INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX OF SHEETS

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

C 596-I-23

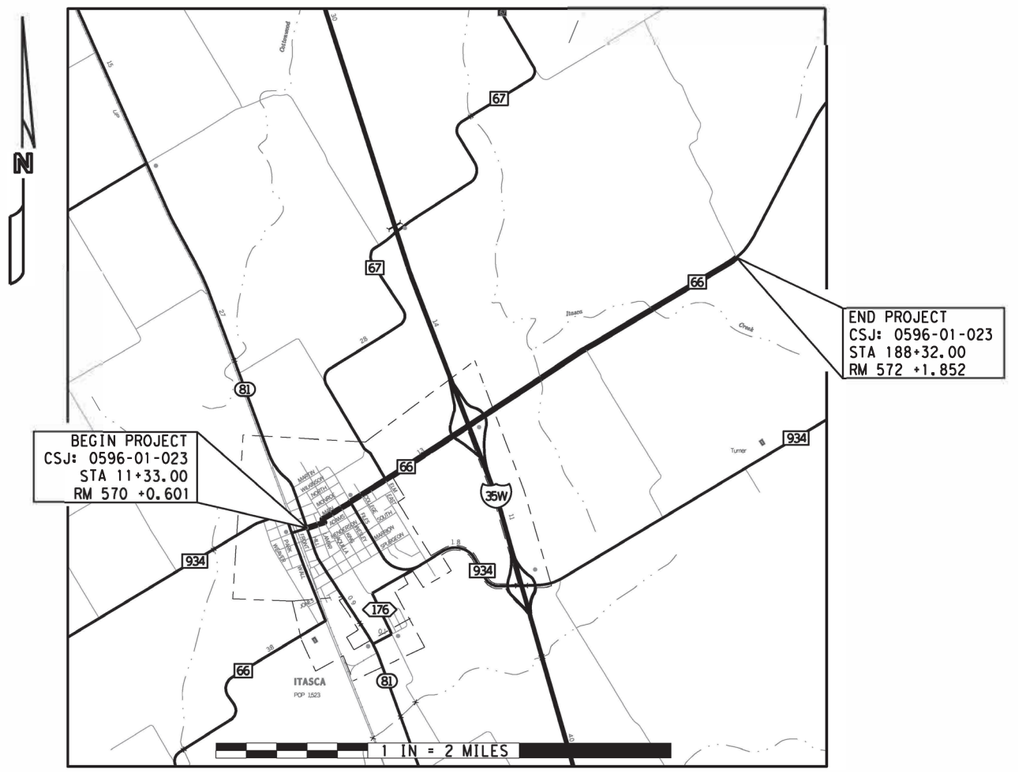
HILL

FM 66

CSJ: 0596-01-023

ROADWAY =	17,376.57	FT =	3.291 MI
BRIDGE =	322.43	FT =	0.061 MI
TOTAL =	17,699.00	FT =	3.352 MI

LIMITS
FROM SH 81
TO HCR 4421
FOR THE CONSTRUCTION OF
REHABILITATION OF EXISTING ROAD
CONSISTING OF
REHABILITATE ROADWAY AND ADD CONCRETE PAVEMENT



EXCEPTIONS: NONE
EQUATIONS: NONE
RR CROSSINGS: UPRR-DOT 416 027L, RRMP 206.690

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

DESIGN	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	C 596-I-23		FM 66
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	WAC	HILL	
	CONTROL	SECTION	JOB	1
CHECK	0596	01	023	

DESIGN SPEED = MEEC (URBAN SECTION)
40 MPH (RURAL SECTION)

YEAR	ADT
2021	2,650
2041	3,750

Texas Department of Transportation

Recommended for Letting 11/10/2021
DocuSigned by: Josh Voiles
Area Engineer
AC8604F84EC2483...

Recommended for Letting 11/15/2021
Director of Transportation Planning & Development

Approved for Letting 11/15/2021
DocuSigned by: Stanley Swiatek
District Engineer
B69BD796DD5841C...

SHEET NO	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3	PROJECT LAYOUT
4 - 9	TYPICAL SECTIONS
10, 10A-10E	GENERAL NOTES
11, 11A	ESTIMATE AND QUANTITY
12 - 15	CONSOLIDATED SUMMARIES

SHEET NO	TRAFFIC CONTROL
16	TCP SEQUENCE OF OPERATION
	TRAFFIC CONTROL STANDARDS
17 - 28	* BC(1)-21 THRU BC(12)-21
29	* TCP(1-2)-18
30	* TCP(1-3)-18
31	* TCP(1-4)-18
32	* TCP(2-2)-18
33	* TCP(3-1)-13
34	* TCP(3-3)-14
35	* TCP(7-1)-13
36	* WZ(RS)-16
37	* WZ(STPM)-13
38	* WZ(UL)-13

SHEET NO	ROADWAY
39 - 40	HORIZONTAL ALIGNMENT DATA
41	BEST FIT PROFILE
42 - 59	PLAN & PROFILE
60 - 62	MILLING LAYOUT
63 - 65	INTERSECTION AND DRIVEWAY DETAILS
66	MISCELLANEOUS DETAILS
67	MANHOLE AND VALVE ADJUTMENT DETAILS
	ROADWAY STANDARDS
68 - 69	* REPCP-14
70	* JS-14

SHEET NO	RAILROAD COORDINATION
71	RAILROAD SCOPE OF WORK
72 - 73	RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

SHEET NO	TRAFFIC
74 - 78	SIGN REMOVAL LAYOUT
79 - 97	SIGNING AND STRIPING LAYOUT
98 - 100	PAVEMENT MARKING DETAILS
101 - 107	SUMMARY OF SMALL SIGNS
108	SMALL SIGN DETAILS
	TRAFFIC STANDARDS
109	* PM(1)-20
110	* PM(2)-20
111	* PM(4)-20
112	* PM(AP)-21
113	* RCD(1)-16
114	* RS(3)-13
115	* D&OM(1)-20
116	* D&OM(2)-20
117	* D&OM(4)-20
118	* D&OM(5)-20
119	* SMD(GEN)-08
120	* SMD(SLIP-1)-08
121	* SMD(SLIP-2)-08
122	* SMD(SLIP-3)-08
123	* SMD(TWT)-08
124	* TSR(3)-13
125	* TSR(4)-13
126	* TSR(5)-13

SHEET NO	ENVIRONMENTAL ISSUES
127	WACO DISTIRCT STORM WATER POLLUTION PREVENTION PLAN (SW3P)
128	EPIC
	ENVIRONMENTAL ISSUES STANDARDS
129	* EC(1)-16
130 - 139	* TA-BMP (WACO DISTRICT STANDARD)

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

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

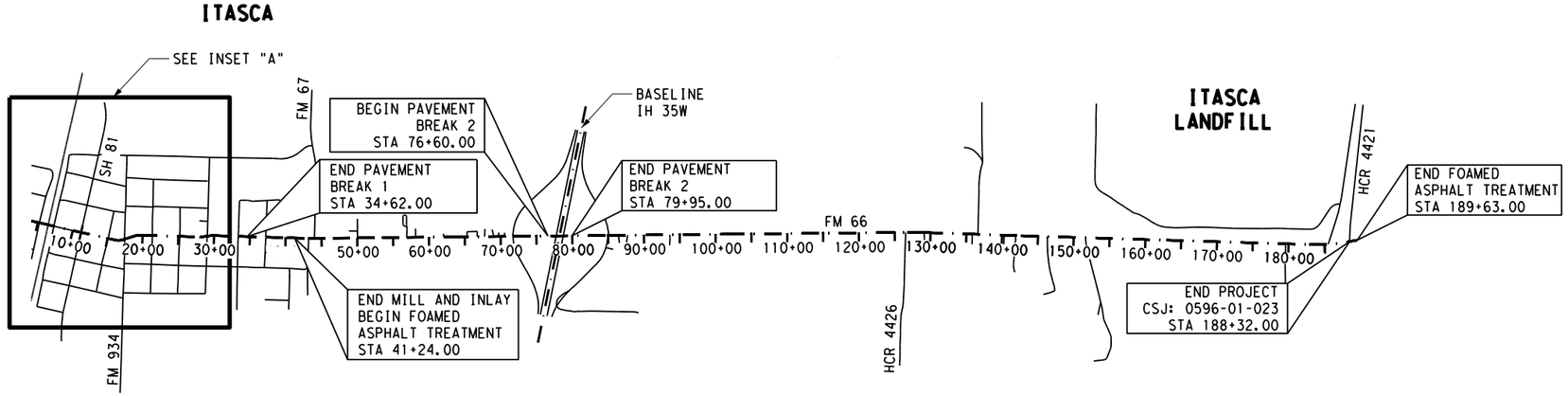
11/2/2021

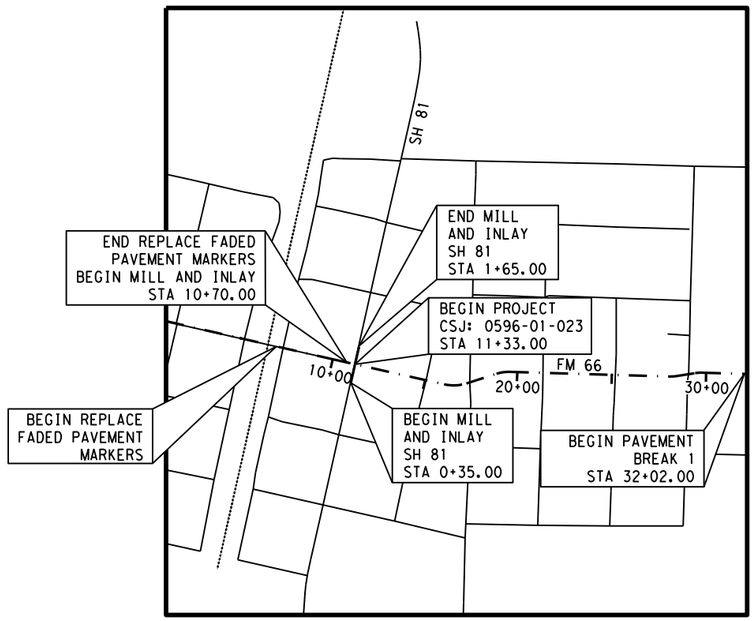
SIGNATURE OF REGISTRANT & DATE

INDEX OF SHEETS

NOT TO SCALE SHEET 1 OF 1

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		2





INSET "A"

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

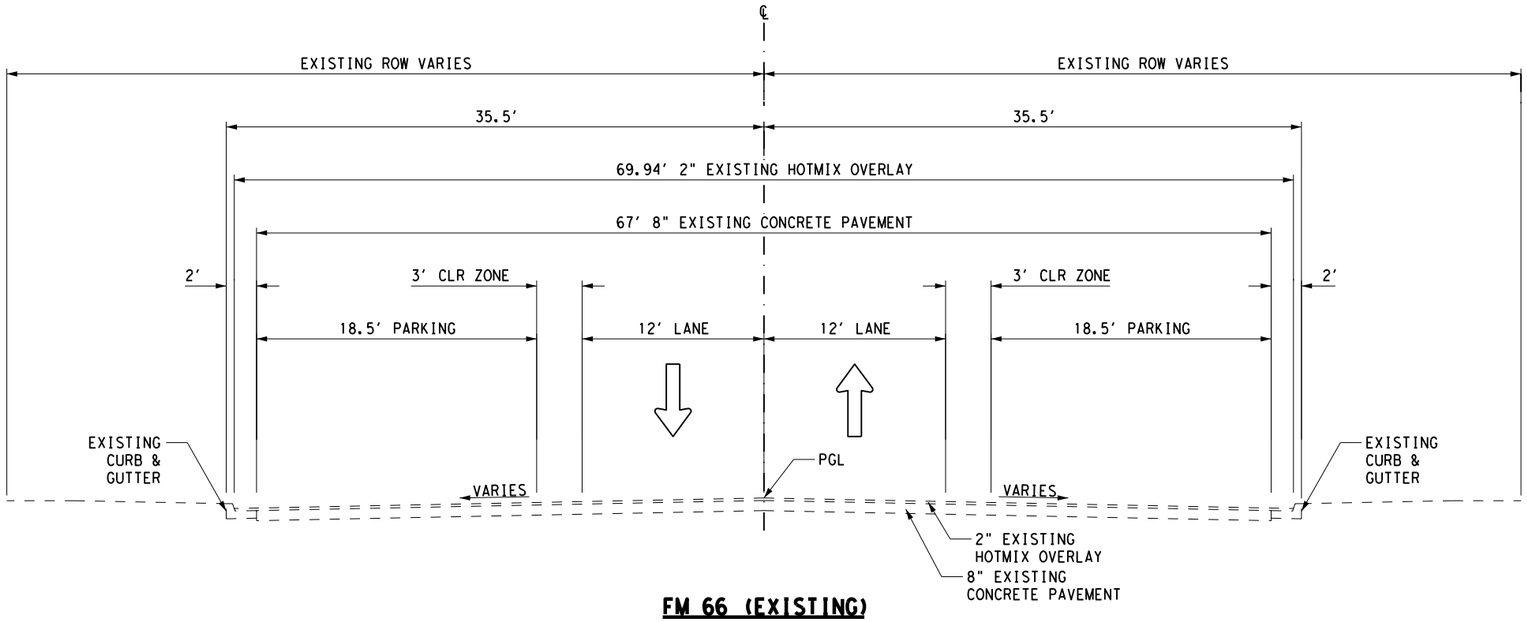
PROJECT LAYOUT

SCALE: 0 500 1000 2000 FEET
1" = 2000' HORIZ.

SHEET 1 OF 1

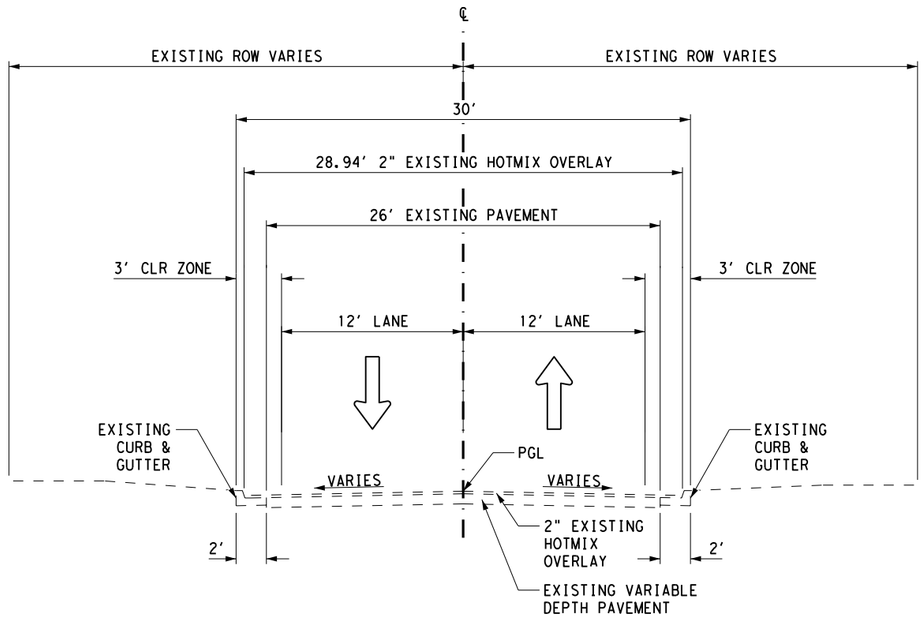
CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		3

C:\txdot\pw\online\txdot3\anton.lopour\d0142399\Overall Sign Removal.dgn
1:40:24 PM
NODE
10/25/2021



FM 66 (EXISTING)

STA 10+70.00 TO STA 14+84.00
TRANSITION TO STA 15+31.00



FM 66 (EXISTING)

STA 15+31.00 TO STA 32+02.00
STA 34+62.00 TO STA 41+24.00

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

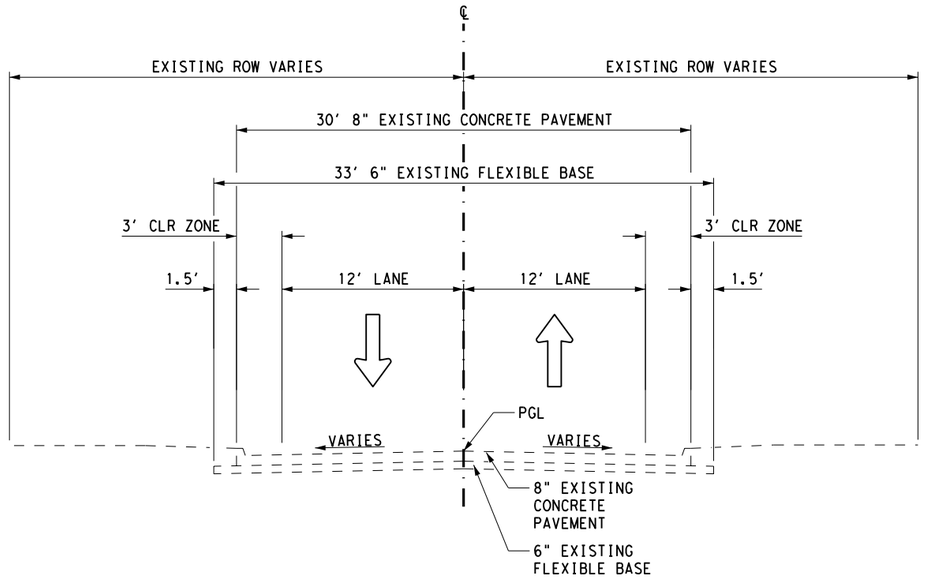
TYPICAL SECTIONS

SCALE: 0 2.5 5 10 FEET
1" = 10′ HORIZ.

SHEET 1 OF 6

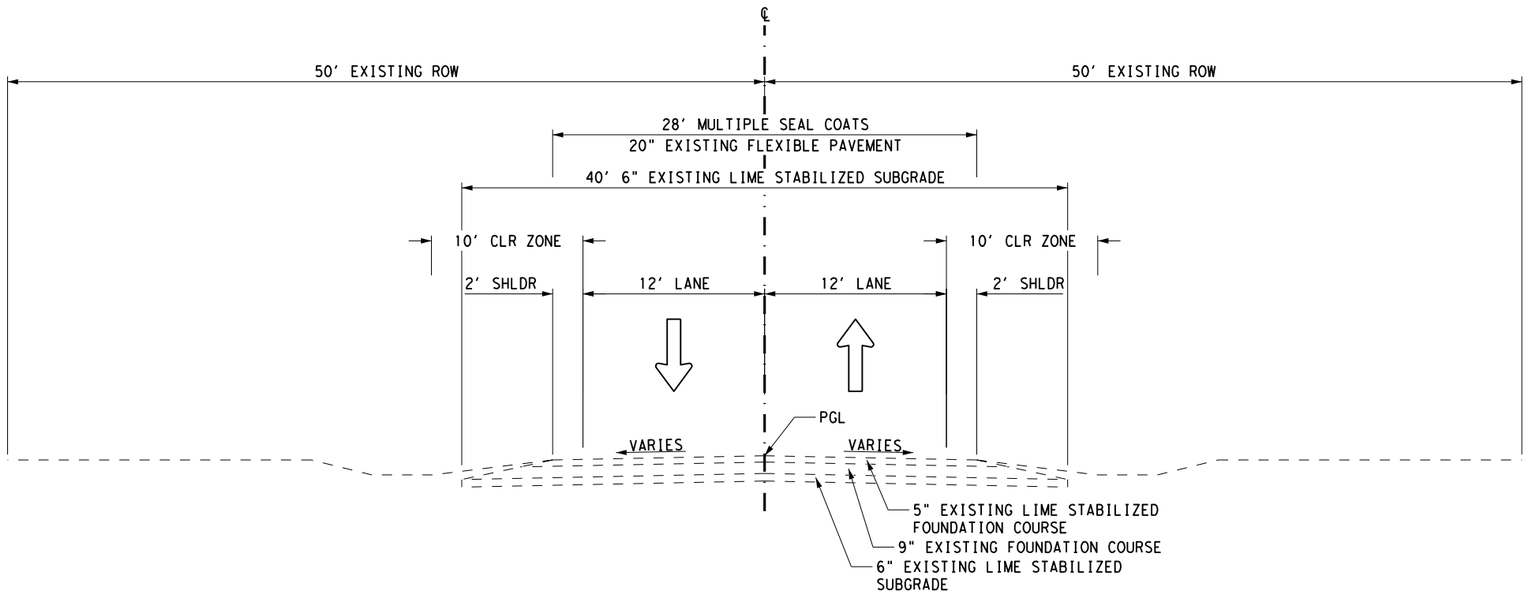
CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		4

NODE
10/25/2021
c:\txdot\pw*online\txdot3\anton. lopour\d0142399\Typical Sections Sheet 1.dgn
1:40:31 PM



FM 66 (EXISTING)

STA 32+02.00 TO STA 34+62.00



FM 66 (EXISTING)

STA 41+24.00 TO STA 85+70.00

BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

TYPICAL SECTIONS

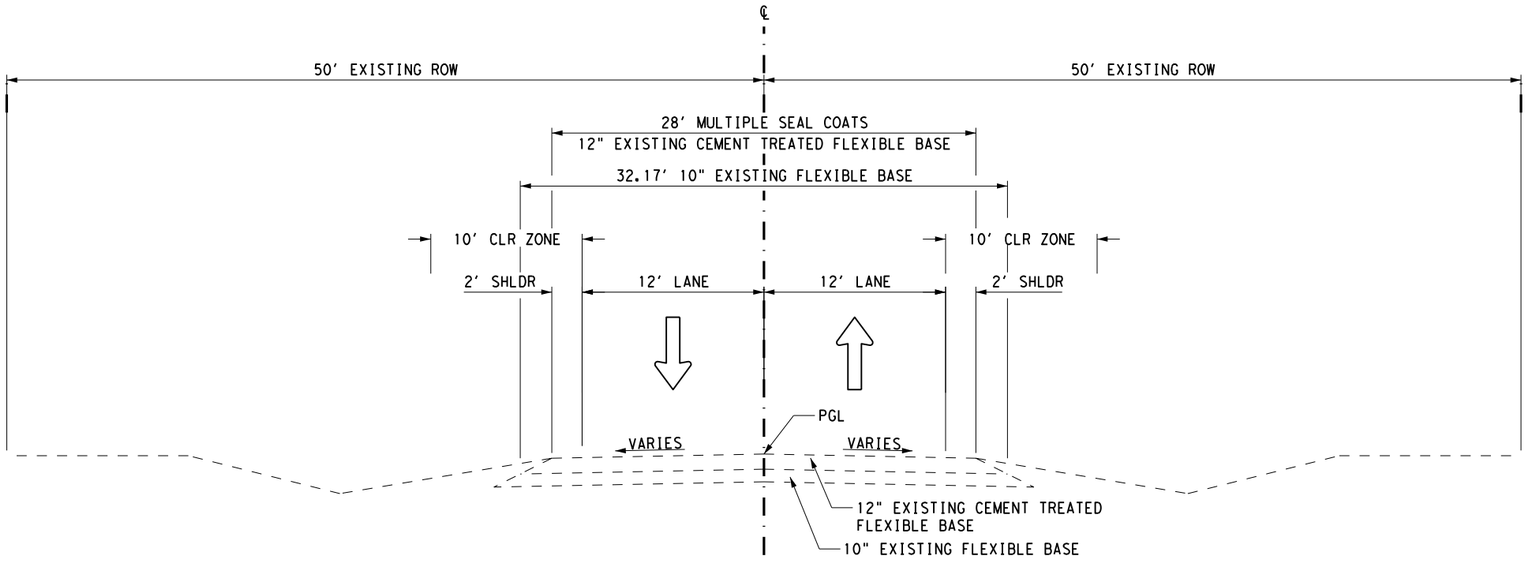
SCALE: 0 2.5 5 10 FEET
1" = 10' HORIZ.

SHEET 2 OF 6

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		5

NODE
10/25/2021

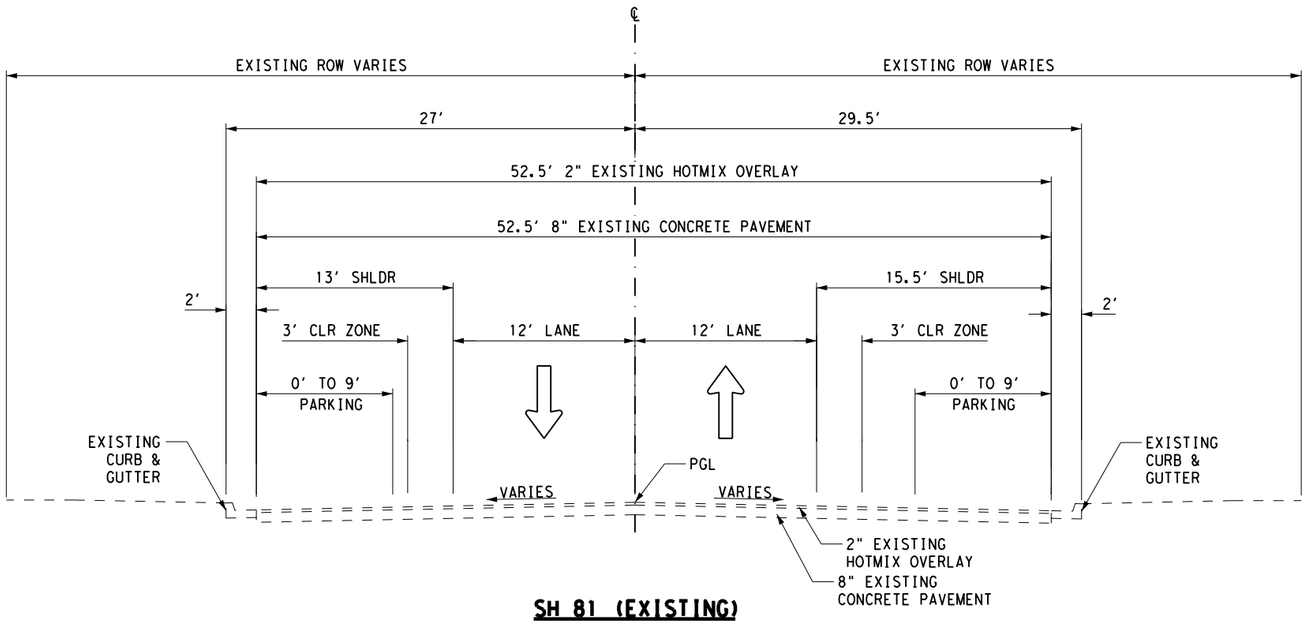
c:\txdot\pw*online\txdot3\anton. lopour\d0142399\Typical Sections Sheet 2.dgn
1:40:36 PM



FM 66 (EXISTING)

STA 85+70.00 TO STA 189+63.00 *

* AREAS WITH HOT MIX DEEPER THAN 2" MAY BE ENCOUNTERED WITHIN STATION RANGE



SH 81 (EXISTING)

STA 0+00.00 TO STA 2+00.00

BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

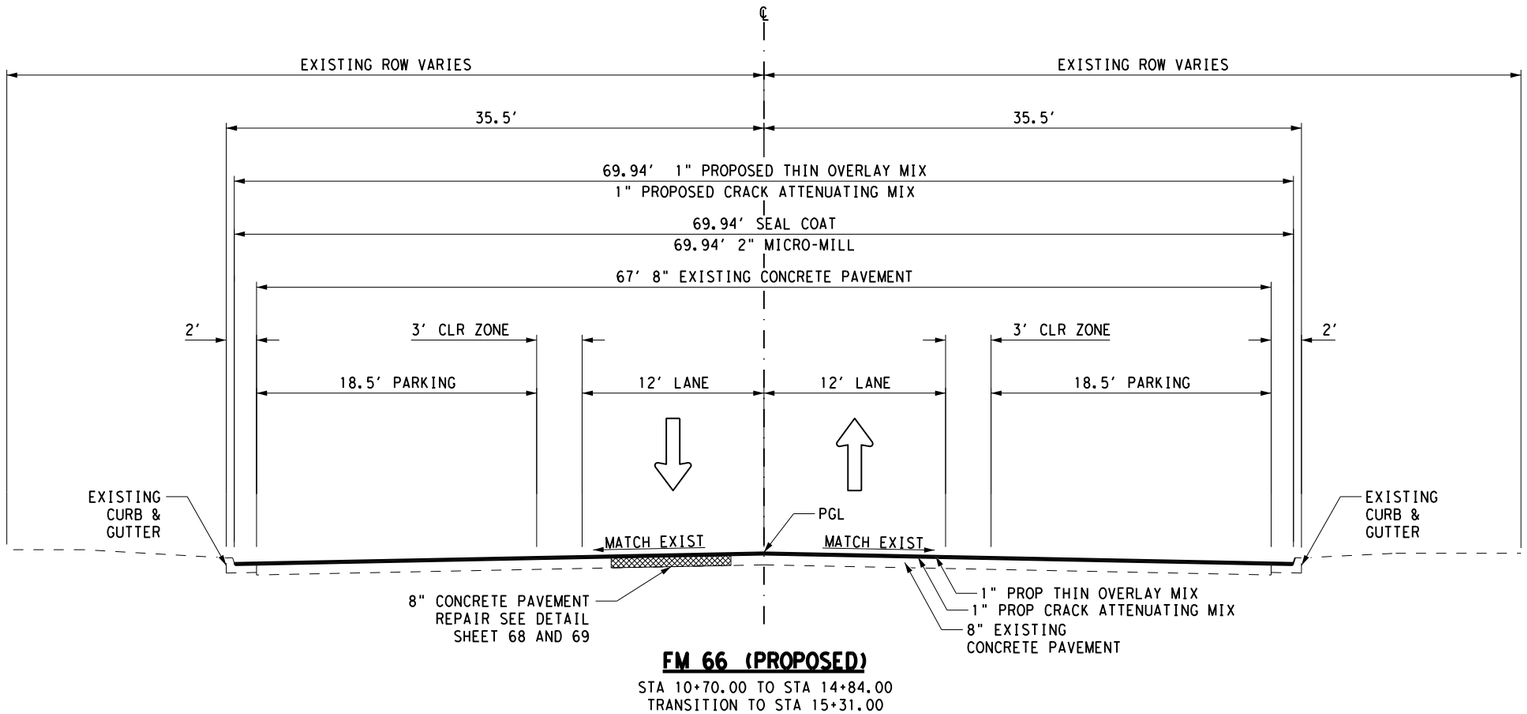
TYPICAL SECTIONS

SCALE: 0 2.5 5 10 FEET
1" = 10' HORIZ.

SHEET 3 OF 6

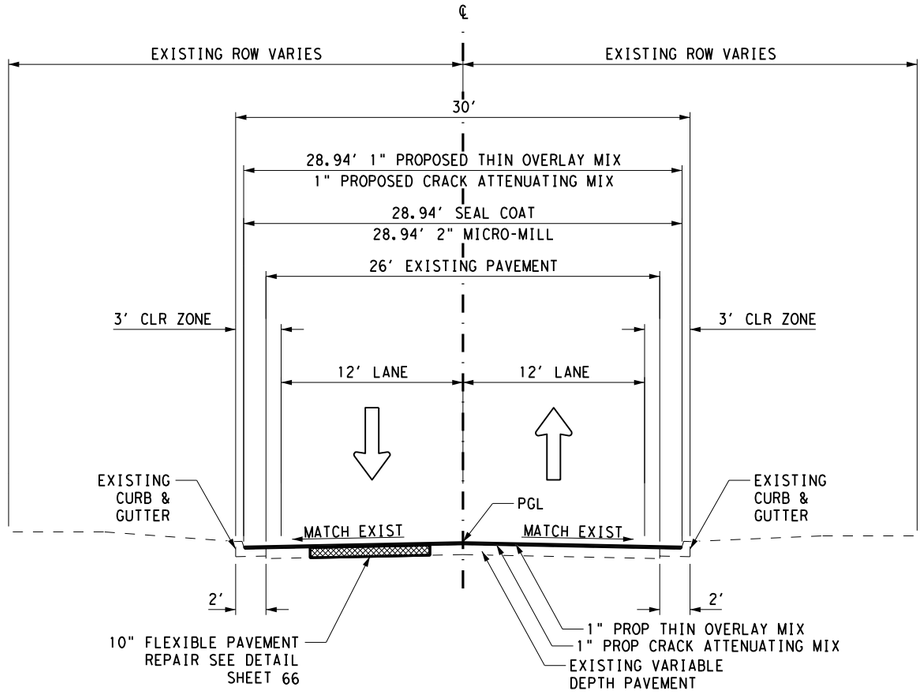
CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		6

NODE
10/25/2021
c:\txdot\pw*online\txdot3\anton. lopour\d0142399\Typical Sections Sheet 3.dgn
1:40:42 PM



FM 66 (PROPOSED)

STA 10+70.00 TO STA 14+84.00
TRANSITION TO STA 15+31.00



FM 66 (PROPOSED)

STA 15+31.00 TO STA 32+02.00
PAVEMENT BREAK: STA 32+02.00 TO STA 34+62.00
STA 34+62.00 TO STA 41+24.00

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

B. W. L, P.E. 10/25/2021

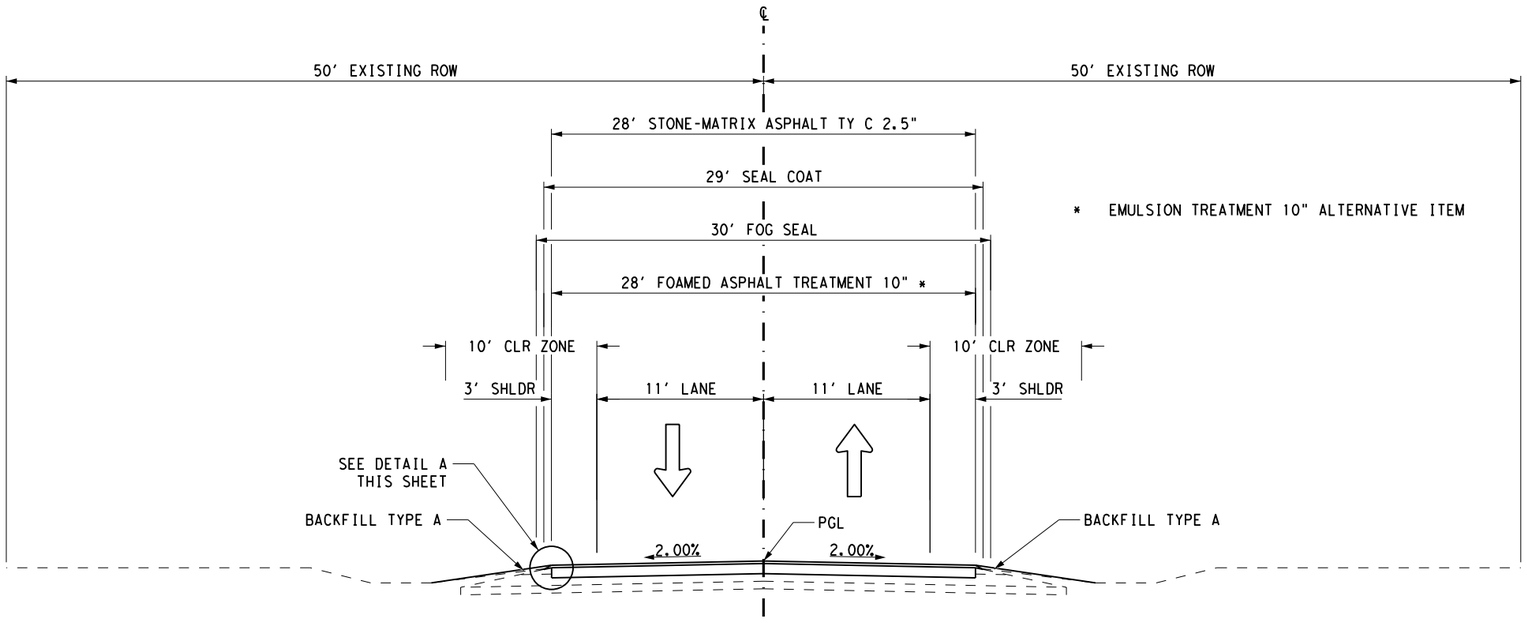
SIGNATURE OF REGISTRANT & DATE

TYPICAL SECTIONS

SCALE: 0 2.5 5 10 FEET
1" = 10′ HORIZ.

SHEET 4 OF 6

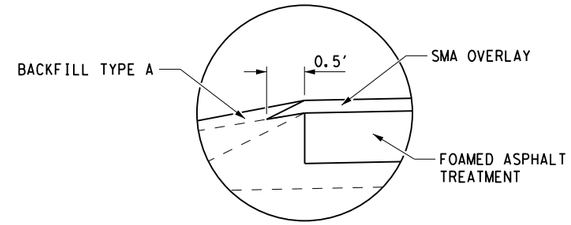
CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		7



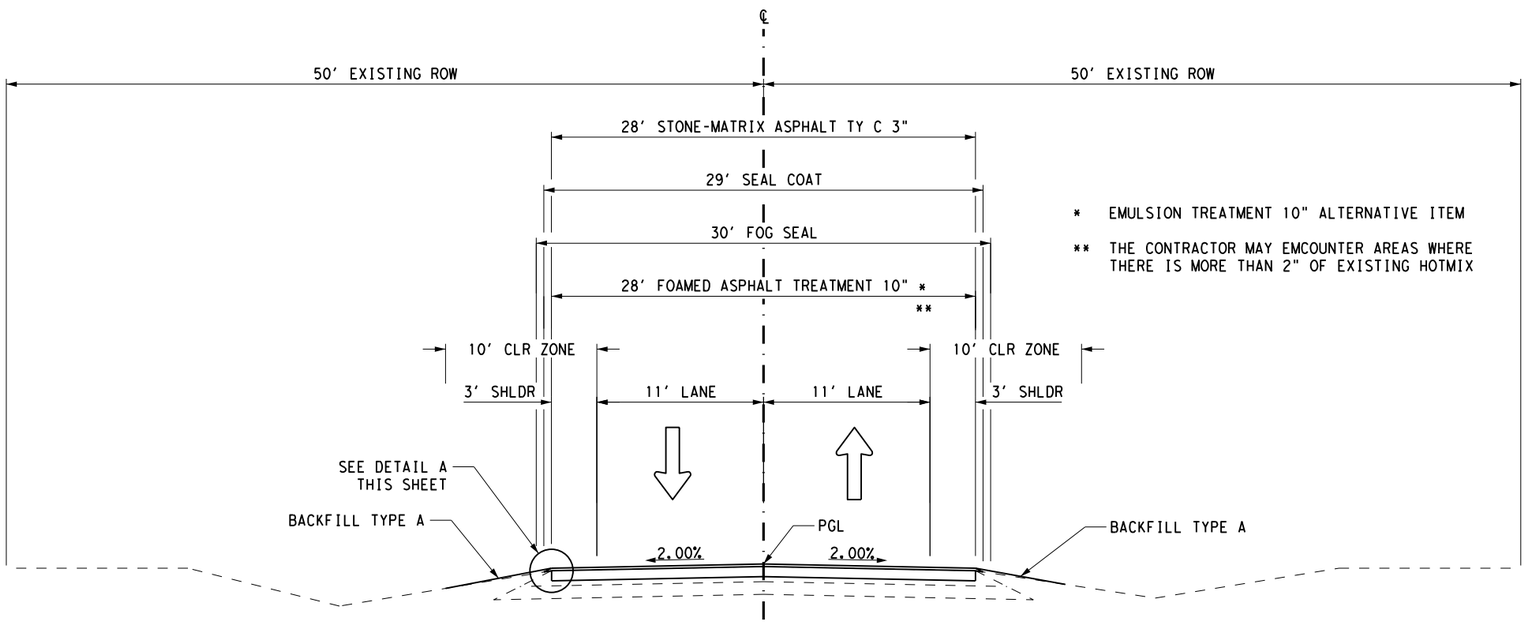
* EMULSION TREATMENT 10" ALTERNATIVE ITEM

FM 66 (PROPOSED)

STA 41+24.00 TO STA 76+60.00
PAVEMENT BREAK: STA 76+60.00 TO STA 79+95.00
STA 79+95.00 TO STA 84+39.00



NOT TO SCALE



* EMULSION TREATMENT 10" ALTERNATIVE ITEM

** THE CONTRACTOR MAY EMCOUNTER AREAS WHERE THERE IS MORE THAN 2" OF EXISTING HOTMIX

FM 66 (PROPOSED)

STA 84+39.00 TO STA 189+63.00

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

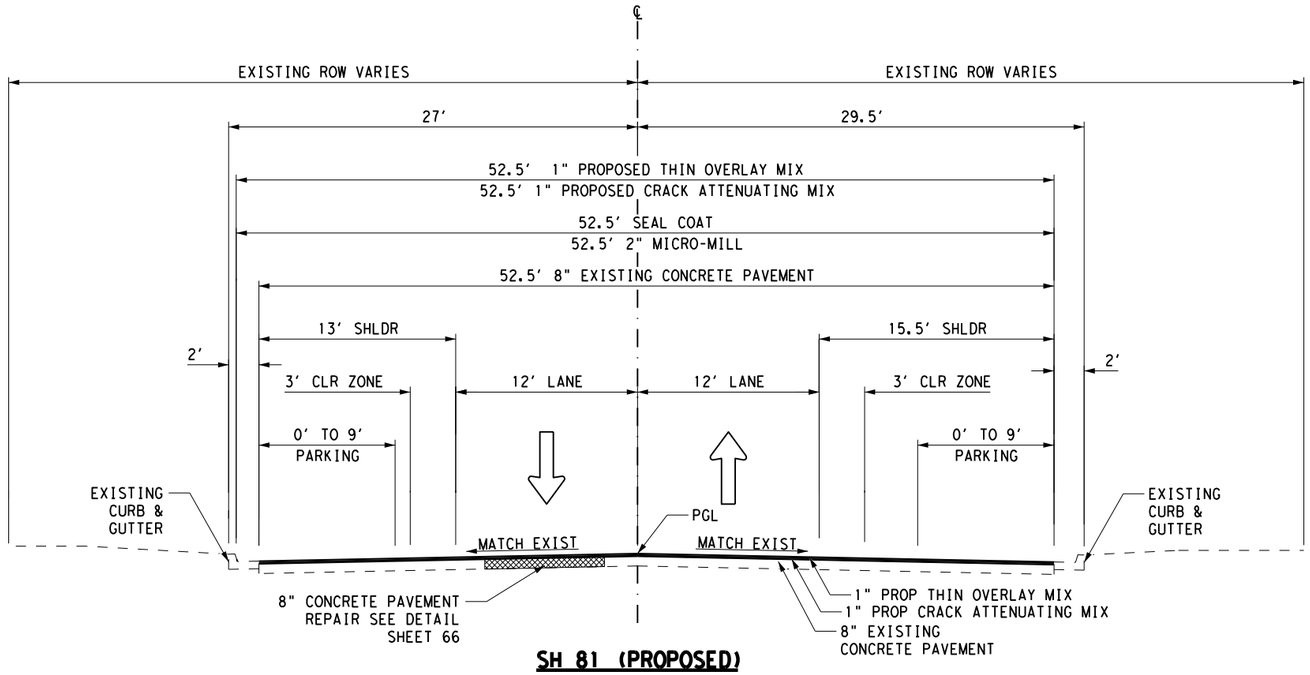
TYPICAL SECTIONS

SCALE: 0 2.5 5 10 FEET
1" = 10' HORIZ.

SHEET 5 OF 6

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		8

C:\txdot\pw\online\txdot3\anton.lopour\d0142399\Typical Sections Sheet 5.dgn
11:40:52 PM
NODE
10/25/2021



SH 81 (PROPOSED)

STA 0+35.00 TO STA 0+64.00
(SEE SHEET 7 FOR FM 66 TYPICAL SECTION)
STA 1+33.00 TO STA 1+65.00

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

TYPICAL SECTIONS

SCALE: 0 2.5 5 10 FEET
1" = 10′ HORIZ.

SHEET 6 OF 6

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		9

c:\txdot\pw\online\txdot3\anton. lopour\d0142399\Typical Sections Sheet 6.dgn
1:40:58 PM
NODE
10/25/2021

BASIS OF ESTIMATE TABLES

Table 3: Basis of Estimate for Fog Seal				
Item	**Description**	**Rate**	**Basis**	**Quantities**
315	**FOG SEAL**			
	FOG SEAL (SS-1)	0.10 GAL / SY	48,350 SY	4,835 GAL

Table 4: Basis of Estimate for Foamed Asphalt Treatment (Main Bid Item)				
Item	**Description**	**Rate**	**Basis**	**Quantities**
3088	**10" DEPTH RECLAMATION USING ASPHALT EMULSION (ROAD-MIXED)**			
	CEMENT	0.90 LB / SY /IN	45,123 SY	203 TON
	ASPHALT BINDER (64-22)	2.25 LB / SY /IN	45,123 SY	508 TON

Table 5: Basis of Estimate for Emulsion Treatment (Alternate Bid Item)				
Item	**Description**	**Rate**	**Basis**	**Quantieties**
3089	**10" DEPTH RECLAMATION USING ASPHALT EMULSION (ROAD-MIXED)**			
	CEMENT	0.90 LB /SY/IN	45,123 SY	203 TON
	EMULSION	0.418 GAL/SY /IN	45,123 SY	188,614 GAL

Table 6: Basis of Estimate for Seal Coat				
Item	**Description**	**Rate**	**Basis**	**Quantities**
316	**SEAL COAT**			
	ASPH (CRS-2)	0.25 GAL / SY	58,092 SY	14,523 GAL
	AGGR (TY-D GR-5 OR TY-L GR-5)	1 CY / 150 SY	58,092 SY	387 CY

Table 7: Basis of Estimate for Asphalt Pavements				
Item	**Description**	**Rate**	**Basis**	**Quantities**
346	**3.0" STONE-MATRIX ASPHALT (SMA)**			
	STONE-MTRX-ASPH SMA-C SAC-A PG76-22	110 LB / SY / IN	45,933 SY	7,579 TON
3000	**CRACK ATTENUATOR MIXES (CAM)**			
	CAM (ASPHALT) (PG 64-22)	7.48 LB / SY	11,354 SY	43 TON
	CAM (AGGREGATE)	102.52 LB / SY	11,354 SY	583 TON
347	**THIN OVERLAY MIXTURES (TOM)**			
	TOM-C (ASPHALT) PG 76-22	7.48 LB / SY	11,354 SY	43 TON
	TOM-C (AGGREGATE) SAC-A	102.52 LB / SY	11,354 SY	583 TON

GENERAL

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

The disturbed area for this project, as shown on the plans is 2.9 acres. However, the Total Disturbed Area (TDA) will establish the required authorization for storm water discharges. The TDA of this project will be determined by the sum of the disturbed area in all project locations in the contract, and all disturbed area on all Project-Specific Locations (PSL) located in the project limits and/or within 1 mile of the project limits. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction site as shown on the plans, according to the TDA of the project. The contractor will obtain any required authorization from the TCEQ for the discharge of storm water from any PSL for construction support activities on or off of the project row according to the TDA of the project. When the TDA for the project exceeds 1 acre, provide a copy of the appropriate application of permit (NOI, or Construction Site Notice) to the engineer, for any PSL located in the project limits or within 1 mile of the project limits. Follow the directives and adhere to all requirements set forth in the TCEQ, Texas Pollution Discharge Elimination System, Construction General Permit (TPDES, CGP).

Contractor questions on this project are to be emailed to the Waco District at the following address:

Bill Compton, P.E. - Wacoprebid@txdot.gov, 254-867-2707, 100 S. Loop Dr., Waco, TX
Carmen Chau - Wacoprebid@txdot.gov, 254-867-2794, 100 S. Loop Dr., Waco, TX

Or Via phone or in person to the following individual(s):
Area Engineer's: Josh Voiles, P.E., 254-582-5432
Assistant Area Engineer's: Anel Rivero Rosado, P.E., 254-582-5432

All contractor questions will be reviewed by the Area Engineer or Assistant Area Engineer. Once a response is developed, it will be posted to TxDOT's Public FTP at the following Address: https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting%20Responses/

All questions submitted that generate a response will be posted through this site. The site is organized by District, Project Type (Construction or Maintenance), Letting Date, CCSJ/Project Name.

Paper copies of cross-sections may be produced by using the provided .pdf file located on the above FTP Website at the bidders' expense and at copying companies. 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).

ITEM 5: CONTROL OF THE WORK

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 (254)867-2808 for locates a minimum of 48 hours in advance of excavation. For irrigation systems, call TxDOT Landscape Office (254)867-2726 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.

ITEM 6: CONTROL OF MATERIALS

References to manufacturer's trade name or catalog numbers are for the purpose of identification only and the contractor will be permitted to furnish like materials of other manufacturers provided they are of equal quality and comply with specifications for this project.

ITEM 7: LEGAL RELATIONS AND RESPONSIBILITIES

No significant traffic generator events identified.

If utilizing private property for waste disposal sites, field office sites, equipment storage sites or for any other purpose involved with this project, provide to the Engineer written proof of the property owner's approval of the use of this property. This proof may be in the form of a letter or agreement signed by the property owner or other documents acceptable to the Engineer.

Personal vehicles of the contractor's employees will not be parked within the right of way at any time including any section closed to public traffic, unless the vehicle is being utilized for construction procedures. However, the contractor's employees may park on the right of way at the sites where the contractor has his office, equipment and materials storage yard.

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

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

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site. A minimum number of hours is not guaranteed. Payment is for work performed. If the Contractor has a field office, provide an office location for a supervisory officer when event requires a supervising officer. This work is subsidiary.

A maximum combined rate of $65 per hour for the law enforcement personnel and the patrol vehicle will be allowed. Any scheduling fee is subsidiary per Standard Specification 502.4.2.

Cancel law enforcement personnel when the event is canceled. Cancellation, minimums or "show up" fees will not be paid when cancellation is made 12 hours prior to beginning of the event. Failure to cancel within 12 hours will not be cause for payment for cancellation, minimums, or "show up" time. Payment of actual "show up" time to the event site due to cancellation will be on a case by case basis at a maximum of 2 hours per officer.

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

ITEM 8: PROSECUTION AND PROGRESS

This Project will be a Standard Workweek in accordance with Article 8.3.1.4.

Nighttime work is allowed in accordance with Article 8.3.3.

Meet bi-weekly or at intervals as agreed upon with the engineer to notify him or her of planned work for the upcoming 3-week period.

For this project, provide a Bar Chart progress schedule.

ITEM 134: BACKFILLING PAVEMENT EDGES

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

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

ITEM 316: SEAL COAT

Warm Season asphalt will be applied between May 1 and September 15 unless approved in writing.

Cool Season asphalt will be applied between September 15 and May 1 unless approved in writing.

No AC or Emulsion for surface treatment items will be placed between September 15 and May 1 unless approved in writing.

All trucks hauling materials to be paid for by truck measurement will be “struck off” prior to delivery to the project.

Unless otherwise approved, seal coat will not be exposed to traffic for more than one calendar day before application of HMAC..

<table>
<tr><th></th><th>AC20-5TR, AC20-XP
AC15-P</th><th>CRS-2P</th><th>RC-250</th></tr>
<tr><td>JANUARY</td><td></td><td></td><td rowspan="2">REQUIRES INTERMEDIATE COURSE TO BE PLACED</td></tr>
<tr><td>FEBRUARY</td><td></td><td></td></tr>
<tr><td>MARCH</td><td></td><td rowspan="3">REFER TO STANDARD SPECIFICATIONS ITEM 316 FOR TEMPERATURE REQUIREMENTS</td><td></td></tr>
<tr><td>APRIL</td><td></td><td></td></tr>
<tr><td>MAY</td><td></td><td></td></tr>
<tr><td>JUNE</td><td rowspan="4">REFER TO STANDARD SPECIFICATIONS ITEM 316 FOR TEMPERATURE REQUIREMENTS</td><td></td><td></td></tr>
<tr><td>JULY</td><td></td><td></td></tr>
<tr><td>AUGUST</td><td></td><td></td></tr>
<tr><td>SEPTEMBER</td><td></td><td rowspan="3">REFER TO STANDARD SPECIFICATIONS ITEM 316 FOR TEMPERATURE REQUIREMENTS</td><td></td></tr>
<tr><td>OCTOBER</td><td></td><td></td></tr>
<tr><td>NOVEMBER</td><td></td><td></td><td rowspan="2">REQUIRES INTERMEDIATE COURSE TO BE PLACED</td></tr>
<tr><td>DECEMBER</td><td></td><td></td></tr>
</table>

Do not begin rework or flexible base operations if a first course and intermediate surface treatment cannot be placed prior to October 31.

Utilize an asphalt distributor capable of providing a transversely varied asphalt rate. The Engineer will select the pavements where the transversely varied asphalt rate is required.
When a transversely varied rate is required, the asphalt rate outside of the wheel paths will be between 22 and 32% higher than the asphalt rate applied in the wheel paths. Provide calibration documents to the Engineer that include a description of the spray bar(s) and nozzles that will be used and the percentage difference in asphalt rate achieved by each tested spray bar and nozzle arrangement. The nozzles proposed for use shall be clearly stamped or marked from the factory identifying the manufacturer.

ITEM 320: EQUIPMENT FOR ASPHALT CONCRETE PAVEMENT

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.

ITEM 346: STONE-MATRIX ASPHALT

RAP from Contractor owned sources may be used if the RAP is fractionated.

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

Maximum stripping of 0% is required.

No Recycled Asphalt Shingles (RAS) will be allowed.

ITEM 347: THIN OVERLAY MIXTURES

A Warm Mix Asphalt additive is required with a discharge temperature greater than 300° F when the haul distance from the plant to the project is greater than 40 miles or the ambient temperature is between 60° - 70° F. WMA processes, such as water or foaming processes, are not allowed under these circumstances.

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

For SAC-A, blending SAC-B Aggregate with an RSSM greater than the SAC-A rating or 10, whichever is greater, is prohibited.

ITEM 351: FLEXIBLE PAVEMENT STRUCTURE REPAIR

For this project, a laydown machine will be required during the construction & placement of this item.

Locations and Quantities will vary as directed. The minimum area to be repaired will be five (5) SY.

ITEM 354: PLANING AND TEXTURING PAVEMENT

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

Mill the pavement producing a final pavement surface with transverse pattern of 0.2 inch center to center of each strike area with a difference of no greater than one-sixteenth (1/16) inch between the ridge and valley (RVD) measurement of the final milled surface. The speed of the milling machine and RPMs of the drum will be set to ensure a smooth surface per manufacturer's instructions.

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.

The Contractor will take possession of RAP produced from this project and dispose of it at their own expense.

Properly dispose of unsalvageable material at Contractor's expense.

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

ITEM 361: REPAIR OF CONCRETE PAVEMENT

Provide Class HES concrete designed to attain a minimum average compressive strength of 1,800 psi within the allowed lane closure times.

Tining will be required as described in Item 360.4.8.3 unless otherwise directed by the Engineer. Surface Test Type A utilizing a 10' straight edge as described under Item 585 will be required unless otherwise directed by the Engineer.

Provide aggregate meeting Grade 2 or 3 requirements in accordance with Item 421 for Class HES concrete.

ITEM 500: MOBILIZATION

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

ITEM 502: BARRICADES, SIGNS, AND TRAFFIC HANDLING

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.

Install traffic marking signs prior to sealcoat application and remove within three days after placement of traffic markings.

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.

A meeting between the contractor and Engineer to discuss upcoming changes in construction phasing and traffic switches is required at least fourteen (14) days prior to the phase change. Items to be discussed at this meeting include temporary signing, traffic control, pavement markings, the processes necessary for the phase change and subcontractor scheduling.

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.

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

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.

The Contractor Responsible Person(s) (CRP) for Work Zone Traffic Controls will inspect and ensure any deficiencies are corrected each and every day throughout the duration of this contract. Any misaligned or damaged traffic control devices will be repaired as soon as practical after deficiency is discovered.

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee(s) available to respond on the project for emergencies and for taking corrective measures within One (1) Hour.

ITEM 504: FIELD OFFICE

Furnish one Asphalt Mix Control Laboratory (Type D) for this project.

Provide an all in one printer/scanner/fax/copier with software that is compatible with TxDOT equipment, cost not in excess of $300. This is subsidiary to the various bid items.

ITEM 506: TEMPROARY EROSION, SEDIMENTATION AND ENVIRONMENTAL CONTROLS

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 bond with adhesive to 36" X 36" 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.

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

No soil disturbing activities will begin on any section of TxDOT ROW without adequate sedimentation controls first being installed and functioning at adjacent drainage outfalls. Begin and continuously prosecute the repairs, additions and maintenance of erosion and sedimentation control devices within seven days after the Contractor receives each Form 2118, Field Inspection and Maintenance Report, from the Engineer. Failure of the Contractor to fulfill either of the above requirements places TxDOT in potential non-compliance with permit requirements and may result in withholding estimates or stopping work or both until all environmental permit requirements are fulfilled.

Cleaning and sweeping of open roadways due to material spillage or loss from Contractor equipment or tires will be the responsibility of the Contractor at no cost to TxDOT. This work will not be charged as Item 738, "Cleaning and Sweeping Highways". Cleaning and sweeping of roadways will be completed as directed, including multiple times per day if necessary, to maintain acceptable roadways for the traveling public and to meet environmental regulations. Construction activities will cease when material deposited on the roadway is not properly removed or when equipment is not available as needed. Adequate construction exits will be planned, constructed and maintained by the Contractor per Item 506, "Temporary Erosion, Sedimentation, and Environmental Controls".

ITEM 530: INTERSECTIONS, DRIVEWAYS AND TURNOUTS

Provide Class "HES" concrete for concrete driveways shown on the plans.

ITEM 585: RIDE QUALITY FOR PAVEMENT SURFACES

Use Surface Test Type A on all intersections and driveways.

Use Surface Test Type B pay adjustment schedule 2 on the travel lanes.

The contractor will ensure satisfactory profile results in the intermediate paving layers (mixture) to eliminate corrective action for excessive deviations in the final surface layers.

Milling will not be allowed as a corrective action for excessive deviations in the surface layer.

ITEM 636: SIGNS

Verify all dimensions at the actual proposed sign location in order to maintain dimensions as shown on the Sign Mounting Details.

Stake the location of the new signs to be approved.

ITEM 644: SMALL ROADSIDE SIGN ASSEMBLIES

Bolt Clamp type will be used on Texas Triangular Slip Base System.

As practical with new construction, leave the existing sign assemblies in place until the proposed foundation, post and sign are in installed, and then remove the old sign assemblies.

Do not leave any sign foundation holes open overnight. Ensure all holes drilled are at least the minimum required depth with no loose material remaining in the hole.

Stake proposed sign locations and receive approval before installation of sign foundations.

Existing Mile Markers Signs are to be relocated to their original location(s) as they were prior to the beginning of the project.

Expanded foam foundations are not permitted.

Cut the bottom of all posts square.

For sign types which design details are not shown on these plans, fabricate according to the "STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS".

Removed material that is deemed salvageable (signs and posts) will be the property of TxDOT. Deliver salvageable material to the TxDOT Maintenance Office. Remove unsalvageable material.

The Contractor will relocate the existing double sided street name signs and furnish the post mounted brackets for the street name signs to be paid for as part of the proposed Stop Signs (R1-1). Existing street name signs will be mounted above Stop signs. If damaged while being relocated, the Contractor will furnish new double sided street name sign at their own expense.

ITEM 658: DELINEATOR AND OBJECT MARKER ASSEMBLIES

All flexible and GF2 delineators will have a tubular body.

The delineator assembly BRF Class A (D-SW) and (D-SY) are to be single delineators (Class I) attached to a flat, plastic bracket to facilitate the mounting of the delineator on top of the bridge rail at the locations shown on the plans. Submit a sample for approval before ordering materials.

ITEM 666: RETROREFLECTORIZED PAVEMENT MARKINGS

The Contractor will layout the proposed striping in accordance with TxDOT Traffic Control Plan Standards and latest version Texas Manual on Uniform Traffic Control Devices (TMUTCD) and project striping layout sheets. The Engineer will verify proposed striping layout prior to the beginning of striping operations.

The Contractor will locate the beginning and ending points of No Pass Zones.

ITEM 668: PREFABRICATED PAVEMENT MARKINGS

Use Type C prefabricated pavement markings.

ITEM 672: RAISED PAVEMENT MARKERS

Existing raised pavement markers to be replaced will be removed at the same time that the new markers are placed (i.e. remove and replace in one operation). Existing raised pavement markers replaced by new markers will be removed in accordance with Item 677, “Eliminating Existing Pavement Markings and Markers”. Immediately fill the damaged area in the pavement due to the removal of existing markers with an approved bituminous material. This removal and backfill work will not be paid for directly, but will be subsidiary to Item 672, "Raised Pavement Markers".

ITEM 677: ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS

Water blasting method will be the only acceptable method of removing existing pavement markings.

ITEM 6001: PORTABLE CHANGEABLE MESSAGE SIGN

This project will require “full matrix” type portable changeable message signs.

Ensure that the Contractor’s Responsible Person for traffic control can revise messages within thirty (30) minutes of notification.

Furnish 4 portable changeable message signs. The portable changeable message sign(s) will be used for all lane closures and freeway closures as shown on the traffic control plan standard sheets.

Supply portable changeable message sign(s) in accordance with the Traffic Control Plan standard sheets and Article 6f.55 of the Texas Manual on Uniform Traffic Control Devices for Streets and Highways Part VI.

ITEM 6185: TRUCK MOUNTED ATTENUATORS

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

TCP 1 Series	Scenario		Required TMA	
(1-2)-18			1	
(1-3)-18	A	B	1	2
(1-4)-18			1	

TCP 2 Series	Scenario	Required TMA
(2-2)-18	All	1

TCP 3 Series	Scenario			Required TMA
(3-1)-13	All			2
(3-3)-14	A	B	D	2
	C			3

Shadow vehicles equipped for truck mounted attenuators (TMA) for stationary operations will be paid for by the day and must be available for use at any time as determined by the Engineer.

Mobile operations will be paid for by the hour, per specifications. For mobile operations, payment will be made only while the TMA is in use.

For mobile operations requiring multiple TMA’s, judgement may be applied in lower speed, urban / in town traffic environments to reduce the numbers of TMA in use where the added TMA may pose a hazard for traffic entering and exiting driveways, side streets, etc.

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 TMA needed for the project for those times per plan requirements. Additional TMAs used that are not specified in the plans in which the contractor expects compensation will require prior approval from the Engineer.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0596-01-023 **DISTRICT** Waco **COUNTY** Hill
HIGHWAY FM 66

			CONTROL SECTION JOB		**0596-01-023**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00004690**		
			COUNTY		**Hill**		
			HIGHWAY		**FM 66**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	134-6001	BACKFILL (TY A)	STA	136.040		136.040	
	315-6001	FOG SEAL (SS-1)	GAL	4,835.000		4,835.000	
	316-6022	ASPH (CRS-2)	GAL	14,523.000		14,523.000	
	316-6485	AGGR (TY-D GR-5 OR TY-L GR-5)	CY	387.000		387.000	
	346-6002	STONE-MTRX-ASPH SMA-C SAC-A PG76-22	TON	7,579.000		7,579.000	
	347-6001	TOM (ASPHALT) PG 76-22	TON	43.000		43.000	
	347-6002	TOM-C (AGGREGATE) SAC-A	TON	583.000		583.000	
	351-6006	FLEXIBLE PAVEMENT STRUCTURE REPAIR(10")	SY	500.000		500.000	
	354-6088	PLANE ASPH CONC PAV (0" TO 5")	SY	6,860.000		6,860.000	
	354-6208	PLANE ASPH CONC PAV(MICRO-MLLING)(2")	SY	11,354.000		11,354.000	
	361-6002	FULL - DEPTH REPAIR CRCP (8")	SY	500.000		500.000	
	479-6004	ADJUSTING MANHOLES (SANITARY)	EA	3.000		3.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	3.000		3.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	250.000		250.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	250.000		250.000	
	530-6002	INTERSECTIONS (ACP)	SY	1,528.000		1,528.000	
	530-6004	DRIVEWAYS (CONC)	SY	1,817.000		1,817.000	
	530-6005	DRIVEWAYS (ACP)	SY	1,474.000		1,474.000	
	533-6002	RUMBLE STRIPS (CENTERLINE)	LF	12,676.000		12,676.000	
	636-6007	REPLACE EXISTING ALUMINUM SIGNS(TY A)	SF	22.000		22.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	3.000		3.000	
	644-6007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)	EA	4.000		4.000	
	644-6033	IN SM RD SN SUP&AM TYS80(1)SA(U)	EA	4.000		4.000	
	644-6038	IN SM RD SN SUP&AM TYS80(1)SA(U-EXAL)	EA	5.000		5.000	
	644-6044	IN SM RD SN SUP&AM TYS80(1)SB(U)	EA	4.000		4.000	
	644-6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	EA	83.000		83.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	96.000		96.000	
	658-6014	INSTL DEL ASSM (D-SW)SZ (BRF)CTB (BI)	EA	8.000		8.000	
	658-6047	INSTL OM ASSM (OM-2Y)(WC)GND	EA	1.000		1.000	
	658-6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	36.000		36.000	
	658-6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	EA	7.000		7.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	3,358.000		3,358.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	20.000		20.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	416.000		416.000	
	666-6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	1,634.000		1,634.000	
	666-6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	LF	3,040.000		3,040.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0596-01-023 **DISTRICT** Waco **COUNTY** Hill
HIGHWAY FM 66

		CONTROL SECTION JOB		**0596-01-023**		TOTAL EST.	TOTAL FINAL
		PROJECT ID		**A00004690**			
		COUNTY		**Hill**			
		HIGHWAY		**FM 66**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	14,007.000		14,007.000	
	666-6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	LF	28,408.000		28,408.000	
	668-6085	PREFAB PAV MRK TY C (W) (WORD)	EA	5.000		5.000	
	668-6089	PREFAB PAV MRK TY C (W) (RR XING)	EA	1.000		1.000	
	668-6114	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)SM	EA	5.000		5.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	329.000		329.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	3,306.000		3,306.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	36.000		36.000	
	677-6016	ELIM EXT PAV MRK & MRKS (RR XING)	EA	1.000		1.000	
	678-6001	PAV SURF PREP FOR MRK (4")	LF	1,734.000		1,734.000	
	3000-6004	CAM (AGGREGATE)	TON	583.000		583.000	
	3000-6005	CAM (ASPHALT)(PG 64-22)	TON	43.000		43.000	
	6001-6001	PORTABLE CHANGEABLE MESSAGE SIGN	DAY	42.000		42.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	4.000		4.000	
	6185-6002	TMA (STATIONARY)	DAY	72.000		72.000	
	6185-6003	TMA (MOBILE OPERATION)	HR	50.000		50.000	
	02	RAILROAD FORCE ACCOUNT WORK	LS	1.000		1.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
1	3088-6001	CEMENT	TON	203.000		203.000	
	3088-6002	ASPHALT BINDER (PG 64-22)	TON	508.000		508.000	
	3088-6005	FOAMED ASPHALT TREAT (10")(DC)	SY	45,123.000		45,123.000	
1A	3089-6002	CEMENT	TON	203.000		203.000	
	3089-6003	EMULSION	GAL	188,614.000		188,614.000	
	3089-6009	EMUL TRTMNT (MX EXIST MATL) 10"	SY	45,123.000		45,123.000	

SUMMARY OF SURFACING AND GRADING

ROADWAY	BEGIN STATION	END STATION	TYPE OF WORK	0315 6001	0316 6022	0316 6485	0346 6002	0347 6001	0347 6002	0351 6006	0354 6208	0361 6002	3000 6004	3000 6005	MAIN BID			ALTERNATE		
															3088 6001	3088 6002	3088 6005	3089 6002	3089 6003	3089 6009
				FOG SEAL (SS-1)	ASPH (CRS-2)	AGGR (TY-D GR-5 OR TY-L GR-5)	STONE-MTRX-ASPH SMA-C SAC-A PG76-22	TOM (ASPHALT) PG 76-22	TOM-C (AGGRE-GATE) SAC-A	FLEXIBLE PAVEMENT STRUCTURE REPAIR (10")	PLANE ASPH CONC PAV (MICRO-MLLING) (2")	FULL - DEPTH REPAIR CRCP (8")	CAM (AGGRE-GATE)	CAM (ASPHALT) (PG 64-22)	CEMENT	ASPHALT BINDER (PG 64-22)	FOAMED ASPHALT TREAT (10") (DC)	CEMENT	EMULSION	EMUL TRTMNT (MX EXIST MATL) (10")
				GAL	GAL	CY	TON	TON	TON	SY	SY	SY	TON	TON	TON	TON	SY	TON	GAL	SY
FM 66	10+70	14+84	MICRO MILL CAM & TOM		805	21		12	166		3,220		166	12						
FM 66	14+84	15+31	MICRO MILL CAM & TOM		65	2		1	13		261		13	1						
FM 66	15+31	32+02	MICRO MILL CAM & TOM		1,346	36		21	276		5,384		276	21						
FM 66	32+02	34+62	PAVEMENT BREAK 1																	
FM 66	34+62	41+24	MICRO MILL CAM & TOM		533	14		7	109		2,133		109	7						
FM 66	41+24	76+60	FOAMED ASPHALT	1,179	2,849	76	1,848								50	124	11,001	50	45,984	11,001
FM 66	76+60	79+95	PAVEMENT BREAK 2																	
FM 66	79+95	84+39	FOAMED ASPHALT	148	358	10	232								6	16	1,381	6	5,773	1,381
FM 66	84+39	189+63	FOAMED ASPHALT	3,508	8,478	226	5,499								147	368	32,741	147	136,857	32,741
SH 81	0+35	0+64	MICRO MILL CAM & TOM		42	1		1	9		169		9	1						
SH 81	1+33	1+65	MICRO MILL CAM & TOM		47	1		1	10		187		10	1						
FM 66 AND SH 81	VARIOUS LOCATIONS		PAVEMENT REPAIR							500		500								
PROJECT TOTAL CSJ: 0596-01-023				4,835	14,523	387	7,579	43	583	500	11,354	500	583	43	203	508	45,123	203	188,614	45,123

SUMMARY OF BACKFILLING PAVEMENT EDGES

BEGIN STATION	END STATION	0134 6001 BACK-FILL (TY A)	* BACKFILL
		STA	CY
41+24	76+60	35.36	134
76+60	79+95		
79+95	84+39	4.44	20
84+39	189+63	96.24	372
PROJECT TOTAL CSJ: 0596-01-023		136.04	526

* FOR CONTRACTOR'S INFORMATION ONLY, SUBSIDIARY TO ITEM 134 BACKFILLING PAVEEMNT EDGES

LOCATION	NUMBER OF APPLI-CATIONS	0662 6111 WK ZN PAV MRK SHT TERM (TAB) TY Y-2
		EA
MICRO MILL CAM & TOM	3	738
FOAMED ASPHALT	2	2,620
PROJECT TOTAL CSJ: 0596-01-023		3,358

SUMMARY OF MBGF MILLING

BEGIN STATION	END STATION	AVERAGE CROWN WIDTH	0354 6088 PLANE ASPH CONC PAV (0" TO 5")
			SY
103+85	112+10	28	2,567
122+85	129+90	28	2,193
150+35	157+10	28	2,100
PROJECT TOTAL CSJ: 0596-01-023			6,860

CONSOLIDATED SUMMARIES

NOT TO SCALE

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		12

SUMMARY OF DRIVEWAYS

STATION	SIDE	ID #	COMMENT	0530 6002	0530 6004	0530 6005	*	*
				INTER-SECTIONS (ACP)	DRIVE-WAYS (CONC)	DRIVE-WAYS (ACP)	2" TYPE C D-GR HMAC	CONC (CL A)
				SY	SY	SY	TON	CY
41+51	RT	4-01			37			6
41+63	LT	4-02				51	6	
43+15	RT	4-03	ELM STREET	143			16	
43+40	LT	4-04				87	10	
44+05	LT	4-05	FM 67 NORTH	169			19	
49+95	LT	4-06			150			25
56+88	LT	5-01				58	6	
58+12	LT	5-02			184			31
62+01	LT	6-01			141			24
65+60	LT	6-02			108			18
66+72	LT	6-03			108			18
67+77	LT	6-04			202			34
68+90	LT	6-05			202			34
69+60	RT	6-06			189			32
69+77	LT	6-07			115			19
70+55	LT	7-01			112			19
71+85	LT	7-02	IH 35W SB FRONTAGE ROAD	222			24	
71+85	RT	7-03	IH 35W SB FRONTAGE ROAD	239			26	
84+98	RT	8-01	IH 35W NB FRONTAGE ROAD	321			35	
84+99	LT	8-02	IH 35W NB FRONTAGE ROAD	320			35	
86+51	RT	8-03				108	12	
87+60	RT	8-04				127	14	
93+65	RT	9-01				48	5	
126+59	RT	12-01	HCR 4426			79	9	
129+12	RT	12-02			73			12
135+85	RT	13-01				46	5	
135+85	RT	13-02				66	7	
140+29	RT	14-01				52	6	
141+92	RT	14-02				48	5	
146+34	RT	14-03				68	7	
151+69	RT	15-01				83	9	
155+39	LT	15-02				51	6	
156+33	LT	15-03				54	6	
157+59	LT	15-04				50	6	
160+05	RT	16-01				76	8	
161+61	RT	16-02				65	7	
162+57	RT	16-03				73	8	
175+49	LT	17-01				73	8	
179+61	RT	17-02				54	6	
185+07	RT	18-01				57	6	
185+58	LT	18-02	ITASCA LANDFILL		196			33
188+58	LT	18-03	HCR 4421	114			13	
PROJECT TOTAL CSJ: 0596-01-023				1,528	1,817	1,474	330	305

* FOR CONTRACTOR'S INFORMARION ONLY SUBSIDIARY TO ITEM 530 INTERSECTIONS, DRIVEWAYS, AND TURNOUTS

SUMMARY OF SIGN REMOVAL

BEGIN STATION	END STATION	0644 6076
		REMOVE SM RD SN SUP & AM
		EA
10+00	50+00	60
50+00	90+00	22
90+00	130+00	11
130+00	170+00	
170+00	189+63	3
PROJECT TOTAL CSJ: 0596-01-023		96

CONSOLIDATED SUMMARIES

NOT TO SCALE

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		13

SUMMARY OF SIGNING, PAVEMENT MARKERS AND DELINEATORS

LOCATION	BEGIN STATION	END STATION	0533 6002	0636 6007	0644 6001	0644 6007	0644 6033	0644 6038	0644 6044	0644 6060	0658 6014	0658 6047	0658 6062	0658 6099
			RUMBLE STRIPS (CENTER-LINE)	REPLACE EXISTING ALUMINUM SIGNS (TY A)	IN SM RD SN SUP&AM TY10BWG (1)SA (P)	IN SM RD SN SUP&AM TY10BWG (1)SA (U)	IN SM RD SN SUP&AM TYS80 (1)SA (U)	IN SM RD SN SUP&AM TYS80 (1)SA (U-EXAL)	IN SM RD SN SUP&AM TYS80 (1)SB (U)	IN SM RD SN SUP&AM TYTWT (1)WS (P)	INSTL DEL ASSM (D-SW) SZ (BRF) CTB (BI)	INSTL OM ASSM (OM-2Y) (WC) GND	INSTL DEL ASSM (D-SW) SZ 1 (BRF) GF2 (BI)	INSTL OM ASSM (OM-2Z) (WFLX) GND
			LF	SF	EA	EA	EA	EA	EA	EA	EA	EA	EA	EA
SIGNING AND STRIPING LAYOUT SHEET 1	5+00	15+00							4	12				
SIGNING AND STRIPING LAYOUT SHEET 2	15+00	25+00						1		17				
SIGNING AND STRIPING LAYOUT SHEET 3	25+00	35+00		11		1				12				
SIGNING AND STRIPING LAYOUT SHEET 4	35+00	45+00		11				1		15				
SIGNING AND STRIPING LAYOUT SHEET 5	45+00	55+00	945							3				
SIGNING AND STRIPING LAYOUT SHEET 6	55+00	65+00	1,000					1		3				
SIGNING AND STRIPING LAYOUT SHEET 7	65+00	75+00	691		2		2			6		1	1	
SIGNING AND STRIPING LAYOUT SHEET 8	75+00	85+00	310			2				2	8		13	
SIGNING AND STRIPING LAYOUT SHEET 9	85+00	95+00	830		1	1	2	2		3				2
SIGNING AND STRIPING LAYOUT SHEET 10	95+00	105+00	1,000							4				
SIGNING AND STRIPING LAYOUT SHEET 11	105+00	115+00	1,000										10	
SIGNING AND STRIPING LAYOUT SHEET 12	115+00	125+00	1,000							1				2
SIGNING AND STRIPING LAYOUT SHEET 13	125+00	135+00	1,000							2			5	3
SIGNING AND STRIPING LAYOUT SHEET 14	135+00	145+00	1,000											
SIGNING AND STRIPING LAYOUT SHEET 15	145+00	155+00	1,000										7	
SIGNING AND STRIPING LAYOUT SHEET 16	155+00	165+00	1,000											
SIGNING AND STRIPING LAYOUT SHEET 17	165+00	175+00	1,000											
SIGNING AND STRIPING LAYOUT SHEET 18	175+00	185+00	900							1				
SIGNING AND STRIPING LAYOUT SHEET 19	185+00	189+63								2				
PAVEMENT MARKING DETAIL SHEET 1	5+00	10+00												
PAVEMENT MARKING DETAIL SHEET 2	10+00	15+00												
PAVEMENT MARKING DETAIL SHEET 3														
PROJECT TOTAL CSJ: 0596-01-023			12,676	22	3	4	4	5	4	83	8	1	36	7

CONSOLIDATED SUMMARIES

NOT TO SCALE

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		14

SUMMARY OF SIGNING, PAVEMENT MARKERS AND DELINEATORS (CONTINUED)

LOCATION	BEGIN STATION	END STATION	0666 6036	0666 6048	0666 6303	0666 6312	0666 6315	0666 6342	0668 6085	0668 6089	0668 6114	0672 6009	0677 6001	0677 6007	0677 6016	0678 6001
			REFL PAV MRK TY I (W)8" (SLD) (100MIL)	REFL PAV MRK TY I (W)24" (SLD) (100MIL)	RE PM W/RET REQ TY I (W)4" (SLD) (100MIL)	RE PM W/RET REQ TY I (Y)4" (BRK) (100MIL)	RE PM W/RET REQ TY I (Y)4" (SLD) (100MIL)	REF PROF PAV MRK TY I (W)4" (SLD) (100MIL)	PREFAB PAV MRK TY C (W) (WORD)	PREFAB PAV MRK TY C (W) (RR XING)	PRE PM TY C (ACC PRK) (BL&WH) (W/BORDR) SM	REFL PAV MRKR TY II-A-A	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (24")	ELIM EXT PAV MRK & MRKS (RR XING)	PAV SURF PREP FOR MRK (4")
			LF	LF	LF	LF	LF	LF	EA	EA	EA	EA	LF	LF	EA	LF
SIGNING AND STRIPING LAYOUT SHEET 1	5+00	15+00														
SIGNING AND STRIPING LAYOUT SHEET 2	15+00	25+00					1,706					23				
SIGNING AND STRIPING LAYOUT SHEET 3	25+00	35+00		37			1,688					22	398			398
SIGNING AND STRIPING LAYOUT SHEET 4	35+00	45+00		24		30	1,640	88				20				
SIGNING AND STRIPING LAYOUT SHEET 5	45+00	55+00				250	630	2,000				20				
SIGNING AND STRIPING LAYOUT SHEET 6	55+00	65+00				250	190	2,000				15				
SIGNING AND STRIPING LAYOUT SHEET 7	65+00	75+00				160	1,164	1,782				23				
SIGNING AND STRIPING LAYOUT SHEET 8	75+00	85+00					1,888	1,888				23	1,336			1,336
SIGNING AND STRIPING LAYOUT SHEET 9	85+00	95+00				100	1,543	1,891				25				
SIGNING AND STRIPING LAYOUT SHEET 10	95+00	105+00				250	630	2,000				20				
SIGNING AND STRIPING LAYOUT SHEET 11	105+00	115+00				250		2,000				12				
SIGNING AND STRIPING LAYOUT SHEET 12	115+00	125+00				250		2,000				13				
SIGNING AND STRIPING LAYOUT SHEET 13	125+00	135+00				250		1,952				12				
SIGNING AND STRIPING LAYOUT SHEET 14	135+00	145+00				250		2,000				13				
SIGNING AND STRIPING LAYOUT SHEET 15	145+00	155+00				250		2,000				13				
SIGNING AND STRIPING LAYOUT SHEET 16	155+00	165+00				250		2,000				13				
SIGNING AND STRIPING LAYOUT SHEET 17	165+00	175+00				250		2,000				12				
SIGNING AND STRIPING LAYOUT SHEET 18	175+00	185+00				250	935	2,000				24				
SIGNING AND STRIPING LAYOUT SHEET 19	185+00	189+63					542	763				7				
PAVEMENT MARKING DETAIL SHEET 1	5+00	10+00		36	705		546		2	1	2	7	1,198	36	1	
PAVEMENT MARKING DETAIL SHEET 2	10+00	15+00	20	280	929		810		3		3	12	374			
PAVEMENT MARKING DETAIL SHEET 3				39			95	44								
PROJECT TOTAL CSJ: 0596-01-023			20	416	1,634	3,040	14,007	28,408	5	1	5	329	3,306	36	1	1,734

SUMMARY OF TMA & PCMS

LOCATION	6001 6001	6001 6002	6185 6002	6185 6003
	PORTABLE CHANGE-ABLE MESSAGE SIGN	PORTABLE CHANGE-ABLE MESSAGE SIGN	TMA (STATION-ARY)	TMA (MOBILE OPERA-TION)
	DAY	EA	DAY	HR
VARIOUS LOCATIONS	42	4	72	50
PROJECT TOTAL CSJ: 0596-01-023	42	4	72	50

SUMMARY OF SW3P

LOCATION	0506 6038	0506 6039
	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)
	LF	LF
VARIOUS LOCATIONS AS DIRECTED	250	250
PROJECT TOTAL CSJ: 0596-01-023	250	250

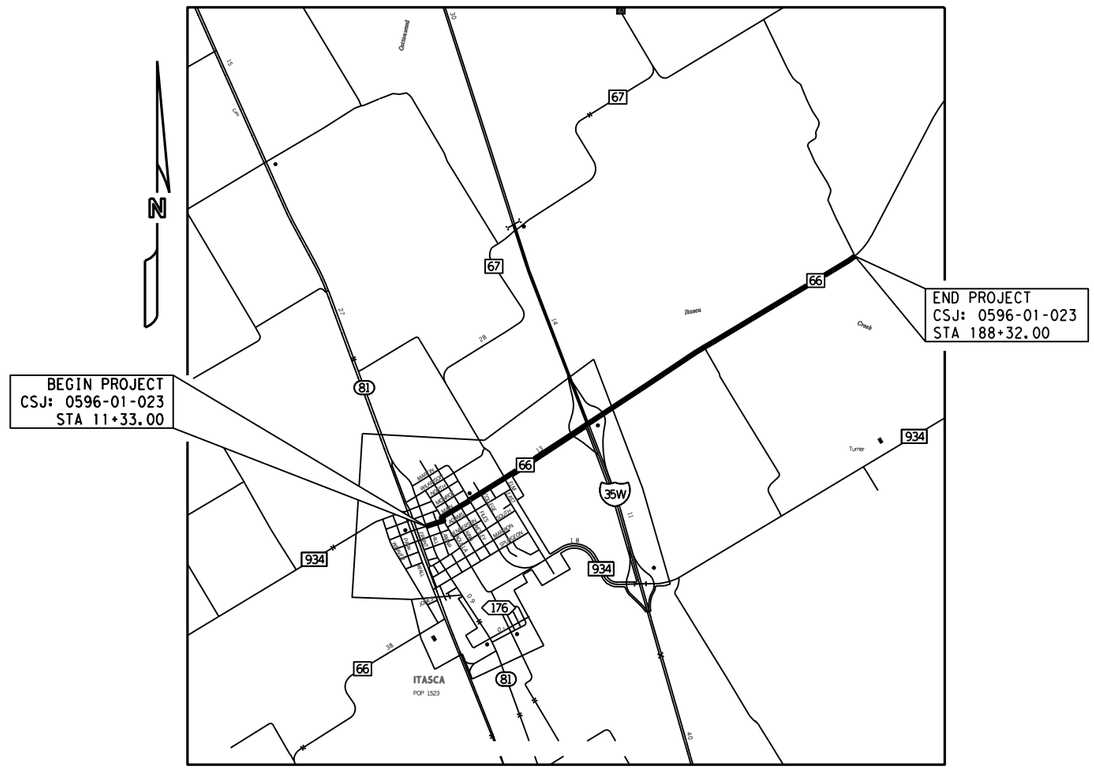
SUMMARY OF ADJUSTING MANHOLES

STATION	OFFSET	0479 6004
		ADJUST-ING MAN-HOLES (SANI-TARY)
		EA
21+26	8' LT	1
37+08	11' LT	1
44+28	26' LT	1
PROJECT TOTAL CSJ: 0596-01-023		3

CONSOLIDATED SUMMARIES

NOT TO SCALE

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		15



VICINITY MAP

1 IN = 2 MILES

1. SIGNS R20-3T, G20-10T, G20-9TP, R20-5T, R20-5aTP, R2-1, G20-5T, G20-6T, G20-2 AND G20-2bT WILL BE REQUIRED AT PROJECT LIMITS.

2. CW20-1D AND G20-2 WILL BE REQUIRED AT ALL CROSSROADS.

3. G20-1aT WILL BE REQUIRED AT MAJOR CROSSROADS.

SIGNAGE LEGEND

G20-5T	48X24	BEGIN ROAD WORK NEXT X MILES
G20-6T	48X30	NAME, ADDRESS, CITY, STATE, CONTRACTOR
G20-9TP	24X24	BEGIN WORK ZONE
G20-2bT	36X18	END WORK ZONE
R20-3T	48X42	OBEY WARNING SIGNS STATE LAW
G20-1aT	72X36	ROAD WORK NEXT X MILES
CW20-1D	36X36	ROAD WORK AHEAD
R20-5T	24X30	TRAFFIC FINES DOUBLE
R20-5aTP	24X12	WHEN WORKERS ARE PRESENT
R2-1	30X36	SPEED LIMIT XX
G20-10T	60X48	STAY ALERT TALK OR TEXT LATER
G20-2	36X18	END ROAD WORK

GENERAL

A. INSTALL ALL SIGNS, BARRICADES AND TRAFFIC CONTROL DEVICES AS SHOWN AND IN ACCORDANCE WITH THE STANDARD BC SHEETS AND AS DIRECTED.

B. ADDITIONAL SIGNS, BARRICADES OR TRAFFIC CONTROL DEVICES OTHER THAN THOSE SPECIFIED MAY BE REQUIRED FOR THE SAFE MOVEMENT OF TRAFFIC THROUGH THE PROJECT. PAYMENT FOR ALL SUCH SIGNS, BARRICADES OR TRAFFIC CONTROL DEVICES WILL BE CONSIDERED SUBSIDIARY TO THE ITEM "BARRICADES, SIGNS AND TRAFFIC HANDLING".

C. WORK SITES SHOULD BE CAREFULLY MONITORED TO ENSURE THAT TRAFFIC CONTROL MEASURES ARE OPERATING EFFECTIVELY AND THAT ALL DEVICES USED ARE CLEARLY VISIBLE, CLEAN AND IN GOOD REPAIR.

D. THE CONTRACTOR WILL PROVIDE SAFE ACCESS TO AND FROM ALL PRIVATE PROPERTY AT ALL TIMES AND IN ALL WEATHER CONDITIONS.

E. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A DETAILED SCHEDULE OF WORK PRIOR TO THE BEGINNING OF CONSTRUCTION WHICH GENERALLY CONFORMS TO THE SEQUENCE SHOWN ON THE TCP SEQUENCE OF OPERATION BELOW.

F. COMPLETE ALL WORK ON PROJECT AS SHOWN ON THE VARIOUS PLAN SHEETS AND IN COMPLIANCE WITH THE GENERAL NOTES OF THIS CONTRACT.

G. ANY REQUEST TO ALTER THE SEQUENCE OF OPERATION OR TRAFFIC CONTROL PLAN WILL BE SUBMITTED TO THE ENGINEER FOR HIS WRITTEN APPROVAL.

H. THIS PROJECT CONSISTS OF TWO SEPARATE WORK AREAS.

1. THE URBAN SECTION FROM SH 81 TO FM 67 WILL CONSIST OF A 2" MILL, FOLLOWED BY A CAM OVERLAY AND THEN A TOM OVERLAY.

2. THE RURAL SECTION FROM FM 67 TO HCR 4421 WILL BE RECYCLED FOAMED ASPHALT WITH AN SMA OVERLAY.

SEQUENCE OF CONSTRUCTION

1. SET PROJECT BARRICADES.

2. MICRO-MILL EXISTING ASPHALT 2" AND PLACE TEMPORARY WORK ZONE TABS IN THE URBAN SECTION.

3. CONSTRUCT BASE AND CONCRETE PAVEMENT REPAIRS AS DIRECTED.

4. CONSTRUCT UNDERSEAL COURSE, CAM AND TOM OVERLAY AND WORK ZONE TABS IN THE URBAN SECTION.

5. MILL ACP IN FRONT OF MBGF TO ACHIEVE PROPER MBGF HEIGHT AFTER SMA OVERLAY IN THE RURAL SECTION.

6. RECYCLE IN PLACE 10" OF EXISTING PAVEMENT (FOAMED ASPHALT TREATMENT), FOG SEAL, UNDERSEAL AND CONSTRUCT SMA OVERLAY AND PLACE WORK ZONE TABS IN THE RURAL SECTION.

7. REBUILD DRIVEWAYS TO MATCH NEW ROADWAY PROFILE IN THE RURAL SECTION.

8. PLACE PERMANENT PAVEMENT MARKINGS, SIGNS AND DELINEATORS IN THE RURAL AND URBAN SECTIONS, AND MILL RUMBLE STRIPS IN THE RURAL SECTION.

9. COMPLETE ALL OTHER WORK AS SHOWN IN THE PLANS.

10. CLEAN UP PROJECT AREA AND REMOVE PROJECT BARRICADES.

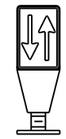
NOTES

1. ALL TRAFFIC CONTROL DEVICES WILL CONFORM WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), AND WILL BE MAINTAINED AS DIRECTED. ADDITIONAL GUIDELINES FOR TRAFFIC CONTROL DEVICES MAY BE FOUND IN THE MUTCD.

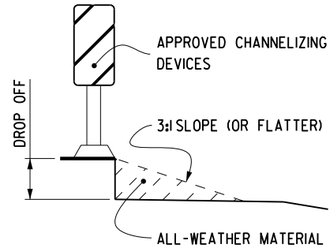
2. FOR CHANNELIZING DEVICE PLACEMENT AND SPACING FOR ALL PHASES, REFER TO THE TCP STANDARDS.

3. TEMPORARY RUMBLE STRIPS WILL BE USED.

4. MULTIPLE MOBILIZATIONS MAY BE REQUIRED FOR FINAL STRIPING.



2 WAY VERTICAL PANELS WILL BE REQUIRED TO SIMULATE CENTERLINE.



PAV EDGE DROP-OFF DETAIL

1. LESS THAN 2 INCHES: CW 8-11 SIGNS ARE REQUIRED.

2. GREATER THAN 2 INCHES BUT LESS THAN 24 INCHES: VERTICAL PANELS AND EITHER CW 8-9a OR CW 8-11 SIGNS ARE REQUIRED.

3. GREATER THAN 24 INCHES: POSITIVE BARRIER REQUIRED.

4. THE SAFETY SLOPE WILL BE CONSTRUCTED WITH AN ALL- WEATHER MATERIAL SUCH AS RAP, WHICH IS CLEAN AND FREE OF DEBRIS AND LARGE ROCKS.

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/29/2021

SIGNATURE OF REGISTRANT & DATE

© 2021 Texas Department of Transportation

TCP SEQUENCE OF OPERATION

NOT TO SCALE SHEET 1 OF 1

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		16

DATE: 10/21/2021 10:28:25 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY NOTES:

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

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

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

Texas Department of Transportation

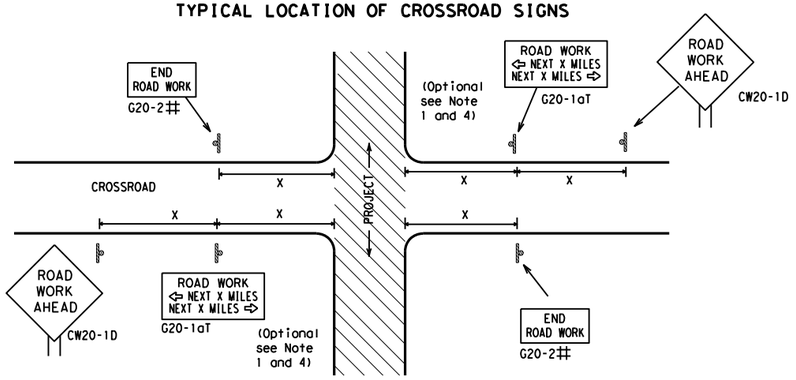
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	WACO	HILL		17
5-10 5-21				

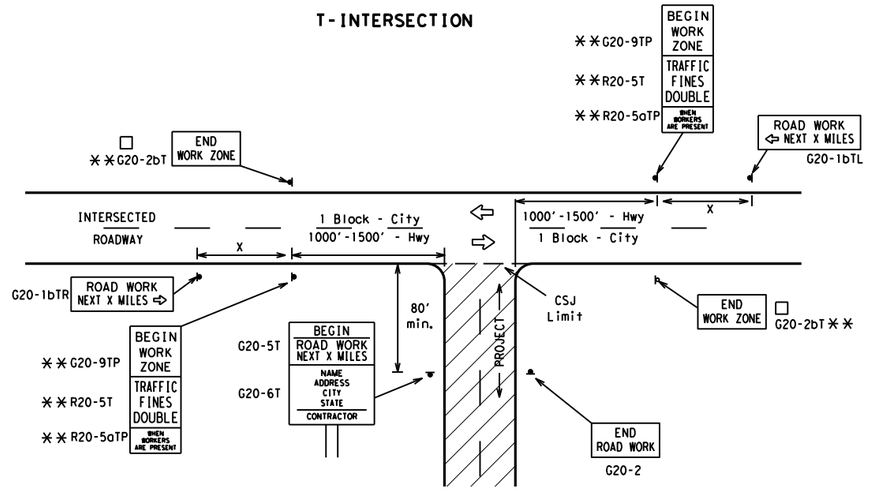
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING[1,5,6]

SIZE

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

SPACING

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

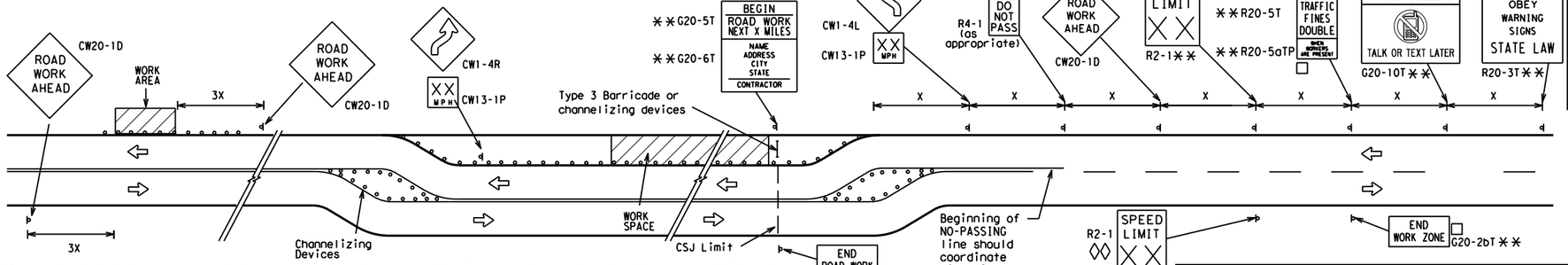
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

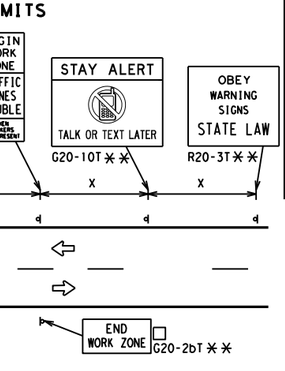
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer as per TMUTCD Part 5. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

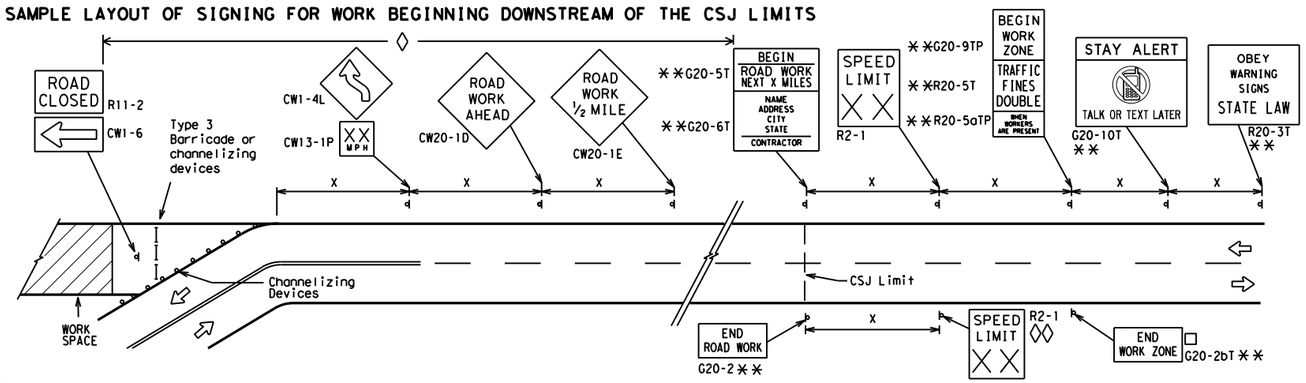


When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

Texas Department of Transportation

Traffic Safety Division Standard

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
REVISIONS	0596	01	023	FM 66
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	WACO	HILL		18

96

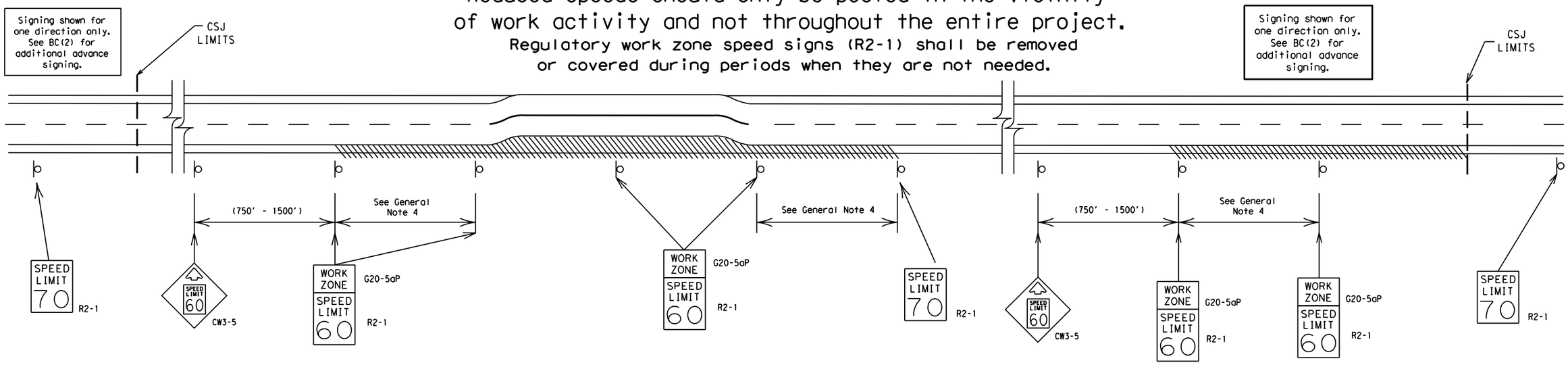
DATE: 10/21/2021 10:28:26 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

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

SHORT TERM WORK ZONE SPEED LIMITS

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

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.

Texas Department of Transportation | Traffic Safety Division Standard

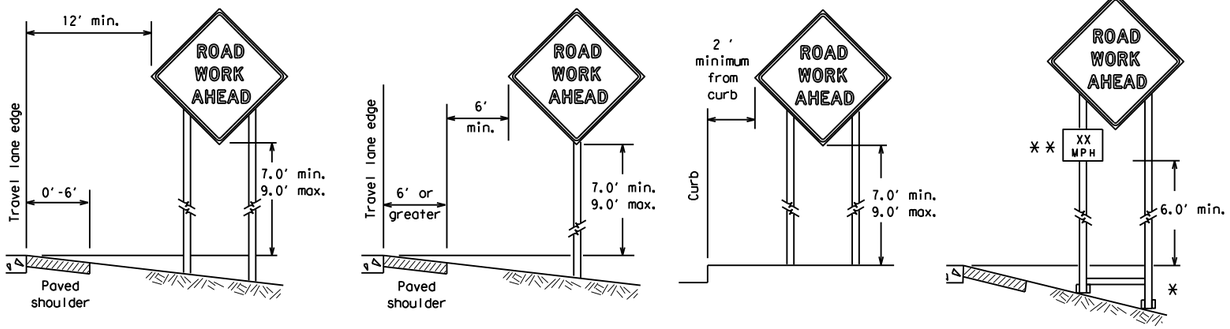
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	WACO	HILL		19

DATE: 10/21/2021 10:28:26 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0366518\bc-21.dgn

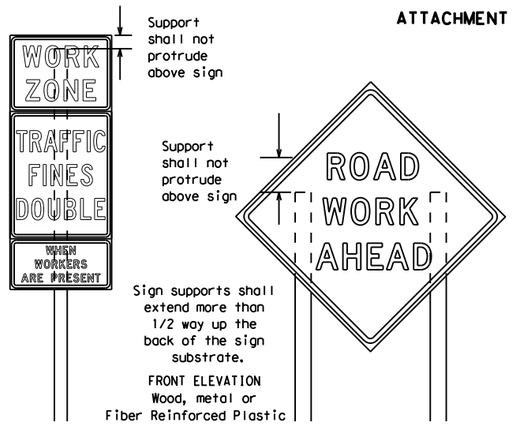
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

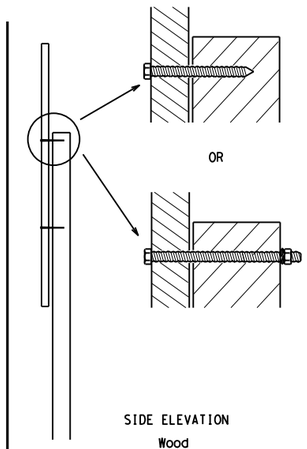


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** 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





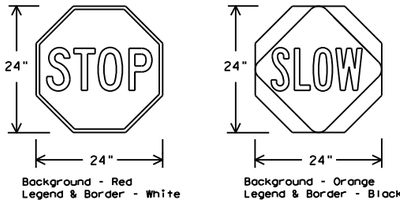
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, 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.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition. For details for covering large guide signs see the TS-CD standard.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC 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.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD) 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.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

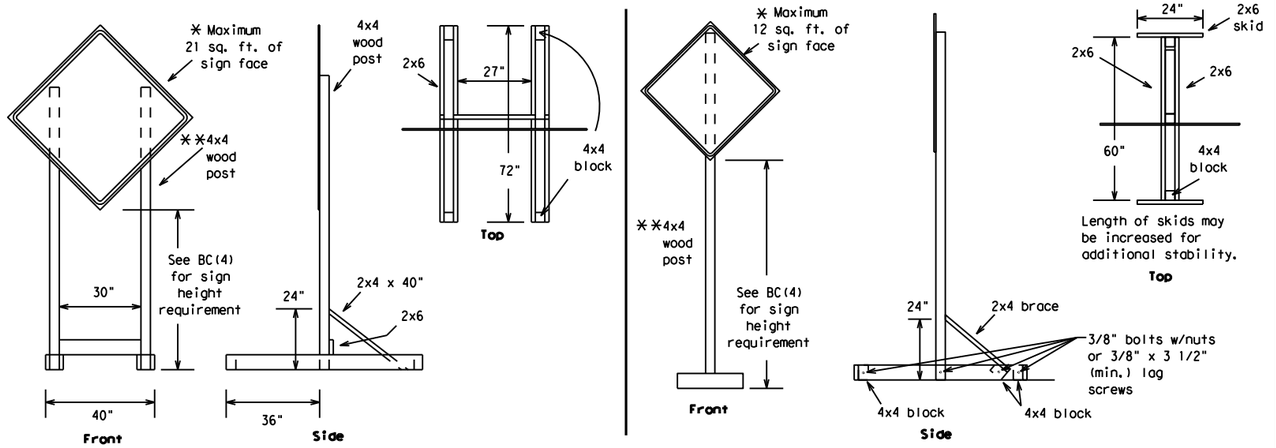
1. Flags may be used to draw attention to warning signs. When used, the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

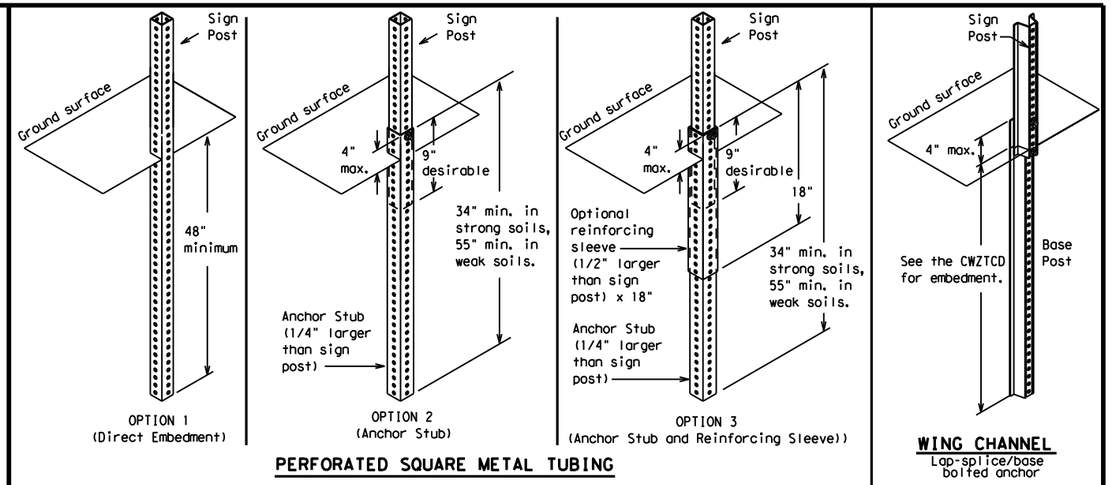
BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	WACO	HILL		20



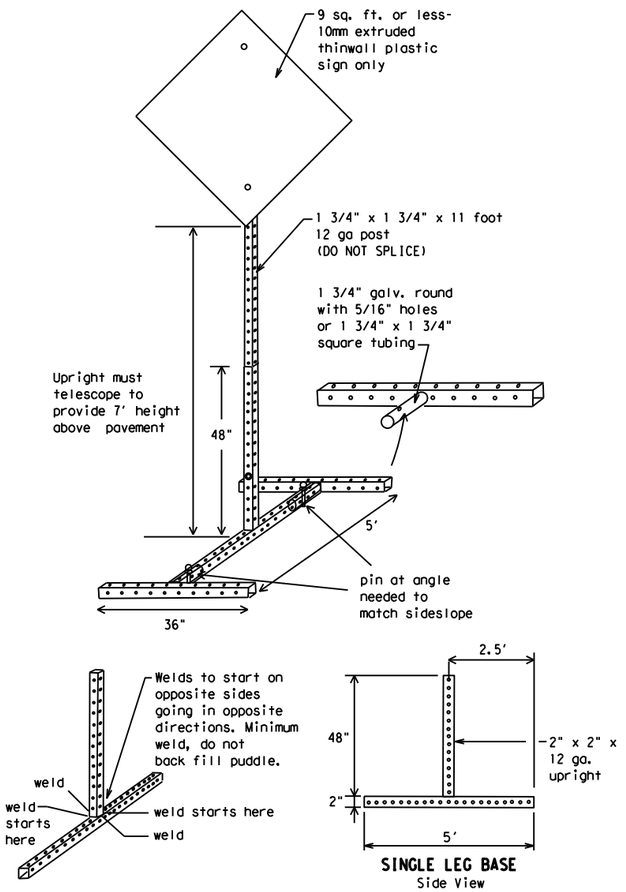
SKID MOUNTED WOOD SIGN SUPPORTS

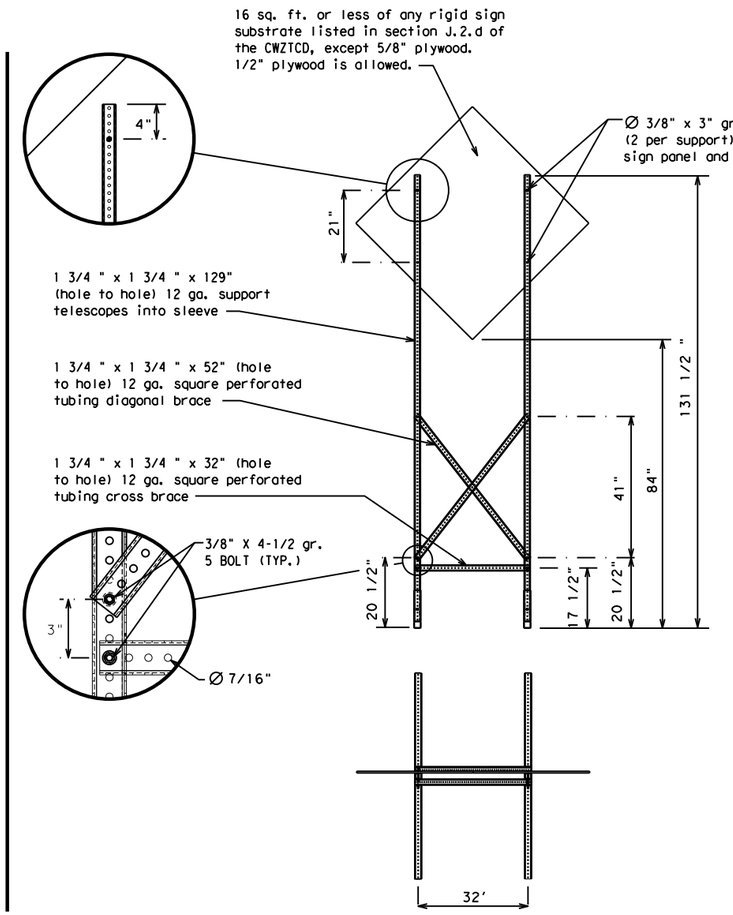
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

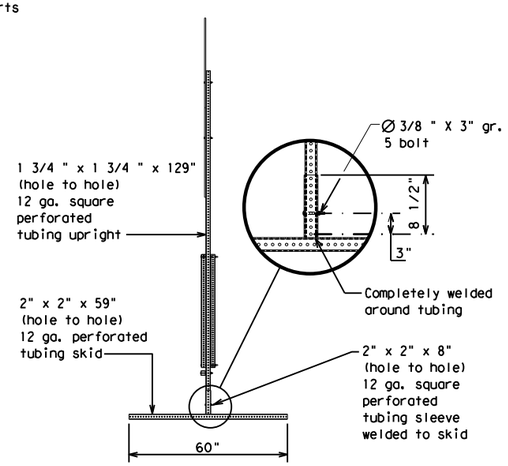


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

* See BC(4) for definition of "Work Duration."

** Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

☐ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

SHEET 5 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	WACO	HILL		21

DATE: 10/21/2021 10:28:27 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

DATE: 10/21/2021 10:28:27 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

- FREEWAY CLOSED X MILE
- FRONTAGE ROAD CLOSED
- ROAD CLOSED AT SH XXX
- SHOULDER CLOSED XXX FT
- ROAD CLSD AT FM XXXX
- RIGHT LN CLOSED XXX FT
- RIGHT X LANES CLOSED
- RIGHT X LANES OPEN
- CENTER LANE CLOSED
- DAYTIME LANE CLOSURES
- NIGHT LANE CLOSURES
- I-XX SOUTH EXIT CLOSED
- VARIOUS LANES CLOSED
- EXIT XXX CLOSED X MILE
- EXIT CLOSED
- RIGHT LN TO BE CLOSED
- MALL DRIVEWAY CLOSED
- X LANES CLOSED TUE - FRI
- XXXXXXXX BLVD CLOSED

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

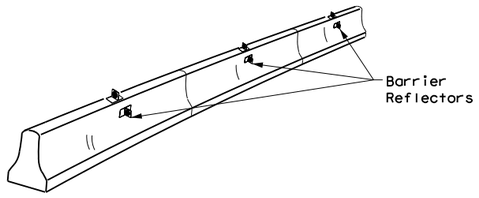
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	WACO	HILL		22

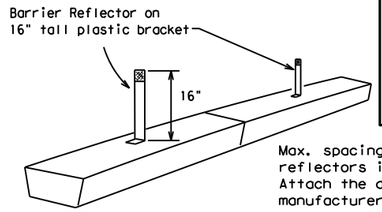
100

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



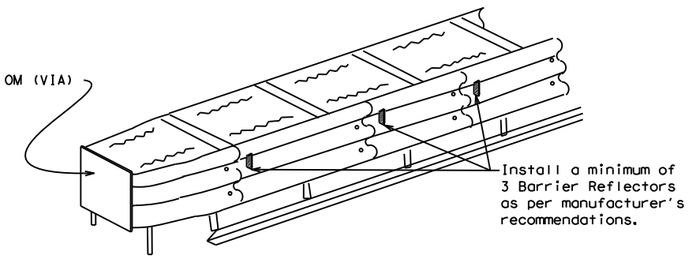
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

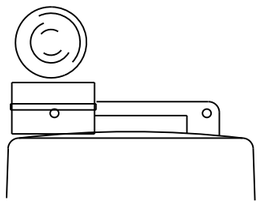
LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the apppropriate 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

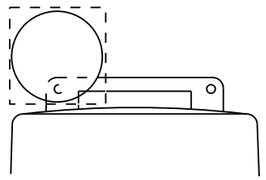


Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



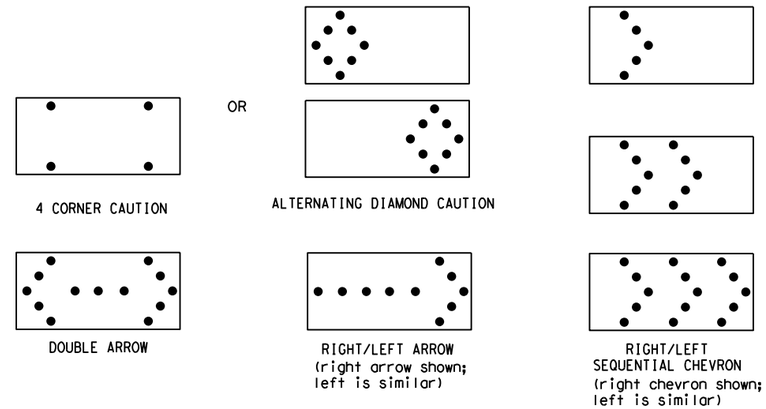
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

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

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

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



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

RIGHT/LEFT ARROW
(right arrow shown;
left is similar)

RIGHT/LEFT
SEQUENTIAL CHEVRON
(right chevron shown;
left is similar)

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

SHEET 7 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

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	0596	01	023	FM 66
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	WACO	HILL		23

101

DATE: 10/21/2021 10:28:28 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

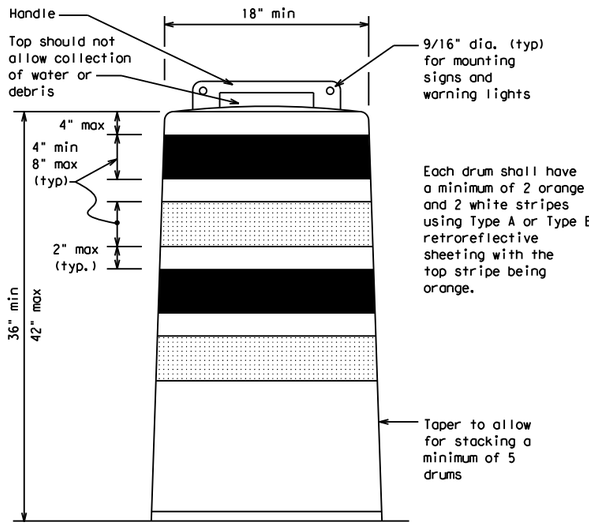
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

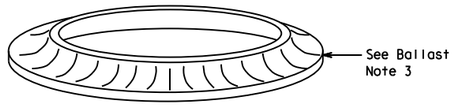
RETROREFLECTIVE SHEETING

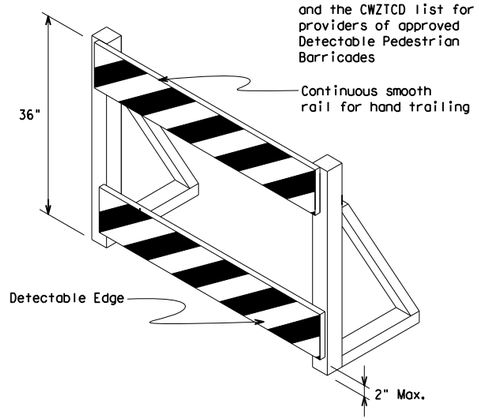
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

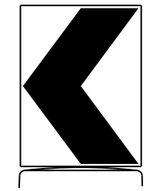




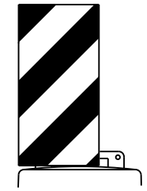


DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. 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.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades 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

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

Texas Department of Transportation | Traffic Safety Division Standard

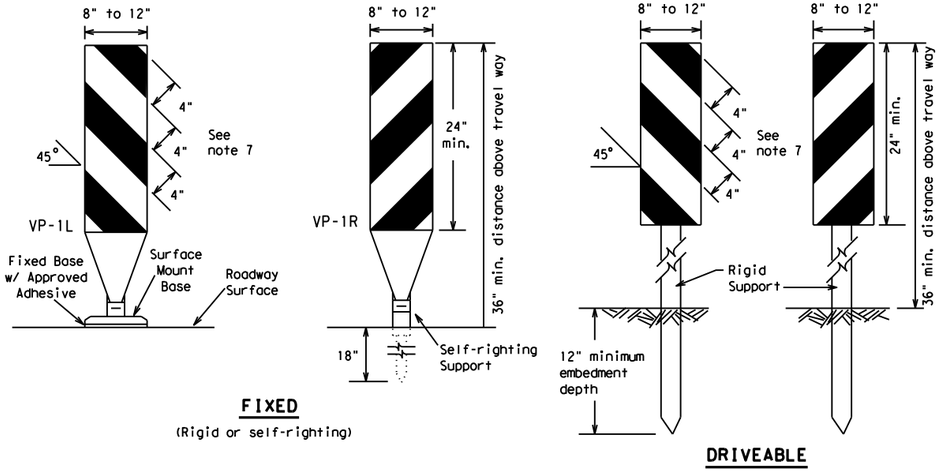
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	WACO	HILL		24
7-13				

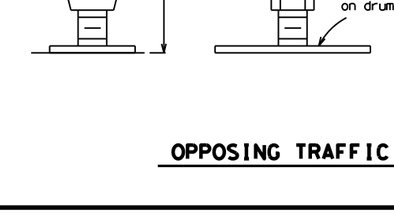
102

DATE: 10/21/2021 10:28:28 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn



FIXED
(Rigid or self-righting)

DRIVEABLE

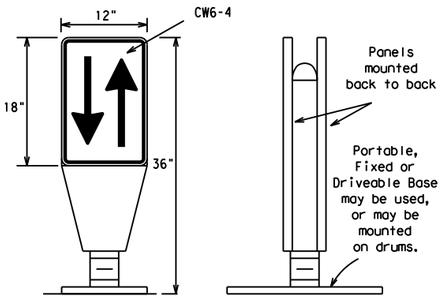


(Rigid or self-righting)

PORTABLE

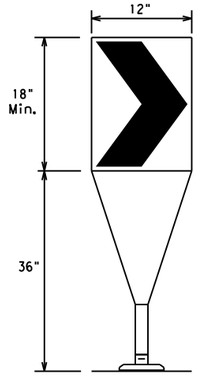
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B_{FL} or Type C_{FL} conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



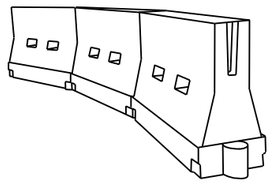
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	WACO	HILL		25

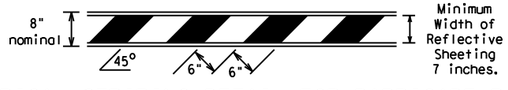
103

DATE: 10/21/2021 10:28:29 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

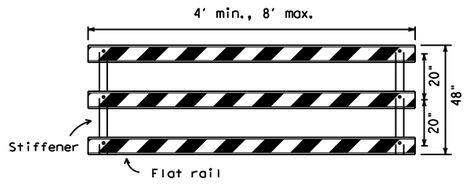
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



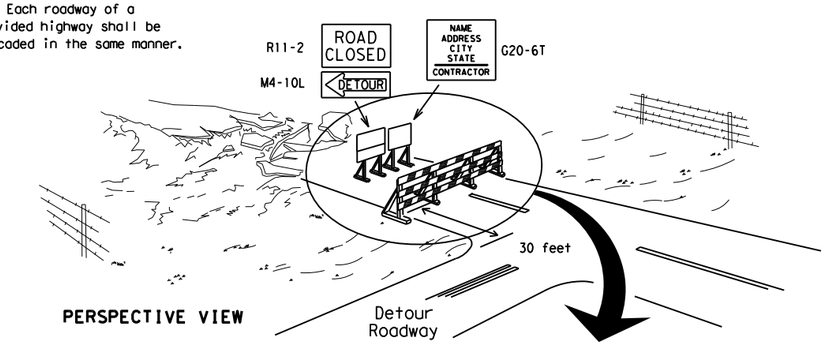
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

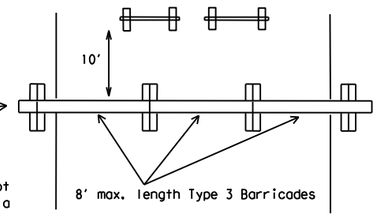
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

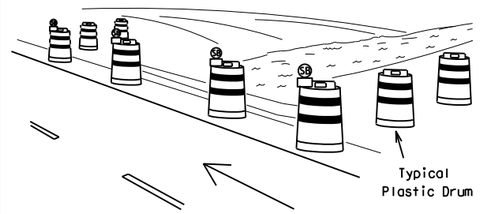
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

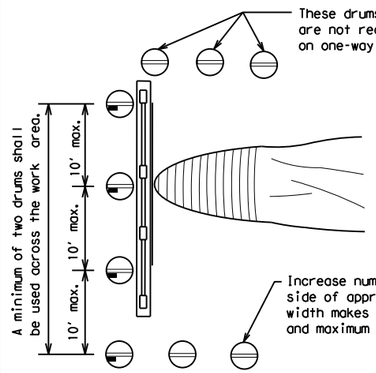
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

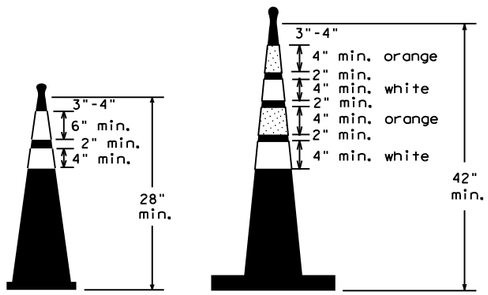
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



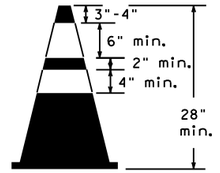
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

PLAN VIEW

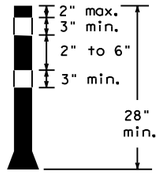
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

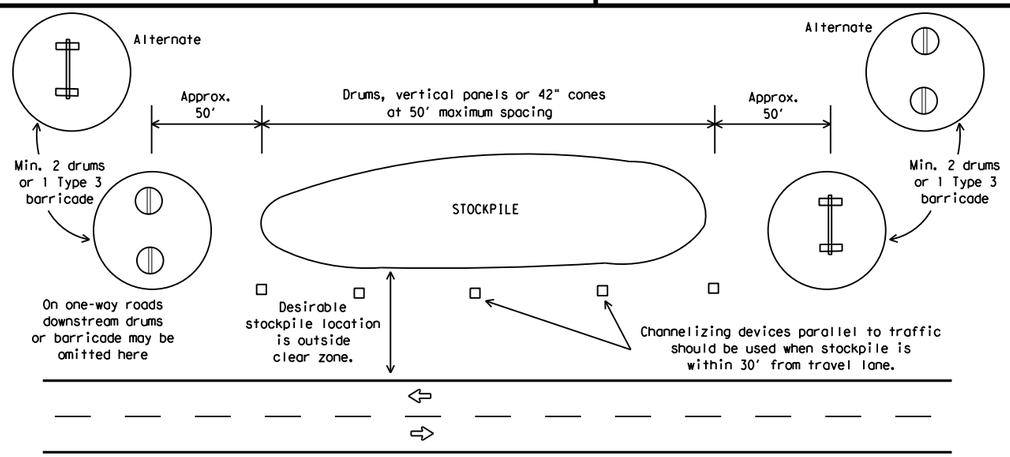


Tubular Marker

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

SHEET 10 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

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	0596	01	023	FM 66
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	WACO	HILL		26

104

DATE: 10/21/2021 10:28:30 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

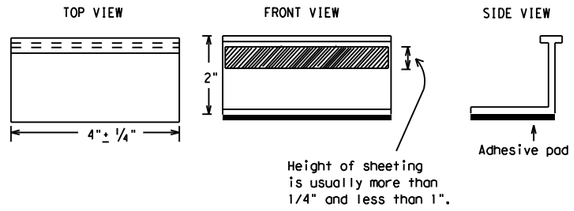
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

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	0596	01	023	FM 66
2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	WACO	HILL		27
11-02 8-14				

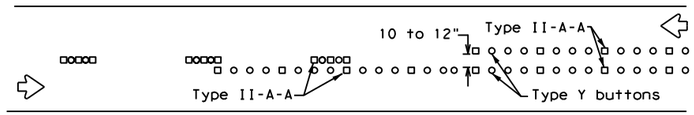
105

DATE: 10/21/2021 10:28:30 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

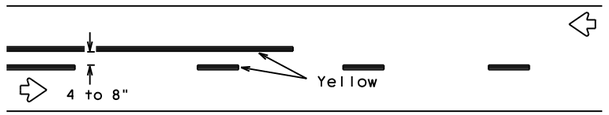
DATE: 10/21/2021 10:28:31 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\bc-21.dgn

PAVEMENT MARKING PATTERNS

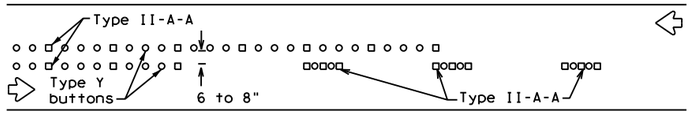
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



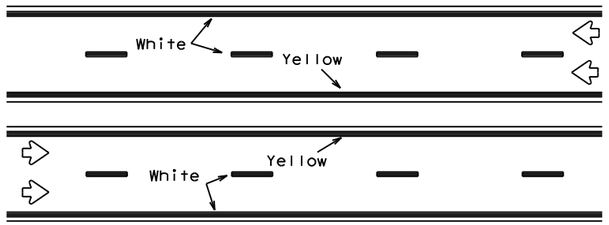
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



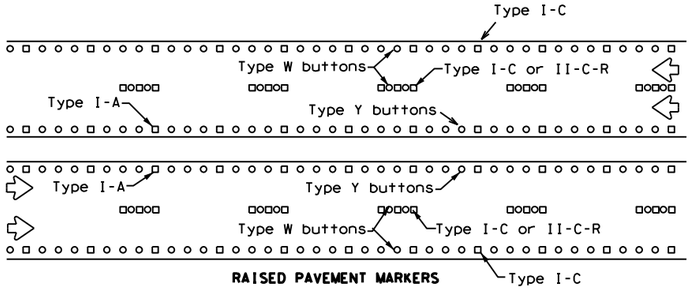
RAISED PAVEMENT MARKERS - PATTERN B

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

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



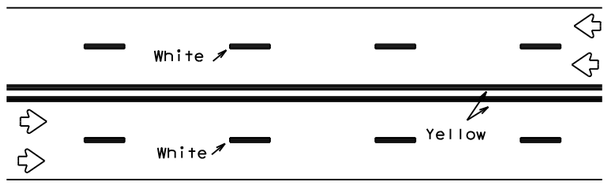
REFLECTORIZED PAVEMENT MARKINGS



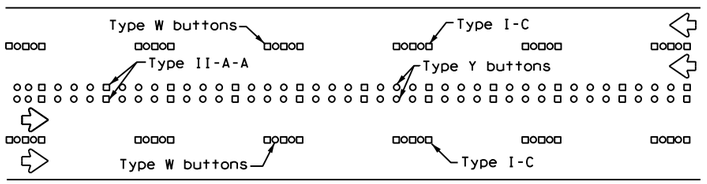
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



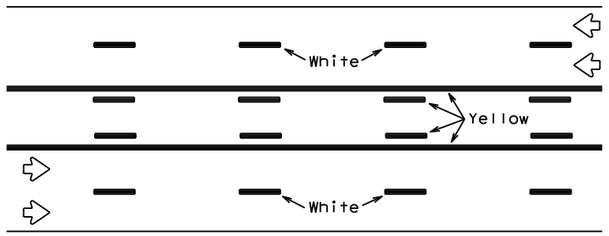
REFLECTORIZED PAVEMENT MARKINGS



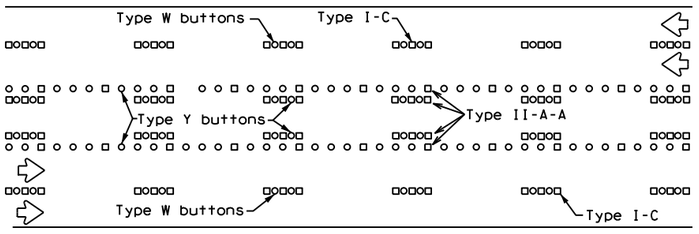
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

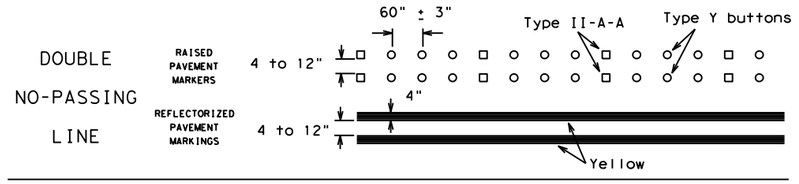
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

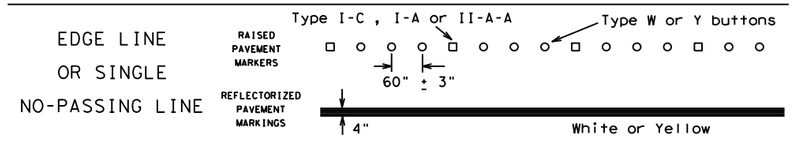
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

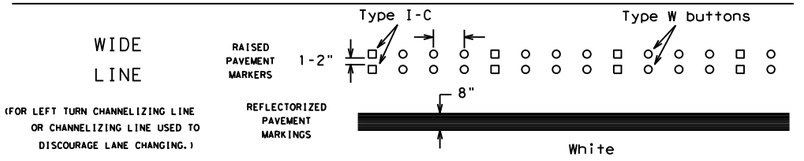


EDGE LINE OR SINGLE NO-PASSING LINE



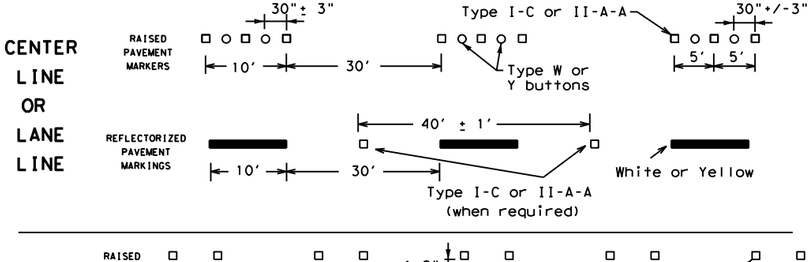
WIDE LINE

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

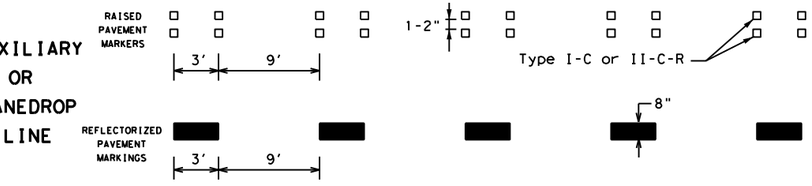


BROKEN LINES

CENTER LINE OR LANE LINE

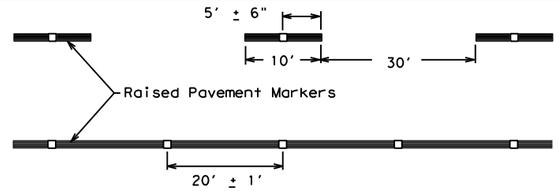


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

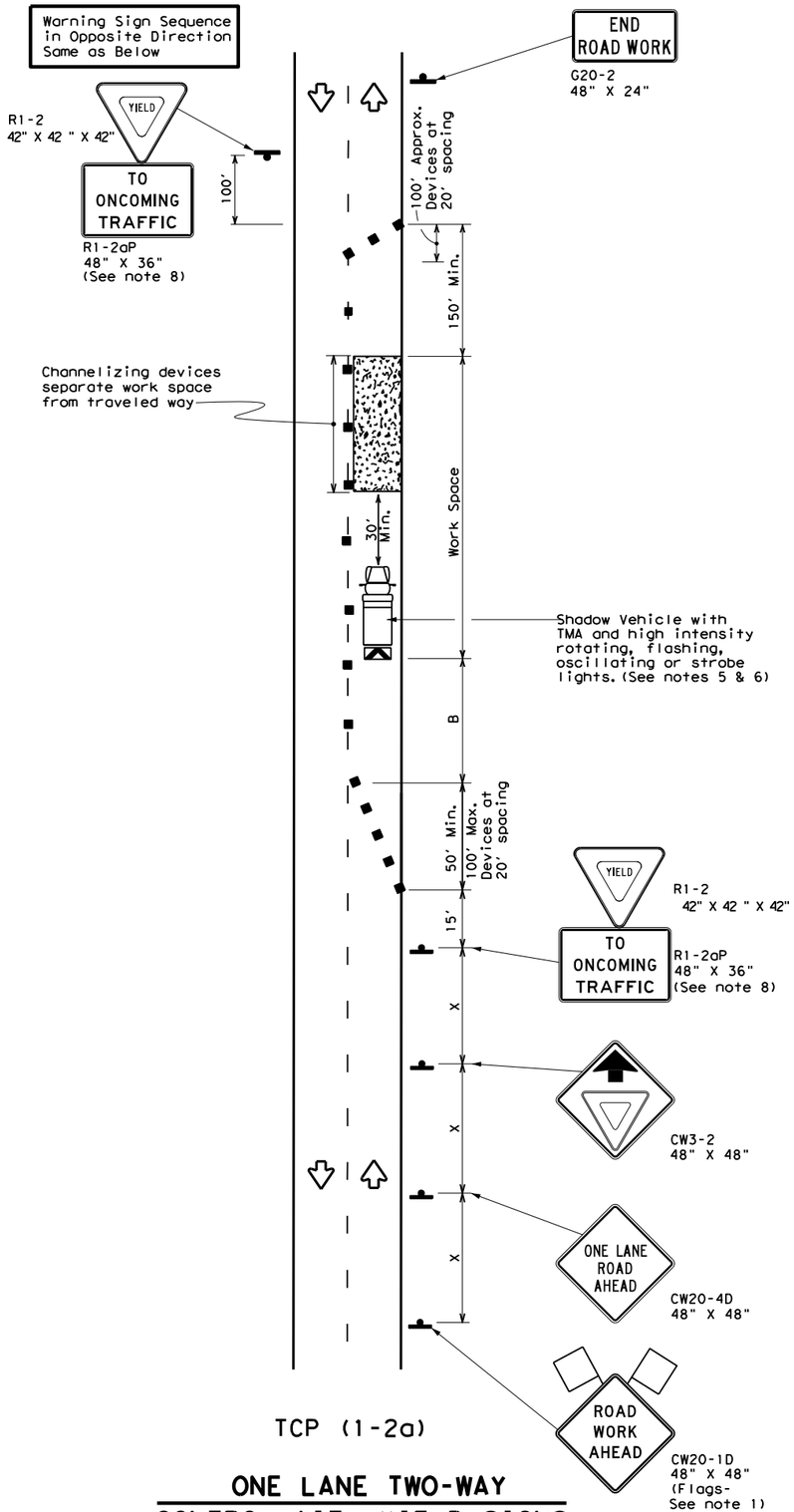
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

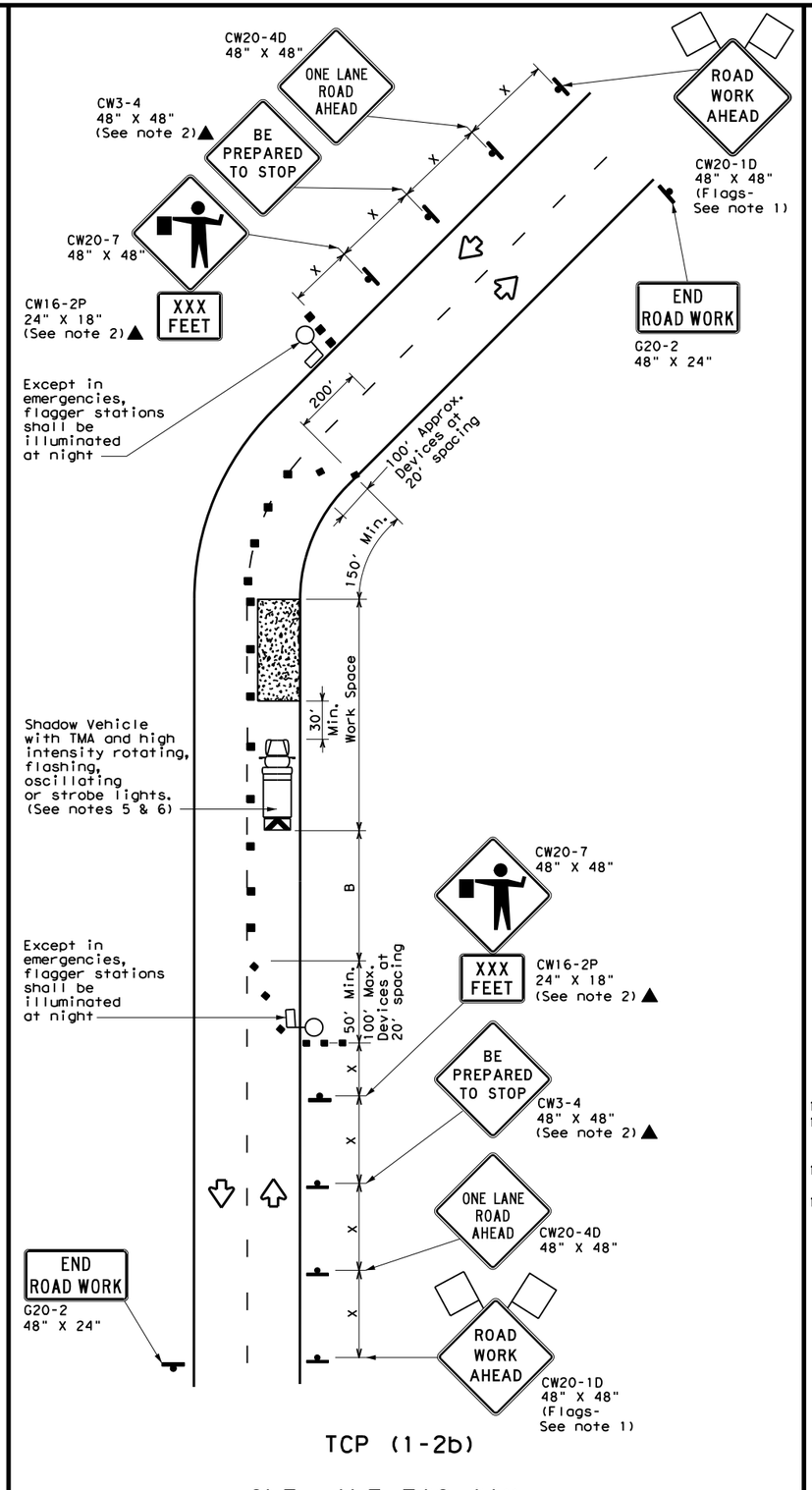
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		28

DATE: 10/21/2021 10:28:47 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\tcp1-2-18.dgn



TCP (1-2a)

ONE LANE TWO-WAY CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. 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.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

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

TCP (1-2b)

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

Texas Department of Transportation

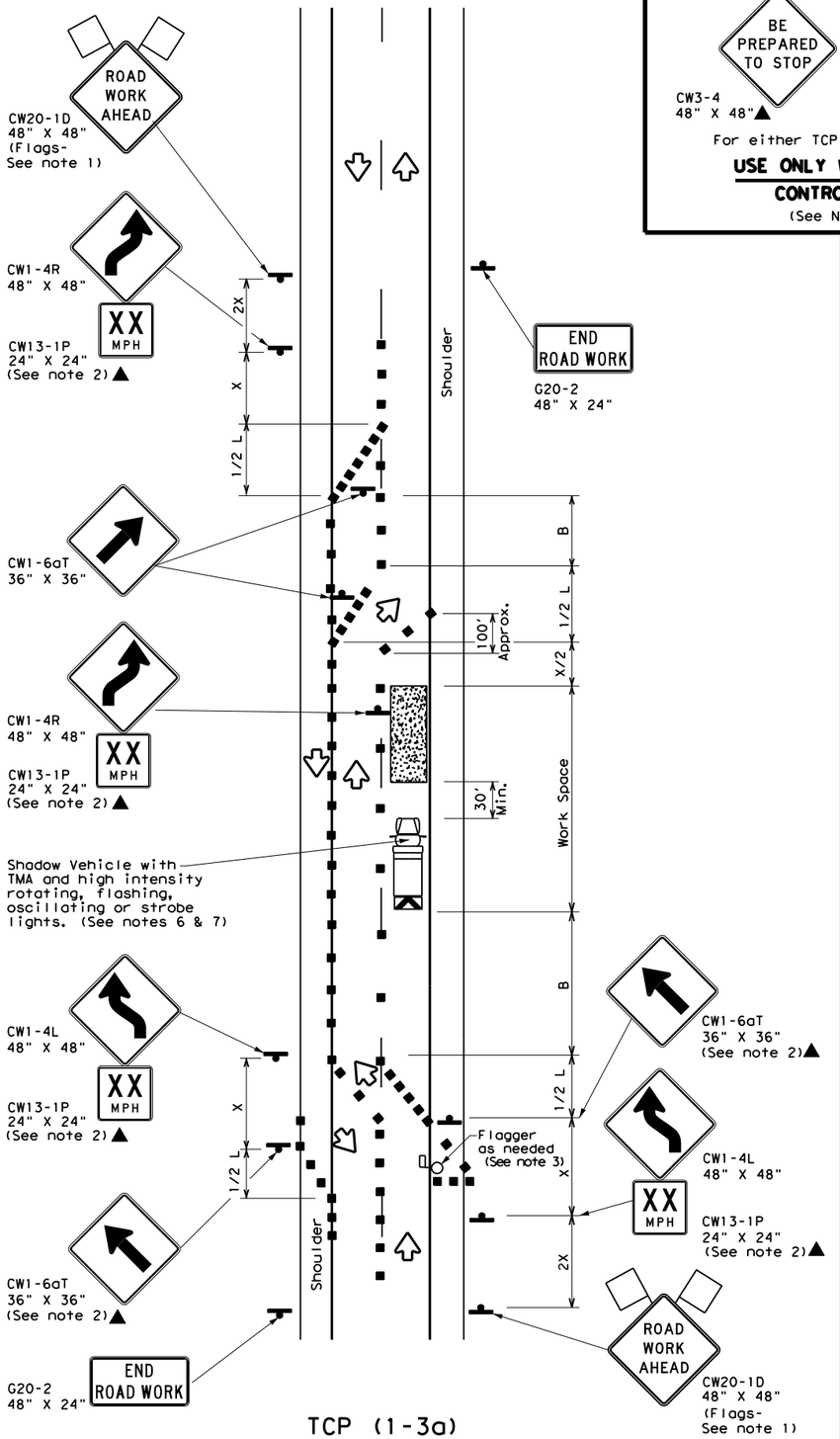
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-18

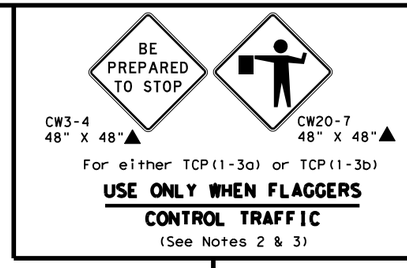
FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98 2-94 2-12 1-97 2-18	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		29

DATE: 10/21/2021 10:29:01 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\tcp1-3-18.dgn



TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

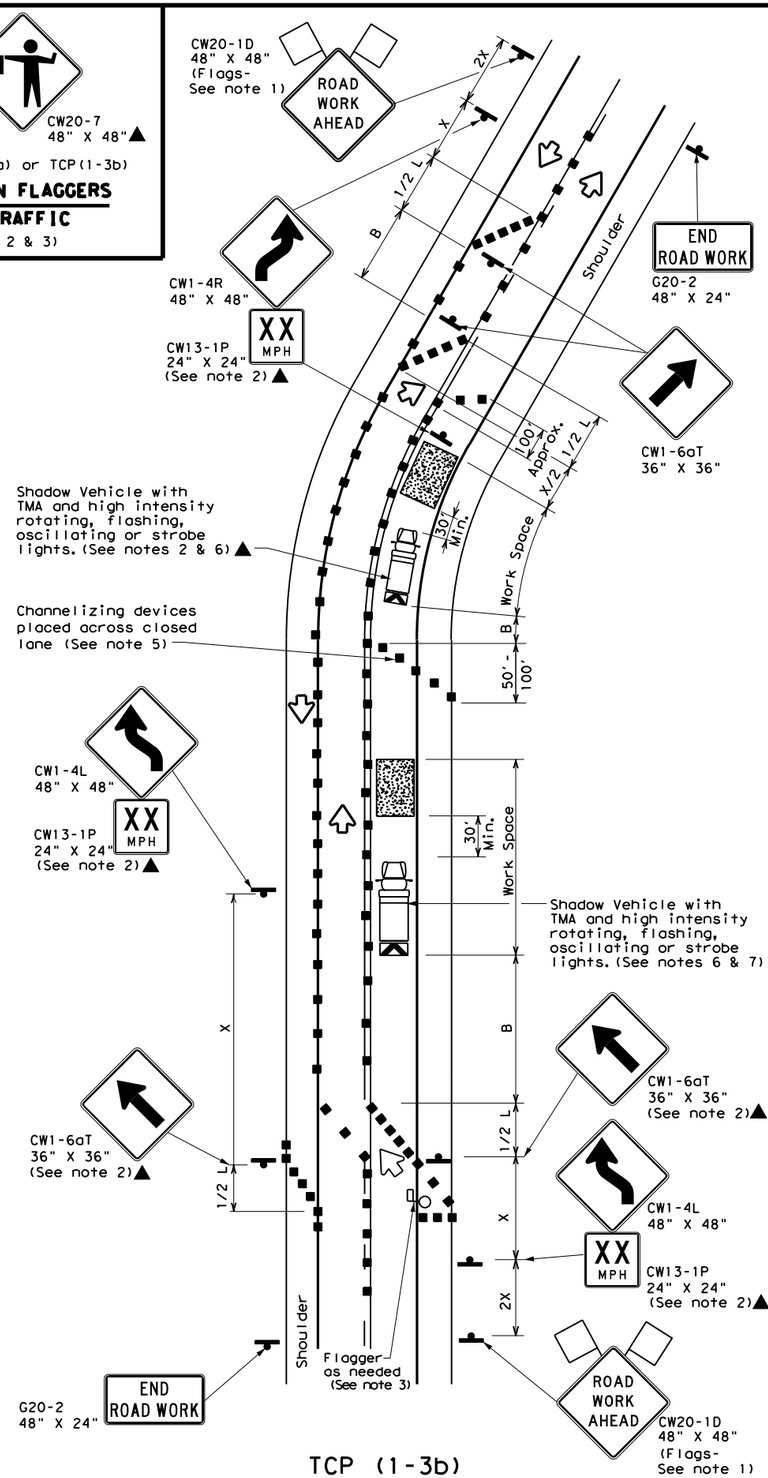
ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



For either TCP(1-3a) or TCP(1-3b)

USE ONLY WHEN FLAGGERS CONTROL TRAFFIC

(See Notes 2 & 3)



TCP (1-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
8. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20', or 15' if posted speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings not the entire work zone.

Texas Department of Transportation

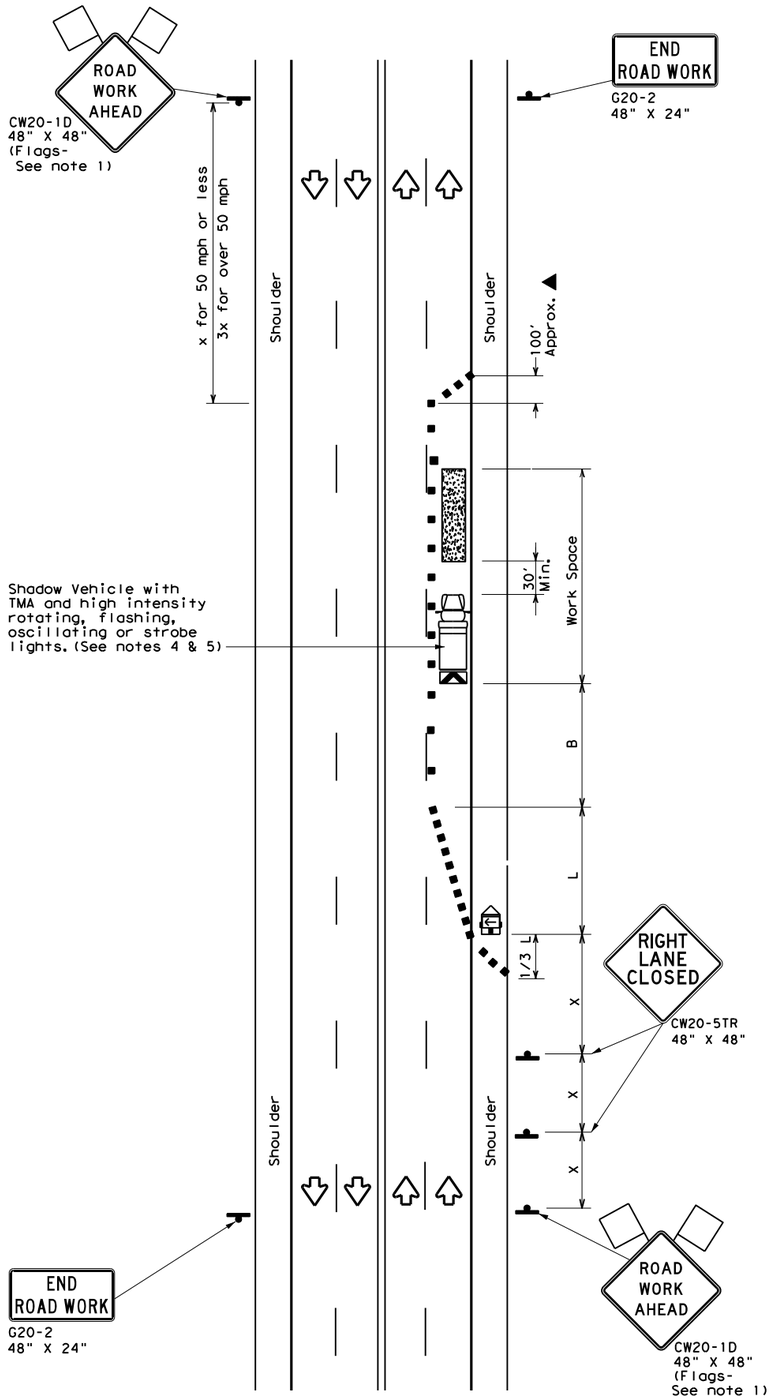
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

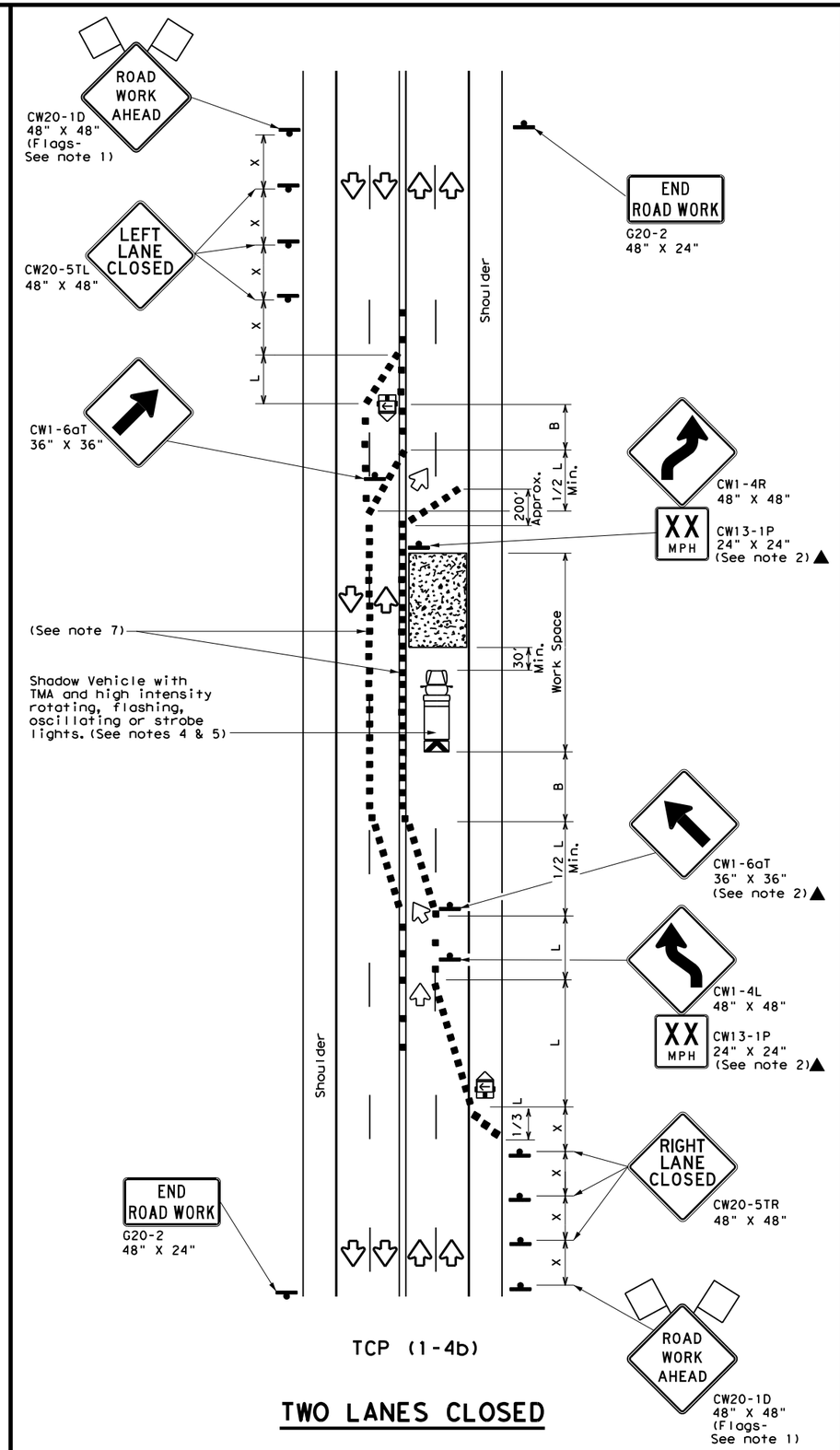
FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	WACO	HILL		30
1-97 2-18				

DATE: 10/21/2021 10:29:13 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\tcp1-4-18.dgn



TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

TWO LANES CLOSED

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

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

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

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

GENERAL NOTES

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

TCP (1-4a)

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

TCP (1-4b)

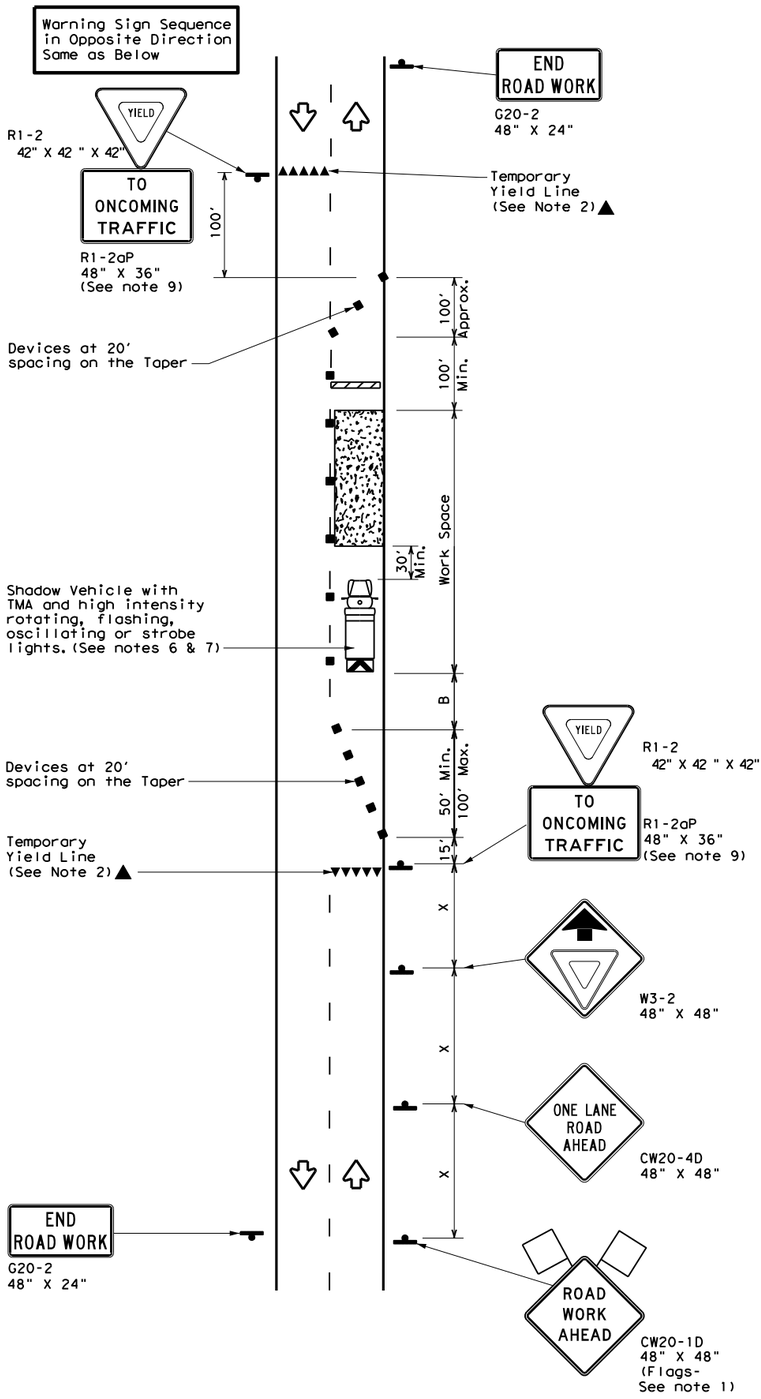
7. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the areas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

Texas Department of Transportation | Traffic Operations Division Standard

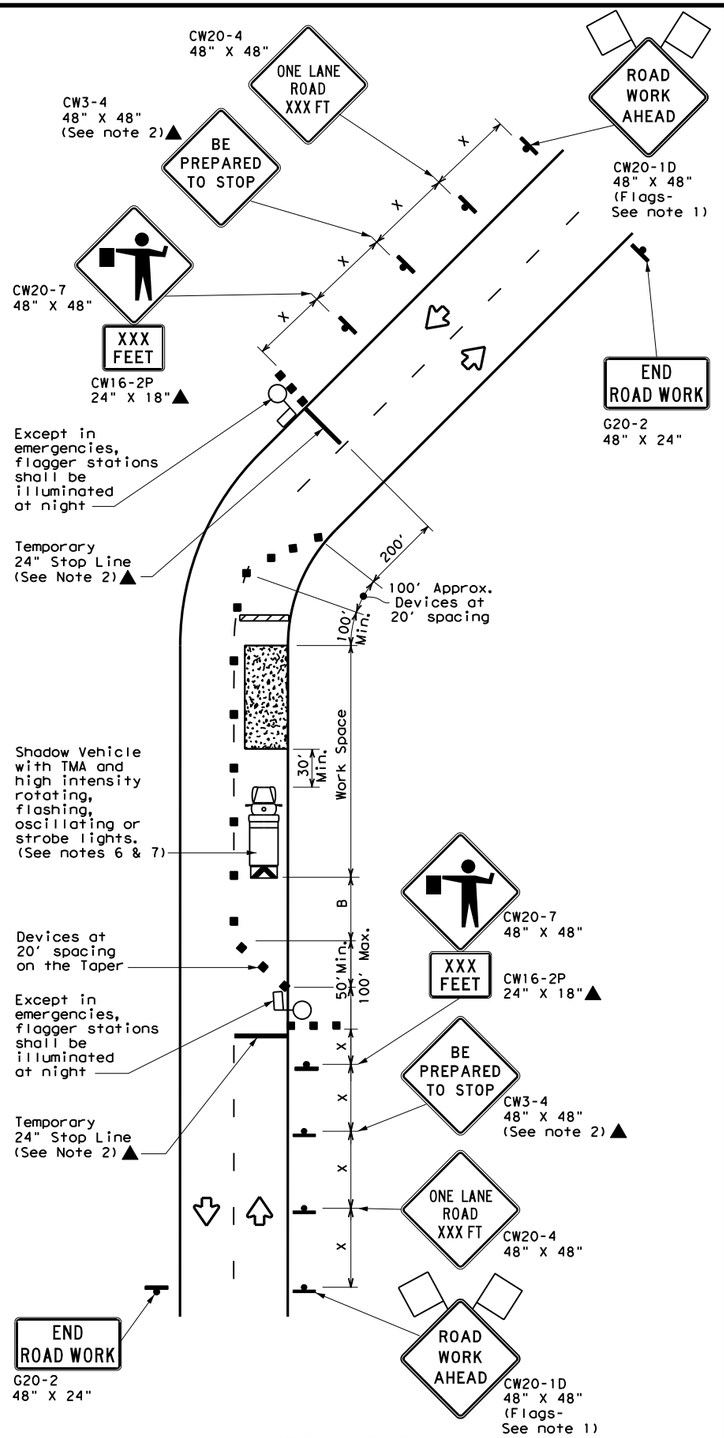
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(1-4)-18

FILE: tcp1-4-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	WACO	HILL		31
1-97 2-18				



TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-2a)

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

TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

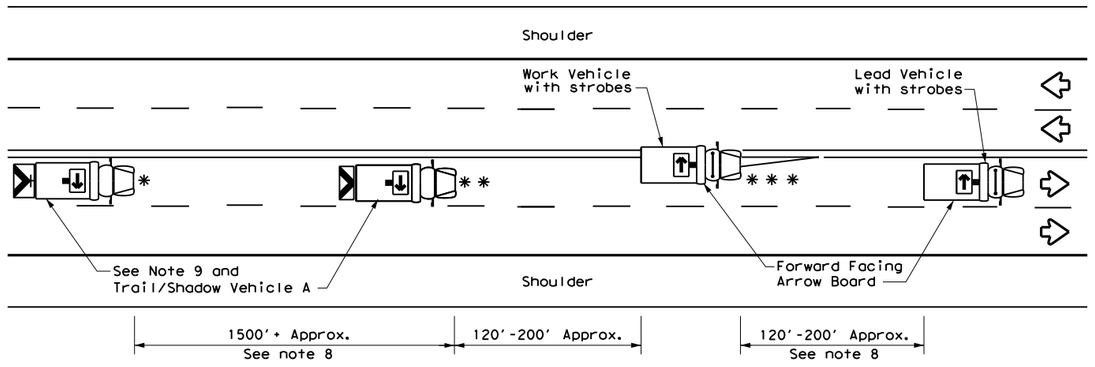
Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-18

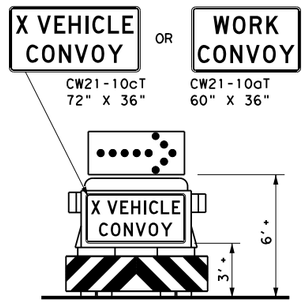
FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	WACO	HILL		32
4-98 2-18				

DATE: 10/21/2021 10:29:26 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\tcp2-2-18.dgn



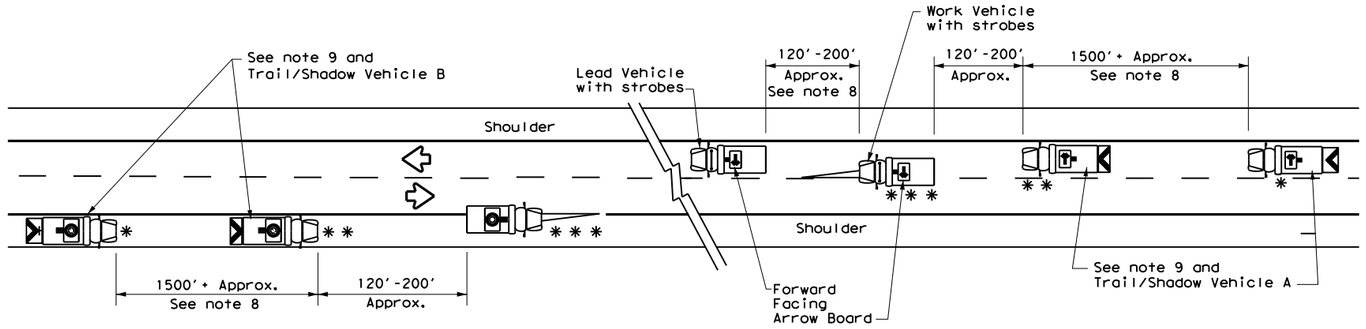
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

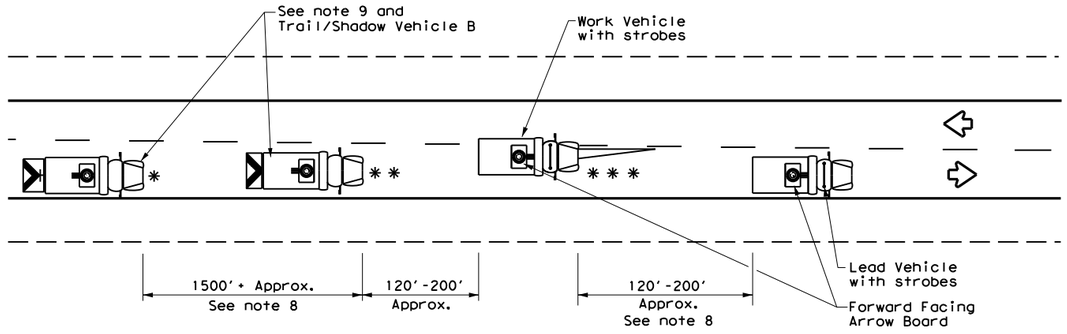
with RIGHT Directional display Flashing Arrow Board



WORK ON SHOULDER — WORK ON TRAVEL LANE

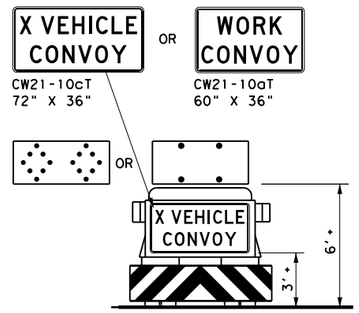
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

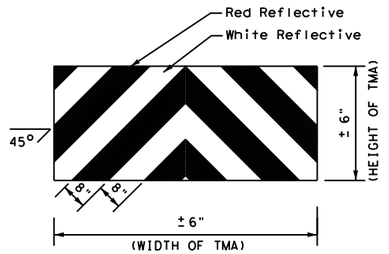
with Flashing Arrow Board in CAUTION display

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 the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



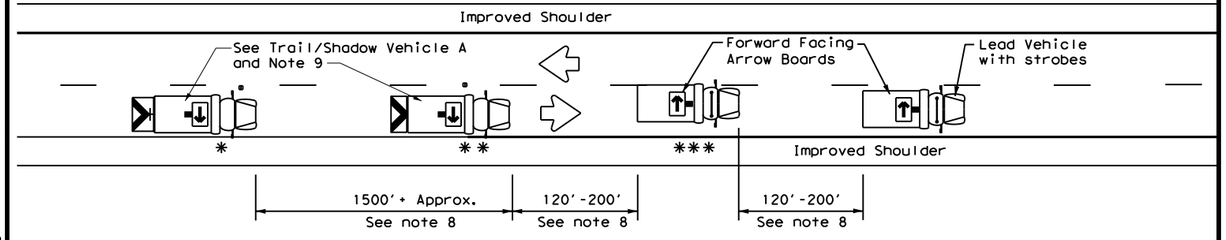
STRIPING FOR TMA

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

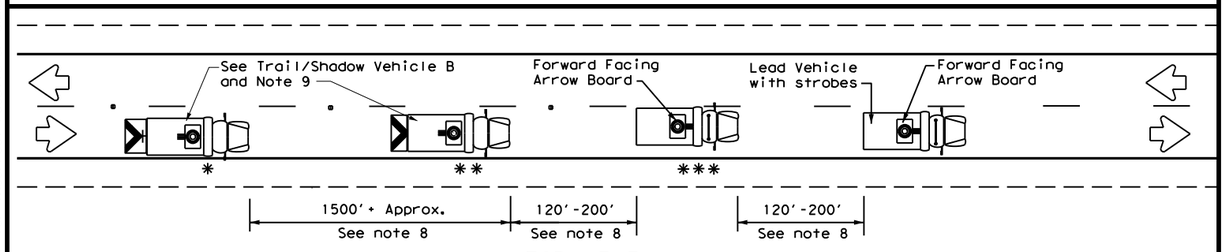
TCP(3-1)-13

FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		33



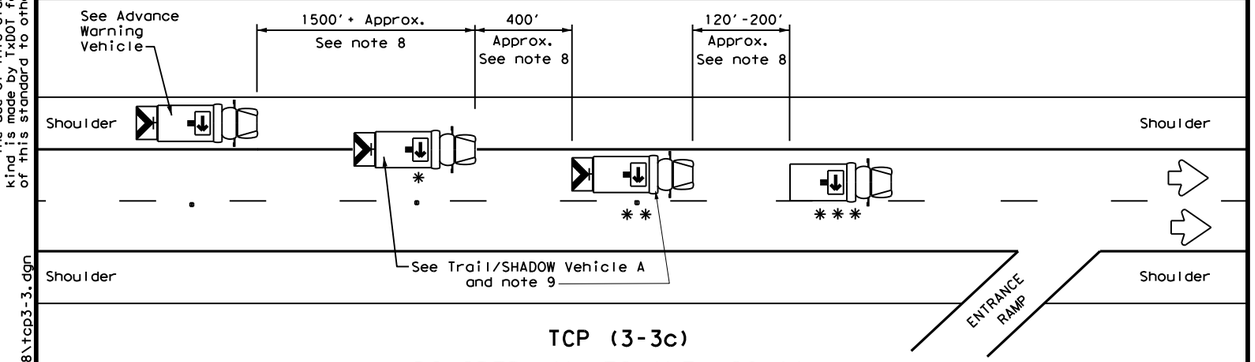
TCP (3-3a)

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



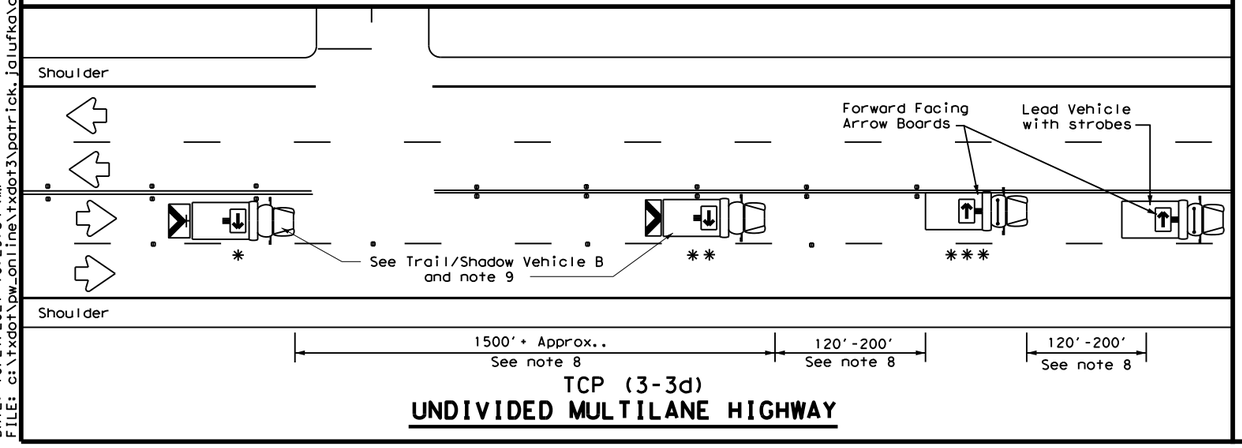
TCP (3-3b)

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



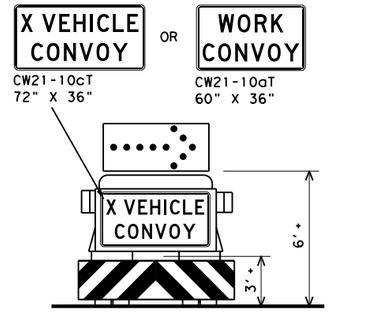
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



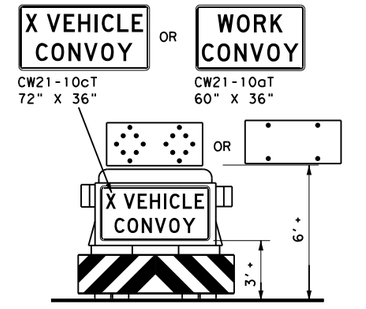
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



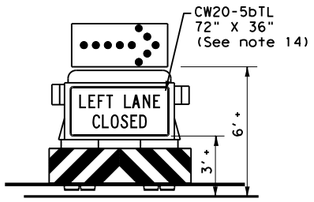
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

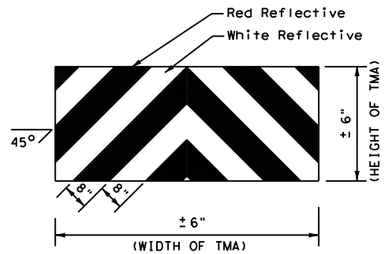


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

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

Texas Department of Transportation

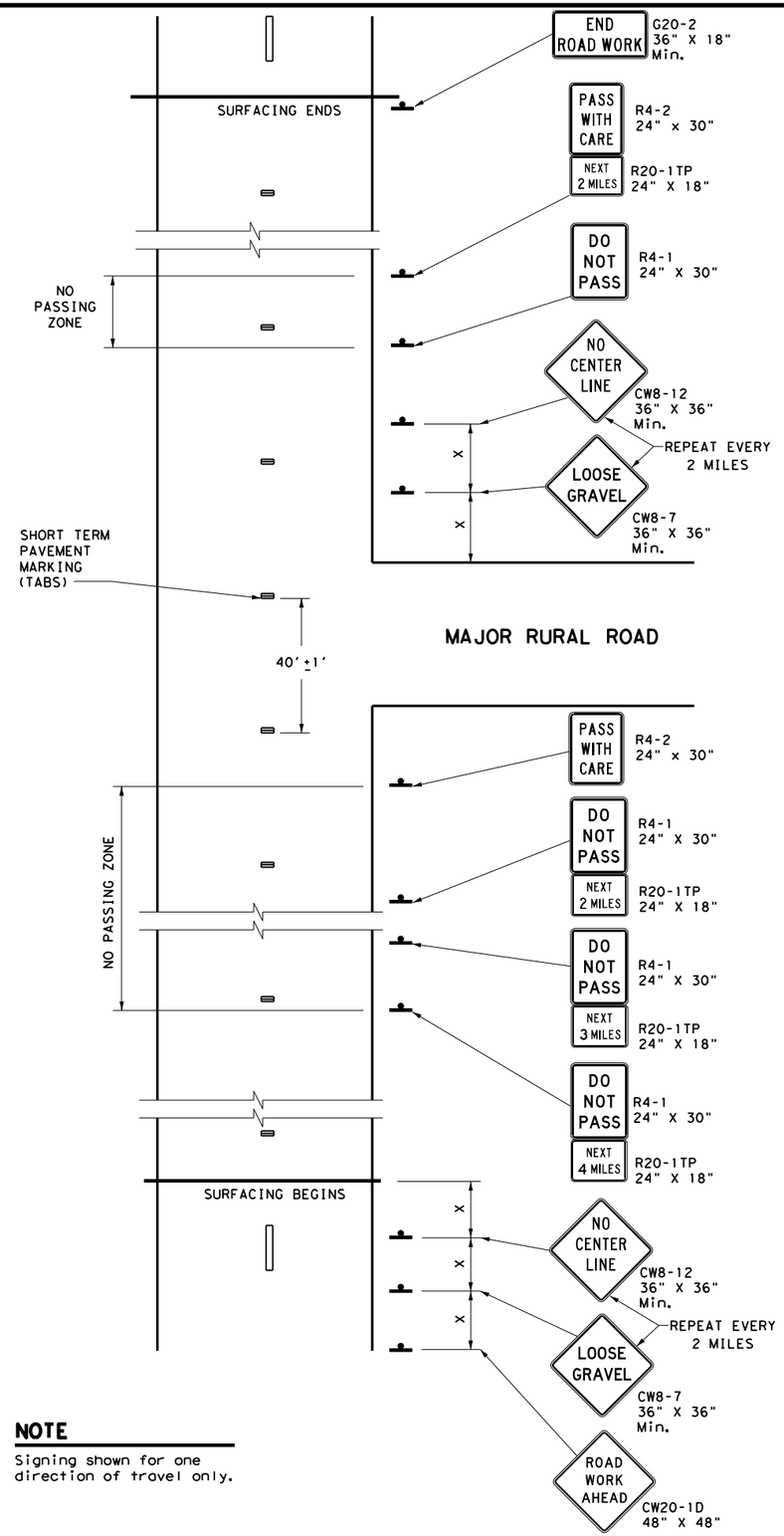
Traffic Operations Division Standard

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

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	WACO	HILL		34
1-97 7-14				

DATE: 10/21/2021 10:29:54 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\tcp3-3.dgn

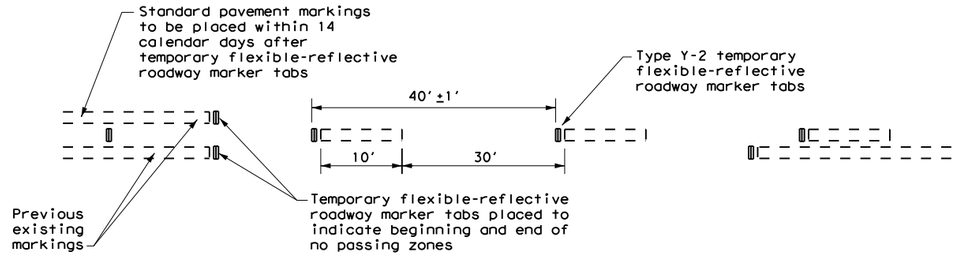
DATE: 10/21/2021 10:30:09 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\tcp7-1.dgn



NOTE

Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS

For seal coat, micro-surface or similar operations

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

A. Prior to the beginning of construction, all currently striped no-passing zones shall be signed with the DO NOT PASS (R4-1) signs and PASS WITH CARE (R4-2) signs placed at the beginning and end of each zone for each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.

B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES (R20-1TP) plaque may be used at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where there is considerable distance between no-passing zones, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.

C. Depending on traffic volumes and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque should be used and repeated as often as necessary for this purpose. Where several existing zones are to be combined into one individual no-passing zone, the sign at the beginning of the zone should be covered until the surfacing operation has passed this location so as not to have the DO NOT PASS sign conflict with the existing pavement markings. Also, unless one days operation completes the entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zones where the surfacing operation has stopped for the day.

D. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

"NO CENTER LINE" SIGN (CW8-12)

A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.

B. At the time construction activity obliterates the existing center line markings(low volume roads may not have an existing centerline), a NO CENTER LINE (CW8-12) sign should be erected at the beginning of the work area, at approximately 2 mile intervals within the work area, beyond major intersections and other locations deemed necessary by the Engineer.

C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

"LOOSE GRAVEL" SIGN (CW8-7)

A. When construction begins, a LOOSE GRAVEL (CW8-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.

B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

PAVEMENT MARKINGS

A. Temporary markings for surfacing projects shall be Temporary Flexible-reflective Roadway Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping crews or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement
no more than two (2) days before the surfacing is applied. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.

B. Tabs shall not be used to simulate edge lines.

C. Tab placement for overlay/inlay operations shall be as shown on the WZ(STPM) standard sheet.

COORDINATION OF SIGN LOCATIONS

A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.

B. Where possible the ROAD WORK AHEAD (CW20-1D), LOOSE GRAVEL (CW8-7), and NO CENTER LINE (CW8-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-3T) and the TRAFFIC FINES DOUBLE (R20-5T) sign, and one "X" sign spacing prior to the CONTRACTOR (G20-6T)sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

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

* Conventional Roads Only

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

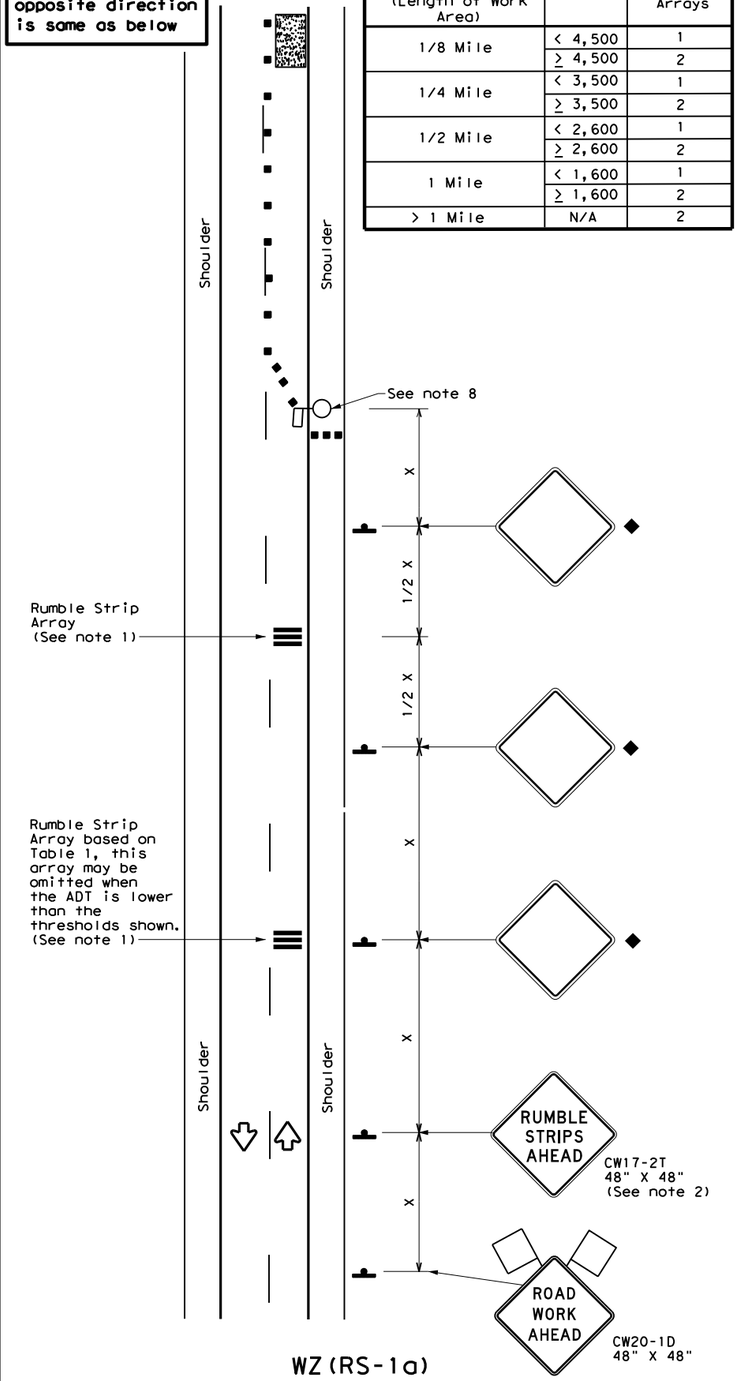
TCP(7-1)-13

FILE: tcp7-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 1991	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
4-92 4-98	DIST	COUNTY		SHEET NO.
1-97 7-13	WACO	HILL		35

DATE: 10/21/2021 10:30:23 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\wzrs16.dgn

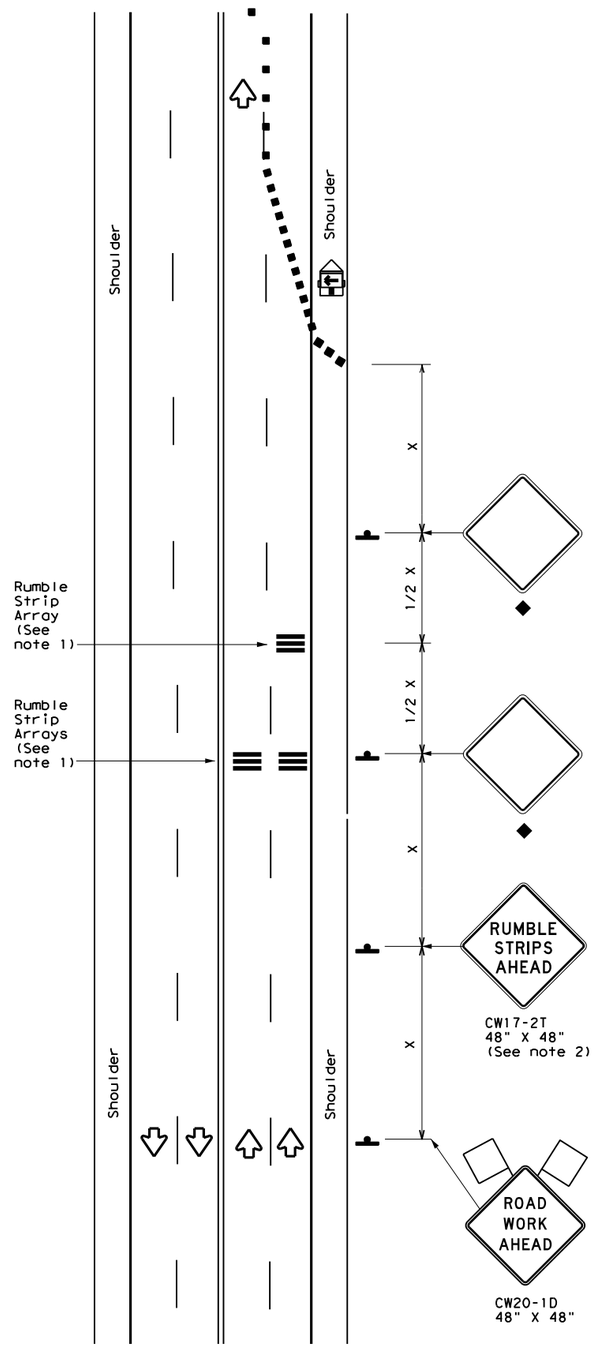
Warning sign and rumble strip sequence in opposite direction is same as below

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



WZ(RS-1a)
75 mph or Less

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)
75 mph or Less

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

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

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

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

* Conventional Roads Only

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

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

◆ **Signs are for illustrative purposes only. Signs required may vary depending on the TCP, TMUTCD Typical Application, or project specific details for the project.**

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

Texas Department of Transportation

Traffic Operations Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-16

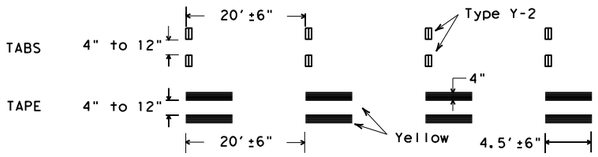
FILE: wzrs16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
2-14	DIST	COUNTY		SHEET NO.
4-16	WACO	HILL		36

DATE: 10/21/2021 10:30:36 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\wzstpm-13.dgn

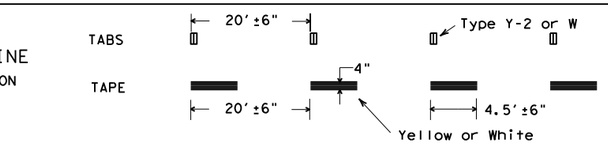
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

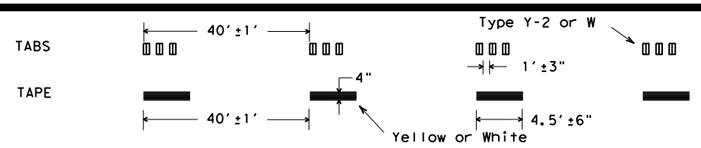


SINGLE NO-PASSING LINE or CHANNELIZATION LINE



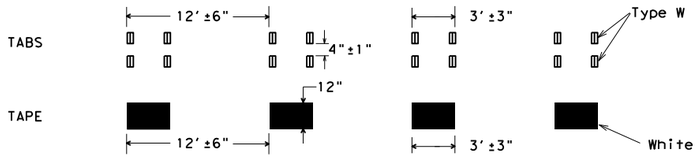
BROKEN LINES

(FOR CENTER LINE OR LANE LINE)

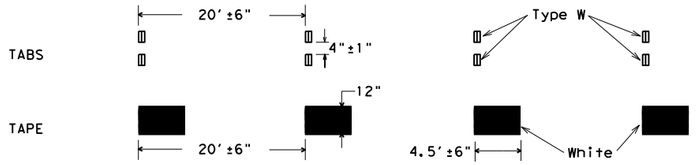


WIDE DOTTED LINES

(FOR LANE DROP LINES)



WIDE GORE MARKINGS



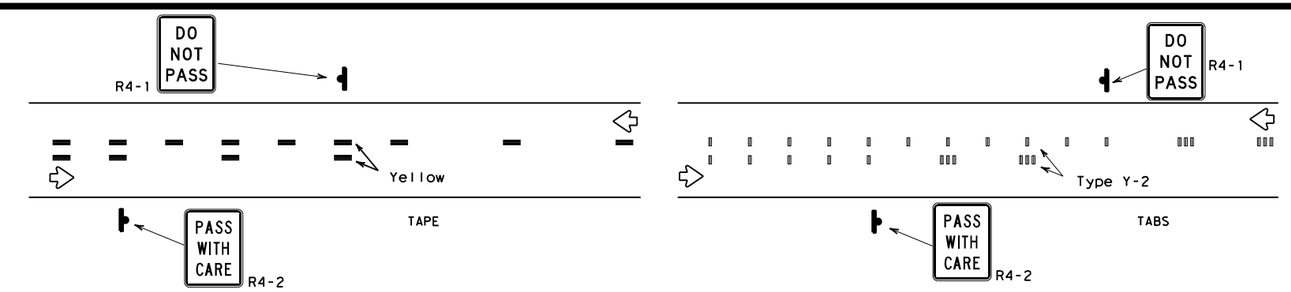
NOTES:

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

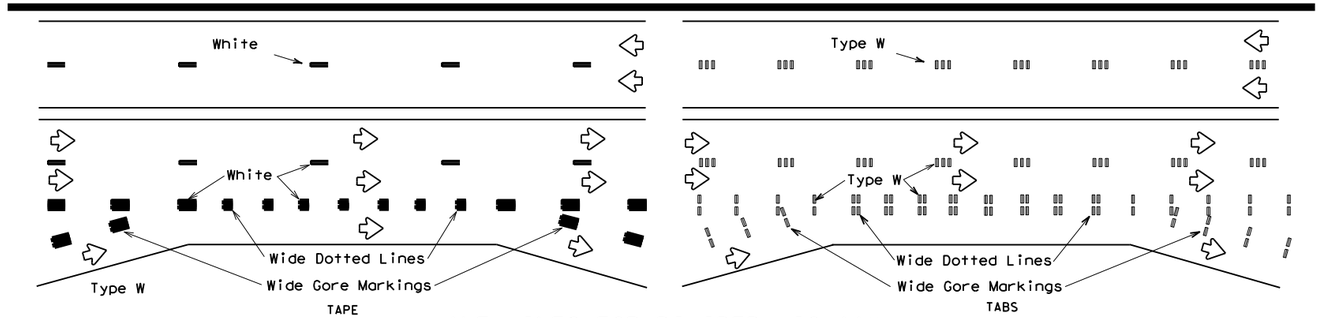
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

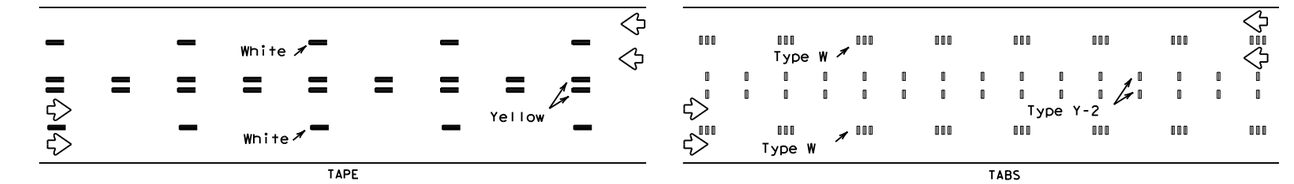
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



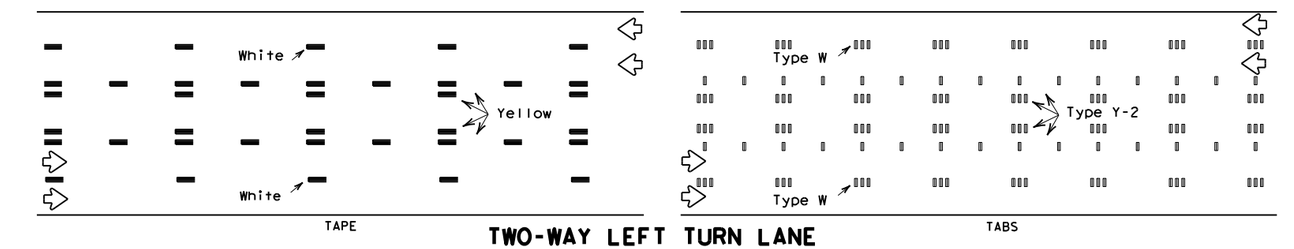
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



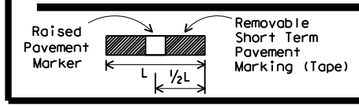
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



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

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

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

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

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

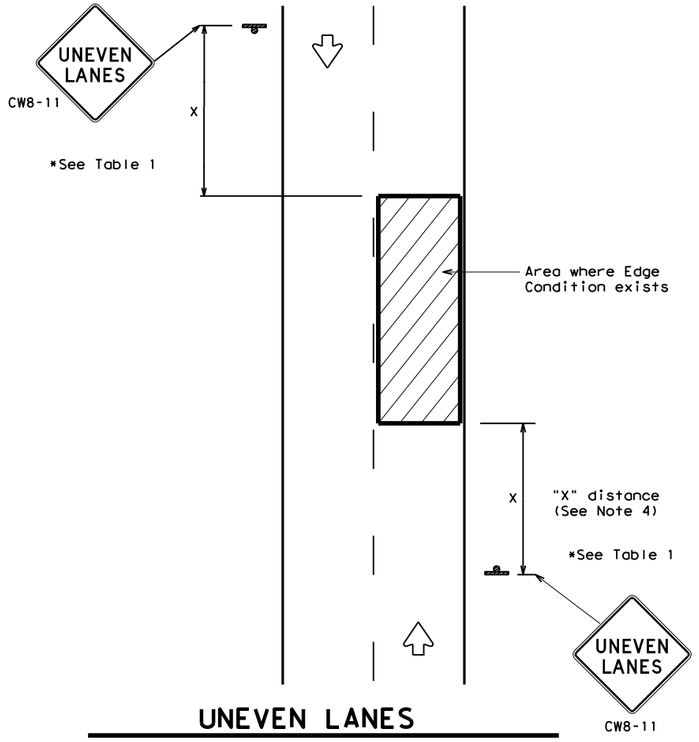
Texas Department of Transportation

Traffic Operations Division Standard

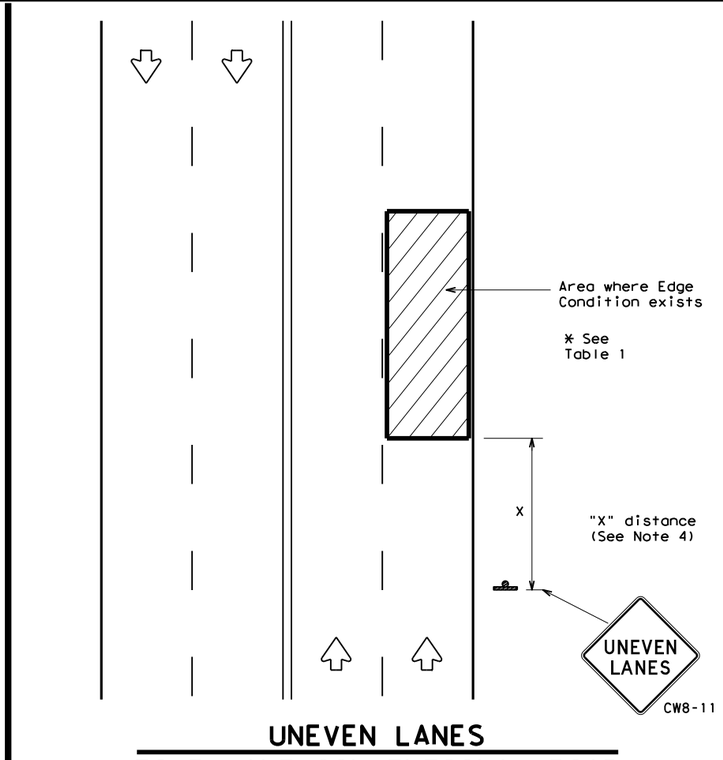
WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-13

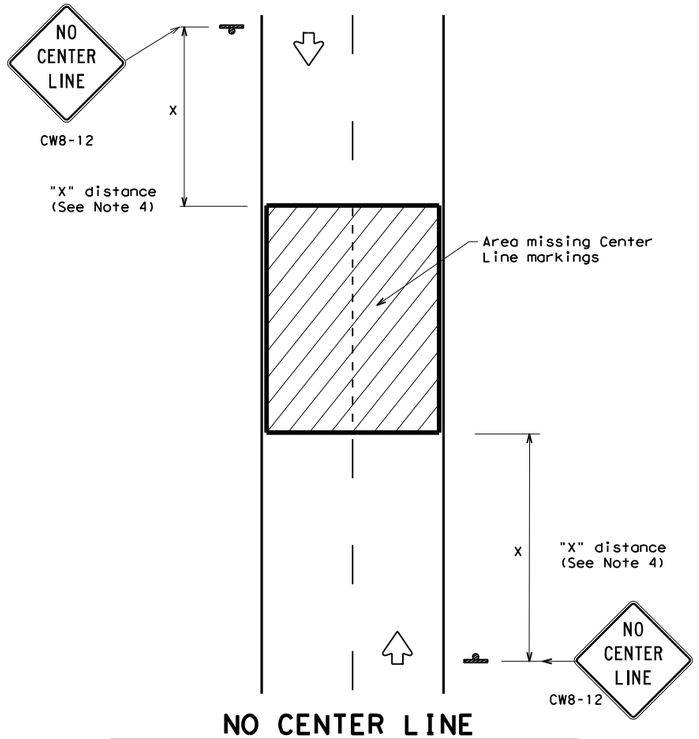
FILE:	wzstpm-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS		0596	01	023	FM 66
1-97		DIST	COUNTY		SHEET NO.
3-03		WACO	HILL		37
7-13					



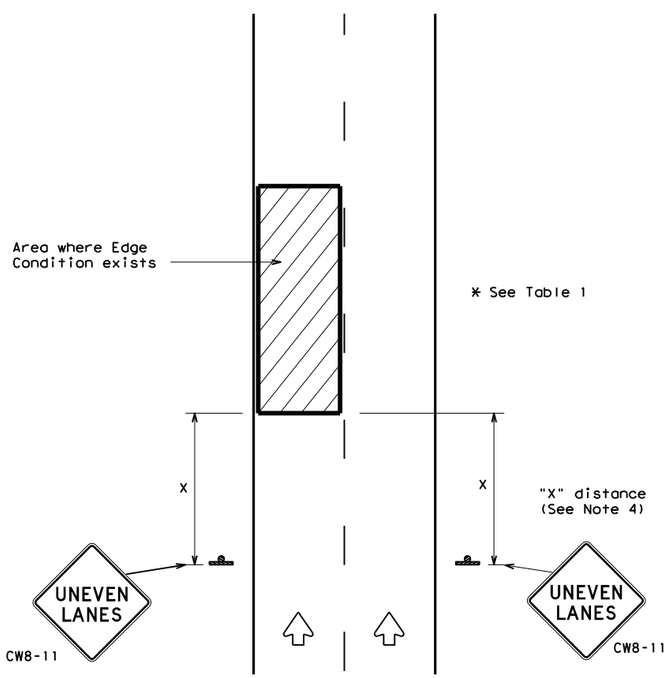
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

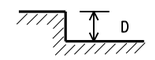
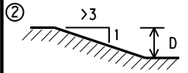
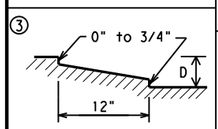
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

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

TABLE 1

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

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

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

Texas Department of Transportation

Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

WZ(UL)-13

FILE: wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
8-95 2-98 7-13	DIST	COUNTY		SHEET NO.
1-97 3-03	WACO	HILL		38

DATE: 10/21/2021 10:30:49 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0368518\wzul-13.dgn

Beginning chain ALIGN66 description

Point 1001 N 6,743,189.3602 E 2,385,077.6887 Sta 0+00.00

Course from 1001 to 1002 N 70° 50' 32.76" E Dist 500.0000

Point 1002 N 6,743,353.4438 E 2,385,549.9986 Sta 5+00.00

Course from 1002 to 1003 N 70° 54' 58.10" E Dist 500.0000

Point 1003 N 6,743,516.9197 E 2,386,022.5191 Sta 10+00.00

Course from 1003 to PC 66CUR1 N 70° 39' 48.58" E Dist 603.1472'

Curve Data

Curve 66CUR1

P.I. Station	16+64.13	N	6,743,736.8238	E 2,386,649.1865
Delta =	30° 19' 48.28" (LT)'			
Degree =	25° 27' 53.25"'			
Tangent =	60.9837			
Length =	119.1059			
Radius =	225.0000			
External =	8.1180			
Long Chord =	117.7201			
Mid. Ord. =	7.8353			
P.C. Station	16+03.15	N	6,743,716.6311	E 2,386,591.6428
P.T. Station	17+22.25	N	6,743,783.3112	E 2,386,688.6573
C.C.		N	6,743,928.9389	E 2,386,517.1418
Back = N	70° 39' 48.58" E			
Ahead = N	40° 20' 00.30" E			
Chord Bear = N	55° 29' 54.44" E			

Course from PT 66CUR1 to PC 66CUR2 N 40° 20' 00.30" E Dist 166.8431'

Curve Data

Curve 66CUR2

P.I. Station	19+27.47	N	6,743,939.7457	E 2,386,821.4803
Delta =	19° 21' 25.30" (RT)'			
Degree =	25° 27' 53.25"'			
Tangent =	38.3731			
Length =	76.0149			
Radius =	225.0000			
External =	3.2488			
Long Chord =	75.6539			
Mid. Ord. =	3.2025			
P.C. Station	18+89.10	N	6,743,910.4942	E 2,386,796.6439
P.T. Station	19+65.11	N	6,743,959.1115	E 2,386,854.6083
C.C.		N	6,743,764.8664	E 2,386,968.1594
Back = N	40° 20' 00.30" E			
Ahead = N	59° 41' 25.60" E			
Chord Bear = N	50° 00' 42.95" E			

Course from PT 66CUR2 to PC 66CUR3 N 59° 41' 25.60" E Dist 834.9494'

Curve Data

Curve 66CUR3

P.I. Station	28+20.64	N	6,744,390.8716	E 2,387,593.1944
Delta =	10° 27' 03.52" (LT)'			
Degree =	25° 27' 53.25"'			
Tangent =	20.5775			
Length =	41.0409			
Radius =	225.0000			
External =	0.9390			
Long Chord =	40.9840			
Mid. Ord. =	0.9351			
P.C. Station	28+00.06	N	6,744,380.4867	E 2,387,575.4296
P.T. Station	28+41.10	N	6,744,404.3067	E 2,387,608.7807
C.C.		N	6,744,574.7318	E 2,387,461.8785
Back = N	59° 41' 25.60" E			
Ahead = N	49° 14' 22.09" E			
Chord Bear = N	54° 27' 53.84" E			

Course from PT 66CUR3 to PC 66CUR4 N 49° 14' 22.09" E Dist 100.1220'

Curve Data

Curve 66CUR4

P.I. Station	29+61.70	N	6,744,483.0479	E 2,387,700.1305
Delta =	10° 24' 06.96" (RT)'			
Degree =	25° 27' 53.25"'			
Tangent =	20.4804			
Length =	40.8483			
Radius =	225.0000			
External =	0.9302			
Long Chord =	40.7922			
Mid. Ord. =	0.9264			
P.C. Station	29+41.22	N	6,744,469.6762	E 2,387,684.6177
P.T. Station	29+82.07	N	6,744,493.3989	E 2,387,717.8026
C.C.		N	6,744,299.2511	E 2,387,831.5199
Back = N	49° 14' 22.09" E			
Ahead = N	59° 38' 29.05" E			
Chord Bear = N	54° 26' 25.57" E			

Course from 66CUR4 to 1008 N 59° 38' 29.05" E Dist 369.9391'

Point 1008 N 6,744,680.3700 E 2,388,037.0153 Sta 33+52.01

Course from 1008 to 1009 N 59° 38' 29.05" E Dist 369.9391'

Point 1009 N 6,744,867.3410 E 2,388,356.2280 Sta 37+21.95

Course from 1009 to 1010 N 59° 32' 18.44" E Dist 295.8271'

Point 1010 N 6,745,017.3135 E 2,388,611.2220 Sta 40+17.78

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

© 2021 Texas Department of Transportation

HORIZONTAL ALIGNMENT DATA

NOT TO SCALE SHEET 1 OF 2

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		39

NODE
10/25/2021
c:\txdot\pw*online\txdot3\anton. lopour\d0142399\Alignment Data1.dgn
1:41:03 PM

Course from 1010 to 1011 N 59° 32′ 18.44" E Dist 295.8271′

Point 1011 N 6,745,167.2860 E 2,388,866.2160 Sta 43+13.60

Course from 1011 to 1012 N 57° 33′ 00.37" E Dist 344.7310′

Point 1012 N 6,745,352.2555 E 2,389,157.1210 Sta 46+58.34

Course from 1012 to 1013 N 57° 33′ 00.37" E Dist 344.7310′

Point 1013 N 6,745,537.2250 E 2,389,448.0260 Sta 50+03.07

Course from 1013 to 1014 N 57° 24′ 38.38" E Dist 342.3964′

Point 1014 N 6,745,721.6445 E 2,389,736.5130 Sta 53+45.46

Course from 1014 to 1015 N 57° 24′ 38.38" E Dist 342.3964′

Point 1015 N 6,745,906.0640 E 2,390,025.0000 Sta 56+87.86

Course from 1015 to 1016 N 57° 29′ 33.56" E Dist 621.7645′

Point 1016 N 6,746,240.2050 E 2,390,549.3480 Sta 63+09.62

Course from 1016 to 1017 N 57° 24′ 32.41" E Dist 868.7631′

Point 1017 N 6,746,708.1541 E 2,391,281.3131 Sta 71+78.39

Course from 1017 to 1018 N 57° 21′ 03.40" E Dist 1,326.7863′

Point 1018 N 6,747,423.9446 E 2,392,398.4550 Sta 85+05.17

Course from 1018 to 1019 N 57° 27′ 49.41" E Dist 1,656.6363′

Point 1019 N 6,748,314.9390 E 2,393,795.0840 Sta 101+61.81

Course from 1019 to PC 66CUR5 N 57° 25′ 04.46" E Dist 2,517.8155′

Curve Data

Curve 66CUR5

P.I. Station	128+03.28	N	6,749,737.3887	E 2,396,020.8388
Delta =	2° 29′ 07.70" (RT)′			
Degree =	1° 00′ 18.68"′			
Tangent =	123.6514			
Length =	247.2640			
Radius =	5,700.0000			
External =	1.3410			
Long Chord =	247.2446			
Mid. Ord. =	1.3407			
P.C. Station	126+79.62	N	6,749,670.8015	E 2,395,916.6476
P.T. Station	129+26.89	N	6,749,799.3949	E 2,396,127.8196
C.C.		N	6,744,867.8633	E 2,398,986.1402

Back = N 57° 25′ 04.46" E

Ahead = N 59° 54′ 12.16" E

Chord Bear = N 58° 39′ 38.31" E

Course from PT 66CUR5 to 1021 N 59° 54′ 12.16" E Dist 1,333.9348′

Point 1021 N 6,750,468.3095 E 2,397,281.9147 Sta 142+60.82

Course from 1021 to 1022 N 59° 41′ 58.12" E Dist 2,030.9146′

Point 1022 N 6,751,492.9780 E 2,399,035.3880 Sta 162+91.74

Course from 1022 to PC 66CUR6 N 59° 42′ 59.76" E Dist 1,997.5057′

Curve Data

Curve 66CUR6

P.I. Station	185+78.62	N	6,752,646.2013	E 2,401,010.2064
Delta =	12° 14′ 05.38" (LT)′			
Degree =	2° 07′ 19.44"′			
Tangent =	289.3767			
Length =	576.5526			
Radius =	2,700.0000			
External =	15.4629			
Long Chord =	575.4578			
Mid. Ord. =	15.3749			
P.C. Station	182+89.24	N	6,752,500.2751	E 2,400,760.3175
P.T. Station	188+65.80	N	6,752,841.7693	E 2,401,223.4951
C.C.		N	6,754,831.8377	E 2,399,398.7683

Back = N 59° 42′ 59.76" E

Ahead = N 47° 28′ 54.38" E

Chord Bear = N 53° 35′ 57.07" E

Course from PT 66CUR6 to 1024 N 47° 28′ 54.38" E Dist 97.0840

Point 1024 N 6,752,907.3810 E 2,401,295.0520 Sta 189+62.88

==========

Ending chain ALIGN66 description

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

HORIZONTAL ALIGNMENT DATA

NOT TO SCALE SHEET 2 OF 2

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		40

BEST FIT VERTICAL PROFILE FOR FM 66, CSJ: 0596-01-023

STATION	ELEVATION	GRADE	L (FEET)	K	CURVE TYPE	DESIGN SPEED (MPH)
10+03.10	704.83	0.35%				
11+50.00	705.34		100	74	CREST	45
		-1.00%				
13+00.00	703.84		200	236	CREST	65
		-1.85%				
17+25.00	695.99		200	131	SAG	55
		-0.32%				
22+00.00	694.47		200	102	SAG	50
		1.65%				
28+00.00	704.34		200	57	CREST	40
		-1.86%				
33+00.00	695.06		300	125	SAG	55
		0.54%				
38+00.00	697.76		100	79	SAG	45
		1.80%				
46+00.00	712.15		600	149	CREST	55
		-2.23%				
54+00.00	694.32		900	465	SAG	80
		-0.29%				
65+00.00	691.09		600	1,198	CREST	80
		-0.79%				
72+25.00	685.33		300	63	SAG	35
		3.96%				
78+25.00	709.08		700	78	CREST	45
		-4.99%				
84+50.00	677.92		400	74	SAG	40
		0.39%				
95+50.00	682.25		800	351	SAG	80
		-1.88%				
104+50.00	665.29		600	336	CREST	75
		-0.10%				
113+00.00	664.43		600	419	SAG	80
		1.33%				
125+00.00	680.42		600	2,419	CREST	80
		1.08%				
147+50.00	704.82		600	333	CREST	75
		-0.72%				
155+00.00	699.43		600	384	SAG	80
		0.84%				
171+50.00	713.33		600	519	SAG	75
		2.00%				
182+60.94	735.52		600	147	SAG	60
		6.09%				
189+62.88	778.26					

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

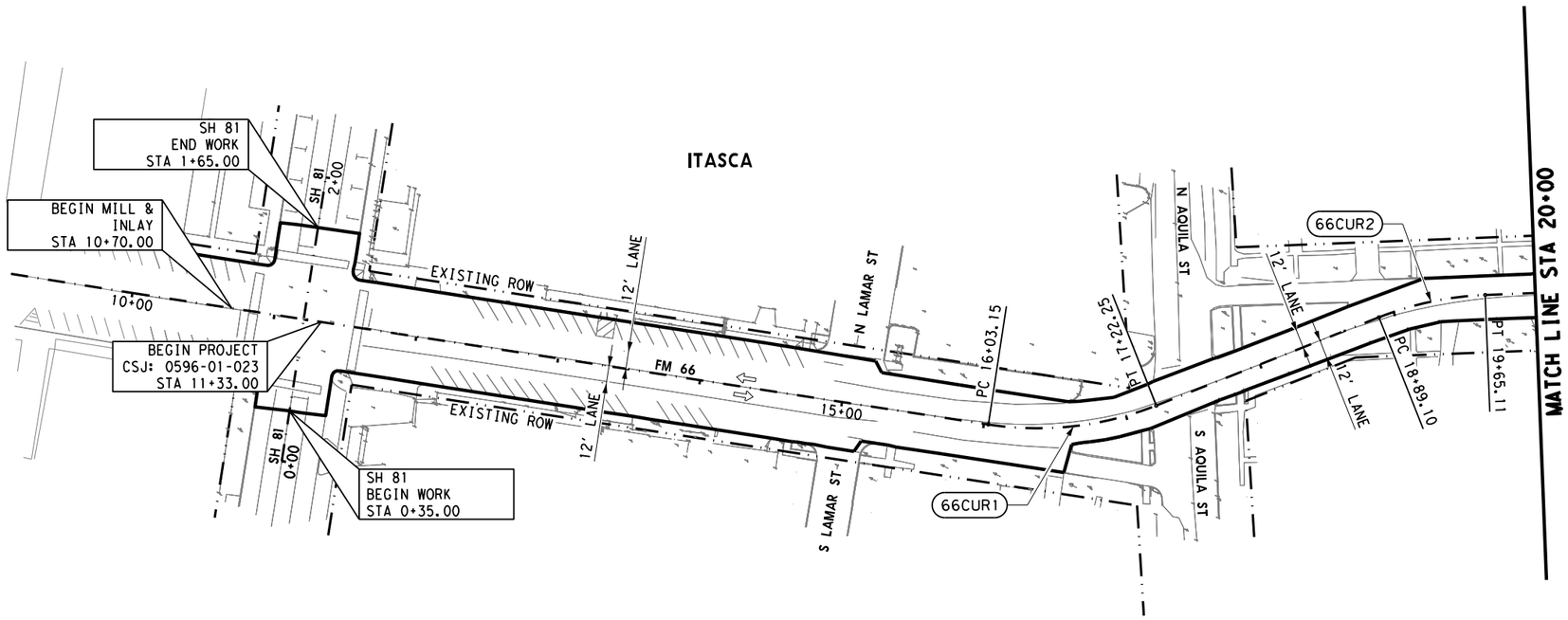
11/2/2021

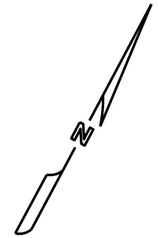
SIGNATURE OF REGISTRANT & DATE

BEST FIT PROFILE

NOT TO SCALE

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		41

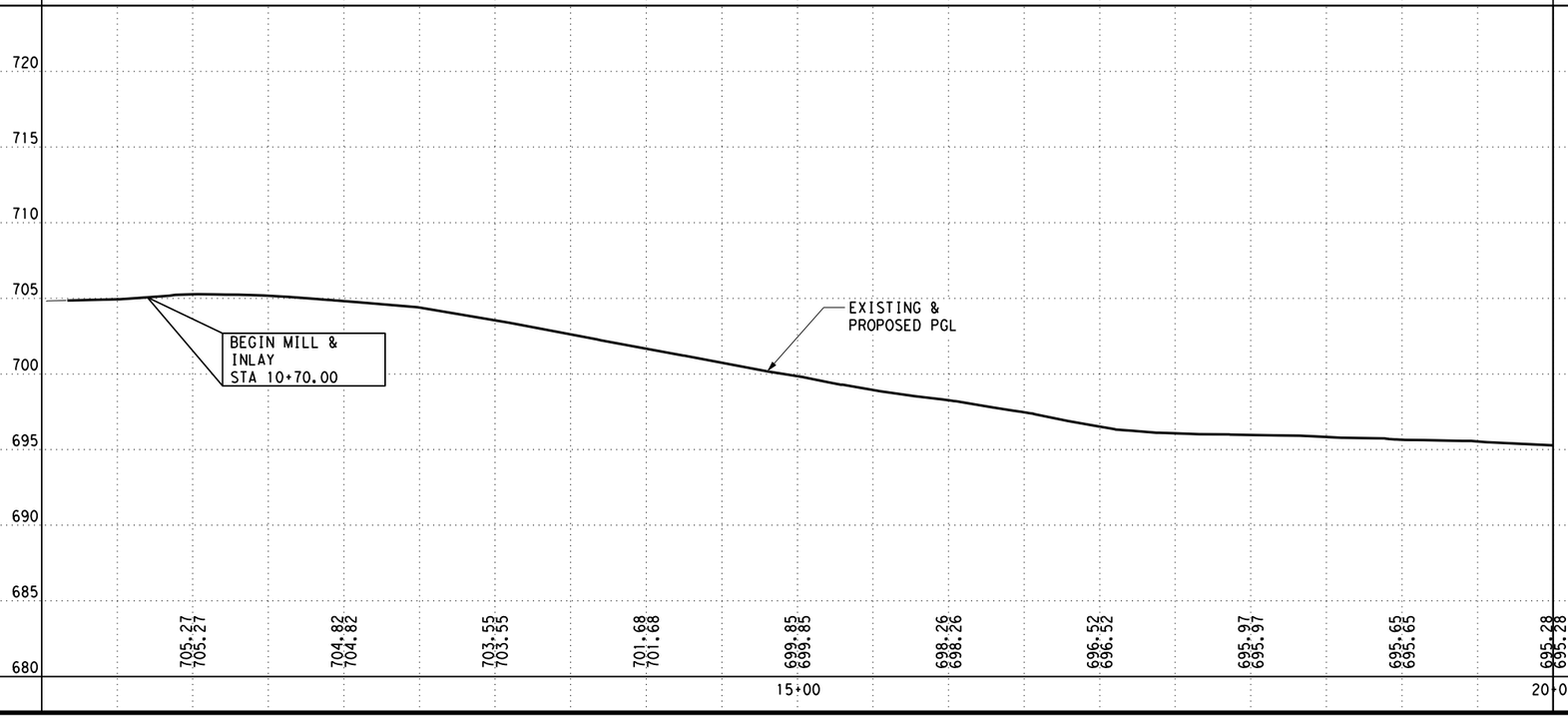




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

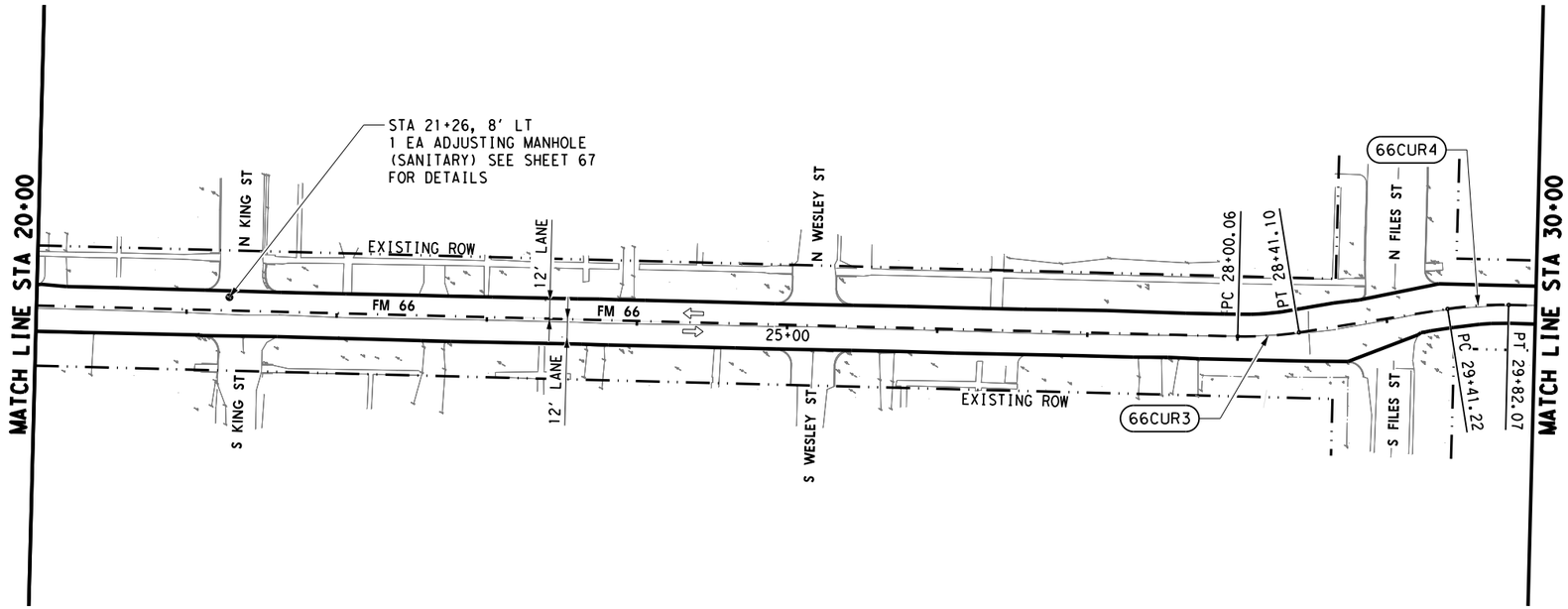
PLAN & PROFILE

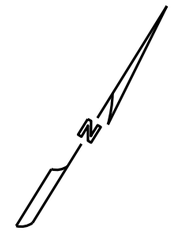
SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 1 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		42

c:\txdot\pw\online\txdot3\anton.lopour\d0142404\PP Sheet 1.dgn
1:41:33 PM
NODE
10/25/2021

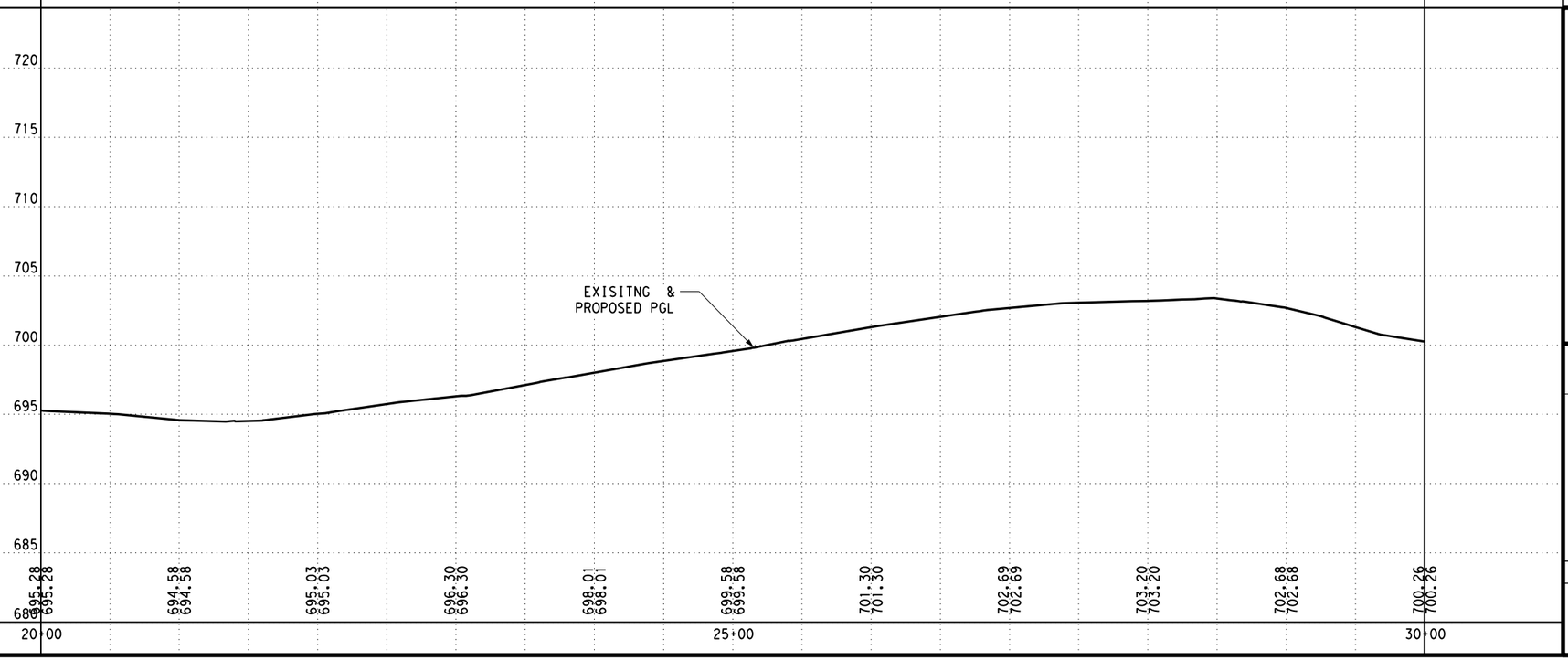




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



P.E.

10/25/2021

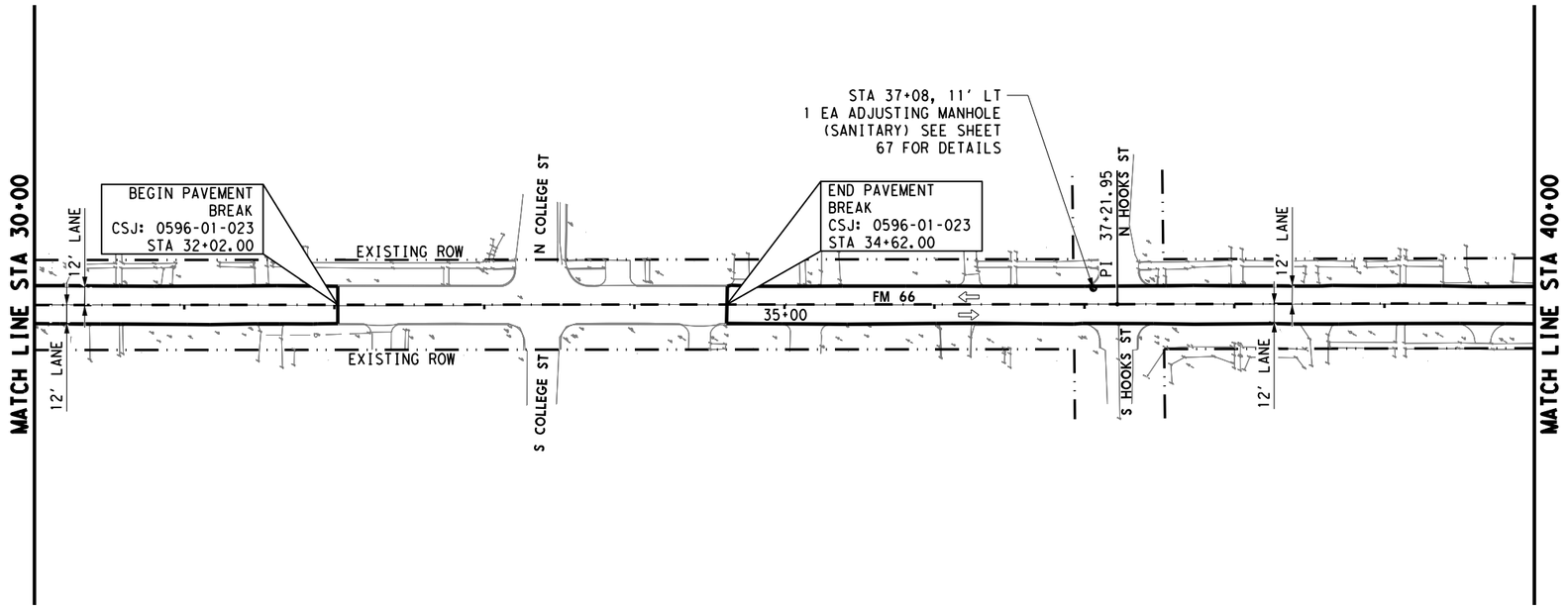
SIGNATURE OF REGISTRANT & DATE

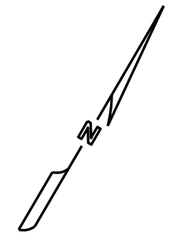
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 2 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		43

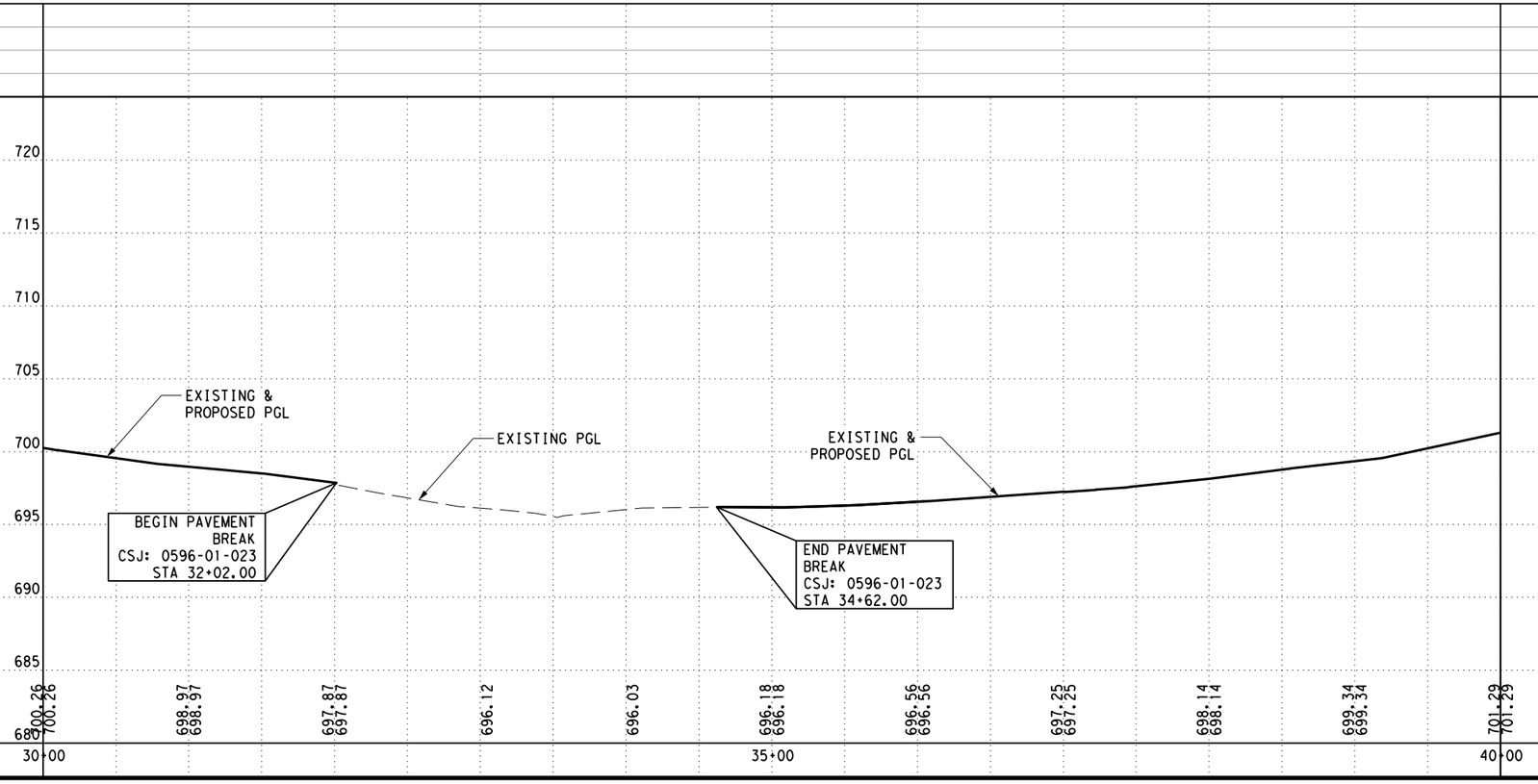




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

Texas Department of Transportation

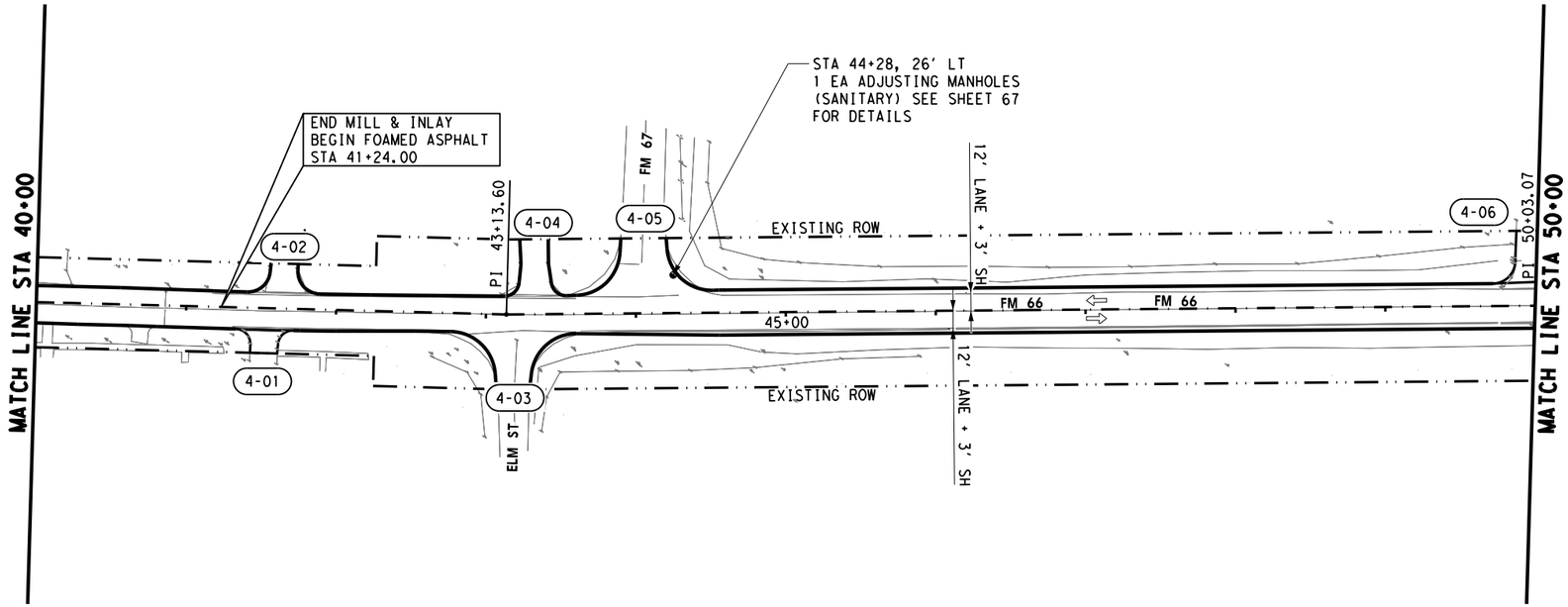
PLAN & PROFILE

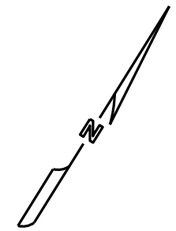
SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 3 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		44

c:\txdot\pw*online\txdot3\anton.lopour\d0142404\PP Sheet 3.dgn
1:41:45 PM
NODE
10/25/2021

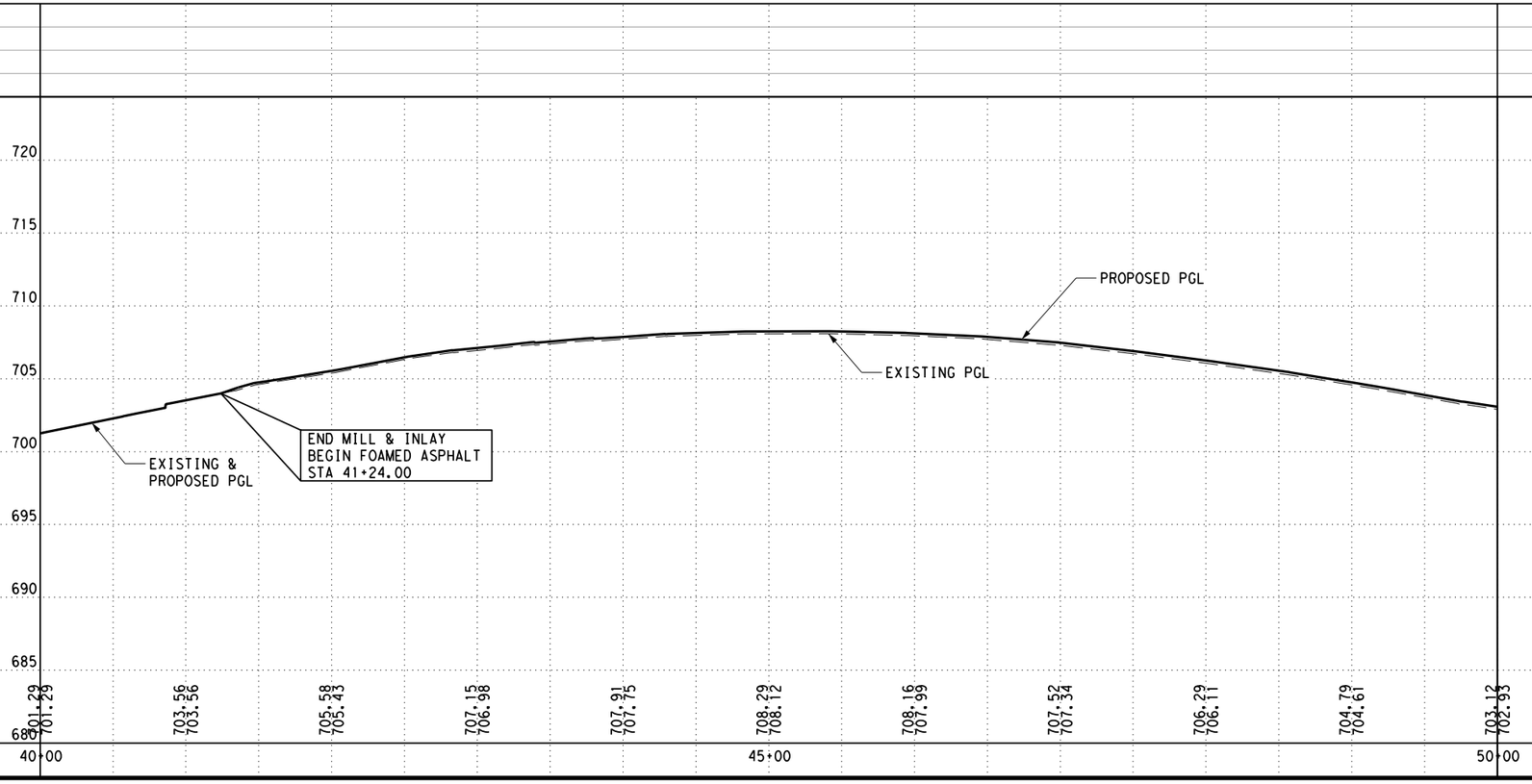




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

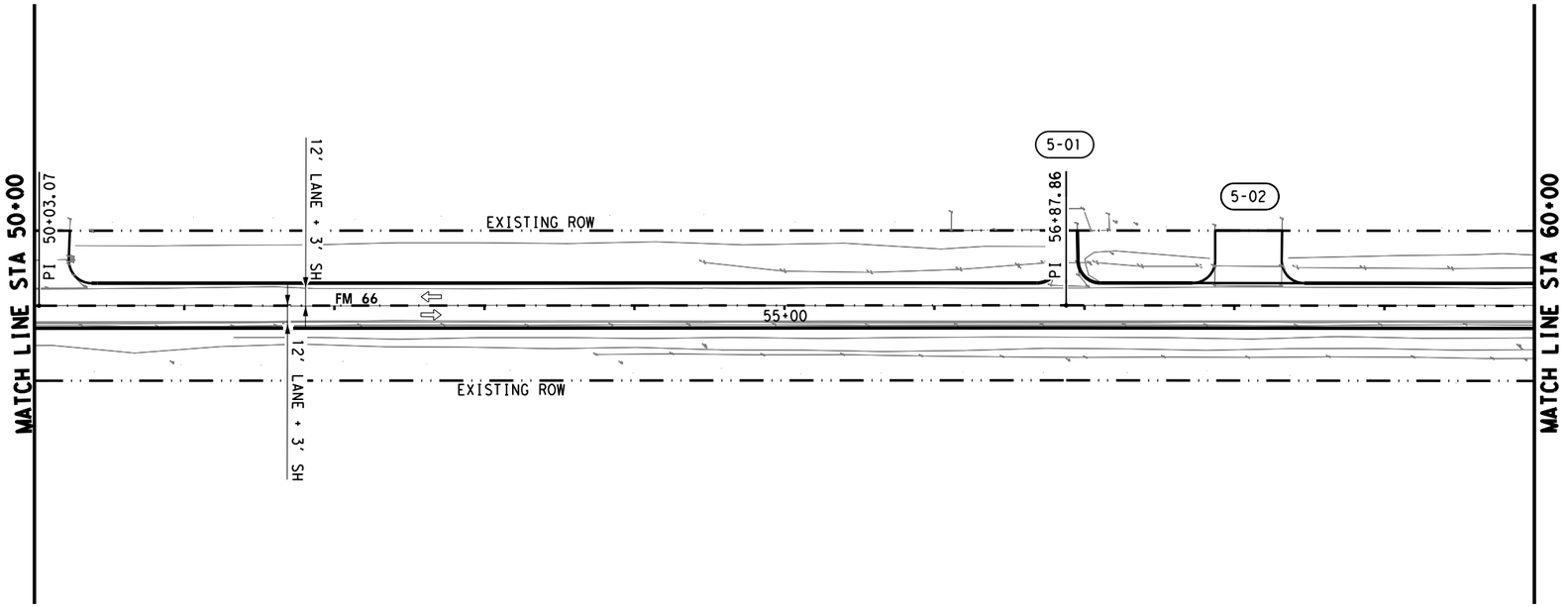
PLAN & PROFILE

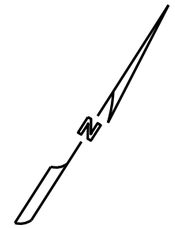
SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 4 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		45

c:\txdot\pw*online\txdot3\anton.lopour\d0142404\PP Sheet 4.dgn
1:41:51 PM
NODE
10/25/2021

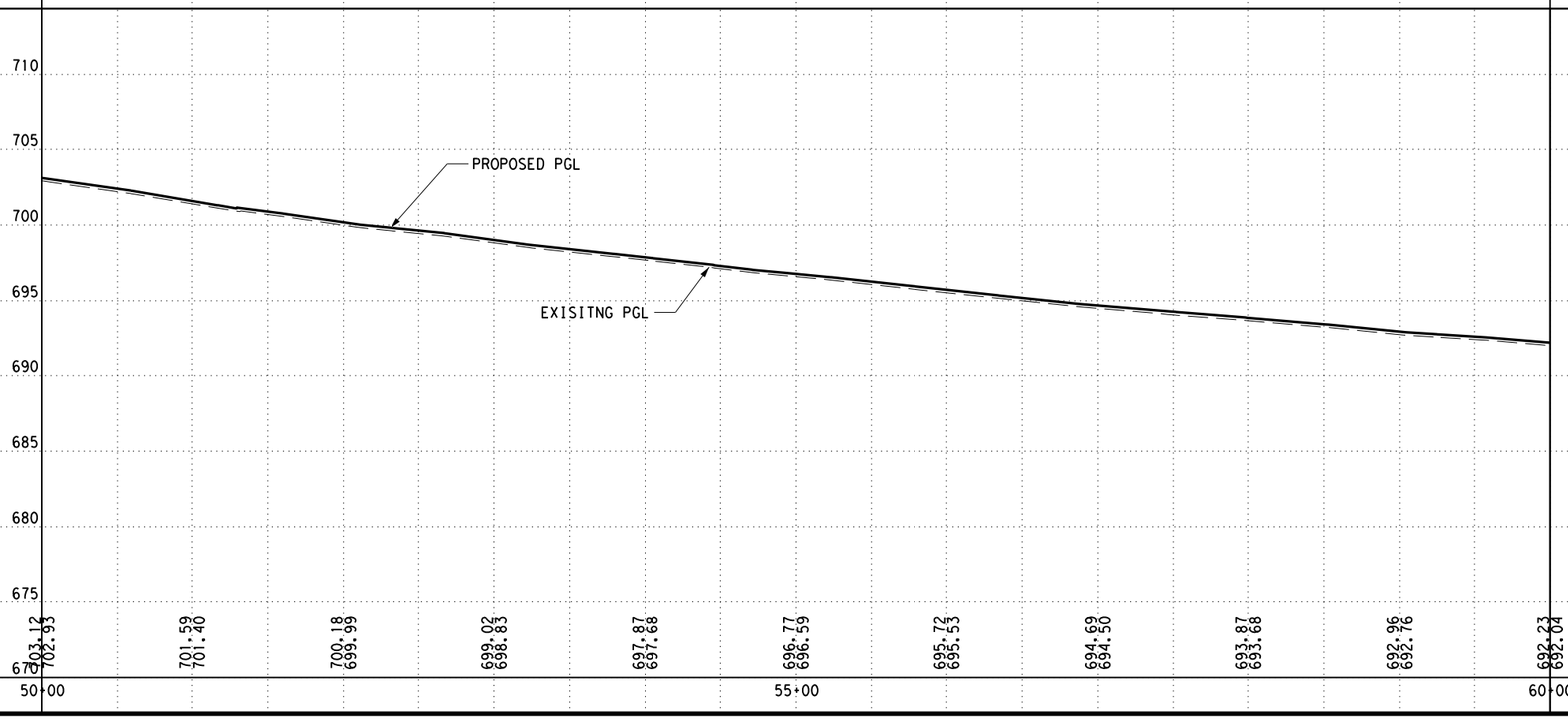




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

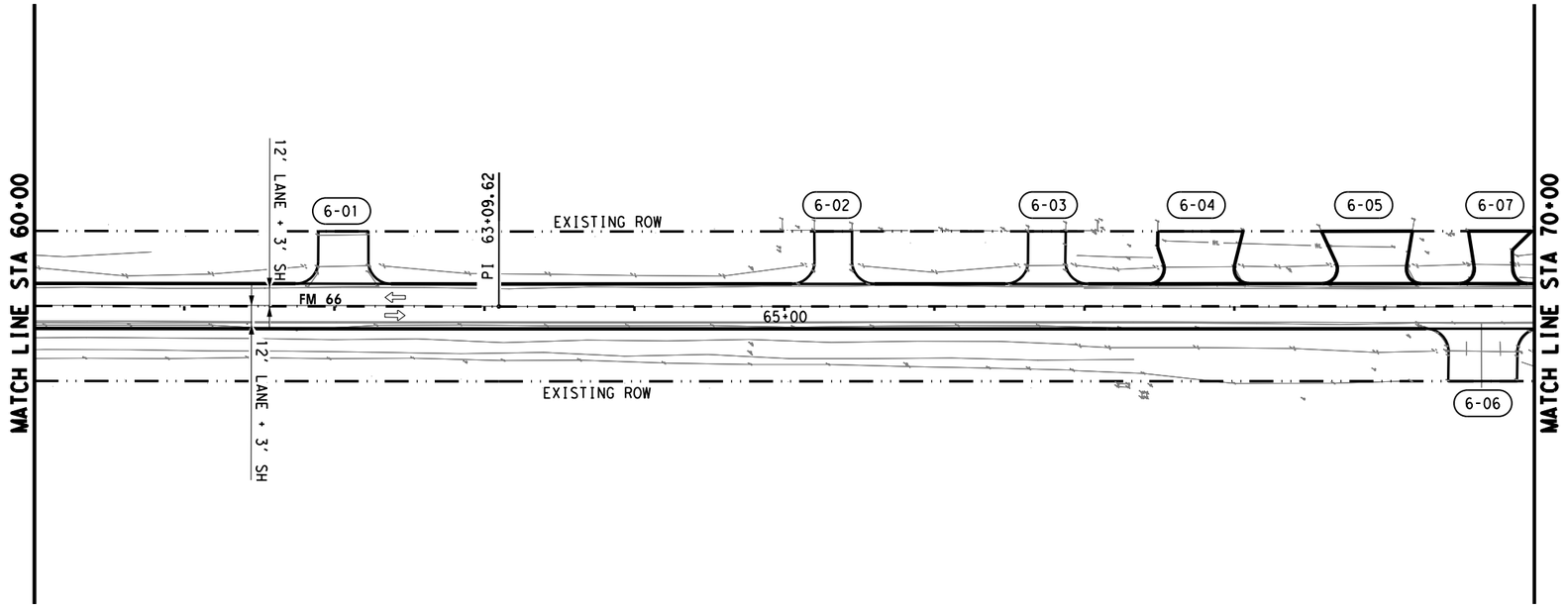
PLAN & PROFILE

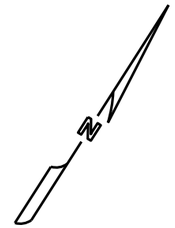
SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 5 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		46

c:\txdot\pw*online\txdot3\anton.lopour\d0142404\PP Sheet 5.dgn
1:41:57 PM
NODE
10/25/2021

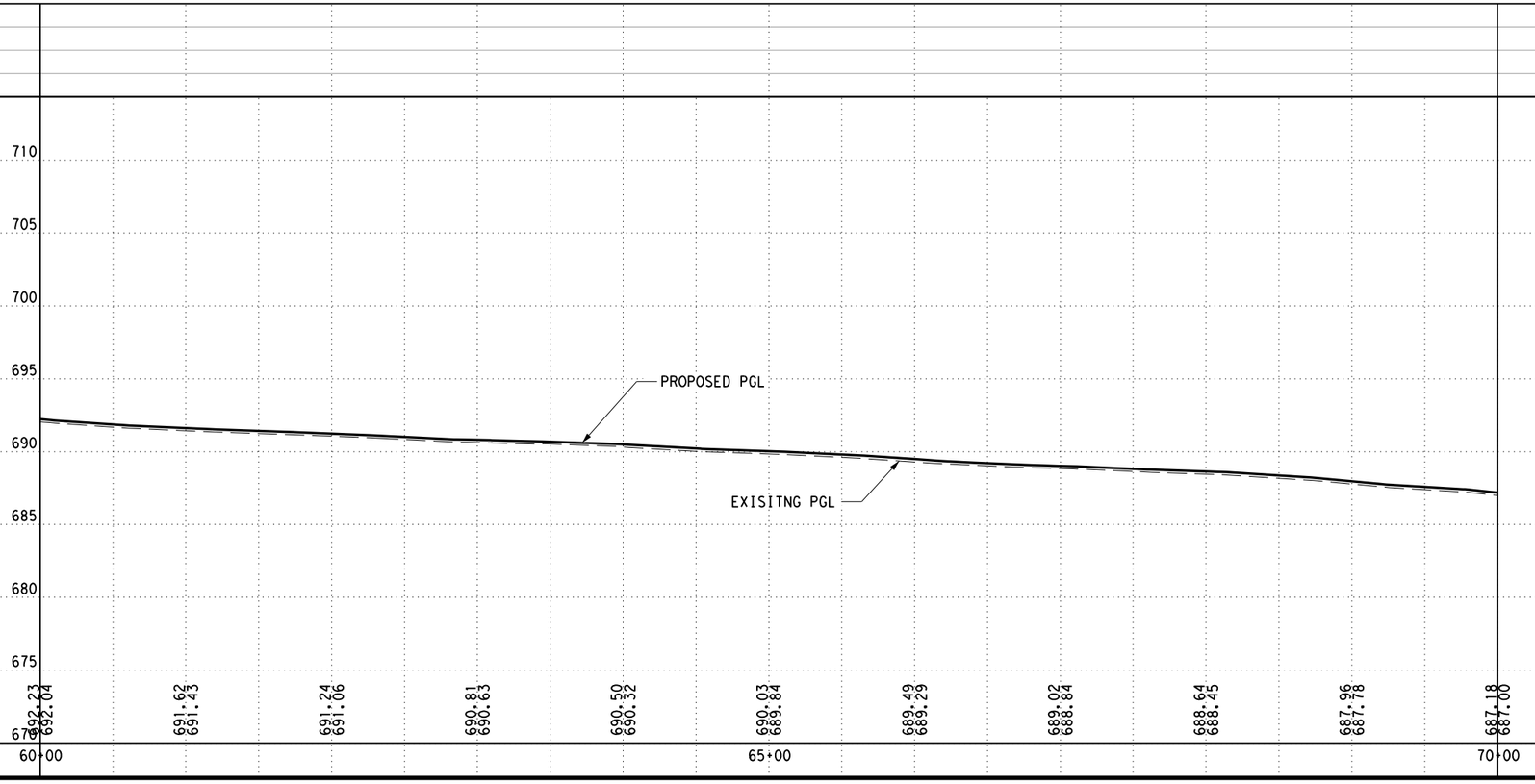




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

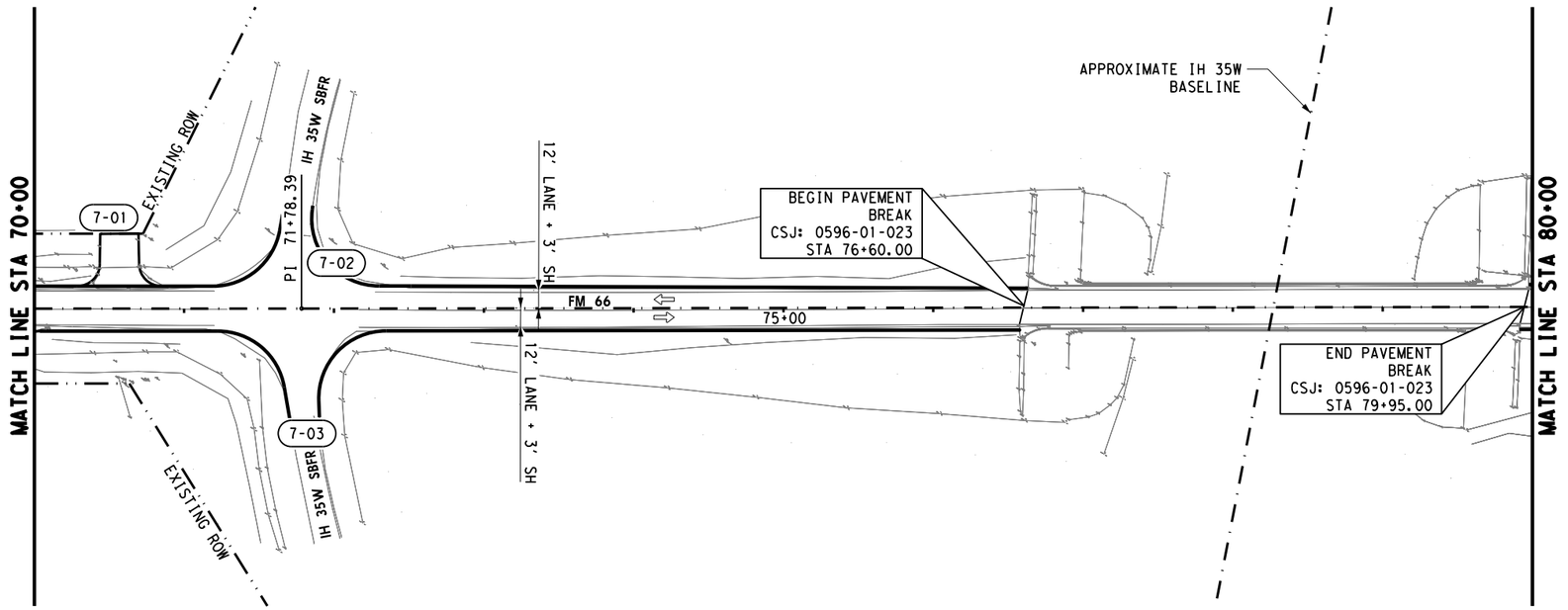
SIGNATURE OF REGISTRANT & DATE

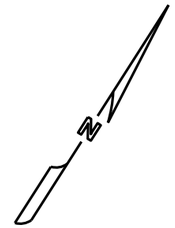
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 6 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		47

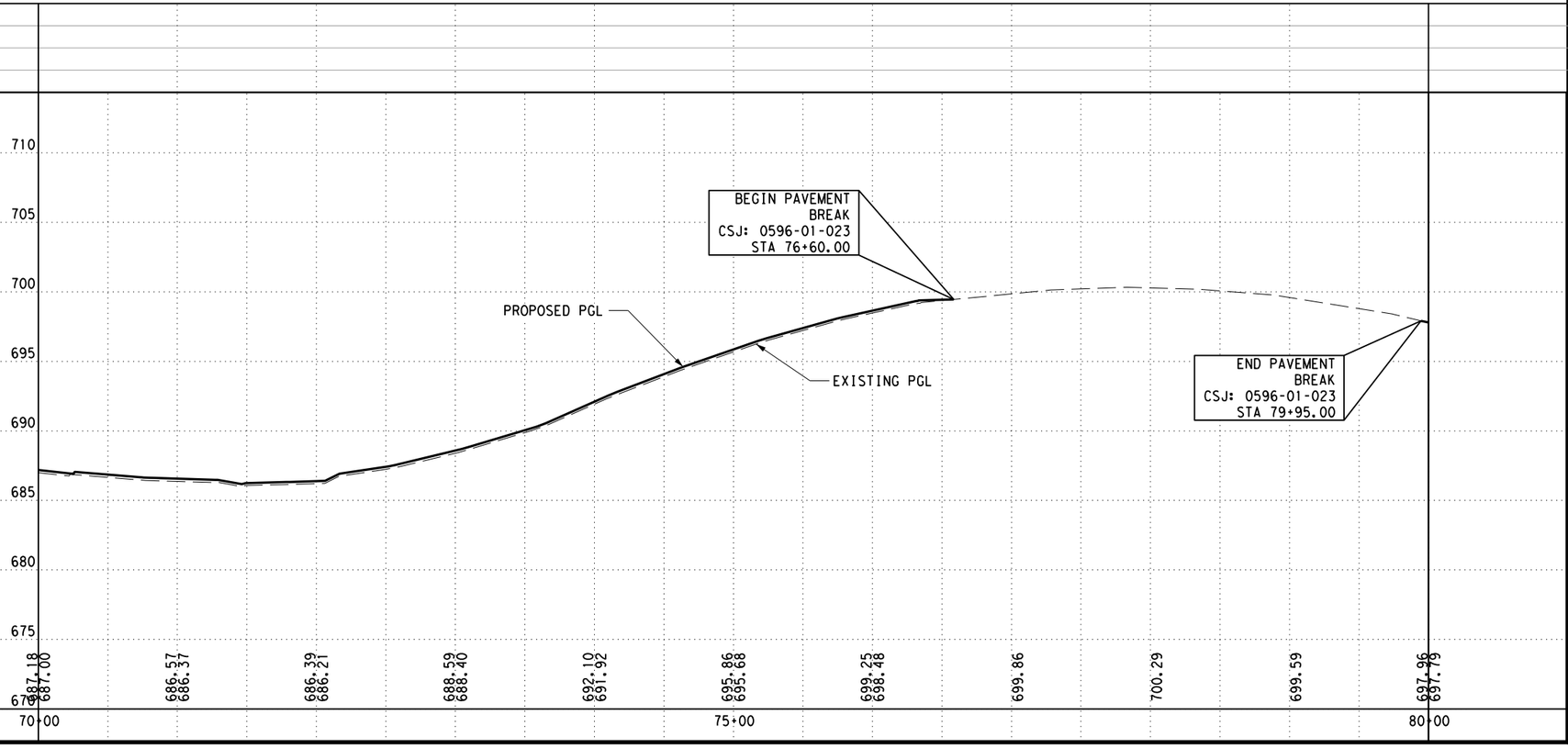




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

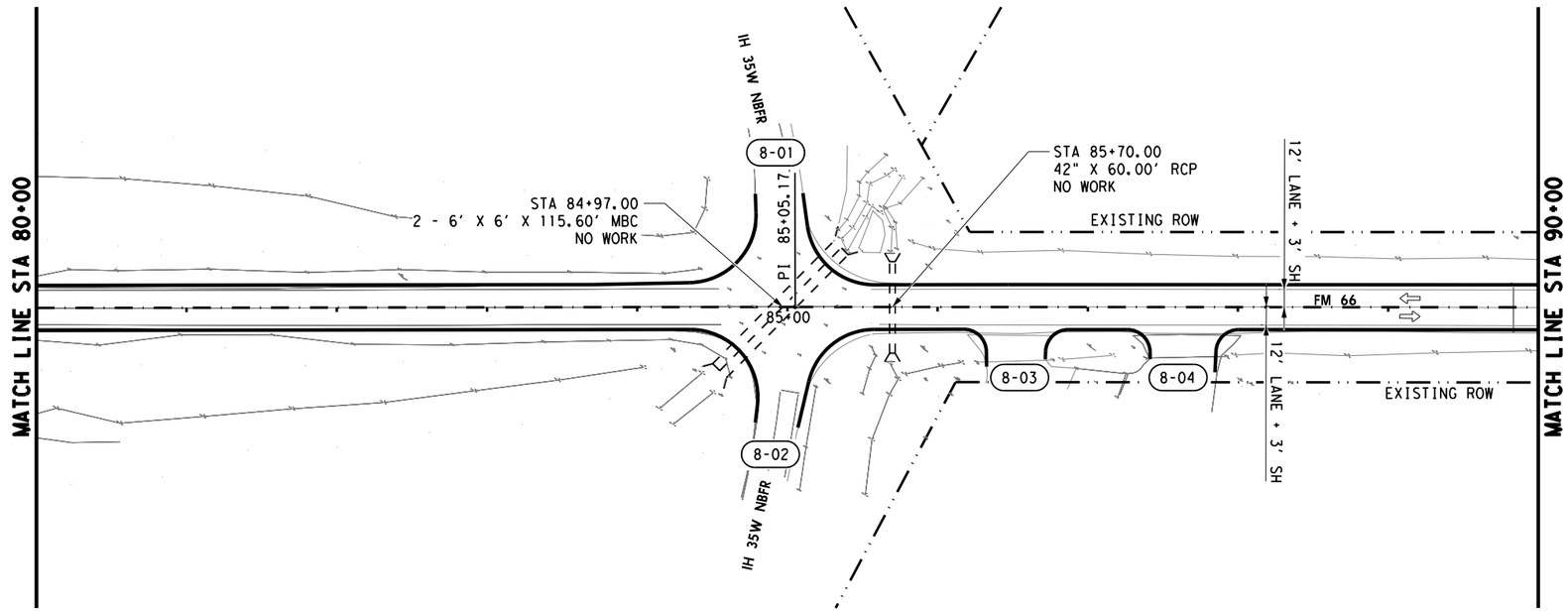
SIGNATURE OF REGISTRANT & DATE

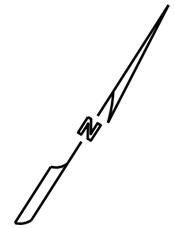
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 7 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		48

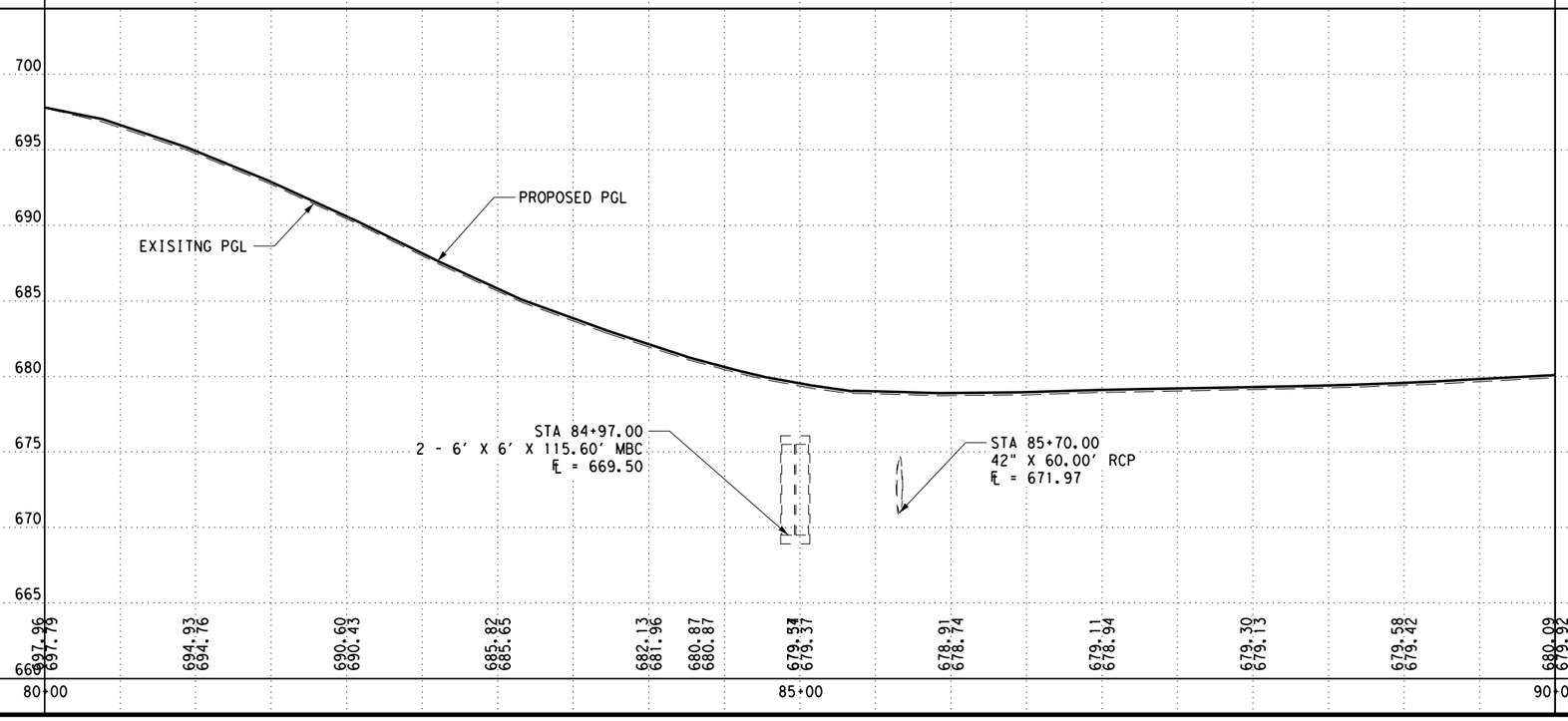




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



P.E.

10/25/2021

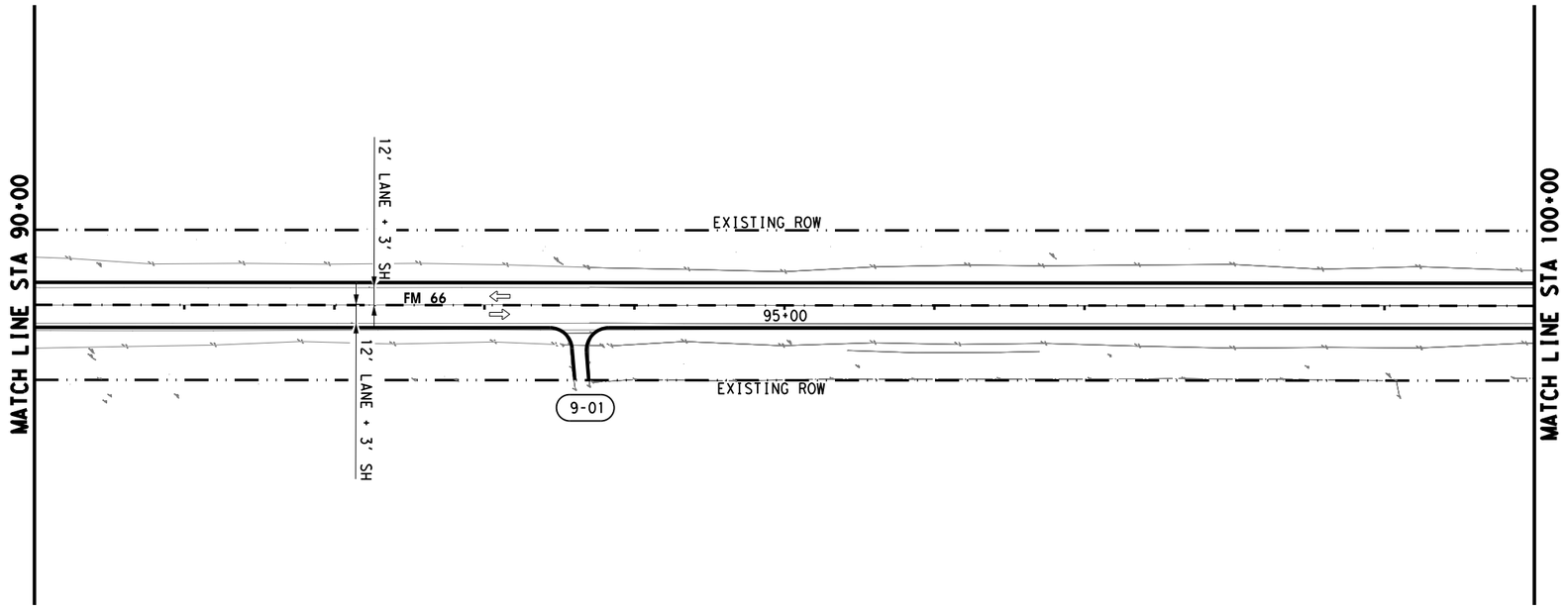
SIGNATURE OF REGISTRANT & DATE

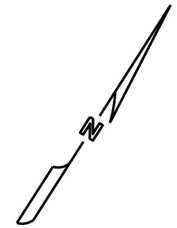
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 8 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		49

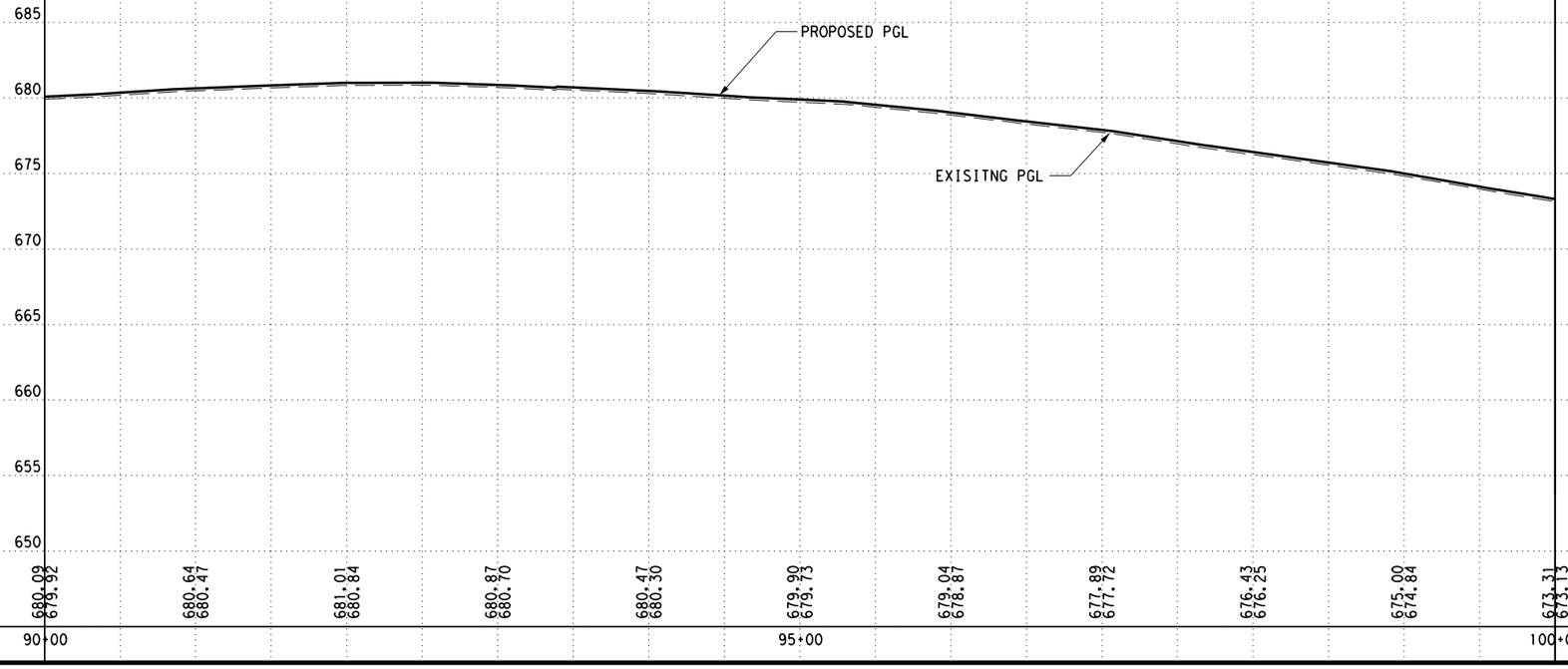




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

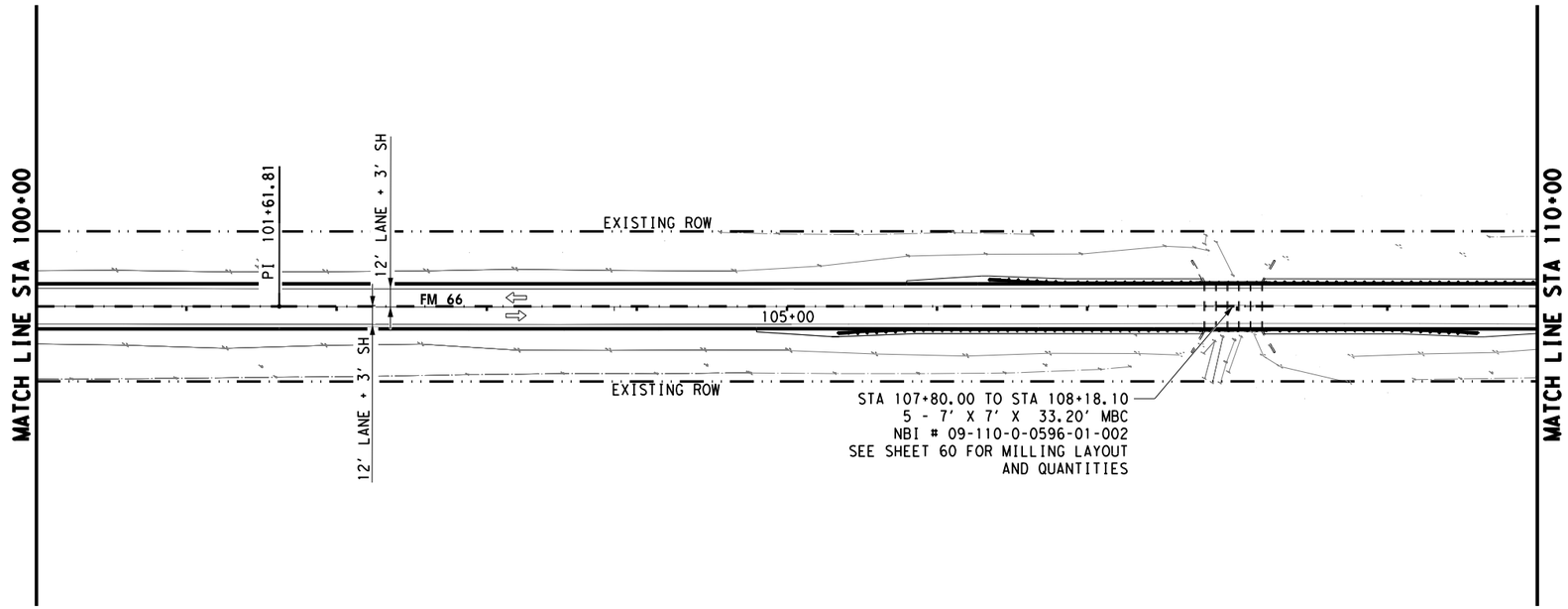
SIGNATURE OF REGISTRANT & DATE

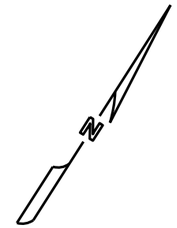
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 9 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		50

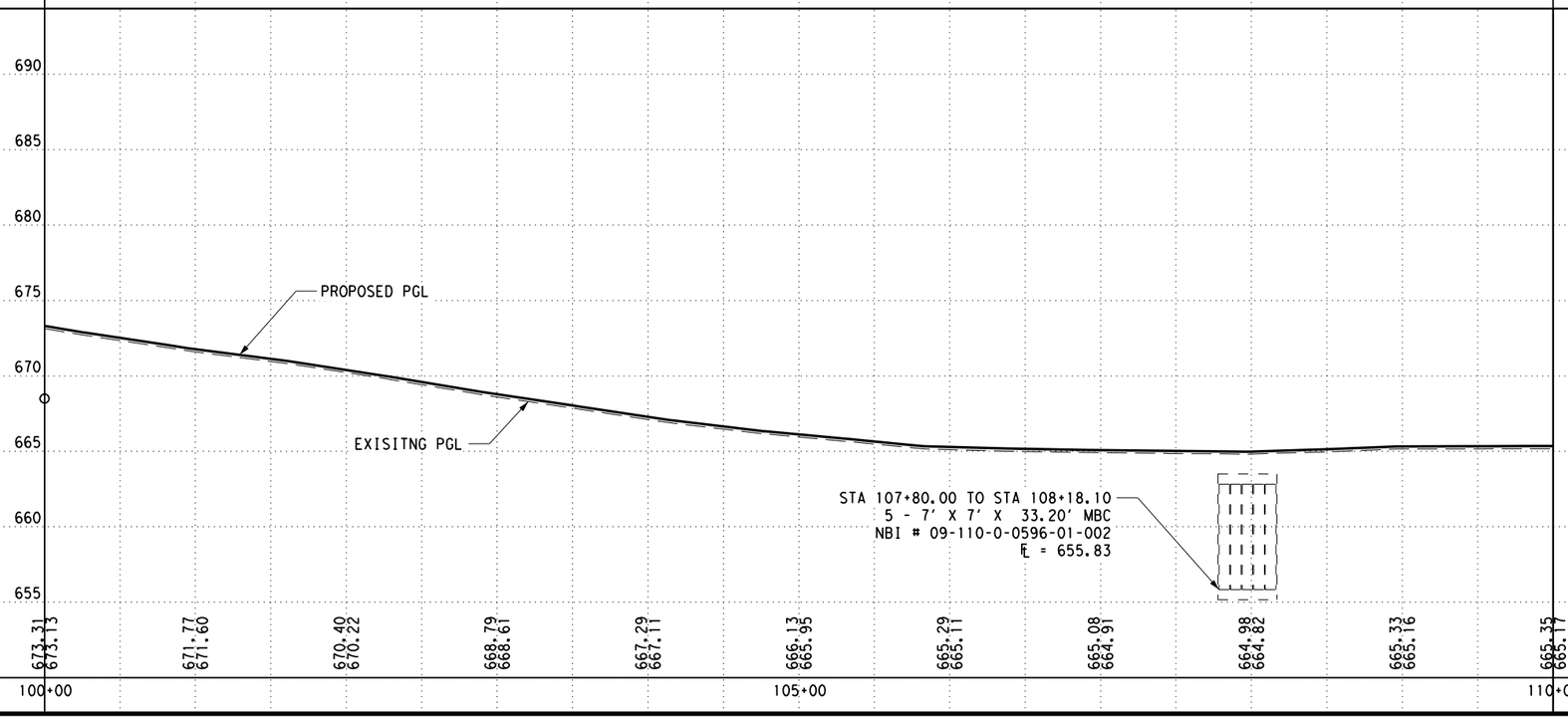




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



P.E. 10/25/2021

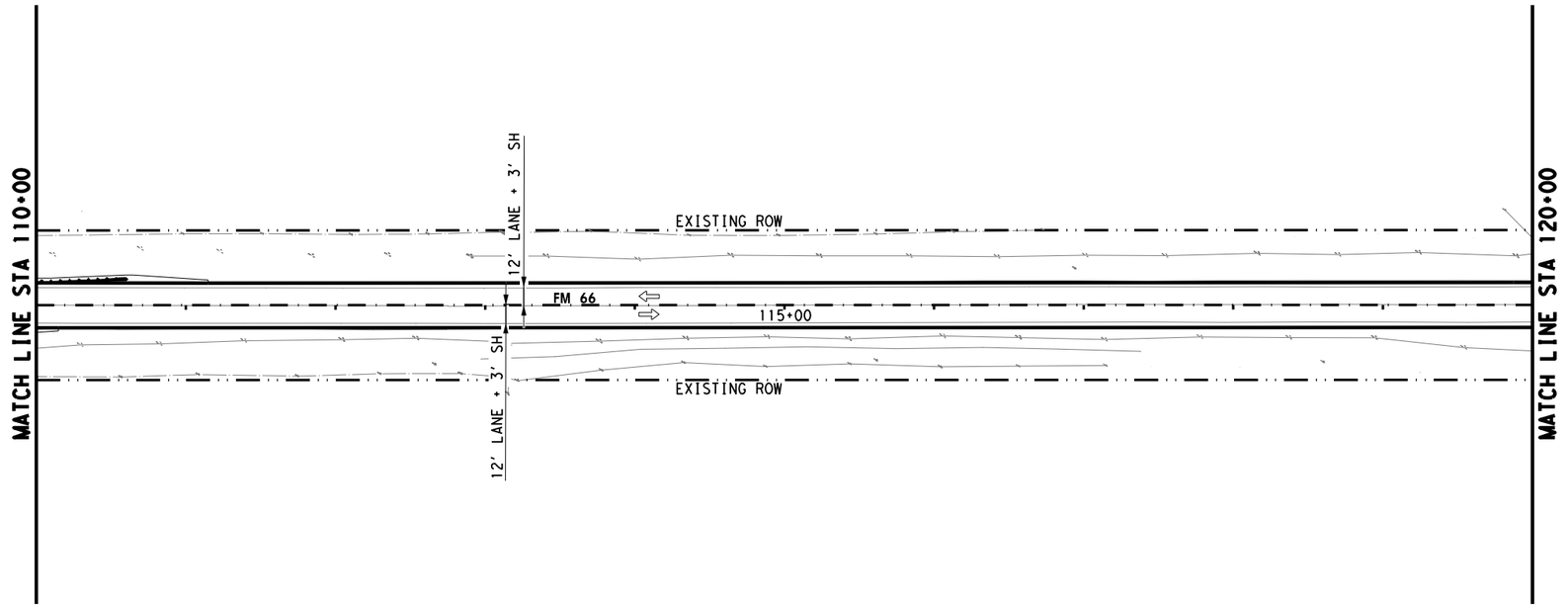
SIGNATURE OF REGISTRANT & DATE

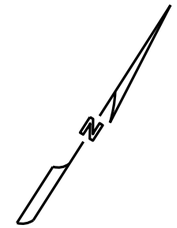
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 10 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		51

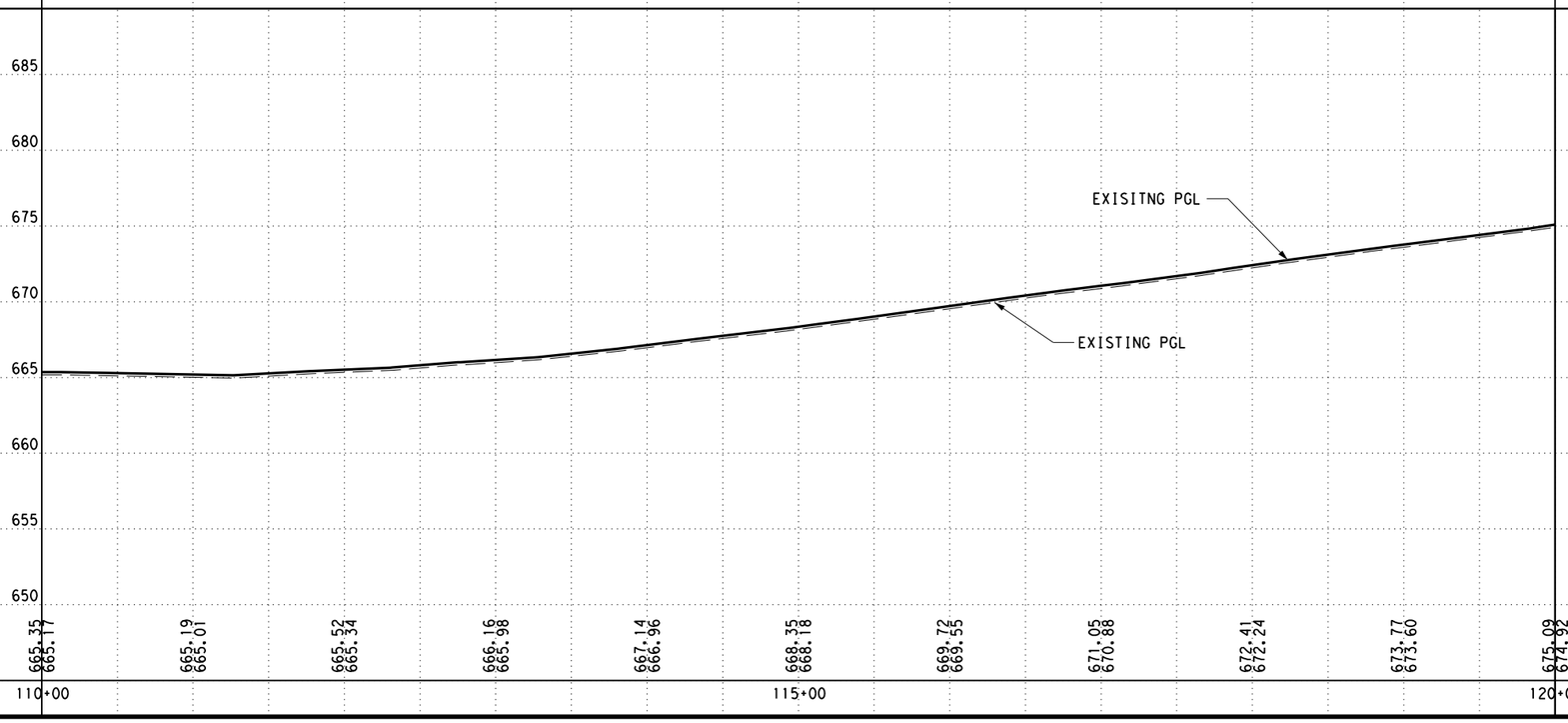




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

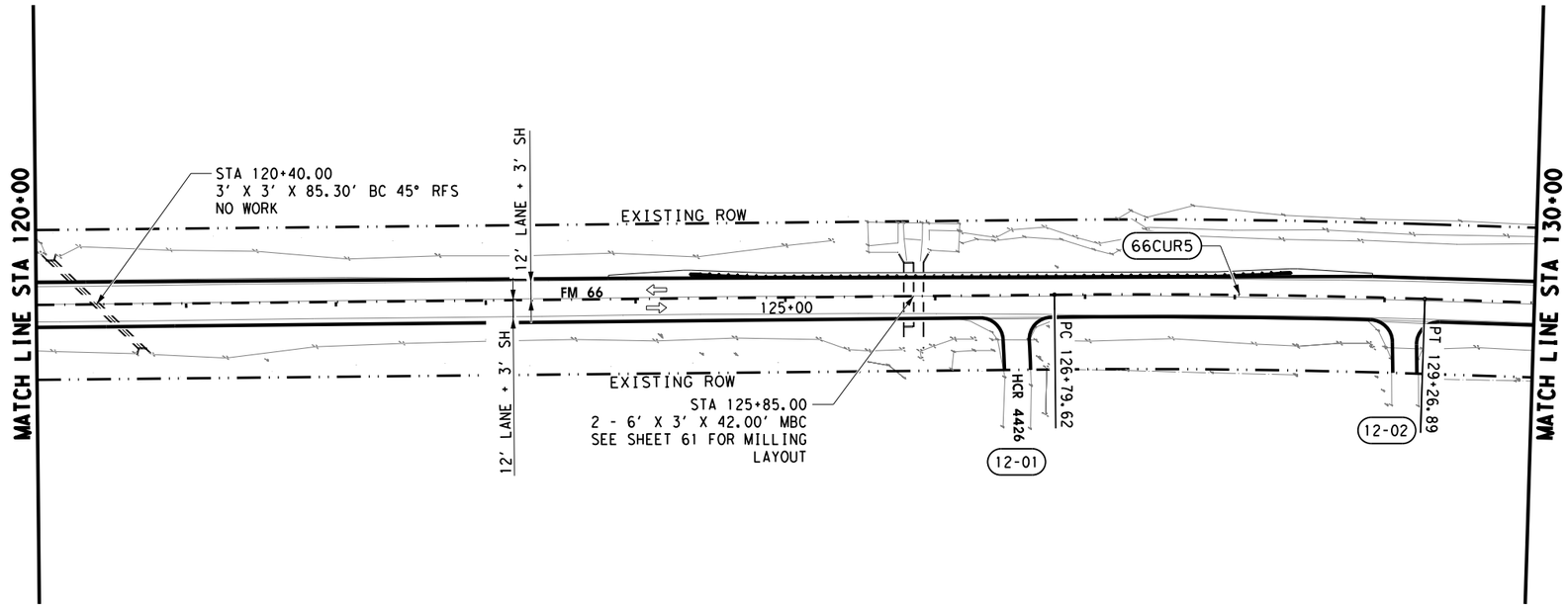
Texas Department of Transportation

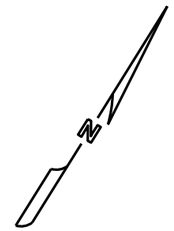
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 11 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		52

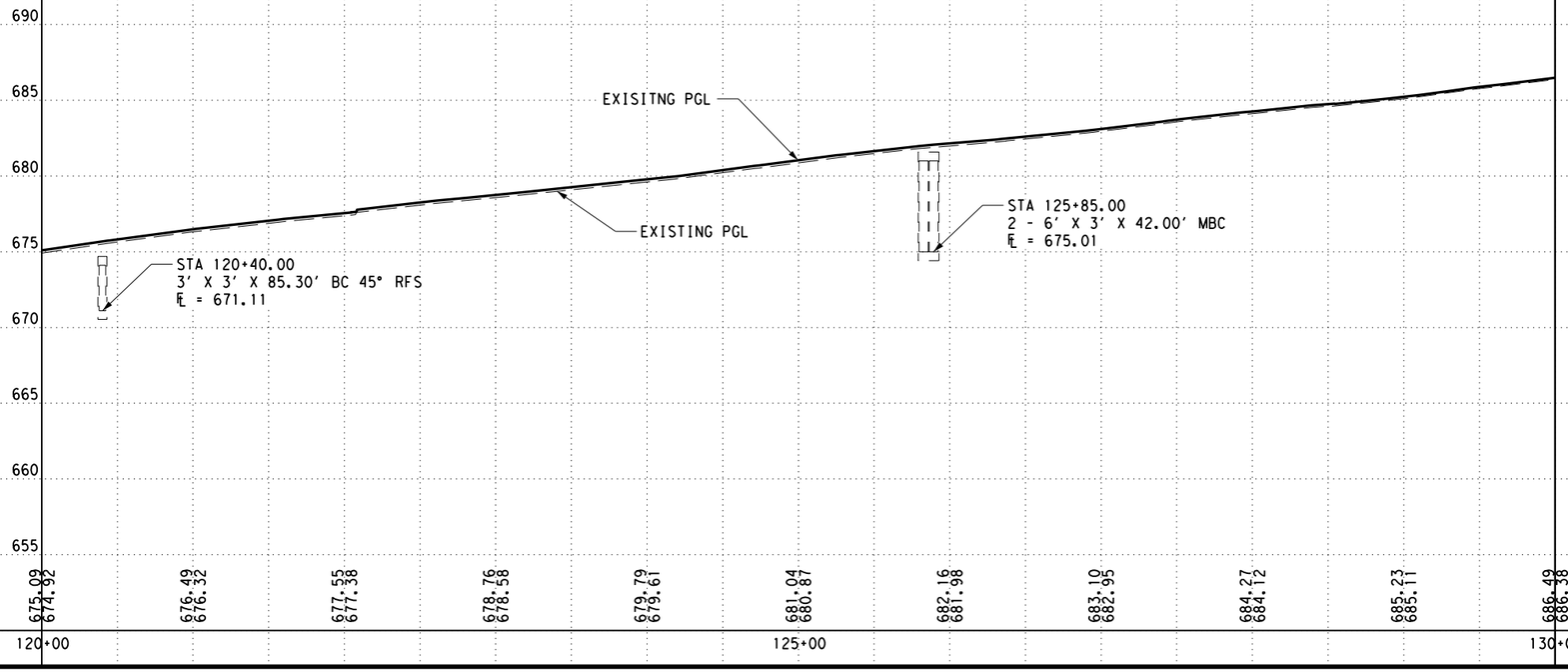




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



P.E.

10/25/2021

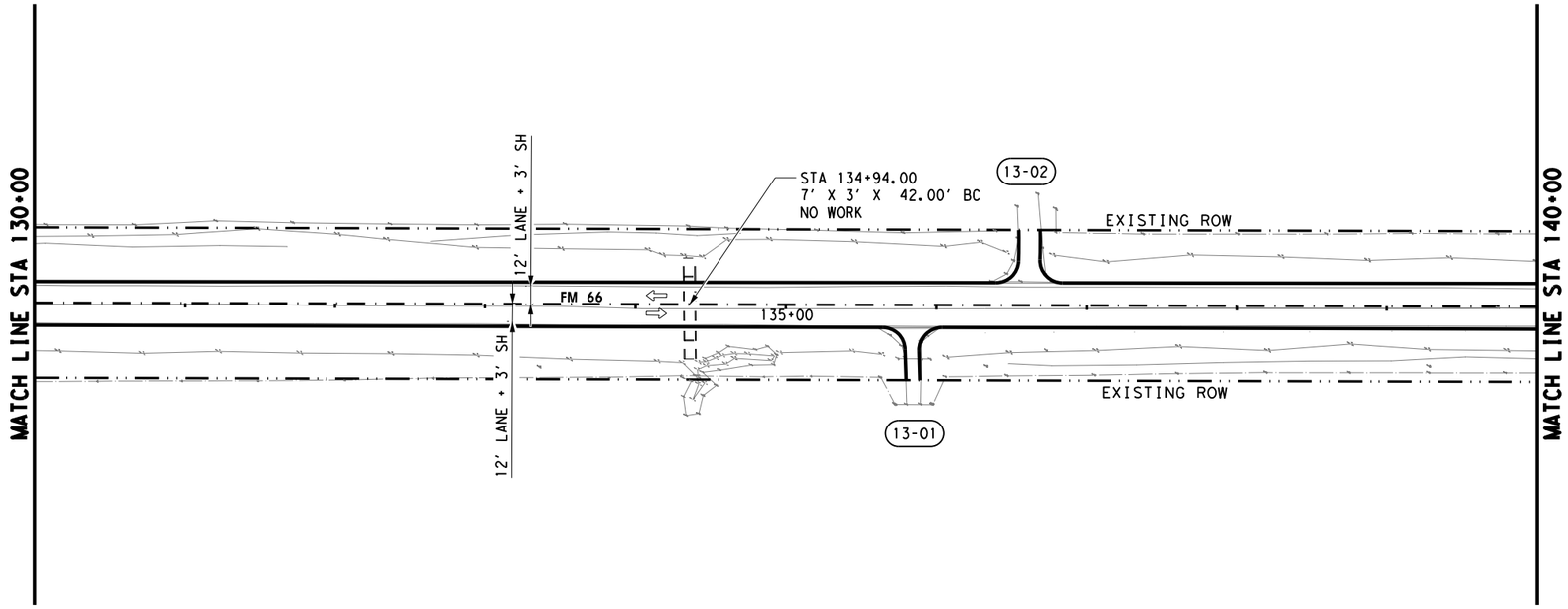
SIGNATURE OF REGISTRANT & DATE

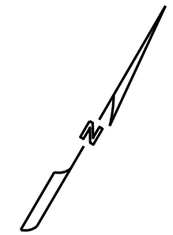
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 12 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		53

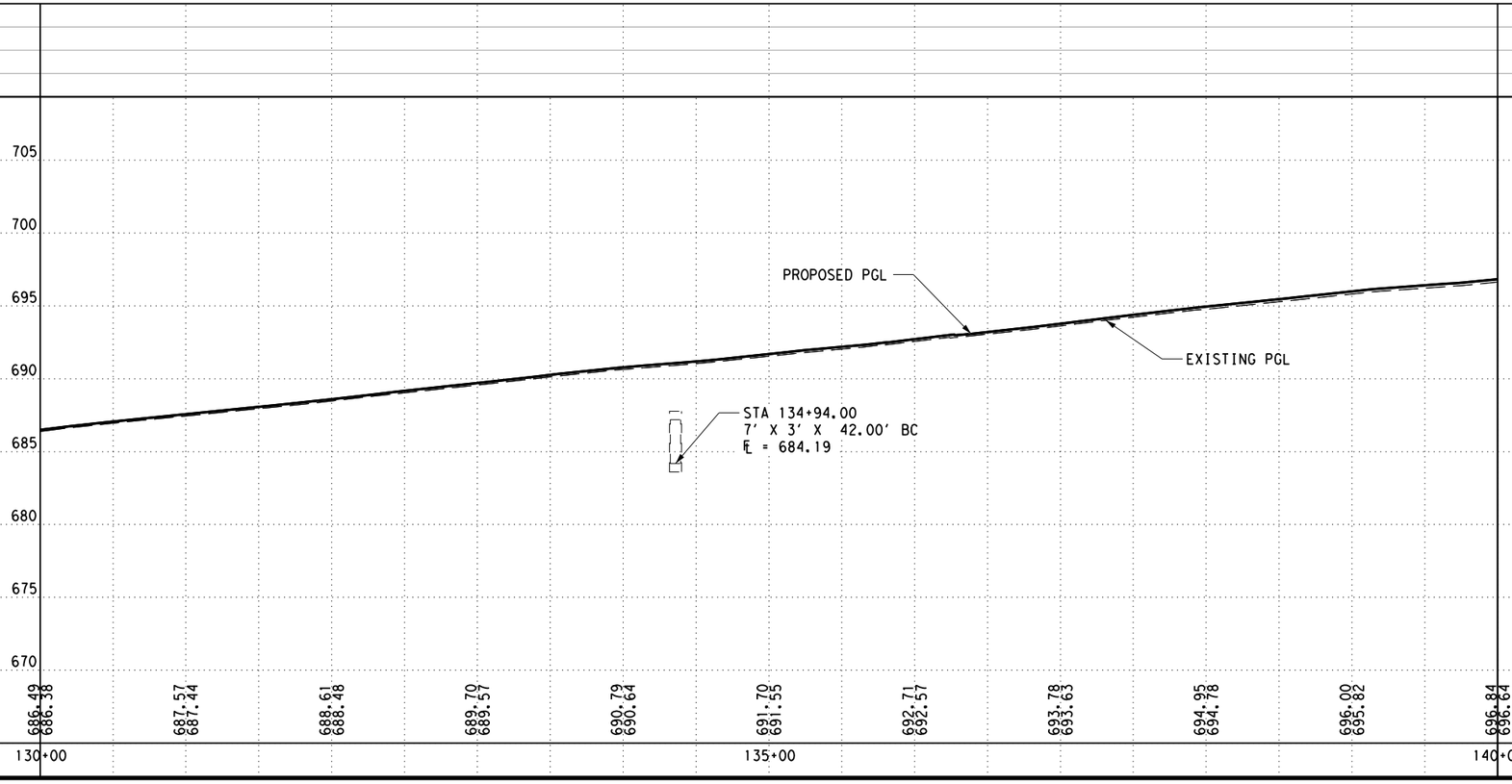




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

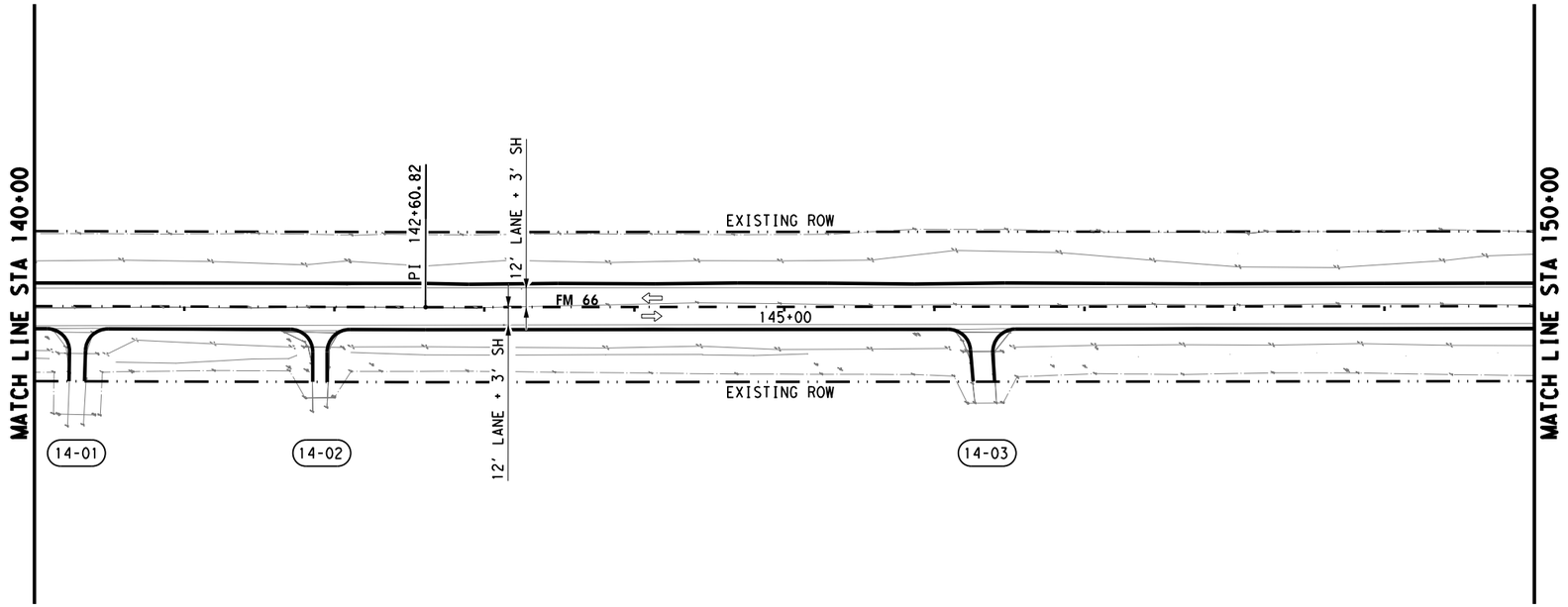
PLAN & PROFILE

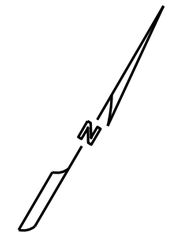
SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 13 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		54

c:\txdot\pw*online\txdot3\anton.lopour\d0142404\PP Sheet 13.dgn
1:42:53 PM
NODE
10/25/2021

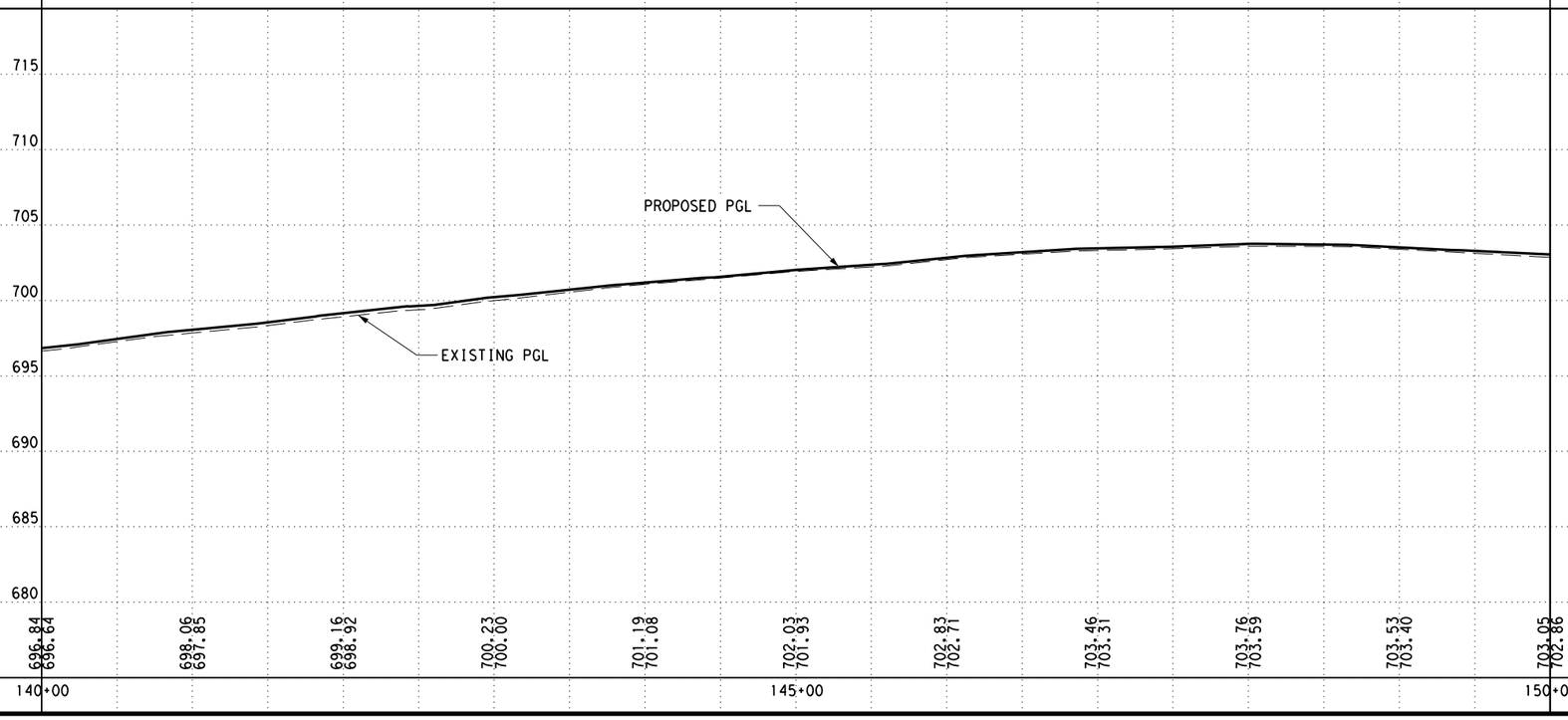




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

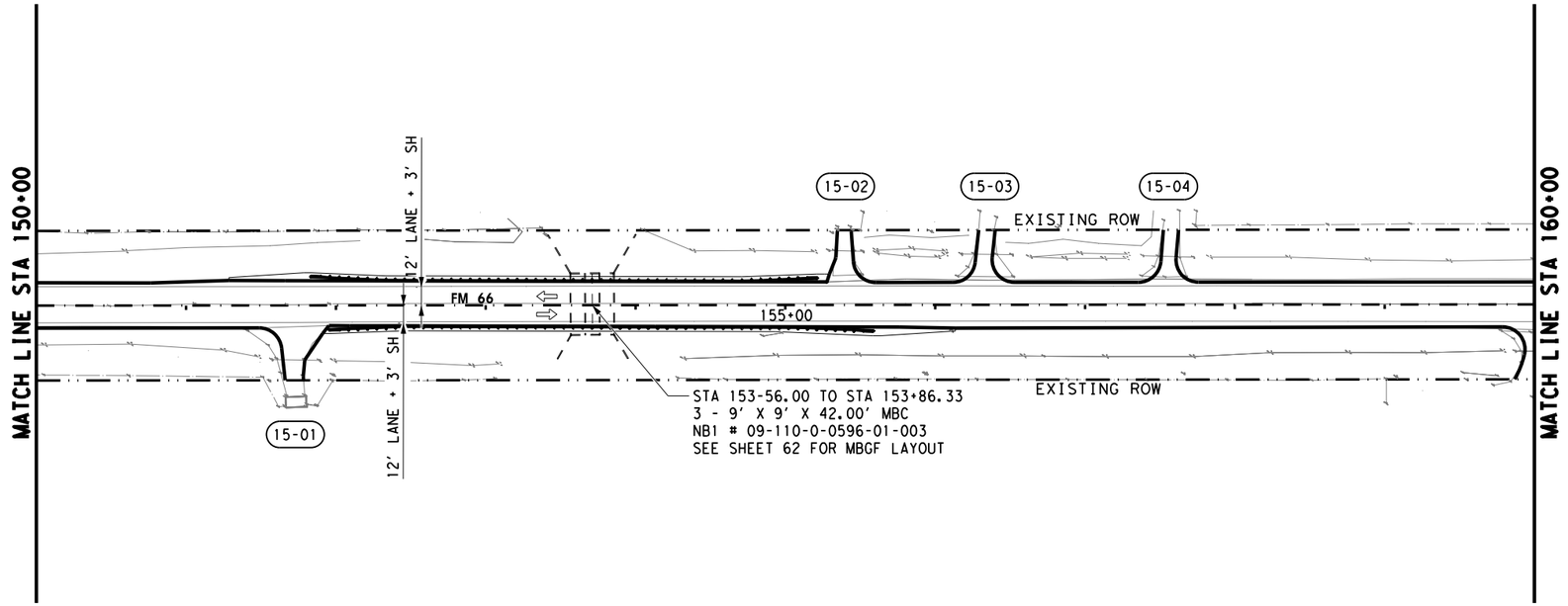
SIGNATURE OF REGISTRANT & DATE

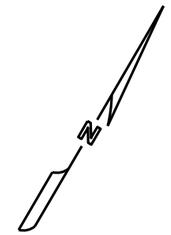
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 14 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		55

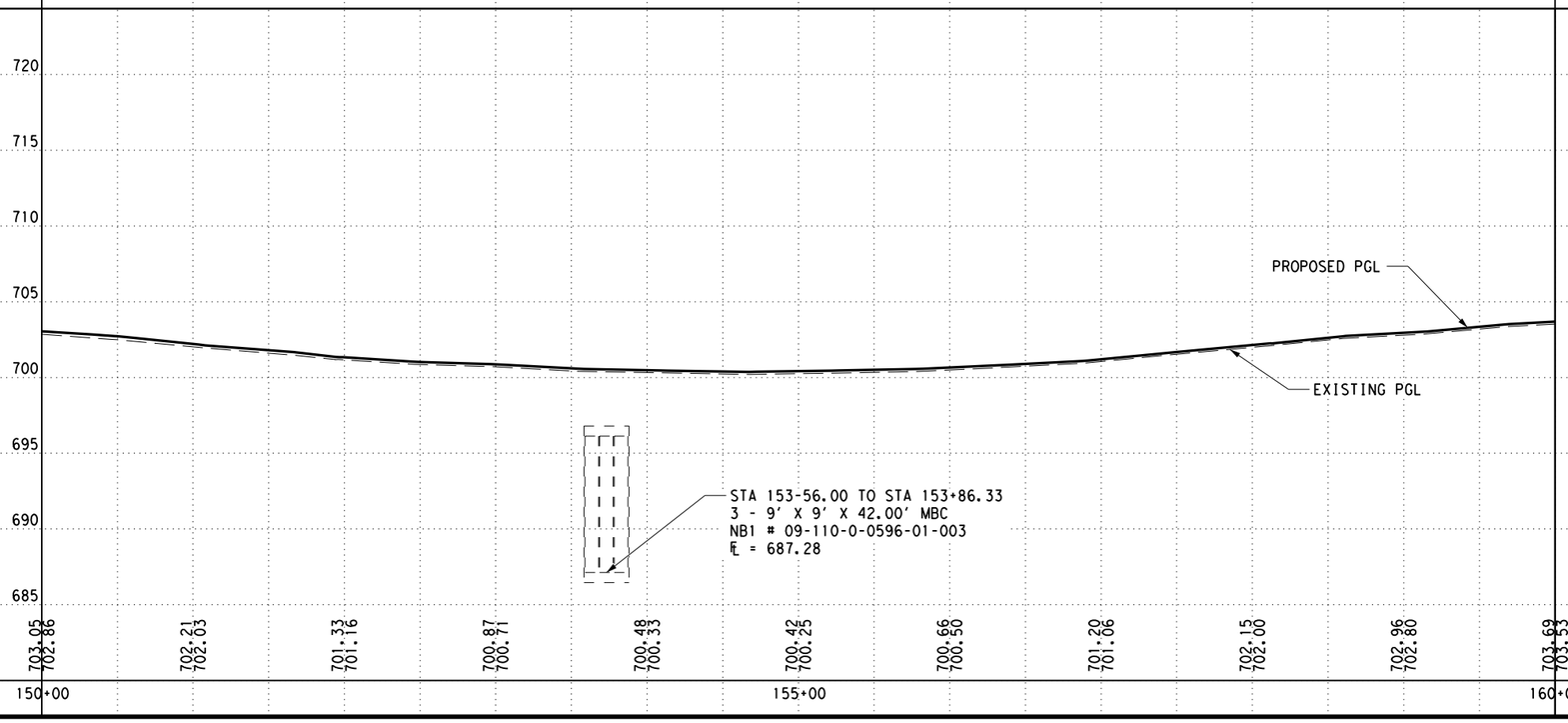




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

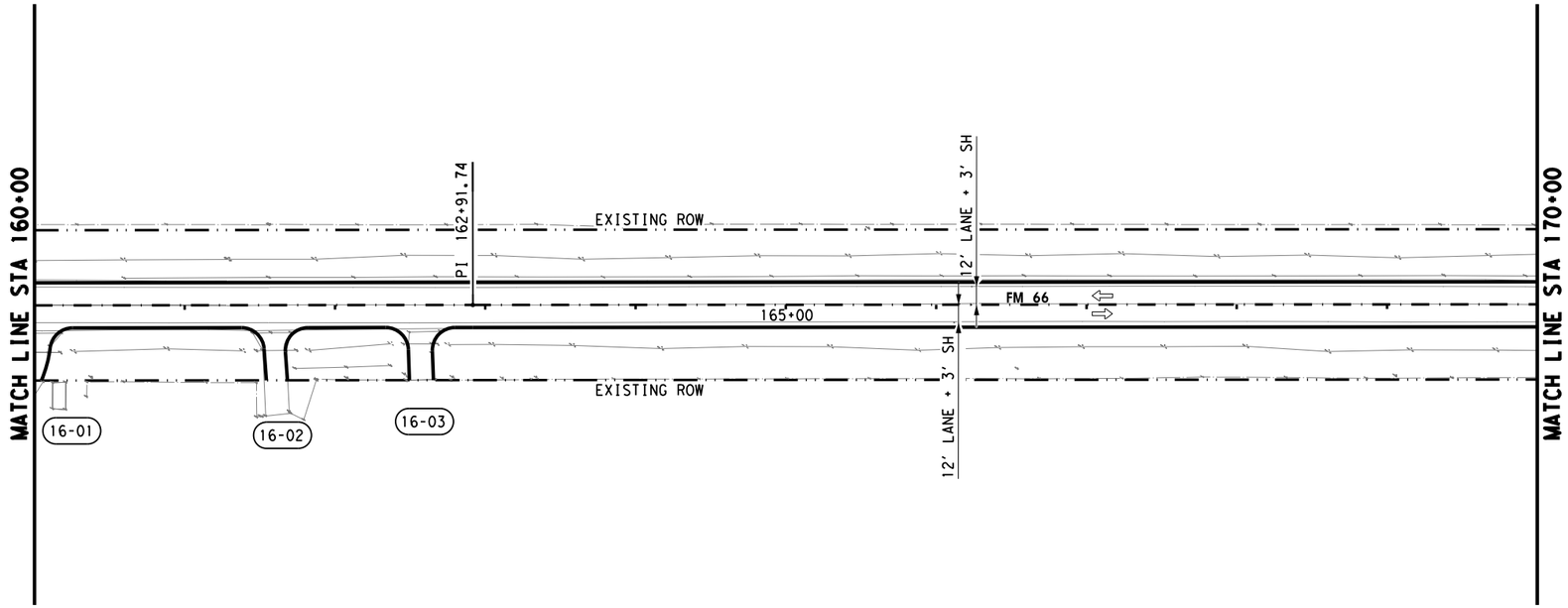
PLAN & PROFILE

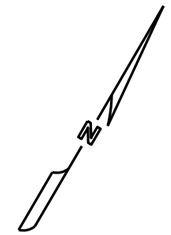
SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 15 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		56

c:\txdot\pw\online\txdot3\anton.lopour\d0142404\PP Sheet 15.dgn
1:43:07 PM
NODE
10/25/2021

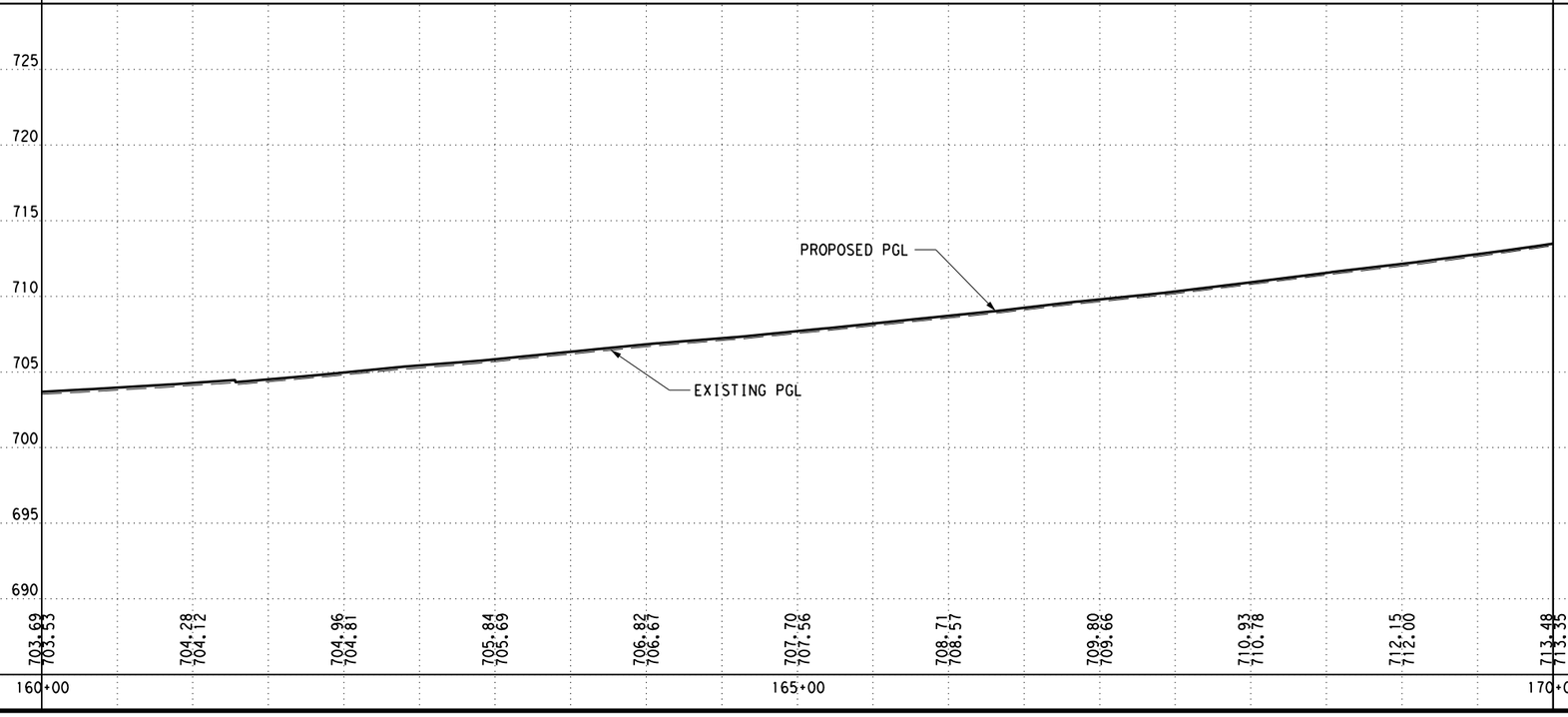




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

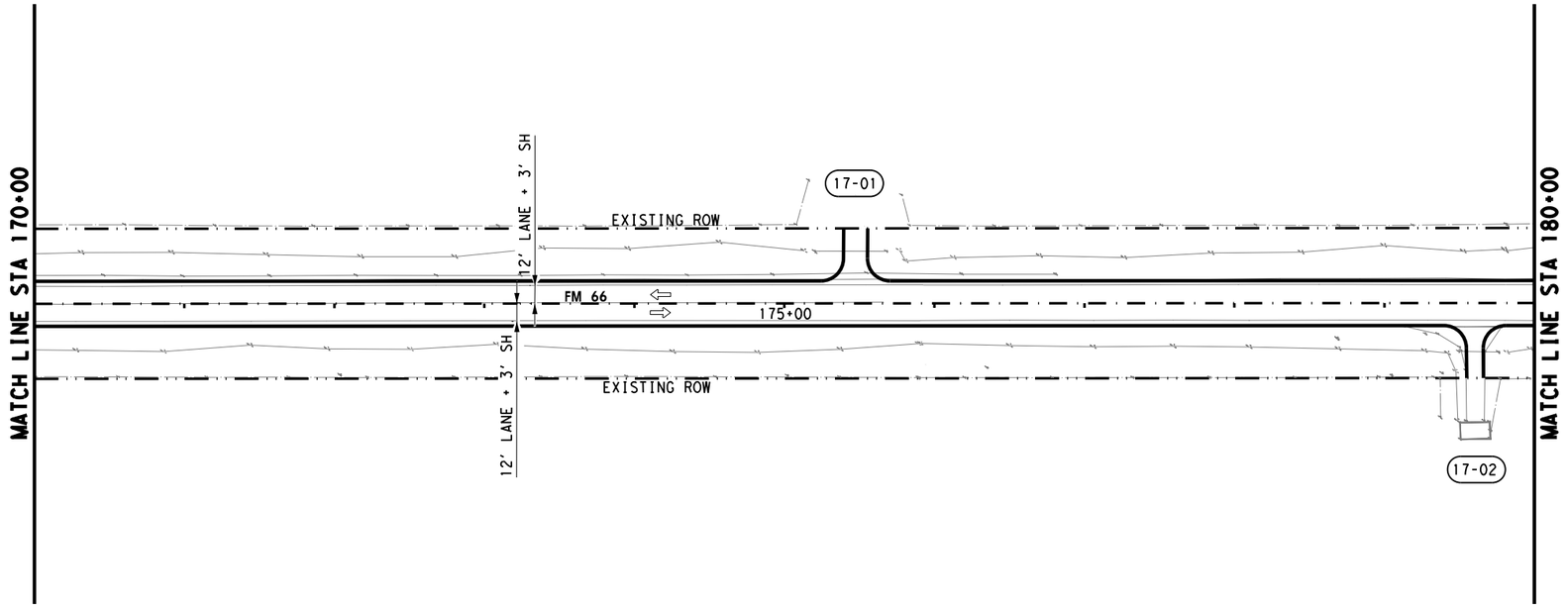
SIGNATURE OF REGISTRANT & DATE

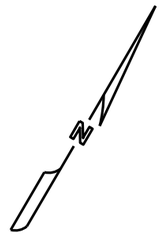
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 16 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		57

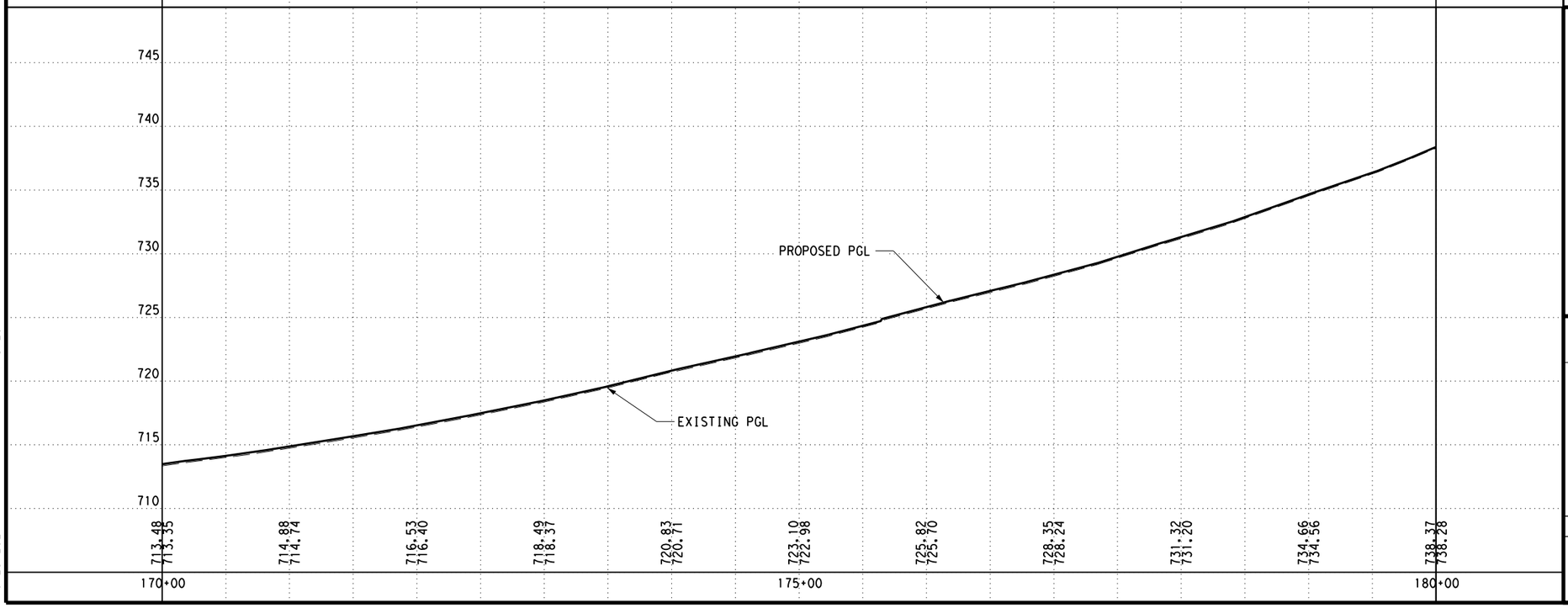




LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

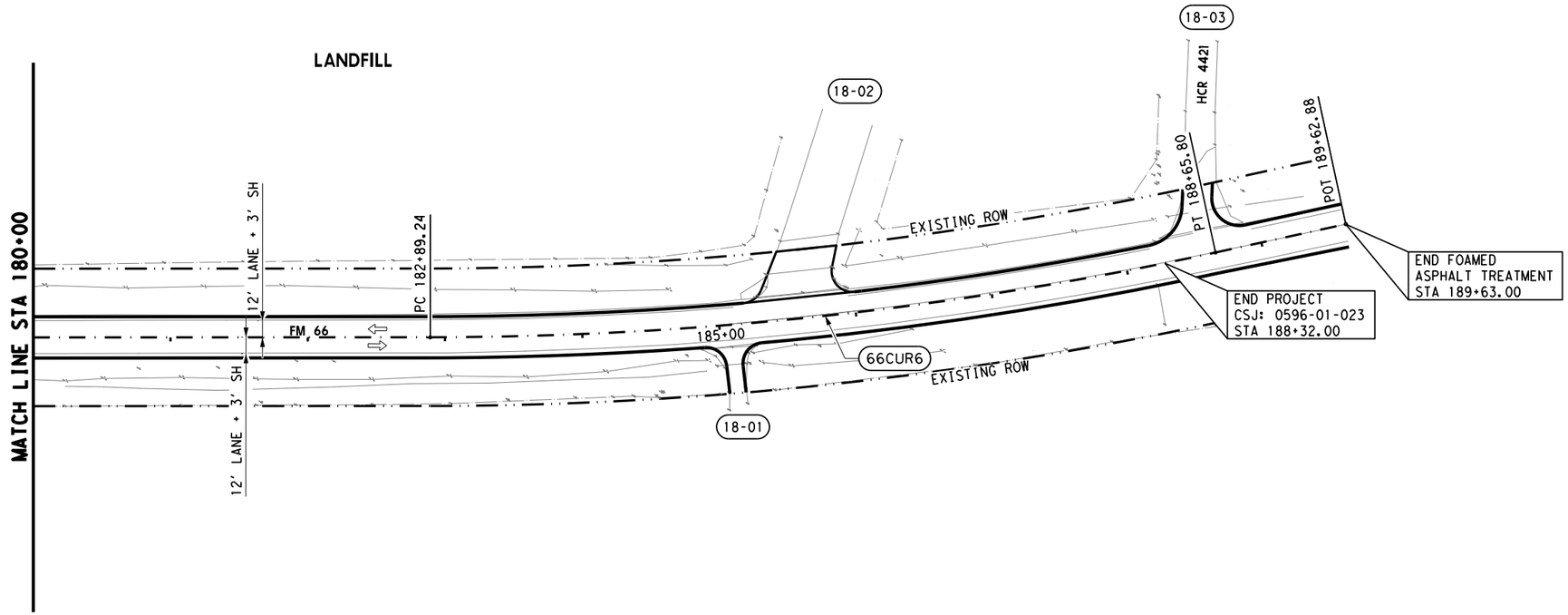
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 17 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		58

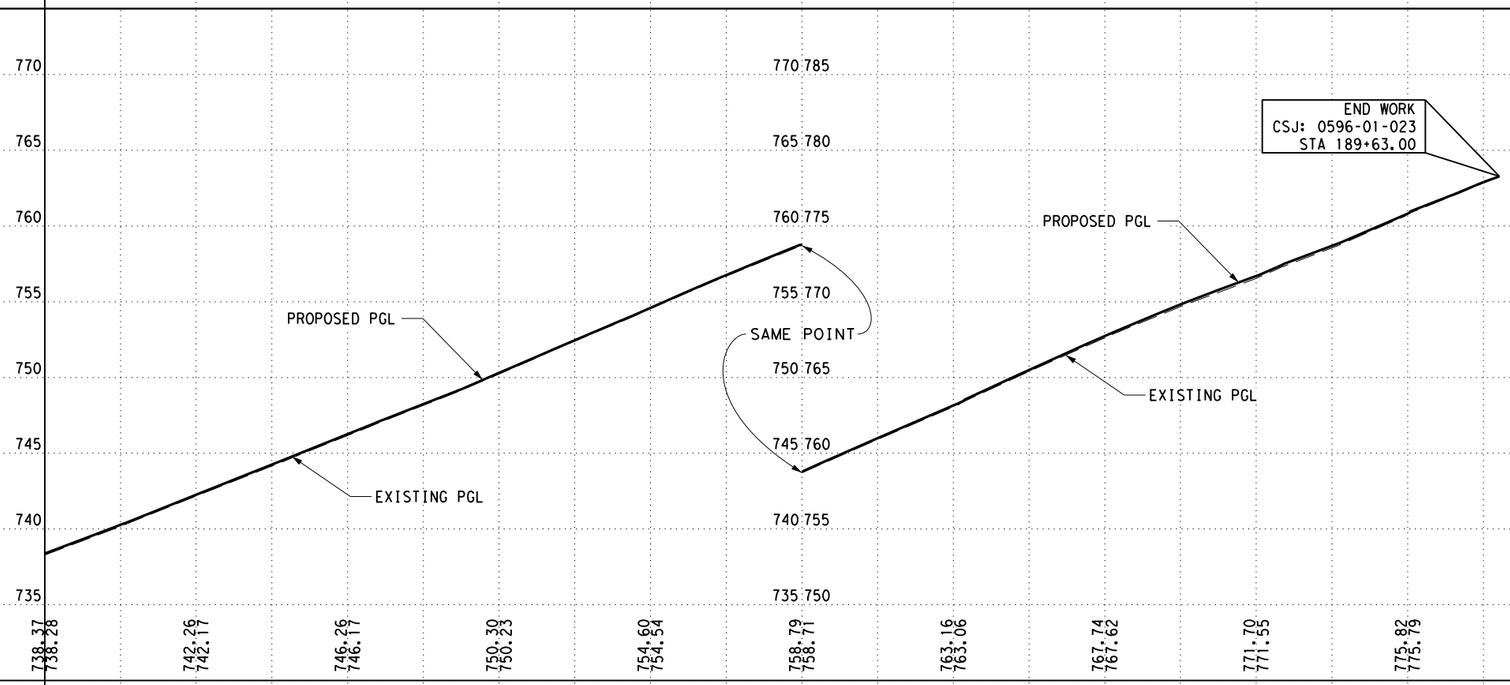
c:\txdot\pw*online\txdot3\anton.lopour\d0142404\PP Sheet 17.dgn
1:43:20 PM
NODE
10/25/2021



LEGEND

66CURX	HORIZONTAL CURVE ID
XX-XX	DRIVEWAY ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	UNIT



STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

Texas Department of Transportation

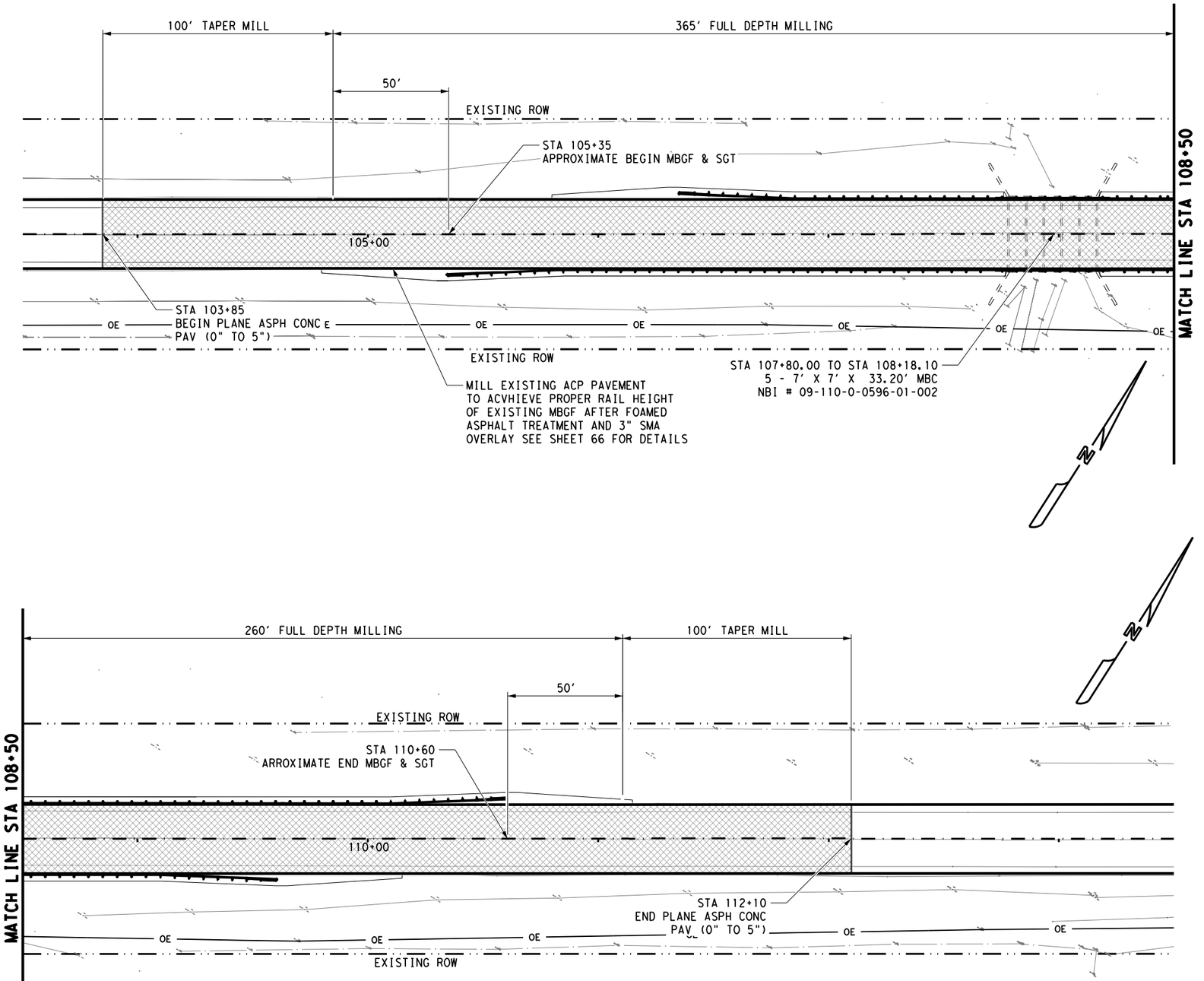
PLAN & PROFILE

SCALE: 0 50 100 200 FEET
1" = 100' HORIZ.
1" = 10' VERT.

SHEET 18 OF 18

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		59

c:\txdot\pw*online\txdot3\anton.lopour\d0142404\PP Sheet 18.dgn
1:43:24 PM
NODE
10/25/2021



ITEM	DESCRIPTION	QUAN
0354 6088	PLANE ASPH CONC PAV (0" TO 5")	2,567 SY

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

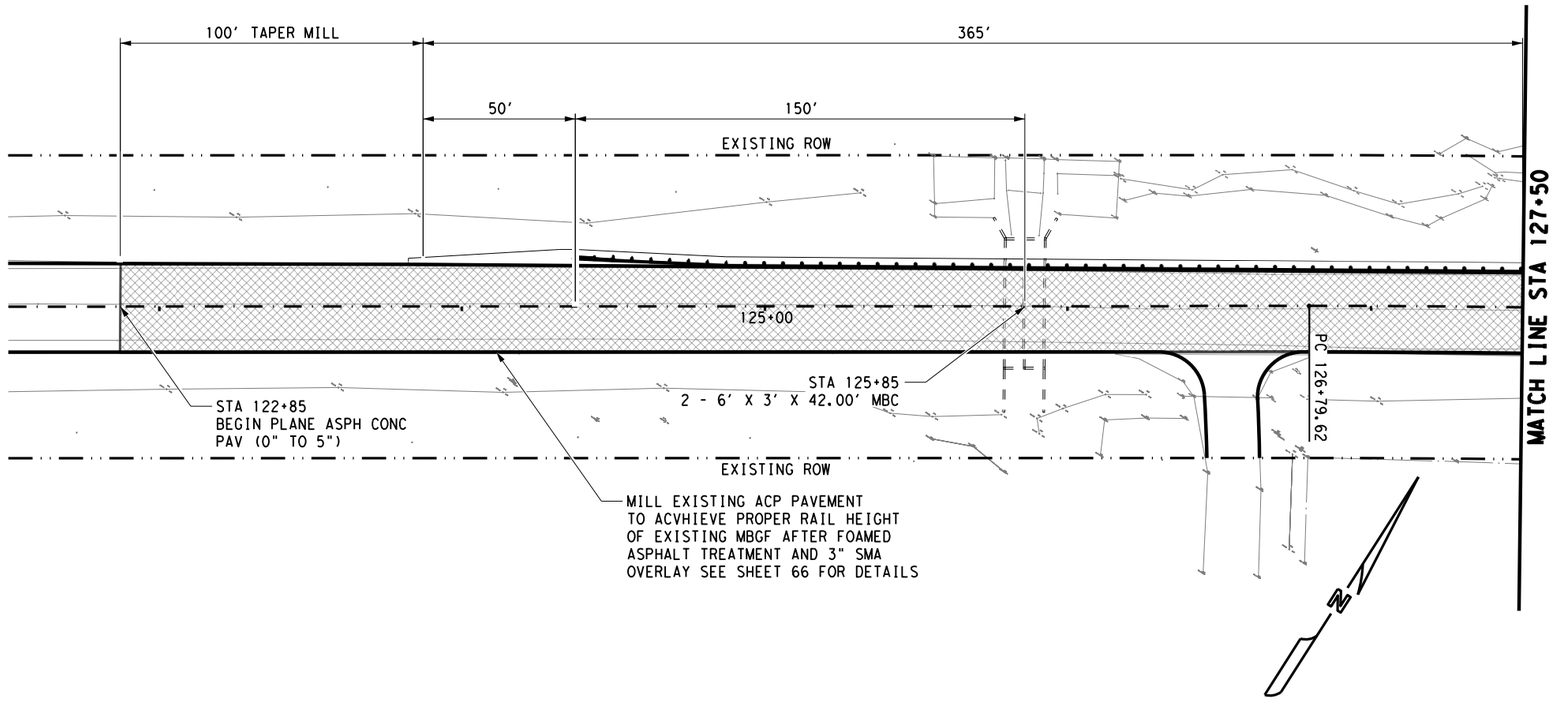
SIGNATURE OF REGISTRANT & DATE

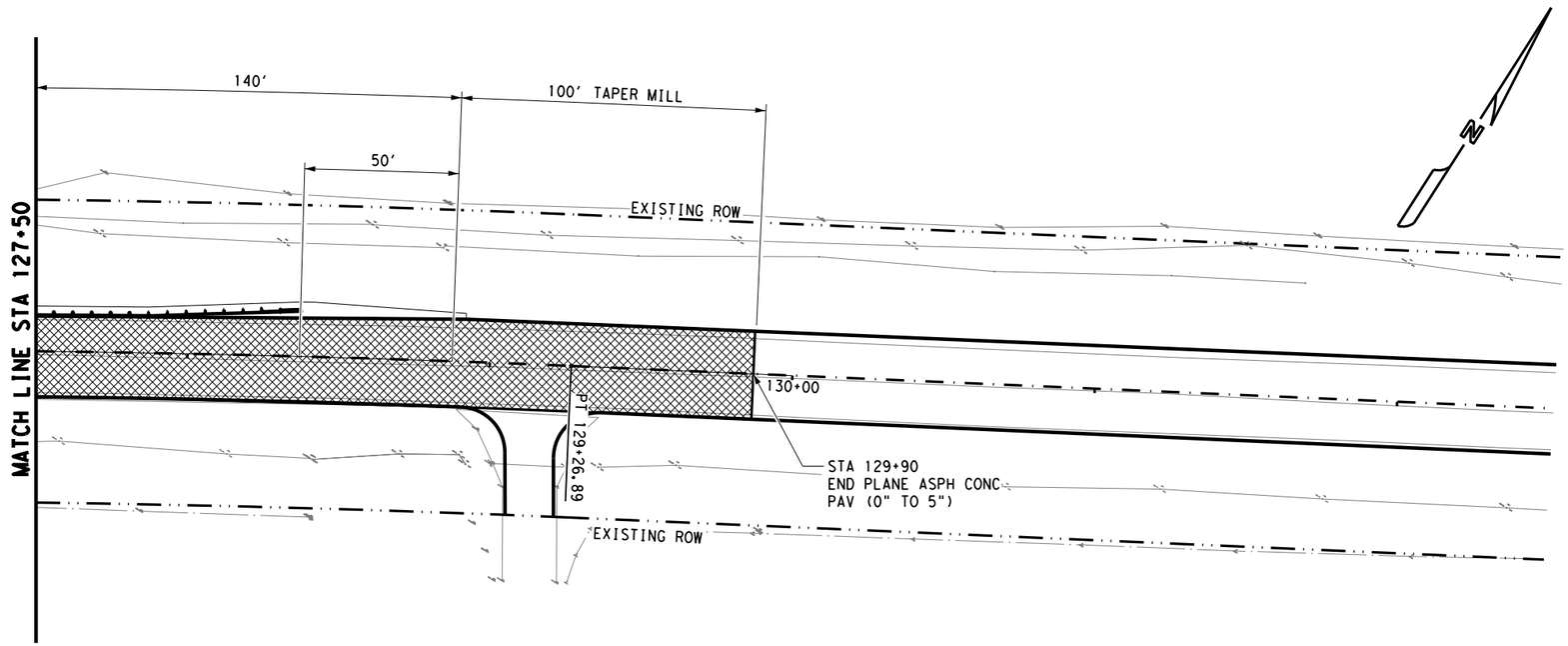
MILLING LAYOUT

SCALE: 0 12.5 25 50 FEET
1" = 50' HORIZ.

SHEET 1 OF 3

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		60





ITEM	DESCRIPTION	QUAN
0354 6088	PLANE ASPH CONC PAV (0" TO 5")	2,193 SY

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

MILLING LAYOUT

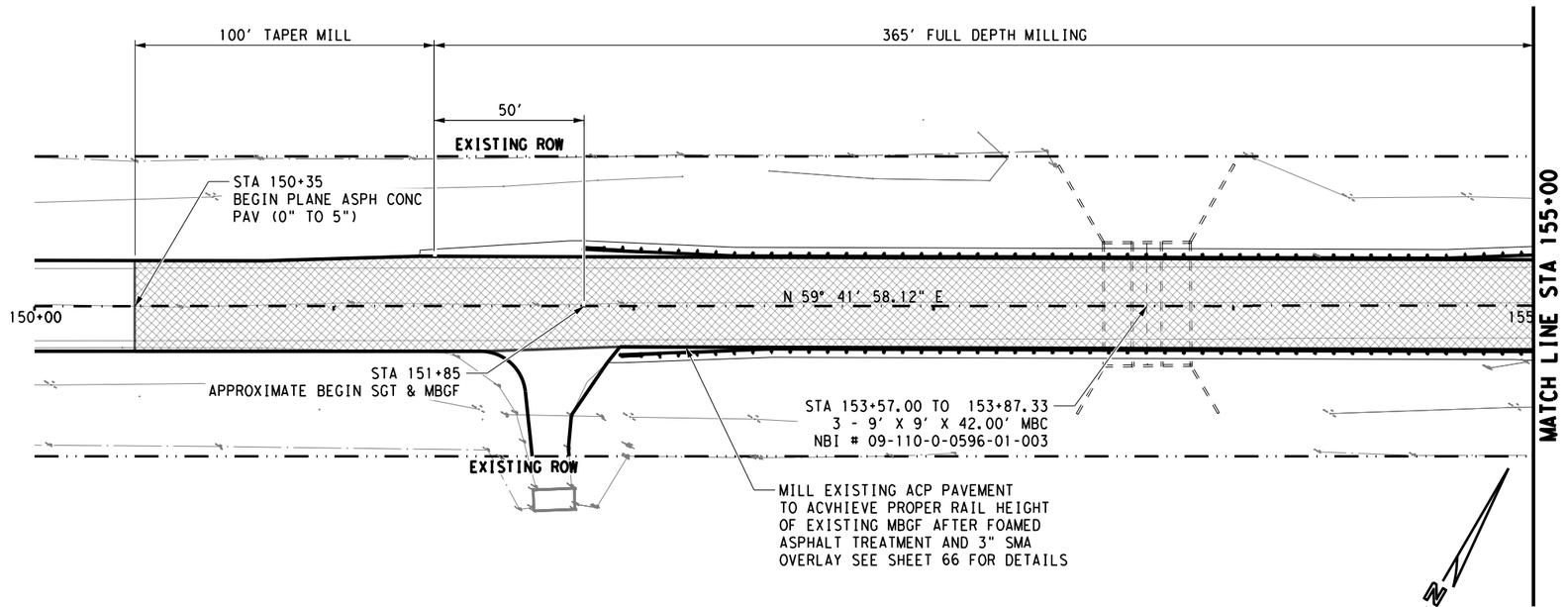
SCALE: 0 12.5 25 50 FEET
1" = 50' HORIZ.

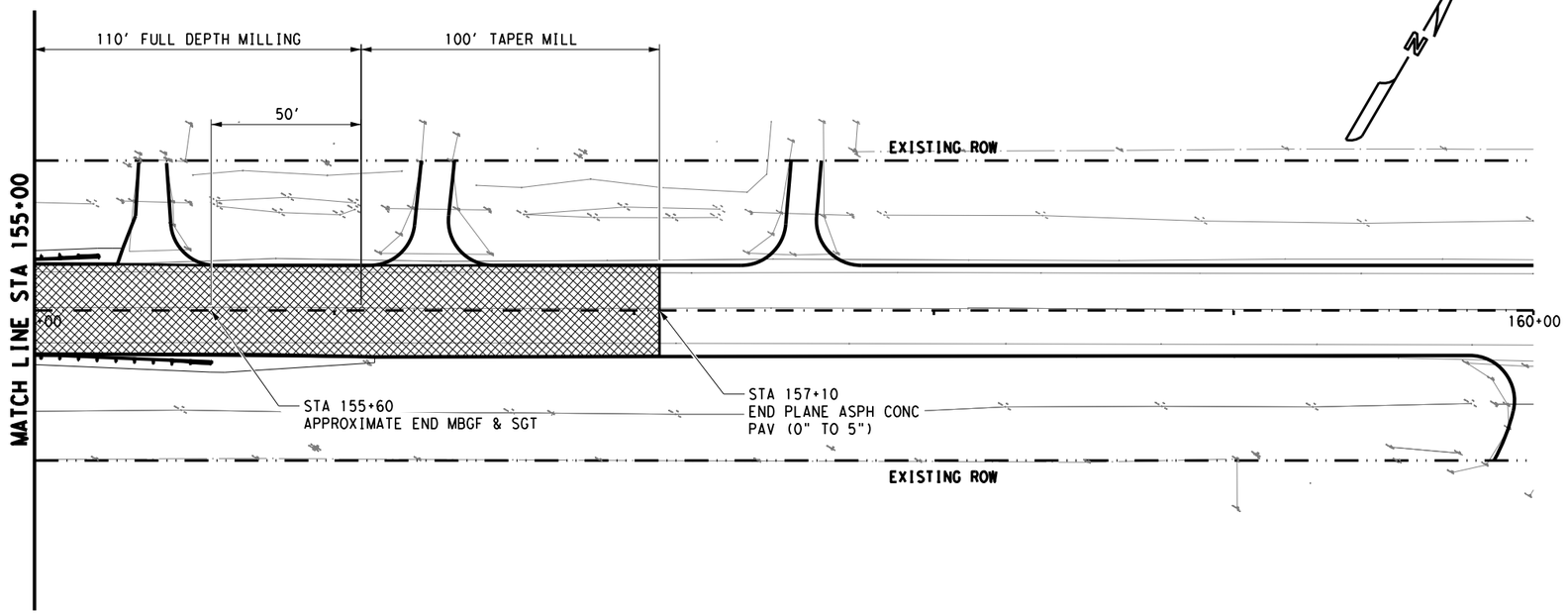
SHEET 2 OF 3

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		61

NODE
10/25/2021

c:\txdot\dw*online\txdot3\anton. lopour\d0142404\Milling Layout 2.dgn
1:43:37 PM





ITEM	DESCRIPTION	QUAN
0354 6088	PLANE ASPH CONC PAV (0" TO 5")	2,100 SY

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

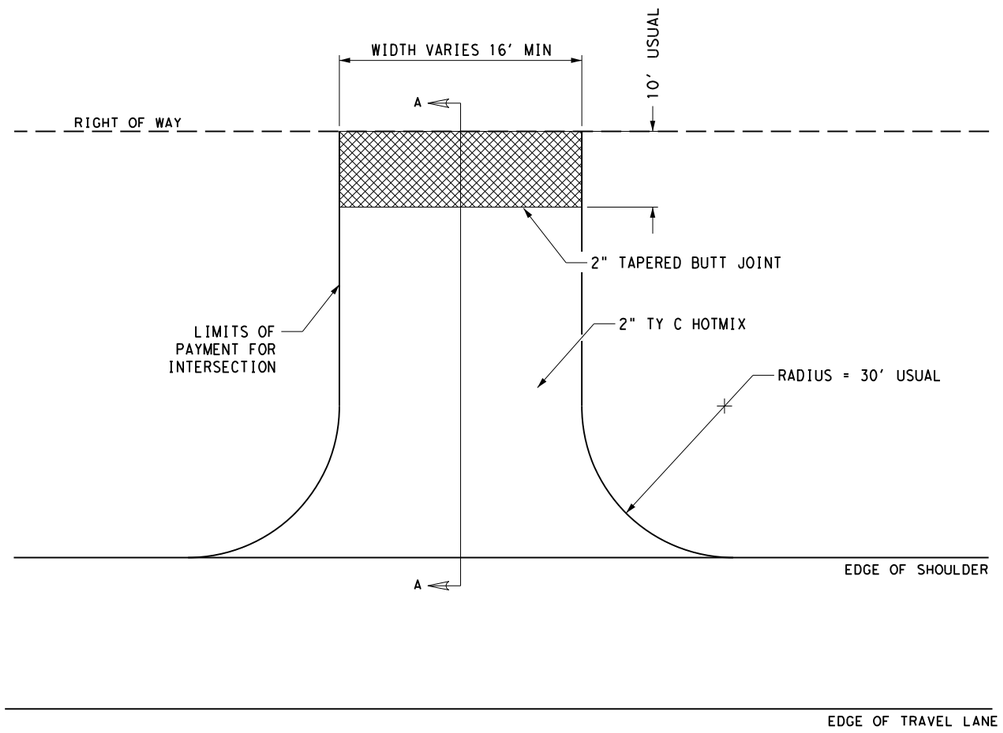
MILLING LAYOUT

SCALE: 0 12.5 25 50 FEET
1" = 50' HORIZ.

SHEET 3 OF 3

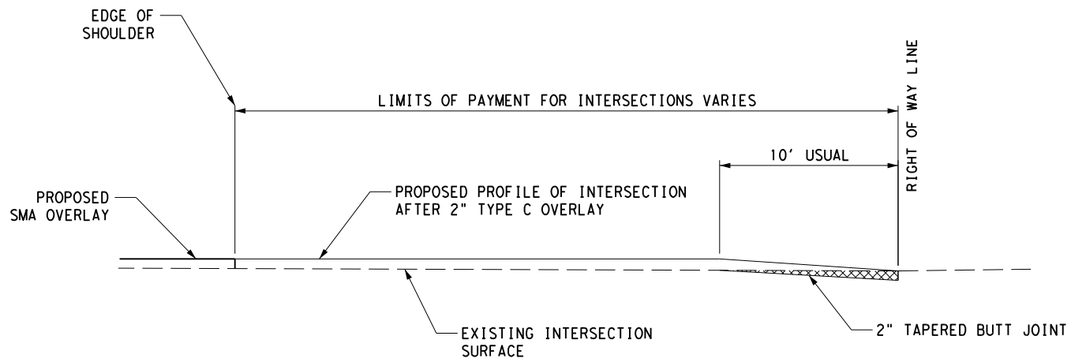
CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		62

c:\txdot\pw\online\txdot3\anton.lopour\d0142404\Milling Layout 3.dgn
1:43:44 PM
NODE
10/25/2021



INTERSECTIONS (ACP)

INTERSECTIONS (ACP) SHALL CONSIST OF MILLING A 2" TAPERED BUTT JOINT AT THE EXISTING RIGHT OF WAY LINE AND AN ACP OVERLAY TO PROVIDE A SMOOTH TRANSITION FROM THE PROPOSED SURFACE OF FM 66 TO THE ADJOINING ROADWAY.



SECTION A-A

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

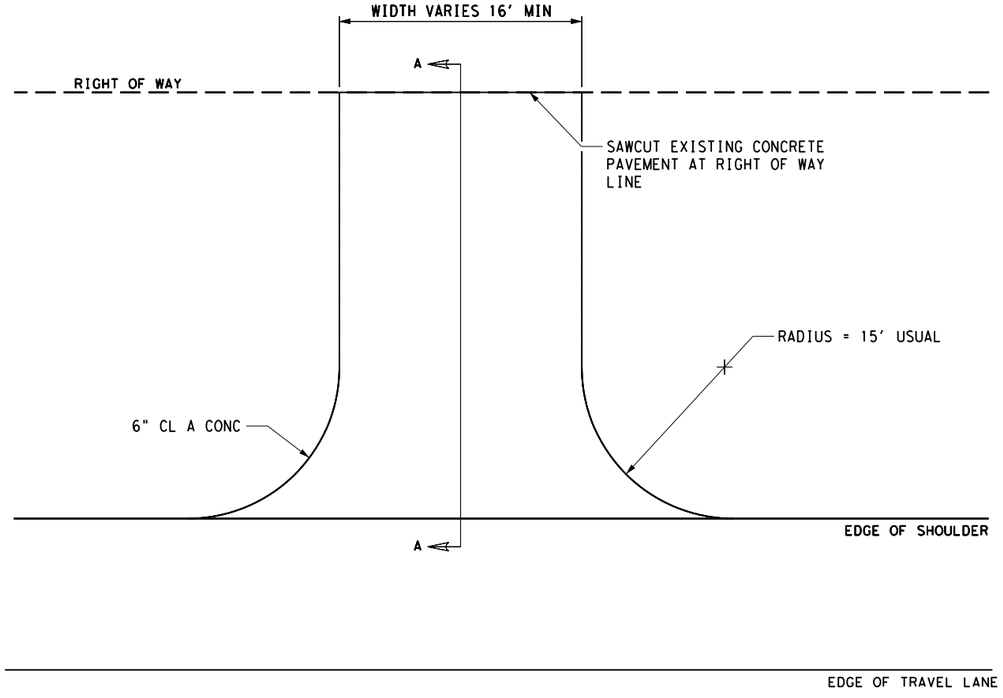
SIGNATURE OF REGISTRANT & DATE

INTERSECTION AND DRIVEWAY DETAILS

NOT TO SCALE

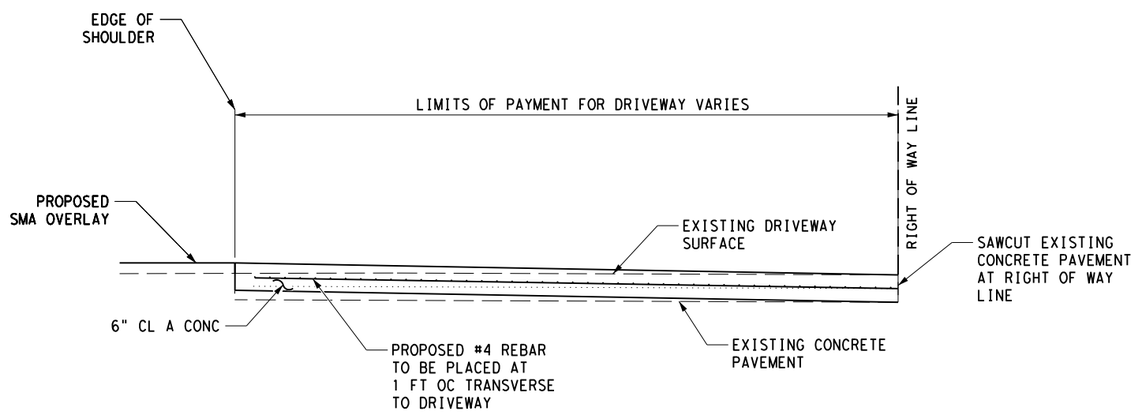
CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		63

c:\txdot\pw*online\txdot3\anton.lopour\d0374182\FM 66 ACP Driveway Details*1.dgn
1:43:57 PM
NODE
10/25/2021



DRIVEWAYS (CONC)

DRIVEWAYS (CONC) SHALL CONSIST OF SAW CUTTING THE EXISTING CONCRETE DRIVEWAY AT THE RIGHT OF WAY LINE, REMOVAL OF EXISTING CONCRETE, BENDING OF EXISTING LONGITUDINAL REBAR FOR TIEING NEW CONCRETE PAVEMENT INTO EXISTING CONCRETE PAVEMENT AND PLACEMENT OF A MINIMUM OF 6" CLASS 'A' CONCRETE. MATCH EXISTING DRIVEWAY THICKNESS IF GREATER THAN 6".



SECTION A-A

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

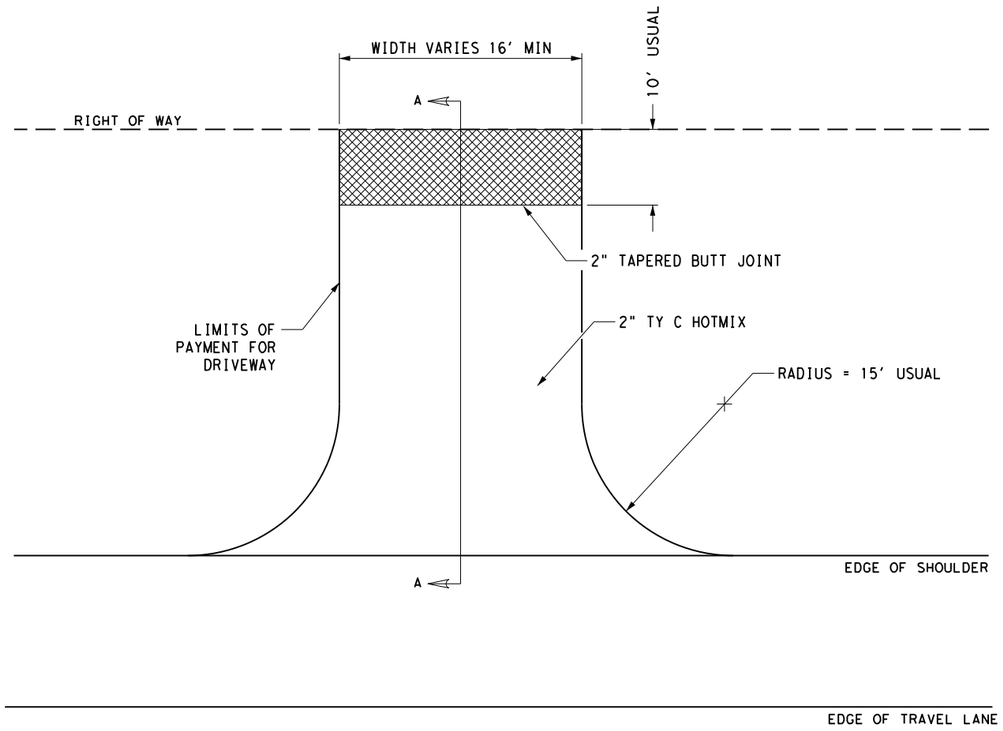
P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

INTERSECTION AND DRIVEWAY DETAILS

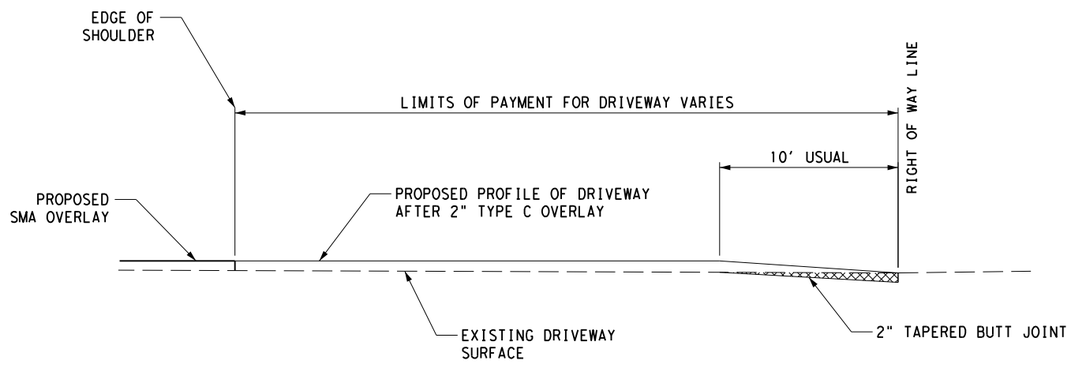
NOT TO SCALE SHEET 2 OF 3

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		64



DRIVEWAYS (ACP)

DRIVEWAYS (ACP) SHALL CONSIST OF MILLING A 2" TAPERED BUTT JOINT AT THE EXISTING RIGHT OF WAY LINE AND AN ACP OVERLAY TO PROVIDE A SMOOTH TRANSITION FROM THE PROPOSED SURFACE OF FM 66 TO THE ADJOINING PROPERTY.



SECTION A-A

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

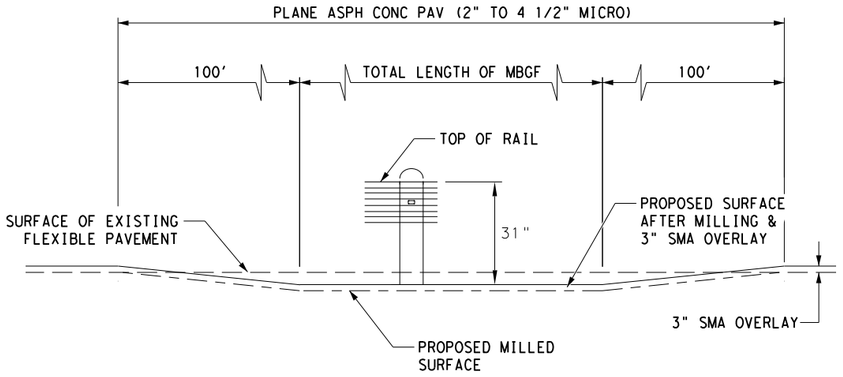
SIGNATURE OF REGISTRANT & DATE

INTERSECTION AND DRIVEWAY DETAILS

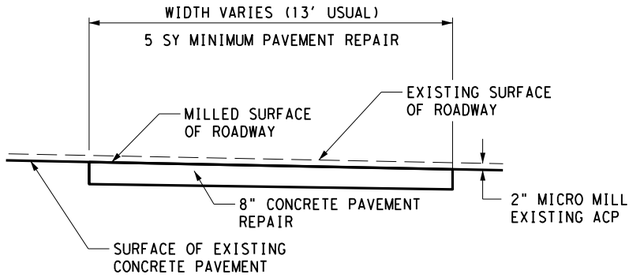
NOT TO SCALE SHEET 3 OF 3

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		65

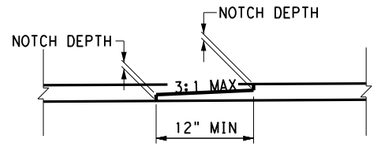
c:\txdot\pw*online\txdot3\anton.lopour\d0374182\FM 66 ACP Driveway Details.dgn
1:44:13 PM
NODE
10/25/2021



TAPER MILLING DETAIL
AT METAL BEAM GUARD FENCE LOCATIONS
NOT TO SCALE



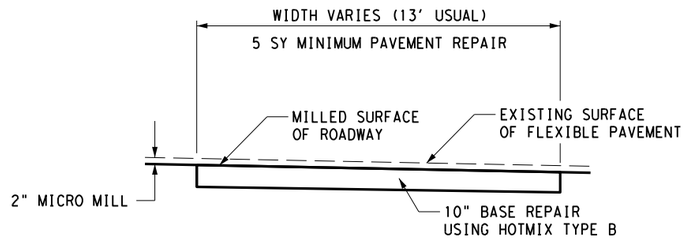
CONCRETE PAVEMENT REPAIR DETAIL
NOT TO SCALE



HOT MIX LONGITUDINAL TAPERED JOINT DETAILS
NOT TO SCALE

NOTES:

- LONGITUDINAL JOINTS WILL BE CONSTRUCTED BY TAPERING THE BITUMINOUS MAT.
- THE TAPERED PORTION MUST EXTEND BEYOND THE NORMAL LANE WIDTH.
- THE TAPERED PORTION OF THE MAT WILL BE CONSTRUCTED BY THE USE OF AN APPROVED STRIKE-OFF DEVICE THAT WILL PROVIDE A UNIFORM SLOPE AND WILL NOT RESTRICT THE MAIN SCREED.
- TACK COAT WILL BE APPLIED TO THE IN-PLACE TAPER BEFORE THE ADJACENT MAT IS PLACED. FINAL DENSITY REQUIREMENTS FOR THE ENTIRE PAVEMENT, INCLUDING THE TAPER AREA, WILL REMAIN UNCHANGED. COMPACTION OF THE INITIAL TAPER SECTION WILL BE REQUIRED AS NEAR TO FINAL DENSITY AS POSSIBLE.
- NOTCH DEPTH = LARGEST AGGREGATE IN MIX.



FLEXIBLE PAVEMENT REPAIR DETAIL
NOT TO SCALE

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021
SIGNATURE OF REGISTRANT & DATE

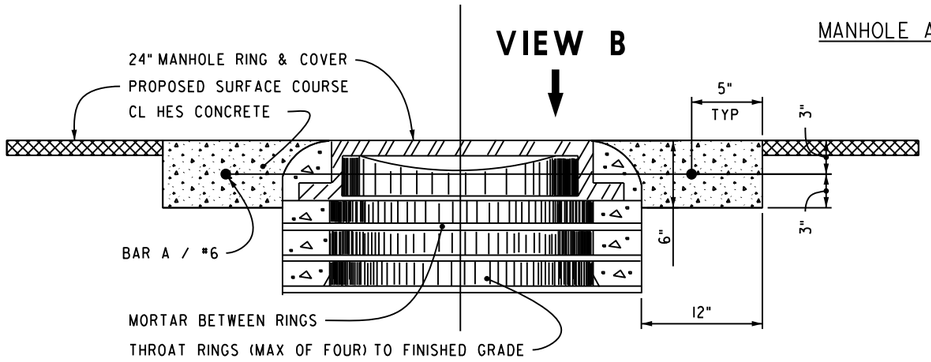
MISCELLANEOUS DETAILS

NOT TO SCALE SHEET 1 OF 1

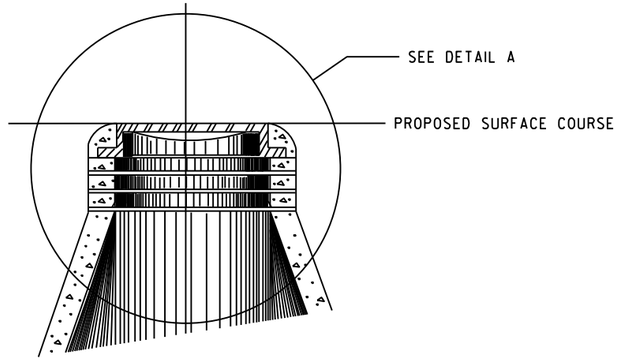
CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		66

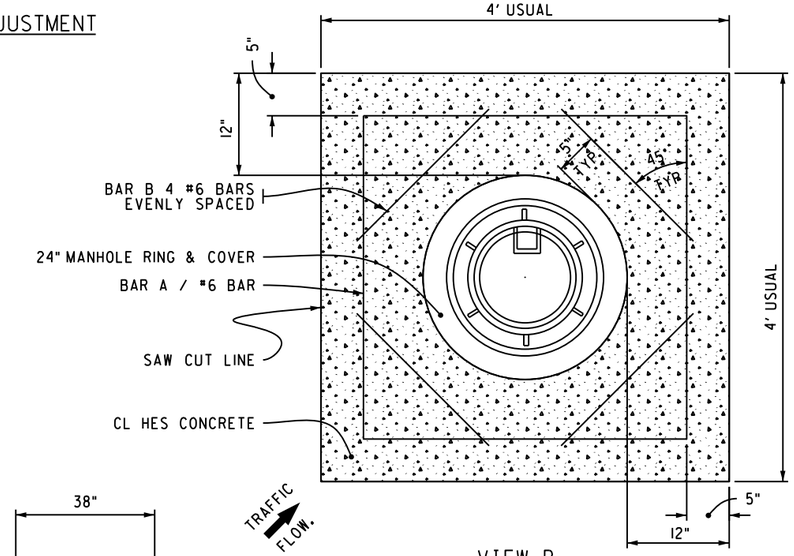
c:\txdot\pw\online\txdot3\anton. lopour\d0142400\Misc Details.dgn
1:44:26 PM
NODE
10/25/2021

MANHOLE ADJUSTMENT

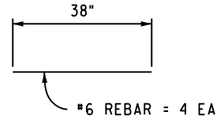


DETAIL A





VIEW B



BAR B DETAIL

1. INSTALL PROPOSED SURFACE COURSE.

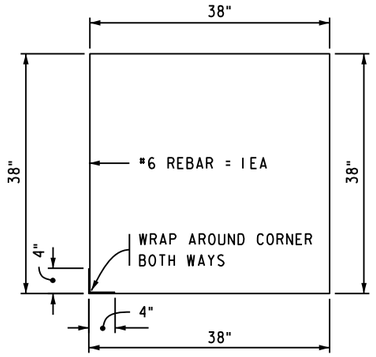
   SAW CUT THE PERIMETER AS SHOWN AND REMOVE SURFACE COURSE TO PROVIDE CLEAN REPAIR JOINT.

   ADD OR REMOVE RINGS AND MORTAR AS REQUIRED TO BRING COVER FLUSH WITH PROPOSED SURFACE COURSE.

   INSTALL CL HES CONCRETE.

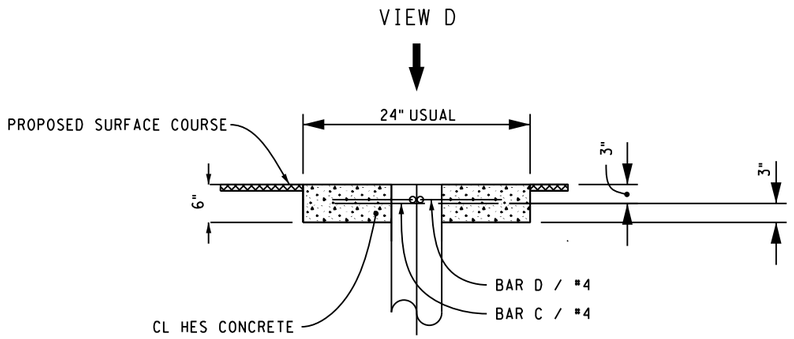
2. ALL ITEMS SHOWN WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO ITEM 479 ADJUSTING MANHOLES.

   LOCATIONS AND QUANTITIES OF REPAIRS WILL VARY AS DIRECTED.

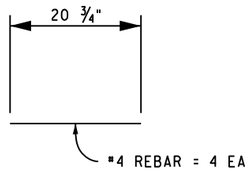


BAR A DETAIL

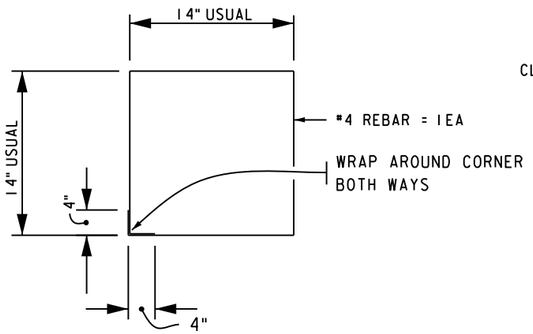
VALVE ADJUSTMENT



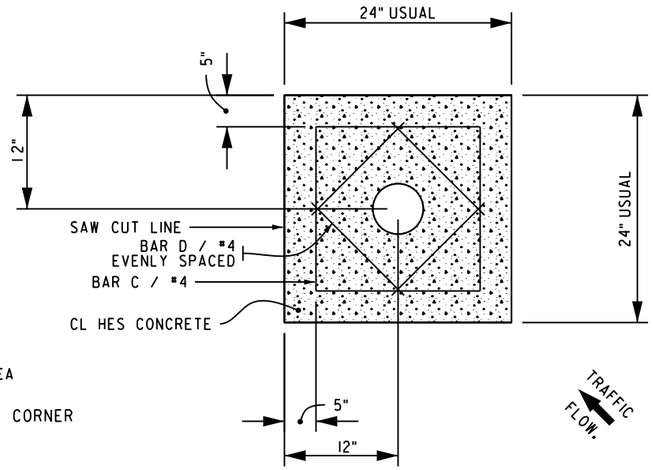
DETAIL C



BAR D DETAIL



BAR C DETAIL



VIEW D

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

MANHOLE AND VALVE ADJUSTMENT DETAILS

NOT TO SCALE SHEET 1 OF 1

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		67

c:\txdot\pw*online\txdot3\anton. lopour\d0142400\manhole.dgn
1:44:30 PM
NODE
10/25/2021

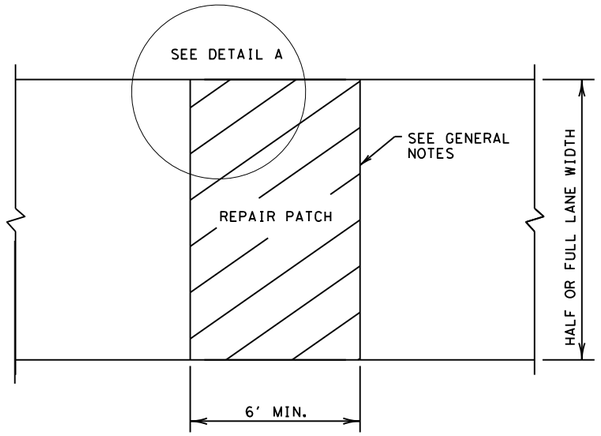
DATE: 10/21/2021
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0142404\repcp14.dgn

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

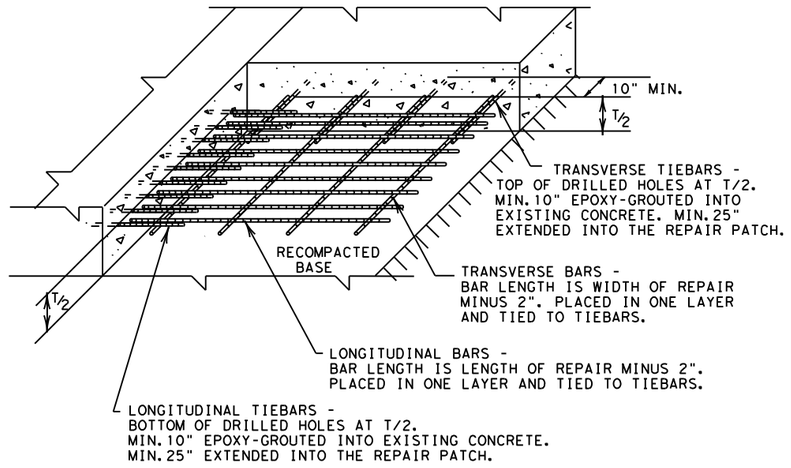
* USE 12" SPACING AS FIRST AND LAST SPACING AT END OR SIDE FOR ALL BARS.

GENERAL NOTES

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



PLAN VIEW

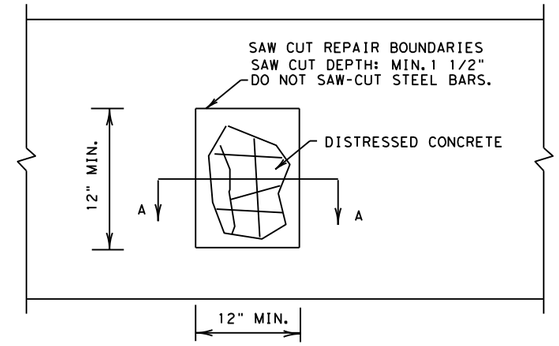


DETAIL A
GROUTED TIEBARS & REINFORCEMENT

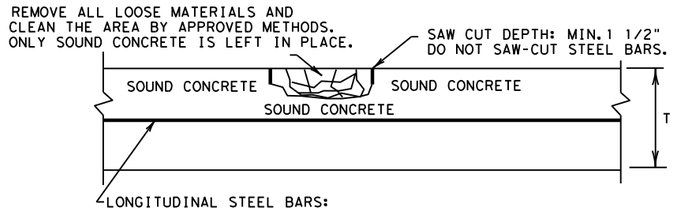
FULL-DEPTH REPAIR OF CRCP, JRCP, AND CPCD

GENERAL NOTES

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



PLAN VIEW



LONGITUDINAL STEEL BARS:

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

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

SECTION A-A

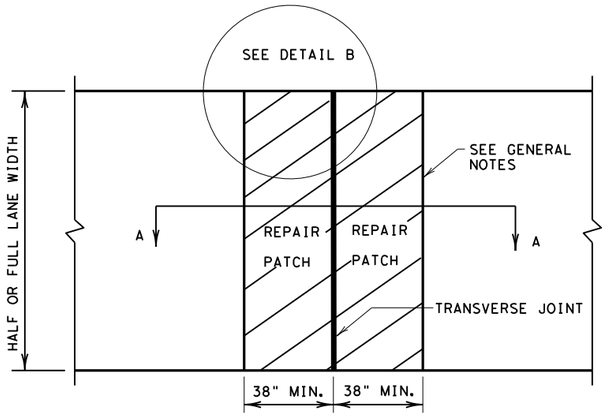
HALF-DEPTH REPAIR

Texas Department of Transportation | Design Division Standard

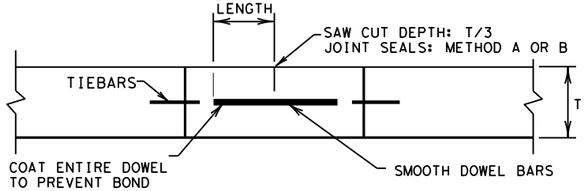
REPAIR OF CONCRETE PAVEMENT

REPCP-14

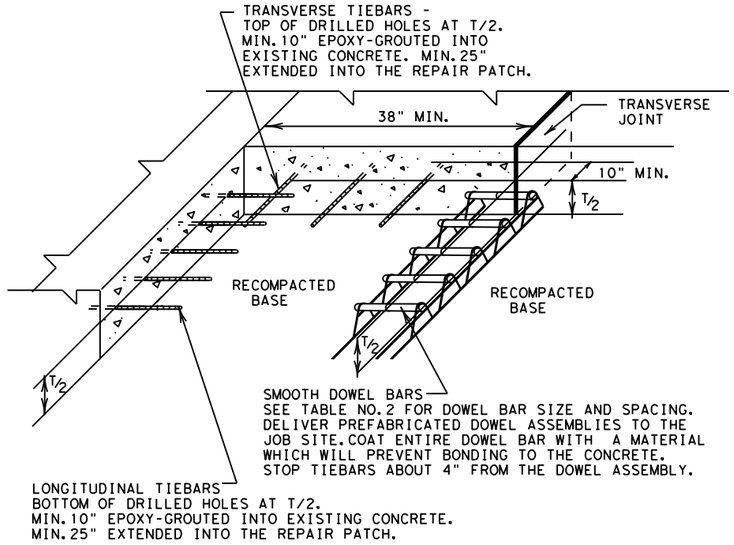
FILE: repcp14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		68



PLAN VIEW



SECTION A-A



DETAIL B
GROUTED TIEBARS & DOWELS

GENERAL NOTES

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

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

REPAIR OF TRANSVERSE JOINT OF CPCD

Texas Department of Transportation — Design Division Standard

REPAIR OF CONCRETE PAVEMENT

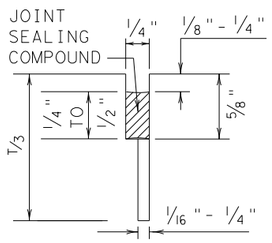
REPCP-14

FILE: repcp14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		69

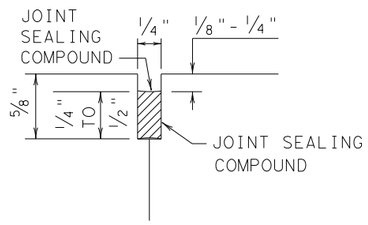
DATE: 10/21/2021
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0142404\repcp14.dgn

DATE: 10/21/2021
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0142404\js14.dgn

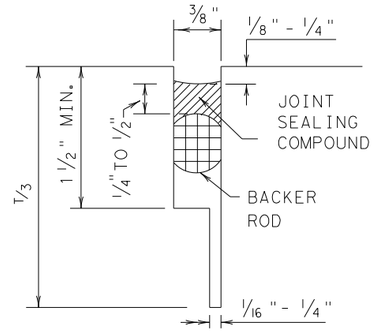
METHOD B: JOINT SEALING COMPOUND



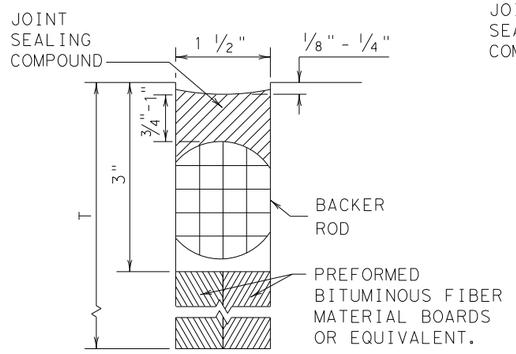
LONGITUDINAL SAWED CONTRACTION JOINT



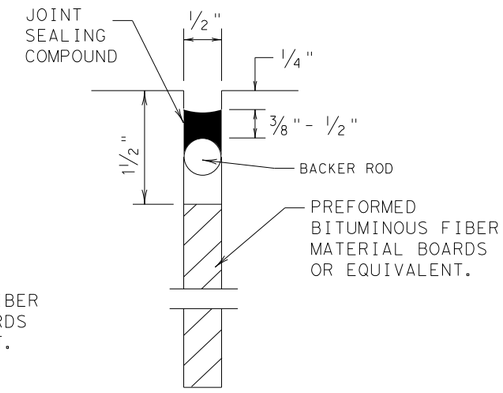
LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT

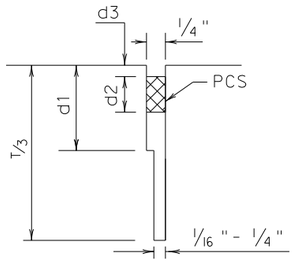


TRANSVERSE FORMED EXPANSION JOINT

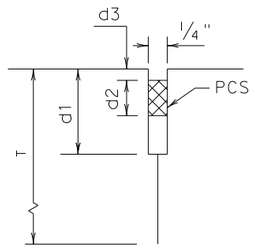


FORMED ISOLATION JOINT

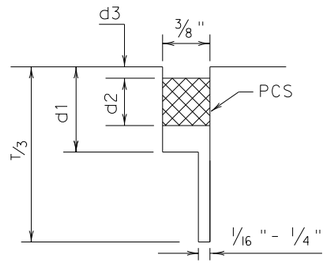
METHOD A: PREFORMED COMPRESSION SEALS (PCS)(DMS-6310 CLASS 6)



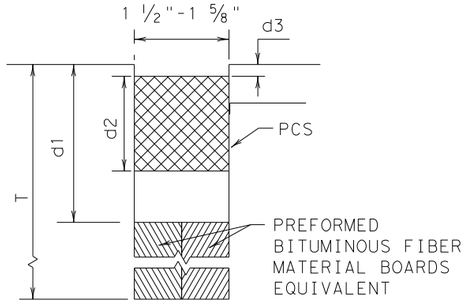
LONGITUDINAL SAWED CONTRACTION JOINT



LONGITUDINAL CONSTRUCTION JOINT



TRANSVERSE SAWED CONTRACTION JOINT



TRANSVERSE FORMED EXPANSION JOINT

GENERAL NOTES

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

Texas Department of Transportation — Design Division Standard

CONCRETE PAVING DETAILS

JOINT SEALS

JS-14

FILE: js14.dgn	DN: TxDOT	DN: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		70

DATE:
FILE:

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

DOT #: 416 027L
Crossing Type: ** At - Grade
RR Company Owning Track at Crossing: Union Pacific Railroad
Operating RR Company at Track: Union Pacific Railroad
RR MP: 206.690
RR Subdivision: Fort Worth
City: Itasca
County: Hill
CSJ at this Crossing: 0596-01-023
Highway/Roadway name crossing the railroad: FM66
# of regularly scheduled trains per day at this crossing: 18
# of switching movements per day at this crossing: 0
% of estimated contract cost of work within railroad ROW: <1%

Scope of Work at this Crossing to Be Performed by State Contractor:
Pavement Markings

Scope of Work at this Crossing to Be Performed by Railroad Company:
None

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

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

None

III. FLAGGING & INSPECTION

of Days of Railroad Flagging Expected: 1

On this project, night or weekend flagging is:

- [X] Expected
- [ ] Not Expected

Flagging services will be provided by:

- [ ] Railroad Company: TxDOT will pay flagging invoices
- [X] Outside Party: Contractor will pay flagging invoices, to be reimbursed by TxDOT

Contractor must incorporate flaggers into anticipated construction schedule. The Railroad requires a 30 day notice if their flaggers are to be utilized. If Contractor falls behind schedule due to their own negligence and is not ready for scheduled flaggers, any flagging charges will be paid by Contractor.

Contact Information for Flagging:

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

Contractor must incorporate Construction Inspection into anticipated construction schedule.

- [X] Not Required
- [ ] Required: Contact Information for Construction Inspection:

IV. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

On this project, construction work to be performed by a railroad company is:

- [ ] Required
- [X] Not Required

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

V. RAILROAD INSURANCE REQUIREMENTS

Railroad reference number shall be provided by TxDOT CST or DO.

The Contractor shall confirm the insurance requirements with the Railroad as the insurance limits are subject to change without notice.

Insurance policies must be issued for and on behalf of the Railroad. Where more than one Railroad Company is operating on the same right of way or where several Railroad Companies are involved and operate on their own separate rights of way, provide separate insurance policies in the name of each Railroad Company.

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

Type of Insurance	Amount of Coverage (Minimum)
Workers Compensation	$500,000 / $500,000 / $500,000
Commercial General Liability	$2,000,000 / $4,000,000
Business Automobile	$2,000,000 combined single limit
Railroad Protective Liability	
[ ] Not Required	
[X] Non - Bridge Projects	$2,000,000 / $6,000,000
[ ] Bridge Projects	$5,000,000 / $10,000,000
[ ] Other	

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

On this project, an ROE agreement is:

- [ ] Not Required
- [X] Required: TxDOT CST to assist in obtaining with the UPRR (see Item 5, Article 8.3)
- [ ] Required: Contractor to obtain (see Item 5, Article 8.4)

With the following railroad companies: _____

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

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

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

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

VII. RAILROAD COORDINATION MEETING

On this project, a Railroad Coordination Meeting is:

- [X] Not Required
- [ ] Required

See Item 5, Article 8.1 for more details.

VIII. SUBCONTRACTORS

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

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency
Call Union Pacific Railroad (UPRR)
Railroad Emergency Line at 888-877-7267
Location: DOT 416 027 L
RR Milepost 206.690
Subdivision Fort Worth

Texas Department of Transportation | Rail Division

RAILROAD SCOPE OF WORK

PROJECT SPECIFIC DETAILS

FILE: RR Scope of Work.dgn	DN: TxDOT	CK:	DW:	CK:
© TxDOT June 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
3/2020	DIST	COUNTY		SHEET NO.
	09	Hill		71

PART 1 - GENERAL

1.01 DESCRIPTION

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

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

1.02 REQUEST FOR INFORMATION / CLARIFICATION

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

1.03 PLANS / SPECIFICATIONS

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

PART 2 - UTILITIES AND FIBER OPTIC

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

PART 3 - CONSTRUCTION

3.01 GENERAL

A. Perform all work in compliance with all applicable Railroad, Federal Railroad Administration (FRA), and TxDOT rules and regulations. Arrange and conduct work in a manner that does not endanger or interfere with the safe operation of the tracks and property of the Railroad and the traffic moving on such tracks, or the wires, signals and other property of the Railroad, its tenants or licensees, at or in the vicinity of the Work. The safe operation of railroad train movements takes precedence over any work to be performed by the Contractor. The Contractor is responsible for train delay cost and lost revenue claims due to any delays or interruption of train operations resulting from Contractor's construction or other activities.

B. Construction activities within 15 feet of the operational tracks will only be allowed if absolutely necessary and the Railroad's Designated Representative grants approval. Construction activities within 15 feet of the operational track(s) preferably allow the tracks to stay operational. In such cases, coordination and approval by the Railroad Track Manager is required with regard to schedule, flagging, and slow orders. See Sections 3.07 and 3.08 for additional information.

C. Provide track protection for all work equipment (including rubber tired equipment) operating within 25 feet from nearest rail. When not in use, keep Contractor machinery and materials at least 50 feet from the Railroad's nearest track.

D. Vehicular crossings of railroad track are allowed only at existing crossings, or haul road crossings developed with Railroad approval.

E. The Contractor is also advised that new railroad facilities within the project may be built by the Railroad. If applicable, these facilities are delineated in the plans. Be aware of the limits of responsibilities and coordinate efforts with the Railroad and TxDOT.

F. Railroad requirements do not allow work within 50 feet of track centers when a train passes the work site and all personnel must clear the area within 50 feet of the track centerline and secure all equipment. Additional allowances may be pursued as outlined in 3.02 and 3.03.

G. All permanent clearances shall be verified before project closing.

3.02 RAILROAD OPERATIONS

A. Trains and/or equipment are expected on any track, at any time, in either direction. Become familiar with the train schedules in this location and structure bid assuming intermittent track windows in this period, as defined in Paragraph B that follows.

B. All railroad tracks within and adjacent to the contract site are active, and rail traffic over these facilities shall be maintained throughout the Project. Activities may include both through moves and switching moves to local customers. railroad traffic and operations will occur continuously throughout the day and night on these tracks and shall be maintained at all times as defined herein. Coordinate and schedule the work so that construction activities do not interfere with railroad operations.

C. Coordinate work windows with TxDOT and the Railroad's Designated Representative. Types of work windows include Conditional Work Windows and Absolute Work Windows, as defined below:

1. Conditional Work Window: A Conditional Work Window is a period of time that railroad operations have priority over construction activities. When construction activities may occur on and/or adjacent to the railroad tracks within 25 feet of the nearest track, a railroad flag person will be required. At the direction of the railroad flag person, upon approach of a train, and when trains are present on the tracks, the tracks must be cleared (i.e., no construction equipment, materials or personnel within 25 feet, or as directed by the Railroad Designated Representative, from the tracks). Conditional Work Windows are available for the Project.

2. Absolute Work Window: An Absolute Work Window is a period of time that construction activities are given priority over railroad operations. During this time frame, the designated railroad track(s) will be inactive for train movements and may be fouled by the Contractor. At the end of an Absolute Work Window, the railroad tracks and/or signals must be completely operational for train operations and all Railroad, Public Utilities Commission (PUC) and FRA requirements, codes and regulations for operational tracks must be satisfied. In the situation where the operating tracks and/or signals have been affected, the Railroad will perform inspections of the work prior to placing that track back into service. Railroad flag persons will be required for construction activities requiring an Absolute Work Window. Absolute Work Windows will not generally be granted. Any request will require a detailed explanation for Railroad review.

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

A. Do not perform any work within Railroad Right of Way without a valid executed Right of Entry Agreement if required on this project.

B. Give advance notice to the Railroad as required in the "Contractor's Right of Entry Agreement" before commencing work in connection with construction upon or over Railroad Right of Way and observe the Railroad's rules and regulations with respect thereto.

C. Perform all work upon Railroad Right of Way in a manner to avoid interference with or endanger the operations of the Railroad. Whenever work may affect the operations or safety of trains, submit the work method to the Railroad Designated Representative for approval. Approval does not relieve the Contractor from liability. Do not commence any work which requires flagging service or inspection service until the flagging protection required by the Railroad is available at the job site. See Section 3.15 for railroad flagging requirements.

D. Make requests in writing for both Absolute and Conditional Work Windows, at least 30 days in advance of any work. Include in the written request:
1. Exactly what the work entails.
2. The days and hours that work will be performed.
3. The exact location of work, and proximity to the tracks.
4. The type of window requested and the amount of time requested.
5. The designated contact person.

Provide a written confirmation notice to the Railroad at least 48 hours before commencing work in connection with approved work windows when work is within 25 feet of nearest rail. Perform all work in accordance with previously approved work plans.

E. Make provisions to protect operations and property of the Railroad should a condition arising from, or in connection with the work, require immediate and unusual action. If in the judgment of the Railroad Designated Representative such provisions are insufficient, the Railroad Designated Representative may require or provide such provisions as deemed necessary. In any event, such provisions shall be at the Contractor's expense and without cost to the Railroad or TxDOT. The Railroad or TxDOT shall have the right to order the Contractor to temporarily cease operations in the event of an emergency or, if in the opinion of the Railroad Designated Representative, the Contractor's operations could endanger railroad operations. In the event of such an order, immediately notify TxDOT of the order.

3.04 INSURANCE

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

3.05 RAILROAD SAFETY ORIENTATION

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

"UPRR, BNSF, KCS/TEXMEX will not accept on-track safety training certificates from other railroads. Refer to Railroad specific contractor right of entry for training information."

B. Know and follow the "Contractor's Right of Entry Agreement" EXHIBIT D, MINIMUM SAFETY REQUIREMENTS regarding clothing, personal protective equipment, and general safety requirements.

3.06 COOPERATION

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

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

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

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

3.08 APPROVAL OF REDUCED CLEARANCES

A. Maintain minimum track clearances during construction as specified in Section 3.07.

B. Submit any proposed infringement on the specified minimum clearances to the Railroad Designated Representative through TxDOT at least 30 days in advance of the work. Do not proceed with such infringement without written approval by the Railroad Designated Representative.

C. Do not commence work involving an approved infringement without receiving written assurance from the Railroad Designated Representative that arrangements have been made for any necessary flagging service.

Texas Department of Transportation — Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		72

DATE: 10/21/2021 1:13:49 PM
FILE: c:\txdot\pw_online\txdot3\anton.lopaur\d0142400\nbp.dgn

3.09 MAINTENANCE OF RAILROAD FACILITIES

A. Maintain all ditches and drainage structures free of silt or other obstructions resulting from Contractor's operations. Repair eroded areas and any other damage within Railroad Right of Way and repair any other damage to the property of the Railroad, or its tenants.

B. Perform all such maintenance and repair of damages due to the Contractors's operations at Contractor's expense.

C. Submit a proposed method of erosion control for review by the Railroad prior to beginning any grading on the project site. Comply with all applicable local, state and federal regulations when developing and implementing such erosion control.

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

A. In addition to the office reviews of construction submittals, site inspections may be performed by the Railroad Designated Representative at significant points during construction, including the following if applicable:
   1. Pre-construction meetings.
   2. Pile driving/drilling of caissons or drilled shafts.
   3. Reinforcement and concrete placement for railroad bridge substructure and/or superstructure.
   4. Erection of precast concrete or steel bridge superstructure.
   5. Placement of waterproofing (prior to placing ballast on bridge deck).
   6. Completion of the bridge structure.

B. Site inspection is not limited to the milestone events listed above. Site visits to check progress of the work may be performed at any time throughout the construction as deemed necessary by the Railroad.

C. Provide a detailed construction schedule, including the proposed temporary horizontal and vertical clearances and construction sequence for all work to TxDOT for submittal to the Railroad Designated Representative for review prior to commencement of work. Include the anticipated dates when the above listed events will occur. Update this schedule for the above listed events as necessary and each month at a minimum to allow the Railroad to schedule site inspections.

3.11 RAILROAD REPRESENTATIVES

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

A. When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from nearest rail of any track on which trains may operate, or when any object is off the ground and any dimension thereof could extend inside the 25 foot limit, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.

B. For any excavation below elevation of track subgrade if, in the opinion of the Railroad Designated Representative, track or other railroad facilities may be subject to settlement or movement.

C. During any clearing, grubbing, excavation or grading in proximity to railroad facilities, which, in the opinion of the Railroad Designated Representative, may endanger railroad facilities or operations.

D. During any Contractor's operations when, in the opinion of the Railroad Designated Representative, railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines, or pipe lines, may be endangered.

E. Arrange with the Railroad Designated Representative to provide the adequate number of flag persons to accomplish the work.

3.12 COMMUNICATIONS AND SIGNAL LINES

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

3.13 TRAFFIC CONTROL

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

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

A. Take special precaution and care in connection with excavating and shoring. Excavations for construction of footings, piers, columns, walls or other facilities that require shoring shall comply with requirements of TxDOT, OSHA, AREMA and Railroad "Guidelines for Temporary Shoring".

B. The project plans indicate whether there are fiber optic lines or other such telecommunications systems that require consideration. Regardless, contact the necessary call center to determine if such cable systems are present:

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

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

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

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

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

3.15 RAILROAD FLAGGING

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

3.16 CLEANING OF RIGHT-OF-WAY

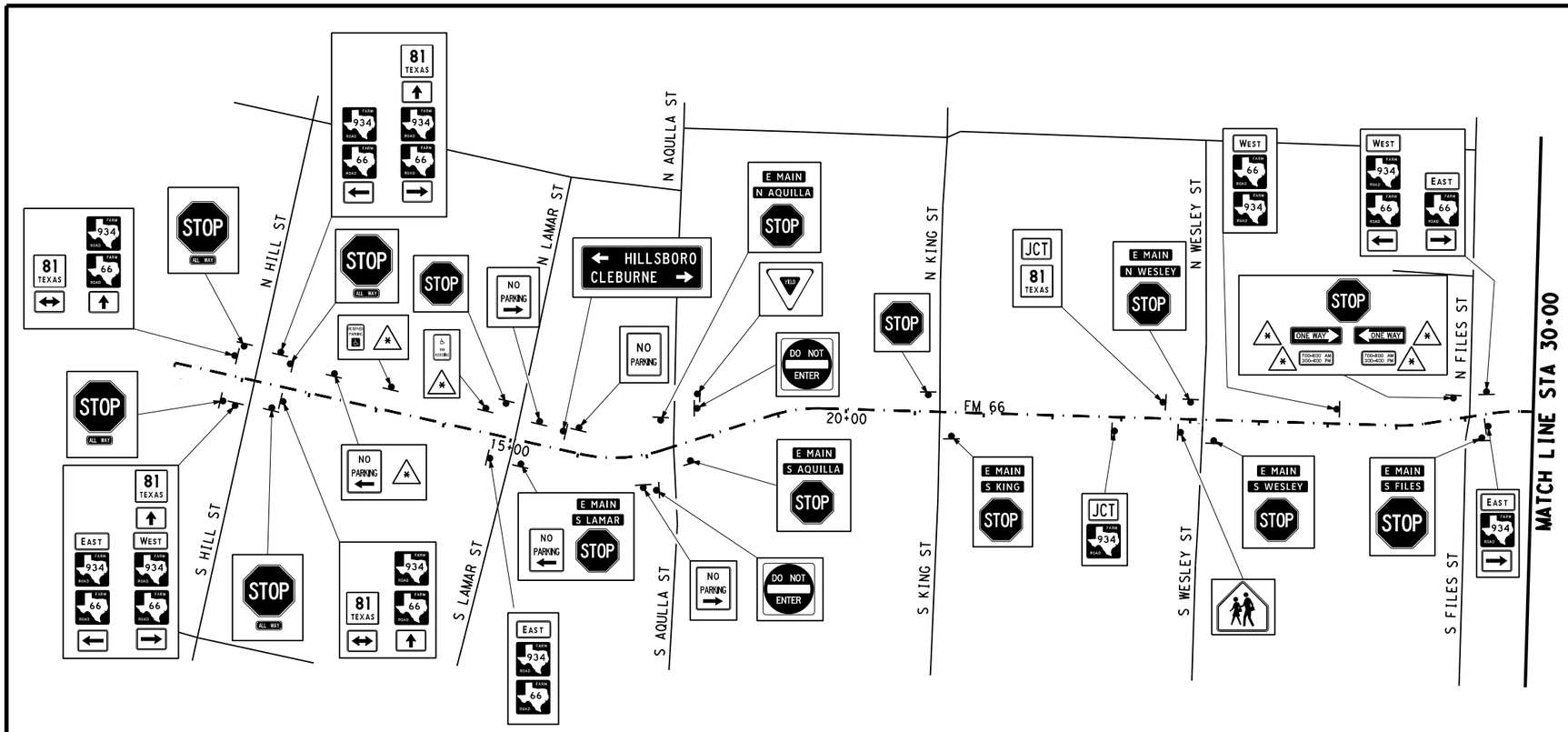
When work is complete, remove all tools, implements, and other materials brought into Railroad Right of Way and leave the right of Way in a clean and presentable condition to the satisfaction of TxDOT and the Railroad.

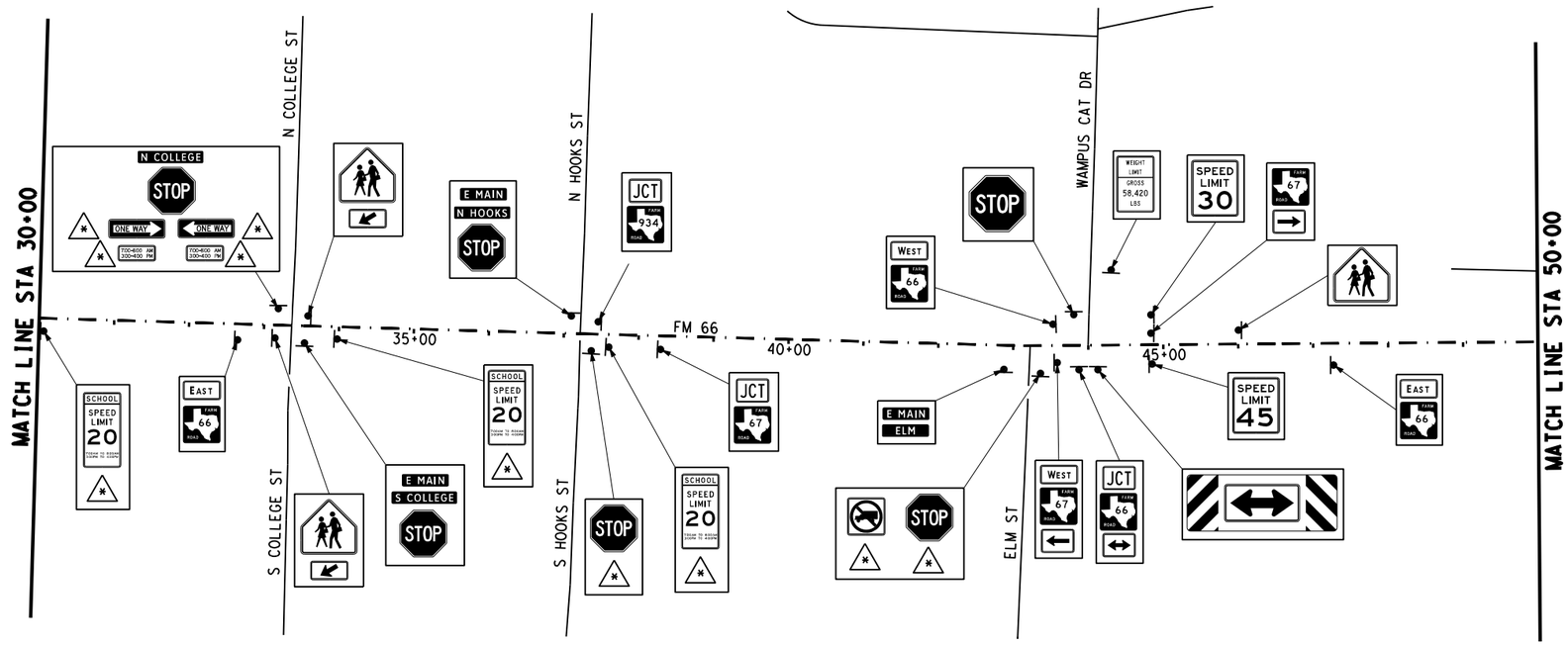
Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		73

DATE: 10/21/2021 1:13:49 PM
FILE: c:\txdot\pw_online\txdot3\anton.lopour\d0142400\nbp.dgn





GENERAL NOTES:

1. RELOCATE EXISTING STREET NAME SIGNS ONTO THE CORRESPONDING REPLACEMENT STOP SIGNS. THE RELOCATION OF EXISTING STREET NAME SIGNS SHALL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED PART OF THE VARIOUS BID ITEMS.
2. SIGNS MARKED WITH (*) ARE TO BE RETURNED TO THE CITY OF ITASCA.

ITEM	DESCRIPTION	QUAN
0644 6076	REMOVE SM RD SN SUP&AM	60 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021
SIGNATURE OF REGISTRANT & DATE

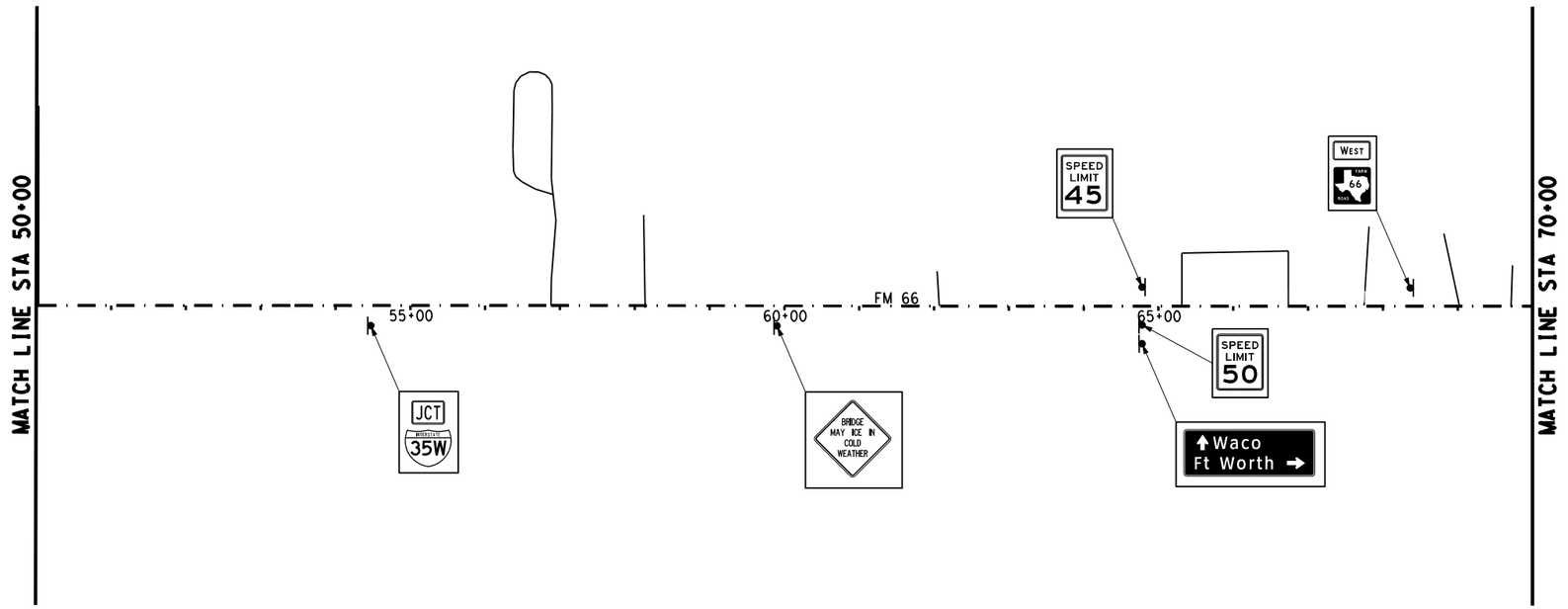
SIGN REMOVAL LAYOUT

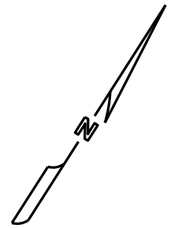
SCALE: 0 50 100 200 FEET
1" = 200' HORIZ.

SHEET 1 OF 5

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		74

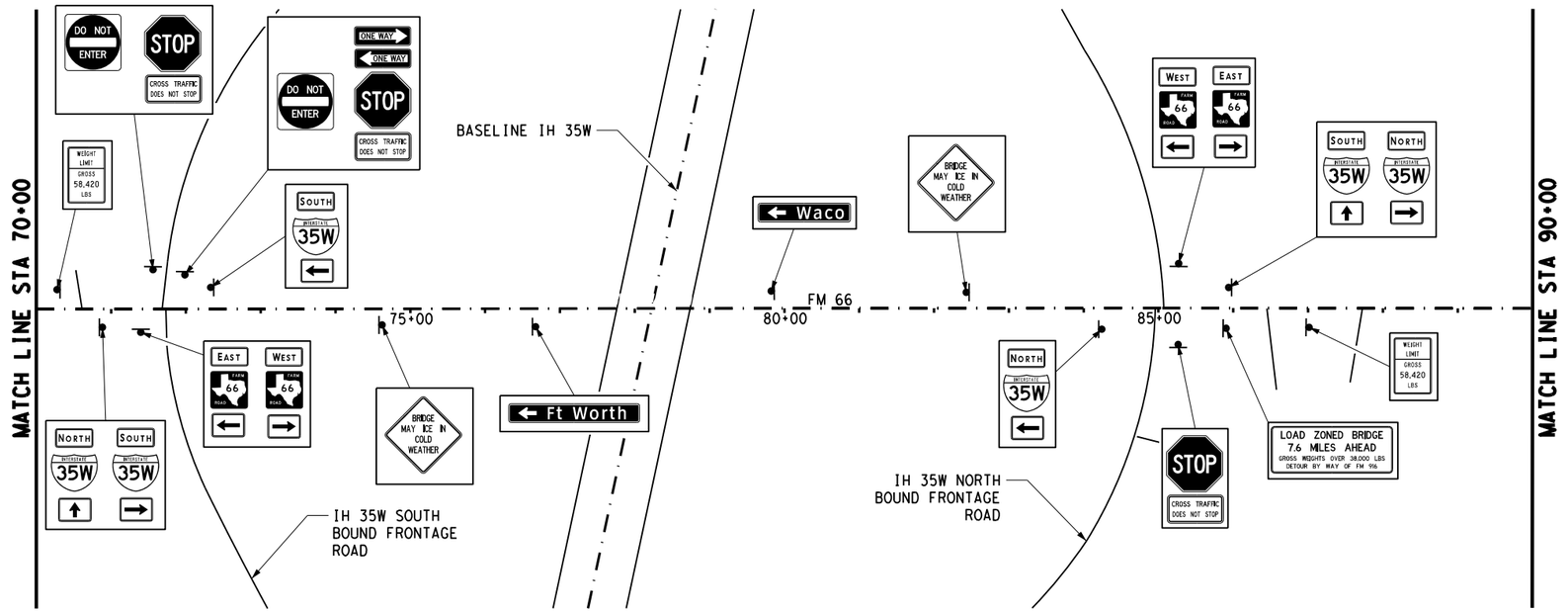
c:\txdot\pw\online\txdot3\anton.lopour\d0372392\R&R Layout Sheet 1.dgn
1:44:42 PM
NODE
10/25/2021





GENERAL NOTES:

1. RELOCATE EXISTING STREET NAME SIGNS ONTO THE CORRESPONDING REPLACEMENT STOP SIGNS. THE RELOCATION OF EXISTING STREET NAME SIGNS SHALL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED PART OF THE VARIOUS BID ITEMS.



ITEM	DESCRIPTION	QUAN
0644 6076	REMOVE SM RD SN SUP&AM	22 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

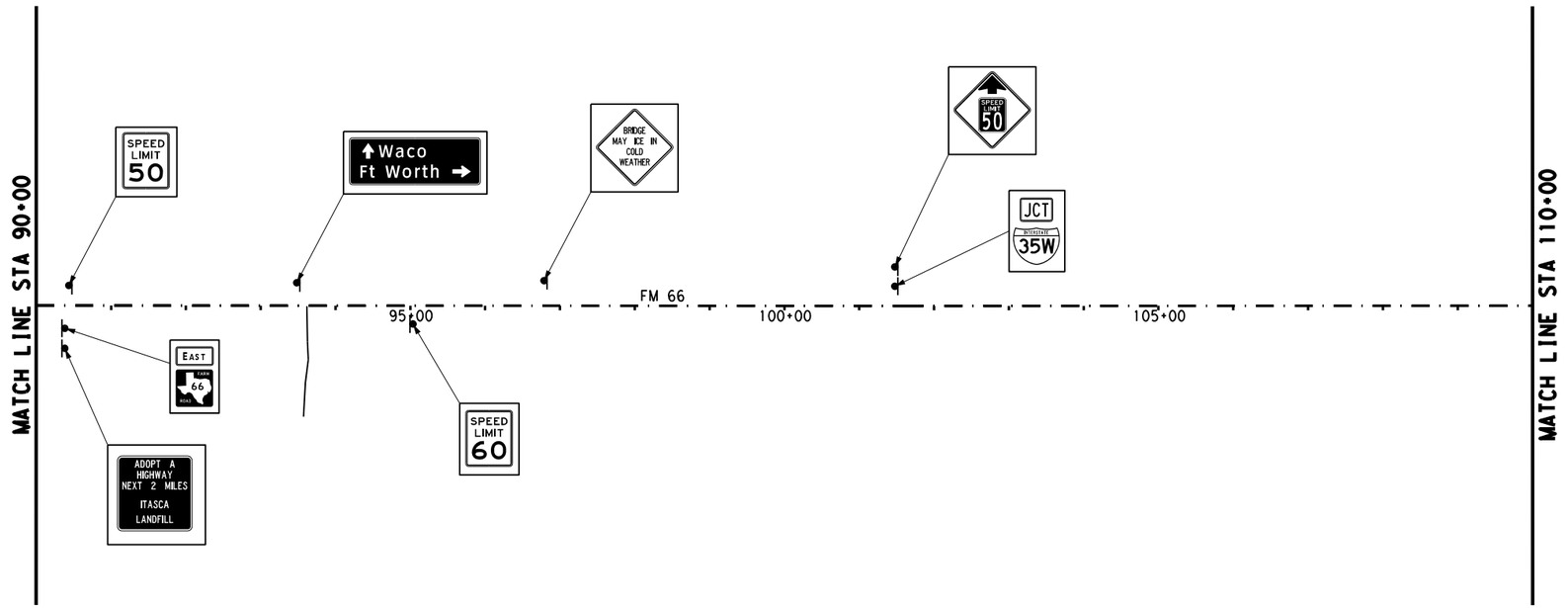
SIGN REMOVAL LAYOUT

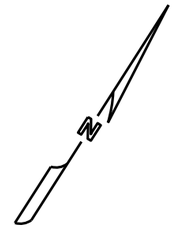
SCALE: 0 50 100 200 FEET
1" = 200' HORIZ.

SHEET 2 OF 5

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		75

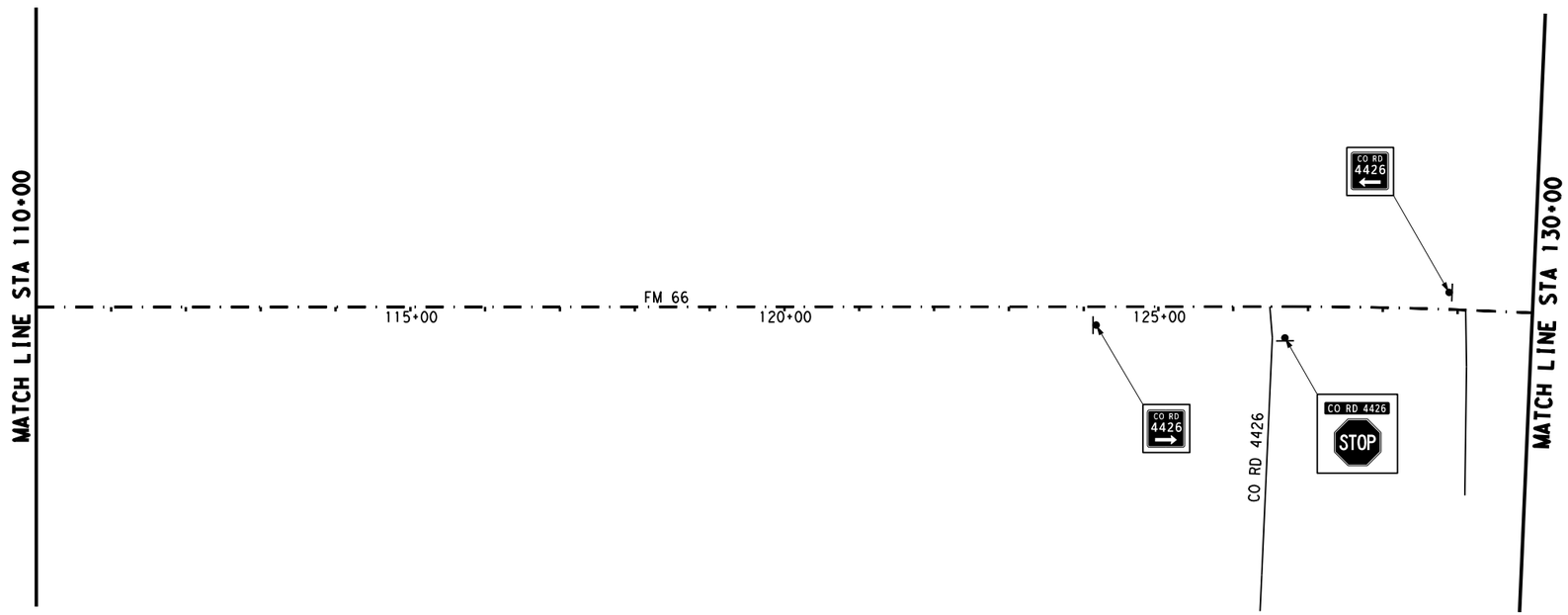
C:\txdot\pw\online\txdot3\vanton.lopour\d0372392\R&R Layout Sheet 2.dgn
NODE
10/25/2021 1:44:46 PM





GENERAL NOTES:

1. RELOCATE EXISTING STREET NAME SIGNS ONTO THE CORRESPONDING REPLACEMENT STOP SIGNS. THE RELOCATION OF EXISTING STREET NAME SIGNS SHALL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED PART OF THE VARIOUS BID ITEMS.



ITEM	DESCRIPTION	QUAN
0644 6076	REMOVE SM RD SN SUP&AM	11 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021
SIGNATURE OF REGISTRANT & DATE

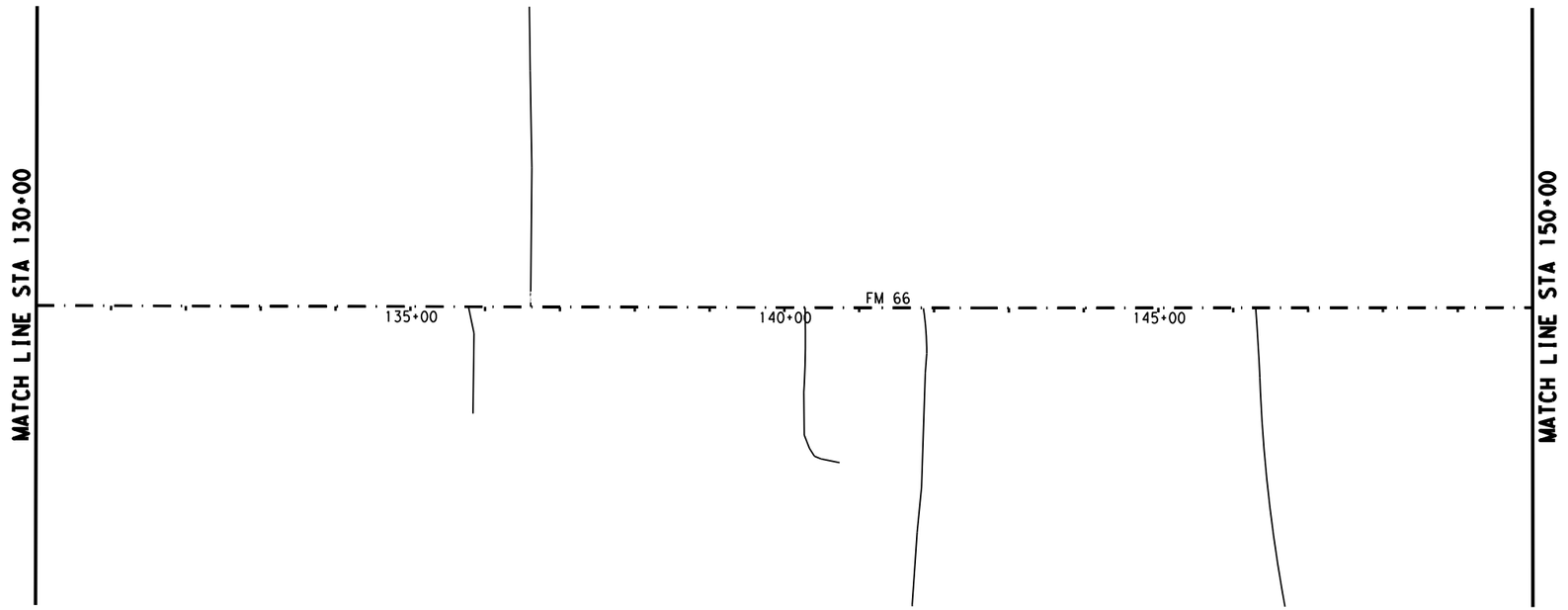
SIGN REMOVAL LAYOUT

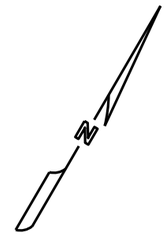
SCALE: 0 50 100 200 FEET
1" = 200' HORIZ.

SHEET 3 OF 5

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		76

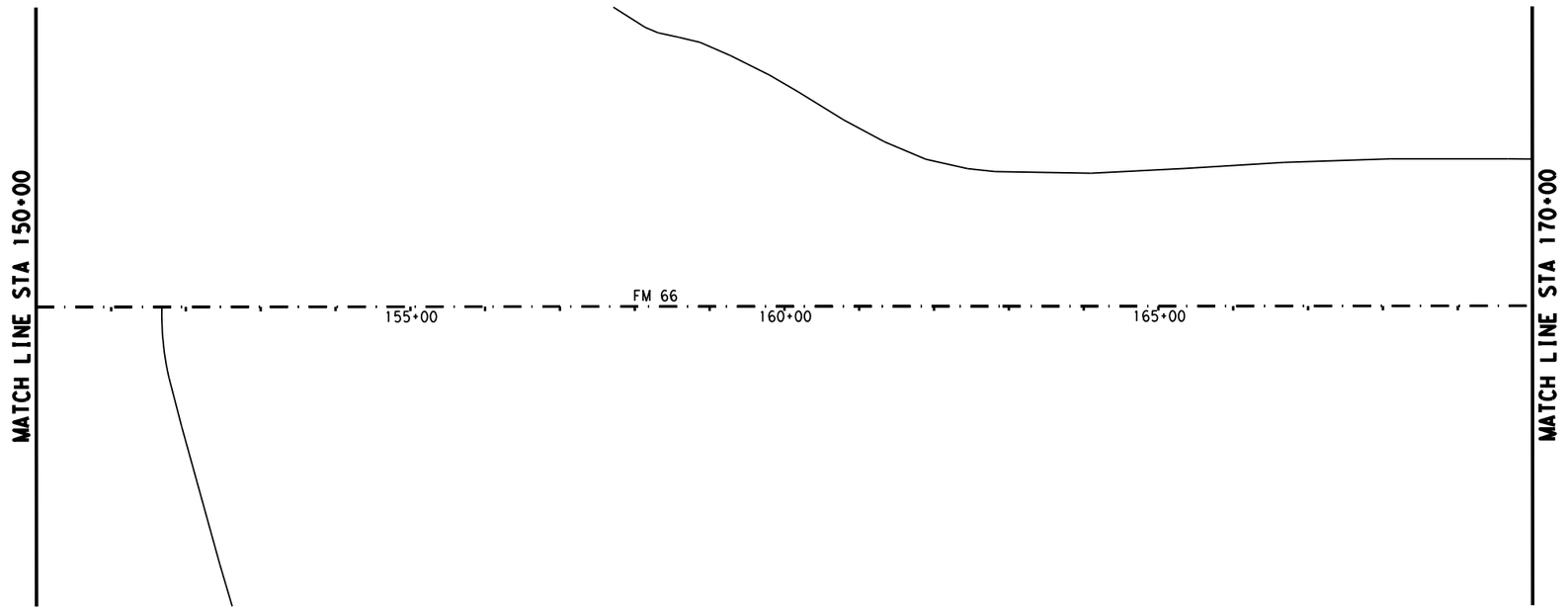
C:\txdot\pw\online\txdot3\anton.lopour\d0372392\R&R Layout Sheet 3.dgn
1:44:50 PM
NODE
10/25/2021



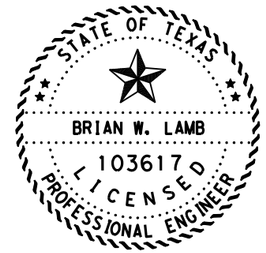


GENERAL NOTES:

1. THERE ARE NO SIGNS ON THIS PLAN SHEET.



ITEM	DESCRIPTION	QUAN
0644 6076	REMOVE SM RD SN SUP&AM	0 EA



P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

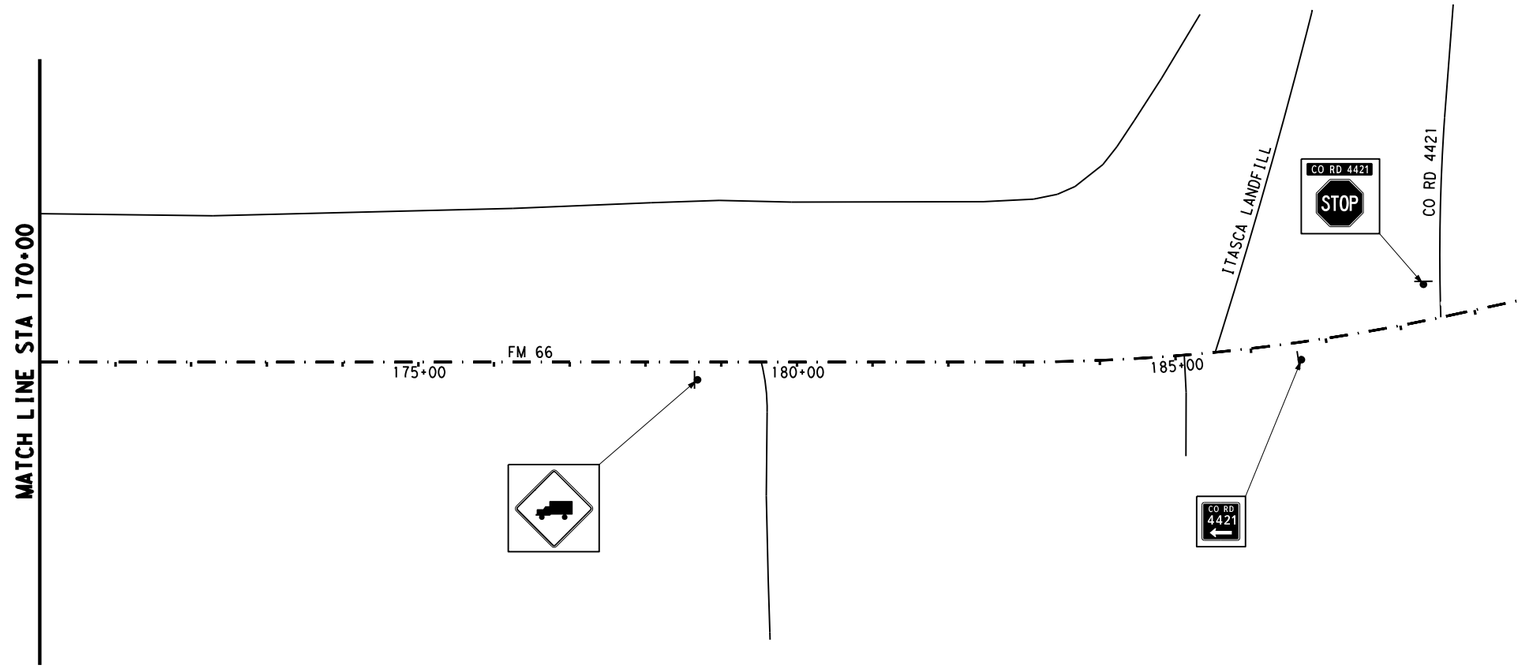
SIGN REMOVAL LAYOUT

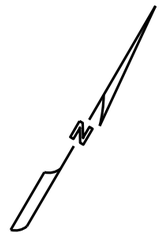
SCALE: 0 50 100 200 FEET
1" = 200' HORIZ.

SHEET 4 OF 5

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		77

c:\txdot\pw\online\txdot3\anton.lopour\d0372392\R&R Layout Sheet 4.dgn
1:44:54 PM
NODE
10/25/2021





GENERAL NOTES:

1. RELOCATE EXISTING STREET NAME SIGNS ONTO THE CORRESPONDING REPLACEMENT STOP SIGNS. THE RELOCATION OF EXISTING STREET NAME SIGNS SHALL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED PART OF THE VARIOUS BID ITEMS.

ITEM	DESCRIPTION	QUAN
0644 6076	REMOVE SM RD SN SUP&AM	3 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

SIGN REMOVAL LAYOUT

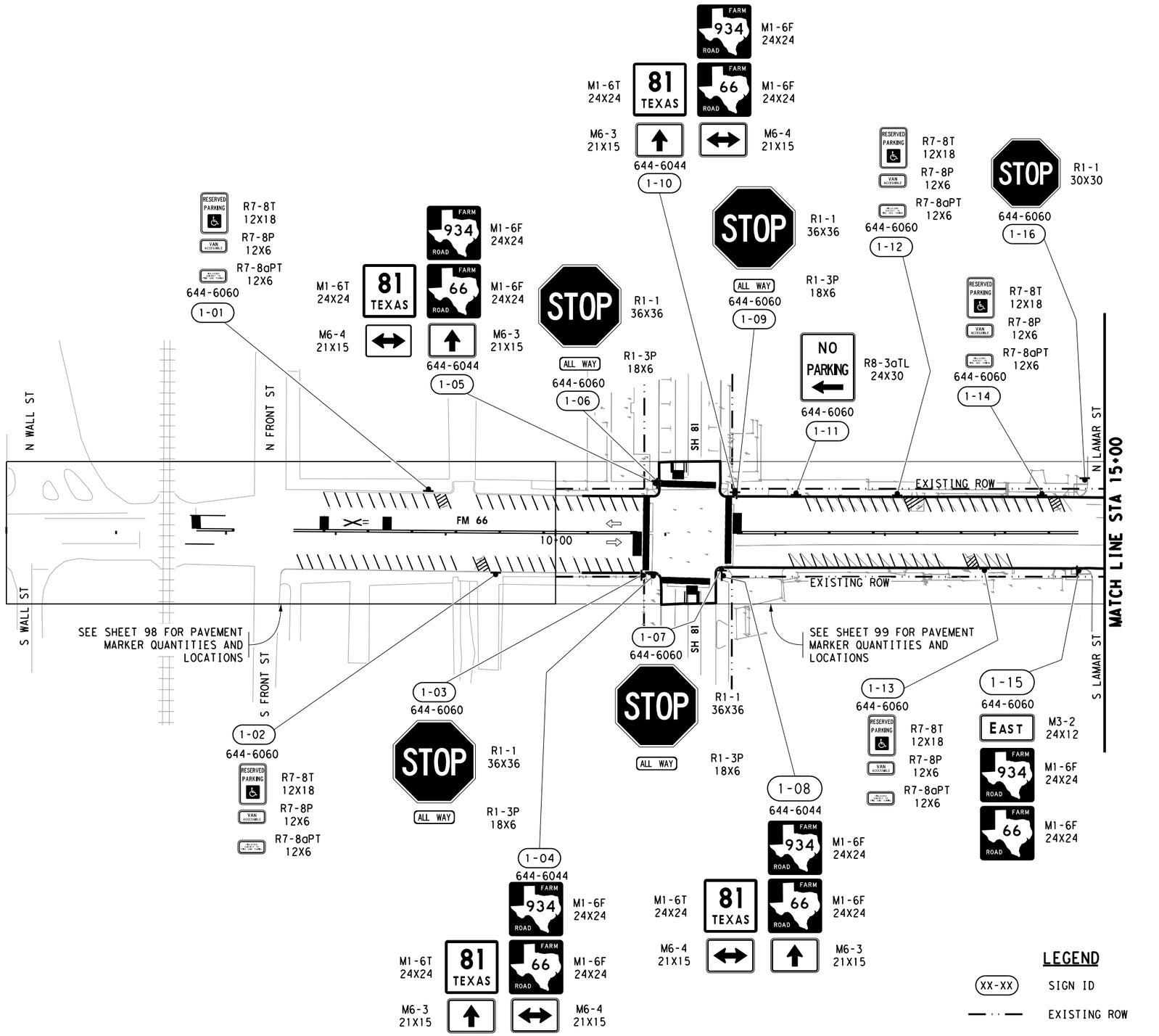
SCALE: 0 50 100 200 FEET
1" = 200' HORIZ.

SHEET 5 OF 5

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		78

NODE
10/25/2021

c:\txdot\pw\online\txdot3\anton.lopour\d0372392\R&R Layout Sheet 5.dgn
1:44:58 PM



ITEM	DESCRIPTION	QUAN
0644 6044	IN SM RD SN SUP&AM TYS80(1)SB(U)	4 EA
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	12 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021
SIGNATURE OF REGISTRANT & DATE

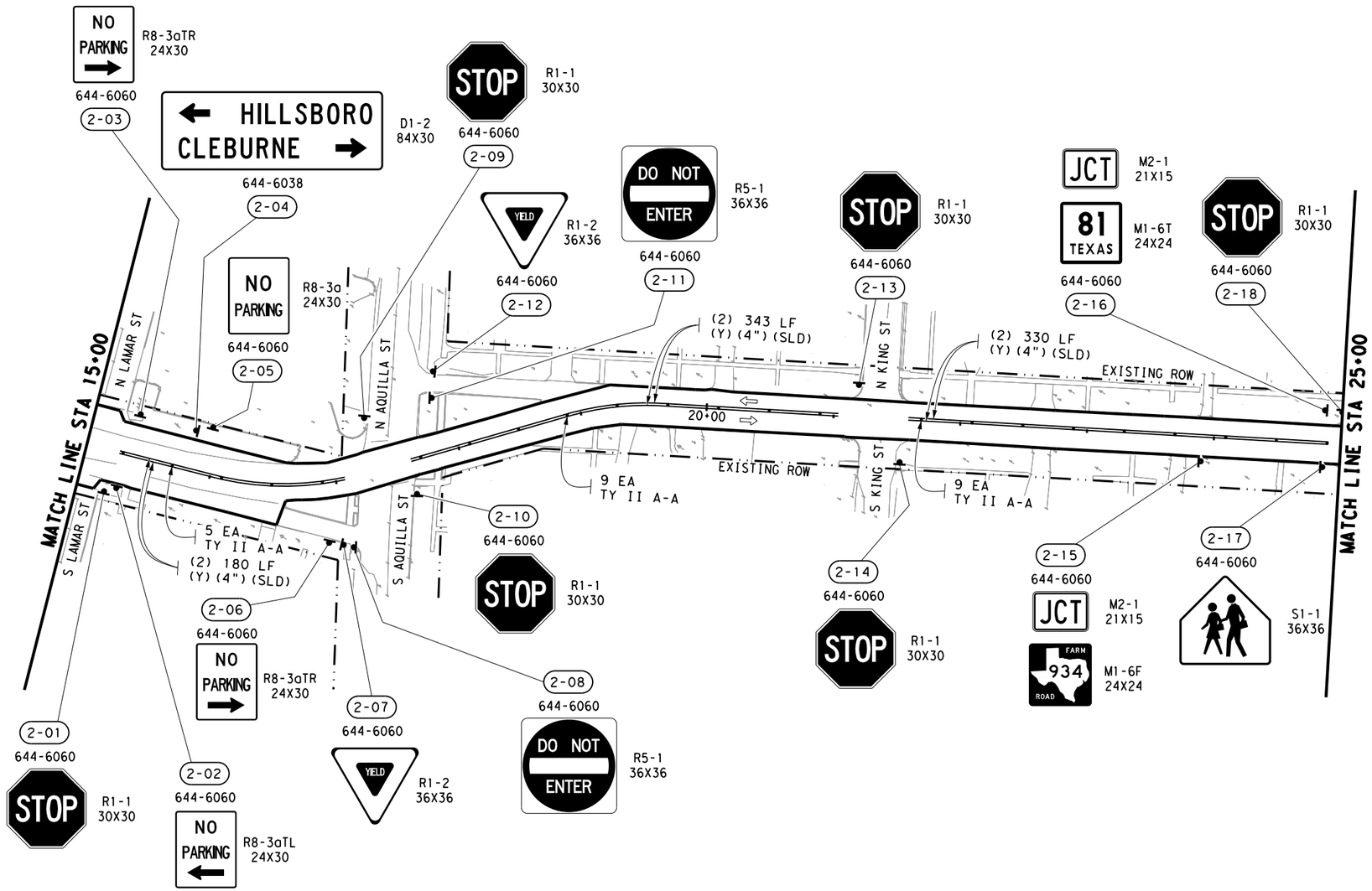
SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 1 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		79

c:\txdot\pw\online\txdot3\anton.lopour\d0372460\Traffic Sheet 1.dgn
1:45:09 PM
NODE
10/25/2021



ITEM	DESCRIPTION	QUAN
0644 6038	IN SM RD SN SUP&AM TYS80(1)SA(U-EXAL)	1 EA
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	17 EA
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	1,706 LF
0672 6009	REFL PAV MRKR TY II-A-A	23 EA

BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

SIGNING AND STRIPING LAYOUT

LEGEND

XX-XX SIGN ID

EXISTING ROW

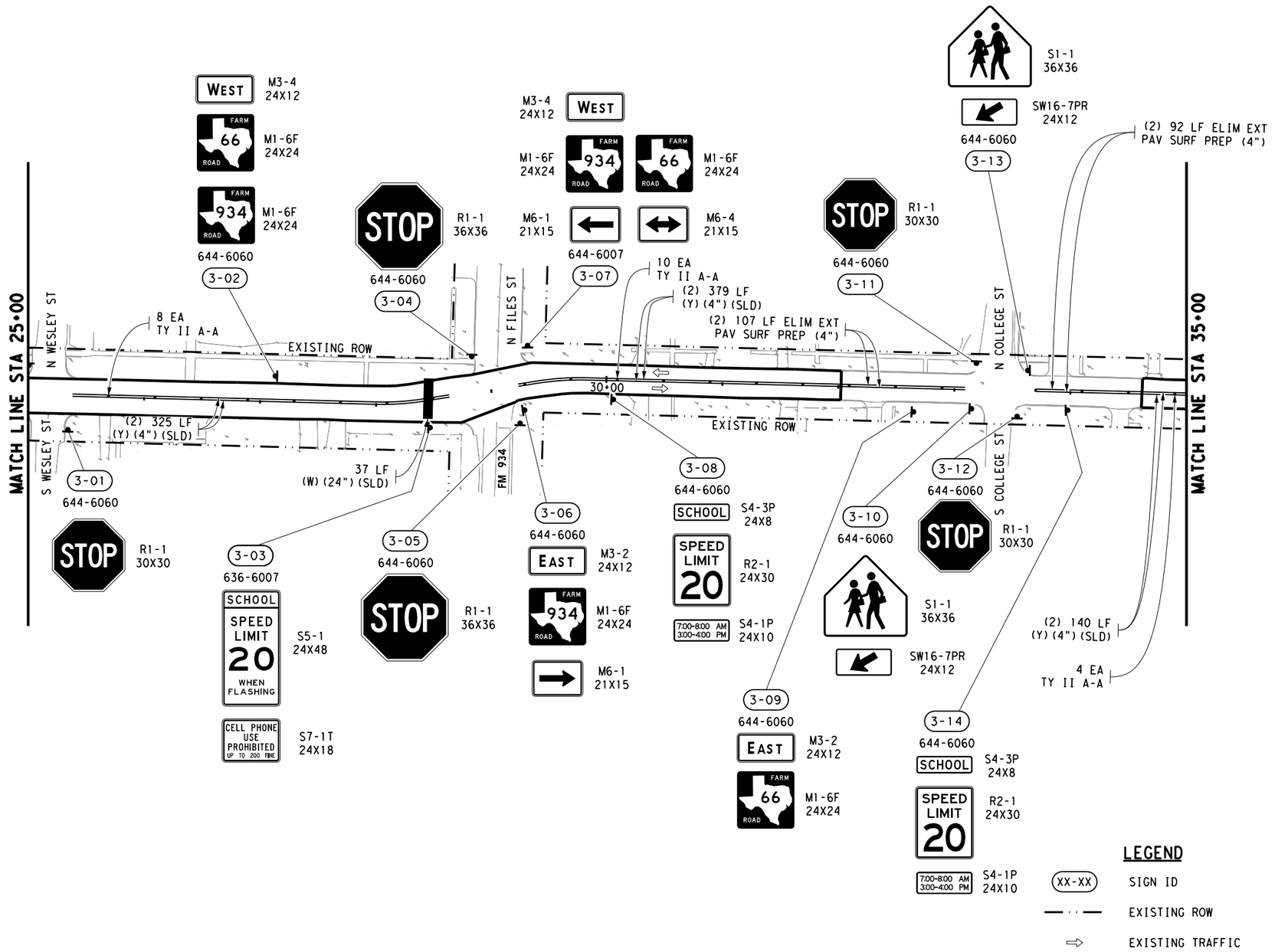
EXISTING TRAFFIC

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 2 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		80

C:\txdot\pw\online\txdot3\anton.lopour\d0372460\Traffic Sheet 2.dgn
1:45:14 PM
NODE
10/25/2021



ITEM	DESCRIPTION	QUAN
0636 6007	REPLACE EXISTING ALUMINUM SIGNS(TY A)	11 SF
0644 6007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)	1 EA
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	12 EA
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	37 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	1,688 LF
0672 6009	REFL PAV MRKR TY II-A-A	22 EA
0677 6001	ELIM EXT PAV MRK & MRKS (4")	398 LF
0678 6001	PAV SURF PREP FOR MRK (4")	398 LF

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

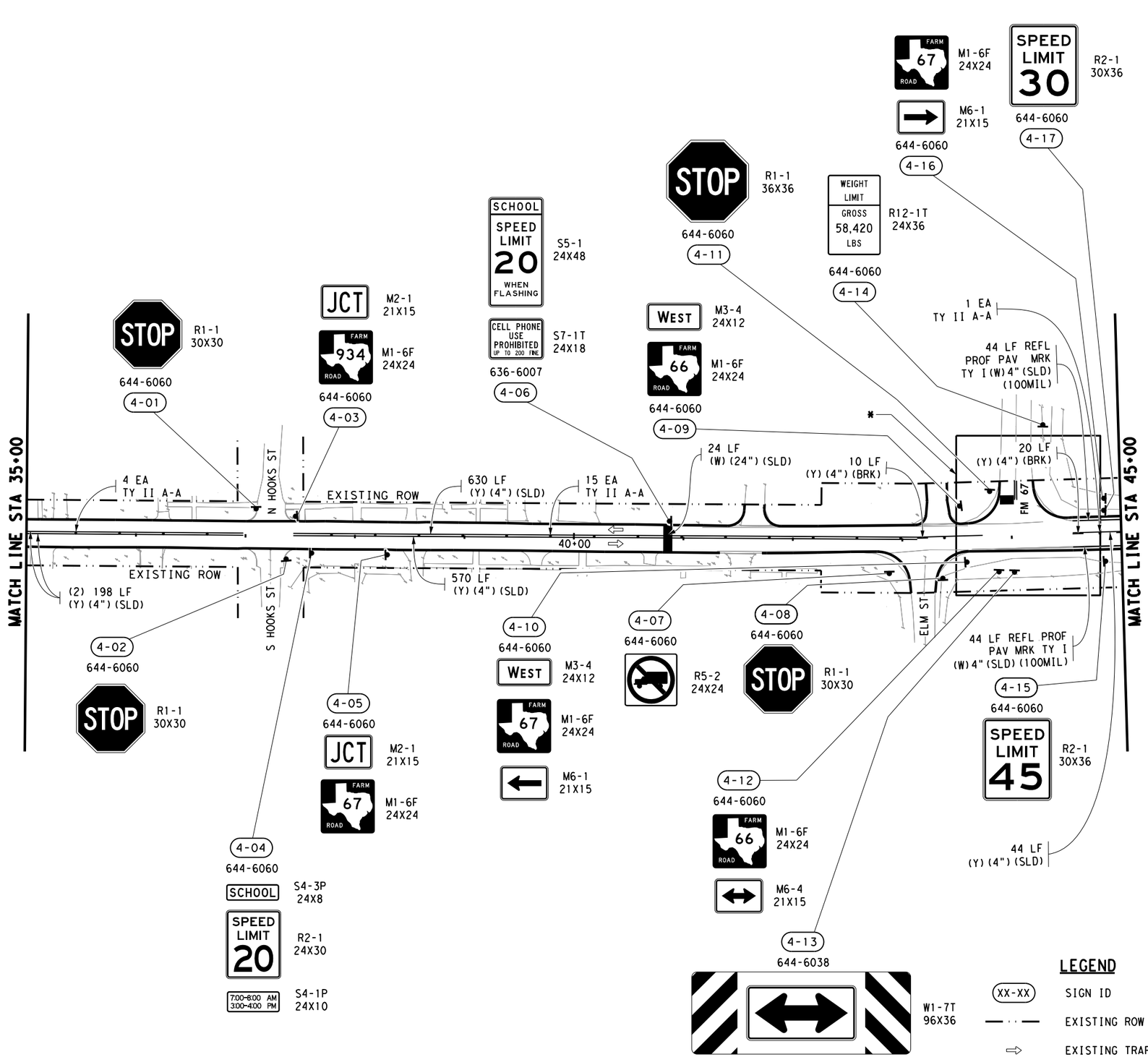
SIGNATURE OF REGISTRANT & DATE

SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 3 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		81



N

* SEE SHEET 100 DETAIL A FOR PAVEMENT MARKER QUANTITIES AND LOCATIONS

ITEM	DESCRIPTION	QUAN
0636 6007	REPLACE EXISTING ALUMINUM SIGNS(TY A)	11 SF
0644 6038	IN SM RD SN SUP&AM TYS80(1)SA(U-EXAL)	1 EA
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	15 EA
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	24 LF
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	30 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	1,640 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	88 LF
0672 6009	REFL PAV MRKR TY II-A-A	20 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021
SIGNATURE OF REGISTRANT & DATE

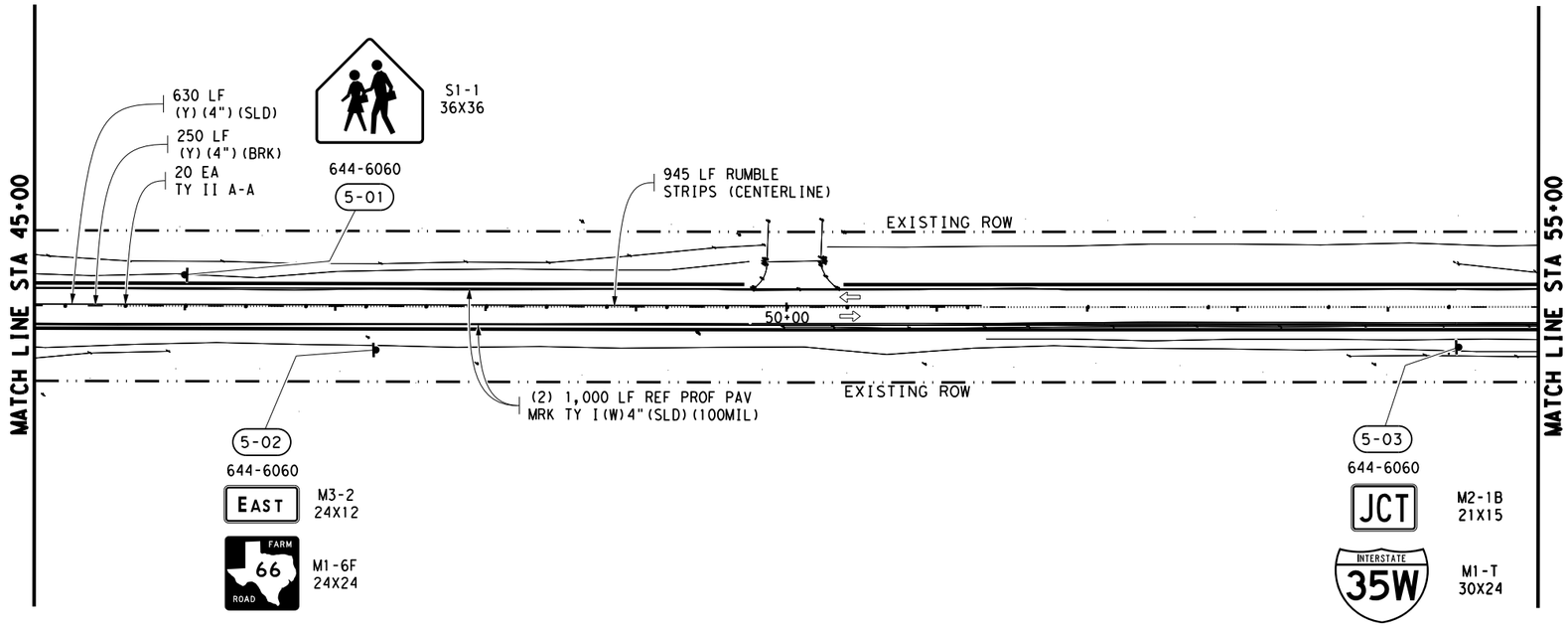
SIGNING AND STRIPING LAYOUT

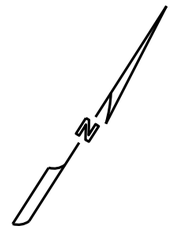
SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 4 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		82

c:\txdot\pw*online\txdot3\anton.lopour\d0372460\Traffic Sheet 4.dgn
1:45:23 PM
NODE
10/25/2021





ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	945 LF
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	3 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	630 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	20 EA

LEGEND

XX-XX	SIGN ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

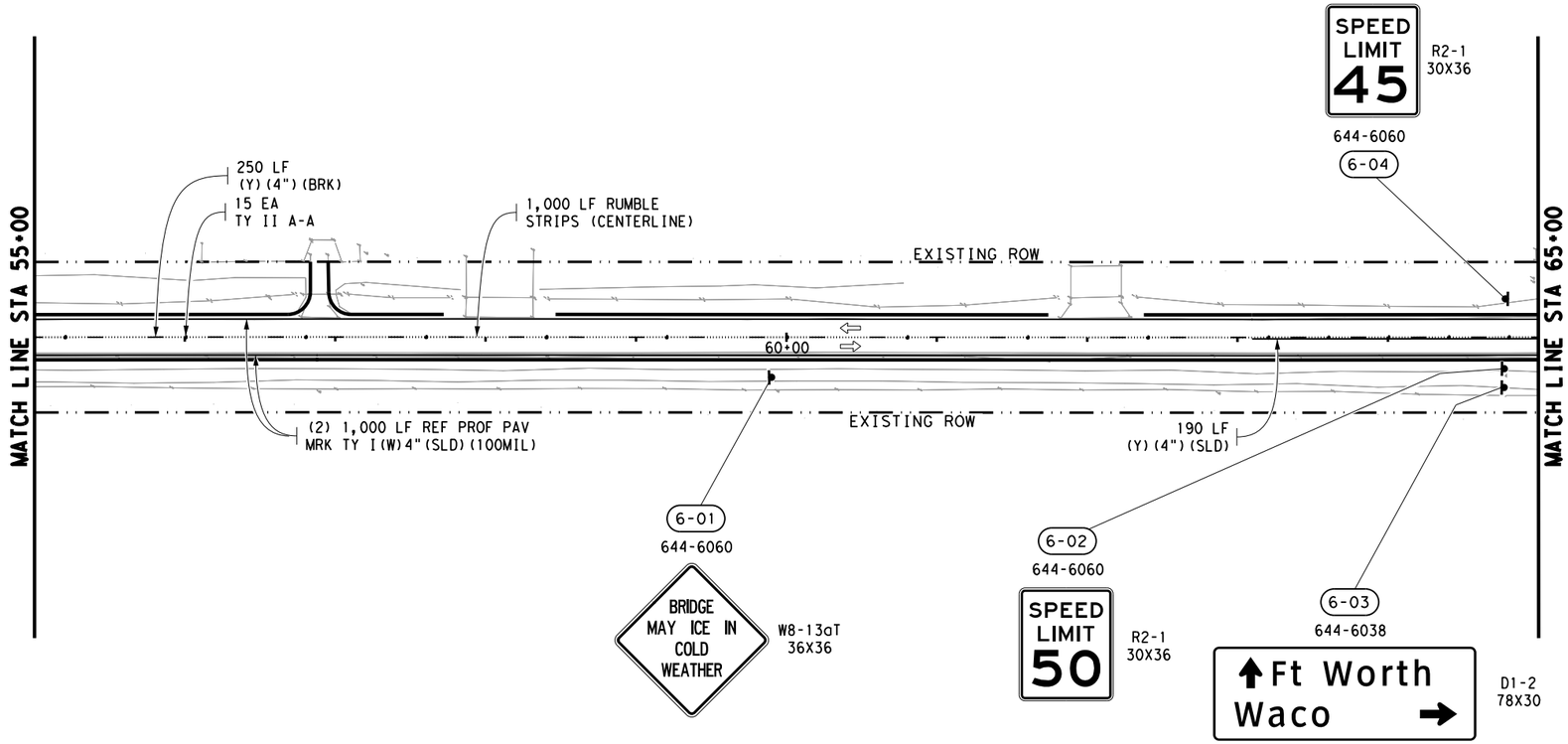
P.E. 10/25/2021
SIGNATURE OF REGISTRANT & DATE

SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 5 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		83



LEGEND

XX-XX	SIGN ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0644 6038	IN SM RD SN SUP&AM TYS80(1)SA(U-EXAL)	1 EA
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	3 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	190 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	15 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.
SIGNATURE OF REGISTRANT & DATE 10/25/2021

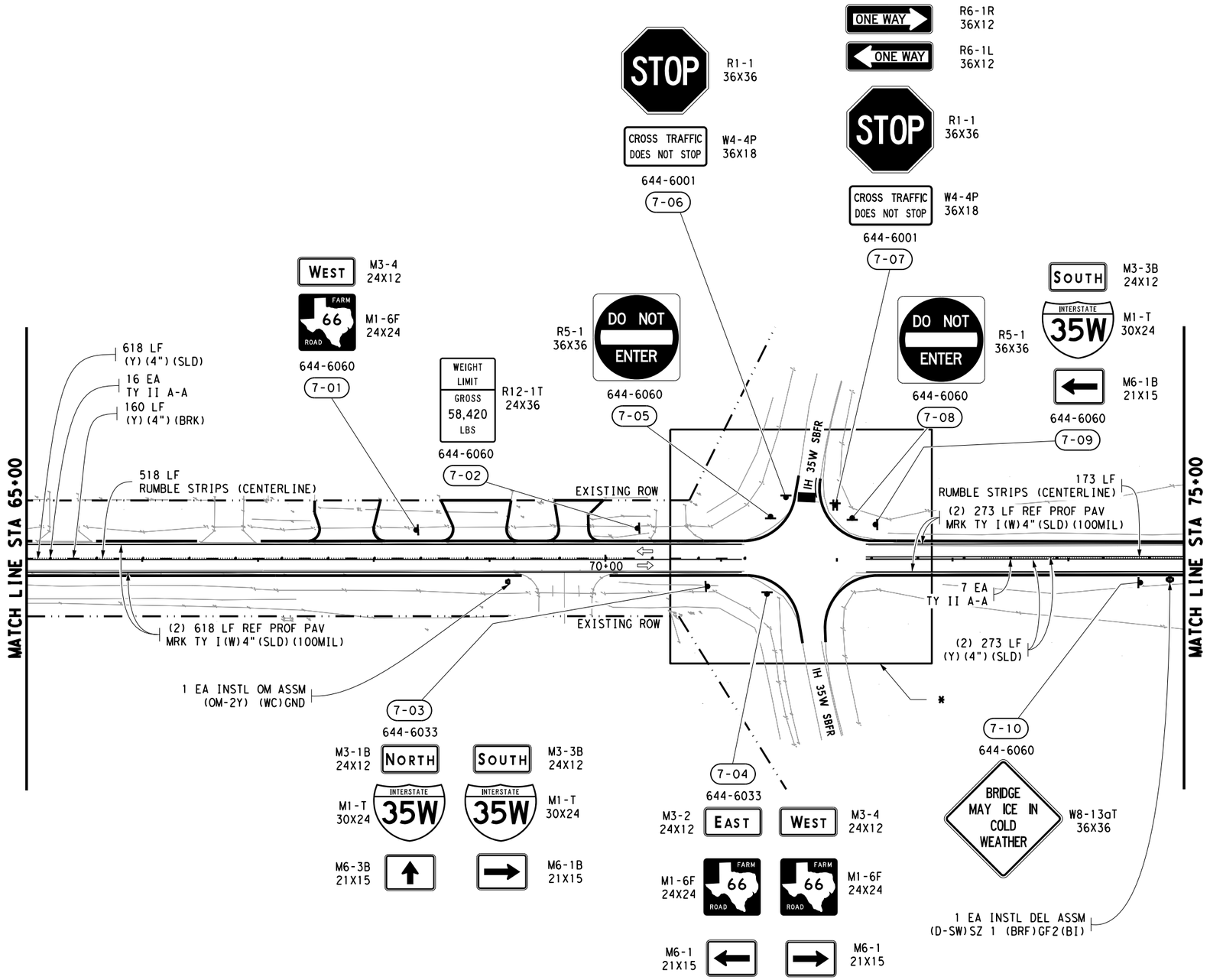
SIGNING AND STRIPING LAYOUT

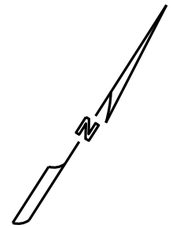
SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 6 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		84

c:\txdot\pw\online\txdot3\anton.lopour\d0372460\Traffic Sheet 6.dgn
1:45:31 PM
NODE
10/25/2021





* SEE SHEET 100 DETAIL B FOR PAVEMENT MARKER QUANTITIES AND LOCATIONS

ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	691 LF
0644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	2 EA
0644 6033	IN SM RD SN SUP&AM TYS80(1)SA(U)	2 EA
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	6 EA
0658 6047	INSTL OM ASSM (OM-2Y)(WC)GND	1 EA
0658 6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	1 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	160 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	1,164 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	1,782 LF
0672 6009	REFL PAV MRKR TY II-A-A	23 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021
SIGNATURE OF REGISTRANT & DATE

LEGEND

(XX-XX) SIGN ID

EXISTING ROW

EXISTING TRAFFIC

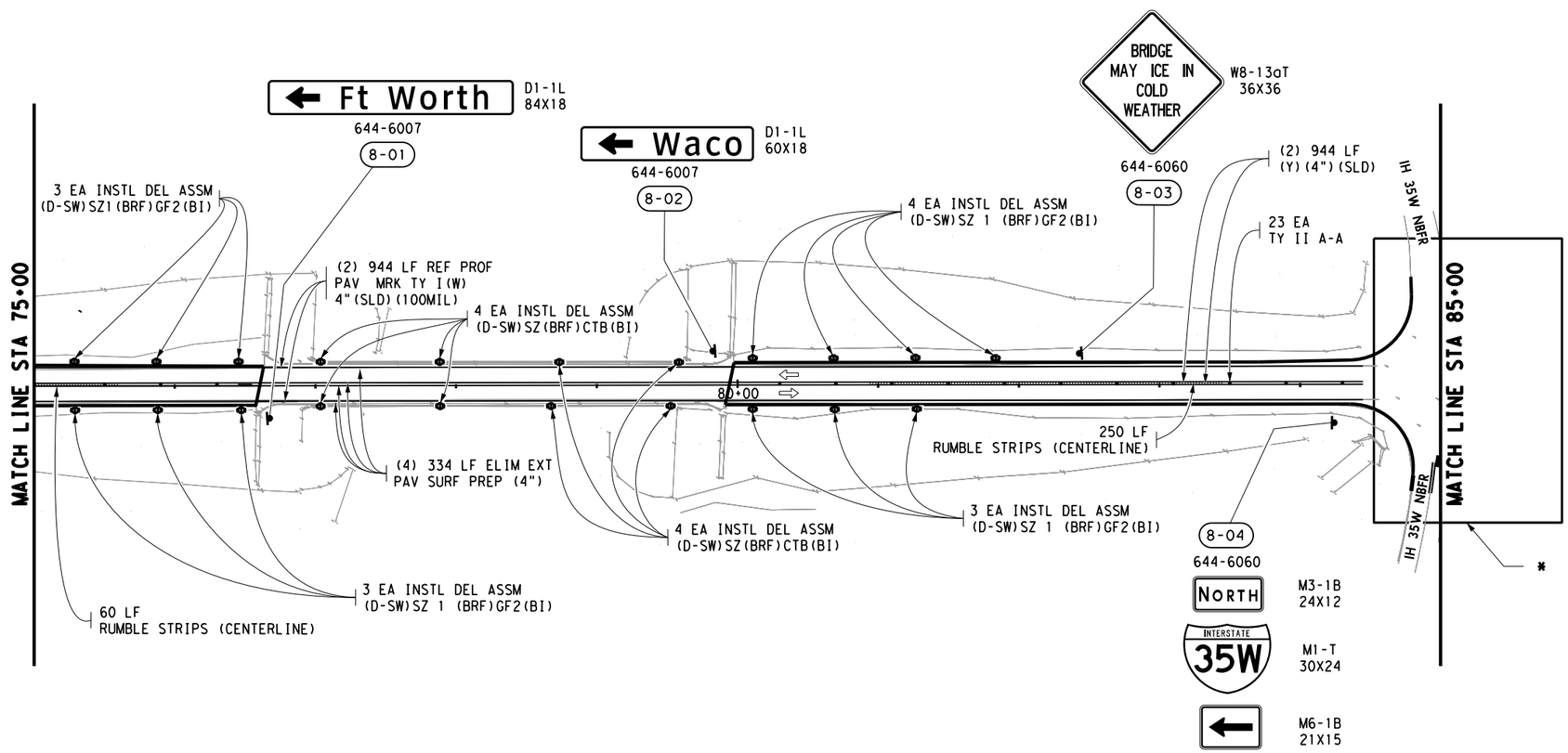
SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 7 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		85

c:\txdot\pw\online\txdot3\anton.lopour\d0372460\Traffic Sheet 7.dgn
1:45:35 PM
NODE
10/25/2021



* SEE SHEET 100 DETAIL C FOR PAVEMENT MARKER QUANTITIES AND LOCATIONS

ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	310 LF
0644 6007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)	2 EA
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	2 EA
0658 6014	INSTL DEL ASSM (D-SW)SZ (BRF)CTB (BI)	8 EA
0658 6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	13 EA
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	1,888 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	1,888 LF
0672 6009	REFL PAV MRKR TY II-A-A	23 EA
0677 6001	ELIM EXT PAV MRK & MRKS (4")	1,336 LF
0678 6001	PAV SURF PREP FOR MRK (4")	1,336 LF

LEGEND

XX-XX — SIGN ID

— · · — EXISTING ROW

⇨ EXISTING TRAFFIC

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

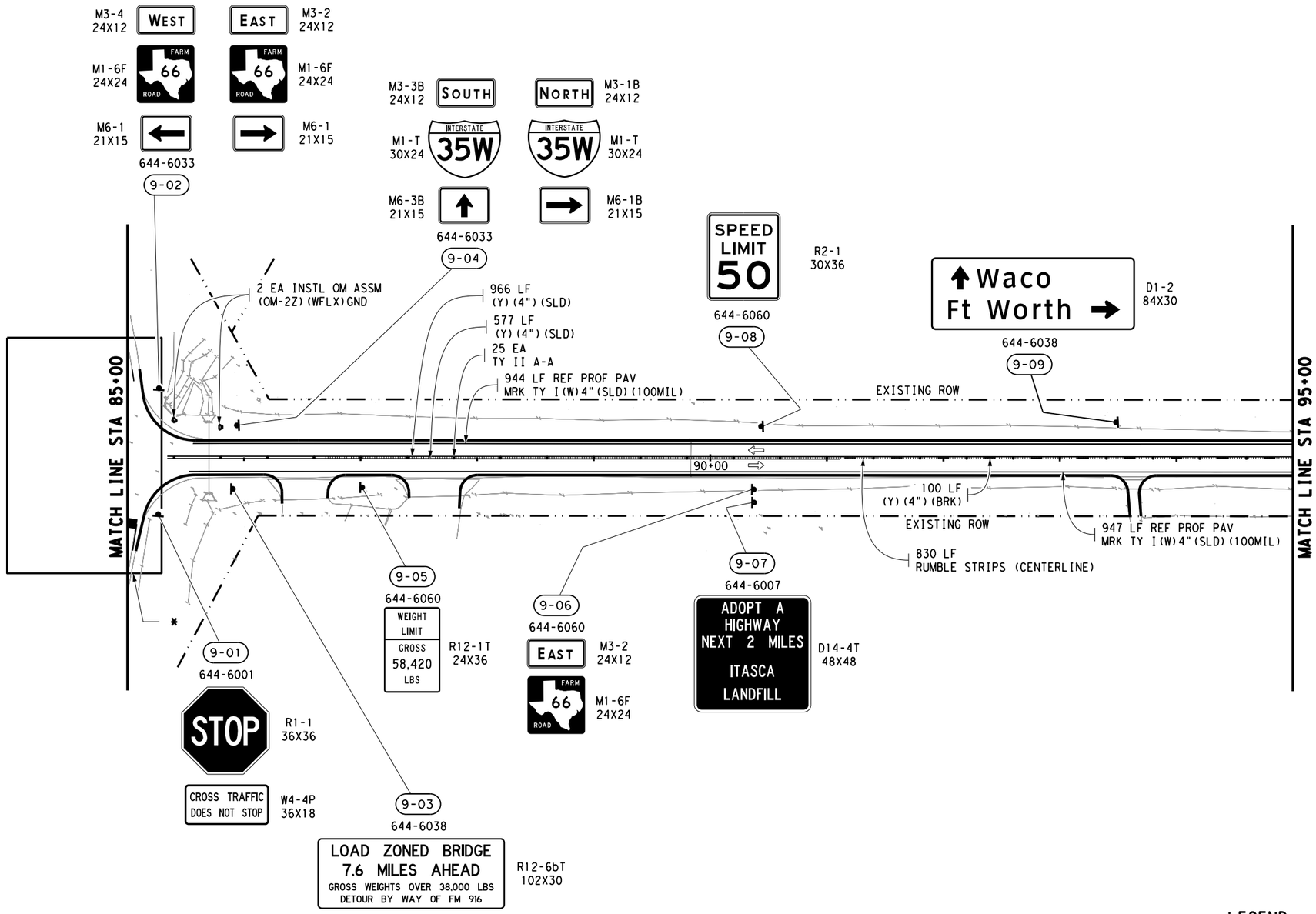
SIGNATURE OF REGISTRANT & DATE

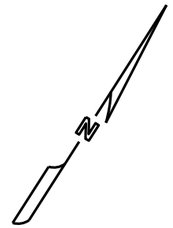
SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 8 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		86





* SEE SHEET 100DETAIL C FOR PAVEMENT MARKER QUANTITIES AND LOCATIONS

ITEM	DESCRIPTION	QUAN	
0533 6002	RUMBLE STRIPS (CENTERLINE)	830	LF
0644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	1	EA
0644 6007	IN SM RD SN SUP&AM TY10BWG(1)SA(U)	1	EA
0644 6033	IN SM RD SN SUP&AM TYS80(1)SA(U)	2	EA
0644 6038	IN SM RD SN SUP&AM TYS80(1)SA(U-EXAL)	2	EA
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	3	EA
0658 6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	2	EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	100	LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	1,543	LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	1,891	LF
0672 6009	REFL PAV MRKR TY II-A-A	25	EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

11/2/2021

SIGNATURE OF REGISTRANT & DATE

SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 9 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		87

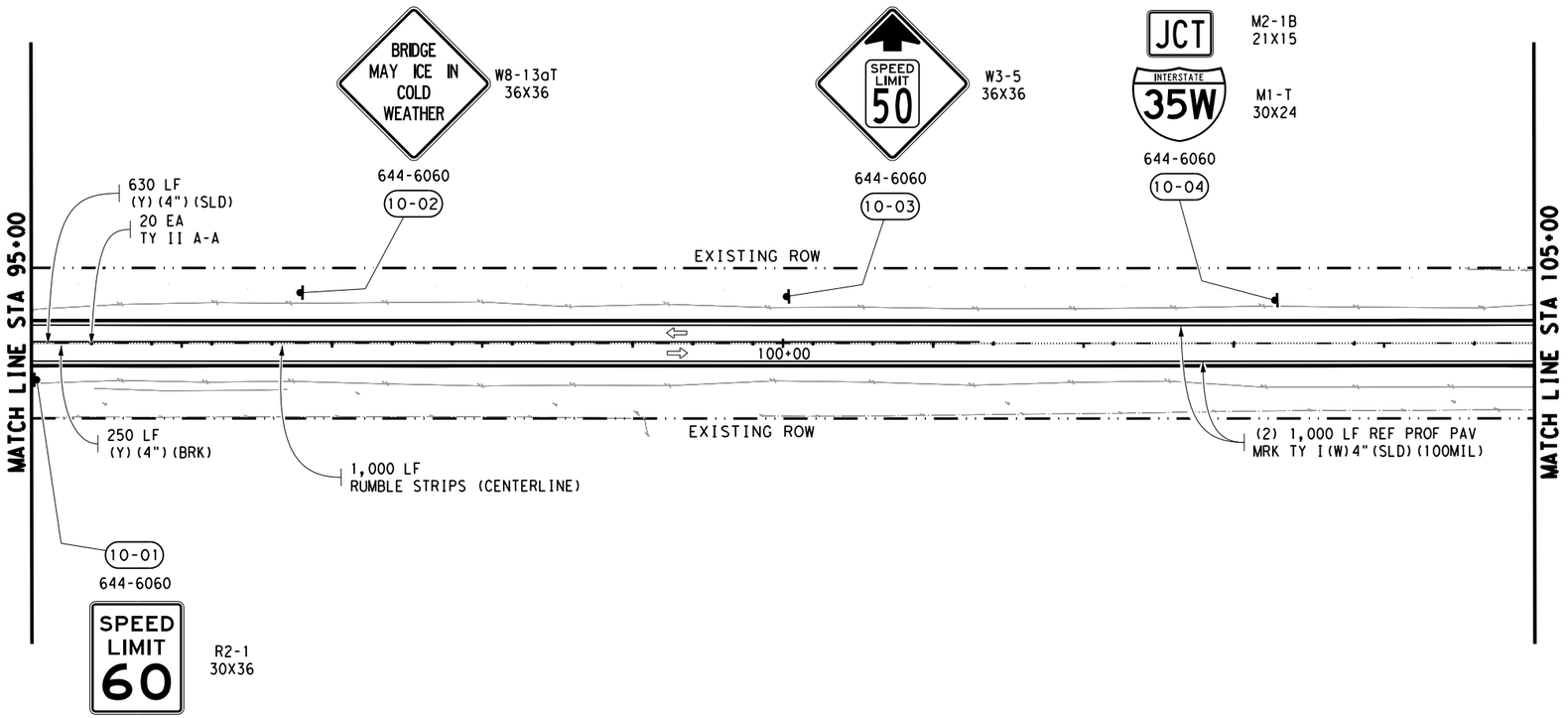
LEGEND

XX-XX SIGN ID

EXISTING ROW

EXISTING TRAFFIC

G:\txdot\pw*online\txdot3\anton.lopour\d0372460\Traffic Sheet 9.dgn
2:06:09 PM
NODE
11/2/2021



ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	4 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	630 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	20 EA

LEGEND

XX-XX	SIGN ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

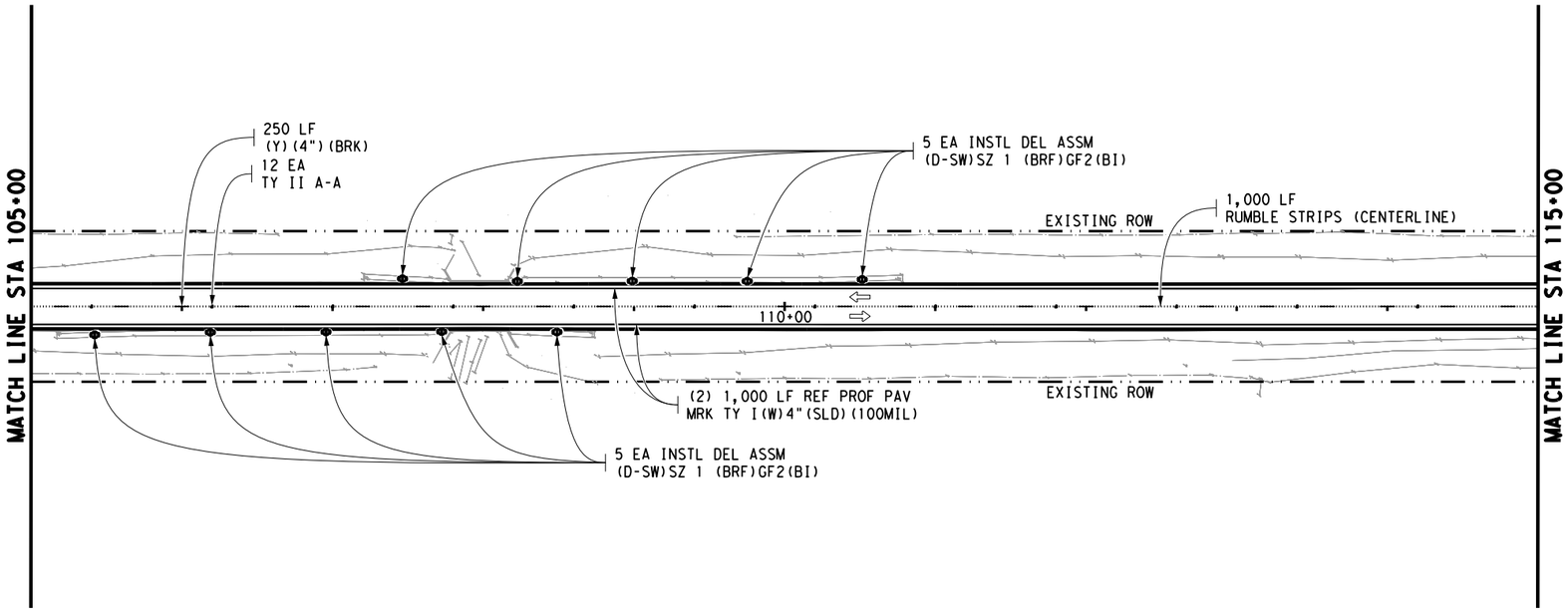
P.E.
SIGNATURE OF REGISTRANT & DATE 10/25/2021

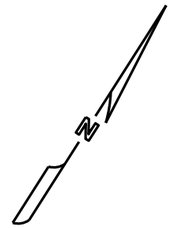
SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 10 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		88





ITEM		QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0658 6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	10 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	12 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

SIGNING AND STRIPING LAYOUT

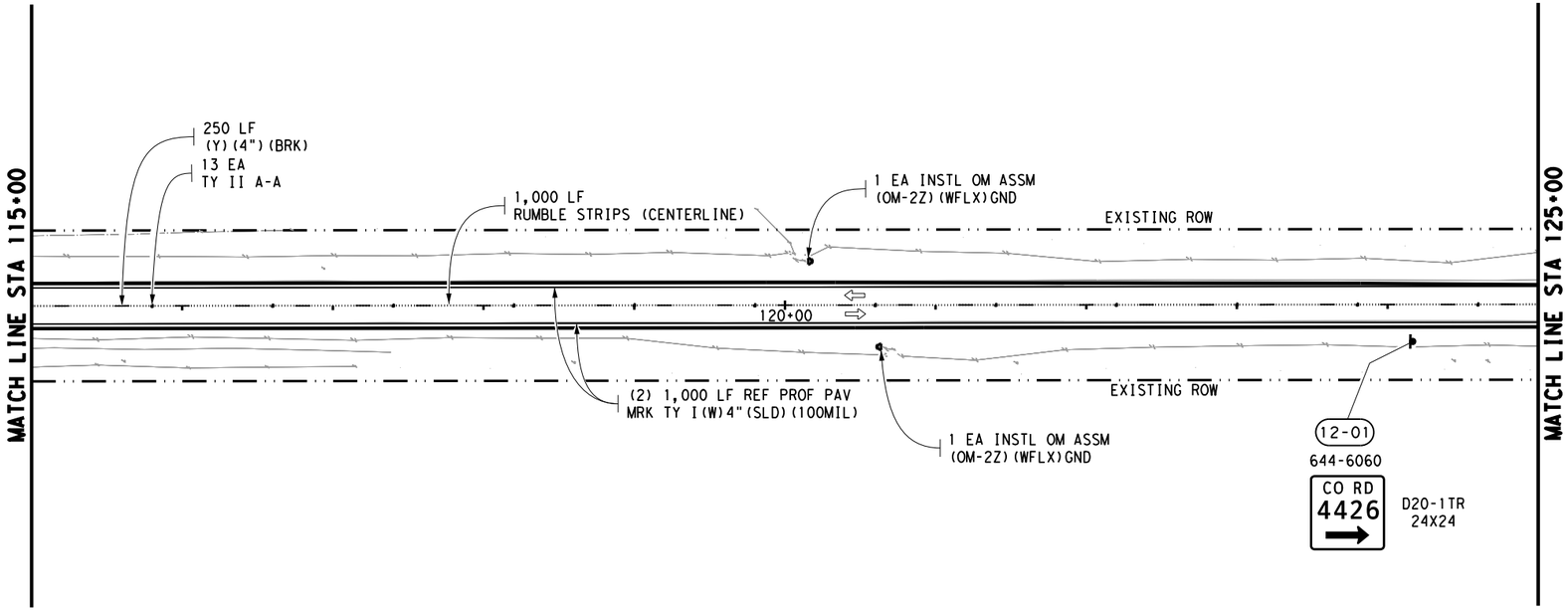
SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 11 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		89

LEGEND

XX-XX	SIGN ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC



ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	1 EA
0658 6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	2 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	13 EA

LEGEND

(XX-XX) SIGN ID

EXISTING ROW

EXISTING TRAFFIC

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 11/2/2021

SIGNATURE OF REGISTRANT & DATE

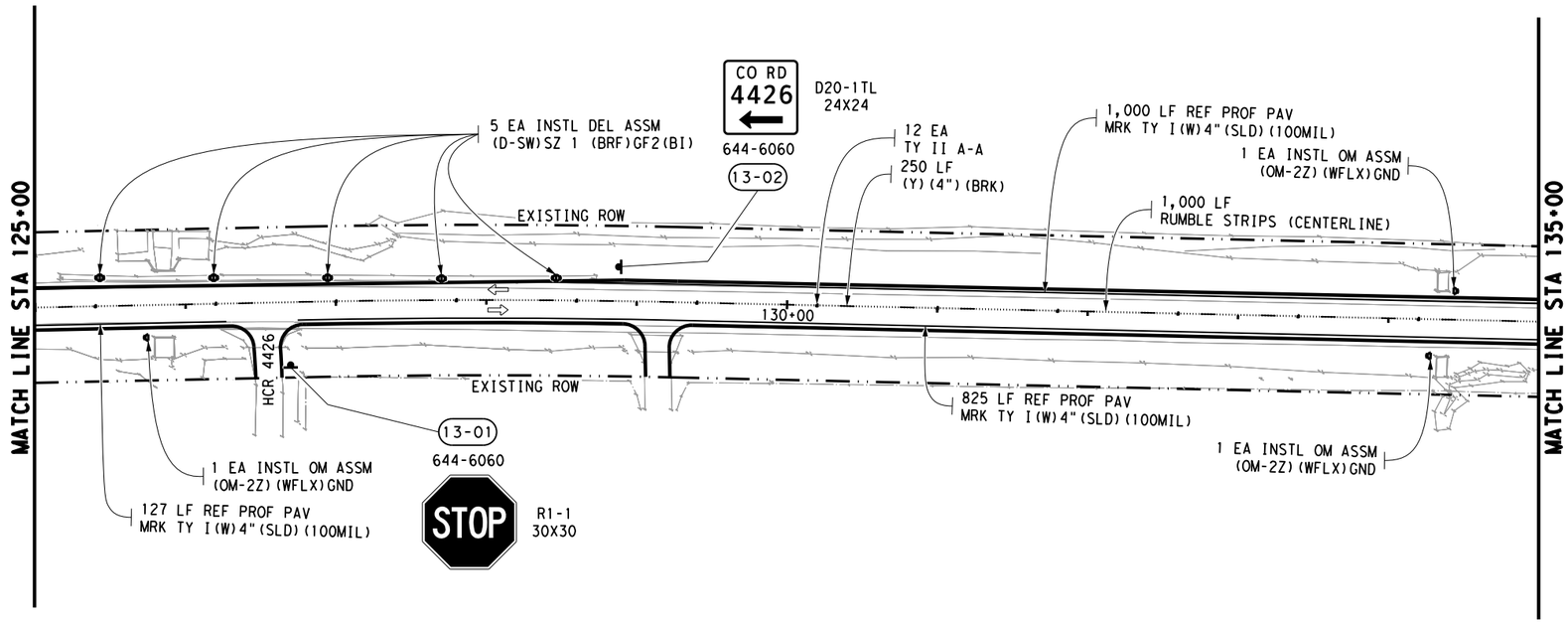
SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 12 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		90

G:\txdot\pw*online\txdot3\anton.lopour\d0372460\Traffic Sheet 12.dgn
2:06:12 PM
NODE
11/2/2021



ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	2 EA
0658 6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	5 EA
0658 6099	INSTL OM ASSM (OM-2Z)(WFLX)GND	3 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	1,952 LF
0672 6009	REFL PAV MRKR TY II-A-A	12 EA

LEGEND

XX-XX SIGN ID

EXISTING ROW

EXISTING TRAFFIC

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

11/2/2021

SIGNATURE OF REGISTRANT & DATE

SIGNING AND STRIPING LAYOUT

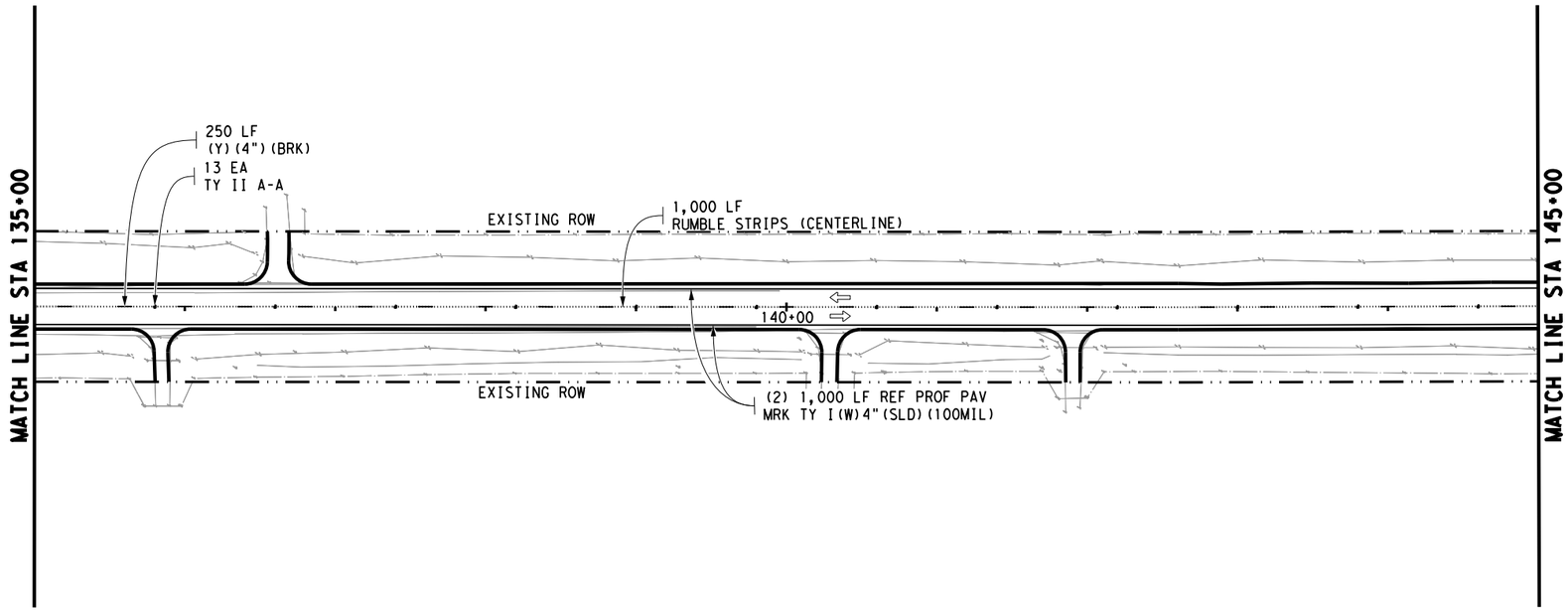
SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

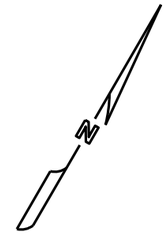
SHEET 13 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		91

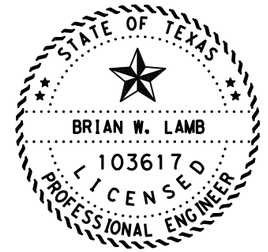
NODE
11/2/2021

G:\txdot\pw*online\txdot3\anton.lopour\d0372460\Traffic Sheet 13.dgn
2:06:16 PM





ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	13 EA



P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

LEGEND

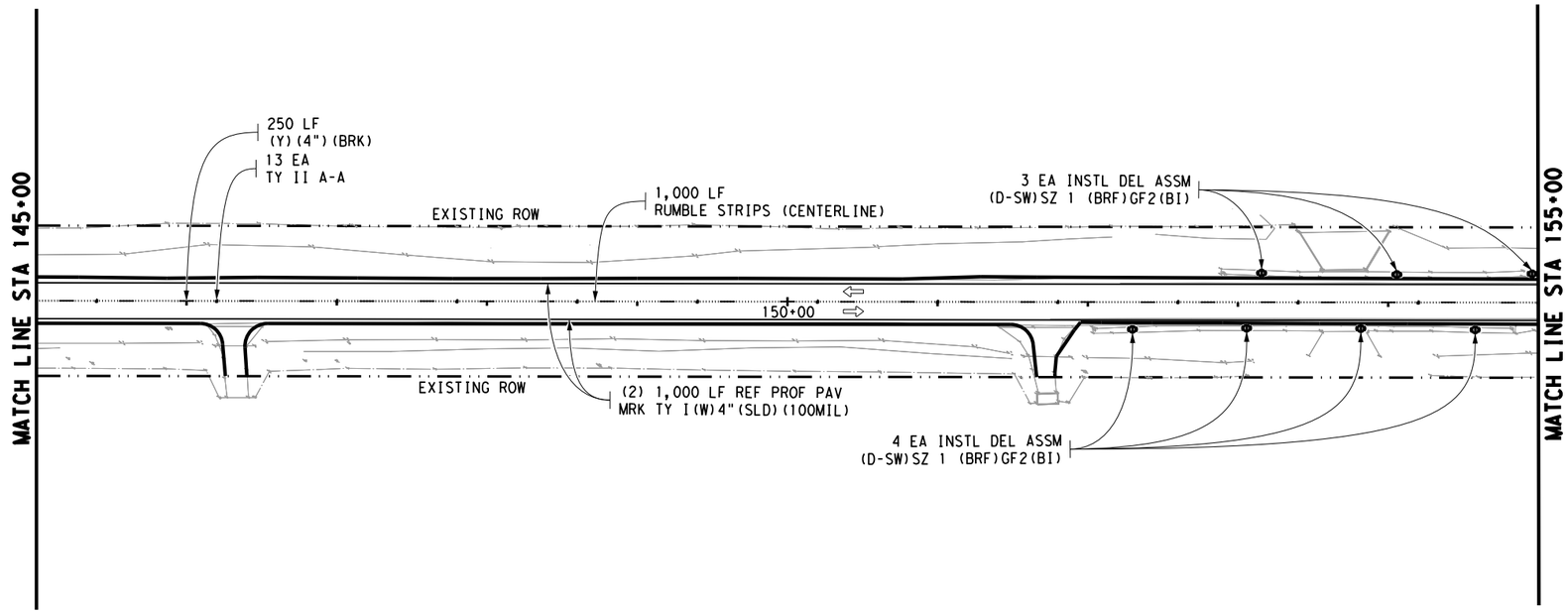
XX-XX	SIGN ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 14 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		92



LEGEND

XX-XX	SIGN ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0658 6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	7 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	13 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

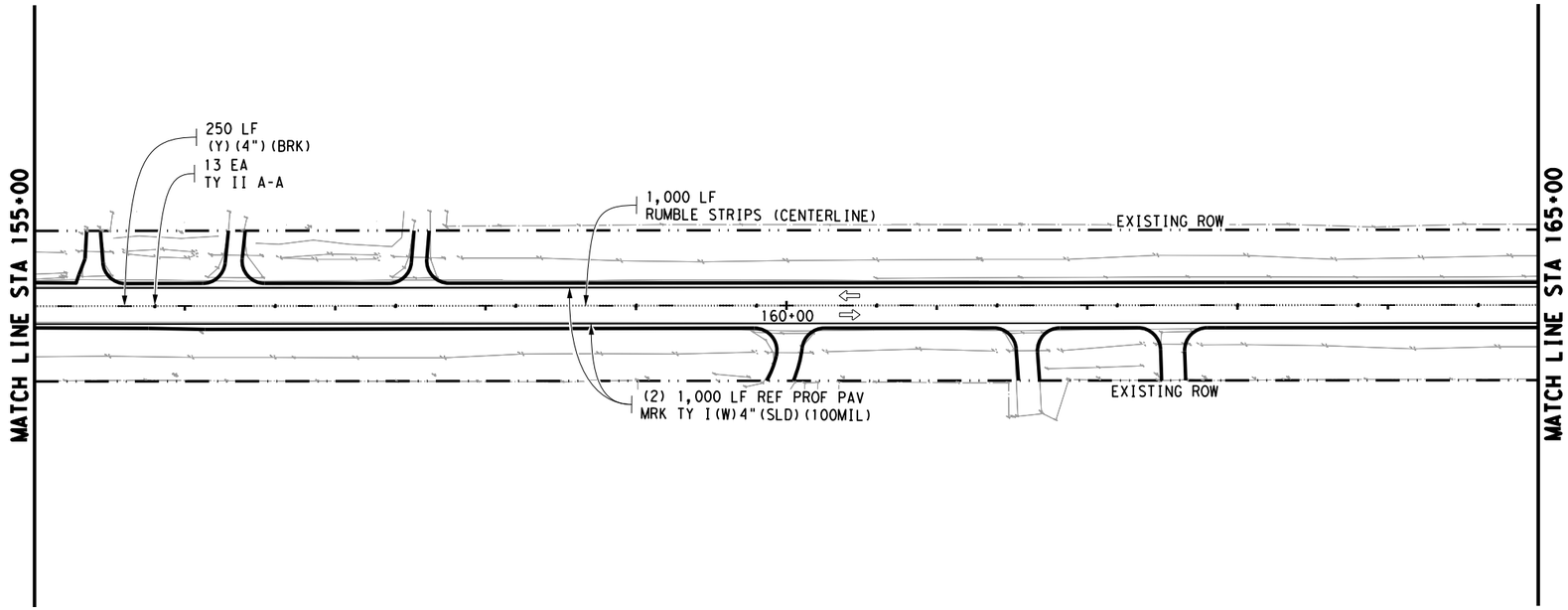
SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 15 OF 19

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		93

c:\txdot\pw\online\txdot3\anton.lopour\d0372460\Traffic Sheet 15.dgn
1:46:15 PM
NODE
10/25/2021



ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	13 EA

LEGEND

XX-XX	SIGN ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

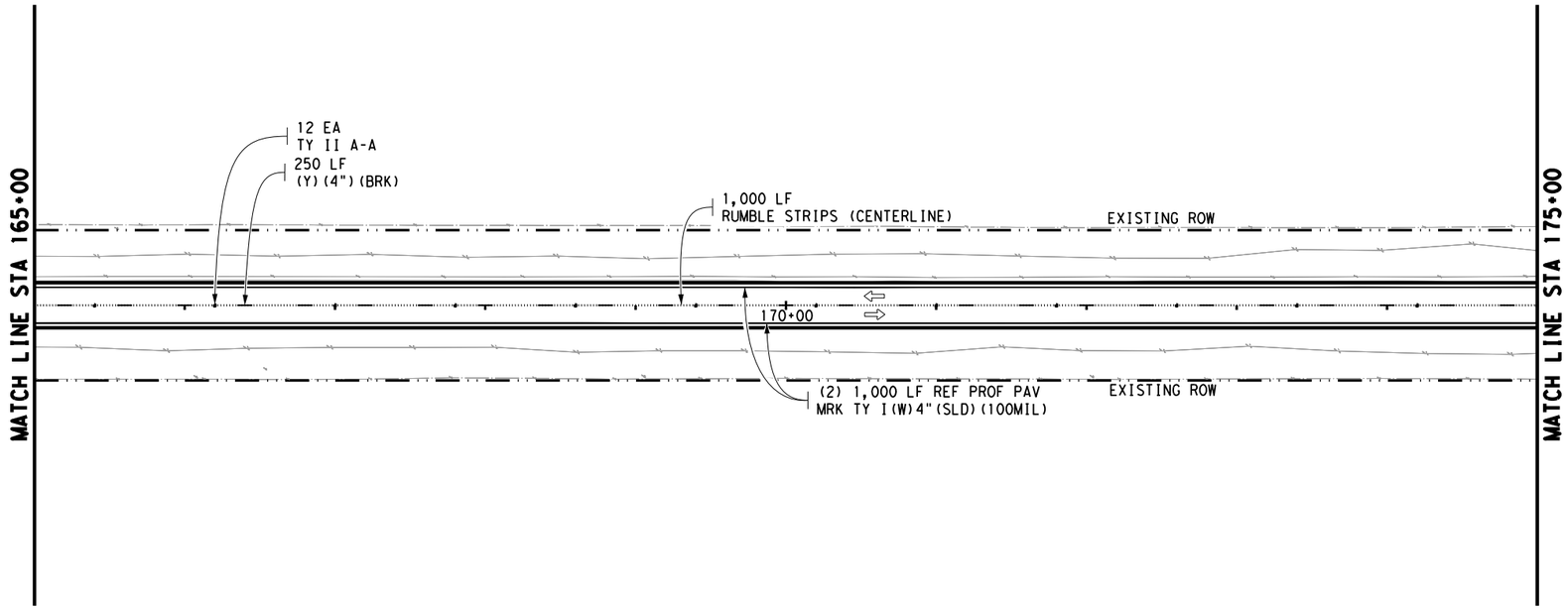
SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 16 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		94

c:\txdot\pw*online\txdot3\anton.lopour\d0372460\Traffic Sheet 16.dgn
1:46:19 PM
NODE
10/25/2021



ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	1,000 LF
0666 6312	RE PM W/RET REQ TY I (Y) 4" (BRK) (100MIL)	250 LF
0666 6342	REF PROF PAV MRK TY I (W) 4" (SLD) (100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	12 EA

LEGEND

XX-XX	SIGN ID
— · · —	EXISTING ROW
⇨	EXISTING TRAFFIC

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

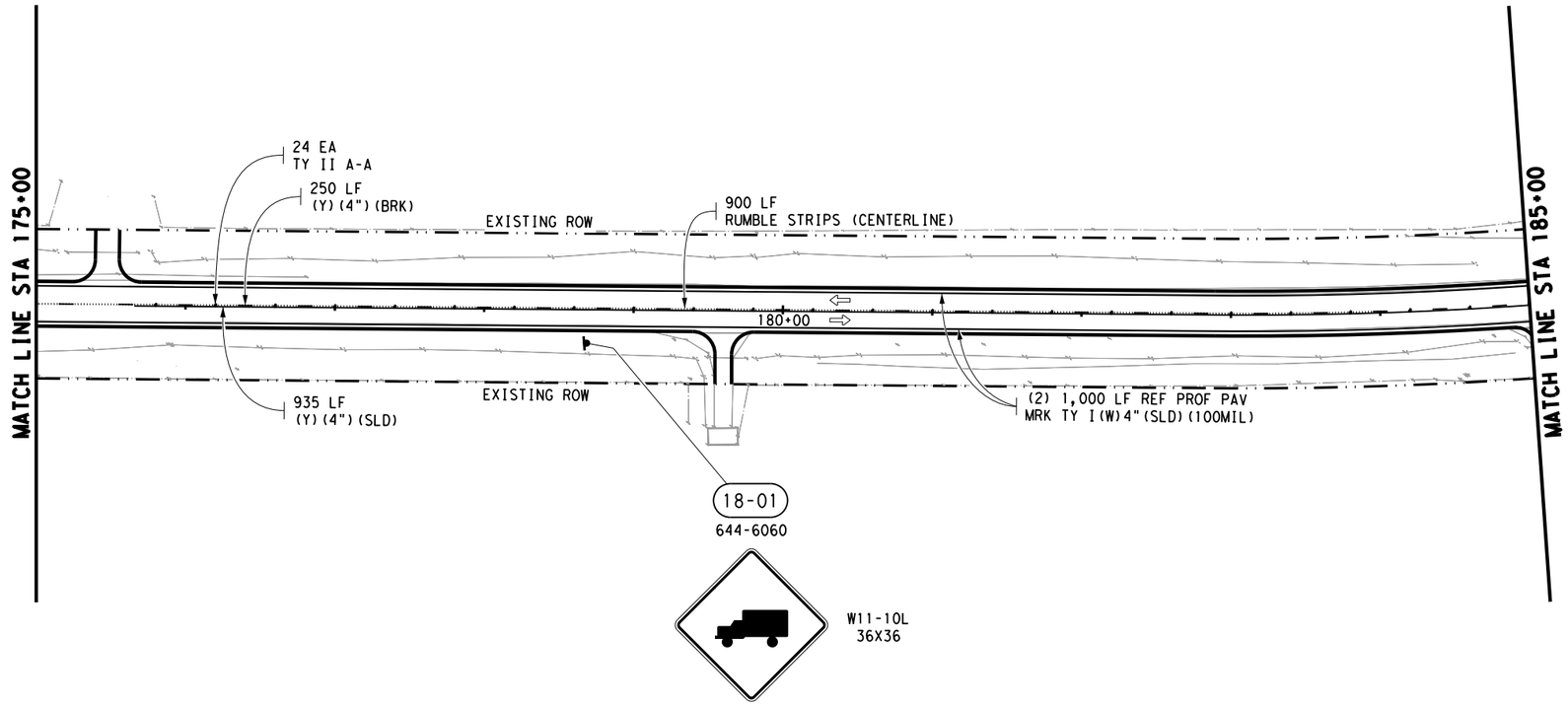
SIGNATURE OF REGISTRANT & DATE

SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 17 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		95



ITEM	DESCRIPTION	QUAN
0533 6002	RUMBLE STRIPS (CENTERLINE)	900 LF
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	1 EA
0666 6312	RE PM W/RET REQ TY I (Y)4"(BRK)(100MIL)	250 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	935 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	2,000 LF
0672 6009	REFL PAV MRKR TY II-A-A	24 EA

LEGEND

XX-XX SIGN ID

EXISTING ROW

EXISTING TRAFFIC

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E. 10/25/2021

SIGNATURE OF REGISTRANT & DATE

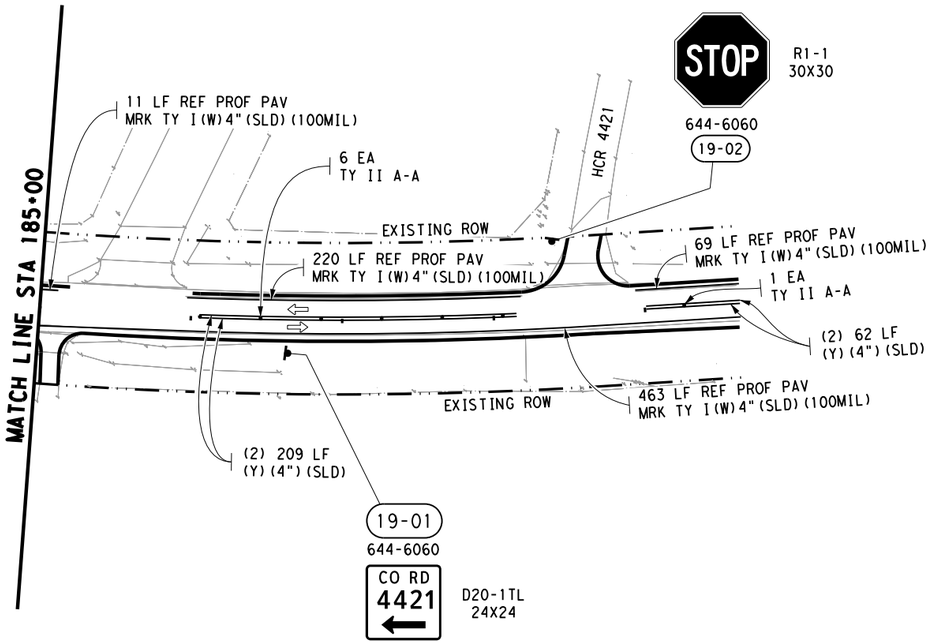
SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

SHEET 18 OF 19

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		96

c:\txdot\pw*online\txdot3\anton.lopour\d0372460\Traffic Sheet 18.dgn
1:46:27 PM
NODE
10/25/2021



ITEM	DESCRIPTION	QUAN
0644 6060	IN SM RD SN SUP&AM TYTWT(1)WS(P)	2 EA
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	542 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	763 LF
0672 6009	REFL PAV MRKR TY II-A-A	7 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

SIGNING AND STRIPING LAYOUT

SCALE: 0 25 50 100 FEET
1" = 100' HORIZ.

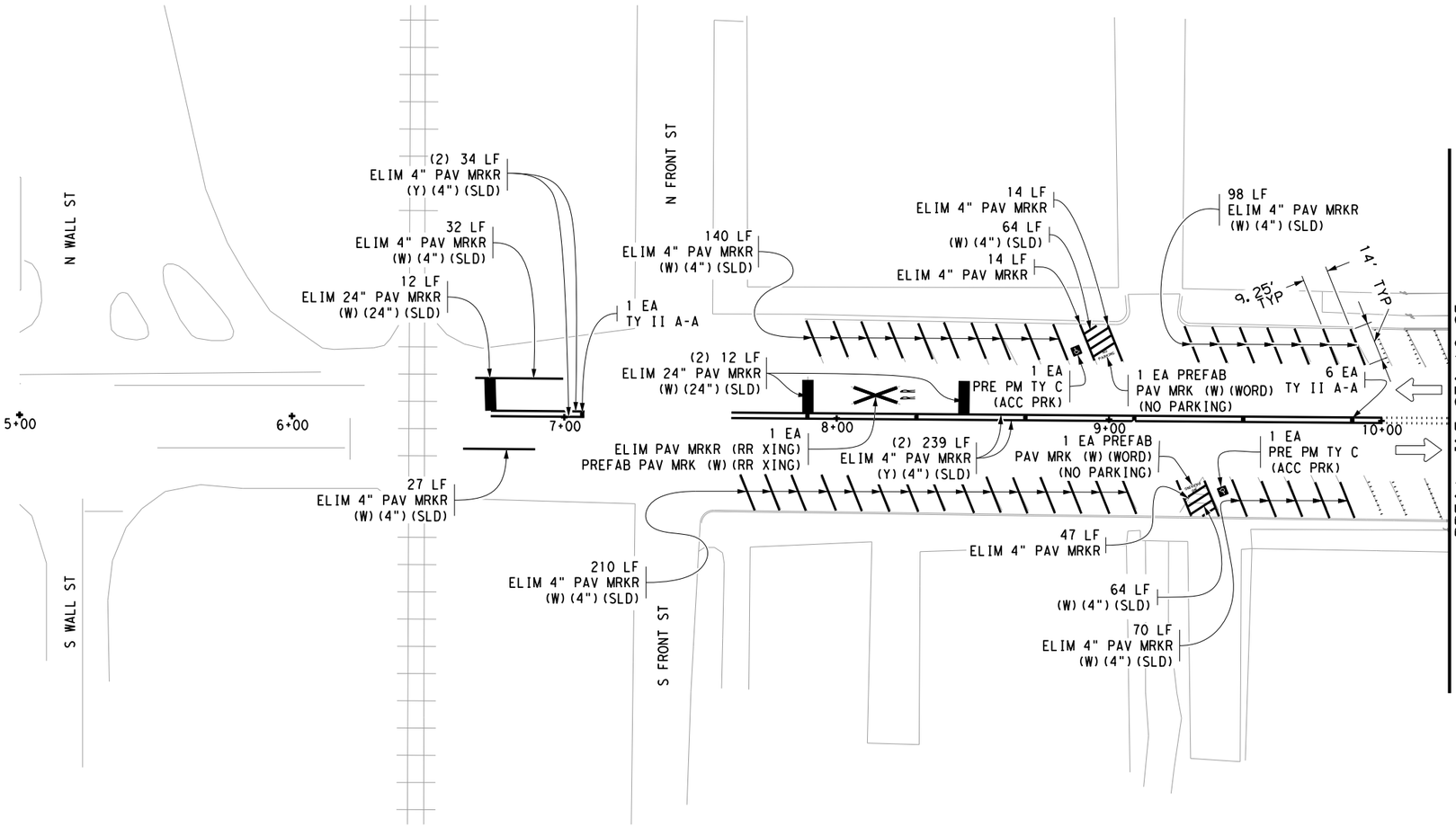
SHEET 19 OF 19

LEGEND

- (XX-XX) SIGN ID
- EXISTING ROW
- EXISTING TRAFFIC

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		97

c:\txdot\pw*online\txdot3\anton.lopour\d0372460\Traffic Sheet 19.dgn
1:46:31 PM
NODE
10/25/2021



ITEM	DESCRIPTION	QUAN
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	36 LF
0666 6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	705 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	546 LF
0668 6085	PREFAB PAV MRK TY C (W) (WORD)	2 EA
0668 6089	PREFAB PAV MRK TY C (W) (RR XING)	1 EA
0668 6114	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)SM	2 EA
0672 6009	REFL PAV MRKR TY II-A-A	7 EA
0677 6001	ELIM EXT PAV MRK & MRKS (4")	1,198 LF
0677 6007	ELIM EXT PAV MRK & MRKS (24")	36 LF
0677 6016	ELIM EXT PAV MRK & MRKS (RR XING)	1 EA

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.
10/25/2021
SIGNATURE OF REGISTRANT & DATE

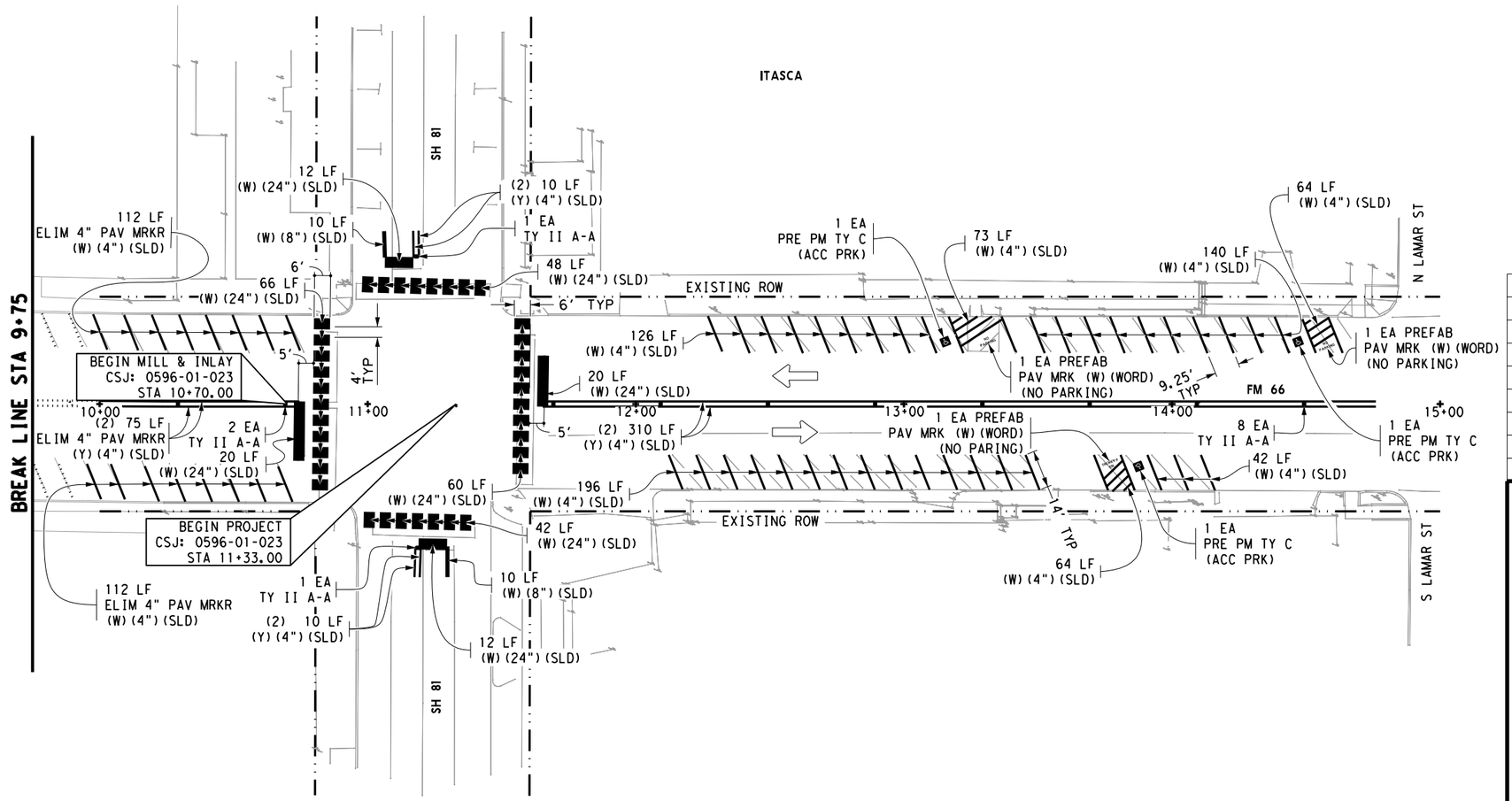
PAVEMENT MARKING DETAILS

SCALE: 0 12.5 25 50 FEET
1" = 50' HORIZ.

SHEET 1 OF 3

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		98

c:\txdot\pw*online\txdot3\vanton.lopour\d0372460\Traffic Detail 1 40 SC.dgn
1:46:35 PM
NODE
10/25/2021



ITEM	DESCRIPTION	QUAN
0666 6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	20 LF
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	280 LF
0666 6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	929 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	810 LF
0668 6085	PREFAB PAV MRK TY C (W) (WORD)	3 EA
0668 6114	PRE PM TY C(ACC PRK)(BL&WH)(W/BORDR)SM	3 EA
0672 6009	REFL PAV MRKR TY II-A-A	12 EA
0677 6001	ELIM EXT PAV MRK & MRKS (4")	374 LF

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

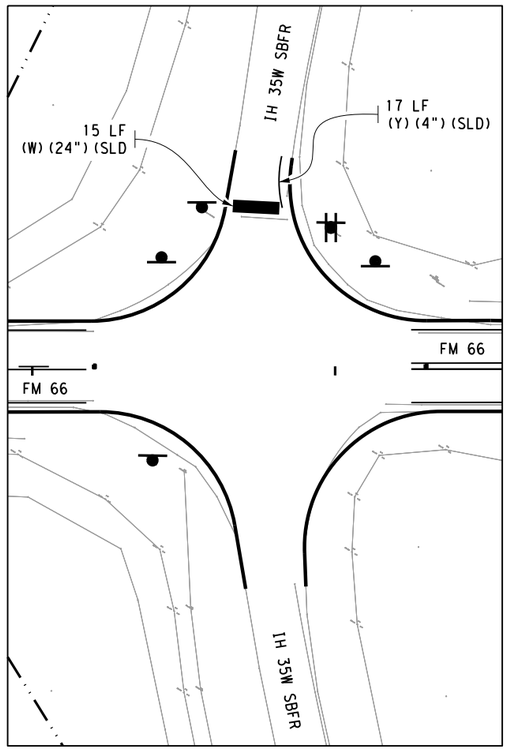
PAVEMENT MARKING DETAILS

SCALE: 0 12.5 25 50 FEET
1" = 50' HORIZ.

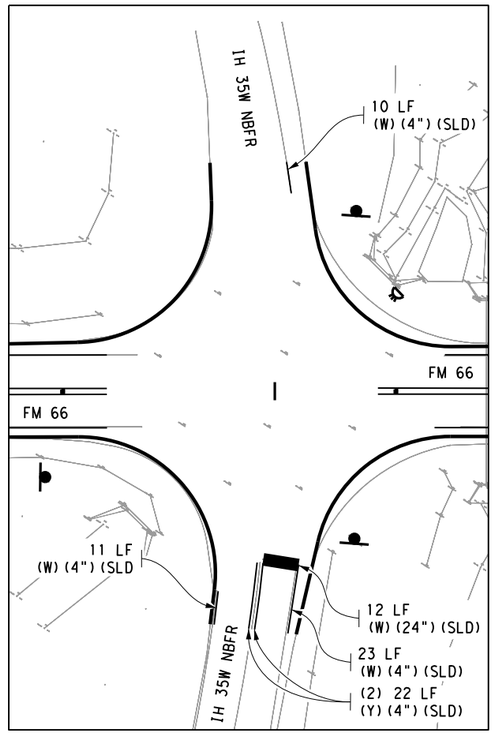
SHEET 2 OF 3

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		99

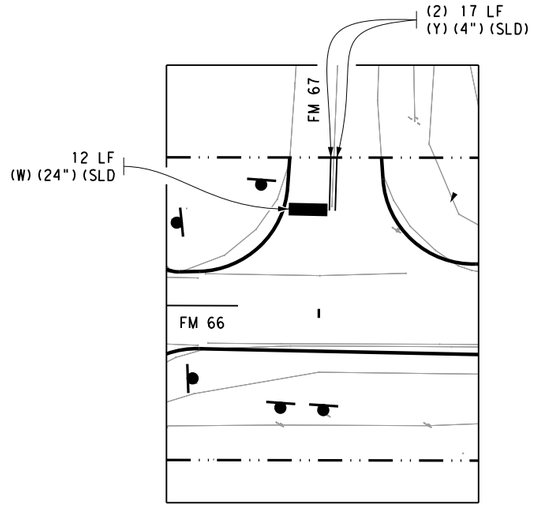
c:\txdot\pw*online\txdot3\anton.lopour\d0372460\Traffic Detail 2 40 SC.dgn
1:46:40 PM
NODE
10/25/2021



DETAIL B
NOT TO SCALE



DETAIL C
NOT TO SCALE



DETAIL A
NOT TO SCALE

ITEM	DESCRIPTION	QUAN
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	39 LF
0666 6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	95 LF
0666 6342	REF PROF PAV MRK TY I(W)4"(SLD)(100MIL)	44 LF

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

PAVEMENT MARKING DETAILS

SCALE: 0 12.5 25 50 FEET
1" = 50' HORIZ.

SHEET 3 OF 3

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		100

SUMMARY OF SMALL SIGNS

SHEET	SIGN	STATION (FOR CONTRAC-TOR'S INFO)		ID	LEGEND OR TYPE	SIGN WIDTH (IN)	SIGN HEIGHT (IN)	SIGN AREA (SF)	SIGN AREA (TOTAL) (SF)	PANEL	POST SIZE	NO. OF POST	ANCHOR TYPE	SIGN MOUNT	0636 6007 REPLACE EXIST-ING ALUM-INIUM SIGNS SF	0644 6001 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6007 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6033 IN SM RD SN SUP&AM TY S80 (1) SA (U) EA	0644 6038 IN SM RD SN SUP&AM TY S80 (1) SA (U- EA	0644 6044 IN SM RD SN SUP&AM TY S80 (1) SB (U) EA	0644 6060 IN SM RD SN SUP&AM TY TWT (1) WS (P) EA
1	01	8+84	LT	R7-8T	RESERVED PARKING	12	18	1.5	2.5	TY A	TWT	1	WS	P							
				R7-8P	VAN ACCESIBLE	12	6	0.5													1
				R7-8aPT	VIOLATORS SUBJECTED TO FINE	12	6	0.5													
1	02	9+46	RT	R7-8T	RESERVED PARKING	12	18	1.5	2.5	TY A	TWT	1	WS	P							
				R7-8P	VAN ACCESIBLE	12	6	0.5													1
				R7-8aPT	VIOLATORS SUBJECTED TO FINE	12	6	0.5													
1	03	10+80	RT	R1-1	STOP	36	36	7.5	8.2	TY A	TWT	1	WS	P							
				R1-3P	ALL WAY	18	6	0.8													1
1	04	10+89	RT	M1-6F	FM 934	24	24	4.0	16.4	TY A	S 80	1	SB	U							
				M1-6F	FM 66	24	24	4.0													
				M6-4	<--->	21	15	2.2												1	
				M1-6T	81 TEXAS	24	24	4.0													
				M6-3	/\	21	15	2.2													
1	05	10+91	LT	M1-6T	81 TEXAS	24	24	4.0	16.4	TY A	S 80	1	SB	U							
				M6-4	<--->	21	15	2.2													
				M1-6F	FM 934	24	24	4.0												1	
				M1-6F	FM 66	24	24	4.0													
				M6-3	/\	21	15	2.2													
1	06	10+92	LT	R1-1	STOP	36	36	7.5	8.2	TY A	TWT	1	WS	P							
				R1-3P	ALL WAY	18	6	0.8													1
1	07	11+51	RT	R1-1	STOP	36	36	7.5	8.2	TY A	TWT	1	WS	P							
				R1-3P	ALL WAY	18	6	0.8													1
1	08	11+53	RT	M1-6T	81 TEXAS	24	24	4.0	16.4	TY A	S 80	1	SB	U							
				M6-4	<--->	21	15	2.2													
				M1-6F	FM 934	24	24	4.0												1	
				M1-6F	FM 66	24	24	4.0													
				M6-3	/\	21	15	2.2													
1	09	11+63	LT	R1-1	STOP	36	36	7.5	8.2	TY A	TWT	1	WS	P							
				R1-3P	ALL WAY	18	6	0.8													1
1	10	11+63	LT	M1-6F	FM 934	24	24	4.0	16.4	TY A	S 80	1	SB	U							
				M1-6F	FM 66	24	24	4.0													
				M6-4	<--->	21	15	2.2												1	
				M1-6T	81 TEXAS	24	24	4.0													
				M6-3	/\	21	15	2.2													
1	11	12+19	LT	R8-3aTL	NO PARKING <---	24	30	5.0	5.0	TY A	TWT	1	WS	P							1

SUMMARY OF SMALL SIGNS

NOT TO SCALE SHEET 1 OF 7

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		101

SUMMARY OF SMALL SIGNS

SHEET	SIGN	STATION (FOR CONTRAC-TOR'S INFO)		ID	LEGEND OR TYPE	SIGN WIDTH (IN)	SIGN HEIGHT (IN)	SIGN AREA (SF)	SIGN AREA (TOTAL) (SF)	PANEL	POST SIZE	NO. OF POST	ANCHOR TYPE	SIGN MOUNT	0636 6007 REPLACE EXIST-ING ALUM-INIUM SIGNS SF	0644 6001 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6007 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6033 IN SM RD SN SUP&AM TY S80 (1) SA (U) EA	0644 6038 IN SM RD SN SUP&AM TY S80 (1) SA (U- EA	0644 6044 IN SM RD SN SUP&AM TY S80 (1) SB (U) EA	0644 6060 IN SM RD SN SUP&AM TY TWT (1) WS (P) EA
1	12	13+11	LT	R7-8T	RESERVED PARKING	12	18	1.5	2.5	TY A	TWT	1	WS	P							
				R7-8P	VAN ACCESIBLE	12	6	0.5													1
				R7-8aPT	VIOLATORS SUBJECTED TO FINE	12	6	0.5													
1	13	13+90	RT	R7-8T	RESERVED PARKING	12	18	1.5	2.5	TY A	TWT	1	WS	P							
				R7-8P	VAN ACCESIBLE	12	6	0.5													1
				R7-8aPT	VIOLATORS SUBJECTED TO FINE	12	6	0.5													
1	14	14+43	LT	R7-8T	RESERVED PARKING	12	18	1.5	2.5	TY A	TWT	1	WS	P							
				R7-8P	VAN ACCESIBLE	12	6	0.5													1
				R7-8aPT	VIOLATORS SUBJECTED TO FINE	12	6	0.5													
1	15	14+76	RT	M3-2	EAST	24	12	2.0	10.0	TY A	TWT	1	WS	P							
				M1-6F	FM 934	24	24	4.0													1
				M1-6F	FM 66	24	24	4.0													
1	16	14+82	LT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
														SHEET 1 OF 19:						4	12
2	01	15+22	RT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
2	02	15+30	RT	R8-3aTL	NO PARKING <---	24	30	5.0	5.0	TY A	TWT	1	WS	P							1
2	03	15+35	LT	R8-3aTR	NO PARKING --->	24	30	5.0	5.0	TY A	TWT	1	WS	P							1
2	04	15+81	LT	D1-2	<--- HILLSBORO CLEBURNE --->	84	30	17.5	17.5	TY A	S 80	1	SA	U-EXAL					1		
2	05	15+93	LT	R8-3a	NO PARKING	24	30	5.0	5.0	TY A	TWT	1	WS	P							1
2	06	16+90	RT	R8-3aTR	NO PARKING --->	24	30	5.0	5.0	TY A	TWT	1	WS	P							1
2	07	16+98	RT	R5-1	YIELD	36	36	3.9	3.9	TY A	TWT	1	WS	P							1
2	08	17+03	RT	R1-2	DO NOT ENTER	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
2	09	17+35	LT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
2	10	17+58	RT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
2	11	17+90	LT	R5-1	DO NOT ENTER	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
2	12	17+97	LT	R1-2	YIELD	36	36	3.9	3.9	TY A	TWT	1	WS	P							1
2	13	21+19	LT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
2	14	21+54	RT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
2	15	23+91	RT	M2-1	JCT	21	15	2.2	6.2	TY A	TWT	1	WS	P							
				M1-6F	FM 934	24	24	4.0													1
2	16	24+86	LT	M2-1	JCT	21	15	2.2	6.2	TY A	TWT	1	WS	P							
				M1-6T	81 TEXAS	24	24	4.0													1
2	17	24+87	RT	S1-1	PEDESTRIAN CROSSING	36	36	6.6	6.6	TY A	TWT	1	WS	P							1
2	18	24+99	LT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
														SHEET 2 OF 19:					1		17

SUMMARY OF SMALL SIGNS

NOT TO SCALE

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		102

SUMMARY OF SMALL SIGNS

SHEET	SIGN	STATION (FOR CONTRAC-TOR'S INFO)		ID	LEGEND OR TYPE	SIGN WIDTH (IN)	SIGN HEIGHT (IN)	SIGN AREA (SF)	SIGN AREA (TOTAL) (SF)	PANEL	POST SIZE	NO. OF POST	ANCHOR TYPE	SIGN MOUNT	0636 6007 REPLACE EXIST-ING ALUM-INIUM SIGNS SF	0644 6001 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6007 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6033 IN SM RD SN SUP&AM TY S80 (1) SA (U) EA	0644 6038 IN SM RD SN SUP&AM TY S80 (1) SA (U- EA	0644 6044 IN SM RD SN SUP&AM TY S80 (1) SB (U) EA	0644 6060 IN SM RD SN SUP&AM TY TWT (1) WS (P) EA
3	01	25+35	RT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
3	02	27+13	LT	M3-4	WEST	24	12	2.0	10.0	TY A	TWT	1	WS	P							1
				M1-6F	FM 66	24	24	4.0													
				M1-6F	FM 934	24	24	4.0													
3	03	28+43	RT	S5-1	SCHOOL SPEED LIMIT 20	24	48	8.0	11.0	TY A	-	1	-	P	11						
				S7-1T	CELL PHONE USE PROHIBITED	24	18	3.0													
3	04	28+88	LT	R1-1	STOP	36	36	7.5	7.5	TY A	TWT	1	WS	P							1
3	05	29+20	RT	R1-1	STOP	36	36	7.5	7.5	TY A	TWT	1	WS	P							1
3	06	29+26	RT	M3-2	EAST	24	12	2.0	8.2	TY A	TWT	1	WS	P							1
				M1-6F	FM 934	24	24	4.0													
				M6-1	--->	21	15	2.2													
3	07	29+37	LT	M3-4	WEST	24	12	2.0	14.4	TY A	10 BWG	1	SB	U			1				
				M1-6F	FM 934	24	24	4.0													
				M6-1	<---	21	15	2.2													
				M1-6F	FM 66	24	24	4.0													
				M6-4	<--->	21	15	2.2													
3	08	30+06	RT	S4-3P	SCHOOL	24	8	1.3	8.0	TY A	TWT	1	WS	P							1
				R2-1	SPEED LIMIT 20	24	30	5.0													
				S4-1P	7:00-8:00 AM 3:00-4:00 PM	24	10	1.7													
3	09	32+65	RT	M3-2	EAST	24	12	2.0	6.0	TY A	TWT	1	WS	P							1
				M1-6F	FM 66	24	24	4.0													
3	10	33+15	RT	S1-1	PEDESTRIAN CROSSING	36	36	6.6	8.6	TY A	TWT	1	WS	P							1
				SW16-7P	DOWN-LEFT ARROW	24	12	2.0													
3	11	33+18	LT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
3	12	33+54	RT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
3	13	33+63	LT	S1-1	PEDESTRIAN CROSSING	36	36	6.6	8.6	TY A	TWT	1	WS	P							1
				SW16-7P	DOWN-LEFT ARROW	24	12	2.0													
3	14	33+98	RT	S4-3P	SCHOOL	24	8	1.3	8.0	TY A	TWT	1	WS	P							1
				R2-1	SPEED LIMIT 20	24	30	5.0													
				S4-1P	7:00-8:00 AM 3:00-4:00 PM	24	10	1.7													
SHEET 3 OF 19:															11		1				12
4	01	37+10	LT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
4	02	37+37	RT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
4	03	37+46	LT	M2-1	JCT	21	15	2.2	6.2	TY A	TWT	1	WS	P							1
				M1-6F	FM 934	24	24	4.0													

SUMMARY OF SMALL SIGNS

NOT TO SCALE

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		103

SUMMARY OF SMALL SIGNS

SHEET	SIGN	STATION (FOR CONTRAC-TOR'S INFO)		ID	LEGEND OR TYPE	SIGN WIDTH (IN)	SIGN HEIGHT (IN)	SIGN AREA (SF)	SIGN AREA (TOTAL) (SF)	PANEL	POST SIZE	NO. OF POST	ANCHOR TYPE	SIGN MOUNT	0636 6007 REPLACE EXIST-ING ALUM-INIUM SIGNS SF	0644 6001 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6007 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6033 IN SM RD SN SUP&AM TY S80 (1) SA (U) EA	0644 6038 IN SM RD SN SUP&AM TY S80 (1) SA (U- EA	0644 6044 IN SM RD SN SUP&AM TY S80 (1) SB (U) EA	0644 6060 IN SM RD SN SUP&AM TY TWT (1) WS (P) EA
4	04	37+60	RT	S4-3P	SCHOOL	24	8	1.3	8.0	TY A	TWT	1	WS	P							
				R2-1	SPEED LIMIT 20	24	30	5.0													1
				S4-1P	7:00-8:00 AM 3:00-4:00 PM	24	10	1.7													
4	05	38+30	RT	M2-1	JCT	21	15	2.2	6.2	TY A	TWT	1	WS	P							
				M1-6F	FM 67	24	24	4.0													1
4	06	40+87	LT	S5-1	SCHOOL SPEED LIMIT 20	24	48	8.0	11.0	TY A	-	1	-	P	11						
				S7-1T	CELL PHONE USE PROHIBITED	24	18	3.0													
4	07	42+88	RT	R5-2	NO TRUCKS ALLOWED	24	24	4.0	4.0	TY A	TWT	1	WS	P							1
4	08	43+36	RT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
4	09	43+53	LT	M3-4	WEST	24	12	2.0	6.0	TY A	TWT	1	WS	P							
				M1-6F	FM 66	24	24	4.0													1
4	10	43+58	RT	M3-4	WEST	24	12	2.0	8.2	TY A	TWT	1	WS	P							
				M1-6F	FM 67	24	24	4.0													1
				M6-1	<---	21	15	2.2													
4	11	43+81	LT	R1-1	STOP	36	36	7.5	7.5	TY A	TWT	1	WS	P							1
4	12	43+87	RT	M1-6F	FM 66	24	24	4.0	6.2	TY A	TWT	1	WS	P							
				M6-1	<--->	21	15	2.2													1
4	13	44+02	RT	W1-7T	///<--->\\\	96	36	24.0	24.0	TY A	S 80	1	SA	U-EXAL					1		
4	14	44+31	LT	R12-1T	WEIGHT LIMIT GROSS 58,420 LB	24	36	6.0	6.0	TY A	TWT	1	WS	P							1
4	15	44+85	RT	R2-1	SPEED LIMIT 45	30	36	7.5	7.5	TY A	TWT	1	WS	P							1
4	16	44+85	LT	M1-6F	FM 67	24	24	4.0	6.2	TY A	TWT	1	WS	P							
				M6-1	--->	21	15	2.2													1
4	17	44+85	LT	R2-1	SPEED LIMIT 30	24	30	5.0	5.0	TY A	TWT	1	WS	P							1
														SHEET 4 OF 19:	**11**				**1**		**15**
5	01	46+00	LT	S1-1	PEDESTRIAN CROSSING	36	36	6.6	6.6	TY A	TWT	1	WS	P							1
5	02	47+27	RT	M3-2	EAST	24	12	2.0	6.0	TY A	TWT	1	WS	P							
				M1-6F	FM 66	24	24	4.0													1
5	03	54+47	RT	M2-1B	JCT	21	15	2.2	7.2	TY A	TWT	1	WS	P							
				M1-1T	IH 35W	30	24	5.0													1
														SHEET 5 OF 19:							**3**
6	01	59+90	RT	W8-13aT	BRIDGE ICE IN COLD WEATHER	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
6	02	64+78	RT	R2-1	SPEED LIMIT 50	30	36	7.5	7.5	TY A	TWT	1	WS	P							1
6	03	64+78	RT	D1-2	/\ FT WORTH WACO --->	78	30	16.3	16.3	TY A	S 80	1	SA	U-EXAL					1		

SUMMARY OF SMALL SIGNS

NOT TO SCALE

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		104

SUMMARY OF SMALL SIGNS

SHEET	SIGN	STATION (FOR CONTRAC-TOR'S INFO)		ID	LEGEND OR TYPE	SIGN WIDTH (IN)	SIGN HEIGHT (IN)	SIGN AREA (SF)	SIGN AREA (TOTAL) (SF)	PANEL	POST SIZE	NO. OF POST	ANCHOR TYPE	SIGN MOUNT	0636 6007 REPLACE EXIST-ING ALUM-INIUM SIGNS SF	0644 6001 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6007 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6033 IN SM RD SN SUP&AM TY S80 (1) SA (U) EA	0644 6038 IN SM RD SN SUP&AM TY S80 (1) SA (U- EA	0644 6044 IN SM RD SN SUP&AM TY S80 (1) SB (U) EA	0644 6060 IN SM RD SN SUP&AM TY TWT (1) WS (P) EA
6	04	64+78	LT	R2-1	SPEED LIMIT 45	30	36	7.5	7.5	TY A	TWT	1	WS	P							1
														SHEET 6 OF 19:					**1**		**3**
7	01	68+37	LT	M3-4	WEST	24	12	2.0	6.0	TY A	TWT	1	WS	P							1
				M1-6F	FM 66	24	24	4.0													
7	02	70+28	LT	R12-1T	WEIGHT LIMIT GROSS 58,420 LB	24	36	6.0	6.0	TY A	TWT	1	WS	P							1
7	03	70+88	RT	M3-1B	NORTH	24	12	2.0	18.4	TY A	S 80	1	SA	U				1			
				M1-1T	IH 35W	30	24	5.0													
				M6-3B	/\	21	15	2.2													
				M3-3B	SOUTH	24	12	2.0													
				M1-1T	IH 35W	30	24	5.0													
				M6-1B	--->	21	15	2.2													
7	04	71+40	RT	M3-2	EAST	24	12	2.0	16.4	TY A	S 80	1	SA	U				1			
				M1-6F	FM 66	24	24	4.0													
				M6-1	<---	21	15	2.2													
				M3-4	WEST	24	12	2.0													
				M1-6F	FM 66	24	24	4.0													
				M6-1	--->	21	15	2.2													
7	05	71+44	LT	R5-1	DO NOT ENTER	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
7	06	71+56	LT	R1-1	STOP	36	36	7.5	12.0	TY A	10 BWG	1	SA	P		1					
				W4-4P	CROSS TRAFFIC DOES NOT STOP	36	18	4.5													
7	07	71+99	LT	R6-1R	ONE WAY --->	36	12	3.0	18.0	TY A	10 BWG	1	SA	P		1					
				R6-1R	ONE WAY <---	36	12	3.0													
				R1-1	STOP	36	36	7.5													
				W4-4P	CROSS TRAFFIC DOES NOT STOP	36	18	4.5													
7	08	72+13	LT	R5-1	DO NOT ENTER	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
7	09	72+33	LT	M3-3B	SOUTH	24	12	2.0	9.2	TY A	TWT	1	WS	P							1
				M1-1T	IH 35W	30	24	5.0													
				M6-1B	<---	21	15	2.2													
7	10	74+62	RT	W8-13aT	BRIDGE ICE IN COLD WEATHER	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
														SHEET 7 OF 19:		**2**		**2**			**6**
8	01	76+67	RT	D1-1L	<--- FT WORTH	84	18	10.5	10.5	TY A	10 BWG	1	SA	U			1				
8	02	79+82	LT	D1-1L	<--- WACO	60	18	7.5	7.5	TY A	10 BWG	1	SA	U			1				
8	03	82+43	LT	W8-13aT	BRIDGE ICE IN COLD WEATHER	36	36	9.0	9.0	TY A	TWT	1	WS	P							1

SUMMARY OF SMALL SIGNS

NOT TO SCALE

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		105

SUMMARY OF SMALL SIGNS

SHEET	SIGN	STATION (FOR CONTRACTOR'S INFO)		ID	LEGEND OR TYPE	SIGN WIDTH (IN)	SIGN HEIGHT (IN)	SIGN AREA (SF)	SIGN AREA (TOTAL) (SF)	PANEL	POST SIZE	NO. OF POST	ANCHOR TYPE	SIGN MOUNT	0636 6007 REPLACE EXISTING ALUMINIUM SIGNS SF	0644 6001 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6007 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6033 IN SM RD SN SUP&AM TY S80 (1) SA (U) EA	0644 6038 IN SM RD SN SUP&AM TY S80 (1) SA (U- EA	0644 6044 IN SM RD SN SUP&AM TY S80 (1) SB (U) EA	0644 6060 IN SM RD SN SUP&AM TY TWT (1) WS (P) EA
8	04	84+24	RT	M3-1B	NORTH	24	12	2.0	9.2	TY A	TWT	1	WS	P							1
				M1-1T	IH 35W	30	24	5.0													
				M6-1B	<---	21	15	2.2													
														SHEET 8 OF 19:			**2**				**2**
9	01	85+26	RT	R1-1	STOP	36	36	7.5	12.0	TY A	10 BWG	1	SA	P		1					
				W4-4P	CROSS TRAFFIC DOES NOT STOP	36	18	4.5													
9	02	85+27	LT	M3-4	WEST	24	12	2.0	16.4	TY A	S 80	1	SA	U				1			
				M1-6F	FM 66	24	24	4.0													
				M6-1	<---	21	15	2.2													
				M3-2	EAST	24	12	2.0													
				M1-6F	FM 66	24	24	4.0													
				M6-1	--->	21	15	2.2													
9	03	85+90	RT	R12-6bT	LOAD ZONED BRIDGE 7.6 MILES	102	30	21.3	21.3	TY A	S 80	1	SA	U-EXAL					1		
9	04	85+94	LT	M3-3B	SOUTH	24	12	2.0	18.4	TY A	S 80	1	SA	U				1			
				M1-1T	IH 35W	30	24	5.0													
				M6-3B	/\	21	15	2.2													
				M3-1B	NORTH	24	12	2.0													
				M1-1T	IH 35W	30	24	5.0													
				M6-1B	--->	21	15	2.2													
9	05	87+01	RT	R12-1T	WEIGHT LIMIT GROSS 58,420 LB	24	36	6.0	6.0	TY A	TWT	1	WS	P							1
9	06	90+38	RT	M3-2	EAST	24	12	2.0	6.0	TY A	TWT	1	WS	P							1
				M1-6F	FM 66	24	24	4.0													
9	07	90+38	RT	D14-4T	ADOPT A HIGHWAY NEXT 2 MILES	48	48	16.0	16.0	TY A	10 BWG	1	SA	U			1				
9	08	90+44	LT	R2-1	SPEED LIMIT 50	30	36	7.5	7.5	TY A	TWT	1	WS	P							1
9	09	93+48	LT	D1-2	/\ WACO FT WORTH --->	84	30	17.5	17.5	TY A	S 80	1	SA	U-EXAL					1		
														SHEET 9 OF 19:		**1**	**1**	**2**	**2**		**3**
10	01	95+04	RT	R2-1	SPEED LIMIT 60	30	36	7.5	7.5	TY A	TWT	1	WS	P							1
10	02	96+79	LT	W8-13aT	BRIDGE ICE IN COLD WEATHER	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
10	03	100+04	LT	W3-5	SPEED LIMIT 50 AHEAD	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
10	04	103+29	LT	M2-1B	JCT	21	15	2.2	7.2	TY A	TWT	1	WS	P							1
				M1-1T	IH 35W	30	24	5.0													
														SHEET 10 OF 19:							**4**
12	01	124+17	RT	D20-1TR	CO RD 4426 --->	24	24	4.0	4.0	TY A	TWT	1	WS	P							1
														SHEET 12 OF 19:							**1**

SUMMARY OF SMALL SIGNS

NOT TO SCALE SHEET 6 OF 7

CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		106

SUMMARY OF SMALL SIGNS

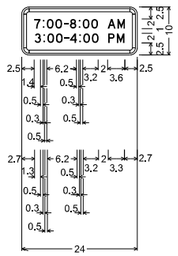
SHEET	SIGN	STATION (FOR CONTRAC-TOR'S INFO)		ID	LEGEND OR TYPE	SIGN WIDTH (IN)	SIGN HEIGHT (IN)	SIGN AREA (SF)	SIGN AREA (TOTAL) (SF)	PANEL	POST SIZE	NO. OF POST	ANCHOR TYPE	SIGN MOUNT	0636 6007 REPLACE EXIST-ING ALUM-INIUM SIGNS SF	0644 6001 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6007 IN SM RD SN SUP&AM TY 10BWG (1) SA EA	0644 6033 IN SM RD SN SUP&AM TY S80 (1) SA (U) EA	0644 6038 IN SM RD SN SUP&AM TY S80 (1) SA (U- EA	0644 6044 IN SM RD SN SUP&AM TY S80 (1) SB (U) EA	0644 6060 IN SM RD SN SUP&AM TY TWT (1) WS (P) EA
13	01	126+69	RT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
13	02	128+88	LT	D20-1TL	CO RD 4426 <---	24	24	4.0	4.0	TY A	TWT	1	WS	P							1
														SHEET 13 OF 19:							**2**
18	01	178+69	RT	W11-10L	TRUCK	36	36	9.0	9.0	TY A	TWT	1	WS	P							1
														SHEET 18 OF 19:							**1**
19	01	186+64	RT	D20-1TL	CO RD 4421 <---	24	24	4.0	4.0	TY A	TWT	1	WS	P							1
19	02	188+41	LT	R1-1	STOP	30	30	5.2	5.2	TY A	TWT	1	WS	P							1
														SHEET 19 OF 19:							**2**
														TOTAL:	**22**	**3**	**3**	**4**	**5**	**4**	**83**

SUMMARY OF SMALL SIGNS

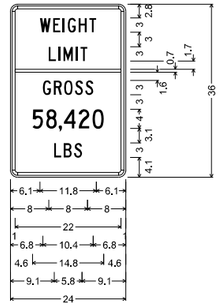
NOT TO SCALE

SHEET 7 OF 7

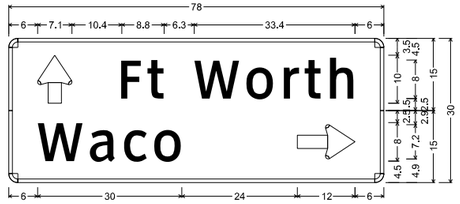
CHANGE ORDER	FED.RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		107



S4-1P_24x10:
1.5" Radius, 0.6" Border, 0.4" Indent, Black on, White;
"7 : 00-8 : 00 AM", D specified length;
"3 : 00-4 : 00 PM", D specified length;



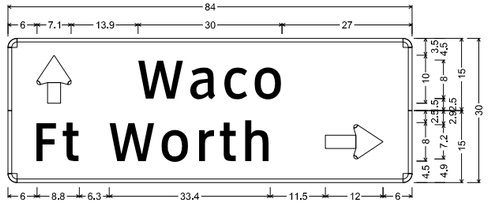
R12-IT_24x36:
1.5" Radius, 0.6" Border, 0.4" Indent, Black on, White;
"WEIGHT", C;
"LIMIT", C;
"GROSS", C;
"58,420", C;
"LBS", C;



D1-2 8in UP-RT:

1.9" Radius, 0.8" Border, White on, Green;
Standard Arrow Custom 10.0" X 7.1" 90°; "Ft Worth", ClearviewHwy-3-W;

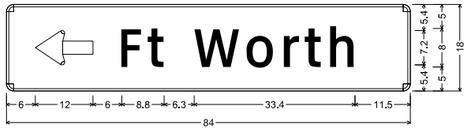
1.9" Radius, 0.8" Border, White on, Green;
"Waco", ClearviewHwy-3-W; Standard Arrow Custom 12.0" X 7.1" 0°;



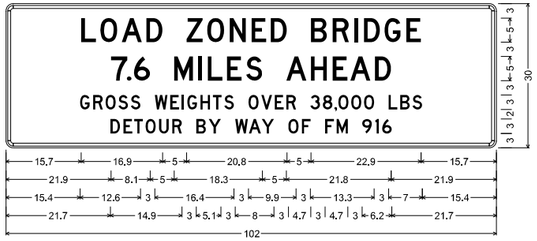
D1-2 8in UP-RT:

1.9" Radius, 0.8" Border, White on, Green;
Standard Arrow Custom 10.0" X 7.1" 90°; "Waco", ClearviewHwy-3-W;

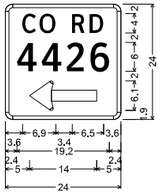
1.9" Radius, 0.8" Border, White on, Green;
"Ft Worth", ClearviewHwy-3-W; Standard Arrow Custom 12.0" X 7.1" 0°;



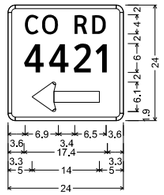
D1-1 8in LT:
1.5" Radius, 0.5" Border, White on, Green;
Standard Arrow Custom 12.0" X 7.1" 180°; "Ft Worth", ClearviewHwy-3-W;



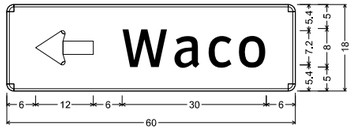
R12-6bT_VARx30:
1.5" Radius, 0.6" Border, 0.4" Indent, Black on, White;
"LOAD ZONED BRIDGE", D; "7.6 MILES AHEAD", D;
"GROSS WEIGHTS OVER 38,000 LBS", D; "DETOUR BY WAY OF FM 916", D;



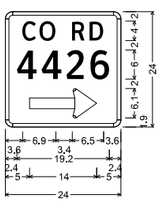
D20-1TL_24x24:
1.5" Radius, 0.8" Border, White on, Green;
"CO RD", ClearviewHwy-3-W;
"4426", ClearviewHwy-3-W;
Standard Arrow Custom 14.0" X 6.1" 180°;



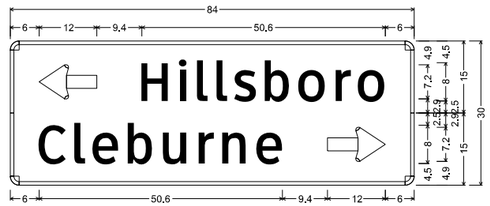
D20-1TL_24x24:
1.5" Radius, 0.8" Border, White on, Green;
"CO RD", ClearviewHwy-3-W;
"4421", ClearviewHwy-3-W;
Standard Arrow Custom 14.0" X 6.1" 180°;



D1-1 8in LT:
1.5" Radius, 0.5" Border, White on, Green;
Standard Arrow Custom 12.0" X 7.1" 180°;
"Waco", ClearviewHwy-3-W;



D20-1TR_24x24:
1.5" Radius, 0.8" Border, White on, Green;
"CO RD", ClearviewHwy-3-W;
"4426", ClearviewHwy-3-W;
Standard Arrow Custom 14.0" X 6.1" 0°;



D1-2 8in LT-RT:

1.9" Radius, 0.8" Border, White on, Green;
Standard Arrow Custom 12.0" X 7.1" 180°; "Hillsboro", ClearviewHwy-3-W;

1.9" Radius, 0.8" Border, White on, Green;
"Cleburne", ClearviewHwy-3-W; Standard Arrow Custom 12.0" X 7.1" 0°;

D14-4T-2_48x48:

3.0" Radius, 1.0" Border, White on, Blue;
"ADOPT A", C; "HIGHWAY", C;
"NEXT 2 MILES", C;

3.0" Radius, 1.0" Border, White on, Blue;
"ITASCA", C; "LANDFILL", C;

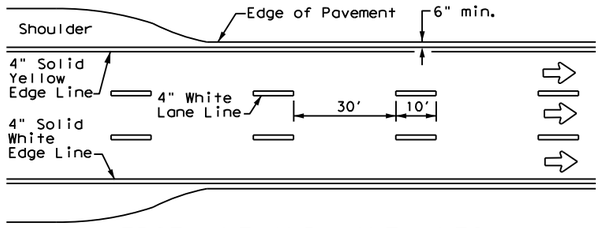
10/25/2021

SIGNATURE OF REGISTRANT & DATE

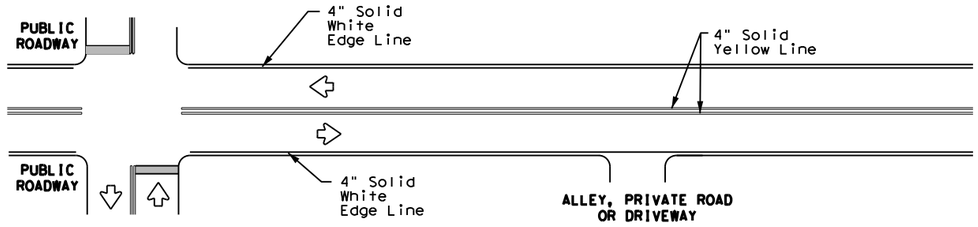
SMALL SIGN DETAILS

NOT TO SCALE SHEET 1 OF 1

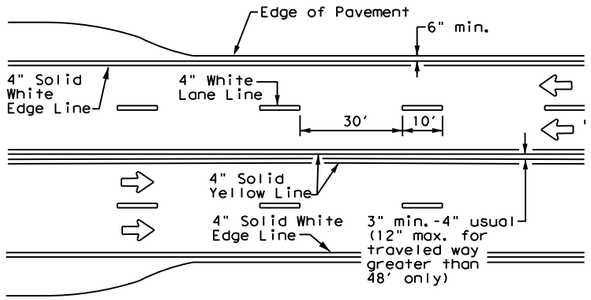
CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		108



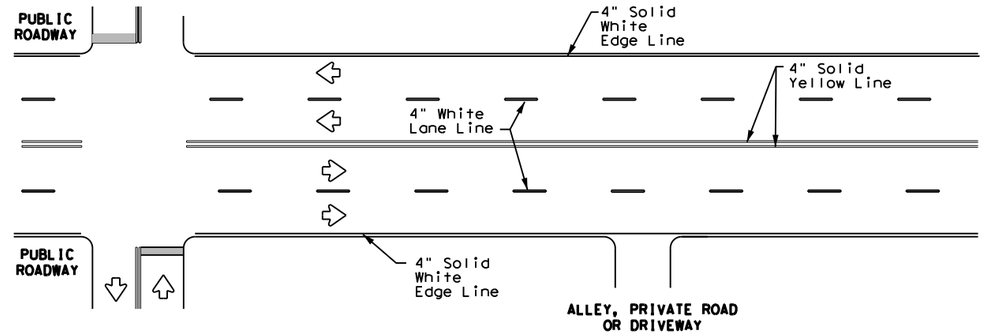
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



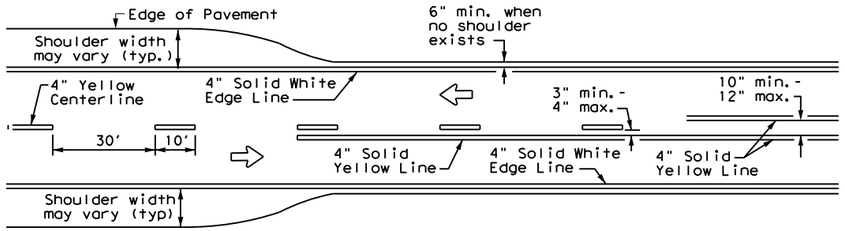
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



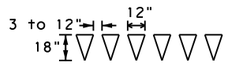
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



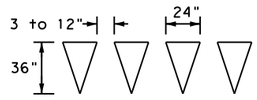
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

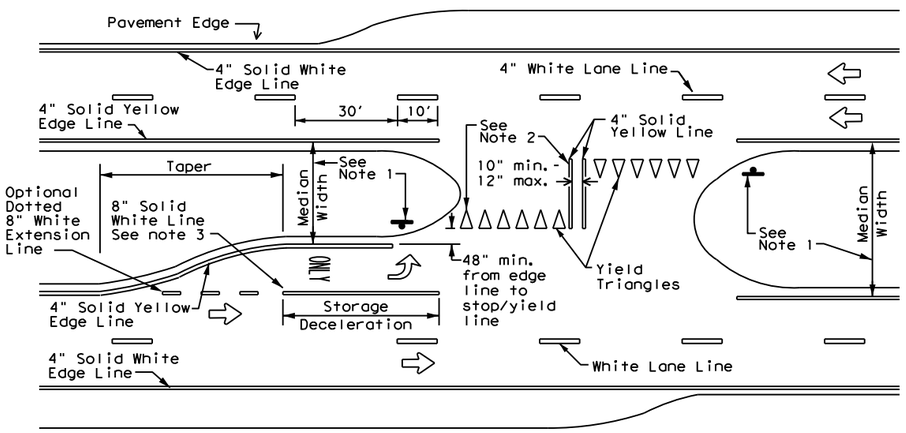


For posted speed on road being marked equal to or less than 40 MPH.



For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. 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 are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield traingles shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

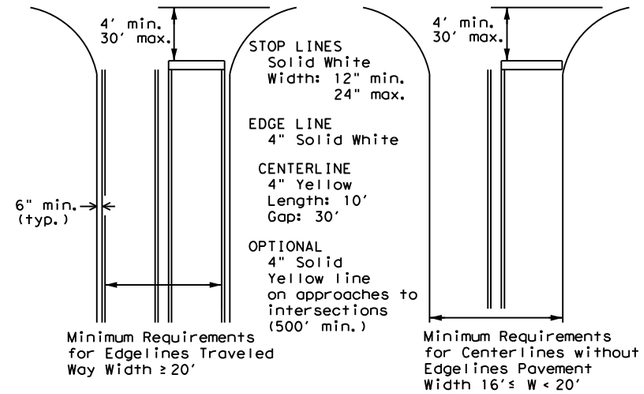
GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.

2. 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 inside of edgeline to the inside of edgeline 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.



GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

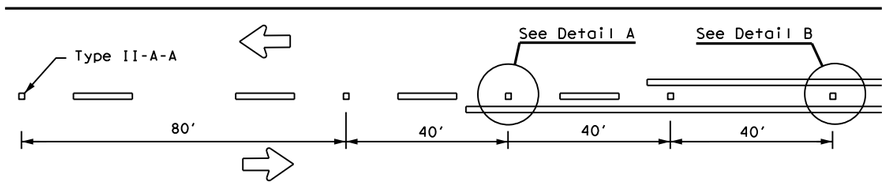
PM(1)-20

FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT November 1978	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0596	01	023	FM 66
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	WACO	HILL		109

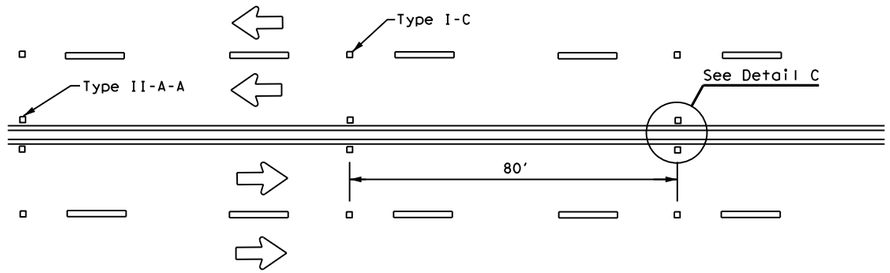
22A

DATE: 10/21/2021 10:42:33 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\pm1-20.dgn

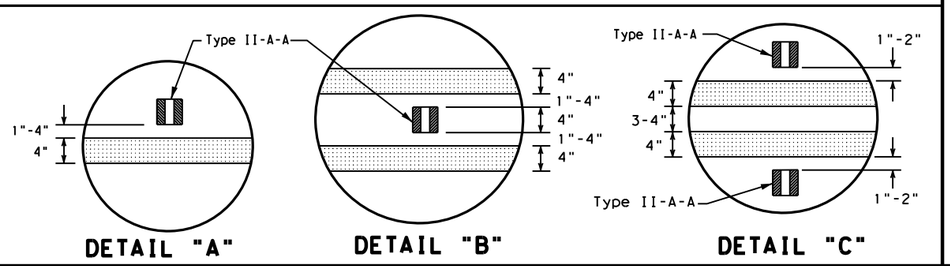
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



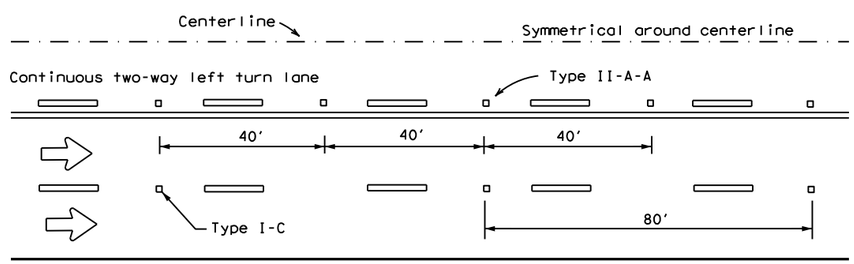
CENTERLINE FOR ALL TWO LANE ROADWAYS



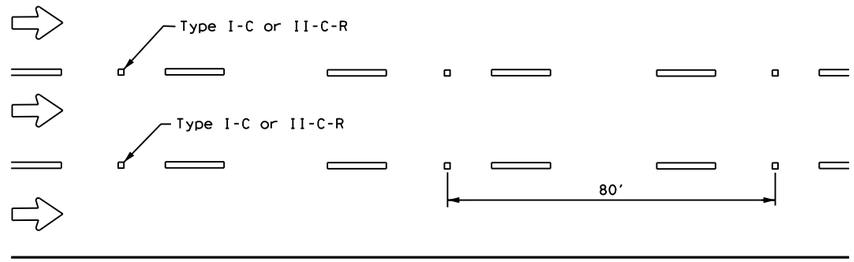
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS



DETAIL "A" **DETAIL "B"** **DETAIL "C"**



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

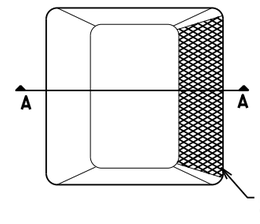


LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

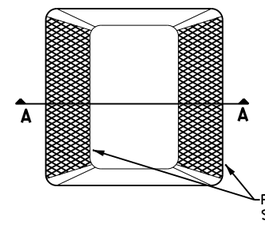
Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

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

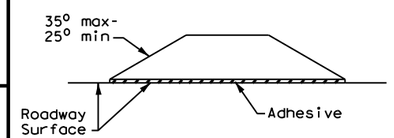
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

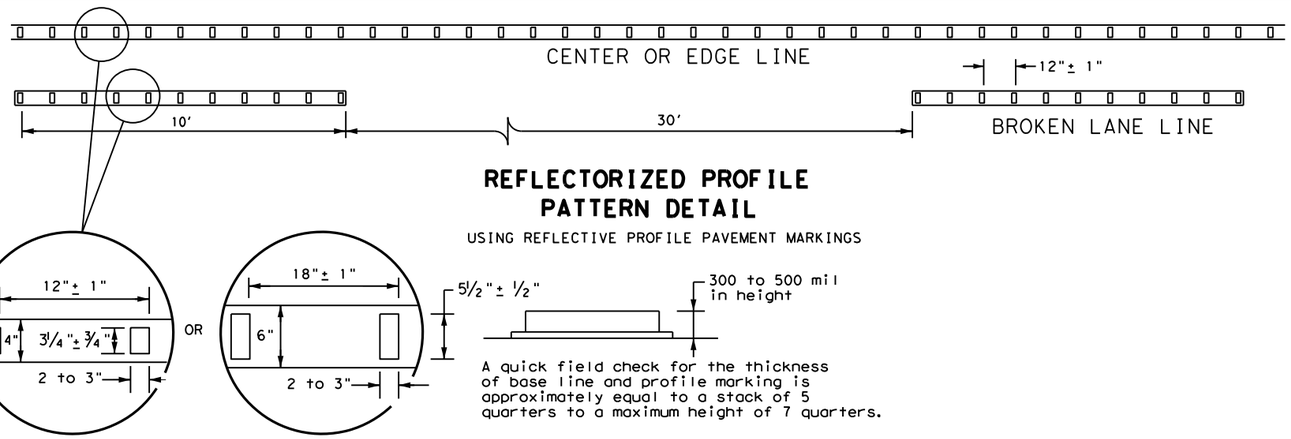


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

4" EDGE LINE, CENTER LINE OR LANE LINE

OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE

NOTE

Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

Texas Department of Transportation

Traffic Safety Division Standard

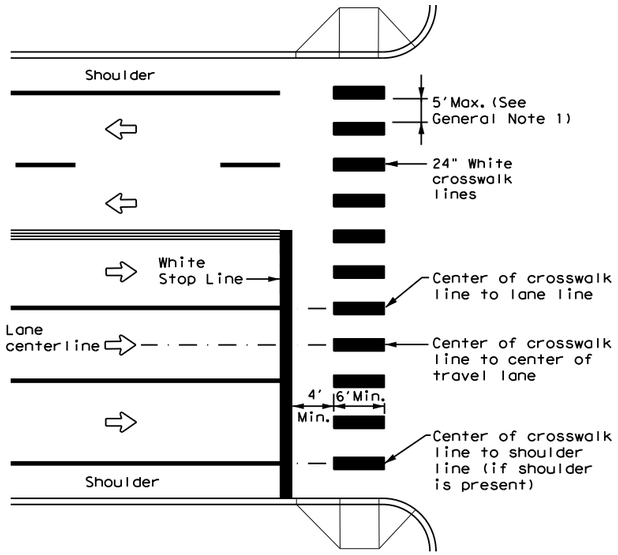
POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-20

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-92 2-10	0596	01	023	FM 66
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20	WACO	HILL		110

22B

DATE: 10/21/2021 10:42:39 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\pm2-20.dgn

DATE: 10/21/2021 10:42:46 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\pm4-20.dgn



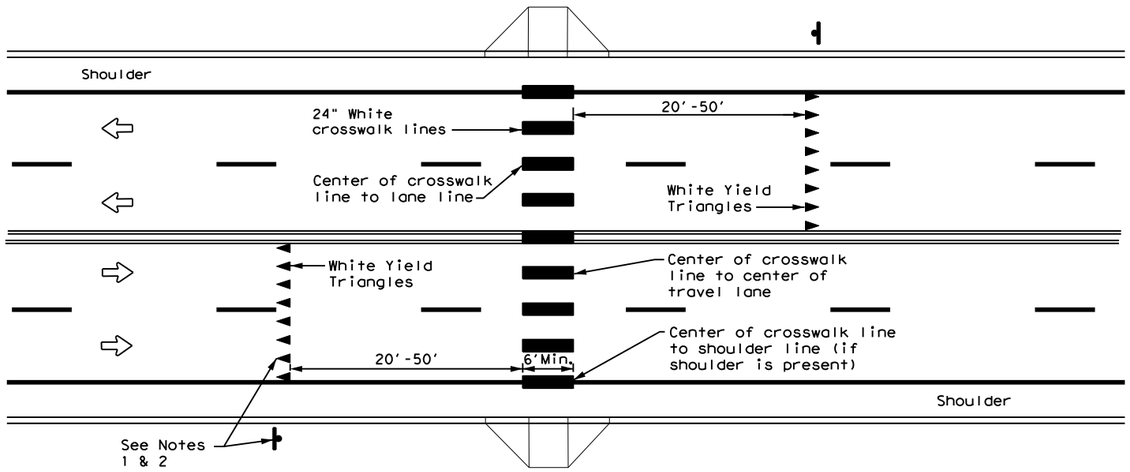
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar/Yield Triangles and Crosswalk shall be approved by the Engineer in the field.

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.



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES

1. Use yield triangles with "Yield Here to Pedestrians" signs at unsignalized mid block crosswalks.
2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

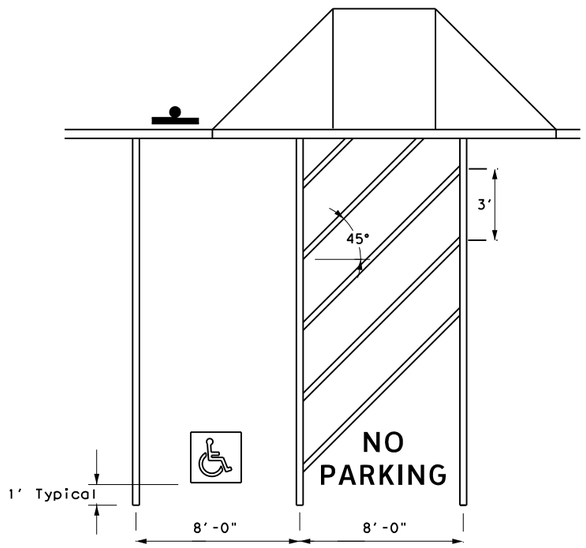
CROSSWALK PAVEMENT MARKINGS

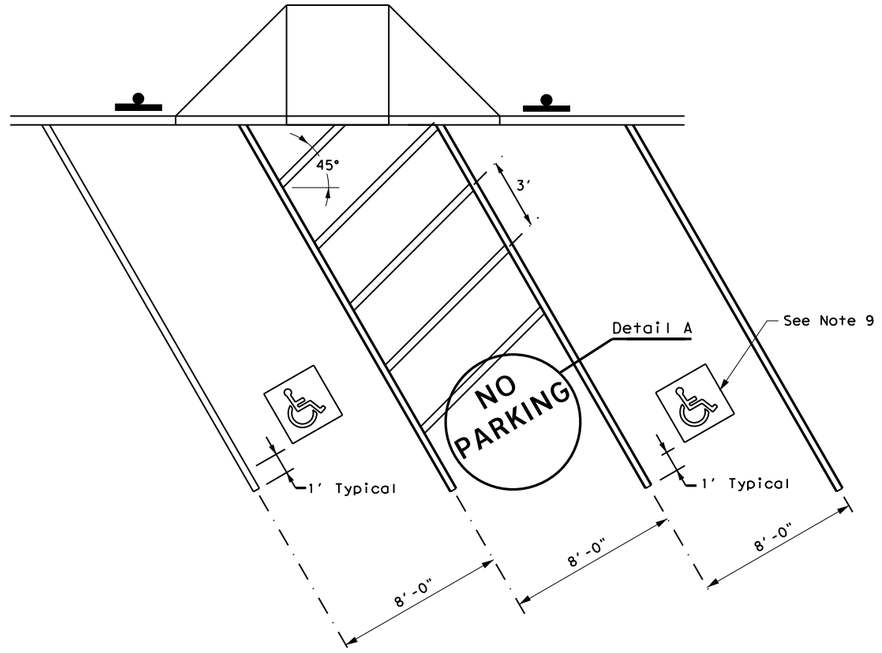
PM(4)-20

FILE: pm4-20.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		111

22D

DATE: 10/21/2021 10:42:53 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\pm(ap)-21.dgn





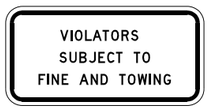
PERPENDICULAR OR ANGLED ACCESSIBLE PARKING SPACE DIMENSIONS

GENERAL NOTES:

1. All paved accessible parking space limit lines shall be 4" solid white lines.
2. Paved accessible parking spaces must include a white International Symbol of Accessibility applied conspicuously on the surface in a color that contrasts the pavement. A blue background with white border may supplement the symbol for additional contrast.
3. The words "NO PARKING" must be applied on any access aisle adjacent to the parking space. The words must be white, applied:
   a) in all capital letters.
   b) centered within each access aisle adjacent to the parking space.
4. RESERVED PARKING (R7-8T) sign including the International Symbol of Accessibility.
   a) shall be REQUIRED for each accessible parking space.
   b) shall NOT be placed between two accessible parking spaces.
   c) shall NOT be placed in a location that restricts movement of wheelchairs within the adjacent sidewalk.
   d) shall have a mounting height of 7 feet to the bottom of the sign.
5. A sign identifying the consequences of parking illegally in a paved accessible parking space. Must:
   a) at a minimum state "VIOLATORS SUBJECT TO FINE AND TOWING" (Plaque)(R7-8aPT).
   b) be mounted on a pole, post, wall or freestanding board.
   c) be no more than eight inches (8") below sign R7-8T a sign required by the Texas Accessibility Standards, 502.6.
   d) be installed so that the bottom edge of the sign is no lower than 48 inches and no higher than 80 inches above the ground level.
6. Signs identifying van parking spaces shall contain the designation "VAN ACCESSIBLE" (R7-8P) Signs shall be 60 inches minimum above the ground level measured to the bottom of the sign.
7. Perpendicular or angled parking spaces shall be 8 feet wide minimum with an access aisle 8 feet minimum wide (van accessible). Two parking spaces are permitted to share a common access aisle.
8. Access aisles shall be at street level, extend the full length of the parking space they serve, follow ADA surface requirements, and marked to discourage parking in the access aisle. Curb ramps shall connect the access aisle to the adjacent pedestrian access route. Curb ramps shall not be located within the access aisle.
9. International Symbol of Accessibility Parking Space Marking and sign details can be found in The Standard Highway Sign Designs for Texas (SHSD) at the following website. http://www.txdot.gov/

R7-8T

R7-8P



R7-8aPT

ACCESSIBLE PARKING SIGNS

Detail A

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

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
SIGN FACE MATERIALS	DMS-8300

Texas Department of Transportation

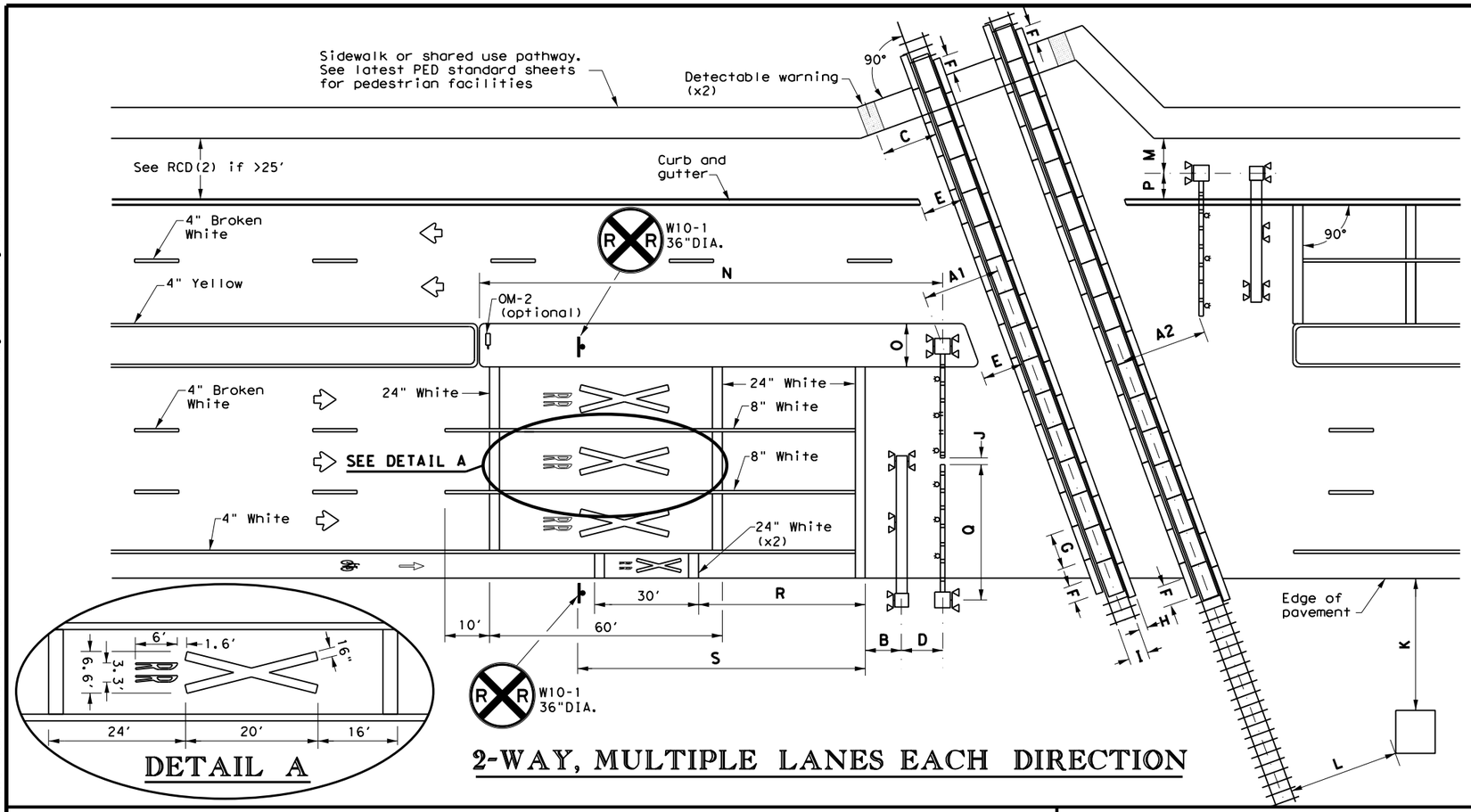
Traffic Safety Division Standard

PAVEMENT MARKINGS AND SIGNING FOR ACCESSIBLE PARKING

PM(AP)-21

FILE: pm(ap)-21	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July 2021	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		112

22F



DETAIL A

2-WAY, MULTIPLE LANES EACH DIRECTION

NOTES

A1: Center of RR mast to center of rail: 12' minimum, 15' typical.

A2: Tip of gate to center of rail: 12' minimum, 15' typical.

B: Center of mast (cantilever, gate, or mast flasher) of nearest active traffic control device to stop line: 8' (NOTE: Stop line may be moved as needed, but should be at least 8' back from gates, if present).

C: Center of detectable warning device to nearest rail: 6' minimum

D: Center of gate mast to center of cantilever mast: 6' typical. NOTE: Cantilever may be located in front or behind gates.

E: Edge of median or curb to nearest rail: 10' typical. NOTE: Design median edge to be parallel with rail.

F: Edge of planking panel from edge of pavement or sidewalk: 3' minimum. NOTE: Field panels need not be in line with gauge panels.

G: Length of panels along rail: 8' typical.

H: Width of field panel: 2' typical (check with railroad company).

I: Distance between rails: 4'-8.5".

J: Tip of gate to tip of gate: 2' maximum for Quiet Zone SSM or 90% of traveled way covered by gates for all other locations.

K: Nearest edge of RR cabin from edge of pavement: 30' typical. NOTE: Cabinet not required to be parallel to edge of pavement.

L: Nearest edge of RR cabin from nearest rail: 25' typical.

M: Center of RR mast to edge of sidewalk: 6' minimum.

N: Center of gate mast to leading edge of non-traversable median: 100' minimum to qualify as a Quiet Zone SSM. NOTE: 60'will suffice if there is a street intersection within the 100' and all street intersections within 60' are closed.

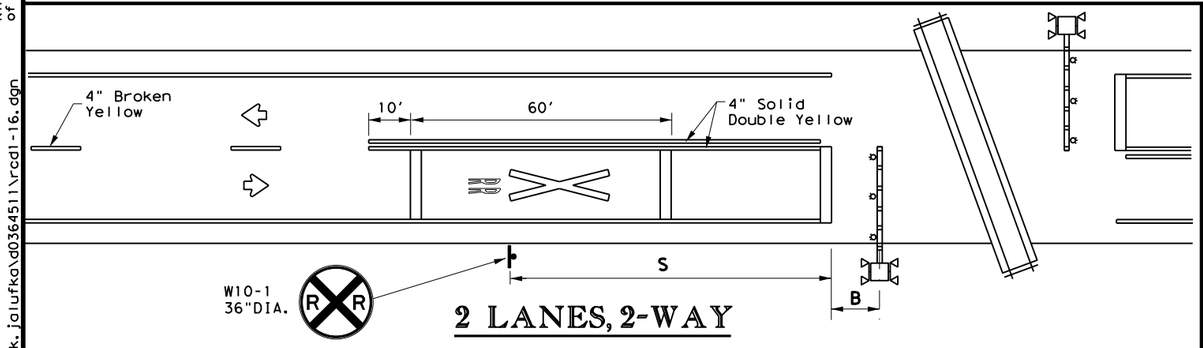
O: Width of median: 8'-6" minimum, 10' typical when using median gates. NOTE: Center of gate mast minimum 4'-3" from face of curb.

P: Center of RR mast to face of curb: 4'-3" minimum.
Center of RR mast to edge of pavement (with shoulder): 6' minimum
Center of RR mast to edge of pavement (no shoulder): 8'-3" minimum
NOTE: BNSF prefers 5'-3", 7', and 9'-3" minimums, respectively.

Q: Gate length: 28' or less typical, but railroad company may allow up to 32'under special circumstances.

R: Stop line to first RR Crossing transverse line (bike lane): 50' typical.

S: Stop line to GRADE CROSSING ADVANCE WARNING (W10-1) sign and adjacent RR Crossing pavement markings. See Table 1. See RCD(2) for other signs.



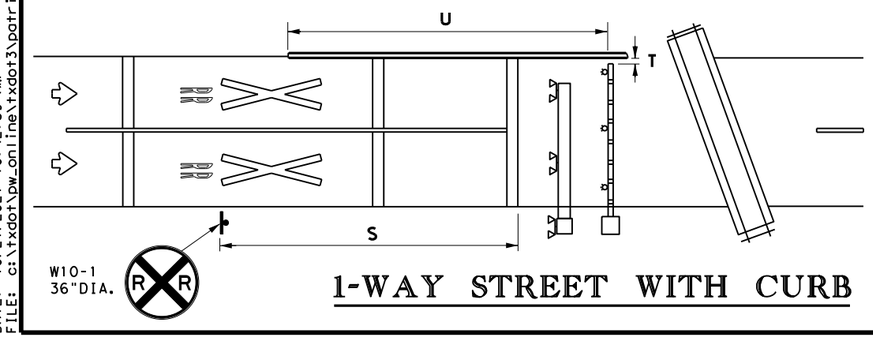
2 LANES, 2-WAY

TABLE 1	
Approach Speed (mph)	Desirable Placement (feet)
20	100
25	100
30	100
35	100
40	125
45	175
50	250
55	325
60	400
65	475
70	550
75	650

LEGEND	
	Sign
	Object Marker
	Traffic Flow
	Cantilever
	Gate Assembly
	Mast Flasher Pair

GENERAL NOTES

1. Medians and curbs must be non-traversable to qualify as a Quiet Zone Supplementary Safety Measure (SSM). Non-traversable curbs in Quiet Zones are 6" tall minimum and used on roadways where speed does not exceed 40 mph.
2. Raised pavement markers may be used to supplement striping. See PM(2) and PM(3) standard sheets.
3. Medians preferred whenever possible to prevent vehicles from driving around gates.
4. Longitudinal edge striping may be continued thru crossing as needed. Illumination may also be considered for nighttime visibility.
5. See SMD standard sheets for sign mounting details.
6. See the Standard Highway Sign Design for Texas (SHSD) manual for sign and pavement marking details.

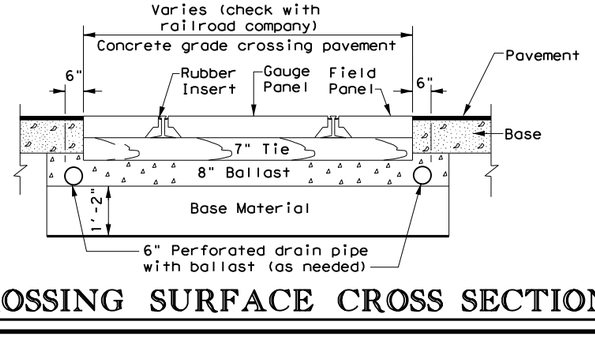


1-WAY STREET WITH CURB

NOTES

T: Tip of gate to edge of curb: 1' max for Quiet Zone SSM, 90% of traveled way covered by gates for all other locations

U: Non-traversable curb length from gate: 100' min. for a Quiet Zone SSM, 10' min for all other locations.



CROSSING SURFACE CROSS SECTION

Texas Department of Transportation

Traffic Operations Division Standard

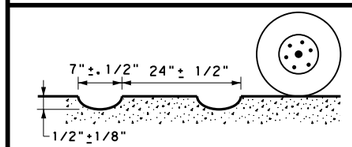
RAILROAD CROSSING DETAILS SIGNING, STRIPING, AND DEVICE PLACEMENT RCD(1)-16

FILE: rcd1-16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT FEBRUARY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		113

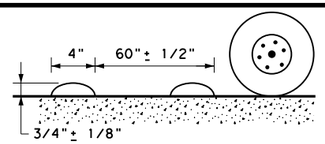
DATE: 10/21/2021 10:42:59 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\rcd1-16.dgn

DATE: 10/21/2021 10:43:06 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\rs(3)-13.dgn

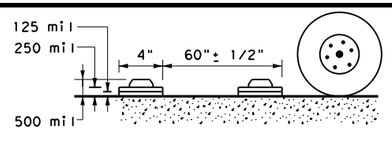
CENTERLINE RUMBLE STRIPS



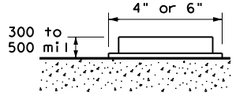
MILLED RUMBLE STRIPS



RAISED TRAFFIC BUTTONS

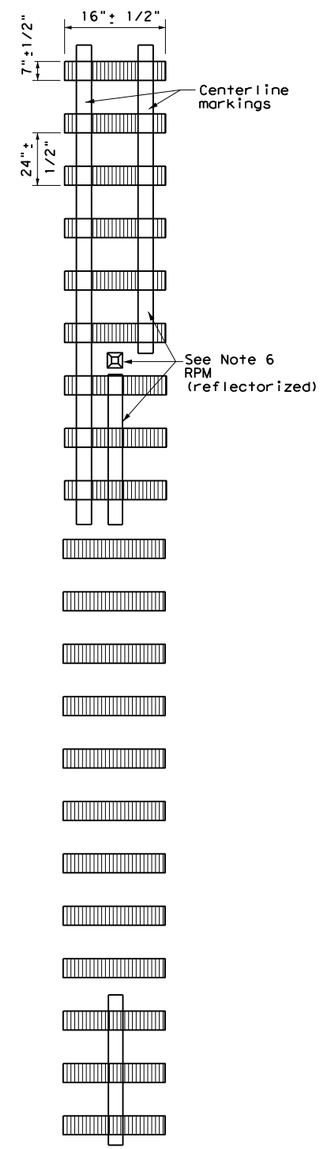


PREFORMED THERMOPLASTIC STRIPS



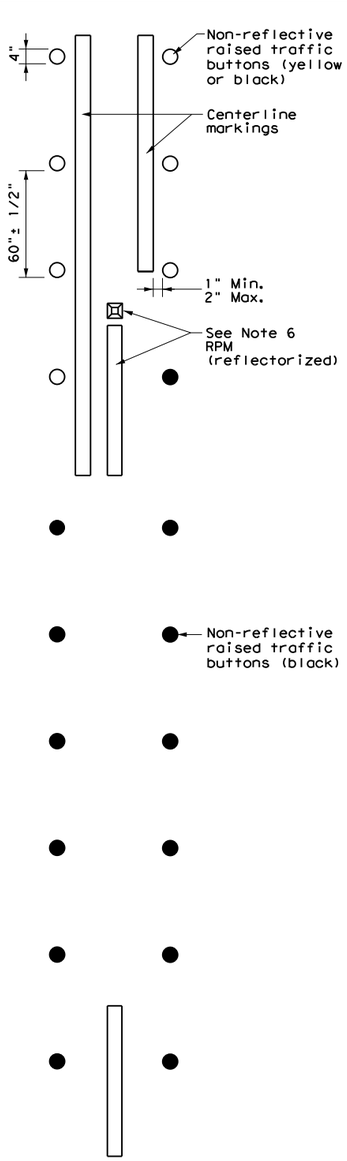
PROFILE MARKINGS

PROFILE VIEW



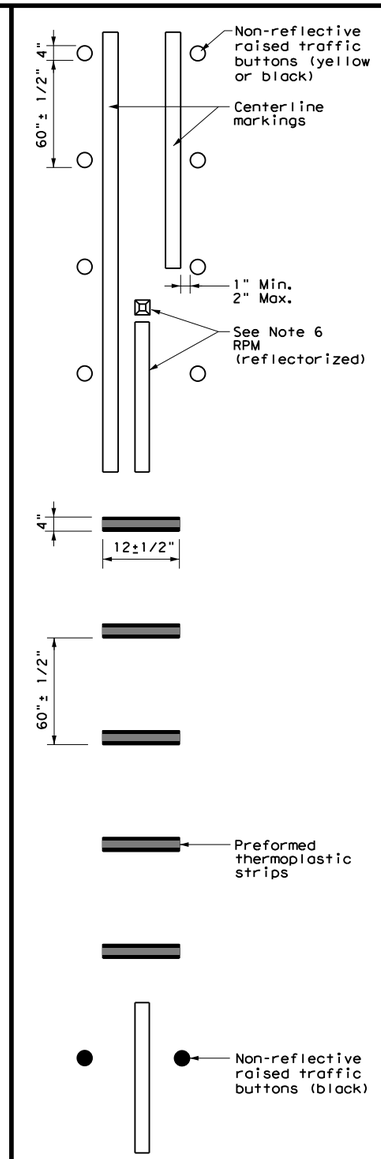
PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS



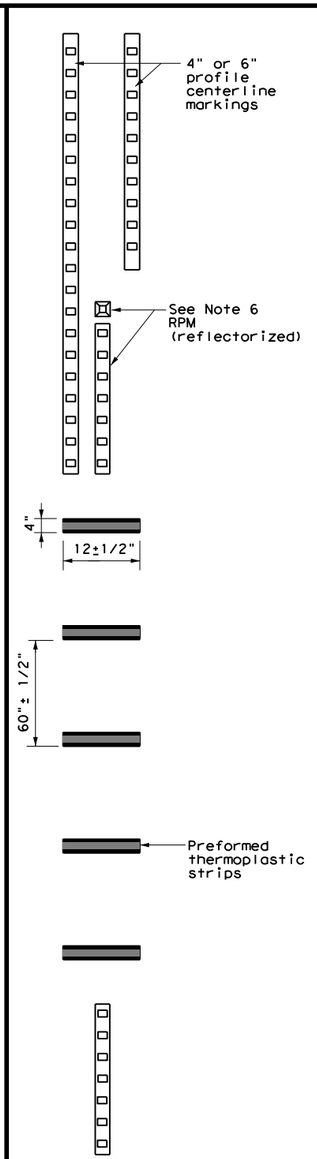
PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS



PLAN VIEW
OPTION 3

RAISED CENTERLINE RUMBLE STRIPS AND PREFORMED THERMOPLASTIC STRIPS



PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS AND PREFORMED THERMOPLASTIC STRIPS

TWO LANE TWO-WAY ROADWAYS

GENERAL NOTES

1. This standard sheet provides guidelines for installing centerline rumble strips on two-lane highways with or without shoulders.
2. Centerline and edgeline rumble strips or profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
3. 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.
4. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Operations Division.
5. Breaks in milled centerline rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections and driveways with high usage of large trucks.
6. Use Standard Sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, and dimensions pavement markings and profile markings.
7. Consideration should be given to noise levels when centerline rumble strips are installed near residential areas, schools, churches, etc. A minimum of 3/8 inch depth of milled rumble strip may be considered in these areas.
8. Pavement markings must be applied over milled centerline rumble strips.

WHEN INSTALLING CENTERLINE RUMBLE STRIPS:

9. 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 manufacturer's recommendations.
10. When using non-reflective raised traffic buttons as a centerline rumble strip, the button shall be placed adjacent to the pavement marking delineating the centerline. The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
11. The color of the button should be yellow for a continuous no passing roadway. Black buttons should be used in areas where passing is allowed.

WHEN INSTALLING EDGELINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

12. See standard sheet RS(4).

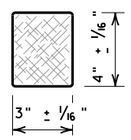
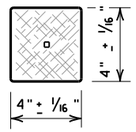
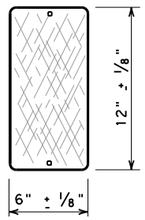
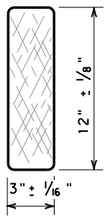
Texas Department of Transportation®
Traffic Operations Division Standard

CENTERLINE RUMBLE STRIPS ON TWO LANE TWO-WAY HIGHWAYS

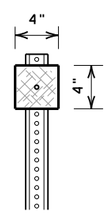
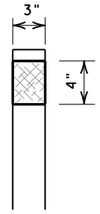
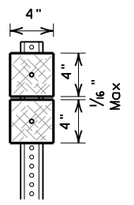
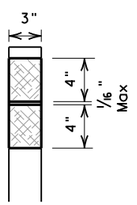
RS(3)-13

FILE: rs(3)-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2013	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		114

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

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

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

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

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

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

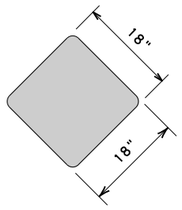
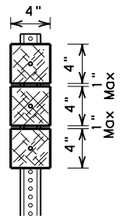
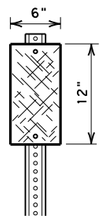
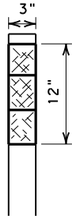
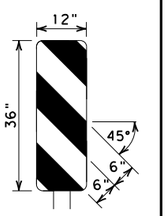
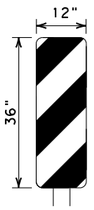
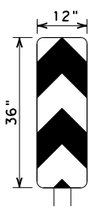
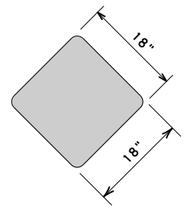
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

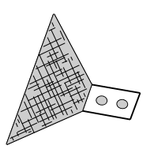
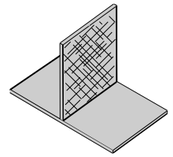
OBJECT MARKERS

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

DEPARTMENTAL MATERIAL SPECIFICATIONS

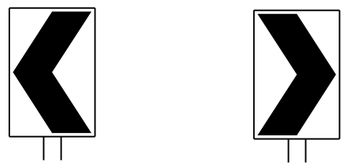
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

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

CHEVRONS

DEVICE



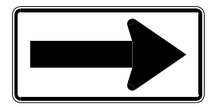
W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE



W1-6

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

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	WACO	HILL		115

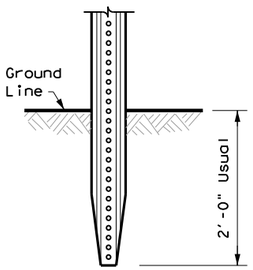
20A

DATE: 10/21/2021 10:43:12 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\dom1-20.dgn

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

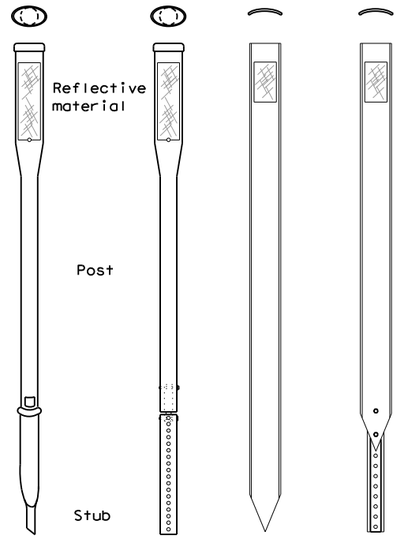


NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

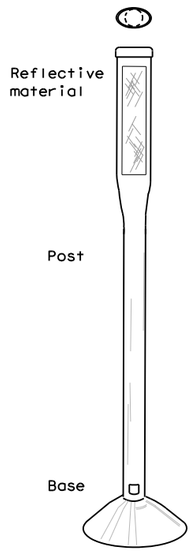
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



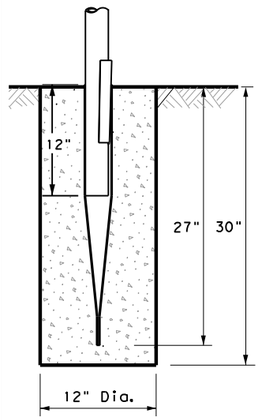
SURFACE MOUNT

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

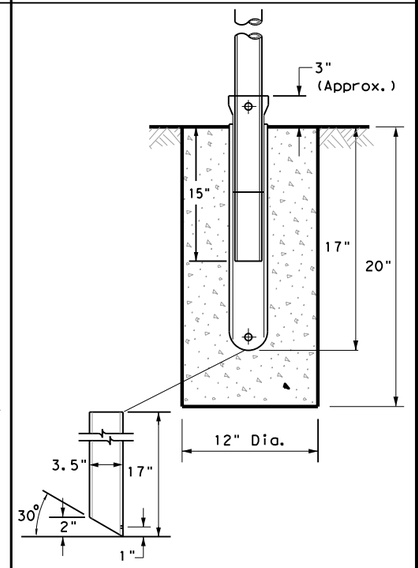
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

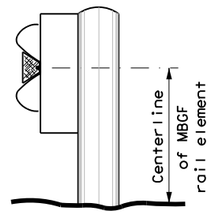
NOTE

1. Install per manufacturer's recommendations.

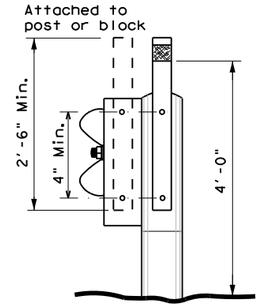
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

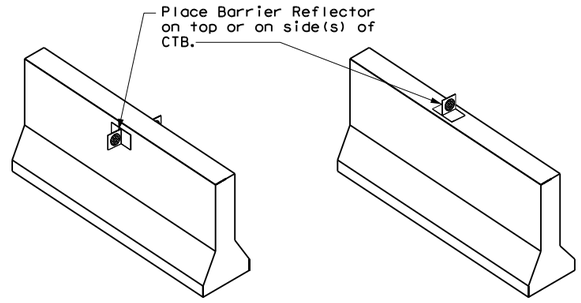
GF1



GF2



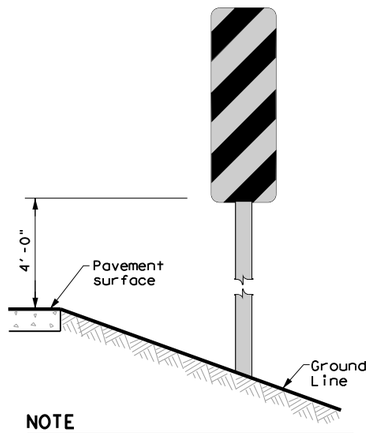
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

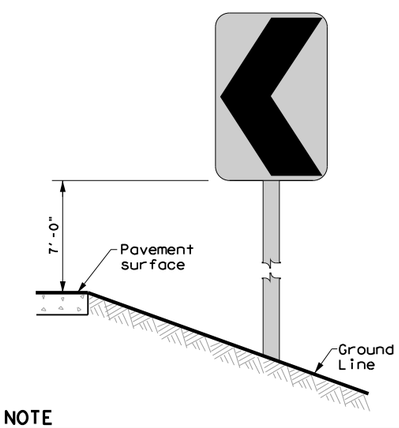
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

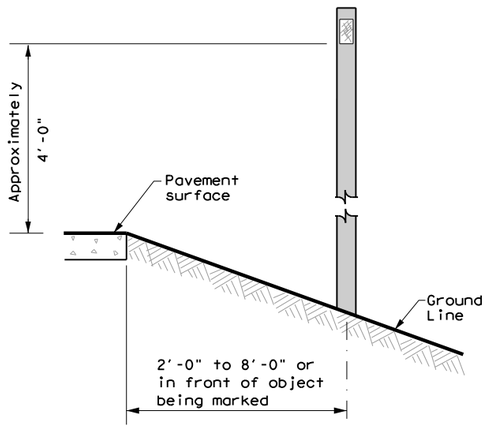
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation

Traffic Safety Division Standard

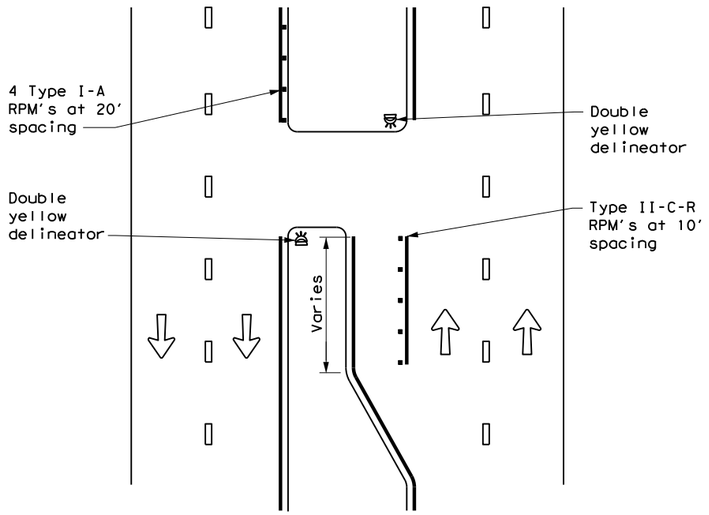
DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	WACO	HILL		116

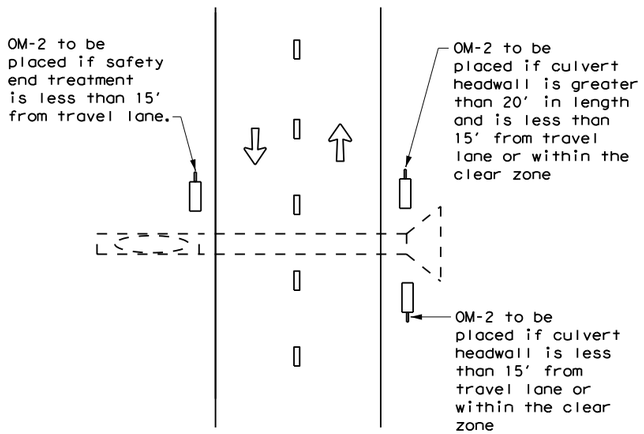
20B

CROSSOVERS



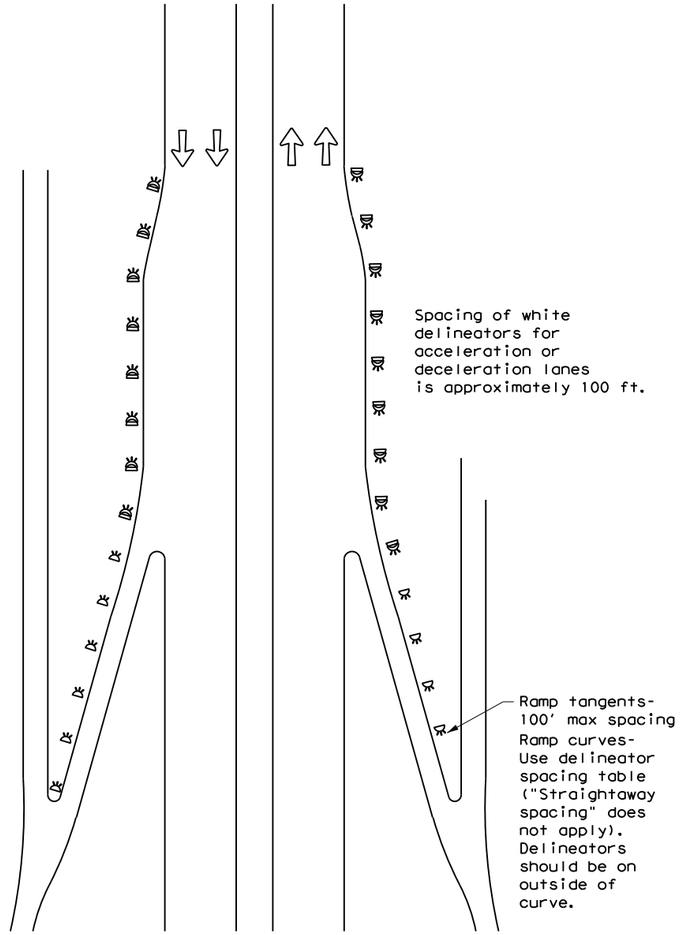
DETAIL 1

FOR CULVERTS WITHOUT MBGF



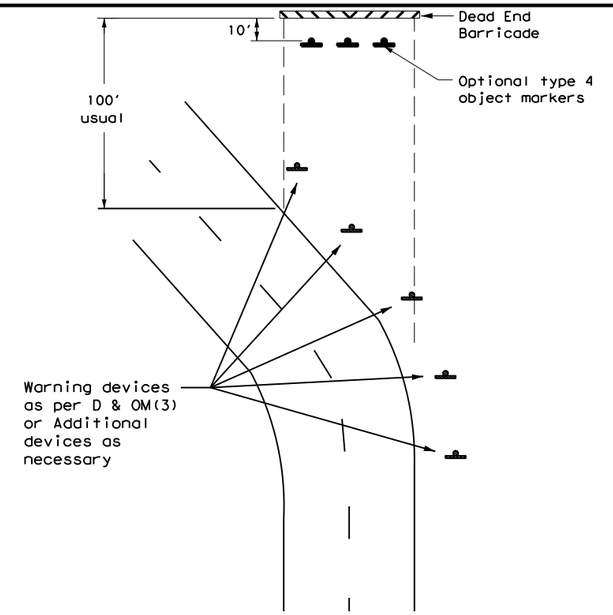
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



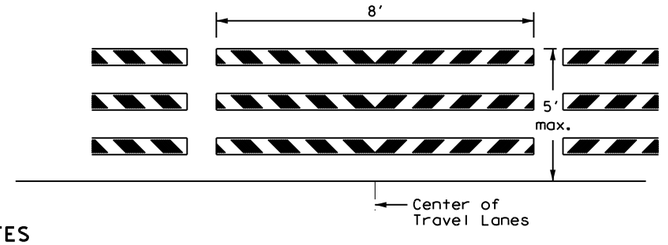
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

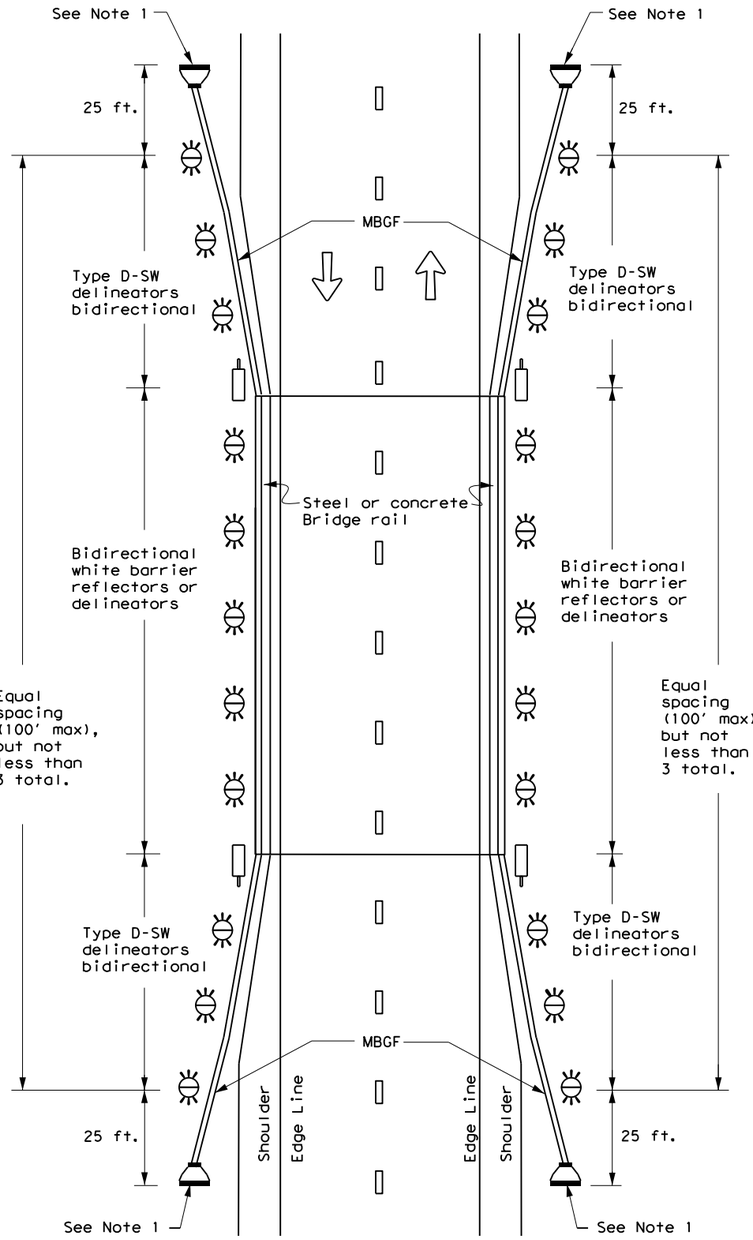
FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
3-15 7-20	DIST	COUNTY		SHEET NO.
	WACO	HILL		117

20D

DATE: 10/21/2021 10:43:25 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jaluf\d0364511\dom4-20.dgn

DATE: 10/21/2021 10:43:32 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jaluf\d0364511\dom5-20.dgn

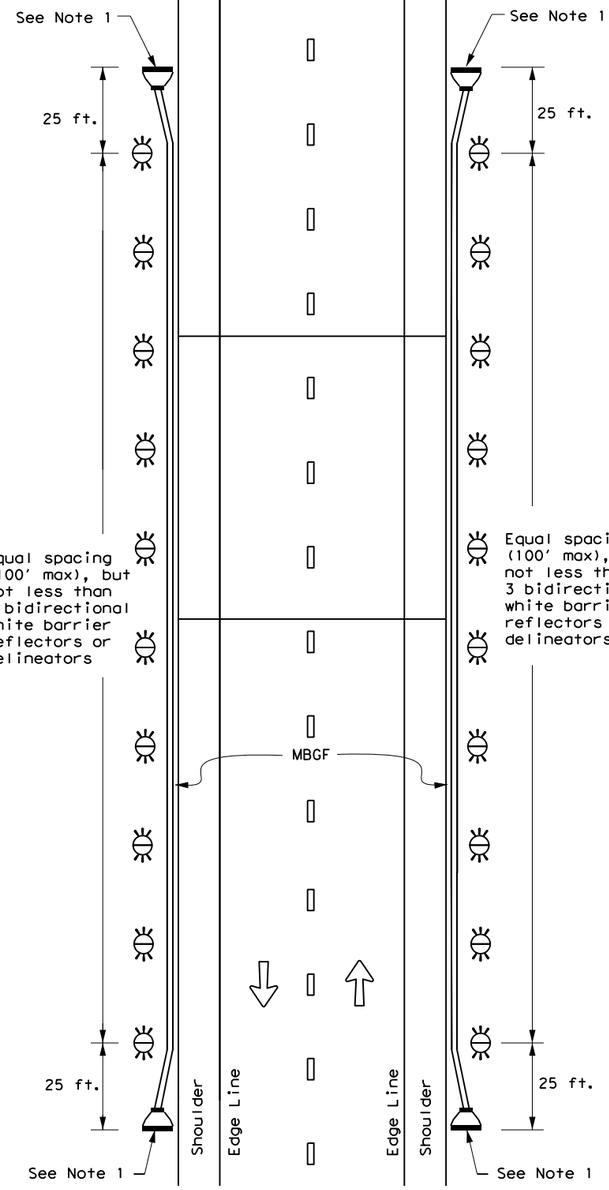
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

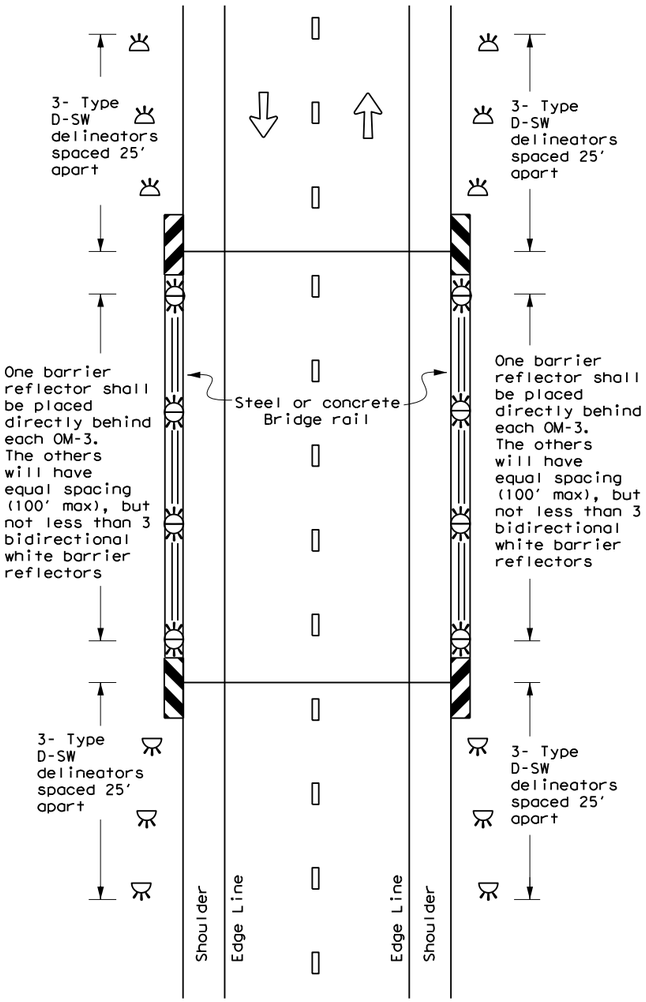
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

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

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
7-20	DIST	COUNTY		SHEET NO.
	WACO	HILL		118

20E

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)

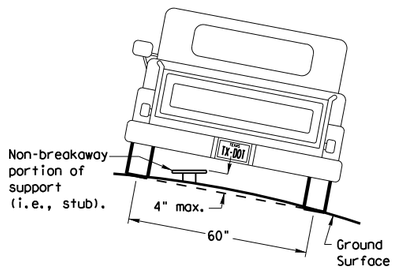
Anchor Type

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-1))

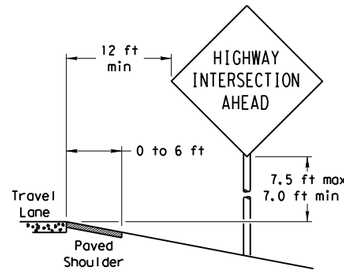
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

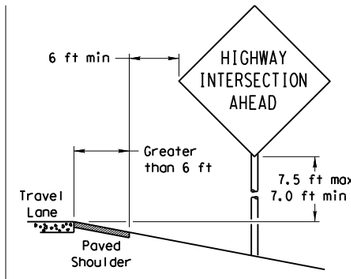
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

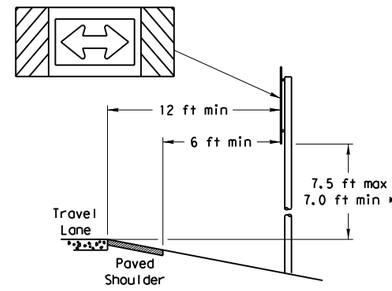
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



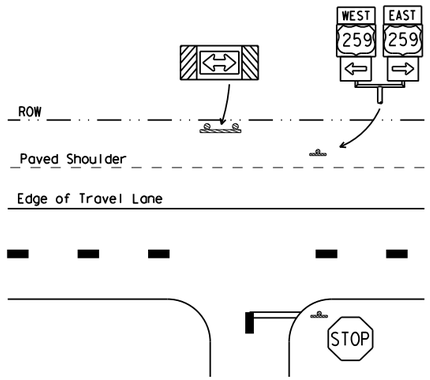
GREATER THAN 6 FT. WIDE

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.

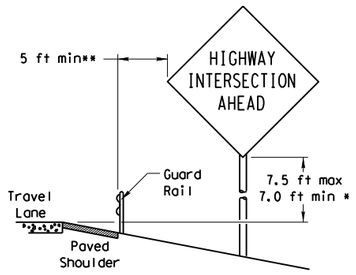
T-INTERSECTION



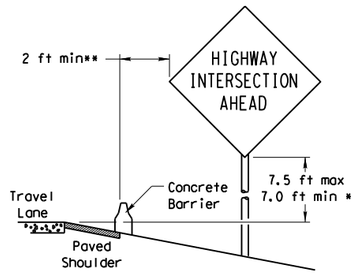
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



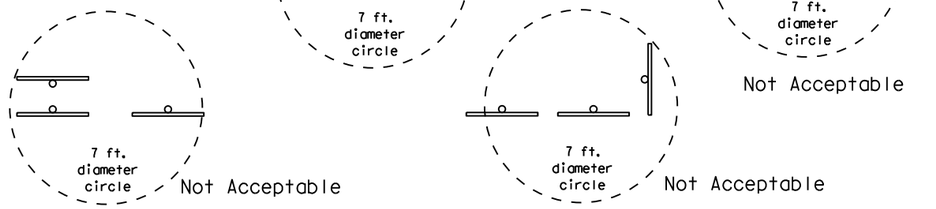
BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

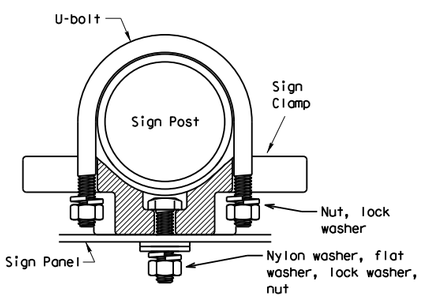
****Sign clearance based on distance required for proper guard rail or concrete barrier performance.**

No more than 2 sign posts should be located within a 7 ft. circle.

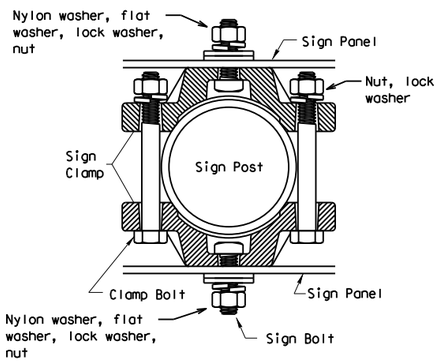


TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



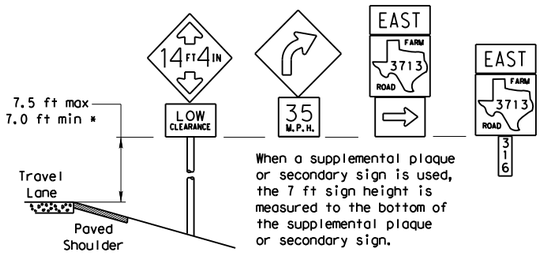
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

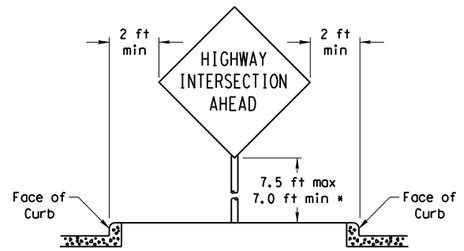
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



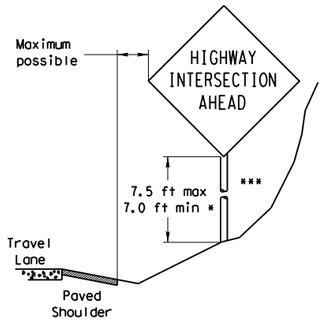
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

REVISIONS
9-08

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

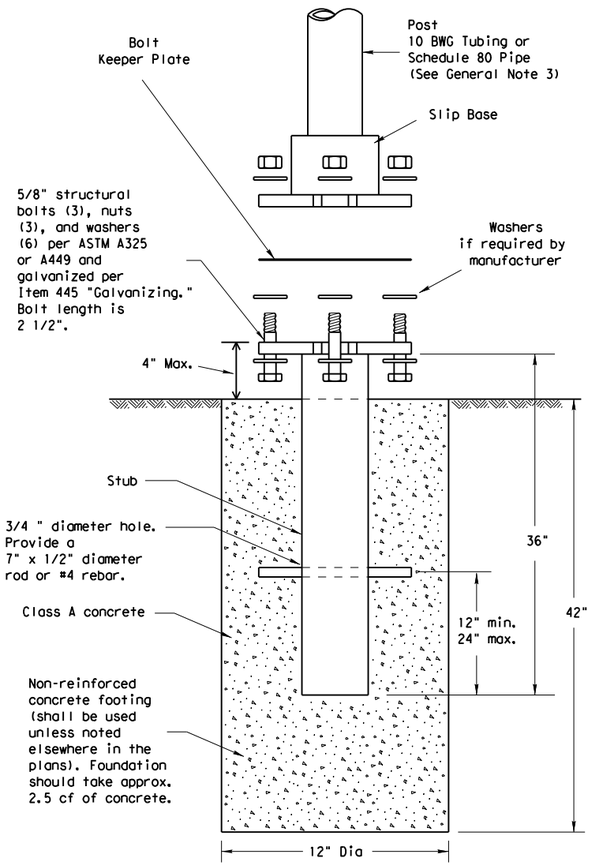
CONT	SECT	JOB	HIGHWAY
0596	01	023	FM 66

DIST	COUNTY	SHEET NO.
WACO	HILL	119

26A

DATE: 10/21/2021 10:43:38 AM
FILE: c:\txdot\pw*online\txdot3\patrick.jalufka\d0364511\smdgen.dgn

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. 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.
2. 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.

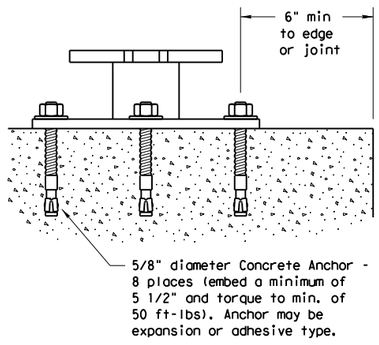
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum 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
3. 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
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. 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.
2. 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.
3. 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.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. 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.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies 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.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

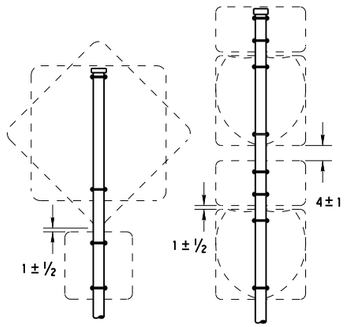
SMD(SLIP-1)-08

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

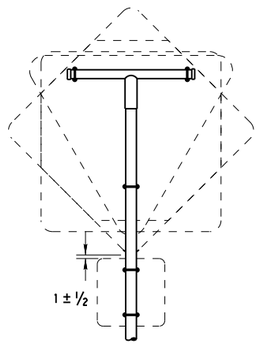
REVISIONS 9-08

CONT	SECT	JOB	HIGHWAY
0596	01	023	FM 66
DIST	COUNTY		SHEET NO.
WACO	HILL		120

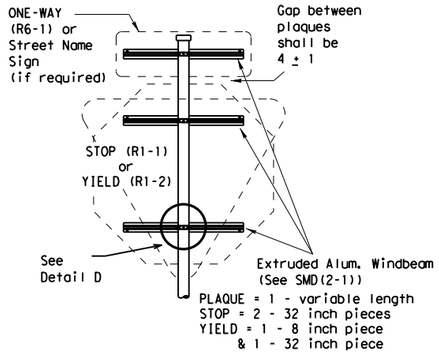
DATE: 10/21/2021 10:43:44 AM
FILE: c:\txdot\pw*online\txdot3\patrick.jalufka\d0364511\smds1.dgn



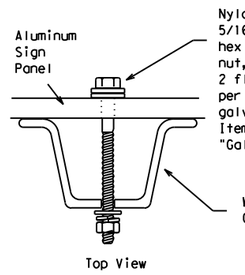
SM RD SGN ASSM TY XXXXX(1)XX(P)



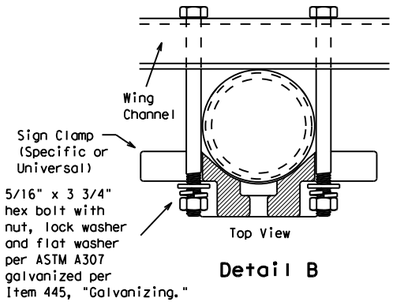
SM RD SGN ASSM TY XXXXX(1)XX(T)



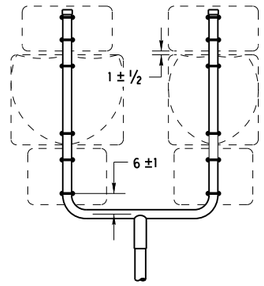
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



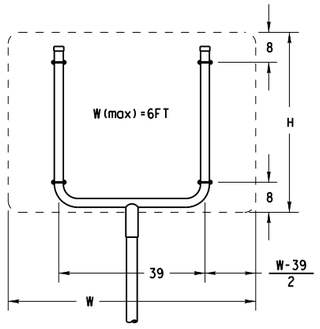
Detail A



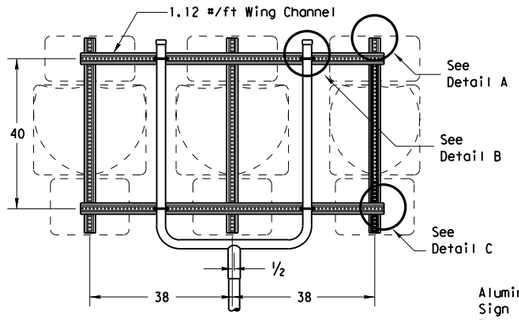
Detail B



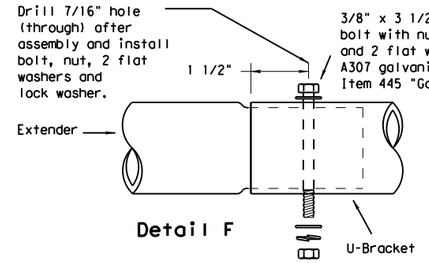
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

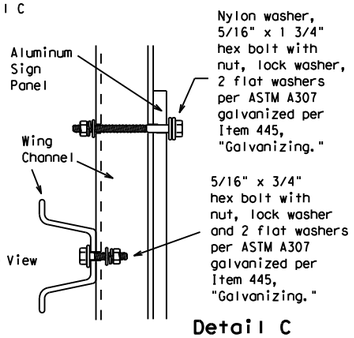


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

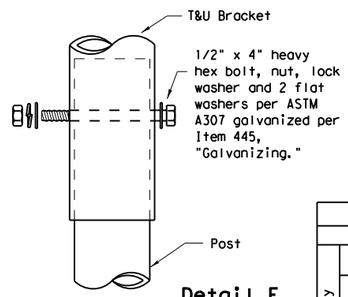


Detail F

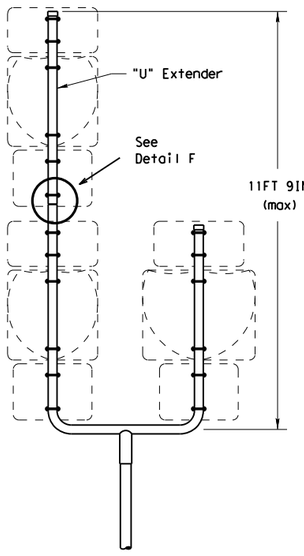
Splices shall only be allowed behind the sign substrate.



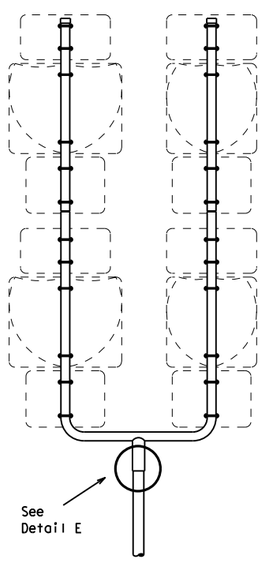
Detail C



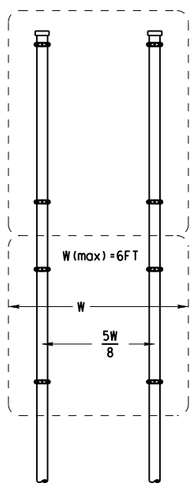
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

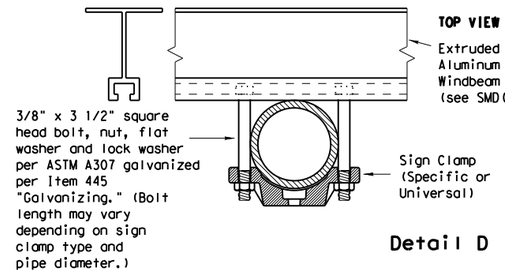


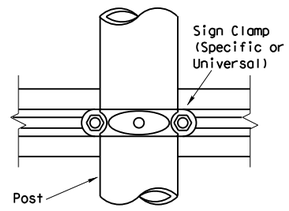
SM RD SGN ASSM TY S80(1)XX(U-2EXT)



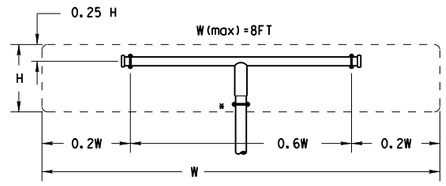
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW





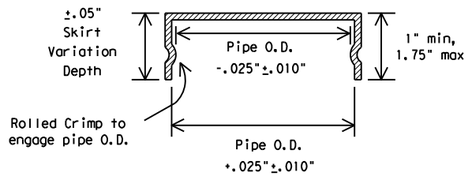
Detail D



SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



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:

1.

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

2. 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.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. 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.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. 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.
7. 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.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. 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."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. 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.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	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

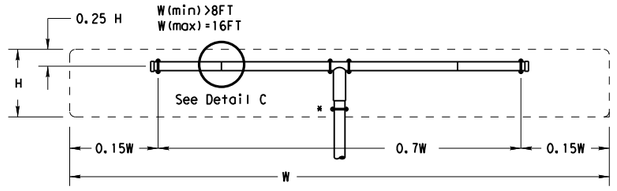
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0596	01	023	FM 66
DIST	COUNTY		SHEET NO.
WACO	HILL		121

9-08 REVISIONS

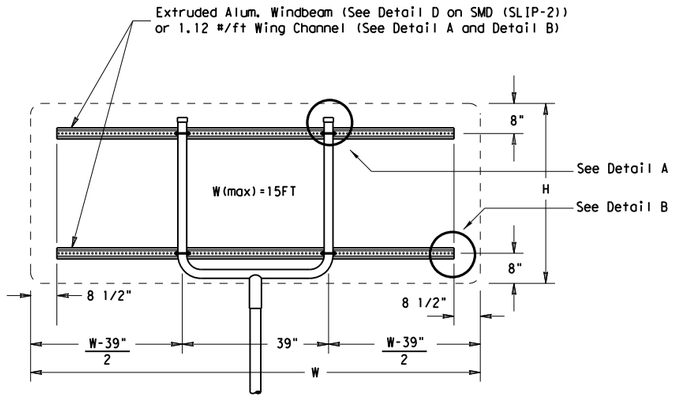
26C

DATE: 10/21/2021 10:43:50 AM
FILE: c:\txdot\pw*online\txdot3\patrick.jalufka\d0364511\smds2.dgn

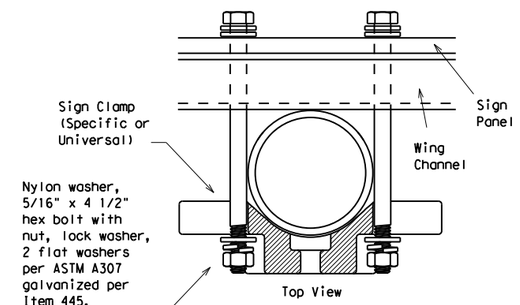
DATE: 10/21/2021 10:43:57 AM
FILE: c:\txdot\pwonline\txdot3\patrick.jalufka\d0364511\smds3.dgn



SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)

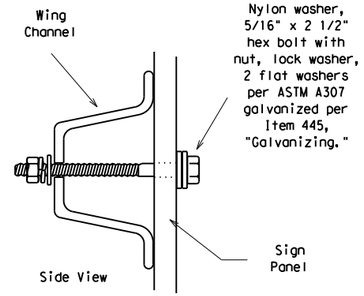


SM RD SGN ASSM TY XXXXX(1)XX(U-XX)

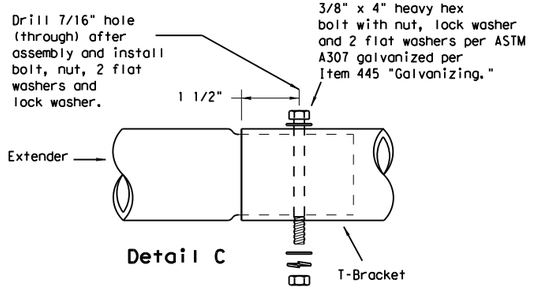


Top View

Detail A



Detail B



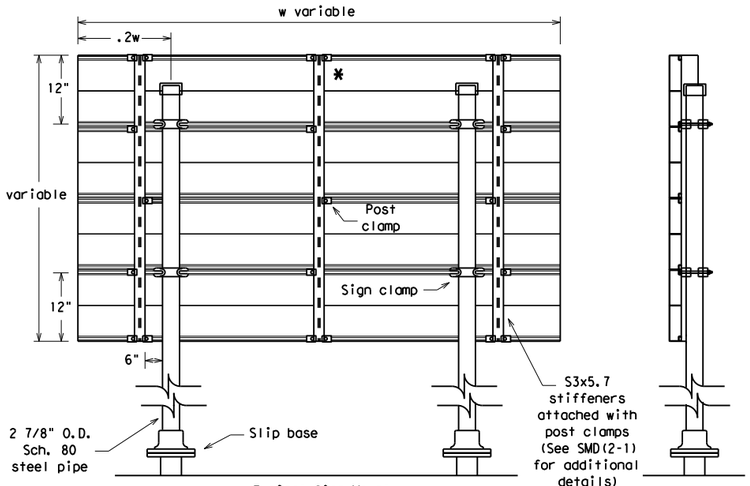
Detail C

Splices shall only be allowed behind the sign substrate.

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. 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.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. 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.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. 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.
7. 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.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. 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."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. 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.
12. Post open ends shall be fitted with Friction Caps.

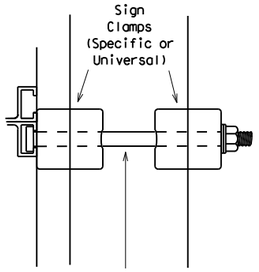


Typical Sign Mount

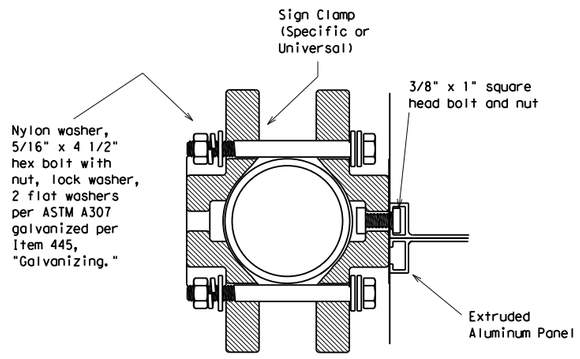
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

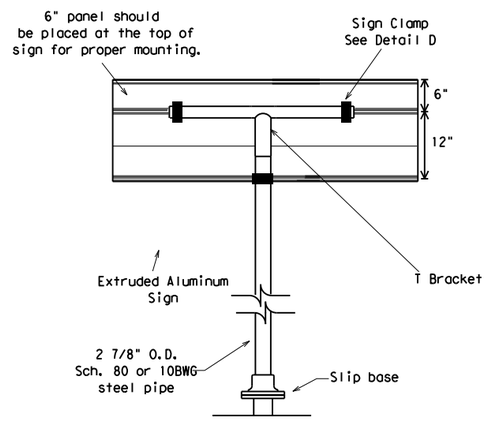
See Detail E
for clamp installation



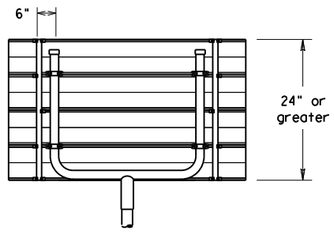
Detail E



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	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-3)-08

REVISIONS
9-08

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

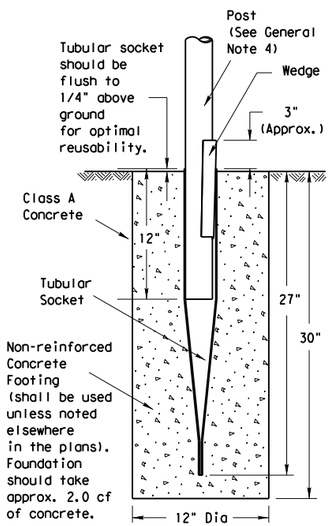
CONT	SECT	JOB	HIGHWAY
0596	01	023	FM 66

DIST	COUNTY	SHEET NO.
WACO	HILL	122

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.

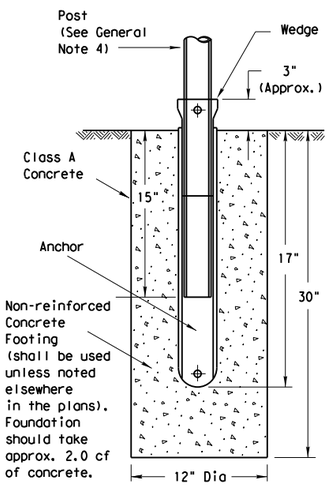
DATE: 10/21/2021 10:44:03 AM
FILE: c:\txdot\pw\online\txdot3\patrick.jalufka\d0364511\smdtwt.dgn

Wedge Anchor Steel System



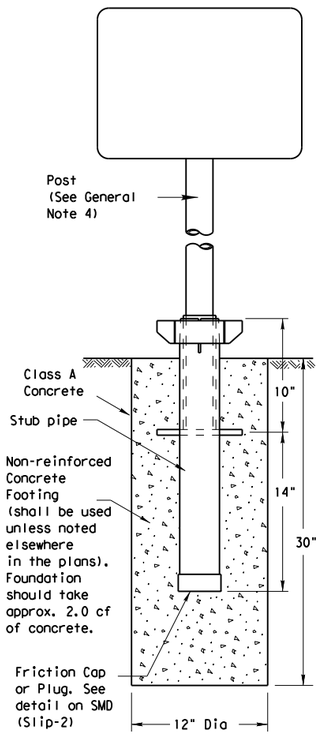
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

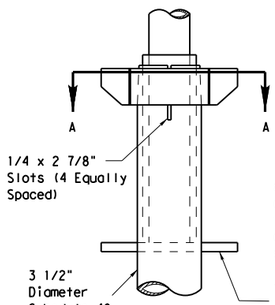


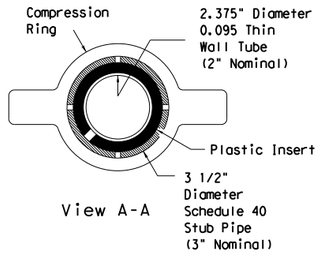
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



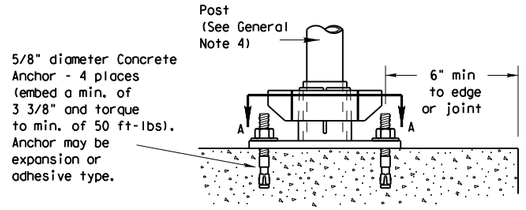
SM RD SGN ASSM TY TWT(X)UA(P)



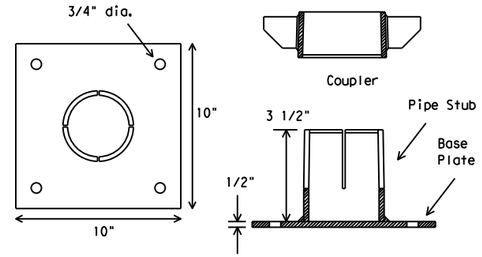


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

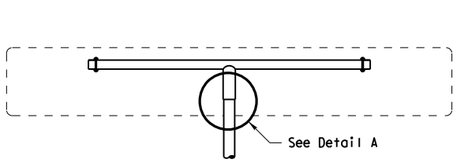


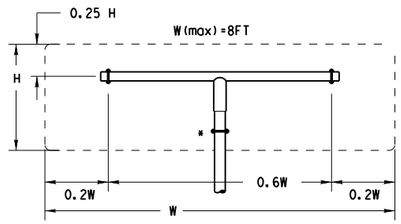
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



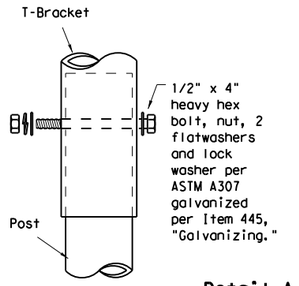
SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   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
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. 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. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

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

9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
0596	01	023	FM 66

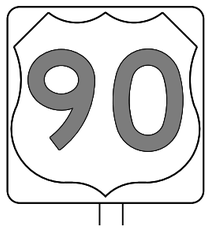
DIST	COUNTY	SHEET NO.
WACO	HILL	123

26E

DATE: 10/21/2021 10:44:10 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\tsr3-13.dgn

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

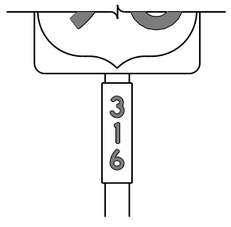
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING

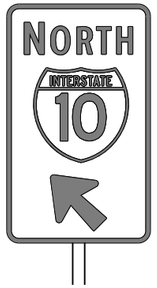


TYPICAL EXAMPLES

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

1. 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).

2. 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

3. 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).

4. 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.

5. 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.

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 should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. 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/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

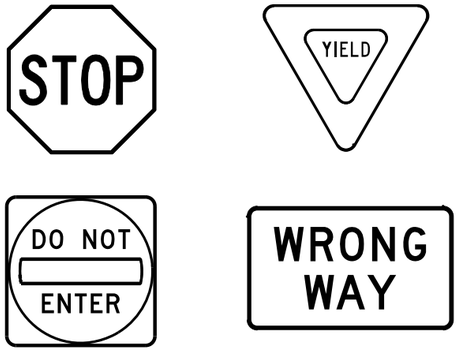
TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	WACO	HILL		124

DATE: 10/21/2021 10:44:16 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\tsr4-13.dgn

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

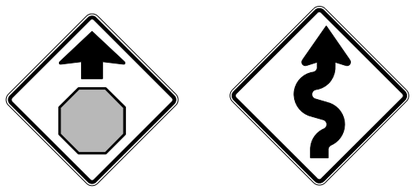
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(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_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. 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).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
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 and borders 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 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.
6. 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.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. 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/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

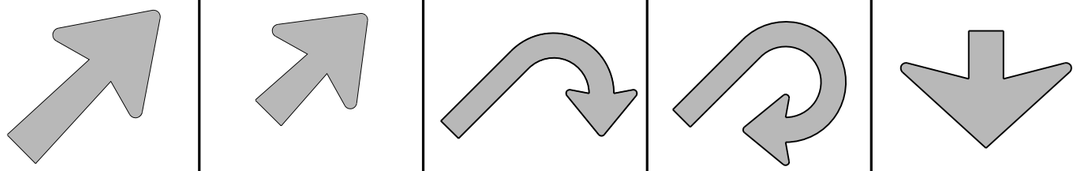
TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	WACO	HILL		125

DATE: 10/19/2021 2:46:07 PM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0364511\tsr5-13.dgn

ARROW DETAILS

for Large Ground-Mounted and Overhead Guide Signs



TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

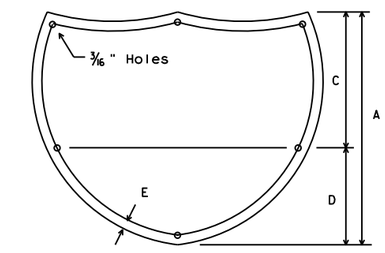
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

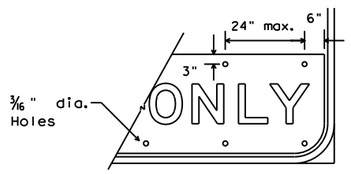
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

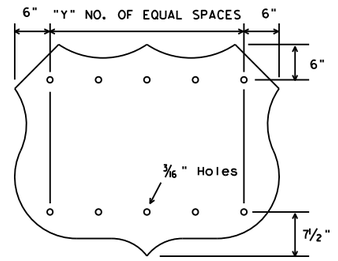


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4

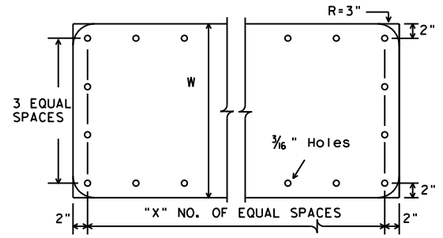


EXIT ONLY PANEL



U.S. ROUTE MARKERS

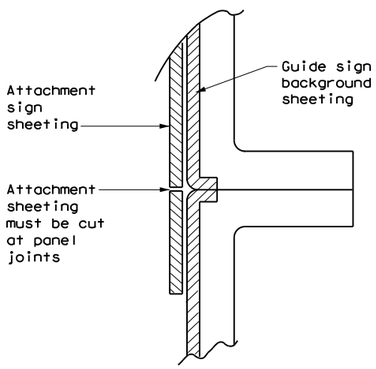
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



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

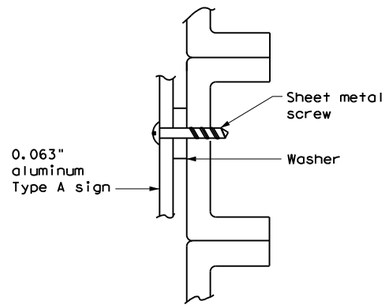
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



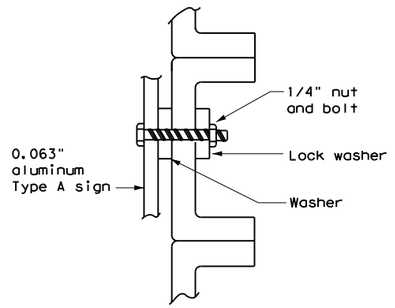
DIRECT APPLIED ATTACHMENT

NOTE:

1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".



SCREW ATTACHMENT



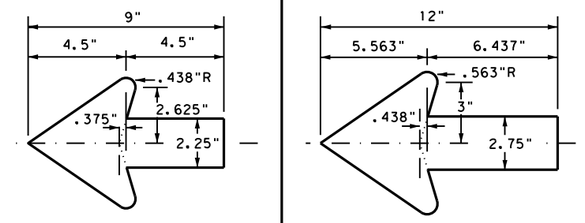
NUT/BOLT ATTACHMENT

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.

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE: tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	WACO	HILL		126

SITE DESCRIPTION

PROJECT LIMITS:

FROM SH 81
TO HCR 4421

LOCATION MAPS:

Refer to the Title Sheet for project location map

PROJECT DESCRIPTION:

0596-01-023

FOR THE CONSTRUCTION OF
REHABILITATION OF EXISTING ROAD
CONSISTING OF
REHABILITATE ROADWAY AND ADD CONCRETE PAVEMENT

MAJOR SOIL DISTURBING ACTIVITIES:

The major soil disturbing activities for this project Will consist of:

There are no major soil disturbing activities on this project.

TOTAL PROJECT AREA:	40.0 AC
TOTAL AREA TO BE DISTURBED:	2.9 AC

EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:

0596-01-023

Predominate soil type is Houston Black Clay
Vegetative cover is in good condition with 90 to 95% coverage.

NAME OF RECEIVING WATERS:

0596-01-023

Storm water from this project drains into Stream Segment 0814 of the Trinity River Basin, Chambers Creek above Richland-Chamber's Reservoir - from a point 2.5 miles downstream of Tupelo Branch in Navarro County to the confluence of North Fork Chamber's Creek and South Fork Chambers Creek.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- [ ] TEMPORARY SEEDING
- [ ] PERMANENT PLANTING, SODDING, OR SEEDING
- [ ] MULCHING
- [ ] SOIL RETENTION BLANKET
- [X] NATURAL BARRIERS OR BUFFER ZONES
- [X] PRESERVATION OF NATURAL RESOURCES

OTHER: TXR 150000, Part III, Section G, 2 Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavating, or other earth disturbing activities have permanently ceased on any portion of the site, or temporarily ceased on any portion of the site and Will not resume for a period exceeding 14 calendar days. Temporary stabilization must be completed no more than 14 calendar days after initiation of soil stabilization measures, and final stabilization must be achieved prior to termination of permit coverage.

STRUCTURAL PRACTICES: (Select T = Temporary or P = Permanent, As Applicable)

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

OTHER:

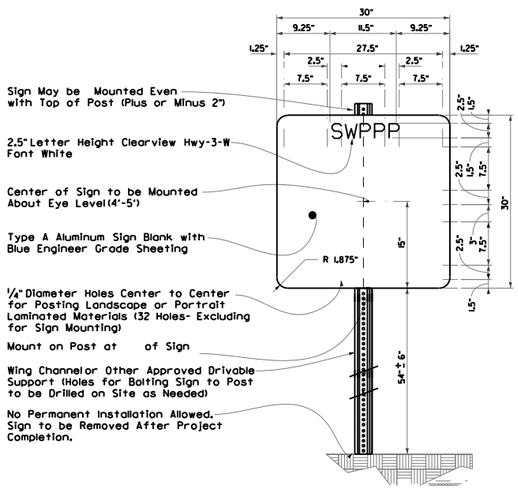
NARRATIVE-SEQUENCE OF CONSTRUCTION (STORM WATER MANAGEMENT) ACTIVITIES:

The order of activities Will be as follows:
1. Preserve existing vegetative cover as much as possible.
2. Install temporary sediment control fencing.

STORM WATER MANAGEMENT:

An integral part of the SWPPP for this project includes the EPIC Sheet, Item 506, Waco District Waters of the US Notes, Waco District Typical Applications for Best Management Practices, Form 2118 TxDOT inspection forms, Contractor daily inspection forms, miscellaneous general notes on environmental requirements, TxDOT EC Standards, 2014 Standard Specifications, TxDOT roadway design drawings, SWPPP design and working BMP drawings, Site Manager Data Base, EMS Stage Gate Inspections and the Waco District environmental folders. The requirements of the TxDOT EMS Will be fully implemented including training requirements for Contractors and TxDOT staff.

STORM WATER POLLUTION PREVENTION PLAN PERMIT POSTING



OTHER EROSION AND SEDIMENT CONTROLS:

MAINTENANCE:

All erosion and sediment best management practices (BMPs) Will be maintained in good working order per the environmental notes, details and standards included as part of the project plans and contract documents. BMP repairs Will be made at the earliest possible date, but no later than seven calendar days after the inspection report has been completed and immediately after the ground has dried sufficiently to allow equipment access. BMPs damaged by the Contractor Will be repaired or replaced immediately. The installation and repair of BMPs at creeks and outfalls Will be given priority.

INSPECTION:

TxDOT Form 2118 inspections to support TXR150000 and 404 permits Will be conducted on a seven day interval on the same day of the week, until permits are terminated. The Contractor Will provide daily BMP inspection reports on work days. Stage Gate Inspections and other BMP inspections Will be conducted by the District and Area Office Staff based on requirements of the TxDOT Environmental Management System (EMS).

WASTE MATERIALS:

Any waste materials generated during construction Will be disposed of in accordance with existing federal, state, and local laws.

HAZARDOUS WASTE (INCLUDING SPILL REPORTING):

At a minimum, any products in the following categories are considered to be hazardous: Fuels, Lubricating products, Asphalt products, or Concrete curing compounds and any additives. In the event of a spill which may be hazardous, clean-up Will be done in accordance with federal, state, and local regulations. The Contractor Will maintain a list of all chemicals and wastes required for the project; including chemicals used by sub-contractors, and Will implement written spill prevention and clean-up plans.

SANITARY WASTE:

Sanitary waste from portable units Will be collected by a licensed sanitary waste management contractor.

OFF SITE VEHICLE TRACKING:

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

REMARKS:

Disposal areas, stockpiles, and haul roads Will be constructed in a manner that Will minimize and control the amount of sediment that may enter receiving waters. Disposal areas Will not be located in any wetland, waterbody or streambed. Construction staging area and vehicle maintenance area Will be constructed by the contractor in a manner to minimize the runoff pollutants.

Furnish one SW3P permit posting sign and sign support as detailed on the SW3P Sheet. Install this sign in a location selected by the Engineer. The sign and support should be removed upon completion of the project and is the property of the Contractor. The purchase of the sign and support, installation, relocation(s) if determined necessary by the Engineer and removal at project end Will be subsidiary to Item 506.

SEDIMENTATION BASINS:

Since the area disturbed is less than 10 acres, per outfall location, a sedimentation basin is not required.

STATE OF TEXAS
BRIAN W. LAMB
103617
LICENSED
PROFESSIONAL ENGINEER

P.E.

10/25/2021

SIGNATURE OF REGISTRANT & DATE

WACO DISTRICT
STORM WATER POLLUTION PREVENTION PLAN (SW3P)

NOT TO SCALE SHEET 1 OF 1

CHANGE ORDER	FED. RD. DIV. NO.	CONT	SECT	JOB	HIGHWAY
	6	0596	01	023	FM 66
	STATE	DIST	COUNTY		SHEET NO.
	TEXAS	WAC	HILL		127

DATE: 10/21/2021 10:44:52 AM
FILE: c:\txdot\pw_online\txdot3\patrick.jalufka\d0142410\EPIC FM 66.dgn

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000

2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.

3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.
2.
3.
4.
5.
6.
7.
8.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

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

III. CULTURAL RESOURCES

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

☐ No Action Required ☒ Required Action

Action No.

1. SEE STATEMENT ABOVE

2.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☐ No Action Required ☒ Required Action

Action No.

1. SEE STATEMENT ABOVE

2.

3.

4.

☐ No Action Required ☒ Required Action

Action No.

1. Comply with Migratory Bird Treaty Act (MBTA)

2. Plains Spotted Skunk: Contractors will be advised of potential occurence in the project area, and to avoid harming the species if encountered, and to avoed unnecessary impacts to dens

3.

4.

5. SEE STATEMENT BELOW

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SW3P:	Storm Water Pollution Prevention Plan
DSHS:	Texas Department of State Health Services	PCN:	Pre-Construction Notification
FHWA:	Federal Highway Administration	PSL:	Project Specific Location
MOA:	Memorandum of Agreement	TCEQ:	Texas Commission on Environmental Quality
MOU:	Memorandum of Understanding	TPDES:	Texas Pollutant Discharge Elimination System
MS4:	Municipal Separate Stormwater Sewer System	TPWD:	Texas Parks and Wildlife Department
MBTA:	Migratory Bird Treaty Act	TxDOT:	Texas Department of Transportation
NOT:	Notice of Termination	T&E:	Threatened and Endangered Species
NWP:	Nationwide Permit	USACE:	U.S. Army Corps of Engineers
NOI:	Notice of Intent	USFWS:	U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:
* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☒ No

If "No", then no further action is required.
If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☒ No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☒ No Action Required ☐ Required Action

Action No.

1.

2.

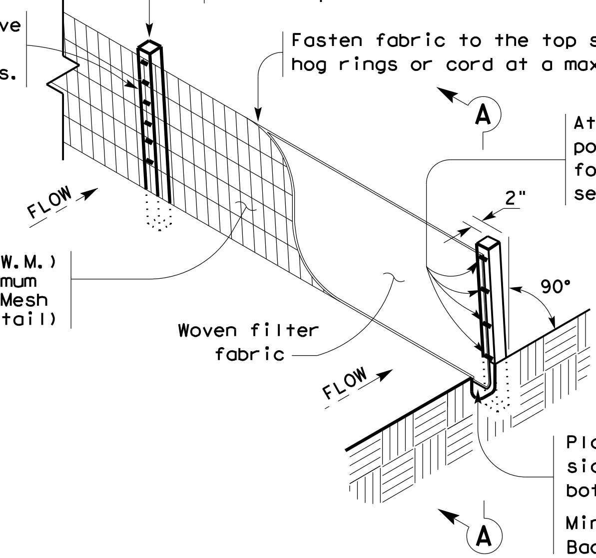
3.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

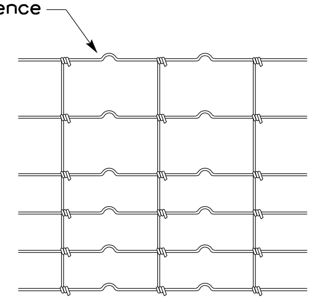
EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0596	01	023	FM 66	
12-12-2011 (DS)	DIST	COUNTY		SHEET NO.	
05-07-14 ADDED NOTE SECTION IV.	WAC	HILL		128	
01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.					



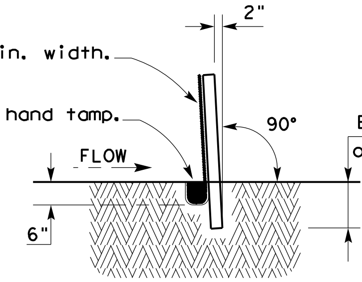
TEMPORARY SEDIMENT CONTROL FENCE

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.



SECTION A-A

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

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

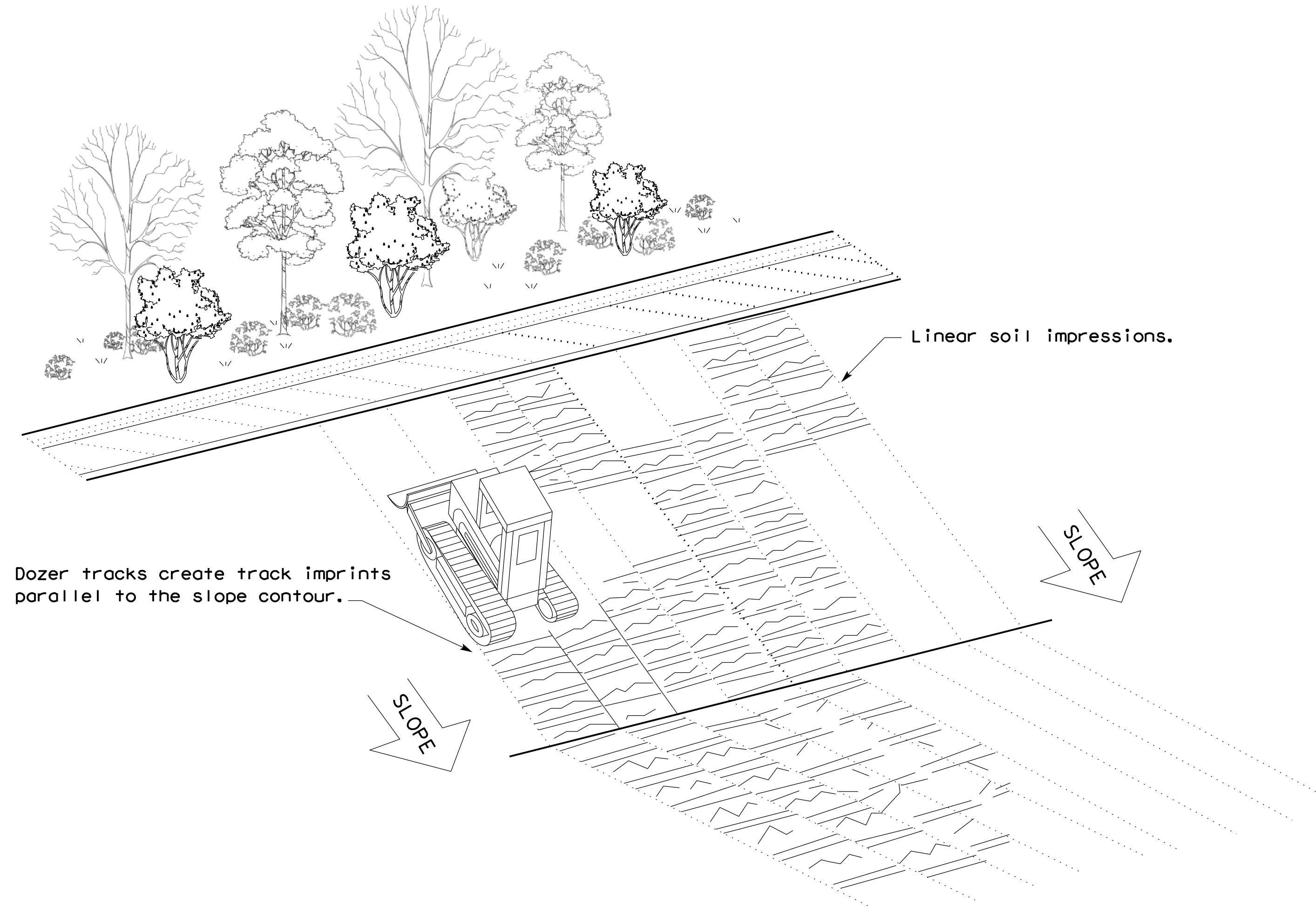
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

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



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
	DIST		COUNTY	SHEET NO.
	WACO		HILL	129

BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

1. Prior to TxDOT allowing the Contractor to start construction, the Contractor will provide the required storm water and 404 permit documentation and support activities, including but not limited to the following:

   - Provide a list of all chemicals, construction and waste products that will be generated, stored or brought upon TxDOT ROW. The list includes expected construction debris, sanitary wastes, construction chemicals and petroleum products used or generated by the Contractor and sub-contractors. Along with the list, the Contractor will supply a spill prevention plan and clean up procedures that will include each of these chemical products or generated waste.

   - Provide in the construction schedule the necessary line items that will comply with the schedule and planning requirements of the storm water permit.

   - Post the TxDOT storm water permit and any Contractor permits, per permit requirements.

   - Provide copies of storm water permits for Contractor PSL(s). As new PSL(s) may be obtained for the project, provide copies of new or amended permits to TxDOT. The Contractor will not disturb soil without the proper permits.

   - Provide scale drawings of off ROW PSL's within one mile of the project, for field offices, borrow sources, plant sites or other uses.

   - Provide permit information on any Contractor batch plants or concrete crushing plants to be located at a Contractor PSL(s) within one mile of the project limits or boundaries. Copies of the air and water permits are to be provided to TxDOT before materials will be used on the project. No asphalt or concrete batch plants or concrete crushing plants will be located on TxDOT ROW.

   - Provide a letter indicating a Contractor Responsible Person for environmental compliance (CRP) for the project, and maintain a CRP throughout the project duration.

   - Provide all environmental documentation including certification of compliance and EMS training documents/certificates prior to starting work. The Contractor is to provide daily BMP inspection reports that document all field BMPs needing repair or replacement. The Contractor is to clearly document specific BMPs needing repair and location each work day. The Contractor is encouraged to be proactive in fixing BMPs without TxDOT direction.

   - Provide documentation required for Waters of the US, Note #3 and submittals for Item 496 bridge removal. Bridge removal methods submitted will follow all Waters of the US note requirements. The Contractor is not to start construction within the Ordinary High Water Marks of any stream until receiving approval for stream channel construction methods from TxDOT.

   - Provide a written procedure for managing all chemicals and construction items placed in vertical containment structures. Also, provide methods to be used for the treatment, disposal, collection or release of storm water.

   - Provide an estimated date by letter, for the submittal of marked up bridge drawings, indicating cut locations for any structural steel requiring cutting or torching of steel, coated with lead containing paints.

2. Place and maintain trash cans and portable sanitary facilities at locations where there is active construction. Worker generated trash and construction debris will be kept from being transported by storm water and will be collected daily from the ground and routinely hauled from the work area.

3. Contractor will provide TxDOT copies of all correspondence with MS4s, TCEQ, EPA, DSHS and Corps of Engineers regarding activities on this project.

4. Contractor to conduct storm water inspections and develop SWPPP documents to support Contractor permits obtained for the project including PSL(s).

5. Contractor will maintain written documentation of locations of all portable sanitary facilities. The Contractor is required to document the location and disposition of all spills and cleanups from portable sanitary facilities.

6. Contractor will not store chemicals on TxDOT ROW, unless chemicals are stored following all environmental and safety regulations. Fuels for construction equipment will not be stored on TxDOT ROW.

7. The Contractor will store fuels and bulk chemicals on Contractor PSL(s) using a secondary containment method, such as double lined tanks and/or free standing containment reservoirs made of plastic or steel designed to hold bulk chemicals or drums.

8. The Contractor will not remove sediment controls without the prior approval of TxDOT, except for a sediment control that may back up water and cause safety or traffic problems.

SCALE = NTS SHEET 1 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

TA-BMP

FILE: BMPLAYOUTS.dgn	DN:		CK:	DW:		CK:
© TxDOT 2009	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0596	01	023		FM 66	
DEC 2013 FEB 2015	DIST	COUNTY				SHEET NO.
	WACO	HILL				130

BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

9. Any sediment controls removed by the Contractor must be re-installed before the next rainfall event or by the end of day, as approved in advance.

10. Vegetative buffer strips may be used in place of temporary sediment controls such as silt fences and rock filter dams. The amount of disturbed soil area will be limited to 1/3 of an acre or less for a minimum of 50 feet of grassed ditch and 2/3 of an acre of disturbed soil for a minimum of 100 feet of grassed ditch.

11. Construction equipment found to be leaking oil, fuel or coolant will be immediately stopped, the leaking fluid collected and the equipment fixed. Equipment continuing to leak will be removed from the project at no cost to TxDOT. Leaking fluids from equipment will be collected and removed from the project or PSL.

12. Earth berms or mounds typically used to stockpile topsoil and used in place of boundary silt fence will be seeded upon being constructed. Long term use of earth berms or mounds will not be continued without establishing grass on the control.

13. The Contractor will inform TxDOT of new areas where soil will be disturbed to facilitate planning for new sediment controls. Areas of vegetated soil will not be disturbed by the Contractor, unless adequate sediment controls can be installed before the next rainfall event. The Contractor will assist TxDOT in keeping an accurate set of working SWPPP drawings that show the locations of all temporary sediment and erosion controls.

14. The Contractor will maintain an adequate amount of temporary sediment controls on hand at the field office or project staging area for critical SWPPP maintenance, including silt fence (minimum of 200 feet) and rock / fabric for rock filter dams (minimum for 100 feet of Type III dams).

    The requirement for BMP rock quantities on hand is waived for small projects for on and off system bridge installations. The Contractor having a BMP Subcontractor does not eliminate the requirement for the Contractor to have the required silt fence and rock on hand, typically stored at the Contractor PSL.

15. Failure of a sub-contractor to complete storm water work on time will require the Contractor to start storm water sediment control work immediately and complete the work with high priority, or be subject to stop work on the entire project.

16. Earth materials on roads as a result of soil tracking will not be allowed to be transported off ROW in storm water. Soil or rock material found on roadways deposited from Contractor equipment will be removed daily.

17. Unless approved, completed concrete curb inlets will not be blocked by sediment controls. The contractor will frequently sweep the completed or partially completed roadway to keep sediment out of drainage pipes.

18. The Contractor will be responsible for proper dust control and will route construction traffic in a manner that minimizes dust generation.

19. Water for dust control will contain no pollutants, but may be non-potable from upland stock ponds. No quantity of water to be used for construction purposes may be taken from a 404 stream, prior to the proper authorizations or permits being obtained by the Contractor.

20. Contractor is to direct workers and sub-contractors to use portable sanitary facilities provided by the Contractor and not to trespass off ROW.

21. Contractor will provide written verification to TxDOT that earth borrow pits and disposal sources meet environmental and regulatory requirements, prior to use. Excavations will meet all OSHA requirements and the current safety guidelines established for TxDOT Quarries and Pits.

22. Boundary silt fences that are terminated down slope, with one end being at the lowest elevation, will be installed with an L - hook to contain sediment. Boundary silt fences that are installed on flat ground will have L-hooks on both ends.

23. Rock filter dams across ditches will be constructed where the rock filter dam ends are embedded within the ditch side slopes and ditch bottom. The top center elevation of the rock filter dam will be at least 6 inches lower than the elevations on the rock filter dam ends.

24. Silt fence will be constructed in a U or V pattern across ditch lines and up the ditch side slope to keep storm water from flowing around the ends of the silt fence. Small silt fences that do not adequately span the ditch and allows storm water around the end(s) will not be used. Where there is adequate space, large U pattern silt fences are preferred to facilitate sediment collection and sediment removal with equipment.

25. Sediment controls (RFDs or silt fences) will be located along road ditches as marked on the SWPPP drawings. Modifications to the sediment control spacing will be adjusted during the project based on sediment control effectiveness. The installation and maintenance of sediment controls at or near outfalls, where storm water leaves TxDOT ROW, takes persistent over ditch line sediment controls.

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

TA-BMP

FILE: BMPLAYOUTS.dgn	DN:	CK:	DW:	CK:
© TxDOT 2009	CONT.	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
DEC 2013	DIST	COUNTY		SHEET NO.
FEB 2015	WACO	HILL		131

BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

26. Storm water draining sheet flow over disturbed soil sloped towards the ROW property line, will be intercepted by a boundary silt fence typically installed with L-shaped ends.

27. For ditch grading and shoulder up work, the Contractor is limited during good weather to remove up to one mile (limited to five acres of disturbed soil) of ditch line sediment controls; on one side of the roadway. Outfall controls cannot be removed during this activity. Ditch line controls must be replaced upon completion of work and before the next rain event.

28. Sediment controls damaged by the Contractor, as defined by permit, must be fixed or replaced immediately upon discovery.

29. Notches in silt fences are not typically allowed. Specific silt fences that back up water onto lanes of traffic may be notched if approved.

30. For silt fence maintenance, the Contractor will leave approximately 4 inches of deposited sediment up stream of silt fences and not over excavate around silt fences or rock filter dams.

31. The Contractor will inform TxDOT of new construction areas and where soil is planned to be disturbed. Sediment controls will be installed at outfalls prior to the Contractor beginning soil disturbing activities up slope from the outfall.

32. Water from concrete saw cutting, concrete grinding and concrete coring activities; or fine materials from concrete chipping and salvage will not be allowed to enter storm drains or enter streams.

33. Storm water containing suspended sediment and turbidity needing to be removed from excavations or low areas will be pumped or gravity drained through vegetated buffer strips (50 foot minimum) or placed in ditches with temporary sediment controls, prior to the water being discharged into a stream.

34. Uncontaminated water from natural groundwater seepage, springs, foundations and drains that does not contain suspended sediment or any pollutants may be discharged without storm water controls.

35. Lime or cement if spilled in ditches or outside the defined limits of application is considered a pollutant and will be excavated and removed the same day, to avoid contaminating streams.

36. If located along the project ROW, RAP stockpiles will be located where there is a minimum 100 feet of vegetative buffer strip before storm water will reach a stream. RAP will not be used as a construction material within the Ordinary High Water Marks of a stream channel of a 404 designated stream.

37. If allowed on the project, concrete truck wash out areas will have adequate volume to allow 12 inch freeboard for rain and will be lined with 6 mils of plastic. No concrete will be stored higher than the 12 inch freeboard. Cleaning of truck chutes and equipment does not constitute concrete truck wash out and this activity may be completed at the concrete placement location. Wash out areas will not be located closer than 50 ft from down slope inlets or stream channels.

38. For outfalls near stock ponds closer than 50 foot from disturbed soil at the ROW line, redundant sediment controls will be provided, typically a combination of rock filter dam and a silt fence constructed in line of the flow.

39. Earth stockpiles will utilize silt fence sediment controls, positioned on the low end of the stockpile drainage area with L-hooks or silt fence installed around the entire stockpile.

40. Sediment controls including rock filter dams and silt fences will not be installed across any 404 streams. Sediment controls at 404 streams will be positioned to limit sediment entering the stream from the banks and around structures/culverts, and will allow free flow of storm water to pass through the ROW without being dammed by any sediment controls. Remove loose materials from stream channels prior to each rain event.

41. Sediment controls for non-404 streams may be constructed across the drainage channel in unlimited locations. It is appropriate to use sediment control details typically used for 404 streams for non-404 streams when flow velocities are high. Remove loose material from stream channels prior to each rain event.

42. Incomplete drainage pipe installation across the roadway does not remove the requirement for having sediment controls around the ends of the pipe. To stay within permit requirements, sediment controls should be installed over and around the terminated end and along each side of the banks as soon as construction on the pipe has been completed. Remove loose material from stream channels prior to each rain event.

43. Safety end / headwall construction temporarily will require the removal of part of the sediment control placed over and around the pipe end. Retain in place as much functioning sediment control as possible. Replace the silt fence over and around the top of the pipe, immediately upon concrete placement and form removal. Do not remove culvert sediment controls that cannot be replaced before the next rain event. Sediment control at the ends of culverts must be in place and available for any rain event until the disturbed soil areas are re-vegetated.

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

TA-BMP

FILE: BMPLAYOUTS.dgn	DN:		CK:	DW:		CK:	
© TxDOT 2009	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0596	01	023		FM 66		
DEC 2013 FEB 2015	DIST	COUNTY			SHEET NO.		
	WACO	HILL			132		

BEST MANAGEMENT PRACTICE (BMP) GENERAL NOTES

44. Between the Ordinary High Water Marks of a 404 stream channel, the Contractor will disturb only the minimum amount of stream channel that is necessary to complete the work.

45. Rock riprap for erosion control does not replace the requirements to maintain sediment control until vegetation is re-established. Replace sediment controls immediately after installing erosion rock.

46. At the direction of TxDOT, sediment deposited into existing and new culverts will be removed subsidiary to Item 506. Sediment to be removed is either pre-existing material before construction starts or sediment generated as a part of this project.

47. Provide treated 2X4 cross bracing for rectangular inlet silt fence, subsidiary to Item 506.

48. Loose or granular earth materials will not be used to repair silt fence undercuts. Silt fence undercut repairs will be conducted with well compacted soils or the silt fence will be reset in a nearby location.

49. Silt fence steel T posts of approximately 1.25 pounds per foot are allowed at a spacing of 8 feet or less. Silt fence steel T posts between approximately 1.25 pounds per foot and 0.85 pounds per foot are allowed for T post spacing of 5 feet or less.

50. Silt fence to be used to slow the flow of storm water down slopes will be positioned approximately horizontal (on the contour) with L hooks on the ends and limited to approximately 200 feet in length. Multiple sections and levels of silt fence may be required in addition to temporary / permanent erosion control flumes.

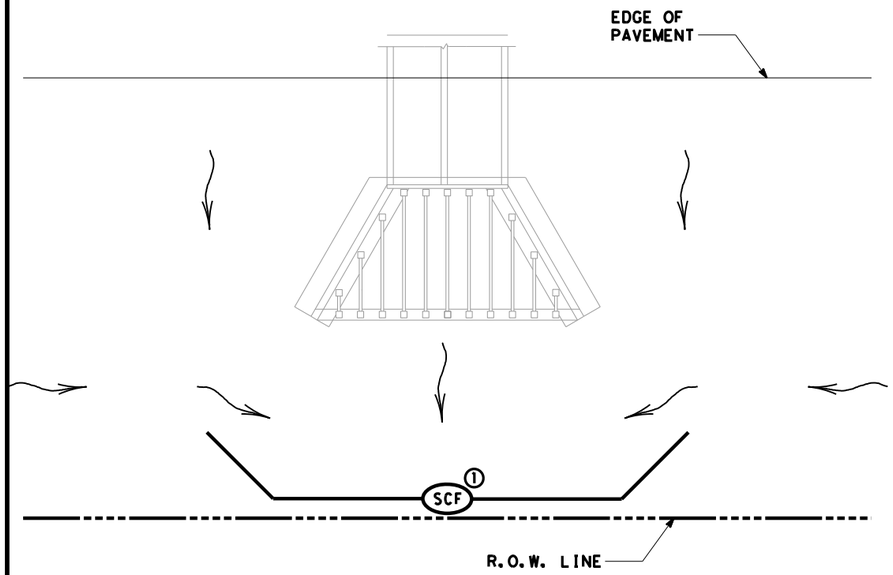
51. Soil retention blankets will be installed rolled down the slope with the small dimension side embedded at the top of slope, unless recommended otherwise by the manufacturer. Excess grass, rocks, trash, debris or clods will be removed before seeding and installing soil retention blankets. All installations will be by the manufacturer recommendations. Contractor equipment, including tractor mowers will be kept off areas with soil retention blankets until the grass is established.

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

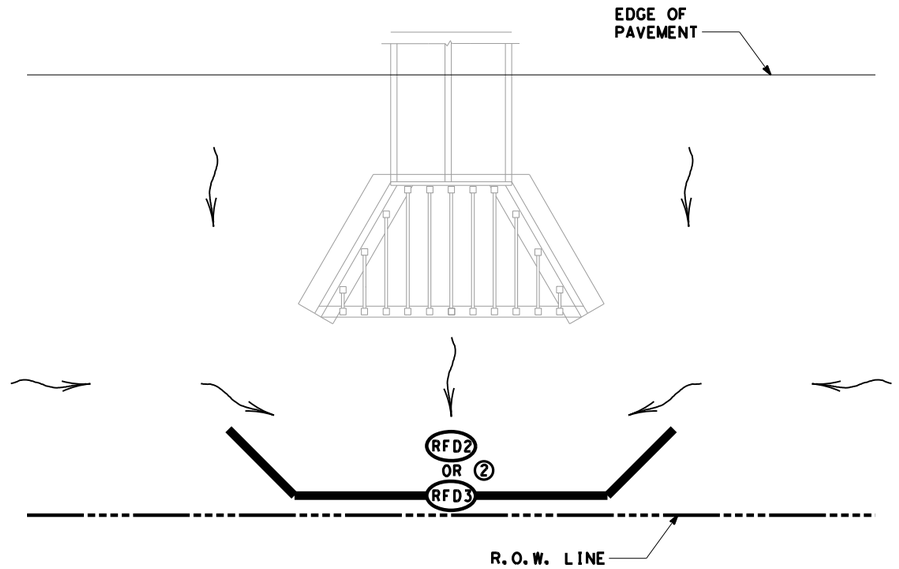
TA-BMP

FILE: BMPLAYOUTS.dgn	DN:		CK:	DW:		CK:	
	CONT	SECT	JOB		HIGHWAY		
REVISIONS DEC 2013 FEB 2015	0596	01	023		FM 66		
	DIST	COUNTY				SHEET NO.	
	WACO	HILL				133	



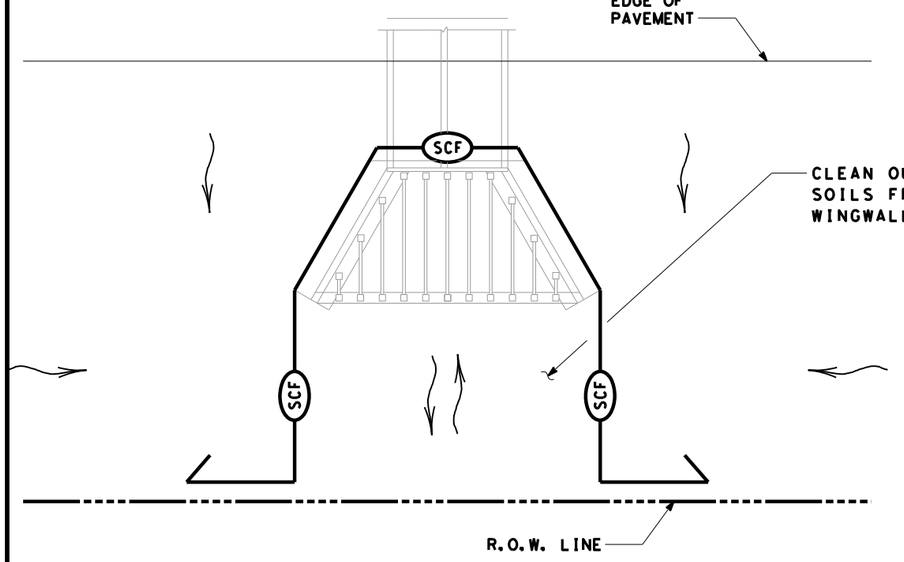
BEST MANAGEMENT PRACTICE (BMP) #1

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT EXIT OF CULVERT



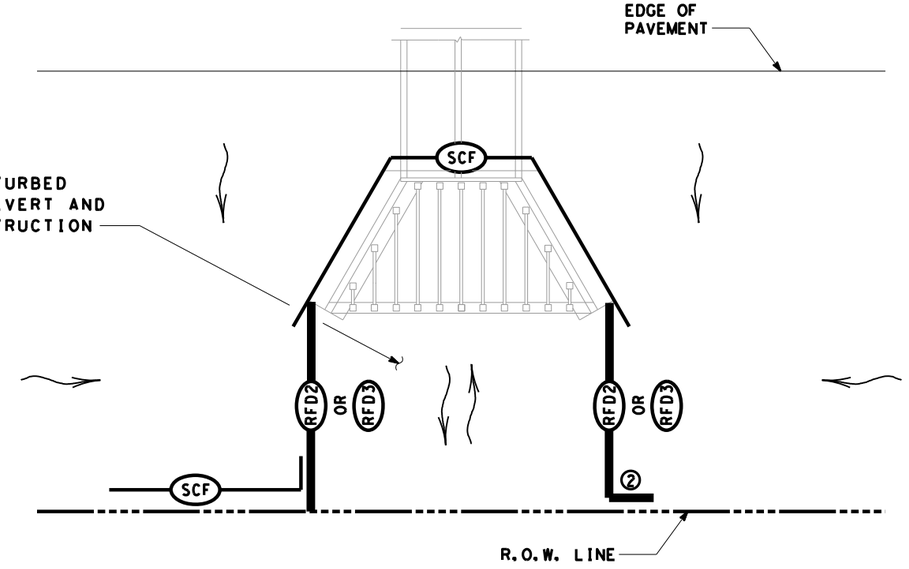
BEST MANAGEMENT PRACTICE (BMP) #2

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT EXIT OF CULVERT



BEST MANAGEMENT PRACTICE (BMP) #3

FOR 404 OR NON-404 STREAMS ~ SEDIMENT CONTROL AT EXIT OR ENTRANCE OF CULVERT



BEST MANAGEMENT PRACTICE (BMP) #4

FOR 404 OR NON-404 STREAMS ~ SEDIMENT CONTROL AT EXIT OR ENTRANCE OF CULVERT

SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
RFD3	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

NOTES:

1. EXTEND SILT FENCE SO STORM WATER DOES NOT GO AROUND THE ENDS. USE L-HOOKS ON ENDS AS REQUIRED.
2. EXTEND ROCK FILTER DAM SO STORM WATER DOES NOT GO AROUND THE ENDS.

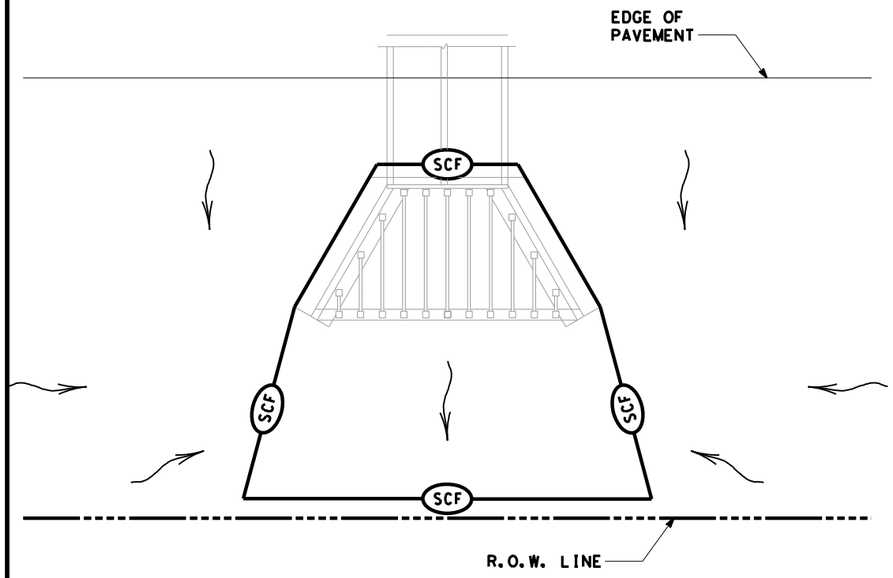
SCALE = NTS SHEET 5 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

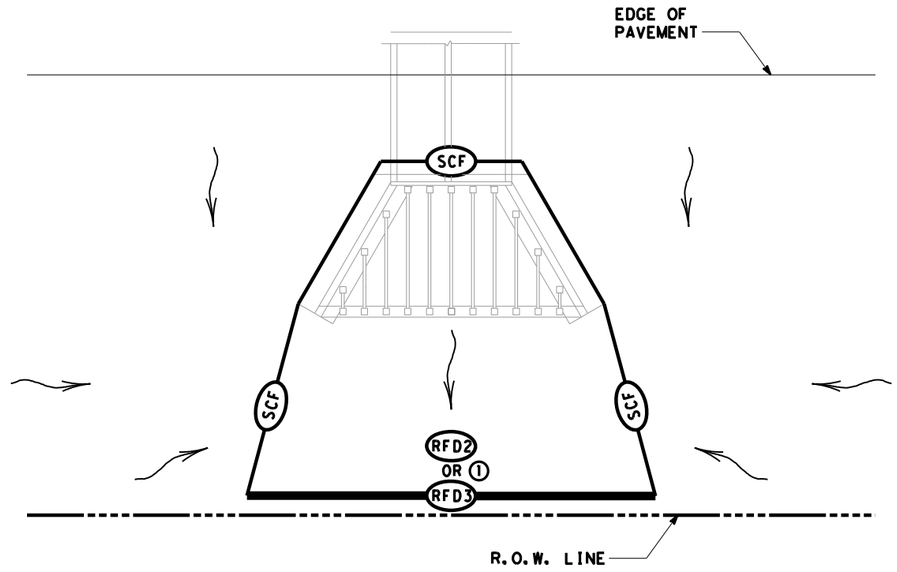
TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
DEC 2013	DIST	COUNTY		SHEET NO.
FEB 2015	WACO	HILL		134



BEST MANAGEMENT PRACTICE (BMP) #5

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT EXIT OF CULVERT



BEST MANAGEMENT PRACTICE (BMP) #6

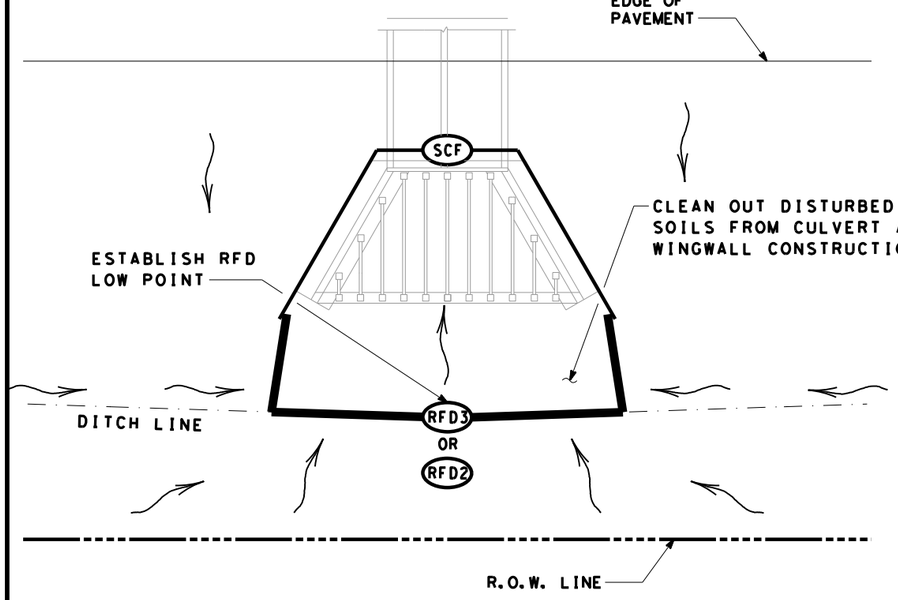
FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT EXIT OF CULVERT

SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
RFD3	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

NOTES:

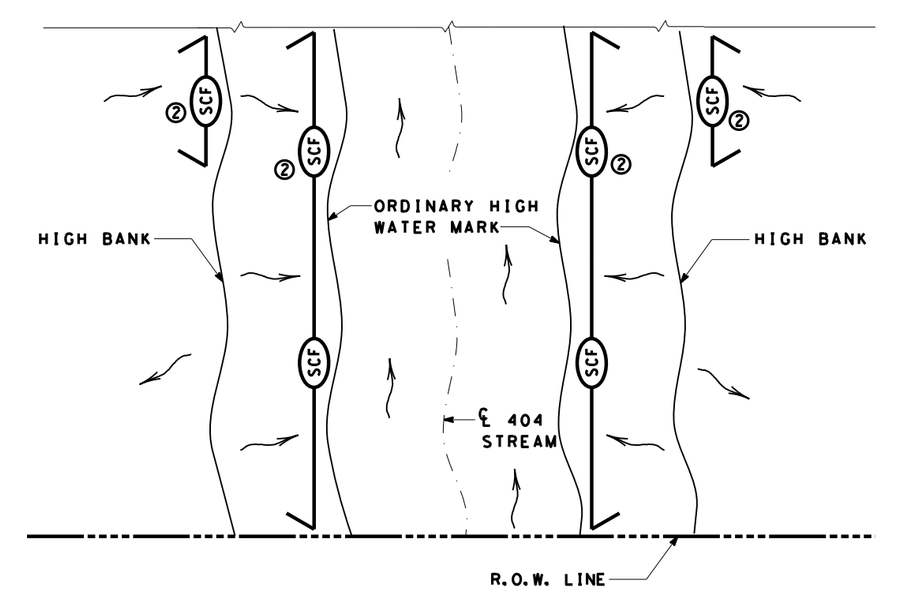
① PROVIDE OVERLAP OF SILT FENCE WITH ROCK FILTER DAM.

② USE SILT FENCE L-HOOKS ON ENDS TO BLOCK STORM WATER SEDIMENT



BEST MANAGEMENT PRACTICE (BMP) #7

FOR NON-404 STREAMS ONLY ~ SEDIMENT CONTROL AT ENTRANCE OF CULVERT



BEST MANAGEMENT PRACTICE (BMP) #8

FOR 404 STREAMS ~ SEDIMENT CONTROL DURING PROJECT CLEARING AND GRUBBING

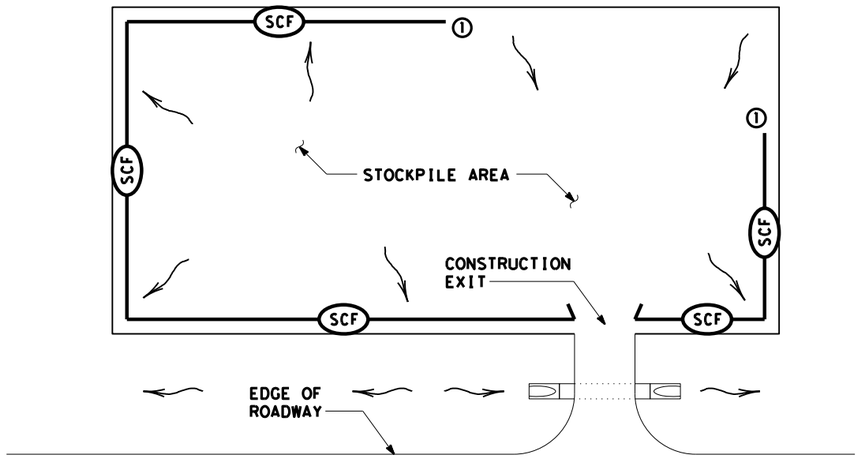
SCALE = NTS SHEET 6 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

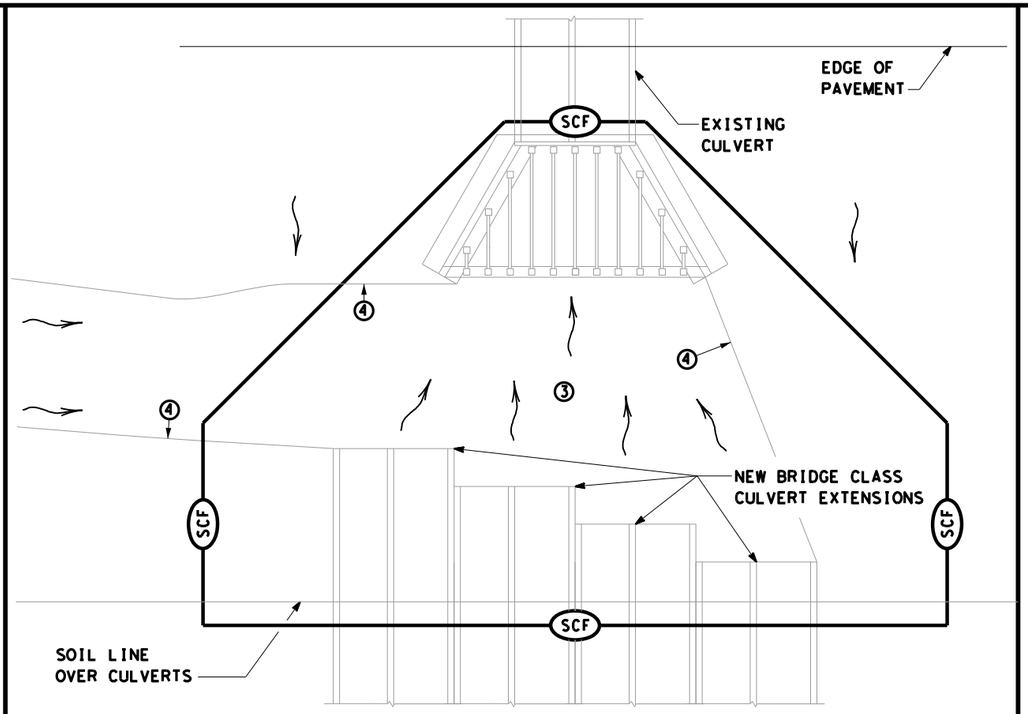
TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT		CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT 2009	CONT	SECT	JOB		HIGHWAY
REVISIONS	0596	01	023		FM 66
DEC 2013	DIST		COUNTY		SHEET NO.
FEB 2015	WACO		HILL		135



BEST MANAGEMENT PRACTICE (BMP) #9

STOCKPILE SEDIMENT CONTROL



BEST MANAGEMENT PRACTICE (BMP) #10

FOR 404 OR NON-404 STREAMS ONLY ~
SEDIMENT CONTROL AT PHASED CONSTRUCTION OF BRIDGE CLASS CULVERTS

SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
RFD3	ROCK FILTER DAM (TY 3)
	DIRECTION OF FLOW

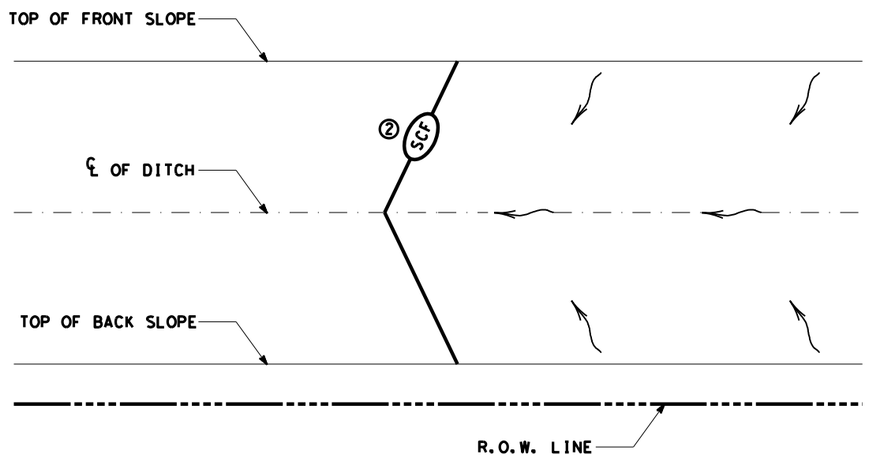
NOTES:

① START SEDIMENT CONTROL AT LOCATION SO ALL STORM WATER WITH SEDIMENT IS COLLECTED

② ROCK FILTER DAMS OR EARTH/GRASSED EMBANKMENTS CAN BE SUBSTITUTED AS DIRECTED.

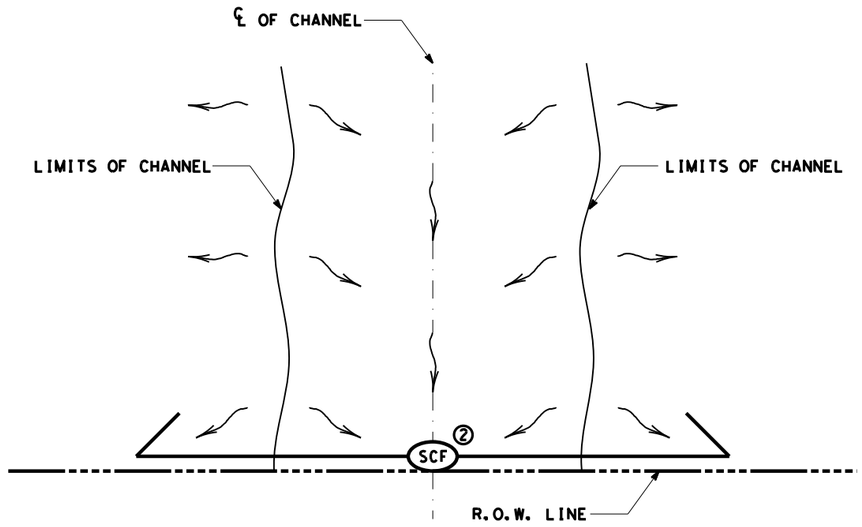
③ PROVIDE A SMOOTH TRANSITION FROM THE INVERT ELEVATIONS BETWEEN CULVERTS. REMOVE LOOSE SOIL FROM EXCAVATED AREA BETWEEN CULVERTS.

④ PROVIDE AND INSTALL PNEUMATICALLY PLACED CONCRETE ON THE DITCH BOTTOM AND SIDE SLOPES BETWEEN TEMPORARY TERMINATIONS BETWEEN OLD AND NEW CULVERTS. PNEUMATICALLY PLACED CONCRETE WILL BE PLACED TO THE HEIGHT OF THE LARGEST CULVERT ON THE DITCH SIDE SLOPES; AND TO A LIMIT 10 FEET OUTSIDE THE LOCATION OF BMPS ALONG THE DITCH BOTTOM. CEMENT STABILIZED SAND MAY BE SUBSTITUTED FOR PNEUMATICALLY PLACED CONCRETE, IN AREAS WHERE INSTALLATION WORKS AND AT THE OPTION OF TXDOT.



BEST MANAGEMENT PRACTICE (BMP) #11

BOUNDRY SEDIMENT CONTROL ~ BOTH ENDS OF CONTROL TERMINATED UP SLOPE



BEST MANAGEMENT PRACTICE (BMP) #12

BOUNDRY SEDIMENT CONTROL ~ BOTH ENDS OF CONTROL TERMINATED DOWN SLOPE

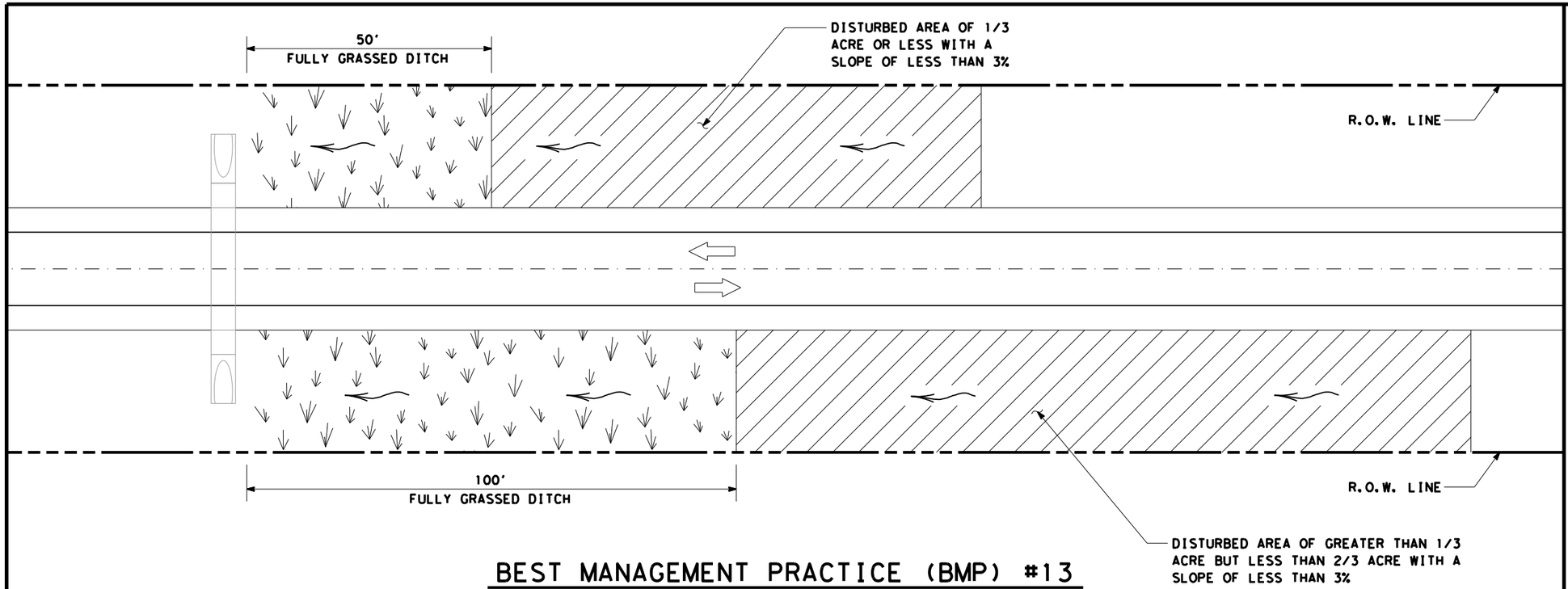
SCALE = NTS SHEET 7 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

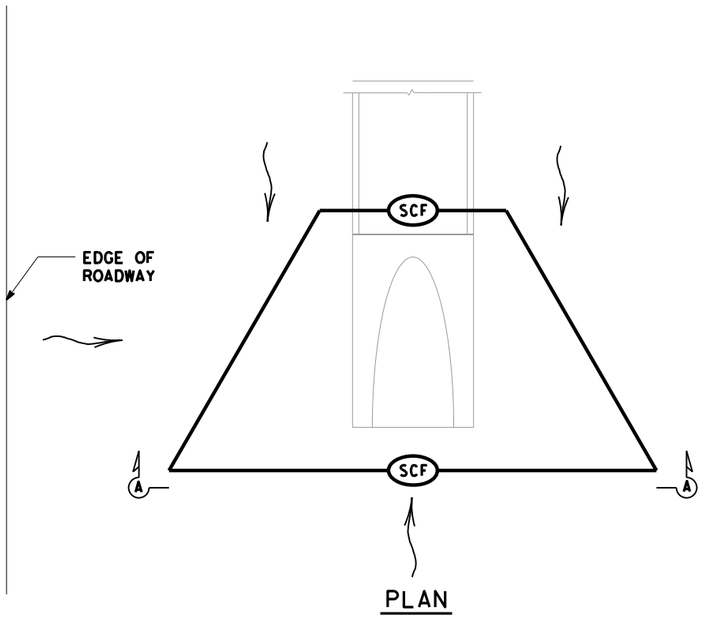
TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT		CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT 2009	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0596	01	023	FM 66	
DEC 2013 FEB 2015	DIST	COUNTY		SHEET NO.	
	WACO	HILL		136	

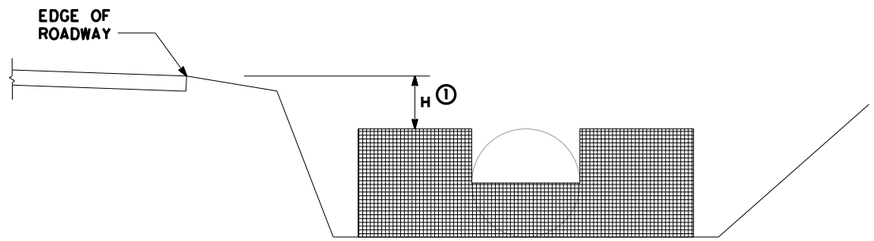


BEST MANAGEMENT PRACTICE (BMP) #13

USE OF VEGETATIVE BUFFERS IN PLACE OF TEMPORARY SEDIMENT CONTROLS SUCH AS SILT FENCE AND ROCK FILTER DAMS



PLAN



VIEW A-A

BEST MANAGEMENT PRACTICE (BMP) #14

NON-404 STREAMS AND DITCHES ONLY - SEDIMENT CONTROL AT PARALLEL DRAINAGE STRUCTURE ENTRANCE ②

	FULLY GRASSED DITCH
	DISTURBED AREA
	DIRECTION OF FLOW
SCF	SEDIMENT CONTROL FENCE

① FOR H DIMENSIONS LESS THAN 1.5' SILT FENCE MAY NEED TO BE NOTCHED AS SHOWN IN VIEW A-A. ADD EXTRA POSTS AT NOTCH.

② BMP #14 MAY BE USED AT CROSS DRAINAGE STRUCTURES AS DIRECTED.

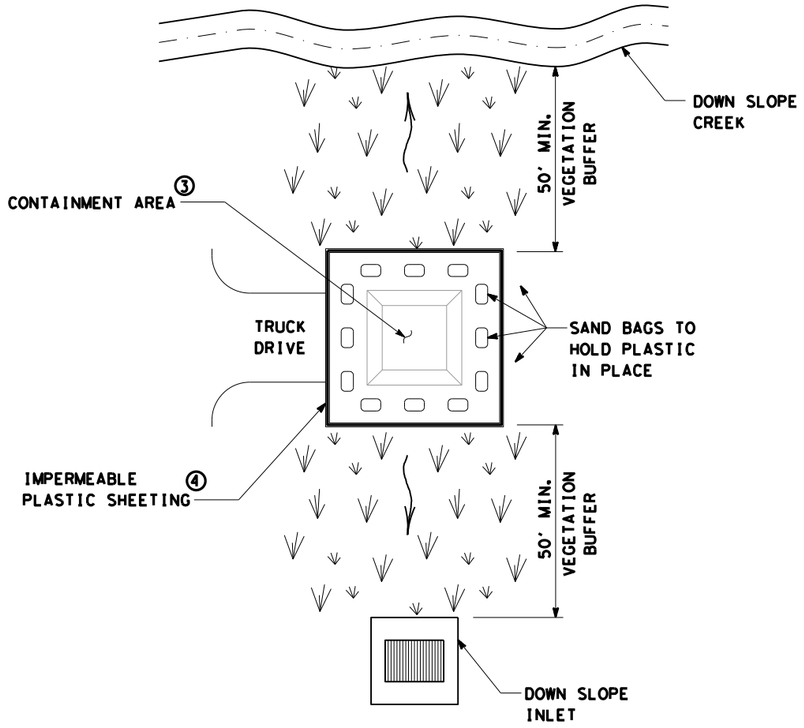
SCALE = NTS SHEET 8 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

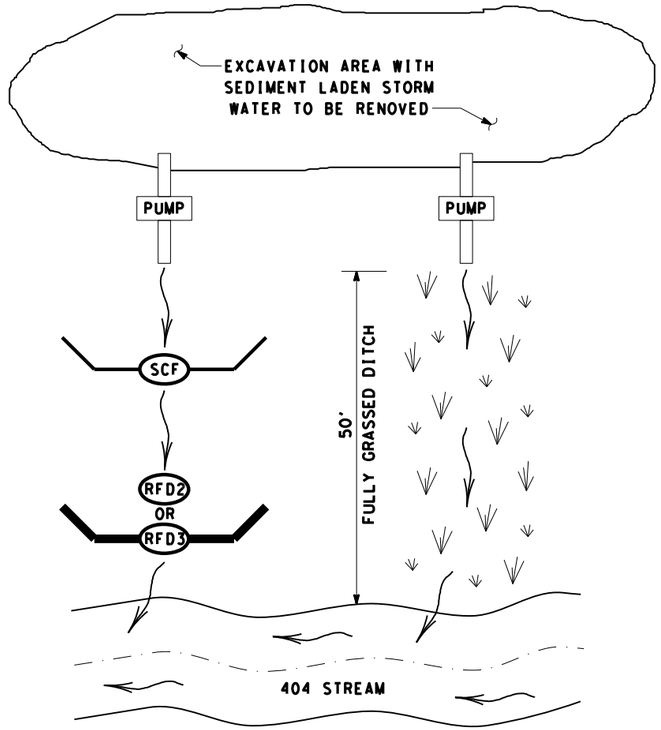
TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT		CK: TXDOT	DW: TXDOT	CK: TXDOT
	CONT	SECT	JOB		HIGHWAY
REVISIONS DEC 2013 FEB 2015	0596	01	023		FM 66
	DIST	COUNTY			SHEET NO.
	WACO	HILL			137



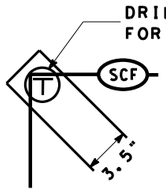
BEST MANAGEMENT PRACTICE (BMP) #15

CONCRETE TRUCK WASHOUT AREA

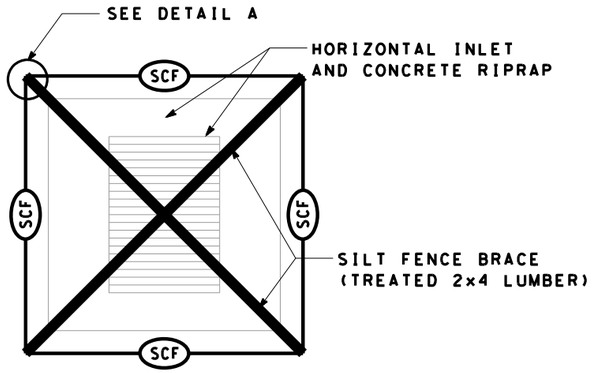


BEST MANAGEMENT PRACTICE (BMP) #16

PUMPED STORM WATER SEDIMENT CONTROLS ①

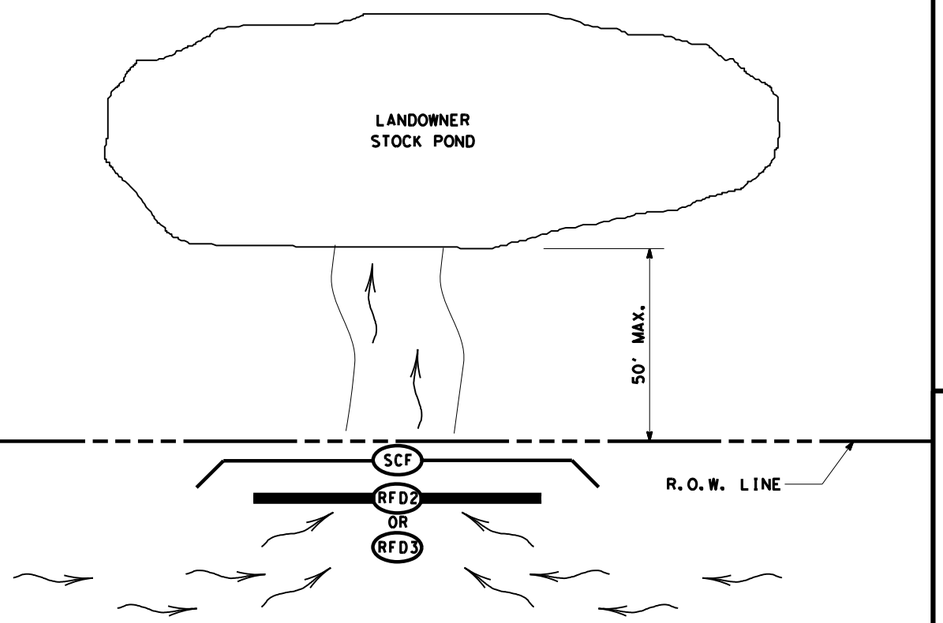


DETAIL A



BEST MANAGEMENT PRACTICE (BMP) #17

HORIZONTAL INLET SEDIMENT CONTROL



BEST MANAGEMENT PRACTICE (BMP) #18

LANDOWNER STOCKPOND SEDIMENT CONTROL ②

	FULLY GRASSED DITCH
	DIRECTION OF FLOW
SCF	SEDIMENT CONTROL FENCE
RFD2	ROCK FILTER DAM (TY 2)
RFD3	ROCK FILTER DAM (TY 3)

① PUMPED STROM WATER FROM AN EXCAVATION AREA SHOULD BE DISCHARGED IN A 50' VEGETATIVE BARRIER OR THROUGH TWO TEMPORARY SEDIMENT CONTROLS BEFORE ENTERING A 404 STREAM.

② FOR LANDOWNER STOCKPONDS WITHIN 50' OF THE RIGHT OF WAY LINE, PROVIDE REDUNDANT SEDIMENT CONTROLS AT THE CONVEYANCE OF THE POND. MINIMUM OF TWO SEDIMENT CONTROLS.

③ WHEN CONTAINMENT AREA REACHES 1' FREEBOARD, DISCONTINUE WASHOUT PLACEMENT AND REMOVE MATERIAL UPON SOLIDIFICATION.

④ EACH TIME SOLIDIFIED MATERIAL IS REMOVED REPLACE PLASTIC SHEETING.

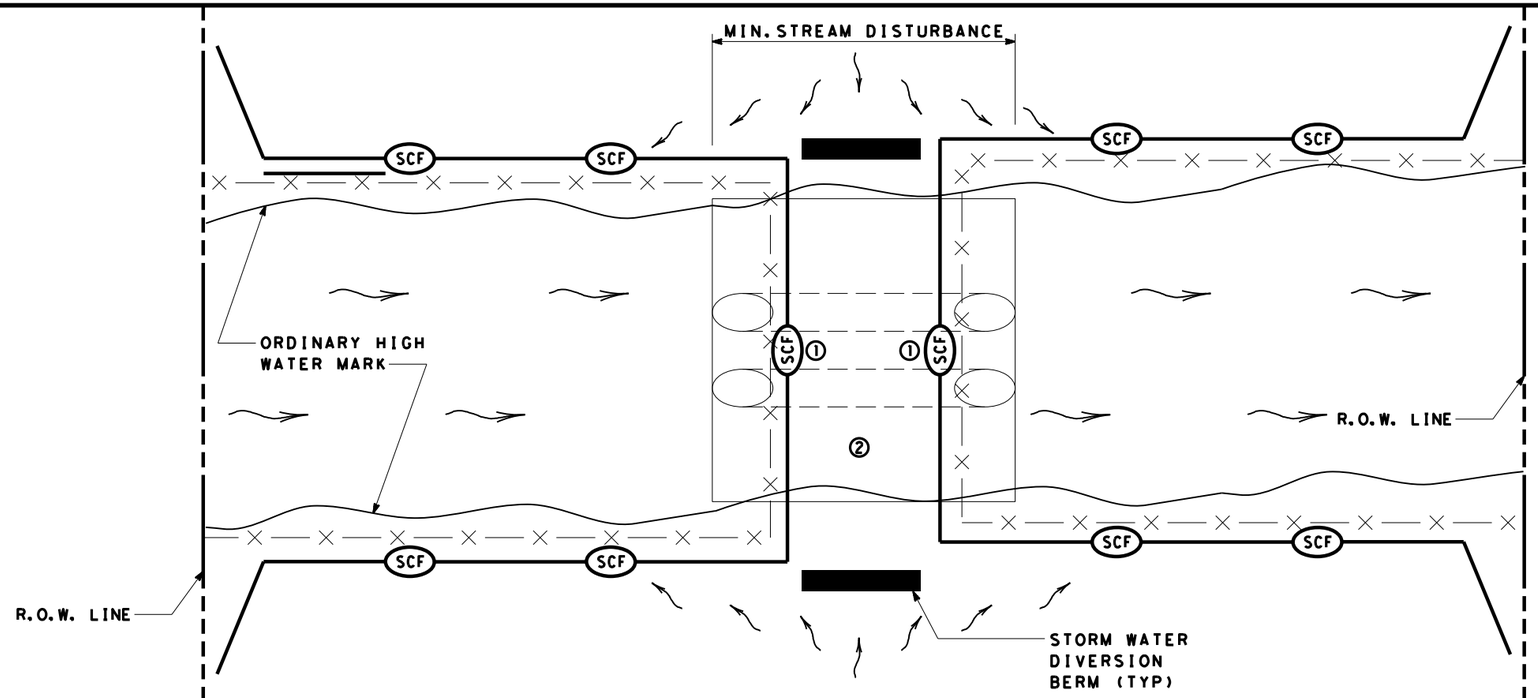
SCALE = NTS SHEET 9 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

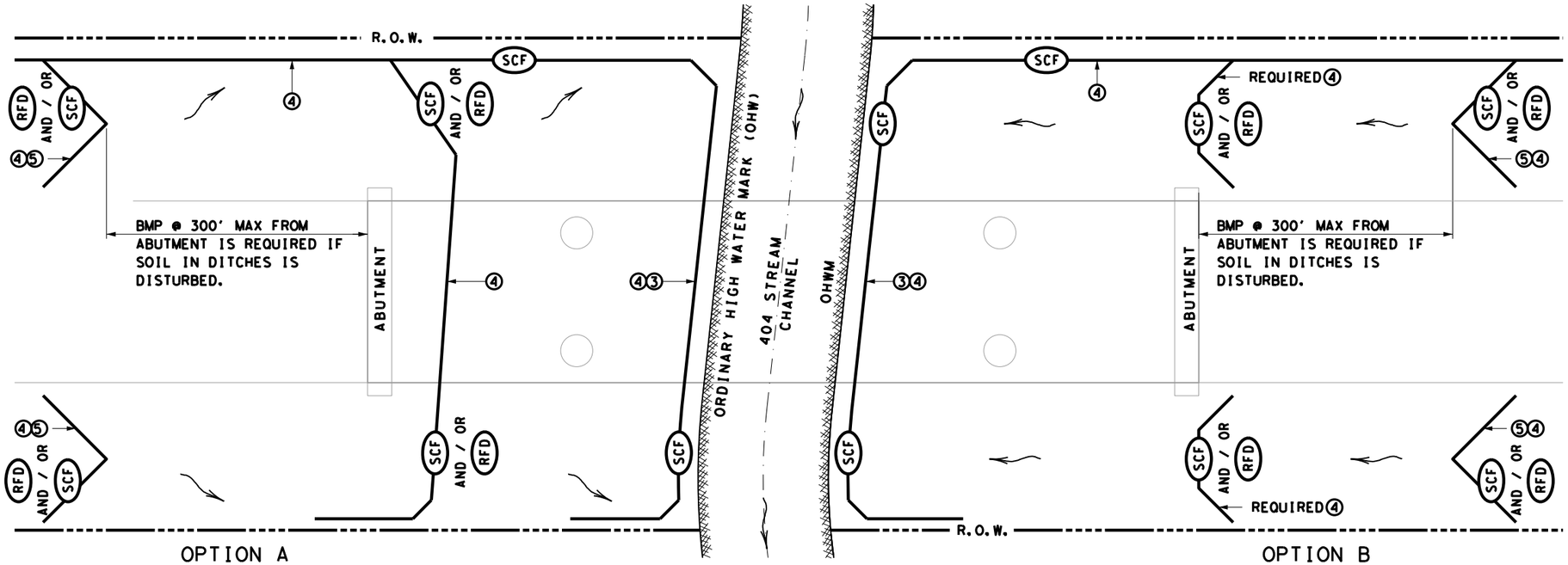
TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS DEC 2013 FEB 2015	0596	01	023	FM 66
	DIST	COUNTY		SHEET NO.
	WACO	HILL		138



BEST MANAGEMENT PRACTICE (BMP) #19

TYPICAL 404 STREAM CROSSING (SEDIMENT CONTROL AT CROSSING)



BEST MANAGEMENT PRACTICE (BMP) #20

FOR 404 STREAMS ~ BMP'S AT BRIDGES

	DIRECTION OF FLOW
SCF	SEDIMENT CONTROL FENCE
RFD	ROCK FILTER DAM
× — ×	SECURITY FENCING

① HAY BALES MAY BE SUBSTITUTED FOR SILT FENCE OVER THE STREAM CROSSING.

② CROSSING WILL BE AS PER REQUIREMENTS OF THE WATERS OF THE US GENERAL NOTES.

③ INSTALL SILT FENCE SLIGHTLY UP FROM OHW MARK FROM R.O.W. TO R.O.W.

④ USE SILT FENCE L-HOOKS ON LEVEL OR DOWN SLOPING ENDS TO BLOCK STORM WATER SEDIMENT

⑤ INSTALL LARGE V OR U SHAPED BMP'S FROM ABUTMENT AS SHOWN. IF THERE IS STEEP DITCH CONDITIONS DECREASE SPACING AND CONSIDER RFD'S. ADD ADDITIONAL BMP'S IF GRADE IS STEEP OR IF FLOW IS HIGH.

SCALE = NTS SHEET 10 OF 10

Texas Department of Transportation
Waco District Standard

TYPICAL APPLICATIONS FOR BEST MANAGEMENT PRACTICES

TA-BMP

FILE: BMPLAYOUTS.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT 2009	CONT	SECT	JOB	HIGHWAY
REVISIONS	0596	01	023	FM 66
DEC 2013	DIST	COUNTY		SHEET NO.
FEB 2015	WACO	HILL		139