CONT	SECT	JOB	HIGHWAY
3343	02	016	FM 1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		1

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	INDEX OF SHEETS

FINAL PLANS

DATE OF LETTING: _____

DATE WORK BEGAN: _____

DATE WORK COMPLETED: _____

DATE WORK ACCEPTED: _____

FINAL CONTRACT COST: _____

CONTRACTOR: _____

LIST OF APPROVED FIELD CHANGES, CHANGE ORDERS & SUPPLEMENTAL AGREEMENTS:

THIS IS TO CERTIFY THAT ALL CONSTRUCTION SUBSTANTIAL WORK WAS PERFORMED IN ACCORDANCE WITH THE PLANS SPECIFICATIONS AND CONTRACT. ALL PROPOSED CONSTRUCTION WAS COMPLETED UNLESS OTHERWISE NOTED.

_____ _____

ANDRES ESPINOZA, P.E. DATE
SAN BENITO AREA ENGINEER

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

STATE PROJECT NUMBER
C: 3343-2-16
CSJ: 3343-02-016

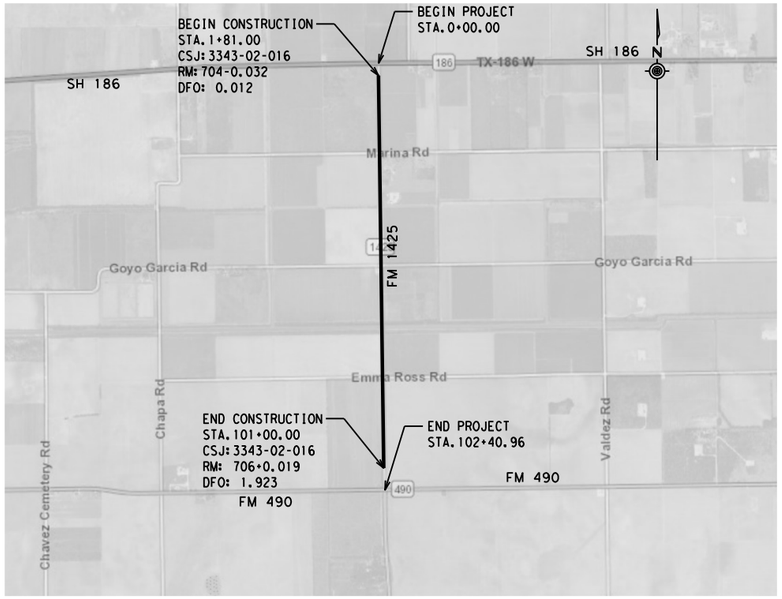
NET LENGTH OF PROJECT = 9,919 FEET = 1.88 MILES
BRIDGE LENGTH = 55 FEET = 0.01 MILES
ROADWAY LENGTH = 10,243 FEET = 1.94 MILES

WILLACY COUNTY
FM 1425

FROM: SH 186
TO: FM 490

FOR THE REHABILITATION OF AN EXISTING ROADWAY

CONSISTING OF A FULL DEPTH RECONSTRUCTION OF EXISTING ASPHALT ROADWAY, GRADING, LIME TREATMENT SUBGRADE, CEMENT TREATMENT FLEXIBLE BASE, ASPHALT, DRIVEWAYS, S.E.T.'S, CULVERT CROSSING, STRIPING, RAISED PAVEMENT MARKERS, AND BRIDGE RAIL RETROFIT



LOCATION MAP NOT TO SCALE

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

DESIGN SPEED

MAIN LANES: 60 MPH

POSTED SPEED

MAIN LANES: 60 MPH

A.D.T.

2020: 1,646 VPD
2040: 3,192 VPD

TDLR INSPECTION NOT REQUIRED

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

RECOMMENDED FOR LETTING: DATE: 1/4/2024

DocuSigned by: Pedro R. Alvarez EABA335C2DAA48C...
DISTRICT ENGINEER

SUBMITTED FOR LETTING: DATE: 1/3/2024

DocuSigned by: Romualdo Mena Jr 8D395A956F70440...
DISTRICT CENTRAL DESIGN SUPERVISOR

FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\33430201 6\4 - Design\Plan Set\1. General\FM1425*TITLE SHEET
DATE: 12/29/2023 11:02:32 AM

SHEET NO.	DESCRIPTION
	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3-5	PROJECT LAYOUT
6	EXISITING TYPICAL SECTIONS
7-8	PROPOSED TYPICAL SECTIONS
9-17	GENERAL NOTES
18-21	QUANTITY SUMMARY SHEETS
22-28	EARTHWORK SUMMARY SHEETS
29-31	ESTIMATE & QUANTITY SHEETS
32	SEAL COAT MATERIAL SELECTION TABLE "UNDERSEAL"
	TRAFFIC CONTROL PLAN
33-34	TCP - GENERAL NOTES & SEQUENCE OF CONSTRUCTION
35	TCP - SIGN SUMMARY SHEET
36-37	ADVANCE WARNING SIGNS
38	CRASH CUSHION SUMMARY SHEET
39	DETOUR LAYOUT AT FM 490
40-41	TCP - TYPICAL SECTIONS PHASE 1 STEP 1
42-46	TCP - LAYOUT PHASE 1 STEP 1
47-48	TCP - TYPICAL SECTIONS PHASE 1 STEP 2
49-53	TCP - LAYOUT PHASE 1 STEP 2
54	TCP - DETAIL SHEET
	TRAFFIC CONTROL PLAN STANDARDS
* [S] 55-66	BC (1)-21 THRU BC (12)-21
* [S] 67	TCP (2-2) - 18
* [S] 68	TCP (3-1) - 13
* [S] 69	TCP (3-3) - 14
* [S] 70	TCP (7-1) - 13
* [S] 71	WZ (STPM) - 23
* [S] 72	WZ (UL) - 13
* [S] 73	WZ (RCD) - 13
* [S] 74	WZ (BRK) - 13
* [S] 75	WZ (RS) - 22
* [S] 76	ABSORB (M) - 19
* [S] 77	SLED - 19
	ROADWAY DETAILS
78-79	SURVEY CONTROL INDEX SHEET
80-81	HORIZONTAL AND VERTICAL CONTROL INDEX SHEET
82	ALIGNMENT DATA
83-91	PLAN & PROFILE
92	PRIVATE DRIVEWAY TABLES
93	PUBLIC DRIVEWAY TABLES
	ROADWAY DETAILS STANDARDS
# [D] 94	DRIVEWAY PROFILE DETAILS
# [D] 95	DRIVEWAY DETAILS PRIVATE (RESIDENTIAL - COMMERCIAL)
# [D] 96	DRIVEWAY DETAILS PUBLIC (COUNTY ROAD - CITY STREET)
# [S] 97	GF (31) - 19
# [S] 98,98-A	SGT (13S)31-18 ,SGT (14W)31-18
# [S] 99-100	GF (31) TRTL3 - 20
# [S] 101	GF (31) MS - 19
# [S] 102	BED - 14
# [S] 103	MB (1) - 21
# [S] 104	MB (2) - 21
# [S] 105	MB (3) - 21
# [S] 106	MB (4) - 21
	DRAINAGE DETAILS
107	CROSS CULVERT DETAIL SHEET
	DRAINAGE DETAILS STANDARDS
# [S] 108	PSET-SC
# [S] 109	PSET-SP
# [S] 110	PBGC
# [D] 111	MISCELLANEOUS PIPE DETAILS
# [D] 112	CEMENT STABILIZATION & MISCELLANEOUS DETAILS
	BRIDGE DETAILS
113	SSRT(MOD) RAIL RETROFIT LAYOUT
	BRIDGE STANDARDS
$ [S] 114-115	TRAFFIC RAIL SINGLE SLOPE (TYPE SSTR)
$ [D] 116	SSTR(MOD) RAIL RETROFIT
	SIGNING
117-121	SIGNING LAYOUT
122	SUMMARY OF SMALL SIGNS (REMOVAL)
123-125	SUMMARY OF SMALL SIGNS
126	SIGN PANEL DETAILS
	SIGNING STANDARDS
# [S] 127	TSR (3) - 13
# [S] 128	TSR (4) - 13
# [S] 129	TSR (5) - 13
# [S] 130	SMD (GEN) - 08
# [S] 131	SMD (SLIP-1) - 08
# [S] 132	SMD (SLIP-2) - 08
# [S] 133	SMD (SLIP-3) - 08
	PAVEMENT MARKINGS & DELINEATION
134-138	PAVEMENT MARKINGS LAYOUT
	PAVEMENT MARKINGS & DELINEATION STANDARDS
* [S]139	PM (1) - 22
* [S]140	PM (2) - 22
* [S]141	PM (3) - 22
* [S]142	RS (2) - 23
* [S]143	RS (4) - 23
* [S]144	D & OM (1) - 20
* [S]145	D & OM (2) - 20
* [S]146	D & OM (3) - 20
* [S]147	D & OM (5) - 20
* [S]148	D & OM (VIA) - 20
	ENVIRONMENTAL ISSUES
149-150	STORMWATER POLLUTION PREVENTION PLAN (SWP3)
151-152	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)
153-155	EPIC SHEET SUPPLEMENTALS TPWD BMPs
156-160	SW3P LAYOUT
	ENVIRONMENTAL ISSUES STANDARDS
# [S]161	EC (1) - 16
# [S]162	EC (3) - 16
# [S]163-165	EC (9) - 16

LEGEND
D - DISTRICT STANDARD
S - STATE STANDARD

THE STANDARD SHEETS SPECIFICALLY INDENTIFIED WITH A "#" SYMBOL HAVE BEEN ISSUED BY ME OR UNDER MY REPONSIBLE SUPERVISION, AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED PROFESSIONAL ENGINEER

DocuSigned by: 12/21/2023
Ana Pruneda
B490B82599AB4F8...

THE STANDARD SHEETS SPECIFICALLY INDENTIFIED WITH A "*" SYMBOL HAVE BEEN ISSUED BY ME OR UNDER MY REPONSIBLE SUPERVISION, AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
FILIBERTO M. RAMOS
146133
LICENSED PROFESSIONAL ENGINEER

DocuSigned by: 12/21/2023
Filiberto Ramos
97AAD53D9FDA403...

THE STANDARD SHEETS SPECIFICALLY INDENTIFIED WITH A "$" SYMBOL HAVE BEEN ISSUED BY ME OR UNDER MY REPONSIBLE SUPERVISION, AS BEING APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
MARIEL B. TORRES
128897
LICENSED PROFESSIONAL ENGINEER

DocuSigned by: 12/21/2023
Mariel Torres
C9702DF8C67B467...

Pharr District Central Design

Texas Department of Transportation

FM 1425
INDEX OF SHEETS

SHEET 1 OF 1

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		2

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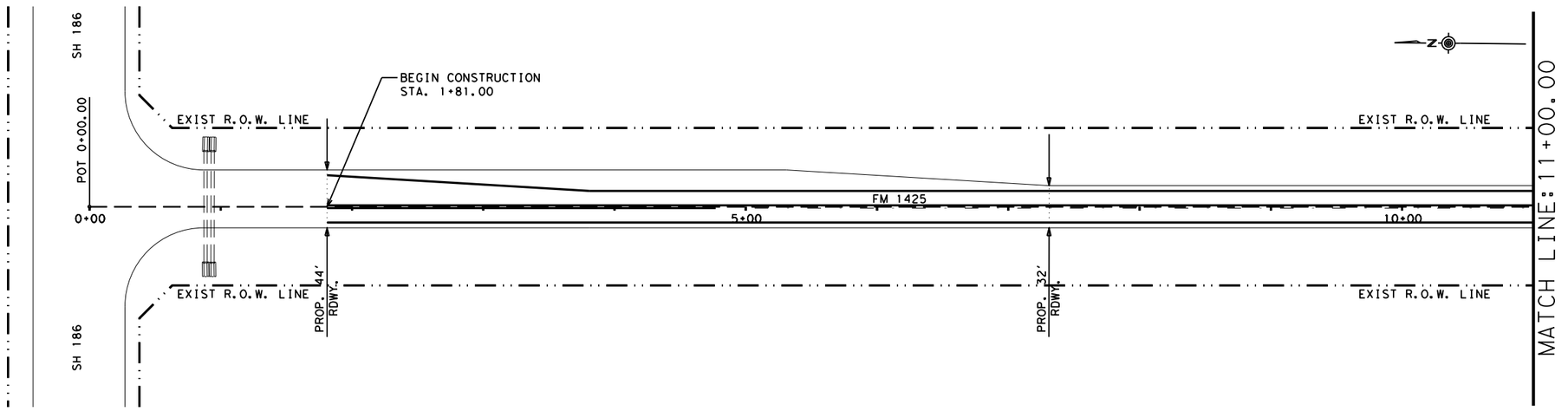

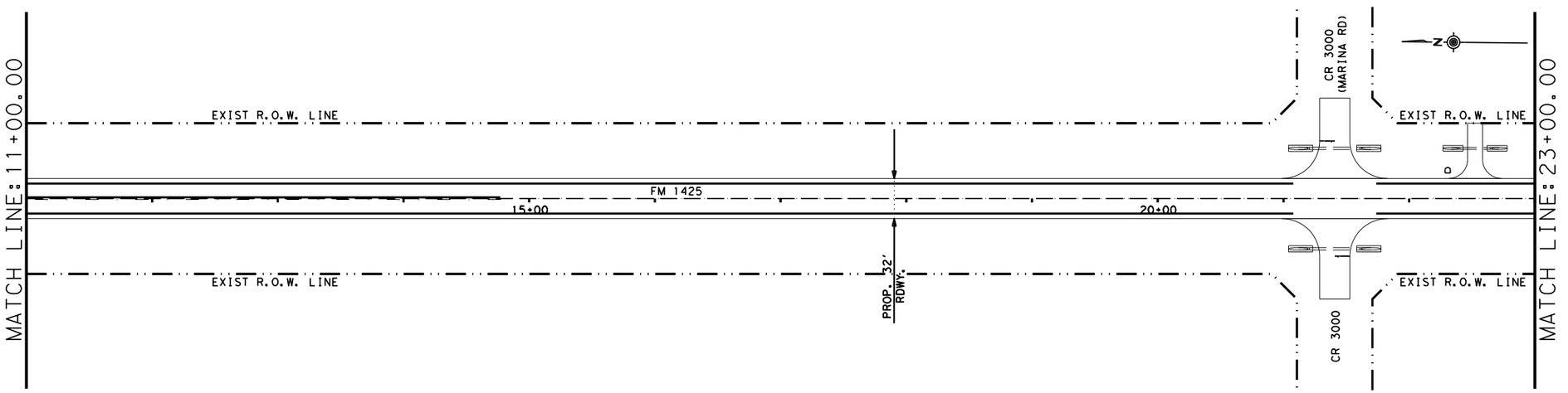

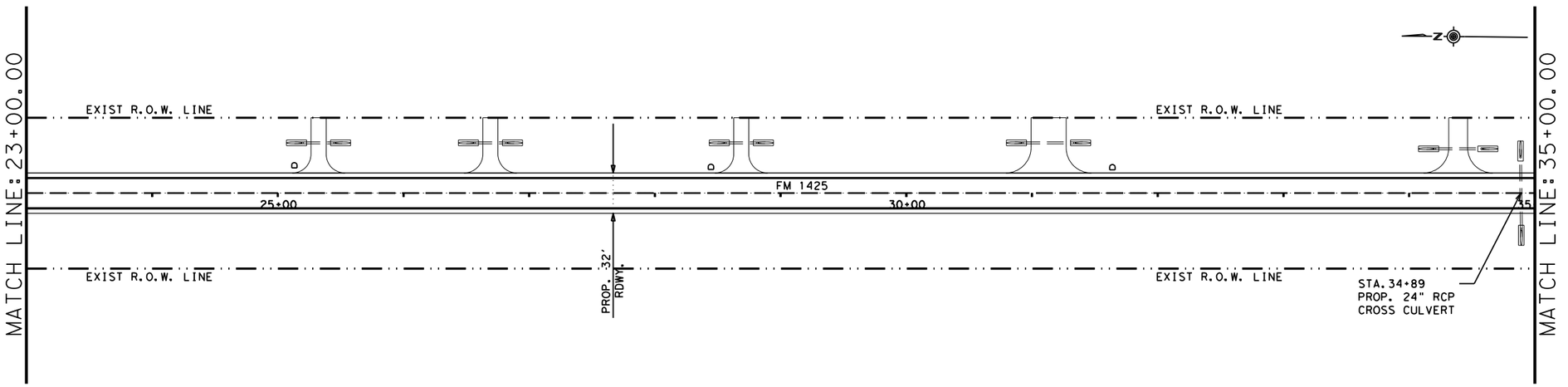

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STATE OF TEXAS
ABEL MARROQUIN III
134752
LICENSED PROFESSIONAL ENGINEER
P.E.

06/09/2022

Pharr District Central Design

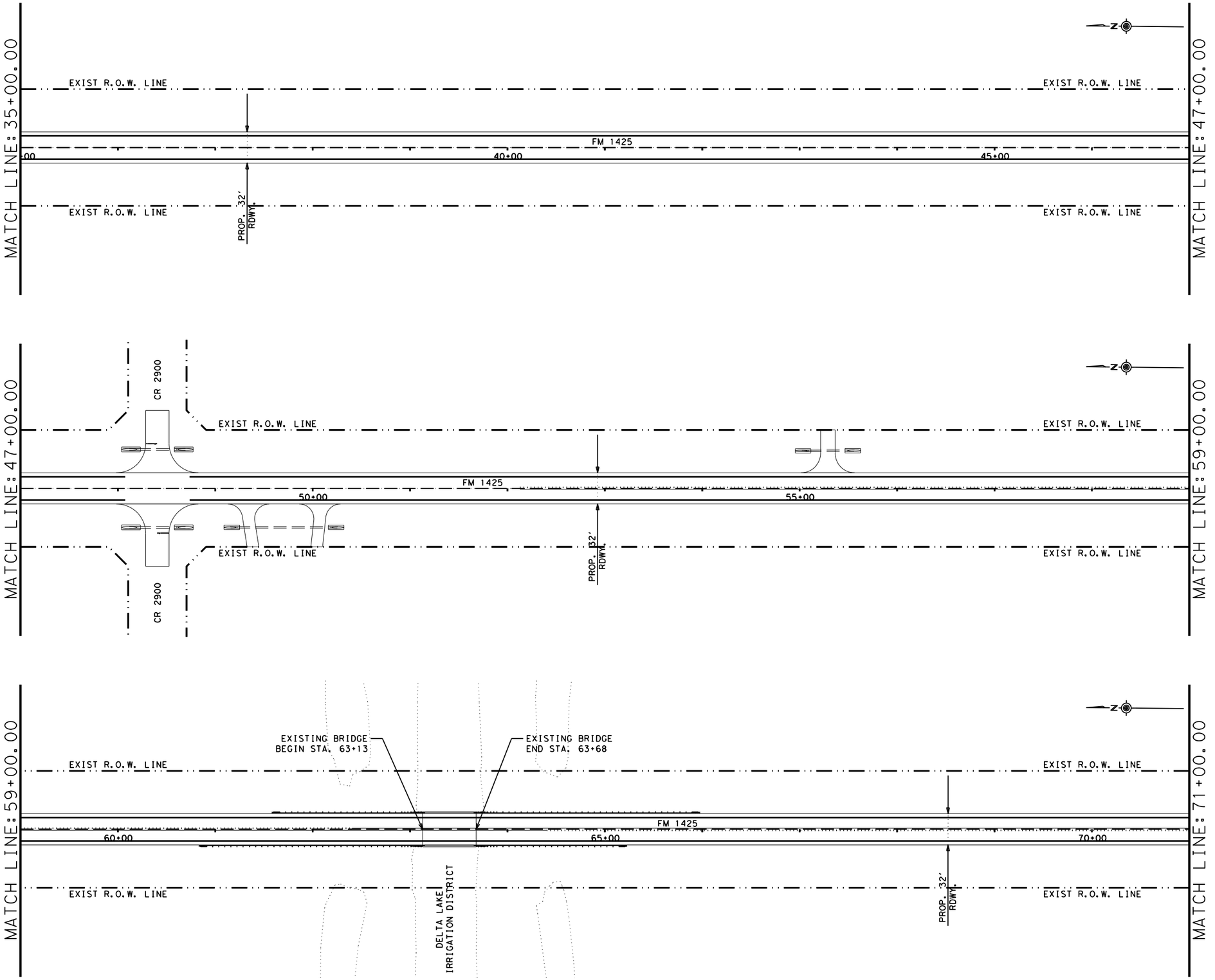
Texas Department of Transportation

FM 1425
PROJECT LAYOUT

1" = 100' SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		3

DS: CK: DW: CK:



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STATE OF TEXAS
ABEL MARROQUIN III
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Texas Department of Transportation

FM 1425 PROJECT LAYOUT

1" = 100' SHEET 2 OF 3

© 2022	CONT	SECT	JOB	HIGHWAY
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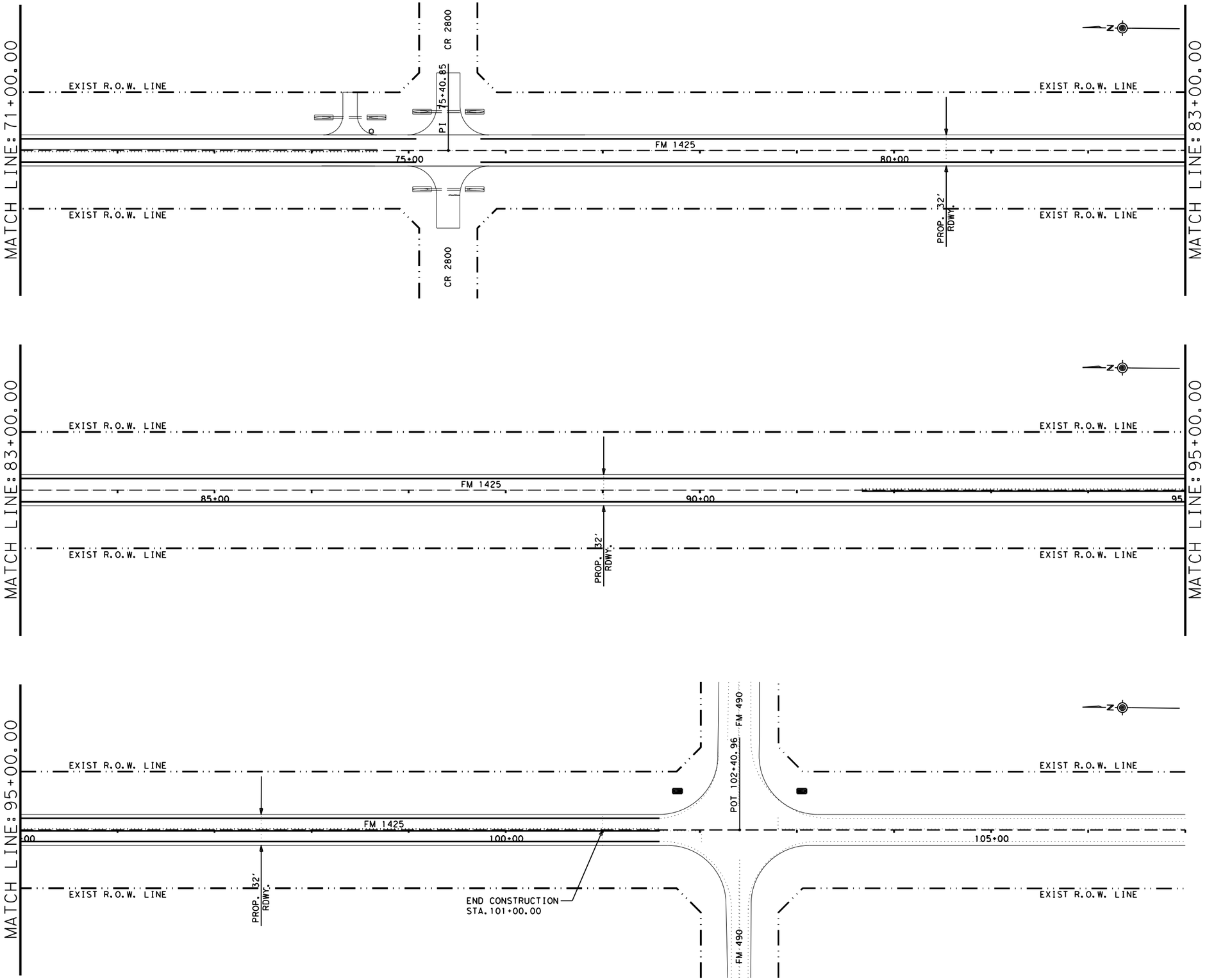
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		4



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STATE OF TEXAS
ABEL MARROQUIN III
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P.E.
06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425 PROJECT LAYOUT

1" = 100' SHEET 3 OF 3

© 2022	CONT	SECT	JOB	HIGHWAY
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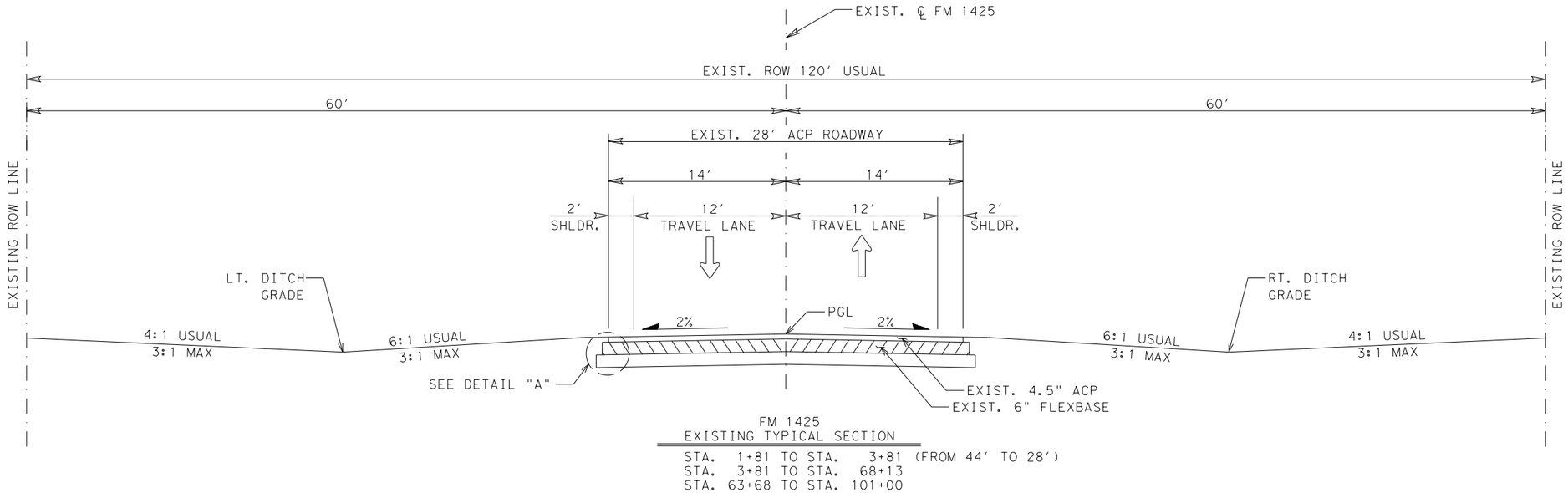
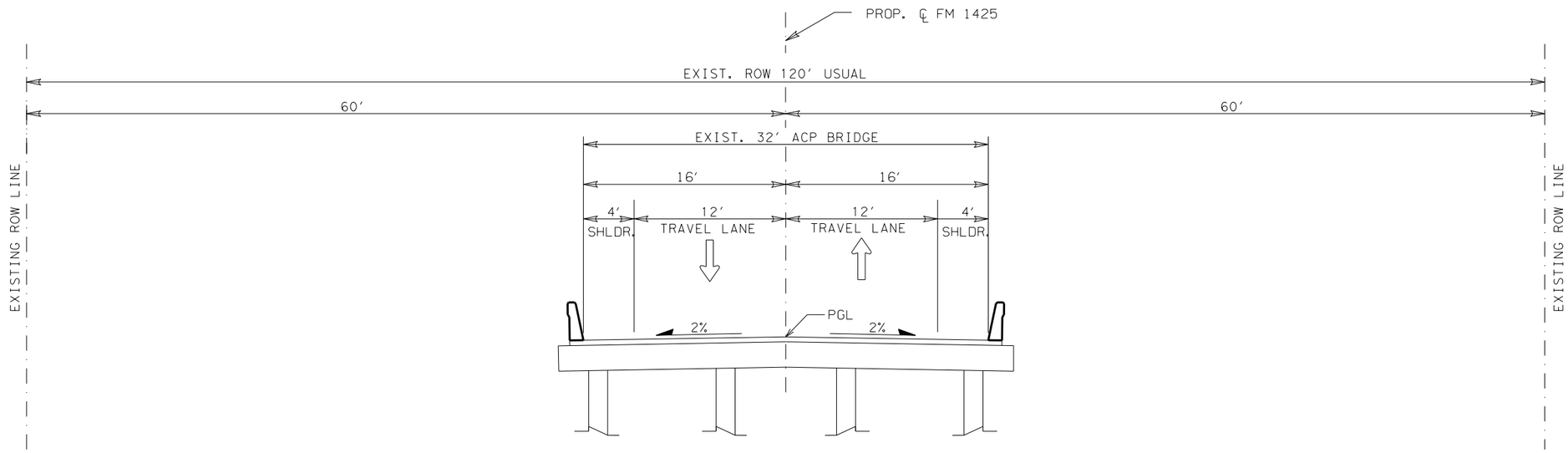
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		5



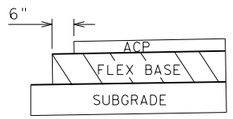
FM 1425
EXISTING TYPICAL SECTION

STA. 1+81 TO STA. 3+81 (FROM 44' TO 28')
STA. 3+81 TO STA. 68+13
STA. 63+68 TO STA. 101+00



FM 1425
EXISTING TYPICAL SECTION

STA. 63+13 TO STA. 63+68



DETAIL "A"

LEGEND:

EXIST.	- EXISTING
STA.	- STATION
CRS	- COURSE
TYP.	- TYPICAL
SHLDR.	- SHOULDER
ACP	- ASPHALT CONCRETE PAVEMENT
RDWY	- ROADWAY
PGL.	- PROFILE GRADE LINE
PCJ.	- PERMISSIBLE CONSTRUCTION JOINT
#%	- EXIST. SUPERELVATION
⇨	- TRAFFIC FLOW

NOTES:

1.) CONTRACTOR SHALL FIELD VERIFY EXISTING ROADWAY CONSTRUCTION JOINTS FOR LIMITS OF PROJECT.

2.) THE EXISTING ACP IS TO BE SALVAGED IN ACCORDANCE WITH ITEM 305. ALL SURPLUS RAP WILL REMAIN AS PROPERTY OF THE CONTRACTOR. THE EXISTING BASE MATERIAL TO BE SALVAGED IN ACCORDANCE WITH ITEM 251, ANY EXCESS BASE MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR. QUANTITY ESTIMATED IS FOR EXISTING ROADWAY.

STATE OF TEXAS
ABEL MARROQUIN III
134752
LICENSED PROFESSIONAL ENGINEER
P.E.

06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425 EXISTING TYPICAL SECTION

NOT TO SCALE

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM 1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		6

DATE: 6/8/2022 6:15:25 PM
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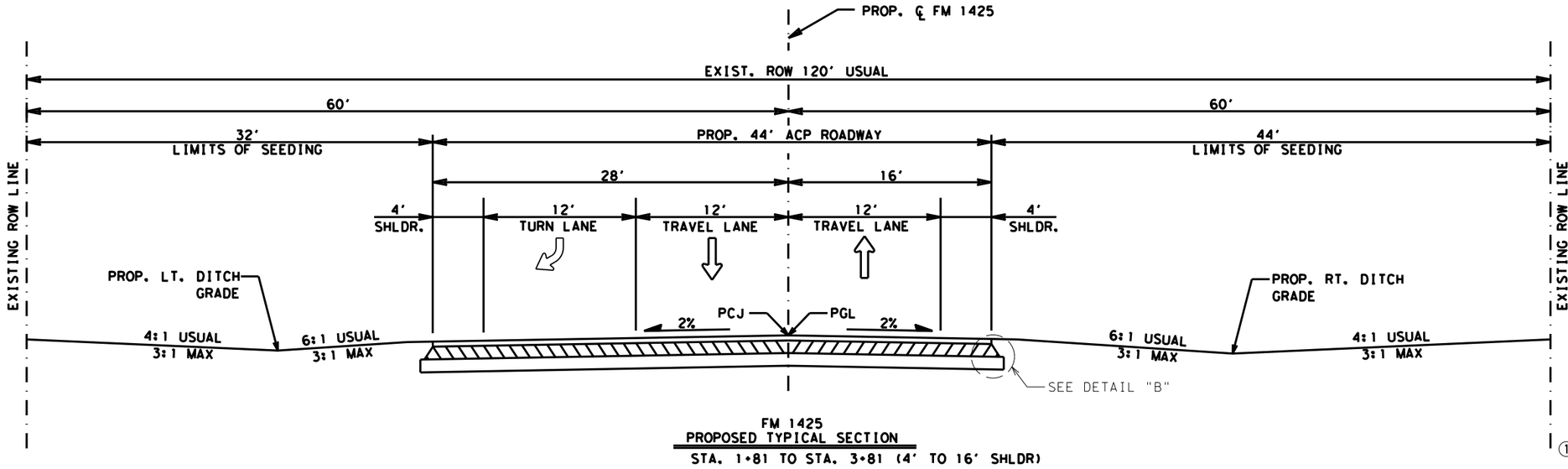


FM 1425
PROPOSED TYPICAL SECTION
STA. 1+81 TO STA. 3+81 (4' TO 16' SHLDR)

GENERAL NOTES:
WHEN REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

WHERE POSSIBLE AND UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON STRIPING LINES AS SHOWN ON STRIPING DETAILS.

THE COMPLETE BASE SHALL BE ROLLED BEFORE THE EARTH SHOULDER IS SHAPED AND FINAL COMPACTION SHALL BE DONE OVER BASE AND EDGE OF SHOULDER. ALL GRADING SHALL BE WITHIN THE LIMITS SHOWN.

114 #/SY OF ACP IS EQUIVALENT TO 1" IN DEPTH OF ACP.

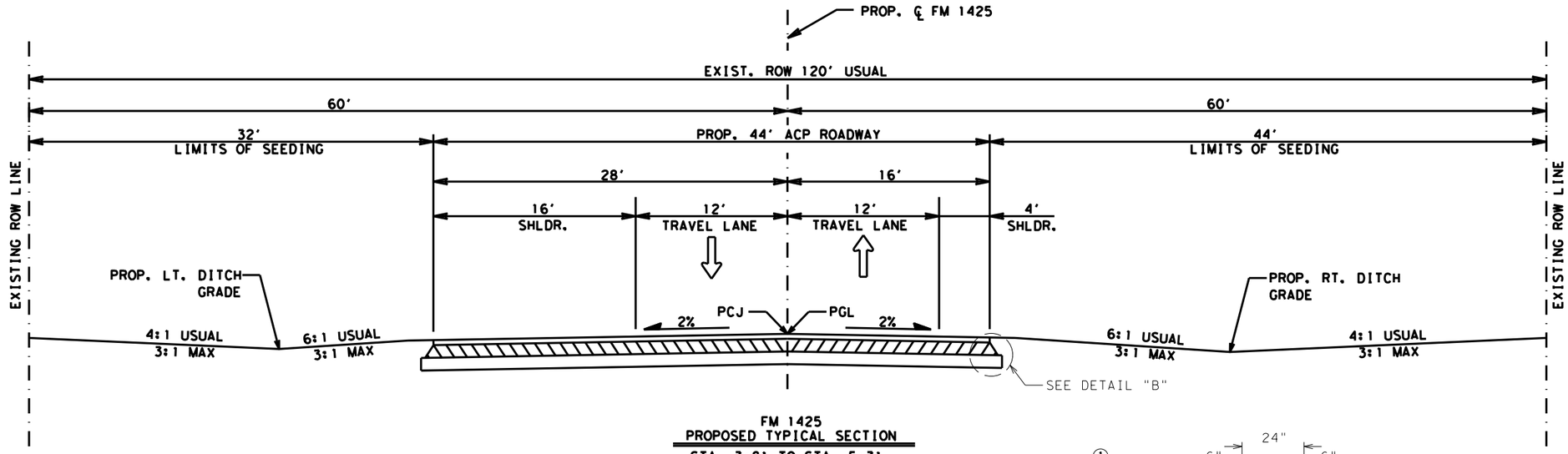
A STATION IS EQUIVALENT TO 100 FT.

MIN. COVER OF 5" OF NEW FLEX. BASE WILL BE REQUIRED WHERE SALVAGE IS PART OF FLEXBASE.

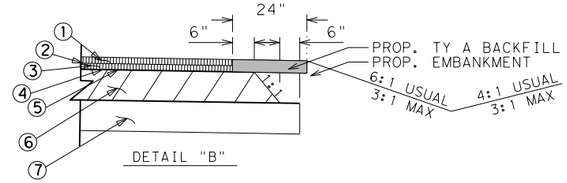
ANY DAMAGE TO EXISTING CROSS CULVERTS OR IRRIGATION CROSSINGS CAUSED BY THE CONTRACTOR AS A RESULT OF HIGHWAY WORK WILL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

LEGEND:
① PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (2ND LIFT)
② PROPOSED BONDING COURSE BETWEEN LIFTS
③ PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (1ST LIFT)
④ PROPOSED 1" COURSE UNDER SEAL
⑤ PROPOSED MC-30 (0.2 GAL/SY)
⑥ PROPOSED 10.0" TY-E GR-4 BASE W/2% CEMENT BY WEIGHT
⑦ PROPOSED 12.0" STABILIZED SUBGRADE W/4% LIME BY WEIGHT

NOTE: SEE PROPOSED PAVEMENT MARKING LAYOUTS FOR MORE INFORMATION.



FM 1425
PROPOSED TYPICAL SECTION
STA. 3+81 TO STA. 5+31
STA. 5+31 TO STA. 7+31 (FROM 44' TO 32')



DETAIL "B"

STATE OF TEXAS
ABEL MARROQUIN III
134752
LICENSED
PROFESSIONAL ENGINEER
P.E.
06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425 PROPOSED TYPICAL SECTION

NOT TO SCALE — SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM 1425

DIST	COUNTY	SHEET NO.
PHR	WILLACY	7

DATE: 6/8/2022 6:17:34 PM
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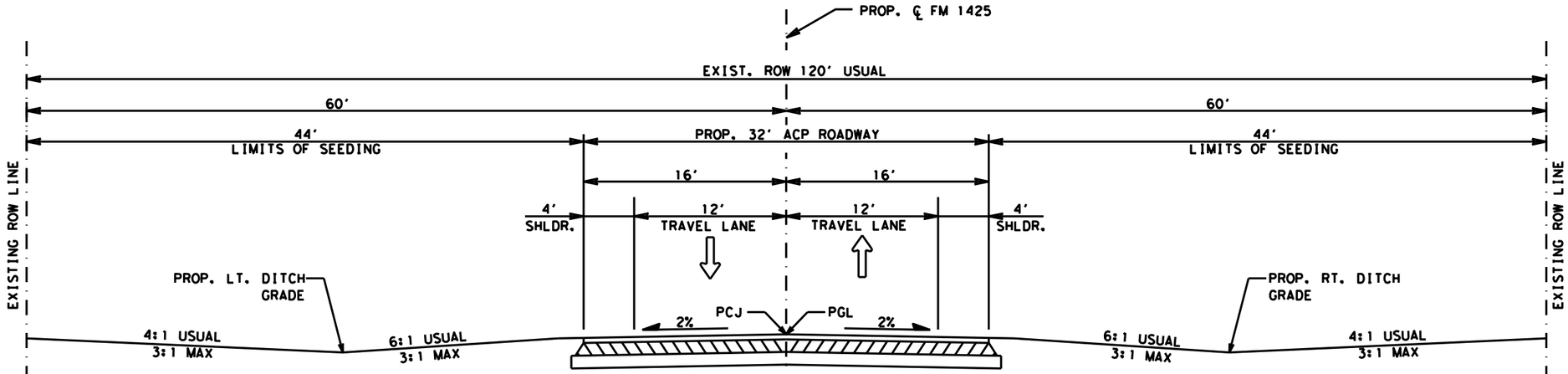
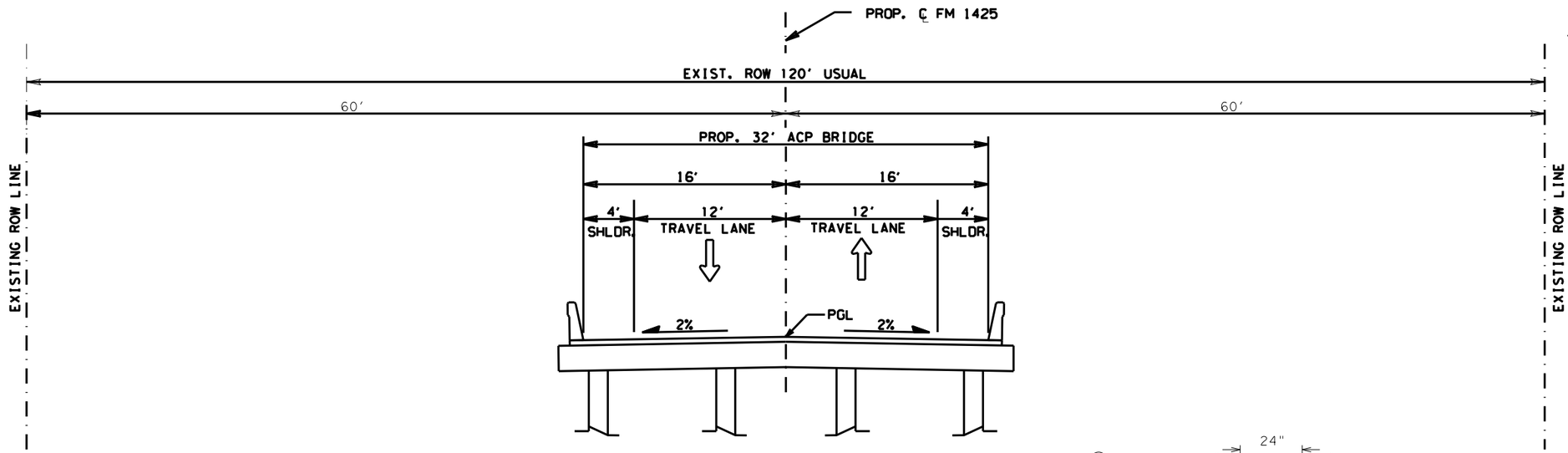
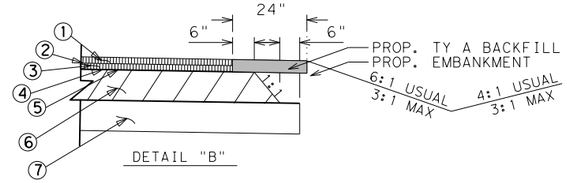


FM 1425
PROPOSED TYPICAL SECTION
STA. 7+31 TO STA. 63+13
STA. 63+68 TO STA. 101+00



FM 1425
TCP TYPICAL SECTION
STA. 63+13 TO STA. 63+68



DETAIL "B"

GENERAL NOTES:
WHEN REQUIRED BY FIXTURES OR UNUSUAL CONDITIONS, THE GOVERNING SLOPES MAY BE VARIED WHEN SPECIFICALLY DIRECTED BY THE ENGINEER.

WHERE POSSIBLE AND UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON STRIPING LINES AS SHOWN ON STRIPING DETAILS.

THE COMPLETE BASE SHALL BE ROLLED BEFORE THE EARTH SHOULDER IS SHAPED AND FINAL COMPACTION SHALL BE DONE OVER BASE AND EDGE OF SHOULDER. ALL GRADING SHALL BE WITHIN THE LIMITS SHOWN.

114 #/SY OF ACP IS EQUIVALENT TO 1" IN DEPTH OF ACP.

A STATION IS EQUIVALENT TO 100 FT.

MIN. COVER OF 5" OF NEW FLEX. BASE WILL BE REQUIRED WHERE SALVAGE IS PART OF FLEXBASE.

ANY DAMAGE TO EXISTING CROSS CULVERTS OR IRRIGATION CROSSINGS CAUSED BY THE CONTRACTOR AS A RESULT OF HIGHWAY WORK WILL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

LEGEND:
① PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (2ND LIFT)
② PROPOSED BONDING COURSE BETWEEN LIFTS
③ PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (1ST LIFT)
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⑤ PROPOSED MC-30(0.2 GAL/SY)
⑥ PROPOSED 10.0" TY-E GR-4 BASE W/2% CEMENT BY WEIGHT
⑦ PROPOSED 12.0" STABILIZED SUBGRADE W/4% LIME BY WEIGHT

NOTE: SEE PROPOSED PAVEMENT MARKING LAYOUTS FOR MORE INFORMATION.

STATE OF TEXAS
ABEL MARROQUIN III
134752
LICENSED
PROFESSIONAL ENGINEER
P.E.
06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425 PROPOSED TYPICAL SECTION

NOT TO SCALE — SHEET 2 OF 2

© 2022	CONT	SECT	JOB	HIGHWAY
	3343	02	016	FM 1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		8

DATE: 6/8/2022 6:19:39 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Projects\334302016\4 - Design\Plan Set\1. General\FM1425_PROPOSED_TYPICAL_SECTION2.dgn

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

2014 SPECS GENERAL NOTES:

****

General Requirements and Covenants to ITEMS 1 thru 9:

For all pits or quarries, comply with the "Texas Aggregate Quarry and Pit Safety Act."

Provide on a weekly basis a list of equipment, including idle equipment, utilized on the project that week.

The 1-800 call services for utility locations do not include TxDOT facilities. Contact the Pharr District Signal Section (956-702-6225) for coordination regarding TxDOT underground lines.

ITEM 2: Instructions to Bidders

Andres Espinoza, P.E., San Benito Area Engineer; Andres.Espinoza@txdot.gov
Gabriel Villareal, P.E., Assist. Area Engineer; Gabriel.Villarreal@txdot.gov

Contractor questions will be accepted through email, phone, and in person by the above individuals. Questions may also be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:

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

All contractor questions will be reviewed by the Engineer. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page.

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

Information found on TxDOT's FTP server will be considered for informational purposes only. Index of /pub/txdot-info/Pre-Letting Responses/Pharr District/21-Pharr District (Construction) (state.tx.us)

ITEM 5: Control of the Work

The responsibility for the construction surveying on this contract will be in accordance with Article 5.9.1., "Method A."

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

Prior to contract letting, bidders may obtain a free computerized transfer of files (from the Engineer's office) that contains the earthwork information. If copies of the actual cross-sections in additional to, or instead of the electronic files are requested, they will be available at the Engineer's office for borrowing by copying companies for the purpose of making copies for the bidder at the bidder's expense.

When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at https://www.txdot.gov/business/resources/highway/bridge/bridge-publications.html#design. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

ITEM 7: Legal Relations and Responsibilities

No significant traffic generator events identified.

ITEM 8: Prosecution and Progress

Working days will be computed and charged in accordance with Article 8.3.1.4. Standard Workweek.

Where road closures or detours around structures are necessary to accomplish proposed work, the removal of existing structures and/or cutting of existing pavement will not be permitted until all precast members for the proposed structure have been cast, tested, and approved for use.

TxDOT is required to provide 10 working days advanced written notice of all proposed bridge widening, rehabilitation, or demolition work to the Texas Department of State Health Services (TDSHS) to allow them the opportunity to both verify information provided regarding asbestos containing materials and abatement and observe the demolition/renovation work. Considering that this notice will be provided TDSHS at the beginning of the project for all affected bridge work based on start and finish dates included in the Contractor's original submitted work schedule, any schedule changes proposed by the Contractor shall be submitted to TxDOT at least 15 days prior to the revised or original start date to accommodate the required coordination with TDSHS.

Prepare progress schedules using the Critical Path Method (CPM).

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

ITEM 100: Preparing Right of Way

Preparation of right of way will be done in accordance with the construction phasing shown on the Traffic Control Plans. Performance of this item will not be allowed outside of the project's current construction phase without prior approval by the Engineer.

Removal of all existing vegetation and trees within the ROW will be subsidiary to prep ROW.

ITEM 132: Embankment

Embankment (DENS CONT) shall be Type C with a max. PI of 40. Material used as embankment material in the top two feet below the bottom of Flexible Base shall meet the following requirements based on preliminary tests and such other tests found necessary by the Engineer.

1. The material shall be such as to produce a well-bonded embankment and shall have a minimum PI of 8 and a maximum PI of 30.

It is the Contractor's responsibility to advise the Engineer of the location of the source sufficiently in advance to avoid delay.

ITEM 134: Backfilling Pavement Edges

Areas to be backfilled shall extend approximately 3-ft out from the edges of the proposed overlay. Final slopes shall be uniform and smooth. The 100-foot station payment includes backfilling of both sides.

Backfill Ty A shall not contain particles more than two inches in size and shall have a minimum PI of 10 and a maximum PI of 20.

Any additional backfill material necessary due to pre-existing edge conditions or to replace existing fill removed during blading operations will not be paid for directly. It will be considered subsidiary to this bid Item.

ITEM 160: Topsoil

Use topsoil as needed and directed by the Project Engineer for select problem areas. Unless otherwise approved by the Project Engineer, use topsoil from approved sources outside the right of way as per standard specifications. Existing topsoil is to be salvaged and retained for re-use on the project as topsoil.

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

ITEM 164: Seeding for Erosion Control

During drill seeding operations, application methods shall be in accordance with the method shown in the Standard Specification Book.

SS-1 Tacking Agent shall be a ratio of 2:1, two (Emulsion) to one (water) and applied at a rate of 0.05 gallons per square yard. The SS-1 Tacking Agent required for Drill Seed operations, will not be paid for directly, but will be subsidiary to Item 164 "Drill Seeding." Watering shall not be used with the Drill Seed Method. A biodegradable tacking agent may be used in lieu of the SS-1 tacking agent in accordance with the manufacturer's recommendations when approved by the Engineer.

Cool Season or Warm Season Grasses shall be included as part of Item 164 (See Table 3 and/or Table 4 in the Standard Specification Book or dates and seed type).

Seed mixture shall be as specified under Item 164.

ITEM 166: Fertilizer

Fertilizer rate is based on a rate of 100 Lbs. of Nitrogen per acre. The Nitrogen-Phosphorous Potassium (NPK) ratio shall include a minimum of 5% Phosphorous and 5% Potassium.

Fertilizer shall be homogenized.

ITEM 247: Flexible Base

Flexible Base Type E will be composed of caliche (argillaceous Limestone, calcareous or calcareous clay particles) and may contain stone, conglomerate, gravel, sand, or granular materials when these materials are in situ with the caliche.

Table 1: Gradation Requirements for Flexible Base

Retained on Sq. Sieve:	Percent Retained
2"	0
½"	20-60
No. 4	40-75
No. 40	70-90
Max. PI	15
Max. Wet Ball PI	15
Wet Ball Mill Max. Amount	50
Min. Comp. Strength PSI	150 at 15 PSI lateral pressure
Triaxial Test	Tex-117-E

The Wet Ball Test (Tex-116-E) shall be run and the Plasticity Index of the material passing the No.40 sieve shall be determined (Wet Ball PI).

Flexible Base (TY E GR 4) caliche shall meet minimum compressive strength specified on Table 1 Gradation Requirements for Flexible Base above.

The percent of density as determined by Compaction Ratio (Tex-113-E) for the new Flexible Base shall be a minimum of 98%.

The Contractor's attention is called to the fact that certain existing and/or proposed structures may be within the limits of the Flexible Base. It shall be the Contractor's responsibility to perform construction operations without damage to these structures.

For water added under Item 247, the sulfate content will not exceed 3000-ppm and the chloride content will not exceed 3000-ppm.

ITEM 251: Reworking Base Courses

Quantities of Flexible Base to be salvaged, shown on the typical sections, are for estimating purposes only. All acceptable base material encountered in existing base is to be salvaged as directed by the Engineer regardless of the quantities involved.

Salvaged base shall be used in the bottom course on any of the proposed roadway and/or turnout sections.

Salvaged base may be used on any of the proposed driveway sections.

All surplus salvage base not used on the project will remain the property of the Contractor, unless otherwise directed by Engineer.

ITEM 260: Lime Treatment (Road-Mixed)

The Contractor's attention is called to the fact that certain existing and/or proposed structures are within the limits of the lime-treated Subgrade. Unless otherwise directed by the Engineer, these structures shall be installed before the final rolling of this Subgrade. It shall be the Contractor's responsibility to perform the proper lime treating operation without damage to these structures.

The slurry method of applying lime will be required, except when the lime is to be added to naturally wet materials as directed by the Engineer.

For this project, the Engineer will direct a random number of lime trucks to be check weighed.

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

The percent of density as determined by Tex-121-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

Proof roll all constructed lime treated subgrade and bases courses in accordance with Item 216, “Proof Rolling.” Correct soft spots as directed. Correction of soft spots in the subgrade or base courses will be at the Contractor’s expense.

Contractor is to place an underseal and/or pavement course as indicated on plans within 14 calendar days of initial prime coat application. Otherwise, reapply prime coat as directed by the Engineer. Reapplication of the prime coat will be at the Contractor’s expense.

Allow the mixture to mellow for a minimum period of 48 hours for all types of lime utilized. Additional time might be required due to sulfate and organic testing requirements, as directed by Engineer.

ITEM 275: Cement Treatment (Road-Mixed)

The percent of density as determined by Tex-120-E for the new and salvage Flexible Base shall be a minimum of 98% for all courses.

Proof roll all constructed cement treated subgrade and bases courses in accordance with Item 216, “Proof Rolling.” Correct soft spots as directed. Correction of soft spots in the subgrade or base courses will be at the Contractor’s expense.

Contractor is to place an underseal and/or pavement course as indicated on plans within 14 calendar days of initial prime coat application. Otherwise, reapply prime coat as directed by the Engineer. Reapplication of the prime coat will be at the Contractor’s expense.

ITEM 3096: Asphalts, Oils, and Emulsions

Temporary ramps/detours and driveways may use Performance Grade Binder 64-22.

ITEM 301: Asphalt Antistripping Agents

Hydrated Lime shall be added as an Antistripping additive between the rates of 1% minimum and 2.0% maximum by weight for Items 292, 3076, 3077, and 3080. If the Hamburg Wheel Test cannot be met within these limits, Liquid Antistripping agents as approved by the Engineer may be used in conjunction with lime for Items 3076, 3077, and 3080.

ITEM 305: Salvaging, Hauling, and Stockpiling Reclaimable Asphalt Pavement

Stockpile RAP material generated from the project at designated site located at ½ mile south of FM 490 on FM 1425. Ensure this material meets the requirements of Item 305 when stockpiled at above specified location.

ITEM 310: Prime Coat

The Contractor shall exercise diligence in the application of asphalt by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

All existing Flexible Base, which may become exposed by the milling operation, shall be primed at the rate of 0.2 Gal/SY.

Do not apply subsequent courses over the initial prime coat no earlier than 12 hours after the prime coat was applied, unless otherwise authorized or directed by the Engineer.

ITEM 316: Seal Coat

In addition to cleaning by brooming of paved surfaces to be sealed as required by this Item, blading may also be necessary to clean dirt and grass from edges of the pavement and/or turnout areas. The cost of this blading will not be paid for directly but will be considered subsidiary to the various bid Items of the project.

The type and grade of asphalt as shown on the plans and/or as directed by the Engineer, shall be used on these projects. Asphalt cement will be used during the warm season. An emulsified asphalt will be used during the cooler season if permitted in writing by the Engineer. The emulsified asphalt, if used, shall be HFRS 2P. Estimated quantities shown for the bid Item is based on an average of the estimated rates of application for asphaltic cement and emulsified asphalt. These rates should be used for estimating and comparison purposes only.

The one or two-course surface treatment shall be in place for a sufficient period of time in the opinion of the Engineer, for the surface treatment to properly dry and cure before placing the Asphaltic Concrete Pavement.

Traffic will not be permitted on the surface treatment unless authorized by the Engineer.

When emulsified asphalt is used, do not apply subsequent courses over the surface treatment any earlier than the day after the surface treatment was applied, unless otherwise authorized or directed by the Engineer.

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

Contractor is to place ACP layer(s) as indicated on plans within 14-calendar days of seal coat placement unless otherwise directed by the Engineer.

ITEM 3077: Superpave Mixtures

The Contractor shall exercise diligence in the application of "Bonding Course" by the use of flagging and rolling procedures to keep from spraying or splattering the traveling public with asphaltic material.

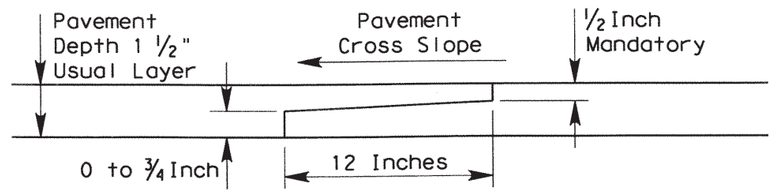
Blading (not to exceed more than 3-ft from the pavement edge) may also be necessary to clean dirt and grass from pavement edges and turnout areas as work under this bid Item. The cost of this blading will not be paid for directly but shall be considered subsidiary to this bid Item.

A portion of RAP generated from this project will remain the property of the State. This quantity can be found on the Estimate and Quantity Tables under Item 305 or Item 354.

Level-up will be placed before the surface course. An asphaltic concrete spreading and finishing machine and/or motor graders; when approved by the Engineer may be used to place the ACP level-up.

Aggregates used on shoulders and ramps are required to meet SAC requirements.

All unconfined longitudinal joints shall be constructed with a joint maker providing a maximum ½-inch vertical edge and a minimum 6:1 edge taper or as approved by the Engineer. The Engineer may waive this requirement when no impacts to the traveling public are foreseen.



NOTCHED WEDGE JOINT

The engineer may allow for variances to the dimensions shown.

Public and private driveways need to have a smooth vertical transition between the edge of pavement and the existing driveways. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 3077.

The use of RAP and RAS (recycled asphalt shingles) will not be allowed as part of the mix design for the final riding surface.

Use a release agent from the Department's MPL to clean and to coat the inside of truck beds for hauling equipment. Hauling equipment shall be cleaned prior to hauling material to job site. Submit a copy of the bill of lading to the Engineer as part of the QCP. Ensure the pavement is free from any spillage of hydraulic oil or diesel from construction equipment. The Department may reject trucks that contain any foreign material and suspend production if the pavement is contaminated by any pollutants mentioned above.

The percentage of RAS used in the total mix shall not exceed 3% when allowed.

SAC B aggregate must have material properties that require 10 or less on the magnesium sulfate soundness test and 20 or less on the Micro-Deval test.

ITEM 3084 – Bonding Course

The minimum application rates are listed in Table BC.

The target shear bond strengths are listed in Table BCS. The informational test cores shall be taken once a shift for first 5 lots of placement or a change to placement method of bonding course, bonding material, or hot mix material. The remaining informational test cores shall be taken once every 3 lots for surface mix. Informational tests are not required for non-surface mix beyond the first 5 lots unless there is a change to placement method of bonding course, bonding material, or hot mix material. Results from these informational tests will not be used for specification compliance.

Table BC

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

Table BCS (For Informational Tests)

Material	Target Shear Bond Strength (Tex-249-F psi)
SMA – Stone-Matrix Asphalt	60.0
All Other Materials	40.0

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

ITEM 354: Planing and Texturing Pavement

Contractor is to place seal coat or ACP layer(s) as indicated on plans within 14-calendar days of planing/milling operation unless otherwise directed by the Engineer.

All planing/milling operation drop offs greater than 1-inch need to have a 3:1 slope taper unless otherwise directed by the Engineer. The cost of the 3:1 slope taper is subsidiary to Item 354.

All planing/milling material; RAP (recycled asphalt pavement) from this project will remain the property of the State unless otherwise noted in the plans and/or as directed by the Engineer. Stockpile material generated from the project at designated site located at ½ mile south of FM 490 on FM 1425.

ITEM 400: Excavation and Backfill for Structures

If the Contractor elects to cut pavement (existing/detour) for structural work beyond that required by the construction phasing shown in the plans and approved by the Engineer, it shall be restored at his expense and backfilled to its original condition or better in accordance with Item 400.

Unless shown otherwise in the plans, use a 1-ft depth for Item 400 Structural Excavation (Special) for gravel bedding needed below drainage structures with unstable material.

Structural Excavation Special (Gravel):

Use durable natural stone when tested in accordance with Tex-411-A, has weight loss of no more than 18% after 5 cycles of magnesium sulfate solution. Provide gravel conforming to an aggregate Grade No. 1 as shown on Table 4 of Article 421.2.

ITEM 421: Hydraulic Cement Concrete

Provide Sulfate Resistant Concrete for all concrete piling and drilled shafts.

Provide equipment at the batch plant for determining the free moisture and/or absorption of aggregates in accordance with applicable TXDOT Test.

Provide the following items for concrete batch inspection in accordance with specifications outlined in DMS-10101, "Computer Equipment":

(1) One Desktop Microcomputer or One Laptop Microcomputer
(2) One Integrated Printer/Scanner/Copier/Fax Unit
(3) Contractor-Furnished Software

(4) Hardware

Submit to the Engineer for approval the project locations for all Portland Cement concrete washout areas prior to starting any concrete work.

Fiber Reinforced Concrete is not permitted.

ITEM 427: Surface Finishes for Concrete

Provide surface finishes for concrete as follows:

(1) Bridge overpass and underpass structures – surface area I, opaque sealer coating (color to be determined by the Engineer).
(2) Bridge waterway crossings and bridge class box culvert structures – surface area II, opaque sealer coating (color to be determined by the Engineer).

Concrete traffic barrier/railing (roadway and bridge) and retaining wall coping - opaque sealer coating (color to be determined by the Engineer) to all exposed surfaces.

ITEM 432: Riprap

Provide Class "A" concrete minimum for riprap aprons placed around all box culvert and pipe safety end treatments. Provide ¼-inch thick dummy joints at least every 15-ft for riprap aprons placed around box and pipe culverts.

Do not use fiber reinforced concrete RIPRAP on side slopes equal to or steeper than 6:1 unless approved by the Engineer.

ITEM 467: Safety End Treatment

All Type II SET's shall have riprap, Class "A" minimum, aprons as shown on the plans. The Contractor may submit an alternate precast SET design for approval by the Engineer.

ITEM 502: Barricades, Signs, and Traffic Handling

Shadow vehicles equipped with Truck-Mounted Attenuators are required for traffic handling. See notes for Item 6185: Truck Mounted Attenuator/Trailer Attenuator, for additional references pertaining to the TMAs.

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

Replace/relocate all regulatory signs removed due to construction operations with the same sign on fixed support(s) immediately upon its removal. First obtain Project Engineer approval before removing any regulatory roadway sign. Required flaggers are to be available to direct traffic during sign intermediate down time.

Relocate any Directional Sign Assemblies removed during construction operations immediately upon their removal.

These signs shall be relocated to a location in accordance with the Latest Version of the "Texas Manual on Uniform Traffic Control Devices". In no case will a sign be removed without a replacement sign and support(s) being readily available and a location established. Removal and relocation of these signs required for traffic control will not be paid for directly but shall be considered subsidiary to Item 502.

From the beginning to the end of the project, all traffic control devices need to be in acceptable condition as per the Texas Quality Guidelines for Work Zone Traffic Control Devices.

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 "Safety Contingency" is not intended to be used in lieu of bid Items established by the contract.

Remove and dispose of all litter, debris, objectionable material, excess materials that accumulate at the base of all traffic control devices as directed by the Engineer.

ITEM 504: Field Office and Laboratory

Furnish (1) Field Office (Type C).

The Contractor will furnish a Type D Structure (Asphalt Mix Laboratory) modified by the following.

Laboratory room:

The other room of this building will be used as a laboratory and will include access to a bathroom facility from the interior. The laboratory and bathroom facility will have the walls, ceiling and floor insulated such that the air temperature can always be maintained at 76 degrees Fahrenheit.

Furnish for the Department's use in the asphalt laboratory one (1) desktop computer.

ITEM 506: Temporary Erosion, Sedimentation, and Environmental Controls

Before starting each phase of construction, review with the Engineer the SW3P used for temporary erosion control as outlined on the plans. Before construction, place the temporary erosion and sedimentation control features as shown on the SW3P. Location of Construction Exits are to be approved by the Engineer. After completing earthwork operations, restore and reseed the disturbed areas in accordance with the Department's specifications for permanent or temporary erosion control. Before starting grading operations and during the project duration, place the temporary or permanent erosion control measures to prevent sediment from leaving the right of way.

The Contractor Force Account "Erosion Control Maintenance" that has been established for this project is intended to be utilized for work zone Best Management Practice (BMP) maintenance, to improve the effectiveness of the Environmental Controls that may need maintenance attention and/or require replacement while the project is still under the construction stage. These procedures will be mutually agreed upon by the Engineer and the Contractor's Responsible Person based on weekly or more frequent BMP management reviews on the project. The "Erosion Control Maintenance" is not intended to be used in lieu of bid Items established by the contract.

ITEM 512: Portable Traffic Barrier

During the various construction phases, provide drainage slots in every temporary concrete traffic barrier used for traffic control in order to handle temporary drainage. Provide any additional drainage measures needed as directed by the Engineer.

ITEM 529: Concrete Curb, Gutter, and Combined Curb and Gutter

Before final acceptance of the project, remove discoloration caused by tire marks, mud, asphalt, paint, or other similar material by any method satisfactory to the Engineer to achieve a uniform color and texture of the finished surface exposed to view.

Curb attached to the MBGF thrie-beam transition section will be subsidiary to the MBGF transition.

ITEM 530: Intersections, Driveways, and Turnouts

Prime coat shall meet the requirements of Item 310.

Public and private driveways need to have a smooth vertical transition tie-in between the proposed driveway and the existing driveway. The Contractor is to add a vertical taper if needed which will be subsidiary to Item 530.

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

ITEM 540: Metal Beam Guard Fence

The optional terminal anchor post with the terminal connector will be required as shown on the Metal Beam Guard Fence Standard.

Galvanize the rail elements supplied for this project using a Type II Zinc Coating.

ITEM 542: Removing Metal Beam Guard Fence

Dispose all metal beam guard fence materials unless shown otherwise in the plans.

ITEM 544: Guardrail End Treatments

Label "end treatment type" on backside of unit at time of installation.

ITEM 560: Mailbox Assemblies

Coordinate and verify final mailbox locations with TxDOT and the US Postmaster.

ITEM 585: Ride Quality for Pavement Surfaces

Use Surface Test Type "B" for service roads and ramps.

Quality control results shall be submitted to TxDOT the next working day after each day's paving.

Pavement areas with public turnout intersections that carry major traffic volumes will not be subjected to inertial profiler testing. These areas shall be evaluated using the 10-ft. straightedge.

Diamond grinding shall be used to remove localized roughness.

Use Surface Test Type B pay adjustment schedule 2 to evaluate ride quality of the travel lanes in accordance with Item 585, "Ride Quality for Pavement Surfaces." This includes ramps and service road travel lanes.

ITEMS 636: Signs

Complete sign blanks and panels shall be handled and stored at the job site in such a manner that corners, edges and faces are not damaged. Finished sign blanks shall be stored in either a

weatherproof warehouse or outside and off the ground in a vertical position. All paper, cardboard and chemically treated separators and packaging shall be removed prior to outside storage.

ITEM 644: Small Roadside Sign Assemblies

All signs shall be installed as shown in the plans and in accordance with the current edition of the "Texas Manual on Uniform Traffic Control Devices" and the “Sign Crew Field Book” (SCFB).

All signs shall be erected according to the locations shown on the signing layout sheets except that a sign may be shifted in order to secure a more desirable location. All sign locations will be staked as shown in the plans and as approved. It is the intent of the plans to erect all roadside traffic signs with the sign edge a minimum of 6 feet from the edge of the shoulder, or if none, 12 feet from the edge of the travel lane. In curb and gutter sections, the sign edge shall be a minimum of 2 feet from the face of the curb.

For this project, aluminum type sign blanks as provided for under Item 636 will be required for all proposed signing installed under Item 644. Aluminum sign blanks less than 7.5 square feet shall be 0.08-inch-thick, sign blanks 7.5 to 15 square feet shall be 0.100-inch-thick and sign blanks greater than 15 square feet shall be 0.125 inch thick.

All excess excavation shall be spread uniformly inside the right of way as directed and shall be included in the price of these Items.

Sign types which design details are not shown on the plans shall conform with the latest edition of the Department's "Standard Highway Sign Design for Texas" Manual.

Signs shown to be removed shall include the complete sign installation and separate the sign post at the concrete foundation. The concrete foundation shall be disposed in accordance with this bid Item. Except for concrete foundations, all removed sign panels, sign posts, and hardware shall remain then property of the Department. All removed sign installations shall be completely disassembled. All salvageable sections of sign panels shall be recycled by TxDOT. The removed sign material will be required to be hauled to the maintenance yard closest to the project. No signs shall be removed without prior approval.

Existing signs shown to be removed and relocated within this project shall first be identified in the field before they are removed and relocated to their new installation position as determined in the plans. The complete sign assembly shall be removed and the sign with post shall be separated at the concrete foundation. The concrete foundation shall be disposed off in accordance with this bid Item. No sign shall be removed without prior approval.

All excess excavation shall be spread uniformly inside the right of way as directed and shall be included in the price of this Item.

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

ITEM 658: Delineator and Object Marker Assemblies

Delineator assemblies shall be installed 8 feet from the edge of the shoulder unless restricted by some obstruction, in which case, the delineator assembly shall be placed between 2 and 8 feet from the edge of the shoulder.

Bi-directional object markers shall be in accordance with the D&OM standard sheets. The Contractor is directed to the standards when instructed where and how to install the object markers.

ITEMS 662 and 666: Work Zone Pavement Markings and Retroreflectorized Pavement Markings

All permanent pavement markings and work zone pavement markings for this project under these Items shall be 0.100 inches (100 mil) thick thermoplastic.

Any permanent pavement markings or non-removal work zone pavement markings lacking reflectivity in accordance with the requirements of Tex 828-B, or that fail to meet minimum retro reflectivity requirements for longitudinal pavement markings when required, will be addressed per the requirements of the specification. The roadway will be re-striped at no additional compensation.

Pavement surface preparation for markings and markers will not be paid for directly but shall be considered subsidiary to Item 666.

Prior to any striping operations, an on-site coordination meeting between all the parties involved will be required to review striping details and requirements to ensure quality work.

The beads used on this project shall meet the requirements of Departmental Materials Specification DMS-8290, Glass Traffic Beads Texas Type II & III. Use a 50% Type II/ 50% Type III mix utilizing a double drop system with Type III beads dropped first.

ITEM 677: Eliminating Existing Pavement Markings and Markers

Asphalt and aggregate types and grades shall be as approved in writing when a surface treatment is used to eliminate existing pavement markings.

ITEM 6185: Truck Mounted Attenuator/Trailer Attenuator

In addition to the shadow vehicles with truck mounted attenuator (TMA) that are specified as being required on the traffic control plan for the project, provide 2 additional shadow vehicle(s) with TMA as per TCP (2-2) -18 as detailed on General Note 7 of this standard sheet.

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

Therefore, 3 total shadow vehicles with TMA will be required on this project for the type of work as shown on the plans. The Contractor will be responsible for determining if one or more of his construction operations will be ongoing at the same time and thus determine the total number of TMAs needed for the project.

Project Number:

County: Willacy **Control:** 3343-02-016

Highway: FM 1425

SUMMARY OF ROADWAY PLAN & PROFILE

LOCATION	100 6002	204 6003	247 6225	251 6055	260 6043	260 6084	275 6001	275 6012	305 6067	310 6009	316 6005	316 6486
	PREPARING ROW	SPRINKLING (DUST CONTROL)	FL BS (RDWY DEL)(TY E GR 4)(FNAL POS)	RWRK BS MTL(TY B)(6")(DEN CNT)(ORG POS)	LIME (HYD, COM OR QK)(SLURRY)	LIME TRT (SUBGRADE)(12")	CEMENT	CEMENT TRT (MX EXST MTL & NW BS)(10")	* SALV,HAUL & STKPL RECL ASPH PAV (4.5")	PRIME COAT (MC-30)	ASPH (TIER II)	AGGR (TY-D GR-4P)(SAC-B)
	STA	MG	CY	CY	TON	SY	TON	SY	SY	GAL	GAL	CY
PHASE 1 STEP 1	49.6	200	2810	2565	398	20141	181	18710	15463	3742	5613	151
PHASE 1 STEP 2	49.6	197	2565	2565	387	19541	173	18084	15428	3617	5425	146
PHASE 2												
PROJECT TOTALS	**99.2**	**397**	**5375**	**5130**	**785**	**39682**	**354**	**36794**	**30891**	**7359**	**11038**	**297**

SUMMARY OF ROADWAY PLAN & PROFILE (CONT.)

LOCATION	354 6045	400 6008	3077 6065	3084 6001
	PLANE ASPH CONC PAV (2")	CUT & RESTORE ASPH PAVING	SP-MIXES SP-D SAC-A PG76-22	BONDING COURSE
	SY	SY	TON	GAL
PHASE 1 STEP 1	98	14.22	1550	
PHASE 1 STEP 2	98		1500	
PHASE 2			3050	2497
PROJECT TOTALS	**196**	**14.22**	**6100**	**2497**

SUMMARY OF REMOVAL ITEMS

LOCATION	104 6017	496 6004	496 6007
	REMOVING CONC (DRIVEWAYS)	REMOV STR (SET)	REMOV STR (PIPE)
	SY	EA	LF
TCP - PHASE 1 STEP 1 SHEET 4 OF 5		2	56
SEE DRIVEWAY TABLES	69	8	555
PROJECT TOTALS	**69**	**10**	**611**

* EXISTING RAP MATERIAL TO BECOME PROPERTY OF TXDOT
AND TO BE STOCKPILED 0.5 MILE SOUTH OF FM 490 ON FM 1425
NEW ASPHALTIC MATERIAL 1" = 114#/SY.
ESTIMATED WEIGHT OF FLEX BASE = 3375#/CY COMPACTED DRY WEIGHT.
ESTIMATED WEIGHT OF SUBGRADE = 2970#/CY.
BONDING COURSE RATE = 0.07GAL/SY. BONDING COURSE QUANTITY IS FOR ESTIMATED PURPOSES ONLY
(FINAL RATE SHALL BE DETERMINED IN THE FIELD)
PRIME COAT RATE = 0.2 GAL/SY
ASPH (TIER II) RATE = 0.3 GAL/SY
AGGR = 1 CY/120 SY

SUMMARY OF EXCAVATION & EMBANKMENT

LOCATION	ITEM 110	ITEM 132	ITEM 134
	6001	6006	6001
	EXCAVATION (ROADWAY)	EMBANKMENT (FIN AL)(DENS CONT)(TY C)	BACKFILL (TY A)
	CY	CY	STA
SEE SHEETS 124-125	10,081	5,465	
STA 1+81 - STA 63+13			61.32
STA 63+68 - STA 101+00			37.32
PROJECT TOTAL	10,081	5,465	98.64

SUMMARY OF DRIVEWAYS

LOCATION	ITEM 530		
	6004	6005	6008
	DRIVEWAYS (CONCRETE)	DRIVEWAYS (ACP)	TURNOUTS (ACP)
	SY	SY	SY
SEE DRIVEWAY TABLES	69	967	1,284

Pharr District Central Design

Texas Department of Transportation

FM 1425 QUANTITY SUMMARY SHEETS

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		18

DATE: 12/21/2023 2:30:07 PM
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SUMMARY OF TRAFFIC CONTROL PLAN

LOCATION	502 6001	512 6001	512 6025	512 6049	545 6003	545 6005	545 6019	662 6037	662 6111	677 6001
	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	PORT CTB (MOVE)(SGL SLP)(TY 1)	PORT CTB (REMOVE)(SGL SLP)(TY 1)	CRASH CUSH ATTEN (MOVE & RESET)	CRASH CUSH ATTEN (REMOVE)	CRASH CUSH ATTEN (INSTL)(S)(N)(TL3)	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	ELIM EXT PAV MRK & MRKS (4")
	MO	LF	LF	LF	EA	EA	EA	LF	EA	LF
PHASE 1 STEP 1	6	600					1	9919		14415
PHASE 1 STEP 2	6		600		1			9919		
PHASE 2				600		1			1500	
PROJECT TOTALS	**12**	**600**	**600**	**600**	**1**	**1**	**1**	**19838**	**1500**	14415

LOCATION	6001 6002	6185 6002	6185 6005
	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	EA	DAY	DAY
PROJECT TOTALS	**2**	**184**	**184**

SUMMARY OF BRIDGE & METAL BEAM GUARD FENCE

LOCATION	104 6021	432 6045	451 6024	540 6001	540 6006	542 6001	542 6004	544 6001	544 6003
	REMOVING CONC (CURB)	RIPRAP (MOW STRIP)(4 IN)	RETROFIT RAIL (TY SSTR)	MTL W-BEAM GD FEN (TIM POST)	MTL BEAM GD FEN TRANS (THRIE-BEAM)	REMOVE METAL BEAM GUARD FENCE	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	GUARDRAIL END TREATMENT (INSTALL)	GUARDRAIL END TREATMENT (REMOVE)
	LF	CY	LF	LF	EA	LF	EA	EA	EA
PHASE 1 STEP 1	20	14	67	387.5	2	225	2	2	2
PHASE 1 STEP 2	20	14	67	387.5	2	225	2	2	2
PROJECT TOTALS	**40**	**28**	**134**	**775**	**4**	**450**	**4**	**4**	**4**

Pharr District Central Design

Texas Department of Transportation

FM 1425 QUANTITY SUMMARY SHEETS

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		19

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SUMMARY OF DRAINAGE & IRRIGATION

LOCATION	400 6001	400 6005	402 6001	4216 6001	4216 6002	467 6363	467 6394	467 6395
	STRUCT EXCAV	CEM STABIL BKFL	TRENCH EXCAVATION PROTECTION	THERMOPLASTIC PIPE (PP) (18")	THERMOPLASTIC PIPE (PP) (24")	* SET (TY II) (18 IN) (RCP) (6: 1) (P)	* SET (TY II) (24 IN) (RCP) (6: 1) (C)	* SET (TY II) (24 IN) (RCP) (6: 1) (P)
	CY	CY	LF	LF	LF	EA	EA	EA
SEE CROSS CULVERT DETAIL SHEET	63	40	60		56		2	
SEE DRIVEWAY TABLES				428	240	22		12
PROJECT TOTALS	**63**	**40**	**60**	**428**	**296**	**22**	**2**	**12**

* SET RCP ARE CONNECTING THERMOPLASTIC PIPE.

SUMMARY OF PAVEMENT MARKINGS

LOCATION	658 6014	658 6062	658 6100	666 6042	666 6318	666 6321	666 6343	672 6009	672 6017	672 6018
	INSTL DEL ASSM (D-SW)SZ (BRF)CTB (BI)	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	INSTL OM ASSM (OM-2Z)(WFLX)GN D(BI)	REFL PAV MRK TY I (W)12"(SLD)(100 MIL)	RE PM W/RET REQ TY I (Y)6"(BRK)(100M IL)	RE PM W/RET REQ TY I (Y)6"(SLD)(100M IL)	REF PROF PAV MRK TY I(W)6"(SLD)(100 MIL)	REFL PAV MRKR TY II-A-A	TRAFFIC BUTTON TY Y	TRAFFIC BUTTON TY B
	EA	EA	EA	LF	LF	LF	LF	EA	EA	EA
SEE PM LAYOUTS SHEETS										
SHEET 1 OF 5				24	460	1592	4108	66	320	532
SHEET 2 OF 5			2		600		4800	30		960
SHEET 3 OF 5	6	16		24	550	2088	4668	59	418	542
SHEET 4 OF 5				24	600	700	4668	41	142	822
SHEET 5 OF 5					170	658	1316	17	132	132
PROJECT TOTALS	**6**	**16**	**2**	**72**	**2380**	**5038**	**19560**	**213**	**1012**	**2988**

SUMMARY OF MAILBOXES

LOCATION	ITEM 560 6014
	⊙ MAILBOX INSTALL-S (TWG-POST) (TY 4)
	EA
SEE P&P SHEETS	
SHEET 2 OF 9	1
SHEET 3 OF 9	3
SHEET 7 OF 9	1
PROJECT TOTAL	5

⊙ CONTRACTOR SHALL PROVIDE NEW MAILBOXES AS REQUIRED.

Pharr District Central Design

Texas Department of Transportation

FM 1425 QUANTITY SUMMARY SHEETS

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		20

DATE: 12/21/2023 2:30:08 PM
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SUMMARY OF SW3P ITEMS

LOCATION	160 6005	164 6035	164 6041	168 6001	506 6021	506 6024	506 6038	506 6039	506 6041	506 6043	166 6001
	FURNISHING AND PLACING TOPSOIL	DRILL SEEDING (PERM) (RURAL) (CLAY)	DRILL SEEDING (TEMP) (WARM)	# VEGETATIVE WATERING	CONSTRUCTION EXITS (INSTALL) (TY 2)	CONSTRUCTION EXITS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)	⊗ FERTILIZER
	CY	SY	SY	MG	SY	SY	LF	LF	LF	LF	AC
SEE SW3P LAYOUT SHEETS											
SHEET 1 OF 5	10	20386	20386	328	156	156	720	720	720	720	4.21
SHEET 2 OF 5	10	21901	21901	418			880	880	880	880	4.53
SHEET 3 OF 5	10	22316	22316	412			880	880	880	880	4.61
SHEET 4 OF 5	10	23226	23226	419			600	600	600	600	4.80
SHEET 5 OF 5	10	5727	5727	104	156	156	80	80	80	80	1.18
PROJECT TOTALS	**50**	**93556**	**93556**	**1681**	**312**	**312**	**3160**	**3160**	**3160**	**3160**	**19.33**

⊗ FOR CONTRACTORS INFORMATION ONLY, NON-PAY ITEM
VEGETATIVE WATERING APPLICATION RATE= 88,300 GAL/AC/CYCLE @ 13 CYCLES.
FERTILIZER APPLICATION RATE= 500 LB/ACRE

SUMMARY OF SIGNING ITEMS

LOCATION	636 6001	644 6027	644 6030	644 6076
	ALUMINUM SIGNS (TY A)	IN SM RD SN SUP&AM TYS80(1)SA(P)	IN SM RD SN SUP&AM TYS80(1)SA(T)	REMOVE SM RD SN SUP&AM
	SF	EA	EA	EA
SEE SIGNING LAYOUT SHEETS				
SHEET 1 OF 5	70	5	4	9
SHEET 2 OF 5	8	2	0	2
SHEET 3 OF 5	40	1	4	5
SHEET 4 OF 5	35	2	3	5
SHEET 5 OF 5	14	2	0	2
PROJECT TOTALS	**167**	**12**	**11**	**23**

Pharr District Central Design

Texas Department of Transportation

FM 1425 QUANTITY SUMMARY SHEETS

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		21

DATE: 12/21/2023 2:30:09 PM
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Baseline Station	Cut Shrink Swell Factor	Station Cut Area	Station Cut Volume	Adjusted Station Cut	Fill Shrink Swell Factor	Station Fill Area	Station Fill Volume	Adjuste Station Fill	Mass Ordinate
1+81.0000	1	31.3462	0	0	1	18.0713	0	0	
Station Total:				0				0	0
2+00.0000	1	29.637	21	21	1	19.0266	13	13	
Station Total:				21				13	8
3+00.0000	1	30.3383	111	111	1	18.7311	70	70	
Station Total:				111				70	50
4+00.0000	1	31.1569	114	114	1	14.8328	62	62	
Station Total:				114				62	101
5+00.0000	1	28.6543	111	111	1	16.3066	58	58	
Station Total:				111				58	154
6+00.0000	1	24.3054	98	98	1	16.0196	60	60	
Station Total:				98				60	193
7+00.0000	1	18.6333	80	80	1	19.7043	66	66	
Station Total:				80				66	206
8+00.0000	1	20.6562	73	73	1	21.7143	77	77	
Station Total:				73				77	202
9+00.0000	1	17.476	71	71	1	17.4803	73	73	
Station Total:				71				73	200
10+00.0000	1	16.0918	62	62	1	18.3907	66	66	
Station Total:				62				66	196
11+00.0000	1	15.2845	58	58	1	23.1509	77	77	
Station Total:				58				77	177
12+00.0000	1	10.2044	47	47	1	29.9824	98	98	
Station Total:				47				98	126
13+00.0000	1	9.6134	37	37	1	29.2768	110	110	
Station Total:				37				110	53
14+00.0000	1	10.1653	37	37	1	27.6471	105	105	
Station Total:				37				105	-16
15+00.0000	1	8.6326	35	35	1	29.251	105	105	
Station Total:				35				105	-87
16+00.0000	1	5.5775	26	26	1	31.5031	113	113	
Station Total:				26				113	-173

CONTINUE TO SHEET 2 OF 7

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FM 1425 EARTHWORK SUMMARY SHEET

SHEET 1 OF 7

© 2022	CONT	SECT	JOB	HIGHWAY
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DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		22

DATE: 6/8/2022 4:12:15 PM
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Baseline Station	Cut Shrink Swell Factor	Station Cut Area	Station Cut Volume	Adjusted Station Cut	Fill Shrink Swell Factor	Station Fill Area	Station Fill Volume	Adjuste Station Fill	Mass Ordinate
17+00.0000	1	6.8853	23	23	1	30.4428	115	115	
Station Total:				23				115	-264
18+00.0000	1	7.0927	26	26	1	28.5391	109	109	
Station Total:				26				109	-348
19+00.0000	1	5.1818	23	23	1	31.8425	112	112	
Station Total:				23				112	-437
20+00.0000	1	3.9625	17	17	1	34.6215	123	123	
Station Total:				17				123	-543
21+00.0000	1	13.2596	32	32	1	12.0938	87	87	
Station Total:				32				87	-598
22+00.0000	1	11.2872	45	45	1	13.6049	48	48	
Station Total:				45				48	-600
23+00.0000	1	11.2036	42	42	1	13.5999	50	50	
Station Total:				42				50	-609
24+00.0000	1	8.7322	37	37	1	12.7605	49	49	
Station Total:				37				49	-620
25+00.0000	1	10.8854	36	36	1	13.4822	49	49	
Station Total:				36				49	-633
26+00.0000	1	18.8079	55	55	1	10.1704	44	44	
Station Total:				55				44	-622
27+00.0000	1	15.3319	63	63	1	5.8189	30	30	
Station Total:				63				30	-588
28+00.0000	1	13.5985	54	54	1	8.7585	27	27	
Station Total:				54				27	-561
29+00.0000	1	20.5454	63	63	1	7.415	30	30	
Station Total:				63				30	-528
30+00.0000	1	13.8648	64	64	1	9.3481	31	31	
Station Total:				64				31	-495
31+00.0000	1	37.0678	94	94	1	6.8662	30	30	
Station Total:				94				30	-431
32+00.0000	1	11.3066	90	90	1	23.647	57	57	
Station Total:				90				57	-398

CONTINUE TO SHEET 3 OF 7

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FM 1425 EARTHWORK SUMMARY SHEET

DS:	CK:	CONT	SECT	JOB	HIGHWAY
		3343	02	016	FM1425
DW:	CK:	DIST	COUNTY		SHEET NO.
		PHR	WILLACY		23

Baseline Station	Cut Shrink Swell Factor	Station Cut Area	Station Cut Volume	Adjusted Station Cut	Fill Shrink Swell Factor	Station Fill Area	Station Fill Volume	Adjuste Station Fill	Mass Ordinate
33+00.0000	1	14.581	48	48	1	23.4086	87	87	
Station Total:				48				87	-437
34+00.0000	1	53.7913	127	127	1	4.1425	51	51	
Station Total:				127				51	-362
35+00.0000	1	16.7121	131	131	1	24.7714	54	54	
Station Total:				131				54	-285
36+00.0000	1	16.9526	62	62	1	30.0966	102	102	
Station Total:				62				102	-324
37+00.0000	1	16.3777	62	62	1	32.2116	115	115	
Station Total:				62				115	-378
38+00.0000	1	14.4065	57	57	1	22.8501	102	102	
Station Total:				57				102	-422
39+00.0000	1	12.1659	49	49	1	17.5467	75	75	
Station Total:				49				75	-448
40+00.0000	1	14.6238	50	50	1	16.9821	64	64	
Station Total:				50				64	-462
41+00.0000	1	15.5086	56	56	1	17.228	63	63	
Station Total:				56				63	-470
42+00.0000	1	17.2671	61	61	1	14.9012	59	59	
Station Total:				61				59	-469
43+00.0000	1	14.7415	59	59	1	14.1695	54	54	
Station Total:				59				54	-463
44+00.0000	1	11.0156	48	48	1	17.4138	58	58	
Station Total:				48				58	-474
45+00.0000	1	14.2862	47	47	1	17.8378	65	65	
Station Total:				47				65	-493
46+00.0000	1	13.5879	52	52	1	19.4347	69	69	
Station Total:				52				69	-510
47+00.0000	1	13.7935	51	51	1	19.6339	72	72	
Station Total:				51				72	-532
48+00.0000	1	29.5631	80	80	1	10.3324	55	55	
Station Total:				80				55	-507

CONTINUE TO SHEET 4 OF 7

06/09/2022

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FM 1425 EARTHWORK SUMMARY SHEET

SHEET 3 OF 7

DS:	CK:	CONT	SECT	JOB	HIGHWAY
		3343	02	016	FM1425
DW:	CK:	DIST	COUNTY		SHEET NO.
		PHR	WILLACY		24

DATE: 6/8/2022 4:12:17 PM
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Baseline Station	Cut Shrink Swell Factor	Station Cut Area	Station Cut Volume	Adjusted Station Cut	Fill Shrink Swell Factor	Station Fill Area	Station Fill Volume	Adjuste Station Fill	Mass Ordinate
49+00.0000	1	10.6776	75	75	1	14.1211	45	45	
Station Total:				75				45	-478
50+00.0000	1	50.0516	112	112	1	17.3955	58	58	
Station Total:				112				58	-423
51+00.0000	1	17.803	126	126	1	25.0814	79	79	
Station Total:				126				79	-376
52+00.0000	1	17.777	66	66	1	26.1463	95	95	
Station Total:				66				95	-405
53+00.0000	1	14.5678	60	60	1	24.3358	93	93	
Station Total:				60				93	-439
54+00.0000	1	15.9092	56	56	1	24.2057	90	90	
Station Total:				56				90	-472
55+00.0000	1	15.1035	57	57	1	23.4093	88	88	
Station Total:				57				88	-503
56+00.0000	1	19.5953	64	64	1	21.3464	83	83	
Station Total:				64				83	-522
57+00.0000	1	20.0158	73	73	1	20.7527	78	78	
Station Total:				73				78	-526
58+00.0000	1	15.1212	65	65	1	20.0057	75	75	
Station Total:				65				75	-537
59+00.0000	1	18.9633	63	63	1	20.3912	75	75	
Station Total:				63				75	-549
60+00.0000	1	33.0648	96	96	1	20.6612	76	76	
Station Total:				96				76	-528
61+00.0000	1	29.3735	116	116	1	26.6871	88	88	
Station Total:				116				88	-500
62+00.0000	1	88.7928	219	219	1	23.3523	93	93	
Station Total:				219				93	-374
63+00.0000	1	0	164	164	1	0	43	43	
Station Total:				164				43	-253
64+00.0000	1	0	0	0	1	0	0	0	
Station Total:				0				0	-253

CONTINUE TO SHEET 5 OF 7

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FM 1425 EARTHWORK SUMMARY SHEET

DS:	CK:	CONT	SECT	JOB	HIGHWAY
		3343	02	016	FM1425
DW:	CK:	DIST	COUNTY		SHEET NO.
		PHR	WILLACY		25

Baseline Station	Cut Shrink Swell Factor	Station Cut Area	Station Cut Volume	Adjusted Station Cut	Fill Shrink Swell Factor	Station Fill Area	Station Fill Volume	Adjuste Station Fill	Mass Ordinate
65+00.0000	1	56.1388	104	104	1	26.389	49	49	
Station Total:				104				49	-198
66+00.0000	1	132.5516	349	349	1	12.7114	72	72	
Station Total:				349				72	79
67+00.0000	1	100.0998	431	431	1	9.5155	41	41	
Station Total:				431				41	469
68+00.0000	1	66.736	309	309	1	11.9887	40	40	
Station Total:				309				40	738
69+00.0000	1	56.4127	228	228	1	9.6727	40	40	
Station Total:				228				40	926
70+00.0000	1	59.0346	214	214	1	6.9972	31	31	
Station Total:				214				31	1109
71+00.0000	1	54.3669	210	210	1	6.3126	25	25	
Station Total:				210				25	1294
72+00.0000	1	51.3784	196	196	1	7.0949	25	25	
Station Total:				196				25	1465
73+00.0000	1	47.4789	183	183	1	8.0419	28	28	
Station Total:				183				28	1620
74+00.0000	1	50.6103	182	182	1	7.5277	29	29	
Station Total:				182				29	1773
75+00.0000	1	57.5558	200	200	1	3.4422	20	20	
Station Total:				200				20	1953
76+00.0000	1	59.5532	217	217	1	3.6095	13	13	
Station Total:				217				13	2157
77+00.0000	1	51.3403	205	205	1	7.2605	20	20	
Station Total:				205				20	2342
78+00.0000	1	54.1839	195	195	1	5.7227	24	24	
Station Total:				195				24	2513
79+00.0000	1	54.6278	202	202	1	4.9832	20	20	
Station Total:				202				20	2695
80+00.0000	1	51.3432	196	196	1	6.1612	21	21	
Station Total:				196				21	2871

CONTINUE TO SHEET 6 OF 7

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FM 1425 EARTHWORK SUMMARY SHEET

SHEET 5 OF 7

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		26

DATE: 6/8/2022 4:12:19 PM
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Baseline Station	Cut Shrink Swell Factor	Station Cut Area	Station Cut Volume	Adjusted Station Cut	Fill Shrink Swell Factor	Station Fill Area	Station Fill Volume	Adjuste Station Fill	Mass Ordinate
81+00.0000	1	50.1838	188	188	1	5.2471	21	21	
Station Total:				188				21	3038
82+00.0000	1	47.028	180	180	1	5.9411	21	21	
Station Total:				180				21	3197
83+00.0000	1	40.1989	162	162	1	7.4471	25	25	
Station Total:				162				25	3334
84+00.0000	1	40.7746	150	150	1	8.2573	29	29	
Station Total:				150				29	3455
85+00.0000	1	37.7602	145	145	1	10.5852	35	35	
Station Total:				145				35	3565
86+00.0000	1	34.6391	134	134	1	8.9021	36	36	
Station Total:				134				36	3663
87+00.0000	1	35.7107	130	130	1	9.7945	35	35	
Station Total:				130				35	3759
88+00.0000	1	37.8199	136	136	1	10.2777	37	37	
Station Total:				136				37	3858
89+00.0000	1	35.0369	135	135	1	7.5049	33	33	
Station Total:				135				33	3960
90+00.0000	1	31.0863	122	122	1	7.6412	28	28	
Station Total:				122				28	4054
91+00.0000	1	26.5482	107	107	1	7.0303	27	27	
Station Total:				107				27	4134
92+00.0000	1	25.8001	97	97	1	6.9718	26	26	
Station Total:				97				26	4205
93+00.0000	1	22.5915	90	90	1	5.9997	24	24	
Station Total:				90				24	4270
94+00.0000	1	23.0301	84	84	1	5.2789	21	21	
Station Total:				84				21	4334
95+00.0000	1	19.1735	78	78	1	4.5266	18	18	
Station Total:				78				18	4394
96+00.0000	1	16.7496	67	67	1	4.344	16	16	
Station Total:				67				16	4444

CONTINUE TO SHEET 7 OF 7

STATE OF TEXAS
ABEL MARROQUIN III
134752
LICENSED
PROFESSIONAL ENGINEER
P.E.

06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425 EARTHWORK SUMMARY SHEET

DS:	CK:	CONT	SECT	JOB	HIGHWAY
		3343	02	016	FM1425
DW:	CK:	DIST	COUNTY		SHEET NO.
		PHR	WILLACY		27

Baseline Station	Cut Shrink Swell Factor	Station Cut Area	Station Cut Volume	Adjusted Station Cut	Fill Shrink Swell Factor	Station Fill Area	Station Fill Volume	Adjuste Station Fill	Mass Ordinate
97+00.0000	1	15.5265	60	60	1	6.496	20	20	
Station Total:				60				20	4484
98+00.0000	1	12.277	51	51	1	7.1249	25	25	
Station Total:				51				25	4510
99+00.0000	1	11.6629	44	44	1	5.4384	23	23	
Station Total:				44				23	4531
100+00.0000	1	11.1049	42	42	1	2.2979	14	14	
Station Total:				42				14	4559
101+00.0000	1	22.3016	62	62	1	0.1348	5	5	
Station Total:				62				5	4616
	Grand Total:		10081				5465	5465	

06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425 EARTHWORK SUMMARY SHEET

SHEET 7 OF 7

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
DW: CK:	PHR	WILLACY		28

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Estimate & Quantity Sheet

CONTROLLING PROJECT ID 3343-02-016 **DISTRICT** Pharr **COUNTY** Willacy
HIGHWAY FM 1425

			CONTROL SECTION JOB		**3343-02-016**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00123461**		
			COUNTY		**Willacy**		
			HIGHWAY		**FM 1425**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6002	PREPARING ROW	STA	99.200		99.200	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	69.000		69.000	
	104-6021	REMOVING CONC (CURB)	LF	40.000		40.000	
	110-6001	EXCAVATION (ROADWAY)	CY	10,081.000		10,081.000	
	132-6006	EMBANKMENT (FINAL)(DENS CONT)(TY C)	CY	5,465.000		5,465.000	
	134-6001	BACKFILL (TY A)	STA	98.640		98.640	
	160-6005	FURNISHING AND PLACING TOPSOIL	CY	50.000		50.000	
	164-6035	DRILL SEEDING (PERM) (RURAL) (CLAY)	SY	93,556.000		93,556.000	
	164-6041	DRILL SEEDING (TEMP) (WARM)	SY	93,556.000		93,556.000	
	168-6001	VEGETATIVE WATERING	MG	1,681.000		1,681.000	
	204-6003	SPRINKLING (DUST CONTROL)	MG	397.000		397.000	
	247-6225	FL BS (RDWY DEL)(TY E GR 4)(FNAL POS)	CY	5,375.000		5,375.000	
	251-6055	RWRK BS MTL(TY B)(6")(DEN CNT)(ORG POS)	CY	5,130.000		5,130.000	
	260-6043	LIME (HYD, COM OR QK)(SLURRY)	TON	785.000		785.000	
	260-6084	LIME TRT (SUBGRADE)(12")	SY	39,682.000		39,682.000	
	275-6001	CEMENT	TON	354.000		354.000	
	275-6012	CEMENT TRT (MX EXST MTL & NW BS)(10")	SY	36,794.000		36,794.000	
	305-6067	SALV,HAUL & STKPL RECL ASPH PAV (4.5")	SY	30,891.000		30,891.000	
	310-6009	PRIME COAT (MC-30)	GAL	7,359.000		7,359.000	
	316-6005	ASPH (TIER II)	GAL	11,038.000		11,038.000	
	316-6486	AGGR (TY-D GR-4P)(SAC-B)	CY	297.000		297.000	
	354-6045	PLANE ASPH CONC PAV (2")	SY	196.000		196.000	
	400-6001	STRUCT EXCAV	CY	63.000		63.000	
	400-6005	CEM STABIL BKFL	CY	40.000		40.000	
	400-6008	CUT & RESTORE ASPH PAVING	SY	14.220		14.220	
	402-6001	TRENCH EXCAVATION PROTECTION	LF	60.000		60.000	
	432-6045	RIPRAP (MOW STRIP)(4 IN)	CY	28.000		28.000	
	451-6024	RETROFIT RAIL (TY SSTR)	LF	134.000		134.000	
	467-6363	SET (TY II) (18 IN) (RCP) (6: 1) (P)	EA	22.000		22.000	
	467-6394	SET (TY II) (24 IN) (RCP) (6: 1) (C)	EA	2.000		2.000	
	467-6395	SET (TY II) (24 IN) (RCP) (6: 1) (P)	EA	12.000		12.000	
	496-6004	REMOV STR (SET)	EA	10.000		10.000	
	496-6007	REMOV STR (PIPE)	LF	611.000		611.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	12.000		12.000	
	506-6021	CONSTRUCTION EXITS (INSTALL) (TY 2)	SY	312.000		312.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	312.000		312.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 3343-02-016 **DISTRICT** Pharr **COUNTY** Willacy
HIGHWAY FM 1425

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**3343-02-016**			
		PROJECT ID		**A00123461**			
		COUNTY		**Willacy**			
		HIGHWAY		**FM 1425**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	3,160.000		3,160.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	3,160.000		3,160.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	3,160.000		3,160.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	3,160.000		3,160.000	
	512-6001	PORT CTB (FUR & INST)(SGL SLOPE)(TY 1)	LF	600.000		600.000	
	512-6025	PORT CTB (MOVE)(SGL SLP)(TY 1)	LF	600.000		600.000	
	512-6049	PORT CTB (REMOVE)(SGL SLP)(TY 1)	LF	600.000		600.000	
	530-6004	DRIVEWAYS (CONC)	SY	69.000		69.000	
	530-6005	DRIVEWAYS (ACP)	SY	967.000		967.000	
	530-6008	TURNOUTS (ACP)	SY	1,284.000		1,284.000	
	540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	775.000		775.000	
	540-6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA	4.000		4.000	
	542-6001	REMOVE METAL BEAM GUARD FENCE	LF	450.000		450.000	
	542-6004	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	EA	4.000		4.000	
	544-6001	GUARDRAIL END TREATMENT (INSTALL)	EA	4.000		4.000	
	544-6003	GUARDRAIL END TREATMENT (REMOVE)	EA	4.000		4.000	
	545-6003	CRASH CUSH ATTEN (MOVE & RESET)	EA	1.000		1.000	
	545-6005	CRASH CUSH ATTEN (REMOVE)	EA	1.000		1.000	
	545-6019	CRASH CUSH ATTEN (INSTL)(S)(N)(TL3)	EA	1.000		1.000	
	560-6014	MAILBOX INSTALL-S (TWG-POST) TY 4	EA	5.000		5.000	
	636-6001	ALUMINUM SIGNS (TY A)	SF	167.000		167.000	
	644-6027	IN SM RD SN SUP&AM TYS80(1)SA(P)	EA	12.000		12.000	
	644-6030	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA	11.000		11.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	23.000		23.000	
	658-6014	INSTL DEL ASSM (D-SW)SZ (BRF)CTB (BI)	EA	6.000		6.000	
	658-6062	INSTL DEL ASSM (D-SW)SZ 1(BRF)GF2(BI)	EA	16.000		16.000	
	658-6100	INSTL OM ASSM (OM-2Z)(WFLX)GND(BI)	EA	2.000		2.000	
	662-6037	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	LF	19,838.000		19,838.000	
	662-6111	WK ZN PAV MRK SHT TERM (TAB)TY Y-2	EA	1,500.000		1,500.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	72.000		72.000	
	666-6318	RE PM W/RET REQ TY I (Y)6"(BRK)(100MIL)	LF	2,380.000		2,380.000	
	666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	5,038.000		5,038.000	
	666-6343	REF PROF PAV MRK TY I(W)6"(SLD)(100MIL)	LF	19,560.000		19,560.000	
	672-6009	REFL PAV MRKR TY II-A-A	EA	213.000		213.000	
	672-6017	TRAFFIC BUTTON TY Y	EA	1,012.000		1,012.000	
	672-6018	TRAFFIC BUTTON TY B	EA	2,988.000		2,988.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	14,415.000		14,415.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 3343-02-016 **DISTRICT** Pharr **COUNTY** Willacy
HIGHWAY FM 1425

			CONTROL SECTION JOB		**3343-02-016**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00123461**		
			COUNTY		**Willacy**		
			HIGHWAY		**FM 1425**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	3077-6065	SP MIXES SP-D SAC-A PG76-22	TON	6,100.000		6,100.000	
	3084-6001	BONDING COURSE	GAL	2,497.000		2,497.000	
	4216-6001	THERMOPLASTIC PIPE (PP) (18")	LF	428.000		428.000	
	4216-6002	THERMOPLASTIC PIPE (PP) (24")	LF	296.000		296.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	184.000		184.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	184.000		184.000	
	08	CONTRACTOR FORCE ACCOUNT EROSION CONTROL MAINTENANCE (NON-PARTICIPATING)	LS	1.000		1.000	
		CONTRACTOR FORCE ACCOUNT SAFETY CONTINGENCY (NON-PARTICIPATING)	LS	1.000		1.000	

SEAL COAT MATERIAL SELECTION TABLE

Contractor:
1) Provide materials according to the alternates selected for the roadway tier designations specified at various roadway locations shown on the plans;
2) Alternately supply selected binders from a higher tier, but only if the type of material is allowed for the designated tier; payment will only be made for the tier designated for the pavement;
3) Supply the aggregate type, grade and surface aggregate class that is shown to be allowed with the binder used; and
4) Adhere to the application season selected.

☐ Tier 1: Heavy Use (>5,000 ADT) Use only the selected materials.

	Asphalt Rubber (A-R)	Asphalt Cement (A-C)
Type	☐ A-R Only	☐ A-C Only
Asphalt	☐ A-R Ty II ☐ SP 300-016&039 ☐ A-R Ty III	☐ AC-20-5TR ☐ AC-20XP ☐ AC-15P
Aggregate Type	☐ Ty PA ☐ Ty PB ☐ Ty PC ☐ Ty PD ☐ Ty PE ☐ Ty PL	☐ Ty PA ☐ Ty PB ☐ Ty PC ☐ Ty PD ☐ Ty PE ☐ Ty PL
Aggregate Grade	☐ 3S ☐ 3non-1w ☐ 3 1w ☐ 4S ☐ 4P ☐ SP 302-013	☐ 3S ☐ 4S ☐ 5 ☐ 3non-1w ☐ 4P ☐ 5S ☐ 3 1w ☐ SP 302-1
Aggregate SAC	☐ A ☐ B	☐ A ☐ B

☒ Tier 2: Moderate Use (500-5,000 ADT)

Use this materials or any selected Tier 1 materials combinations of the allowed types

	Asphalt Cement (A-C)	Asphalt Emulsion
Type	☒ A-C Only	☐ Emulsion Only
Asphalt	☒ AC-10-2TR ☒ AC-5 W/2% SBR ☒ AC-10 ☒ AC-10 W/2% SBR ☐ AC-15P	☐ CHFRS-2P ☐ CRS-2P ☐ HFRS-2P ☐ SP 300-016&039
Aggregate Type	☐ Ty PA ☐ Ty PB ☐ Ty PC ☐ Ty PD ☐ Ty PE ☐ Ty PL ☒ Allow uncoated aggregate	☐ Ty A ☐ Ty B ☐ Ty C ☐ Ty D ☐ Ty E ☐ Ty L
Aggregate Grade	☐ 3S ☐ 4S ☐ 5 ☐ 3non-1w ☒ 4P ☐ 5S ☐ 3 1w ☒ SP 302-008	☐ 3S ☐ 4S ☐ 5S ☐ 3non-1w ☐ 4P ☐ 5 ☐ 3 1w ☐ SP 302-013
Aggregate SAC	☐ A ☒ B	☐ A ☐ B

☐ Tier 3: Moderate Use (<500 ADT) Use this materials or any selected Tier 1 or Tier 2 materials combinations of the allowed types

	Asphalt Cement (A-C)	Asphalt Emulsion
Type	☐ A-C Only	☐ Emulsion Only
Asphalt	☐ AC-10-2TR ☐ AC-5 W/2% SBR ☐ AC-20XP ☐ SP 300-016&039 ☐ AC-10 W/2% SBR ☐ AC-15P	☐ CRS-2 ☐ CRS-2H ☐ HFRS-2 ☐ SP 300-016&039
Aggregate Type	☐ Ty PA ☐ Ty PB ☐ Ty PC ☐ Ty PD ☐ Ty PE ☐ Ty PL	☐ Ty A ☐ Ty B ☐ Ty C ☐ Ty D ☐ Ty E ☐ Ty L
Aggregate Grade	☐ 3S ☐ 4S ☐ 5 ☐ 3non-1w ☐ 4P ☐ 5S ☐ 3 1w ☐ SP 302-013	☐ 3S ☐ 4S ☐ ☐ 3non-1w ☐ 4P ☐ 5 ☐ 3 1w ☐ SP 302-013
Aggregate SAC	☐ A ☐ B	☐ A ☐ B

Seasonal Alternates: Use these materials for work in cooler conditions as directed.

☒ CRS-2 ☒ HFRS-2 ☐ CRS-1P ☐ RS-1P ☐ RC-250 ☐ MC-800 ☐ AC-12-5-TR ☐ SP 300-016&032

Seal Coat Seasons: Refer to Item 316 for temperature and weather restrictions.

☒ Season 4: CRP, LRD, PHR	Apr 1 to Sept 30

Texas Department of Transportation
Design Division (Roadway)

SEAL COAT MATERIAL SELECTION TABLE "UNDERSEAL"

FILE: sctable.dgn	DN: TxDOT	CK: AM	DW: BGD	CK:	
©TxDOT June 2011	DIST	FEDERAL AID PROJECT			SHEET
REVISIONS	PHR	FPN			32
September 2020	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	WILLACY		3343	02	016	FM1425

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FM 1425 TRAFFIC CONTROL PLAN GENERAL NOTES & SEQUENCE OF CONSTRUCTION

GENERAL NOTES AND SPECIFICATIONS DATA:

USE A POWER-BROOM WHEN CLEANING THE ROADWAY AS NEEDED.

REMOVE & DISPOSE ALL MATERIAL NOT DEEMED SALVAGEABLE BY THE ENGINEER, UNLESS OTHERWISE SHOWN ON THE PLANS.

ON EXISTING PAVEMENT THAT WILL REMAIN IN PLACE, SAND BLAST OR SURFACE TREAT IN ORDER TO REMOVE EXISTING STRIPING.

DO NOT BLOCK DRAINAGE WHEN HANDLING & STOCKPILING EXCAVATED MATERIAL.

MAINTAIN ACCESS TO DRIVEWAYS AND INTERSECTIONS THROUGH ALL PHASES OF CONSTRUCTION.

MAINTAIN POSITIVE DRAINAGE DURING ALL PHASES OF CONSTRUCTION.

ALWAYS COMPLETE THE PROPOSED DRIVEWAYS DURING THEIR TCP PHASE BEFORE SWITCHING TRAFFIC TO A NEW PHASE UNLESS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES:

AT THE COMMENCEMENT OF THE PROJECT, ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCEPTABLE CONDITION, AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT, AS PER GUIDELINES FOR TEMPORARY TRAFFIC CONTROL DEVICES AND FEATURES.

NOTIFY THE AREA ENGINEER(AE) IN WRITING(E-MAIL IS ACCEPTABLE) ONCE THE TRAFFIC CONTROL PLAN(TCP) AND ALL TRAFFIC CONTROL DEVICES HAVE BEEN INSTALLED AS PER PLANS ON THE PROJECT SO THAT THE DEPARTMENT'S RESPONSIBLE PERSON ACCOMPANIED BY THE CONTRACTOR'S RESPONSIBLE PERSON CAN CONDUCT A NIGHT INSPECTION ON THE SAID TCP AND TRAFFIC CONTROL DEVICES. COMMENCEMENT OF WORK WILL NOT BE AUTHORIZED NOR ALLOWED UNTIL THE AE NOTIFIES THE CONTRACTOR IN WRITING(E-MAIL IS ACCEPTABLE) TO PROCEED WITH THE WORK.

CONTRACTOR SHALL HAVE A SUFFICIENT AMOUNT OF TRAFFIC CONTROL DEVICES IN ACCEPTABLE CONDITION TO REPLACE ANY DAMAGED TRAFFIC CONTROL DEVICE WITHIN 24 HOURS OF NOTIFICATION.

PROVIDE ADDITIONAL SIGNS AND BARRICADES AS NECESSARY TO ADDRESS FIELD CONSTRUCTIBILITY & VISIBILITY. THESE ADDITIONAL SIGNS WILL BE CONSIDERED SUBSIDIARY TO ITEM 502.

REMOVE OR COMPLETELY COVER ALL EXISTING SIGNS WHICH ARE IN CONFLICT WITH THE TRAFFIC CONTROL PLAN.

ADJUST STOP SIGNS AS NEEDED ON INTERSECTING STREETS DURING THE VARIOUS CONSTRUCTION PHASES. DO NOT REMOVE ANY EXISTING STOP SIGNS UNTIL TEMPORARY SIGNS ARE IN PLACE.

COORDINATE THE TRAFFIC CONTROL PLAN AND THE VARIOUS SEQUENCES OF CONSTRUCTION WITH ADJACENT CONSTRUCTION PROJECTS IF APPLICABLE, TO ENSURE THE UNINTERRUPTED AND SAFE FLOW OF TRAFFIC.

NOTIFY THE ENGINEER IN WRITING WHEN MAJOR TRAFFIC CHANGES ARE TO BE MADE. NOTIFICATIONS MUST BE GIVEN A MINIMUM OF THREE WORKING DAYS PRIOR TO THE CHANGE.

ALL WORK ZONE PAVEMENT MARKINGS FOR THIS PROJECT SHALL BE 0.100 INCHES (100 MIL) THICK THERMOPLASTIC.

SAFETY:

PROTECT EXPOSED PITS THAT MUST REMAIN OPEN DURING NON-WORKING HOURS AS PER OSHA REQUIREMENTS.

PROJECT SPECIFIC NOTES

1. INSTALL PROJECT LIMIT SIGNS AND ADVANCE WARNING SIGNS AS SHOWN ON THE TRAFFIC CONTROL PLANS (TCP) AND/OR AS DIRECTED BY THE ENGINEER. INSTALL CROSSROADS BARRICADES/SIGNS AS SHOWN ON THE TCP PLANS OR BC (2)-21. THESE SIGNS SHALL BE ERECTED AND PLACED PRIOR TO COMMENCING ANY CONSTRUCTION AND SHALL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT AND FINAL ACCEPTANCE OF THE PROJECT BY TXDOT. RELOCATE MAILBOXES AND REGULATORY SIGNS AWAY FROM PHASE CONSTRUCTION.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS.
3. EXISTING SIGNS THAT ARE IN CONFLICT WITH THE PROPOSED WORK ZONE SIGNS SHALL BE REMOVED OR COVERED.
4. EXISTING STRIPING THAT IS IN CONFLICT WITH THE PROPOSED WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
5. REFER TO THE PUBLIC AND PRIVATE DRIVEWAY TABLES, PLAN LAYOUT, AND SEQUENCE OF CONSTRUCTION FOR ADDITIONAL INFORMATION REGARDING PROPOSED DRIVEWAYS, RCP'S AND SET'S.
6. CONTRACTOR MUST MAINTAIN ACCESS TO PUBLIC/PRIVATE DRIVEWAYS AND CROSS STREETS DURING CONSTRUCTION USING ALL WEATHER MATERIALS AND MUST COORDINATE WITH AFFECTED PROPERTY OWNERS PRIOR TO INSTALLING CRASH CUSHION OPENINGS FOR ACCESS.
7. CONTRACTOR SHALL TEMPORARILY RELOCATE EXISTING MAILBOXES THAT WILL BE IN CONFLICT WITH THE PROPOSED ROADWAY. TXDOT OR CONSTRUCTION PROJECT MANAGER SHALL COORDINATE WITH THE POSTAL SERVICE OFFICE PRIOR TO THE RELOCATION OF TEMPORARY MAILBOXES.
8. EXCESS SALVAGE MATERIAL WILL BE AVAILABLE TO BE USED FOR THE CORRECTION OF SOFT SPOTS ENCOUNTERED IN THE PROJECT LIMITS OR AS APPROVED BY THE ENGINEER.
9. TO ACCOMMODATE THE VARIOUS PHASES OF CONSTRUCTION, CONTRACTOR WILL BE RESPONSIBLE FOR THE TEMPORARY ADJUSTMENTS AND RELOCATION OF EXISTING SIGNAL HEADS, POLES, PRECAST CONCRETE TRAFFIC BARRIER, SIGNING AND ANY OTHER INCIDENTAL WORK NECESSARY TO PROVIDE FOR PROPER TRAFFIC SIGNAL OPERATION. THE ADJUSTMENTS AND RELOCATIONS WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 502: "BARRICADES, SIGNS AND TRAFFIC HANDLING".
10. NO PHASE OF CONSTRUCTION SHALL START UNTIL COMPLETION OF THE PREVIOUS PHASE, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
11. INSTALLATION OF CULVERT CROSSINGS SHALL OCCUR DURING OFF PEAK HOURS OR AT THE DISCRETION OF THE ENGINEER. ROADWAY MUST BE BACK IN SERVICE AT THE END OF EACH DAY.
12. THE PORTION OF THIS PROJECT WHICH COINCIDES WITH EXISTING ROADS AND/OR PRIVATE DRIVES SHALL BE KEPT OPEN TO TRAFFIC AT ALL TIMES, UNLESS OTHERWISE PROVIDED FOR OR APPROVED BY THE ENGINEER. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN, AT ALL TIMES, (1) ONE-WAY SURFACE ROADWAY LANE FOR LOCAL TRAFFIC ALONG FM 1425 PROJECT LIMITS AS INDICATED ON TCP LAYOUTS. THE CONTRACTOR SHALL DELINEATE TEMPORARY DRIVEWAYS ACROSS THE CONSTRUCTION AREAS WITH TRAFFIC BARRELS OR VERTICAL PANELS AT THE END OF EACH WORK DAY AND WHEN OPERATIONS PERMIT.
13. FOR THE PURPOSES OF THIS TRAFFIC CONTROL PLAN, THE FOLLOWING DEFINITIONS SHALL APPLY:

PEAK HOURS
MON.-FRI. 6:00 A.M. TO 8:30 A.M.
MON.-FRI. 4:00 P.M. TO 7:00 P.M.
OFF-PEAK HOURS
MON.-FRI. 9:00 A.M. TO 4:00 P.M.
NIGHTTIME HOURS
MON.-FRI. 7:00 P.M. TO 6:00 A.M.
WEEKEND HOURS
FRI. 9:00 A.M. TO MON. 6:00 A.M.

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

12/20/2023

Pharr District Central Design

Texas Department of Transportation

FM 1425 TRAFFIC CONTROL PLAN GENERAL NOTES & SEQUENCE OF CONSTRUCTION

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		33

DS: CK: DW: CK:

DATE: 12/19/2023 4:34:26 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Projects\334302016\4 - Design\Plan Set\2. TCP\FM1425_SEQ OF CONST.dgn

FM 1425 TRAFFIC CONTROL PLAN GENERAL NOTES & SEQUENCE OF CONSTRUCTION

PHASE 1 STEP 1-CONSTRUCT EAST SIDE (FROM SH 186 TO FM 490)

1. CONTRACTOR SHALL INSTALL ALL TRAFFIC CONTROL DEVICES, TEMPORARY WORK ZONE PAVEMENT MARKINGS, AND TEMPORARY SIGNS AS SHOWN ON THE TRAFFIC CONTROL PLANS (TCP) AND/OR AS DIRECTED BY THE ENGINEER.
2. CONTRACTOR SHALL INSTALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE THE SW3P LAYOUTS AND ASSOCIATED STANDARDS. THESE DEVICES SHALL REMAIN IN PLACE UNTIL FINAL ACCEPTANCE OF THE PROJECT.
3. CONTRACTOR SHALL RELOCATE EXISTING MAILBOXES THAT WILL BE IN CONFLICT WITH THIS PHASE. EACH MAILBOX SHALL BE REINSTALLED IMMEDIATELY AS TO REDUCE HINDRANCE OF RECEIVAL OF MAIL. CONTRACTOR SHALL COORDINATE WITH THE PERTINENT POST OFFICE OVER THE MOST EFFICIENT LOCATION TO PLACE THE RELOCATED MAILBOXES.
4. COMMENCE WITH CONSTRUCTION OF CULVERT CROSSING UTILIZING OPEN-CUT METHOD FOR FM 1425. THE CONTRACTOR SHALL BACKFILL ALL OPEN-CUT SECTIONS AT THE END OF EACH WORK DAY AND CUT AND RESTORE EXISTING PAVEMENT. THE CULVERT CROSSING MUST BE COMPLETED ON THIS PHASE. REFER TO TCP PHASE 1 STEP 1 FOR THE LOCATION OF CROSSING.
5. CONTINUE WITH CONSTRUCTION OF EAST SIDE OF PROPOSED REHABILITATON AS SHOWN ON THE PLANS. THIS INCLUDES PAVEMENT (EXCLUDING FINAL LIFT OF ACP), DRIVEWAYS, REPLACEMENT OF DRAINAGE CROSSINGS AND SET's, RESHAPING OF DITCHES, SIGNS, METAL BEAM GUARD FENCE(MBGF) AND RETROFIT OF RAIL. THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING DRAINAGE DURING CONSTRUCTION PHASES.
6. EXISTING SIGNS, GUARDRAIL TERMINAL, MBGF, AND THRIE BEAM ARE TO BE REMOVED AND RELOCATED TO THE RAYMONDVILLE MAINTAINANCE OFFICE LOCATED AT 13868 BUSINESS 77, RAYMONDVILLE, TX 78580. BRIDGE IS TO BE MILLED TO BRIDGE DECK AND SEAL COAT TO PROPOSED ELEVATIONS SHOWN IN PLAN AND PROFILE SHEETS IN THIS PHASE. RAIL HEIGHT SHALL REMAIN TO TXDOT STANDARDS.
7. STRIPE TRAVEL LANE FOR TRAFFIC AS SHOWN IN THE TCP LAYOUTS FOR PHASE 1 STEP 1.
8. CONTRACTOR MUST COMPLETE THIS CURRENT STEP BEFORE PROCEEDING TO PHASE 1 STEP 2.

PHASE 1 STEP 2-CONSTRUCT WEST SIDE (FROM SH 186 TO FM 490)

1. CONTRACTOR SHALL INSTALL ALL TRAFFIC CONTROL DEVICES, TEMPORARY WORK ZONE PAVEMENT MARKINGS, AND TEMPORARY SIGNS AS SHOWN ON THE TRAFFIC CONTROL PLANS (TCP) AND/OR AS DIRECTED BY THE ENGINEER.
2. CONTRACTOR SHALL INSTALL EROSION AND SEDIMENT CONTROL DEVICES AS SHOWN ON THE THE SW3P LAYOUTS AND ASSOCIATED STANDARDS. THESE DEVICES SHALL REMAIN IN PLACE UNTIL FINAL ACCEPTANCE OF THE PROJECT.
3. COMMENCE WITH CONSTRUCTION OF WEST SIDE OF PROPOSED REHABILITATON AS SHOWN ON THE PLANS. THIS INCLUDES PAVEMENT (EXCLUDING FINAL LIFT OF ACP), DRIVEWAYS, REPLACEMENT OF DRAINAGE CROSSINGS AND SET's, RESHAPING OF DITCHES, SIGNS, METAL BEAM GUARD FENCE(MBGF) AND RETROFIT OF RAIL. THE CONTRACTOR WILL BE RESPONSIBLE FOR HANDLING DRAINAGE DURING CONSTRUCTION PHASES.
4. EXISTING SIGNS, GUARDRAIL TERMINAL, MBGF, AND THRIE BEAM ARE TO BE REMOVED AND RELOCATED TO THE RAYMONDVILLE MAINTAINANCE OFFICE. BRIDGE IS TO BE MILLED TO BRIDGE DECK AND SEAL COAT TO PROPOSED ELEVATIONS SHOWN IN PLAN AND PROFILE SHEETS IN THIS PHASE. RAIL HEIGHT SHALL REMAIN TO TXDOT STANDARDS.
5. STRIPE TRAVEL LANE FOR TRAFFIC AS SHOWN IN THE TCP LAYOUTS FOR PHASE 1 STEP 2.
6. CONTRACTOR MUST COMPLETE THIS CURRENT STEP BEFORE PROCEEDING TO PHASE 2.

PHASE 2-FINAL LIFT (OVERLAY) & CLEAN-UP

1. PRIOR TO COMMENCEMENT OF OVERLAY OPERATION, THE CONTRACTOR SHALL MAKE EVERY EFFORT TO CLEAN THE EXISTING PAVEMENT SURFACE FROM ANY DEBRIS AND DIRT FROM VEHICLE TRACKING, OR LOOSE AGGREGATE FROM SURFACE TO ENSURE MAXIMUM BONDING OF FINAL LIFT.
2. PLACE FINAL COURSE OF 1.5 INCHES OF SP-D PG76-22 SAC-A ACP TO THE ENTIRE ROADWAY SURFACE IN ACCORDANCE WITH THE PROPOSED TYPICAL SECTIONS. PERMISSIBLE CONSTRUCTION JOINTS SHALL FALL ON THE STRIPING LINES AS SHOWN ON THE PAVEMENT MARKING LAYOUTS.
3. COMPLETED ROADWAY SECTION SHALL BE DELINEATED WITH GUIDE MARKER TABS AND/OR SHORT-TERM TABS AT THE END OF THE WORK DAY DURING OVERLAY OPERATIONS AND SHALL BE PAID FOR UNDER ITEM 662 "WORK ZONE PAVEMENT MARKINGS". TABS SHALL BE PLACED IN ACCORDANCE WITH TXDOT STANDARD "WZ(STPM)-23" TO DELINEATE LANES FOR A MAXIMUM OF 14 DAYS.
4. INSTALL PERMANENT STRIPING IN ACCORDANCE WITH THE PAVEMENT MARKING LAYOUTS AND ALL APPLICABLE STANDARDS. ALL SHORT TERM FLEXIBLE ROADWAY TABS SHALL BE REPLACED AS NEEDED WITHIN THAT 14 DAY PERIOD AT THE CONTRACTORS EXPENSE.
5. INSTALL ANY REMAINING SIGNS IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS ALONG WITH ANY MISCELLANEOUS WORK TO COMPLETE THE PROJECT AS DIRECTED BY THE ENGINEER.
6. RAISED PAVEMENT MARKERS SHALL BE PLACED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS.
7. CONTRACTOR SHALL VERIFY THAT ALL EXISTING MAILBOXES HAVE BEEN REMOVED AND REPLACED.
8. CONTRACTOR SHALL REMOVE ALL EROSION CONTROL DEVICES ONCE SUFFICIENT VEGETATION IS ESTABLISHED AND APPROVED BY THE ENGINEER.
9. PRIOR TO FINAL WRITING ACCEPTANCE, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY STRIPING, BARRICADES, AND SIGNS, EROSION CONTROL DEVICES, MISCELLANEOUS DEBRIS SUCH AS LEFT OVER WORK ZONE TABS. POWER BROOM TO REMOVE ALL LOOSE AGGREGATE/DIRT AND OPEN ALL TRAVEL LANES TO TRAFFIC BUT MUST LEAVE ADVANCE WARNING SIGNS IN PLACE UNTIL FINAL ACCEPTANCE BY THE ENGINEER.

STATE OF TEXAS
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139883
LICENSED
PROFESSIONAL ENGINEER

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12/21/2023

Pharr District Central Design

Texas Department of Transportation

FM 1425 TRAFFIC CONTROL PLAN GENERAL NOTES & SEQUENCE OF CONSTRUCTION

SHEET 2 OF 2

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		34

DATE: 12/19/2023 4:34:27 PM
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R20-3T
48" X 42"

1

G20-10T
60" X 48"

2

G20-9TP
24" X 24"

R20-5T
24" X 30"

R20-5aTP
24" X 12"

3

CW20-1
36" X 36"

4

G20-5T
48" X 24"

G20-6T
48" X 30"

5

CW20-3
36" X 36"

6

CW20-3
36" X 36"

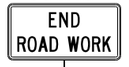
7

CW20-3
36" X 36"

8

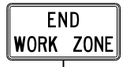
CW20-2
36" X 36"

9



G20-2
36"x18"

10



G20-2bT
36" X 18"

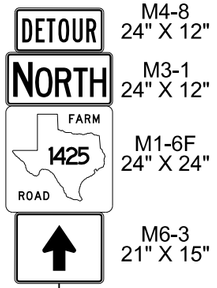
11

R3-2
24"x30"

12

R3-1
24"x30"

13



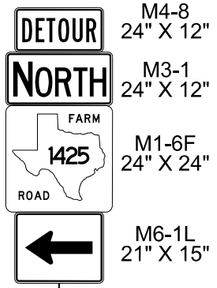
M4-8
24" X 12"

M3-1
24" X 12"

M1-6F
24" X 24"

M6-3
21" X 15"

14



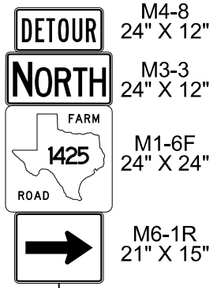
M4-8
24" X 12"

M3-1
24" X 12"

M1-6F
24" X 24"

M6-1L
21" X 15"

15



M4-8
24" X 12"

M3-3
24" X 12"

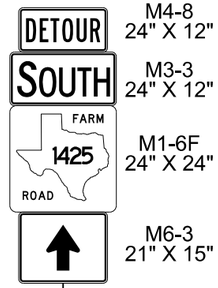
M1-6F
24" X 24"

M6-1R
21" X 15"

16

TY 3 (C) BARRICADE

17



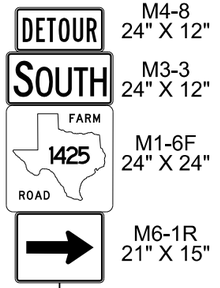
M4-8
24" X 12"

M3-3
24" X 12"

M1-6F
24" X 24"

M6-3
21" X 15"

18



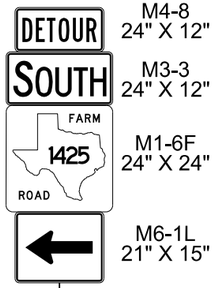
M4-8
24" X 12"

M3-3
24" X 12"

M1-6F
24" X 24"

M6-1R
21" X 15"

19



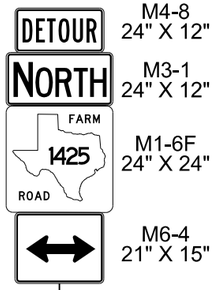
M4-8
24" X 12"

M3-3
24" X 12"

M1-6F
24" X 24"

M6-1L
21" X 15"

20



M4-8
24" X 12"

M3-1
24" X 12"

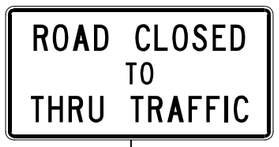
M1-6F
24" X 24"

M6-4
21" X 15"

21

R11-2
48"x30"

22



R11-4
60"x30"

23

M4-8a
24"x18"

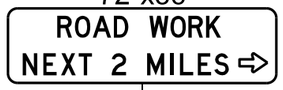
24

R6-1L
36"x12"

25

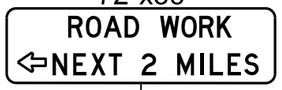
R6-1L
36"x12"

26



G20-1bTR
72"x36"

27



G20-1bTL
72"x36"

28

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

06/09/2022

Pharr District Central Design

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FM 1846
TRAFFIC CONTROL PLAN - SIGN SUMMARY SHEET

NOT TO SCALE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		35

DS: CK: DW: CK:

DATE: 6/8/2022 4:13:02 PM
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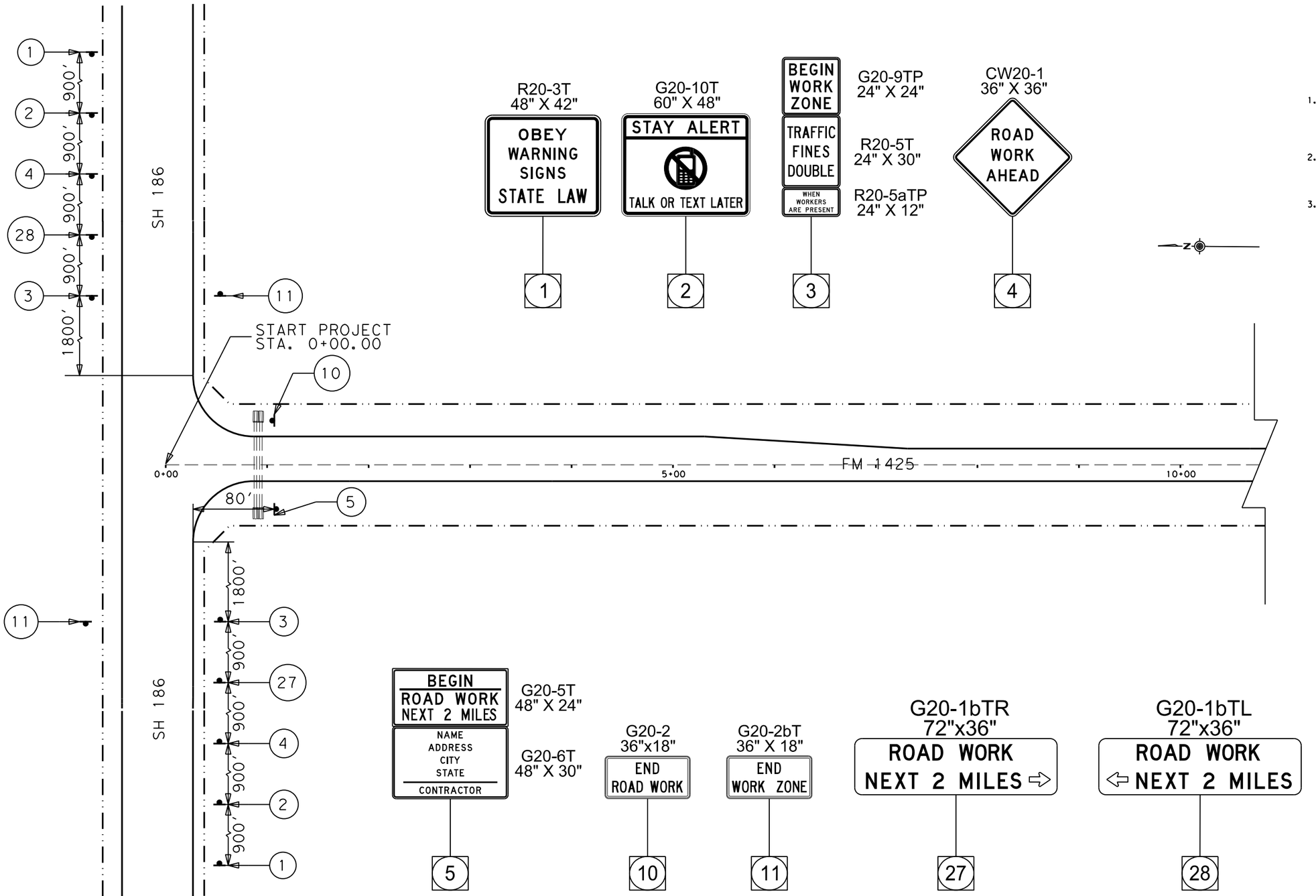

R20-3T
48" X 42"
OBEY WARNING SIGNS STATE LAW
1

G20-10T
60" X 48"
STAY ALERT
TALK OR TEXT LATER
2

BEGIN WORK ZONE
TRAFFIC FINES DOUBLE
WHEN WORKERS ARE PRESENT
G20-9TP
24" X 24"
R20-5T
24" X 30"
R20-5aTP
24" X 12"
3

CW20-1
36" X 36"
ROAD WORK AHEAD
4

BEGIN
ROAD WORK
NEXT 2 MILES
NAME
ADDRESS
CITY
STATE
CONTRACTOR
G20-5T
48" X 24"
G20-6T
48" X 30"
5

G20-2
36"x18"
END
ROAD WORK
10

G20-2bT
36" X 18"
END
WORK ZONE
11

G20-1bTR
72"x36"
ROAD WORK
NEXT 2 MILES ⇨
27

G20-1bTL
72"x36"
ROAD WORK
⇦ NEXT 2 MILES
28

LEGEND

⇨ DIRECTION OF TRAFFIC FLOW

d CONSTRUCTION SIGN

NOTES:

1. PROJECT LIMITS AND ADVANCE WARNING SIGNS SHALL BE IN PLACE BEFORE COMMENCING CONSTRUCTION AND SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION UNTIL THE PROJECT IS COMPLETED AND ACCEPTED BY TXDOT.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS. REFER TO BC(2)-21 STANDARDS FOR SIGN SPACING.
3. EXISTING SIGNS THAT ARE IN CONFLICT WITH THE PROPOSED ADVANCE WARNING SIGNS SHALL BE REMOVED OR COVERED.

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FM 1425 ADVANCE WARNING SIGNS

NOT TO SCALE SHEET 1 OF 2

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
DW: CK:	PHR	WILLACY		36

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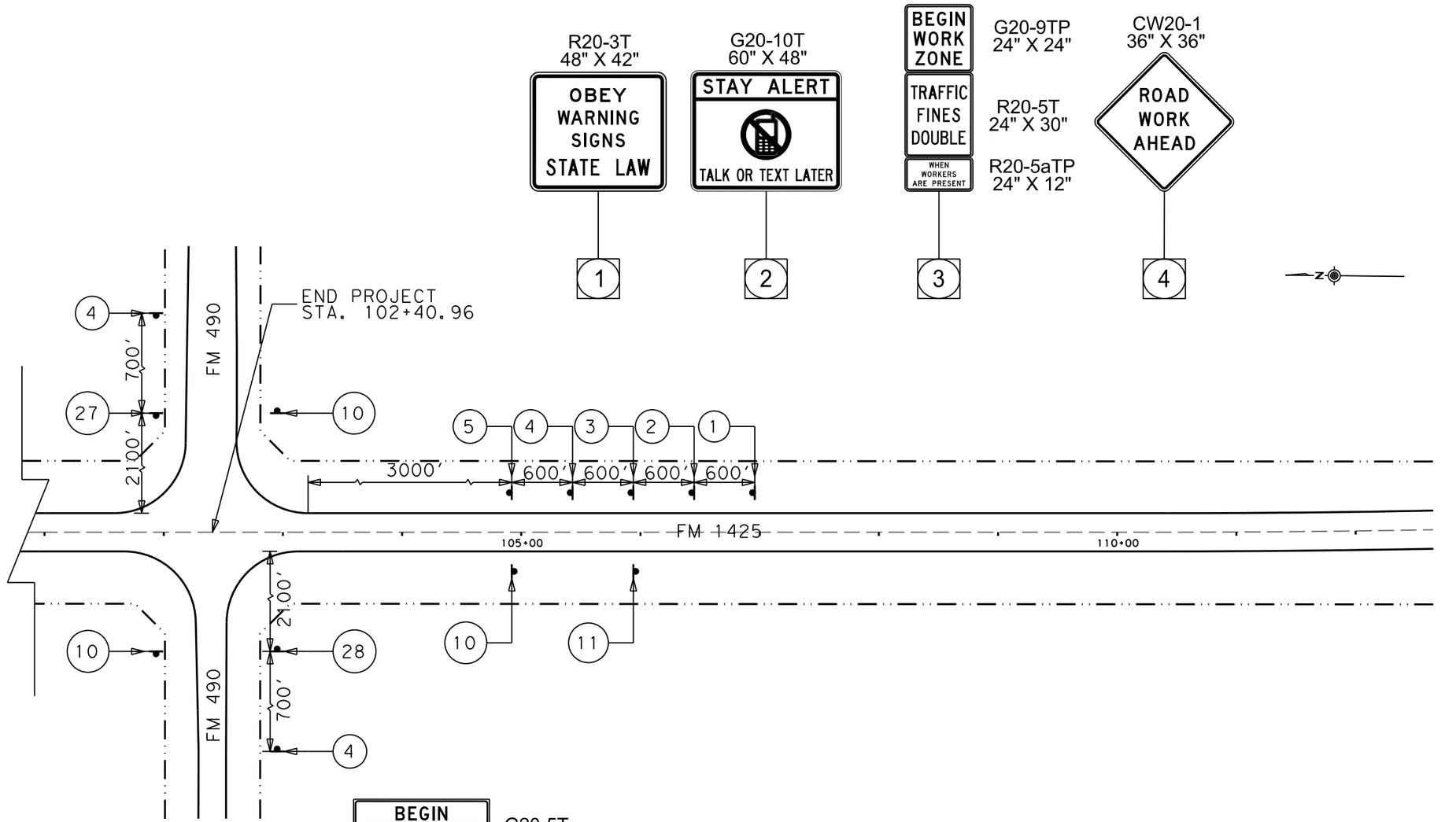

LEGEND

⇨ DIRECTION OF TRAFFIC FLOW

d CONSTRUCTION SIGN

NOTES:

1. PROJECT LIMITS AND ADVANCE WARNING SIGNS SHALL BE IN PLACE BEFORE COMMENCING CONSTRUCTION AND SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION UNTIL THE PROJECT IS COMPLETED AND ACCEPTED BY TXDOT.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS. REFER TO BC(2)-21 STANDARDS FOR SIGN SPACING.
3. EXISTING SIGNS THAT ARE IN CONFLICT WITH THE PROPOSED ADVANCE WARNING SIGNS SHALL BE REMOVED OR COVERED.

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FM 1425 ADVANCE WARNING SIGNS

NOT TO SCALE SHEET 2 OF 2

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		37

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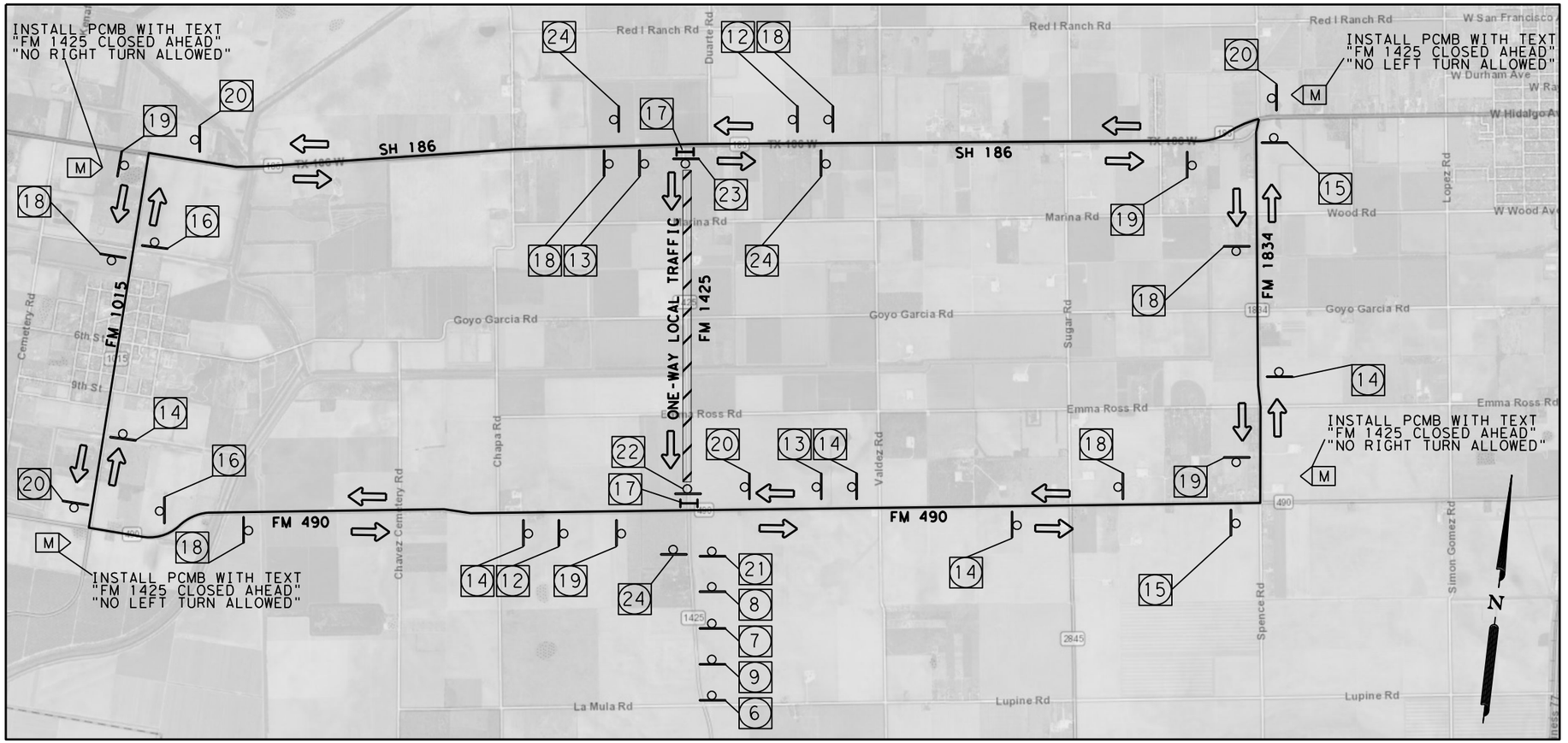
LOC NO.	TCP PHASE	PLAN SHEET NUMBER	LOCATION	STA	TEST LEVEL	DIRECTION OF TRAFFIC (UNI/BI)	FOUNDATION PAD		BACKUP SUPPORT			AVAILABLE SITE LENGTH	CRASH CUSHION									
															MOVE / RESET		L	L	R	R	S	S
							PROPOSED MATERIAL	PROPOSED THICKNESS	DESCRIPTION	WIDTH	HEIGHT		INSTALL	REMOVE	MOVE/ RESET	FROM LOC.#	N	W	N	W	N	W
1	PHASE 1 STEP 1	42	FM 1425 EASTBOUND	61+20	3	UNI	NOTE 1	NOTE 1	PCTB	24"	3'-6"	32'	1								X	
2	PHASE 1 STEP 2	49	FM 1425 WESTBOUND	59+70	3	UNI	NOTE 1	NOTE 1	PCTB	24"	3'-6"	32'			1	1						
3	PHASE 2	49	FM 1425 WESTBOUND	59+70	3	UNI	NOTE 1	NOTE 1	PCTB	24"	3'-6"	32'		1		2						
												TOTALS	1	1	1							

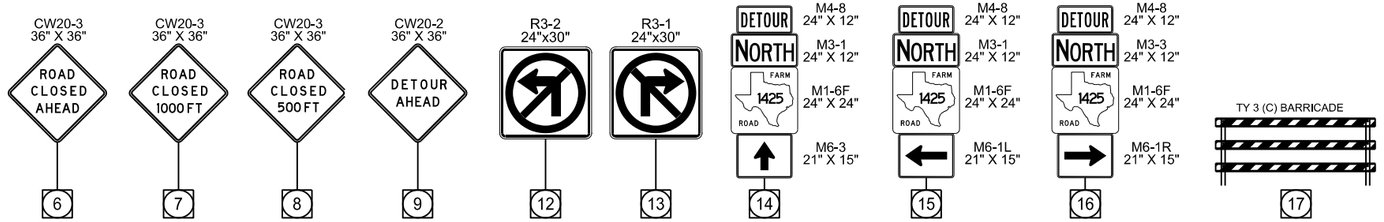
LEGEND:
L=LOW MAINTENANCE
R=REUSABLE
S=SACRIFICIAL
N=NARROW
W=WIDE

NOTE 1: SEE STANDADARD OPTIONS.
FOR DEFINITIONS SEE THE "CRASH CUSHION CATEGORIZATION CHART.PDF" AT THE DESIGN DIVISION (ROADWAY STANDARDS) WEBSITE. USE QUICK LINKS TO ACCESS ATTENUATORS / CRASH CUSHIONS SECTION.
http://www.dot.state.tx.us/insdtdot/orgchart/cmd/cserve/standard/rdwyise.htm

CRASH CUSHION SUMMARY SHEET

FILE: ccss.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		
	PHR	WILLACY		
	STATE AID PROJECT			SHEET NO.
				38





LEGEND

- PROP. CONSTRUCTION AREA
- TRAFFIC SIGN I.D.
- PROP. SIGN
- TY-3 (C) BARRICADE
- DIRECTION OF TRAFFIC
- M — PORTABLE CHANGEABLE MESSAGE BOARD (PCMB)

GENERAL NOTES:

1. REFER TO BC AND TCP STANDARDS FOR SIGN SPACING AND ADDITIONAL SIGNING.

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06/09/2022

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Texas Department of Transportation

FM 1425 DETOUR LAYOUT AT FM 490

NOT TO SCALE — SHEET 1 OF 1

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		39

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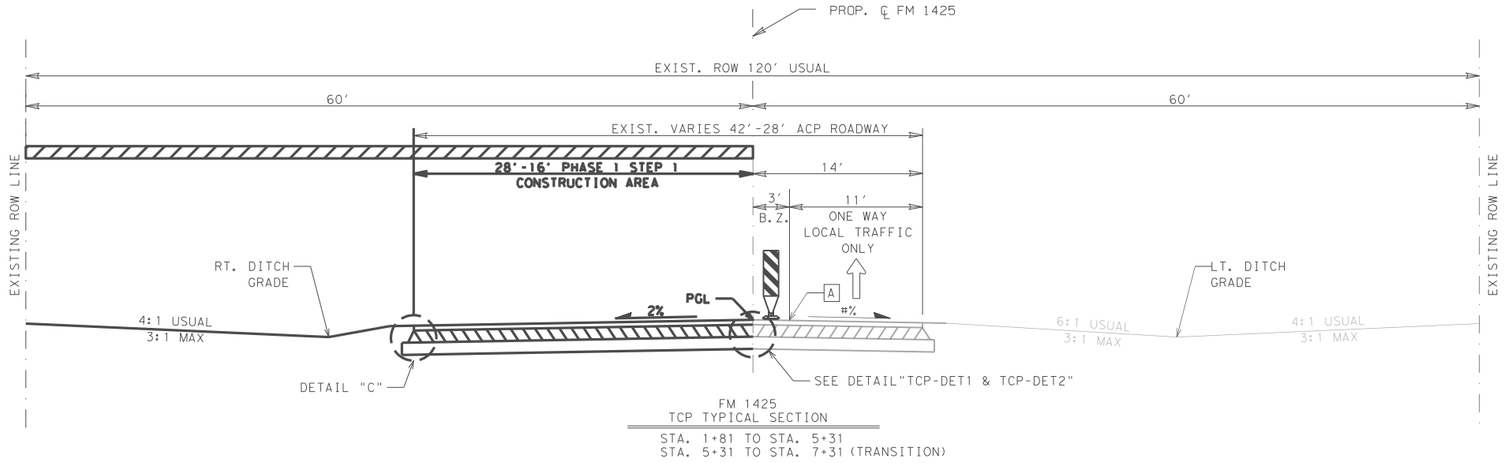
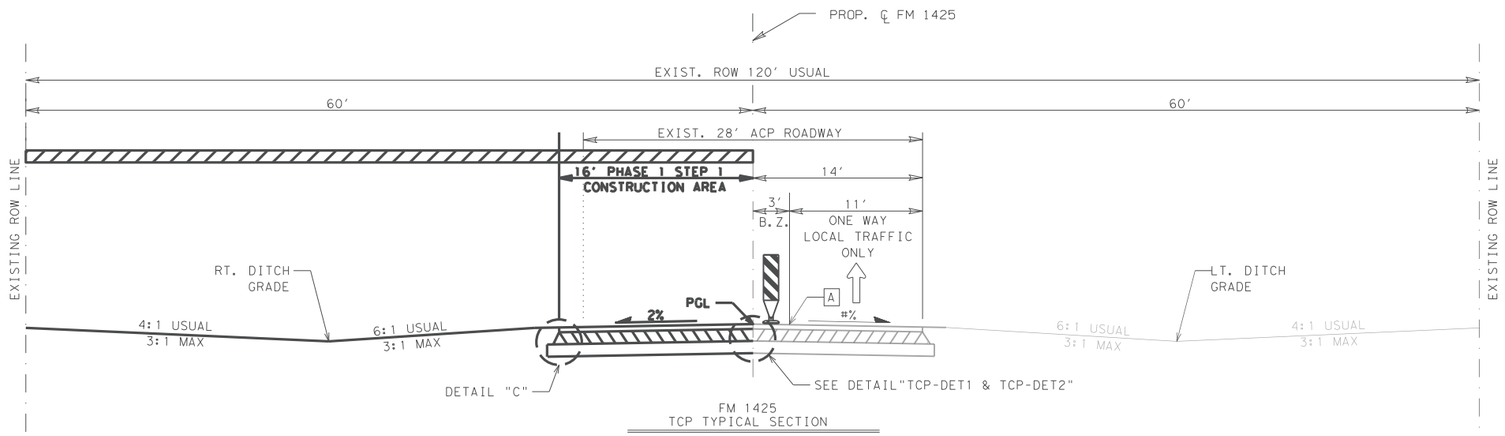


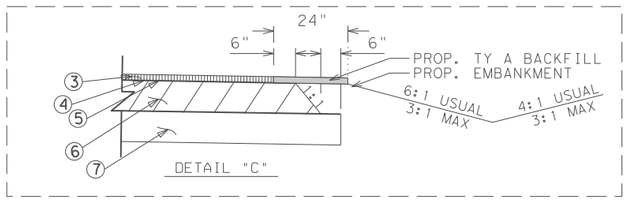
FM 1425
TCP TYPICAL SECTION

STA. 1+81 TO STA. 5+31
STA. 5+31 TO STA. 7+31 (TRANSITION)



FM 1425
TCP TYPICAL SECTION

STA. 7+31 TO STA. 63+13
STA. 63+68 TO STA. 101+00



LEGEND:

(3) PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (1ST LIFT)
(4) PROPOSED 1" COURSE UNDER SEAL
(5) PROPOSED MC-30 (0.2 GAL/SY)
(6) PROPOSED 10.0" TY-E GR-4 BASE W/2% CEMENT BY WEIGHT
(7) PROPOSED 12.0" STABILIZED SUBGRADE W/4% LIME BY WEIGHT

- CONSTRUCTION AREA
BZ - BUFFER ZONE
ACP - ASPHALT CONCRETE PAVEMENT
P.C. - PREVIOUSLY CONSTRUCTED
#% - EXISTING CROSS SLOPE
#% - PROPOSED CROSS SLOPE
- VERTICAL PANEL
- CONCRETE TRAFFIC BARRIER W/REFLECTORS
[A] WORK ZONE PVMT MARK (NON-REM) 6" YELLOW SOLID

NOTES:

1. SEE PROPOSED TRAFFIC CONTROL PLAN LAYOUTS FOR LANE STRIPING DIMENSIONS, STATIONING AND TRANSITIONS.

STATE OF TEXAS
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FM 1425 TCP TYPICAL SECTIONS PHASE 1 STEP 1

NOT TO SCALE SHEET 1 OF 2

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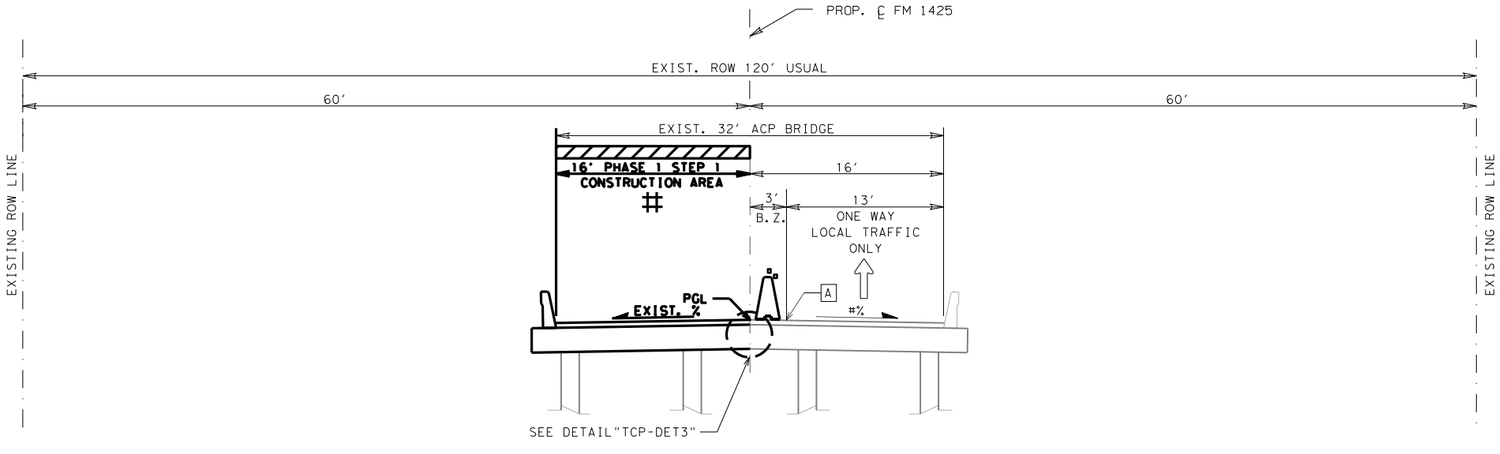
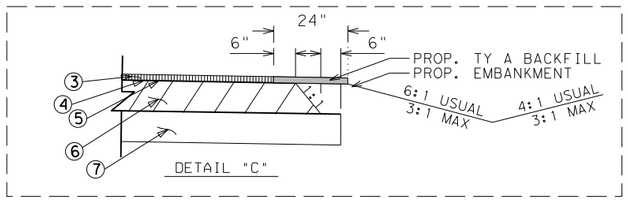


FM 1425
TCP TYPICAL SECTION

STA. 63+13 TO STA. 63+68
BRIDGE TO BE MILLED TO
BRIDGE DECK AND REPLACED
WITH 2" OVERLAY



DETAIL "C"

LEGEND:

(3) PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (1ST LIFT)
(4) PROPOSED 1" COURSE UNDER SEAL
(5) PROPOSED MC-30 (0.2 GAL/SY)
(6) PROPOSED 10.0" TY-E GR-4 BASE W/2% CEMENT BY WEIGHT
(7) PROPOSED 12.0" STABILIZED SUBGRADE W/4% LIME BY WEIGHT

- CONSTRUCTION AREA
BZ - BUFFER ZONE
ACP - ASPHALT CONCRETE PAVEMENT
P.C. - PREVIOUSLY CONSTRUCTED
#% - EXISTING CROSS SLOPE
#% - PROPOSED CROSS SLOPE
- VERTICAL PANEL
- CONCRETE TRAFFIC BARRIER W/REFLECTORS
A - WORK ZONE PVMT MARK (NON-REM) 6" YELLOW SOLID

NOTES:

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NOT TO SCALE SHEET 2 OF 2

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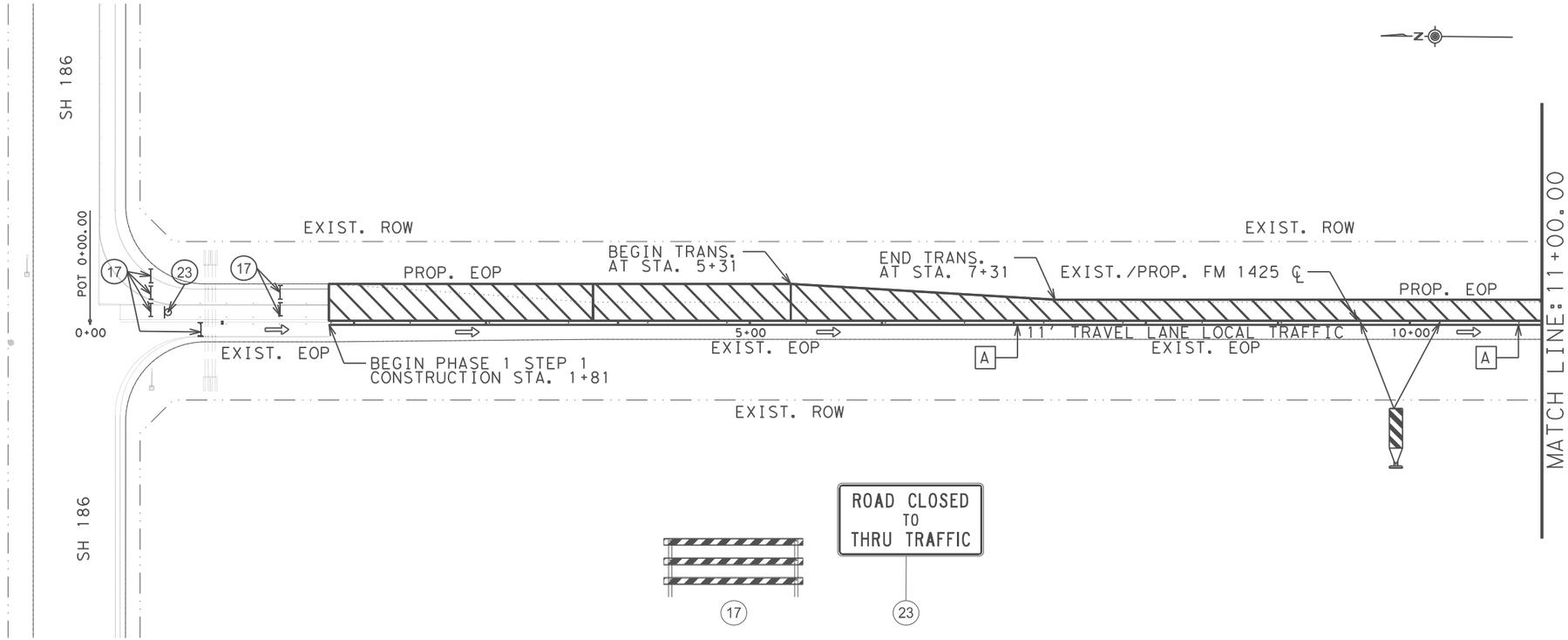
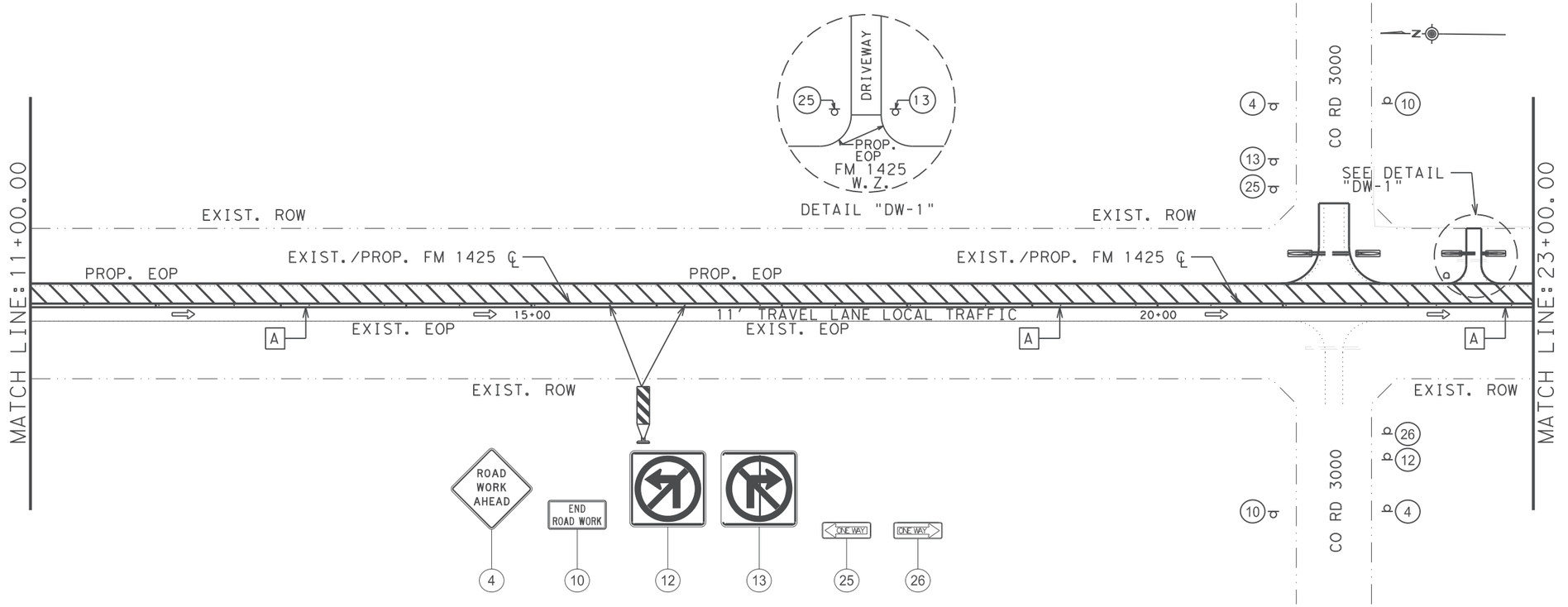


LEGEND

- CONSTRUCTION AREA
- BRIDGE CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- [A] WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
- [B] WK ZN PVMT MARK (REM) (REFL) TY II-A-A
- DIRECTION OF TRAFFIC FLOW
- PROPOSED SIGN
- PROPOSED TYPE 3 (C) BARRICADES
- VERTICAL PANELS W/REFLECTORS
- PORTABLE CONCRETE TRAFFIC BARRIER W/REFLECTORS (PCTB)
- CRASH CUSHION ATTENUATOR-TL3

NOTES:

1. PROJECT LIMITS AND ADVANCE WARNING SIGNS SHALL BE IN PLACE BEFORE COMMENCING CONSTRUCTION AND SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION UNTIL THE PROJECT IS COMPLETED AND ACCEPTED BY TXDOT.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS. REFER TO BC(2)-21 STANDARDS FOR SIGN SPACING.
3. ALL STATIONING/ALIGNMENTS ARE FOR REFERENCE PURPOSES ONLY.
4. EXISTING STRIPING THAT IS IN CONFLICT WITH THE PROPOSED WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
5. EXISTING SIGNS THAT ARE IN CONFLICT WITH THE PROPOSED WORK ZONE SIGNS SHALL BE REMOVED OR COVERED.



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FM 1425 TRAFFIC CONTROL PLAN LAYOUT PHASE 1 STEP 1

1" = 100' SHEET 1 OF 5

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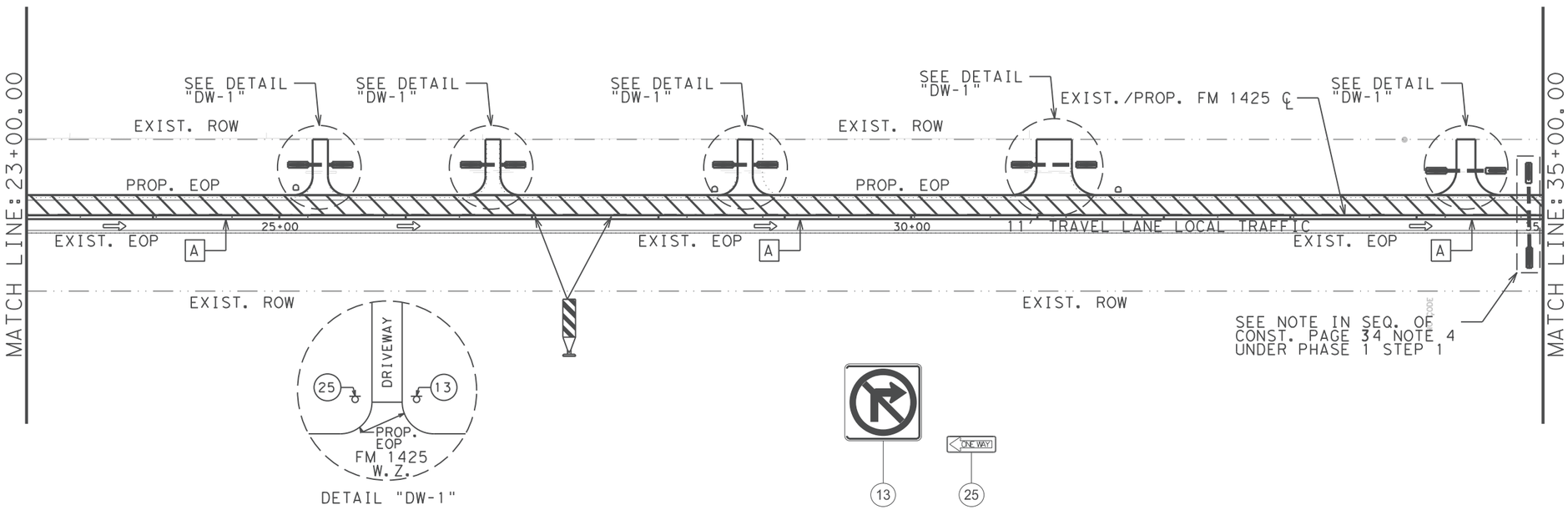

LEGEND

- CONSTRUCTION AREA
- BRIDGE CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- [A] WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
- [B] WK ZN PVMT MARK (REM) (REFL) TY II-A-A
- DIRECTION OF TRAFFIC FLOW
- PROPOSED SIGN
- PROPOSED TYPE 3 (C) BARRICADES
- VERTICAL PANELS W/REFLECTORS
- PORTABLE CONCRETE TRAFFIC BARRIER W/REFLECTORS (PCTB)
- CRASH CUSHION ATTENUATOR-TL3

NOTES:

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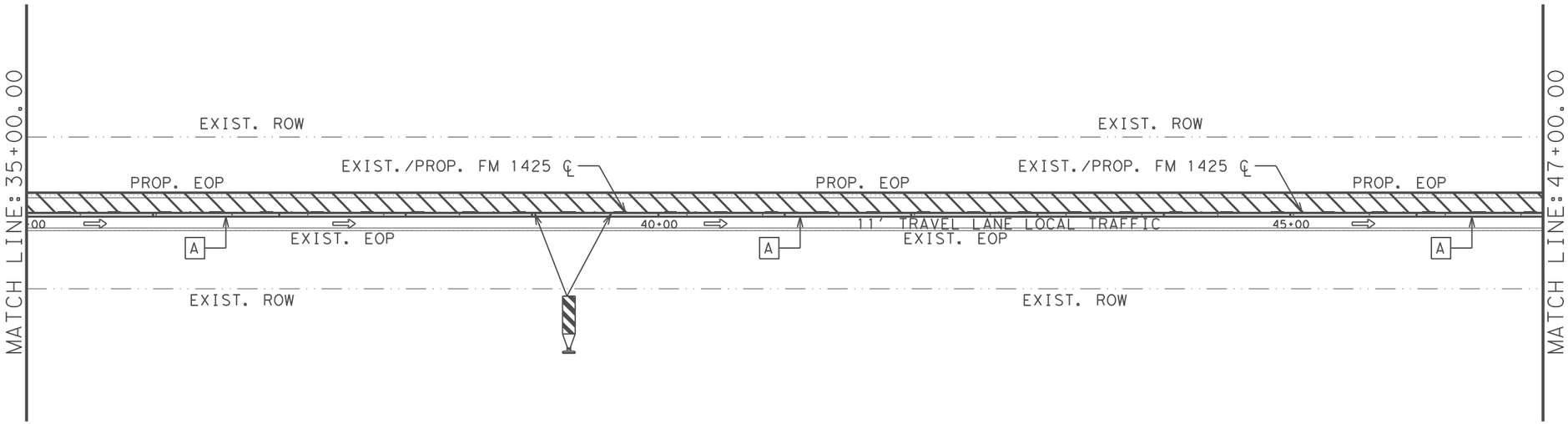

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1" = 100' SHEET 2 OF 5

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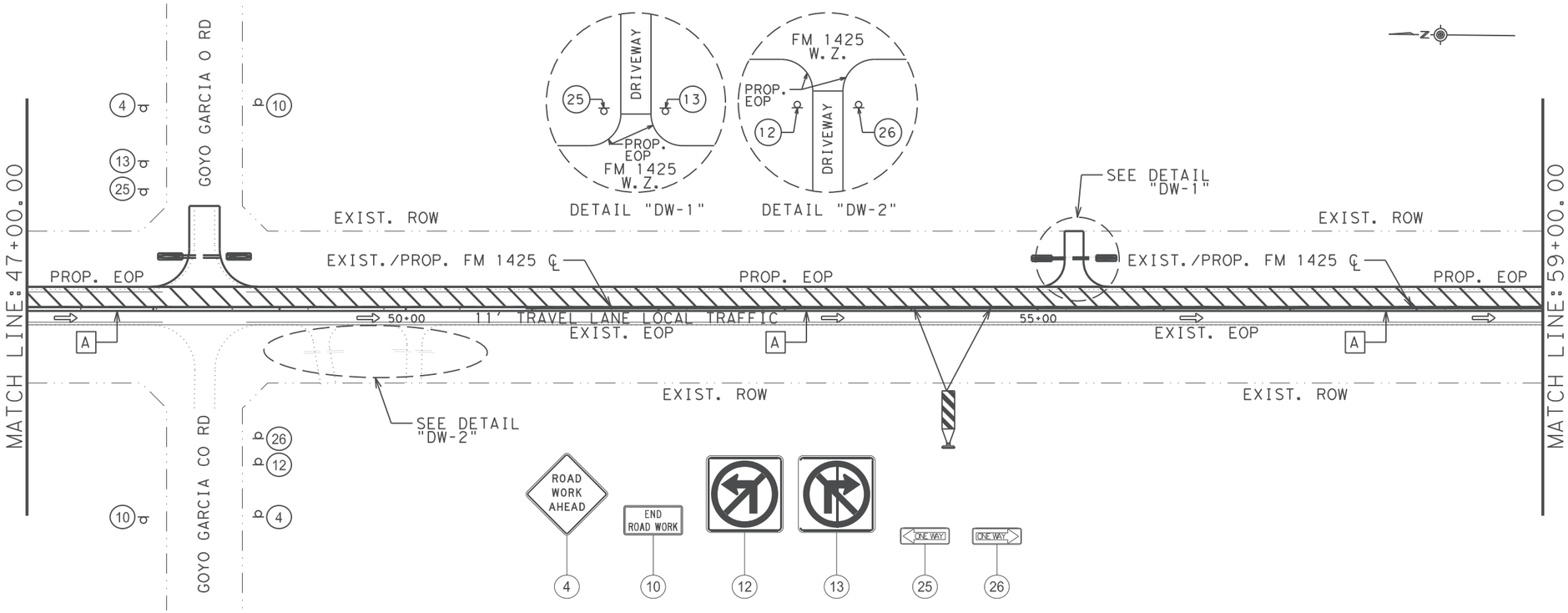

LEGEND

- CONSTRUCTION AREA
- BRIDGE CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- [A] WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
- [B] WK ZN PVMT MARK (REM) (REFL) TY II-A-A
- DIRECTION OF TRAFFIC FLOW
- d PROPOSED SIGN
- I PROPOSED TYPE 3 (C) BARRICADES
- VERTICAL PANELS W/REFLECTORS
- PORTABLE CONCRETE TRAFFIC BARRIER W/REFLECTORS (PCTB)
- CRASH CUSHION ATTENUATOR-TL3

NOTES:

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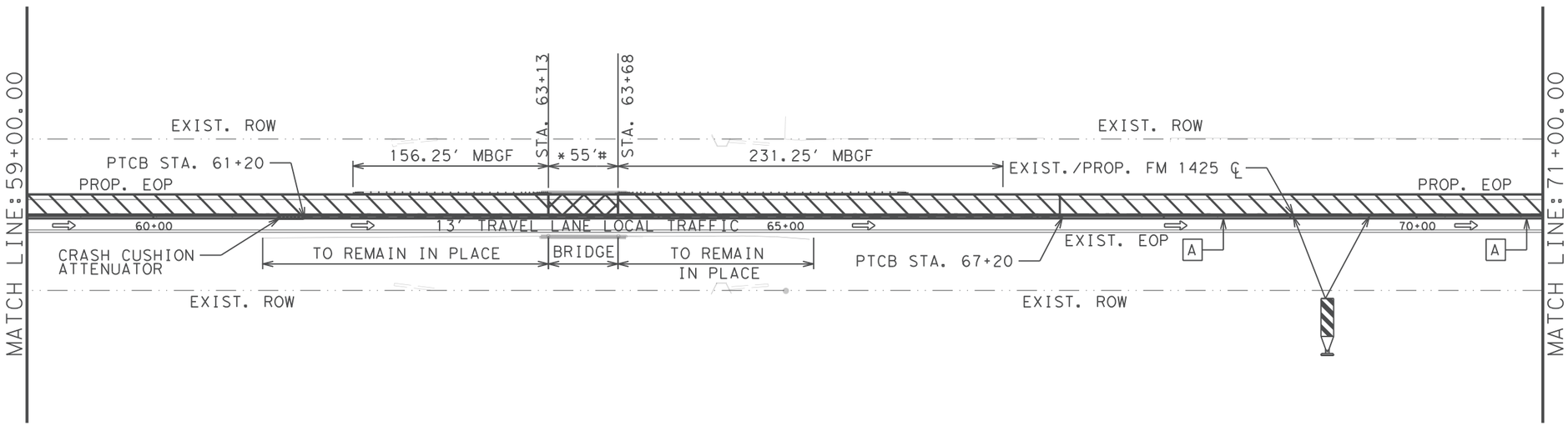

* PROP. 67' T-2 RAILING RETROFIT

\# PROP. BRIDGE TO BE MILLED TO BRIDGE DECK AND REPLACED WITH SEAL COAT

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1" = 100'

SHEET 3 OF 5

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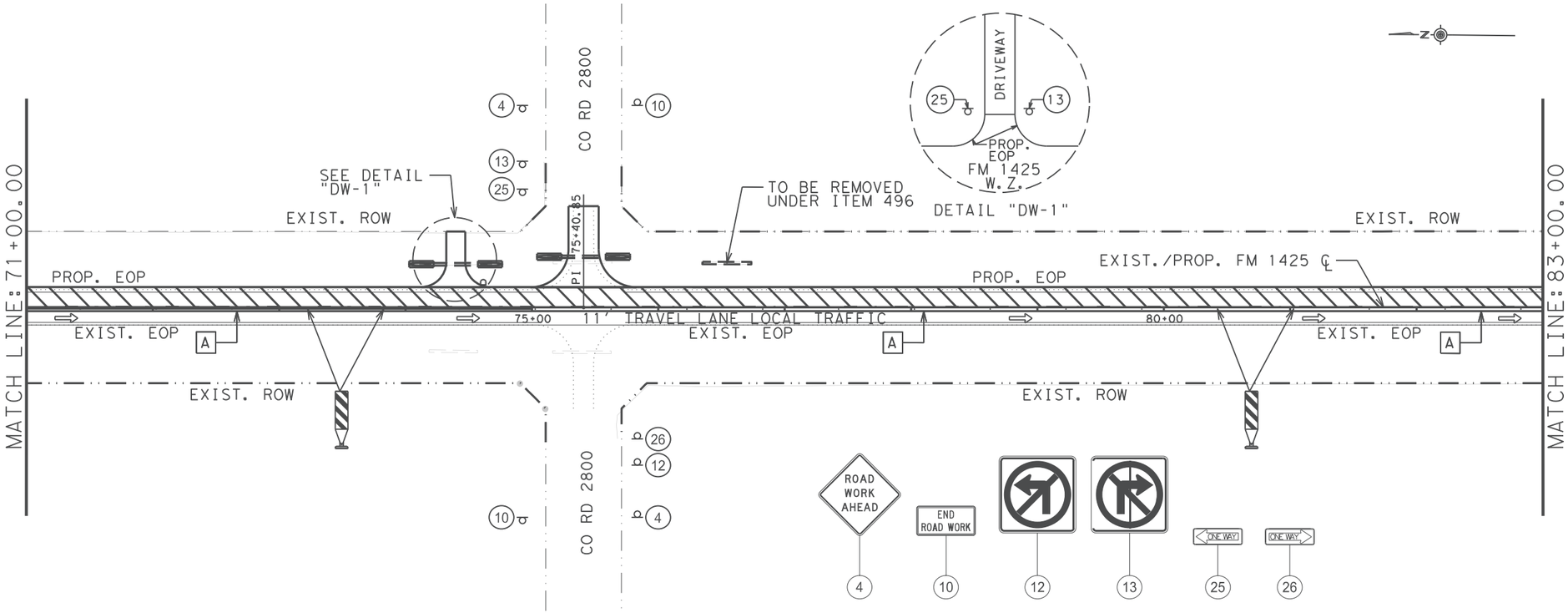

LEGEND

- CONSTRUCTION AREA
- BRIDGE CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- A — WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
- B — WK ZN PVMT MARK (REM) (REFL) TY II-A-A
- DIRECTION OF TRAFFIC FLOW
- d — PROPOSED SIGN
- PROPOSED TYPE 3 (C) BARRICADES
- VERTICAL PANELS W/REFLECTORS
- PORTABLE CONCRETE TRAFFIC BARRIER W/REFLECTORS (PCTB)
- CRASH CUSHION ATTENUATOR-TL3

NOTES:

1. PROJECT LIMITS AND ADVANCE WARNING SIGNS SHALL BE IN PLACE BEFORE COMMENCING CONSTRUCTION AND SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION UNTIL THE PROJECT IS COMPLETED AND ACCEPTED BY TXDOT.
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3. ALL STATIONING/ALIGNMENTS ARE FOR REFERENCE PURPOSES ONLY.
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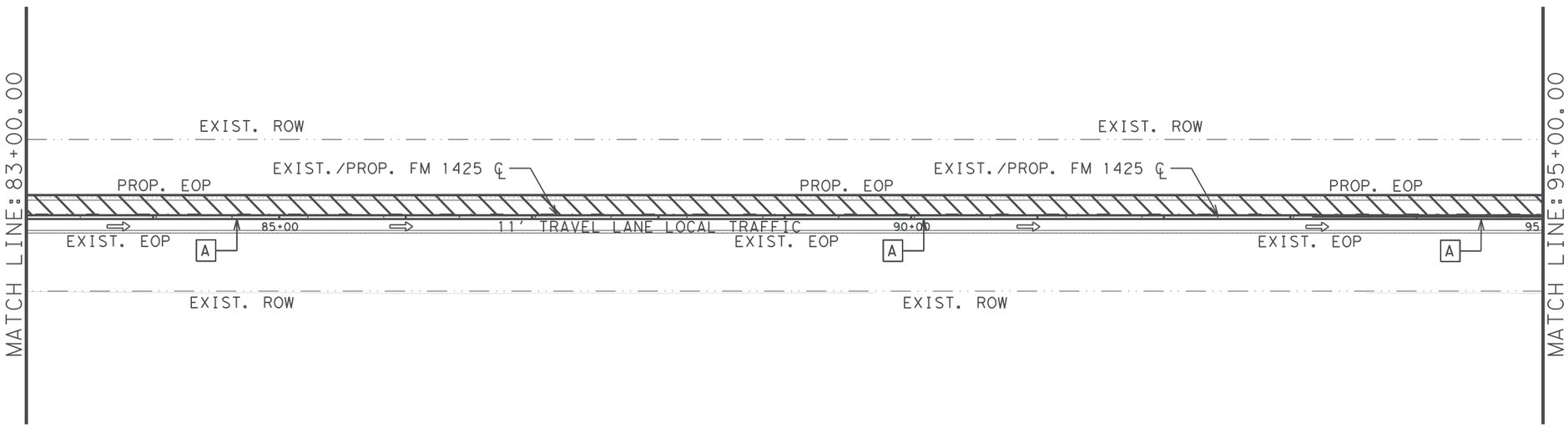

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FM 1425 TRAFFIC CONTROL PLAN LAYOUT PHASE 1 STEP 1

1" = 100' SHEET 4 OF 5

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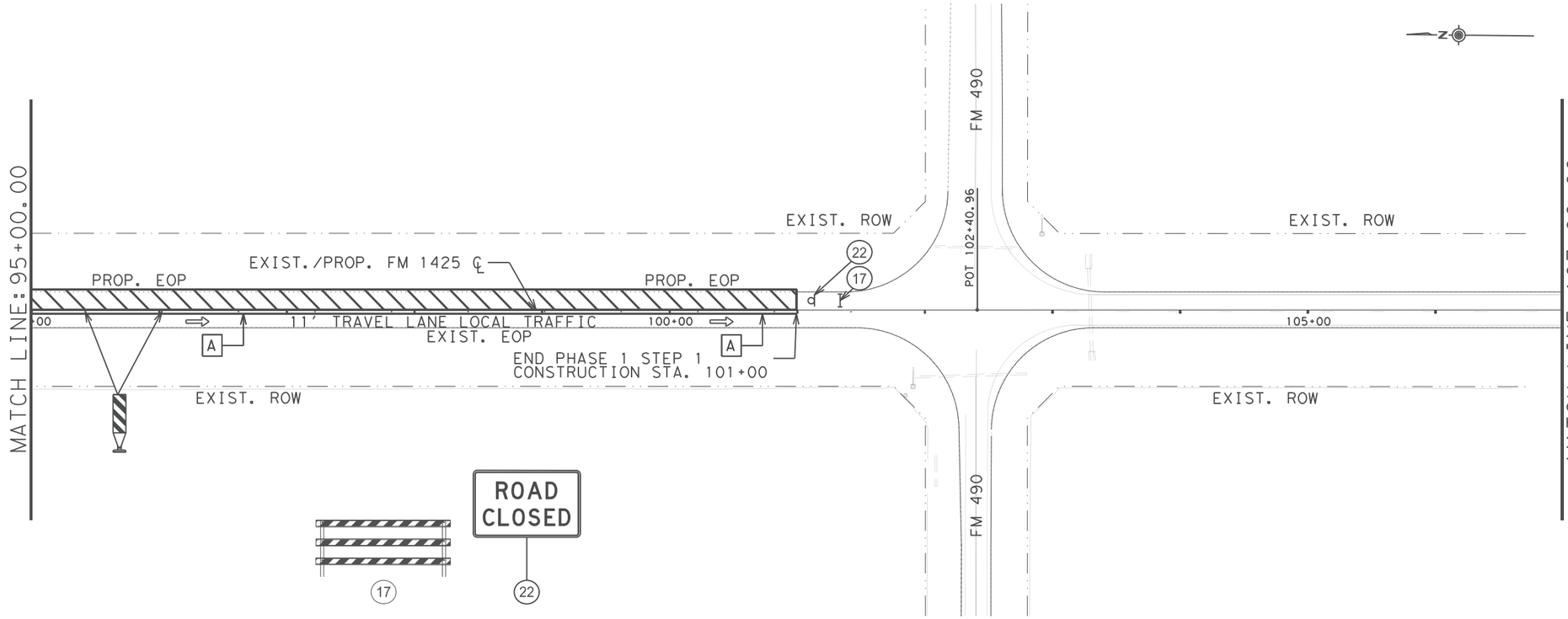

LEGEND

- CONSTRUCTION AREA
- BRIDGE CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- [A] WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
- [B] WK ZN PVMT MARK (REM) (REFL) TY II-A-A
- DIRECTION OF TRAFFIC FLOW
- PROPOSED SIGN
- PROPOSED TYPE 3 (C) BARRICADES
- VERTICAL PANELS W/REFLECTORS
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NOTES:

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FM 1425 TRAFFIC CONTROL PLAN LAYOUT PHASE 1 STEP 1

1" = 100'

SHEET 5 OF 5

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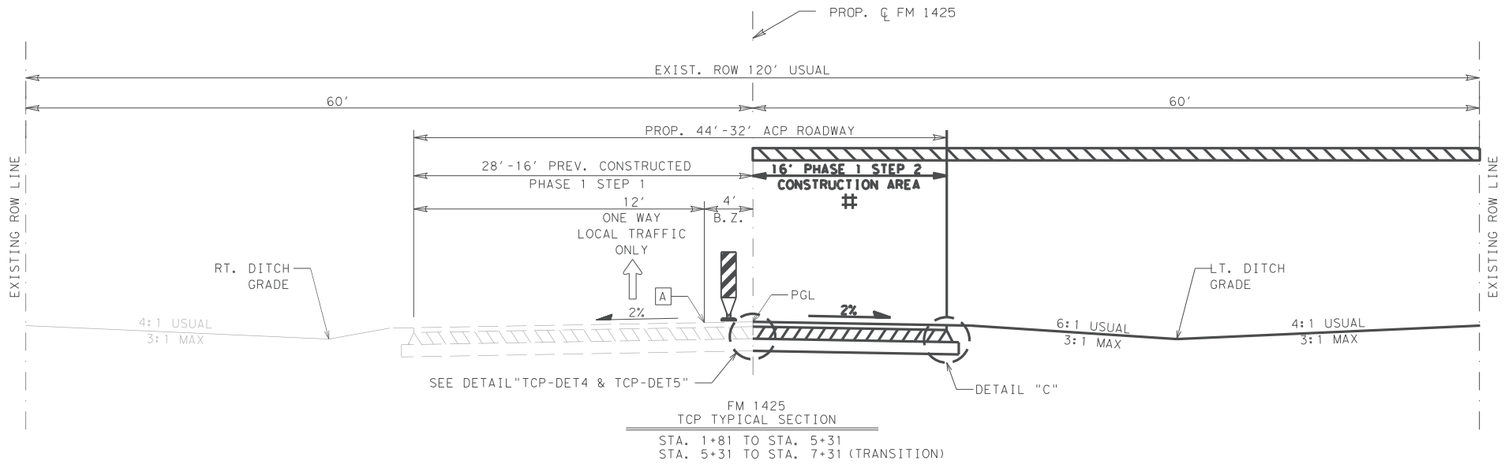
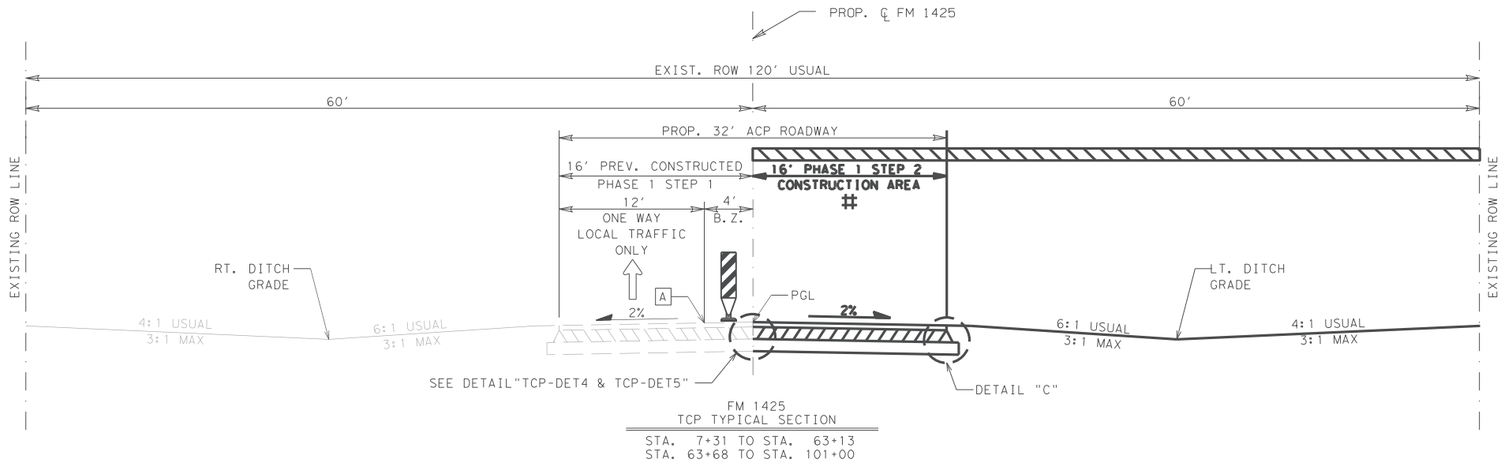


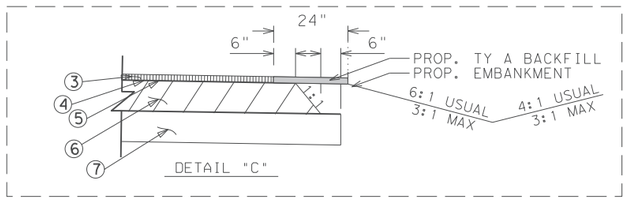
FM 1425
TCP TYPICAL SECTION

STA. 1+81 TO STA. 5+31
STA. 5+31 TO STA. 7+31 (TRANSITION)



FM 1425
TCP TYPICAL SECTION

STA. 7+31 TO STA. 63+13
STA. 63+68 TO STA. 101+00



LEGEND:

(3) PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (1ST LIFT)
(4) PROPOSED 1" COURSE UNDER SEAL
(5) PROPOSED MC-30 (0.2 GAL/SY)
(6) PROPOSED 10.0" TY-E GR-4 BASE W/2% CEMENT BY WEIGHT
(7) PROPOSED 12.0" STABILIZED SUBGRADE W/4% LIME BY WEIGHT

- CONSTRUCTION AREA
BZ - BUFFER ZONE
ACP - ASPHALT CONCRETE PAVEMENT
P.C. - PREVIOUSLY CONSTRUCTED
#% - EXISTING CROSS SLOPE
#% - PROPOSED CROSS SLOPE
- VERTICAL PANEL
- CONCRETE TRAFFIC BARRIER W/REFLECTORS
A - WORK ZONE PVMT MARK (NON-REM) 6" YELLOW SOLID

NOTES:

1. SEE PROPOSED TRAFFIC CONTROL PLAN LAYOUTS FOR LANE STRIPING DIMENSIONS, STATIONING AND TRANSITIONS.

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FM 1425 TCP TYPICAL SECTIONS PHASE 1 STEP 2

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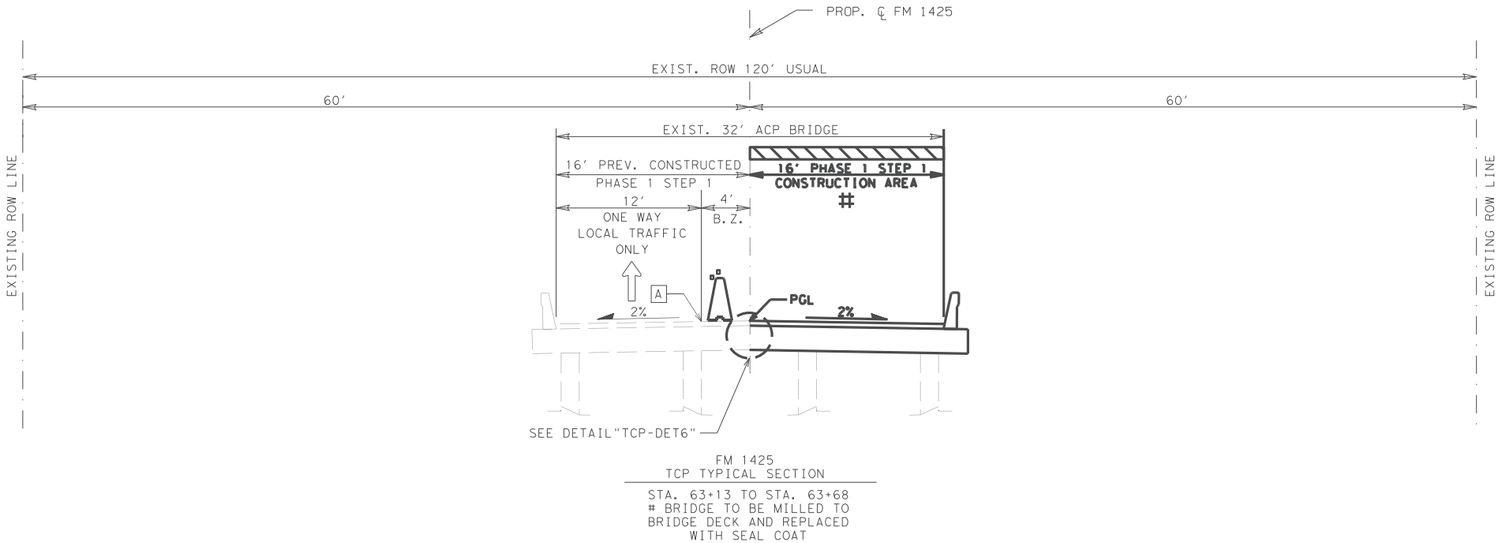
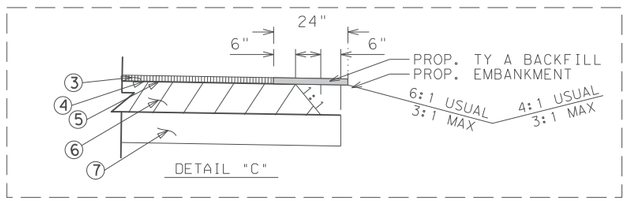


FM 1425
TCP TYPICAL SECTION

STA. 63+13 TO STA. 63+68
BRIDGE TO BE MILLED TO BRIDGE DECK AND REPLACED WITH SEAL COAT



DETAIL "C"

LEGEND:

(3) PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (1ST LIFT)
(4) PROPOSED 1" COURSE UNDER SEAL
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BZ - BUFFER ZONE
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NOT TO SCALE SHEET 2 OF 2

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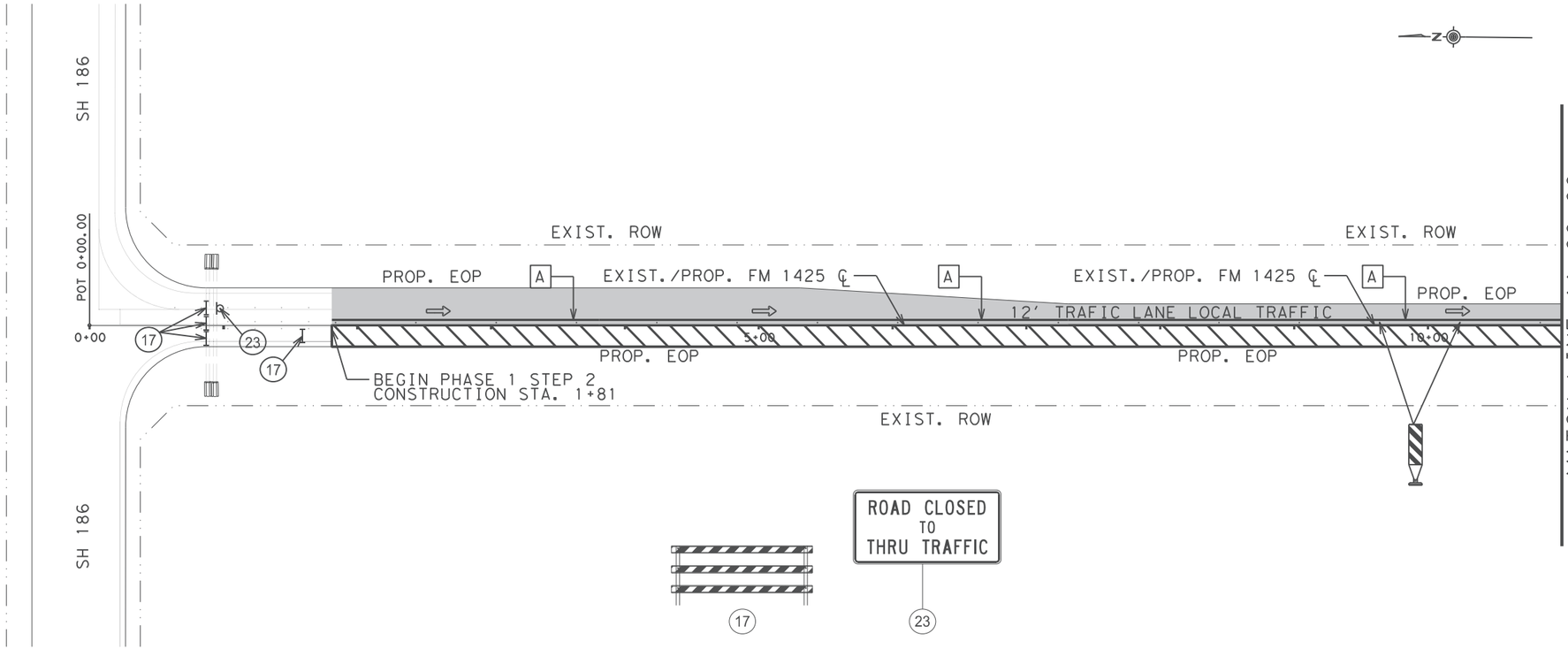

LEGEND

- CONSTRUCTION AREA
- BRIDGE CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- A — WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
- B — WK ZN PVMT MARK (REM) (REFL) TY II-A-A
- DIRECTION OF TRAFFIC FLOW
- PROPOSED SIGN
- PROPOSED TYPE 3 (C) BARRICADES
- VERTICAL PANELS W/REFLECTORS
- PORTABLE CONCRETE TRAFFIC BARRIER W/REFLECTORS (PCTB)
- CRASH CUSHION ATTENUATOR-TL3

NOTES:

1. PROJECT LIMITS AND ADVANCE WARNING SIGNS SHALL BE IN PLACE BEFORE COMMENCING CONSTRUCTION AND SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION UNTIL THE PROJECT IS COMPLETED AND ACCEPTED BY TXDOT.
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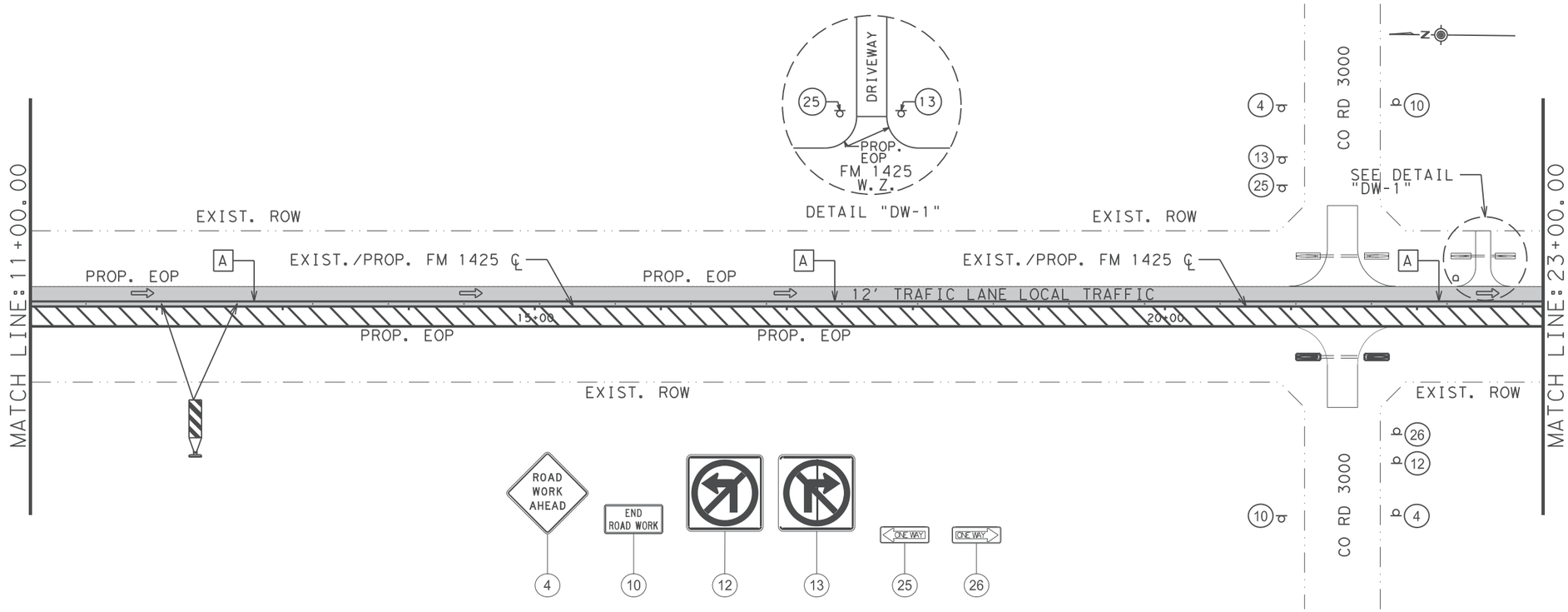

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FM 1425 TRAFFIC CONTROL PLAN LAYOUT PHASE 1 STEP 2

1" = 100' SHEET 1 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
DW: CK:	PHR	WILLACY		49

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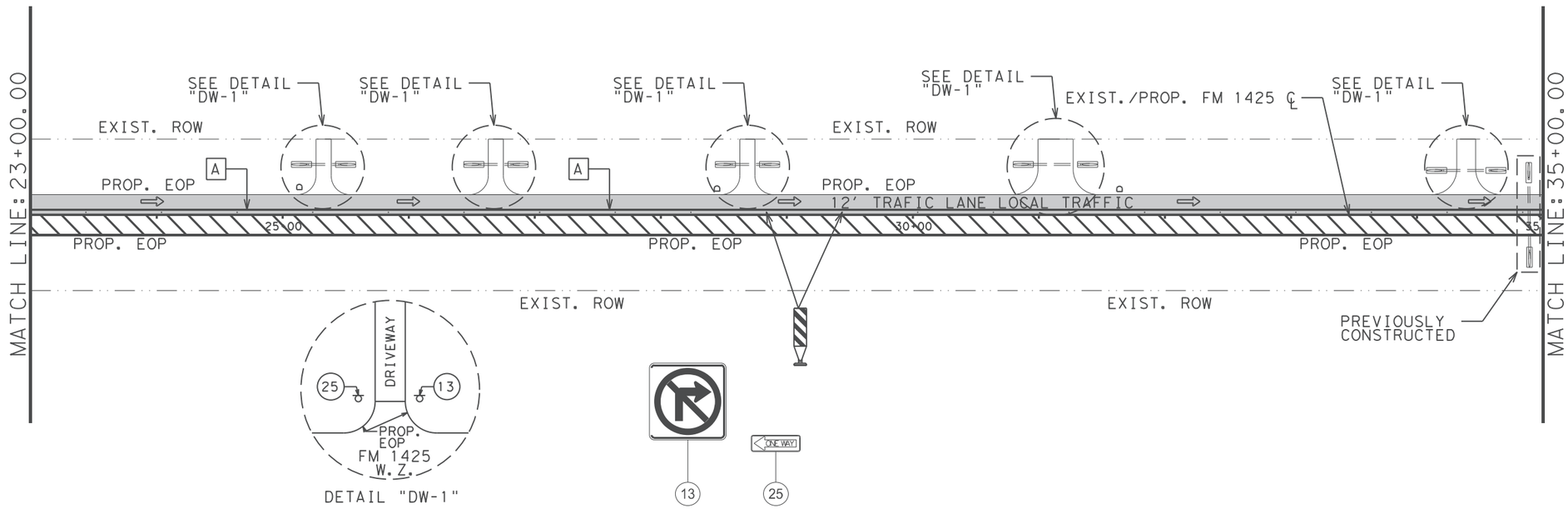
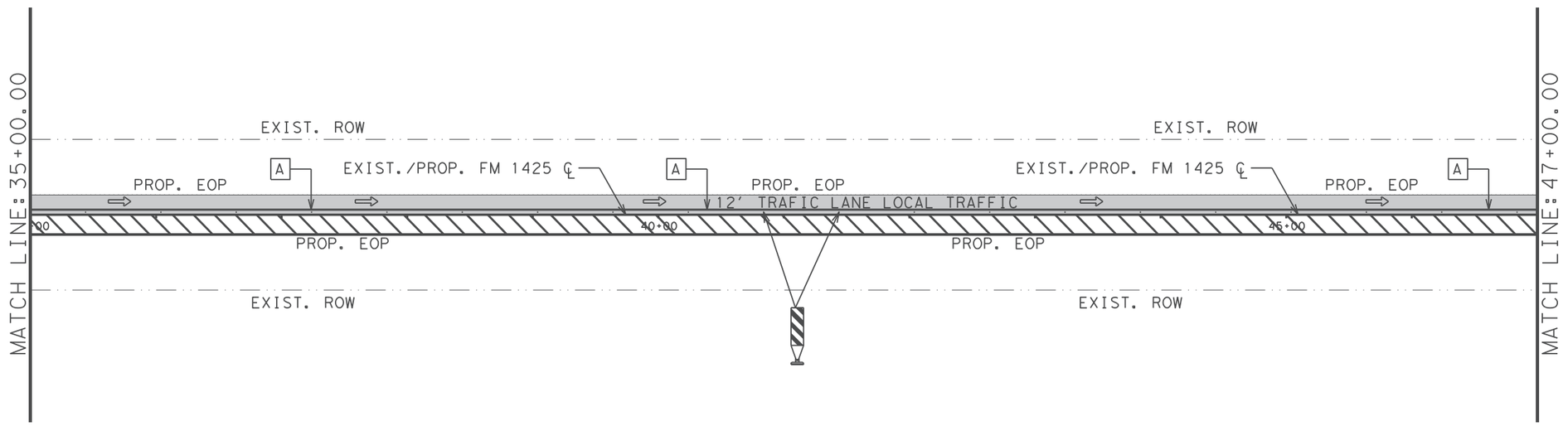


LEGEND

- CONSTRUCTION AREA
- BRIDGE CONSTRUCTION
- PREVIOUSLY CONSTRUCTED
- [A] WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
- [B] WK ZN PVMT MARK (REM) (REFL) TY II-A-A
- DIRECTION OF TRAFFIC FLOW
- PROPOSED SIGN
- PROPOSED TYPE 3 (C) BARRICADES
- VERTICAL PANELS W/REFLECTORS
- PORTABLE CONCRETE TRAFFIC BARRIER W/REFLECTORS (PCTB)
- CRASH CUSHION ATTENUATOR-TL3

NOTES:

1. PROJECT LIMITS AND ADVANCE WARNING SIGNS SHALL BE IN PLACE BEFORE COMMENCING CONSTRUCTION AND SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF CONSTRUCTION UNTIL THE PROJECT IS COMPLETED AND ACCEPTED BY TXDOT.
2. ALL SIGNS SHOWN FOR CONSTRUCTION ARE SPACED AT MINIMUM AND MAY BE ADJUSTED DUE TO FIELD CONDITIONS. REFER TO BC(2)-14 STANDARDS FOR SIGN SPACING.
3. ALL STATIONING/ALIGNMENTS ARE FOR REFERENCE PURPOSES ONLY.
4. EXISTING STRIPING THAT IS IN CONFLICT WITH THE PROPOSED WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
5. EXISTING SIGNS THAT ARE IN CONFLICT WITH THE PROPOSED WORK ZONE SIGNS SHALL BE REMOVED OR COVERED.



STATE OF TEXAS
FILIBERTO M. RAMOS
146133
LICENSED PROFESSIONAL ENGINEER

12/08/2023

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FM 1425 TRAFFIC CONTROL PLAN LAYOUT PHASE 1 STEP 2

1" = 100' SHEET 2 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
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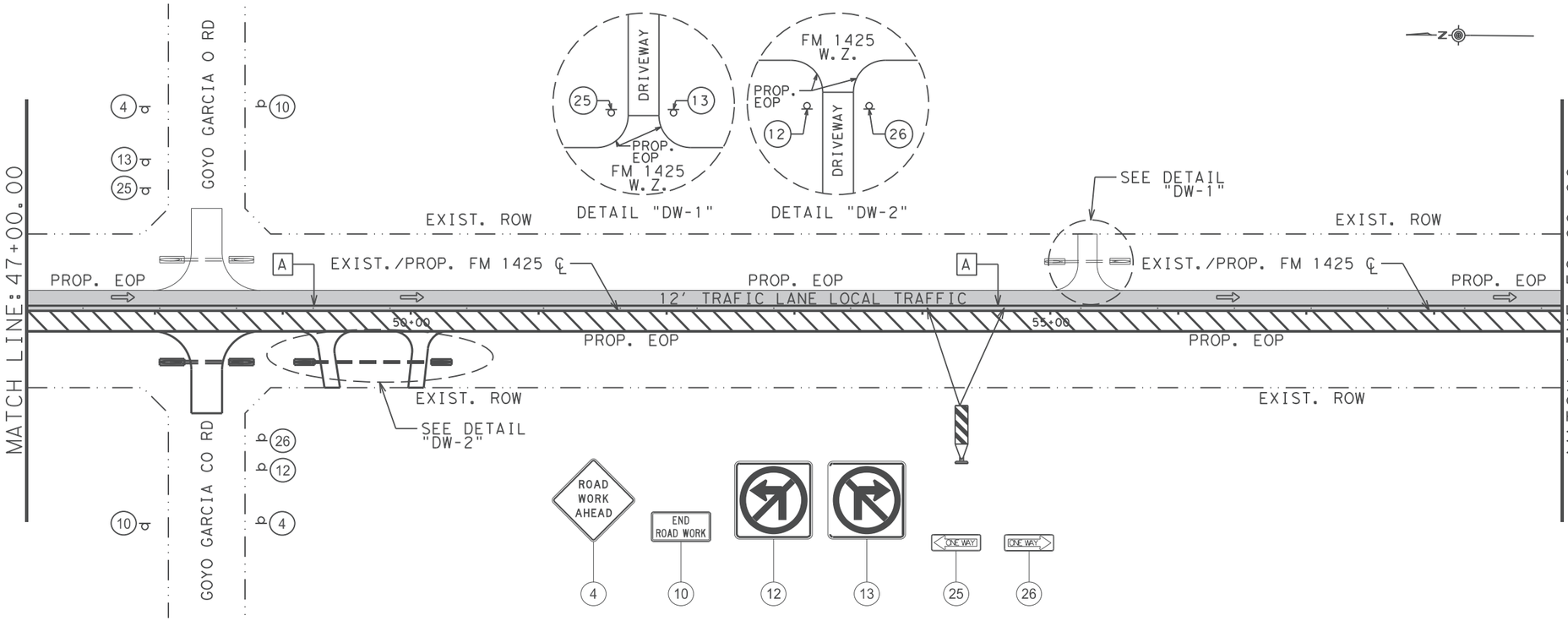

LEGEND

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- BRIDGE CONSTRUCTION
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- [A] WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
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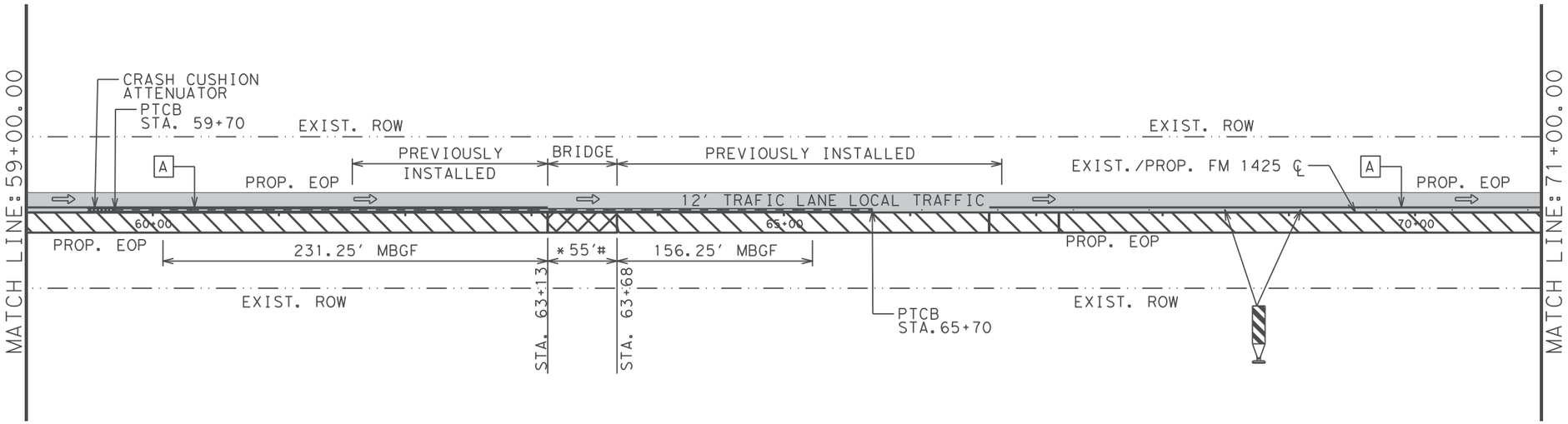

* PROP. 67' T-2 RAILING RETROFIT

\# PROP. BRIDGE TO BE MILLED TO BRIDGE DECK AND REPLACED WITH SEAL COAT

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FM 1425 TRAFFIC CONTROL PLAN LAYOUT PHASE 1 STEP 2

1" = 100'

SHEET 3 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
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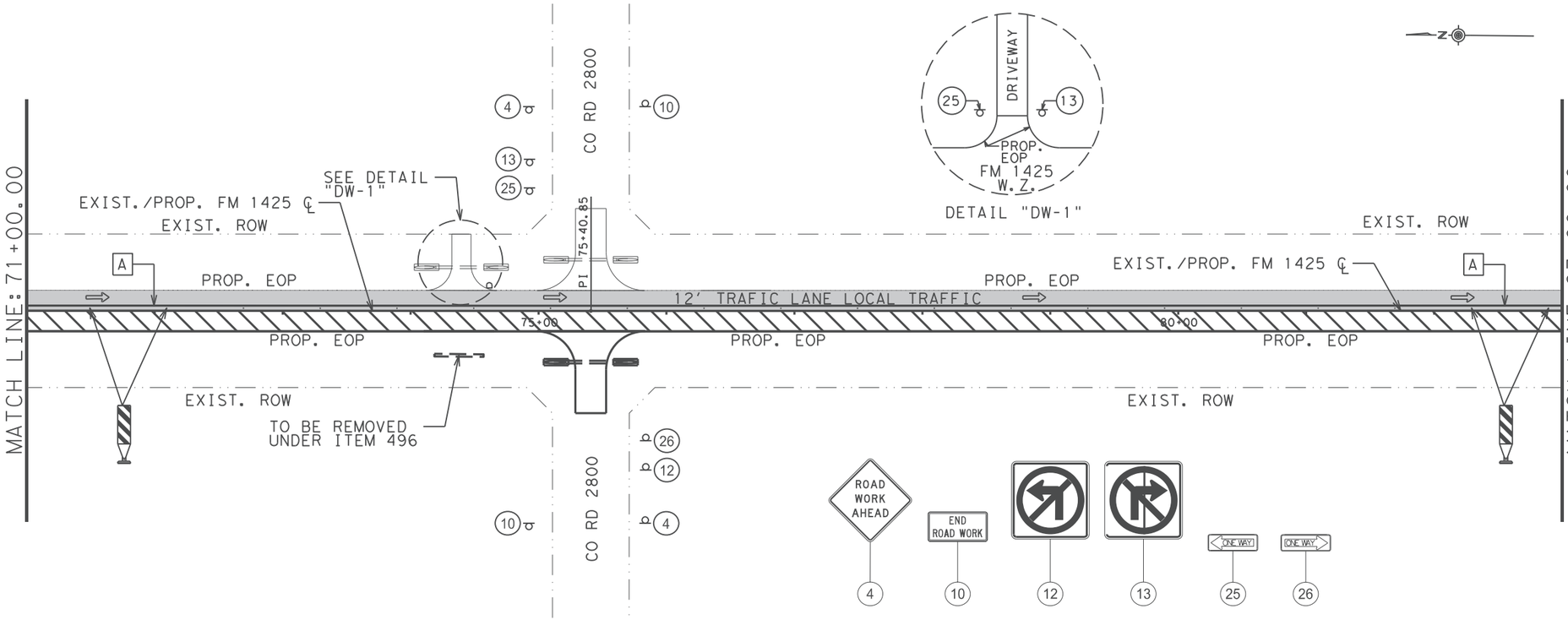

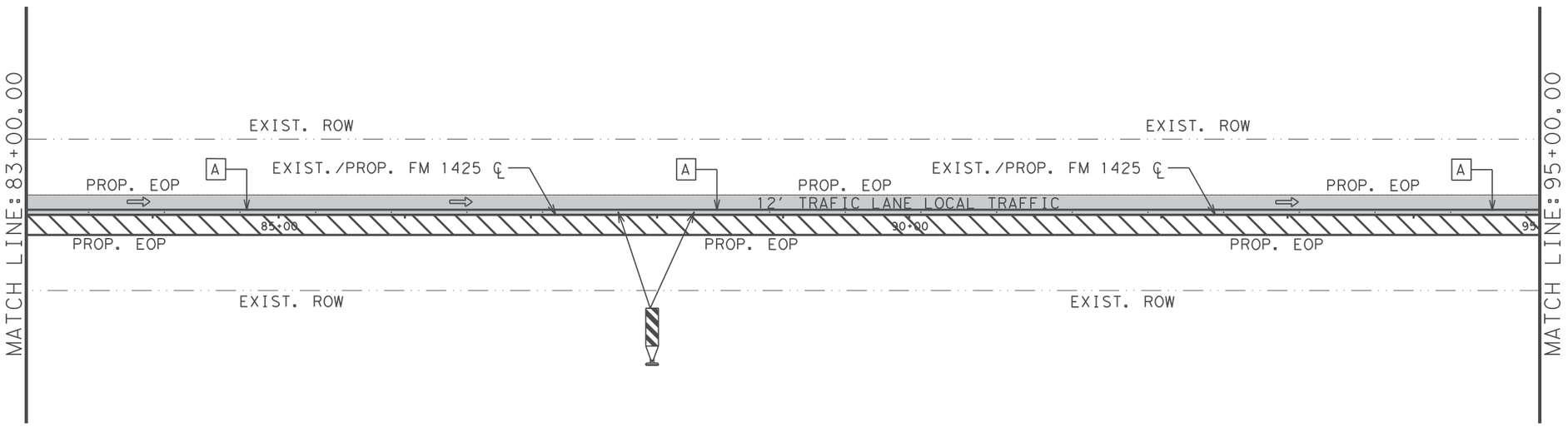

LEGEND

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- PREVIOUSLY CONSTRUCTED
- [A] WK ZN PVMT MARK (NON-REM) 6" YELLOW SOLID
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FM 1425 TRAFFIC CONTROL PLAN LAYOUT PHASE 1 STEP 2

1" = 100' SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
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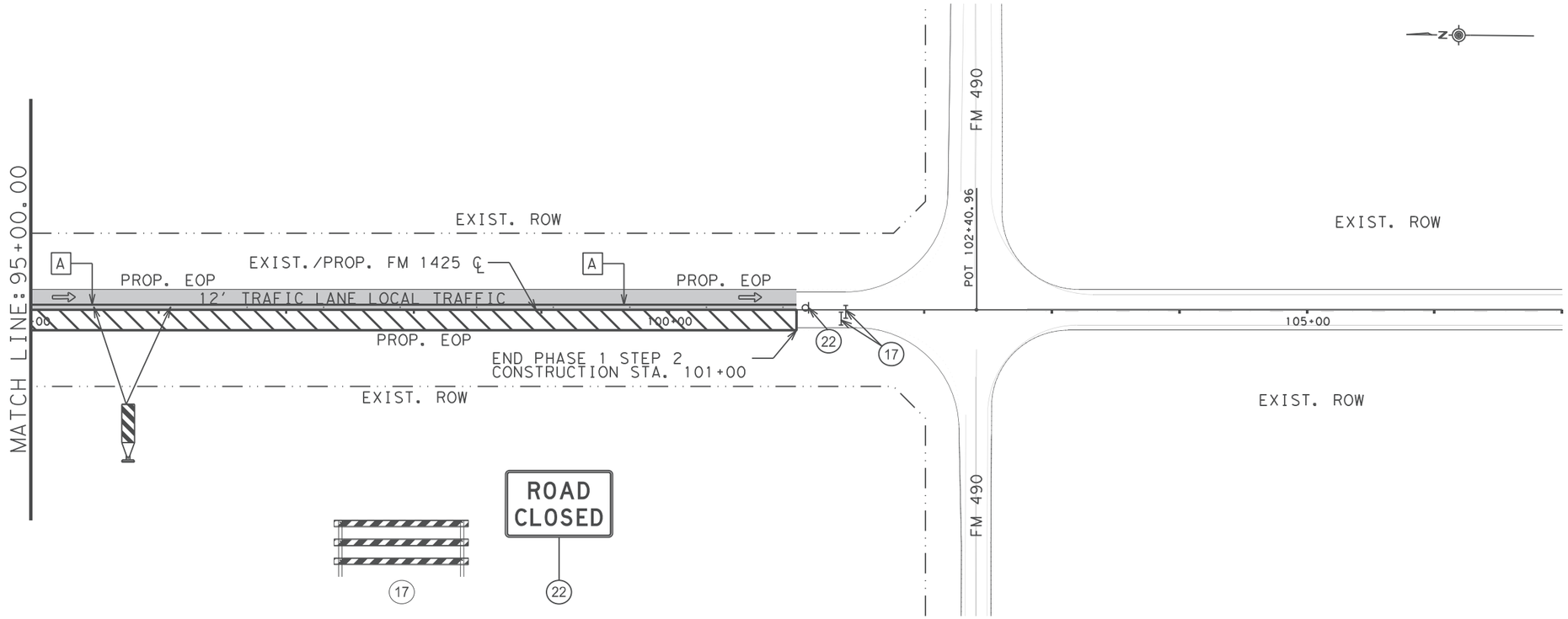

LEGEND

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- BRIDGE CONSTRUCTION
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FM 1425 TRAFFIC CONTROL PLAN LAYOUT PHASE 1 STEP 2

1" = 100'

SHEET 5 OF 5

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		DIST	COUNTY		SHEET NO.
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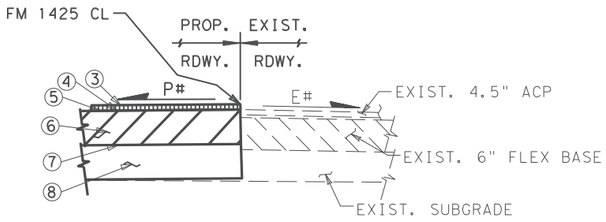

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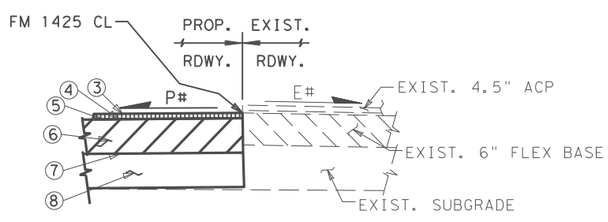

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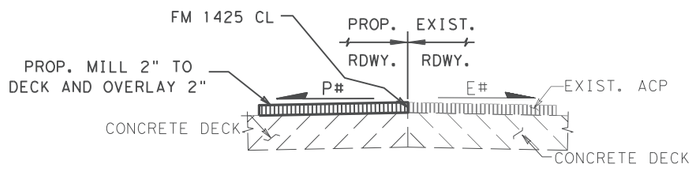

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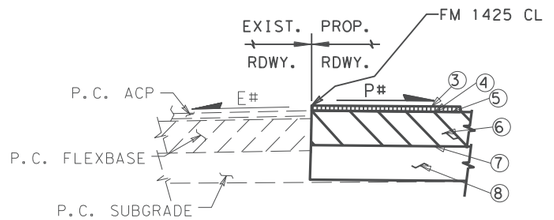

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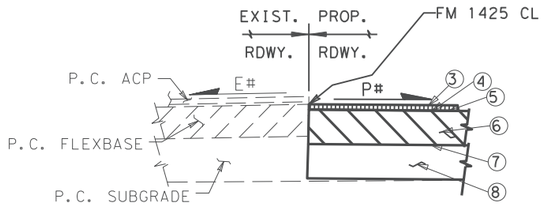

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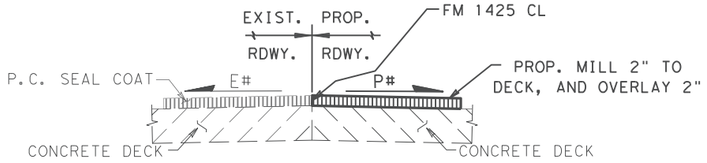

DETAIL "TCP-DET6"

LEGEND:

(3) PROPOSED 1.5" SP-D PG76-22 (SAC-A) ACP (1ST LIFT)
(4) PROPOSED 1" COURSE UNDER SEAL
(5) PROPOSED MC-30 (0.2 GAL/SY)
(6) PROPOSED 10.0" TY-E GR-4 BASE W/2% CEMENT BY WEIGHT
(7) PROPOSED 1-TYII GEOGRID
(8) PROPOSED 12.0" STABILIZED SUBGRADE W/4% LIME BY WEIGHT

ACP - ASPHALT CONCRETE PAVEMENT
RDWY - ROADWAY
P.C. - PREVIOUSLY CONSTRUCTED
#% - EXISTING CROSS SLOPE
#% - PROPOSED CROSS SLOPE

NOTES:

1. SEE PROPOSED TRAFFIC CONTROL PLAN LAYOUTS FOR LANE STRIPING DIMENSIONS, STATIONING AND TRANSITIONS.

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12/08/2023

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FM 1425 TRAFFIC CONTROL PLAN - DETAIL SHEET

NOT TO SCALE — SHEET 1 OF 1

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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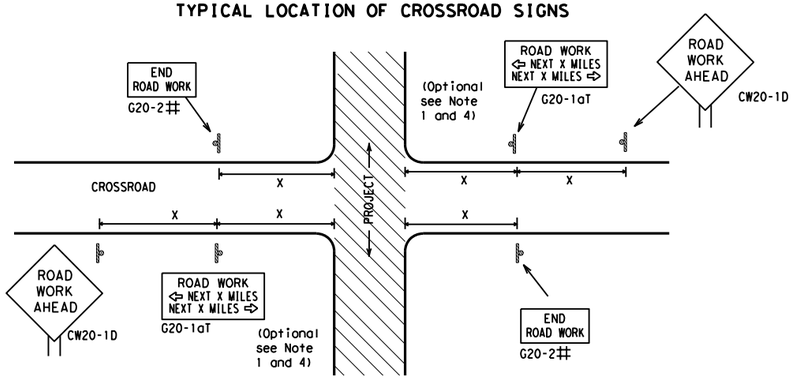
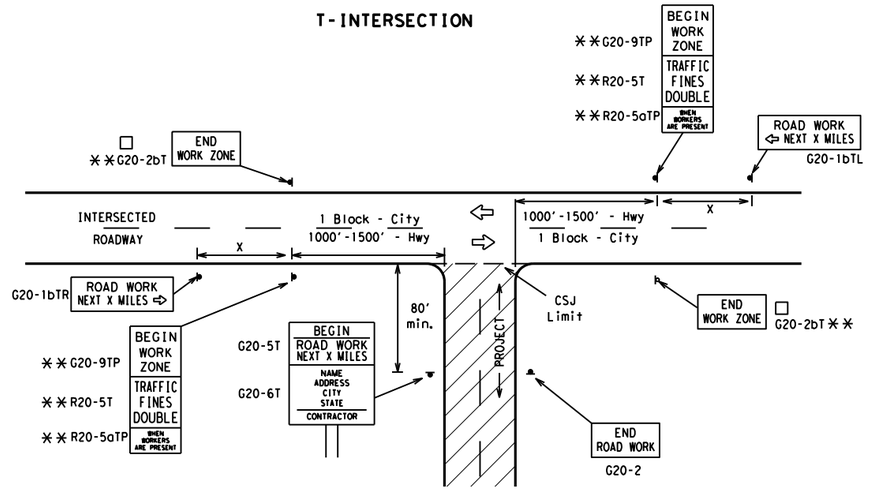
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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]

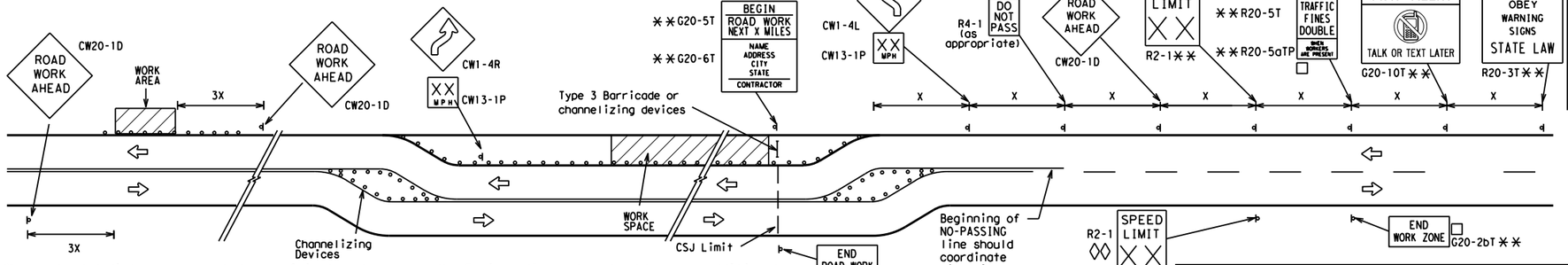
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ 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.

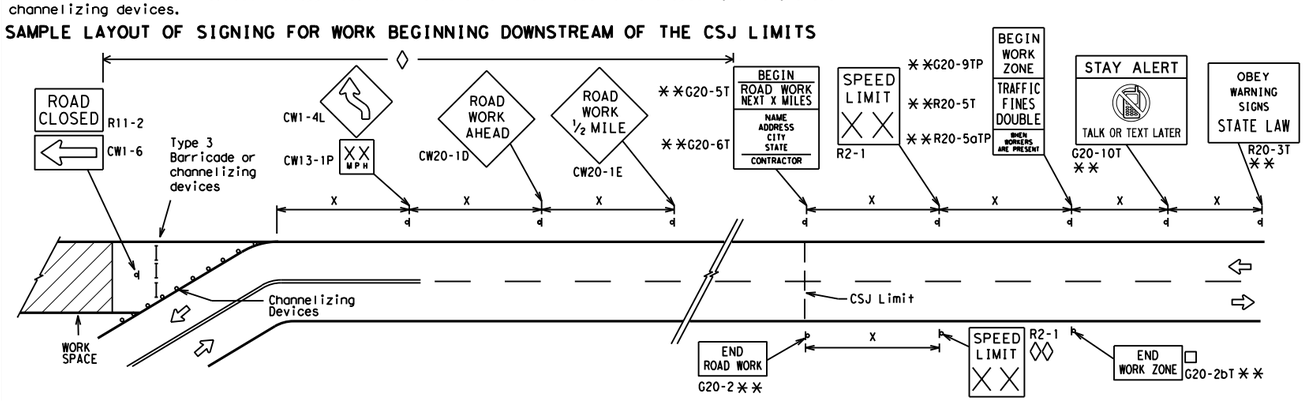
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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.

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
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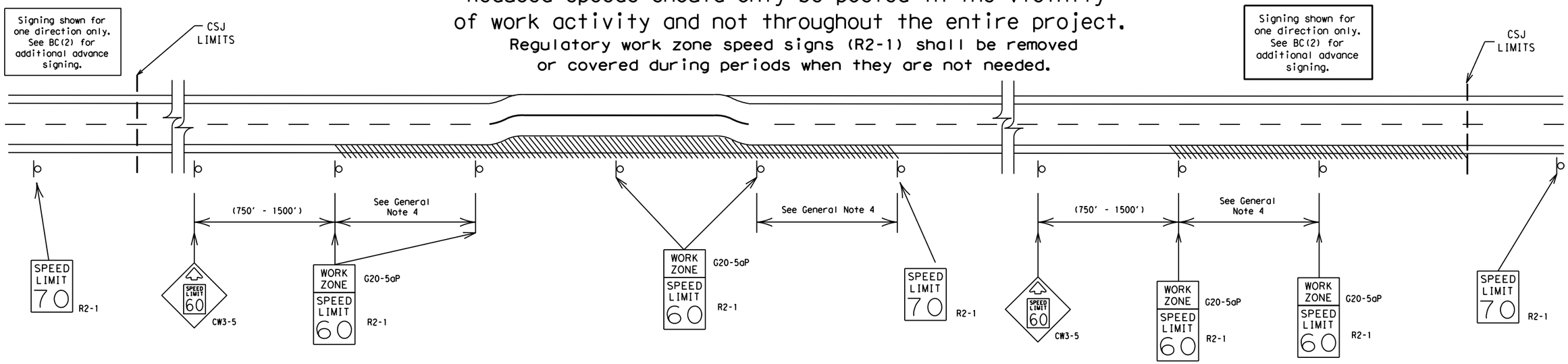
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	WILLACY		56

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.

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SHEET 3 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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7-13 5-21	PHR	WILLACY		57

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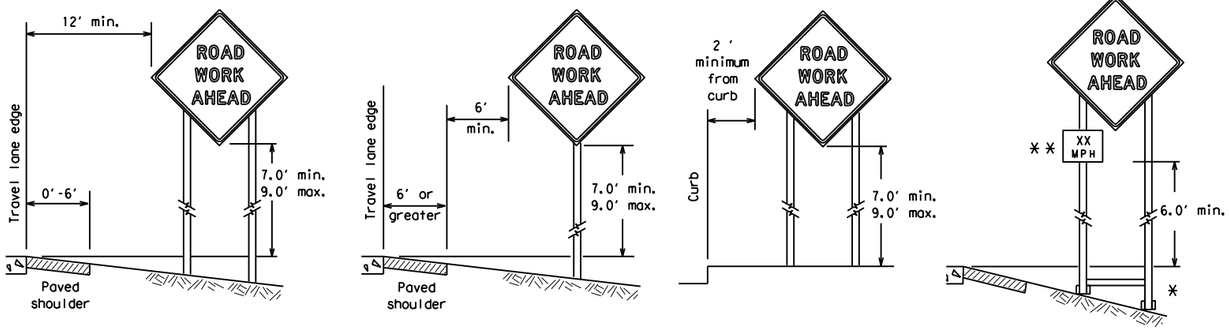
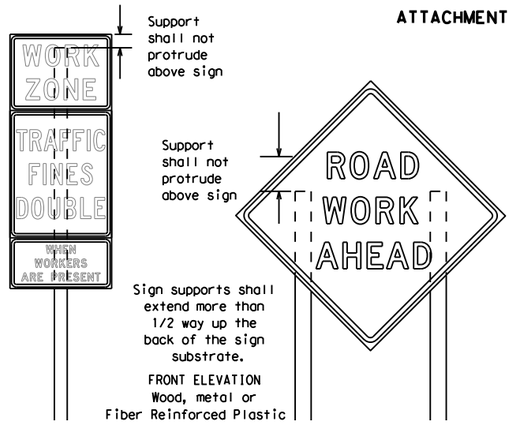
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

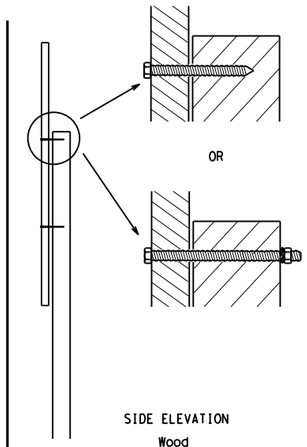


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





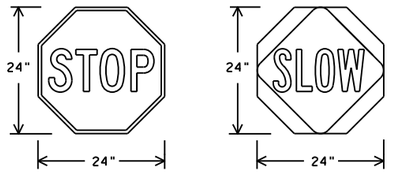
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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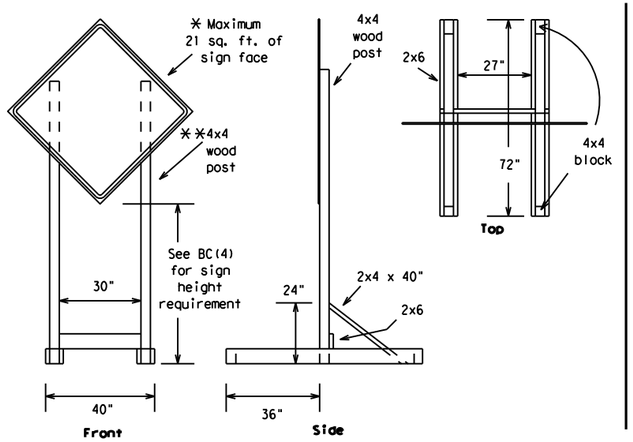
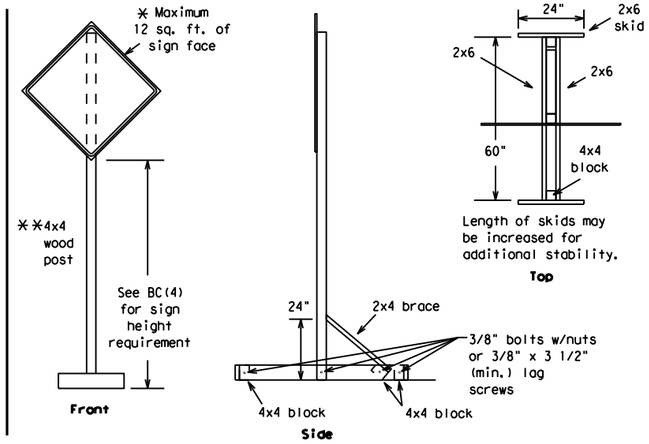
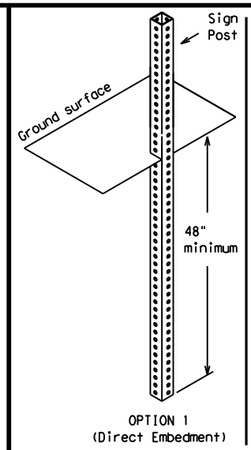
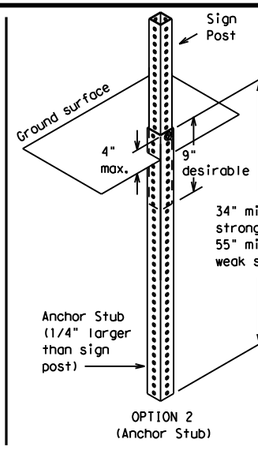


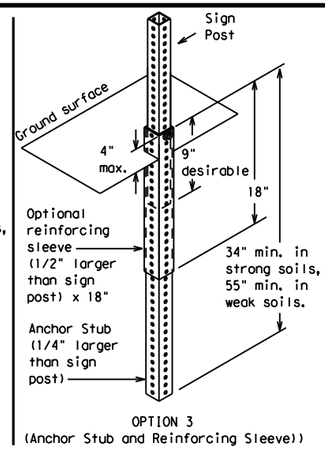


SKID MOUNTED WOOD SIGN SUPPORTS

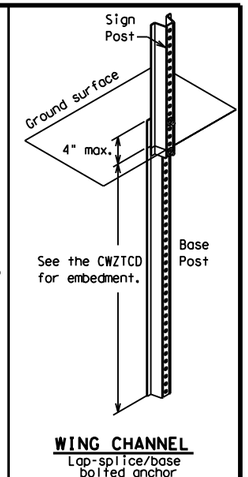
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS







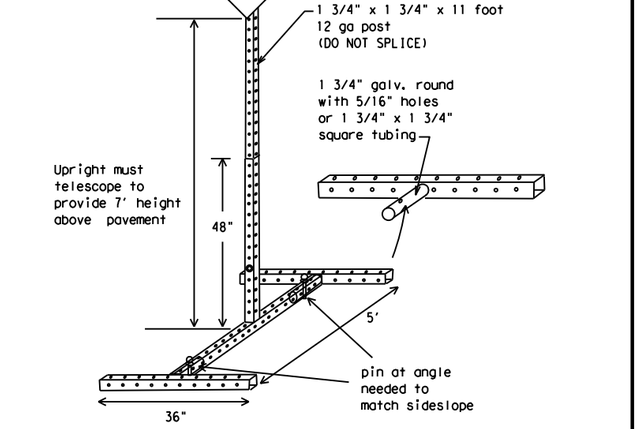
PERFORATED SQUARE METAL TUBING

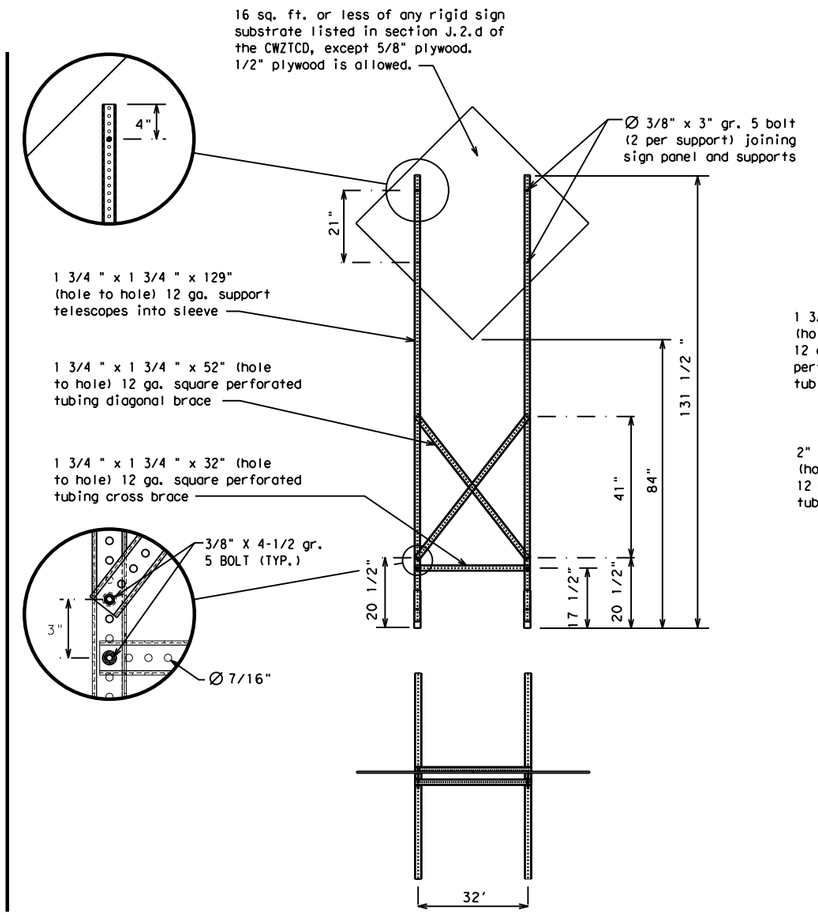


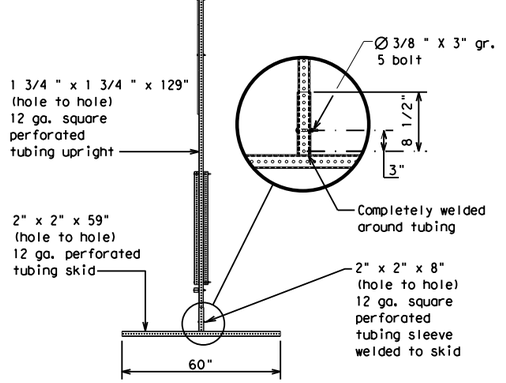
WING CHANNEL
Lap-splice/base bolted anchor

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

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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 Vehicle	HOV
Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

WORD OR PHRASE	ABBREVIATION
Major	MAJ
Miles	MI
Miles Per Hour	MPH
Minor	MNR
Monday	MON
Normal	NORM
North	N
Northbound	(route) N
Parking	PKING
Road	RD
Right Lane	RT LN
Saturday	SAT
Service Road	SERV RD
Shoulder	SHLDR
Slippery	SLIP
South	S
Southbound	(route) S
Speed	SPD
Street	ST
Sunday	SUN
Telephone	PHONE
Temporary	TEMP
Thursday	THURS
To Downtown	TO DWNTN
Traffic	TRAF
Travelers	TRVLRS
Tuesday	TUES
Time Minutes	TIME MIN
Upper Level	UPR LEVEL
Vehicles (s)	VEH, VEHS
Warning	WARN
Wednesday	WED
Weight Limit	WT LIMIT
West	W
Westbound	(route) W
Wet Pavement	WET PVMT
Will Not	WONT

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic 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	3343	02	016	FM1425
9-07 8-14	DIST		COUNTY	SHEET NO.
7-13 5-21	PHR		WILLACY	60

100

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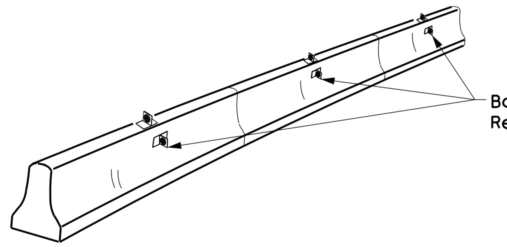
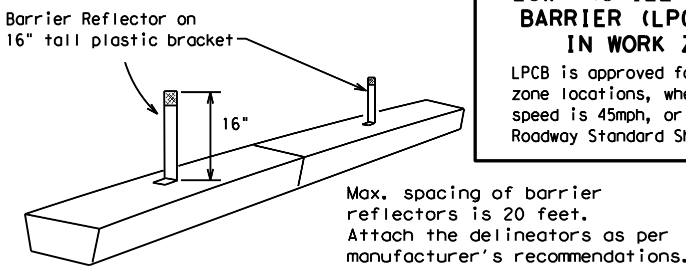
FILE: pw:\\txdot.projectwiseonline.com:TxDOTS\Documents\21 - PHR\Design Projects\334302016\4 - Design\Plan Set\2. TCP\TCP STANDARDS\C01F bc-21.dgn

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)

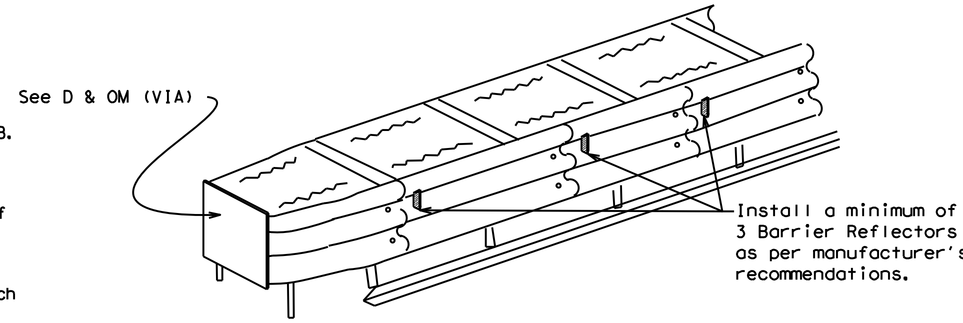


LOW PROFILE CONCRETE BARRIER (LPCB)

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.

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.

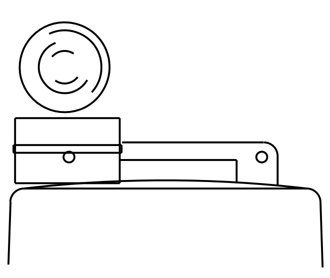


DELINEATION OF END TREATMENTS

END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



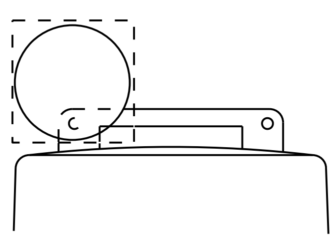
Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



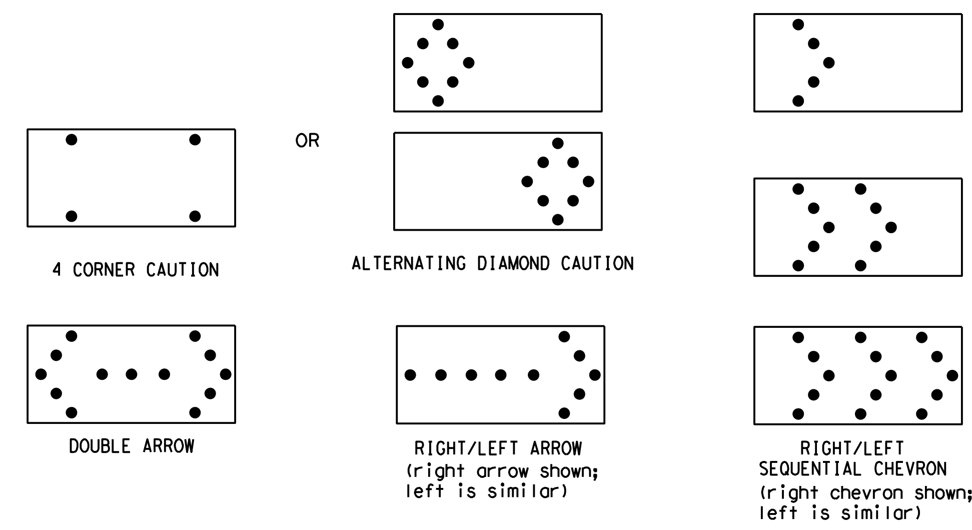
Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

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:



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

SHEET 7 OF 12

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 on extended distance from the TMA.

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	3343	02	016	FM1425
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	PHR		WILLACY	61

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

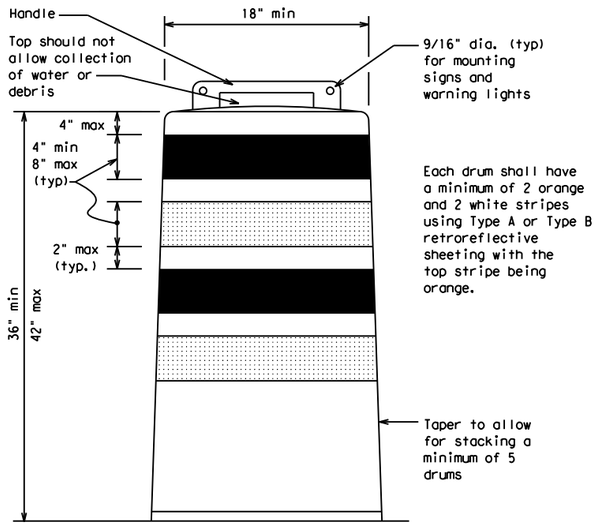
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

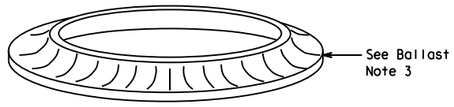
RETROREFLECTIVE SHEETING

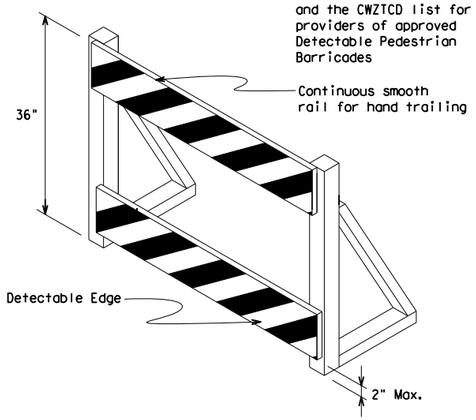
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall 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.

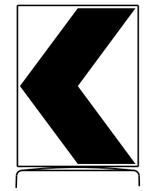




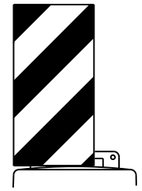


DETECTABLE PEDESTRIAN BARRICADES

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	3343	02	016	FM1425
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	PHR	WILLACY		62
7-13				

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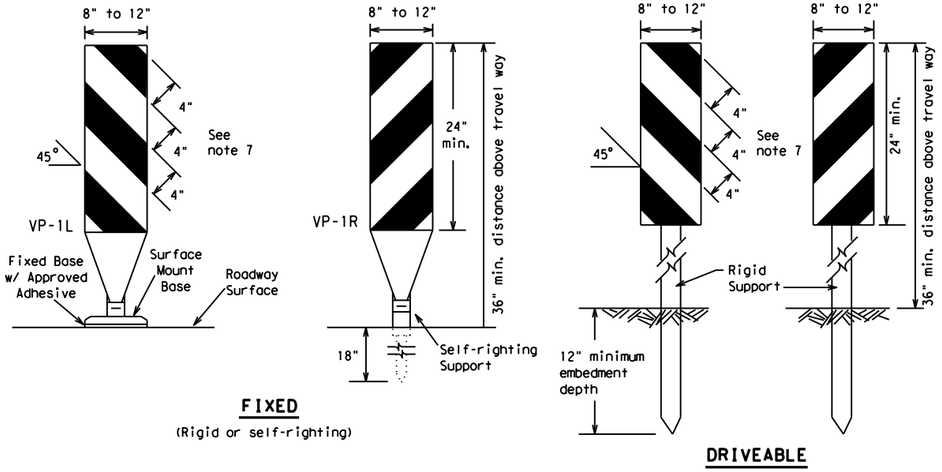


FIXED
(Rigid or self-righting)

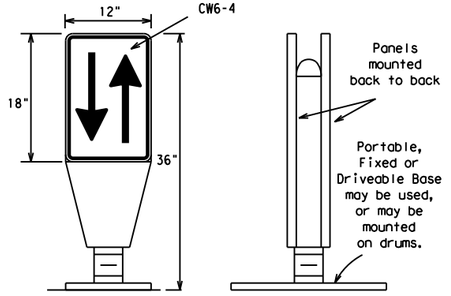
DRIVEABLE

(Rigid or self-righting)

PORTABLE

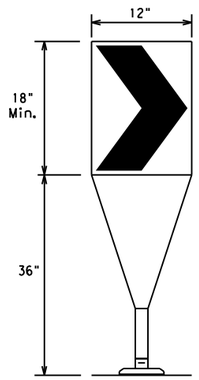
VERTICAL PANELS (VPs)

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.



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)



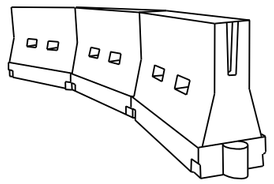
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

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7-13 5-21	PHR	WILLACY		63

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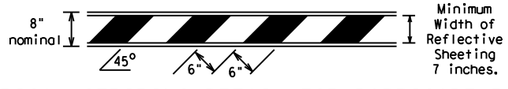
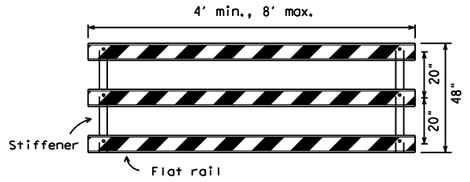
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



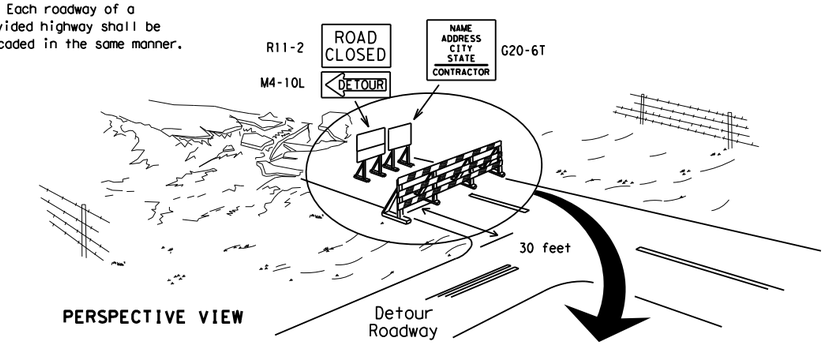
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

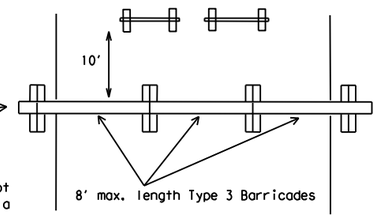
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

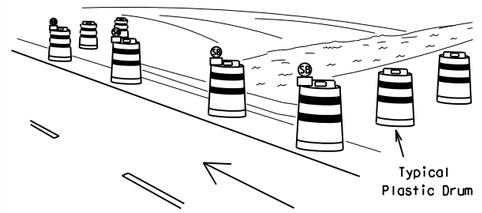
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

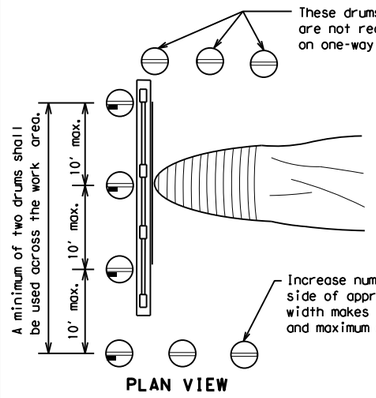
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

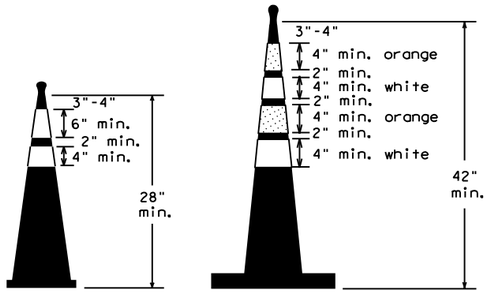
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



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

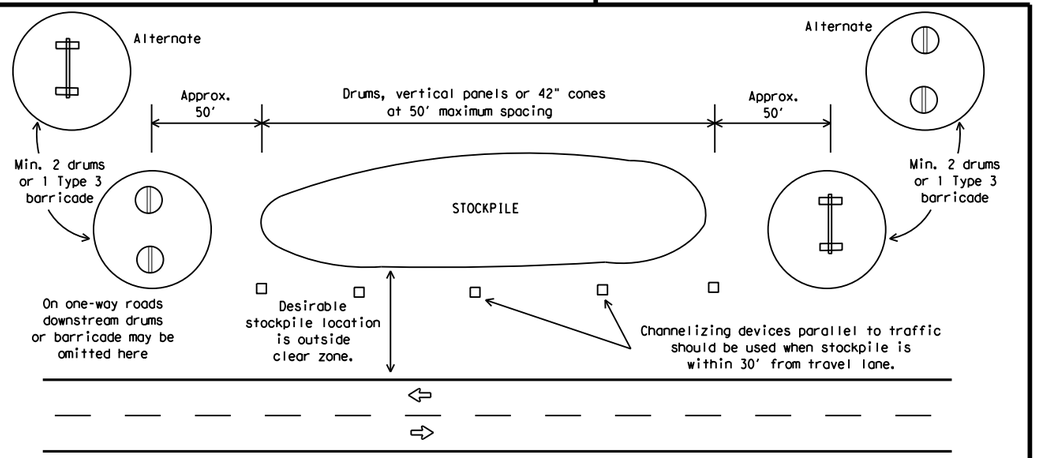
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers 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
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9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	WILLACY		64

104

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.

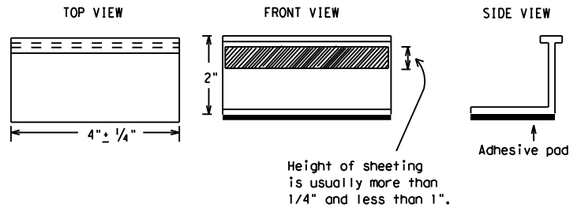
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

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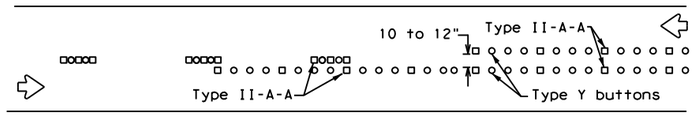
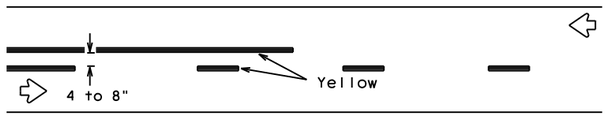
PAVEMENT MARKING PATTERNS

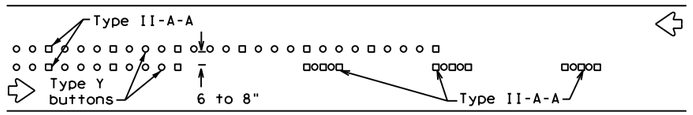
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



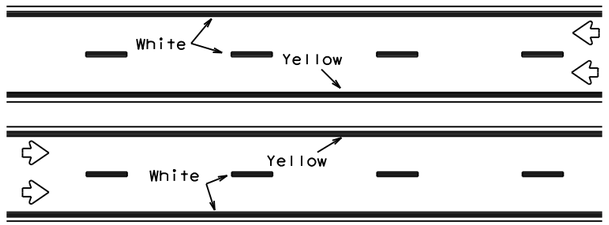
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



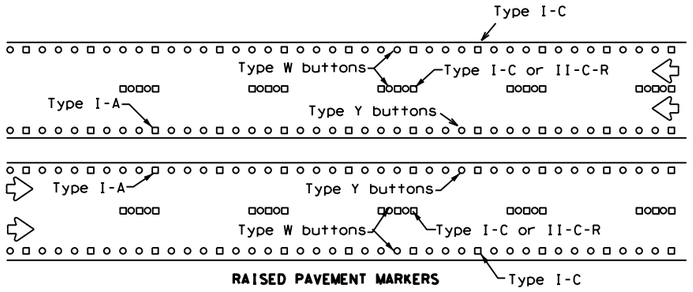
RAISED PAVEMENT MARKERS - PATTERN B

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

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



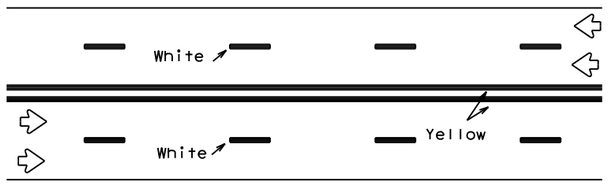
REFLECTORIZED PAVEMENT MARKINGS



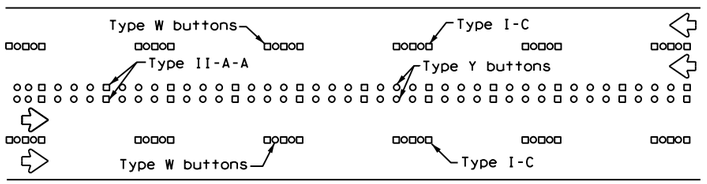
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



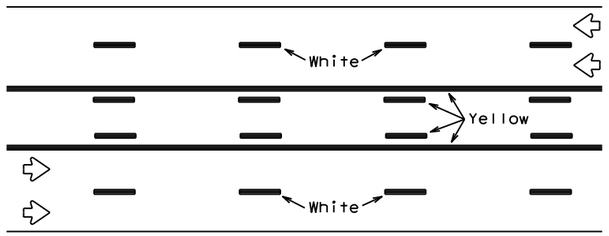
REFLECTORIZED PAVEMENT MARKINGS



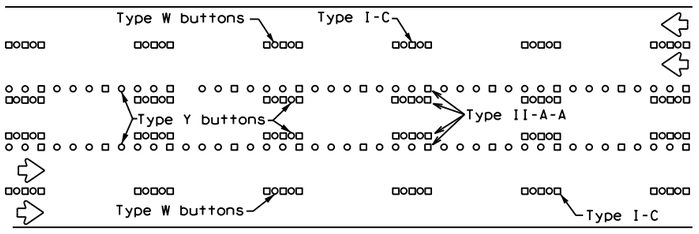
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

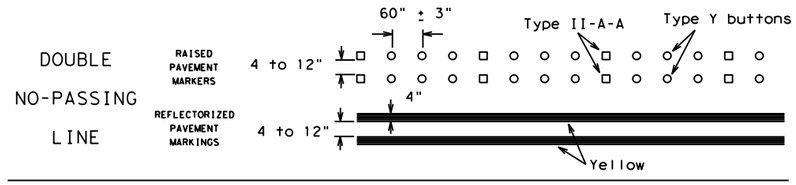
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

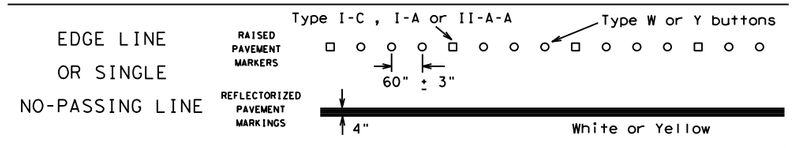
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

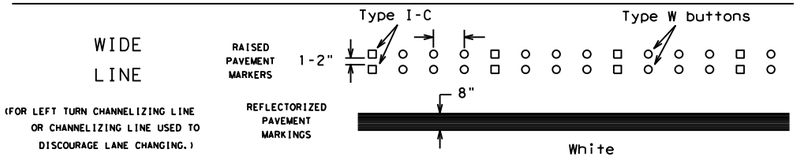


EDGE LINE OR SINGLE NO-PASSING LINE



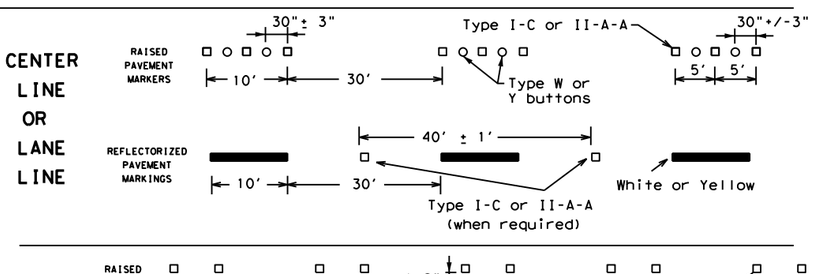
WIDE LINE

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

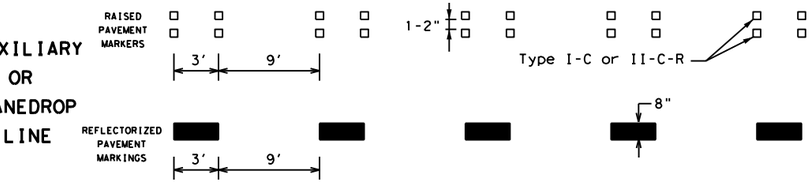


BROKEN LINES

CENTER LINE OR LANE LINE

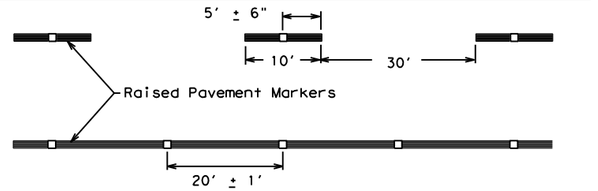


AUXILIARY OR LANEDROP LINE



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	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		66

106

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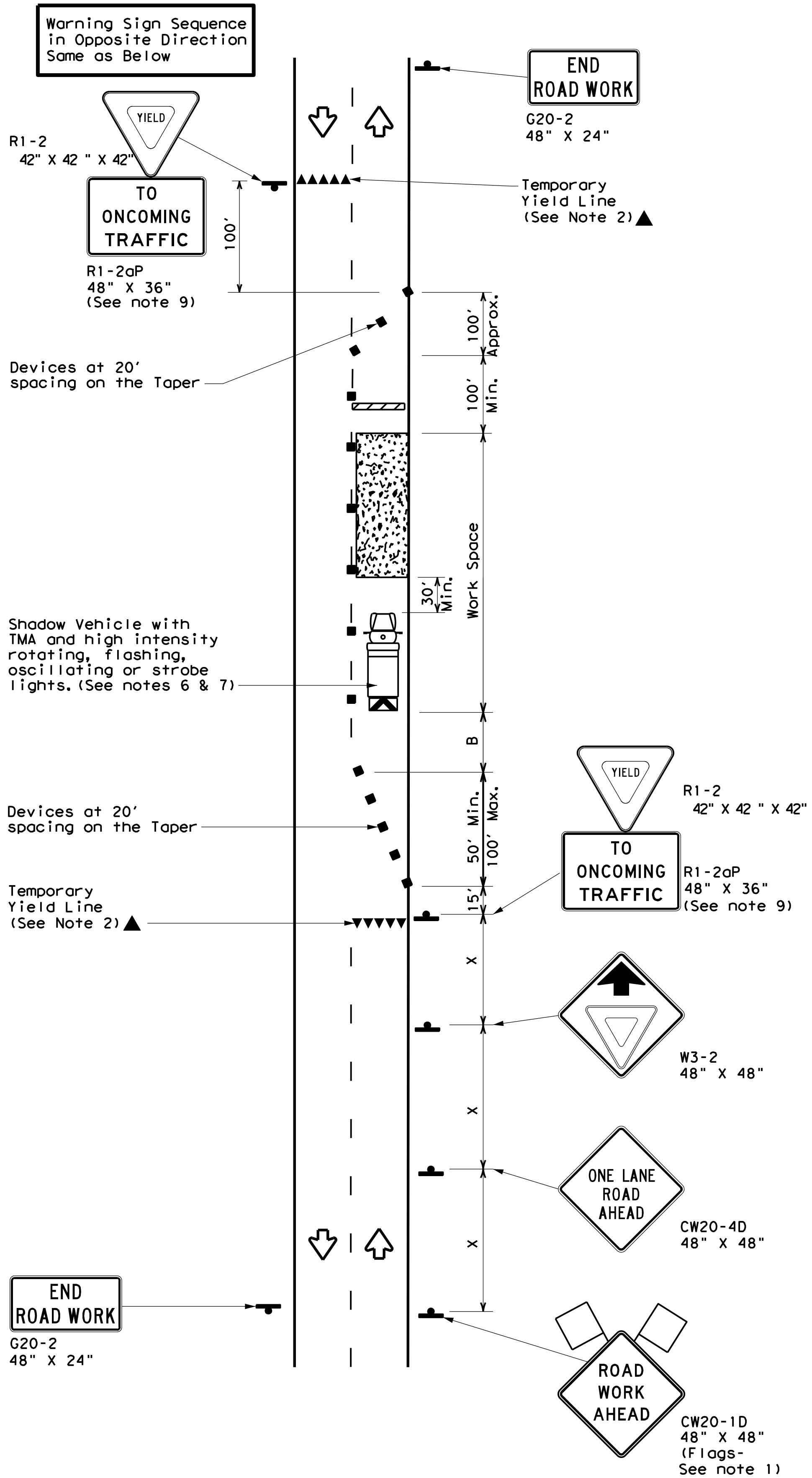


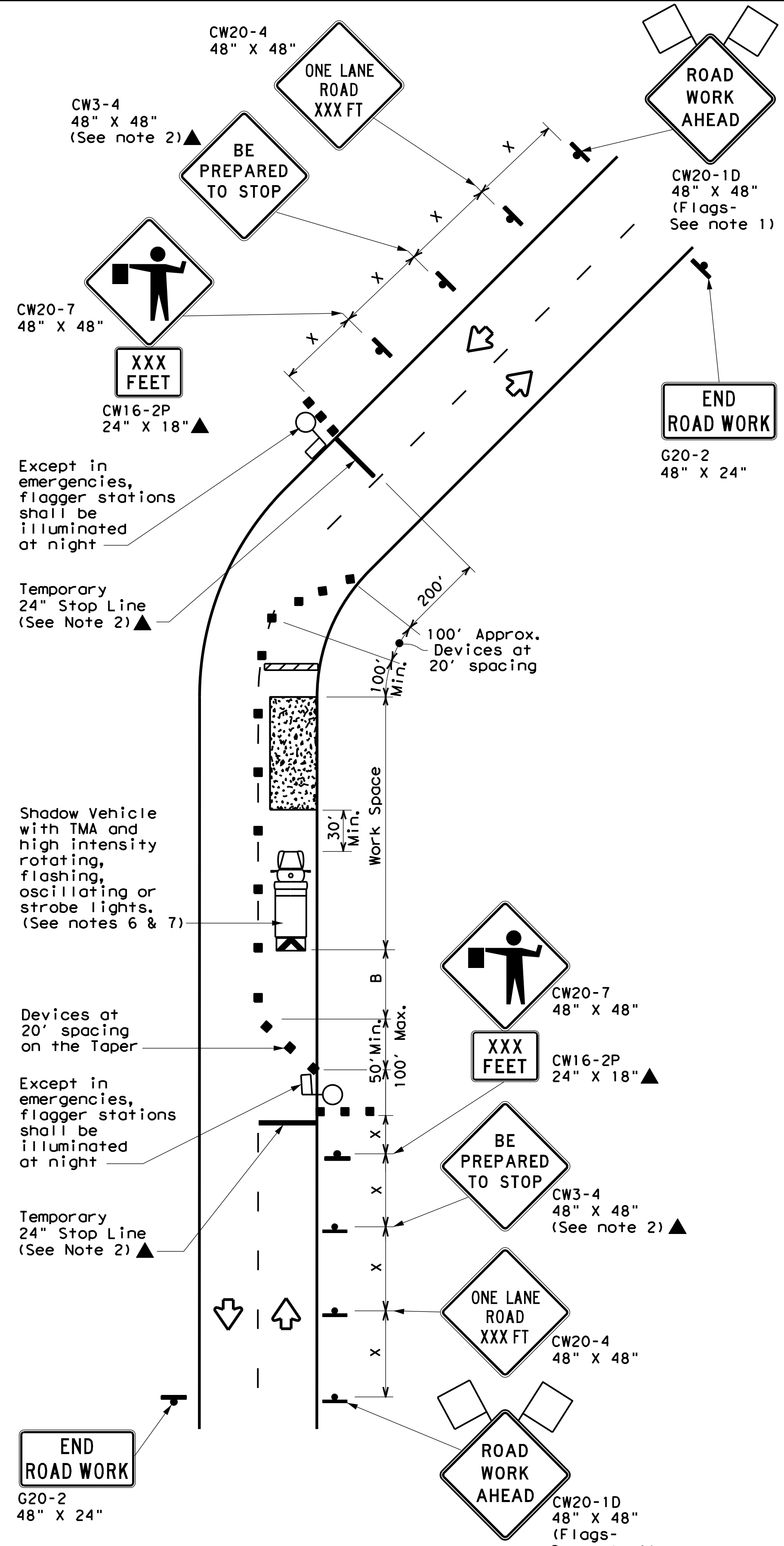
TCP (2-2a)

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

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

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

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

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

GENERAL NOTES

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.

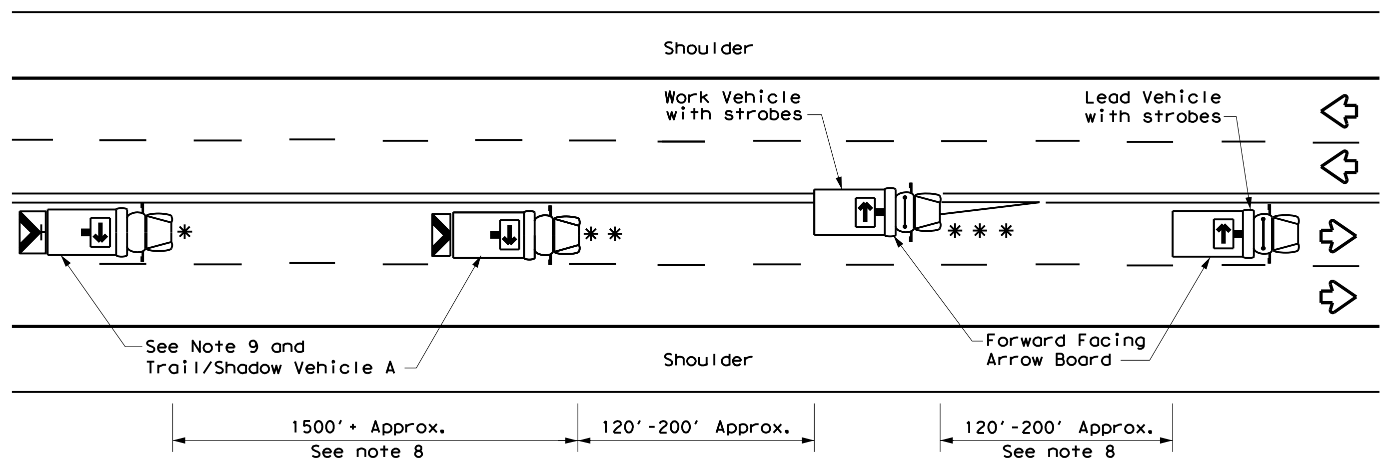
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

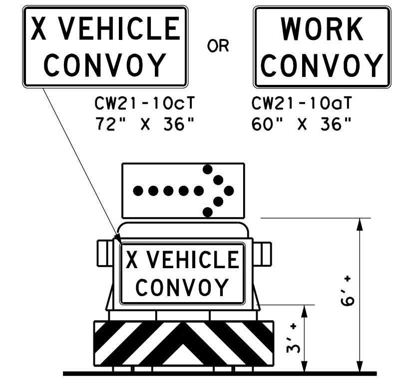
TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		67



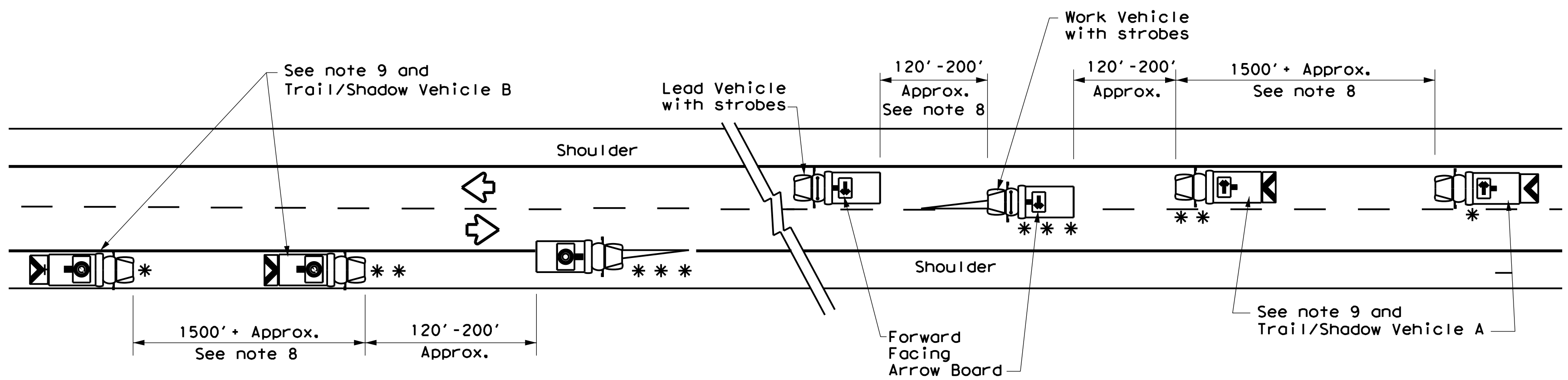
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

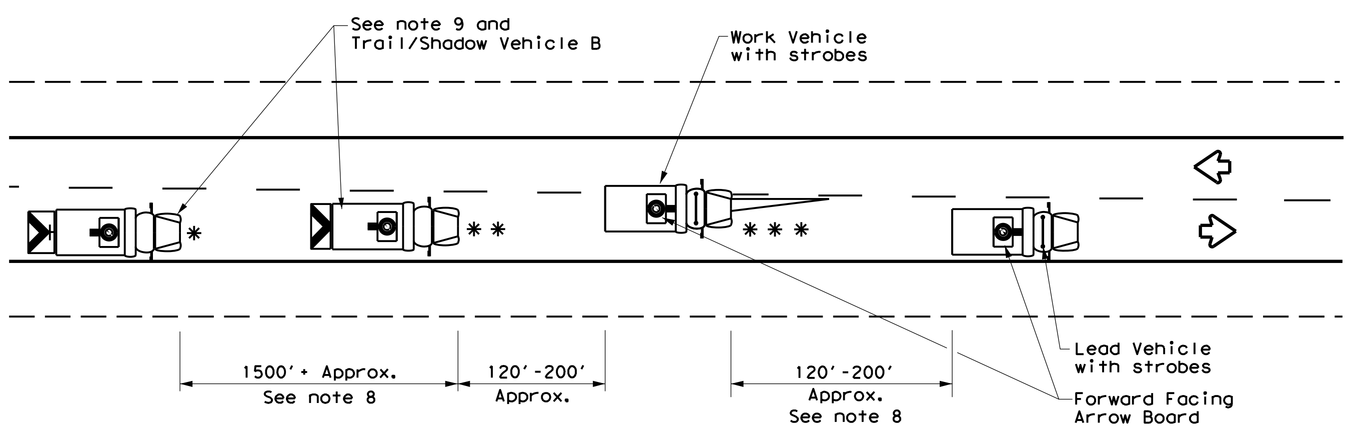


WORK ON SHOULDER

WORK ON TRAVEL LANE

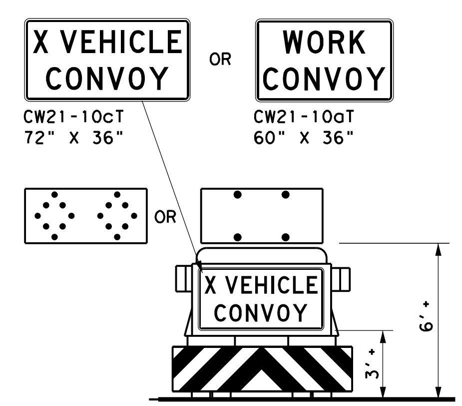
TCP (3-1b)

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

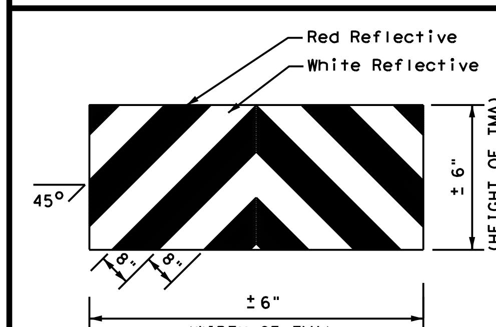
Symbol	Description	Symbol	ARROW BOARD DISPLAY
*	Trail Vehicle		
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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 3343	SECT 02	JOB 016	HIGHWAY FM1425
REVISIONS 2-94 4-98 8-95 7-13 1-97	DIST PHR	COUNTY WILLACY		SHEET NO. 68

175

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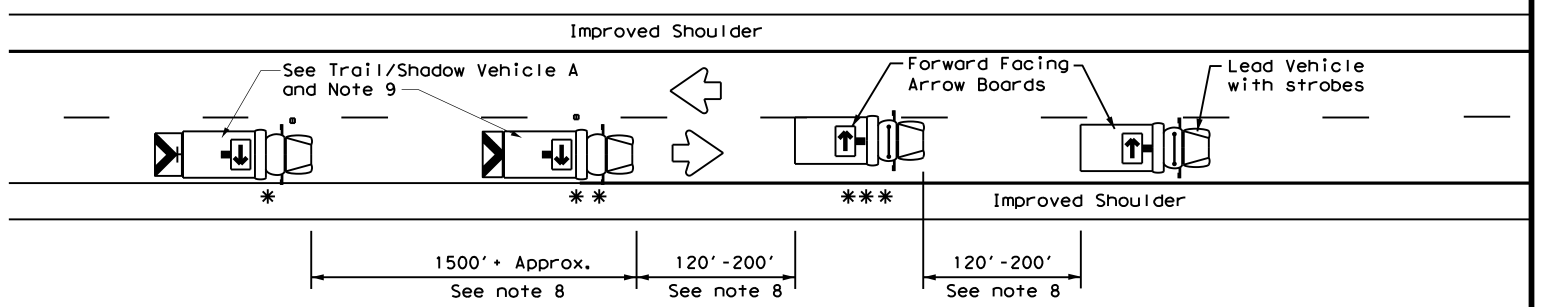
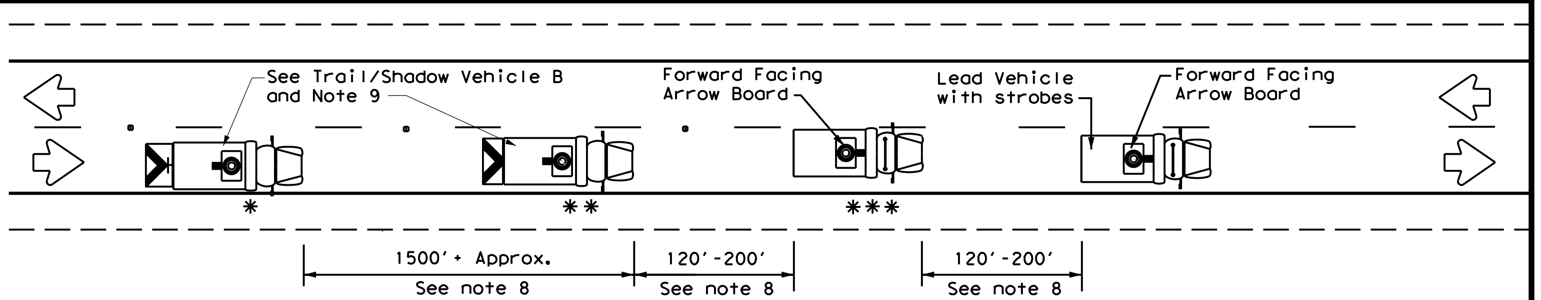


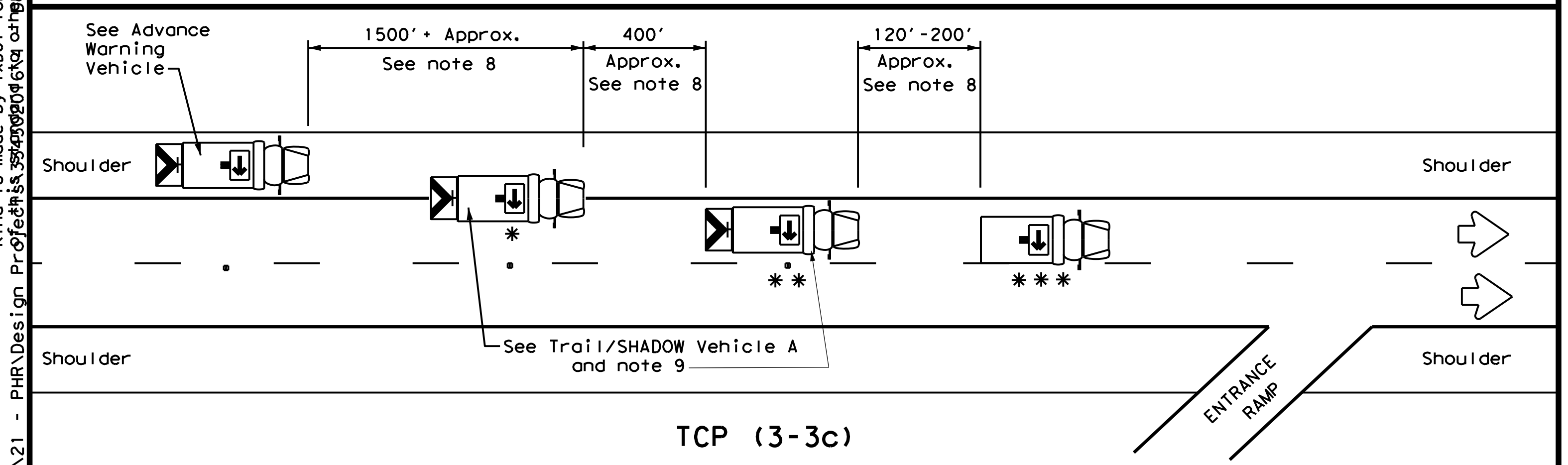
TCP (3-3a)

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



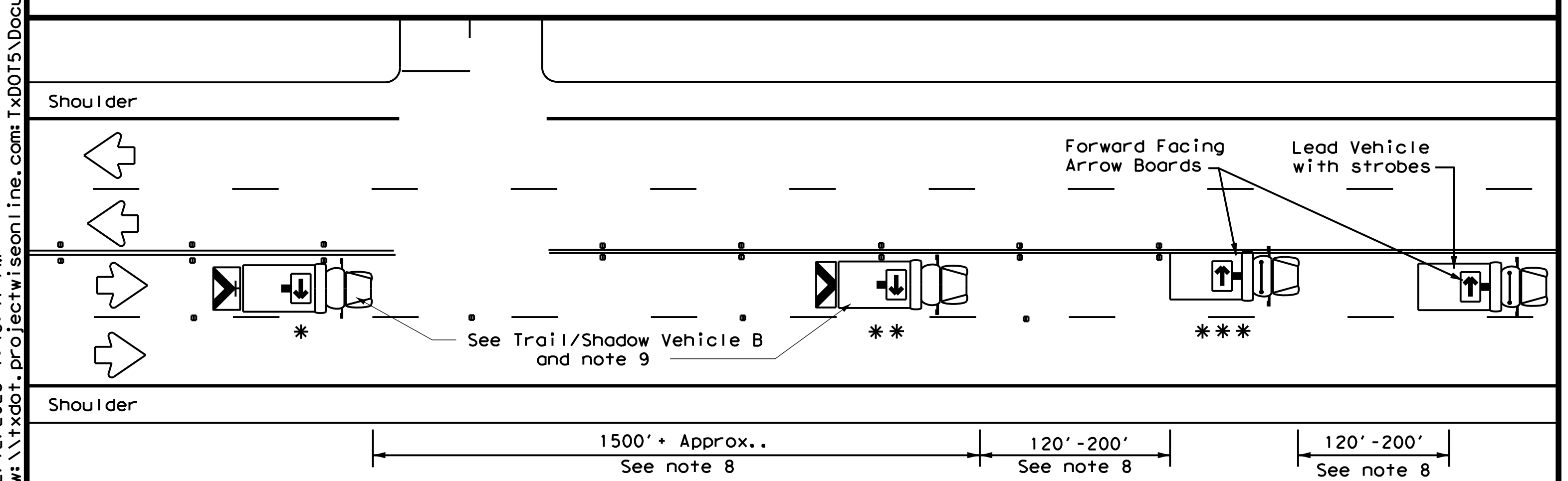
TCP (3-3b)

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



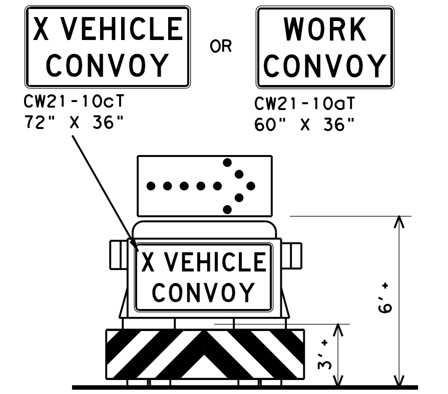
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



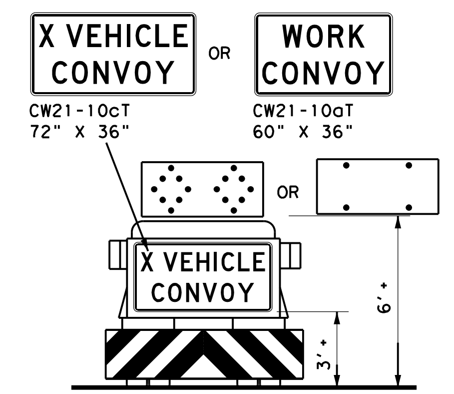
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



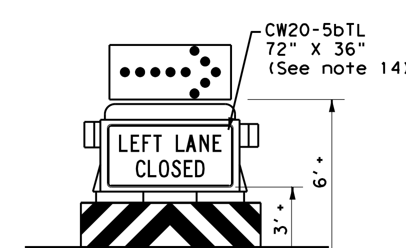
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

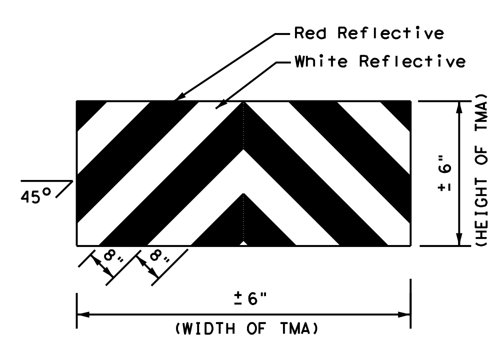


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

LEGEND

Symbol	Description	Symbol	ARROW BOARD DISPLAY
*	Trail Vehicle		
**	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
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177

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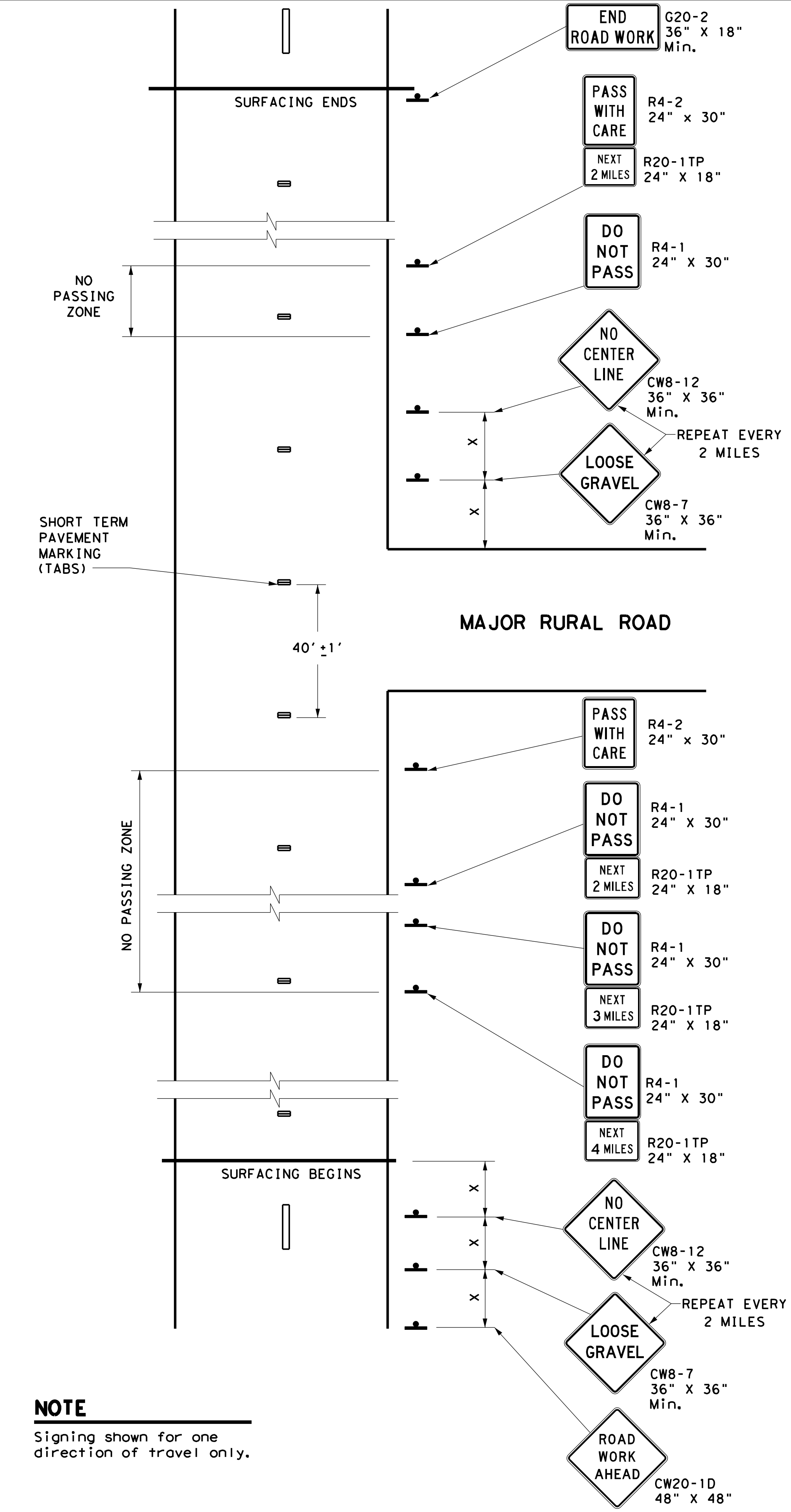
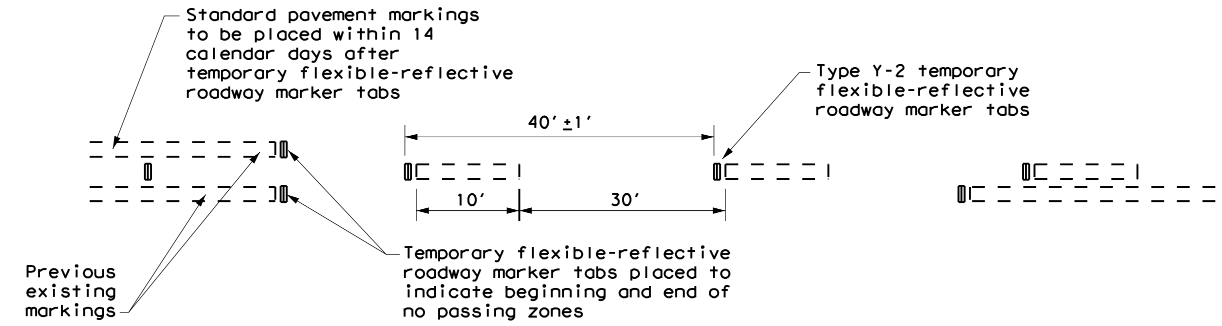


NOTE

Signing shown for one direction of travel only.

NO PASSING ZONES ON TWO-LANE TWO-WAY ROADS



TABS ON CENTERLINES OF TWO-LANE TWO-WAY ROADS

For seal coat, micro-surface or similar operations

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

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

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

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

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

"NO CENTER LINE" SIGN (CW8-12)

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

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

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

"LOOSE GRAVEL" SIGN (CW8-7)

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

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

PAVEMENT MARKINGS

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

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

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

COORDINATION OF SIGN LOCATIONS

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

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

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

* Conventional Roads Only

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

GENERAL NOTES

1. The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.

2. The devices shown on this sheet are to be used to supplement those required by the BC Standards or others required elsewhere in the plans.

3. Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWZTCD) on supports approved for Long-Term / Intermediate-Term Work Zone Sign Supports.

4. When surfacing operations take place on divided highways, freeways or expressways, the size of diamond shaped construction warning signs shall be 48" x 48".

5. Signs on divided highways, freeways and expressways will be placed on both right and left sides of the roadway based on roadway conditions as directed by the Engineer.

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 3343	SECT 02	JOB 016	HIGHWAY FM1425
REVISIONS 4-92 4-98 1-97 7-13	DIST PHR		COUNTY WILLACY	SHEET NO. 70

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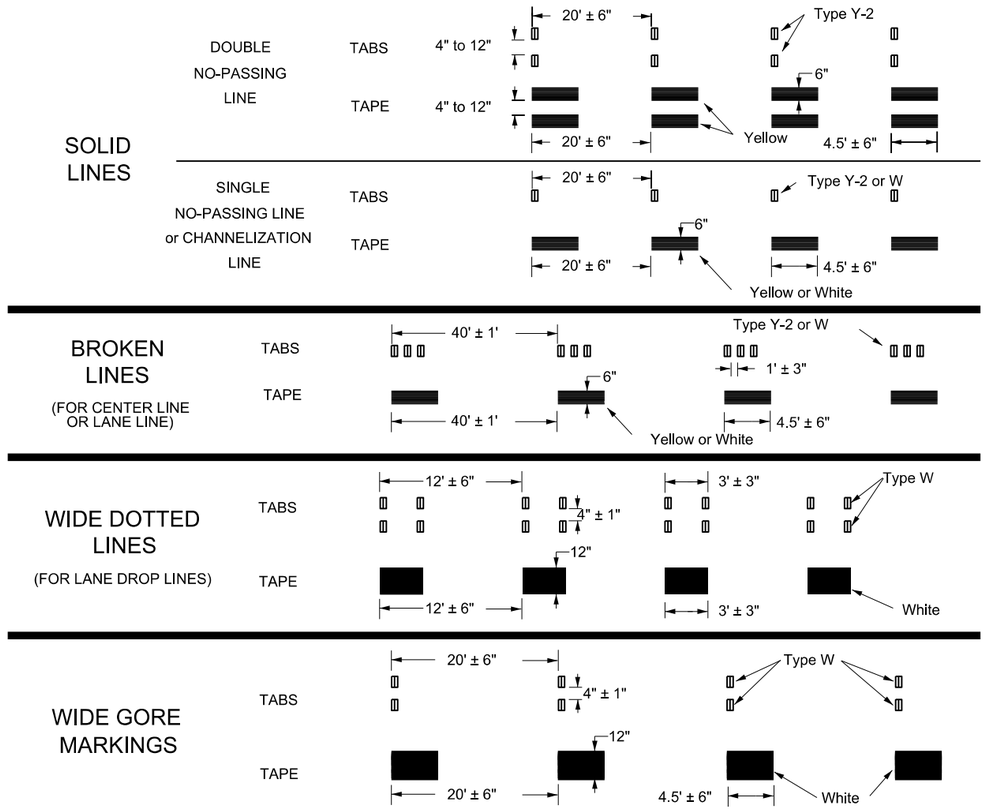
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



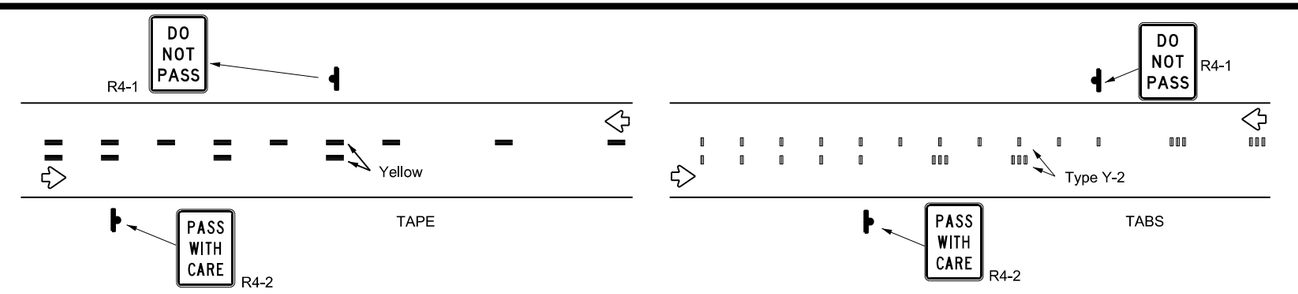
NOTES:

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

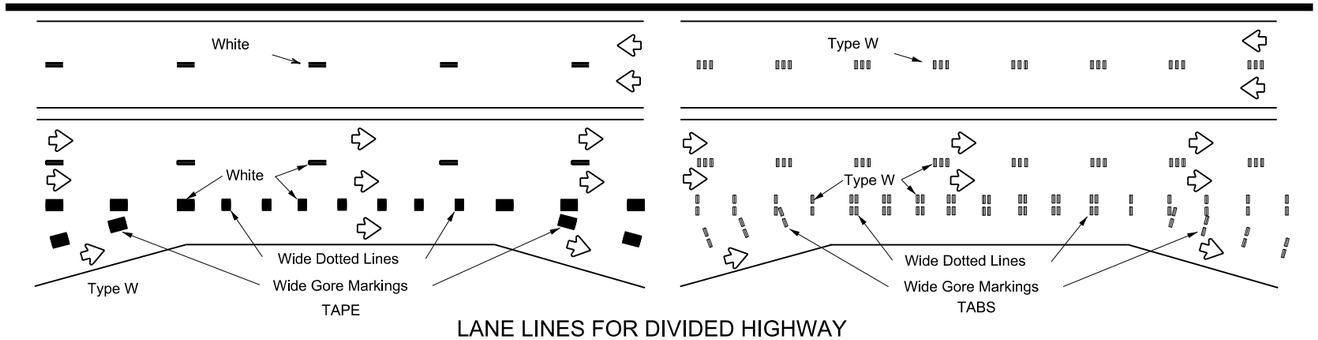
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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

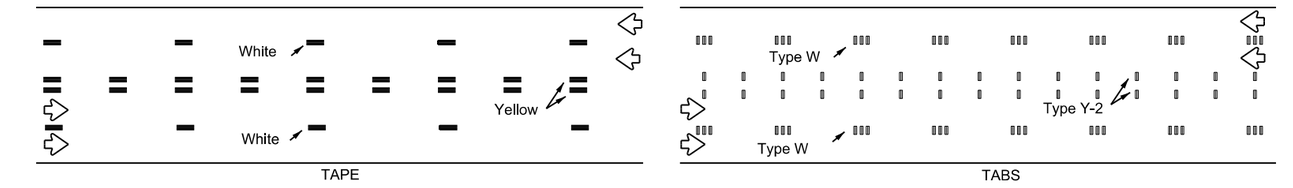
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



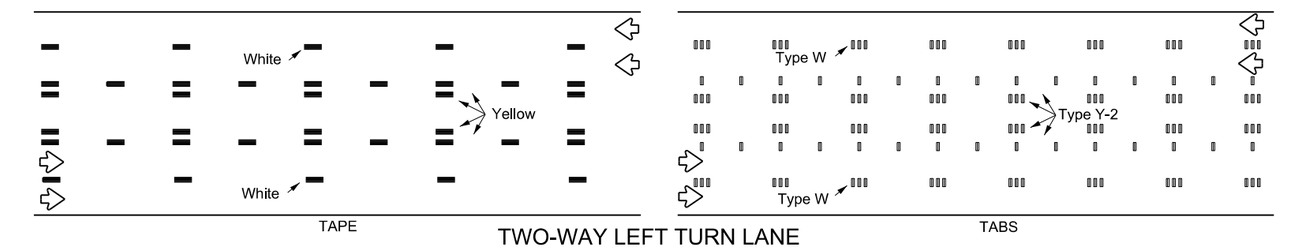
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



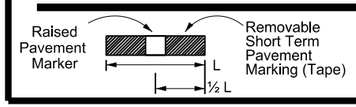
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



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

PREFABRICATED PAVEMENT MARKINGS

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

RAISED PAVEMENT MARKERS

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

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

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:

http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Safety Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-23

FILE: wzstpm-23.dgn	DN:	CK:	DW:	CK:
© TxDOT February 2023	CONT	SECT	JOB	HIGHWAY
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4-92 7-13 1-97 2-23 3-03	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		71

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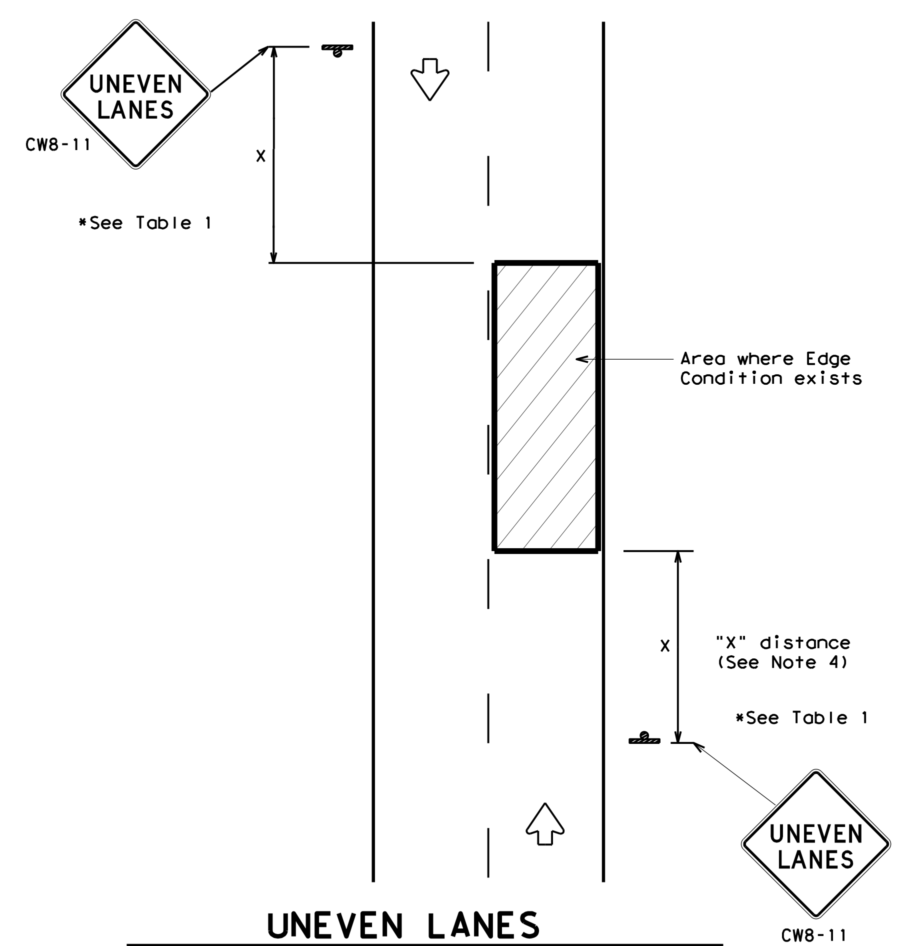
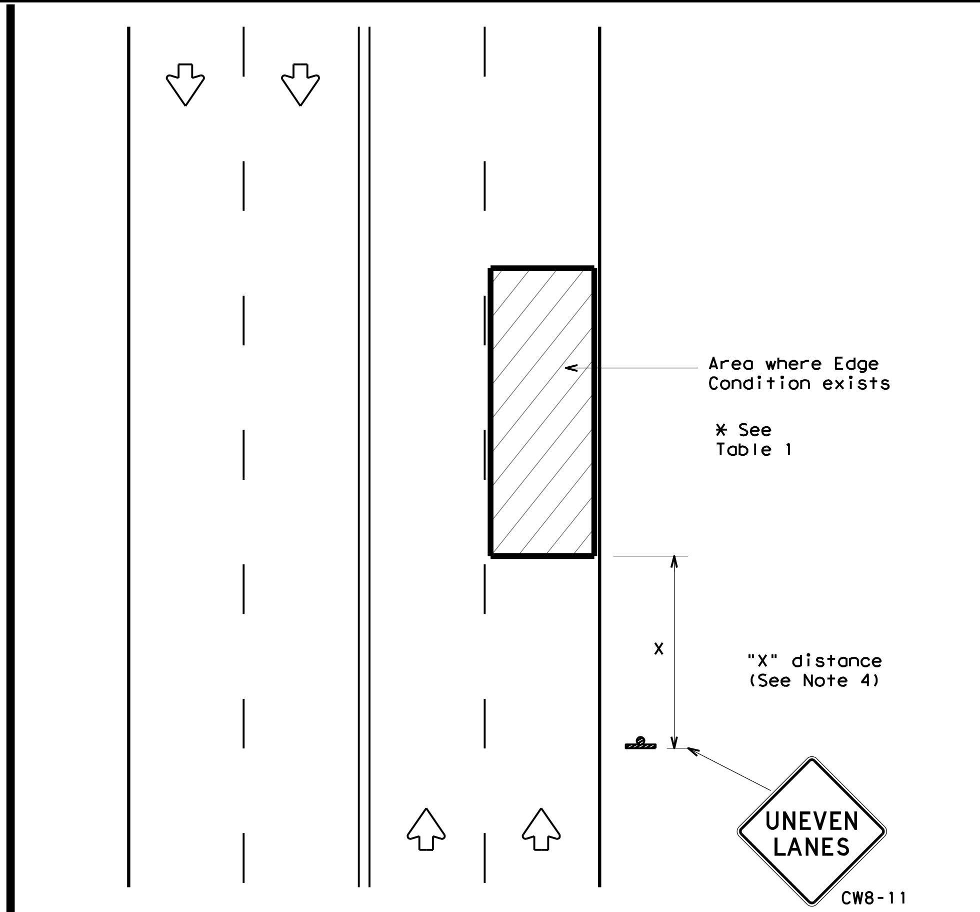
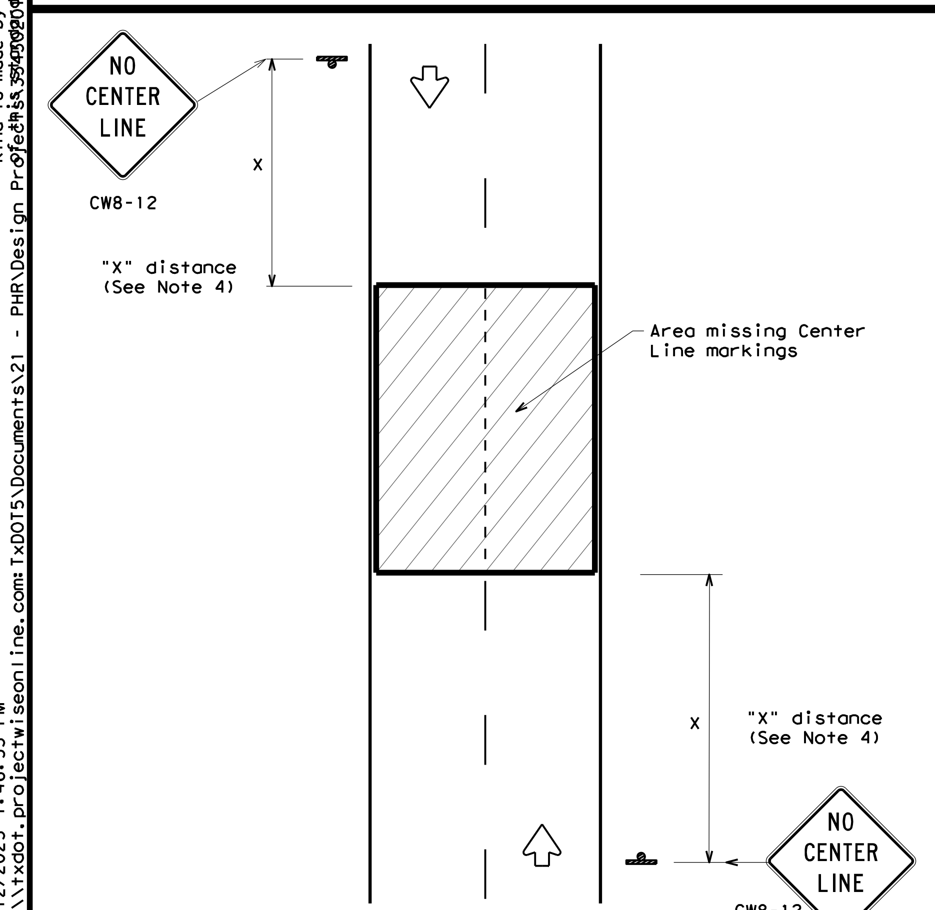


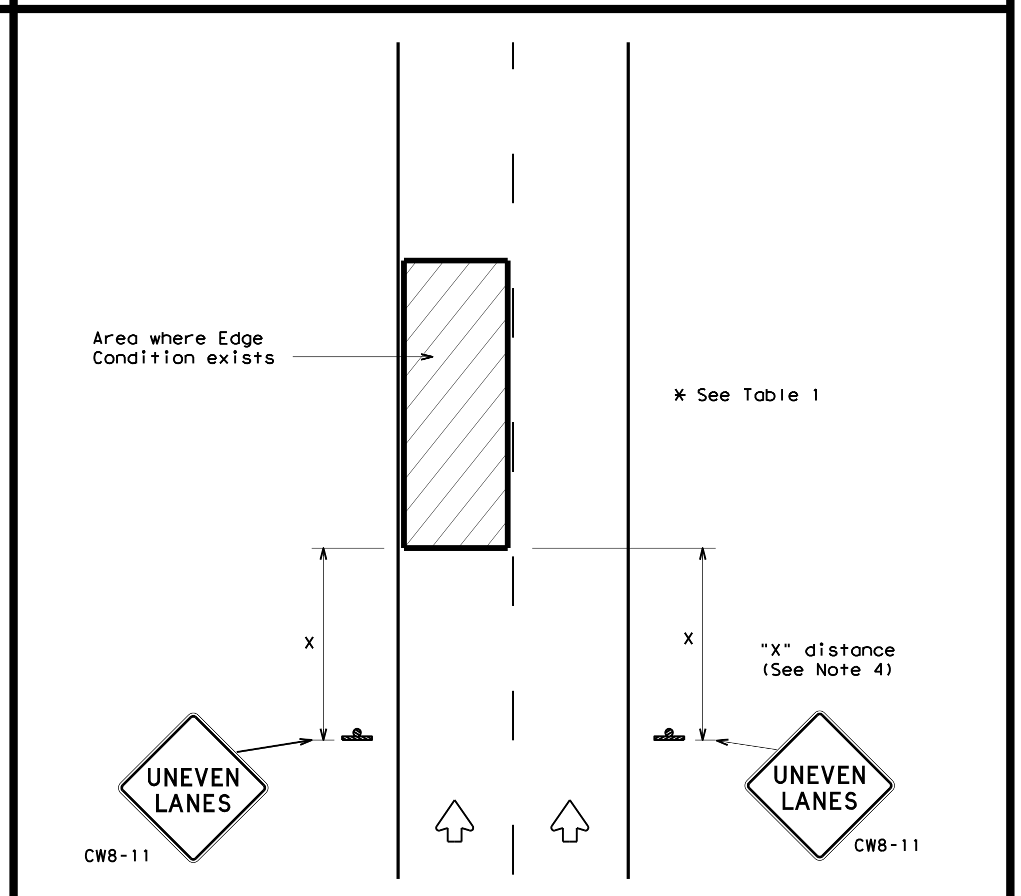
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



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 (D)	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 (>3, 1, D)	Less than or equal to 3"	Sign: CW8-11
③ (0" to 3/4", D, 12") 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
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8-95 2-98 7-13 1-97 3-03	DIST		COUNTY	SHEET NO.
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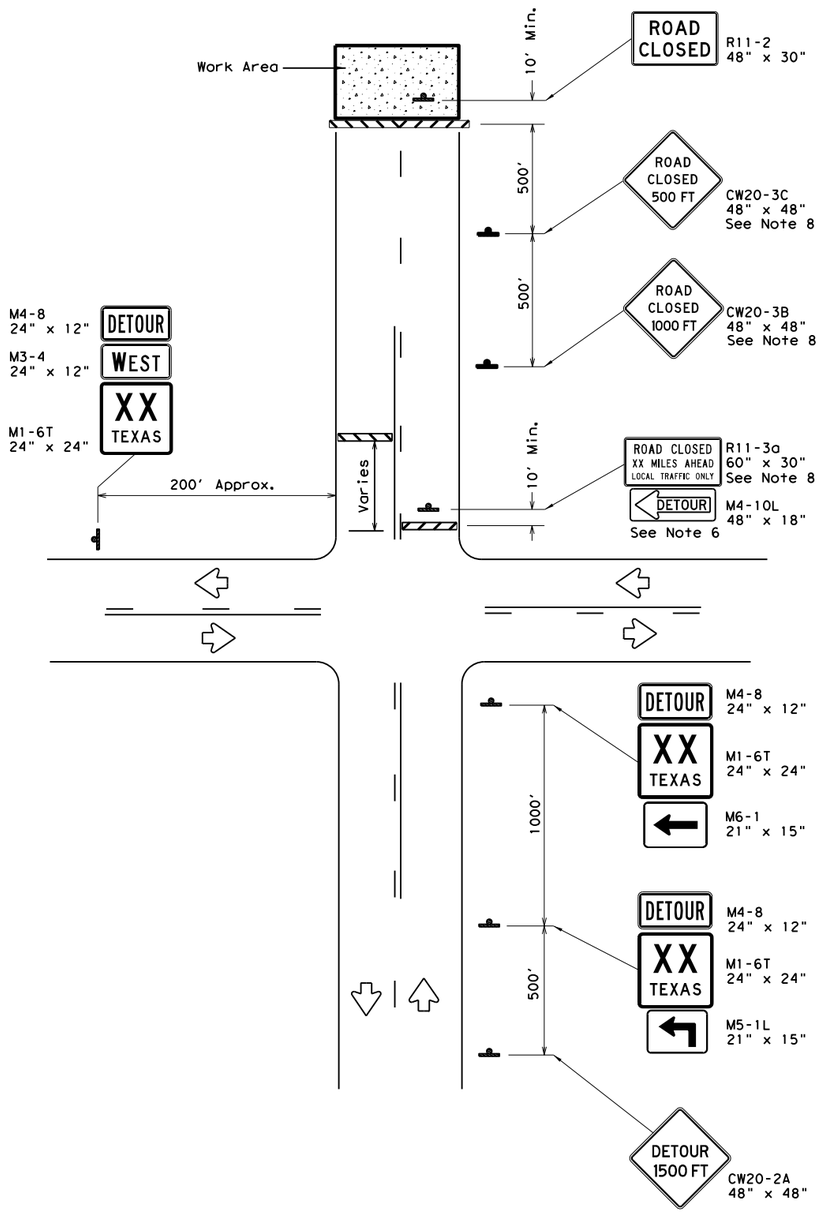
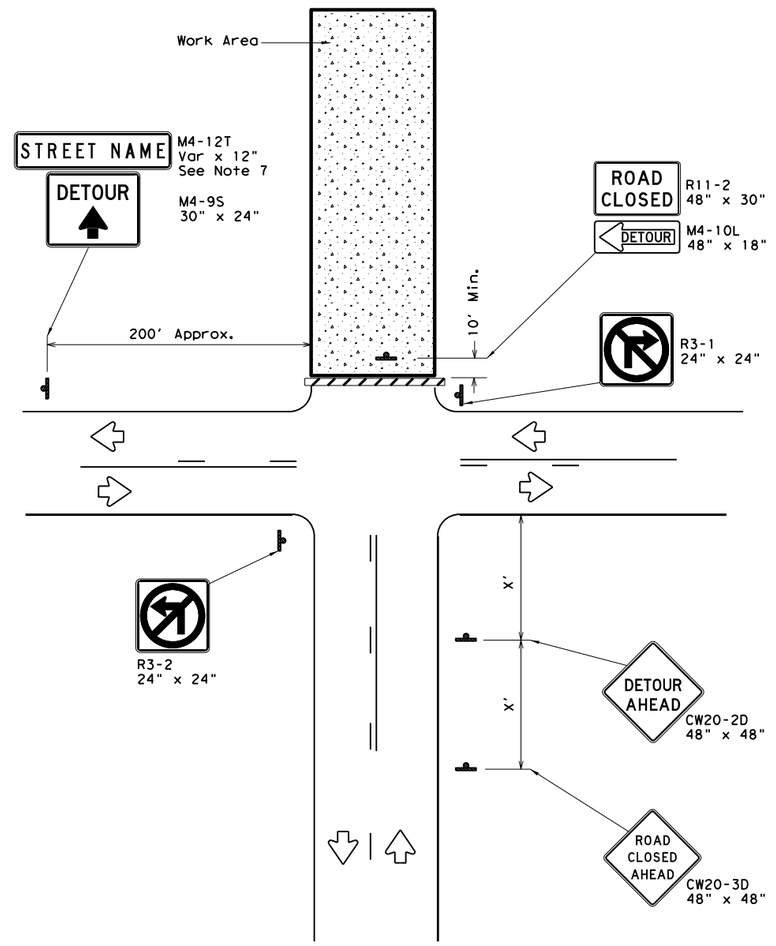


ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

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

* Conventional Roads Only

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

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1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	PHR	WILLACY		73

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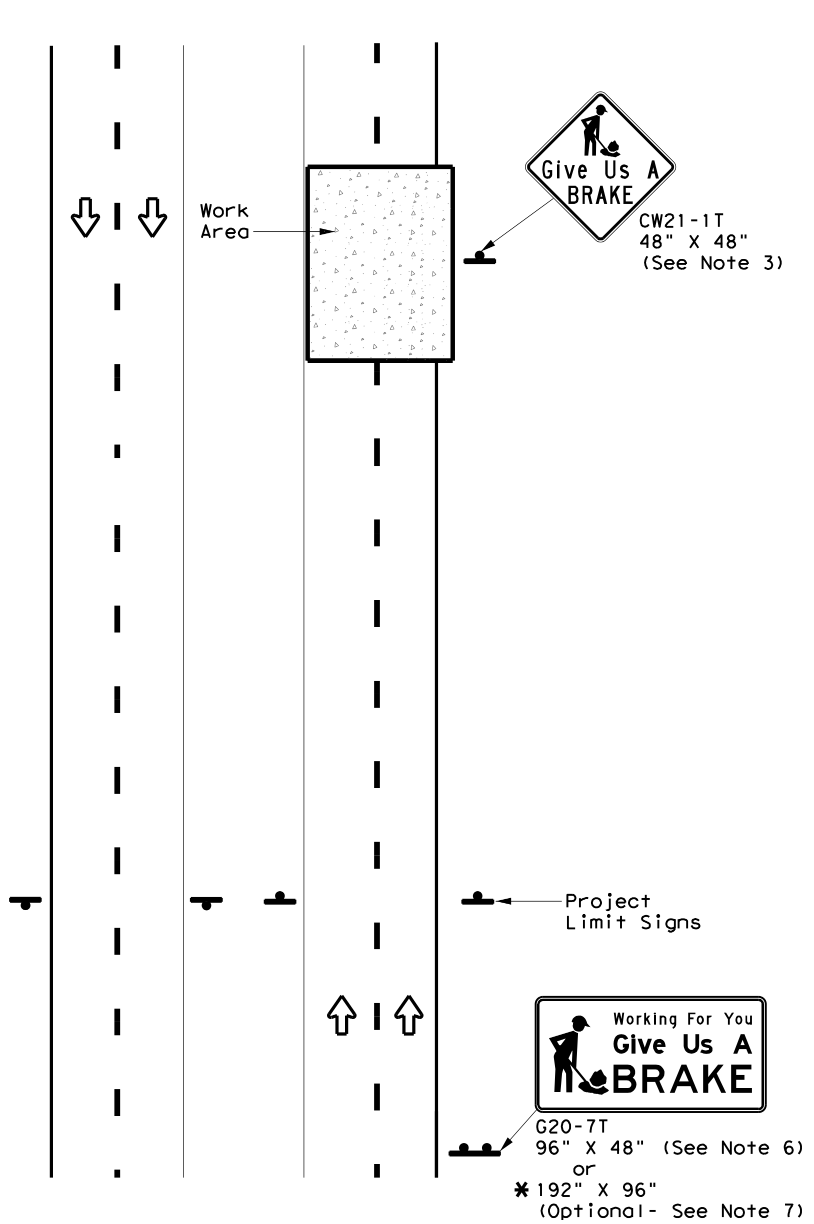
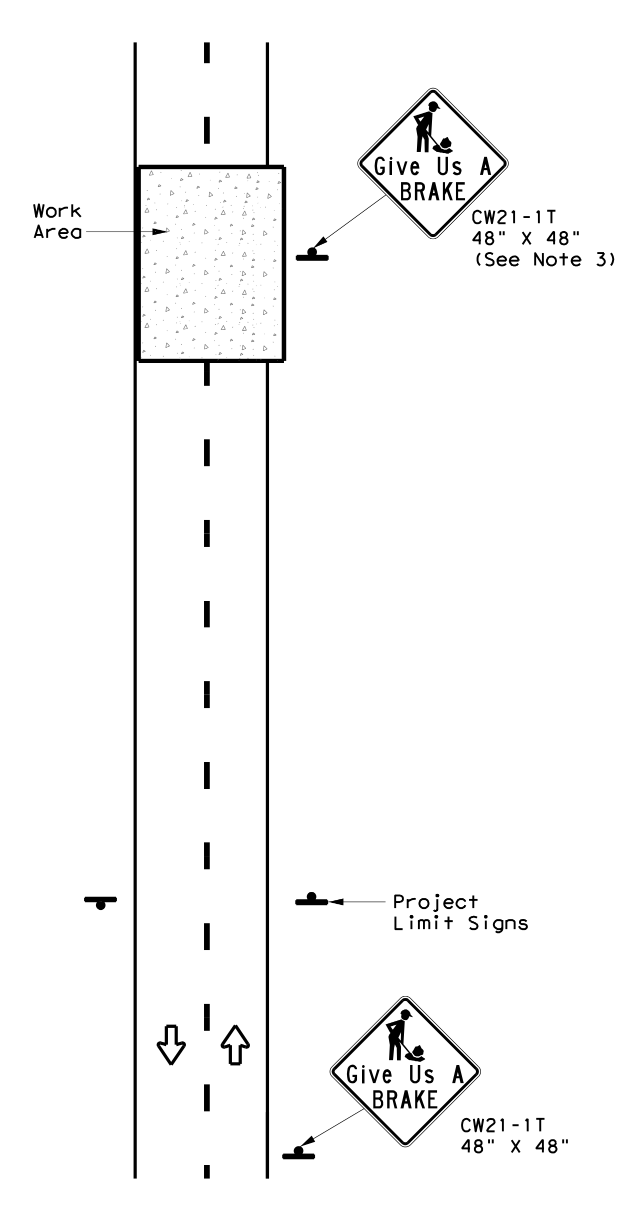


DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

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

SUMMARY OF LARGE SIGNS

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

▲ See Note 6 Below

LEGEND

⊥	Sign
⊥⊥	Large Sign
⇦	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS

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

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

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   - Item 636 - Aluminum Signs
   - Item 647 - Large Roadside Sign Supports and Assemblies.
   - Item 416 - Drilled Shaft Foundations
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

Texas Department of Transportation | Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

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©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
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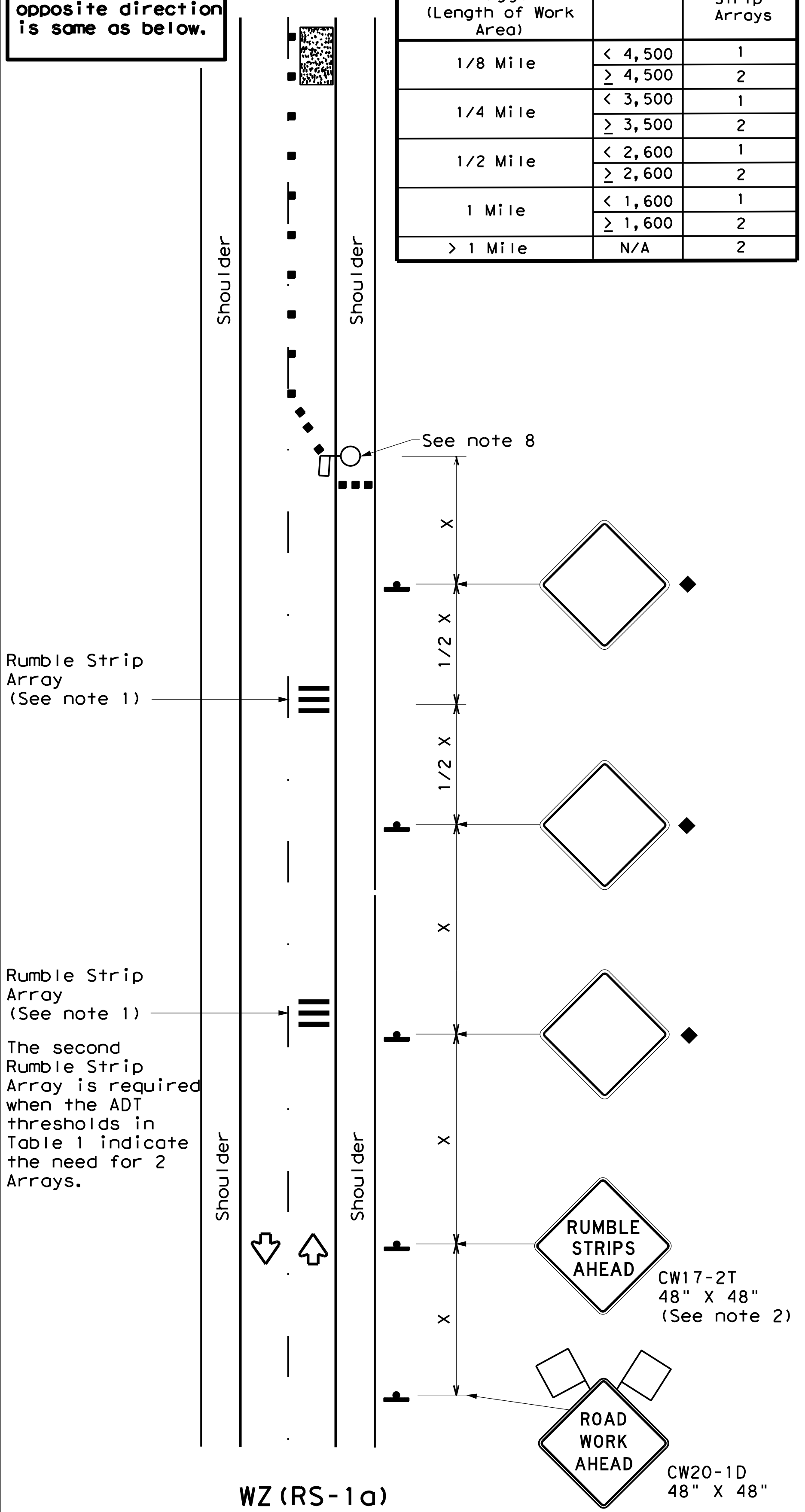
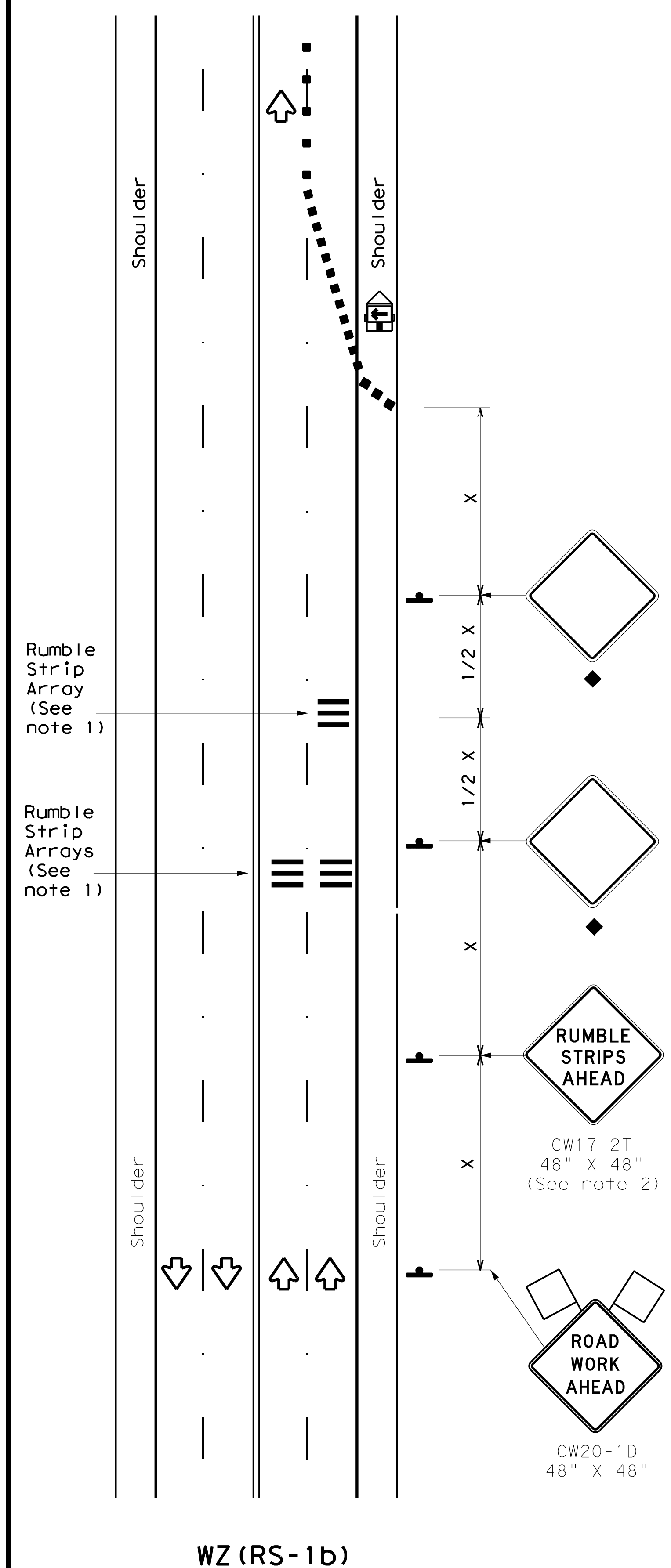
Warning sign and rumble strip sequence in opposite direction is same as below.

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)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

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. Remove Temporary Rumble Strips before removing the advanced 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 Automated Flagger Assistance Device (AFAD) or a Portable Traffic Signal (PTS).
9. Replace defective Temporary Rumble Strips as directed by the Engineer.
10. Temporary Rumble Strips may be used on freeways or expressways based on engineering judgment and written direction from the Engineer.

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

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

TABLE 2	
Speed	Approximate distance between strips in an array
≤ 40 MPH	10'
> 40 MPH & ≤ 55 MPH	15'
= 60 MPH	20'
≥ 65 MPH	* 35'+

Texas Department of Transportation

Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

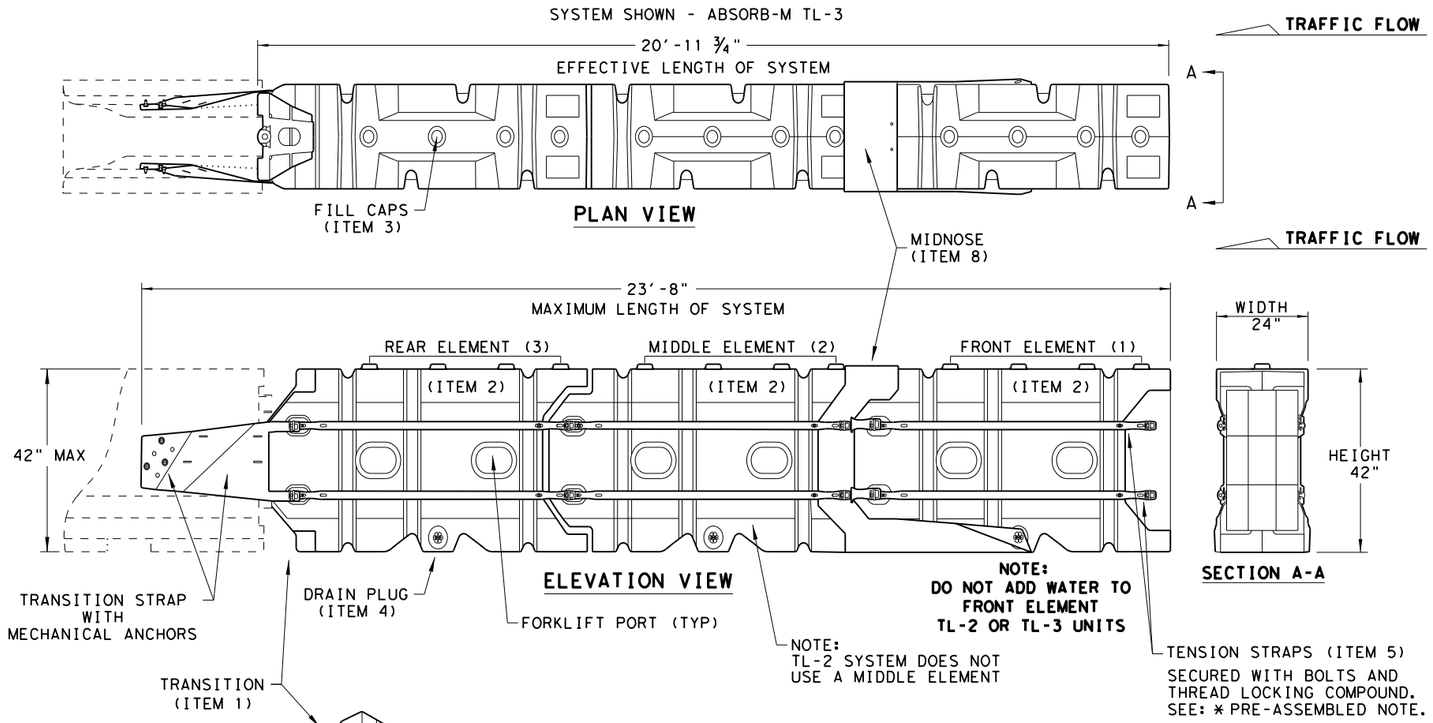
WZ(RS)-22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2012	CONT 3343	SECT 02	JOB 016	HIGHWAY FM1425
REVISIONS 2-14 1-22 4-16	DIST PHR		COUNTY WILLACY	SHEET NO. 75

117

DATE: 12/12/2023
FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\3343020164 - Design\Plan Set\2. TCP\TCP STANDARDS\6of6 absorbm19.dgn

SYSTEM SHOWN - ABSORB-M TL-3



THE ABSORB-M IS A NON-REDIRECTIVE, GATING, CRASH CUSHION DESIGNED TO MEET THE LATEST TL-3 & TL-2 MASH REQUIREMENTS.

THE SYSTEM IS DESIGNED TO ACCOMMODATE A VARIETY OF F-SHAPE AND SINGLE SLOPE CONCRETE BARRIERS. CONTACT THE MANUFACTURER FOR GUIDANCE REGARDING OTHER ALLOWABLE SHAPES.

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

NOTE:
CROSS SLOPES OF UP TO 8% (OR 1:12 SLOPE) CAN BE ACCOMMODATED WITH STANDARD HARDWARE SHOWN WITHIN THE INSTRUCTIONS MANUAL. FOR SLOPES WITH EXCESS OF 8% (OR 1:12) CONTACT, LINDSAY TRANSPORTATION SOLUTIONS.

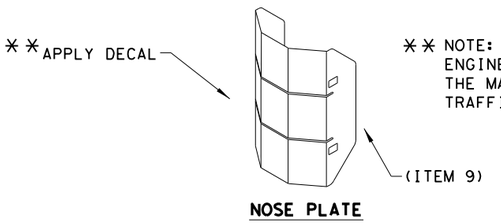
GENERAL NOTES

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

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

*COMPONENTS PRE-ASSEMBLED WITH ELEMENT ASSEMBLY

DELINEATION DECAL PLACEMENT GUIDE



NOSE PLATE

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

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

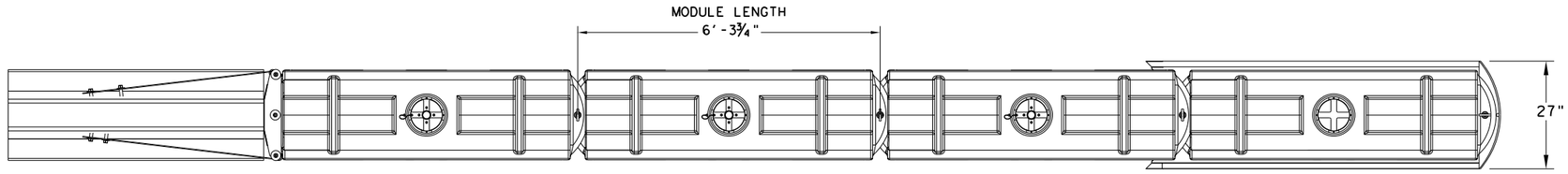
NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

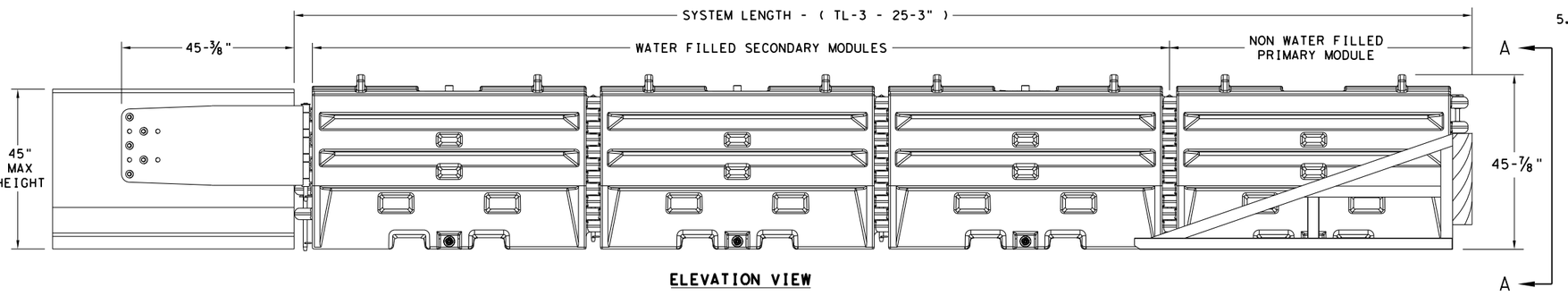
Texas Department of Transportation — Design Division Standard

LINDSAY TRANSPORTATION SOLUTIONS
CRASH CUSHION
(MASH TL-3 & TL-2)
TEMPORARY - WORK ZONE
ABSORB(M)-19

FILE: absorbm19	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: JULY 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		76



PLAN VIEW



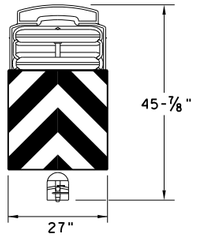
ELEVATION VIEW

GENERAL NOTES

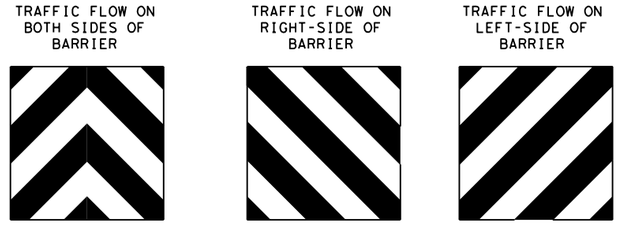
1. REFER TO THE INSTALLATION MANUAL FOR SPECIFIC SYSTEM ASSEMBLY AND MODULE ORIENTATION. FOR ADDITIONAL INFORMATION, CONTACT TRAFFIX, INC. AT (949) 361-5663.
2. THE SLED SYSTEM IS A MASH APPROVED TEST LEVEL 3 (TL-3) CRASH CUSHION APPROVED FOR USE IN TEMPORARY WORK ZONES. THE SLED SYSTEM IS A NON-REDIRECTIVE,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

- CONCRETE BARRIER, TEMPORARY OR PERMANENT, 45" MAXIMUM HEIGHT
- STEEL BARRIER
- PLASTIC BARRIER
- CONCRETE BRIDGE ABUTMENTS
- W-BEAM GUARD RAIL
- THRIE BEAM GUARD RAIL

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

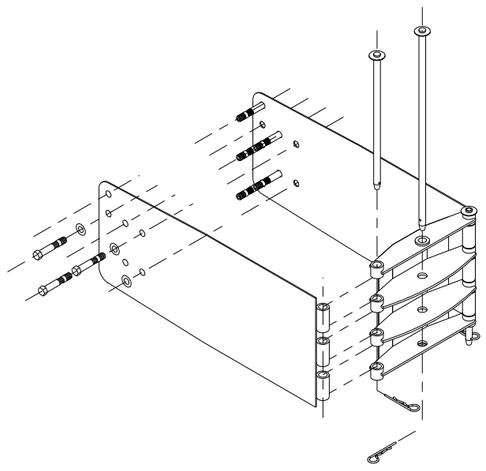


SECTION A-A



NOSE SHEETING PANEL DELINEATION

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



SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

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

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

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

SACRIFICIAL

BILL OF MATERIAL

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

Texas Department of Transportation — Design Division Standard

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

FILE: sled19.dgn	DN: TxDOT	CK: KM	DW: VP	CK:
©TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		77

DATE: 12/12/2023
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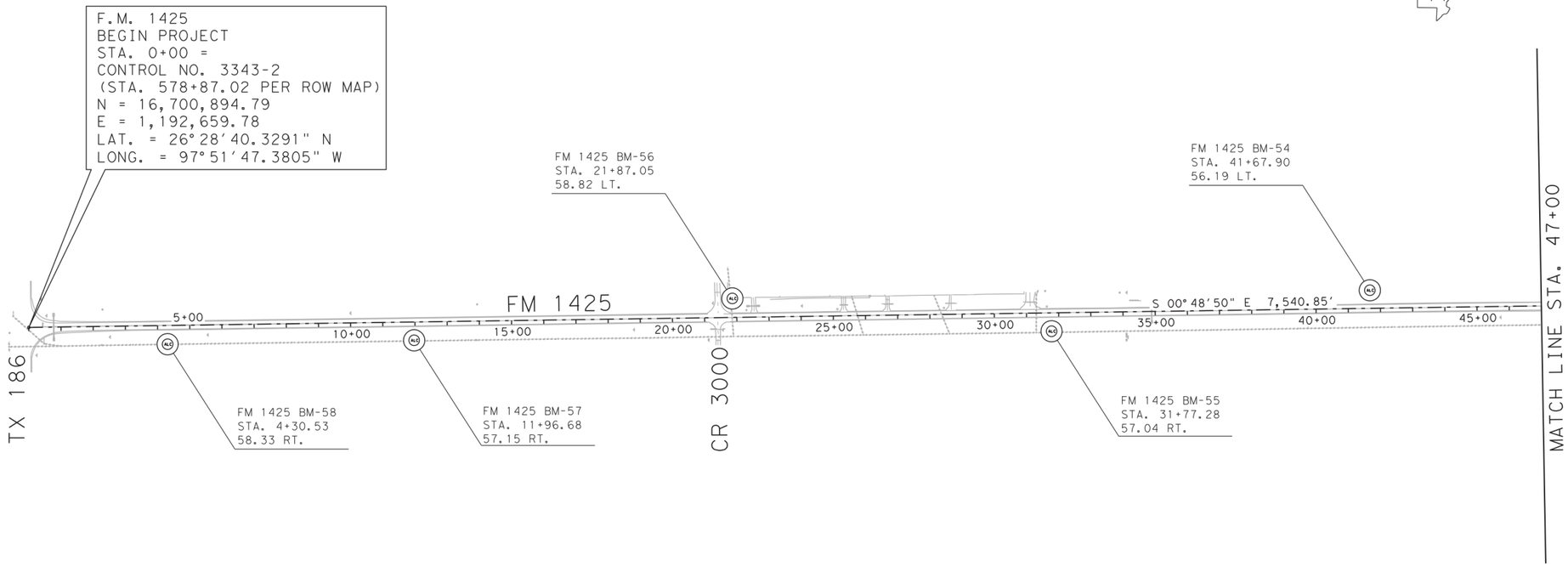
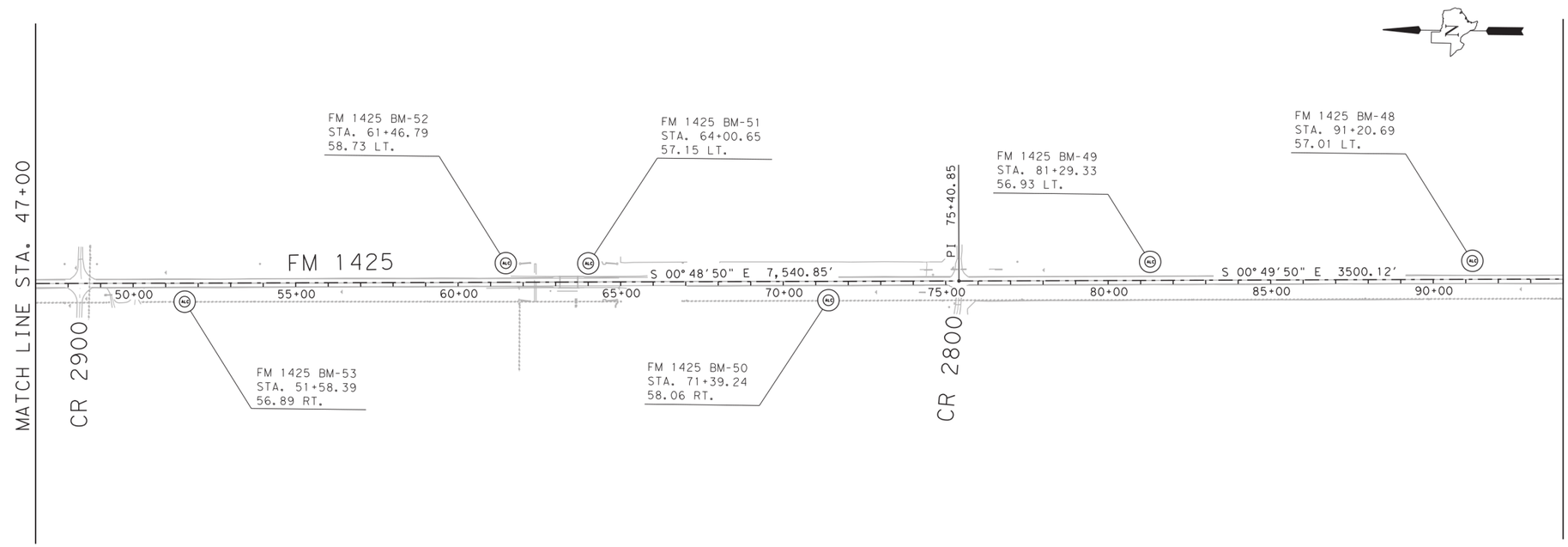




NOTES:

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE (4205), NORTH AMERICAN DATUM OF 1983 (2011 ADJUSTMENT) EPOCH 2010.00.

2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEOID12B PERFORMING DIGITAL LEVEL LOOPS FROM EXISTING PHR-245-0097.

3. COORDINATES AND DISTANCES ARE US SURVEY FEET, DISPLAYED IN SUREFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE TXDOT SURFACE ADJUSTMENT FACTOR 1.00004.

4. HORIZONTAL CONTROL VALUES SHOWN ARE BASED ON RTK OBSERVATIONS UTILIZING TXDOT VRS.

5. CONTROL POINTS 1-58 WERE SET +/- 15" SUBSURFACE.

0' 100' 200' 400'
SCALE: 1"=400'

STATE OF TEXAS
REGISTERED
CHRIS T. ABBOTT
6407
PROFESSIONAL
LAND SURVEYOR

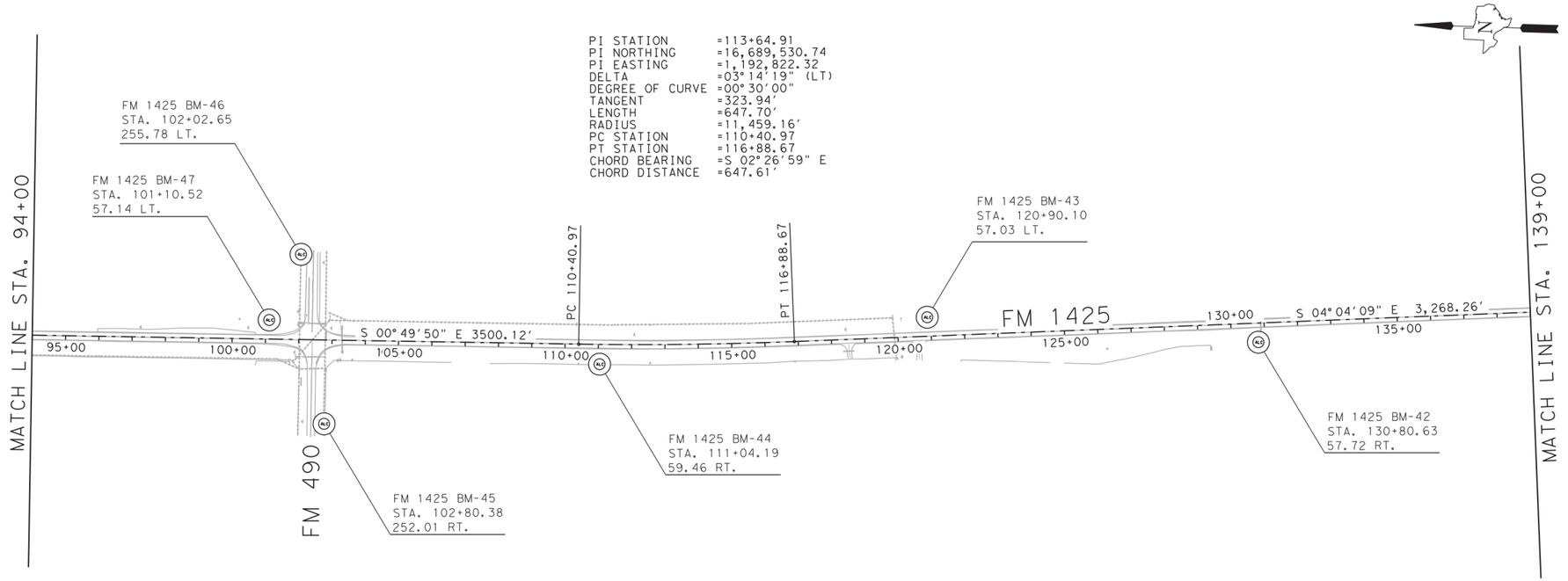
04/02/2020

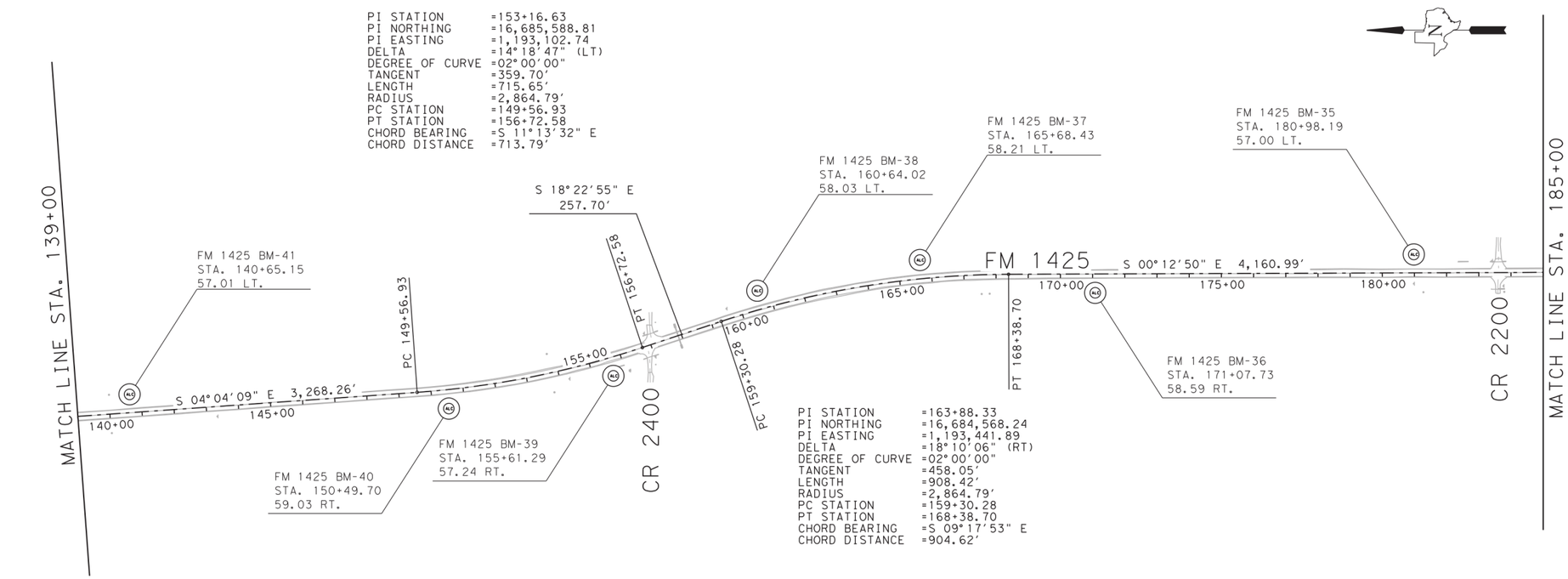
GORRONDONA & ASSOCIATES, INC.
7524 JACK NEWELL BLVD. SO.
FORT WORTH, TEXAS 76118
TEXAS REGISTERED SURVEYING FIRM 10106900

FM 1425
SURVEY CONTROL INDEX SHEET

SHEET 1 OF 2

DESIGN	FED.RD. DIV NO.	FEDERAL AID PROJECT NO.	SHEET NO.
			78
DRAWN	STATE	DIST. NO.	COUNTY
	TEXAS	PHARR	WILLACY & CAMERON
CHECK	CONTROL	SECTION	JOB	HIGHWAY NO.
	3343	02	016	FM 1425





NOTES:

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0' 100' 200' 400'
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STATE OF TEXAS
REGISTERED
CHRIS T. ABBOTT
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GORRONDONA & ASSOCIATES, INC.
7524 JACK NEWELL BLVD. SO.
FORT WORTH, TEXAS 76118
TEXAS REGISTERED SURVEYING FIRM 10106900

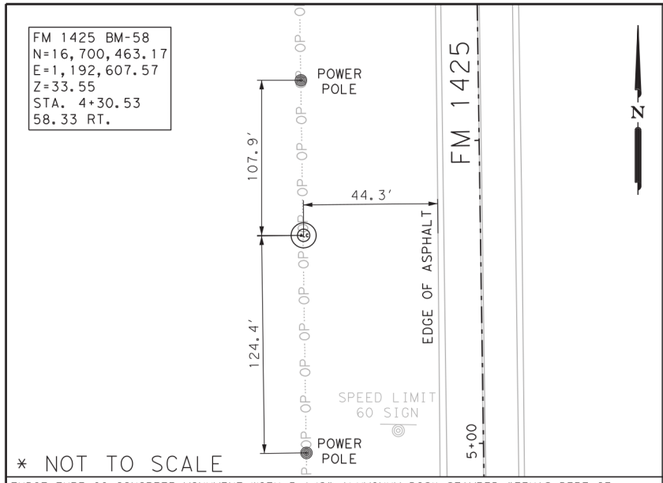
Texas Department of Transportation

FM 1425
SURVEY CONTROL INDEX SHEET

SHEET 2 OF 2

DESIGN	FED.RD. DIV NO.	FEDERAL AID PROJECT NO.		SHEET NO.
				79
DRAWN	STATE	DIST. NO.	COUNTY	
	TEXAS	PHARR	WILLACY & CAMERON	
CHECK	CONTROL	SECTION	JOB	HIGHWAY NO.
	3343	02	016	FM 1425

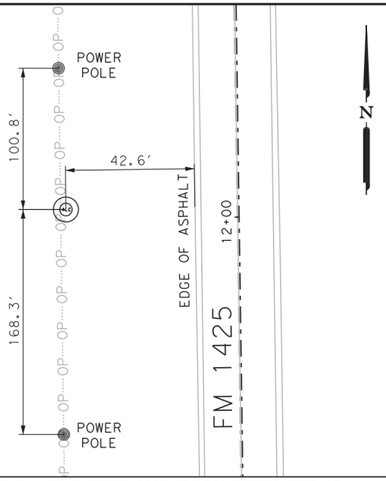
FM 1425 BM-58
N=16,700,463.17
E=1,192,607.57
Z=33.55
STA. 4+30.53
58.33 RT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-58" SET APPROXIMATELY 430' SOUTH OF THE FM 1425 / TX 186 INTERSECTION. LOCATED 44.3' WEST OF THE WEST EDGE OF ASPHALT OF FM 1425, 107.9' SOUTH OF A POWER POLE, AND 124.4' NORTH OF A POWER POLE.

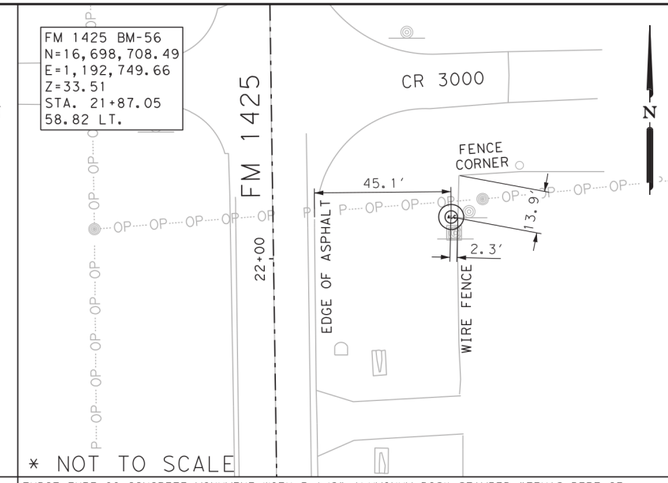
FM 1425 BM-57
N=16,699,697.12
E=1,192,619.64
Z=33.65
STA. 11+96.68
57.15 RT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-57" SET APPROXIMATELY 940' NORTH OF THE FM 1425 / CR 3000 INTERSECTION. LOCATED 42.6' WEST OF THE WEST EDGE OF ASPHALT OF FM 1425, 168.3' NORTH OF A POWER POLE, AND 100.8' SOUTH OF A POWER POLE.

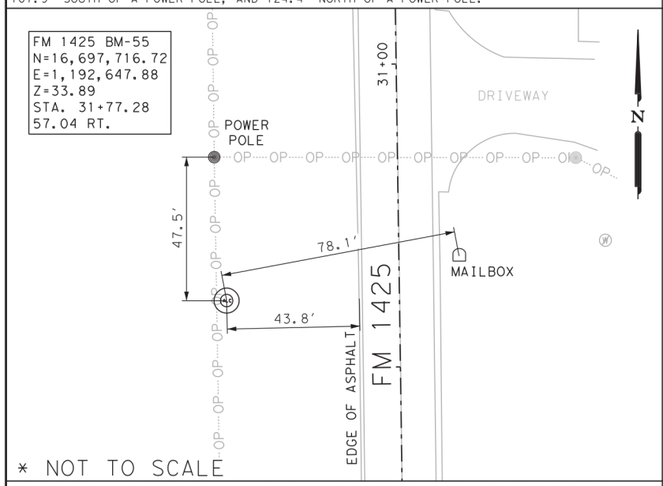
FM 1425 BM-56
N=16,698,708.49
E=1,192,749.66
Z=33.51
STA. 21+87.05
58.82 LT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-56" SET AT THE SOUTHEAST CORNER OF THE FM 1425 / CR 3000 INTERSECTION. LOCATED 45.1' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425, 2.3' WEST OF A WIRE FENCE, AND 13.9' SOUTHWEST FROM THE CORNER OF SAID WIRE FENCE.

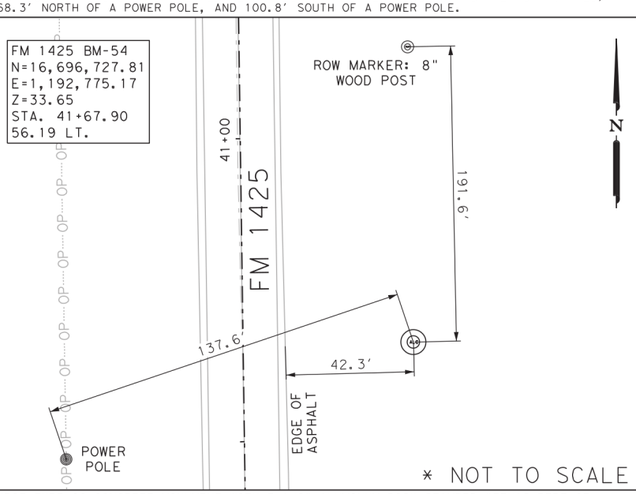
FM 1425 BM-55
N=16,697,716.72
E=1,192,647.88
Z=33.89
STA. 31+77.28
57.04 RT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-55" SET APPROXIMATELY 0.20 MILES SOUTH OF THE FM 1425 / CR 3000 INTERSECTION. LOCATED 43.8' WEST OF THE WEST EDGE OF ASPHALT OF FM 1425, 78.1' SOUTHWEST OF A MAILBOX, AND 47.5' SOUTH OF A POWER POLE.

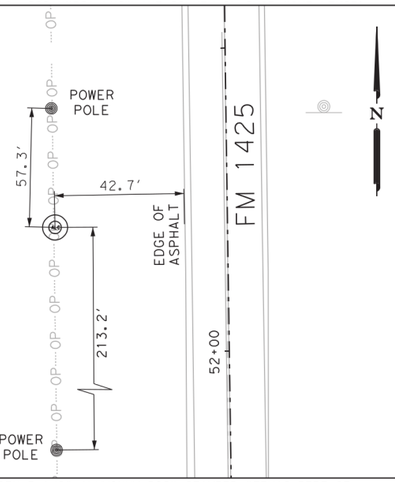
FM 1425 BM-54
N=16,696,727.81
E=1,192,775.17
Z=33.65
STA. 41+67.90
56.19 LT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-54" SET APPROXIMATELY 670' NORTH OF THE FM 1425 / CR 2900 INTERSECTION. LOCATED 42.3' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425 AND 191.6' SOUTH OF A 8" WOOD POST ROW MARKER ON THE EAST SIDE OF FM 1425.

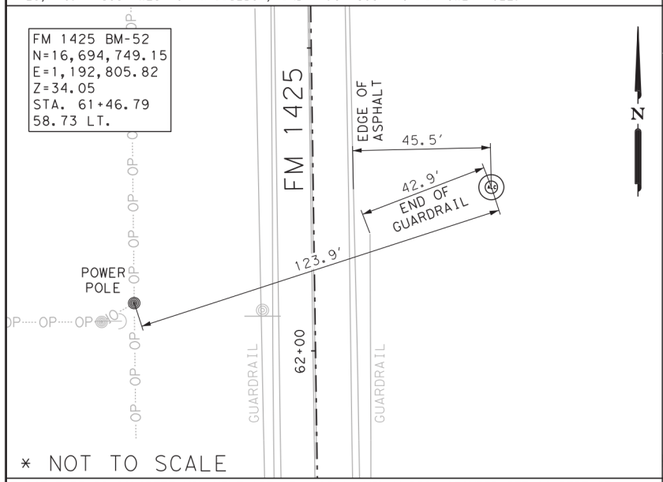
FM 1425 BM-53
N=16,695,735.81
E=1,192,676.17
Z=34.45
STA. 51+58.39
56.89 RT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-53" SET APPROXIMATELY 320' SOUTH OF THE FM 1425 / CR 2900 INTERSECTION. LOCATED 42.7' WEST OF THE WEST EDGE OF ASPHALT OF FM 1425, 57.3' SOUTH OF A POWER POLE, AND 213.2' NORTH OF A POWER POLE.

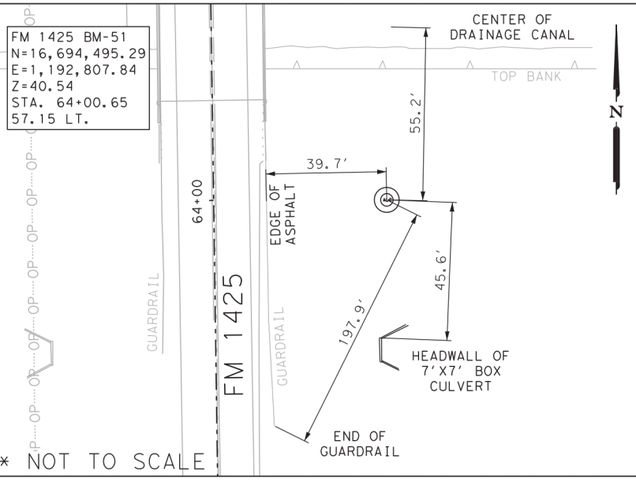
FM 1425 BM-52
N=16,694,749.15
E=1,192,805.82
Z=34.05
STA. 61+46.79
58.73 LT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-52" SET APPROXIMATELY 0.25 MILES SOUTH OF THE FM 1425 / CR 2900 INTERSECTION. LOCATED 45.5' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425 AND 42.9' NORTHEAST OF THE NORTHERN END OF A GUARDRAIL.

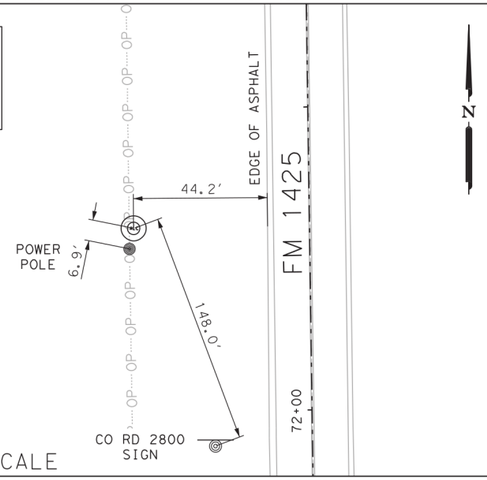
FM 1425 BM-51
N=16,694,495.29
E=1,192,807.84
Z=40.54
STA. 64+00.65
57.15 LT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-51" SET APPROXIMATELY 0.22 MILES NORTH OF THE FM 1425 / CR 2800 INTERSECTION. LOCATED 39.7' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425 AND 197.9' NORTHEAST OF THE SOUTHERN END OF A GUARDRAIL.

FM 1425 BM-50
N=16,693,755.14
E=1,192,703.13
Z=34.85
STA. 71+39.24
58.06 RT.



* NOT TO SCALE

TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-50" SET APPROXIMATELY 410' NORTH OF THE FM 1425 / CR 2800 INTERSECTION. LOCATED 44.2' WEST OF THE WEST EDGE OF ASPHALT OF FM 1425, 148.0' NORTH OF A "CO RD 2800" SIGN, AND 6.9' NORTH OF A POWER POLE

NOTES:

1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE (4205), NORTH AMERICAN DATUM OF 1983 (2011 ADJUSTMENT) EPOCH 2010.00.

2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEOID12B PERFORMING DIGITAL LEVEL LOOPS FROM EXISTING PHR-245-0097.

3. COORDINATES AND DISTANCES ARE US SURVEY FEET, DISPLAYED IN SUREFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE TXDOT SURFACE ADJUSTMENT FACTOR 1.00004.

4. HORIZONTAL CONTROL VALUES SHOWN ARE BASED ON RTK OBSERVATIONS UTILIZING TXDOT VRS.

5. CONTROL POINTS 1-58 WERE SET +/- 15" SUBSURFACE.

0 25' 50'

SCALE: 1" = 50'

STATE OF TEXAS
REGISTERED
CHRIS T. ABBOTT
6407
PROFESSIONAL
LAND SURVEYOR

04/02/2020

GORRONDONA & ASSOCIATES, INC.
7524 JACK NEWELL BLVD. SO.
FORT WORTH, TEXAS 76118
TEXAS REGISTERED SURVEYING FIRM 10106900

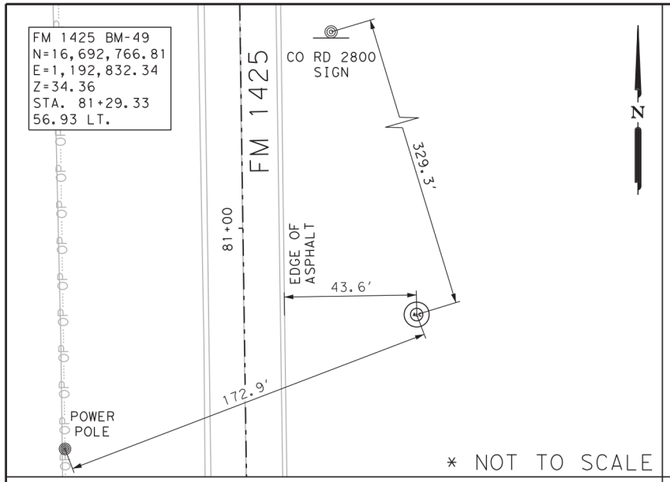
Texas Department of Transportation

FM 1425

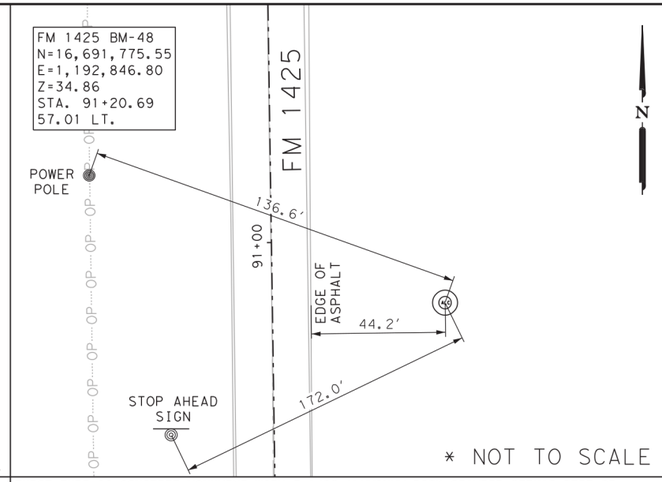
HORIZONTAL AND VERTICAL CONTROL INDEX SHEET

SHEET 1 OF 2

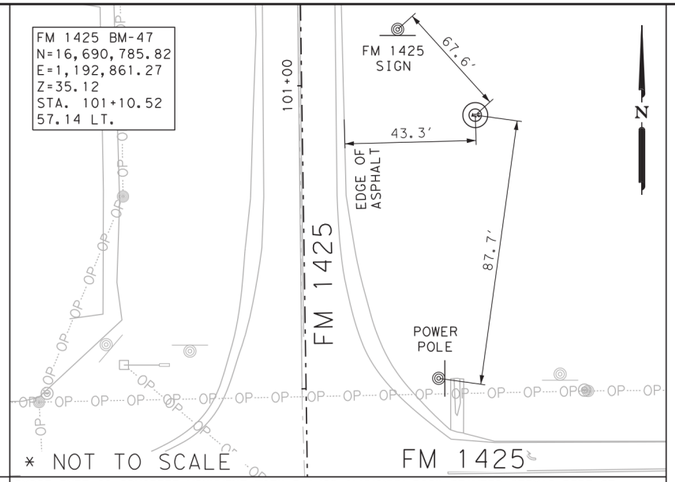
DESIGN	FED.RD. DIV NO.	FEDERAL AID PROJECT NO.		SHEET NO.
				80
DRAWN	STATE	DIST. NO.	COUNTY	
	TEXAS	PHARR	WILLACY & CAMERON	
CHECK	CONTROL	SECTION	JOB	HIGHWAY NO.
	3343	02	016	FM 1425



TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-49" SET APPROXIMATELY 580' SOUTH OF THE FM 1425 / CR 2800 INTERSECTION. LOCATED 43.6' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425, 172.9' NORTHEAST OF A POWER POLE, AND 329.3' SOUTH OF A "CO RD 2800" SIGN.



TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-48" SET APPROXIMATELY 0.21 MILES NORTH OF THE FM 1425 / FM 490 INTERSECTION. LOCATED 44.2' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425, 136.6' SOUTHEAST OF A POWER POLE, AND 172.0' NORTHEAST OF A "STOP AHEAD" SIGN.



TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-47" SET APPROXIMATELY 130' NORTH OF THE FM 1425 / FM 490 INTERSECTION. LOCATED 43.3' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425, 67.6' SOUTHEAST OF A "FM 1425" SIGN, AND 87.7' NORTH OF A POWER POLE.

NOTES:

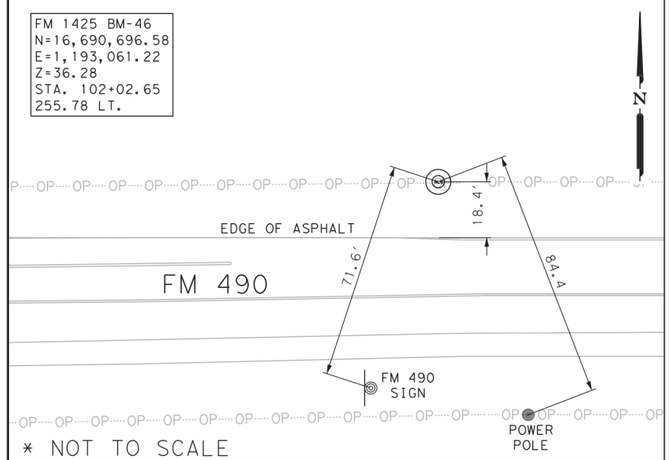
1. ALL BEARINGS AND COORDINATES SHOWN HEREON ARE BASED ON THE TEXAS COORDINATE SYSTEM, SOUTH ZONE (4205), NORTH AMERICAN DATUM OF 1983 (2011 ADJUSTMENT) EPOCH 2010.00.

2. ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEOID12B PERFORMING DIGITAL LEVEL LOOPS FROM EXISTING PHR-245-0097.

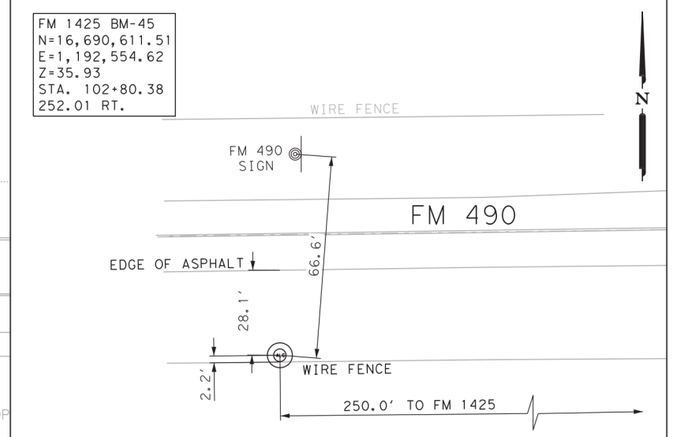
3. COORDINATES AND DISTANCES ARE US SURVEY FEET, DISPLAYED IN SUREFACE VALUES AND MAY BE CONVERTED TO GRID BY DIVIDING BY THE TXDOT SURFACE ADJUSTMENT FACTOR 1.00004.

4. HORIZONTAL CONTROL VALUES SHOWN ARE BASED ON RTK OBSERVATIONS UTILIZING TXDOT VRS.

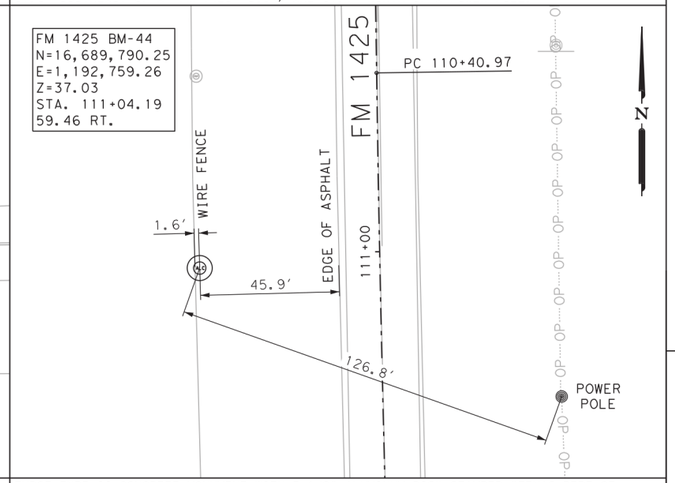
5. CONTROL POINTS 1-58 WERE SET +/- 15" SUBSURFACE.



TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-46" SET APPROXIMATELY 250' EAST OF THE FM 1425 / FM 490 INTERSECTION. LOCATED 18.4' NORTH OF THE NORTH EDGE OF ASPHALT OF FM 490, 71.6' NORTHEAST OF A "FM 490" SIGN, AND 84.4' NORTHWEST OF A POWER POLE.



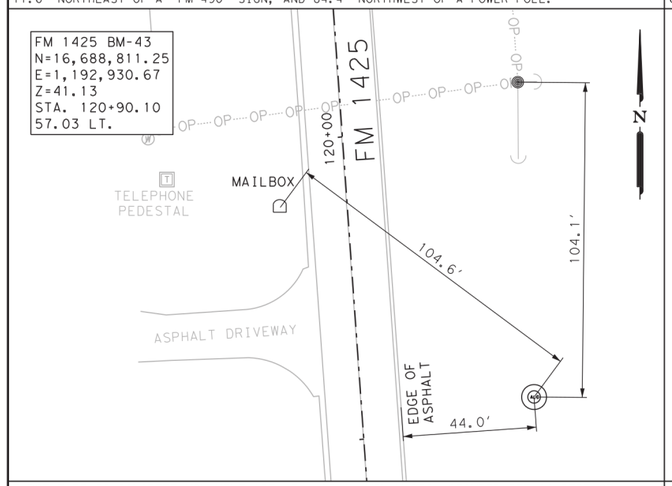
TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-45" SET APPROXIMATELY 250' WEST OF THE FM 1425 / FM 490 INTERSECTION. LOCATED 28.1' SOUTH OF THE SOUTH EDGE OF ASPHALT OF FM 490, 66.6' SOUTH OF A "FM 490" SIGN, AND 2.2' NORTH OF A WIRE FENCE.



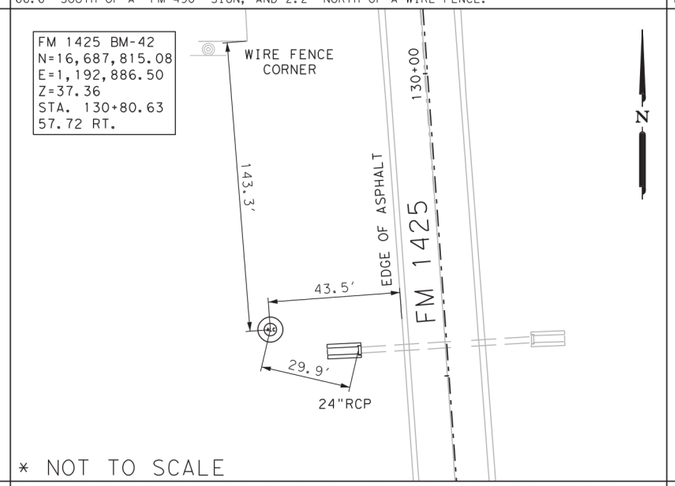
TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-44" SET APPROXIMATELY 0.32 MILES NORTH OF THE FM 1425 / FM 490 INTERESECTION. LOCATED 45.9' WEST OF THE WEST EDGE OF ASPHALT OF FM 1425, 126.8' NORTHWEST OF A POWER POLE, AND 1.6' EAST OF A WIRE FENCE.

0 25' 50'

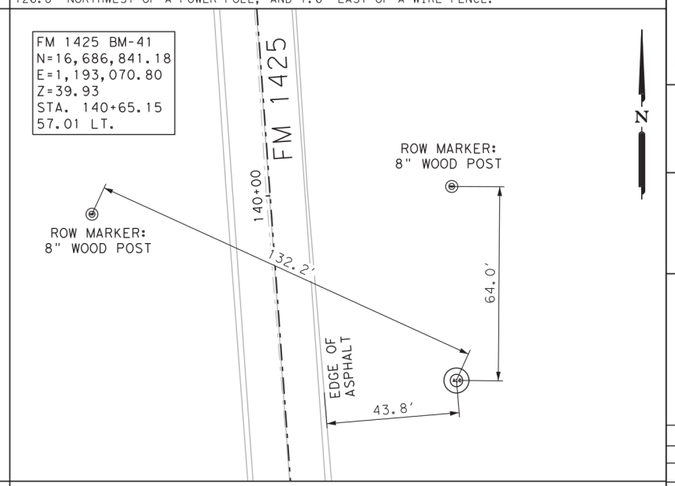
SCALE: 1" = 50'



TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-43" SET APPROXIMATELY 0.35 MILES SOUTH OF THE FM 1425 / FM 490 INTERSECTION. LOCATED 44.0' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425, 104.6' SOUTHEAST OF A MAILBOX, AND 104.1' SOUTH OF A POWER POLE.



TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-42" SET APPROXIMATELY 0.54 MILES SOUTH OF THE FM 1425 / FM 490 INTERSECTION. LOCATED 43.5' WEST OF THE WEST EDGE OF ASPHALT OF FM 1425, 29.9' WEST OF A 24" RCP, AND 143.3' SOUTH OF A WIRE FENCE CORNER.



TXDOT TYPE II CONCRETE MONUMENT WITH 3-1/2" ALUMINUM DISK STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL MARK FM 1425 BM-41" SET APPROXIMATELY 0.32 MILES NORTH OF THE FM 1425 / CR 2400 INTERESECTION. LOCATED 43.8' EAST OF THE EAST EDGE OF ASPHALT OF FM 1425, 64.0' SOUTH OF AN 8" WOOD POST ROW MARKER ON THE EAST SIDE OF FM 1425.

STATE OF TEXAS
REGISTERED
CHRIS T. ABBOTT
6407
PROFESSIONAL
LAND SURVEYOR

04/02/2020

GORRONDONA & ASSOCIATES, INC.
7524 JACK NEWELL BLVD. SO.
FORT WORTH, TEXAS 76118
TEXAS REGISTERED SURVEYING FIRM 10106900

Texas Department of Transportation

FM 1425

HORIZONTAL AND VERTICAL CONTROL INDEX SHEET

SHEET 2 OF 2

DESIGN	FED.RD. DIV NO.	FEDERAL AID PROJECT NO.		SHEET NO.
				81
DRAWN	STATE	DIST. NO.	COUNTY	
	TEXAS	PHARR	WILLACY & CAMERON	
CHECK	CONTROL	SECTION	JOB	HIGHWAY NO.
	3343	02	016	FM 1425

FM 1425 PROPOSED ALIGNMNET (FM 1425)

Beginning chain FM1425 description

Point 12	N 16,700,894.4879	E 1,192,659.7823	Sta	0+00.00
Course from 12 to 13 S 0° 48′ 49.77" E Dist 7,540.8500				
Point 13	N 16,693,354.3985	E 1,192,766.8884	Sta	75+40.85
Course from 13 to 14 S 0° 49′ 49.77" E Dist 2,700.1100				
Point 14	N 16,690,654.5722	E 1,192,806.0246	Sta	102+40.96

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

12/12/2023

Pharr District Central Design

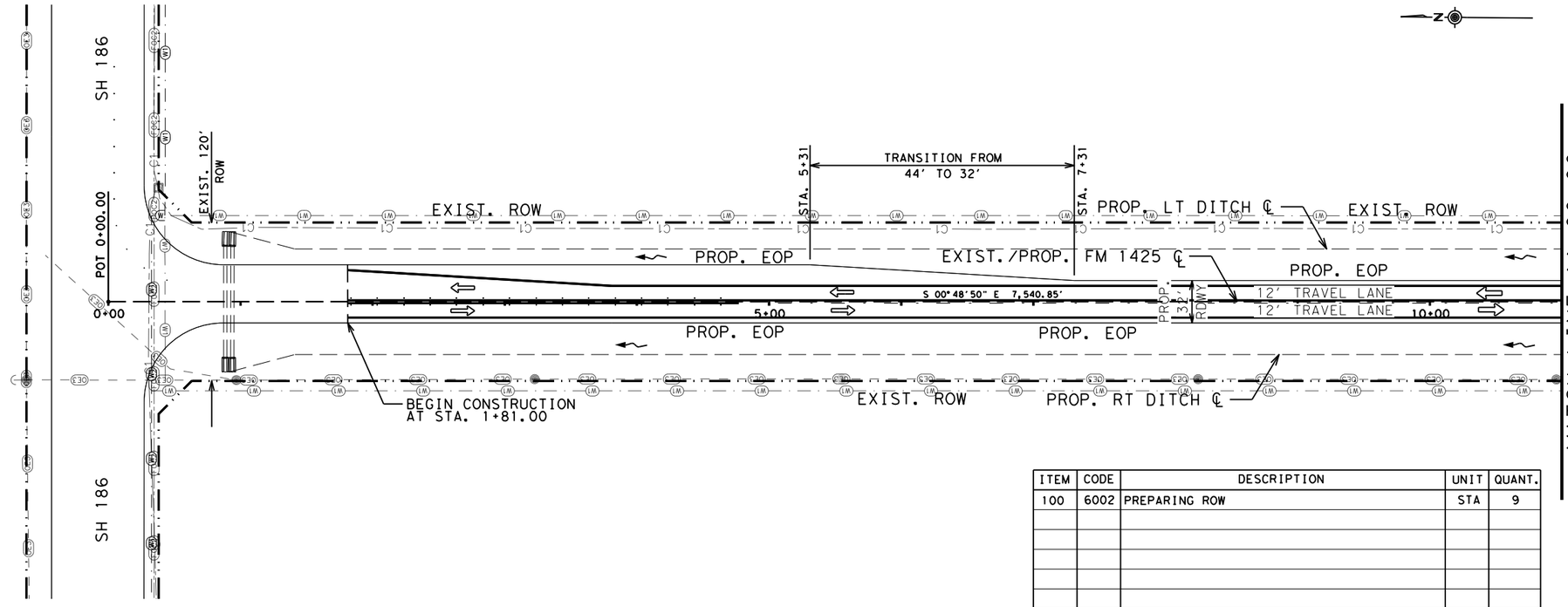
Texas Department of Transportation

FM 1425
ALIGNMENT DATA

SHEET 1 OF 1

© 2022		CONT	SECT	JOB	HIGHWAY
DS:	CK:	3343	02	016	FM1425
DW:	CK:	DIST	COUNTY		SHEET NO.
		PHR	WILLACY		82

DATE: 12/11/2023 9:50:35 AM
FILE: dw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\334302016\4 - Design\Plan Set\3. Roadway\FM1425_RDWY ALIGN DATA.dgn



LEGEND:

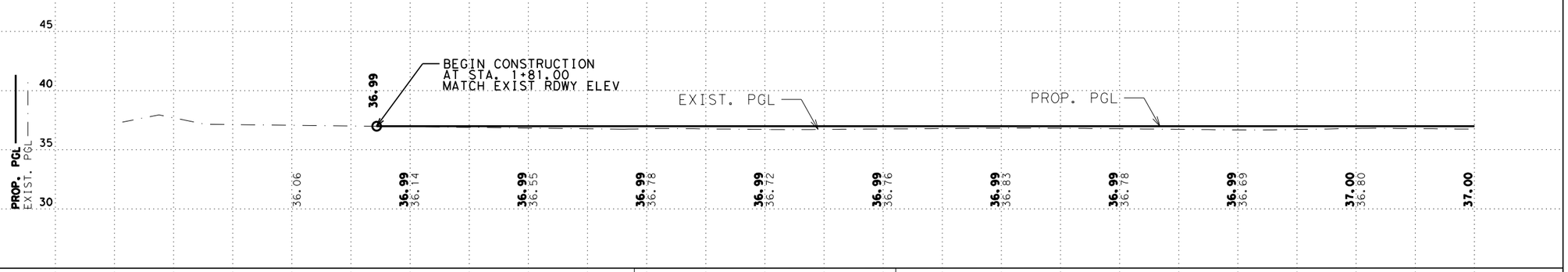
- PROP. ASPHALT DRIVEWAY
- PROP. CONCRETE DRIVEWAY
- PROP. MILLING/OVERLAY
- DIRECTION OF TRAFFIC FLOW
- (#) DRIVEWAY I.D. (SEE DRIVEWAY TABLES)
- MAILBOX (MB)
- TELEPHONE PEDESTAL
- POWER POLE
- WATER METER
- FOC — FIBER OPTIC CABLE
- OE — OVERHEAD ELECTRICAL
- C — TELEPHONE CABLE
- W — WATER LINE
- G — GAS LINE

ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	9

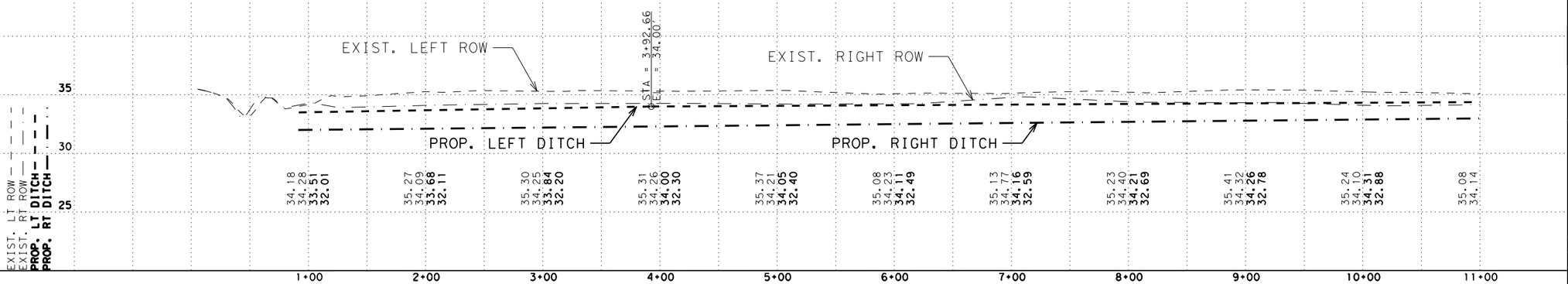
GENERAL NOTES:

1. ALL STATIONS ARE BASED ON FM 1425 ALIGNMENT
2. ALL EXISTING INFORMATION ON PLANS IS FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION PER "AS BUILT CONDITION".
3. EXIST./PROP. RCP UNDERNEATH THE EXIST/ PROP. DRIVEWAYS ARE ITEMIZED IN THE DRIVEWAY DETAIL SHEETS.
4. FOR CONCRETE DRIVEWAYS, SAW-CUT AND DOWELS WILL BE SUBSIDIARY TO DRIVEWAY CONSTRUCTION.
5. ALL UTILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES TO FIELD VERIFY THE EXACT LOCATION PRIOR TO CONSTRUCTION.

EXIST. & PROP. CENTERLINE



PROP. DITCH LINE W/EXIST R.O.W



STATE OF TEXAS
ABEL MARROQUIN III
134752
PROFESSIONAL ENGINEER
LICENSED
P.E.

06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 1 OF 9

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		83

DATE: 6/8/2022 4:19:04 PM
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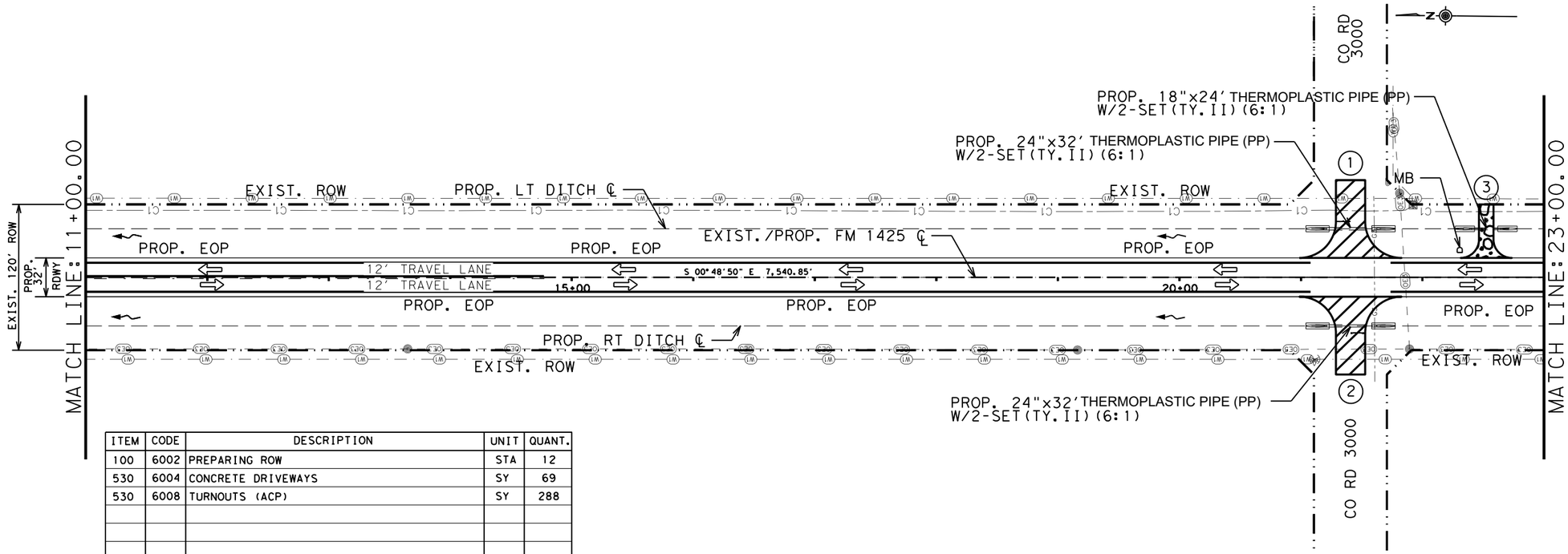


LEGEND:

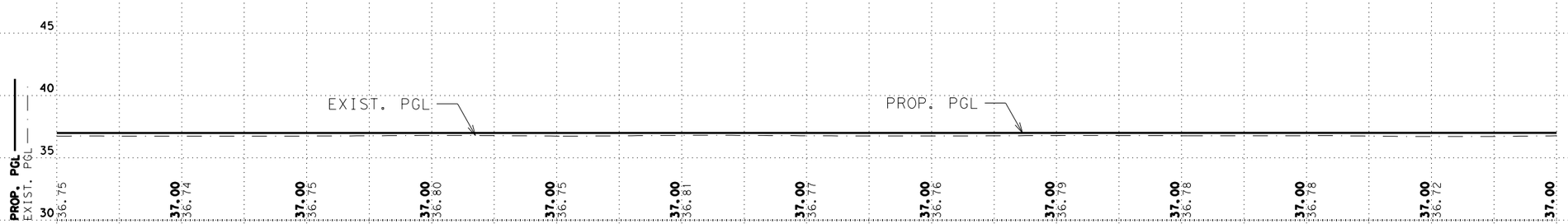
- PROP. ASPHALT DRIVEWAY
- PROP. CONCRETE DRIVEWAY
- PROP. MILLING/OVERLAY
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY I.D. (SEE DRIVEWAY TABLES)
- MAILBOX (MB)
- TELEPHONE PEDESTAL
- POWER POLE
- WATER METER
- FOC — FIBER OPTIC CABLE
- OE — OVERHEAD ELECTRICAL
- C — TELEPHONE CABLE
- W — WATER LINE
- G — GAS LINE

ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	12
530	6004	CONCRETE DRIVEWAYS	SY	69
530	6008	TURNOUTS (ACP)	SY	288

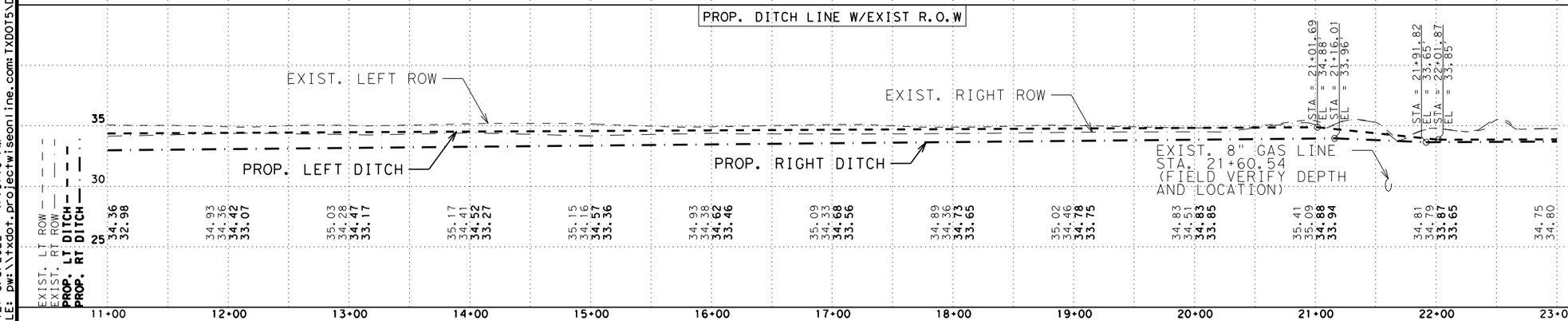
GENERAL NOTES:

1. ALL STATIONS ARE BASED ON FM 1425 ALIGNMENT
2. ALL EXISTING INFORMATION ON PLANS IS FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION PER "AS BUILT CONDITION".
3. EXIST./PROP. RCP UNDERNEATH THE EXIST/ PROP. DRIVEWAYS ARE ITEMIZED IN THE DRIVEWAY DETAIL SHEETS.
4. FOR CONCRETE DRIVEWAYS, SAW-CUT AND DOWELS WILL BE SUBSIDIARY TO DRIVEWAY CONSTRUCTION.
5. ALL UTILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES TO FIELD VERIFY THE EXACT LOCATION PRIOR TO CONSTRUCTION.

EXIST. & PROP. CENTERLINE



PROP. DITCH LINE W/EXIST R.O.W



STATE OF TEXAS
ABEL MARROQUIN III
134752
LICENSED PROFESSIONAL ENGINEER
P.E.
06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 2 OF 9

© 2022		CONT	SECT	JOB	HIGHWAY
DS:	CK:	3343	02	016	FM1425
		DIST	COUNTY		SHEET NO.
DW:	CK:	PHR	WILLACY		84

DATE: 6/8/2022 4:19:10 PM
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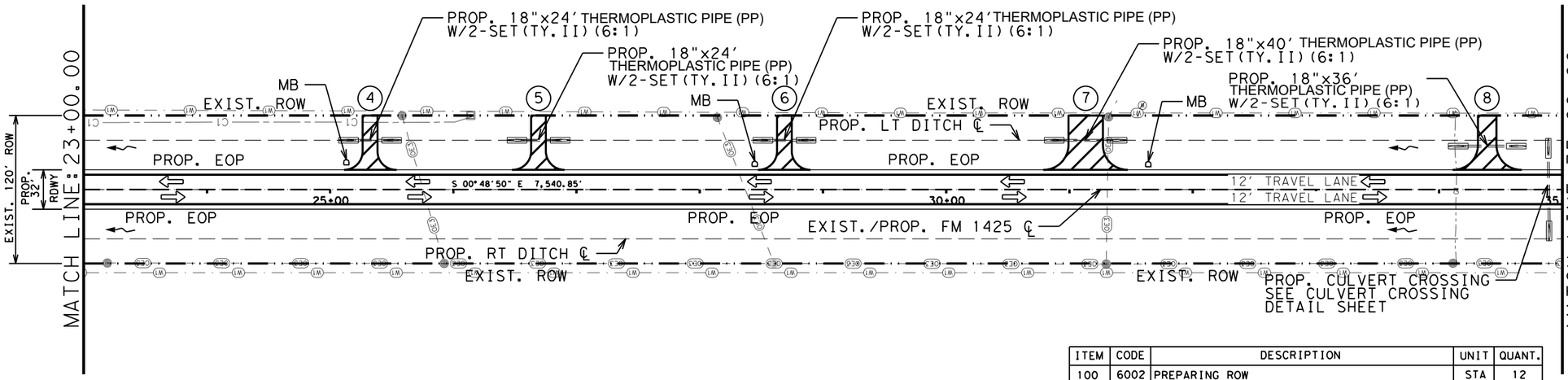


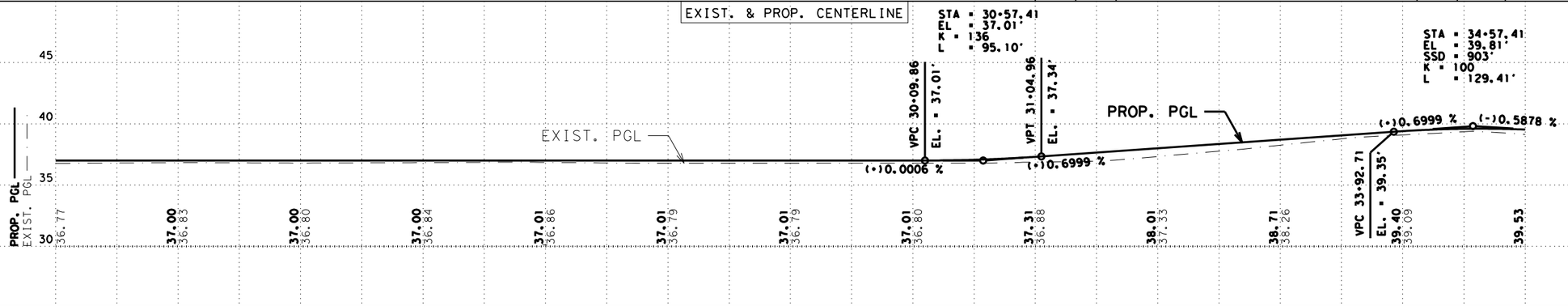
LEGEND:

- PROP. ASPHALT DRIVEWAY
- PROP. CONCRETE DRIVEWAY
- PROP. MILLING/OVERLAY
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY I.D. (SEE DRIVEWAY TABLES)
- MAILBOX (MB)
- TELEPHONE PEDESTAL
- POWER POLE
- WATER METER
- FOC — FIBER OPTIC CABLE
- OE — OVERHEAD ELECTRICAL
- C — TELEPHONE CABLE
- W — WATER LINE
- G — GAS LINE

GENERAL NOTES:

1. ALL STATIONS ARE BASED ON FM 1425 ALIGNMENT
2. ALL EXISTING INFORMATION ON PLANS IS FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION PER "AS BUILT CONDITION".
3. EXIST./PROP. RCP UNDERNEATH THE EXIST/ PROP. DRIVEWAYS ARE ITEMIZED IN THE DRIVEWAY DETAIL SHEETS.
4. FOR CONCRETE DRIVEWAYS, SAW-CUT AND DOWELS WILL BE SUBSIDIARY TO DRIVEWAY CONSTRUCTION.
5. ALL UTILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES TO FIELD VERIFY THE EXACT LOCATION PRIOR TO CONSTRUCTION.

ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	12
530	6005	DRIVEWAYS (ACP)	SY	455
___	___	_____	___	_____
___	___	_____	___	_____
___	___	_____	___	_____
___	___	_____	___	_____
___	___	_____	___	_____
___	___	_____	___	_____



STATE OF TEXAS
ABEL MARROQUIN III
134752
LICENSED PROFESSIONAL ENGINEER
P.E.
06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 3 OF 9

© 2022		CONT	SECT	JOB	HIGHWAY
DS: ___	CK: ___	3343	02	016	FM1425
		DIST	COUNTY		SHEET NO.
DW: ___	CK: ___	PHR	WILLACY		85

DATE: 6/8/2022 4:19:17 PM
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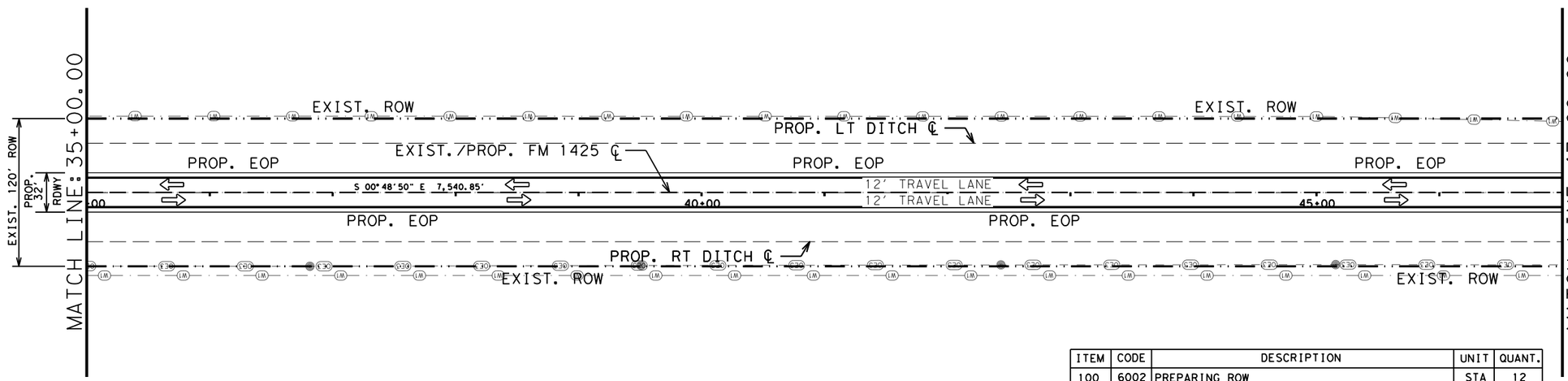

LEGEND:

- PROP. ASPHALT DRIVEWAY
- PROP. CONCRETE DRIVEWAY
- PROP. MILLING/OVERLAY
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY I.D. (SEE DRIVEWAY TABLES)
- MAILBOX (MB)
- TELEPHONE PEDESTAL
- POWER POLE
- WATER METER
- FOC — FIBER OPTIC CABLE
- OE — OVERHEAD ELECTRICAL
- C — TELEPHONE CABLE
- W — WATER LINE
- G — GAS LINE

GENERAL NOTES:

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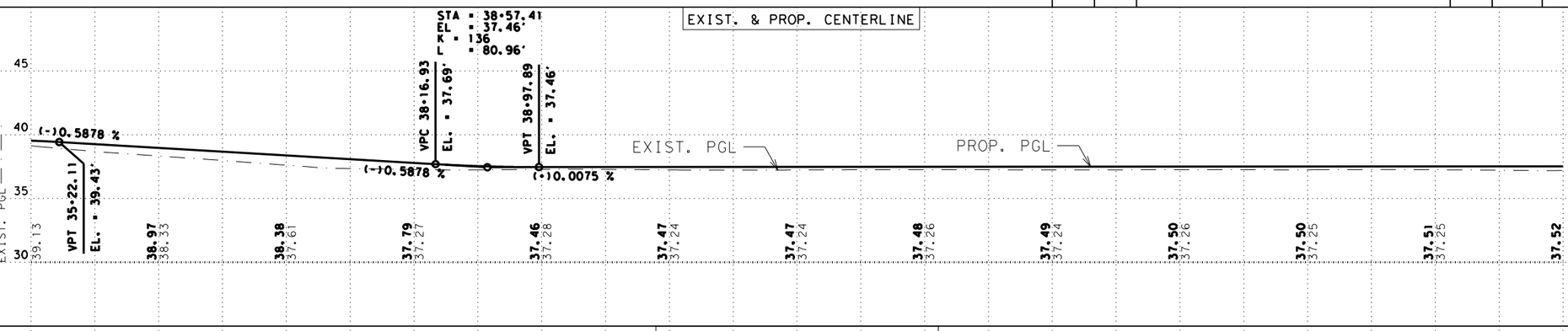
2. ALL EXISTING INFORMATION ON PLANS IS FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION PER "AS BUILT CONDITION".
3. EXIST./PROP. RCP UNDERNEATH THE EXIST/ PROP. DRIVEWAYS ARE ITEMIZED IN THE DRIVEWAY DETAIL SHEETS.
4. FOR CONCRETE DRIVEWAYS, SAW-CUT AND DOWELS WILL BE SUBSIDIARY TO DRIVEWAY CONSTRUCTION.
5. ALL UTILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES TO FIELD VERIFY THE EXACT LOCATION PRIOR TO CONSTRUCTION.

ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	12

EXIST. & PROP. CENTERLINE



PROP. DITCH LINE W/EXIST R.O.W

STATE OF TEXAS
ABEL MARROQUIN III
134752
LICENSED PROFESSIONAL ENGINEER
P.E.
06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 4 OF 9

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		86

DATE: 6/8/2022 4:19:23 PM
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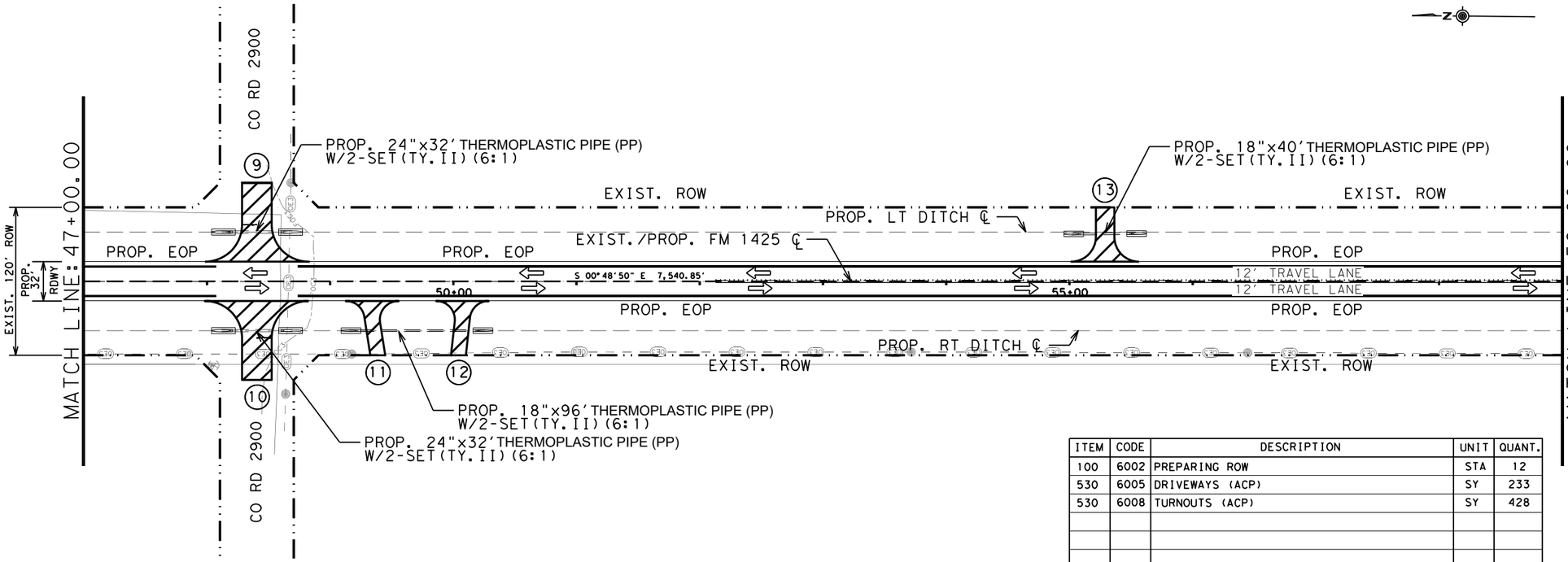

ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	12
530	6005	DRIVEWAYS (ACP)	SY	233
530	6008	TURNOUTS (ACP)	SY	428

LEGEND:

- PROP. ASPHALT DRIVEWAY
- PROP. CONCRETE DRIVEWAY
- PROP. MILLING/OVERLAY
- DIRECTION OF TRAFFIC FLOW
- (#) DRIVEWAY I.D. (SEE DRIVEWAY TABLES)
- MAILBOX (MB)
- TELEPHONE PEDESTAL
- POWER POLE
- WATER METER
- FOC — FIBER OPTIC CABLE
- OE — OVERHEAD ELECTRICAL
- C — TELEPHONE CABLE
- W — WATER LINE
- G — GAS LINE

GENERAL NOTES:

1. ALL STATIONS ARE BASED ON FM 1425 ALIGNMENT
2. ALL EXISTING INFORMATION ON PLANS IS FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION PER "AS BUILT CONDITION".
3. EXIST./PROP. RCP UNDERNEATH THE EXIST/ PROP. DRIVEWAYS ARE ITEMIZED IN THE DRIVEWAY DETAIL SHEETS.
4. FOR CONCRETE DRIVEWAYS, SAW-CUT AND DOWELS WILL BE SUBSIDIARY TO DRIVEWAY CONSTRUCTION.
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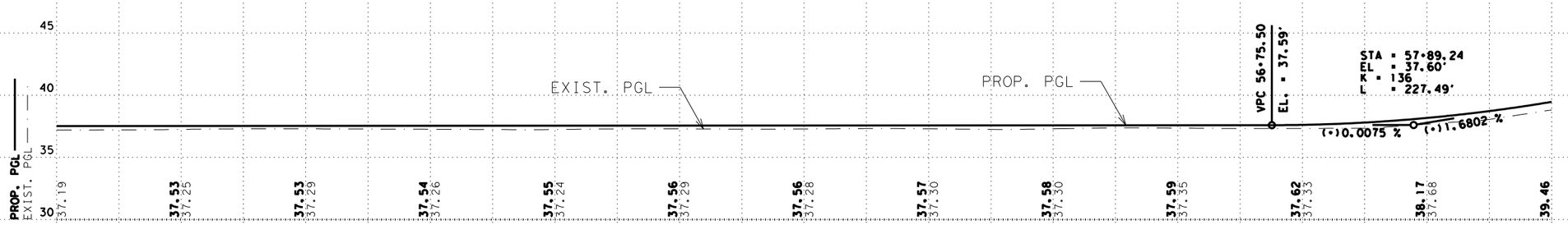
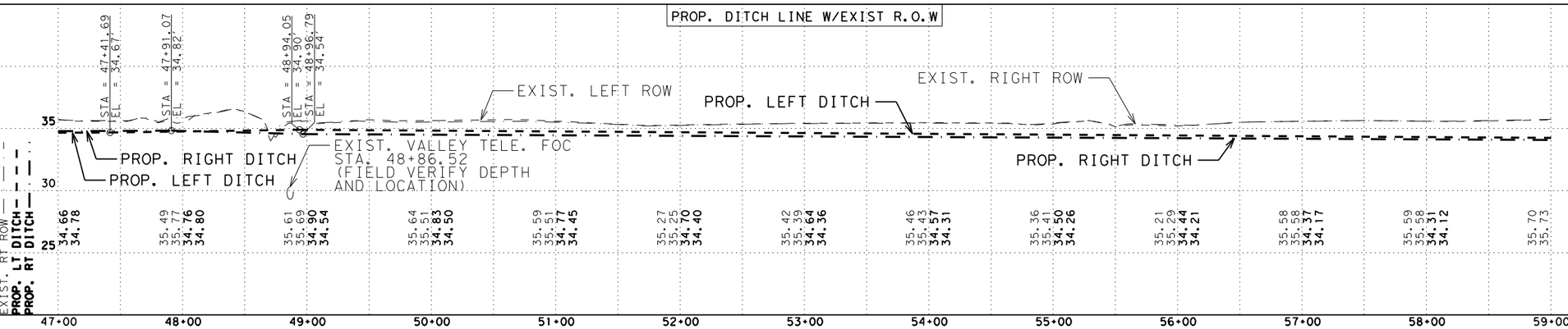
EXIST. & PROP. CENTERLINE



PROP. DITCH LINE W/EXIST R.O.W



ANA M. PRUNEDA
139883
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Ana M. Pruneda

12/12/2023

Pharr District Central Design

Texas Department of Transportation

FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 5 OF 9

© 2022		CONT	SECT	JOB	HIGHWAY
DS:	CK:	3343	02	016	FM1425
		DIST	COUNTY		SHEET NO.
DW:	CK:	PHR	WILLACY		87

DATE: 12/11/2023 9:51:36 AM
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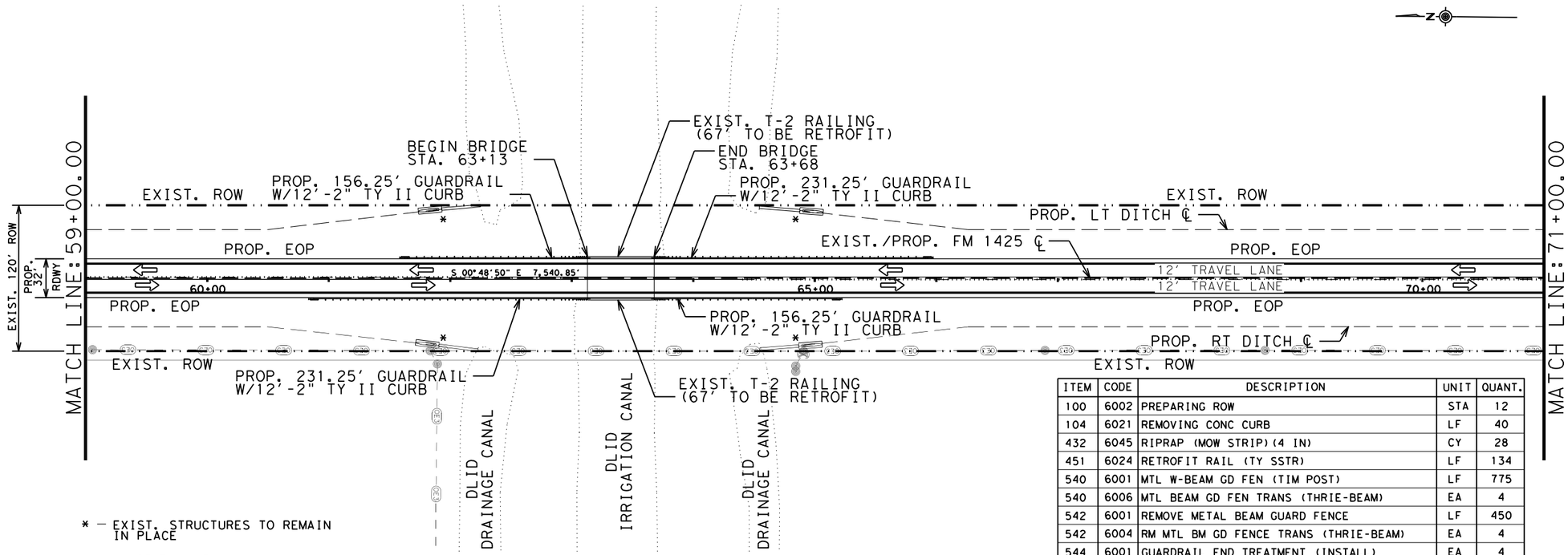

* — EXIST. STRUCTURES TO REMAIN IN PLACE

DLID — DELTA LAKE IRRIGATION DISTRICT

ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	12
104	6021	REMOVING CONC CURB	LF	40
432	6045	RIPRAP (MOW STRIP)(4 IN)	CY	28
451	6024	RETROFIT RAIL (TY SSTR)	LF	134
540	6001	MTL W-BEAM GD FEN (TIM POST)	LF	775
540	6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA	4
542	6001	REMOVE METAL BEAM GUARD FENCE	LF	450
542	6004	RM MTL BM GD FENCE TRANS (THRIE-BEAM)	EA	4
544	6001	GUARDRAIL END TREATMENT (INSTALL)	EA	4
544	6004	GUARDRAIL END TREATMENT (REMOVE)	EA	4

LEGEND:

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- PROP. CONCRETE DRIVEWAY
- PROP. MILLING/OVERLAY
- DIRECTION OF TRAFFIC FLOW
- DRIVEWAY I.D. (SEE DRIVEWAY TABLES)
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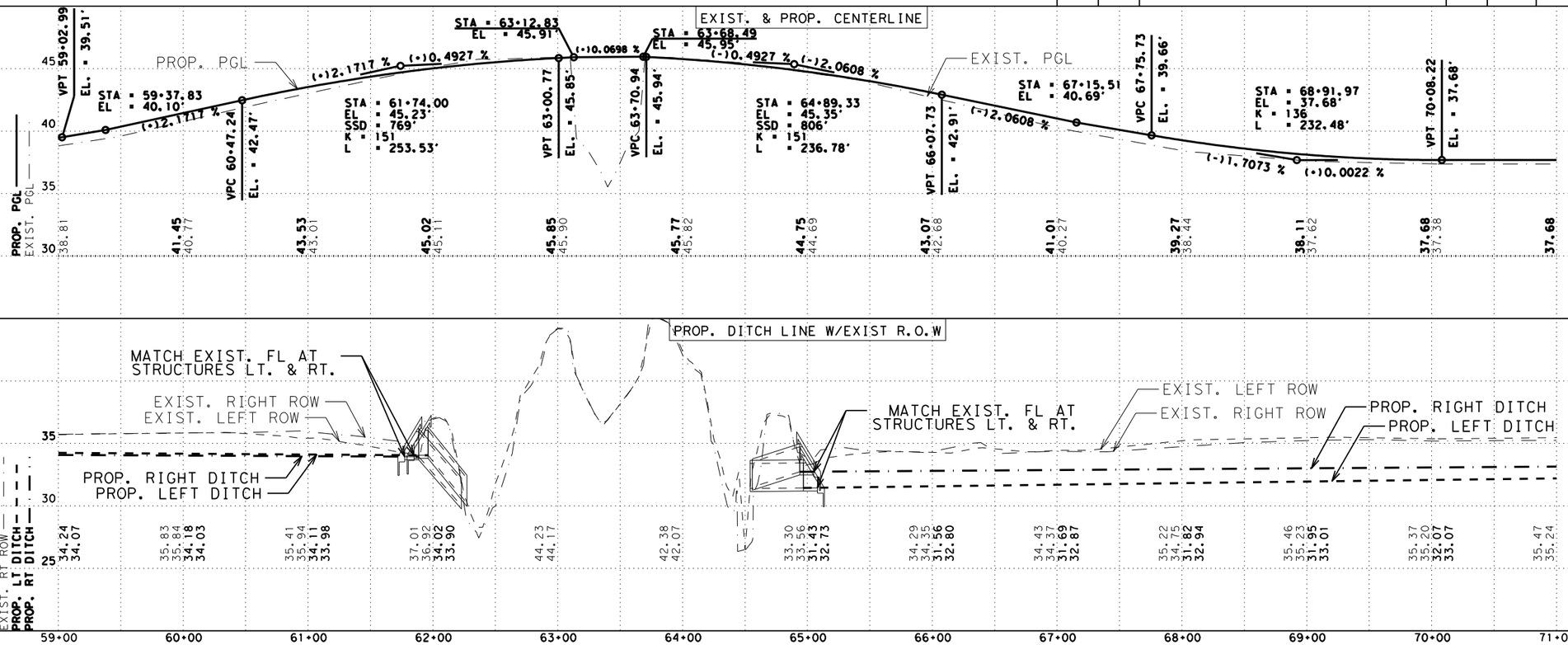

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED PROFESSIONAL ENGINEER
Ana M. Pruneda
12/12/2023

Pharr District Central Design

Texas Department of Transportation

FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 6 OF 9

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		88

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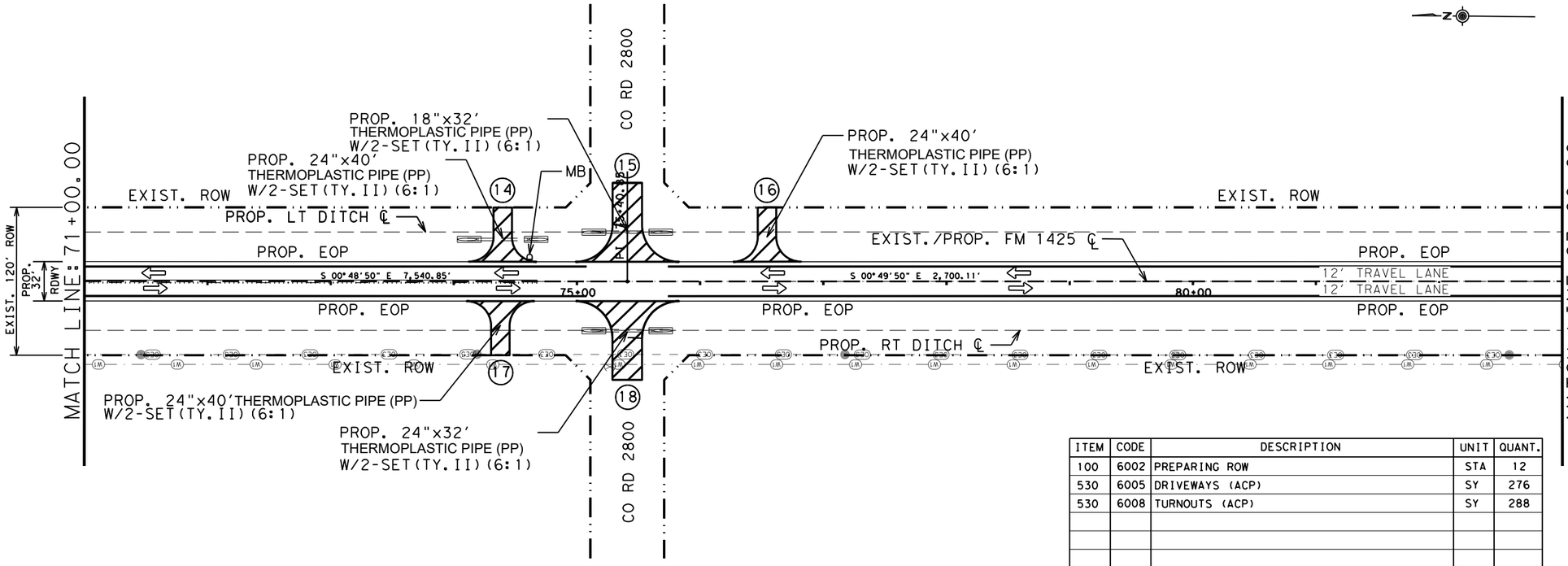

ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	12
530	6005	DRIVEWAYS (ACP)	SY	276
530	6008	TURNOUTS (ACP)	SY	288

LEGEND:

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- PROP. CONCRETE DRIVEWAY
- PROP. MILLING/OVERLAY
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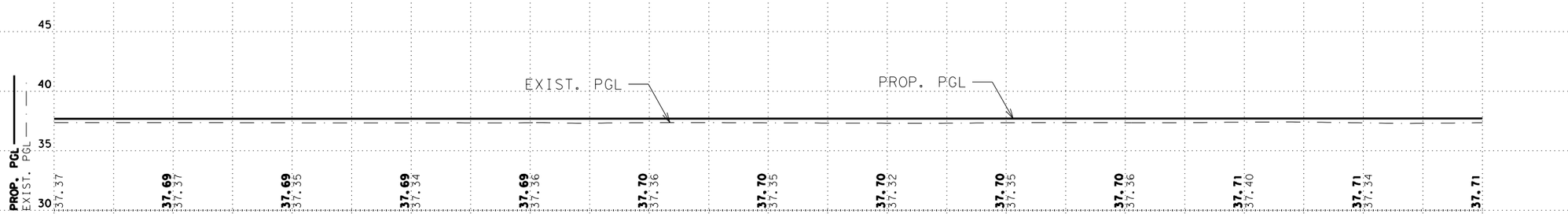
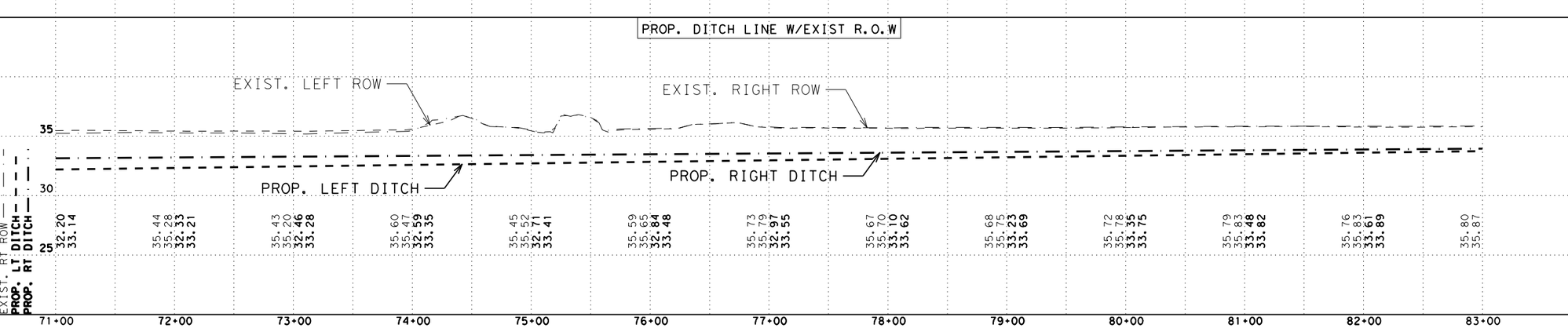
EXIST. & PROP. CENTERLINE



PROP. DITCH LINE W/EXIST R.O.W



ABEL MARROQUIN III
134752
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
P.E.
06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 7 OF 9

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		89

DATE: 6/8/2022 4:19:44 PM
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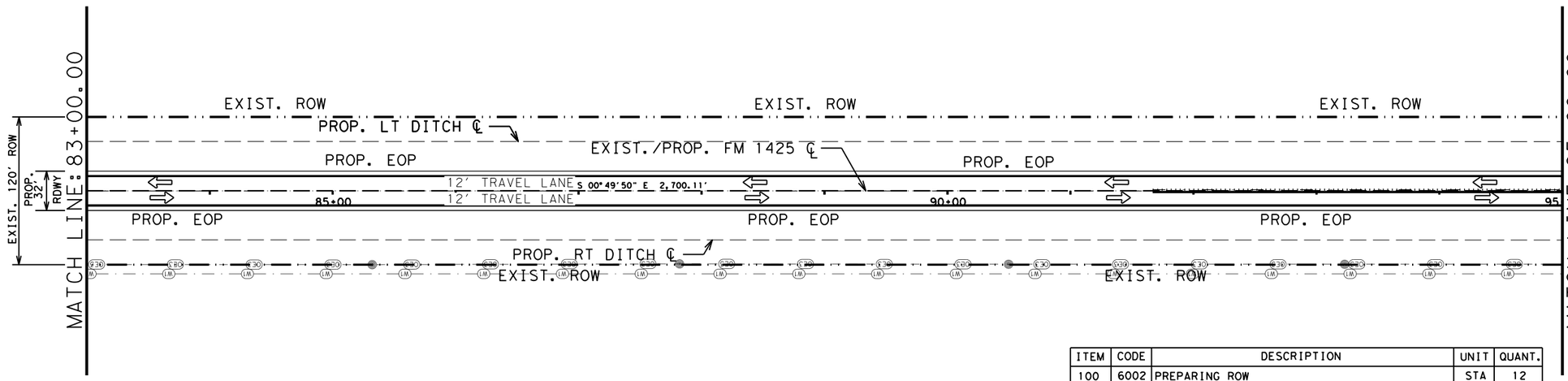

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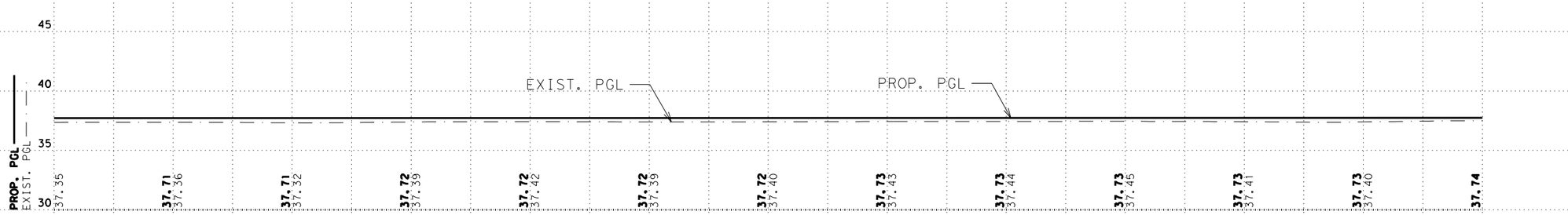
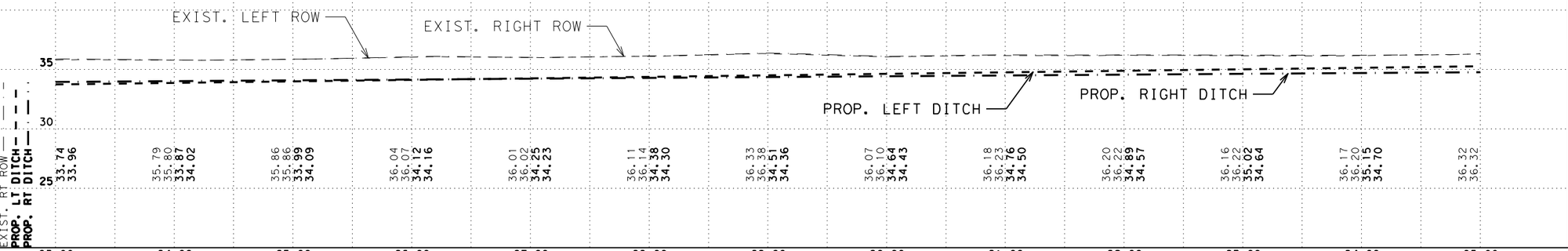
ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	12

EXIST. & PROP. CENTERLINE



PROP. DITCH LINE W/EXIST R.O.W



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FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 8 OF 9

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
DW: CK:	PHR	WILLACY		90

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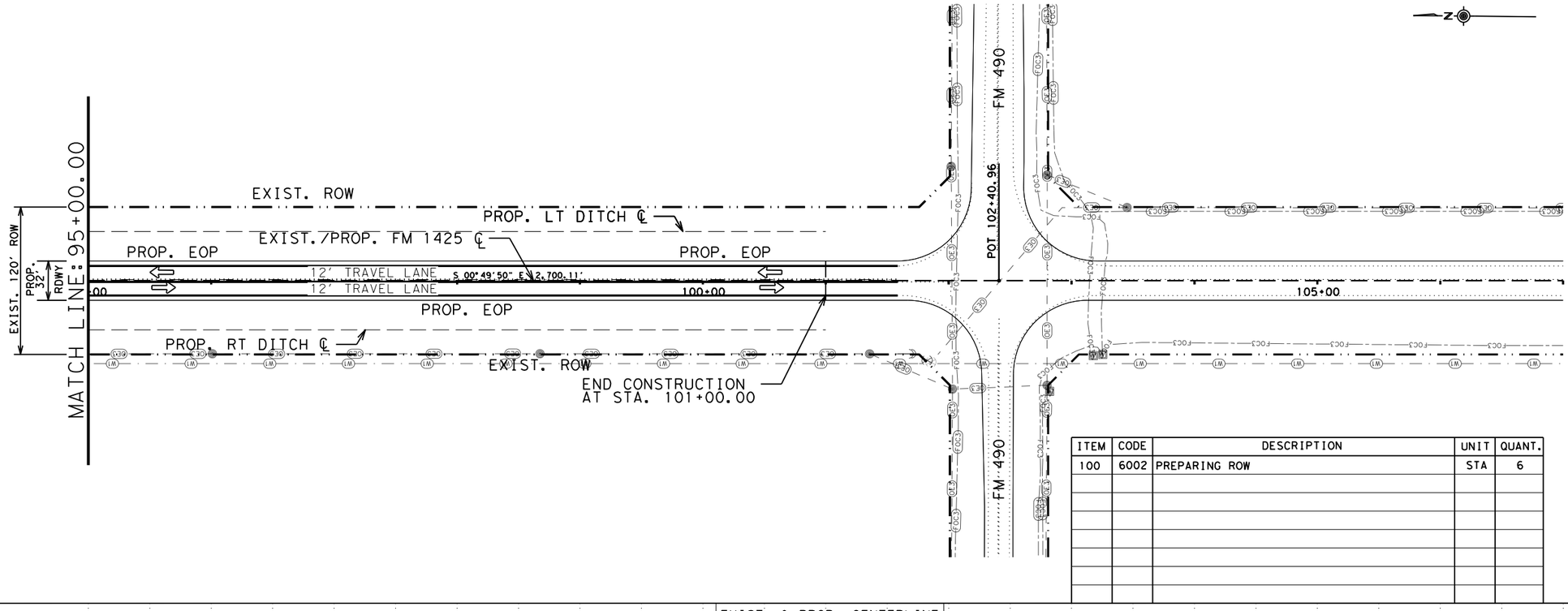

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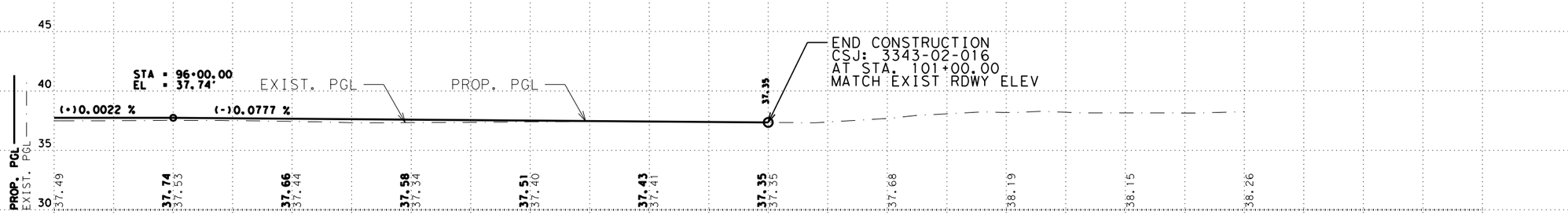
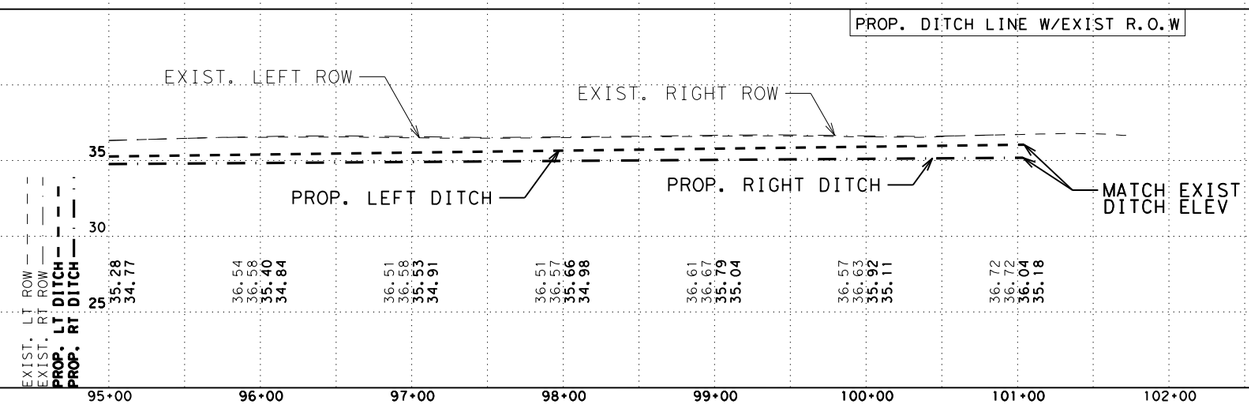
ITEM	CODE	DESCRIPTION	UNIT	QUANT.
100	6002	PREPARING ROW	STA	6

EXIST. & PROP. CENTERLINE



PROP. DITCH LINE W/EXIST R.O.W



06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425
PLAN & PROFILE

V: 1' = 10'
H: 1' = 100'

SHEET 9 OF 9

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		91

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PRIVATE DRIVEWAYS

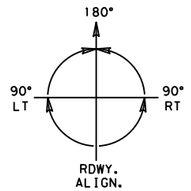
PRIVATE DRIVEWAYS														
								ITEM 530		ITEM 4216	ITEM 467	ITEM 496	ITEM 496	ITEM 104
								6005	6004	6001	6363	6007	6004	6017
DWY. ID #	STATION	OFFSET	EXIST. DRVWY WIDTH (FT.)	PROP. WIDTH @ EDGE OF PAVEMENT (FT.)	PROP. WIDTH @ R.O.W. LINE (FT.)	# PROP. DRIVEWAY ANGLE TO ROADWAY (DEG.)	PROP. RAD. (FT)	DRIVEWAYS (ACP) TY PB-1	DRIVEWAYS (CONCRETE)	THERMOPLASTIC PIPE (PP) (18")	SET (TY II) (18 IN) (RCP) (6:1) (P)	REMOVE STR. (PIPE)	REMOVE STR. (SET)	REMOVING CONC (DRIVEWAYS)
								(SY)	(SY)	(LF)	(EA)	(LF)	(EA)	(SY)
3	22+52	LT	12	42	12	90	15	-	69	24	2	24	2	69
4	25+32	LT	12	42	12	90	15	69	-	24	2	24	-	-
5	26+69	LT	9	42	12	90	15	69	-	24	2	35	-	-
6	28+69	LT	11	42	12	90	15	69	-	24	2	37	-	-
7	31+13	LT	28	68	28	90	20	156	-	40	2	38	-	-
8	34+39	LT	12	55	15	90	20	92	-	36	2	36	-	-
11	49+29	RT	9	43	12	99	15	71	-	96	1	33	2	-
12	50+11	RT	17	42	12	84	15	70	-	0	1	34	2	-
13	55+29	LT	15	55	15	90	20	92	-	40	2	41	2	-
14	74+70	LT	15	55	15	90	20	92	-	40	2	39	-	-
16	76+54	LT	15	55	15	90	20	92	-	40	2	39	-	-
17	74+38	RT	15	55	15	90	20	92	-	40	2	38	-	-
	TOTAL							967	69	428	22	418	8	69

*USE NATIVE MATERIAL FOR BACKFILL ON DRIVEWAYS.

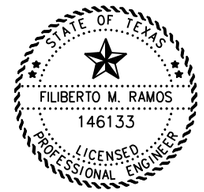
NOTE :

1. LOCATIONS LISTED ON THE TABLE ARE APPROXIMATE. THE EXACT LOCATIONS, DIMENSIONS, AND TYPE OF DRIVEWAY IS TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER AS REQUIRED. ALL STATIONING BASED ON THE EXIST. & PROP. BASELINE ALIGNMENT.

2. CONTRACTOR TO COORDINATE WITH PROPERTY OWNER OR BUSINESS PRIOR TO CONSTRUCTION OF DRIVEWAYS.



#- DRIVEWAY ANGLE ORIENTATION



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FM 1425 PRIVATE DRIVEWAY TABLES

SHEET 1 OF 2

© 2023		CONT	SECT	JOB	HIGHWAY
DS:	CK:	3343	02	016	FM1425
		DIST	COUNTY		SHEET NO.
DW:	CK:	PHR	WILLACY		92

PUBLIC DRIVEWAYS

PUBLIC DRIVEWAYS												
									ITEM 530	ITEM 4216	ITEM 467	ITEM 496
									6008	6002	6395	6007
ID	STATION	OFFSET	DESCRIPTION	EXIST. DRVWY WIDTH (FT.)	PROP. WIDTH @ EDGE OF PAVEMENT (FT.)	PROP. RAD. (FT)	# PROP. DRIVEWAY ANGLE TO ROADWAY (DEG.)	PROP. WIDTH @ R.O.W. LINE (FT.)	TURNOUTS (ACP) (SY)	THERMOPLASTIC PIPE (PP) (24") (LF)	SET (TY II) (24 IN) (RCP) (6:1) (P) (EA)	REMOVE STR. (LF)
1	21+41	LT	COUNTY ROAD 3000	17	84	30	90	24	214	40	2	-
2	21+41	RT	COUNTY ROAD 3000	14	84	30	90	24	214	40	2	44
9	48+41	LT	COUNTY ROAD 2900	14	84	30	90	24	214	40	2	-
10	48+41	RT	COUNTY ROAD 2900	15	84	30	90	24	214	40	2	-
15	75+41	LT	COUNTY ROAD 2800	12	84	30	90	24	214	40	2	47
18	75+41	RT	COUNTY ROAD 2800	16	84	30	90	24	214	40	2	46
CSJ: 3343-02-016			TOTAL						1284	240	12	137

*USE NATIVE MATERIAL FOR BACKFILL ON DRIVEWAYS.

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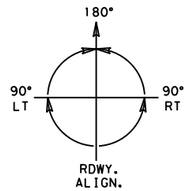
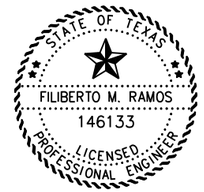


#- DRIVEWAY ANGLE ORIENTATION



12/12/2023

Pharr District Central Design

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FM 1425 PUBLIC DRIVEWAY TABLES

SHEET 2 OF 2

© 2023		CONT	SECT	JOB	HIGHWAY
DS:	CK:	3343	02	016	FM1425
		DIST	COUNTY		SHEET NO.
DW:	CK:	PHR	WILLACY		93

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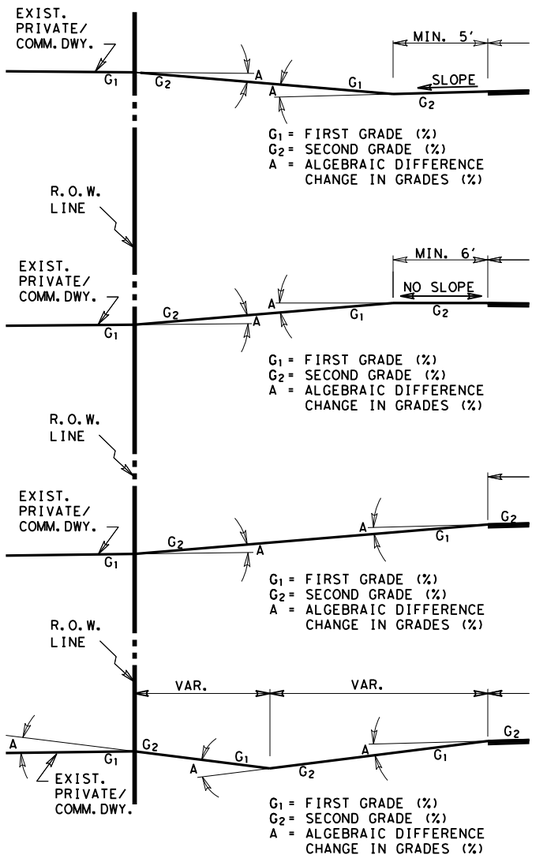
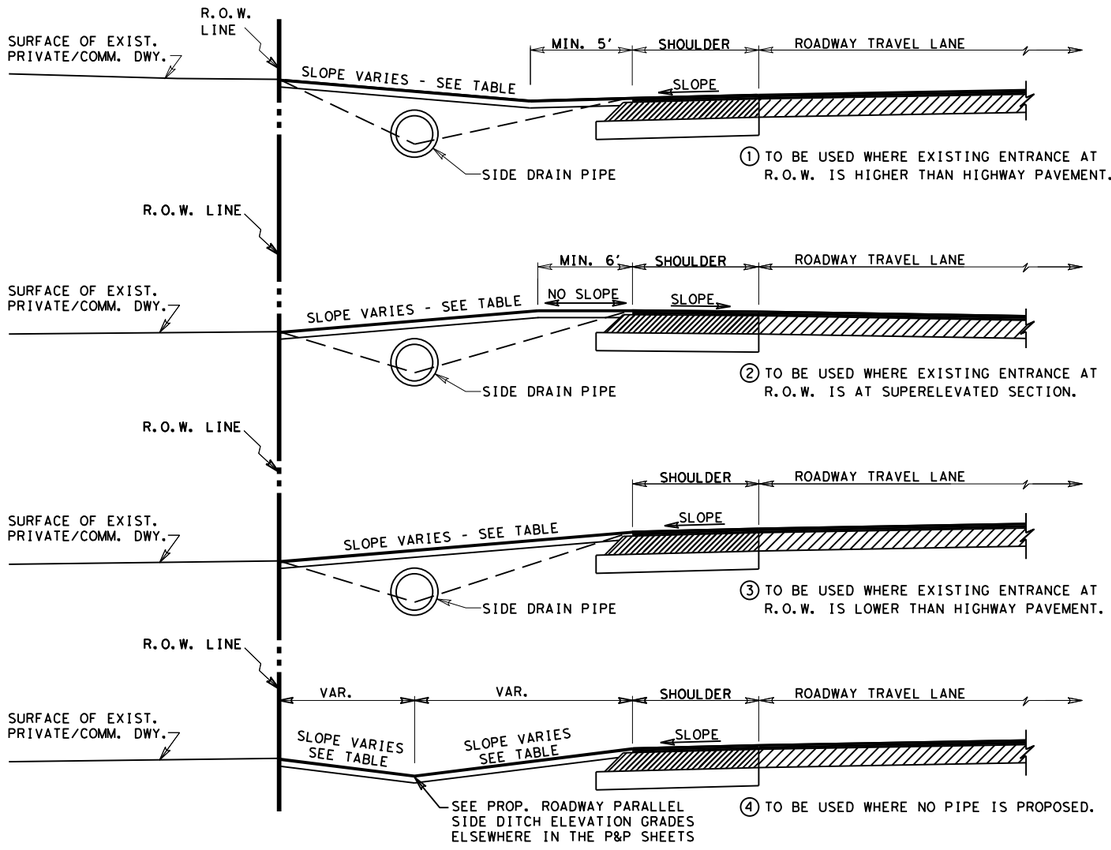
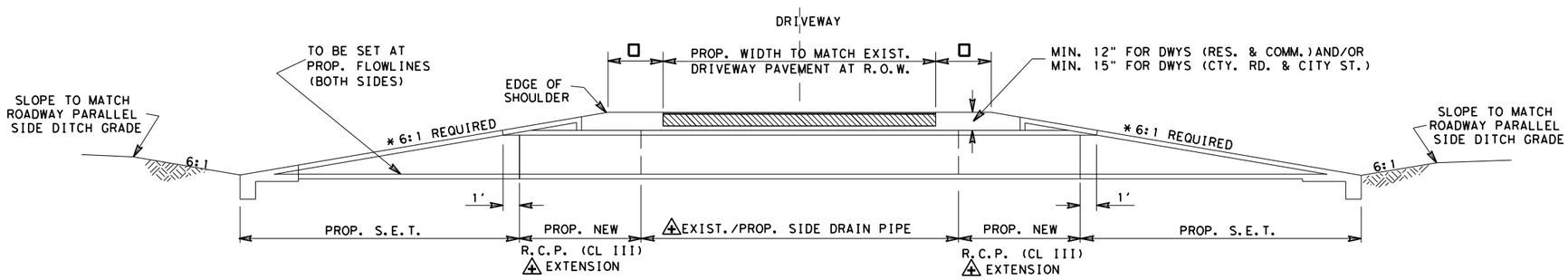




TYPICAL ENTRANCE PROFILE FOR DRIVEWAYS W/OUT C&G

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX.
RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PROP. DWY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% DESIRABLE
RESIDENTIAL DRIVEWAYS @ A = 8% DESIRABLE
FORMULA, A=G2-G1



□ - 1' MIN. ON DRIVEWAYS (RES. & COMM.)
2' MIN. ON DRIVEWAYS (COUNTY RD. & CITY ST.)

* - 6:1 SLOPE REQUIRED

⚠ USE DRAINAGE PIPE AS SHOWN ON THE PLANS

NOTES:

ALL ENTRANCES CONSTRUCTED ON THIS PROJECT ARE SUBJECT TO CONCURRENCE WITH EXISTING GOVERNING REGULATIONS AS SET OUT BY THE STATE - TEXAS TRANSPORTATION COMMISSION.

ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING DRIVEWAY GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

ALL FLEXIBLE BASE USED FOR PRIVATE DRIVES & COMMERCIAL DRIVES WILL NOT REQUIRE LIME TREATMENT.

EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER.

PROP. WIDTH OF DRIVEWAYS TO MATCH EXISTING WIDTH AT R.O.W. LINE.

114 #/SY ACP (COMPACTED) IS EQUAL TO 1 IN. DEPTH,
171 #/SY ACP (COMPACTED) IS EQUAL TO 1½ IN. DEPTH.

SIDE DRAIN PIPES TO BE INSTALLED WHERE ROADWAY DITCH DRAINAGE IS NECESSARY, AS INDICATED ON PLANS AND/OR AS DIRECTED BY THE ENGINEER.

SIDE DRAIN PIPES TO BE INSTALLED WITH A MINIMUM OF 12" COVER WITH PROPOSED RESIDENTIAL & COMMERCIAL DRIVEWAY MATERIAL OR 15" COVER WITH PROPOSED COUNTY ROAD & CITY STREET ROADWAY MATERIAL.

AVERAGE DRIVEWAY DIMENSIONS SHOWN ON TABLE OF DRIVEWAYS (ELSEWHERE IN PLANS) ARE FOR ESTIMATING PURPOSES ONLY. ACTUAL DRIVEWAY DIMENSIONS MAY BE CHANGED BY THE ENGINEER BASED ON EXISTING FIELD CONDITIONS.

THE RATE OF PRIME COAT SHALL BE 0.10 GAL/SY FOR PRIVATE AND/OR COMMERCIAL DRIVEWAYS AND 0.20 GAL/SY FOR PUBLIC DRIVEWAYS (COUNTY ROADS AND/OR CITY STREETS).

TYPICALLY A CHANGE IN GRADE OF THREE PERCENT (3%) OR LESS AND A DISTANCE BETWEEN CHANGES IN GRADE OF AT LEAST ELEVEN FEET (11') ACCOMMODATES MOST VEHICLES. HOWEVER, LITERATURE SUGGESTS THAT A SIX PERCENT (6%) TO EIGHT PERCENT (8%) CHANGE IN GRADE MAY OPERATE EFFECTIVELY. INDIVIDUAL SITE CONDITIONS SHOULD BE EVALUATED TO ACCOMMODATE THE VEHICLE FLEET USING THE DRIVEWAY.

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

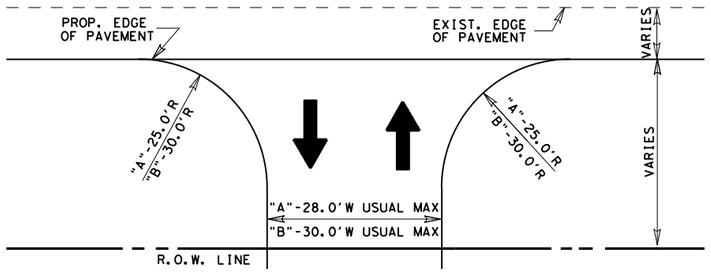
DRIVEWAY PROFILE DETAILS

REV. 3/2020

DRIVEWAY1.DGN

FED. RD. DIV. NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						94
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	WILLACY	3343	02	016	FM 1425

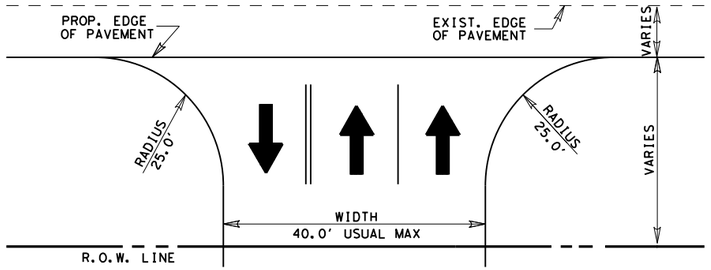
DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



"A"- ONE ENTRY LANE AND ONE EXIT LANE, FEWER THAN 4 LARGE VEHICLES PER HOUR

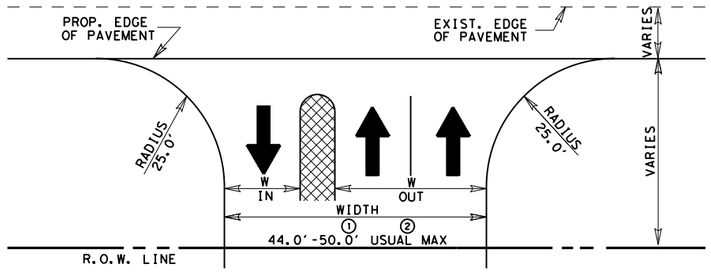
"B"- ONE ENTRY LANE AND ONE EXIT LANE, 4 OR MORE SINGLE UNIT VEHICLES① PER HOUR

① - *DRIVEWAY DESIGNS FOR LARGER VEHICLES WILL BE CONSIDERED ON A CASE BY CASE BASIS*



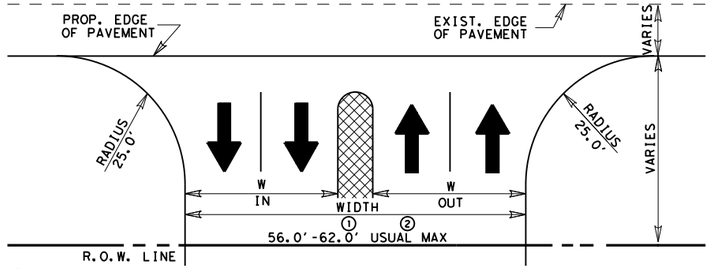
ONE ENTRY LANE AND TWO EXIT LANES (WITHOUT DIVIDERS)

DESIGNS FOR TWO-WAY COMMERCIAL DRIVEWAYS



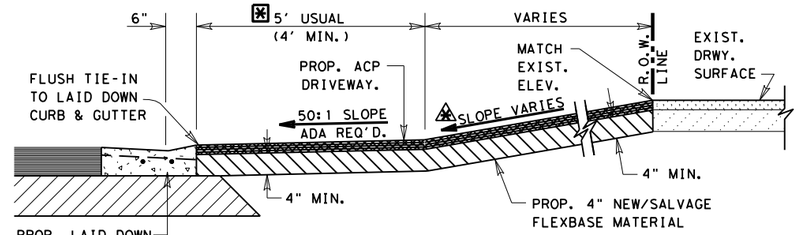
① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

ONE ENTRY LANE AND TWO EXIT LANES (WITH A DIVIDER)



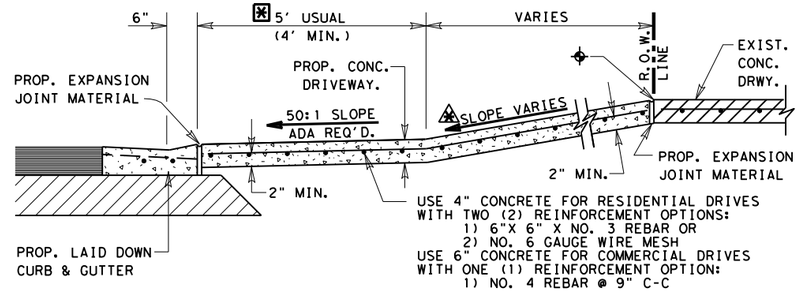
① - *4.0' WIDE DIVIDER, FACE-TO-FACE CURBS*
② - *10.0' WIDE DIVIDER, FACE-TO-FACE-CURBS*

TWO ENTRY LANES AND TWO EXIT LANES (WITH A DIVIDER)



TYPICAL ASPH. CONC. PVM'T. DRIVEWAY SECTION

N.T.S.



TYPICAL CONCRETE DRIVEWAY SECTION

N.T.S.

⌖ CONCRETE SHALL BE SAW CUT TO THE LIMITS OF REMOVAL WHERE APPLICABLE.

⊠ PROP./FUTURE SIDEWALK CROSSING LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. SEE P&P SHEETS FOR PROP. SIDEWALK LOCATION IF SIDEWALKS ARE INCLUDED AS PART OF PROJECT. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

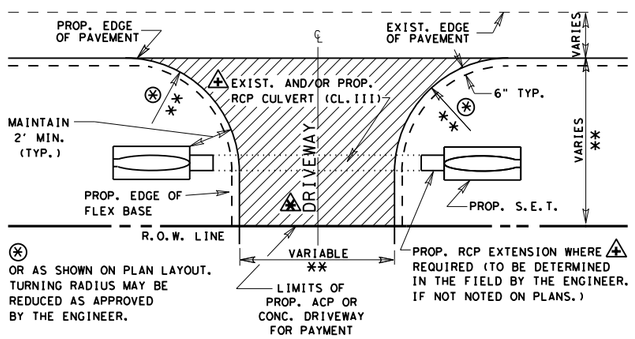
⚠ ENTRANCE'S BASE AND SURFACING MAY BE EXTENDED BEYOND R.O.W. LINE AS REQUIRED TO MEET EXISTING GRADE IN A SATISFACTORY MANNER OF WHICH NO STEEPER THAN 12:1 FOR COMMERCIAL DRIVEWAY AND 8:1 FOR RESIDENTIAL DRIVEWAY SLOPE WILL BE CONSTRUCTED.

PROP. DWY ALGEBRAIC DIFFERENCE TABLE
COMMERCIAL DRIVEWAYS @ A = 6% MAX. RESIDENTIAL DRIVEWAYS @ A = 8% MAX.

PROPOSED DRIVEWAY SLOPE TABLE
COMMERCIAL DRIVEWAYS @ 12:1 MAX. RESIDENTIAL DRIVEWAYS @ 8:1 MAX.

PRIVATE AND COMMERCIAL DRIVES WITHOUT CURB & GUTTER

⚠ USE DRAINAGE PIPE AS SHOWN ON PLANS

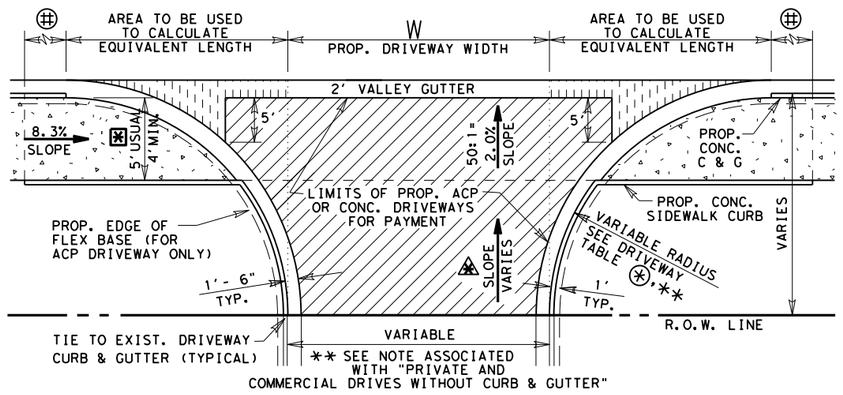


PLAN OF PRIVATE AND COMMERCIAL DRIVES

** FOR PRIVATE RESIDENTIAL DRIVES, TRY TO MATCH EXISTING WITH A MINIMUM WIDTH OF 12 FT. AND A MAXIMUM WIDTH OF 24 FT. WITH 15 FT. USUAL RADIUS. FOR COMMERCIAL DRIVES, USE ABOVE COMMERCIAL DRIVEWAY DETAILS.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

PRIVATE AND COMMERCIAL DRIVES WITH CURB & GUTTER



PLAN OF PRIVATE AND COMMERCIAL DRIVES

SEE P&P SHEETS FOR LOCATIONS OF DRIVES
N.T.S.

⊠ PROP./FUTURE CONC. SIDEWALK LOCATION UNLESS SHOWN ELSEWHERE ON P&P SHEETS. REFER TO STATE STANDARDS - PEDESTRIAN FACILITIES - FOR ADDITIONAL REQUIREMENTS.

⊕ LIMITS OF SLOPE FOR PROP. CONC. CURB BASED ON 8.3% SLOPE FOR SIDEWALK.

⚠ SEE TYPICAL DRIVEWAY SECTIONS NOTES FOR DRIVEWAY SLOPE CRITERIA.

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 2' VALLEY GUTTER

LF OF VALLEY GUTTER= W + X1 + X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 2') Equivalent LF Length
5'	1
8'	2
10'	4
12'	6
15'	9
18'	12
20'	15
22'	18
25'	24
28'	30
30'	34

SEE DRIVEWAY TABLE FOR LIMITS OF LAID DOWN CURB TO BE PAID FOR AS CURB AND GUTTER

DRIVEWAY TYPES

TY PB-1
EXIST. PRIVATE OR COMMERCIAL DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" NEW AND/OR SALVAGE FLEX. BASE, PRIMED AND SURFACED WITH 171#/SY ACP. (HMA-D PG 64-22 SAC B MEETING ITEM 340)

CONCRETE (RESIDENTIAL)
EXIST. PRIVATE DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 4" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

CONCRETE (COMMERCIAL)
EXIST. BUSINESS DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 6" CONCRETE. TO BE PAID FOR BY THE SQ.YD.

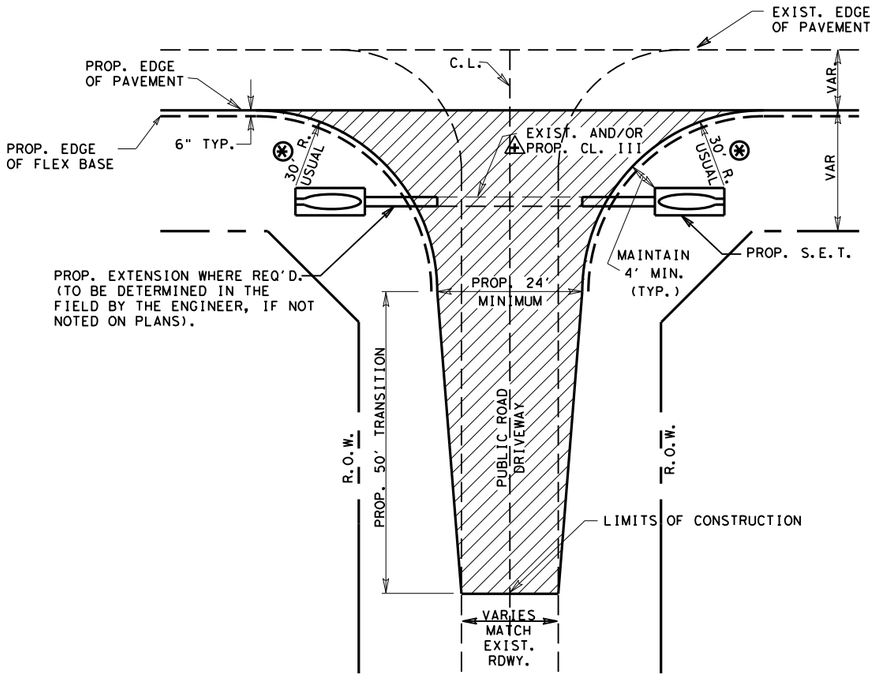
 PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

DRIVEWAY DETAILS PRIVATE (RESIDENTIAL-COMMERCIAL)

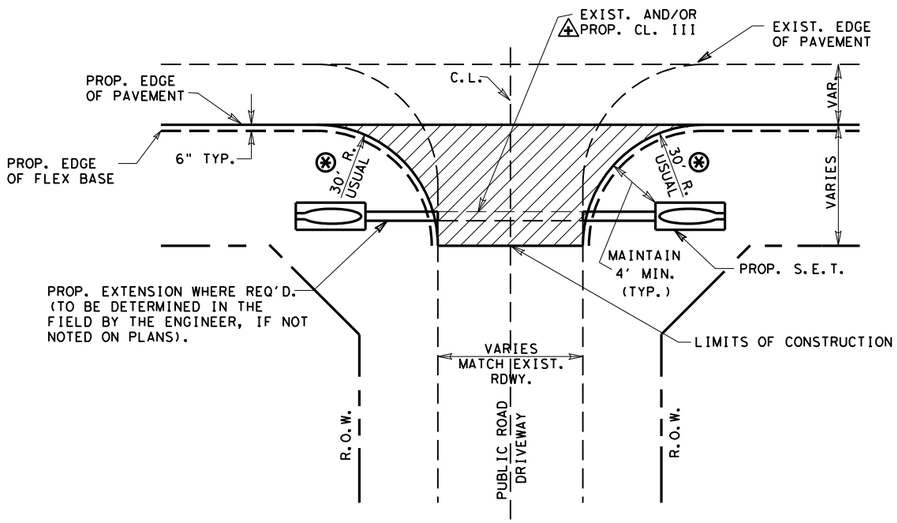
REV. 08/22 DRIVEWAY2.DGN

FED. RD. DIV. NO.	PROJECT NO.		FILE NO.			SHEET NO.
6						95
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	WILLACY	3343	02	016	FM 1425



TYPICAL DETAIL

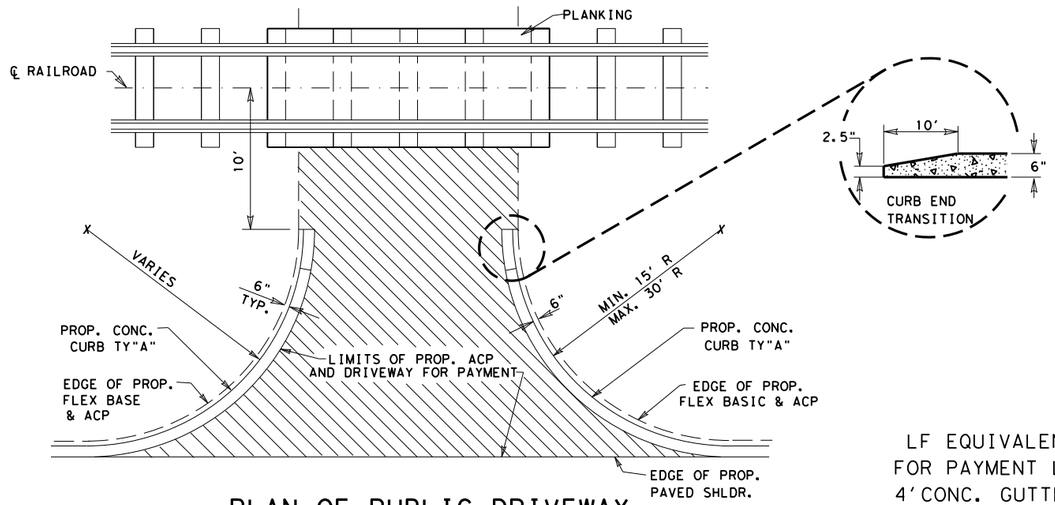
(WHEN EXIST. ROADWAY WIDTH LESS THAN 24'.)



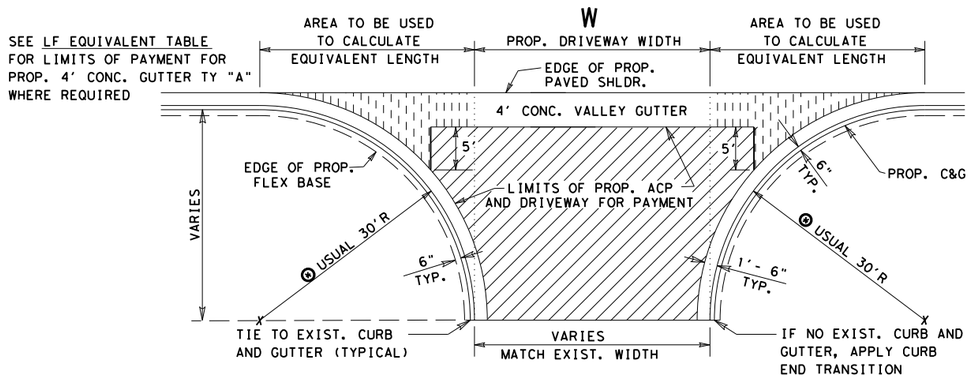
TYPICAL DETAIL

(WHEN EXIST. ROADWAY WIDTH EQUAL TO OR GREATER THAN 24'.)

④ USE DRAINAGE PIPE AS SHOWN ON PLANS



PLAN OF PUBLIC DRIVEWAY ADJACENT TO R.R. CROSSING



PLAN OF PUBLIC DRIVEWAY

LF EQUIVALENT TABLE FOR PAYMENT LIMITS OF 4'CONC. GUTTER TY."A"

LF OF VALLEY GUTTER= W + X1 + X2

WHERE X1 AND X2 MAY VARY DEPENDING ON RADIUS

Prop. Driveway Radius	X1 or X2 (Sq Ft Area / 4') Equivalent LF Length
10	3
15	7
20	12
25	19
30	27
35	37
40	48
45	61
50	75
55	91
60	109
65	127
70	148
75	170

TY PBS1

EXIST. UNPAVED PUBLIC DRIVEWAYS TO BE CONSTRUCTED AS SHOWN WITH 12" LIME TREAT. SUBGRADE, 8" FLEX. BASE 1% LIME, THEN PRIMED AND SURFACED WITH 171#/SY ACP. (HMA-D PG 64-22 SAC B MEETING ITEM 340)

TY PBS2

EXIST. DRIVEWAY TO BE CONSTRUCTED SAME AS PROPOSED ROADWAY.

GENERAL NOTES:

AVERAGE DIMENSIONS SHOWN ON TABLE OF DRIVEWAYS ARE FOR ESTIMATING PURPOSES ONLY.

LOCATIONS LISTED ON THE TABLE ARE APPROXIMATE, EXACT LOCATIONS, DIMENSIONS, AND TYPE TO BE ESTABLISHED DURING CONSTRUCTION BY THE ENGINEER AS REQUIRED.

⑧ SEE DRIVEWAY TABLE, TURNING RADIUS MAY BE REDUCED AS APPROVED BY THE ENGINEER.

SEE TABLE OF DRIVEWAYS FOR TOTAL LENGTH OF PROP. 4' CONC. VALLEY GUTTER FOR EACH LOCATION.

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

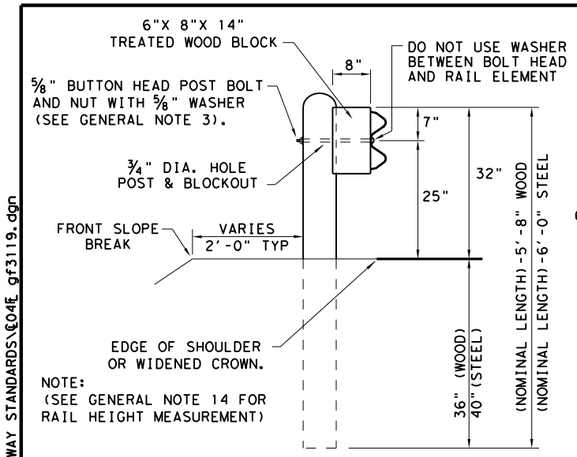
DRIVEWAY DETAILS PUBLIC (COUNTY ROAD-CITY STREET)

REV. 8/22

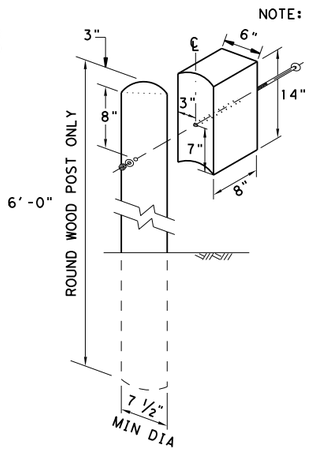
DRIVEWAY3.DGN

FED. RD. DIV. NO.	STATE AID PROJECT NO.		FILE NO.			SHEET NO.
6						96
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	WILLACY	3343	02	016	FM 1425

DATE: 12/12/2023
FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\334302016\4 - Design\Plan Set\3. Roadway\ROADWAY STANDARDS\gf04e_gf3119.dgn

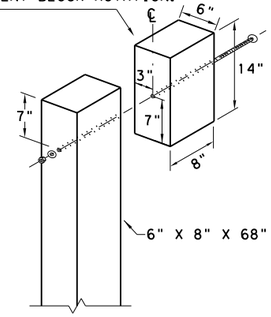


TYPICAL POST PLACEMENT

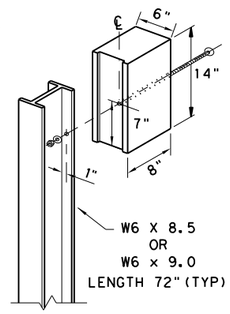


WOOD BLOCK TO ROUND WOOD POST

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

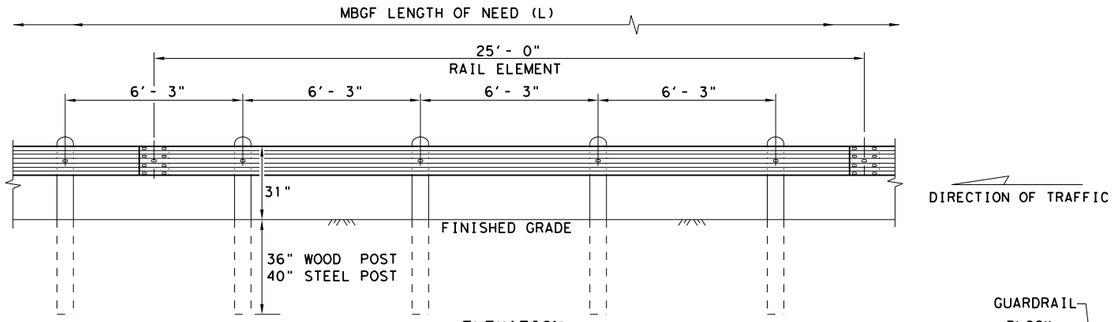


WOOD BLOCK TO RECTANGULAR WOOD POST



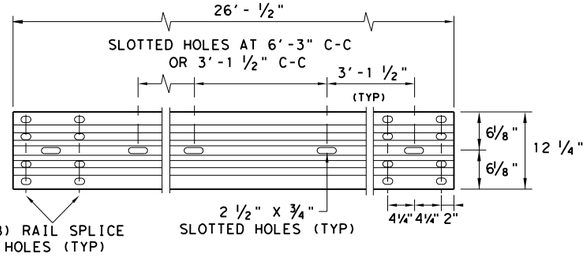
ROUTED WOOD BLOCK TO I-BEAM STEEL POST

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



ELEVATION
MID-SPAN RAIL SPLICE

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



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

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

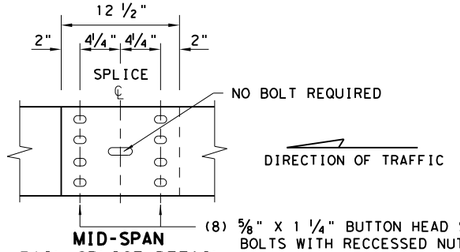
NOTE:
FOUR TYPES OF BUTTON-HEAD GUARD RAIL BOLTS COME WITH A RECCESSED NUT.

SPLICE BOLT LENGTH — VARIES
FBBO1 = 1 ¼"
FBBO2 = 2"
⅝"

POST & BLOCK LENGTH
FBBO3 = 10"
FBBO4 = 18"

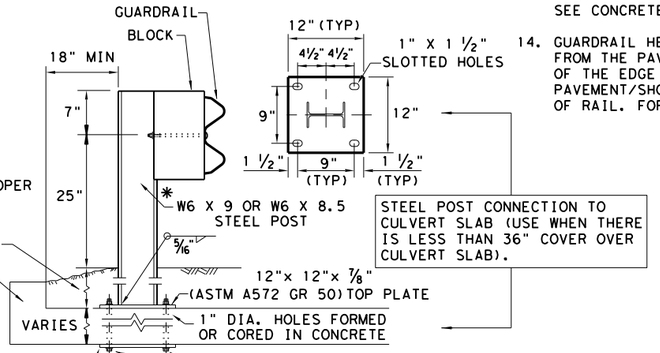
BUTTON HEAD BOLT

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



MID-SPAN RAIL SPLICE DETAIL

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



12" X 12" X ¼" (ASTM A36) STEEL BOTTOM PLATE WITH 1" DIA. HOLES REQUIRED WITH BOLT-THROUGH INSTALLATION.

LOW FILL CULVERT POST

NOTE: TWO INSTALLATION OPTIONS.

1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. ⅞" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
   NOTE: BOLT LENGTH = SLAB PLUS 2 ¼" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE ⅞" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS ¼" MIN. BEYOND NUT.

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

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

GENERAL NOTES

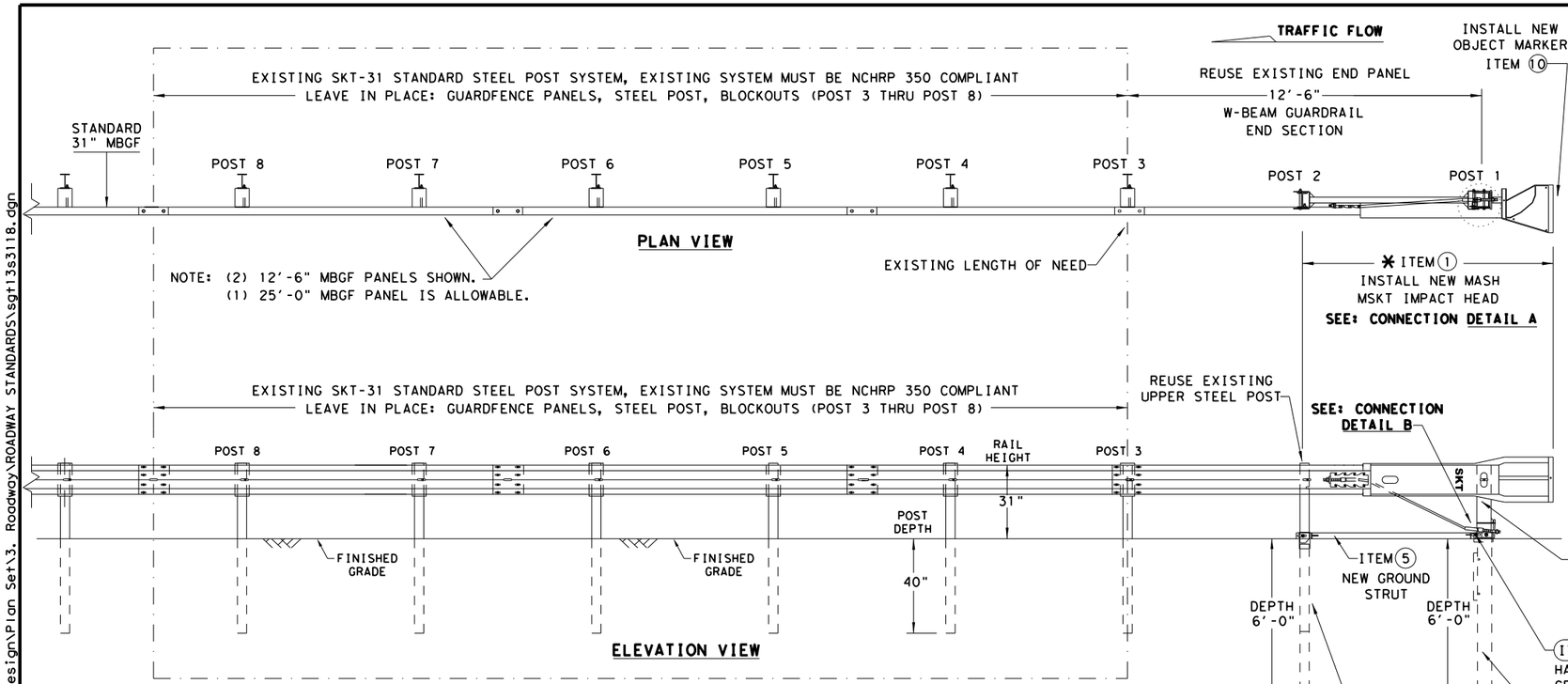
1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

Texas Department of Transportation — Design Division Standard

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

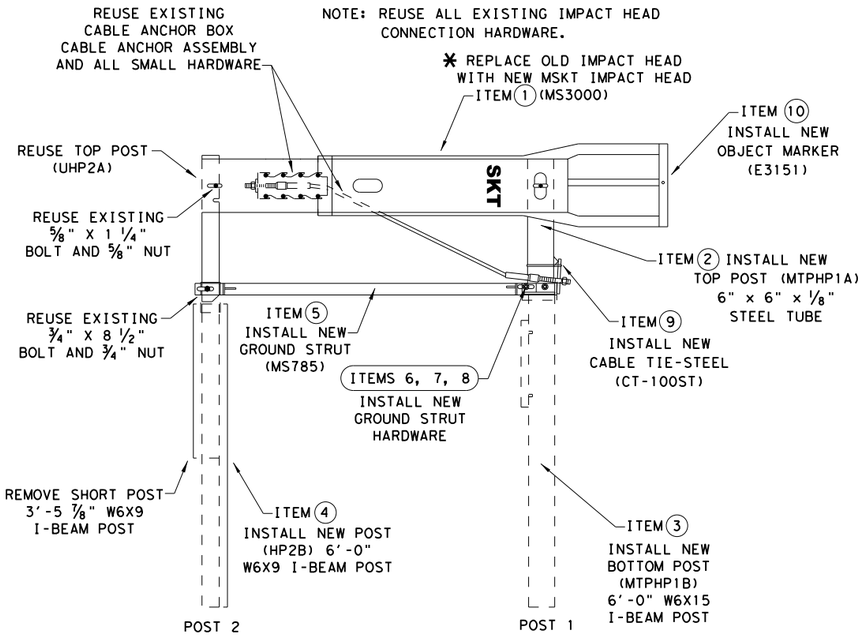
FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		97

DATE: 1/23/2024
FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\334302016\4 - Design\Plan Set\3. Roadway\ROADWAY STANDARDS\sgt13s3118.dgn



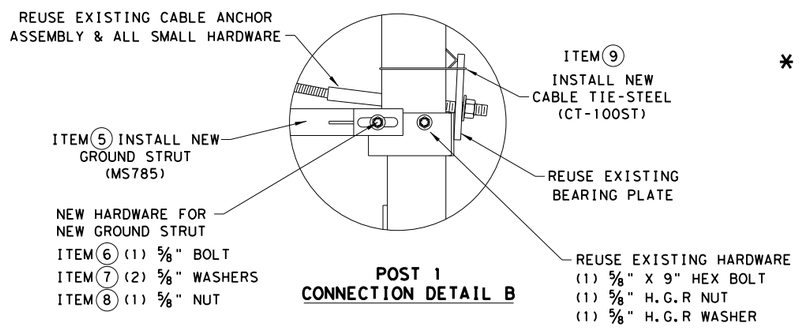
GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
2. FOR INSTALLATION, REPAIR AND MAINTENANCE REFER TO; MSKT END TERMINAL, PRODUCT DESCRIPTION ASSEMBLY MANUAL (PUBLICATION~062717).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. THE EXISTING SKT 31" STANDARD STEEL POST SYSTEM MUST BE THOROUGHLY INSPECTED, AND DETERMINED TO BE INTACT, AND FREE OF ANY DAMAGE OR DEFECTS BEFORE RETROFITTING. THIS INSPECTION INCLUDES COMPLETING THE MSKT RETROFIT INSPECTION CHECKLIST FOR THE EXISTING SKT 31" STEEL POST NCHRP 350 SYSTEM. ALL EXISTING, AND REUSABLE PARTS MUST BE FREE OF ANY DAMAGE FOR A MASH COMPLIANT RETROFIT.
9. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
10. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
11. SPECIAL DRIVING CAP TO BE USED WHEN DRIVING (LOWER POSTS 1 & 2) TO PREVENT DAMAGE TO THE WELDED PLATES.



CONNECTION DETAIL A
IMPACT HEAD (POST 1 & POST 2)

ITEMS	QTY	MAIN SYSTEM COMPONENTS	PART NUMBERS
* 1	1	MSKT IMPACT HEAD	MS3000
2	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
3	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
4	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
5	1	GROUND STRUT	MS785
6	1	5/8" X 9" HEX BOLT (GRD A449)	B580904A
7	2	5/8" WASHERS	W050
8	1	5/8" H.G.R NUT	N050
9	1	CABLE TIE-STEEL	CT-100ST
* 10	1	OBJECT MARKER 18" X 18"	E3151



POST 1 CONNECTION DETAIL B

COMPONENTS REQUIRED TO RETROFIT: EXISTING 31" STEEL POST (NCHRP 350 SKT) GUARDRAIL TERMINAL WITH THE NEW 31" (MASH COMPLIANT MSKT IMPACT HEAD).

*** IF THE EXISTING NCHRP 350 (31" STEEL POST SKT) ALREADY HAS THE MSKT IMPACT HEAD THERE IS NO NEED TO REPLACE THE IMPACT HEAD OR OBJECT MARKER AS LONG AS IT IS NOT DAMAGED.**

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

Texas Department of Transportation — Design Division Standard

RETROFIT STANDARD SKT 31" STEEL POST SYSTEM TO MASH MSKT

SGT(13S)31-18

FILE: sgt13s3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL
© TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		98

DATE:
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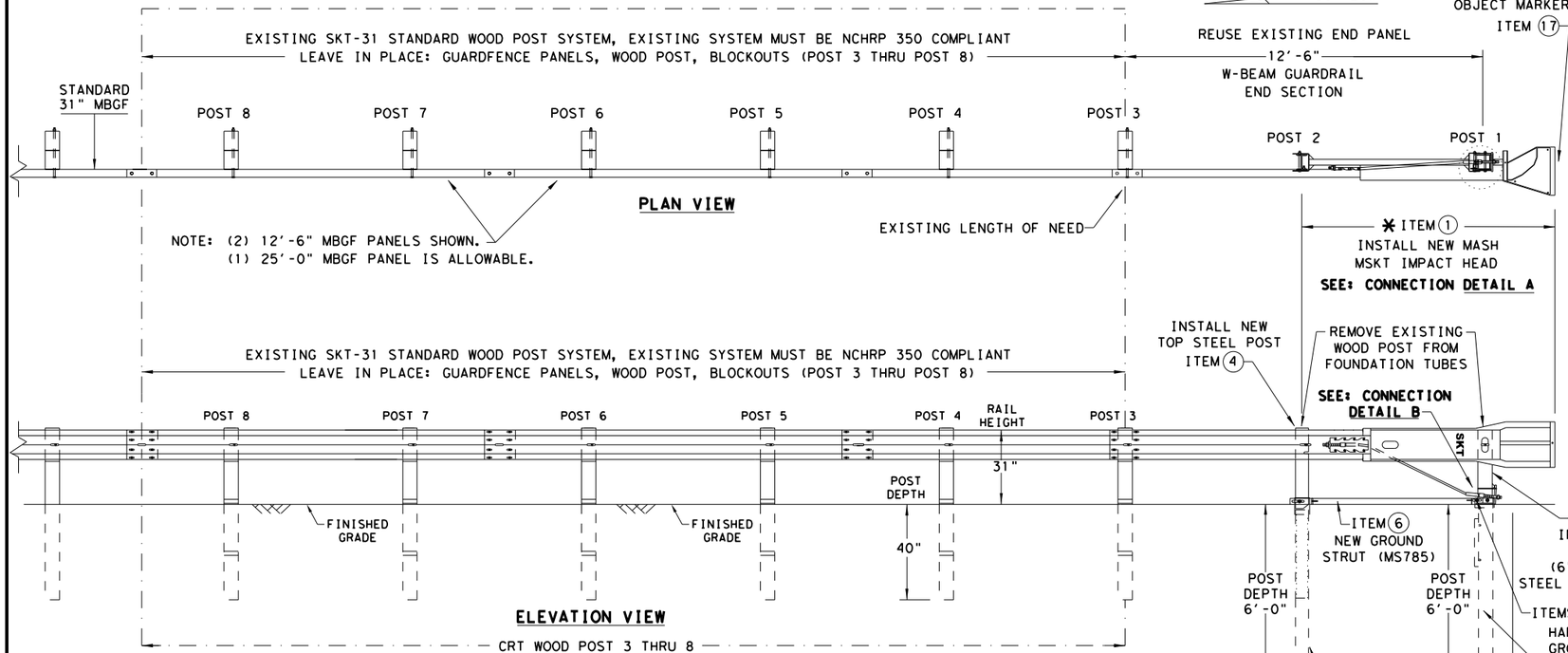
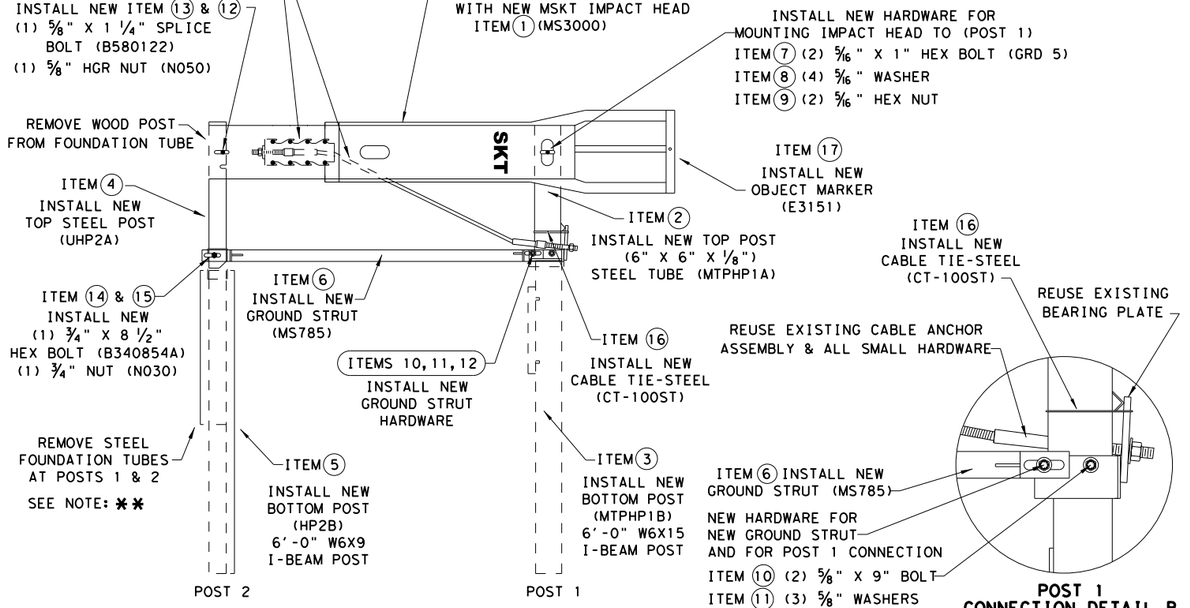
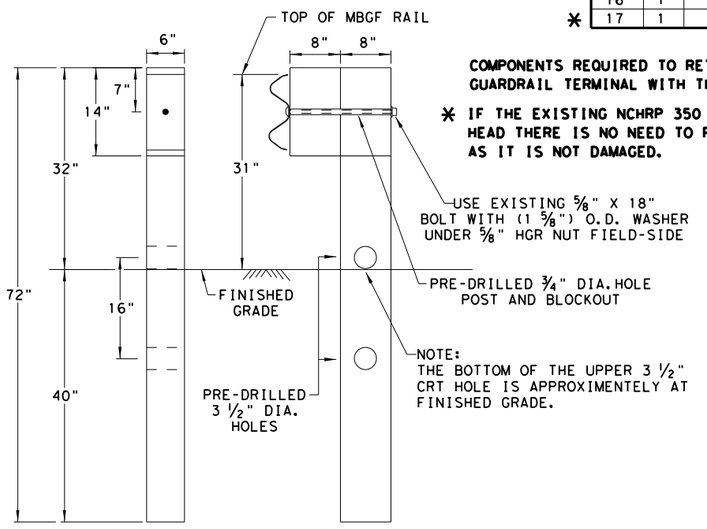




CONNECTION DETAIL A
IMPACT HEAD (POST 1 & POST 2)

POST 1
CONNECTION DETAIL B

** NOTE: EXTRA SOIL COMPACTION WILL BE NEEDED AROUND NEW (POSTS 1 & 2) DUE TO THE REMOVAL OF THE STEEL FOUNDATION TUBES.



FRONT VIEW **SIDE VIEW**
EXISTING WOOD POSTS 3-8
CONTROLLED RELEASE TERMINAL (CRT)

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

GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: ROAD SYSTEMS, INC. (432)263-2435. 3616 OLD HOWARD COUNTY AIRPORT, BIG SPRING, TX 79720
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3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURER'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. HARDWARE (BOLTS, NUTS, & WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
6. IF SOLID ROCK IS ENCOUNTERED IN THE AREA OF (POST 1) AND / OR (POST 2) CONTACT THE MANUFACTURER, AND REFER TO THE LATEST ROADWAY MBGF STANDARD FOR INSTALLATION GUIDANCE.
7. POSTS SHALL NOT BE SET IN CONCRETE.
8. THE EXISTING SKT 31" STANDARD WOOD POST SYSTEM MUST BE THOROUGHLY INSPECTED, AND DETERMINED TO BE INTACT, AND FREE OF ANY DAMAGE OR DEFECTS BEFORE RETROFITTING. THIS INSPECTION INCLUDES COMPLETING THE MSKT RETROFIT INSPECTION CHECKLIST FOR THE EXISTING SKT 31" WOOD POST NCHRP 350 SYSTEM. ALL EXISTING, AND REUSABLE PARTS MUST BE FREE OF ANY DAMAGE FOR A MASH COMPLIANT RETROFIT.
9. UNDER NO CIRCUMSTANCES SHALL THE GUARDRAIL WITHIN THE MSKT SYSTEM BE CURVED.
10. A FLARE RATE OF UP TO 25:1 MAY BE USED TO PREVENT THE TERMINAL HEAD FROM ENCROACHING ON THE SHOULDER. THE FLARE MAY BE DECREASED OR ELIMINATED FOR SPECIFIC INSTALLATIONS, IF DIRECTED BY THE ENGINEER.
11. SPECIAL DRIVING CAP TO BE USED WHEN DRIVING (LOWER POSTS 1 & 2) TO PREVENT DAMAGE TO THE WELDED PLATES.

ITEMS	QTY	MAIN SYSTEM COMPONENTS	PART NUMBERS
1	1	MSKT IMPACT HEAD	MS3000
2	1	POST 1 - TOP (6" X 6" X 1/8" TUBE)	MTPHP1A
3	1	POST 1 - BOTTOM (6' W6X15)	MTPHP1B
4	1	POST 2 - ASSEMBLY TOP	UHP2A
5	1	POST 2 - ASSEMBLY BOTTOM (6' W6X9)	HP2B
6	1	GROUND STRUT	MS785
7	2	5/16" X 1" HEX BOLT (GRD 5)	B516014A
8	4	5/16" WASHERS	W0516
9	2	5/16" HEX NUT	N0516
10	2	5/8" X 9" HEX BOLT (GRD A449)	B580904A
11	3	5/8" WASHERS	W050
12	3	5/8" H.G.R NUT	N050
13	1	5/8" X 1 1/4" SPLICE BOLT	B580122
14	1	3/4" X 8 1/2" HEX BOLT (GRD 5)	B340854A
15	1	3/4" HEX NUT	N030
16	1	CABLE TIE-STEEL	CT-100ST
* 17	1	OBJECT MARKER 18" X 18"	E3151

COMPONENTS REQUIRED TO RETROFIT: EXISTING 31" WOOD POST (NCHRP 350 SKT) GUARDRAIL TERMINAL WITH THE NEW 31" (MASH COMPLIANT MSKT IMPACT HEAD).

*** IF THE EXISTING NCHRP 350 (31" WOOD POST SKT) ALREADY HAS THE MSKT IMPACT HEAD THERE IS NO NEED TO REPLACE THE IMPACT HEAD OR OBJECT MARKER AS LONG AS IT IS NOT DAMAGED.**

Texas Department of Transportation

Design Division Standard

RETROFIT STANDARD SKT 31" WOOD POST SYSTEM TO MASH MSKT

SGT(14W)31-18

FILE: sgt14w3118.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CL
©TxDOT: APRIL 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		98-A

DATE: 12/12/2023
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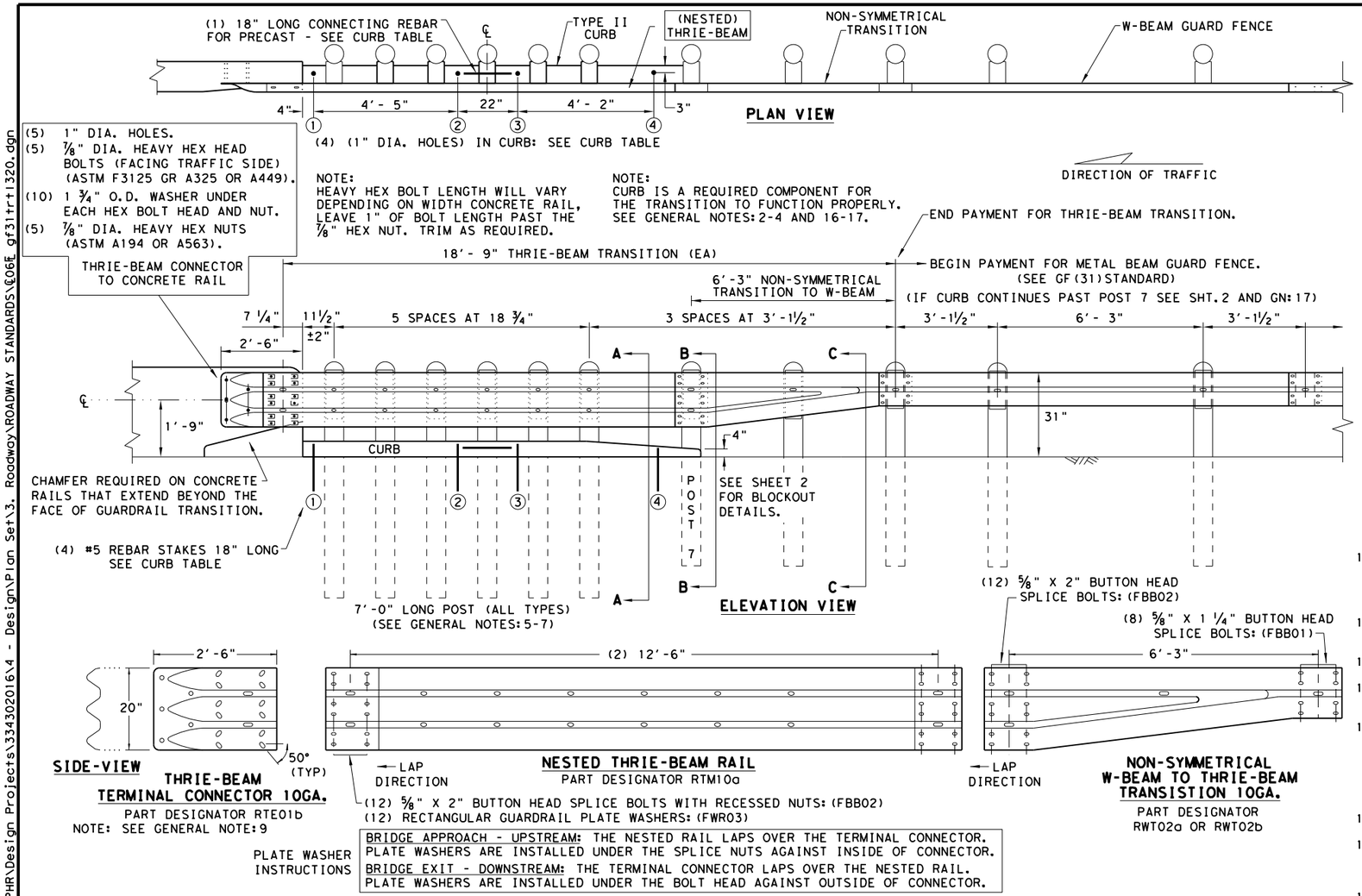


GENERAL NOTES

1. CONTACT THE DESIGN DIVISION FOR DRAINAGE CUT OUT OPTIONS NEEDED WITHIN THE CURB SECTION OF THE THRIE-BEAM TRANSITION. (512) 416-2678
2. CONCRETE CURB MAY BE CAST-IN-PLACE OR PRECAST AS SHOWN ON THIS SHEET. WHEN USED IN CONJUNCTION WITH THE THRIE-BEAM TRANSITIONS, CURB SHALL BE TYPE II (5- ¾" HEIGHT); SEE CURRENT CCCG STANDARD SHEET FOR FURTHER DETAILS. IF OTHER CURB HEIGHTS ARE SHOWN IN THE PLANS IN CONJUNCTION WITH THE TRANSITION, THE CURB HEIGHT MAY BE FROM 4" TO 8" WITH A RELATIVELY VERTICAL FACE. CONCRETE CURB SHALL BE CONTINUOUS TO THE SEVENTH POST UNLESS OTHERWISE SHOWN IN THE PLANS. SEE GENERAL NOTE: 17 FOR CIRCUMSTANCES WHERE CURB CONTINUES PAST POST 7.
3. CONCRETE CURB TYPE II SUBSIDIARY TO "METAL BEAM GUARD FENCE TRANSITION". IF NO ADDITIONAL CURB IS INDICATED BEYOND THE TRANSITION, THEN ANY CURB HEIGHT GREATER THAN 4" WILL BE TAPERED DOWN BEGINNING AT THE LAST 7 FT. POST TO A MAXIMUM HEIGHT OF 4" AT POST 7. IF SHOWN ELSEWHERE IN THE PLANS, ADDITIONAL CURB UNDERNEATH GUARDRAIL WILL BE PAID FOR BY THE LINEAR FOOT.
4. UNLESS OTHERWISE SHOWN IN THE PLANS, TRANSITIONS SHALL BE PLACED WITH THE BLOCKOUT FACE IN FRONT OF OR DIRECTLY ABOVE THE CURB FACE. SEE SECTION A-A.
5. FOR ROUND WOOD POST SYSTEMS, ALL ROUND WOOD POSTS SHALL BE 7 ½" DIA. MINIMUM THROUGHOUT THE THRIE-BEAM TRANSITION.
6. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. REFER TO GF(31) STANDARD SHEET.
7. THE POST LENGTH SHALL BE MARKED ON ALL 7'- 0" LONG POSTS BY THE MANUFACTURER. THE MARK SHALL BE LOCATED WITHIN THE TOP 1 FT. REGION OF THE POST, AT LEAST ⅝" IN HEIGHT, AND VISIBLE AFTER INSTALLATION. WOODEN POSTS SHALL BE MARKED WITH A BRAND, AND STEEL POSTS WITH A STENCIL BEFORE GALVANIZING.
8. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
9. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED ON THE PLANS. THE THRIE-BEAM TERMINAL CONNECTOR AND THE THRIE-BEAM TRANSITION TO W-BEAM SHALL BE OF THE SAME MATERIAL, BUT SHALL NOT BE LESS THAN 10 GAUGE. CONTRACTOR SHALL VERIFY THAT THE LOCATIONS OF BOLT HOLES MATCH THOSE IN THE THRIE-BEAM TERMINAL CONNECTOR PRIOR TO ORDERING MATERIALS.
10. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
11. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING". FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
12. CROWN SHALL BE WIDENED TO ACCOMMODATE TRANSITIONS.
13. WHERE SOLID ROCK IS ENCOUNTERED, CONTACT THE DESIGN DIVISION FOR ADDITIONAL GUIDANCE. (512) 416-2678
14. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. TXDOT'S MATERIALS AND TESTS DIVISION MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210. ONLY PRODUCERS ON THE MPL CAN FURNISH COMPOSITE MATERIAL BLOCKS.
15. REFER TO GF(31) STANDARD SHEET & BRIDGE RAILING DETAILS FOR ADDITIONAL DETAILS.
16. THE INSTALLATION OF THE TYPE II CURB IS CRITICAL FOR THE PERFORMANCE OF THE THRIE-BEAM TRANSITION SYSTEM. THE CURB PREVENTS (VEHICLE WHEEL SNAGGING) AT THE CONCRETE RAIL AND IS REQUIRED TO MEET MASH CRASH TEST CRITERIA.
17. IF CURB EXTENDS BEYOND POST 7, 25' OF NESTED W-BEAM GUARDRAIL SHALL BE INSTALLED BEYOND THE PAY LIMITS OF THRIE-BEAM TRANSITION SECTION, (SEE SHT.2). PAYMENT FOR THIS 25' SECTION WILL BE BY LINEAR FOOT, PAY ITEM "0540 6XXX MTL W-BEAM GD FEN (NESTED) (TIM POST)" OR "540 6XXX MTL W-BEAM GD FEN (NESTED) (STEEL POST)" AS APPLICABLE FOR POST TYPE. SEE SHT.2 FOR ADDITIONAL INFORMATION.

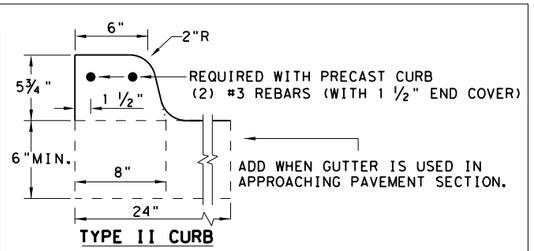
THRIE-BEAM TERMINAL - CURB TABLE

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

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

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

SECURING PRECAST OR CAST-IN-PLACE TO FINISHED GRADE *:
FORM OR CORE (4) 1" DIA. HOLES, SEE PLAN AND ELEVATION VIEWS FOR HOLE LOCATIONS. DRIVE (4) #5 GR.60 REBAR STAKES 18" LONG INTO THE GROUND AND ½" BELOW TOP OF CURB.
FILL HOLES WITH APPROVED GROUT MIXTURE.



TYPE II CURB

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

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

TYPE II CURB DETAILS

HIGH-SPEED TRANSITION

SHEET 1 OF 2

Texas Department of Transportation — Design Division Standard

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

GF(31)TR TL3-20

FILE: gf31tr-tl320.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
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REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		99

DATE: 12/12/2023
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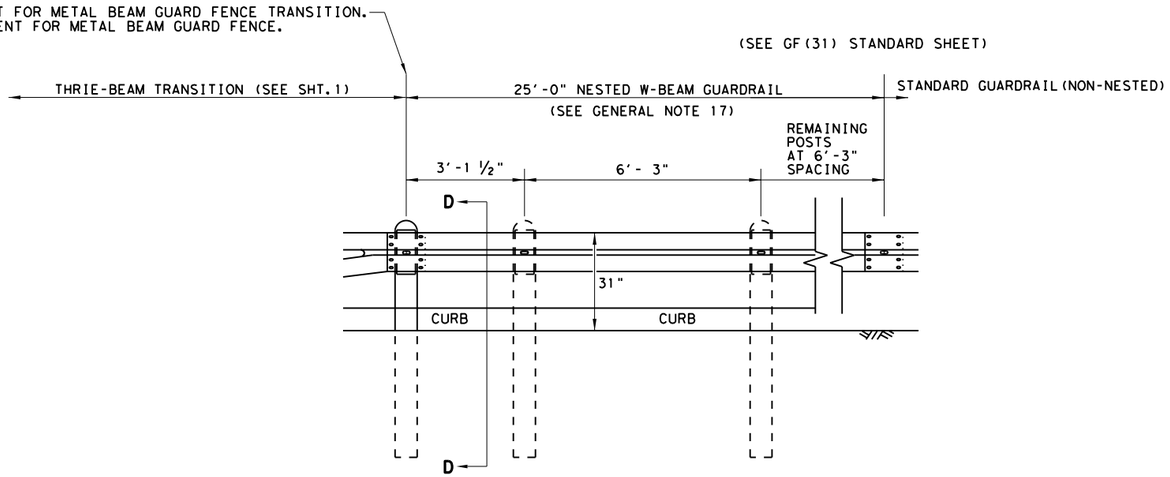
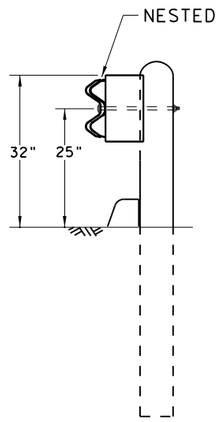
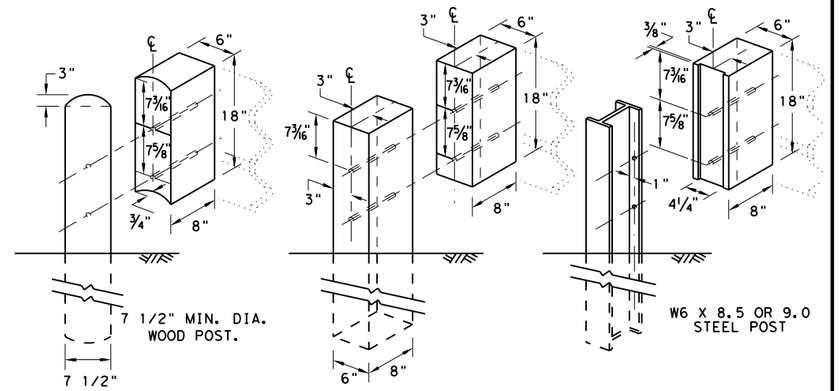
REQUIRED ALTERNATIVE FOR CONTINUOUS CURB EXTENDING PAST POST 7 (SEE SHT. 1 GENERAL NOTE 17)



ELEVATION VIEW



SECTION D-D



THRIE BEAM TRANSITION BLOCKOUT DETAILS

HIGH-SPEED TRANSITION

SHEET 2 OF 2

Texas Department of Transportation | Design Division Standard

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

GF(31)TR TL3-20

FILE: gf31tr1320.dgn	DN: TxDOT	CK: KM	DW: KM	CK: CGL/AG
©TxDOT: NOVEMBER 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		100

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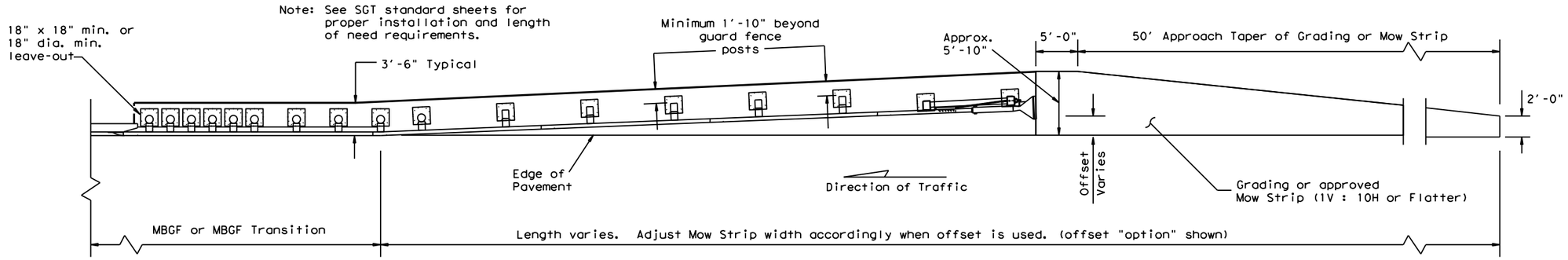
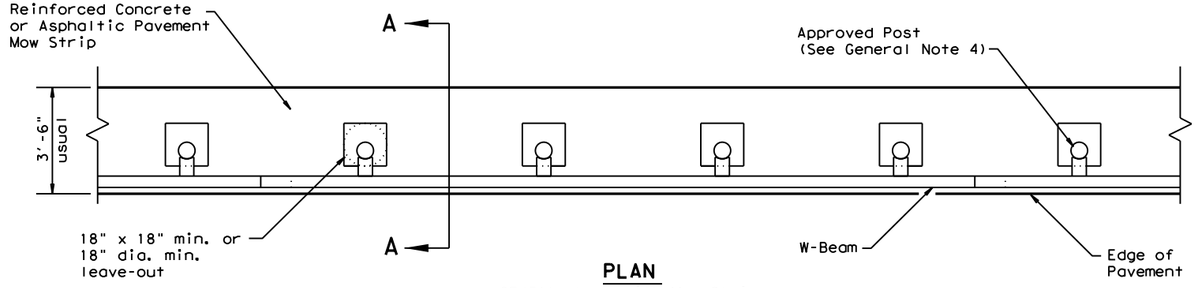
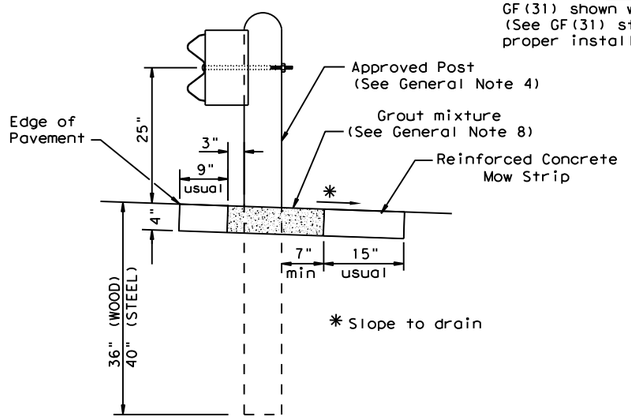


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



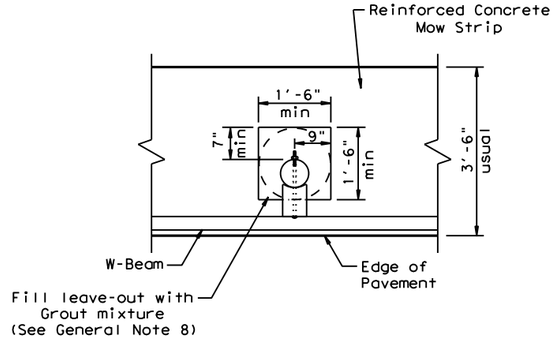
PLAN

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



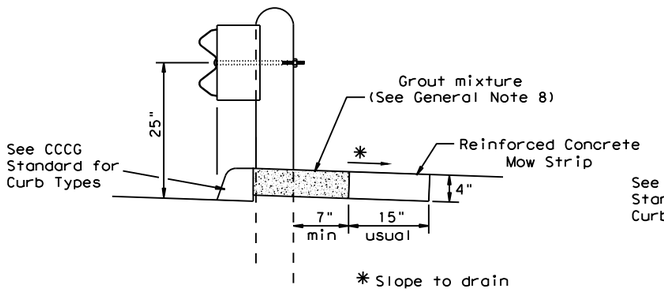
SECTION A-A

Typical



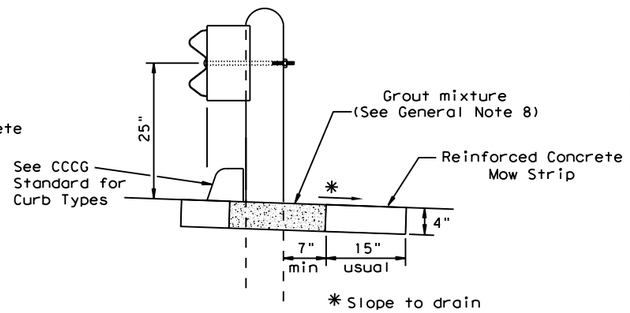
MOW STRIP DETAIL

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



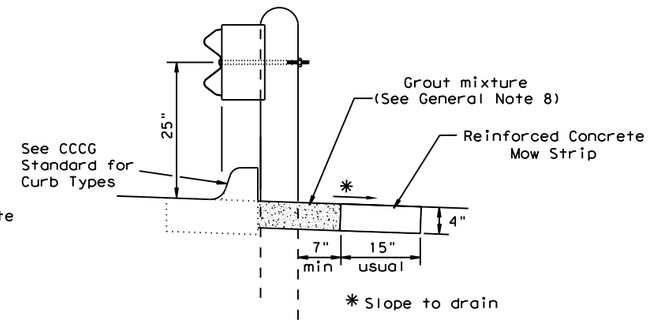
CURB OPTION (1)

This option will increase the post embedment throughout the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments. See applicable GF(31) MBGF or GF(31) Transition Standard sheet for additional information.
2. Mow strips shall be reinforced concrete with (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. Only steel (W6 x 8.5 or W6 x 9.0), or 7 ½" Dia. round wood posts are acceptable for use in the mow strip. See GF(31) Standard for additional details.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with a Grout mixture consisting of: 2719 pounds sand, 188 pounds Type 1 or II cement, and 550 pounds of water per cubic yard, with a 28-day compressive strength of approximately 230 psi or less. Provide grout with a consistency that will flow into and completely fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of riprap mow strip.

Texas Department of Transportation

Design Division Standard

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

GF(31)MS-19

FILE: gf31ms19.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		101

DATE: 12/12/2023 1:58:06 PM
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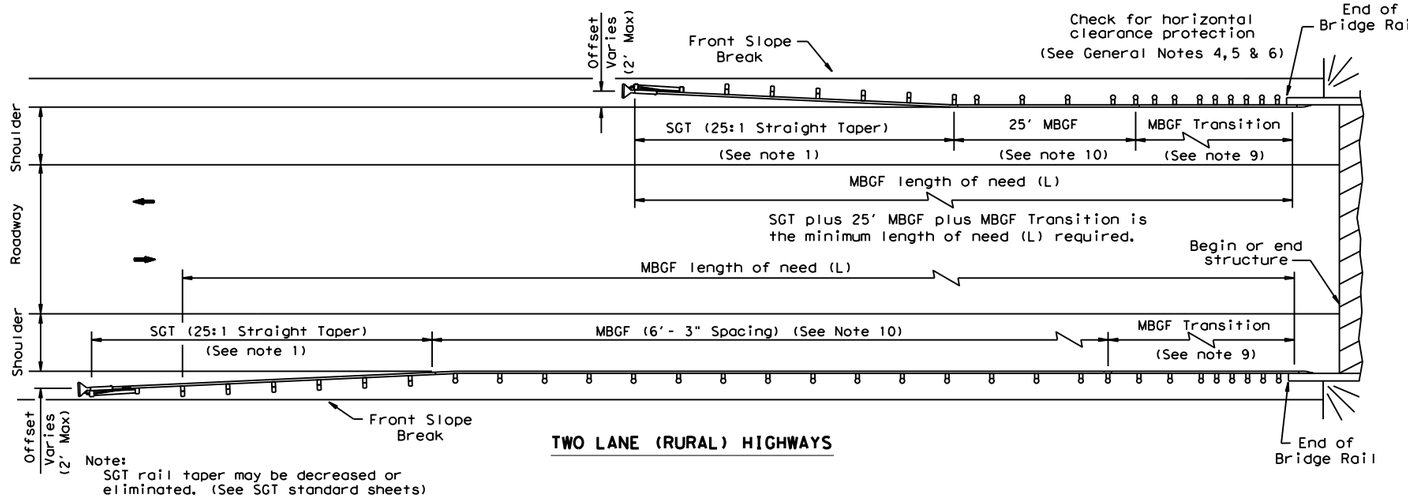
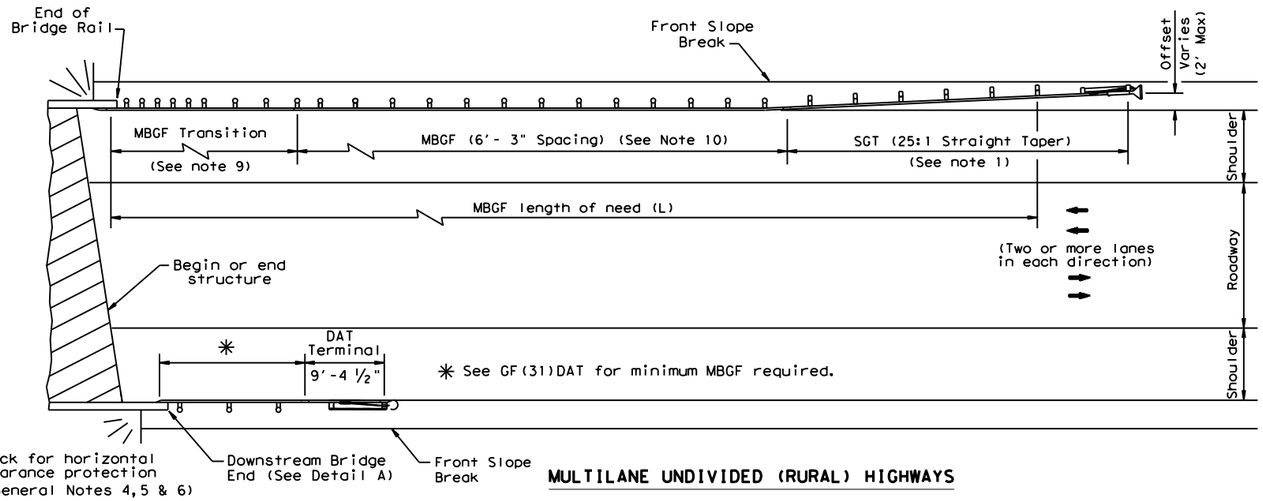
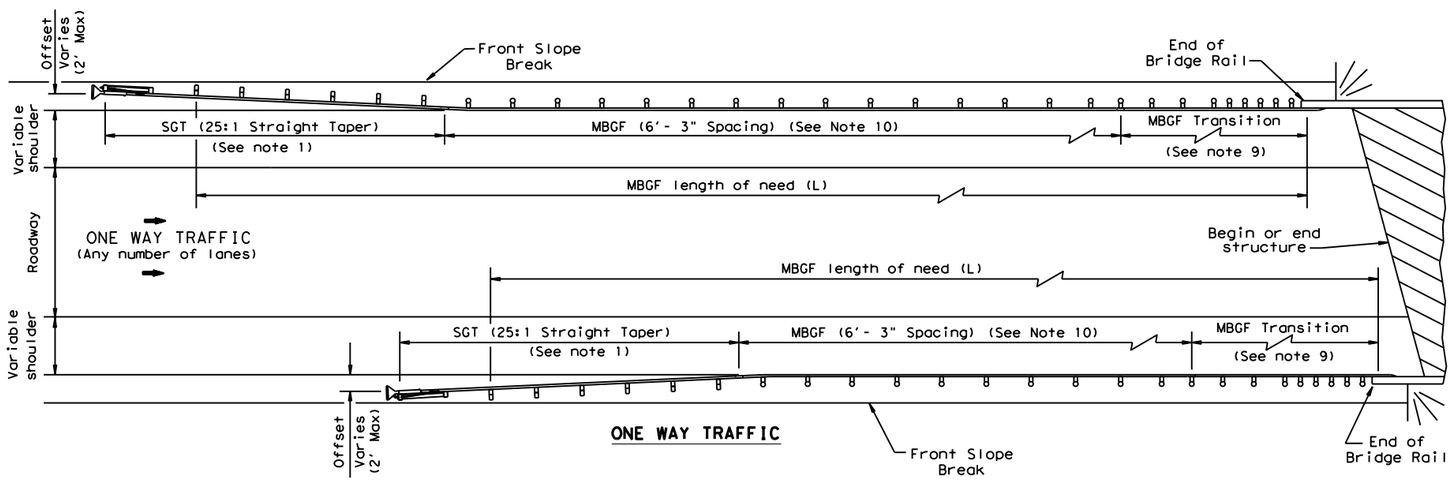


TWO LANE (RURAL) HIGHWAYS

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



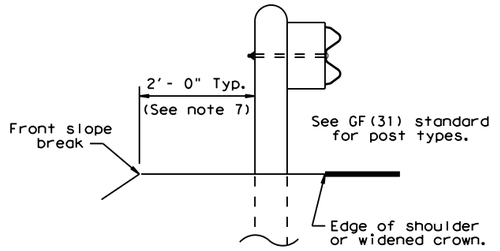
MULTILANE UNDIVIDED (RURAL) HIGHWAYS



ONE WAY TRAFFIC

GENERAL NOTES

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



TYPICAL CROSS SECTION AT MBGF

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

DETAIL A

Showing Downstream Rail Attachment

Texas Department of Transportation | Design Division Standard

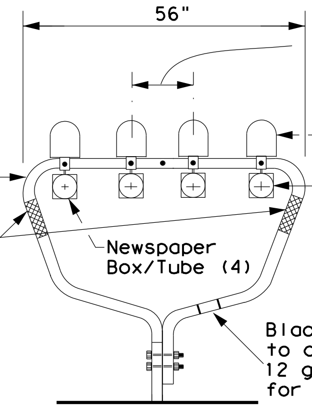
BRIDGE END DETAILS

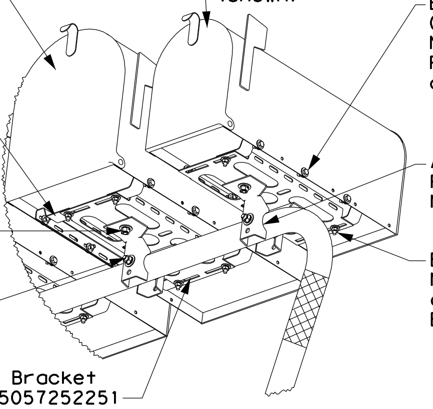
(METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS)

BED-14

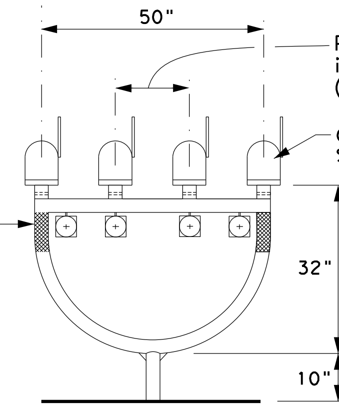
FILE: bed14.dgn	DN: TxDOT	CK: AM	DW: BD/VP	CK: CGL
© TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
REVISED APRIL 2014 SEE (MEMO 0414)	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		102

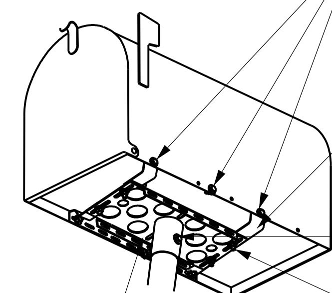
TYPE 1 - MULTIPLE





TYPE 4 - MULTIPLE





MAILBOX SIZES

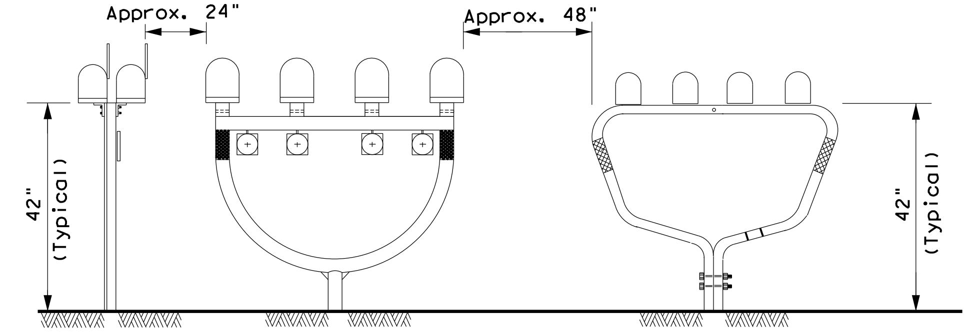
MAILBOX SIZE	TYPICAL DIMENSIONS LENGTH	WIDTH	HEIGHT	MAX ** WEIGHT
SMALL	19 1/2"	6"	7"	6 LBS
MEDIUM	22 1/2" *	8" *	11 1/2" *	8 LBS
LARGE	23 1/2"	11 1/2"	13 1/2"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 1/2"	15"	23 LBS

* See Note 1.
** Excluding Molded Plastic on 4 X 4 Post

GENERAL NOTES:

1. Dimensions shown (length, width, and height) are typical, not maximums. However, anytime a medium size mailbox is mounted on a single/double mount or on the outside position on a multi mount, the dimensions shown are maximums.
2. Mailboxes shall be made of light weight sheet metal or light weight plastic. Heavy steel, cast iron or decorative mailboxes shall not be used on the state highway system.

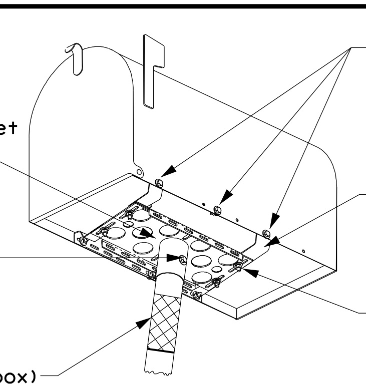
TYPICAL INSTALLATION MEASUREMENTS

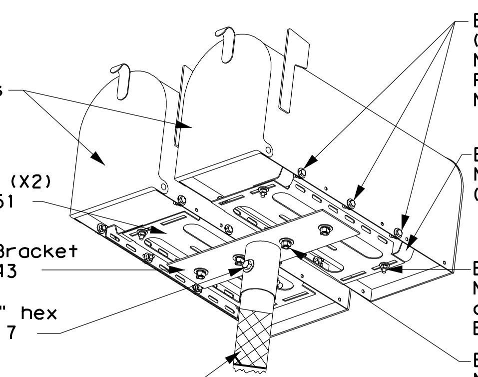


NOTE:

Mailbox installations in sidewalk areas shall be in accordance with the latest TxDOT Design Standard sheets PED-Pedestrian Facilities Curb Ramps.

TYPE 2 and 4 - SINGLE/DOUBLE

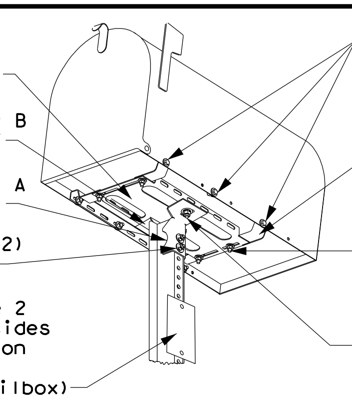


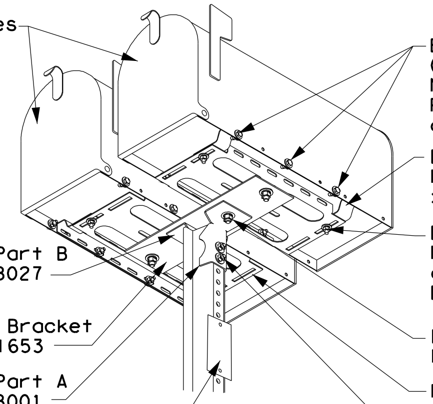


NOTE:

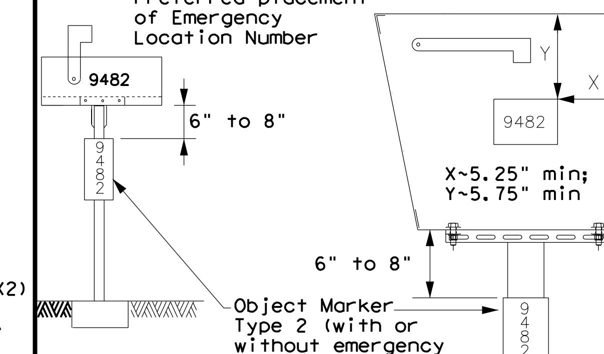
Double mailbox mounts are not allowed with a type 4 multiple mailbox installation

TYPE 3 - SINGLE/DOUBLE





PLACEMENT OF EMERGENCY LOCATION NUMBER

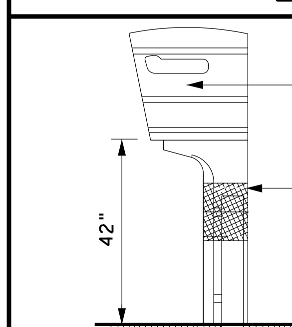


NOTES:

1. Location numbers are provided by homeowner. Minimum size 1" height.
2. Location number is typically placed on the mailbox in a contrasting color.
3. Black numbers may be placed on the Type 2 object marker if the numbers cannot be placed on the mailbox.
4. Alternatively, a green or blue plate with white numbers attached may be mounted below the object marker. Other contrasting color configuration, as approved, may be used.
5. See 3 of 4 for Foundation details.
6. See 4 of 4 for Hardware details.

SHEET 1 OF 4

TYPE 5



Typical Molded Plastic Mailbox

Texas Department of Transportation — Maintenance Division Standard

MAILBOX MOUNTING AND ASSEMBLY

MB(1)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	3343	02	016	FM1425
	DIST		COUNTY	SHEET NO.
	PHR		WILLACY	103

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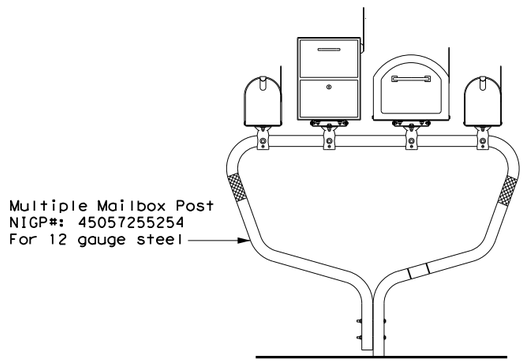
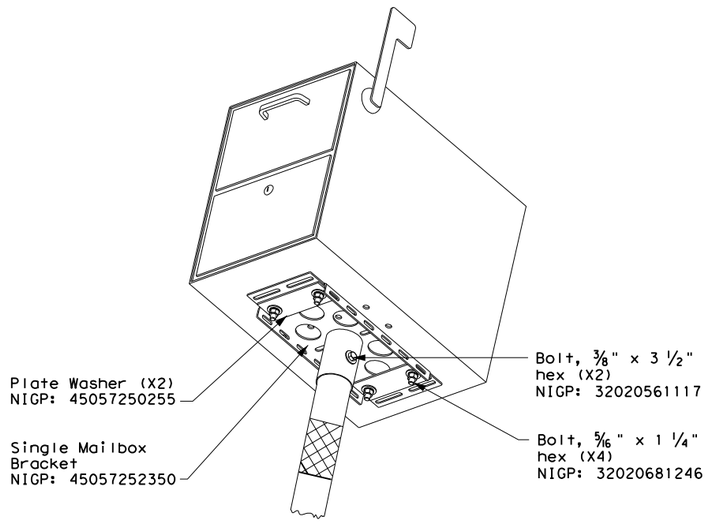
DATE: 12/12/2023 1:58:12 PM
FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\3946920046\Roadway Standards\mb(2)-21.dgn

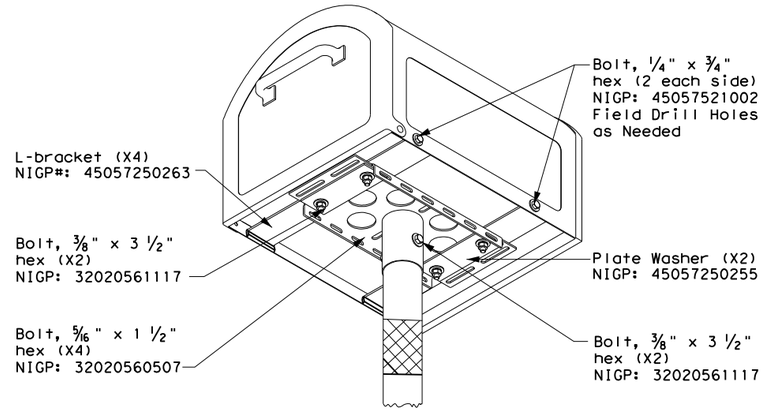
TYPE 1- MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

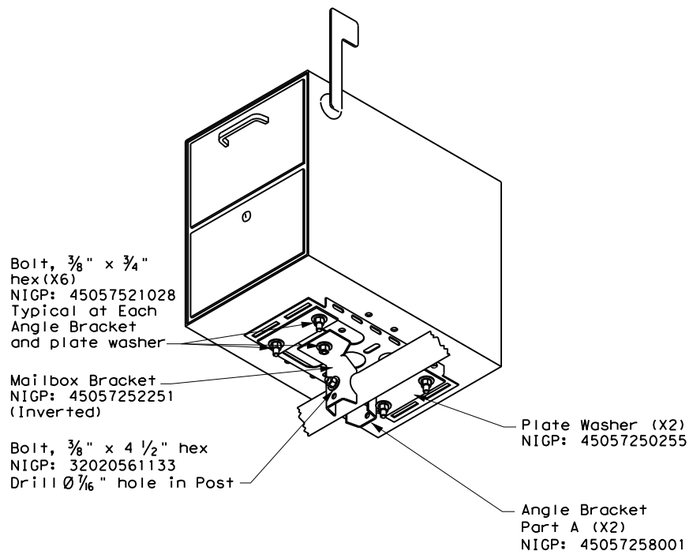


TYPE 2/4 - SINGLE XL MAILBOX

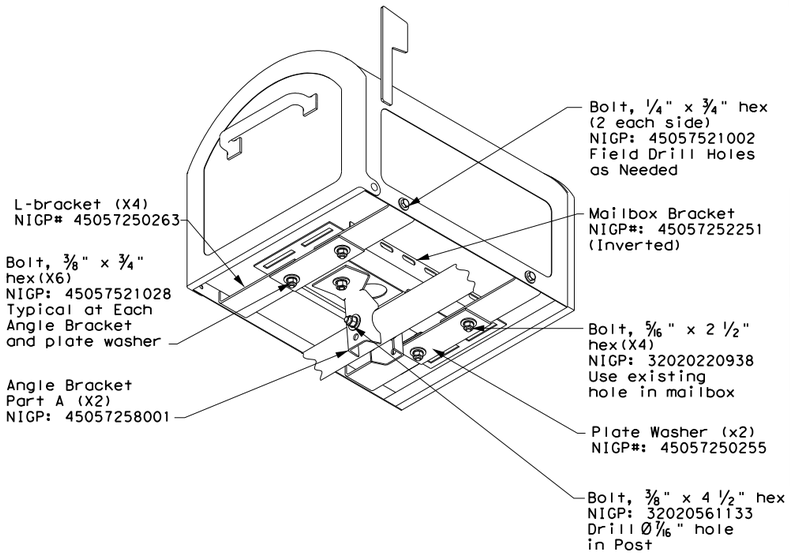


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

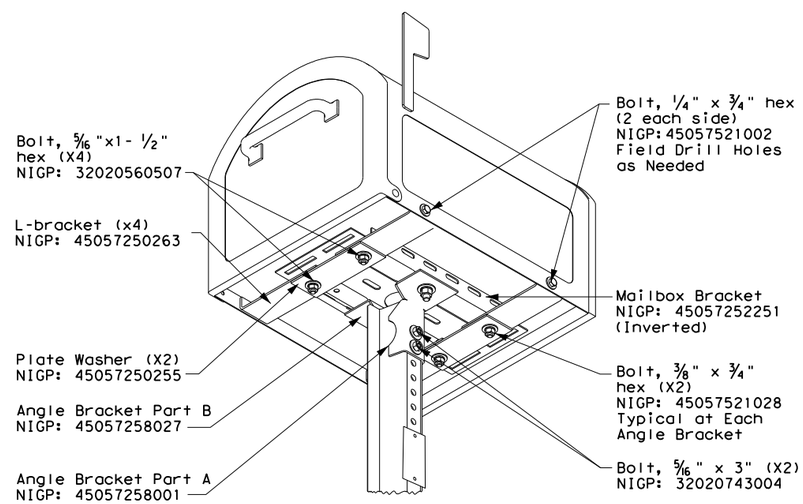
TYPE 1 MULTI – LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI – XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



Texas Department of Transportation | Maintenance Division Standard

XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY

MB(2)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		104

DATE: 12/12/2023 1:58:13 PM
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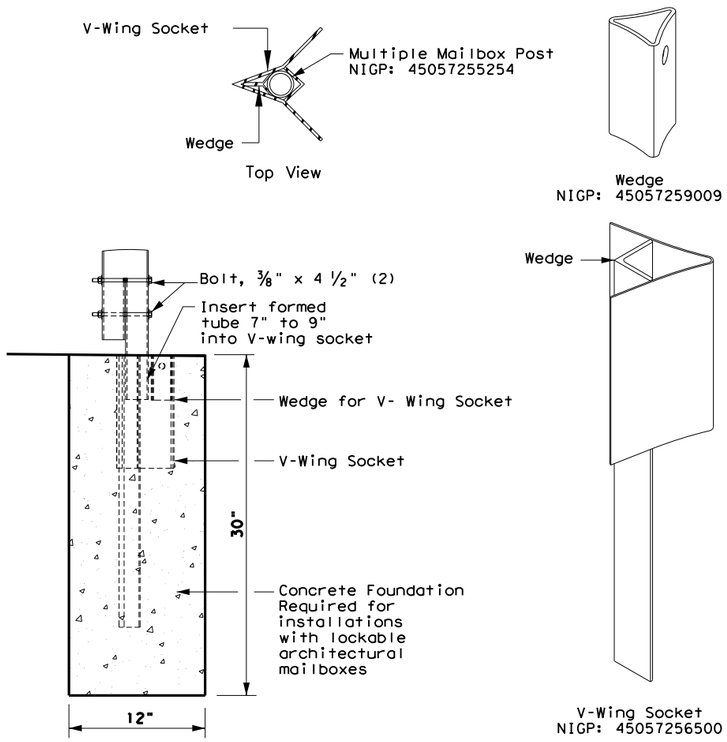
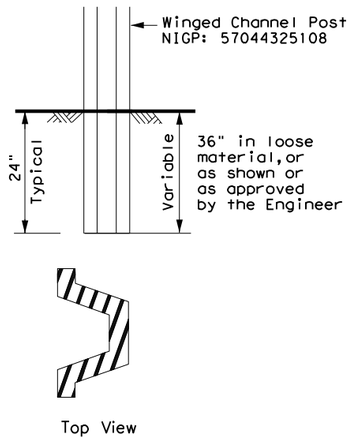
TYPE 1 - SUPPORT/FOUNDATION
Thin Wall Tube w/ V-LOC Anchorage

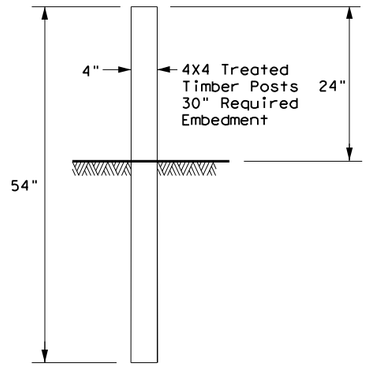


TYPE 3 - SUPPORT/FOUNDATION

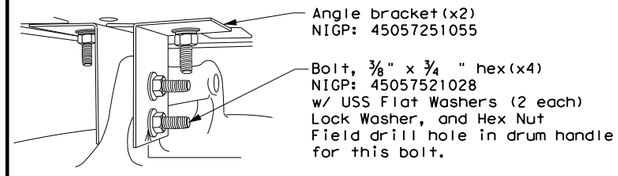


NOTES:
1. Attach Object Marker (OM) facing direction of traffic.
2. OM will also be required on opposite side if installed on a 2-Lane, 2-Way roadway.

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT

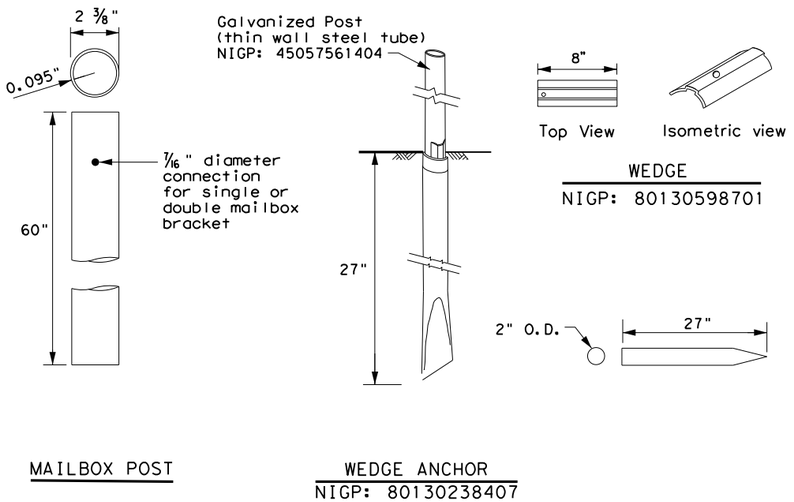


Plastic Drum NIGP: 55093383655
Rubber Collar NIGP: 55093387102

NOTES:
1. Place on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
2. Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

GENERAL NOTES:
1. Erect post plumb or vertical.
2. When galvanized part is required galvanize in accordance with Item 445.
3. Use a concrete footing as shown or when directed. Concrete footing will be required when soils do not hold the support/foundations in a stable condition, only on Type 1, Type 2, and Type 4

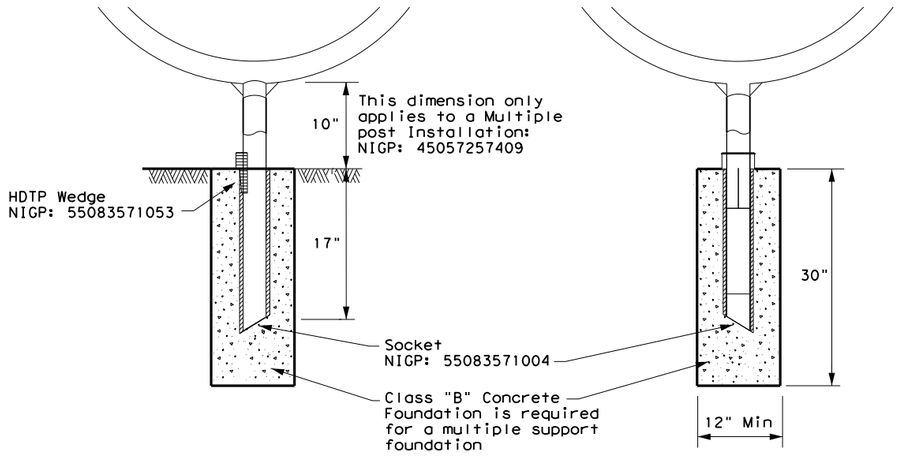
TYPE 2 - SUPPORT/FOUNDATION
Thin Wall Steel Tube w/Wedge Anchor System



MAILBOX POST

WEDGE ANCHOR
NIGP: 80130238407

TYPE 4 - SUPPORT/FOUNDATION
Whitecoated steel post NIGP: 45057561107
Multiple post NIGP: 45057257409
Recycled Rubber post (RR) NIGP: 45057561057



SHEET 3 OF 4

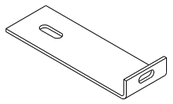
Texas Department of Transportation | Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION

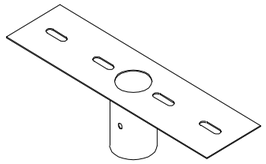
MB(3)-21

FILE: MB-21.dgn	DN:	CK:	DW:	CK:
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		105

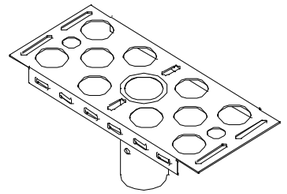
TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4			TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple	Single	Single
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: SS, SM, MM	S, M, L, XL, or LA	SS, SM, or MM	Outside Position: S or M Inside Position: S, M, L, or XL	Molded Plastic	S, or M
Mailbox Post NIGP #	45057255254 (Galvanized Multiple)	45057561404 (Thin Walled Gavanize)	57044325108 (Wing Channel Post)	45057561107 (Thin walled white powder coated) 45057561057 (Recycled Rubber Post: S or M only)	45057561107 (Thin Walled White Powder Coated)	45057257409 (White Powder Coated Multiple)	4x4 Timber	Construction Barrel
Post and Mailbox Hardware NIGP #	45057259009 (Wedge) 45057256500 (V-Wing Socket) 45057253002 (Bracket Extension) 45057252251 (Mailbox Bracket) 45057258001 (Part A Angle Bracket x2) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	80130598701 (Wedge) 80130238407 (Wedge Anchor) 45057253002 (Bracket Extension) 45057252343 (Double MB Bracket) 45057252350 (S. Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket forXL x4)	45057541653 (Type 3 Double Mailbox Bracket) 45057252251 (Mailbox Bracket) 45057253002 (Bracket Extension) 45057258001 (Part A Angle Bracket) 45057258027 (Part B Angle Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057252350 (Single Mailbox Bracket) 45057253002 (Bracket Extension) 45057250255 (Plate Washer for XL/LA x2) 45057250263 (L-Bracket for XL x4)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252343 (Double Mount Bracket) 45057252251 (Mailbox Bracket x2)	55083571053 (Wedge) 55083571004 (Socket) 45057253002 (Bracket Extension) 45057252350 (Single Mount Bracket) 45057250255 (Plate Washer for XL x2) 45057250263 (L-Bracket for XL x4)	None	45057251055 Angle Bracket (x2)
Foundation Used	Class B Concrete (Required for LA Mailboxes)	Class B Concrete (Required for LA Mailboxes)	None	Class B Concrete (not used with recycled rubber post, required for LA Mailboxes)	Class B Concrete (not required)	Class B Concrete	None	None



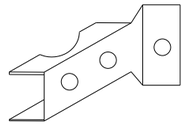
NIGP: 45057250263
L-Bracket x4 for
XL sized mailboxes



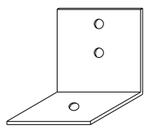
NIGP: 45057252343
Double Mailbox Bracket
For Type 2 and Type 4
double mount



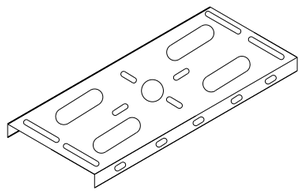
NIGP: 45057252350
Single Mailbox Bracket
For Type 2 single and for
Type 4 single and multi mount



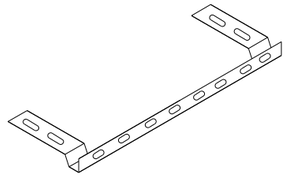
NIGP: 45057258001
Part "A" Angle Bracket
For Type 1 multi (2 per mailbox)
and Type 3 single and double



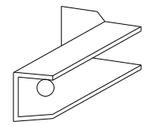
NIGP: 45057251055
Type 6 Angle Bracket
(2 per mailbox)



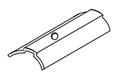
NIGP: 45057252251
Mailbox Bracket
For Type 1 multi and
any double mount (use 2)



NIGP: 45057253002
Bracket Extension
Use 1 for a medium Mailbox
Use 2 for a Large Mailbox



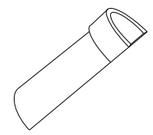
NIGP: 45057258027
Part "B" Angle Bracket
For Type 3 single
and double



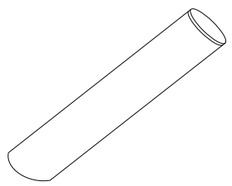
NIGP: 80130598701
Wedge for Type 2

NIGP: 45057250255
Plate Washer for Architecural
and XL Mailboxes

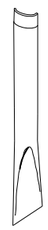
NIGP: 45057541653
Type 3 double mailbox bracket



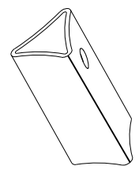
NIGP: 55083571053
Type 4 Mailbox Wedge



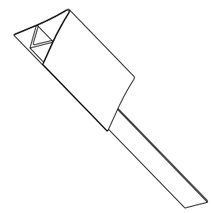
NIGP: 55083571004
Type 4 Mailbox Socket



NIGP: 80130238407
Type 2 Wedge Anchor



NIGP: 45057259009
Wedge for Type 1 V-wing Socket



NIGP: 45057256500
V-wing Socket for
Type 1 Foundation

NIGP #	OBJECT MARKERS AND CONFORMABLE SHEETING
55008311759	Type 2 OM 4"x4" (3 Needed) for Type 3 Wing Channel Post
55008312906	Type 2 OM 6"x12" (1 needed) for Type 3 Wing Channel Post
80149872006	12" Conformable Reflective Yellow Sheeting for Flexible Posts

NOTES:

1. Type 2 object marker in accordance with Traffic Engineering Standard Delineators & Object Markers.
2. A light weight receptacle for newspaper delivery can be attached to mailbox posts if the receptacle does not touch the mailbox, present a hazard to traffic or delivery of the mail, extend beyond the front of the mailbox, or display advertising, except the publication title.

BID CODES FOR CONTRACTS

MB-(X) ASSM TY (XXX) (X)

Type of Mailbox
- S = Single
- D = Double
- M = Multiple
- MP = Molded Plastic

Type of Post
- WC = Winged Channel Post
- RR = Recycled Rubber
- TWW = Thin Walled White Tubing
- TWG = Thin Walled Galvanized Tubing
- TIM = Timber

Type of Foundation
- Ty 1 = V-Loc
- Ty 2 = Wedge Anchor Steel System
- Ty 3 = Winged Channel post
- Ty 4 = Wedge Anchor Plastic System
- Ty 5 = 4 X 4 Post

SHEET 4 OF 4

Texas Department of Transportation — Maintenance Division Standard

NIGP PARTS LIST AND COMPATIBILITY

MB(4)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		106

DATE: 12/12/2023 1:58:14 PM
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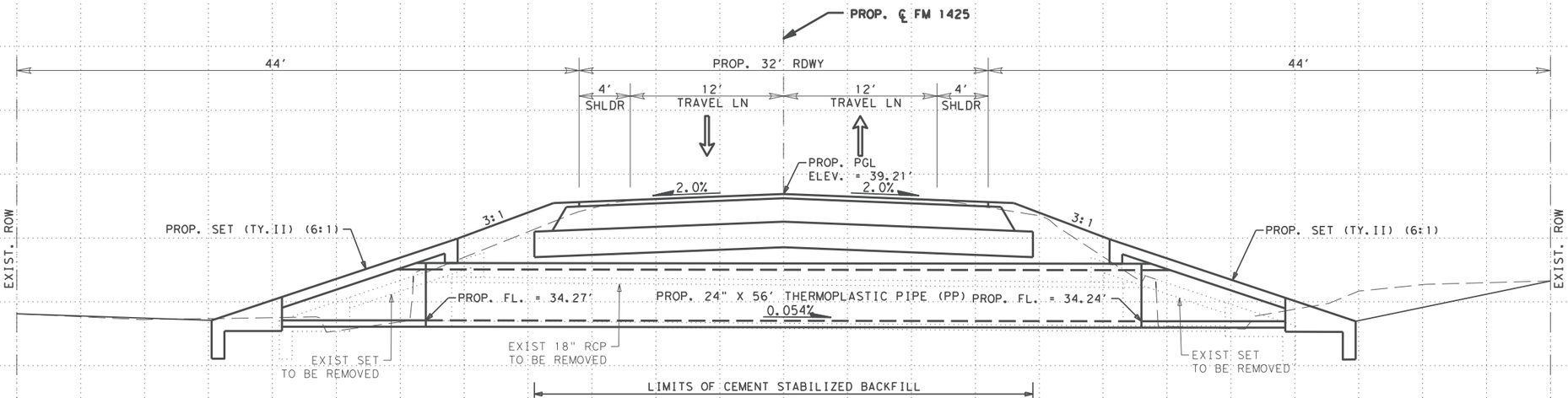

ITEM	CODE	DESCRIPTION	UNIT	QUANT.
400	6001	STRUCTURAL EXCAVATION	CY	63
400	6005	CEMENT STABILIZED BACKFILL	CY	40
402	6001	TRENCH EXCAVATION PROTECTION	LF	60
4216	6002	THERMOPLASTIC PIPE (PP) (24")	LF	56
467	6394	SET (TY II) (24 IN) (RCP) (6:1) (C)	EA	2
496	6004	REMOVE STR (SET)	EA	2
496	6007	REMOVE STR (PIPE)	LF	56

LEGEND

⇦	DIRECTION OF TRAFFIC FLOW
EXIST.	EXISTING
PROP.	PROPOSED
N.G.	NATURAL GROUND
SHLDR.	SHOULDER
CONC.	CONCRETE
RDWY.	ROADWAY
ELEV.	ELEVATION
ROW	RIGHT OF WAY
EOP	EDGE OF PAVEMENT
SET	SAFETY END TREATMENT
TYP.	TYPICAL
TY	TYPE
LF	LINEAR FOOT
FL.	FLOW LINE

NOTES:

1. PRIOR TO WORKING OUTSIDE THE ROW, THE CONTRACTOR SHALL NOTIFY PROPERTY OWNER(S). CAUTION SHALL BE TAKEN NOT TO DAMAGE EXISTING FENCE, TREES, ETC. ANY DAMAGES DONE TO THEIR PROPERTY SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

2. THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES TO VERIFY ALL UTILITIES WITHIN THE R.O.W. ALL UTILITIES ARE SHOWN FOR INFORMATION PURPOSES ONLY AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL HORIZONTAL AND VERTICAL INFORMATION.

STATE OF TEXAS
FILIBERTO M. RAMOS
146133
LICENSED PROFESSIONAL ENGINEER

12/08/2023

Pharr District Central Design

Texas Department of Transportation

FM 1425
CROSS CULVERT DETAIL SHEET

V: 1" = 5'
H: 1" = 10'

SHEET 1 OF 1

© 2022		CONT	SECT	JOB	HIGHWAY
DS:	CK:	3343	02	016	FM1425
		DIST	COUNTY		SHEET NO.
DW:	CK:	PHR	WILLACY		107

DATE: 12/7/2023 4:37:30 PM
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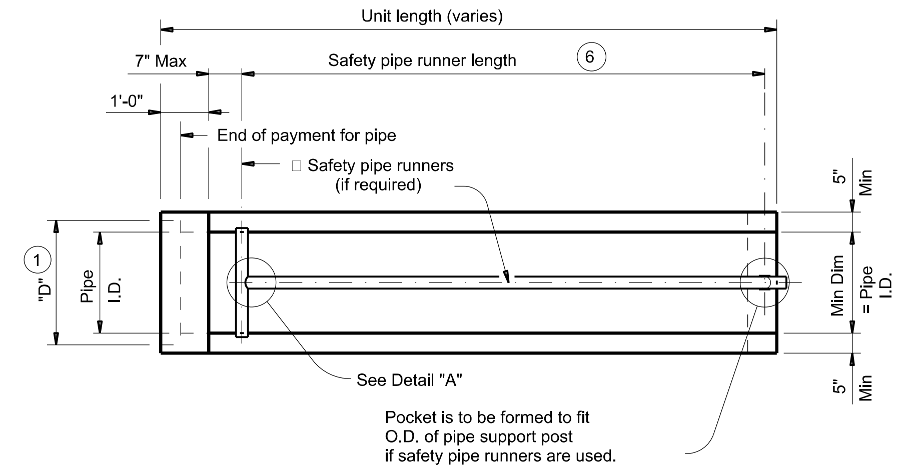
FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\3343020016\Design\Roadway\...DRAINAGE STANDARDS\CIF psetscss-21.dgn

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (8)	"D" (1)	Slope	Min Length of Unit	Single Pipe: Skew	Single Pipe: Pipe Runners Required	Multiple Pipes: Skew	Multiple Pipes: Pipe Runners Required
12"	2"	1.15"	17.00"	3:1	2' - 11"	≤ 45°	No	≤ 45°	No
				4:1	3' - 6"				
				6:1	4' - 9"				
15"	2 ¼"	1.30"	20.50"	3:1	3' - 8"	≤ 45°	No	≤ 45°	No
				4:1	4' - 7"				
				6:1	6' - 5"				
18"	2 ½"	1.60"	24.00"	3:1	4' - 6"	≤ 45°	No	≤ 45°	No
				4:1	5' - 8"				
				6:1	8' - 0"				
24"	3"	1.95"	31.00"	3:1	6' - 2"	≤ 45°	No	= 30°	No
				4:1	7' - 10"			> 30°	Yes
				6:1	11' - 3"				
30"	3 ½"	2.65"	38.50"	3:1	7' - 10"	= 15°	No	= 15°	No
				4:1	10' - 1"	> 15°	Yes	> 15°	Yes
				6:1	14' - 8"				
36"	4"	2.75"	45.50"	3:1	9' - 5"	= 0°	No	≥ 0°	Yes
				4:1	12' - 3"	> 0°	Yes		
				6:1	17' - 11"				
42"	4 ½"	2.7"	52.50"	3:1	11' - 1"	≥ 0°	Yes	≥ 0°	Yes
				4:1	14' - 5"				
				6:1	21' - 2"				



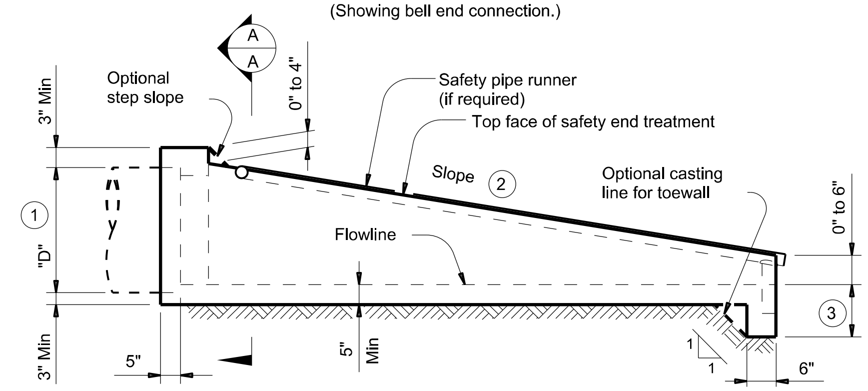
PLAN

(Showing bell end connection.)

SAFETY PIPE RUNNER DIMENSIONS

Max Safety Pipe Runner Length	Required Pipe Runner Size: Pipe Size	Pipe O.D.	Pipe I.D.
11' - 2"	3" STD	3.500"	3.068"
15' - 6"	3 ½" STD	4.000"	3.548"
20' - 10"	4" STD	4.500"	4.026"
35' - 4"	5" STD	5.563"	5.047"

1. Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.
2. Slope as shown elsewhere in plans. Slope of 3:1 or flatter is required for vehicle safety.
3. Toewall to be used only when dimension is shown elsewhere in the plans.
4. Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment".
5. Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.
6. Measured along slope.
7. Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures". Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment". When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.
8. Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.



LONGITUDINAL ELEVATION

(Showing bell end connection.)

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).
B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

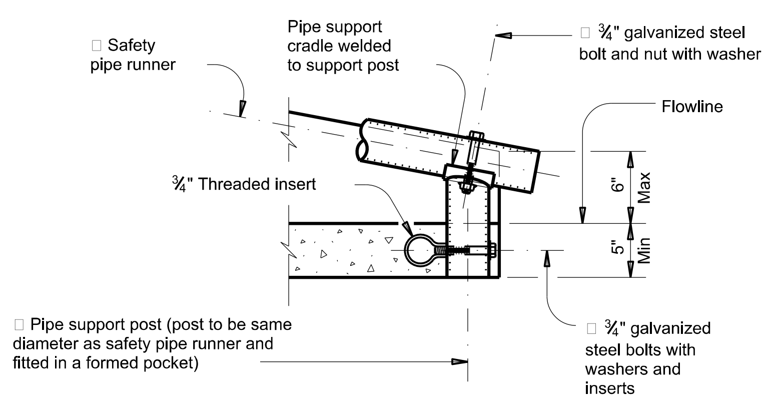
At the option and expense of the Contractor, the next larger size of safety end treatment may be furnished as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 1,800 Lbs at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

Provide safety pipe runners, cross pipes, pipe support posts, and pipe stubs meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

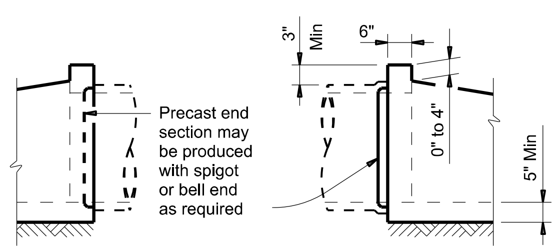
Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464 "Reinforced Concrete Pipe". Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.



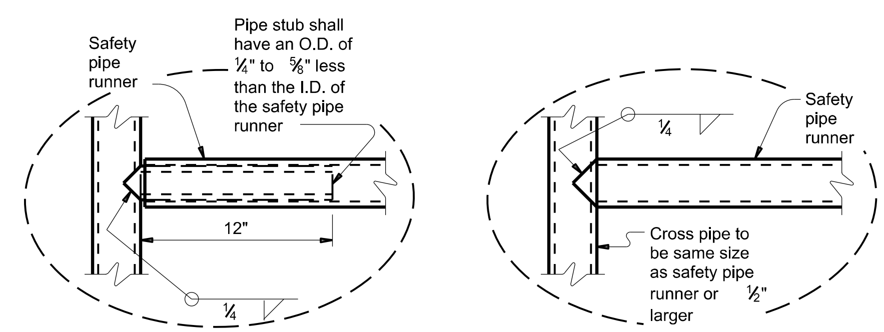
END DETAIL FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)



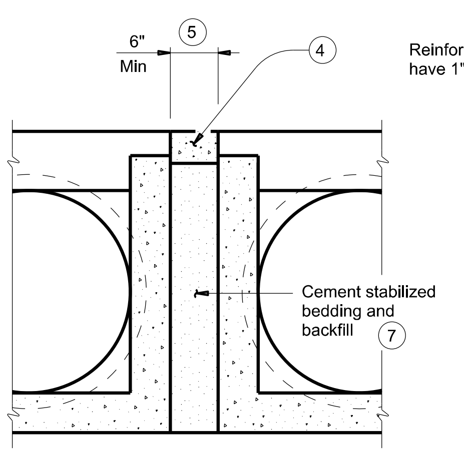
OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment)

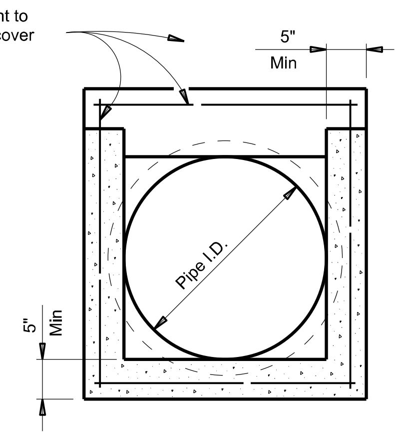


DETAIL A

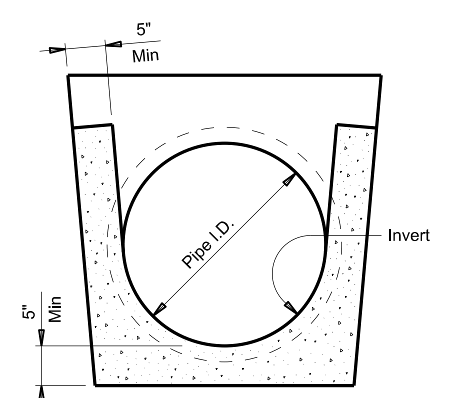
(If required)



MULTIPLE PIPE INSTALLATION

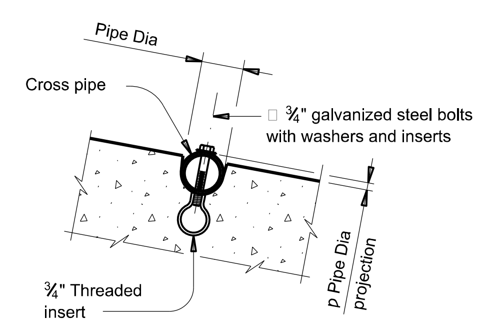


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)

Texas Department of Transportation | Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ CROSS DRAINAGE

PSET-SC

FILE: psetscss-21.dgn	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	3343	02	016	FM1425
	DIST		COUNTY	SHEET NO.
	PHR		WILLACY	108

DATE: 12/12/2023 1:48:46 PM
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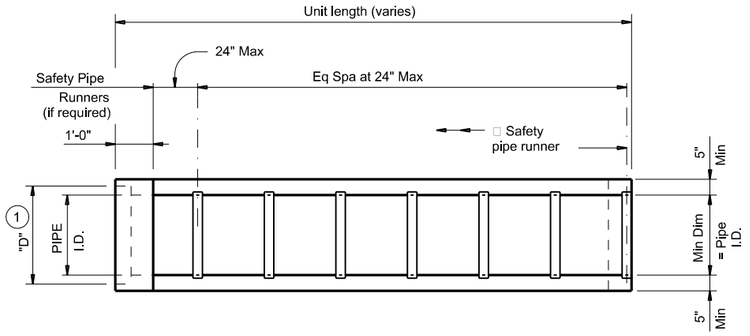
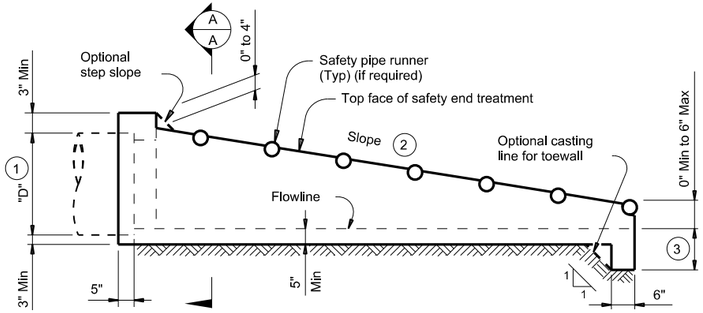


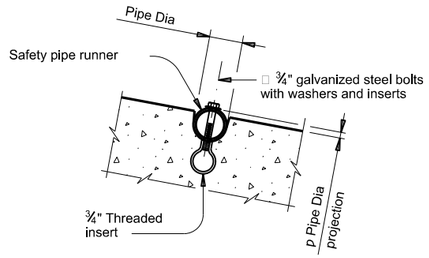
PLAN

(Showing bell end connection.)



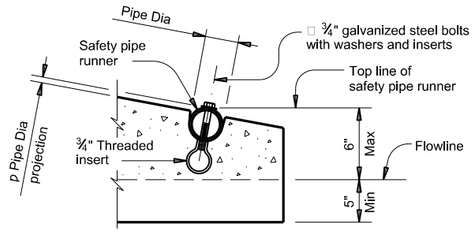
LONGITUDINAL ELEVATION

(Showing bell end connection.)

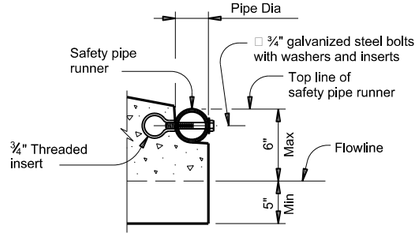


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



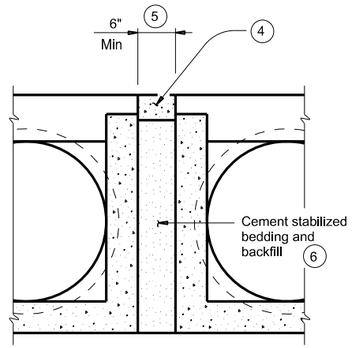
OPTION A



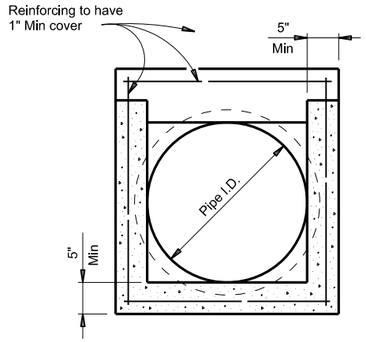
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

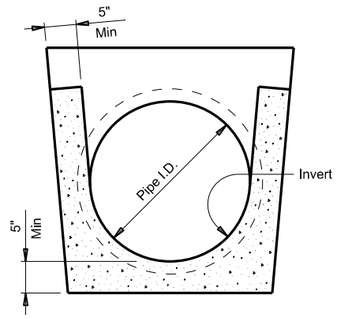
(If required)



MULTIPLE PIPE INSTALLATION

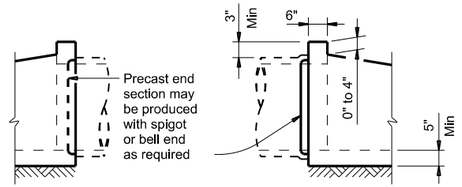


OPTION WITH SQUARE BOTTOM



OPTION WITH INVERT BOTTOM

SECTION A-A



OPTIONAL JOINT FOR RCP

(Showing joint between RCP and precast safety end treatment.)

REQUIREMENTS FOR CULVERT PIPES AND SAFETY PIPE RUNNERS

Pipe I.D.	RCP Wall "B" Thickness	TP Wall Thickness (7)	"D" (1)	Slope	Min Length	Pipe Runners Required		Required Pipe Runner Size		
						Single Pipe	Multiple Pipe	Nominal Dia.	O.D.	I.D.
12"	2"	1.15"	17.00"	6:1	4' - 9"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
15"	2 ¼"	1.30"	20.50"	6:1	6' - 5"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
18"	2 ½"	1.60"	24.00"	6:1	8' - 0"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
24"	3"	1.95"	31.00"	6:1	11' - 3"	No	Yes, for > 2 pipes	3" STD	3.500"	3.068"
30"	3 ½"	2.65"	38.50"	6:1	14' - 8"	No	Yes	4" STD	4.500"	4.026"
36"	4"	2.75"	45.50"	6:1	17' - 11"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	2.7"	52.50"	6:1	21' - 2"	Yes	Yes	4" STD	4.500"	4.026"

(1) Dimension "D" is based on reinforced concrete pipe (RCP) meeting the requirements of ASTM C-76, Class III, (RCP Wall "B" thickness). Adjust "D" for any other wall thickness used. For thermoplastic pipe (TP) take into account the annular space requirements for grouted connections.

(2) Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.

(3) Toewall to be used only when dimension is shown elsewhere in the plans.

(4) Fill the top 4" of void between precast end treatments with concrete riprap. Concrete riprap is considered subsidiary to the Item 467, "Safety End Treatment."

(5) Adjust clear distance between pipes to provide for the minimum distance between safety end treatments.

(6) Provide cement stabilized bedding and backfill in accordance with the Item 400, "Excavation and Backfill for Structures." Bedding and backfill is considered subsidiary to the Item 467, "Safety End Treatment." When concrete riprap is specified around the safety end treatment, backfill as directed by Engineer.

(7) Thermoplastic pipe wall thickness may vary. Adjust accordingly. Thermoplastic pipe requires the safety end treatments to have a bell end for grouted connections.

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe (RCP), and thermoplastic pipe (TP) may be used for TYPE II end treatment as specified in Item "Safety End Treatment."

When precast safety end treatment is used as a Contractor's alternate to mitered RCP, riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Manufacture this product in accordance with Item 467, "Safety End Treatment" except as noted below :

A. Provide minimum reinforcing of #4 at 6" (Grade 40) or #4 at 9" (Grade 60) each way or 6"x6" - D12 x D12 or 5"x5" - D10 x D10 welded wire reinforcement (WWR).

B. For precast (steel formed) sections, provide Class "C" concrete (f'c = 3,600 psi).

At the option and expense of the Contractor the next larger size of safety end treatment may be furnished; as long as the "D" dimension cast is that of the required size of pipe.

Pipe runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Provide pipe runners meeting the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Galvanize all steel components except reinforcing steel after fabrication. Repair galvanizing damaged during transport or construction in accordance with the specifications.

Connect RCP using the Optional Joint for RCP detail shown or in accordance with Item 464, "Reinforced Concrete Pipe." Connect TP by grouting. See Pipe and Box Grouted Connections (PBGC) standard for grouted connections with TP and precast safety end treatment.

Texas Department of Transportation

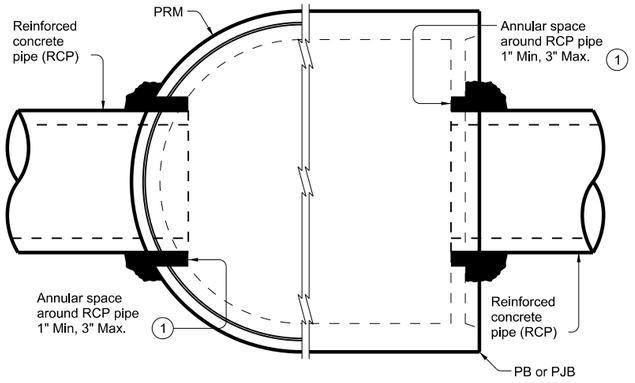
Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II ~ PARALLEL DRAINAGE

PSET-SP

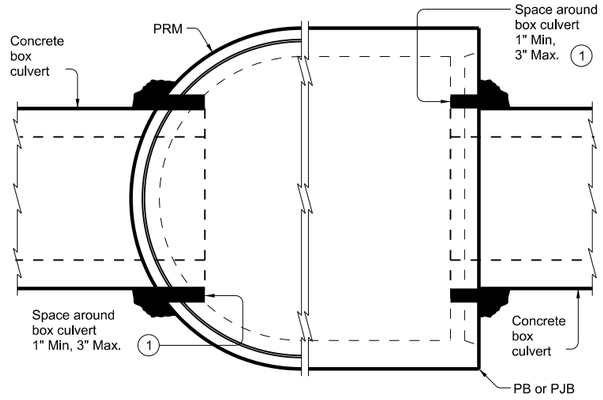
FILE:	DN: RLW	CK: KLR	DW: JTR	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-21: Added 42" TP	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		109



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

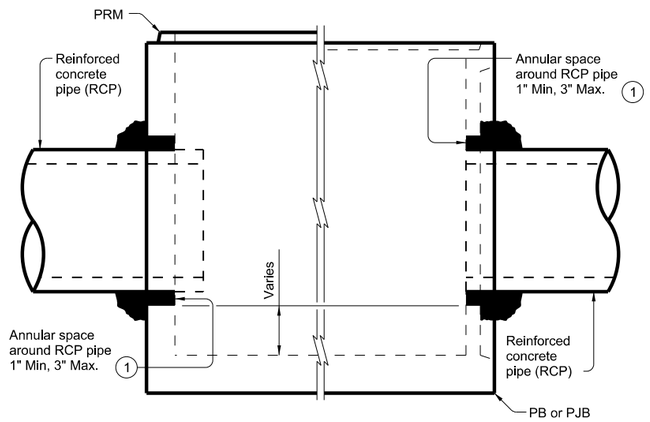
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

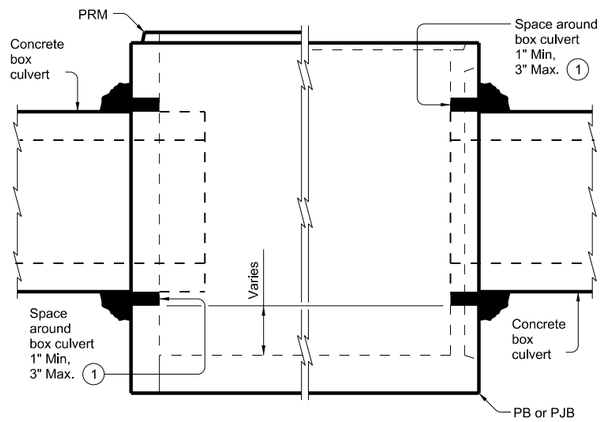
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

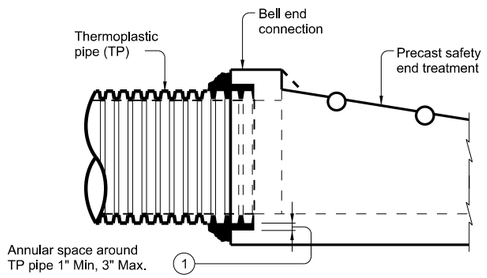
TYPICAL HALF ELEVATION



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

PRECAST BASE (PB) OR PRECAST JUNCTION BOX (PJB) WITH THIN-WALL KNOCK-OUT

TYPICAL HALF ELEVATION



TYPICAL PARTIAL ELEVATION OF PRECAST SAFETY END TREATMENTS

Showing square PSET for parallel drainage, cross drainage shown similar.

(1) Completely fill the void between the precast structure and the connecting pipe or box with cementitious grouts and mortars in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

CONSTRUCTION NOTES:

Do not grout rubber gasket joints without Manufacturer's recommendations.

Do not use bricks, masonry blocks, native stone, or similar materials in conjunction with grouted connections when filling void spaces around pipes or box culverts.

MATERIAL NOTES:

Provide grouted connections in accordance with DMS-4675 "Cementitious Grouts and Mortars for Miscellaneous Application".

GENERAL NOTES:

See applicable standards for notes and details not shown:

- Precast Base (PB)
- Precast Junction Box (PJB)
- Precast Round Manhole (PRM)
- Precast Safety End Treatments C/D Square (PSET-SC)
- Precast Safety End Treatments P/D Square (PSET-SP)

Provide Concrete Box Culverts in accordance with Item 462 "Concrete Box Culverts and Drains".

Provide Reinforced Concrete Pipe (RCP) in accordance with Item 464 "Reinforced Concrete Pipe".

Provide Thermoplastic Pipe (TP) in accordance with Special Specification Thermoplastic Pipe.

Payment for grouted connections is considered subsidiary to other bid Items.

Texas Department of Transportation

Bridge Division Standard

PIPE AND BOX GROUTED CONNECTIONS FOR PRECAST STRUCTURES

PBGC

FILE: pbgcstd1-20.dgn	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		110

DATE: 12/12/2023 1:48:51 PM
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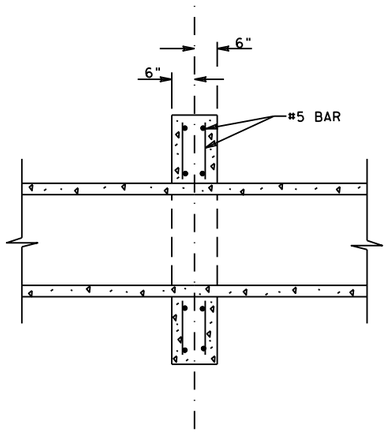
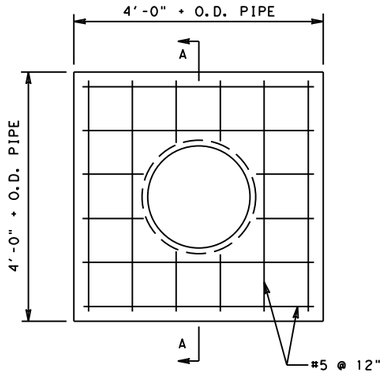
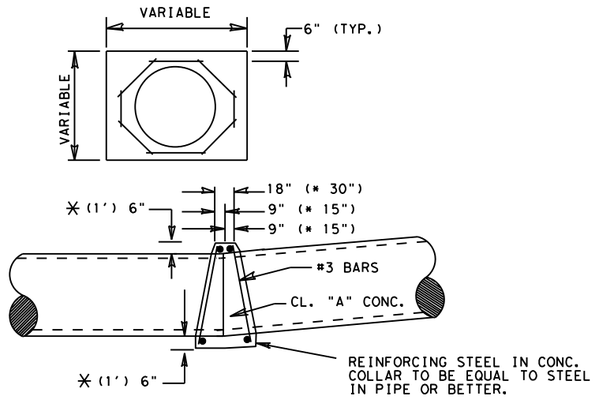


SECTION A-A



FRONT ELEVATION

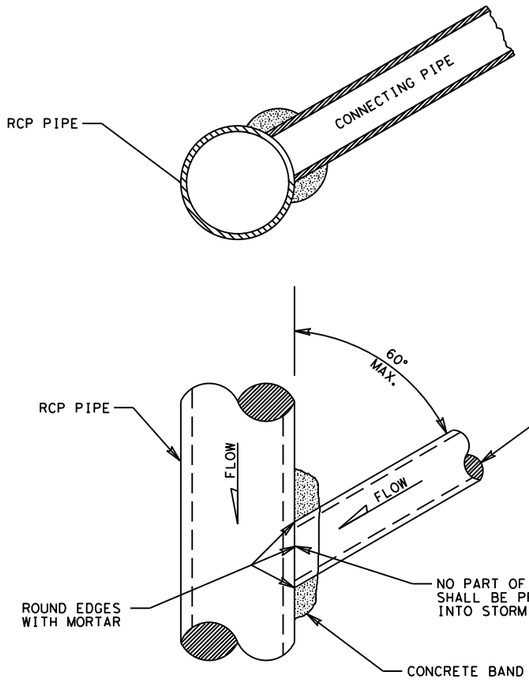
CONCRETE PIPE COLLAR



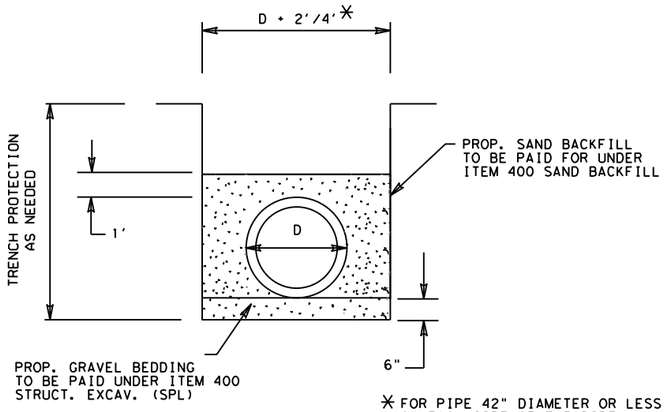
DETAIL FOR CONC. COLLARS DRAINAGE STRUCTURES AND PIPE SIPHONS (HORIZ. & VERT. BENDS)

NOTE: PROP. CONC. COLLAR WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SUBSIDIARY TO THE BIDS ITEMS INVOLVED.

* FOR 42" DIAMETER AND LARGER PIPE

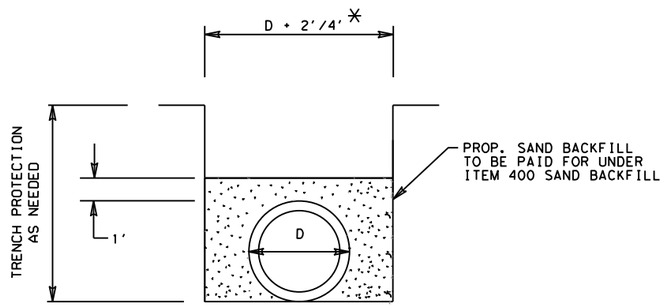


TYPICAL REINFORCED CONC. PIPE CONNECTION WITHOUT MANHOLE



* FOR PIPE 42" DIAMETER OR LESS PLACE 1'OF FILL ON EACH SIDE OF THE PIPE. FOR PIPE LARGER THAN 42" DIAMETER PLACE 2' OF FILL ON EACH SIDE OF THE PIPE.

SPIRAL RIB CMP
TYPICAL BACKFILL DETAIL GRAVEL & SAND



* FOR PIPE 42" DIAMETER OR LESS PLACE 1'OF FILL ON EACH SIDE OF THE PIPE. FOR PIPE LARGER THAN 42" DIAMETER PLACE 2' OF FILL ON EACH SIDE OF THE PIPE.

REINFORCED CONCRETE PIPE
TYPICAL BACKFILL DETAIL-SAND

NOTE:
USE DRAINAGE PIPE AS SHOWN ON PLANS

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS PIPE DETAILS

REV. 8/14

COLLAR.DGN

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		FILE NO.			SHEET NO.
6						111
STATE	STATE DIST. NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21	WILLACY	3343	02	016	FM 1425

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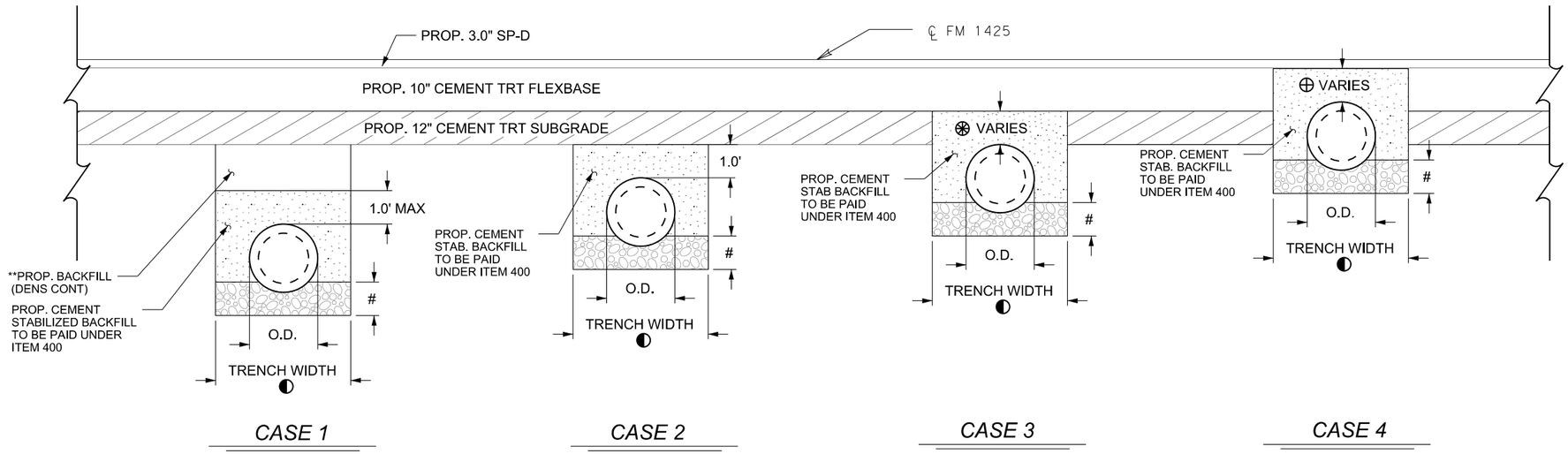
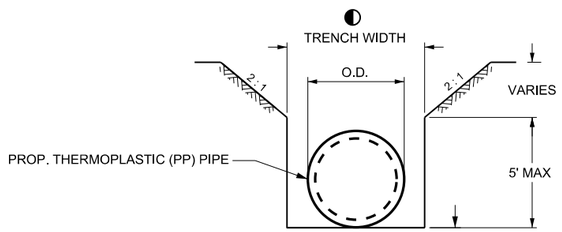
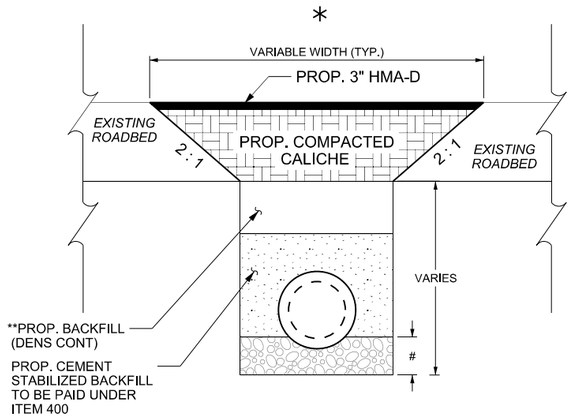


CASE 1 | CASE 2 | CASE 3 | CASE 4



TYPICAL TRENCH EXCAVATION DETAIL

FOR TRENCH DEPTHS EQUAL TO OR GREATER THAN 5 FT



CUT & RESTORE TYPICAL DETAILS

NOTES:

PROP. CEMENT STABILIZED BACKFILL SHALL EXTEND 2.0' BEYOND THE OUTSIDE EDGE OF THE PROP. PAVEMENT.

* REFER TO TRAFFIC CONTROL PLAN FOR CUT & RESTORE ESTIMATED QUANTITIES.

\# 12" PROP. GRAVEL BEDDING, TO BE PAID UNDER ITEM 400 "STRUCT EXCAV. SPL"

⊕ PLACE CEMENT STABILIZED BACKFILL TO FINISH GRADE OF FLEXBASE.

⊛ PLACE CEMENT STABILIZED BACKFILL TO FINISH GRADE OF SUBGRADE.

◐ FOR 42" THERMOPLASTIC (PP) PIPE OR LESS (O.D. + 2 FT)
FOR 48" THERMOPLASTIC (PP) PIPE OR GREATER (O.D. + 4 FT)

"O.D." DENOTES "OUTER DIAMETER"

** PROP. BACKFILL TO BE PAID SUBSIDIARY TO PERTINENT BID ITEMS PER ITEM 400 SPECIFICATIONS.

CONTRACTOR SHALL REFER TO FM 1425 PROPOSED TYPICAL SECTION PAVEMENT DETAILS FOR PAVEMENT LAYER INFORMATION.

COMPACTED CALICHE FOR CUT & RESTORE OPERATIONS SHALL FOLLOW ITEM 247 SPECIFICATIONS.

STATE OF TEXAS
FILIBERTO M. RAMOS
146133
LICENSED PROFESSIONAL ENGINEER

12/22/2023

Texas Department of Transportation

CEMENT STABILIZATION & MISCELLANEOUS DETAILS

NOT TO SCALE | SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM 1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		112

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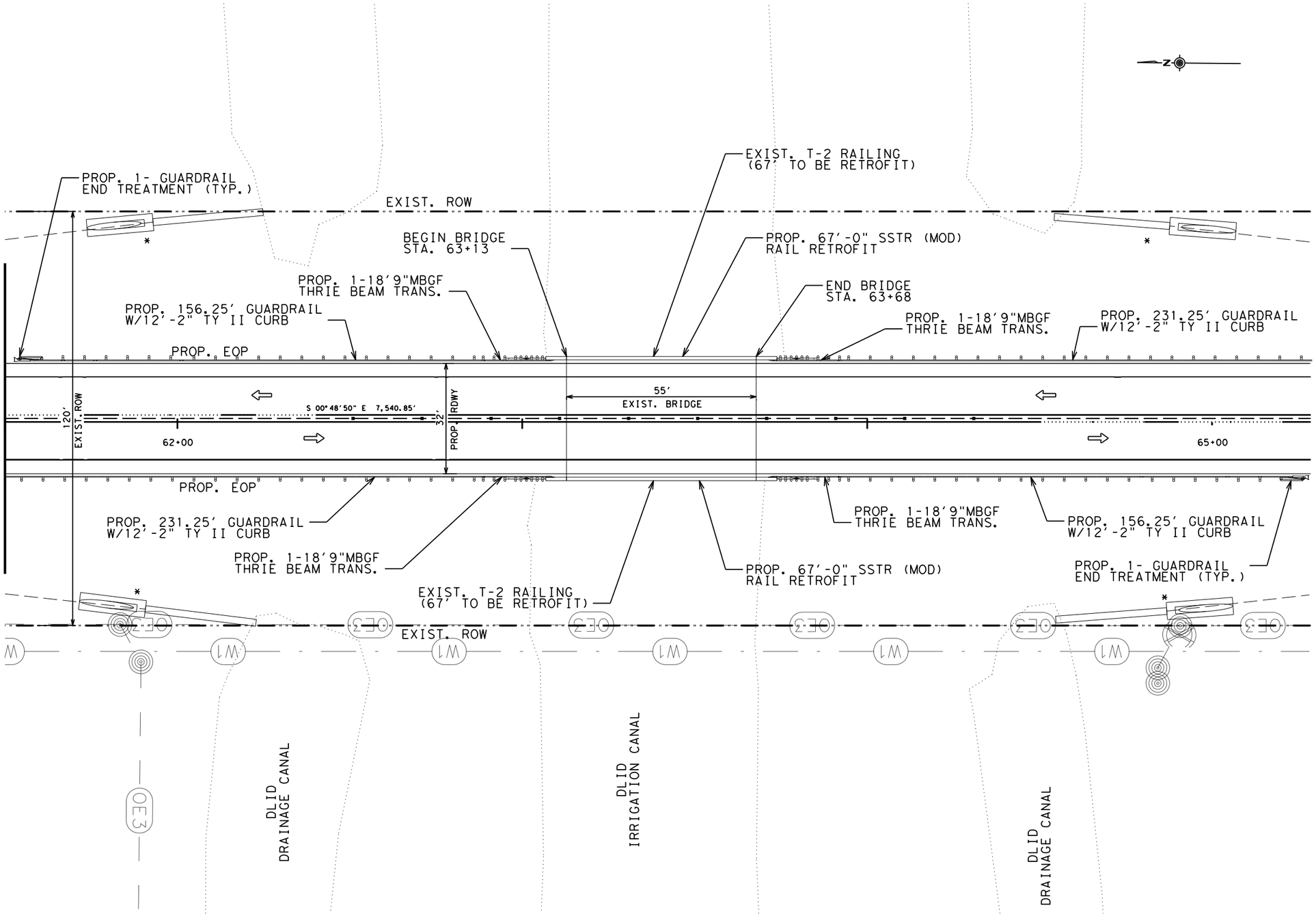

* — EXIST. STRUCTURES TO REMAIN IN PLACE

DLID — DELTA LAKE IRRIGATION DISTRICT

LEGEND:

- PROP. ASPHALT DRIVEWAY
- PROP. CONCRETE DRIVEWAY
- PROP. MILLING/OVERLAY
- DIRECTION OF TRAFFIC FLOW
- POWER POLE
- WATER METER
- OE — OVERHEAD ELECTRICAL
- W — WATER LINE

GENERAL NOTES:

1. THE CONTRACTOR SHALL PROTECT THE BRIDGE FROM DAMAGE DURING CONSTRUCTION. ANY DAMAGES TO THE BRIDGE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
2. ALL EXISTING INFORMATION ON PLANS IS FOR INFORMATION PURPOSES ONLY. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION PER "AS BUILT CONDITION".
3. SEE "PLAN & PROFILE" SHEET FOR ROADWAY DETAILS.
4. SEE "SSTR (MOD) RAIL RETROFIT" SHEET FOR RAIL RETROFIT DETAILS.
5. SEE "TRAFFIC RAIL SINGLE SLOPE TYPE SSTR" SHEET FOR SSTR STANDARD DETAILS

STATE OF TEXAS
MARIEL B. TORRES
128897
LICENSED PROFESSIONAL ENGINEER

06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425

SSTR(MOD) RAIL RETROFIT LAYOUT

2022	CONT	SECT	JOB	HIGHWAY
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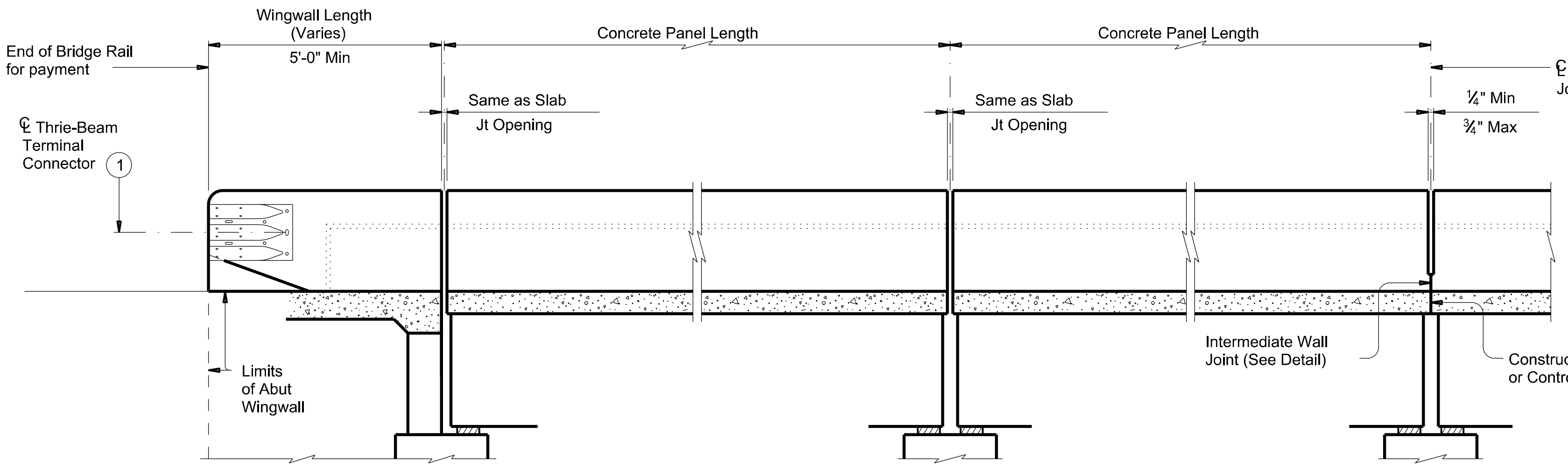
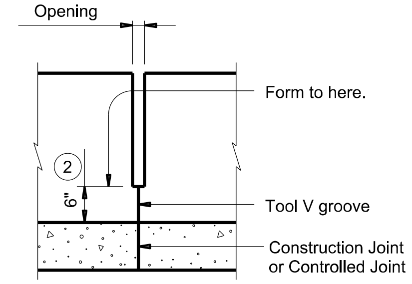
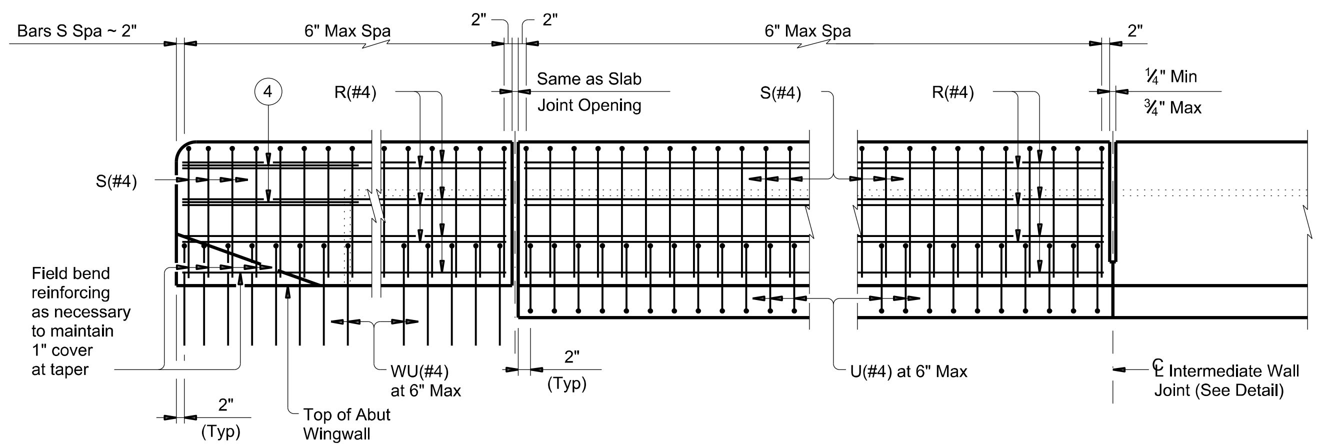


ROADWAY ELEVATION OF RAIL



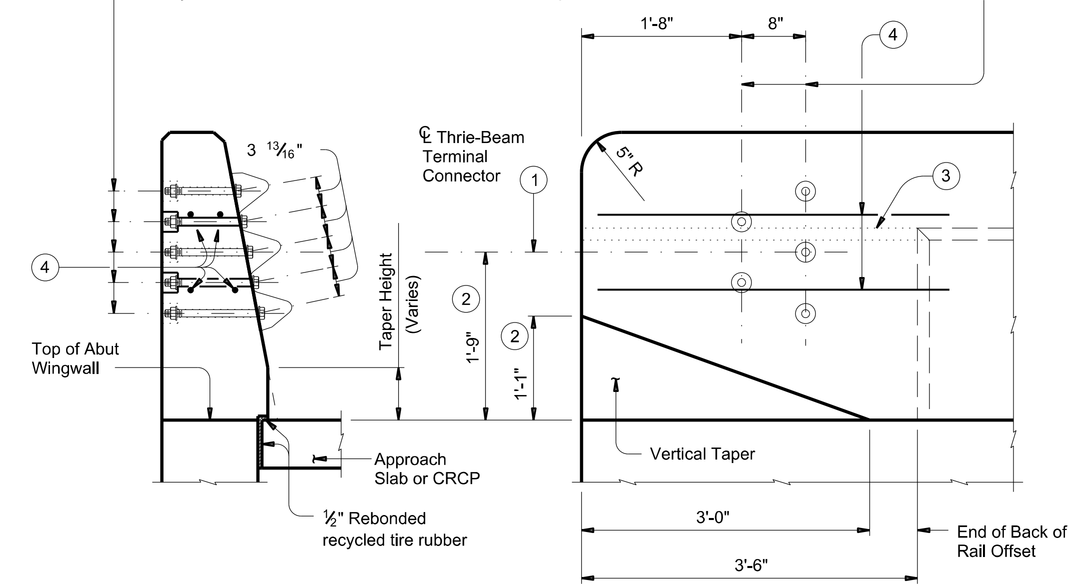
INTERMEDIATE WALL JOINT DETAIL

Provide at all interior bents without slab expansion joints.

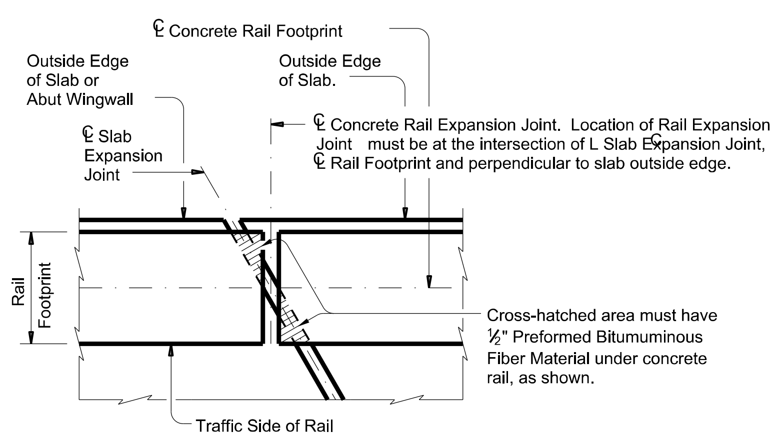


ELEVATION SHOWING TYPICAL REINFORCING PLACEMENT

□ 5 ~ 1" Dia holes and 2 ½" Dia x 2" deep recesses. Form or core holes and recesses. Percussion drilling is not permitted. Adjust placement of reinforcing steel as necessary to avoid bolt holes and recesses. Bolt recesses are only required when pedestrian sidewalks are adjacent to back of rail. Tighten the 5 Terminal Connection Bolts in a well distributed pattern so to prevent damage or distortion of the Thrie-Beam Connection and the MBGF Transition. Cut bolts off after installation so as to extend no more than ¾" beyond nut. Paint ends of cut-off bolts with Zinc-rich paint.



TERMINAL CONNECTION DETAILS



PLAN OF RAIL AT EXPANSION JOINTS

Example showing Slab Expansion Joints without breakbacks.

1. Terminal Connectors and associated hardware are to be paid for under the Item "Metal Beam Guard Fence". Attach Metal Beam Guard Fence Transitions to the bridge rail and extend along the embankment unless otherwise shown in the plans.
2. Increase 2" for structures with Overlay.
3. Back of rail offset may, with Engineer's approval, be continued to the end of the railing.
4. Place 4 additional Bars R(#4) 3'-8" in length inside Bars S(#4) and centered 2'-0" from end of rail when Terminal Connections are required.

Texas Department of Transportation

Bridge Division Standard

TRAFFIC RAIL SINGLE SLOPE

TYPE SSTR

FILE:	rfstd014-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT	September 2019	CONT	SECT	JOB	HIGHWAY
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		PHR		WILLACY	114

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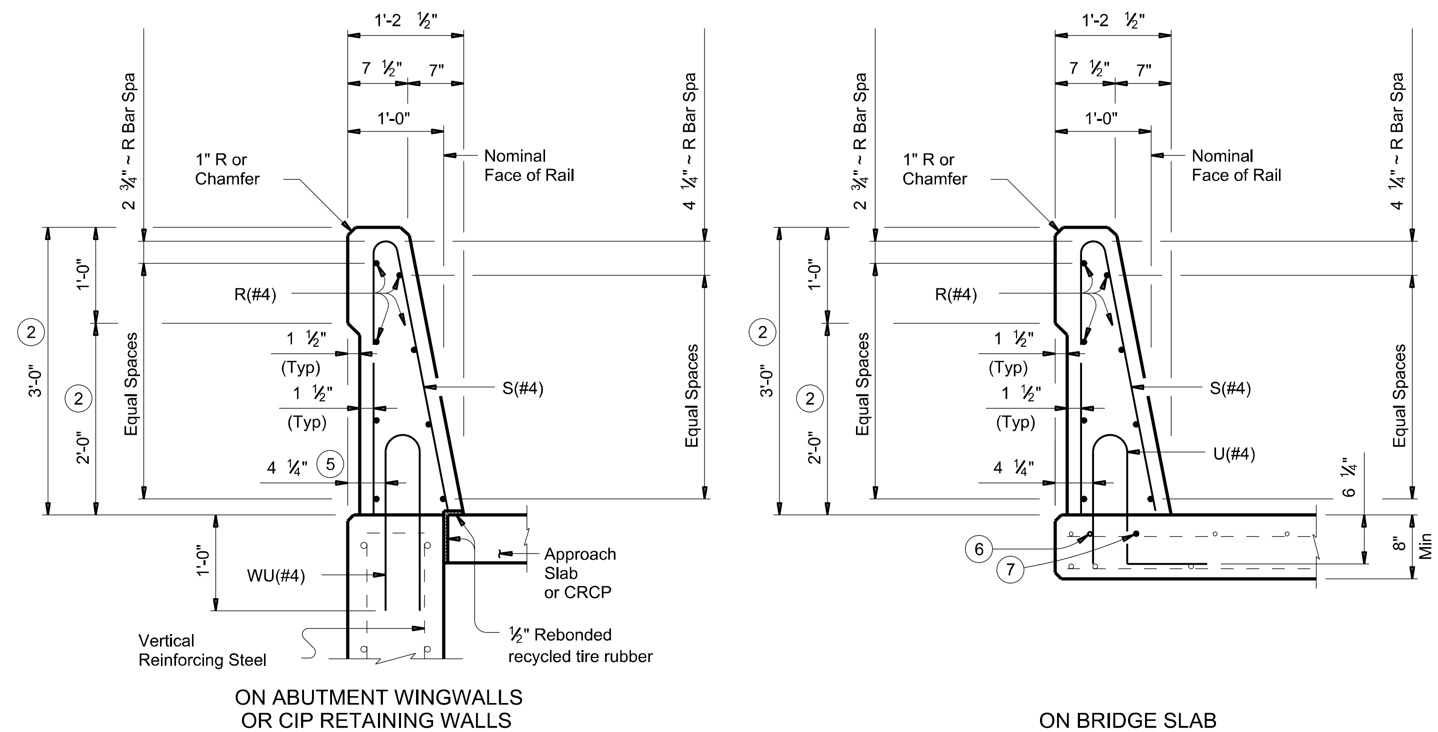


SECTIONS THRU RAIL

2 Increase 2" for structures with Overlay.

5 5 ¼" when vertical reinforcing has closer clear cover over horizontal reinforcing in abutment wingwalls or retaining walls on traffic side of wall.

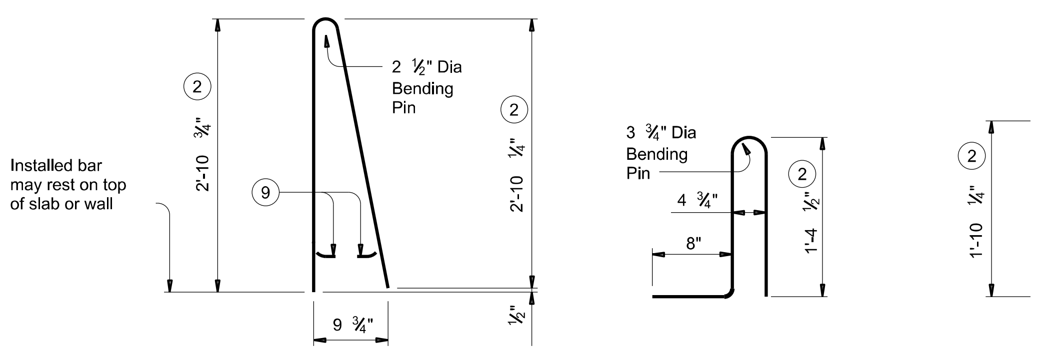
6 As an aid in supporting reinforcement, additional longitudinal bars may be used in the slab with the approval of the Engineer. Such bars must be furnished at the Contractor's expense.

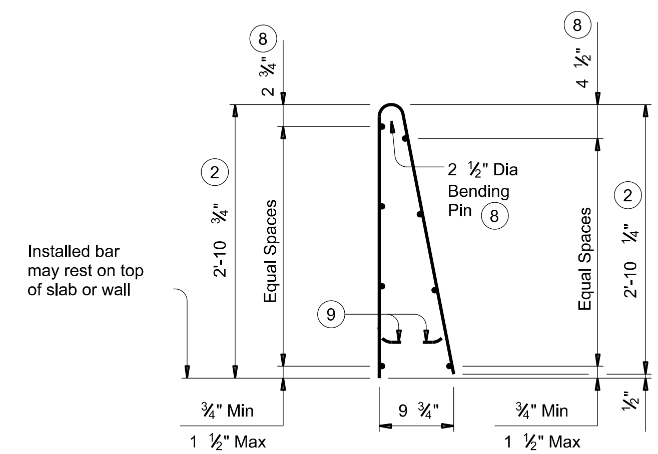
7 Top longitudinal slab bar may be adjusted laterally 3" plus or minus to tie reinforcing.

8 No longitudinal wires may be within upper bend.

9 Bend or cut as required to clear drain slots.

10 Space U(#4) bars at 4" Max when end region of panel length is less than 6'-0" to side slot drain. Space U(#4) bars at 6" Max when end region of panel length is 6'-0" and greator to side slot drain.





OPTIONAL WELDED WIRE REINFORCEMENT (WWR)

DESCRIPTION	LONGITUDINAL WIRES	VERTICAL WIRES
Minimum (Cumulative Total) Wire Area	1.067 Sq In.	0.267 Sq In. per Ft
	No. of Wires	Spacing
Minimum	8	4"
Maximum	10	8"
Maximum Wire Size Differential	The smaller wire must have an area of 40% or more of the larger wire.	

CONSTRUCTION NOTES:

This railing may be constructed by the slipform process when approved by the Engineer, with equipment approved by the Engineer. Provide sensor control for both line and grade. Tack welding to provide bracing for slipform operations is acceptable. Welding may be performed at a minimum spacing of 3 ft between the cage and the anchorage. It is permissible to weld to bars U, WU and S at any location on the cage. If increased bracing is needed, provide additional anchorage devices and weld in the upper two thirds of the cage. Paint welded areas on epoxy coated and/or galvanized reinforcing with an organic zinc rich paint in accordance with Item 445 "Galvanizing".

If rail is slipformed, apply an heavy epoxy bead 1" behind toe of traffic side of rail to concrete deck just prior to slip forming. Provide a ⅜" width x ¼" tall heavy epoxy bead with Type III, Class C or a Type V epoxy.

The back of railing must be vertical unless otherwise shown in the plans or approved by the Engineer.

MATERIAL NOTES:

Provide Class "C" concrete. Provide Class "C" (HPC) if required elsewhere.

Provide Grade 60 reinforcing steel.

Epoxy coat or galvanize all reinforcing steel if slab bars are epoxy coated or galvanized.

Deformed Welded Wire Reinforcement (WWR) (ASTM A1064) of equal size and spacing may be substituted for Bars U and WU unless noted otherwise. Deformed WWR (ASTM A1064) may be substituted for Bars R and S, as shown. Combinations of reinforcing steel and WWR or configurations of WWR other than shown are permitted if conditions in the table are satisfied. Provide the same laps as required for reinforcing bars.

Provide bar laps, where required, as follows:
Uncoated or galvanized ~ #4 = 1'-7"
Epoxy coated ~ #4 = 2'-5"

GENERAL NOTES:

This rail has been successfully evaluated by full-scale crash test to meet MASH TL-4 criteria. This rail can be used for speeds of 50 mph and greater when a TL-3 rated guard fence transition is used. When a TL-2 rated guard fence transition is used, this rail can only be used for speeds of 45 mph and less.

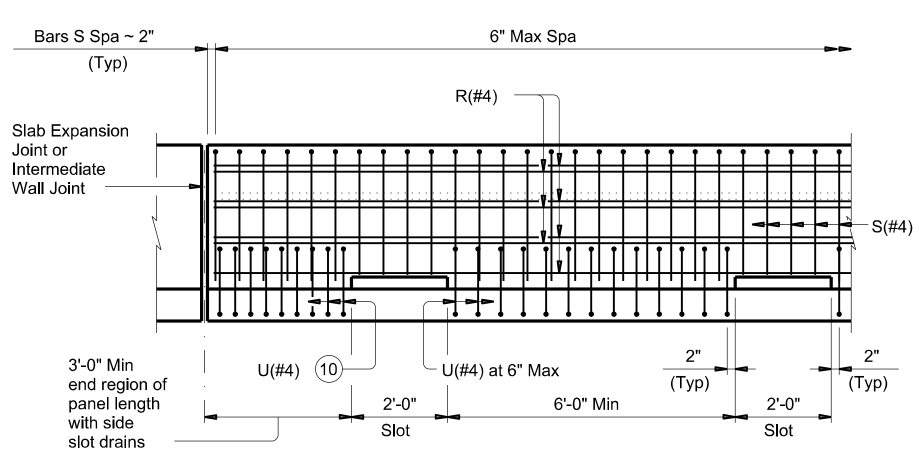
Do not use this railing on bridges with expansion joints providing more than 5" movement.

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

Shop drawings will not be required for this rail.

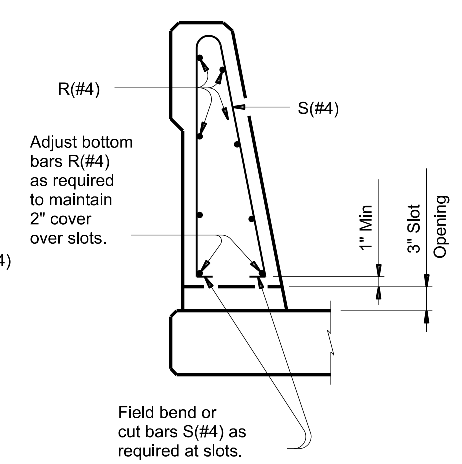
Average weight of railing with no overlay is 376 plf.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



OPTIONAL SIDE SLOT DRAIN DETAIL

Note: Side Slot Drains may be used where shown elsewhere on the plans or as directed by the Engineer. Drains should not be placed over railroad tracks, lower roadways, or sidewalks. When this rail is used as a separator between a roadway surface and a sidewalk surface, side drain slots will not be permitted.



SECTION THRU OPTIONAL SIDE SLOT DRAIN

SHEET 2 OF 2

Texas Department of Transportation | Bridge Division Standard

TRAFFIC RAIL SINGLE SLOPE

TYPE SSTR

FILE: rlstd014-19.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: TxDOT
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
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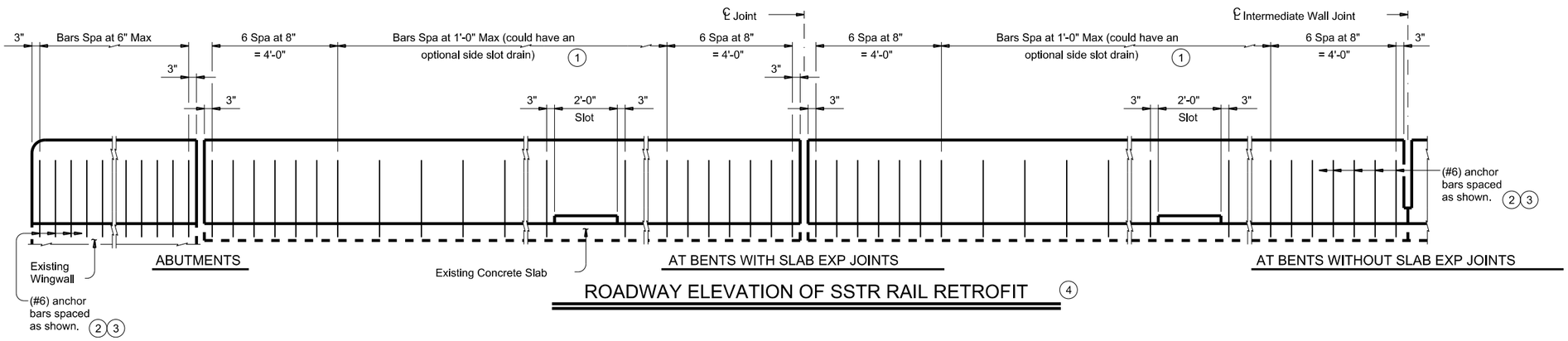
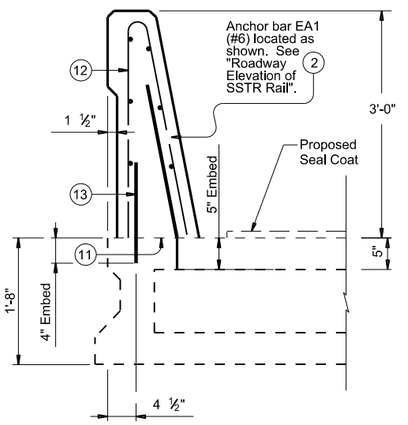
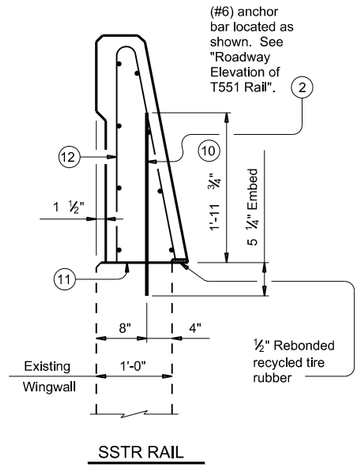


ROADWAY ELEVATION OF SSTR RAIL RETROFIT (4)

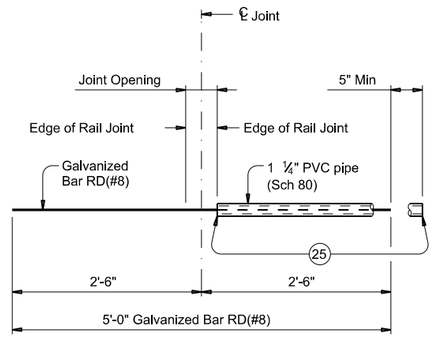


RAIL RETROFIT SECTION ON CONCRETE BOX BEAM USING ADHESIVE ANCHORS (9)

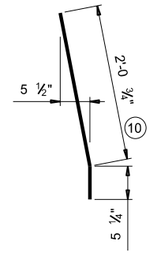


RAIL RETROFIT SECTION ON WINGWALLS USING ADHESIVE ANCHORS (9)

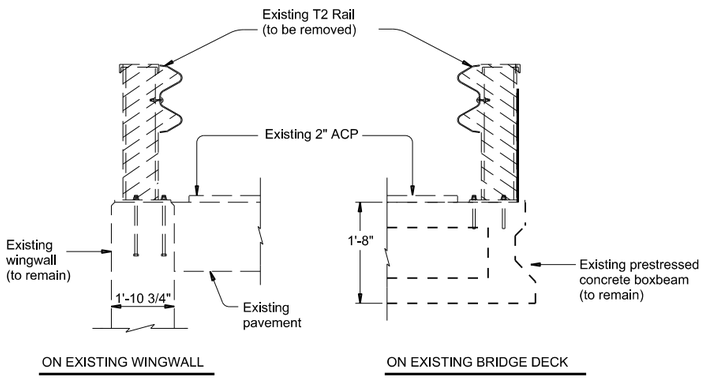
Rail retrofits on existing Traffic Rail Foundations (TRF) are similar.



BAR RD(#8) ASSEMBLY DETAIL



ANCHOR BAR EA1 (#6)



PARTIAL TRANSVERSE SECTIONS

(1) When side slot drains are used, provide 8'-0" Min clear spacing between drain slots.

(2) Embed (#6) anchor bars with a Type III, Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 5". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 20 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

(3) See T551 or SSTR Rail Sections in "Rail Retrofit Section on Wingwalls using Adhesive Anchors" and/or "Rail Retrofit Section on Concrete Slabs using Adhesive Anchors".

(4) Showing spacing of (#6) adhesive anchor in a rail retrofit condition. Secondary (#4) adhesive anchor in a rail retrofit not shown for clarity. Reinforcing steel and terminal connections not shown for clarity. See rail standard for details and notes not shown.

(9) Showing location or locations of anchor bars in a rail retrofit condition. See appropriate rail standard for details and notes not shown.

(10) Increase by amount of existing overlay/seal coat thickness, not to exceed 0.5". If thickness of existing overlay/seal coat is greater than 0.5" at toe of rail, taper overlay at a 1:10 or flatter slope over shoulder width to a thickness of 0.5" or less at toe of rail.

(11) Do not cast rails or parapet walls on top of overlays/seal coats.

(12) See appropriate rail standard for reinforcing steel. Modify length of vertical reinforcing bars as required to fit existing structure. Longitudinal reinforcing bars may be removed only if their position puts them in conflict with un-removed portions of existing structure.

(13) Embed secondary (#4) anchor bars 1'-4" in length with a Type III Class C, D, E, or F anchor adhesive. Minimum adhesive anchor embedment depth is 4". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 10 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing". (#4) anchor bars spaced longitudinally along rail at 4 ft Max (Spaced 3" longitudinally from outside edge and edge of side slot drains).

(#6) anchor bars need to be rotated slightly to fit in designated area, as shown.

(25) Tape ends of 1 1#4" PVC pipe Sch 80 to prevent concrete or mortar from seeping in.

GENERAL NOTES:

Field verify dimensions before commencing work and ordering materials.
By adding additional anchorage, welding can be performed at a minimum spacing of 3 ft between the cage and additional anchorage. By satisfying additional anchorage requirements slip forming is allowed. Do not weld to the required anchorage.
Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.
Provide Grade 60 reinforcing steel.
Epoxy coat or galvanize all reinforcing steel if required elsewhere.
(#6) and (#4) anchor bars used for the adhesive anchorage system must not be epoxy coated within the required embedment.
Face of rail and parapet must be vertical transversely unless otherwise shown in the plans or approved by the Engineer. Install railing end face openings perpendicular to adjacent roadway grade.
Use of these retrofit details will result in a railing acceptable for the MASH Test Level indicated on the applicable rail standard. Rail anchorage details shown on this guide may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.
Do not remove any part of a curb until it has been evaluated to not be a load-carrying structural component.
Repair and replace any removed or damaged ACP overlay from rail retrofit.
Removal and replacement of backfill, subgrade, and asphalt or concrete pavement necessary for this installation is considered subsidiary to the retrofit railing.
Payment for a rail retrofit will be as per Item 451, "Retrofit Railing", by the type of the rail retrofit. All details shown herein are subsidiary to rail retrofit. Examples are "Retrofit Rail (Ty T551)", "Retrofit Rail (Ty SSTR)", etc.
New SSTR(MOD) Railing will be in accordance with and paid for under Item 451 Retrofit Railing (Ty SSTR). All parts of the railing, including removal of overlay, cleaning existing deck, breakbacks, installation and testing of anchors, and installation of new reinforced concrete are included in the price bid per linear foot of rail. Capture and properly dispose of all material removed from bridge including abrasives, overlay, saw cuttings, and other foreign material. This work will not be paid for directly but is considered subsidiary to the bid item.

STATE OF TEXAS
MARIEL B. TORRES
128897
LICENSED PROFESSIONAL ENGINEER
06/09/2022

SHEET 1 OF 1

Texas Department of Transportation — Bridge Division Standard

SSTR (MOD) RAIL RETROFIT

OVER DELTA LAKE IRRIGATION DISTRICT IRRIGATION CANAL

FILE: rlstd022-20.dgn	DN: TxDOT	CK: TxDOT	DW: JTR	CK: JMH
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM 1425
07-20: Text change from epoxy to adhesive and changed MASH Test Level note.	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		116

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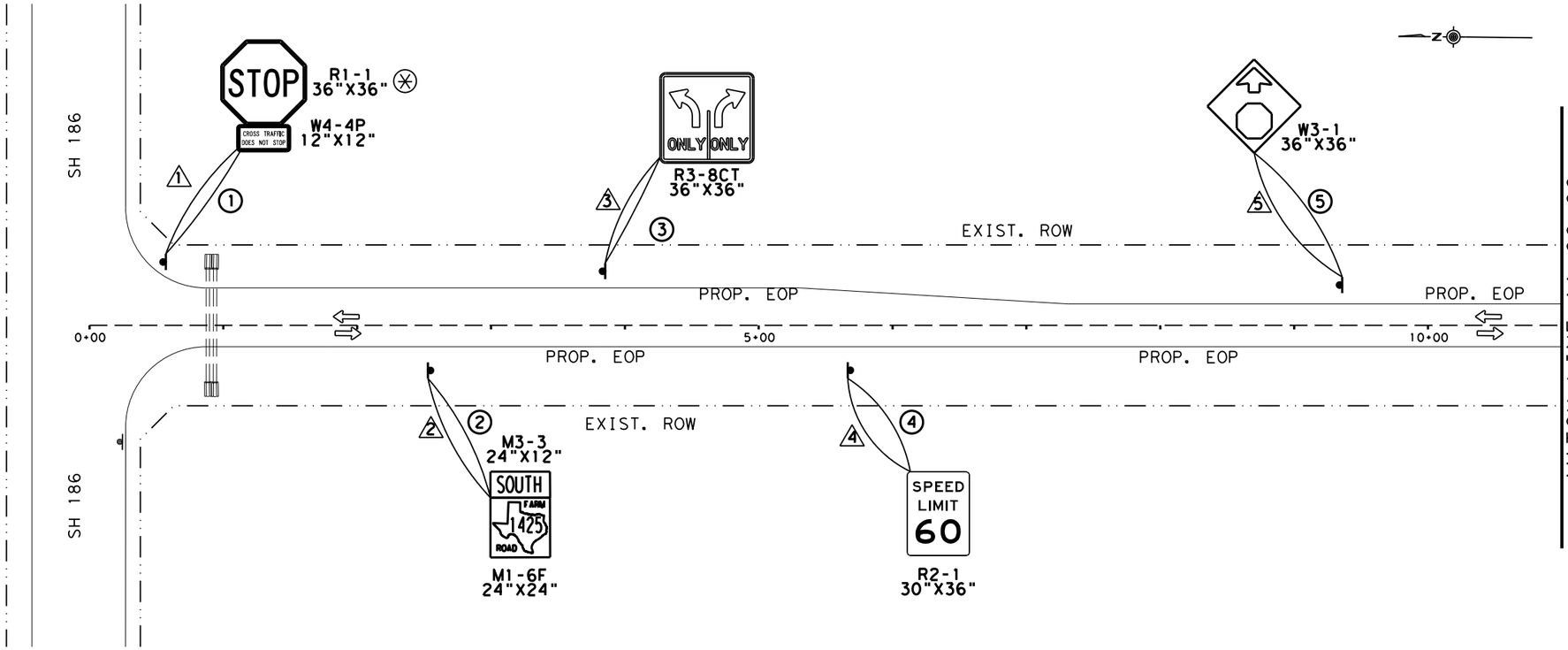
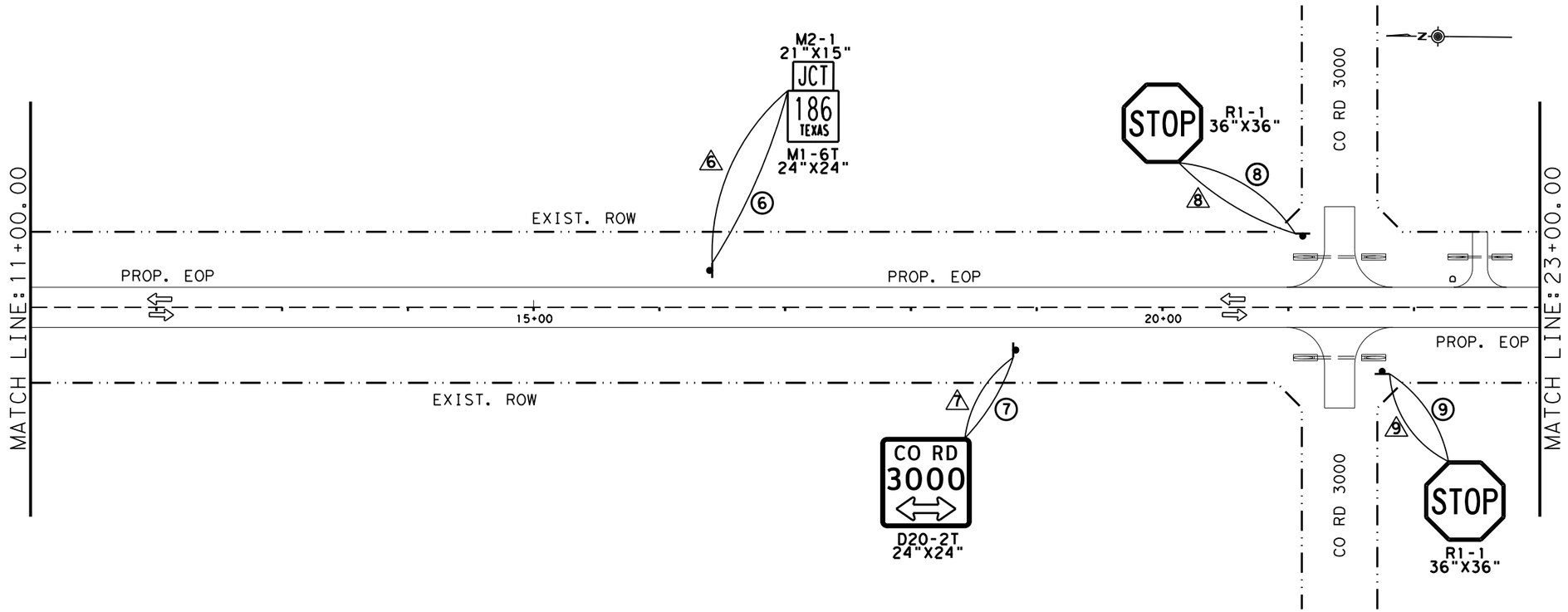


LEGEND:

- # SIGNS TO BE RELOCATED (ITEM 685)
- SIGNS TO BE RELOCATED (ITEM 644)
- SIGNS TO BE REMOVED (ITEM 644)
- SIGNS TO BE INSTALLED (ITEM 644)
- SIGNS TO REMAIN IN PLACE
- EXISTING STREET NAME SIGNS TO BE RELOCATED BY OTHERS

GENREAL NOTES:

1. ALL SIGNS IN WORKING AREAS DESIGNATED TO BE RELOCATED CAN BE REMOVED AND STORED AT THE RAYMONDVILLE MAINTENANCE YARD TO PREVENT DAMAGE DURING CONSTRUCTION.
2. CONTRACTOR IS RESPONSIBLE FOR ALL SIGNS DAMAGED DURING CONSTRUCTION. ANY DAMAGED SIGNS WILL BE REPLACED BY THE CONTRACTOR AT THEIR EXPENSE.
3. ANY EXISTING SIGN DESIGNATED TO BE RELOCATED CAN BE REPLACED IF IT DOES NOT MEET THE ATTACHED SIGN STANDARDS OR IF DIRECTED BY THE ENGINEER.



STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

06/09/2022

Pharr District Central Design

Texas Department of Transportation

FM 1425
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NOT TO SCALE — SHEET 1 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
DSN: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		117

DATE: 6/8/2022 4:23:29 PM
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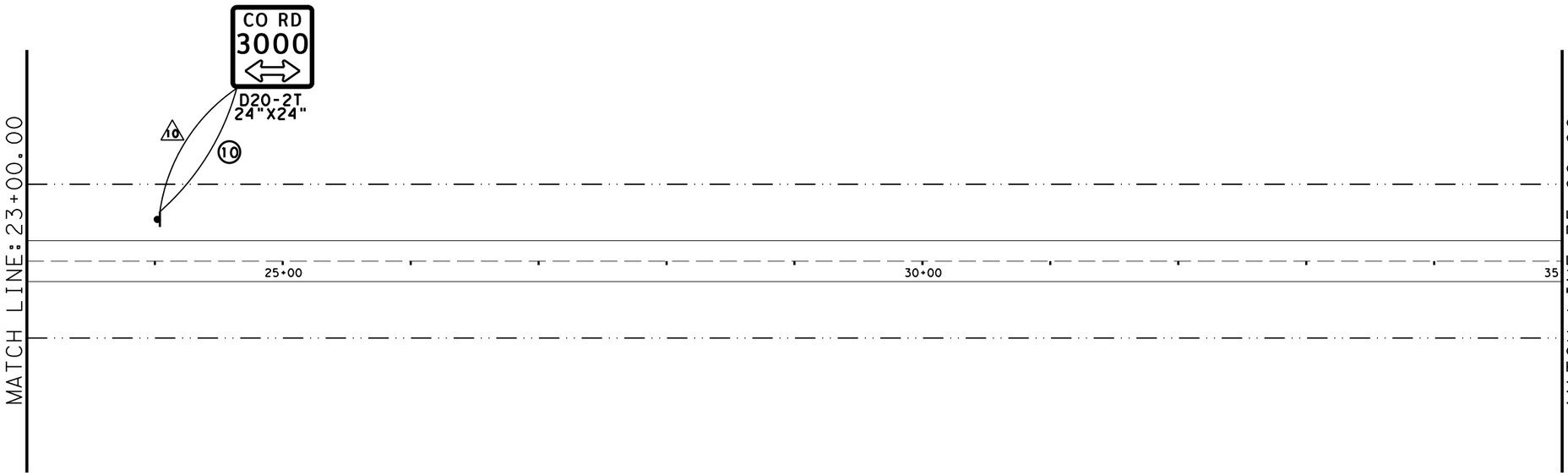

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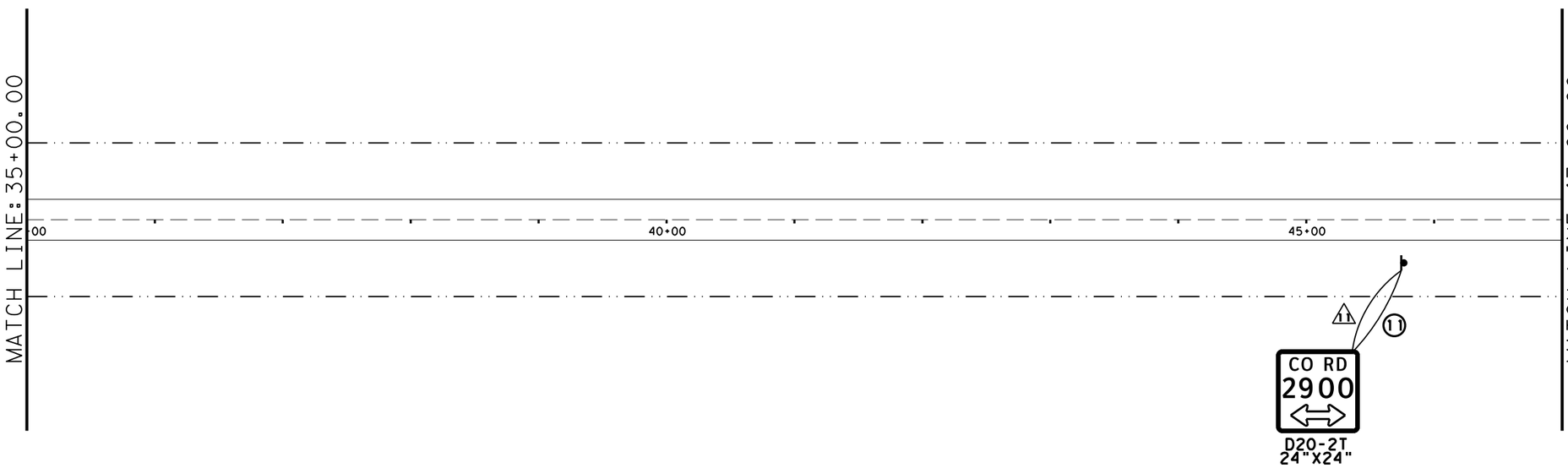

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

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DSn CKn	3343	02	016	FM1425
DSn CKn	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		118

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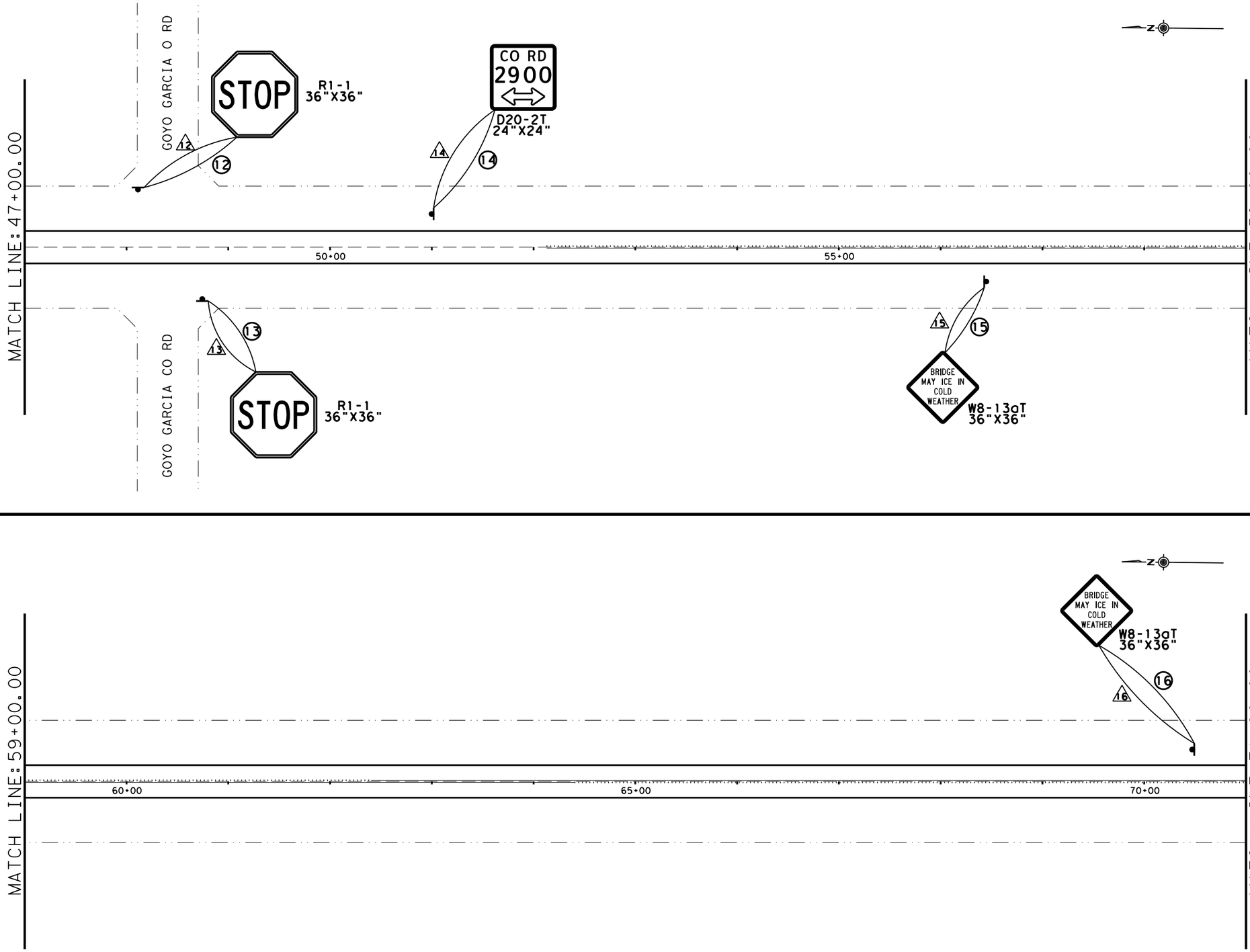

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STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

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DSN CKD	3343	02	016	FM1425
DWN CKD	DIST	COUNTY		SHEET NO.
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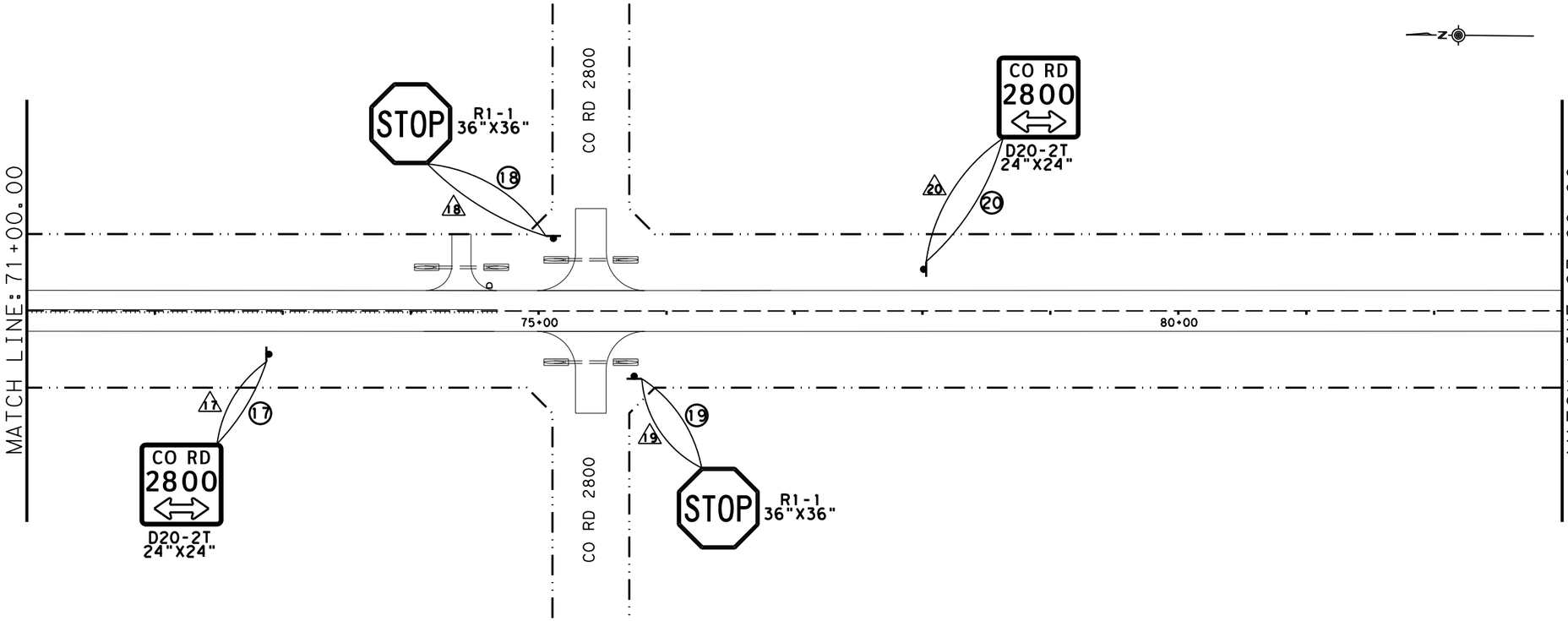

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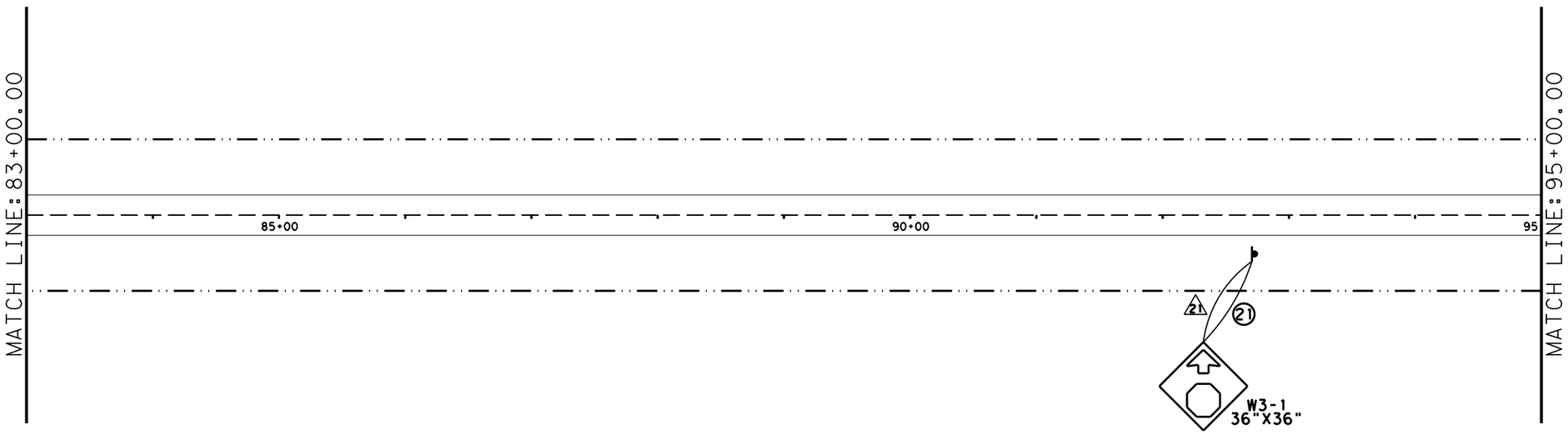

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ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

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NOT TO SCALE — SHEET 4 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
DSN CKD	3343	02	016	FM1425
DWN CKD	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		120

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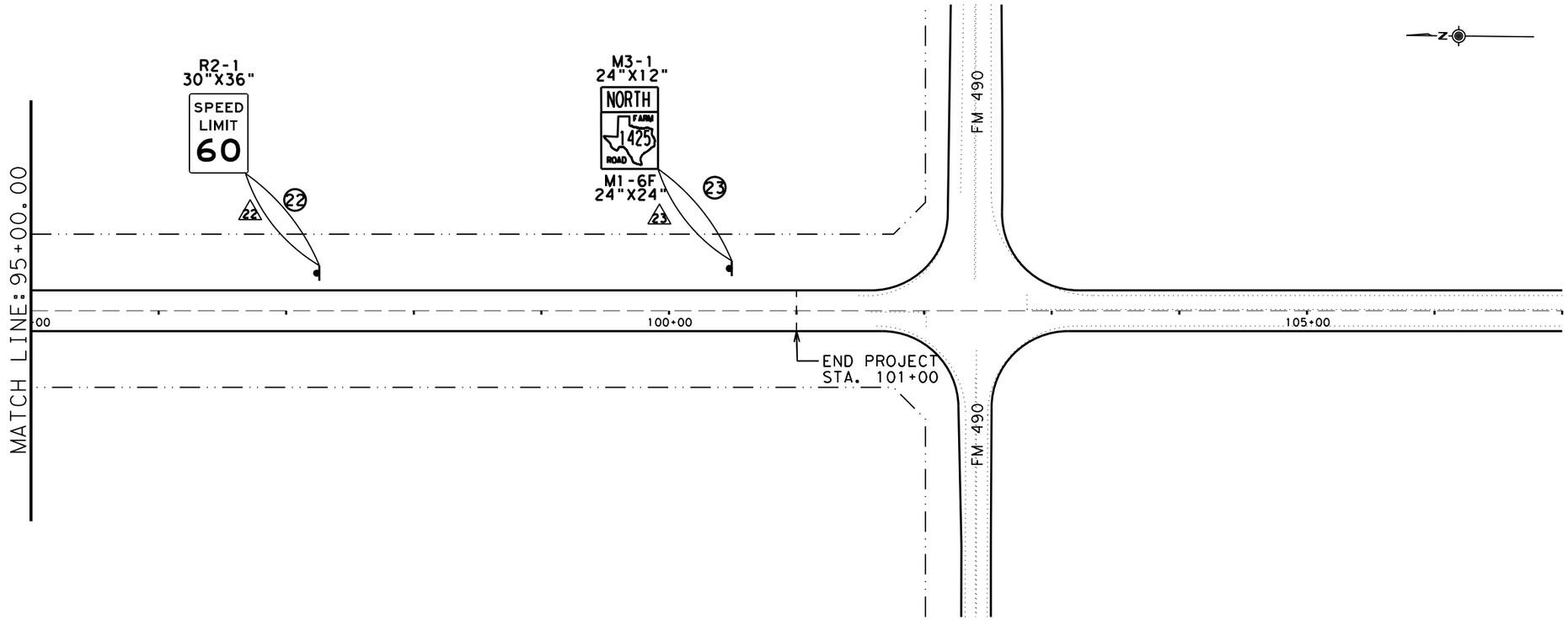

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ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

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NOT TO SCALE — SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425
DIST	COUNTY		SHEET NO.
PHR	WILLACY		121

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SUMMARY OF SMALL SIGNS TO BE REMOVED & RELOCATED UNDER ITEM (644)

PLAN SHT. NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMENS. (INCHES)	REMOVE SMALL SIGN ASSM. (EA)	RELOCATE SM RD SN SUP & AM TY S80 (EA)
1of5	1	R1-1	STOP	36x36	X	
	2	M3-3	SOUTH	24x12	X	
		M1-6F	FM 1425	24x24		
	3	R3-8CT	LEFT/RIGHT TURN	36x36	X	
	4	R2-1	SPEED LIMIT 60	30x36	X	
	5	W3-1	STOP AHEAD	36x36	X	
	6	M2-1	JUNCTION	21x15	X	
		M1-6T	TEXAS 186	24x24		
	7	D20-2T	COUNTY ROAD 3000	24x24	X	
	8	R1-1	STOP	36x36	X	
	9	R1-1	STOP	36x36	X	
2of5	10	D20-2T	COUNTY ROAD 3000	24x24	X	
	11	D20-2T	COUNTY ROAD 2900	24x24	X	
3of5	12	R1-1	STOP	36x36	X	
	13	R1-1	STOP	36x36	X	
	14	D20-2T	COUNTY ROAD 2900	24x24	X	
	15	W8-13aT	BRIDGE MAY ICE IN COLD	36x36	X	
			WEATHER			
	16	W8-13aT	BRIDGE MAY ICE IN COLD	36x36	X	
			WEATHER			
4of5	17	D20-2T	COUNTY ROAD 2800	24x24	X	
	18	R1-1	STOP	36x36	X	
	19	R1-1	STOP	36x36	X	
	20	D20-2T	COUNTY ROAD 2800	24x24	X	
	21	W3-1	STOP AHEAD	36x36	X	
5of5	22	R2-1	SPEED LIMIT 60	30x36	X	
	23	M3-1	NORTH	24x12	X	
		M1-6F	FM 1425	24x24		

SUMMARY OF SMALL SIGNS TO BE REMOVED & RELOCATED UNDER ITEM (644)

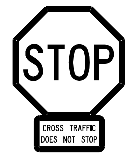
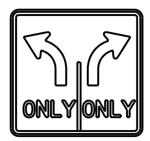
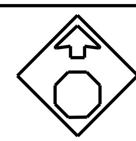
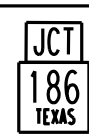
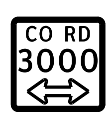
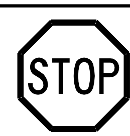
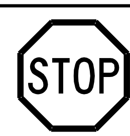
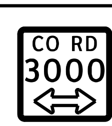
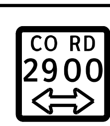
PLAN SHT. NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMENS. (INCHES)	REMOVE SMALL SIGN ASSM. (EA)	RELOCATE SM RD SN SUP & AM TY S80 (EA)

SUMMARY OF SMALL SIGNS REMOVAL

FED.RD. DIV.NO.	PROJECT NO.		SHEET 1 OF 1			SHEET NO.
6						122
STATE	STATE DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	PHR	WILLACY	3343	02	016	FM1425

SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	MOUNTING DESIGNATION 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
SHEET 1 OF 5												
	1	R1-1 W4-4P		36X36 12X12	✓		S80	1	SA	T		
	2	M3-3 M1-6F		24X12 24X24	✓		S80	1	SA	P		
	3	R3-8CT		36X36	✓		S80	1	SA	P		
	4	R2-1		30X36	✓		S80	1	SA	P		
	5	W3-1		36X36	✓		S80	1	SA	T		
	6	M2-1 M1-6T		21X15 24X24	✓		S80	1	SA	P		
	7	D20-2T		24X24	✓		S80	1	SA	P		
	8	R1-1		36X36	✓		S80	1	SA	T		
	9	R1-1		36X36	✓		S80	1	SA	T		
SHEET 2 OF 5												
	10	D20-2T		24X24	✓		S80	1	SA	P		
	11	D20-2T		24X24	✓		S80	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS

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

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

NOTE:

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

SHEET 1 OF 3

Texas Department of Transportation — Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT 3343	SECT 02	JOB 016	HIGHWAY FM1425
REVISIONS 4-16 8-16	DIST PHR		COUNTY WILLACY	SHEET NO. 123

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SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED P = "Plain" T = "T" U = "U"	MOUNTING DESIGNATION 1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
SHEET 3 OF 5												
	12	R1-1	STOP	36X36	✓		S80	1	SA	T		
	13	R1-1	STOP	36X36	✓		S80	1	SA	T		
	14	D20-2T	CO RD 2900 ⟺	24X24	✓		S80	1	SA	P		
	15	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	36X36	✓		S80	1	SA	T		
	16	W8-13aT	BRIDGE MAY ICE IN COLD WEATHER	36X36	✓		S80	1	SA	T		
SHEET 4 OF 5												
	17	D20-2T	CO RD 2800 ⟺	24X24	✓		S80	1	SA	P		
	18	R1-1	STOP	36X36	✓		S80	1	SA	T		
	19	R1-1	STOP	36X36	✓		S80	1	SA	T		
	20	D20-2T	CO RD 2800 ⟺	24X24	✓		S80	1	SA	P		
	21	W3-1	(stop ahead symbol)	36X36	✓		S80	1	SA	T		
SHEET 5 OF 5												
	22	R2-1	SPEED LIMIT 60	30X36	✓		S80	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS

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

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

NOTE:

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

SHEET 2 OF 3

Texas Department of Transportation — Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT 3343	SECT 02	JOB 016	HIGHWAY FM1425
REVISIONS 4-16 8-16	DIST PHR	COUNTY WILLACY		SHEET NO. 124

DATE: 6/8/2022 4:24:19 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Projects\

SUMMARY OF SMALL SIGNS

SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION: PREFABRICATED	MOUNTING DESIGNATION	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	TY = TYPE TY N TY S
	23	M3-1 M1-6F		24X12 24X24	✓		S80	1	SA	P		

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

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

NOTE:

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

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FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Projects\3343020016\a Design Plan Set\15. Striping & Signing\FM 1425_SOSS.dgn

SHEET 3 OF 3

Texas Department of Transportation

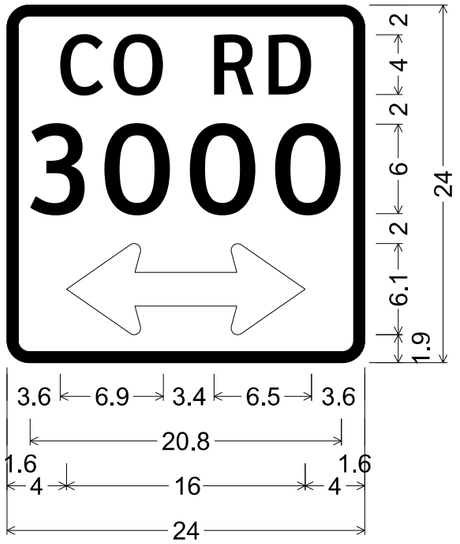
Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

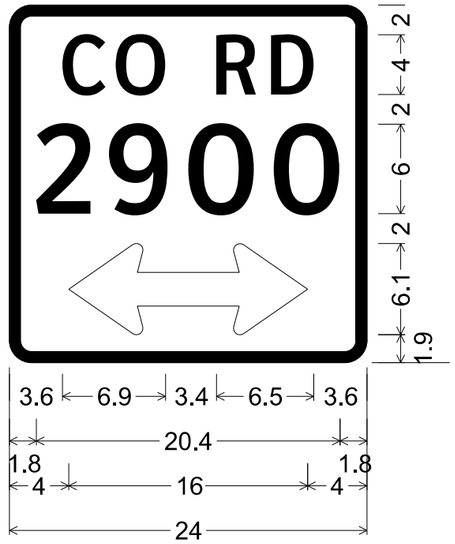
FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
4-16 8-16	DIST		COUNTY	SHEET NO.
	PHR		WILLACY	125

18



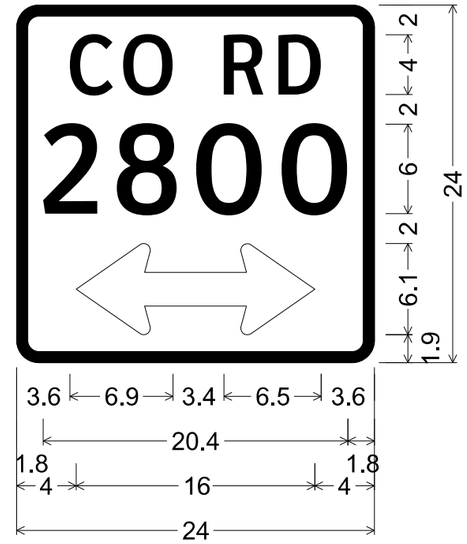
D20-2T_24x24;
1.5" Radius, 0.8" Border, White on Green;
"CO RD", ClearviewHwy-3-W;
"3000", ClearviewHwy-3-W;
Table of letter and object lefts

C	O	R	D
3.6	7.1	13.9	17.6
3	**0**	**0**	**0**
1.6	6.5	12.3	18.0
⇔			
4.0			



D20-2T_24x24;
1.5" Radius, 0.8" Border, White on Green;
"CO RD", ClearviewHwy-3-W;
"2900", ClearviewHwy-3-W;
Table of letter and object lefts

C	O	R	D
3.6	7.1	13.9	17.6
2	**9**	**0**	**0**
1.8	6.7	12.0	17.7
⇔			
4.0			



D20-2T_24x24;
1.5" Radius, 0.8" Border, White on Green;
"CO RD", ClearviewHwy-3-W;
"2800", ClearviewHwy-3-W;
Table of letter and object lefts

C	O	R	D
3.6	7.1	13.9	17.6
2	**8**	**0**	**0**
1.8	6.7	12.1	17.8
⇔			
4.0			

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

Ana M. Pruneda

12/20/2023

Pharr District Central Design

Texas Department of Transportation

FM 1425 SIGN PANEL DETAILS

NOT TO SCALE — SHEET 1 OF 1

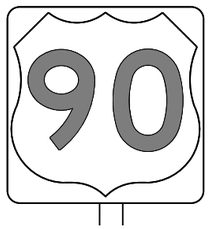
© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		126

DATE: 12/19/2023 4:33:17 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Projects\3343020161\4 - Design\Plan Set\13. Striping & Signage\FM1425_SIGN PANEL DETAILS.dgn

DATE: 6/8/2022 4:24:42 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Profiles\SIGNS\STANDARDS\tsr3-13.dgn

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

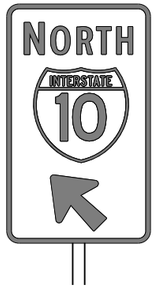
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



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

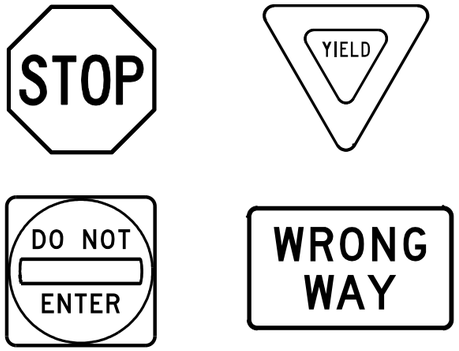
FILE:	tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS		3343	02	016	FM1425
12-03 7-13		DIST	COUNTY		SHEET NO.
9-08		PHR	WILLACY		127

3

DATE: 6/8/2022 4:24:47 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Projects\SIGNS AND BARRIERS\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

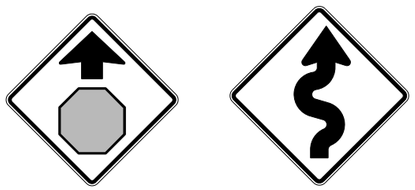
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(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

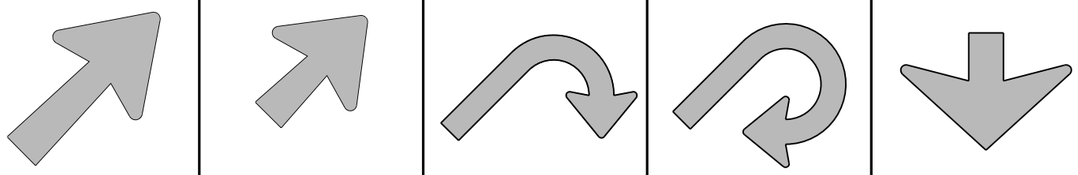
FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		128

4

DATE: 6/8/2022 4:24:53 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Projects\SIGNS\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

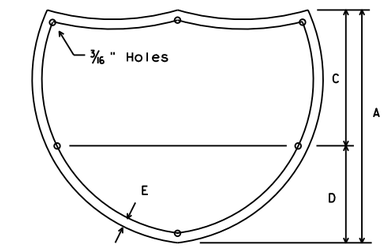
NOTE

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.

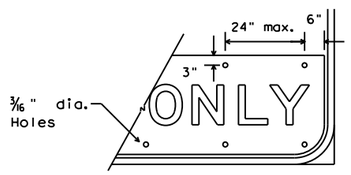
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

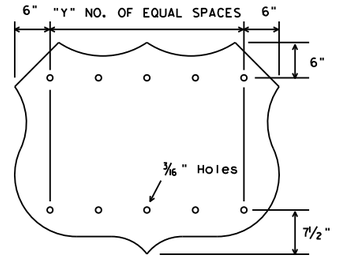


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1 1/2
48	28	20	1 3/4

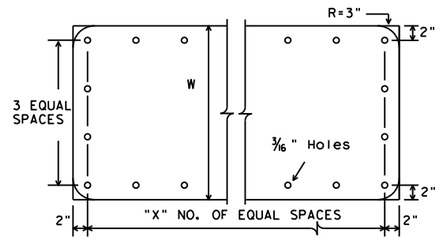


EXIT ONLY PANEL



U.S. ROUTE MARKERS

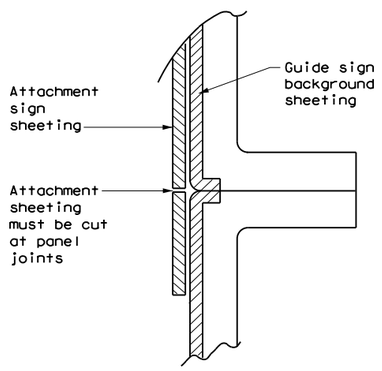
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



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

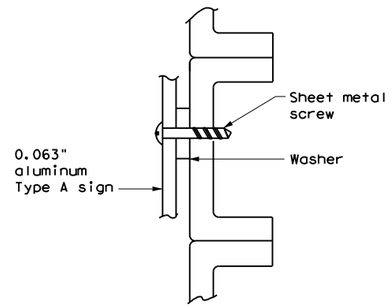
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



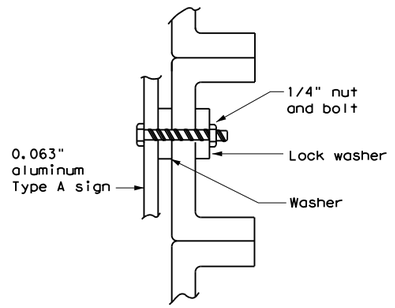
DIRECT APPLIED ATTACHMENT

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



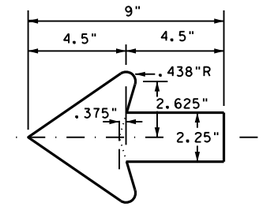
NUT/BOLT ATTACHMENT

NOTE:

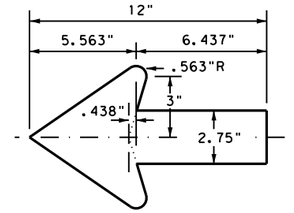
Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

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	3343	02	016	FM1425
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	PHR	WILLACY		129

5

DATE: 6/8/2022 4:24:58 PM
FILE: pw:\\txdot.projectwiseonline.com:TXDOT5\Documents\21 - PHR\Design Projects\334302016\4 - Design\Plan Set\13. Striping & Signage\STANDARDS\SIGNING STANDARDS\[04] smdgen.dgn

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)

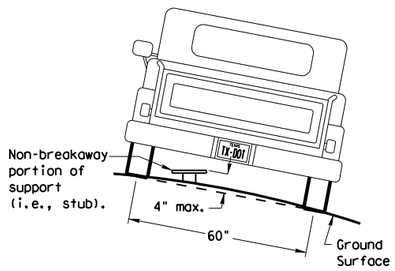
Anchor Type

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))

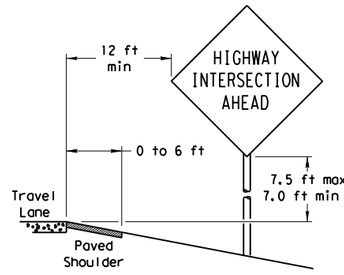
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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).

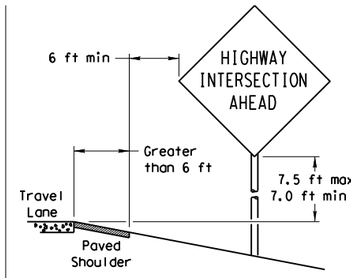
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

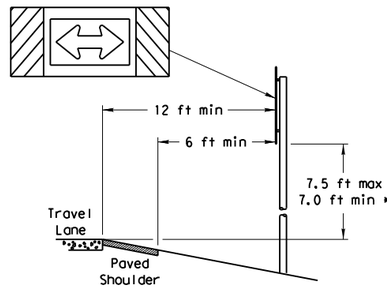
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



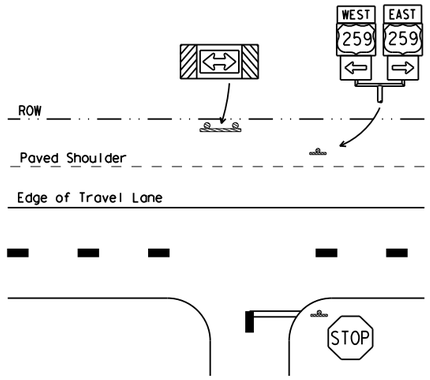
GREATER THAN 6 FT. WIDE

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.

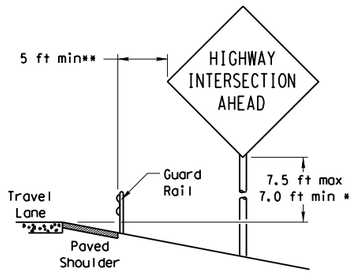
T-INTERSECTION



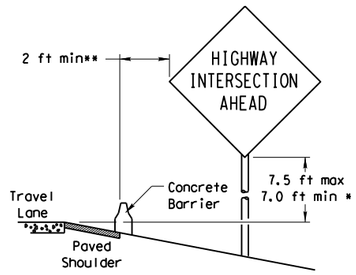
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



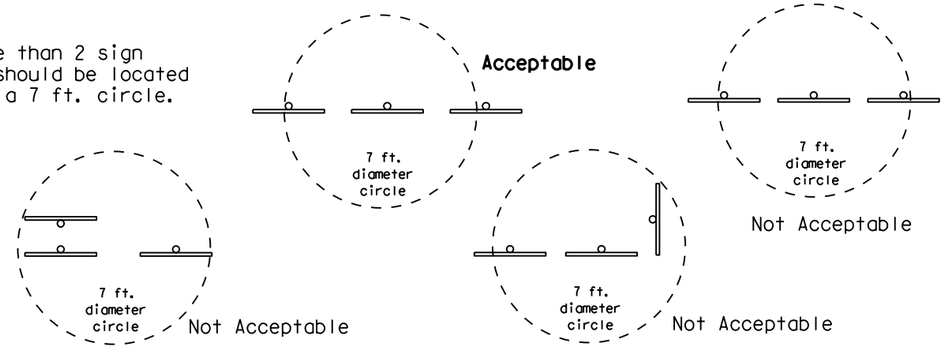
BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

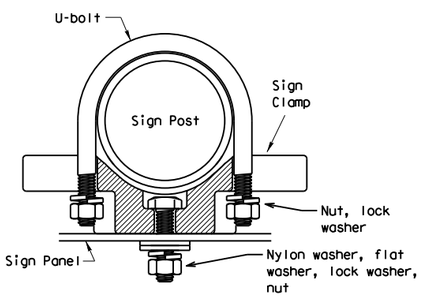
**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

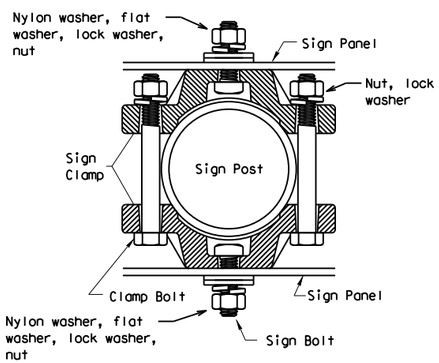


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

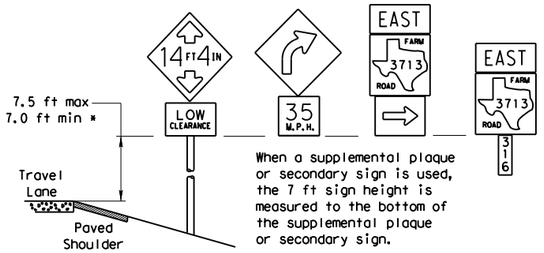
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



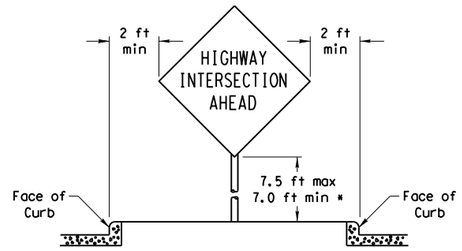
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



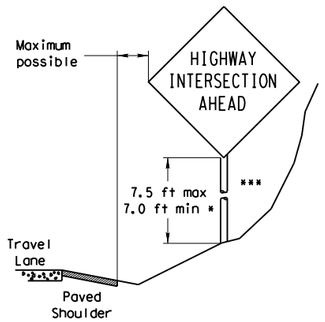
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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
3343	02	016	FM1425

DIST	COUNTY	SHEET NO.
PHR	WILLACY	130

DATE: 6/8/2022 4:25:03 PM
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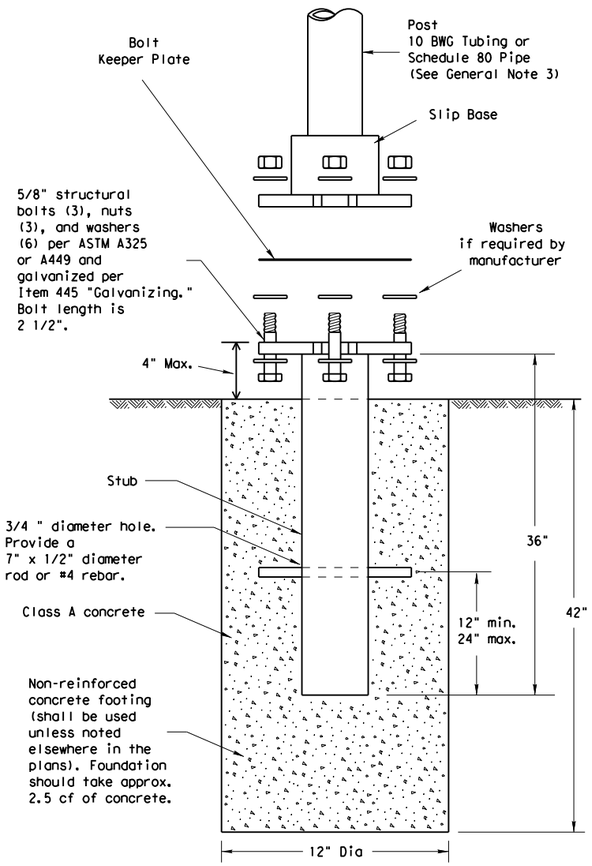
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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:

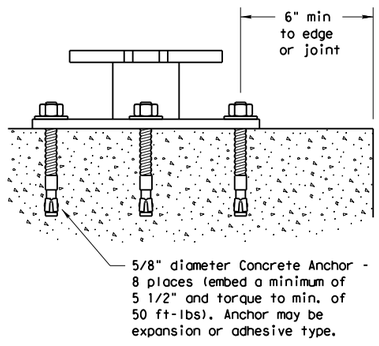
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   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
3343	02	016	FM1425

DIST	COUNTY	SHEET NO.
PHR	WILLACY	131

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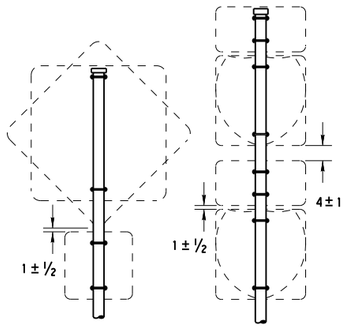
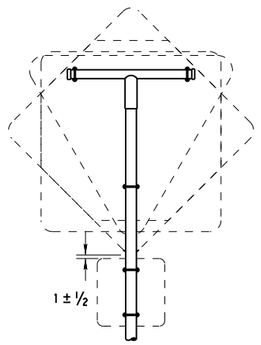


SM RD SGN ASSM TY XXXXX(1)XX(P)



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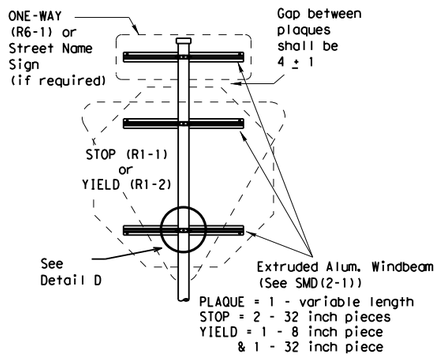

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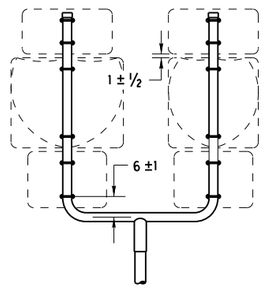

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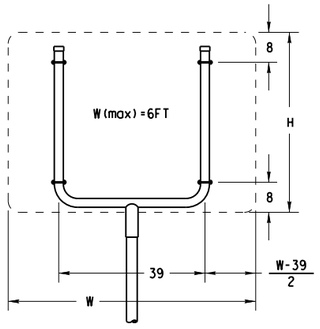

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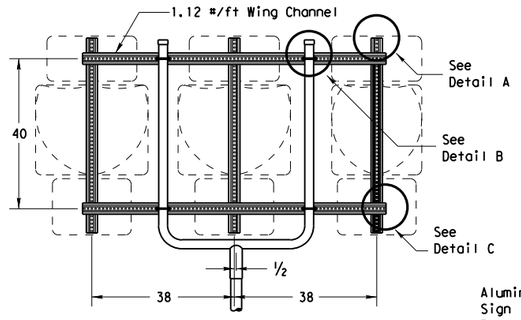
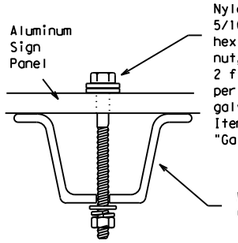
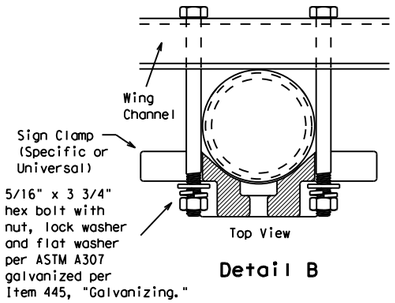


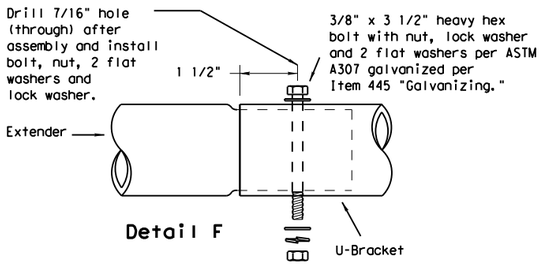
SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)



Detail A

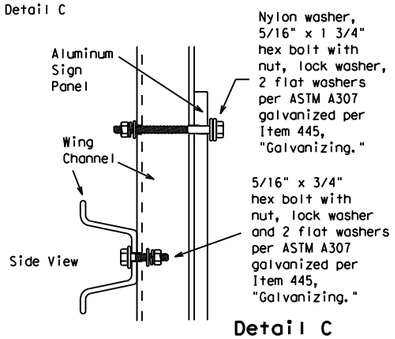


Detail B

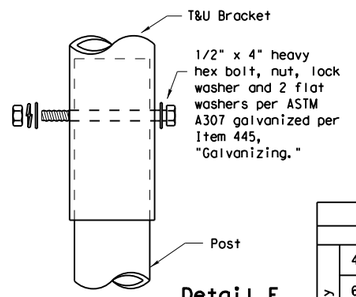


Detail F

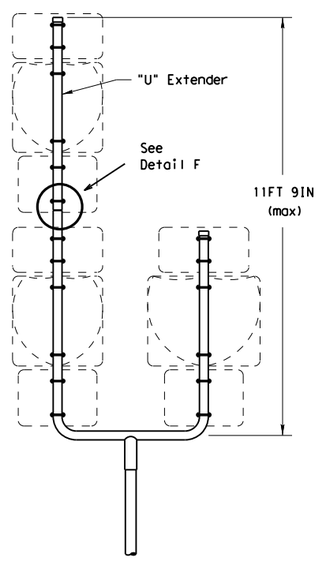
Splices shall only be allowed behind the sign substrate.



Detail C



Detail E



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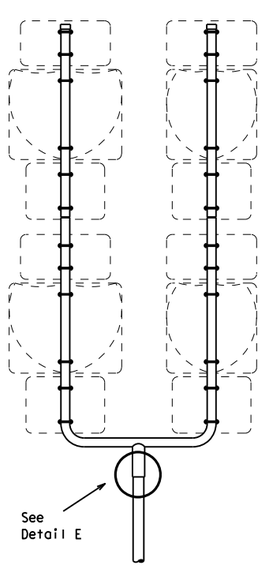

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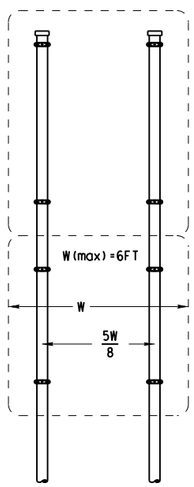
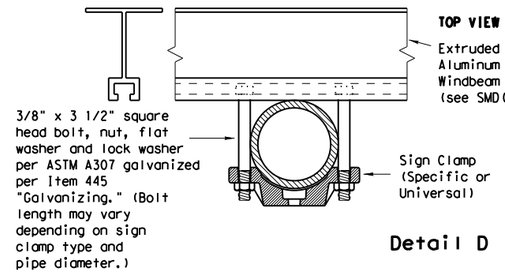
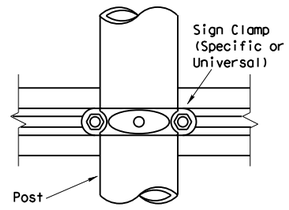


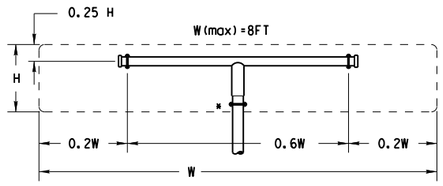
SM RD SGN ASSYM TY XXXXX(2)XX(P)

SIDE VIEW



Detail D

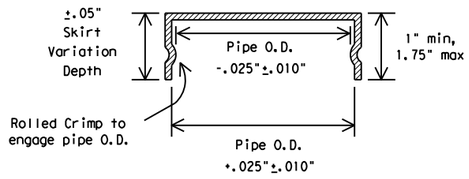




SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

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

9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
3343	02	016	FM1425

DIST	COUNTY	SHEET NO.
PHR	WILLACY	132

26C

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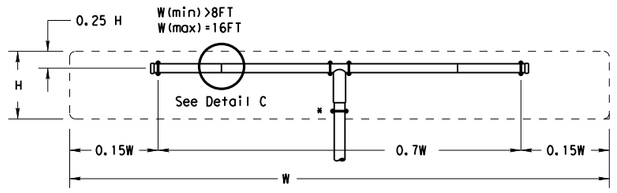
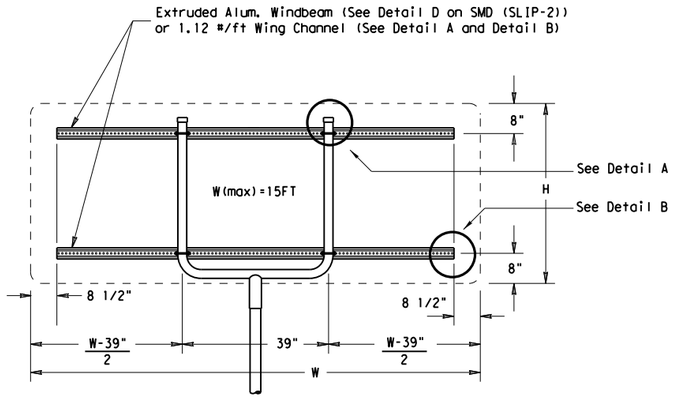


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



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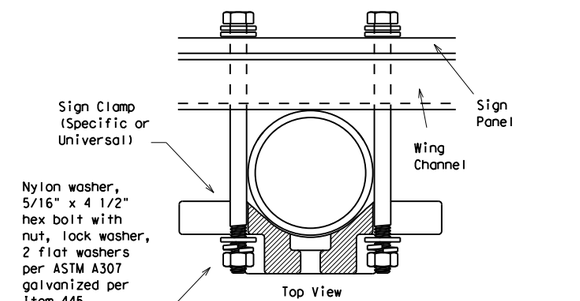
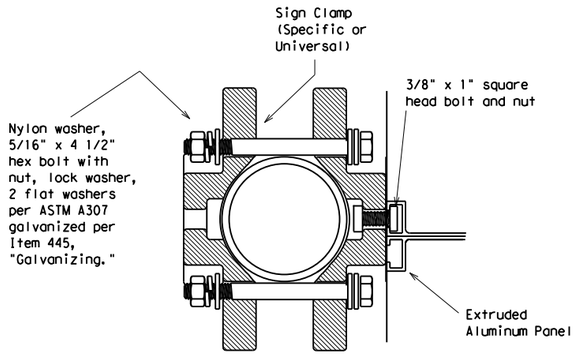
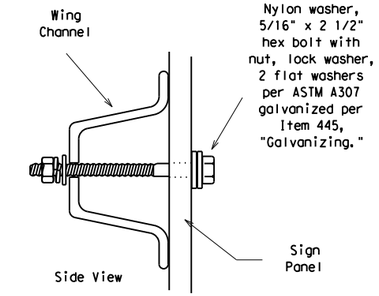


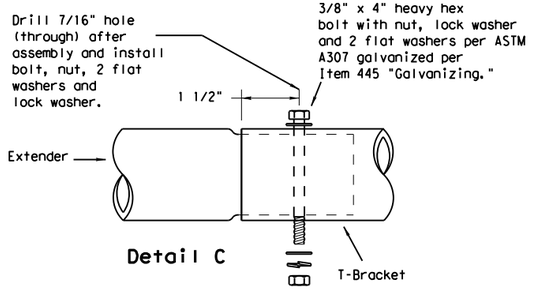
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

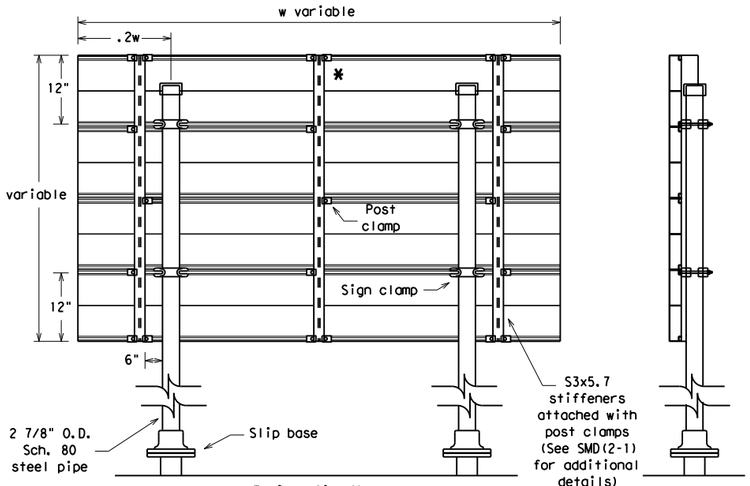


Detail B



Detail C

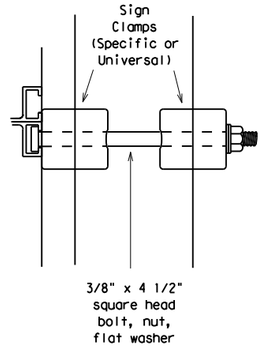
Splices shall only be allowed behind the sign substrate.



Typical Sign Mount

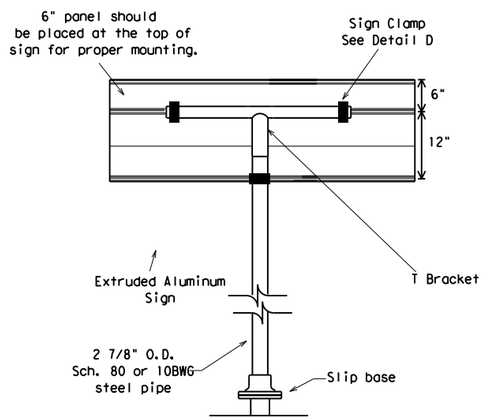
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

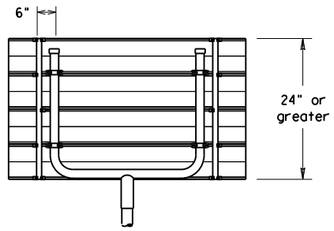


Detail E

See Detail E
for clamp installation



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

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

1. 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.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. 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.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. 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.
6. 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.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. 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."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. 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.
11. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT

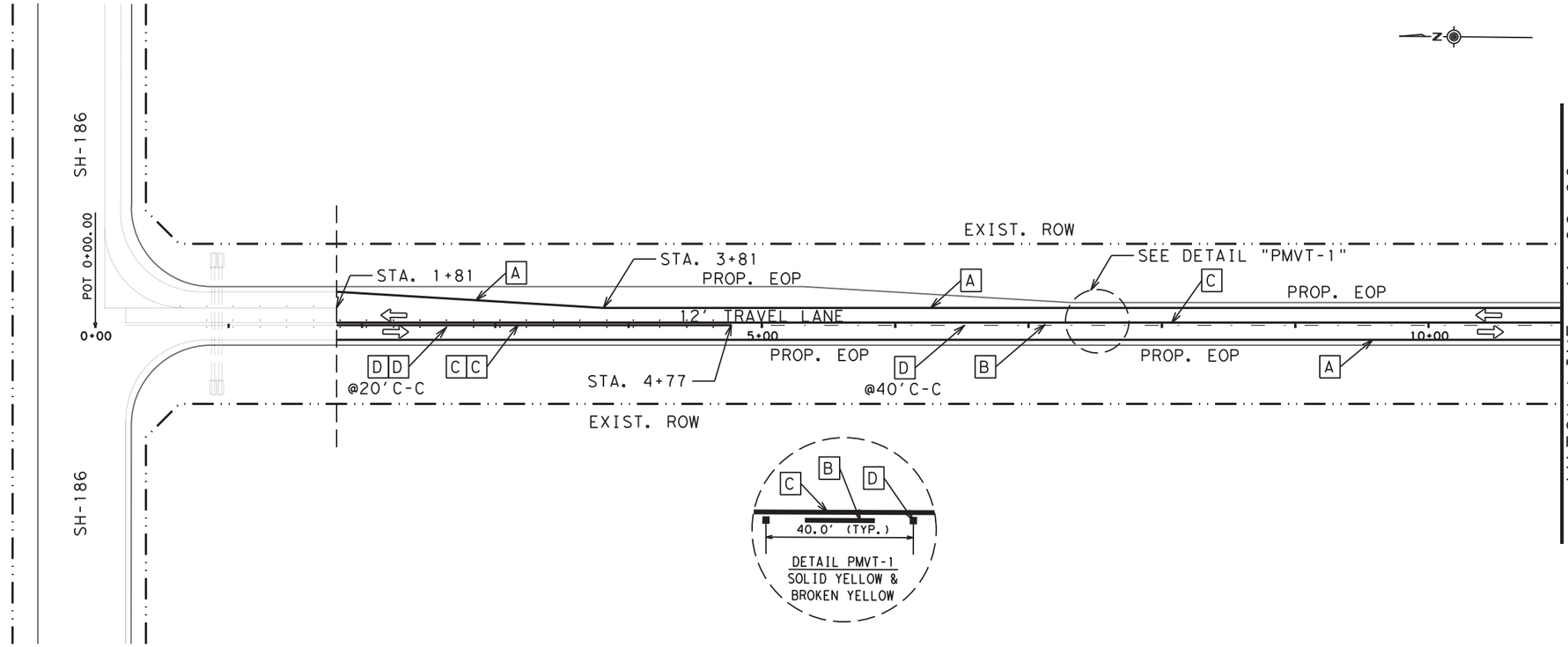
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	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	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		133



DETAIL PMVT-1
SOLID YELLOW &
BROKEN YELLOW

LEGEND

- A - 6" SOLID WHITE LINE (PROF.)
- B - 6" BROKEN YELLOW LINE (RET.)
- C - 6" SOLID YELLOW LINE (RET.)
- D - TYPE II-A-A (TYP.)
- E - 12" SOLID WHITE LINE (TYP.)

- DELINIATOR (D-SW)SZ(BRF)CTB (BI)
- DELINIATOR (D-SW)SZ1(BRF)GF2 (BI)
- OBJECT MARKER (OM-2Z)(WFLX)GND (BI)
- DIRECTION OF TRAFFIC FLOW
- C-C - CENTER TO CENTER
- @ - AT
- ℄ - CENTER LINE
- EOP - EDGE OF PAVEMENT
- PROP. - PROPOSED
- SHLDR - SHOULDER
- EXIST. - EXISTING

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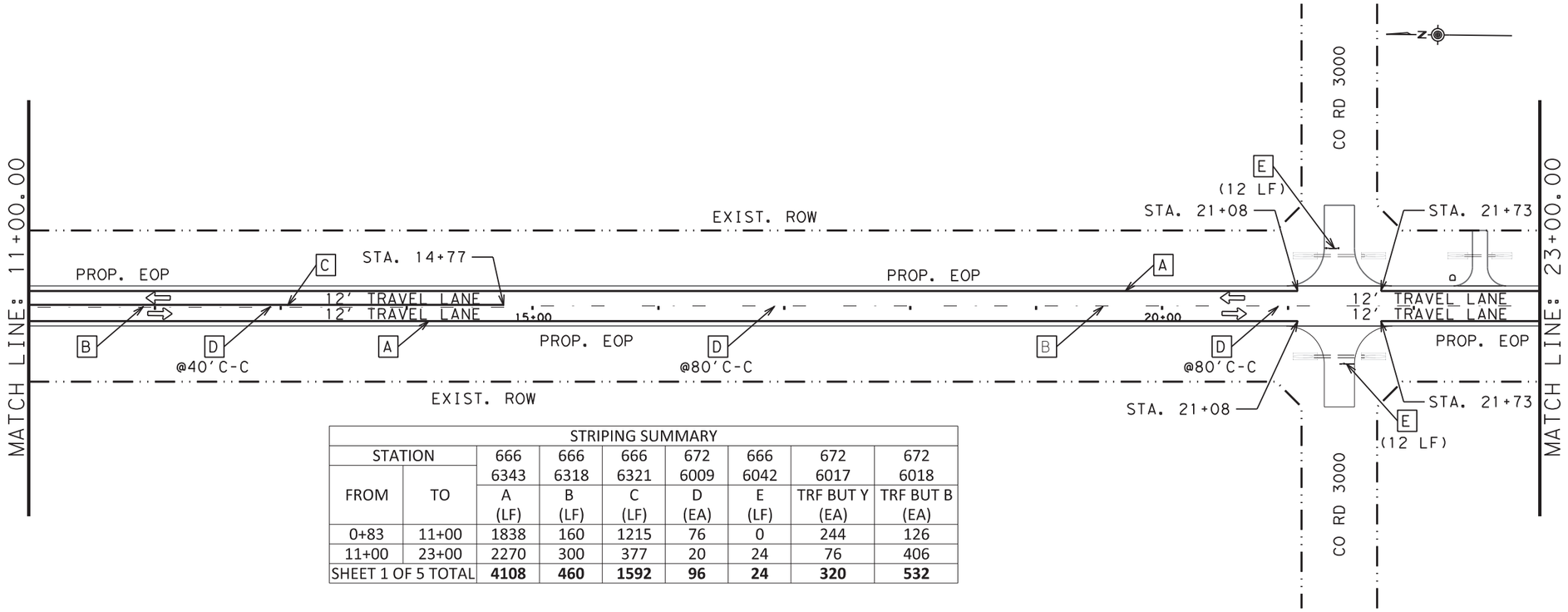
5. SEE INDEX OF SHEETS FOR RAIL AND MBGF DELINIATOR STANDARDS.



STRIPING SUMMARY

STATION		666 6343	666 6318	666 6321	672 6009	666 6042	672 6017	672 6018
FROM	TO	A (LF)	B (LF)	C (LF)	D (EA)	E (LF)	TRF BUT Y (EA)	TRF BUT B (EA)
0+83	11+00	1838	160	1215	76	0	244	126
11+00	23+00	2270	300	377	20	24	76	406
SHEET 1 OF 5 TOTAL		**4108**	**460**	**1592**	**96**	**24**	**320**	**532**

STATE OF TEXAS
FILIBERTO M. RAMOS
146133
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12/08/2023

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FM 1425 PAVEMENT MARKINGS LAYOUT

1" = 100' SHEET 1 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		134

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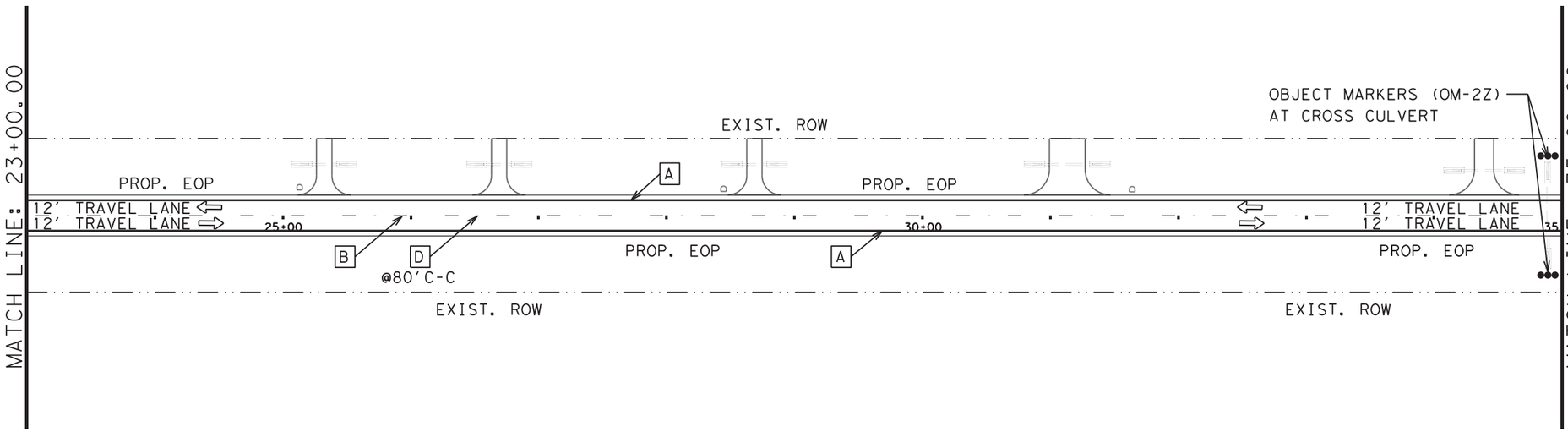

LEGEND

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- C - 6" SOLID YELLOW LINE (RET.)
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- OBJECT MARKER (OM-2Z)(WFLX)GND (BI)
- DIRECTION OF TRAFFIC FLOW
- C-C - CENTER TO CENTER
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- ℄ - CENTER LINE
- EOP - EDGE OF PAVEMENT
- PROP. - PROPOSED
- SHLDR - SHOULDER
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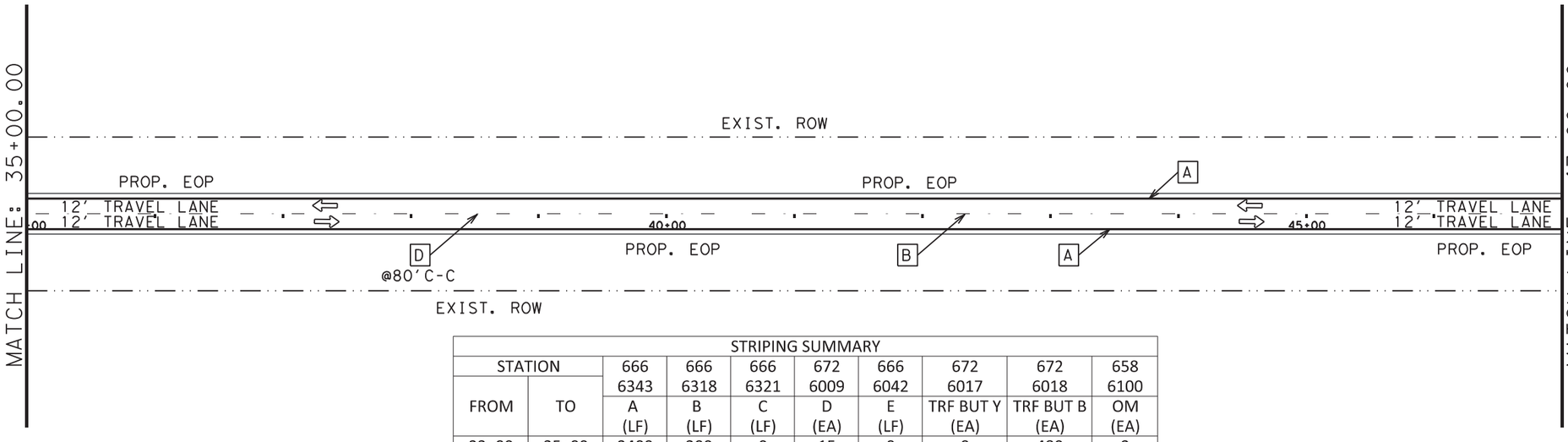

STRIPING SUMMARY

STATION		666 6343	666 6318	666 6321	672 6009	666 6042	672 6017	672 6018	658 6100
FROM	TO	A (LF)	B (LF)	C (LF)	D (EA)	E (LF)	TRF BUT Y (EA)	TRF BUT B (EA)	OM (EA)
23+00	35+00	2400	300	0	15	0	0	480	2
35+00	47+00	2400	300	0	15	0	0	480	0
SHEET 2 OF 5 TOTAL		**4800**	**600**	**0**	**30**	**0**	**0**	**960**	**2**

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FM 1425 PAVEMENT MARKINGS LAYOUT

1" = 100' SHEET 2 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		135

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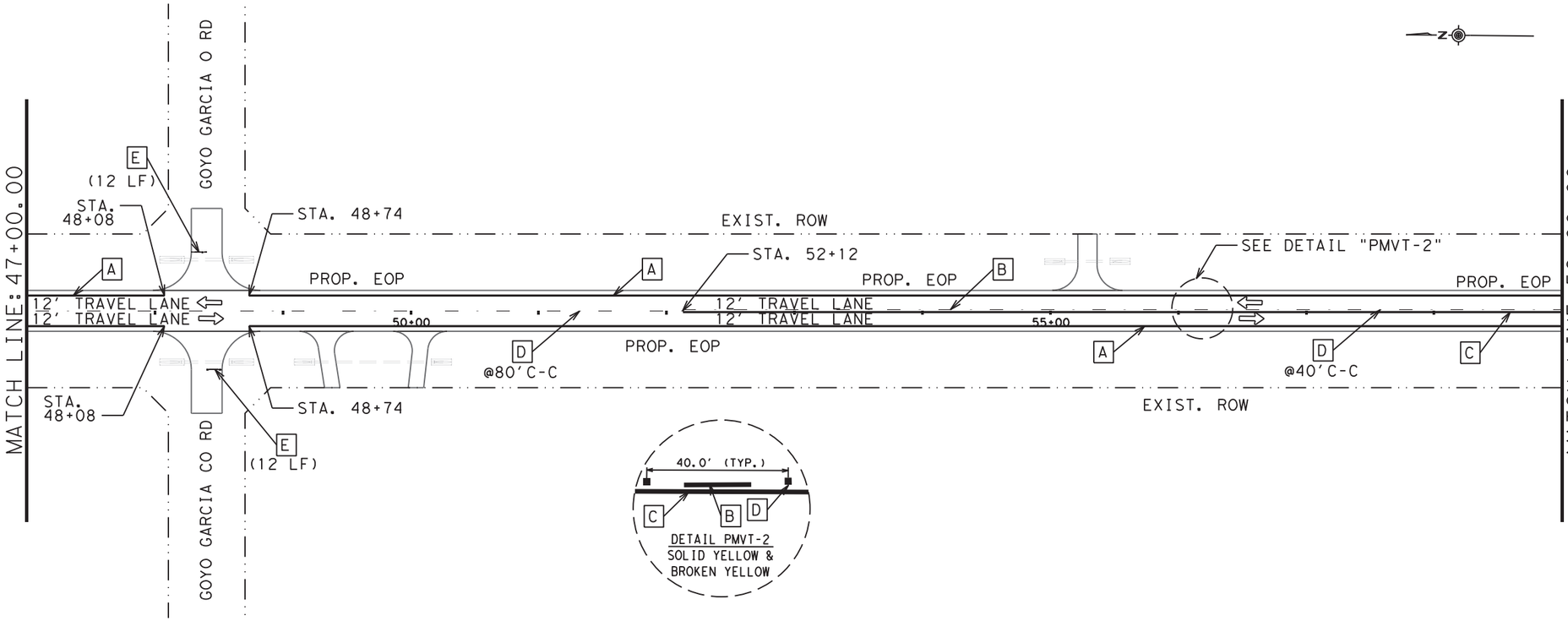

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- ℄ - CENTER LINE
- EOP - EDGE OF PAVEMENT
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- SHLDR - SHOULDER
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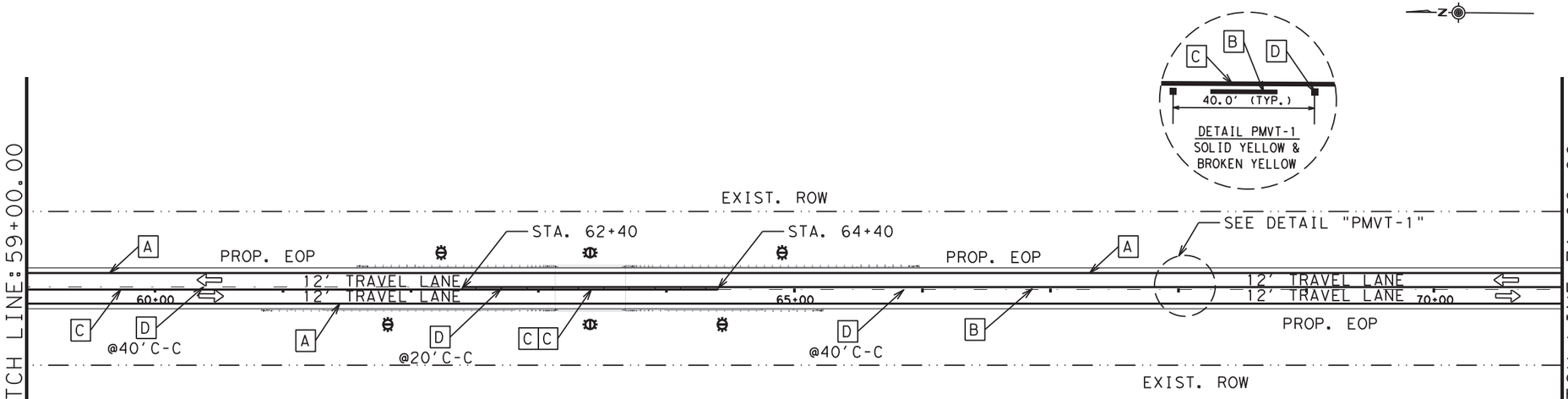

STRIPING SUMMARY

STATION		666 6343	666 6318	666 6321	672 6009	666 6042	672 6017	672 6018	658 6014	658 6062
FROM	TO	A (LF)	B (LF)	C (LF)	D (EA)	E (LF)	TRF BUT Y (EA)	TRF BUT B (EA)	DEL (EA)	DEL (EA)
47+00	59+00	2268	300	688	24	24	138	342	0	0
59+00	71+00	2400	250	1400	35	0	280	200	6	16
SHEET 3 OF 5 TOTAL		**4668**	**550**	**2088**	**59**	**24**	**418**	**542**	**6**	**16**

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FM 1425 PAVEMENT MARKINGS LAYOUT

1" = 100'

SHEET 3 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		136

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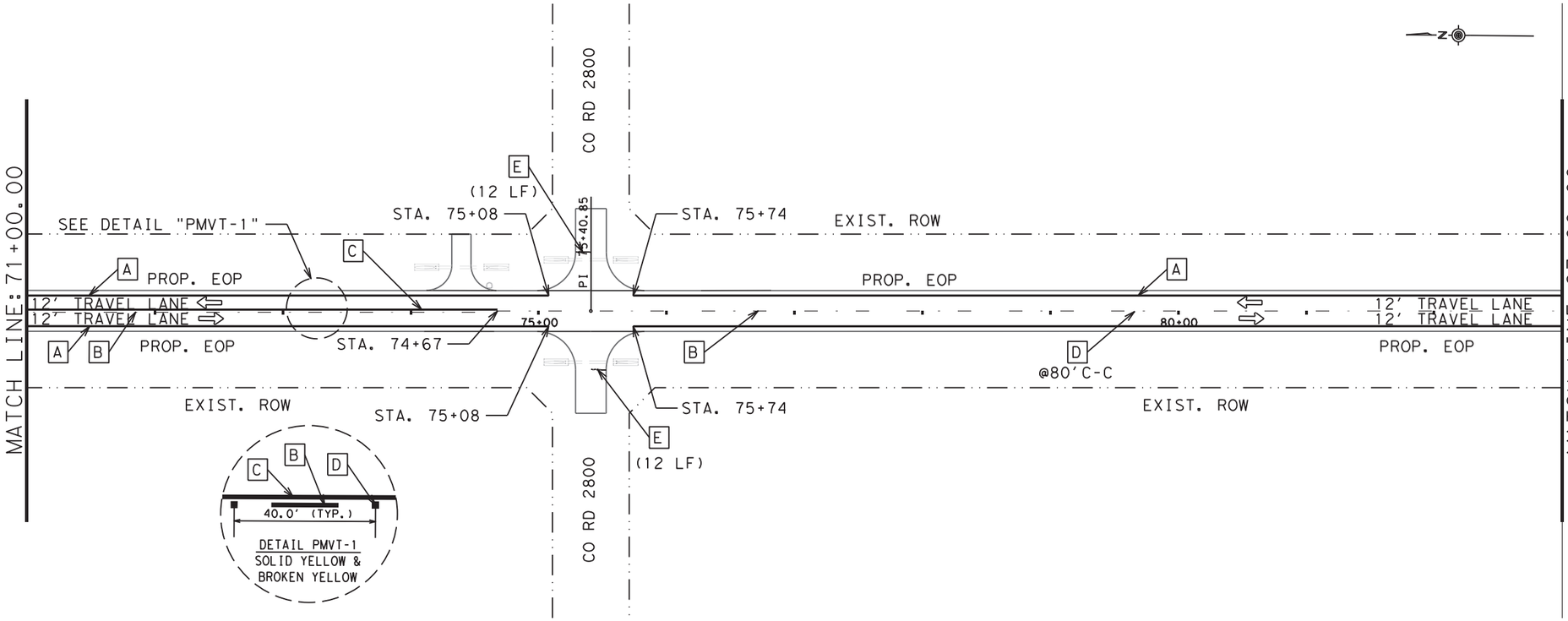

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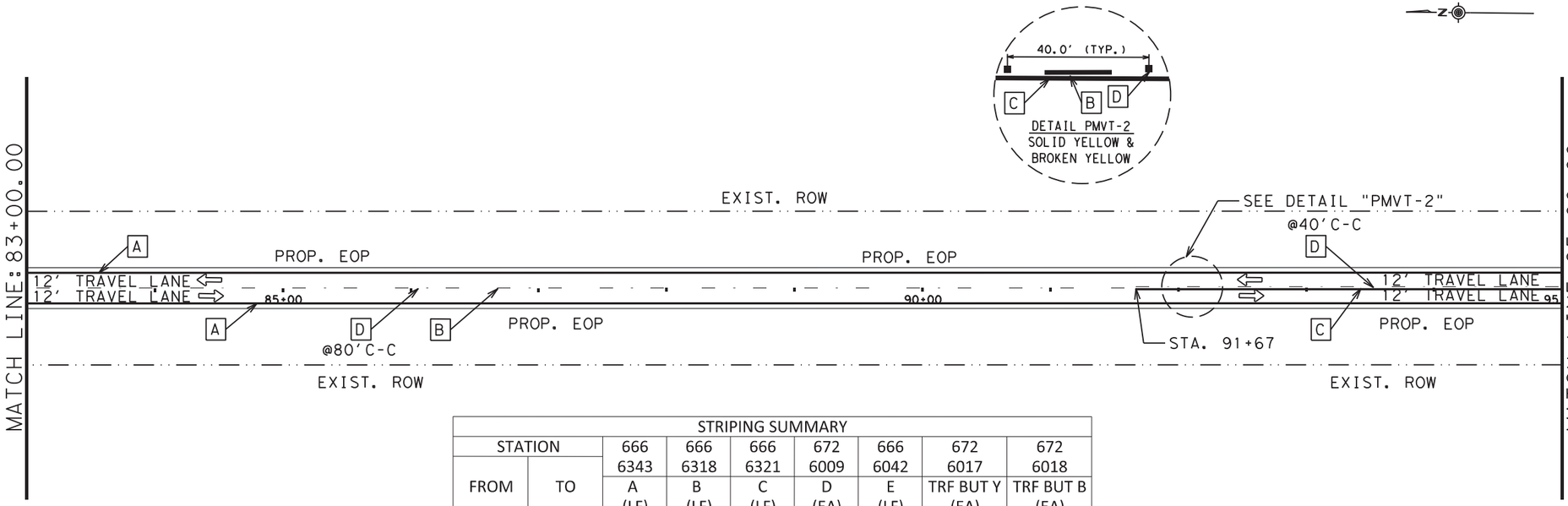

STRIPING SUMMARY								
STATION		666 6343	666 6318	666 6321	672 6009	666 6042	672 6017	672 6018
FROM	TO	A (LF)	B (LF)	C (LF)	D (EA)	E (LF)	TRF BUT Y (EA)	TRF BUT B (EA)
71+00	83+00	2268	300	367	21	24	74	408
83+00	95+00	2400	300	333	20	0	68	414
SHEET 4 OF 5 TOTAL		**4668**	**600**	**700**	**41**	**24**	**142**	**822**

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12/08/2023

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FM 1425 PAVEMENT MARKINGS LAYOUT

1" = 100' SHEET 4 OF 5

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DS: CK:	3343	02	016	FM1425
DW: CK:	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		137

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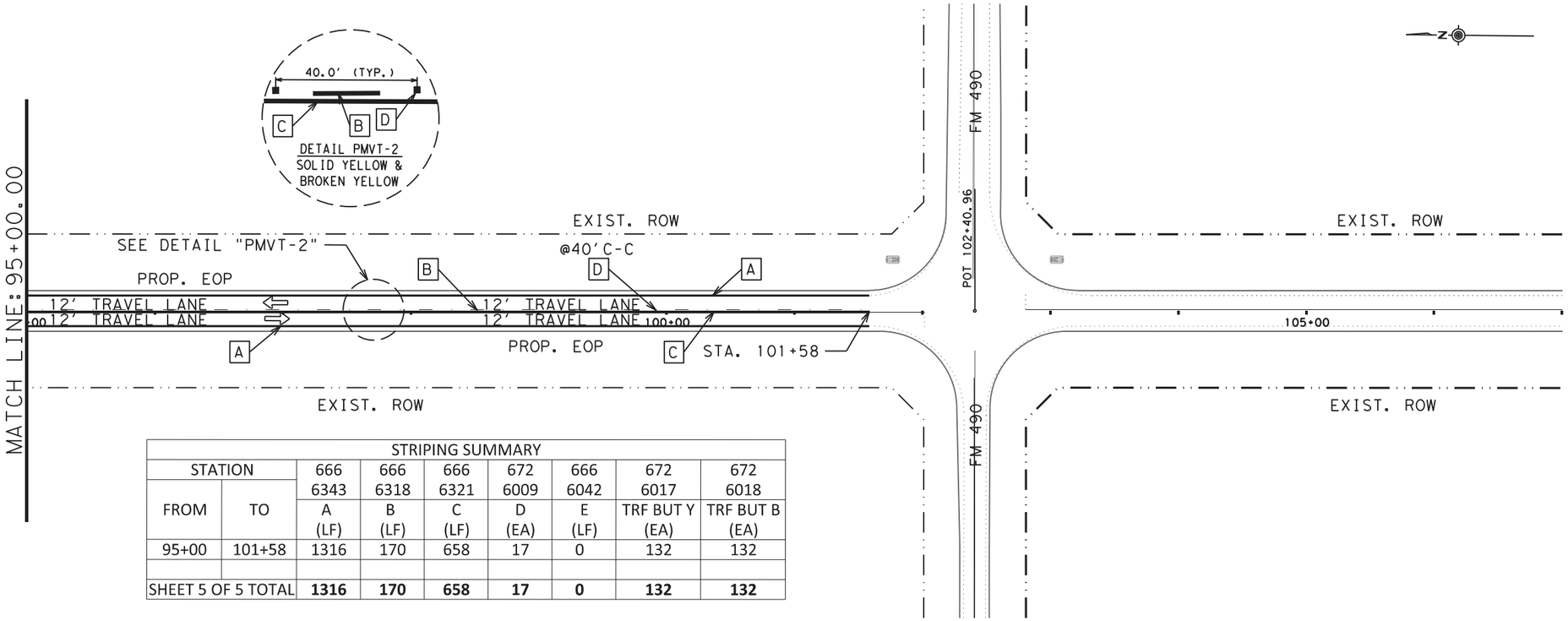

STRIPING SUMMARY								
STATION		666 6343	666 6318	666 6321	672 6009	666 6042	672 6017	672 6018
FROM	TO	A (LF)	B (LF)	C (LF)	D (EA)	E (LF)	TRF BUT Y (EA)	TRF BUT B (EA)
95+00	101+58	1316	170	658	17	0	132	132
SHEET 5 OF 5 TOTAL		**1316**	**170**	**658**	**17**	**0**	**132**	**132**

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12/08/2023

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FM 1425
PAVEMENT MARKINGS LAYOUT

1" = 100' SHEET 5 OF 5

DS:	CK:	CONT	SECT	JOB	HIGHWAY
		3343	02	016	FM1425
DW:	CK:	DIST	COUNTY		SHEET NO.
		PHR	WILLACY		138

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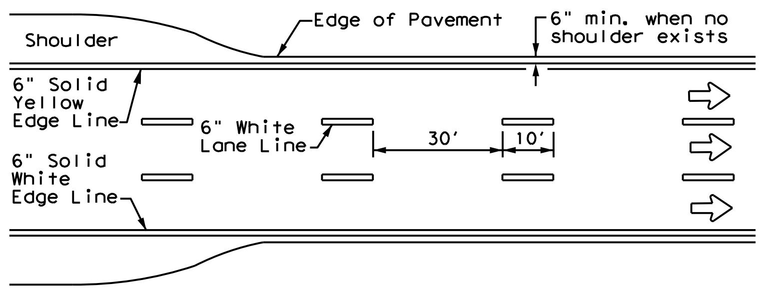
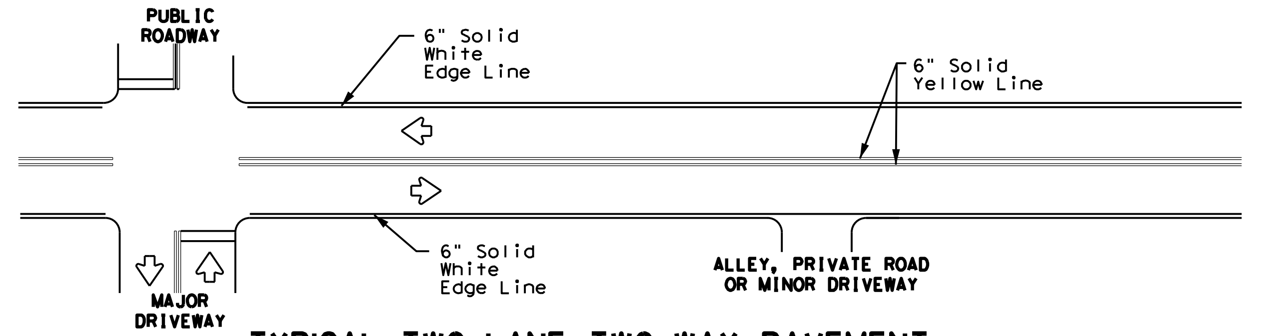


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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

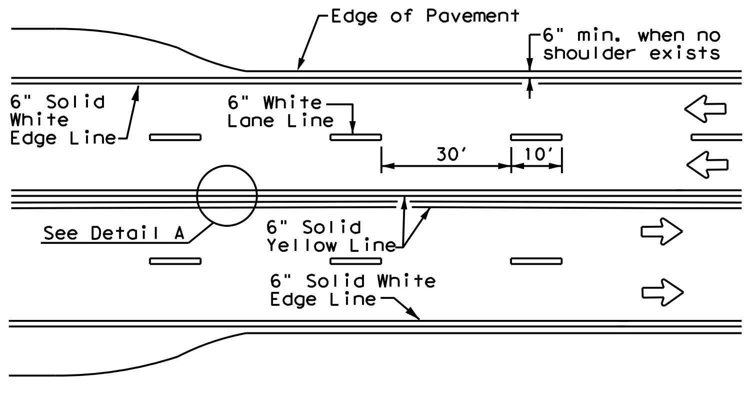
GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.

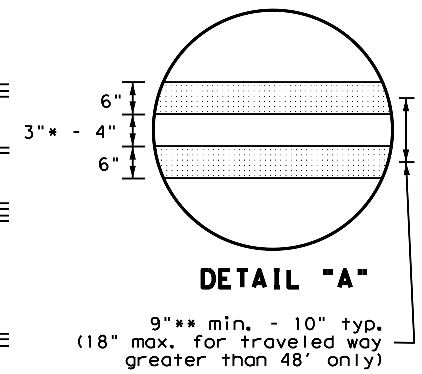
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



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

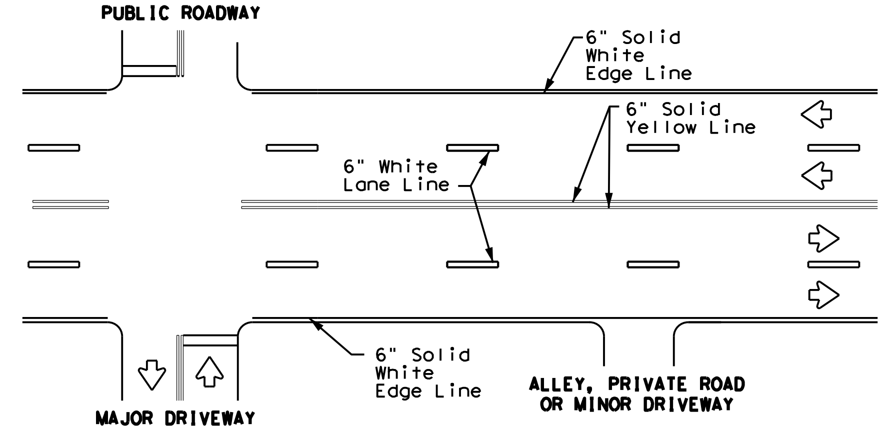


DETAIL "A"

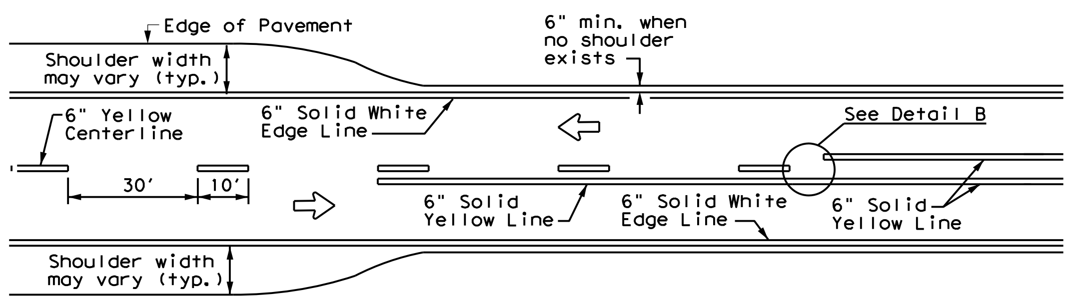
9"** min. - 10" typ. (18" max. for traveled way greater than 48' only)

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

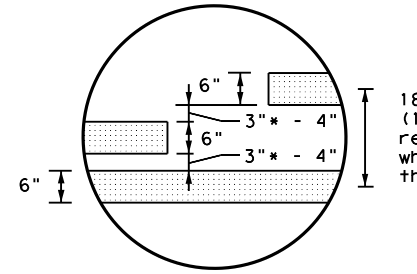
** 8" minimum for restripe projects when approved by the Engineer.



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



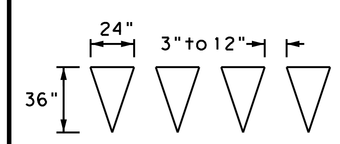
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



18" min. - 20" max. (16" minimum for restripe projects when approved by the Engineer.)

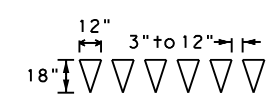
DETAIL "B"

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

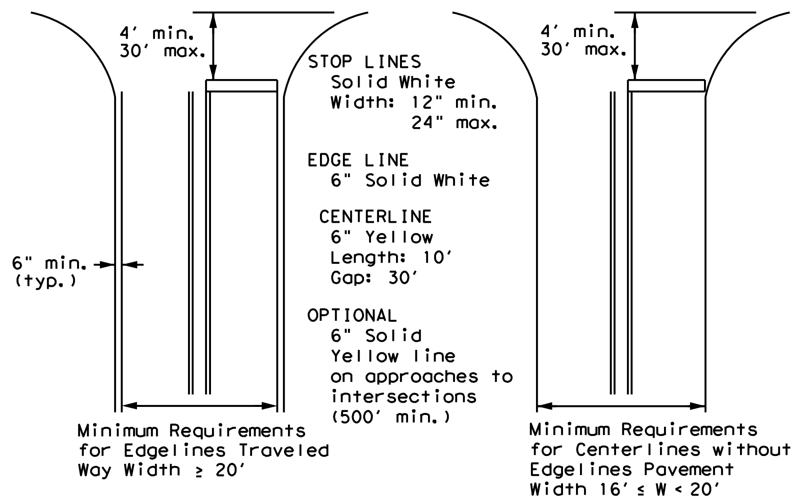


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



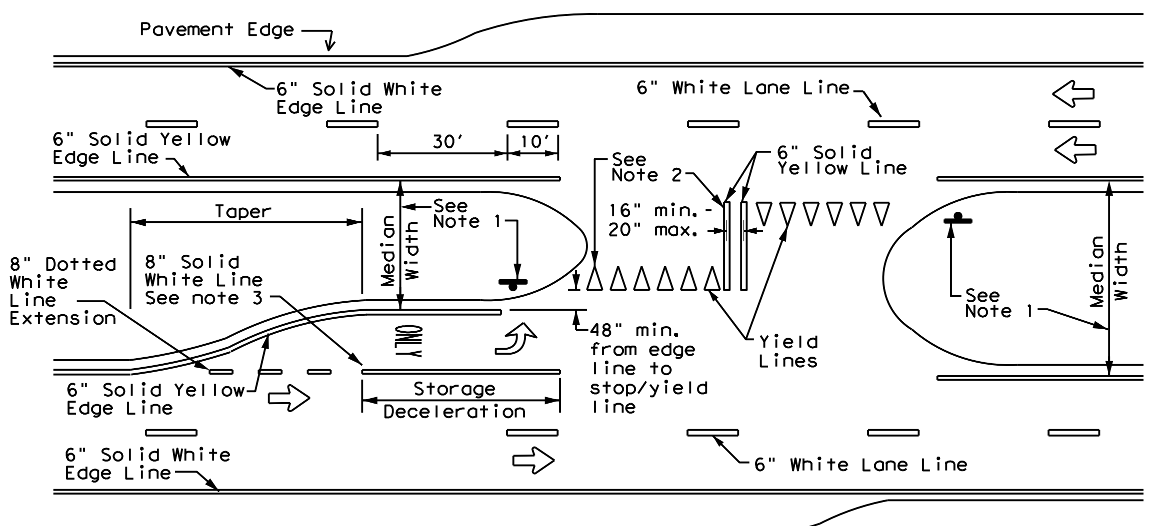
For posted speed on road being marked equal to or less than 40 MPH.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways



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 and stop bars are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

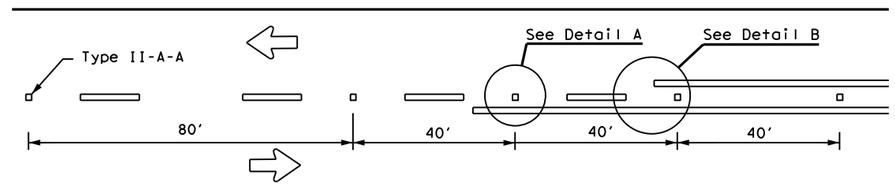
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20 8-95 3-03 12-22 5-00 2-12	3343	02	016	FM1425
	DIST		COUNTY	SHEET NO.
	PHR		WILLACY	139

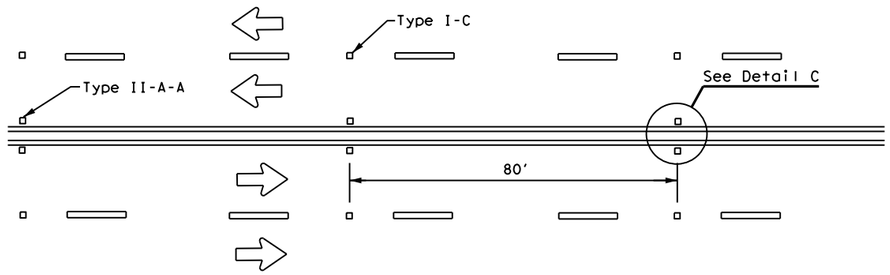
22A

DATE: 12/12/2023 1:50:46 PM
FILE: pw:\\txdot.projectwiseonline.com:TxDOTS\Documents\21 - PHR\Design Projects\...\STANDARDS\pm1-22.dgn

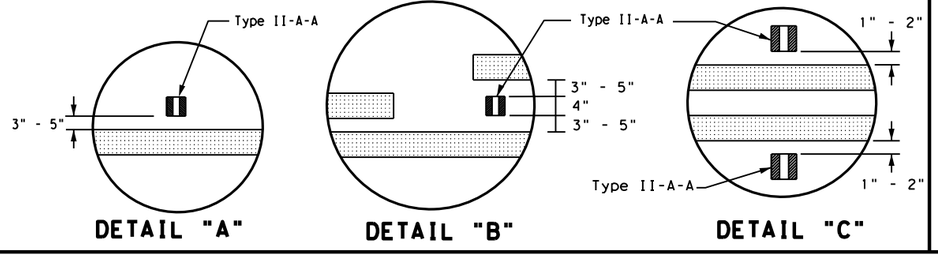
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

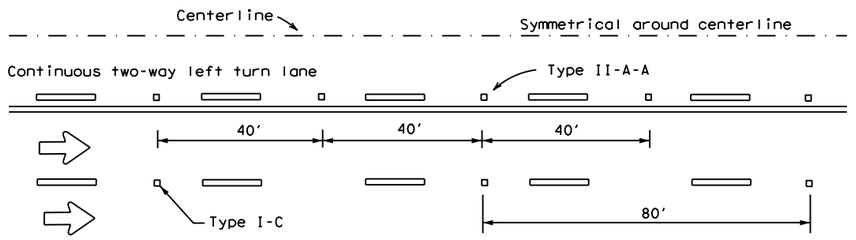


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

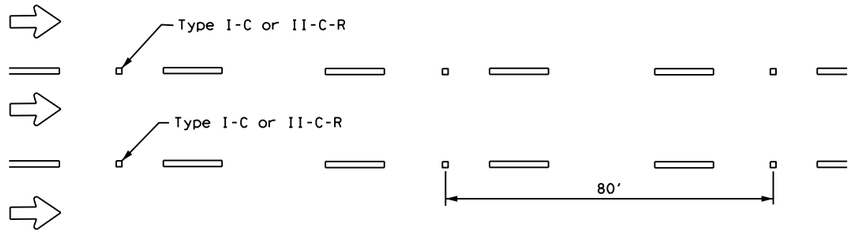


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



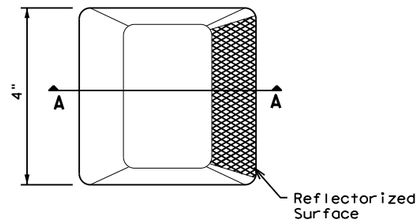
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

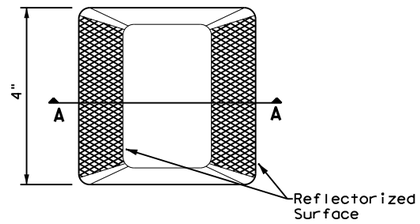
See Note 3.

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

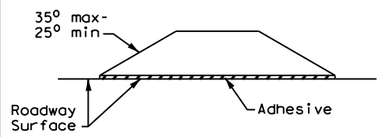
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

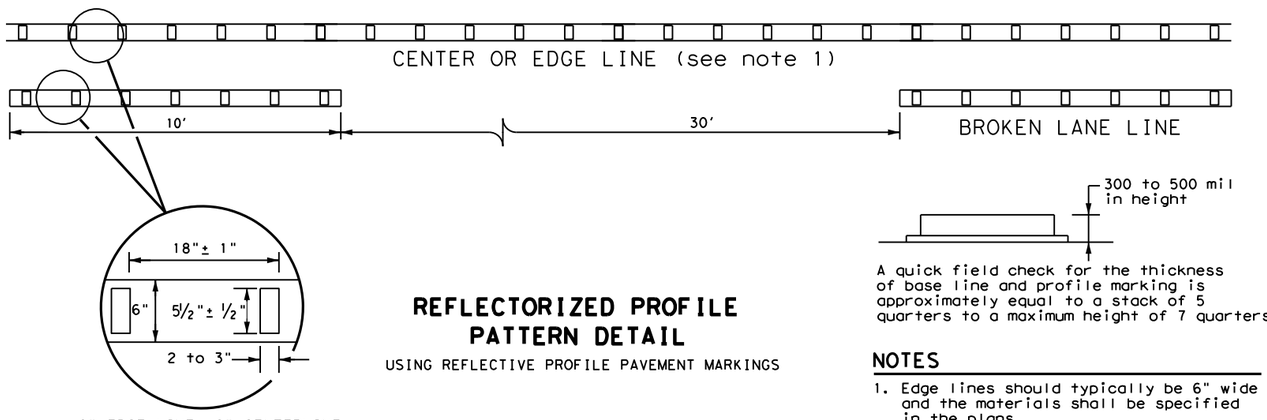


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

NOTES

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

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

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		140

22B

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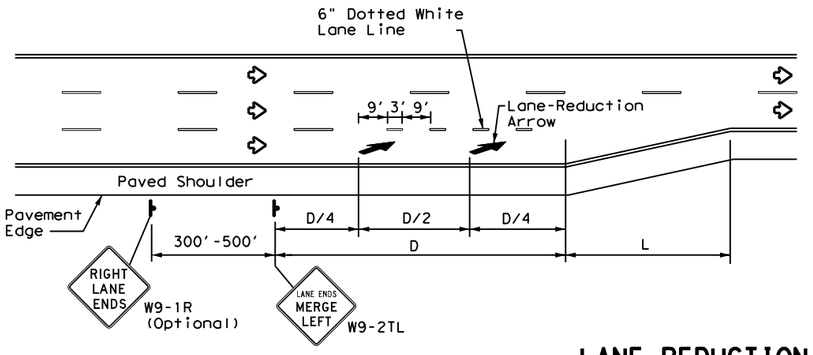


LANE REDUCTION

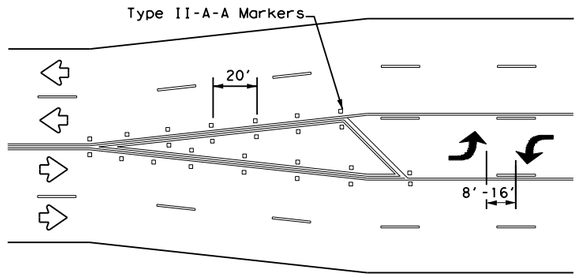
NOTES

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

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

GENERAL NOTES

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

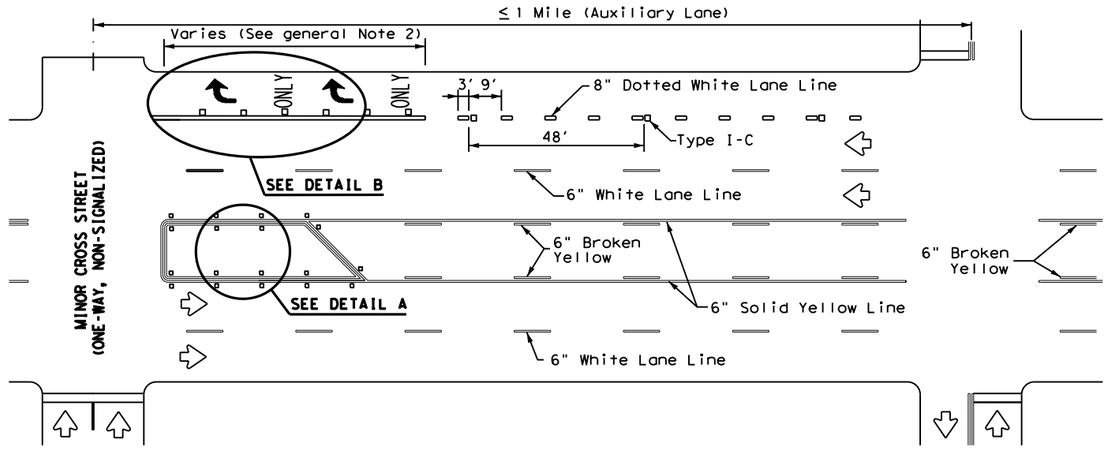


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

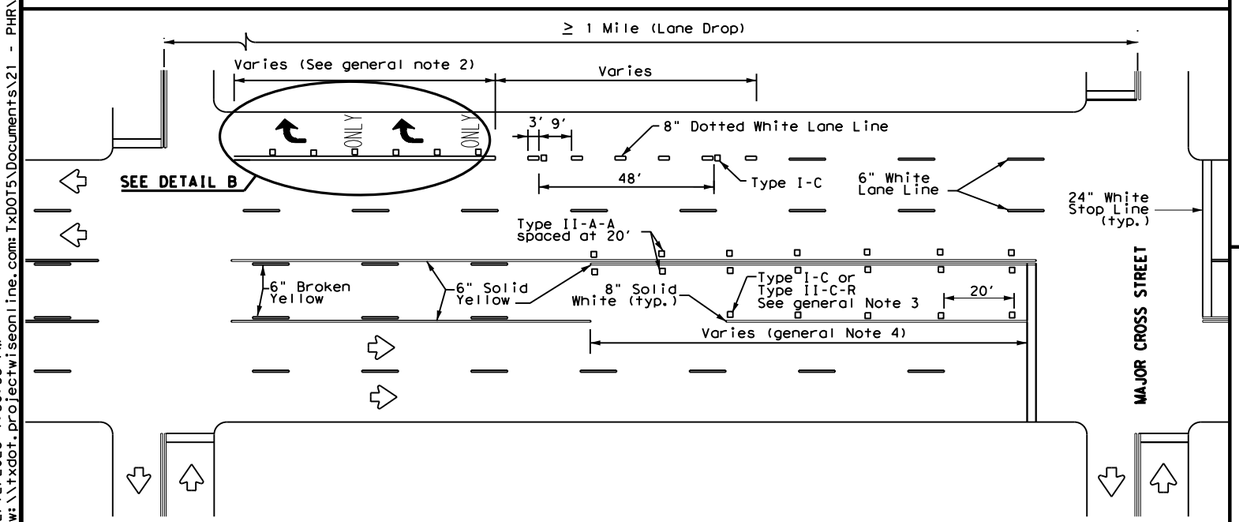
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

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

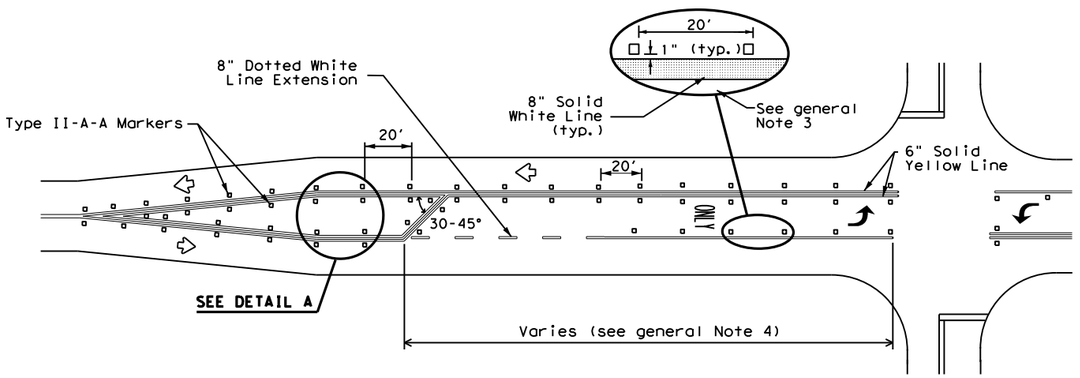
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



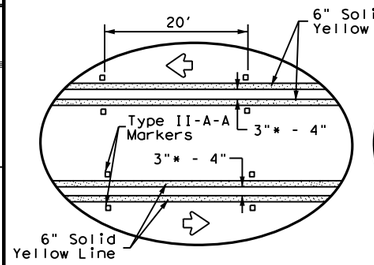
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



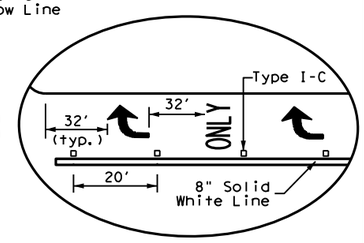
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A



DETAIL B

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

Texas Department of Transportation

Traffic Safety Division Standard

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

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		141

22C

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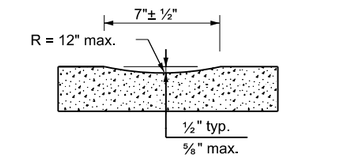
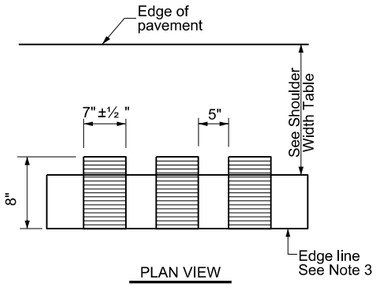
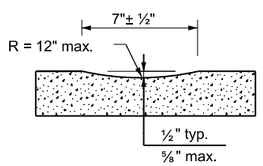


PROFILE VIEW
OPTION 1

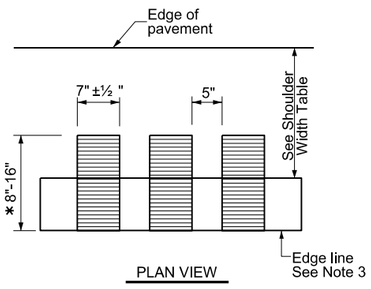


PLAN VIEW

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



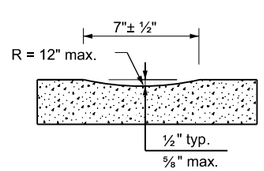
PROFILE VIEW
OPTION 2



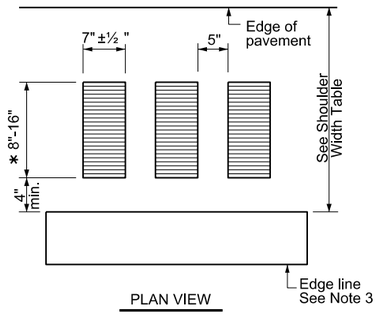
PLAN VIEW

∗ This distance may vary based on width of shoulder

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



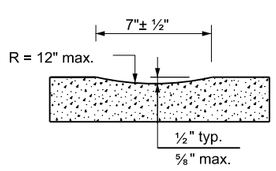
PROFILE VIEW
OPTION 3



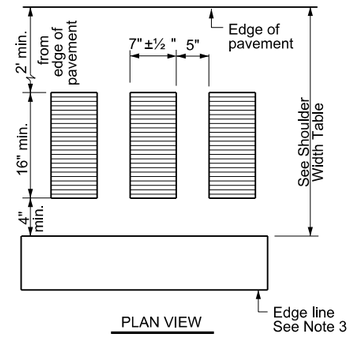
PLAN VIEW

∗ This distance may vary based on width of shoulder

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)

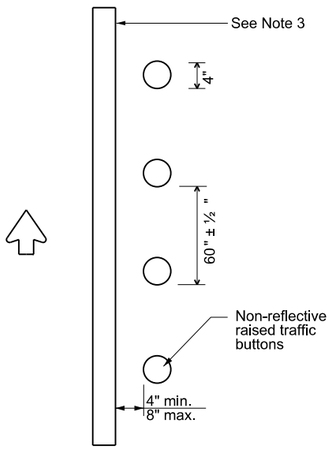


PROFILE VIEW
OPTION 4



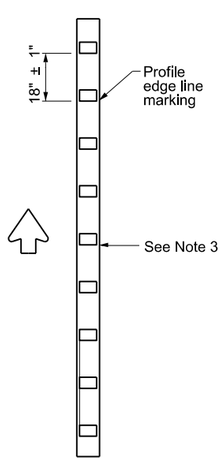
PLAN VIEW

CONTINUOUS MILLED DEPRESSIONS (Rumble Strips)



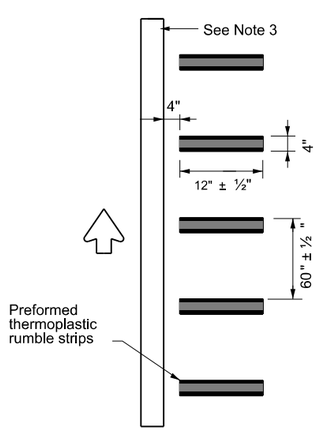
PLAN VIEW
OPTION 5

RAISED EDGE LINE (Rumble Strips)



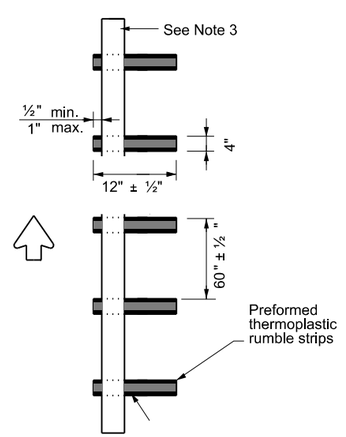
PLAN VIEW
OPTION 6

PROFILE EDGE LINE MARKINGS (Rumble Strips)



PLAN VIEW
OPTION 7

PREFORMED THERMOPLASTIC EDGE LINE (Rumble Strips)



PLAN VIEW
OPTION 8

PREFORMED THERMOPLASTIC EDGE LINE (Rumble Strips)

SHOULDER WIDTH TABLE		
EQUAL TO OR LESS THAN 2 FEET	GREATER THAN 2 FEET LESS THAN 4 FEET	EQUAL TO OR GREATER THAN 4 FEET
Option 1, 5, 6 or 8	Option 1, 2, 3 5, 6 or 7	Option 2, 4, 5 6 or 7

GENERAL NOTES

1. Rumble strips and profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.
2. 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.
3. Use Standard Sheet PM(2) and FPM(1) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings, and profile markings.
4. See the Shoulder Width Table below for determining what options may be used for edge line rumble strips.
5. Breaks in edge line rumble strips shall occur at least 50 feet and no more than 150 feet in advance of bridges, railroad crossings, intersections, or driveways with high usage of large trucks when installed on conventional highways.
6. Rumble strips shall not be placed across exit or entrance ramps, acceleration or deceleration lanes, crossovers, gore areas, or intersections with other roadways.
7. Consideration should be given to noise levels when edgeline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
8. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING MILLED DEPRESSION EDGE LINE RUMBLE STRIPS:

9. See dimensions for milled rumble strips. Other shapes and dimensions may be used if approved by the Traffic Safety Division.
10. Pavement markings can be applied over milled shoulder rumble strips to create an edge line rumble strip.

WHEN INSTALLING RAISED OR PROFILE EDGE LINE RUMBLE STRIPS:

11. Raised rumble strips consisting of non-reflective raised traffic buttons may be used. Non-reflective raised traffic buttons can be affixed to asphalt or concrete with bitumen or adhesives, as per the manufacturer's recommendations.
12. Non-reflective traffic buttons shall be placed adjacent to the pavement marking delineating the edge line when used as a rumble strip. The color of the button should match the color of the adjacent edge line marking (white or yellow). The buttons will be paid for under Item 672, "Raised Pavement Markers." Non-reflective traffic buttons must meet the requirements of DMS-4300.
13. Non-reflective traffic buttons shall not be placed across exit or entrance ramps, acceleration and deceleration lanes, crossovers, gore areas or intersections with other roadways.
14. The minimum distance between the edge line and the buttons should be used if the shoulder is less than 8 feet in width.
15. Raised profile thermoplastic markings used as edge lines may substitute for buttons.

Texas Department of Transportation

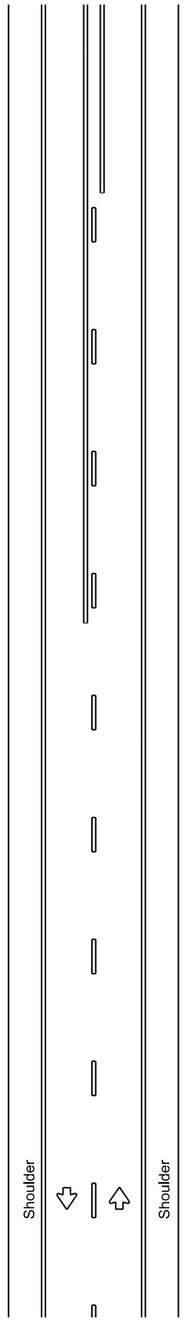
Traffic Safety Division Standard

EDGE LINE RUMBLE STRIPS ON UNDIVIDED OR TWO LANE HIGHWAYS
RS(2)-23

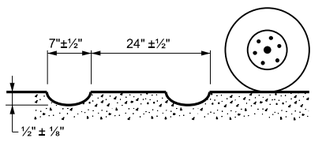
FILE: rs(2)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
10-13	DIST	COUNTY		SHEET NO.
1-23	PHR	WILLACY		142

DATE: 12/12/2023 1:51:04 PM
FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\334302016\4 - Design\Plan Sets\13. Striping & Signage\STANDARDS\PM STANDARDS\rs(4)-23.dgn

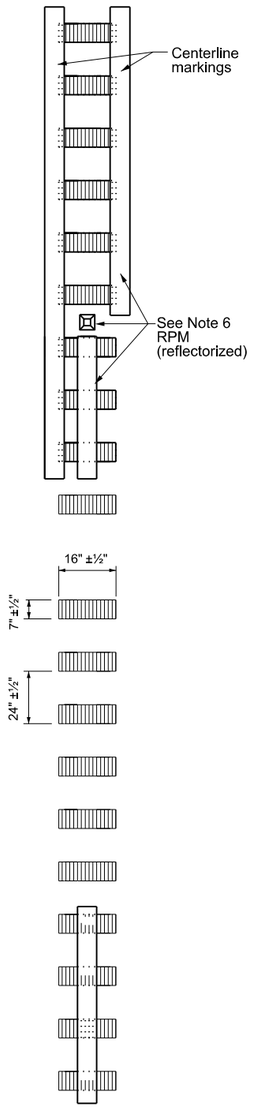
CENTERLINE RUMBLE STRIPS



TWO LANE TWO-WAY HIGHWAYS

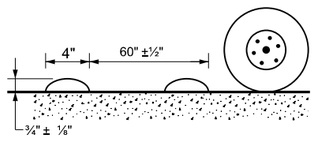


PROFILE VIEW

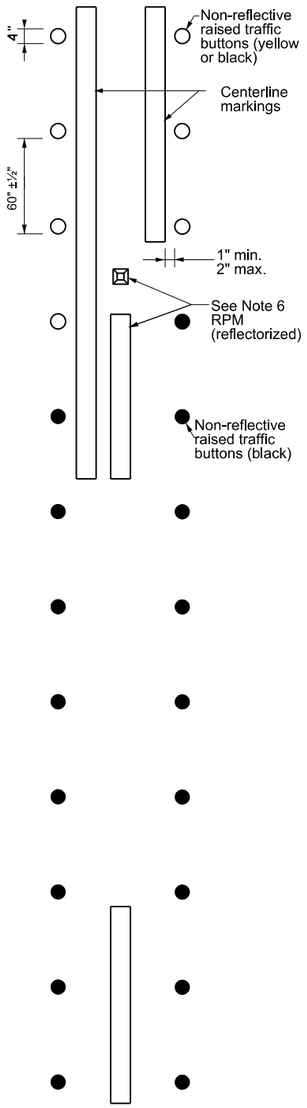


PLAN VIEW
OPTION 1

MILLED CENTERLINE RUMBLE STRIPS

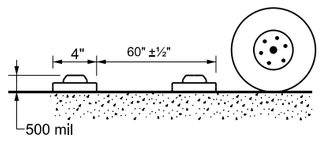


PROFILE VIEW

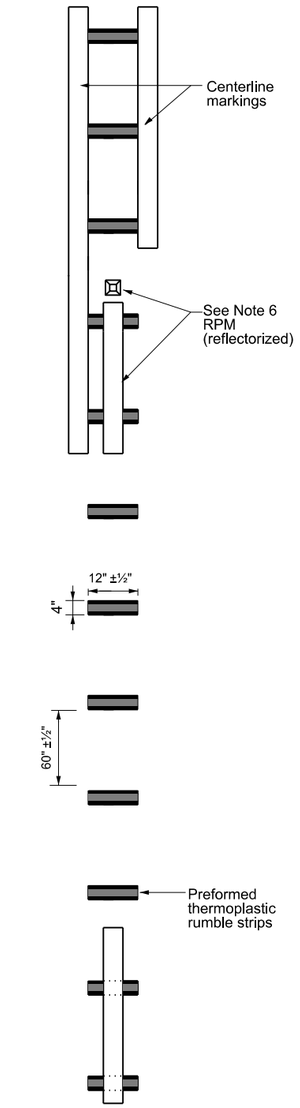


PLAN VIEW
OPTION 2

RAISED CENTERLINE RUMBLE STRIPS

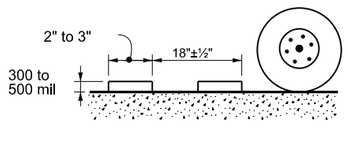


PROFILE VIEW

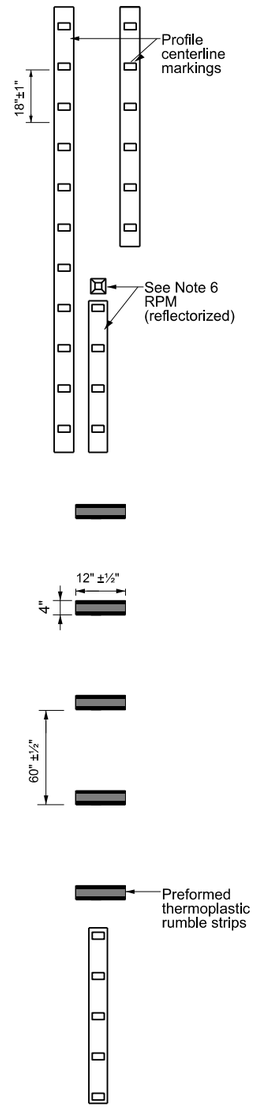


PLAN VIEW
OPTION 3

PREFORMED THERMOPLASTIC RUMBLE STRIPS



PROFILE VIEW



PLAN VIEW
OPTION 4

PROFILE CENTERLINE MARKINGS AND PREFORMED THERMOPLASTIC RUMBLE STRIPS

GENERAL NOTES

1. This standard sheet provides guidelines for installing centerline rumble strips on two-lane highways with or without shoulders.
2. Centerline and edge line 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 Safety 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 or driveways with high usage of large trucks.
6. Use standard sheet PM(2) for positioning, dimensioning, and spacing of all reflective raised pavement markers, pavement markings and profile markings.
7. Consideration should be given to noise levels when centerline rumble strips are to be installed near residential areas, schools, churches, etc. A 3/8 inch deep (minimum) milled rumble strip may be considered in these areas.
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.
12. Consideration shall be given to bicyclists. See RS(6).

WHEN INSTALLING EDGE LINE RUMBLE STRIPS WITH OR WITHOUT CENTERLINE RUMBLE STRIPS ON UNDIVIDED HIGHWAYS:

13. See standard sheet RS(2).

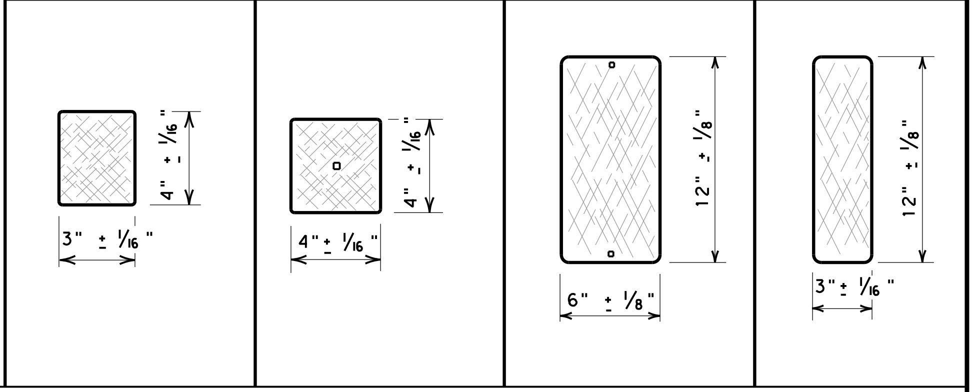
Texas Department of Transportation

Traffic Safety Division Standard

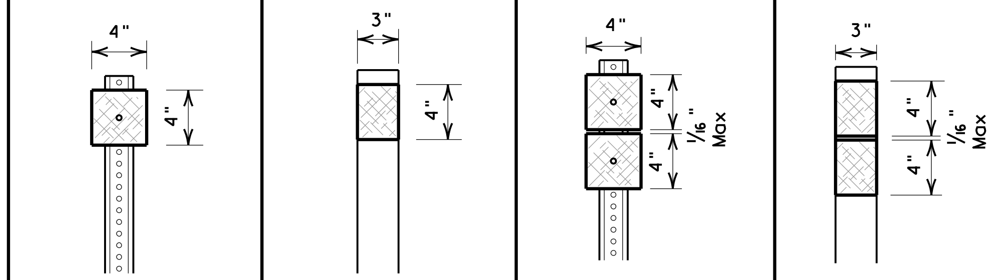
CENTERLINE RUMBLE STRIPS ON TWO LANE TWO-WAY HIGHWAYS RS(4)-23

FILE: rs(4)-23.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT January 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
10-13	DIST	COUNTY		SHEET NO.
1-23	PHR	WILLACY		143

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)

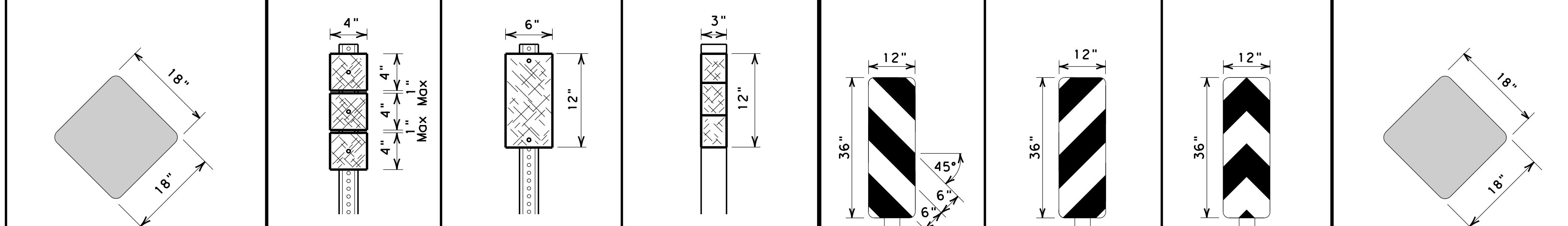
TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

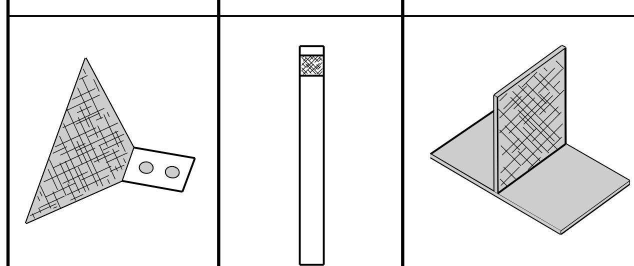
DIRECTION
If Required
BI = Bi-Directional

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

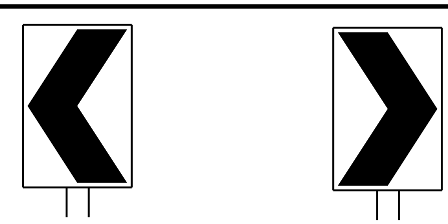
OBJECT MARKERS

	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

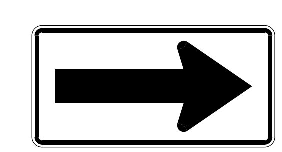
BARRIER REFLECTORS (BRF)

	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	

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

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).

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: doml-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT 3343	SECT 02	JOB 016	HIGHWAY FM1425
REVISIONS 10-09 3-15 4-10 7-20	DIST PHR		COUNTY WILLACY	SHEET NO. 144

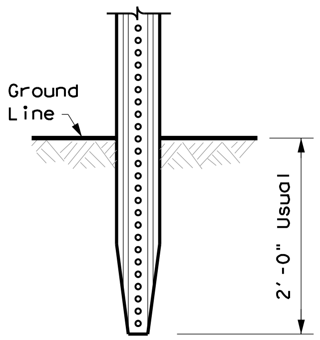
20A

DATE: 12/12/2023 1:51:08 PM
FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\... STANDARDS\...\doml-20.dgn

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

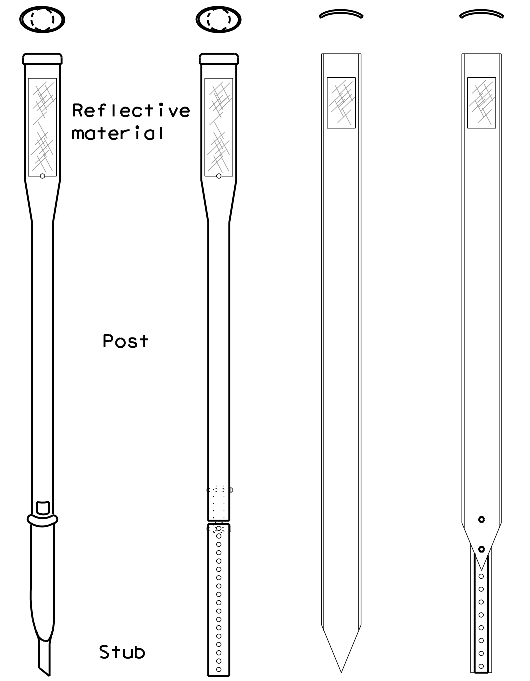


NOTES

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.

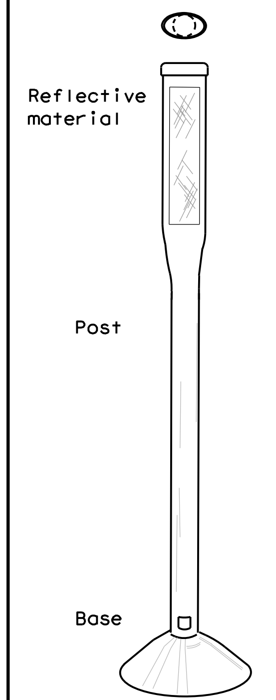
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



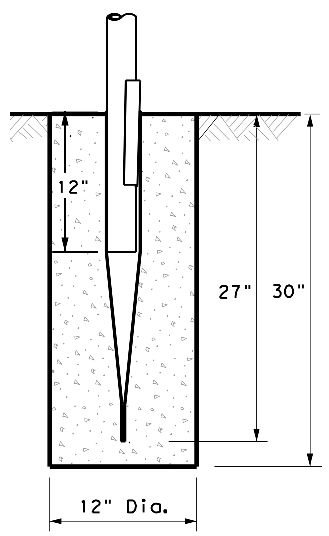
SURFACE MOUNT

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.

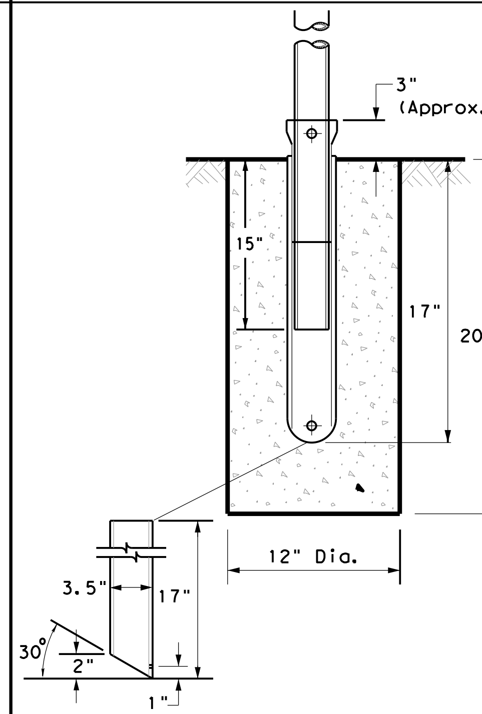
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

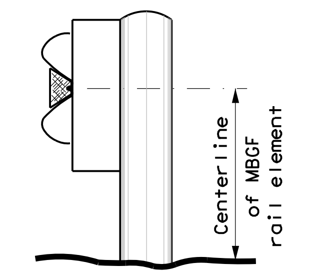
NOTE

1. Install per manufacturer's recommendations.

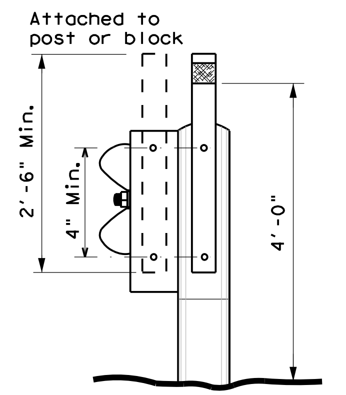
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

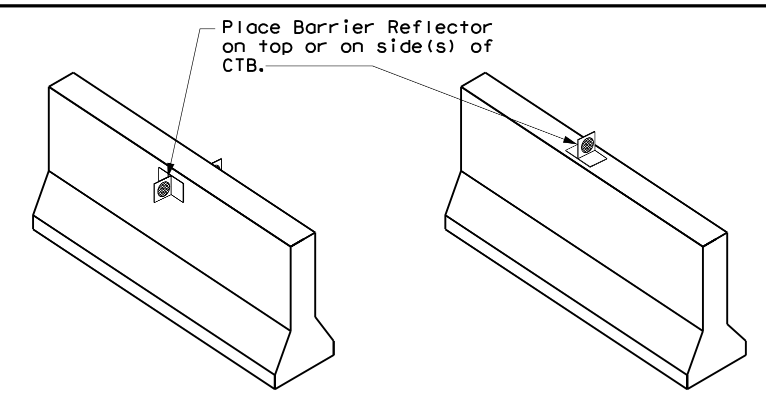
GF1



GF2



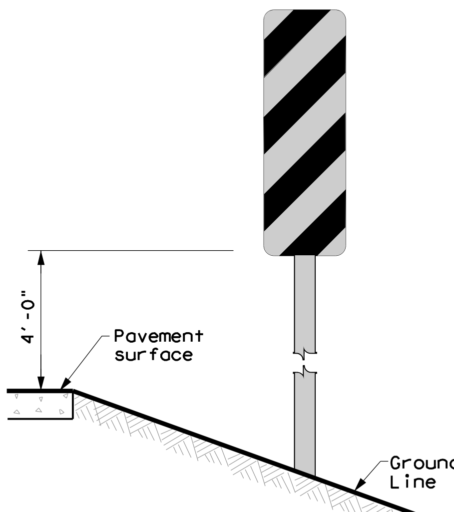
CONCRETE TRAFFIC BARRIER (CTB)



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.

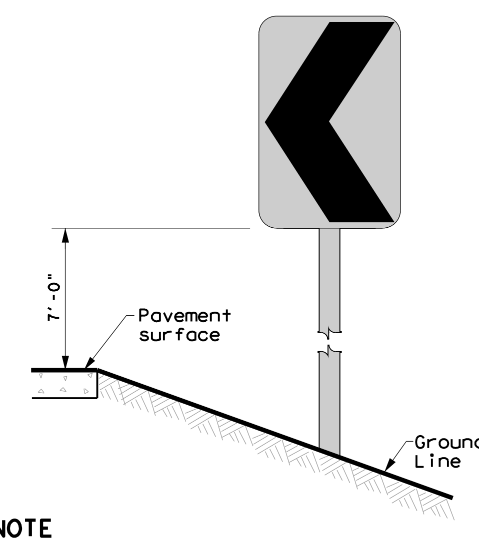
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

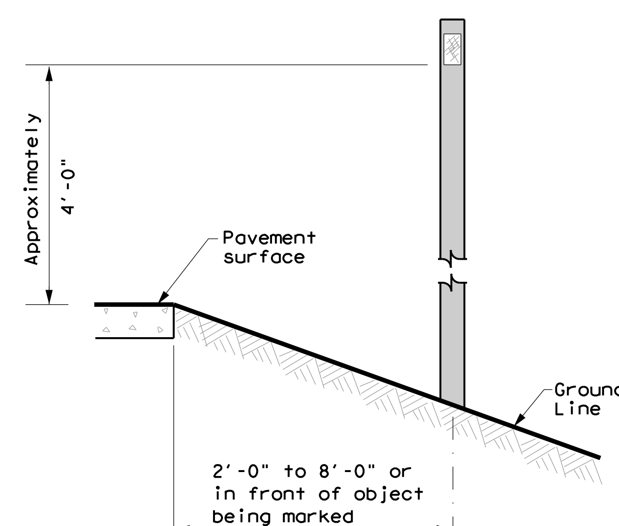
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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	3343	02	016	FM1425
10-09 3-15	DIST		COUNTY	SHEET NO.
4-10 7-20	PHR		WILLACY	145

20B

DATE: 12/12/2023 1:51:13 PM
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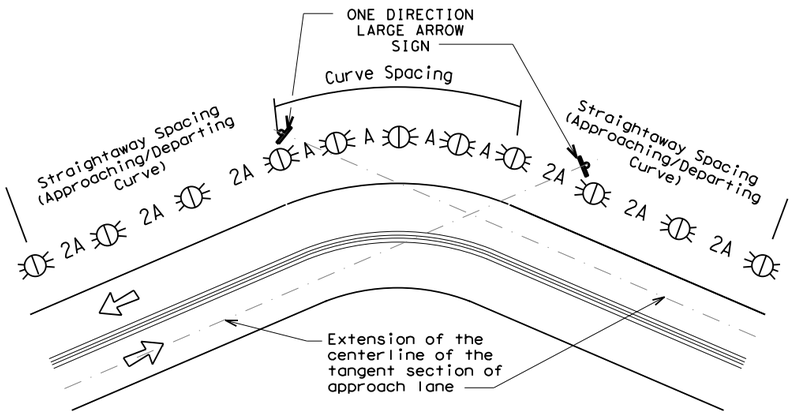
DATE: 12/12/2023 1:51:17 PM
FILE: pw:\\txdot.projectwiseonline.com:TxDOT5\Documents\21 - PHR\Design Projects\STANDARDS\PW_STANDARDS_dom3-20.dgn

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

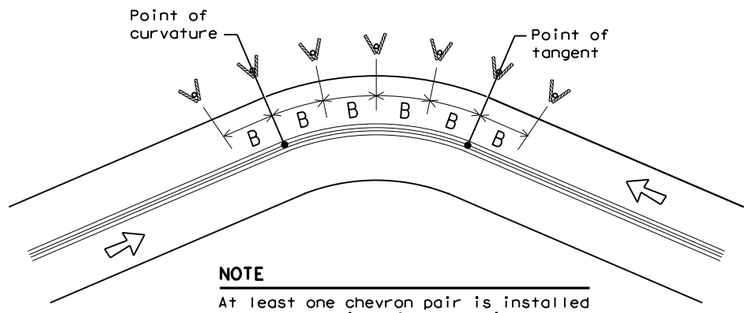
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND	
	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
3-15 8-15 8-15 7-20	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		146

20C

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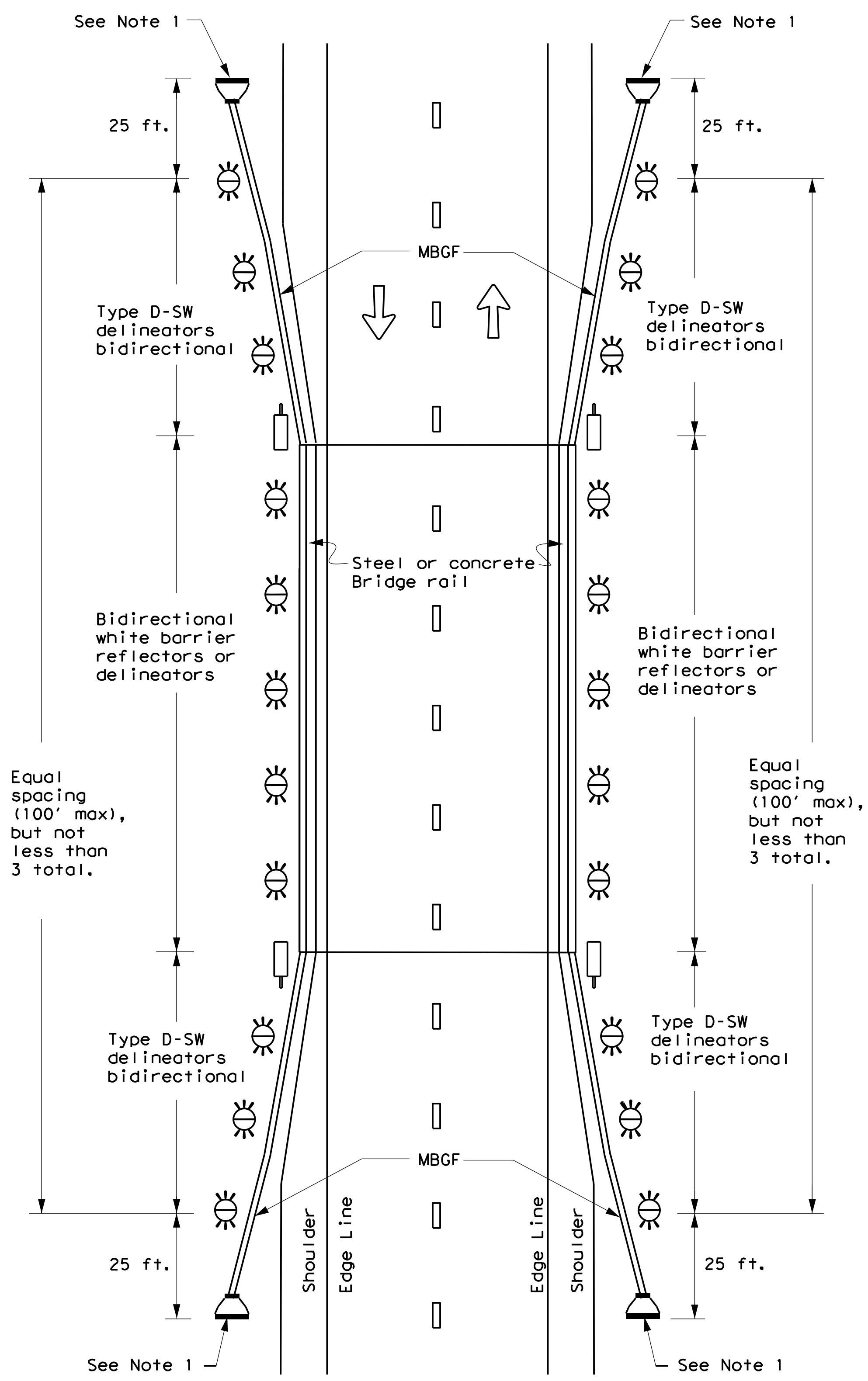
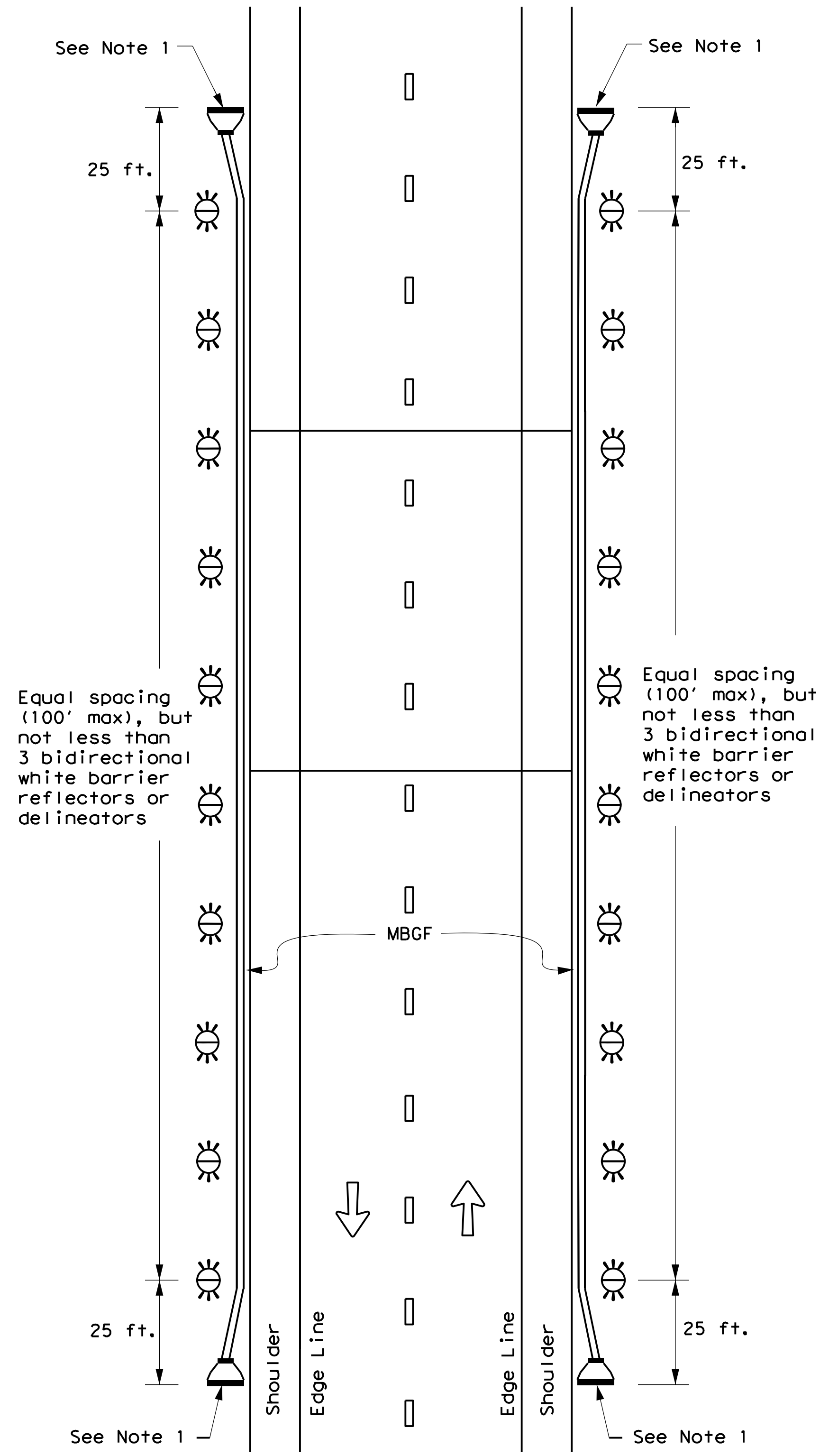
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



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.

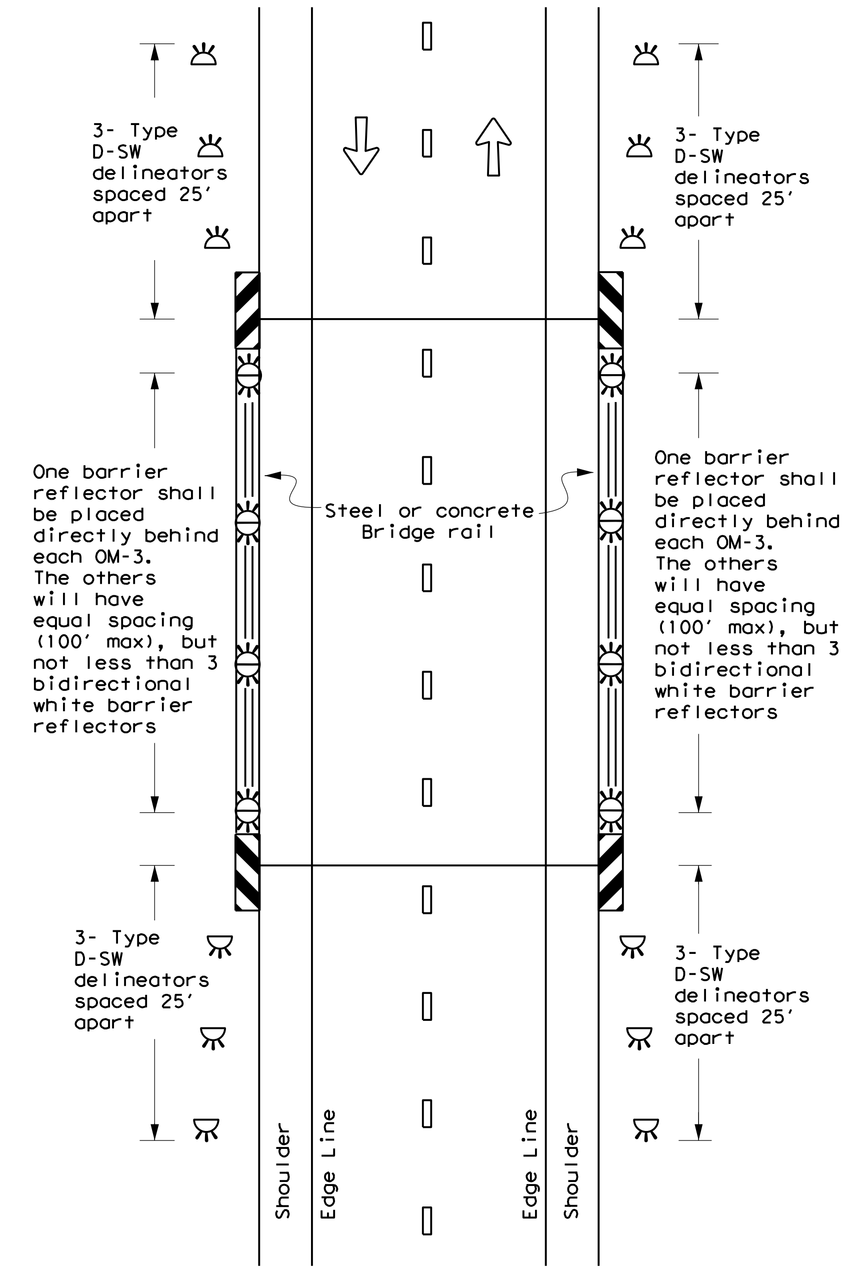
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



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

Symbol	Description
	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	3343	02	016	FM1425
7-20	DIST		COUNTY	SHEET NO.
	PHR		WILLACY	147

20E

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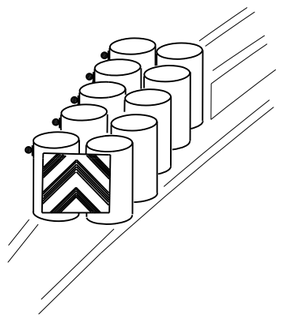
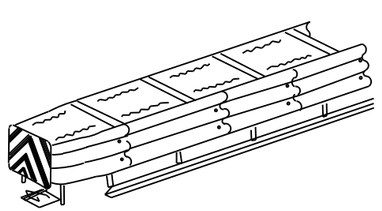
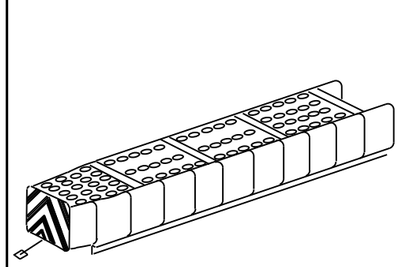
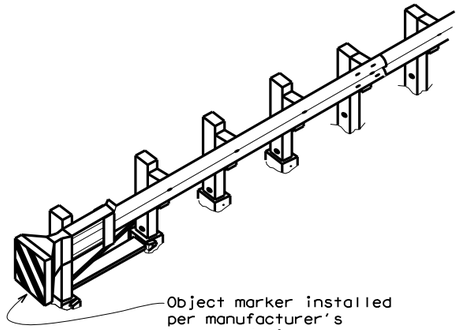
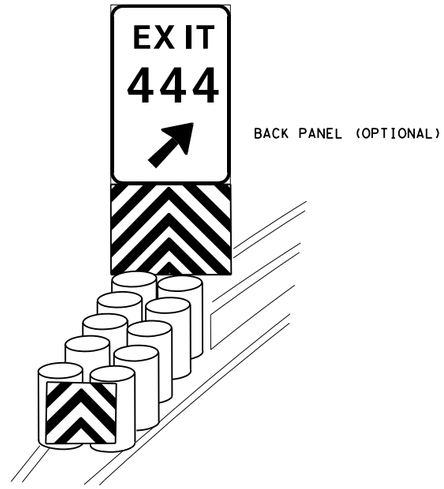
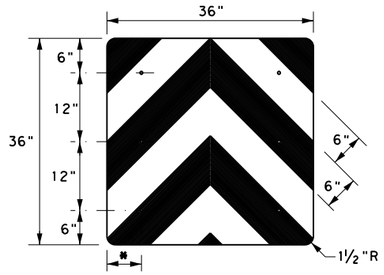


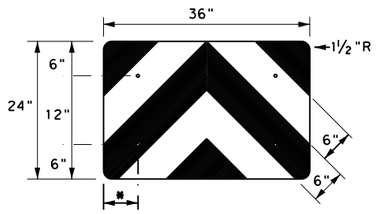




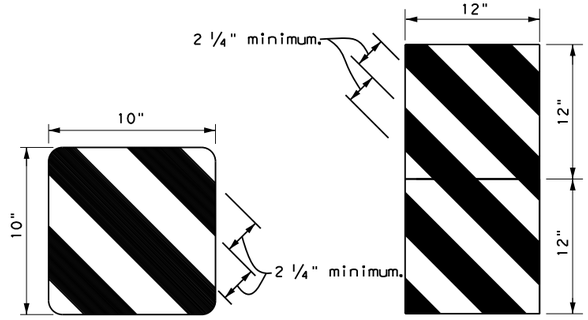




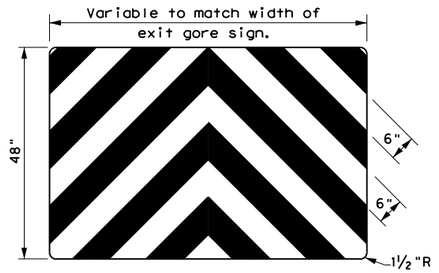


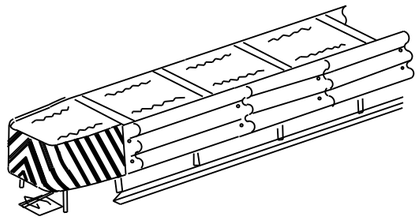


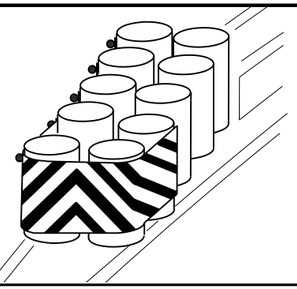
* Adjust to fit attenuator per manufacturer's recommendation, or as directed by the Engineer

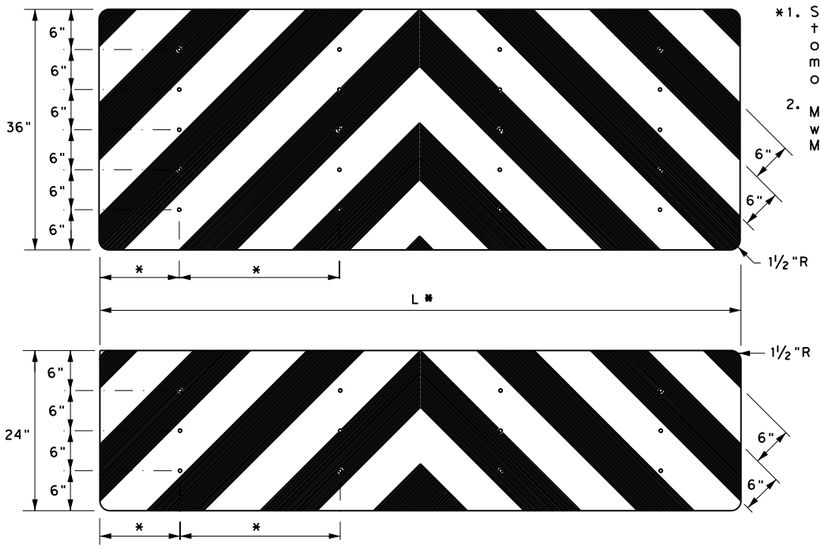


OBJECT MARKERS SMALLER THAN 3 FT^2









NOTES

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

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

NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER FOR VEHICLE IMPACT ATTENUATORS

D & OM(VIA)-20

FILE: domvia20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
© TxDOT December 1989	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
4-92 8-04	DIST	COUNTY		SHEET NO.
8-95 3-15	PHR	WILLACY		148
4-98 7-20				

20G

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

For all projects with soil disturbing activity and for projects that have Environmental, Permits, Issues, and Commitments (EPICs) dependent on stormwater controls and water quality measures TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office, Area Office, or electronically.

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

CSJ: 3343-02-016

1.2 PROJECT LIMITS:

From: SH 186

To: FM 490

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 26.4797515 ,(Long) -97.8629658

END: (Lat) 26.4515682 ,(Long) -97.8626458

1.4 TOTAL PROJECT AREA (Acres): 27.6 Acres

1.5 TOTAL AREA TO BE DISTURBED (Acres): 27.6 Acres

1.6 NATURE OF CONSTRUCTION ACTIVITY:

Consisting of a full depth reconstruction of existing asphalt roadway, grading, lime treated subgrade, cement treatment flexible base,asphalt & concrete. driveways. S.E.T's, striping, and raised pavement markers.

1.7 MAJOR SOIL TYPES:

Soil Type	Description
HoA	Hidalgo sandy clay loam, 0 to 1 percent slopes
Rd	Raymondville Clay Loam
W	Water

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

- [X] PSLs determined during preconstruction meeting
- [ ] PSLs determined during construction
- [ ] No PSLs planned for construction

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

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

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

1.11 RECEIVING WATERS:

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

Tributaries	Classified Waterbody
Drainage ditches flowing into Lower Laguna Madre	

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

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

MS4 Entity

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED PROFESSIONAL ENGINEER

Ana M. Pruneda

12/20/2023

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			149
STATE	STATE DIST.	COUNTY	
TEXAS		WILLACY	
CONT.	SECT.	JOB	HIGHWAY NO.
3343	02	016	FM 1425

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

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

T / P

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☐ Excess dirt/mud on road removed daily
- ☒ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☒ Chemical Management
- ☒ Concrete and Materials Waste Management
- ☒ Debris and Trash Management
- ☒ Dust Control
- ☒ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 DEWATERING:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

2.9 INSPECTIONS:

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

When dewatering activities are present, a daily inspection will be conducted once per day during those activities and documented in accordance with CGP and TxDOT requirements.

2.10 MAINTENANCE:

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

STATE OF TEXAS
ANA M. PRUNEDA
139883
LICENSED
PROFESSIONAL ENGINEER

12/21/2023

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			150
STATE	STATE DIST.	COUNTY	
TEXAS		WILLACY	
CONT.	SECT.	JOB	HIGHWAY NO.
3343	02	016	FM 1425

During the planning phase of project development, the following Environmental Permits, Issues and Commitments have been developed during coordination with resource agencies, local governmental entities and the general public. Any change orders and/or deviations from the final design must be reported to the Engineer prior to the commencement of construction activities as additional environmental clearances may be required.

I. Clean Water Act, Section 402; Stormwater Pollution Prevention

Action Items Required : ☐ No Action Required

1. ☒ The contractor must implement the SW3P by installing Best Management Practices (BMPs) as indicated in the construction plans and maintained appropriately throughout construction. BMPs must be in place prior to the start of construction. The SW3P may need to be revised as necessary as construction progresses.

2. ☒ For all construction PSL's off the ROW, the contractor must certify compliance with all applicable laws, rules and regulations pertaining to the preservation of cultural resources, natural resources and the environment.

3. ☒ Based on the acreage of impact, select the appropriate box below:

   ☐ This project will disturb less than 1 acre of soil and is not part of a larger common plan of development; therefore, a NOI and TPDES Site Notice are not required for this project.

   or

   ☐ This project will disturb equal to or more than 1 acre of soil but less than 5 acres; therefore a NOI is not required but a TPDES Site Notice is required. The Construction Site Notice (CSN) is required to be posted at the construction site in a publicly accessible location for review by the public, TCEQ, EPA and other Inspectors.

   or

   ☒ This project will disturb equal to or more than 5 acres of soil and will require a NOI and TPDES Site Notice. The NOI and Site Notice are required to be posted at the construction site in a publicly accessible location.

4. ☐ Need to address MS4 requirements (Cameron & Hidalgo Counties only) ☒ MS4 requirements not needed

II. Clean Water Act, Sections 401 and 404 Compliance

Action Items Rquired : ☐ No Action Required

1. ☒ Filling, dredging or excavating in any water bodies, rivers, creeks, streams, wetlands or wet areas is prohibited unless specified in the USACE permit and approved by the Engineer. The contractor shall adhere to all agreements, mitigation plans, and BMPs required by the NWP as regulated by the USACE.

   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 (1/10th to <1/2 acre, 1/3 in tidal waters)

   ☐ Individual 404 Permit Required

   ☐ Other Nationwide Permit Required: NWP#_____

2. ☒ The contractor is responsible for obtaining new or revised Section 404 permit(s) for Contractor initiated changes in construction methods that change Impacts To Waters Of The U.S., including wetlands. The Contractor will ensure that the water quality of the State will be maintained and not degraded.

3. ☒ Best Management Practices for applicable Section 401 General Conditions:

General Condition 12 - Categories I and II BMPs required

Category I (Erosion Control)

☒ Temporary Vegetation	☐ Interceptor Swale	☒ Mulch Filter Berms and/or Socks
☐ Blankets, Matting	☐ Diversion Dike	☐ Compost Filter Berms and/or Socks
☐ Mulch	☐ Erosion Control Compost	☐ Compost Blankets
☐ Sodding		

Category II (Sedimentation Control)

☒ Silt Fence	☐ Hay (Straw) Bale Dike	☒ Mulch Filter Berms and/or Socks
☐ Rock Berm	☐ Brush Berms	☐ Compost Filter Berms and/or Socks
☐ Triangular Filter Dike	☐ Sediment Basins	☐ Stone Outlet Sediment Traps
☐ Sand Bag Berm	☐ Erosion Control Compost	

General Condition 21 - Category III BMPs required

Category III (Post-Construction TSS Control)

☐ Vegetative Filter Strips	☐ Wet Basins	☐ Mulch Filter Berms and/or Socks
☐ Retention/Irrigation	☒ Grassy Swales	☐ Compost Filter Berms and/or Socks
☐ Extended Detention Basin	☒ Vegetation-Lined Ditches	☐ Sand Filter Systems
☐ Constructed Wetlands	☐ Erosion Control Compost	☐ Sedimentation Chambers

II. Clean Water Act, Sections 401 and 404 Compliance - Continued:

4. ☒ The Contractor's designated and qualified Contractor Responsible Person Environmental (CRPe) will monitor the project site daily to ensue compliance with SW3P and TPDES General Permit TXR 150000. Daily Monitoring Reports shall be provided to TxDOT within 48 hours, in accordance with Item 506.3.1.

5. ☒ Other Project Specific Actions:

   1. Contractor must sweep roadway and remove loose aggregate upon completed daily operations.

   2. Contractor shall not place removed aggregate along adjacent grass areas.

III. Cultural Resources

Action Items Required : ☐ No Action Required

1. ☒ Refer to the 2014 TxDOT Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges, Item 7.7.1., 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.

2. ☐ Other Project Specific Actions:

   1.

   2.

IV. Vegetation Resources

Action Items Required : ☐ No Action Required

1. ☒ In accordance with the 2014 TxDOT Standard Specifications; Item 164 - Seeding For Erosion Control; provide and install temporary or permanent seeding for erosion control as shown on the plans or as directed by the Engineer for all seeding and replanting of right of way where possible. (Required for Urban Settings)

2. ☒ In accordance with Executive Order 13112 on invasive species and the Executive Memorandum on Beneficial Landscaping, native species of plants shall be used for all seeding and replanting of right of way where possible for rural roadways. (Required for Rural Settings)

3. ☒ Preserve vegetation where possible throughout the project and minimize clearing, grubbing and excavation within stream banks, bed and approach sections.

4. ☒ Other Project Specific Actions:

   1. Vegitation clearing activities would be avoided during the general bird nesting season, Feb. 1 - Oct. 1 to minimize adverse impacts to birds.

Pharr District Contact No. 956-702-6100 Revised 01/30/2017

List of Abbreviations

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Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (EPIC)

SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM1425
STATE	DISTRICT	COUNTY	
TEXAS	PHR	WILLACY	
CONTROL	SECTION	JOB	SHEET NO.
3343	02	016	151

Date Printed: X-X-XX

V. Federal Listed, and Proposed Threatened and Endangered Species, Critical Habitat, State Listed Species, Candidate Species and Migratory Birds

Action Items Required : ☐ No Action Required

1. ☒ Under the Migratory Bird Treaty Act (MBTA) of 1918, codified at 16 U.S.C. § 703-712 and as enforced by the USFWS, the proposed construction work will not remove active nests from bridges, trees, ground and other structures during migratory bird nesting season, (February 1st. through October 1st.). If the Contractor needs to perform work within the right of way during nesting season, a qualified Biologist shall conduct a survey to determine if active nests are present. If present, the Contractor shall maintain a buffer zone around the nest(s) as directed by the Biologist. The buffer zone will be protected from clearing and disturbance until such time as the Biologist has determined that the nest(s) is no longer active. Prior to the nesting season, existing bridges and culverts should be treated against migratory bird nesting by utilizing Bird Exclusion Methods. Bird Exclusion Methods should be monitored and maintained throughout the nesting season. Refer to Standard Bird Exclusion Details.

2. ☒ There is the potential for the presence of state-listed species & species of concern in the project area and state law prohibits the taking (incidental or otherwise) of state-listed species. Taking is defined as the collection, hooking, hunting, netting, shooting, or share by any means or devices. If any listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately.

3. ☒ Other Project Specific Actions:

   1. Texas Horned Lizard, Wood Stark, South Texas Siren, Sheep Frog, Mexican Treefrog, Black-spotted Newt.

   2. See EPIC sheet supplementals for TPWD BMP's

VI. Hazardous Materials on Contamination Issues

Action Items Required : ☒ No Action Required

General (applies to all projects):

Comply with the Hazard Communication Act (HCA) 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 HCA.

Maintain an adequate supply of on-site spill response materials as indicated in the MSDS. In the event of a spill, take immediate action to mitigate the spill as indicated in the MSDS and in accordance with safe work practices. Contact the TxDOT Pharr 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 (identified as not normal)
- Trash piles, drums, canisters, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of contaminant substances

Any other evidence indicating possible hazardous materials or contamination discovered on site.

1. ☒ If potentially hazardous material and/or contaminated media (i.e.: soil, groundwater, surface water, sediment, building materials) are unexpectedly encountered during construction, assure that such materials and contamination are handled according to applicable federal and state regulations, cease work in the immediate area and contact the Engineer immediately.

VI. Hazardous Materials on Contamination Issues - Continued:

2. 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 required.
   If "Yes", then TxDOT is responsible for completing an asbestos assessment/inspection.

3. Are the results of the asbestos inspection positive (is asbestos present)?

   ☐ Yes ☒ No

   If "Yes", then TxDOT must retain a Texas Department of State Health Services (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 abatement activities and/or demolition.

   If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

4. ☐ The Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and an Asbestos Consultant in order to minimize construction delays and subsequent claims.

VII. Other Environmental Issues

Action Items Required : ☐ No Action Required

1. ☒ Noise

   Contractor shall make every reasonable effort to minimize construction noise through abatement measures such as work hour controls and proper maintenance of equipment mufflers.

2. ☒ Air

   Contractor shall practice common dust control techniques such as surface chemical treatment or watering of unpaved road surfaces and vehicle speed reduction shall be implemented to minimize and prevent airborne dust during construction.

   Contractor should minimize MSAT by utilizing measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increase use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate.

Pharr District Contact No. 956-702-6100 Revised 01/30/2017

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Texas Department of Transportation

PHARR DISTRICT

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

(EPIC)

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM1425
STATE	DISTRICT	COUNTY	
TEXAS	PHR	WILLACY	SHEET NO.
CONTROL	SECTION	JOB	
3343	02	016	152

Date Printed: X-X-XX

TPWD BMPs

Under Section 12.0011 of the Texas Parks and Wildlife Code, Texas Parks and Wildlife Department (TPWD) is charged with "providing recommendations that will protect fish and wildlife resources to local, state, and federal agencies that approve, permit, license, or construct developmental projects" and "providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources."

The purpose of this section is to provide beneficial management practices (BMP) that should be implemented during construction, and maintenance activities statewide for transportation projects with the goal of avoidance and minimization of impacts to natural resources. Statewide Standard BMP pertain to all fish and wildlife species, including state-listed species and other Species of Greatest Conservation Need (SGCN). Implementing the recommendations as outlined below will improve conservation of species and their habitat.

☒ General Design/Construction BMPs

- ☒ Prior to start of construction, information will be provided to personnel of the potential for all state-listed threatened species or other SGCN to occur within the project area and should be advised of relevant rules and regulations to protect plants, fish, and wildlife.
- ☒ Contractor should avoid harming all wildlife species if encountered and allow them to safely leave the project site. Due diligence should be used to avoid killing or harming any wildlife species in the implementation of transportation projects.
- ☒ Contractors should install wildlife exclusion fencing and should examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities.
- ☒ Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas around wetlands and in riparian areas.
- ☒ Contractor should use woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
- ☒ Project staging areas, stockpiles, temporary construction easements, and other project related sites should be situated in previously disturbed areas to avoid or minimize impacts to sensitive or unique habitats including intact native vegetation, floodplains, riparian corridors, wetlands, playa lakes, and habitat for wildlife species.
- ☒ When lighting is added, consider wildlife impacts from light pollution and incorporating dark-sky practices into design strategies. Minimize sky glow by focusing light downward, with full cutoff luminaries to avoid light emitting above the horizontal. The minimum amount of night-time lighting needed for safety and security should be used.

☒ Vegetation BMPs

- ☒ Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided. Impacted vegetation should be replaced with in-kind on- site replacement /restoration of native vegetation.
- ☒ It is strongly recommended that trees greater than 12 inches in diameter at breast height (DBH) that are removed be replaced. TPWD 9/32 s experience indicates that for ecologically effective replacement, a ratio of three trees for every one (3:1) lost should be provided to either on-site or off-site. Trees less than 12 inches DBH should be replaced at a 1:1 ratio.
- ☒ The use of any non-native vegetation in landscaping and revegetation is discouraged. Locally adapted native species should be used.
- ☒ The use of seed mix that contains seeds from only regional ecotype native species is recommended

☐ Invasive Species BMPs

- ☐ For all work in water bodies designated as 3/32 infested 5/32 or 3/32 positive 5/32 for invasive zebra (Dreissena polymorpha) OR quagga mussels (Dreissena bugensis) as well as waters downstream of these lakes, all machinery, equipment, vessels, or vehicles coming in contact with such waters should be cleaned prior to leaving the site to remove any mud, plants, organisms, or debris, water drained (if applicable), and dried completely before use in another water body to prevent the potential spread of invasive mussels.
- ☐ Care should be taken to prevent the spread of aquatic and terrestrial invasive plants during construction activities.
- ☐ Care should be taken to avoid the spread of aquatic invasive plants such as giant Salvinia (Salvinia molesta), common salvinia (Salvinia minima), hydrilla (Hydrilla verticillata), water hyacinth (Eichhornia spp.), Eurasian watermilfoil (Myriophyllum spicatum), water lettuce (Pistia stratiotes), and alligatorweed (Alternanthera philoxeroides) from infested water bodies into areas not currently infested. All machinery, equipment, vessels, boat trailers, or vehicles coming in contact with waters containing aquatic invasive plant species should be cleaned prior to leaving the site to remove all aquatic plant material and dried completely before use on another water body to prevent the potential spread of invasive plants. Removed plants should be transported for disposal in a secure manner to prevent dispersal.
- ☐ Only native or non-invasive plants should be planted. Care should be taken to avoid mowing invasive giant reed (Arundo donax), which spreads by fragmentation, and to clean equipment if inadvertently mowed to prevent spread. If using hay bales for sediment control, use locally grown weed-free hay to prevent the spread of invasive species. Leave the hay bales in place and allow them to break down, as this acts as mulch assisting in revegetation.

☐ Stream Crossings BMPs

- ☐ Riparian buffer zones should remain undisturbed.

☐ Dewatering BMPs

- ☐ Impact avoidance measures for aquatic organisms, including all native fish and freshwater mussel species, regardless of state-listing status, should be considered during project planning and construction activities.

☐ Wildlife Crossing BMPs

- ☐ Incorporate wildlife crossings with fencing, particularly in areas that bisect wildlife travel corridors or seasonal movement routes to avoid further habitat fragmentation and minimize wildlife-vehicle interactions.

☐ Rare Plant BMPs

- ☐ Avoid impacts and minimize unavoidable impacts. Plant locations should be protected with temporary barrier fencing and contractors should be instructed to avoid protected areas. Conducting construction outside of the growing season or after a plant has produced mature fruit is the preferred way to avoid/minimize impacts to SGCN plant populations. Staging areas, stockpiles, and other project related sites on TxDOT ROW should not impact SGCN plant populations. After construction begins, minimize herbicide use near SGCN plant populations (if possible, use hand-held spot sprayers, several meters from rare plants, on still or days with little wind).

Pharr District Contact No. 956-702-6100

☐ Rare Plants BMPs (Continued)

- ☐ If there are unintended impacts to SGCN populations, these impacts should be reported to TPWD Transportation Staff.
- ☐ During project period, conduct work during times of the year when plants are dormant and/or conditions minimize disturbance of the habitat.

☒ Bird BMPs

- ☒ Avoid vegetation clearing activities during the general bird nesting season, February 15th to October 1st to minimize adverse impacts to birds.
- ☒ Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.
- ☒ Minimize extended human presence near nesting birds during construction and maintenance activities. Protect sensitive habitat areas with temporary barriers or fencing to limit human foot- traffic and off-road vehicle use to alert and discourage contractors from causing any unintentional impacts.
- ☒ Minimize construction noise above ambient levels during general bird nesting season to minimize adverse impacts on birds.
- ☒ Minimize construction lighting during the general bird nesting season by scheduling work activities between dawn and dusk.

☐ Rookeries BMPs

- ☐ In general, nesting dates for herons and egrets range from early February to late August in Texas, depending on the species. Great blue herons (GBHE) (Ardea herodis) are usually the first to nest. When GBHE get disrupted from the nest and abandon nesting, then the other species of herons and egrets may not attempt to nest at the colony that year.
- ☐ If rookeries are encountered, avoid and minimize disturbance during nesting to protect rookery species and their habitat.
- ☐ Vegetation clearing in a primary buffer area of 300 meters (984 feet) from a rookery or heronry periphery should be avoided. Utilizing areas that have already been cleared within this buffer area may be acceptable depending on site-specific characteristics. Additionally, human foot-traffic or machinery use should not occur within this buffer area during the nesting season.
- ☐ Clearing activities or construction using heavy machinery in a secondary buffer area of 1000 meters (3281 feet) from the heronry periphery should be avoided during the breeding season (courting and nesting).

Revised 02/24/2022

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PHARR DISTRICT

EPIC SHEET SUPPLEMENTALS

TPWD BMPs

SHEET 1 OF 3

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM1425
STATE	DISTRICT	COUNTY	
TEXAS	PHR	WILLACY	SHEET NO.
CONTROL	SECTION	JOB	
3343	02	016	153

Date Printed: X-X-XX

☐ Fish BMPs

- ☐ The following Fish BMP apply to projects for all fish species in waters of the state to minimize impacts to water quality and aquatic passage from transportation projects.
- ☐ For projects in waters of the state and work is adjacent to water: follow Water Quality and Stream Crossing BMPs.
- ☐ For projects in waters of the state and work is in the water: follow Water Quality, Stream Crossing, and Dewatering BMP.

☒ Aquatic Invertebrate BMPs

- ☒ For projects within the range of a SGCN or state-listed species and work is adjacent to water: Water Quality and Stream Crossing BMP
- ☐ For projects within the range of a SGCN or state-listed species and work is in the water: Water Quality, Stream Crossing, and Dewatering BMP.
- ☐ For spring-seep associated caddisflies (Cheumatopsyche morsei, Chimarra holzenthali, and Hydroptila ouachita): Avoid or minimize impacts to the natural riparian buffer along stream channel including native shrubs and trees.

☐ Crayfish BMP

- ☐ For projects within the range of a SGCN or state-listed species and work is adjacent to water: Water Quality and Stream Crossing BMP.
- ☐ For projects within the range of a SGCN or state-listed species and work is in the water: Water Quality, Stream Crossing, and Dewatering BMP.
- ☐ Avoid or minimize impacts to the natural riparian buffer that provides terrestrial and aquatic plant matter for the diet of most crayfish species.

☐ Freshwater Mussel BMP

- ☐ In addition to Water Quality and Stream Crossing BMP, follow the most recent, 7/32 TPWD9/32 TxDOT Annual Work Plan for Pre-Construction Surveys, Aquatic Resources Relocations, and Other Best Management Practices to Avoid, Minimize, and Mitigate Impacts to Freshwater Resources.9/32
- ☐ When work is adjacent to the water: Water Quality BMP implemented as part of the Texas Commission on Environmental Quality (TCEQ) Stormwater Pollution Prevention Plan (SWPPP) for a construction general permit or any conditions of the 401 Water Quality Certification for the project will be implemented.

☒ Insect Pollinator BMP

- ☐ Deep soil disturbances, such as, tilling or deep disking in areas that host aggregations of ground- nesting bees should be avoided. Tilling and disking also may promote the invasion or germination of non-native plants. Different species of native ground-nesting bees prefer different soil conditions, although research suggests that many ground nesting bees prefer sandy, loamy sand or sandy loam soils. In areas with these soil types consider leaving open patches of soil.
- ☒ Allow dead trees to stand (so long as they do not pose a risk to property or people) and protect shrubs and herbaceous plants with pithy or hollow stems (e.g., cane fruits, sumac, elderberry), as these provide nesting habitat for tunnel-nesting native bees.
  Retain dead or dying branches whenever it is safe and practical at the edges of the ROW. Wood- boring beetle larvae often fill dead trees and branches with narrow tunnels into which tunnel- nesting bees will establish nests. Additionally, bumble bees may choose to nest in wood piles.
- ☒ Retain rotting logs at edges of the ROW where some bee species may burrow tunnels in which to nest.

☒ Insect Pollinator BMP (Continued)

- ☒ Protect sloped or well-drained ground sites where plants are sparse and direct access to soil is available. These are the areas where ground-nesting bees may dig nests. Turning the soil destroys all ground nests that are present at that depth and hinders the emergence of bees that are nesting deeper in the ground.
- ☐ Protect grassy thickets, or other areas of dense, low cover from mowing or other disturbance. These are the sites where bumble bees might find the nest cavities they need, as well as annual and perennial wildflowers that can provide important food resources.
- ☐ Where available and economical, native plants and seed should be procured from local eco-type providers. Seed mixes should be diverse and include as many ecoregion natives as possible ensuring full season floral resources. Species by Texas ecoregion can be found in the Texas Management Recommendations for Native Insect Pollinators in Texas document: https://tpwd.texas.gov/publications/pwdpubs/media/pwd*bk*w7000*1813.pdf
- ☐ Planting at least three different native flowering plants within each of three blooming periods are recommended (spring, summer, early fall) in high rainfall regions of Texas. In drier regions of the state, a target of three native flowering plants within each of two blooming periods can be used.

☐ Small Mammal BMP

For Coues' rice rat (Oryzomys couesi aquaticus):

- ☐ Minimize impacts to wetland, resaca, oxbow Conversion of property containing cave or cliff features to transportation purposes should be avoided.lake, and marsh habitats
- ☐ Water Quality BMP

☐ Fossorial Mammal BMP

- ☐ When a construction zone is adjacent to active BTPD burrows or pocket gopher mounds, erect barriers to discourage individuals moving through or into the construction area.
- ☐ When seeding or revegetation is planned in an area adjacent to BTPD burrows or pocket gopher mounds, a vegetative barrier should be considered in the planting to discourage dispersal into the ROW.

☒ Bat BMP

- ☐ For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before project letting.
- ☐ For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.
- ☐ If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.
- ☐ Exclusion devices can be installed by a qualified individual between September 1 and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area.

Pharr District Contact No. 956-702-6100

☒ Bat BMP (Continued)

- ☒ If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features.
- ☐ Avoid unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, Kleberg, Nueces, and San Patricio counties) from April 1 through October 31. If removal of dead fronds is necessary at other times of the year, limit frond removal to extended warms periods (nighttime temperatures = 55°F for at least two consecutive nights), so bats can move away from the disturbance and find new roosts.
- ☐ Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.
- ☐ Retain mature, large diameter hardwood forest species and native/ornamental palm trees.
- ☒ In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.

☒ Aquatic Amphibian and Reptile BMP

For projects within existing right-of-way (ROW) when work is in water or will permanently impact a water feature and potential habitat exists for the target species complete the following:

- ☐ Minimize impacts to wetlands, temporary and permanent open water features, including depressions, and riverine habitats.
- ☐ Maintain the existing hydrologic regime and any connections between wetlands and other aquatic features.
- ☒ Use barrier fencing to direct animal movements away from construction activities and areas of potential wildlife-vehicle collisions in construction areas directly adjacent, or that may directly impact, potential habitat for the target species.
- ☒ Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas around wetlands and in riparian areas. If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
- ☒ Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.
- ☒ When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and refugia/overwinter sites (e.g., brush and debris piles, crayfish burrows, aquatic logjams, and leaf packs).

Revised 02/24/2022

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Texas Department of Transportation

PHARR DISTRICT

EPIC SHEET SUPPLEMENTALS

TPWD BMPs

SHEET 2 OF 3

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM1425
STATE	DISTRICT	COUNTY	
TEXAS	PHR	WILLACY	SHEET NO.
CONTROL	SECTION	JOB	
3343	02	016	154

Date Printed: X-X-XX

☐ Aquatic Amphibian and Reptile BMP (Continued)

- ☐ If gutters and curbs are part of the roadway design, install gutters that do not include the side box inlet and include sloped (i.e., mountable) curbs to allow small animals to leave roadway. If this modification to the entire curb system is not possible, install sections of sloped curb on either side of the storm water drain for several feet to allow small animals to leave the roadway. Priority areas for these design recommendations are those with nearby wetlands or other aquatic features.

For projects that require acquisition of additional ROW and work within that new ROW is in water or will permanently impact a water feature, implement BMP for projects within existing ROW above plus those below:

- ☐ For sections of roadway adjacent to wetlands or other aquatic features, install wildlife barriers that prevent climbing. Barriers should terminate at culvert openings in order to funnel animals under the road. The barriers should be of the same length as the adjacent feature or 80 feet long in each direction, or whichever is the lesser of the two.
- ☐ For culvert extensions and culvert replacement/installation, incorporate measures to funnel animals toward culverts such as concrete wingwalls and barrier walls with overhangs.
- ☐ When riprap or other bank stabilization devices are necessary, their placement should not impede the movement of terrestrial or aquatic wildlife through the water feature. Biotechnical streambank stabilization methods using live native vegetation, or a combination of vegetative and structural materials should be used.

☒ Terrestrial Amphibian and Reptile BMP

- ☒ For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling
- ☒ Avoid or minimize disturbing or removing cover objects, such as downed trees, rotting stumps, brush piles, and leaf litter. If avoidance or minimization is not practicable, consider removing cover objects prior to the start of the project and replace them at project completion.
- ☒ Examine heavy equipment stored on site before use, particularly after rain events when reptile and amphibian movements occur more often, to ensure use will not harm individuals that might be seeking temporary refuge.
- ☒ Due to increased activity (mating) of reptiles and amphibian during the spring, construction activities like clearing or grading should attempt to be scheduled outside of the spring (March-May) season.
  Also, timing ground disturbing activities before October when reptiles and amphibians become less active and may be using burrows in the project area is also encouraged.
- ☐ If Texas tortoises (Gopherus berlandieri) or box turtles (Terrepene spp.) are present in a project area, they should be removed from the area and relocated between 100 and 200 meters from the project area. After removal of the individuals, the area that will be disturbed during active construction and project specific locations should be fenced off to exclude reentry by turtles, tortoises, and other reptiles. The exclusion fence should be constructed and maintained as follows:

  - The exclusion fence should be constructed with metal flashing or drift fence material.
  - Rolled erosion control mesh material should not be used.
  - The exclusion fence should be buried at least 6 inches deep and be at least 24 inches high.
  - The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated.

☐ Terrestrial Amphibian and Reptile BMP (Continued)

- ☐ After project is complete, revegetate disturbed areas with an appropriate locally sourced native seed mix. If erosion control blankets or mats will be used, the product should not contain nylon netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.

☒ Black-spotted newt/Mexican Burrowing toad/ Mexican treefrog/ Strecker's chorus frog/White-lipped frog/Woodhouse's toad

- ☒ Aquatic Amphibian and Reptile BMP
- ☒ Terrestrial Amphibian and Reptile BMP
- ☒ Water Quality BMP
- ☒ Vegetation BMP

☒ Sheep Frog

- ☒ Minimize disturbance to burrows or downed woody debris
- ☒ Aquatic Amphibian and Reptile BMP
- ☒ Terrestrial Amphibian and Reptile BMP
- ☒ Water Quality BMP
- ☒ Vegetation BMP

☒ South Texas Siren (Large Form)

- ☒ Minimize impacts to warm, shallow waters with vegetative cover such as ponds and ditches
- ☒ Aquatic Amphibian and Reptile BMP
- ☒ Water Quality BMP

Black-striped snake/ Eastern box turtle/Northern cat-eyed snake/Plateau spot-tailed earless lizard/ Reticulate collared lizard/ Slender glass lizard/ Speckler racer/Tamaulipan spot-tailed earless lizard/ Texas Indigo snake/ Western box turtle/Western hognose snake/Western massasauga

☐

- ☐ Terrestrial Amphibian and Reptile BMP
- ☐ Vegetation BMP

☐ Rio Grande River Cooter

- ☐ Aquatic Amphibian and Reptile BMP
- ☐ Water Quality BMP

☒ Texas Horned Lizard

- ☒ Avoid harvester ant mounds in the selection of Project Specific Locations (PSLs).
- ☒ Terrestrial Amphibian and Reptile BMP
- ☒ Vegetation BMP

☐ Texas Tortoise

- ☐ Utility trenches should be covered overnight or visually inspected before filling to avoid burial of the species
- ☐ Terrestrial Amphibian and Reptile BMP
- ☐ Vegetation BMP

Pharr District Contact No. 956-702-6100

OTHER PERTINENT INFORMATION

☐ Trifold Available

- ☐ Ocelot information
- ☐ Pelican information
- ☐ Ashy dogweed

☐ Stockcards Available

- ☐ Mitigatory Bird Treaty Act
- ☐ Texas Tortoise
- ☐ Harvester Ants and Horn Lizards

Revised 02/24/2022

List of Abbreviations

BMP: Best Management Practice	MSAT: Mobile Source Air Toxic	TCEQ: Texas Commission on Environmental Quality
CGP: Construction General Permit	MBTA: Migratory Bird Treaty Act	THC: Texas Historical Commission
CRPe: Contractor Responsible Person Environmental	NOI: Notice of Intent	TPDES: Texas Pollutant Discharge Elimination System
DSHS: Texas Department of State Health Services	NOT: Notice of Termination	TPWD: Texas Parks and Wildlife Department
FEMA: Federal Emergency Management Agency	NWP: Nationwide Permit	TxDOT: Texas Department of Transportation
FHWA: Federal Highway Administration	PCN: Pre-Construction Notification	T&E: Threatened and Endangered Species
MOA: Memorandum of Agreement	PSL: Project Specific Location	USACE: U.S. Army Corp of Engineers
MOU: Memorandum of Understanding	SPCC: Spill Prevention Control and Countermeasure	USFWS: U.S. Fish and Wildlife Service
MS4: Municipal Separate Stormwater Sewer System	SW3P: Storm Water Pollution Prevention Plan	

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PHARR DISTRICT

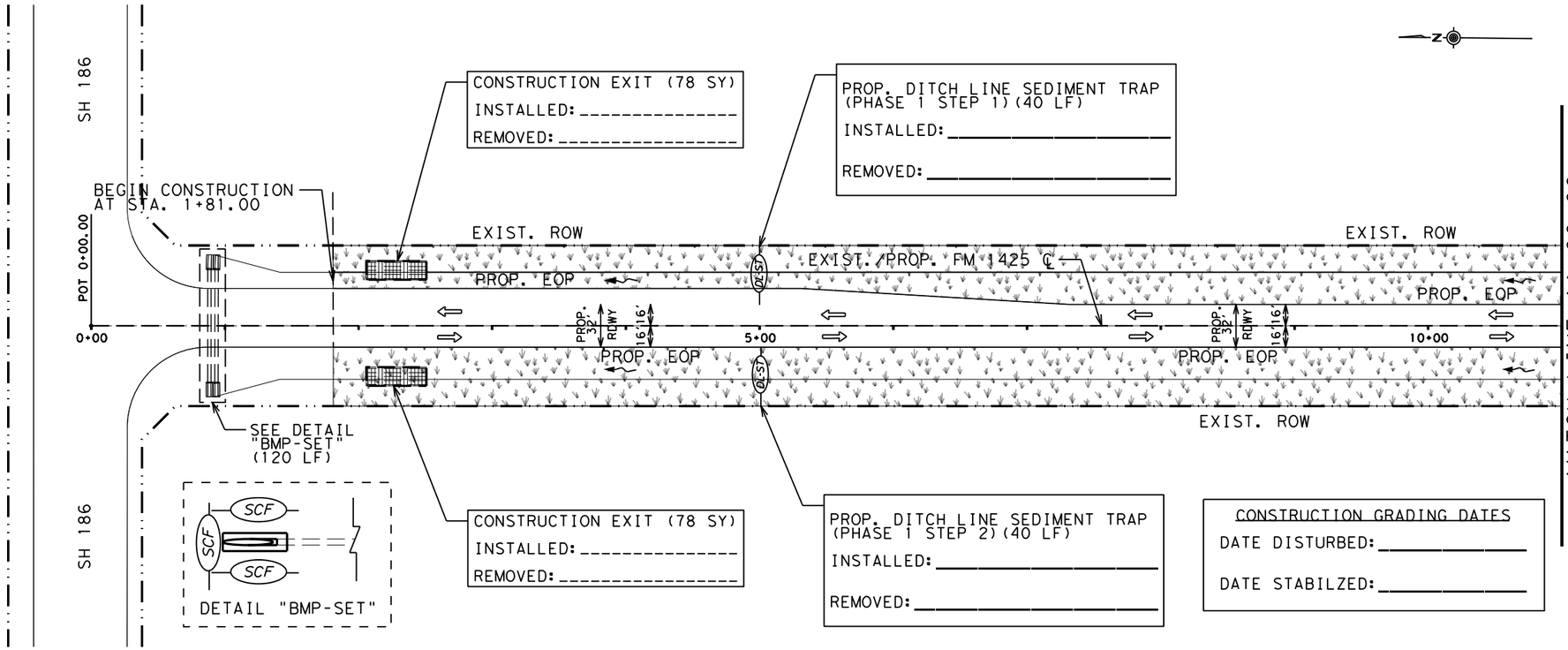
EPIC SHEET SUPPLEMENTALS

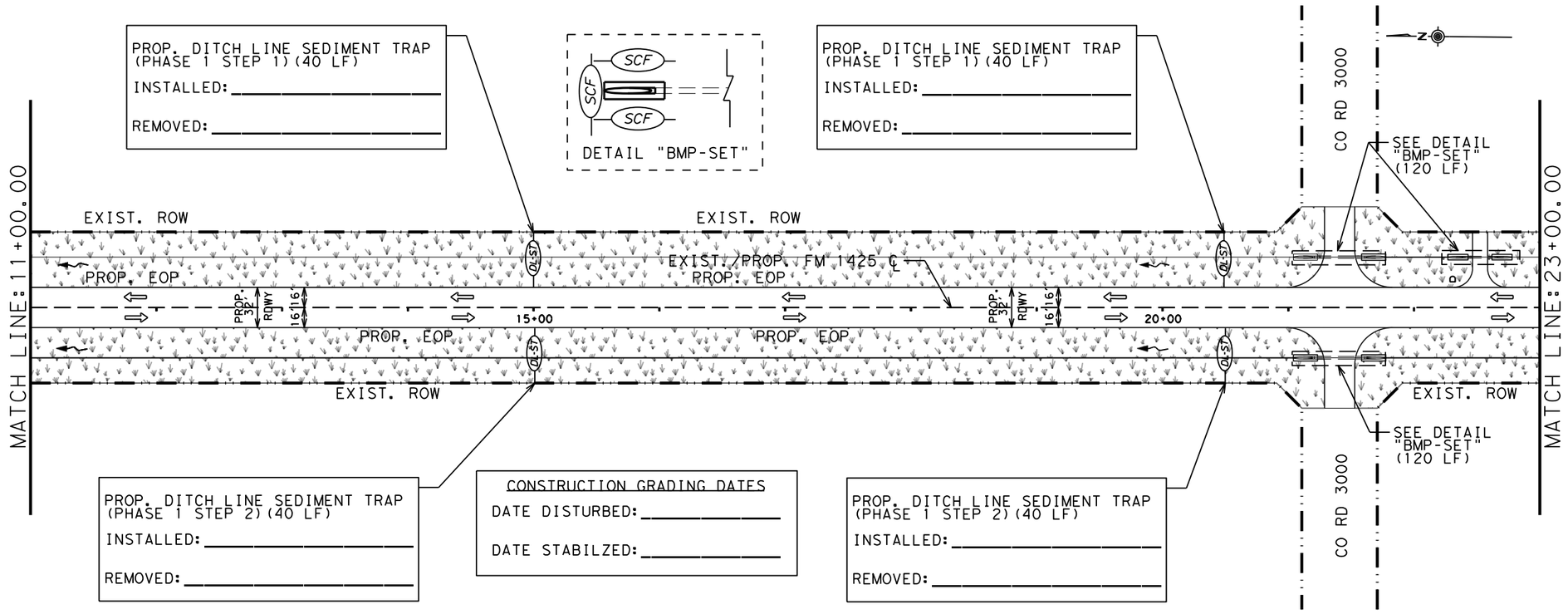
TPWD BMPs

SHEET 3 OF 3

FED. RD. DIV. NO.	PROJECT NO.		HIGHWAY NO.
6			FM1425
STATE	DISTRICT	COUNTY	
TEXAS	PHR	WILLACY	SHEET NO.
CONTROL	SECTION	JOB	
3343	02	016	155

Date Printed: X-X-XX





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134752
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FM 1425
SW3P LAYOUT

1" = 100' SHEET 1 OF 5

© 2022	CONT	SECT	JOB	HIGHWAY
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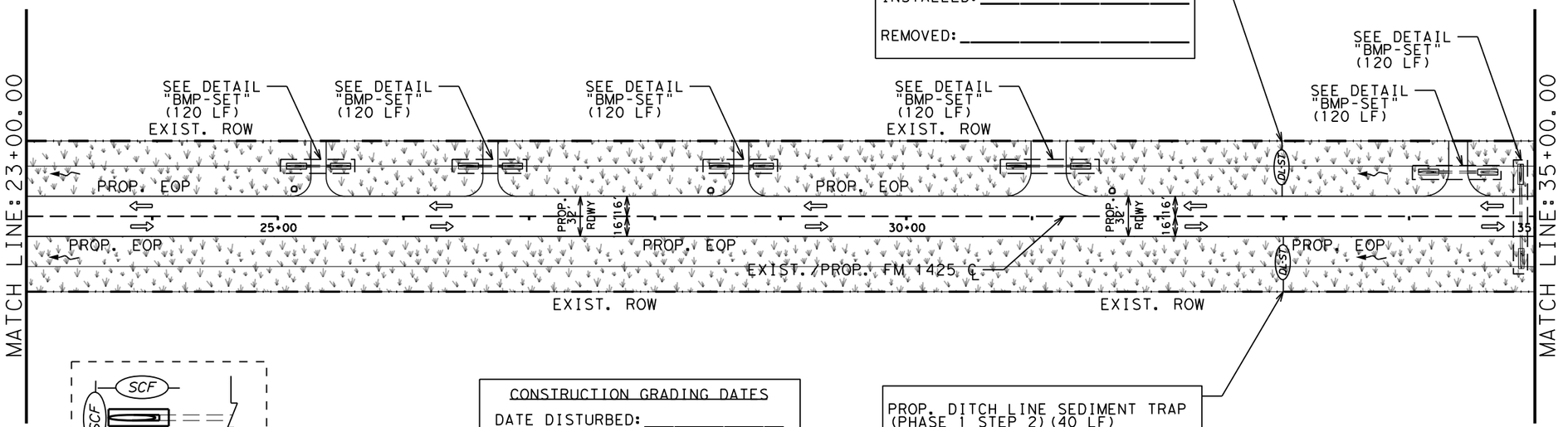

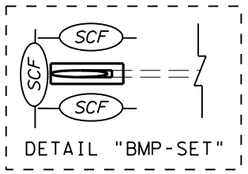

DETAIL "BMP-SET"

CONSTRUCTION GRADING DATES

DATE DISTURBED: _____

DATE STABILZED: _____

LEGEND

- CONSTRUCTION EXIT (TY II)
- SEEDING AREA
- DIRECTION OF FLOW
- DITCH LINE SEDIMENT TRAP (LOGS)
- TEMPORARY SEDIMENT CONTROL FENCE
- TEMPORARY EROSION CONTROL LOGS

NOTES

1. CONSTRUCTION EXITS ARE TO BE LOCATED AND INSTALLED BASED ON FIELD CONDITIONS AND AS APPROVED BY THE ENGINEER. THE LOCATION OF THE CONSTRUCTION EXIT SHOULD BE SUFFICIENT FOR CONTINOUS USE BY THE CONTRACTOR DURING CONSTRUCTION.
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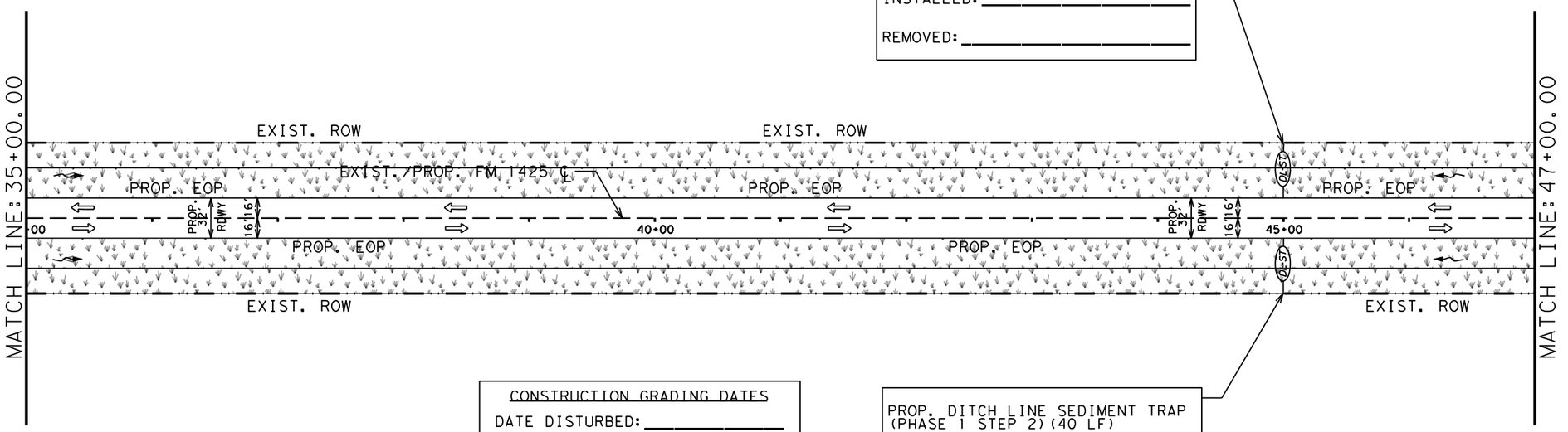
3. EROSION CONTROL DEVICES SHALL ONLY BE PLACED DURING PHASE CONSTRUCTION. DEVICES SHALL NOT BE PLACED ALL AT THE SAME TIME.
4. EROSION CONTROL DEVICES MAY BE MODIFIED TO MEET FIELD CONDITIONS OR AS DIRECTED BY THE ENGINEER
5. VEGETATIVE WATERING APPLICATION RATE = 88,300 GAL/AC @ 13 CYCLES.



CONSTRUCTION GRADING DATES

DATE DISTURBED: _____

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1" = 100'

SHEET 2 OF 5

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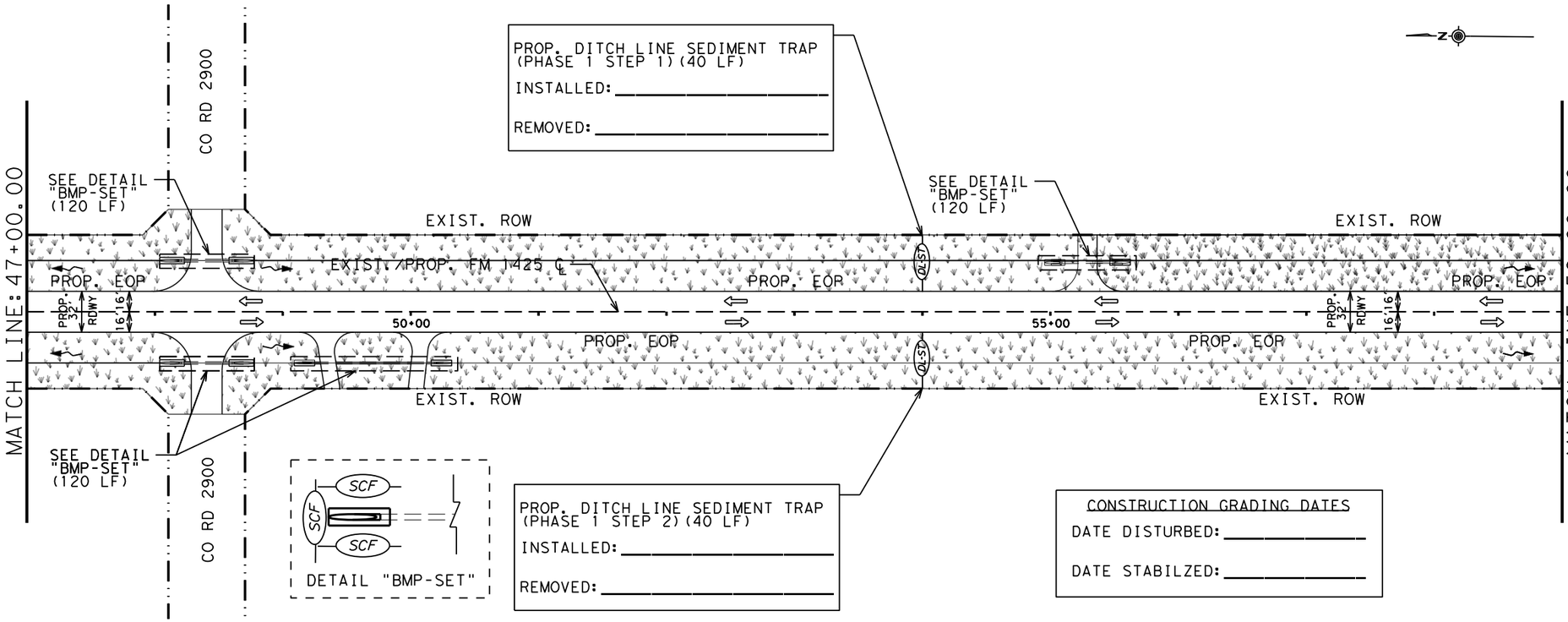

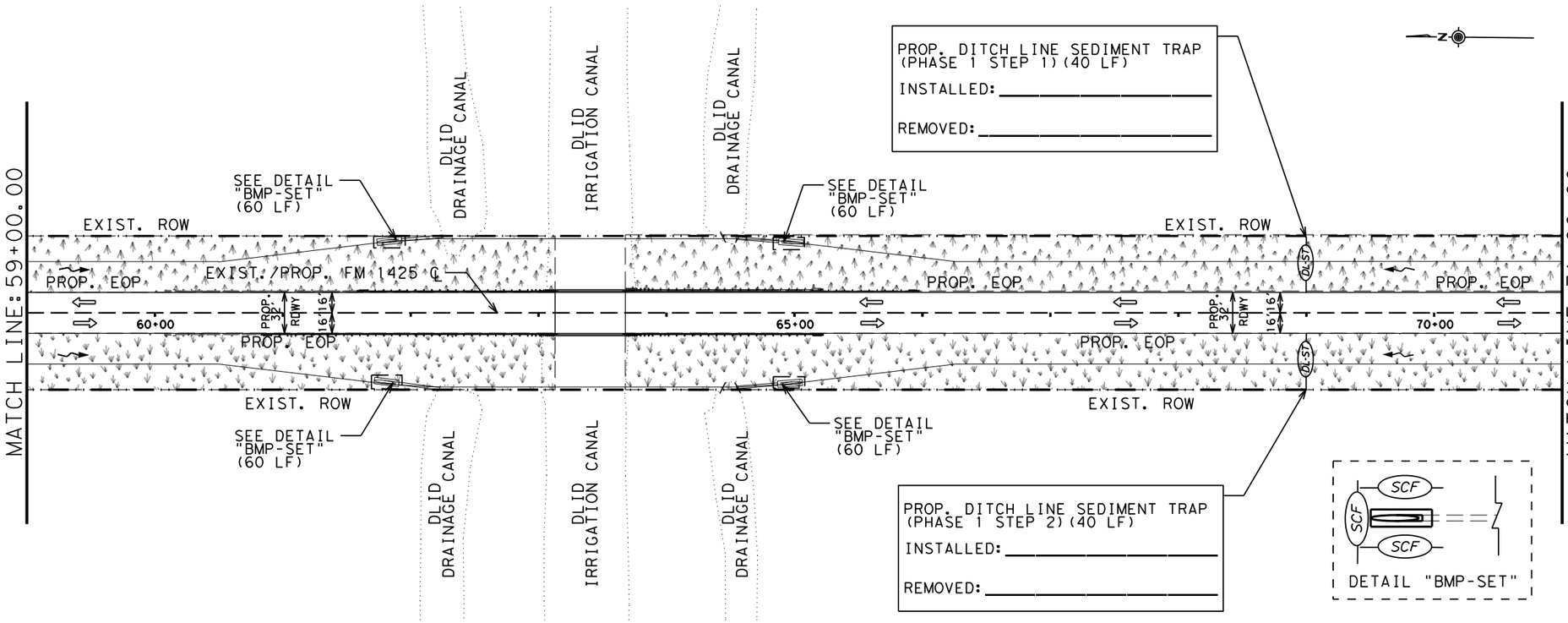

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1" = 100' SHEET 3 OF 5

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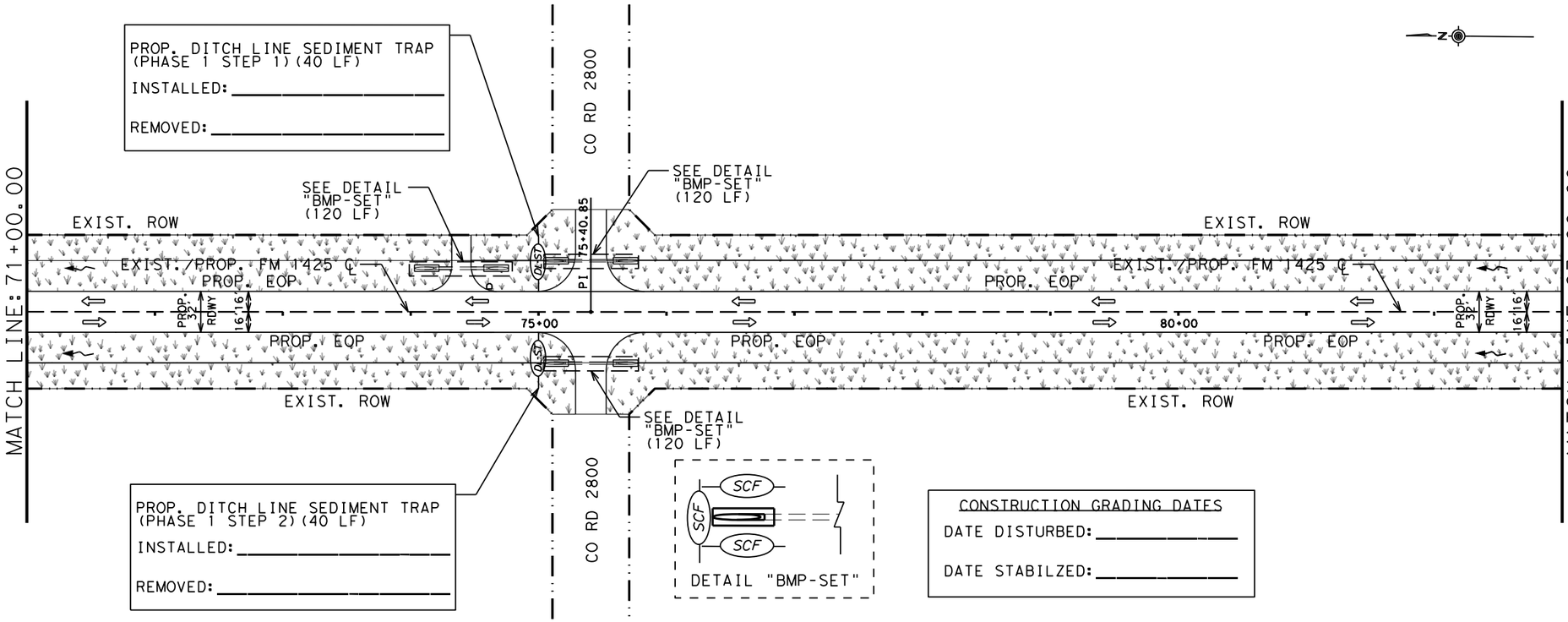

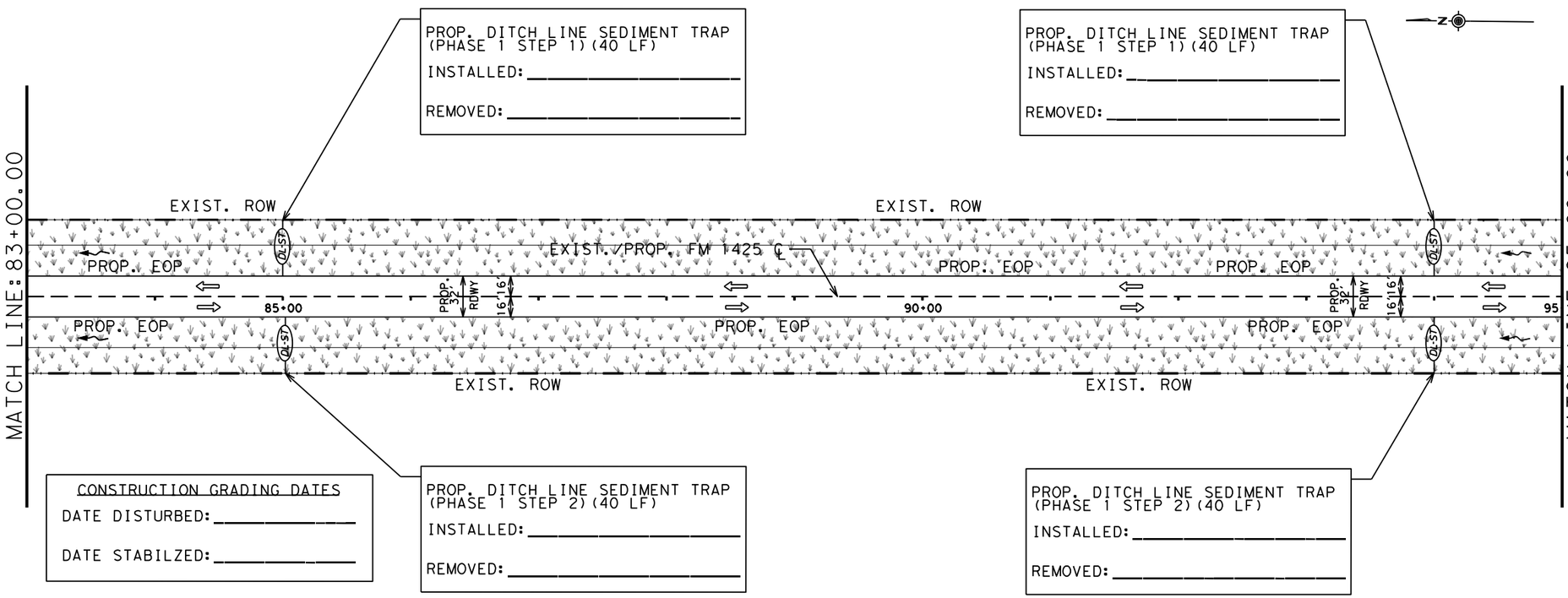

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1" = 100'

SHEET 4 OF 5

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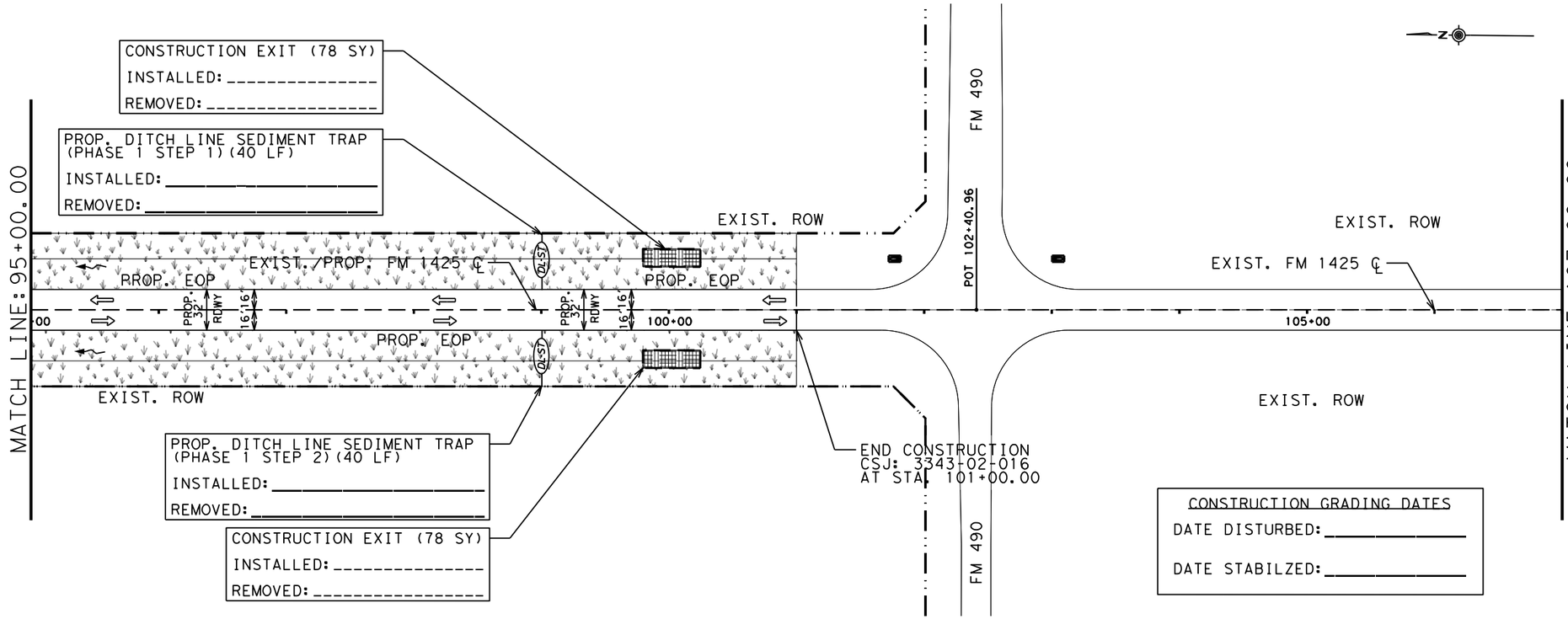

LEGEND

- CONSTRUCTION EXIT (TY II)
- SEEDING AREA
- DIRECTION OF FLOW
- DL-ST — DITCH LINE SEDIMENT TRAP (LOGS)
- SCF — TEMPORARY SEDIMENT CONTROL FENCE
- TECL — TEMPORARY EROSION CONTROL LOGS

NOTES

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5. VEGETATIVE WATERING APPLICATION RATE = 88,300 GAL/AC @ 13 CYCLES.

CONSTRUCTION GRADING DATES

DATE DISTURBED: _____

DATE STABILZED: _____

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1" = 100'

SHEET 5 OF 5

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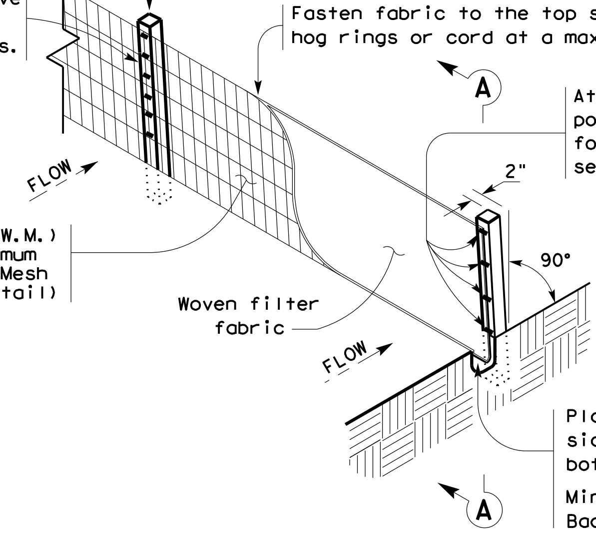
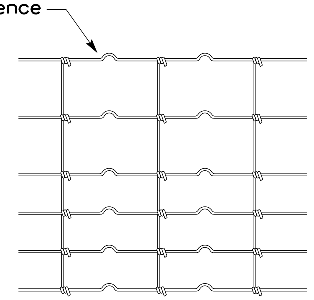


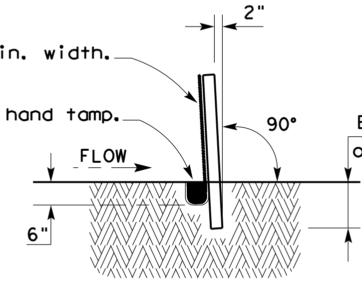
TEMPORARY SEDIMENT CONTROL FENCE

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.

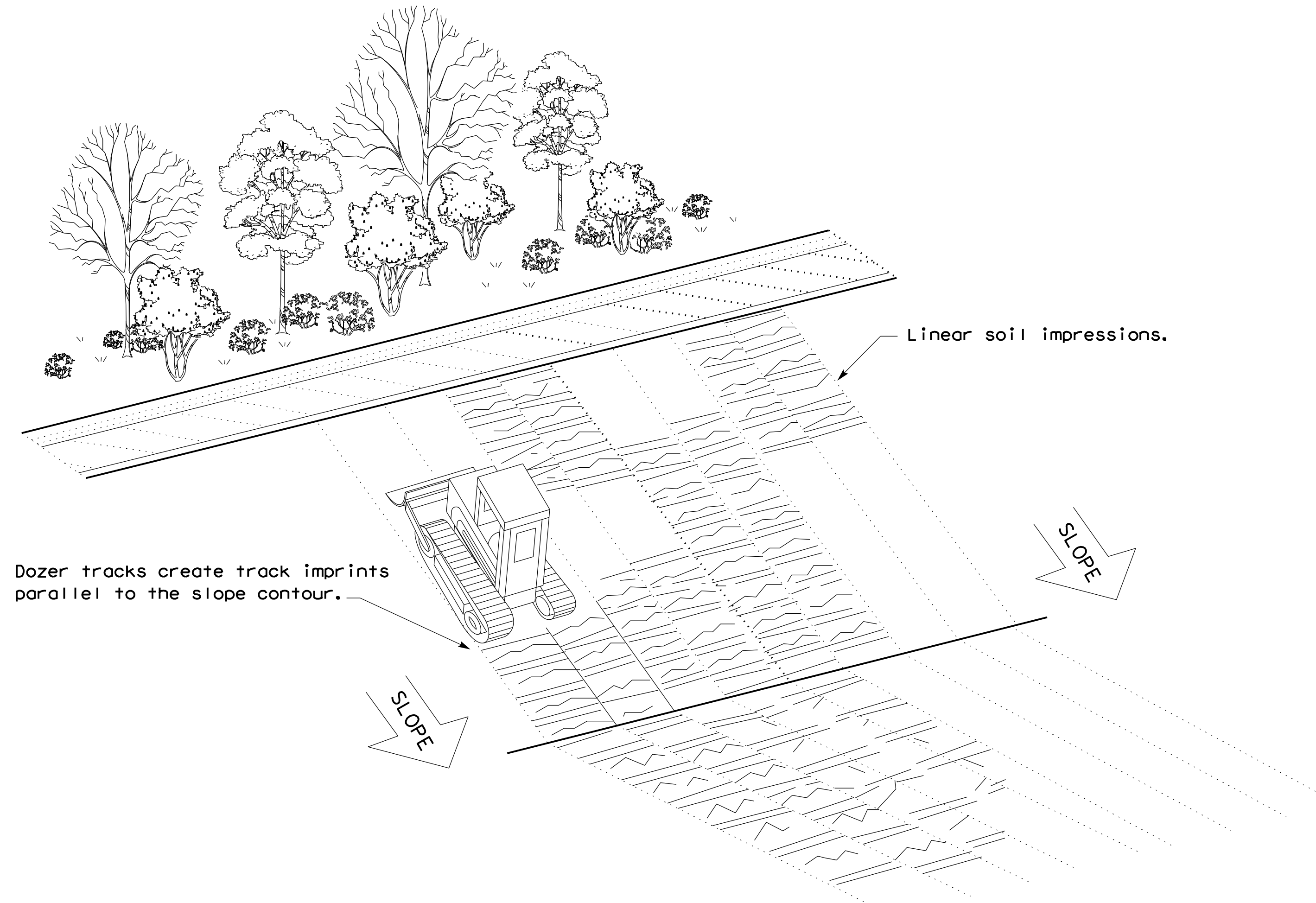
LEGEND

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
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	DIST		COUNTY	SHEET NO.
	PHR		WILLACY	161

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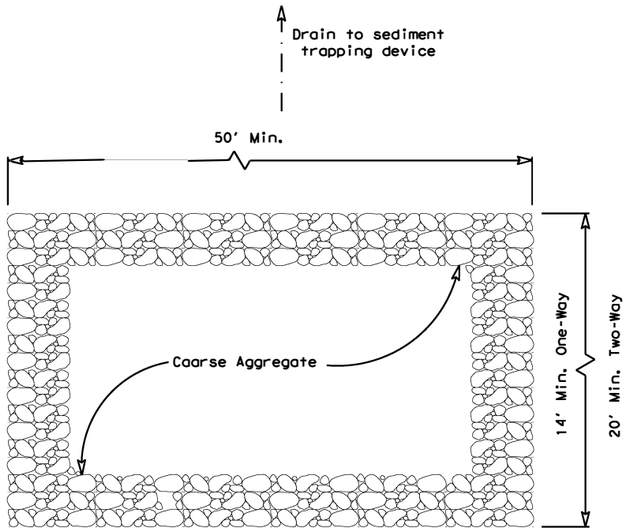

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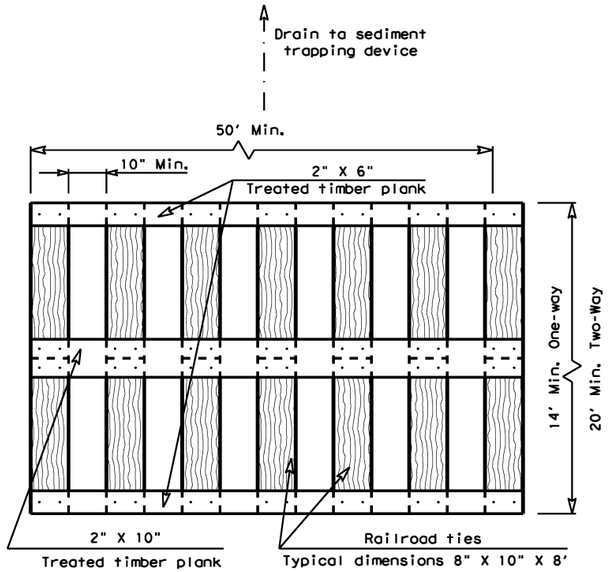

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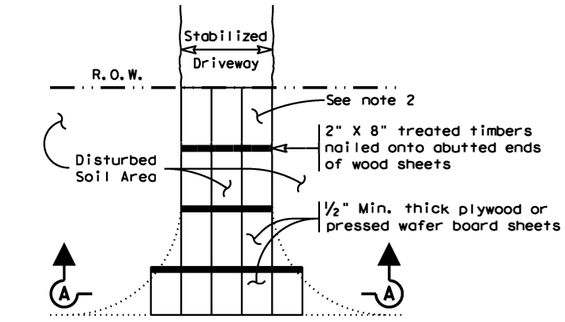

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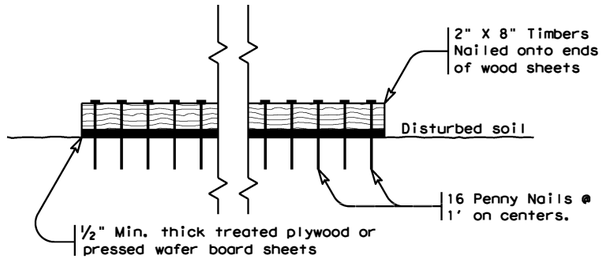
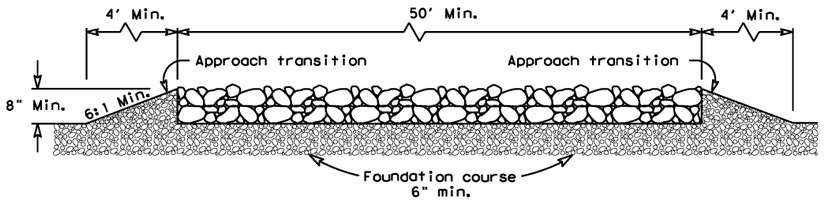


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

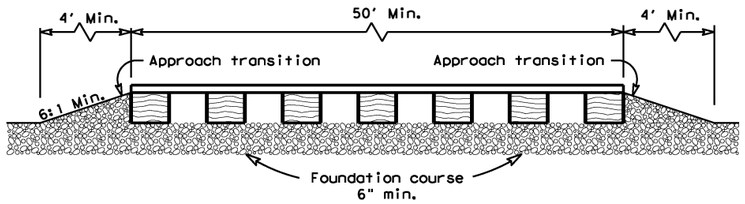
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials as approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed fram open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		162

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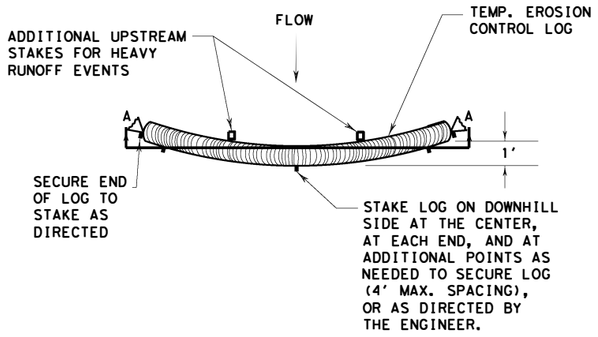
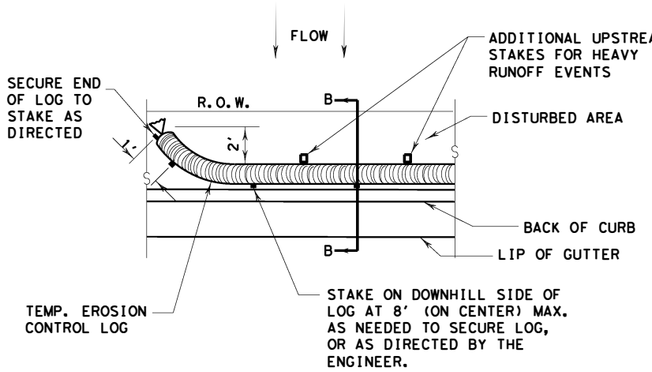


PLAN VIEW



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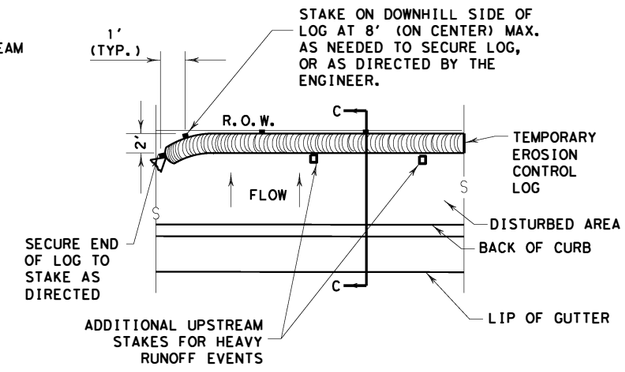

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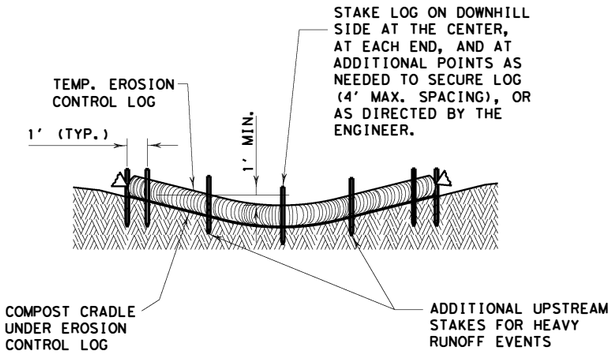
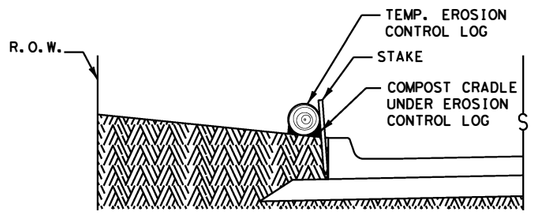


SECTION A-A

EROSION CONTROL LOG DAM

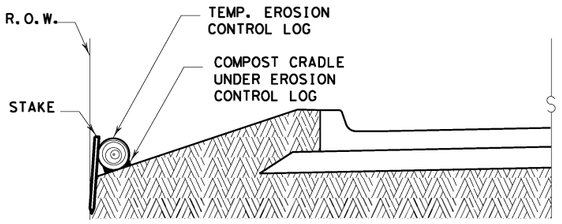
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

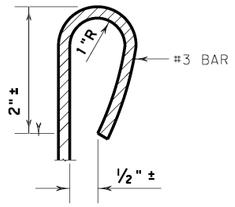
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

SEDIMENT BASIN & TRAP USAGE GUIDELINES

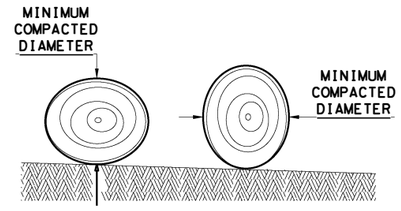
An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:
1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS	3343	02	016	FM1425	
	DIST	COUNTY		SHEET NO.	
	PHR	WILLACY		163	

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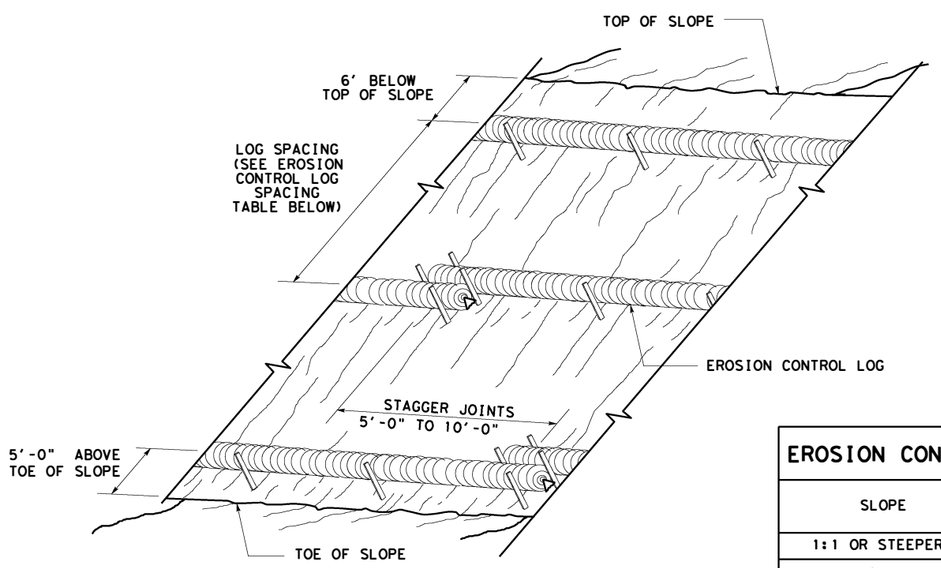
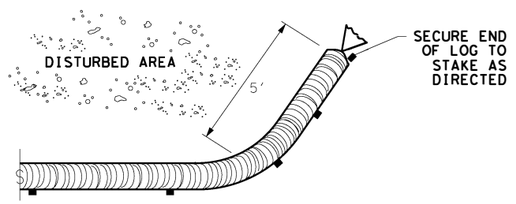


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

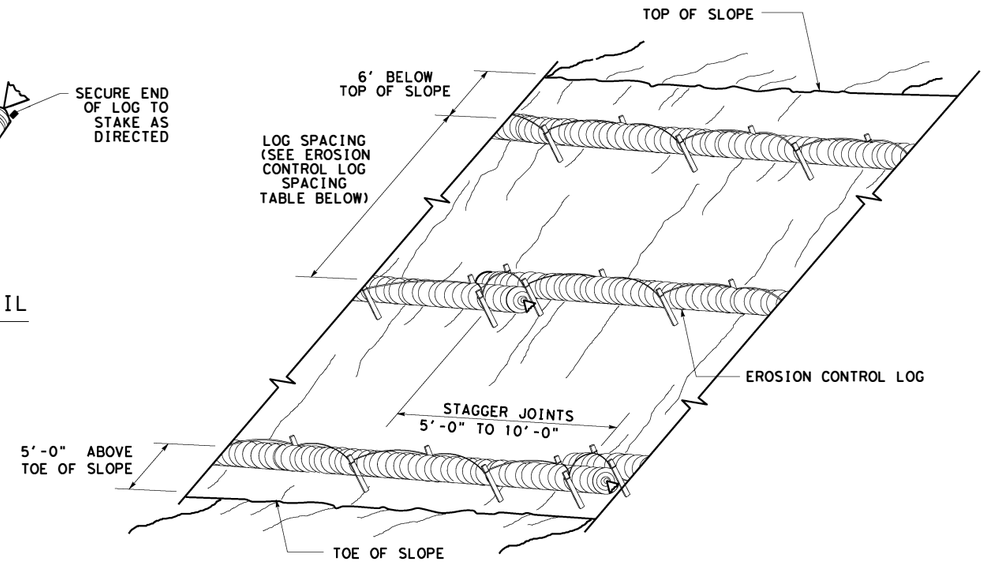
CL-SST



END SECTION RAP DETAIL

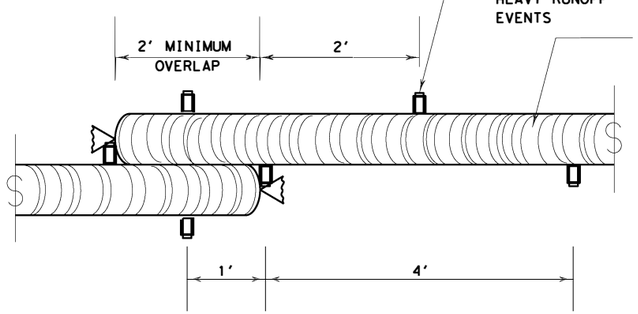
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

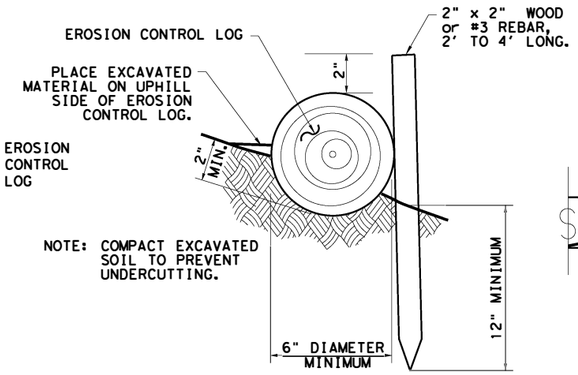
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

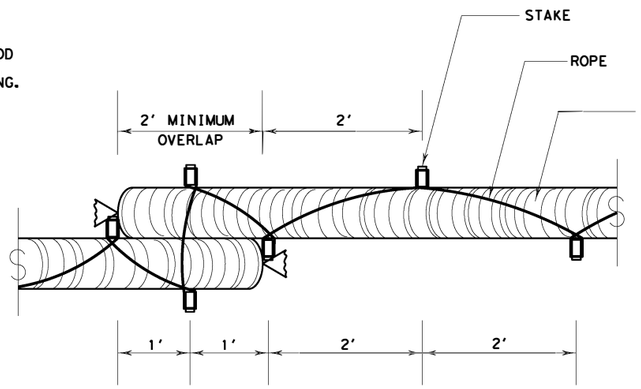


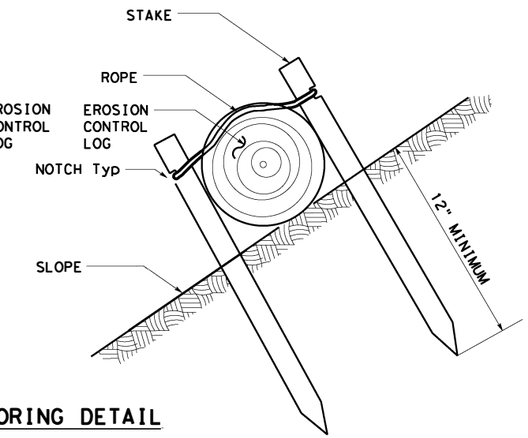


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

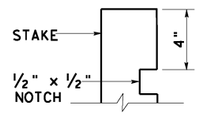
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
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REVISIONS	3343	02	016	FM1425
	DIST	COUNTY		SHEET NO.
	PHR	WILLACY		164

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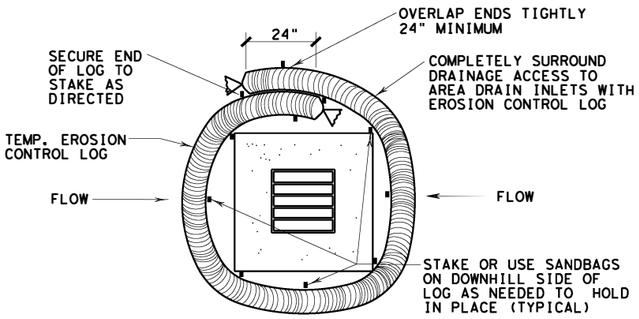
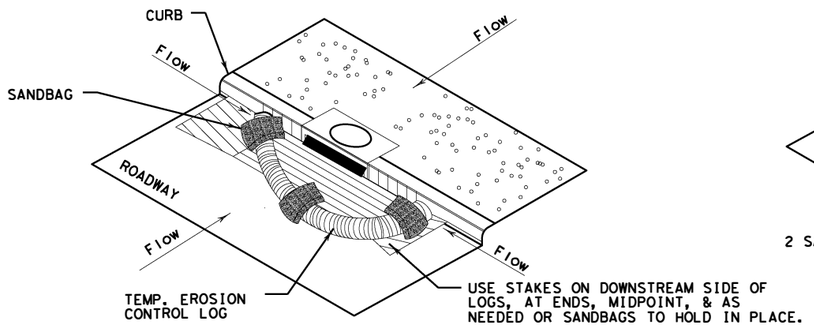


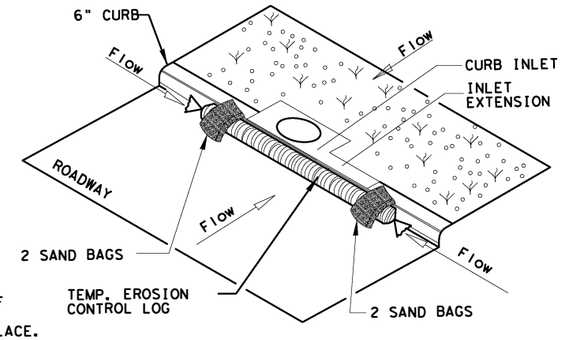
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

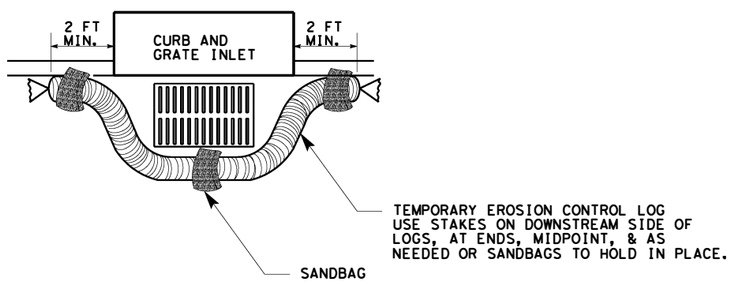
CL-CI



EROSION CONTROL LOG AT CURB INLET

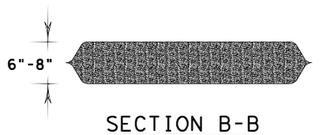
CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

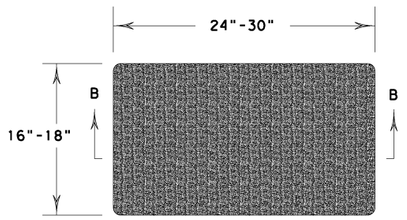


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

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