARW)(100MIL)	EA	20.000		20.000	
	666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	30.000		30.000	

DISTRICT	COUNTY	CCSJ	SHEET
Dallas	Ellis	0172-05-129	11A



# Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0172-05-129

DISTRICT Dallas  
HIGHWAY US 287

COUNTY Ellis



CONTROL SECTION JOB				0172-05-129		TOTAL EST.	TOTAL FINAL
PROJECT ID				A00196902			
COUNTY				Ellis			
HIGHWAY				US 287			
ALT	BID CODE	DESCRIPTION	UNIT	EST.	FINAL		
	666-6099	REF PAV MRK TY I(W)18"(YLD TRI)(100MIL)	EA	35.000		35.000	
	666-6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	24.000		24.000	
	666-6141	REFL PAV MRK TY I (Y)12"(SLD)(100MIL)	LF	356.000		356.000	
	666-6306	RE PM W/RET REQ TY I (W)6"(BRK)(100MIL)	LF	8,064.000		8,064.000	
	666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	35,064.000		35,064.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	37,558.000		37,558.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	77.000		77.000	
	672-6010	REFL PAV MRKR TY II-C-R	EA	1,635.000		1,635.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	59,723.000		59,723.000	
	677-6002	ELIM EXT PAV MRK & MRKS (6")	LF	75,473.000		75,473.000	
	677-6003	ELIM EXT PAV MRK & MRKS (8")	LF	18,546.000		18,546.000	
	677-6005	ELIM EXT PAV MRK & MRKS (12")	LF	3,466.000		3,466.000	
	677-6008	ELIM EXT PAV MRK & MRKS (ARROW)	EA	45.000		45.000	
	677-6012	ELIM EXT PAV MRK & MRKS (WORD)	EA	34.000		34.000	
	677-6036	ELIM EXT PAV MRK & MRKS (UTURN ARROW)	EA	16.000		16.000	
	730-6107	FULL - WIDTH MOWING	CYC	3.000		3.000	
	3077-6001	SP MIXES SP-B PG64-22	TON	20,646.000		20,646.000	
	3077-6012	SP MIXES SP-C SAC-A PG64-22	TON	48.000		48.000	
	3077-6022	SP MIXES SP-C SAC-A PG70-22	TON	18,752.000		18,752.000	
	3077-6075	TACK COAT	GAL	21,876.000		21,876.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	210.000		210.000	
	6185-6003	TMA (MOBILE OPERATION)	HR	720.000		720.000	
18		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

**SUMMARY OF TRAFFIC CONTROL PLAN QUANTITIES (CSJ 0172-05-129)**

LOCATION	662 6052	662 6005	662 6006	662 6008	662 6012	662 6013	662 6014	662 6017	662 6026	662 6029	662 6037	677 6001	677 6002	677 6003	677 6005
	WK ZN PAV MRK REMOV (REFL) TY II-C-R	WK ZN PAV MRK NON-REMOV (W) 6" (BRK)	WK ZN PAV MRK NON-REMOV (W) 6" (DOT)	WK ZN PAV MRK NON-REMOV (W) 6" (SLD)	WK ZN PAV MRK NON-REMOV (W) 8" (SLD)	WK ZN PAV MRK NON-REMOV (W) 12" (LNDR)	WK ZN PAV MRK NON-REMOV (W) 12" (SLD)	WK ZN PAV MRK NON-REMOV (W) (ARROW)	WK ZN PAV MRK NON-REMOV (W) (UTURN ARW)	WK ZN PAV MRK NON-REMOV (W) (WORD)	WK ZN PAV MRK NON-REMOV (Y) 6" (SLD)	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (6")	ELIM EXT PAV MRK & MRKS (8")	ELIM EXT PAV MRK & MRKS (12")
	EA	LF	LF	LF	LF	LF	LF	EA	EA	EA	LF	LF	LF	LF	LF
TCP-INSIDE CONSTRUCTION															
TCP-OUTSIDE CONSTRUCTION															
MILL AND OVERLAY	651	7300	75	33608	14056	1716	1750	37	16	26	34490				
TCP-PERMANENT STRIPING AS DIRECTED												59723	75473	18546	3466
<b>PROJECT TOTALS</b>	<b>651</b>	<b>7300</b>	<b>75</b>	<b>33608</b>	<b>14056</b>	<b>1716</b>	<b>1750</b>	<b>37</b>	<b>16</b>	<b>26</b>	<b>34490</b>	<b>59723</b>	<b>75473</b>	<b>18546</b>	<b>3466</b>

**SUMMARY OF TRAFFIC CONTROL PLAN QUANTITIES (CSJ 0172-05-129)**

LOCATION	677 6008	677 6012	677 6036	6001 6002	6185 6002	6185 6003
	ELIM EXT PAV MRK & MRKS (ARROW)	ELIM EXT PAV MRK & MRKS (WORD)	ELIM EXT PAV MRK & MRKS (UTURN ARROW)	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	EA	EA	EA	EA	DAY	HR
TCP-INSIDE CONSTRUCTION					168	
TCP-OUTSIDE CONSTRUCTION					42	
MILL AND OVERLAY						360
TCP-PERMANENT STRIPING AS DIRECTED	45	34	16	2		360
<b>PROJECT TOTALS</b>	<b>45</b>	<b>34</b>	<b>16</b>	<b>2</b>	<b>210</b>	<b>720</b>



NO.	DATE	DESCRIPTION	APPROV.
 <b>BRIDGEFARMER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
 ©2024			
<b>US 287</b> <b>SUMMARY OF QUANTITIES</b> <b>TRAFFIC CONTROL PLAN</b>			
SHEET 1 OF 1			
DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET	US 287
CHECK MB	STATE	DISTRICT	COUNTY
CHECK SA	TEXAS	DALLAS	ELLIS
	CONTROL	SECTION	JOB
	0172	05	129

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## SUMMARY OF ROADWAY QUANTITIES (CSJ 0172-05-129)

LOCATION	134	260	260	432	432	529	533	540	543	543	544	730	3077	3077	3077	3077
	6004	6006	6016	6001	6045	6007	6003	6002	6002	6020	6001	6107	6001	6012	6022	6075
	BACKFILL (TY A OR B)	LIME TRT (EXST MATL) (6")	LIME (HYD, COM, OR QK (SLURRY))	RIPRAP (CONC) (4 IN)	RIPRAP (MOW STRIP) (4 IN)	CONC CURB & GUTTER (TY I)	RUMBLE STRIPS (SHOULDER) ASPHALT	MTL W-BEAM GD FEN (STEEL POST)	CABLE BARRIER SYSTEM (TL-4)	CABLE BARRIER TERMINAL SECTION (TL-4)	GUARDRAIL END TREATMENT (INSTALL)	FULL - WIDTH MOWING	SP MIXES SP-B PG64-22	SP MIXES SP-C SAC-A PG64-22	SP MIXES SP-C SAC-A PG70-22	TACK COAT
STA	SY	TON	CY	CY	LF	LF	LF	LF	EA	EA	CYC	TON	TON	TON	GAL	
SHEET 1 OF 22		344	5			253	877						190	7	28	72
SHEET 2 OF 22	3	706	9		18		307		275	4			389	8	71	140
SHEET 3 OF 22																
SHEET 4 OF 22																
SHEET 5 OF 22	5	1182	15		11		446		277				650	11	120	232
SHEET 6 OF 22	15	3825	48	64	39	608	2164	100	681	2	1		2104	18	892	1227
SHEET 7 OF 22	13	3200	40		50		4405	200	1100				1760		1310	1564
SHEET 8 OF 22	13	2705	34		21		4268		512	1			1488		1295	1512
SHEET 9 OF 22	2	626	8		2		4276			1			345		1120	1179
SHEET 10 OF 22	22	4008	50		37		4101		892	2			2205	2	1381	1702
SHEET 11 OF 22	9	1811	23				4133						996		1103	1252
SHEET 12 OF 22	16	2752	35		32		3899		759	2			1514		1144	1366
SHEET 13 OF 22	13	2700	34		3	280	3955			1			1475		1392	1612
SHEET 14 OF 22	8	1191	15			12	4402						655		1131	1237
SHEET 15 OF 22	20	5126	64		19		4181		393	2			2820		1357	1758
SHEET 16 OF 22	11	3746	47	54	30	535	3851		683	2			2060	2	1546	1849
SHEET 17 OF 22	8	2216	28		26		3800		679				1219		1470	1646
SHEET 18 OF 22	10	1410	18				3574						776		1455	1578
SHEET 19 OF 22							2628								976	985
SHEET 20 OF 22							532								135	136
SHEET 21 OF 22															430	430
SHEET 22 OF 22															396	399
AS DIRECTED BY PROJECT ENGINEER												3				
<b>PROJECT TOTALS</b>	<b>168</b>	<b>37548</b>	<b>473</b>	<b>118</b>	<b>288</b>	<b>1688</b>	<b>55799</b>	<b>300</b>	<b>6251</b>	<b>17</b>	<b>1</b>	<b>3</b>	<b>20646</b>	<b>48</b>	<b>18752</b>	<b>21876</b>

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NO.	DATE	DESCRIPTION										APPROV.				
																
																
<b>US 287</b> <b>SUMMARY OF QUANTITIES</b> <b>ROADWAY</b>																
SHEET 1 OF 1																
DESIGN	CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.											
GRAPHICS	CPM	6	SEE TITLE SHEET		US 287											
CHECK	SA	STATE	DISTRICT	COUNTY	SHEET NO.											
CHECK	SA	TEXAS	DALLAS	ELLIS	13											
CHECK	CPM	CONTROL	SECTION	JOB												
		0172	05	129												



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### SUMMARY OF REMOVAL QUANTITIES (CSJ 0172-05-129)

LOCATION	104	105	105	354	496	496	542	543	644	658
	6009	6008	6159	6021	6004	6007	6002	6021	6076	6060
	REMOVING CONC (RIPRAP)	REMOVING STAB BASE AND ASPH PAV (6")	REMOVING STAB BASE AND ASPH PAV (18"-22")	PLANE ASPH CONC PAV (0" TO 2")	REMOV STR (SET)	REMOV STR (PIPE)	REMOVE TERMINAL ANCHOR SECTION	REMOVE CABLE BARRIER	REMOVE SM RD SN SUP&AM	REMOVE DELIN & OBJECT MARKER ASSMS
	SY	SY	SY	SY	EA	LF	EA	LF	EA	EA
SHEET 1 OF 20			1277	62	1				8	1
SHEET 2 OF 20	126		355	68				378		
SHEET 3 OF 20										
SHEET 4 OF 20										
SHEET 5 OF 20	92		495	99				277		
SHEET 6 OF 20	262		2352	4904	3			753	12	4
SHEET 7 OF 20	367		880	9034			1	1100	1	
SHEET 8 OF 20	188		1521	9365	2	75		563	5	3
SHEET 9 OF 20	85		146	9597				253		
SHEET 10 OF 20	226		2125	9032	3	150		671	6	5
SHEET 11 OF 20			749	8409						
SHEET 12 OF 20	282		697	7981				847		
SHEET 13 OF 20	104	212	1264	10357	1	82		313	8	1
SHEET 14 OF 20			684	9269	1	4			1	
SHEET 15 OF 20	245		1836	7775				740	1	
SHEET 16 OF 20	263		1243	10782	1			787	10	3
SHEET 17 OF 20	226		357	11318				677		
SHEET 18 OF 20			217	12027					1	
SHEET 19 OF 20				12893						
SHEET 20 OF 20				4704						
PROJECT TOTALS	2466	212	16198	137676	12	311	1	7359	53	17

NO.	DATE	DESCRIPTION						APPROV.	
									
									
<b>US 287</b> <b>SUMMARY OF QUANTITIES</b> <b>REMOVALS</b>									
SHEET 1 OF 1									
DESIGN	FED. RD. DIV. NO.	PROJECT NO.				HIGHWAY NO.			
CPM	6	SEE TITLE SHEET				US 287			
GRAPHICS	STATE	DISTRICT	COUNTY			SHEET NO.			
CPM	TEXAS	DALLAS	ELLIS			14			
CHECK	CONTROL	SECTION	JOB						
SA	0172	05	129						
CHECK	CPM								

SUMMARY OF EARTHWORK QUANTITIES (CSJ 0172-05-129)

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STA	Dist	Cut	Fill C	ITEM 110	
				EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DEN CONT) (TY C)
				6001	6006
	(FT)	(SF)	(SF)	(CY)	(CY)
1100					
1200	100				
1300	100				
1400	100				
1500	100				
1600	100				
1700	100				
1800	100				
1900	100				
2000	100				
2042	42		35		27
2100	58		35		76
2195	95		35		124
2200	5				3
2300	100				
2400	100				
2500	100				
2600	100				
2700	100				
2707	7	6	5	1	1
2800	93	6	5	21	17
2900	100	6	6	22	20
3000	100	3		17	11
3013	13	3		1	
3100	87			5	
3200	100				
3300	100				
3400	100				
3500	100				
3600	100				
3700	100				
3800	100				
3900	100				
4000	100				
4100	100				
4200	100				
4300	100				
4400	100				
4500	100				
4600	100				
4700	100				
4800	100				
4900	100				
5000	100				
5100	100				
5200	100				
5300	100				
5400	100				
5500	100				
5600	100				
5700	100				
5800	100				
5900	100				
6000	100				
6100	100				
6155	55	2	1	2	1
6200	45	2	1	3	2
6300	100	6	6	15	13
6400	100	3	42	17	89
6500	100	1	61	7	191
6600	100	2	67	6	237
6700	100	1	43	6	204
6800	100	1	31	4	137
6900	100	1	34	4	120

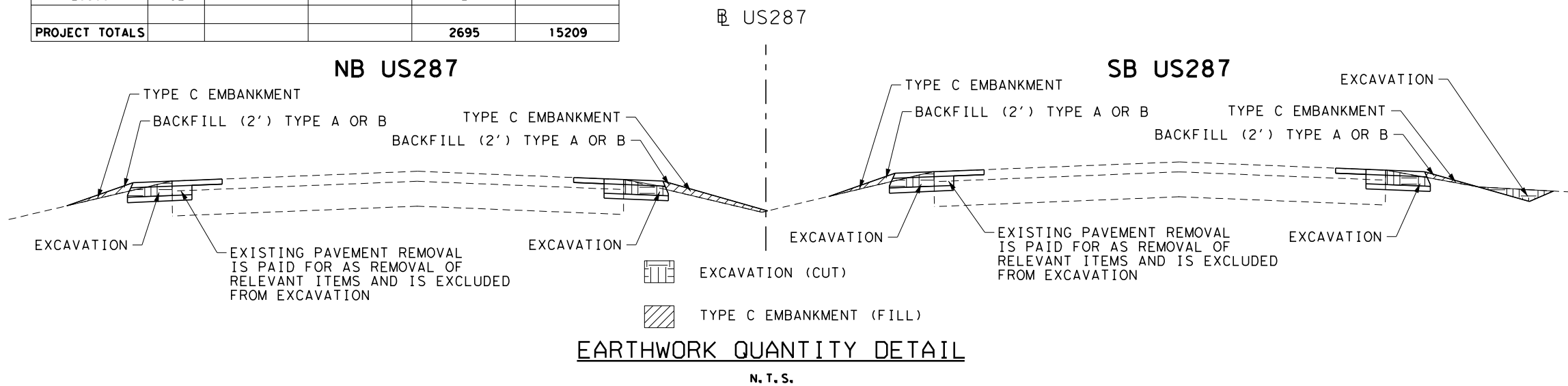
STA	Dist	Cut	Fill C	ITEM 110	
				EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DEN CONT) (TY C)
				6001	6006
	(FT)	(SF)	(SF)	(CY)	(CY)
7000	100	1	38	4	133
7100	100	1	35	4	135
7200	100	7	21	15	104
7300	100	6	141	24	300
7400	100	5	81	20	411
7500	100	6	75	20	289
7600	100	6	47	22	226
7700	100	9	47	28	174
7800	100	6	59	28	196
7900	100	2	64	15	228
8000	100	5	65	13	239
8100	100	2	28	13	172
8200	100	2	5	7	61
8300	100	3	8	9	24
8400	100	2	14	9	41
8500	100	1	35	6	91
8600	100	4	39	9	137
8700	100	3	54	13	172
8800	100	4	52	13	196
8900	100	5	50	17	189
9000	100	5	53	19	191
9100	100	5	60	19	209
9200	100	5	38	19	181
9300	100	4	32	17	130
9400	100	11	4	28	67
9500	100	6	16	31	37
9600	100			11	30
9700	100				
9800	100				
9900	100				
10000	100				
10100	100				
10200	100				
10300	100				
10400	100				
10500	100				
10600	100				
10700	100				
10800	100				
10896	96		127		227
10900	4		127		17
11000	100	3	57	6	341
11100	100	3	43	11	185
11200	100	2	43	9	159
11300	100	2	37	7	148
11400	100	3	32	9	128
11500	100	5	32	15	119
11600	100	3	28	15	111
11700	100	3	21	11	91
11800	100	28	48	57	128
11900	100	11	22	72	130
12000	100	8	52	35	137
12100	100	15	37	43	165
12200	100	9	63	44	185
12300	100	7	66	30	239
12400	100	3	65	19	243
12500	100	4	56	13	224
12600	100	3	42	13	181
12700	100	1	2	7	81
12705	5	1	2		
12800	95			2	4
12900	100				
13000	100				
13100	100				

STA	Dist	Cut	Fill C	ITEM 110	
				EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (DEN CONT) (TY C)
				6001	6006
	(FT)	(SF)	(SF)	(CY)	(CY)
13200	100				
13300	100				
13400	100				
13500	100				
13536	36	7	5	5	3
13600	64	7	5	17	12
13700	100	4	35	20	74
13800	100	4	45	15	148
13900	100	4	59	15	193
14000	100	5	37	17	178
14100	100	6	34	20	131
14200	100	4	50	19	156
14300	100	8	37	22	161
14400	100	6	42	26	146
14500	100	2	11	15	98
14600	100	3	21	9	59
14700	100	2	23	9	81
14800	100	3	17	9	74
14900	100	4	18	13	65
15000	100	3	14	13	59
15100	100	3	5	11	35
15200	100	2	1	9	11
15300	100	24	11	48	22
15400	100	7		57	20
15407	7	7		2	
15500	93			12	
15600	100				
15700	100				
15800	100				
15806	6	3			
15900	94	3		10	
16000	100	6	1	17	2
16100	100	5	10	20	20
16200	100	3	16	15	48
16300	100	4	15	13	57
16400	100	6	19	19	63
16500	100	16	23	41	78
16600	100	27	12	80	65
16700	100	26	8	98	37
16800	100	26	6	96	26

NO.	DATE	DESCRIPTION	APPROV.
 BRIDGEFARMER & ASSOCIATES, INC. CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
 Texas Department of Transportation ©2024			
<b>US 287</b> <b>SUMMARY OF QUANTITIES</b> <b>EARTHWORK</b>			
SHEET 1 OF 2			
DESIGN CPM	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS CPM	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK SA	CONTROL 0172	SECTION 05	JOB 129
CHECK CPM			15

SUMMARY OF EARTHWORK QUANTITIES (CSJ 0172-05-129)

STA	Dist	Cut	Fill C	ITEM	132
				CODE	6006
	(FT)	(SF)	(SF)	EXCAVATION (ROADWAY) (CY)	EMBANKMENT (FINAL) (DEN CONT) (TY C) (CY)
16900	100	15	34	76	74
17000	100	14	37	54	131
17100	100	10	59	44	178
17200	100	11	40	39	183
17300	100	14	81	46	224
17400	100	2		30	150
17500	100	6	2	15	4
17600	100	8	22	26	44
17700	100	4	39	22	113
17800	100	3	47	13	159
17900	100	7	61	19	200
18000	100	4	43	20	193
18100	100	2	50	11	172
18200	100	2	34	7	156
18300	100	2	28	7	115
18400	100	2	27	7	102
18500	100	23	15	46	78
18600	100	3	27	48	78
18700	100	2	39	9	122
18800	100	3	53	9	170
18900	100	5	42	15	176
19000	100	2	87	13	239
19100	100	2	86	7	320
19200	100	3	69	9	287
19300	100	2	59	9	237
19400	100	1	25	6	156
19482	82	1	25	3	76
19500	18				8
19600	100				
19700	100				
19790	90	2	1	3	2
19800	10	2	1	1	
19900	100	4	3	11	7
20000	100	9	2	24	9
20100	100	11	4	37	11
20200	100	13	2	44	11
20300	100	12	2	46	7
20400	100	14	1	48	6
20500	100	7	1	39	4
20600	100	7	1	26	4
20700	100	4		20	2
20768	68	4		10	
20800	32			2	
<b>PROJECT TOTALS</b>				<b>2695</b>	<b>15209</b>



NO.	DATE	DESCRIPTION	APPROV.
 BRIDGEFARMER & ASSOCIATES, INC. CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
 Texas Department of Transportation ©2024			
<b>US 287</b> <b>SUMMARY OF QUANTITIES</b> <b>EARTHWORK</b>			
SHEET 2 OF 2			
DESIGN CPM	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS CPM	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK SA	CONTROL 0172	SECTION 05	JOB 129
CHECK CPM			SHEET NO. 16



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 ct:\bms\br\idgef farmer-pw\chr\is.myr\ick\dms35299\0387-EARTHWORK-02.dgn





### SUMMARY OF SIGN QUANTITIES (CSJ 0172-05-129)

LOCATION	644 6001	644 6004	644 6009	644 6012	644 6028	644 6039	644 6040	644 6068
	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	IN SM RD SN SUP&AM TY10BWG(1)SB(P)	IN SM RD SN SUP&AM TY10BWG(1)SB(T)	IN SM RD SN SUP&AM TYS80(1)SA(P- BM)	IN SM RD SN SUP&AM TYS80(1)SB(P)	IN SM RD SN SUP&AM TYS80(1)SB(P- BM)	RELOCATE SM RD SN SUP&AM TY 10BWG
	EA	EA	EA	EA	EA	EA	EA	EA
SHEET 1 OF 20	5	1		2				
SHEET 2 OF 20	2							
SHEET 3 OF 20								
SHEET 4 OF 20								
SHEET 5 OF 20	2							
SHEET 6 OF 20	9	1	5	1	1	1	1	
SHEET 7 OF 20	3							
SHEET 8 OF 20	3	1						
SHEET 9 OF 20	1	1						
SHEET 10 OF 20	6	2						
SHEET 11 OF 20	2							
SHEET 12 OF 20	2							1
SHEET 13 OF 20	9	4						
SHEET 14 OF 20	3							2
SHEET 15 OF 20	3	1						
SHEET 16 OF 20	13	4	4	2		2		
SHEET 17 OF 20	3							
SHEET 18 OF 20								
SHEET 19 OF 20	1							
SHEET 20 OF 20								
PROJECT TOTALS	67	15	9	5	1	3	1	3

NO.	DATE	DESCRIPTION	APPROV.
			
			
<b>US 287</b> <b>SUMMARY OF QUANTITIES</b> <b>SIGNING</b>			
SHEET 1 OF 1			
DESIGN AP	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129
CHECK SA	HIGHWAY NO. US 287		SHEET NO. 18

# SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)	
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc UB = Universal Bolt SA = Slipbase-Conc SB = Slipbase-Bolt	PREFABRICATED	1EXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum. Sign		TY = TYPE
1	1	R6-1R		54" X 18"	X		10BWG	1	SB	T		TY = TYPE	
		R1-1		36" X 36"									
1	2	R5-1		36" X 36"	X		10BWG	1	SA	P			
1	3	R3-5L		30" X 36"	X		10BWG	1	SA	P			
1	4	R3-5R		30" X 36"	X		10BWG	1	SA	P			
1	5	R5-1		36" X 36"	X		10BWG	1	SA	P			
1	6	R1-2		48" X 48" X 48"	X		10BWG	1	SA	T			
1	7	R5-1		36" X 36"	X		10BWG	1	SA	P			
1	8	R6-1R		54" X 18"	X		MOUNT BACK TO BACK						
		R6-1L		54" X 18"			10BWG	1	SB	T			
		R1-1		36" X 36"									
2	1	R3-5L		30" X 36"	X		10BWG	1	SA	P			
2	2	R3-4		36" X 36"	X		10BWG	1	SA	P			
5	1	W9-2TL		36" X 36"	X		10BWG	1	SA	P			

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DATE: 5/30/2024 1:26:55 PM  
 FILE: c:\bms\bridgeformer-pw\allex.pap\lomat\ams35338\0387-SOSS-01.dgn

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

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

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

SHEET 1 OF 9




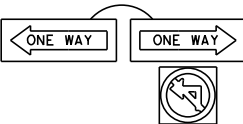










## US 287 SUMMARY OF SMALL SIGNS

**SOSS**

FILE: slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	ELLIS	19	

# SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)	
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc Bolt UB = Universal Bolt SA = Slipbase-Conc SB = Slipbase-Bolt	PREFABRICATED	1EXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL . = Extruded Alum. Sign		TY = TYPE
5	2	R3-5L		30" X 36"	X		10BWG	1	SA	P			
6	1	R1-2		48" X 48" X 48"	X		10BWG	1	SB	T			
6	2	R5-1		36" X 36"	X		10BWG	1	SA	P			
6	3	R6-1R		54" X 18"	X		MOUNT BACK TO BACK						
		R6-1L		54" X 18"			10BWG	1	SA	T			
		R3-2		36" X 36"									
6	4	R5-1		36" X 36"	X		10BWG	1	SB	P			
6	5	R5-1		36" X 36"	X		10BWG	1	SA	P			
6	6	R3-5L		30" X 36"	X		10BWG	1	SB	P			
6	7	R3-4		36" X 36"	X		10BWG	1	SA	P			
6	8	R3-5L		30" X 36"	X		10BWG	1	SA	P			
6	9	R3-4		36" X 36"	X		10BWG	1	SA	P			
6	10	R3-5L		30" X 36"	X		10BWG	1	SB	P			
6	11	R5-1		36" X 36"	X		10BWG	1	SB	P			

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: 5/30/2024 1:27:02 PM  
 FILE: c:\bms\bridgeformer-pw\alex.pap\lomatof\dms35338\0387-SOSS-02.dgn

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

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

**NOTE:**

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

SHEET 2 OF 9



## US 287 SUMMARY OF SMALL SIGNS

### SOSS

FILE: slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	ELLIS	20	

# SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc Bolt UB = Universal Bolt SA = Slipbase-Conc SB = Slipbase-Bolt	PREFABRICATED	TEXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum. Sign	
6	12	R5-1		36" X 36"	X		10BWG	1	SA	P		
6	13	R5-1		36" X 36"	X		10BWG	1	SB	P		
6	14	R6-1L		54" X 18"	X		S80	1	SB	P	BM	
		R1-2		48"X48"X48"	X							
6	15	R3-5R		30" X 36"	X		10BWG	1	SA	P		
6	16	R4-7		36" X 48"	X		S80	1	SB	P		
		R3-2		36" X 36"								
6	17	R6-1R		54" X 18"	X		S80	1	SA	P	BM	
		R1-2		48"X48"X48"	X							
6	18	W9-2TL		36" X 36"	X		10BWG	1	SA	P		
6	19	R5-1		36" X 36"	X		10BWG	1	SA	P		
7	1	R3-5L		30" X 36"	X		10BWG	1	SA	P		
7	2	R2-1		30" X 36"	X		10BWG	1	SA	P		
7	3	M3-1		24" X 12"	X		10BWG	1	SA	P		
		M1-4		30" X 24"	X							
		M5-3T		21" X 15"	X							
8	1	W9-2TR		36" X 36"	X		10BWG	1	SA	P		

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: 5/30/2024 1:27:09 PM  
 FILE: c:\bms\bridgeformer-pw\alex.pap\lomat\ams35338\0387-SOSS-03.dgn.dgn

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

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

**NOTE:**

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

SHEET 3 OF 9



## US 287 SUMMARY OF SMALL SIGNS

### SOSS

FILE: slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	ELLIS	21	

# SUMMARY OF SMALL SIGNS

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: 5/30/2024 1:27:15 PM  
 FILE: c:\bms\bridgeformer-pw\alex.pap\lomat\ams35338\0387-SOSS-04.dgn

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc UB = Universal Bolt SA = Slipbase-Conc SB = Slipbase-Bolt	PREFABRICATED	EXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum. Sign	
8	2	R6-1L		54" X 18"	X		10BWG	1	SA	T		
8	3	R5-1		36" X 36"	X		10BWG	1	SA	P		
8	4	M3-1		24" X 12"	X		10BWG	1	SA	P		
		M1-4		30" X 24"	X							
		M5-3T		21" X 15"	X							
9	1	R5-1		36" X 36"	X		10BWG	1	SA	P		
9	2	R6-1L		54" X 18"	X		10BWG	1	SA	T		
10	1	M3-3		24" X 12"	X		10BWG	1	SA	P		
		M1-4		30" X 24"	X							
		M5-3T		21" X 15"	X							
10	2	M3-3		24" X 12"	X		10BWG	1	SA	P		
		M1-4		30" X 24"	X							
		M5-3T		21" X 15"	X							
10	3	R6-1R		54" X 18"	X		10BWG	1	SA	T		
10	4	R5-1		36" X 36"	X		10BWG	1	SA	P		
10	5	R3-5R		30" X 36"	X		10BWG	1	SA	P		
10	6	W9-2TR		36" X 36"	X		10BWG	1	SA	P		
10	7	R5-1		36" X 36"	X		10BWG	1	SA	P		
10	8	R6-1R		54" X 18"	X		10BWG	1	SA	T		

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

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

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

SHEET 4 OF 9

















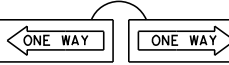


## US 287 SUMMARY OF SMALL SIGNS

**SOSS**

FILE: slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	ELLIS	22	

# SUMMARY OF SMALL SIGNS

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: 5/30/2024 1:27:19 PM  
 FILE: c:\bms\brIDGEformer-pw\allex.pap\lomatof\dms35338\0387-SOSS-05.dgn

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc Bolt UB = Universal Slipbase-Conc SB = Slipbase-Bolt	PREFABRICATED	TEXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL. = Extruded Alum. Sign	
11	1	M3-3		24" X 12"	X							
		M1-4		30" X 24"	X		10BWG	1	SA	P		
		M5-3T		21" X 15"	X							
11	2	R3-5R		30" X 36"	X		10BWG	1	SA	P		
12	1	W8-13T		36" X 36"	X		RELOCATE TY 10BWG					
12	2	M3-1		24" X 12"	X							
		M1-4		30" X 24"	X		10BWG	1	SA	P		
		M5-3T		21" X 15"	X							
12	3	M3-1		24" X 12"	X							
		M1-4		30" X 24"	X		10BWG	1	SA	P		
		M5-3T		21" X 15"	X							
13	1	W9-2TR		36" X 36"	X		10BWG	1	SA	P		
13	2	R5-1		36" X 36"	X		10BWG	1	SA	P		
13	3	R6-1L		54" X 18"	X		10BWG	1	SA	T		
13	4	R6-1L		54" X 18"	X		MOUNT BACK TO BACK					
		R6-1R		54" X 18"			10BWG	1	SA	T		
		R3-2		36" X 36"								
13	5	W9-2TL		36" X 36"	X		10BWG	1	SA	P		
13	6	R1-2		48" X 48" X 48"	X		10BWG	1	SA	T		

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

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

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

SHEET 5 OF 9



















## US 287 SUMMARY OF SMALL SIGNS

**SOSS**

FILE: slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	ELLIS	23	

# SUMMARY OF SMALL SIGNS

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: 5/30/2024 1:27:25 PM  
 FILE: c:\bms\bridgeformer-pw\alex.pap\lomatof\dms3338\0387-SOSS-06.dgn

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc UB = Universal Bolt SA = Slipbase-Conc SB = Slipbase-Bolt	PREFABRICATED	1EXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum. Sign	
13	7	R1-2		48" X 48" X 48"	X		10BWG	1	SA	T		
13	8	R3-5R		30" X 36"	X		10BWG	1	SA	P		
13	9	R5-1		36" X 36"	X		10BWG	1	SA	P		
13	10	R3-5L		30" X 36"	X		10BWG	1	SA	P		
13	11	R3-4		36" X 36"	X		10BWG	1	SA	P		
13	12	R3-5L		30" X 36"	X		10BWG	1	SA	P		
13	13	R5-1		36" X 36"	X		10BWG	1	SA	P		
14	1	R3-5R		30" X 36"	X		10BWG	1	SA	P		
14	2	R3-5R		30" X 36"	X		10BWG	1	SA	P		
14	3	D1-1		-	X		RELOCATE TY 10BWG					
14	4	I-5 M6-1G	 	-	X		RELOCATE TY 10BWG					
14	5	M3-1 M1-4 M5-3T	  	24" X 12" 30" X 24" 21" X 15"	X X X		10BWG	1	SA	P		
15	1	W9-2TR		36" X 36"	X		10BWG	1	SA	P		

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

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

- NOTE:**
- Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
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SHEET 6 OF 9

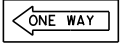













## US 287 SUMMARY OF SMALL SIGNS

**SOSS**

FILE: slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	ELLIS	24	

# SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc Bolt UB = Universal Slipbase-Conc Bolt SA = Slipbase-Bolt	PREFABRICATED	EXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum. Sign	
15	2	R6-1L		54" X 18"	X		10BWG	1	SA	T		
15	3	R5-1		36" X 36"	X		10BWG	1	SA	P		
15	4	M3-1		24" X 12"	X		10BWG	1	SA	P		
		M1-4		30" X 24"	X							
		M5-3T		21" X 15"	X							
16	1	W9-2TL		36" X 36"	X		10BWG	1	SA	P		
16	2	R6-1L		54" X 18"	X	MOUNT BACK TO BACK						
		R6-1R		54" X 18"		10BWG	1	SA	T			
16	3	R1-2		48" X 48" X 48"	X		10BWG	1	SA	T		
16	4	M1-4		30" X 24"	X		10BWG	1	SA	P		
		M6-1		21" X 15"								
16	5	R3-5R		30" X 36"	X		10BWG	1	SA	P		
16	6	R4-7		36" X 48"	X		S80	1	SB	P		
		R3-2		36" X 36"								
16	7	R5-1		36" X 36"	X		10BWG	1	SA	P		
16	8	R1-2		48" X 48" X 48"	X		10BWG	1	SB	T		
16	9	R3-5L		30" X 36"	X		10BWG	1	SB	P		


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 DATE: 5/30/2024 1:27:31 PM  
 FILE: c:\bms\bridgeformer-pw\alex.pap\lomat\ams35338\0387-SOSS-07.dgn

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

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

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

SHEET 7 OF 9



**Traffic Operations Division Standard**

## US 287 SUMMARY OF SMALL SIGNS

### SOSS

FILE: slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
	0172	05	129	US 287
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	ELLIS	25	



# SUMMARY OF SMALL SIGNS

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: 5/30/2024 1:27:37 PM  
 FILE: c:\bms\bridgeformer-pw\alex.pap\lomatof\dms3338\0387-SOSS-08.dgn

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc Bolt UB = Universal Bolt SA = Slipbase-Conc SB = Slipbase-Bolt	PREFABRICATED	1EXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL = Extruded Alum. Sign	
16	10	W9-1R		36" X 36"	X		10BWG	1	SA	P		
16	11	R3-4		36" X 36"	X		10BWG	1	SA	P		
16	12	R3-5L		30" X 36"	X		10BWG	1	SA	P		
16	13	R3-5R		30" X 36"	X		10BWG	1	SA	P		
16	14	R3-4		36" X 36"	X		10BWG	1	SA	P		
16	15	R5-1		36" X 36"	X		10BWG	1	SA	P		
16	16	R5-1		36" X 36"	X		10BWG	1	SB	P		
16	17	R5-1		36" X 36"	X		10BWG	1	SB	P		
16	18	R3-5L		30" X 36"	X		10BWG	1	SB	P		
16	19	R1-2		48" X 48" X 48"	X		10BWG	1	SB	T		
16	20	R4-7		36" X 48"	X		S80	1	SB	P		
		R3-2		36" X 36"								
16	21	R3-5R		30" X 36"	X		10BWG	1	SA	P		
16	22	M1-4		30" X 24"	X		10BWG	1	SA	P		
		M6-1		21" X 15"								

Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website:  
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SHEET 8 OF 9










## US 287 SUMMARY OF SMALL SIGNS

**SOSS**

FILE:	slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT	May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS		0172	05	129	US 287
4-16		DIST	COUNTY	SHEET NO.	
8-16		DAL	ELLIS	26	

# SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	Sign Designation	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	FLAT ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		Bridge Mount Clearance Signs (See Note 2)	
							FRP = Fiberglass TWT = Thin-wall 10BWG = 10 BWG S80 = Sch 80	Posts (1 or 2)	UA = Universal Conc UB = Universal Bolt SA = Slipbase-Conc SB = Slipbase-Bolt	PREFABRICATED	TEXT OR 2EXT = # of Ext. BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL . = Extruded Alum. Sign		TY = TYPE
16	23	R1-2		48" X 48" X 48"	X		10BWG	1	SA	T			
16	24	R6-1L		54" X 18"	X		MOUNT BACK TO BACK						
		R6-1R		54" X 18"	X		10BWG	1	SA	T			
16	25	W9-2TL		36" X 36"	X		10BWG	1	SA	P			
17	1	R2-1		30" X 36"	X		10BWG	1	SA	P			
17	2	R3-5L		30" X 36"	X		10BWG	1	SA	P			
17	3	W4-1R		36" X 36"	X		10BWG	1	SA	P			
19	1	W9-2TR		36" X 36"	X		10BWG	1	SA	P			

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.  
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- NOTE:**
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  - For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

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: 5/30/2024 1:27:43 PM  
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## US 287 SUMMARY OF SMALL SIGNS



**SOSS**

FILE: slms16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CR: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-16	DIST	COUNTY	SHEET NO.	
8-16	DAL	ELLIS	27	

**SUMMARY OF PAVEMENT MARKING QUANTITIES (CSJ 0172-05-129)**

LOCATION	658	666	666	666	666	666	666	666	666	666	666	666	666	666	666	666	672	672
	6099	6018	6036	6039	6042	6048	6054	6063	6072	6078	6099	6102	6141	6306	6309	6321	6009	6010
	INSTL OM ASSM (OM-2Z) (WF LX)GND	REFL PAV MRK TY I (W)6" (DOT) (100MIL)	REFL PAV MRK TY I (W)8" (SLD) (100MIL)	REFL PAV MRK TY I (W)12" (LND P) (100MIL)	REFL PAV MRK TY I (W)12" (SLD) (100MIL)	REFL PAV MRK TY I (W)24" (SLD) (100MIL)	REFL PAV MRK TY I (W) (ARROW) (100MIL)	REFL PAV MRK TY I (W) (UTURN ARW) (100MIL)	REFL PAV MRK TY I (W) (LNDP ARW) (100MIL)	REFL PAV MRK TY I (W) (WORD) (100MIL)	REF PAV MRK TY I (W)18" (YLD TRI) (100MIL)	REF PAV MRK TY I (W)36" (YLD TRI) (100MIL)	REFL PAV MRK TY I (Y)12" (SLD) (100MIL)	RE PM W/RET REQ TY I (W)6" (BRK) (100MIL)	RE PM W/RET REQ TY I (W)6" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y)6" (SLD) (100MIL)	REFL PAV MRKR TY II-A-A	REFL PAV MRKR TY II-C-R
EA	LF	LF	LF	LF	LF	EA	EA	EA	EA	EA	EA	LF	LF	LF	LF	EA	EA	
SHEET 1 OF 20	2		93			36	1					4		280	153	1169		19
SHEET 2 OF 20			892				3			2				216	107	814		56
SHEET 3 OF 20																		
SHEET 4 OF 20																		
SHEET 5 OF 20	1		332		651		1		2	1			112	446	447		45	
SHEET 6 OF 20	3	75	2288	58	1395	92	8		2	5	8	8	33	401	1839	2001	8	155
SHEET 7 OF 20	1		1050	76	393		2	1	1	2				551	2201	2203		93
SHEET 8 OF 20	2		833	81	300	153		3	1	1				551	2243	2143		98
SHEET 9 OF 20	4		230		37	131		1						550	2248	2156		41
SHEET 10 OF 20	1		972	195	264		2	3	2	3			35	551	2155	2397	10	122
SHEET 11 OF 20			494				2			1				550	2201	2201		53
SHEET 12 OF 20			647	141	56			3	2	1				551	2201	2201		87
SHEET 13 OF 20	5		1446	177	94	198	6	1	2	3	7	4	49	548	2381	2309	8	134
SHEET 14 OF 20	1		316	80			1		1	2				551	2201	2202		57
SHEET 15 OF 20	3		891	275	300	100		4	2	2				550	2263	2186		133
SHEET 16 OF 19	2		2089	274	1280	98	7		1	5	20	8		550	2423	2393		188
SHEET 17 OF 19	1		1881	172	1159		1		2	1				495	2490	2498		168
SHEET 18 OF 19	1		1292	173					1					552	2539	2737		121
SHEET 19 OF 19			243	20	300				1					438	3683	3684		53
SHEET 20 OF 20			161				1			1			239	67	1290	1817	51	12
PROJECT TOTALS	27	75	16150	1722	6229	808	35	16	20	30	35	24	356	8064	35064	37558	77	1635

5/8/2024 2:09:19 PM  
 A.lexP  
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NO.	DATE	DESCRIPTION	APPROV.
 <b>BRIDGEFARMER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
 Texas Department of Transportation ©2024			
<b>US 287</b> <b>SUMMARY OF QUANTITIES</b> <b>PAVEMENT MARKINGS</b>			
SHEET 1 OF 1			
DESIGN AP	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			28



**SUMMARY OF SW3P QUANTITIES (CSJ 0172-05-129)**

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LOCATION	161	164	166	168	506	506	506	506	506	506	506	506
	6017	6023	6002	6001	6001	6011	6020	6024	6038	6039	6040	6043
	COMPOST MANUF TOPSOIL (4")	CELL FBR MLCH SEED (PERM) (RURAL) (CLAY)	FERTILIZER	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 1)	ROCK FILTER DAMS (REMOVE)	CONSTRUCTION EXITS (INSTALL) (TY 1)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (8")	BIODEG EROSN CONT LOGS (REMOVE)
	SY	SY	TON	MG	LF	LF	SY	SY	LF	LF	LF	LF
SHEET 1	4050	4050	0.21	602	50	50	100	100	50	50	50	50
SHEET 2	1033	1033	0.05	154			78	78				
SHEET 3												
SHEET 4												
SHEET 5	1498	1498	0.08	223			112	112	50	50	50	50
SHEET 6	4086	4086	0.21	608	100	100			405	405		
SHEET 7	5812	5812	0.30	865	25	25			459	459	25	25
SHEET 8	4679	4679	0.24	696	50	50	112	112				
SHEET 9	1587	1587	0.08	236	50	50	112	112	75	75	75	75
SHEET 10	5808	5808	0.30	864					384	384	75	75
SHEET 11	4946	4946	0.26	736			223	223	25	25	25	25
SHEET 12	4243	4243	0.22	631			112	112				
SHEET 13	5249	5249	0.27	781	125	125	197	197	378	378	50	50
SHEET 14	5042	5042	0.26	750	75	75	27	27	210	210	50	50
SHEET 15	5376	5376	0.28	800	100	100	112	112	25	25	25	25
SHEET 16	4282	4282	0.22	637	125	125			367	367	25	25
SHEET 17	2201	2201	0.11	327	25	25	112	112	25	25	25	25
SHEET 18	1207	1207	0.06	180					50	50	50	50
SHEET 19												
* AS DIRECTED BY THE ENGINEER					73	73			251	251	53	53
<b>PROJECT TOTALS</b>	<b>61099</b>	<b>61099</b>	<b>3.16</b>	<b>9090</b>	<b>798</b>	<b>798</b>	<b>1297</b>	<b>1297</b>	<b>2754</b>	<b>2754</b>	<b>578</b>	<b>578</b>

\* ADDITIONAL QUANTITY IS PROVIDED TO ALLOW FOR THE PERIODIC REPLACEMENT OF PERISHABLE BMP'S DUE TO NORMAL WEAR WHEN OTHERWISE PROPERLY INSTALLED AND MAINTAINED.

\*\* FOR CONTRACTORS' INFORMATION ONLY, NOT A BID ITEM.

NO.	DATE	DESCRIPTION	APPROV.
			
			
<p><b>US 287</b> <b>SUMMARY OF QUANTITIES</b> <b>SW3P</b></p>			
SHEET 1 OF 1			
DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK MB	STATE	DISTRICT	COUNTY
CHECK SA	TEXAS	DALLAS	ELLIS
	CONTROL	SECTION	JOB
	0172	05	129
			29

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# TRAFFIC CONTROL PLAN NARRATIVE

THE FOLLOWING SEQUENCE OF WORK IS THE SUGGESTED METHOD OF PROSECUTION OF THE CONSTRUCTION ACTIVITIES OF THIS PROJECT. THIS SEQUENCE OF WORK MAY BE REVISED WITH THE APPROVAL OF THE ENGINEER.

## TCP GENERAL NOTES:

- LIMIT LANE CLOSURES ALONG THE HIGHWAY AND AT CROSS STREETS TO OFF-PEAK HOURS UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- TRAFFIC CONTROL, INCLUDING ADVANCE SIGNING, AND LANE CLOSURES WILL BE IN ACCORDANCE WITH THE PLANS, BC, TCP, AND WZ STANDARDS, AND AS DIRECTED BY THE ENGINEER.
- ALL TCP DEVICES AND SIGNS SHOWN ON TCP PLAN ARE CONSIDERED MINIMUM, ADDITIONAL DEVICES AND SIGNS MAY BE NECESSARY AND SUBSIDIARY TO ITEM 502.
- ALL TRAFFIC CONTROL SHALL CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, ALL APPLICABLE TXDOT STANDARDS AND AS DIRECTED BY ENGINEER.
- PAVEMENT EDGE DROP-OFFS STEEPER THAN 3:1 WILL NOT BE ALLOWED TO REMAIN AFTER WORK SHIFT. USE SUITABLE MATERIAL TO FORM 3:1 SLOPE OR FLATTER.
- KEEP ALL DRIVEWAYS OPEN DURING CONSTRUCTION IN ALL PHASES.
- MAINTAIN POSITIVE DRAINAGE AT ALL TIME.
- INSTALL WORKZONE PAVEMENT MARKINGS TO MATCH THE PROPOSED PAVEMENT MARKING PLAN BEFORE TRAFFIC IS ALLOWED ON MILLED SURFACES. REMOVE ANY CONFLICTING OR MISLEADING PAVEMENT MARKINGS.
- REMOVE WORKZONE PAVEMENT MARKINGS AND REMAINING EXISTING PAVEMENT MARKINGS IN AREAS WHERE THERE IS PROPOSED STRIPING PRIOR TO PLACING PERMANENT PAVEMENT MARKINGS.

## SEQUENCE OF WORK:

- SET BARRICADES AND ADVANCED WARNING SIGNS.
- INSTALL AND MAINTAIN STORMWATER POLLUTION PREVENTION PLAN ITEMS. TEMPORARY STORMWATER POLLUTION PREVENTION MEASURES SHALL ONLY BE PLACED IN AREAS WHERE SOIL DISTURBANCE IS EXPECTED TO OCCUR WITHIN TWO WEEKS.
- CONSTRUCT U-TURN LANES AND ASSOCIATED DRAINAGE AT STA 94+50, STA 109+50, AND STA 144+50 USING LANE CLOSURES AS SHOWN ON TCP LAYOUT. ALL EXISTING CROSSOVERS TO REMAIN OPEN UNTIL U-TURNS ARE IN PLACE. OMIT SURFACE COURSE IN WIDENED SECTIONS ADJACENT TO AREAS SHOWN AS MILL AND OVERLAY IN THE PLAN & PROFILE SHEETS.
- CONSTRUCT REMAINING PAVEMENT AND DRAINAGE ON INSIDE OF US 287. NO MORE THAN ONE EXISTING CROSSOVER TO BE CLOSED AT THE SAME TIME. TRAFFIC WILL USE CONSTRUCTED U-TURN LANES AS DETOURS. OMIT SURFACE COURSE IN WIDENED SECTIONS ADJACENT TO AREAS SHOWN AS MILL AND OVERLAY IN THE PLAN & PROFILE SHEETS.
- CONSTRUCT PAVEMENT AND ASSOCIATED DRAINAGE ON OUTSIDE OF US 287 USING LANE CLOSURES AS DESCRIBED ON TCP LAYOUTS. OMIT SURFACE COURSE IN WIDENED SECTIONS ADJACENT TO AREAS SHOWN AS MILL AND OVERLAY IN THE PLAN & PROFILE SHEETS.
- MILL ALL AREAS INDICATED AS MILL AND OVERLAY ON PLAN AND PROFILE SHEETS USING TXDOT STANDARDS FOR LANE AND SHOULDER CLOSURES.
- OVERLAY ALL AREAS INDICATED AS MILL AND OVERLAY ON PLAN AND PROFILE SHEETS AND CONSTRUCT SURFACE COURSE FOR PREVIOUSLY CONSTRUCTED ADJACENT WIDENING USING TXDOT STANDARDS FOR LANE, RAMP, AND SHOULDER CLOSURES.
- UTILIZE TXDOT STANDARD TCP(3-2)-13 FOR STRIPING OPERATIONS.
- REVEGETATE DISTURBED AREAS. TEMPORARY STORMWATER POLLUTION PREVENTION MEASURES SHALL BE REMOVED IN EACH AREA WITHIN TWO WEEKS OF PERMANENT VEGETATION ESTABLISHMENT OR AS APPROVED BY THE ENGINEER.
- REMOVE BARRICADES AND ADVANCE WARNING SIGNS.
- FINAL PROJECT CLEANUP.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 TRAFFIC CONTROL PLAN NARRATIVE

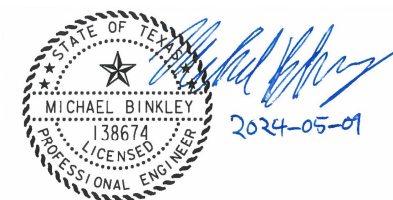
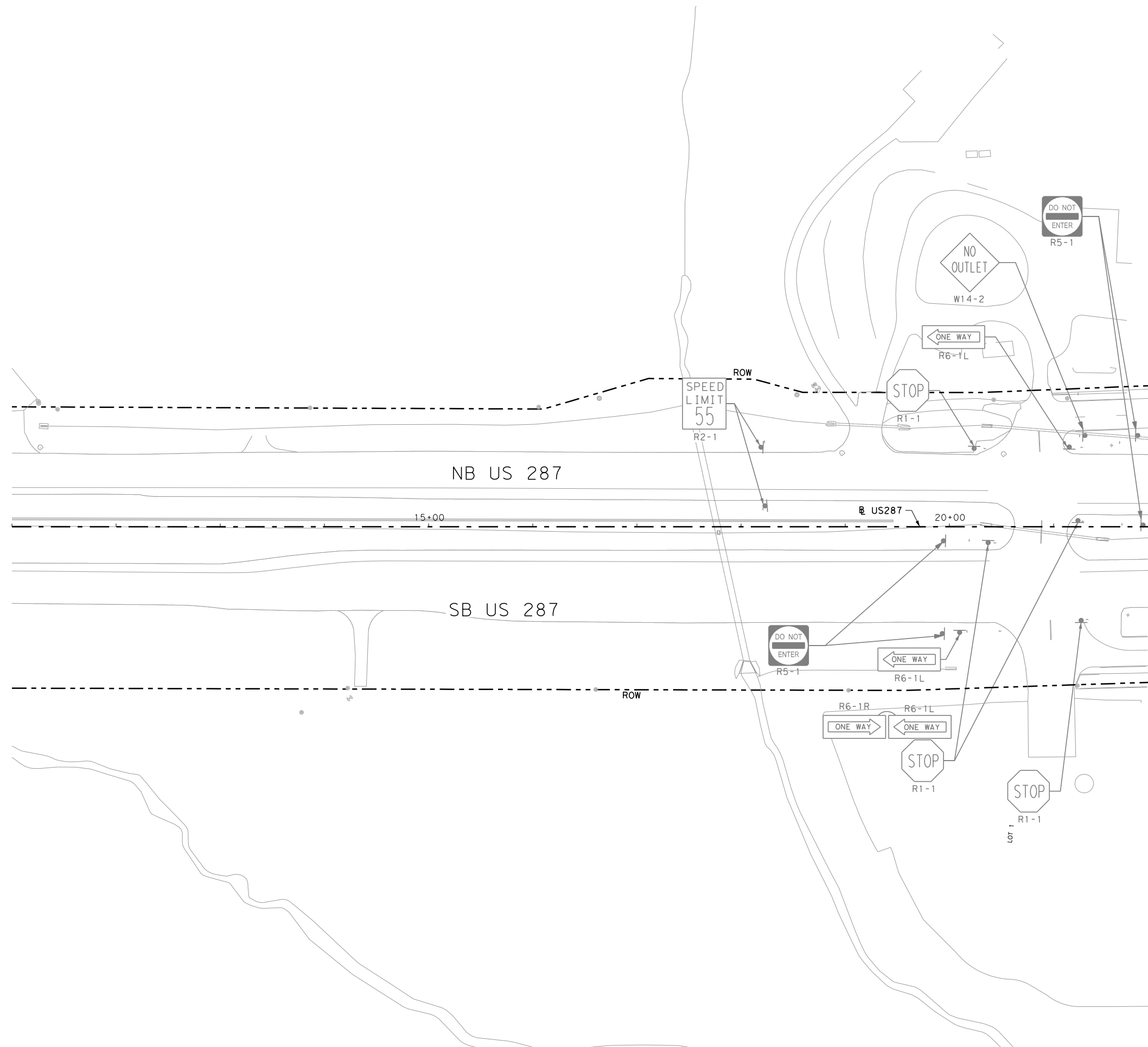
SHEET 1 OF 1

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CHECK MB	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SA	TEXAS	DALLAS	ELLIS	30
	CONTROL	SECTION	JOB	
	0172	05	129	

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50 0 50 100  
SCALE: 1" = 100'



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
BEGIN PROJECT TO STA 22+00**

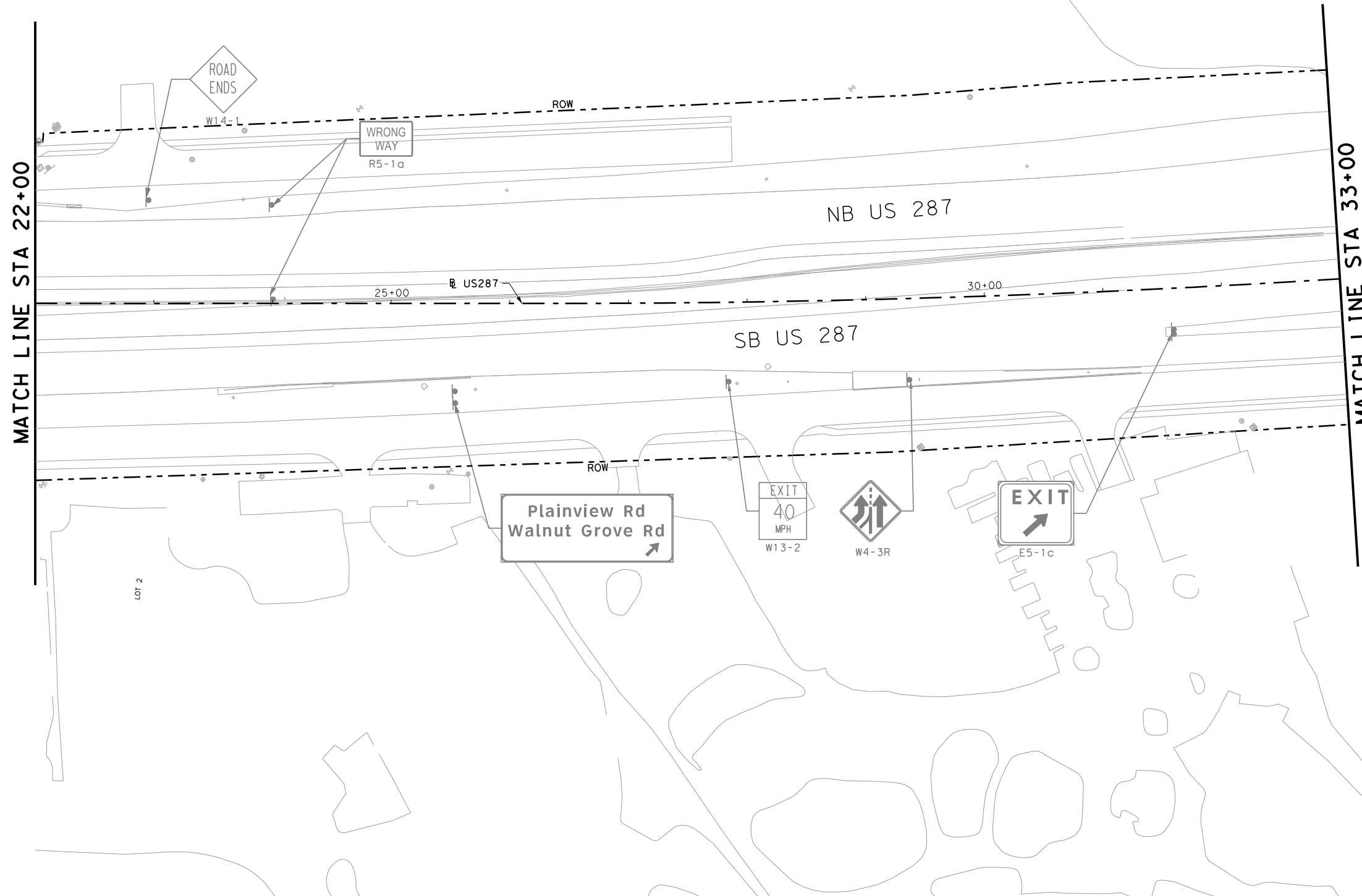
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GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 31
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				

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SCALE: 1" = 100'



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
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TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 22+00 TO STA 33+00**

SCALE: 1" = 100' SHEET 2 OF 20

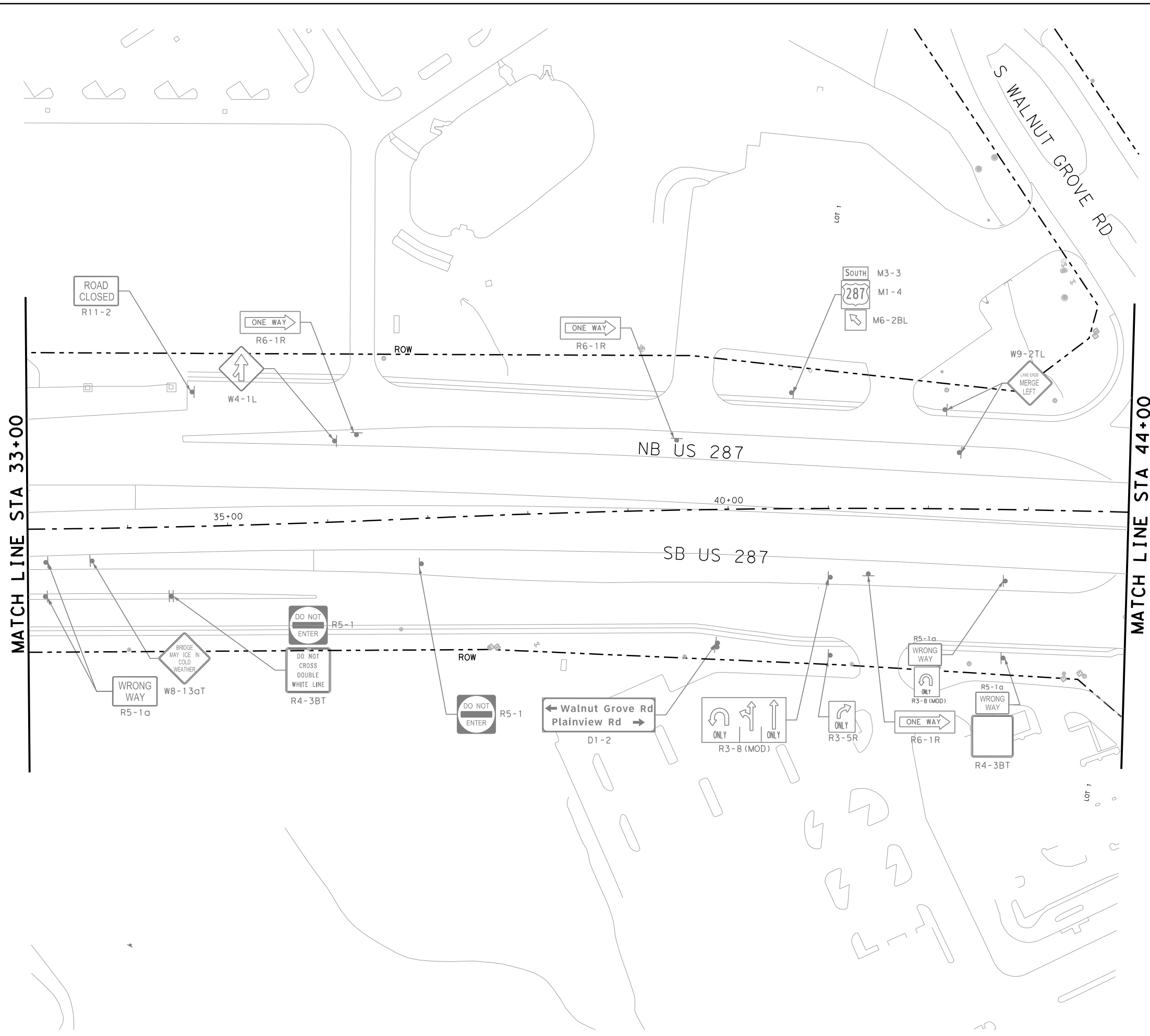
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MB	6	SEE TITLE SHEET		US 287
GRAPHICS	AP	STATE	DISTRICT	COUNTY
CHECK	MB	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129
				32



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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

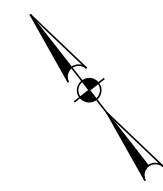


**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 33+00 TO STA 44+00**

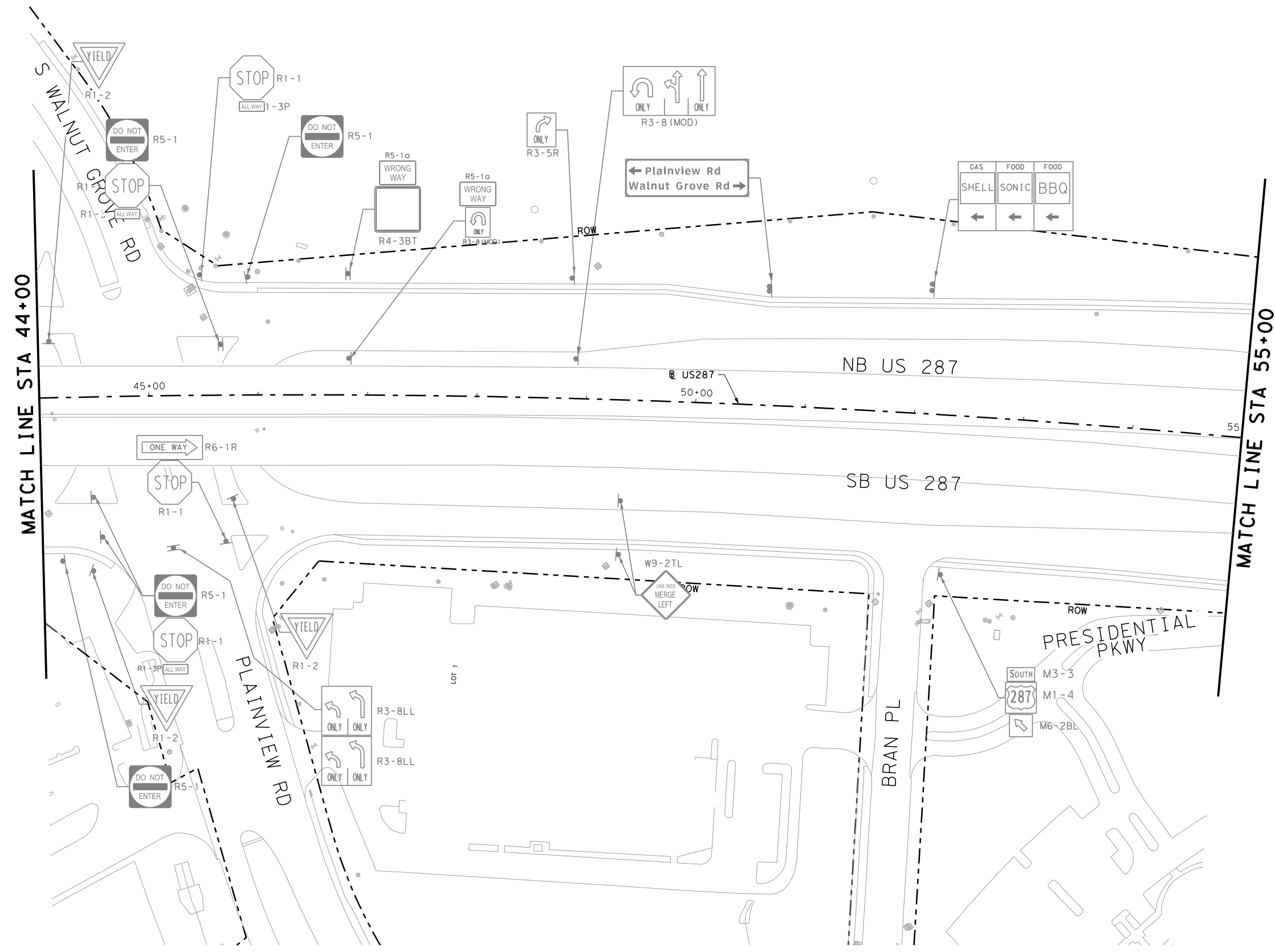
SCALE: 1" = 100' SHEET 3 OF 20

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GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 33
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				





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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 44+00 TO STA 55+00**

SCALE: 1" = 100' SHEET 4 OF 20

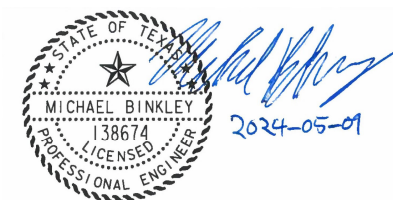
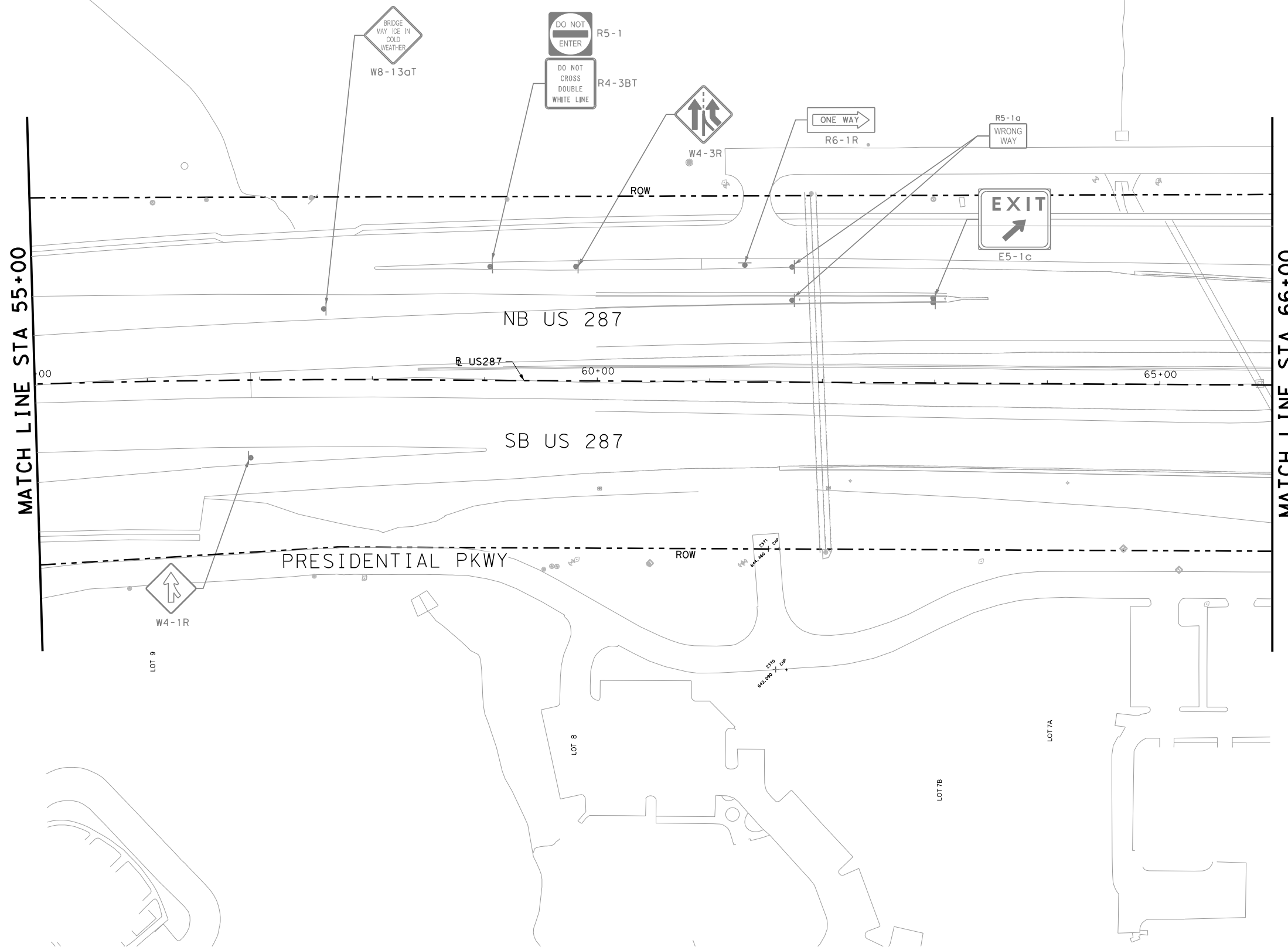
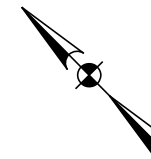
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GRAPHICS AP	6	SEE TITLE SHEET		US 287
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CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

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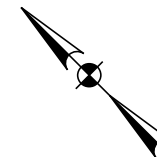
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 55+00 TO STA 66+00**

SCALE: 1" = 100' SHEET 5 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
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CHECK SA	CONTROL	SECTION	JOB	
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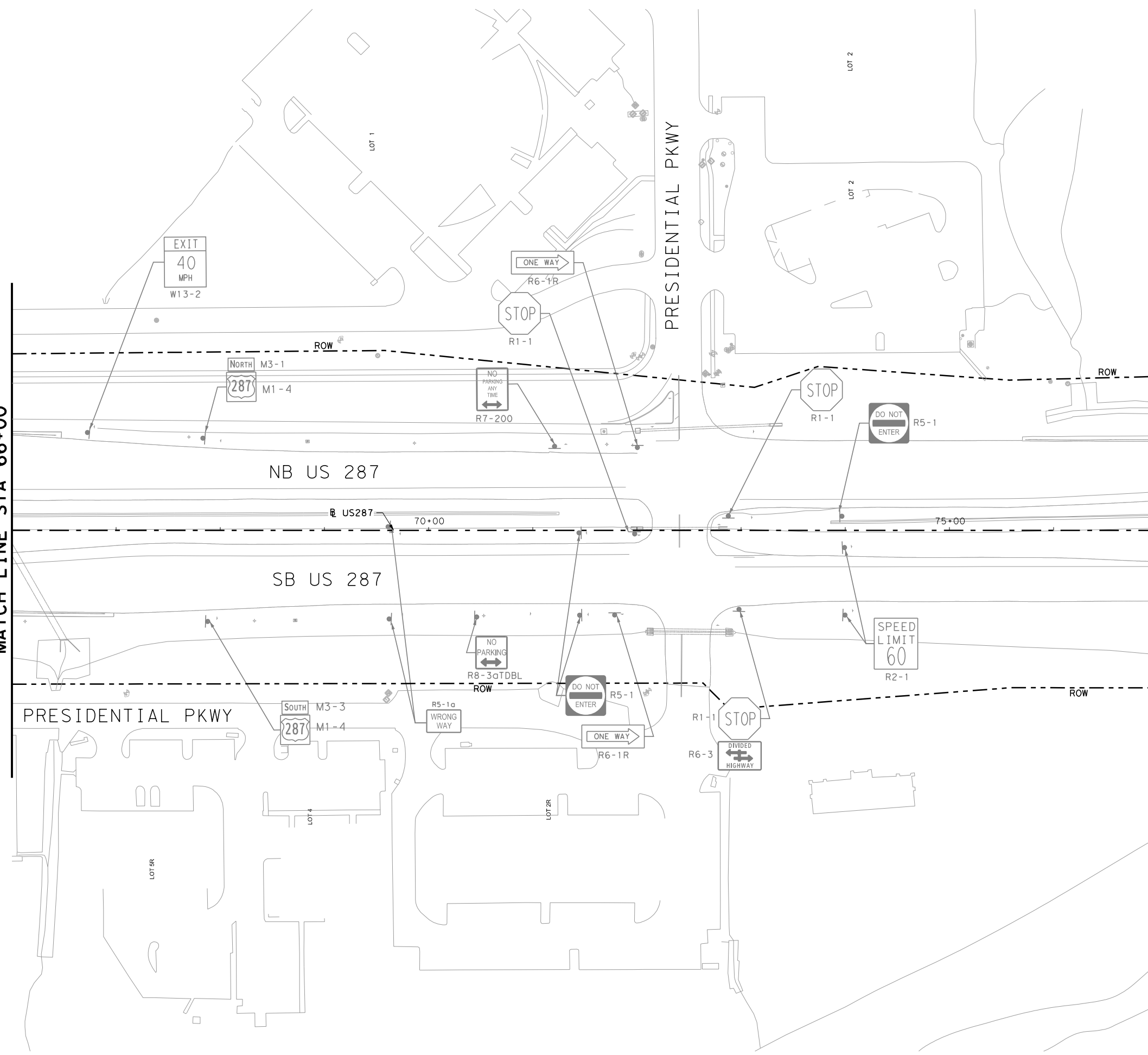


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MATCH LINE STA 66+00

MATCH LINE STA 77+00



NO.	DATE	DESCRIPTION	APPROV.

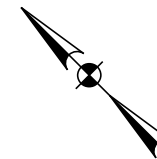
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 66+00 TO STA 77+00**

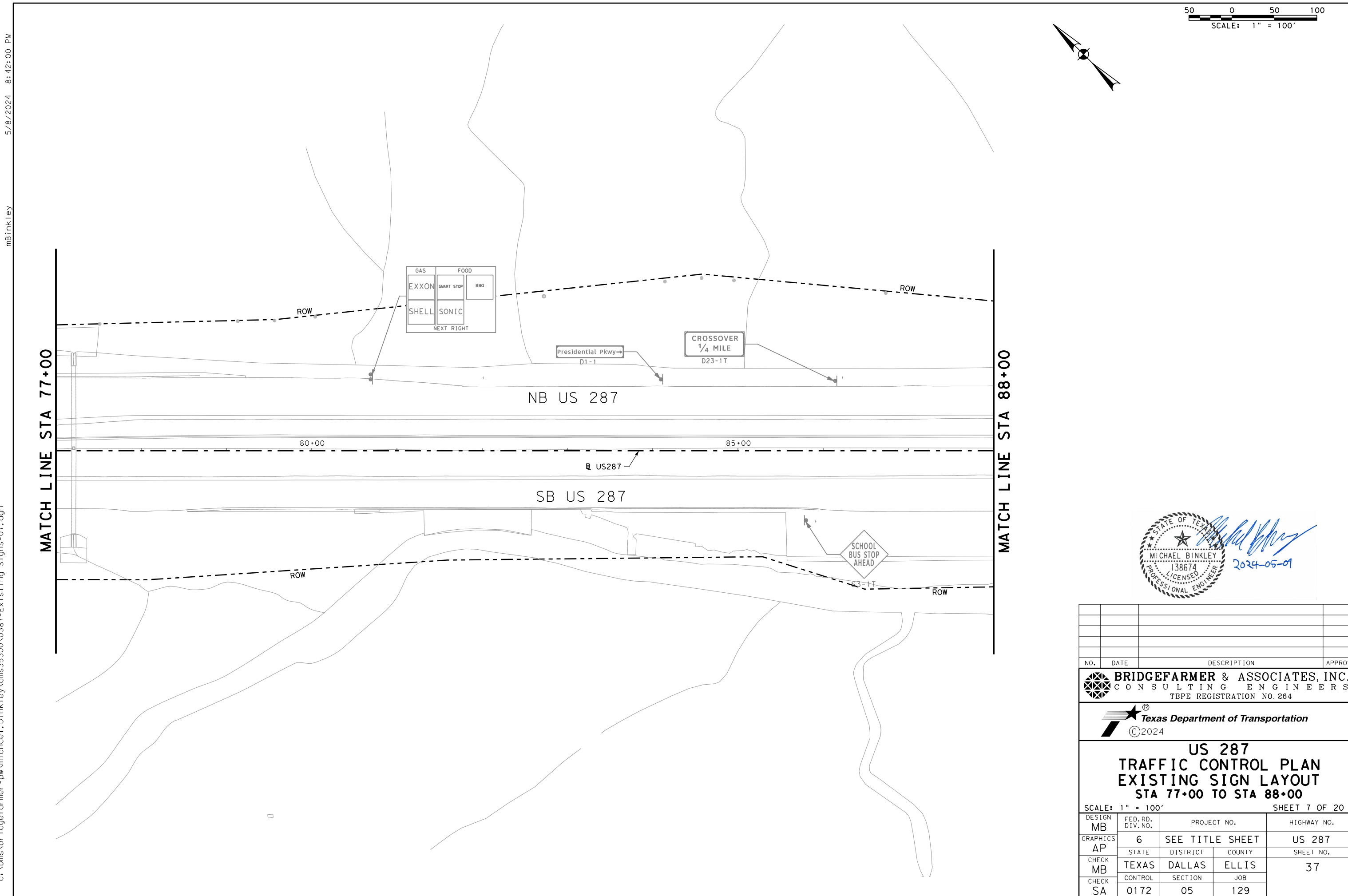
SCALE: 1" = 100' SHEET 6 OF 20

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GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 36
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				



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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
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TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 77+00 TO STA 88+00**

SCALE: 1" = 100' SHEET 7 OF 20

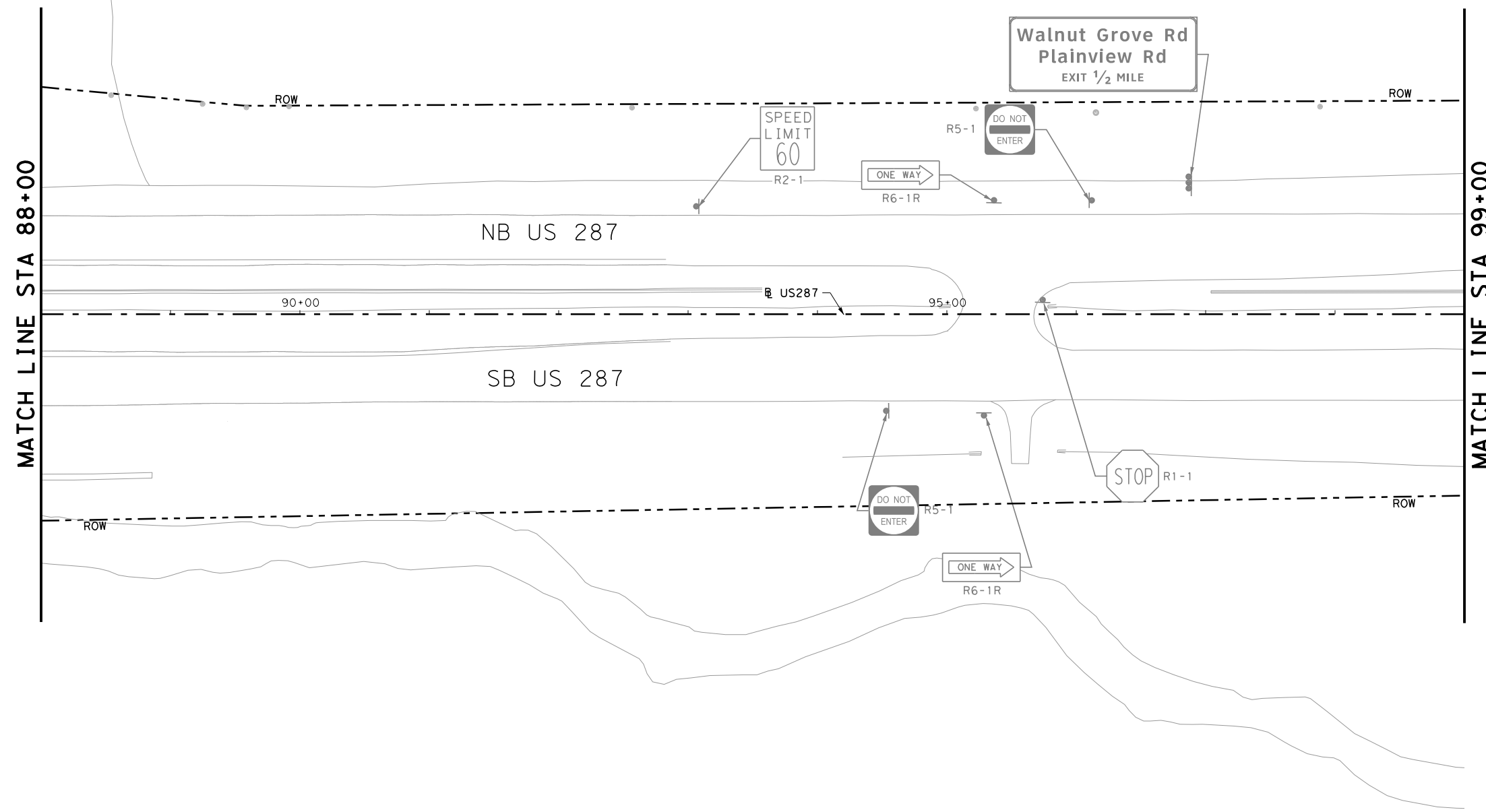
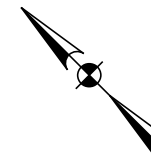
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GRAPHICS AP	6	SEE TITLE SHEET		US 287
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CHECK SA	CONTROL	SECTION	JOB	
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50 0 50 100  
SCALE: 1" = 100'



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 88+00 TO STA 99+00**

SCALE: 1" = 100' SHEET 8 OF 20

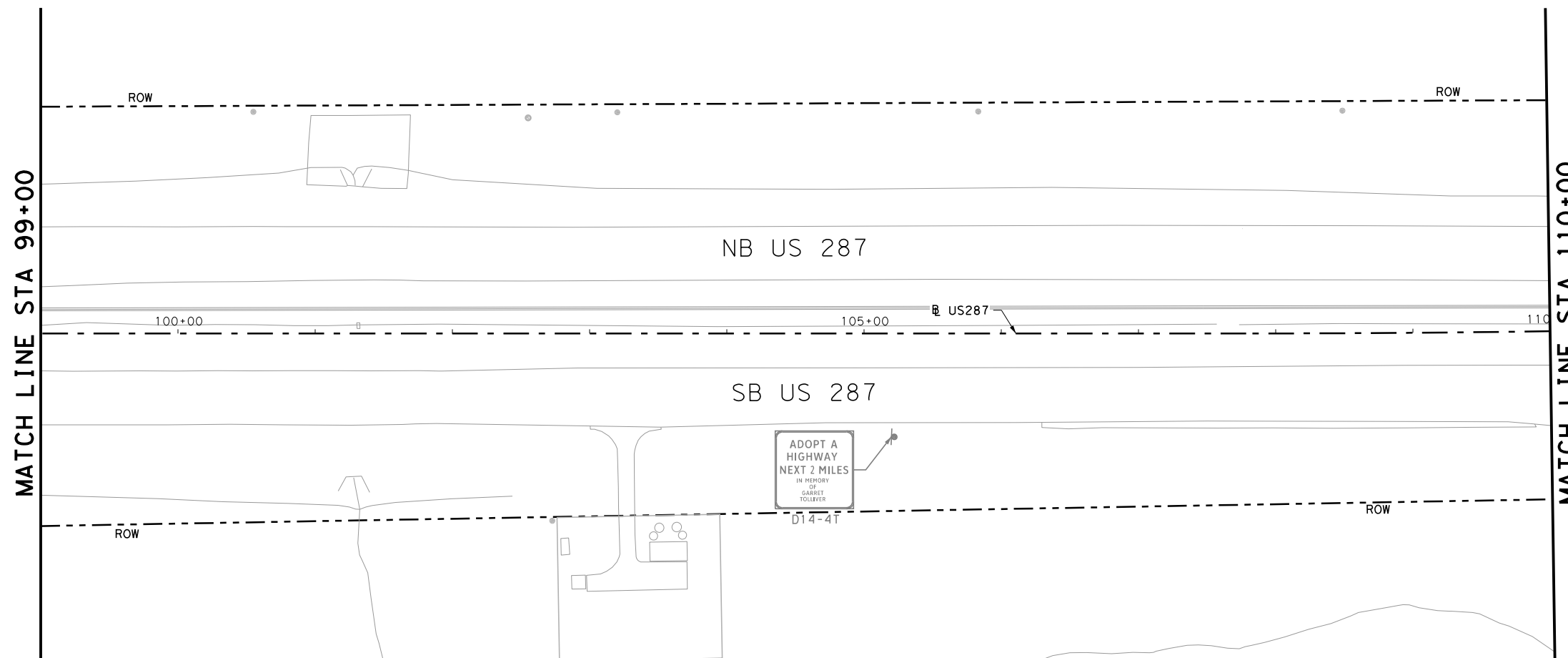
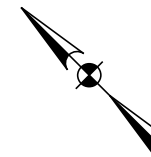
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GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 38
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				

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SCALE: 1" = 100'



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 99+00 TO STA 110+00**

SCALE: 1" = 100' SHEET 9 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
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CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

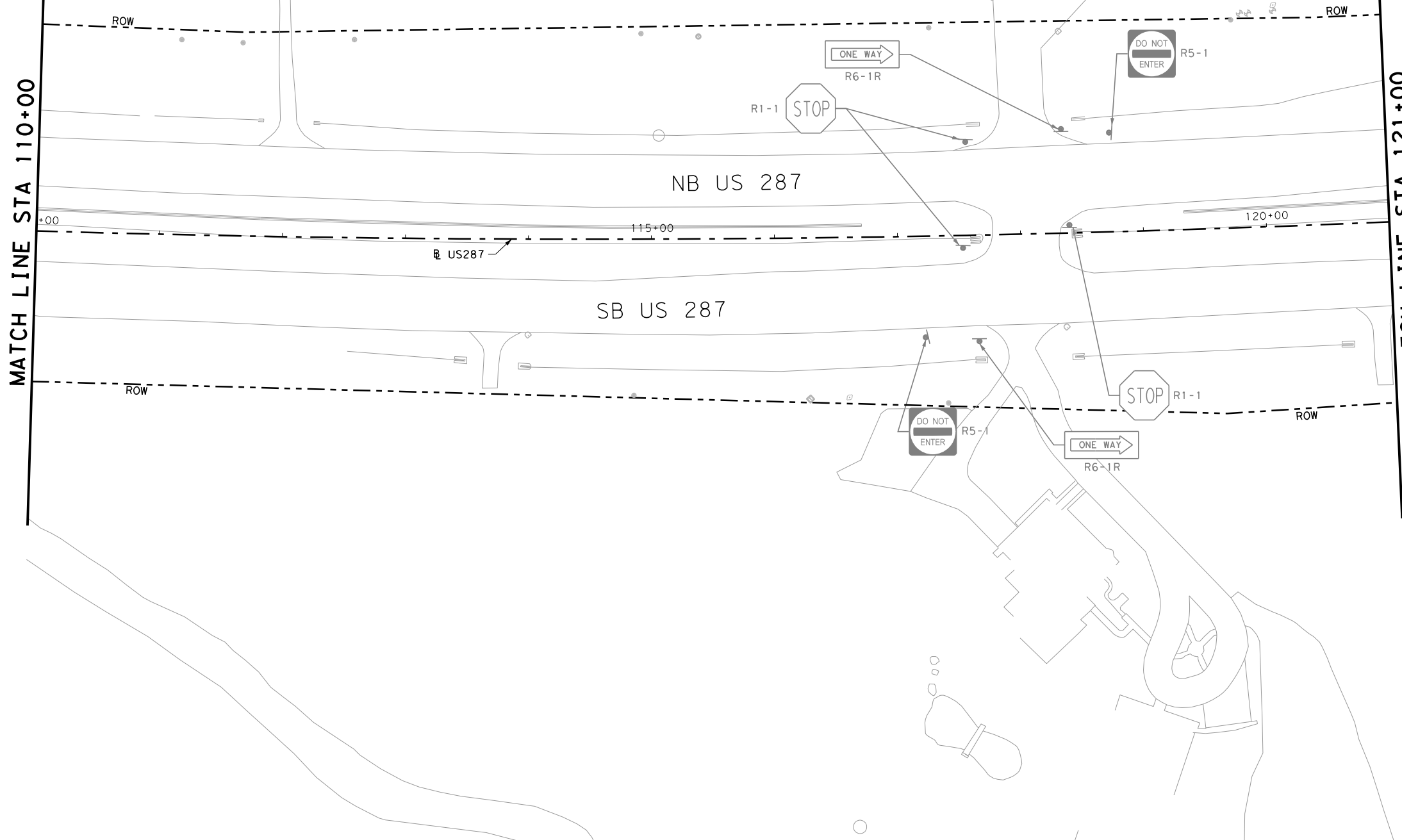


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MATCH LINE STA 110+00

MATCH LINE STA 121+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 110+00 TO STA 121+00**

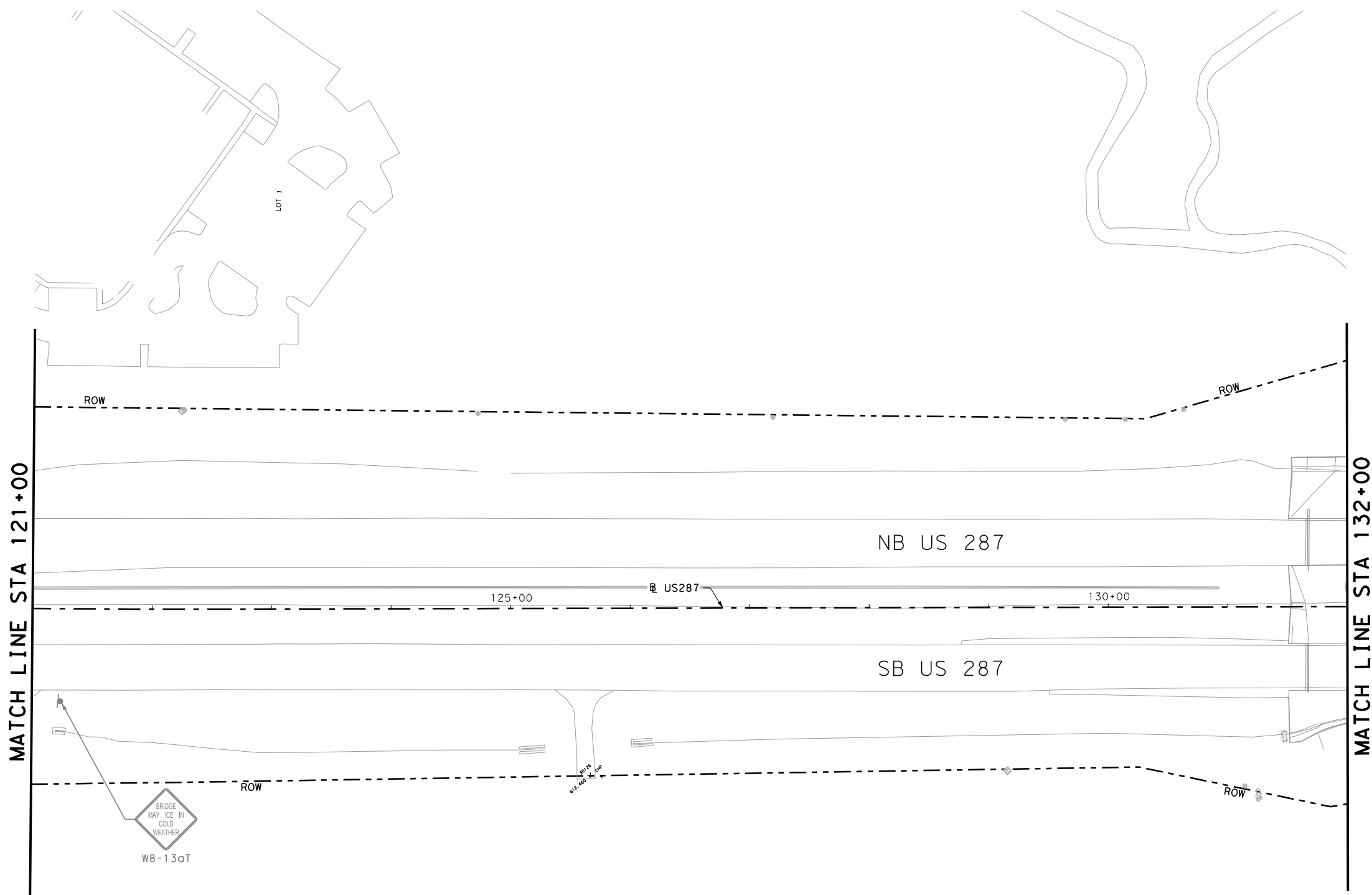
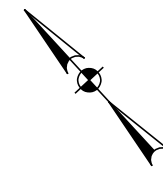
SCALE: 1" = 100' SHEET 10 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	40
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

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50 0 50 100  
SCALE: 1" = 100'



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 121+00 TO STA 132+00**

SCALE: 1" = 100' SHEET 11 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	SHEET NO. 41
CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

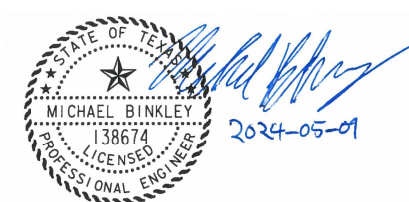
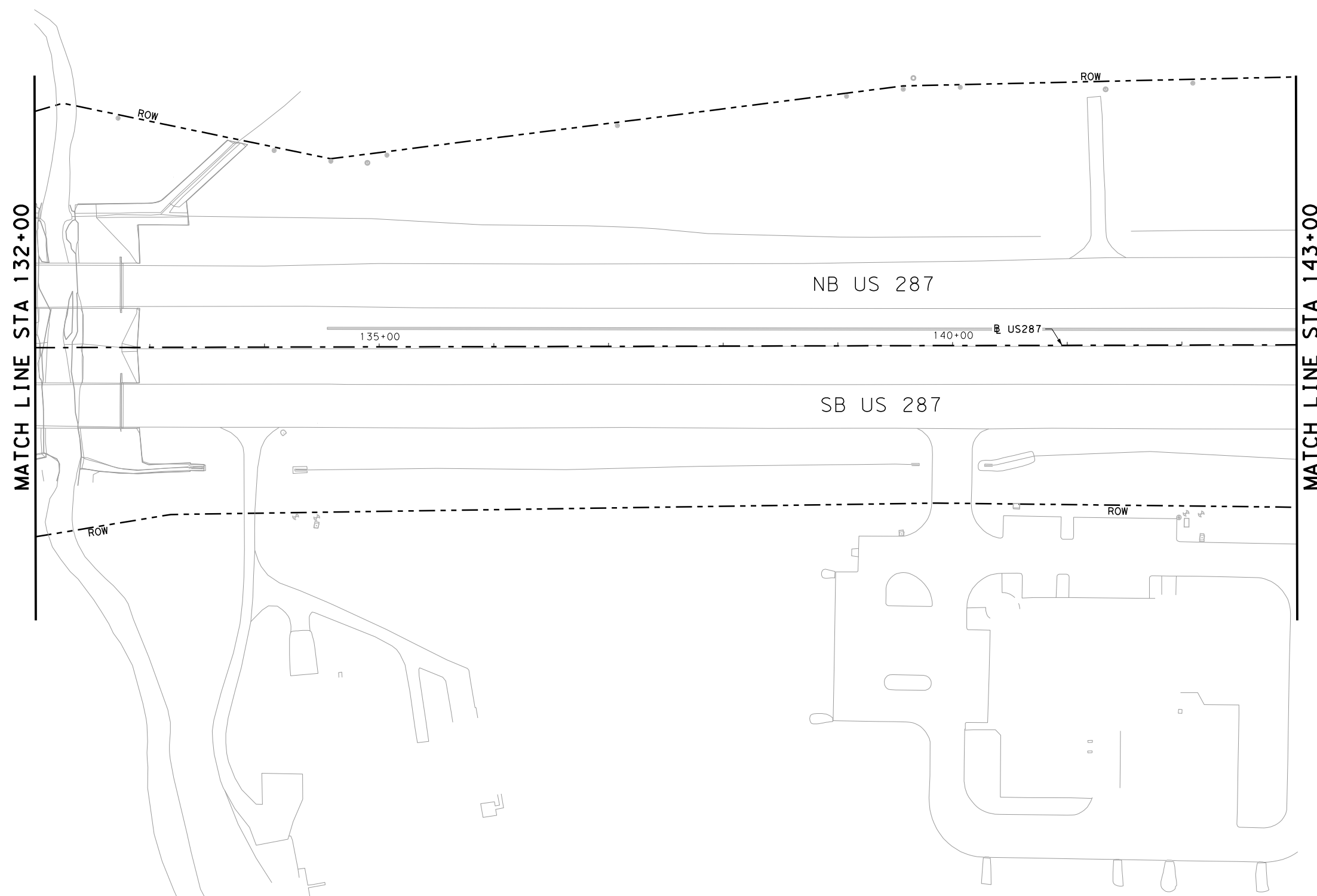




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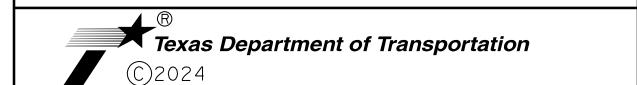
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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 132+00 TO STA 143+00**

SCALE: 1" = 100' SHEET 12 OF 20

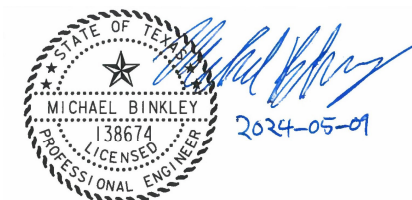
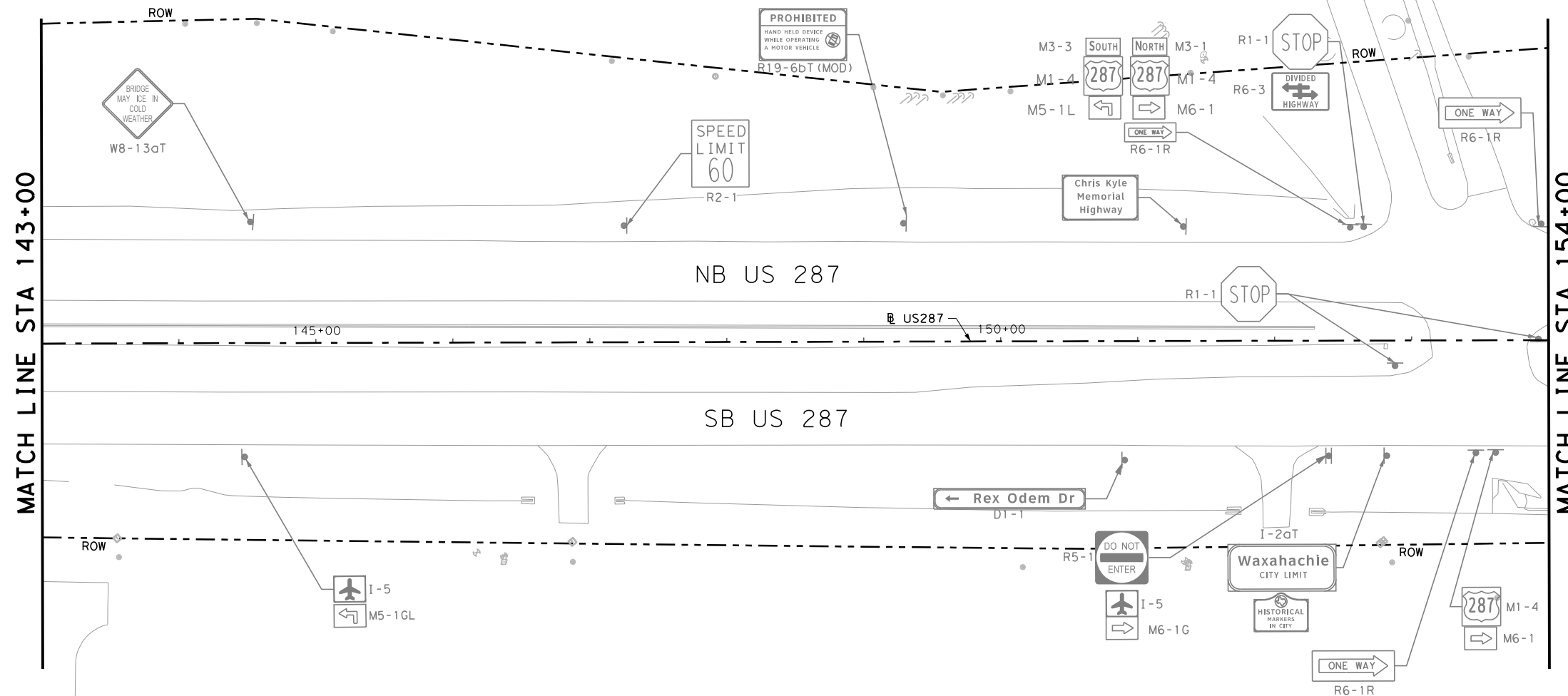
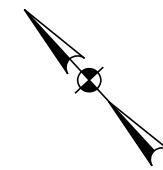
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GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 42
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				

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SCALE: 1" = 100'



NO.	DATE	DESCRIPTION	APPROV.

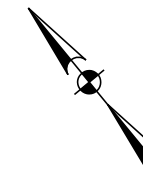
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 143+00 TO STA 154+00**

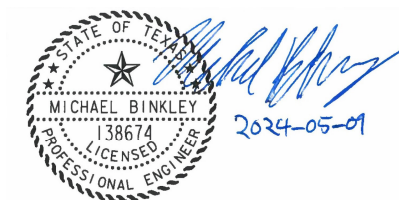
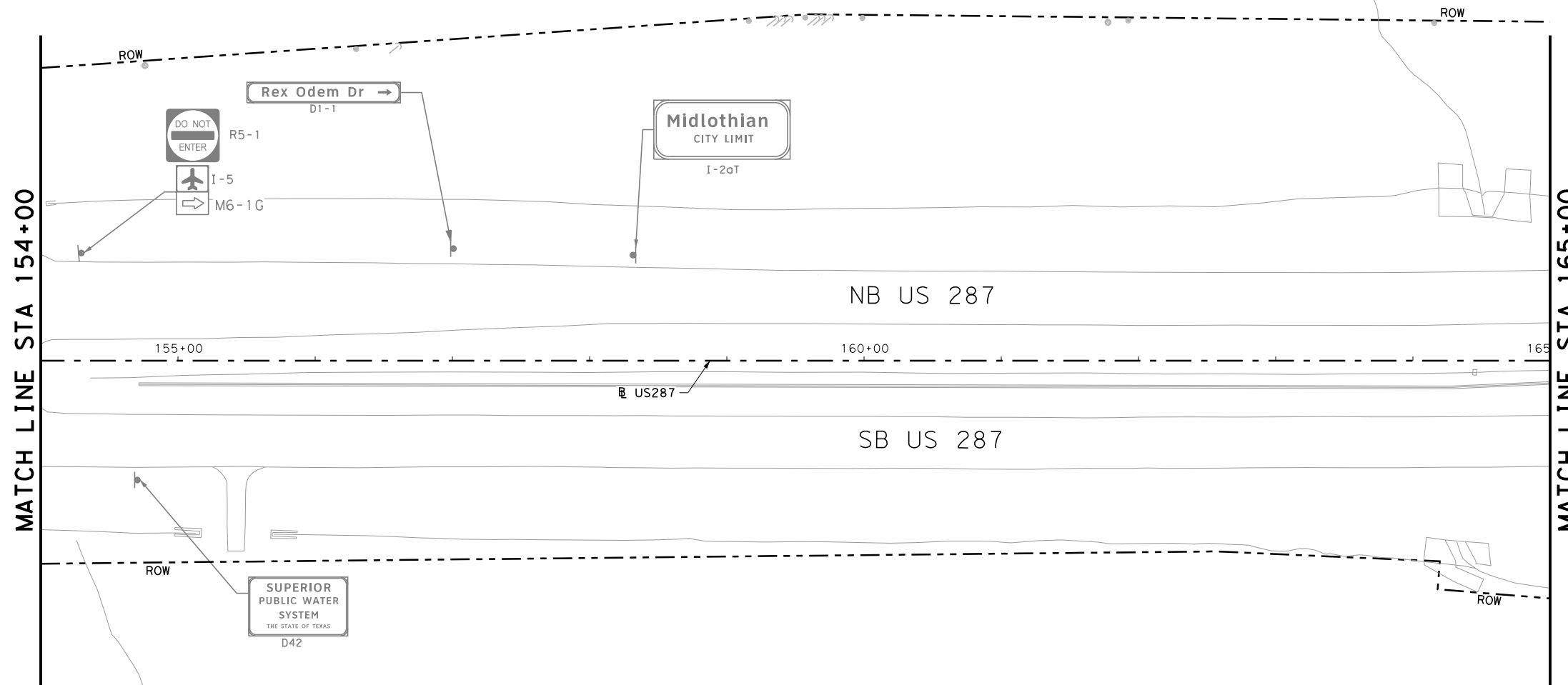
SCALE: 1" = 100' SHEET 13 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 43
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				



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NO.	DATE	DESCRIPTION	APPROV.

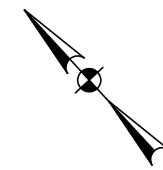
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 154+00 TO STA 165+00**

SCALE: 1" = 100' SHEET 14 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	SHEET NO. 44
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

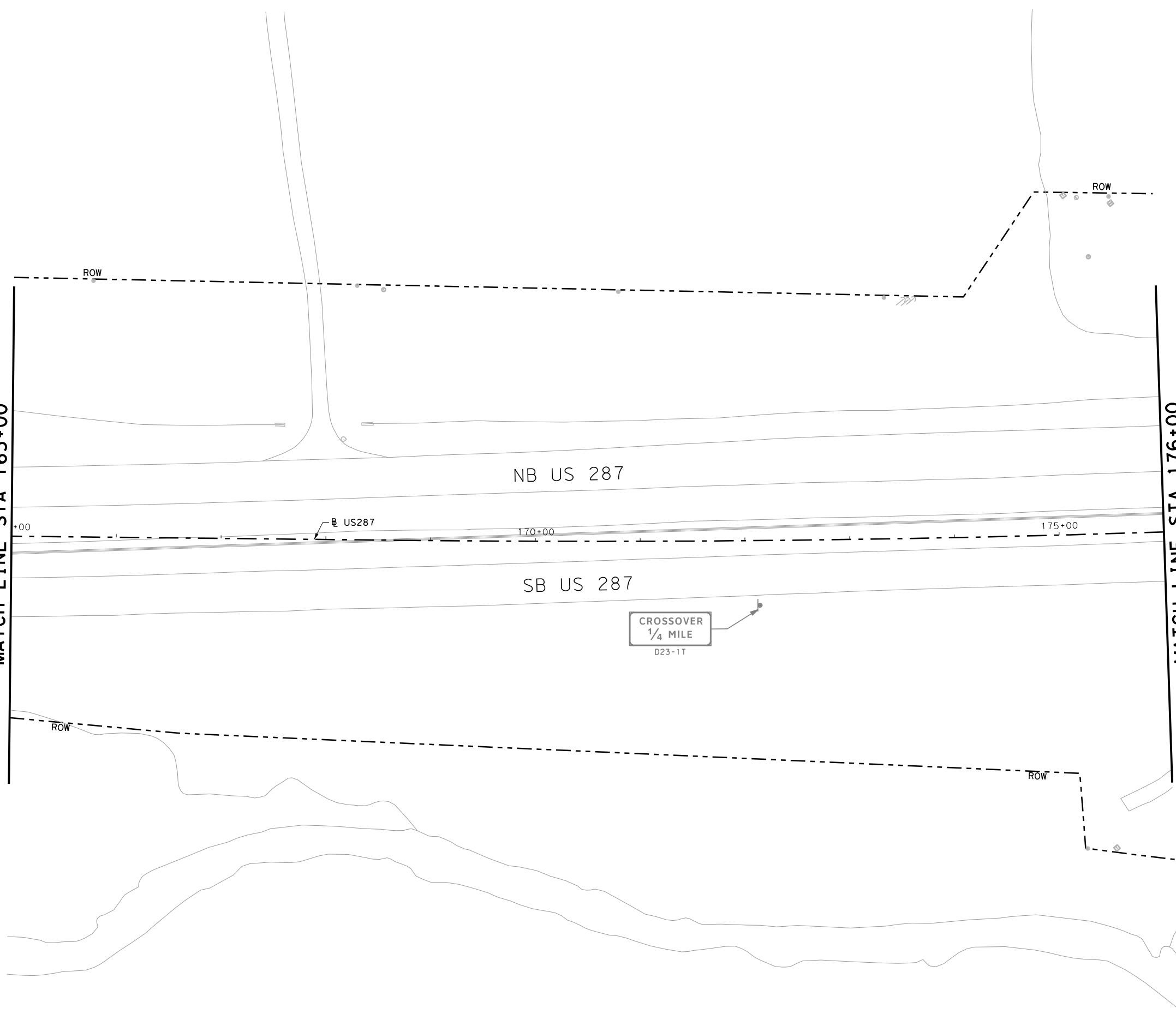


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MATCH LINE STA 165+00

MATCH LINE STA 176+00



NO.	DATE	DESCRIPTION	APPROV.

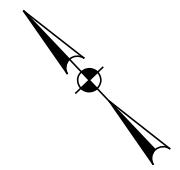
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 165+00 TO STA 176+00**

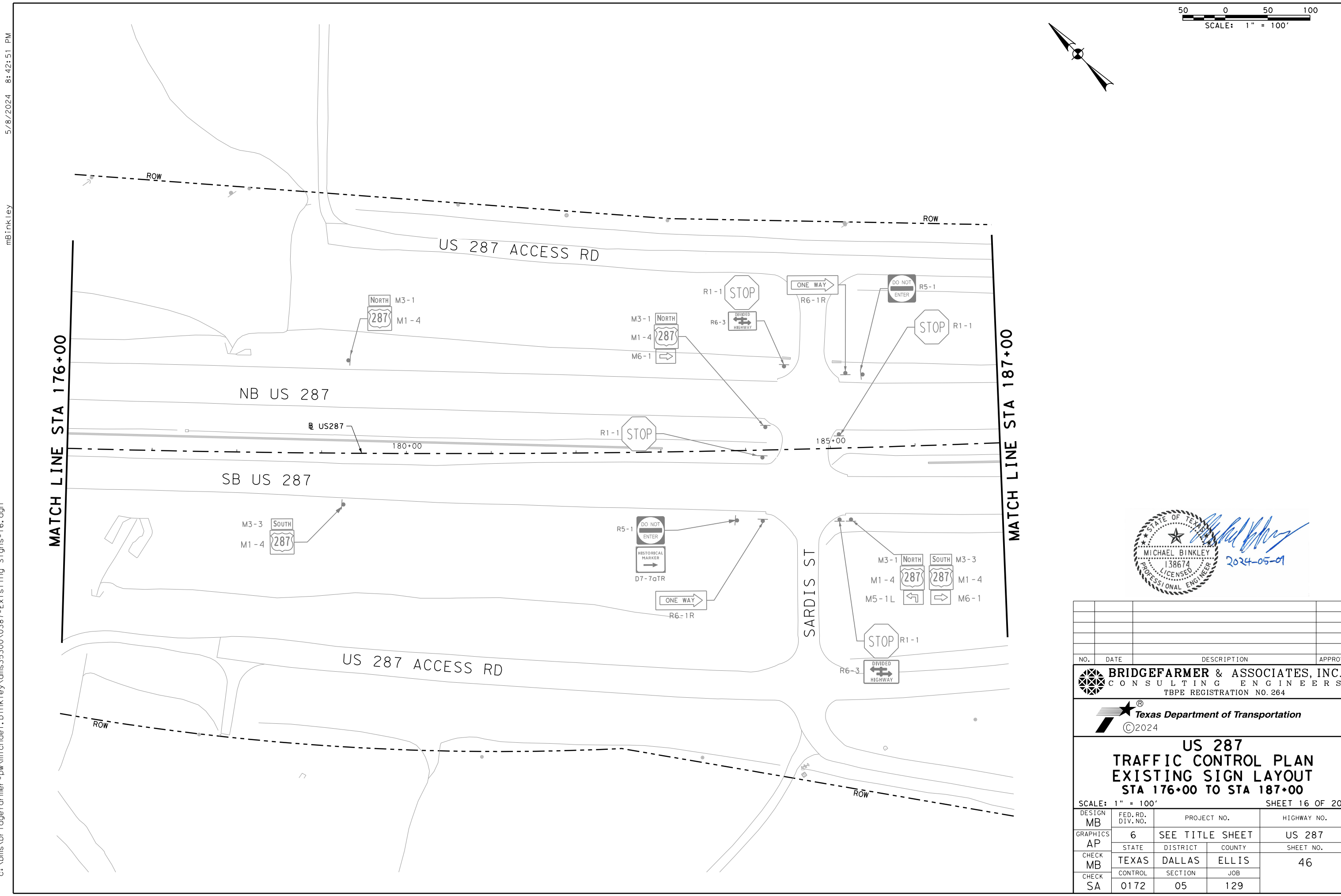
SCALE: 1" = 100' SHEET 15 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	45
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	



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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 176+00 TO STA 187+00**

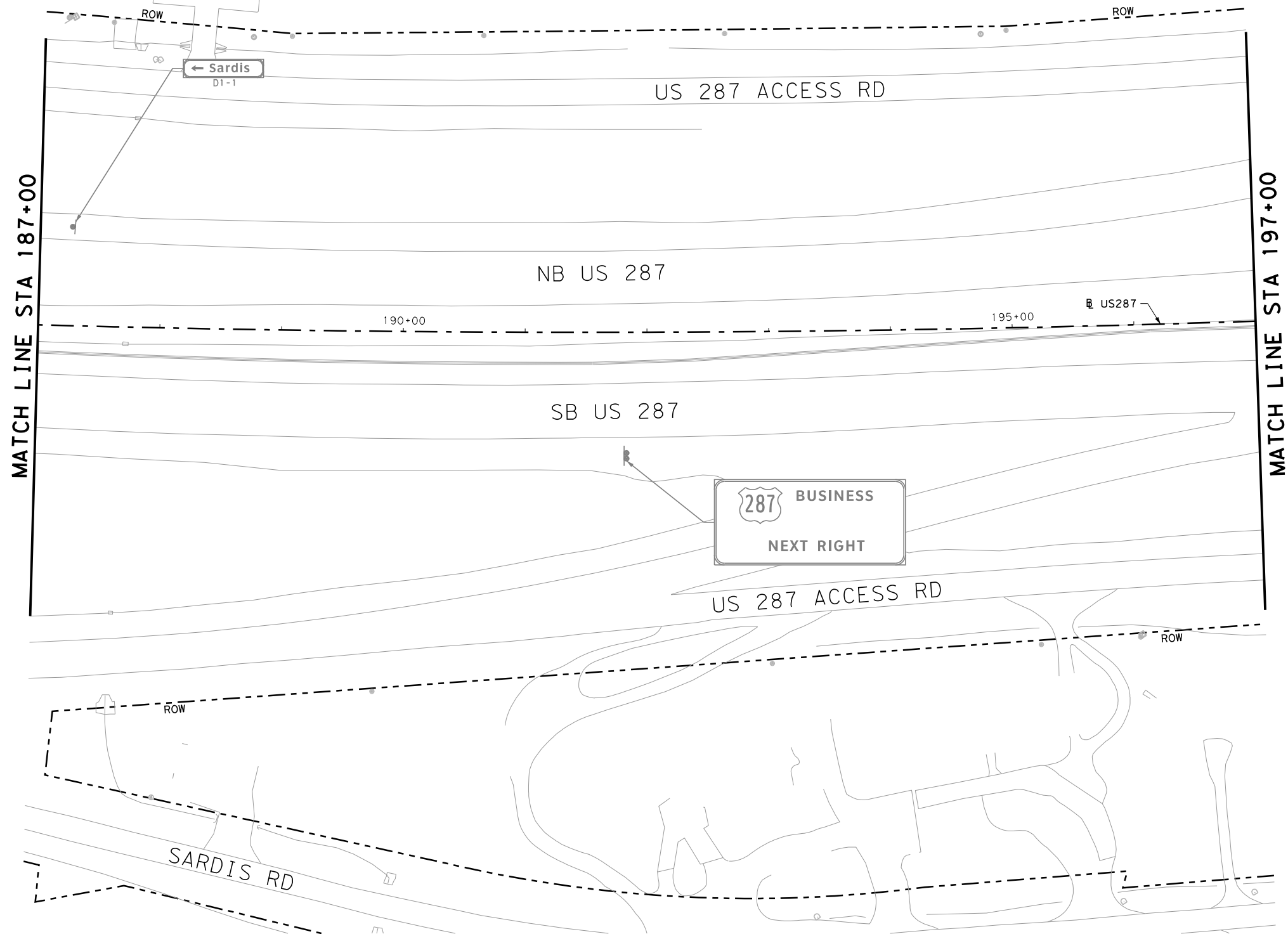
SCALE: 1" = 100' SHEET 16 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 46
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				



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mBinkley

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NO.	DATE	DESCRIPTION	APPROV.

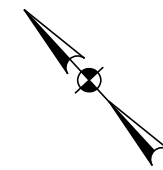
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 186+00 TO STA 197+00**

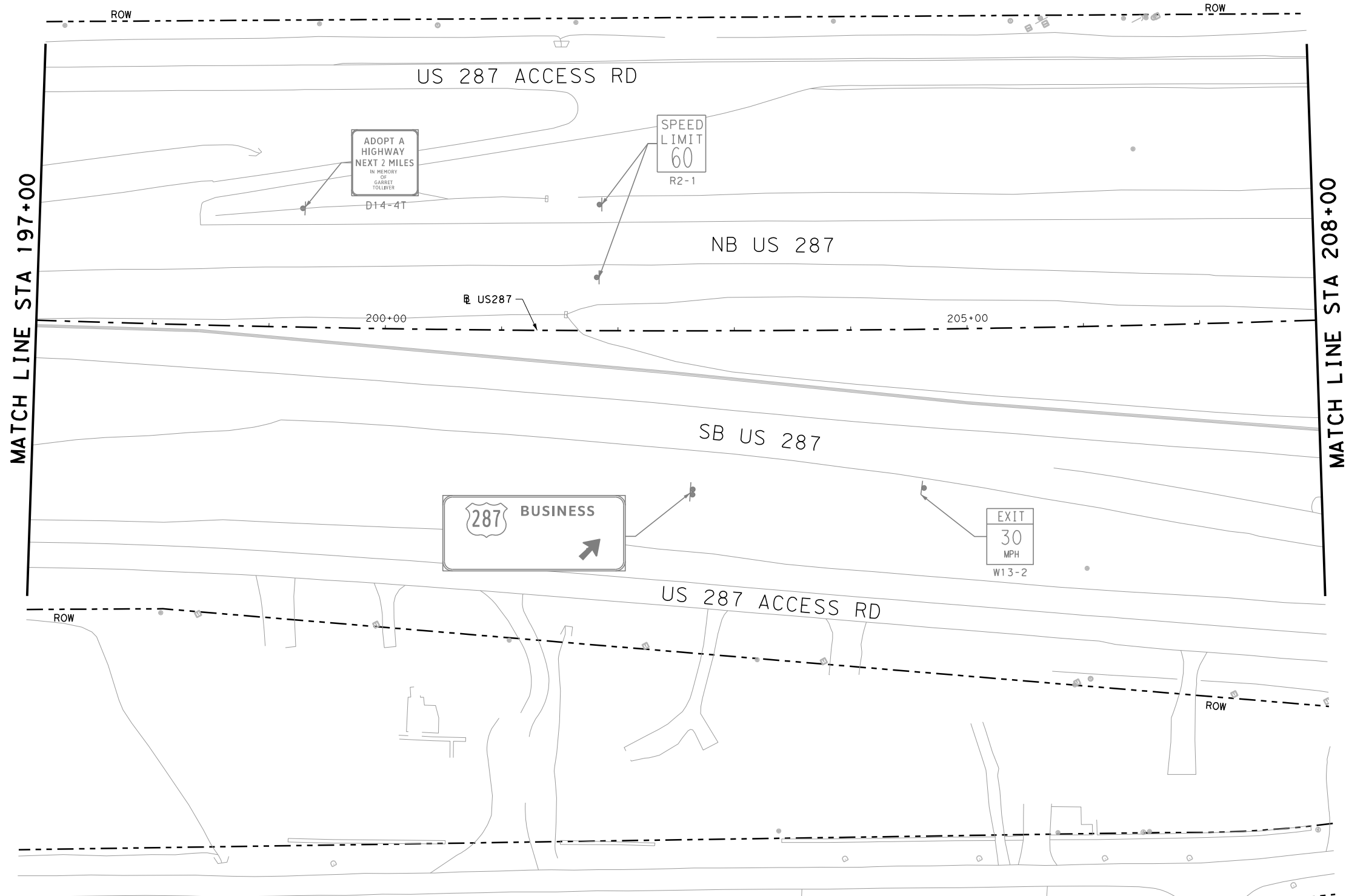
SCALE: 1" = 100' SHEET 17 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 47
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				



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MATCH LINE STA 197+00

MATCH LINE STA 208+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 197+00 TO STA 208+00**

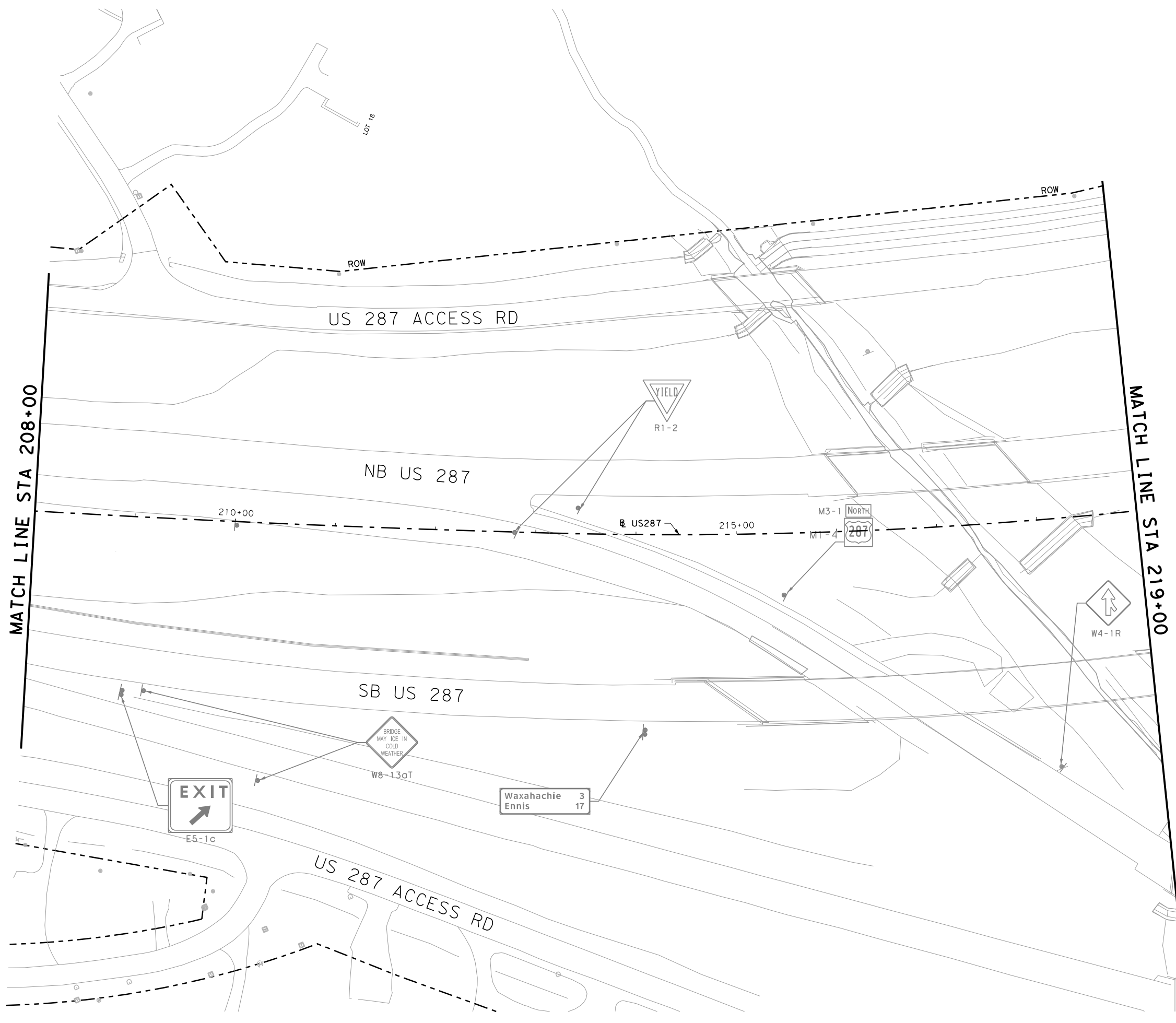
SCALE: 1" = 100' SHEET 18 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	SHEET NO. 48
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	



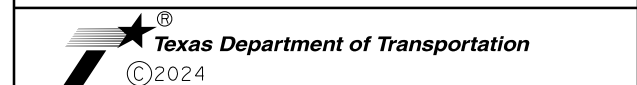
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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 208+00 TO STA 219+00**

SCALE: 1" = 100' SHEET 19 OF 20

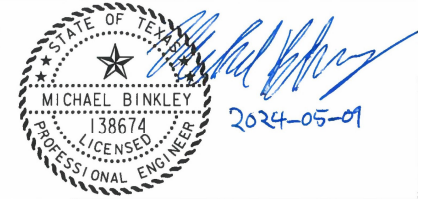
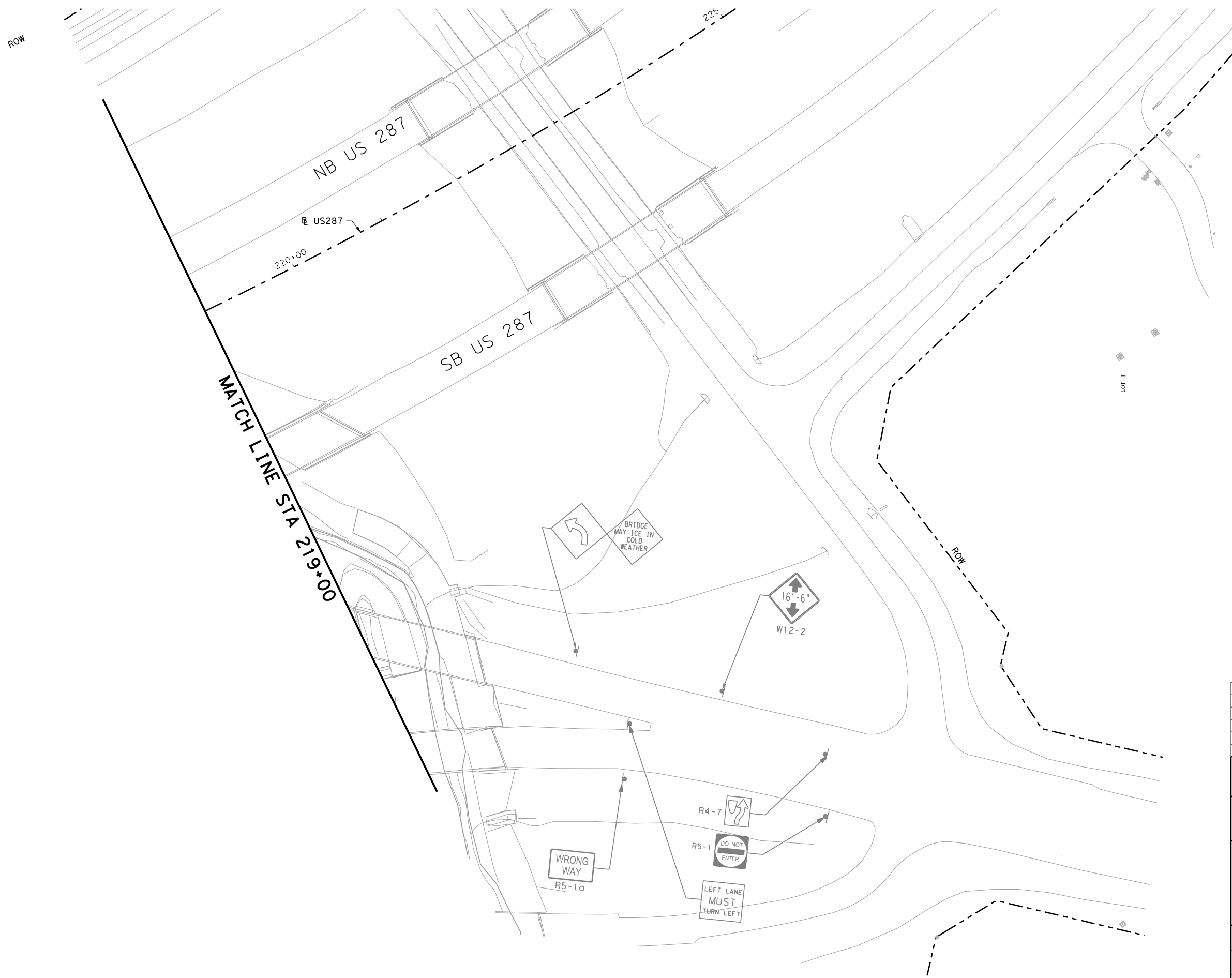
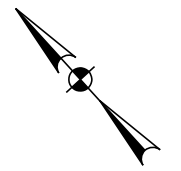
DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 49
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				



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50 0 50 100  
SCALE: 1" = 100'



NO.	DATE	DESCRIPTION	APPROV.

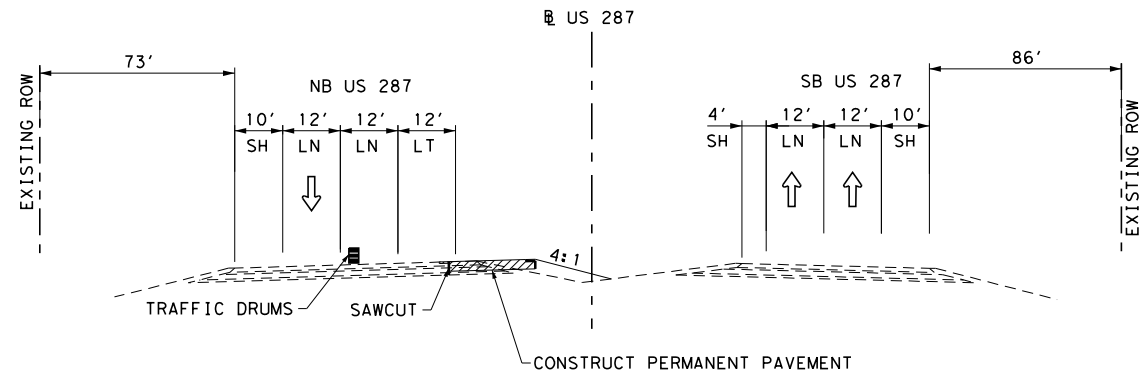
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
EXISTING SIGN LAYOUT  
STA 219+00 TO END PROJECT**

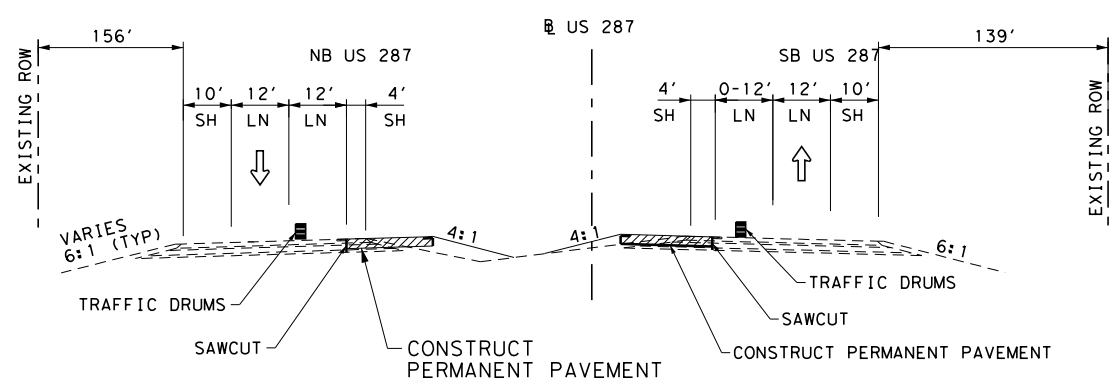
SCALE: 1" = 100' SHEET 20 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 50
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				



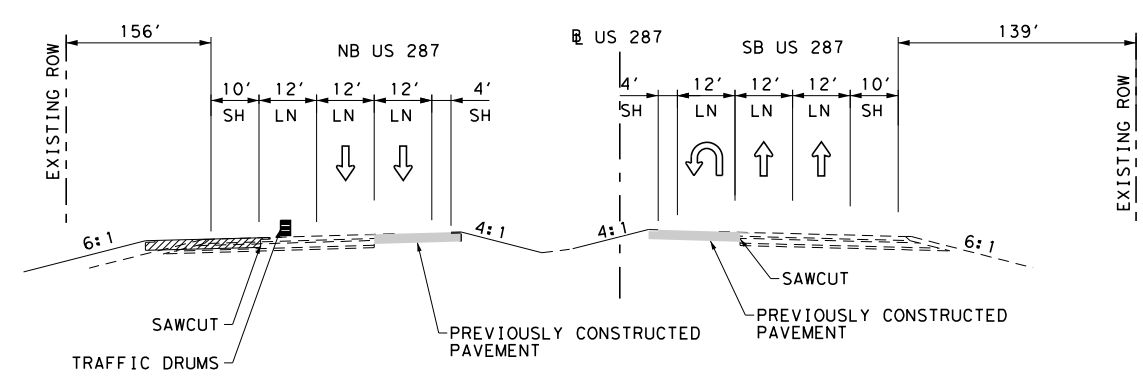
TCP INSIDE CONSTRUCTION TYPICAL SECTION

STA 75+00



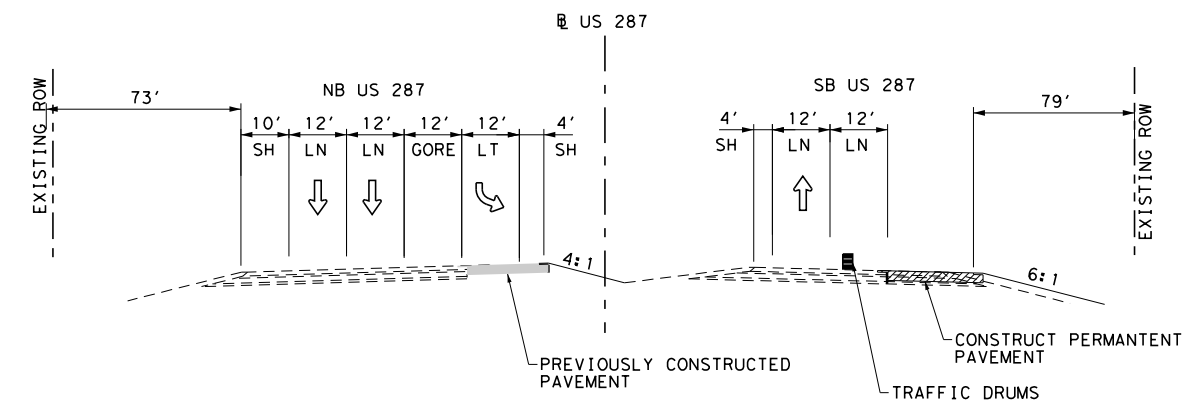
TCP INSIDE CONSTRUCTION TYPICAL SECTION

STA 170+00



TCP OUTSIDE CONSTRUCTION TYPICAL SECTION

STA 170+00



TCP OUTSIDE CONSTRUCTION TYPICAL SECTION

STA 75+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
TYPICAL SECTIONS**

SCALE: N. T. S.			SHEET 1 OF 1	
DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 51
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				

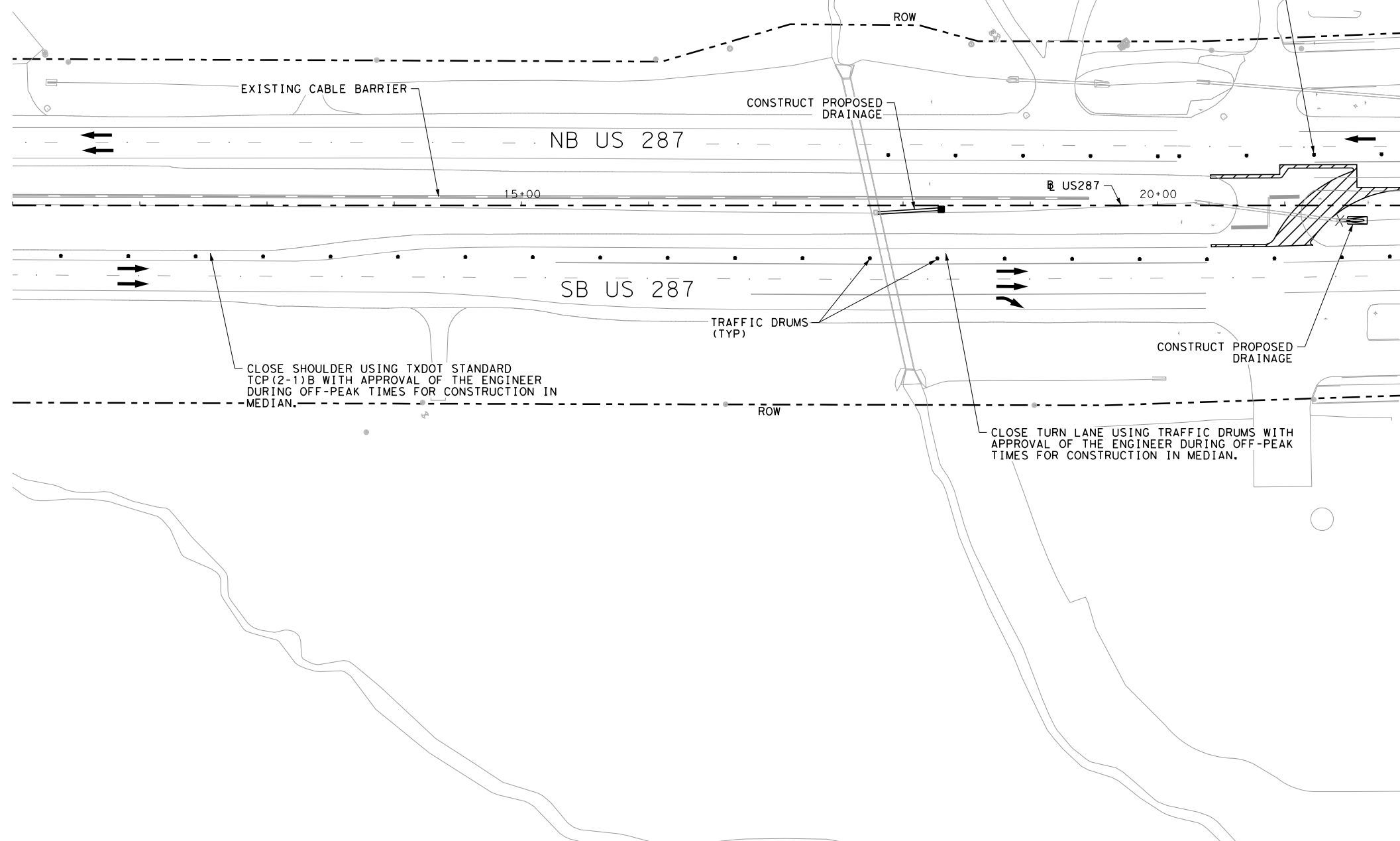


**NOTES:**

1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

**LEGEND**

- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
BEGIN PROJECT TO STA 22+00**

SCALE: 1" = 100' SHEET 1 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	52
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

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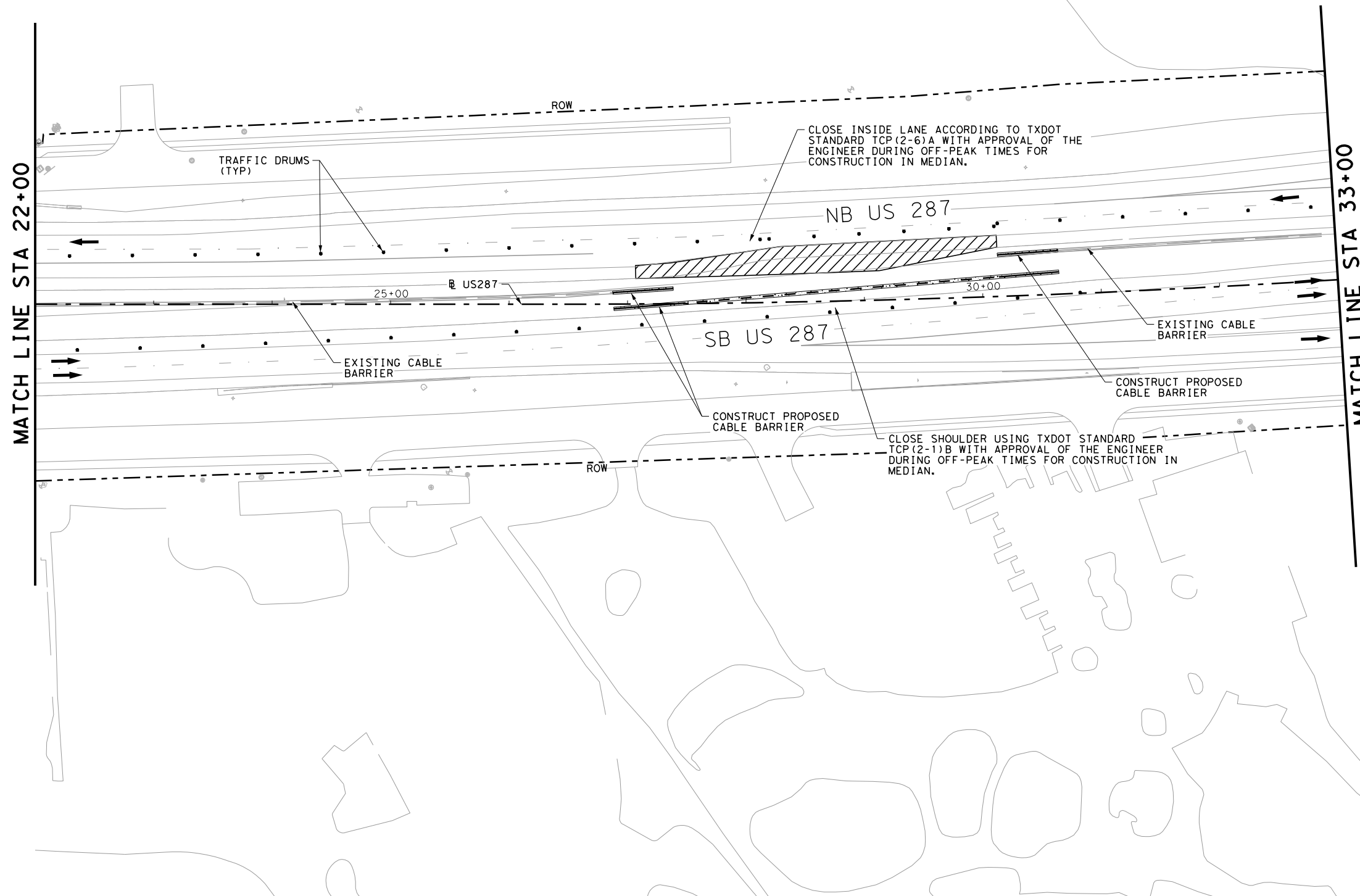


**NOTES:**

1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

**LEGEND**

- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 22+00 TO STA 33+00**

SCALE: 1" = 100' SHEET 2 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	53
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

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**LEGEND**

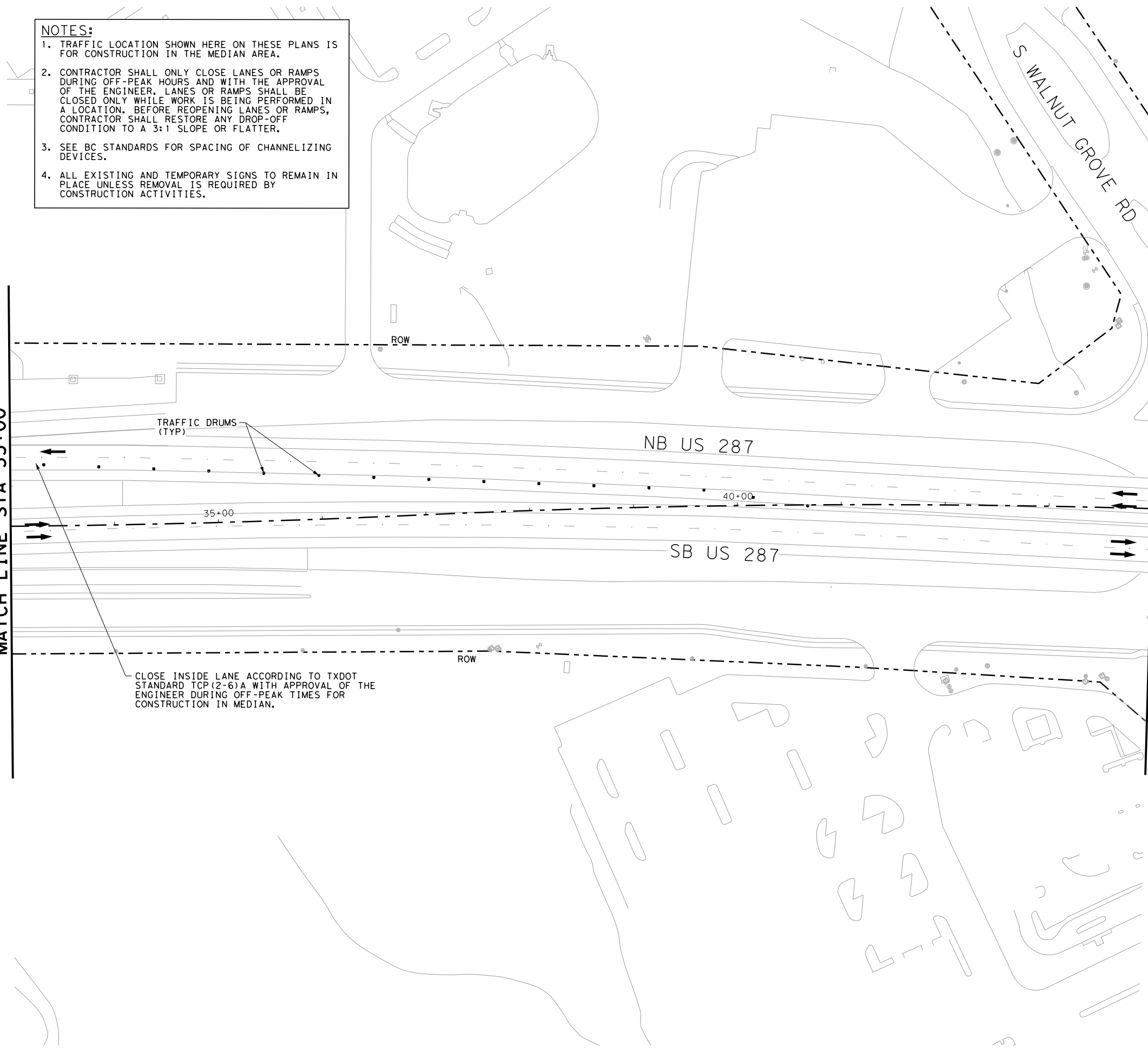
- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT

**NOTES:**

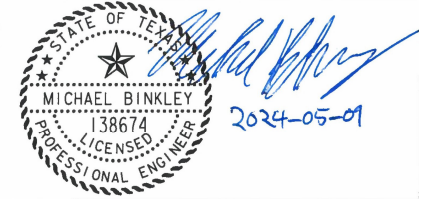
1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

MATCH LINE STA 33+00

MATCH LINE STA 44+00



CLOSE INSIDE LANE ACCORDING TO TXDOT STANDARD TCP(2-6)A WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR CONSTRUCTION IN MEDIAN.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 33+00 TO STA 44+00**

SCALE: 1" = 100' SHEET 3 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 54
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	



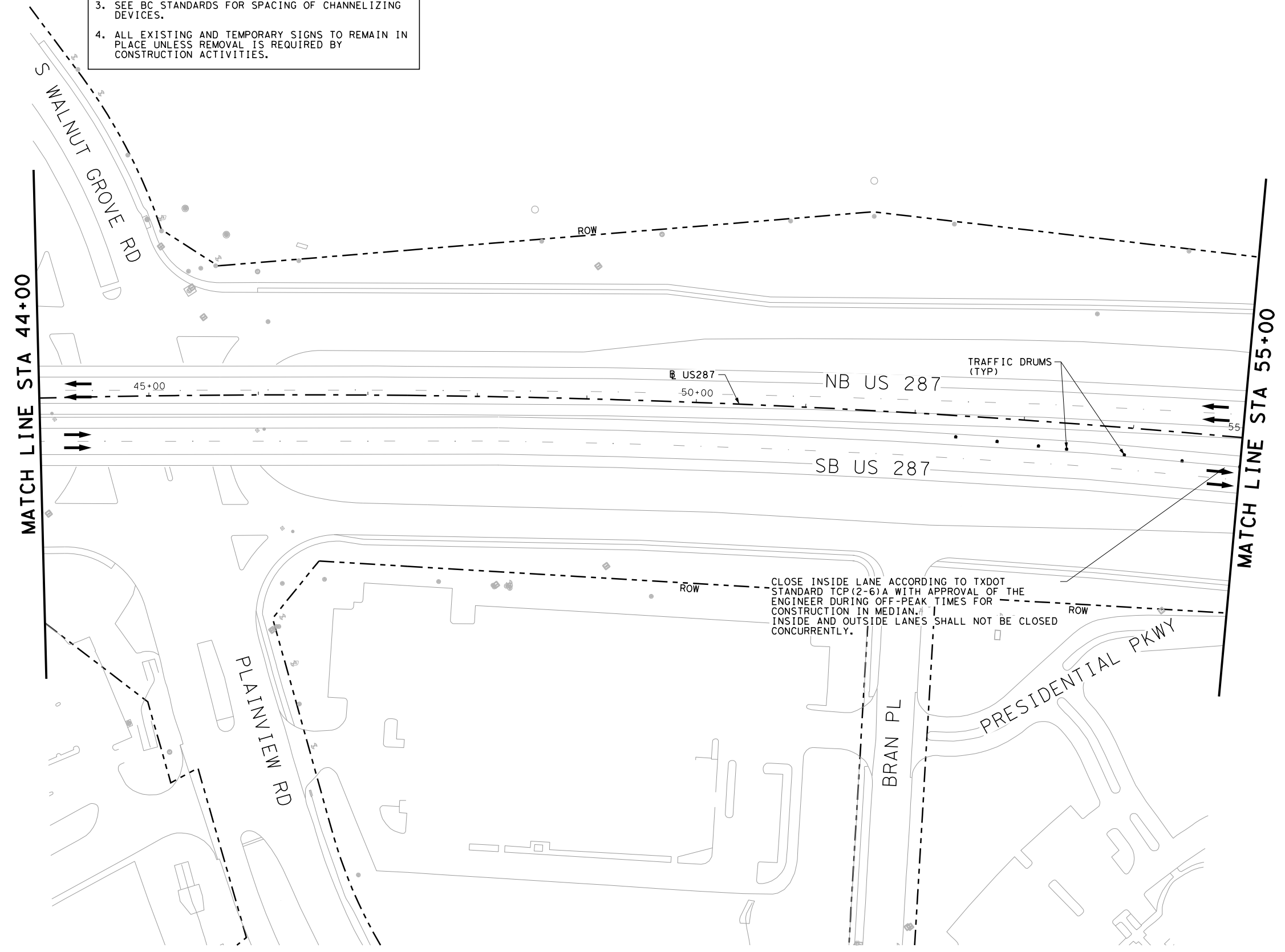
**NOTES:**

1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

**LEGEND**

- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT

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CLOSE INSIDE LANE ACCORDING TO TXDOT STANDARD TCP(2-6)A WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR CONSTRUCTION IN MEDIAN. INSIDE AND OUTSIDE LANES SHALL NOT BE CLOSED CONCURRENTLY.



NO.	DATE	DESCRIPTION	APPROV.

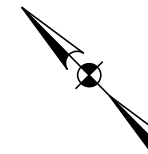
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264
















**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 44+00 TO STA 55+00**

SCALE: 1" = 100' SHEET 4 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	55
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	



**LEGEND**

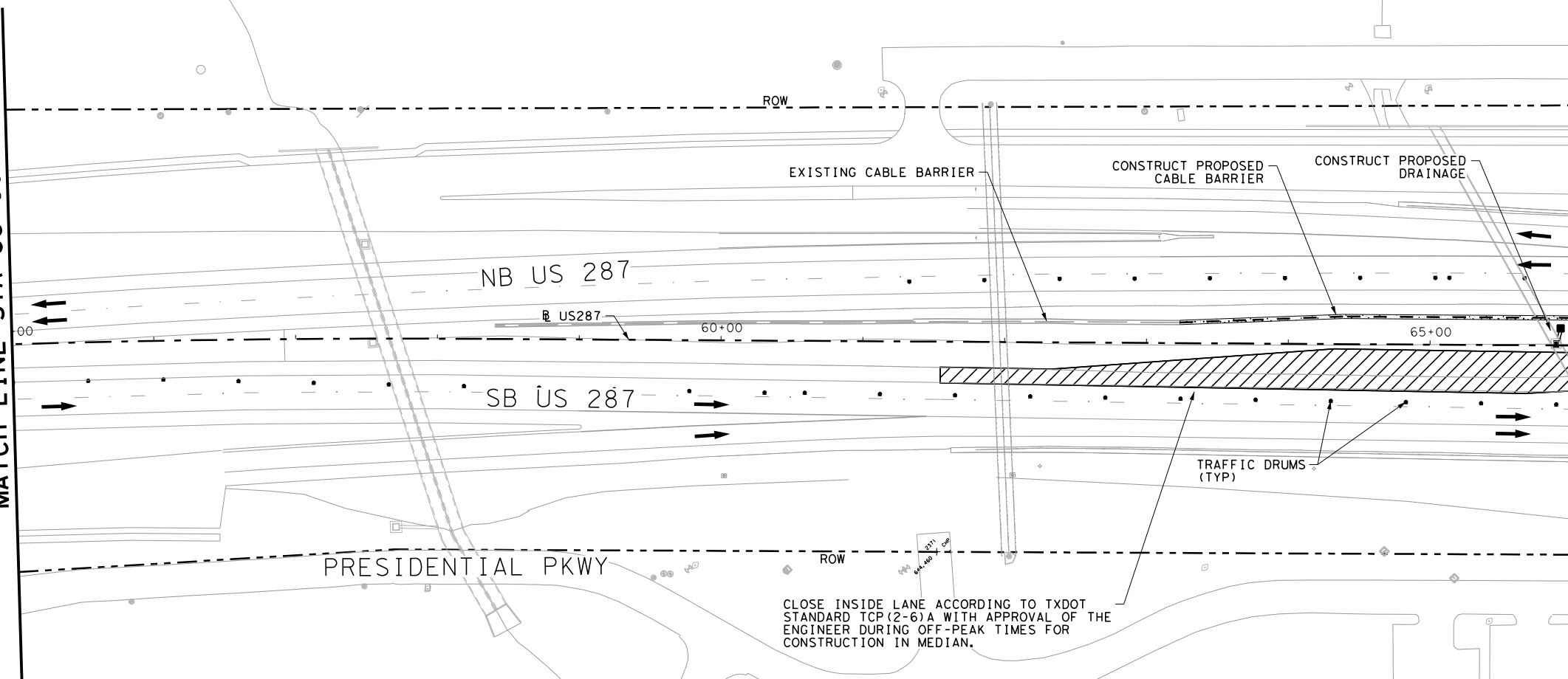
-  EXISTING PAVEMENT
-  PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
-  PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
-  TRAVEL LANE
-  CONSTRUCTION SIGN
-  CHANNELIZING DEVICE
-  PROPOSED STORM SEWER
-  EXISTING STORM SEWER
-  CHANGEABLE MESSAGE BOARD
-  FLASHING ARROW PANEL
-  EXISTING STRIPING
-  CABLE BARRIER
-  REMOVE EXISTING PAVEMENT

**NOTES:**

1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

MATCH LINE STA 55+00

MATCH LINE STA 66+00



NO.	DATE	DESCRIPTION	APPROV.

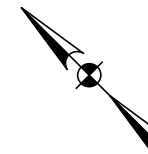
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 55+00 TO STA 66+00**

SCALE: 1" = 100' SHEET 5 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			



**LEGEND**

- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT

**NOTES:**

1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

MATCH LINE STA 66+00

MATCH LINE STA 77+00

PRESIDENTIAL PKWY

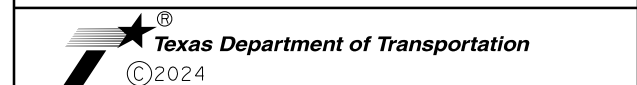
CLOSE INSIDE LANE ACCORDING TO TXDOT STANDARD TCP (2-6)A WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR CONSTRUCTION IN MEDIAN. INSIDE AND OUTSIDE LANES SHALL NOT BE CLOSED CONCURRENTLY.

CLOSE OUTSIDE LANE ACCORDING TO TXDOT STANDARD TCP (2-6)A WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR CONSTRUCTION ON OUTSIDE. INSIDE AND OUTSIDE LANES SHALL NOT BE CLOSED CONCURRENTLY.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

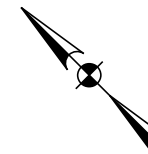


**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 66+00 TO STA 77+00**

SCALE: 1" = 100' SHEET 6 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	SHEET NO. 57
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

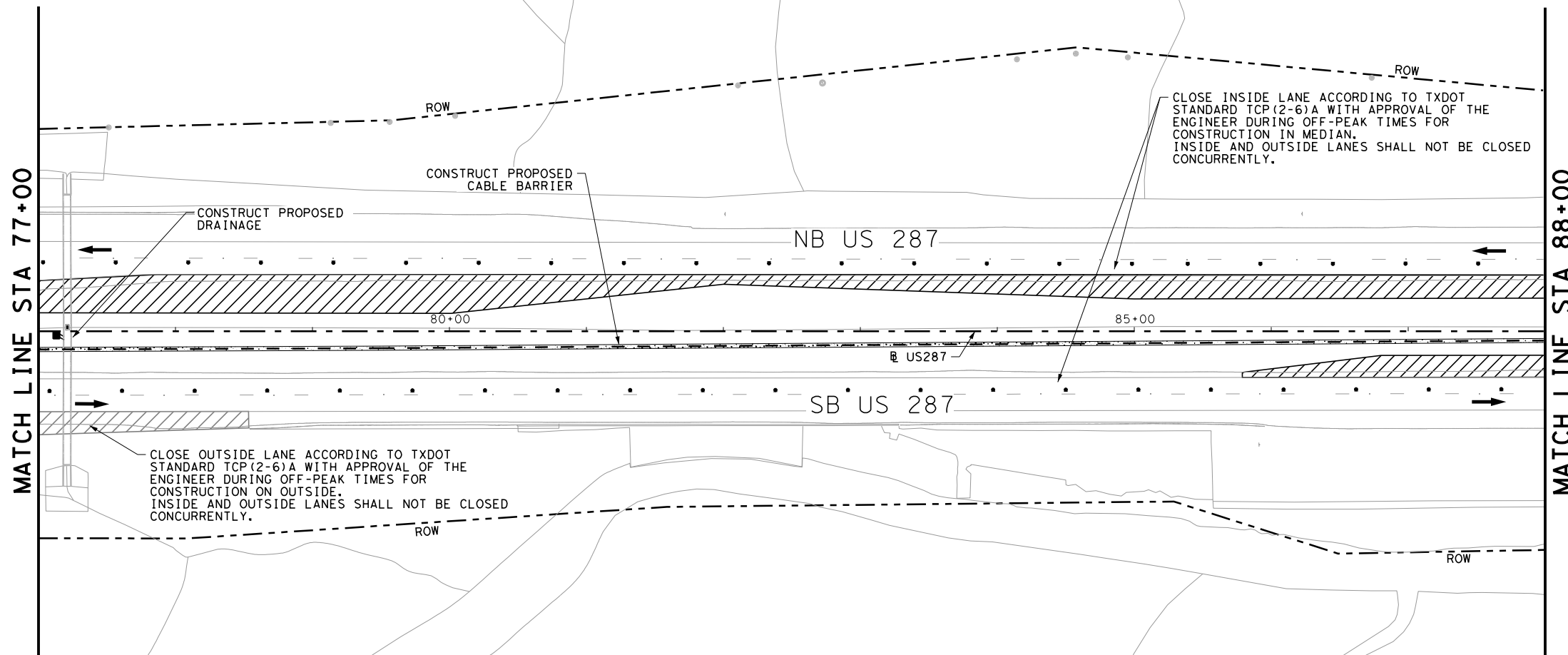




**NOTES:**

1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

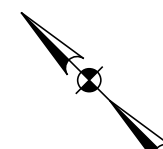
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 77+00 TO STA 88+00**

SCALE: 1" = 100' SHEET 7 OF 20

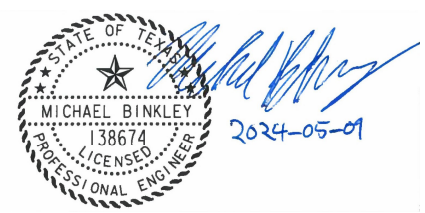
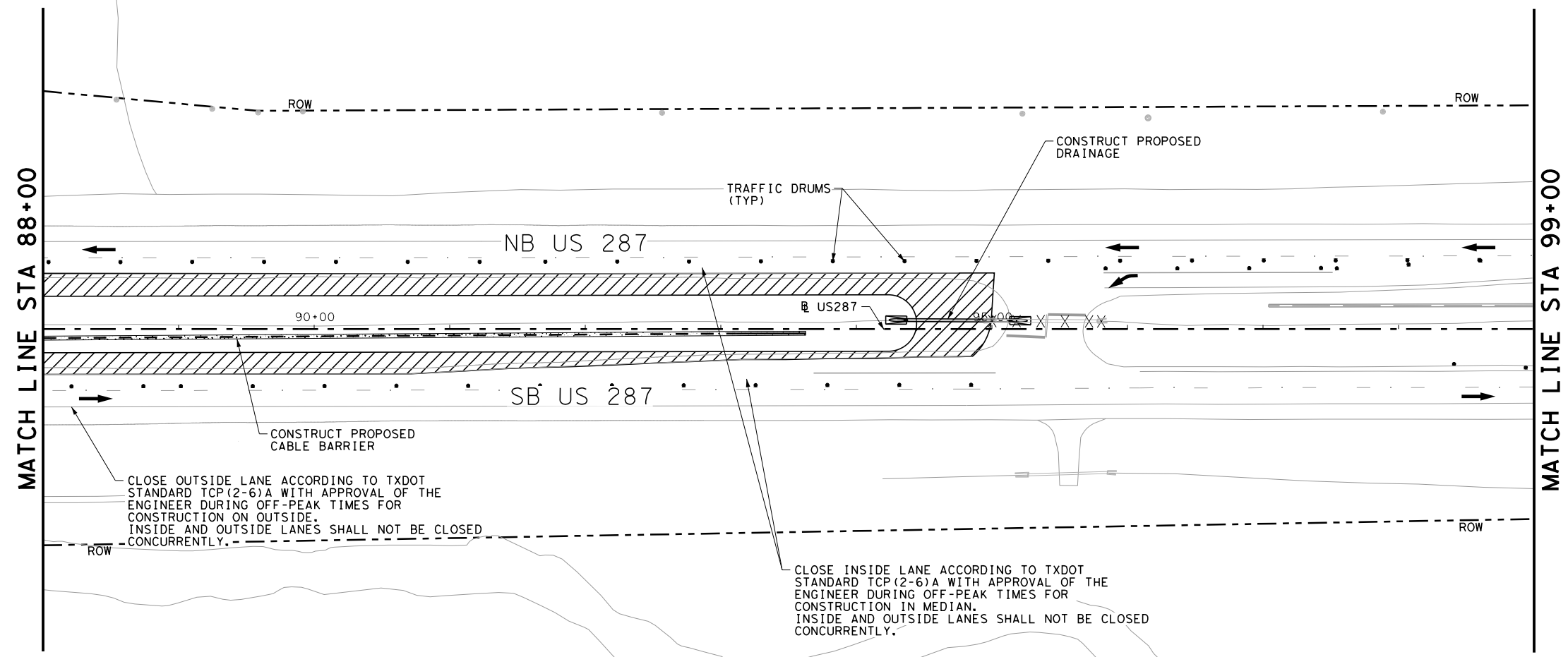
DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			



**NOTES:**

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3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

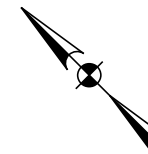


**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 88+00 TO STA 99+00**

SCALE: 1" = 100' SHEET 8 OF 20

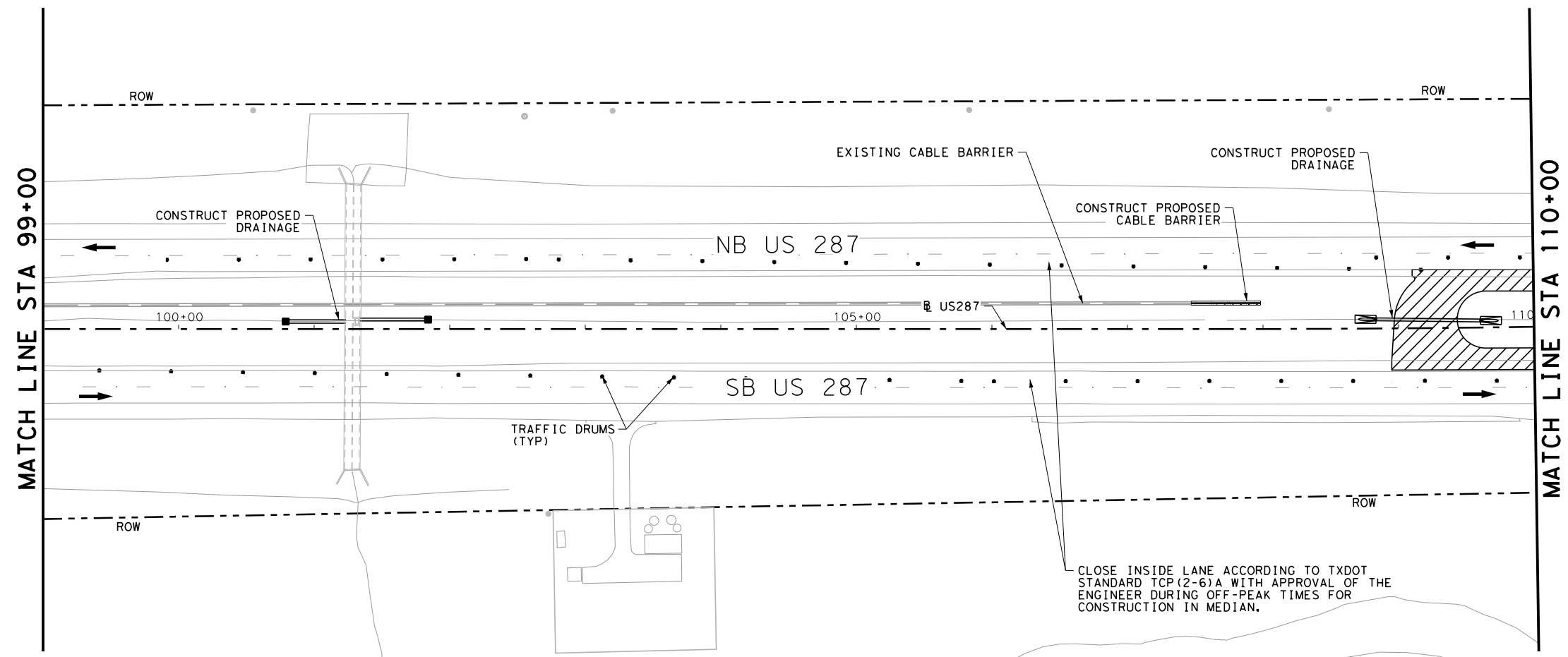
DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			

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- NOTES:**
1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
  2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
  3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
  4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT



CLOSE INSIDE LANE ACCORDING TO TXDOT STANDARD TCP(2-6)A WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR CONSTRUCTION IN MEDIAN.



NO.	DATE	DESCRIPTION	APPROV.

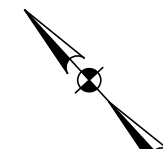
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 99+00 TO STA 110+00**

SCALE: 1" = 100' SHEET 9 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	60
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	



**NOTES:**

1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
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4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT

CLOSE INSIDE LANE ACCORDING TO TXDOT STANDARD TCP(2-6)A WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR CONSTRUCTION IN MEDIAN. INSIDE AND OUTSIDE LANES SHALL NOT BE CLOSED CONCURRENTLY.

CONSTRUCT PROPOSED DRAINAGE

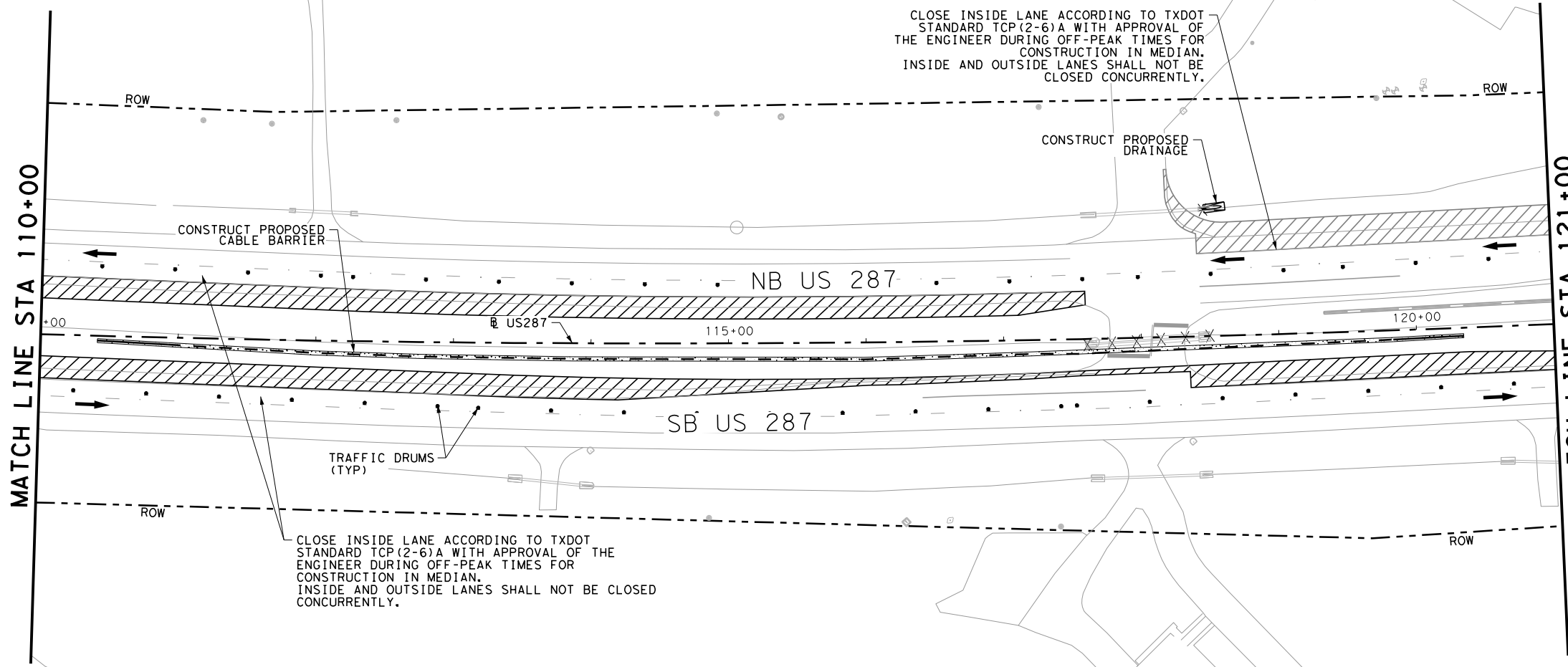
CONSTRUCT PROPOSED CABLE BARRIER

TRAFFIC DRUMS (TYP)

CLOSE INSIDE LANE ACCORDING TO TXDOT STANDARD TCP(2-6)A WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR CONSTRUCTION IN MEDIAN. INSIDE AND OUTSIDE LANES SHALL NOT BE CLOSED CONCURRENTLY.

MATCH LINE STA 110+00

MATCH LINE STA 121+00



NO.	DATE	DESCRIPTION	APPROV.

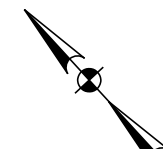
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 110+00 TO STA 121+00**

SCALE: 1" = 100' SHEET 10 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			

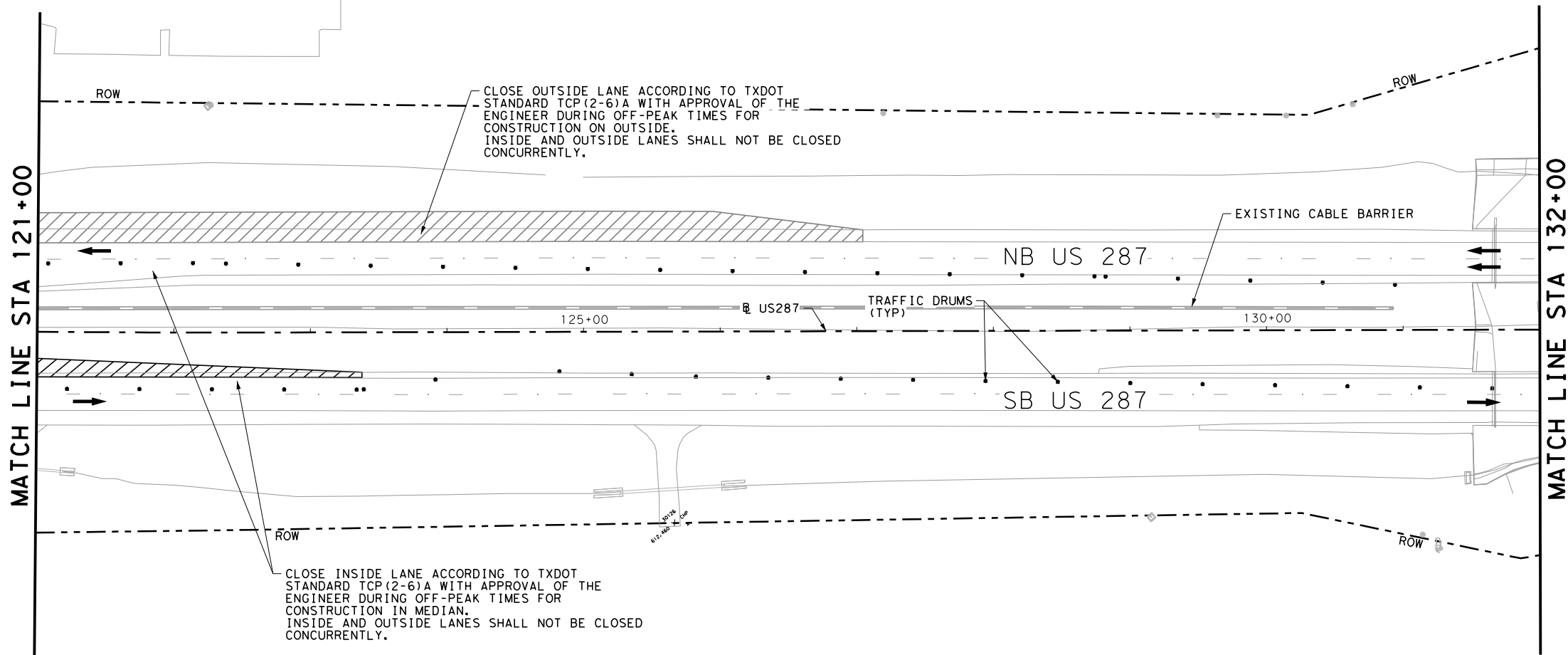


**NOTES:**

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3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

**LEGEND**

- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

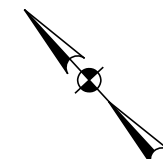


**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 121+00 TO STA 132+00**

SCALE: 1" = 100' SHEET 11 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			

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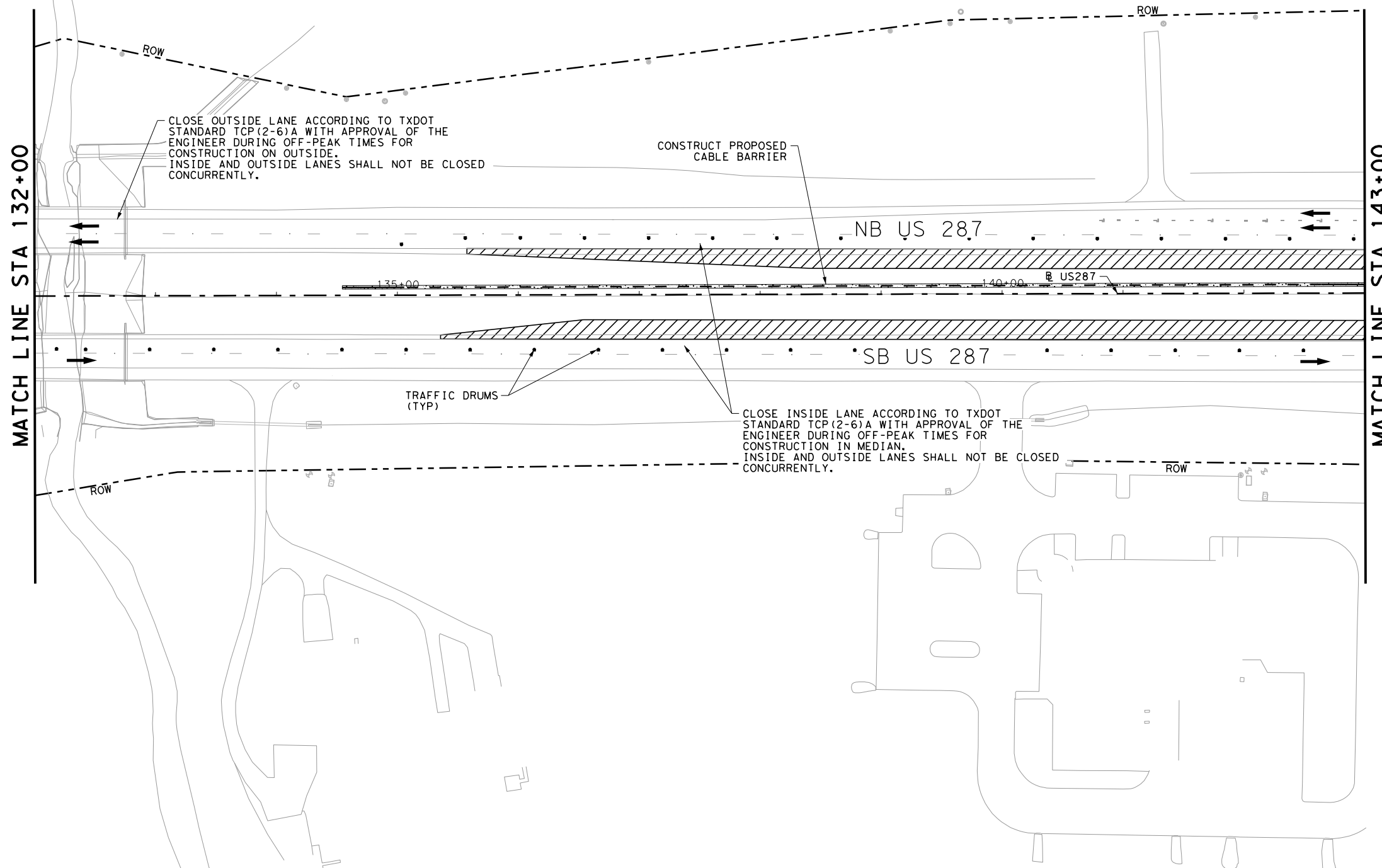


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**LEGEND**

- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

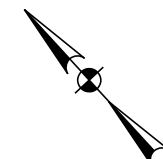
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 132+00 TO STA 143+00**

SCALE: 1" = 100' SHEET 12 OF 20

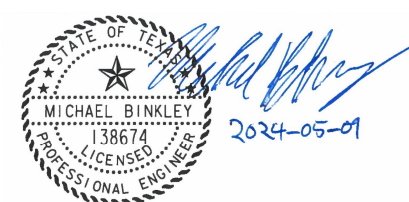
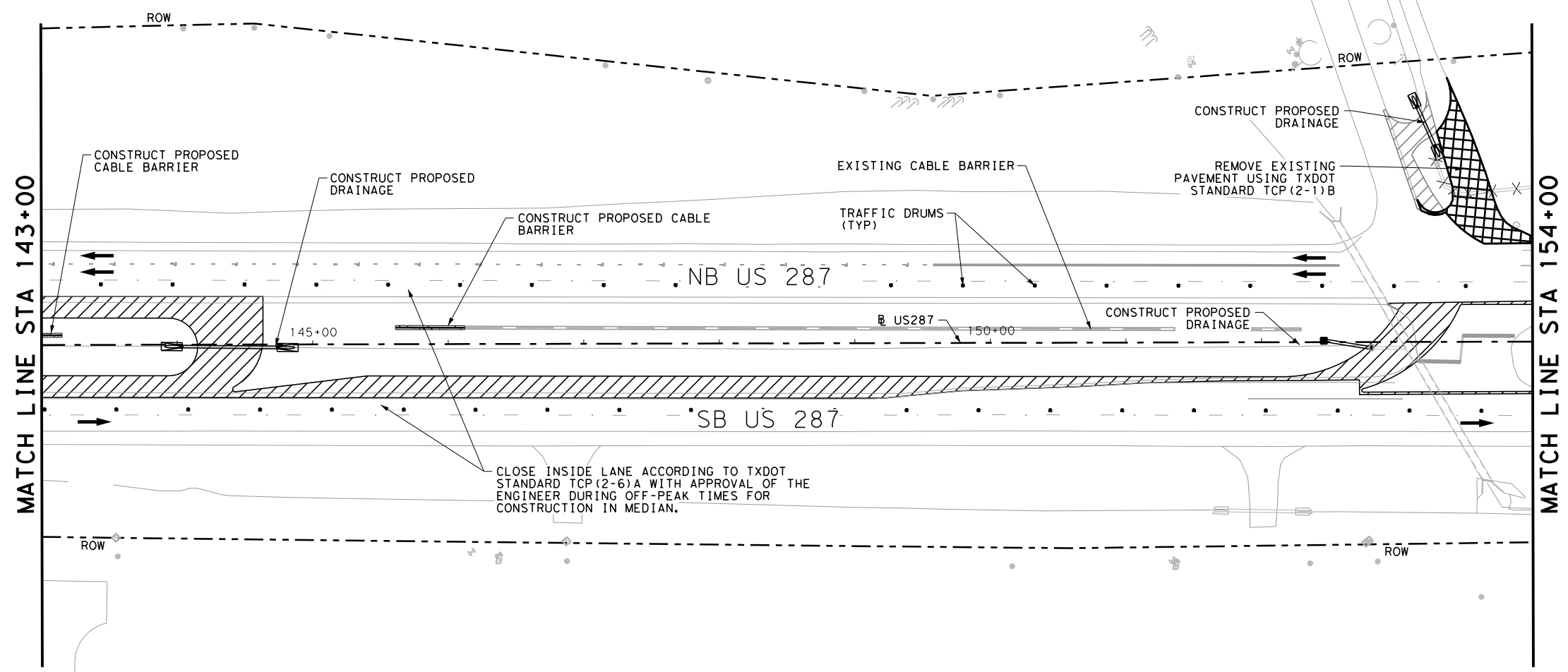
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GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	63
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	



**LEGEND**

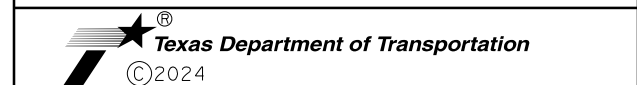
- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT

- NOTES:**
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  3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
  4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 143+00 TO STA 154+00**

SCALE: 1" = 100' SHEET 13 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			

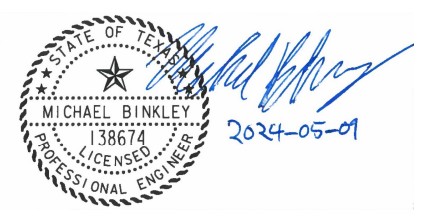
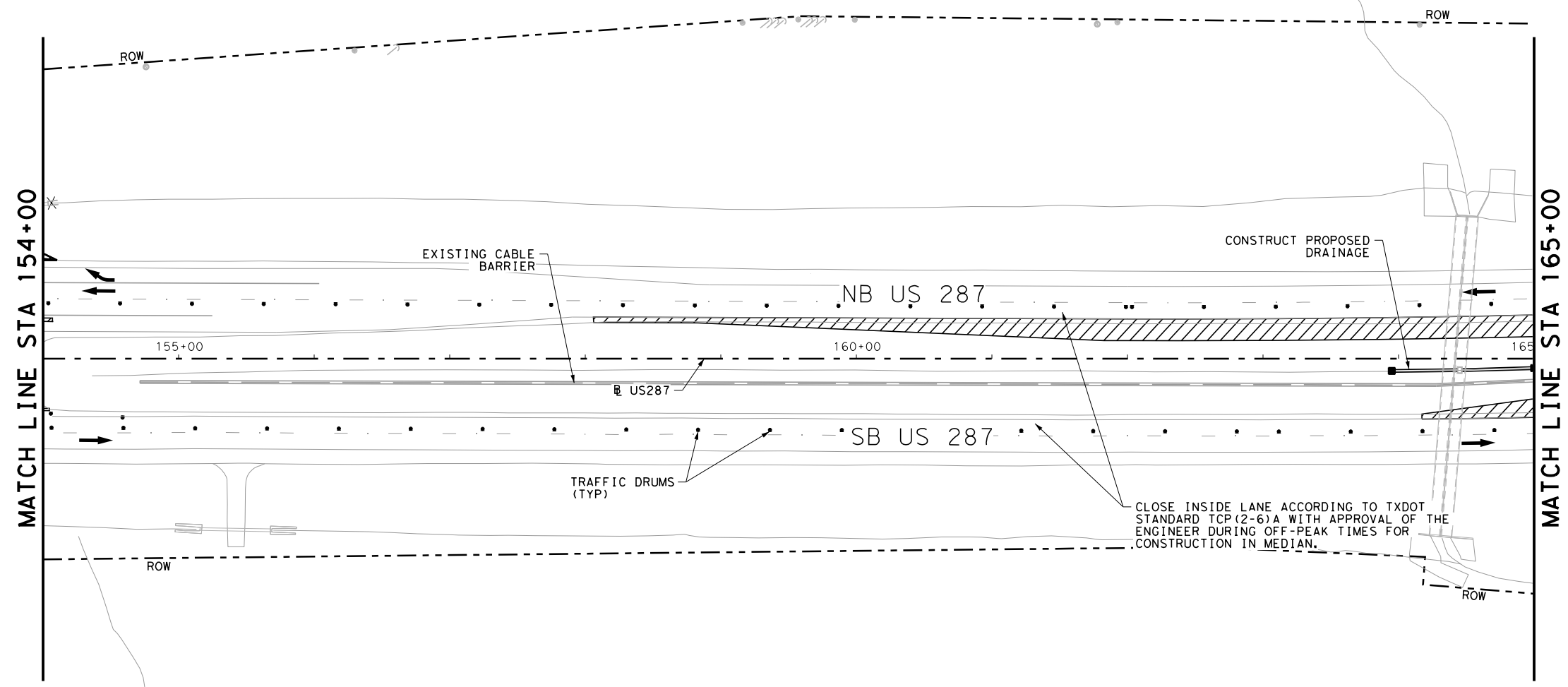
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**NOTES:**

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- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

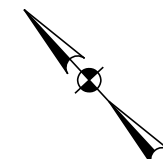


**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 154+00 TO STA 165+00**

SCALE: 1" = 100' SHEET 14 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	65
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	





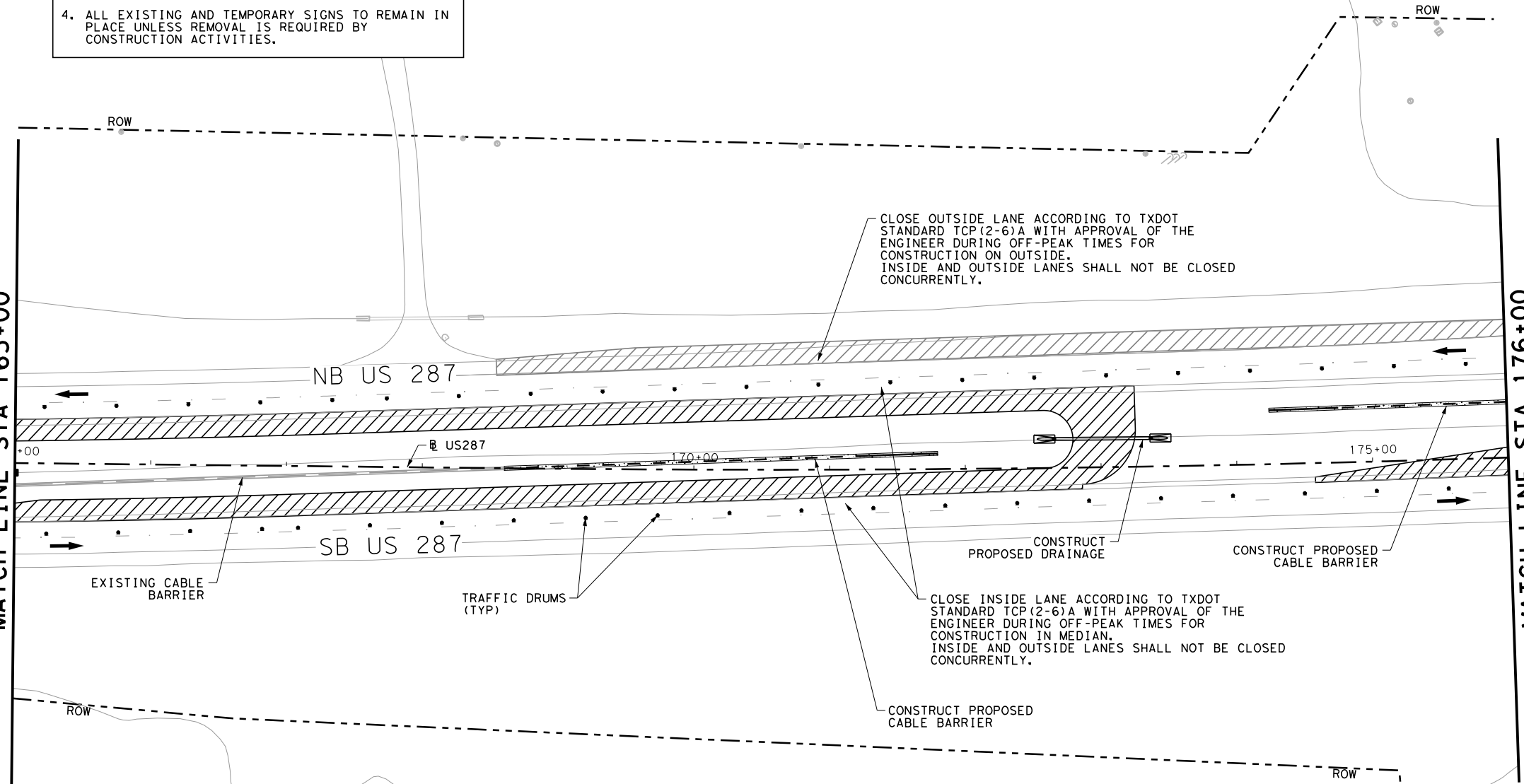
**NOTES:**

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- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT

MATCH LINE STA 165+00

MATCH LINE STA 176+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 165+00 TO STA 176+00**

SCALE: 1" = 100' SHEET 15 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			

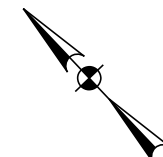
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**NOTES:**

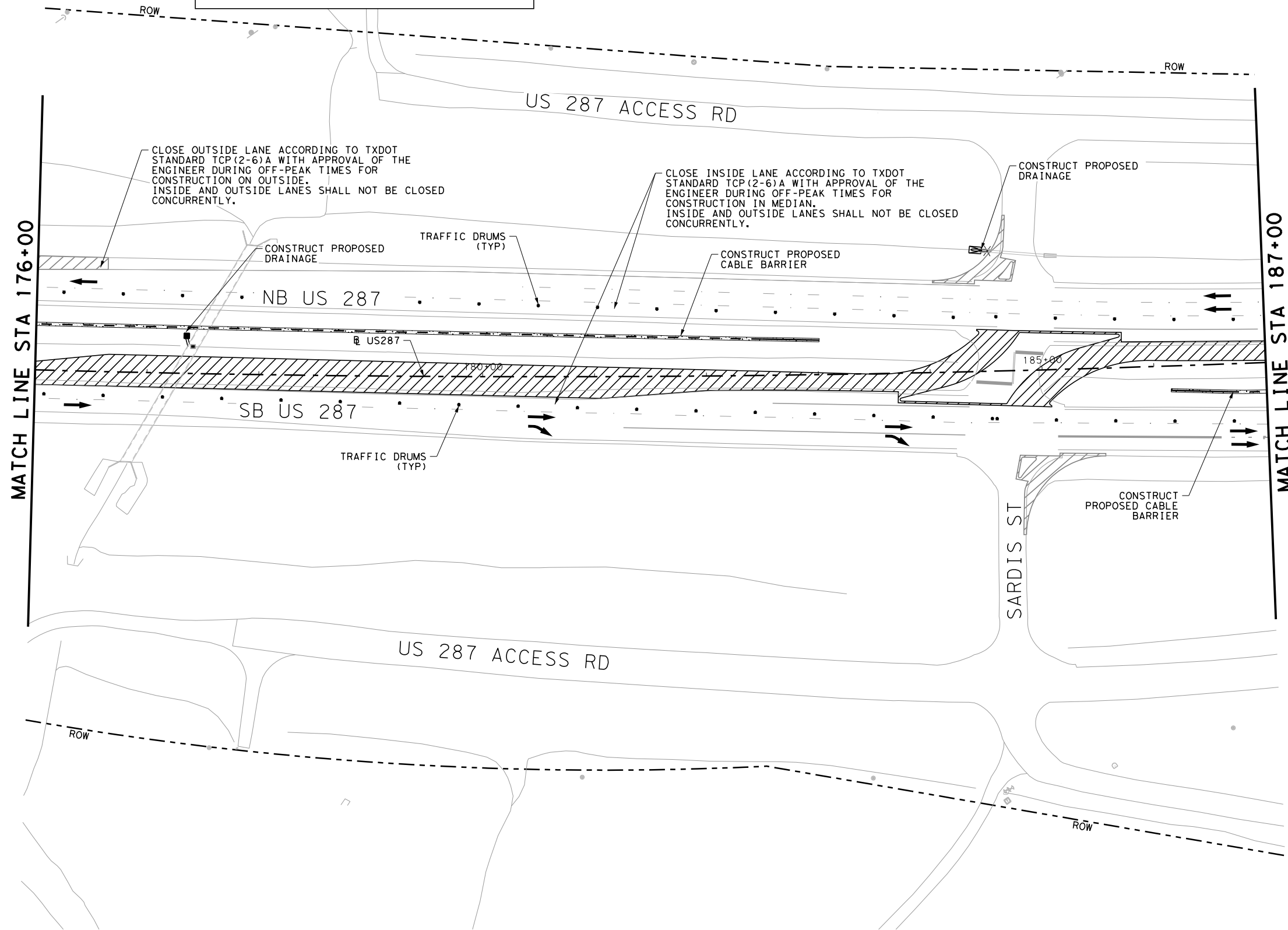
1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
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4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

50 0 50 100  
SCALE: 1" = 100'



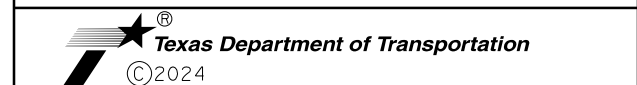
**LEGEND**

- EXISTING PAVEMENT
- PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
- PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
- TRAVEL LANE
- CONSTRUCTION SIGN
- CHANNELIZING DEVICE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CHANGEABLE MESSAGE BOARD
- FLASHING ARROW PANEL
- EXISTING STRIPING
- CABLE BARRIER
- REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

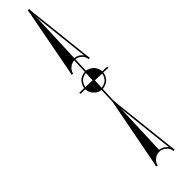
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 176+00 TO STA 187+00**

SCALE: 1" = 100' SHEET 16 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	SHEET NO. 67
CHECK SA	CONTROL 0172	SECTION 05	JOB 129	



**NOTES:**

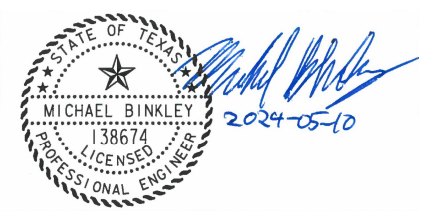
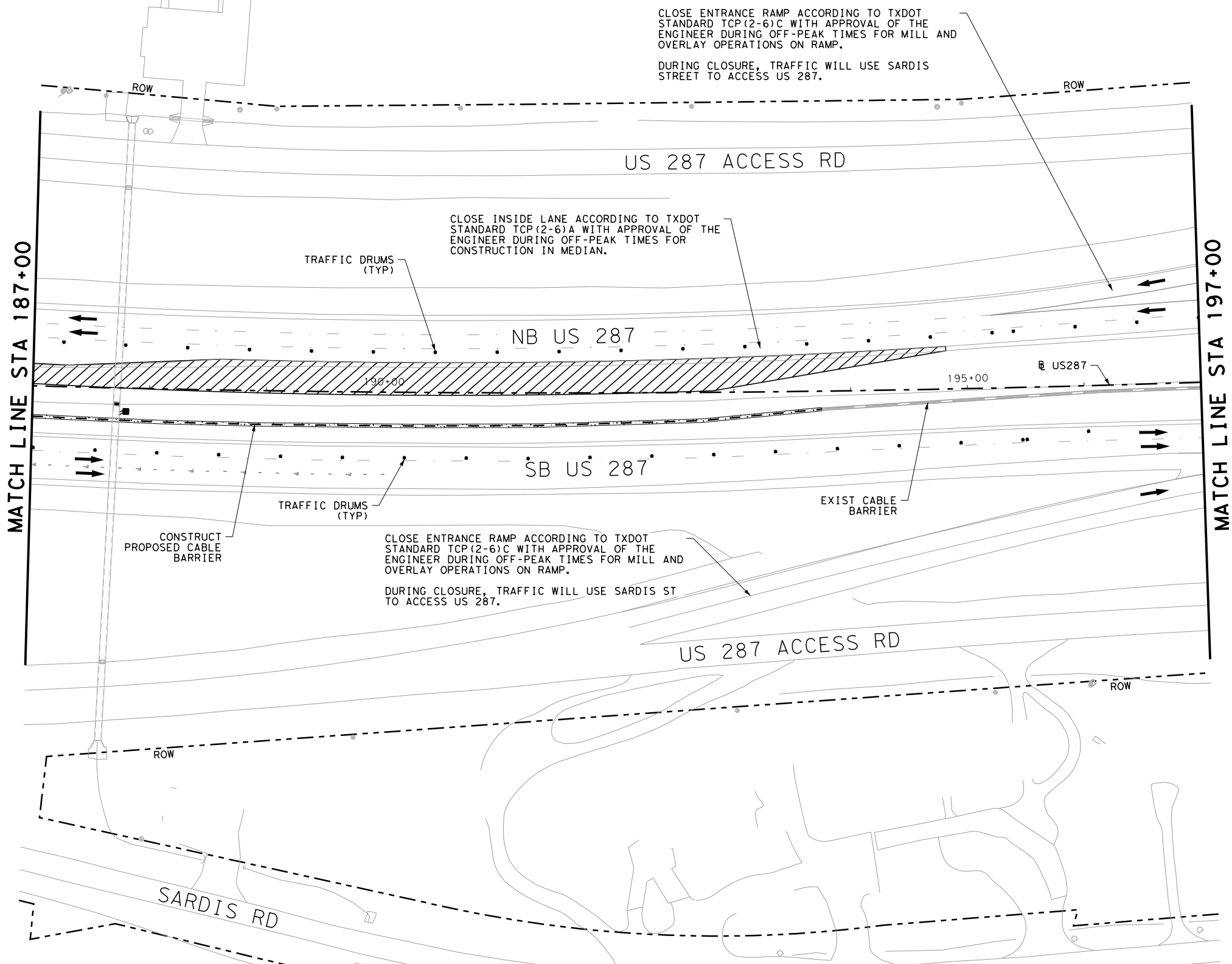
1. TRAFFIC LOCATION SHOWN HERE ON THESE PLANS IS FOR CONSTRUCTION IN THE MEDIAN AREA.
2. CONTRACTOR SHALL ONLY CLOSE LANES OR RAMPS DURING OFF-PEAK HOURS AND WITH THE APPROVAL OF THE ENGINEER. LANES OR RAMPS SHALL BE CLOSED ONLY WHILE WORK IS BEING PERFORMED IN A LOCATION. BEFORE REOPENING LANES OR RAMPS, CONTRACTOR SHALL RESTORE ANY DROP-OFF CONDITION TO A 3:1 SLOPE OR FLATTER.
3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT

CLOSE ENTRANCE RAMP ACCORDING TO TXDOT STANDARD TCP(2-6)C WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR MILL AND OVERLAY OPERATIONS ON RAMP.  
DURING CLOSURE, TRAFFIC WILL USE SARDIS STREET TO ACCESS US 287.

CLOSE INSIDE LANE ACCORDING TO TXDOT STANDARD TCP(2-6)A WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR CONSTRUCTION IN MEDIAN.

CLOSE ENTRANCE RAMP ACCORDING TO TXDOT STANDARD TCP(2-6)C WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR MILL AND OVERLAY OPERATIONS ON RAMP.  
DURING CLOSURE, TRAFFIC WILL USE SARDIS ST TO ACCESS US 287.



NO.	DATE	DESCRIPTION	APPROV.

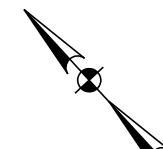
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 186+00 TO STA 197+00**

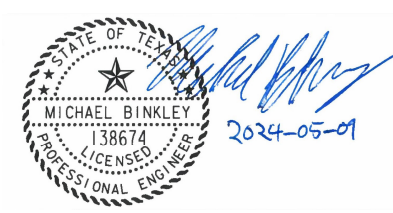
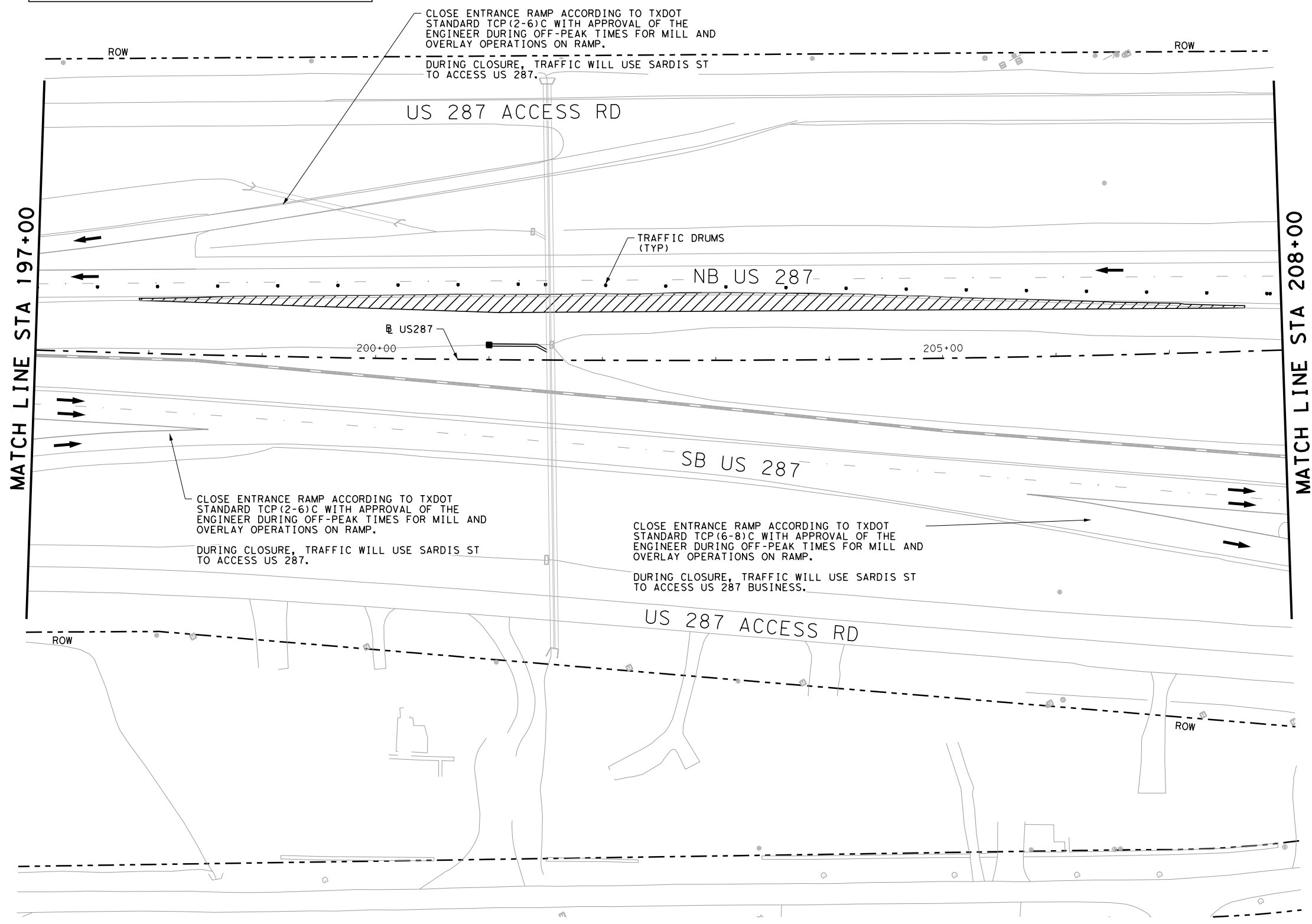
SCALE: 1" = 100' SHEET 17 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			



- NOTES:**
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  3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
  4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.

- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

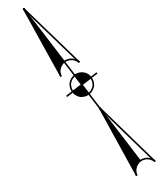


**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 197+00 TO STA 208+00**

SCALE: 1" = 100' SHEET 18 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 69
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				

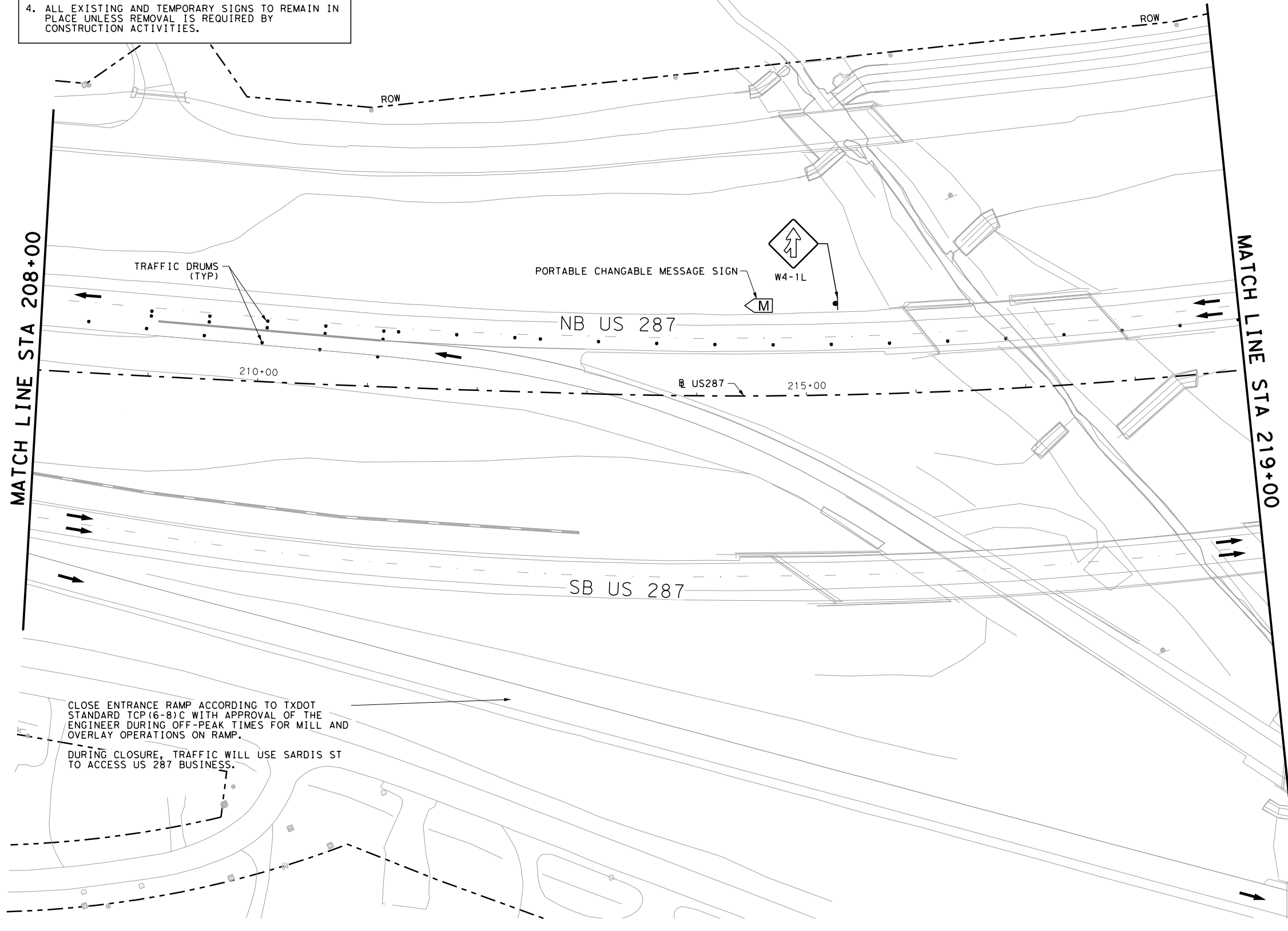
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**NOTES:**

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- LEGEND**
- EXISTING PAVEMENT
  - PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
  - PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
  - TRAVEL LANE
  - CONSTRUCTION SIGN
  - CHANNELIZING DEVICE
  - PROPOSED STORM SEWER
  - EXISTING STORM SEWER
  - CHANGEABLE MESSAGE BOARD
  - FLASHING ARROW PANEL
  - EXISTING STRIPING
  - CABLE BARRIER
  - REMOVE EXISTING PAVEMENT



TRAFFIC DRUMS (TYP)

PORTABLE CHANGABLE MESSAGE SIGN W4-1L

NB US 287

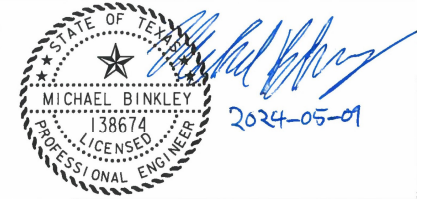
210+00

US287

215+00

SB US 287

CLOSE ENTRANCE RAMP ACCORDING TO TXDOT STANDARD TCP (6-8) C WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR MILL AND OVERLAY OPERATIONS ON RAMP.  
DURING CLOSURE, TRAFFIC WILL USE SARDIS ST TO ACCESS US 287 BUSINESS.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264
















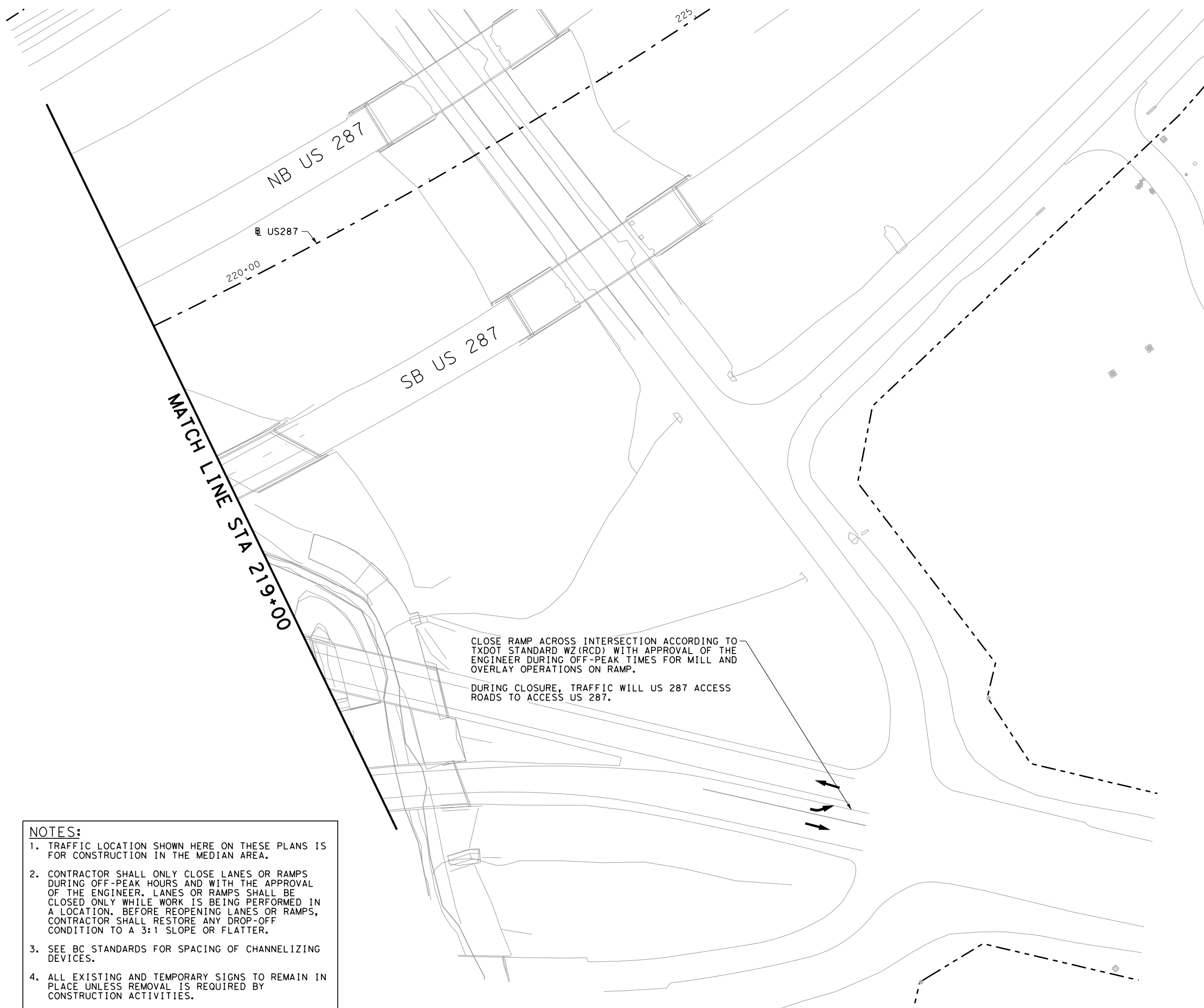
**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 208+00 TO END PROJECT**

SCALE: 1" = 100' SHEET 19 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 70
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	
CHECK SA				

**LEGEND**

-  EXISTING PAVEMENT
-  PERM PAVEMENT UNDER CONSTRUCTION WITH LANE CLOSURES SHOWN
-  PERM PAVEMENT UNDER CONSTRUCTION WITH OUTSIDE LANE CLOSURES
-  TRAVEL LANE
-  CONSTRUCTION SIGN
-  CHANNELIZING DEVICE
-  PROPOSED STORM SEWER
-  EXISTING STORM SEWER
-  CHANGEABLE MESSAGE BOARD
-  FLASHING ARROW PANEL
-  EXISTING STRIPING
-  CABLE BARRIER
-  REMOVE EXISTING PAVEMENT



CLOSE RAMP ACROSS INTERSECTION ACCORDING TO TXDOT STANDARD WZ(RCD) WITH APPROVAL OF THE ENGINEER DURING OFF-PEAK TIMES FOR MILL AND OVERLAY OPERATIONS ON RAMP.  
DURING CLOSURE, TRAFFIC WILL US 287 ACCESS ROADS TO ACCESS US 287.

- NOTES:**
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  3. SEE BC STANDARDS FOR SPACING OF CHANNELIZING DEVICES.
  4. ALL EXISTING AND TEMPORARY SIGNS TO REMAIN IN PLACE UNLESS REMOVAL IS REQUIRED BY CONSTRUCTION ACTIVITIES.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
TRAFFIC CONTROL PLAN  
LAYOUT  
STA 208+00 TO END CONSTRUCTION**

SCALE: 1" = 100' SHEET 20 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	71
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

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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.

DATE:  
FILE:

**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).

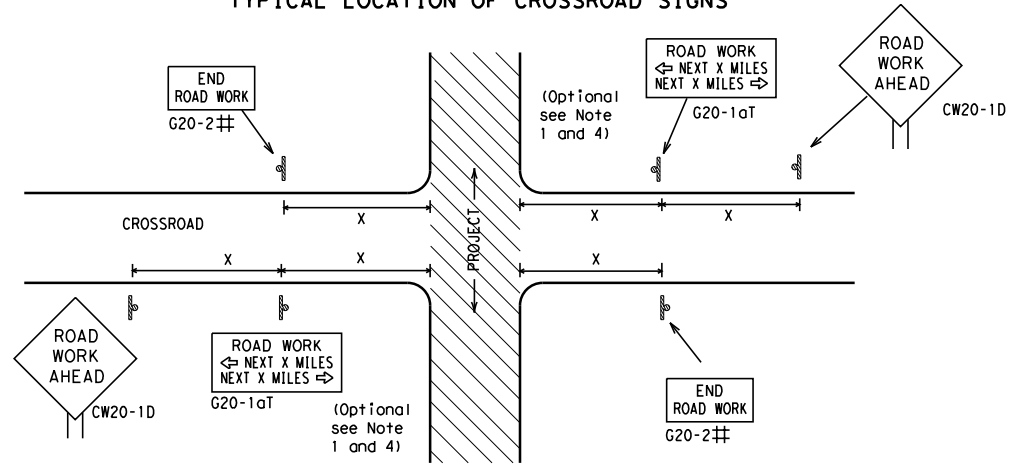
<p>THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT  <a href="http://www.txdot.gov">http://www.txdot.gov</a></p>
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD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

SHEET 1 OF 12

			
<p><b>BARRICADE AND CONSTRUCTION          GENERAL NOTES          AND REQUIREMENTS</b></p> <p><b>BC (1) - 21</b></p>			
FILE:	bc-21.dgn	DN:	TxDOT
© TxDOT	November 2002	CK:	TxDOT
		DW:	TxDOT
		CK:	TxDOT
REVISIONS		CONT	SECT
4-03	7-13	0172	05
9-07	8-14		
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		DIST	COUNTY
		DAL	ELLIS
			SHEET NO.
			72

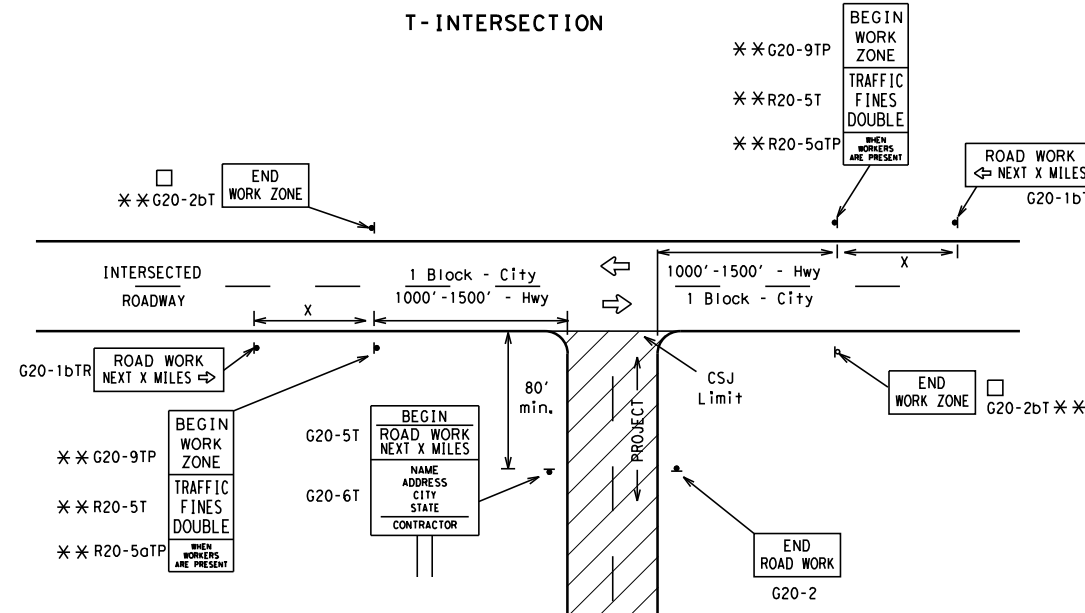
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**TYPICAL LOCATION OF CROSSROAD SIGNS**



- ## 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	48" x 48"	48" x 48"	55	500 <sup>2</sup>
CW3, CW4, CW5, CW6, CW8-3, CW10, CW12			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>

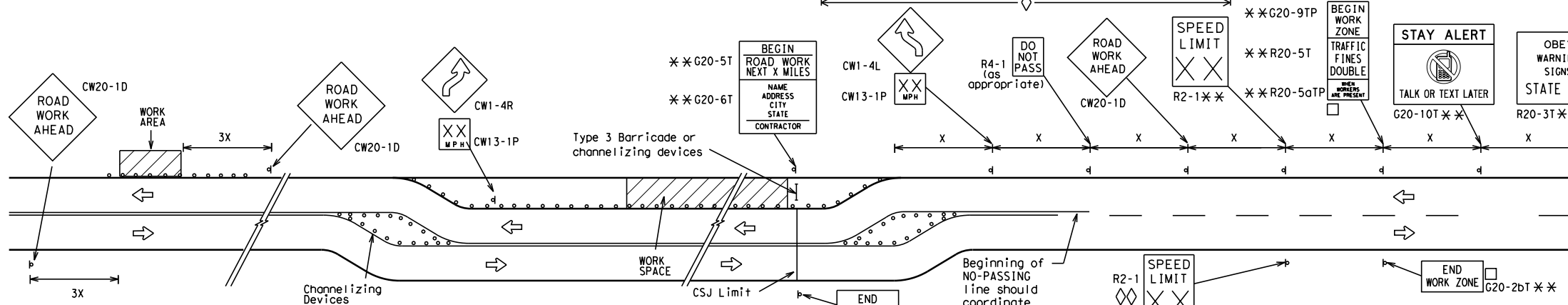
\* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

**GENERAL NOTES**

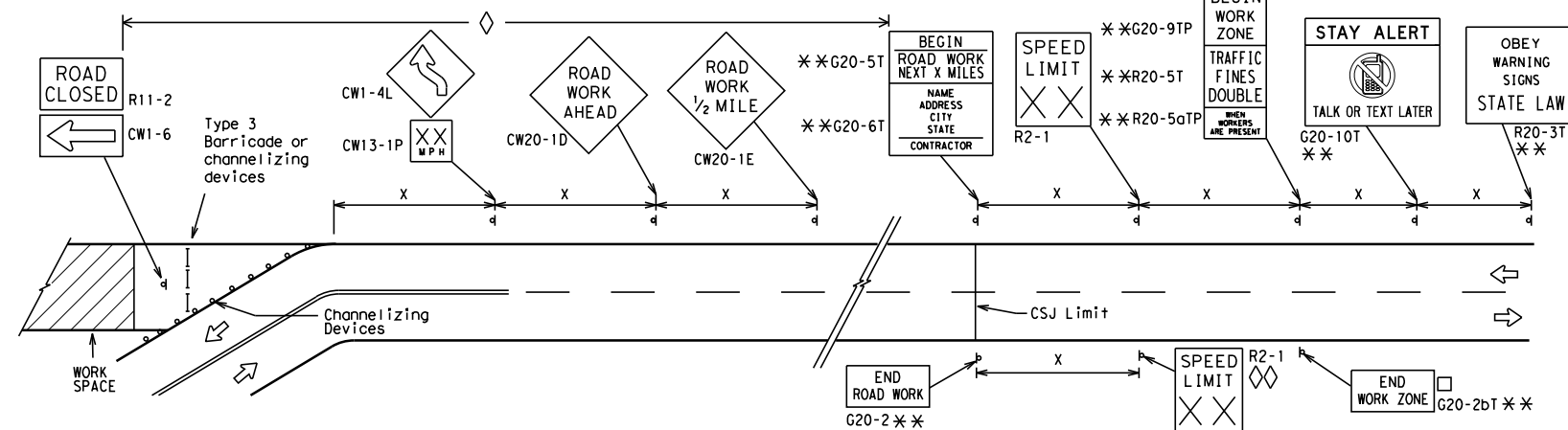
- Special or larger size signs may be used as necessary.
- Distance between signs should be increased as required to have 1500 feet advance warning.
- Distance between signs should be increased as required to have 1/2 mile or more advance warning.
- 36" x 36" "ROAD WORK AHEAD" (CW20-1D) signs may be 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**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT SECT	JOB	HIGHWAY	
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9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	DAL	ELLIS	73	

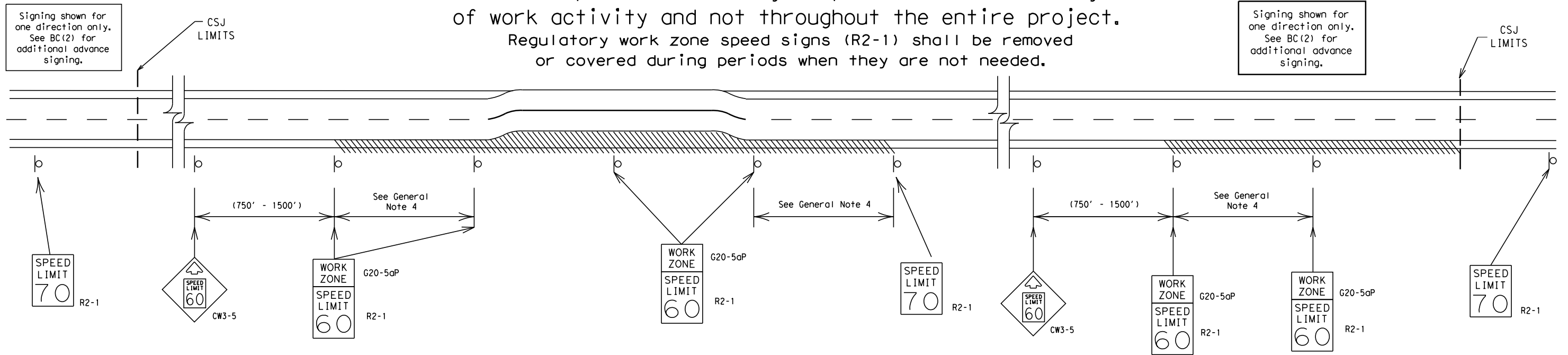
DATE: FILE:



# 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



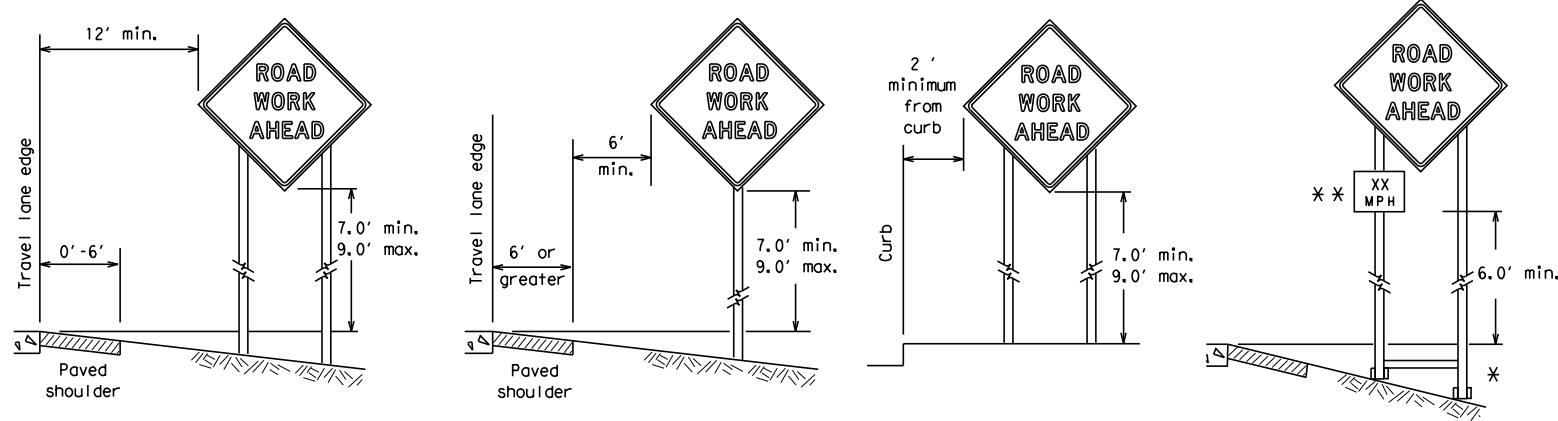
## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC (3) - 21

FILE:	bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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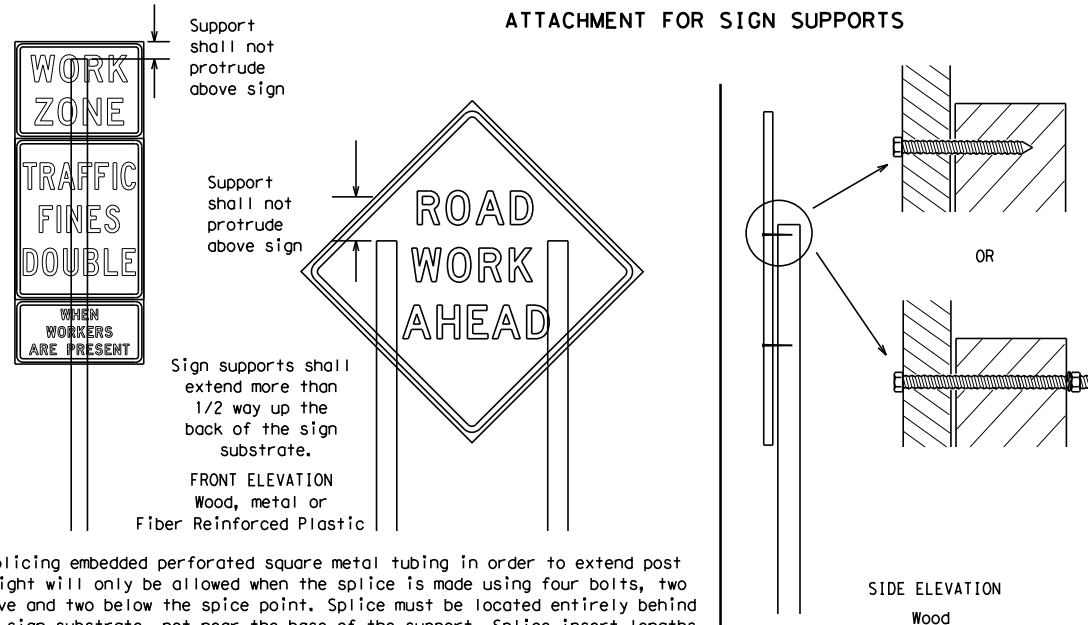
**TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS**



\* 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**

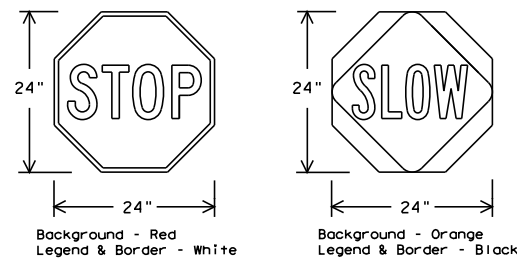
- Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
- The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
- Rock, concrete, iron, steel or other solid objects shall not 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.

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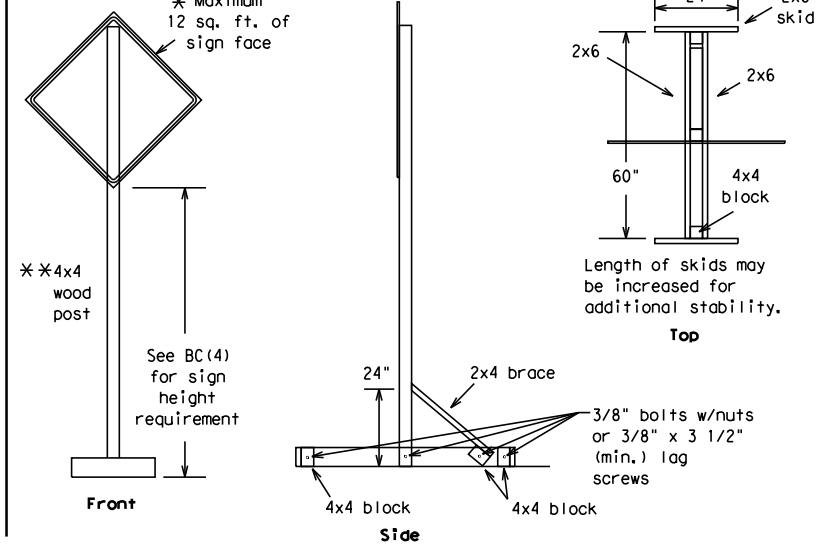
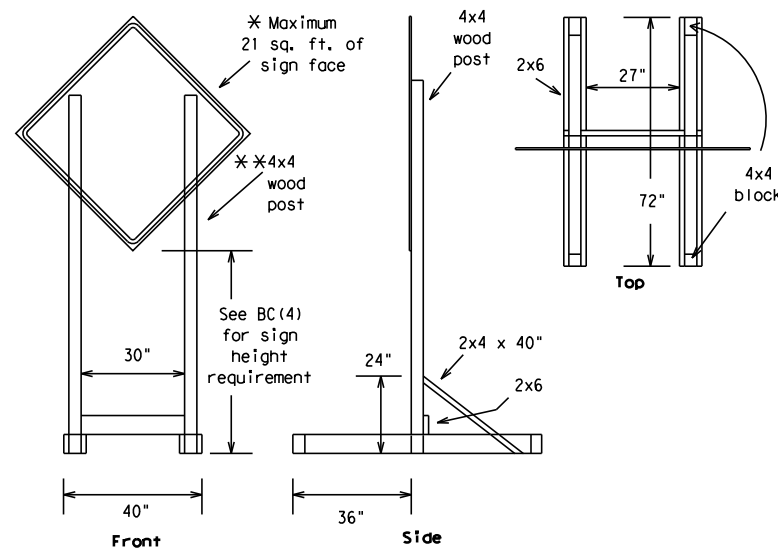
**BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES**

**BC (4) - 21**

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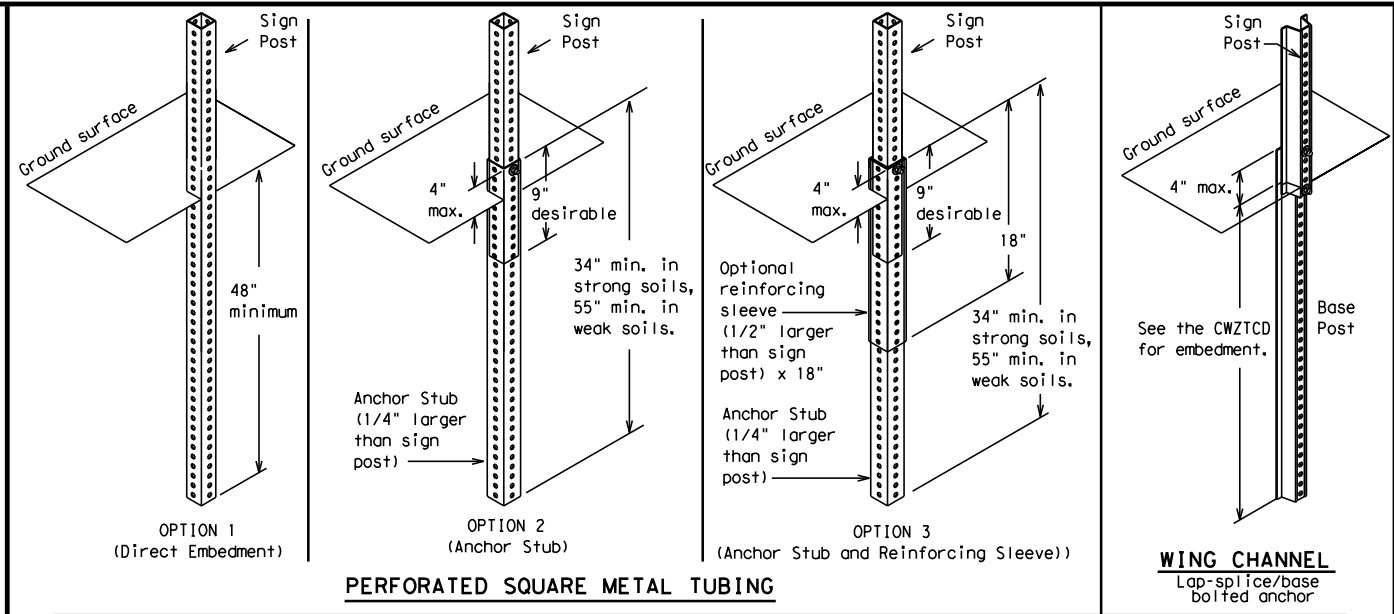
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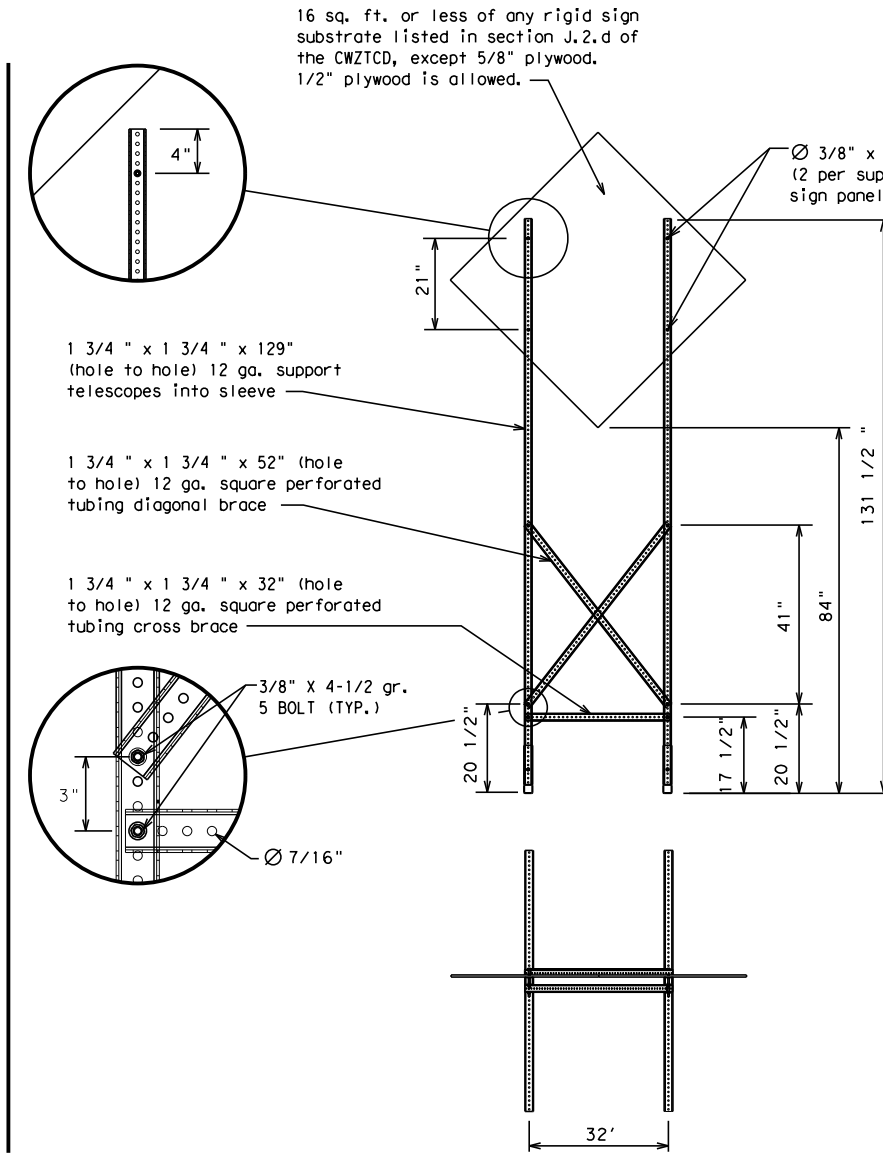
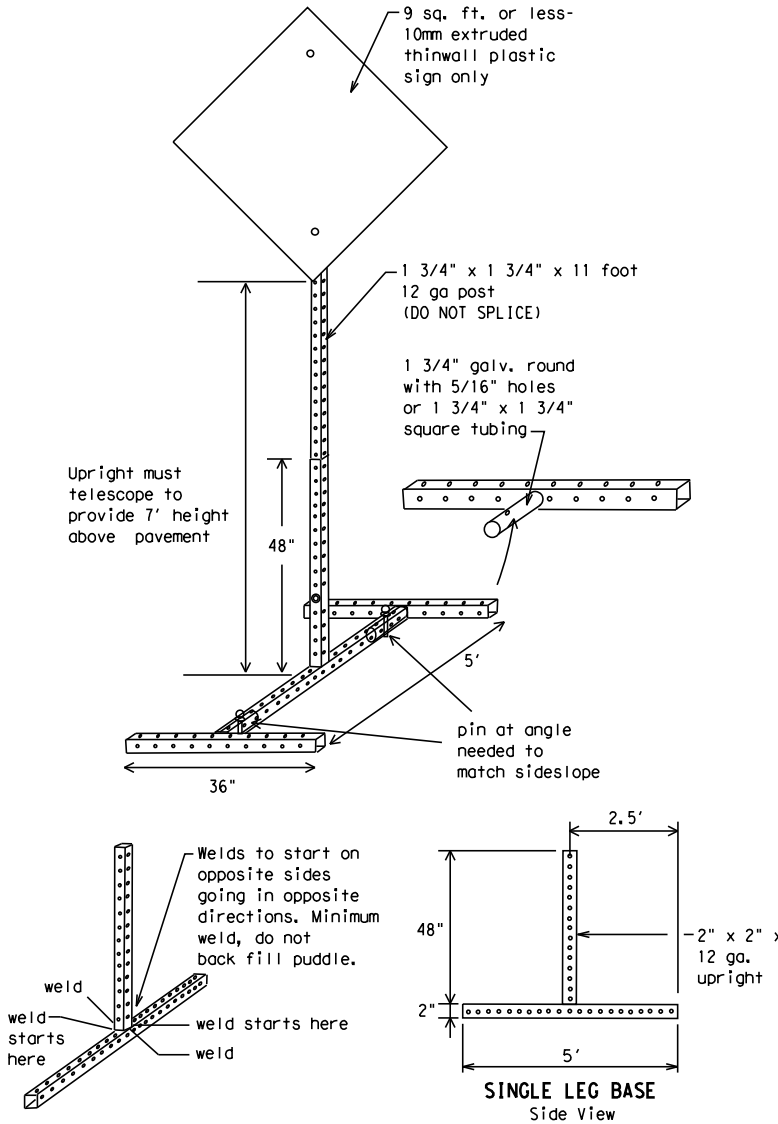
### SKID MOUNTED WOOD SIGN SUPPORTS

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



### GROUND MOUNTED SIGN SUPPORTS

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



### SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

### WEDGE ANCHORS

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

### OTHER DESIGNS

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

### GENERAL NOTES

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

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

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## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5) - 21

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

# 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.

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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

## Phase 1: Condition Lists

### Road/Lane/Ramp Closure List

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

### Other Condition List

FRONTAGE ROAD CLOSED
SHOULDER CLOSED XXX FT
RIGHT LN CLOSED XXX FT
RIGHT X LANES OPEN
DAYTIME LANE CLOSURES
I-XX SOUTH EXIT CLOSED
EXIT XXX CLOSED X MILE
RIGHT LN TO BE CLOSED
X LANES CLOSED TUE - FRI

\* 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
DETOUR NEXT X EXITS
USE EXIT XXX
STAY ON US XXX SOUTH
TRUCKS USE US XXX N
WATCH FOR TRUCKS
EXPECT DELAYS
REDUCE SPEED XXX FT
USE OTHER ROUTES
STAY IN LANE

### Location List

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

### Warning List

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

### \*\* Advance Notice List

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

\*\* See Application Guidelines Note 6.

## APPLICATION GUIDELINES

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

## WORDING ALTERNATIVES

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

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

## FULL MATRIX PCMS SIGNS

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

SHEET 6 OF 12



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

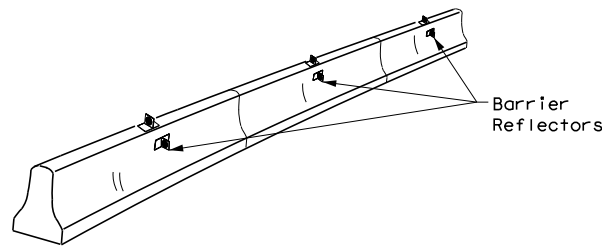
BC (6) - 21

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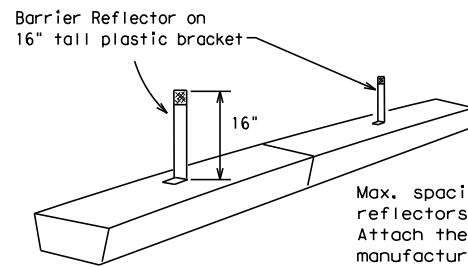
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- Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
- Color of Barrier Reflectors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



**CONCRETE TRAFFIC BARRIER (CTB)**

- 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.

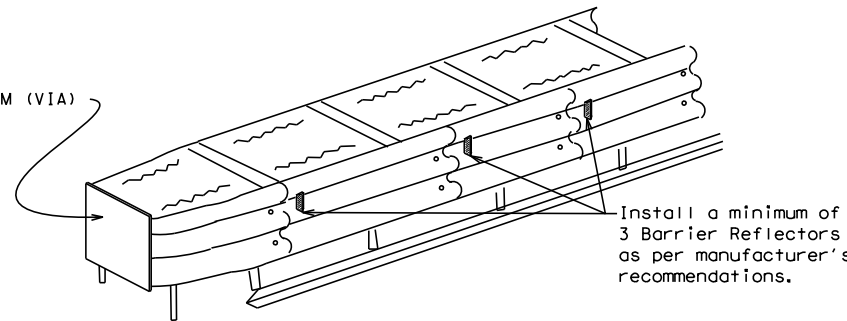


**LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES**

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

Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

**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**

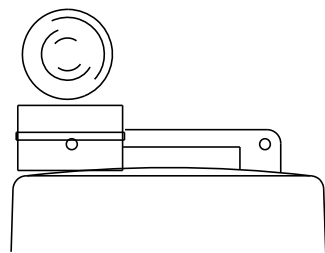
- Warning lights shall meet the requirements of the TMUTCD.
- Warning lights shall NOT be installed on barricades.
- Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet 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**

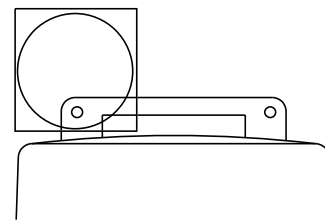
- Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
- Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
- A series of sequential flashing warning lights placed on channelizing 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.

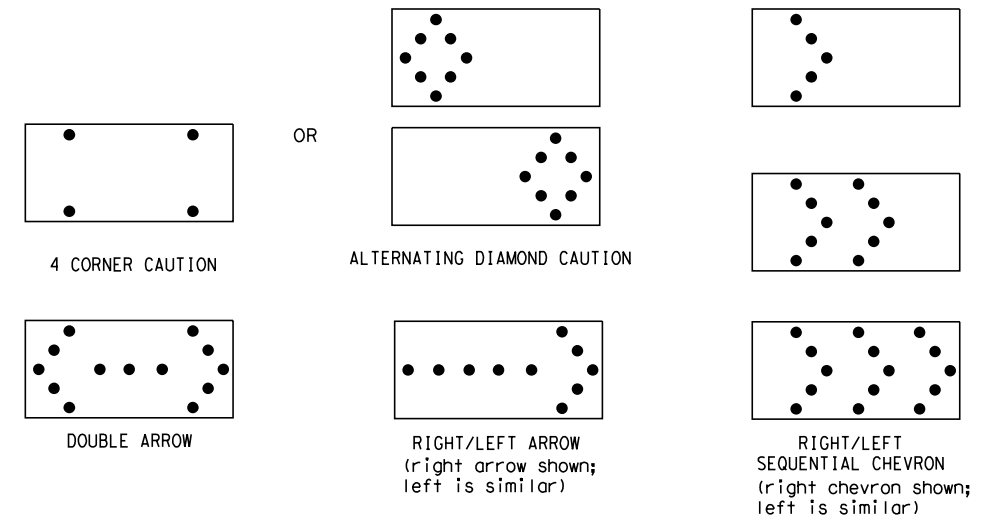


Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

DATE:  
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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.



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

**BC (7) - 21**

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
© TxDOT	November 2002	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0172	05	129	US 287				
9-07	8-14	DIST	COUNTY	SHEET NO.					
7-13	5-21	DAL	ELLIS	78					

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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:

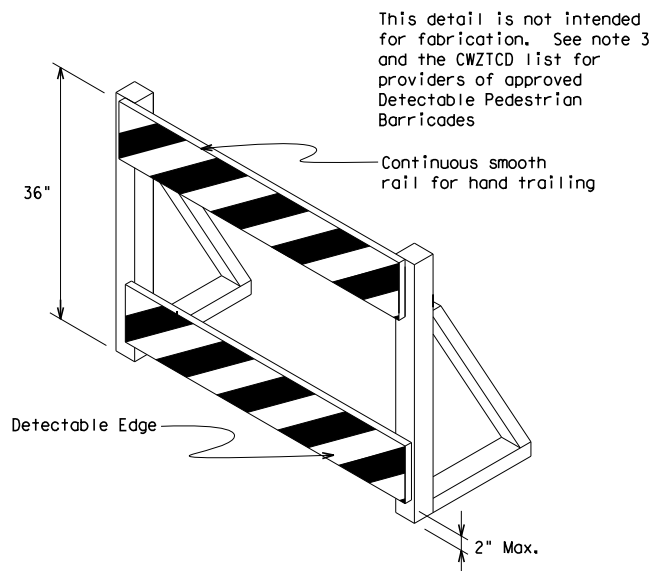
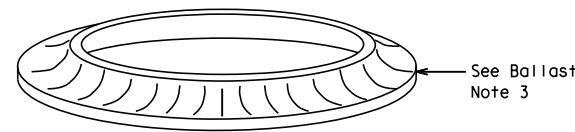
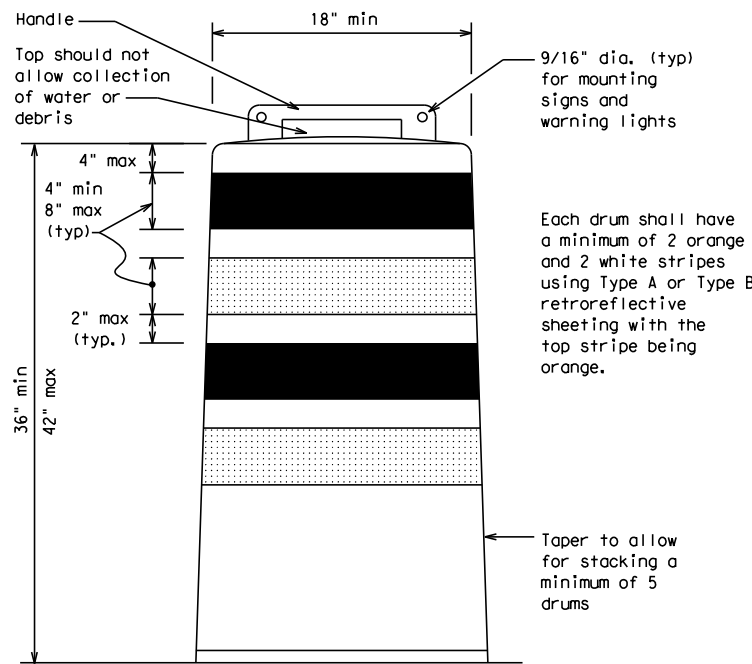
- Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
- The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

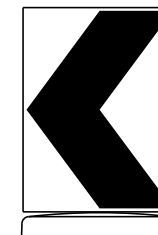
**BALLAST**

- 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.

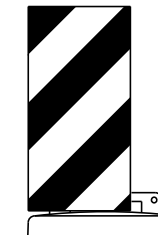


**DETECTABLE PEDESTRIAN BARRICADES**

- 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



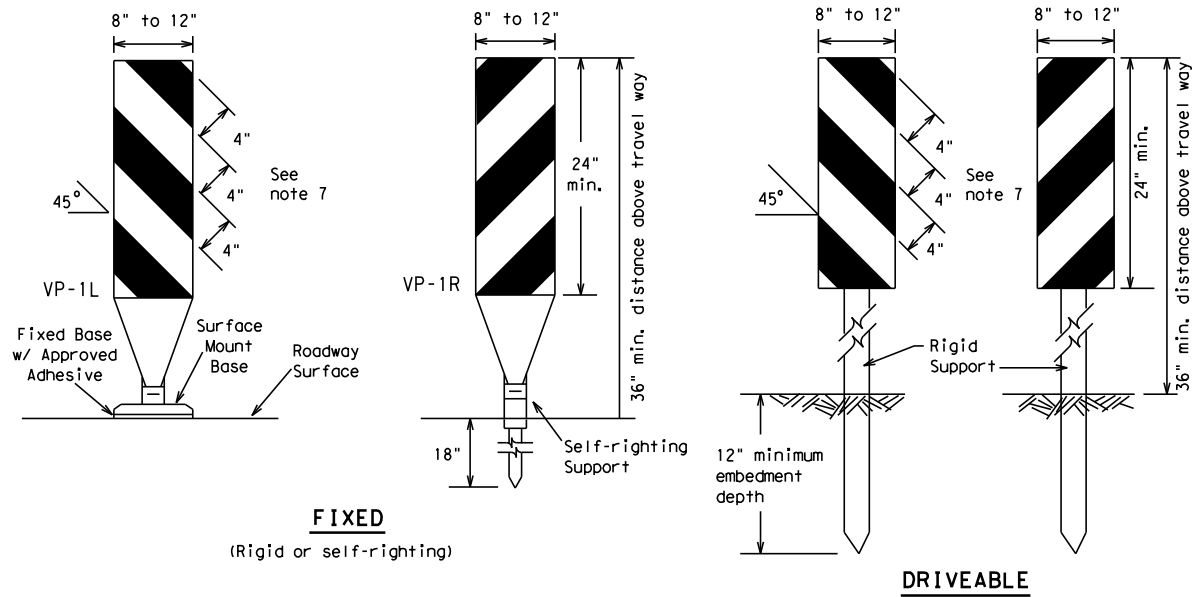
**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (8) - 21**

FILE:	bc-21.dgn	DN:	TxDOT	CK:	TxDOT	DW:	TxDOT	CK:	TxDOT
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4-03	8-14	DIST	COUNTY	SHEET NO.					
9-07	5-21	DAL	ELLIS	79					
7-13									

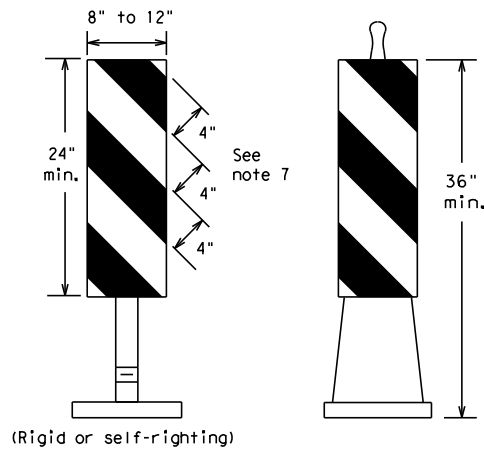
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**FIXED**  
(Rigid or self-righting)

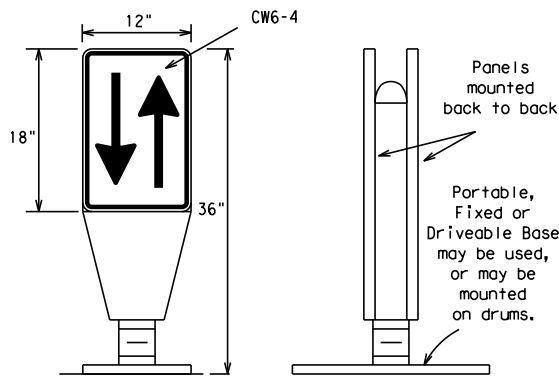
**DRIVEABLE**



**PORTABLE**

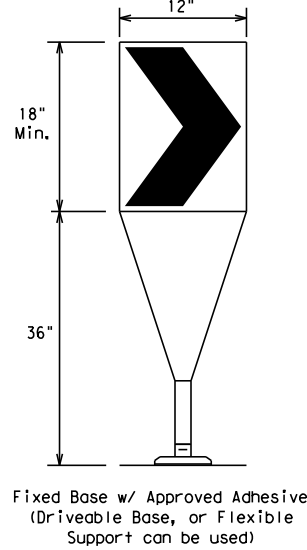
**VERTICAL PANELS (VPs)**

- 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.



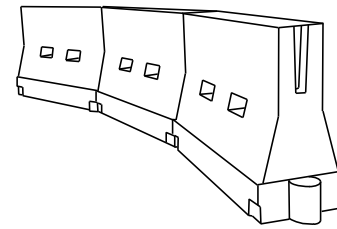
**OPPOSING TRAFFIC LANE DIVIDERS (OTLD)**

- 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 cones 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	L = WS	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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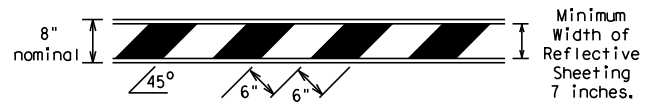
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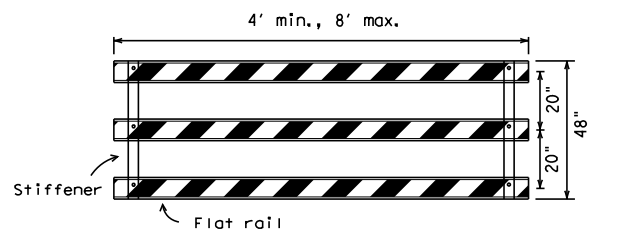
**TYPE 3 BARRICADES**

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.

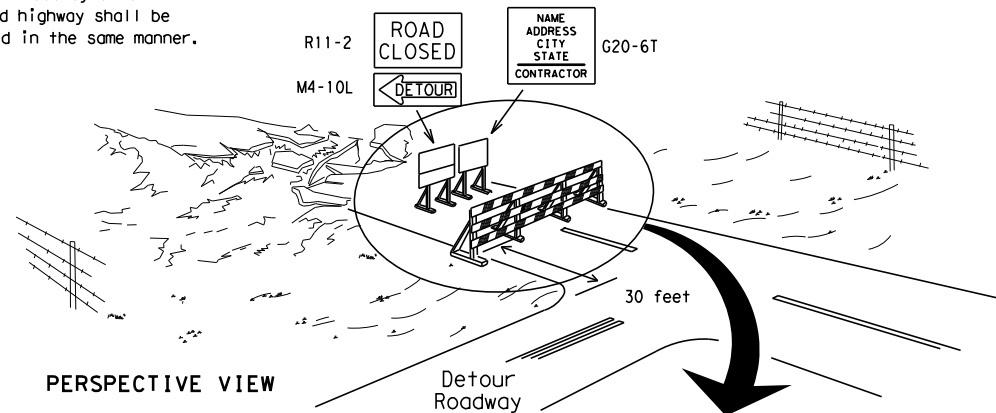


**TYPICAL STRIPING DETAIL FOR BARRICADE RAIL**



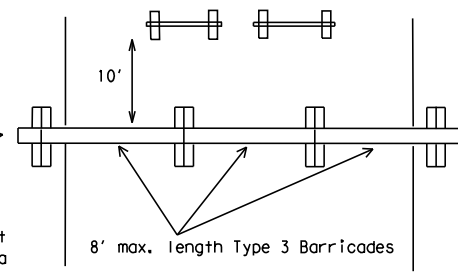
**TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES**

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



PERSPECTIVE VIEW

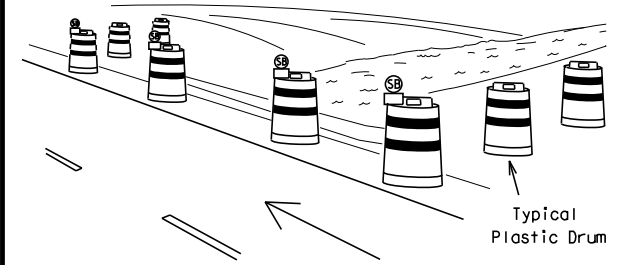
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic. Barricade striping should slant downward in the direction of detour.



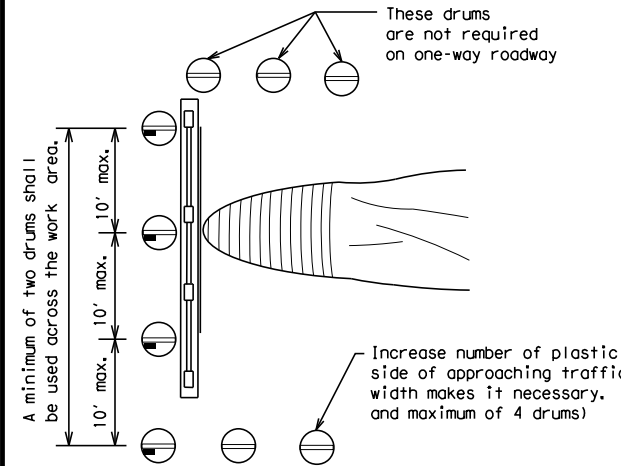
PLAN VIEW

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

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



PERSPECTIVE VIEW

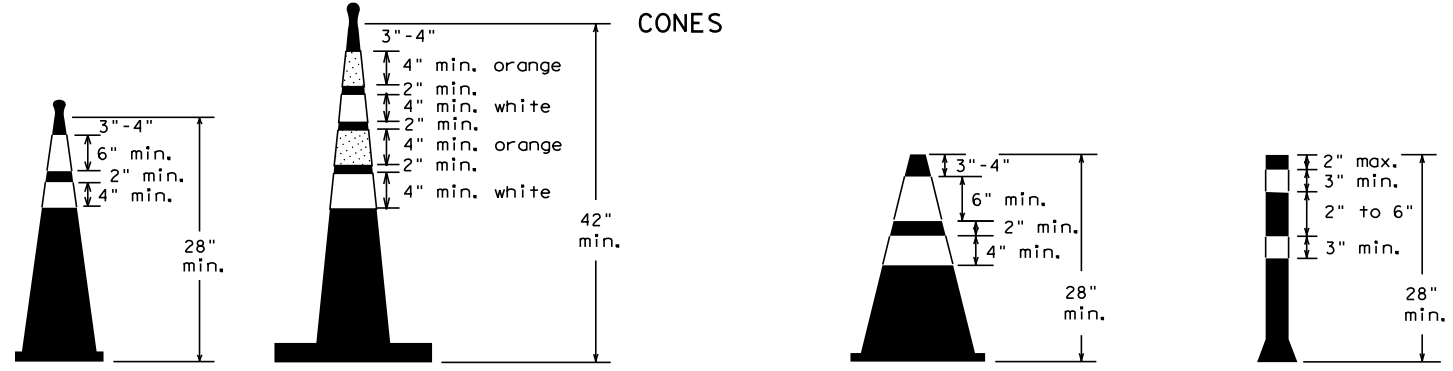


PLAN VIEW

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

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.



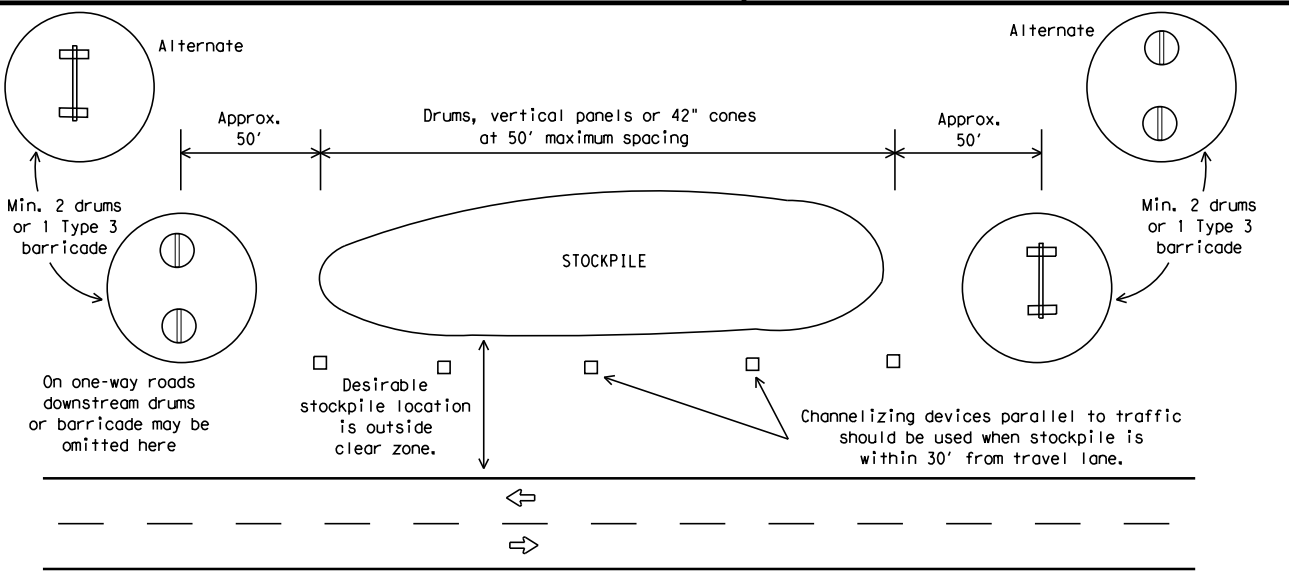
Two-Piece cones

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.

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.



**TRAFFIC CONTROL FOR MATERIAL STOCKPILES**



**BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES**

**BC (10) - 21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
9-07 8-14	DIST	COUNTY	SHEET NO.	
7-13 5-21	DAL	ELLIS	81	

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.

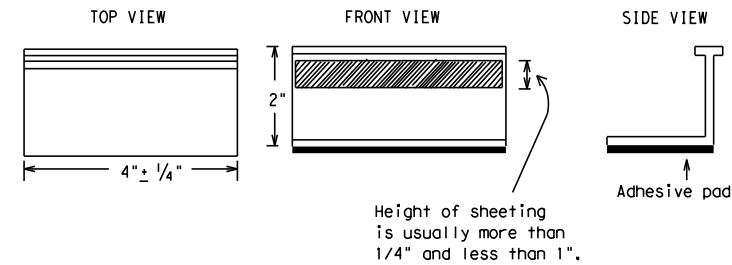
### MAINTAINING WORK ZONE PAVEMENT MARKINGS

- 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).

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DATE:  
FILE:

SHEET 11 OF 12

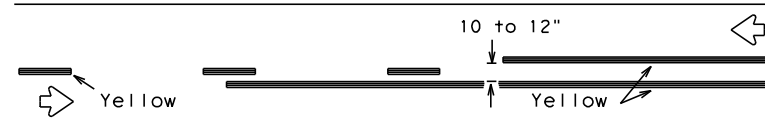


## BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

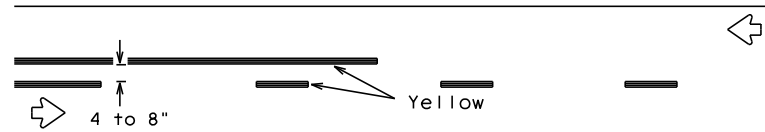
**BC(11) - 21**

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS		0172	05	129
2-98	9-07	5-21		US 287
1-02	7-13			
11-02	8-14	DAL	ELLIS	SHEET NO. 82

## PAVEMENT MARKING PATTERNS

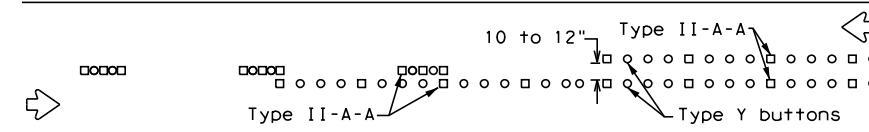


REFLECTORIZED PAVEMENT MARKINGS - PATTERN A

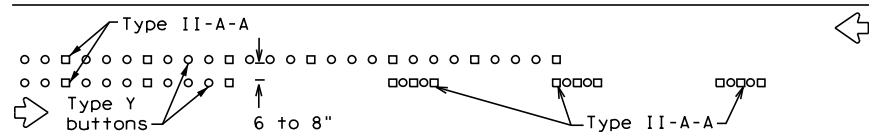


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

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.

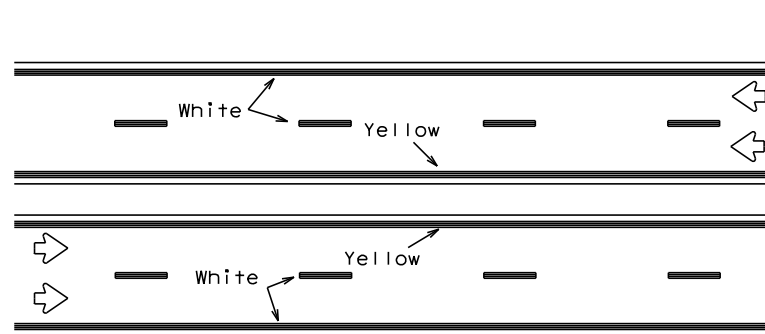


RAISED PAVEMENT MARKERS - PATTERN A



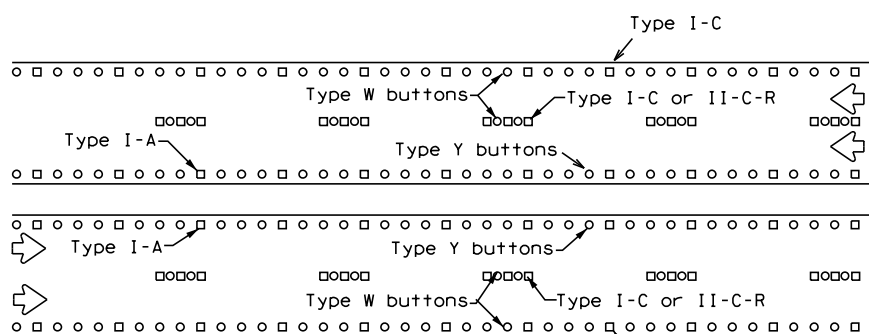
RAISED PAVEMENT MARKERS - PATTERN B

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



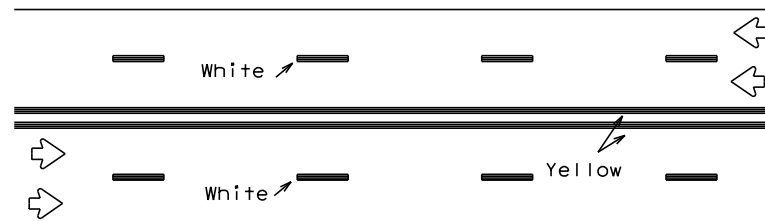
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



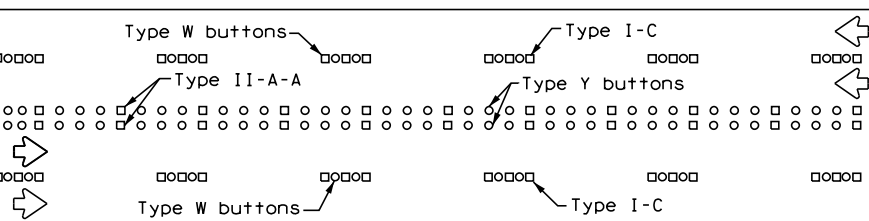
RAISED PAVEMENT MARKERS

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



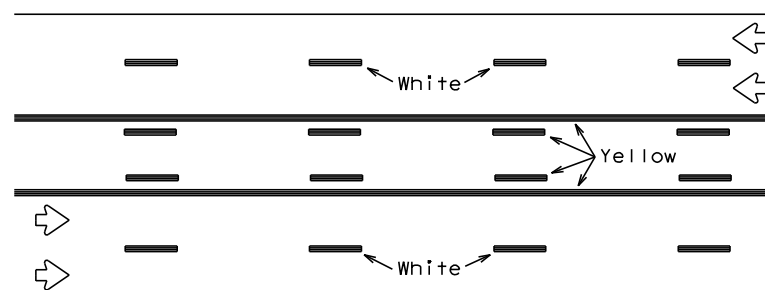
REFLECTORIZED PAVEMENT MARKINGS

Prefabricated markings may be substituted for reflectORIZED pavement markings.



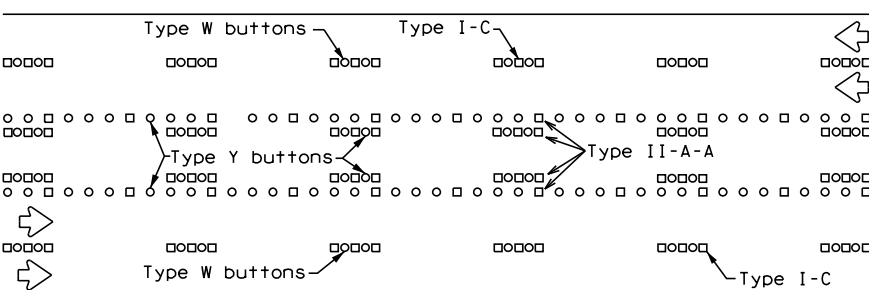
RAISED PAVEMENT MARKERS

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS

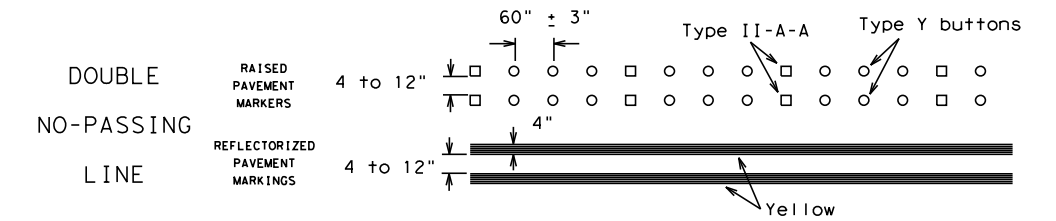
Prefabricated markings may be substituted for reflectORIZED pavement markings.



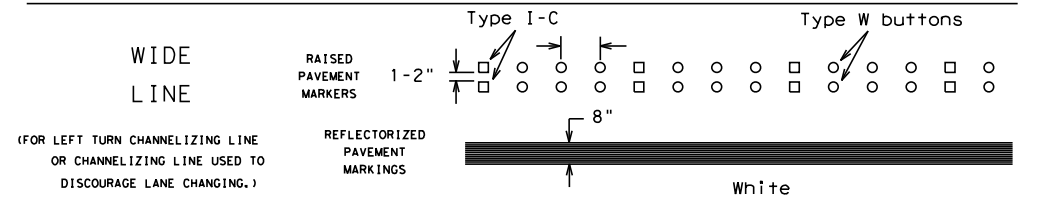
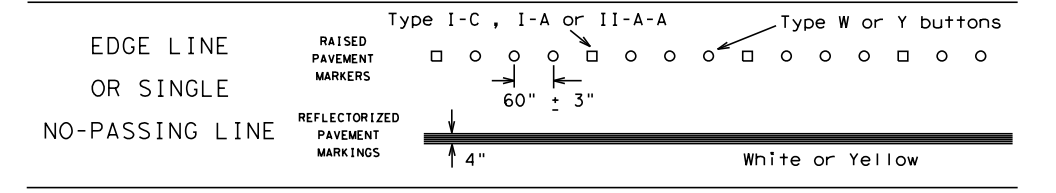
RAISED PAVEMENT MARKERS

## TWO-WAY LEFT TURN LANE

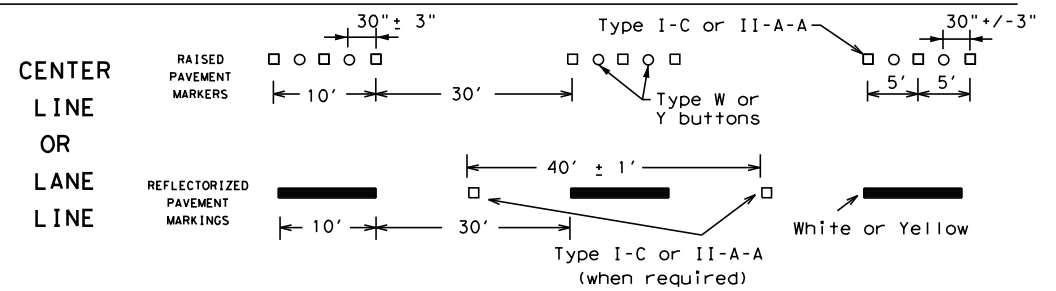
## STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS



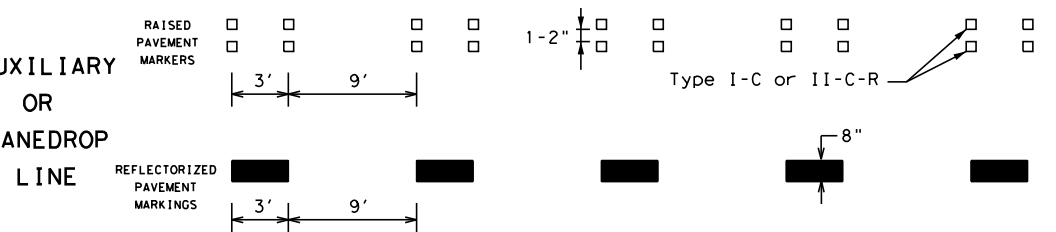
### SOLID LINES



### BROKEN LINES

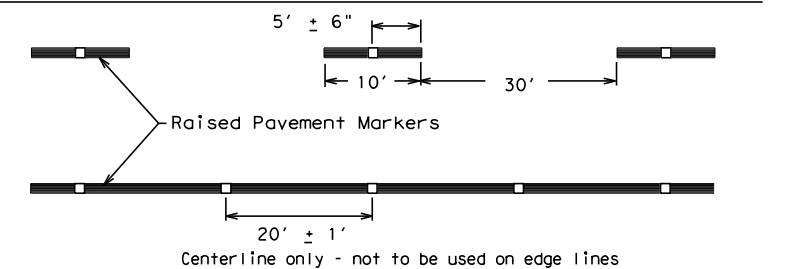


### AUXILIARY OR LANEDROP LINE



### REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



SHEET 12 OF 12



## BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

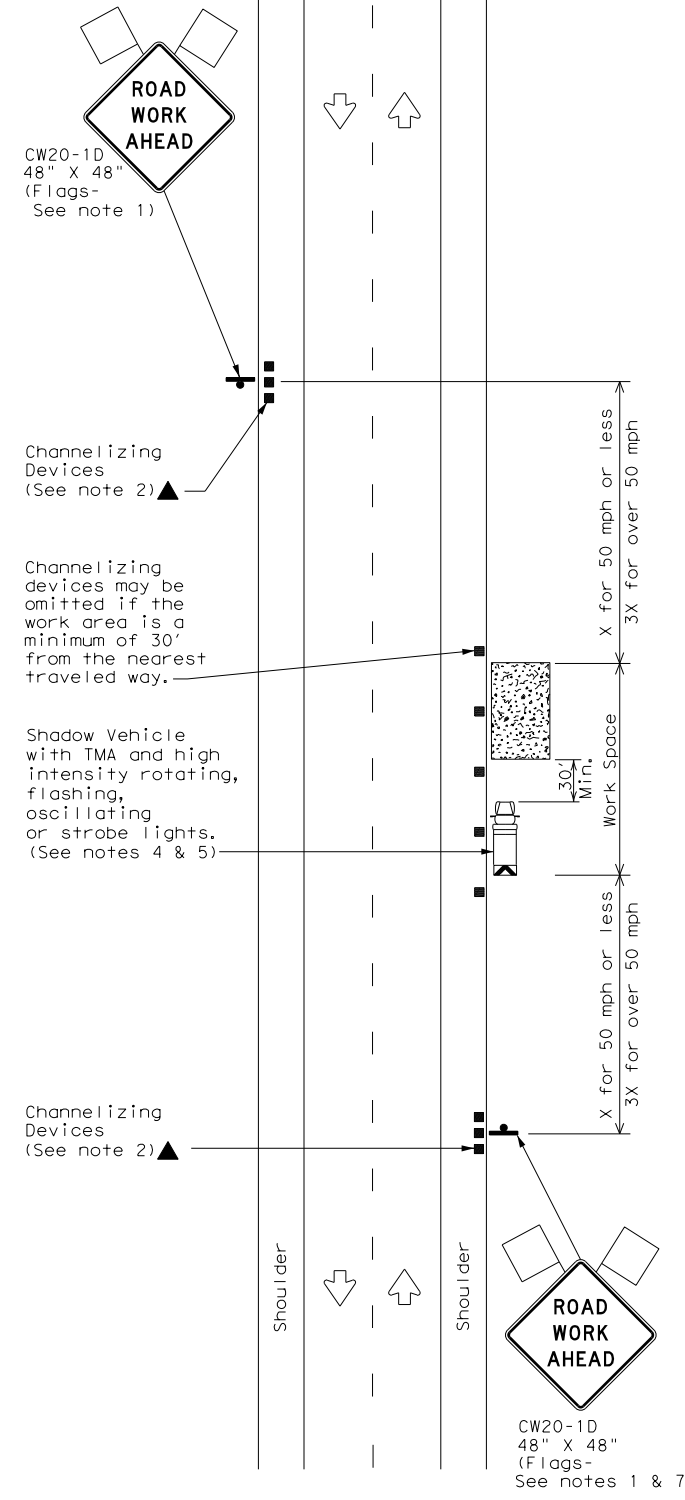
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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
1-97 9-07 5-21				
2-98 7-13	DIST	COUNTY	SHEET NO.	
11-02 8-14	DAL	ELLIS	83	

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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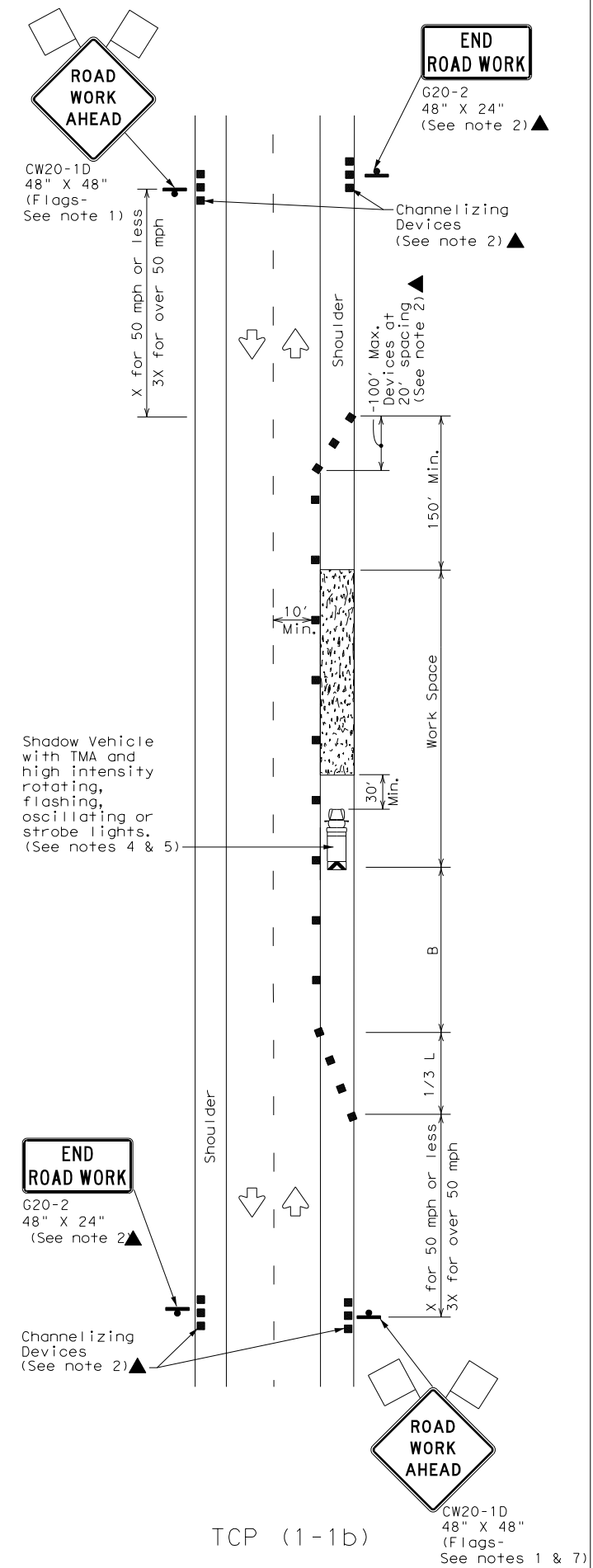
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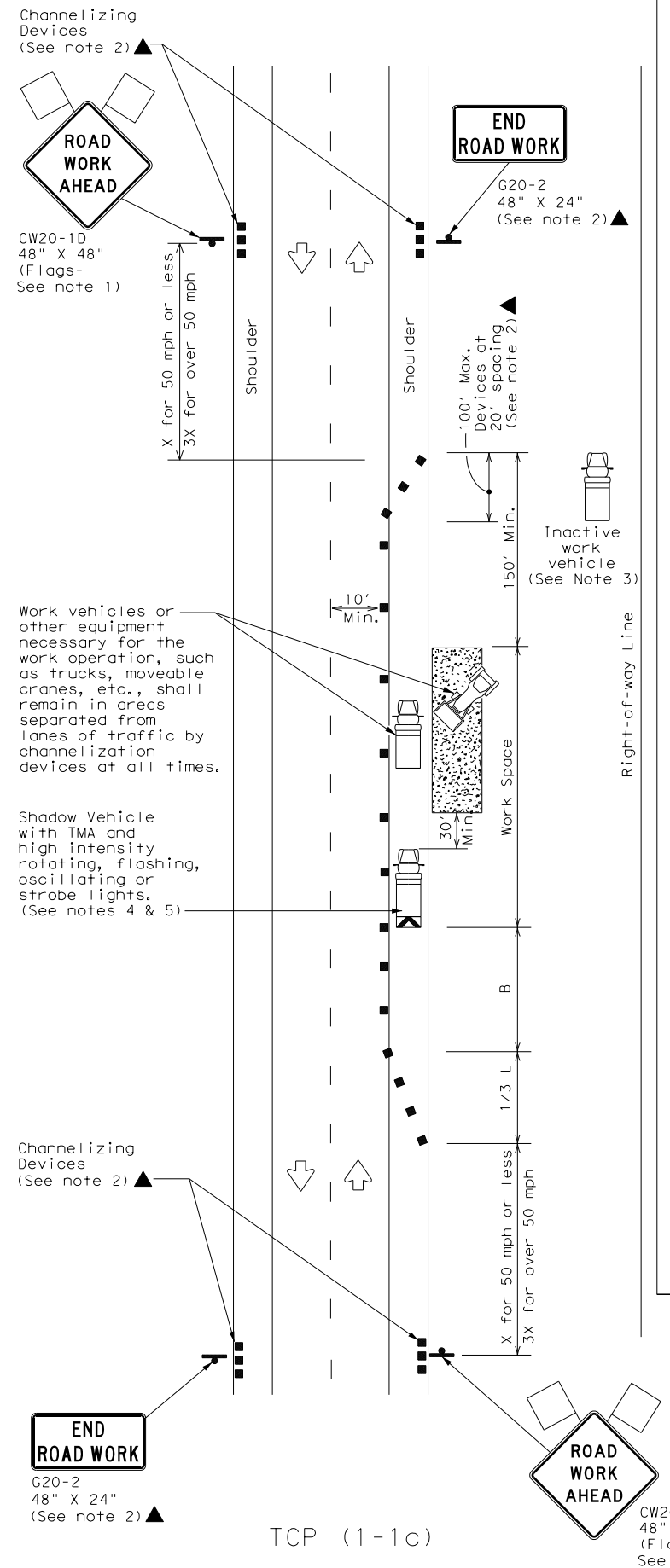
TCP (1-1a)

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 *	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.
  - 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

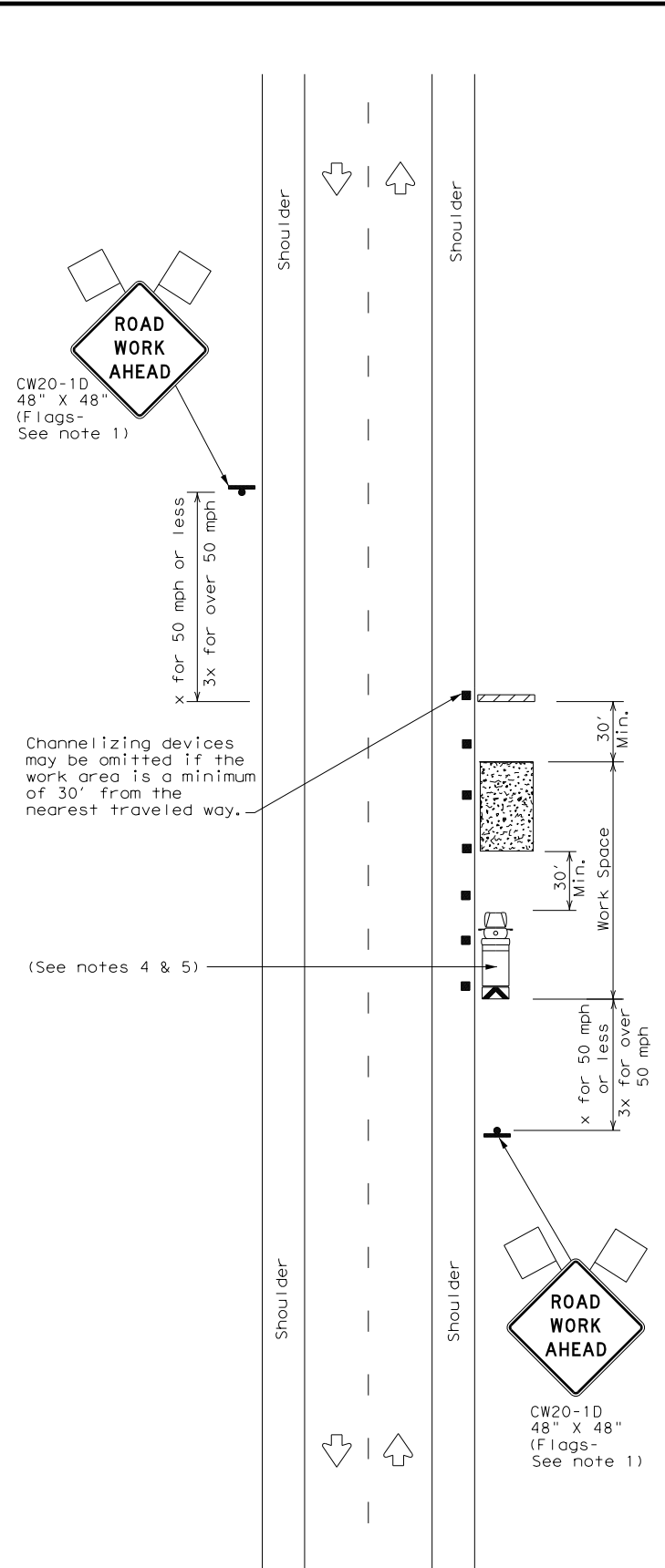
TCP (1-1) - 18

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DATE:  
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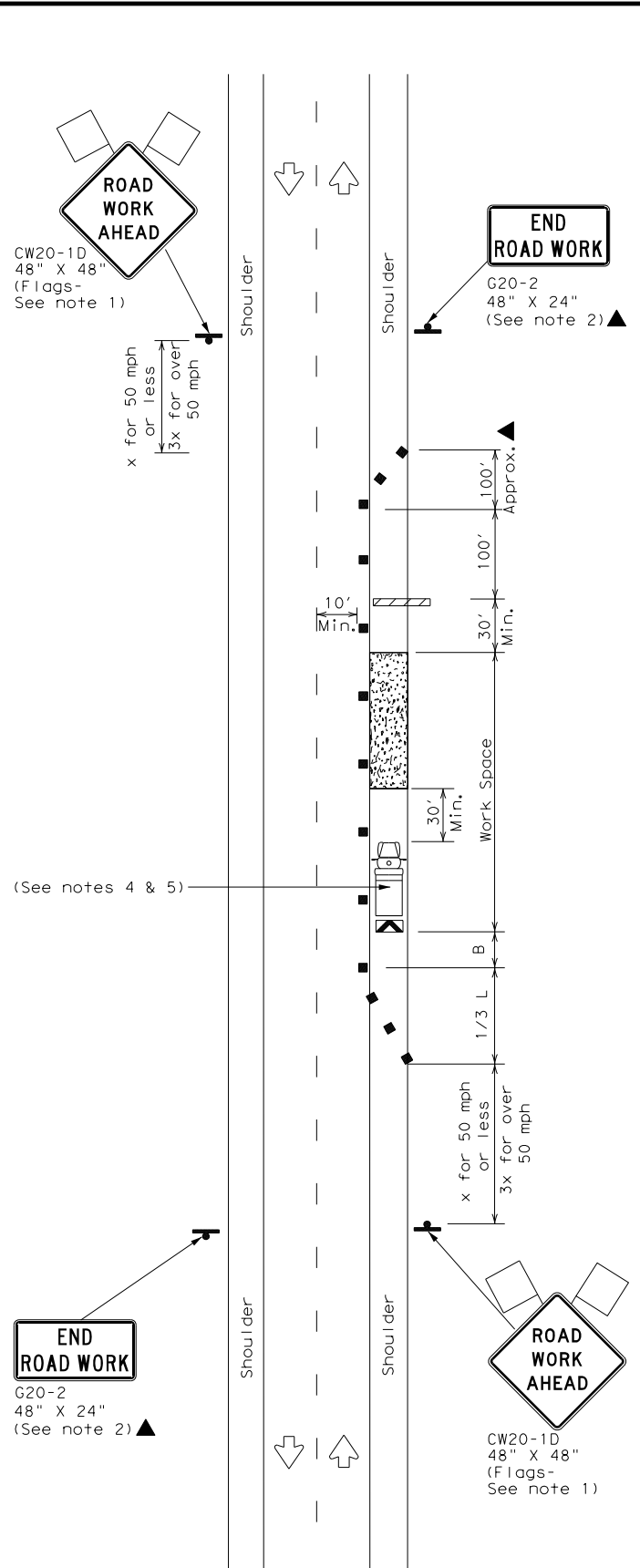
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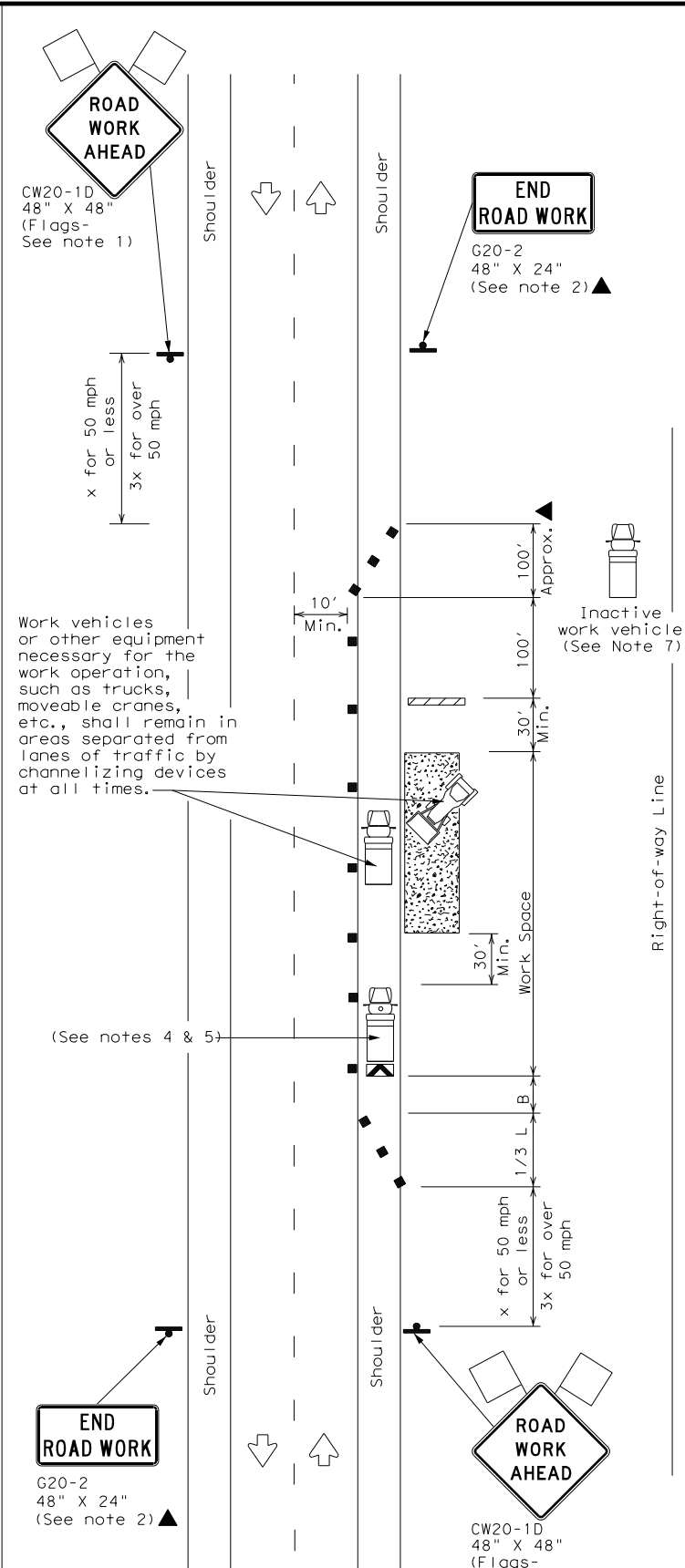
TCP (2-1a)

WORK SPACE NEAR SHOULDER  
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER  
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER  
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		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"	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	L = WS	265'	295'	320'	40'	80'	240'	155'
45		450'	495'	540'	45'	90'	320'	195'
50	L = WS	500'	550'	600'	50'	100'	400'	240'
55		550'	605'	660'	55'	110'	500'	295'
60	L = WS	600'	660'	720'	60'	120'	600'	350'
65		650'	715'	780'	65'	130'	700'	410'
70	L = WS	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.



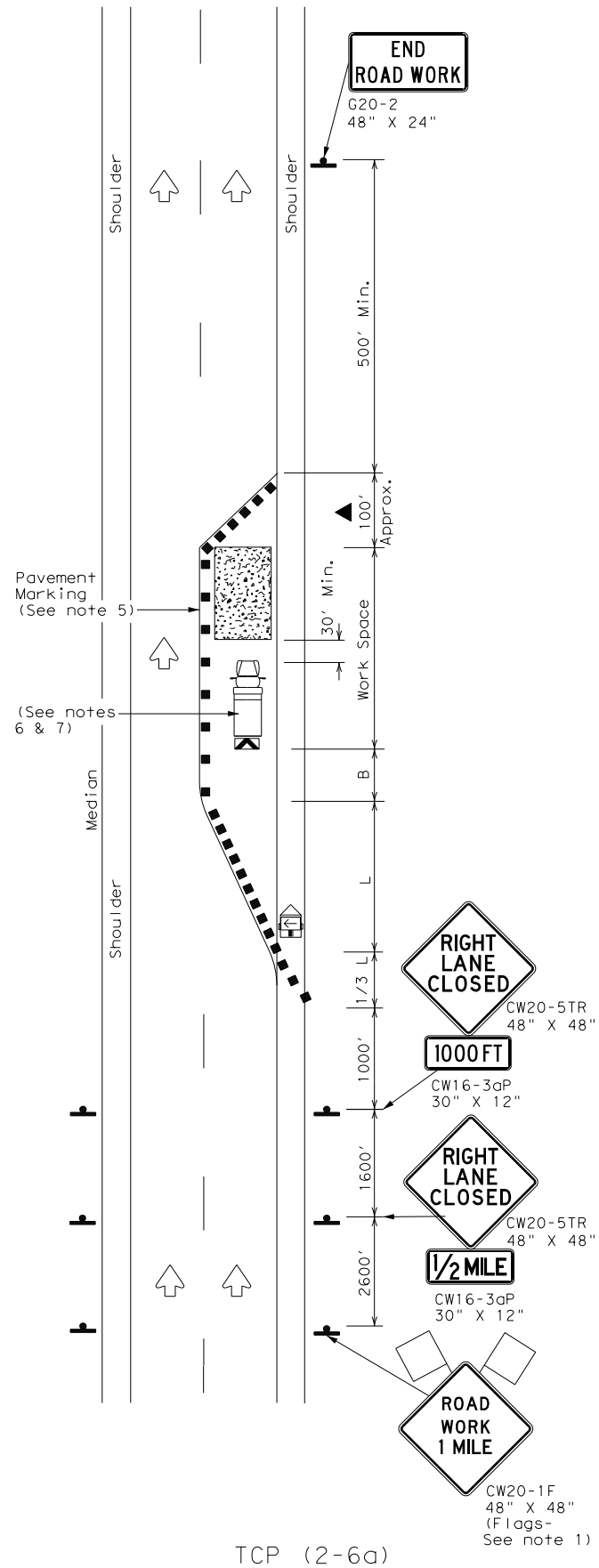
TRAFFIC CONTROL PLAN  
CONVENTIONAL ROAD  
SHOULDER WORK

TCP (2-1) - 18

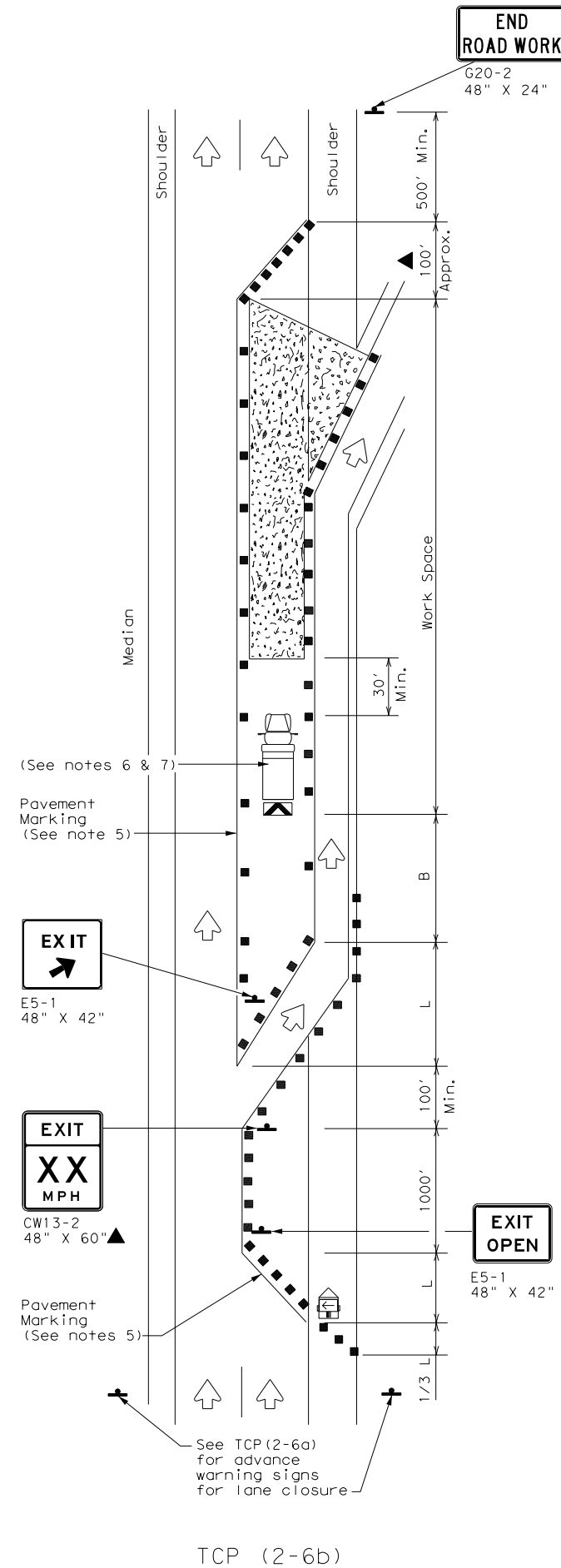
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© TxDOT December 1985	CON: 0172	SECT: 05	JOB: 129	HIGHWAY: US 287
REVISIONS	DIST: DAL	COUNTY: ELLIS	SHEET NO. 85	
2-94 4-98				
8-95 2-12				
1-97 2-18				

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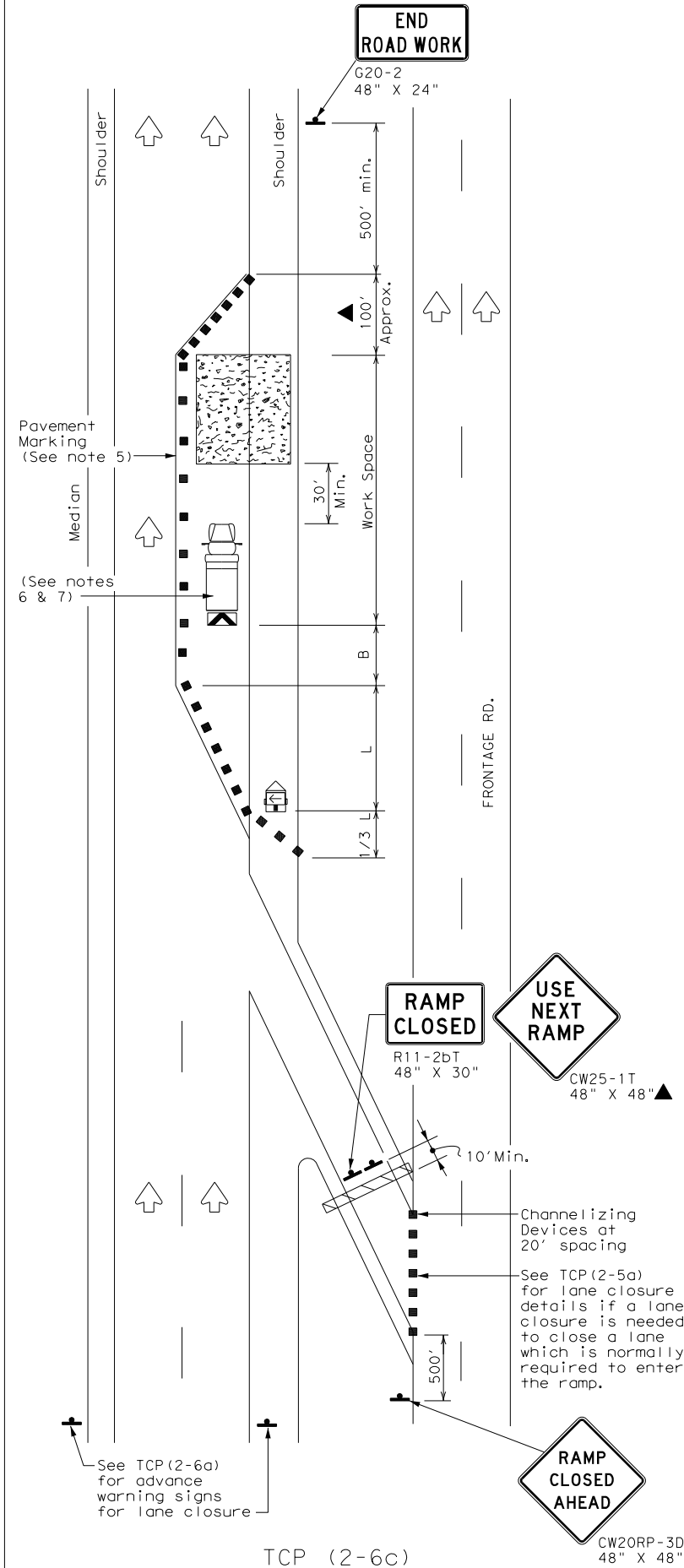
DATE: FILE:



TCP (2-6a)  
ONE LANE CLOSURE



TCP (2-6b)  
LANE CLOSURE NEAR EXIT RAMP



TCP (2-6c)  
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 * X			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

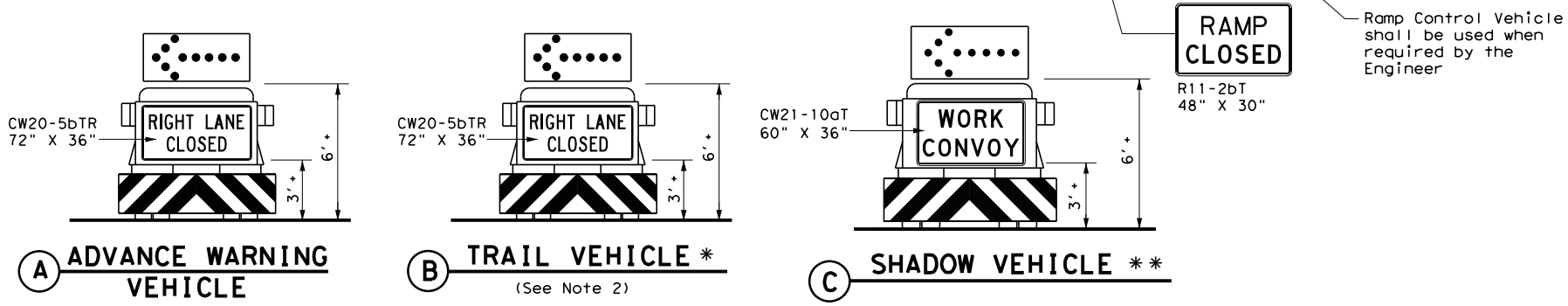
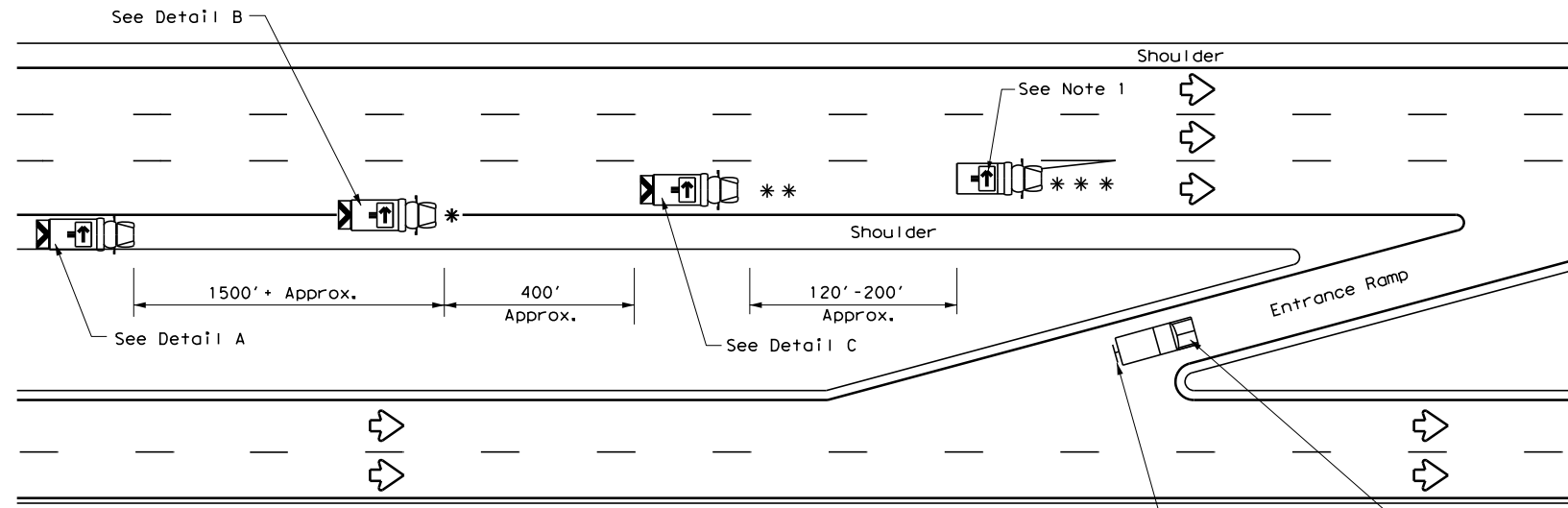
**TRAFFIC CONTROL PLAN  
 LANE CLOSURES ON  
 DIVIDED HIGHWAYS**

**TCP (2-6) - 18**

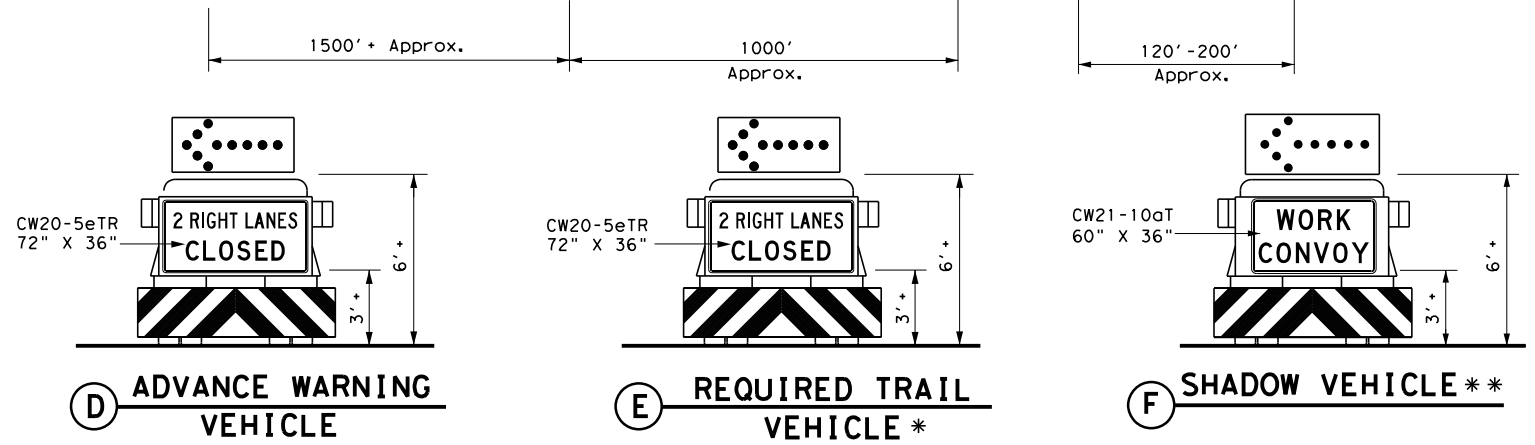
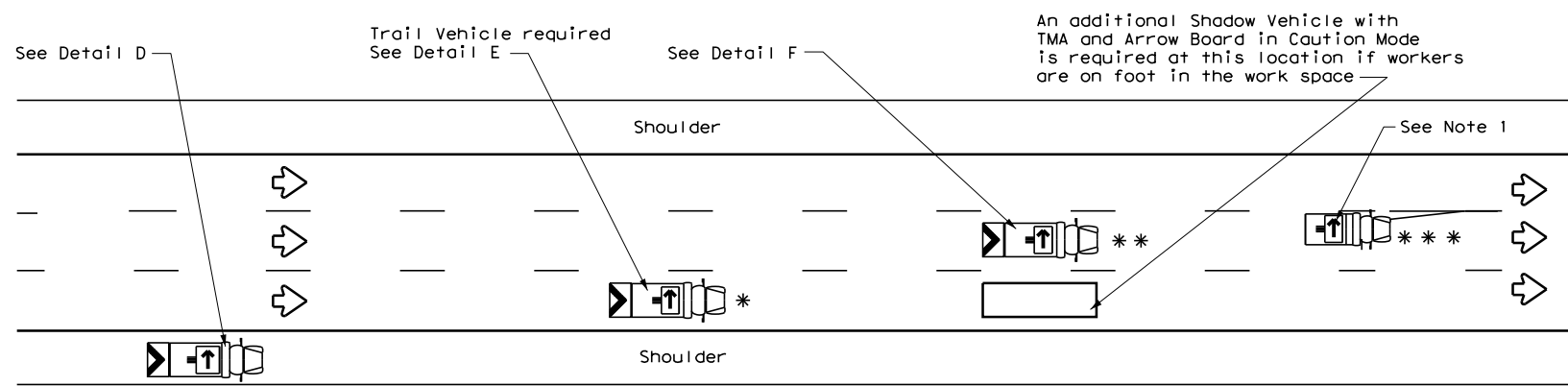
FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CON:	SECT:	JOB:	HIGHWAY:
REVISIONS	0172	05	129	US 287
2-94 4-98	DIST:	COUNTY:	SHEET NO.:	
8-95 2-12	DAL	ELLIS	86	
1-97 2-18				

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DATE: FILE:



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



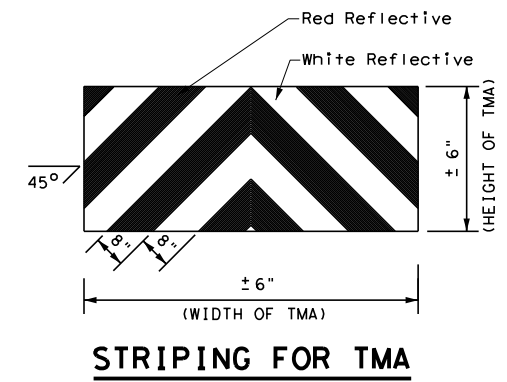
**INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)**

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.

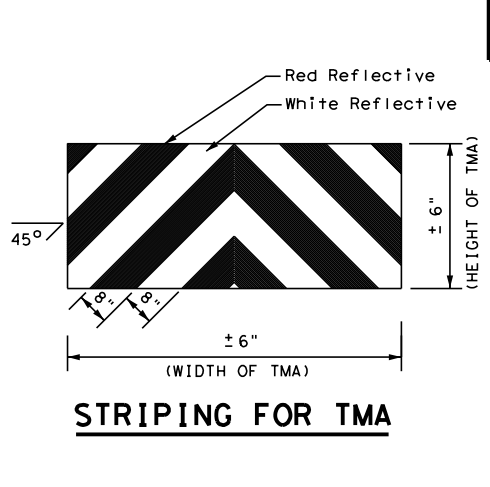
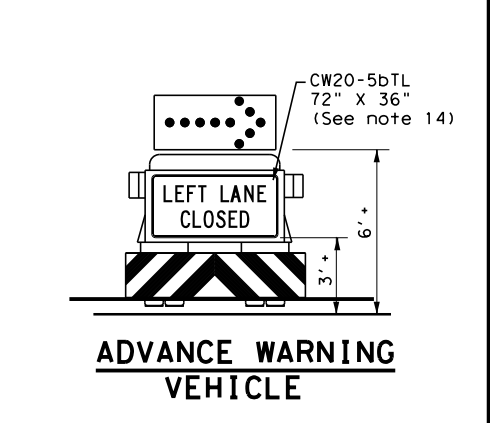
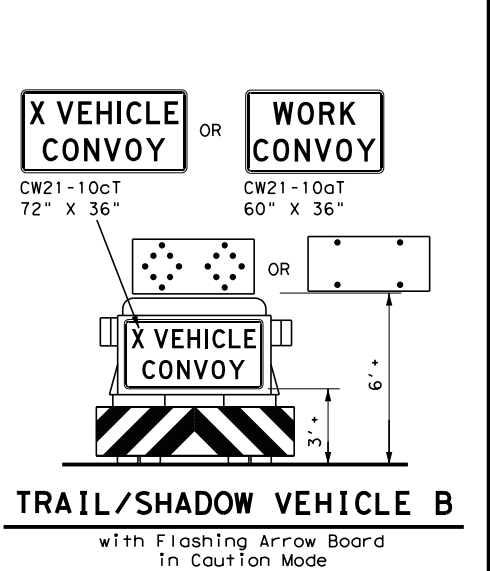
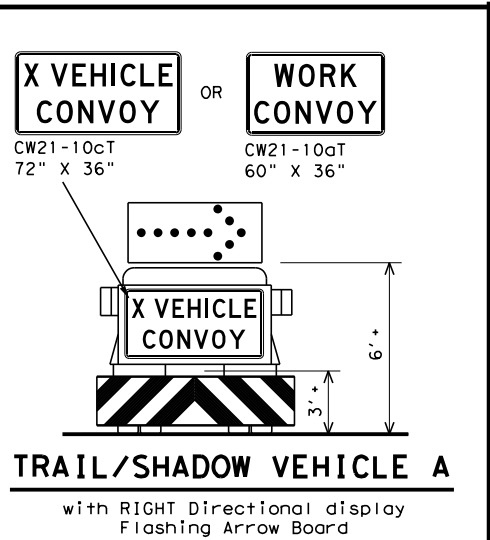
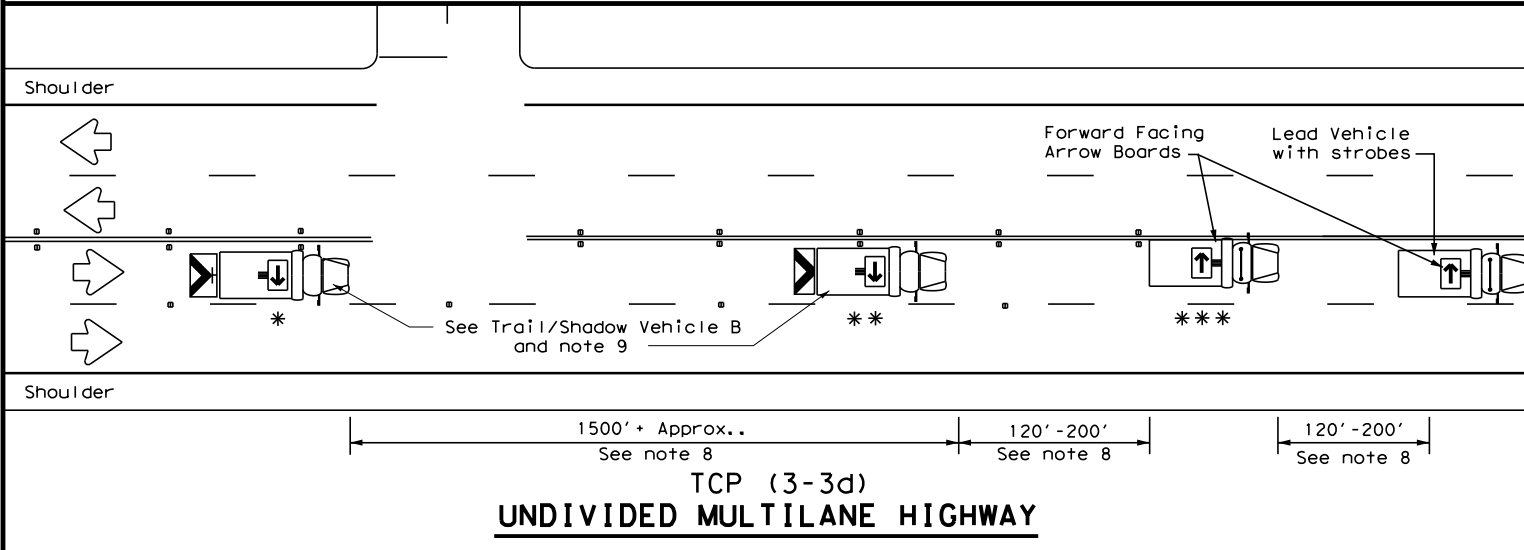
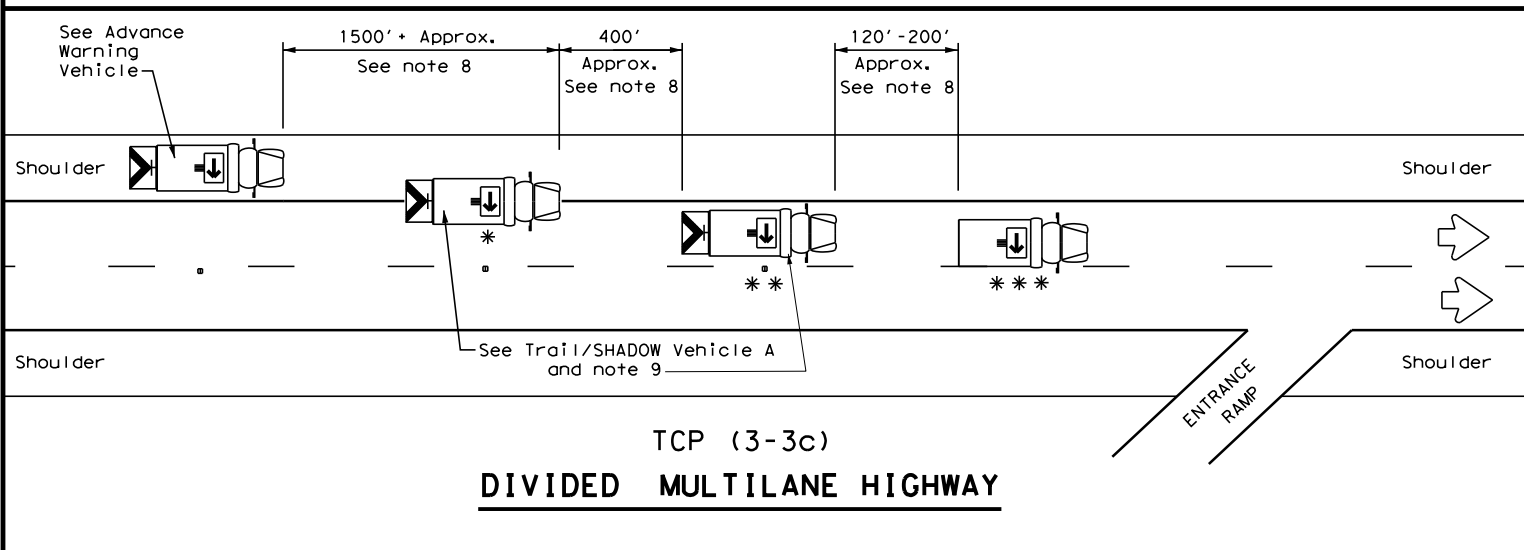
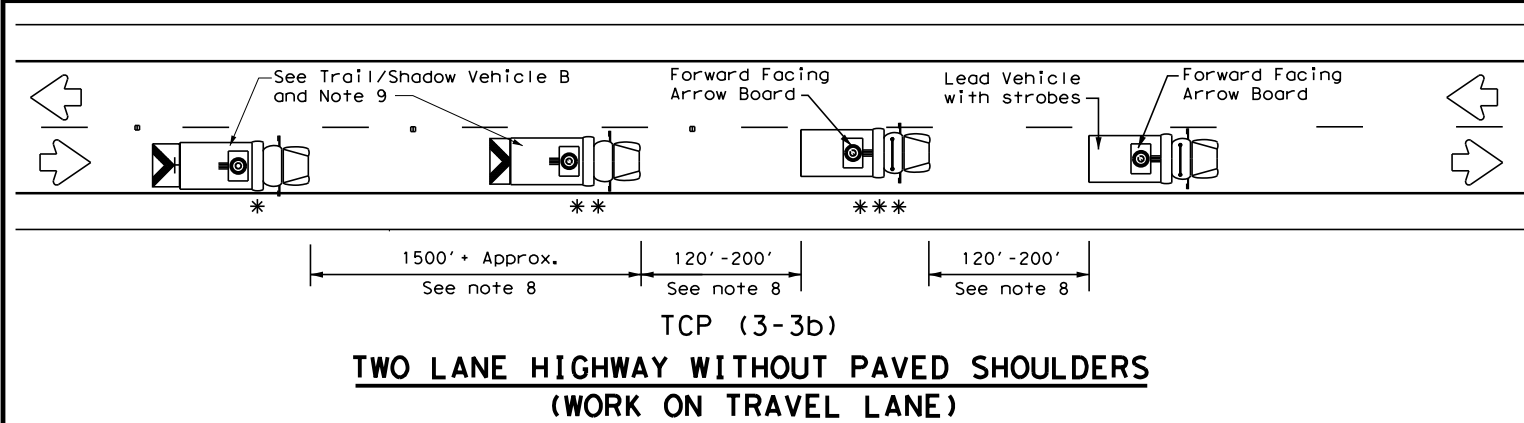
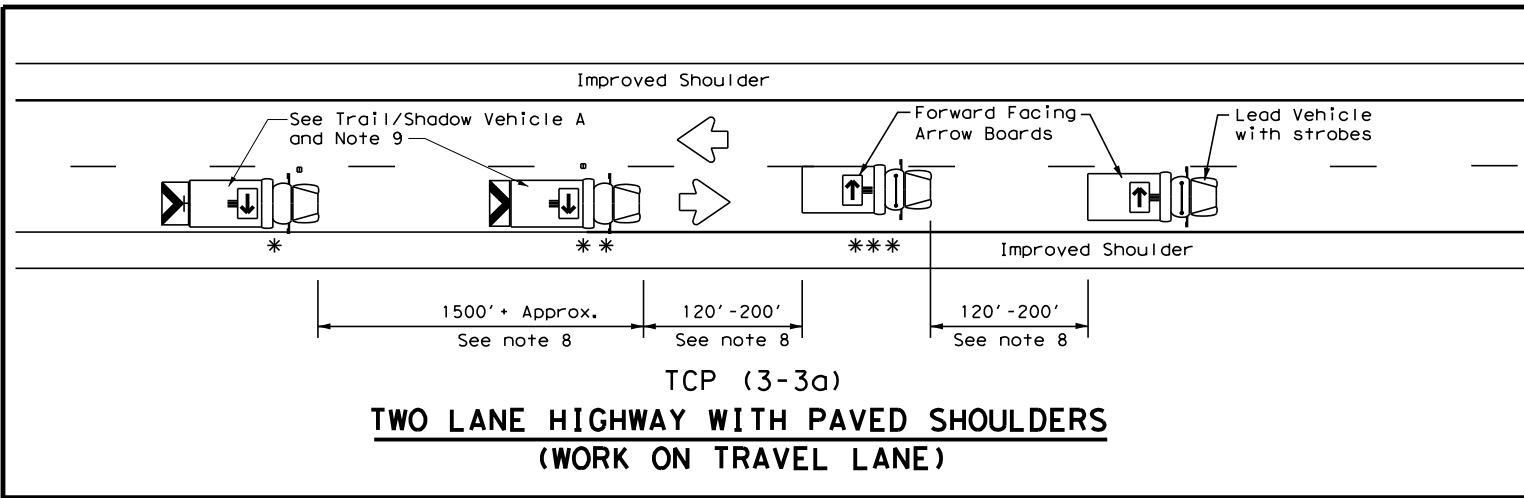


**STRIPING FOR TMA**

		<b>Traffic Operations Division Standard</b>	
<b>TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS</b>			
<b>TCP(3-2)-13</b>			
FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
© TxDOT December 1985	CONT SECT	JOB	HIGHWAY
REVISIONS	0172 05	129	US 287
2-94 4-98			
8-95 7-13			
1-97	DIST	COUNTY	SHEET NO.
	DAL	ELLIS	87

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DATE: FILE:



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

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

**GENERAL NOTES**

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

**Texas Department of Transportation**

*Traffic Operations Division Standard*

**TRAFFIC CONTROL PLAN**

**MOBILE OPERATIONS**

**RAISED PAVEMENT**

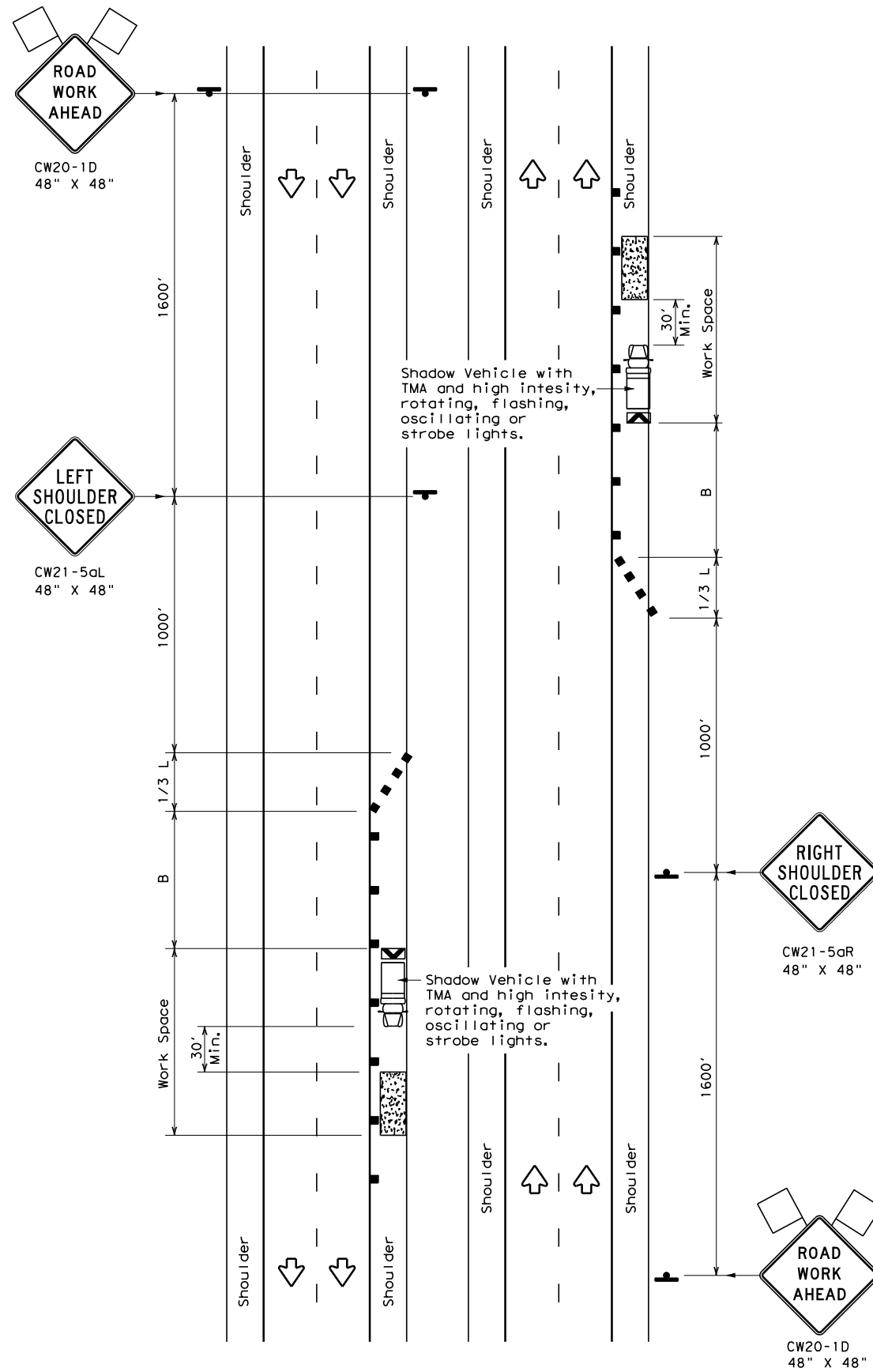
**MARKER INSTALLATION/REMOVAL**

**TCP (3-3) - 14**

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© TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
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2-94 4-98				
8-95 7-13				
1-97 7-14	DAL		ELLIS	SHEET NO. 88

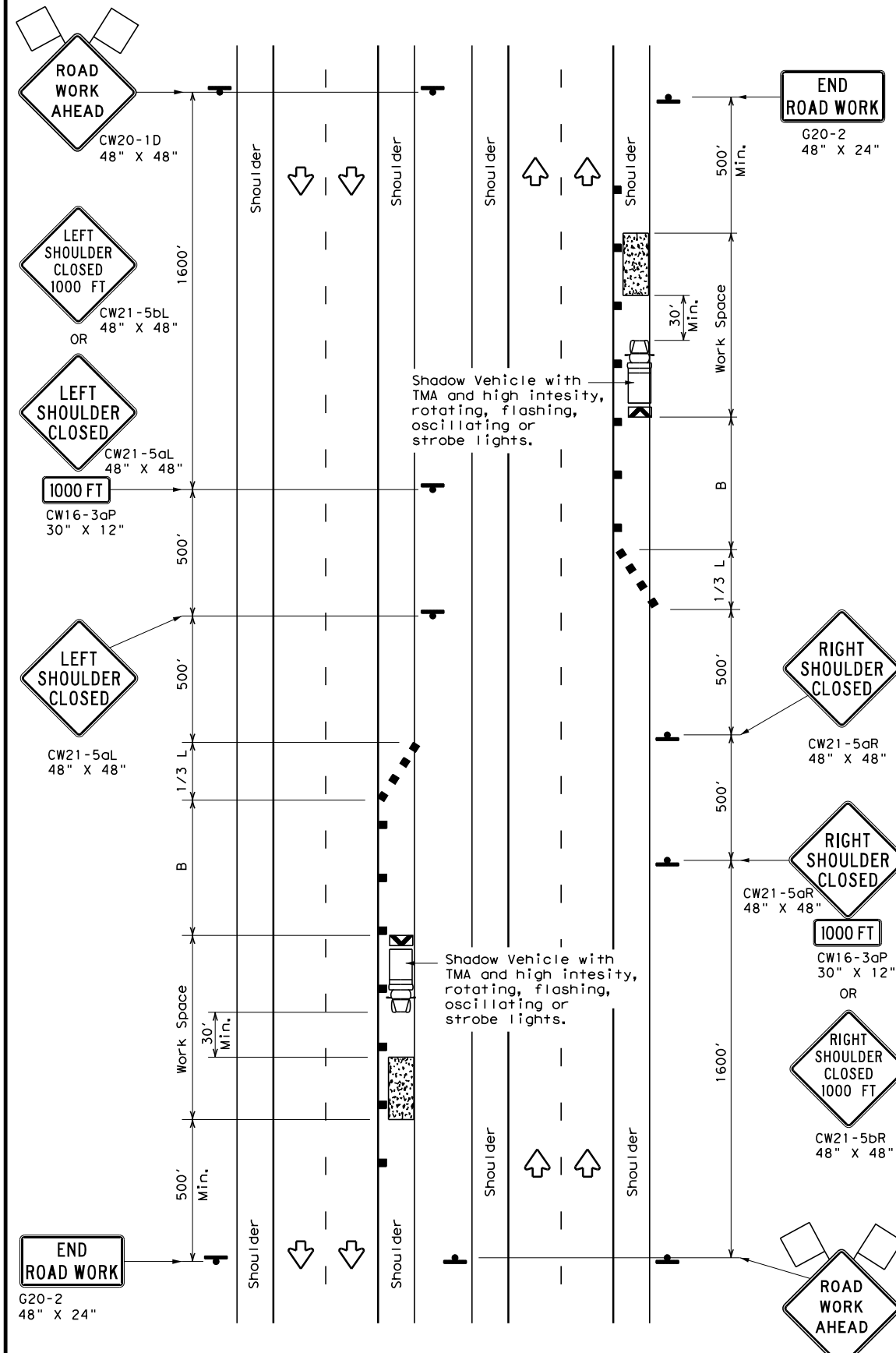
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DATE: FILE:



TCP (5-1a)

**WORK AREA ON SHOULDER**



TCP (5-1b)

**WORK AREA ON SHOULDER**

**LEGEND**

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

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

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

**TYPICAL USAGE**

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

**GENERAL NOTES**

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



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

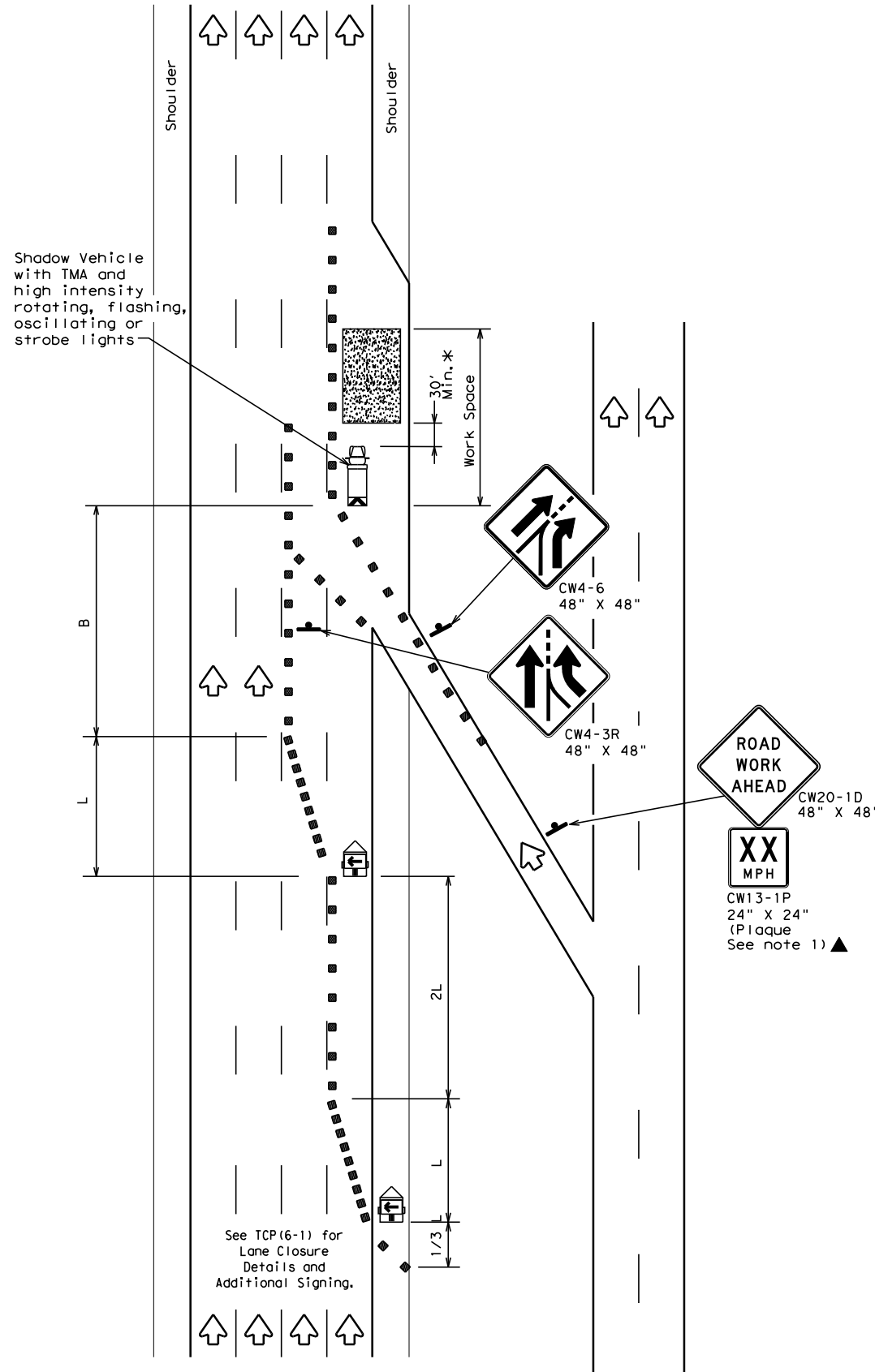
**TCP (5-1) - 18**

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2-18	DIST: DAL	COUNTY: ELLIS	SHEET NO.: 89	

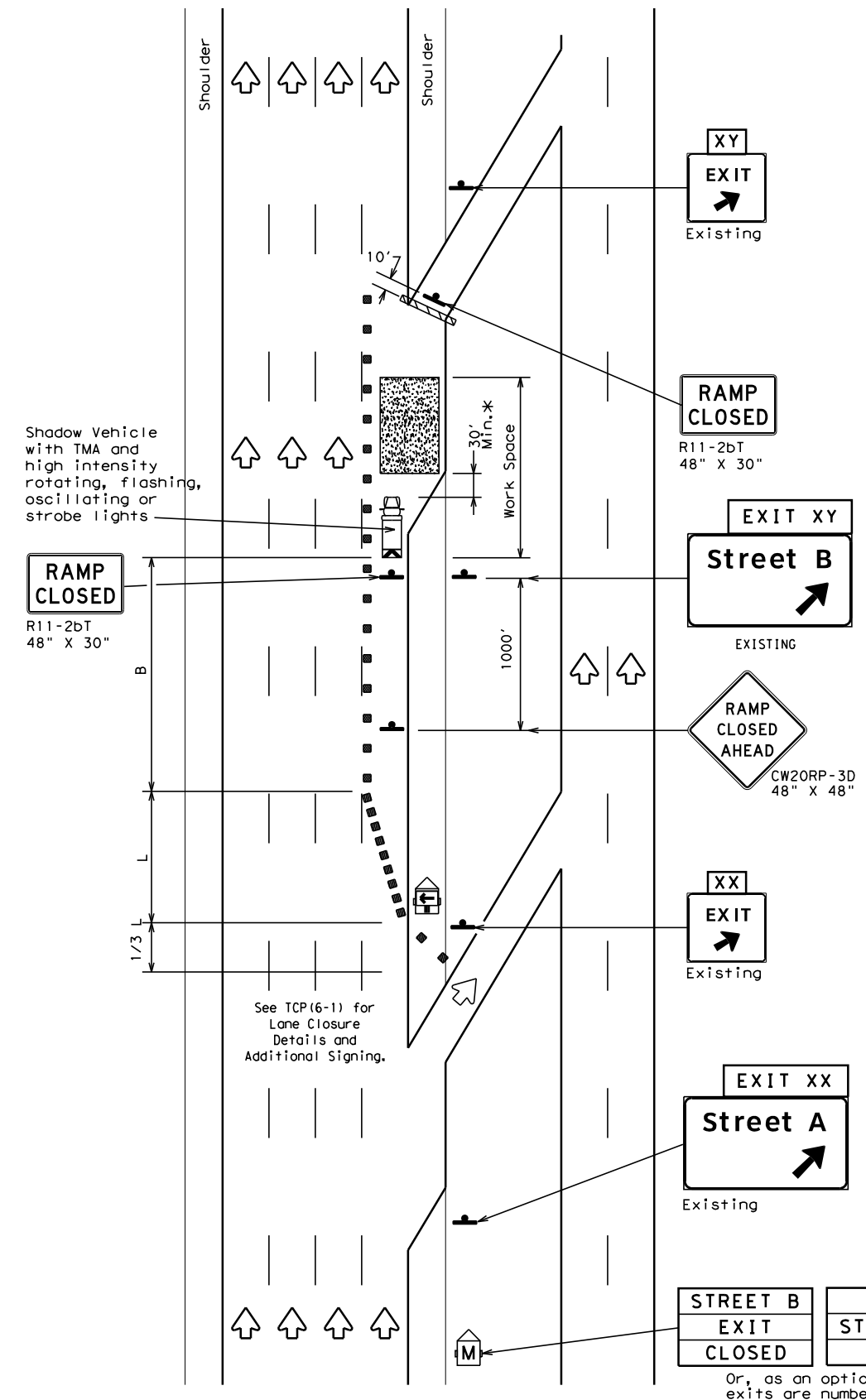


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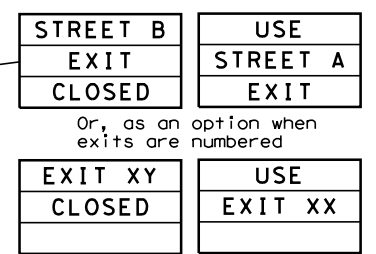
DATE: FILE:



TCP (6-3a)  
ENTRANCE RAMP OPEN



TCP (6-3b)  
EXIT RAMP CLOSED  
TRAFFIC EXITS PRIOR TO CLOSED RAMP



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

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

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

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

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

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

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

Texas Department of Transportation  
Traffic Operations Division Standard

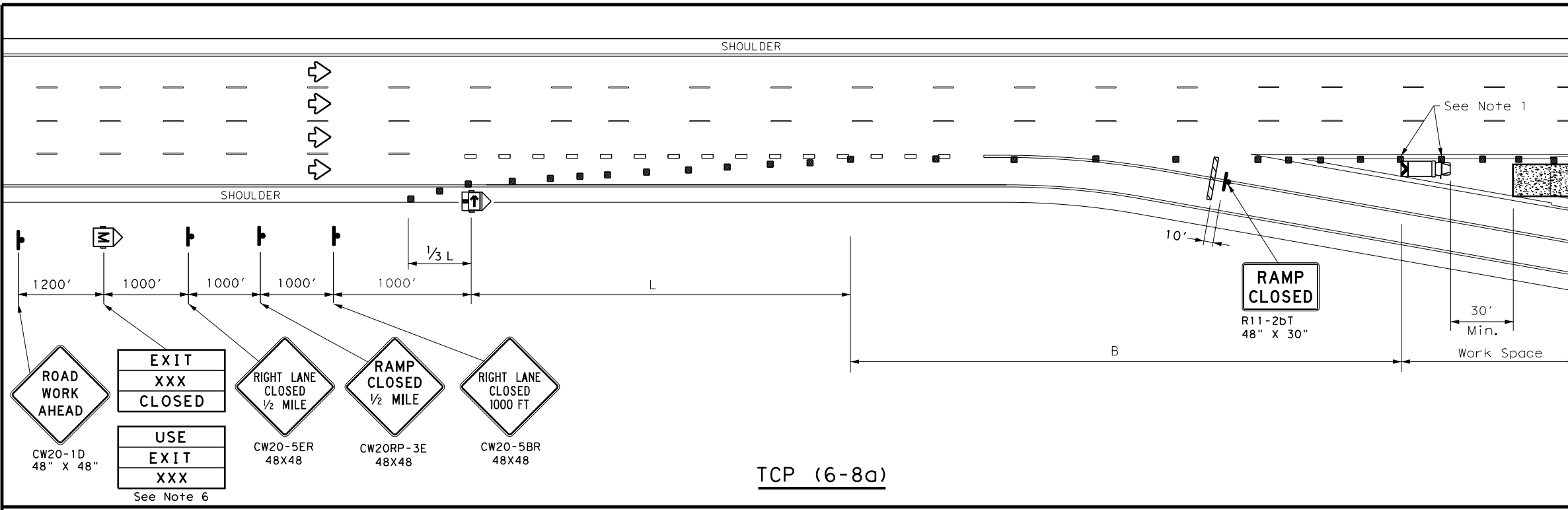
TRAFFIC CONTROL PLAN  
WORK AREA BEYOND RAMP

TCP (6-3) - 12

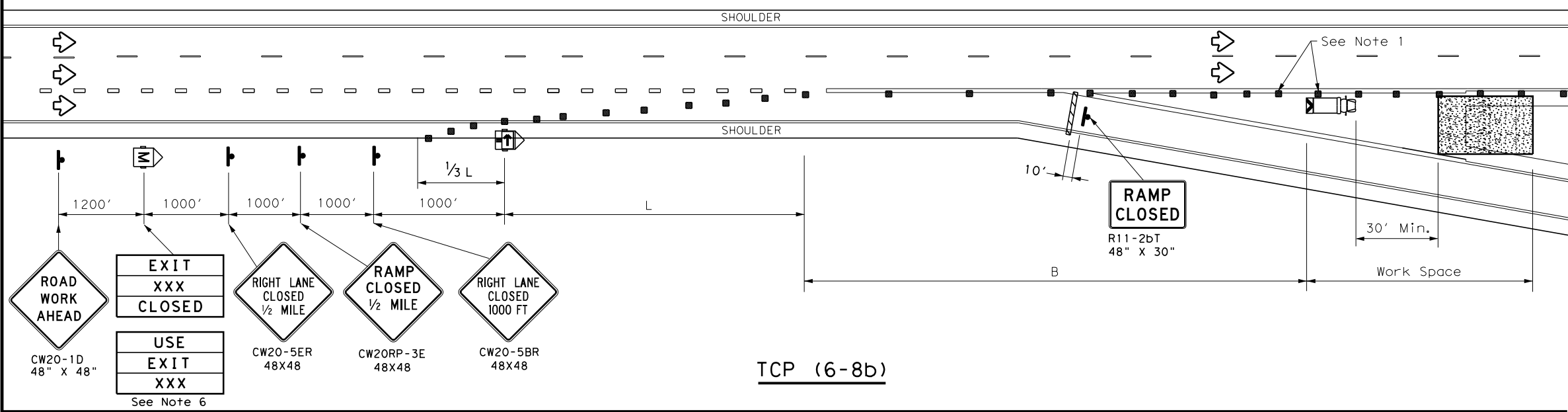
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© TxDOT February 1994	CONT SECT	JOB	HIGHWAY	
REVISIONS	0172 05	129	US 287	
1-97 8-98	DIST	COUNTY	SHEET NO.	
4-98 8-12	DAL	ELLIS	90	

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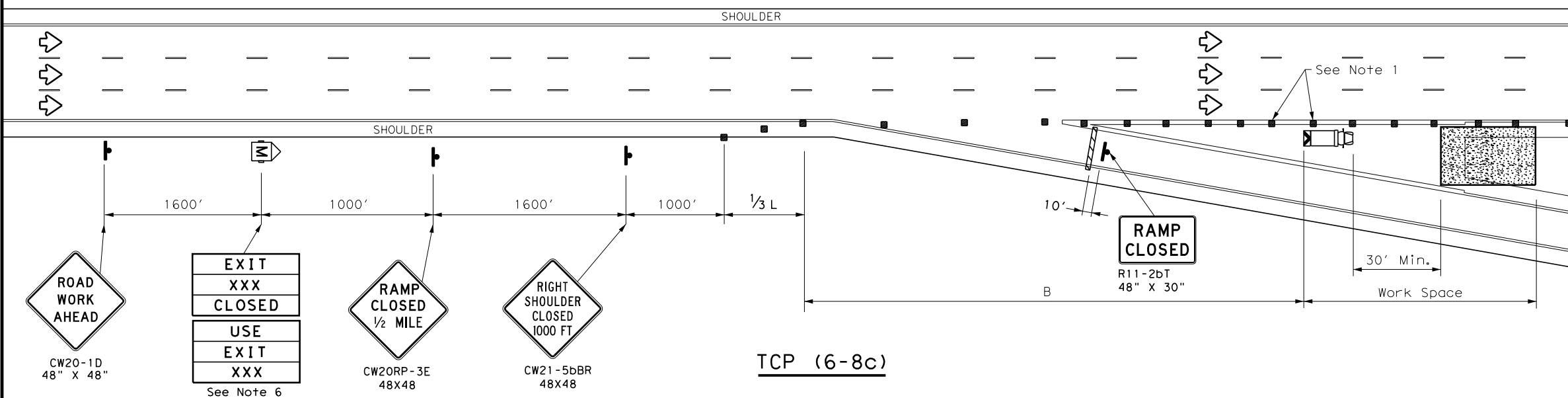
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TCP (6-8a)



TCP (6-8b)



TCP (6-8c)

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

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

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

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

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



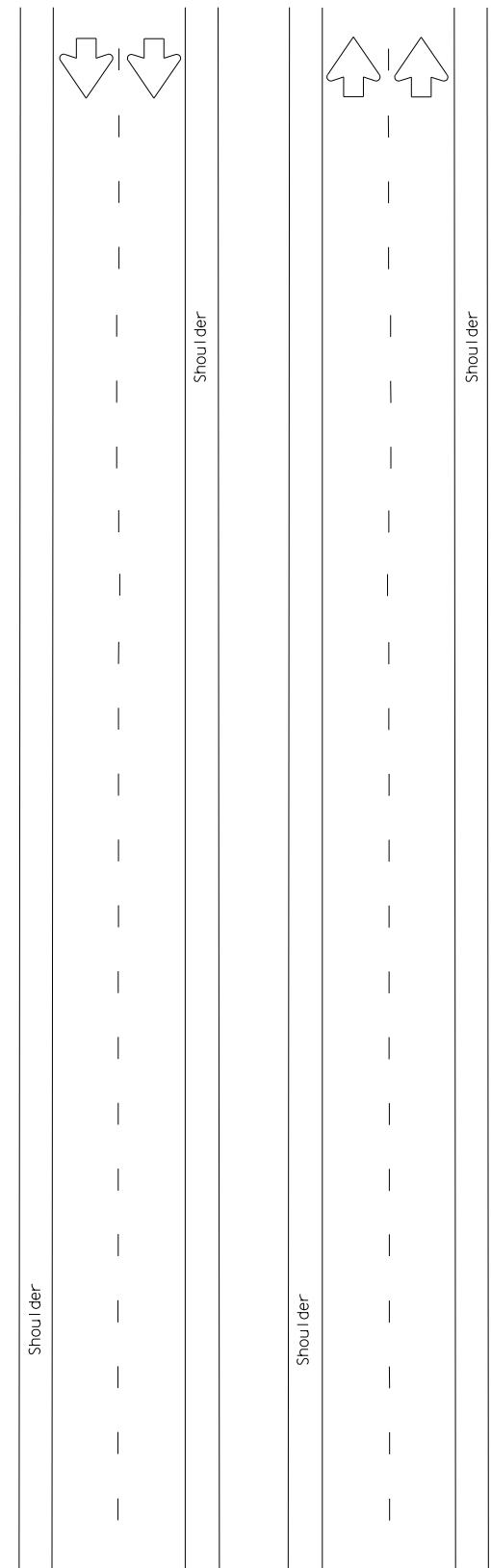
**WORK IN EXIT GORE FOR ADT GREATER THAN 10,000**

**TCP (6-8) - 14**

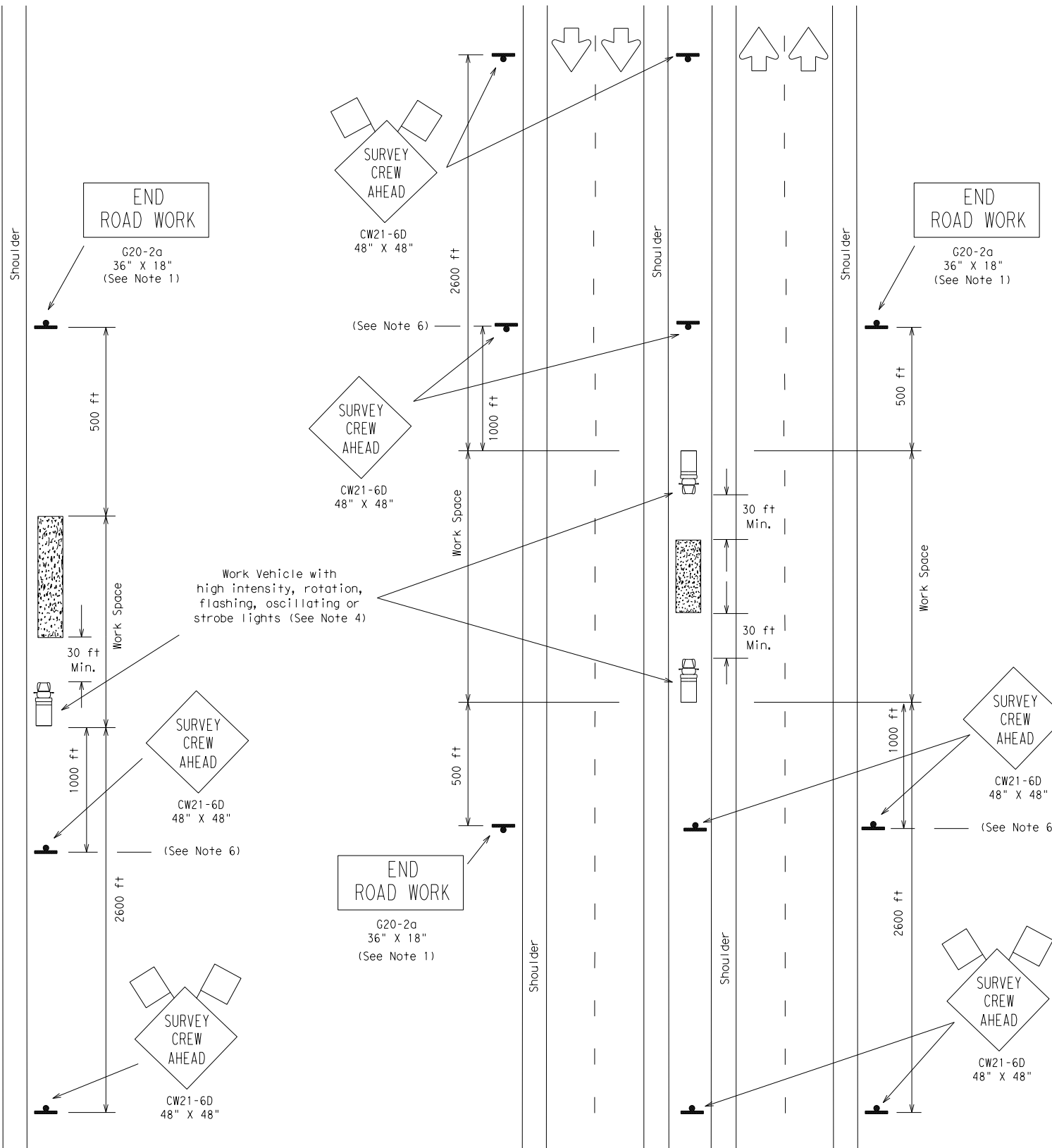
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© TxDOT February 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	91	

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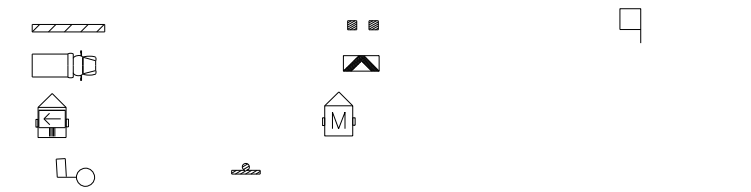
TCP (S-4a)  
WORK OFF RIGHT SHOULDER  
OF DIVIDED ROADWAYS



TCP (S-4b)  
WORK IN MEDIAN  
OF DIVIDED ROADWAYS

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECESSARY PERIODS OF TIME ON THE ROAD SURFACE.

8-18-08 Revision  
 Corrected misspelling.



Posted Speed *	Formula	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Device		Min. Sign Spacing "X" Distance	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' - 75'	120'	90'
35		205'	225'	245'	35'	70' - 90'	160'	120'
40		265'	295'	320'	40'	80' - 100'	240'	155'
45		450'	495'	540'	45'	90' - 110'	320'	195'
50		500'	550'	600'	50'	100' - 125'	400'	240'
55		550'	605'	660'	55'	110' - 140'	500'	295'
60		600'	660'	720'	60'	120' - 150'	600'	350'
65	650'	715'	780'	65'	130' - 165'	700'	410'	
70	700'	770'	840'	70'	140' - 175'	800'	475'	
75	750'	825'	900'	75'	150' - 185'	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
	✓	✓		

DEFINITIONS:  
 SHORT DURATION - work that occupies a location up to 1 hour.  
 SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

- GENERAL NOTES:
- The G20-2a "END ROAD WORK" sign may be omitted for short duration (less than 1 hour) work.
  - When median work is protected on one side by existing median barriers, signing and protection vehicle may be omitted for the protected direction only.
  - CW20-1D "ROAD WORK AHEAD" signs may be substituted for "SURVEY CREW AHEAD" signs.
  - A Shadow Vehicle with a TMA and flashing warning lights/arrow panel in caution mode may be used in lieu of the Work Vehicle to protect the work space.
  - The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.
  - The CW21-6D "SURVEY CREW AHEAD" sign placed at 1000' ahead of the work space is optional, at the discretion of the Engineer. The signs shown at 2600' from the work space are required.
  - Cones may be placed at edge of pavement adjacent to the work space to enhance safety.

Texas Department of Transportation  
Traffic Operations Division

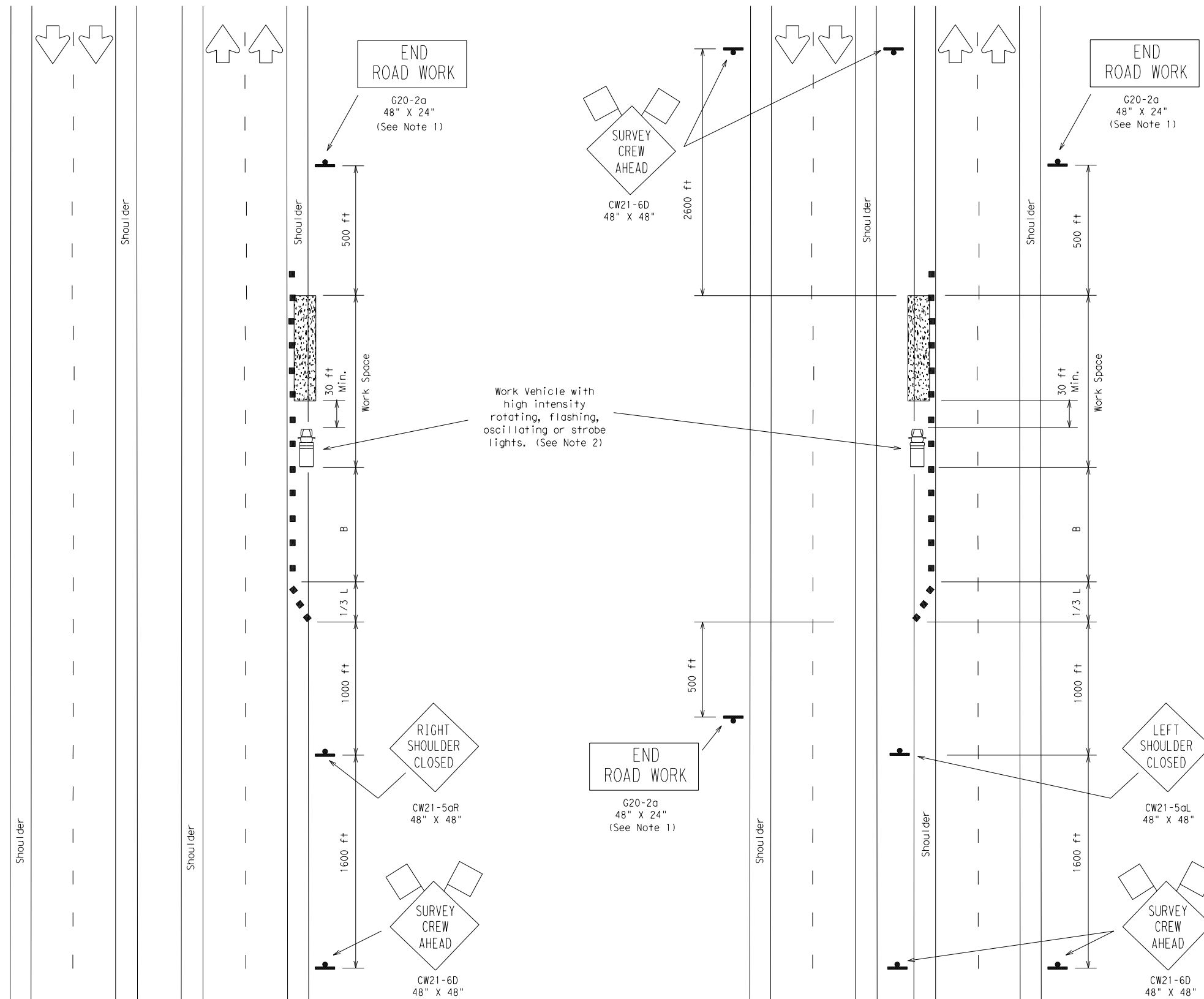
TRAFFIC CONTROL PLAN  
FOR SURVEYING  
OPERATIONS

TCP (S-4) - 08A

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		DIST	COUNTY	SHEET NO.	
		DAL	ELLIS	92	

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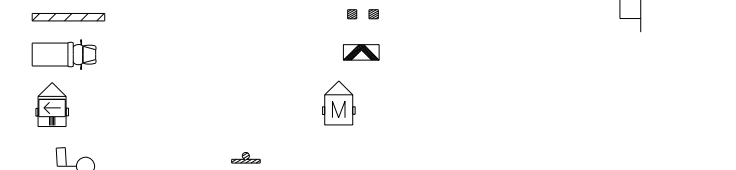
DATE:  
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TCP (S-5a)  
WORK ON RIGHT SHOULDER  
OF DIVIDED ROADWAYS

TCP (S-5b)  
WORK ON MEDIAN SHOULDER  
OF DIVIDED ROADWAYS

WHENEVER POSSIBLE, SURVEY PARTIES SHOULD AVOID, BY THE USE OF OFFSET LINES, ANY UNNECESSARY PERIODS OF TIME ON THE ROAD SURFACE.



Posted Speed * 30 35 40 45 50 55 60 65 70 75	Formula $L = \frac{WS^2}{60}$	Minimum Desirable Taper Lengths **			Suggested Maximum Spacing of Device		Min. Sign Spacing "X" Distance	Longitudinal Buffer Space "B"
		10' Offset	11' Offset	12' Offset	On a Taper	On a Tangent		
30		150'	165'	180'	30'	60' - 75'	120'	90'
35		205'	225'	245'	35'	70' - 90'	160'	120'
40		265'	295'	320'	40'	80' - 100'	240'	155'
45		450'	495'	540'	45'	90' - 110'	320'	195'
50		500'	550'	600'	50'	100' - 125'	400'	240'
55		550'	605'	660'	55'	110' - 140'	500'	295'
60		600'	660'	720'	60'	120' - 150'	600'	350'
65		650'	715'	780'	65'	130' - 165'	700'	410'
70		700'	770'	840'	70'	140' - 175'	800'	475'
75		750'	825'	900'	75'	150' - 185'	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
	✓	✓		

DEFINITIONS:  
SHORT DURATION - work that occupies a location up to 1 hour.  
SHORT TERM STATIONARY - daytime work that occupies a location for more than 1 hour within a single daylight period.

- GENERAL NOTES:
- The G20-2a "END ROAD WORK" sign may be omitted for short duration (less than 1 hour) work.
  - For short duration work, the Shadow Vehicle with TMA may be replaced by another Work Vehicle with high intensity rotating, flashing or strobe lights.
  - Shadow Vehicles with a TMA are desirable when workers or equipment are in the work space. When approved by the engineer, Type III barricades or other channelizing devices may be substituted for the Shadow Vehicle.
  - If shoulders are not present, the 1/3L shoulder taper is to be omitted and four channelizing devices shall be placed in front of the arrow panel, perpendicular to traffic.
  - CW20-1D "ROAD WORK AHEAD" signs may be substituted for CW21-6D "SURVEY CREW AHEAD" signs.
  - The CW21-6D "SURVEY CREW AHEAD" sign for low volume intersecting side roads is desirable, but is not required when working less than 15 minutes in area of the side road, as determined by the Engineer.

Texas Department of Transportation  
Traffic Operations Division

TRAFFIC CONTROL PLAN  
FOR SURVEYING  
OPERATIONS

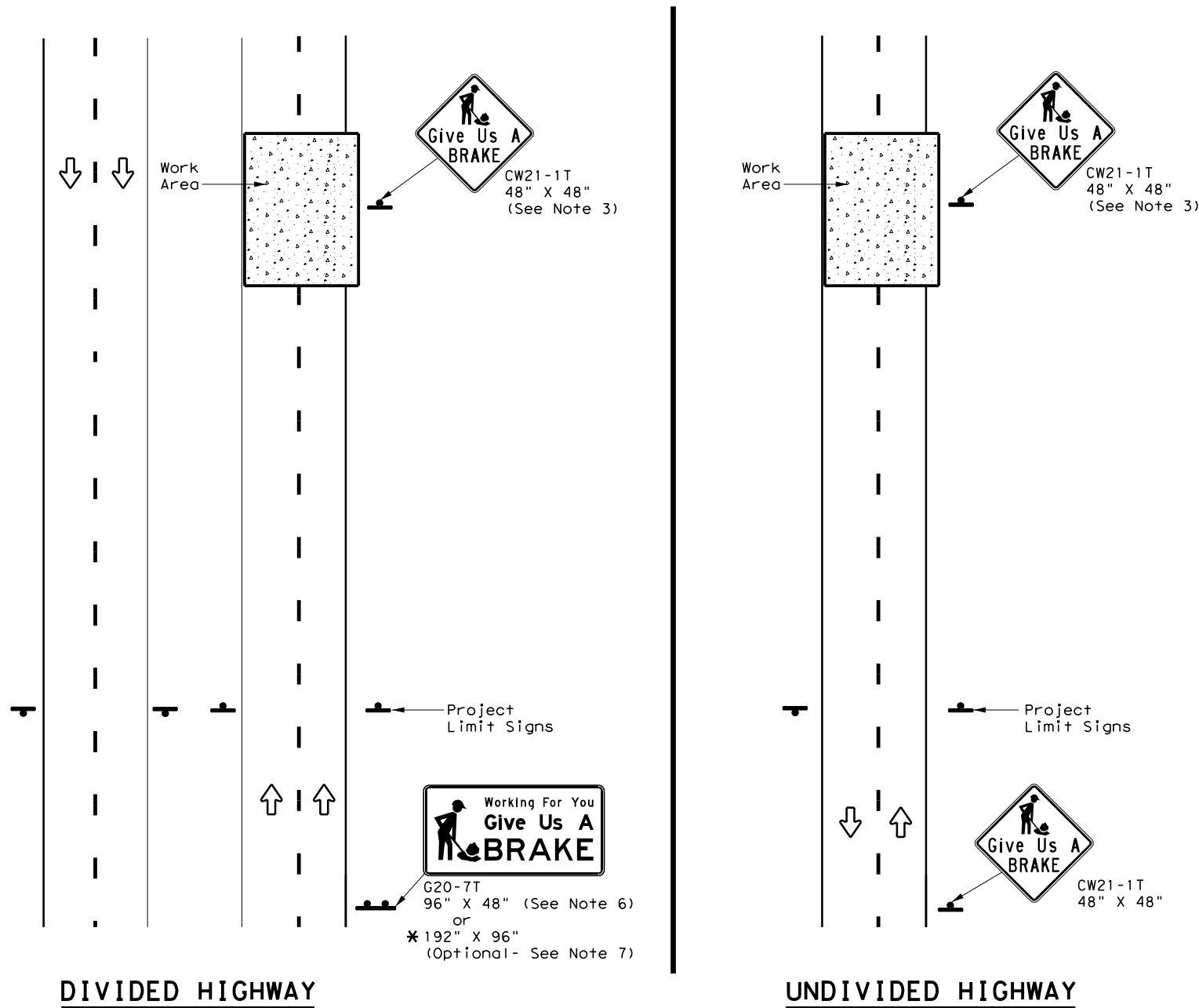
TCP (S-5) - 08

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REVISIONS		CONT	SECT	JOB	HIGHWAY
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		DAL	ELLIS		93

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SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

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

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL		DRILLED SHAFT
						Size	(LF)	
							① ②	24" DIA. (LF)
Orange	G20-7T		96" X 48"	Type B <sub>FL</sub> or C <sub>FL</sub>	32	▲	▲ ▲	▲
Orange	G20-7T		192" X 96"	Type B <sub>FL</sub> or C <sub>FL</sub>	128	W8x18	16 17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS	
PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B <sub>FL</sub> OR TYPE C <sub>FL</sub>
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

- See BC and SMD sheets for additional sign support details.
- Sign locations shall be approved by the Engineer.
- For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
- Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
- Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
- The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
- The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:  
 Item 636 - Aluminum Signs  
 Item 647 - Large Roadside Sign Supports and Assemblies.  
 Item 416 - Drilled Shaft Foundations
- 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.



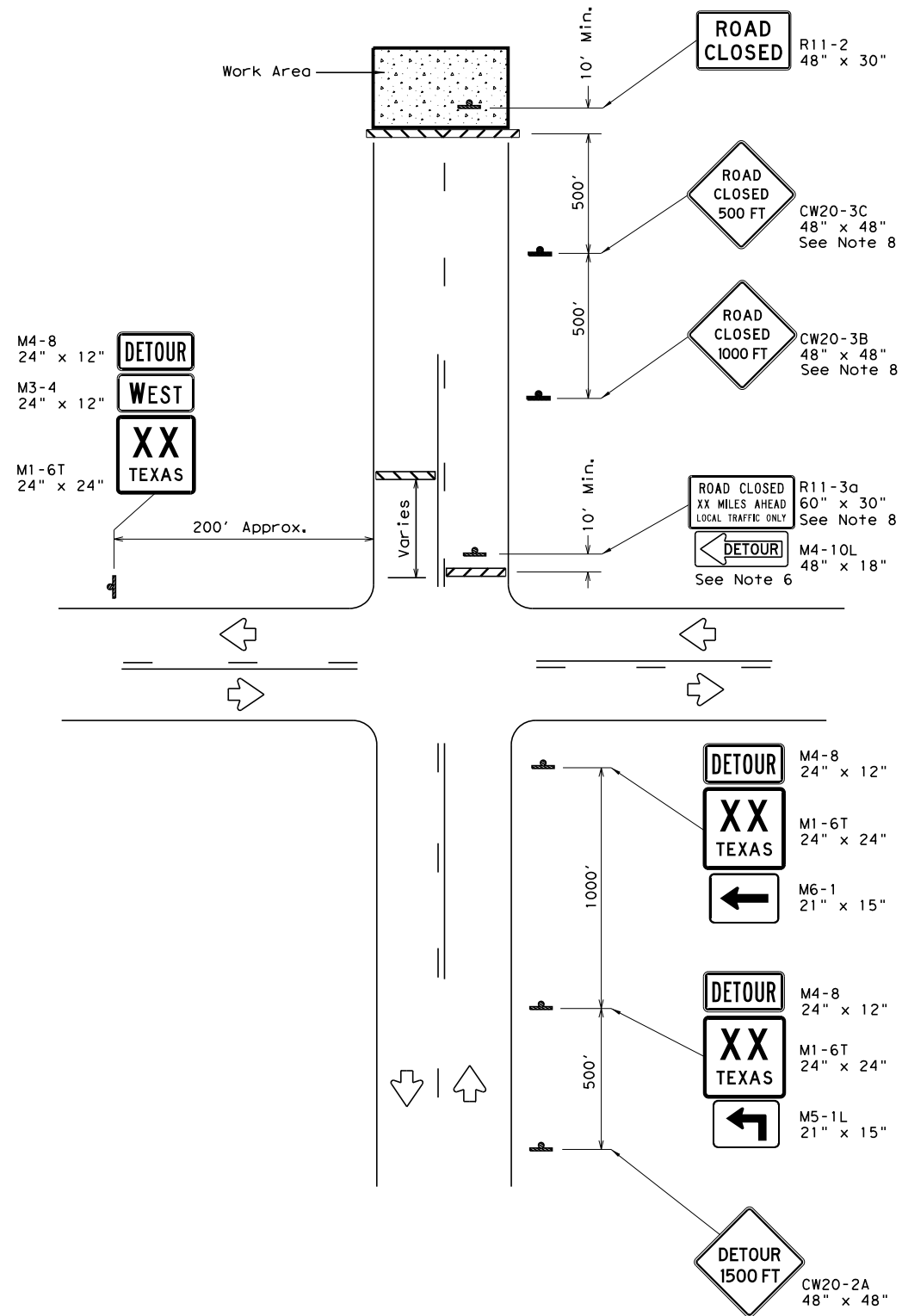
WORK ZONE  
"GIVE US A BRAKE"  
SIGNS

WZ (BRK) - 13

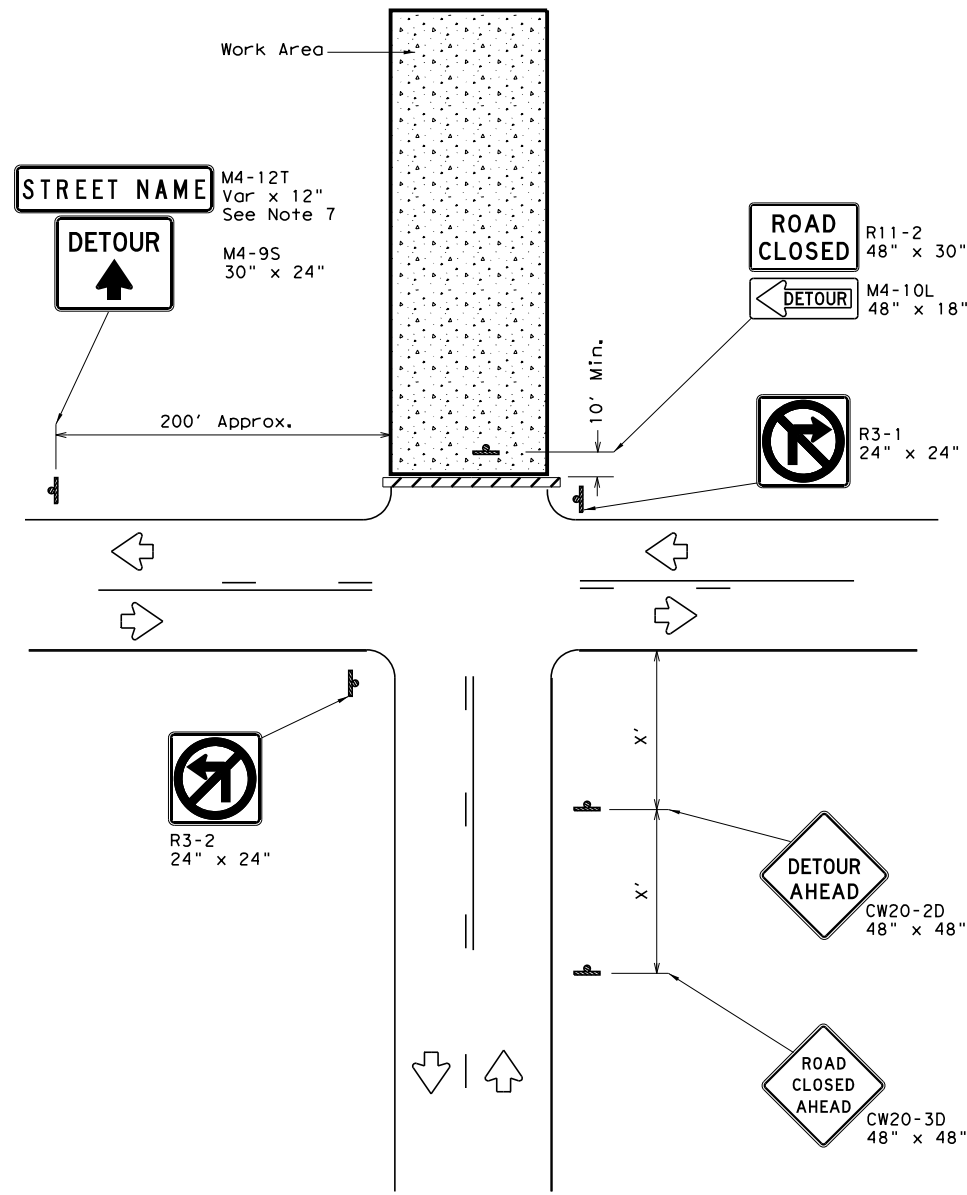
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© TxDOT	August 1995	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0172	05	129	US 287				
6-96	5-98	7-13	DIST		COUNTY	SHEET NO.			
8-96	3-03	DAL		ELLTS	94				

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**ROAD CLOSURE BEYOND THE INTERSECTION**  
 Signing for a Numbered Route with an Off-Site Detour



**ROAD CLOSURE AT THE INTERSECTION**  
 Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

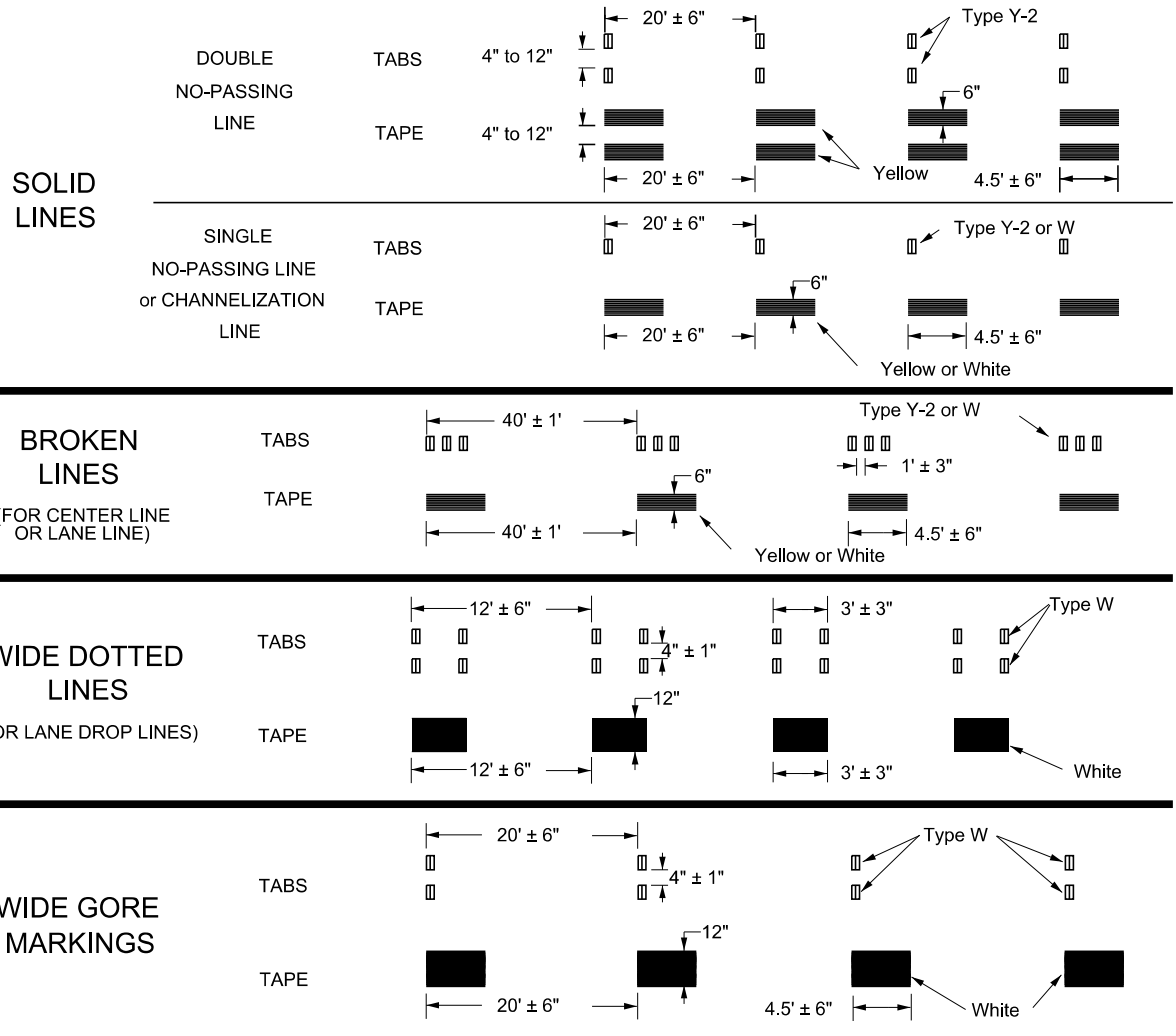
**GENERAL NOTES**

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

		Traffic Operations Division Standard	
<b>WORK ZONE ROAD CLOSURE DETAILS</b>			
<b>WZ (RCD) - 13</b>			
FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT
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REVISIONS	0172	05	129
1-97 4-98 7-13	DIST	COUNTY	SHEET NO.
2-98 3-03	DAL	ELLIS	95

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## WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



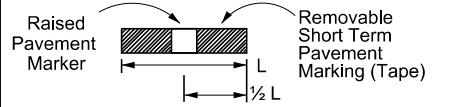
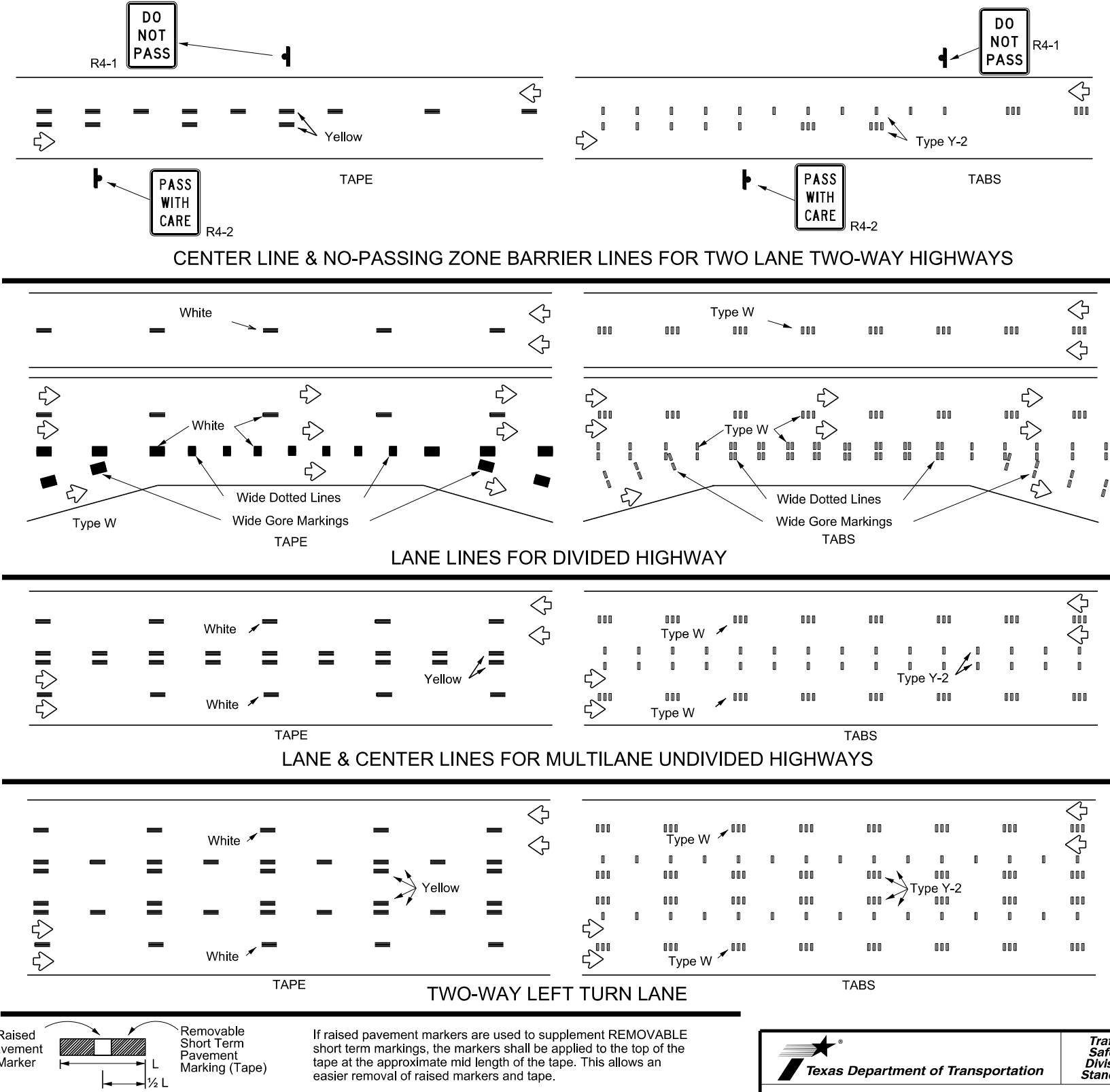
### NOTES:

- 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.

## WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



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

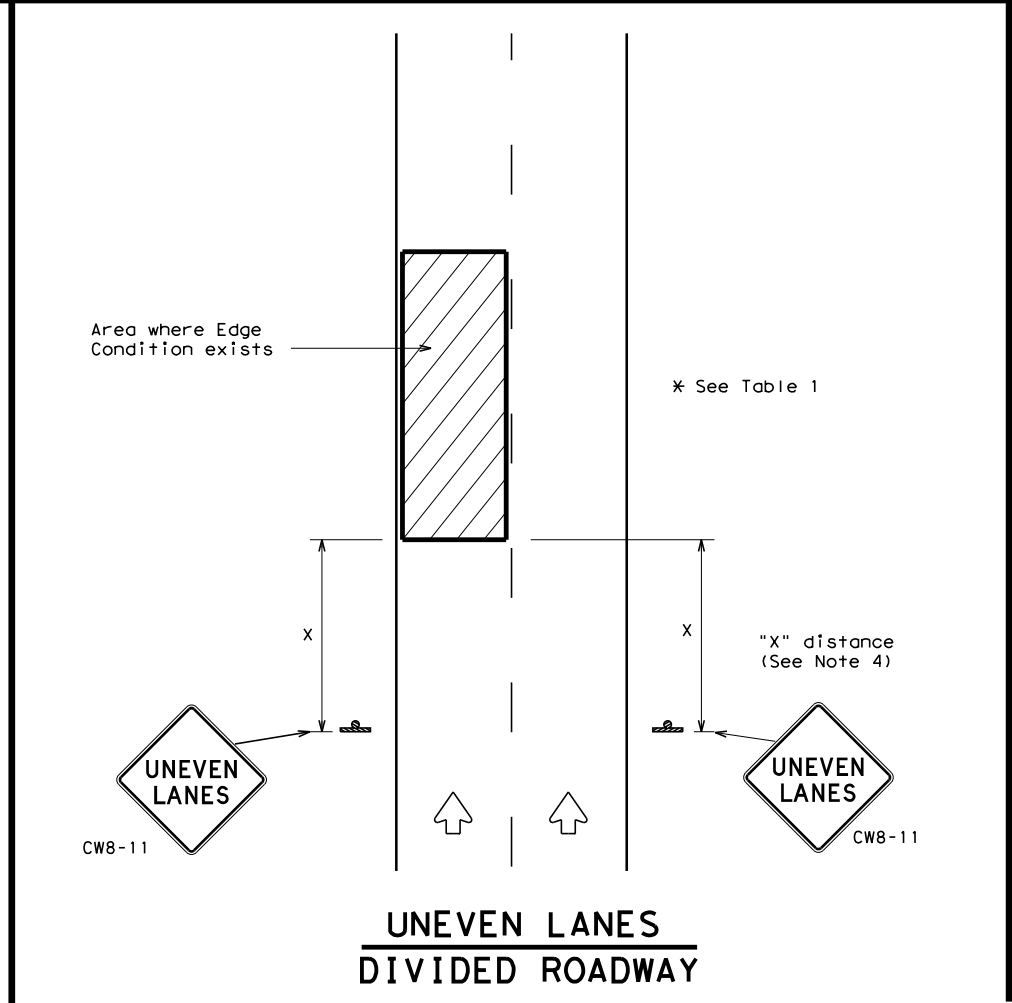
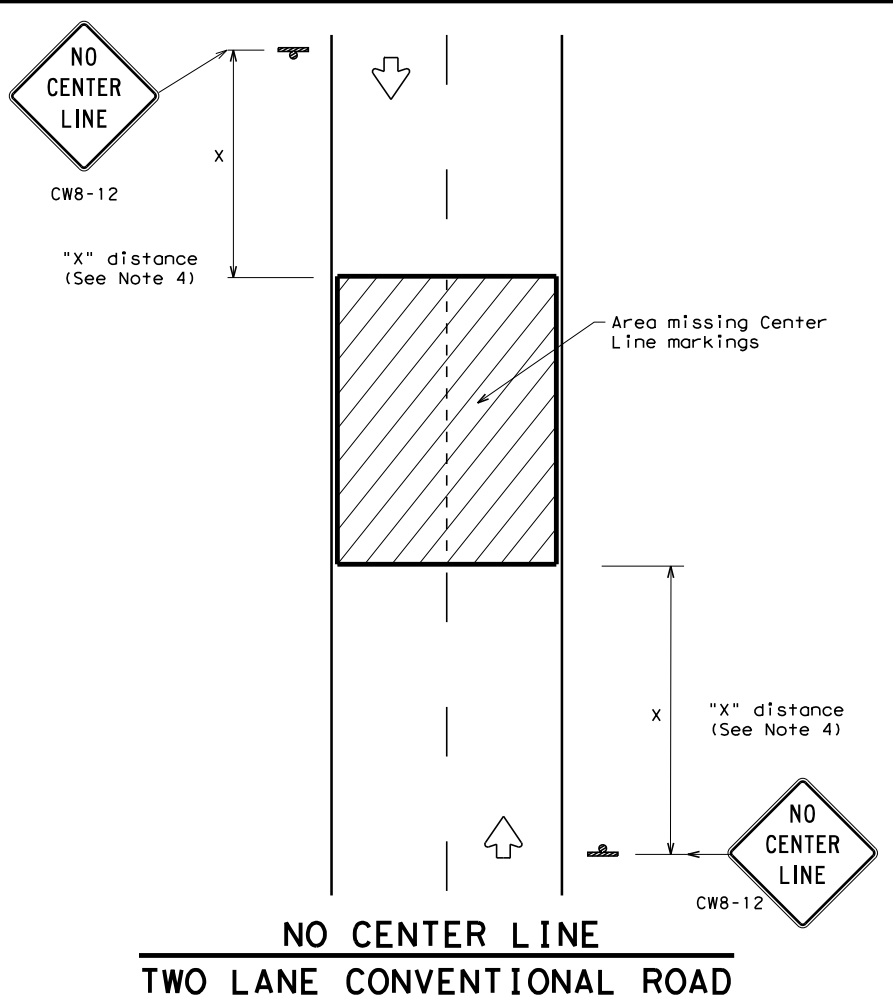
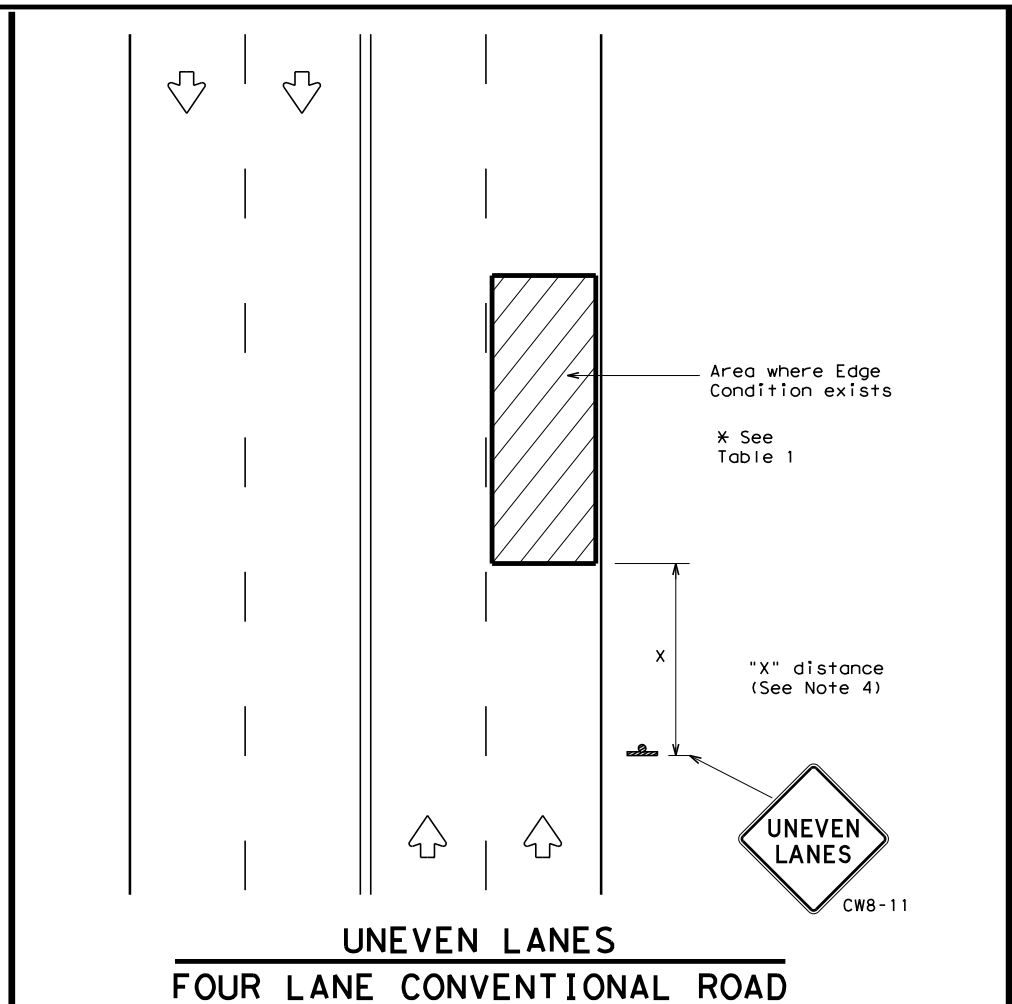
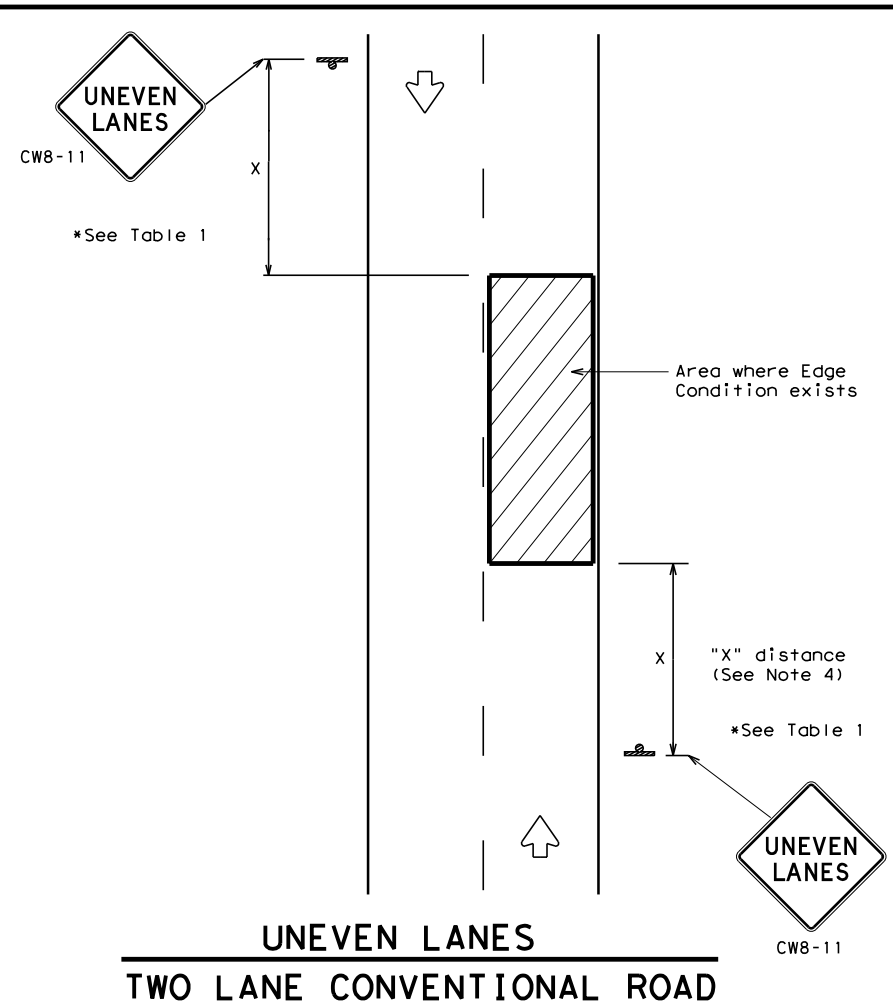
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© TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-92 7-13	DIST	COUNTY	SHEET NO.	
1-97 2-23	DAL	ELLIS	96	
3-03				

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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**

- 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.
- 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.
- 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.
- Signs shall be spaced at the distances recommended as per BC standards.
- 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."
- 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.
- Short term markings shall not be used to simulate edge lines.
- 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	CK: TxDOT
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REVISIONS	0172	05	129	US 287
8-95 2-98 7-13	DIST	COUNTY	SHEET NO.	
1-97 3-03	DAL	ELLIS	97	



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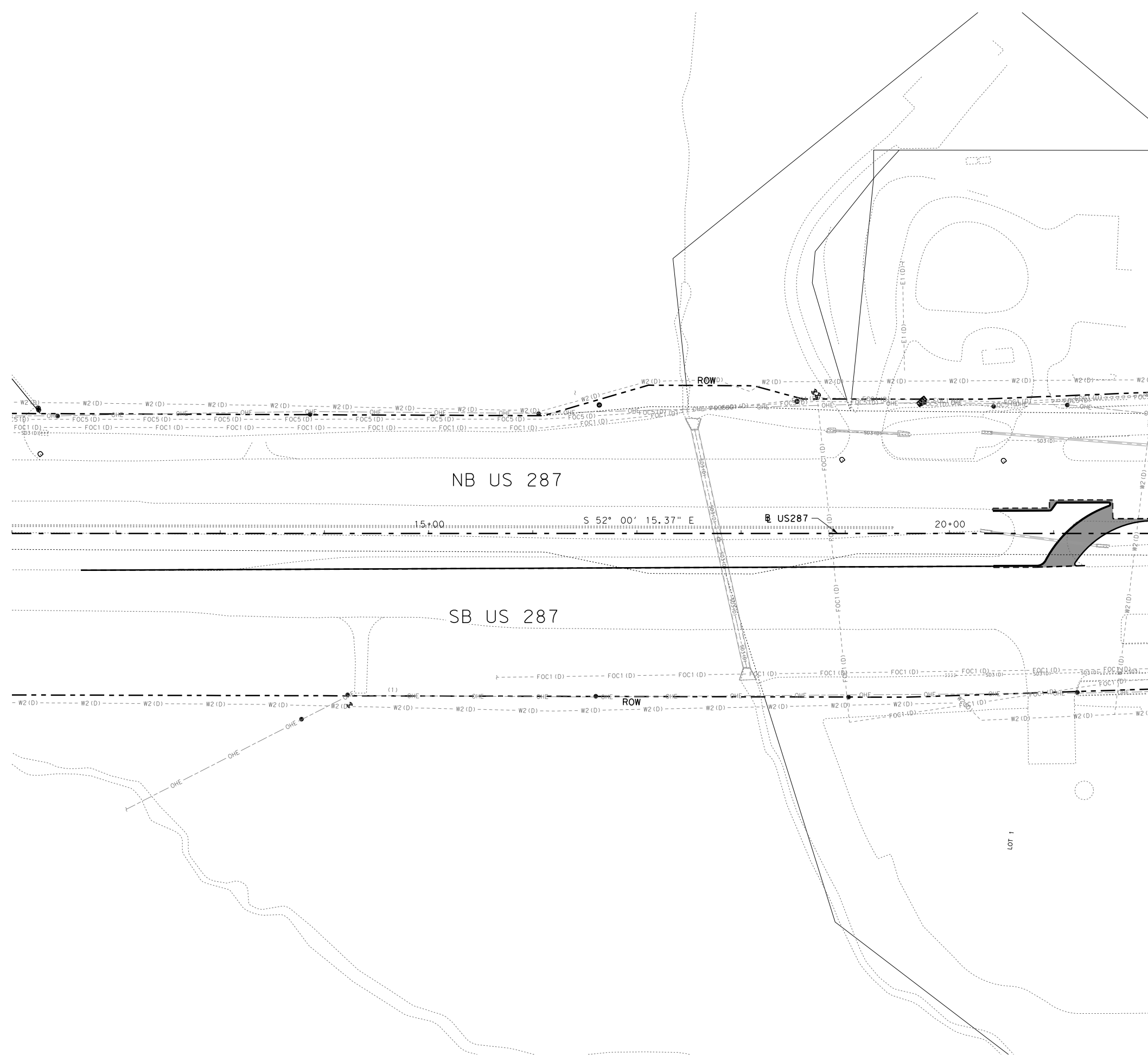


### LEGEND

- XX-XX - CURVE NUMBER
- BL XXXX - BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, NORTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.000072449 FOR ELLIS COUNTY, TEXAS.
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MATCH LINE STA 22+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 SURVEY CONTROL LAYOUT BEGIN PROJECT TO STA 22+00

SCALE: 1" = 100'			SHEET 1 OF 19	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO.
CHECK CPM	0172	05	129	98



**LEGEND**

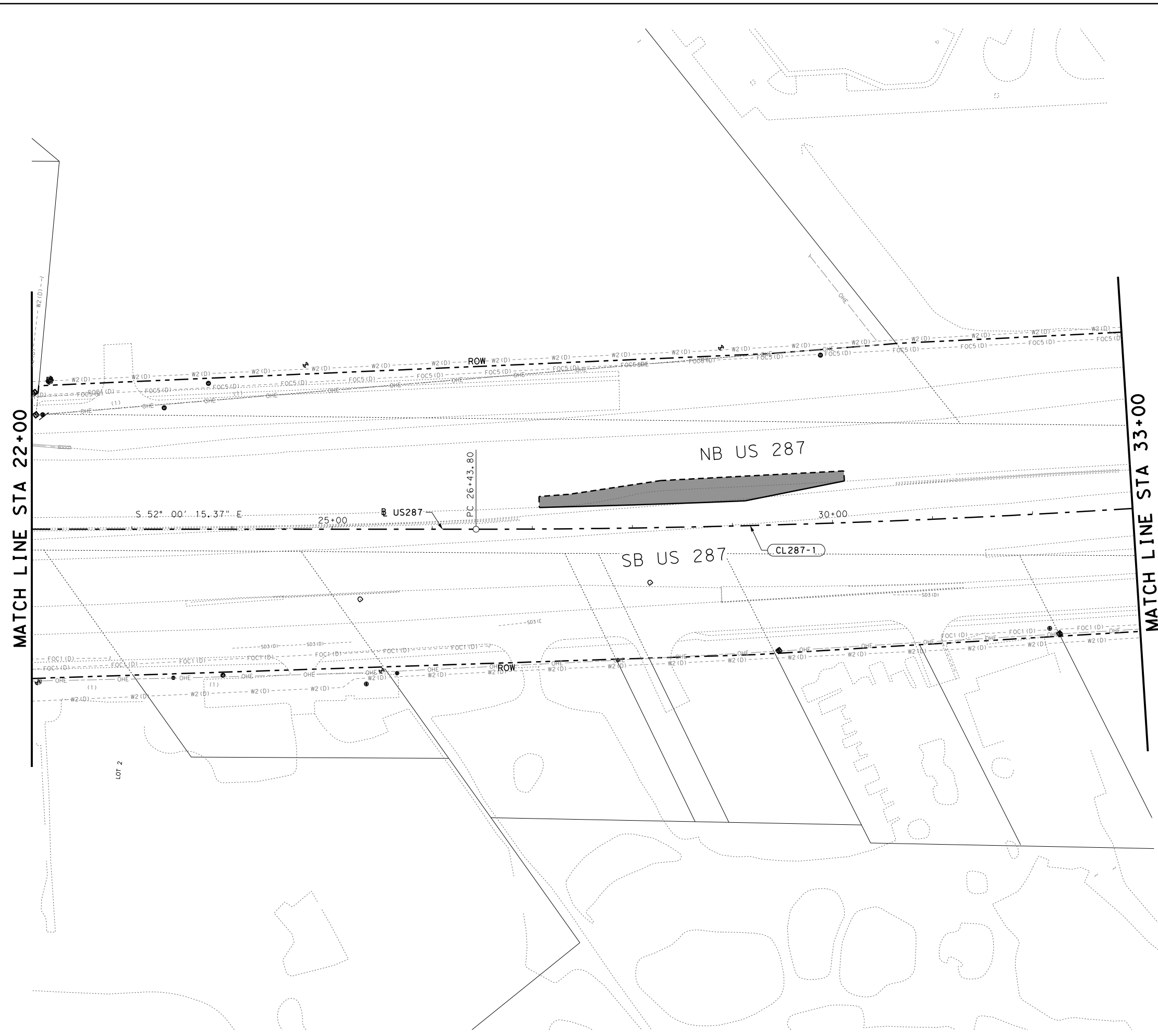
- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

**NOTES:**

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MATCH LINE STA 22+00

MATCH LINE STA 33+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SURVEY CONTROL LAYOUT  
STA 22+00 TO STA 33+00**

SCALE: 1" = 100' SHEET 2 OF 19

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 99
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'



### LEGEND

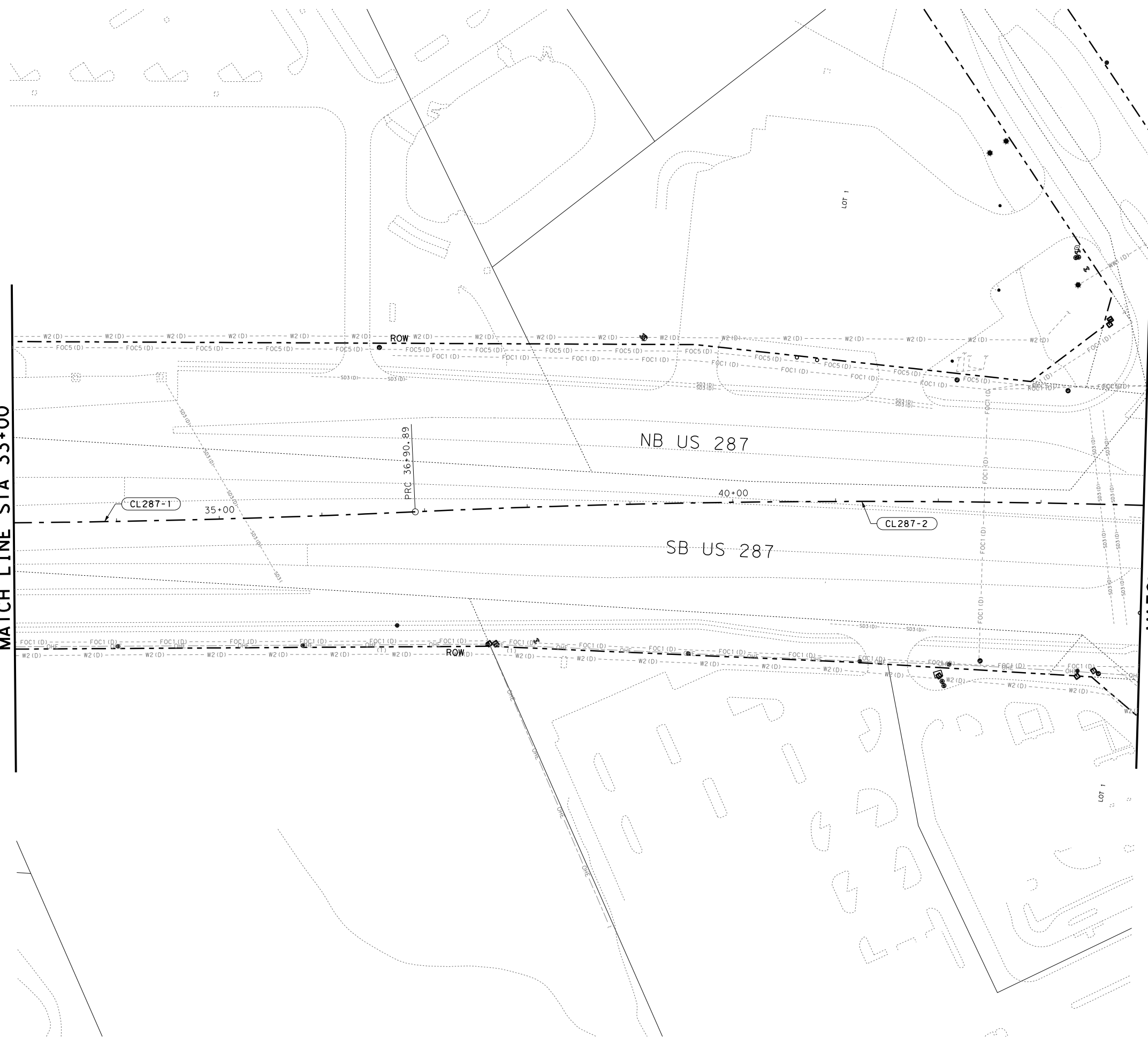
- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

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MATCH LINE STA 33+00

MATCH LINE STA 44+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 SURVEY CONTROL LAYOUT STA 33+00 TO STA 44+00

SCALE: 1" = 100' SHEET 3 OF 19

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 100
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'

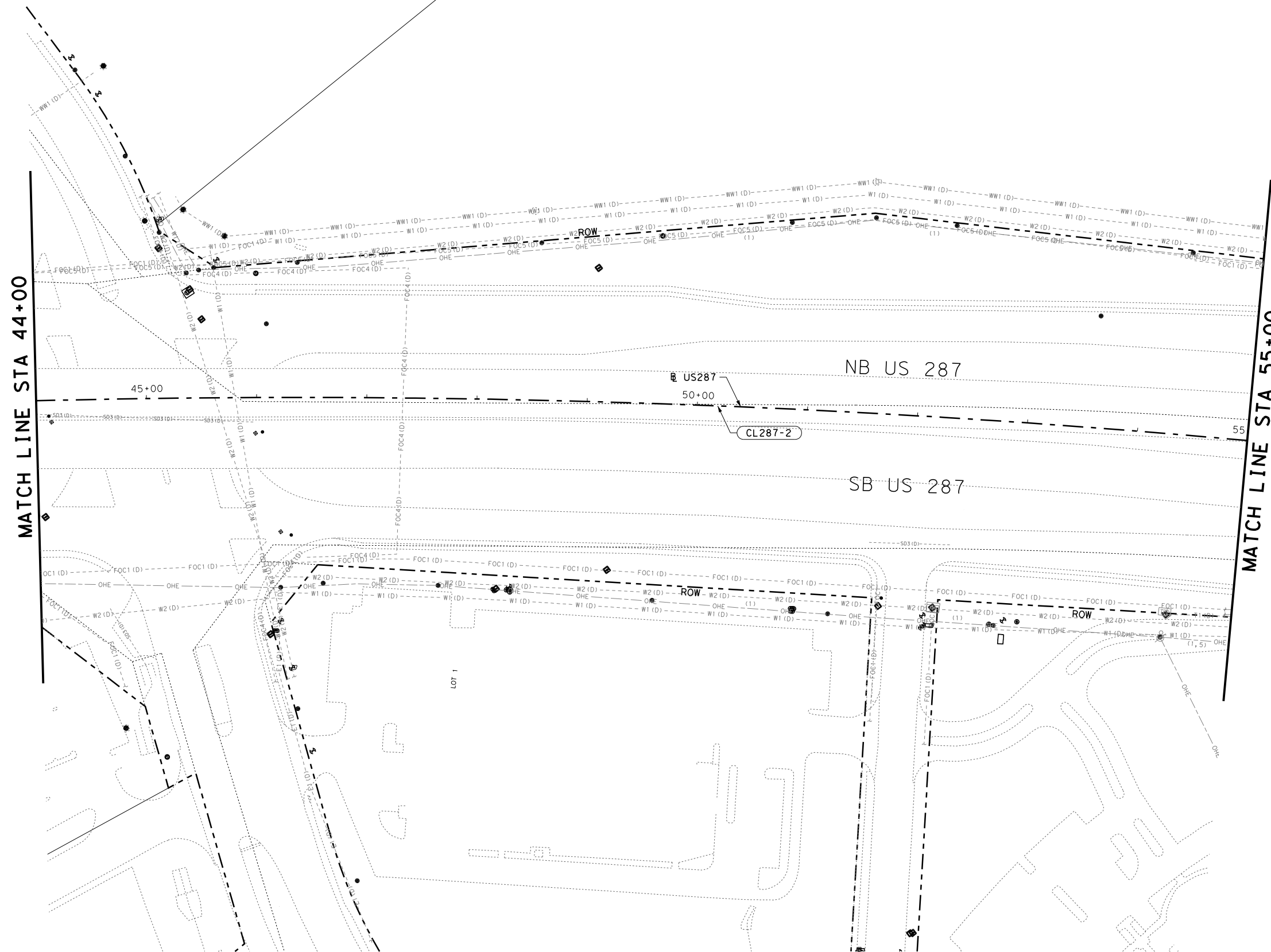


### LEGEND

- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

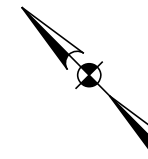


## US 287 SURVEY CONTROL LAYOUT STA 44+00 TO STA 55+00

SCALE: 1" = 100' SHEET 4 OF 19

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
CPM	6	SEE TITLE SHEET		US 287
GRAPHICS		STATE	DISTRICT	COUNTY
CHECK		TEXAS	DALLAS	ELLIS
SA		CONTROL	SECTION	JOB
CHECK		0172	05	129
CPM				

50 0 50 100  
SCALE: 1" = 100'



CONTROL NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION	US287 BASELINE STATION	OFFSET
E0710119	6,853,095.56	2,450,489.05	637.559	3-INCH TXDOT ALUMINUM DISK	65+73.54	139.85' RT

**LEGEND**

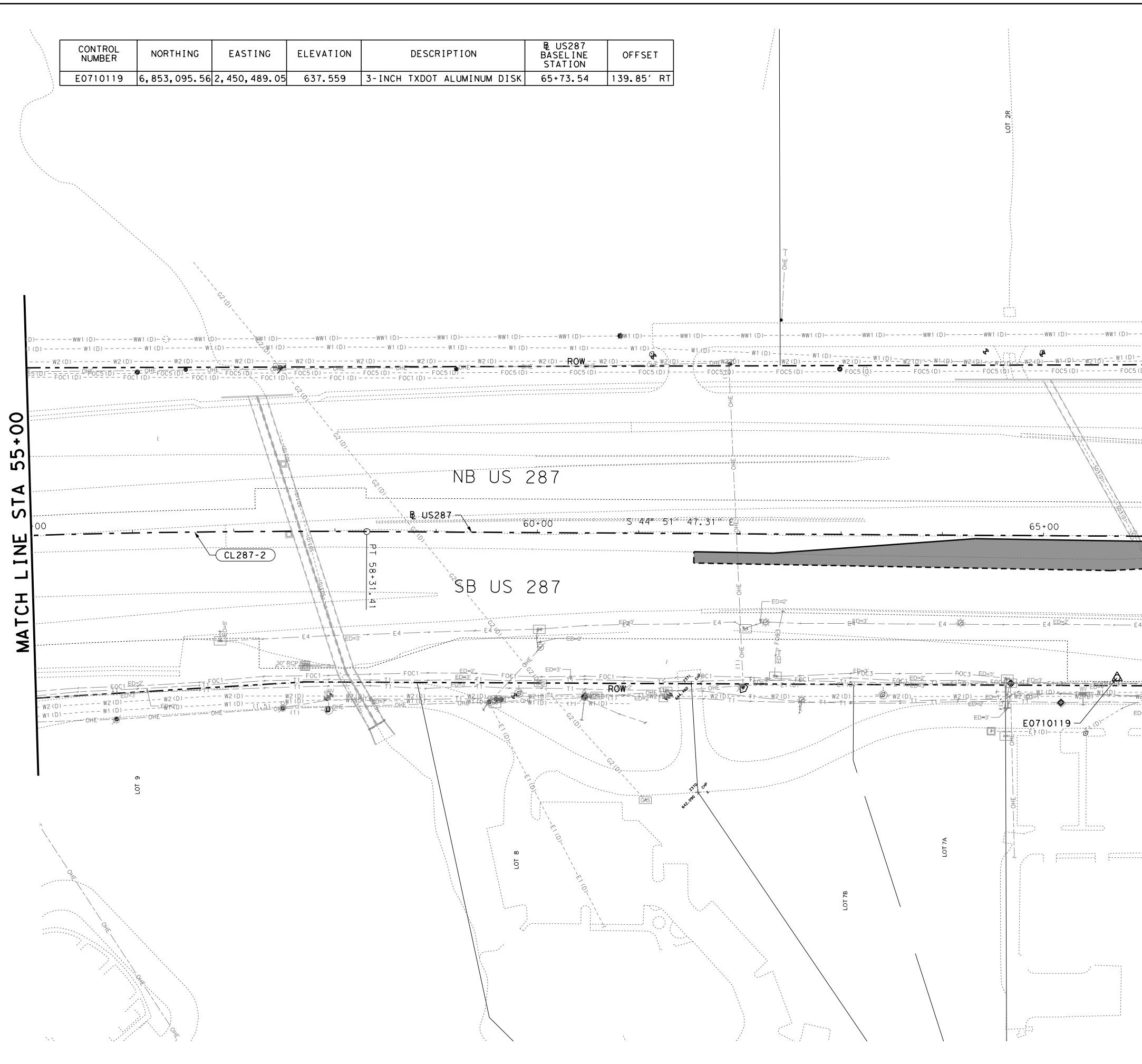
- XX-XX - CURVE NUMBER
- BL XXXX - BASELINE NAME
- △ - FOUND CONTROL MONUMENT
- - PROPOSED PAVEMENT WIDENING
- - PROPOSED MILL & OVERLAY

**NOTES:**

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MATCH LINE STA 55+00

MATCH LINE STA 66+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



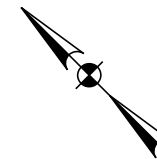
**US 287  
SURVEY CONTROL LAYOUT  
STA 55+00 TO STA 66+00**

SCALE: 1" = 100' SHEET 5 OF 19

DESIGN CPM	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS CPM	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 102
CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

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50 0 50 100  
SCALE: 1" = 100'



CONTROL NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION	US287 BASELINE STATION	OFFSET
E0710129	6,852,427.72	2,451,232.44	631.543	3-INCH TXDOT ALUMINUM DISK	75+71.30	84.05' RT

**LEGEND**

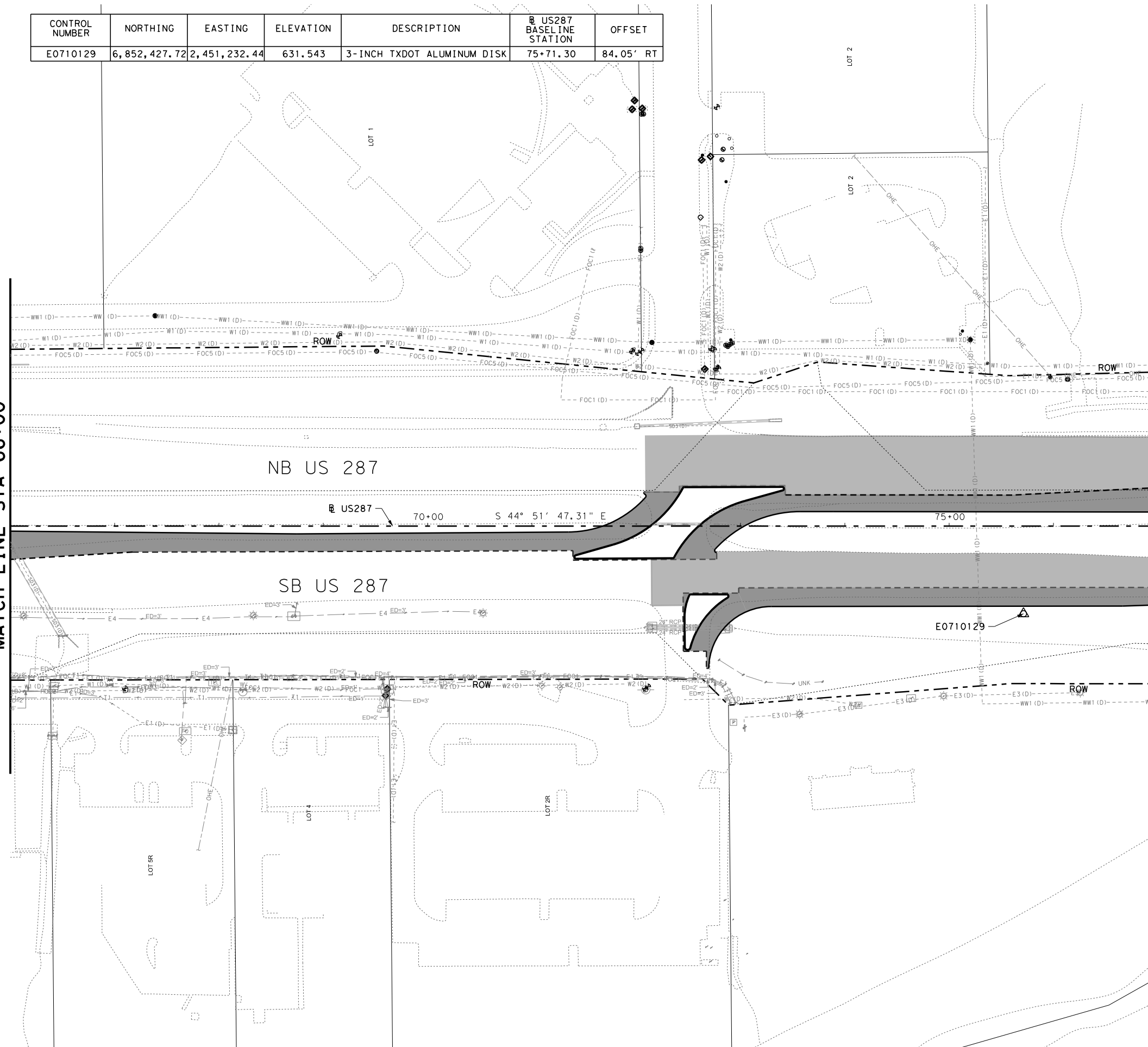
- XX-XX - CURVE NUMBER
- BL XXXX - BASELINE NAME
- △ - FOUND CONTROL MONUMENT
- - PROPOSED PAVEMENT WIDENING
- - PROPOSED MILL & OVERLAY

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MATCH LINE STA 66+00

MATCH LINE STA 77+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SURVEY CONTROL LAYOUT  
STA 66+00 TO STA 77+00**

SCALE: 1" = 100' SHEET 6 OF 19

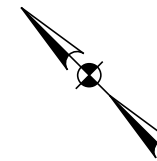
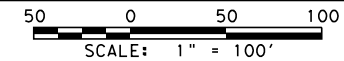
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 103
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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**LEGEND**

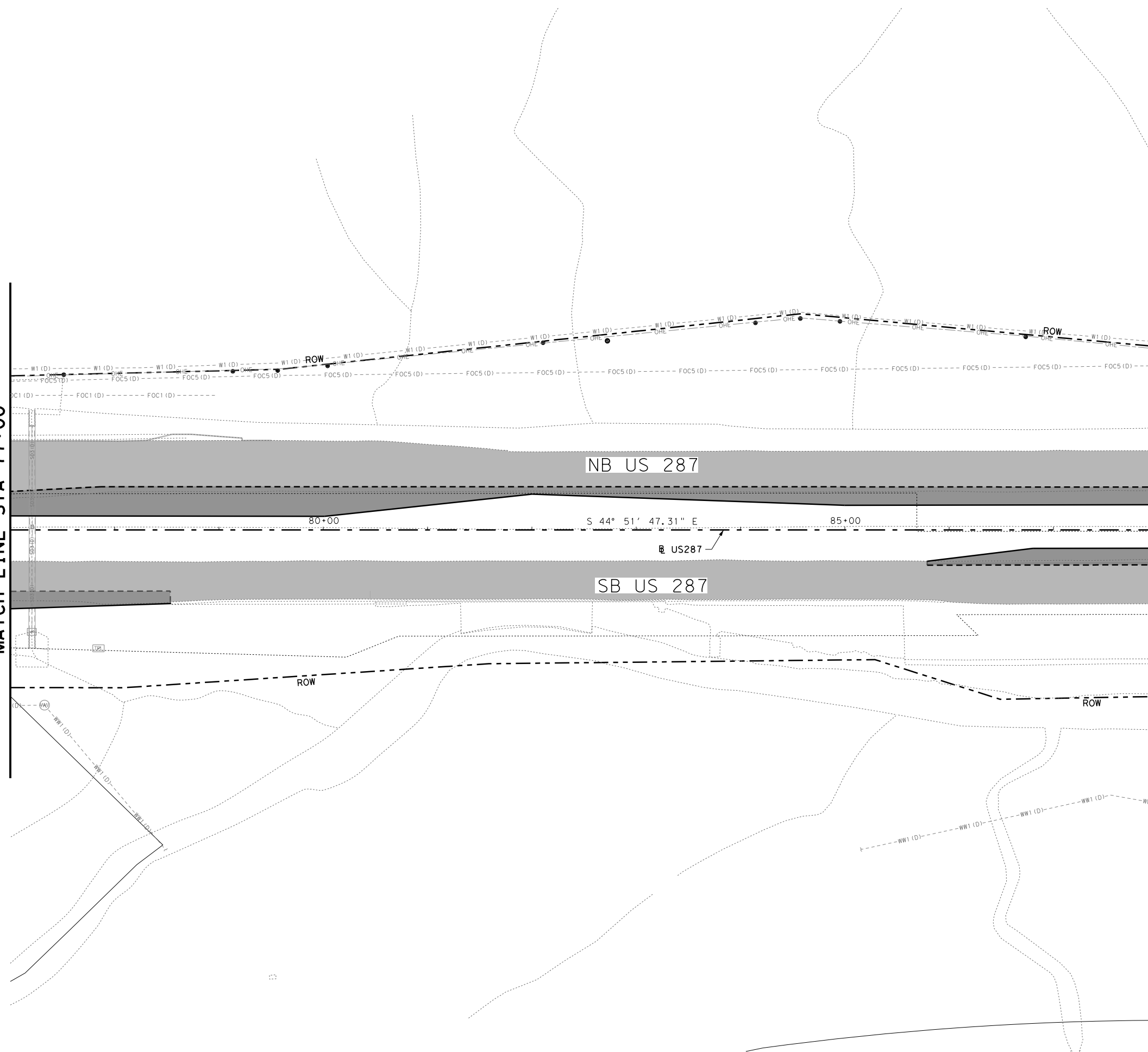
- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

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MATCH LINE STA 77+00

MATCH LINE STA 88+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SURVEY CONTROL LAYOUT  
STA 77+00 TO STA 88+00**

SCALE: 1" = 100' SHEET 7 OF 19

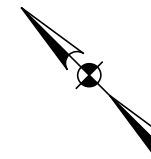
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GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 104
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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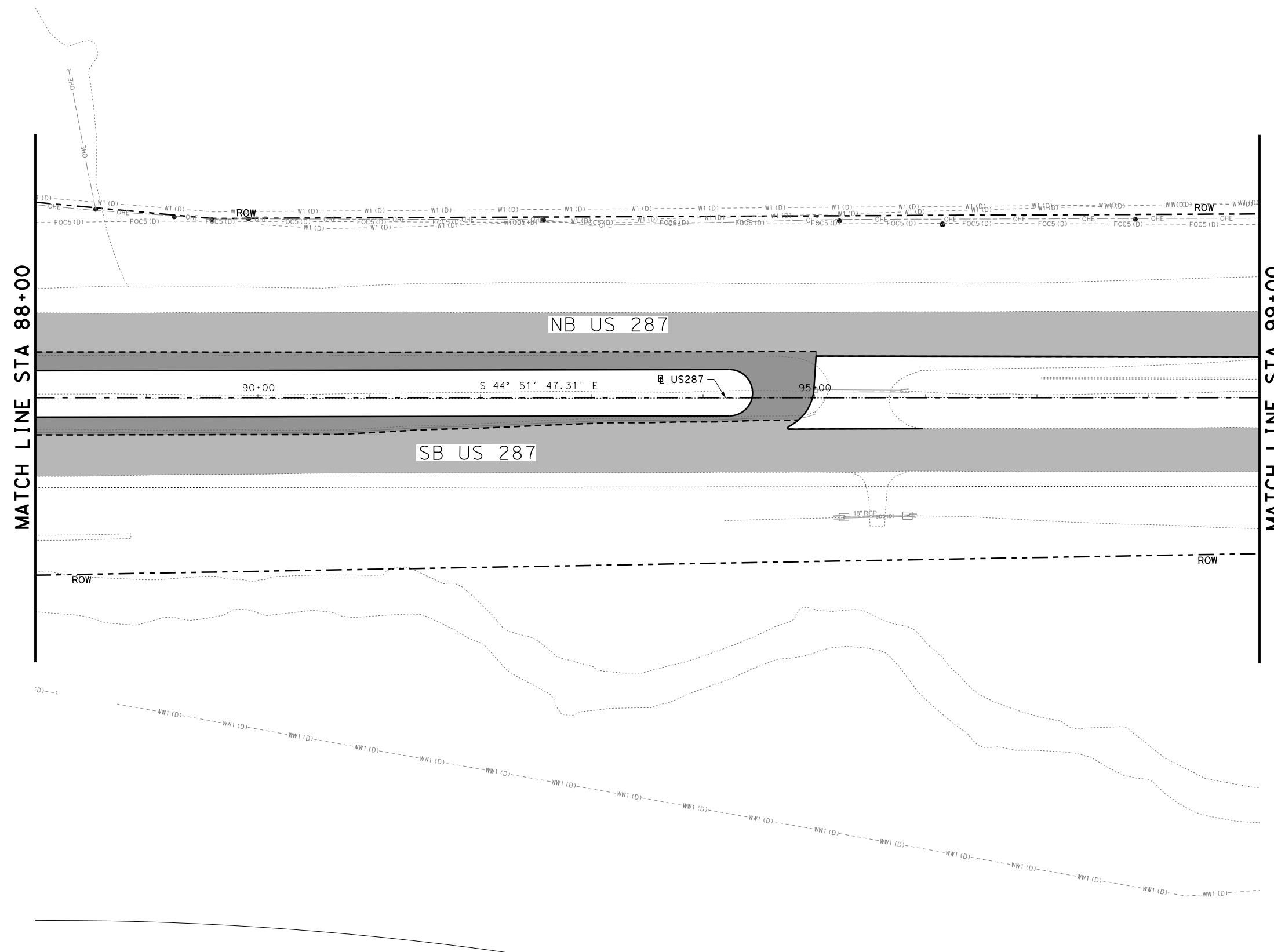


### LEGEND

- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

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NO.	DATE	DESCRIPTION	APPROV.

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TBPE REGISTRATION NO. 264

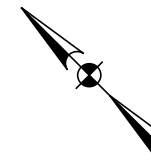


## US 287 SURVEY CONTROL LAYOUT STA 88+00 TO STA 99+00

SCALE: 1" = 100' SHEET 8 OF 19

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 105
CHECK CPM	CONTROL	SECTION	JOB	
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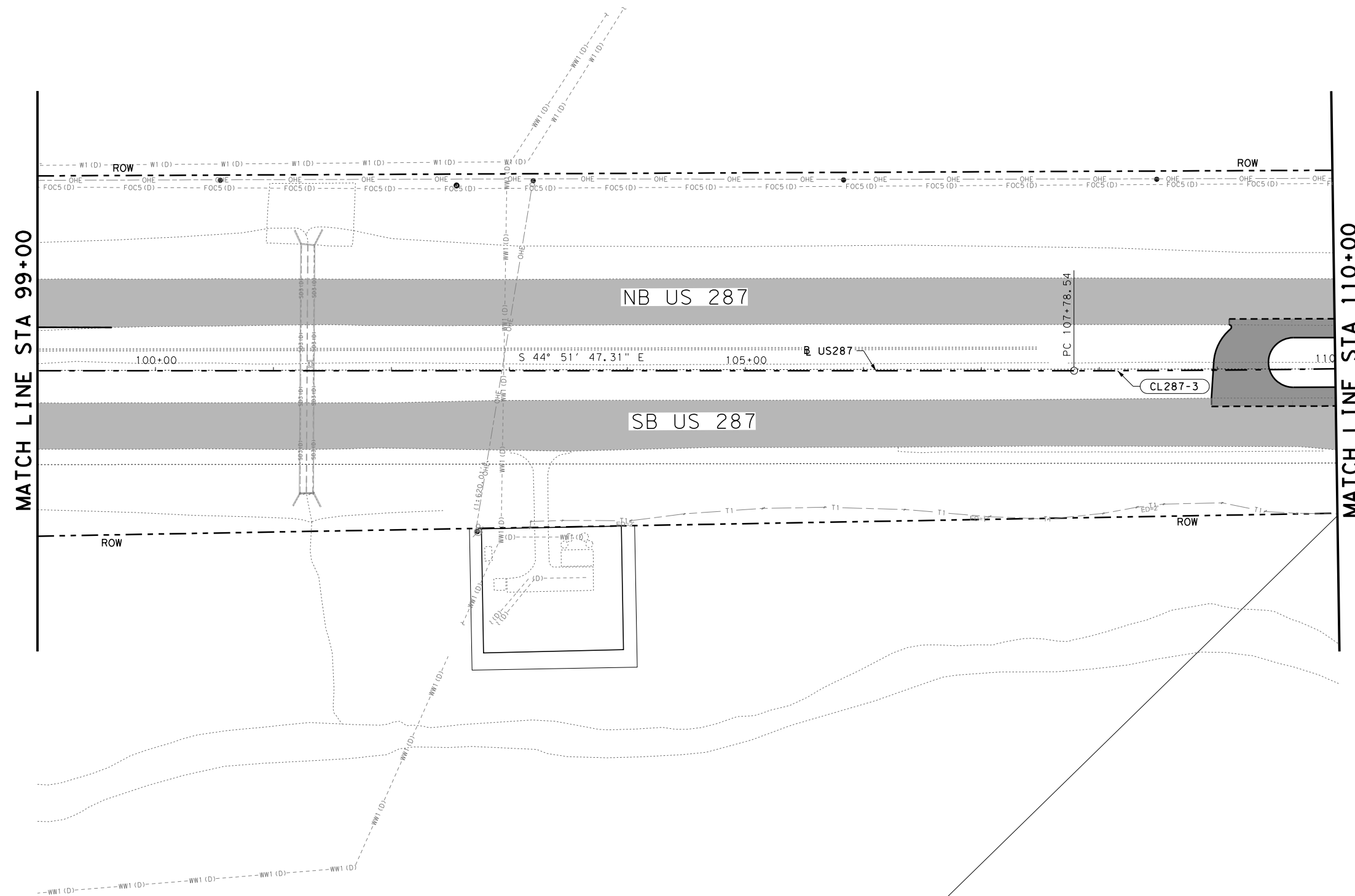


**LEGEND**

- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

**NOTES:**

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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



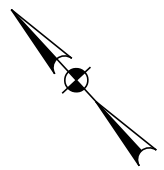
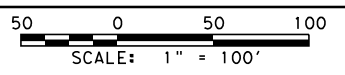
**US 287  
SURVEY CONTROL LAYOUT  
STA 99+00 TO STA 110+00**

SCALE: 1" = 100'		SHEET 9 OF 19	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			106

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**LEGEND**

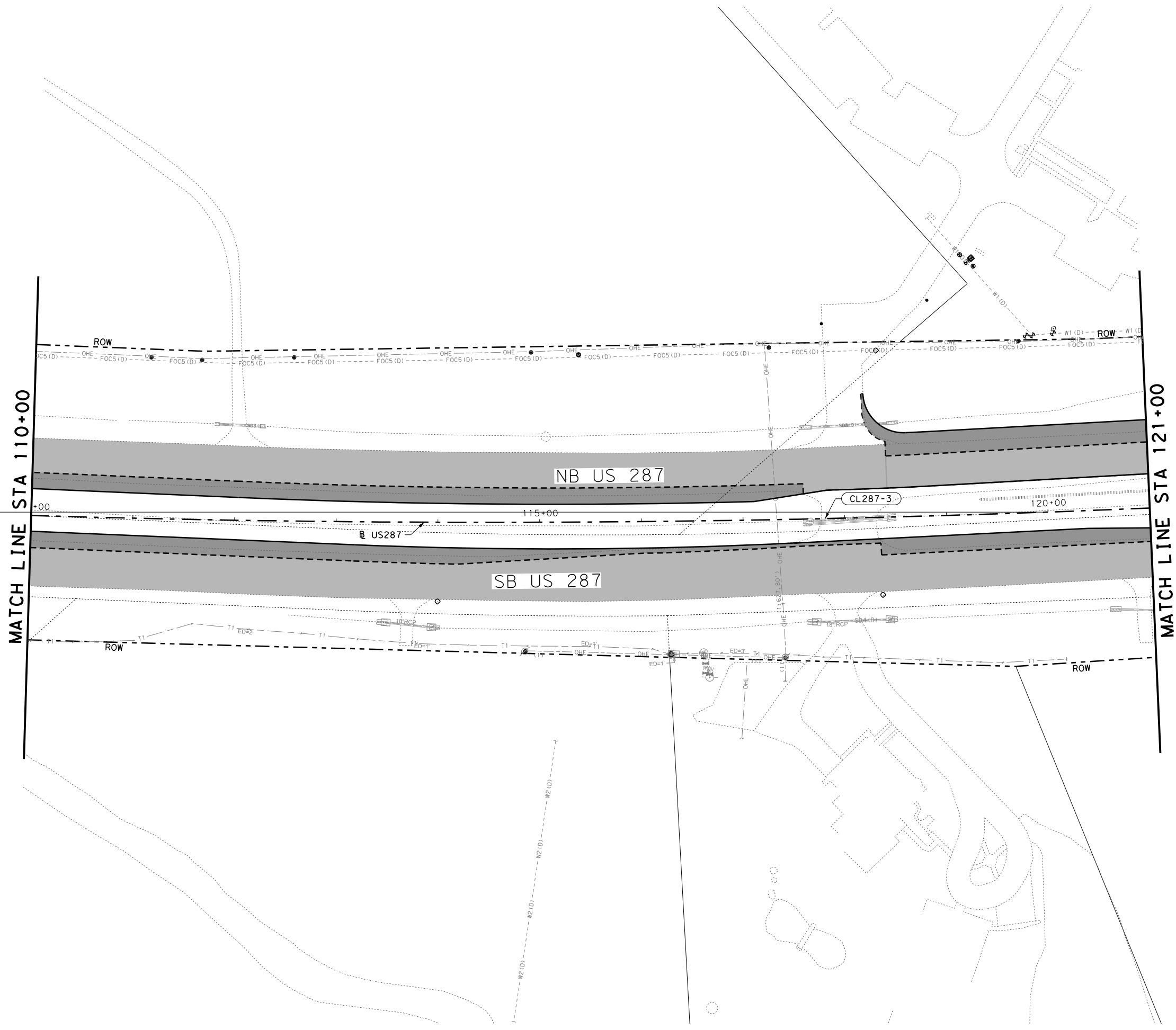
- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

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MATCH LINE STA 110+00

MATCH LINE STA 121+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SURVEY CONTROL LAYOUT  
STA 110+00 TO STA 121+00**

SCALE: 1" = 100' SHEET 10 OF 19

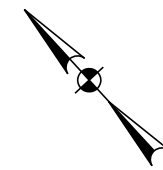
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 107
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'



### LEGEND

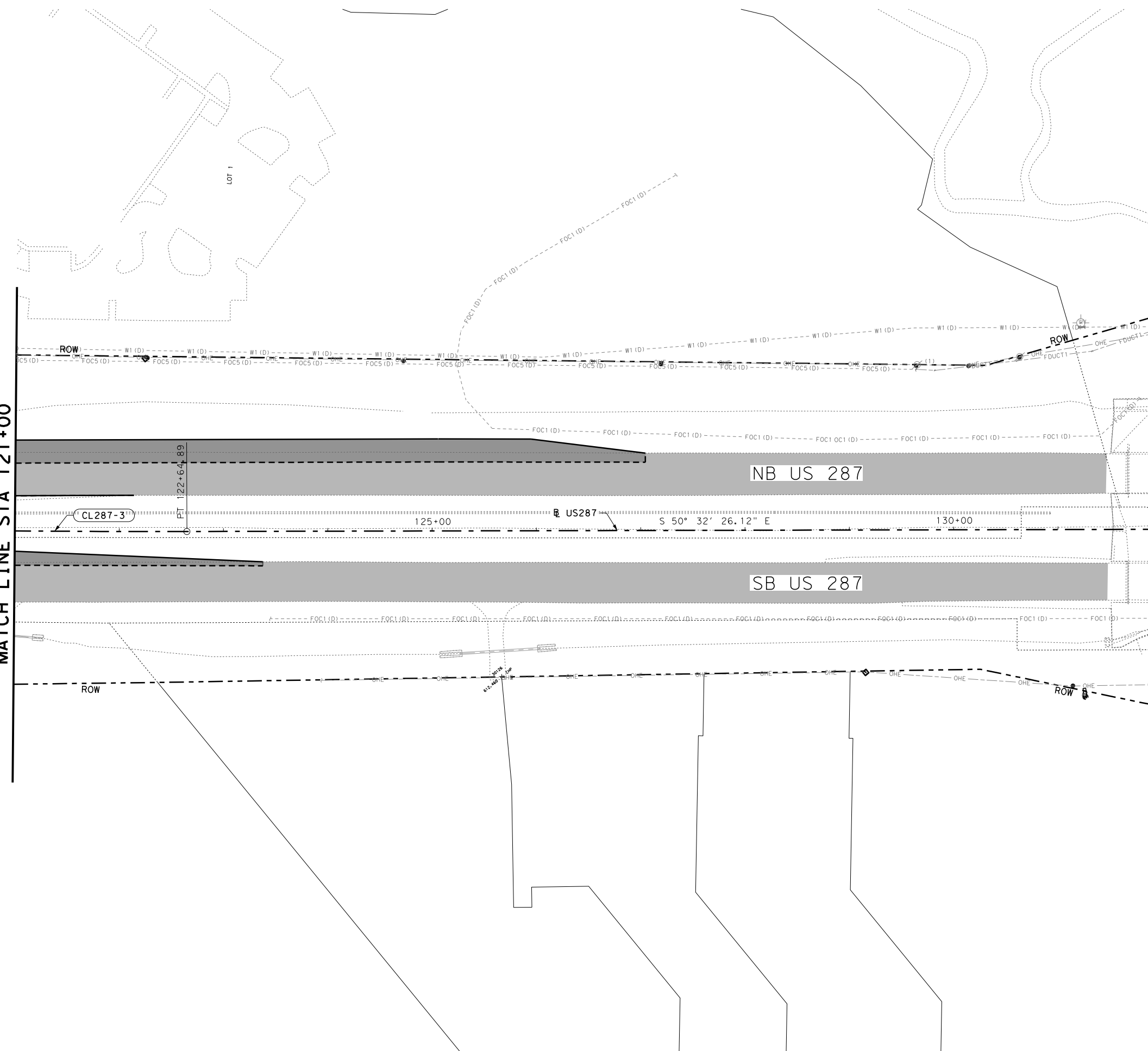
- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

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MATCH LINE STA 121+00

MATCH LINE STA 132+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SURVEY CONTROL LAYOUT  
STA 121+00 TO STA 132+00**

SCALE: 1" = 100' SHEET 11 OF 19

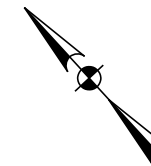
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 108
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

5/9/2024 7:07:06 AM

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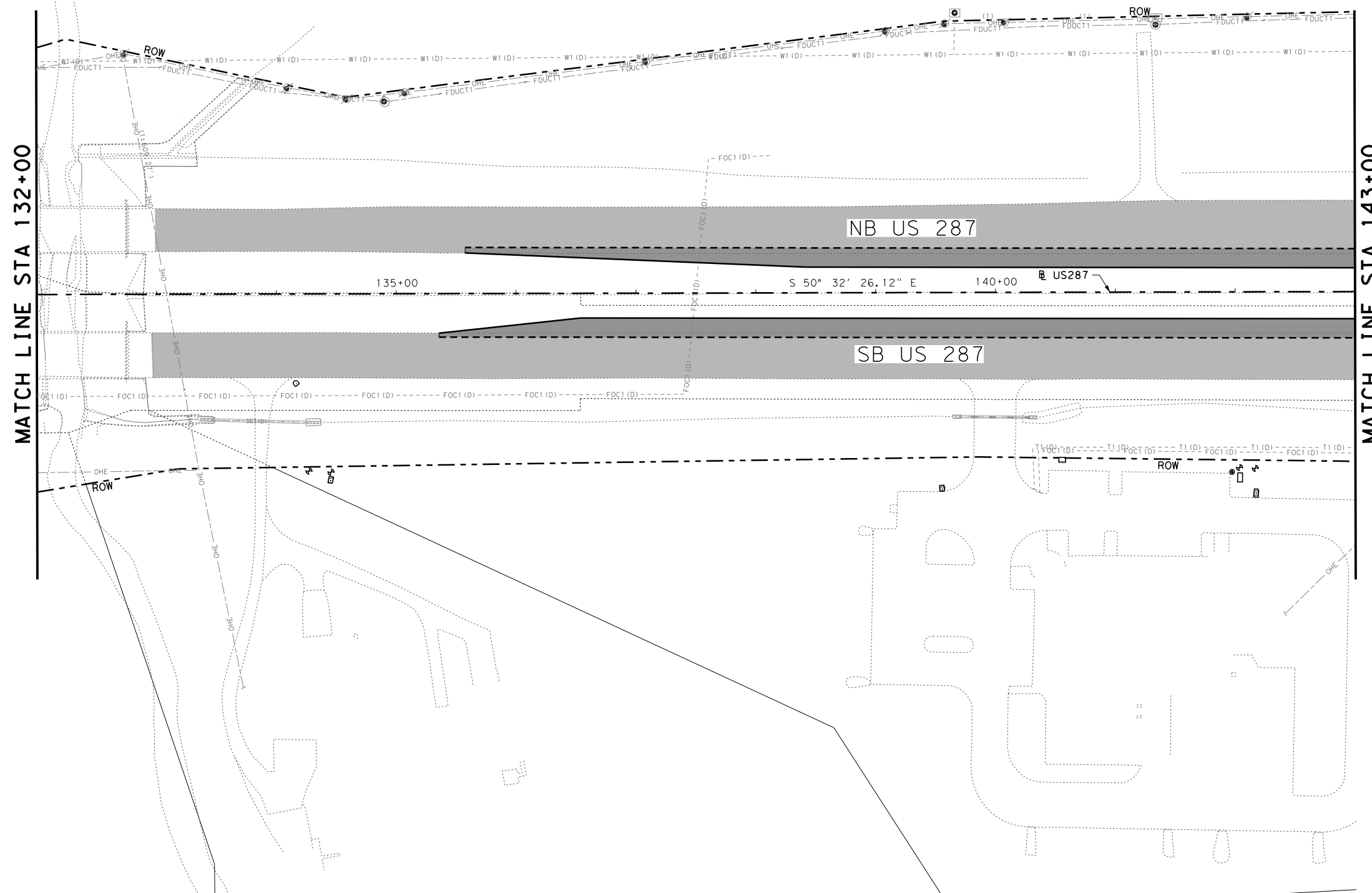


### LEGEND

- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, NORTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.000072449 FOR ELLIS COUNTY, TEXAS.
2. ALL COORDINATES AND DISTANCES SHOWN HEREON ARE IN U. S. SURVEY FEET.
3. ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88), 2001 ADJUSTMENT, GEOID 2012B.
4. HELD MONUMENTS FOR THIS PROJECT ARE TXDOT CONTROL STATION VRS.
5. BASELINE STATIONS AND OFFSETS SHOWN HEREON ARE REFERENCED TO THE ROW-OF-WAY BASELINE WHICH MAY NOT MATCH THE PROPOSED CONSTRUCTION BASELINE OR AS-BUILT BASELINE DUE TO DESIGN CHANGES.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264



## US 287 SURVEY CONTROL LAYOUT STA 132+00 TO STA 143+00

SCALE: 1" = 100' SHEET 12 OF 19

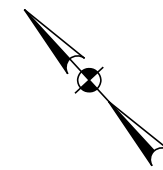
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 109
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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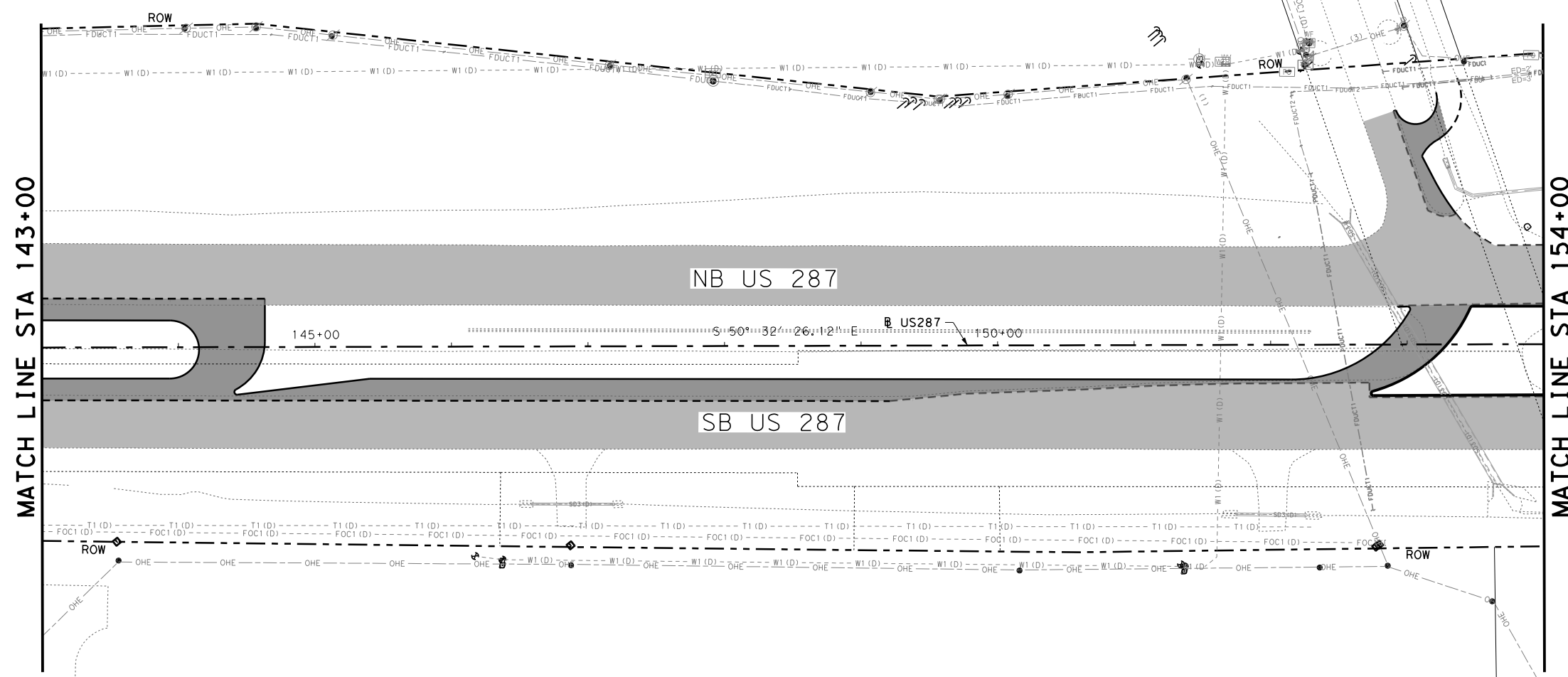


### LEGEND

- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, NORTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.000072449 FOR ELLIS COUNTY, TEXAS.
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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 SURVEY CONTROL LAYOUT STA 143+00 TO STA 154+00

SCALE: 1" = 100'		SHEET 13 OF 19	
DESIGN CPM	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	
GRAPHICS CPM	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK SA	CONTROL 0172	SECTION 05	JOB 129
HIGHWAY NO. US 287		SHEET NO. 110	

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SCALE: 1" = 100'

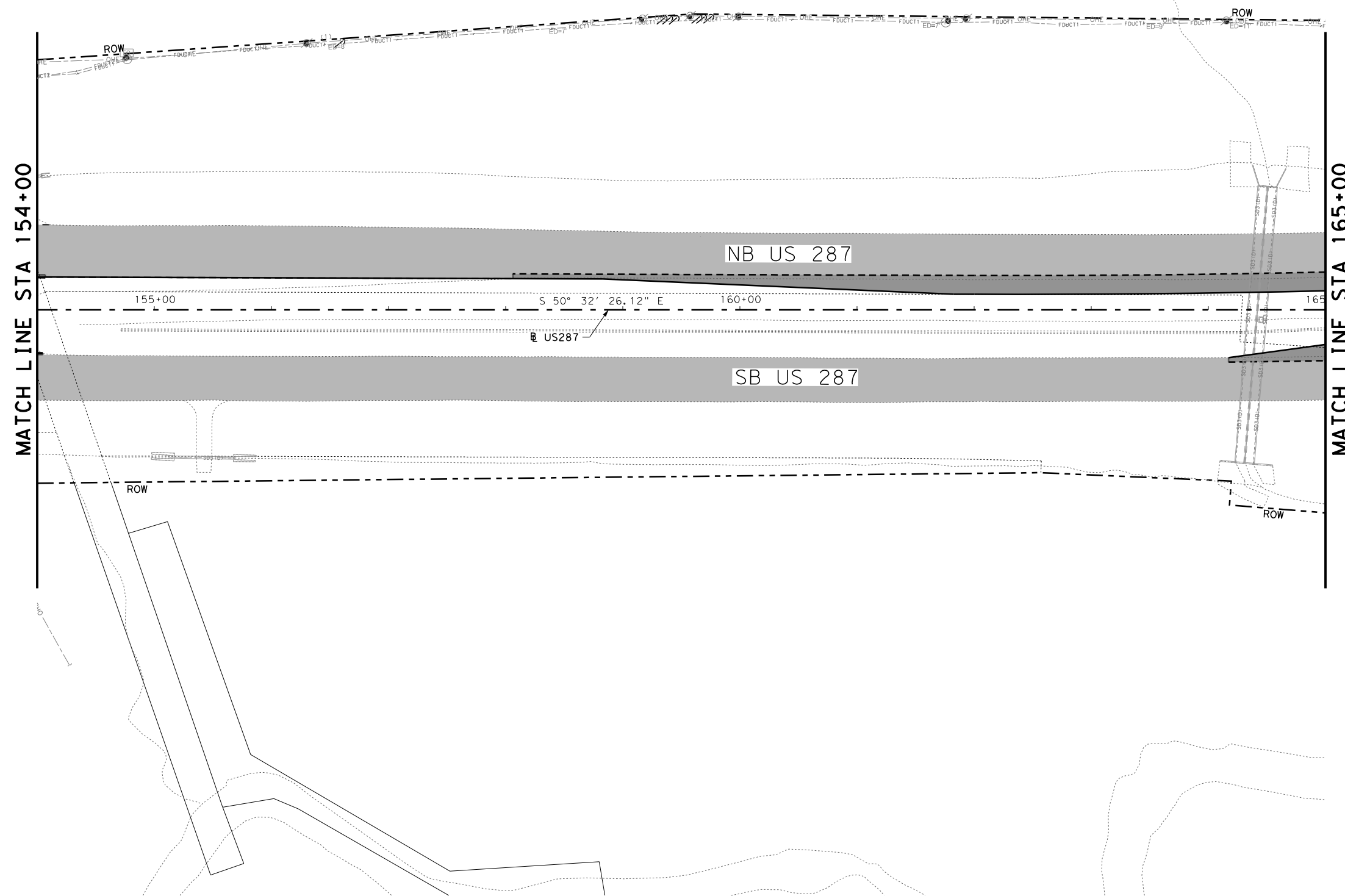


### LEGEND

- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, NORTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.000072449 FOR ELLIS COUNTY, TEXAS.
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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SURVEY CONTROL LAYOUT  
STA 154+00 TO STA 165+00**

SCALE: 1" = 100' SHEET 14 OF 19

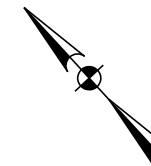
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK CPM	TEXAS	DALLAS	ELLIS	111
	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'



### LEGEND

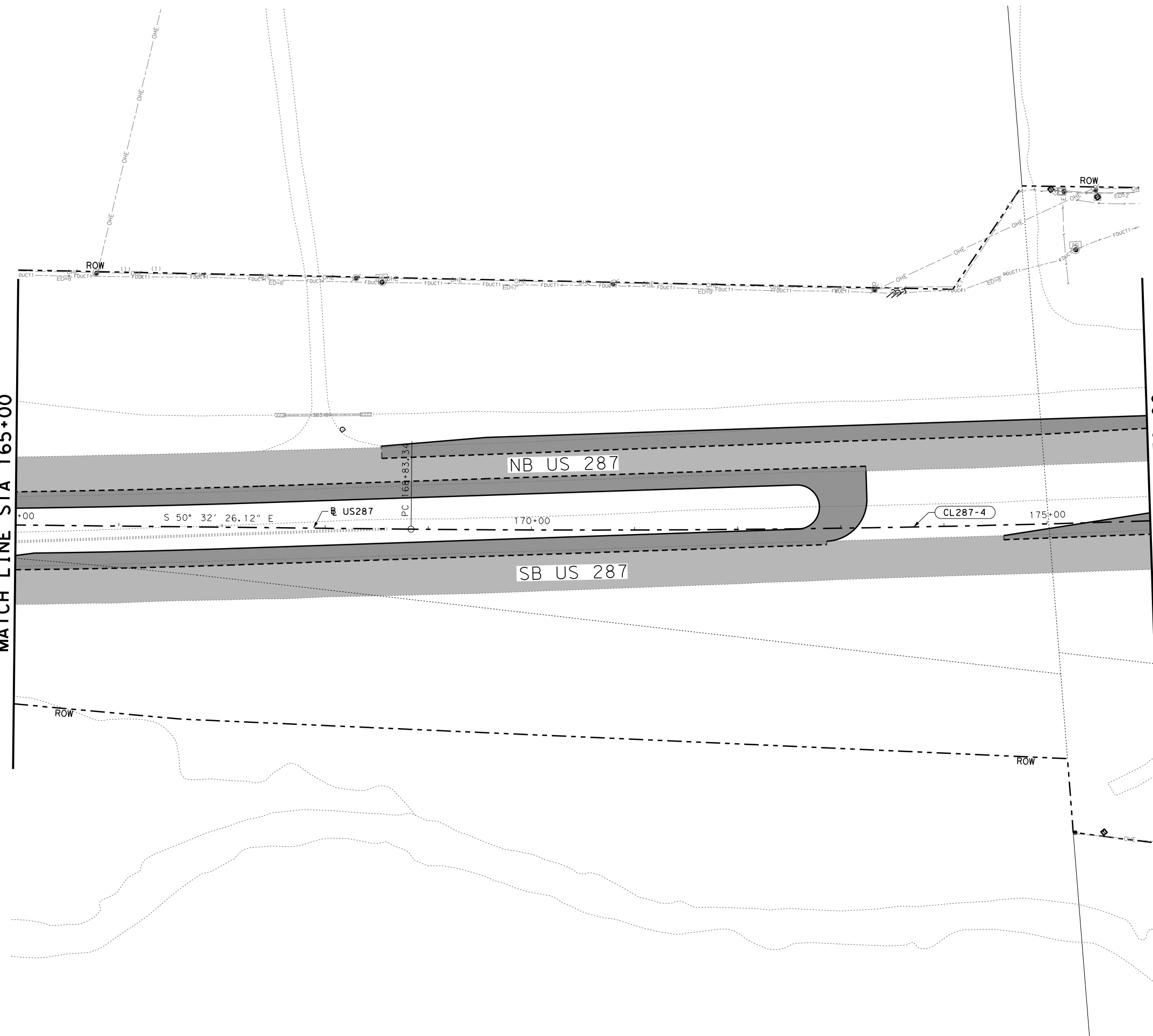
- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

1. ALL BEARINGS AND COORDINATES ARE BASED ON THE TEXAS COORDINATE SYSTEM, NORTH CENTRAL ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83), 2011 ADJUSTMENT, EPOCH 2010.00. ALL DISTANCES AND COORDINATES SHOWN ARE SURFACE AND MAY BE CONVERTED TO GRID BY DIVIDING BY A COMBINED ADJUSTMENT FACTOR OF 1.000072449 FOR ELLIS COUNTY, TEXAS.
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MATCH LINE STA 165+00

MATCH LINE STA 176+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

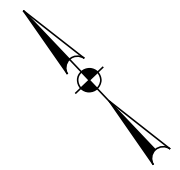
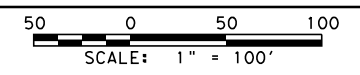


**US 287**  
**SURVEY CONTROL LAYOUT**  
**STA 165+00 TO STA 176+00**

SCALE: 1" = 100' SHEET 15 OF 19

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
CPM	6	SEE TITLE SHEET		US 287
GRAPHICS		STATE	DISTRICT	COUNTY
CPM		TEXAS	DALLAS	ELLIS
CHECK		CONTROL		SECTION
SA				JOB
CHECK				
CPM	0172	05	129	

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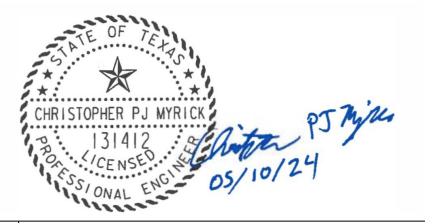


**LEGEND**

- XX-XX - CURVE NUMBER
- BL XXXX - BASELINE NAME
- △ - FOUND CONTROL MONUMENT
- - PROPOSED PAVEMENT WIDENING
- - PROPOSED MILL & OVERLAY

**NOTES:**

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NO.	DATE	DESCRIPTION	APPROV.

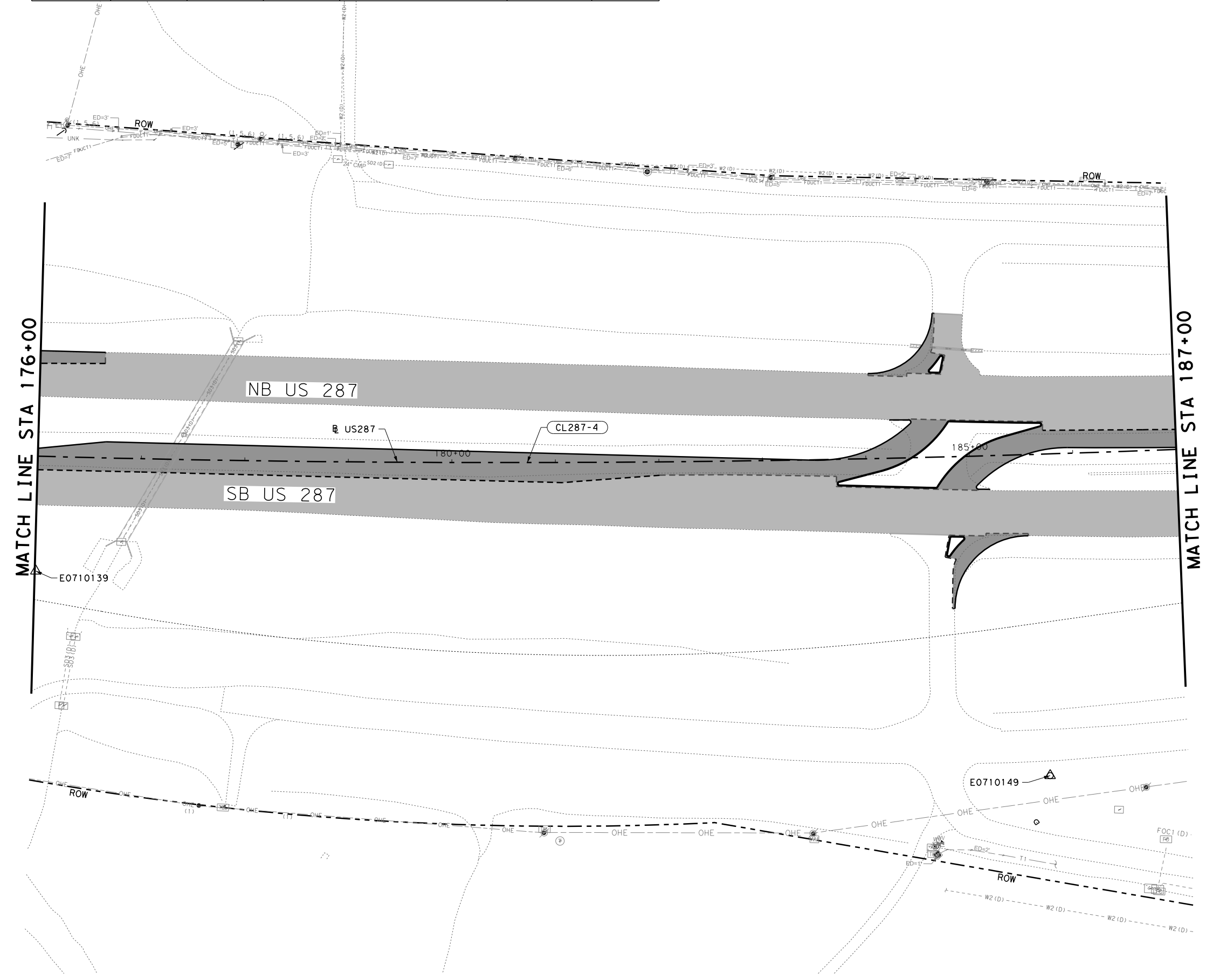
**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264



**US 287**  
**SURVEY CONTROL LAYOUT**  
**STA 176+00 TO STA 187+00**

SCALE: 1" = 100'		SHEET 16 OF 19	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			113

CONTROL NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION	US287 BASELINE STATION	OFFSET
E0710139	6,845,746.21	2,458,716.31	607.596	3-INCH TXDOT ALUMINUM DISK	176+00.97	110.88' RT
E0710149	6,845,017.23	2,459,400.55	616.891	3-INCH TXDOT ALUMINUM DISK	185+68.40	310.72' RT



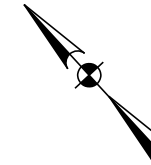


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50 0 50 100  
SCALE: 1" = 100'



### LEGEND

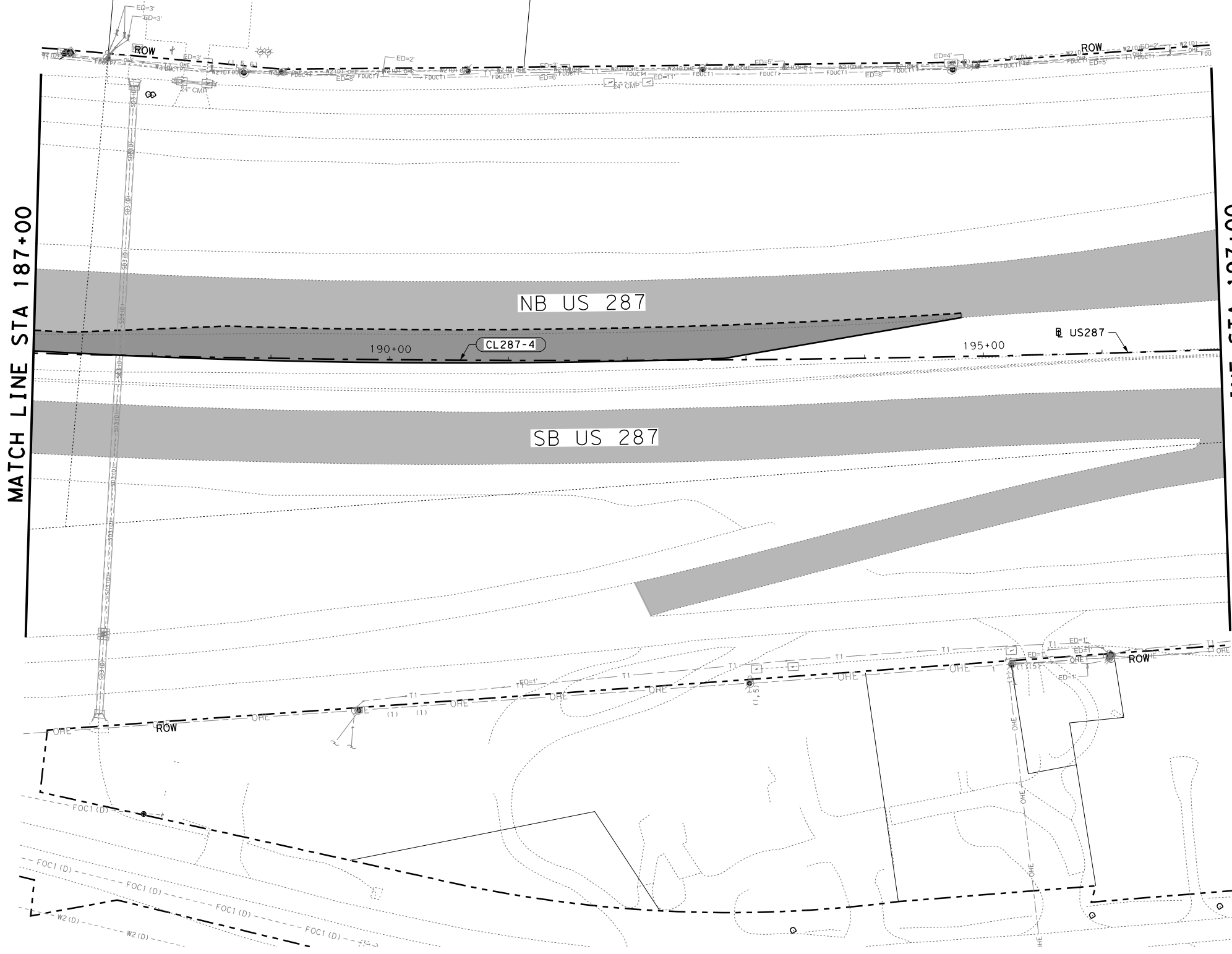
- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

### NOTES:

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MATCH LINE STA 187+00

MATCH LINE STA 197+00



STATE OF TEXAS  
 CHRISTOPHER PJ MYRICK  
 131412  
 LICENSED ENGINEER  
*Christopher PJ Myrick*  
 05/10/24

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264

**Texas Department of Transportation**  
 ©2024

**US 287**  
**SURVEY CONTROL LAYOUT**  
**STA 186+00 TO STA 197+00**

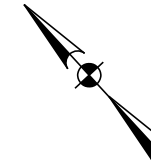
SCALE: 1" = 100'		SHEET 17 OF 19	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			SHEET NO. 114

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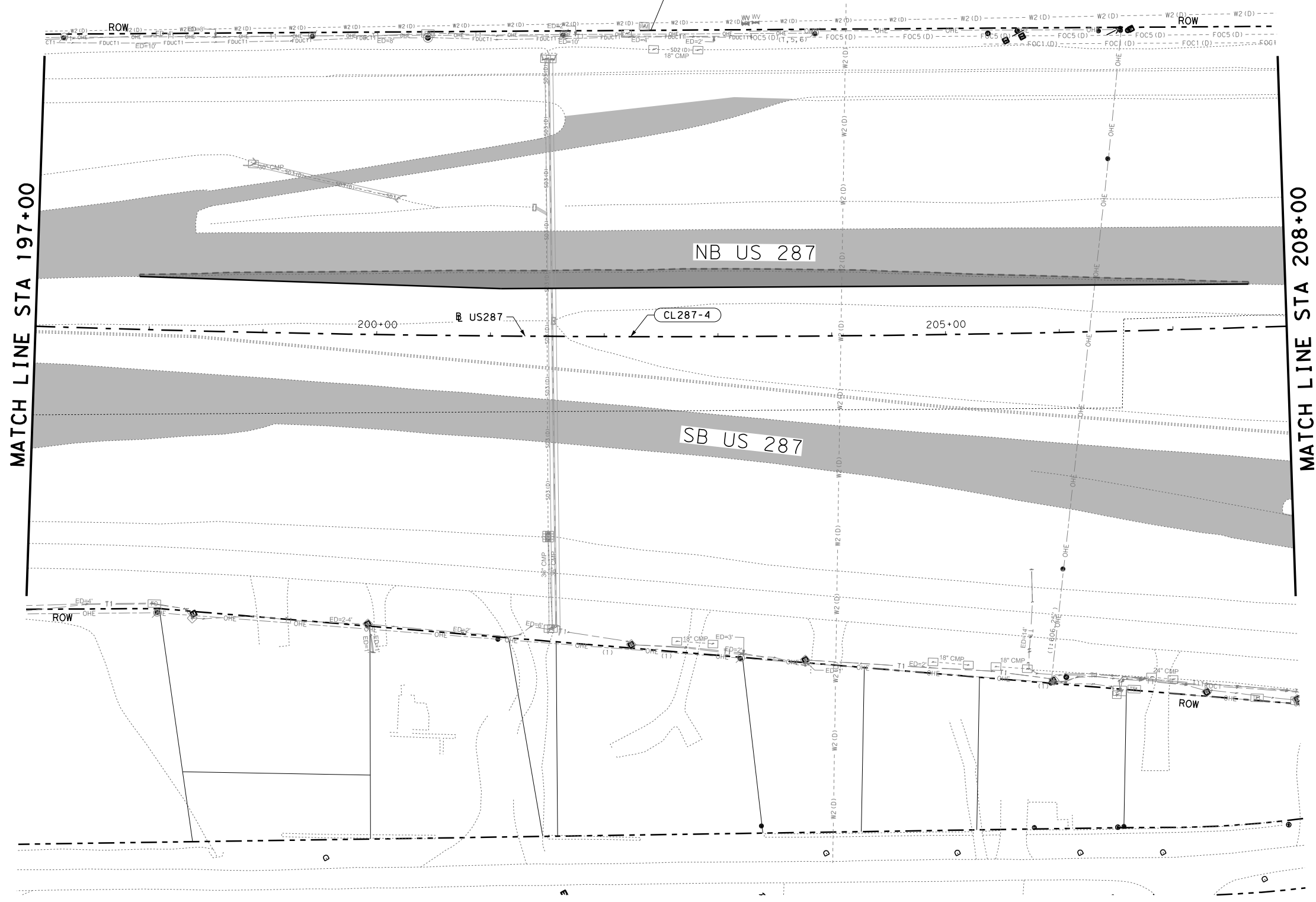


### LEGEND

- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

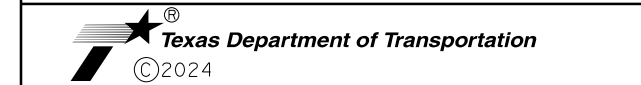
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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 SURVEY CONTROL LAYOUT STA 197+00 TO STA 208+00

SCALE: 1" = 100'		SHEET 18 OF 19	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	
GRAPHICS CPM	6	SEE TITLE SHEET	
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			HIGHWAY NO. US 287
			SHEET NO. 115

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cMyrick

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50 0 50 100  
SCALE: 1" = 100'



**LEGEND**

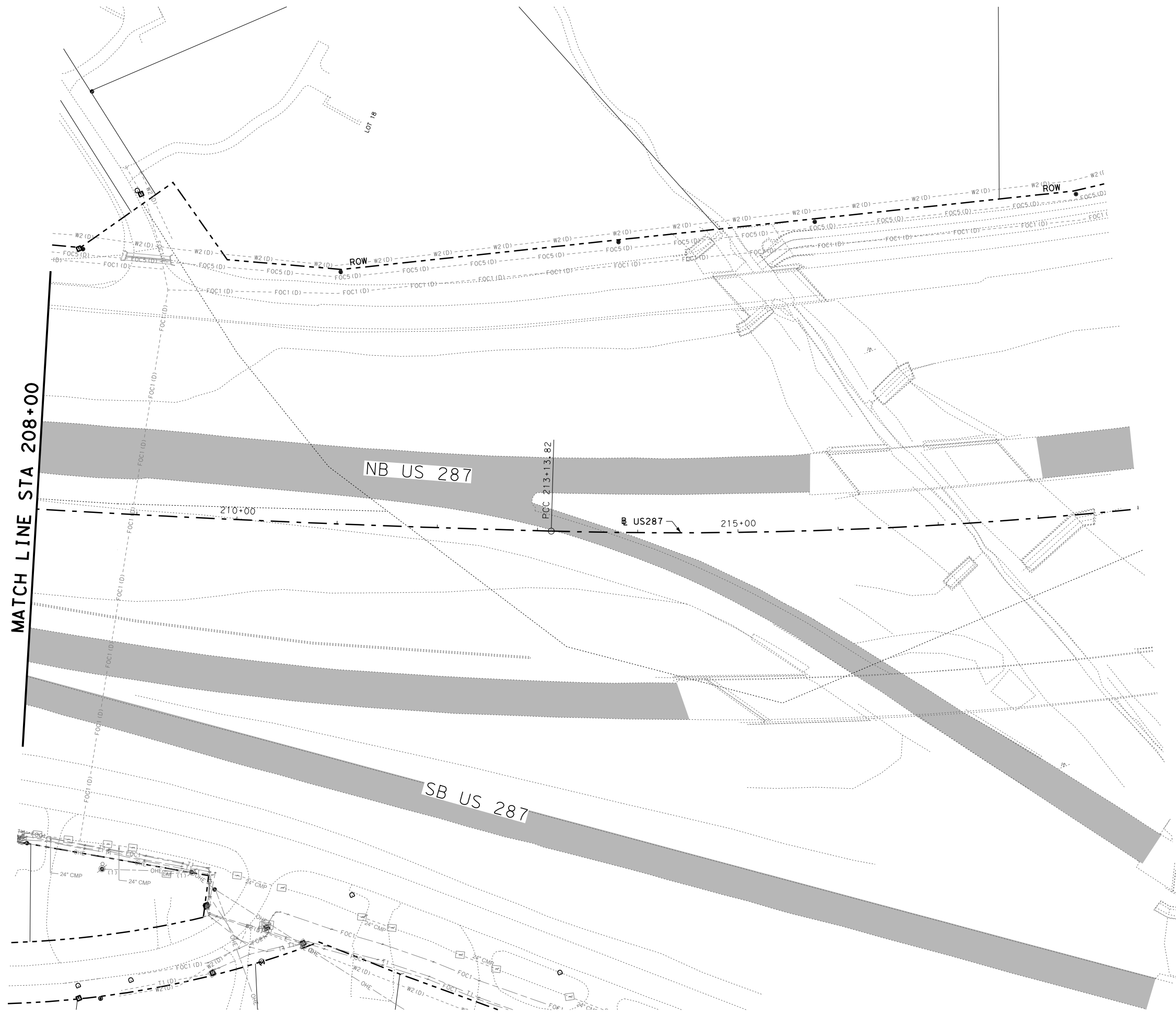
- CURVE NUMBER
- BASELINE NAME
- FOUND CONTROL MONUMENT
- PROPOSED PAVEMENT WIDENING
- PROPOSED MILL & OVERLAY

**NOTES:**

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MATCH LINE STA 208+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SURVEY CONTROL LAYOUT  
STA 208+00 TO END PROJECT**

SCALE: 1" = 100'		SHEET 19 OF 19	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			SHEET NO. 116

# US 287

CL28701 CUR CL287-1 CUR CL287-2 CUR CL287-3 CUR CL287-4 CUR CL287-5

Beginning chain US287 description

Point CL28701 N 6,857,223.1936 E 2,445,536.3993 Sta 1+00.000

Course from CL28701 to PC CL287-1 S 52° 00' 15.37" E Dist 2,543.8022

### Curve Data

```

*-----*
Curve CL287-1
P.I. Station = 31+67.790 N 6,855,334.6533 E 2,447,953.9919
Delta = 5° 46' 07.12" (LT)
Degree = 0° 33' 03.32"
Tangent = 523.9883
Length = 1,047.0912
Radius = 10,400.0000
External = 13.1918
Long Chord = 1,046.6490
Mid. Ord. = 13.1751
P.C. Station = 26+43.802 N 6,855,657.2220 E 2,447,541.0594
P.T. Station = 36+90.893 N 6,855,055.2228 E 2,448,397.2551
C.C. = N 6,863,853.0108 E 2,453,943.3282
Back = S 52° 00' 15.37" E
Ahead = S 57° 46' 22.49" E
Chord Bear = S 54° 53' 18.93" E
    
```

### Curve Data

```

*-----*
Curve CL287-2
P.I. Station = 47+65.705 N 6,854,482.0512 E 2,449,306.4826
Delta = 12° 54' 35.18" (RT)
Degree = 0° 36' 11.21"
Tangent = 1,074.8117
Length = 2,140.5213
Radius = 9,500.0000
External = 60.6077
Long Chord = 2,135.9963
Mid. Ord. = 60.2235
P.C. Station = 36+90.893 N 6,855,055.2228 E 2,448,397.2551
P.T. Station = 58+31.415 N 6,853,720.2314 E 2,450,064.6717
C.C. = N 6,847,018.7819 E 2,443,331.1307
Back = S 57° 46' 22.49" E
Ahead = S 44° 51' 47.31" E
Chord Bear = S 51° 19' 04.90" E
    
```

Course from PT CL287-2 to PC CL287-3 S 44° 51' 47.31" E Dist 4,947.1204

### Curve Data

```

*-----*
Curve CL287-3
P.I. Station = 115+22.320 N 6,849,686.5531 E 2,454,079.1258
Delta = 5° 40' 38.81" (LT)
Degree = 0° 22' 55.10"
Tangent = 743.7849
Length = 1,486.3523
Radius = 15,000.0000
External = 18.4292
Long Chord = 1,485.7443
Mid. Ord. = 18.4066
P.C. Station = 107+78.535 N 6,850,213.7432 E 2,453,554.4482
P.T. Station = 122+64.887 N 6,849,213.8544 E 2,454,653.3835
C.C. = N 6,860,794.9792 E 2,464,186.3551
Back = S 44° 51' 47.31" E
Ahead = S 50° 32' 26.12" E
Chord Bear = S 47° 42' 06.71" E
    
```

Course from PT CL287-3 to PC CL287-4 S 50° 32' 26.12" E Dist 4,618.4484

### Curve Data

```

*-----*
Curve CL287-4
P.I. Station = 191+11.983 N 6,844,862.3097 E 2,459,939.8549
Delta = 15° 23' 05.00" (LT)
Degree = 0° 20' 50.09"
Tangent = 2,228.6474
Length = 4,430.4817
Radius = 16,500.0000
External = 149.8309
Long Chord = 4,417.1839
Mid. Ord. = 148.4826
P.C. Station = 168+83.336 N 6,846,278.6853 E 2,458,219.1719
P.T. Station = 213+13.818 N 6,843,953.1839 E 2,461,974.6422
C.C. = N 6,859,017.9225 E 2,468,705.4408
Back = S 50° 32' 26.12" E
Ahead = S 65° 55' 31.12" E
Chord Bear = S 58° 13' 58.62" E
    
```

### Curve Data

```

*-----*
Curve CL287-5
P.I. Station = 223+20.428 N 6,843,542.5600 E 2,462,893.6924
Delta = 25° 13' 04.75" (LT)
Degree = 1° 16' 23.66"
Tangent = 1,006.6109
Length = 1,980.6161
Radius = 4,500.0000
External = 111.2108
Long Chord = 1,964.6678
Mid. Ord. = 108.5287
P.C. Station = 213+13.818 N 6,843,953.1839 E 2,461,974.6422
P.T. Station = 232+94.434 N 6,843,562.6448 E 2,463,900.1029
C.C. = N 6,848,061.7490 E 2,463,810.3145
Back = S 65° 55' 31.12" E
Ahead = N 88° 51' 24.13" E
Chord Bear = S 78° 32' 03.49" E
    
```

Ending chain US287 description



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 SURVEY CONTROL DATA

SHEET 1 OF 1

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	STATE	DISTRICT	COUNTY
CHECK CPM	TEXAS	DALLAS	ELLIS
	CONTROL	SECTION	JOB
	0172	05	129

c:\bms\br idgef armer -pw\chr is.myr ick\dms35295\0387-HZ\_Control\_Data-01.dgn 5/9/2024 7:07:36 AM cMyr.ick

5/9/2024 1:22:19 PM

cMyr.icck

c:\bms\br\idgfarmer-pw\chr\is.myr\icck\dms35308\0387-Removals-01.dgn

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SCALE: 1" = 100'

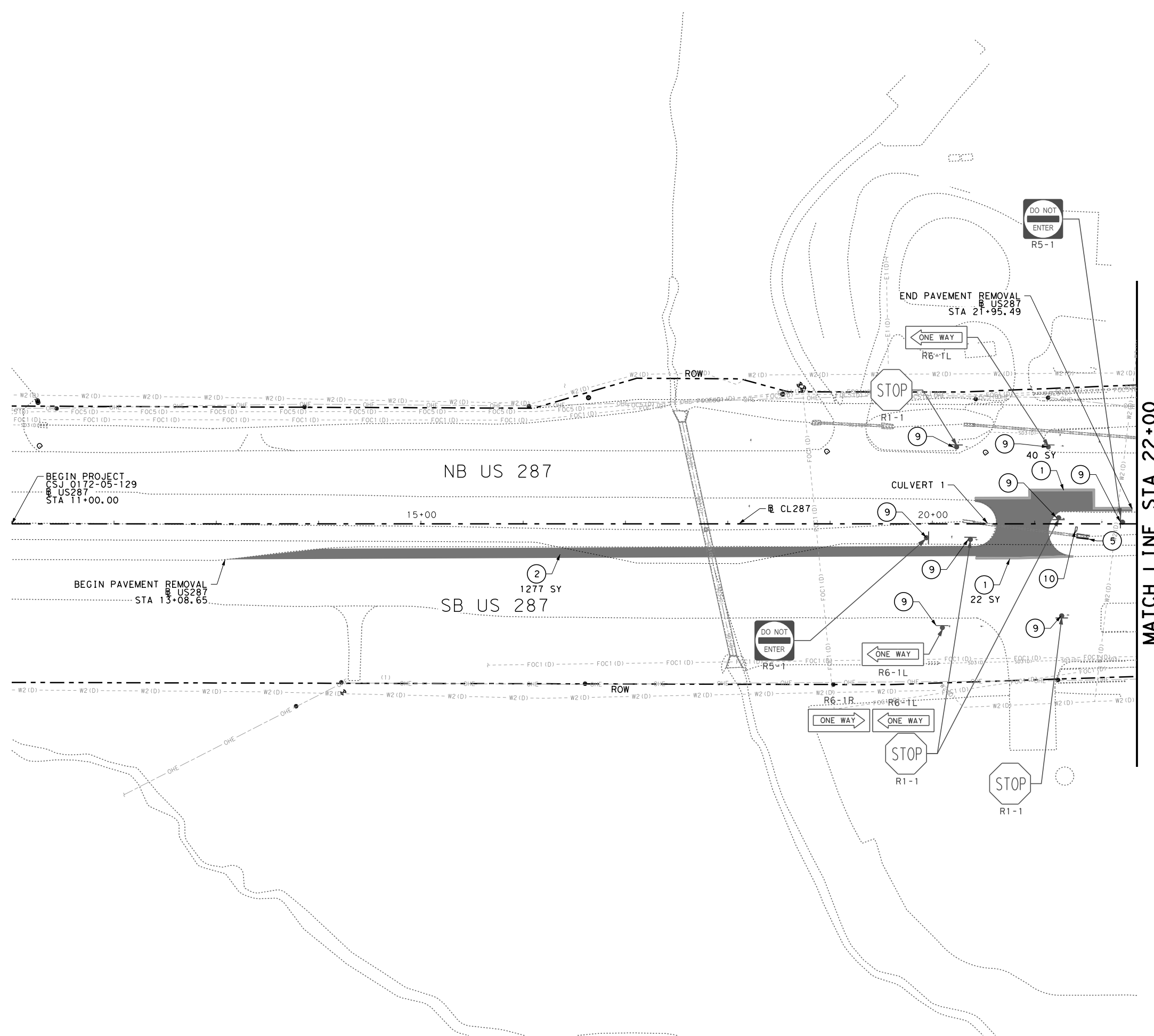


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

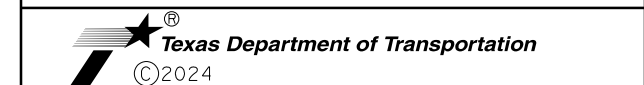
**NOTES:**

1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
BEGIN PROJECT TO STA 22+00**

SCALE: 1" = 100'		SHEET 1 OF 20	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
	CONTROL	SECTION	JOB
			118

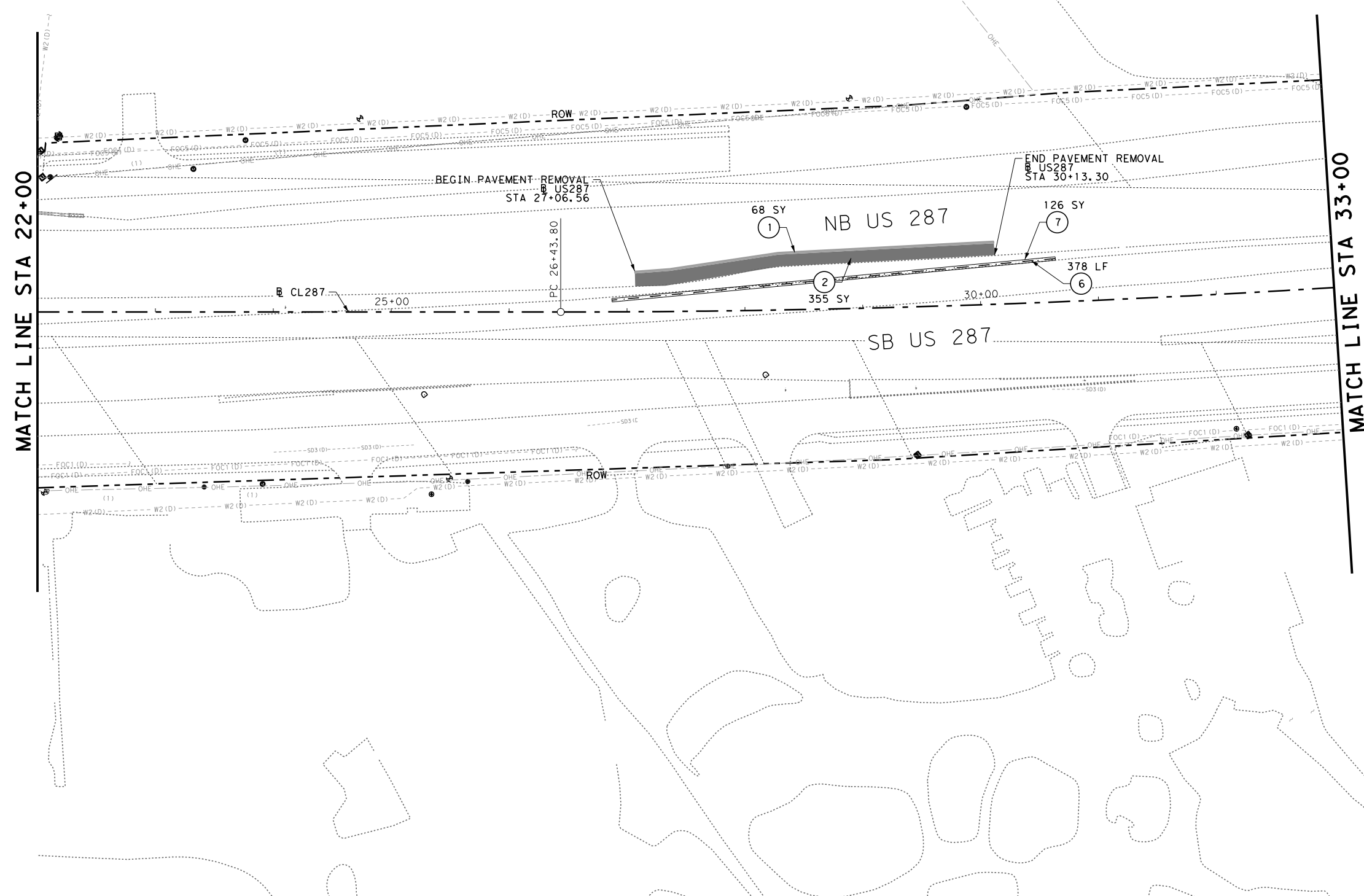


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

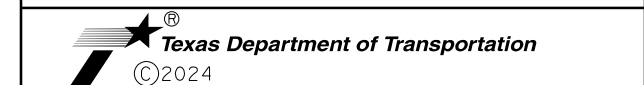
**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 22+00 TO STA 33+00**

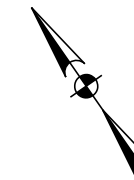
SCALE: 1" = 100'		SHEET 2 OF 20	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			SHEET NO. 119

5/9/2024 1:22:30 PM

cMyr.ick

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50 0 50 100  
SCALE: 1" = 100'



**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.

NO WORK ON THIS SHEET

MATCH LINE STA 33+00

MATCH LINE STA 44+00

NB US 287

SB US 287

B-US287

40+00

35+00

PRC 36+90.89



*Christopher P.J. Myrick*  
05/10/24

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 33+00 TO STA 44+00**

SCALE: 1" = 100' SHEET 3 OF 20

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 120
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	



**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

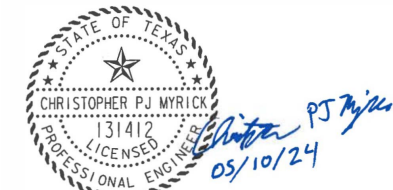
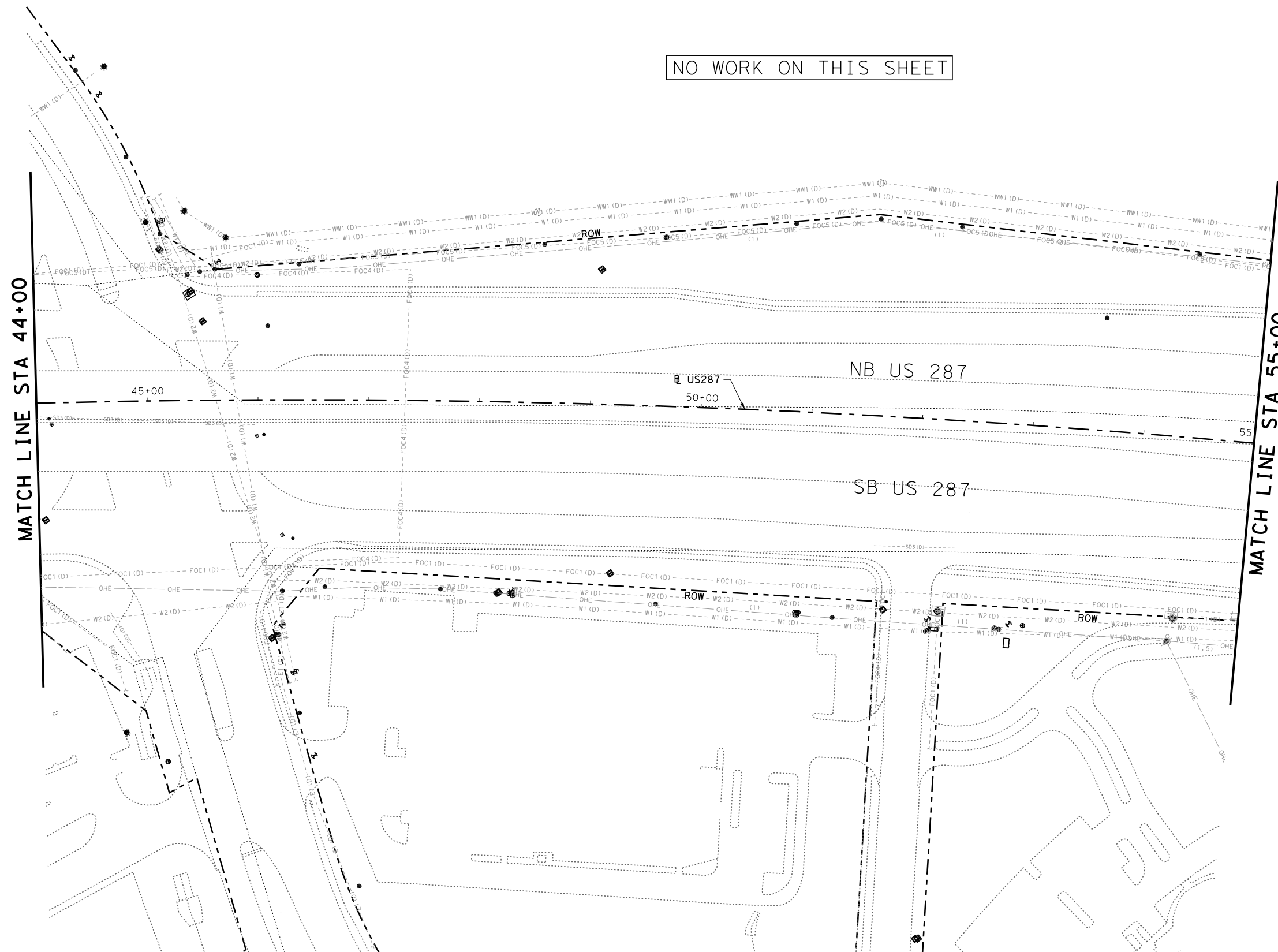
1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.

NO WORK ON THIS SHEET

MATCH LINE STA 44+00

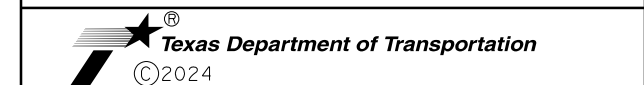
MATCH LINE STA 55+00

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c:\bms\br\dgefarmer-pw\chr\is.myr\ick\dms35308\0387-Removals-04.dgn



NO.	DATE	DESCRIPTION	APPROV.

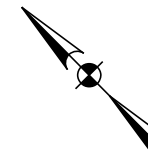
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264













**US 287  
REMOVALS  
STA 44+00 TO STA 55+00**

SCALE: 1" = 100'		SHEET 4 OF 20	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			SHEET NO. 121





**LEGEND**

-  ① PLANE ASPHALT CONC PAV (0"-2")
-  ② REMOVE STAB BASE & ASPH. PAV (18"-22")
-  ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
-  ④ REMOVE STRUCTURE (PIPE)
-  ⑤ REMOVE STRUCTURE (SET)
-  ⑥ REMOVE CABLE BARRIER
-  ⑦ REMOVE CONC (RIPRAP)
-  ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
-  ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
-  ⑩ REMOVE DELINEATOR & OBJECT MARKERS

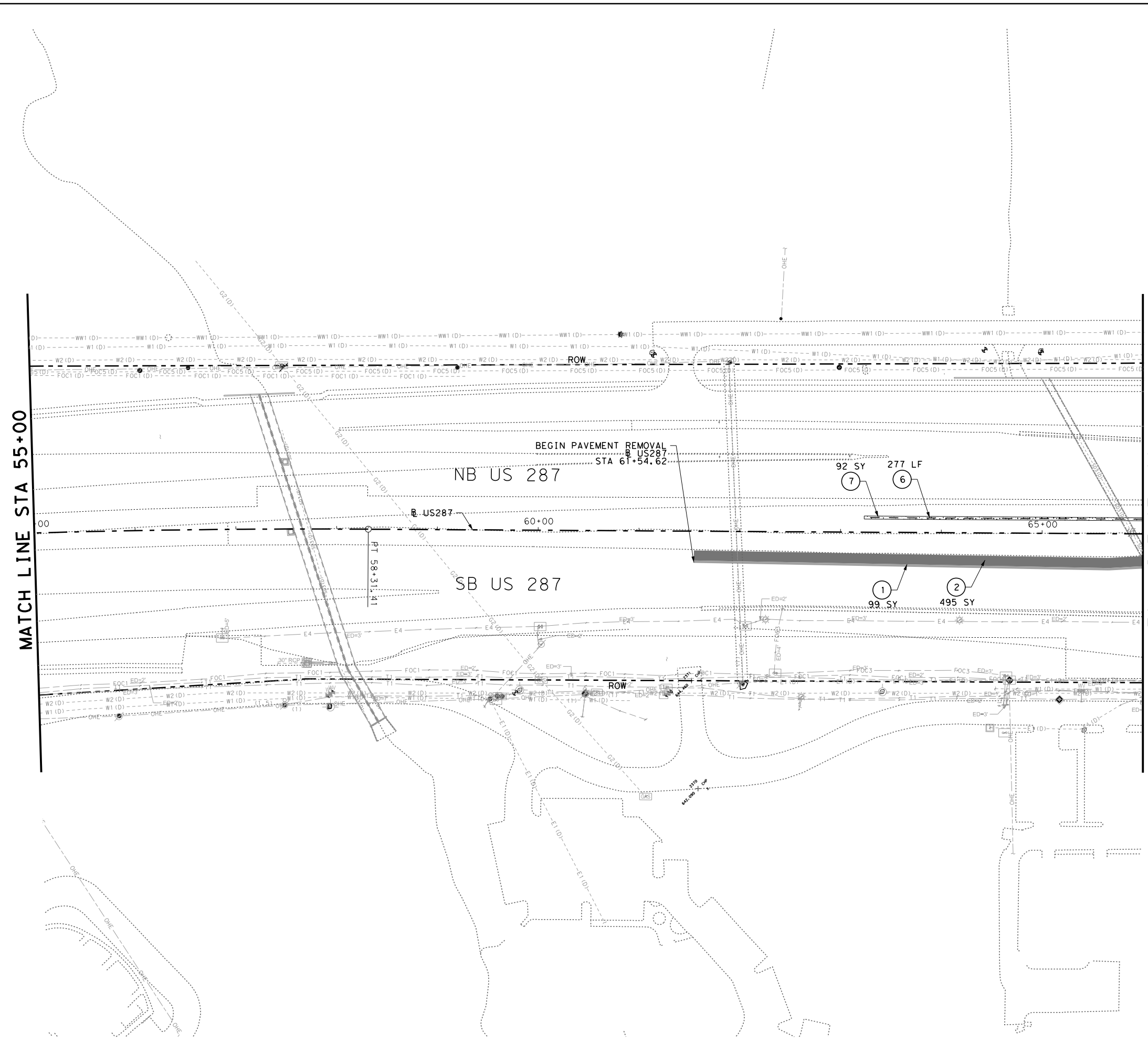
**NOTES:**

1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.

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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 55+00 TO STA 66+00**

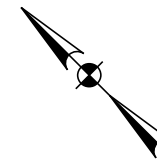
SCALE: 1" = 100'		SHEET 5 OF 20	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			SHEET NO. 122

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50 0 50 100  
SCALE: 1" = 100'

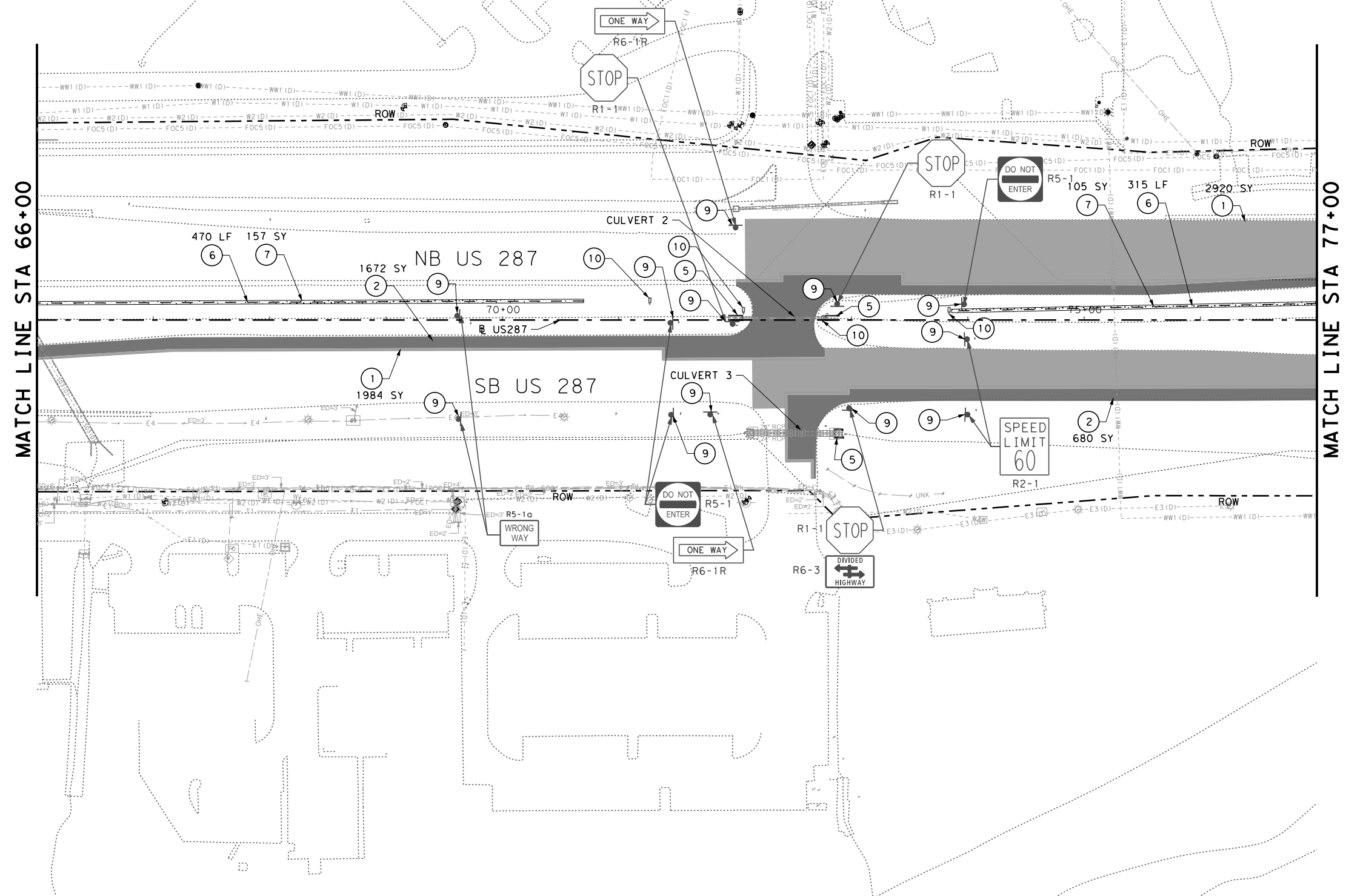


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 66+00 TO STA 77+00**

SCALE: 1" = 100' SHEET 6 OF 20

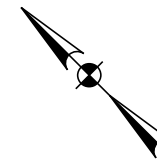
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 123
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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50 0 50 100  
SCALE: 1" = 100'



**LEGEND**

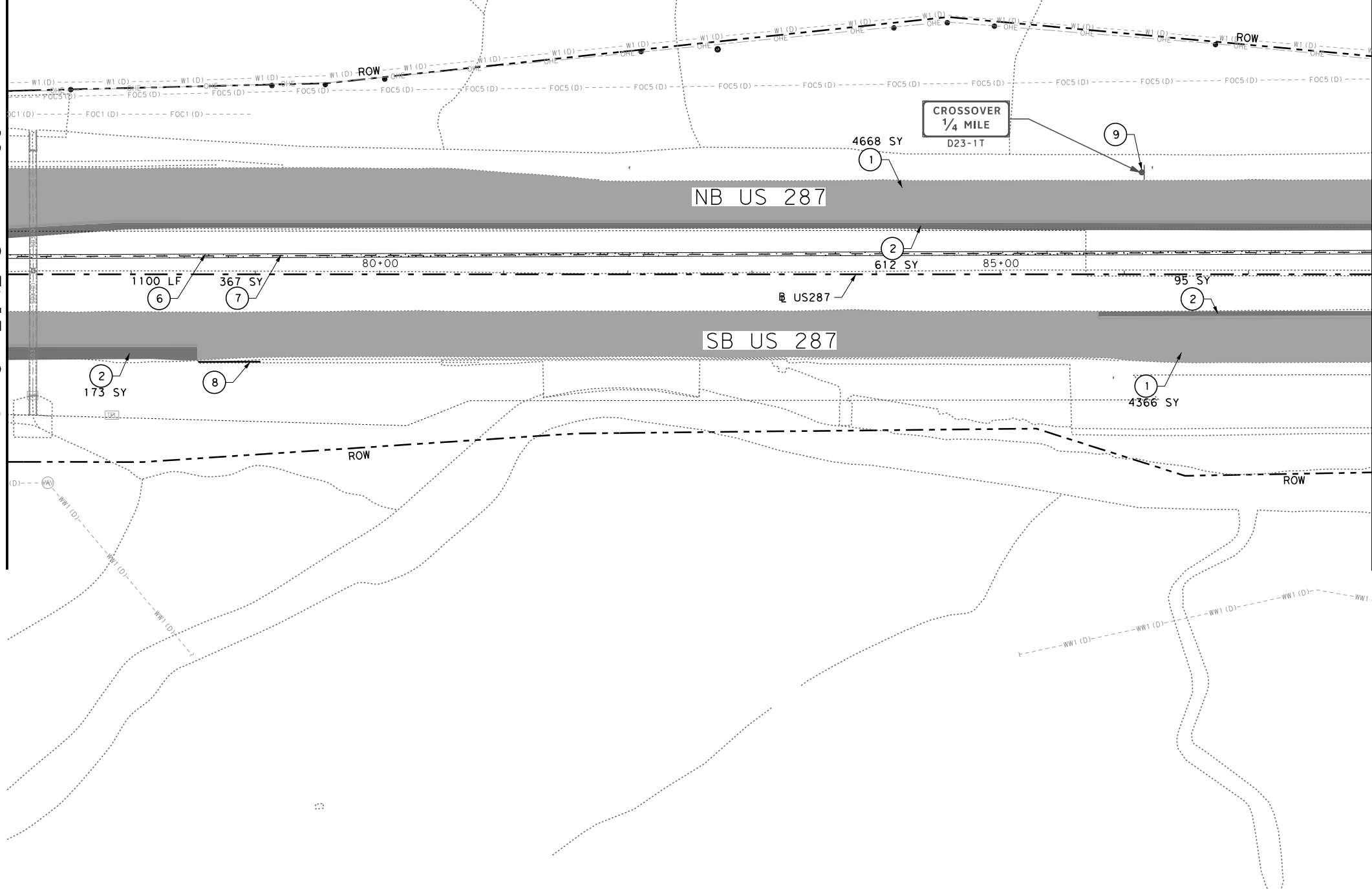
- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.

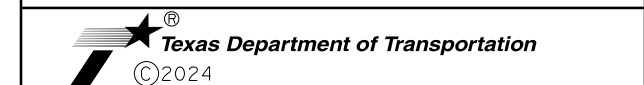
MATCH LINE STA 77+00

MATCH LINE STA 88+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 77+00 TO STA 88+00**

SCALE: 1" = 100' SHEET 7 OF 20

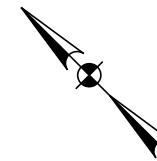
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GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 124
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'

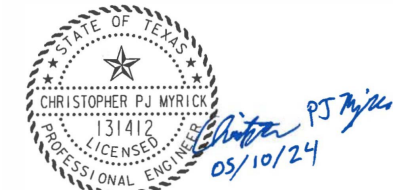
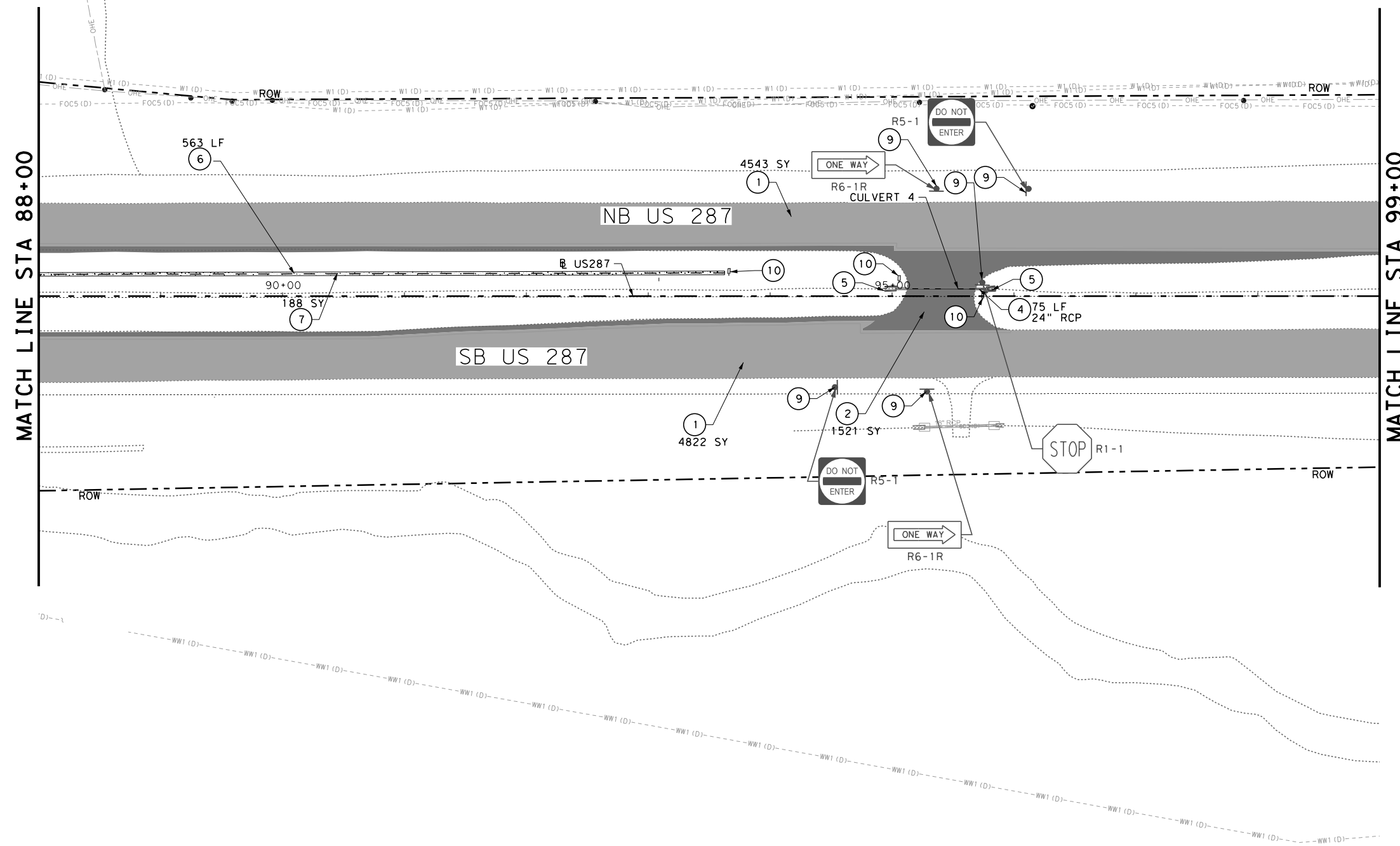


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIP-RAP)
- ⑧ REMOVE MGBF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

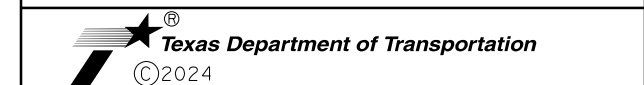
**NOTES:**

1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 88+00 TO STA 99+00**

SCALE: 1" = 100' SHEET 8 OF 20

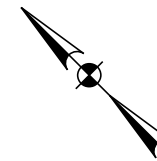
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 125
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'

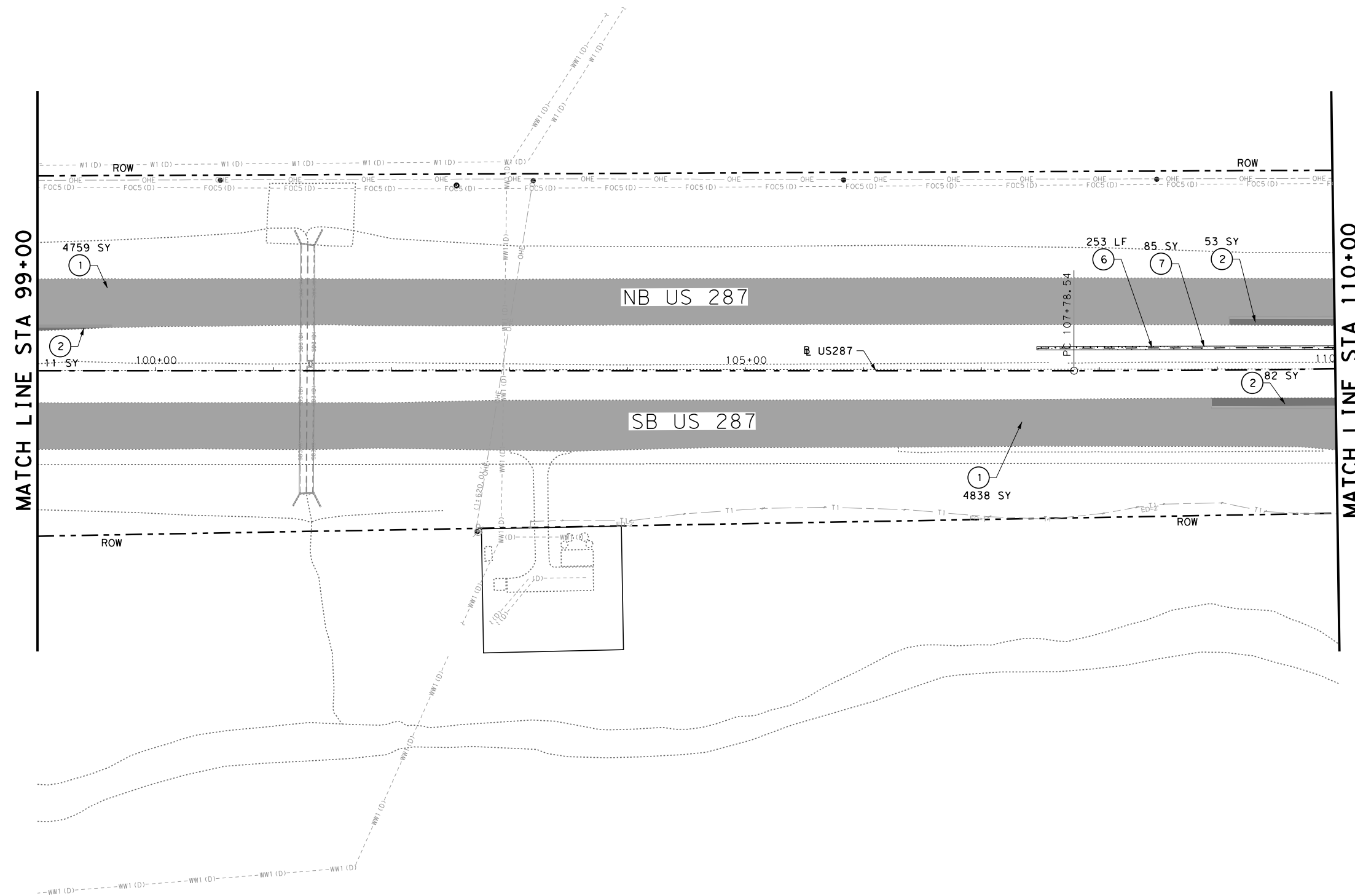


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

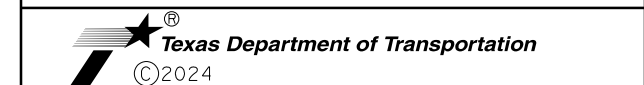
**NOTES:**

1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 99+00 TO STA 110+00**

SCALE: 1" = 100' SHEET 9 OF 20

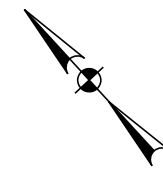
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 126
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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50 0 50 100  
SCALE: 1" = 100'



**LEGEND**

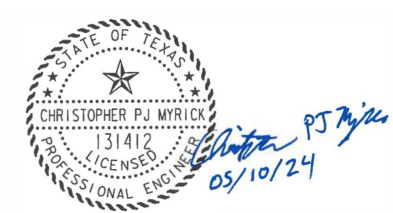
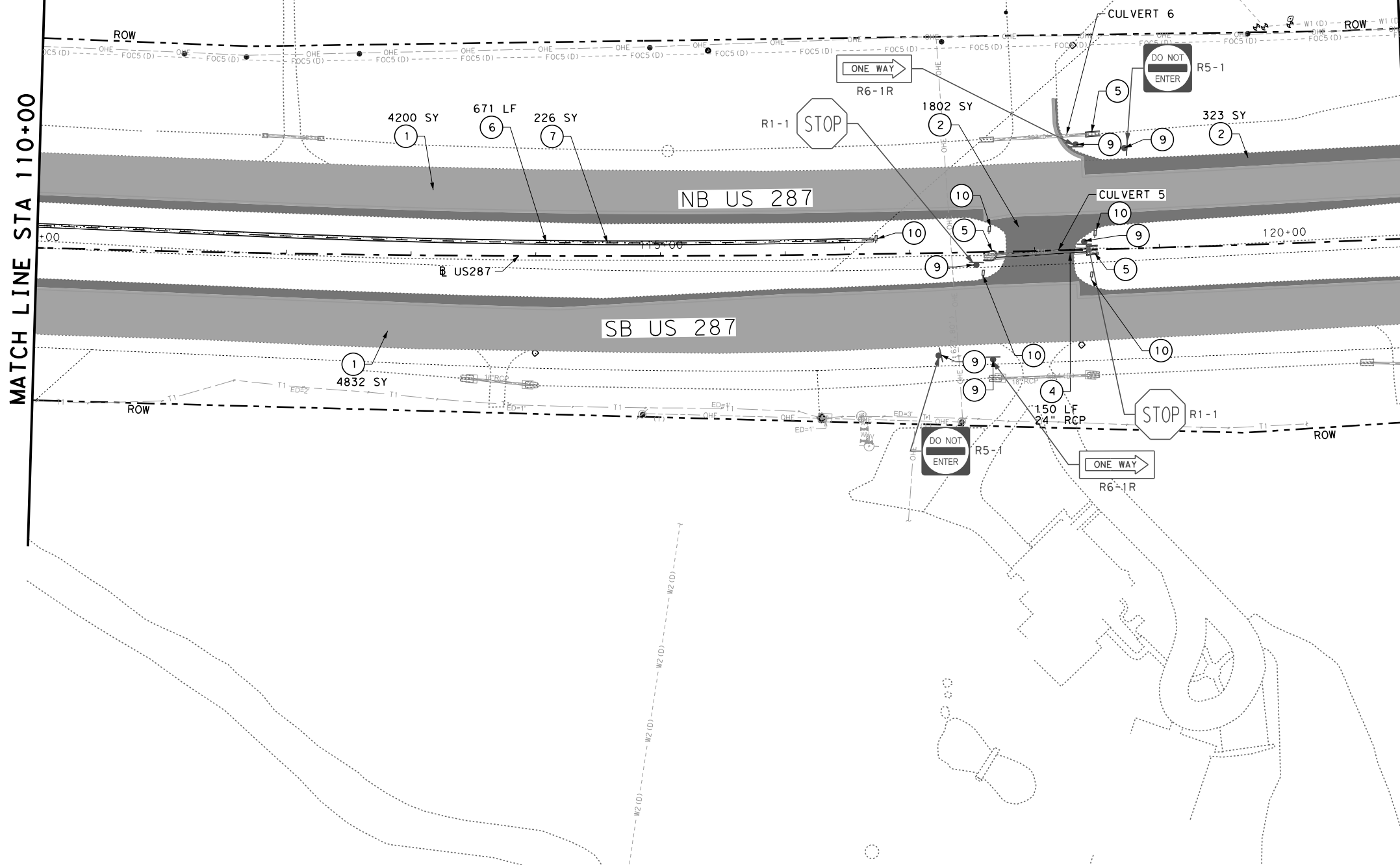
- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.

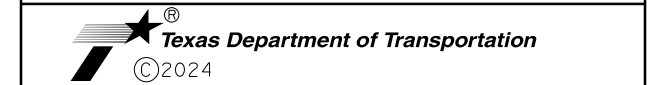
MATCH LINE STA 110+00

MATCH LINE STA 121+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 110+00 TO STA 121+00**

SCALE: 1" = 100' SHEET 10 OF 20

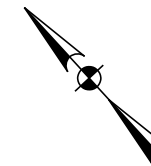
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 127
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'



**LEGEND**

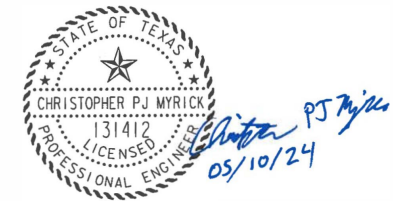
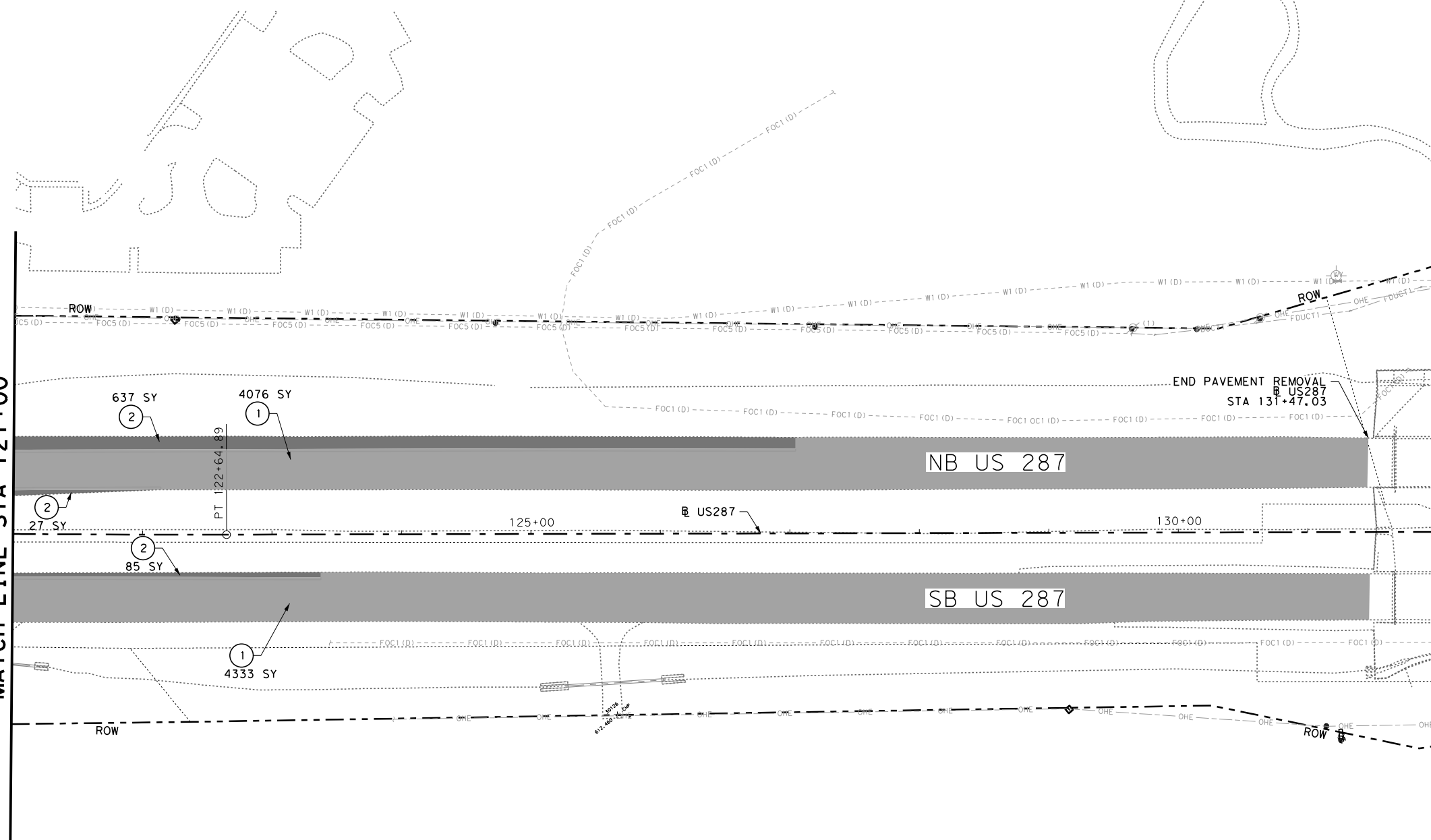
- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.

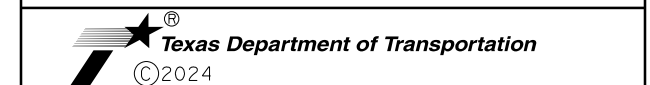
MATCH LINE STA 121+00

MATCH LINE STA 132+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 121+00 TO STA 132+00**

SCALE: 1" = 100' SHEET 11 OF 20

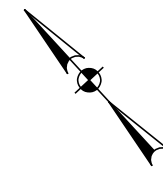
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 128
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'

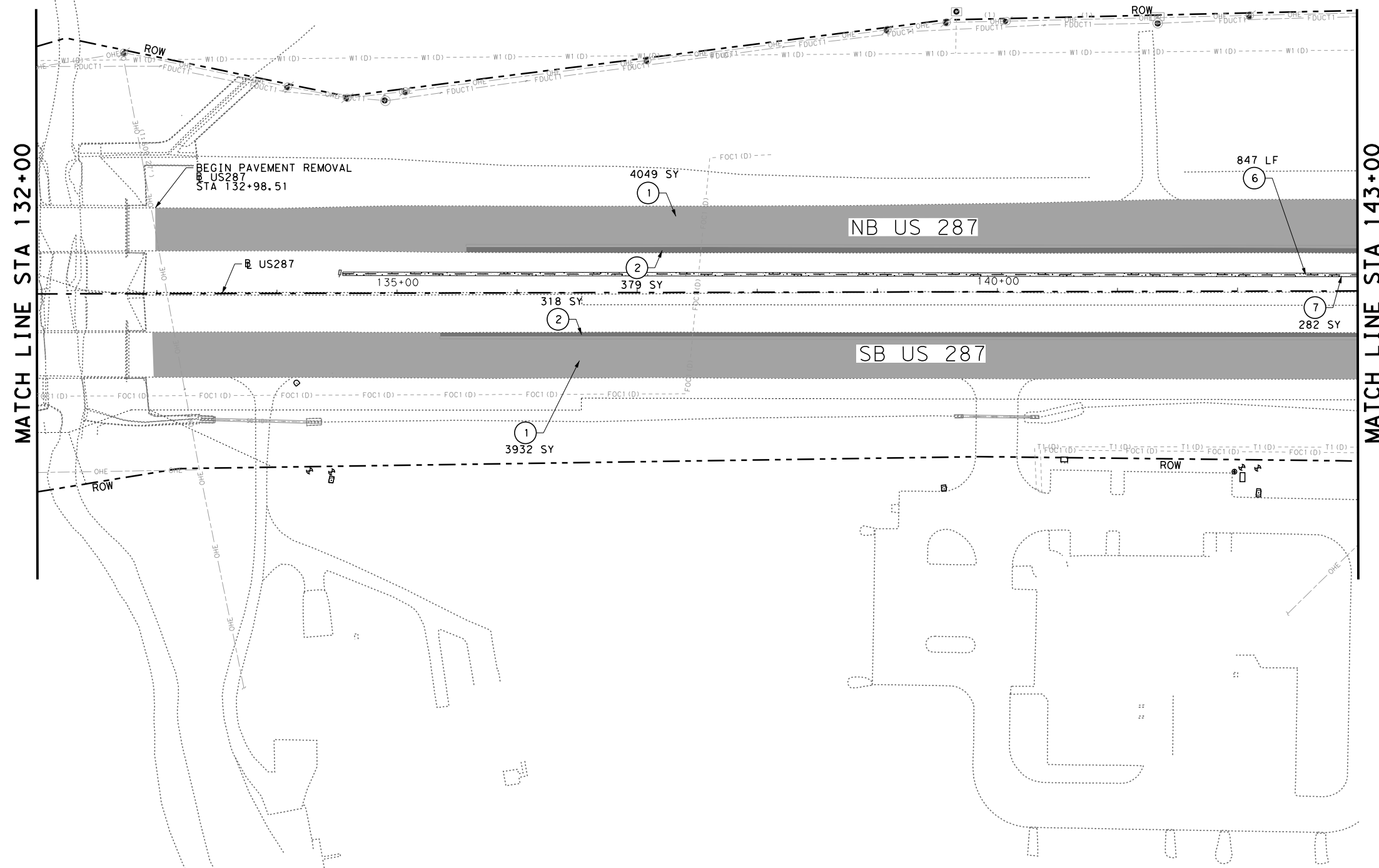


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

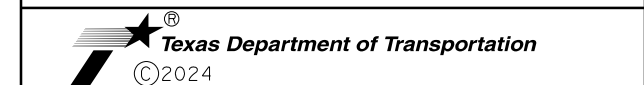
**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 132+00 TO STA 143+00**

SCALE: 1" = 100' SHEET 12 OF 20

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 129
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

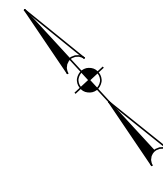


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SCALE: 1" = 100'

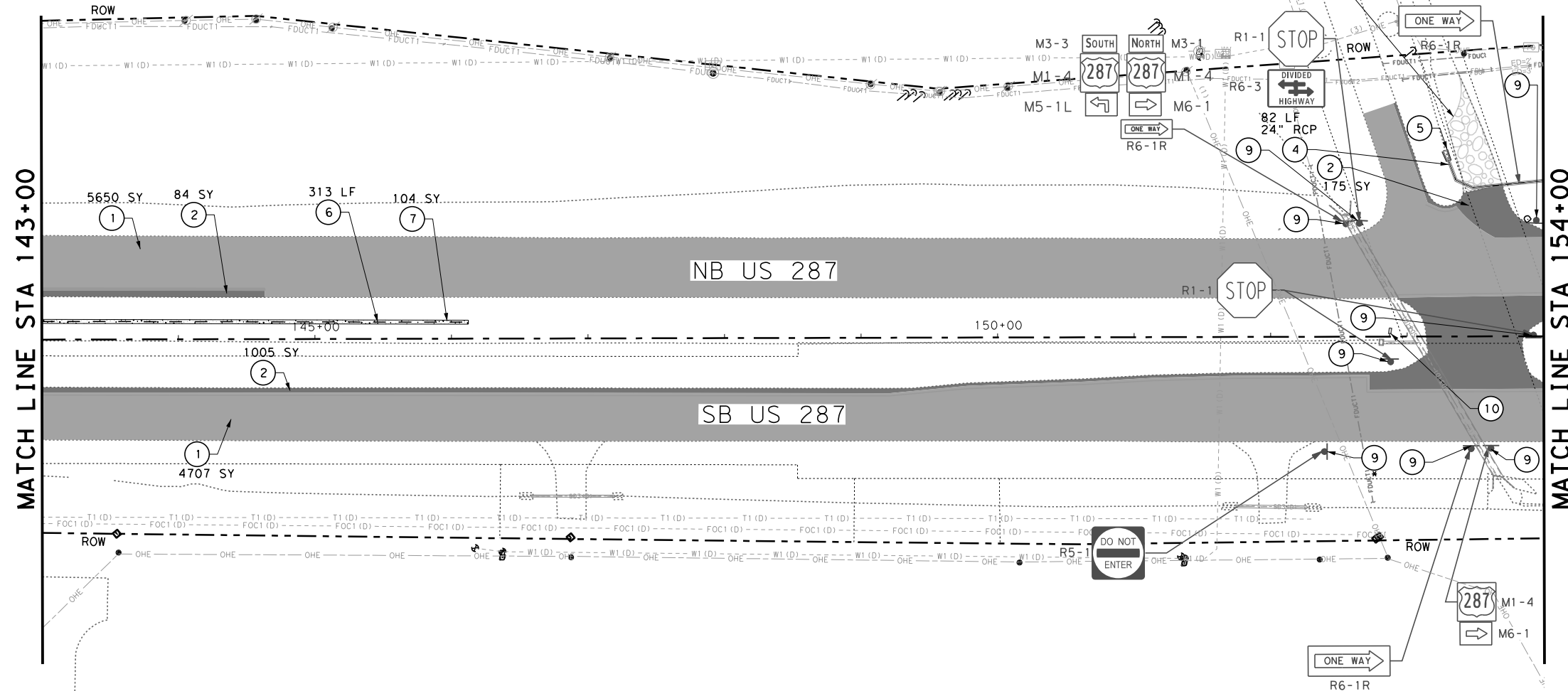


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIP-RAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

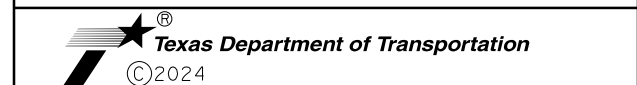
**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.
- \* REMOVAL OF SIGN ONLY, SUPPORT TO REMAIN FOR USE WITH EXIST SIGN TO REMAIN



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 143+00 TO STA 154+00**

SCALE: 1" = 100'		SHEET 13 OF 20	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			130

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SCALE: 1" = 100'

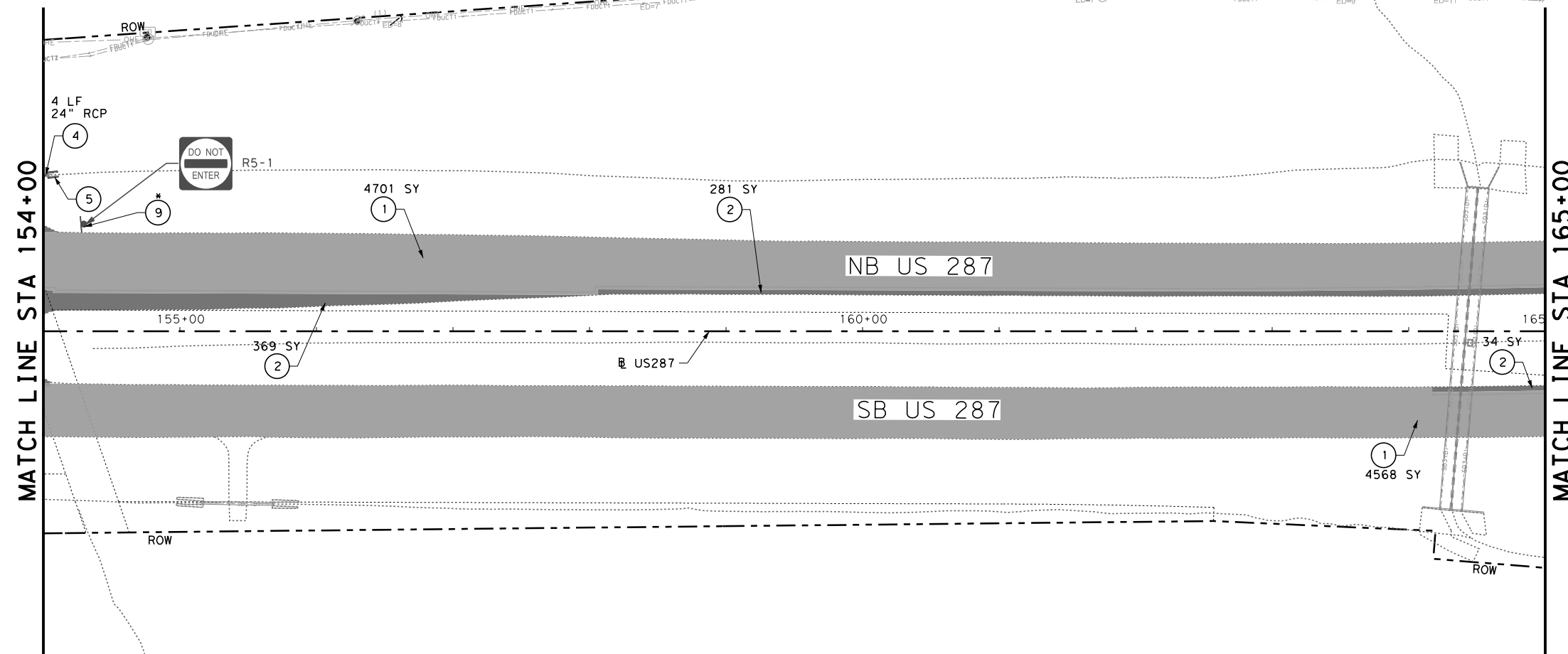


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

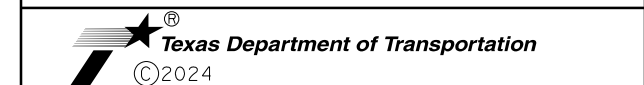
**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.
- \* REMOVAL OF SIGN ONLY, SUPPORT TO REMAIN FOR USE WITH EXIST SIGN TO REMAIN



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 154+00 TO STA 165+00**

SCALE: 1" = 100' SHEET 14 OF 20

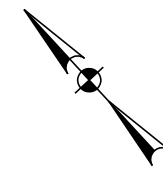
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 131
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'



**LEGEND**

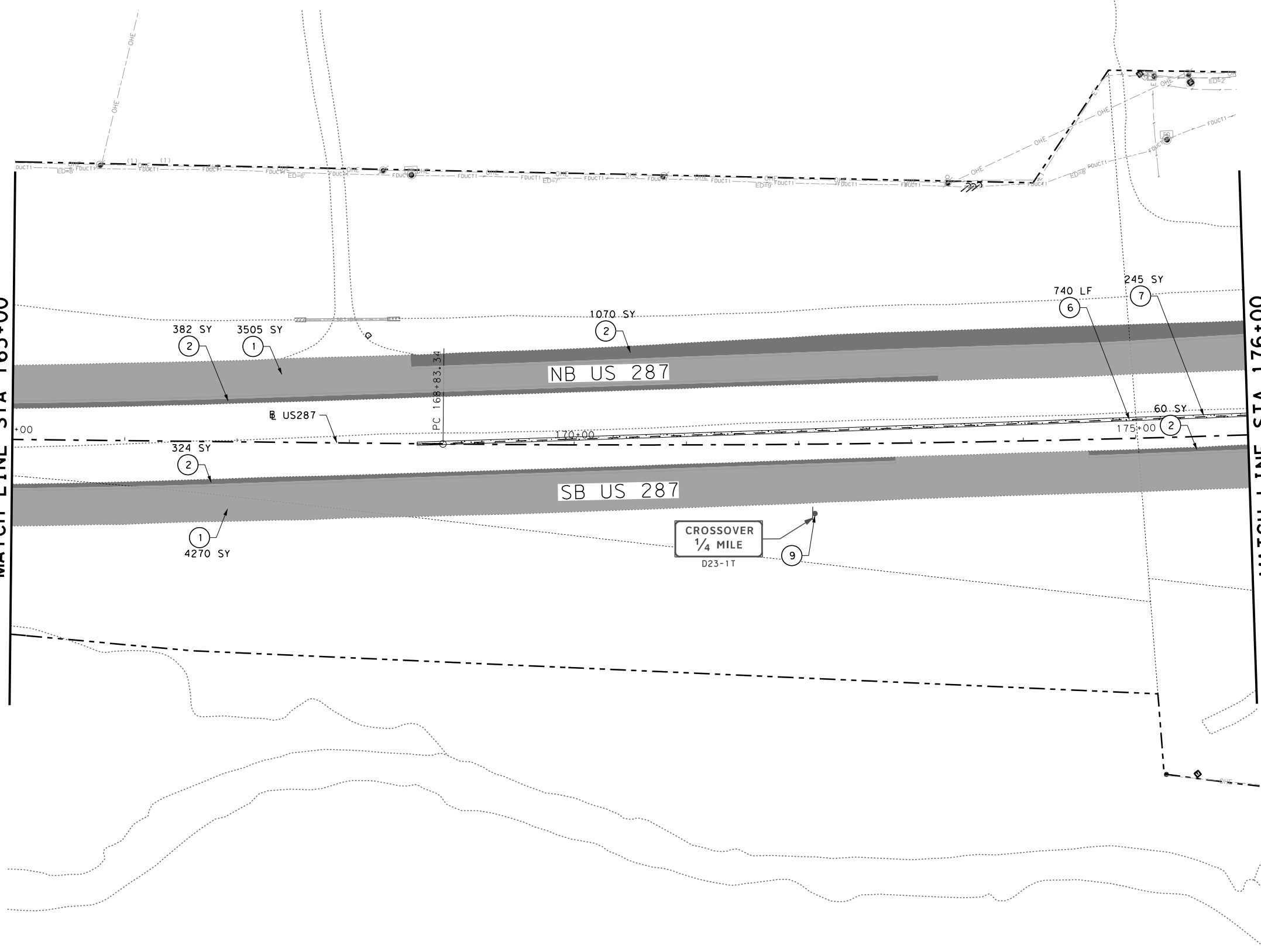
- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.

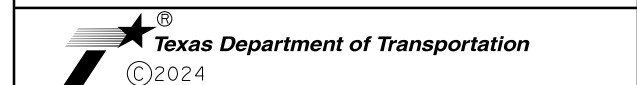
MATCH LINE STA 165+00

MATCH LINE STA 176+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 165+00 TO STA 176+00**

SCALE: 1" = 100' SHEET 15 OF 20

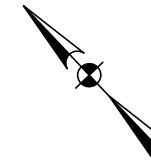
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 132
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'

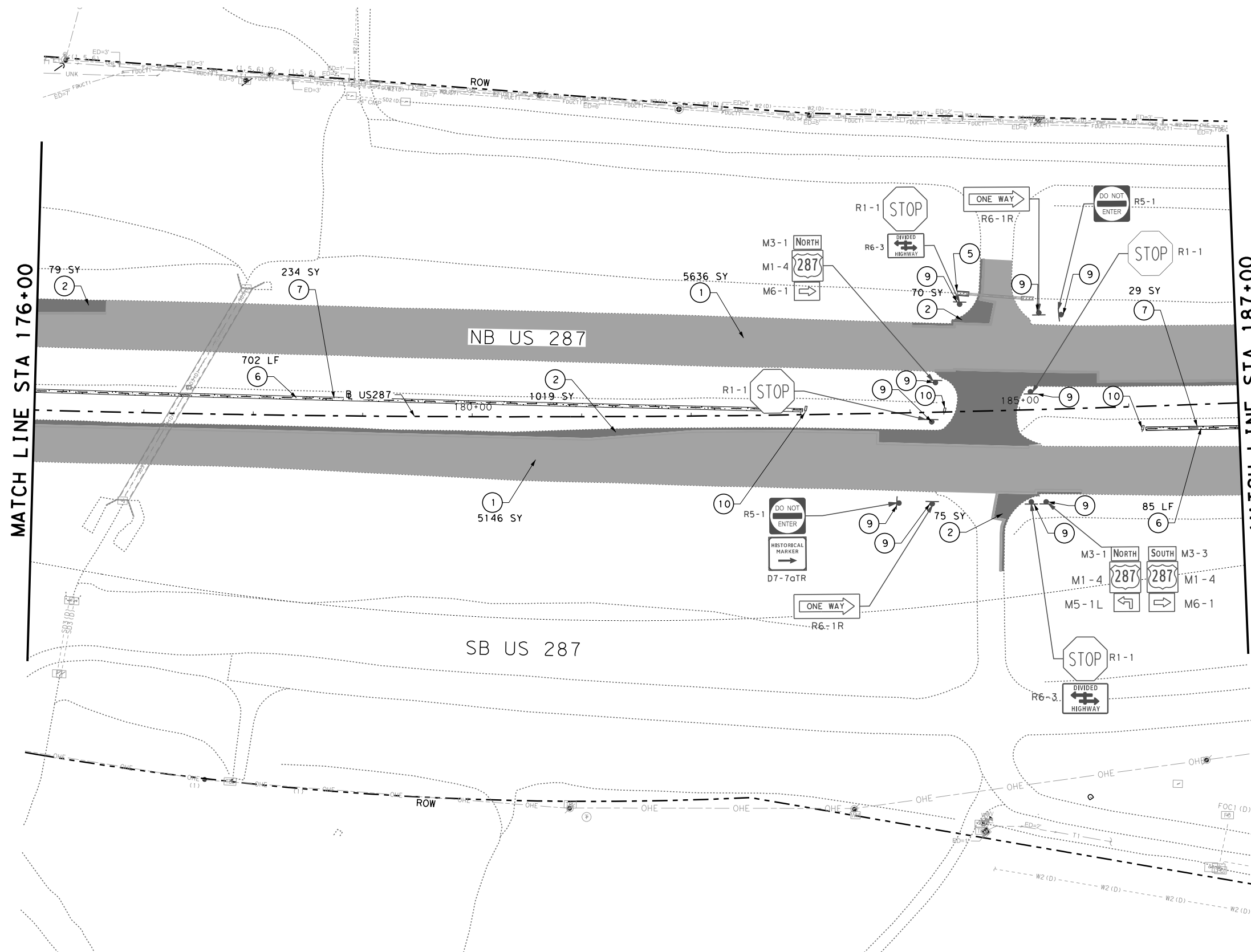


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

**Texas Department of Transportation**  
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**US 287  
REMOVALS  
STA 176+00 TO STA 187+00**

SCALE: 1" = 100' SHEET 16 OF 20

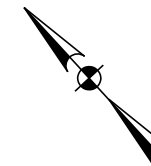
DESIGN CPM	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS CPM	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK SA	CONTROL 0172	SECTION 05	JOB 129
CHECK CPM			SHEET NO. 133

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






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SCALE: 1" = 100'

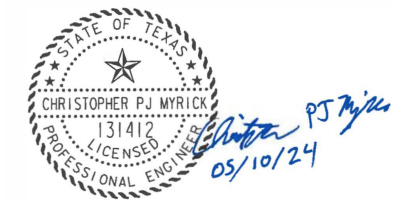
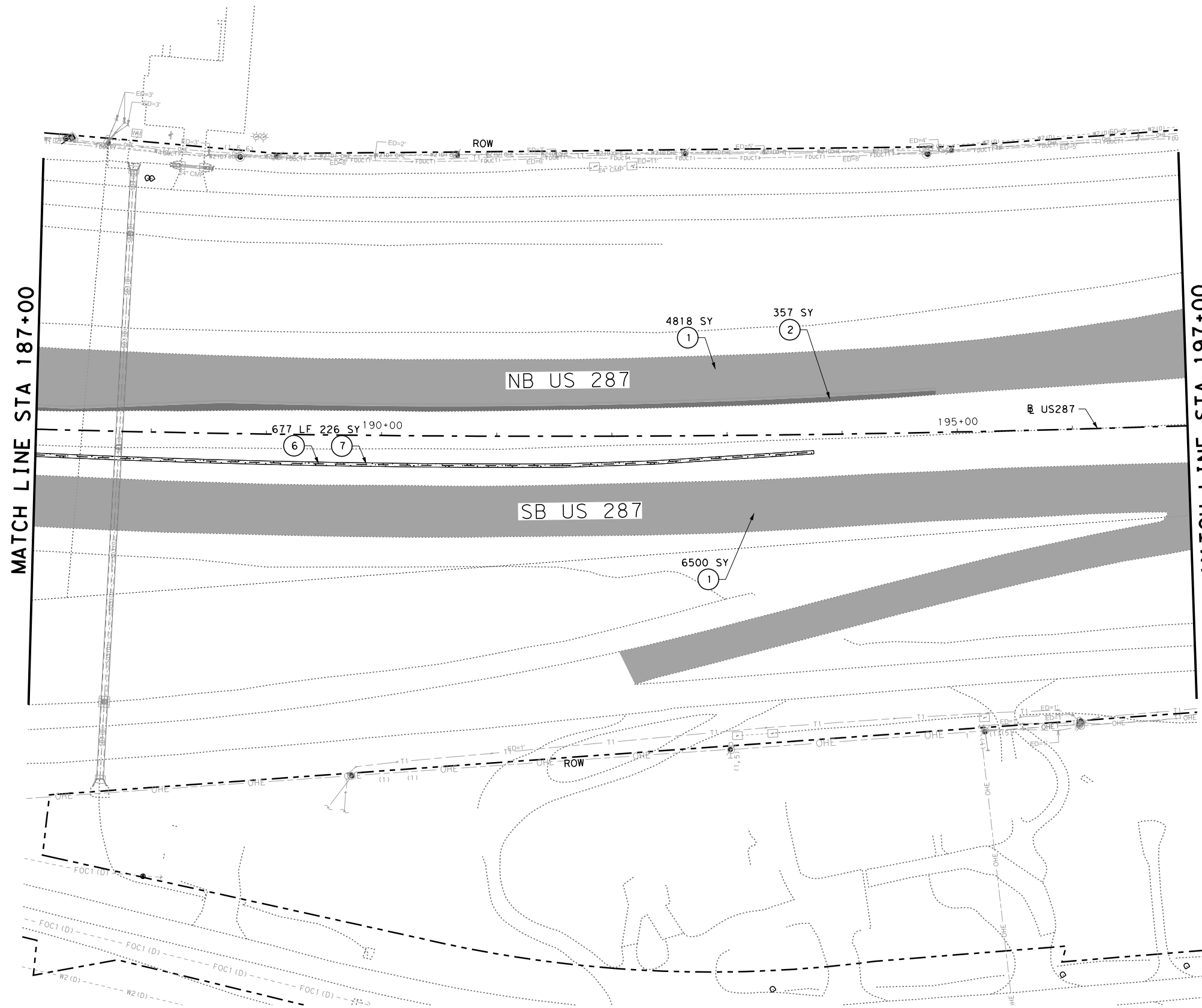


**LEGEND**

-  ① PLANE ASPHALT CONC PAV (0"-2")
-  ② REMOVE STAB BASE & ASPH. PAV (18"-22")
-  ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
-  ④ REMOVE STRUCTURE (PIPE)
-  ⑤ REMOVE STRUCTURE (SET)
-  ⑥ REMOVE CABLE BARRIER
-  ⑦ REMOVE CONC (RIPRAP)
-  ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
-  ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
-  ⑩ REMOVE DELINEATOR & OBJECT MARKERS

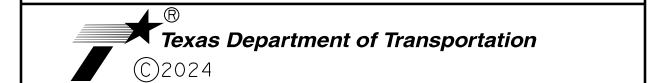
**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 186+00 TO STA 197+00**

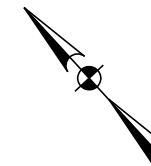
SCALE: 1" = 100'		SHEET 17 OF 20	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			SHEET NO. 134

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SCALE: 1" = 100'

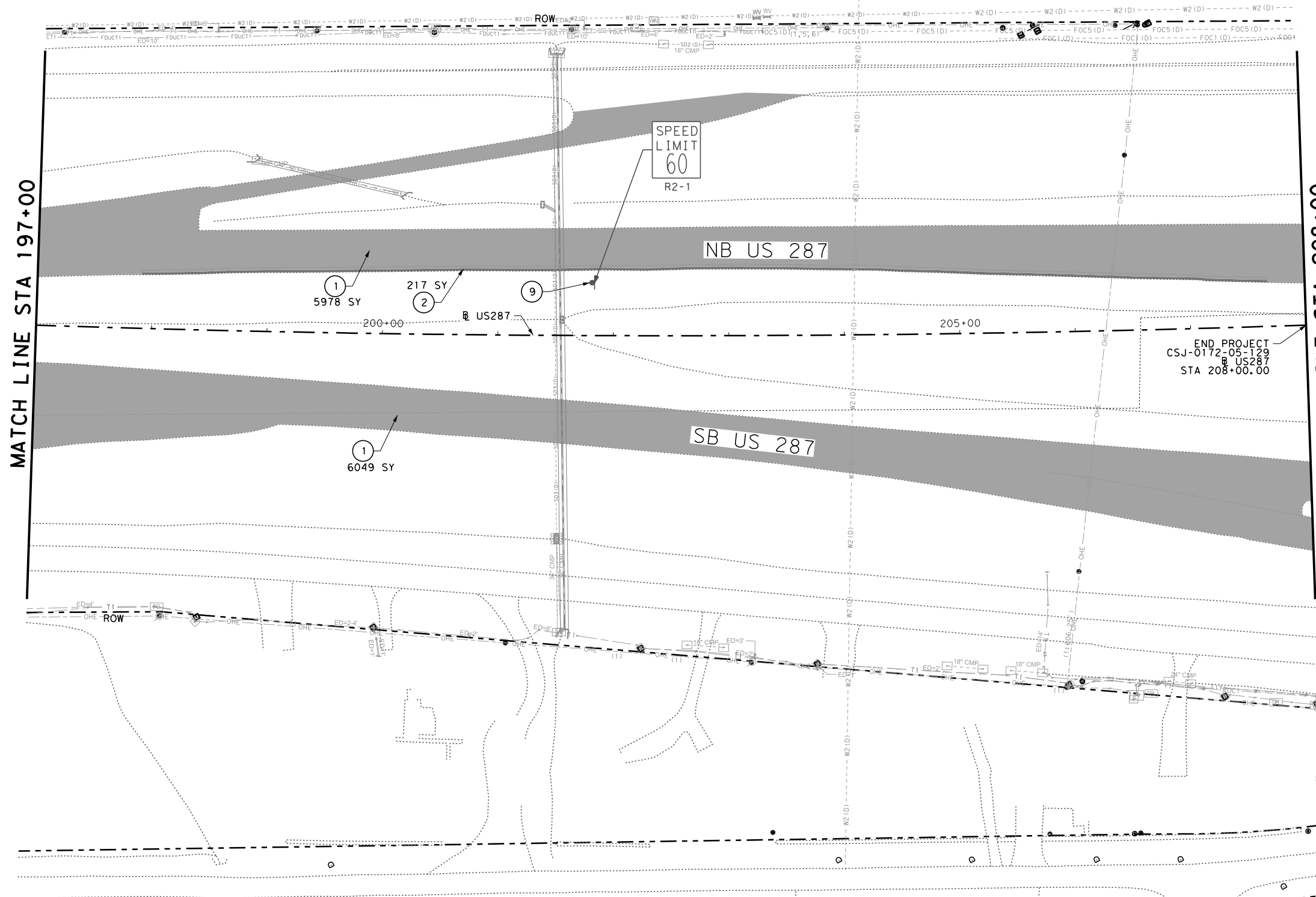


**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

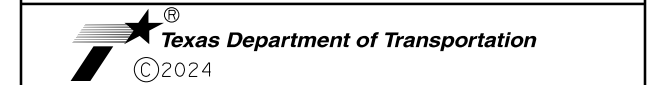
**NOTES:**

- 1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
REMOVALS  
STA 197+00 TO STA 208+00**

SCALE: 1" = 100' SHEET 18 OF 20

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO.
CHECK CPM	CONTROL	SECTION	JOB	135
	0172	05	129	



**LEGEND**

- ① PLANE ASPHALT CONC PAV (0"-2")
- ② REMOVE STAB BASE & ASPH. PAV (18"-22")
- ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
- ④ REMOVE STRUCTURE (PIPE)
- ⑤ REMOVE STRUCTURE (SET)
- ⑥ REMOVE CABLE BARRIER
- ⑦ REMOVE CONC (RIPRAP)
- ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
- ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
- ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



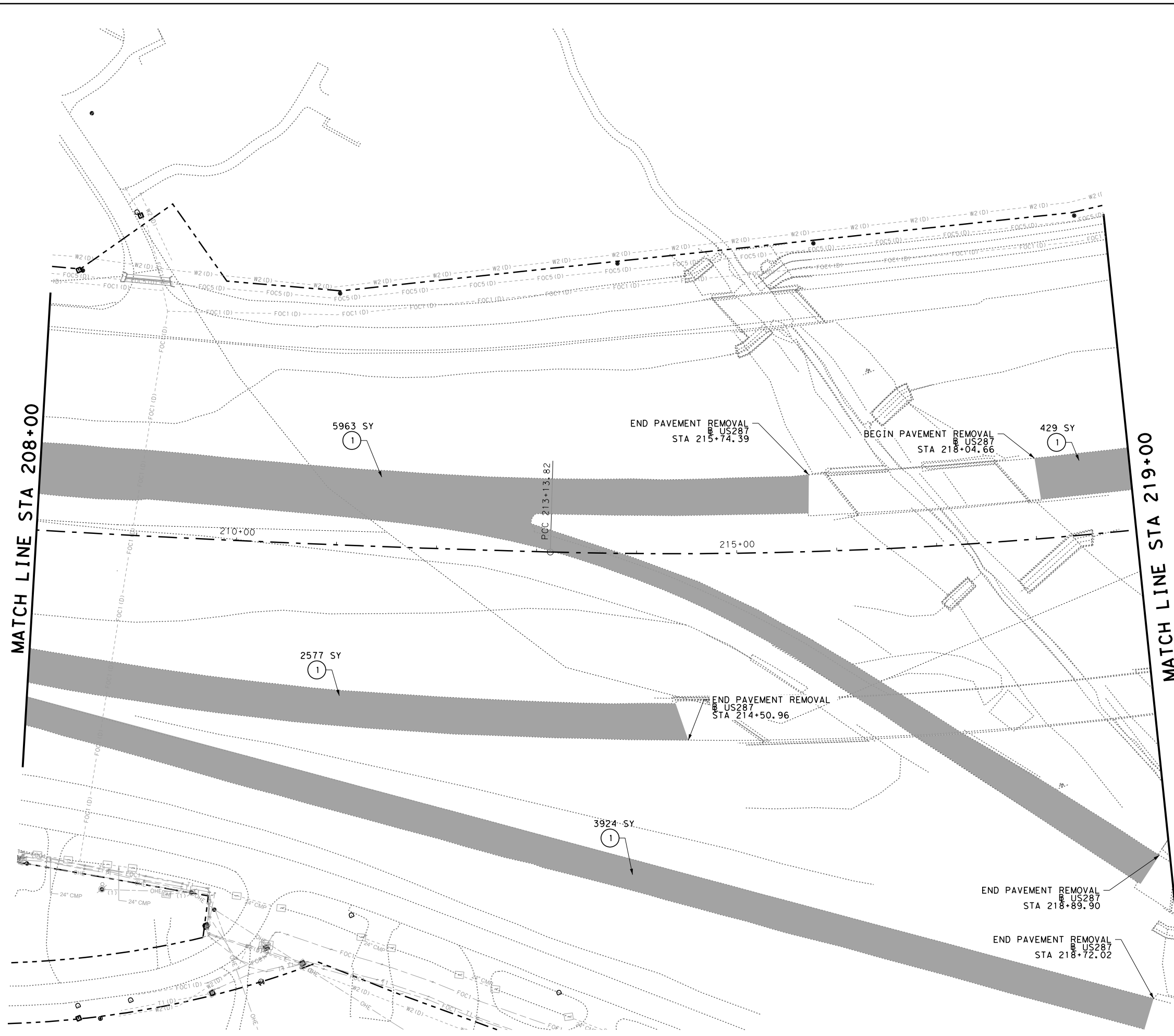
NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPB REGISTRATION NO. 264

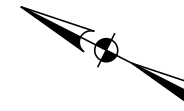


**US 287  
REMOVALS  
STA 208+00 TO STA 219+00**











SCALE: 1" = 100'		SHEET 19 OF 20	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	
GRAPHICS CPM	6	SEE TITLE SHEET	
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129
			HIGHWAY NO. US 287
			SHEET NO. 136



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**LEGEND**

-  ① PLANE ASPHALT CONC PAV (0"-2")
-  ② REMOVE STAB BASE & ASPH. PAV (18"-22")
-  ③ REMOVE STAB BASE & ASPH. PAV (6") (DRVWY)
-  ④ REMOVE STRUCTURE (PIPE)
-  ⑤ REMOVE STRUCTURE (SET)
-  ⑥ REMOVE CABLE BARRIER
-  ⑦ REMOVE CONC (RIPRAP)
-  ⑧ REMOVE MBGF TERMINAL ANCHOR SECTION
-  ⑨ REMOVE EXIST SMALL ROAD SIGN ASSEMBLY
-  ⑩ REMOVE DELINEATOR & OBJECT MARKERS

**NOTES:**

1. REMOVAL OF EXISTING FLEXBASE MATERIAL OR LIME TREATED SUBGRADE IS SUBSIDIARY TO EXCAVATION.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

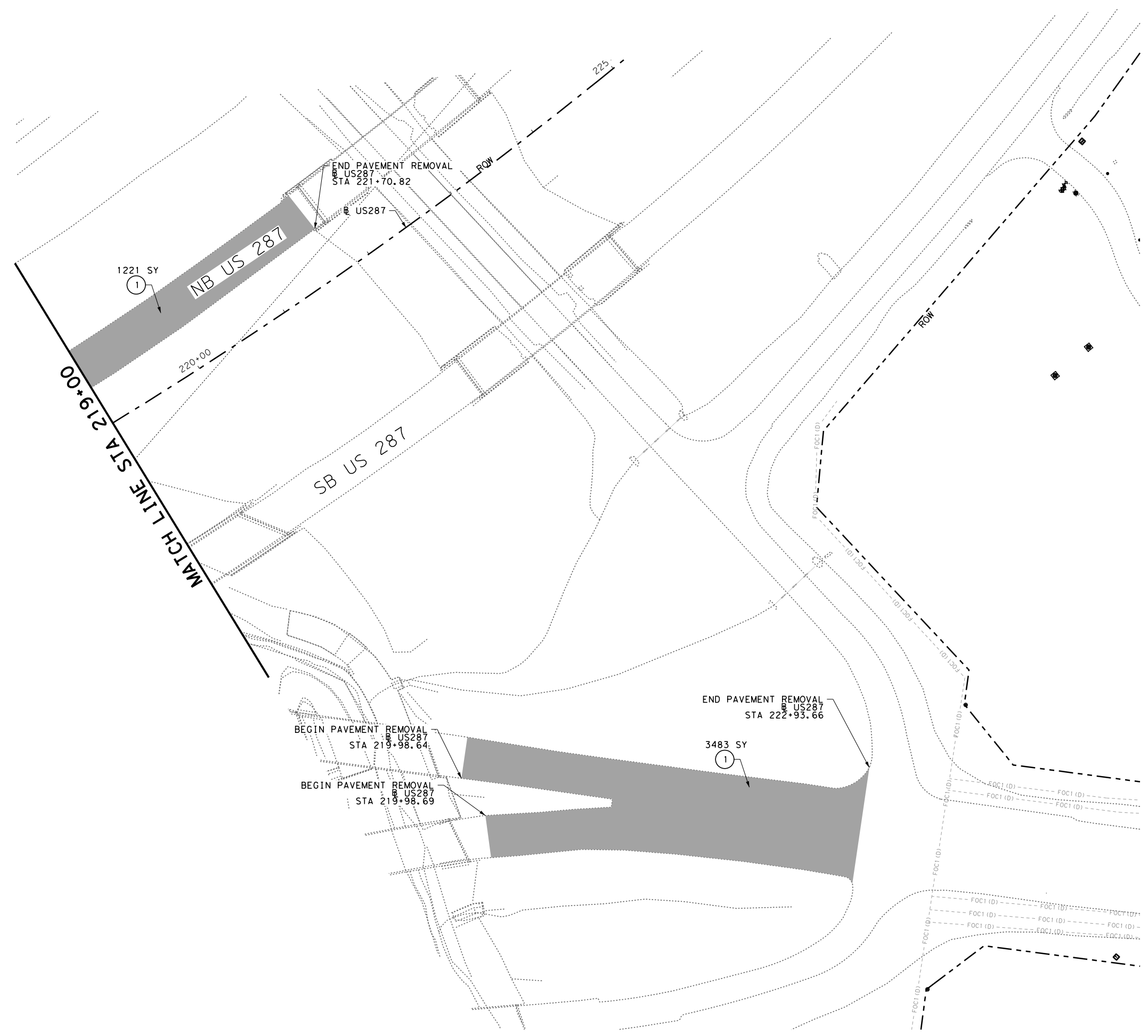


**US 287  
REMOVALS  
STA 219+00 TO END**

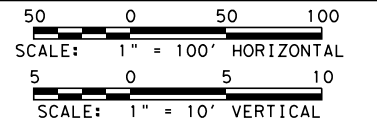
SCALE: 1" = 100' SHEET 20 OF 20

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS CPM	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 137
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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### LEGEND

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

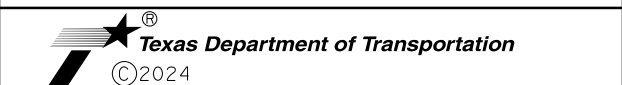
### NOTES:

1. ALL DIMENSIONS ARE MEASURED TO FACE OF CURB OR BARRIER, WHERE CURB OR BARRIER IS PROPOSED, OR EDGE OF PAVEMENT, UNLESS NOTED OTHERWISE.
2. EXISTING PAVEMENT CROSS SLOPES AND TRANSITIONS SHOWN ARE BASED ON AS-BUILTS AND ARE PROVIDED FOR INFORMATION ONLY. ALL PAVEMENT WIDENING SHALL MATCH THE CROSS SLOPE OF THE EXISTING PAVEMENT ADJACENT TO THE WIDENING. CONTRACTOR SHALL FIELD VERIFY EXISTING PAVEMENT ELEVATION AND CROSS SLOPE PRIOR TO WIDENING. FIELD VERIFICATION IS SUBSIDIARY TO PAVEMENT QUANTITIES.
3. REFER TO TYPICAL SECTIONS FOR PAVEMENT DETAILS.
4. SEE HORIZONTAL CONTROL LAYOUT SHEETS FOR BASELINE DATA AND SURVEY CONTROL INFORMATION.
5. EXISTING CABLE BARRIER TO REMAIN IS TO BE PROTECTED IN PLACE. DAMAGE TO THE EXISTING CABLE BARRIER AND/OR EXISTING RIPRAP MOWSTRIP REQUIRING REPAIR OR REPLACEMENT DUE TO CONSTRUCTION ACTIVITIES WILL BE AT THE CONTRACTORS' EXPENSE AT NO ADDITIONAL COST TO TXDOT.



NO.	DATE	DESCRIPTION	APPROV.

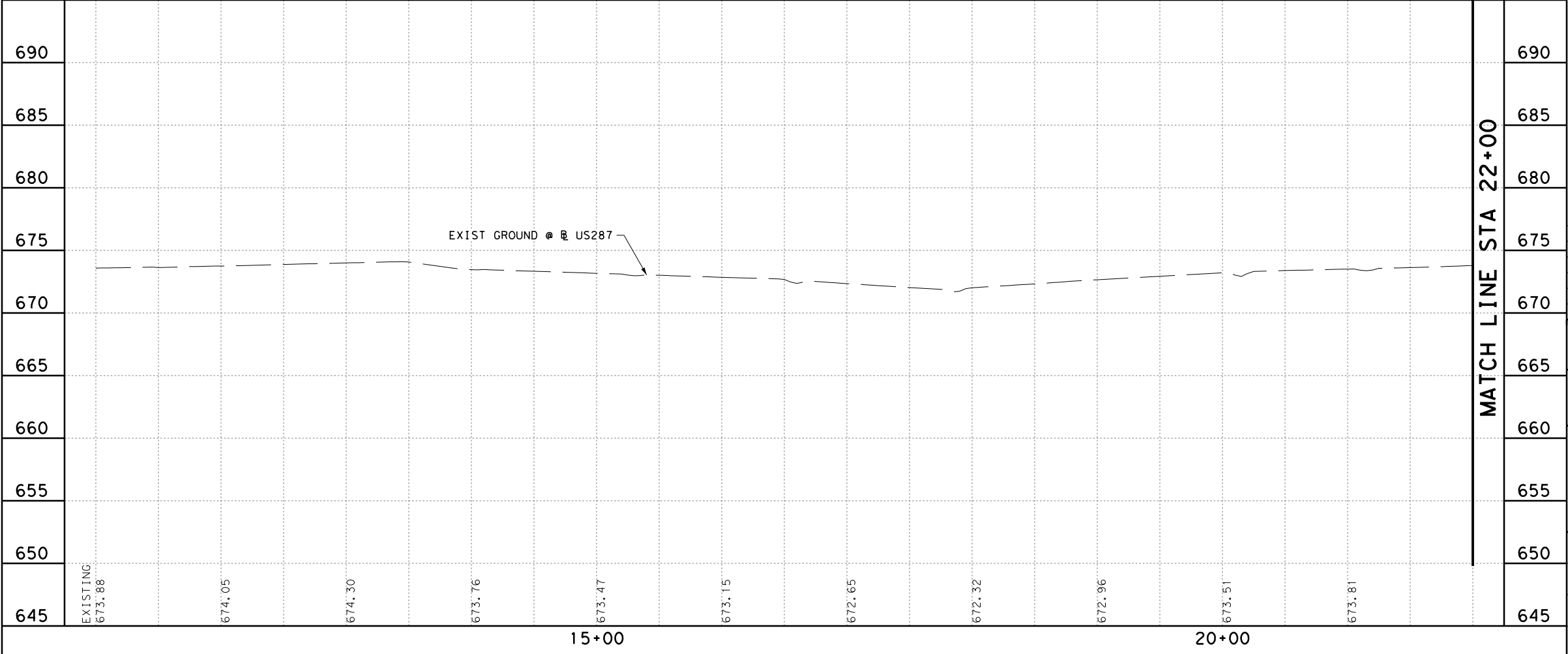
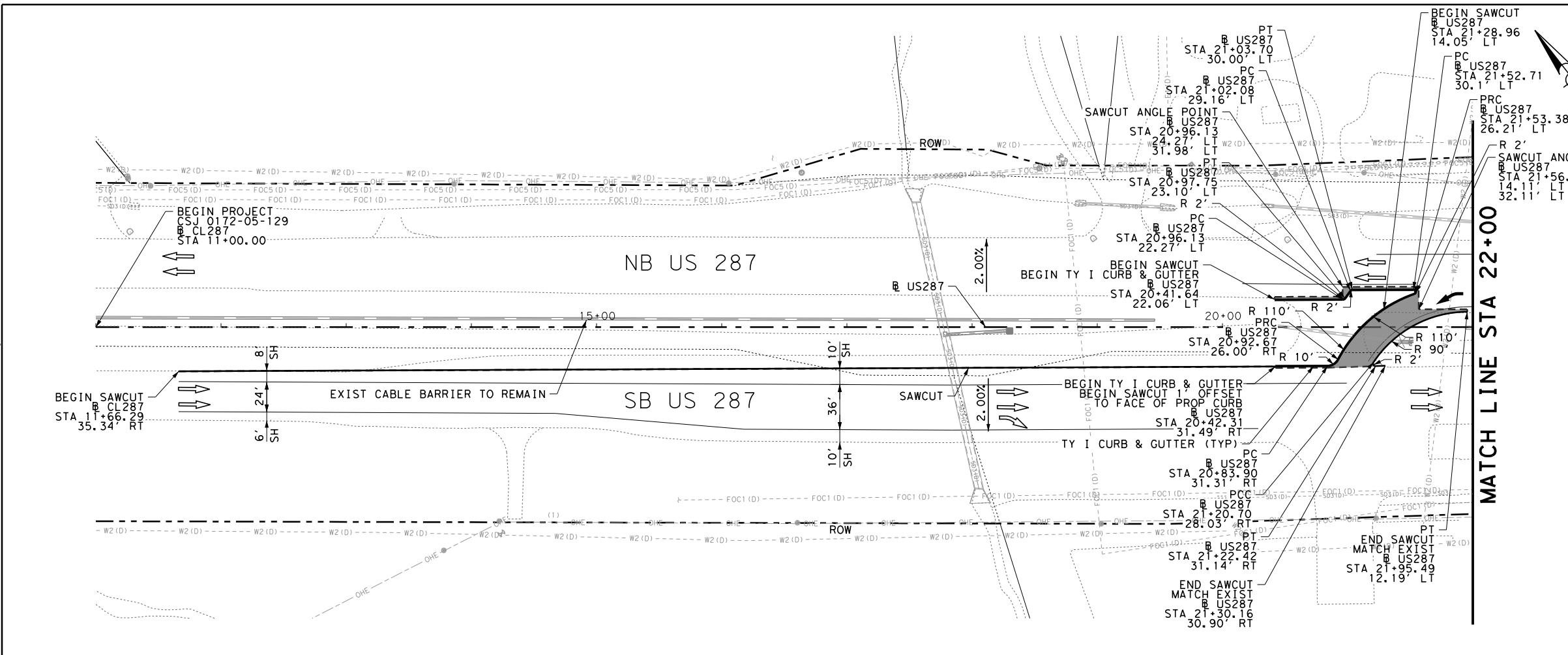
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 PLAN AND PROFILE BEGIN PROJECT TO STA 22+00

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL  
SHEET 1 OF 22

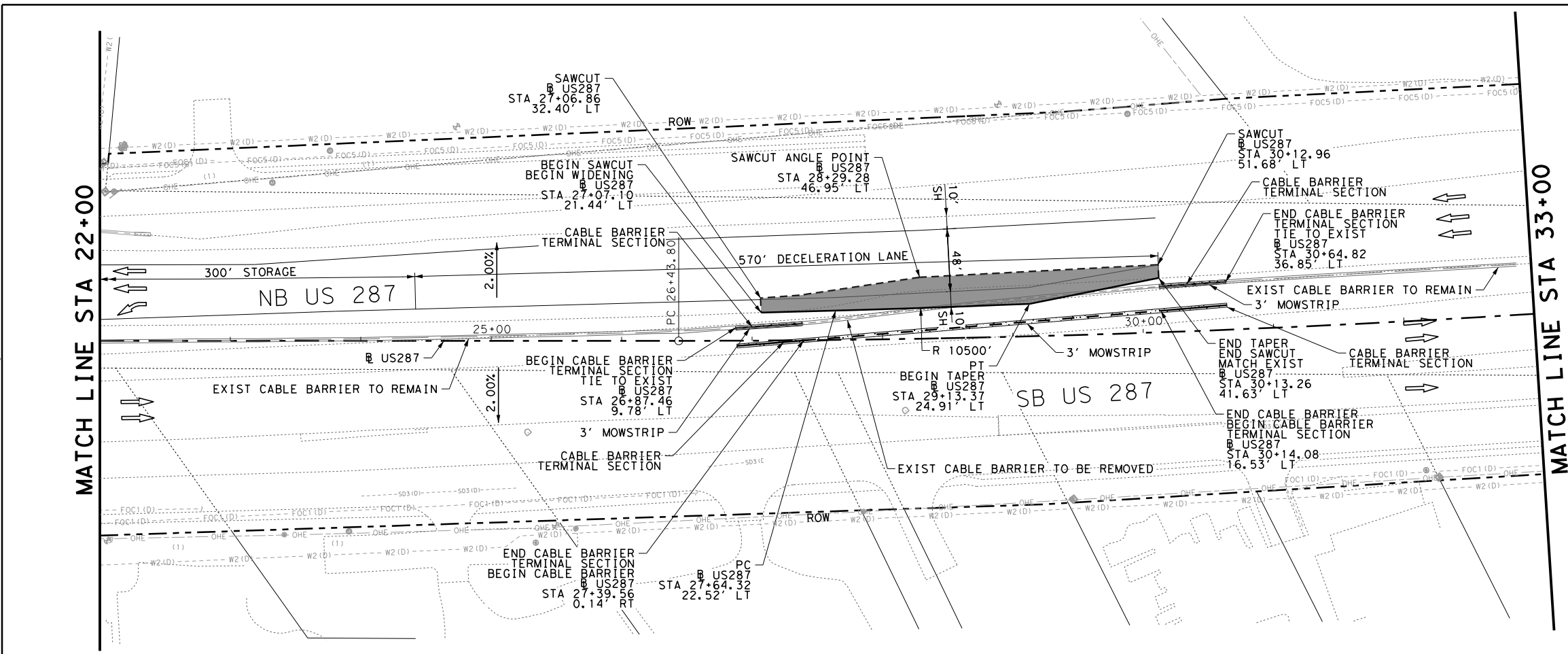
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 138
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	



MATCH LINE STA 22+00

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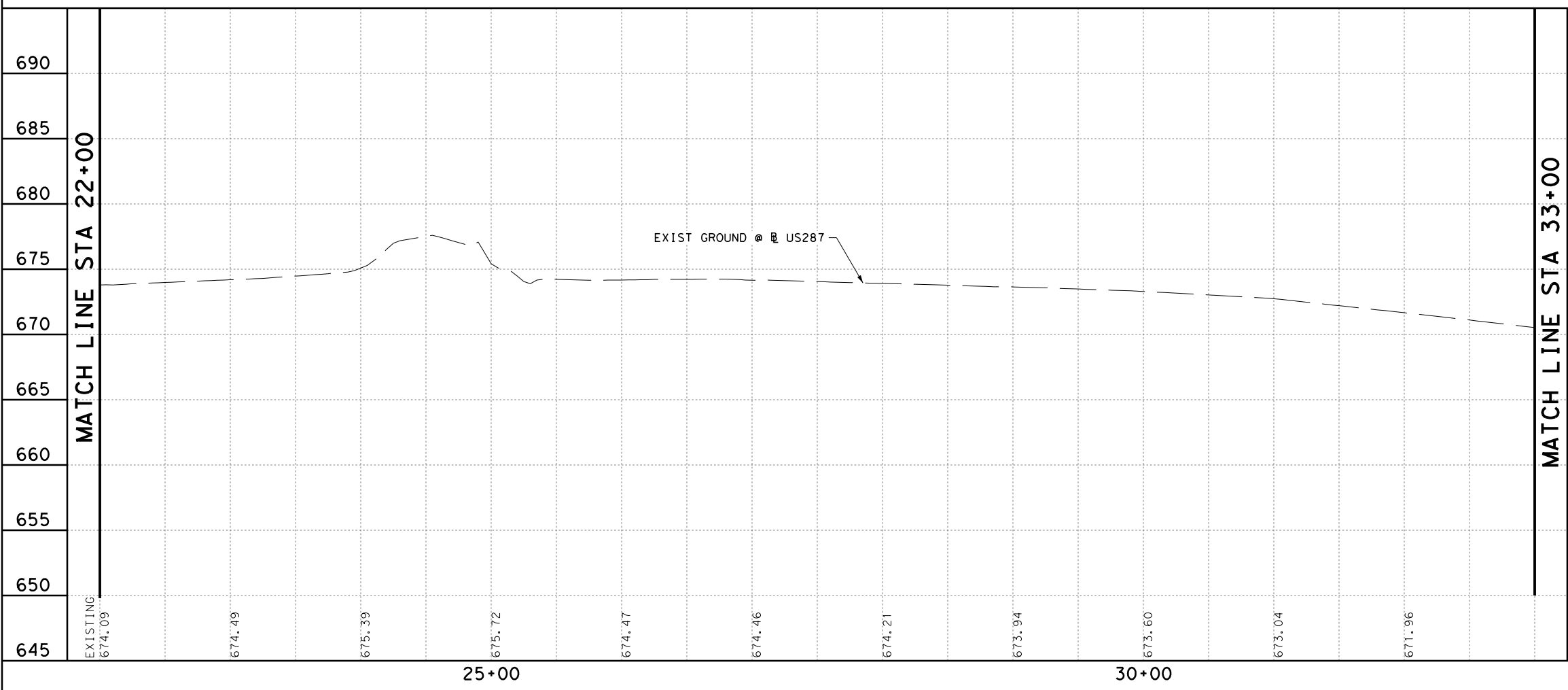


50 0 50 100  
SCALE: 1" = 100' HORIZONTAL  
5 0 5 10  
SCALE: 1" = 10' VERTICAL

**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

- NOTES:**
- ALL DIMENSIONS ARE MEASURED TO FACE OF CURB OR BARRIER, WHERE CURB OR BARRIER IS PROPOSED, OR EDGE OF PAVEMENT, UNLESS NOTED OTHERWISE.
  - EXISTING PAVEMENT CROSS SLOPES AND TRANSITIONS SHOWN ARE BASED ON AS-BUILTS AND ARE PROVIDED FOR INFORMATION ONLY. ALL PAVEMENT WIDENING SHALL MATCH THE CROSS SLOPE OF THE EXISTING PAVEMENT ADJACENT TO THE WIDENING. CONTRACTOR SHALL FIELD VERIFY EXISTING PAVEMENT ELEVATION AND CROSS SLOPE PRIOR TO WIDENING. FIELD VERIFICATION IS SUBSIDIARY TO PAVEMENT QUANTITIES.
  - REFER TO TYPICAL SECTIONS FOR PAVEMENT DETAILS.
  - SEE HORIZONTAL CONTROL LAYOUT SHEETS FOR BASELINE DATA AND SURVEY CONTROL INFORMATION.
  - EXISTING CABLE BARRIER TO REMAIN IS TO BE PROTECTED IN PLACE. DAMAGE TO THE EXISTING CABLE BARRIER AND/OR EXISTING RIPRAP MOWSTRIP REQUIRING REPAIR OR REPLACEMENT DUE TO CONSTRUCTION ACTIVITIES WILL BE AT THE CONTRACTORS' EXPENSE AT NO ADDITIONAL COST TO TXDOT.



690	690
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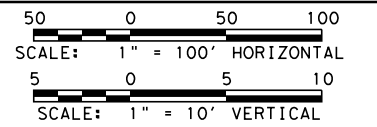
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

**Texas Department of Transportation**  
©2024

**US 287  
PLAN AND PROFILE  
STA 22+00 TO STA 33+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 2 OF 22

DESIGN	CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS	AP	6	SEE TITLE SHEET	US 287
CHECK	SA	STATE	DISTRICT	COUNTY
CHECK	CPM	CONTROL	SECTION	JOB
		0172	05	129



**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

**NOTES:**

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3. REFER TO TYPICAL SECTIONS FOR PAVEMENT DETAILS.
4. SEE HORIZONTAL CONTROL LAYOUT SHEETS FOR BASELINE DATA AND SURVEY CONTROL INFORMATION.
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NO.	DATE	DESCRIPTION	APPROV.

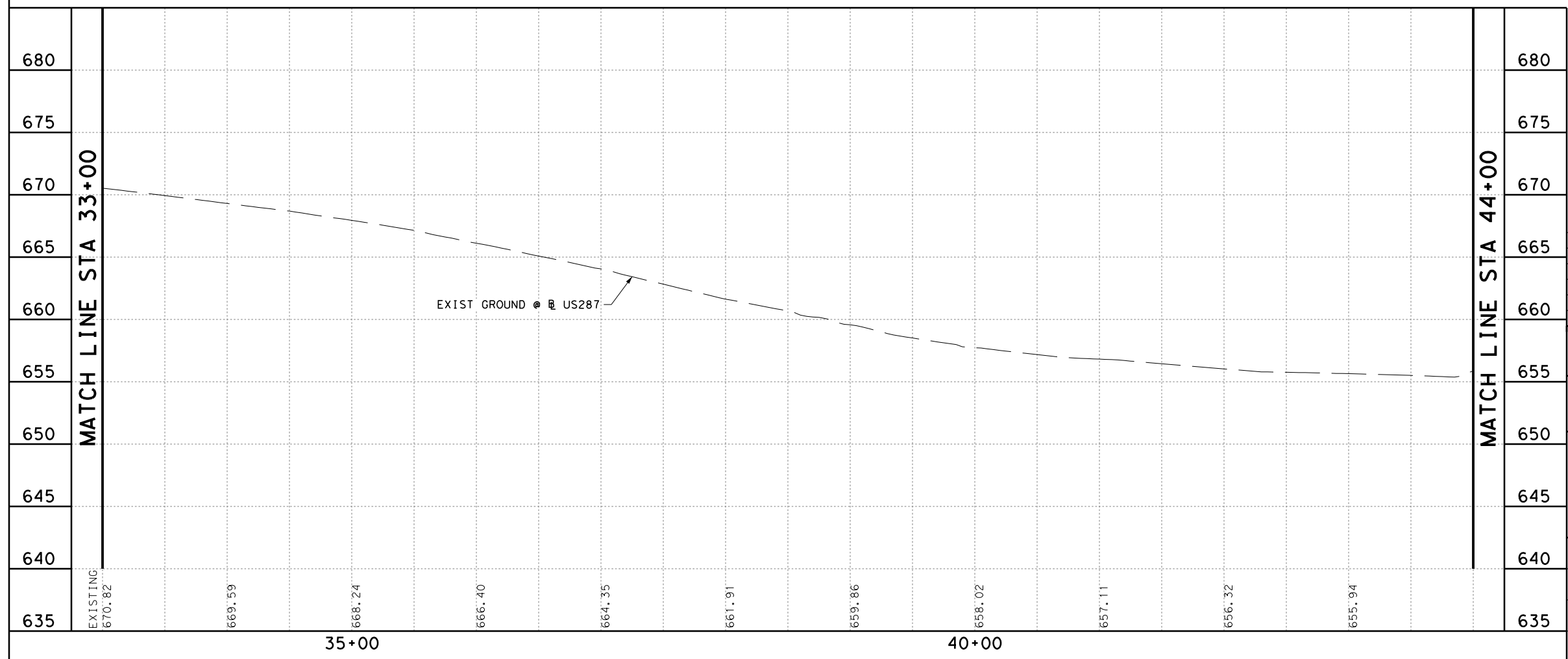
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN AND PROFILE  
STA 33+00 TO STA 44+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL  
SHEET 3 OF 22

DESIGN CPM	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 140
CHECK SA	CONTROL 0172	SECTION 05	JOB 129	



**NO WORK ON THIS SHEET**

MATCH LINE STA 33+00

MATCH LINE STA 44+00

NB US 287

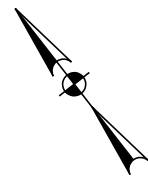
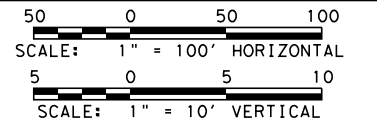
SB US 287

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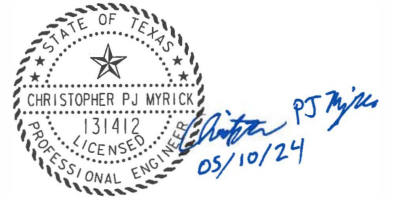
NO WORK ON THIS SHEET

**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

**NOTES:**

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3. REFER TO TYPICAL SECTIONS FOR PAVEMENT DETAILS.
4. SEE HORIZONTAL CONTROL LAYOUT SHEETS FOR BASELINE DATA AND SURVEY CONTROL INFORMATION.
5. EXISTING CABLE BARRIER TO REMAIN IS TO BE PROTECTED IN PLACE. DAMAGE TO THE EXISTING CABLE BARRIER AND/OR EXISTING RIPRAP MOWSTRIP REQUIRING REPAIR OR REPLACEMENT DUE TO CONSTRUCTION ACTIVITIES WILL BE AT THE CONTRACTORS' EXPENSE AT NO ADDITIONAL COST TO TXDOT.



NO.	DATE	DESCRIPTION	APPROV.

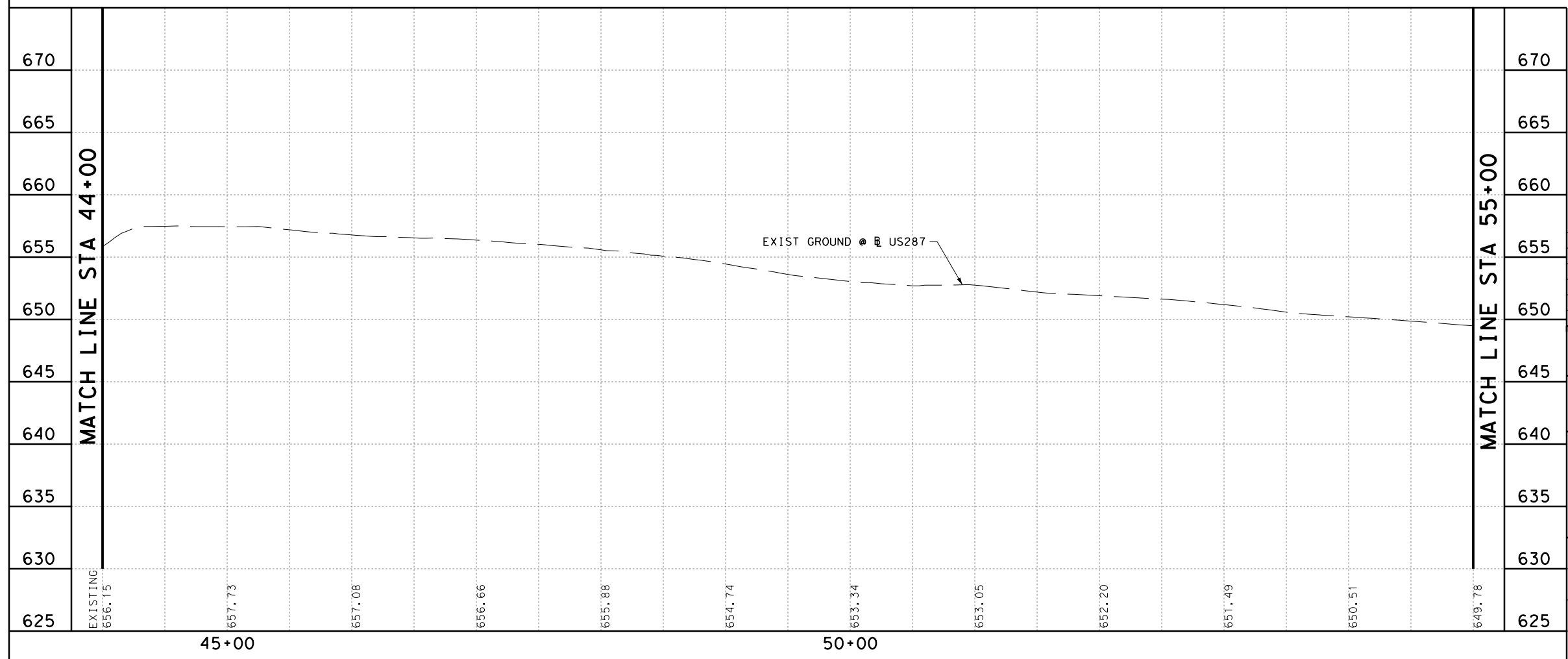
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN AND PROFILE  
STA 44+00 TO STA 55+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 4 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	141
CHECK CPM	0172	05	129	



MATCH LINE STA 44+00

MATCH LINE STA 55+00

S WALNUT GROVE RD

NB US 287

SB US 287

US287  
50+00

45+00

45+00

50+00

MATCH LINE STA 55+00

MATCH LINE STA 44+00

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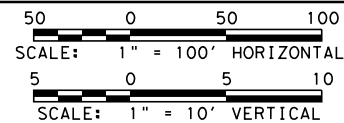
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EXIST GROUND @ US287

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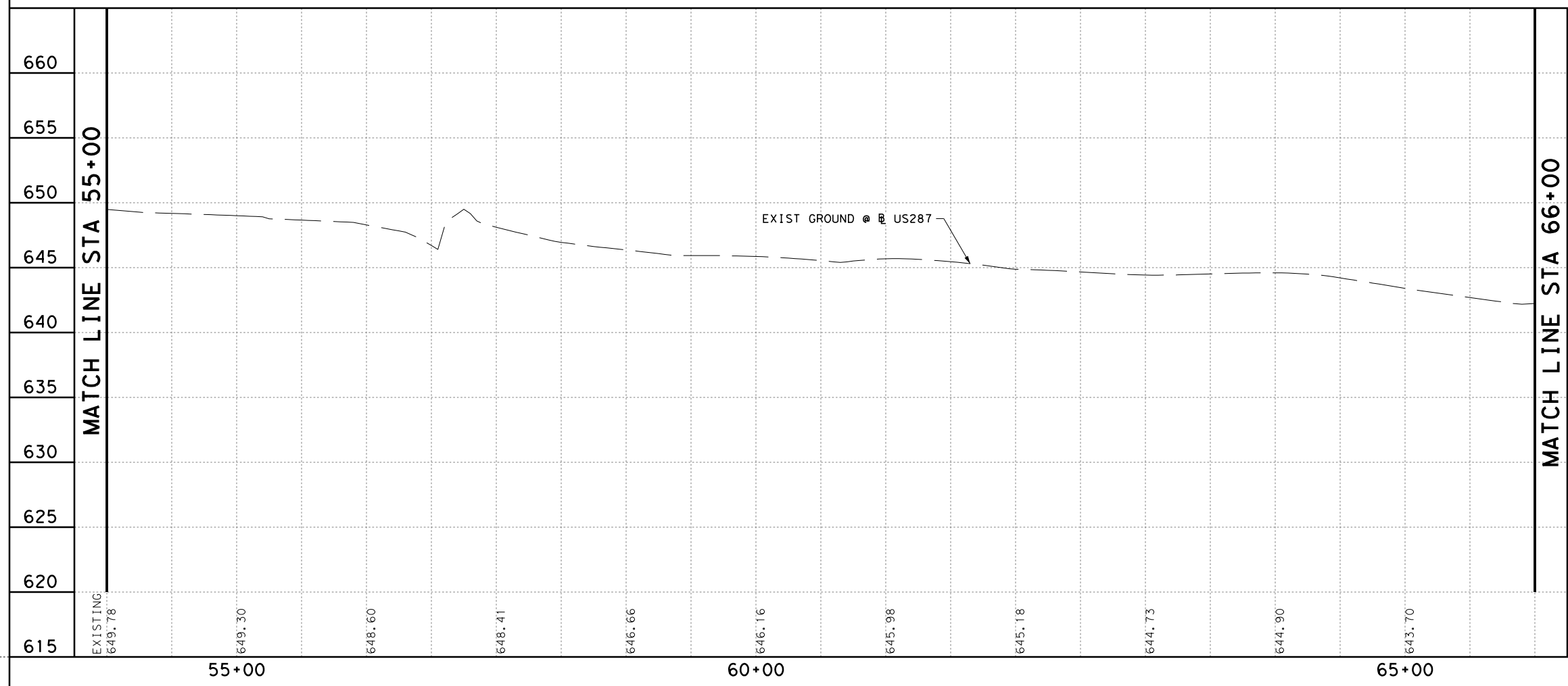
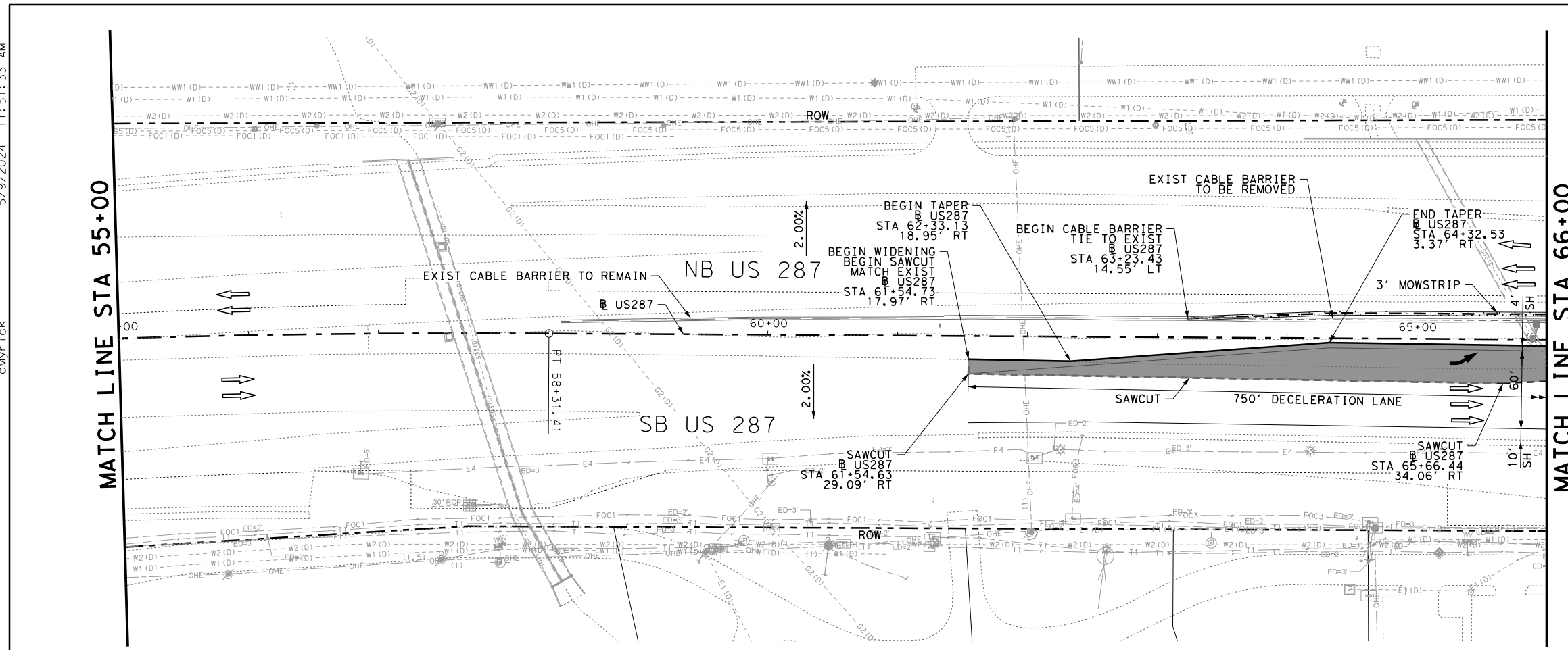


**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

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660	MATCH LINE STA 55+00	660	MATCH LINE STA 66+00
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615		615	

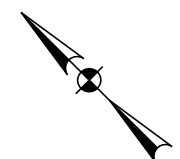
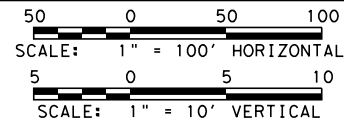
NO.	DATE	DESCRIPTION	APPROV.
 <b>BRIDGEFARMER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
 <b>Texas Department of Transportation</b> ©2024			
<b>US 287</b> <b>PLAN AND PROFILE</b> <b>STA 55+00 TO STA 66+00</b>			
SCALE: 1" = 100' HORIZONTAL		SHEET 5 OF 22	
SCALE: 1" = 10' VERTICAL			
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129

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**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

**NOTES:**

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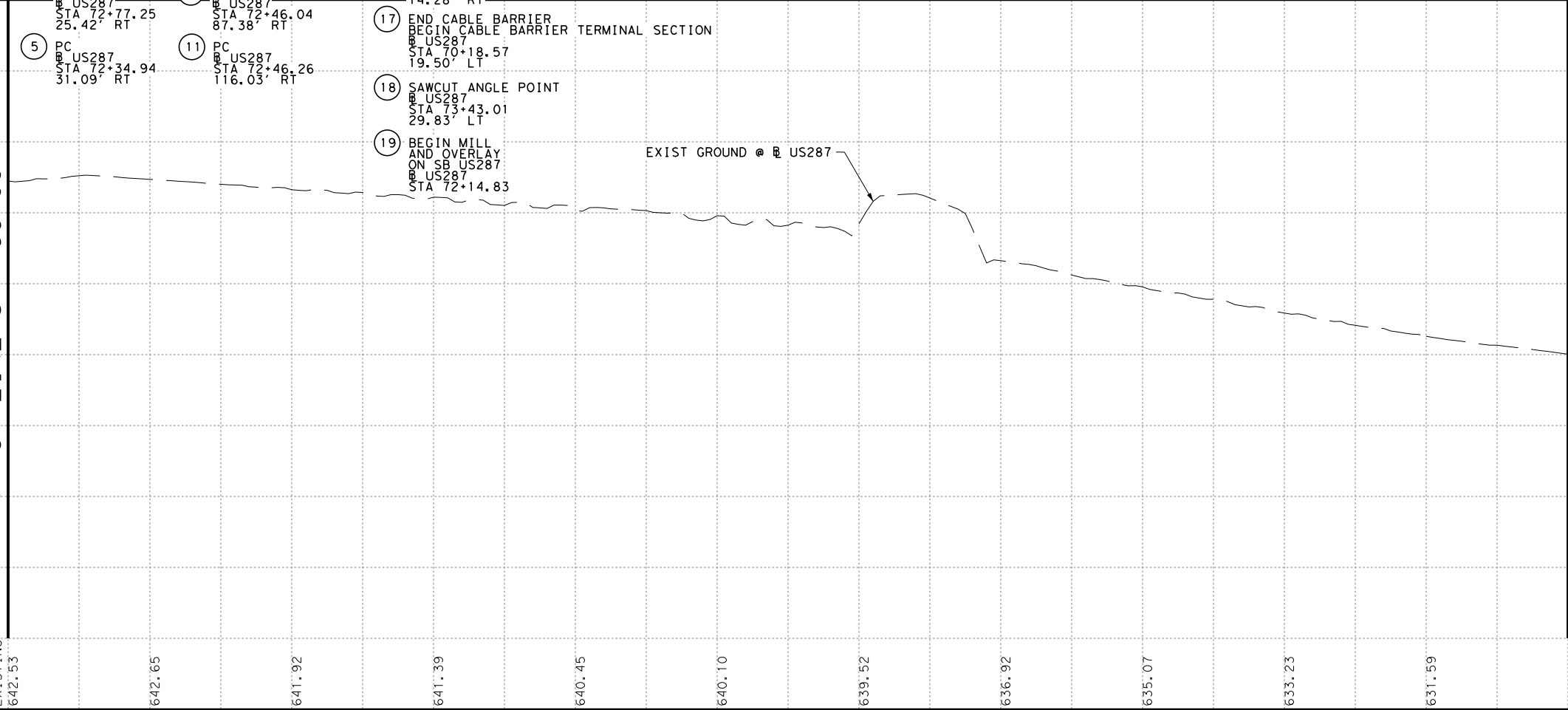
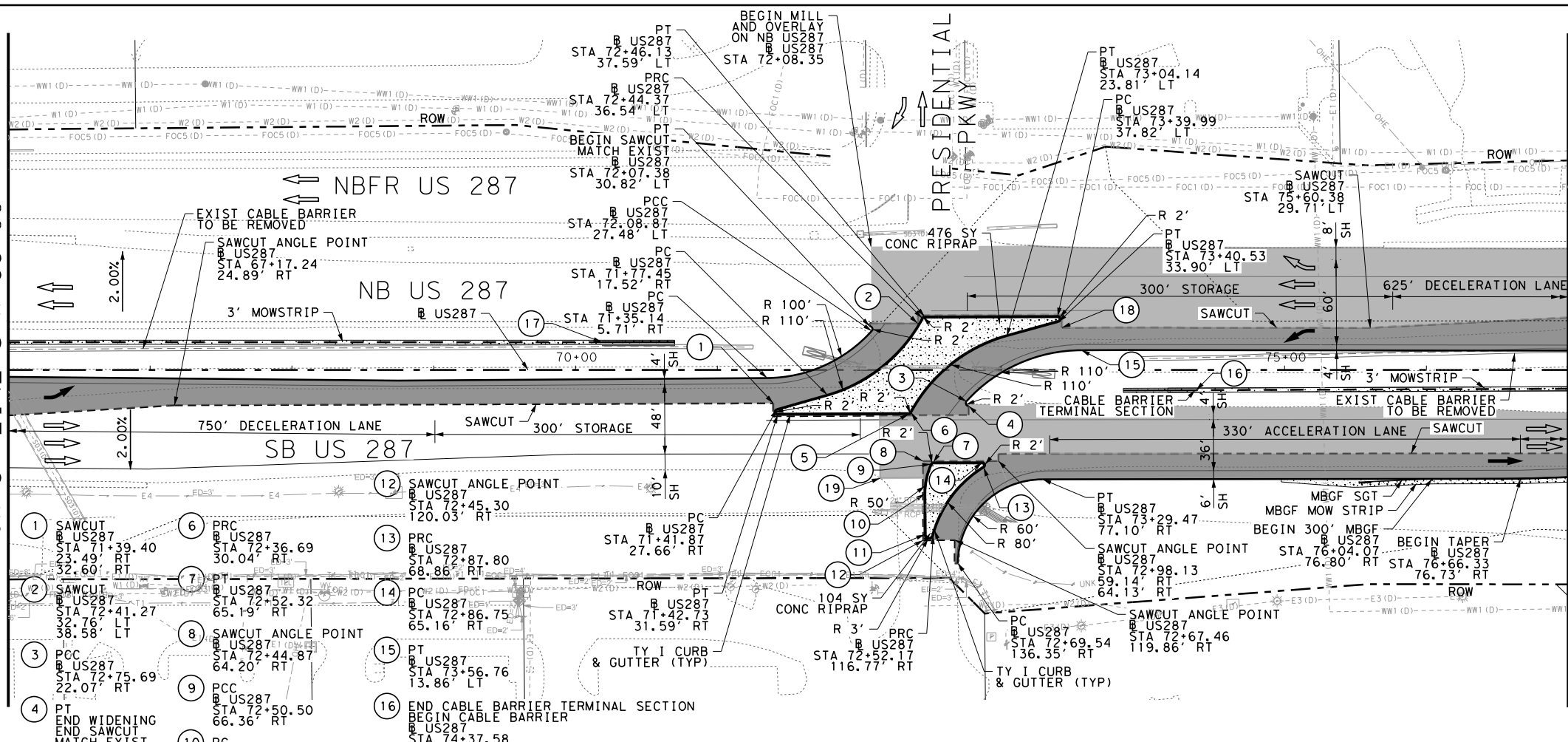


MATCH LINE STA 66+00

MATCH LINE STA 77+00

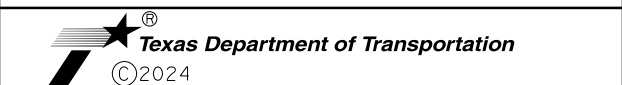
MATCH LINE STA 66+00

MATCH LINE STA 77+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

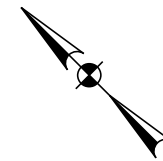
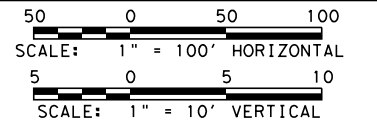


**US 287  
PLAN AND PROFILE  
STA 66+00 TO STA 77+00**

DESIGN	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
CPM	6	SEE TITLE SHEET	US 287
GRAPHICS	STATE	DISTRICT	COUNTY
AP	TEXAS	DALLAS	ELLIS
CHECK	CONTROL	SECTION	JOB
SA	0172	05	129

SHEET 6 OF 22

5/9/2024 11:51:43 AM  
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**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

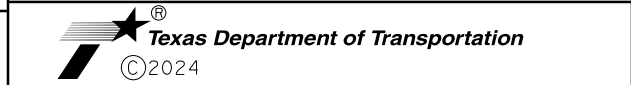
**NOTES:**

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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



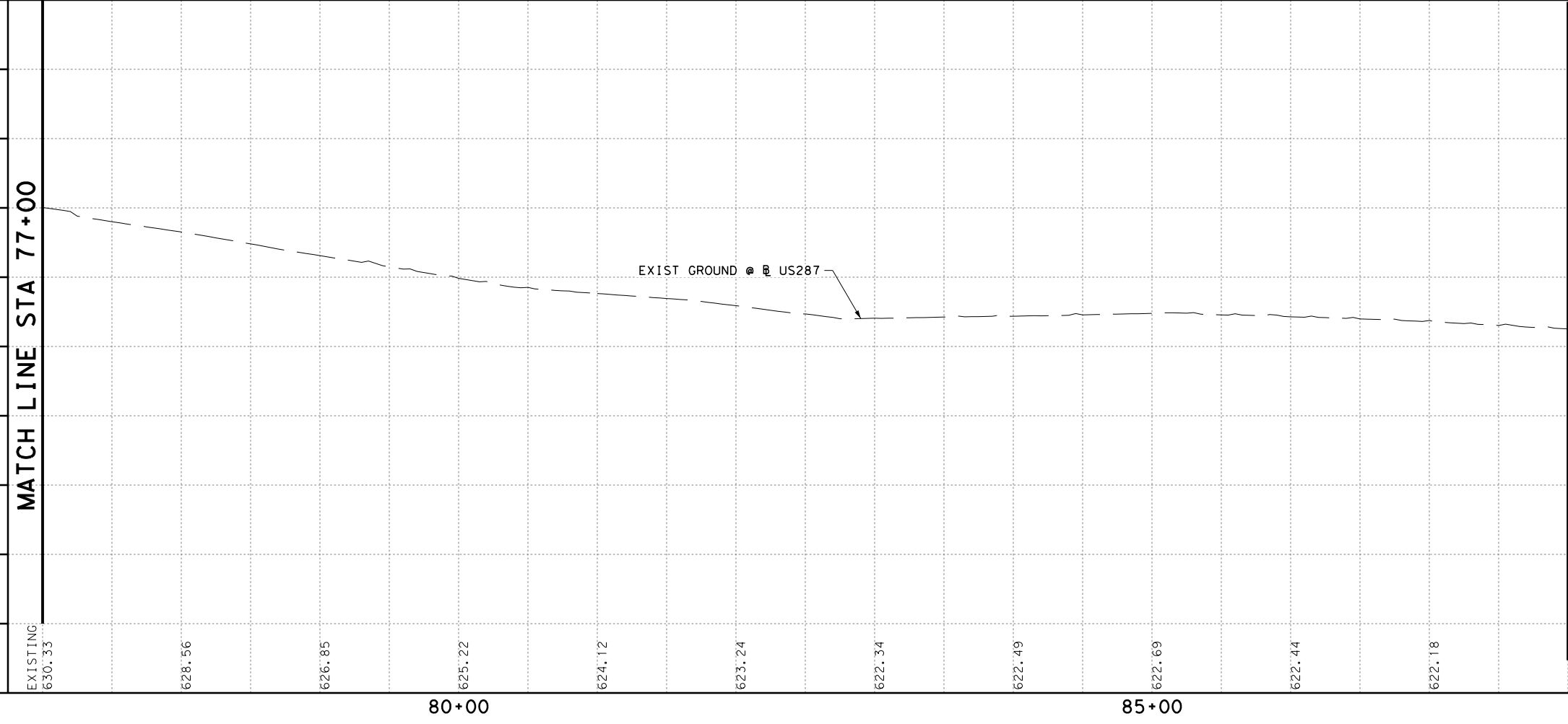
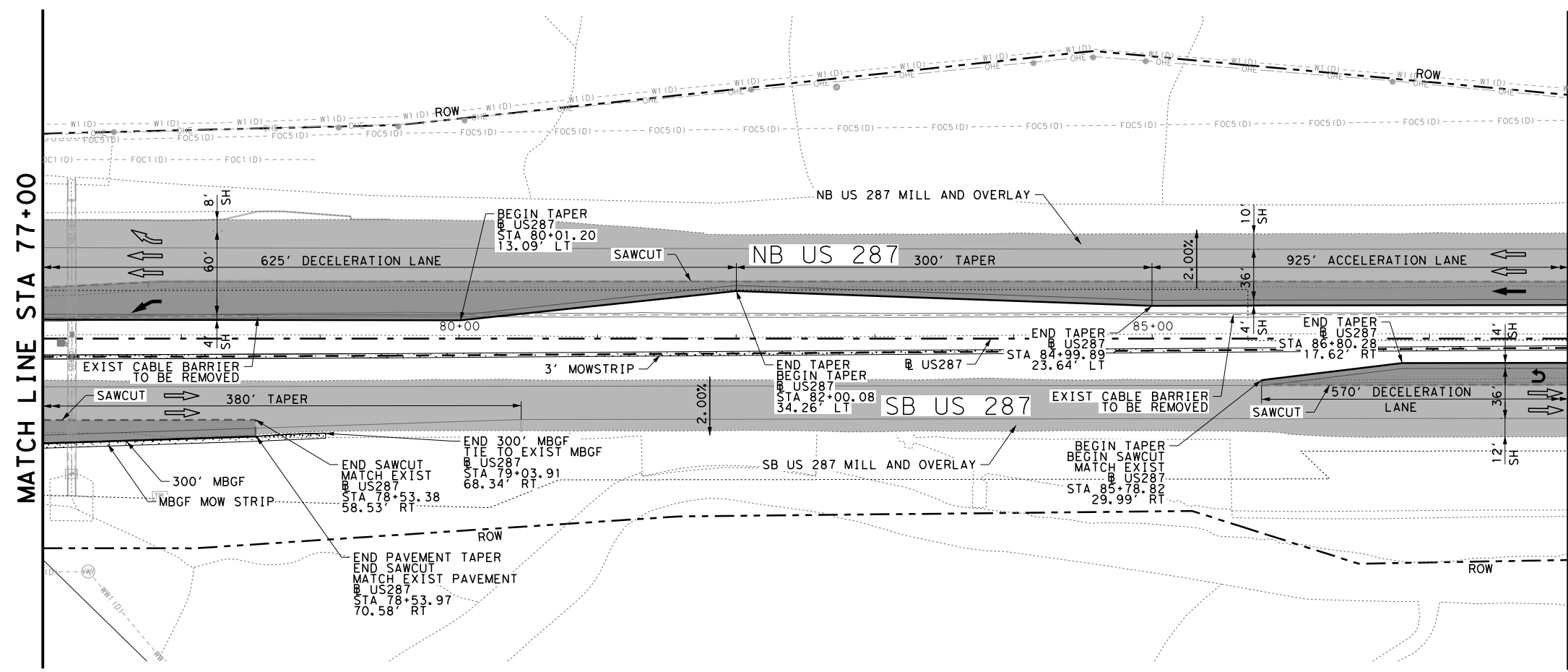
**US 287  
PLAN AND PROFILE  
STA 77+00 TO STA 88+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL  
SHEET 7 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 144
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

MATCH LINE STA 77+00

MATCH LINE STA 88+00

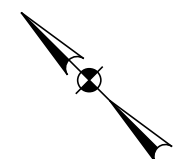
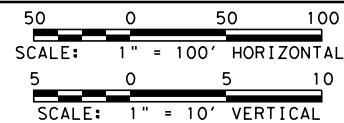


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**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

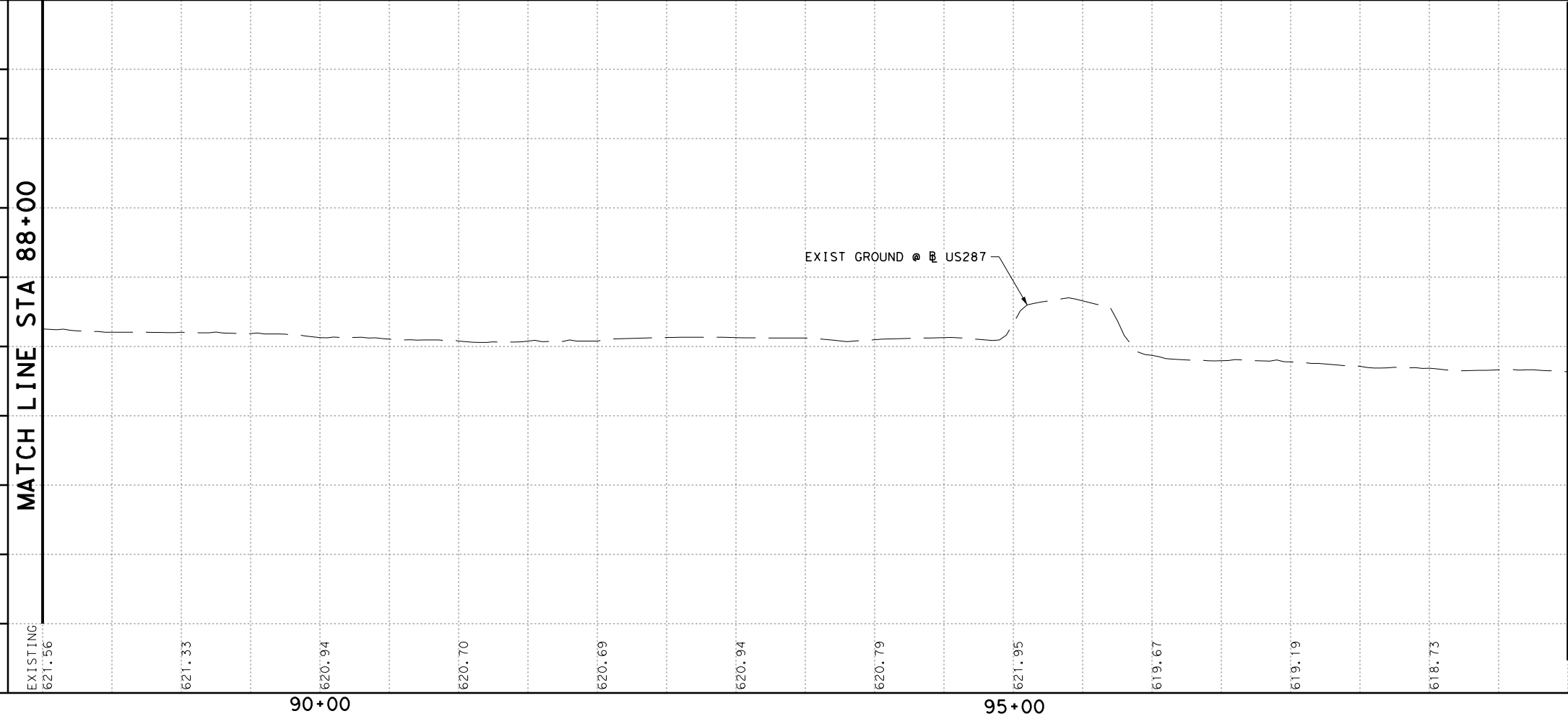
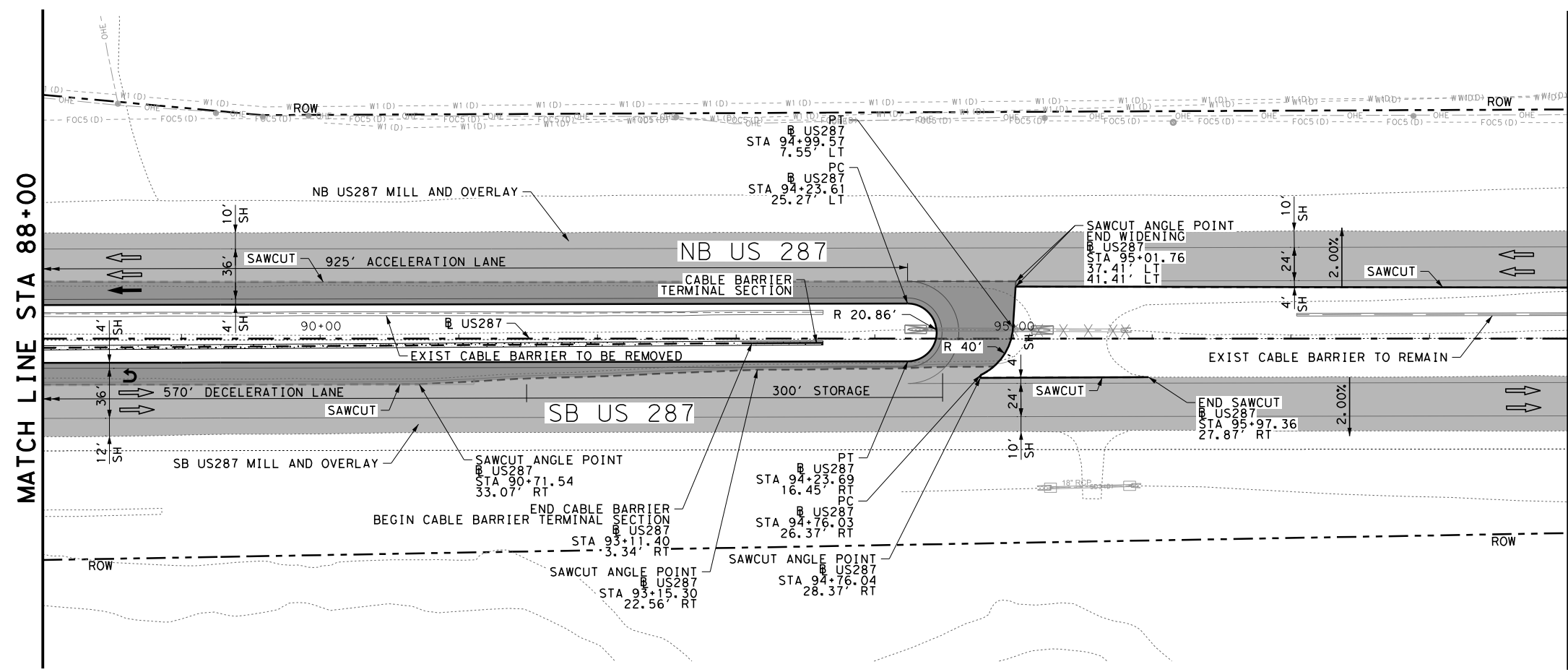
**NOTES:**

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MATCH LINE STA 88+00

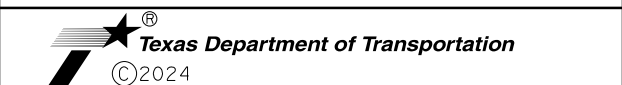
MATCH LINE STA 99+00



MATCH LINE STA 99+00

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN AND PROFILE  
STA 88+00 TO STA 99+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL

DESIGN	CPM	FED. RD. DIV. NO.	6	PROJECT NO.	SEE TITLE SHEET	HIGHWAY NO.	US 287
GRAPHICS	AP	STATE	TEXAS	DISTRICT	DALLAS	COUNTY	ELLIS
CHECK	SA	CONTROL	0172	SECTION	05	JOB	129
CHECK	CPM						

SHEET 8 OF 22

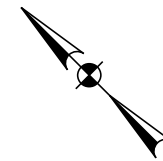
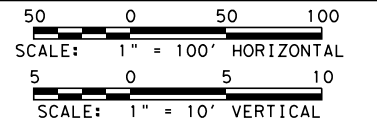
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**LEGEND**

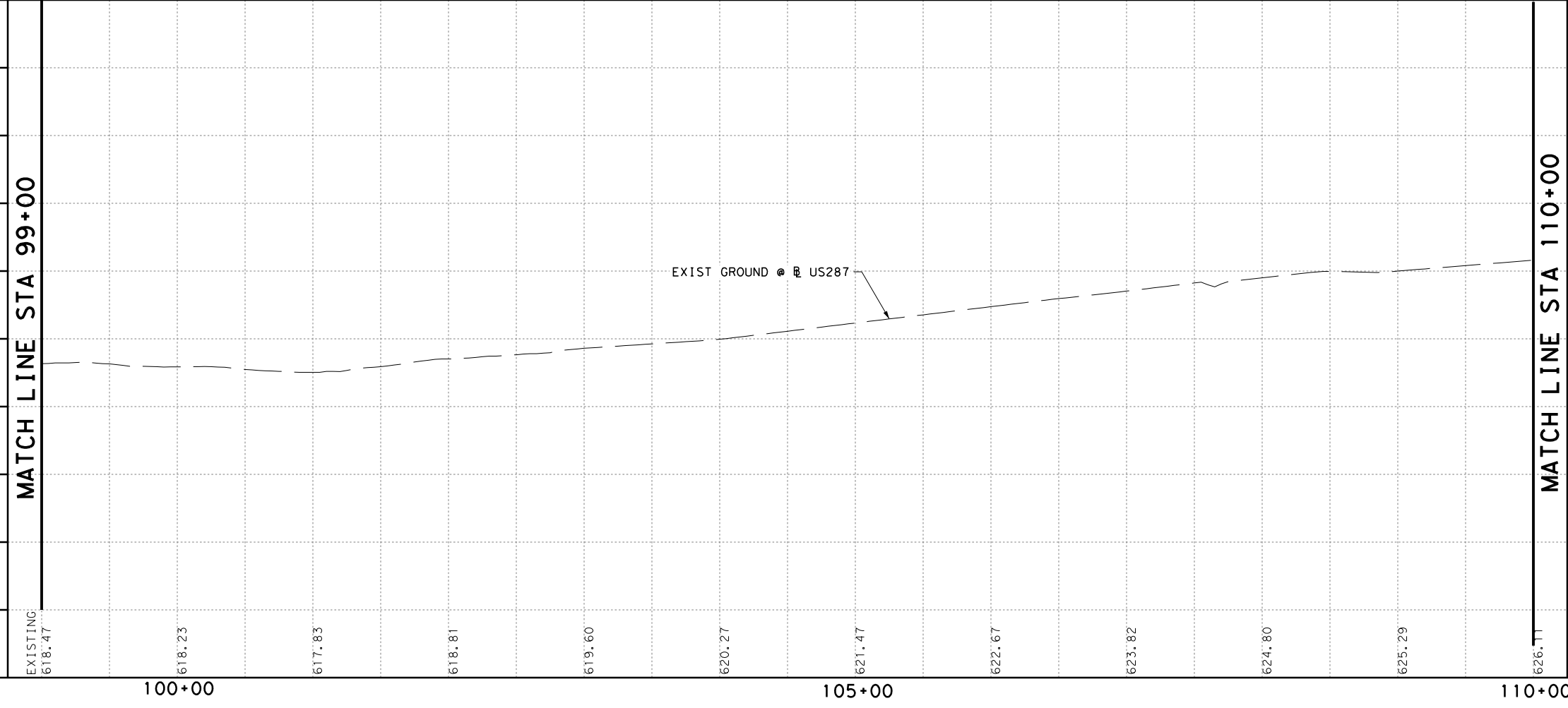
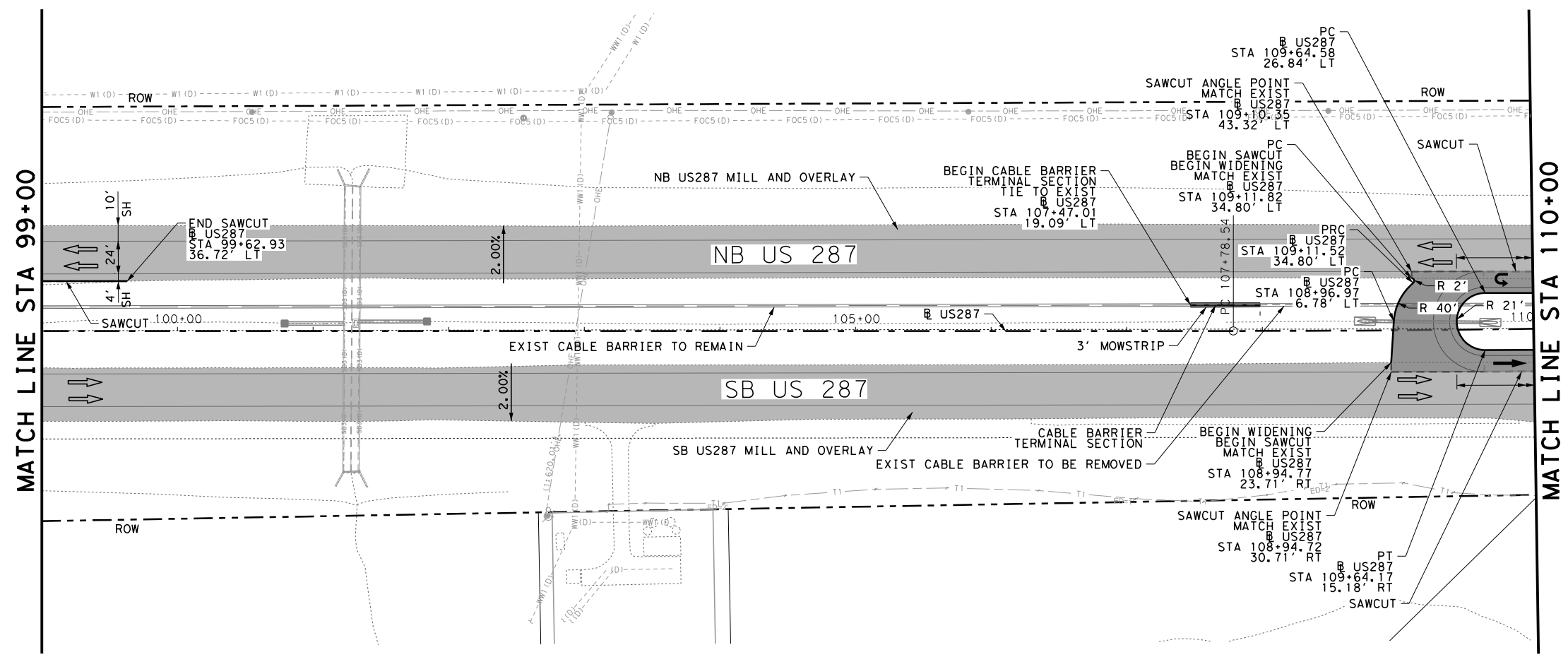
- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

- NOTES:**
- ALL DIMENSIONS ARE MEASURED TO FACE OF CURB OR BARRIER, WHERE CURB OR BARRIER IS PROPOSED, OR EDGE OF PAVEMENT, UNLESS NOTED OTHERWISE.
  - EXISTING PAVEMENT CROSS SLOPES AND TRANSITIONS SHOWN ARE BASED ON AS-BUILTS AND ARE PROVIDED FOR INFORMATION ONLY. ALL PAVEMENT WIDENING SHALL MATCH THE CROSS SLOPE OF THE EXISTING PAVEMENT ADJACENT TO THE WIDENING. CONTRACTOR SHALL FIELD VERIFY EXISTING PAVEMENT ELEVATION AND CROSS SLOPE PRIOR TO WIDENING. FIELD VERIFICATION IS SUBSIDIARY TO PAVEMENT QUANTITIES.
  - REFER TO TYPICAL SECTIONS FOR PAVEMENT DETAILS.
  - SEE HORIZONTAL CONTROL LAYOUT SHEETS FOR BASELINE DATA AND SURVEY CONTROL INFORMATION.
  - EXISTING CABLE BARRIER TO REMAIN IS TO BE PROTECTED IN PLACE. DAMAGE TO THE EXISTING CABLE BARRIER AND/OR EXISTING RIPRAP MOWSTRIP REQUIRING REPAIR OR REPLACEMENT DUE TO CONSTRUCTION ACTIVITIES WILL BE AT THE CONTRACTORS' EXPENSE AT NO ADDITIONAL COST TO TXDOT.



MATCH LINE STA 99+00

MATCH LINE STA 110+00

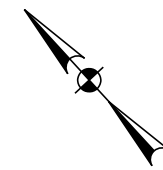
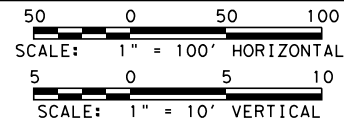


NO.	DATE	DESCRIPTION	APPROV.
<b>US 287</b> <b>PLAN AND PROFILE</b> <b>STA 99+00 TO STA 110+00</b>			
SCALE: 1" = 100' HORIZONTAL		SHEET 9 OF 22	
SCALE: 1" = 10' VERTICAL			
DESIGN CPM	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK SA	CONTROL 0172	SECTION 05	JOB 129
CHECK CPM			SHEET NO. 146

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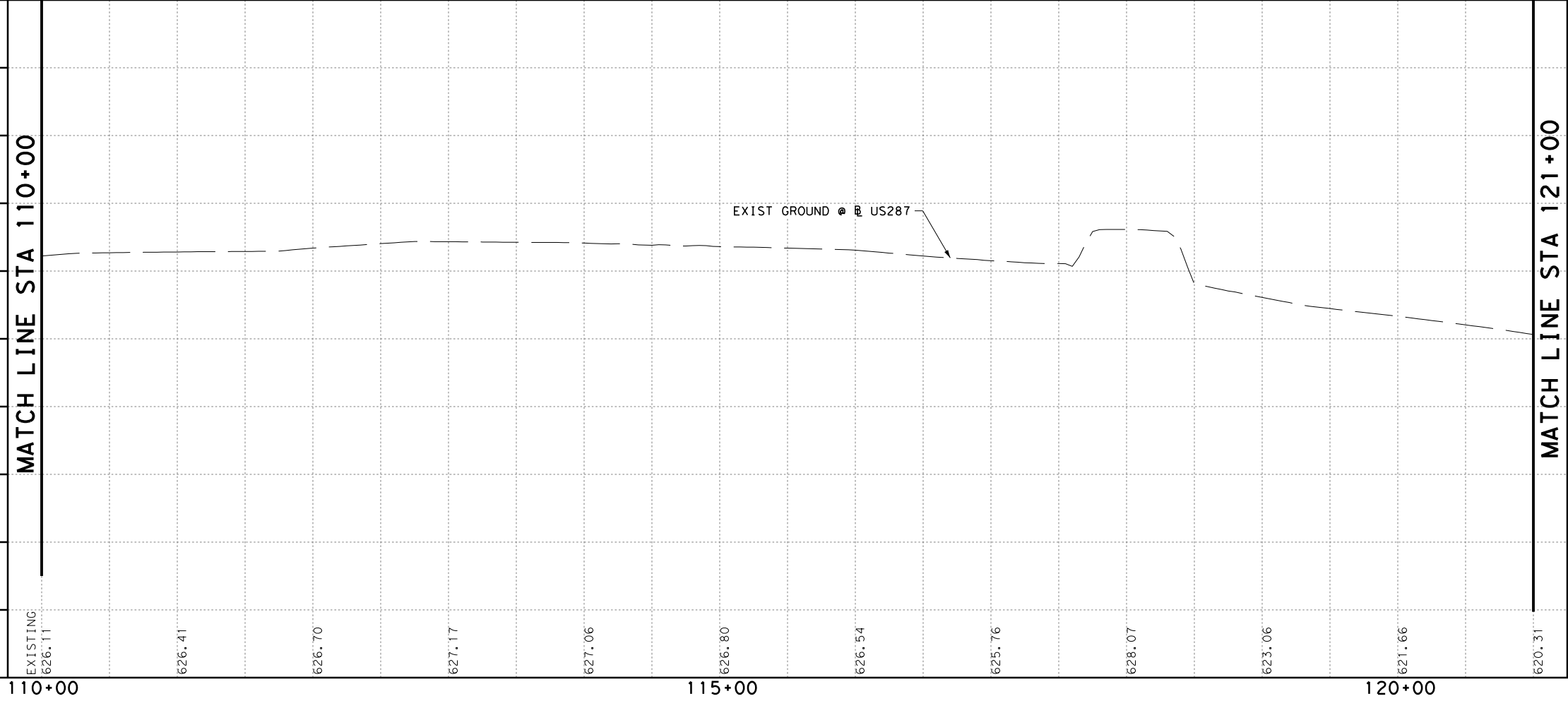
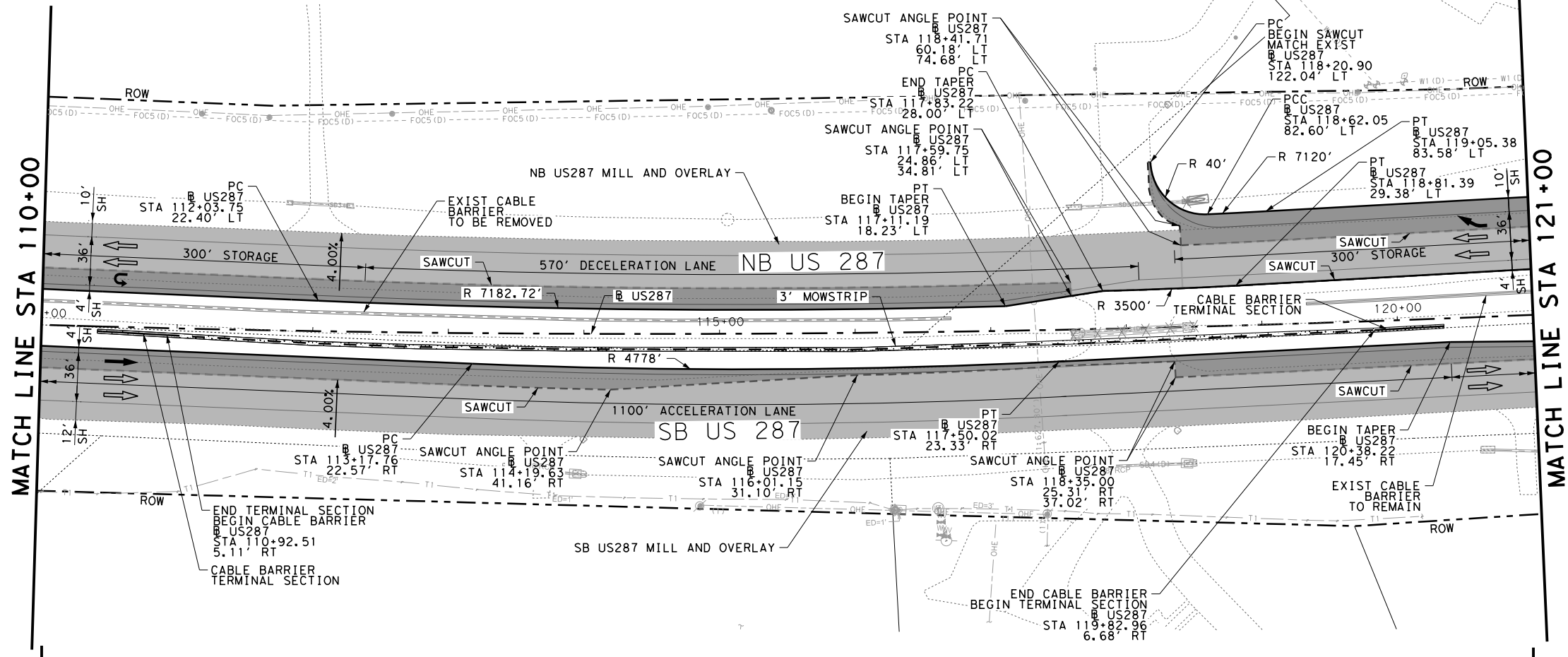


**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

**NOTES:**

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4. SEE HORIZONTAL CONTROL LAYOUT SHEETS FOR BASELINE DATA AND SURVEY CONTROL INFORMATION.
5. EXISTING CABLE BARRIER TO REMAIN IS TO BE PROTECTED IN PLACE. DAMAGE TO THE EXISTING CABLE BARRIER AND/OR EXISTING RIPRAP MOWSTRIP REQUIRING REPAIR OR REPLACEMENT DUE TO CONSTRUCTION ACTIVITIES WILL BE AT THE CONTRACTORS' EXPENSE AT NO ADDITIONAL COST TO TXDOT.



NO.	DATE	DESCRIPTION	APPROV.

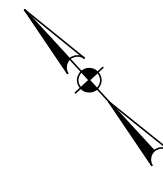
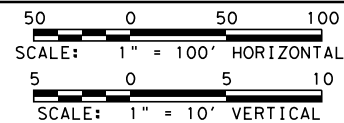
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN AND PROFILE  
STA 110+00 TO STA 121+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 10 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 147
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	



**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

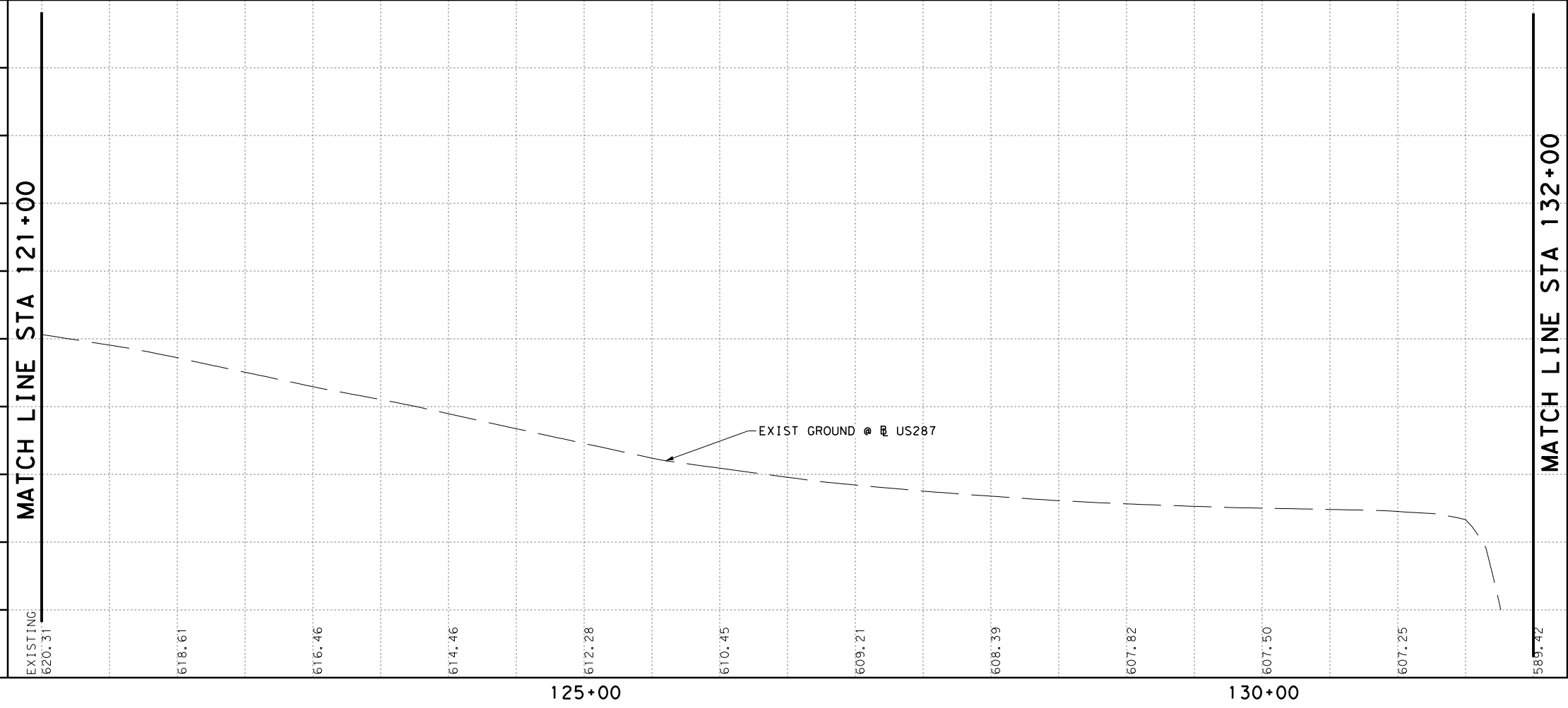
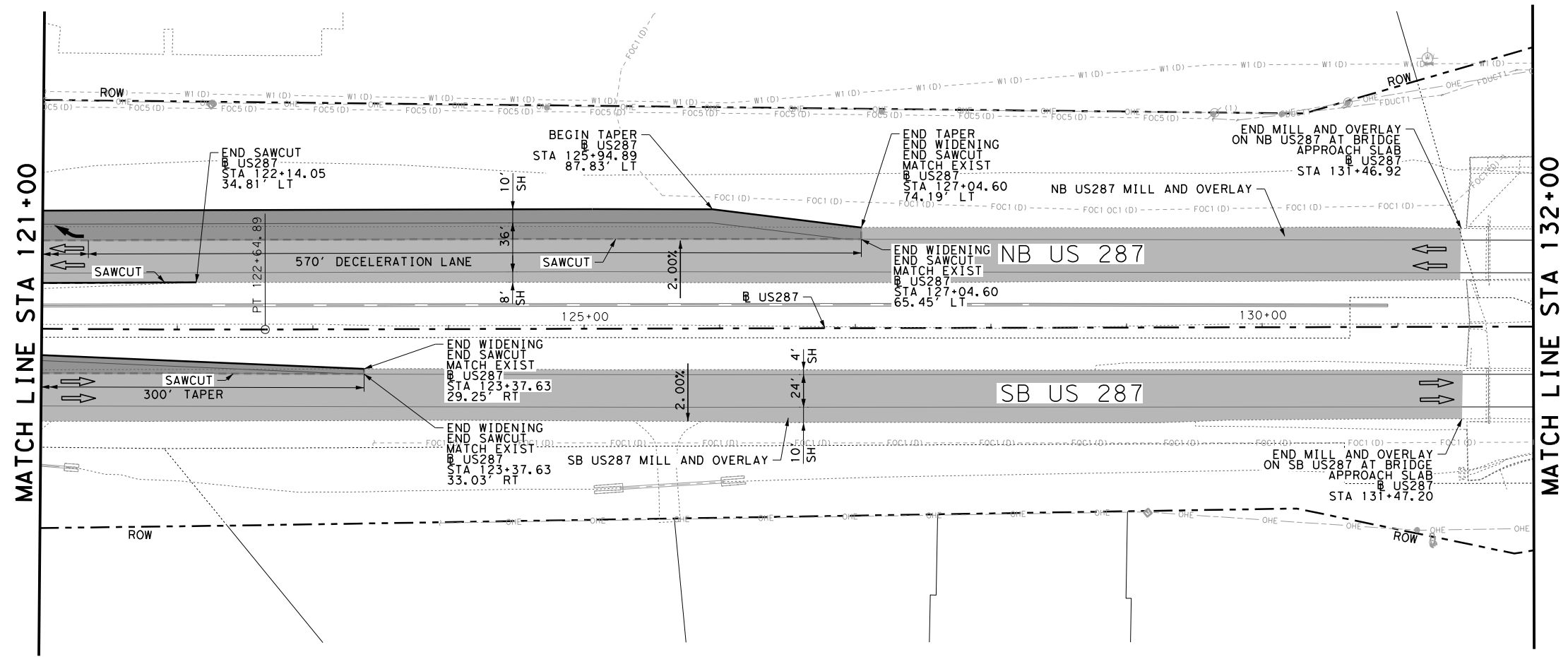
**NOTES:**

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3. REFER TO TYPICAL SECTIONS FOR PAVEMENT DETAILS.
4. SEE HORIZONTAL CONTROL LAYOUT SHEETS FOR BASELINE DATA AND SURVEY CONTROL INFORMATION.
5. EXISTING CABLE BARRIER TO REMAIN IS TO BE PROTECTED IN PLACE. DAMAGE TO THE EXISTING CABLE BARRIER AND/OR EXISTING RIPRAP MOWSTRIP REQUIRING REPAIR OR REPLACEMENT DUE TO CONSTRUCTION ACTIVITIES WILL BE AT THE CONTRACTORS' EXPENSE AT NO ADDITIONAL COST TO TXDOT.



MATCH LINE STA 121+00

MATCH LINE STA 132+00



MATCH LINE STA 132+00

EXISTING  
620.31

618.61

616.46

614.46

612.28

610.45

609.21

608.39

607.82

607.50

607.25

599.72

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



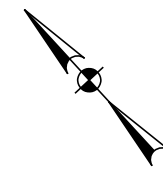
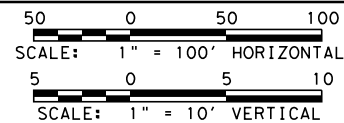
**US 287  
PLAN AND PROFILE  
STA 121+00 TO STA 132+00**

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	148
CHECK CPM	0172	05	129	

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**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

- NOTES:**
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  - REFER TO TYPICAL SECTIONS FOR PAVEMENT DETAILS.
  - SEE HORIZONTAL CONTROL LAYOUT SHEETS FOR BASELINE DATA AND SURVEY CONTROL INFORMATION.
  - EXISTING CABLE BARRIER TO REMAIN IS TO BE PROTECTED IN PLACE. DAMAGE TO THE EXISTING CABLE BARRIER AND/OR EXISTING RIPRAP MOWSTRIP REQUIRING REPAIR OR REPLACEMENT DUE TO CONSTRUCTION ACTIVITIES WILL BE AT THE CONTRACTORS' EXPENSE AT NO ADDITIONAL COST TO TXDOT.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



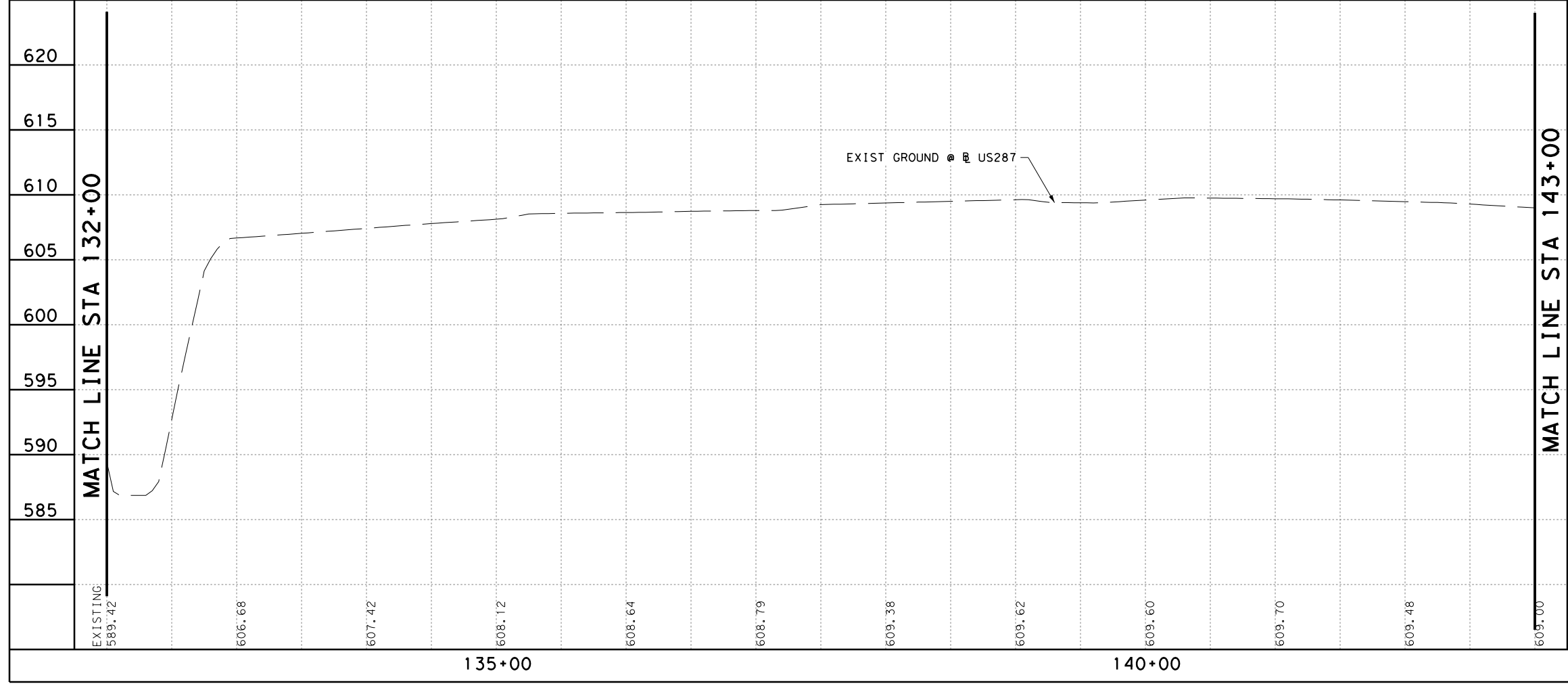
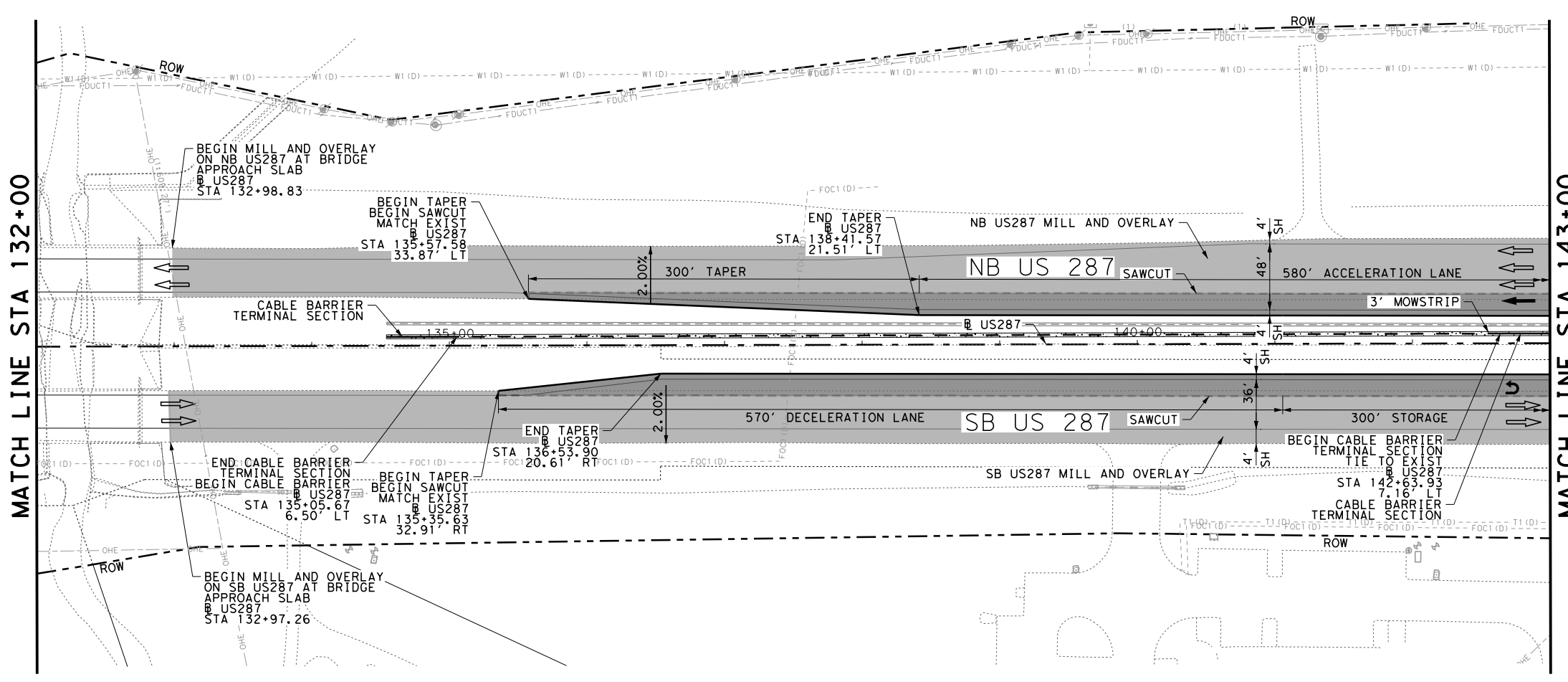
**US 287  
PLAN AND PROFILE  
STA 132+00 TO STA 143+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 12 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 149
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

MATCH LINE STA 132+00

MATCH LINE STA 143+00

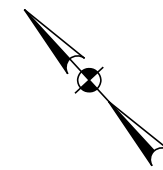
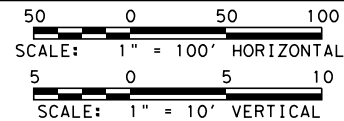


MATCH LINE STA 143+00

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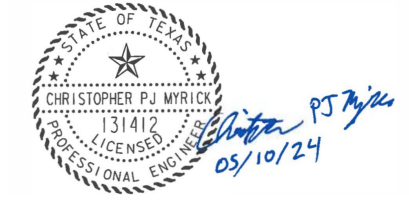


**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

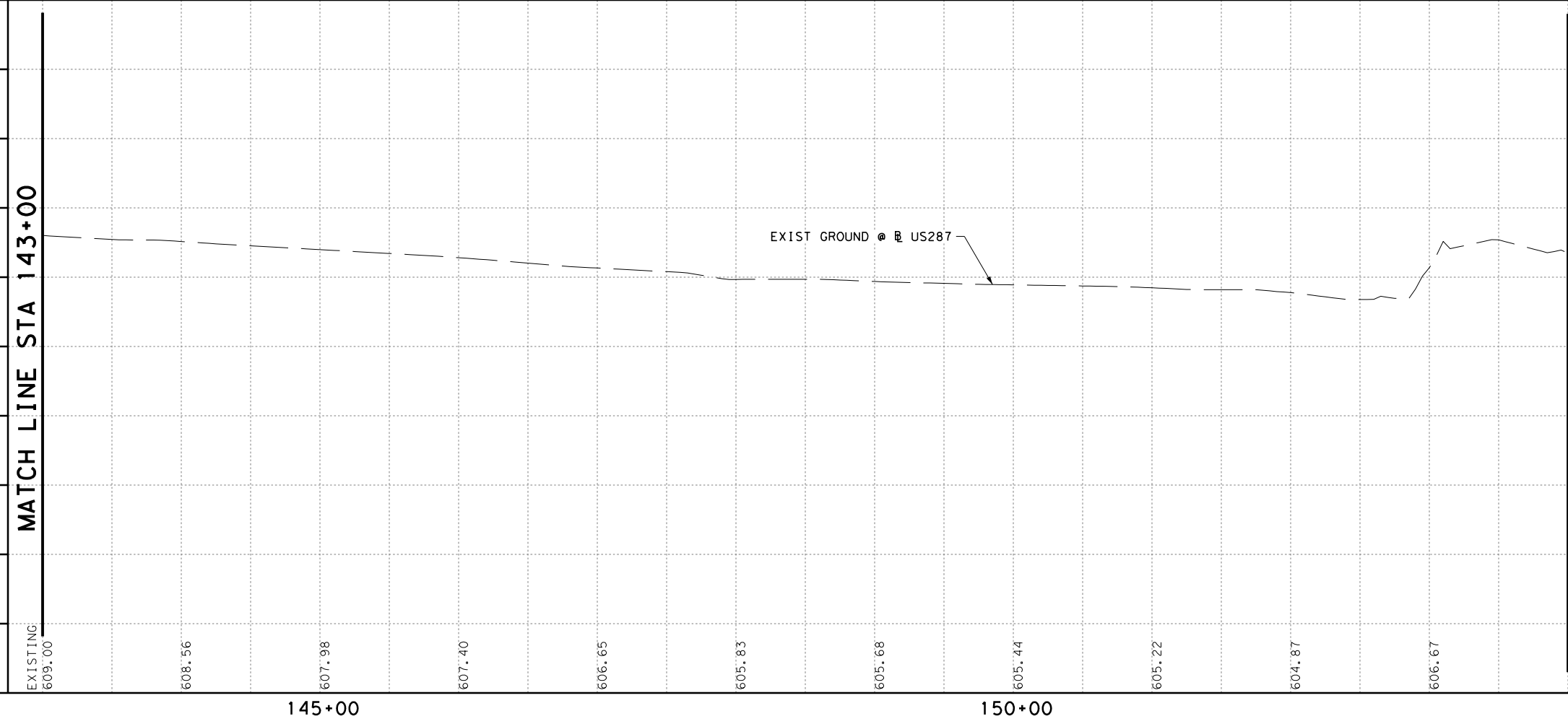
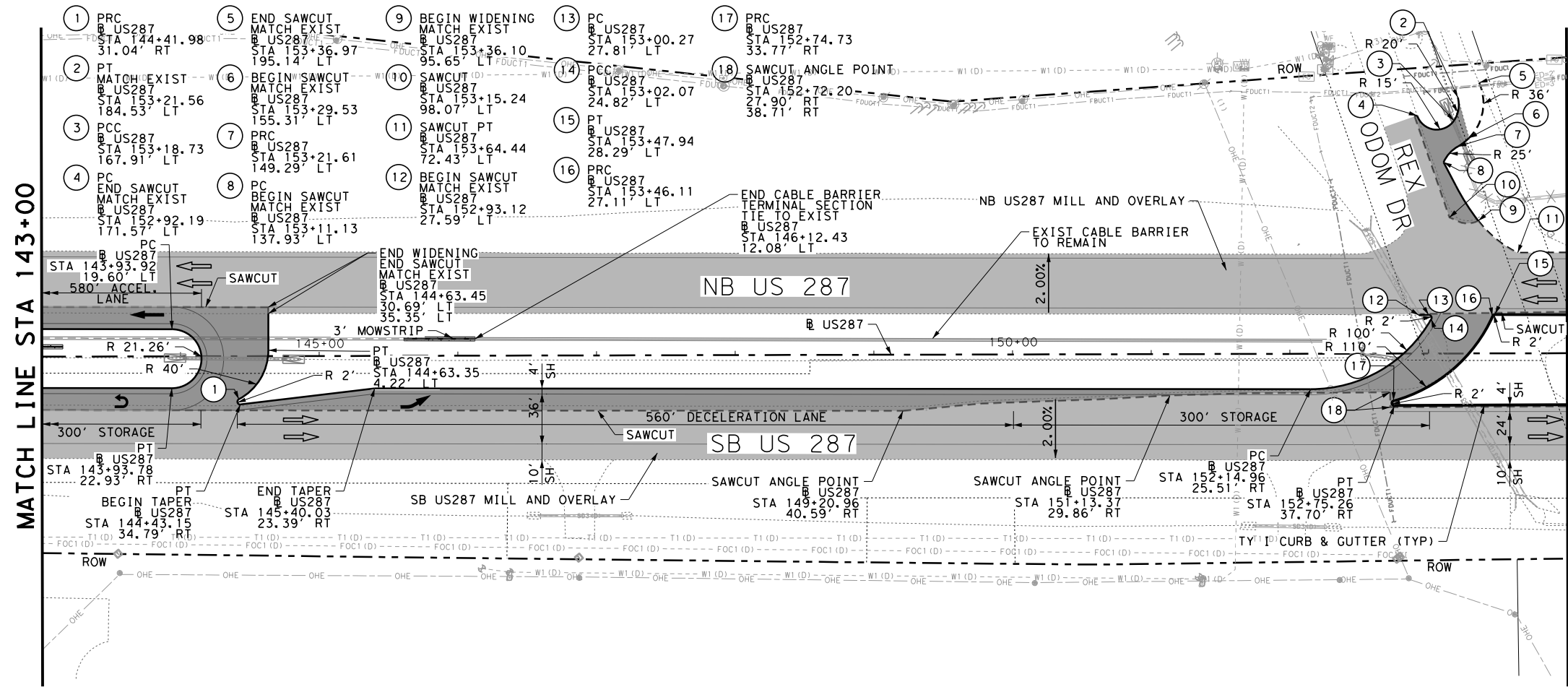
**NOTES:**

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5. EXISTING CABLE BARRIER TO REMAIN IS TO BE PROTECTED IN PLACE. DAMAGE TO THE EXISTING CABLE BARRIER AND/OR EXISTING RIPRAP MOWSTRIP REQUIRING REPAIR OR REPLACEMENT DUE TO CONSTRUCTION ACTIVITIES WILL BE AT THE CONTRACTORS' EXPENSE AT NO ADDITIONAL COST TO TXDOT.



MATCH LINE STA 143+00

MATCH LINE STA 154+00



MATCH LINE STA 154+00

MATCH LINE STA 143+00

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN AND PROFILE  
STA 143+00 TO STA 154+00**

SCALE: 1" = 100' HORIZONTAL		SHEET 13 OF 22	
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	0172	05	129

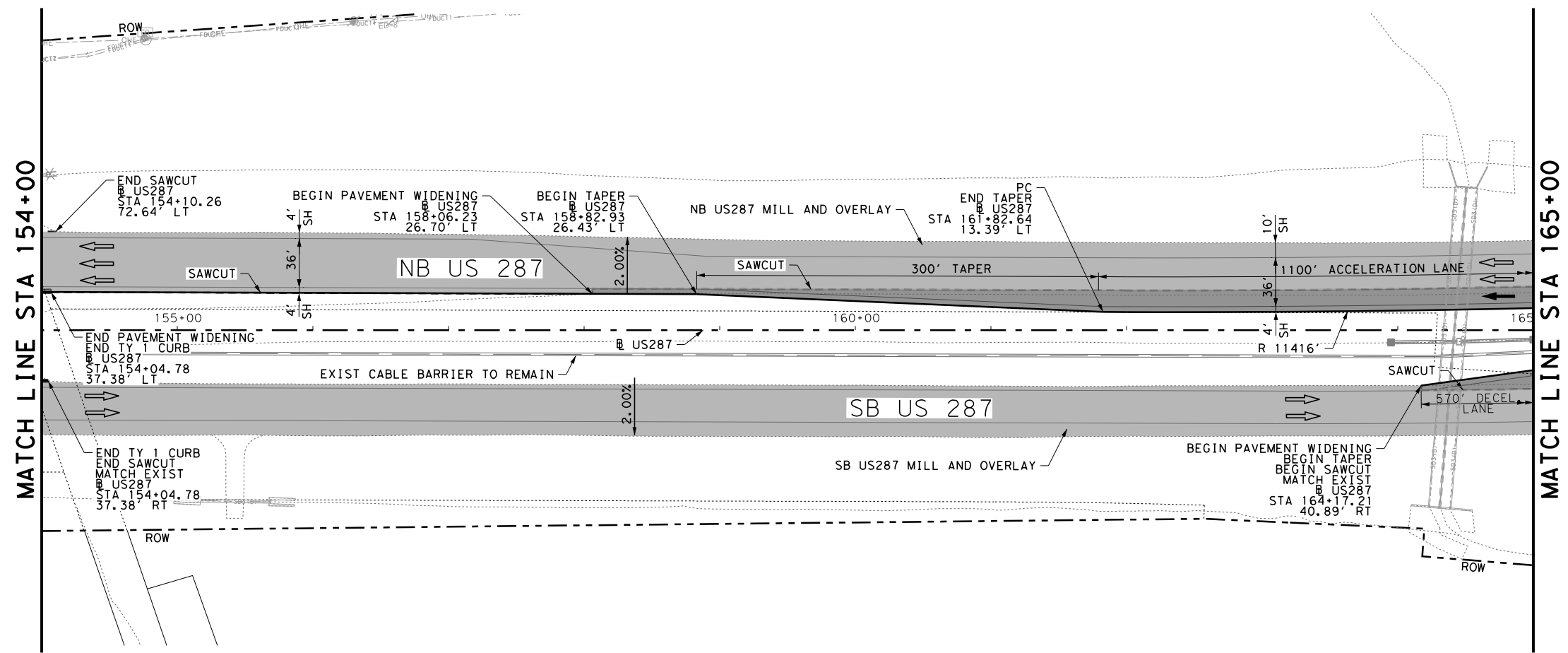
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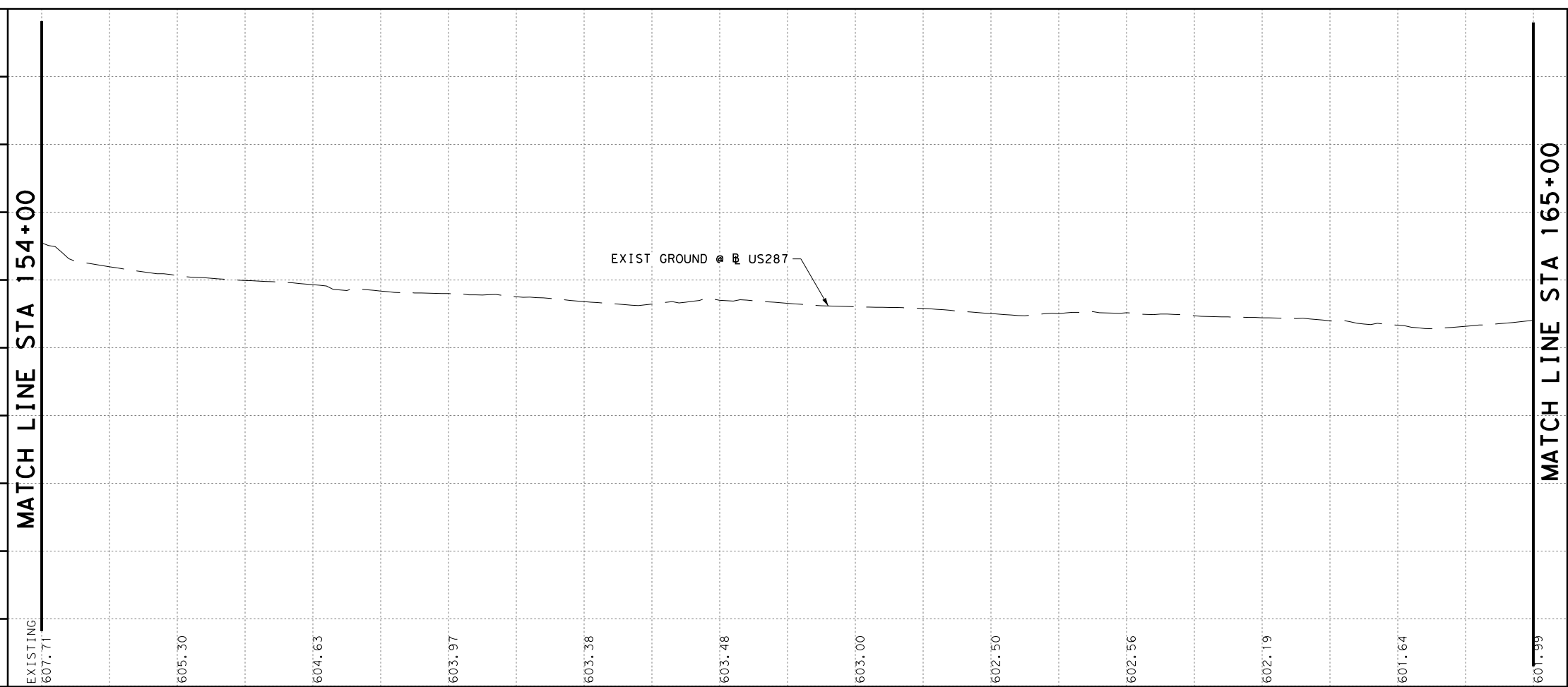
MATCH LINE STA 154+00

MATCH LINE STA 165+00



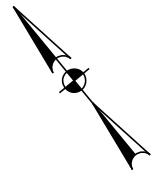
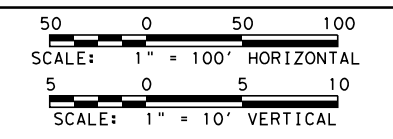
MATCH LINE STA 154+00

MATCH LINE STA 165+00



EXISTING	607.71	605.30	604.63	603.97	603.38	603.48	603.00	602.50	602.56	602.19	601.64	601.99
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155+00 160+00 165+00

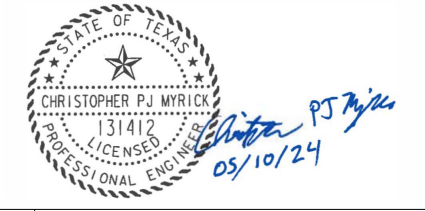


LEGEND

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

NOTES:

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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN AND PROFILE  
STA 154+00 TO STA 165+00**

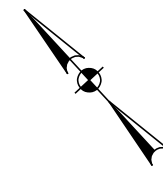
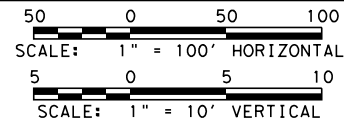
SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 14 OF 22

DESIGN	CPM	FED. RD. DIV. NO.	6	PROJECT NO.	SEE TITLE SHEET	HIGHWAY NO.	US 287
GRAPHICS	AP	STATE	TEXAS	DISTRICT	DALLAS	COUNTY	ELLIS
CHECK	SA	CONTROL	0172	SECTION	05	JOB	129
CHECK	CPM						

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**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

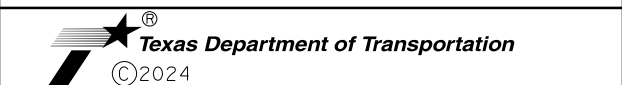
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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



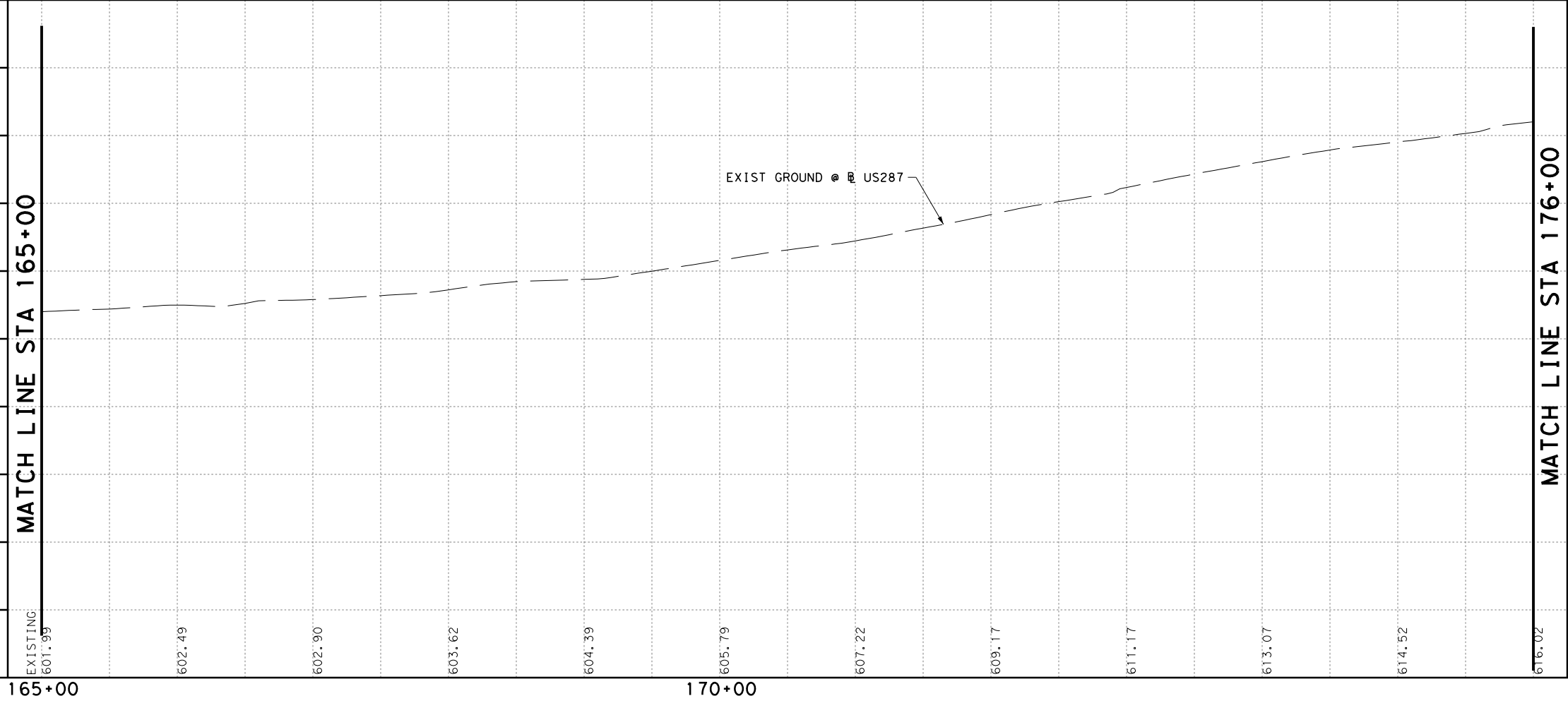
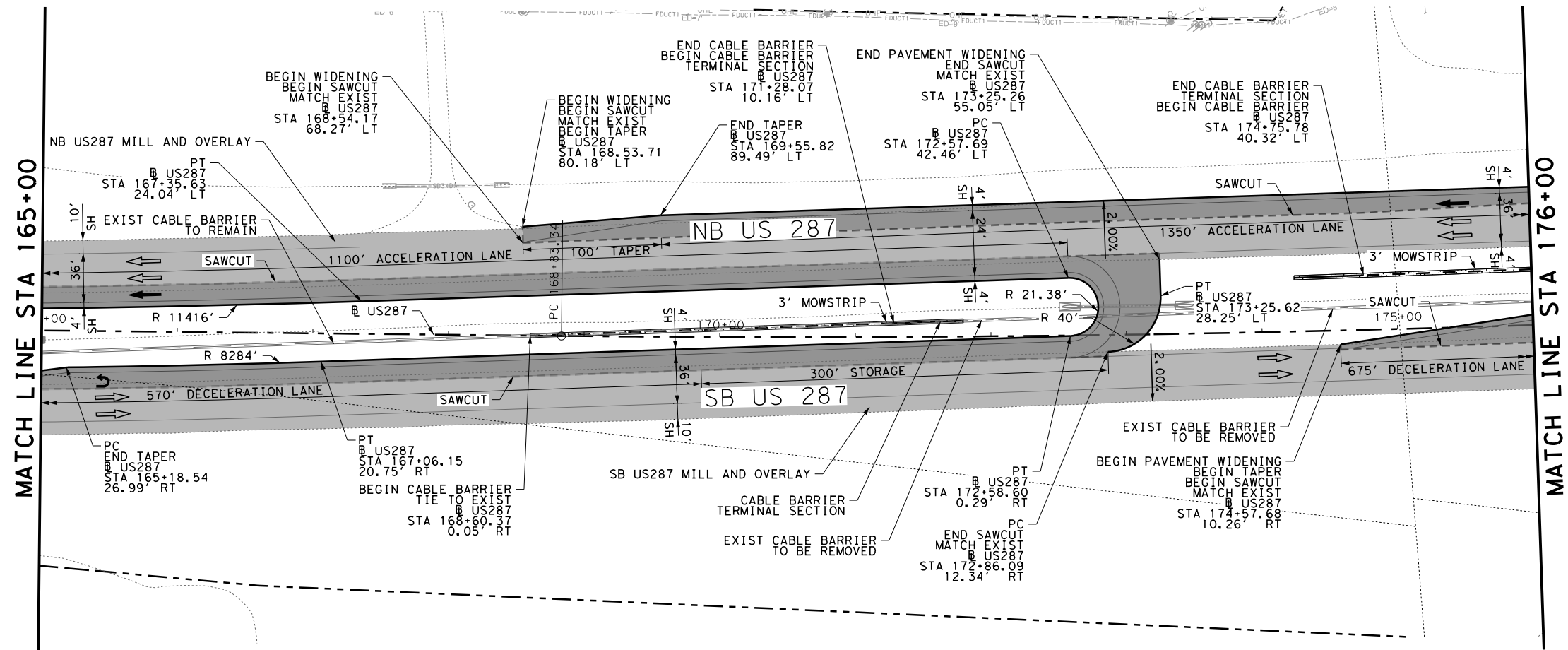
**US 287  
PLAN AND PROFILE  
STA 165+00 TO STA 176+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 15 OF 22

DESIGN	CPM	FED. RD. DIV. NO.	6	PROJECT NO.	SEE TITLE SHEET	HIGHWAY NO.	US 287
GRAPHICS	AP	STATE	TEXAS	DISTRICT	DALLAS	COUNTY	ELLIS
CHECK	SA	CONTROL	SECTION	JOB	152		
CHECK	CPM		0172		05		129

MATCH LINE STA 165+00

MATCH LINE STA 176+00



MATCH LINE STA 176+00

EXISTING  
601.99

602.49

602.90

603.62

604.39

605.79

607.22

609.17

611.17

613.07

614.52

616.02

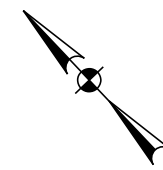
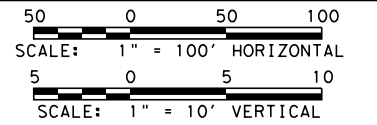
165+00

170+00

5/11/2024 1:12:35 PM

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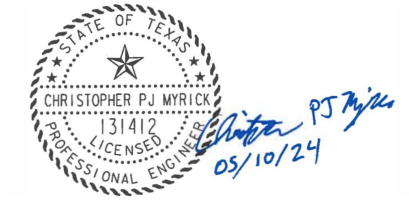


### LEGEND

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

### NOTES:

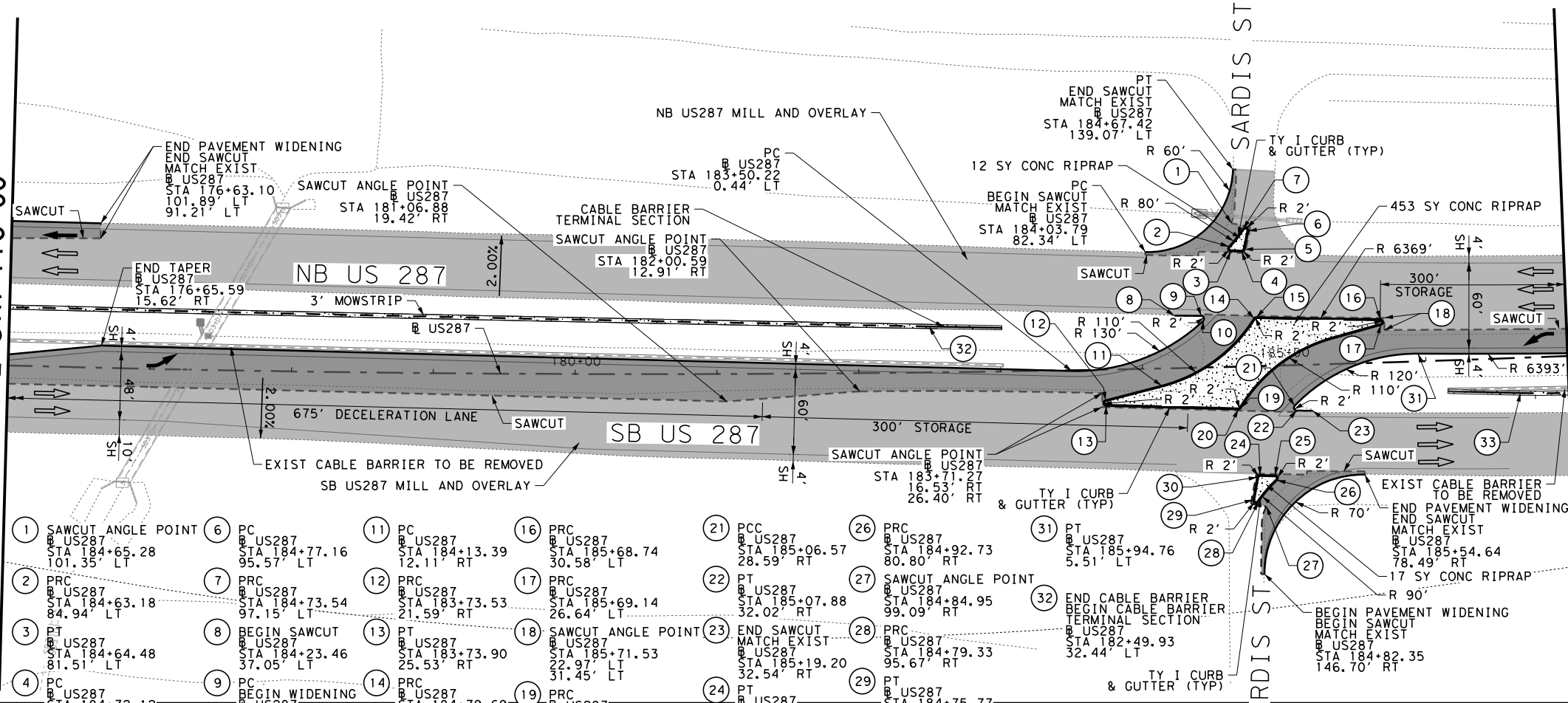
1. ALL DIMENSIONS ARE MEASURED TO FACE OF CURB OR BARRIER, WHERE CURB OR BARRIER IS PROPOSED, OR EDGE OF PAVEMENT, UNLESS NOTED OTHERWISE.
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MATCH LINE STA 176+00

MATCH LINE STA 187+00

SARDIS ST

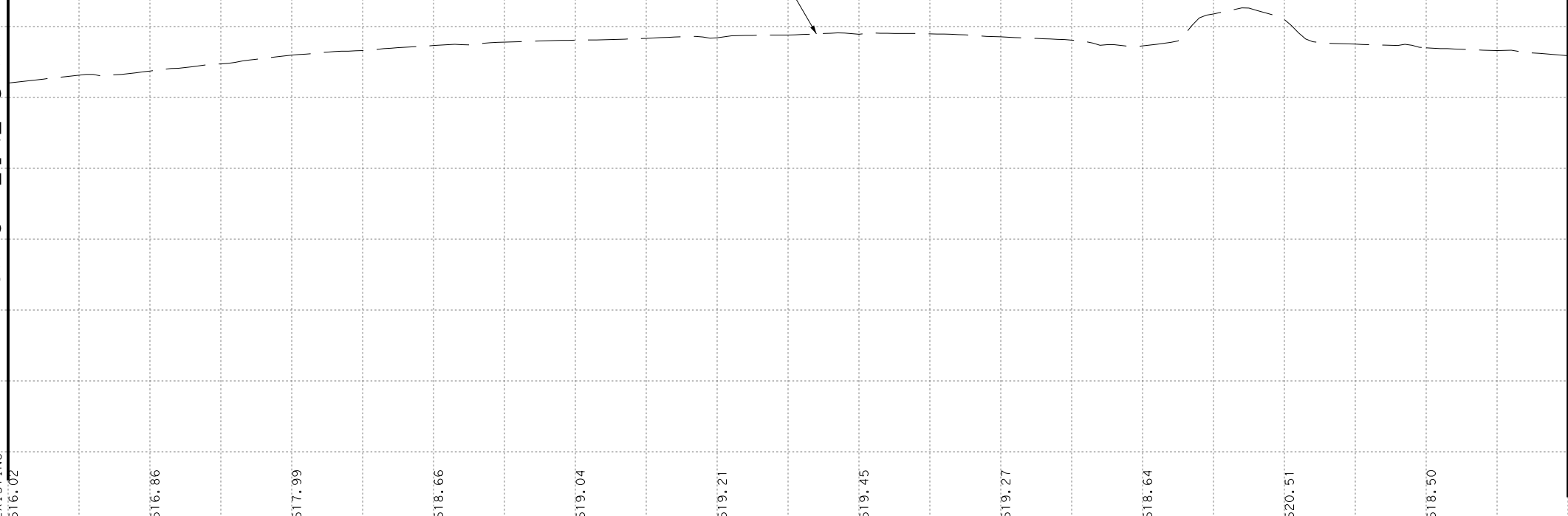


1 SAWCUT ANGLE POINT STA 184+65.28 101.35' LT	6 PC STA 184+77.16 95.57' LT	11 PC STA 184+13.39 12.11' RT	16 PRC STA 185+68.74 30.58' LT	21 PCC STA 185+06.57 28.59' RT	26 PRC STA 184+92.73 80.80' RT
2 PRC STA 184+63.18 84.94' LT	7 PRC STA 184+73.54 97.15' LT	12 PRC STA 183+73.53 21.59' RT	17 PRC STA 185+69.14 26.64' LT	22 PT STA 185+07.88 32.02' RT	27 SAWCUT ANGLE POINT STA 184+84.95 99.09' RT
3 PT STA 184+64.48 81.51' LT	8 BEGIN SAWCUT STA 184+23.46 37.05' LT	13 PT STA 183+73.90 25.53' RT	18 SAWCUT ANGLE POINT STA 185+71.53 51.45' LT	23 END SAWCUT STA 185+19.20 32.54' RT	28 PRC STA 184+79.33 95.67' RT
4 PC STA 184+72.12 81.11' LT	9 BEGIN WIDENING STA 184+42.37 36.51' LT	14 PRC STA 184+79.69 33.70' LT	19 PRC STA 184+68.64 29.13' RT	24 PT STA 184+81.08 76.80' RT	29 PT STA 184+75.77 94.09' RT
5 PT STA 184+74.18 82.67' LT	10 PT STA 184+43.65 33.02' LT	15 PRC STA 184+81.45 34.58' LT	20 PT STA 184+66.86 30.04' RT	25 PC STA 184+91.51 77.30' RT	30 PC STA 184+79.04 78.39' RT
					33 END CABLE BARRIER STA 186+65.84 24.86' RT

EXIST GROUND @ US 287

MATCH LINE STA 176+00

MATCH LINE STA 187+00



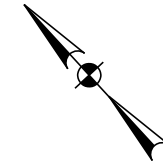
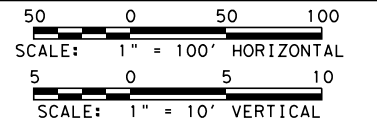
NO.	DATE	DESCRIPTION	APPROV.
<b>BRIDGEFARMER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
<b>Texas Department of Transportation</b> ©2024			
<b>US 287</b> <b>PLAN AND PROFILE</b> <b>STA 176+00 TO STA 187+00</b>			
SCALE: 1" = 100' HORIZONTAL		SHEET 16 OF 22	
SCALE: 1" = 10' VERTICAL			
DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET	US 287
CHECK SA	TEXAS	DALLAS	ELLIS
CHECK CPM	CONTROL	SECTION	JOB
	0172	05	129



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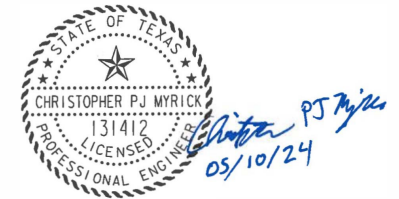


**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

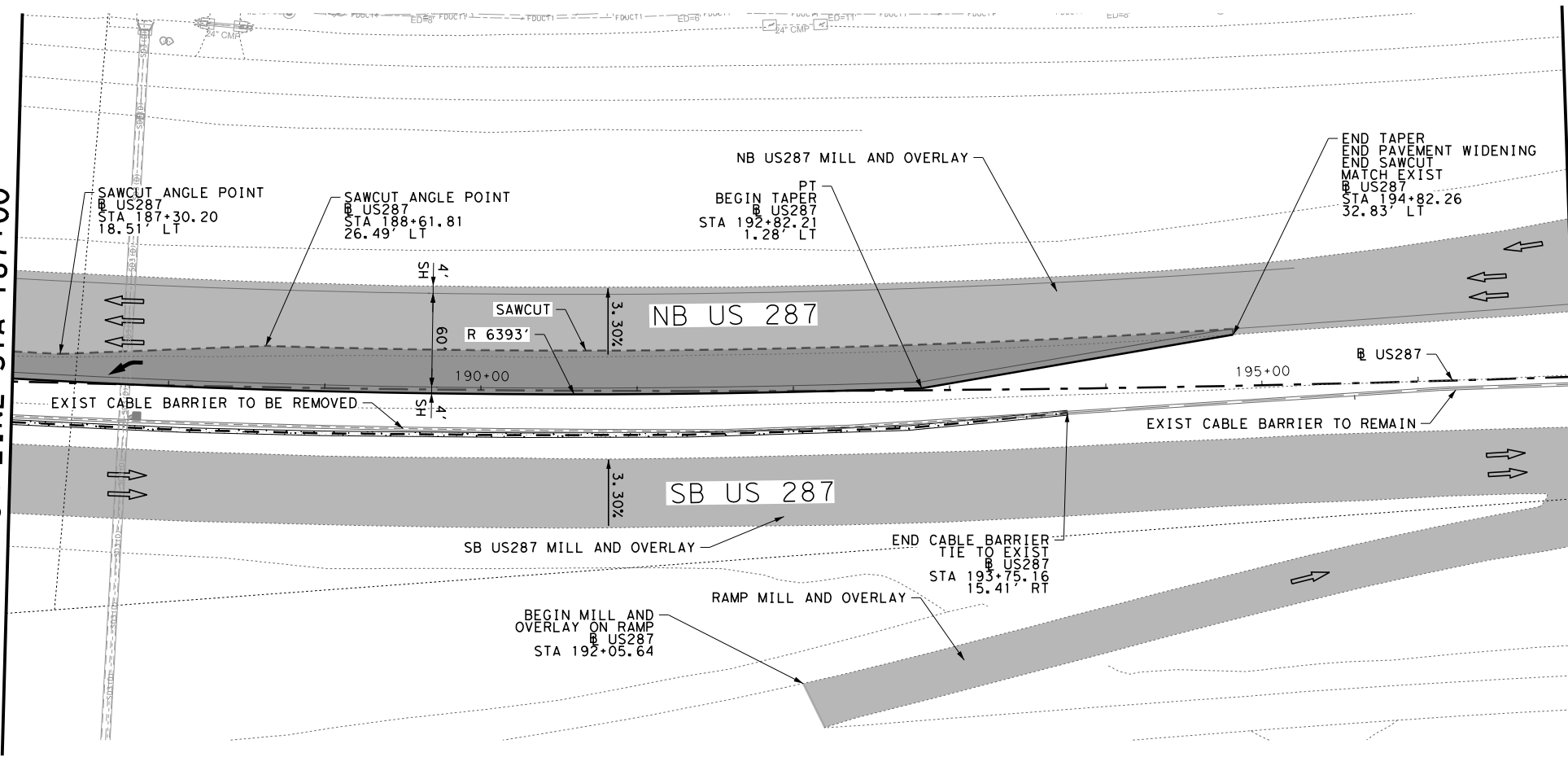
**NOTES:**

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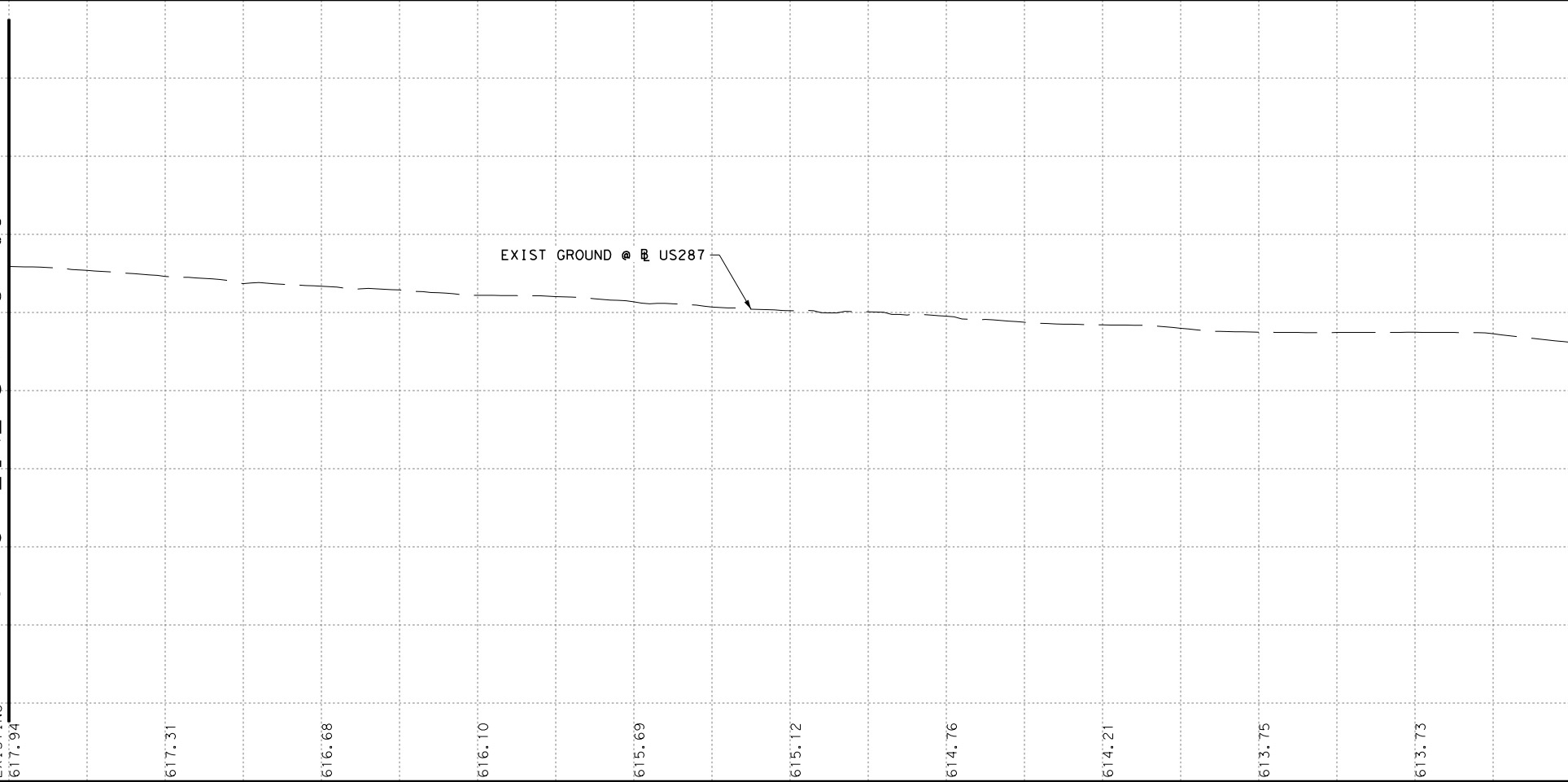
MATCH LINE STA 187+00

MATCH LINE STA 197+00



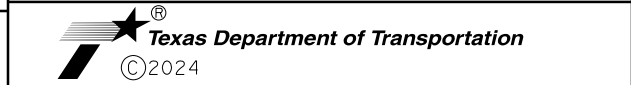
MATCH LINE STA 187+00

MATCH LINE STA 197+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN AND PROFILE  
STA 186+00 TO STA 197+00**

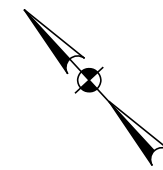
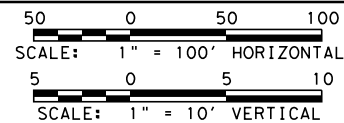
SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 17 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 154
CHECK CPM	CONTROL	SECTION	JOB	
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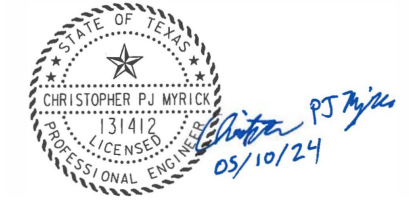
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**LEGEND**

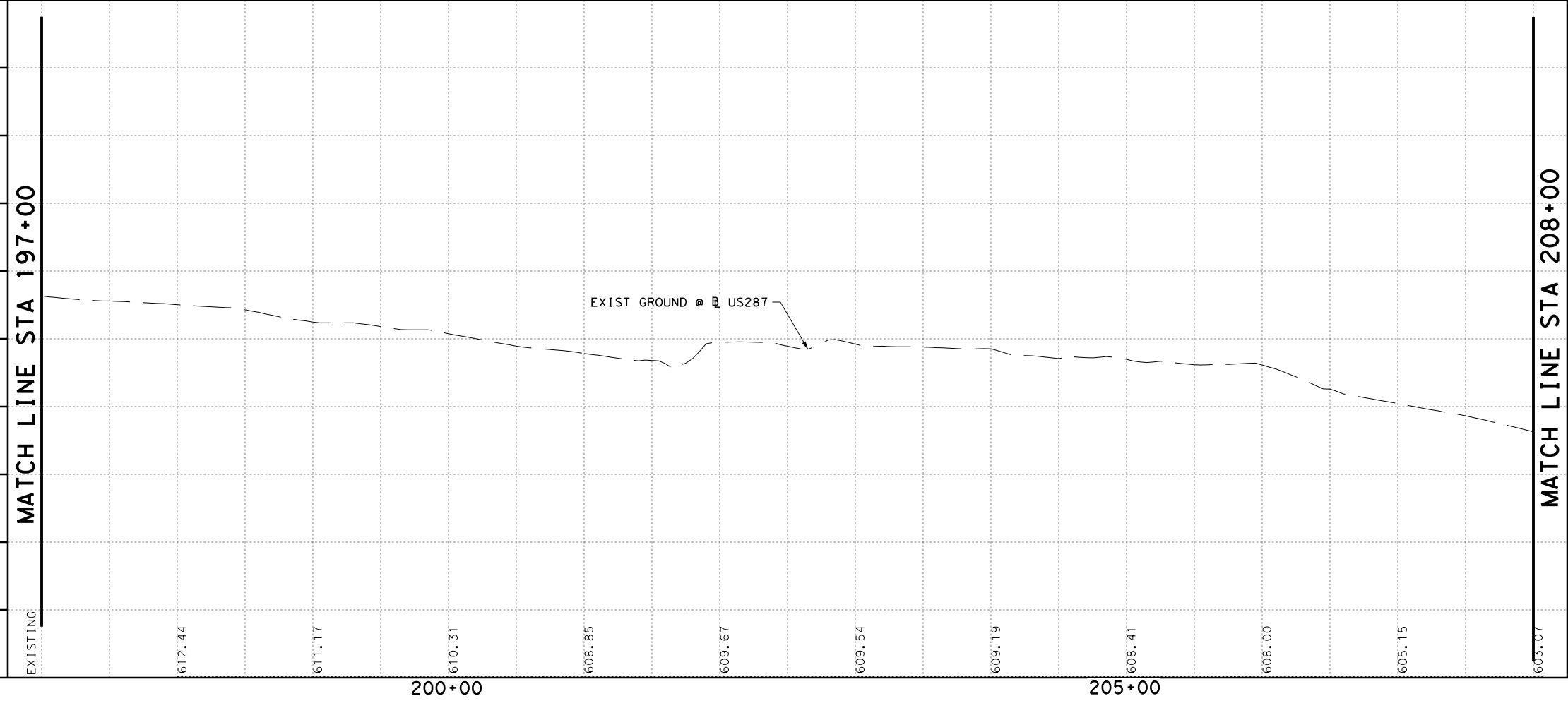
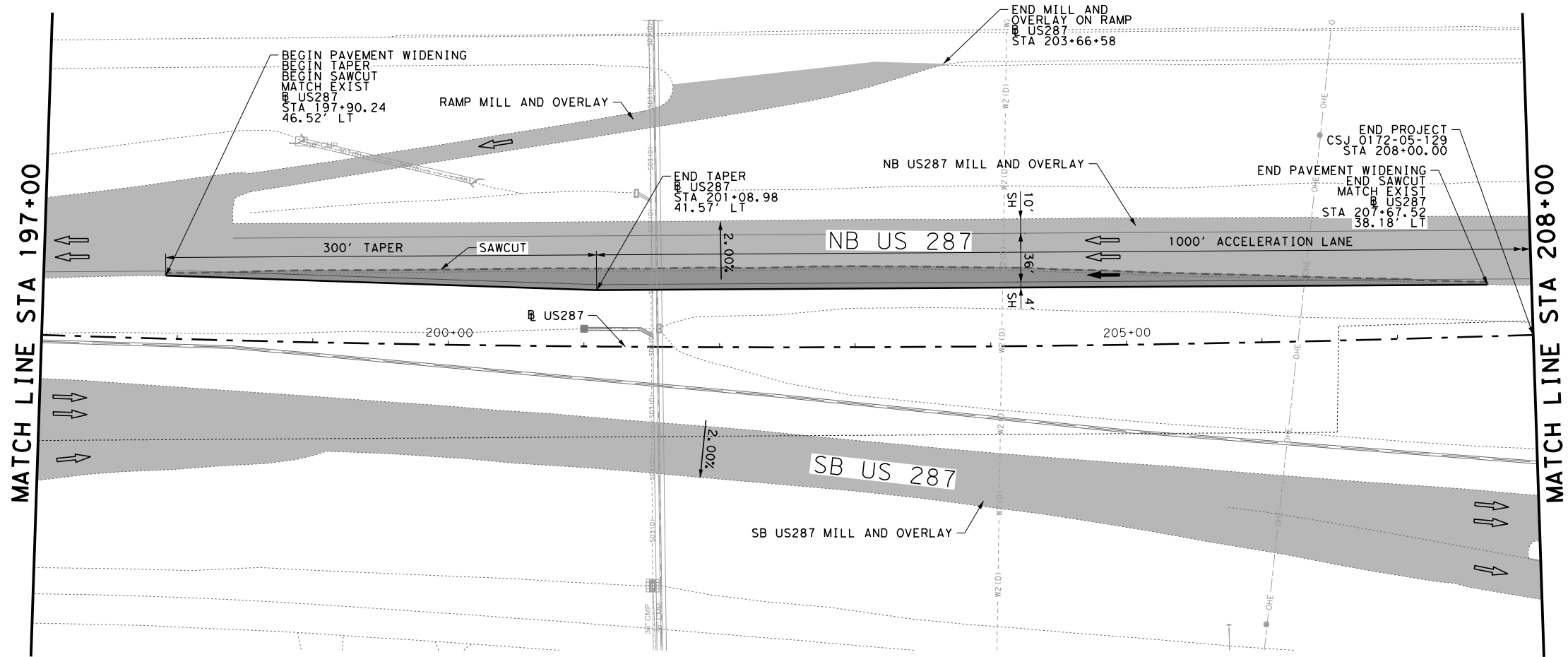
- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

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MATCH LINE STA 197+00

MATCH LINE STA 208+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN AND PROFILE  
STA 197+00 TO STA 208+00**

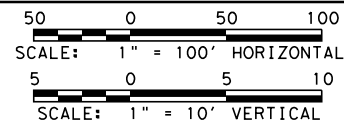
SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 18 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 155
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

**NOTES:**

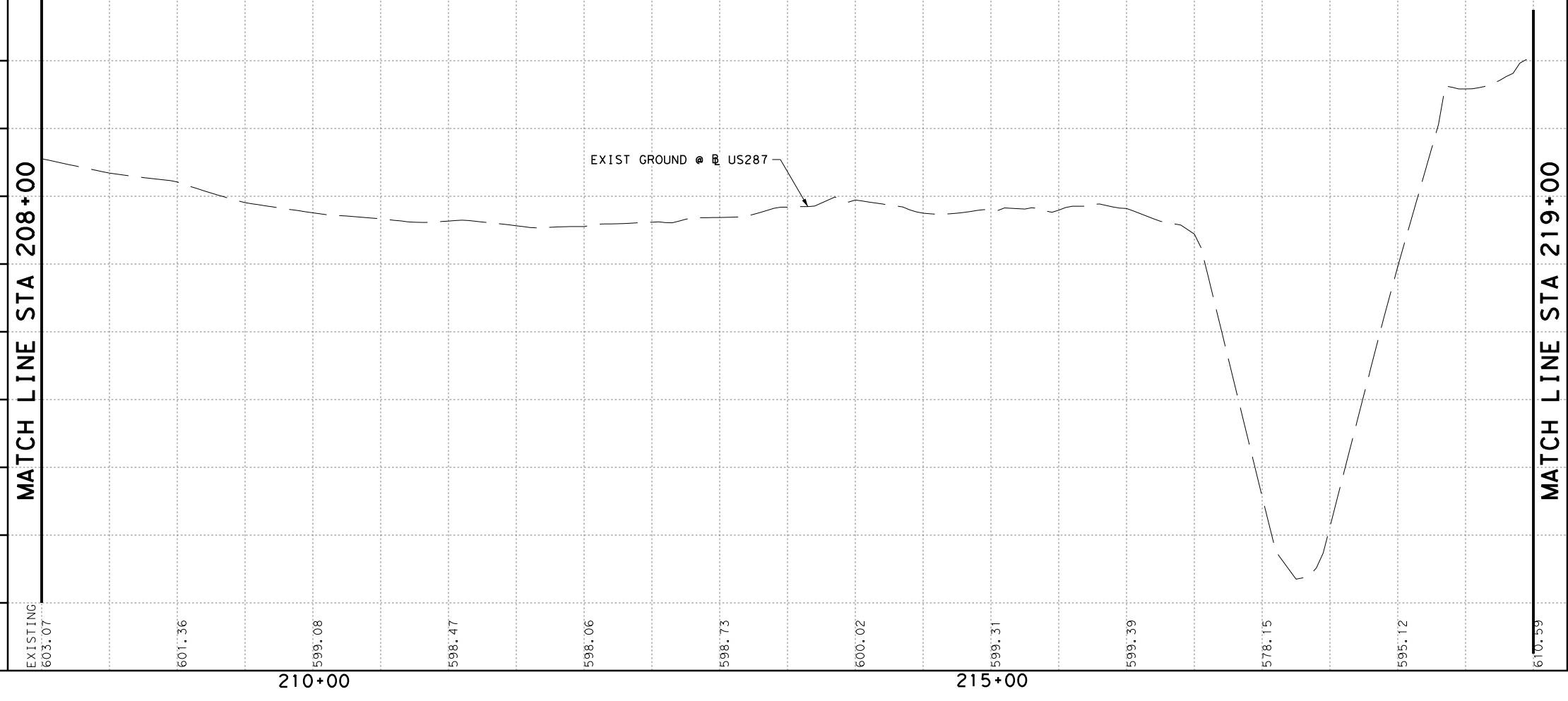
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MATCH LINE STA 208+00

MATCH LINE STA 219+00

**MATCH LINE SHEET 21**



MATCH LINE STA 219+00

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



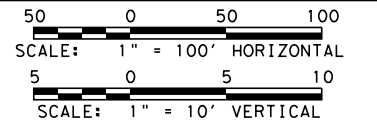
**US 287  
PLAN AND PROFILE  
STA 208+00 TO STA 219+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL

SHEET 19 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 156
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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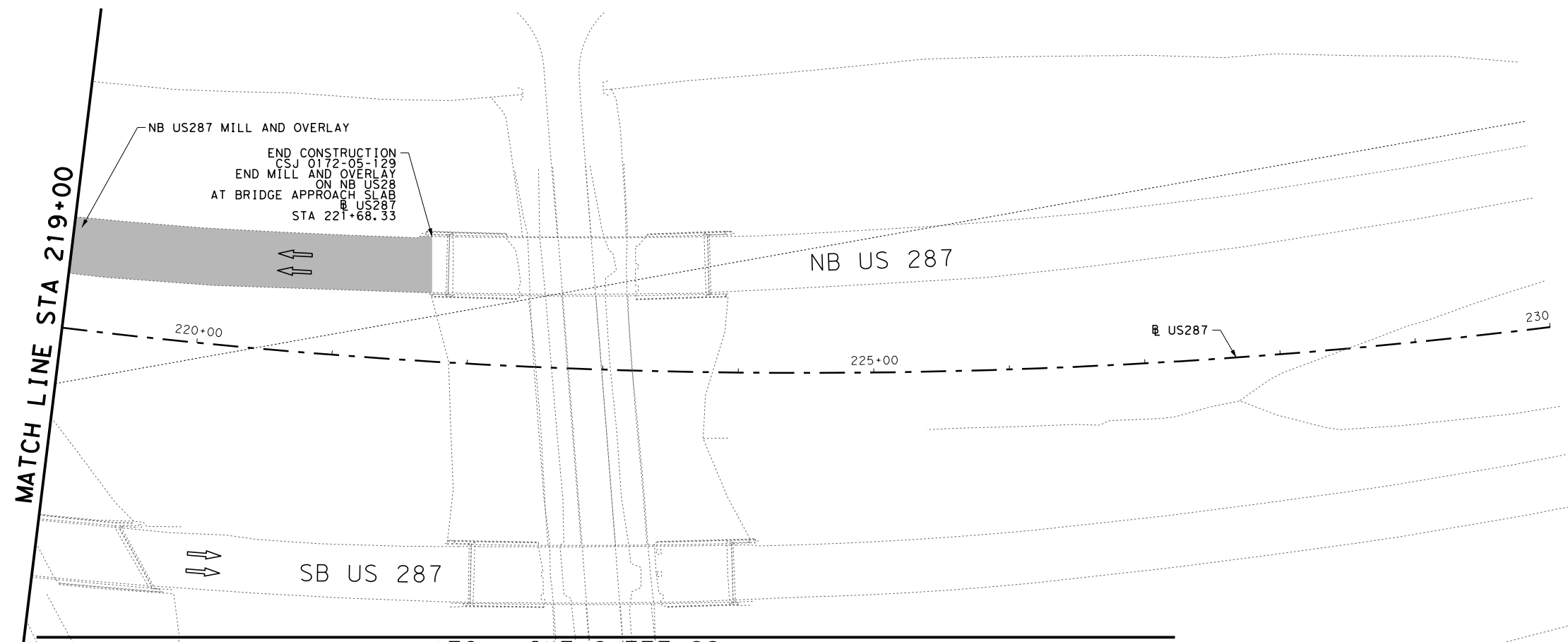


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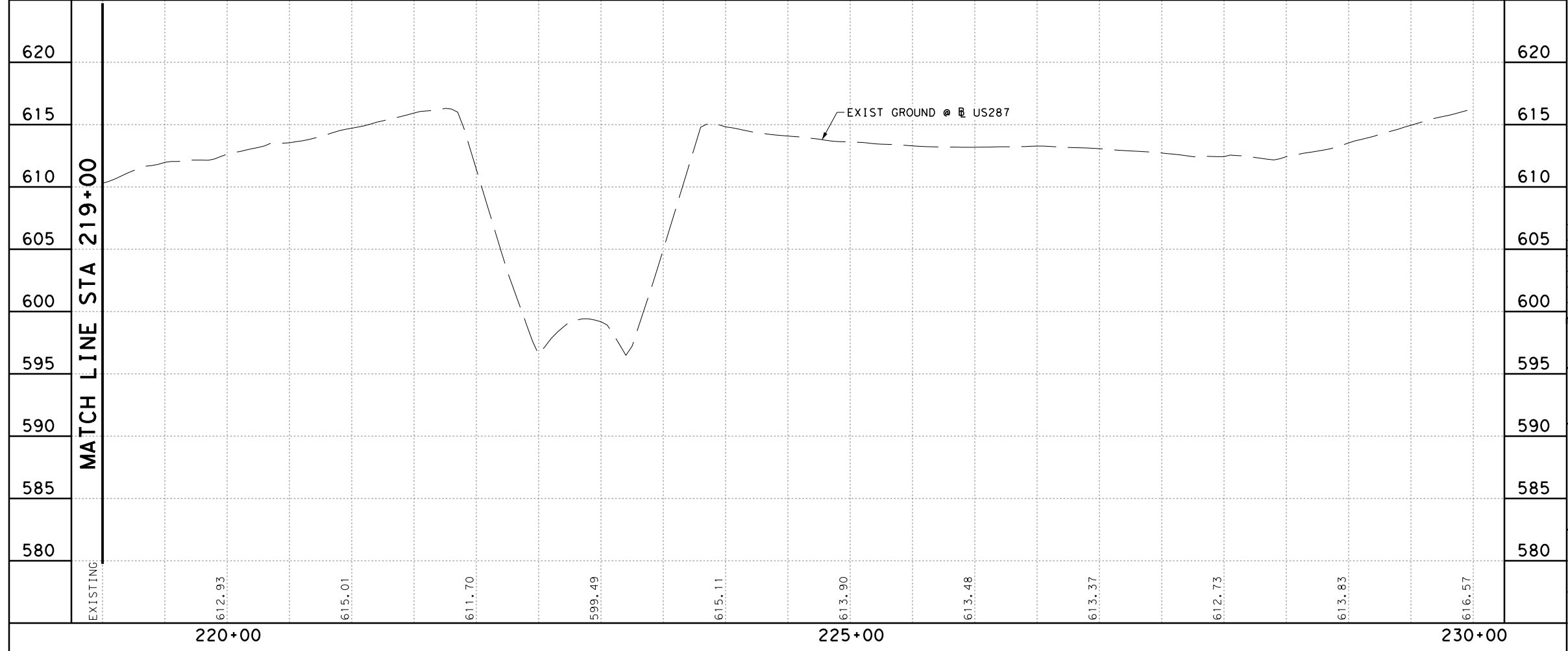
- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER

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**MATCH LINE SHEET 22**



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

**Texas Department of Transportation**  
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**US 287  
PLAN AND PROFILE  
STA 219+00 TO END PROJECT**

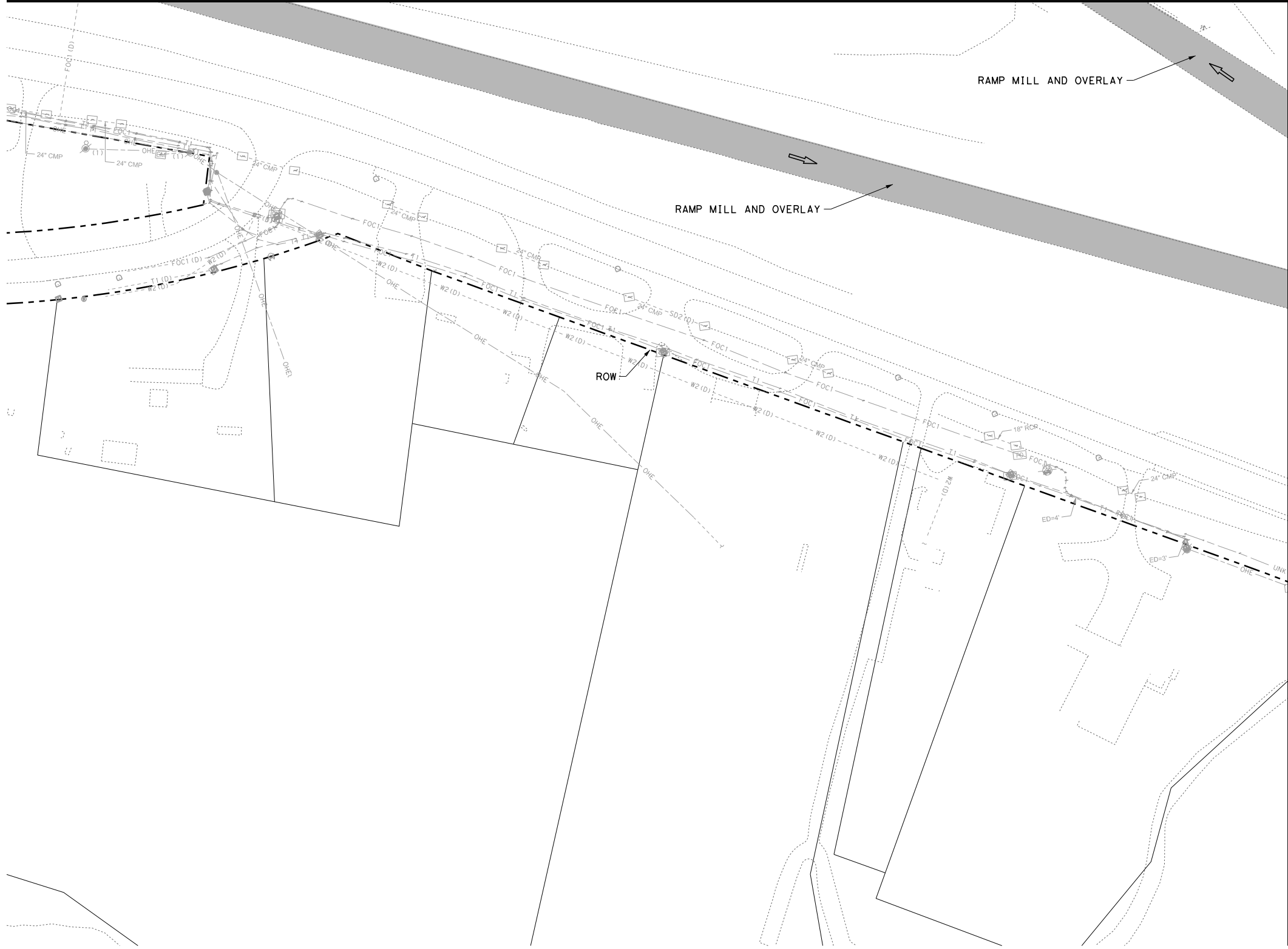
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1" = 10' VERTICAL SHEET 20 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 157
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

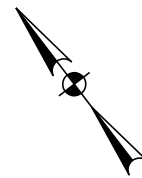
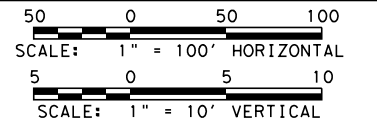
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MATCH LINE SHEET 19

MATCH LINE SHEET 22



NO PROFILE INFORMATION PROVIDED



LEGEND

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
- EXIST CABLE BARRIER TO REMAIN
- PROPOSED CABLE BARRIER
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- PROPOSED STORM SEWER

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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN & PROFILE**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 21 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 158
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

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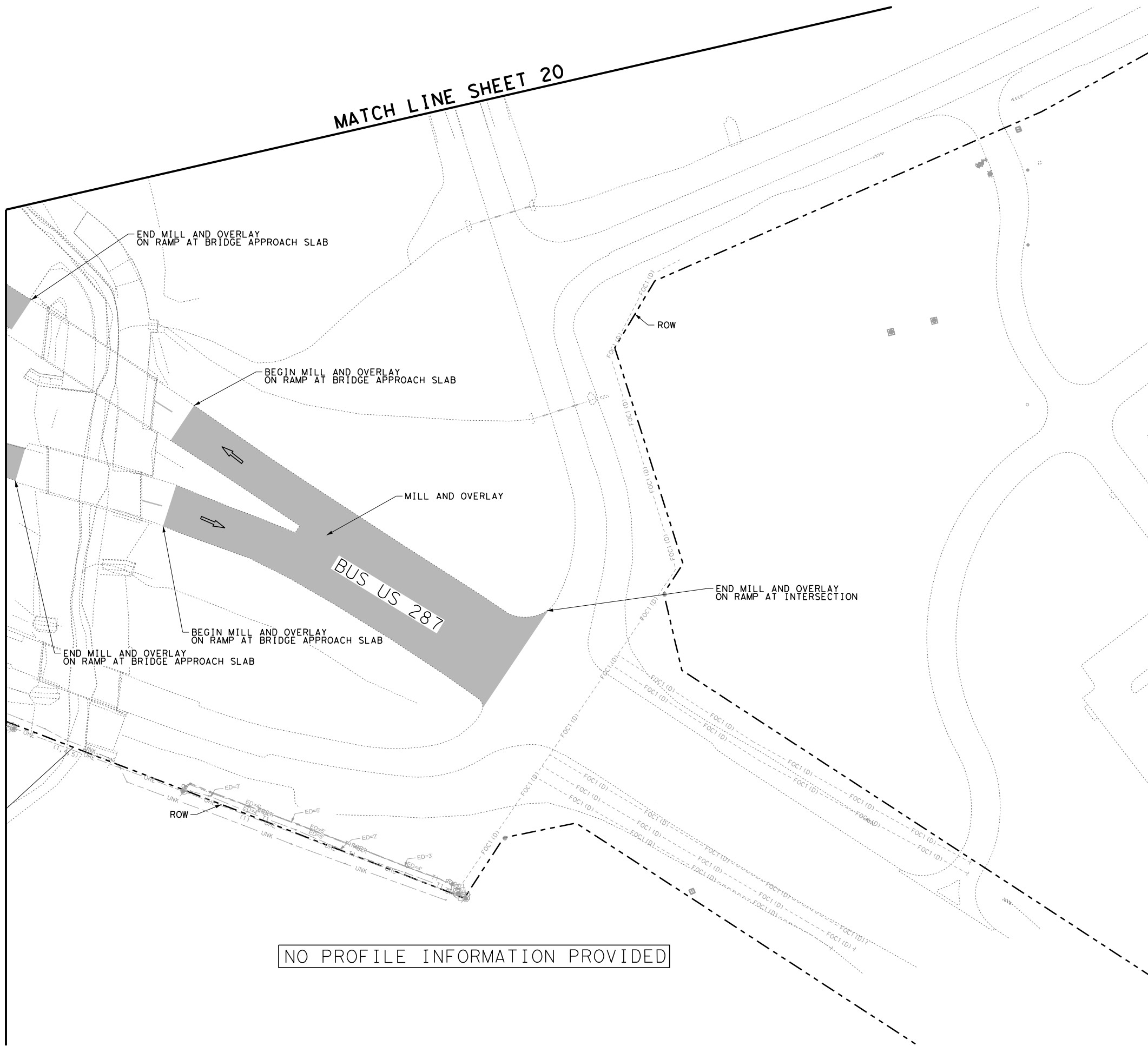
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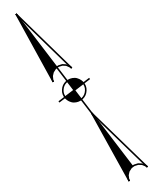
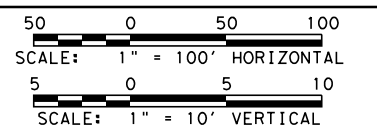
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MATCH LINE SHEET 21

MATCH LINE SHEET 20



NO PROFILE INFORMATION PROVIDED



**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- PAVEMENT CROSS-SLOPE
- PROPOSED PAVEMENT WIDENING
- MILL AND OVERLAY (2")
- CONCRETE RIPRAP (4")
- EXIST CABLE BARRIER TO REMOVE
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CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PLAN & PROFILE**

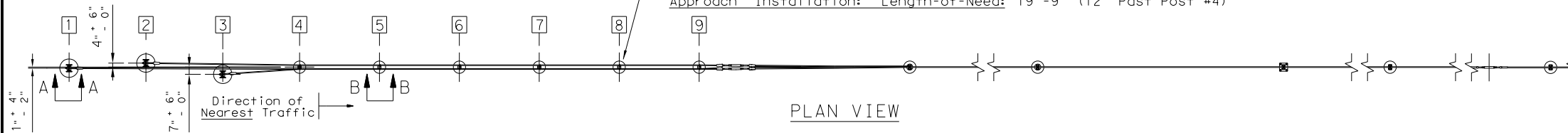
SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL SHEET 22 OF 22

DESIGN CPM	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK SA	TEXAS	DALLAS	ELLIS	SHEET NO. 159
CHECK CPM	CONTROL	SECTION	JOB	
	0172	05	129	

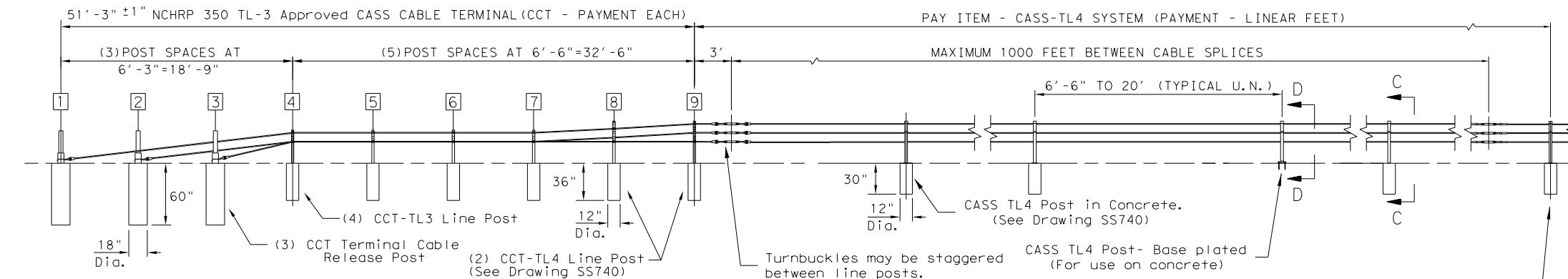
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

Preferred Installation: Locate post #2 away from nearest traffic. System has been successfully tested with opposite installation.

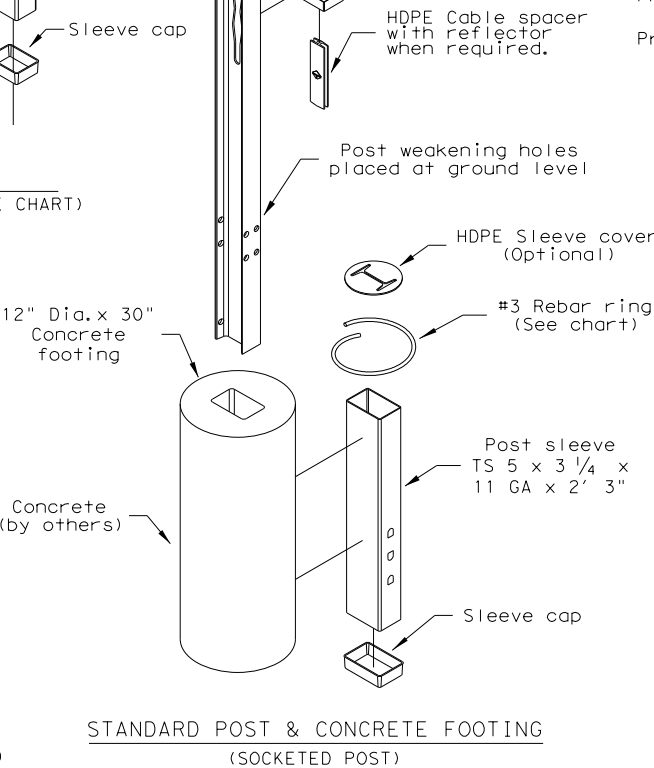
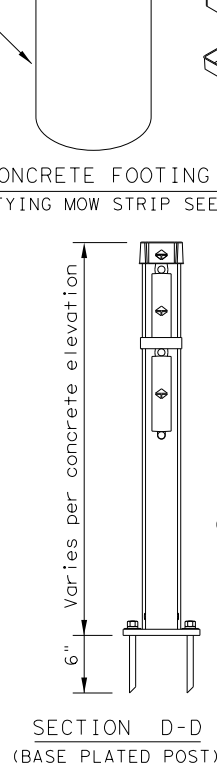
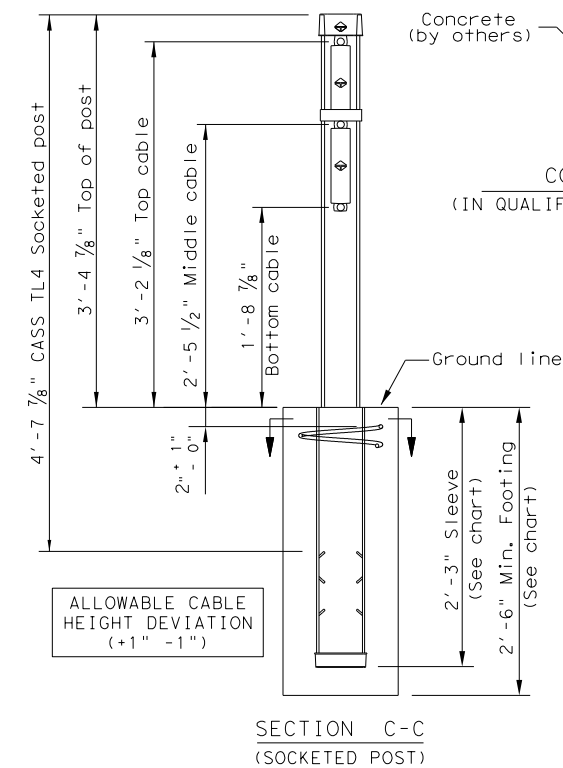
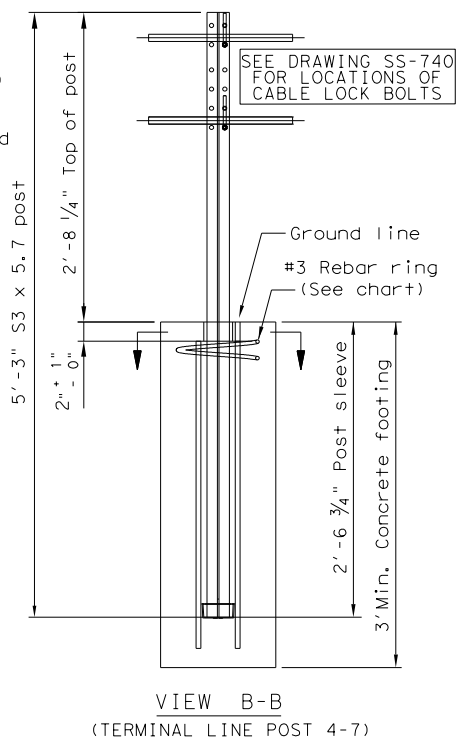
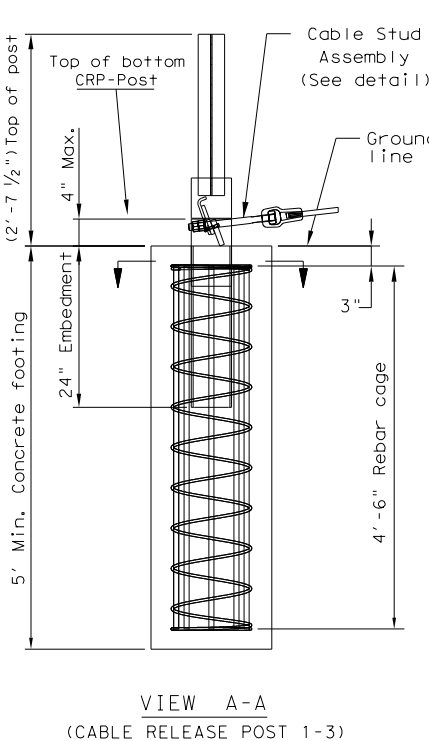
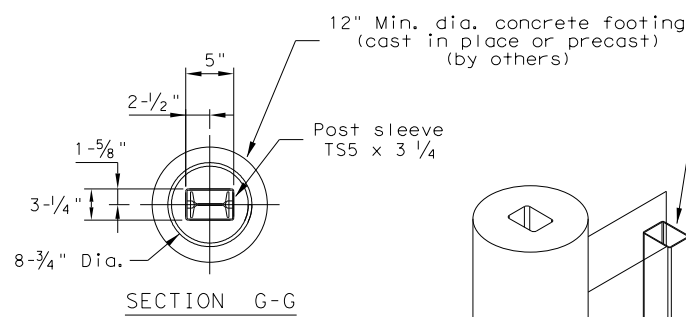
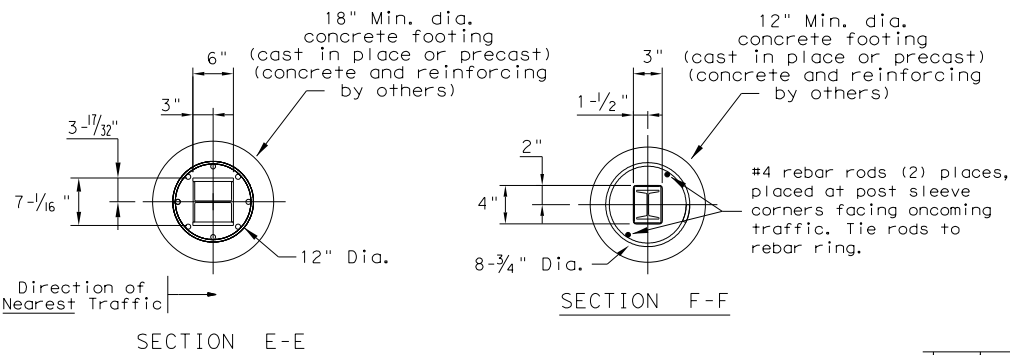
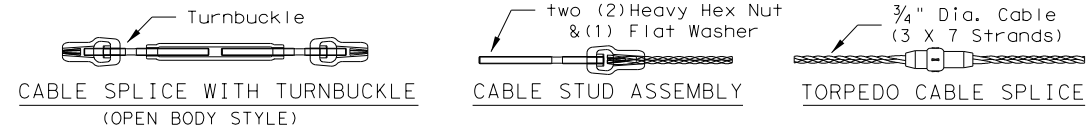
Length-of-Need Cass Cable Terminal (CCT):  
 Departure Installation: Length-of-Need: 44'-9" (At Post #8)  
 Approach Installation: Length-of-Need: 19'-9" (12" Post Post #4)



PLAN VIEW



ELEVATION VIEW  
(TYPICAL LAY-OUT)



- GENERAL NOTES
- This drawing is a general overview of CASS TL-4 Barrier System. See SS-740 (latest version) for specific details of CASS cable terminal (CCT) and cable safety system (CASS) requirements, proper installation, options and specification.
  - CASS is designed for bi-directional traffic flows and can be installed on either side of the median. Contact Trinity (800-527-6050) or consult the design, installation, or repair manual(s) for additional information.
  - All concrete for CASS footings shall be TxDOT class A. If class A or stronger concrete is utilized for the mowstrip, please see chart below for allowable footing depth and sleeve deviations.
  - All posts shall be socketed unless otherwise specified. All cables shall be pre-stretched unless otherwise specified.
  - For payment see Special Specification "Cable Barrier System".
  - CASS-TL4 shall be installed on shoulders or medians with slopes of 6:1 or flatter without obstructions, depressions, etc. That may significantly affect the stability of an errant vehicle. Grading of site and/or appropriate fill materials may be required. The designer/installer shall "Flatten" or "Round" various topographical inconsistencies that could interfere with the ability of the installer to consistently maintain the design height (in relation to the terrain) of the cables. Please consult manual(s) and / or TxDOT Memo(s) for installations in "Ditch Sections".
  - CASS TL-4 post spacing may be modified to avoid obstacles that conflict with the installation of cass-tl4 line posts or to reduce deflection on radiuses. No post space can exceed the maximum post TxDOT space limit of 20'. Reducing or increasing post spacing affects deflection. CASS TL-4 may be laterally transferred at a rate not to exceed 30:1.
  - Post foundations may be drilled through existing pavement. Please see line post foundation chart for minimum footing requirements in various applications.
  - For aesthetic purposes Trinity recommends all sleeves, driven posts, and lower cable release posts to be installed reasonably plumb (approximately 1/8" per foot).
  - CASS TL-4 shall be installed in well-drained, compacted, NCHRP Report 350 Standard soil. If soil does not meet this classification, if solid rock/concrete is encountered below grade or if soil is susceptible to severe freeze/thaw cycles, please contact Trinity about alternate footing designs(s). Trinity suggests the use of "Mow strips" for erosion prevention and ease of maintenance / installation.
  - See the Texas MUTCD for proper "Barrier" Delineation.

MOW STRIP DETAIL*			CONCRETE FOOTING CHART		
MOW STRIP	DEPTH	WIDTH	FOOTING	TUBE SLEEVE	REBAR RING
NONE			30" Min.	27" Min.	YES
HMA	6" Min.	3' Min.	27" Min.	15" Min.	NO
HMA	8" Min.	3' Min.	24" Min.	15" Min.	NO
RC	3" Min.	3' Min.	24" Min.	15" Min.	NO

Chart does not apply to Terminal Posts 1 thru 9.  
 \* Mow strip or pavement.  
 HMA = Hot Mix Asphalt (Not Recycled Asphalt Pavement).  
 RC = Reinforced Concrete (TxDOT Class A Minimum).

Trinity Highway Products, LLC.  
 2525 Stemmons Freeway  
 Dallas, TX 75207  
 Phone: (800) 644-7976  
 Product: INFO@TRIN.NET

CABLE TENSION CHART		
FAHRENHEIT DEGREES	PRE-STRETCHED LB / FORCE	
-10	7300	
0	7000	
10	6600	
20	6300	
30	6000	
40	5600	
50	5300	
60	5000	
70	4600	
80	4300	
90	4000	
100	3600	
110	3300	
120	3000	
130	2700	
140	2500	
150	2300	

Allowable deviation from chart in tangent sections: +800, -200 pounds/force. Cable tension readings are typically higher in curved cable sections.

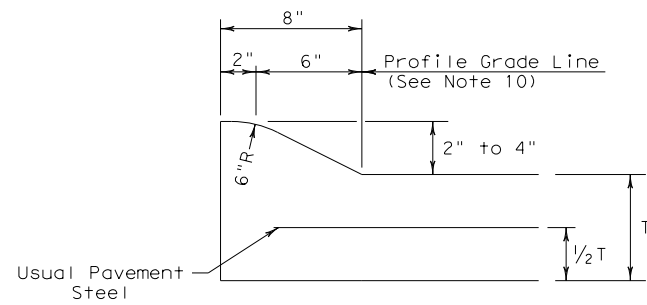


TRINITY  
 CABLE SAFETY SYSTEM  
 (TL-4)  
 CASS (TL4) - 14

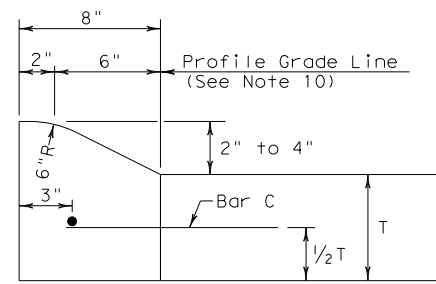
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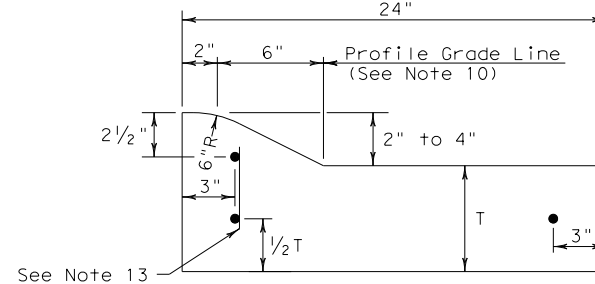
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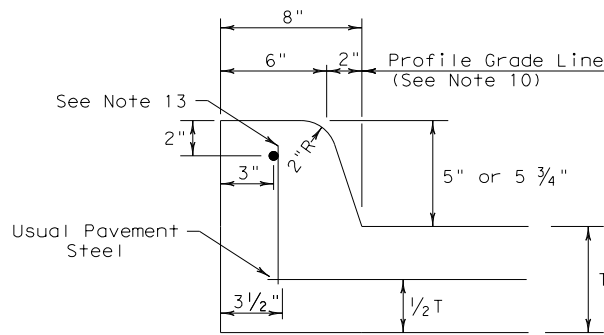
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2" - 4" HEIGHT



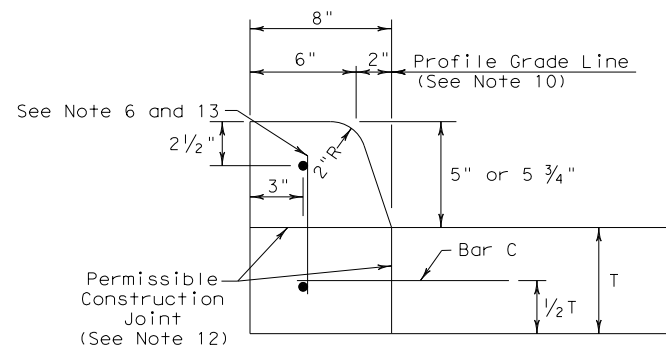
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2" - 4" HEIGHT



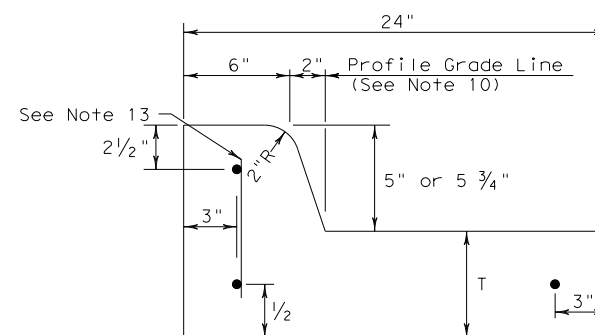
TYPE I CURB AND GUTTER  
2" - 4" HEIGHT



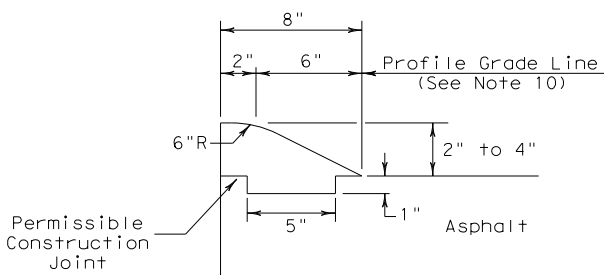
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5" - 5 3/4" HEIGHT



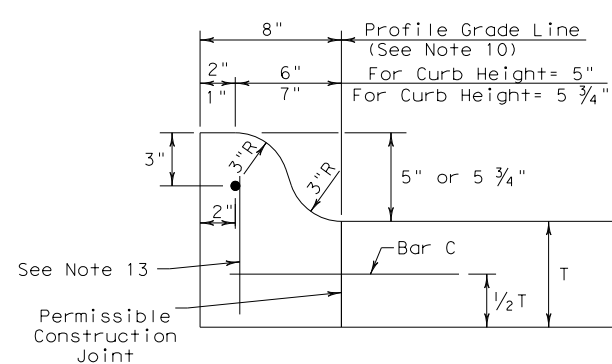
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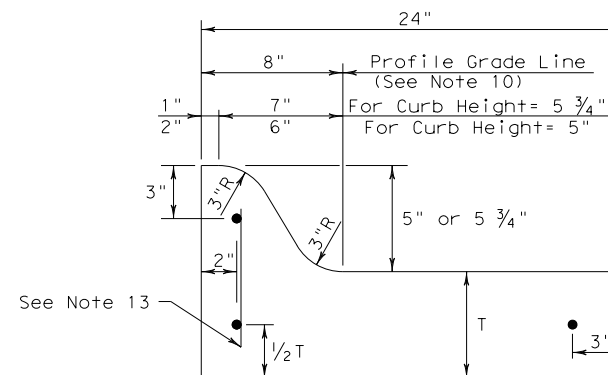
TYPE II CURB AND GUTTER  
5" - 5 3/4" HEIGHT



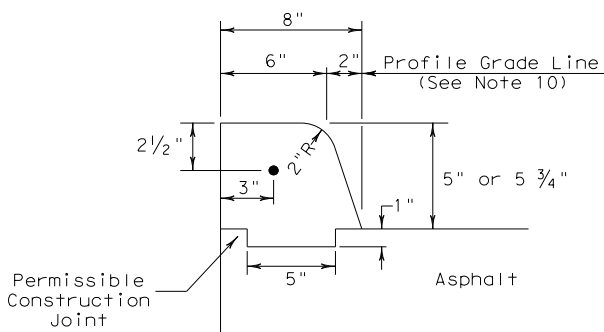
TYPE III CURB (KEYED)  
2" - 4" HEIGHT



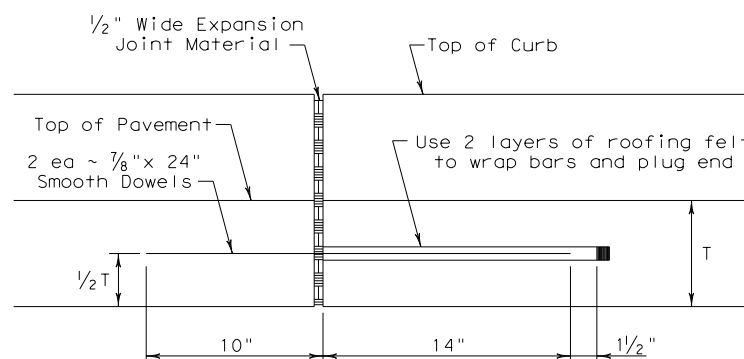
TYPE IIa CURB  
5" - 5 3/4" HEIGHT



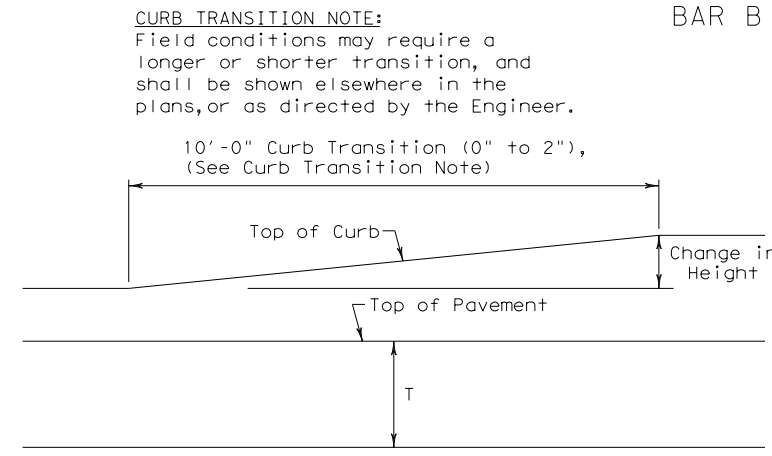
TYPE IIa CURB AND GUTTER  
5" - 5 3/4" HEIGHT



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



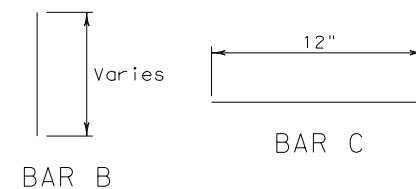
EXPANSION JOINT DETAIL



CURB TRANSITION  
Note: To be paid for as Highest Curb

GENERAL NOTES

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

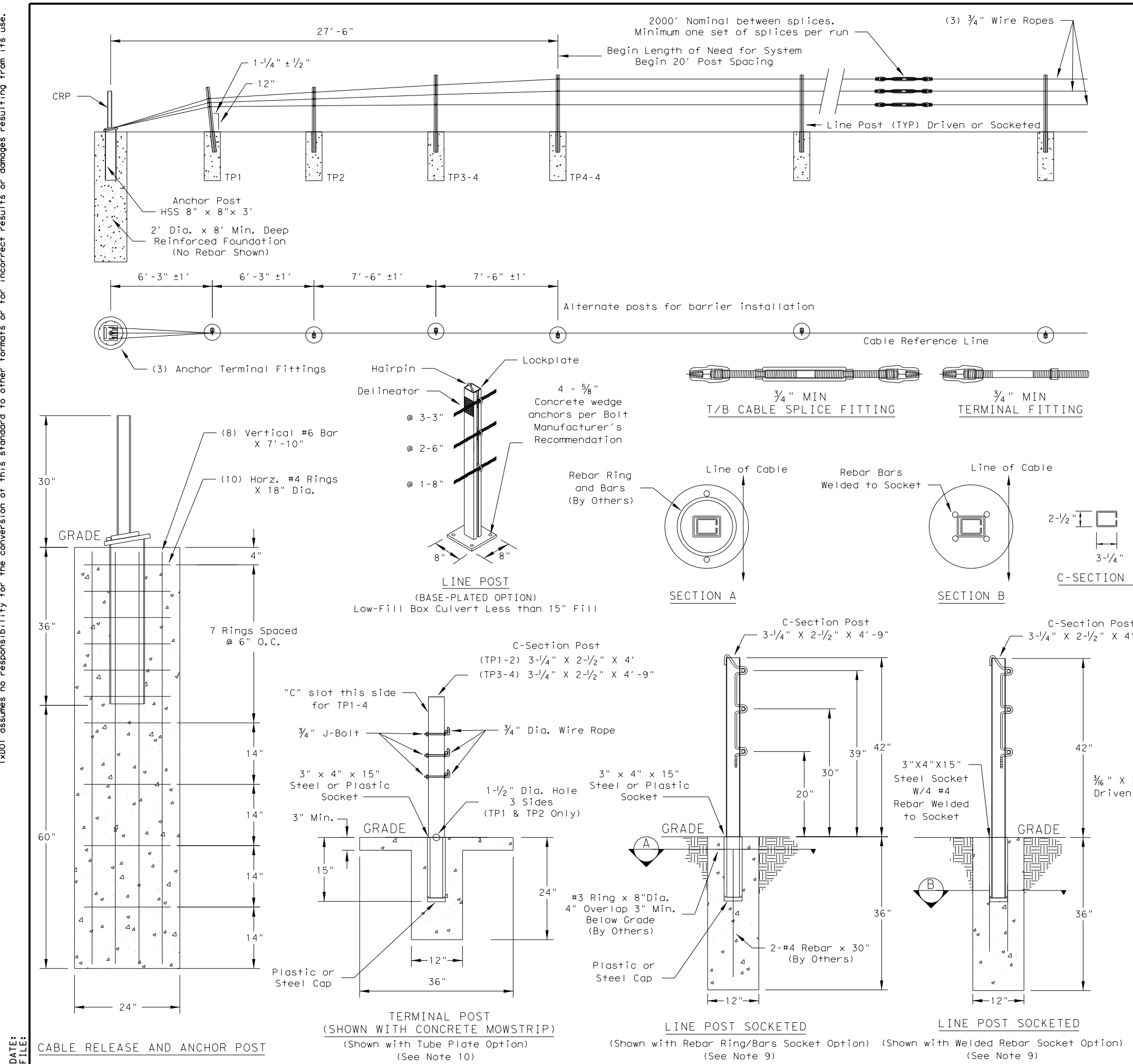


CURB TRANSITION NOTE:  
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.

		<b>Design Division Standard</b>	
<h2>CONCRETE CURB AND GUTTER</h2>			
<h3>CCCG-22</h3>			
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DIST	COUNTY	SHEET NO.	
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**GENERAL NOTES**

- For additional information contact Gibraltar, Inc. at 1-800-495-8957, 830-798-5444, or see the manufacturer's product manual.
- All concrete shall be CLASS A.
- The Cable Barrier System shall be installed on shoulders or on medians with slopes of 6:1 or flatter. If installed on slopes steeper than 6:1 up to 4:1 the TL-4 system performs as a TL-3 and Gibraltar must be contacted for various guidelines related to placement.
- The Cable Barrier System is accepted by the FHWA Test Level - 4.
- See the Texas MUTCD for proper "Barrier" delineation.
- Rock Clause: Where solid rock is encountered:
  - For socketed post, continue digging 12" diameter, 15" deep into rock or the required plan depth, whichever comes first.
  - For driven post, core drill a 4" diameter hole 18" deep into rock or the required plan depth, whichever comes first.
  - For Anchor post, continue digging 24" diameter, 30" deep into rock or the required plan depth, whichever comes first.
- Tolerances:
  - \* LP = 3" out of plumb, at top
  - \* Cable height = 1"
  - \* Anchor Post = 5" off of Cable Reference Line
- The Gibraltar cable barrier system shall be installed in NCHRP Report 350 standard compacted soil. Soil must be well drained.
- All non-welded rebar by others.
- Minimum recommended line post foundation.
  - Without mowstrip, 36" Deep x 12" diameter foundations with #3 rebar ring x 8" diameter with two #4 rebar vertical bars 30" long
  - With 4" minimum depth hot mix asphalt, 30" deep x 12" diameter foundations with #3 rebar ring x 8" diameter with two #4 rebar vertical bars 30" long.
  - With 3" minimum depth concrete mowstrip, 24" deep x 12" diameter foundations. (No rebar required)
  - Direct drive post 42" deep.

Temperature (°F)	Tension
-10 °F	8000
0 °F	7600
10 °F	7200
20 °F	6800
30 °F	6400
40 °F	6000
50 °F	5600
60 °F	5200
70 °F	4800
80 °F	4400
90 °F	4000
100 °F	3600
110 °F	3200

Deflection	Post Spacing
8'-0"	20 FT
7'-0"	12 FT
6'-8"	10 FT

\* Allowable Deviation from Chart +/- 10%

**Texas Department of Transportation** Design Division Standard

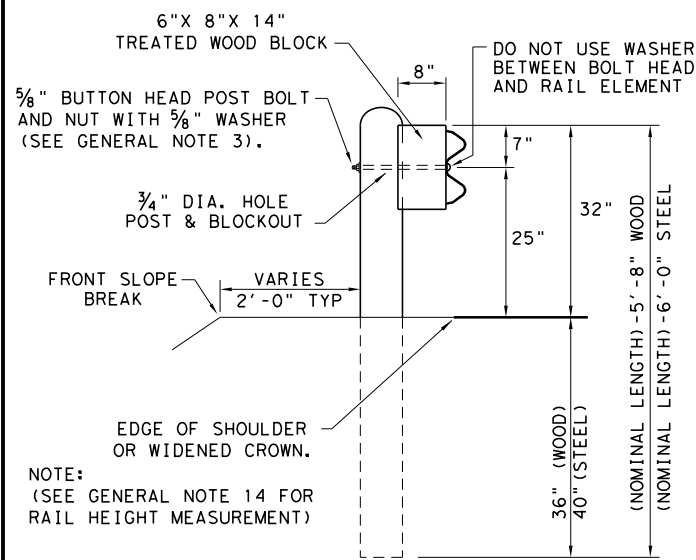
**GIBRALTAR CABLE BARRIER SYSTEM (TL-4)**

**GBRLTR(TL4) - 14**

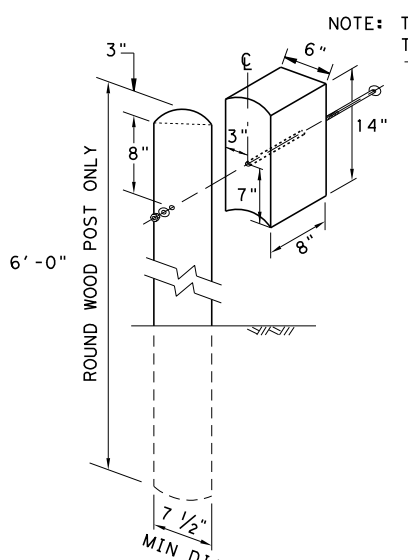
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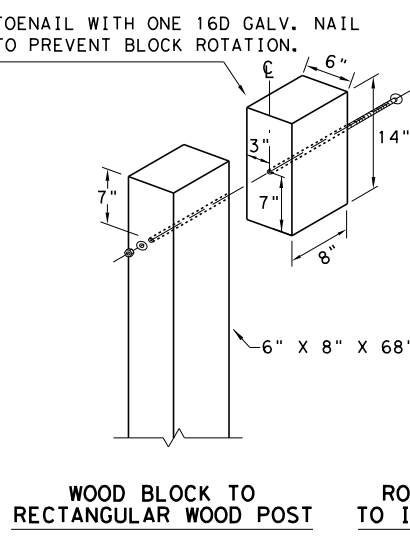
DISCLAIMER: THE USE OF THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT RESULTS OR DAMAGES RESULTING FROM ITS USE.



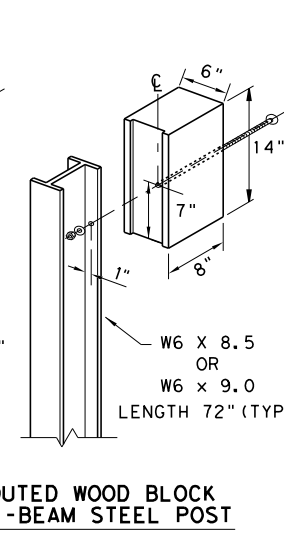
**TYPICAL POST PLACEMENT**



**WOOD BLOCK TO ROUND WOOD POST**



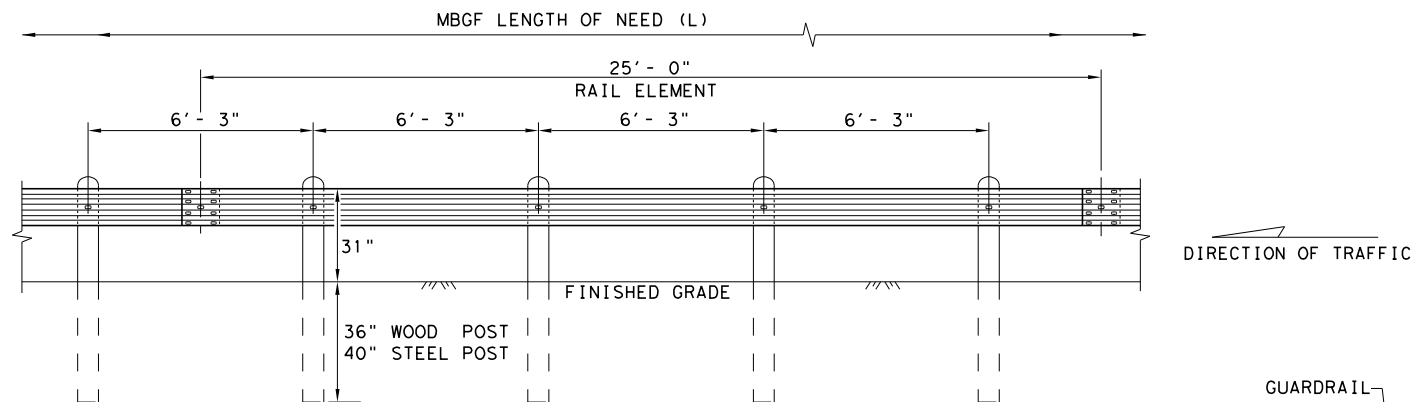
**WOOD BLOCK TO RECTANGULAR WOOD POST**



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

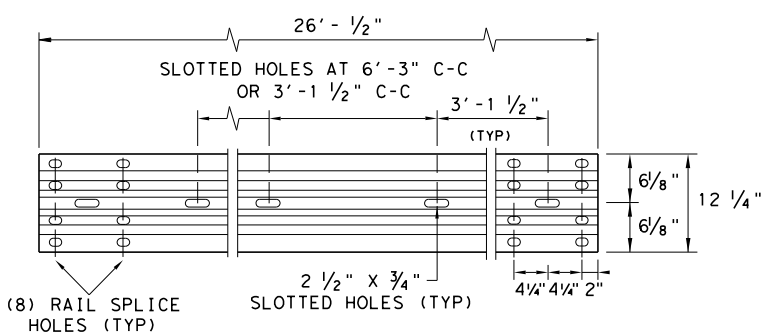
- GENERAL NOTES**
1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBSG SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
  2. RAIL ELEMENTS 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 VARIES

FBB01 = 1 1/4"

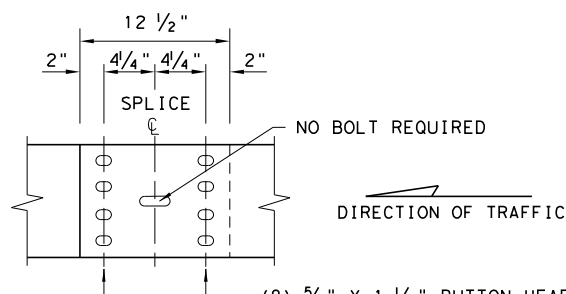
FBB02 = 2"

POST & BLOCK LENGTH

FBB03 = 10"

FBB04 = 18"

**BUTTON HEAD BOLT**

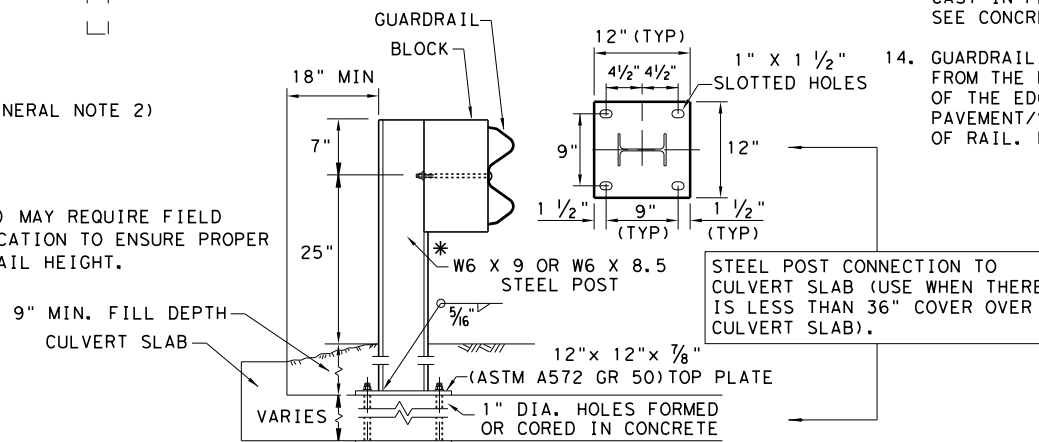


**MID-SPAN RAIL SPLICE DETAIL**

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

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

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



**LOW FILL CULVERT POST**

NOTE: TWO INSTALLATION OPTIONS.

1. **BOLT-THROUGH OPTION:** REQUIRES A 6" MIN. SLAB THICKNESS. 7/8" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS. NOTE: BOLT LENGTH = SLAB PLUS 2 1/4" MIN.

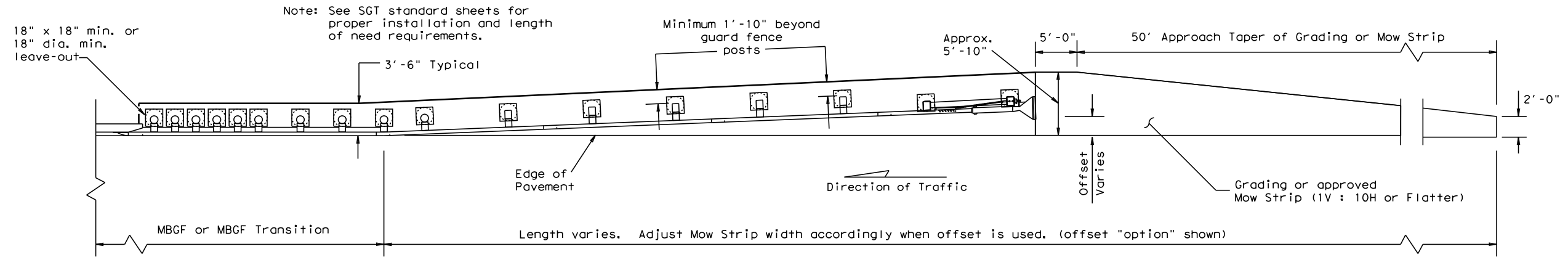
2. **EPOXY ANCHOR OPTION:** THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE 7/8" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES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

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

				<b>Design Division Standard</b>	
<b>METAL BEAM GUARD FENCE</b> <b>TL-3 MASH COMPLIANT</b> <b>GF(31)-19</b>					
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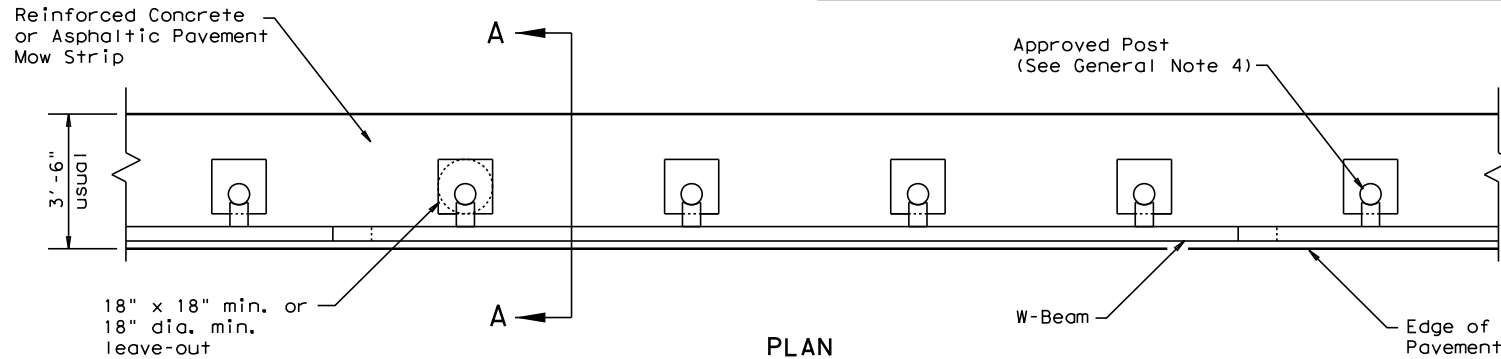
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Note: See SGT standard sheets for proper installation and length of need requirements.

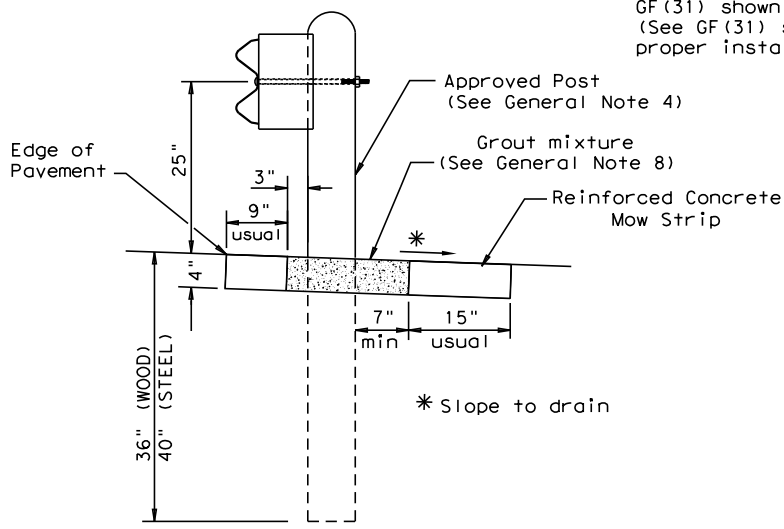
**GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS**

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.



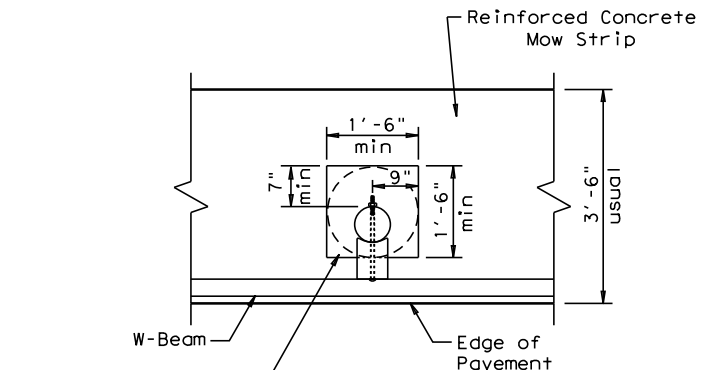
**PLAN**

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



**SECTION A-A**

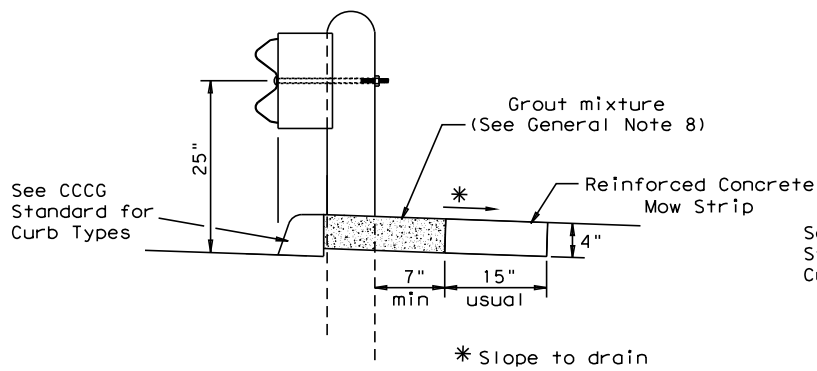
Typical



**MOW STRIP DETAIL**

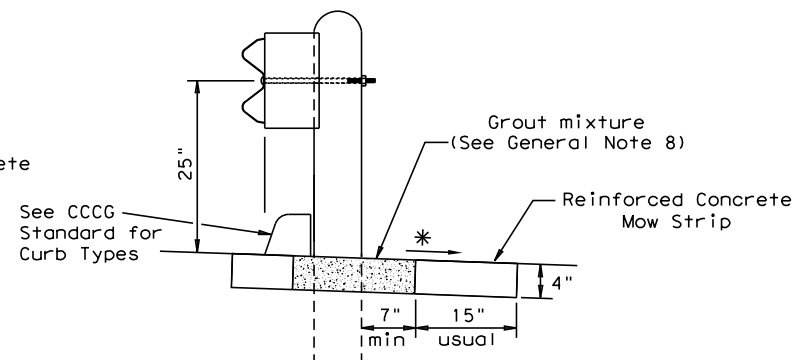
Reinforced Concrete Mow Strip with 18\"/>

- 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 I or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.



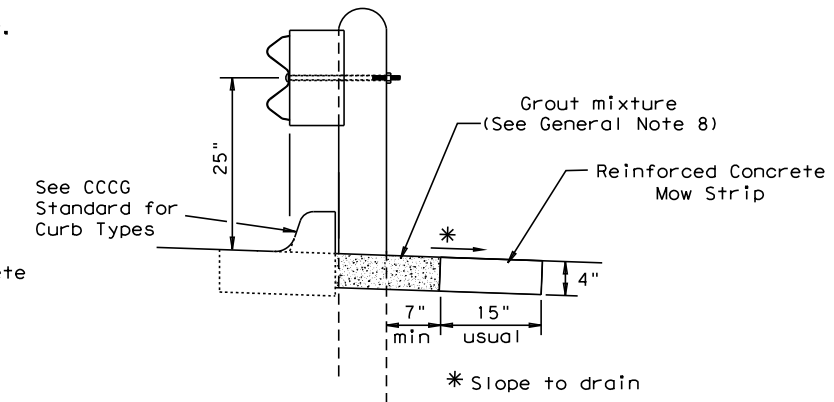
**CURB OPTION (1)**

This option will increase the post embedment throughout the system.



**CURB OPTION (2)**

Curb shown on top of mow strip



**CURB OPTION (3)**

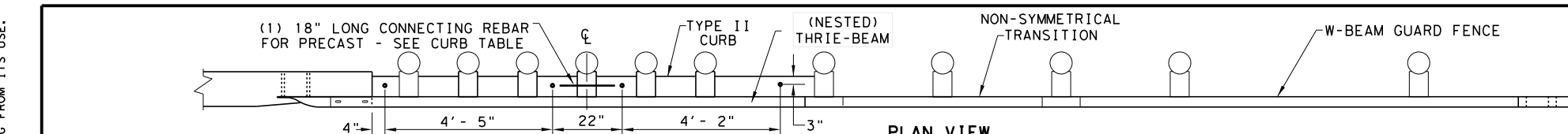
Design Division Standard

**METAL BEAM GUARD FENCE (MOW STRIP)**  
**TL-3 MASH COMPLIANT**  
**GF(31)MS-19**

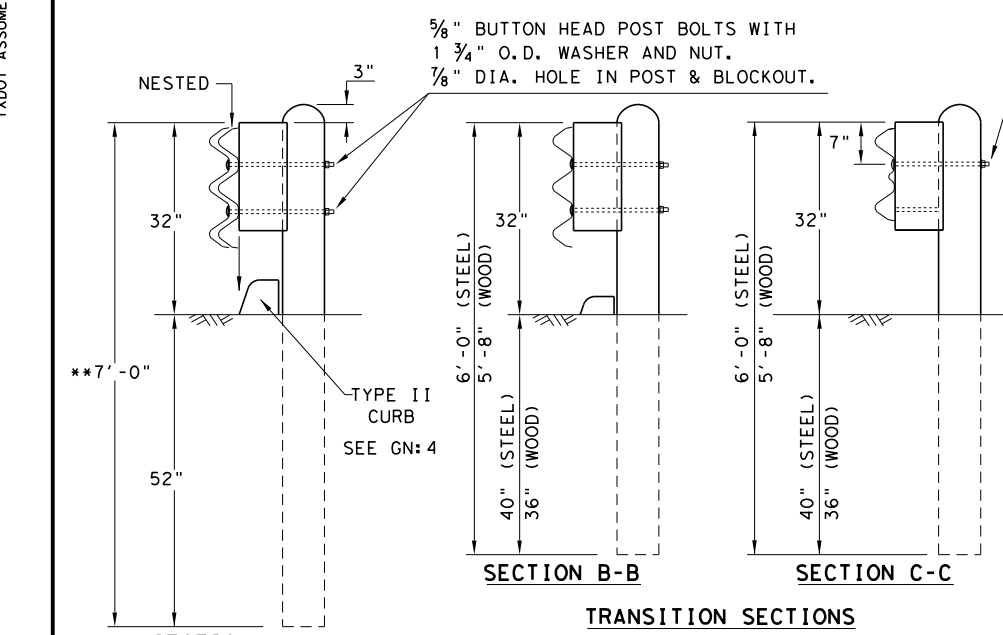
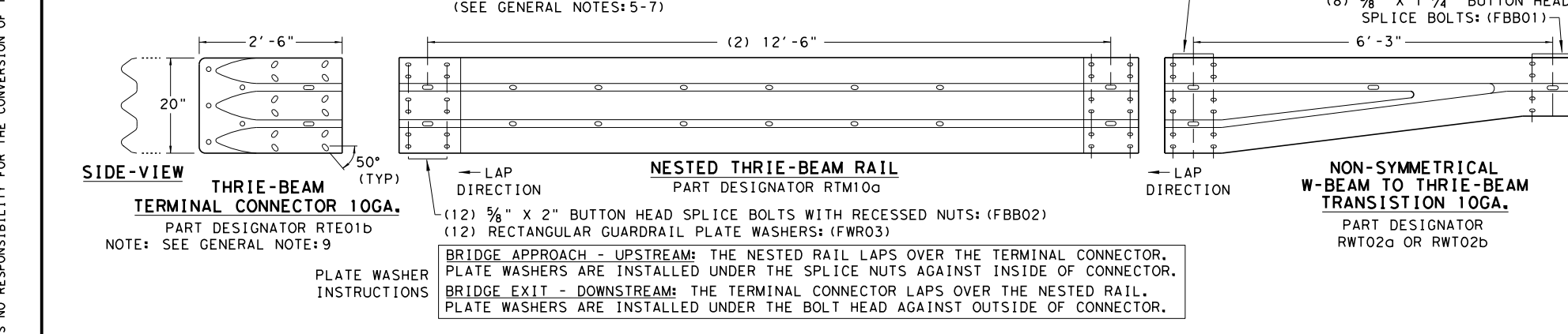
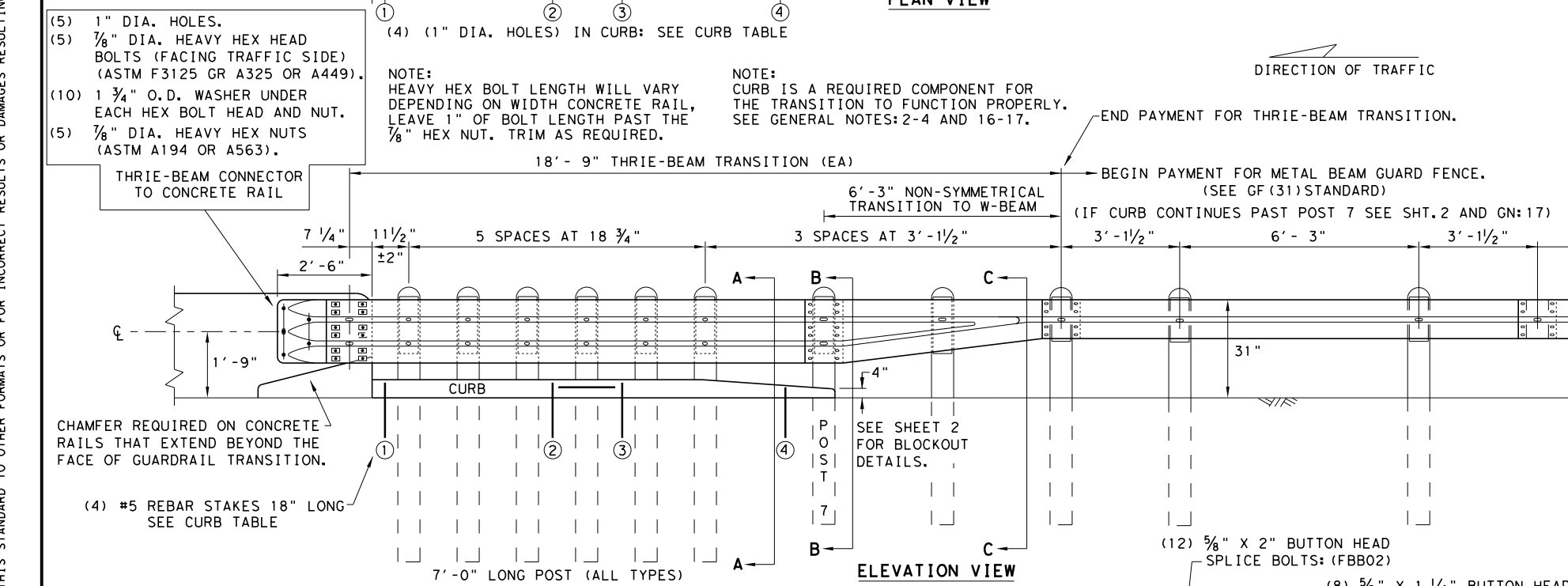
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© TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	164	

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

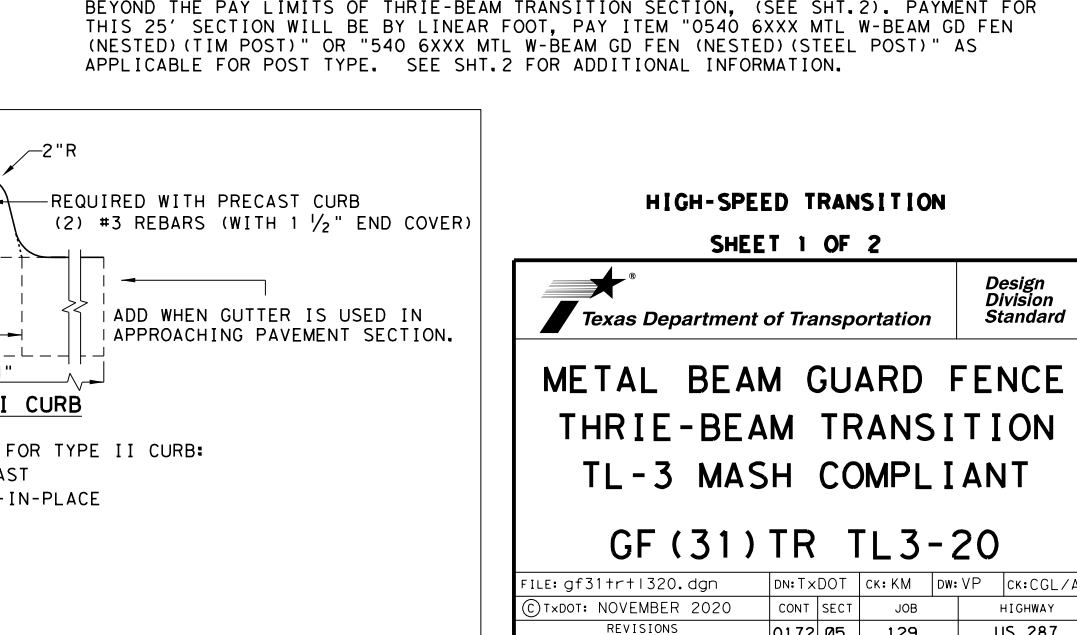


THRIE-BEAM TERMINAL - CURB TABLE	
PRECAST CURB FULL LENGTH EQUALS 12'-2"	
THE PRECAST CURB MAY BE FORMED INTO TWO SECTIONS.	
CURB (1) LENGTH	5'-8"
CURB (2) LENGTH	6'-6"
TAPER CURB (2) TO A HEIGHT OF 4" AT POST 7	
CONNECTING PRECAST CURB SECTIONS (1) & (2):	
FORM OR CORE	1" DIA. HOLE 9" LONG INTO EACH CURB END.
USE (1)	#5 GR.60 REBAR 18" LONG TO CONNECT BOTH CURBS.
SECURING PRECAST OR CAST-IN-PLACE TO FINISHED GRADE *:	
FORM OR CORE	(4) 1" DIA. HOLES, SEE PLAN AND ELEVATION VIEWS FOR HOLE LOCATIONS. DRIVE (4) #5 GR.60 REBAR STAKES 18" LONG INTO THE GROUND AND 1/2" BELOW TOP OF CURB.
	FILL HOLES WITH APPROVED GROUT MIXTURE.

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

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



**HIGH-SPEED TRANSITION**  
SHEET 1 OF 2

Design Division Standard

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

### GF (31) TR TL3-20

FILE: gf31tr+1320.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
© TxDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	165	

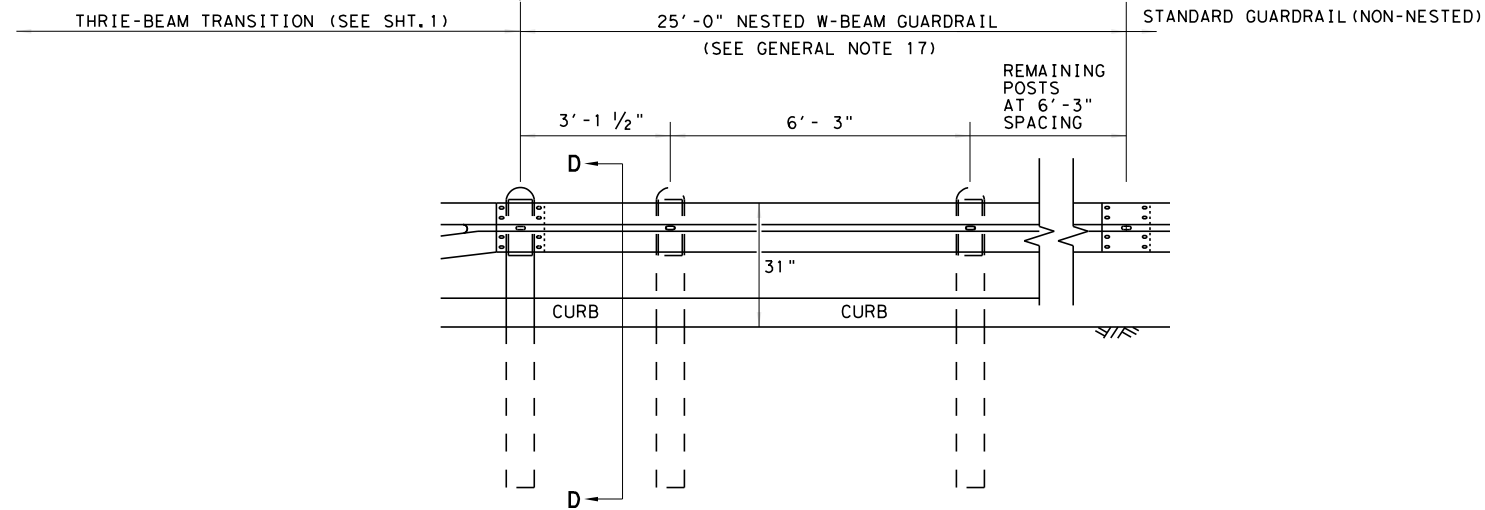
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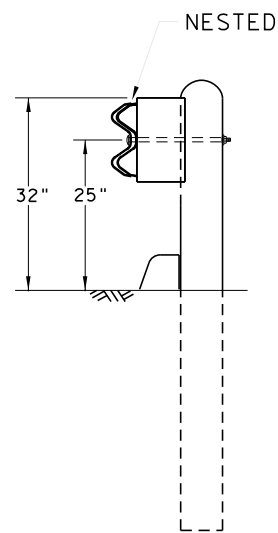
REQUIRED ALTERNATIVE FOR CONTINUOUS CURB EXTENDING PAST POST 7 (SEE SHT. 1 GENERAL NOTE 17)

END PAYMENT FOR METAL BEAM GUARD FENCE TRANSITION.  
 BEGIN PAYMENT FOR METAL BEAM GUARD FENCE.

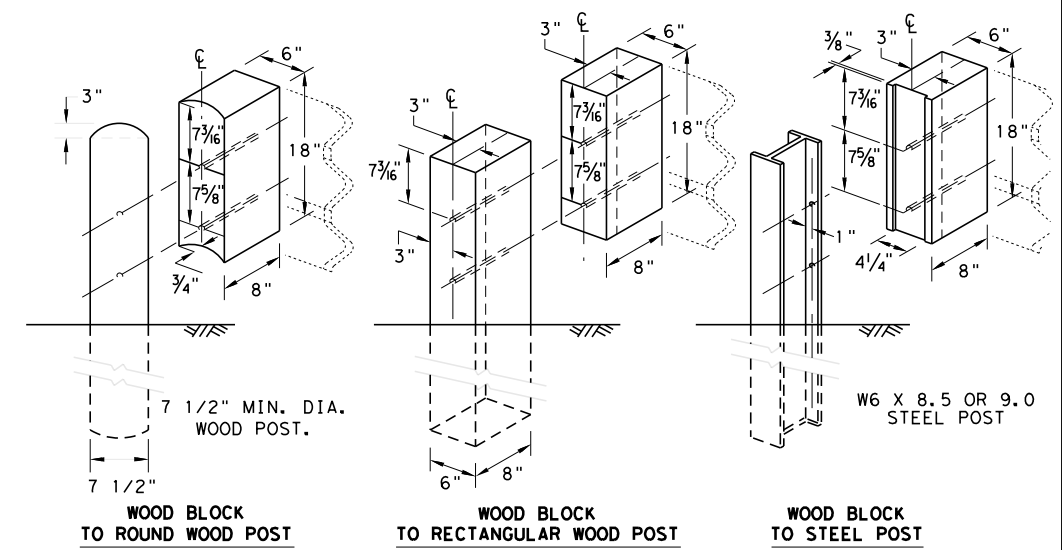
(SEE GF (31) STANDARD SHEET)



ELEVATION VIEW



SECTION D-D



THREE BEAM TRANSITION BLOCKOUT DETAILS

HIGH-SPEED TRANSITION

SHEET 2 OF 2



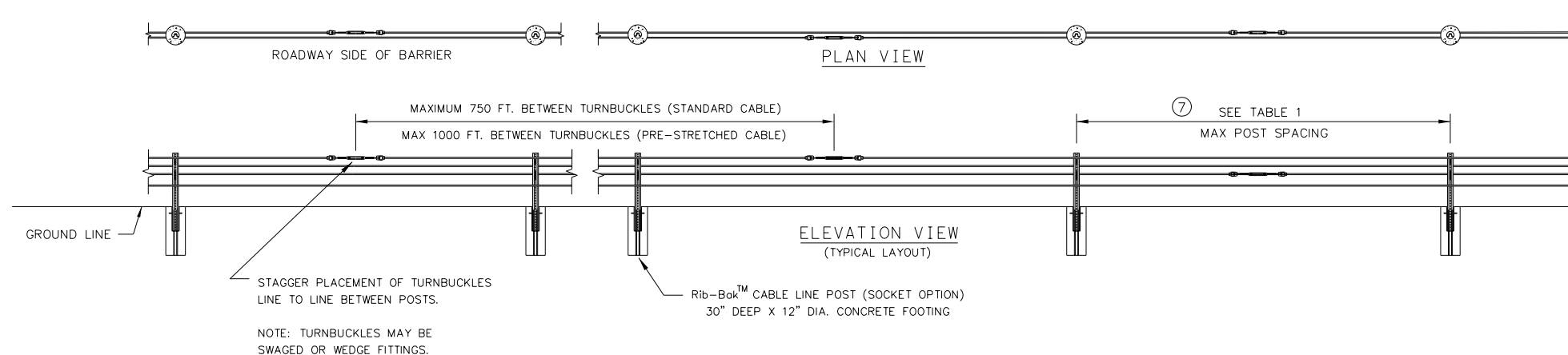
METAL BEAM GUARD FENCE  
 THREE-BEAM TRANSITION  
 TL-3 MASH COMPLIANT

GF (31) TR TL3-20

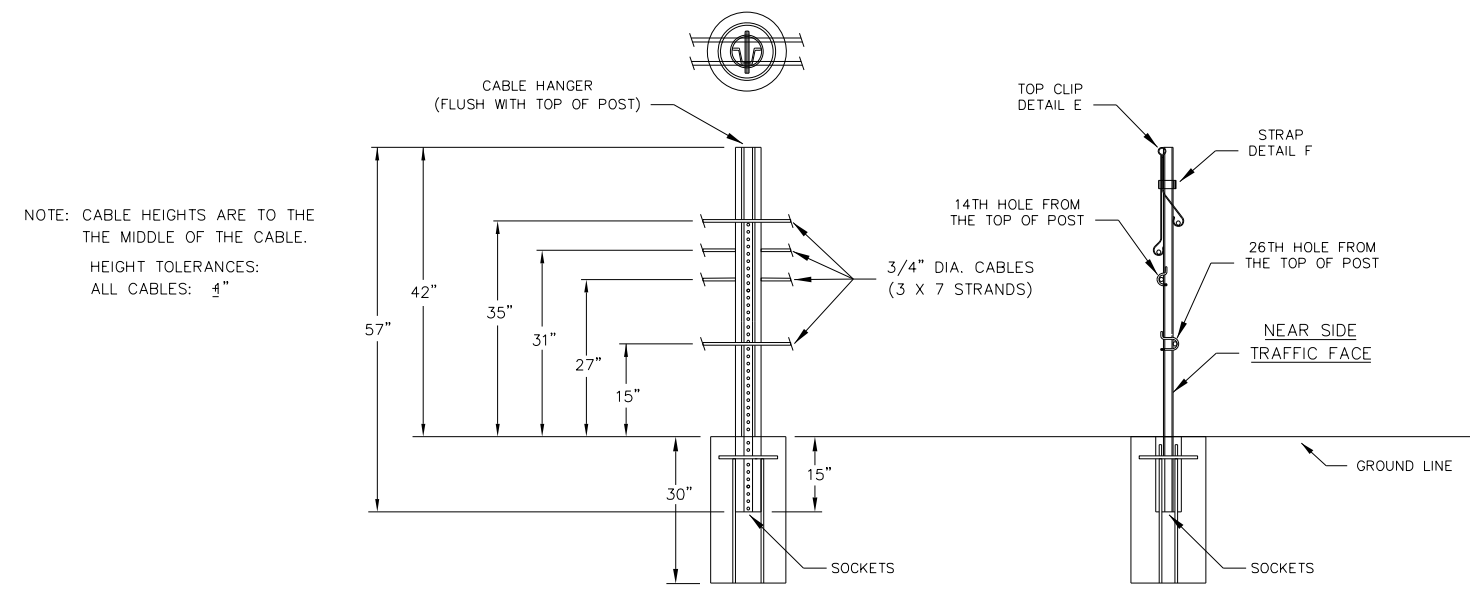
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- GENERAL NOTES**
- FOR ADDITIONAL INFORMATION CONTACT YOUR DISTRIBUTOR OR NUCOR STEEL MARION, INC. AT (740) 383-4011.
  - FOR PAYMENT SEE SPECIAL SPECIFICATION "CABLE BARRIER SYSTEM".
  - FOR ADDITIONAL INFORMATION SEE THE MANUFACTURER'S PRODUCT MANUAL.
  - THE NU-CABLE SYSTEM IS DESIGNED FOR BI-DIRECTIONAL TRAFFIC FLOWS. SEE THE MANUFACTURER'S PRODUCT MANUAL FOR PLACEMENT ADJACENT TO GUARDRAIL END TREATMENTS.
  - THE NU-CABLE SYSTEM SHALL BE INSTALLED ON MEDIANS WITH SLOPES OF 6:1 OR FLATTER WITHOUT OBSTRUCTIONS, DEPRESSIONS, ETC; THAT MAY SIGNIFICANTLY AFFECT THE STABILITY OF AN ERRANT VEHICLE.
  - THE NU-CABLE SYSTEM MAY BE INSTALLED ON EITHER SIDE OF THE ROADWAY. Rib-Bok™ CABLE LINE POSTS MAY BE SOCKETED OR DRIVEN DESIGN.
  - THE TL-4 FOR 6:1 SLOPES CAN USE 4# / LF POST. SEE TABLE #1 FOR POST SIZE PER SPACING.
  - SEE (TABLE 2) FOR TENSION AMOUNT AT SPECIFIC CABLE TEMPERATURE FOR INITIAL INSTALLATION.
  - SEE (TABLE 3) FOR TENSION AMOUNT AT SPECIFIC CABLE TEMPERATURE FOR MAINTENANCE.
  - FOURTH (LOWEST) CABLE IS NOT OPTIONAL ON THE TL-4 SYSTEM.
  - CONSULT YOUR PROJECT PLAN SHEETS AND CABLE BARRIER SPECIFICATIONS FOR DESIRED SOCKET MATERIAL.
  - ALL FOUNDATION DESIGNS ARE BASED ON NCHRP 350 STRONG (S1) SOIL. CONSULT THE MANUFACTURER FOR SPECIFIC FOUNDATION DESIGN IF SOIL TYPES DIFFER.



**TABLE 1**

POST SIZE TABLE	
POST SPACING	POST SIZE
0' - 17'-6"	4# / LF X 4' OR 6' POST
17'-6" - 20'	5# / LF X 4' POST

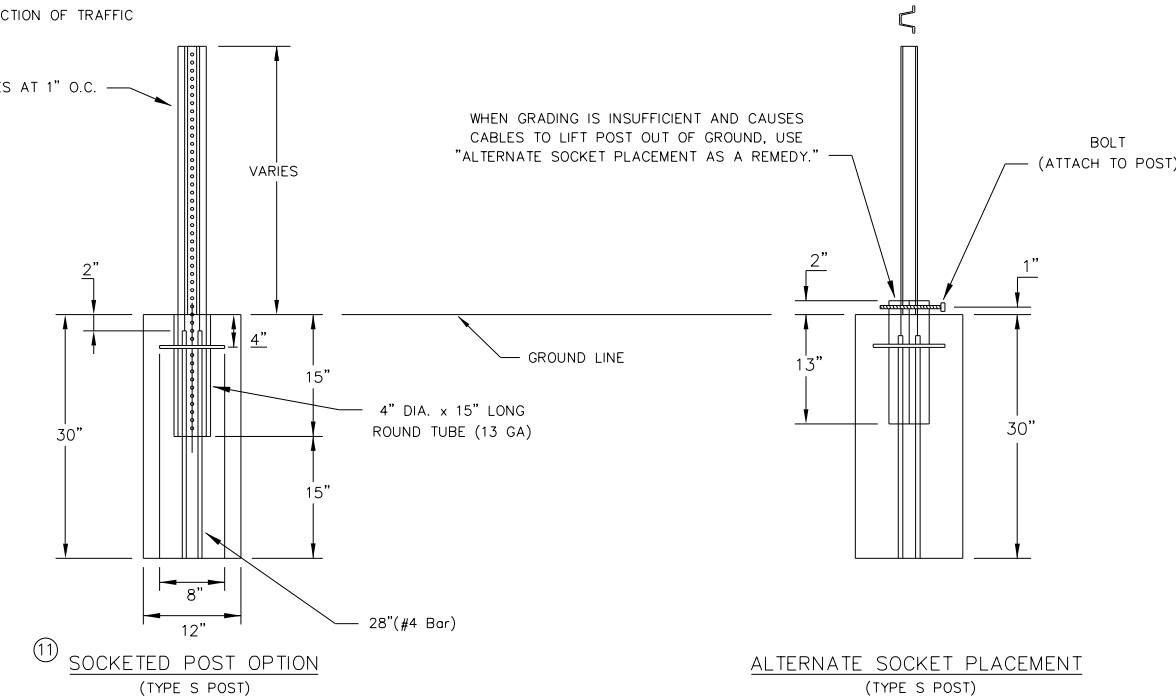
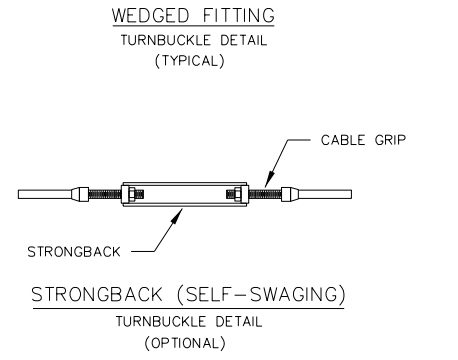
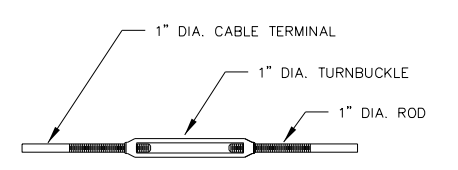
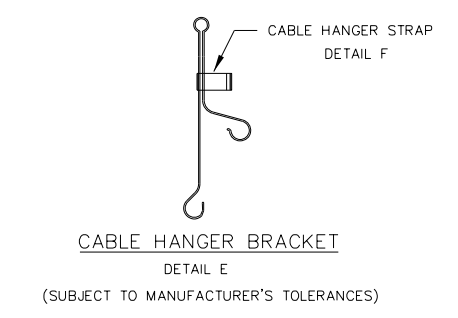
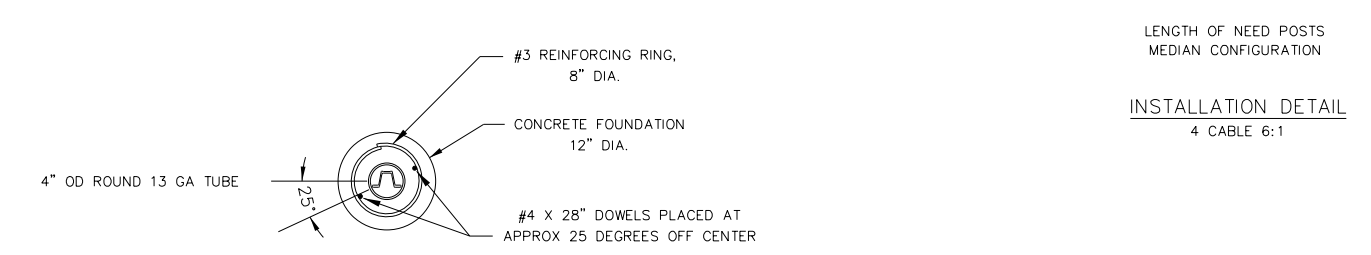
POST SPACING IS PER 8 FOOT DEFLECTION REQUIREMENTS. CONSULT PRODUCT MANUAL IF GREATER DEFLECTION IS PERMISSIBLE.

**TABLE 2**

CABLE TENSION CHART	
INITIAL INSTALL	
F	LBF
120	4624
110	4986
100	5350
90	5713
80	6077
70	6440
60	7167
50	7894
40	8619
30	9346
20	10073
10	10800
0	11525
-10	12252
-20	12979
-30	13706

**TABLE 3**

CABLE TENSION CHART	
MAINTENANCE	
F	LBF
120	4021
110	4336
100	4652
90	4968
80	5284
70	5600
60	6232
50	6864
40	7495
30	8127
20	8759
10	9391
0	10022
-10	10654
-20	11286
-30	11918



SHEET 1 OF 2

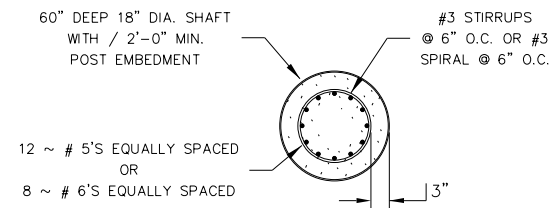
Design Division Standard

NU-CABLE BARRIER SYSTEM  
 (TL-4)  
 (4 CABLE)

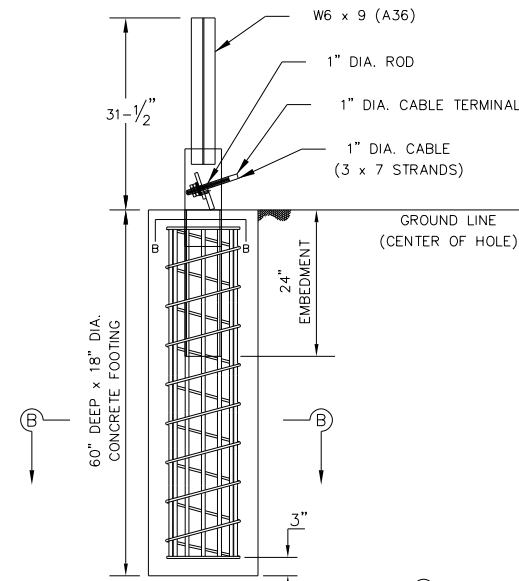
NU-CABLE (TL4) - 14

FILE:	DN:	CK:	DW:	CK:
© TxDOT:	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	167	

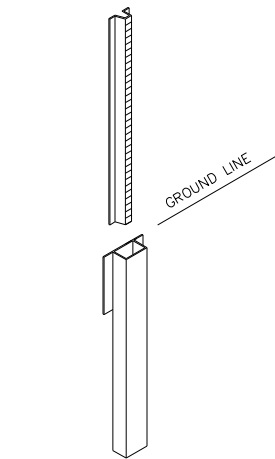
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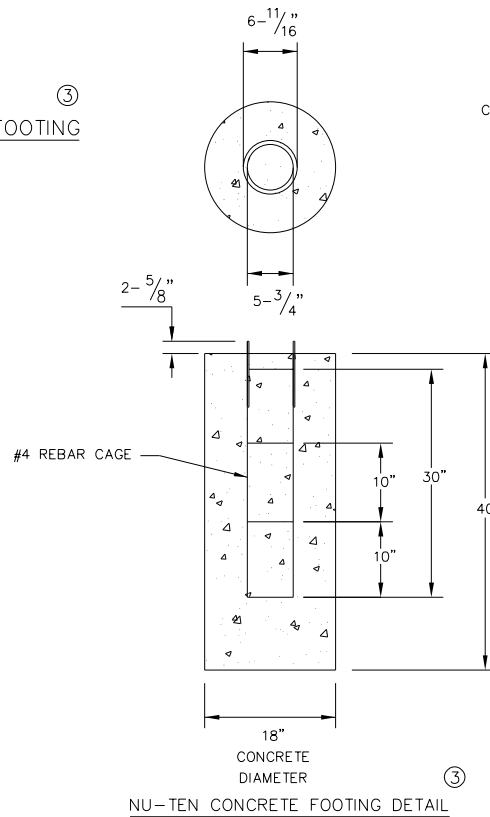
SECTION B-B (CABLE RELEASE POST)



DETAIL A - CRP IN CONCRETE FOOTING (3000 PSI MIN CONCRETE)



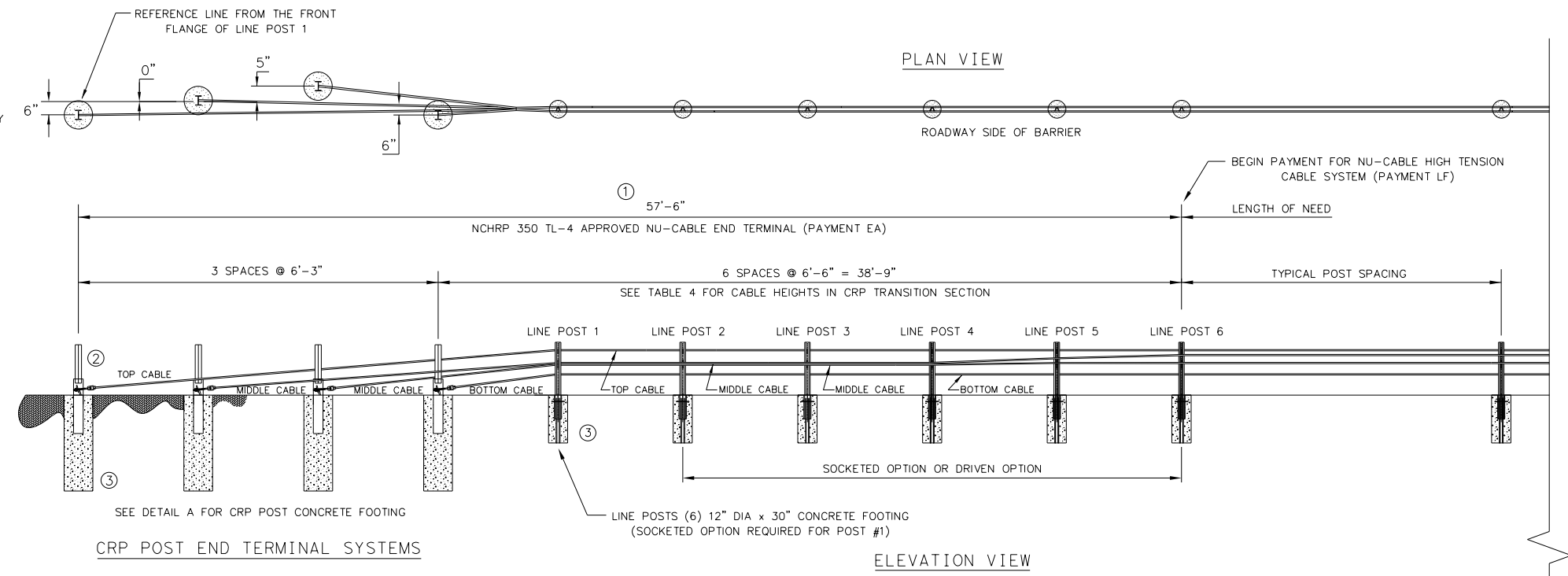
DRIVEN SOCKET OPTION



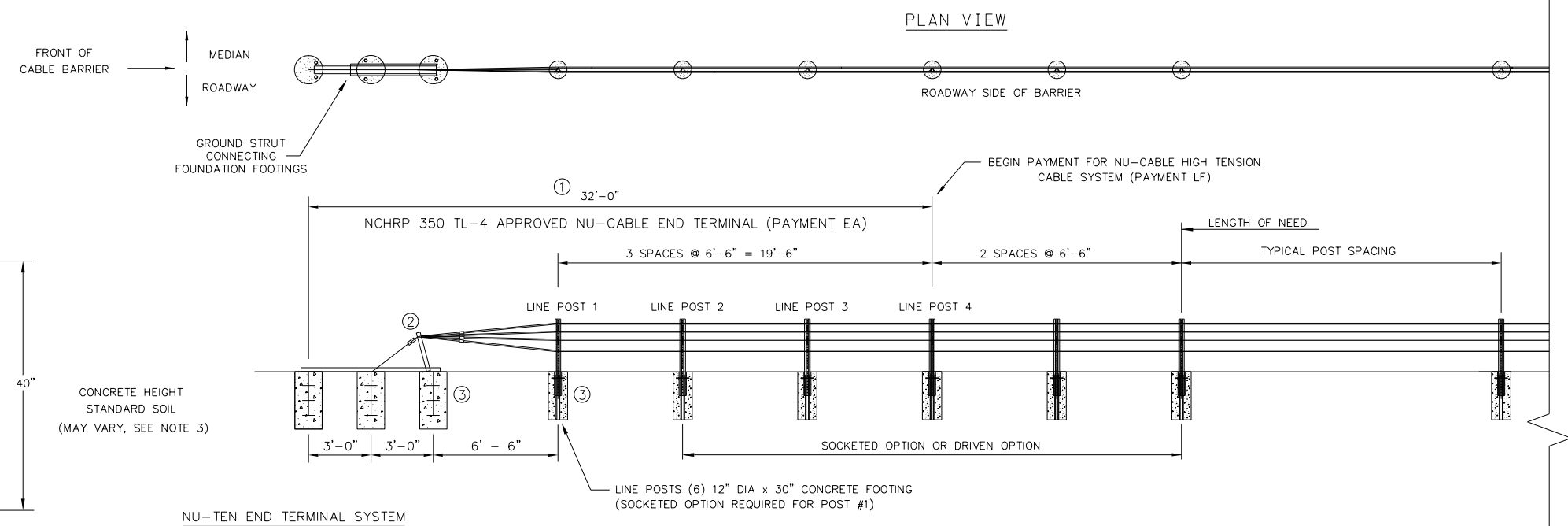
NU-TEN CONCRETE FOOTING DETAIL

TABLE 4

CRP END TERMINAL CABLE HEIGHTS - TL-4						
	LP 1	LP 2	LP 3	LP 4	LP 5	LP 6
TOP CABLE	34"	34"	34"	34"	34"	34"
UPPER-MIDDLE CABLE	27"	27"	27"	27"	28"	31"
BOTTOM-MIDDLE CABLE	24"	24"	24"	24"	24"	24"
BOTTOM CABLE	15"	15"	15"	15"	15"	15"



① THE OPPOSING END TREATMENTS ON A PARTICULAR RUN ARE MIRRORED IN THEIR LAYOUT.



NU-TEN END TERMINAL SYSTEM

NOTES

1. THE OPPOSING END TREATMENTS ON A PARTICULAR RUN ARE MIRRORED IN THEIR LAYOUT. SYSTEM PAYMENT IS PER EACH (EA). REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL PAYMENT INFORMATION
2. REFER TO INSTALLATION MANUAL FOR CABLE END ASSEMBLY DETAIL.
3. ALL FOUNDATION DESIGNS ARE BASED ON NCHRP 350 STRONG (S1) SOIL. CONSULT THE MANUFACTURER FOR SPECIFIC FOUNDATION DESIGNS IF SOIL TYPES DIFFER.
4. SEE TABLE 4 CABLE HEIGHTS IN CRP TRANSITION SECTION.

SHEET 2 OF 2



NU-CABLE BARRIER SYSTEM (TL-4) (4 CABLE)

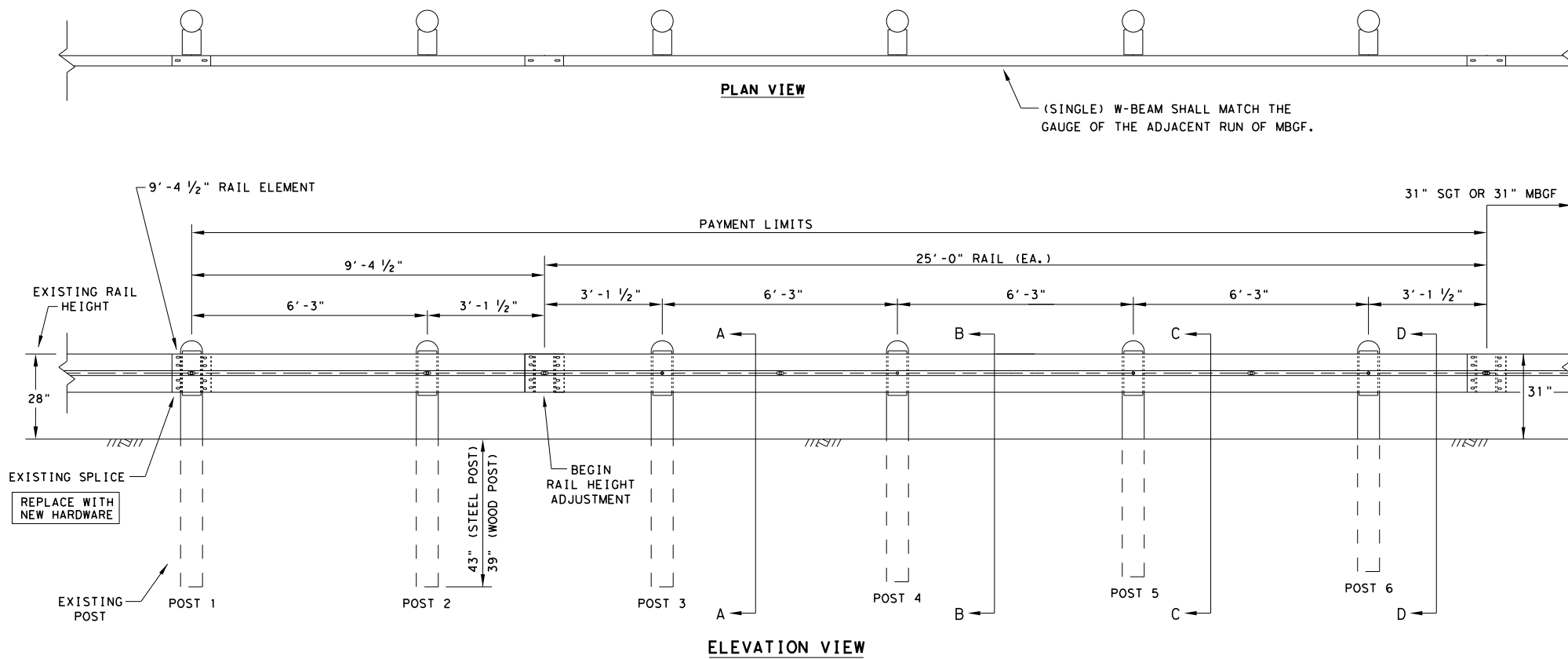
NU-CABLE (TL4) - 14

FILE:	DN:	CK:	DW:	CK:
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REVISIONS	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	168	

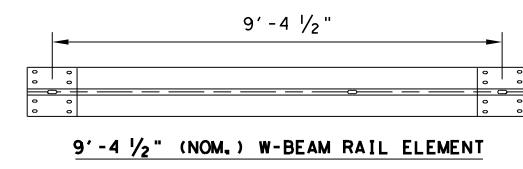
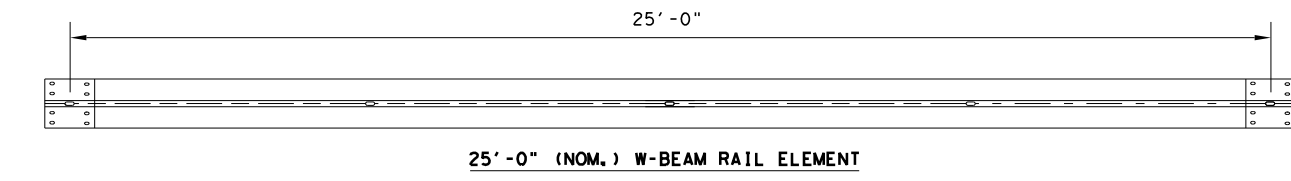
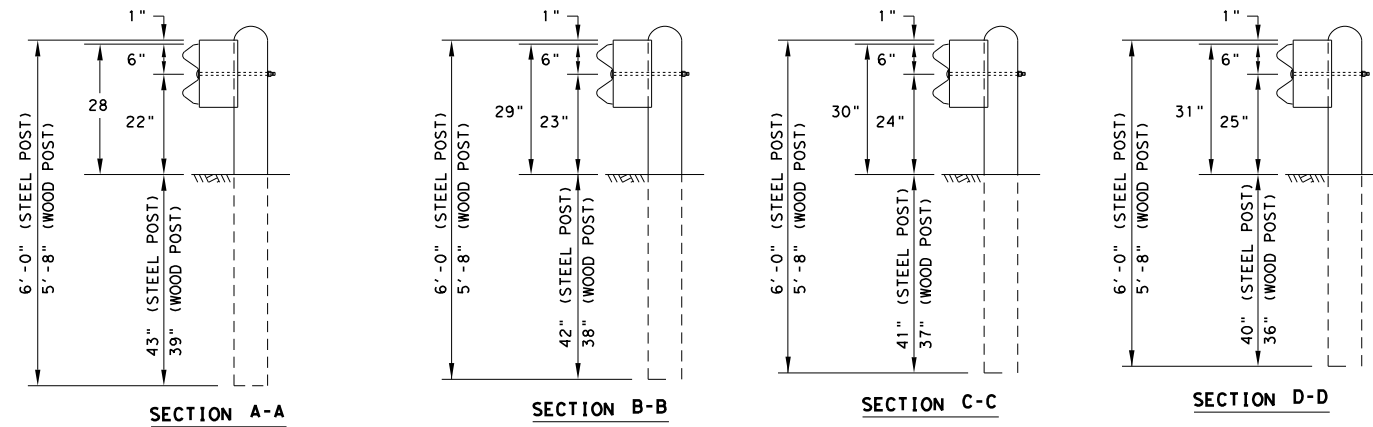
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**GENERAL NOTES**

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 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 3/8" 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.



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



HARDWARE LIST	
QTY	DESCRIPTION
1	9'-4 1/2" W-BEAM RAIL ELEMENT 12GA.
1	25'-0" W-BEAM RAIL ELEMENT 12GA. (TYP)
6	7 1/2" DIA X 6'-0" DOMED ROUND WOOD POSTS (TYP)
6	6" X 8" X 68" RECTANGULAR WOOD POSTS (TYP)
6	W6 X 8.5 OR W6 X 9 X 72" STEEL POSTS (TYP)
6	6" X 8" X 14" WOOD BLOCKS OR COMPOSITE (TYP)
6	5/8" X 18" GUARDRAIL BOLTS WITH NUTS (FBB04)
6	5/8" ROUND WASHERS (ASTM F436) (FWC16a)
6	5/8" X 10" GUARDRAIL BOLTS WITH NUTS (FBB03)
24	5/8" X 1-1/4" GUARDRAIL SPLICE BOLTS WITH DOUBLE RECESSED NUTS (ASTM A563) (FBB01)

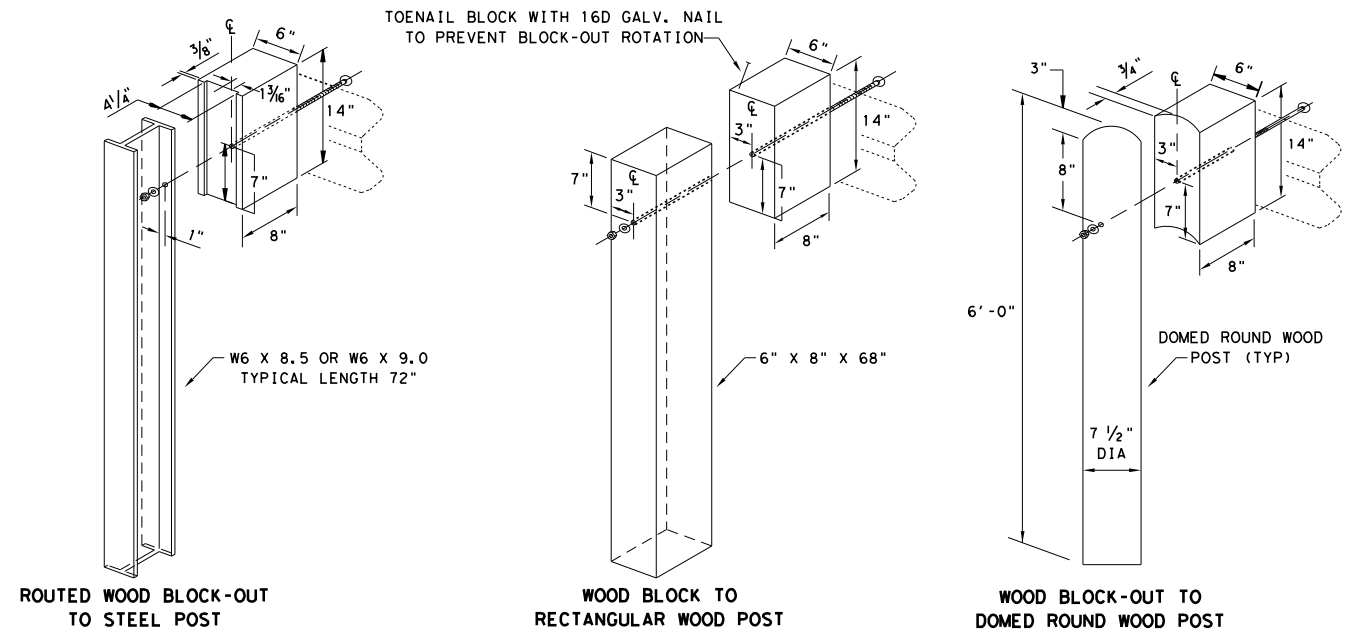
POST AND BLOCK-OUT TYPES AVAILABLE

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**  
*Design Division Standard*

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

FILE: railadj19	DN: TXDOT	CK: KM	DW: VP	CK: CGL/AG
© TXDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
DIST	COUNTY		SHEET NO.	
DAL	ELLIS		169	

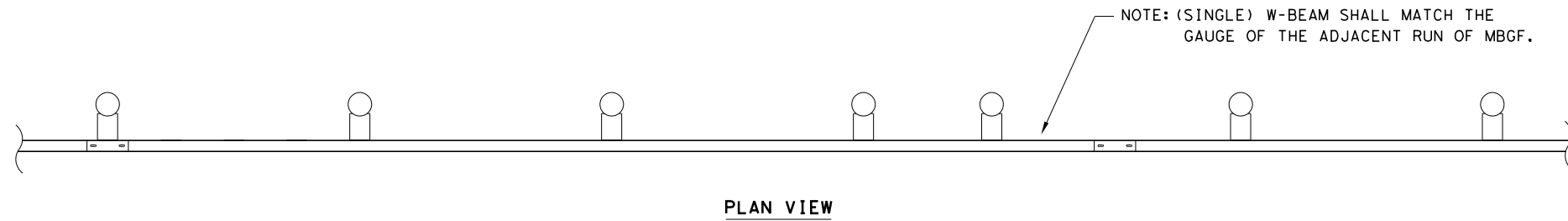


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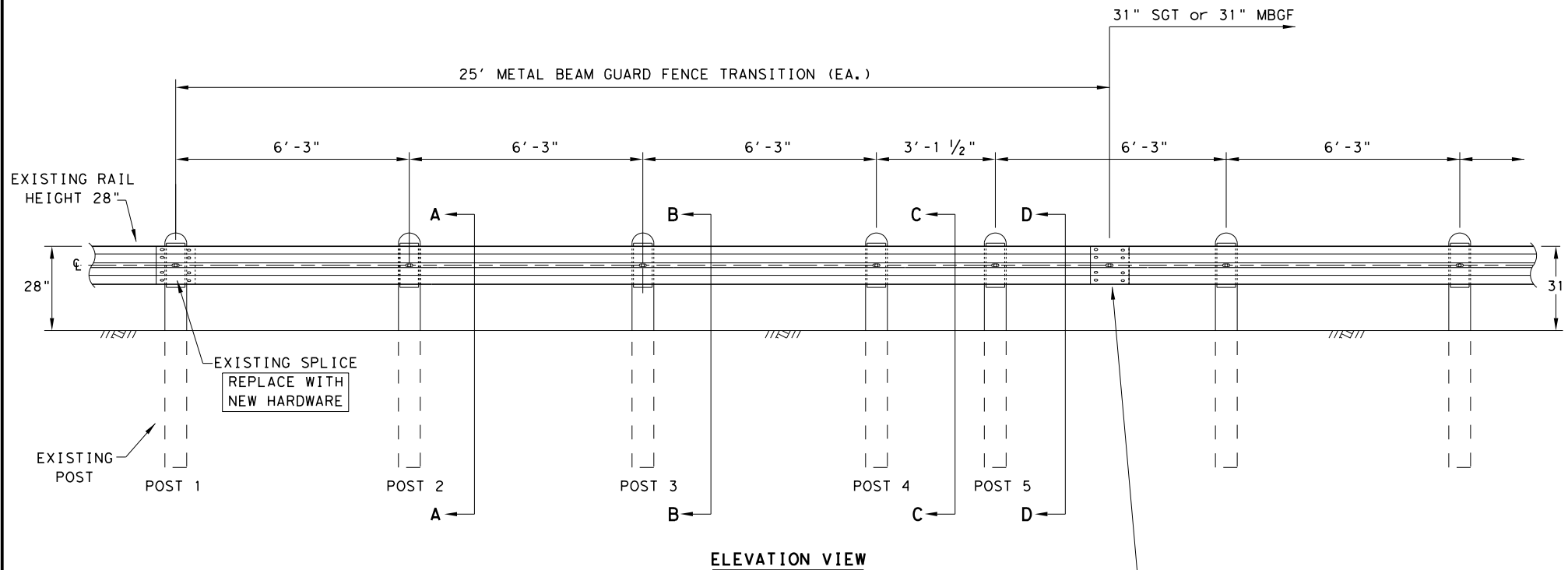
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**GENERAL NOTES**

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 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.

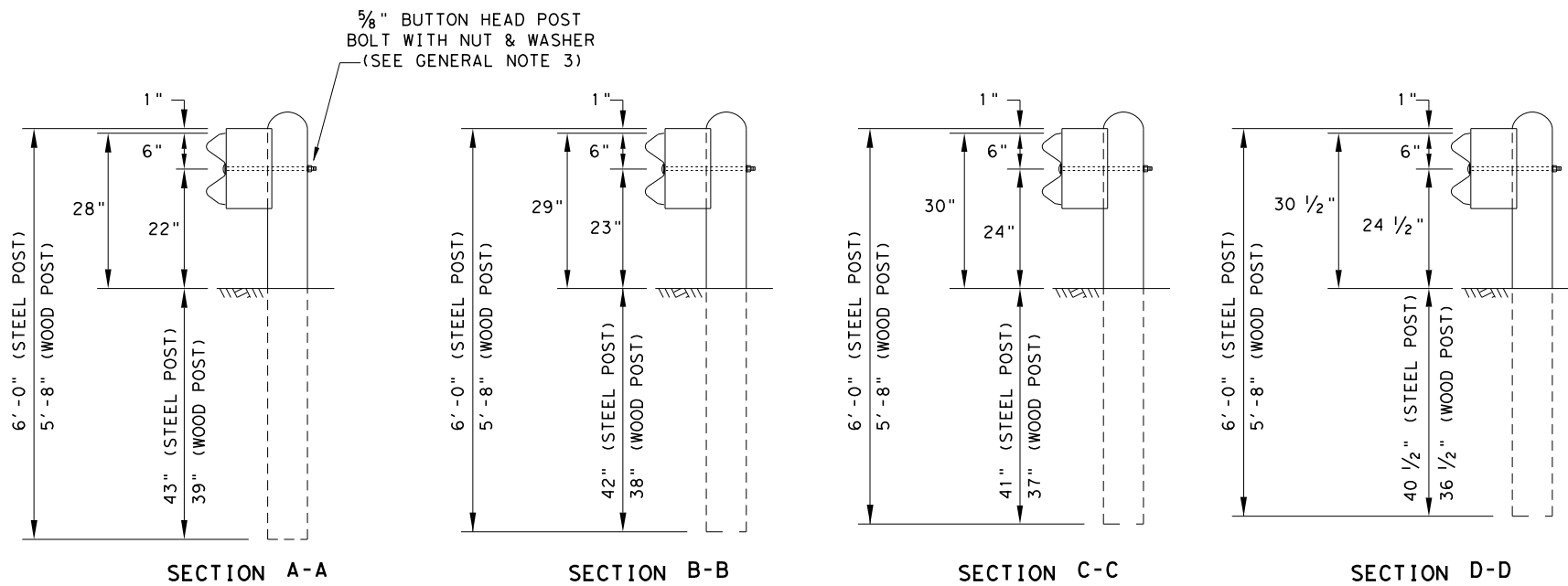


**PLAN VIEW**



**ELEVATION VIEW**

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



POST AND BLOCK-OUT TYPES AVAILABLE

FOR WOOD POST

FOR STEEL POST

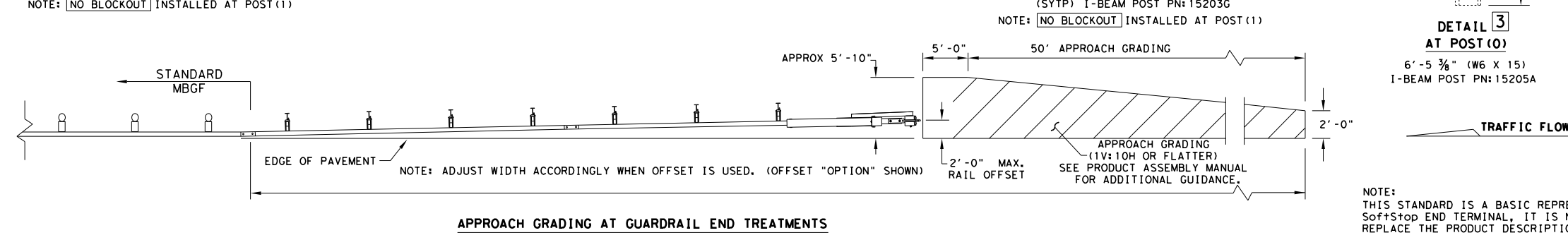
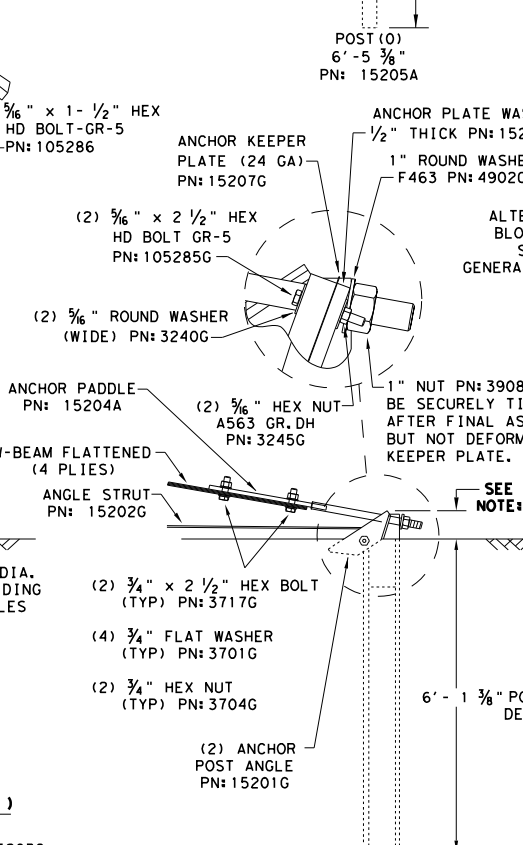
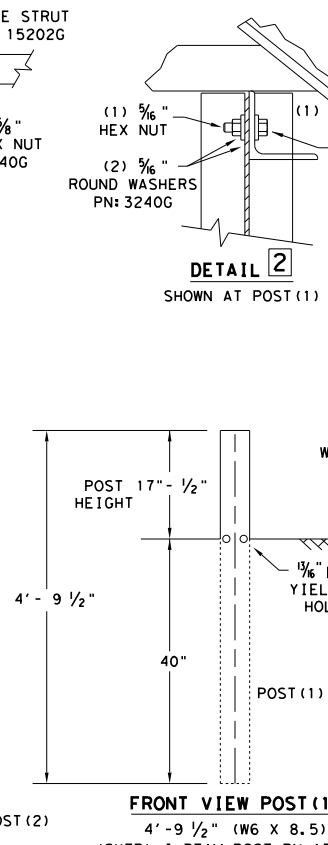
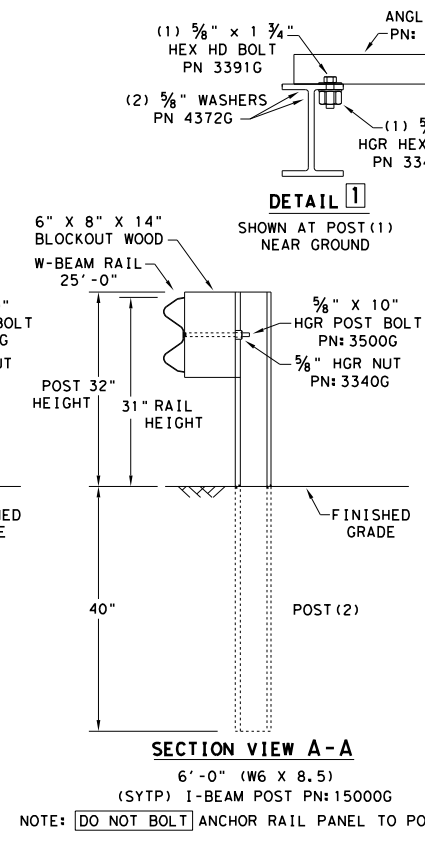
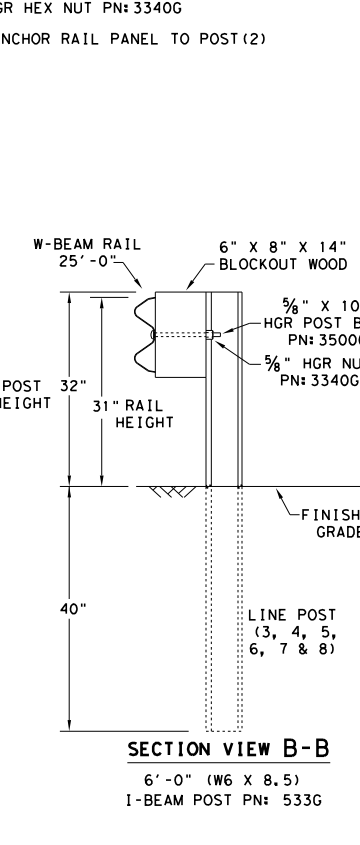
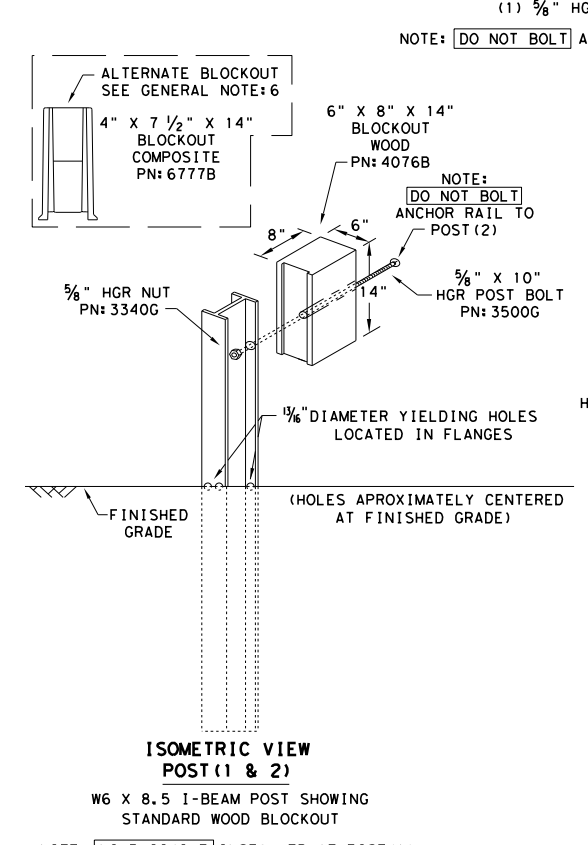
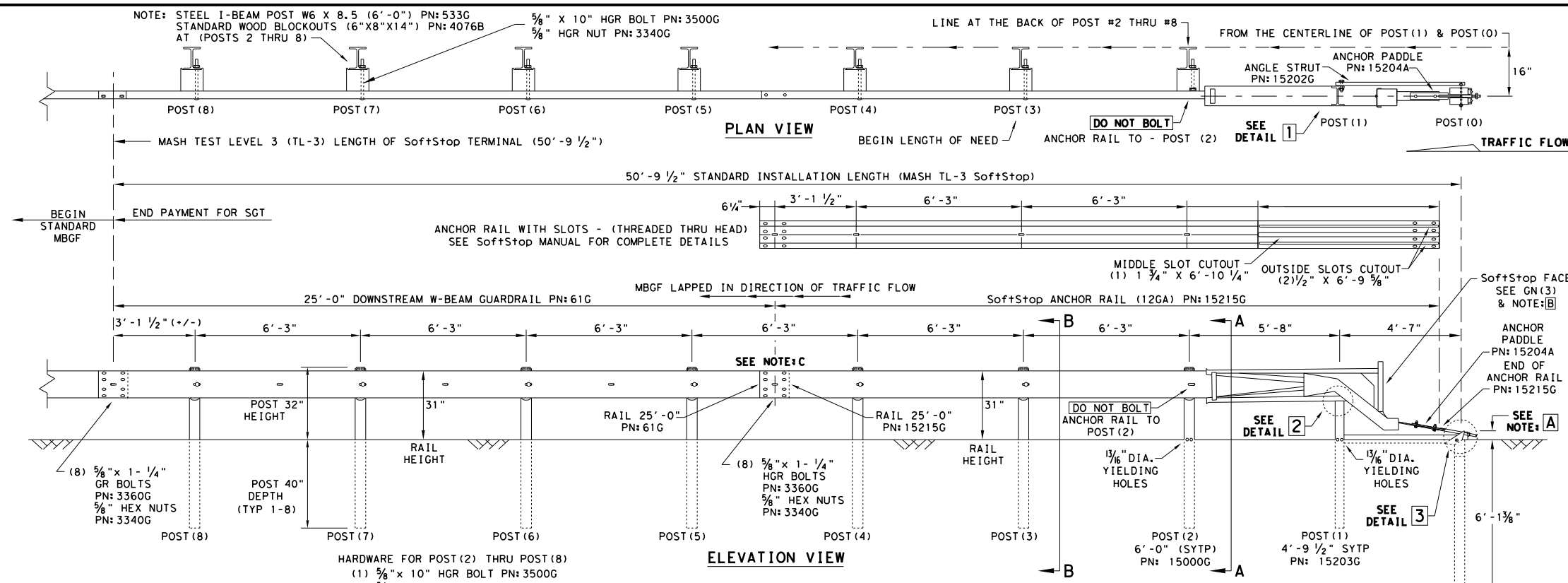
HARDWARE LIST	
QTY	DESCRIPTION
1	25'-0" W-BEAM RAIL ELEMENT 12GA. (TYP)
5	7 1/2" DIA X 6'-0" DOMED ROUND WOOD POSTS (TYP)
5	6" X 8" X 68" RECTANGULAR WOOD POSTS (TYP)
5	W6 X 8.5 OR W6 X 9 X 72" STEEL POSTS (TYP)
5	6" X 8" X 14" WOOD BLOCKS OR COMPOSITE (TYP)
5	5/8" X 18" GUARDRAIL BOLTS AND NUTS (FBB04)
5	5/8" ROUND WASHERS (ASTM F436) (FWC16a)
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)

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)

		<b>Design Division Standard</b>	
<b>METAL BEAM GUARD FENCE RAIL HEIGHT ADJUSTMENT (28" TO 31") TL-3 MASH COMPLIANT RAIL-ADJ(B)-19</b>			
FILE: railadjb19	DN: TXDOT	CK: KM	DW: VP
© TXDOT: NOVEMBER 2019	CONT SECT	JOB	HIGHWAY
REVISIONS	0172 05	129	US 287
DIST	COUNTY	SHEET NO.	
DAL	ELLIS	170	

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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 MGBF 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

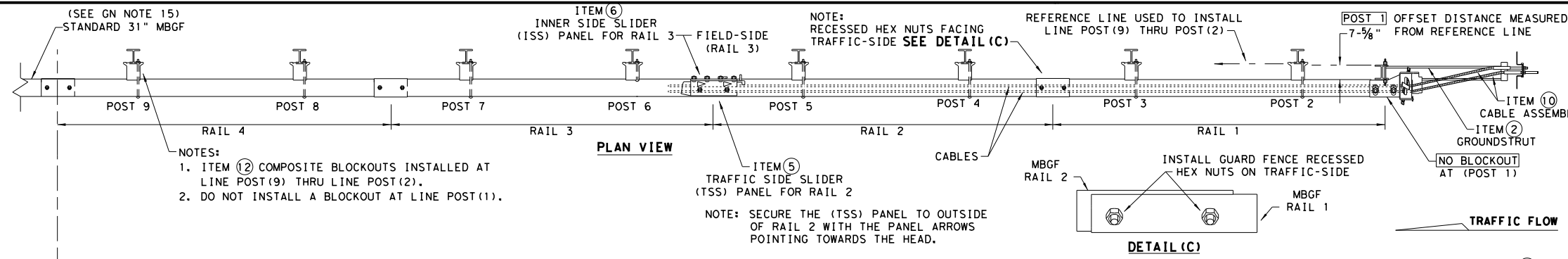
Texas Department of Transportation  
**TRINITY HIGHWAY**  
**SOFTSTOP END TERMINAL**  
**MASH - TL-3**  
**SGT (10S) 31-16**

FILE: sgt10s3116 DNE: TxDOT CK: KM DW: VP CK: MB/VP  
 © TxDOT: JULY 2016 CONT: SECT JOB HIGHWAY  
 REVISIONS 0172 05 129 USH 2307  
 DIST: COUNTY SHEET NO.  
 DAL ELLIS 171

DATE: FILE:

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

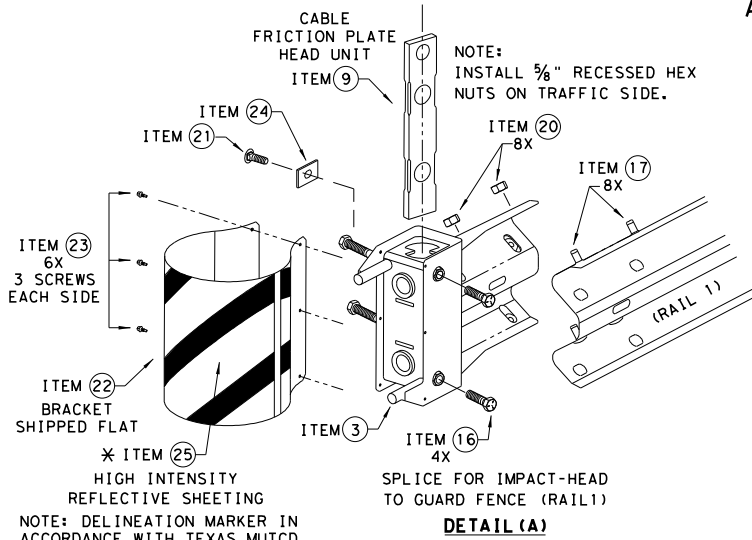
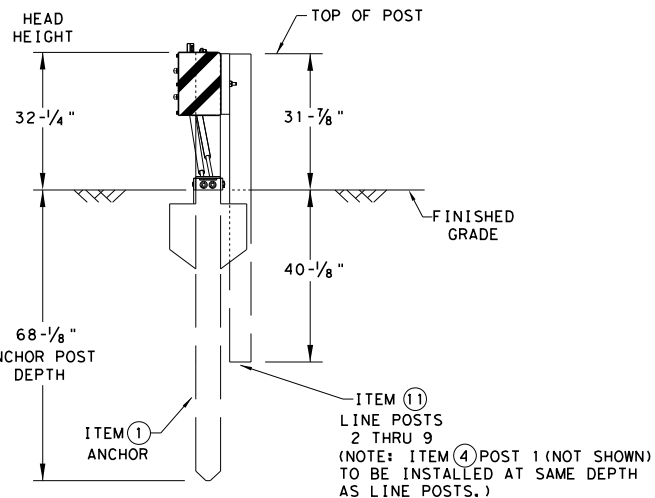
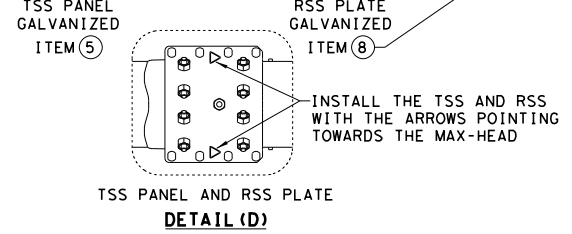
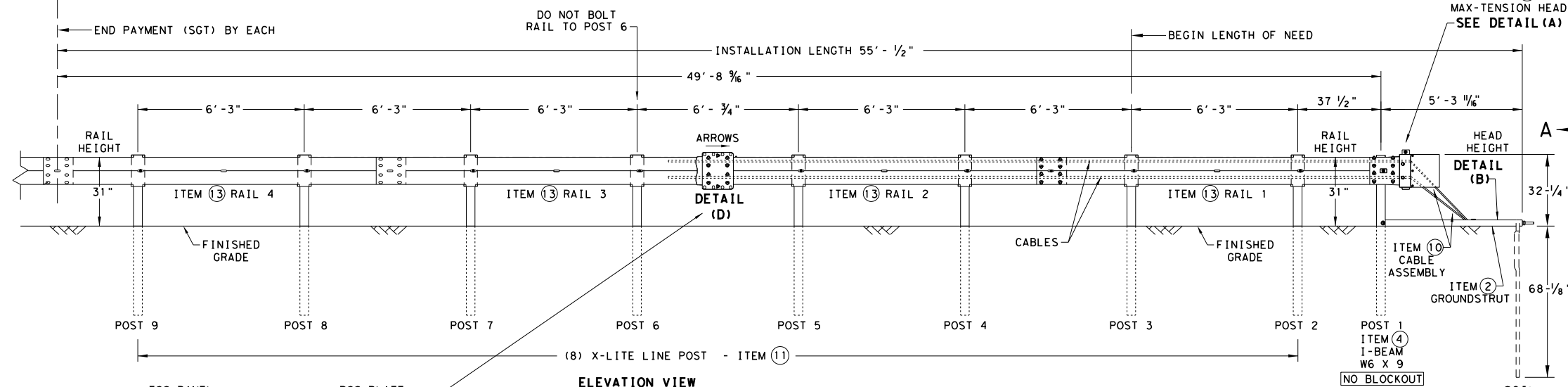
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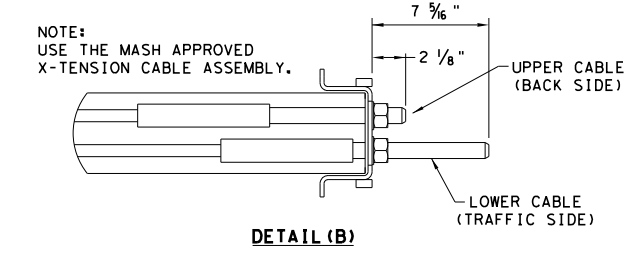
- NOTES:
- ITEM ② COMPOSITE BLOCKOUTS INSTALLED AT LINE POST (9) THRU LINE POST (2).
  - DO NOT INSTALL A BLOCKOUT AT LINE POST (1).

NOTE: SECURE THE (TSS) PANEL TO OUTSIDE OF RAIL 2 WITH THE PANEL ARROWS POINTING TOWARDS THE HEAD.

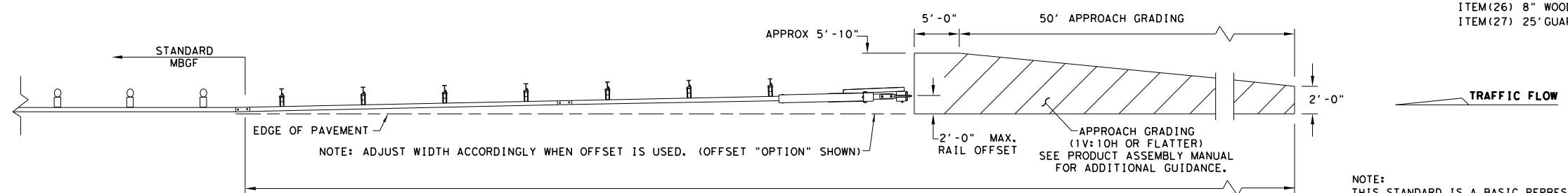
- GENERAL NOTES**
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
  - FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE: MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N 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	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	3/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" 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



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

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

**Texas Department of Transportation** Design Division Standard

## MAX-TENSION END TERMINAL

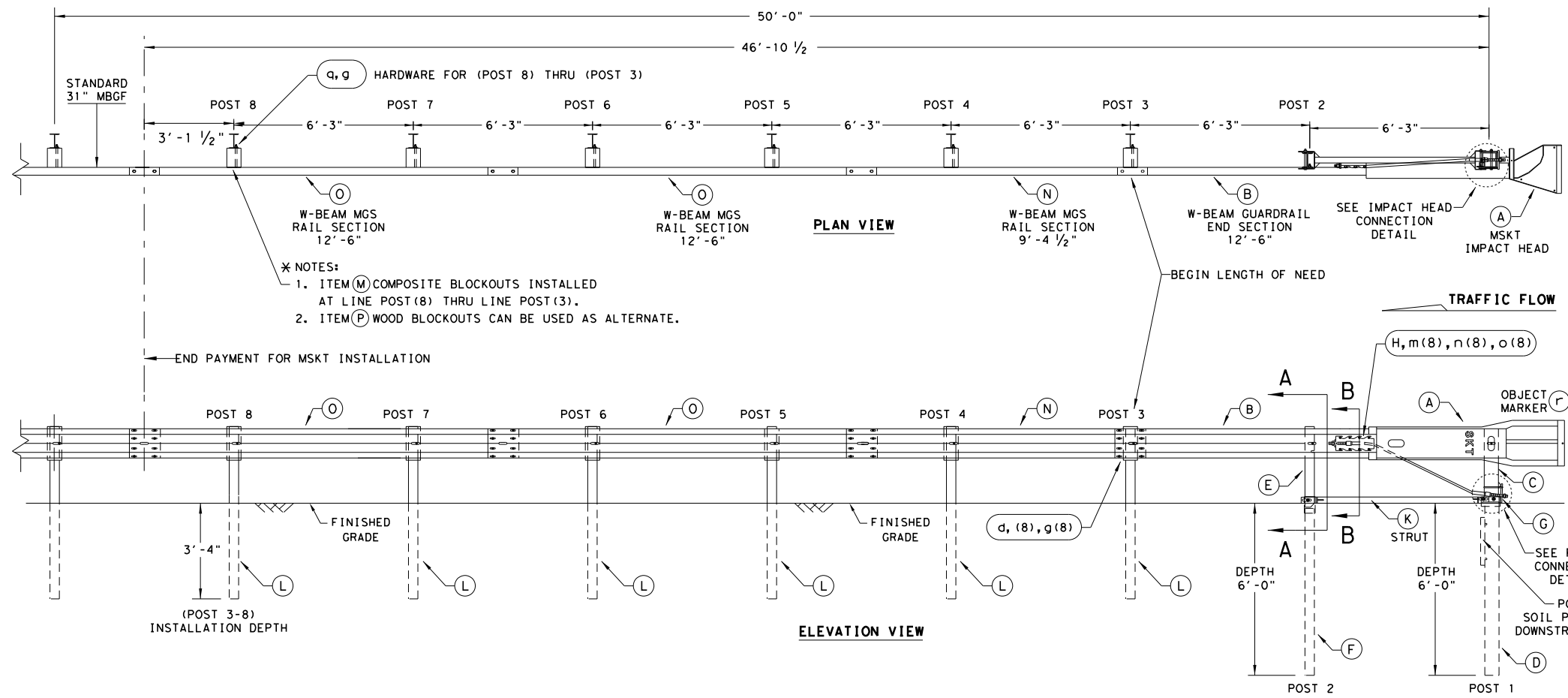
### MASH - TL-3

### SGT (11S) 31-18

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DIST	COUNTY		SHEET NO.	
DAL	ELLIS		172	

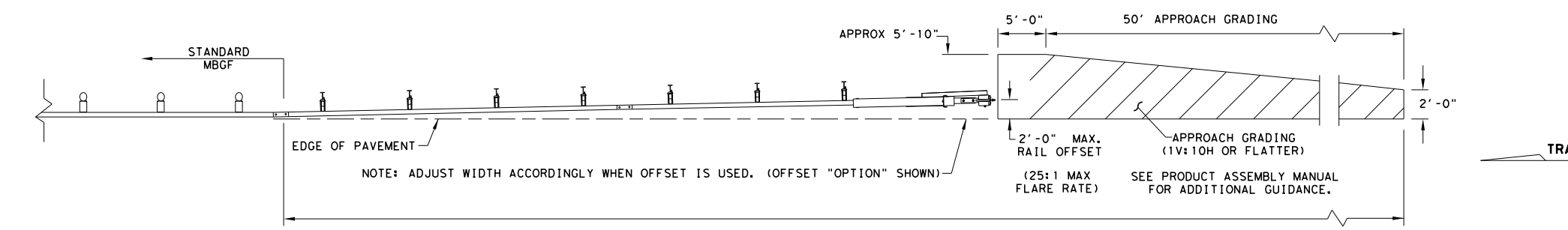
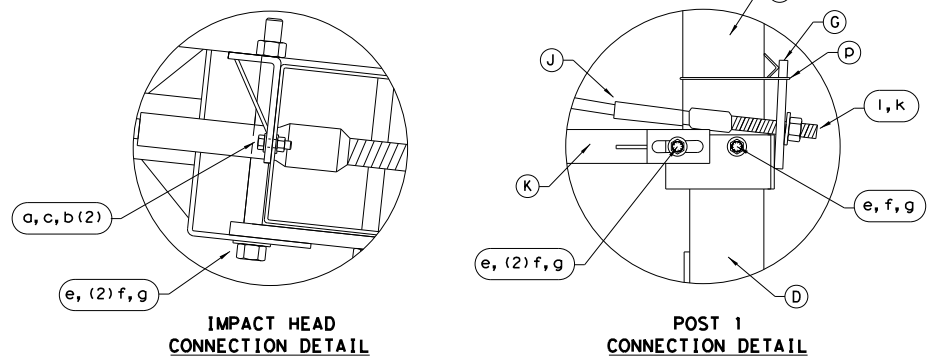
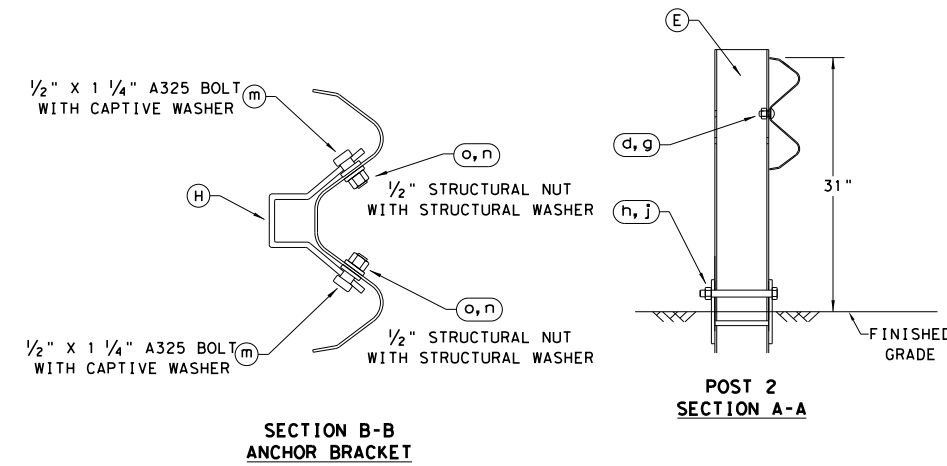
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DISCLAIMER: THIS STANDARD IS GOVERNED BY THE "TEXAS ENGINEERING PRACTICE ACT". NO WARRANTY OF ANY KIND IS MADE BY TXDOT FOR ANY PURPOSE WHATSOEVER. TXDOT ASSUMES NO RESPONSIBILITY FOR THE CONVERSION OF THIS STANDARD TO OTHER FORMATS OR FOR INCORRECT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



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

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



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

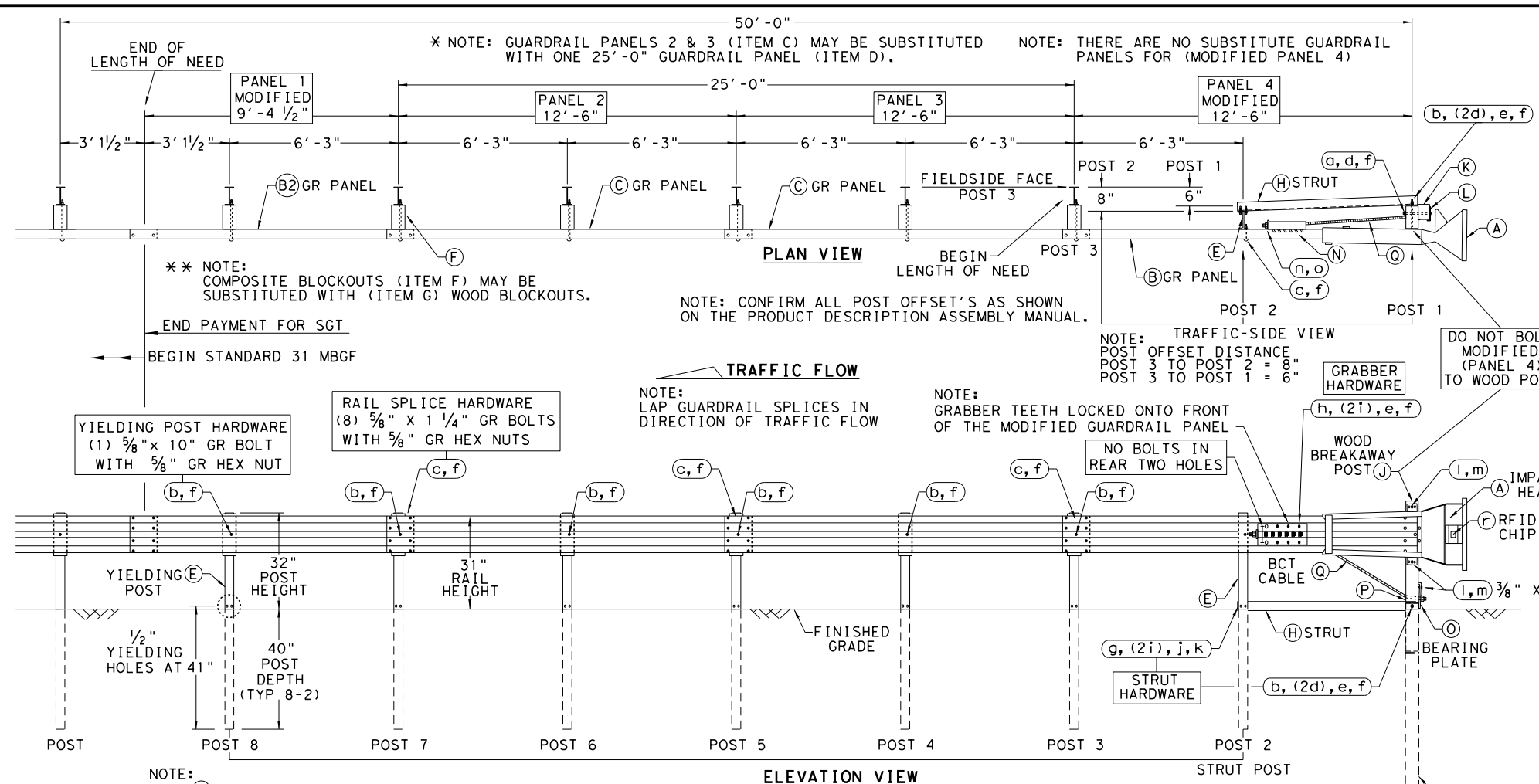
### MSKT-MASH-TL-3

### SGT (12S) 31-18

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REVISIONS	0172	05	129	US 287
DIST	COUNTY		SHEET NO.	
DAL	ELLIS		173	

DATE:  
FILE:

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

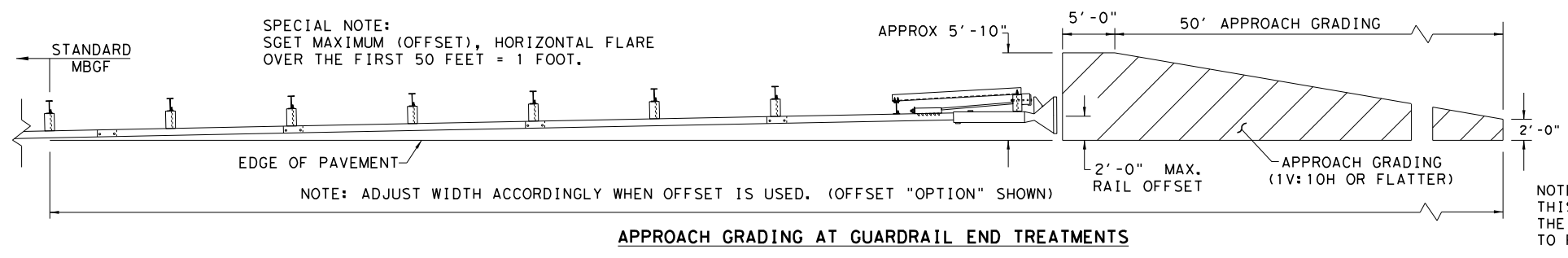
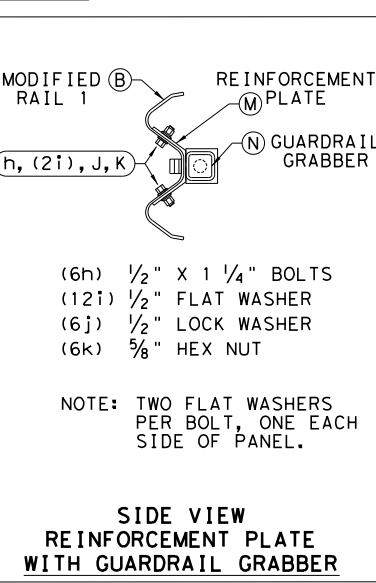
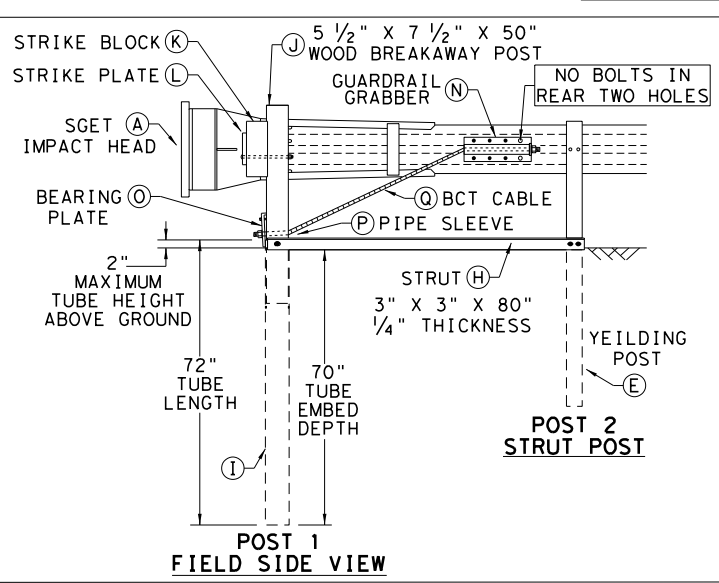
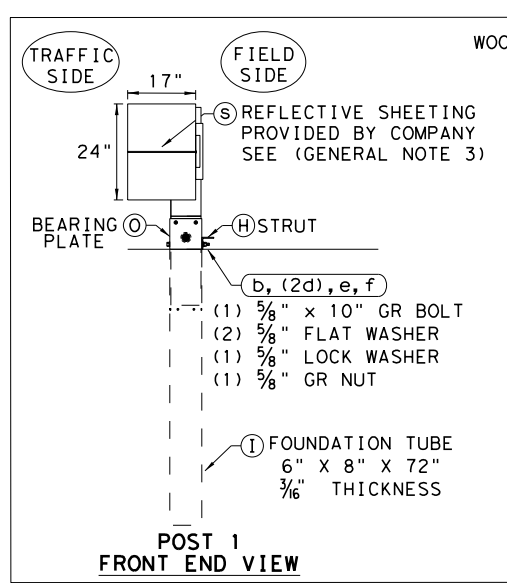
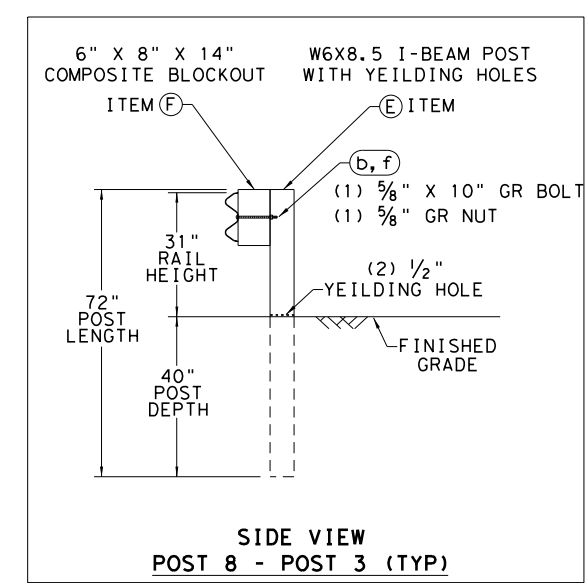


- ### GENERAL NOTES
- FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: SPIG INDUSTRY, INC. AT 1(267) 644-9510. 14675 INDUSTRIAL PARK RD; BRISTOL, VA 24202
  - FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO THE MANUFACTURER'S; SGET END TERMINAL, PRODUCT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

ITEM	QTY	MAIN SYSTEM COMPONENTS	ITEM #
A	1	SGET IMPACT HEAD	SIH1A
B	1	MODIFIED GUARDRAIL PANEL 12'-6" 12GA	126SPZGP
B2	1	MODIFIED GUARDRAIL PANEL 9'-4 1/2" 12GA	GP94
C	2	STANDARD GUARDRAIL PANEL 12'-6" 12GA	GP126
D	1	STANDARD GUARDRAIL PANEL 25'-0" 12GA	GP25
E	7	MODIFIED YIELDING I-BEAM POST W6x8.5	YP6MOD
F	6	COMPOSITE BLOCKOUT 6" X 8" X 14"	CB08
G	6	WOOD BLOCKOUT 6" X 8" X 14"	WB08
H	1	STRUT 3" X 3" X 80" X 1/4" A36 ANGLE	STR80
I	1	FOUNDATION TUBE 6" X 8" X 72" X 3/16"	FNDT6
J	1	WOOD BREAKAWAY POST 5 1/2" X 7 1/2" X 50"	WBRK50
K	1	WOOD STRIKE BLOCK	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

ITEM	QTY	SMALL HARDWARE	ITEM #
a	1	5/8" X 12" GUARDRAIL BOLT 307A HDG	12GRBLT
b	7	5/8" X 10" GUARDRAIL BOLT 307A HDG	10GRBLT
c	33	5/8" X 1 1/4" GR SPLICE BOLTS 307A HDG	1GRBLT
d	3	5/8" FLAT WASHER F436 A325 HDG	58FW436
e	1	5/8" LOCK WASHER HDG	58LW
f	39	5/8" GUARDRAIL HEX NUT HDG	58HN563
g	2	1/2" X 2" STRUT BOLT A325 HDG	2BLT
h	6	1/2" X 1 1/4" PLATE BOLT A325 HDG	125BLT
i	16	1/2" FLAT WASHER F436 A325 HDG	12FWF436
j	8	1/2" LOCK WASHER HDG	12LW
k	8	1/2" HEX NUT A563 HDG	12HN563
l	4	3/8" X 3" HEX LAG SCREW GR5 HDG	38LS
m	4	3/8" FLAT WASHER F436 A325 HDG	38FW844
n	2	1" FLAT WASHER F436 A325 HDG	1FWF436
o	2	1" HEX NUT A563HDG	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

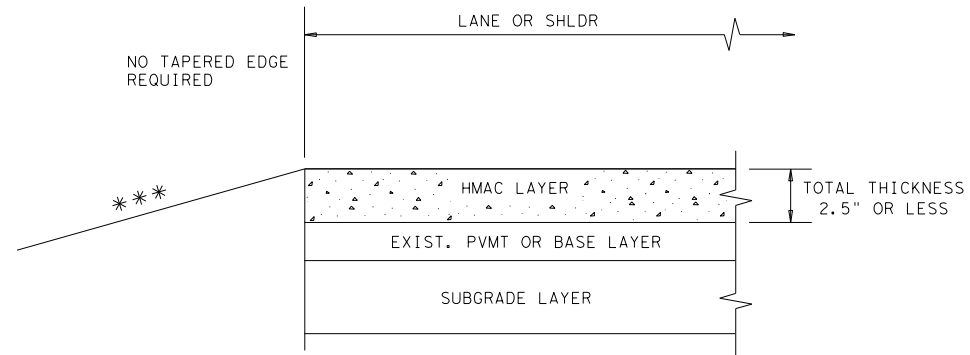
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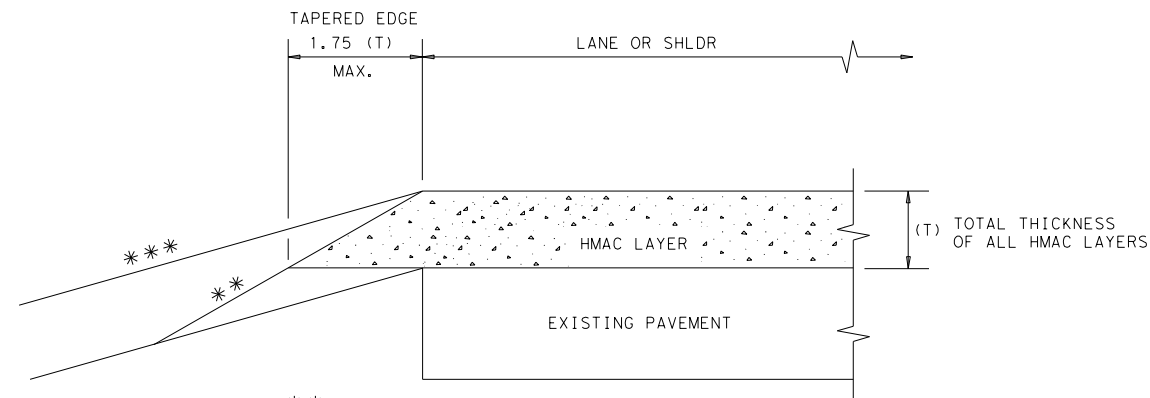
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\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

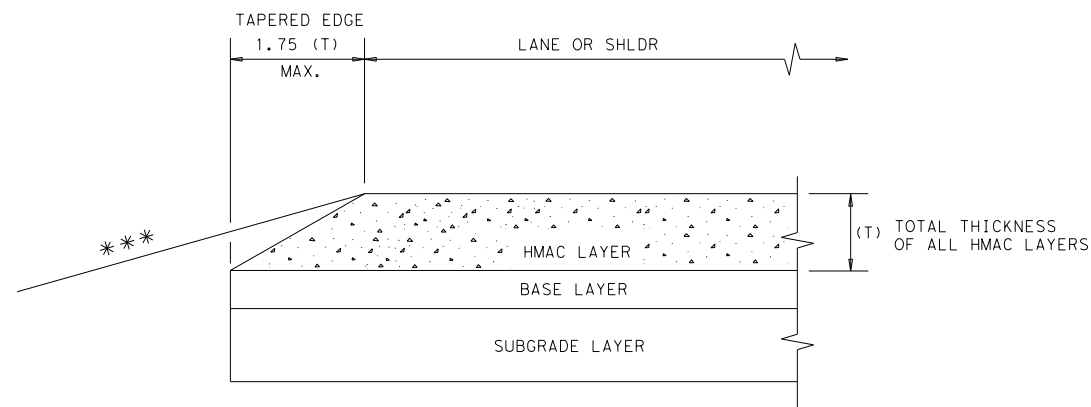
**CONDITION - 1**  
THIN HMAC SURFACES OR HMAC OVERLAY  
WITH THICKNESS OF 2.5" OR LESS



\*\* 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.

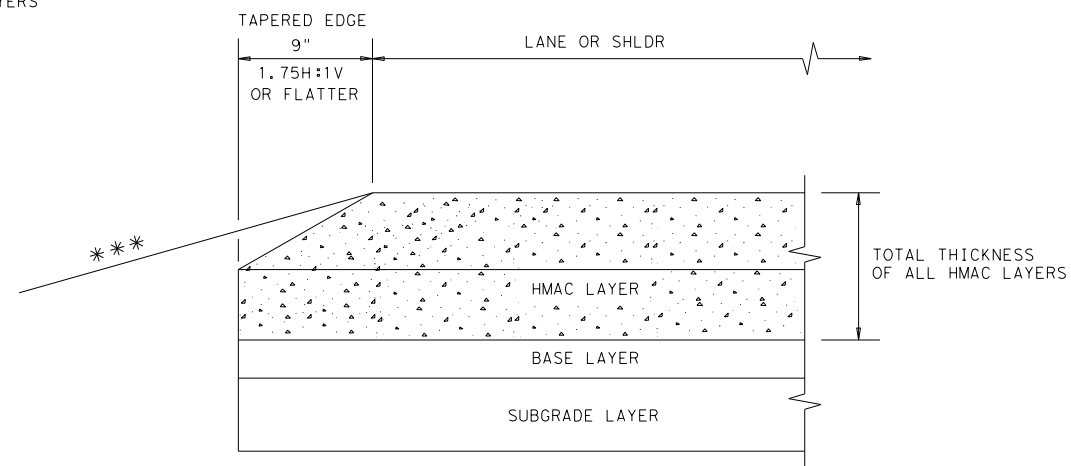
\*\*\* SEE TYPICAL SECTION FOR ROADSIDE DETAILS

**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**

- 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".
- FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
- PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
- THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
- 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.

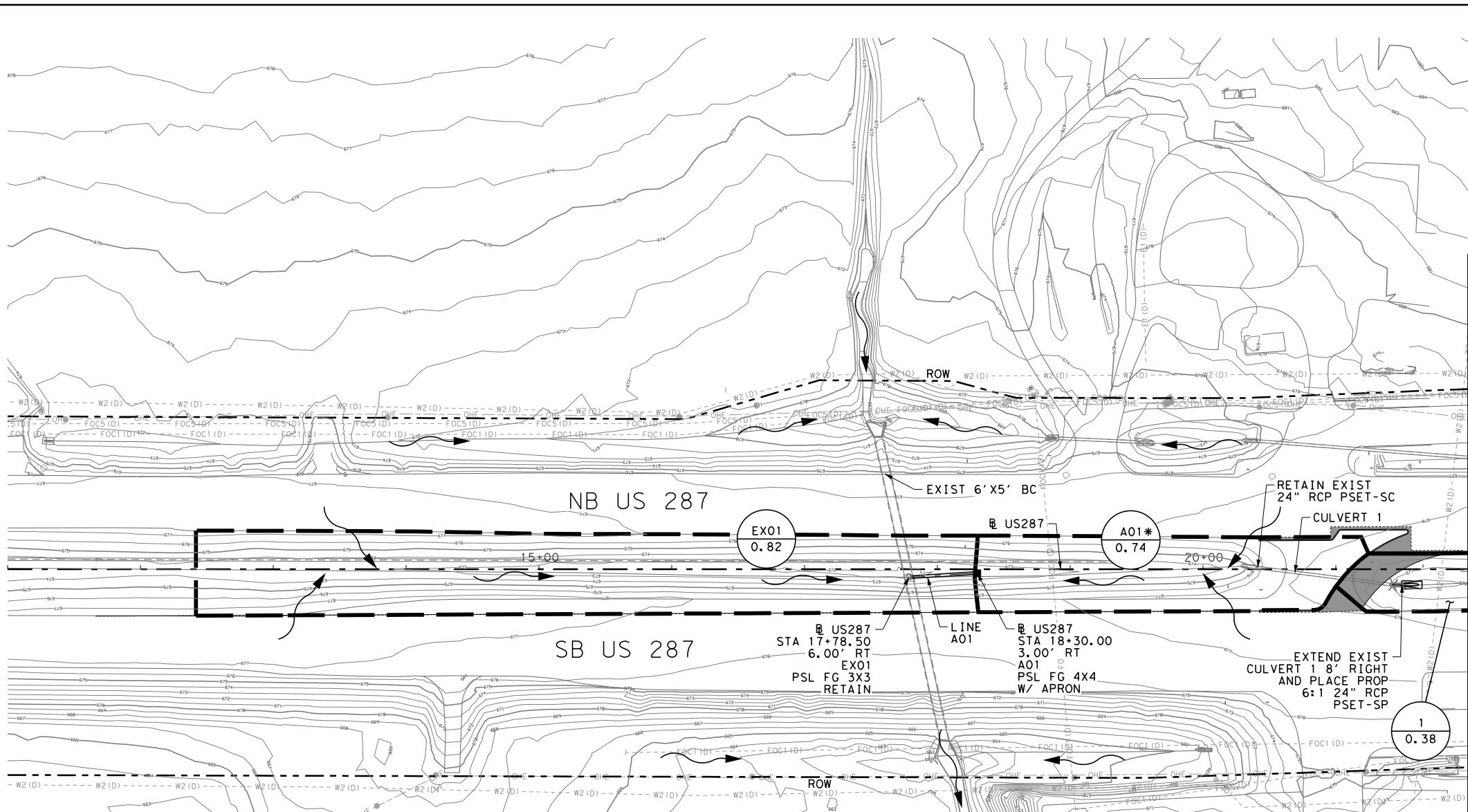
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					<b>Design Division Standard</b>	
<b>TAPERED EDGE DETAILS HMAC PAVEMENT</b>						
<b>TE (HMAC) - 11</b>						
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© TxDOT January 2011	CONT	SECT	JOB	HIGHWAY		
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50 0 50 100  
SCALE: 1" = 100' HORIZONTAL  
5 0 5 10  
SCALE: 1" = 10' VERTICAL

**LEGEND**

- X  
XX.XX → AREA DESIGNATION
- → ACRES FLOW DIRECTION
- → FLOW DIRECTION
- — — — → PROPOSED DRAINAGE AREA
- — — — → EXISTING STORM SEWER
- — — — → PROPOSED STORM SEWER
- — — — → EXISTING DITCH
- — — — → PROPOSED DITCH
- → PROPOSED PAVEMENT
- → PROPOSED CONCRETE RIPRAP (4")
- → PRECAST AREA ZONE DRAIN (PAZD CZ)
- → GRATE INLET (PSL FG)
- → SAFETY END TREATMENT (SET)
- ⊗ ⊗ → STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

- NOTES:**
- EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
  - CUTTING AND PLUGGING OF EXISTING DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
  - CONCRETE COLLAR FOR PIPE TO INLET CONNECTIONS OF EXISTING OR PROPOSED DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
  - THE LOCATIONS AND SIZES OF THE EXISTING STORMDRAIN AND RELATED APPURTANANCES HAVE BEEN DRAWN BASED ON TOPOGRAPHIC SURVEY AND REFERENCE AS-BUILT PLAN DATA, WHERE AVAILABLE.
  - PRIOR TO CONSTRUCTION OF A PARTICULAR STORMDRAIN LINE, THE CONTRACTOR SHALL POT HOLE AND PHYSICALLY LOCATE PERTINENT EXISTING STORMDRAIN FEATURES TO VERIFY LOCATIONS AND ELEVATIONS OF CONNECTIONS TO THE SATISFACTION OF THE ENGINEER. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS UNDER ITEM 462 AND 464.
  - \* SHARES AREA WITH CULVERT 1



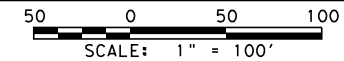
STATE OF TEXAS  
SHAHRIAR AZAD  
91682  
LICENSED PROFESSIONAL ENGINEER  
Shahriar Azad  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.
<b>US 287 DRAINAGE AREA MAPS &amp; PLAN &amp; PROFILE</b> <b>BEGIN PROJECT TO STA 22+00</b>			
SCALE: 1" = 100' HORIZONTAL 1" = 10' VERTICAL			
SHEET 1 OF 20			
DESIGN	FED. RD. DIV. NO.	PROJECT NO.	
MT	6	SEE TITLE SHEET	
GRAPHICS	MT	STATE	HIGHWAY NO.
CHECK	CPM	DISTRICT	US 287
CHECK	SA	COUNTY	SHEET NO.
	CONTROL	ELLIS	176
	0172	SECTION	
	05	JOB	
	129		

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**LEGEND**

- AREA DESIGNATION
- ACRES
- FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

**NOTES:**

1. EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
2. CUTTING AND PLUGGING OF EXISTING DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
3. CONCRETE COLLAR FOR PIPE TO INLET CONNECTIONS OF EXISTING OR PROPOSED DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
4. THE LOCATIONS AND SIZES OF THE EXISTING STORMDRAIN AND RELATED APPURTANANCES HAVE BEEN DRAWN BASED ON TOPOGRAPHIC SURVEY AND REFERENCE AS-BUILT PLAN DATA, WHERE AVAILABLE.
5. PRIOR TO CONSTRUCTION OF A PARTICULAR STORMDRAIN LINE, THE CONTRACTOR SHALL POT HOLE AND PHYSICALLY LOCATE PERTINENT EXISTING STORMDRAIN FEATURES TO VERIFY LOCATIONS AND ELEVATIONS OF CONNECTIONS TO THE SATISFACTION OF THE ENGINEER. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS UNDER ITEM 462 AND 464.
6. SHARES AREA WITH CULVERT 1



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287 DRAINAGE  
AREA MAPS & PLAN & PROFILE  
STA 22+00 TO STA 33+00**

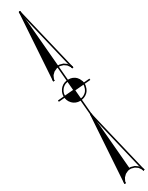
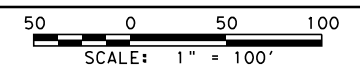
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DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.	
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CHECK SA	TEXAS	DALLAS	ELLIS
	CONTROL	SECTION	JOB
	0172	05	129
			HIGHWAY NO. US 287
			SHEET NO. 177



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**LEGEND**

- AREA DESIGNATION
- ACRES FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

**NOTES:**

1. EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
2. CUTTING AND PLUGGING OF EXISTING DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
3. CONCRETE COLLAR FOR PIPE TO INLET CONNECTIONS OF EXISTING OR PROPOSED DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
4. THE LOCATIONS AND SIZES OF THE EXISTING STORMDRAIN AND RELATED APPURTANANCES HAVE BEEN DRAWN BASED ON TOPOGRAPHIC SURVEY AND REFERENCE AS-BUILT PLAN DATA, WHERE AVAILABLE.
5. PRIOR TO CONSTRUCTION OF A PARTICULAR STORMDRAIN LINE, THE CONTRACTOR SHALL POT HOLE AND PHYSICALLY LOCATE PERTINENT EXISTING STORMDRAIN FEATURES TO VERIFY LOCATIONS AND ELEVATIONS OF CONNECTIONS TO THE SATISFACTION OF THE ENGINEER. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS UNDER ITEM 462 AND 464.



*Shahriar Azad*  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

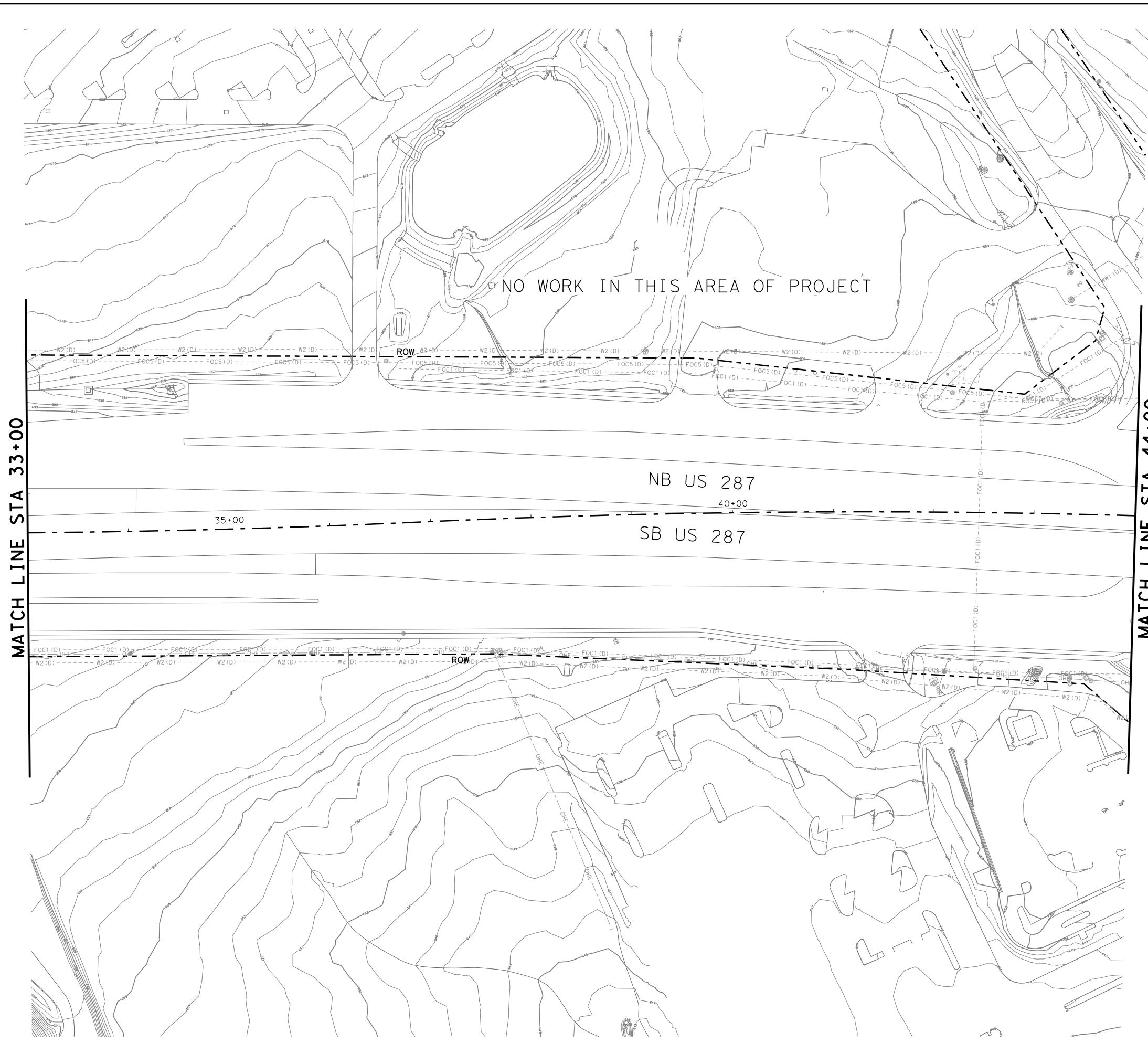
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287 DRAINAGE  
AREA MAPS & PLAN & PROFILE  
STA 33+00 TO STA 44+00**

SCALE: 1" = 100' SHEET 3 OF 20

DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS MT	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO. 178
CHECK SA	CONTROL 0172	SECTION 05	JOB 129	



MATCH LINE STA 33+00

MATCH LINE STA 44+00

NB US 287  
40+00  
SB US 287

35+00

NO WORK IN THIS AREA OF PROJECT

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50 0 50 100  
SCALE: 1" = 100'



### LEGEND

- AREA DESIGNATION
- ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

### NOTES:

1. EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED.
2. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
3. CUTTING AND PLUGGING OF EXISTING DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
4. CONCRETE COLLAR FOR PIPE TO INLET CONNECTIONS OF EXISTING OR PROPOSED DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
5. THE LOCATIONS AND SIZES OF THE EXISTING STORMDRAIN AND RELATED APPURTANANCES HAVE BEEN DRAWN BASED ON TOPOGRAPHIC SURVEY AND REFERENCE AS-BUILT PLAN DATA, WHERE AVAILABLE.
6. PRIOR TO CONSTRUCTION OF A PARTICULAR STORMDRAIN LINE, THE CONTRACTOR SHALL POT HOLE AND PHYSICALLY LOCATE PERTINENT EXISTING STORMDRAIN FEATURES TO VERIFY LOCATIONS AND ELEVATIONS OF CONNECTIONS TO THE SATISFACTION OF THE ENGINEER. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS UNDER ITEM 462 AND 464.

NO WORK IN THIS AREA OF PROJECT

MATCH LINE STA 44+00

MATCH LINE STA 55+00

45+00

US287

50+00

NB US 287

SB US 287

55



*Shahriar Azad*  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 DRAINAGE AREA MAPS & PLAN & PROFILE STA 44+00 TO STA 55+00

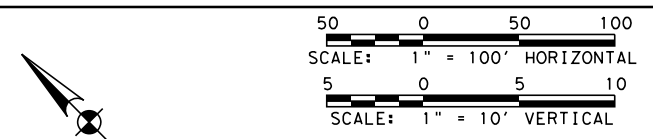
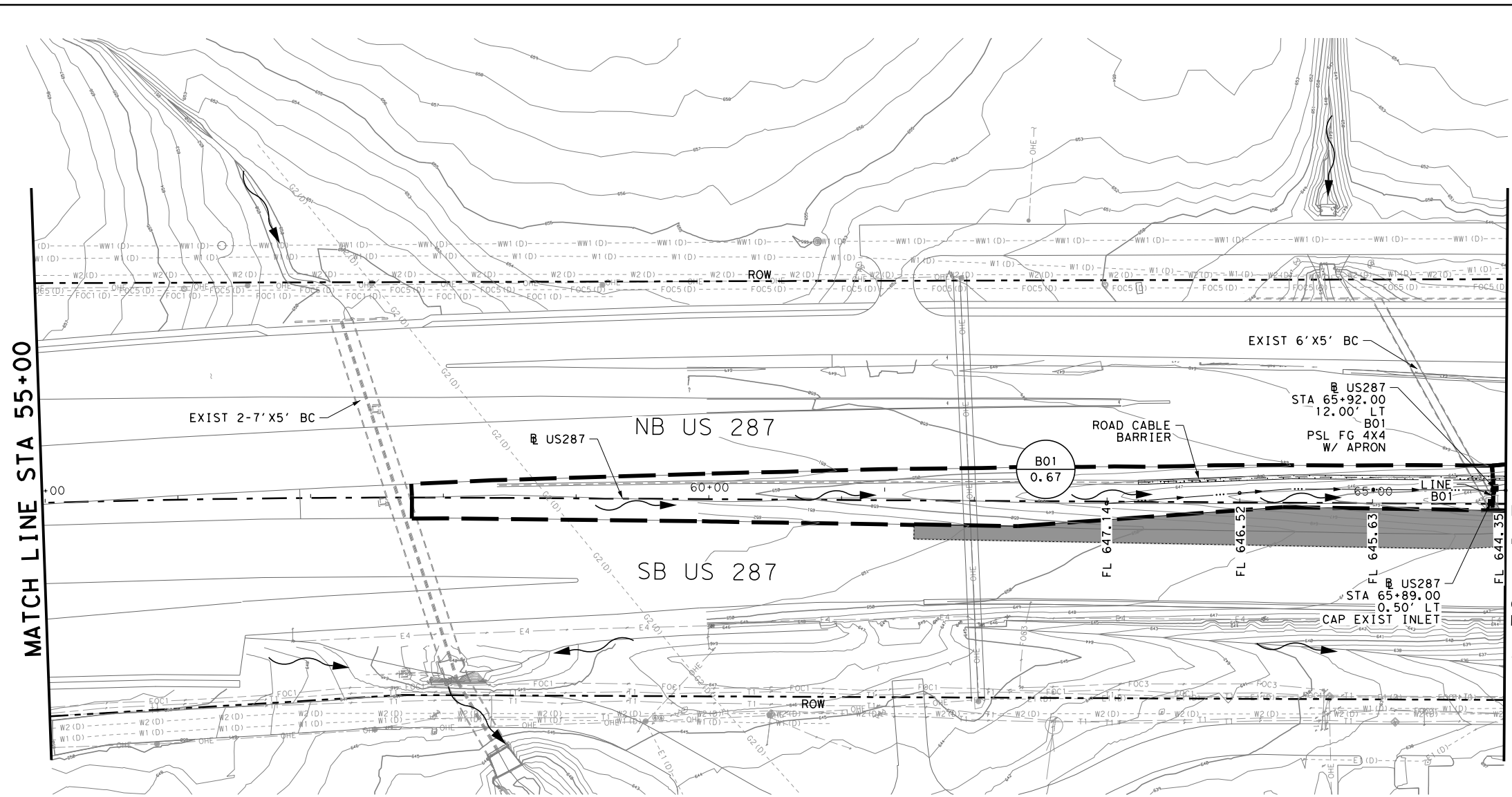
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CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

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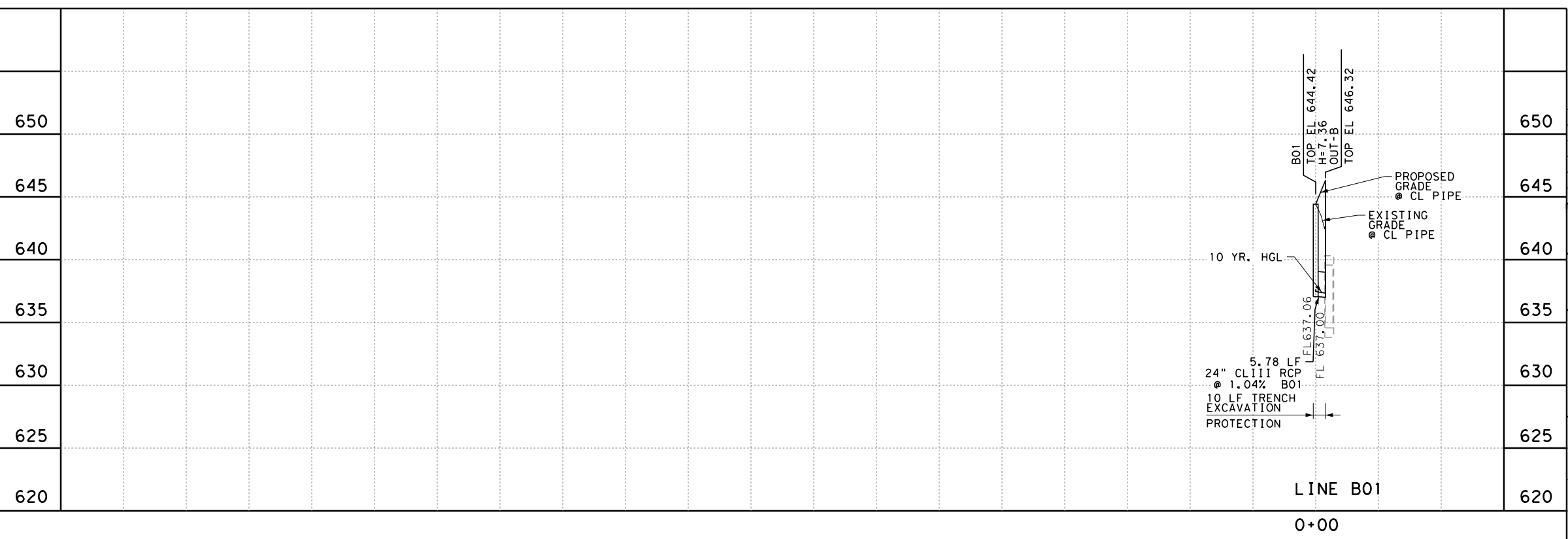
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**LEGEND**

- AREA DESIGNATION
- ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

- NOTES:**
- EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287 DRAINAGE  
AREA MAPS & PLAN & PROFILE  
STA 55+00 TO STA 66+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL

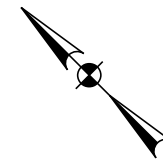
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CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

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SCALE: 1" = 100'



### LEGEND

- AREA DESIGNATION
- ACRES FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

### NOTES:

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6. SHARES AREA WITH CULVERT 2

\* SHARES AREA WITH CULVERT 2



*Shahriar Azad*  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

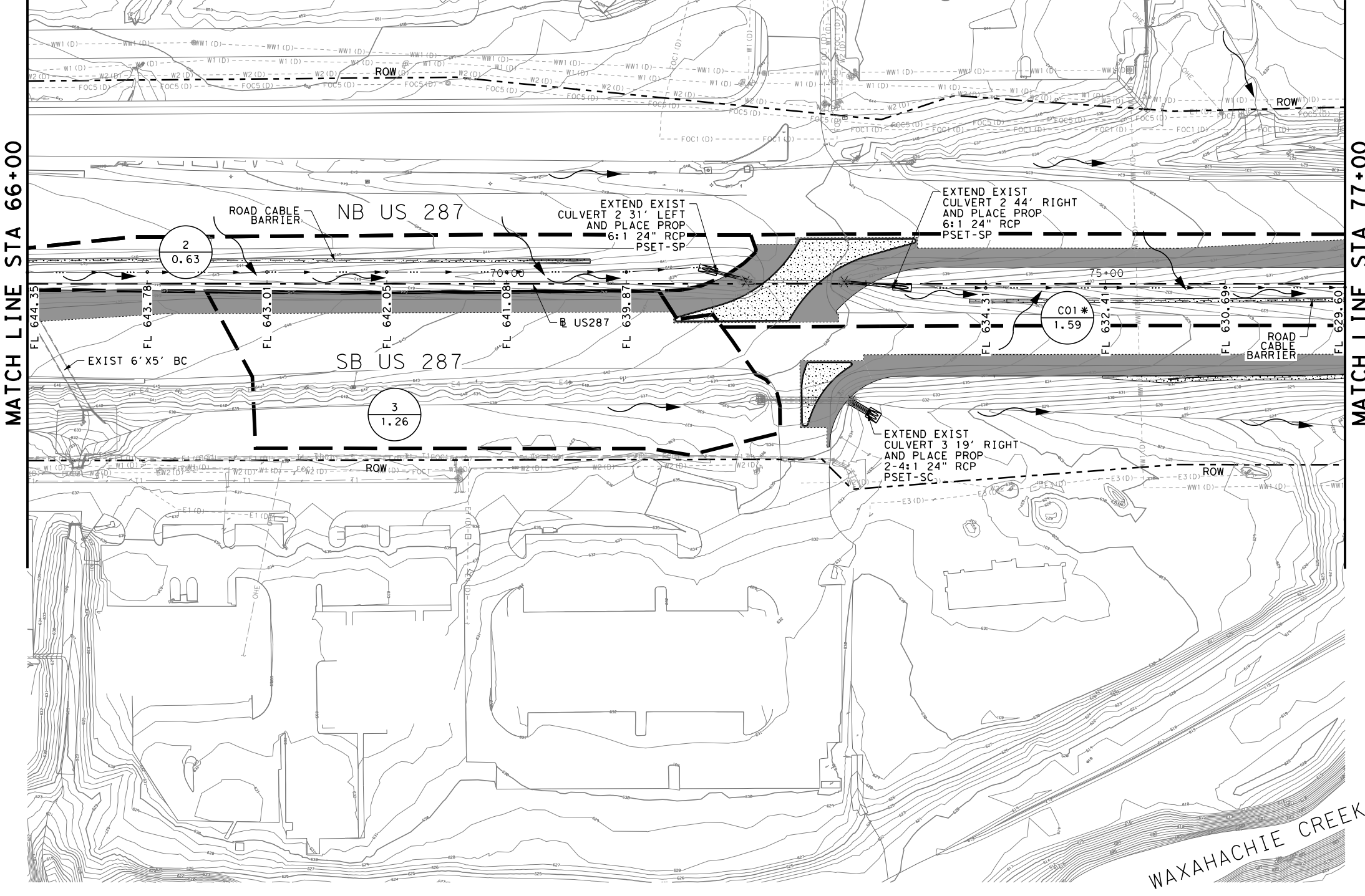
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 DRAINAGE AREA MAPS & PLAN & PROFILE STA 66+00 TO STA 77+00

SCALE: 1" = 100' SHEET 6 OF 20

DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
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CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

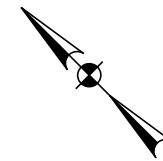
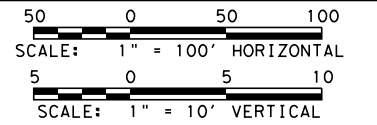


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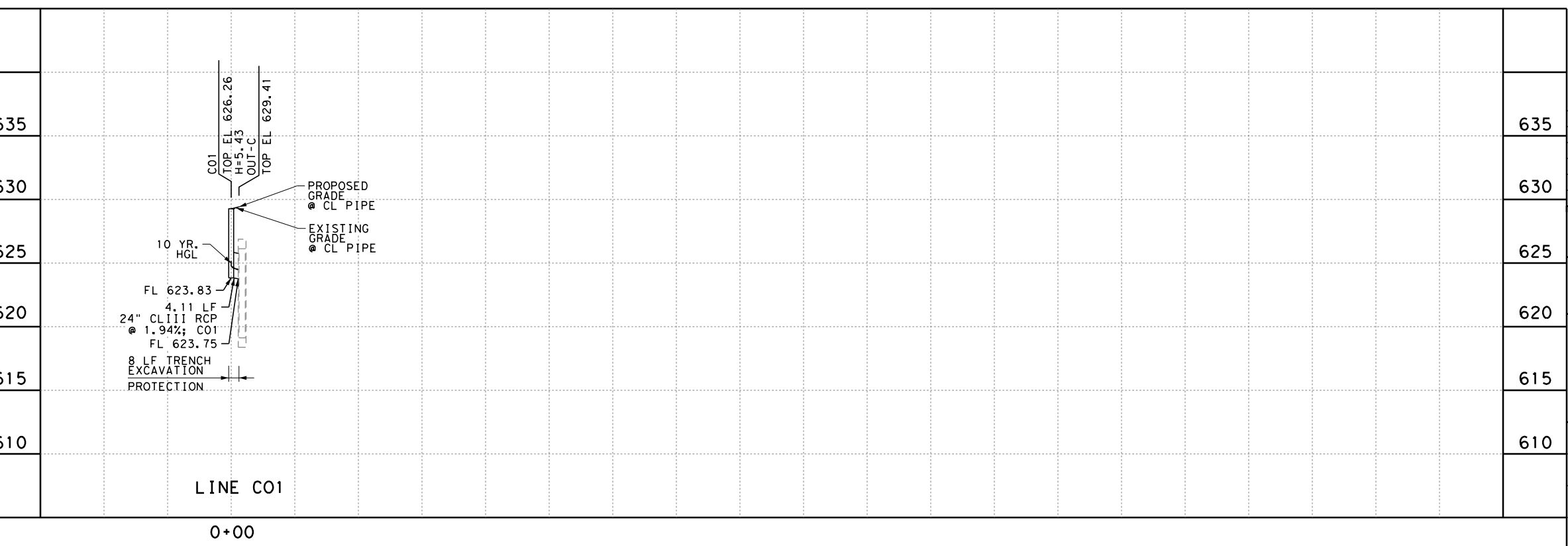
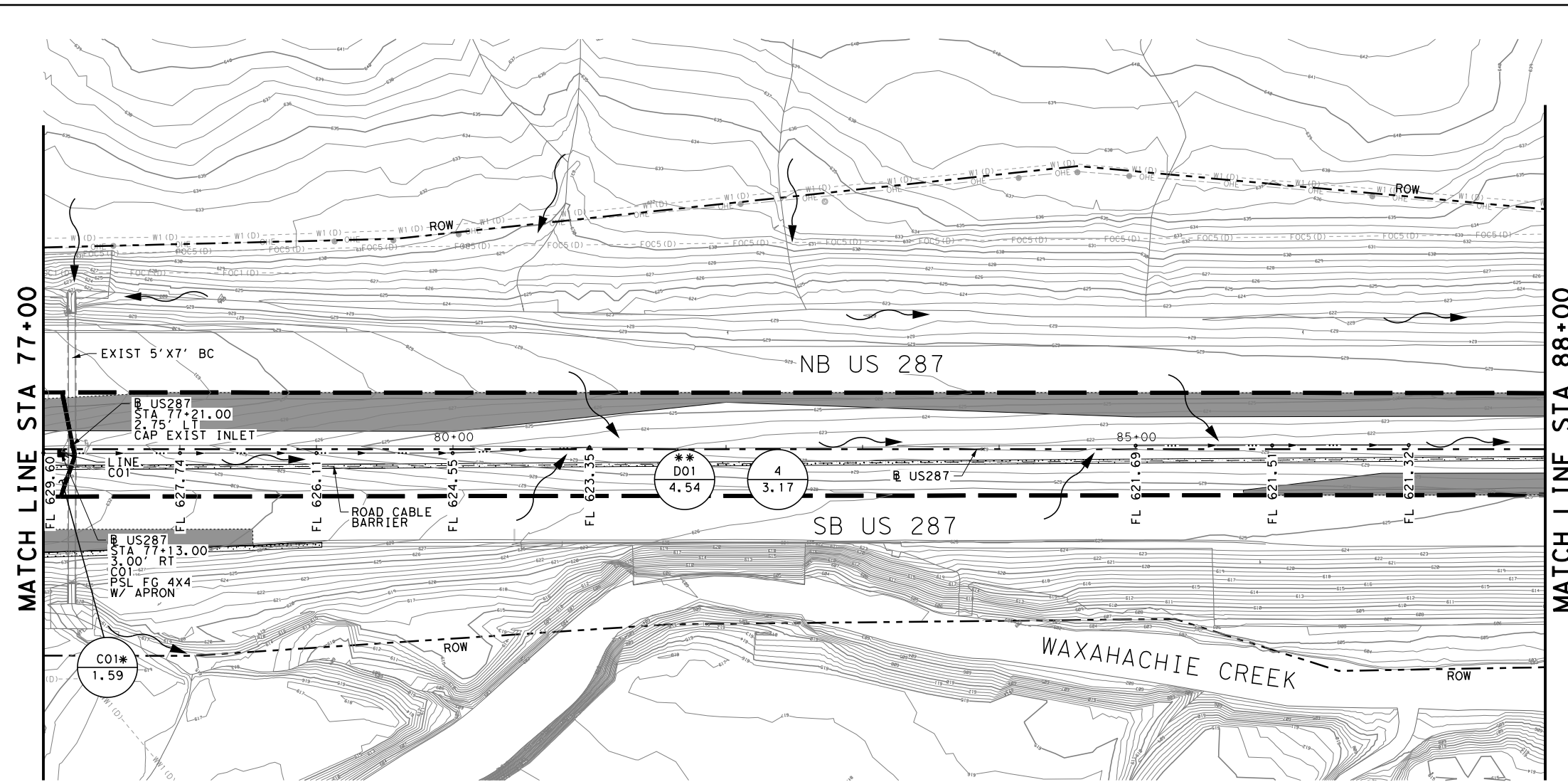
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**LEGEND**

- AREA DESIGNATION
- ACRES FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

- NOTES:**
- EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
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  - CONCRETE COLLAR FOR PIPE TO INLET CONNECTIONS OF EXISTING OR PROPOSED DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
  - THE LOCATIONS AND SIZES OF THE EXISTING STORMDRAIN AND RELATED APPURTANANCES HAVE BEEN DRAWN BASED ON TOPOGRAPHIC SURVEY AND REFERENCE AS-BUILT PLAN DATA, WHERE AVAILABLE.
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- \* SHARES AREA WITH CULVERT 2  
 \*\* SHARES AREA WITH CULVERT 4



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264



**US 287 DRAINAGE  
 AREA MAPS & PLAN & PROFILE  
 STA 77+00 TO STA 88+00**

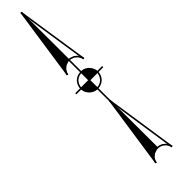
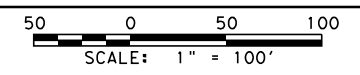
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 1" = 10' VERTICAL SHEET 7 OF 20

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GRAPHICS MT	6	SEE TITLE SHEET		US 287
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CHECK SA	CONTROL	SECTION	JOB	
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**LEGEND**

- AREA DESIGNATION  
ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

**NOTES:**

1. EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
2. CUTTING AND PLUGGING OF EXISTING DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
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6. SHARES AREA WITH CULVERT 4

MATCH LINE STA 88+00

MATCH LINE STA 99+00



Shahriar Azad  
 2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

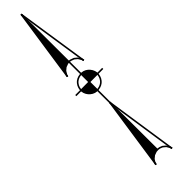
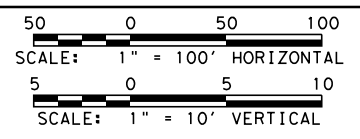
**BRIDGEFARMER & ASSOCIATES, INC.**  
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Texas Department of Transportation  
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**US 287 DRAINAGE**  
**AREA MAPS & PLAN & PROFILE**  
**STA 88+00 TO STA 99+00**

SCALE: 1" = 100'		SHEET 8 OF 20	
DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.	
GRAPHICS MT	6	SEE TITLE SHEET	
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CHECK SA	0172	05	129
			HIGHWAY NO. US 287
			SHEET NO. 183

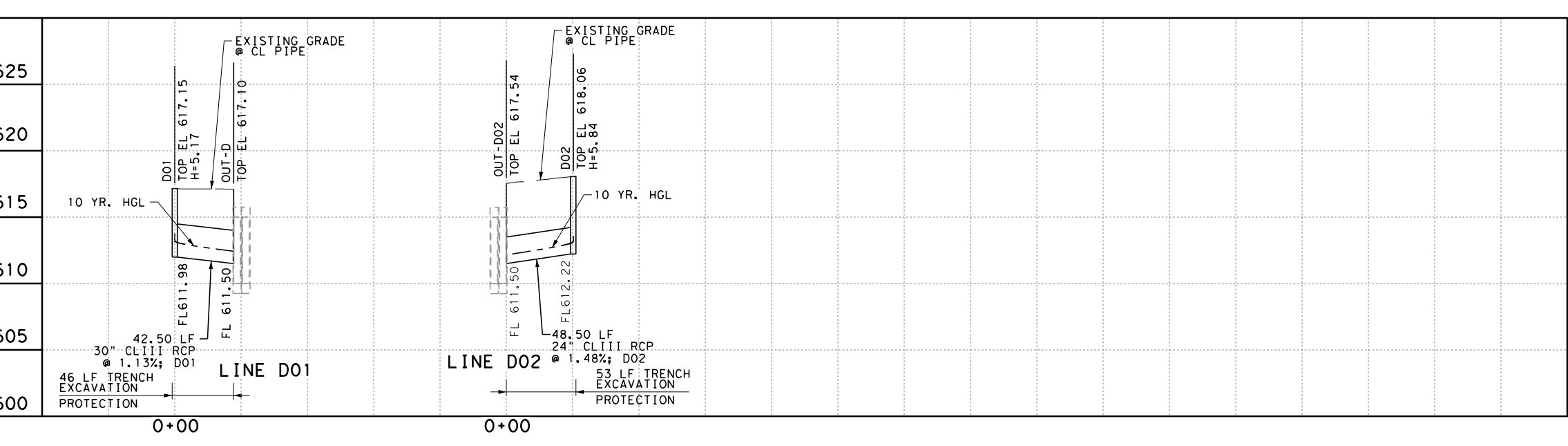
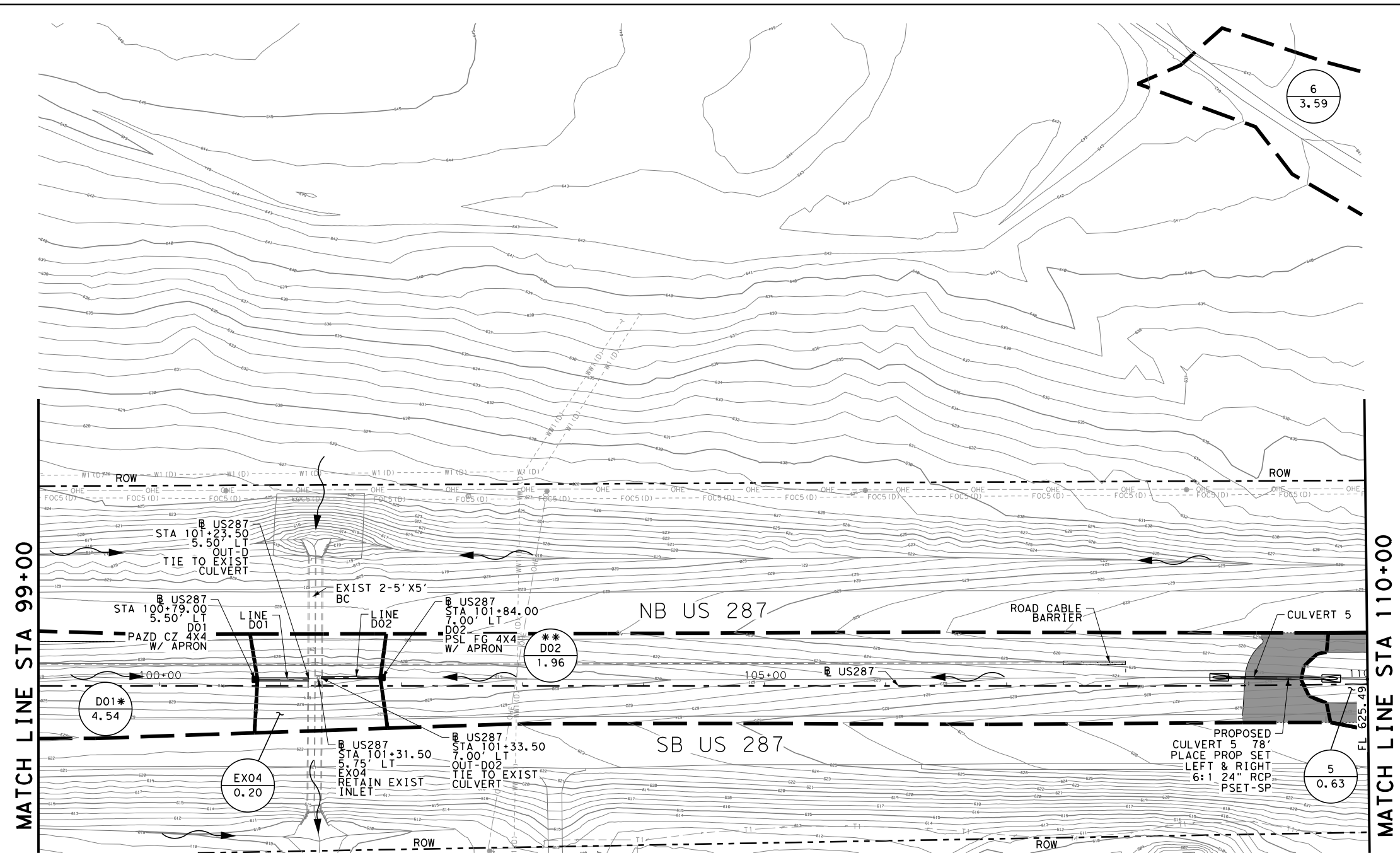
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**LEGEND**

- AREA DESIGNATION
- ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

- NOTES:**
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  6. \*\* SHARES AREA WITH CULVERT 4
  - \* SHARES AREA WITH CULVERT 5



NO.	DATE	DESCRIPTION	APPROV.
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620			
615			
610			
605			
600			

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CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

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**US 287 DRAINAGE  
AREA MAPS & PLAN & PROFILE  
STA 99+00 TO STA 110+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL

SHEET 9 OF 20

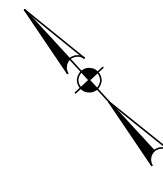
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CHECK	CONTROL	SECTION		JOB
SA	0172	05		129

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50 0 50 100  
SCALE: 1" = 100'



### LEGEND

- AREA DESIGNATION  
ACRES  
FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

### NOTES:

1. EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
2. CUTTING AND PLUGGING OF EXISTING DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
3. CONCRETE COLLAR FOR PIPE TO INLET CONNECTIONS OF EXISTING OR PROPOSED DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
4. THE LOCATIONS AND SIZES OF THE EXISTING STORMDRAIN AND RELATED APPURTANANCES HAVE BEEN DRAWN BASED ON TOPOGRAPHIC SURVEY AND REFERENCE AS-BUILT PLAN DATA, WHERE AVAILABLE.
5. PRIOR TO CONSTRUCTION OF A PARTICULAR STORMDRAIN LINE, THE CONTRACTOR SHALL POT-HOLE AND PHYSICALLY LOCATE PERTINENT EXISTING STORMDRAIN FEATURES TO VERIFY LOCATIONS AND ELEVATIONS OF CONNECTIONS TO THE SATISFACTION OF THE ENGINEER. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS UNDER ITEM 462 AND 464.
- \* SHARES AREA WITH CULVERT 5

Shahriar Azad  
 91682  
 LICENSED PROFESSIONAL ENGINEER  
 2024/05/09

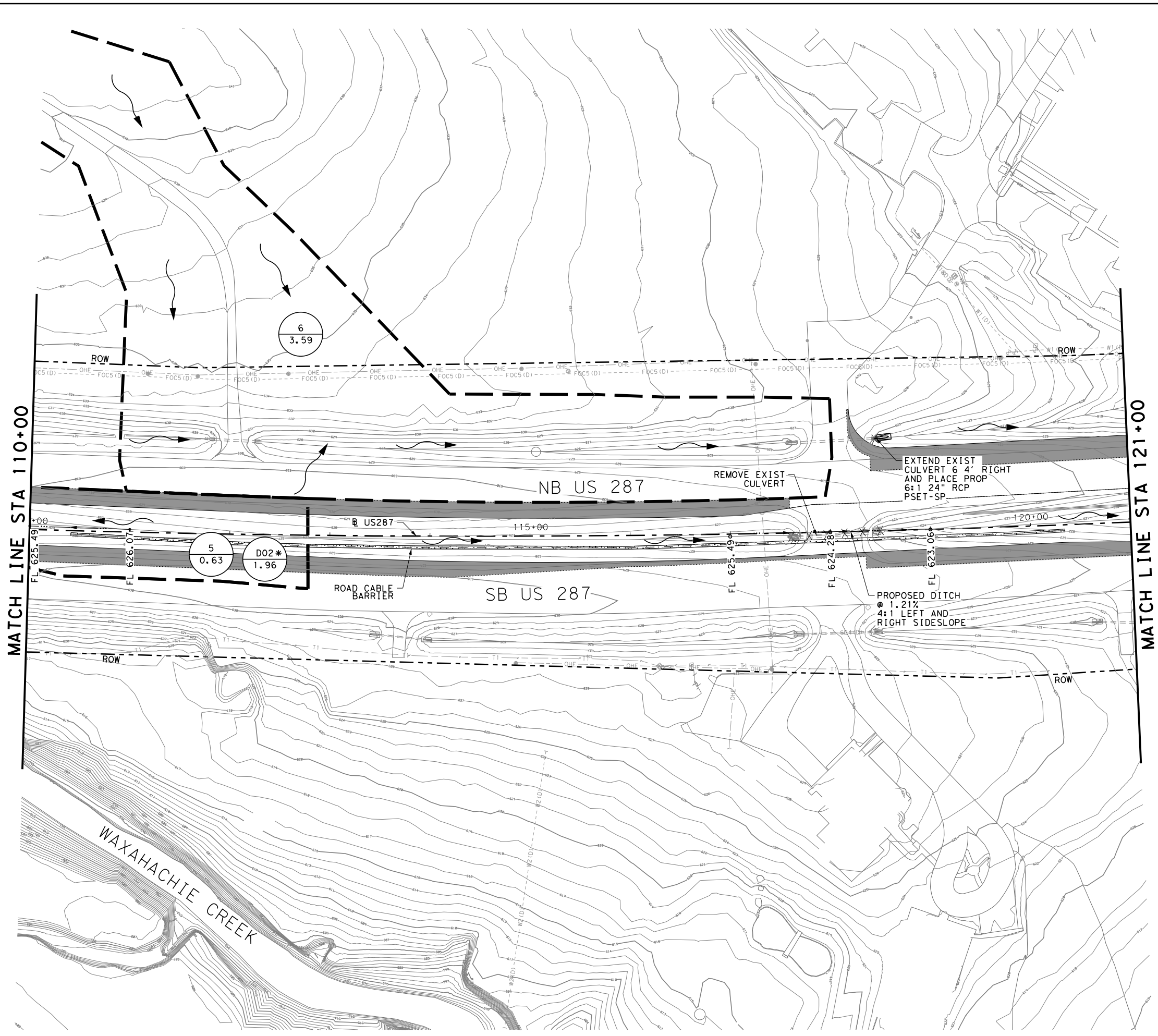
NO.	DATE	DESCRIPTION	APPROV.

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CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

Texas Department of Transportation  
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## US 287 DRAINAGE AREA MAPS & PLAN & PROFILE STA 110+00 TO STA 121+00

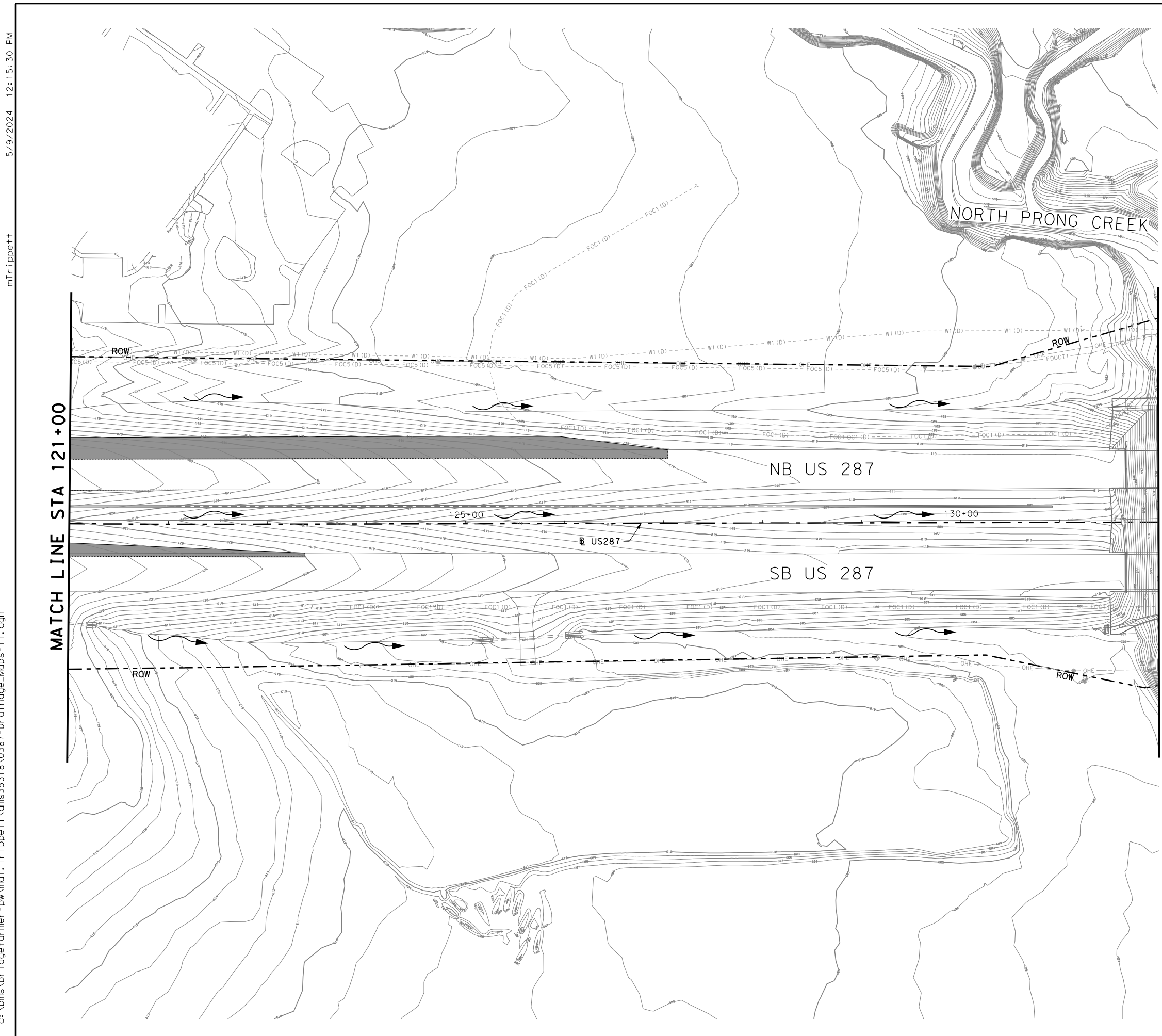
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GRAPHICS MT	6	SEE TITLE SHEET	
CHECK CPM	TEXAS	DALLAS	ELLIS
CHECK SA	0172	05	129
			HIGHWAY NO. US 287
			SHEET NO. 185





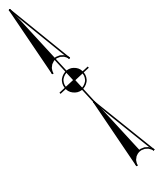
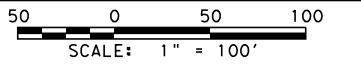
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MATCH LINE STA 121+00

MATCH LINE STA 132+00



### LEGEND

- AREA DESIGNATION
- ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

### NOTES:

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NO.	DATE	DESCRIPTION	APPROV.

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CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 DRAINAGE AREA MAPS & PLAN & PROFILE STA 121+00 TO STA 132+00

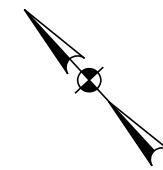
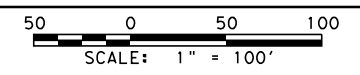
SCALE: 1" = 100' SHEET 11 OF 20

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GRAPHICS MT	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO. 186
CHECK SA	0172	05	129	

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**LEGEND**

- AREA DESIGNATION
- ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

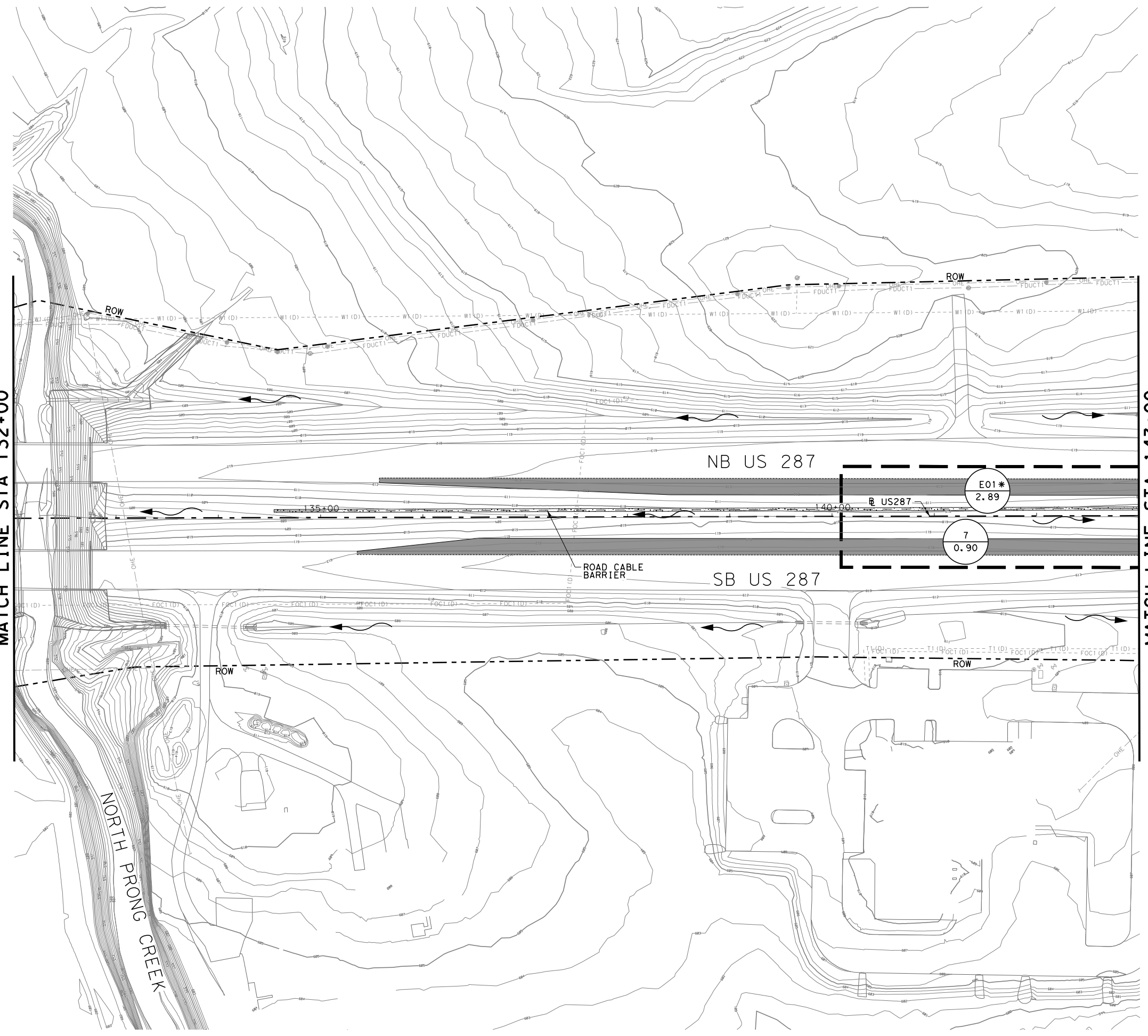
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6. SHARES AREA WITH CULVERT 7



MATCH LINE STA 132+00

MATCH LINE STA 143+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287 DRAINAGE  
AREA MAPS & PLAN & PROFILE  
STA 132+00 TO STA 143+00**

SCALE: 1" = 100' SHEET 12 OF 20

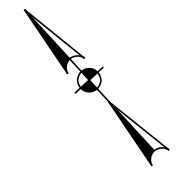
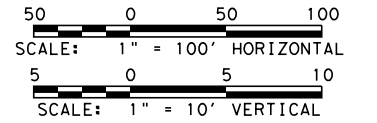
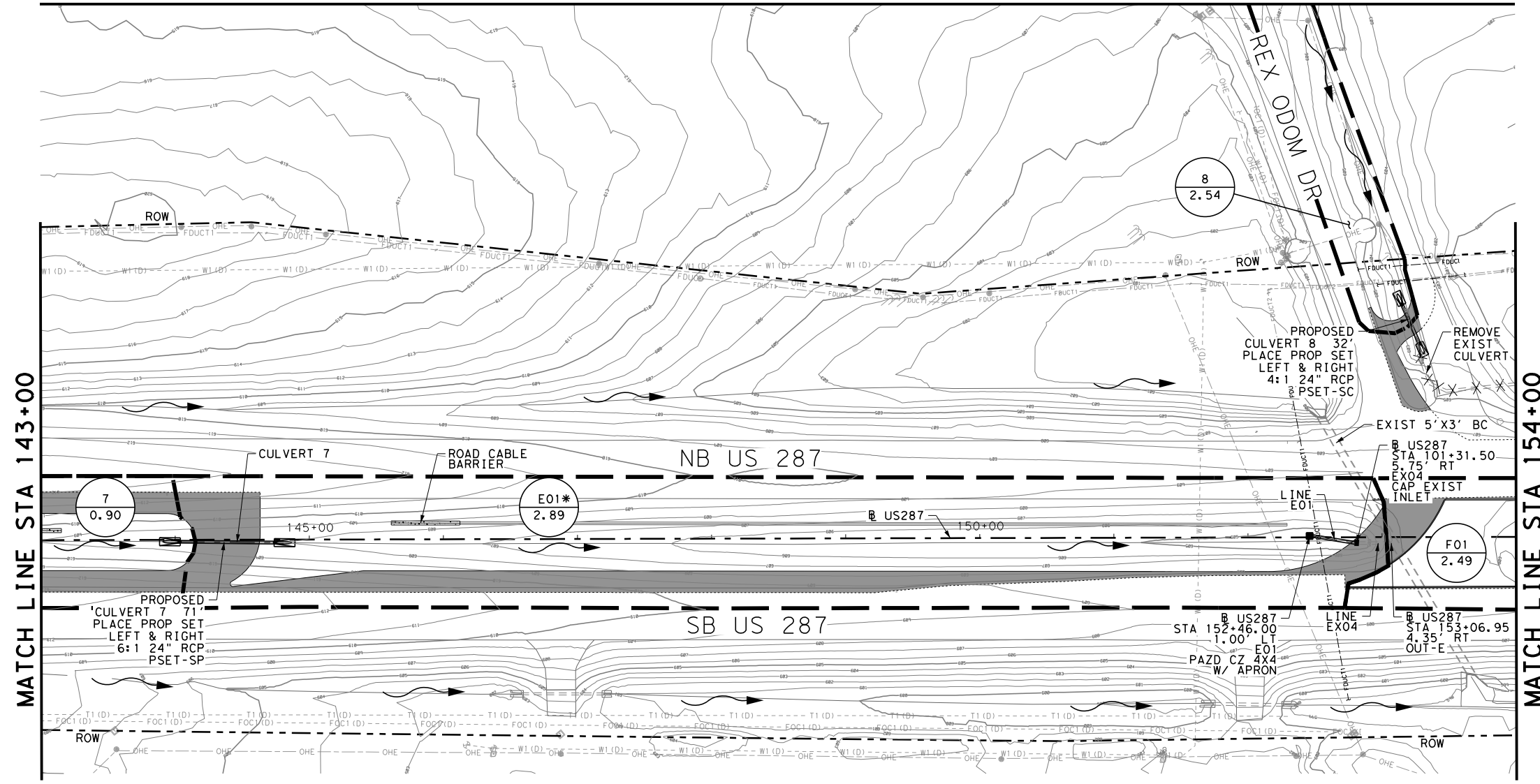
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CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

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### MATCH LINE A-A



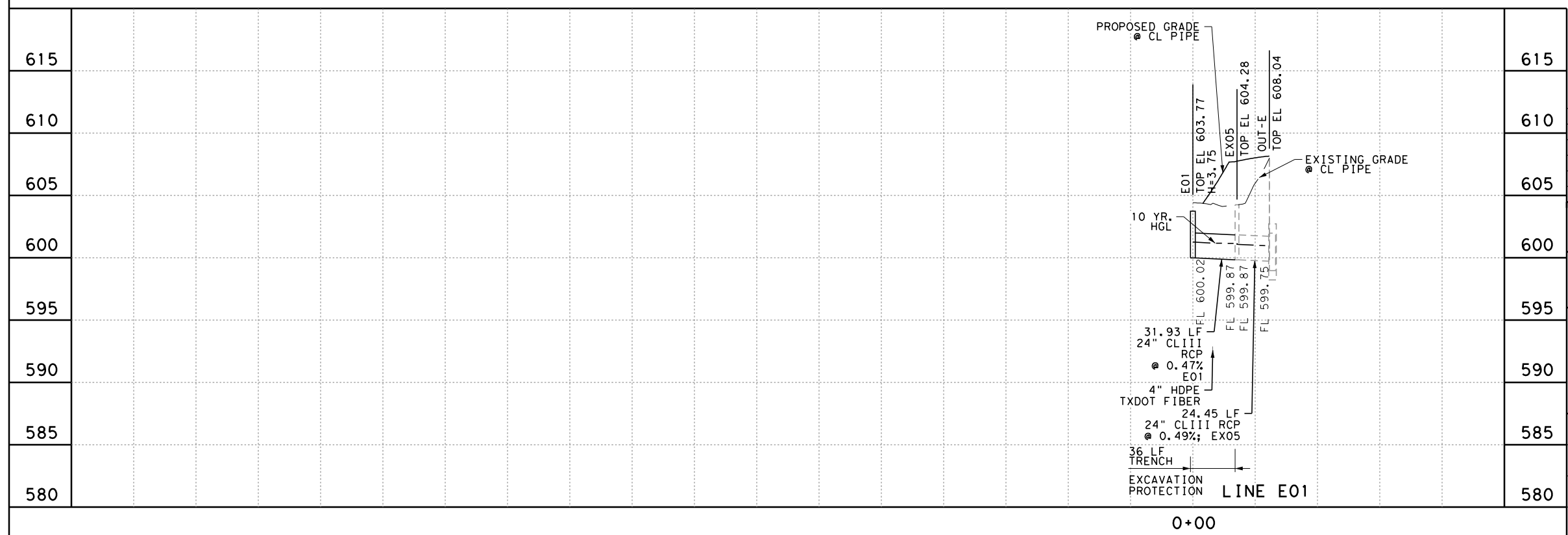
### LEGEND

- AREA DESIGNATION
- ACRES FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORM DRAIN TO BE REMOVED (SEE REMOVAL PLANS)

### NOTES:

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\* SHARES AREA WITH CULVERT 7



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 DRAINAGE AREA MAPS & PLAN & PROFILE STA 143+00 TO STA 154+00

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL

DESIGN	MT	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS	MT	6	SEE TITLE SHEET	US 287
CHECK	CPM	STATE	DISTRICT	COUNTY
CHECK	SA	TEXAS	DALLAS	ELLIS
		CONTROL	SECTION	JOB
		0172	05	129

SHEET 13 OF 20

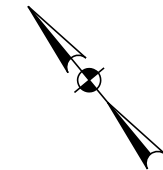
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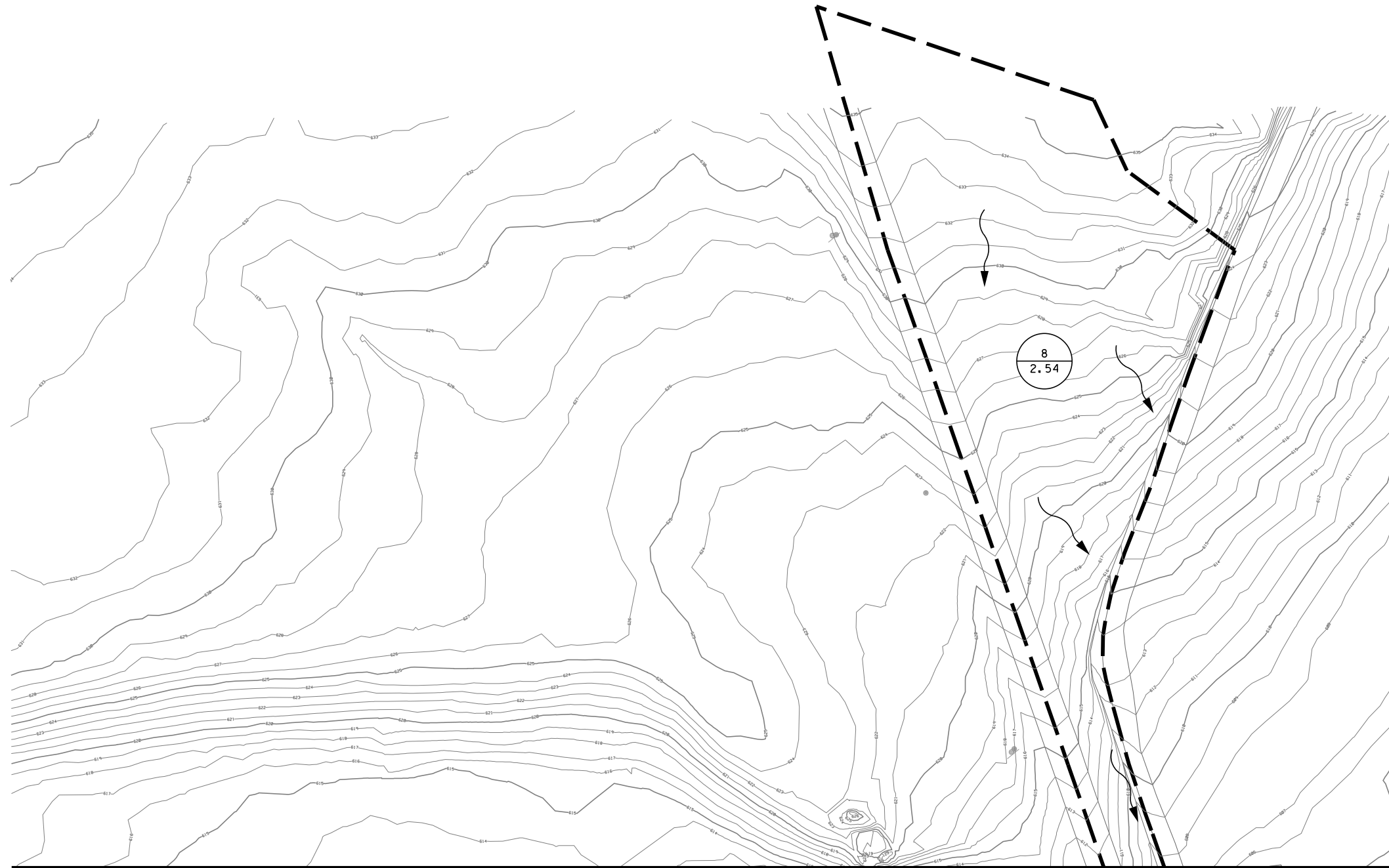


**LEGEND**

- AREA DESIGNATION  
ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

**NOTES:**

1. EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
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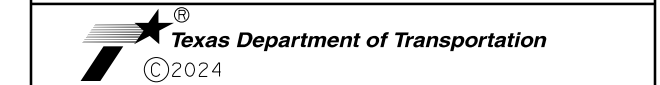
MATCH LINE A-A



*Shahriar Azad*  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287 DRAINAGE  
AREA MAPS & PLAN & PROFILE  
STA 143+00 TO STA 154+00**

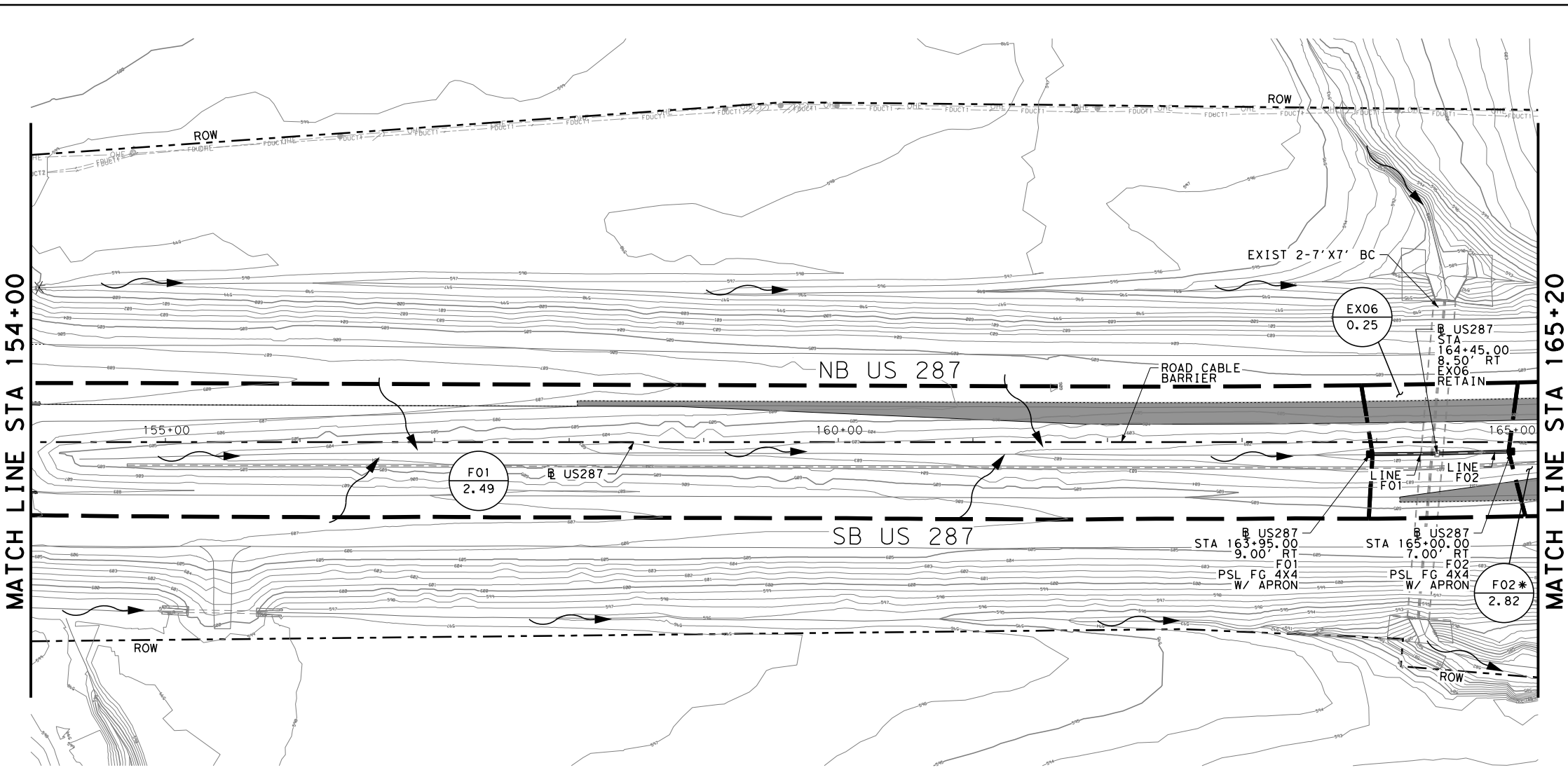
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CHECK SA	TEXAS	DALLAS	ELLIS	189
	CONTROL	SECTION	JOB	
	0172	05	129	

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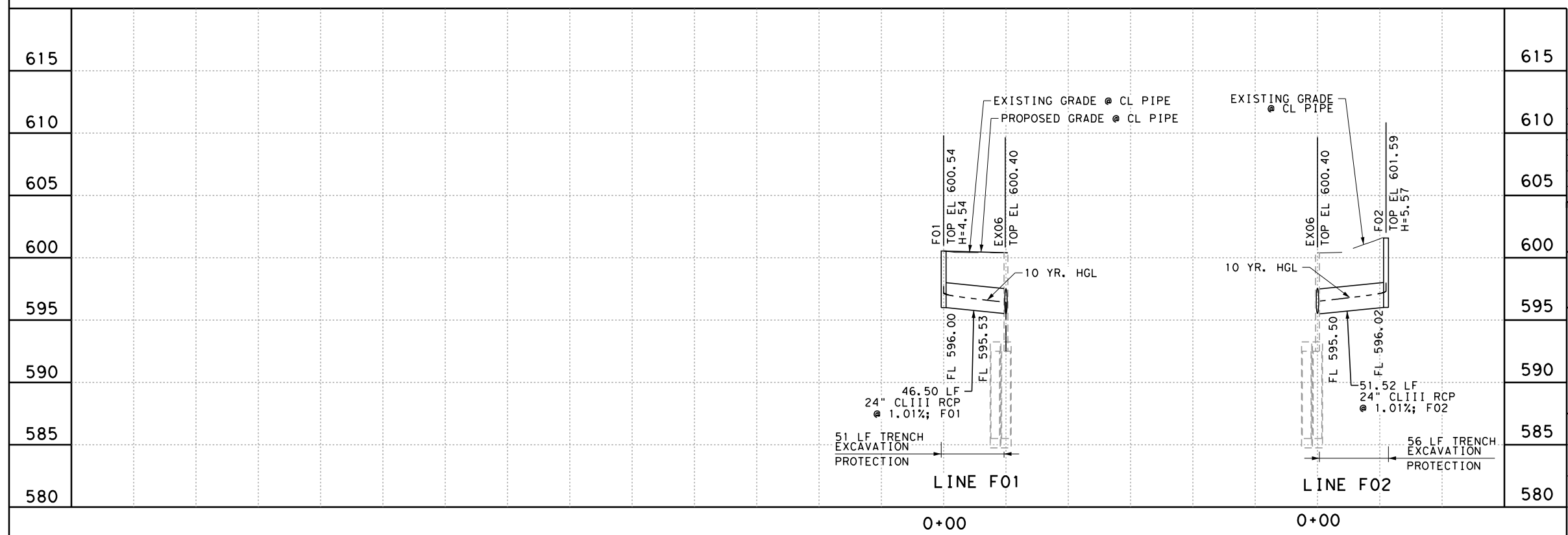
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SCALE: 1" = 100' HORIZONTAL

5 0 5 10  
SCALE: 1" = 10' VERTICAL

**LEGEND**

- X  
XX.XX AREA DESIGNATION
- ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

- NOTES:**
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- \* SHARES AREA WITH CULVERT 9



Shahriar Azad  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

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CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

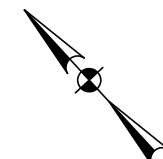
**Texas Department of Transportation**  
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**US 287  
DRAINAGE AREA MAPS & PLAN  
STA 154+00 TO STA 165+20**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL

SHEET 15 OF 20

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MT	6	SEE TITLE SHEET		US 287
GRAPHICS	STATE	DISTRICT	COUNTY	SHEET NO.
MT	TEXAS	DALLAS	ELLIS	190
CHECK	CONTROL	SECTION		JOB
CPM	0172	05		129
CHECK	SA			



### LEGEND

- AREA DESIGNATION  
ACRES  
FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
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6. SHARES AREA WITH CULVERT 9



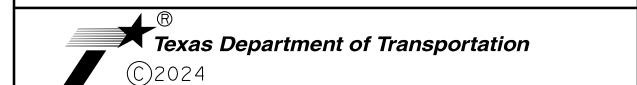
MATCH LINE STA 165+20

MATCH LINE STA 176+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 DRAINAGE AREA MAPS & PLAN & PROFILE STA 165+20 TO STA 176+00

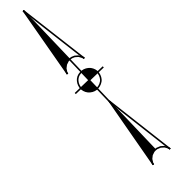
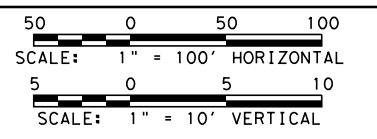
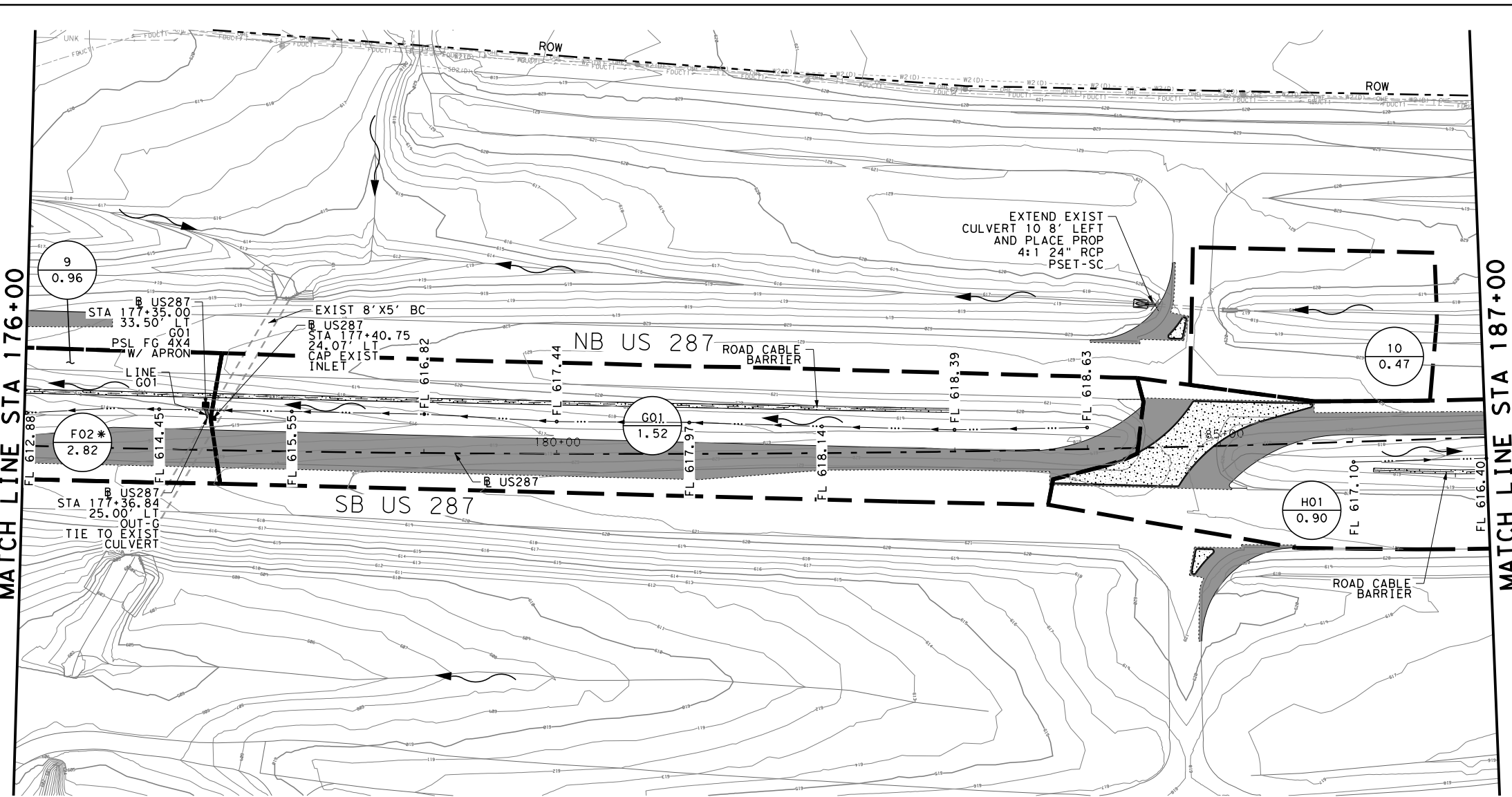
SCALE: 1" = 100' SHEET 16 OF 20

DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS MT	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO.
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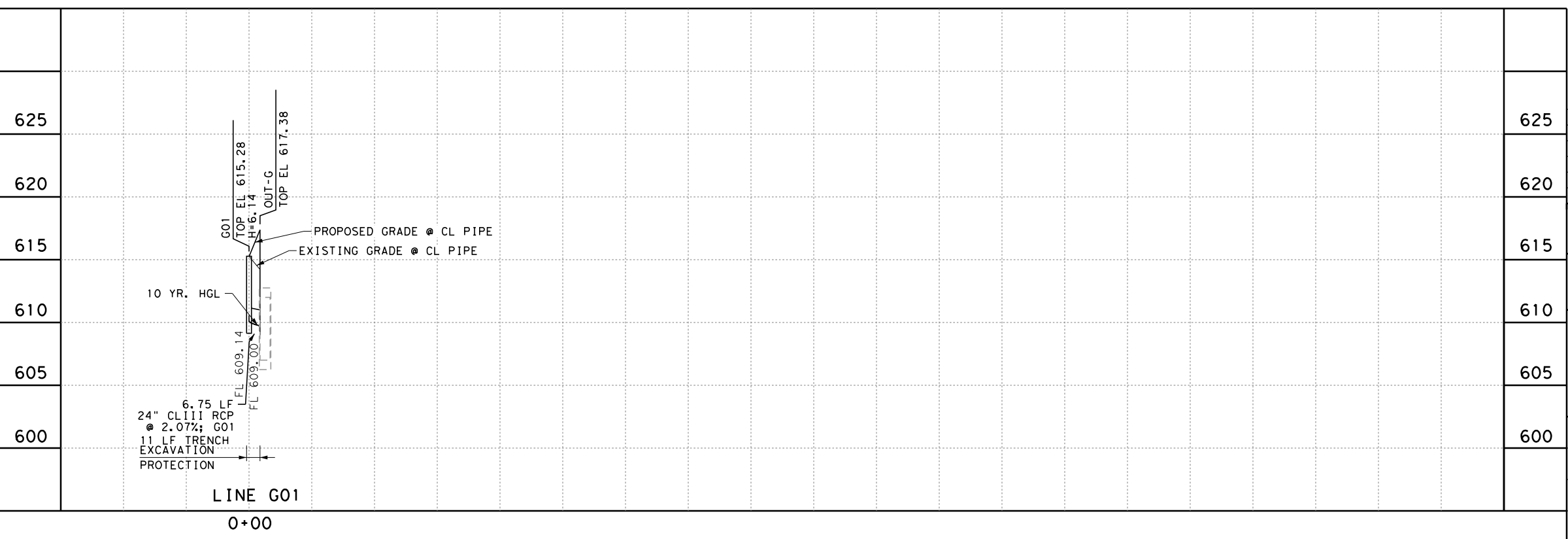


**LEGEND**

- AREA DESIGNATION
- ACRES
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

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6. SHARES AREA WITH CULVERT 9

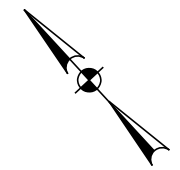
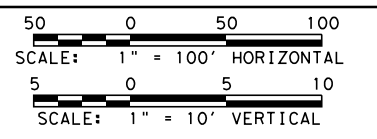


NO.	DATE	DESCRIPTION	APPROV.
<b>BRIDGEFARMER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
 ©2024			
<b>US 287 DRAINAGE</b> <b>AREA MAPS &amp; PLAN &amp; PROFILE</b> <b>STA 176+00 TO STA 187+00</b>			
SCALE: 1" = 100' HORIZONTAL 1" = 10' VERTICAL			
SHEET 17 OF 20			
DESIGN	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
MT	6	SEE TITLE SHEET	US 287
GRAPHICS	STATE	DISTRICT	COUNTY
MT	TEXAS	DALLAS	ELLIS
CHECK	CONTROL	SECTION	JOB
CPM	0172	05	129
CHECK			
SA			

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**LEGEND**

- AREA DESIGNATION  
ACRES  
FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
- STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

**NOTES:**

1. EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
2. CUTTING AND PLUGGING OF EXISTING DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
3. CONCRETE COLLAR FOR PIPE TO INLET CONNECTIONS OF EXISTING OR PROPOSED DRAINAGE SYSTEM IS SUBSIDIARY TO OTHER ITEMS.
4. THE LOCATIONS AND SIZES OF THE EXISTING STORMDRAIN AND RELATED APPURTANANCES HAVE BEEN DRAWN BASED ON TOPOGRAPHIC SURVEY AND REFERENCE AS-BUILT PLAN DATA, WHERE AVAILABLE.
5. PRIOR TO CONSTRUCTION OF A PARTICULAR STORMDRAIN LINE, THE CONTRACTOR SHALL POTHOLE AND PHYSICALLY LOCATE PERTINENT EXISTING STORMDRAIN FEATURES TO VERIFY LOCATIONS AND ELEVATIONS OF CONNECTIONS TO THE SATISFACTION OF THE ENGINEER. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS UNDER ITEM 462 AND 464.

MATCH LINE STA 187+00

MATCH LINE STA 197+00

EXIST 5'X3' BC

US287 STA 187+80.00 20.00' RT HO1 PSL FG 4X4 W/ APRON

NB US 287

SB US 287

ROAD CABLE BARRIER

US287 STA 17+74.08 22.08' RT OUT-H TIE TO EXIST CULVERT

US287 STA 187+72.03 13.67' RT CAP EXIST INLET

FL 616.40

FL 615.96

FL 616.53

FL 615.48

FL 615.31

FL 615.06

FL 614.46

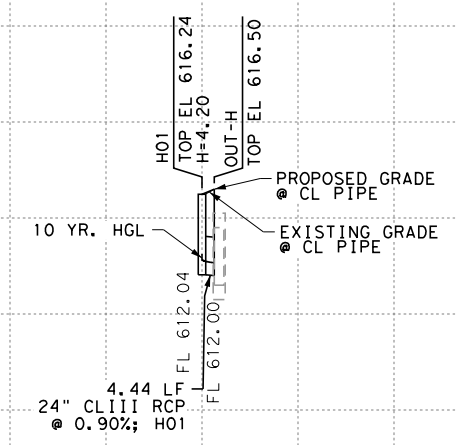
FL 613.74

190+00

195+00

HO1 0.90

IO1 3.15



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287 DRAINAGE AREA MAPS & PLAN & PROFILE**  
STA 186+00 TO STA 197+00

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL

SHEET 18 OF 20

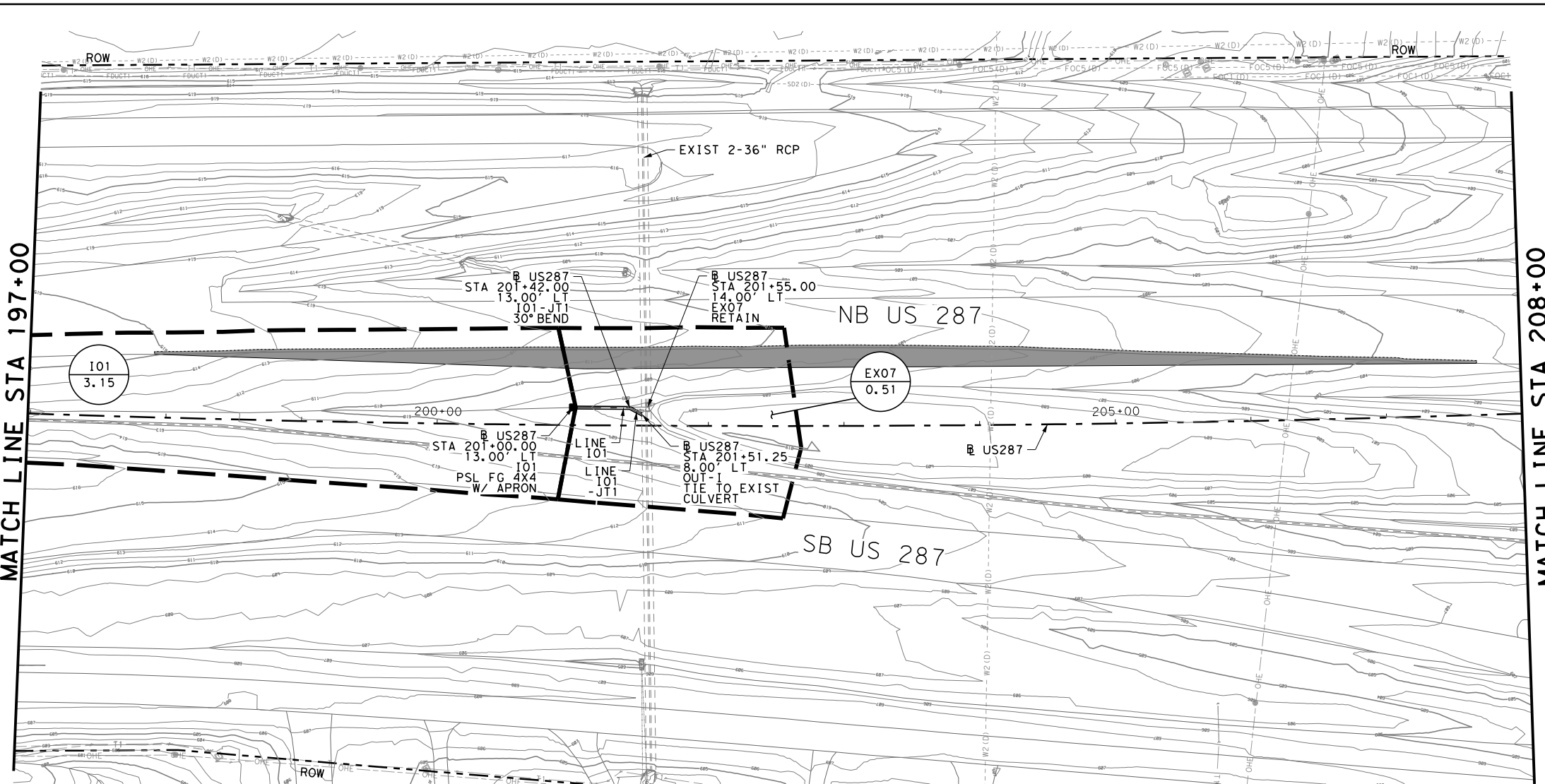
DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MT	6	SEE TITLE SHEET		US 287
GRAPHICS	MT	STATE	DISTRICT	COUNTY
CHECK	CPM	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129



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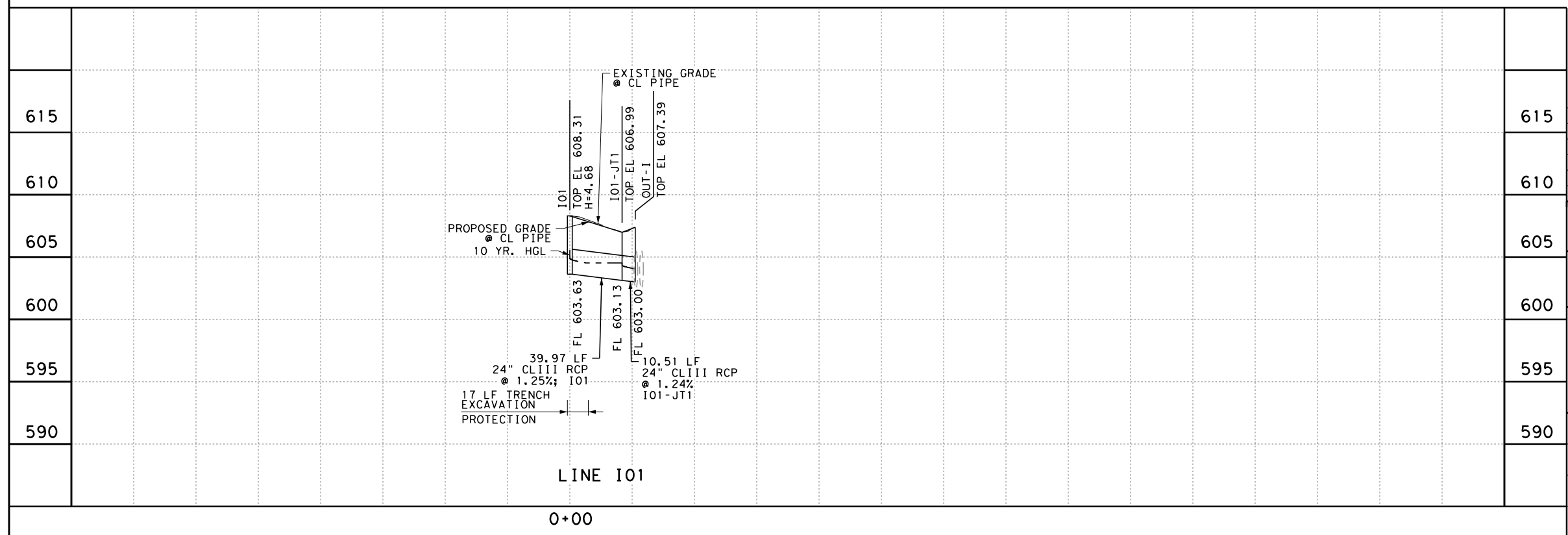
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SCALE: 1" = 100' HORIZONTAL

5 0 5 10  
SCALE: 1" = 10' VERTICAL

**LEGEND**

- X  
XX.XX → AREA DESIGNATION
- → ACRES FLOW DIRECTION
- → FLOW DIRECTION
- → PROPOSED DRAINAGE AREA
- → EXISTING STORM SEWER
- → EXISTING STORM SEWER
- → EXISTING DITCH
- → PROPOSED DITCH
- → PROPOSED PAVEMENT
- → PROPOSED CONCRETE RIPRAP (4")
- → PRECAST AREA ZONE DRAIN (PAZD CZ)
- → GRATE INLET (PSL FG)
- → SAFETY END TREATMENT (SET)
- XX → STORMDRAIN TO BE REMOVED (SEE REMOVAL PLANS)

- NOTES:**
- EXISTING PIPES THAT WILL REMAIN AND WHICH HAVE BEEN MODELED AS PART OF THE PROPOSED DRAINAGE DESIGN HAVE A DESIGNATION WITH PREFIX "EX" ADDED. EXISTING UTILITY INFORMATION SHOWN IS APPROXIMATE. THEIR LOCATIONS ARE SHOWN BASED ON LEVEL A-D SUE INFORMATION PROVIDED BY OTHERS.
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Shahriar Azad  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

Texas Department of Transportation  
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**US 287 DRAINAGE  
AREA MAPS & PLAN & PROFILE  
STA 197+00 TO STA 208+00**

SCALE: 1" = 100' HORIZONTAL  
1" = 10' VERTICAL

SHEET 19 OF 20

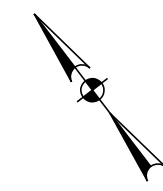
DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS MT	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO. 194
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

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50 0 50 100  
SCALE: 1" = 100'



### LEGEND

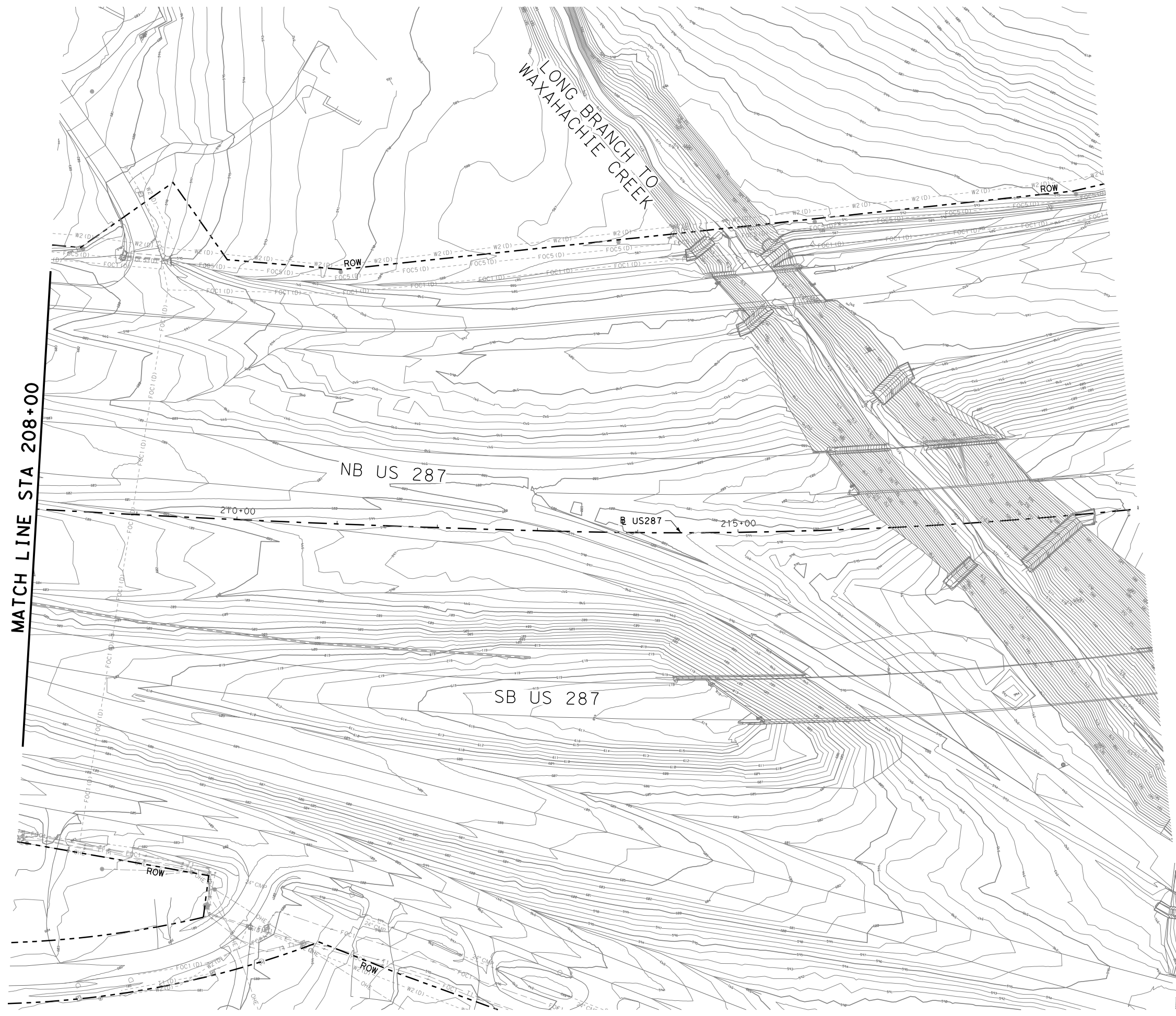
- AREA DESIGNATION  
ACRES  
FLOW DIRECTION
- FLOW DIRECTION
- PROPOSED DRAINAGE AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING DITCH
- PROPOSED DITCH
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")
- PRECAST AREA ZONE DRAIN (PAZD CZ)
- GRATE INLET (PSL FG)
- SAFETY END TREATMENT (SET)
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(SEE REMOVAL PLANS)

### NOTES:

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Shahriar Azad  
 2024/05/09

MATCH LINE STA 208+00



NO.	DATE	DESCRIPTION	APPROV.
<b>BRIDGEFARMER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
<b>Texas Department of Transportation</b> ©2024			
<b>US 287 DRAINAGE          AREA MAPS &amp; PLAN &amp; PROFILE          STA 208+00 TO END PROJECT</b>			
SCALE: 1" = 100'		SHEET 20 OF 20	
DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.	
GRAPHICS MT	6	SEE TITLE SHEET	
CHECK CPM	TEXAS	DALLAS	ELLIS
CHECK SA	0172	05	129
		HIGHWAY NO. US 287	
		SHEET NO. 195	

STATION	ROADWAY	DESCRIPTION	DRAINAGE AREA ID	ALLOWABLE HEADWATER (FT)	CULVERT HYDRAULIC DATA																				
					10 YEAR (DESIGN)						50 YEAR (DESIGN)						100 YEAR (DESIGN)								
					FLOW "Q" (CFS)	HW ELEV (FT)	HW DEPTH (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VEL (FT/S)	TW VEL (FT/S)	FLOW "Q" (CFS)	HW ELEV (FT)	HW DEPTH (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VEL (FT/S)	TW VEL (FT/S)	FLOW "Q" (CFS)	HW ELEV (FT)	HW DEPTH (FT)	TW ELEV (FT)	TW DEPTH (FT)	OUTLET VEL (FT/S)	TW VEL (FT/S)
21+00.00	IH 30	1-24" RCP	CULVERT 1	677.00	0.93	675.19	0.45	674.40	0.35	3.33	1.28	1.25	675.26	0.52	674.44	0.39	3.63	1.38	1.38	675.29	0.55	674.45	0.40	3.73	1.41
72+00.00	IH 30	1-24" RCP	CULVERT 2	642.00	1.84	639.46	0.68	635.93	0.39	4.54	1.97	2.47	639.58	0.80	635.98	0.44	4.94	2.12	2.74	639.62	0.84	636.00	0.46	5.09	2.17
73+00.00	IH 30	2-24" RCP	CULVERT 3	638.00	5.04	633.39	0.86	632.86	0.61	4.29	3.40	6.77	633.54	1.01	632.93	0.68	4.64	3.66	7.52	633.60	1.07	632.96	0.71	4.78	3.76
95+00.00	IH 30	1-24" RCP	CULVERT 4	623.00	10.31	621.34	1.75	620.25	1.01	5.56	1.70	13.92	621.93	2.34	620.37	1.13	6.22	1.83	15.50	622.09	2.50	620.41	1.17	6.52	1.88
109+00.00	IH 30	1-24" RCP	CULVERT 5	628.00	2.56	625.96	0.80	624.96	0.57	4.82	1.34	3.44	626.10	0.94	625.02	0.63	5.26	1.44	3.82	626.15	0.99	625.05	0.66	5.40	1.48
118+00.00	IH 30	1-24" RCP	CULVERT 6	626.10	12.96	626.04	2.24	624.35	0.92	6.61	3.87	17.47	626.58	2.78	624.45	1.02	7.36	4.17	19.44	626.96	3.16	624.50	1.07	7.70	4.28
144+00.00	IH 30	1-24" RCP	CULVERT 7	611.00	3.91	609.52	1.00	608.67	0.61	4.91	1.73	5.25	609.70	1.18	608.75	0.69	5.32	1.86	5.83	609.77	1.25	608.77	0.71	5.48	1.91
153+10.00	IH 30	1-24" RCP	CULVERT 8	605.25	11.50	602.90	1.90	601.56	0.91	7.12	3.51	15.47	603.45	2.45	601.66	1.01	7.70	3.78	17.19	603.74	2.74	601.70	1.05	7.92	3.88
173+00.00	IH 30	1-24" RCP	CULVERT 9	611.00	3.65	609.47	0.98	608.07	0.61	6.08	2.42	4.90	609.64	1.15	608.15	0.69	6.61	2.60	5.44	609.71	1.22	608.17	0.71	6.79	2.67
184+50.00	IH 30	1-24" RCP	CULVERT 10	620.00	1.79	617.62	0.72	617.17	0.55	1.40	1.46	2.40	617.74	0.84	617.24	0.62	1.71	1.57	2.66	617.79	0.89	617.26	0.64	1.83	1.61

CULVERT INPUT DATA												
STATION	ROADWAY	DESCRIPTION	DRAINAGE AREA ID	INLET STATION	INLET ELEV	UPPER BREAK STATION (FT)	UPPER BREAK ELEV (FT)	LOWER BREAK STATION (FT)	LOWER BREAK ELEV (FT)	OUTLET STATION (FT)	OUTLET ELEV (FT)	TAILWATER DATA
21+00.00	IH 30	1-24" RCP	CULVERT 1	01+50.81	674.74	01+42.81	674.70			00+40.00	674.05	CONSTANT TAILWATER EL=674.05FT
72+00.00	IH 30	1-24" RCP	CULVERT 2	00+59.00	638.78	00+90.00	636.89	01+63.97	635.92	02+07.97	635.54	CONSTANT TAILWATER EL=635.54FT
73+00.00	IH 30	2-24" RCP	CULVERT 3	00+50.00	632.53			01+20.34	632.38	01+39.34	632.25	CONSTANT TAILWATER EL=632.25FT
95+00.00	IH 30	1-24" RCP	CULVERT 4	00+55.02	619.59					01+32.02	619.24	CONSTANT TAILWATER EL=619.24FT
109+00.00	IH 30	1-24" RCP	CULVERT 5	01+27.56	625.16					00+49.56	624.39	CONSTANT TAILWATER EL=624.39FT
118+00.00	IH 30	1-24" RCP	CULVERT 6	00+50.00	623.80			01+25.10	623.47	01+29.10	623.43	CONSTANT TAILWATER EL=623.43FT
144+00.00	IH 30	1-24" RCP	CULVERT 7	00+49.32	608.52					01+20.32	608.06	CONSTANT TAILWATER EL=608.06FT
153+10.00	IH 30	1-24" RCP	CULVERT 8	00+65.01	601.00					00+97.01	600.65	CONSTANT TAILWATER EL=600.65FT
173+00.00	IH 30	1-24" RCP	CULVERT 9	00+96.90	608.49					00+25.90	607.46	CONSTANT TAILWATER EL=607.46FT
184+50.00	IH 30	1-24" RCP	CULVERT 10	00+99.88	616.90			00+50.56	616.66	00+42.56	616.62	CONSTANT TAILWATER EL=616.62FT

**NOTES:**

- CULVERT CALCULATION PERFORMED BY HY-8 VER 7.6
- TAILWATER CHANNEL SHAPE, SIDE SLOPES, CHANNEL SLOPE AND ELEVATIONS DEVELOPED FROM EXISTING SURFACE AND EXISTING CONTOURS PROVIDED BY THE STATE (TXDOT).

OVERALL CONTRIBUTING DRAINAGE AREAS LESS THAN 200 ACRES													
DRAINAGE AREA ID	AREA ACRES	COMPUTATION METHOD	RUNOFF COEFFICIENT C	Tc (MIN)	10 YEAR STORM FREQUENCY		25 YEAR STORM FREQUENCY		50 YEAR STORM FREQUENCY		100 YEAR STORM FREQUENCY		
					I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	
CULVERT 1	0.38	RATIONAL	0.360	10.00	6.79	0.93	8.12	1.11	9.11	1.25	10.12	1.38	
CULVERT 2	0.63	RATIONAL	0.430	10.00	6.79	1.84	8.12	2.20	9.11	2.47	10.12	2.74	
CULVERT 3	1.26	RATIONAL	0.590	10.00	6.79	5.04	8.12	6.03	9.11	6.77	10.12	7.52	
CULVERT 4	3.17	RATIONAL	0.550	14.01	5.92	10.31	7.10	12.37	7.99	13.92	8.89	15.50	
CULVERT 5	0.63	RATIONAL	0.600	10.00	6.79	2.56	8.12	3.07	9.11	3.44	10.12	3.82	
CULVERT 6	3.59	RATIONAL	0.590	12.96	6.12	12.96	7.34	15.54	8.25	17.47	9.18	19.44	
CULVERT 7	0.90	RATIONAL	0.640	10.00	6.79	3.91	8.12	4.68	9.11	5.25	10.12	5.83	
CULVERT 8	2.54	RATIONAL	0.700	11.33	6.47	11.50	7.74	13.77	8.70	15.47	9.67	17.19	
CULVERT 9	0.96	RATIONAL	0.560	10.00	6.79	3.65	8.12	4.36	9.11	4.90	10.12	5.44	
CULVERT 10	0.47	RATIONAL	0.560	10.00	6.79	1.79	8.12	2.14	9.11	2.40	10.12	2.66	



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
CULVERT COMPUTATIONS  
CULVERT RUNOFF & HYDRAULICS**

SHEET 1 OF 1

DESIGN MT	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS MT	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 196
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129	

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Area Designation	Area (ACRES)	SUBAREA (ACRES)			Runoff Coefficient	Time of Concentration (MIN)	Tc Used-Time of	10 Year Design Storm		Comments
		Roadway	ROW / Industrial	GRASS				Intensity	Discharge	
		C = 0.90	C = 0.70	C = 0.50				(In/hr)	(CFS)	
A										
A01	0.74	0.04	0.00	0.70	0.33	10.00	10.00	6.79	1.67	
EX01	0.82	0.01	0.00	0.81	0.31	10.00	10.00	6.79	1.71	
B										
B01	0.67	0.01	0.00	0.66	0.31	10.00	10.00	6.79	1.41	
C										
C01	1.59	0.72	0.00	0.87	0.57	10.00	10.00	6.79	6.17	
D										
D01	4.54	1.80	0.00	2.74	0.54	18.94	18.94	5.14	12.54	
D02	1.96	0.60	0.00	1.36	0.48	10.00	10.00	6.79	6.43	
EX04	0.20	0.04	0.00	0.16	0.42	10.00	10.00	6.79	0.57	
E										
E01	2.89	1.48	0.00	1.41	0.61	10.00	10.00	6.79	11.91	
F										
F01	2.49	1.13	0.00	1.36	0.57	10.00	10.00	6.79	9.67	
F02	2.82	1.51	0.00	1.31	0.62	10.00	10.00	6.79	11.89	
EX06	0.25	0.13	0.00	0.12	0.61	10.00	10.00	6.79	1.04	
G										
G01	1.52	0.88	0.00	0.64	0.65	10.00	10.00	6.79	6.68	
H										
H01	0.90	0.67	0.00	0.23	0.75	10.00	10.00	6.79	4.56	
I										
I01	3.15	1.30	0.00	1.85	0.55	10.00	10.00	6.79	11.70	
EX07	0.51	0.28	0.00	0.23	0.63	10.00	10.00	6.79	2.19	

**NOTES:**

- RUNOFF COMPUTATIONS PERFORMED BY BENTLEY GEOPAK V8I DRAINAGE (VER 08.11.07.615)
- ALL AREAS, INLETS, AND LINKS WITH THE PREFEX EX IS EXISTING DRAINAGE.

  
 Shahriar Azad  
 2024/05/09

NO.	DATE	DESCRIPTION	APPROV.


**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264


**Texas Department of Transportation**  
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**US 287  
 DRAINAGE COMPUTATIONS  
 STORM DRAIN RUNOFF**

SHEET 1 OF 3

DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS MT	6	SEE TITLE SHEET		US 287
CHECK CPM	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SA	TEXAS	DALLAS	ELLIS	197
	CONTROL	SECTION	JOB	
	0172	05	129	

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INLET CALCULATIONS (10 YEAR DESIGN)																			
Inlet Designation	Inlet Location Station	Offset (+ Rt, - Lt)	Reference Chain	Inlet Type	Profile Type	Flow From Drainage Area (cfs)	Flow From Bypass (cfs)	Total Flow (cfs)	Street Slope		Rough. Coeff. "n"	Ponded Depth (ft)	Max Ponded Depth (ft)	Ponded Width (ft)	Max Ponded Width (ft)	Capacity (cfs)	Flow Bypassed (cfs)	Bypass to Inlet	Inlet Depth (ft)
									Longit. (%)	Cross (ft/ft)									
A																			
A01	18+30.000	3.00	CL287	PSL FG 4x4	On Grade	1.67	0.00	1.67	0.61	0.03	0.015	0.15	1.00	5.45	20.00	1.64	0.03	EX01	4.35
EX01	17+78.500	6.00	CL287	PSL FG 3x3 W/ 3x3 GR	Sag	1.71	0.03	1.73	n/a	0.04	0.017	0.20	1.00	5.19	20.00	12.19	0.00		5.49
B																			
B01	65+92.000	-12.00	CL287	PSL FG 4x4	Sag	1.41	0.00	1.41	n/a	0.03	0.015	0.14	1.00	5.65	20.00	22.02	0.00		7.36
C																			
C01	77+13.000	3.00	CL287	PSL FG 4x4	Sag	6.17	0.00	6.17	n/a	0.06	0.015	0.39	1.00	6.82	20.00	22.02	0.00		5.43
D																			
D01	100+79.000	-5.50	CL287	PAZD CZ 4x4 W/ 4x4 GR	On Grade	12.54	0.00	12.54	0.38	0.07	0.017	0.53	1.00	7.68	20.00	12.54	0.00		5.17
D02	101+84.000	-7.00	CL287	PSL FG 4x4	On Grade	6.43	0.00	6.43	1.23	0.04	0.015	0.26	1.00	6.18	20.00	5.96	0.47	EX04	5.84
EX04	101+31.500	-5.75	CL287	PSL FG 3x3 W/ 3x3 GR	Sag	0.57	0.47	1.04	n/a	0.03	0.015	0.14	1.00	4.64	20.00	12.19	0.00		n/a
E																			
E01	152+46.000	-1.00	CL287	PAZD CZ 4x4 W/ 4x4 GR	Sag	11.91	0.00	11.91	n/a	0.09	0.015	0.60	2.00	6.80	20.00	135.21	0.00		3.75
F																			
F01	163+95.000	9.00	CL287	PSL FG 4x4	On Grade	9.67	0.00	9.67	0.90	0.05	0.015	0.36	1.00	6.67	20.00	8.72	0.95	EX06	4.54
F02	165+00.000	7.00	CL287	PSL FG 4x4	On Grade	11.89	0.00	11.89	0.87	0.06	0.016	0.41	1.00	6.95	20.00	10.27	1.61	EX06	5.57
EX06	164+45.000	8.50	CL287	PSL FG 3x3 W/ 3x3 GR	Sag	1.04	2.56	3.60	n/a	0.05	0.015	0.32	1.00	5.94	20.00	12.19	0.00		8.40
G																			
G01	177+35.000	-33.50	CL287	PSL FG 4x4	Sag	6.68	0.00	6.68	n/a	0.06	0.015	0.41	1.00	6.94	20.00	22.02	0.00		6.14
H																			
H01	187+80.000	20.00	CL287	PSL FG 4x4	Sag	4.56	0.00	4.56	n/a	0.05	0.015	0.32	1.00	6.42	20.00	22.02	0.00		4.20
I																			
I01	201+00.000	-13.00	CL287	PSL FG 4x4	On Grade	11.70	0.00	11.70	1.66	0.05	0.015	0.34	1.00	6.53	20.00	8.03	3.67	EX07	4.68
EX07	201+55.000	-14.00	CL287	PSL FG 3x3 W/ 3x3 GR	Sag	2.19	3.67	5.86	n/a	0.07	0.015	0.45	1.00	6.19	20.00	12.19	0.00		n/a

**NOTES:**

1. RUNOFF COMPUTATIONS PERFORMED BY BENTLEY GEOPAK V81 DRAINAGE (VER 08.11.07.615)
2. ALL AREAS, INLETS, AND LINKS WITH THE PREFEX EX IS EXISTING DRAINAGE.



NO.	DATE	DESCRIPTION	APPROV.
<b>BRIDGEFARMER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS TBPE REGISTRATION NO. 264			
<b>Texas Department of Transportation</b> ©2024			
<b>US 287</b> <b>DRAINAGE COMPUTATIONS</b> <b>STORM DRAIN INLET</b>			
SHEET 2 OF 3			
DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS MT	6	SEE TITLE SHEET	US 287
CHECK CPM	STATE	DISTRICT	COUNTY
CHECK SA	TEXAS	DALLAS	ELLIS
	CONTROL	SECTION	JOB
	0172	05	129

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STORM DRAIN CALCULATIONS (50 YEAR DESIGN)																		
Link Designation	From Node Designation	To Node Designation	Weighted Runoff C	Cumul. Tc (min)	Tc Used (min)	Cumulative Area (Ac)	Discharge (cfs)	Capacity (cfs)	Conduit Description	Slope (%)	Pipe Length (ft)	Uniform Vel. (ft/s)	Friction Slope (ft/ft)	HGL U.S	HGL D.S	Invert U.S	Invert D.S	Rough. Coeff. "n"
A																		
A01	A01	EX01	0.32	10.17	10.17	0.74	1.67	30.65	24" CLIII RCP	1.35	48.09	4.95	0.014	668.26	667.33	667.65	667.00	0.012
B																		
B01	B01	OUT-B	0.31	10.03	0.00	0.67	1.41	26.86	24" CLIII RCP	1.04	5.78	4.28	0.010	637.61	637.34	637.06	637.00	0.012
C																		
C01	C01	OUT-C	0.57	10.01	0.00	1.59	6.17	36.77	24" CLIII RCP	1.94	4.11	8.24	0.019	625.10	624.47	623.83	623.75	0.012
D																		
D01	D01	OUT-D	0.54	19.03	0.00	4.54	12.54	50.80	30" CLIII RCP	1.13	42.50	8.13	0.011	613.72	612.43	611.98	611.50	0.012
D02	D02	OUT-D02	0.48	10.11	0.00	1.96	6.43	32.07	24" CLIII RCP	1.48	48.50	7.57	0.015	613.52	612.15	612.22	611.50	0.012
E																		
E01	E01	EX05	0.61	10.10	10.00	2.89	11.91	18.07	24" CLIII RCP	0.47	31.93	5.78	0.005	601.93	601.18	600.02	599.87	0.012
EX05	EX05	OUT-E	0.61	10.18	0.00	2.89	11.91	18.47	24" CLIII RCP	0.49	24.45	5.86	0.005	601.18	600.98	599.87	599.75	0.015
F																		
F01	F01	EX06	0.60	10.12	10.12	2.49	9.67	26.50	24" CLIII RCP	1.01	46.50	7.34	0.010	597.67	596.43	596.00	595.53	0.012
F02	F02	EX06	0.60	10.12	10.12	2.82	11.89	26.49	24" CLIII RCP	1.01	51.52	7.77	0.010	597.93	596.51	596.02	595.50	0.012
G																		
G01	G01	OUT-G	0.65	10.02	0.00	1.52	6.68	37.95	24" CLIII RCP	2.07	6.75	8.63	0.021	610.47	609.72	609.14	609.00	0.012
H																		
H01	H01	OUT-H	0.75	10.02	0.00	0.90	4.56	25.01	24" CLIII RCP	0.90	4.44	5.73	0.009	613.09	612.66	612.04	612.00	0.012
I																		
I01	I01	I01-JT1	0.55	10.08	10.00	3.15	11.70	29.49	24" CLIII RCP	1.25	39.97	8.38	0.013	605.52	604.09	603.63	603.13	0.012
I01-JT1	I01-JT1	OUT-I	0.55	10.10	0.00	3.15	11.70	29.32	24" CLIII RCP	1.24	10.51	8.33	0.012	604.53	604.06	603.13	603.00	0.012

**NOTES:**

1. RUNOFF COMPUTATIONS PERFORMED BY BENTLEY GEOPAK V8I DRAINAGE (VER 08.11.07.615)
2. ALL AREAS, INLETS, AND LINKS WITH THE PREFEX EX IS EXISTING DRAINAGE.



*Shahriar Azad*  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



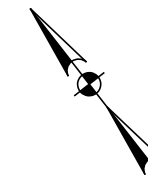
**US 287**  
**DRAINAGE COMPUTATIONS**  
**STORM DRAIN PIPE**

SHEET 3 OF 3

DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS MT	6	SEE TITLE SHEET		US 287
CHECK CPM	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SA	TEXAS	DALLAS	ELLIS	199
	CONTROL	SECTION	JOB	
	0172	05	129	

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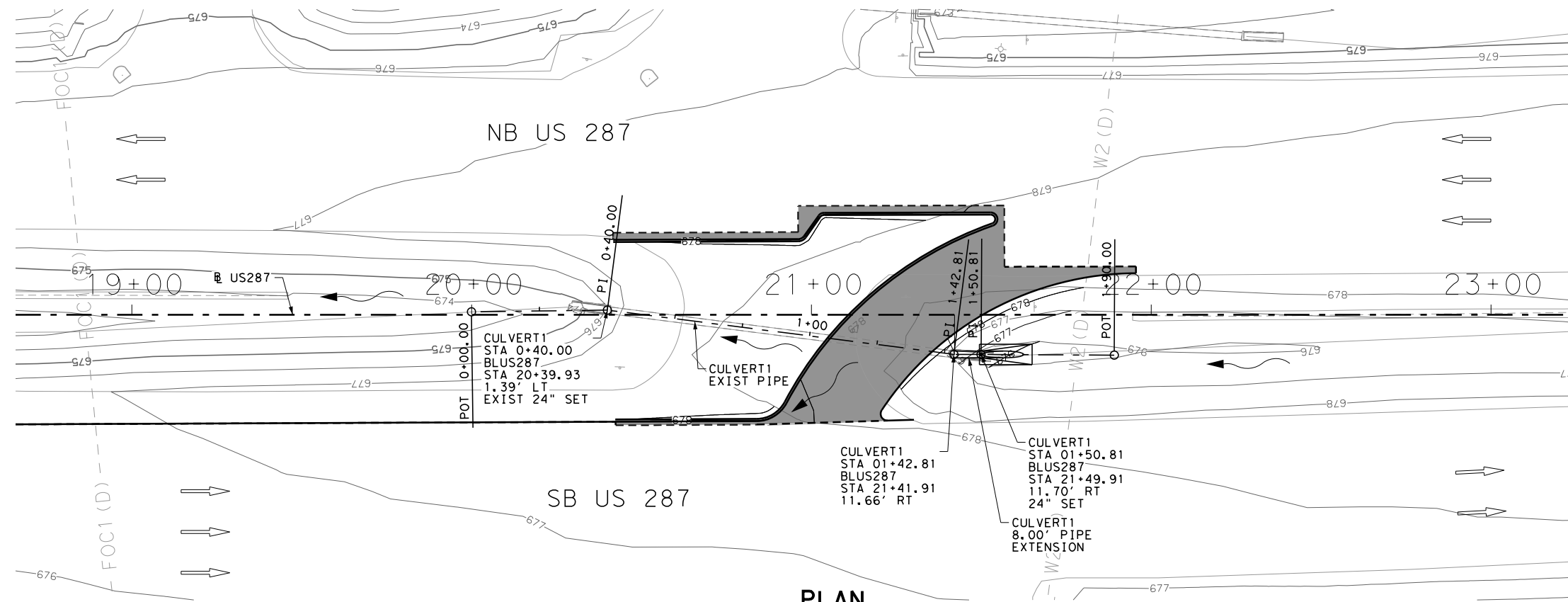
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**LEGEND**

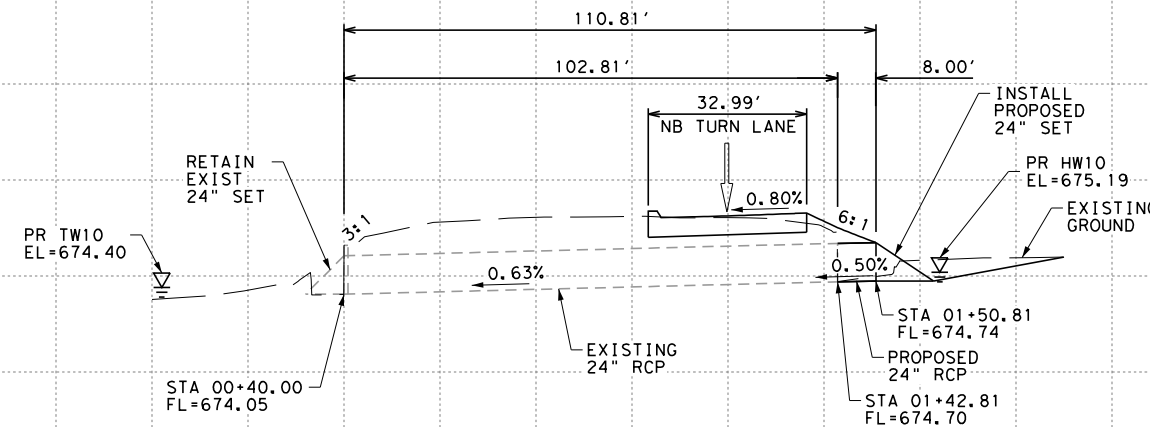
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- PROP TRAVEL LANE
- ▬ RETAINING WALL
- ✕ ✕ ✕ PIPE REMOVAL (SEE REMOVAL PLANS)
- ▬ PROPOSED STORM SEWER
- - - EXISTING STORM SEWER
- FLOW DIRECTION
- ▬ PROPOSED PAVEMENT
- ▬ PROPOSED CONCRETE RIPRAP (4")

TABLE OF QUANTITIES			
BID ITEM	DESCRIPTION	QUANTITY	UNIT
467 6395	SET (TYII) (24IN) (RCP) (6:1) (P)	1	EA
464 6005	RC PIPE (CLIII) (24IN)	8	LF



**PLAN**  
STA 21+00

CULVERT 1 CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	0.93	3.33
25	1.11	3.50
50	1.25	3.63
100	1.38	3.73



US 287 CULVERT 1 @ STA 21+00  
EXIST 1-24" X 103' RCP (TO REMAIN)  
PROPOSED 1-24" X 8' (EXTEND)

**PROFILE**



**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
CULVERT LAYOUT  
CULVERT 1  
STA 21+00**

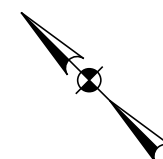
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1" = 10' VERTICAL SHEET 1 OF 10

DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS MT	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO. 200
CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

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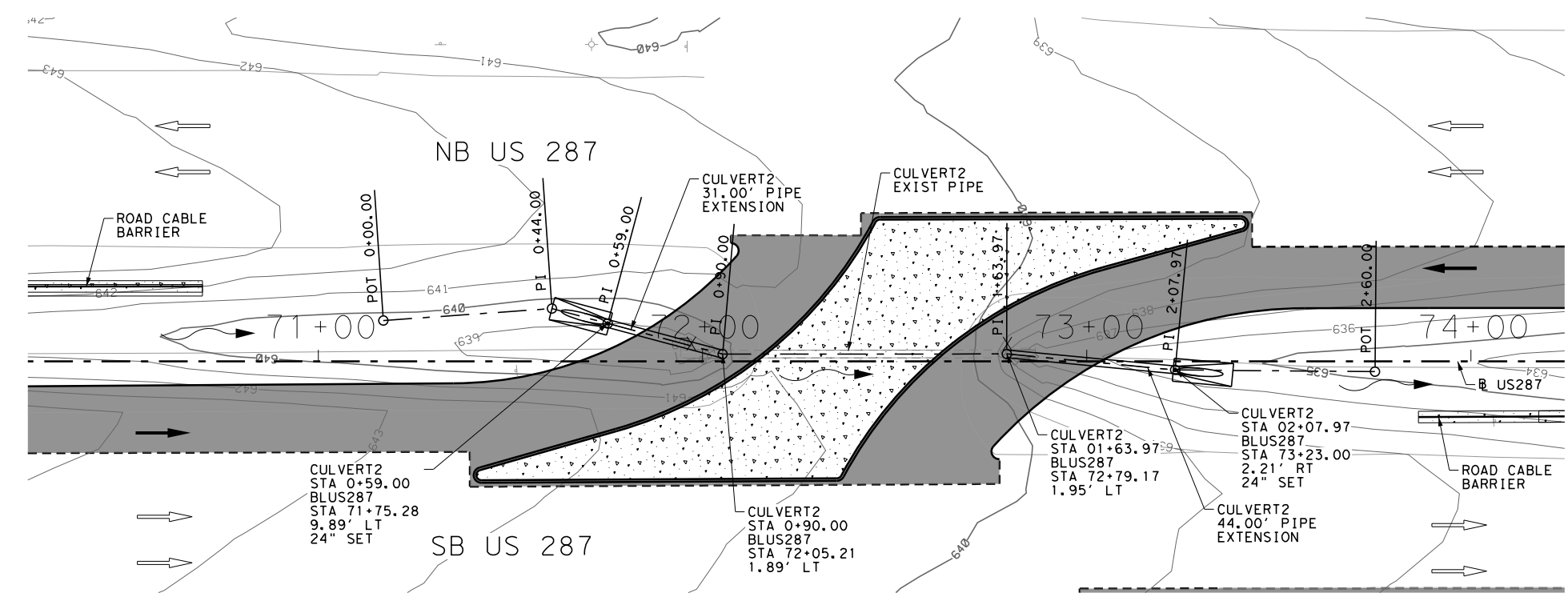
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1" = 10' VERTICAL



**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- RETAINING WALL
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- FLOW DIRECTION
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")

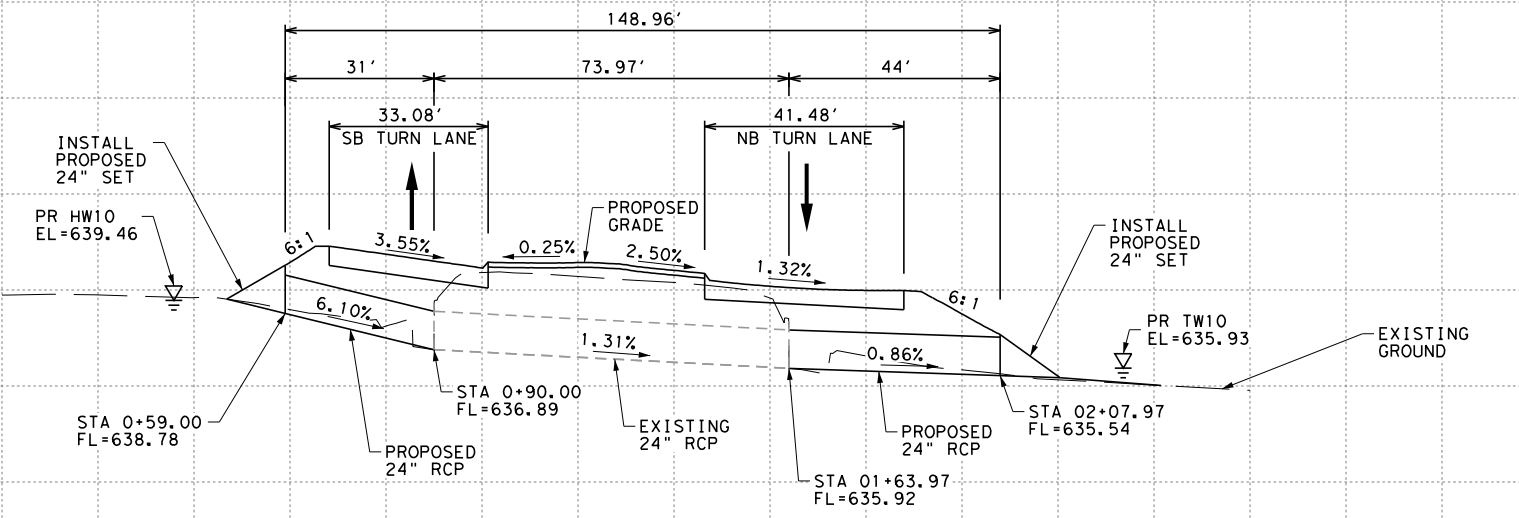


**PLAN**

STA 72+00

TABLE OF QUANTITIES			
BID ITEM	DESCRIPTION	QUANTITY	UNIT
467 6395	SET (TYII) (24IN) (RCP) (6:1) (P)	2	EA
464 6005	RC PIPE (CLIII) (24IN)	75	LF

CULVERT 2		
CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	1.84	4.54
25	2.20	4.77
50	2.47	4.94
100	2.74	5.09



**PROFILE**

US 287 CULVERT 2 @ STA 72+00  
EXIST 1-24" X 74' RCP (TO REMAIN)  
PROP 1-24" X 31' RCP (EXTEND LT)  
PROP 1-24" X 44' RCP (EXTEND RT)



*Shahriar Azad*  
2024/05/30

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
CULVERT LAYOUT  
CULVERT 2  
STA 72+00**

SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL  
SHEET 2 OF 10

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MT	6	SEE TITLE SHEET		US 287
GRAPHICS	MT	STATE	DISTRICT	COUNTY
CHECK	CPM	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
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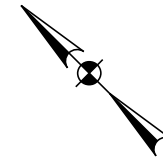
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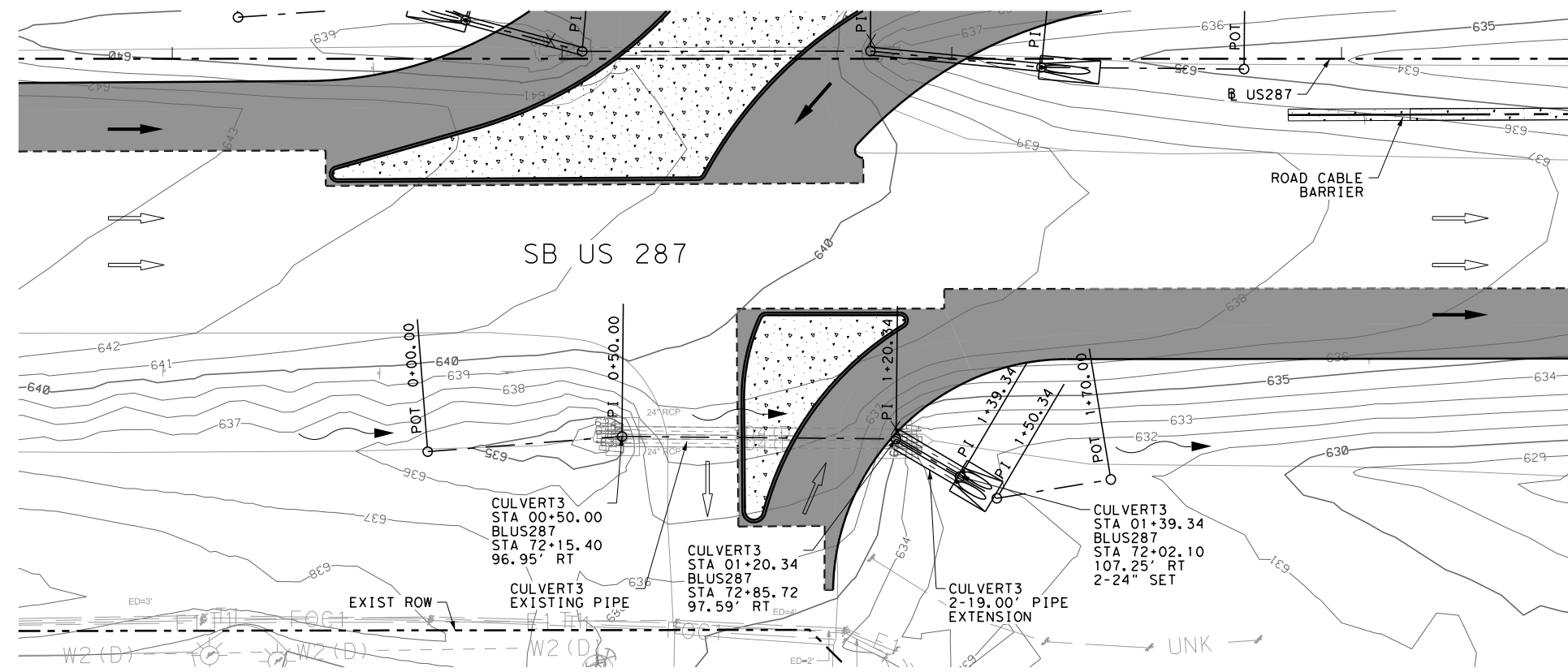
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 SCALE: 1" = 40' HORIZONTAL  
 1" = 10' VERTICAL



**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- RETAINING WALL
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- FLOW DIRECTION
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")

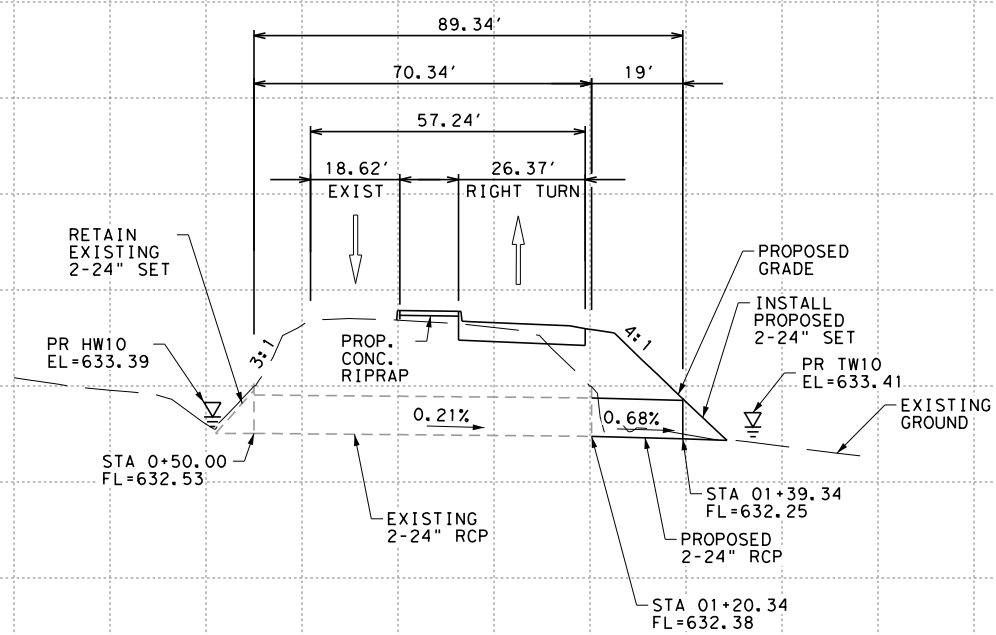


**PLAN**

STA 73+00

TABLE OF QUANTITIES				
BID ITEM	DESCRIPTION	QUANTITY	UNIT	
467 6390	SET (TYII) (24IN) (RCP) (4:1) (C)	1	EA	
464 6005	RC PIPE (CLIII) (24IN)	38	LF	

CULVERT 3		
CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	5.04	4.29
25	6.03	4.51
50	6.77	4.64
100	7.52	4.78



US 287 CULVERT 3 @ STA 73+00  
 EXIST 2-24" X 70' RCP (TO REMAIN)  
 PROP 2-24" X 19' RCP (EXTEND)

**PROFILE**

0+00 1+00



*Shahriar Azad*  
 2024/05/10

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 TBPE REGISTRATION NO. 264

**Texas Department of Transportation**  
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**US 287  
 CULVERT LAYOUT  
 CULVERT 3  
 STA 73+00**

SCALE: 1" = 40' HORIZONTAL  
 1" = 10' VERTICAL SHEET 3 OF 10

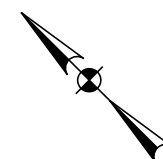
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GRAPHICS	MT	STATE	DISTRICT	COUNTY
CHECK	CPM	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
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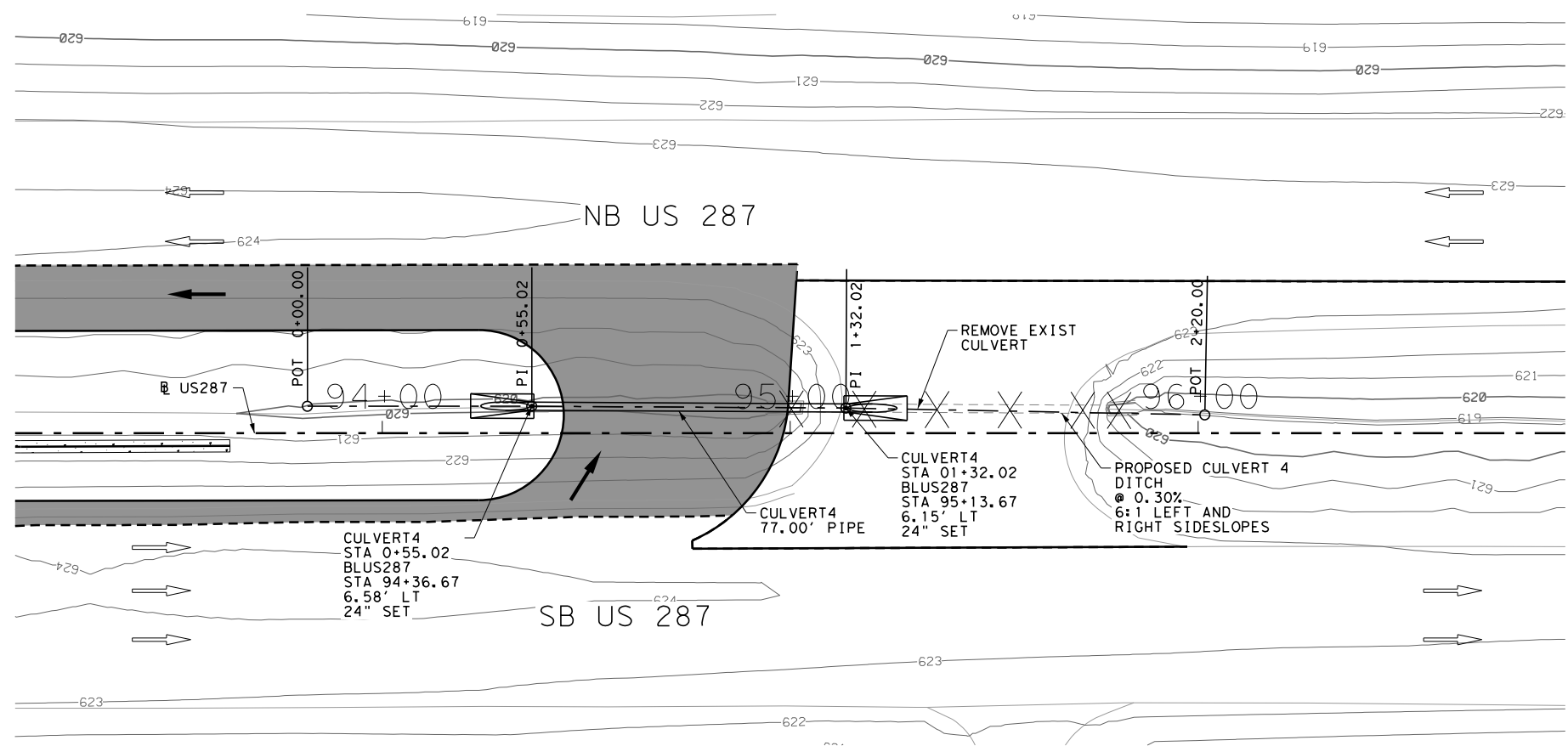
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**LEGEND**

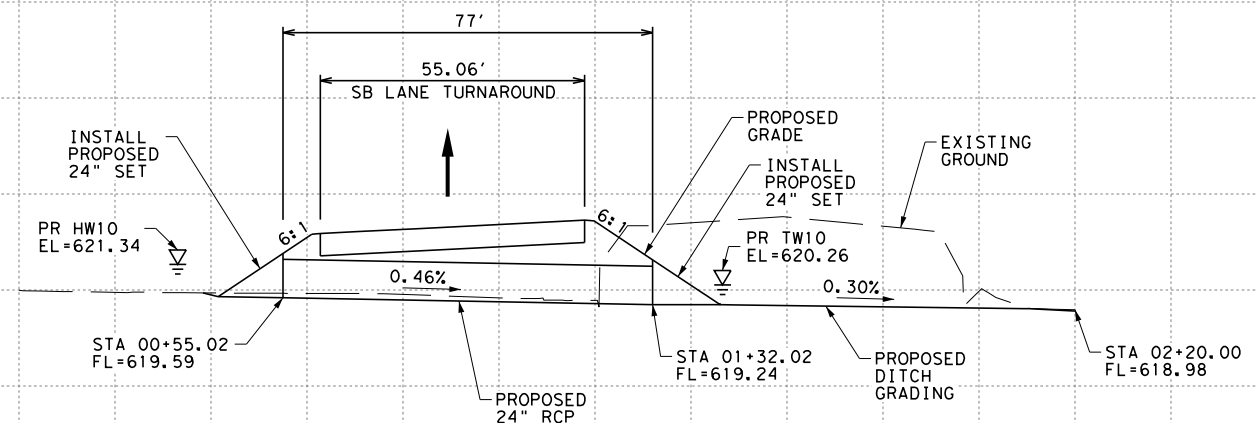
- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- RETAINING WALL
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- FLOW DIRECTION
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")



**PLAN**  
STA 95+00

TABLE OF QUANTITIES			
BID ITEM	DESCRIPTION	QUANTITY	UNIT
467 6395	SET (TYI) (24IN) (RCP) (6:1) (P)	2	EA
464 6018	RC PIPE (CLIV) (24IN)	77	LF

CULVERT 4 CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	10.31	5.56
25	12.37	5.78
50	13.92	6.22
100	15.50	6.52



US 287 CULVERT 4 @ STA 95+00  
EXIST 1-24" X 75' RCP (REMOVE)  
PROP 1-24" X 77' RCP (PROPOSED)

**PROFILE**



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

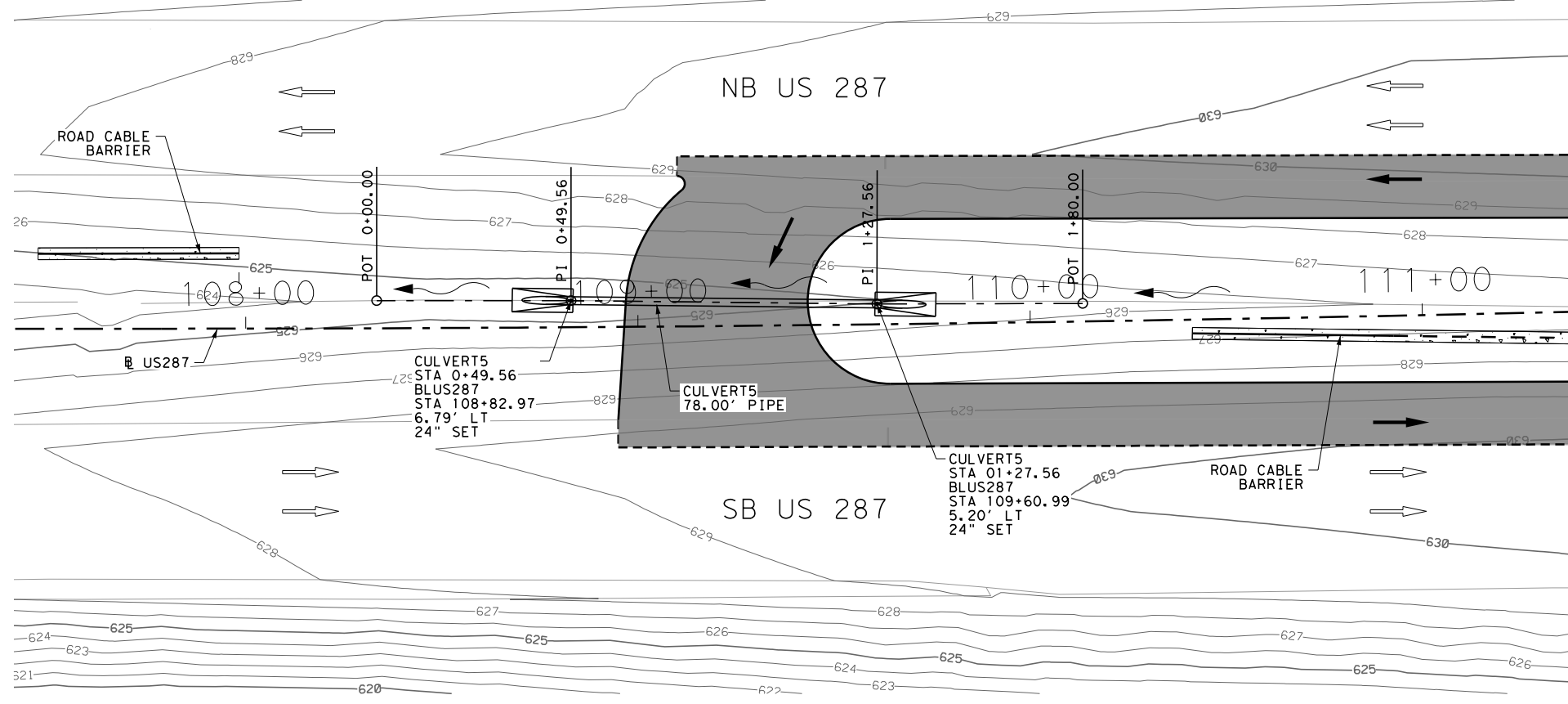


**US 287  
CULVERT LAYOUT  
CULVERT 4  
STA 95+00**

SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL SHEET 4 OF 10

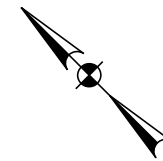
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CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CPM	TEXAS	DALLAS	ELLIS	203
CHECK	CONTROL	SECTION	JOB	
SA	0172	05	129	

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**PLAN**  
STA 109+00

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SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL

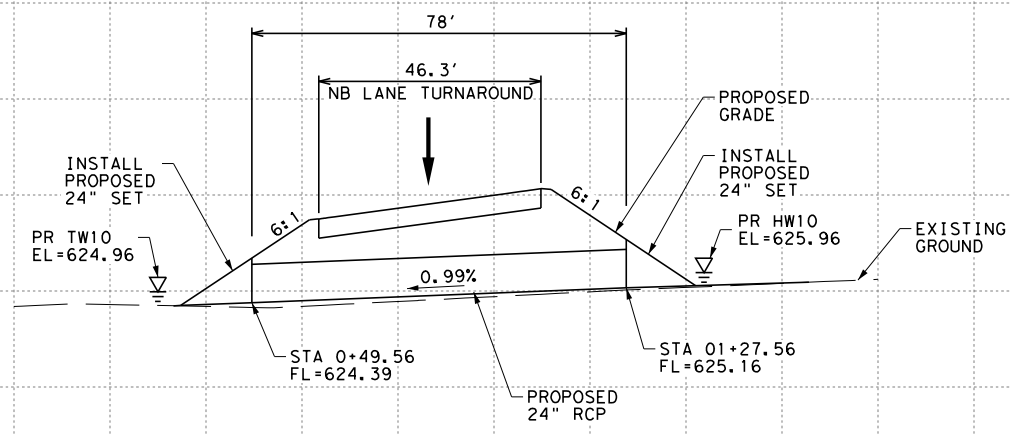


**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- RETAINING WALL
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- FLOW DIRECTION
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")

TABLE OF QUANTITIES			
BID ITEM	DESCRIPTION	QUANTITY	UNIT
467 6395	SET (TY11) (24IN) (RCP) (6:1) (P)	2	EA
464 6005	RC PIPE (CL11) (24IN)	78	LF

CULVERT 5 CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	2.56	4.82
25	3.07	5.08
50	3.44	5.26
100	3.82	5.40



US 287 CULVERT 5 @ STA 109+00  
PROP 1-24" X 78' RCP (PROPOSED)

**PROFILE**



**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
CULVERT LAYOUT  
CULVERT 5  
STA 109+00**

SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL SHEET 5 OF 10

DESIGN MT	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS MT	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 204
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129	

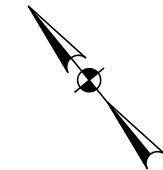
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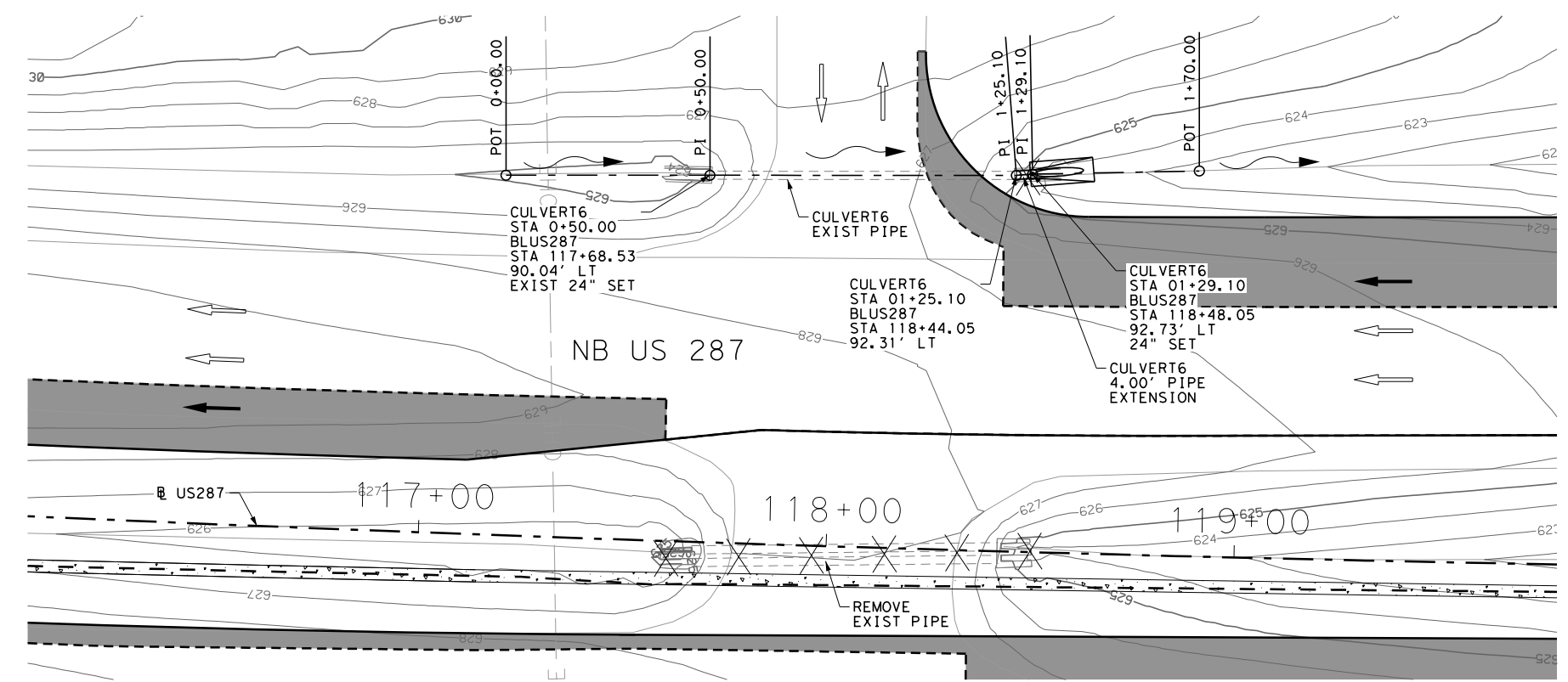
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SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL



**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- RETAINING WALL
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- FLOW DIRECTION
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")

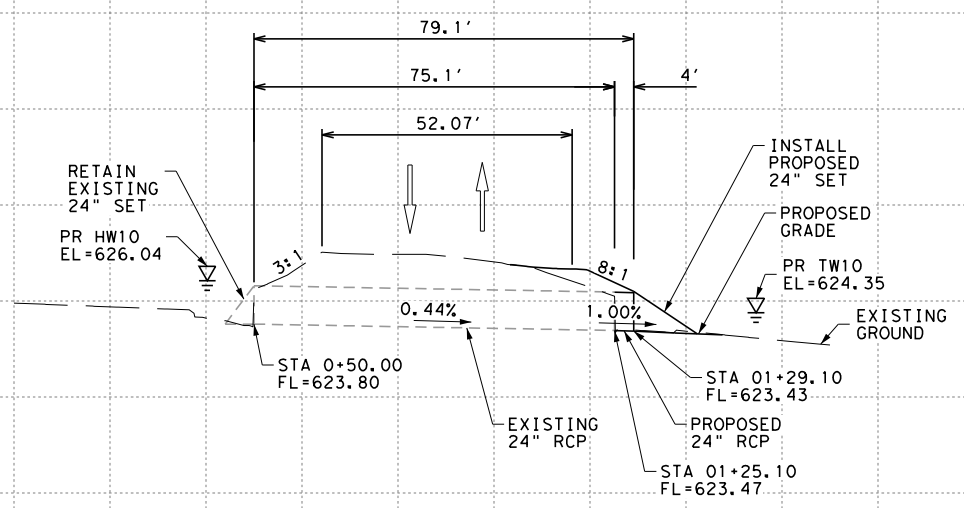


**PLAN**

STA 118+00

TABLE OF QUANTITIES			
BID ITEM	DESCRIPTION	QUANTITY	UNIT
467 6395	SET (TYII) (24IN) (RCP) (6:1) (P)	1	EA
464 6005	RC PIPE (CLIII) (24IN)	4	LF

CULVERT 6		
CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	12.96	6.61
25	15.54	7.04
50	17.47	7.36
100	19.44	7.70



**PROFILE**

US 287 CULVERT 6 @ STA 118+00  
EXIST 1-24" X 75' RCP (TO REMAIN)  
PROP 1-24" X 4' RCP (EXTEND)



**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



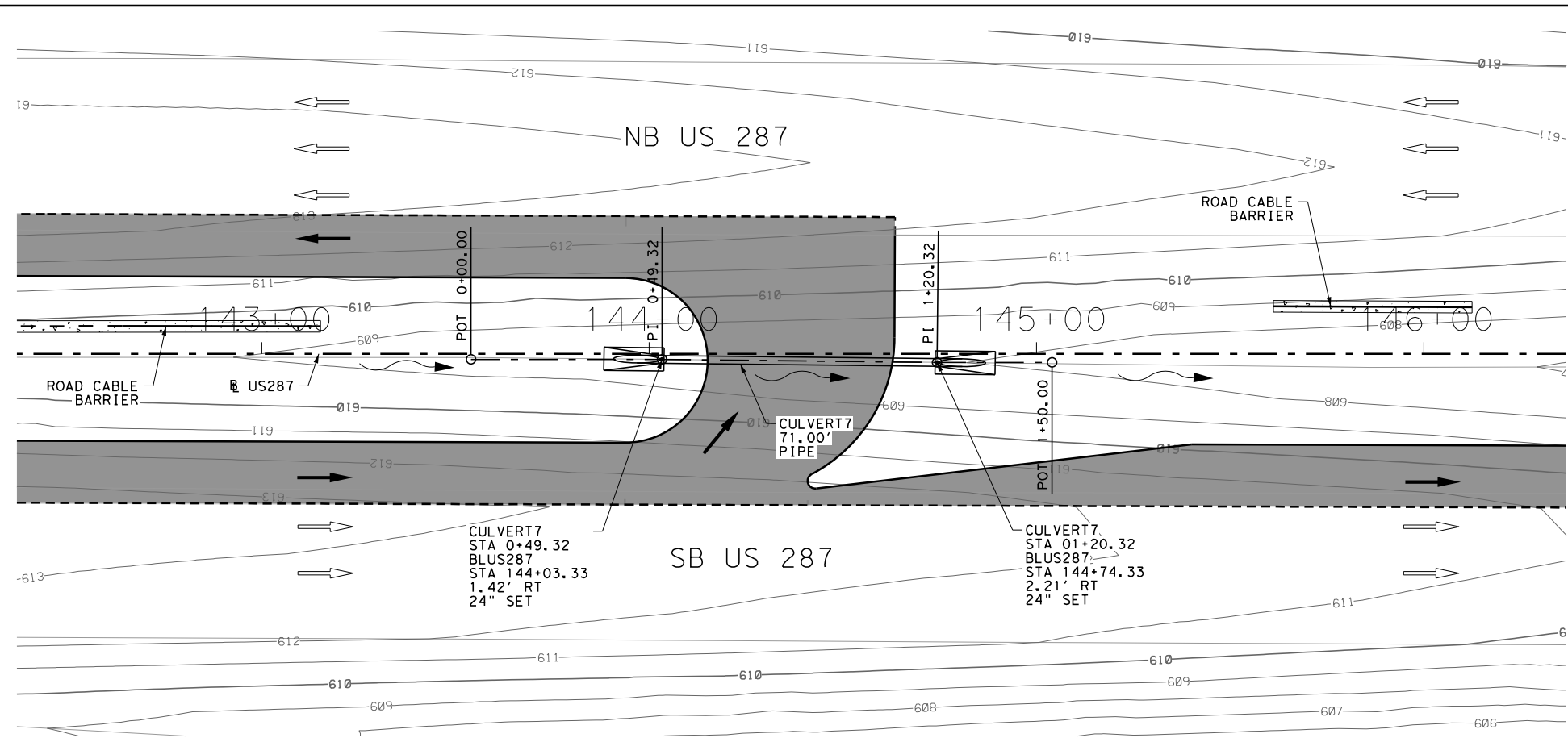
**US 287  
CULVERT LAYOUT  
CULVERT 6  
STA 118+00**

SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL SHEET 6 OF 10

DESIGN	MT	FED. RD. DIV. NO.	6	PROJECT NO.	SEE TITLE SHEET	HIGHWAY NO.	US 287
GRAPHICS	MT	STATE	TEXAS	DISTRICT	DALLAS	COUNTY	ELLIS
CHECK	CPM	CONTROL	0172	SECTION	05	JOB	129
CHECK	SA						205

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**PLAN**  
STA 144+00

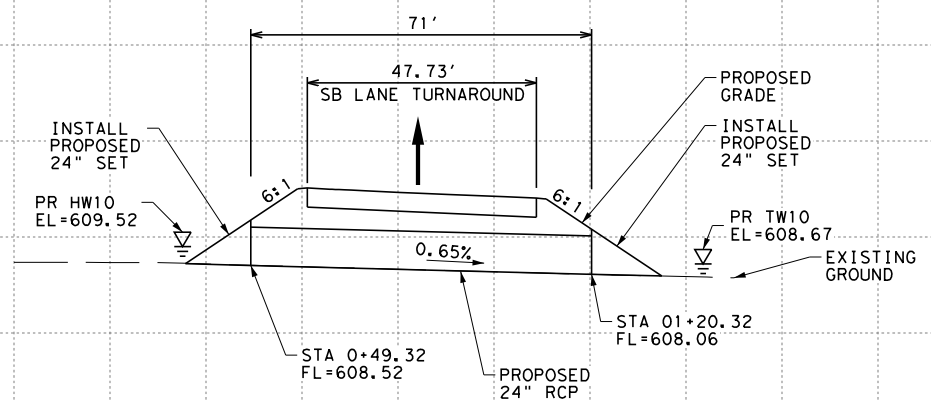
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1" = 10' VERTICAL

**LEGEND**

- ← EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- ▬ RETAINING WALL
- ✕ ✕ ✕ PIPE REMOVAL (SEE REMOVAL PLANS)
- ▬ PROPOSED STORM SEWER
- - - EXISTING STORM SEWER
- FLOW DIRECTION
- ▬ PROPOSED PAVEMENT
- ▬ PROPOSED CONCRETE RIPRAP (4")

TABLE OF QUANTITIES			
BID ITEM	DESCRIPTION	QUANTITY	UNIT
467 6395	SET (TY11) (24IN) (RCP) (6:1) (P)	2	EA
464 6005	RC PIPE (CLIII) (24IN)	71	LF

CULVERT 7 CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	3.91	4.91
25	4.68	5.16
50	5.25	5.32
100	5.83	5.48



US 287 CULVERT 7 @ STA 144+00  
PROP 1-24" X 71' RCP (PROPOSED)

**PROFILE**

Shahriar Azad  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

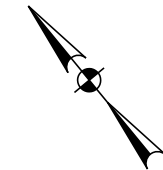
**Texas Department of Transportation**  
©2024

**US 287  
CULVERT LAYOUT  
CULVERT 7  
STA 114+00**

DESIGN MT	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS MT	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			

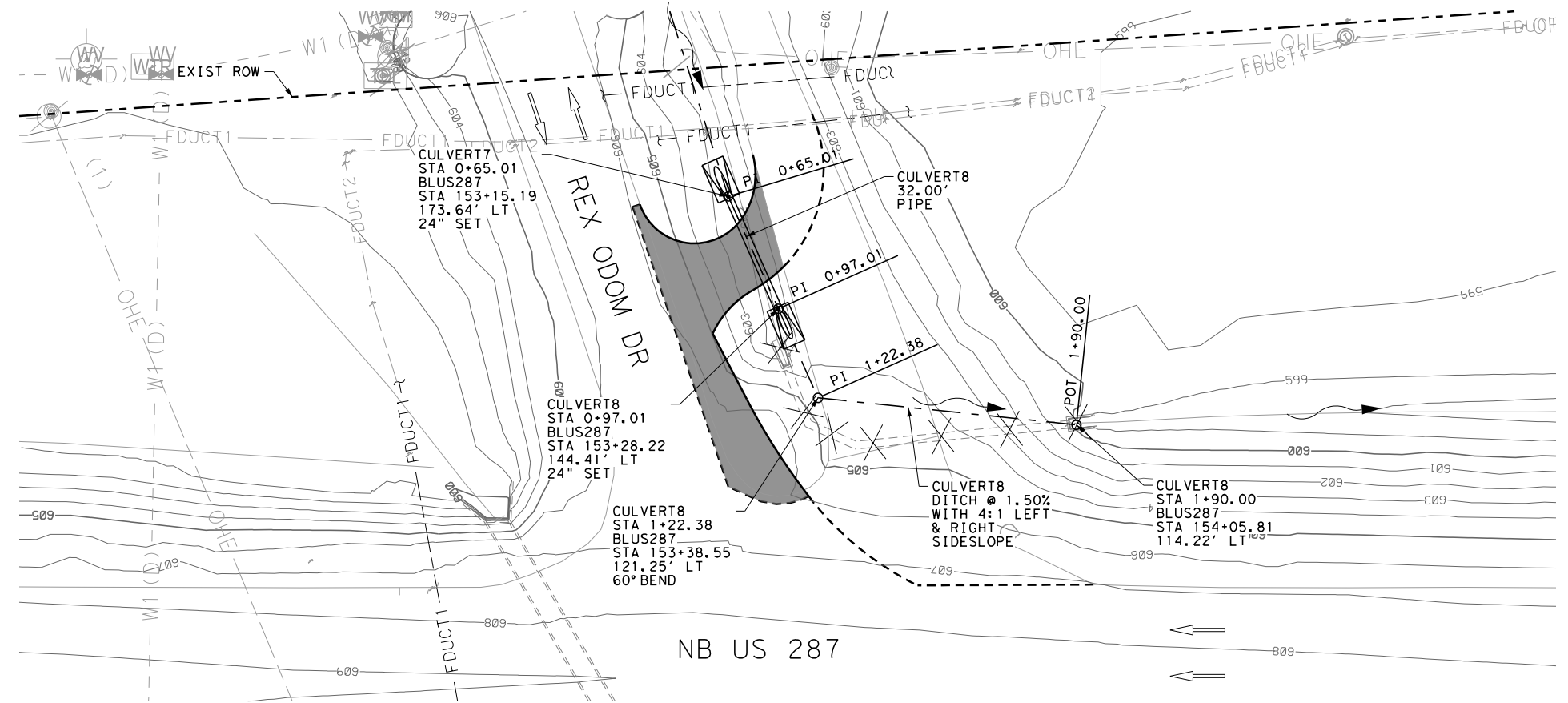
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**LEGEND**

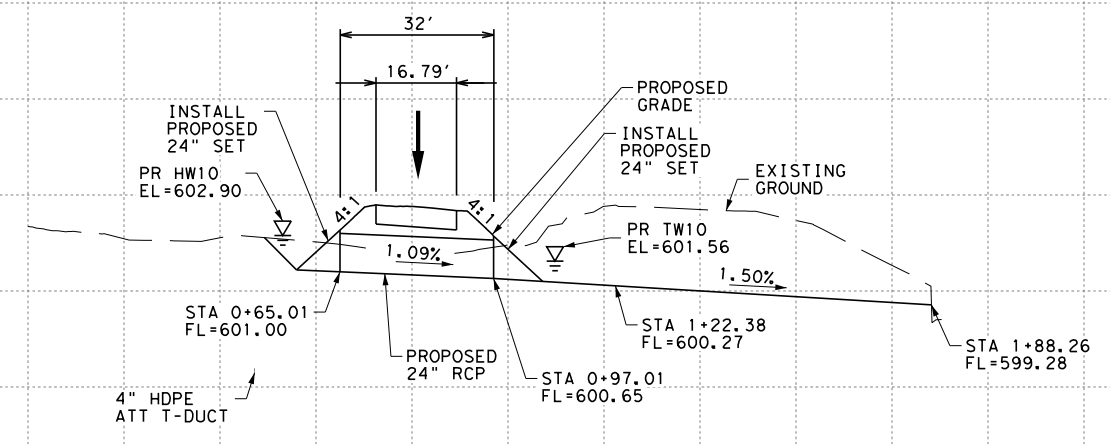
- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- RETAINING WALL
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- FLOW DIRECTION
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")



**PLAN**  
STA 153+10

TABLE OF QUANTITIES			
BID ITEM	DESCRIPTION	QUANTITY	UNIT
467 6390	SET (TYII) (24IN) (RCP) (4:1) (C)	2	EA
464 6018	RC PIPE (CLIV) (24IN)	32	LF

CULVERT 8 CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	11.50	7.12
25	13.77	7.46
50	15.47	7.70
100	17.19	7.92



US 287 CULVERT 8 @ STA 153+10  
PROP 1-24" X 32' RCP (PROPOSED)

**PROFILE**



**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
CULVERT LAYOUT  
CULVERT 8  
STA 153+10**

SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL SHEET 8 OF 10

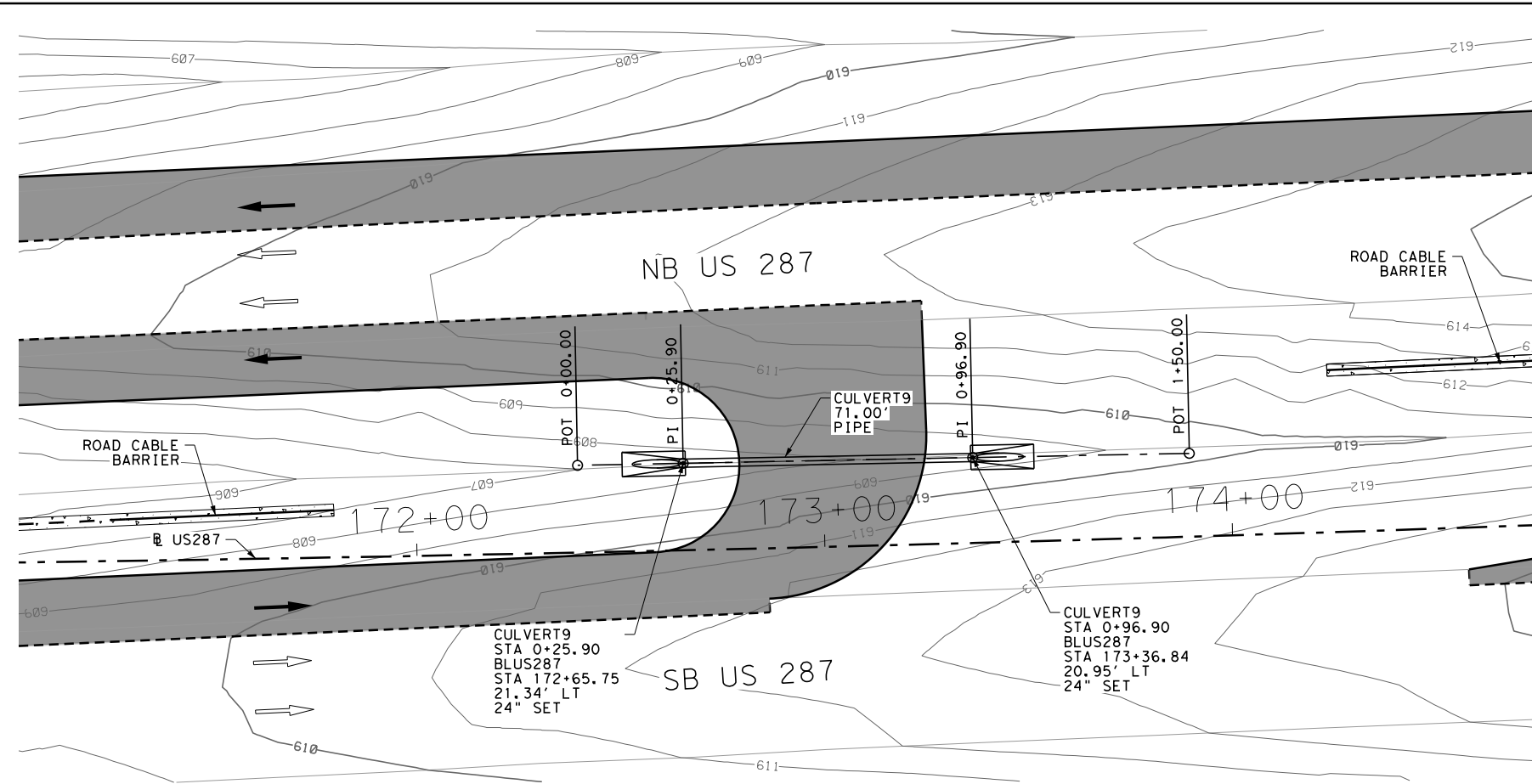
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CPM	TEXAS	DALLAS	ELLIS	207
CHECK	CONTROL	SECTION	JOB	
SA	0172	05	129	

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**PLAN**  
STA 173+00

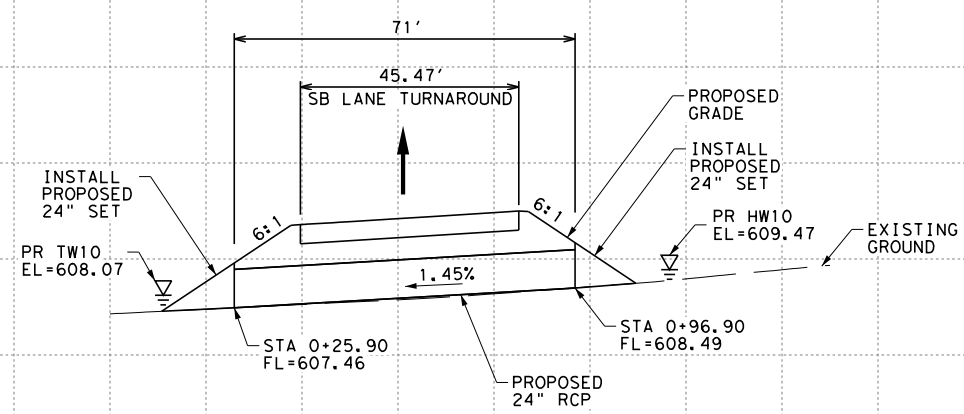
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1" = 10' VERTICAL

**LEGEND**

- ← EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- ▬▬▬ RETAINING WALL
- ✕✕✕ PIPE REMOVAL (SEE REMOVAL PLANS)
- ▬▬▬ PROPOSED STORM SEWER
- - - - EXISTING STORM SEWER
- FLOW DIRECTION
- ▬▬▬ PROPOSED PAVEMENT
- ▬▬▬ PROPOSED CONCRETE RIPRAP (4")

TABLE OF QUANTITIES				
BID ITEM	DESCRIPTION	QUANTITY	UNIT	
467 6395	SET (TY11) (24IN) (RCP) (6:1) (P)	2	EA	
464 6005	RC PIPE (CL11) (24IN)	71	LF	

CULVERT 9 CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	3.65	6.08
25	4.36	6.40
50	4.90	6.61
100	5.44	6.79



US 287 CULVERT 9 @ STA 173+00  
PROP 1-24" X 71' RCP (PROPOSED)

**PROFILE**



**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
CULVERT LAYOUT  
CULVERT 9  
STA 173+00**

SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL SHEET 9 OF 10

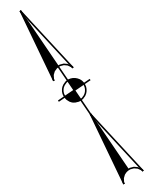
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CHECK	SA	CONTROL	SECTION JOB	
		0172	05 129	

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 SCALE: 1" = 40' HORIZONTAL  
 1" = 10' VERTICAL



**LEGEND**

- EXISTING TRAVEL LANE
- PROP TRAVEL LANE
- RETAINING WALL
- PIPE REMOVAL (SEE REMOVAL PLANS)
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- FLOW DIRECTION
- PROPOSED PAVEMENT
- PROPOSED CONCRETE RIPRAP (4")

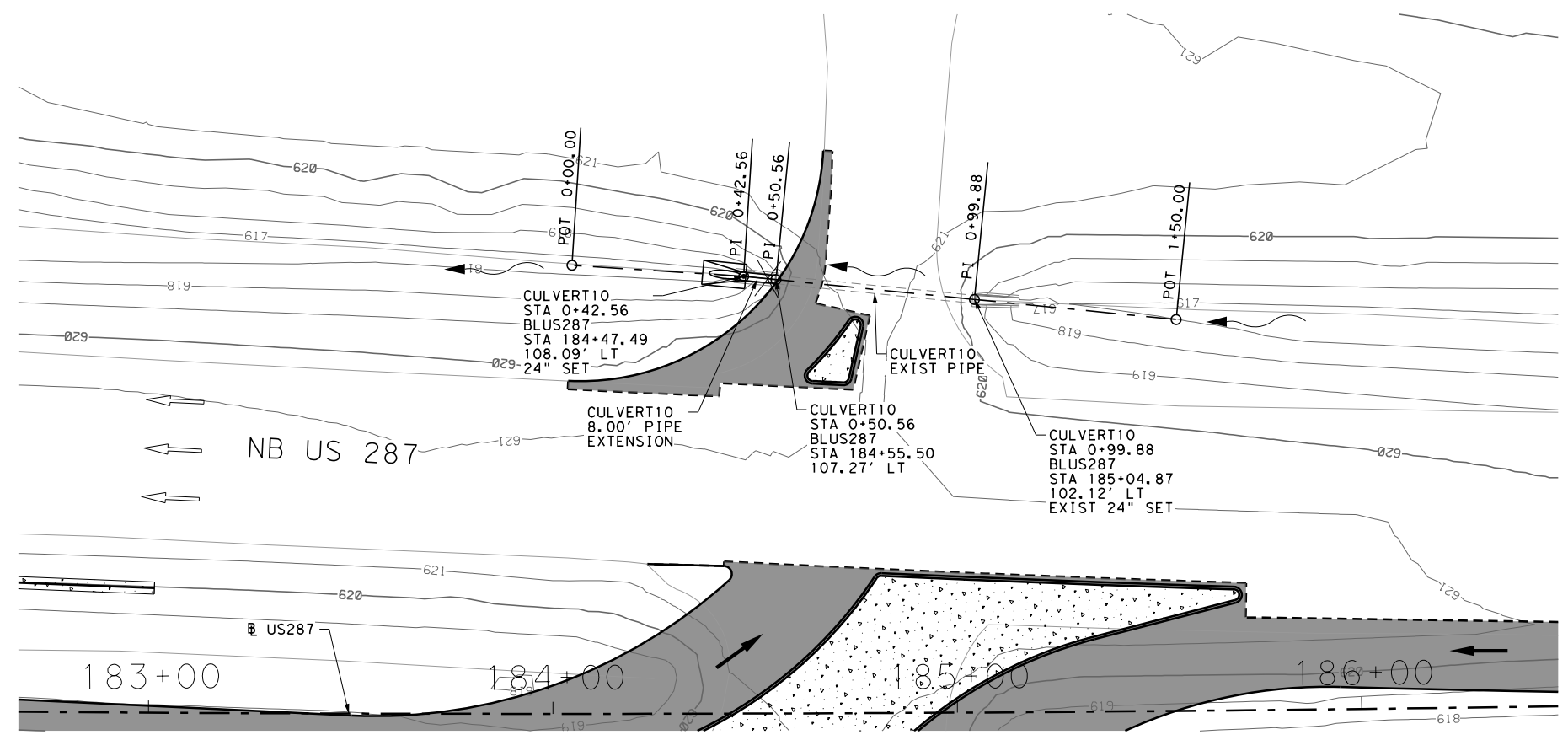
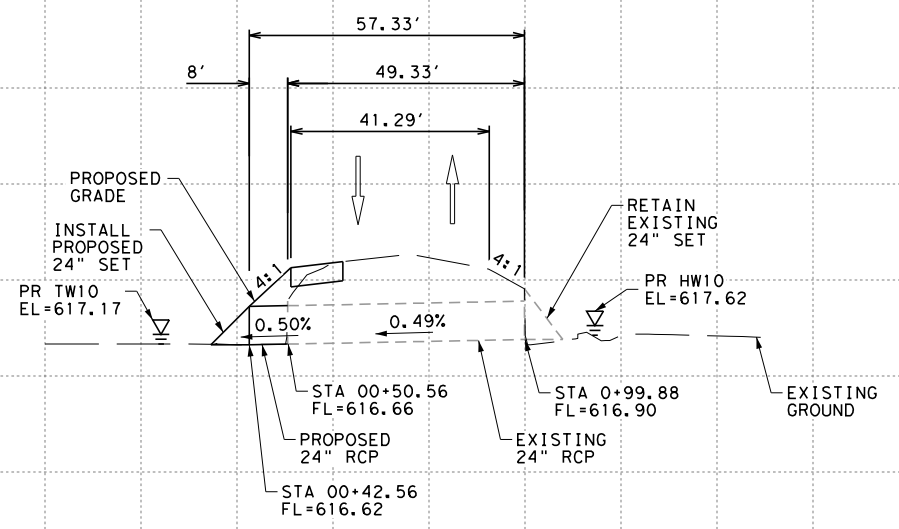


TABLE OF QUANTITIES			
BID ITEM	DESCRIPTION	QUANTITY	UNIT
467 6390	SET (TYII) (24IN) (RCP) (4:1) (C)	1	EA
464 6005	RC PIPE (CLIII) (24IN)	8	LF

CULVERT 10 CULVERT FLOW AND VELOCITY DATA		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10	1.79	1.46
25	2.14	1.53
50	2.40	1.57
100	2.66	1.61



US 287 CULVERT 10 @ STA 184+50  
 EXIST 1-24" X 49' RCP (TO REMAIN)  
 PROP 1-24" X 8' RCP (EXTEND)



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264

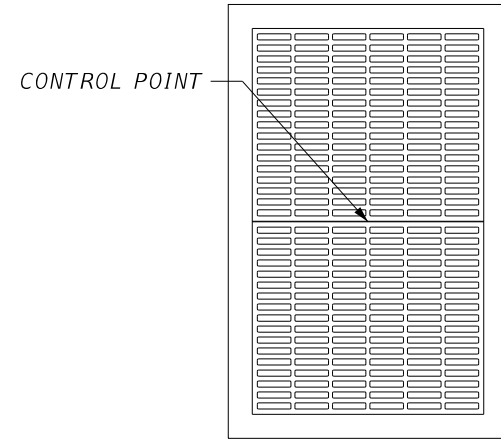


**US 287  
 CULVERT LAYOUT  
 CULVERT 10  
 STA 184+50**

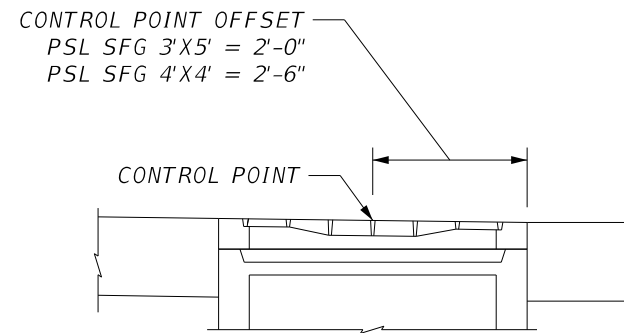
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 1" = 10' VERTICAL SHEET 10 OF 10

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CHECK	STATE	DISTRICT	COUNTY	SHEET NO.
CPM	TEXAS	DALLAS	ELLIS	209
CHECK	CONTROL	SECTION		JOB
SA	0172	05		129

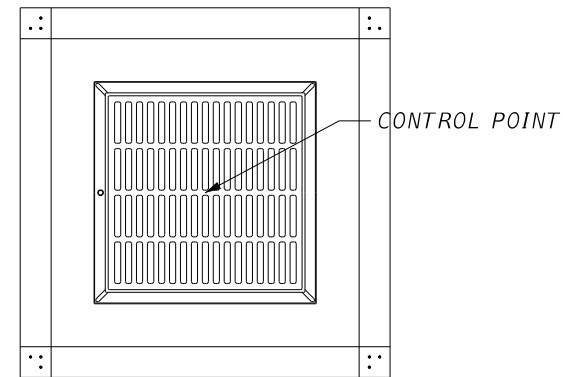




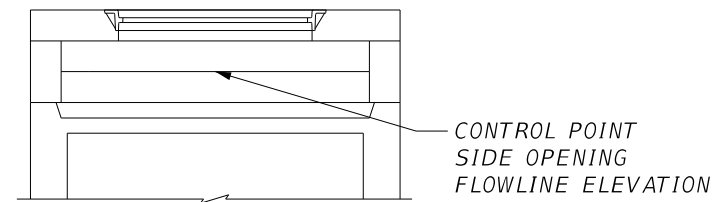
**PLAN VIEW**  
PRECAST SLAB LID (PSL-FG/SFG)



**ELEVATION VIEW**  
PRECAST SLAB LID (PSL)



**PLAN VIEW**  
PRECAST AREA ZONE DRAIN (PAZD)



**ELEVATION VIEW**  
PRECAST AREA ZONE DRAIN (PAZD)



*Shahriar Azad*  
2024/05/09

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287**  
**MISC. DRAINAGE DETAILS**  
**DRAINAGE CONTROL POINT**  
**DETAILS**

SHEET 1 OF 3

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MT	6	SEE TITLE SHEET		US 287
GRAPHICS	GR	STATE	DISTRICT	COUNTY
CHECK	MT	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129

**CONSTRUCTION NOTE:**

REMOVE THE TOP 2'-3" OF INLET AS SHOWN

- ① CLEAN, MAKE ROUGH SURFACE THEN APPLY BONDING AGENT BEFORE POURING THE TOP PART

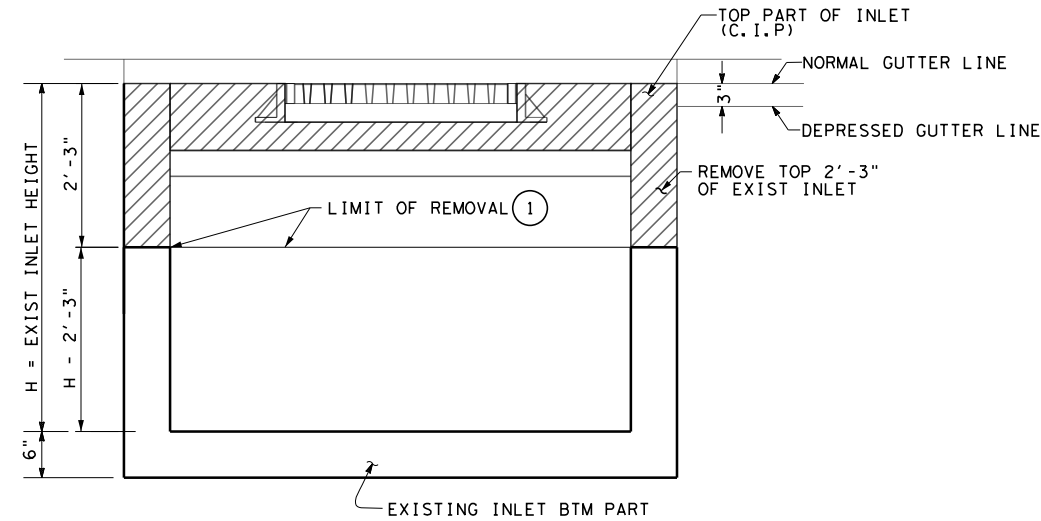


**NOTES:**

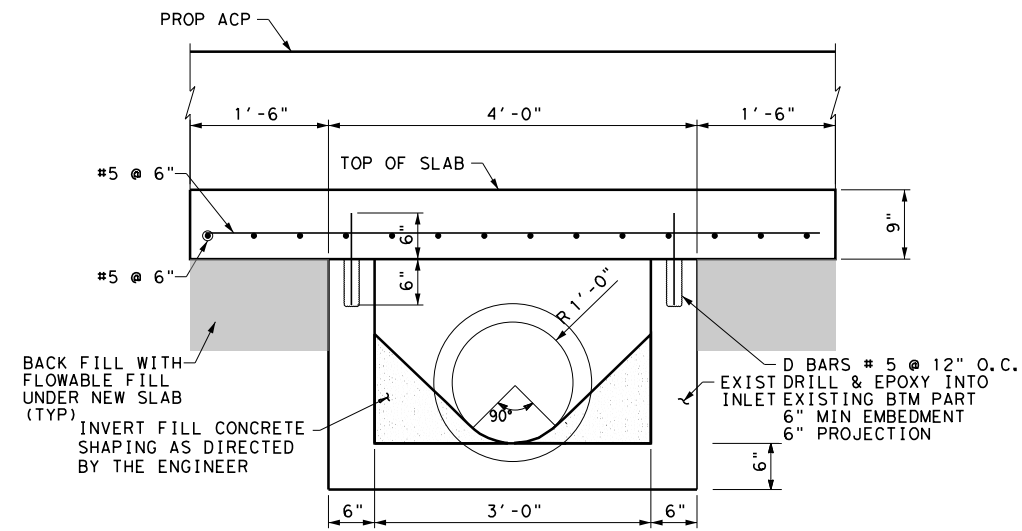
1. EMBED (#5) ANCHOR BARS D 6" WITH HILTI HIT RE500 V3 EPOXY ADHESIVE INTO THE EXISTING INLET. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE500 V3 WITH THE SAME EMBEDMENT DEPTH AND ANCHOR BAR SIZE AND SPACING. FOLLOW MANUFACTURER'S DIRECTIONS FOR INSTALLING THE EPOXIED ANCHOR BARS.
2. WORK AND MATERIAL REQUIRED TO DRILL AND EPOXY REBARS IS NOT PAID FOR DIRECTLY BUT SUBSIDIARY TO THE BID ITEM 420.
3. ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE OUT TO OUT OF BARS.
4. THIS DIMENSION IS FOR CONTRACTOR'S INFORMATION ONLY. THE CONTRACTOR SHALL FIELD VERIFY THE ACTUAL DIMENSION PRIOR TO CONSTRUCTION.
5. THE WORK AND MATERIAL FOR REMOVAL, BACKFILL, FLOWABLE FILL AND CAP OF EXISTING INLET IS PAID FOR BY ITEM 479.

**CONCRETE QUANTITY**

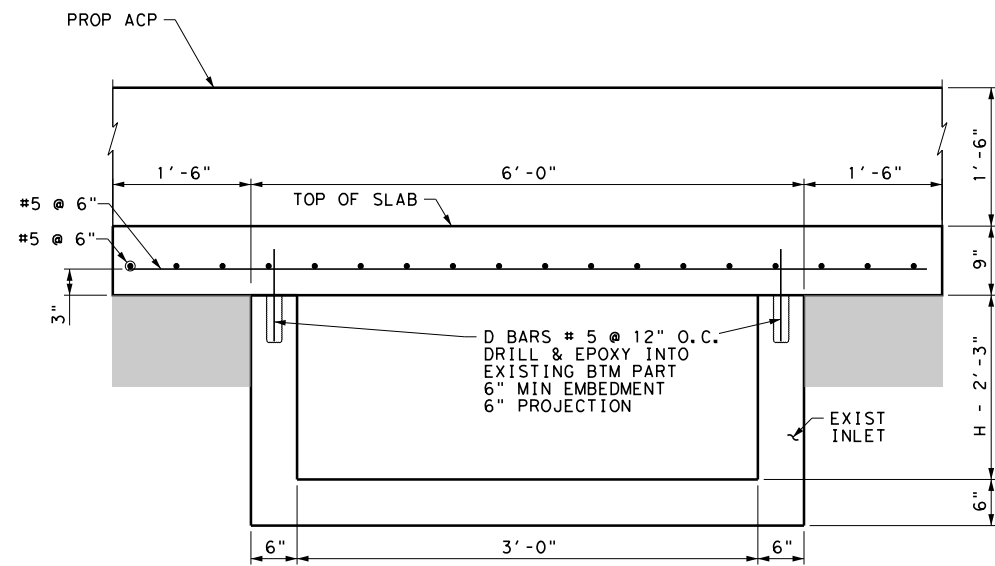
- \* CL C CONC (INLET) = 1.75 C.Y. FOR EACH INLET CAP REINFORCING STEEL IS SUBSIDIARY TO ITEM 420.
- \* FOR CONTRACTOR INFORMATION ONLY



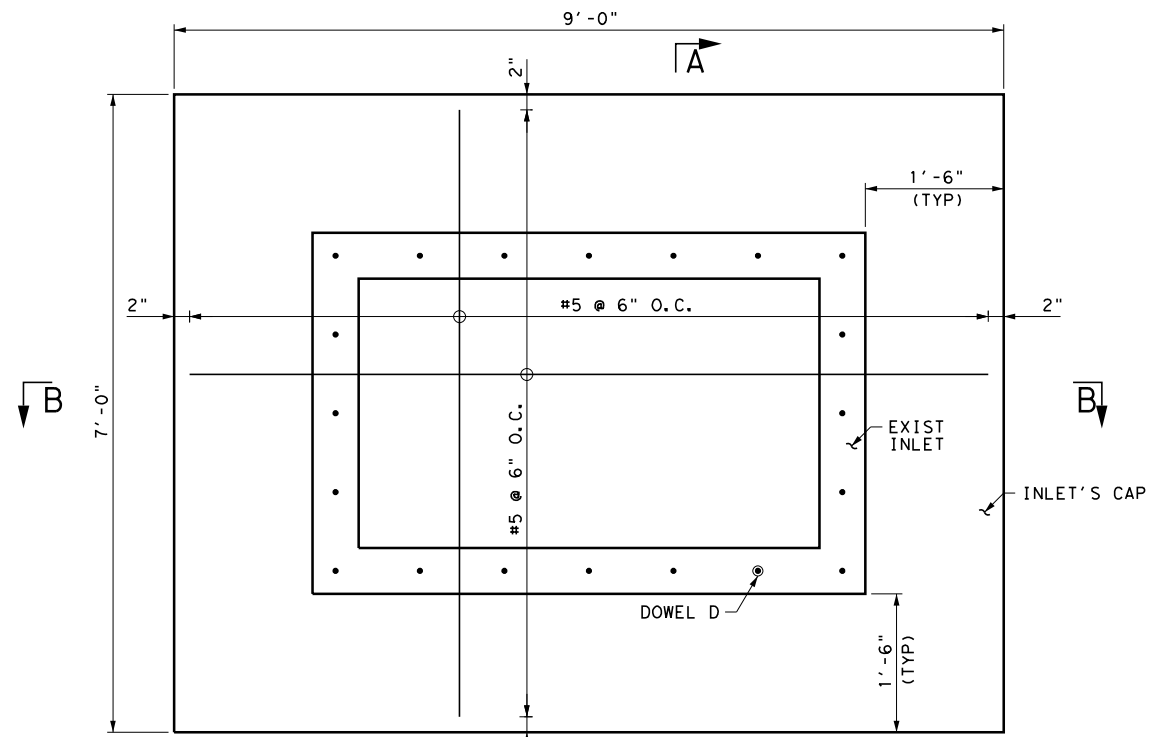
**ELEVATION VIEW**



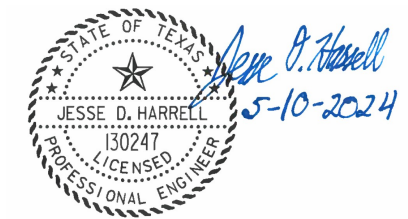
**SECTION A-A**



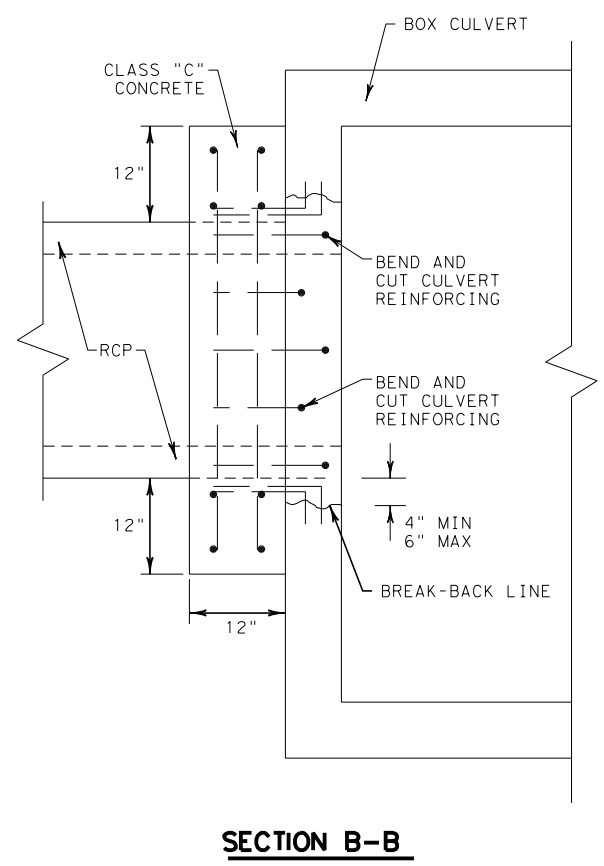
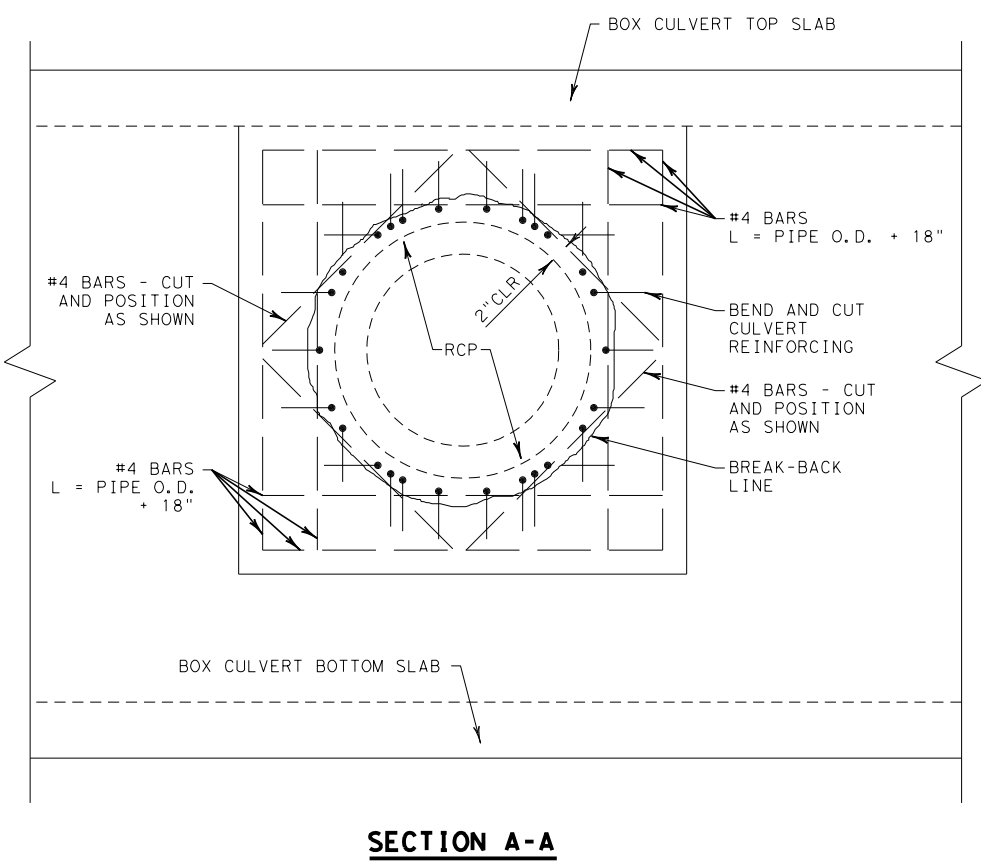
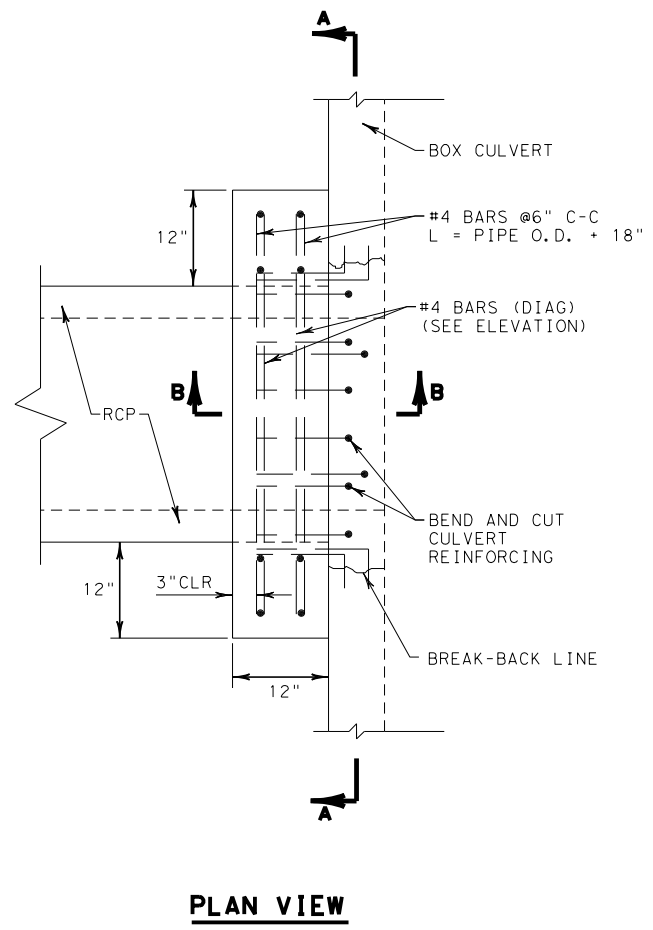
**SECTION B-B**



**PLAN VIEW**



NO.	DATE	DESCRIPTION	APPROV.
 TBPE REGISTRATION NO. 264  ©2024			
<b>US 287</b> <b>MISC. DRAINAGE DETAILS</b> <b>CAP EXIST INLET</b>			
SCALE: N.T.S.		SHEET 2 OF 3	
DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
GRAPHICS GR	6	SEE TITLE SHEET	US 287
CHECK MT	TEXAS	DALLAS	ELLIS
CHECK SA	0172	05	129
			211



**PIPE STUB-IN CONNECTION TO BOX CULVERT OR EXISTING DRAINAGE STRUCTURE**  
N.T.S.

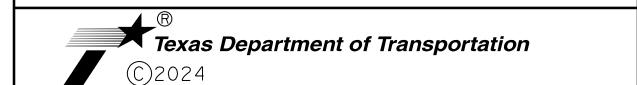
**PIPE STUB-IN GENERAL NOTES**

1. SAW CUT A MAXIMUM 1/2" DEPTH AT BREAK-BACK LINE. USE REMOVAL METHODS THAT WILL NOT DAMAGE REMAINING CONCRETE OR CULVERT REINFORCING.
2. EXPOSE AND CLEAN BOX CULVERT REINFORCING. BEND BARS INTO PROPOSED CONNECTION AND TIE TO CONNECTION REINFORCING.
3. ROUGHEN AND CLEAN EXISTING CONCRETE SURFACES THAT ARE IN CONTACT WITH NEW CONCRETE BEFORE PLACING FORMS.
4. MATERIAL & LABOR FOR PIPE/BOX CONNECTIONS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO ITEMS 462 AND 464.



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

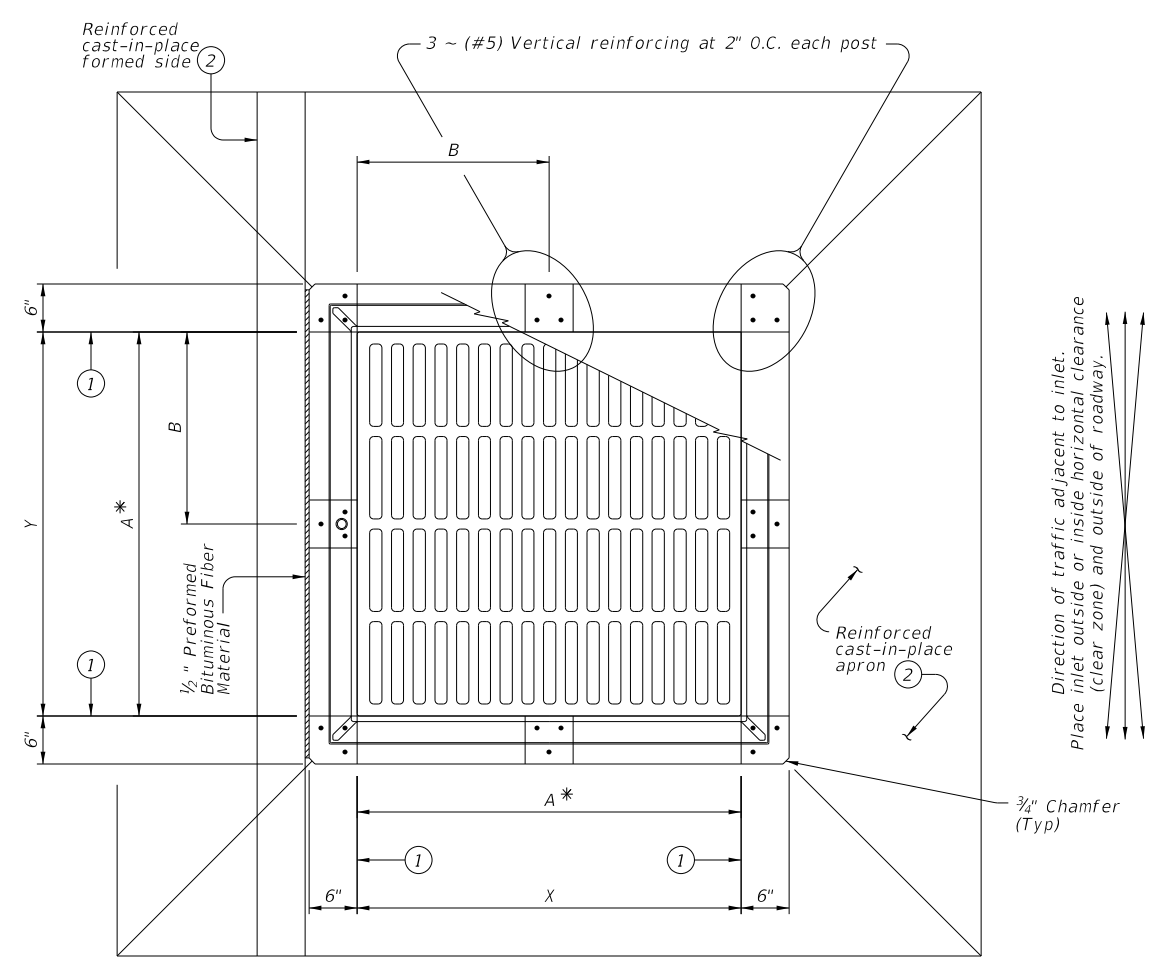


**US 287**  
**MISC. DRAINAGE DETAILS**  
**PIPE STUB-IN DETAIL**

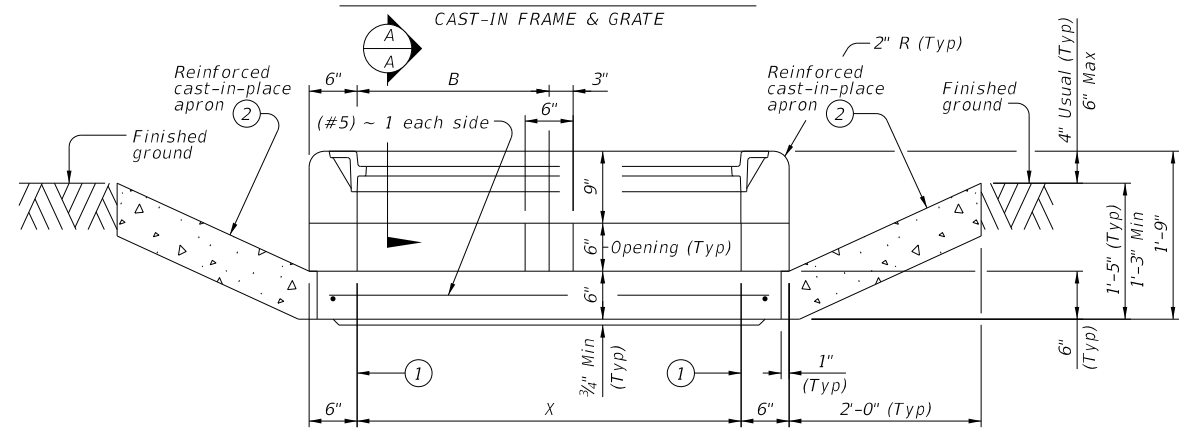
SHEET 3 OF 3

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CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129

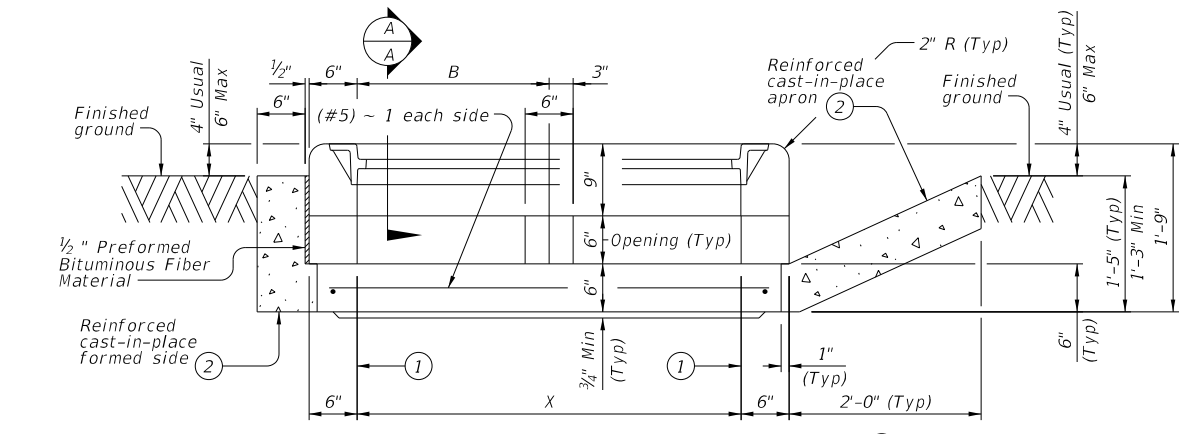
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 DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act." No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or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



PLAN VIEW ~ STYLE 'FG' ③

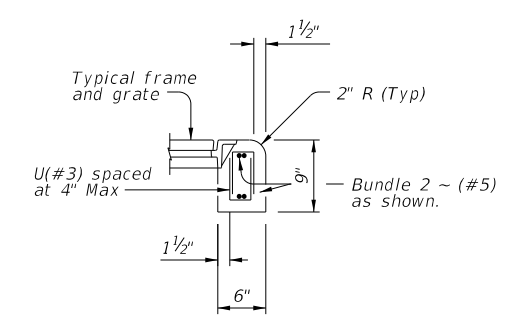


ELEVATION VIEW WITHOUT FORMED SIDE ④

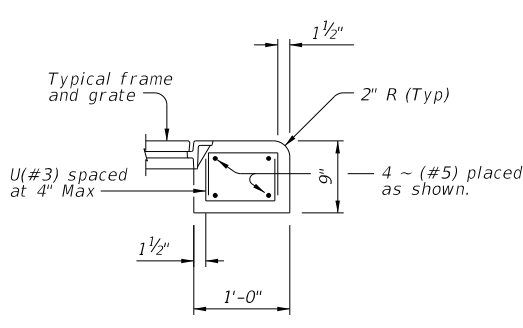


ELEVATION VIEW WITH FORMED SIDE ④

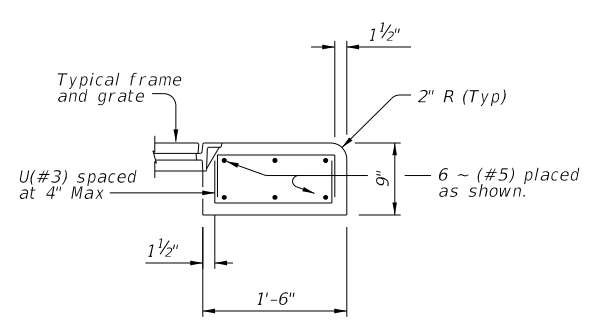
Direction of traffic adjacent to inlet.  
 Place inlet outside or inside horizontal clearance (clear zone) and outside of roadway.



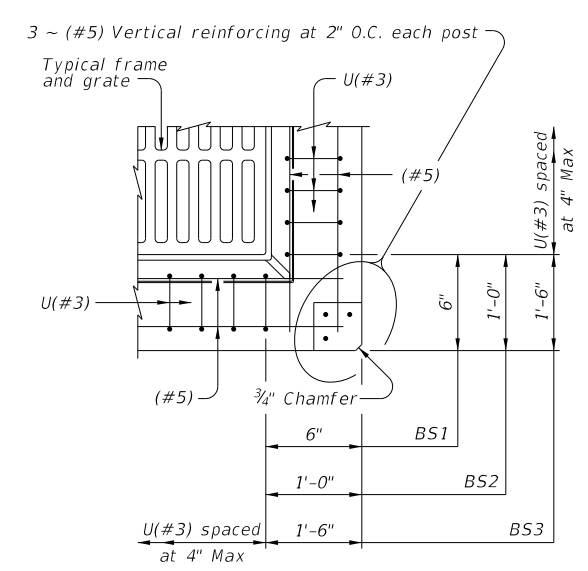
SECTION A-A ~ BS1



SECTION A-A ~ BS2

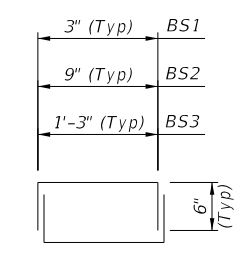


SECTION A-A ~ BS3



TYPICAL CORNER REINFORCING PLAN DETAIL

Showing BS2 other beam sections similar.



BARS U (#3)  
 Showing one complete bar.

- ① Matches inside face of wall of precast base or riser below inlet.
- ② Construct cast-in-place reinforced concrete with or without formed side. Place formed side/sides as directed elsewhere in the plans. Formed sides may only be used on sides parallel to traffic. Use Class "C" concrete. Apron and formed side reinforcing not shown for clarity. Apron and formed side are subsidiary to PAZD-CZ. Apron is 2'-0" width around precast zone drain, unless an optional formed side is used. For apron and formed side, provide (#4) reinforcing at 12" O.C.
- ③ Top slab reinforcing not shown for clarity.
- ④ Top slab reinforcing and post reinforcing not shown for clarity.

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide clear cover of 3/4" to reinforcing from bottom of slab and 2" to reinforcing from top of slab for structural reinforcement.
4. Provide 1 1/2" end cover on (#5) reinforcing.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:

1. Precast Area Zone Drain within Clear Zone (PAZD-CZ) is for use in ditches and medians outside and inside of the horizontal clearance (clear zone). PAZD-CZ is never placed in the roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:

1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.  
 Reinforcing bar dimensions shown are out-to-out of bar.

Style	Size (X x Y)	A x A *	B x B	Beam Section
FG	3'x3'	3'x3'	1.5'x1.5'	BS1
FG	4'x4'	3'x3'	2'x2'	BS2
FG	4'x4'	4'x4'	2'x2'	BS1
FG	5'x5'	3'x3'	2.5'x2.5'	BS3
FG	5'x5'	4'x4'	2.5'x2.5'	BS2

\* Nominal frame/grate size.

HL93 LOADING



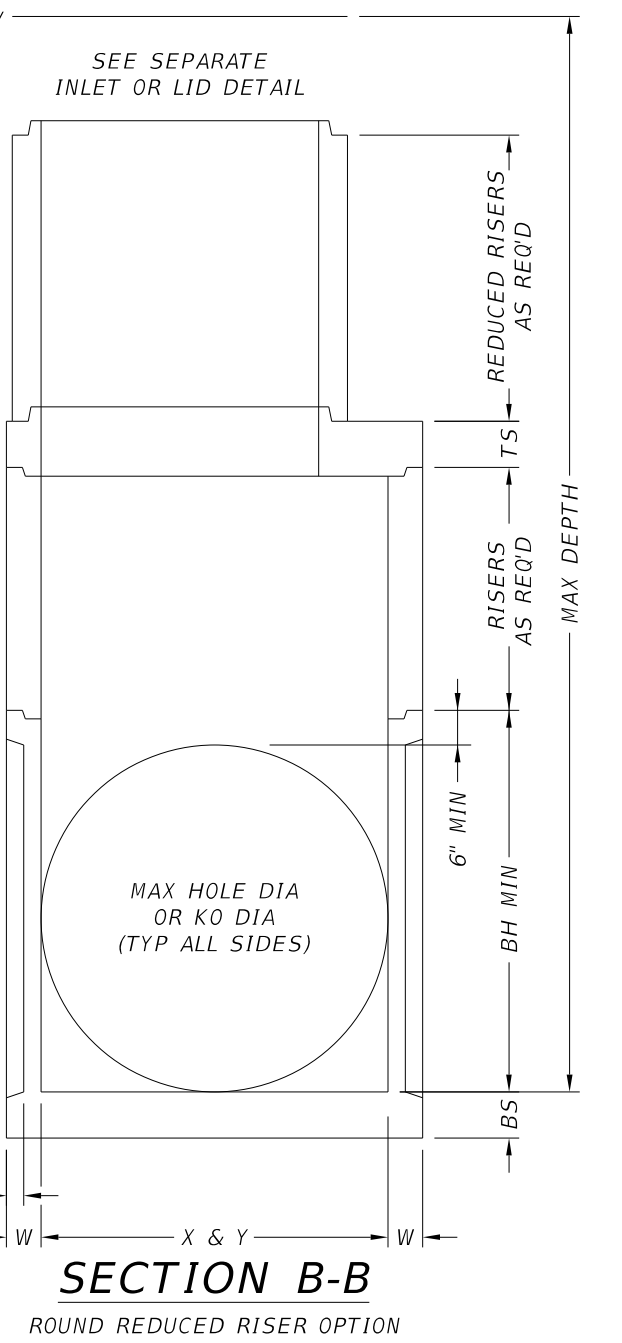
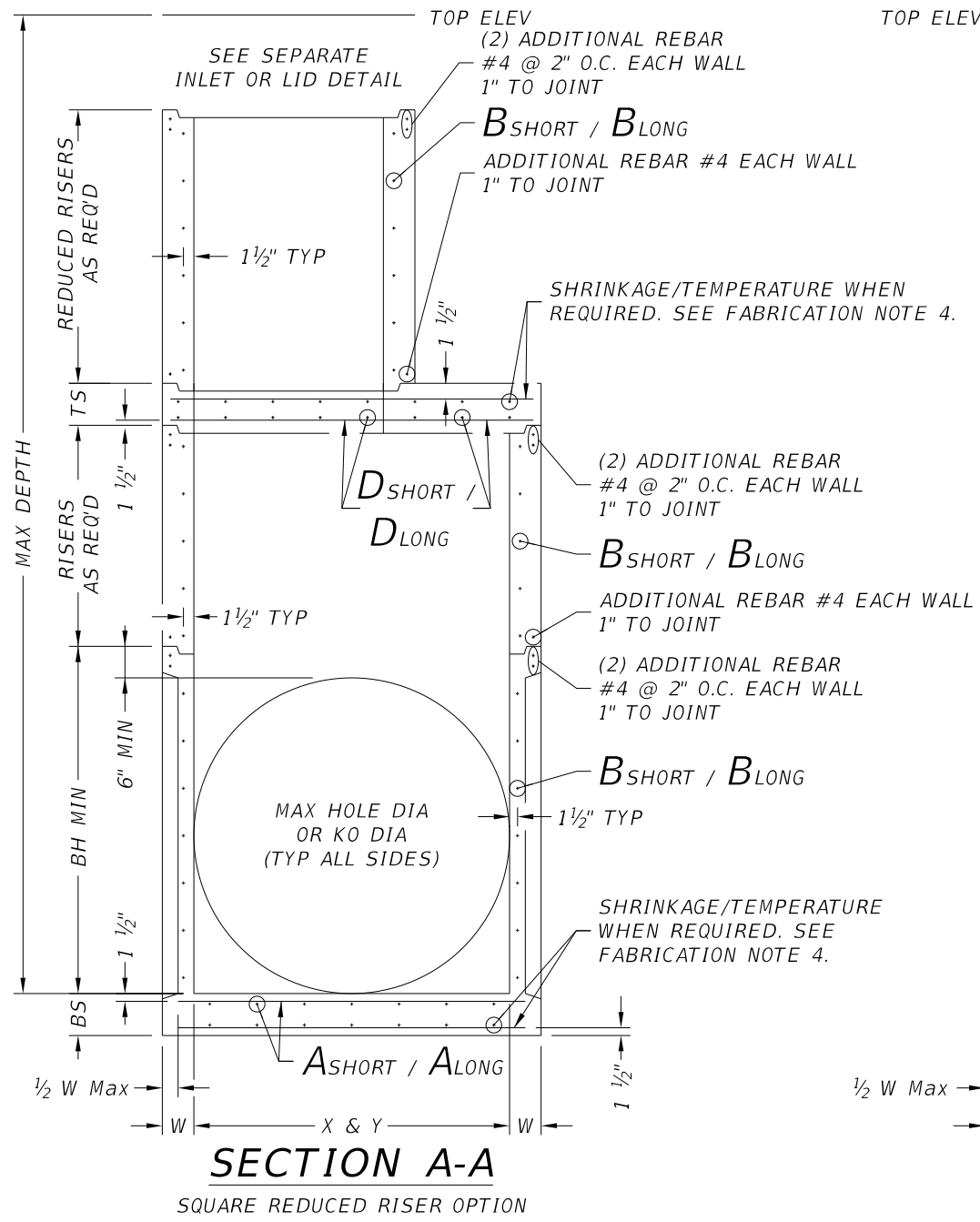
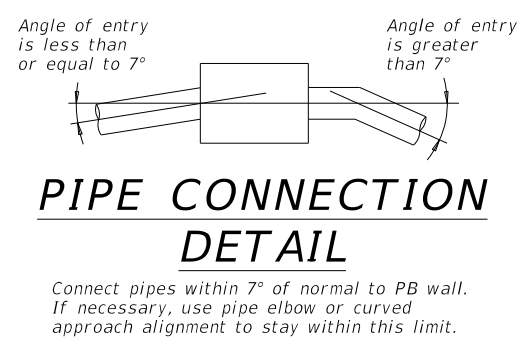
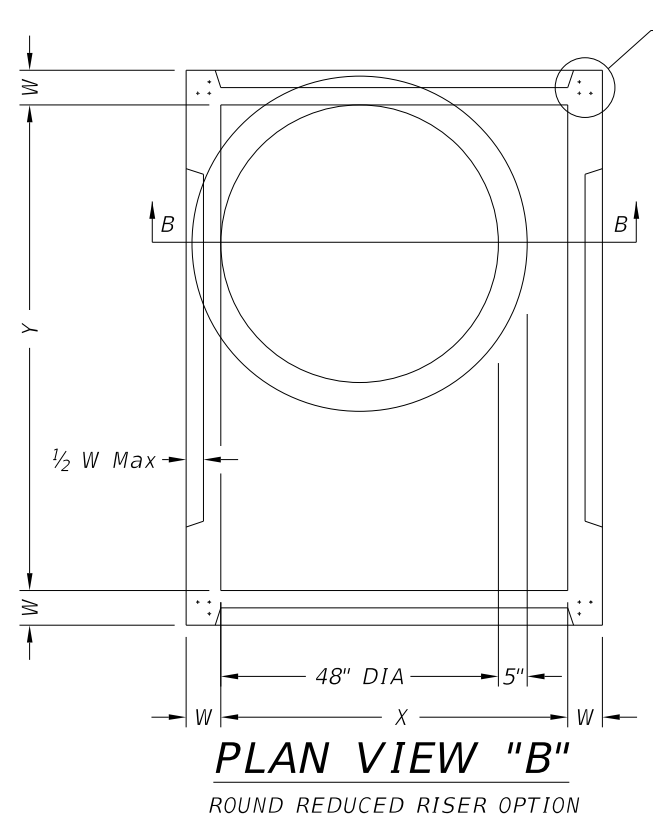
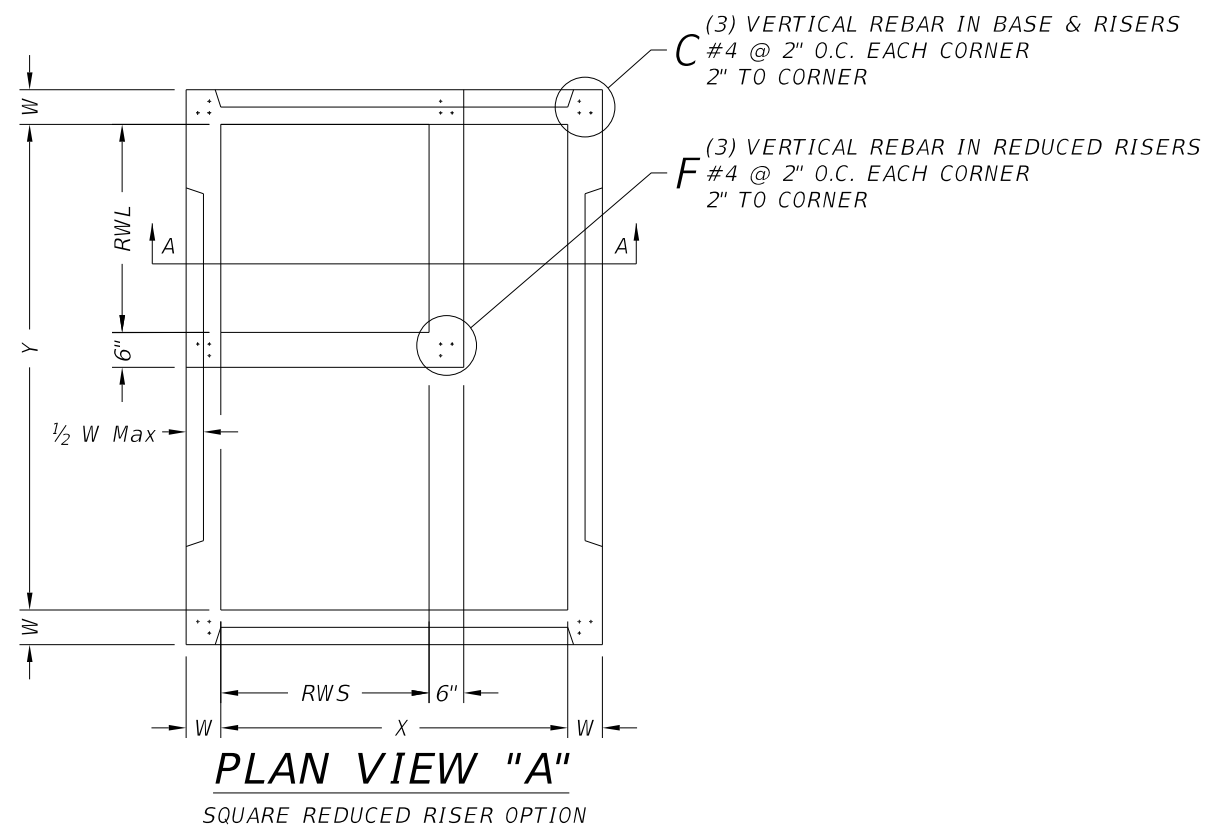
PRECAST AREA ZONE DRAIN WITHIN CLEAR ZONE

PAZD-CZ

FILE:	DN: SDC	CK: TAR	DW: JTR	CK: SDC
©TxDOT February 2020	CONT SECT	JOB	HIGHWAY	
REVISIONS	0172 05	129	US 287	
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	213	

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**FABRICATION NOTES:**

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 1/2" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in<sup>2</sup>/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.

**INSTALLATION NOTES:**

1. If required elsewhere. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to specified inlet or manhole.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

**GENERAL NOTES:**

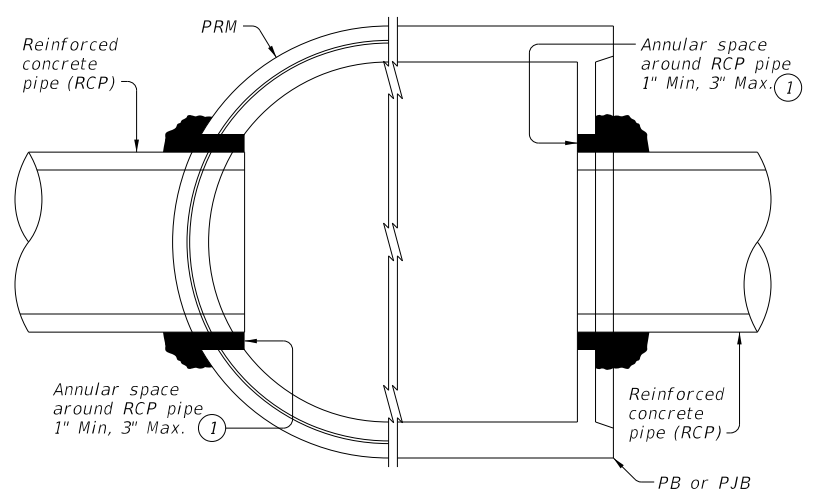
1. Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for precast base is subsidiary to the specified inlet, per Item 465, "Junction Boxes, Manholes, and Inlets."

Cover dimensions are clear dimensions, unless noted otherwise.

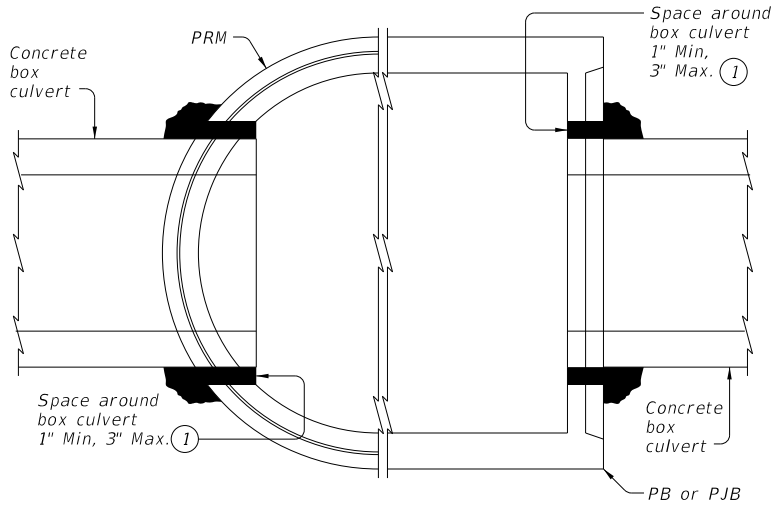
HL93 LOADING				Texas Department of Transportation		Bridge Division Standard	
<b>PRECAST BASE</b>							
<b>PB</b>							
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REVISIONS	0172	05	129	US 287			
	DIST	COUNTY	SHEET NO.				
	DAL	ELLIS	214				

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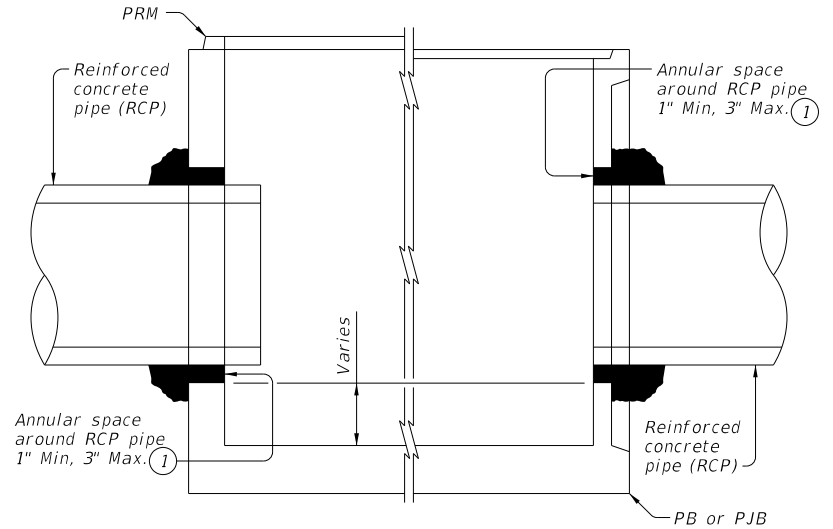
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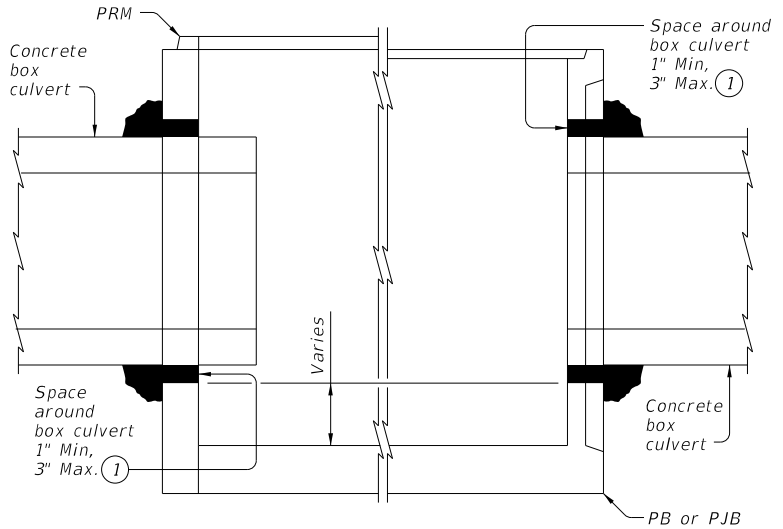
PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE  
 PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT  
TYPICAL HALF PLAN



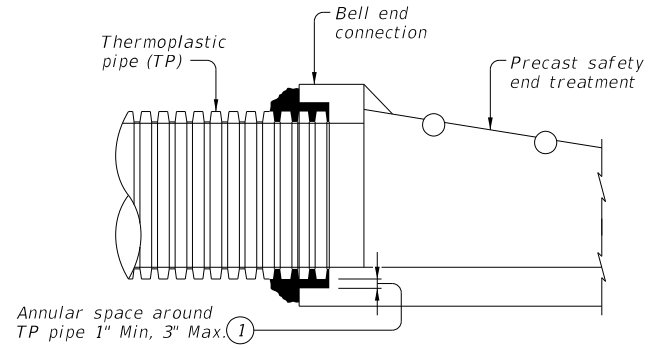
PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE  
 PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT  
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE  
 PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT  
TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE  
 PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT  
TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS  
 Showing square PSET for parallel drainage, cross drainage shown similar.

① Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application."

**CONSTRUCTION NOTES:**  
 Do not grout rubber gasket joints without Manufacturer's recommendations.  
 Do not use bricks, masonry blocks, native stone, or similar materials in conjunction with grouted connections when filling void spaces around pipes or box culverts.

**MATERIAL NOTES:**  
 Provide grouted connections in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application."

**GENERAL NOTES:**  
 See applicable standards for notes and details not shown:  
 Precast Base (PB)  
 Precast Junction Box (PJB)  
 Precast Round Manhole (PRM)  
 Precast Safety End Treatments C/D Square (PSET-SC)  
 Precast Safety End Treatments P/D Square (PSET-SP)  
 Provide Concrete Box Culverts in accordance with Item 462 "Concrete Box Culverts and Drains."  
 Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464 "Reinforced Concrete Pipe."  
 Provide Thermoplastic Pipe (TP) in accordance with Special Specification Thermoplastic Pipe.  
 Payment for grouted connections is considered subsidiary to other bid items.

				<b>Bridge Division Standard</b>	
<b>PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES</b>					
<b>PBGC</b>					
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Size	MAX DEPTH = 15 ft. to top of BASE SLAB											MAX DEPTH = 25 ft. to top of BASE SLAB											Min Height (See Gen Note 3)	Max HOLE DIA (See Fab Note 2)	Max KO DIA (See Fab Note 2)
	Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)					Base Slab			Base Unit or Riser Walls			Below Grade Slab (w/PJB) Reducing Slab (w/PB)							
	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Reduced Riser Size or ID	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness		Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness	Reduced Riser Size or ID	Short Span Reinf. Steel Area	Long Span Reinf. Steel Area	Thickness				
X x Y	Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS		Ashort	Along	BS	Bshort	Blong	W	RWSxRWL or ID	Dshort	Dlong	TS	BH MIN	HOLE DIA	KO DIA	
ft.	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	ft. **	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.		in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	ft. **	in <sup>2</sup> /ft	in <sup>2</sup> /ft	in.	ft.	in.	in.	
Precast Junction Box (PJB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	0.37	0.37	9	0.29	0.29	6	0.24	0.24	6	N/A	0.37	0.37	9	3.5	36	36	
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	0.41	0.41	9	0.47	0.47	6	0.38	0.38	6	N/A	0.41	0.41	9	4.5	48	48	
	3x5	0.29	0.18	6	0.19	0.35	6	N/A	0.48	0.48	9	0.39	0.18	6	0.23	0.59	6	N/A	0.48	0.48	9	3.5	36/60	36/60	
	4x5	0.36	0.18	6	0.22	0.34	6	N/A	0.42	0.42	9	0.53	0.26	6	0.39	0.59	6	N/A	0.42	0.42	9	4.5	48/60	48/60	
	5x5	0.36	0.36	6	0.34	0.34	6	N/A	0.43	0.43	9	0.62	0.62	6	0.59	0.59	6	N/A	0.43	0.43	9	5.5	60	60	
	5x6	0.27	0.27	9	0.34	0.45	6	N/A	0.48	0.48	9	0.47	0.45	9	0.38	0.54	8	N/A	0.48	0.48	9	5.5	60/72	60/72	
	6x6	0.27	0.27	9	0.45	0.45	6	N/A	0.56	0.56	9	0.52	0.52	9	0.54	0.54	8	N/A	0.56	0.56	9	6.5	72	72	
	8x8	0.46	0.46	9	0.51	0.51	8	N/A	0.45	0.45	12	0.87	0.87	9	0.59	0.59	10	N/A	0.45	0.45	12	8.5	96	72	
Precast Base (PB)	3x3	0.23	0.23	6	0.19	0.19	6	N/A	N/A	N/A	N/A	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	3.5	36	36	
	4x4	0.29	0.29	6	0.24	0.24	6	N/A	N/A	N/A	N/A	0.47	0.47	6	0.38	0.38	6	N/A	N/A	N/A	N/A	4.5	48	48	
	3x5	0.29	0.18	6	0.19	0.35	6	3x3	0.30	0.34	9	0.39	0.18	6	0.23	0.59	6	3x3	0.40	0.40	9	3.5	36/60	36/60	
	4x5	0.36	0.18	6	0.22	0.34	6	3x3	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	3x3	0.46	0.37	9	4.5	48/60	48/60	
	4x5	0.36	0.18	6	0.22	0.34	6	4x4	0.30	0.30	9	0.53	0.26	6	0.39	0.59	6	4x4	0.39	0.39	9	4.5	48/60	48/60	
	4x5	0.36	0.18	6	0.22	0.34	6	48"	0.39	0.39	9	0.53	0.26	6	0.39	0.59	6	48"	0.47	0.47	9	4.5	48/60	48/60	
	4x5	0.36	0.18	6	0.22	0.34	6	3x5	0.33	0.40	9	0.53	0.26	6	0.39	0.59	6	3x5	0.48	0.48	9	4.5	48/60	48/60	
	5x5	0.36	0.36	6	0.34	0.34	6	3x3	0.34	0.34	9	0.62	0.62	6	0.59	0.59	6	3x3	0.53	0.53	9	5.5	60	60	
	5x5	0.36	0.36	6	0.34	0.34	6	4x4	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	4x4	0.64	0.64	9	5.5	60	60	
	5x5	0.38	0.38	6	0.34	0.34	6	48"	0.36	0.36	9	0.62	0.62	6	0.59	0.59	6	48"	0.64	0.64	9	5.5	60	60	
	5x5	0.36	0.36	6	0.34	0.34	6	3x5	0.34	0.40	9	0.62	0.62	6	0.59	0.59	6	3x5	0.53	0.53	9	5.5	60	60	
	5x6	0.31	0.31	9	0.34	0.45	6	3x3	0.34	0.34	9	0.47	0.45	9	0.38	0.54	8	3x3	0.61	0.50	9	5.5	60/72	60/72	
	5x6	0.27	0.27	9	0.34	0.45	6	4x4	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	4x4	0.74	0.57	9	5.5	60/72	60/72	
	5x6	0.29	0.29	9	0.34	0.45	6	48"	0.36	0.45	9	0.47	0.45	9	0.38	0.54	8	48"	0.74	0.57	9	5.5	60/72	60/72	
	5x6	0.29	0.29	9	0.34	0.45	6	3x5	0.45	0.45	9	0.47	0.45	9	0.38	0.54	8	3x5	0.61	0.61	9	5.5	60/72	60/72	
	6x6	0.29	0.29	9	0.45	0.45	6	3x3	0.41	0.41	9	0.52	0.52	9	0.54	0.54	8	3x3	0.74	0.74	9	6.5	72	72	
	6x6	0.27	0.27	9	0.45	0.45	6	4x4	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	4x4	0.87	0.87	9	6.5	72	72	
	6x6	0.29	0.29	9	0.45	0.45	6	48"	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	48"	0.87	0.87	9	6.5	72	72	
	6x6	0.29	0.29	9	0.45	0.45	6	3x5	0.45	0.45	9	0.52	0.52	9	0.54	0.54	8	3x5	0.87	0.87	9	6.5	72	72	
	8x8	0.52	0.52	9	0.51	0.51	8	3x3	0.61	0.61	12	0.91	0.91	9	0.70	0.70	10	3x3	0.85	0.85	12	8.5	96	72	
8x8	0.52	0.52	9	0.51	0.51	8	4x4	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	4x4	1.01	1.01	12	8.5	96	72		
8x8	0.52	0.52	9	0.51	0.51	8	48"	0.70	0.70	12	0.87	0.87	9	0.70	0.70	10	48"	1.01	1.01	12	8.5	96	72		
8x8	0.52	0.52	9	0.51	0.51	8	3x5	0.70	0.85	12	0.87	0.87	9	0.70	0.70	10	3x5	1.01	1.01	12	8.5	96	72		

\*\* Unless otherwise indicated.

- FABRICATION NOTES:**
- Maximum spacing of reinforcement is 8".
  - At manufacturer's option, provide cast or cored holes or thin wall panels (KO) to the maximum diameter shown for each. When no penetration is required, it is acceptable to provide a wall with no sectional reduction.
- GENERAL NOTES:**
- Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PJB for details.
  - Precast Base consists of base slab, base unit, risers (as required), reducing slab (as required), and reduced risers (as required). See sheet PB for details.
  - Min Height shown is for stock base units. Use stock base units whenever practical. Smaller height base units can be used in special installation circumstances, when noted elsewhere in the plans. Absolute minimum height of base units is 2'-6".

HL93 LOADING

**Texas Department of Transportation**

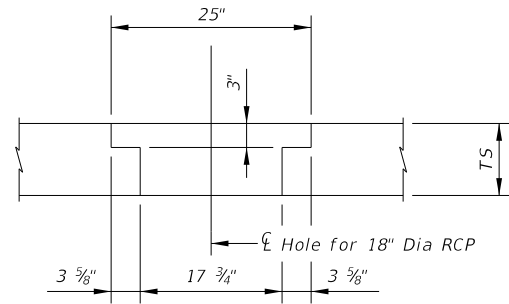
**Bridge Division Standard**

## DESIGN DATA FOR PRECAST BASE AND JUNCTION BOX

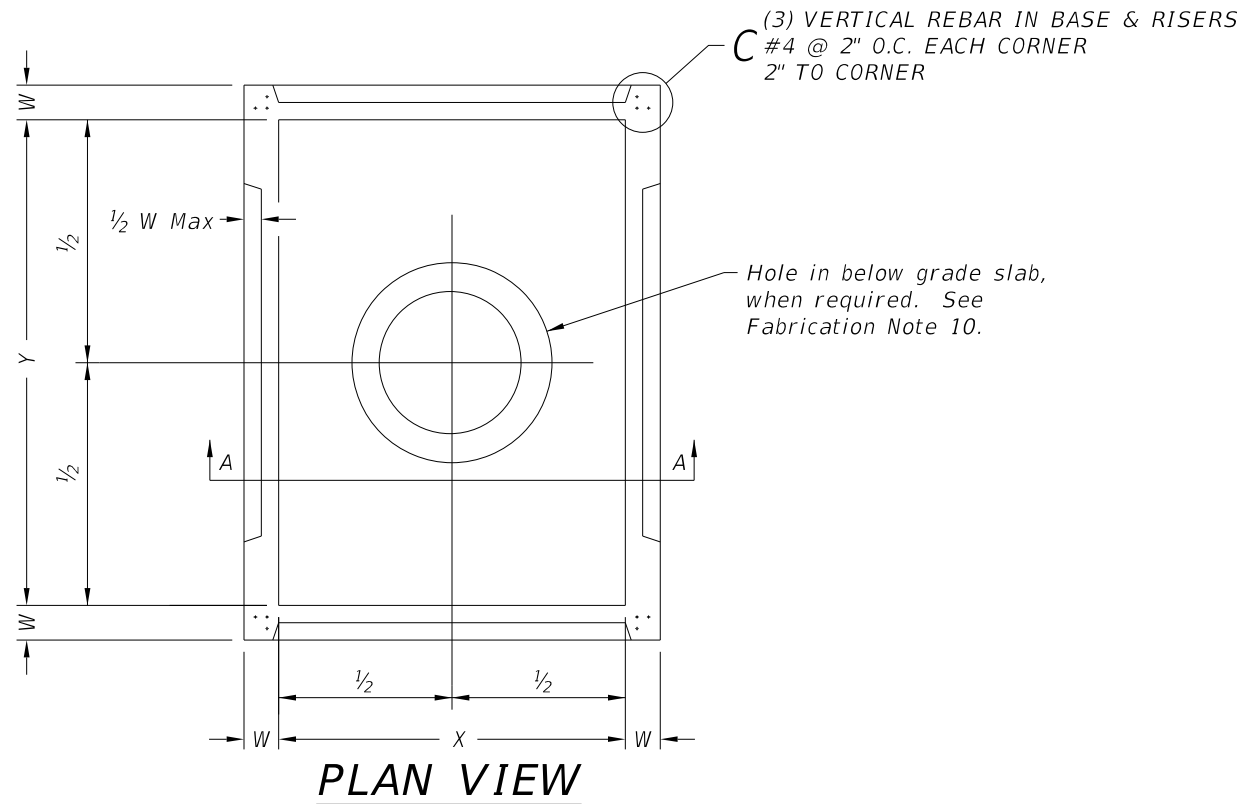
PDD

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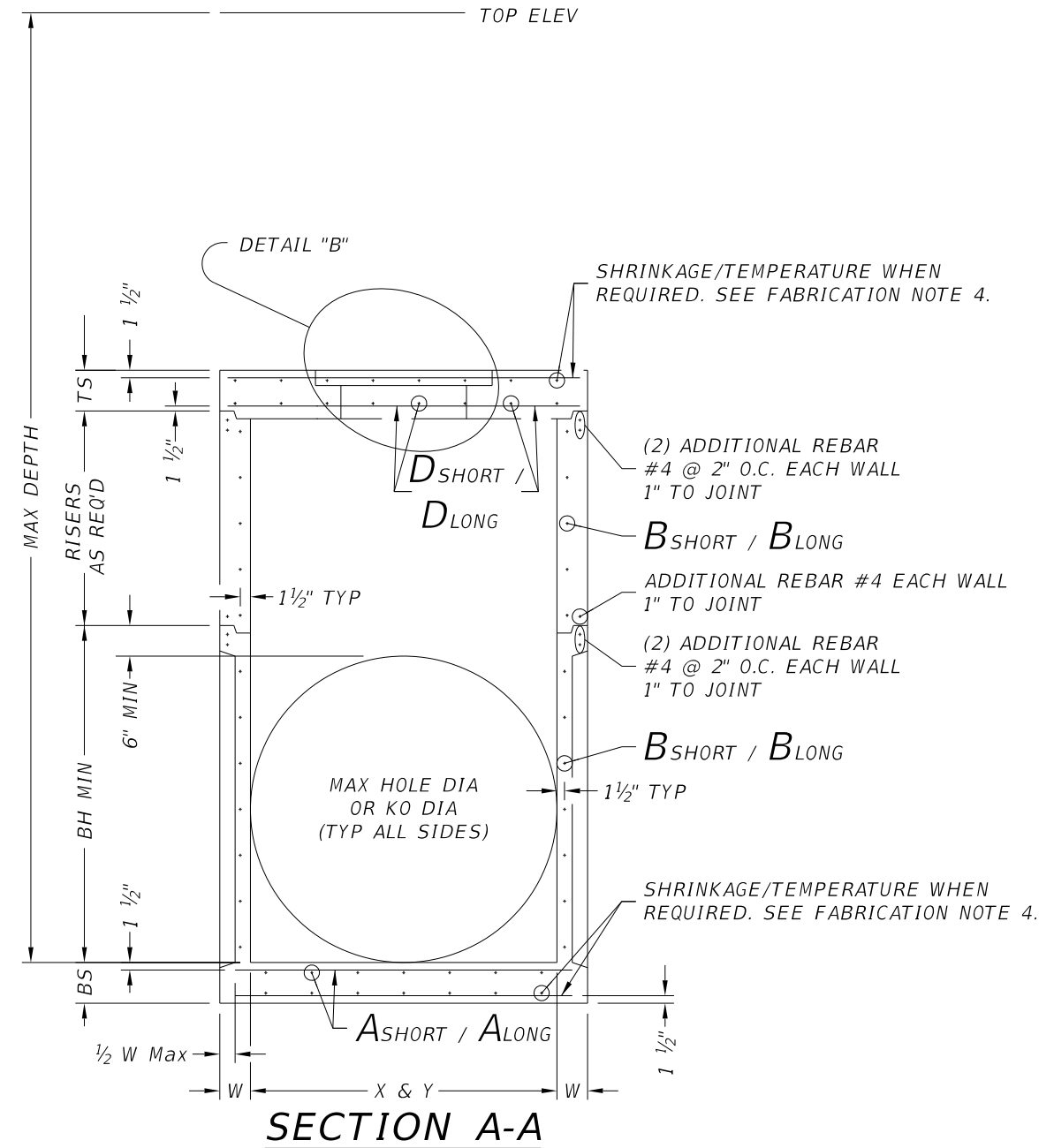
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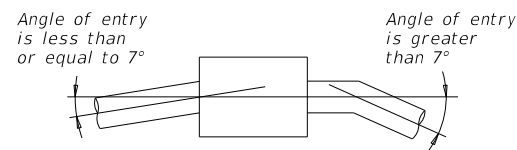
**DETAIL "B"**



**PLAN VIEW**



**SECTION A-A**



**PIPE CONNECTION DETAIL**

Connect pipes within 7° of normal to PJB wall. If necessary, use pipe elbow or curved approach alignment to stay within this limit.

**FABRICATION NOTES:**

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide typical clear cover of 1 1/2" to reinforcing steel at interior or exterior walls.
4. Walls or slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in<sup>2</sup>/ft each way.
5. No substitution is allowed for vertical and horizontal #4 bars in corners.
6. Manufacture base and risers to nearest 3" increment.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.
9. See sheet PDD for sizes, dimensions, and reinforcing steel not shown.
10. Provide hole in below grade slab only when PJB is installed with inlet type POD.

**INSTALLATION NOTES:**

1. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to junction box.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. For rigid pipe, cut hole in thin wall panel (KO) 4" Max, 2" Min larger than pipe OD.
5. For flexible pipe, consult boot/seal Manufacturer's specification for placement tolerance and hole size. Center pipe in hole and install boot/seal per Manufacturer's specification.

**GENERAL NOTES:**

1. Precast Junction Box consists of base slab, base unit, risers (as required), and below grade slab. See sheet PDD for sizes.
2. Designed according to ASTM C913.
3. Payment for junction box is per Item 465 "Junction Boxes, Manholes, and Inlets" by type and size.

Cover dimensions are clear dimensions, unless noted otherwise.

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Bridge Division Standard

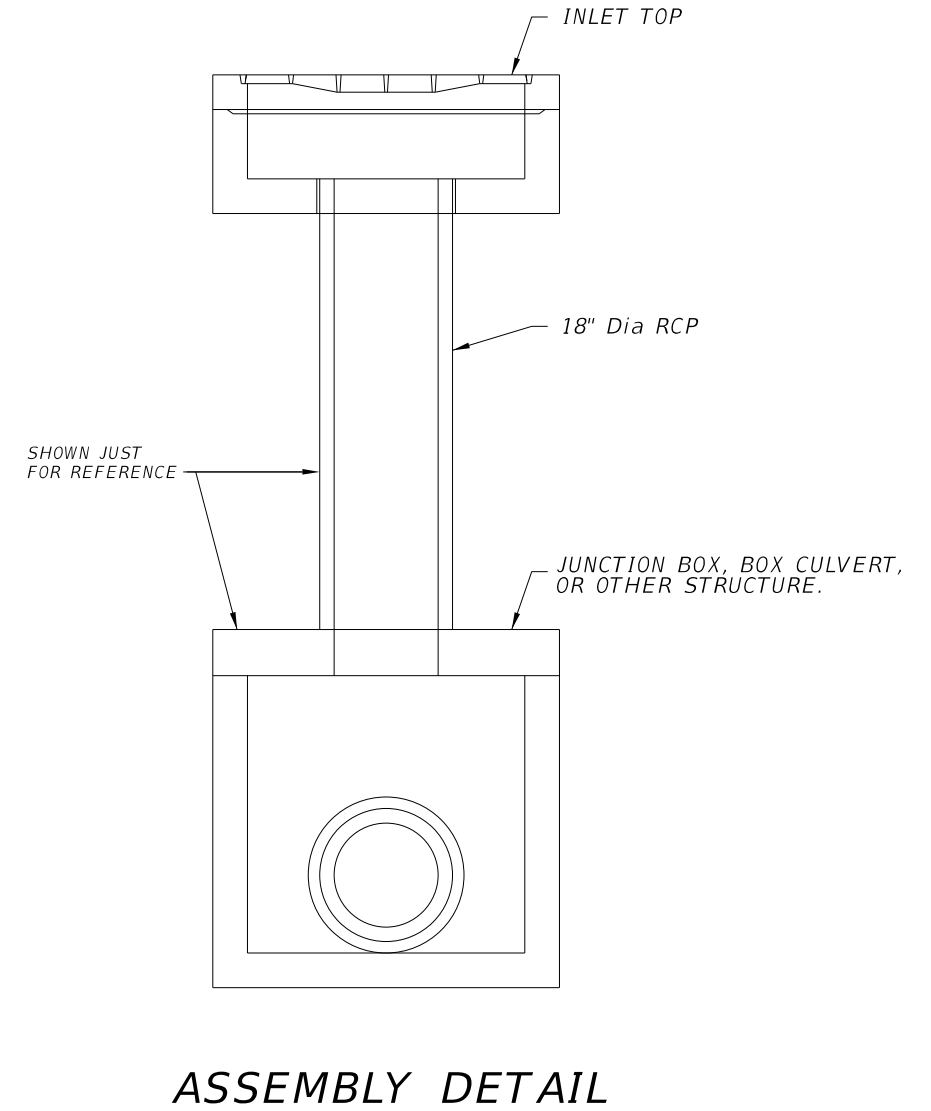
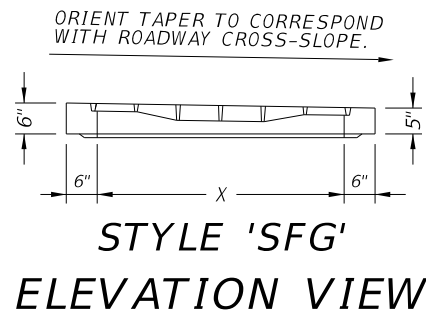
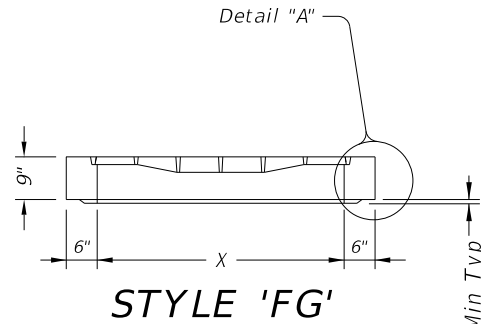
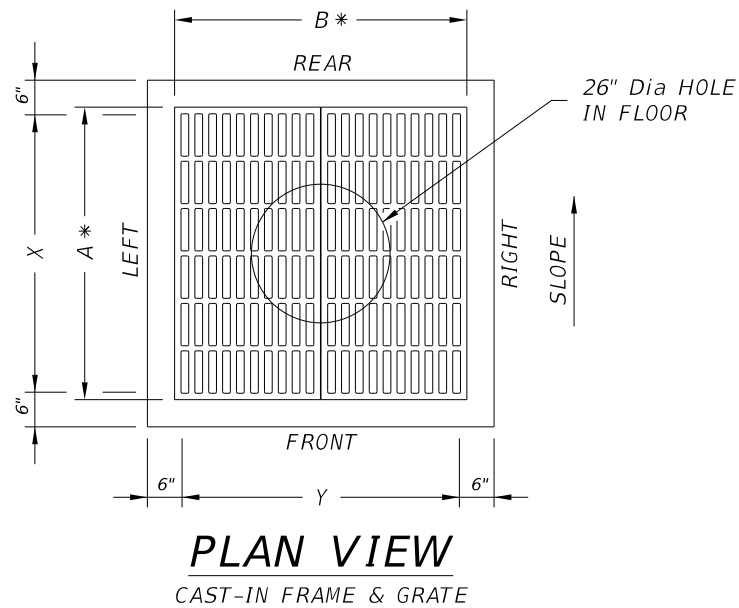
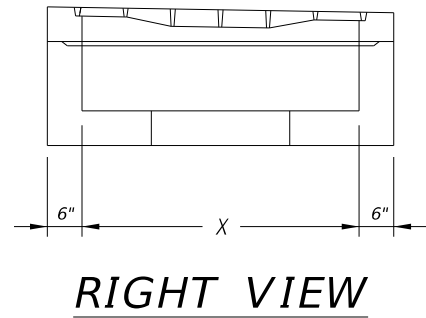
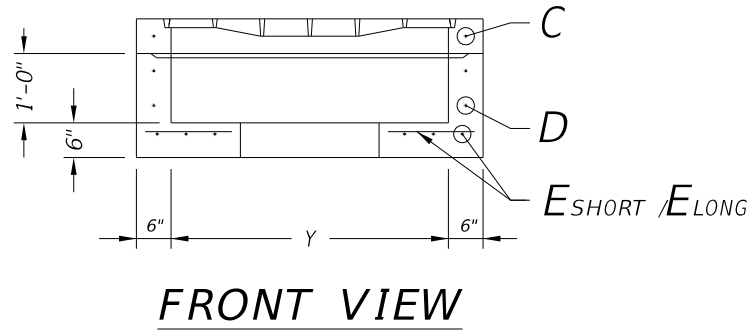
**PRECAST JUNCTION BOX**

**PJB**

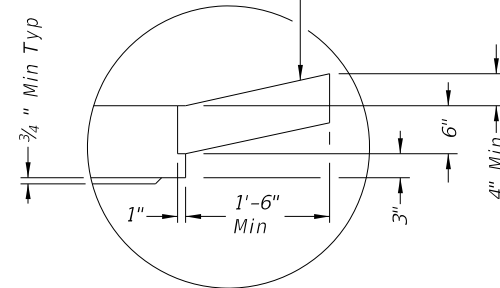
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Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to POD. Apron is 1'-6" Min width around precast overpass drain.



**FABRICATION NOTES:**

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide clear cover of 1 1/2" to reinforcing steel from inside surfaces. Place short span reinforcing steel closest to surface.
4. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
5. Provide lifting devices in conformance with Manufacturer's recommendations.
6. Place additional diagonal #4 bars, length = Dia + 4", at 1" clear cover around opening in floor.
7. Provide cast iron standard grate, unless noted otherwise elsewhere in plans.

**INSTALLATION NOTES:**

1. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendation. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
2. Do not grout rubber gasket joints without Manufacturer's recommendation.
3. Orient long dimension of grate slots perpendicular to direction of traffic, unless noted otherwise on plans.

**GENERAL NOTES:**

1. Designed according to ASTM C913.
2. Precast Overpass Drain may connect into junction box, box culvert, or other new or existing structure. See details for connecting 18" Dia RCP into structure elsewhere.
3. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, and size.

**DETAIL "A"**

(Reinforcing not shown for clarity)  
When an apron is to be cast around POD, use detail above to create an apron ledge on all 4 sides.

Style	Size (X x Y)	A x B*	C	D	E Short	E Long
FG	3'x3'	3'x3'	0.37 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft
SFG	3'x3'	3'x3'	0.32 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft
FG	4'x4'	4'x4'	0.41 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft	0.21 in <sup>2</sup> /ft	0.21 in <sup>2</sup> /ft
SFG	4'x4'	4'x4'	0.32 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft	0.21 in <sup>2</sup> /ft	0.21 in <sup>2</sup> /ft
FG	3'x5'	3'x5'	0.48 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft	0.22 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft
SFG	3'x5'	3'x5'	0.32 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft	0.22 in <sup>2</sup> /ft	0.18 in <sup>2</sup> /ft

\*Nominal frame and grate size.

HL93 LOADING



**PRECAST OVERPASS DRAIN**

**POD**

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	218	

ct:\bms\br\rdgeformr-pw\mnot-tr\ppet++\dms35322\pset-sc.dgn  
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 DATE: FILE:

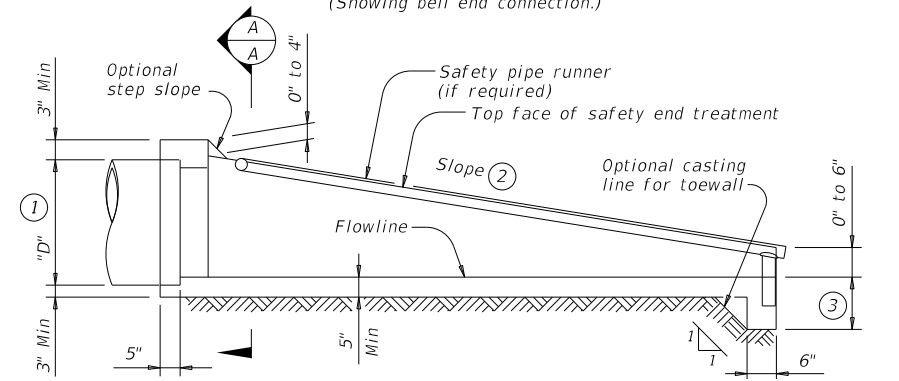
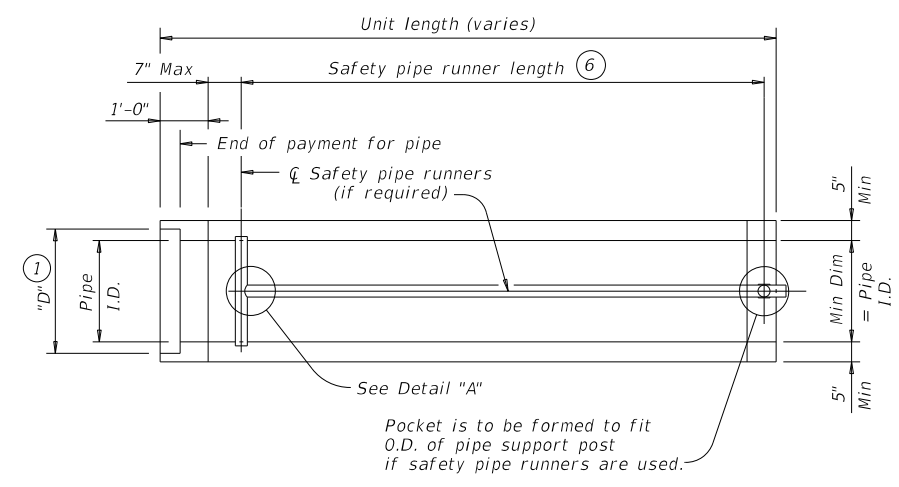
DISCLAIMER:  
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## REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

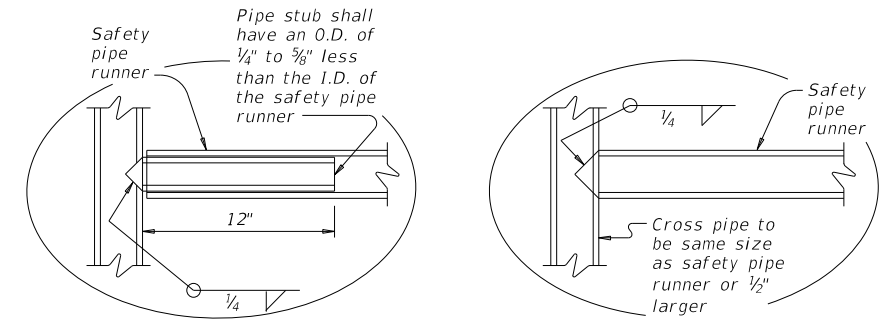
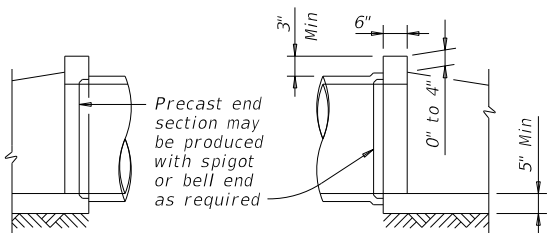
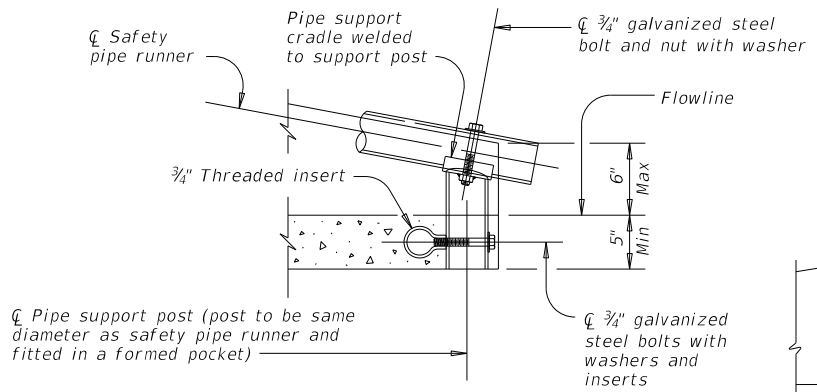
Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (8)	"D" (1)	Slope	Min Length of Unit	Single Pipe		Multiple Pipes	
						Skew	Pipe Runners Required	Skew	Pipe Runners Required
12"	2"	1.15"	17.00"	3:1	2' - 11"	≤ 45°	No	≤ 45°	No
				4:1	3' - 6"				
				6:1	4' - 9"				
15"	2 1/4"	1.30"	20.50"	3:1	3' - 8"	≤ 45°	No	≤ 45°	No
				4:1	4' - 7"				
				6:1	6' - 5"				
18"	2 1/2"	1.60"	24.00"	3:1	4' - 6"	≤ 45°	No	≤ 45°	No
				4:1	5' - 8"				
				6:1	8' - 0"				
24"	3"	1.95"	31.00"	3:1	6' - 2"	≤ 45°	No	= 30°	No
				4:1	7' - 10"				
				6:1	11' - 3"				
30"	3 1/2"	2.65"	38.50"	3:1	7' - 10"	= 15°	No	= 15°	No
				4:1	10' - 1"				
				6:1	14' - 8"				
36"	4"	2.75"	45.50"	3:1	9' - 5"	= 0°	No	≥ 0°	Yes
				4:1	12' - 3"				
				6:1	17' - 11"				
42"	4 1/2"	2.7"	52.50"	3:1	11' - 1"	≥ 0°	Yes	≥ 0°	Yes
				4:1	14' - 5"				
				6:1	21' - 2"				

## SAFETY PIPE RUNNER DIMENSIONS

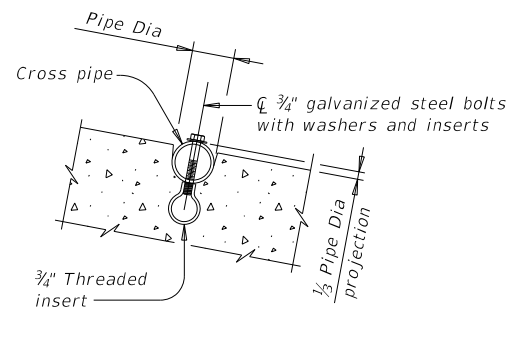
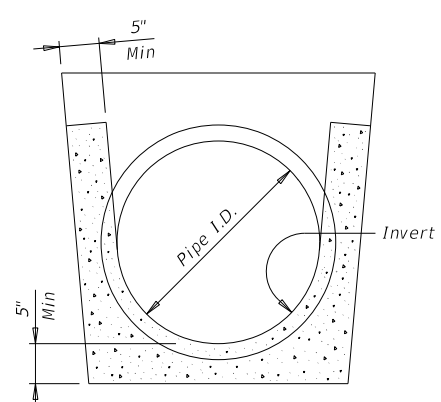
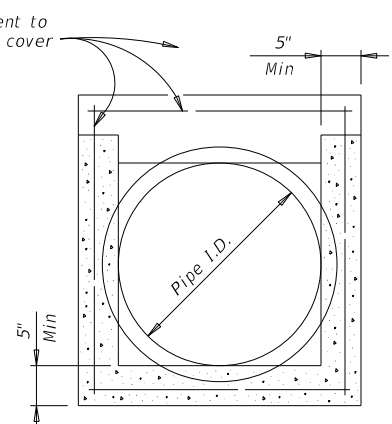
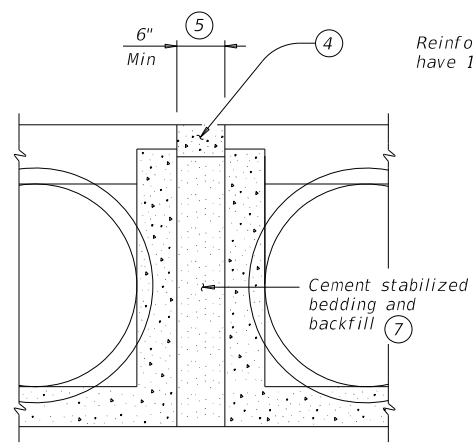
Max Safety Pipe Runner Length	Required Pipe Runner Size		
	Pipe Size	Pipe O.D.	Pipe I.D.
11' - 2"	3" STD	3.500"	3.068"
15' - 6"	3 1/2" STD	4.000"	3.548"
20' - 10"	4" STD	4.500"	4.026"
35' - 4"	5" STD	5.563"	5.047"



- ① Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.
- ② Slope as shown elsewhere in plans. Slope of 3:1 or flatter is required for vehicle safety.
- ③ Toewall to be used only when dimension is shown elsewhere in the plans.
- ④ Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."
- ⑤ Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
- ⑥ Measured along slope.
- ⑦ Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
- ⑧ Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.



**GENERAL NOTES:**  
 Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment."  
 When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.  
 Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.  
 Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below:  
 A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).  
 B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).  
 At the option and expense of the Contractor, the next larger size of safety end treatment may be furnished as long as the "D" dimension cast is that of the required size of pipe.  
 Pipe runners are designed for a traversing load of 1,800 Lbs at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.  
 Provide safety pipe runners, cross pipes, pipe support posts, and pipe stubs meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.  
 Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.  
 Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464 "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.



Texas Department of Transportation
Bridge Division Standard

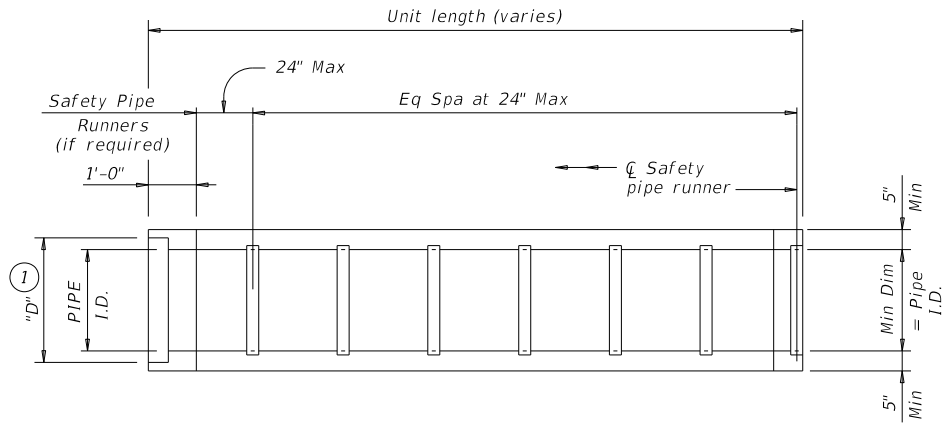
## PRECAST SAFETY END TREATMENT TYPE II ~ CROSS DRAINAGE

### PSET-SC

FILE:	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	219	

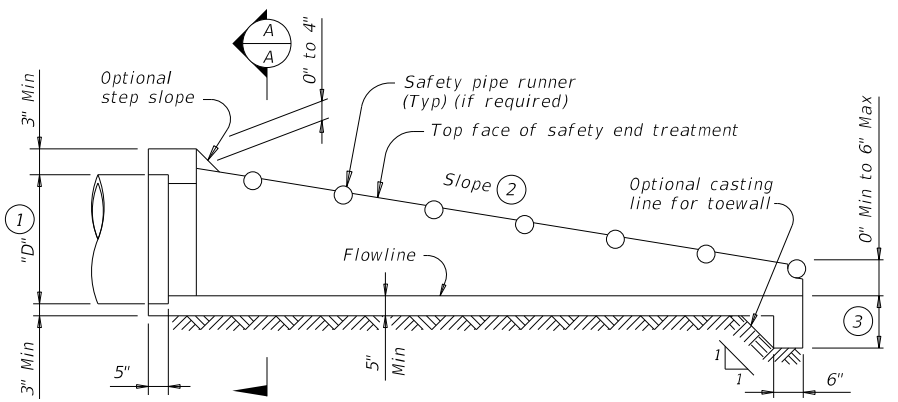
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 DATE: FILE:

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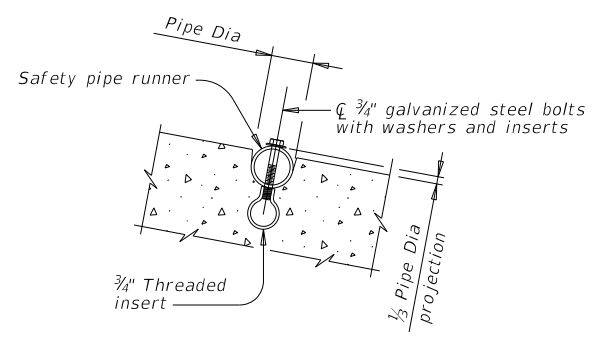
**PLAN**

(Showing bell end connection.)



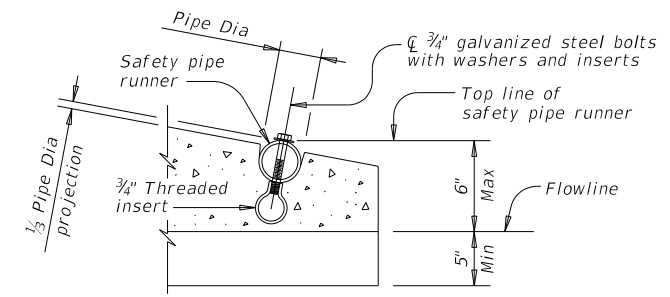
**LONGITUDINAL ELEVATION**

(Showing bell end connection.)

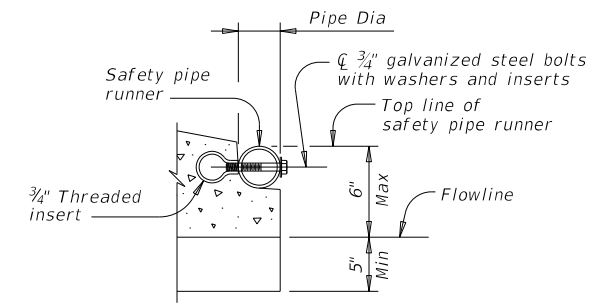


**INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS**

(If required)



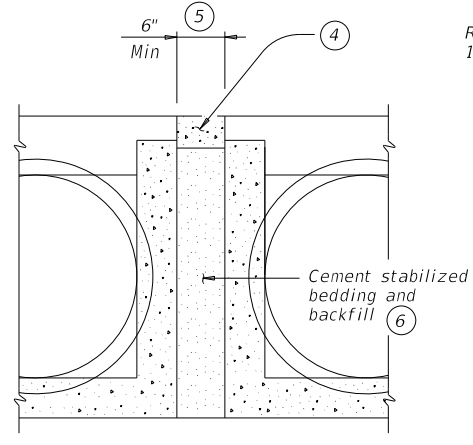
**OPTION A**



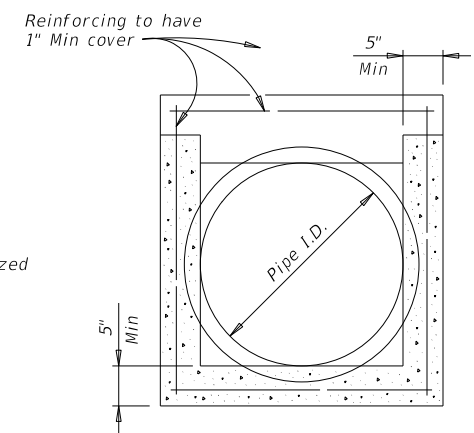
**OPTION B**

**END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS**

(If required)

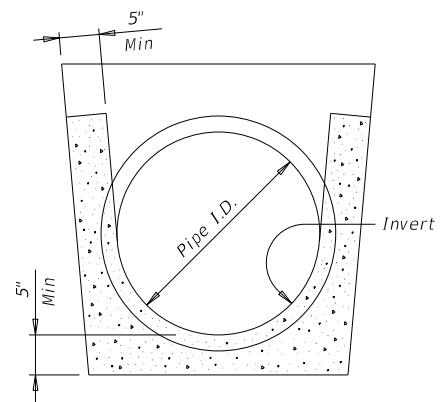


**MULTIPLE PIPE INSTALLATION**

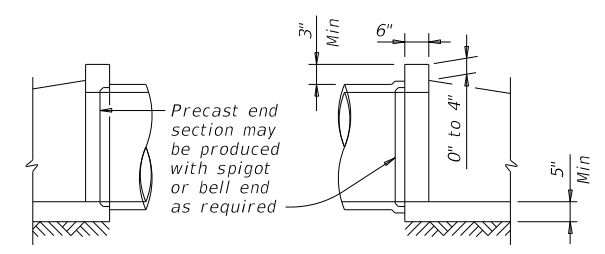


**OPTION WITH SQUARE BOTTOM**

**SECTION A-A**



**OPTION WITH INVERT BOTTOM**



**OPTIONAL JOINT FOR RCP**

(Showing joint between RCP and precast safety end treatment.)

**REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS**

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4' - 9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 1/4"	1.30"	20.50"	6:1	6' - 5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 1/2"	1.60"	24.00"	6:1	8' - 0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' - 3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 1/2"	2.65"	38.50"	6:1	14' - 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' - 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 1/2"	2.7"	52.50"	6:1	21' - 2"	Yes	Yes	4" STD	4.500"	4.026"

- Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.
- Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
- Toewall to be used only when dimension is shown elsewhere in the plans.
- Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."
- Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
- Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
- Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

**GENERAL NOTES:**

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below:

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

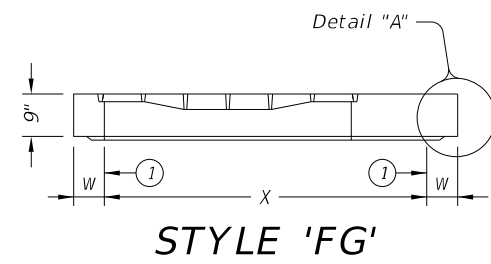


**PRECAST SAFETY END TREATMENT TYPE II ~ PARALLEL DRAINAGE**

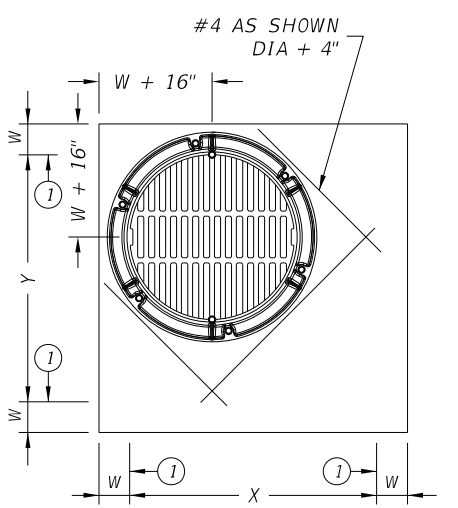
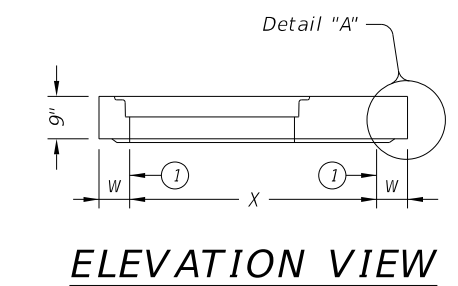
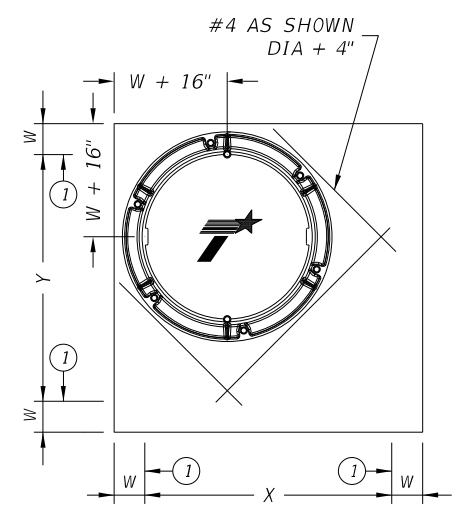
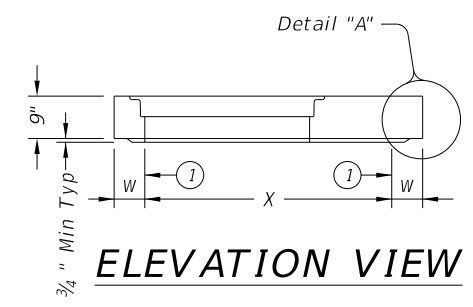
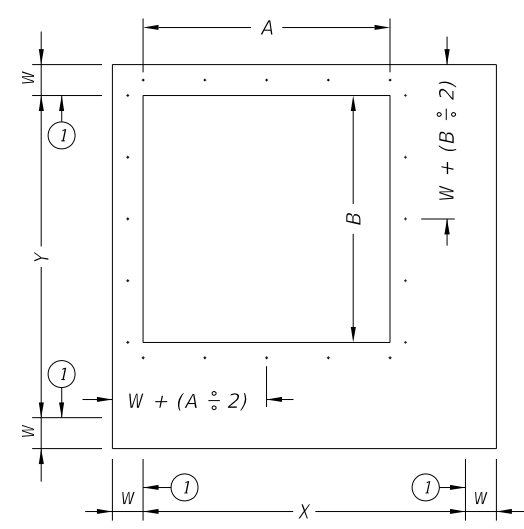
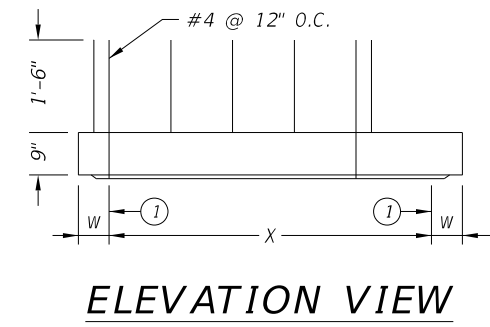
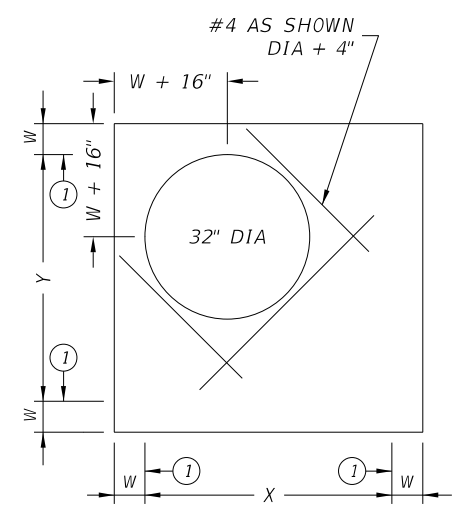
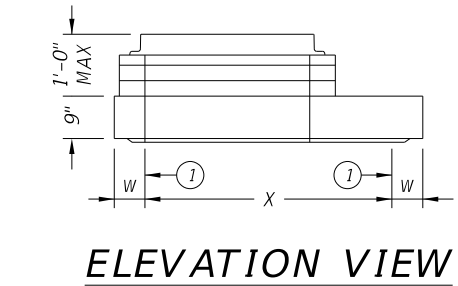
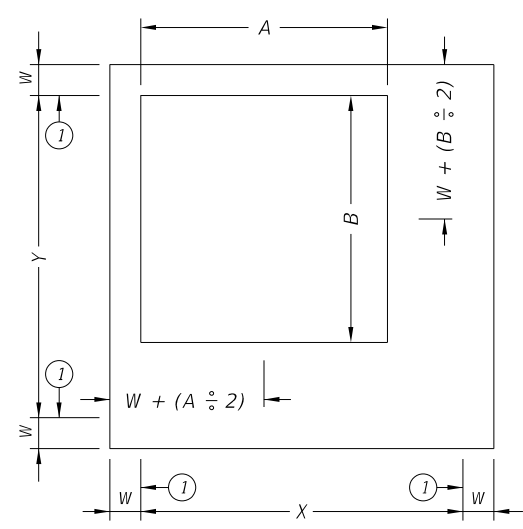
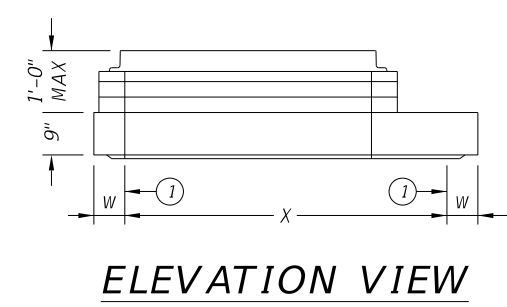
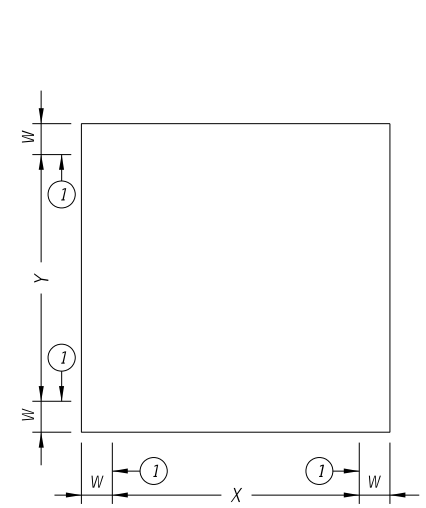
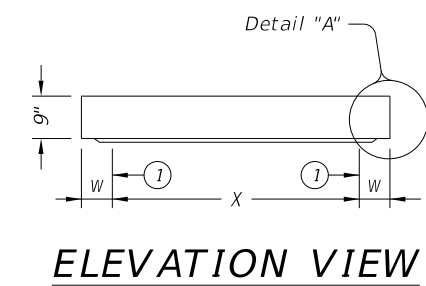
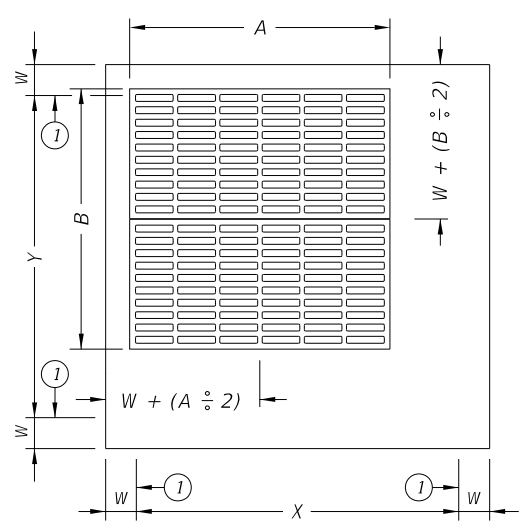
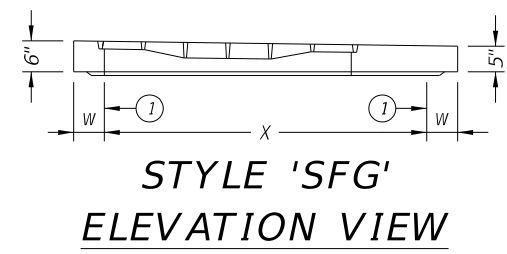
**PSET-SP**

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©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
12-21: Added 42" TP	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	220	

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ORIENT TAPER TO CORRESPOND WITH ROADWAY CROSS-SLOPE.



① Matches inside face of wall of precast base or riser below inlet.

HL93 LOADING SHEET 1 OF 2

**Texas Department of Transportation** Bridge Division Standard

**PRECAST SLAB LID**

PSL

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT 0172	SECT 05	JOB 129	HIGHWAY US 287
REVISIONS	DIST DAL	COUNTY ELLIS	SHEET NO. 221	

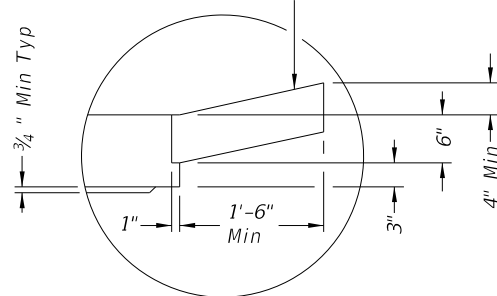
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DATE:  
FILE:

Style	Size (X x Y)	W ②	A x B (nominal)	Short Span Reinf Steel Area	Long Span Reinf Steel Area
SL	3'x3'	6"	n/a	0.37 in <sup>2</sup> /ft	0.37 in <sup>2</sup> /ft
RH,RC,RG,SH,S1,FG	3'x3'	6"	3'x3' or 32" Dia	0.37 in <sup>2</sup> /ft	0.37 in <sup>2</sup> /ft
SFG	3'x3'	6"	3'x3'	0.32 in <sup>2</sup> /ft	0.32 in <sup>2</sup> /ft
SL	4'x4'	6"	n/a	0.34 in <sup>2</sup> /ft	0.34 in <sup>2</sup> /ft
RH,RC,RG,SH,S1,FG	4'x4'	6"	3'x3' or 32" Dia	0.41 in <sup>2</sup> /ft	0.41 in <sup>2</sup> /ft
SH,S1,FG	4'x4'	6"	4'x4'	0.41 in <sup>2</sup> /ft	0.41 in <sup>2</sup> /ft
SFG	4'x4'	6"	4'x4'	0.32 in <sup>2</sup> /ft	0.32 in <sup>2</sup> /ft
SL	3'x5'	6"	n/a	0.39 in <sup>2</sup> /ft	0.39 in <sup>2</sup> /ft
RH,RC,RG,SH,S1,FG	3'x5'	6"	3'x3' or 32" Dia	0.48 in <sup>2</sup> /ft	0.48 in <sup>2</sup> /ft
SH,S1,FG	3'x5'	6"	3'x5'	0.48 in <sup>2</sup> /ft	0.48 in <sup>2</sup> /ft
SFG	3'x5'	6"	3'x5'	0.32 in <sup>2</sup> /ft	0.32 in <sup>2</sup> /ft
SL	4'x5'	6"	n/a	0.42 in <sup>2</sup> /ft	0.42 in <sup>2</sup> /ft
RH,RC,RG,SH,S1,FG	4'x5'	6"	3'x3' or 32" Dia	0.42 in <sup>2</sup> /ft	0.42 in <sup>2</sup> /ft
SH,S1,FG	4'x5'	6"	4'x4'	0.63 in <sup>2</sup> /ft	0.63 in <sup>2</sup> /ft
SH,S1,FG	4'x5'	6"	3'x5'	0.66 in <sup>2</sup> /ft	0.66 in <sup>2</sup> /ft
SL	5'x5'	6"	n/a	0.36 in <sup>2</sup> /ft	0.36 in <sup>2</sup> /ft
RH,RC,RG,SH,S1,FG	5'x5'	6"	3'x3' or 32" Dia	0.43 in <sup>2</sup> /ft	0.43 in <sup>2</sup> /ft
SH,S1,FG	5'x5'	6"	4'x4'	0.63 in <sup>2</sup> /ft	0.63 in <sup>2</sup> /ft
SH,S1,FG	5'x5'	6"	3'x5'	0.63 in <sup>2</sup> /ft	0.63 in <sup>2</sup> /ft
SL	5'x6'	6"/8"	n/a	0.48 in <sup>2</sup> /ft	0.48 in <sup>2</sup> /ft
RH,RC,RG,SH,S1,FG	5'x6'	6"/8"	3'x3' or 32" Dia	0.48 in <sup>2</sup> /ft	0.48 in <sup>2</sup> /ft
SH,S1,FG	5'x6'	6"/8"	4'x4'	0.60 in <sup>2</sup> /ft	0.60 in <sup>2</sup> /ft
SH,S1,FG	5'x6'	6"/8"	3'x5'	0.60 in <sup>2</sup> /ft	0.60 in <sup>2</sup> /ft
SL	6'x6'	6"/8"	n/a	0.43 in <sup>2</sup> /ft	0.43 in <sup>2</sup> /ft
RH,RC,RG,SH,S1,FG	6'x6'	6"/8"	3'x3' or 32" Dia	0.56 in <sup>2</sup> /ft	0.56 in <sup>2</sup> /ft
SH,S1,FG	6'x6'	6"/8"	4'x4'	0.56 in <sup>2</sup> /ft	0.56 in <sup>2</sup> /ft
SH,S1,FG	6'x6'	6"/8"	3'x5'	0.59 in <sup>2</sup> /ft	0.59 in <sup>2</sup> /ft
SL	8'x8'	8"/10"	n/a	0.45 in <sup>2</sup> /ft	0.45 in <sup>2</sup> /ft
RH,RC,RG,SH,S1,FG	8'x8'	8"/10"	3'x3' or 32" Dia	0.45 in <sup>2</sup> /ft	0.45 in <sup>2</sup> /ft
SH,S1,FG	8'x8'	8"/10"	4'x4'	0.45 in <sup>2</sup> /ft	0.45 in <sup>2</sup> /ft
SH,S1,FG	8'x8'	8"/10"	3'x5'	0.45 in <sup>2</sup> /ft	0.45 in <sup>2</sup> /ft

② See sheet PDD for corresponding wall thickness (W) of base unit or riser.

Construct cast-in-place reinforced concrete apron, when shown elsewhere in plans. Use Class "A" concrete. Apron is subsidiary to PSL. Apron is 1'-6" Min width around precast zone drain.



**DETAIL "A"**

(Reinforcing not shown for clarity)  
When an apron is to be cast around PSL, use detail above to create an apron ledge on all 4 sides.

**FABRICATION NOTES:**

1. Locate penetration (Style 'RH'), ring and cover (Style 'RC'), ring and grate (Style 'RG'), and frame and grate (Style 'FG') in a corner. Only one penetration is allowed per slab lid.
2. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
3. Provide Grade 60 reinforcing steel or equivalent area of WWR.
4. Provide clear cover of 3/4" to reinforcing from lower outside shoulder of slab for structural reinforcement, and 2" from top of slab for shrinkage and temperature reinforcement. Place short span reinforcing closest to surface.
5. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing. Provide steel area = 0.11 in<sup>2</sup>/ft each way.
6. No substitution is allowed for diagonal #4 bars around openings.
7. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is 3/4".
8. Provide lifting devices in conformance with Manufacturer's recommendations.

**INSTALLATION NOTES:**

1. Precast slab lids are intended for direct traffic and may be placed in roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or 1/2 the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.
4. Initial installation of grade adjustment rings for Styles 'RH' and 'SH' is limited to 1'-0" Max as shown.
5. Grade adjustment rings for Styles 'RH' and 'SH' may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments can be made up to Max depth shown on sheet PDD. Structure must be evaluated if Max depth will be exceeded.
6. Orient long dimension of grate slots perpendicular to traffic, unless noted otherwise on plans.

**GENERAL NOTES:**

1. Designed according to ASTM C913.
2. Payment for lid is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

SHEET 2 OF 2



Bridge Division Standard

**PRECAST SLAB LID**

**PSL**

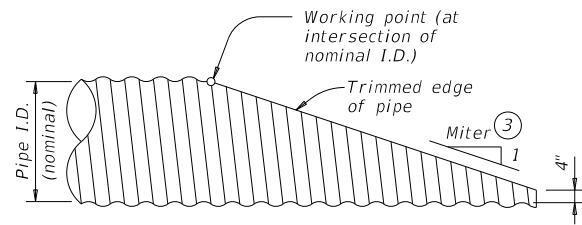
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## CROSS PIPE LENGTHS AND PIPE RUNNER LENGTHS ①②

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length											
			3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
			0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
24"	1' - 7"	3' - 5"	N/A	N/A	N/A	5' - 10"	N/A	N/A	N/A	8' - 1"	N/A	N/A	N/A	12' - 9"
27"	1' - 8"	3' - 8"	N/A	N/A	5' - 5"	6' - 11"	N/A	N/A	7' - 7"	9' - 7"	N/A	N/A	11' - 11"	14' - 11"
30"	1' - 10"	3' - 11"	N/A	N/A	6' - 4"	8' - 0"	N/A	N/A	8' - 9"	11' - 0"	N/A	N/A	13' - 8"	17' - 0"
33"	1' - 11"	4' - 2"	6' - 2"	6' - 5"	7' - 3"	9' - 1"	8' - 6"	8' - 10"	10' - 0"	12' - 5"	13' - 3"	13' - 9"	15' - 5"	19' - 2"
36"	2' - 1"	4' - 5"	6' - 11"	7' - 3"	8' - 2"	10' - 2"	9' - 6"	9' - 11"	11' - 2"	13' - 10"	14' - 9"	15' - 3"	17' - 2"	21' - 3"
42"	2' - 4"	4' - 11"	8' - 6"	8' - 10"	9' - 11"	12' - 4"	11' - 7"	12' - 0"	13' - 6"	16' - 8"	17' - 9"	18' - 5"	20' - 8"	25' - 7"
48"	2' - 7"	5' - 5"	10' - 1"	10' - 5"	11' - 9"	N/A	13' - 7"	14' - 2"	15' - 10"	N/A	20' - 9"	21' - 6"	24' - 2"	N/A
54"	3' - 0"	5' - 11"	11' - 8"	12' - 1"	N/A	N/A	15' - 8"	16' - 3"	N/A	N/A	23' - 10"	24' - 8"	N/A	N/A
60"	3' - 3"	6' - 5"	13' - 3"	N/A	N/A	N/A	17' - 9"	N/A	N/A	N/A	26' - 10"	N/A	N/A	N/A



NOTE: All pipe runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

### SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert. Details of reinforced concrete pipe (RCP) culvert are similar.)

### TYPICAL PIPE CULVERT MITERS ③

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

### CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED ②

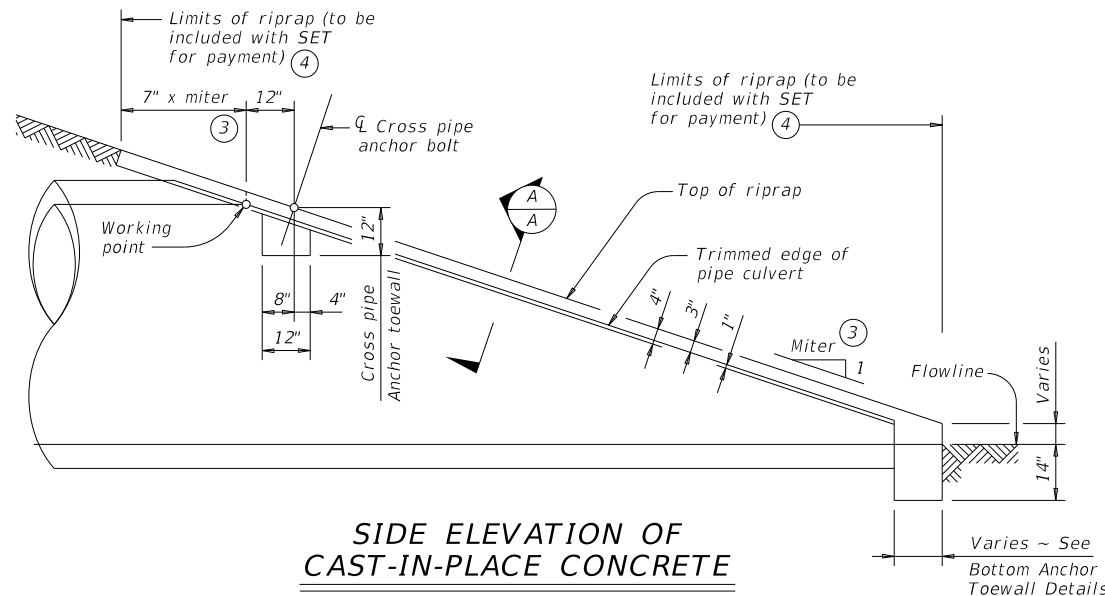
Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (no skew)	Always required
42" thru 60"	Always required	Always required

### STANDARD PIPE SIZES AND MAX PIPE RUNNER LENGTHS ①

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10' - 0"
4" STD	4.500"	4.026"	19' - 8"
5" STD	5.563"	5.047"	34' - 2"

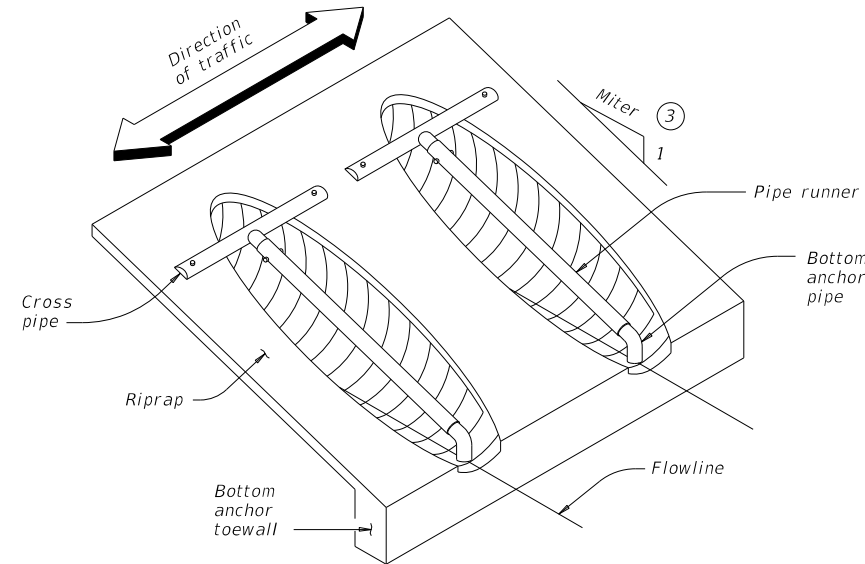
### ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) ⑤

Nominal Culvert I.D.	3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A



### SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details of corrugated metal pipe (CMP) culvert are similar. Pipe runners not shown for clarity)



### ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

① Provide pipe runner of the size shown in the tables. Provide cross pipe of the same size as the pipe runner. Provide cross pipe stub out and bottom anchor pipe of the next smaller size pipe as shown in the Standard Pipe Sizes and Max Pipe Runner Lengths table.

② This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

- For 60" culvert pipes, the skew must not exceed 0°.
- For 54" culvert pipes, the skew must not exceed 15°.
- For 48" culvert pipes, the skew must not exceed 30°.
- For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT Roadway Design Manual.

③ Miter = slope of mitered end of pipe culvert.

④ Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap."

⑤ Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

SHEET 1 OF 2



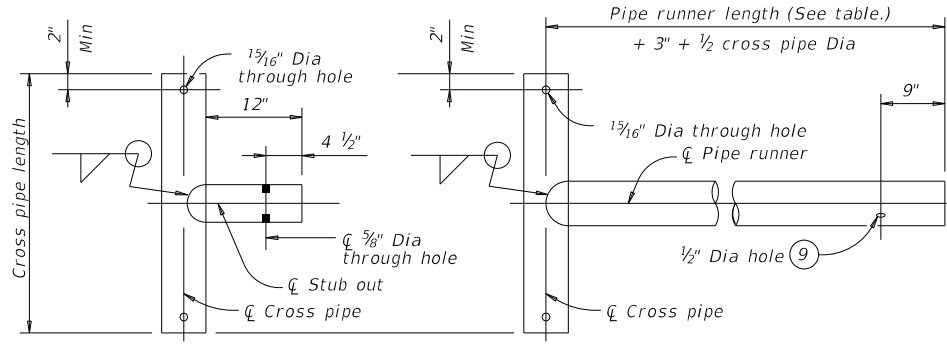
## SAFETY END TREATMENT FOR 12" DIA TO 60" DIA PIPE CULVERTS TYPE II ~ CROSS DRAINAGE

### SETP-CD

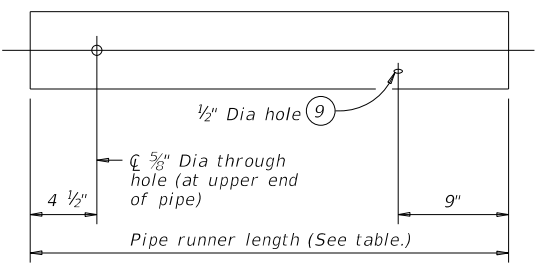
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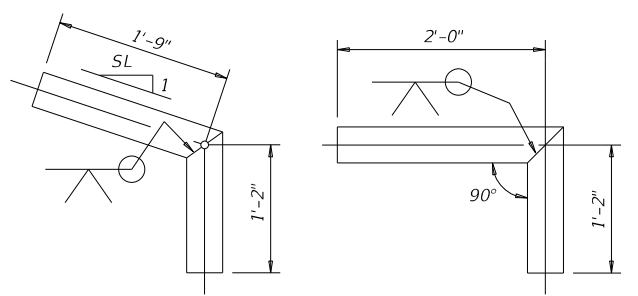


OPTION A1      OPTION A2  
**CROSS PIPE AND CONNECTIONS DETAILS**

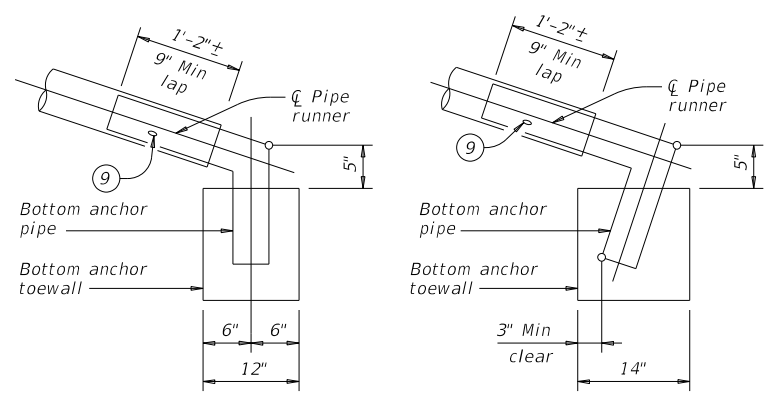


NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

**PIPE RUNNER DETAILS**



OPTION B1      OPTION B2  
**BOTTOM ANCHOR PIPE DETAILS** ⑩

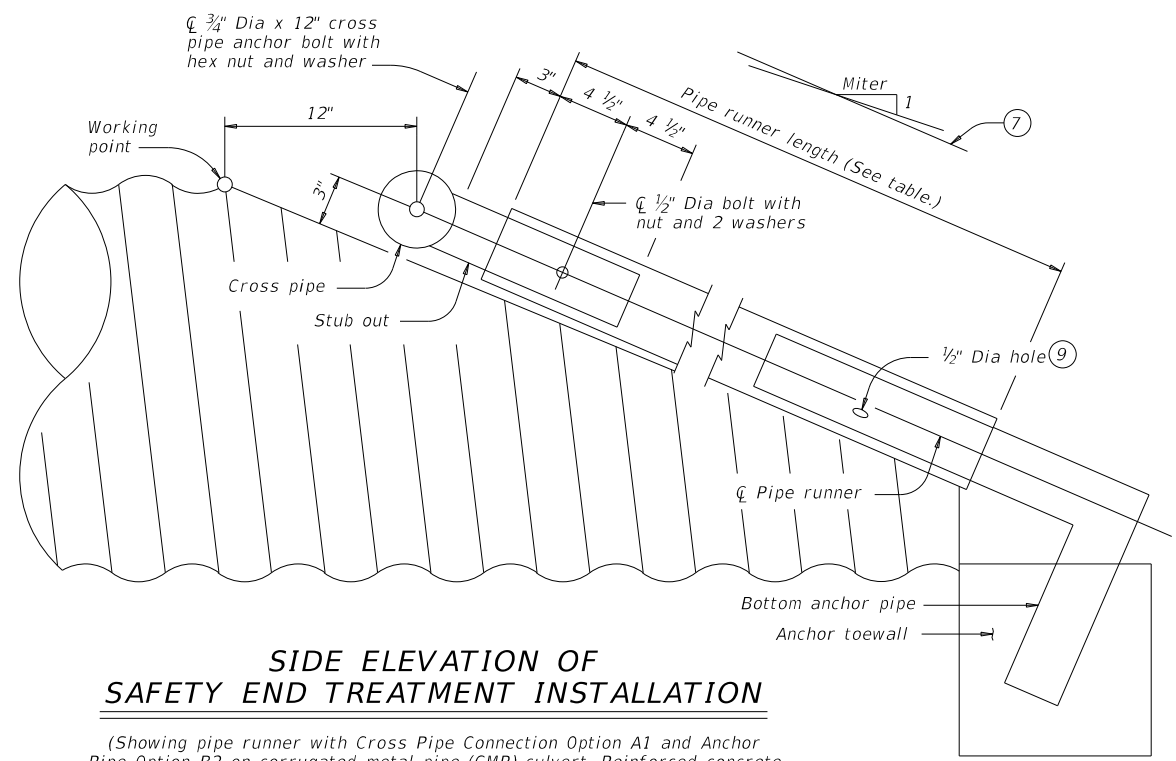


OPTION B1      OPTION B2  
**BOTTOM ANCHOR TOEWALL DETAILS**

(Culvert and riprap not shown for clarity.)

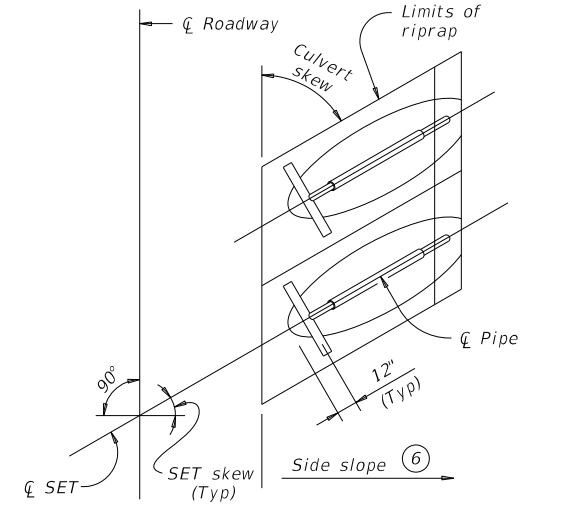
**MATERIAL NOTES:**  
 Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.  
 Provide pipe runners, cross pipes, and anchor pipes conforming to the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.  
 Provide ASTM A307 bolts and nuts.  
 Galvanize all steel components, except concrete reinforcing, after fabrication.  
 Repair galvanizing damaged during transport or construction in accordance with the specifications.

**GENERAL NOTES:**  
 Pipe runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.  
 Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.  
 Payment for riprap and toewall is included in the price bid for each safety end treatment.  
 Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap."

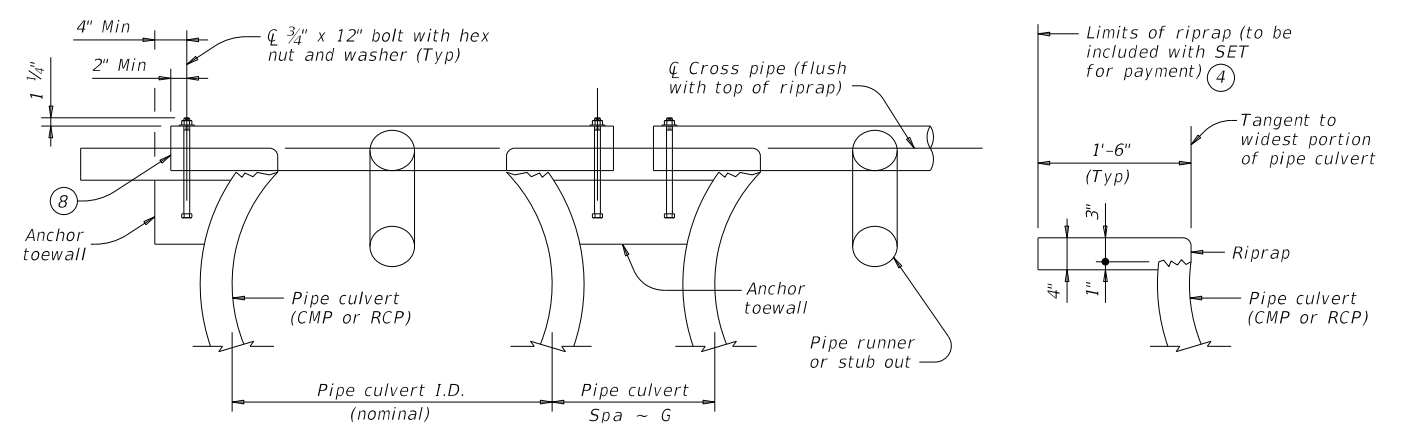


**SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION**

(Showing pipe runner with Cross Pipe Connection Option A1 and Anchor Pipe Option B2 on corrugated metal pipe (CMP) culvert. Reinforced concrete pipe culvert (RCP) details are similar. Riprap not shown for clarity)



**PLAN OF SKEWED INSTALLATION**



**SECTION A-A**

**SHOWING TYPICAL PIPE CULVERT AND RIPRAP**

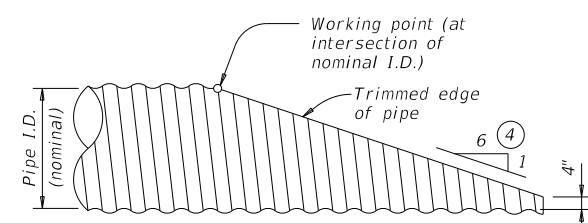
**SECTION A-A**



**SAFETY END TREATMENT FOR 12" DIA TO 60" DIA PIPE CULVERTS TYPE II ~ CROSS DRAINAGE SETP-CD**

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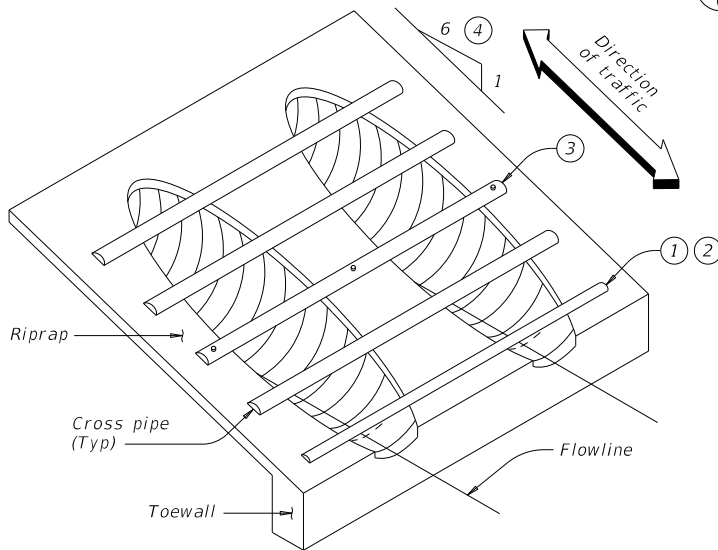
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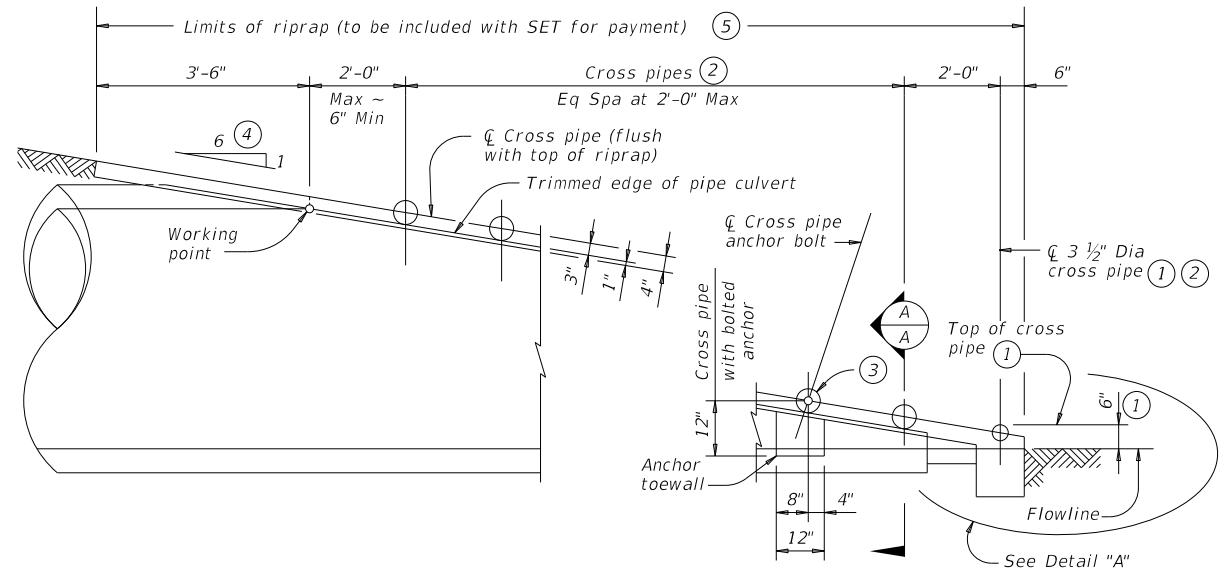
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

**SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER**

(Showing corrugated metal pipe (CMP) culvert. Details at reinforced concrete pipe (RCP) culvert are similar.)

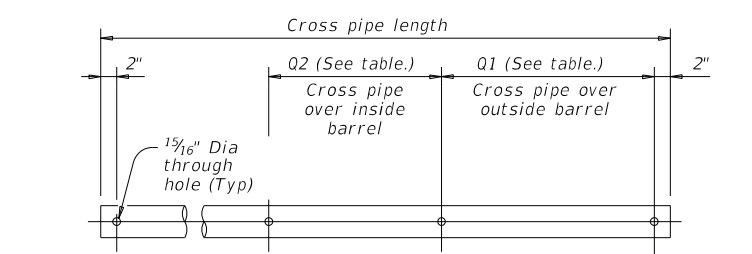


**ISOMETRIC VIEW OF TYPICAL INSTALLATION**

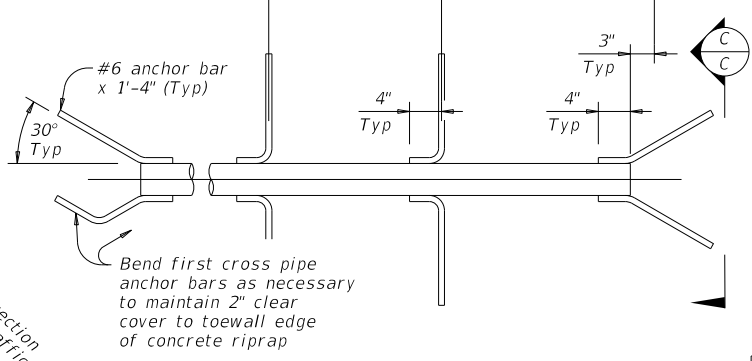


**SIDE ELEVATION OF CAST-IN-PLACE CONCRETE**

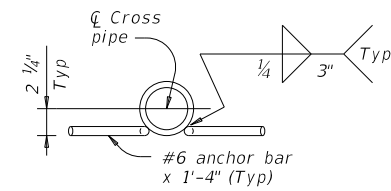
(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



**PIPE WITH BOLTED ANCHOR**

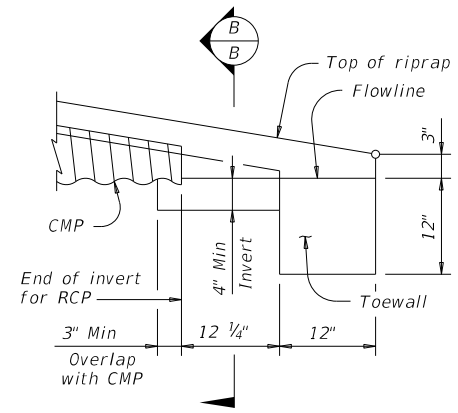


**PIPE WITH ANCHOR BARS**



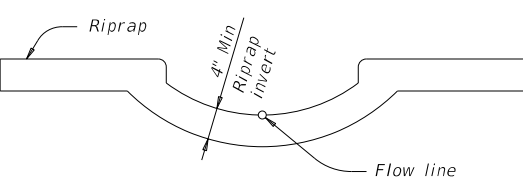
**SECTION C-C**

**CROSS PIPE DETAILS**



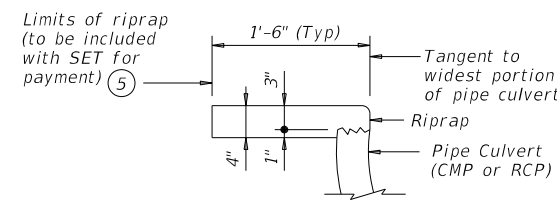
**DETAIL "A"**

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)

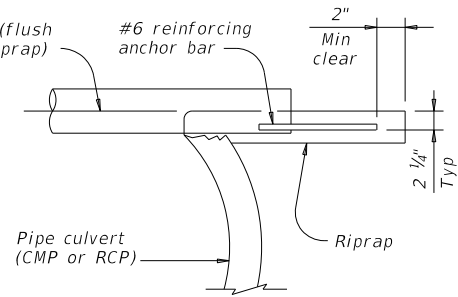


**SECTION B-B**

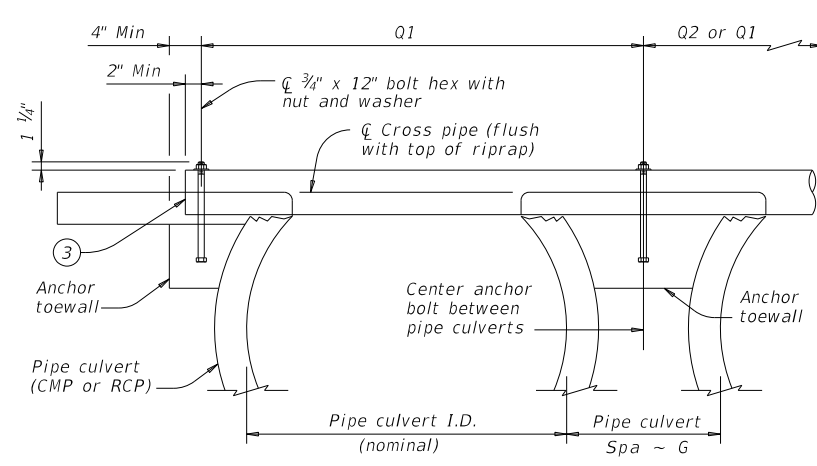
(Cross pipes not shown for clarity.)



**SHOWING TYPICAL PIPE CULVERT AND RIPRAP**



**SHOWING CROSS PIPE WITH ANCHOR BAR**



**SHOWING CROSS PIPE WITH BOLTED ANCHOR**

**SECTION A-A**

**CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES**

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0' - 9"	N/A	2' - 1"	1' - 9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0' - 11"	N/A	2' - 5"	2' - 2"		
18"	0.8	1' - 2"	N/A	2' - 10"	2' - 8"		
21"	0.9	1' - 4"	N/A	3' - 2"	3' - 1"		
24"	0.9	1' - 7"	N/A	3' - 6"	3' - 7"	3 or more pipe culverts	3 1/2" Std (4.000" O.D.)
27"	1.0	1' - 8"	N/A	3' - 10"	3' - 11"		
30"	1.1	1' - 10"	N/A	4' - 2"	4' - 4"	2 or more pipe culverts	4" Std (4.500" O.D.)
33"	1.2	1' - 11"	4' - 2"	4' - 5"	4' - 8"	All pipe culverts	
36"	1.3	2' - 1"	4' - 5"	4' - 9"	5' - 1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2' - 4"	4' - 11"	5' - 5"	5' - 10"		
48"	1.7	2' - 7"	5' - 5"	6' - 0"	6' - 7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3' - 0"	5' - 11"	6' - 9"	7' - 6"		
60"	2.2	3' - 3"	6' - 5"	7' - 4"	8' - 3"		
66"	2.4	3' - 3"	6' - 11"	7' - 10"	8' - 9"		
72"	2.7	3' - 4"	7' - 5"	8' - 5"	9' - 4"		

- The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.
- Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1/2" standard pipe (4" O.D.) for the first bottom pipe.
- Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.
- Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.
- Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap."
- Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

**MATERIAL NOTES:**

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise. Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 (Gr B), or API 5LX52. Provide ASTM A307 bolts and nuts. Galvanize all steel components, except concrete reinforcing, after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

**GENERAL NOTES:**

Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981. Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes. Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap." Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

**Bridge Division Standard**

**SAFETY END TREATMENT FOR 12" DIA TO 72" DIA PIPE CULVERTS TYPE II ~ PARALLEL DRAINAGE SETP-PD**

FILE: 0172 05	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TXDOT February 2020 REVISIONS	CONT SECT	JOB	HIGHWAY	
	05	129	US 287	
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	225	



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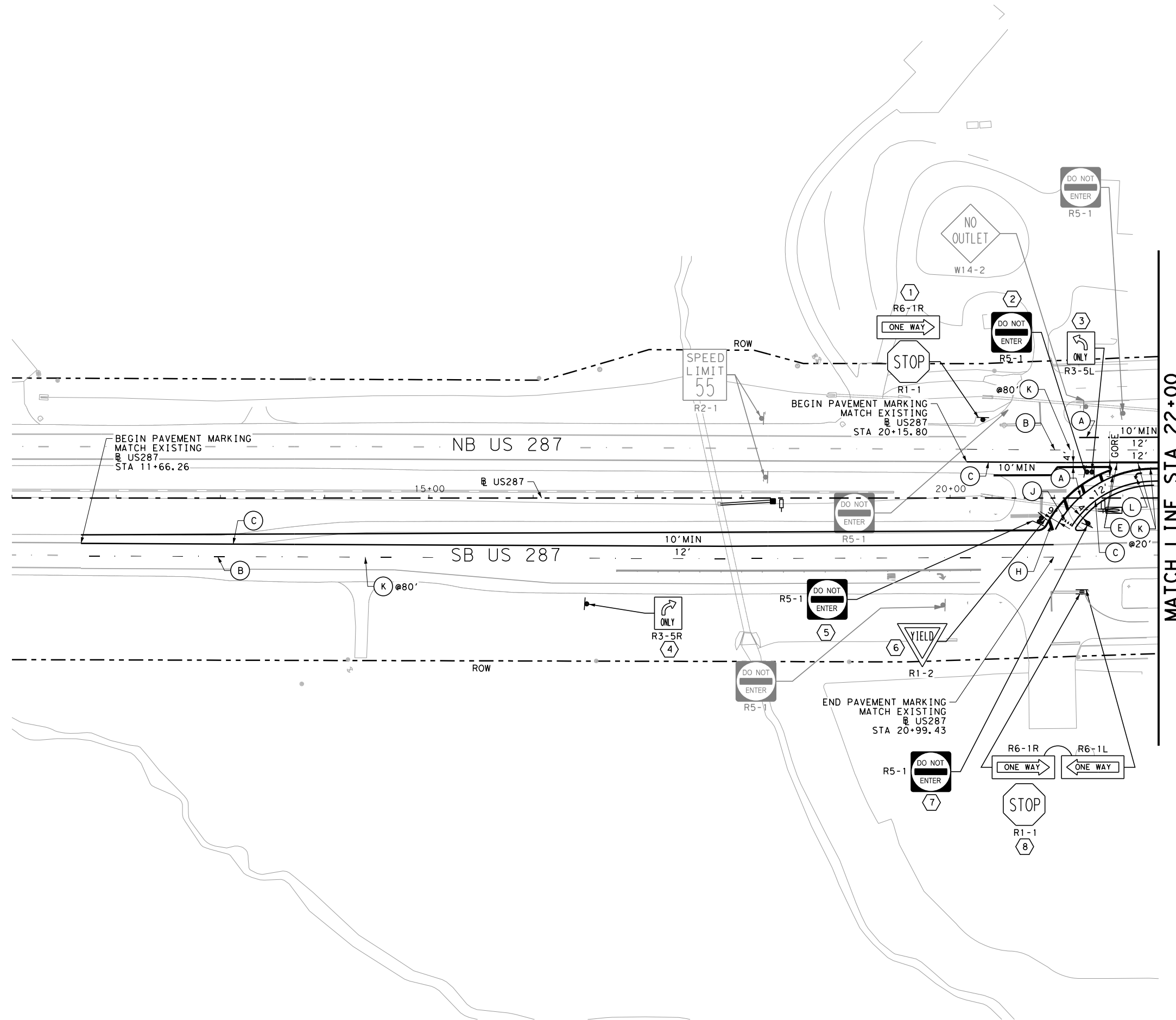
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50 0 50 100  
SCALE: 1" = 100'

### LEGEND

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



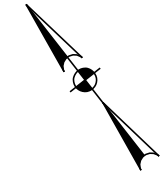
**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
BEGIN PROJECT TO STA 22+00**

SCALE: 1" = 100' SHEET 1 OF 20

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GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			

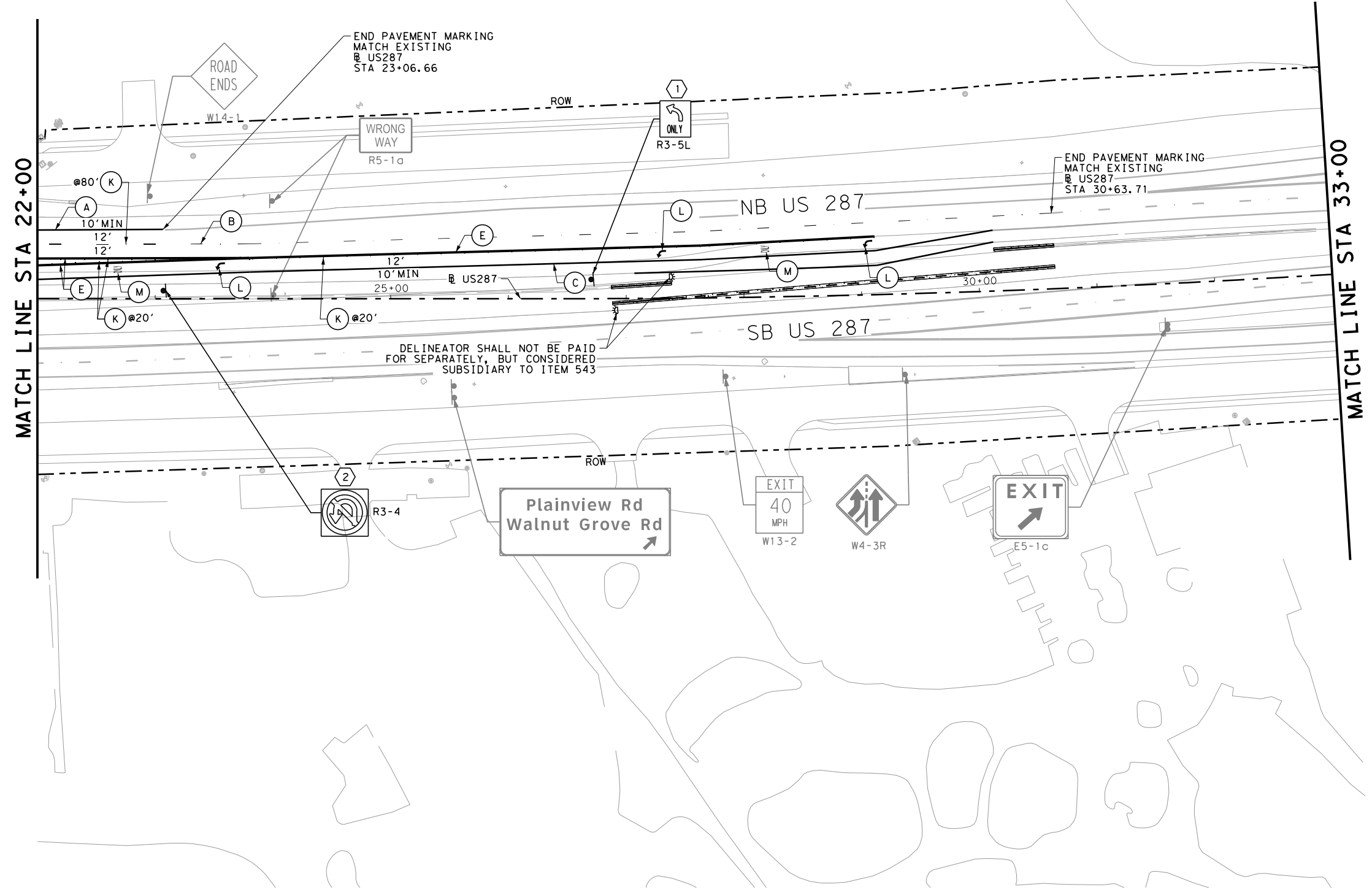
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50 0 50 100  
SCALE: 1" = 100'



**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- REFL PAV MRK TY I (W) (6") (DOT)
- REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- (XX) PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

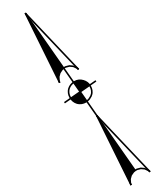
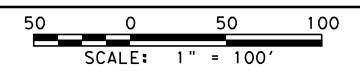


**US 287**  
**PROPOSED SIGNING &**  
**PAVEMENT MARKING PLAN**  
**STA 22+00 TO STA 33+00**

SCALE: 1" = 100' SHEET 2 OF 20

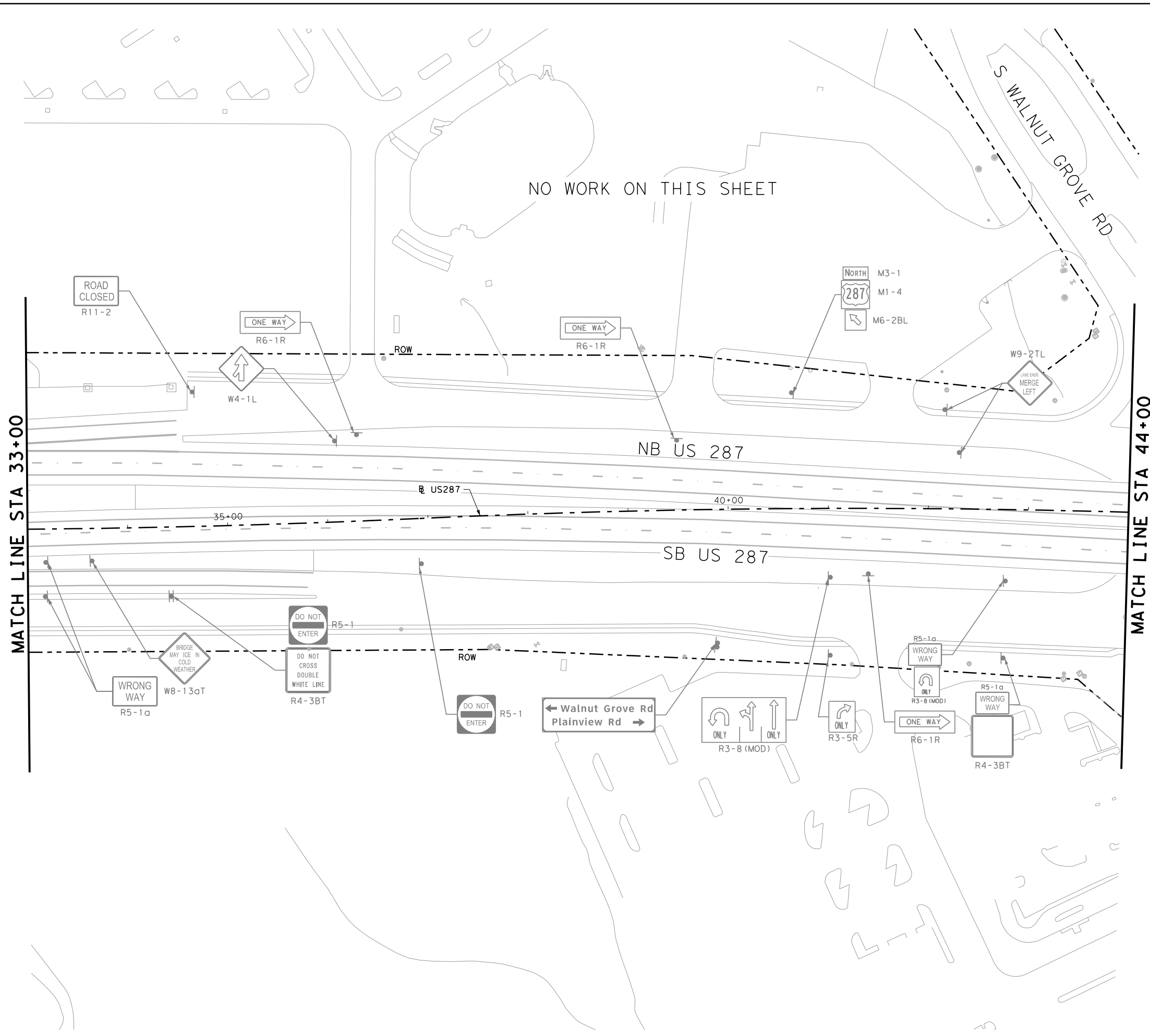
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CHECK CPM	CONTROL 0172	SECTION 05	JOB 129	

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**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264



**US 287**  
**PROPOSED SIGNING &**  
**PAVEMENT MARKING PLAN**  
**STA 33+00 TO STA 44+00**

SCALE: 1" = 100' SHEET 3 OF 20

DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO.
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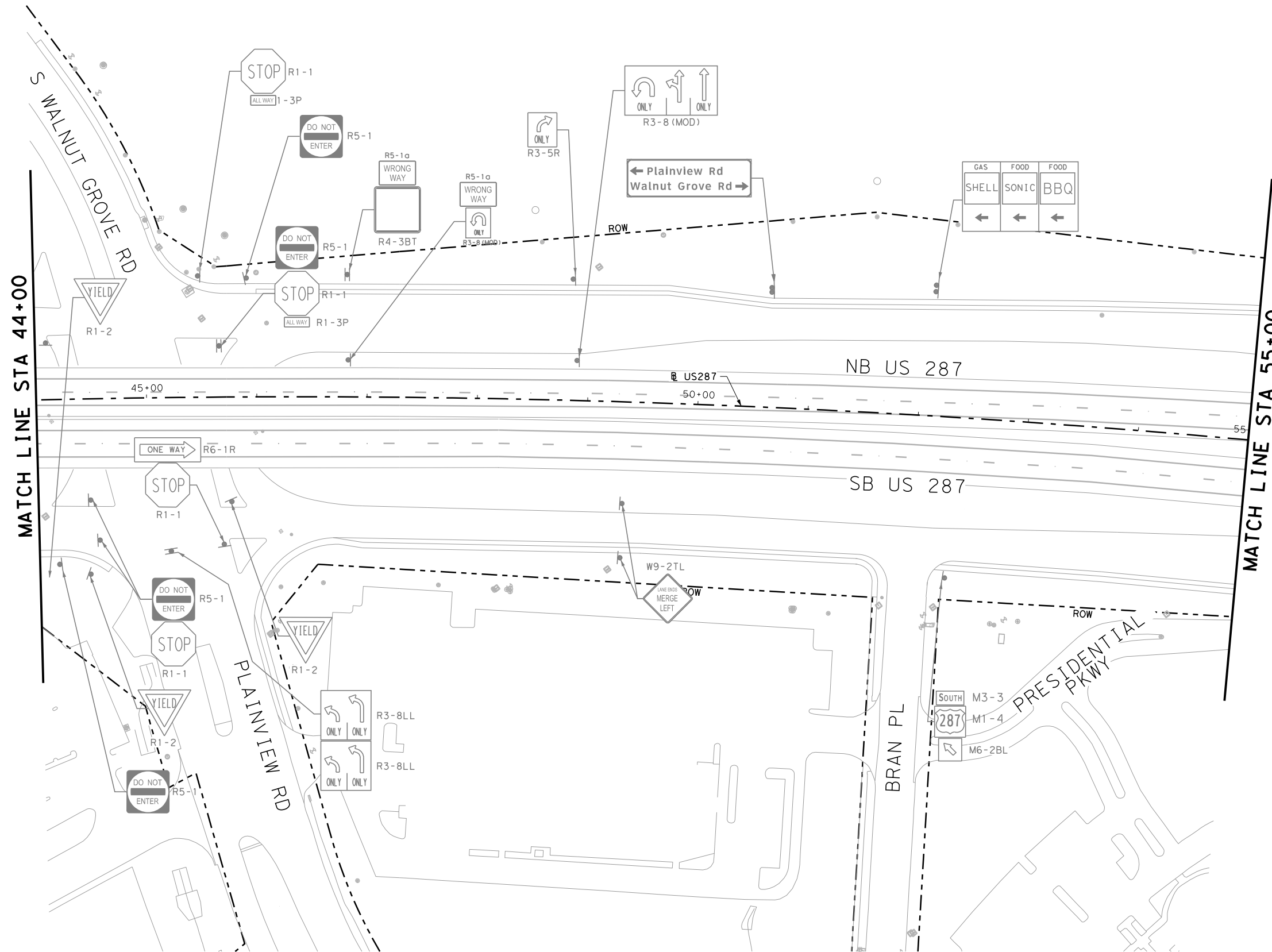
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50 0 50 100  
SCALE: 1" = 100'

### LEGEND

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER

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NO.	DATE	DESCRIPTION	APPROV.

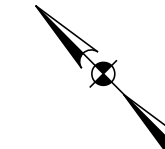
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 44+00 TO STA 55+00**

SCALE: 1" = 100' SHEET 4 OF 20

DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO. 229
CHECK SA	CONTROL	SECTION	JOB	
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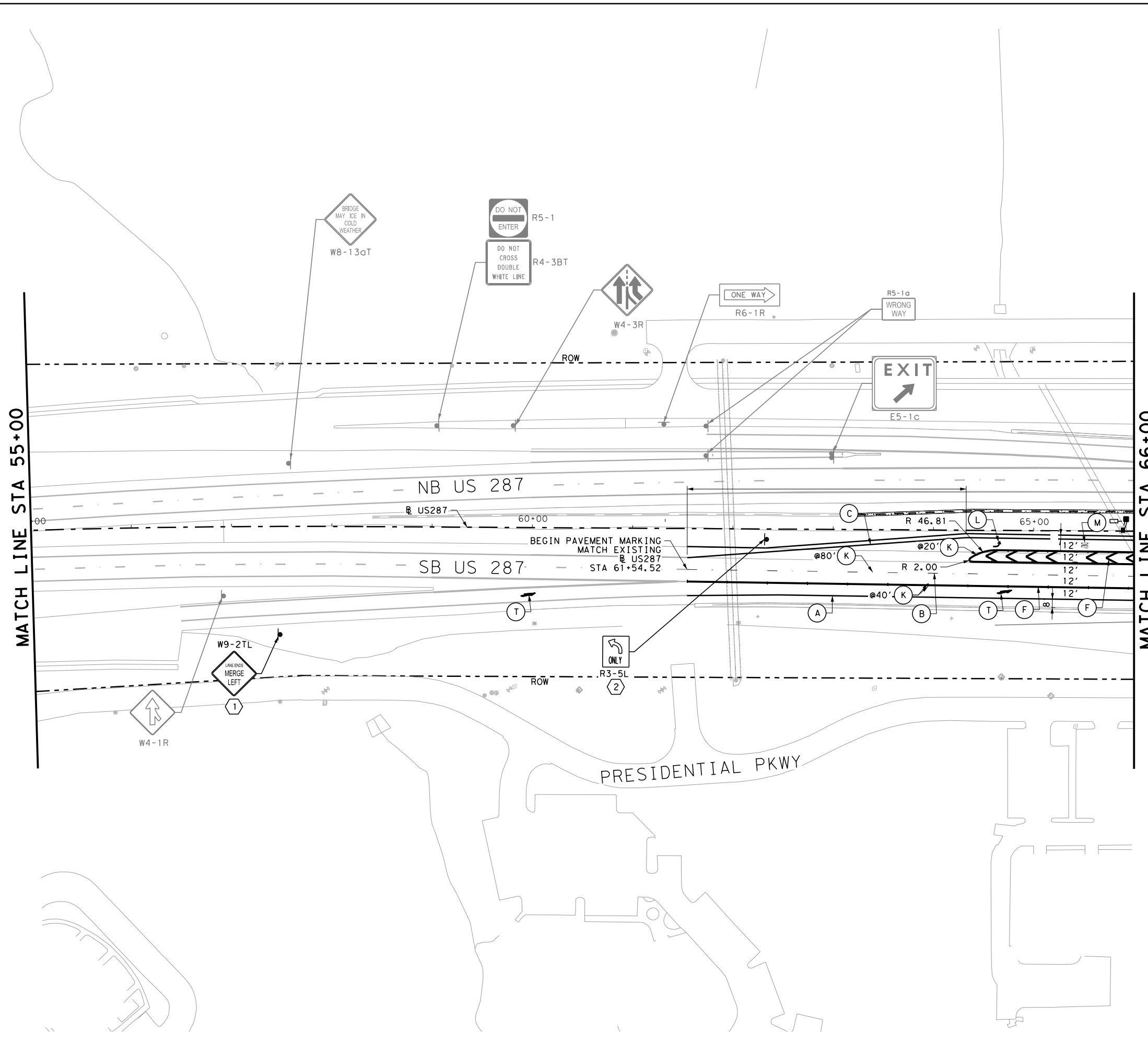
**LEGEND**

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- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



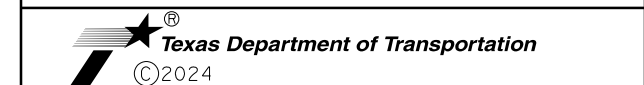
MATCH LINE STA 55+00

MATCH LINE STA 66+00



NO.	DATE	DESCRIPTION	APPROV.

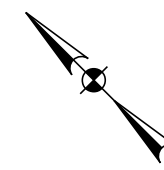
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 55+00 TO STA 66+00**

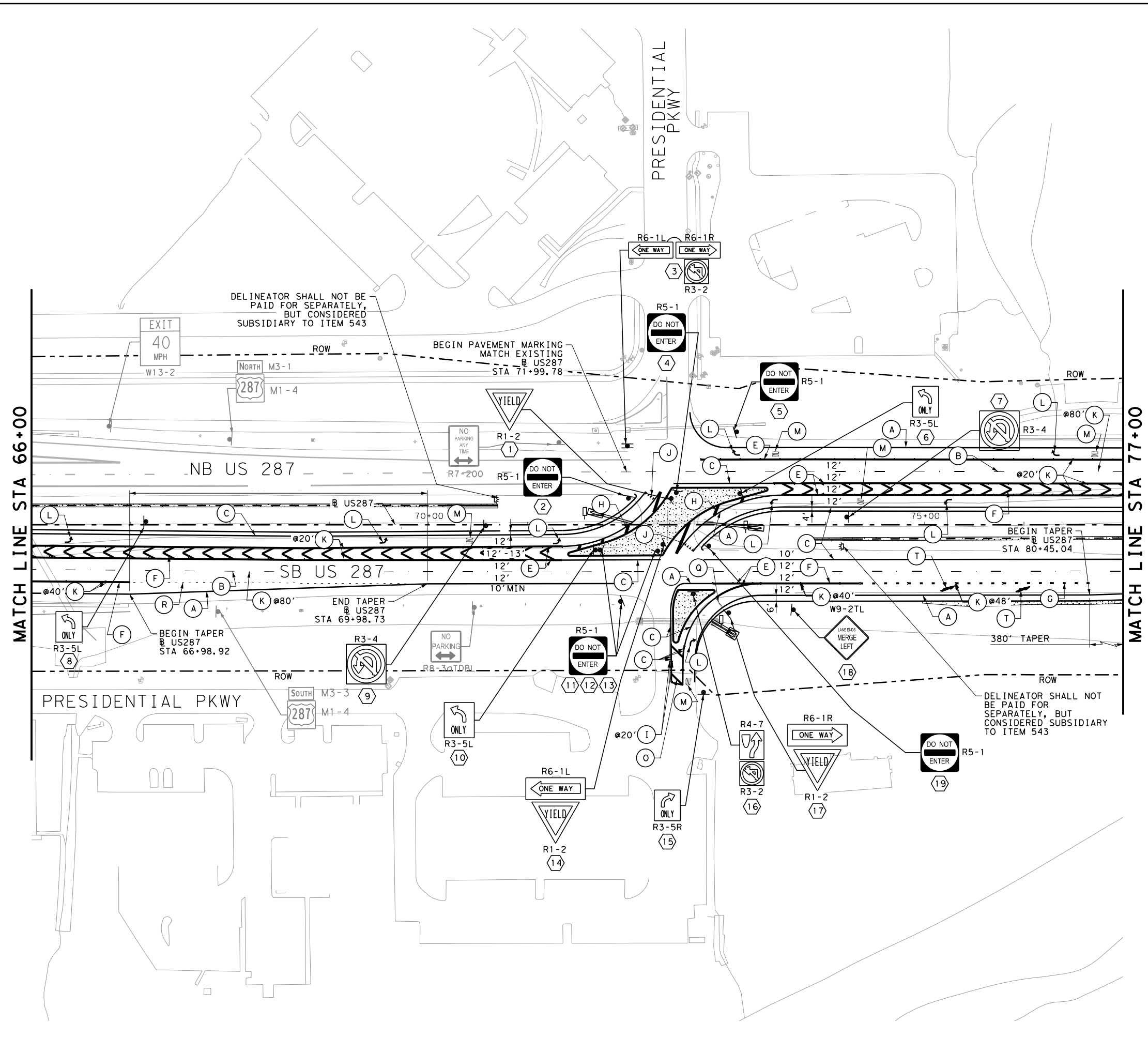
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GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 230
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129	



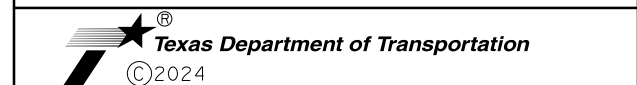
**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

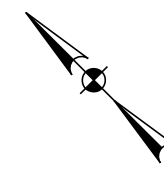


**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 66+00 TO STA 77+00**

SCALE: 1" = 100' SHEET 6 OF 20

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GRAPHICS AP	6	SEE TITLE SHEET		US 287
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CHECK SA	TEXAS	DALLAS	ELLIS	231
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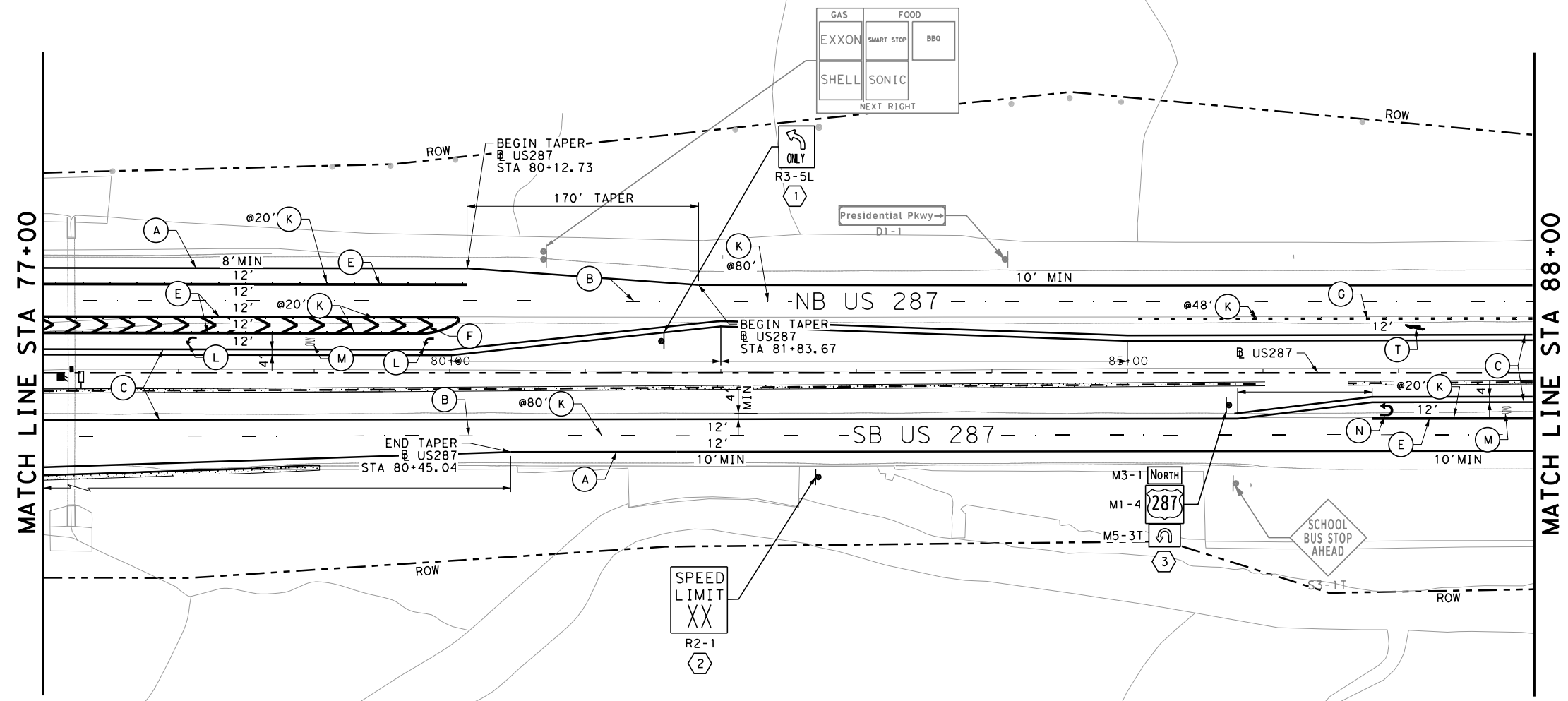
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**LEGEND**

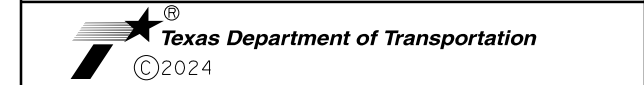
- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER

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NO.	DATE	DESCRIPTION	APPROV.

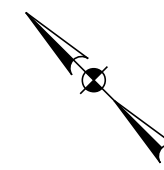
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 77+00 TO STA 88+00**

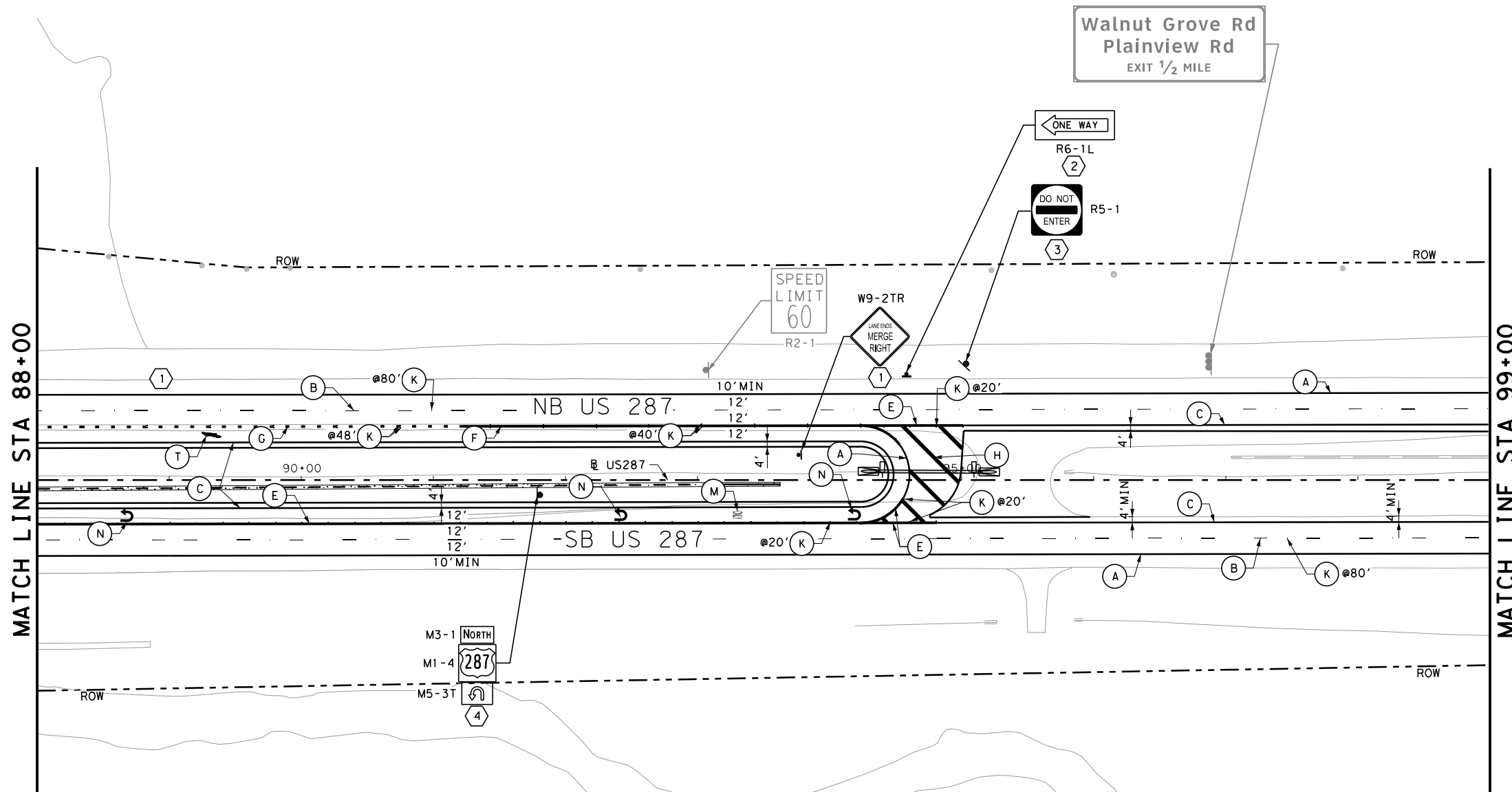
SCALE: 1" = 100' SHEET 7 OF 20

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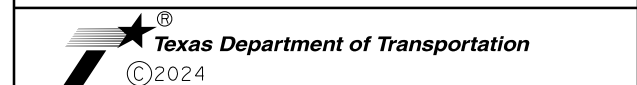
**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 88+00 TO STA 99+00**

SCALE: 1" = 100' SHEET 8 OF 20

DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO.
CHECK SA	0172	05	129	233

5/10/2024 2:28:51 PM  
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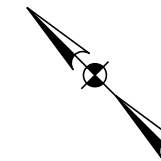


5/10/2024 2:28:54 PM

mTrippett

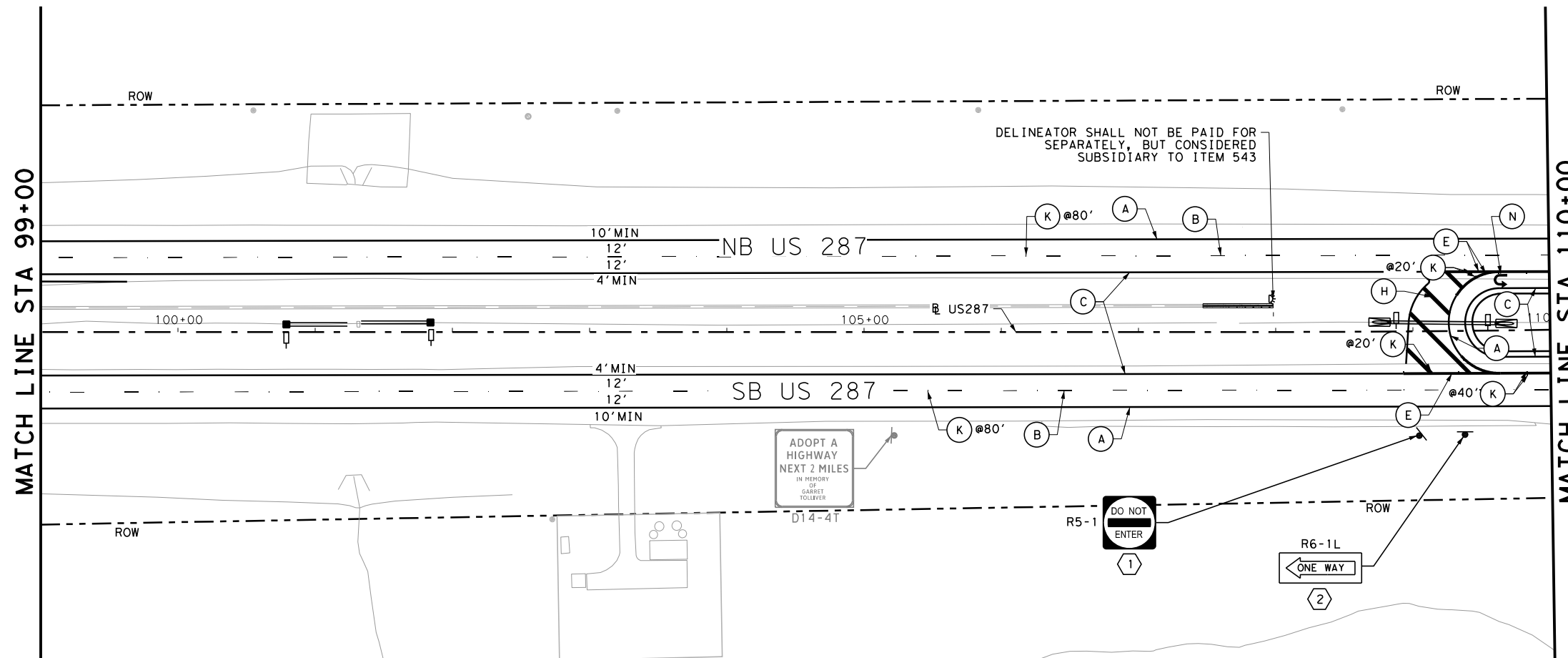
c:\bms\bridgefarmer-pw\mat, trippett\dms35338\0387-Proposed Signs & Pmark-09.dgn

50 0 50 100  
SCALE: 1" = 100'



### LEGEND

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- ( ) REFL PAV MRK TY I (W) (6") (DOT)
- ( ) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

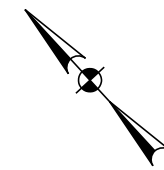
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 PROPOSED SIGNING & PAVEMENT MARKING PLAN STA 99+00 TO STA 110+00

SCALE: 1" = 100' SHEET 9 OF 20

DESIGN AP	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 234
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129	



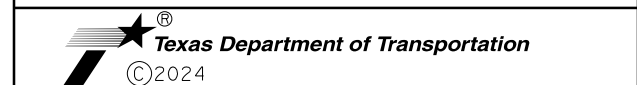
**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

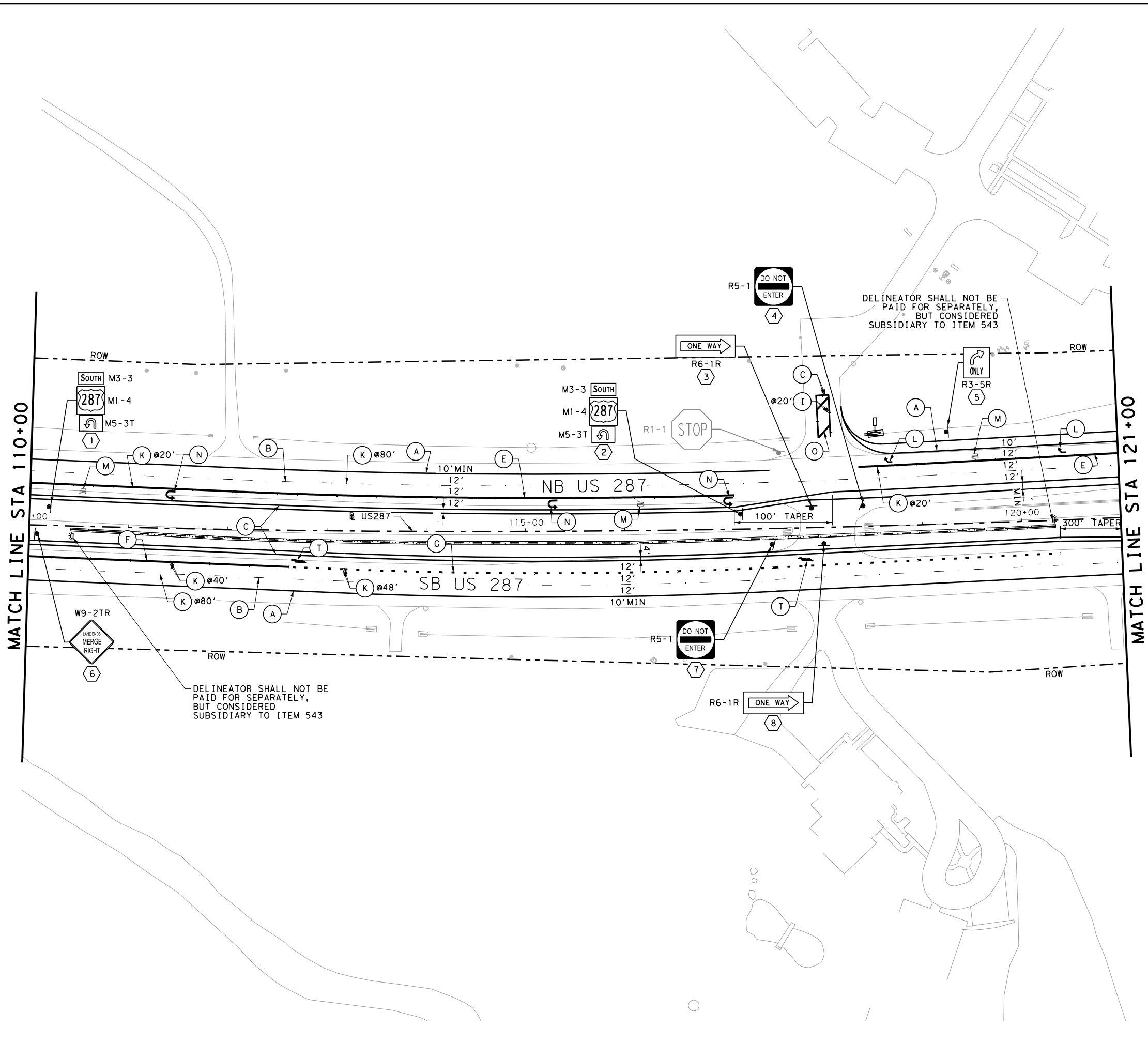
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 110+00 TO STA 121+00**

SCALE: 1" = 100' SHEET 10 OF 20

DESIGN AP	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			



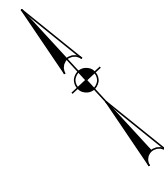
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5/10/2024 2:29:01 PM

mTrippett

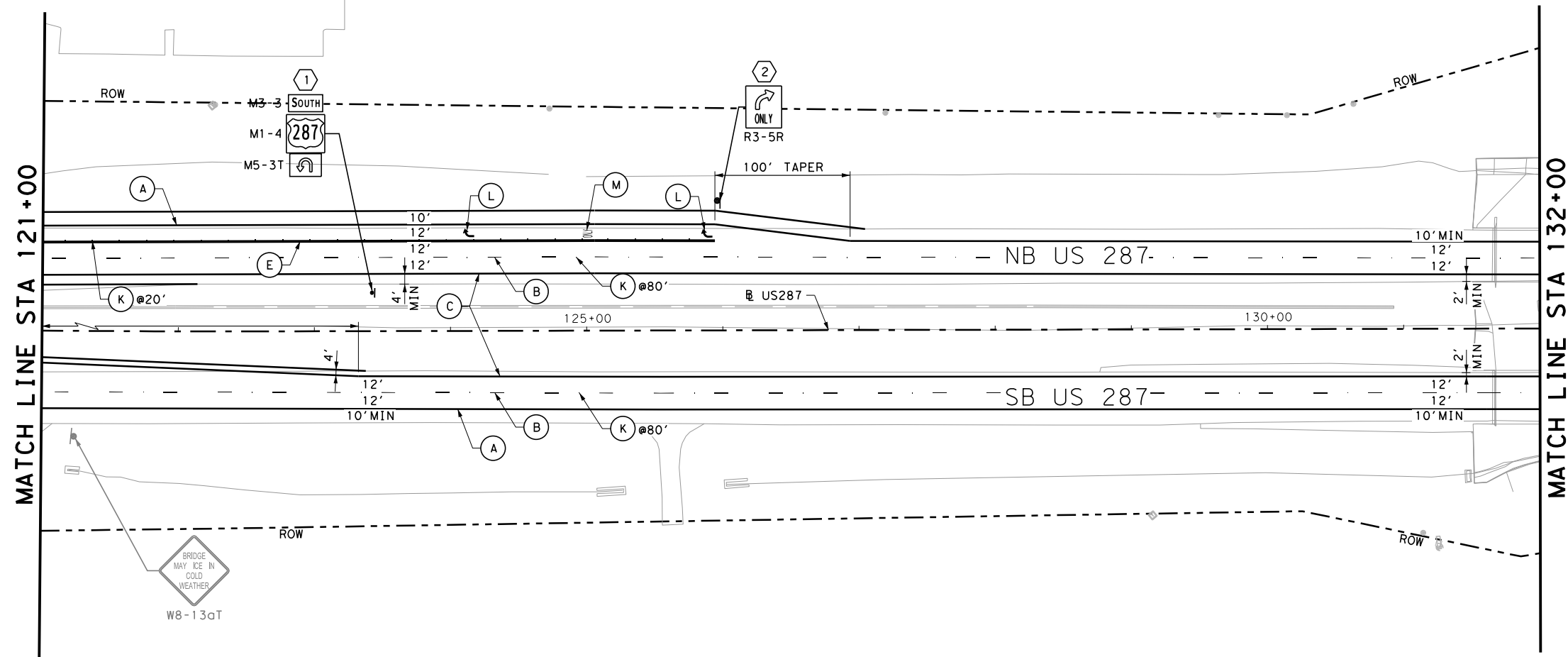
c:\bms\bridgefarmer-pw\mat.rippett\dms35338\0387-Proposed Signs & Pmark-11.dgn

50 0 50 100  
SCALE: 1" = 100'



### LEGEND

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 121+00 TO STA 132+00**

SCALE: 1" = 100' SHEET 11 OF 20

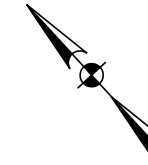
DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	236
CHECK SA	0172	05	129	

5/110/2024 2:29:07 PM

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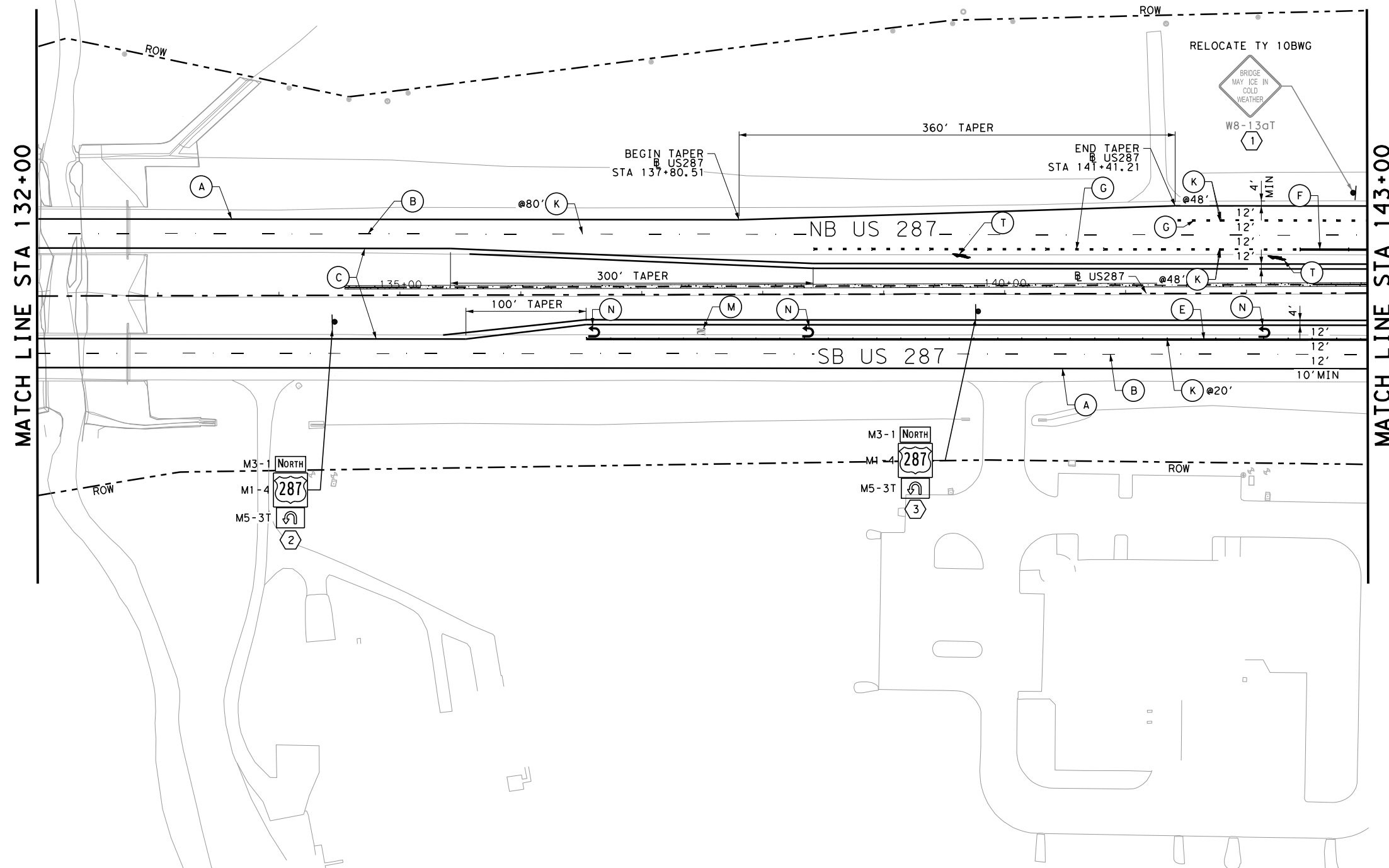
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50 0 50 100  
SCALE: 1" = 100'



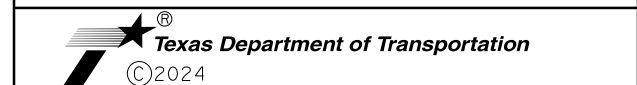
### LEGEND

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

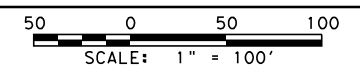


## US 287 PROPOSED SIGNING & PAVEMENT MARKING PLAN STA 132+00 TO STA 143+00

SCALE: 1" = 100' SHEET 12 OF 20

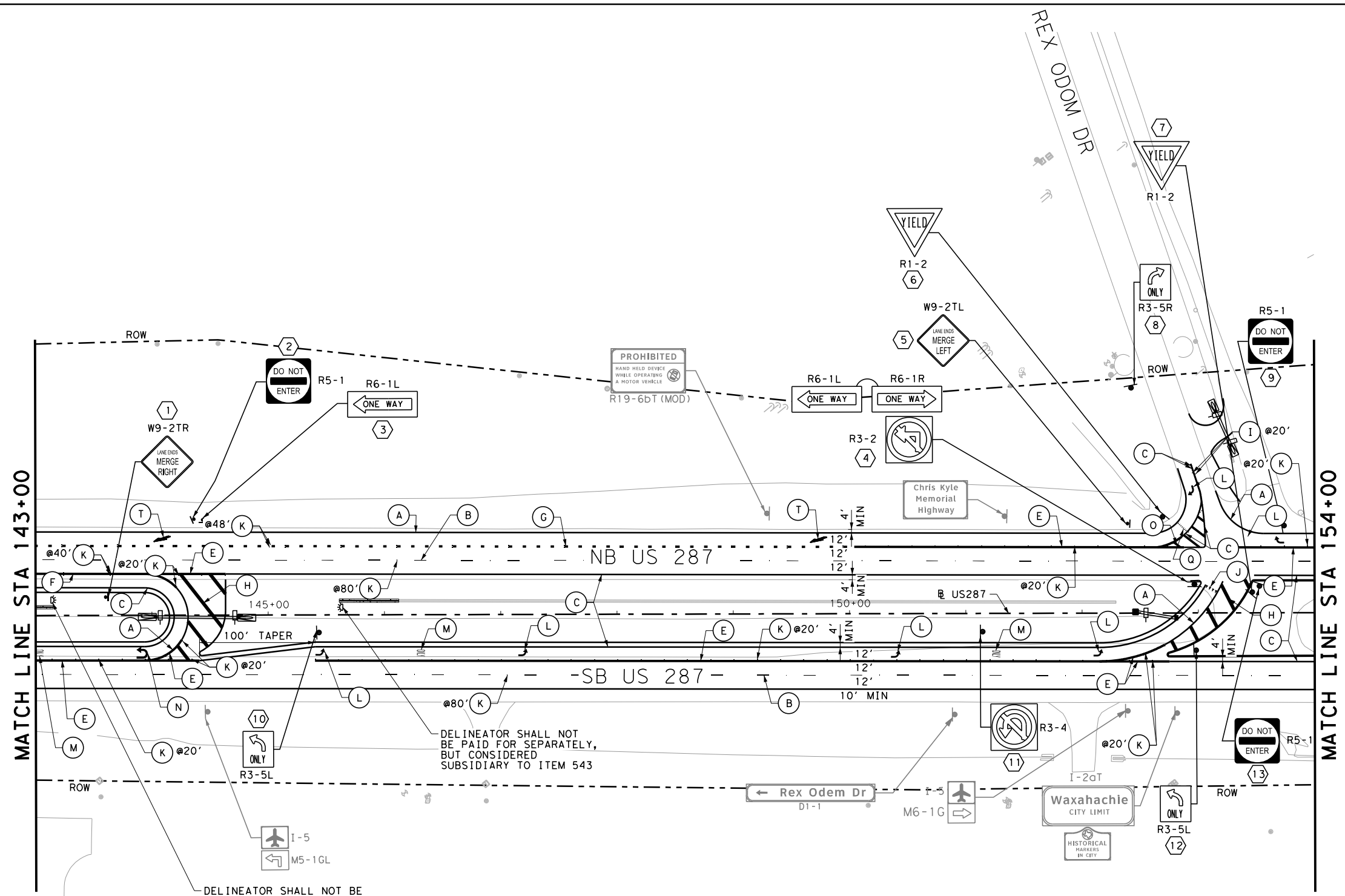
DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO. 237
CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

5/110/2024 2:29:10 PM  
 mTrippett  
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**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- ( ) REFL PAV MRK TY I (W) (6") (DOT)
- ( ) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264



**US 287  
 PROPOSED SIGNING &  
 PAVEMENT MARKING PLAN  
 STA 143+00 TO STA 154+00**

SCALE: 1" = 100' SHEET 13 OF 20

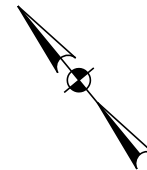
DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	238
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

5/30/2024 12:09:32 PM

A.lex.P

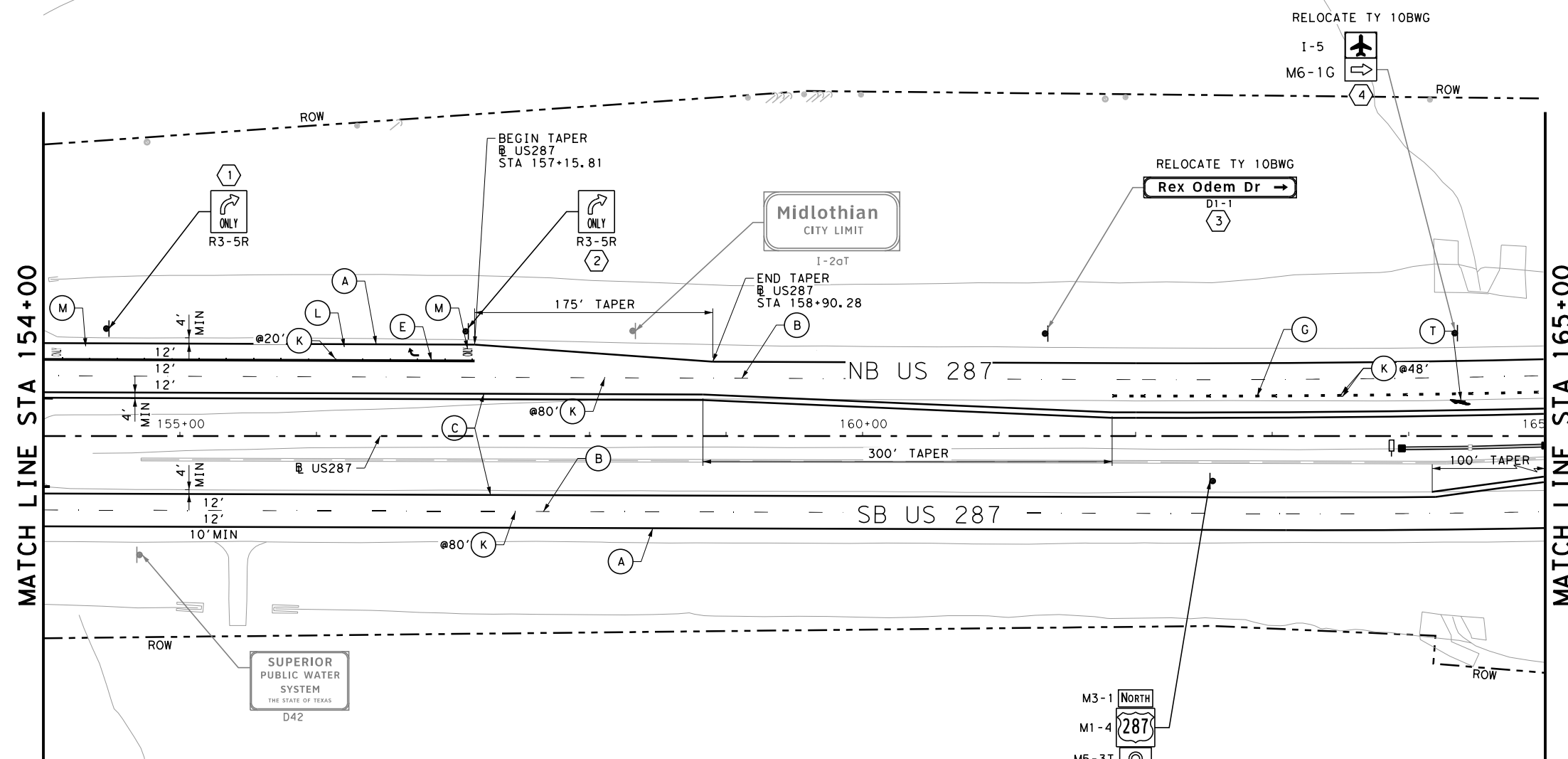
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50 0 50 100  
SCALE: 1" = 100'



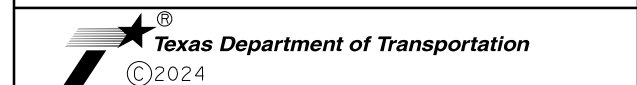
### LEGEND

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (T) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



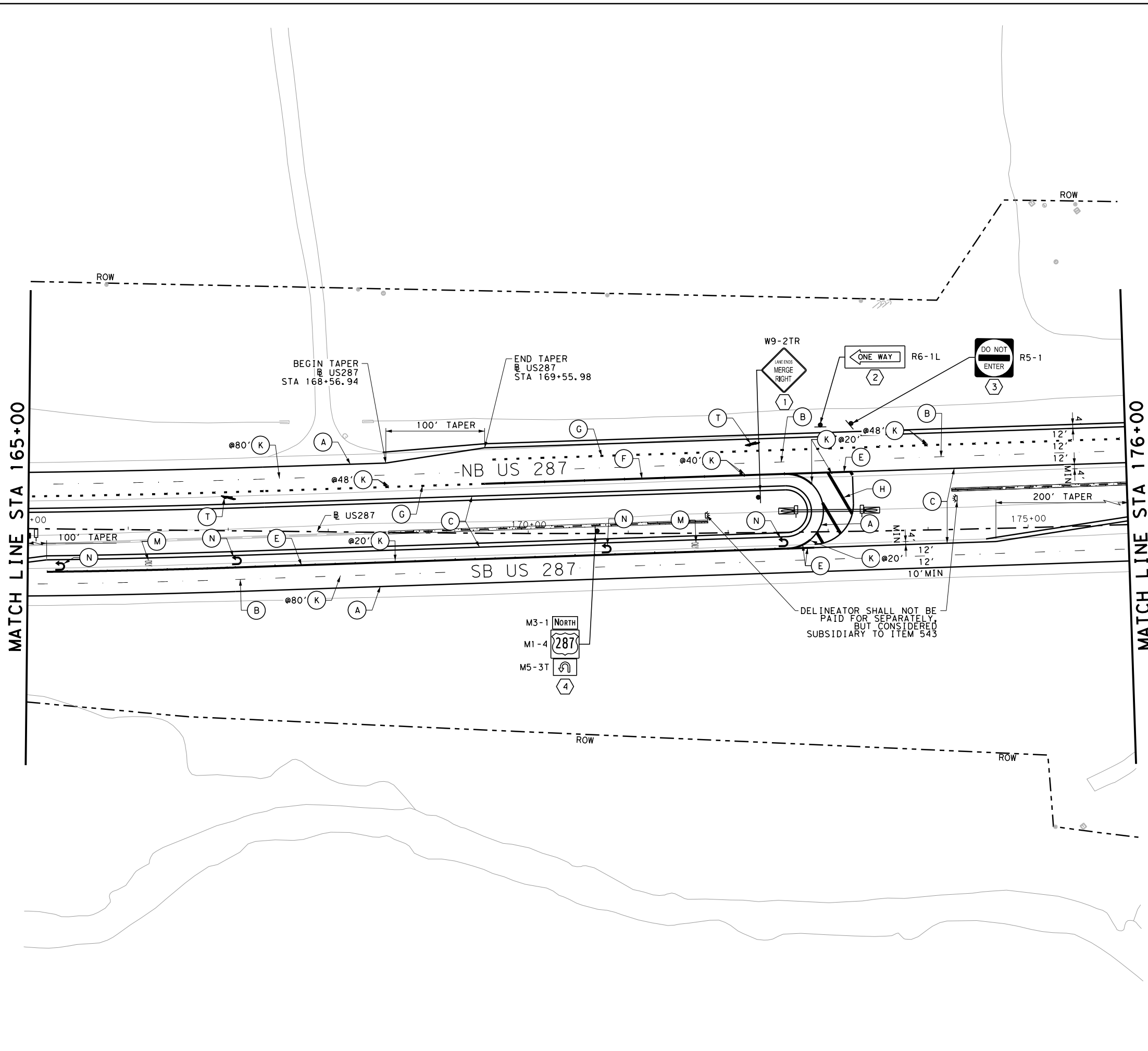
## US 287 PROPOSED SIGNING & PAVEMENT MARKING PLAN STA 154+00 TO STA 165+00

SCALE: 1" = 100' SHEET 14 OF 20

DESIGN AP	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 239
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129	

**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



STATE OF TEXAS  
SHAHRIAR AZAD  
91682  
LICENSED PROFESSIONAL ENGINEER  
*Shahriar Azad*  
2024/05/10

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 165+00 TO STA 176+00**

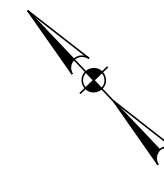
SCALE: 1" = 100' SHEET 15 OF 20

DESIGN AP	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			

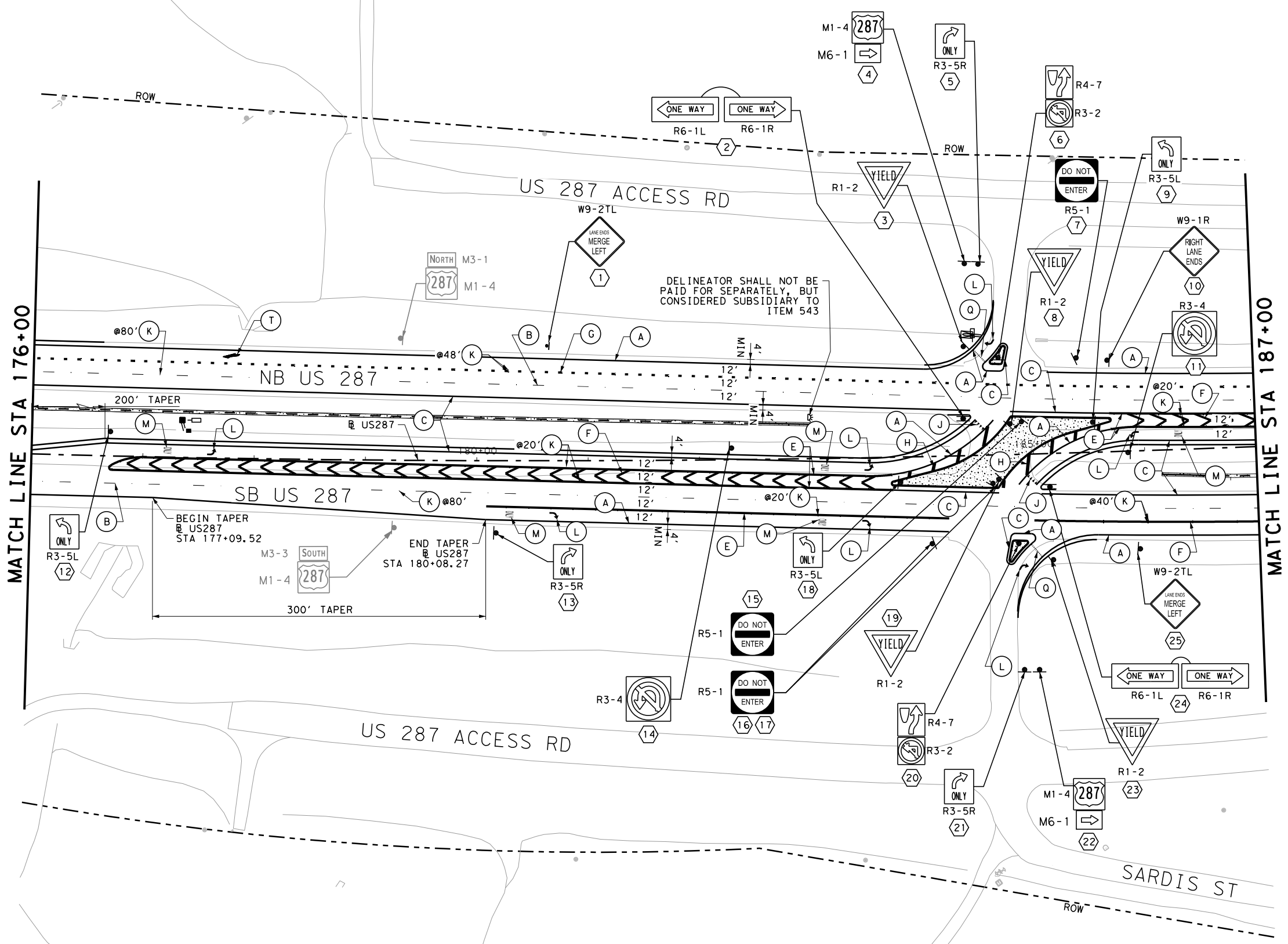
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**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (T) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



5/30/2024 1:04:33 PM A.lexP c:\bms\br\idgfarmer-pw\alex.pap\lomat\as\dms35338\0387-Proposed Signs & Pmark-16.dgn



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

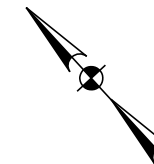
Texas Department of Transportation  
©2024

**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 176+00 TO STA 187+00**

SCALE: 1" = 100' SHEET 16 OF 20

DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO.
CHECK SA	0172	05	129	241





**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

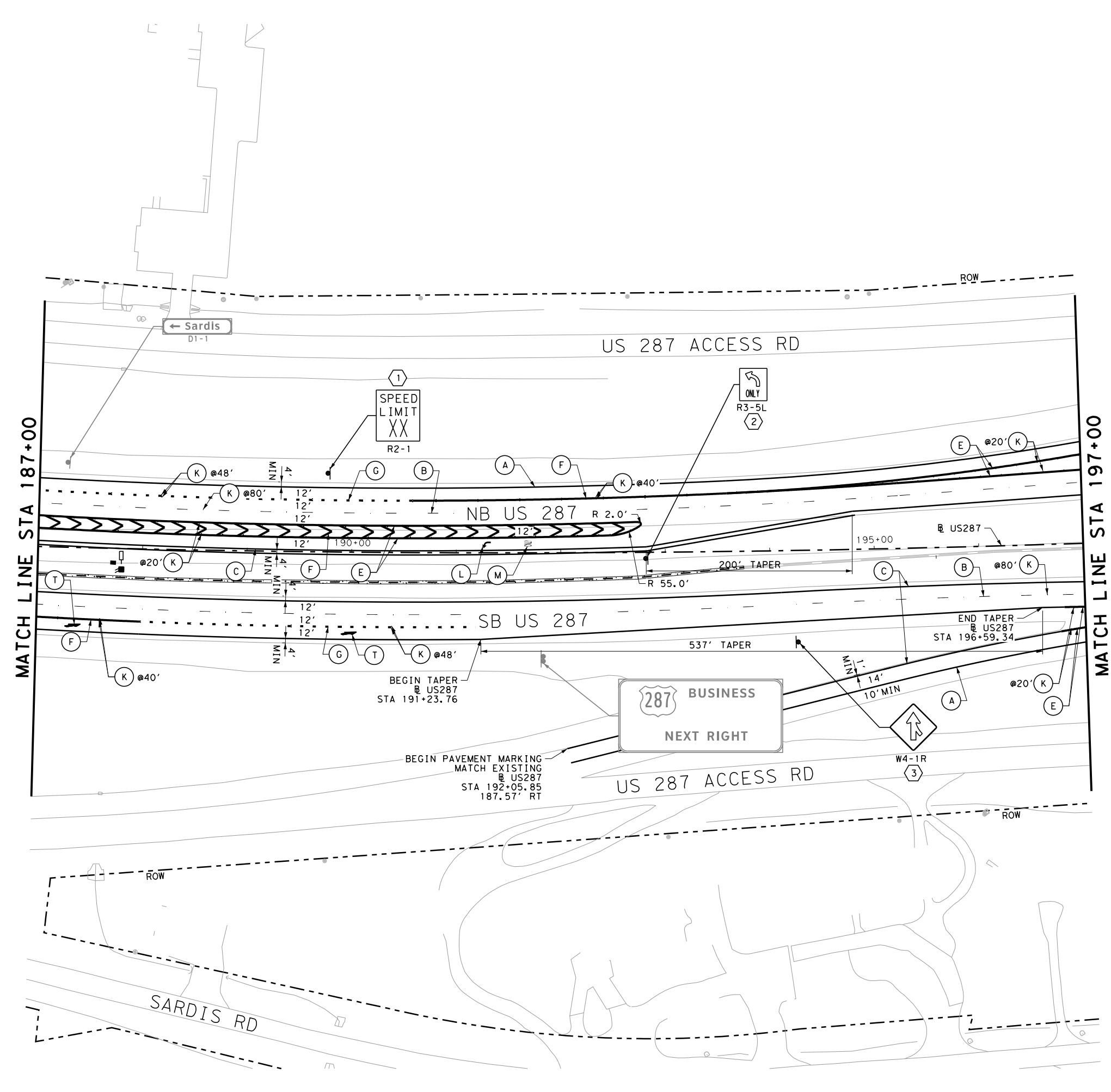
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 186+00 TO STA 197+00**

SCALE: 1" = 100' SHEET 17 OF 20

DESIGN AP	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			



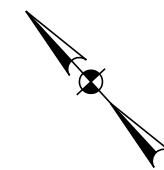
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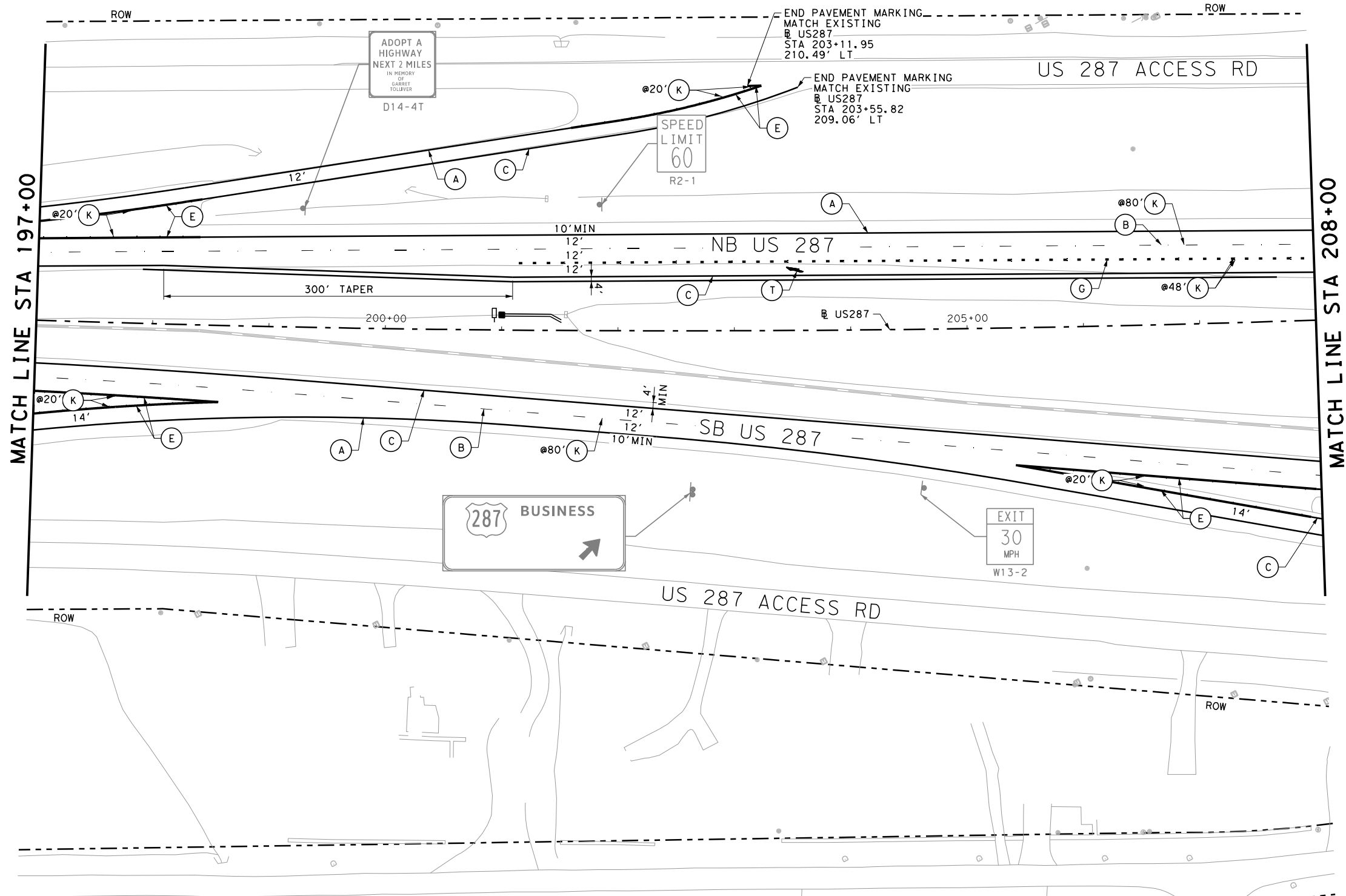
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SCALE: 1" = 100'



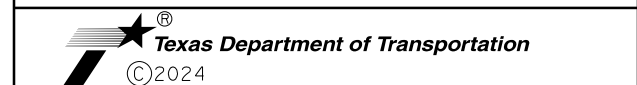
### LEGEND

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

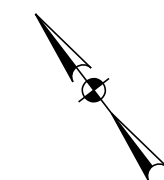
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



## US 287 PROPOSED SIGNING & PAVEMENT MARKING PLAN STA 197+00 TO STA 208+00

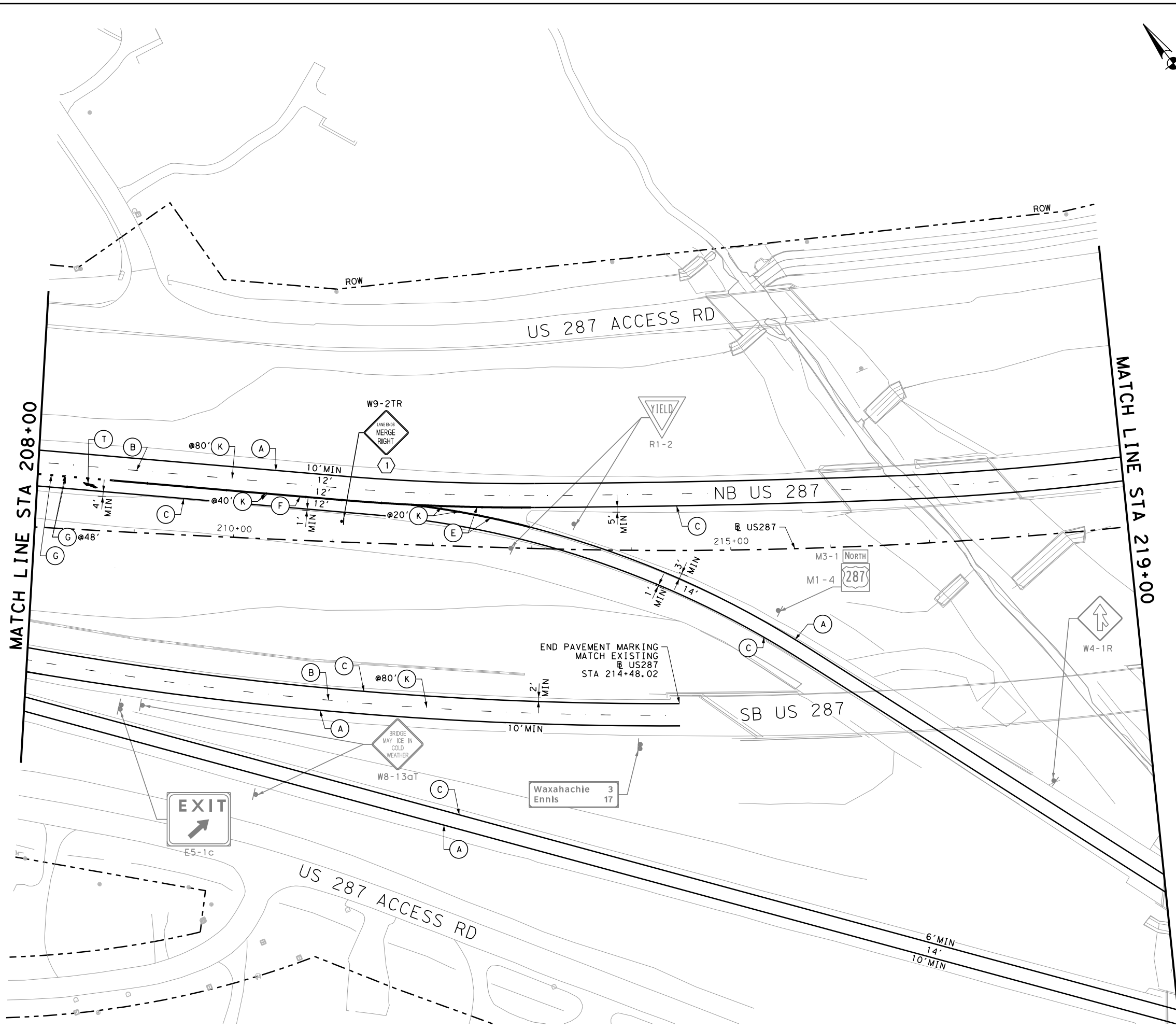
SCALE: 1" = 100' SHEET 18 OF 20

DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK SA	TEXAS	DALLAS	ELLIS	243
	CONTROL	SECTION	JOB	
	0172	05	129	



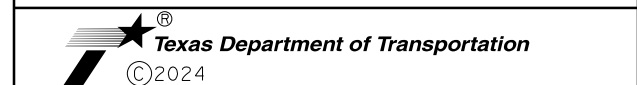
**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 208+00 TO STA 219+00**

SCALE: 1" = 100' SHEET 19 OF 20

DESIGN AP	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK CPM	TEXAS	DALLAS	ELLIS	SHEET NO. 244
CHECK SA	CONTROL 0172	SECTION 05	JOB 129	

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**LEGEND**

- (A) REFL PM W/RET REQ TY I (W) (6") (SLD)(100MIL)
- (B) REFL PM W/RET REQ TY I (W) (6") (BRK)(100MIL)
- (C) REFL PM W/RET REQ TY I (Y) (6") (SLD)(100MIL)
- (D) REFL PAV MRK TY I (W) (NUMBER) (100 MIL)
- (E) REFL PAV MRK TY I (W) (8") (SLD)(100MIL)
- (F) REFL PAV MRK TY I (W) (12") (SLD)(100MIL)
- (G) REFL PAV MRK TY I (W) (12") (LNDP)(100MIL)
- (H) REFL PAV MRK TY I (W) (24") (SLD)(100MIL)
- (I) REFL PAV MRK TY II-A-A
- (J) REFL PAV MRK TY I (W) 36" (YLD TRI)
- (K) REFL PAV MRK TY II-C-R
- (L) REFL PAV MRK TY I (W) (ARROW)
- (M) REFL PAV MRK TY I (W) (WORD)
- (N) REFL PAV MRK TY I (W) (U-TURN ARROW)
- (O) REFL PAV MRK TY I (Y) (12") (SLD)(100MIL)
- (Q) PREFAB PAV MRK TY I (W) 18" (YLD TRI)
- (R) REFL PAV MRK TY I (W) (6") (DOT)
- (S) REFL PAV MRK TY I (W) (LNDP ARROW)
- PROPOSED/EXISTING SIGN
- OBJECT MARKER (OM-2Z) (FLEX) GND
- EXISTING SIGN TO REMIAN
- EXISTING STRIPING
- PROPOSED SMALL SIGN NUMBER



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

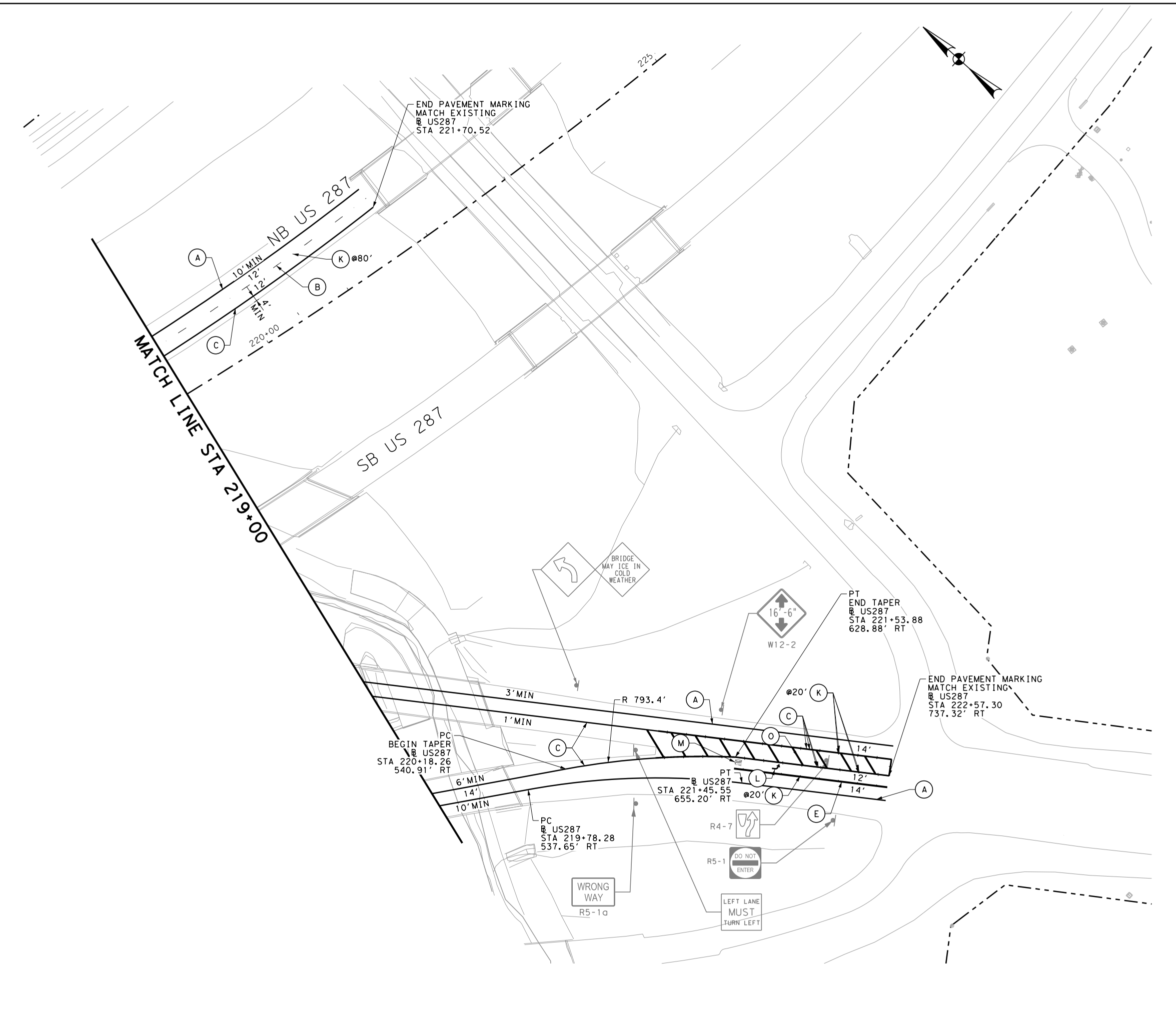


**US 287  
PROPOSED SIGNING &  
PAVEMENT MARKING PLAN  
STA 219+00 TO END CONSTRUCTION**

SCALE: 1" = 100' SHEET 20 OF 20

DESIGN AP	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 245
CHECK CPM	CONTROL 0172	SECTION 05	JOB 129	

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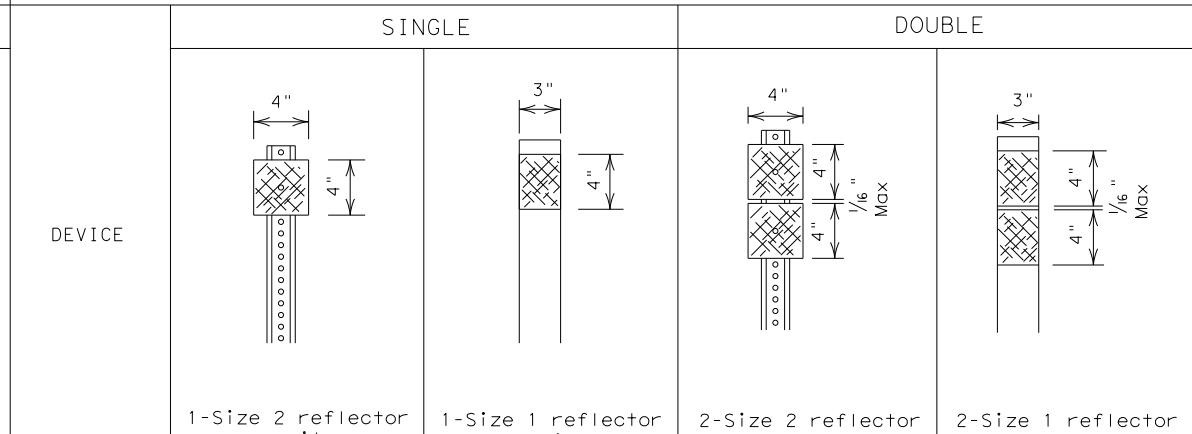
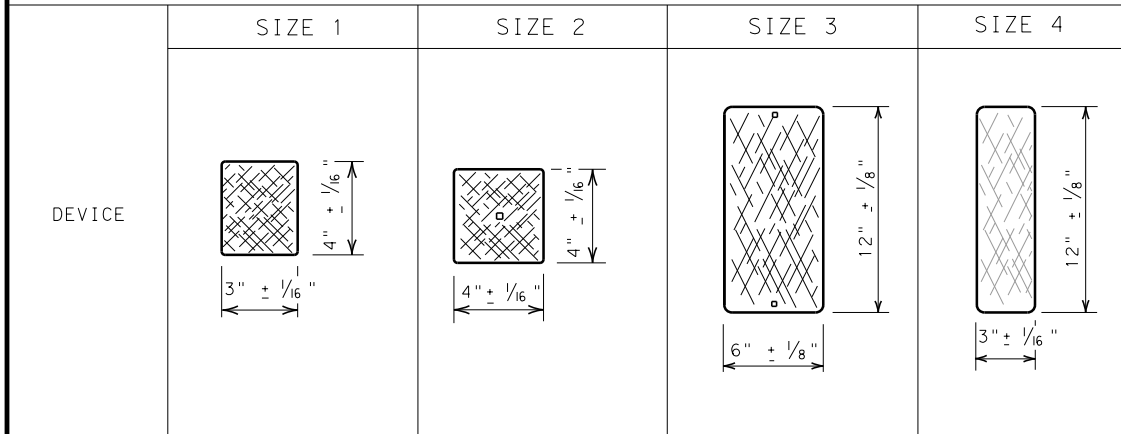
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DATE: FILE:

### REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

### DELINEATORS

### D & OM DESCRIPTIVE CODES



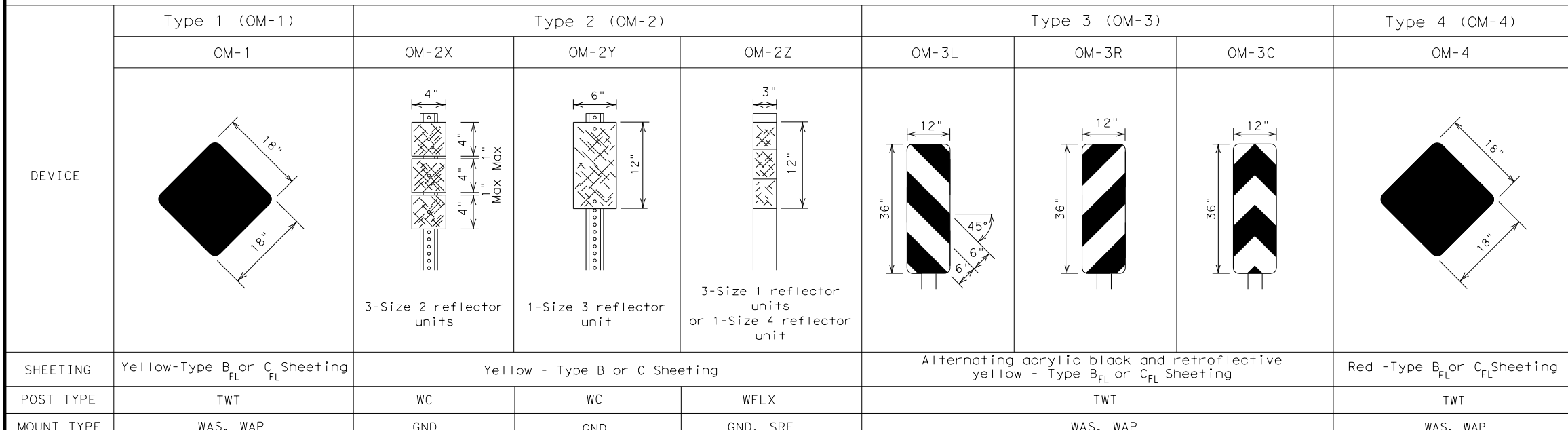
**INSTL DEL ASSM** (D-XX)SZ X (XXXX)XXX(XX)  
**NUMBER OF REFLECTORS**  
 S = Single  
 D = Double  
**COLOR OF REFLECTORS**  
 W = White  
 Y = Yellow  
 R = Red  
**REFLECTOR UNIT SIZE**  
 1 or 2  
**TYPE OF POST OR DELINEATOR**  
 WC = Wing Channel Post  
 YFLX = Yellow Flexible Post  
 WFLX = White Flexible Post  
 BRF = Barrier Reflector  
**TYPE OF MOUNT**  
 GND = Embedded (drivable or set in concrete)  
 CTB = Concrete Barrier Mount  
 GF1 or GF2 = Guard Fence Attachment  
 SRF = Surface Mount

**SHEETING** Yellow, White or Red Type B or C reflective sheeting  
**NOTE**  
 1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (fix).  
 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.

**SHEETING** Yellow, White or Red Type B or C Reflective Sheeting  
**POST TYPE** WC, YFLX, WFLX  
**MOUNT TYPE** GND, GND, SRF, GND, SRF

**DIRECTION**  
 If Required  
 BI = Bi-Directional  
 BR = Bi-Directional with red on back  
**INSTL OM ASSM** (OM-XX) (XXXX)XXX(XX)

### OBJECT MARKERS



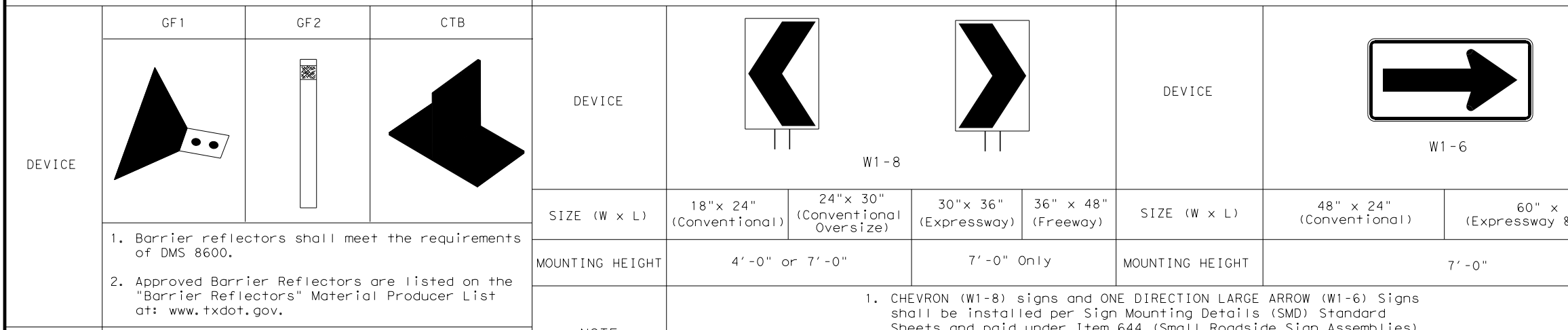
**TYPE OF OBJECT MARKER**  
 1, 2, 3, or 4  
**NUMBER OF REFLECTORS OR DIRECTION**  
 X = 3-Size 2 reflector units (Type 2 only)  
 Y = 1-Size 3 reflector unit (Type 2 only)  
 Z = 3-Size 1 or 1-Size 4 reflector units (Type 2 only)  
 L = Left Side (Type 3 Object Marker only)  
 R = Right Side (Type 3 Object Marker only)  
 C = Center (Type 3 Object Marker only)  
**TYPE OF POST**  
 WC = Wing Channel Post  
 WFLX = White Flexible Post  
 TWT = Thin Walled Tubing  
**TYPE OF MOUNT**  
 GND = Embedded (drivable)  
 SRF = Surface Mount  
 WAS = Wedge Anchor Steel  
 WAP = Wedge Anchor Plastic  
**DIRECTION**  
 If Required  
 BI = Bi-Directional

DEPARTMENTAL MATERIAL SPECIFICATIONS	
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

### BARRIER REFLECTORS (BRF)

### CHEVRONS

### ONE DIRECTION LARGE ARROW



**NOTE:**  
 Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

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

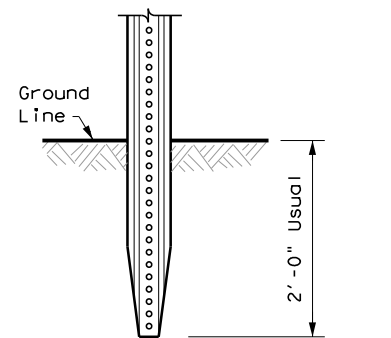
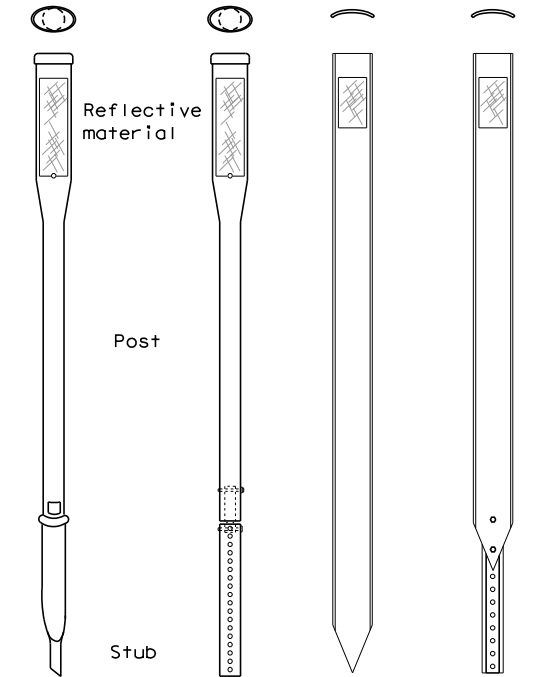
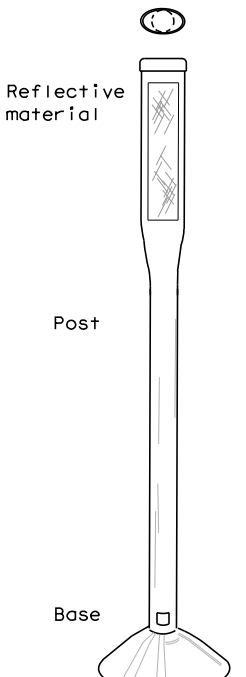
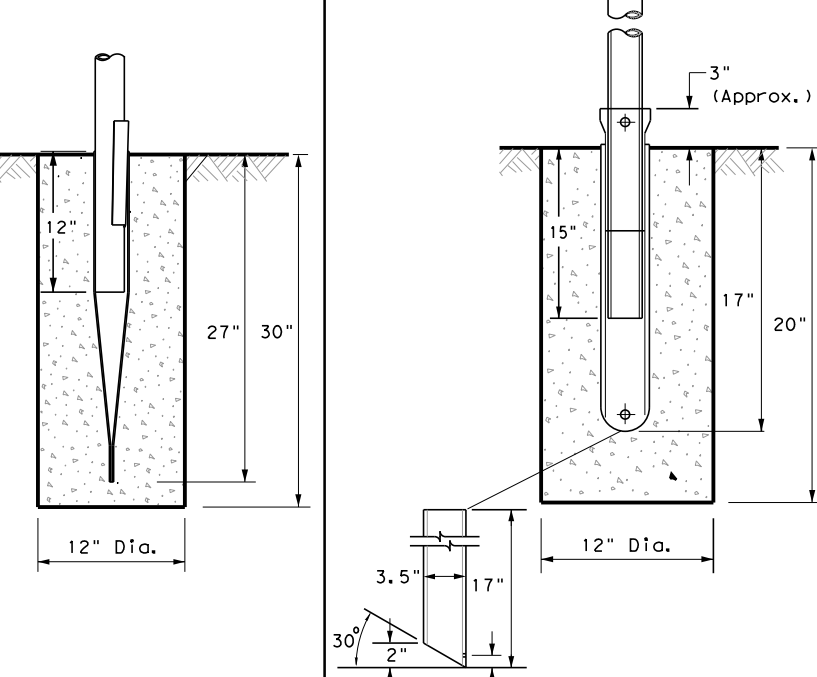
Texas Department of Transportation
Traffic Safety Division Standard

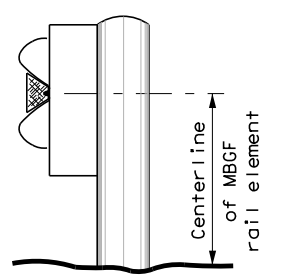
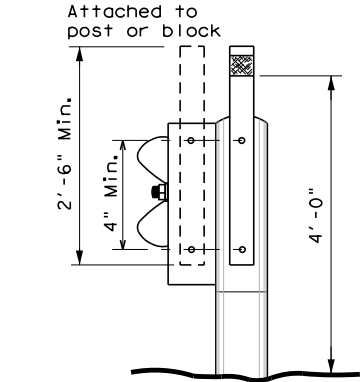
## DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

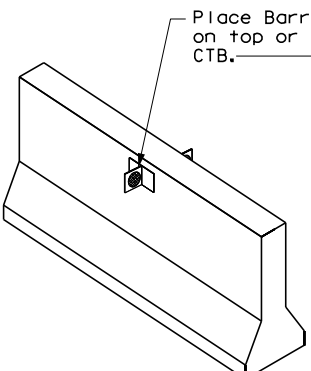
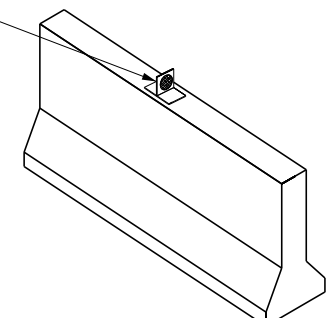
### D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DN: TXDOT	CK: TXDOT
© TXDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
10-09 3-15	DIST	COUNTY	SHEET NO.	
4-10 7-20	DAL	ELLIS	246	

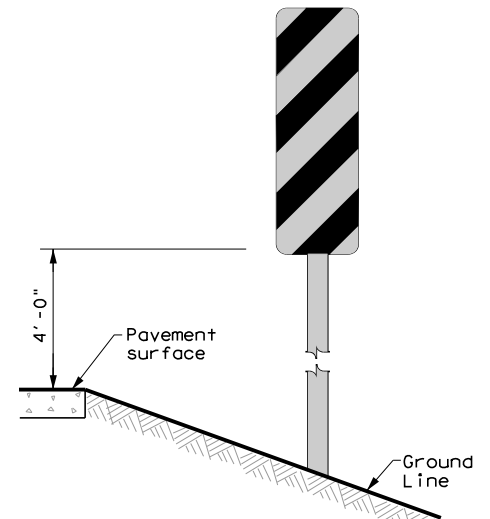
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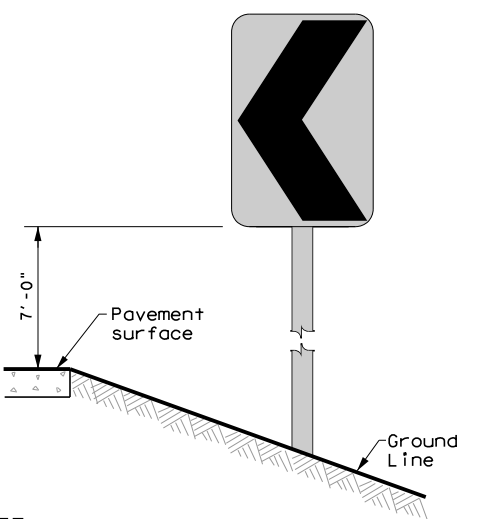
POST TYPE AND SUPPORT FOUNDATION DETAILS			
WING CHANNEL (WC)	FLEXIBLE POSTS (YFLX, WFLX)		WEDGE ANCHOR SYSTEMS
GND	GND	SRF	WAS
			
	EMBEDDED	SURFACE MOUNT	STEEL
			PLASTIC
<b>NOTES</b> 1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only. 2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.	<b>NOTES</b> 1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices. 2. Install per manufacturer's recommendations. 3. Post length may vary to meet field conditions. 4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.		<b>NOTE</b> 1. Install per manufacturer's recommendations.

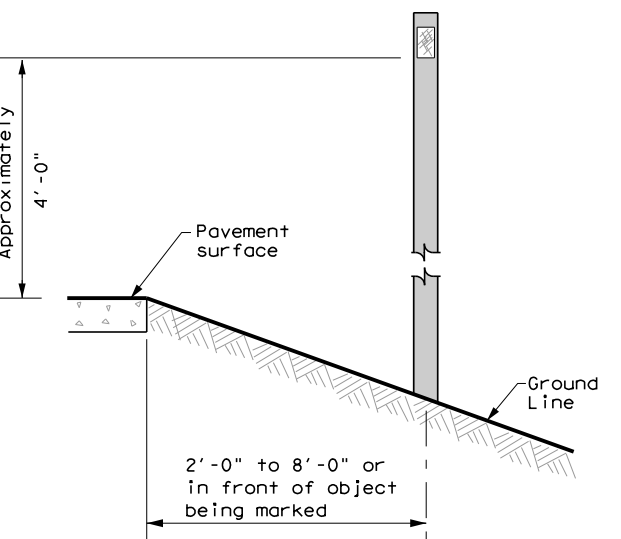
TYPE OF BARRIER MOUNTS	
GUARD FENCE ATTACHMENT	
GF 1	GF 2
	


CONCRETE TRAFFIC BARRIER (CTB)	
	

- GENERAL NOTES**
- Place delineators on a section of roadway at a consistent distance from the edge of pavement.
  - Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
  - When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
  - Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
  - Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
  - Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS

<b>NOTE</b> Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN

<b>NOTE</b> Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS

See general notes 1, 2 and 3.

 <b>Texas Department of Transportation</b>		<b>Traffic Safety Division Standard</b>
<h2 style="margin: 0;">DELINEATOR &amp; OBJECT MARKER INSTALLATION</h2> <h3 style="margin: 0;">D &amp; OM(2)-20</h3>		
FILE: dom2-20.dgn © TxDOT August 2004 10-09 3-15 4-10 7-20	DNE: TxDOT CONT SECT 0172 05 DIST COUNTY DAL ELLIS	CK: TxDOT DW: TxDOT CK: TxDOT JOB 129 COUNTY ELLIS SHEET NO. <b>247</b>

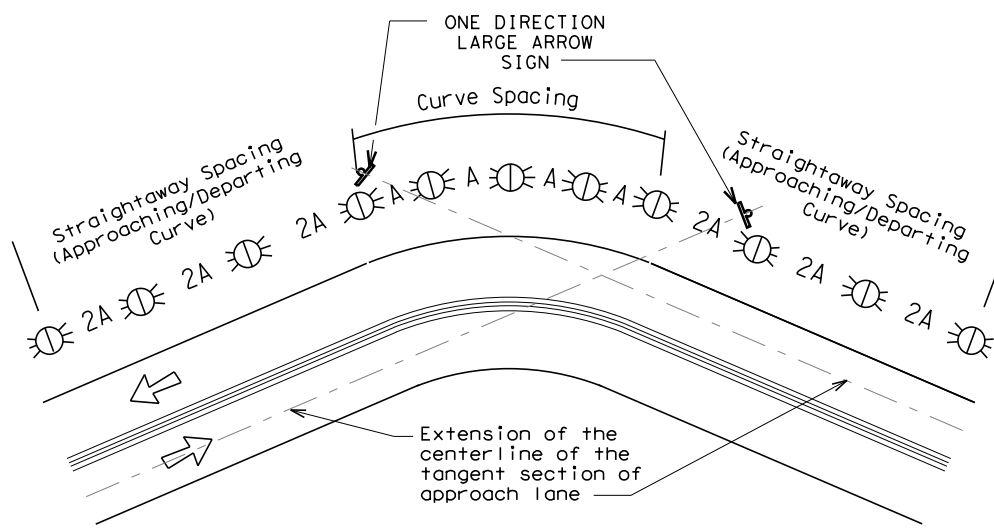
DATE: FILE:

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### MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

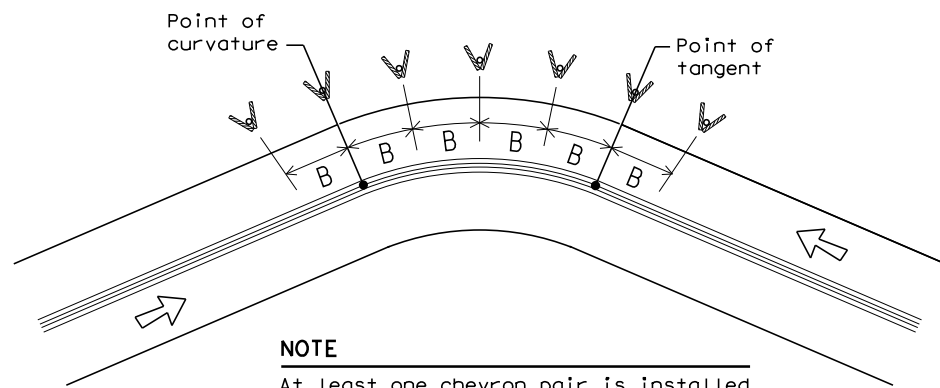
### SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



**NOTE**

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

### SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



**NOTE**

At least one chevron pair is installed beyond the point of tangent in tangent section.

### DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN				
Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

### DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN			
Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

### DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp. Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete) and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100' max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100' max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

**NOTES**

- Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
- Barrier reflectors may be used to replace required delineators.
- Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

**LEGEND**

	Bi-directional Delineator
	Delineator
	Sign



## DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

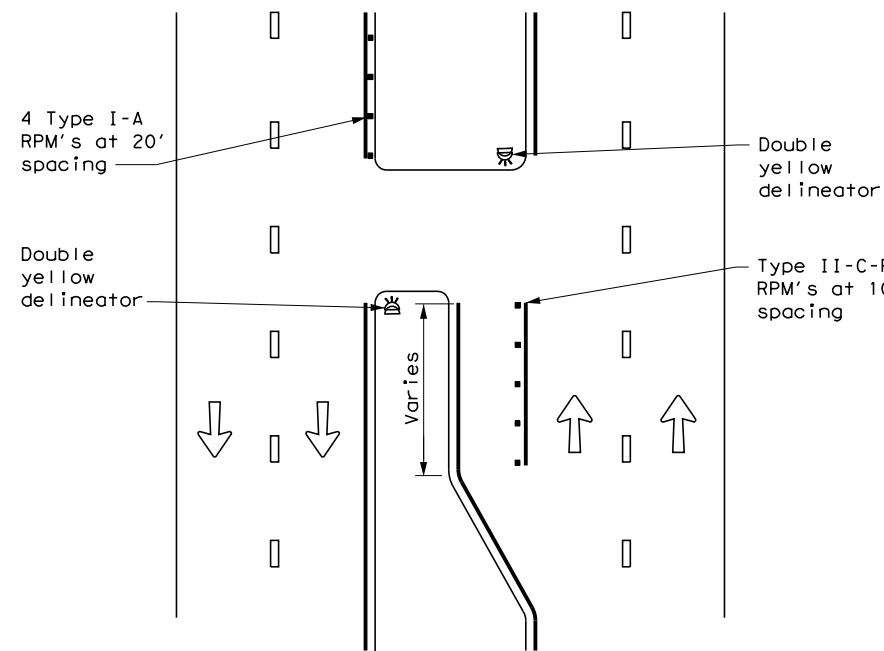
### D & OM(3)-20

FILE: dom3-20.dgn	DW: TXDOT	CK: TXDOT	DN: TXDOT	CR: TXDOT
© TXDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
3-15 8-15	DIST	COUNTY	SHEET NO.	
8-15 7-20	DAL	ELLIS	248	

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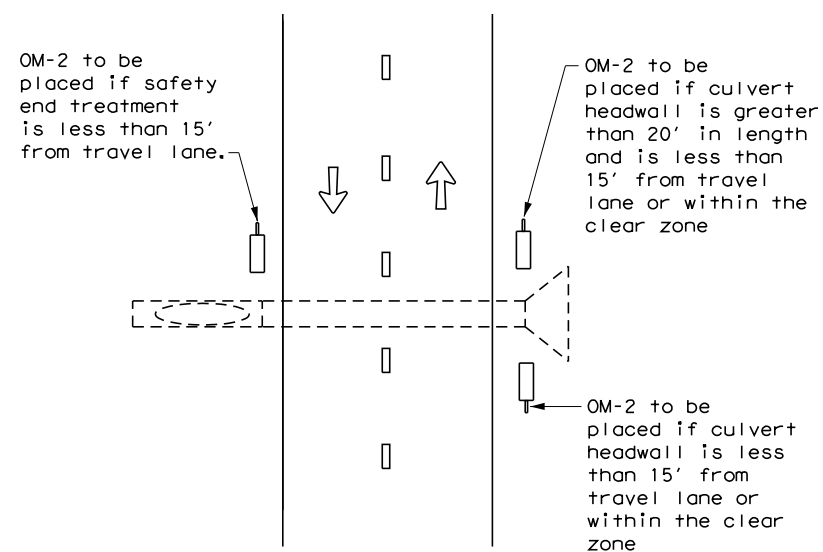
DATE:  
FILE:

**CROSSOVERS**



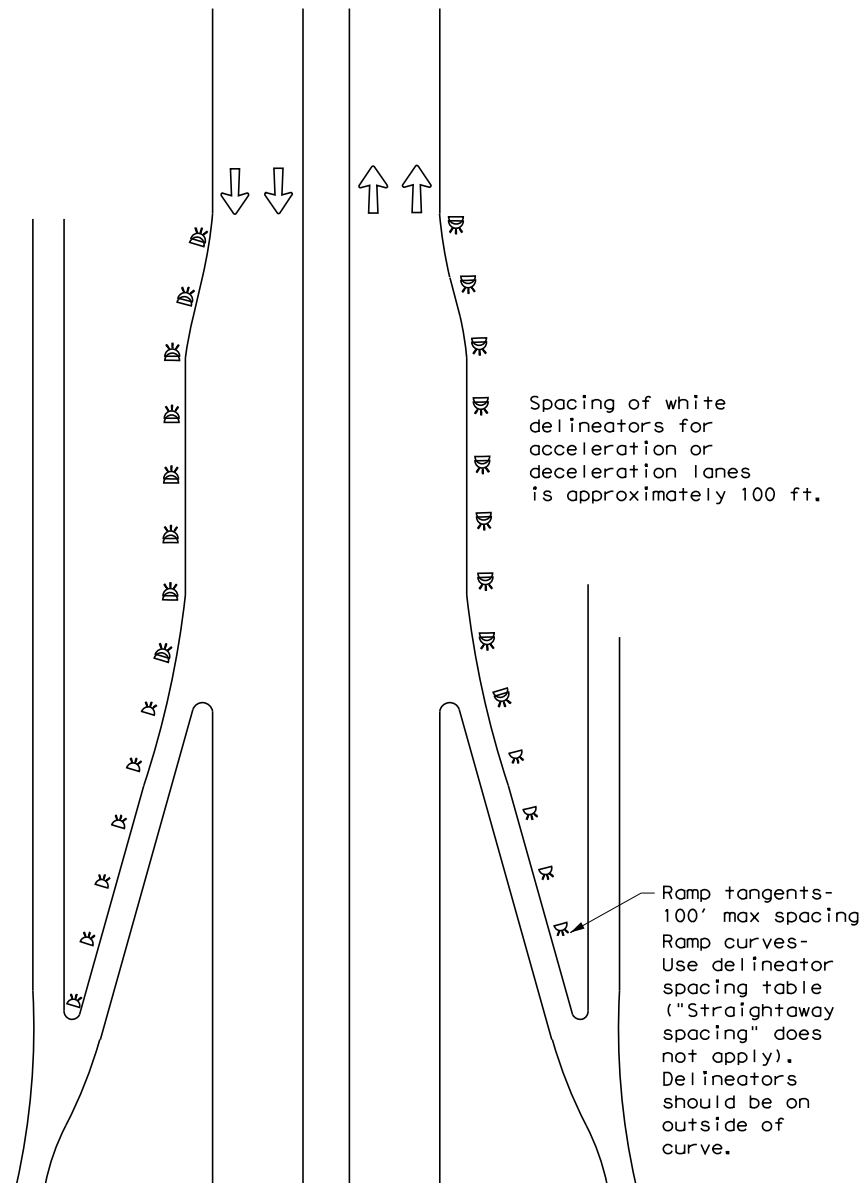
**DETAIL 1**

**FOR CULVERTS WITHOUT MBGF**



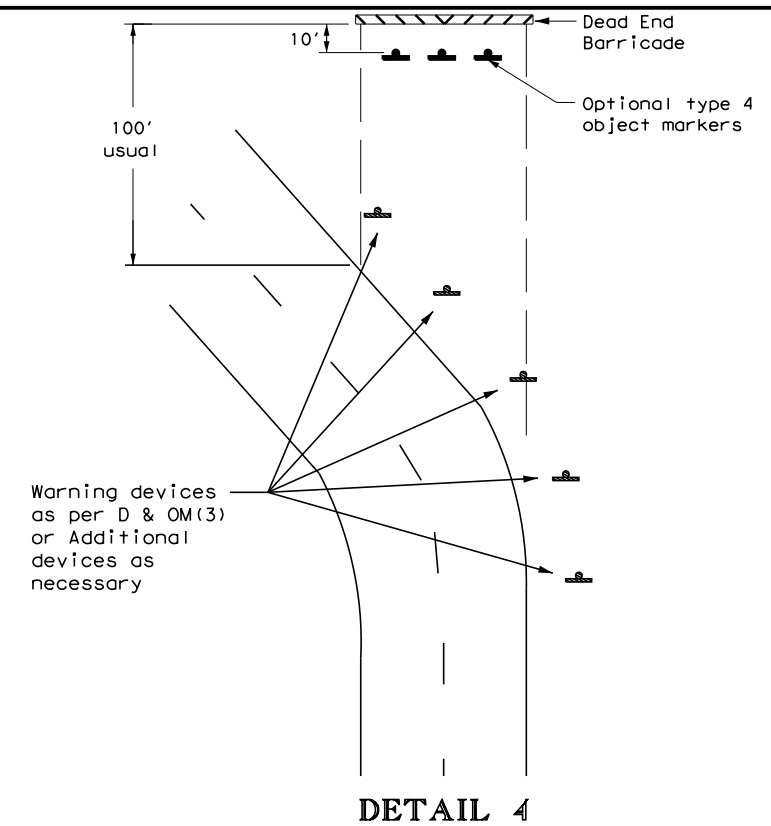
**DETAIL 2**

**FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES**



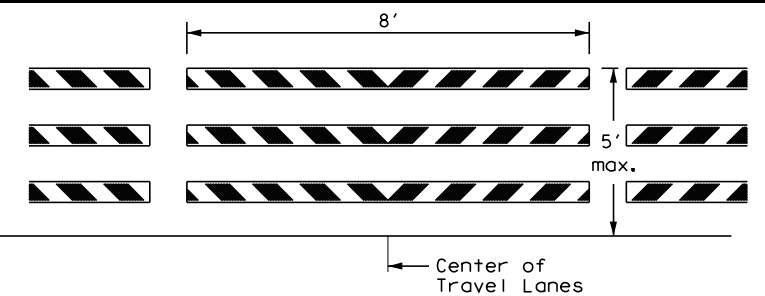
**DETAIL 3**

**TYPICAL APPLICATION OF DEAD END BARRICADE**



**DETAIL 4**

**TYPICAL DEAD END BARRICADE INSTALLATION**



**NOTES**

- Barricade striping shall be red and white reflective sheeting for all permanent road closures.
- Barricade striping is red and white sloping toward the center of the roadway.
- Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

**DETAIL 5**

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator



**DELINEATOR & OBJECT MARKER PLACEMENT DETAILS**

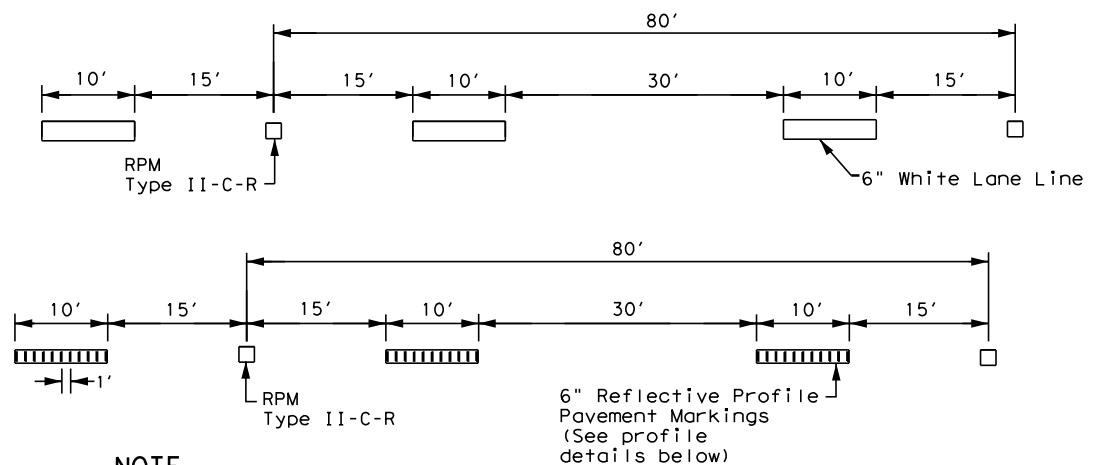
**D & OM(4) - 20**

FILE: dom4-20.dgn	DN: TxDOT	CK: TxDOT	DN: TxDOT	CK: TxDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
3-15	DIST	COUNTY	SHEET NO.	
7-20	DAL	ELLIS	249	



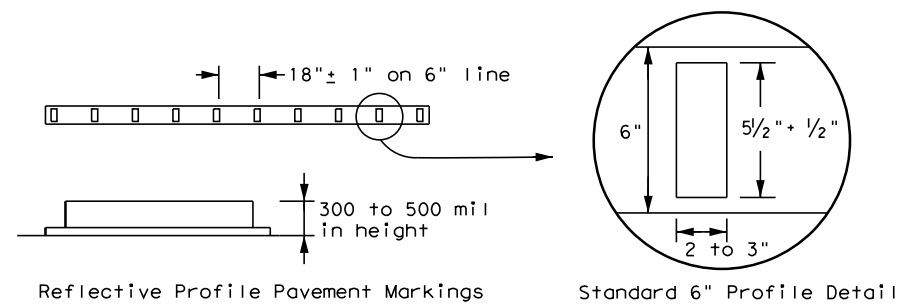
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



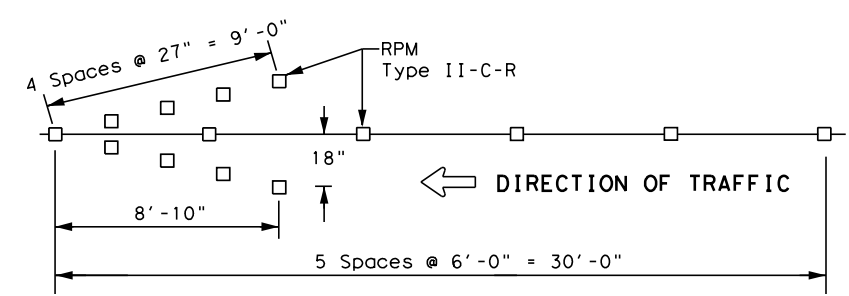
**NOTE**  
 ReflectORIZED raised pavement markers Type II-C-R shall be spaced on 80' centers with the clear face toward normal traffic and the red face toward wrong way traffic. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.

**TRAFFIC LANE LINES PAVEMENT MARKING**



**NOTE**  
 Edge lines should typically be 6" wide and the materials shall be as specified in the plans. See details above if reflective profile pavement markings are to be used.

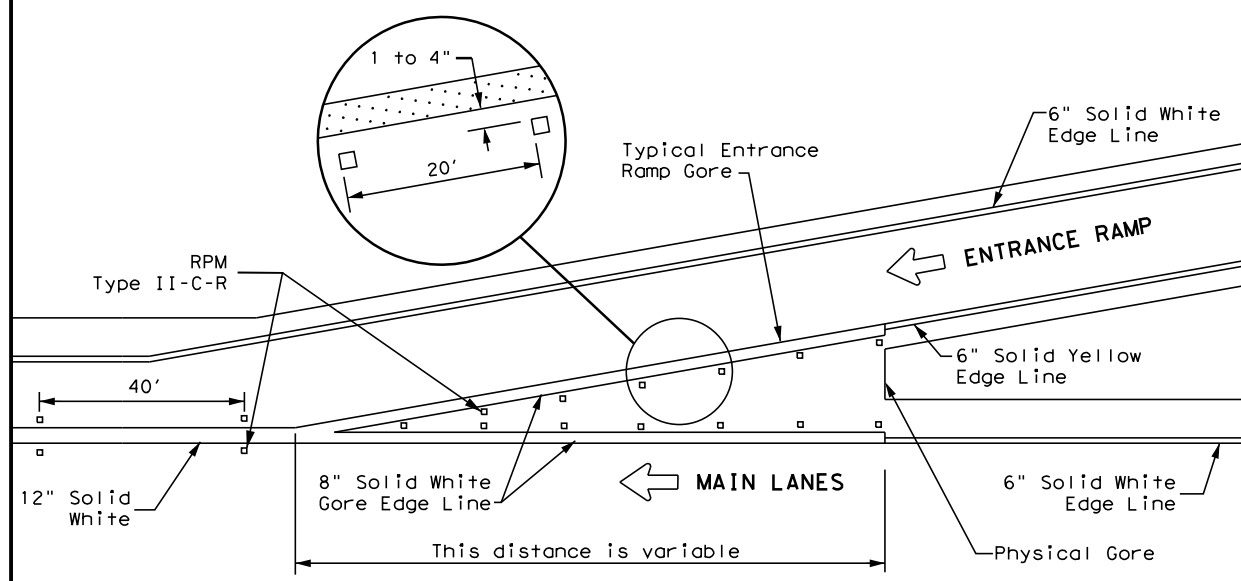
**EDGE LINE PAVEMENT MARKINGS**



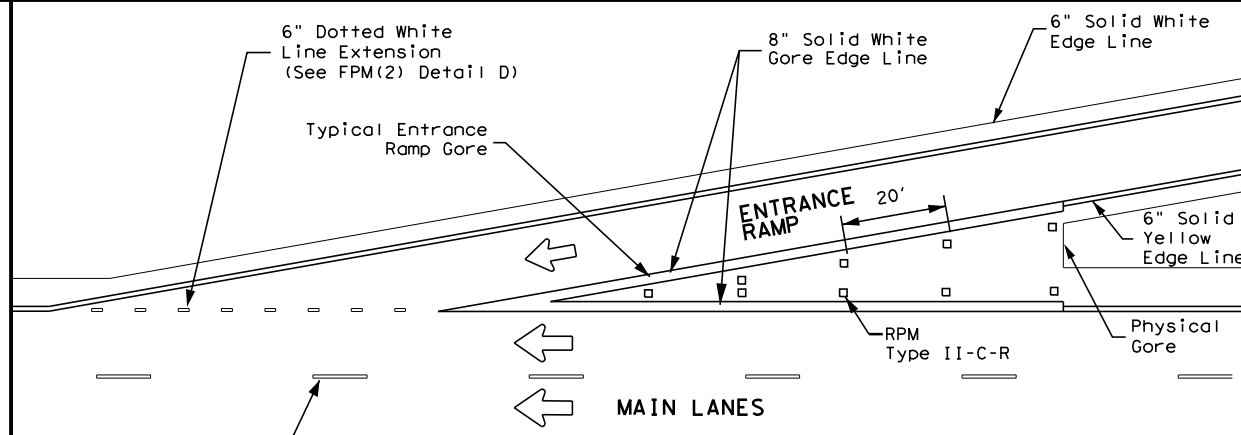
**NOTES**

1. ReflectORIZED raised pavement markers Type-II-C-R in the wrong way arrow shall have the clear face toward normal traffic and the red face toward the wrong way traffic.
2. Red reflectORIZED wrong way arrows, not to exceed two, may be placed on exit ramps. Locations of the arrows shall be as shown in the plans or as directed by the engineer.

**WRONG WAY ARROW**

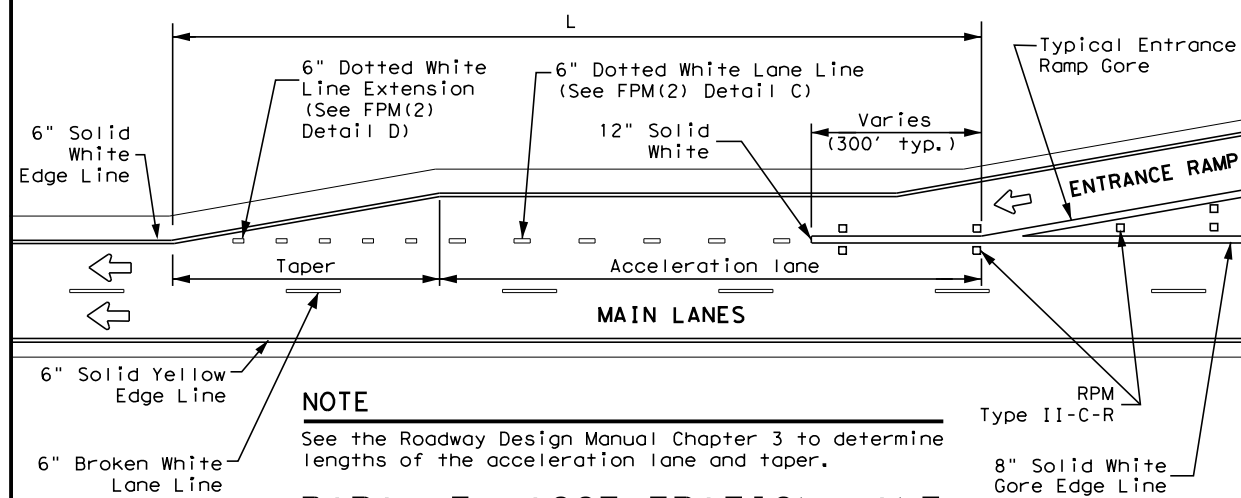


**TYPICAL ENTRANCE RAMP GORE MARKING**



**NOTE**  
 See the Roadway Design Manual Chapter 3 to determine if a tapered acceleration lane may be used.

**TAPERED ACCELERATION LANE**



**NOTE**  
 See the Roadway Design Manual Chapter 3 to determine lengths of the acceleration lane and taper.

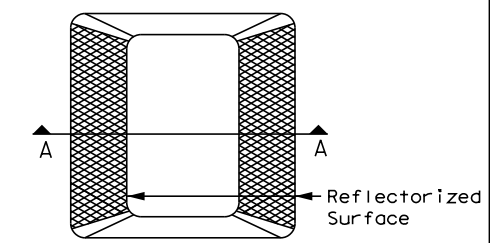
**PARALLEL ACCELERATION LANE**

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

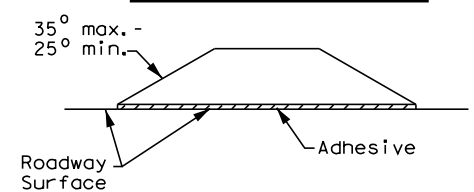
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.

LEGEND	
	Traffic flow
	Pavement marking arrows (white)
	ReflectORIZED Raised Markers (RPM) Type II-C-R

**GENERAL NOTE**  
 On concrete pavements the raised pavement markers shall be placed to one side of the longitudinal joints.



Type II (Top View)



SECTION A

**REFLECTORIZED RAISED PAVEMENT MARKER (RPM)**

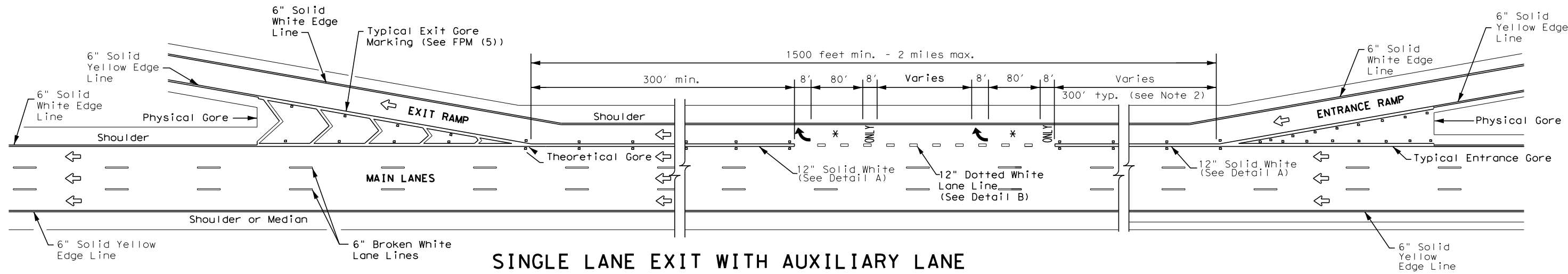
Texas Department of Transportation  
 Traffic Safety Division Standard

**TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS FPM(1)-22**

FILE: fpm(1)-22.dgn	DN: October 2022	CK: 0172	DW: 05	CK: 129	CK: 287
© TxDOT		CON: 0172	SECT: 05	JOB: 129	HIGHWAY: US 287
5-74	8-00	2-12	DIST: COUNTY		SHEET NO.
4-92	2-08	10-22	DAL		ELLIS
5-00	2-10			250	

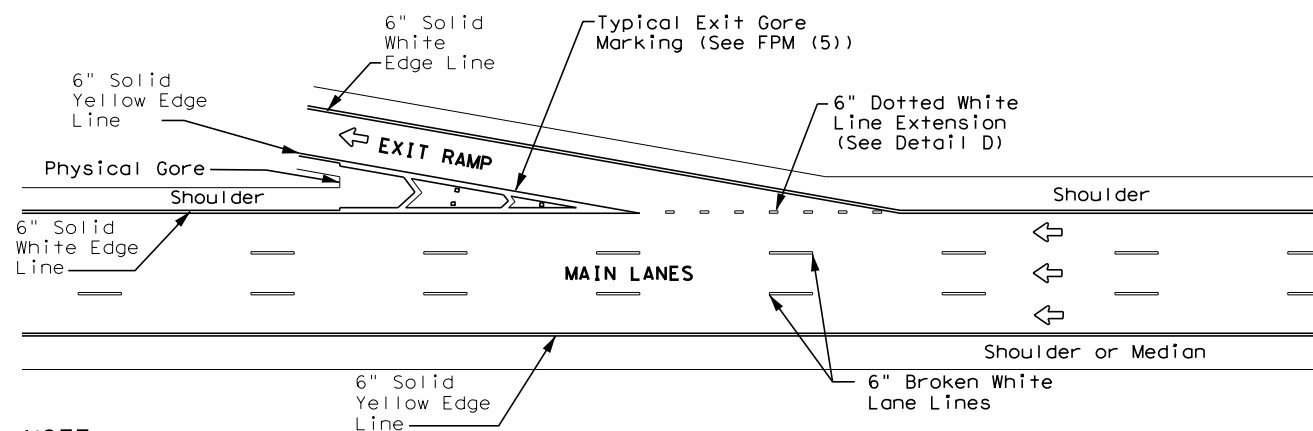
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:  
FILE:



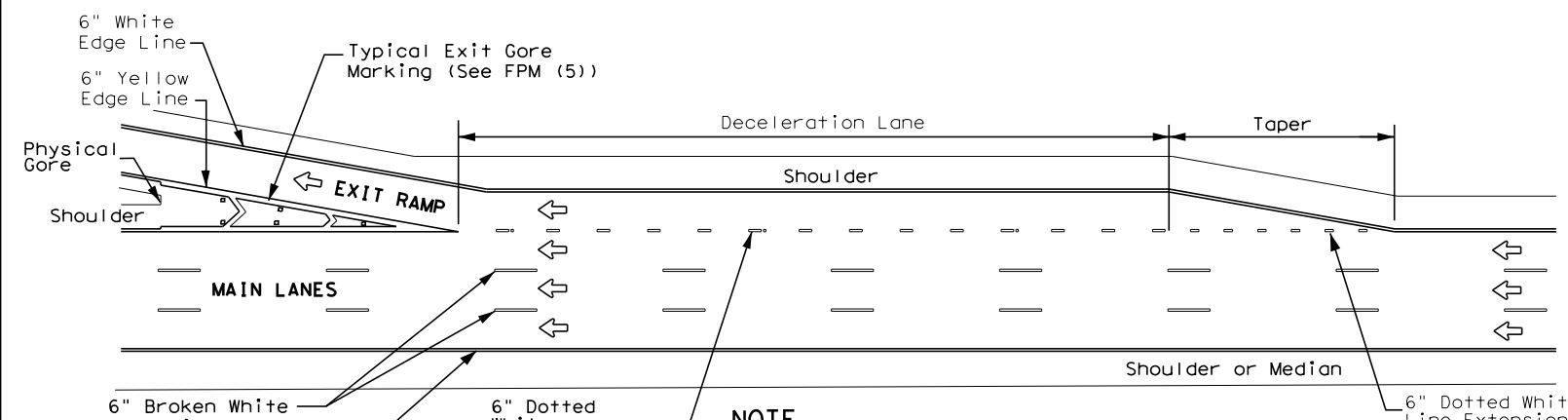
### SINGLE LANE EXIT WITH AUXILIARY LANE

(See Note 2)



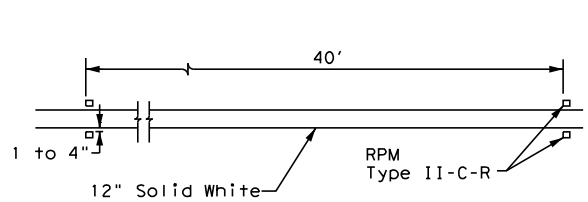
### TAPERED DECELERATION LANE

**NOTE**  
Reference Roadway Design Manual Chapter 3 to determine if tapered deceleration lane may be used.

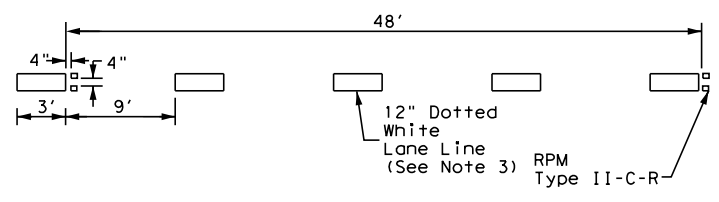


### PARALLEL DECELERATION LANE

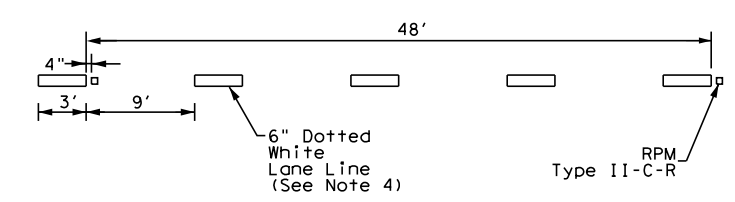
**NOTE**  
Reference Roadway Design Manual Chapter 3 to determine length of deceleration lane and taper.



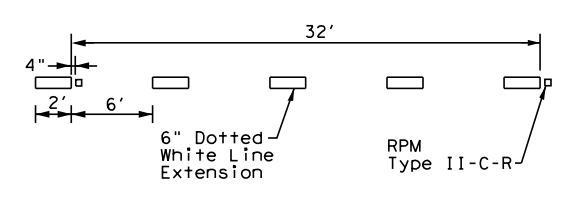
**DETAIL A**



**DETAIL B**



**DETAIL C**



**DETAIL D**

#### GENERAL NOTES

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Normal (6") dotted lane line (see Detail C) is used at parallel acceleration and deceleration lanes.
5. See FPM(1) for traffic lane line pavement marking details.

#### LEGEND

	Traffic flow
	Pavement marking arrows (white)
	Reflectorized Raised Markers (RPM) Type II-C-R
	Arrow markings are optional, however "ONLY" is required if arrow is used

#### MATERIAL SPECIFICATIONS

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

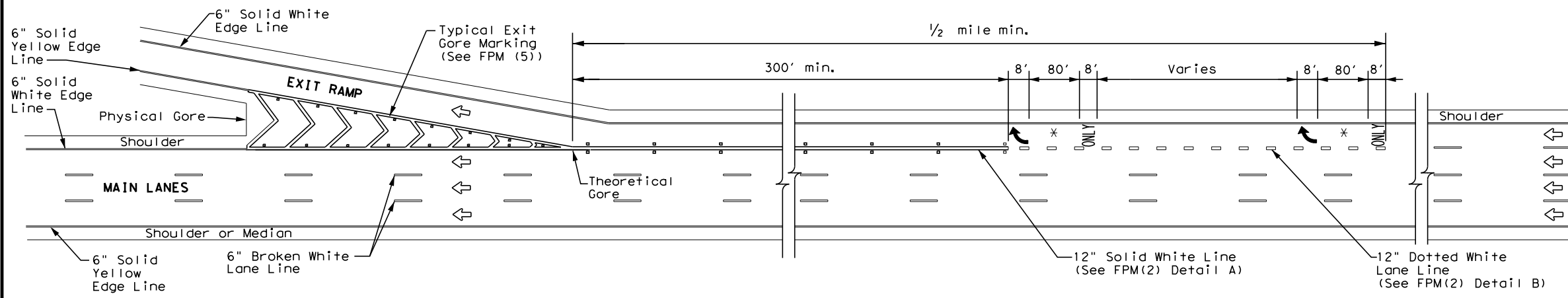
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



## TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS ENTRANCE AND EXIT RAMP

### FPM(2) - 22

FILE: fpm(2)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
2-77 5-00 2-12	DIST	COUNTY	SHEET NO.	
4-92 8-00 10-22	DAL	ELLIS	251	
8-95 2-10				

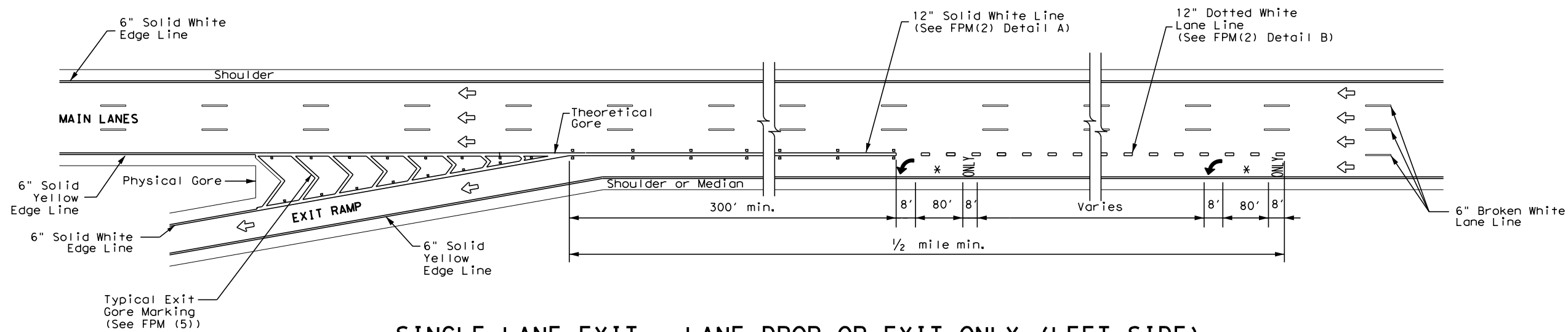


**SINGLE LANE EXIT - LANE DROP OR EXIT ONLY**

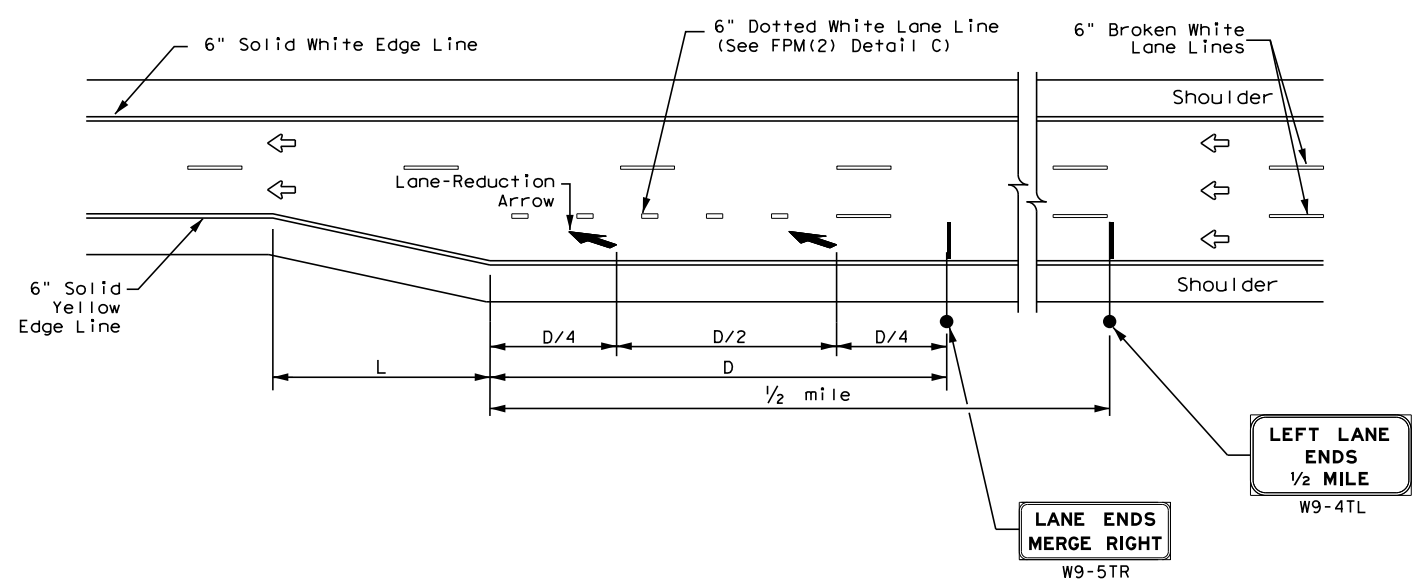
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

LEGEND	
↔	Traffic flow
↶	Pavement marking arrows (white)
□	ReflectORIZED Raised Markers (RPM) Type II-C-R
*	Arrow markings are optional, however "ONLY" is required if arrow is used



**SINGLE LANE EXIT - LANE DROP OR EXIT ONLY (LEFT SIDE)**



**FREeway LANE REDUCTION**

**NOTES**

- Large Guide signs shall conform to the TxDOT Freeway Signing Handbook.
- 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.
- Arrows and sign details can be found in the Standard Highway Sign Designs for Texas (SHSD) at <http://www.txdot.gov>.
- These guidelines may also be applied to the design of a right side lane reduction. Use LANE ENDS MERGE LEFT (W9-5TL) and RIGHT LANE ENDS 1/2 MILE (W9-4TR) signs in lieu of what is shown on drawing.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
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	
80 MPH	1,500	
85 MPH	1,625	

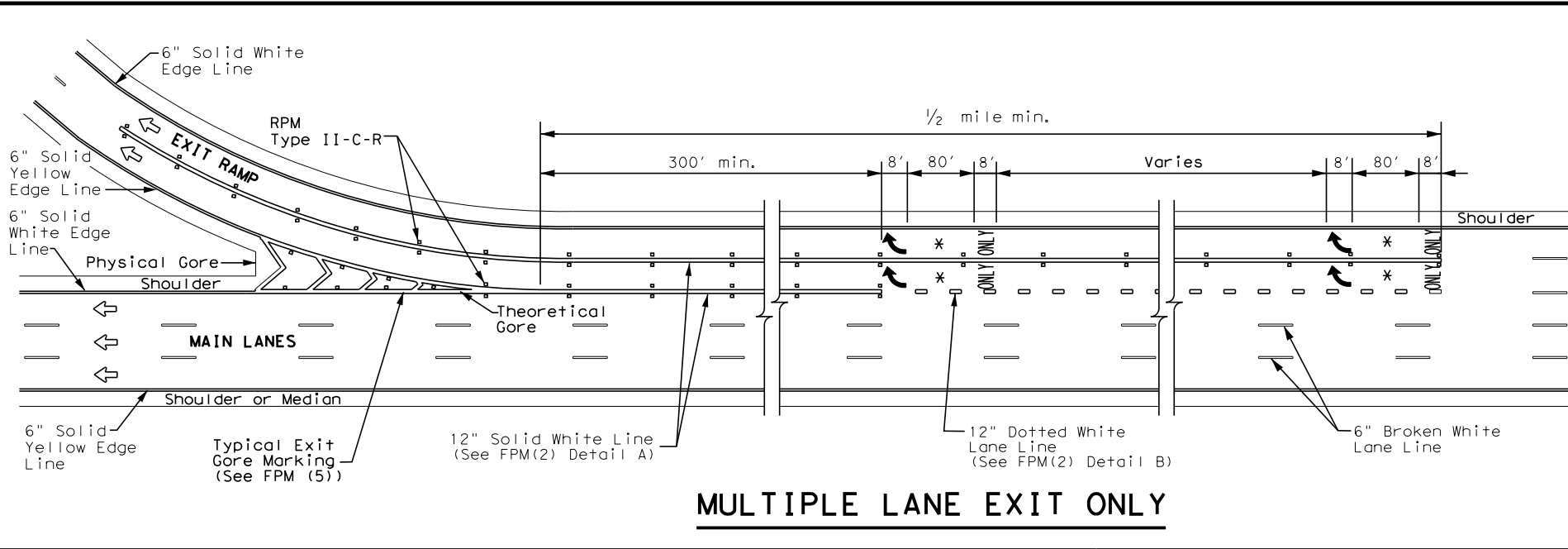
**GENERAL NOTES**

- Pavement markings shall be white except as otherwise noted.
- Length of 12" white line may vary depending on location.
- Wide (12") dotted lane line (see FPM(2) Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
- Edge lines are not required in curb and gutter sections of frontage roads.
- See FPM(1) for traffic lane line pavement marking details.



**TYPICAL STANDARD  
FREEWAY PAVEMENT MARKINGS  
SINGLE LANE DROP (EXIT ONLY)  
AND LANE REDUCTION DETAILS  
FPM(3) - 22**

FILE: fpm(3)-22.dgn	DN:	CK:	DW:	CK:	
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY	
REVISIONS		0172	05	129	US 287
4-92	2-10	DIST	COUNTY	SHEET NO.	
5-00	2-12	DAL	ELLIS	252	
8-00	10-22				



**MULTIPLE LANE EXIT ONLY**

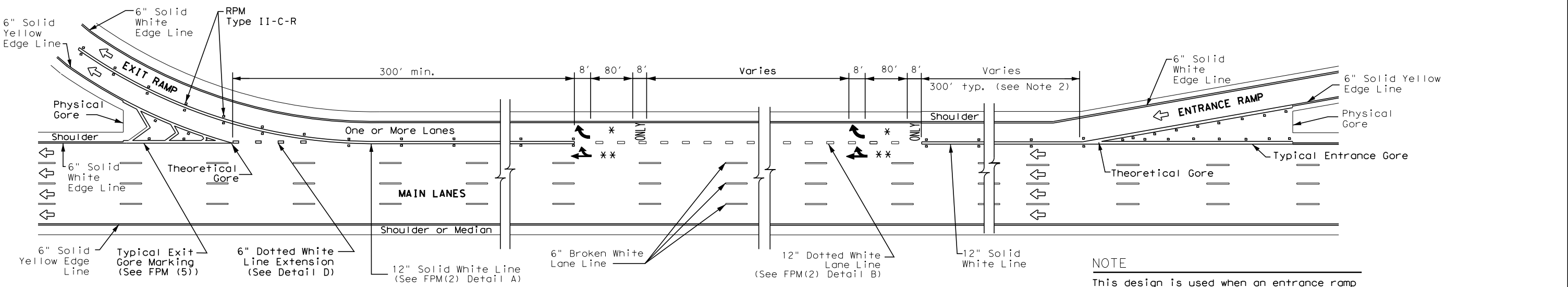
LEGEND	
↔	Traffic Flow
□	Reflectorized Raised Markers (RPM) Type II-C-R
↩	Pavement marking arrow (white)
*	Arrow markings are optional, however "ONLY" is required if arrow is used
**	Arrow markings are optional

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.

**GENERAL NOTES**

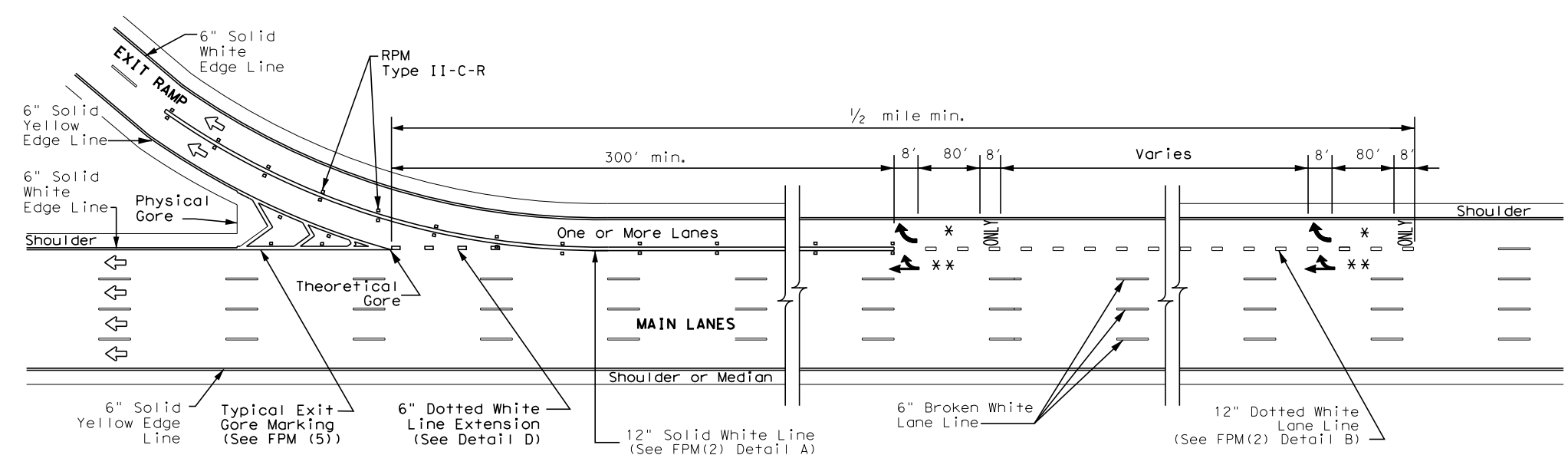
1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see FPM(2) Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Edge lines are not required in curb and gutter sections of frontage roads.
5. See FPM(1) for traffic lane line pavement marking details.



**SINGLE LANE ENTRANCE WITH MULTIPLE LANE EXIT - EXIT ONLY WITH OPTION LANE**

**NOTE**

This design is used when an entrance ramp is followed by a dual lane exit ramp within 2400' downstream (theoretical gore to theoretical gore).



**MULTIPLE LANE EXIT - EXIT ONLY WITH OPTION LANE**

DATE:  
FILE:



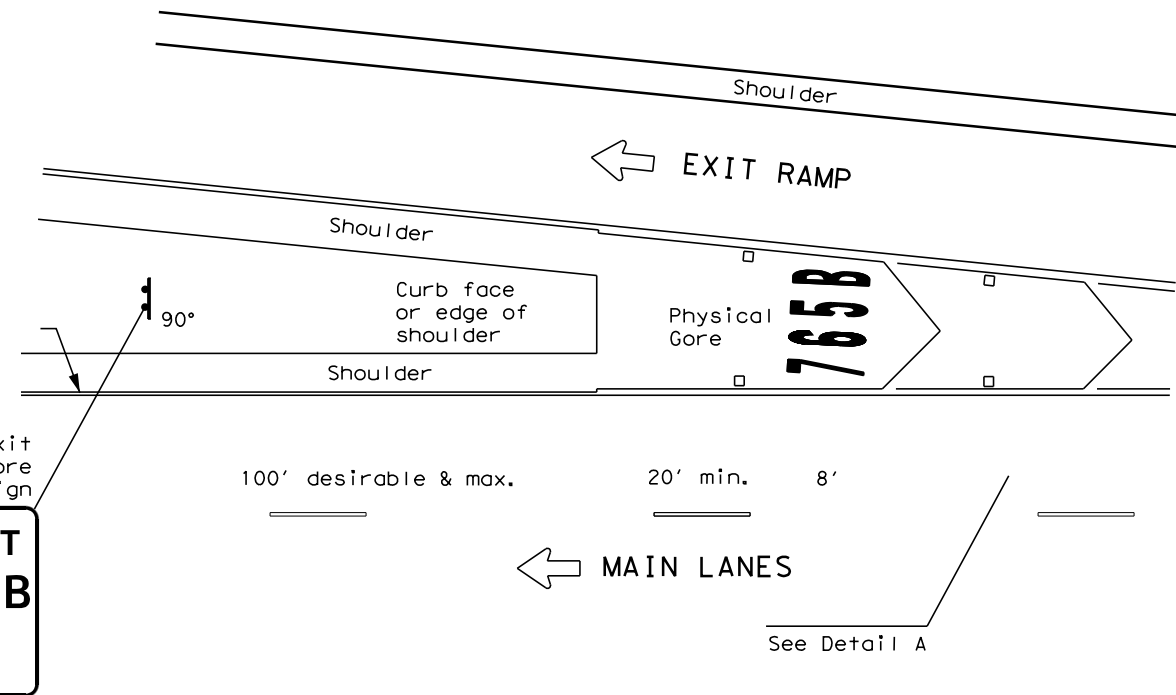
**TYPICAL STANDARD FREEWAY PAVEMENT MARKINGS MULTIPLE LANE DROP (EXIT) DETAILS FPM(4) - 22**

FILE: fpm(4)-22.dgn	DN:	CK:	DW:	CK:
© TXDOT October 2022	CONT	SECT	JOB	HIGHWAY
	0172	05	129	US 287
2-77 2-10	REVISIONS			
5-00 2-12	DIST	COUNTY	SHEET NO.	
8-00 10-22	DAL	ELLIS	253	

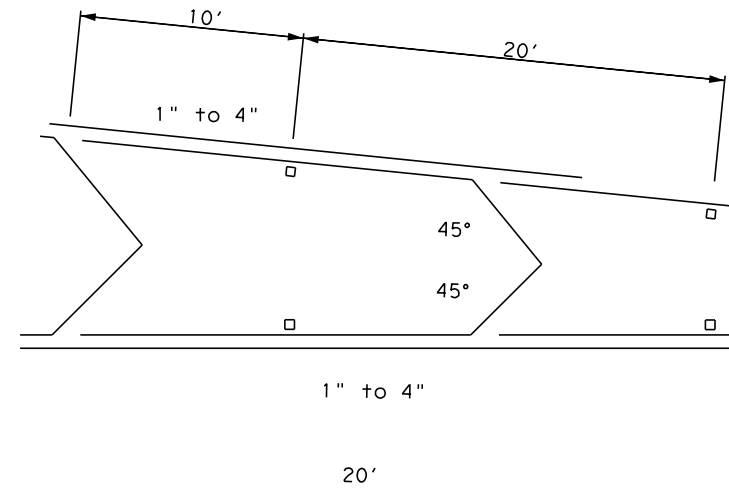
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### EXIT NUMBER PAVEMENT MARKING NOTES

1. Minimum 8 foot white exit number pavement markings should be used, unless otherwise noted.
2. Spacing between letters and numbers should be approximately 4 inches.
3. Pavement markings are to be located as specified elsewhere in the plans.
4. Numbers and Letters details can be found in the Standard Highway Design for Texas (SHSD) Section 12 at <http://www.txdot.gov>



MARKINGS WITH EXIT NUMBER



### NOTES

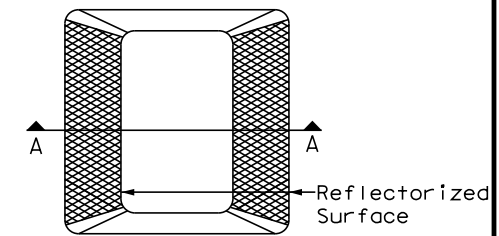
1. Raised pavement markers shall be centered between each chevron or neutral area line.
2. For more information, see ReflectORIZED Raised Pavement Marker Detail.

DETAIL A

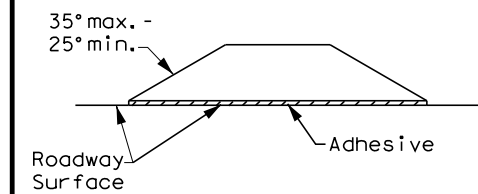
MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

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

LEGEND	
←	Traffic flow
□	ReflectORIZED Raised Markers (RPM) Type II-C-R



Type II (Top View)



SECTION A

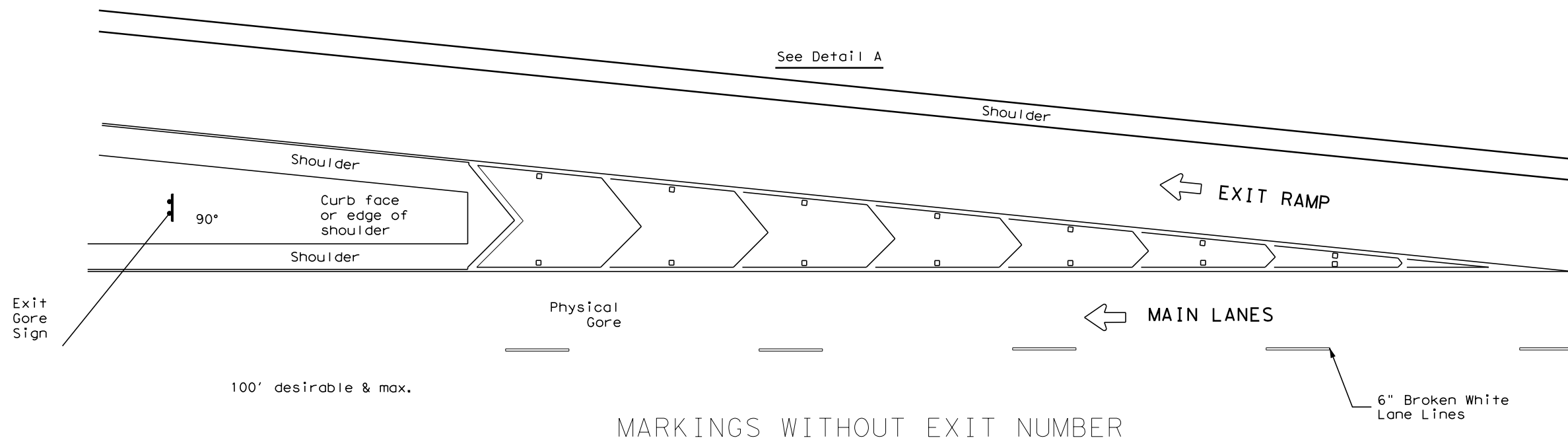
### REFLECTORIZED RAISED PAVEMENT MARKER (RPM)



### EXIT GORE PAVEMENT MARKINGS

#### FPM(5) - 22

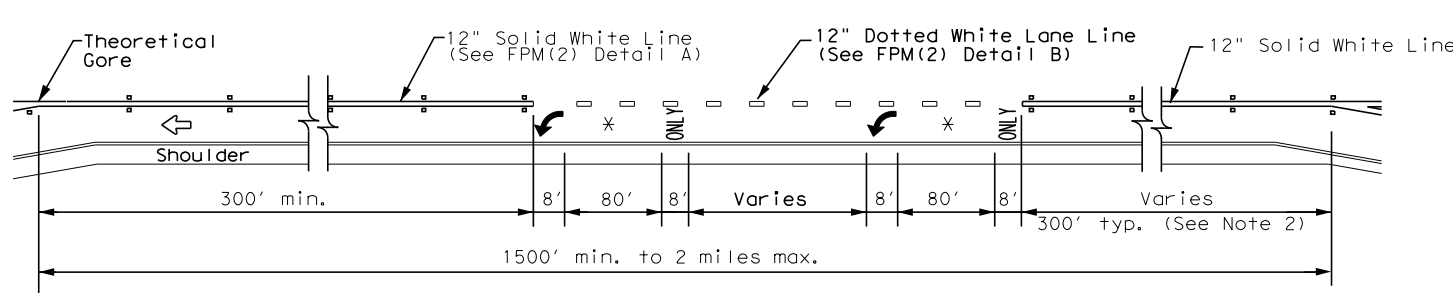
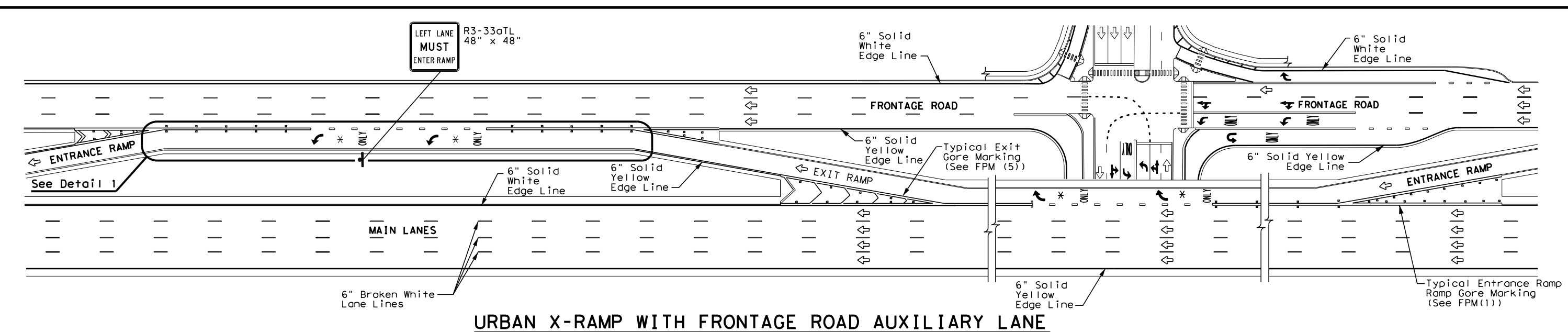
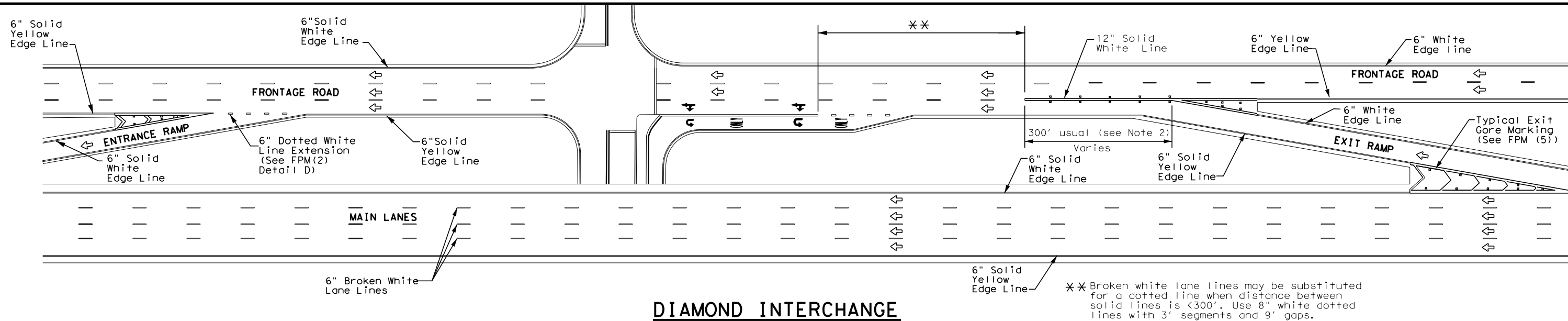
FILE: fpm(5)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
9-19	DIST	COUNTY	SHEET NO.	
10-22	DAL	ELLIS	254	



MARKINGS WITHOUT EXIT NUMBER

DATE:  
FILE:

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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.

**GENERAL NOTES**

1. Pavement markings shall be white except as otherwise noted.
2. Length of 12" white line may vary depending on location.
3. Wide (12") dotted lane line (see FPM(2) Detail B) is used to separate a through lane that continues beyond the interchange from an adjacent mandatory exit lane.
4. Edge lines are not required in curb and gutter sections of frontage roads.
5. See FPM(1) for traffic lane line pavement marking details.

LEGEND	
	Traffic flow
	Pavement marking arrows (white)
	ReflectORIZED Raised Markers (RPM) Type II-C-R
	Arrow markings are optional, however "ONLY" is required if arrow is used



**TYPICAL STANDARD  
FREEWAY AND FRONTAGE  
ROAD PAVEMENT MARKINGS**

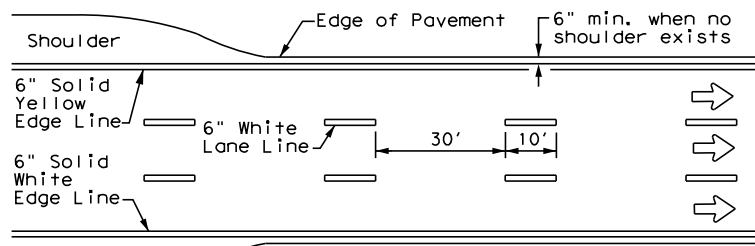
**FPM(6) - 22**

FILE: fpm(6)-22.dgn	DN:	CK:	DW:	CK:
© TxDOT October 2022	CONT	SECT	JOB	HIGHWAY
10-22	0172	05	129	US 287
REVISIONS	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	255	

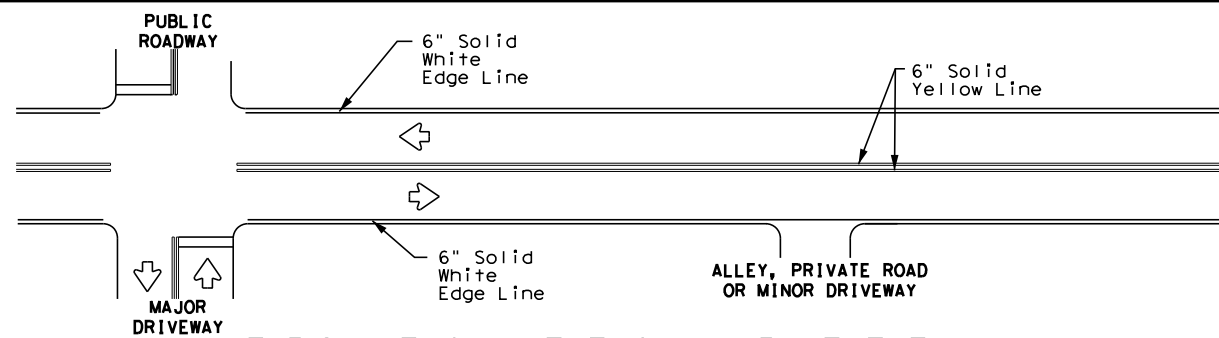
DATE:  
FILE:

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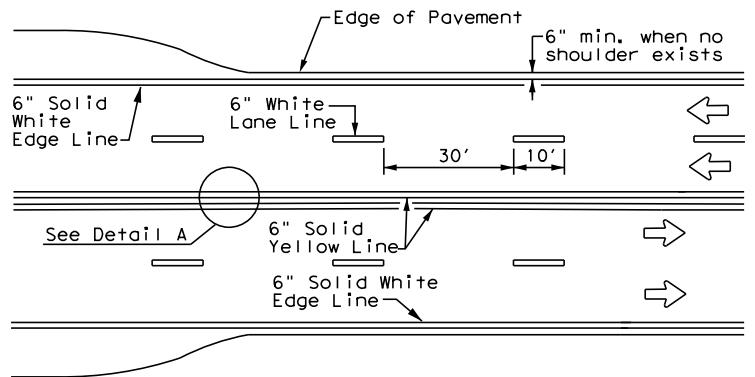
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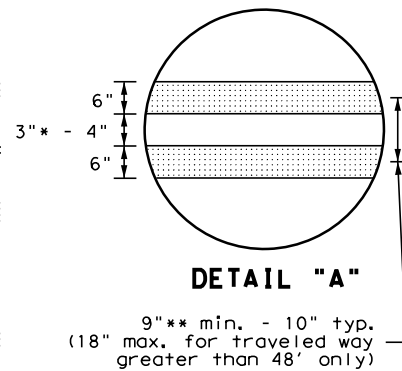
**EDGE LINE AND LANE LINES  
ONE-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



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



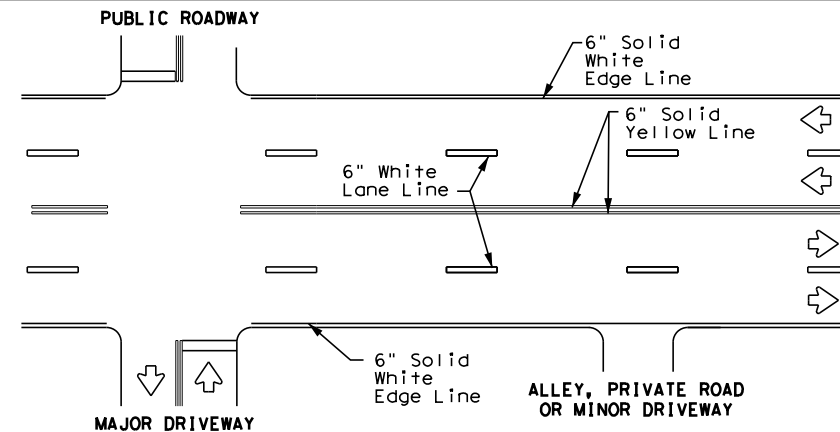
**CENTERLINE AND LANE LINES  
FOUR LANE TWO-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



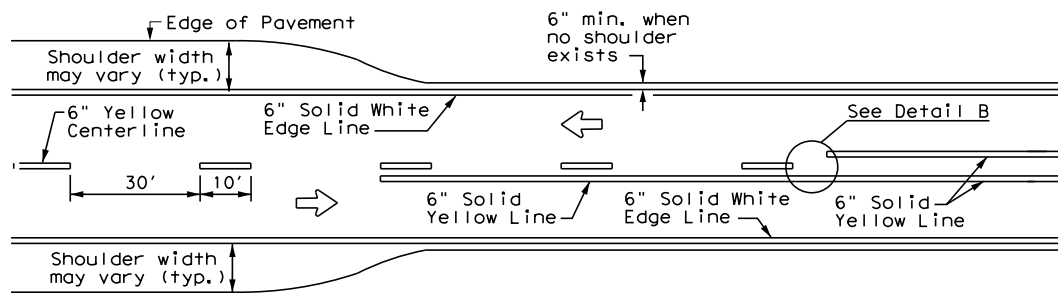
**DETAIL "A"**

9" \*\* min. - 10" typ.  
(18" max. for traveled way greater than 48' only)

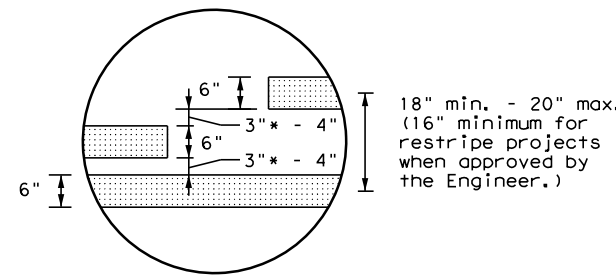
\* 2" minimum for restripe projects when approved by the Engineer.  
\*\* 8" minimum for restripe projects when approved by the Engineer.



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

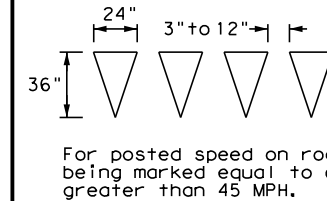


**TWO LANE TWO-WAY ROADWAY  
WITH OR WITHOUT SHOULDERS**



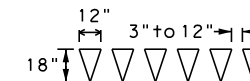
**DETAIL "B"**

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



**YIELD LINES**

For posted speed on road being marked equal to or greater than 45 MPH.



For posted speed on road being marked equal to or less than 40 MPH.

**NOTES**

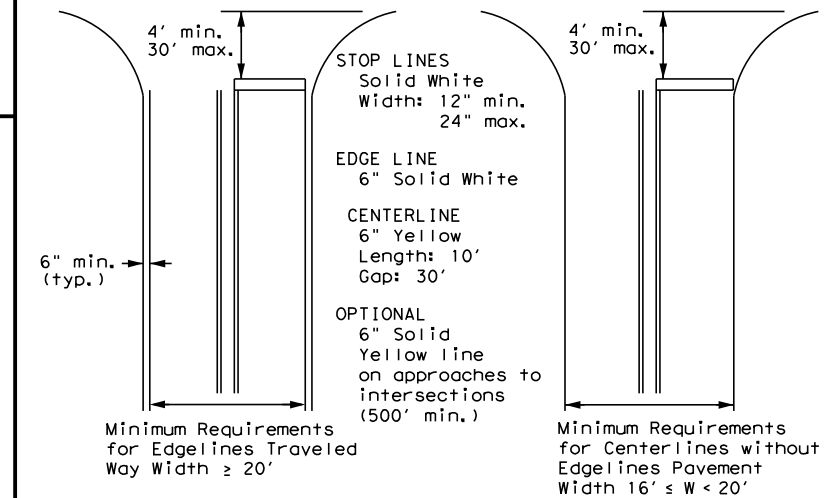
- Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

**GUIDE FOR PLACEMENT OF STOP LINES,  
EDGE LINE & CENTERLINE**

Based on Traveled Way and Pavement Widths for Undivided Roadways



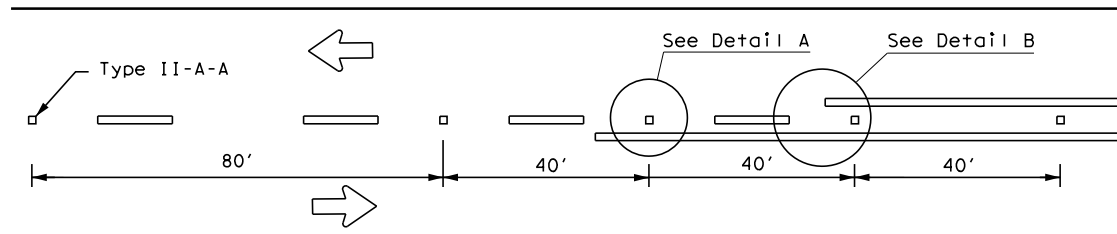
**TYPICAL STANDARD  
PAVEMENT MARKINGS**

**PM(1)-22**

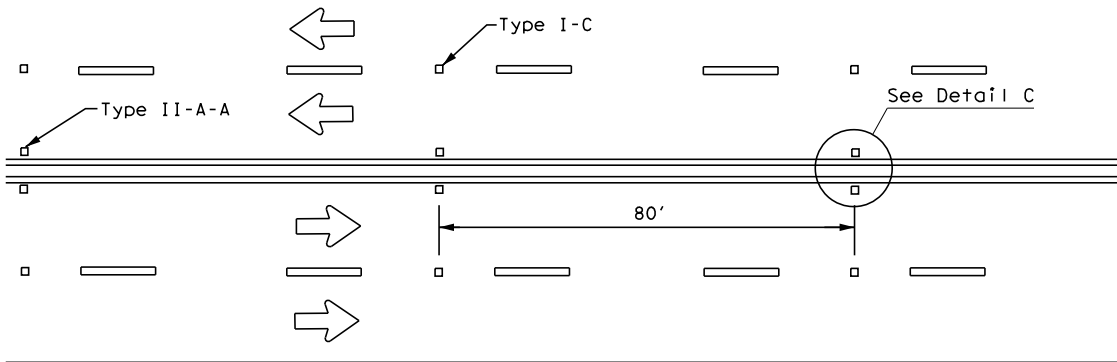
FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
11-78 8-00 6-20	DIST	COUNTY	SHEET NO.	
8-95 3-03 12-22	DAL	ELLIS	256	
5-00 2-12				

# REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

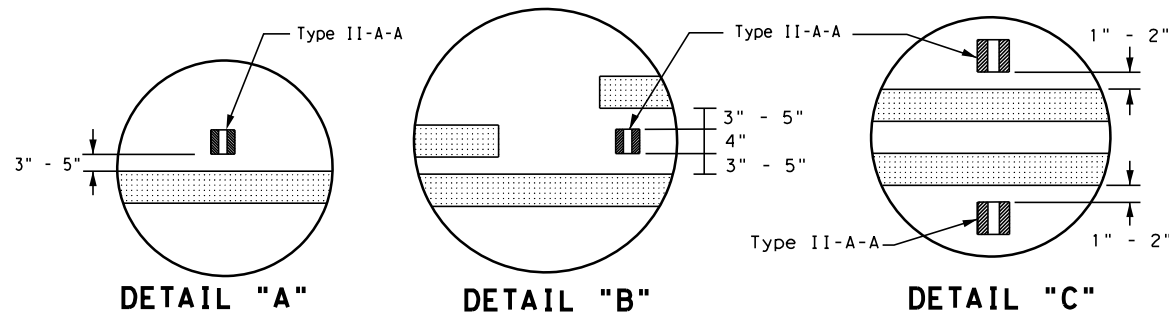
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**CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS**



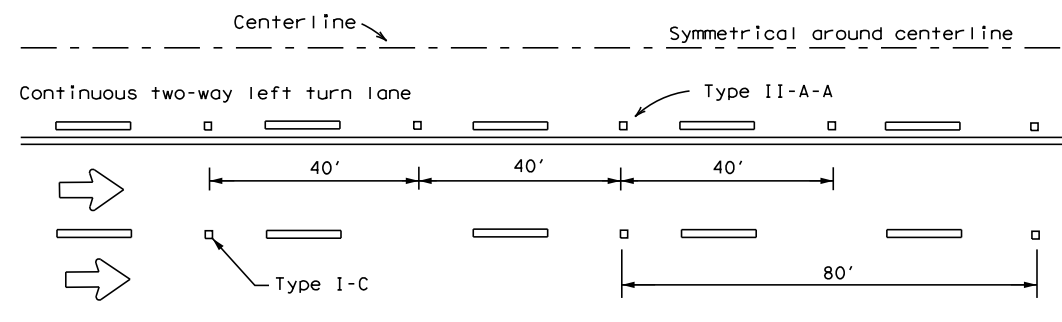
**CENTERLINE & LANE LINES  
FOR FOUR LANE TWO-WAY ROADWAYS**



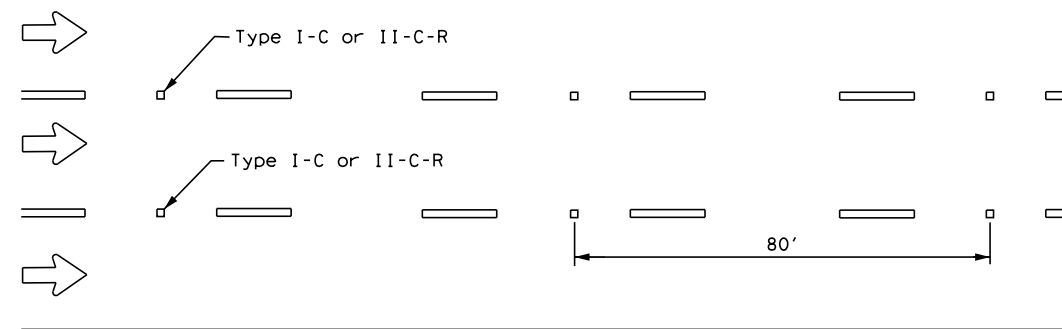
**DETAIL "A"**

**DETAIL "B"**

**DETAIL "C"**

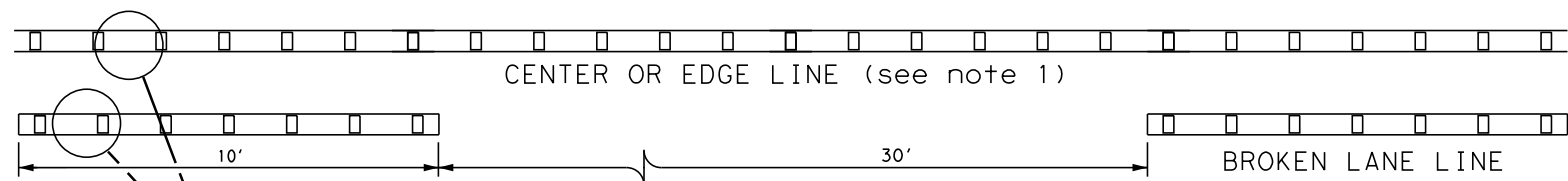


**CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE**

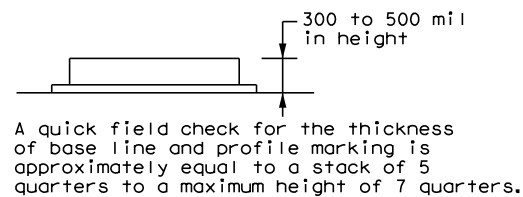


**LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)**

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



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

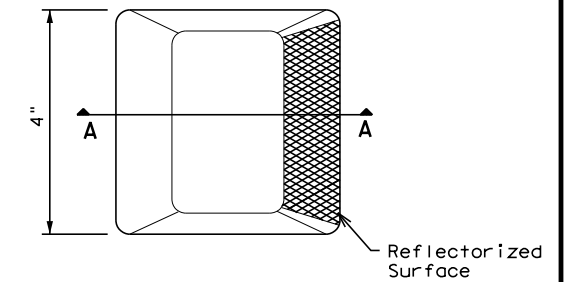


**NOTES**

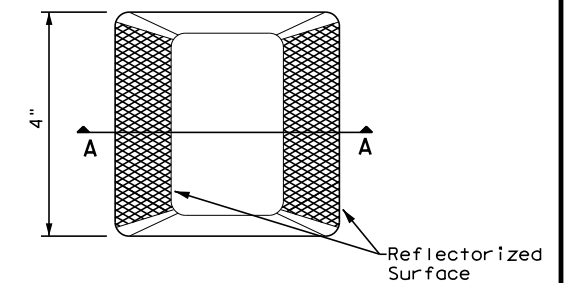
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

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

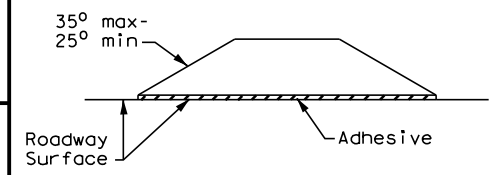
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



**Type I (Top View)**



**Type II (Top View)**



**SECTION A**

**RAISED PAVEMENT MARKERS**



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

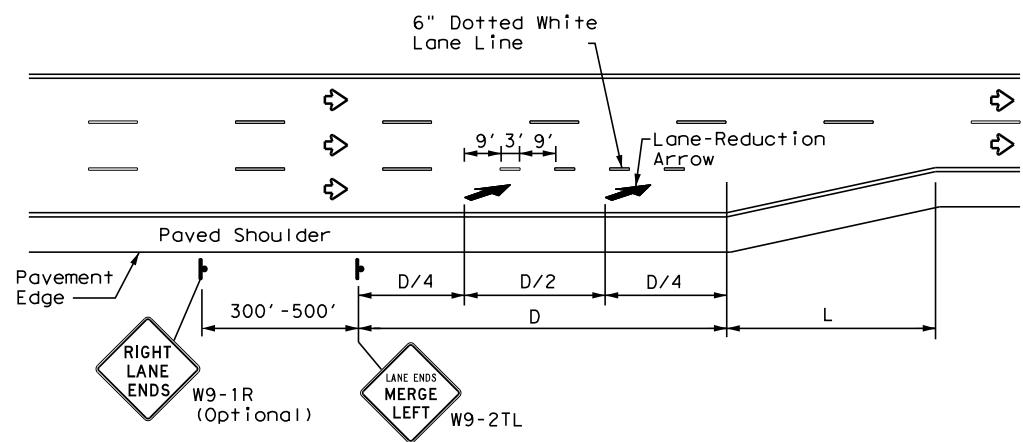
FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-77 8-00 6-20	DIST	COUNTY	SHEET NO.	
4-92 2-10 12-22	DAL	ELLIS	257	
5-00 2-12				

DATE: FILE:



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**LANE REDUCTION**

**NOTES**

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

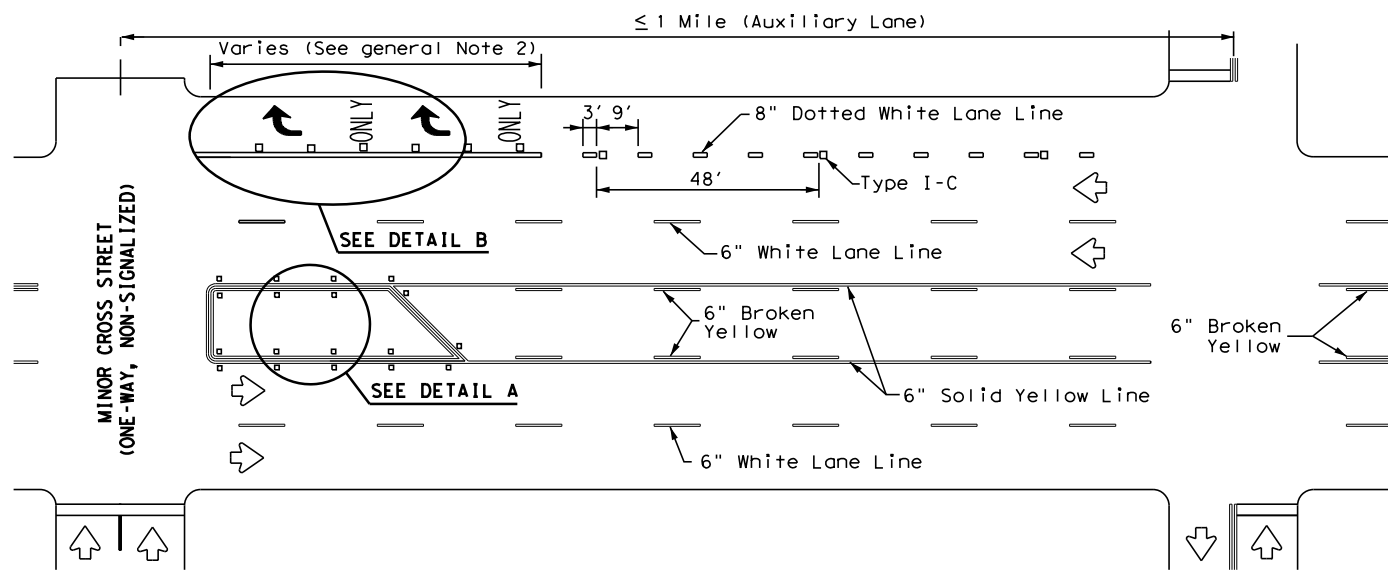
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	L=WS
45 MPH	775	
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

**GENERAL NOTES**

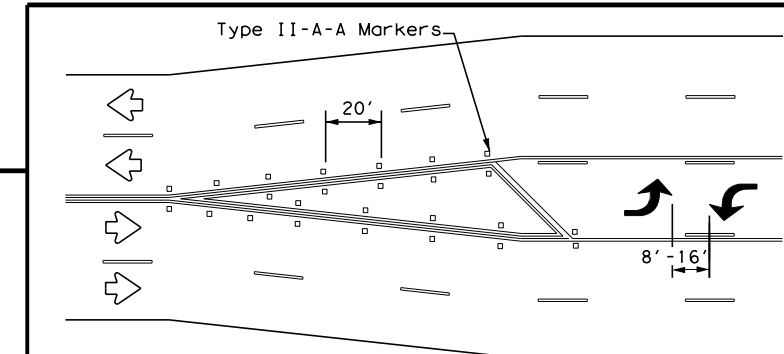
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn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

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

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

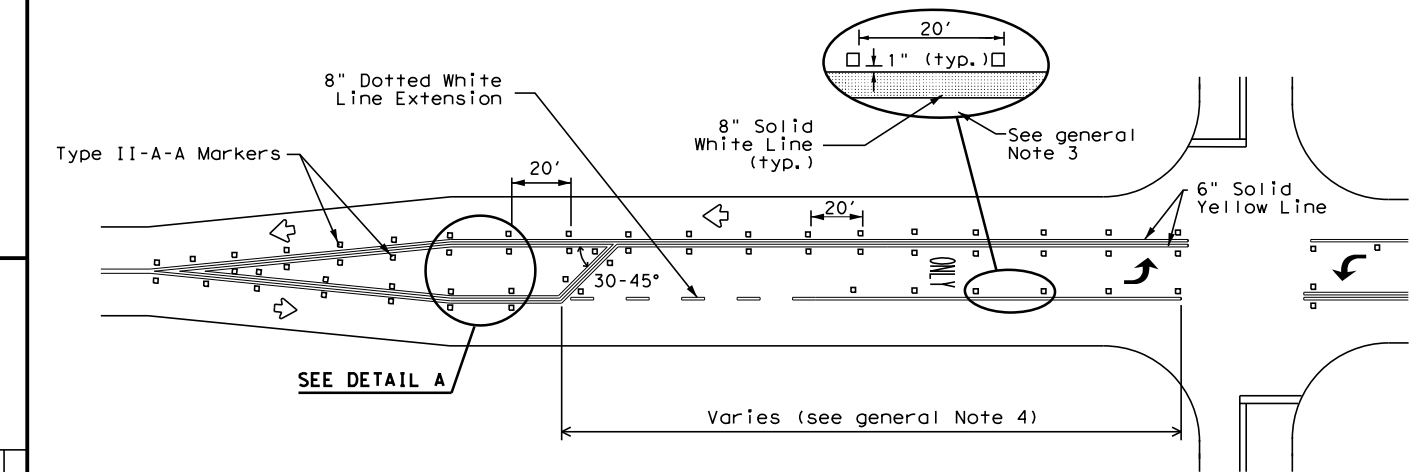


**TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE**

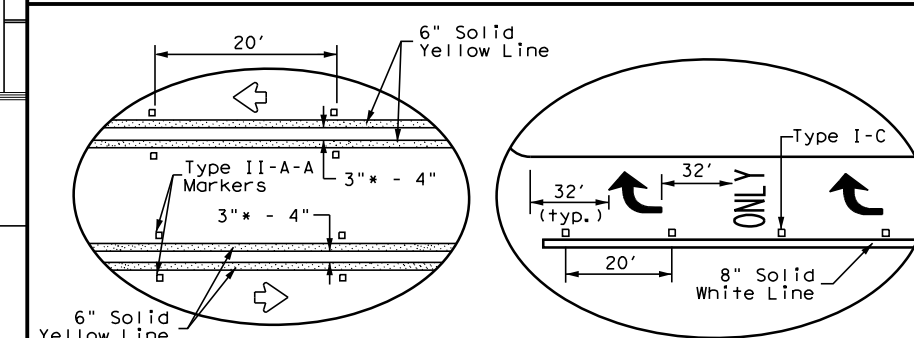


A two-way left-turn (TWLTL) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

**TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY**



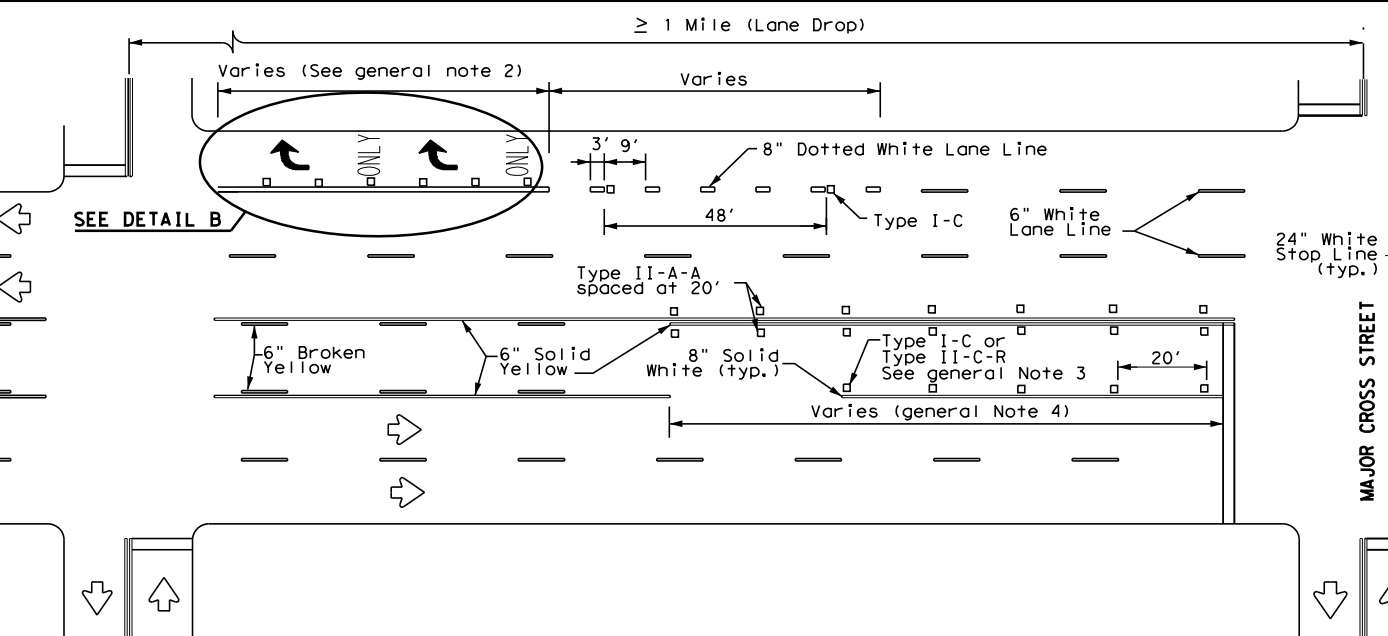
**TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS**



**DETAIL A**

**DETAIL B**

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



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

Texas Department of Transportation  
Traffic Safety Division Standard

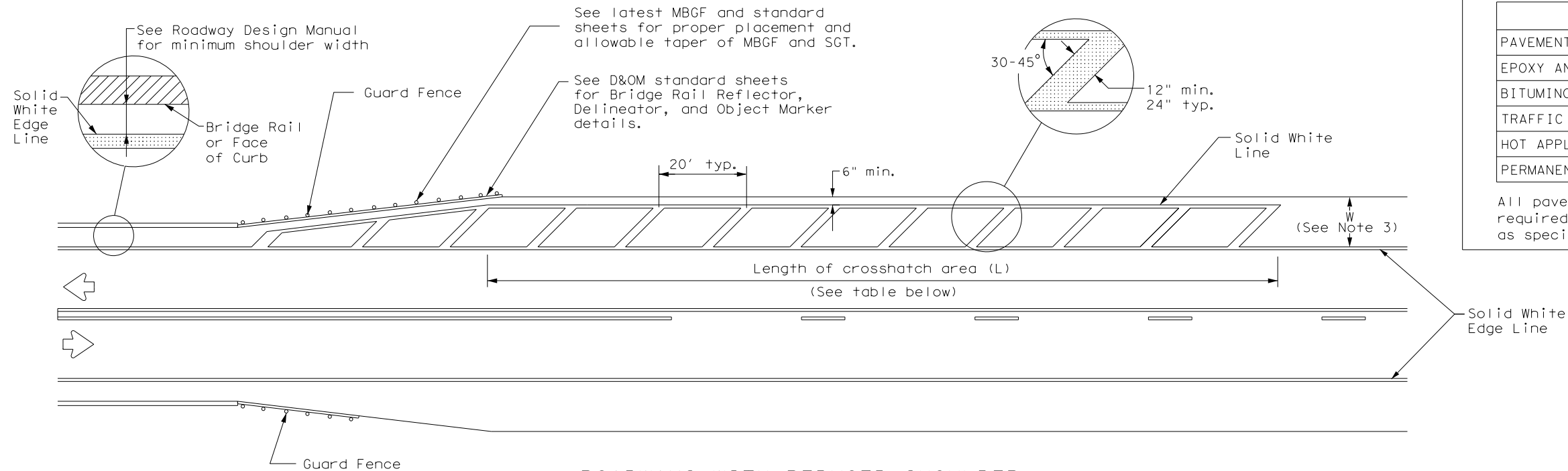
**TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3) - 22**

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
4-98 3-03 6-20	0172	05	129	US 287
5-00 2-10 12-22	DIST	COUNTY		SHEET NO.
8-00 2-12	DAL	ELLIS		258

22C

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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.

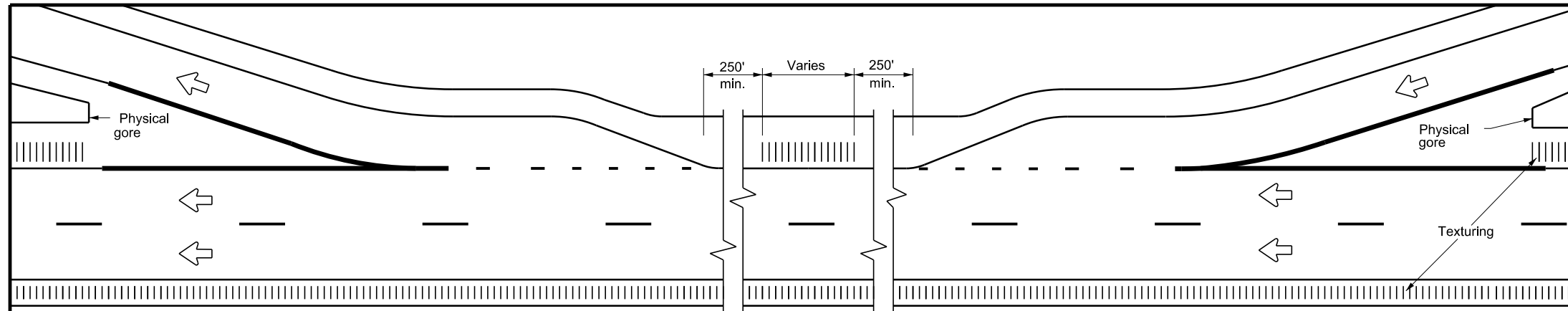
MATERIAL SPECIFICATIONS

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: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT	
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0172	05	129	US 287	
	DIST	COUNTY		SHEET NO.	
	DAL	ELLIS		260	

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TYPICAL RUMBLE STRIP PLACEMENT AT EXIT AND ENTRANCE RAMP

**GENERAL NOTES**

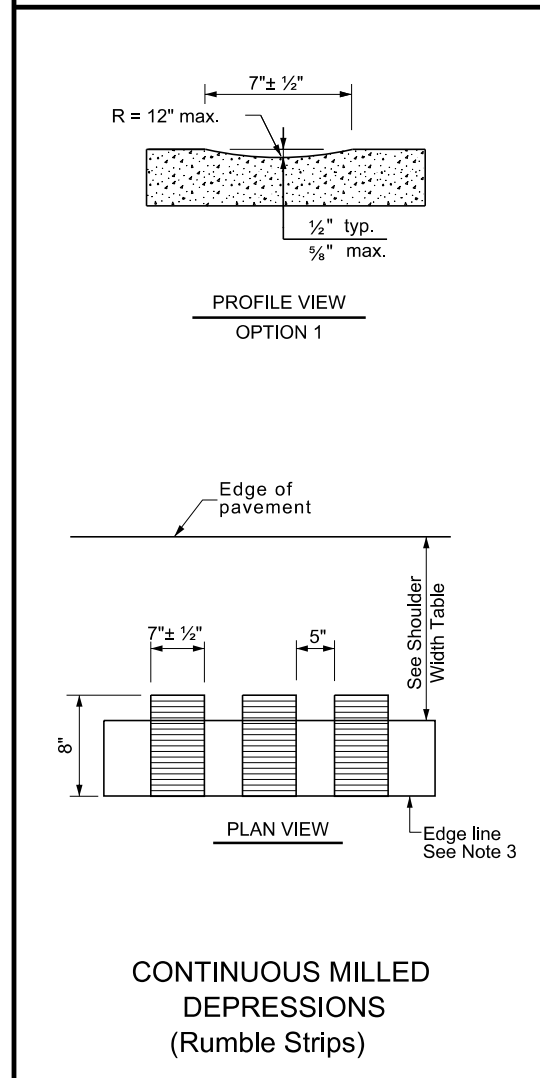
- Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
- Milled rumble strips are preferred when adequate pavement depth is available. If pavement thickness is less than 2 inches, milled rumble strips shall not be used. Rumble strips shall not be milled or depressed into bridge decks.
- Use standard sheets PM(2) and FPM(1) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
- See the Shoulder Width Table below for determining what options may be used for edge line rumble strips.
- Breaks in edge line rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections, or driveways with high usage of large trucks when installed on conventional highways.
- Rumble strips shall not be placed across exit or entrance ramps, acceleration or deceleration lanes, crossovers, gore areas, or intersections with other roadways.
- Consideration should be given to noise levels when edge line rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
- Consideration shall be given to bicyclists. See RS(6).

**WHEN INSTALLING MILLED DEPRESSION EDGE LINE RUMBLE STRIPS:**

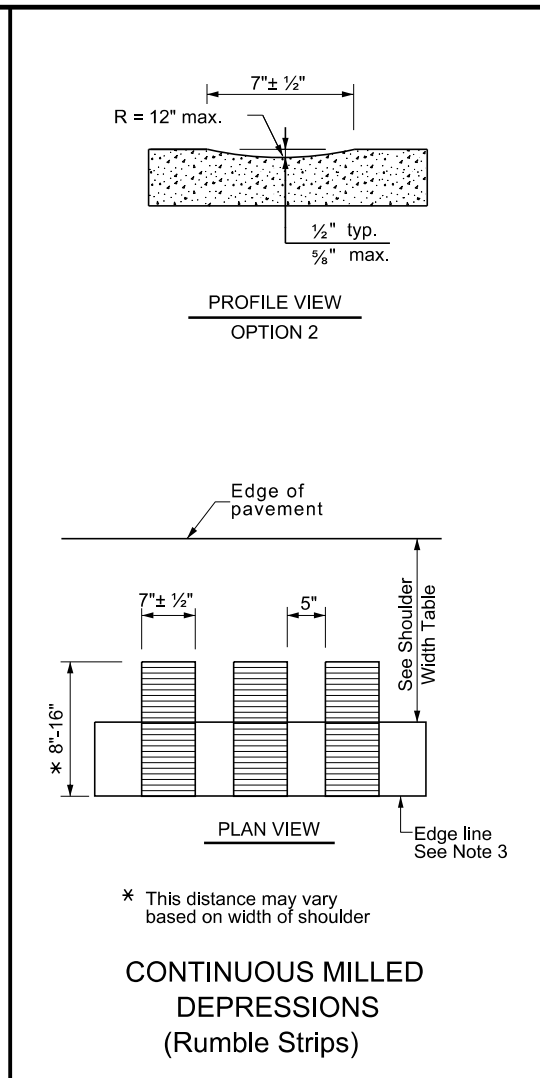
- See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
- Pavement markings can be applied over milled shoulder rumble strips to create an edge line rumble stripe.

**WHEN INSTALLING RAISED OR PROFILE EDGE LINE RUMBLE STRIPS:**

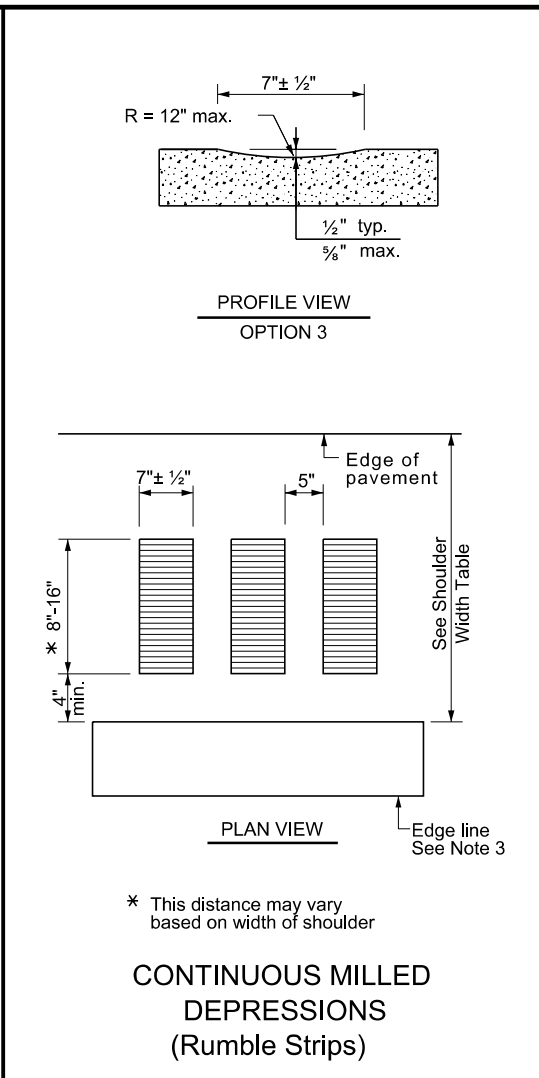
- Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per the manufacturer's recommendations.
- Non-reflective traffic buttons shall be placed adjacent to the pavement marking delineating the edge line when used as a rumble strip. The color of the button should match the color of the adjacent edge line 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.
- The minimum distance between the edge line and the buttons should be used if the shoulder is less than 8 feet in width.
- Raised profile thermoplastic markings used as edge lines may substitute for buttons.



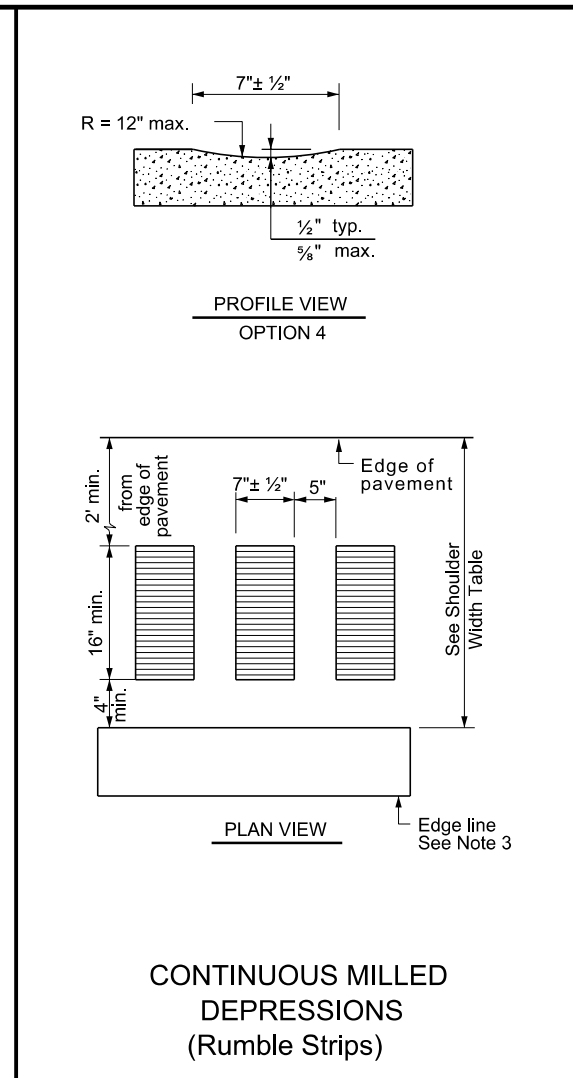
CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



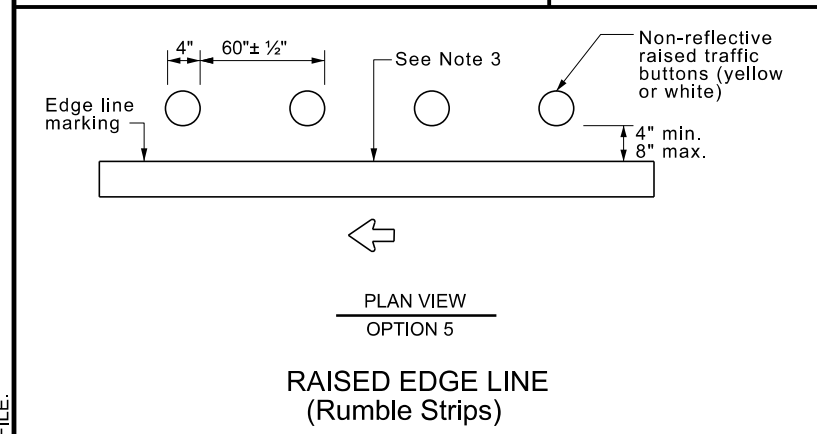
CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



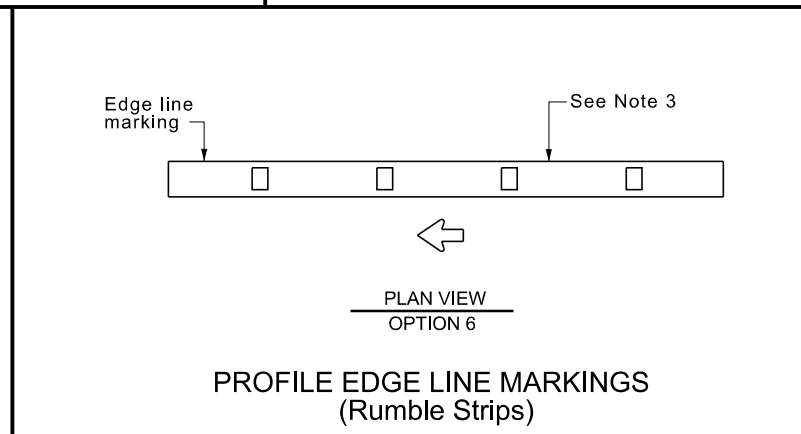
CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



RAISED EDGE LINE (Rumble Strips)



PROFILE EDGE LINE MARKINGS (Rumble Strips)

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

Texas Department of Transportation

**Traffic Safety Division Standard**

## EDGE LINE RUMBLE STRIPS ON FREEWAYS AND DIVIDED HIGHWAYS

### RS(1)-23

FILE: rs(1)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
4-06 1-23 2-10 10-13	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	261	

DATE: FILE:

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## SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

### Post Type

- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

### Number of Posts (1 or 2)

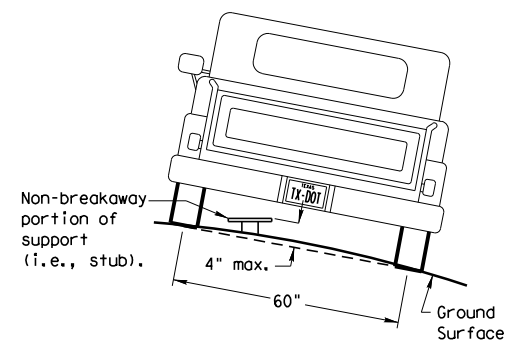
### Anchor Type

- UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
- UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
- WS = Wedge Anchor Steel - (see SMD(TWT))
- WP = Wedge Anchor Plastic (see SMD(TWT))
- SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
- SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

### Sign Mounting Designation

- P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
- IF REQUIRED
- 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

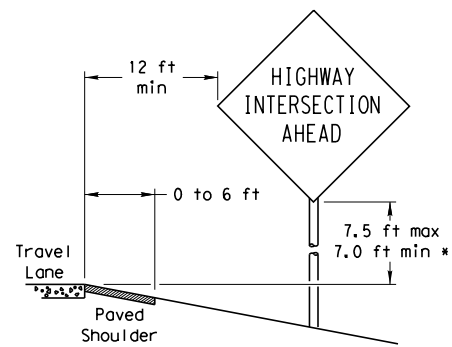
## REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

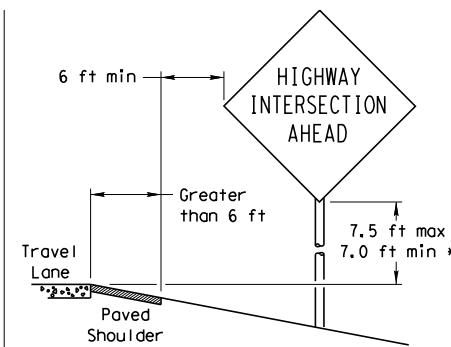
## SIGN LOCATION

### PAVED SHOULDERS



#### LESS THAN 6 FT. WIDE

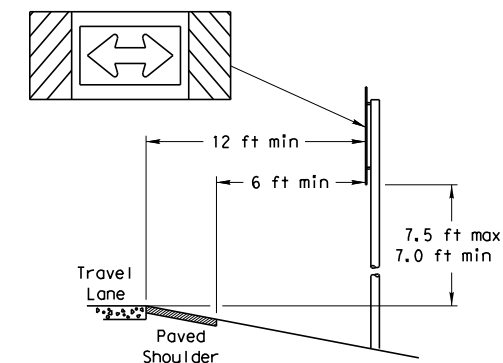
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



#### GREATER THAN 6 FT. WIDE

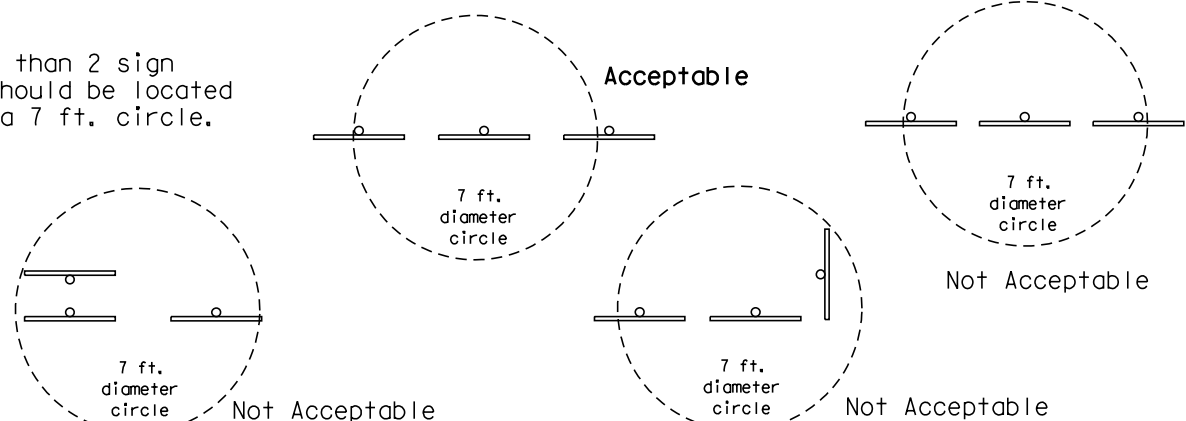
When the shoulder is greater than 6 ft. in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

### T-INTERSECTION

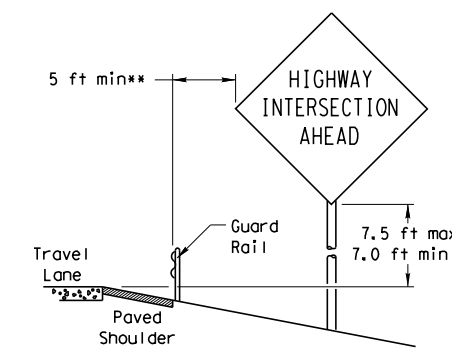


When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.

No more than 2 sign posts should be located within a 7 ft. circle.

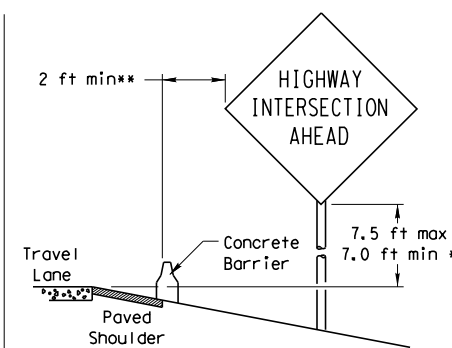


### BEHIND BARRIER

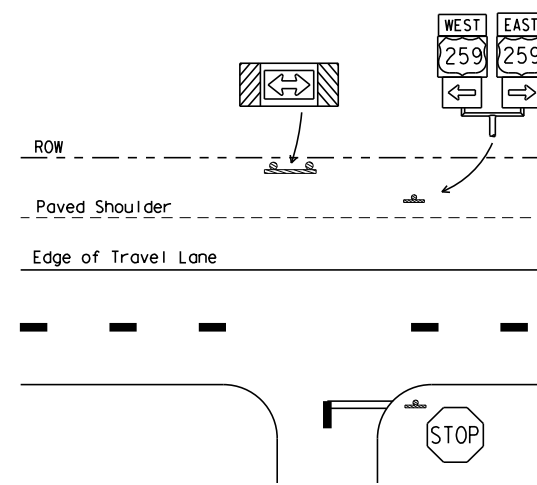


#### BEHIND GUARDRAIL

\*\*Sign clearance based on distance required for proper guard rail or concrete barrier performance.



#### BEHIND CONCRETE BARRIER



\* Signs shall be mounted using the following condition that results in the greatest sign elevation:

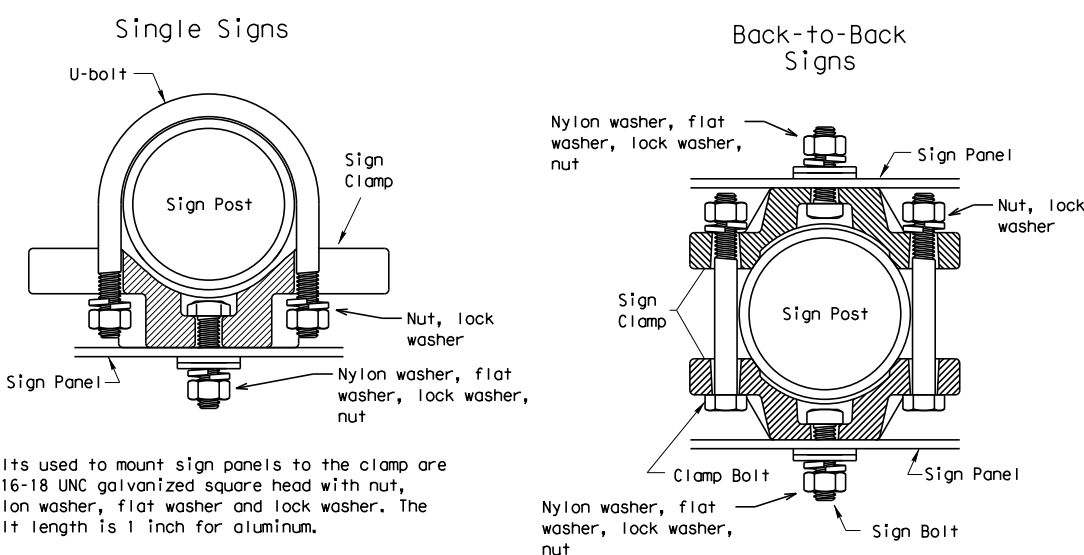
- (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
- (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:  
<http://www.txdot.gov/publications/traffic.htm>

## TYPICAL SIGN ATTACHMENT DETAIL



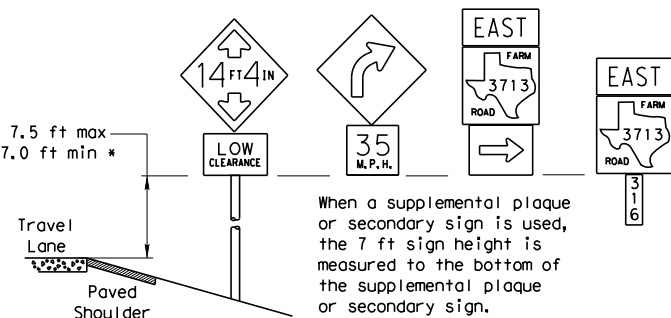
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

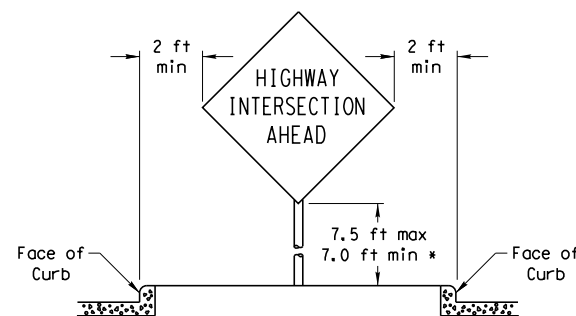
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

### SIGNS WITH PLAQUES

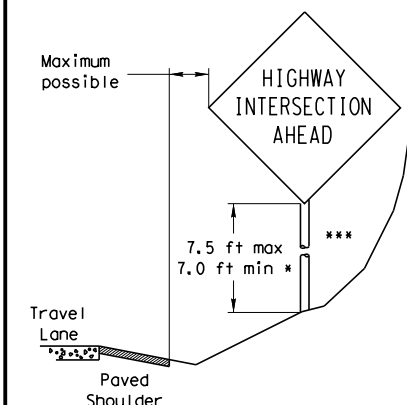


When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

### CURB & GUTTER OR RAISED ISLAND



### RESTRICTED RIGHT-OF-WAY (When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

\*\*\* Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

**Texas Department of Transportation**  
Traffic Operations Division

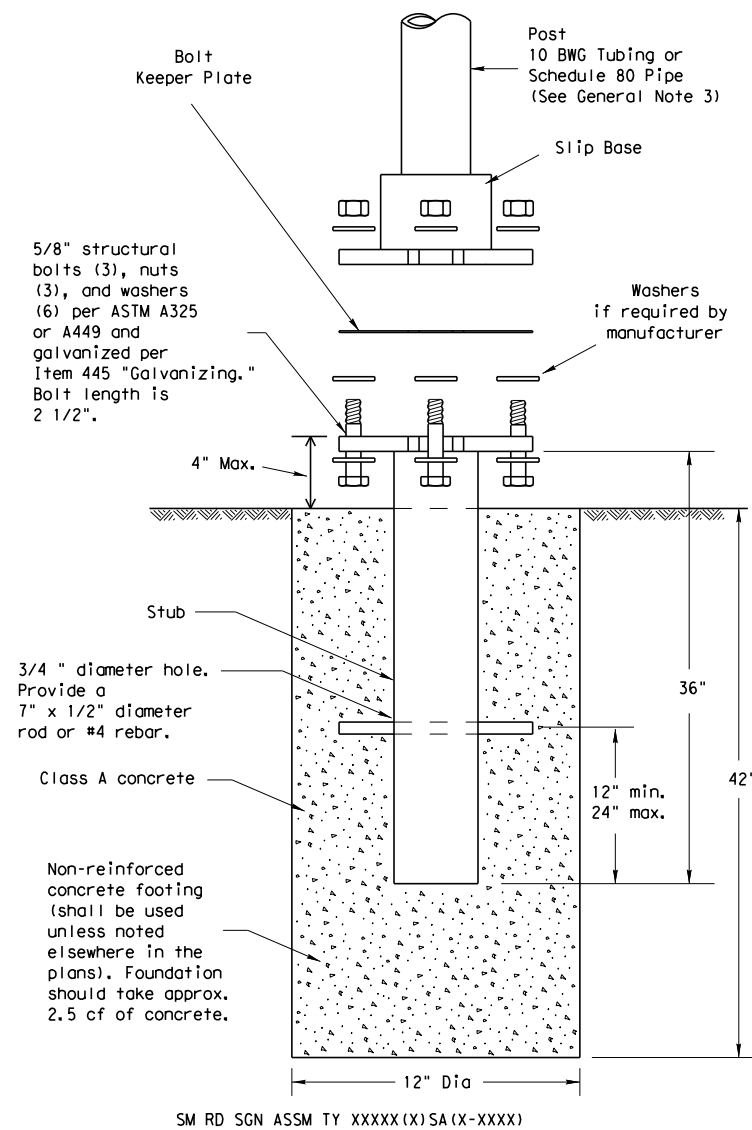
## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN) - 08

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9-08	REVISIONS	CONT	SECT	JOB
		0172	05	129
		DIST	COUNTY	US 287
		DAL	ELLIS	SHEET NO. 262

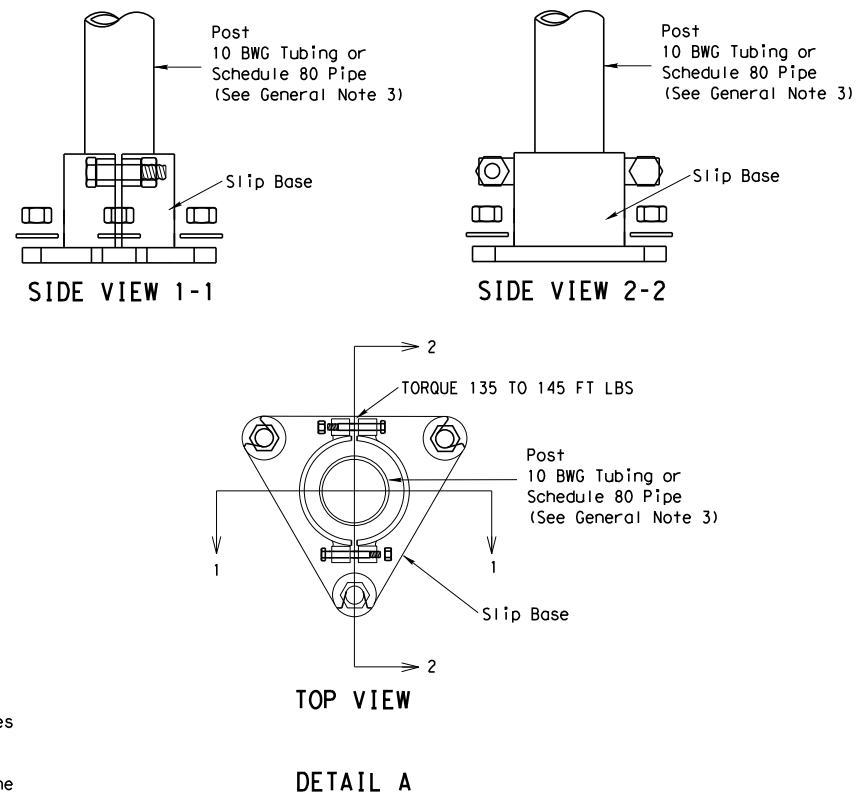
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# TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

**NOTE**  
The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.



DETAIL A

**GENERAL NOTES:**

- Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
- Material used as post with this system shall conform to the following specifications:
  - 10 BWG Tubing (2.875" outside diameter)
    - 0.134" nominal wall thickness
    - Seamless or electric-resistance welded steel tubing or pipe
    - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
    - Other steels may be used if they meet the following:
      - 55,000 PSI minimum yield strength
      - 70,000 PSI minimum tensile strength
      - 20% minimum elongation in 2"
    - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
    - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
    - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
  - Schedule 80 Pipe (2.875" outside diameter)
    - 0.276" nominal wall thickness
    - Steel tubing per ASTM A500 Gr C
    - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
      - 46,000 PSI minimum yield strength
      - 62,000 PSI minimum tensile strength
      - 21% minimum elongation in 2"
    - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
    - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
    - Galvanization per ASTM A123
- See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: <http://www.txdot.gov/publications/traffic.htm>
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

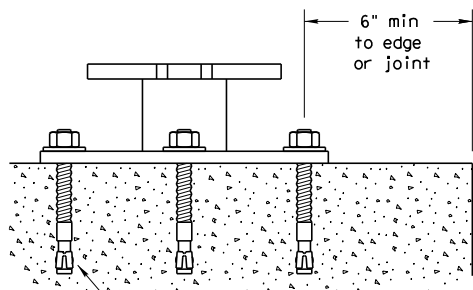
**ASSEMBLY PROCEDURE**

- Foundation**
- Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
  - The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
  - Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
  - Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
  - The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

**Support**

- Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
- Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

## CONCRETE ANCHOR



5/8" diameter Concrete Anchor - 8 places (embed a minimum of 5 1/2" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxyes and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

ADDED DETAIL A FOR CLAMP BASE

10-2010



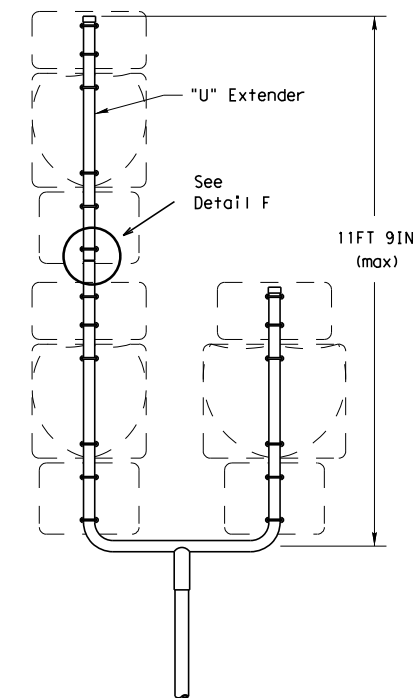
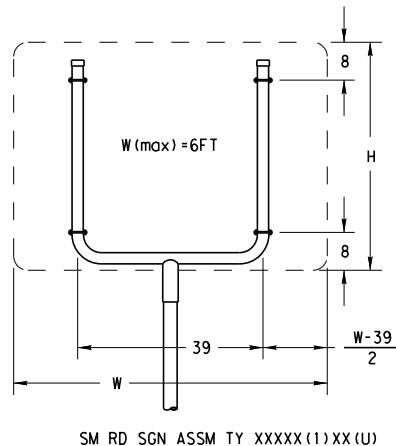
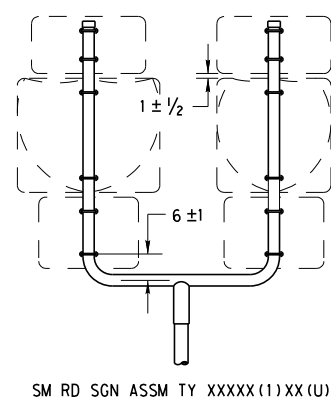
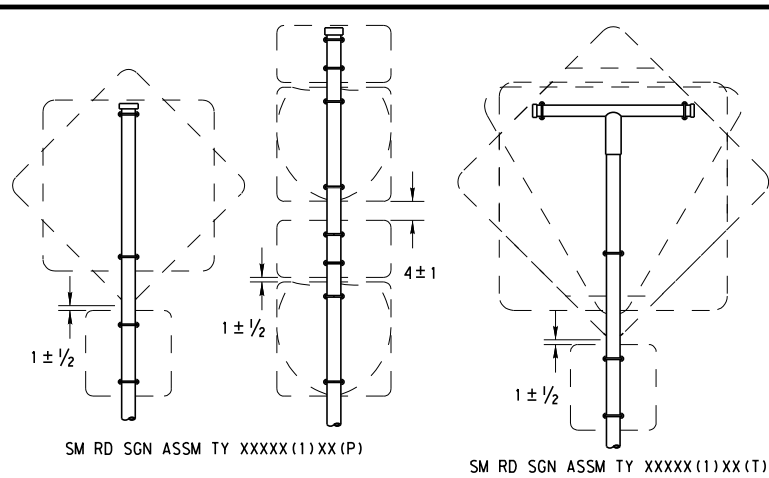
## SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM SMD(SLIP-1)-08(DAL)

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9-08	REVISIONS	CONT	SECT	JOB	HIGHWAY
12-10 (DISTRICT)		0009	11	267	IH 30
ADDED CLAMP BASE DETAIL FOR SLIP BASE INSTALLATION		DIST	COUNTY	SHEET NO.	
		DAL	DALLAS	263	

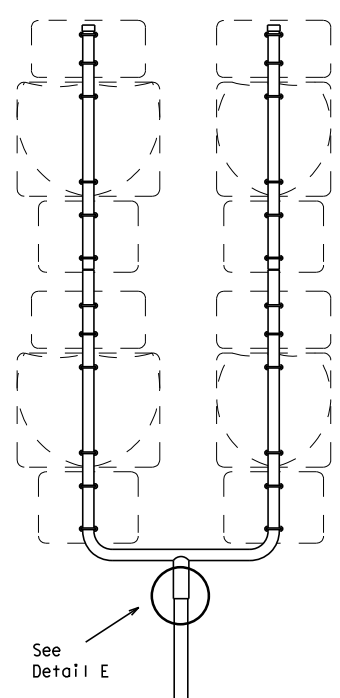
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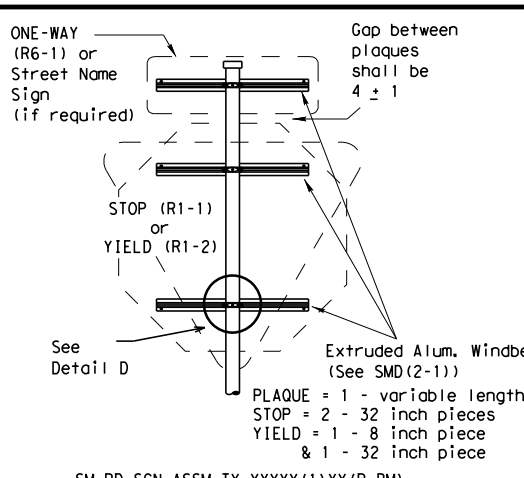
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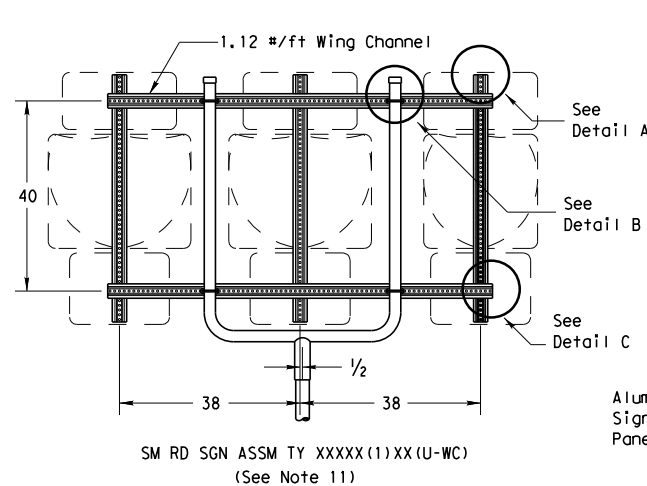
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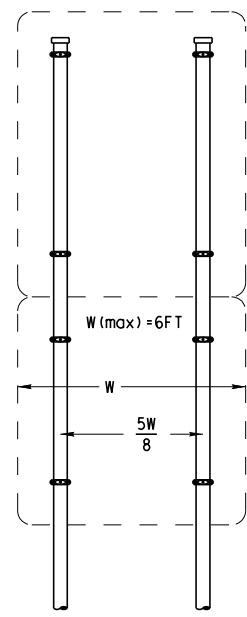
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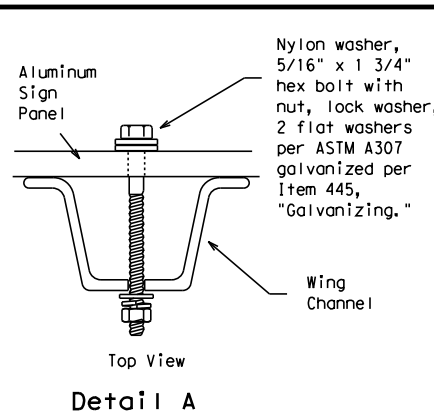
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



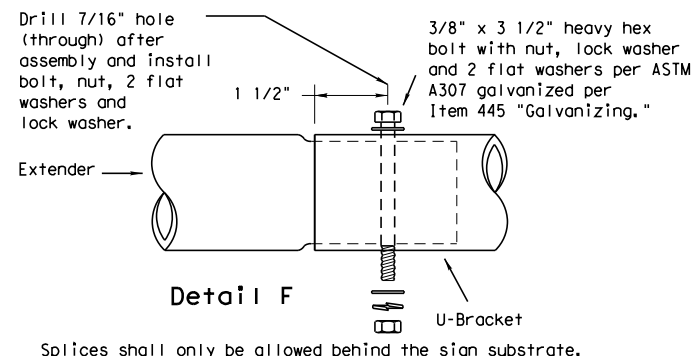
SM RD SGN ASSM TY XXXXX(1)XX(U-WC)  
(See Note 11)



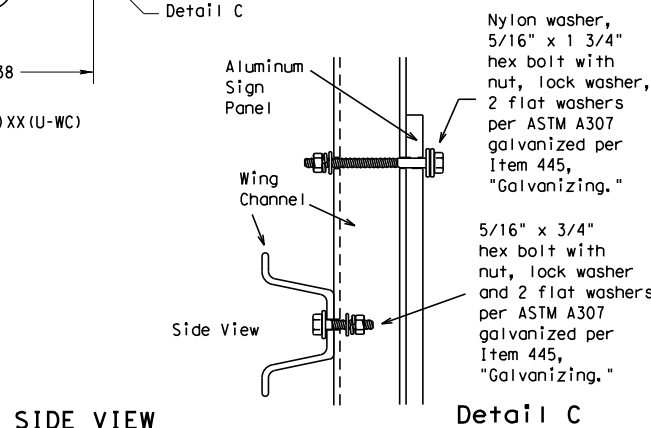
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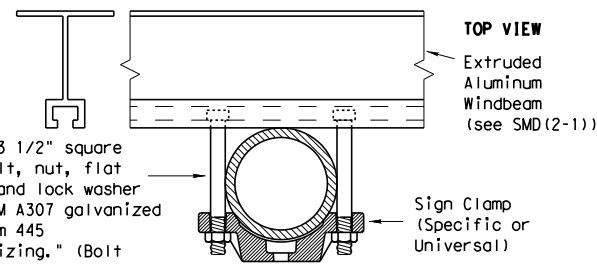
Detail A



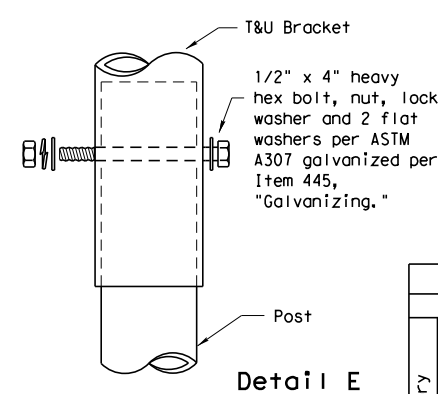
Splices shall only be allowed behind the sign substrate.



SIDE VIEW

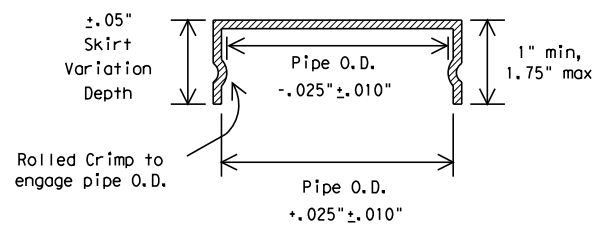


Detail D



Detail E

FRICION CAP DETAIL



Rolled Crimp to engage pipe O.D.

Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes. The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture. Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG       | 1          | 16 SF          |
| 10 BWG       | 2          | 32 SF          |
| Sch 80       | 1          | 32 SF          |
| Sch 80       | 2          | 64 SF          |
- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
- Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.
- Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT		
SIGN DESCRIPTION	SUPPORT	
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
Warning	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)	
Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)	

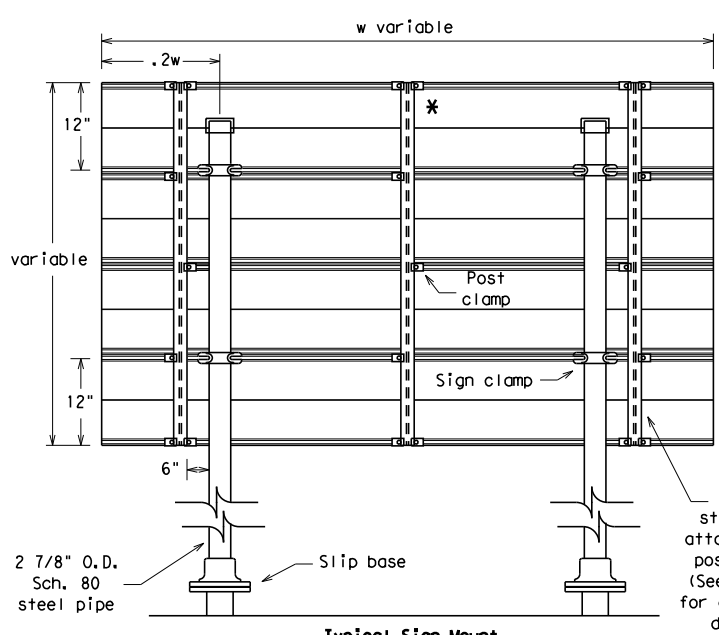
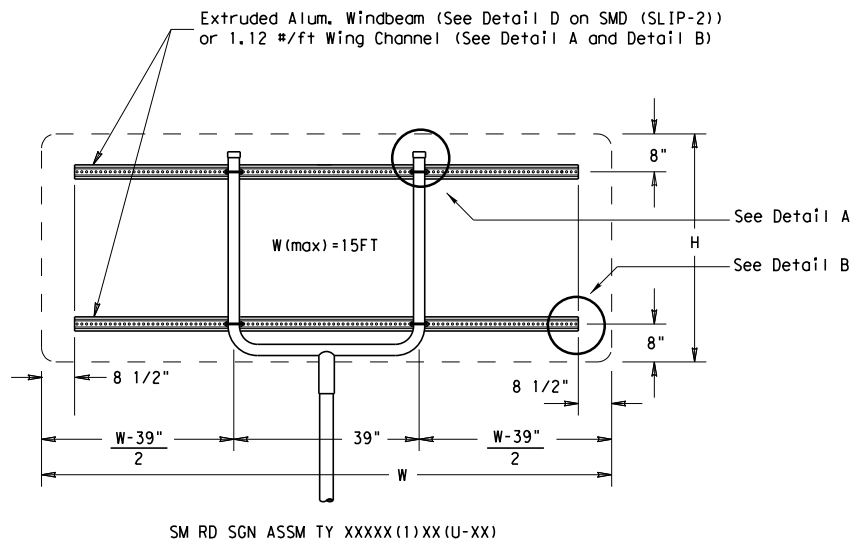
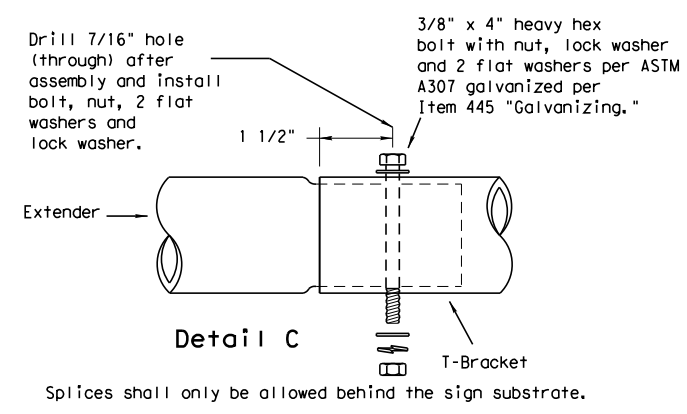
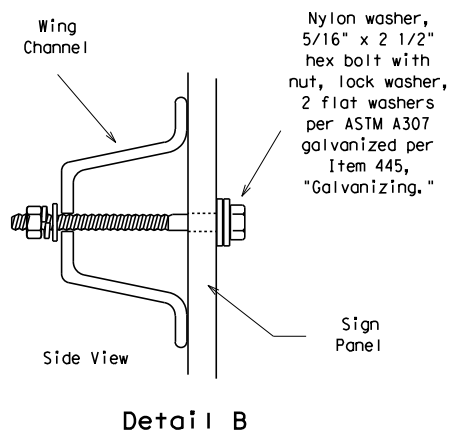
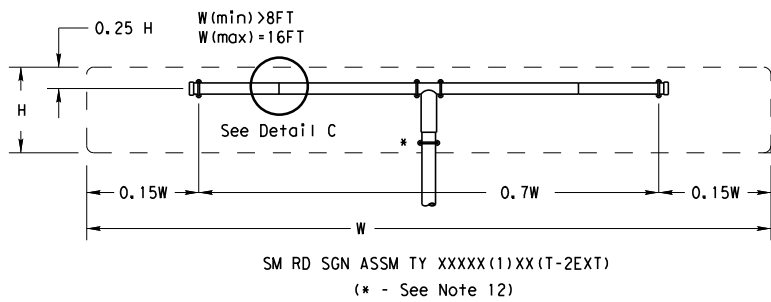
Texas Department of Transportation  
Traffic Operations Division

SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS  
TRIANGULAR SLIPBASE SYSTEM  
SMD(SLIP-2)-08

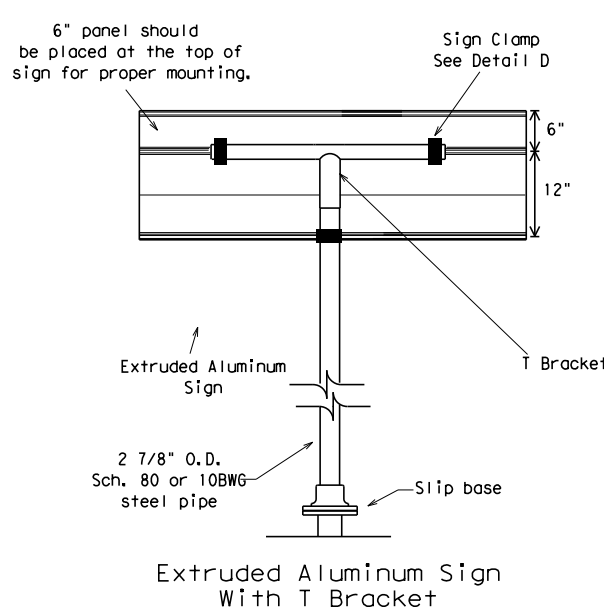
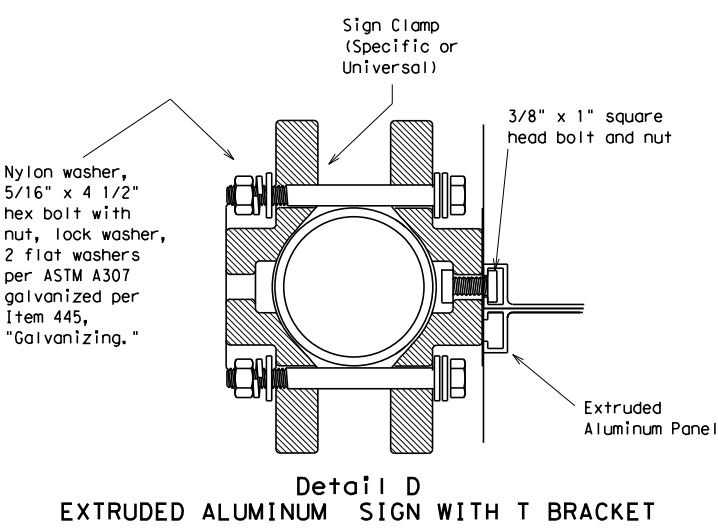
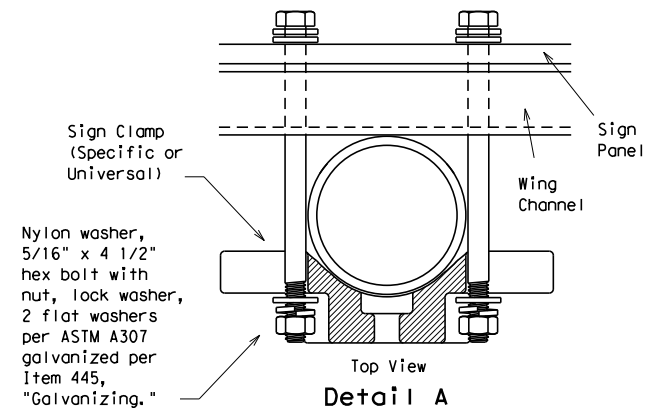
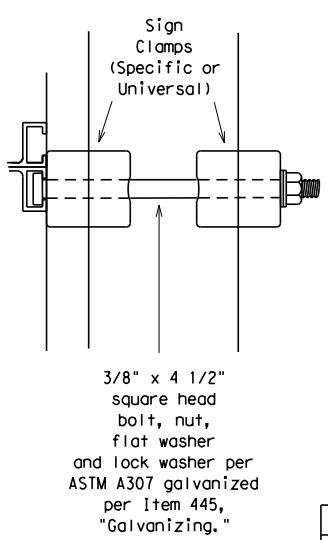
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9-08	REVISIONS	CONT	SECT	JOB
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		DIST	COUNTY	HIGHWAY
		DAL	ELLIS	US 287
				SHEET NO.
				264

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\* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



Use Extruded Alum. Windbeam as stiffeners See SMD (2-1) for additional details See Detail E for clamp installation

GENERAL NOTES:

- | SIGN SUPPORT | # OF POSTS | MAX. SIGN AREA |
|--------------|------------|----------------|
| 10 BWG       | 1          | 16 SF          |
| 10 BWG       | 2          | 32 SF          |
| Sch 80       | 1          | 32 SF          |
| Sch 80       | 2          | 64 SF          |
- The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
- Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
- Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
- Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
- For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
- When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
- Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
- Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
- Sign blanks shall be the sizes and shapes shown on the plans.
- Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
- Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
Warning	48x60-inch signs	TY S80(1)XX(T)
	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

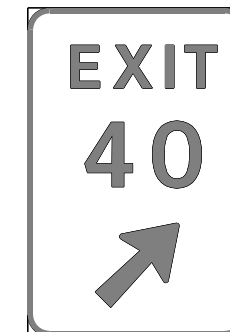
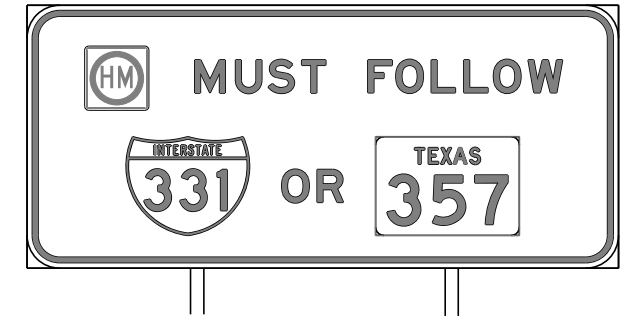
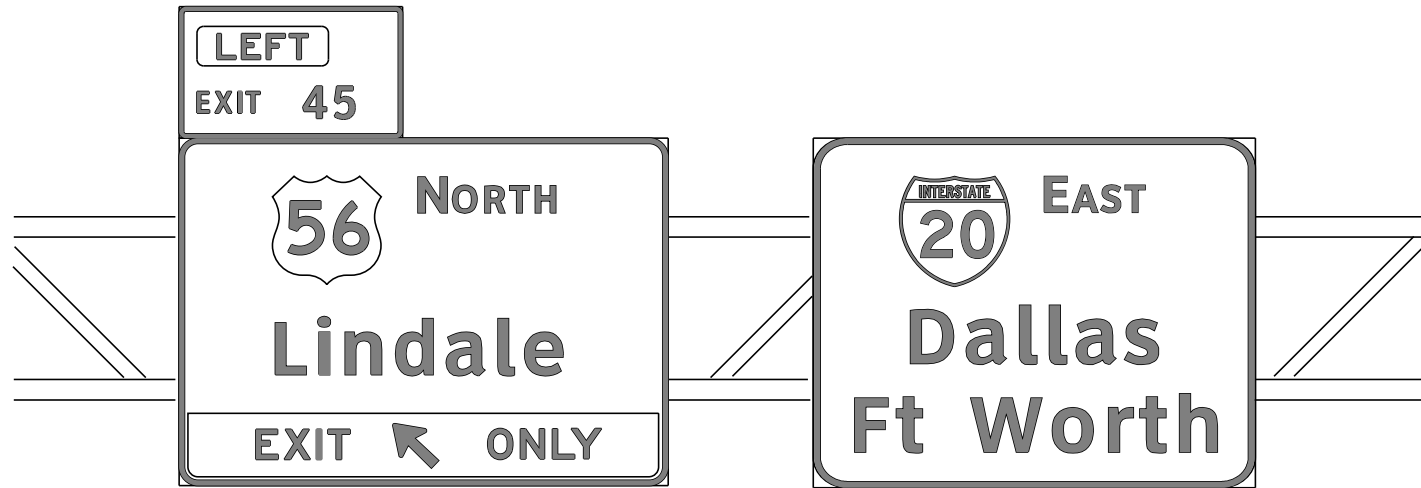


SIGN MOUNTING DETAILS  
SMALL ROADSIDE SIGNS  
TRIANGULAR SLIPBASE SYSTEM  
SMD(SLIP-3)-08

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		0172	05	129	US 287
		DIST	COUNTY		SHEET NO.
		DAL	ELLIS		265

# REQUIREMENTS FOR OVERHEAD AND LARGE GROUND-MOUNTED SIGNS

## TYPICAL EXAMPLES



### GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign summary sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Black legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F). White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white FHWA lettering, when not specified in the SHSD or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be cut-out white sheeting applied to colored background sheeting.
6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius need not be trimmed or rounded if fabricated from an extruded material.
7. Sign substrate for ground-mounted signs shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative. Sign substrate for overhead signs shall be any material that meets DMS-7110. Exit Number Panels attached above the parent sign shall be made with the same substrate and sheeting as the parent sign.
8. Mounting details of attachments to parent sign face are shown on Standard Plan Sheet TSR(5). Mounting details of exit number panels above parent sign are shown in the "SMD series" Standard Plan Sheets.
9. Background sheeting shall be applied to the substrate per sheeting manufacturer's recommendations. Sheeting will not be allowed to bridge the horizontal gap between panels.
10. Cut all legend, symbols, borders, and direct applied sign attachments at panel joints.

### DEPARTMENTAL MATERIAL SPECIFICATIONS

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>

### SHEETING REQUIREMENTS

USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE B OR C SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM

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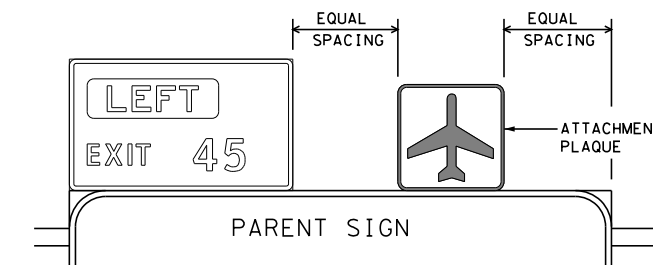
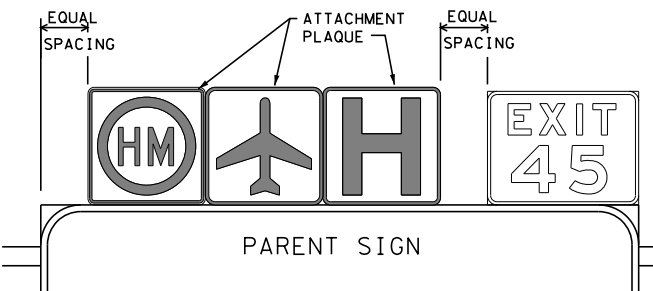
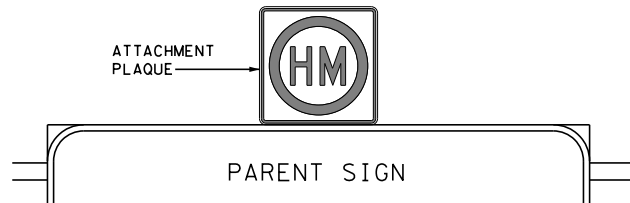
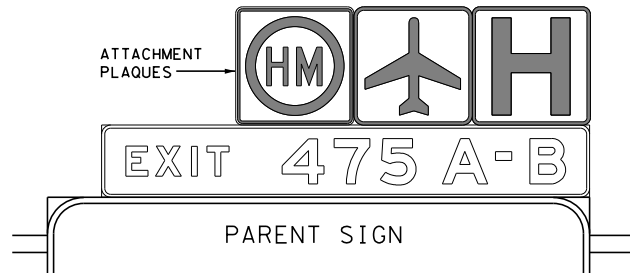
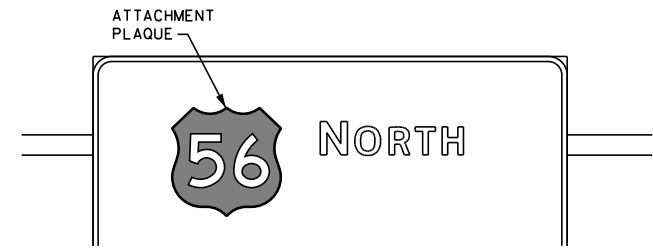
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FILE:

				Traffic Operations Division Standard	
<h2>TYPICAL SIGN REQUIREMENTS</h2> <h3>TSR(1) - 13</h3>					
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©TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS		0172	05	129	US 287
12-03	7-13	DIST	COUNTY	SHEET NO.	
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# REQUIREMENTS FOR ATTACHMENTS TO OVERHEAD AND LARGE GROUND MOUNTED SIGNS

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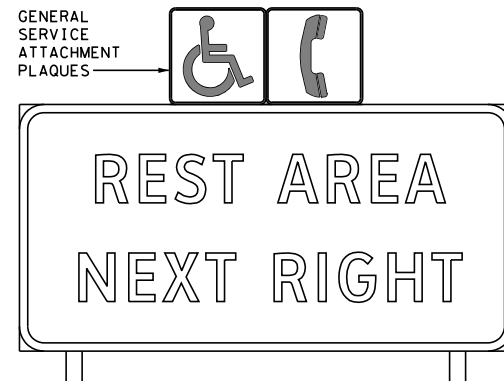


DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B OR C SHEETING

### GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Route Marker legends (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod, or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to white background sheeting, or combination thereof.
- Route markers and other attachments within the parent sign face shall be direct applied unless otherwise specified in the plans. Attachments not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
- General Service Plaques shall be 0.080 inch thick and Routing Plaques shall be 0.100 inch thick.
- The priority for Routing Plaques shall be (left to right) Hazardous Material, Airport then Hospital. See examples for mounting location.
- Mounting details of attachments to parent signs face are shown on Standard Plan Sheet TSR(5). Mounting details of sign plaque attachments above and below parent sign are shown in the "SMD series" Standard Plan Sheets.
- Plaques shall be horizontally centered at the top of the parent sign. If an exit number panel exists, the plaque shall be centered between the edge of the parent sign and the edge of the exit number panel. The plaque may be placed above the exit number panel when there is insufficient space.



TYPICAL EXAMPLES

DATE: FILE:

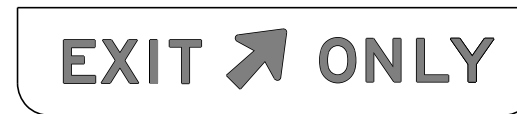
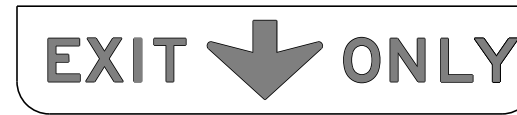
# REQUIREMENTS FOR EXIT ONLY AND LEFT EXIT PANELS

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

SHEETING REQUIREMENTS FOR OVERHEAD EXIT PANELS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLUORESCENT YELLOW	TYPE B <sub>FL</sub> OR C <sub>FL</sub> SHEETING
LEGEND	BLACK	ACRYLIC NON-REFLECTIVE FILM

### GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD). Individual panel sizes shown in the plans may be adjusted to fit actual parent sign sizes if necessary.
- Exit Panel legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets E Series.
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend shall be applied by screening process or cut-out acrylic non-reflective black film to yellow background sheeting, or combination thereof.
- Exit Only and Left Exit panels within the parent sign face shall be direct applied unless otherwise specified in the plans. Panels not direct applied shall use 0.063 inch thick one piece sheet aluminum signs (Type A).
- Mounting details of Exit Only and Left Exit panel attachments to parent signs face are shown on Standard Plan Sheet TSR(5).



TYPICAL EXAMPLES

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>



## TYPICAL SIGN REQUIREMENTS

### TSR(2) - 13

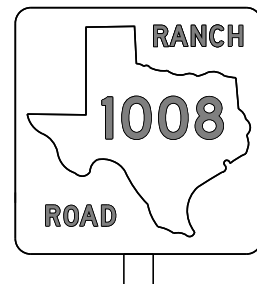
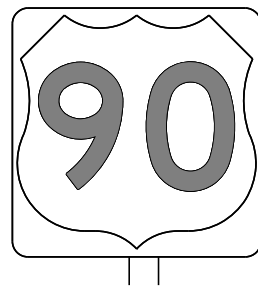
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©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
12-03 7-13	DIST	COUNTY	SHEET NO.	
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## REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

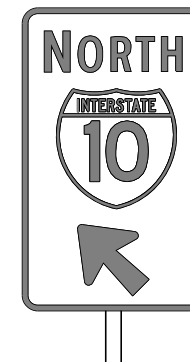
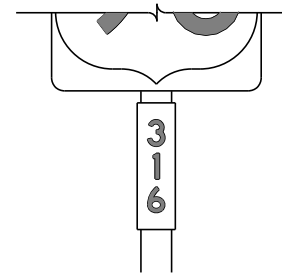
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

## REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

## GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

- Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
- Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>



## TYPICAL SIGN REQUIREMENTS

### TSR(3) - 13

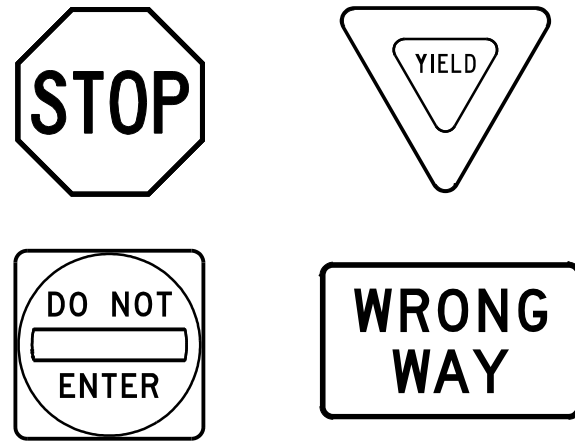
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© TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY				
REVISIONS		0172	05	129	US 287				
12-03	7-13	DIST	COUNTY	SHEET NO.					
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### REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

### REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

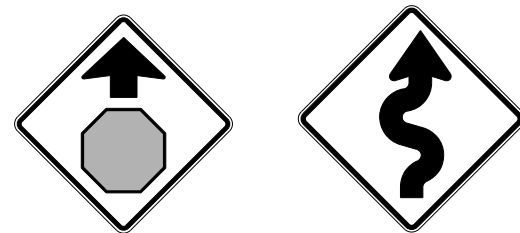
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

### REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B <sub>FL</sub> OR C <sub>FL</sub> SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

### REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B <sub>FL</sub> OR C <sub>FL</sub> SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

### GENERAL NOTES

- Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
- Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
- Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
- Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
- White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
- Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
- Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
- Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

#### ALUMINUM SIGN BLANKS THICKNESS

Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

#### DEPARTMENTAL MATERIAL SPECIFICATIONS

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

<http://www.txdot.gov/>



## TYPICAL SIGN REQUIREMENTS

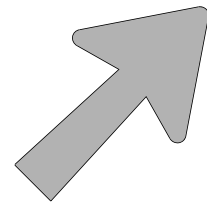
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9-08		DAL	ELLIS		269				

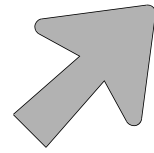
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### ARROW DETAILS

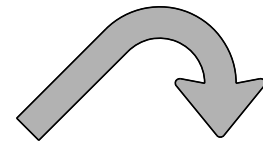
for Large Ground-Mounted and Overhead Guide Signs



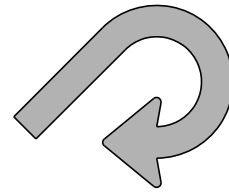
Type A



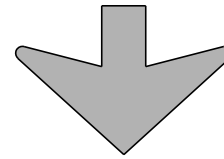
Type B



E-3



E-4



Down Arrow

TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

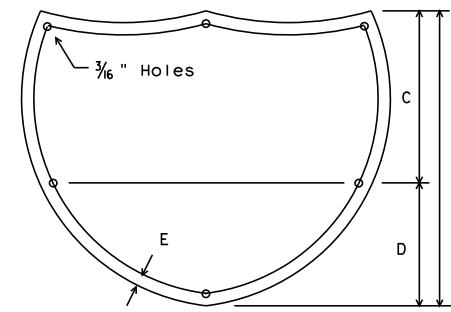
**NOTE**

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

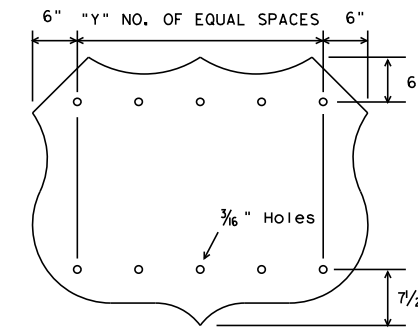
<http://www.txdot.gov/>

### SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)



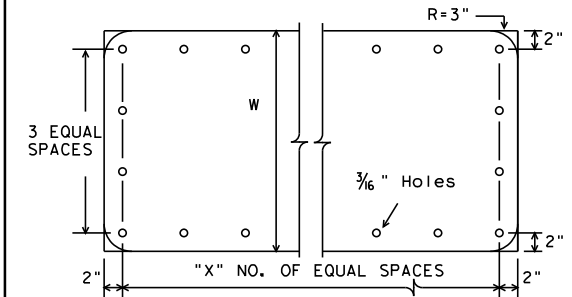
INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4



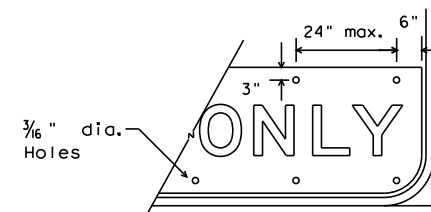
U.S. ROUTE MARKERS

Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



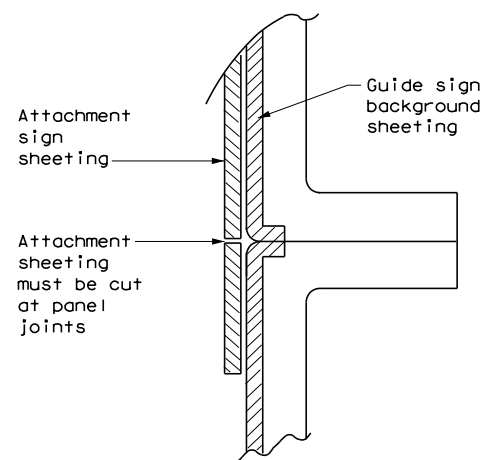
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5



EXIT ONLY PANEL

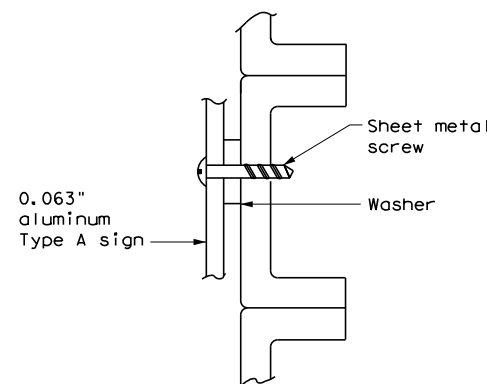
### MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



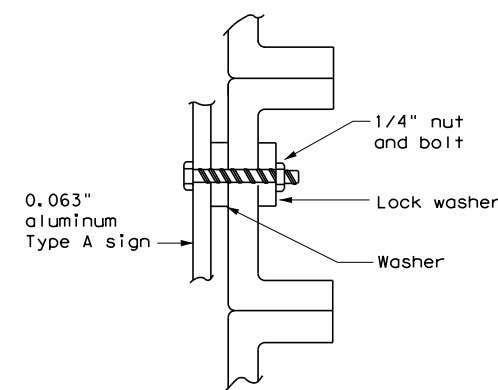
DIRECT APPLIED ATTACHMENT

**NOTE:**

- Sheeting for legend, symbols, and borders must be cut at panel joints.
- Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT

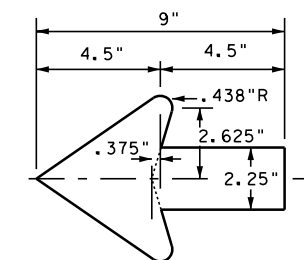


NUT/BOLT ATTACHMENT

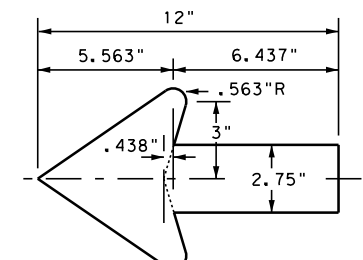
**NOTE:**

Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

### ARROW DETAILS for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.



## TYPICAL SIGN REQUIREMENTS

### TSR (5) - 13

FILE: tsr5-13.dgn	DW: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
12-03 7-13	DIST	COUNTY	SHEET NO.	
9-08	DAL	ELLIS	270	

DATE: FILE:

**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 soil disturbing activity and for projects that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

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):**  
0172-05-129 (US 287)

**1.2 PROJECT LIMITS:**

From: WALNUT GROVE RD

To: BUS 287

**1.3 PROJECT COORDINATES:**

BEGIN: (Lat) 32°28'20" \_\_\_\_\_, (Long) 97°35'56" \_\_\_\_\_

END: (Lat) 32°25'58" \_\_\_\_\_, (Long) 96°54'07" \_\_\_\_\_

**1.4 TOTAL PROJECT AREA (Acres):** 165.42

**1.5 TOTAL AREA TO BE DISTURBED (Acres):** 12.56

**1.6 NATURE OF CONSTRUCTION ACTIVITY:**

CONSTRUCTION OF RESTRICTED CROSSING U-TURN INTERSECTIONS

**1.7 MAJOR SOIL TYPES:**

Soil Type	Description
ASSORTED CLAYS	HARD, STIFF, LIGHT TO DARK GRAY
SILTY CLAYS	SOFT TO STIFF, BROWN & GRAY

Note: Existing vegetation consists largely of grass covering the areas from the edge of pavement to the existing right-of-way, with a density of approximately 90%.

**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: \_\_\_\_\_
- 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: CONCRETE WASHOUT
- 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

\* Add (\*) for impaired waterbodies with pollutant in ( ).

**1.12 ROLES AND RESPONSIBILITIES: TxDOT**

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

**1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR**

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

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

MS4 Entity



**STORMWATER POLLUTION PREVENTION PLAN (SWP3)**

© 2023 July 2023 Sheet 1 of 2  
Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.			SHEET NO.
6	SEE TITLE SHEET			271
STATE	STATE DIST.	COUNTY		
TEXAS	DAL	ELLIS		
CONT.	SECT.	JOB	HIGHWAY NO.	
0172	05	129	US 287	

**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**

- X  Protection of Existing Vegetation
- Vegetated Buffer Zones
- Soil Retention Blankets
- Geotextiles
- X  Mulching/ Hydromulching
- Soil Surface Treatments
- X  Temporary Seeding
- X Permanent Planting, Sodding or Seeding
- X  Biodegradable Erosion Control Logs
- X  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**

- X  Biodegradable Erosion Control Logs
- Dewatering Controls
- X  Inlet Protection
- X  Rock Filter Dams/ Rock Check Dams
- Sandbag Berms
- X  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
- X Required (>10 acres), but not feasible due to:
  - X 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
PERMANENT PLANTING, SODDING OR SEEDING	STA 13+00	STA 22+00
PERMANENT PLANTING, SODDING OR SEEDING	STA 26+00	STA 31+00
PERMANENT PLANTING, SODDING OR SEEDING	STA 61+00	STA 100+00
PERMANENT PLANTING, SODDING OR SEEDING	STA 107+00	STA 129+00
PERMANENT PLANTING, SODDING OR SEEDING	STA 134+00	STA 196+00

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

**2.4 OFFSITE VEHICLE TRACKING CONTROLS:**

- X Excess dirt/mud on road removed daily
- X Haul roads dampened for dust control
- X Loaded haul trucks to be covered with tarpaulin
- X Stabilized construction exit
- X Daily street sweeping
- X Other: DAMPEN DISTURBED SOIL AREAS AS NEEDED FOR DUST CONTROL.
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_
- Other: \_\_\_\_\_

**2.5 POLLUTION PREVENTION MEASURES:**

- X Chemical Management
- X Concrete and Materials Waste Management
- X Debris and Trash Management
- X Dust Control
- X Sanitary Facilities
- X Other: AVOID STORING PORTABLE SANITARY UNITS, CONCRETE WASHOUTS OR CHEMICALS WITHIN 50 FEET UPGRADIENT OF A RECEIVING WATER OR DRAINAGE CONVEYANCE W/O POLLUTION
- Other: CONTROLS.
- Other: \_\_\_\_\_

**2.6 VEGETATED BUFFER ZONES:**

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

Type	Stationing	
	From	To

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

**2.7 ALLOWABLE NON-STORMWATER DISCHARGES:**

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

**2.8 DEWATERING:**

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

**2.9 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.

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

**2.10 MAINTENANCE:**

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



**STORMWATER POLLUTION PREVENTION PLAN (SWP3)**

© 2023 July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	SEE TITLE SHEET		272
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	ELLIS	
CONT.	SECT.	JOB	HIGHWAY NO.
0172	05	129	US 287

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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 by: 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. City of Midlothian Phase II MS4 - Contact Scott Morrow
2. City of Waxahachie Phase II MS4 - Contact Jeff Chambers
3. County of Ellis Phase Phase II MS4 - Contact Joe White

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# \_\_\_\_\_

Required Actions: List Waters of the US Permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

- 1.
- 2.
- 3.

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

**III. CULTURAL RESOURCES**

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

No Action Required  Required Action

Action Number:

- 1.
- 2.
- 3.

**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.
- 2.
- 3.
- 4.

**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.
- 2.
- 3.
- 4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediated area, and contact the Engineer immediately.

*Special Note: 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 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 Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act. Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- \* Dead or distressed vegetation (not identified as normal)
- \* Trash piles, drums, 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.
- 2.
- 3.

**VII. OTHER ENVIRONMENTAL ISSUES**

(includes regional issues such as Edwards Aquifer District, etc.)


No Action Required  Required Action

Action Number:

- 1.
- 2.
- 3.

GENERAL NOTE:

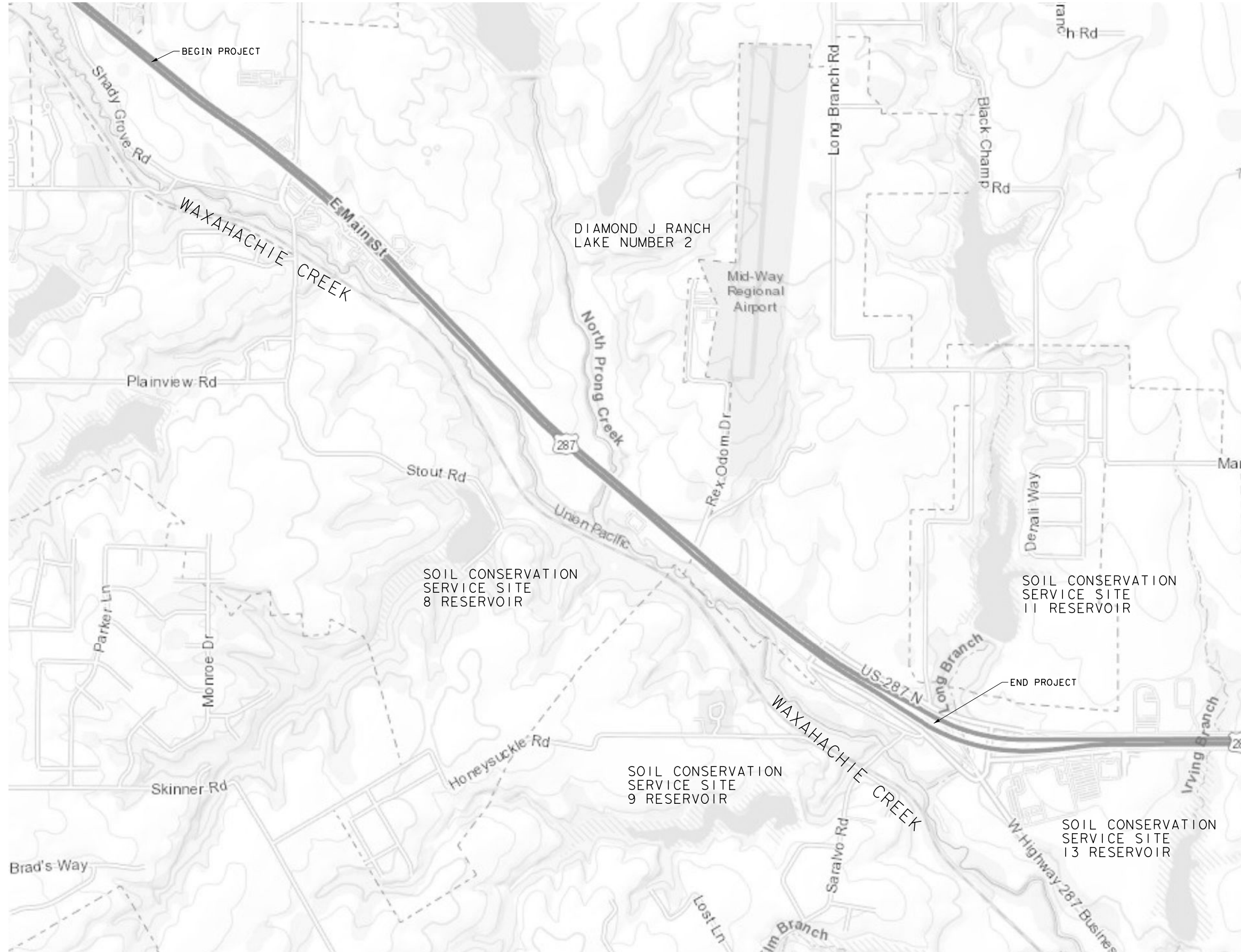
Any change orders and/or deviations from the final design must be reported to the Engineer prior to commencement of construction activities, as additional environmental clearance may be required.

© 2015  Texas Department of Transportation Dallas District			
ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)			
FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6	SEE TITLE SHEET		US 287
STATE	DISTRICT	COUNTY	
TEXAS	DALLAS	ELLIS	
CONTROL	SECTION	JOB	SHEET NO.
0172	05	129	273

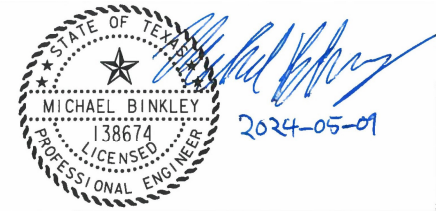
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1000' 0 1000' 2000'  
SCALE: 1" = 2000'



**NOTES:**  
 SURFACE WATER QUALITY VIEWER MAP  
 PRINTED 4/5/2024, 8:45:11 AM  
 TEXAS PARKS & WILDLIFE, ESRI,  
 HERE, GARMIN, INCREMENT P,  
 USGS, METI/NASA, NGA, EPA, USDA  
 WEB APPBUILDER FOR ARCGIS  
 TCEQ / TEXAS PARKS & WILDLIFE,  
 ESRI, HERE, GARMIN, INCREMENT P,  
 USGS, METI/NASA, EPA, USDA



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264



**US 287  
 RECEIVING WATERS MAP**

SCALE: 1" = 2000' SHEET 1 OF 1

DESIGN MT	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS GR	6	SEE TITLE SHEET		US 287
CHECK MT	TEXAS	DALLAS	ELLIS	274
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

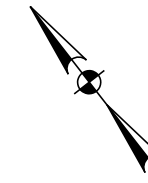
SURFACE WATER QUALITY IN TEXAS CUSTOM MAP



5/8/2024 8:20:34 PM  
mBinkley

c:\bms\br\idgfarmer-pw\michael.binkley\dms35342\0387-SWPPP-PLAN-01.dgn

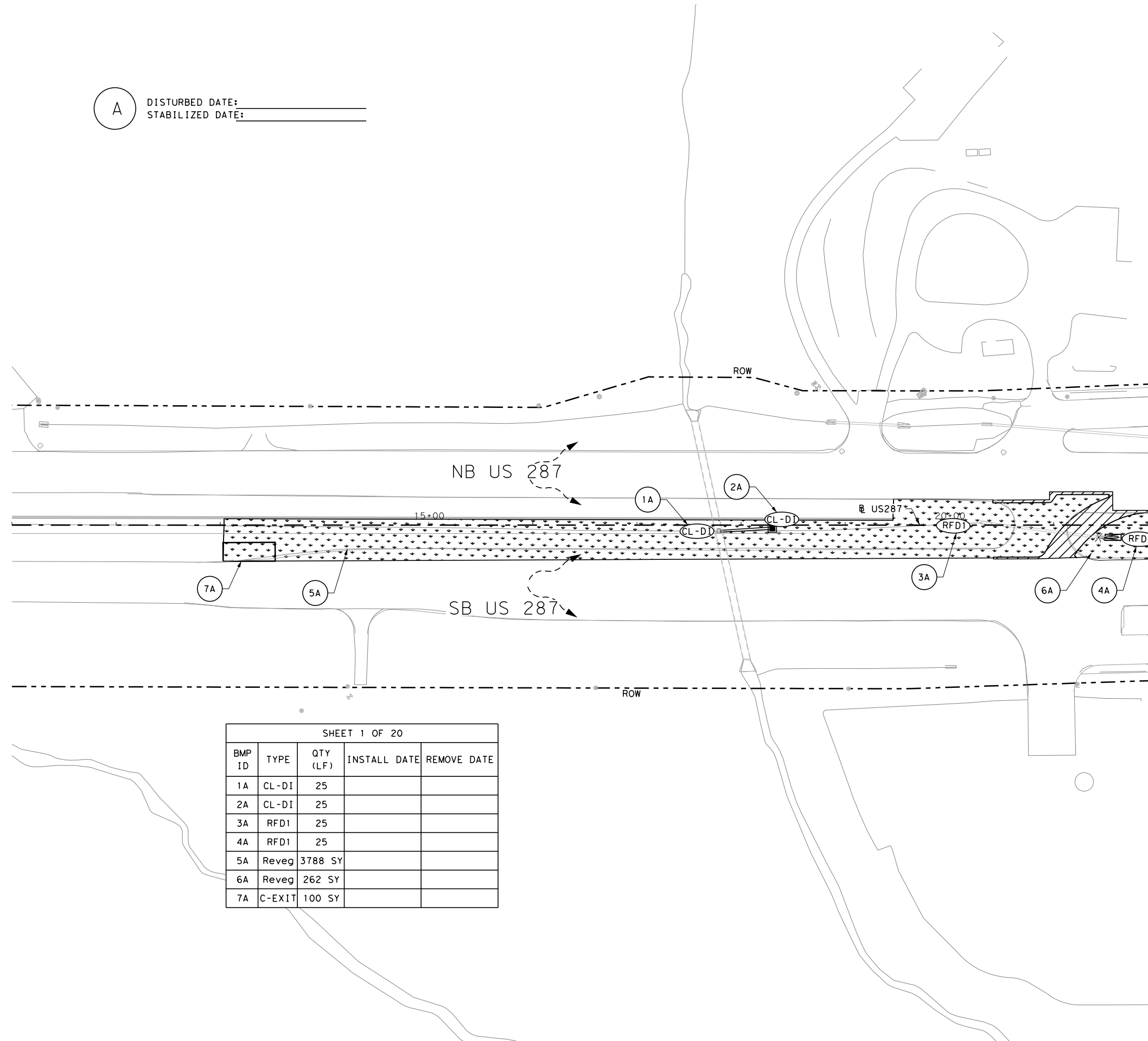
50 0 50 100  
SCALE: 1" = 100'



A DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP

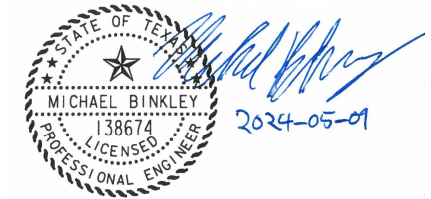
1. LOCATIONS OF EROSION CONTROL DEVICES ARE APPROXIMATIONS. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
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5. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



MATCH LINE STA 22+00

SHEET 1 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1A	CL-DI	25		
2A	CL-DI	25		
3A	RFD1	25		
4A	RFD1	25		
5A	Reveg	3788 SY		
6A	Reveg	262 SY		
7A	C-EXIT	100 SY		



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
BEGIN PROJECT TO STA 22+00**

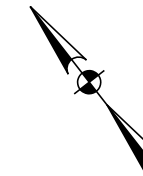
SCALE: 1" = 100' SHEET 1 OF 20

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MB	6	SEE TITLE SHEET		US 287
GRAPHICS	AP	STATE	DISTRICT	COUNTY
CHECK	MB	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129

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mBinkley

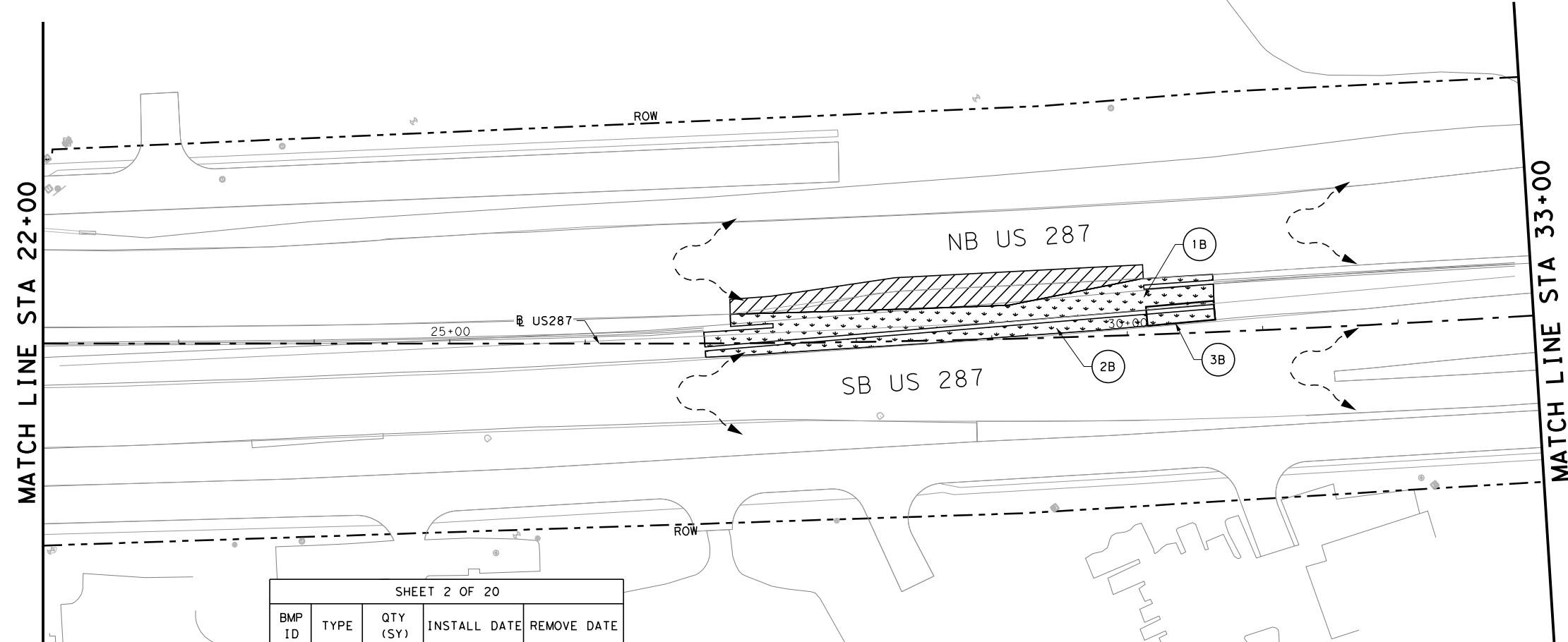
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50 0 50 100  
SCALE: 1" = 100'



**B** DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP



1. LOCATIONS OF EROSION CONTROL DEVICES ARE APPROXIMATIONS. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
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5. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



SHEET 2 OF 20

BMP ID	TYPE	QTY (SY)	INSTALL DATE	REMOVE DATE
1B	Reveg	715		
2B	Reveg	318		
3B	C-EXIT	78		

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 22+00 TO STA 33+00**

SCALE: 1" = 100' SHEET 2 OF 20

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MB	6	SEE TITLE SHEET		US 287
GRAPHICS	AP	STATE	DISTRICT	COUNTY
CHECK	MB	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129

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mBinkley

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SCALE: 1" = 100'



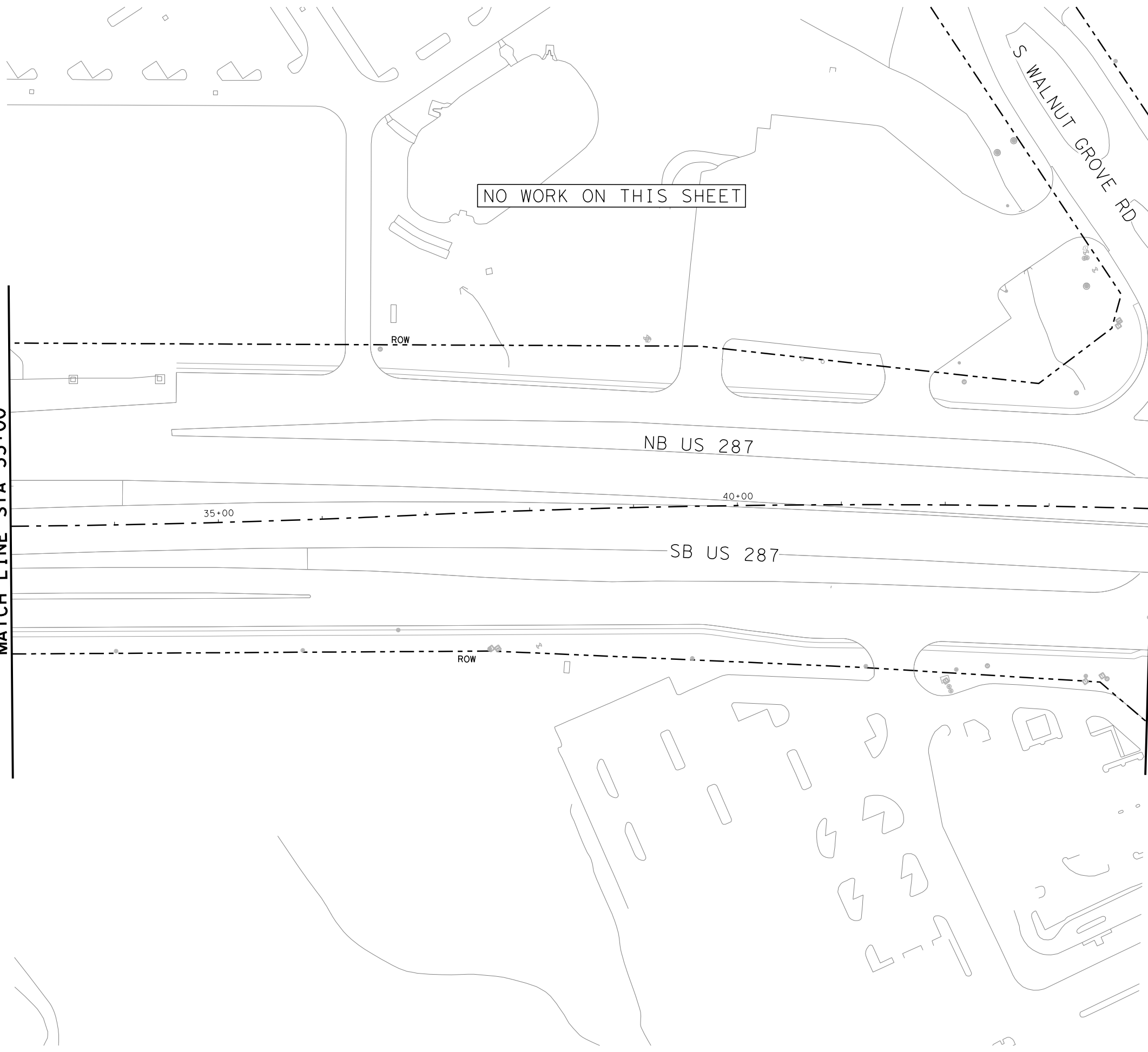
**LEGEND**

- SURFACE FLOW
- TEMPORARY SEDIMENT CONTROL FENCE
- EROSION CONTROL LOG AT DROP INLET (8")
- ROCK FILTER DAM (TYP 2)
- PAVEMENT UNDER CONSTRUCTION
- PERMANENT RE-VEGETATION
- PERMANENT CONC. RIPRAP

NO WORK ON THIS SHEET

MATCH LINE STA 33+00

MATCH LINE STA 44+00



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6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 33+00 TO STA 44+00**

SCALE: 1" = 100' SHEET 3 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	SHEET NO. 277
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

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SCALE: 1" = 100'



NO WORK ON THIS SHEET

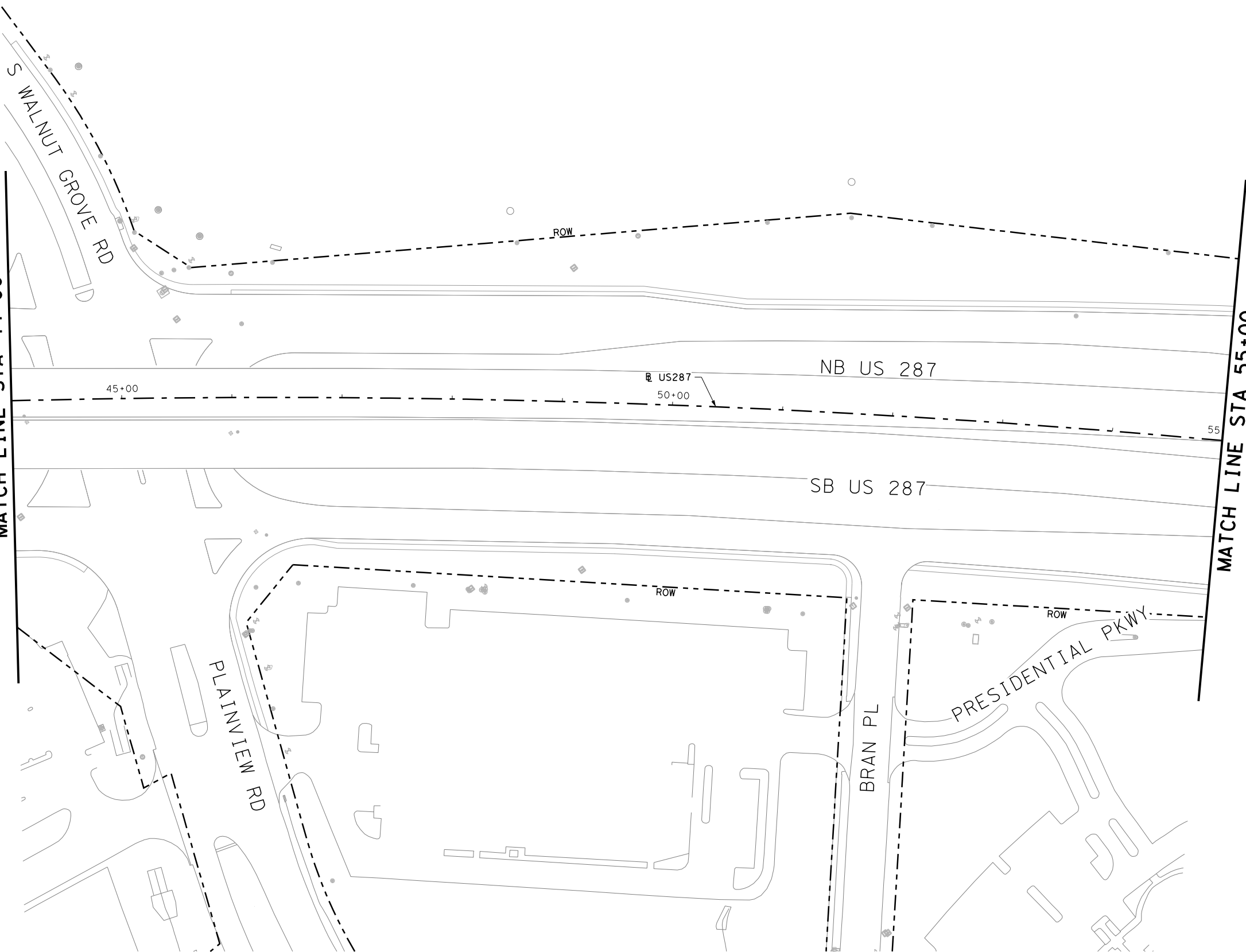
- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP

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6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



MATCH LINE STA 44+00

MATCH LINE STA 55+00



NO.	DATE	DESCRIPTION	APPROV.

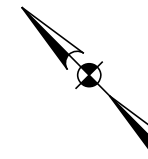
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 44+00 TO STA 55+00**

SCALE: 1" = 100' SHEET 4 OF 20

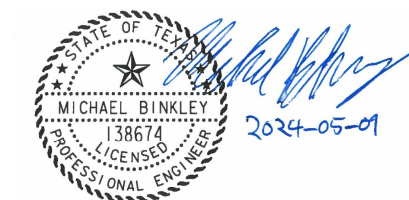
DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 278
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	



**E** DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

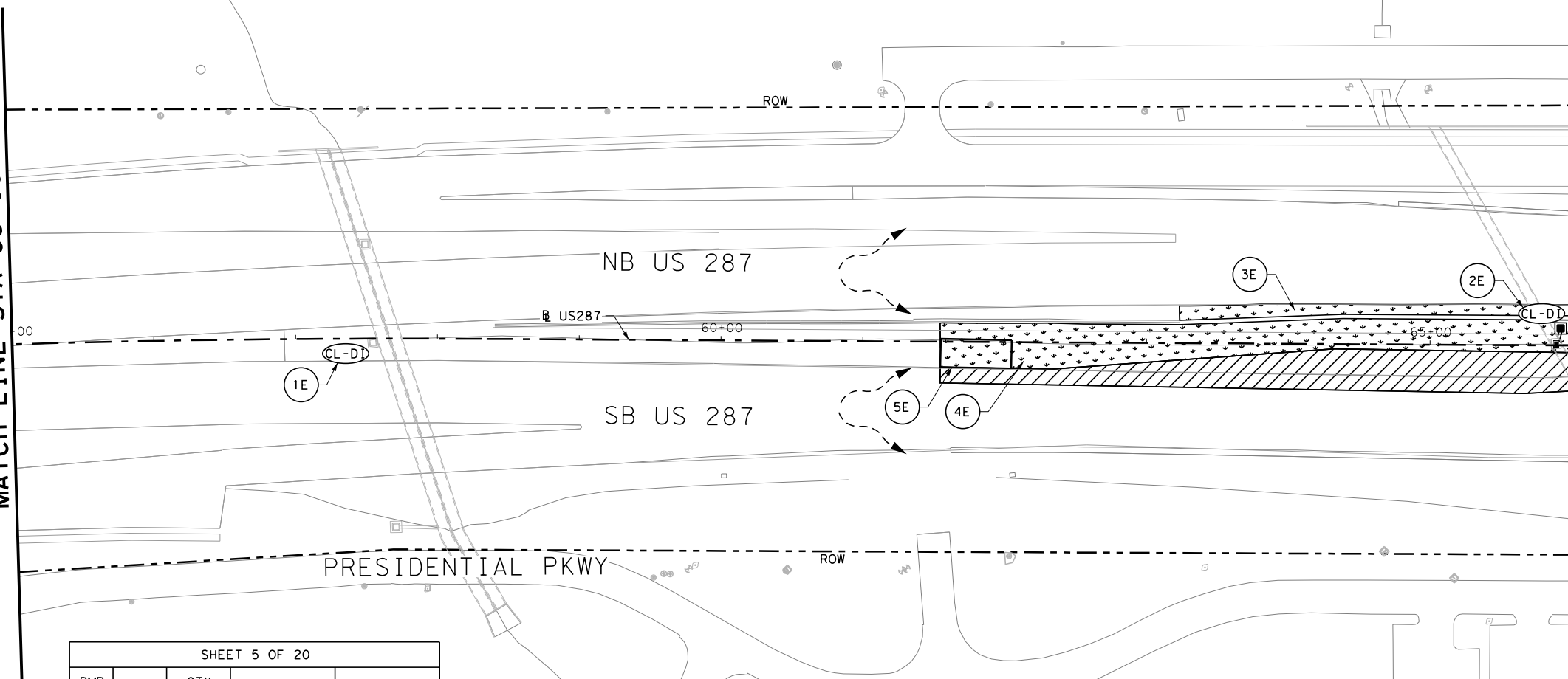
- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP

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6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



MATCH LINE STA 55+00

MATCH LINE STA 66+00



SHEET 5 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1E	CL-DI	25		
2E	CL-DI	25		
3E	Reveg	250 SY		
4E	Reveg	1248 SY		
5E	C-EXIT	112 SY		

NO.	DATE	DESCRIPTION	APPROV.

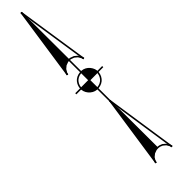
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 55+00 TO STA 66+00**

SCALE: 1" = 100' SHEET 5 OF 20

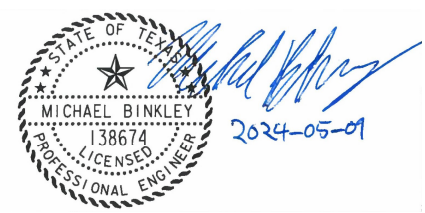
DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MB	6	SEE TITLE SHEET		US 287
GRAPHICS	AP	STATE	DISTRICT	COUNTY
CHECK	MB	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129



(F) DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

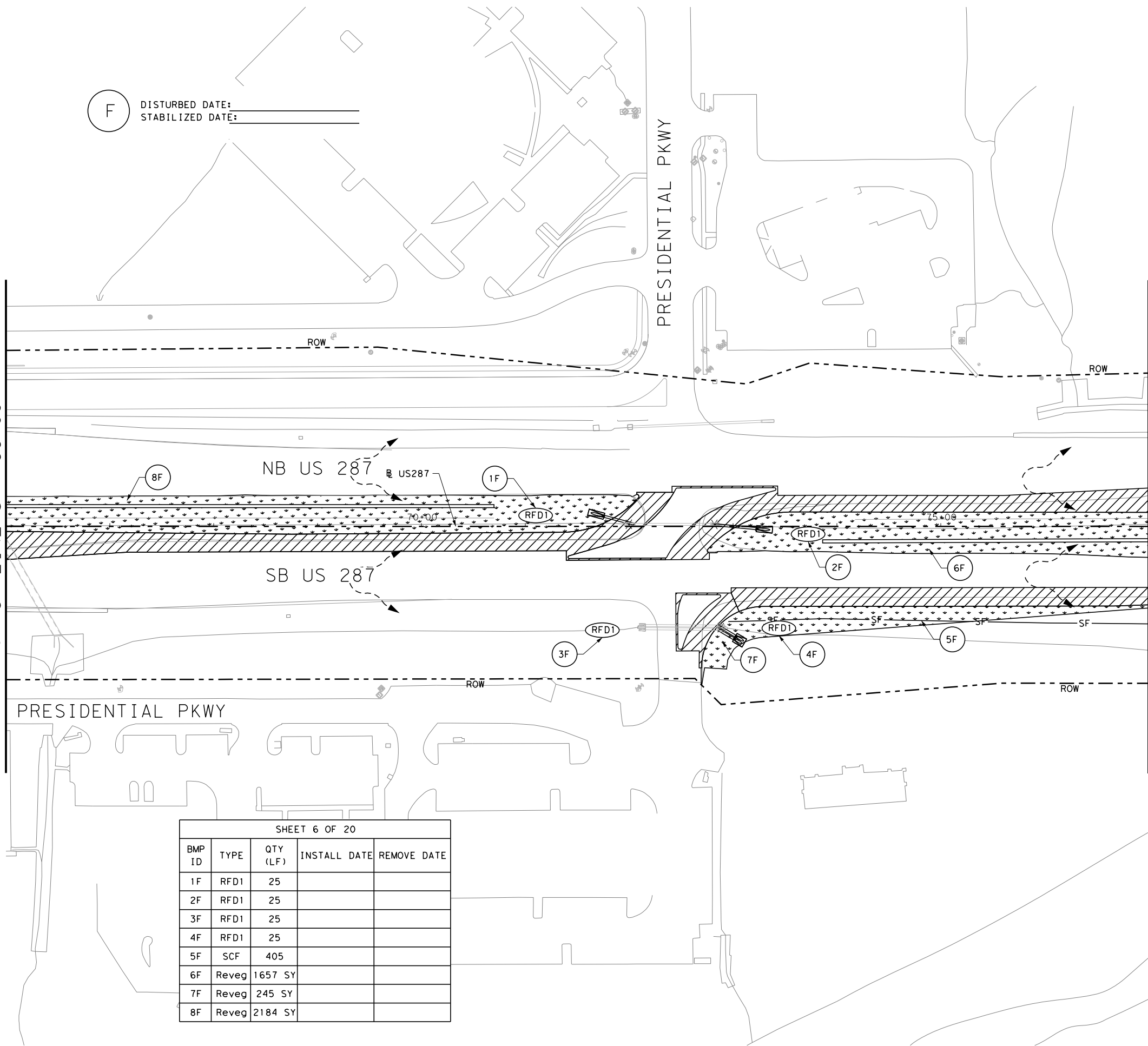
- LEGEND**
- - - SURFACE FLOW
  - SF - TEMPORARY SEDIMENT CONTROL FENCE
  - (CL-DI) EROSION CONTROL LOG AT DROP INLET (8")
  - (RFD1) ROCK FILTER DAM (TYP 2)
  - [Hatched Box] PAVEMENT UNDER CONSTRUCTION
  - [Dotted Box] PERMANENT RE-VEGETATION
  - [Stippled Box] PERMANENT CONC. RIPRAP

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6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



MATCH LINE STA 66+00

MATCH LINE STA 77+00



SHEET 6 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1F	RFD1	25		
2F	RFD1	25		
3F	RFD1	25		
4F	RFD1	25		
5F	SCF	405		
6F	Reveg	1657 SY		
7F	Reveg	245 SY		
8F	Reveg	2184 SY		

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 66+00 TO STA 77+00**

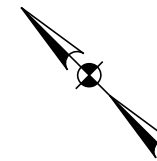
SCALE: 1" = 100' SHEET 6 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			SHEET NO. 280

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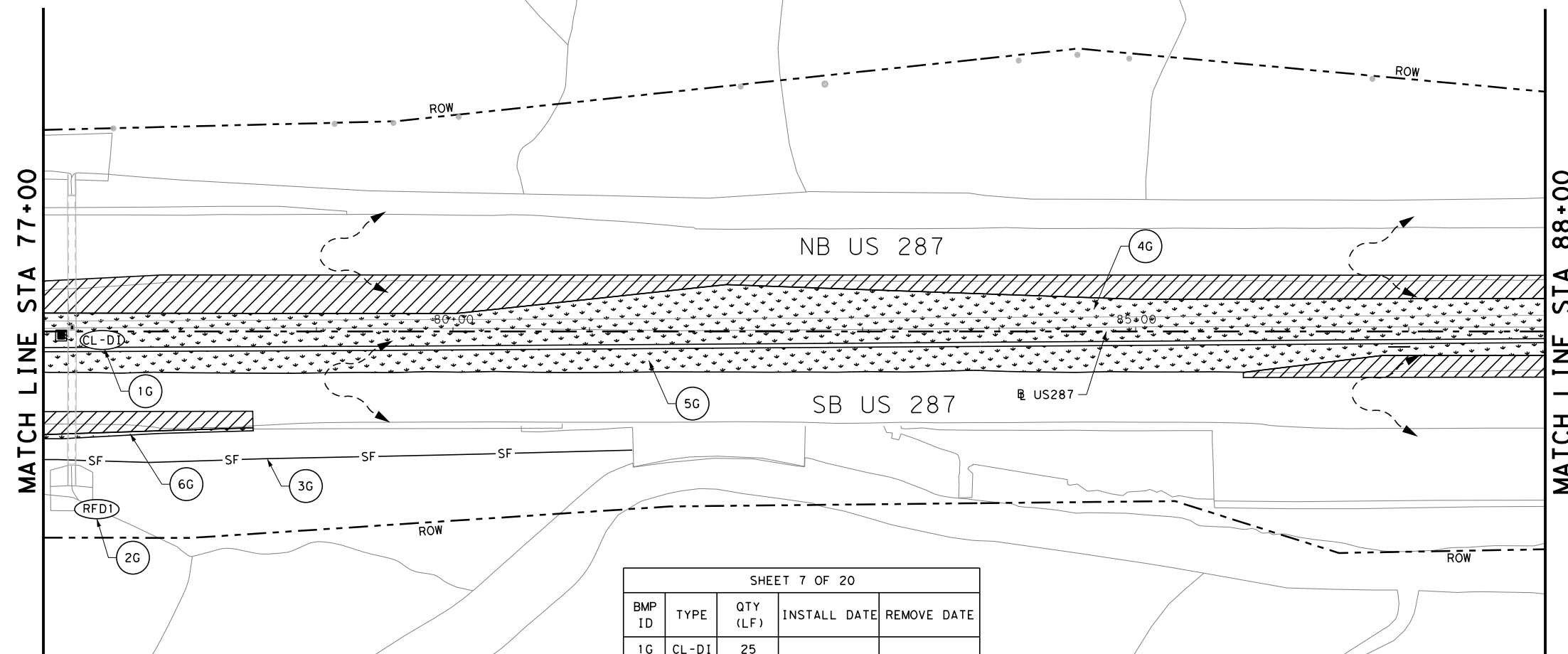
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SCALE: 1" = 100'

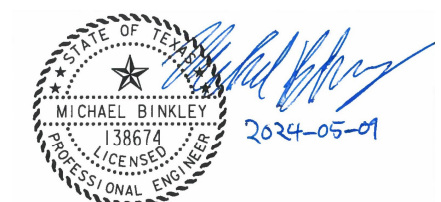


**G** DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP



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SHEET 7 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1G	CL-DI	25		
2G	RFD1	25		
3G	SCF	434		
4G	Reveg	3799 SY		
5G	Reveg	1972 SY		
6G	Reveg	41 SY		

NO.	DATE	DESCRIPTION	APPROV.

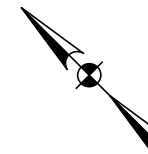
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

**Texas Department of Transportation**  
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**US 287  
DW3P  
SITE MAP  
STA 77+00 TO STA 88+00**

SCALE: 1" = 100' SHEET 7 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			SHEET NO. 281

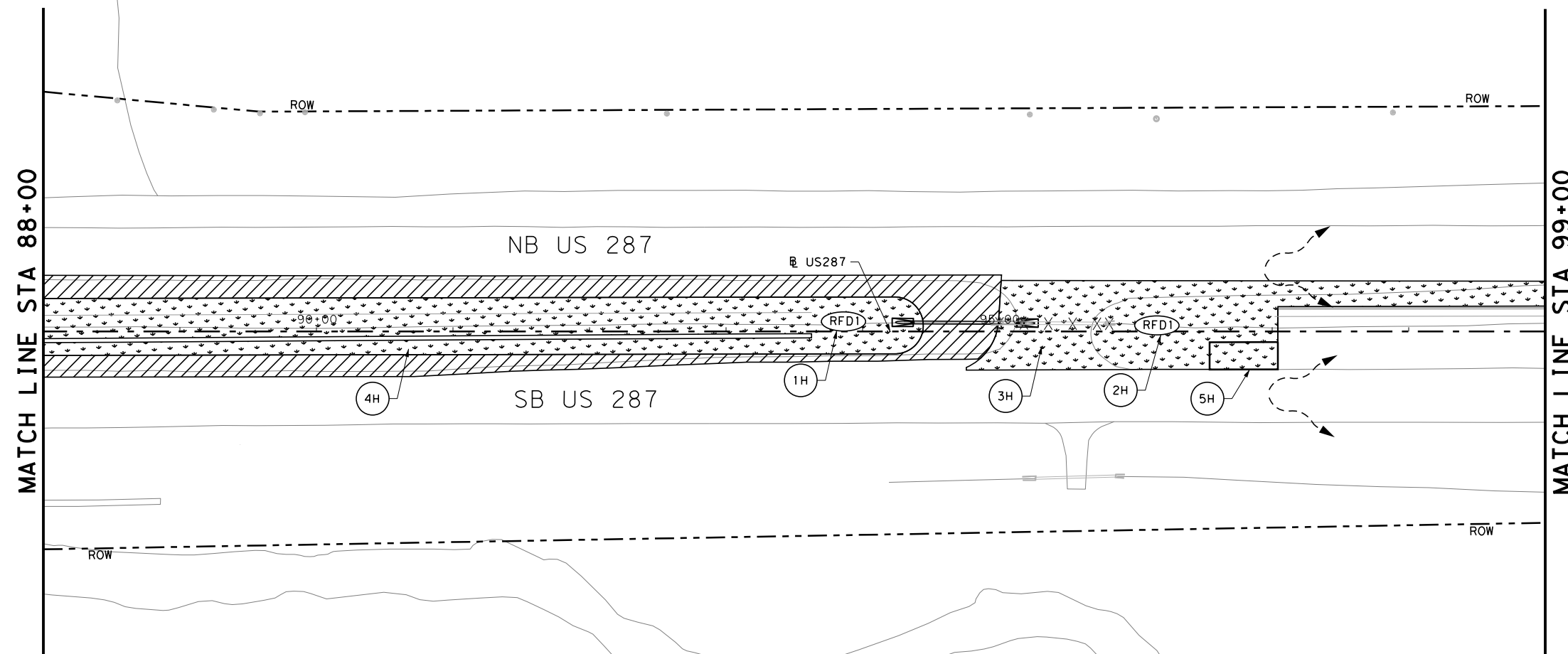


SHEET 8 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1H	RFD1	25		
2H	RFD1	25		
3H	Reveg	1911 SY		
4H	Reveg	2768 SY		
5H	C-EXIT	112 SY		

**H** DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

- LEGEND**
- SURFACE FLOW
  - SF TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP



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- DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP

MICHAEL BINKLEY  
 138674  
 LICENSED PROFESSIONAL ENGINEER  
 2024-05-01

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
 CONSULTING ENGINEERS  
 TBPE REGISTRATION NO. 264

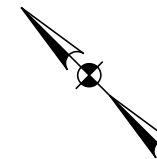
Texas Department of Transportation  
 ©2024

**US 287**  
**SW3P**  
**SITE MAP**  
**STA 88+00 TO STA 99+00**  
 SCALE: 1" = 100' SHEET 8 OF 20

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MB	6	SEE TITLE SHEET		US 287
GRAPHICS	AP	STATE	DISTRICT	COUNTY
CHECK	MB	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129

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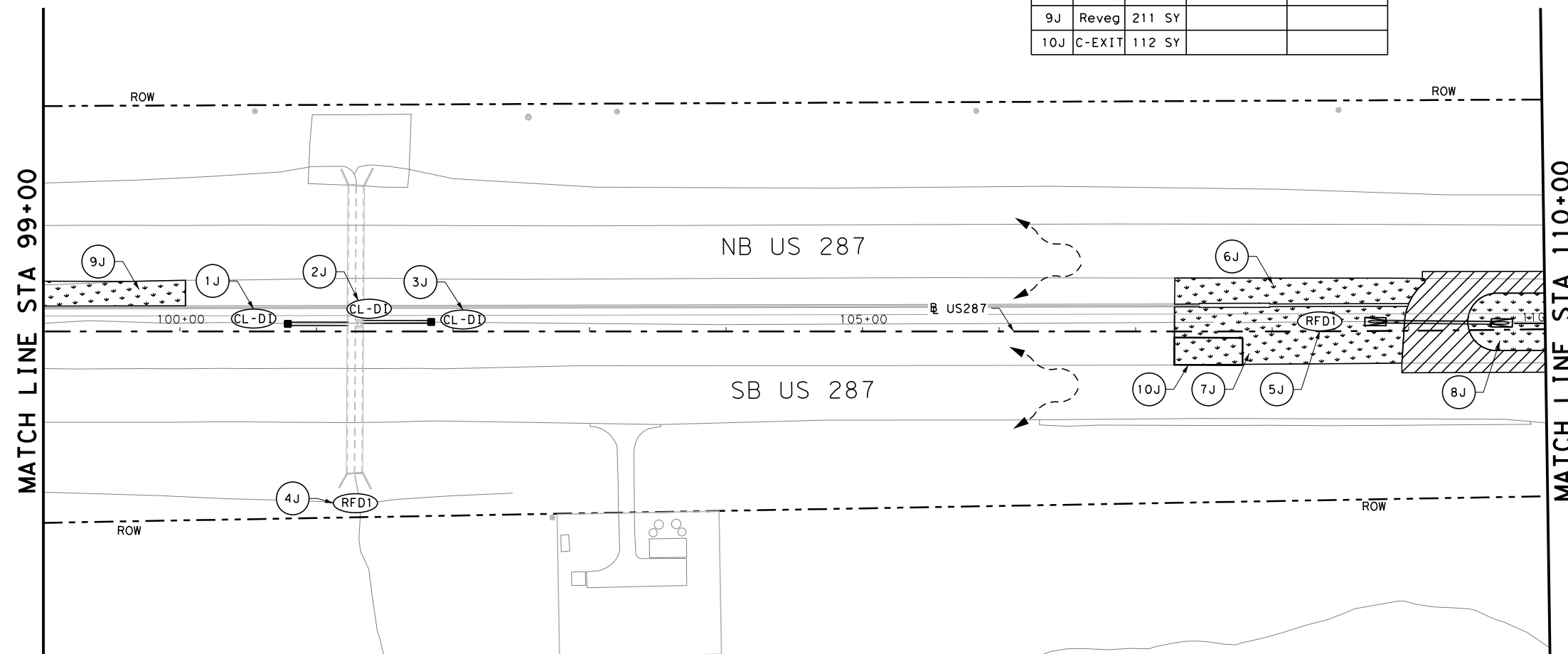


J  
DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

SHEET 9 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1J	CL-DI	25		
2J	CL-DI	25		
3J	CL-DI	25		
4J	RFD1	25		
5J	RFD1	25		
6J	Reveg	370 SY		
7J	Reveg	773 SY		
8J	Reveg	233 SY		
9J	Reveg	211 SY		
10J	C-EXIT	112 SY		

- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP



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2024-05-01

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 99+00 TO STA 110+00**

SCALE: 1" = 100' SHEET 9 OF 20

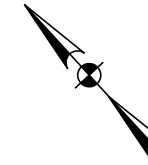
DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MB	6	SEE TITLE SHEET		US 287
GRAPHICS	AP	STATE	DISTRICT	COUNTY
CHECK	MB	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129

5/8/2024 8:21:01 PM  
 mbinkley  
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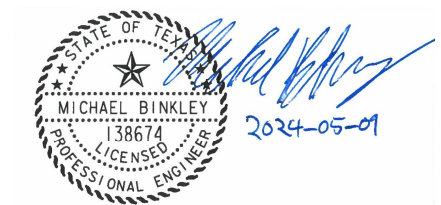
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SCALE: 1" = 100'



**LEGEND**

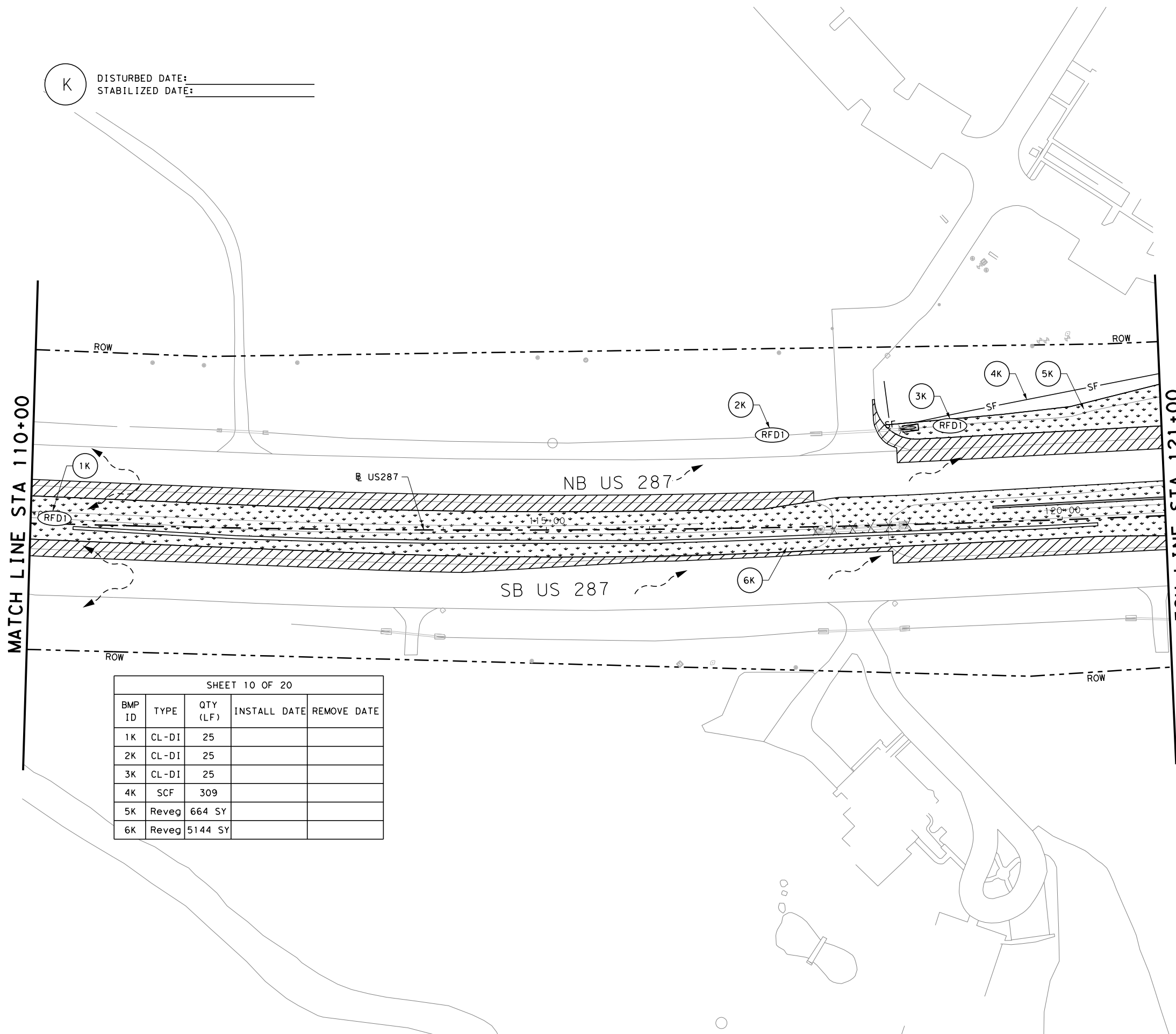
- SURFACE FLOW
- TEMPORARY SEDIMENT CONTROL FENCE
- EROSION CONTROL LOG AT DROP INLET (8")
- ROCK FILTER DAM (TYP 2)
- PAVEMENT UNDER CONSTRUCTION
- PERMANENT RE-VEGETATION
- PERMANENT CONC. RIPRAP

1. LOCATIONS OF EROSION CONTROL DEVICES ARE APPROXIMATIONS. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. BMPs SHALL BE INSTALLED PRIOR TO CONSTRUCTION (BUT NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES IN THEIR CONTROL AREA), AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE AND SOILS HAVE BEEN RE-STABILIZED OR AS OTHERWISE DIRECTED OR AUTHORIZED BY THE ENGINEER.
3. ALL INLETS AND JUNCTION BOXES WITHIN THE PROJECT LIMITS OR AFFECTED BY CONSTRUCTION DEBRIS SHALL BE PROTECTED AT ALL TIMES.
4. EROSION CONTROL DEVICE INSTALLATION, MAINTENANCE, AND REMOVAL SHALL BE IN ACCORDANCE WITH TXDOT STANDARDS FOR EROSION CONTROL.
5. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



MATCH LINE STA 110+00

MATCH LINE STA 121+00



**K** DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

SHEET 10 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1K	CL-DI	25		
2K	CL-DI	25		
3K	CL-DI	25		
4K	SCF	309		
5K	Reveg	664 SY		
6K	Reveg	5144 SY		

NO.	DATE	DESCRIPTION	APPROV.

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CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

**Texas Department of Transportation**  
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**US 287  
SW3P  
SITE MAP  
STA 110+00 TO STA 121+00**

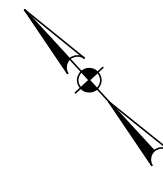
SCALE: 1" = 100' SHEET 10 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			SHEET NO. 284

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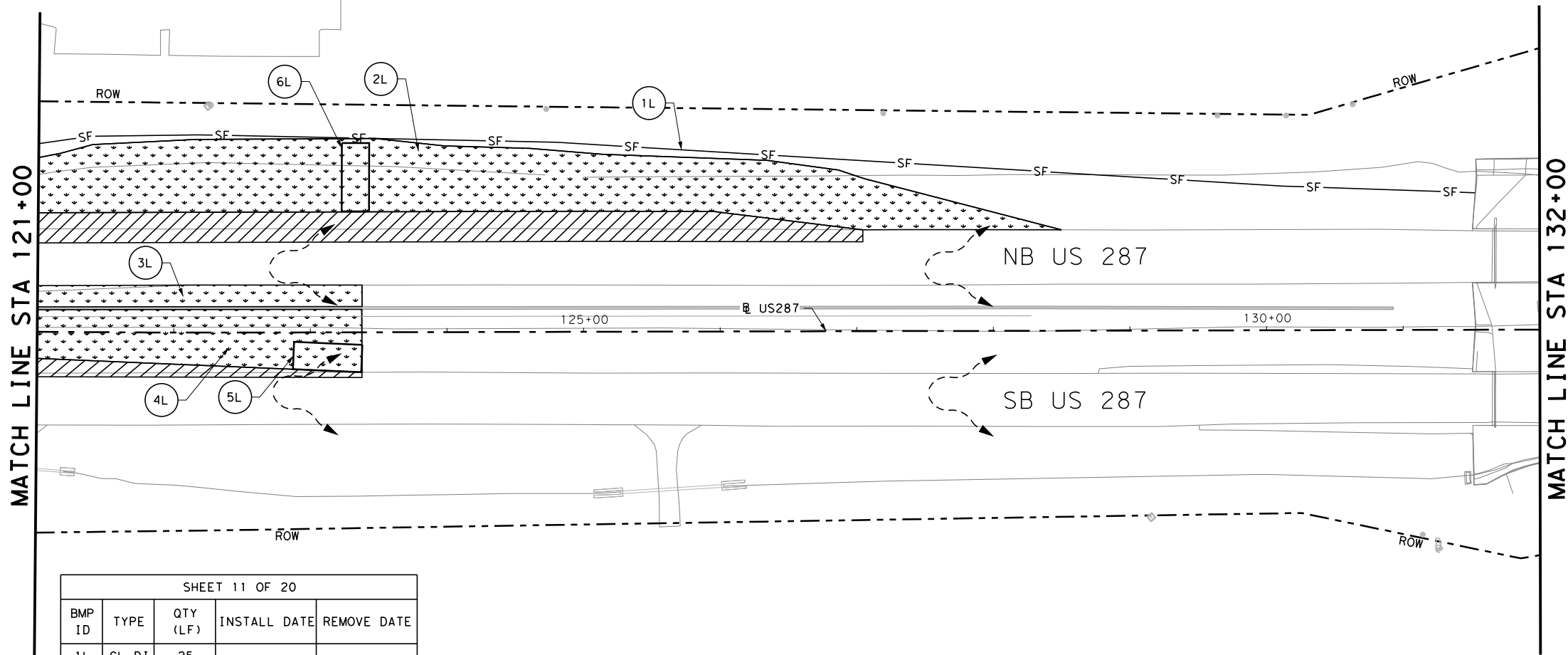
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SCALE: 1" = 100'



L  
DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

- LEGEND**
- - - - - SURFACE FLOW
  - SF - TEMPORARY SEDIMENT CONTROL FENCE
  - (CL-DI) EROSION CONTROL LOG AT DROP INLET (8")
  - (RFD1) ROCK FILTER DAM (TYP 2)
  - [Hatched Box] PAVEMENT UNDER CONSTRUCTION
  - [Dotted Box] PERMANENT RE-VEGETATION
  - [Stippled Box] PERMANENT CONC. RIPRAP



1. LOCATIONS OF EROSION CONTROL DEVICES ARE APPROXIMATIONS. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. BMPs SHALL BE INSTALLED PRIOR TO CONSTRUCTION (BUT NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES IN THEIR CONTROL AREA), AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE AND SOILS HAVE BEEN RE-STABILIZED OR AS OTHERWISE DIRECTED OR AUTHORIZED BY THE ENGINEER.
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5. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



MATCH LINE STA 121+00

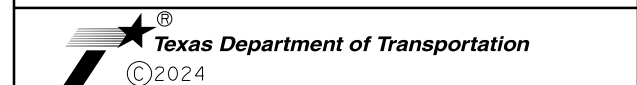
MATCH LINE STA 132+00

SHEET 11 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1L	CL-DI	25		
2L	Reveg	3449 SY		
3L	Reveg	418 SY		
4L	Reveg	1079 SY		
5L	C-EXIT	112 SY		
6L	C-EXIT	112 SY		

NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 121+00 TO STA 132+00**

SCALE: 1" = 100' SHEET 11 OF 20

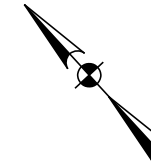
DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET	HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS
CHECK MB	CONTROL 0172	SECTION 05	JOB 129
CHECK SA			SHEET NO. 285

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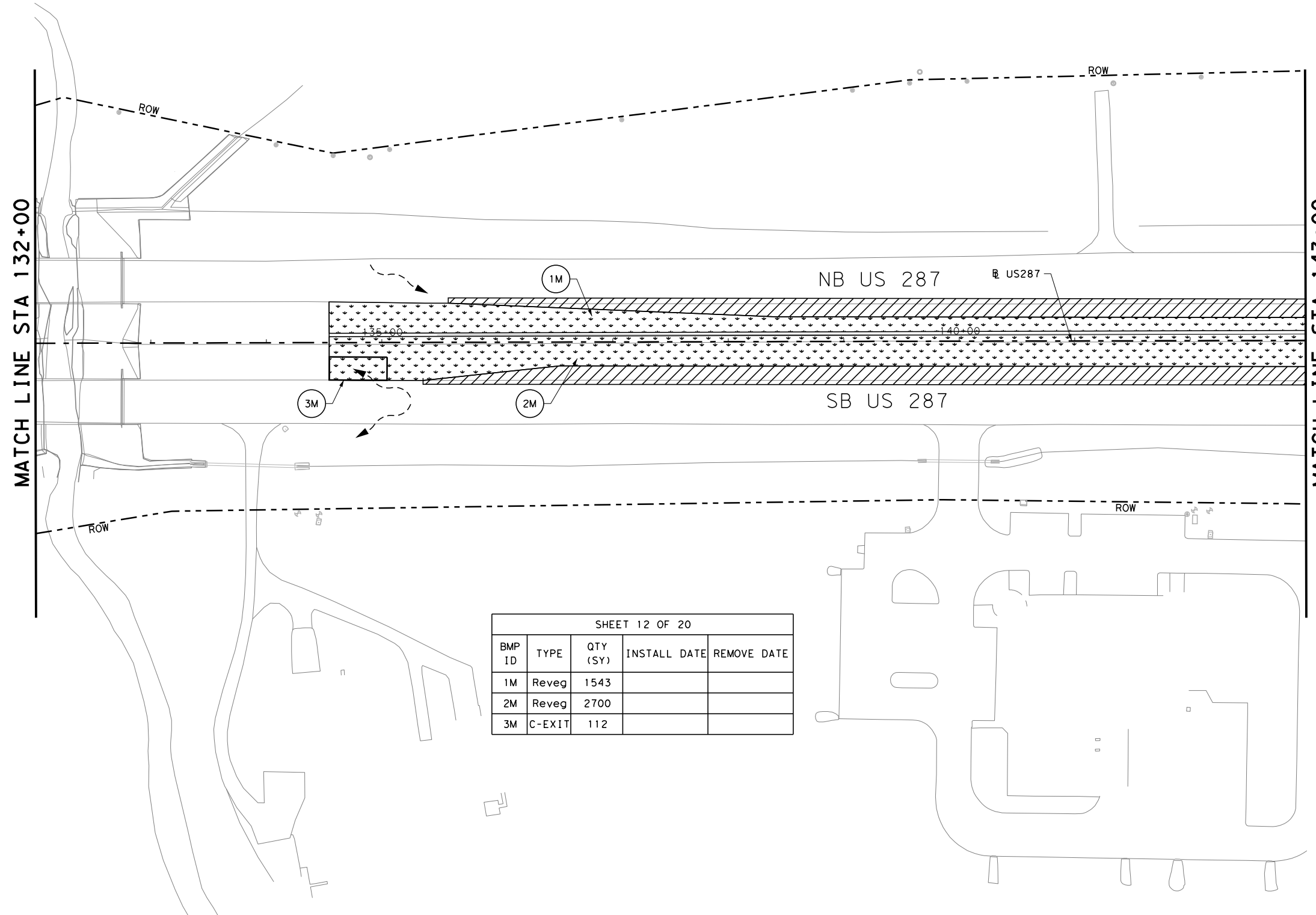
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50 0 50 100  
SCALE: 1" = 100'



M DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

- LEGEND**
- - - - - SURFACE FLOW
  - SF - TEMPORARY SEDIMENT CONTROL FENCE
  - (CL-DI) EROSION CONTROL LOG AT DROP INLET (8")
  - (RFD1) ROCK FILTER DAM (TYP 2)
  - [Hatched Box] PAVEMENT UNDER CONSTRUCTION
  - [Dotted Box] PERMANENT RE-VEGETATION
  - [Stippled Box] PERMANENT CONC. RIPRAP



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6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



SHEET 12 OF 20

BMP ID	TYPE	QTY (SY)	INSTALL DATE	REMOVE DATE
1M	Reveg	1543		
2M	Reveg	2700		
3M	C-EXIT	112		

NO.	DATE	DESCRIPTION					APPROV.			
<b>BRIDGEFARMER &amp; ASSOCIATES, INC.</b> CONSULTING ENGINEERS TBPE REGISTRATION NO. 264										
<b>Texas Department of Transportation</b> ©2024										
<b>US 287</b> <b>SW3P</b> <b>SITE MAP</b> <b>STA 132+00 TO STA 143+00</b>										
SCALE: 1" = 100'					SHEET 12 OF 20					
DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET			HIGHWAY NO. US 287					
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS		SHEET NO. 286					
CHECK MB	CONTROL SECTION		JOB							
CHECK SA	0172	05	129							

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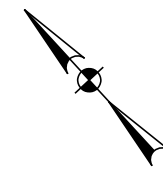
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SCALE: 1" = 100'

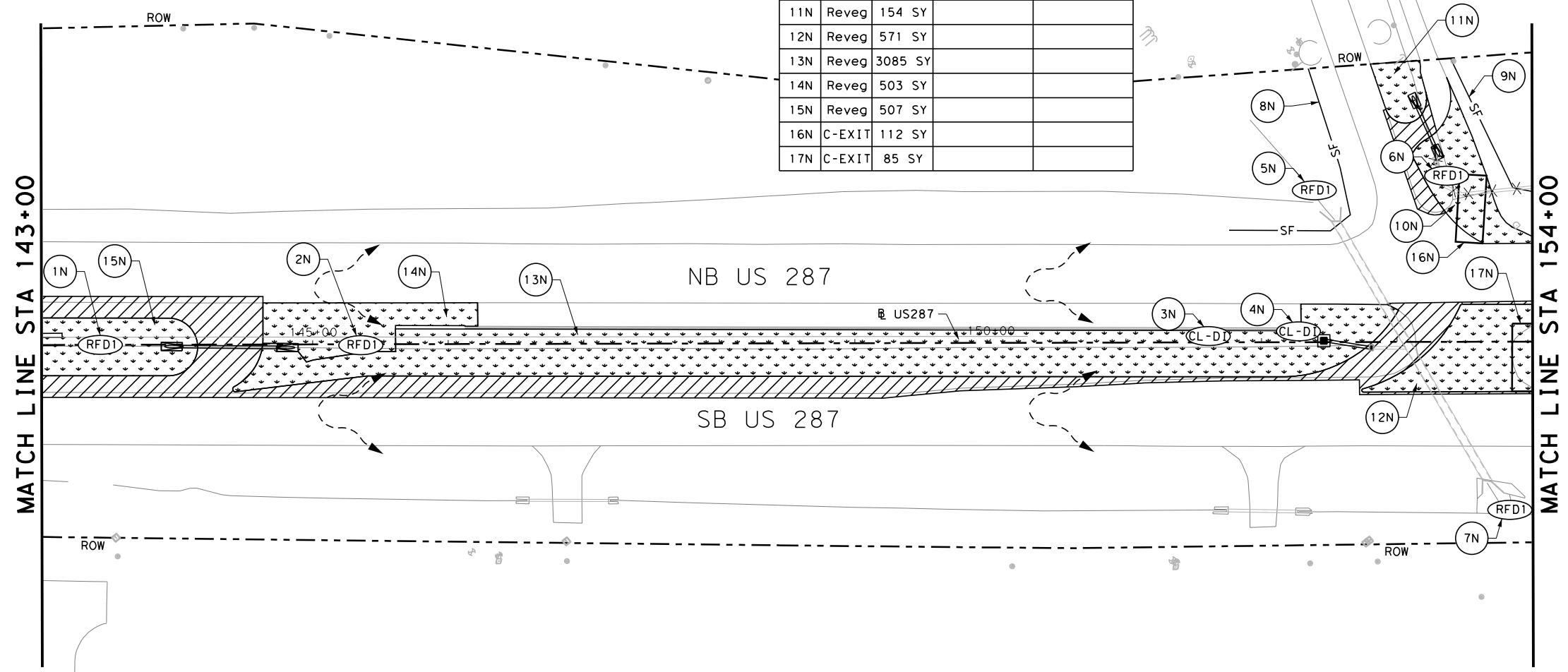
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DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

SHEET 13 OF 20

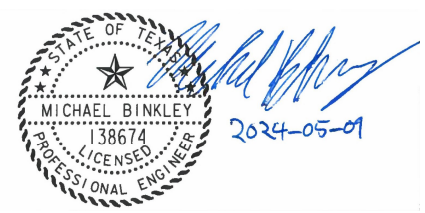
BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1N	RFD1	25		
2N	RFD1	25		
3N	CL-DI	25		
4N	CL-DI	25		
5N	RFD1	25		
6N	RFD1	25		
7N	RFD1	25		
8N	SCF	205		
9N	SCF	123		
10N	Reveg	429 SY		
11N	Reveg	154 SY		
12N	Reveg	571 SY		
13N	Reveg	3085 SY		
14N	Reveg	503 SY		
15N	Reveg	507 SY		
16N	C-EXIT	112 SY		
17N	C-EXIT	85 SY		



- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP



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6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 143+00 TO STA 154+00**

SCALE: 1" = 100' SHEET 13 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	287
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

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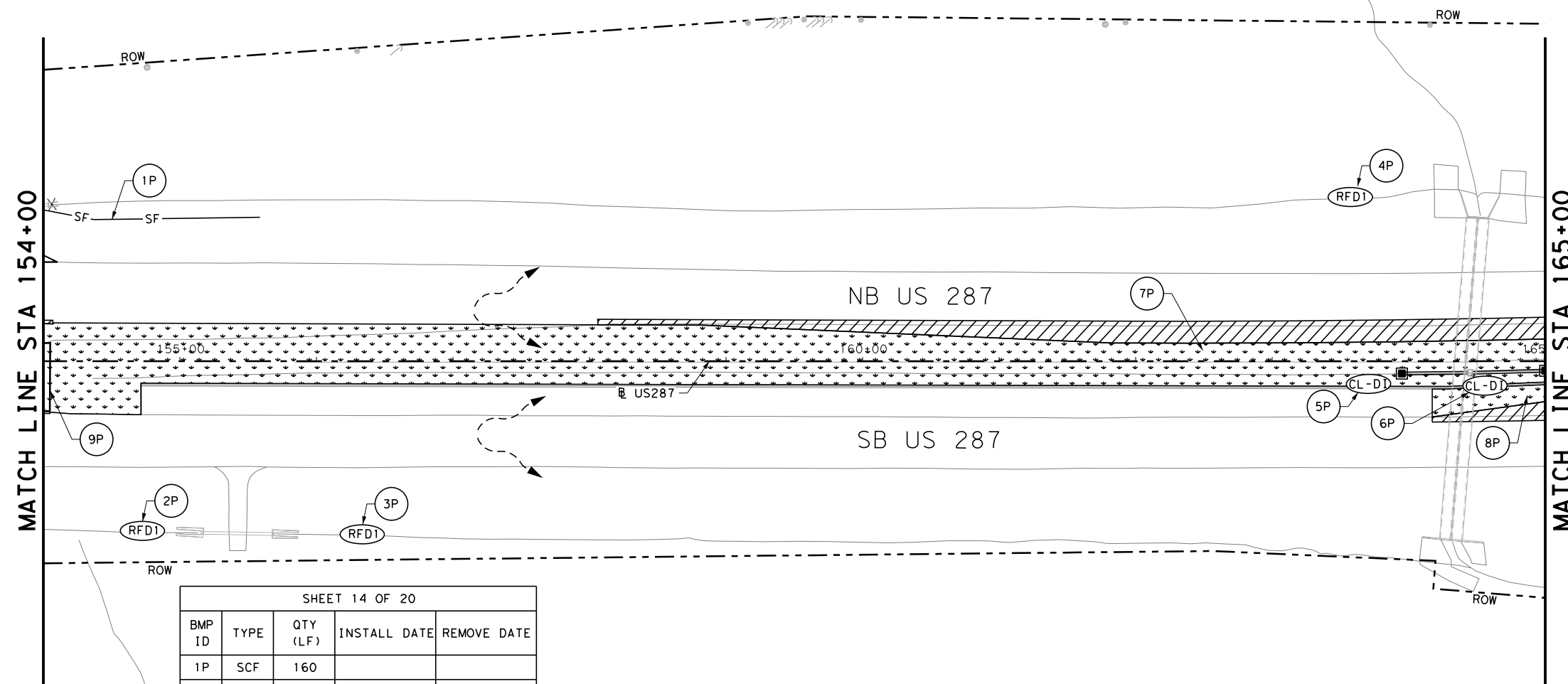
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50 0 50 100  
SCALE: 1" = 100'



(P) DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP



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6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



SHEET 14 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1P	SCF	160		
2P	RFD1	25		
3P	RFD1	25		
4P	RFD1	25		
5P	CL-DI	25		
6P	CL-DI	25		
7P	Reveg	4893 SY		
8P	Reveg	149 SY		
9P	C-EXIT	27 SY		

NO.	DATE	DESCRIPTION	APPROV.

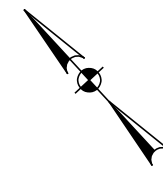
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 154+00 TO STA 165+00**

SCALE: 1" = 100' SHEET 14 OF 20

DESIGN	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
MB	6	SEE TITLE SHEET		US 287
GRAPHICS	AP	STATE	DISTRICT	COUNTY
CHECK	MB	TEXAS	DALLAS	ELLIS
CHECK	SA	CONTROL	SECTION	JOB
		0172	05	129



SHEET 15 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1Q	CL-DI	25		
2Q	RFD1	25		
3Q	RFD1	25		
4Q	RFD1	25		
5Q	RFD1	25		
6Q	Reveg	1871 SY		
7Q	Reveg	1063 SY		
8Q	Reveg	2442 SY		
9Q	C-EXIT	112 SY		

Q DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

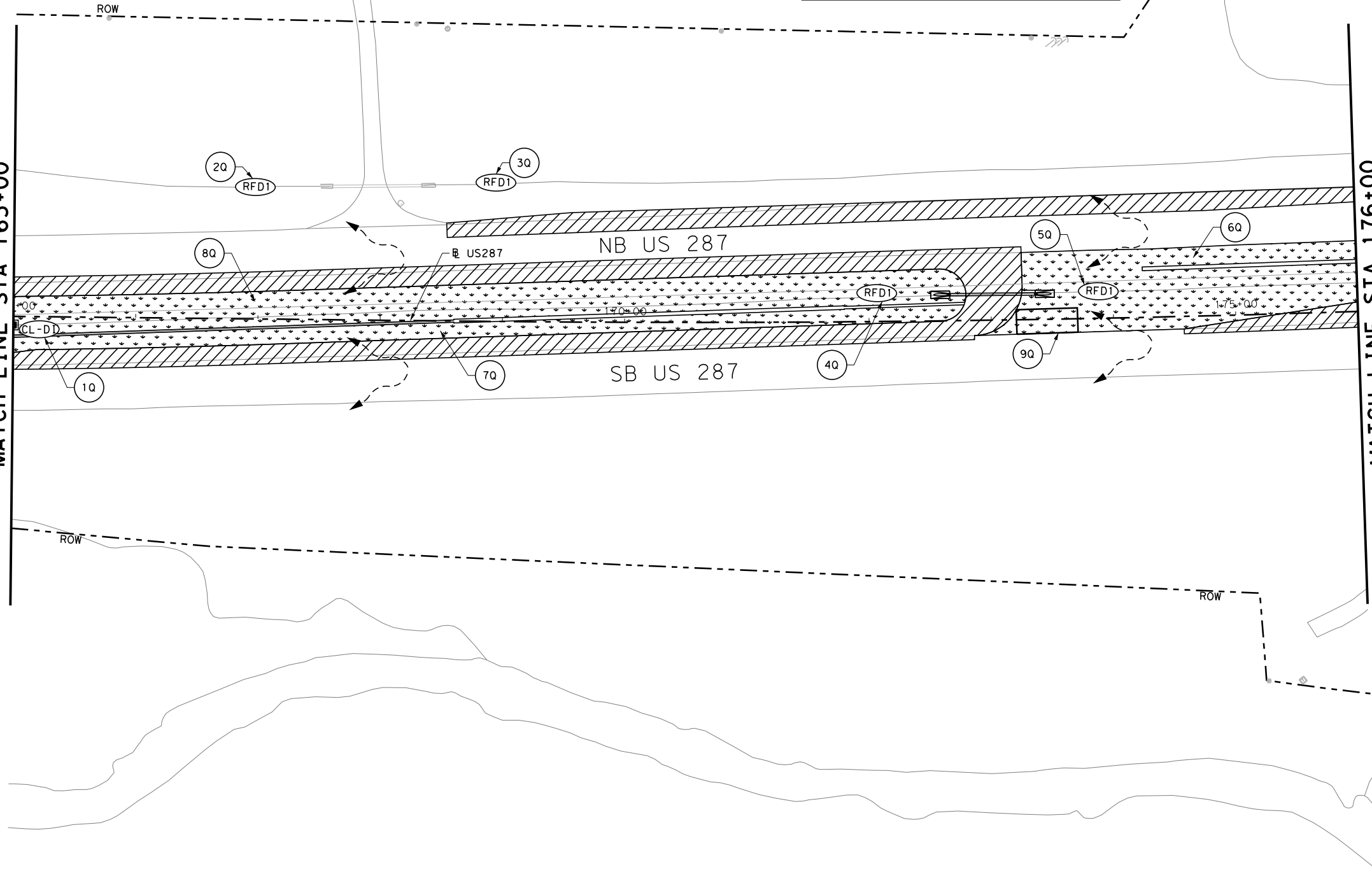
- LEGEND**
- SURFACE FLOW
  - SF TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP

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5. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



MATCH LINE STA 165+00

MATCH LINE STA 176+00



NO.	DATE	DESCRIPTION	APPROV.

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CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264

**Texas Department of Transportation**  
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**US 287  
SW3P  
SITE MAP  
STA 165+00 TO STA 176+00**

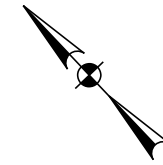
SCALE: 1" = 100' SHEET 15 OF 20

DESIGN	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
MB	6	SEE TITLE SHEET	US 287
GRAPHICS	AP	STATE DISTRICT COUNTY	SHEET NO.
CHECK	MB	TEXAS DALLAS ELLIS	289
CHECK	SA	CONTROL SECTION JOB	
	0172	05 129	

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SCALE: 1" = 100'



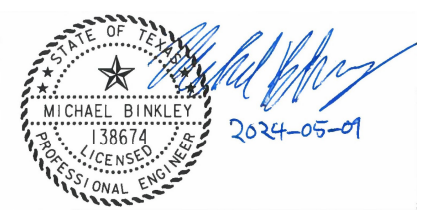
(R) DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

SHEET 16 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1R	RFD1	25		
2R	RFD1	25		
3R	CL-DI	25		
4R	RFD1	25		
5R	SCF	195		
6R	RFD1	25		
7R	RFD1	25		
8R	SCF	147		
9R	Reveg	3537 SY		
10R	Reveg	73 SY		
11R	Reveg	612 SY		
12R	Reveg	60 SY		

- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP

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6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



NO.	DATE	DESCRIPTION	APPROV.

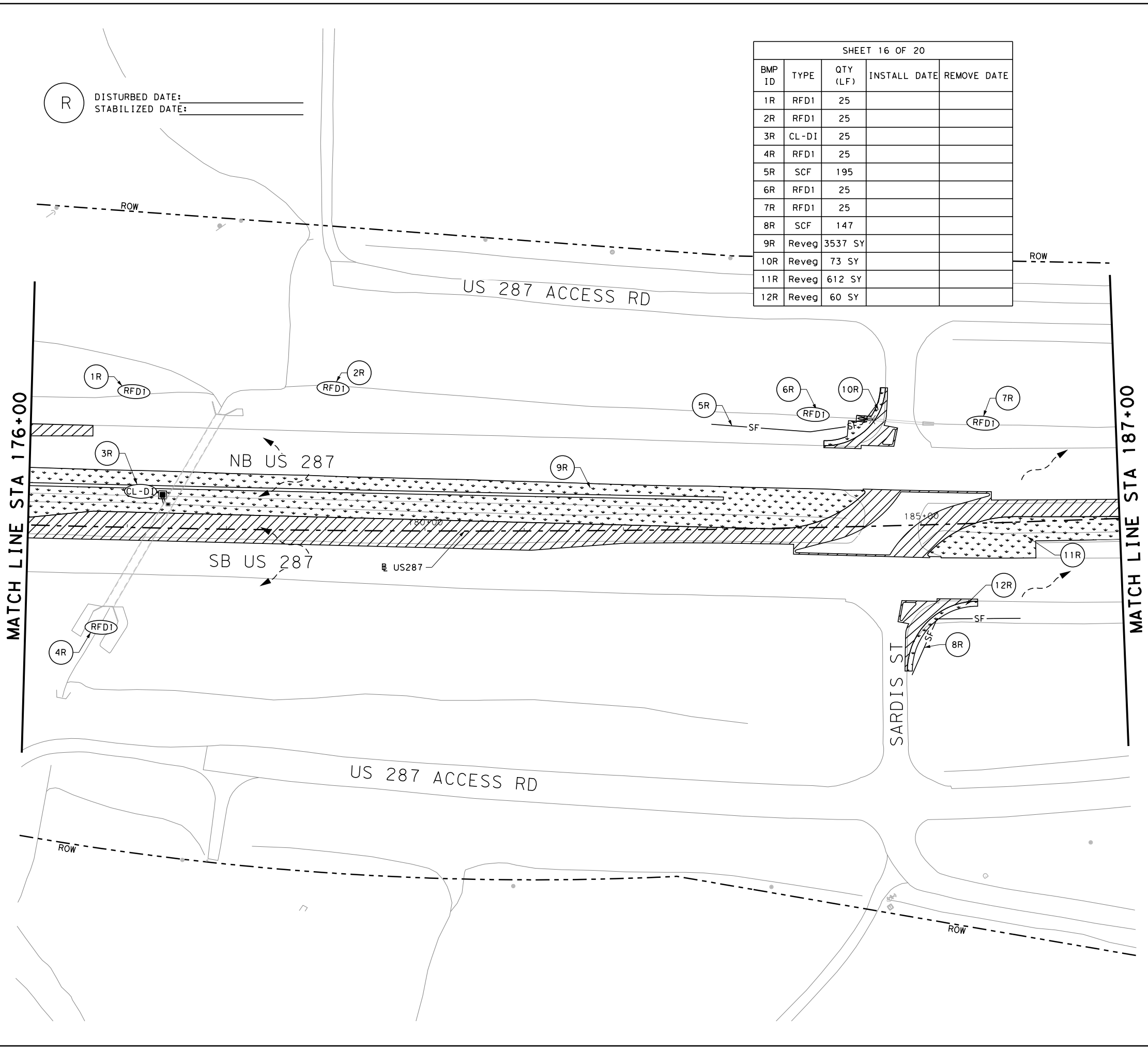
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



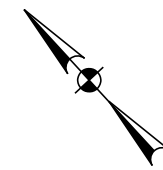
**US 287  
SW3P  
SITE MAP  
STA 176+00 TO STA 187+00**

SCALE: 1" = 100' SHEET 16 OF 20

DESIGN	FED. RD. DIV. NO.	PROJECT NO.			HIGHWAY NO.
MB	6	SEE TITLE SHEET			US 287
GRAPHICS	AP	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	MB	TEXAS	DALLAS	ELLIS	290
CHECK	SA	CONTROL	SECTION	JOB	
		0172	05	129	







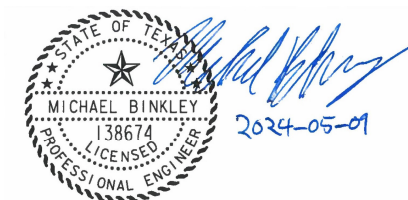
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DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

SHEET 17 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1S	CL-DI	25		
2S	RFD1	25		
3S	Reveg	2201 SY		
4S	C-EXIT	112 SY		

- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP

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5. SEE DAILY WORK REPORTS FOR INITIAL STABILIZATION TIME FRAMES.
6. DISTURBED PROJECT AREAS INCLUDE CONSTRUCTION AREAS SHOWN IN SW3P SITE MAP SHEETS PLUS RE-VEGETATION AREAS SHOWN IN SW3P SITE MAP



NO.	DATE	DESCRIPTION	APPROV.

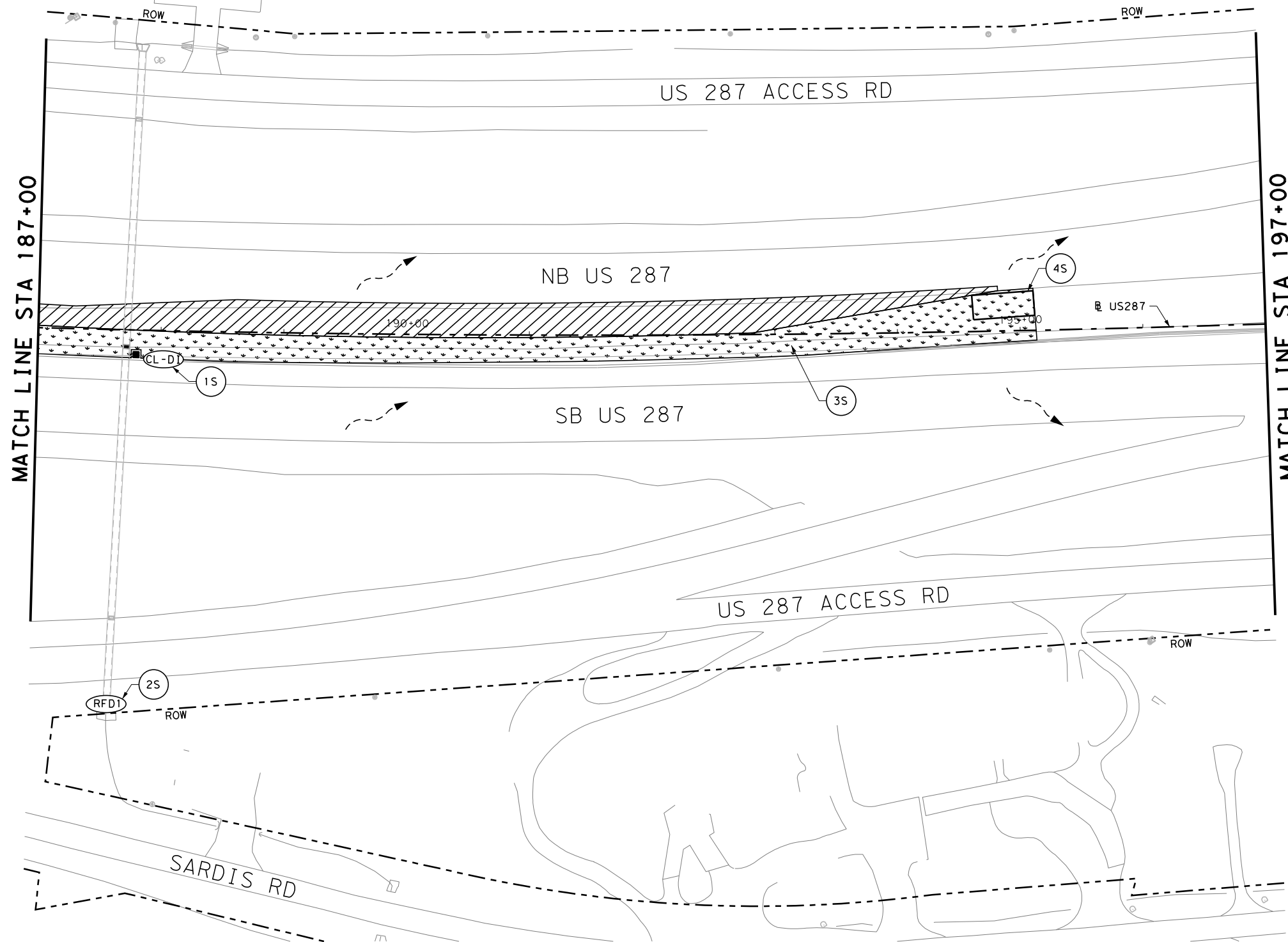
**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 186+00 TO STA 197+00**

SCALE: 1" = 100' SHEET 17 OF 20

DESIGN	FED. RD. DIV. NO.	PROJECT NO.	HIGHWAY NO.
MB	6	SEE TITLE SHEET	US 287
GRAPHICS	AP	STATE	DISTRICT COUNTY SHEET NO.
CHECK	MB	TEXAS	DALLAS ELLIS 291
CHECK	SA	CONTROL SECTION JOB	0172 05 129



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mBinkley  
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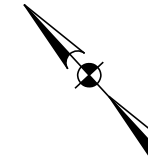
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SCALE: 1" = 100'

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DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

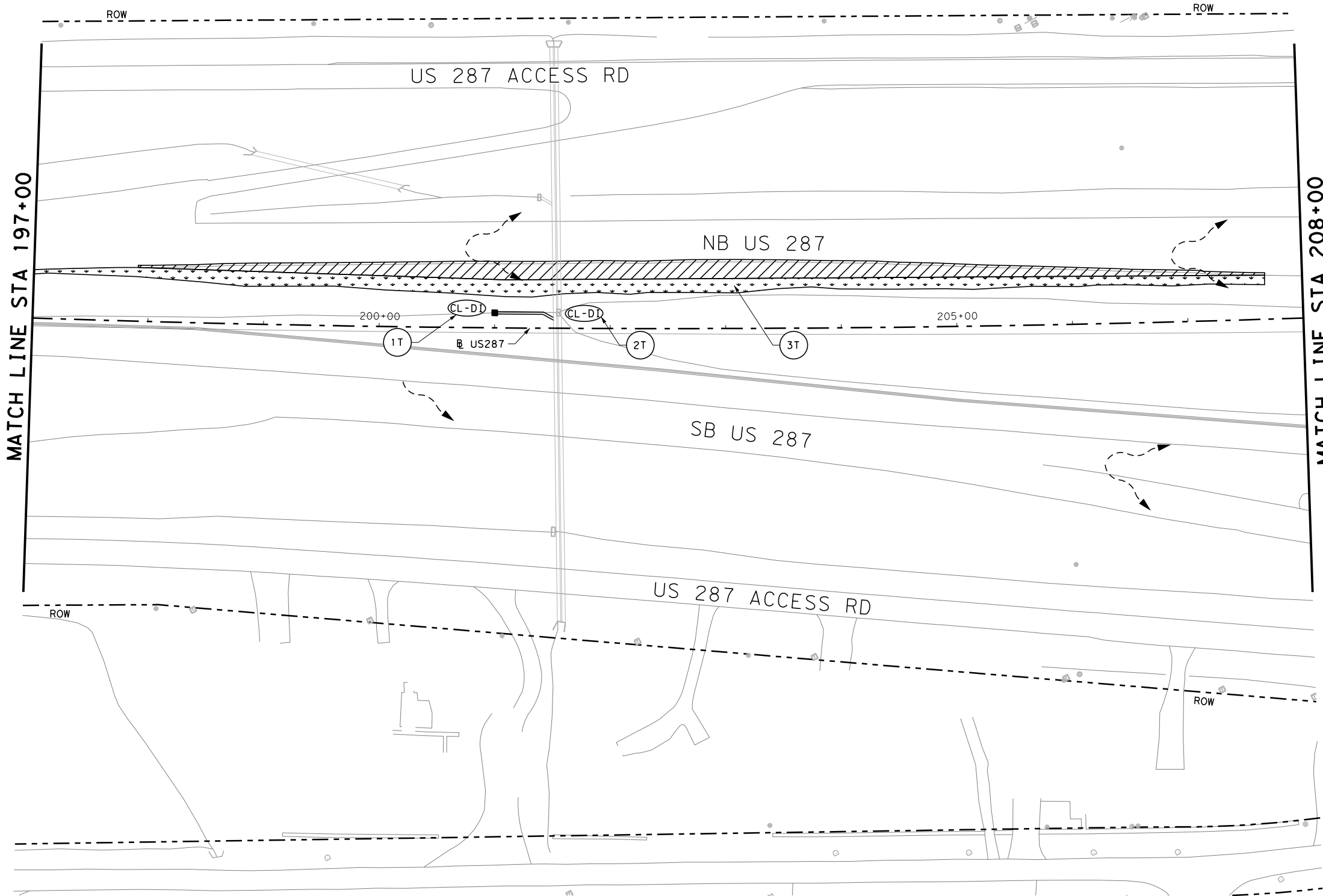
SHEET 18 OF 20

BMP ID	TYPE	QTY (LF)	INSTALL DATE	REMOVE DATE
1T	CL-DI	25		
2T	CL-DI	25		
3T	Reveg	1207 SY		



- LEGEND**
- - - - - SURFACE FLOW
  - SF - TEMPORARY SEDIMENT CONTROL FENCE
  - (CL-DI) EROSION CONTROL LOG AT DROP INLET (8")
  - (RFDI) ROCK FILTER DAM (TYP 2)
  - [Hatched Box] PAVEMENT UNDER CONSTRUCTION
  - [Dotted Box] PERMANENT RE-VEGETATION
  - [Stippled Box] PERMANENT CONC. RIPRAP

1. LOCATIONS OF EROSION CONTROL DEVICES ARE APPROXIMATIONS. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. BMPs SHALL BE INSTALLED PRIOR TO CONSTRUCTION (BUT NO SOONER THAN TWO WEEKS PRIOR TO SOIL DISTURBING ACTIVITIES IN THEIR CONTROL AREA), AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE AND SOILS HAVE BEEN RE-STABILIZED OR AS OTHERWISE DIRECTED OR AUTHORIZED BY THE ENGINEER.
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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 197+00 TO STA 208+00**

SCALE: 1" = 100' SHEET 18 OF 20

DESIGN MB	FED. RD. DIV. NO. 6	PROJECT NO. SEE TITLE SHEET		HIGHWAY NO. US 287
GRAPHICS AP	STATE TEXAS	DISTRICT DALLAS	COUNTY ELLIS	SHEET NO. 292
CHECK MB	CONTROL 0172	SECTION 05	JOB 129	

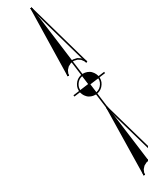
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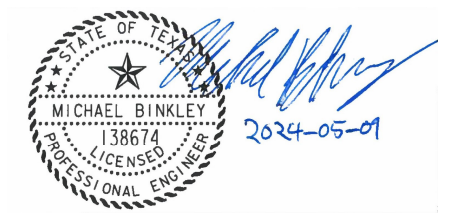
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DISTURBED DATE: \_\_\_\_\_  
STABILIZED DATE: \_\_\_\_\_

NO WORK ON THIS SHEET



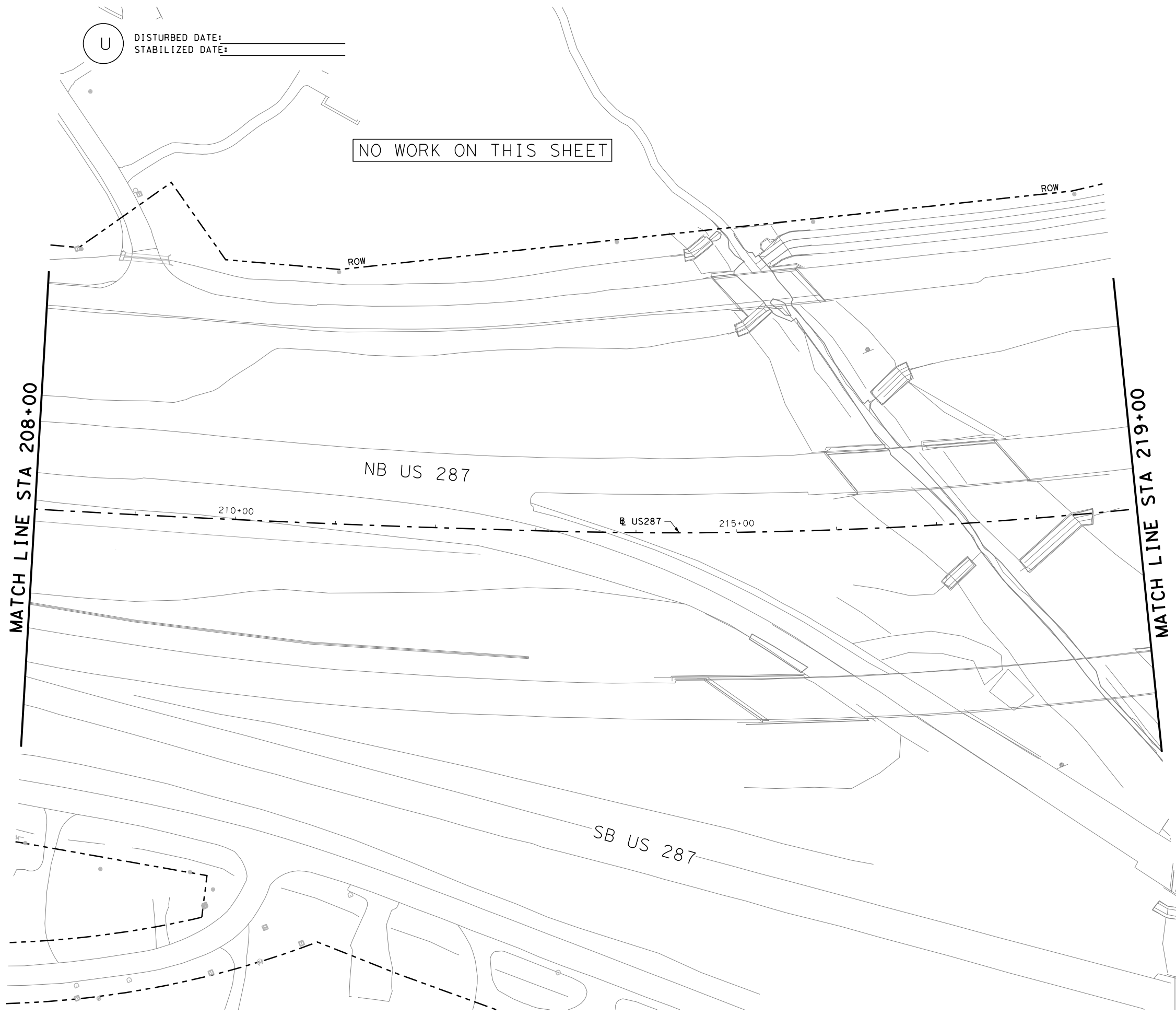
- LEGEND**
- SURFACE FLOW
  - TEMPORARY SEDIMENT CONTROL FENCE
  - EROSION CONTROL LOG AT DROP INLET (8")
  - ROCK FILTER DAM (TYP 2)
  - PAVEMENT UNDER CONSTRUCTION
  - PERMANENT RE-VEGETATION
  - PERMANENT CONC. RIPRAP

1. LOCATIONS OF EROSION CONTROL DEVICES ARE APPROXIMATIONS. ACTUAL LOCATIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
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MATCH LINE STA 208+00

MATCH LINE STA 219+00



NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



**US 287  
SW3P  
SITE MAP  
STA 208+00 TO STA 219+00**

SCALE: 1" = 100' SHEET 19 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	SHEET NO.
CHECK SA	CONTROL	SECTION	JOB	293
	0172	05	129	

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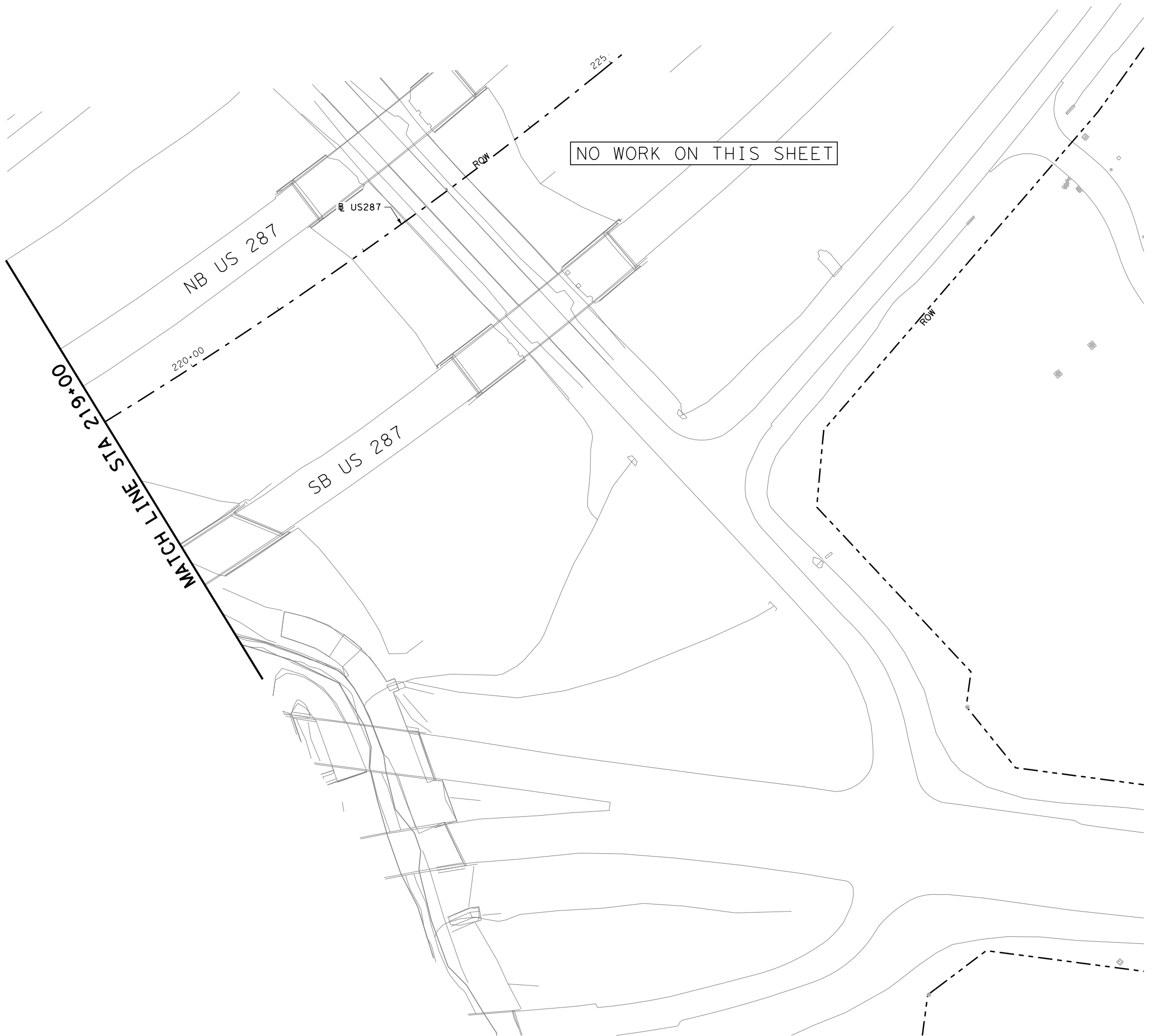
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SCALE: 1" = 100'



**LEGEND**

- SURFACE FLOW
- TEMPORARY SEDIMENT CONTROL FENCE
- EROSION CONTROL LOG AT DROP INLET (8")
- ROCK FILTER DAM (TYP 2)
- PAVEMENT UNDER CONSTRUCTION
- PERMANENT RE-VEGETATION
- PERMANENT CONC. RIPRAP

NO WORK ON THIS SHEET



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NO.	DATE	DESCRIPTION	APPROV.

**BRIDGEFARMER & ASSOCIATES, INC.**  
CONSULTING ENGINEERS  
TBPE REGISTRATION NO. 264



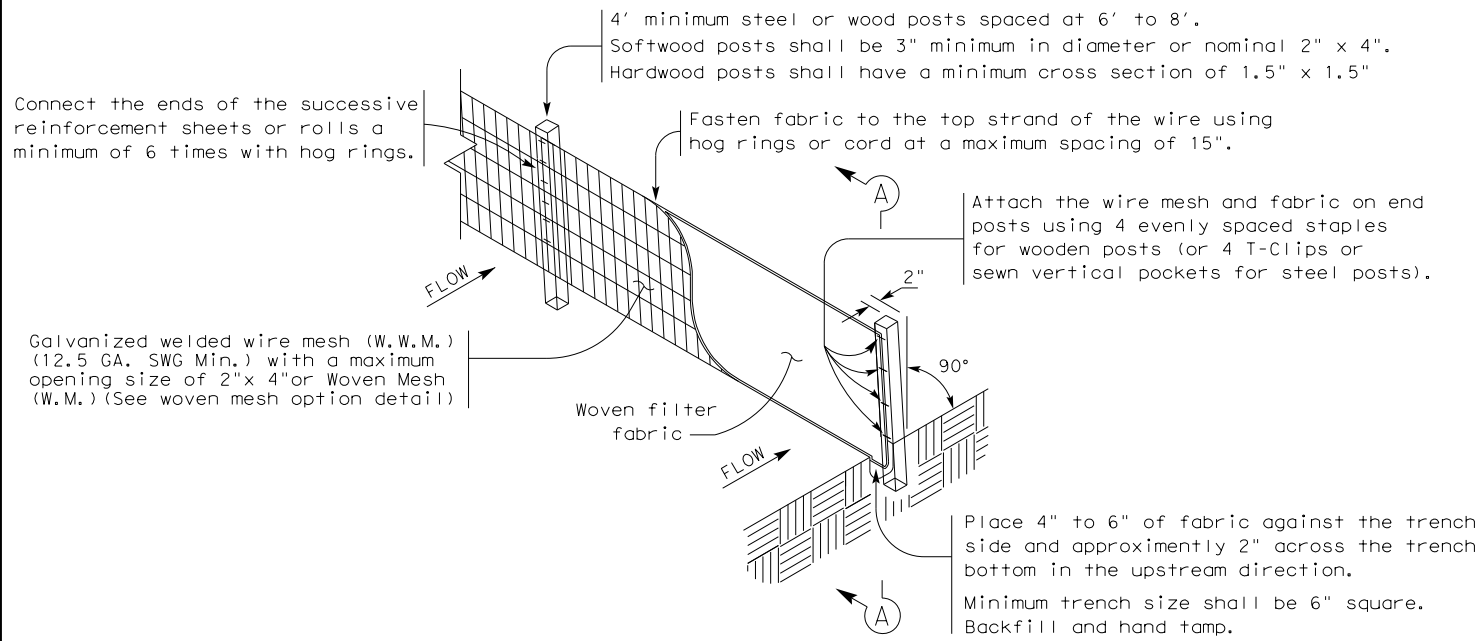
**US 287  
SW3P  
SITE MAP  
STA 219+00 TO END**

SCALE: 1" = 100' SHEET 20 OF 20

DESIGN MB	FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
GRAPHICS AP	6	SEE TITLE SHEET		US 287
CHECK MB	TEXAS	DALLAS	ELLIS	294
CHECK SA	CONTROL	SECTION	JOB	
	0172	05	129	

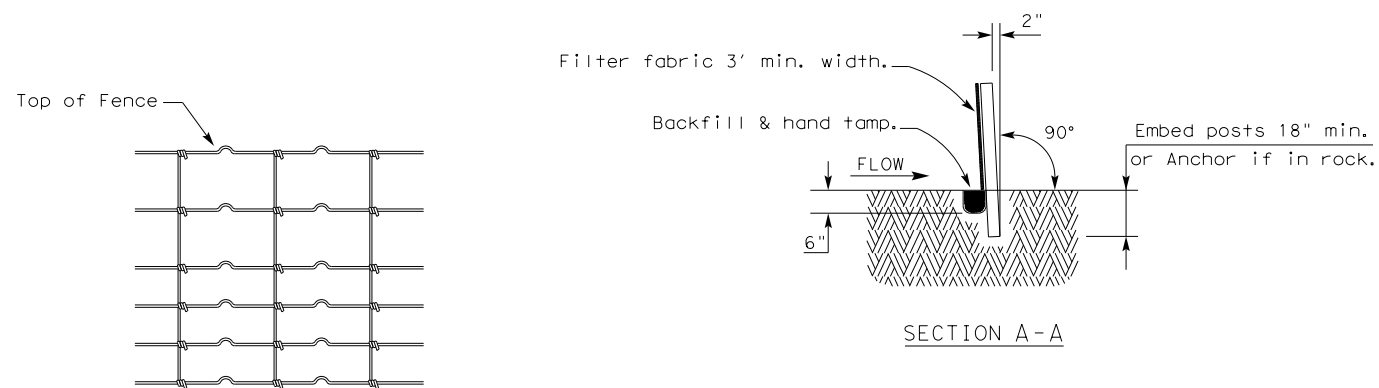
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DATE  
FILE



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.

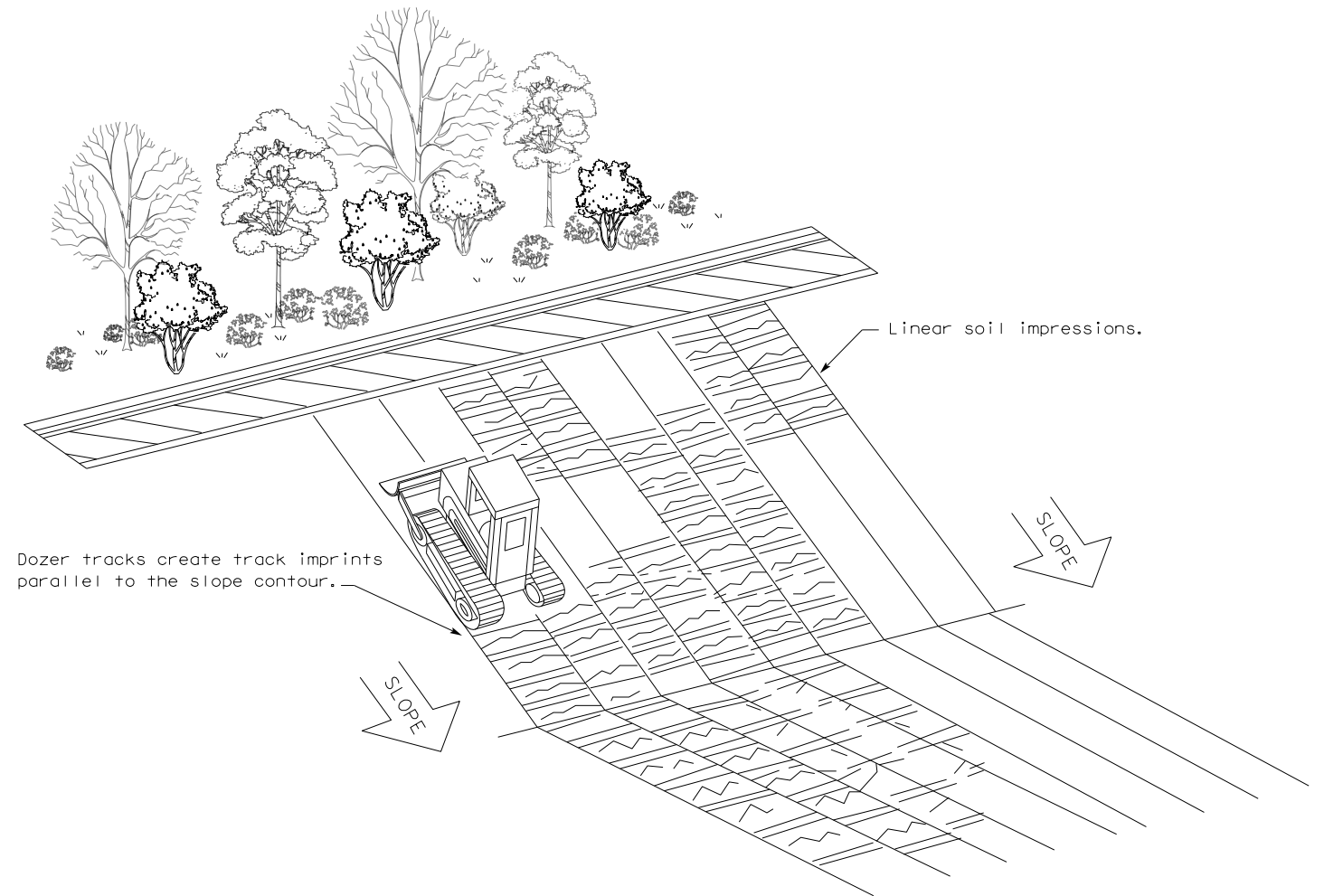
LEGEND

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



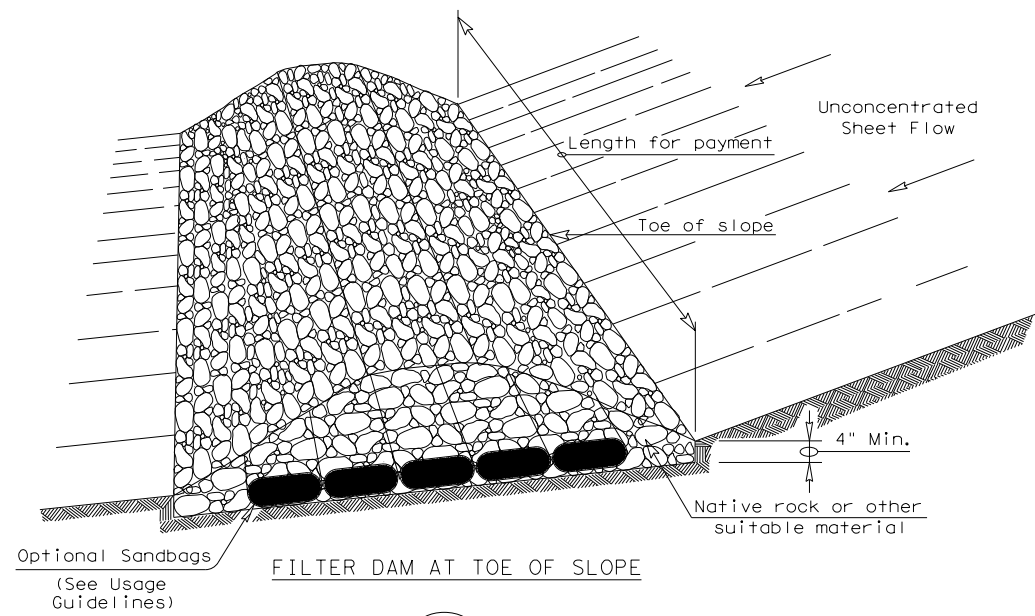
TEMPORARY EROSION,  
SEDIMENT AND WATER  
POLLUTION CONTROL MEASURES  
FENCE & VERTICAL TRACKING

EC(1) - 16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	295	

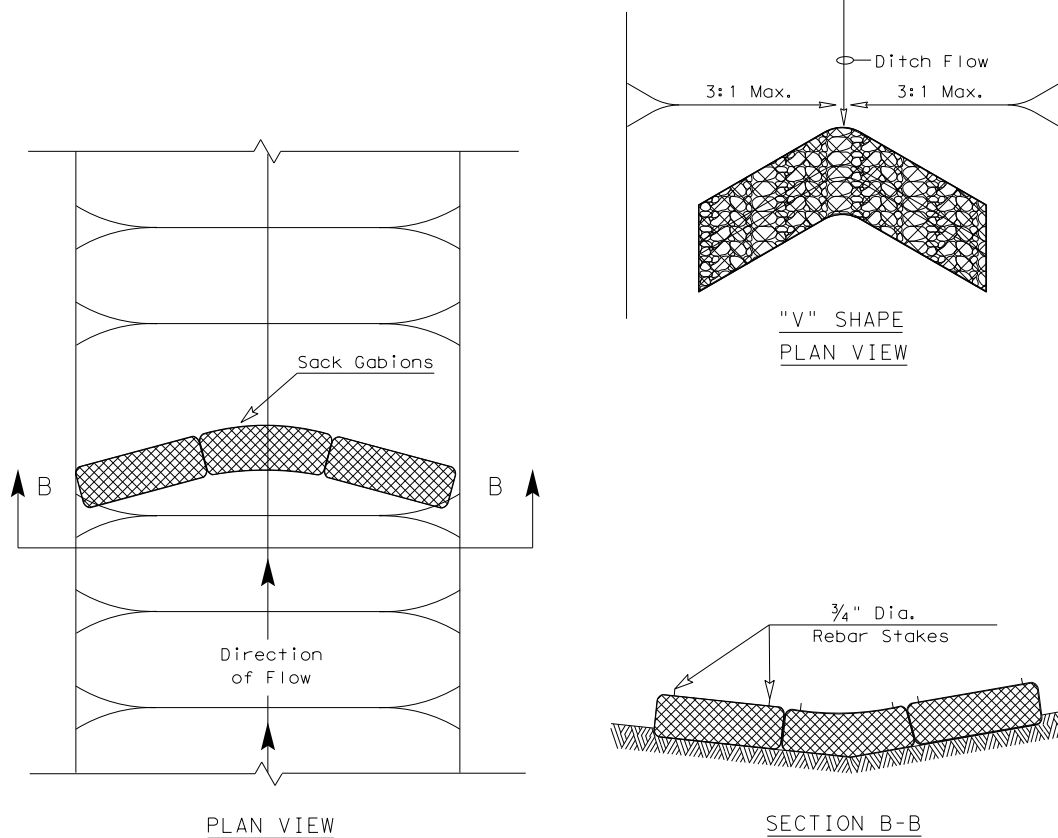
DISCLAIMER: The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE: FILE:



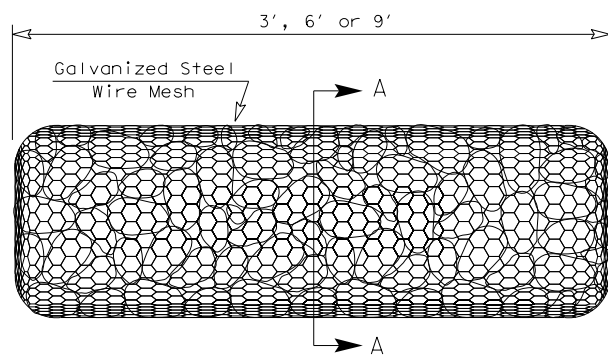
FILTER DAM AT TOE OF SLOPE

(RFD1)



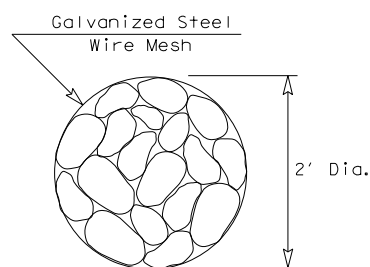
PLAN VIEW

SECTION B-B

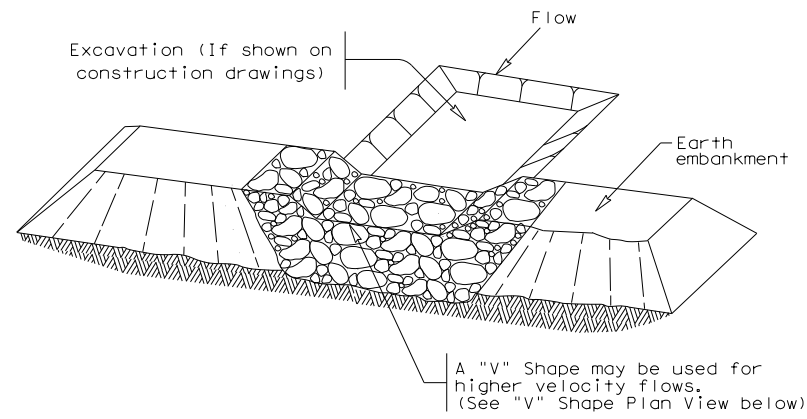


TYPE 4 (SACK GABIONS)

(RFD4)

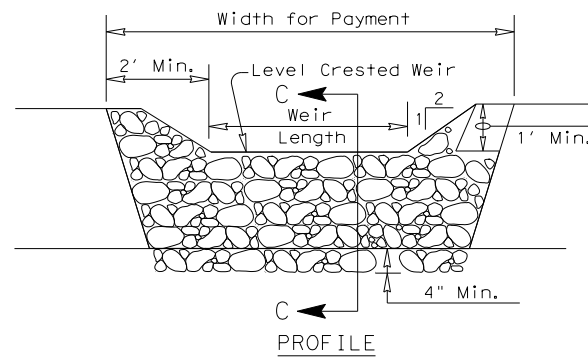


SECTION A-A

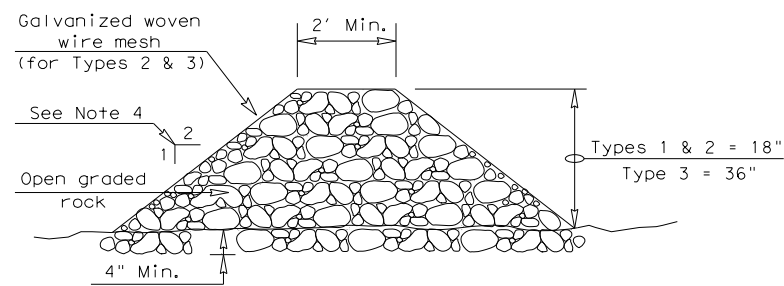


FILTER DAM AT SEDIMENT TRAP

(RFD2) 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.

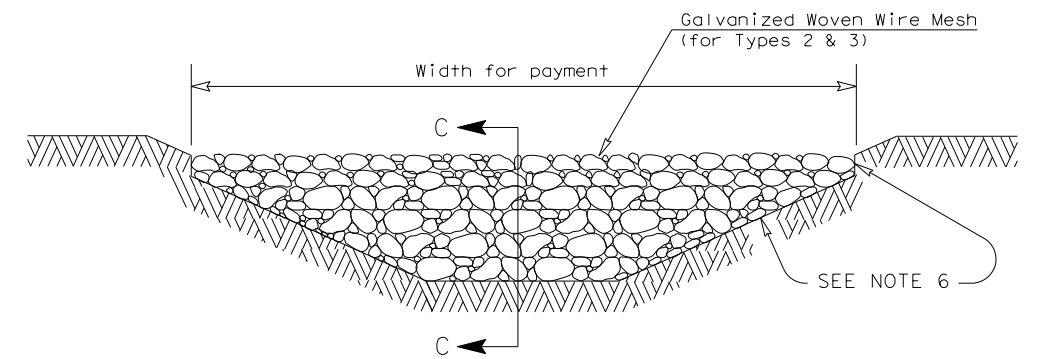
**Type 1 (18" high with no wire mesh) (3" to 6" aggregate):** Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high 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

(RFD3) OR (RFD2) OR (RFD1)

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.

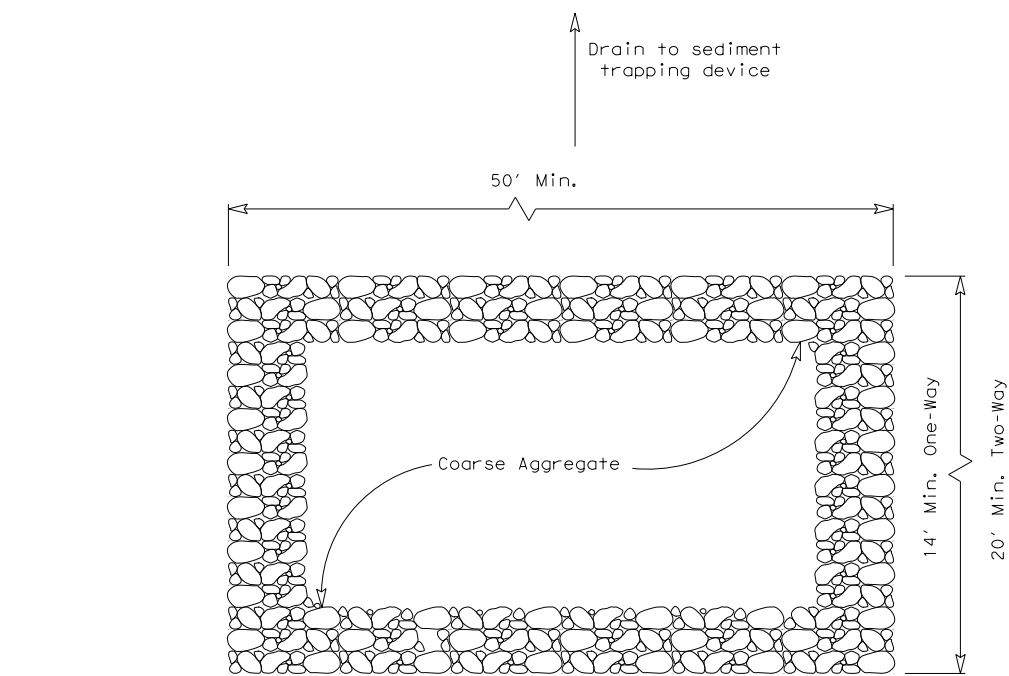
PLAN SHEET LEGEND

- Type 1 Rock Filter Dam (RFD1)
- Type 2 Rock Filter Dam (RFD2)
- Type 3 Rock Filter Dam (RFD3)
- Type 4 Rock Filter Dam (RFD4)

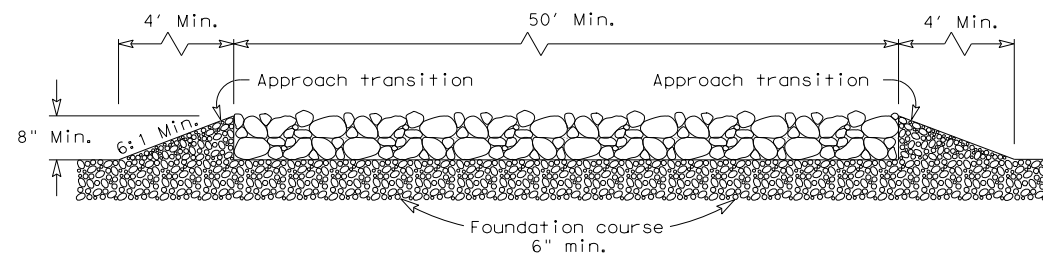
		<b>Design Division Standard</b>	
<p>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</p> <p>ROCK FILTER DAMS</p> <p><b>EC(2) - 16</b></p>			
FILE: ec216	DN: TxDOT	CK: KM	DW: VP
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
REVISIONS	0172 05	129	US 287
DIST	COUNTY	SHEET NO.	
DAL	ELLIS	296	

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DATE:  
FILE:



PLAN VIEW

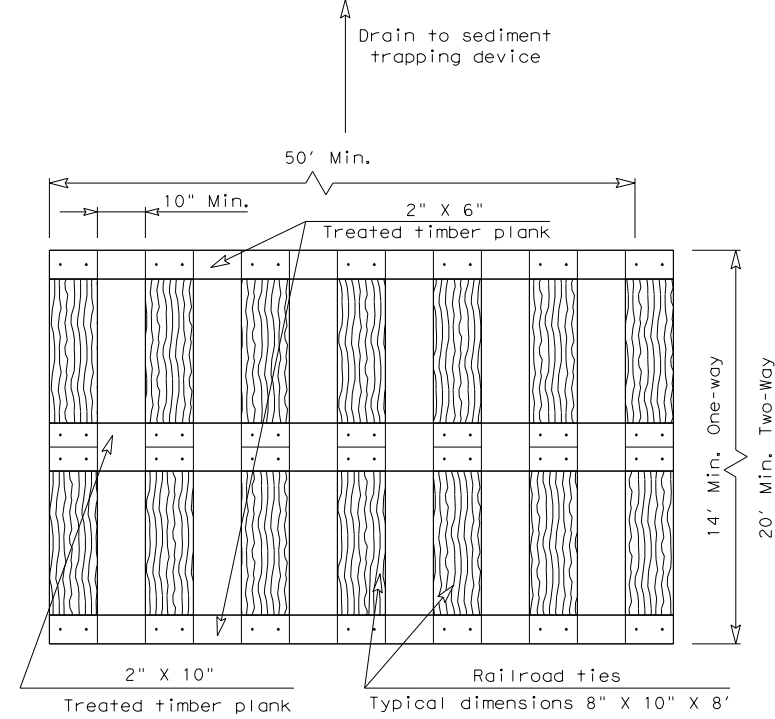


ELEVATION VIEW

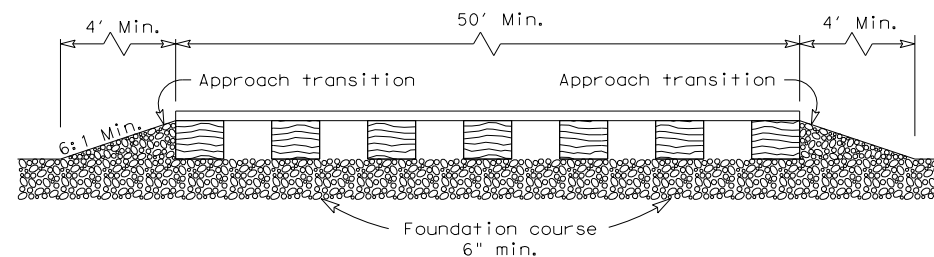
CONSTRUCTION EXIT (TYPE 1)  
ROCK CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. 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

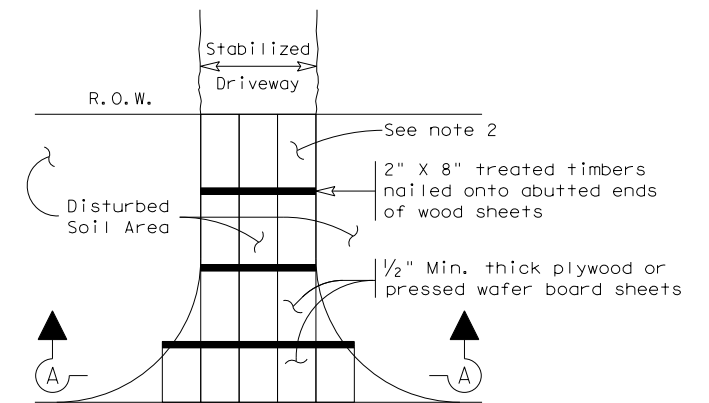


ELEVATION VIEW

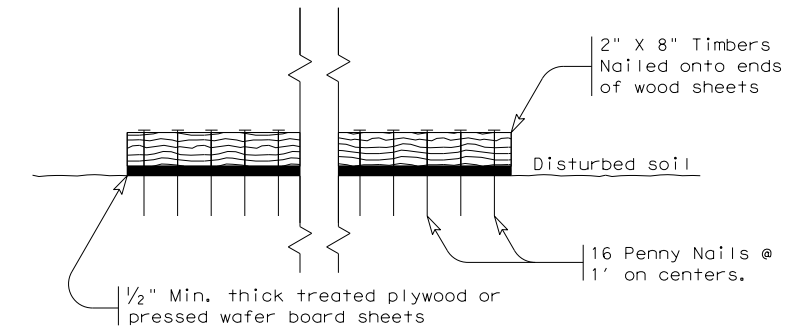
CONSTRUCTION EXIT (TYPE 2)  
TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. 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.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. 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)

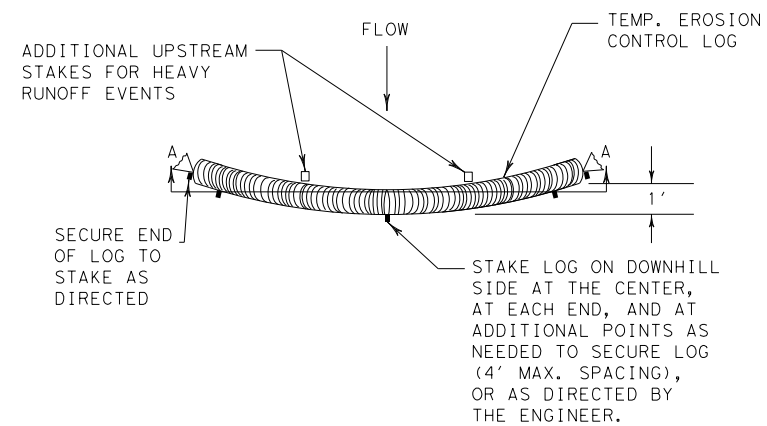
1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.



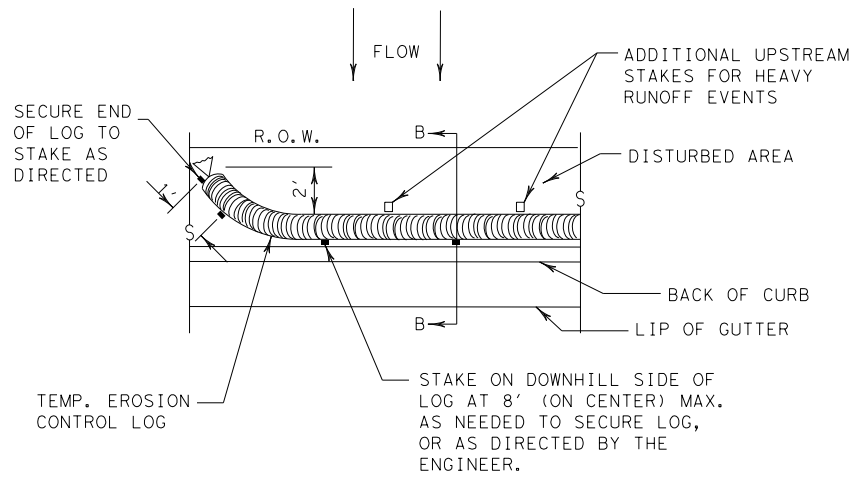
TEMPORARY EROSION,  
SEDIMENT AND WATER  
POLLUTION CONTROL MEASURES  
CONSTRUCTION EXITS  
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	09	129	US 287
	DIST	COUNTY		SHEET NO.
	DAL	ELLIS		297

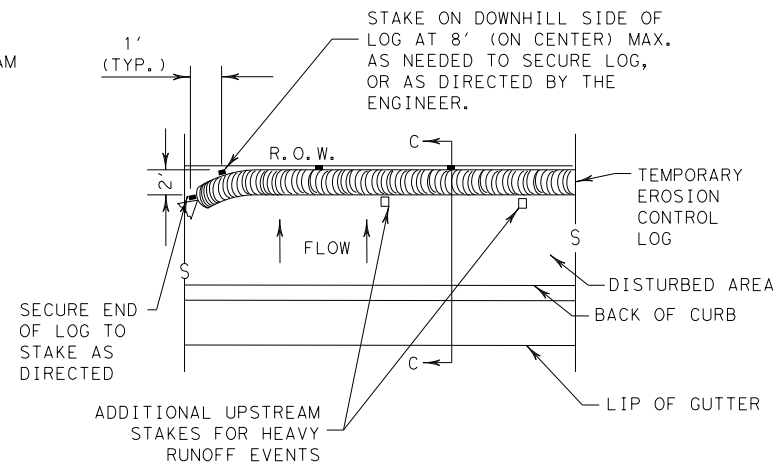
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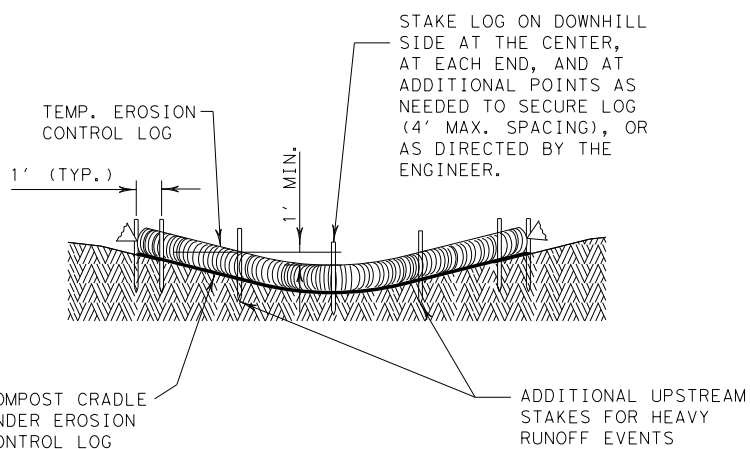
PLAN VIEW



PLAN VIEW



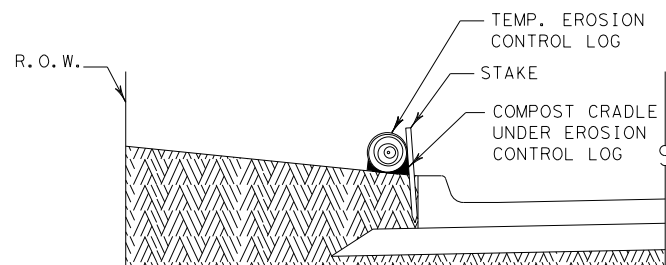
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

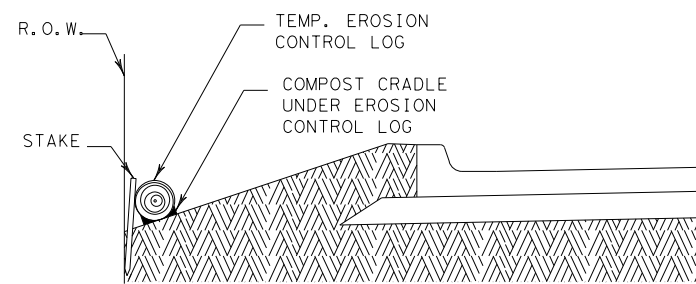
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

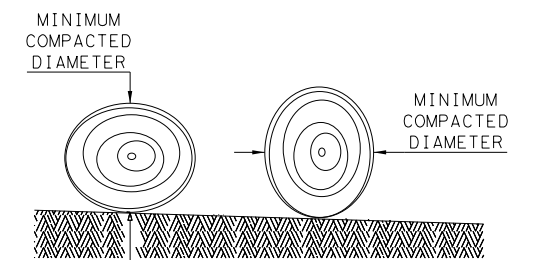
CL-BOC



SECTION C-C

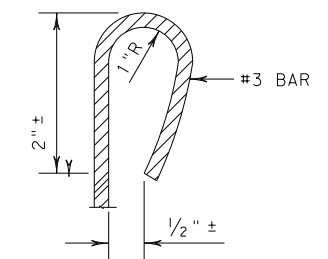
EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

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.

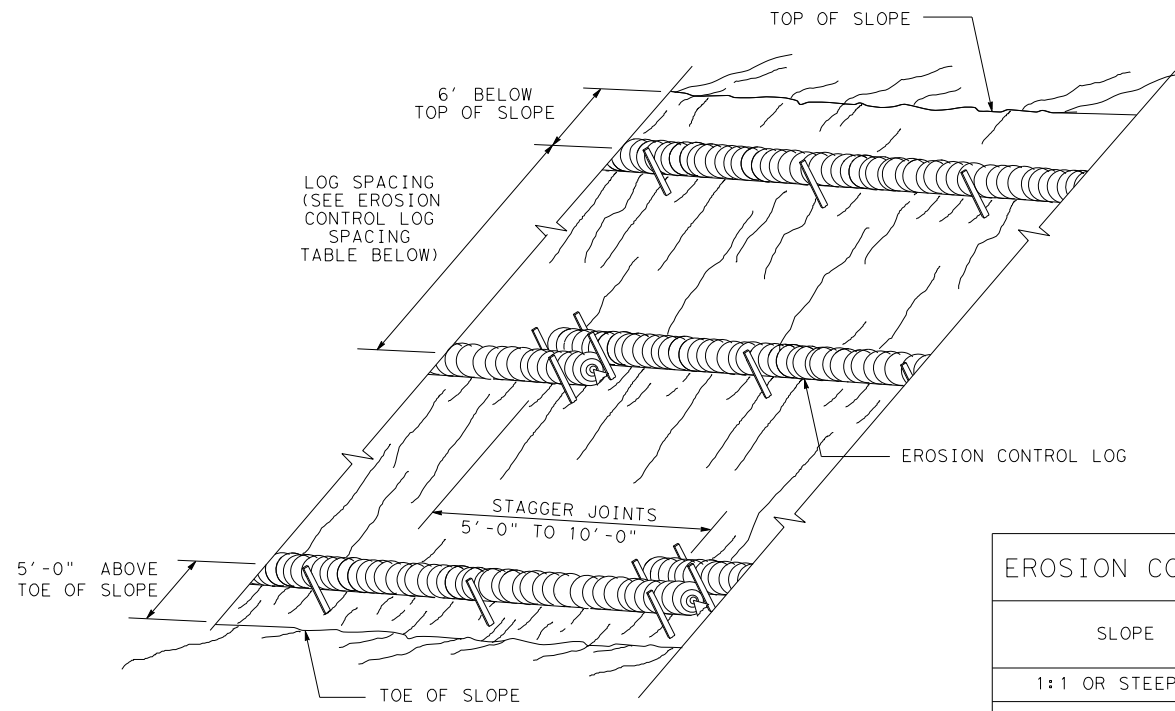
SHEET 1 OF 3

		<b>Design Division Standard</b>		
<p>TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES</p> <p>EROSION CONTROL LOG</p> <p><b>EC (9) - 16</b></p>				
FILE: ec916	DN: TxDOT	CK: KM	DN: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	05	129	US 287
	DIST	COUNTY	SHEET NO.	
	DAL	ELLIS	298	

DATE: FILE:

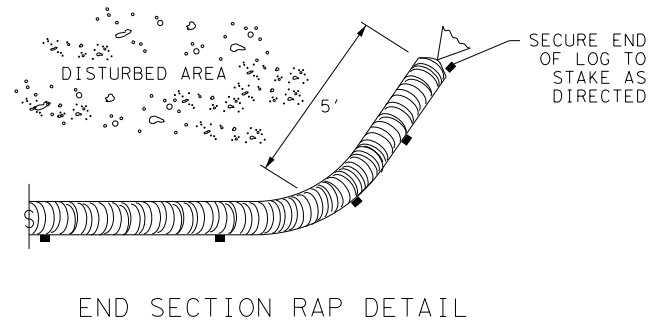


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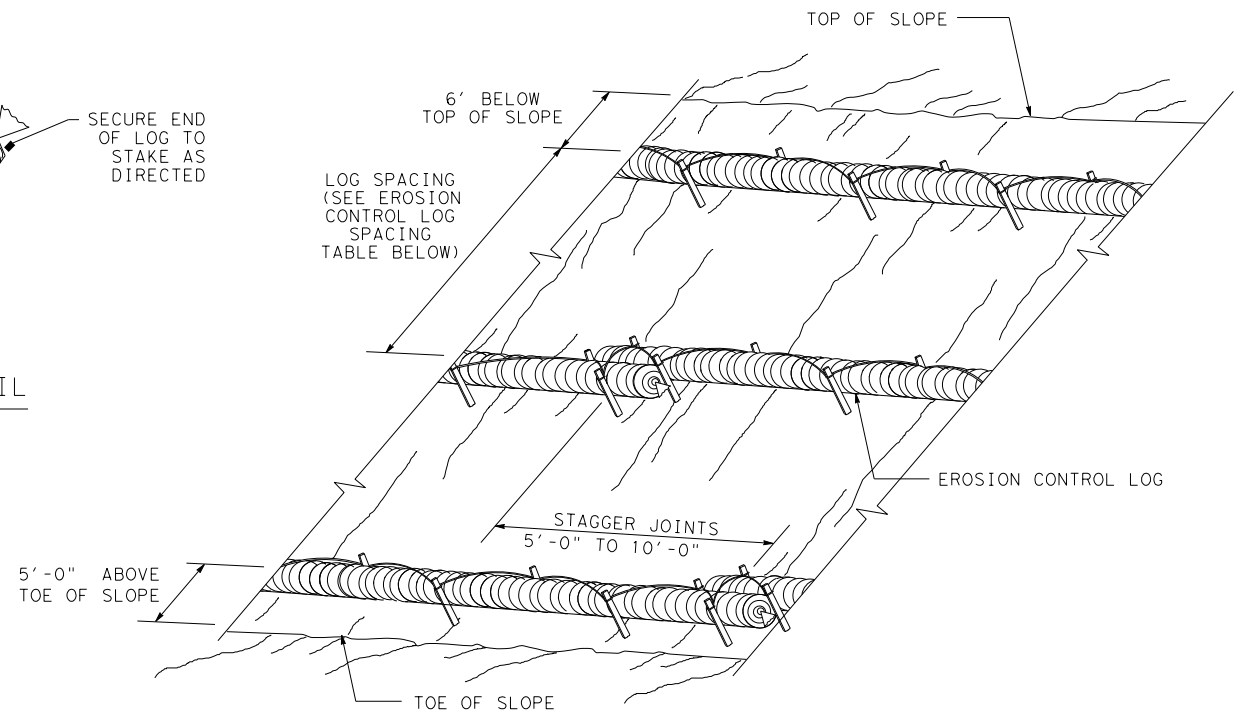


EROSION CONTROL LOGS ON SLOPES  
STAKE AND TRENCHING ANCHORING

CL-SST



END SECTION RAP DETAIL

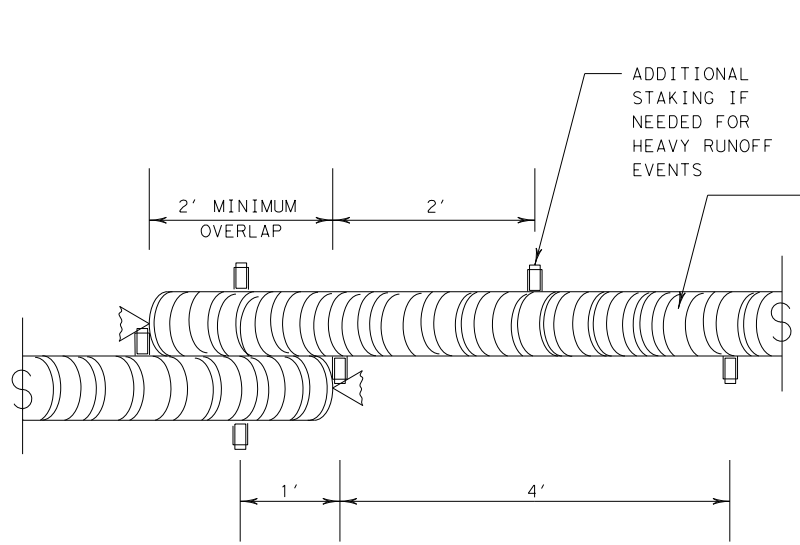


EROSION CONTROL LOGS ON SLOPES  
STAKE AND LASHING ANCHORING

CL-SSL

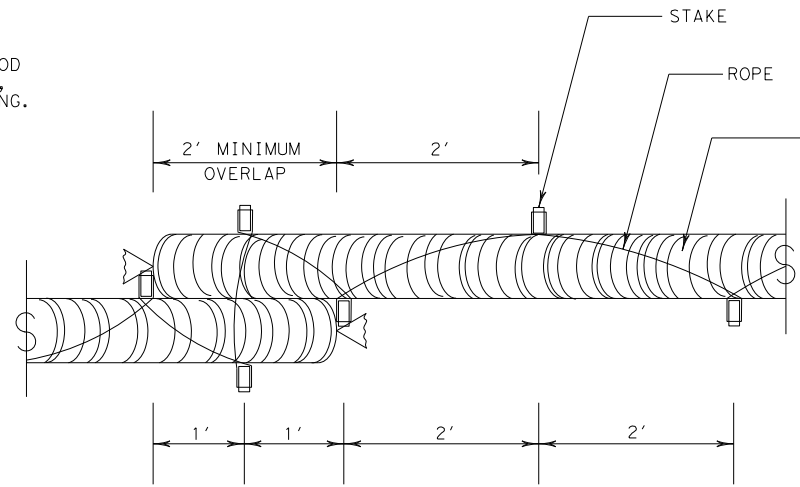
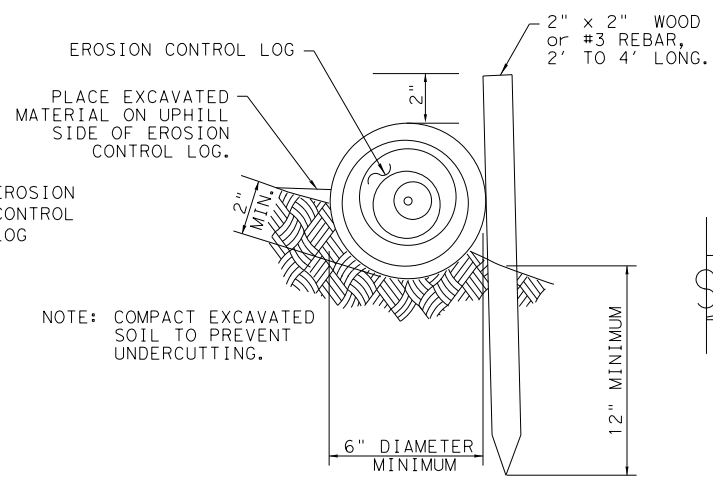
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

\* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:  
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;  
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



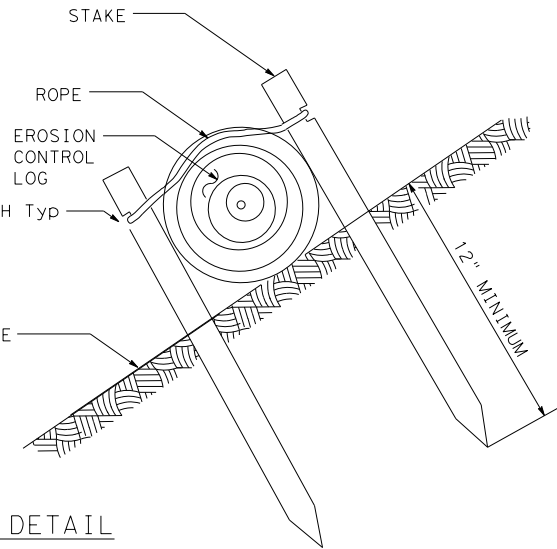
STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

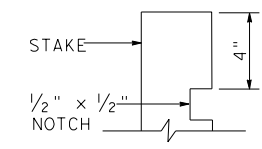


STAKE AND LASHING ANCHORING DETAIL

CL-SSL



LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"



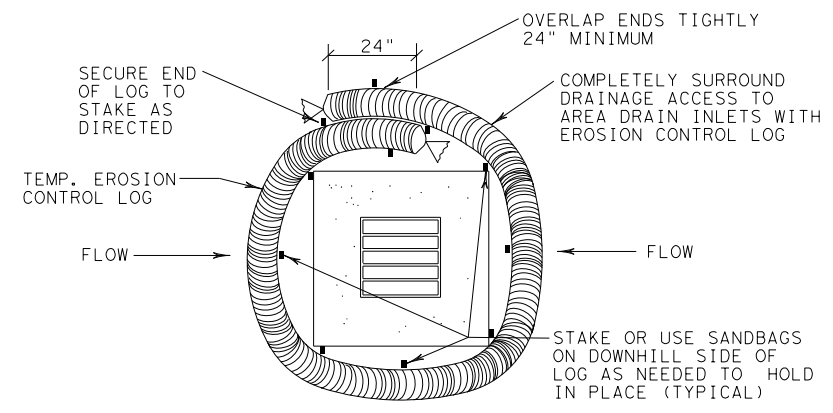
STAKE NOTCH DETAIL

SHEET 2 OF 3

		<b>Design Division Standard</b>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG <b>EC (9) - 16</b>			
FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT SECT	JOB	HIGHWAY
REVISIONS	0172 05	129	US 287
DIST	COUNTY	SHEET NO.	
DAL	ELLIS	299	

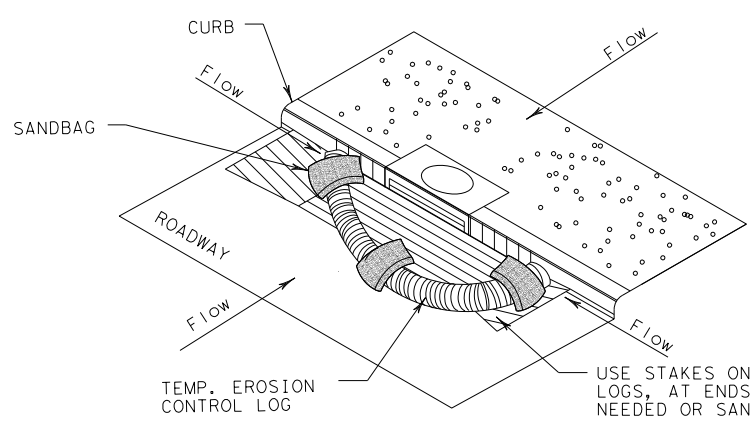
DATE:  
FILE:

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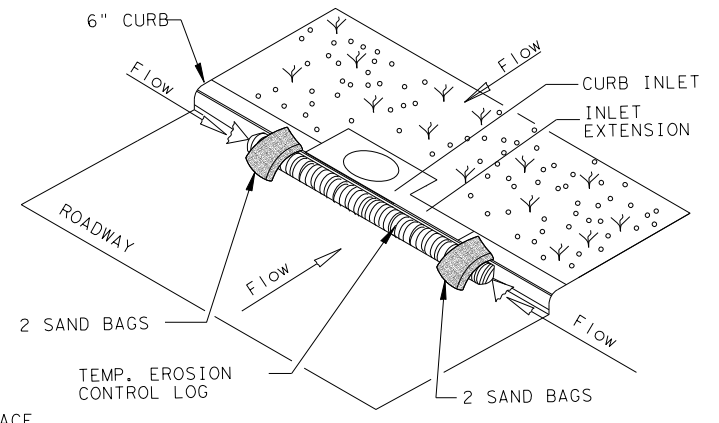
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

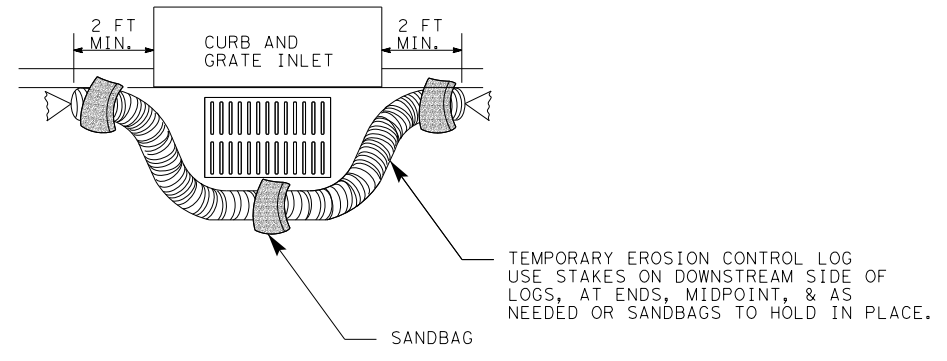
CL-CI



EROSION CONTROL LOG AT CURB INLET

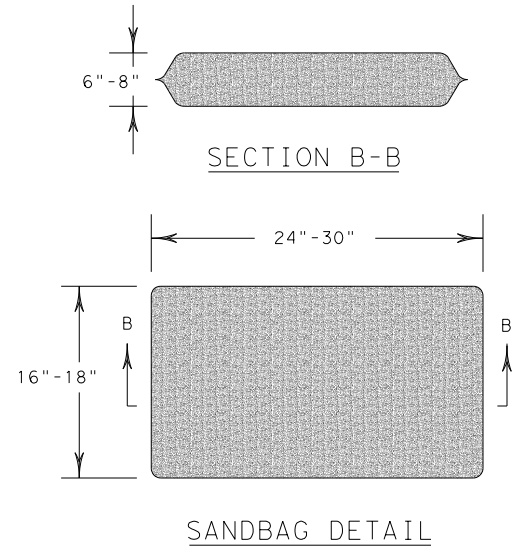
CL-CI

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



SANDBAG DETAIL

SHEET 3 OF 3

		<b>Design Division Standard</b>	
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES EROSION CONTROL LOG <b>EC (9) - 16</b>			
FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT
© TxDOT: JULY 2016	CONT	SECT	JOB
REVISIONS	0172	05	129
	DIST	COUNTY	SHEET NO.
	DAL	ELLIS	300

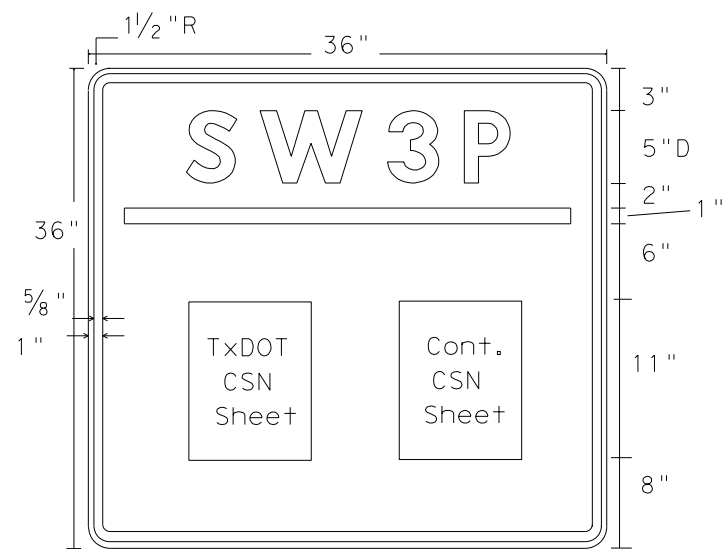
DATE:  
FILE:

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PATH:

LEVELS DISPLAYED

1



## 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.

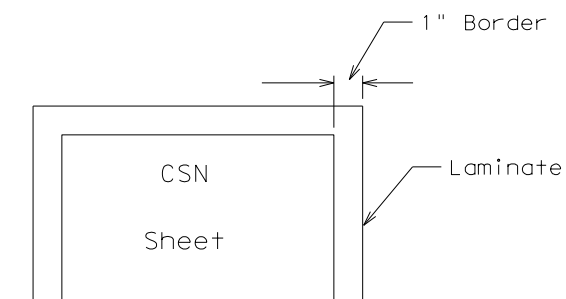
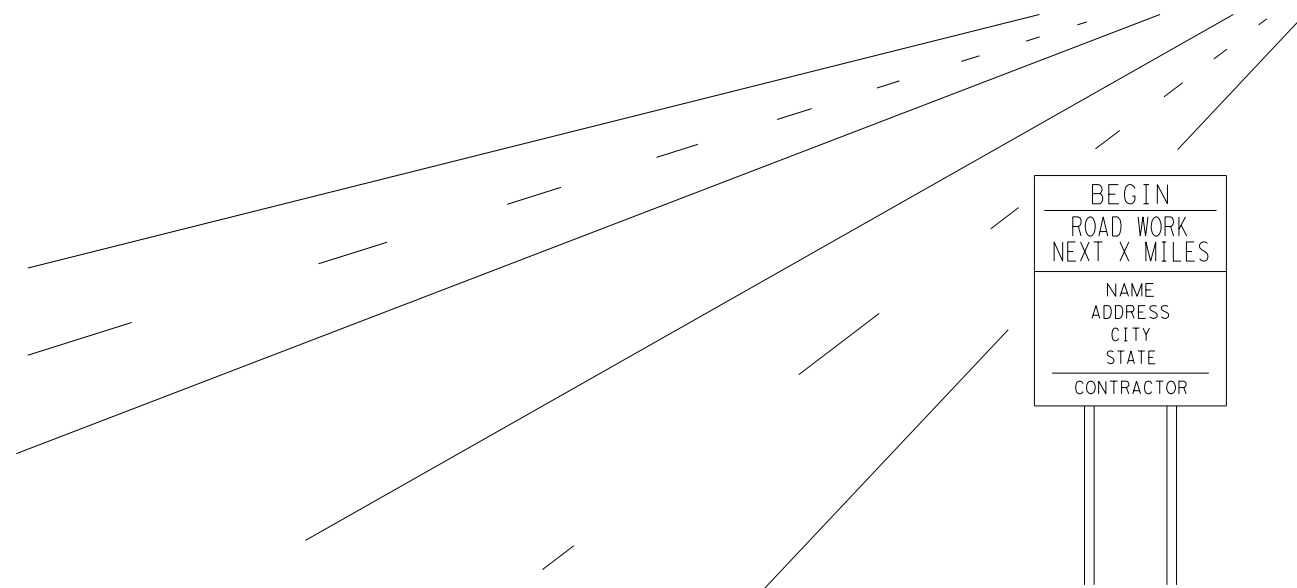


Figure 1



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:	DN: TxDOT	CK:	DN:	CK:
© TxDOT 2016	DISTRICT	PROJECT NO.		SHEET
	DAL	SEE TITLE SHEET		301
REVISION DATE: 10-16-15	COUNTY	CONTROL	SECT	JOB HIGHWAY
	ELLIS	0172	05	129 US 287

**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	<table border="0"> <tr><td>Green Sprangletop (Van Horn)</td><td>- 1.0 lbs/AC</td></tr> <tr><td>Sideoats Grama (Haskell)</td><td>- 1.0 lbs/AC</td></tr> <tr><td>Texas Grama (Atascosa)</td><td>- 1.0 lbs/AC</td></tr> <tr><td>Hairy Grama (Chaparral)</td><td>- 0.4 lbs/AC</td></tr> <tr><td>Shortspike Windmillgrass (Welder)</td><td>- 0.2 lbs/AC</td></tr> <tr><td>Little Bluestem (OK Select)</td><td>- 0.8 lbs/AC</td></tr> <tr><td>Purple Prairie Clover (Cuero)</td><td>- 0.6 lbs/AC</td></tr> <tr><td>Engelmann Daisy (Eldorado)</td><td>- 0.75 lbs/AC</td></tr> <tr><td>Illinois Bundlesflower</td><td>- 1.3 lbs/AC</td></tr> <tr><td>Awnless Bushsunflower (Plateau)</td><td>- 0.2 lbs/AC</td></tr> </table>	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	<table border="0"> <tr><td>Green Sprangletop (Leptochloa dubia)</td><td>- 0.3 lbs/AC</td></tr> <tr><td>Sideoats Grama (El Reno) (Bouteloua curtipendula)</td><td>- 3.6 lbs/AC</td></tr> <tr><td>Buffalograss (Texoka) (Buchloe dactyloides)</td><td>- 1.6 lbs/AC</td></tr> <tr><td>Bermudagrass (Cynodon dactylon)</td><td>- 2.4 lbs/AC</td></tr> </table>	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	<table border="0"> <tr><td>Foxtail Millet (Setaria italica)</td><td>- 34 lbs/AC</td></tr> </table>	Foxtail Millet (Setaria italica)	- 34 lbs/AC
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Foxtail Millet (Setaria italica)	- 34 lbs/AC																																
<b>COOL SEASON</b> Sept 16th, Oct, Nov, Dec, Jan, Feb, Mar 14th			<table border="0"> <tr><td>Tall Fescue (Festuca arundinaceae)</td><td>- 4.5 lbs/AC</td></tr> <tr><td>Western Wheatgrass (Agropyron smithii)</td><td>- 5.6 lbs/AC</td></tr> <tr><td>Red Winter Wheat (Triticum aestivum)</td><td>- 34 lbs/AC</td></tr> <tr><td>Cereal Rye</td><td>- 34 lbs/AC</td></tr> </table>	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																						
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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 Common Bermuda Grass	BOTANICAL NAME 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

**WATERING SCHEDULE**

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	PROJECT NO. (See Title Sheet)		HIGHWAY NO. US 287
GRAPHICS XXX	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK XXX	TEXAS	DALLAS	ELLIS	302
CHECK XXX	CONTROL	SECTION	JOB	
	0172	05	129	