STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

F 2025(292), ETC

BU 287P

TARRANT COUNTY

FEDERAL AID PROJECT NO.			
F 2025(292), ETC			
CONT	SECT	JOB	HIGHWAY
0172	01	055, ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		1

FUNCTIONAL CLASS: PRINCIPAL ARTERIAL
DESIGN SPEED: MOEE

AADT 2022: 12,998
AADT 2042: 18,197

INDEX OF SHEETS

VOLUME 1
(CONTRACT CSJ 0172-01-055)

CSJ	HWY	LIMITS	ROADWAY LENGTH		BRIDGE LENGTH		PROJECT LENGTH	
			FEET	MILES	FEET	MILES	FEET	MILES
0172-01-055	BUS 287	E ROSEDALE ST TO MILLER AVE	27,524.64	5.213	228.00	0.043	27,751.68	5.256
0172-01-057	BUS 287	DIVETT AVE TO GLEN DRIVE	5751.14	1.089	0.00	0.00	5751.14	1.089

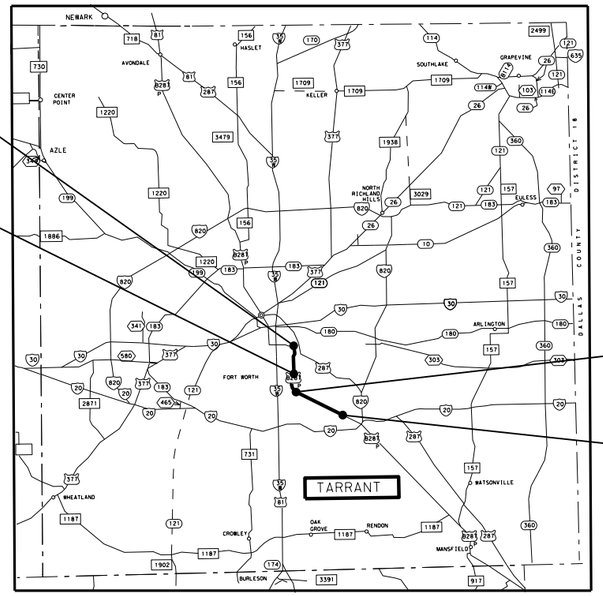
TOTAL PROJECT LENGTH = 6.345 MILES

FOR THE CONSTRUCTION OF Overlay and Bicycle And Pedestrian Improvements Work

CONSISTING OF: Mill & Overlay, Seal Coat, Full Depth Repair, Upgrade Loop Detection, Curb Repair, Pavement Markings, Cleaning drng inlets. Earthwork, Concrete Curb & Gutter, ADA Ramps, Sidewalks, Retaining Wall

BEGIN PROJECT
BEGIN CCSJ 0172-01-055
STA 188+12.90
REF MARKER 272+0.96
BEGIN MP 3.319

BEGIN PROJECT
BEGIN CSJ 0172-01-057
STA 292+48
REF MARKER 274+1.415
BEGIN MP 5.291



TARRANT COUNTY

END PROJECT
END CSJ 0172-01-057
STA 349+51
REF MARKER 276+0.512
END MP 6.368

END PROJECT
END CCSJ 0172-01-055
STA 466+00
REF MARKER 278+0.723
END MP 8.575

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED.
TDLR NO. EABPRJ: TABS2024023742

LETTING DATE: _____
CONTRACTOR: _____
_____
WORK BEGAN: _____
WORK COMPLETED: _____
WORK ACCEPTED: _____
CHANGE ORDERS: _____

Texas Department of Transportation

SUBMITTED FOR LETTING: DocuSigned by: 9/12/2024
Maribel Rangel
E0D25AC6252D429...
AREA ENGINEER

RECOMMENDED FOR LETTING: 9/23/2024
DocuSigned by:
7879B0B92E5D403...
DIRECTOR, TP&D

APPROVED FOR LETTING: 9/23/2024
DocuSigned by:
David M Salazar, P.E.
B741E64FAD82411...
DISTRICT ENGINEER

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)- 21 THRU BC (12)- 21 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, SEPTEMBER 1, 2024 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT:
REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 2023)

EQUATIONS: 196+98.2 BACK=197+30.9 AHEAD
RAILROAD:
UNION PACIFIC RAILROAD
DOT#765248A
FORT WORTH AND WESTERN RAILROAD
EXCEPTIONS: NONE
NO TDLR REQUIRED

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STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

* DENOTES STANDARD SHEETS

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

DocuSigned by:
Maribel Rangel
E0D25AC6252D429...

ENGINEER NAME, PE — 9/12/2024 DATE

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

Δ DENOTES STANDARD SHEETS

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

Thomas E.T. Cochill

ENGINEER NAME, PE — 9/10/2024 DATE

BU 287P
INDEX OF SHEETS

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055, ETC	BUS 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		2

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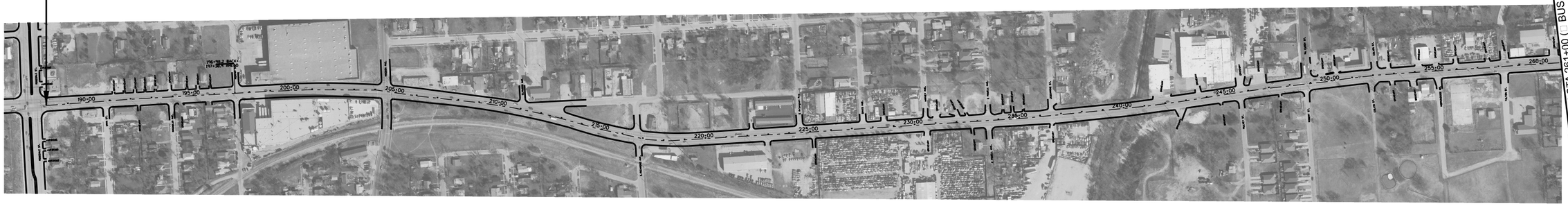
BEGIN PROJECT
CCSJ 0172-01-055
E ROSEDALE ST
STA: 188+12.90

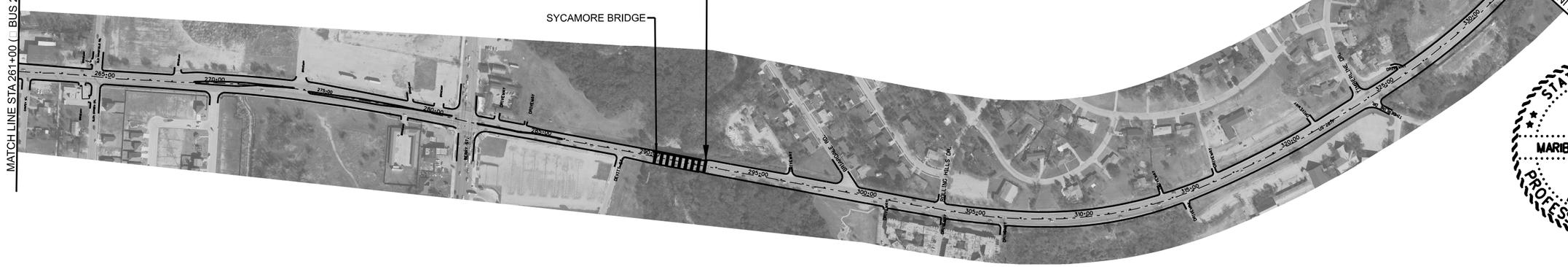


MATCH LINE STA 261+00 (□ BUS 287)

MATCH LINE STA 261+00 (□ BUS 287)

BEGIN PROJECT
CSJ 0172-01-057
DIVETT AVE
STA: 292+48

SYCAMORE BRIDGE



MATCH LINE STA 333+00 (□ BUS 287)

STATE OF TEXAS
MARIBEL G. RANGEL
133275
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PROFESSIONAL ENGINEER

BU 287P
PROJECT LAYOUT

SHEET 1 OF 2

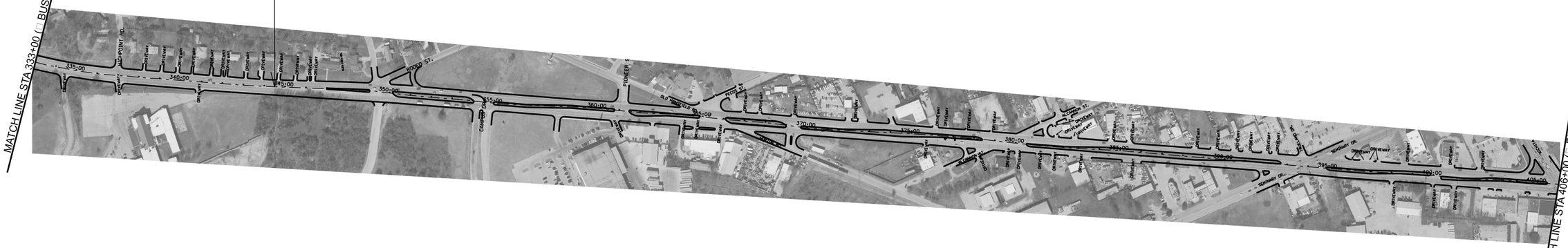
Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	3

DATE:
FILE:

CK:
DW:
CK:
DW:

END PROJECT
CSJ 0172-01-057
GLEN DRIVE
STA: 349+51



END PROJECT
CCSJ 0172-01-055
MILLER AVE
STA: 466+000

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BU 287P
PROJECT LAYOUT

SHEET 2 OF 2

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		4

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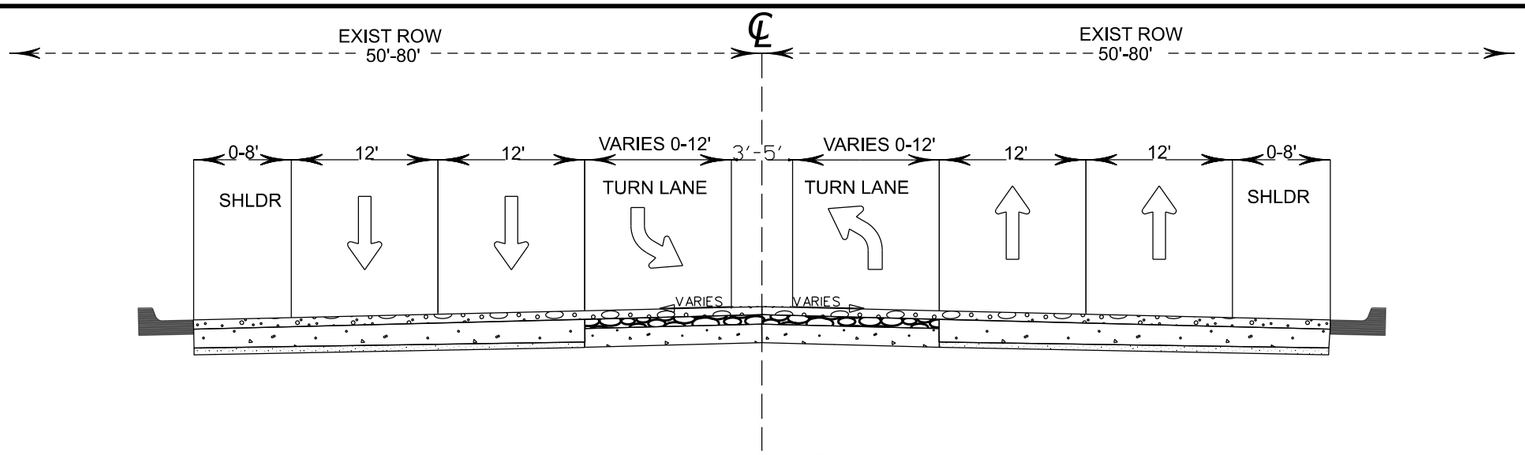
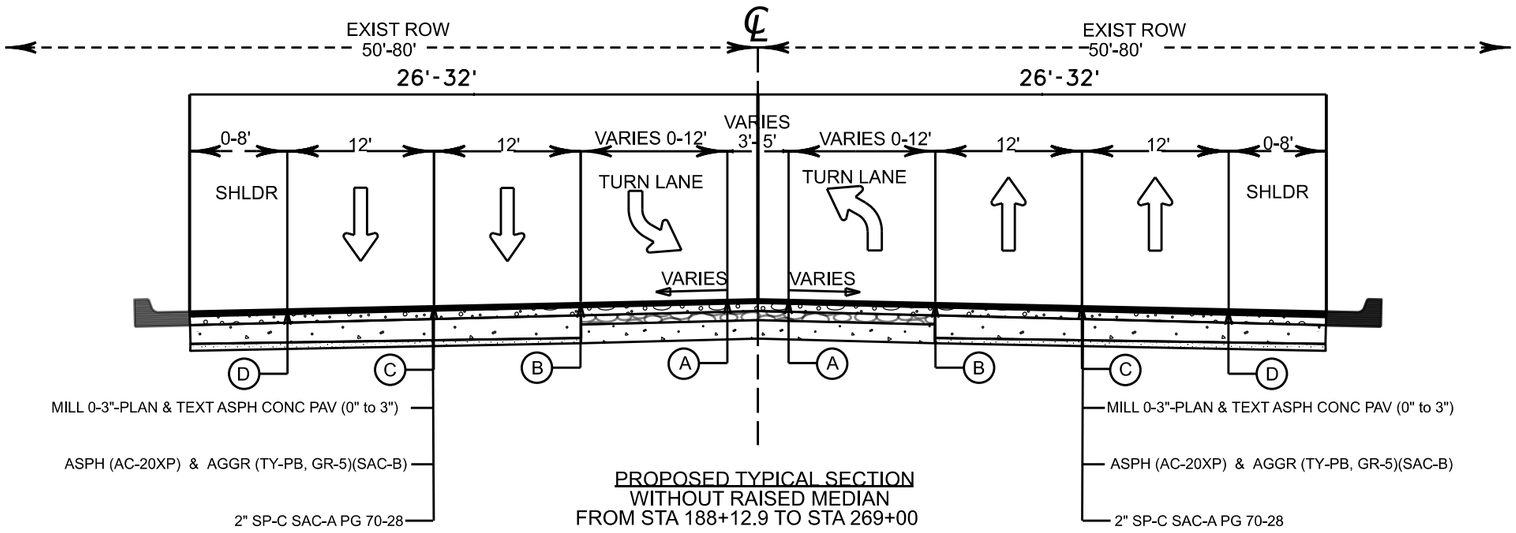


EXISTING TYPICAL SECTION
WITHOUT TURN LANES
FROM STA 188+12.9 TO STA 269+00



PROPOSED TYPICAL SECTION
WITHOUT RAISED MEDIAN
FROM STA 188+12.9 TO STA 269+00

NOTES:

1. REPAIR CONCRETE BASE FAILURES IN ACCORDANCE WITH STANDARD (REPCP-14) AND/OR AS DIRECTED BY THE ENGINEER. REPAIR FLEXIBLE PAVEMENT FAILURES IN ACCORDANCE WITH FULL DEPTH REPAIR DETAIL.

2. CONTRACTOR TO MATCH EXISTING SLOPES.

3. LEVEL-UP USING FOAM INJECTION AS DIRECTED BY THE ENGINEER.

4. ENSURE THAT EXISTING ROADWAY STRUCTURES, SUCH AS LIGHTING, UTILITIES, SIGNS, DRAINAGE ELEMENTS, ETC. ARE NOT IMPACTED DURING CONSTRUCTION AND PLANING OPERATIONS. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

5. REFERENCE ALL EXISTING PAVEMENT MARKINGS BEFORE MILLING.

6. TAKE PRECAUTIONS TO AVOID DAMAGE TO EXISTING BRIDGE DECKS AND BRIDGE JOINTS INCLUDING BUT NOT LIMITED TO ARMOR JOINTS, HEADER JOINTS, ETC. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

7. REMOVAL OF CONCRETE CURB TO BE PAID FOR BY ITEM 104-7016. DO NOT REMOVE CURB FROM CONCRETE BRIDGE MEDIAN AND INLET LOCATIONS.

8. CONSTRUCTION JOINTS SHALL NOT BE PLACED IN WHEEL PATHS.

9. CONSTRUCTION OPERATION LIMITS AT LOCAL STREET CROSSINGS SHALL ALIGN WITH TXDOT ROW LIMITS ,PAVEMENT JOINTS, OR AS DIRECTED BY THE ENGINEER. REFER TO TXDOT ROW MAP TO CONFIRM ROW LIMITS.

Legend:

- (A) — REFL PAV MRK TY I (Y)6"(SLD)(100MIL)
- (B) — REFL PAV MRK TY I (W)8"(SLD)(100MIL)
- (C) — REFL PAV MRK TY I (W)6"(BRK)(100MIL)
- (D) — REFL PAV MRK TY I (W)6"(SLD)(100MIL)
- ⇨ — TRAFFIC DIRECTION
- 3¾" TYP D HMAC
- 6" CONCRETE
- 2" GRAVEL HMAC
- BASE MATERIAL

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
TYPICAL SECTIONS

SHEET 1 OF 5

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		5

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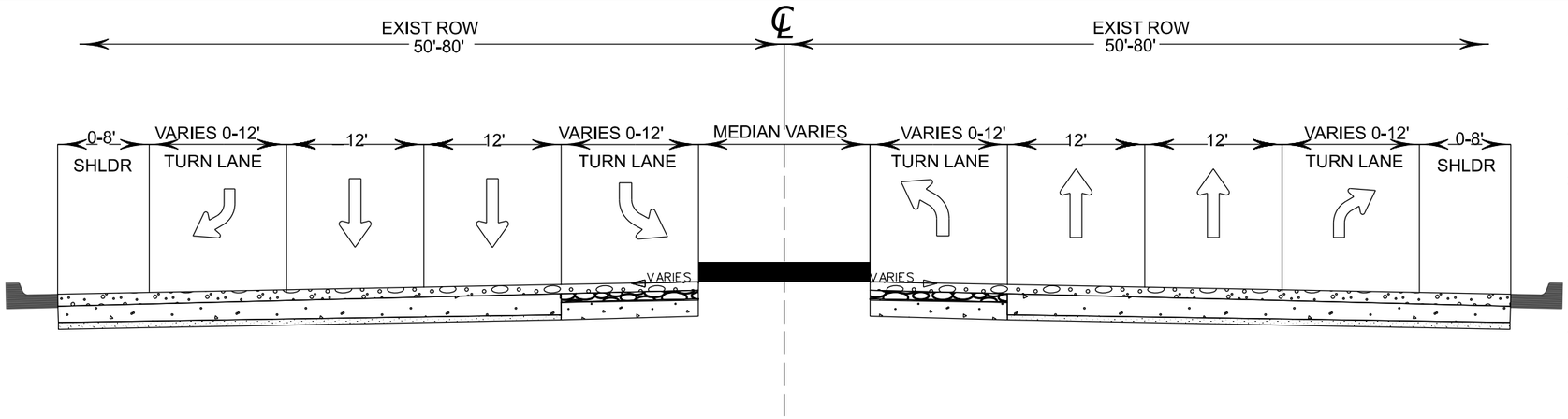
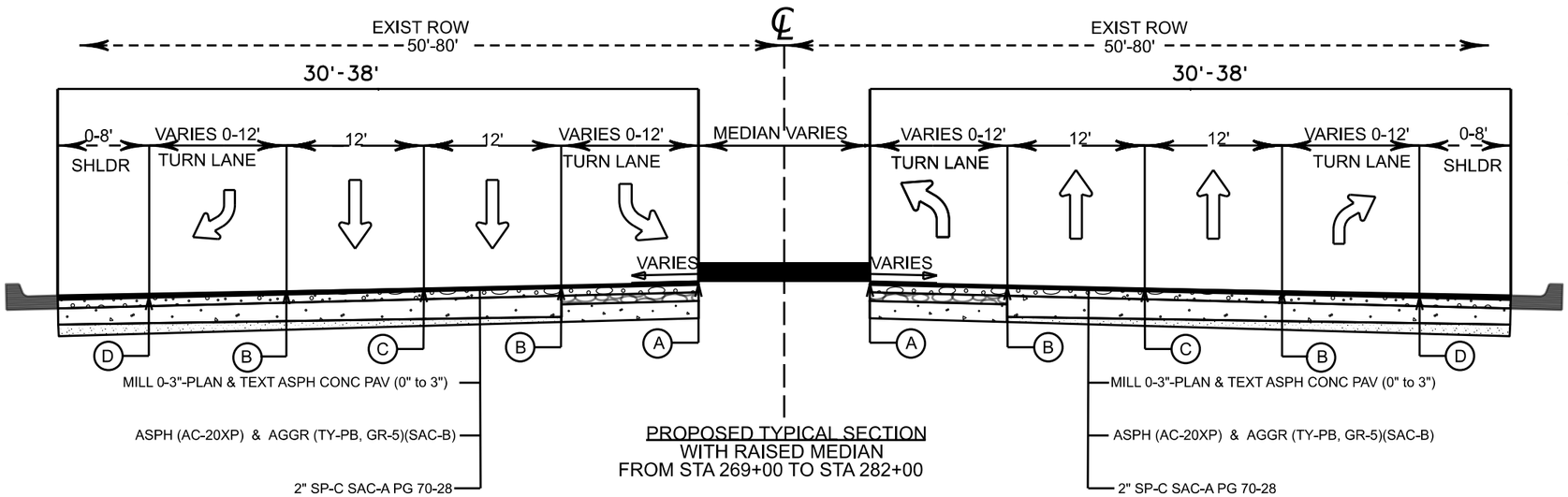


EXISTING TYPICAL SECTION
WITH RAISED MEDIAN
FROM STA 269+00 TO STA 282+00



PROPOSED TYPICAL SECTION
WITH RAISED MEDIAN
FROM STA 269+00 TO STA 282+00

Legend:

- (A) — REFL PAV MRK TY I (Y)6"(SLD)(100MIL)
- (B) — REFL PAV MRK TY I (W)8"(SLD)(100MIL)
- (C) — REFL PAV MRK TY I (W)6"(BRK)(100MIL)
- (D) — REFL PAV MRK TY I (W)6"(SLD)(100MIL)
- ⇨ — TRAFFIC DIRECTION
- 3¾" TYP D HMAC
- 6" CONCRETE
- 2" GRAVEL HMAC
- BASE MATERIAL

NOTES:

1. REPAIR CONCRETE BASE FAILURES IN ACCORDANCE WITH STANDARD (REPCP-14) AND/OR AS DIRECTED BY THE ENGINEER. REPAIR FLEXIBLE PAVEMENT FAILURES IN ACCORDANCE WITH FULL DEPTH REPAIR DETAIL.

2. CONTRACTOR TO MATCH EXISTING SLOPES.

3. LEVEL-UP USING FOAM INJECTION AS DIRECTED BY THE ENGINEER.

4. ENSURE THAT EXISTING ROADWAY STRUCTURES, SUCH AS LIGHTING, UTILITIES, SIGNS, DRAINAGE ELEMENTS, ETC. ARE NOT IMPACTED DURING CONSTRUCTION AND PLANING OPERATIONS. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

5. REFERENCE ALL EXISTING PAVEMENT MARKINGS BEFORE MILLING.

6. TAKE PRECAUTIONS TO AVOID DAMAGE TO EXISTING BRIDGE DECKS AND BRIDGE JOINTS INCLUDING BUT NOT LIMITED TO ARMOR JOINTS, HEADER JOINTS, ETC. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

7. REMOVAL OF CONCRETE CURB TO BE PAID FOR BY ITEM 104-7016. DO NOT REMOVE CURB FROM CONCRETE BRIDGE MEDIAN AND INLET LOCATIONS.

8. CONSTRUCTION JOINTS SHALL NOT BE PLACED IN WHEEL PATHS.

9. CONSTRUCTION OPERATION LIMITS AT LOCAL STREET CROSSINGS SHALL ALIGN WITH TXDOT ROW LIMITS ,PAVEMENT JOINTS, OR AS DIRECTED BY THE ENGINEER. REFER TO TXDOT ROW MAP TO CONFIRM ROW LIMITS.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
TYPICAL SECTIONS

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		6

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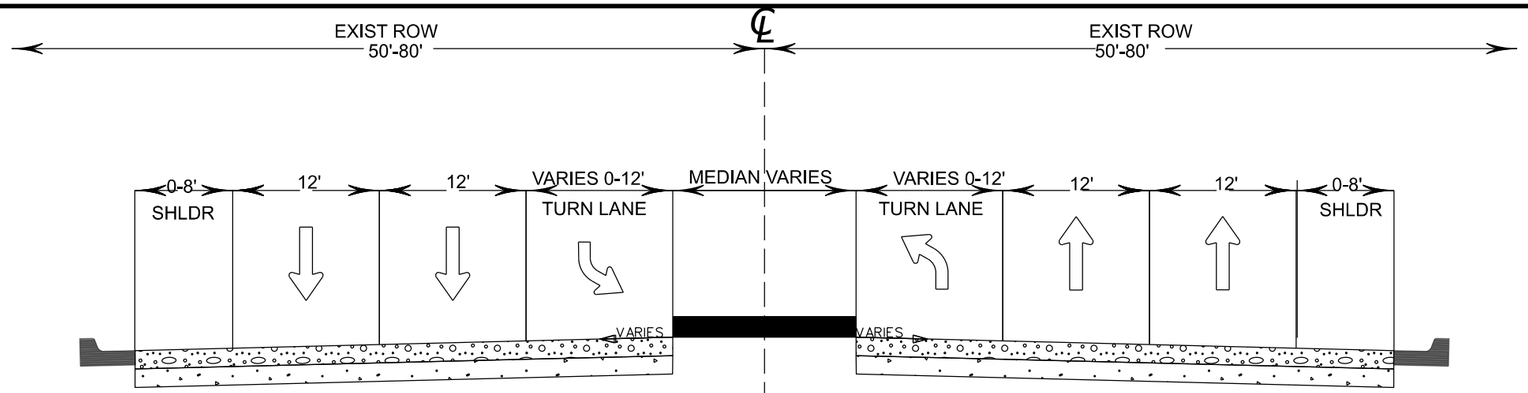
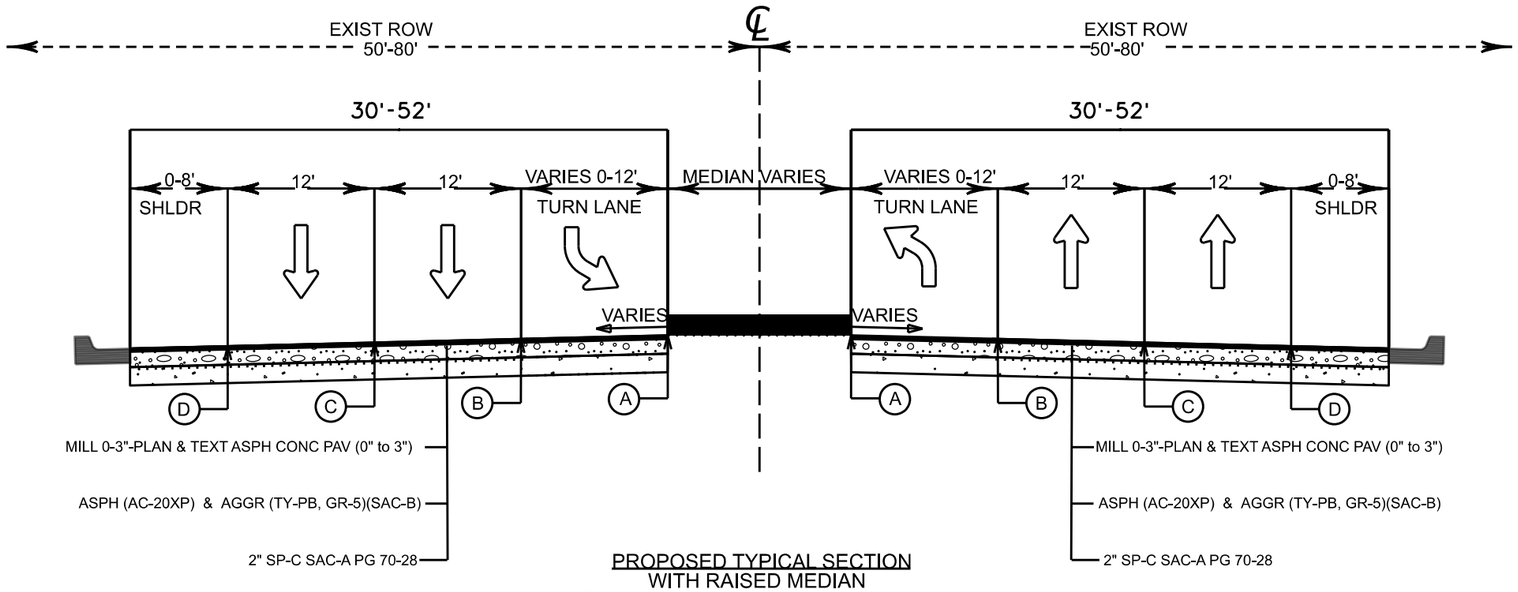


EXISTING TYPICAL SECTION
WITH RAISED MEDIAN
FROM STA 282+00 TO STA 285+93
AND FROM STA 349+51 TO STA 464+21



PROPOSED TYPICAL SECTION
WITH RAISED MEDIAN
FROM STA 282+00 TO STA 285+78
AND FROM STA 349+51 TO STA 464+21

Legend:

- (A) — REFL PAV MRK TY I (Y)6"(SLD)(100MIL)
- (B) — REFL PAV MRK TY I (W)8"(SLD)(100MIL)
- (C) — REFL PAV MRK TY I (W)6"(BRK)(100MIL)
- (D) — REFL PAV MRK TY I (W)6"(SLD)(100MIL)

⇨ — TRAFFIC DIRECTION

2-9½" LIMESTONE TY C HMAC

0-9½" CONCRETE

NOTES:

1. REPAIR CONCRETE BASE FAILURES IN ACCORDANCE WITH STANDARD (REPCP-14) AND/OR AS DIRECTED BY THE ENGINEER. REPAIR FLEXIBLE PAVEMENT FAILURES IN ACCORDANCE WITH FULL DEPTH REPAIR DETAIL.

2. CONTRACTOR TO MATCH EXISTING SLOPES.

3. LEVEL-UP USING FOAM INJECTION AS DIRECTED BY THE ENGINEER.

4. ENSURE THAT EXISTING ROADWAY STRUCTURES, SUCH AS LIGHTING, UTILITIES, SIGNS, DRAINAGE ELEMENTS, ETC. ARE NOT IMPACTED DURING CONSTRUCTION AND PLANING OPERATIONS. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

5. REFERENCE ALL EXISTING PAVEMENT MARKINGS BEFORE MILLING.

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7. REMOVAL OF CONCRETE CURB TO BE PAID FOR BY ITEM 104-7016. DO NOT REMOVE CURB FROM CONCRETE BRIDGE MEDIAN AND INLET LOCATIONS.

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STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
TYPICAL SECTIONS

SHEET 3 OF 5

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	7

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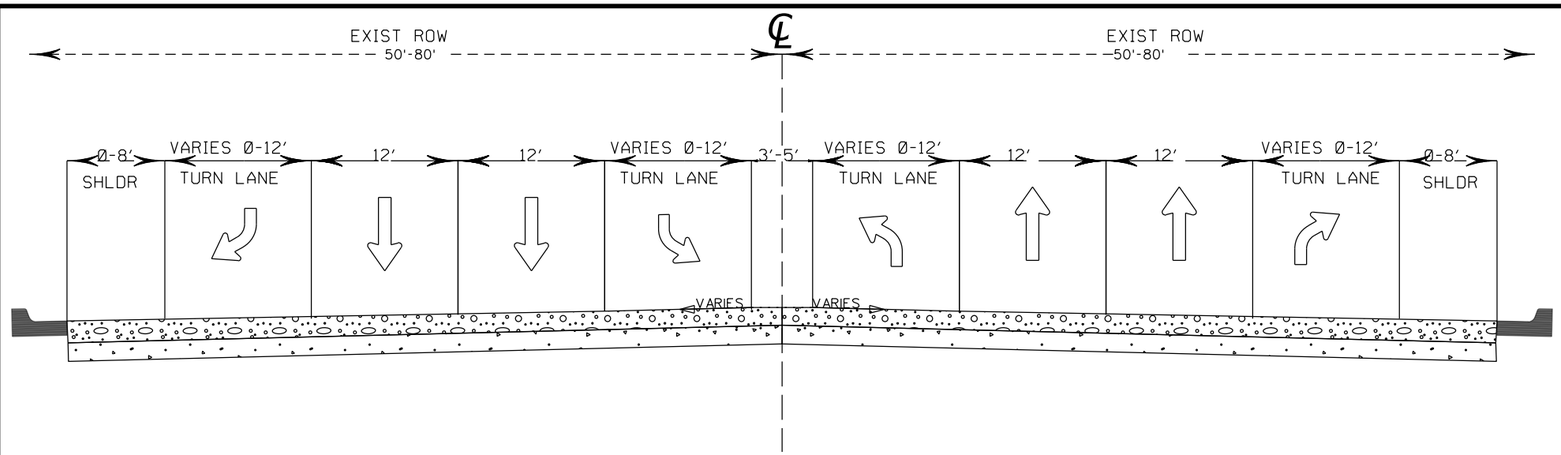
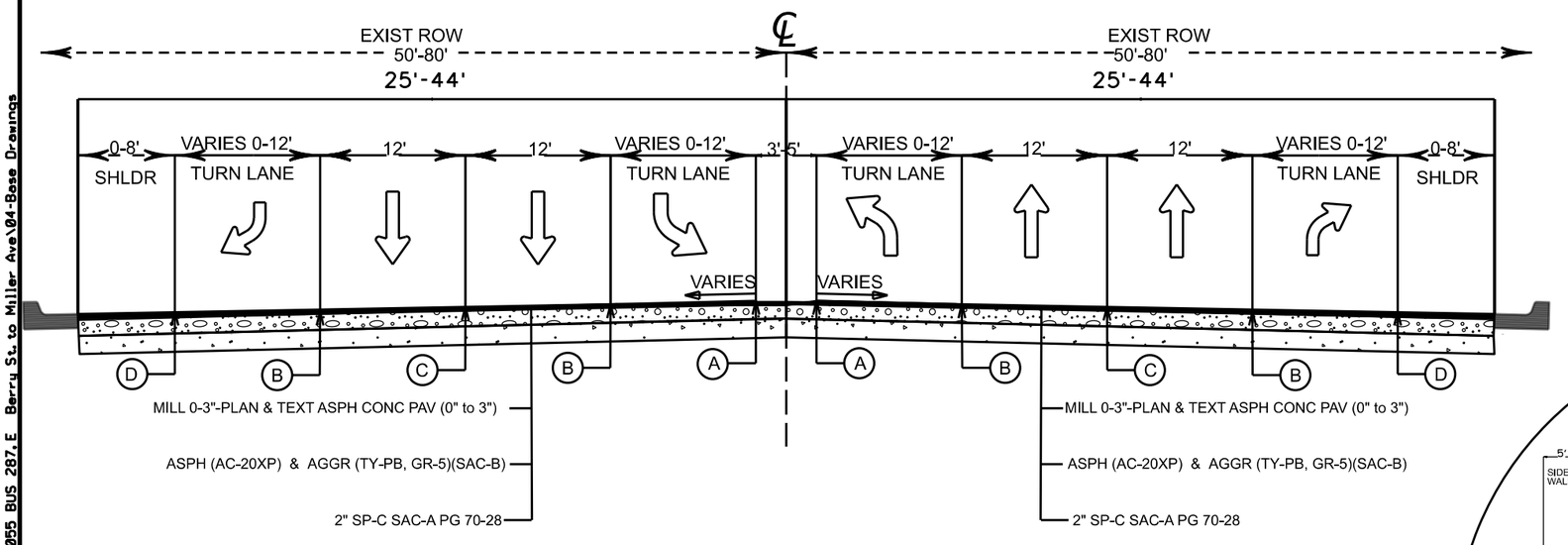


EXISTING TYPICAL SECTION
WITHOUT RAISED MEDIAN
FROM STA 285+78 TO STA 290+20
FROM STA 464+21 TO STA 466+00



PROPOSED TYPICAL SECTION
WITHOUT RAISED MEDIAN
FROM STA 285+78 TO STA 290+20
FROM STA 464+21 TO STA 466+00

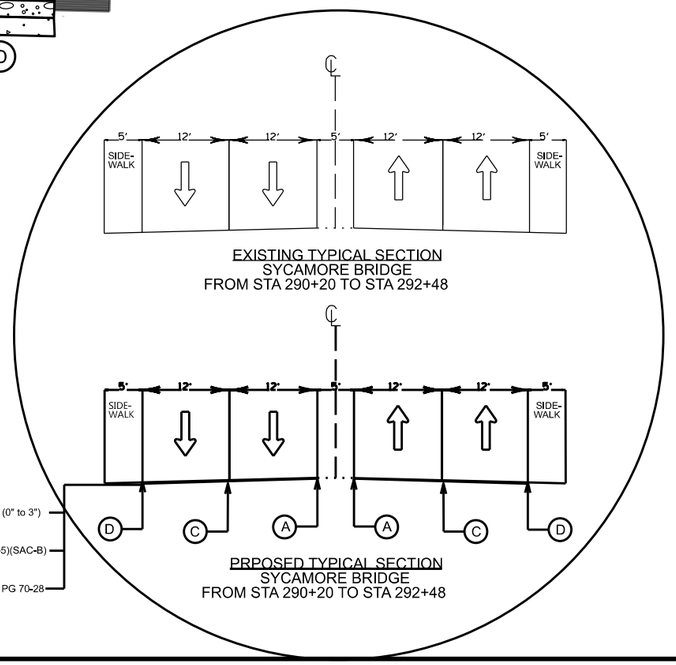
Legend:

- (A) — REFL PAV MRK TY I (Y)6"(SLD)(100MIL)
- (B) — REFL PAV MRK TY I (W)8"(SLD)(100MIL)
- (C) — REFL PAV MRK TY I (W)6"(BRK)(100MIL)
- (D) — REFL PAV MRK TY I (W)6"(SLD)(100MIL)

⇨ — TRAFFIC DIRECTION

▭ — 2-9½" LIMESTONE TY C HMAC

▭ — 0-9½" CONCRETE



EXISTING TYPICAL SECTION
SYCAMORE BRIDGE
FROM STA 290+20 TO STA 292+48

PROPOSED TYPICAL SECTION
SYCAMORE BRIDGE
FROM STA 290+20 TO STA 292+48

NOTES:

1. REPAIR CONCRETE BASE FAILURES IN ACCORDANCE WITH STANDARD (REPCP-14) AND/OR AS DIRECTED BY THE ENGINEER. REPAIR FLEXIBLE PAVEMENT FAILURES IN ACCORDANCE WITH FULL DEPTH REPAIR DETAIL.

2. CONTRACTOR TO MATCH EXISTING SLOPES.

3. LEVEL-UP USING FOAM INJECTION AS DIRECTED BY THE ENGINEER.

4. ENSURE THAT EXISTING ROADWAY STRUCTURES, SUCH AS LIGHTING, UTILITIES, SIGNS, DRAINAGE ELEMENTS, ETC. ARE NOT IMPACTED DURING CONSTRUCTION AND PLANING OPERATIONS. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

5. REFERENCE ALL EXISTING PAVEMENT MARKINGS BEFORE MILLING.

6. TAKE PRECAUTIONS TO AVOID DAMAGE TO EXISTING BRIDGE DECKS AND BRIDGE JOINTS INCLUDING BUT NOT LIMITED TO ARMOR JOINTS, HEADER JOINTS, ETC. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

7. REMOVAL OF CONCRETE CURB TO BE PAID FOR BY ITEM 104-7016. DO NOT REMOVE CURB FROM CONCRETE BRIDGE MEDIAN AND INLET LOCATIONS.

8. CONSTRUCTION JOINTS SHALL NOT BE PLACED IN WHEEL PATHS.

9. CONSTRUCTION OPERATION LIMITS AT LOCAL STREET CROSSINGS SHALL ALIGN WITH TXDOT ROW LIMITS ,PAVEMENT JOINTS, OR AS DIRECTED BY THE ENGINEER. REFER TO TXDOT ROW MAP TO CONFIRM ROW LIMITS.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

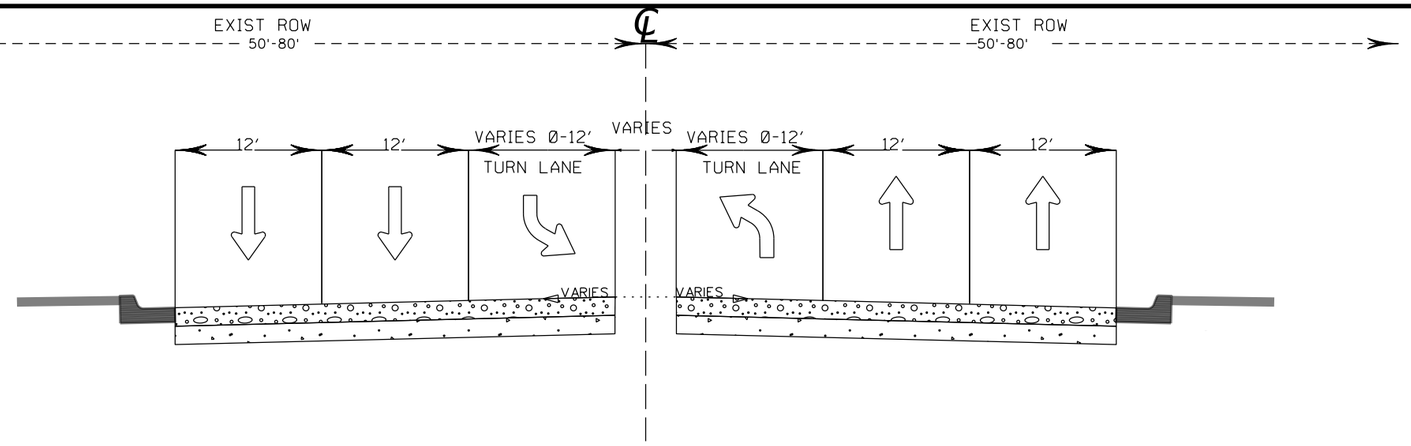
BUS 287
TYPICAL SECTIONS

SHEET 4 OF 5

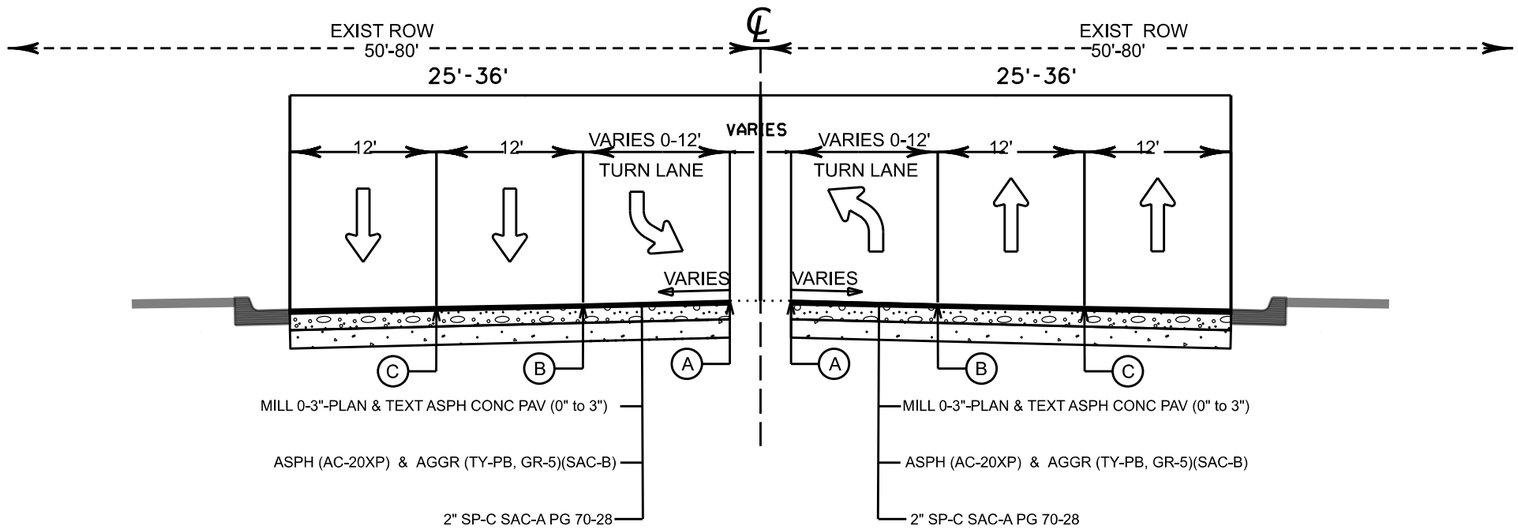
Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		8

DATE: 09/09/2024 7:27AM
FILE: T:\STCAD Files\STCAD Design\Projects\0172-01-055 BUS 287,E Berry St to Miller Ave\04-Base Drawings



EXISTING TYPICAL SECTION
FROM STA 292+48 TO STA 300+50 (NO MEDIAN)
FROM STA 300+50 TO STA 347+00 (5' MEDIAN)
FROM STA 347+00 TO STA 349+51 (RAISED MEDIAN)



PROPOSED TYPICAL SECTION
FROM STA 292+48 TO STA 300+50 (NO MEDIAN)
FROM STA 300+50 TO STA 347+00 (5' MEDIAN)
FROM STA 347+00 TO STA 349+51 (RAISED MEDIAN)

Legend:

Ⓐ —— REFL PAV MRK TY I (Y)6"(SLD)(100MIL)
Ⓑ —— REFL PAV MRK TY I (W)8"(SLD)(100MIL)
Ⓒ —— REFL PAV MRK TY I (W)6"(BRK)(100MIL)
Ⓓ —— REFL PAV MRK TY I (W)6"(SLD)(100MIL)

⇨ —— TRAFFIC DIRECTION

—— 2-9½" LIMESTONE TY C HMAC

—— 0-9½" CONCRETE

NOTES:

1. REPAIR CONCRETE BASE FAILURES IN ACCORDANCE WITH STANDARD (REPCP-14) AND/OR AS DIRECTED BY THE ENGINEER. REPAIR FLEXIBLE PAVEMENT FAILURES IN ACCORDANCE WITH FULL DEPTH REPAIR DETAIL.

2. CONTRACTOR TO MATCH EXISTING SLOPES.

3. LEVEL-UP USING FOAM INJECTION AS DIRECTED BY THE ENGINEER.

4. ENSURE THAT EXISTING ROADWAY STRUCTURES, SUCH AS LIGHTING, UTILITIES, SIGNS, DRAINAGE ELEMENTS, ETC. ARE NOT IMPACTED DURING CONSTRUCTION AND PLANING OPERATIONS. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

5. REFERENCE ALL EXISTING PAVEMENT MARKINGS BEFORE MILLING.

6. TAKE PRECAUTIONS TO AVOID DAMAGE TO EXISTING BRIDGE DECKS AND BRIDGE JOINTS INCLUDING BUT NOT LIMITED TO ARMOR JOINTS, HEADER JOINTS, ETC. ANY DAMAGE DONE BY THE CONTRACTOR WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND REPAIRS MUST BE APPROVED BY THE ENGINEER.

7. REMOVAL OF CONCRETE CURB TO BE PAID FOR BY ITEM 104-7016. DO NOT REMOVE CURB FROM CONCRETE BRIDGE MEDIAN AND INLET LOCATIONS.

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9. CONSTRUCTION OPERATION LIMITS AT LOCAL STREET CROSSINGS SHALL ALIGN WITH TXDOT ROW LIMITS ,PAVEMENT JOINTS, OR AS DIRECTED BY THE ENGINEER. REFER TO TXDOT ROW MAP TO CONFIRM ROW LIMITS.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
TYPICAL SECTIONS

SHEET 5 OF 5

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		9

DATE: 09/09/2024 7:27AM
FILE: T:\STCAD Files\STCAD Design\Projects\0172-01-055 BUS 287,E Berry St to Miller Ave\04-Base Drawings

Control: 0172-01-055, ETC.

County: Tarrant

Highway: BU 287P

Specification Data

Basis of Estimate

Item	Description	Rate	Unit
168	Vegetative Watering	169,400 gal./acre	1,000 gal.
341	D-GR HMA TY D	115 lb./sq. yd.-in.	ton
344	SP MIXES SP-C	115 lb./sq. yd.-in.	ton

Seal Coat Data

Modified Asphalts (Roadway)

Asph Type AC-20XP
Rate 0.25 gal./sq. yd. (when using Gr. 5 aggregate)(2nd Course)

Aggr Type PB
Rate 1 cu. yd./150 sq. yd. (Gr. 5)

Note: The rates of asphalt and aggregate application are for estimating purposes only and may be varied as directed.

Special Notes

Electronic files containing answered pre-letting questions and other project related design information will be placed in the following FTP site periodically.

Check this site for new information. Notices of new postings will not be sent out by the Engineer.

The data located in these files is for non-construction purposes only and can be found at

TxDOT's public FTP site at https://ftp.dot.state.tx.us/pub/txdot-info/Pre-Letting Responses/.

Access is read-only.

All files in the FTP site are subject to the License Agreement shown on the FTP site.

To obtain a copy of the project plans free of charge, submit a request from the following site:

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Highway: BU 287P

http://www.txdot.gov/business/letting-bids/plans-online.html

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

Area Engineer's Email: maribel.rangel@txdot.gov
Assistant Area Engineer's Email: justin.thomey@txdot.gov
Design Manager's Email: raul.orozco@txdot.gov

For Q&A's on Proposals navigate to https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors. Use 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.

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

Single lane closures, except as otherwise shown in the plans, will be restricted to off-peak hours as defined in the following table:

Peak Hours		Off-Peak Hours	
6 to 9 AM Monday through Friday	3 to 7 PM Monday through Friday	9 AM to 3 PM and 7 PM to 6 AM Monday through Friday	All day Saturday and Sunday

Work that requires closure of multiple travel lanes in the same direction, except as otherwise shown in the plans, are restricted to night hours between 9 PM and 6 AM.
Existing storm sewers and utilities are shown from the best available information. Verify the location of all underground facilities prior to starting work.

For dimensions of right-of-way not shown on the plans, see right-of-way map on file at the TxDOT District Office.

Modifications to Lane Closure / Work Restrictions:

Submit a request in writing for approval by the Engineer a minimum of 10 days in advance of implementing a change to lane closure restrictions.

When deemed necessary, the Engineer will lengthen, shorten, or otherwise modify lane closure restrictions as traffic conditions warrant.

When deemed necessary, the Engineer will modify the list of major events when new events develop, existing events are rescheduled, or when warranted.

Special Events/ Special Situations will be handled on a case-by-case basis. No work restricting lane closures is allowed from 3 PM a day before to 9 AM the day after the Special Event or Special Situation.

Complete all work in these easement areas prior to the expiration dates shown. In the event that work is done after these expiration dates, all costs for extending these dates will be paid by the Contractor.

Remove all existing fences within the right of way and remove and replace all existing fences within easements where such fences conflict with the work. Protect the remaining fence from damage due to slacking. Erect temporary fencing in the easement areas as necessary to secure the property. Provide at least one week notice to the property owner prior to removing or relocating the fence. Restore permanent fencing to an equal or better condition.

Provide all-weather surface for temporary ingress and egress to adjacent property, as directed. Materials, labor, equipment and incidentals necessary to provide temporary ingress and egress will not be paid for directly, but will be subsidiary to the various bid items.

Where necessary, the governing slopes indicated herein may be varied from the limits shown, to the extent approved.

On superelevated curves the shoulders will have the same cross-slope as the pavement, unless otherwise indicated.

On superelevated curves where the grade line is in a sag or on a flat grade, overlay the shoulders to the extent necessary to prevent trapping of water on the high side.

All driveway openings will be determined by the Engineer and will conform with Texas Department of Transportation "Regulations for Access Driveways to State Highways" adopted September 1953, and revised June 2004.

Locations and lengths of all private entrances are approximate only. The actual locations, lengths, lines and grades are to be determined by the Engineer and shall conform to the regulations of The City of City of Fort Worth and The City of Forest Hill.

Do not discolor or damage existing curb and curb and gutter during construction operations. In the event of discoloration or damage, clean or repair as directed.

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Remove the grass from the crown of shoulders or pavement edges by blading or other approved methods. Payment for this work will not be made directly, but will be subsidiary to the various items of the contract.

Locations shown for drainage structures refer to the control points of structures as follows:

1) Manholes, Inlets, and Junction Boxes—Locations are at the centroid of the structure; when two structure types are specified, location is at the centroid of the top structure. Bottom structure may be positioned as required to align with top structure, storm drain pipes and other adjacent structures.

2) Street Inlets—Locations are at the face of curb at a distance of L/2 from the end of the inlet.

3) Headwalls—Locations are to the outside face of the headwall at the centerline of the pipe or box structure. For pipe headwalls with Type "P" or "C" safety end treatment, locations are on the centerline of the pipe structure at the limit of payment for pipe.

Plugging of pipes or culverts will not be paid for directly, but will be subsidiary to the various bid items, unless otherwise shown on the plans.

Provide temporary drain openings at all low points or other drainage structures, as required, at the Contractor's expense.

Remove any obstructions to existing drainage due to the contractor's operations, as required, at the Contractor's expense.

Install all required concrete riprap flumes immediately following the construction of ditches in which they are to be placed. In addition, apply all erosion control measures as shown on the plans or as directed, immediately following construction of channels to their required line, grade, and section.

Item 4. Scope of Work

Reimbursement for project overhead will not be considered until project completion has extended beyond the original Contract Time.

Item 5. Control of the Work

When supplementary bridge plans, shop drawings, shop details, erection drawings, working drawings, forming plans, or other drawings are required, prepare and submit drawings on sheets 8-1/2 by 11 inches, 17 by 22 inches, or full size drawings reduced to half scale if completely

legible. If, in the opinion of the Engineer, the drawings are not completely legible, prepare and submit on sheets 22 by 34 inches, with a 1-1/2 inch left margin, and 1/2 inch top, right, and bottom margins.

Submit all sheets with a title in the lower right hand corner. The title must include the sheet index data shown on the lower right corner of the project plans, name of the structure or element or stream, sheet numbering for the shop drawings, name of the fabricator and the name of the Contractor.

Item 6. Control of Materials

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

Item 7. Legal Relations and Responsibilities

This contract requires work to be done on railroad property. Cooperate with the railroads and comply with all of their requirements including obtaining any required training before performing work on railroad property.

Submit to the Engineer an original railroad liability insurance policy.

Do not initiate activities in a project specific location (PSL) associated with a U.S. Army Corps of Engineers (USACE) permit area that has not been previously evaluated by the USACE as part of the permit review of this project. Such activities include, but are not limited to haul roads, equipment staging areas, borrow and disposal sites. "Associated" as defined here means materials are delivered to or from the PSL. The permit area includes all waters of the U.S. or associated wetlands affected by activities associated with this project. Special restrictions may be required for such work. The contractor will be responsible for all consultations with the USACE regarding activities, including project specific locations (PSLs) that have not been previously evaluated by the USACE. Provide the Department with a copy of all consultations or approvals from the USACE prior to initiating activities.

The Contractor may proceed with activities in PSLs that do not affect a USACE permit area if a self-determination has been made that the PSL is non-jurisdictional or proper USACE clearances have been obtained in jurisdictional areas or have been previously evaluated by the USACE as part of the permit review of this project. The contractor is solely responsible for documenting any determinations that their activities do not affect a USACE permit area. Maintain copies of these determinations for review by the Department or any regulatory agency.

Document and coordinate with the USACE, if required, prior to any excavation hauled from or embankment hauled into a USACE permit area by either (1) or (2) below.

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(1) Restricted Use of Materials for Previously Evaluated Permit Areas. Document both the project specific location (PSL) and its authorization. Maintain copies for review by the Department or any regulatory agency. When an area within the project limits has been evaluated by the USACE as part of the permit process for this project:

a. Suitable excavation of required material in the areas shown on the plans and cross sections as specified in Item 110 is used for permanent or temporary fill (Item 132, Embankment) within a USACE permit area;
b. Suitable embankment (Item 132) from within the USACE permit area is used as fill within a USACE evaluated area; and,
c. Unsuitable excavation or excess excavation ["Waste"] (Item 110) that is disposed of at a location approved by the Engineer within a USACE evaluated area.

(2) Contractor Materials from Areas Other than Previously Evaluated Areas. Provide the Department with a copy of all USACE coordination or approvals prior to initiating any activities for an area within the project limits that has not been evaluated by the USACE or for any off right of way locations used for the following, but not limited to haul roads, equipment staging areas, borrow and disposal sites:

a. Item 132, Embankment, used for temporary or permanent fill within a USACE permit area; and,
b. Unsuitable excavation or excess excavation ["Waste"] (Item 110, Excavation) that is disposed of outside a USACE evaluated area.

The total area disturbed for this project is 3.51 acres. The disturbed area in this project, all project locations in the Contract, and the Contractor project specific locations (PSLs), within 1 mile of the project limits, for the Contract will further establish the authorization requirements for storm water discharges. The Department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. The Contractor is to obtain required authorization from the TCEQ for Contractor PSLs for construction support activities on or off the right of way. When the total area disturbed in the Contract and PSLs within 1 mile of the project limits exceeds 5 acres, provide a copy of the Contractor NOI for PSLs on the right of way to the Engineer and to the local government that operates a separate storm sewer system.

When a bridge deck is milled, seal coated and overlaid, remove excess material. Do not just broom to the sides of the bridge, under guardrail, etc. Cover or protect all sealed expansion joints and rails on bridges and all railroad tracks encountered as approved. Clean and repair all of these features if they weren't properly protected at contractor's expense. This work is subsidiary work to applicable bid items.

Prevention of Migratory Bird Nesting

It is anticipated that migratory birds, a protected group of species, may try to nest on bridges, culverts, vegetation, or gravel substrate, at any time of the year. The preferred nesting season for migratory birds is from February 15 through October 1. When practicable, schedule construction

operations outside of the preferred nesting season. Otherwise, avoid nests containing migratory birds and perform no work in the nesting areas until the young birds have fledged.

Structures
Do not begin bridge and culvert construction operations until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If the State installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:
1. By February 15 begin the removal of any existing mud nests and all other mud placed by swallows for the construction of nests on any portion of the bridge and culverts. The Engineer will inspect the bridges and culverts for nest building activity. If swallows begin nest building, scrape or wash down all nest sites. Perform these activities daily unless the Engineer determines the need to do this work more frequently. Remove nests and mud through October 1 or until bridge and culvert construction operations are completed.

2. By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts.

No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows. This work is subsidiary to the various bid items.

The following Holiday/Event lane closure restriction requirements apply to this project:
No work that restricts or interferes with traffic shall be allowed between 3 PM on the day preceding a Holiday or Event and 9 AM on the day after the Holiday or Event.

Holiday Lane Closure Restrictions	
New Year's Eve and New Year's Day (December 31 through January 1)	3 PM December 30 through 9 AM January 2
Easter Holiday Weekend (Friday through Sunday)	3PM Thursday through 9 AM Monday
Memorial Day Weekend (Friday through Monday)	3 PM Thursday through 9 AM Tuesday
Independence Day (July 3 through July 5)	3 PM July 2 through 9 AM July 6
Labor Day Weekend (Friday through Monday)	3 PM Thursday through 9 AM Tuesday
Thanksgiving Holiday (Wednesday through Sunday)	3 PM Tuesday through 9 AM Monday

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Christmas Holiday (December 23 through December 26)	3 PM December 22 through 9 AM December 27

Plan work schedules around the appropriate dates above to ensure productive work is performed without lane closures.

Event Lane Closure Restrictions 3 PM the day before Event to 9 AM the day after the Event			
NASCAR Races at Texas Motor Speedway (generally 3 events):	NASCAR Nationwide and Sprint Cup Series (Held in late March/early April)	NASCAR Nationwide and Sprint Cup Series (Held in Late October/early November)	Indy Series Racing and NASCAR Truck Series (Held in June)
Within one mile radius of major retail traffic generators i.e. malls (Thanksgiving Day through January 2)			
Fort Worth Stock Show and Rodeo			

Item 8. Prosecution and Progress

Each contract awarded by the Department stands on its own, and as such, is separate from other contracts. A Contractor awarded multiple contracts must be capable and sufficiently staffed to concurrently process and/or execute all contracts at the same time.

Working days will be computed and charged in accordance with Section 8.3.1.1, "Five-Day Workweek."

The number of working days for final acceptance will be **192** working days.

Only nighttime work will be allowed of the Phase II and Phase III of the TCP, unless otherwise approved by the Engineer.

Use Critical Path Method (CPM) schedule in P6 format for this project. Submit the baseline schedule and obtain approval prior to beginning construction. The baseline schedule working days will be the same as the number of working days established by the Contract. The Estimate will be held if a monthly schedule update is not submitted. Also submit the XER file.

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Daytime Work	*Nighttime Work*
9:00 am – 3:00 pm Monday – Friday	9:00 pm – 6:00 am Sunday – Thursday

Item 8.9 Workers and Equipment

Provide Multi-Directional Lighting Device for nighttime work with the following quality requirements:

- Provide a 2000 watt (minimum) SIROCCO lighting balloon. Airstar lighting or equivalent.
- It is the intent of the MDLD lighting to supplement the Portable Road Light and Power Unit used to illuminate work areas during night work hours.
- Provide MDLD units which can self-inflate and are capable of illuminating approximately 15,000 sq. ft.
- Provide MDLD units of 1.1 meter horizontal diameter and capable of withstanding 60 mph winds when fully inflated and operating.

Provide MDLD units with two (2) 1,000 watt halogen bulbs recommended by the manufacturer.

Item 100. Preparing Right of Way

Measurement for this item will be along the centerline of the project with the limits of measurements as shown on the plans.

Removal of existing concrete pavement will be in accordance with Item 104, "Removing Concrete" except that this work will not be paid for directly, but will be subsidiary to Item 100, "Preparing Right of Way."

Item 104. Removing Concrete

When associated with a structure to be removed, removal of riprap as required, approach slabs, and shoulder drains are to be included in the unit price bid for Item 496, "Removing Structures."

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Item 105. Removing Treated and Untreated Base and Asphalt Pavement

Cement, lime, and/or lime fly-ash treated base material removed on this project will become the property of the Contractor.

Item 110. Excavation

Review proposed waste sites to determine if any site is located in a "Base Floodplain" or "Floodway" as defined by the Federal Emergency Management Agency (FEMA).

If waste material from this project is placed in a base floodplain as defined by FEMA, obtain a permit from the local community responsible for enforcing National Flood Insurance Program (NFIP) regulations. Ensure that the owner of the property receiving the waste has obtained the necessary permit.

Items 110, 112, and 132. Excavation, Subgrade Widening, and Embankment

Sulfate-laden subgrade material that is to be treated with either lime or cement, including material up to one foot outside the proposed treatment limits, is susceptible to sulfate heave. It has been determined that an excessive concentration of sulfate in the soils (>3,000 PPM by dry weight of the soil) exists for given areas of excavation and/or proposed treated subgrade within the project limits.

Moderate sulfate levels are those defined from 3,001 PPM to 7,000 PPM. Treat these soils with lime at the full 150 lb./cu. yd. rate or cement at the full 125 lb./cu. yd. rate. Do not split the rates to ensure complete reaction and mitigation of sulfate heaves. Allow the mixture to mellow for 7 days to provide for complete reaction.

High sulfate levels are not allowed within the treatment and surrounding areas as defined above.

Test soils for soluble sulfates in accordance with Test Method Tex-145 and Tex-146-E.

Treat moderate sulfate or excavate high sulfate areas identified above and other subgrade areas that may be identified during construction as having moderate to high sulfate concentrations to a depth of one foot below and laterally to one foot outside the proposed treatment limits. Treatment of the moderate level material will be paid for under Item 260, "Lime Treatment (Road Mixed)" or Item 275, "Cement Treatment (Road Mixed)." Removal of the high level material will be measured and paid for in accordance with Item 110, "Excavation" and replacement with suitable material will be measured and paid for in accordance with Item 132, "Embankment."

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Any excavated sulfate-laden material will be acceptable for use in fill areas. Do not place within previously specified section boundaries of subgrade to be treated with either lime or cement.

Off-Site Borrow Sources. In addition to meeting pertinent specification requirements, test off-site borrow sources for sulfate content. Test soils for soluble sulfates in accordance with Test Method Tex-145 and Tex-146-E and provide documentation that supports compliance with previously stated requirements. The Engineer will perform additional testing for sulfates of this material upon delivery to the project. Only material that is placed within one foot vertically or laterally of subgrade treatment will require testing for sulfates. Remove and replace failing material (sulfate concentrations >7,000 PPM by dry weight).

Item 132. Embankment
Provide Type C embankment material with a Plasticity Index (PI) less than 35.

Furnish test results per Test Procedures Tex-104, 105, and 106-E (PIs), Tex-113 or 114-E (M-D Curves), and Tex-145 and/or Tex-146-E (Sulfates) for each material sample provided by the Engineer. Perform field density tests (Tex-115-E, Part I) at a frequency for each worked section to produce passing results prior to testing by the Engineer per Tex-115-E, Part I. The Engineer will perform separate testing of the material.

When embankment is placed as a bridge header bank, test each lift for compliance with density requirements, near the center of each travel lane at the following locations:

1. At the "beginning of bridge" or "end of bridge" station (if abutment is on retaining wall, location may be adjusted by not more than 5 feet.)
2. At 25-foot intervals for a distance of 150 feet in advance of the "beginning of bridge" station.
3. At 25-foot intervals for a distance of 150 feet after the "end of bridge" station.

Density tests must be conducted by a department-certified independent testing laboratory. Results of tests will be furnished to TxDOT within 24 hours after testing; a final copy of all test reports must be signed and sealed by a Professional Engineer in the State of Texas and furnished within five (5) working days after testing. Areas which do not meet minimum density requirements will be removed, re-compacted, and re-tested for compliance at the contractor's entire expense. Testing and reporting of test results will not be paid for directly, but will be subsidiary to this item.

Construct embankments for bridge header banks to final subgrade elevation prior to excavation for abutment caps and placement of foundation course at approach slabs. Payment for structural excavation and/or excavation for placement of foundation course will not be paid for directly, but will be subsidiary to the pertinent bid items.

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At all locations where guardrail is shown to flare, widen the embankment as necessary to accommodate the guardrail.

Item 161. Compost

Place approximately 4" of compost manufactured topsoil (CMT) on all cut and fill slopes (except drainage channels where flexible channel liners are indicated), at other locations shown on the plans, or as directed.

Where "blended on-site" CMT is specified, produce the compost manufactured topsoil by incorporating 1" of compost with 3" of furnished topsoil as shown on the plans.

Where "pre-blended" CMT is specified, amend suitable soil material, as directed, with 25% compost, by volume, to produce the compost manufactured topsoil. Place the compost manufactured topsoil in a loose layer approximately 4" thick, as shown on the plans.

Use the processed material from Item 100 as the wood chips to blend with the compost to produce the Erosion Control Compost required for this project. This is considered subsidiary to Item 161.

Item 162. Sodding for Erosion Control

Furnish and place Bermudagrass sod.

Item 168. Vegetative Watering

Furnish and install an approved rain gauge at the project site, as directed. Furnishing and installation of the rain gauge will not be paid for directly, but will be subsidiary to Item 168.

Apply vegetative watering for an establishment period of thirteen weeks following application of seed or installation of sod, at a rate of 1/2 inch of water depth per week (approximately 13,030 gallons per acre). During the first four weeks after seeding, apply water twice per week, on non-consecutive days, each at half the weekly application rate. For the remainder of the establishment period, apply vegetative watering once per week during the months of January through June or September through December, at the weekly application rate; apply watering twice per week, on non-consecutive days during the months of July and August, each at one-half the weekly application rate.

Average weekly rainfall rates for the District are:

January—0.39"	April—0.86"	July—0.48"	October—0.68"
February—0.46"	May—1.00"	August—0.47"	November—0.46"
March—0.48"	June—0.63"	September—0.74"	December—0.37"

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County: Tarrant

Highway: BU 287P

Item 316. Seal Coats

Asphalt storage tanks may be used.

Provide a transverse variance rate of as applicable or as approved by the Engineer. Provide an equal amount of asphaltic material between the wheelpaths as outside the wheelpaths.

Provide a minimum of 3 pneumatic rollers as specified under Article 316.3.3, "Rollers."

The asphalt application season for this project is May 1 to August 31.

Item 341. Dense-Graded Hot-Mix Asphalt

RAP aggregate must meet the requirements of Table 1.

Provide aggregate with a Surface Aggregate Classification (SAC) value of A for the surfaces other than the travel lanes.

No blending, of the material retained on the No. 4 sieve, to meet SAC A will be allowed for surface mixes.

Natural (field) sands are not allowed.

Provide a PG 64-22 asphalt for the base course.

Provide a PG 64-22 asphalt for the concrete underlayment course.

Provide a PG 70-28 asphalt for the surface course and levelup course, if applicable.

Furnish a CSS-1P with greater than 50% asphalt residue for the tack coat on this project. A trackless tack can be used in lieu of CSS-1P tack coat or as directed by the Engineer. The Engineer will set the rate at time of application.

Warm Mix Asphalt (WMA) is not permitted in any mix type on this project.

RAP and RAS are not permitted in any surface and levelup mixes on this project.

Department-owned RAP is available to the Contractor. The stockpile location is Bridgewood Stockpile (32.75817, -97.21839) or IH-30 Lancaster Stockpile (32.74716,-97.30654).Contact the South Tarrant County Maintenance Office at 817-586-5575 or 682-774-4846 with at least 72 hours advance notice to coordinate the acquisition and accounting of the RAP material.

Grade substitution per Table 5 is not allowed.

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Include the approved mix design number on each delivery ticket.

Use a Material Transfer Device (MTD) unless otherwise directed.

Shoulders, crossovers, and other areas listed on the Plan sheets or as directed are not subject to in-place air void determination for this project.

Temporary detours are subject to in-place air void determination for this project.

Use Surface Test Type B for this project.

Item 344. Superpave Mixtures

RAP aggregate must meet the requirements of Table 1.

Provide aggregate with a Surface Aggregate Classification (SAC) value of A for the travel lanes and shoulders.

Provide aggregate with a Surface Aggregate Classification (SAC) value of A for the surfaces other than the travel lanes.

No blending, of the material retained on the No. 4 sieve, to meet SAC A will be allowed for surface mixes.

Natural (field) sands are not allowed.

Provide a PG 70-28 asphalt for the surface course and level up course, if applicable.

Furnish a CSS-1P with greater than 50% asphalt residue for the tack coat on this project. A trackless tack can be used in lieu of CSS-1P tack coat or as directed by the Engineer. The Engineer will set the rate at time of application.

Warm Mix Asphalt (WMA) is not permitted in any mix type on this project.

Grade substitution per Table 5 is not allowed.

Provide a mix design with the gradation curve below the restricted zone.

Include the approved mix design number on each delivery ticket.

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Highway: BU 287P

Use a Material Transfer Device (MTD) unless otherwise directed.

Shoulders, crossovers, and other areas listed on the Plan sheets or as directed are not subject to in-place air void determination for this project.

Temporary detours are subject to in-place air void determination for this project.

Use Surface Test Type B for this project.

Item 351. Flexible Pavement Structure Repair

The section of roadway where the repair is to be made will be the entire width of the lane and a minimum length of 50 feet, unless otherwise directed by the Engineer.

Item 354. Planing and Texturing Pavement

Intent is to remove the proposed depth of HMAC from existing concrete in one pass. Repair damaged concrete paving caused by Contractor's operations at the expense of the Contractor as directed by the Engineer.

Take precaution to avoid damage to existing bridge decks and bridge joints including but not limited to armor joints, header joints, relieve joints, etc. Repair any damage to the bridge decks and/or joints as approved. This work will not be paid directly, but will be performed at the Contractor's expense.

Item 360. Concrete Pavement

When using rebar support chairs to support reinforcing steel and clips for crossed reinforcing bars, chair spacing may be increased to 1.67 sq. yd. per chair, placed in a diamond or square pattern. Do not exceed 60" longitudinal spacing.

The provisions of Article 360.6.2, "Deficient Thickness Adjustment," will not be a requirement and the pavement will not be cored.

Include the approved mix design number on each delivery ticket.

Use 6x12 inches cylinders for concrete strength tests when Class P concrete and Class HES concrete are used.

Item 361. Full Depth Repair of Concrete Pavement

Furnish a CSS-1P with greater than 50% asphalt residue for the tack coat on this project.

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County: Tarrant

Highway: BU 287P

Schedule work so that concrete placement follows full-depth saw cutting by no more than 7days.

Include the approved mix design number on each delivery ticket.

Use 6x12 inches cylinders for concrete strength tests when Class P concrete and Class HES concrete are used.

Item 400. Excavation and Backfill for Structures

Class B bedding will be permitted in lieu of Class C bedding.

Recycled flex base and RAP are allowed individually or combined for use as granular material and backfill in Class B and C bedding at the discretion of the Engineer. These materials must meet the requirements of Table 1. The Engineer may require the mixing of one or both of these materials with the local soil to provide a cohesive material for compaction and stability of the backfill around the pipe or box culvert.

Item 403. Temporary Special Shoring

Obtain railroad approval for any alternate temporary shoring designs. The contractor is responsible for all costs associated with obtaining such approval. No additional time will be granted as compensation for delays resulting from failure to obtain timely railroad approval of temporary shoring designs.

Item 421. Hydraulic Cement Concrete

For Class P (Item 360) and S (Item 421) Concrete Only: For concrete plants equipped with 2 aggregate bins or no calibrated metering system, blend manufactured and natural sand at the aggregate source only. For concrete plants equipped with a minimum of 3 bins and a calibrated metering system, blending of the separate sands on-site is permitted to meet gradation and AIR requirements.

Strength/cylinder testing equipment must be equipped with a printer for an electronic print out of all test results.

Air entrainment requirements are waived for all classes of concrete except all Class S and all Class P concrete.

Concrete will not be rejected for low air content. Adjustment to the dosage of air entrainment will be as directed or allowed by the Engineer.
Include the approved mix design number on each delivery ticket.

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Furnish a hard copy of all testing equipment calibration reports at the preconstruction meeting when non-TxDOT equipment is used to test concrete. Furnish updated reports as equipment is calibrated through the project contract. The calibration frequency will match TxDOT's and will apply for each piece of equipment as follows:

Slump Cone - Annual
Air Meter - Every 3 months
Compression Tester - Annual
Beam breaker - Annual

The Engineer may allow the use of local commercial laboratories under contract to provide these services. The Commercial Laboratory must fulfill requirements listed above prior to performing any work.

Item 423. Retaining Walls

The backfill material for precast retaining walls shall be approved before placement. Build stockpile(s) in lifts not to exceed 2 feet and a minimum working face of not less than 10 feet, but not more than 20 feet.

TxDOT does not allow the use of experimental systems on projects with over 50,000 square feet walls over 25 ft. tall, or walls supporting or immediately adjacent to interstate highways.

When proprietary wall systems are used, a qualified representative of the retaining wall manufacturer must be available upon request during wall construction. As requested or required the manufacturer's representative must be on site to assist with the initial stages of wall construction, provide training to the Contractor wall crew and ensure proper interpretation of MSE wall shop drawings and details. Specific attention must be given to nonstandard wall installation details. The Contractor's wall crew foreman must be on site for the duration of wall construction. Any change to the wall crew foreman may require additional training by the wall supplier. The Contractor will ensure that the retaining walls are installed per the details presented in the construction drawings and as per the proprietary wall system requirements. The Engineer reserves the right to suspend wall construction activities due to any construction issue encountered.

Horizontal and vertical nail spacing on temp or permanent soil nail walls shall not exceed 4 ft.

Type DS material will be required on MSE walls in the area of the reinforcement mats.

The following Mechanically Stabilized Earth (MSE) panel type systems are approved for use on TxDOT projects:

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http://www.txdot.gov/inside-txdot/division/bridge/approved-systems/mse-wall.html

The following Concrete Block Retaining Wall Systems are approved for use on TxDOT projects:

http://www.txdot.gov/inside-txdot/division/bridge/approved-systems/retaining-system.html

Item 432. Riprap

Provide weep holes as directed.

The quantities for riprap at the location indicated may be varied to the extent necessary to ensure proper functioning for the purpose intended.

All concrete riprap will be 5" (.42') in thickness, unless otherwise shown on the plans, and must be reinforced.

Locations and lengths of riprap flumes shown on the plans are approximate. Actual lengths and locations are to be determined in the field.

When synthetic fiber reinforcement concrete option is chosen, provide the following:

- At all construction joints (vertical or horizontal) provide #3 bars 24 in. long and placed on 18 in. centers along joint length. Bars should be centered in concrete cross section.

- At all toe wall locations #3 L-bars will be required on 18 in. centers with a length 2 times the depth of the toe wall. Place three #3 bars the length of the toe wall and equally spaced on the L-bars.

Item 440. Reinforcement for Concrete

Top and bottom layers of slab reinforcing steel shall be epoxy coated.

Item 464. Reinforced Concrete Pipe

All bends and connections in pipe must be prefabricated.

Item 496. Removing Structures

NBI 02-220-0-0172-01-001- Lead was detected in Grey Paint over Green Paint on West and East Side Bridge Rails

Item 502. Barricades, Signs, and Traffic Handling

The contractor force account 'safety contingency' that has been established for this project is intended to be utilized for work zone enhancements to improve the effectiveness of the traffic control plan that could typically not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor's responsible person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

Permanent signs may be installed when construction in an area is complete and they will not conflict with the traffic control plan for the remainder of the job.
Existing signs are to remain as long as they do not interfere with construction and they do not conflict with the traffic control plan.

Any sign not detailed in the plans but called for in the layout will be as shown in the current "Standard Highway Sign Designs for Texas".

When traffic is obstructed, arrange warning devices in accordance with the latest edition of the "Texas Manual on Uniform Traffic Control Devices".

Cover or remove any work zone signs when work or condition referenced is not occurring.

Do not place barricades, signs, or any other traffic control devices where they interfere with sight distance at driveways or side streets. Provide access to all driveways during all phases of construction unless otherwise noted in the plans or as directed.

Item 503. Portable Changeable Message Signs

Provide all portable changeable message signs and arrow panels with a photoelectric device to allow for automatic dimming of operations to approximately 50% of their normal brightness when ambient light drops to approximately five footcandles, and then increase back again for daytime operations.

Two electronic portable changeable message sign unit(s) will be required. Individual or collective use of signs will be required by the Engineer when deemed necessary to supplement the traffic control plan.

Each sign must have programmed in its permanent memory the following 15 messages:

1. Exit Closed Ahead
2. Use Other Routes
3. Right Lane

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4. Left Lane
5. Closed Ahead
6. Two Lane
7. Detour Ahead
8. Thru Traffic
9. Prepare To Stop
10. Merging Traffic
11. Expect 15 Minute Delay
12. Max Speed ** MPH
13. Merge Right
14. Merge Left
15. No Exit Next ** Miles

Item 504. Field Office and Laboratory

Furnish the following structures for this project:

Type	No.
Field Lab (Ty. D)	1

Item 505. Truck Mounted Attenuator (TMA) and Trailer Attenuator (TA)

In addition to the shadow vehicles with truck mounted attenuator (TMA) that are specified as being required on the traffic control plan for this project, provide 1 additional shadow vehicle(s) with TMA for TCP (2-4)-18, and as detailed on General Note of this standard sheet.

Therefore, 2 total shadow vehicles with TMA will be required for this type of work. Determine if one or more of these operations will be ongoing at the same time to determine the total number of TMAs needed for the project.

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TCP 2 Series	Phase#	Required TMA	Number of days	Total Number of Days
(2-4)-18	II	1	75	75
(2-6)-18	II	1	69	69
			Final Number of Days for Required Stationary TMA	144

TCP 3 Series	Phase#	Required TMA	Number of days	Total Number of Days
(3-1)-13	II & IV	2	11	22
(3-2)-18	II & IV	3	6	18
(3-3 C)-14	II & IV	2	6	12
(3-3 D)-15	IV	3	6	18
			Final Number of Days for Stationary TMA	70

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	TMA Stationary	Days	Total Days	TMA Mobile Operations	Days	Total Days
Phase 1A	1	45	46	1	3	3
Phase 1B	1	58	58	1	6	6
Total			**104**			**9**

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Item 506. Temporary Erosion, Sedimentation, and Environmental Controls

The SW3P for this project will consist of using the following items as directed:

- Temp Sediment Control Fence
- Erosion control logs

Remove accumulated sediment or replace SW3P controls when the capacity has been reduced by 50% or when the depth of sediment at the control structure exceeds one foot.

Item 512. Portable Concrete Traffic Barrier

Used barrier will be inspected and approved by the Engineer prior to using.

"*Furnish and Install*" barrier in compliance with Concrete Safety Barrier (CSB), Single-Slope Concrete Barrier (SSCB), or Low Profile Concrete Barrier (LPCB) standards as shown on the plans.

Furnish Class H Concrete with a minimum 28 day compressive strength of 3,600 psi.

Provide the hardware assemblies to join barrier sections, including barrier from stockpile.

Provide (2) 1-1/4" x 2'2" threaded rods, (4) standard USS washers, grade 5, (4) 1-1/4" hex nuts, and (2) 5" x 10" x 3/8" plate washers for each section of LPCB.

Delineate all barriers in accordance with Barricade and Construction (BC) Standard sheets. Barrier delineation will not be paid for directly, but will be subsidiary to Item 512,"Portable Concrete Traffic Barrier".

Remove and replace traffic barrier damaged by the traveling public and no longer serviceable as directed. Replace traffic barrier with Contractor furnished barrier or Department-furnished barrier from designated stockpile as directed. Additional payment will be provided as compensation to remove, replace and dispose of the traffic barrier damaged by the traveling public in accordance with Item 512.

Items 530 And 531. Intersections, Driveways and Turnouts, and Sidewalks

The furnishing and installation of the sand cushion in proposed sidewalks, sidewalk ramps, and driveways will not be paid for directly but will be subsidiary to this bid item.

Item 556. Pipe Underdrains

Install pipe underdrains at locations shown on the plans or as directed.

The unit price bid per foot of "pipe underdrain" will include the cost of making connections to storm drain lines.

Item 585. Ride Quality for Pavement Surfaces

Before performing work, the Engineer will determine whether Surface Test Type A will be used instead of the specified payment adjustment schedule when the following conditions exist in existing travel lanes:

- travel lane is directly adjacent to existing curb and gutter, or
- travel lane has repair areas or crack sealing that may result in reflective defects.

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."

Item 666. Reflectorized Pavement Markings with Retroreflective Requirements

If retroreflectivity readings are collected using a portable or handheld unit, then measurement is defined as a collective average of at least 20 readings taken along a 200-foot test section. A minimum of three measurements will be required per mile of roadway. Measurements collected on a centerline stripe will be averaged separately for stripe in each direction of travel. A TxDOT inspector must witness the calibration and collection of all retro-reflectivity data.

Item 624. Ground Boxes

Signals:
Slack conductors required by Standard Sheet ED(3)-14 will be subsidiary to Item 624.

Concrete removal required for installation of ground boxes will be subsidiary to Item 624.

Ground all junction boxes mounted on bridges and underpasses with a ground rod in the nearest ground box.

All new mast arm mounted signal heads to be mounted horizontally.

City of Fort Worth Signal Standards:

Traffic Signals:

1. Prior to activating traffic signals with new or revised signal timing, the contractor shall e-mail Cedric Dorsey, Assistant Superintendent, cedric.dorsey@fortworthtexas.gov and copy Aziz Rahman, Engineering Manager, at aziz.rahman@fortworthtexas.gov at least two (2) weeks in advance to schedule that.

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2. If new cabinets and controllers are being installed and furnished by the contractor and the controllers need to be programmed and tested by City Forces; the contractor shall deliver them to the City of Fort Worth, Signal Shop at 5001 James Ave, at least two (2) weeks in advance to schedule that.

3. Notify Cedric Dorsey (817-319-7895) at least 48-hours in advance of all concrete pours. Inspector must be present when concrete is placed on the project site.

4. **If applicable,** equipment supplied by the City will be available for pick up from the Transportation/Public Works (T/PW) Warehouse at 5001 James Avenue. The Assistant Superintendent must authorize all equipment pickups.

5. Contractor shall provide a 5-year manufacturer warranty on APS systems. The warranty documentation shall include the start date (when material is delivered to job site) and the end date of the warranty and the serial number of the equipment.

6. The Contractor shall provide all materials needed to construct a fully operational traffic signal as called out for in the plans and specifications.

7. All existing signal equipment shall remain in place and operating until new equipment is in place and ready to operate.

8. The Contractor shall contact TPW Superintendent, at 817-392-7239 at least one (1) week in advance of any disposal of material to coordinate any material that the city may need salvaged. The Contractor is responsible for hauling and properly disposing of salvaged material from the job site to a disposal site of their choosing. The Contractor will not be allowed to drop off salvaged materials at the City yards unless otherwise directed by TPW Superintendent for the specified material only.

Foundations:

1. Dimensions shown on plans for locations of signal foundations, conduit, and other items may vary in order to meet local conditions. All locations of foundations, conduit, and ground boxes shall be approved by Traffic Signal Engineering.

2. Contractor shall contact Cedric Dorsey (817-319-7895) prior to pouring cabinet foundation to be sure that template and bolt patterns are correct for type of cabinet being supplied. Foundation shall be installed per City Specification and City Detail.

3. Pier Foundations shall be poured together in one piece.

4. No signal poles shall be placed on foundations prior to five (5) calendar days following pouring of concrete.

5. Contractor shall clean up and remove all loose material resulting from construction operations each day prior to the work is being suspended.

6. Controller cabinet concrete apron shall be subsidiary to the bid item for the controller cabinet foundation. Cabinet foundation and apron shall be poured together in one piece.

Controller and Cabinet:

1. Contractor shall install controller cabinet and connect all associated field wiring.

2. City will install signal timing and program controller.

3. Prior to any cabinet removal, all existing modem, power supplies, ethernet cable, unmanaged network switch and antennas from existing cabinet shall be transferred and installed in new cabinet by the city. Contractor must notify Anthony Vasquez (817-201-1284) or James Rensing (817-701-6760) at least one (1) week in advance prior to removal of existing cabinet.

Detection System:

1. The City will furnish the detection system and Contractor shall install the detection system and furnish/install cable unless otherwise called out in the plans.

2. The Contractor shall install, aim and program all detectors as per City Standard Specifications and City Details.

3. The Contractor shall refer to City Standard Details and project plans for detection zones placement.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0172-01-055 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY BU 287P

				CONTROL SECTION JOB	0172-01-055		0172-01-057		TOTAL EST.	TOTAL FINAL
				PROJECT ID	A00129824		A00190636			
				COUNTY	Tarrant		Tarrant			
				HIGHWAY	BU 287P		BU 287P			
ALT	BID CODE	DESCRIPTION	UNIT		EST.	FINAL	EST.	FINAL		
	100-7004	PREP ROW (TREE REMOVE) (12"-24" DIA)	EA				1.000		1.000	
	104-7011	REMOV CONC (DRIVEWAYS)	SY				433.000		433.000	
	104-7013	REMOV CONC (SIDEWALK, RAMP OR SUP)	SY				58.000		58.000	
	104-7016	REMOV CONC (CURB)	LF		1,882.000				1,882.000	
	104-7018	REMOV CONC (CURB OR CURB & GUTTER)	LF				2,211.000		2,211.000	
	105-7002	RMV (2"-6") TRT/UNTRT BASE & ASPH PAV	SY				147.000		147.000	
	105-7111	RMV (0"-12") TRT/UNTRT BASE & ASPH PAV	CY				7,897.000		7,897.000	
	110-7003	EXCAV (SPECIAL)	CY				900.000		900.000	
	132-7001	EMBANK (FNL)(OC)(TY A)	CY				1,000.000		1,000.000	
	132-7005	EMBANK (FNL)(OC)(TY C)	CY				1,500.000		1,500.000	
	134-7002	BACKFILL (TY B)	STA		48.000				48.000	
	161-7002	COMPOST MANUF TOPSOIL (4")	SY				7,729.000		7,729.000	
	162-7002	BLOCK SODDING	SY				7,729.000		7,729.000	
	168-7001	VEGETATIVE WATERING	TGL				271.000		271.000	
	316-7006	ASPH (AC-20XP)	GAL		53,643.000				53,643.000	
	316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY		1,441.000				1,441.000	
	341-7044	D-GR HMA TY-D SAC-A PG64-22	TON				131.000		131.000	
	344-7024	SP MIXES SP-C SAC-A PG70-28	TON		24,682.000				24,682.000	
	351-7004	FLEXIBLE PAVEMENT STRUCTURE REPAIR(5")	SY		4,000.000				4,000.000	
	354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY		214,532.000				214,532.000	
	361-7005	FULL - DEPTH REPAIR CRCP (10")	CY		1,500.000				1,500.000	
	402-7001	TRENCH EXCAVATION PROTECTION	LF				846.000		846.000	
	403-7001	TEMPORARY SPL SHORING	SF				1,335.000		1,335.000	
	423-7015	RETAINING WALL (SPREAD FOOTING)	SF				5,370.000		5,370.000	
	432-7002	RIPRAP (CONC)(5 IN)	CY				30.000		30.000	
	432-7012	RIPRAP (CONC)(FLUME)	CY				1.000		1.000	
	432-7029	RIPRAP (STONE COMMON)(DRY)(6 IN)	CY				83.000		83.000	
	438-7007	CLEANING AND SEALING EXIST JOINTS (CL7)	LF		468.000				468.000	
	450-7059	RAIL (HANDRAIL)(TY B)	LF				1,321.000		1,321.000	
	454-7009	HEADER TYPE EXPANSION JOINT	CF		65.000				65.000	
	464-7005	RC PIPE (CL III)(24 IN)	LF				775.000		775.000	
	464-7009	RC PIPE (CL III)(36 IN)	LF				24.000		24.000	
	465-7186	INLET (COMPL)(CO)(15 FT)(FTW)	EA				2.000		2.000	
	465-7187	INLET (COMPL)(CO)(20 FT)(FTW)	EA				1.000		1.000	
	471-7003	GRATE & FRAME	EA				100.000		100.000	
	479-7001	ADJUSTING MANHOLES	EA		26.000		2.000		28.000	
	500-7001	MOBILIZATION	LS		1.000				1.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0172-01-055 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY BU 287P

				CONTROL SECTION JOB	0172-01-055		0172-01-057		TOTAL EST.	TOTAL FINAL
				PROJECT ID	A00129824		A00190636			
				COUNTY	Tarrant		Tarrant			
				HIGHWAY	BU 287P		BU 287P			
ALT	BID CODE	DESCRIPTION	UNIT		EST.	FINAL	EST.	FINAL		
	502-7001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO		9.000				9.000	
	503-7002	PORTABLE CHANGEABLE MESSAGE SIGN	EA		2.000				2.000	
	505-7001	TMA (STATIONARY)	DAY		179.000		104.000		283.000	
	505-7003	TMA (MOBILE OPERATION)	DAY		70.000		9.000		79.000	
	506-7039	TEMP SEDMT CONT FENCE (INSTALL)	LF				9,393.000		9,393.000	
	506-7041	TEMP SEDMT CONT FENCE (REMOVE)	LF				9,393.000		9,393.000	
	506-7043	BIODEG EROSN CONT LOGS (INSTL) (8")	LF		800.000		700.000		1,500.000	
	506-7046	BIODEG EROSN CONT LOGS (REMOVE)	LF		800.000		700.000		1,500.000	
	512-7009	PORT CTB (FUR & INST)(LOW PROF)(TY 1)	LF				1,360.000		1,360.000	
	512-7010	PORT CTB (FUR & INST)(LOW PROF)(TY 2)	LF				120.000		120.000	
	512-7033	PORT CTB (MOVE)(LOW PROF)(TY 1)	LF				1,360.000		1,360.000	
	512-7034	PORT CTB (MOVE)(LOW PROF)(TY 2)	LF				120.000		120.000	
	512-7057	PORT CTB (REMOVE)(LOW PROF)(TY 1)	LF				1,360.000		1,360.000	
	512-7058	PORT CTB (REMOVE)(LOW PROF)(TY 2)	LF				120.000		120.000	
	529-7002	CONC CURB (TY II)	LF		1,882.000				1,882.000	
	529-7007	CONC CURB (MONO) (TY II)	LF				22.000		22.000	
	529-7009	CONC CURB & GUTTER (TY II)	LF				9,389.000		9,389.000	
	529-7014	CONC CURB (DOWEL)	LF		55.000				55.000	
	529-7018	CONC CURB & GUTTER (ARMOR CURB)	LF				462.000		462.000	
	530-7006	DRIVEWAYS (CONC)	SY				795.000		795.000	
	531-7001	CONC SIDEWALKS (4")	SY				5,903.000		5,903.000	
	531-7015	CURB RAMPS (TY 1)	SY				77.000		77.000	
	531-7016	CURB RAMPS (TY 2)	SY				94.000		94.000	
	531-7017	CURB RAMPS (TY 3)	SY				14.000		14.000	
	531-7020	CURB RAMPS (TY 7)	SY				84.000		84.000	
	531-7021	CURB RAMPS (TY 10)	SY				62.000		62.000	
	531-7025	CONC SIDEWALKS (SPECIAL)	SY				298.000		298.000	
	556-7006	PIPE UNDERDRAINS (TY 6) (6")	LF				1,306.000		1,306.000	
	624-7008	GROUND BOX TY D (162922)W/APRON	EA		1.000				1.000	
	644-7001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA				8.000		8.000	
	644-7028	IN SM RD SN SUP&AM TYS80(1)SA(T)	EA				2.000		2.000	
	644-7073	REMOVE SM RD SN SUP&AM	EA				10.000		10.000	
	658-7066	INSTL OM ASSM (OM-3L)(TWT)GND	EA				1.000		1.000	
	658-7078	REMOVE DELIN & OBJECT MARKER ASSMS	EA				1.000		1.000	
	662-7005	WK ZN PAV MRK NON-REMOV (W)6"(BRK)	LF		26,970.000				26,970.000	
	662-7006	WK ZN PAV MRK NON-REMOV (W)6"(DOT)	LF		470.000				470.000	
	662-7008	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	LF		102,372.000				102,372.000	

Estimate & Quantity Sheet

Texas Department of Transportation

CONTROLLING PROJECT ID 0172-01-055 **DISTRICT** Fort Worth **COUNTY** Tarrant
HIGHWAY BU 287P

				CONTROL SECTION JOB	0172-01-055		0172-01-057		TOTAL EST.	TOTAL FINAL
				PROJECT ID	A00129824		A00190636			
				COUNTY	Tarrant		Tarrant			
				HIGHWAY	BU 287P		BU 287P			
ALT	BID CODE	DESCRIPTION	UNIT		EST.	FINAL	EST.	FINAL		
	662-7012	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	LF		11,738.000				11,738.000	
	662-7015	WK ZN PAV MRK NON-REMOV (W)12"(SLD)	LF		500.000				500.000	
	662-7017	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	LF		7,428.000				7,428.000	
	662-7018	WK ZN PAV MRK NON-REMOV (W)(ARROW)	EA		116.000				116.000	
	662-7030	WK ZN PAV MRK NON-REMOV(W)(WORD)	EA		112.000				112.000	
	662-7038	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)	LF		189,582.000				189,582.000	
	662-7049	WK ZN PAV MRK REMOV (REFL) TY I-C	EA		2,140.000				2,140.000	
	662-7051	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA		3,026.000				3,026.000	
	666-7009	REFL PAV MRK TY I (W)6"(DOT)(100MIL)	LF		235.000				235.000	
	666-7024	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF		5,869.000				5,869.000	
	666-7030	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF		250.000				250.000	
	666-7036	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF		3,714.000				3,714.000	
	666-7042	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA		58.000				58.000	
	666-7066	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA		56.000				56.000	
	666-7408	REFL PAV MRK TY I (W)6"(BRK)(100MIL)	LF		13,485.000				13,485.000	
	666-7411	REFL PAV MRK TY I (W)6"(SLD)(100MIL)	LF		51,186.000				51,186.000	
	666-7423	REFL PAV MRK TY I (Y)6"(SLD)(100MIL)	LF		94,791.000				94,791.000	
	672-7002	REFL PAV MRKR TY I-C	EA		970.000				970.000	
	672-7004	REFL PAV MRKR TY II-A-A	EA		1,513.000				1,513.000	
	690-7100	REMOVE TRAFFIC SIGNAL	EA		1.000				1.000	
	764-7001	DRAIN INLET CLEANING	EA		42.000				42.000	
	3010-7001	RAIS AND UNDERSEAL CONC SLBS W FOAM SYS	LB		61,365.000				61,365.000	
	6017-7001	VDS PROSR SYS	EA		1.000				1.000	
	6017-7010	VDS ATSPM	EA		1.000				1.000	
	6017-7012	VDS CABLING	LF		950.000				950.000	
	6017-7014	VDS (HVDS) (VIVDS AND RVDS)	EA		3.000				3.000	
	6040-7001	HIGHWAY TRAFFIC SIGNALS (COFW)	EA		1.000				1.000	
	12	RAILROAD FLAGGING: RAILROAD FORCE ACCOUNT WORK (PART)	LS		1.000				1.000	
	18	SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS		1.000		1.000		2.000	
		ENVIRONMENTAL: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS				1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS		1.000				1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS		1.000				1.000	

CATEGORY OF WORK	Roadway						
BID CODE	134-7002	316-7006	316-7214	344-7024	351-7004	354-7003	361-7005
DESCRIPTION	BACKFILL (TY B)	ASPH (AC-20XP)	AGGR (TY-PB, GR-5)(SAC-B)	SP MIXES SP-C SAC-A PG70-28	FLEXIBLE PAVEMENT	PLANE & TEXT ASPH CONC	FULL - DEPTH REPAIR CRCP
UNIT	STA	GAL	CY	TON	SY	SY	CY
PROJECT TOTALS	48.00	53,643.00	1,441.00	24,682.00	4,000.00	214,532.00	1,500.00

CATEGORY OF WORK	Roadway			
BID CODE	479-7001	529-7014 ●	529-7002	3010-7001
DESCRIPTION	ADJUSTING MANHOLES	CONC CURB (DOWEL)	CONC CURB (TY II)	RAIS AND UNDERSEAL CONC SLBS W FOAM SYS
UNIT	EA	LF	LF	LB
PROJECT TOTALS	26.00	55.00	1,882.00	61,365.00

● - THIS ITEM APPLIES ONLY TO INLET PREPAIR

CATEGORY OF WORK	Barricades
BID CODE	502-7001
DESCRIPTION	BARRICADES, SIGNS AND TRAFFIC
UNIT	MO
PROJECT TOTALS	9.00

CATEGORY OF WORK	Mobilization
BID CODE	500-7001
DESCRIPTION	MOBILIZATION
UNIT	LS
PROJECT TOTALS	1.00

CATEGORY OF WORK	Drainage
BID CODE	764-7001
DESCRIPTION	DRAIN INLET CLEANING
UNIT	EA
PROJECT TOTALS	42.00

BU 287P
QUANTITY SUMMARY

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
		COUNTY	SHEET NO.
FTW		TARRANT	12

CATEGORY OF WORK	Erosion	
BID CODE	506-7046	506-7043
DESCRIPTION	BIODEG EROSN CONT LOGS	BIODEG EROSN CONT LOGS
UNIT	LF	LF
PROJECT TOTALS	800.00	800.00

CATEGORY OF WORK	Pavemarking(s)					
BID CODE	666-7024	666-7408	666-7009	666-7066	666-7036	666-7411
DESCRIPTION	REFL PAV MRK TY I	REFL PAV MRK TY I	REFL PAV MRK TY I	REFL PAV MRK TY I	REFL PAV MRK TY I	REFL PAV MRK TY I
UNIT	LF	LF	LF	EA	LF	LF
PROJECT TOTALS	5,869.00	13,485.00	235.00	56.00	3,714.00	51,186.00

CATEGORY OF WORK	Pavemarking(s)				
BID CODE	666-7042	666-7423	666-7030	672-7002	672-7004
DESCRIPTION	REFL PAV MRK TY I	REFL PAV MRK TY I	REFL PAV MRK TY I	REFL PAV MRKR TY I-C	REFL PAV MRKR TY II-A-A
UNIT	EA	LF	LF	EA	EA
PROJECT TOTALS	58.00	94,791.00	250.00	970.00	1,513.00

CATEGORY OF WORK	Removal
BID CODE	104-7016
DESCRIPTION	REMOV CONC
UNIT	LF
PROJECT TOTALS	1,882.00

BU 287P
QUANTITY SUMMARY

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
		COUNTY	SHEET NO.
FTW		TARRANT	13

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CATEGORY OF WORK	Signals						
BID CODE	624-7008	690-7100	6017-7012	6017-7001	6017-7010	6017-7014	6040-7001
DESCRIPTION	GROUND BOX TY D	REMOVE TRAFFIC SIGNAL	VDS CABLING	VDS PROSR SYS	VDS ATSPM	VDS (HVDS) (VIVDS AND RVDS)	HIGHWAY TRAFFIC SIGNALS (COFW)
UNIT	EA	EA	LF	EA	EA	EA	EA
PROJECT TOTALS	1.00	1.00	950.00	1.00	1.00	3.00	1.00

CATEGORY OF WORK	Work zone							
BID CODE	503-7002	505-7001	505-7003	662-7006	662-7005	662-7012	662-7018	662-7038
DESCRIPTION	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATION)	WK ZN PAV MRK NON-REMOV (W)6"(DOT)	WK ZN PAV MRK NON-REMOV (W)6"(BRK)	WK ZN PAV MRK NON-REMOV (W)8"(SLD)	WK ZN PAV MRK NON-REMOV (W)(ARROW)	WK ZN PAV MRK NON-REMOV (Y)6"(SLD)
UNIT	EA	DAY	DAY	LF	LF	LF	EA	LF
PROJECT TOTALS	2.00	179.00	70.00	470.00	26,970.00	11,738.00	116.00	189,582.00

CATEGORY OF WORK	Work zone					
BID CODE	662-7030	662-7017	662-7015	662-7051	662-7008	662-7049
DESCRIPTION	WK ZN PAV MRK NON-REMOV(W)(WORD)	WK ZN PAV MRK NON-REMOV (W)24"(SLD)	WK ZN PAV MRK NON-REMOV (W)12"(SLD)	WK ZN PAV MRK REMOV (REFL) TY II-A-A	WK ZN PAV MRK NON-REMOV (W)6"(SLD)	WK ZN PAV MRK REMOV (REFL) TY I-C
UNIT	EA	LF	LF	EA	LF	EA
PROJECT TOTALS	112.00	7,428.00	500.00	3,026.00	102,372.00	2,140.00

CATEGORY OF WORK	Bridge NBI: 022200017201001	
BID CODE	438-7007	454-7009
DESCRIPTION	CLEANING AND SEALING EXIST JOINTS (CL7)	HEADER TYPE EXPANSION JOINT
UNIT	LF	CF
PROJECT TOTALS	468.00	65.00

BU 287P
QUANTITY SUMMARY

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
		COUNTY	SHEET NO.
FTW		TARRANT	14

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TRAFFIC CONTROL NOTES

1. FURNISH AND INSTALL ALL TRAFFIC CONTROL DEVICES, INCLUDING BUT NOT LIMITED TO BARRICADES, SIGNS, AND WORK ZONE MARKINGS, IN COMPLIANCE WITH THE LATEST VERSION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE STATE STANDARD TRAFFIC CONTROL PLAN (TCP) SHEETS, AND THE BARRICADE AND CONSTRUCTION (BC) SHEETS. REFER TO THE PROJECT GENERAL NOTES FOR ADDITIONAL INFORMATION REGARDING THE TRAFFIC CONTROL PLAN.

2. VERIFY THE LOCATION AND SPACING OF SIGNS, BARRICADES, AND CHANNELIZING DEVICES PRIOR TO THEIR PLACEMENT ALONG VERTICAL CURVES, HORIZONTAL CURVES, AND OTHER GEOMETRIC CONSTRAINTS TO ENSURE VISIBILITY TO ALL MOTORISTS.

3. VARY THE SPACING OF SIGNS TO MEET TRAFFIC CONDITIONS, OR AS DIRECTED BY THE ENGINEER AND ENSURE THAT ALL TRAFFIC CONTROL DEVICES AND WORK ZONE PAVEMENT MARKINGS ARE KEPT IN A HIGHLY VISIBLE CONDITION (CLEAN, UPRIGHT AND AT PROPER LOCATION).

4. THE CONTRACTOR SHALL KEEP THE ROADWAY CLEAN AND FREE OF DIRT AND OTHER MATERIALS DURING HAULING OPERATIONS. WHEN DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL CEASE ALL CONSTRUCTION OPERATIONS TO CLEAN THE ROADWAY TO THE SATISFACTION OF THE ENGINEER.

5. EXISTING ABOVE GROUND UTILITIES ARE BASED ON SURVEY AND BOTH ABOVE GROUND AND UNDERGROUND UTILITY LOCATIONS CANNOT BE GUARANTEED BY THE ENGINEER. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ALL DAMAGES WHICH OCCUR AS A RESULT OF THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY ABOVE GROUND AND UNDERGROUND UTILITES.

6. CONTRACTOR SHALL PROVIDE POSITIVE DRAINAGE THROUGHOUT THE CONSTRUCTION OF THE PROJECT. THE CONTRACTOR SHALL CORRECT DRAINAGE DEFICIENCIES THAT PRESENT A HAZARD TO THE TRAVELING PUBLIC OR PROPERTY AS DIRECTED BY THE ENGINEER.

7. CONTRACTOR SHALL CONSTRUCT SIDEWALKS, CURB RAMPS, DRIVEWAYS, HANDRAILS AND PEDESTRIAN PUSH BUTTONS IN ACCORDANCE WITH STANDARDS, THE LATEST TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), AND PROPOSED ACCESSIBILITY GUIDELINES FOR PEDESTRIAN FACILITIES IN THE PUBLIC RIGHT-OF-WAY (PROWAG).

8. ANY REQUEST TO ALTER THE SEQUENCE OF OPERATIONS OR TRAFFIC CONTROL NARRATIVE WILL BE SUBMITTED TO THE ENGINEER FOR WRITTEN APPROVAL.

9. UPON COMPLETION OF THE WORK, THE CONTRACTOR SHALL PLACE FINAL SODDING.

10. COVER ALL EXISTING SIGNS THAT CONFLICT WITH THE TRAFFIC CONTROL PLAN, AND UNCOVER THEM DURING NON-WORKING HOURS, OR AS DIRECTED BY THE ENGINEER. PARTIAL COVERAGE OF THE SIGN OR COVERAGE BY MATERIAL THAT WILL NOT COVER THE ENTIRE SIGN ALL THE TIMES IS NOT PERMITTED.

11. CONDUCT CONSTRUCTION OPERATIONS SO AS TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC AND TO PERMIT THE CONTINUOUS MOVEMENT OF TRAFFIC IN ALL ALLOWABLE DIRECTIONS AT ALL TIMES OR AS PERMITTED BY THE SEQUENCE OF CONSTRUCTION. PROVIDE AND MAINTAIN SAFE AND CONVENIENT ACCESS TO ADJACENT PROPERTIES, DRIVEWAYS, HIGHWAYS, PUBLIC ROADS, AND STREET CROSSINGS, EXCEPT AS OTHERWISE SHOWN ON THE SEQUENCE OF WORK.

12. REGULATE ALL CONSTRUCTION TRAFFIC SO AS TO CAUSE MINIMAL INCONVENIENCE TO THE TRAVELING PUBLIC. AT THE TIMES WHEN IT IS NECESSARY FOR TRUCKS TO STOP, UNLOAD, OR CROSS ROADWAYS UNDER TRAFFIC, PROVIDE WARNING SIGNS AND FLAGGERS AS NEEDED TO ADEQUATELY PROTECT THE TRAVELING PUBLIC.

13. NOTIFY THE ENGINEER IN WRITING TWO WEEKS PRIOR TO SHIFTING OF TRAFFIC WITHIN EACH PHASE OF THE TRAFFIC CONTROL PLAN.

14. MOVING AN EXISTING SIGN TO A TEMPORARY LOCATION IS SUBSIDIARY TO ITEM 502. INSTALLATIONS WITH PERMANENT SUPPORTS AT PERMANENT LOCATIONS WILL BE PAID FOR UNDER THE APPLICABLE BID ITEM(S).

15. THE USE OF PORTABLE CHANGEABLE MESSAGE SIGNS AS ADVANCE NOTICE OF LANE CLOSURES WILL BE REQUIRED, AS DIRECTED BY THE ENGINEER. FOR LOCATIONS THAT ARE ADJACENT TO EACH OTHER, A SINGLE SIGN IN ADVANCE OF THE ENTIRE WORK AREA IS ACCEPTABLE.

16. PROVIDE LIGHTS TO ILLUMINATE THE FLAGGERS AND WORK AREA DURING NIGHTTIME OPERATIONS. CLASS 3 GARMENTS WILL BE REQUIRED FOR ALL WORKERS AND FLAGGERS DURING NIGHTTIME WORK.

17. CONTRACTOR SHALL COORDINATE TCP WITH ANY ADJACENT CONSTRUCTION PROJECTS TO ENSURE NO CONFLICTING TRAFFIC CONTROL EXISTS.

18. ANY WORK REQUIRING FULL CLOSURE OF INTERSECTIONS SHALL BE COORDINATED WITH THE CITY OF FORT WORTH IF ANY SIGNAL TIMING ADJUSTMENTS NEED TO BE MADE FOR THE DURATION OF THE CLOSURE.

19. LIMIT THE LENGTH OF DAILY WORK TO THAT AREA OF OPERATION THAT CAN BE COMPLETED IN ONE WORK DAY OR NIGHT IN ORDER TO ALLOW FOR TRAFFIC AT NIGHT. SUCH AREA MUST NOT EXCEED TWO (2) MILES, UNLESS APPROVED BY THE ENGINEER. WITHIN THE 2 MILE SECTION, ONLY CLOSE OFF THE AREA WHERE ACTUAL WORK IS BEING PERFORMED.

STATE OF TEXAS
MARBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BU 287P
TCP NOTES

SHEET 1 OF 1

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		Tarrant	15

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DW: CK: DW: CK:

SEQUENCE OF WORK

GENERAL INSTRUCTIONS

ONCE WORK HAS BEGUN AT A REFERENCE LOCATION, THE ENTIRE SEQUENCE MUST BE WORKED ON CONTINUOUSLY UNTIL COMPLETION. CONTRACTOR SHALL MAINTAIN CONTINUOUS OVERLAY OPERATIONS FROM THE TIME OF MILLING TO THE TIME OF OVERLAYING.

FOR ALL LOCATIONS, AT THE END OF EACH WORK DAY AND BEFORE OPENING LANES TO TRAFFIC, NO DROPOFFS GREATER THAN 2 INCHES SHALL REMAIN.

FOR PHASE I, DAYTIME WORK IS ALLOWED FROM 9:00 AM TO 3:00 PM.
FOR PHASE II AND PHASE III WORK, NIGHTTIME WORK SHALL BE PERFORMED FROM 9:00 P.M. TO 6:00 A.M.

NOTIFY TXDOT OF LANE CLOSURES AT LEAST 10 DAYS IN ADVANCE AND PROVIDE THE EXPECTED LOCATION, DURATION, AND JUSTIFICATION FOR THE REQUESTED CLOSURE.

INSTALL PROPER EROSION CONTROL DEVICES PRIOR TO THE START OF OPERATIONS.

CONTRACTOR SHALL MAINTAIN HOUSEKEEPING DURING ALL CONSTRUCTION PHASES.

NOTE - CONTRACTOR SHALL MAINTAIN A MINIMUM 3:1 SAFETY SLOPES AT THE END OF EVERY WORKING DAY

GENERAL SEQUENCE OF WORK

PHASES UNDER THIS PROJECT SHALL TAKE PLACE AS DETAILED BELOW:

- PHASE I-A SHALL BE CONCURRENT WITH PHASE II-A
- PHASE I-B SHALL START UPON THE COMPLETION OF PHASE I-A
- PHASE II-B SHALL START UPON THE COMPLETION OF PHASE I-B

PHASE I: EXCAVATION, EMBANKMENT, RETAINING WALLS, STORM DRAIN, SIDEWALK, ADA RAMPS, CURB REPAIR

WORK UNDER THIS PHASE WILL BE PERFORMED DURING DAYTIME.

REFER TO VOLUME 2.

CONCRETE CURB REPAIR FROM THE CCSJ 0172-01-055, WILL BE PERFORMED UNDER THIS PHASE.

PHASE IA. - PEDESTRIAN IMPROVEMENTS - NORTHBOUND SIDE

1. INSTALL PORTABLE TRAFFIC BARRIERS AT LOCATIONS WHERE STORM DRAIN AND RETAINING WALLS ARE TO BE CONSTRUCTED. REFER TO TCP (2-5)-18 AND AS SHOWN ON TCP DETAILS PHASE 1A. SEE VOLUME 2 FOR MORE INFORMATION.

2. REMOVE EXISTING INLET AS SHOWN ON THE PLANS

3. INSTALL INLETS AND STORM DRAINAGE AS SHOWN ON THE PLANS.

4. CONSTRUCT RETAINING WALL ELEMENTS AS SHOWN ON THE PLANS.

5. CONTRACTOR TO REMOVE PORTABLE TRAFFIC BARRIERS AT LOCATIONS WHERE STORM DRAIN AND RETAINING WALLS ARE CONSTRUCTED.

6. CONTRACTOR TO INSTALL TRAFFIC CONTROL FOR PEDESTRIAN WORK TO BE DONE USING TCP (2-5)-18. TRAFFIC CONTROL SET UP WILL BE SUBSIDIARY TO ITEM 502.

7. REMOVE AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.
- TREE
- ASPHALT PAVEMENT
- SIDEWALKS
- DRIVEWAYS
- CURB AND GUTTER

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BU 287P
SEQUENCE OF WORK

SHEET 1 OF 3

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	Tarrant		16

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8. REMOVE AND REPLACE SIGNS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

9. LOCATE AND ADJUST CONFLICTING MANHOLES.

10. CONSTRUCT PEDESTRIAN ELEMENTS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.
- CURB AND GUTTER
- SIDEWALKS
- CURB RAMPS
- DRIVEWAYS
- RIPRAP
- HANDRAIL

11. REMOVE DAMAGED CONCRETE CURBS AND INSTALL NEW CONCRETE CURBS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

NOTE - CONTRACTOR SHALL MAINTAIN A MINIMUM
3:1 SAFETY SLOPES AT THE END OF EVERY WORKING DAY

PHASE IB. - PEDESTRIAN IMPROVEMENTS - SOUTHBOUND SIDE

1. INSTALL PORTABLE TRAFFIC BARRIERS AT LOCATIONS WHERE RETAINING WALLS ARE TO BE CONSTRUCTED. REFER TO TCP (2-5)-18 AND AND AS SHOWN ON TCP DETAILS PHASE 1B.

2. CONSTRUCT RETAINING WALL ELEMENTS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

3. CONTRACTOR TO REMOVE PORTABLE TRAFFIC BARRIERS AT LOCATIONS WHERE RETAINING WALLS ARE CONSTRUCTED.

4. CONTRACTOR TO INSTALL TRAFFIC CONTROL FOR PEDESTRIAN WORK TO BE DONE USING TCP (2-5)-18. TRAFFIC CONTROL SET UP WILL BE SUBSIDIARY TO ITEM 502.

5. REMOVE AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER:
- TREES
- ASPHALT PAVEMENT
- SIDEWALKS
- DRIVEWAYS
- CURB AND GUTTER

6. REMOVE AND REPLACE AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

7. LOCATE AND ADJUST CONFLICTING MANHOLES.

8. CONSTRUCT PEDESTRIAN ELEMENTS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.
- CURB AND GUTTER
- SIDEWALKS
- CURB RAMPS
- DRIVEWAYS
- RIPRAP
- HANDRAIL

9. REMOVE DAMAGED CONCRETE CURBS AND INSTALL NEW CONCRETE CURBS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE ENGINEER.

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

PHASE II-A: FROM E ROSEDALE TO DIVETT AVE & FROM GLEN EDEN DRIVE TO MILLER AVENUE

MILLING, PAVEMENT REPAIRS, FOAM INJECTION, SEAL COAT, AND HOT MIX

GENERAL:

WORK UNDER THIS PHASE WILL BE PERFORMED DURING NIGHT-TIME. CONTRACTOR SHALL INSTALL TCP IN ACCORDANCE WITH TCP (2-4)-18, TCP (2-6)-18, AND/OR AS DIRECTED BY THE ENGINEER.

CONTRACTOR SHALL SUBMIT A PLAN FOR DAILY OPERATION LIMITS THAT ENSURES COMPLETION OF LIMITS AND REOPENING ALL LANES TO TRAFFIC DURING THE DAY. CONSTRUCTION LIMITS SHALL BE APPROVED BY THE ENGINEER.

LAW ENFORCEMENT SHALL BE USED TO ASSIST WITH LANE CLOSURES.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BU 287P
SEQUENCE OF WORK

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		Tarrant	16A

1. MILL BUS 287 HIGHWAY. PERFORM MILLING OPERATIONS AT LOCATIONS SHOWN ON THE PLANS.
- REMOVE LOOP DETECTION ON BUS 287 AT CAMPUS DRIVE.
- PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS PRIOR TO REOPENING LANES TO TRAFFIC.

2. IDENTIFY LOCATIONS FOR FULL DEPTH REPAIR.
- FULL DEPTH REPAIR SHALL BE COMPLETED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

3. PERFORM FOAM INJECTION AS DIRECTED BY THE ENGINEER.

4. PERFORM MANHOLE ADJUSTMENTS.

5. APPLY SEAL COAT ON THE SAME NIGHT OF THE OVERLAY.
- DO NOT SEAL COAT MORE LENGTH THAN CAN BE OVERLAID IN ONE NIGHT.

6. APPLY BONDING COURSE AND OVERLAY IN ACCORDANCE WITH GENERAL INSTRUCTIONS AND TCP PHASE STANDARDS.
- PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS.

7. PERFORM BRIDGE CLEANING AND SEALING JOINTS AT SYCAMORE BRIDGE.

PHASE II-B: FROM DIVETT AVE TO GLEN EDEN DRIVE

MILLING, PAVEMENT REPAIRS, FOAM INJECTION, SEAL COAT, AND HOT MIX

GENERAL:

WORK UNDER THIS PHASE WILL BE PERFORMED DURING NIGHTTIME.

CONTRACTOR SHALL INSTALL TCP IN ACCORDANCE WITH TCP (2-4)-18, TCP (2-6)-18, AND/OR AS DIRECTED BY THE ENGINEER.

CONTRACTOR SHALL SUBMIT A PLAN FOR DAILY OPERATION LIMITS THAT ENSURES COMPLETION OF LIMITS AND REOPENING ALL LANES TO TRAFFIC DURING THE DAY. CONSTRUCTION LIMITS SHALL BE APPROVED BY THE ENGINEER.

LAW ENFORCEMENT SHALL BE USED TO ASSIST WITH LANE CLOSURES.

1. MILL BUS 287 HIGHWAY. PERFORM MILLING OPERATIONS AT LOCATIONS SHOWN ON THE PLANS.
- REMOVE LOOP DETECTION ON BUS 287 AT CAMPUS DRIVE.
- PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS PRIOR TO REOPENING LANES TO TRAFFIC.

2. IDENTIFY LOCATIONS FOR FULL DEPTH REPAIR.
- FULL DEPTH REPAIR SHALL BE COMPLETED AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

3. PERFORM FOAM INJECTION AS DIRECTED BY THE ENGINEER.

4. PERFORM MANHOLE ADJUSTMENTS.

5. APPLY SEAL COAT ON THE SAME NIGHT OF THE OVERLAY.
- DO NOT SEAL COAT MORE LENGTH THAN CAN BE OVERLAID IN ONE NIGHT.

6. APPLY BONDING COURSE AND OVERLAY IN ACCORDANCE WITH GENERAL INSTRUCTIONS AND TCP PHASE STANDARDS.
- PLACE TEMPORARY WORK ZONE PAVEMENT MARKINGS.

7. PERFORM BRIDGE CLEANING AND SEALING JOINTS AT SYCAMORE BRIDGE.

PHASE III: PLACING PERMANENT PAVEMENT MARKINGS AND RAISED PAVEMENT MARKINGS

CONTRACTOR SHALL INSTALL TCP IN ACCORDANCE WITH TCP (3-1)-13, TCP (3-2)-13, TCP (3-3)-14, AND/OR AS DIRECTED BY THE ENGINEER.

1. INSTALL PERMANENT PAVEMENT MARKINGS AND RAISED PAVEMENT MARKERS..

2. INSTALL RADAR CAMERAS.

PHASE IV: PERFORMING DRAINAGE INLET CLEANING AND FINAL CLEAN UP

- REMOVE SW3P.
- CLEAN DRAINAGE INLETS.
- PERFORM FINAL CLEAN UP AND REMOVE ALL BARRICADES AND ADVANCE WARNING SIGNS AS DIRECTED BY THE ENGINEER.

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BU 287P
SEQUENCE OF WORK

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	050[illegible]C	BUS287P
DIST	COUNTY		SHEET NO.
FTW	Tarrant		168

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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

SHEET 1 OF 12

Texas Department of Transportation

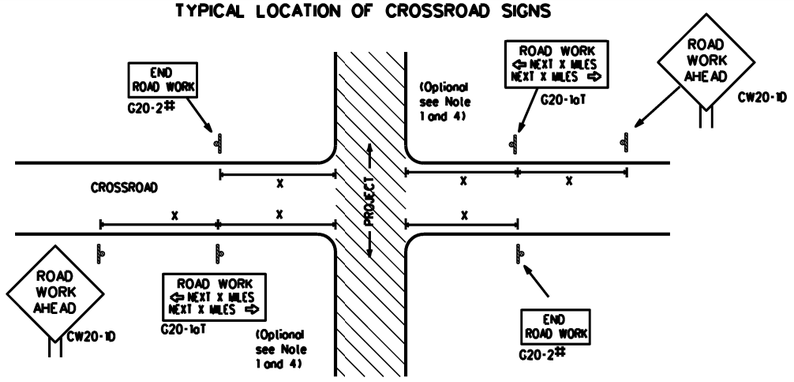
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	FTW	Tarrant		17
5-10 5-21				

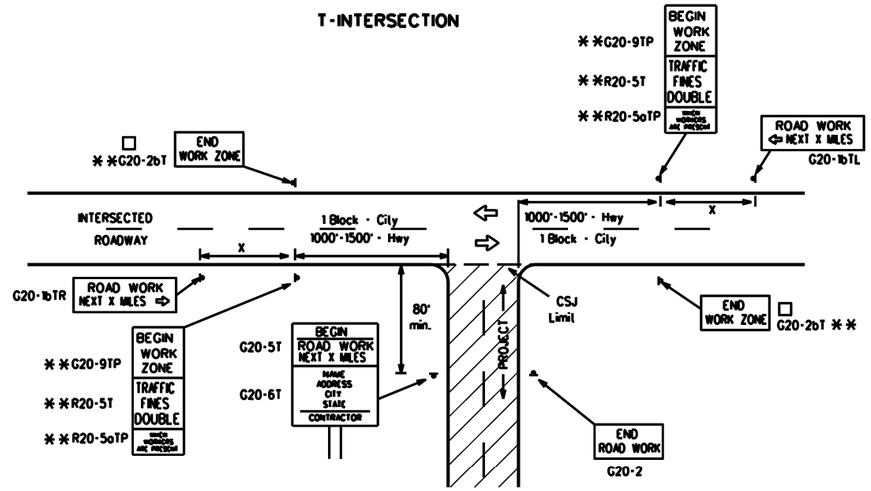
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

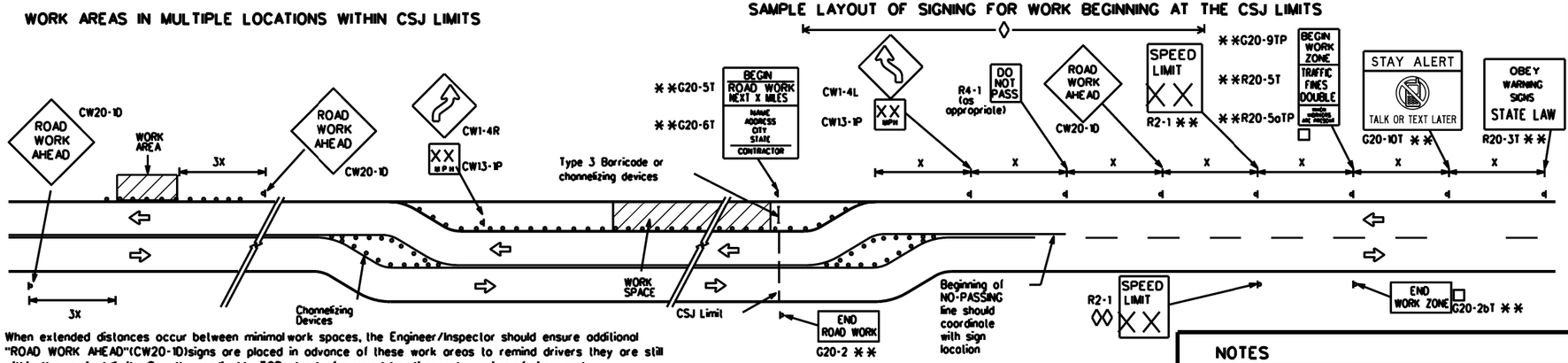
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

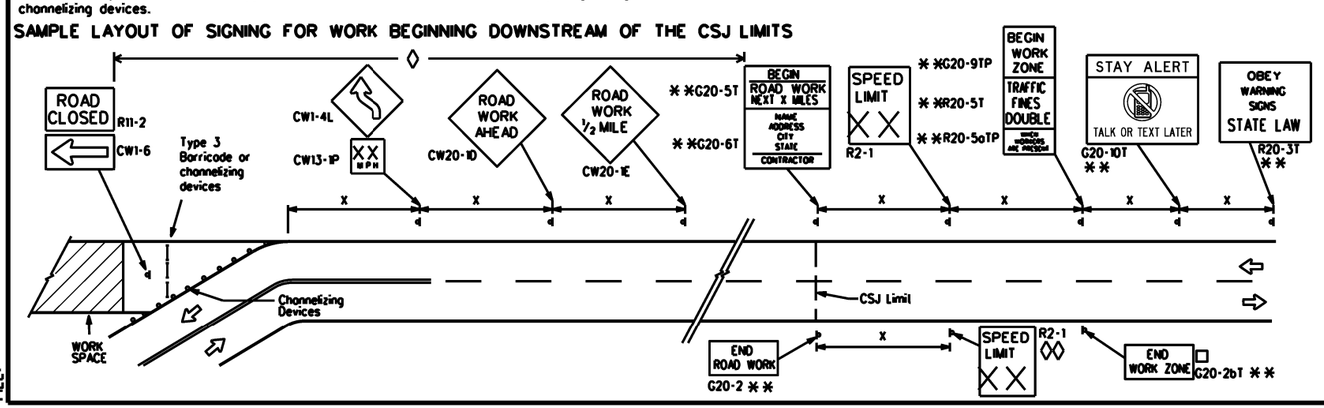
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may 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 DOWNSTREAM OF THE CSJ LIMITS



SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

□ The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

** 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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REVISIONS	0172	01	055,ETC	BU 287P
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DATE:
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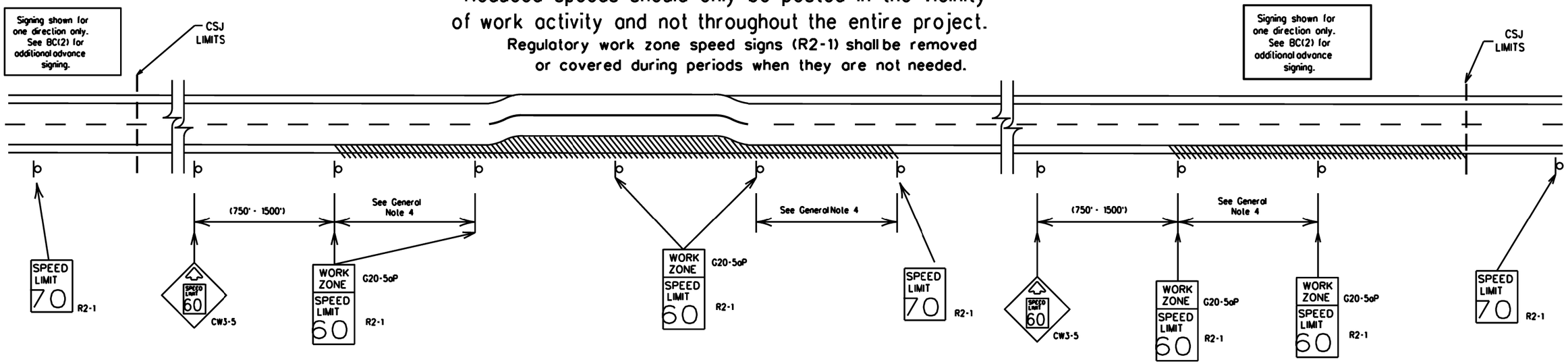
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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	FTW	Tarrant		19

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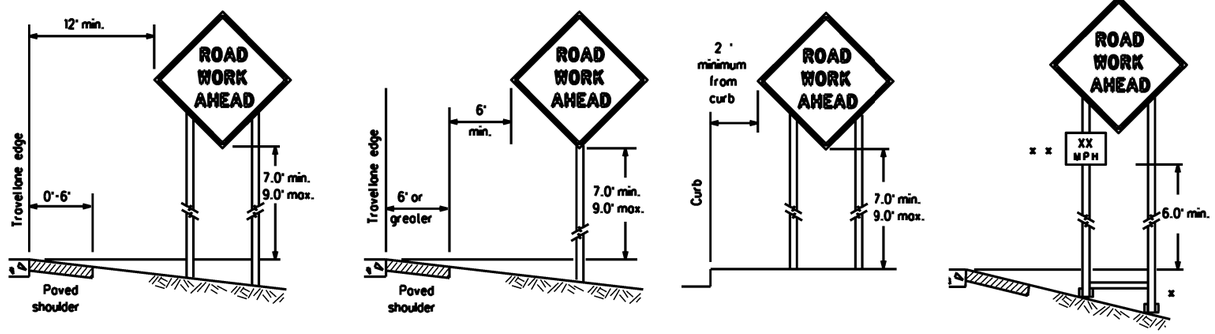
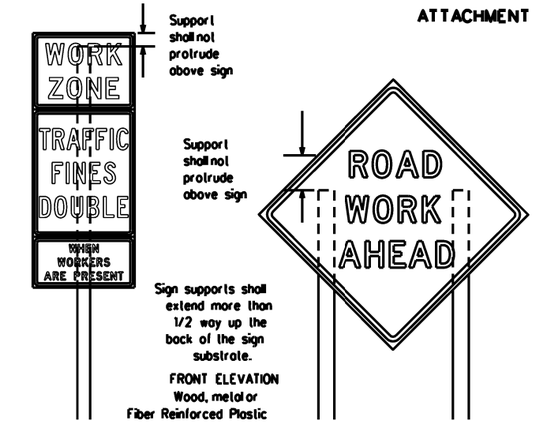
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



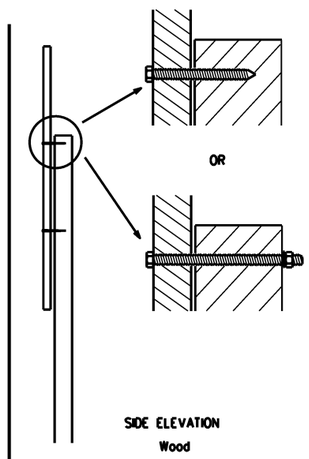
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the 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.

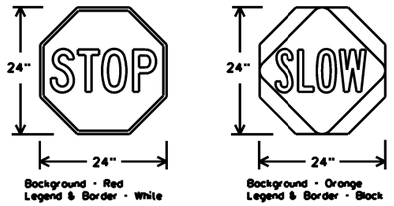


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24".
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.



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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 lightness 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 or Type C_{FL}, shall be used for rigid signs with orange backgrounds.

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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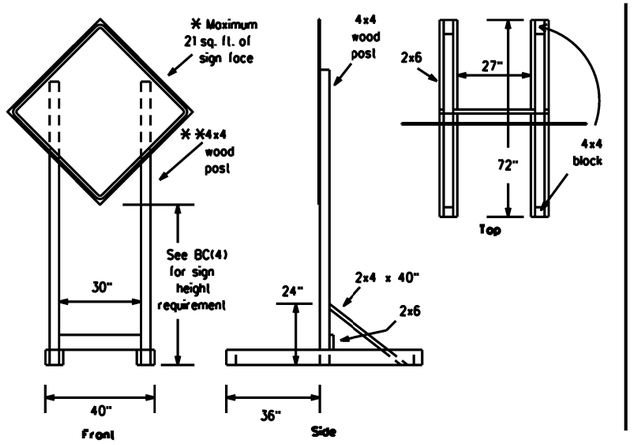
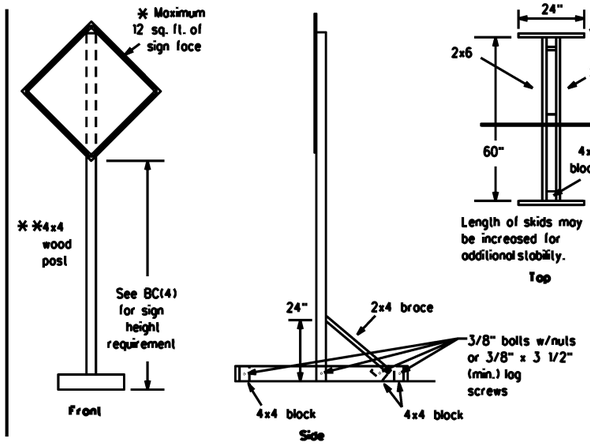
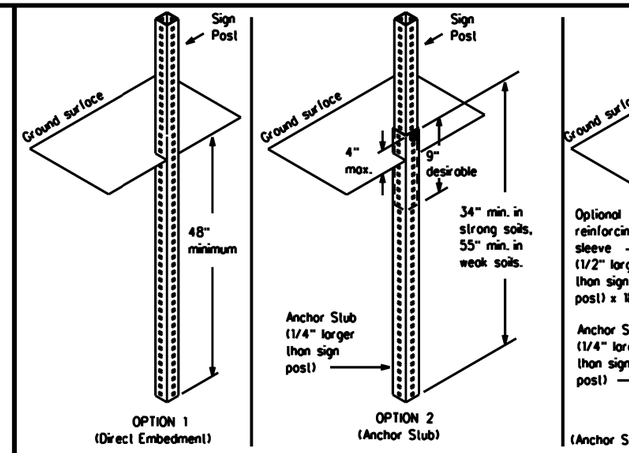
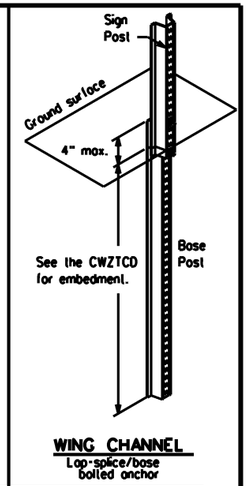




SKID MOUNTED WOOD SIGN SUPPORTS

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



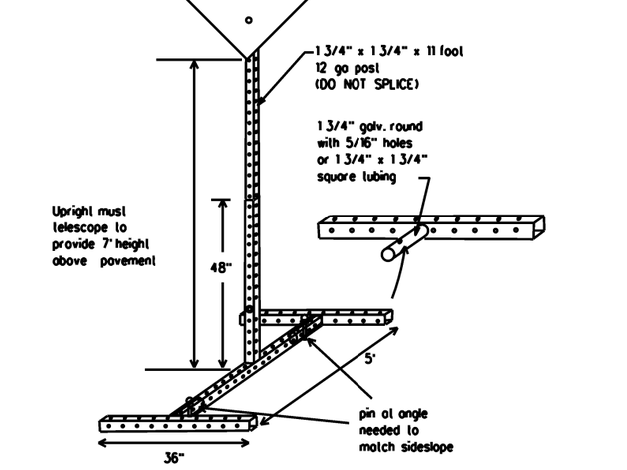


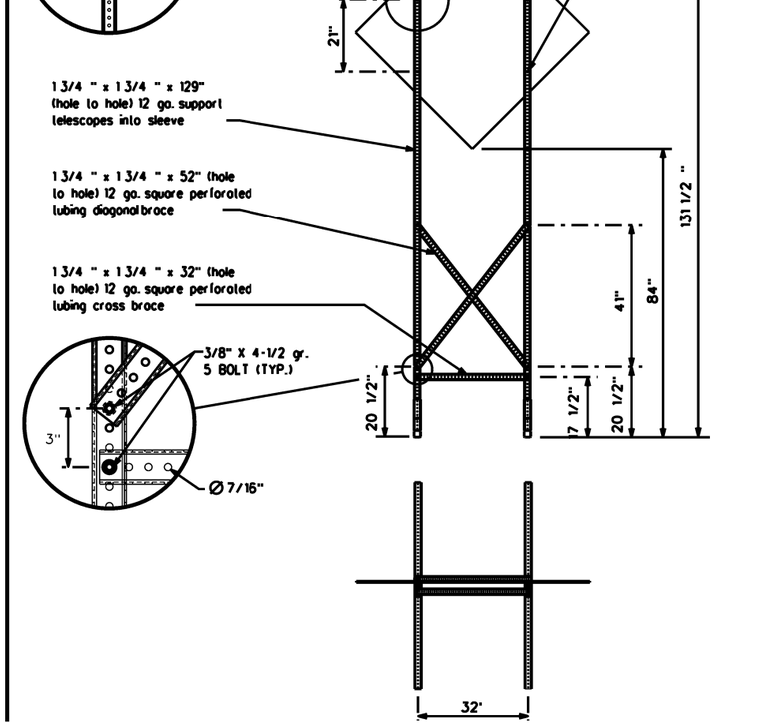
WING CHANNEL
Lap-splice/base bolted anchor

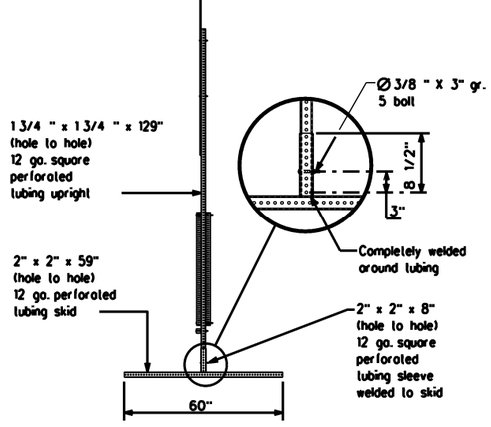
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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Texas Department of Transportation | *Traffic Safety Division Standard*

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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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	HOV
Vehicle Highway	HWY
Hour(s)	HR, HRS
Information	INFO
It Is	ITS
Junction	JCT
Left	LFT
Left Lane	LFT LN
Lane Closed	LN CLOSED
Lower Level	LWR LEVEL
Maintenance	MAINT

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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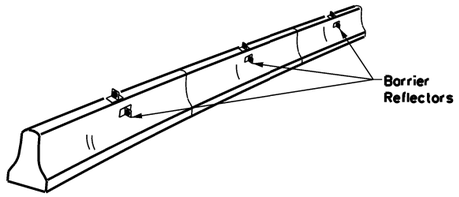
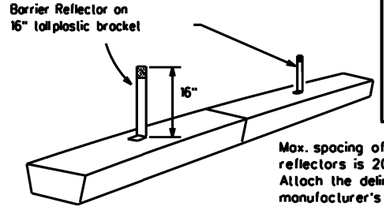
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.



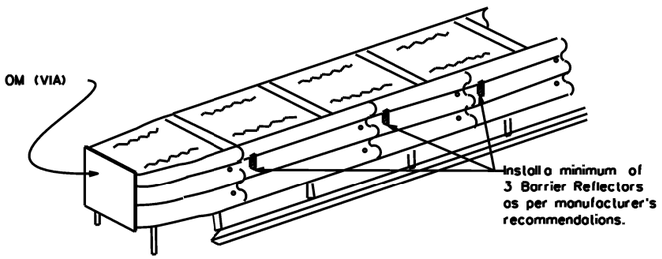
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

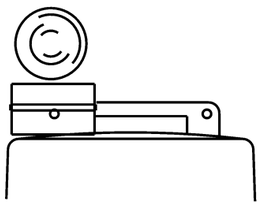
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

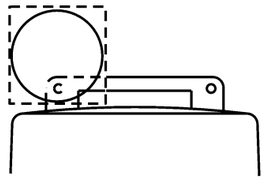
LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

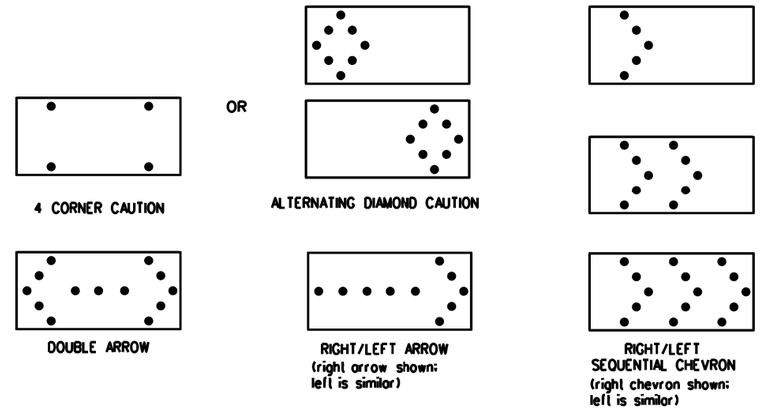
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is 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
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REVISIONS 9-07 8-14 7-13 5-21	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
	FTW	Tarrant		23

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DATE:
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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:

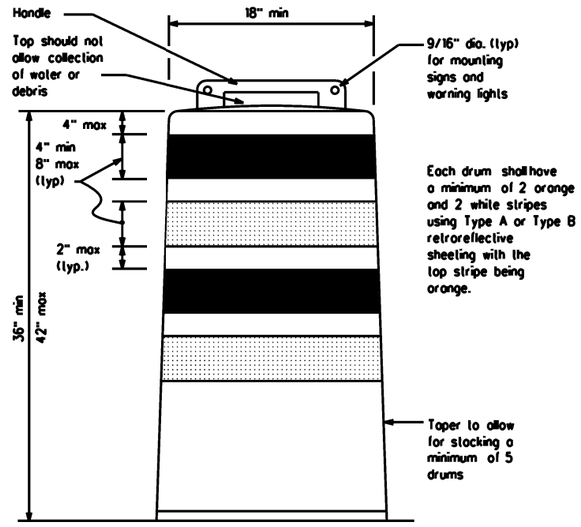
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

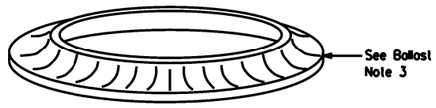
RETROREFLECTIVE SHEETING

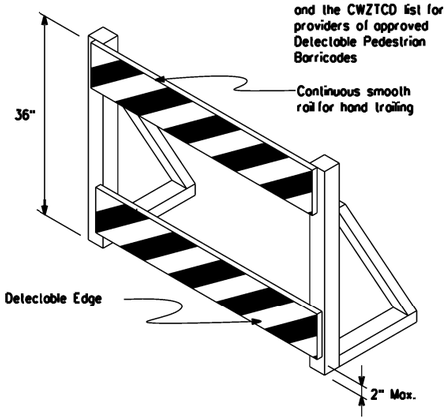
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

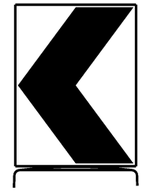




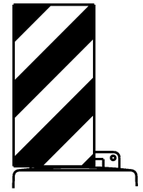


DETECTABLE PEDESTRIAN BARRICADES

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 travelway

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 or Type C Orange$_{FL}$ 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.

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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	0172	01	055,ETC	BU 287P
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	FTW	Tarrant		24
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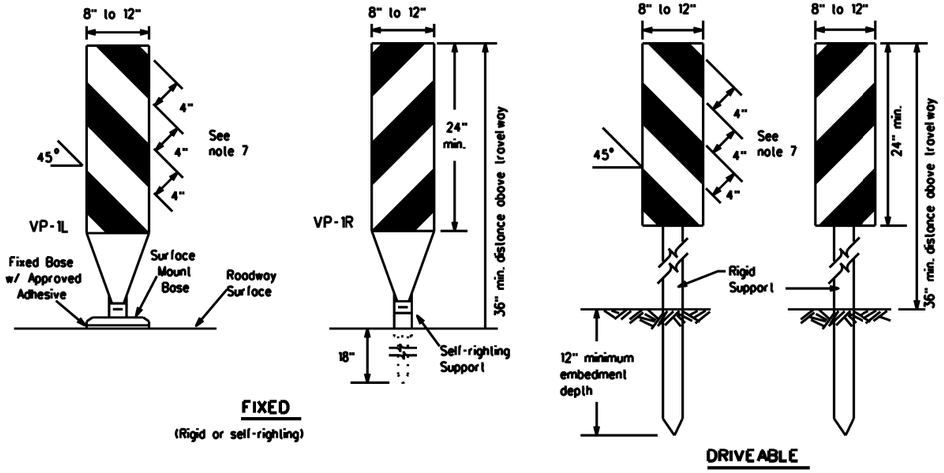
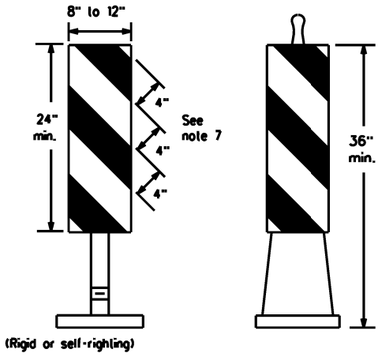
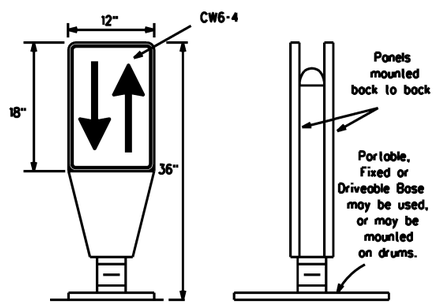




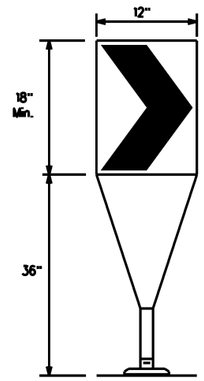
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

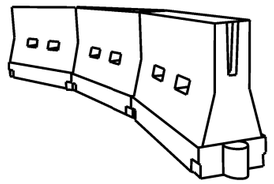
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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 non-reflective legend. Sheeting for the chevron shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways, self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travelanes.
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

GENERAL NOTES

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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REVISIONS 9-07 8-14 7-13 5-21	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
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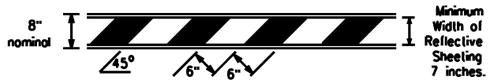
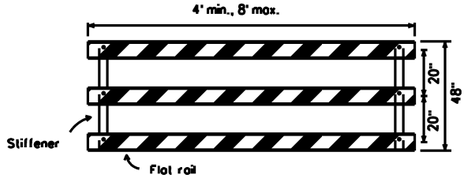
TYPE 3 BARRICADES

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.



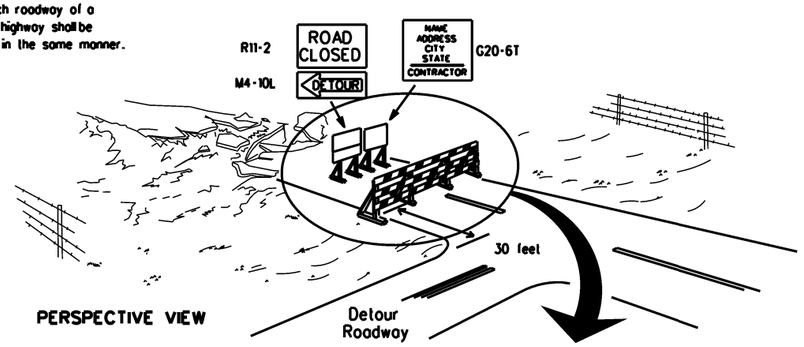
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

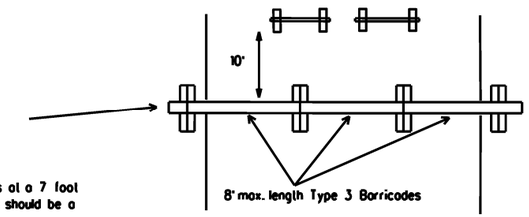
Each roadway of a divided highway shall be barricaded in the same manner.



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.

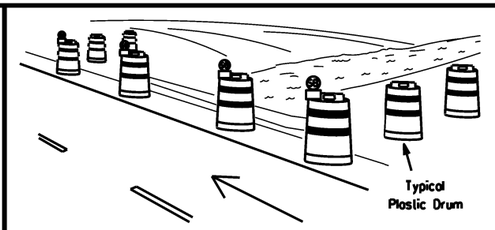
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

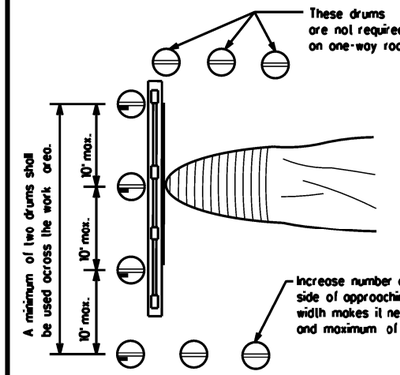
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

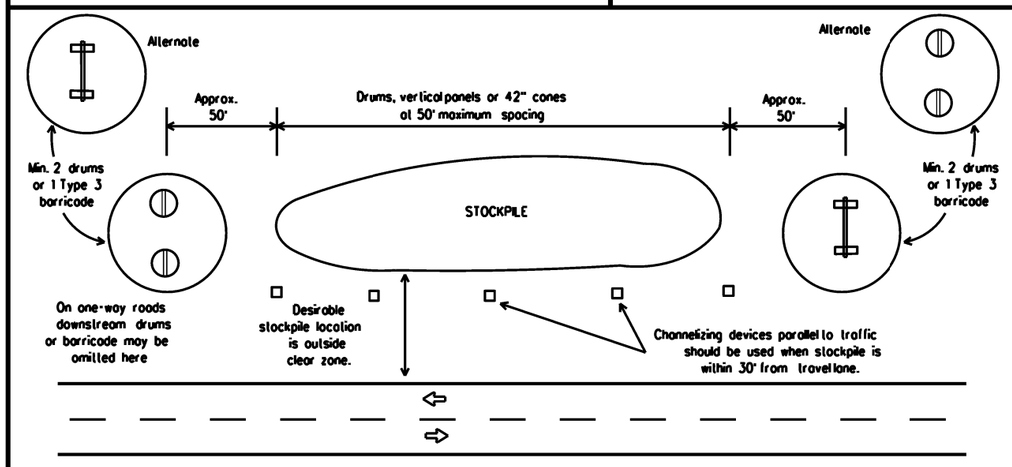
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

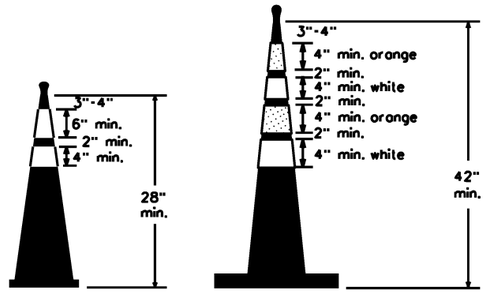
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

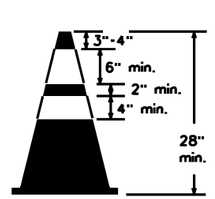


TRAFFIC CONTROL FOR MATERIAL STOCKPILES

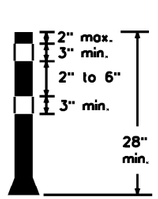
CONES



Two-Piece cones



One-Piece cones



Tubular Marker

28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	FTW	Tarrant		26

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

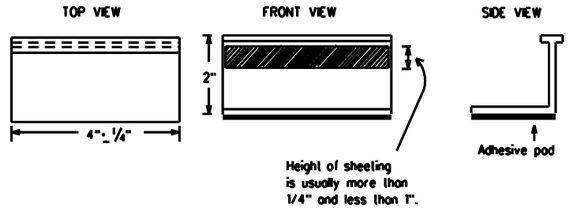
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
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11-02 8-14				

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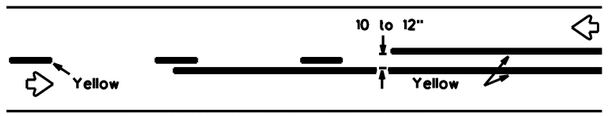
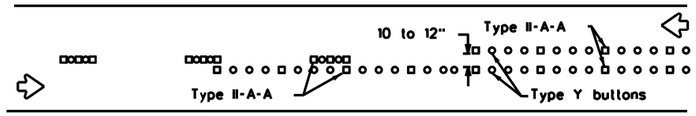
FILE:

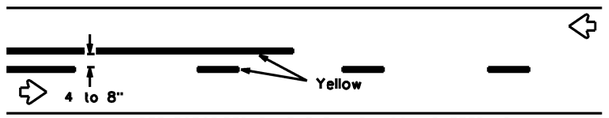
PAVEMENT MARKING PATTERNS



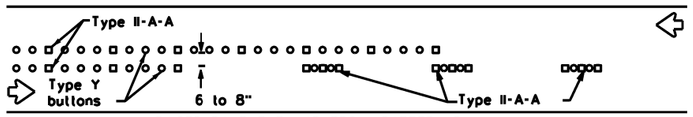
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



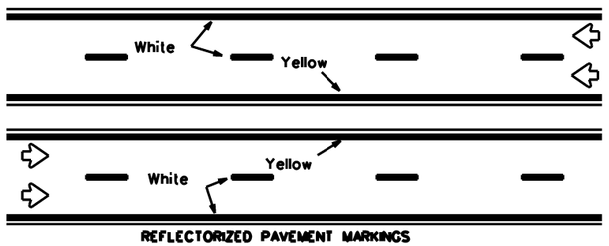
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



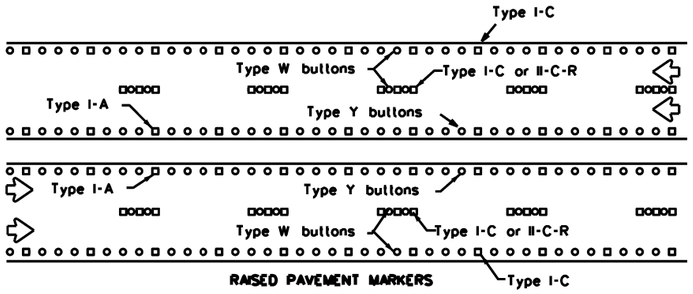
RAISED PAVEMENT MARKERS - PATTERN B

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



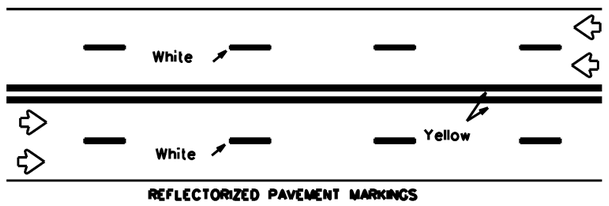
REFLECTORIZED PAVEMENT MARKINGS



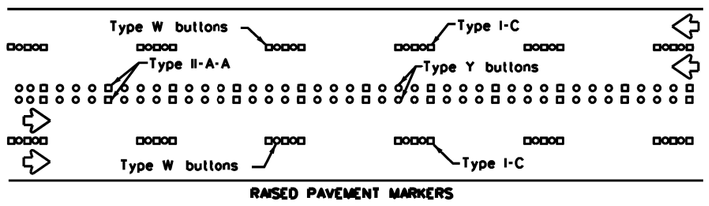
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



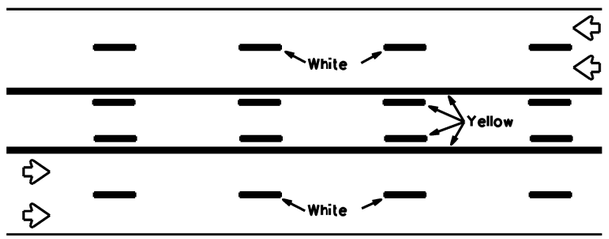
REFLECTORIZED PAVEMENT MARKINGS



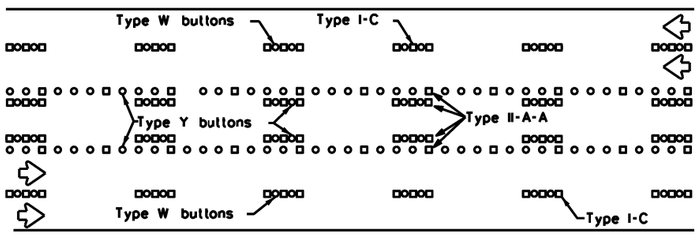
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

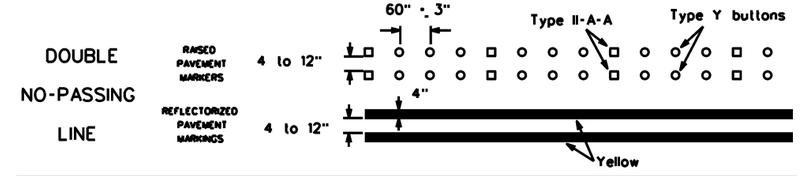
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

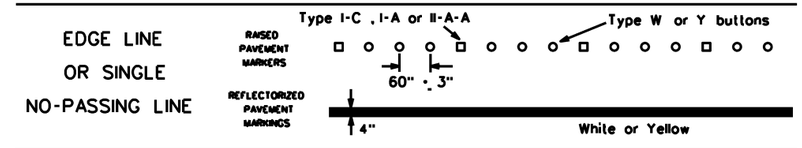
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

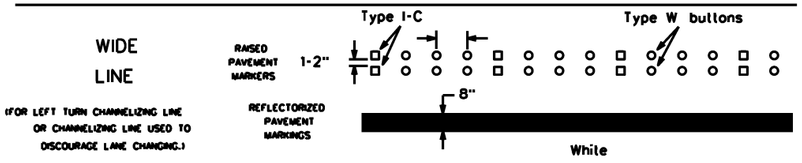


EDGE LINE OR SINGLE NO-PASSING LINE



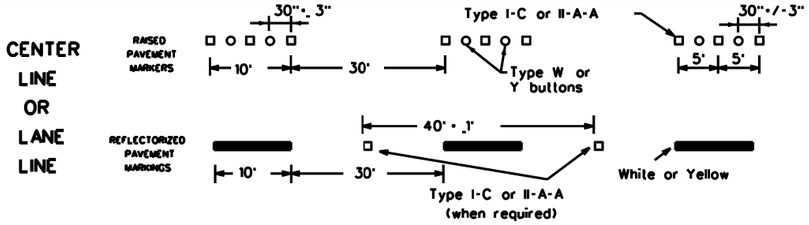
WIDE LINE

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

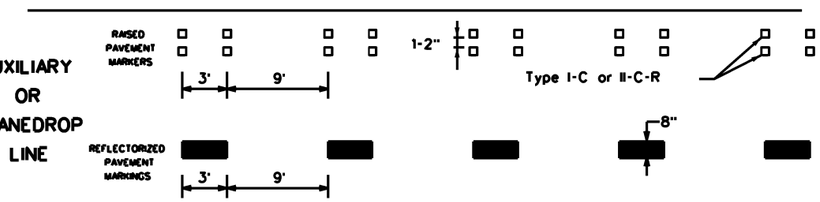


BROKEN LINES

CENTER LINE OR LANE LINE

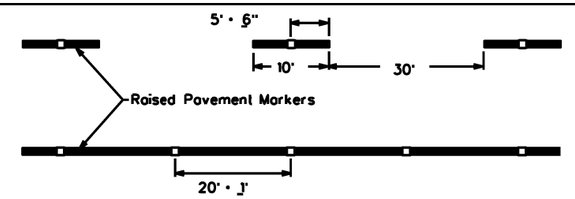


AUXILIARY OR LANEDROP LINE



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
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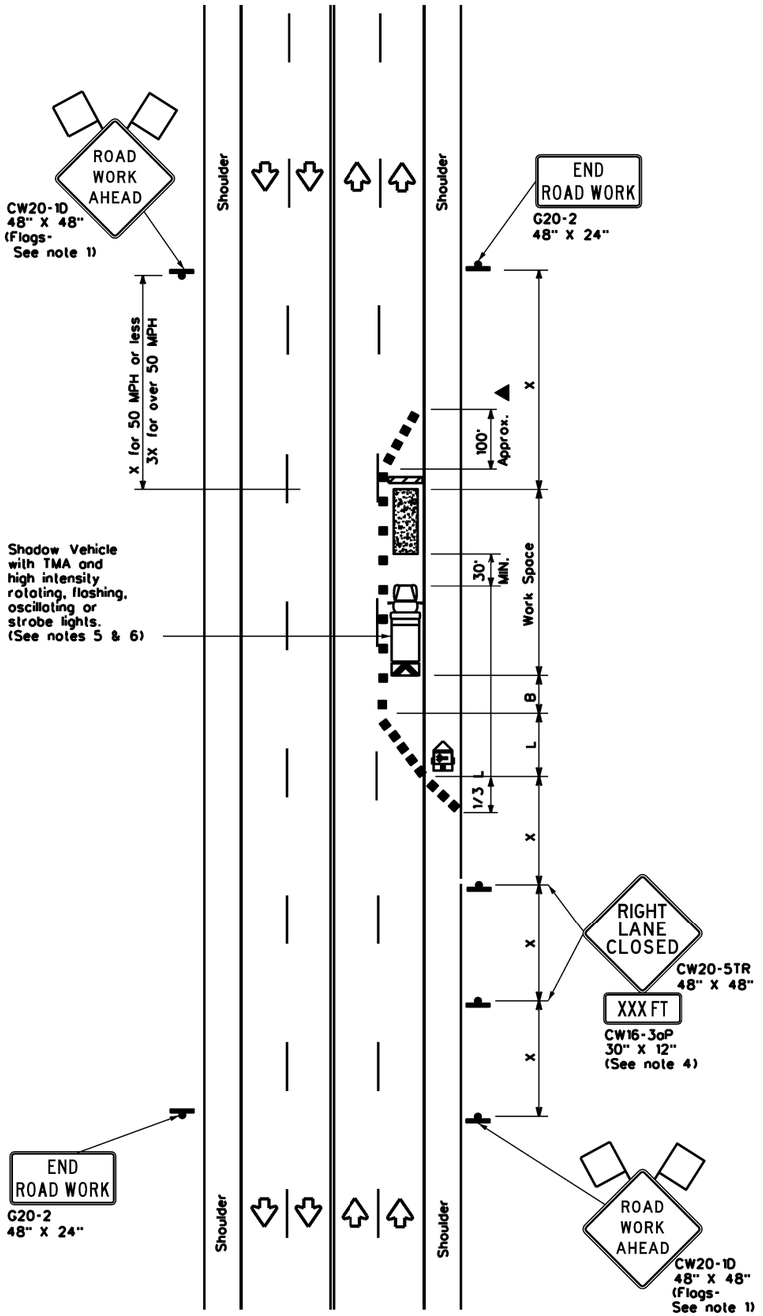
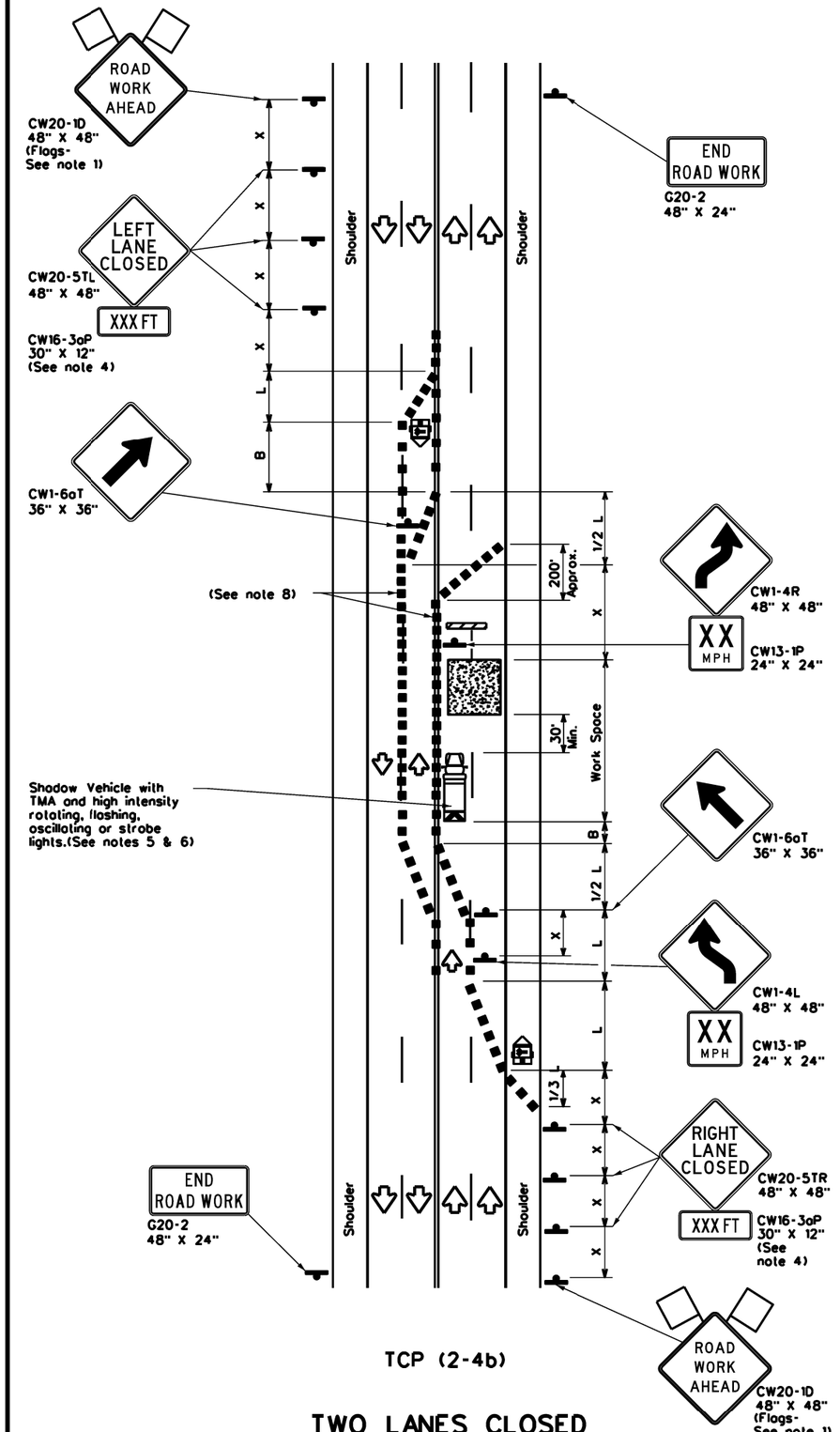


TCP (2-4a)

ONE LANE CLOSED



TCP (2-4b)

TWO LANES CLOSED

LEGEND

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

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

* Conventional Roads Only

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

TYPICAL USAGE

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

GENERAL NOTES

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

TCP (2-4a)

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

TCP (2-4b)

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(2-4)-18

FILE: tcp2-4-18.dgn	DN:	CK:	DW:	CK:
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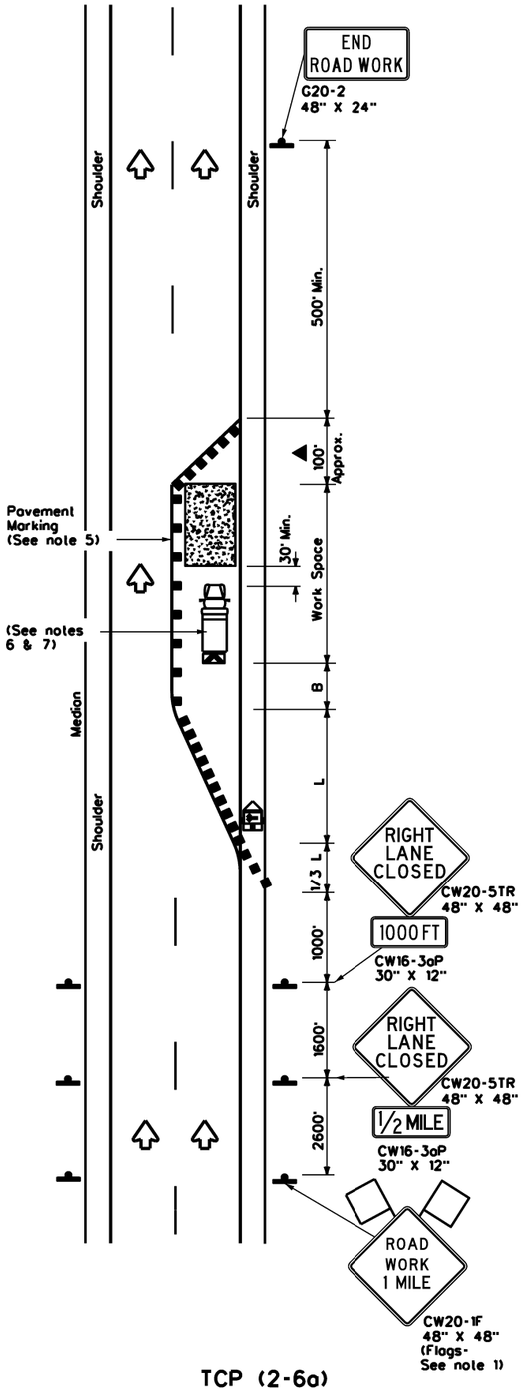
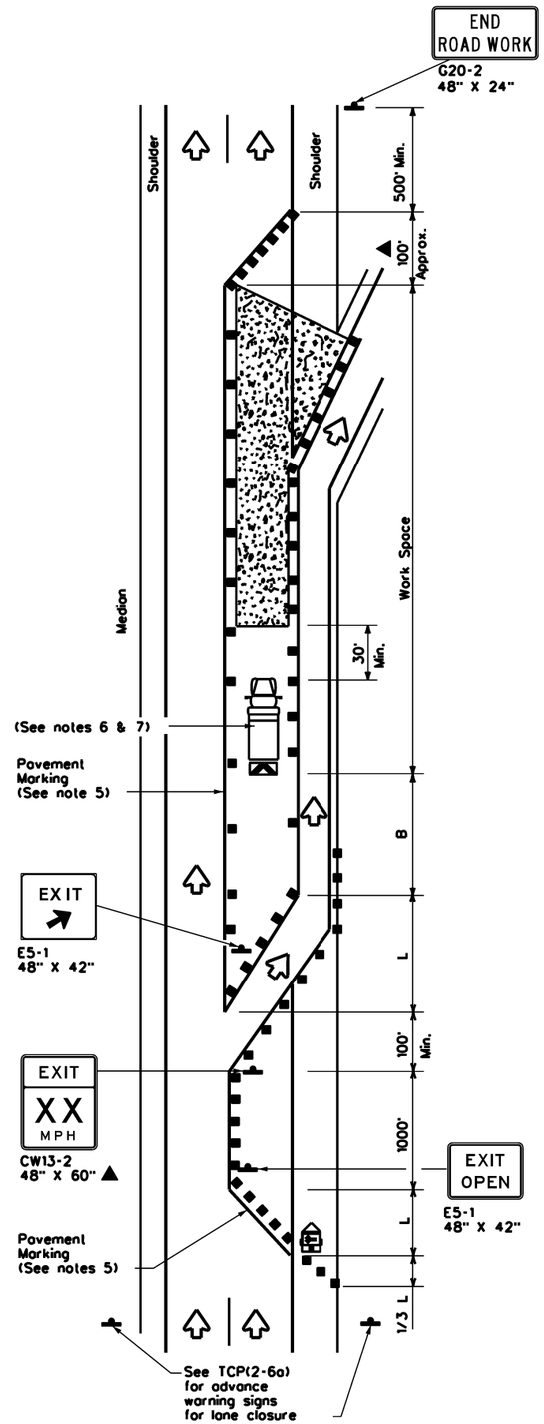


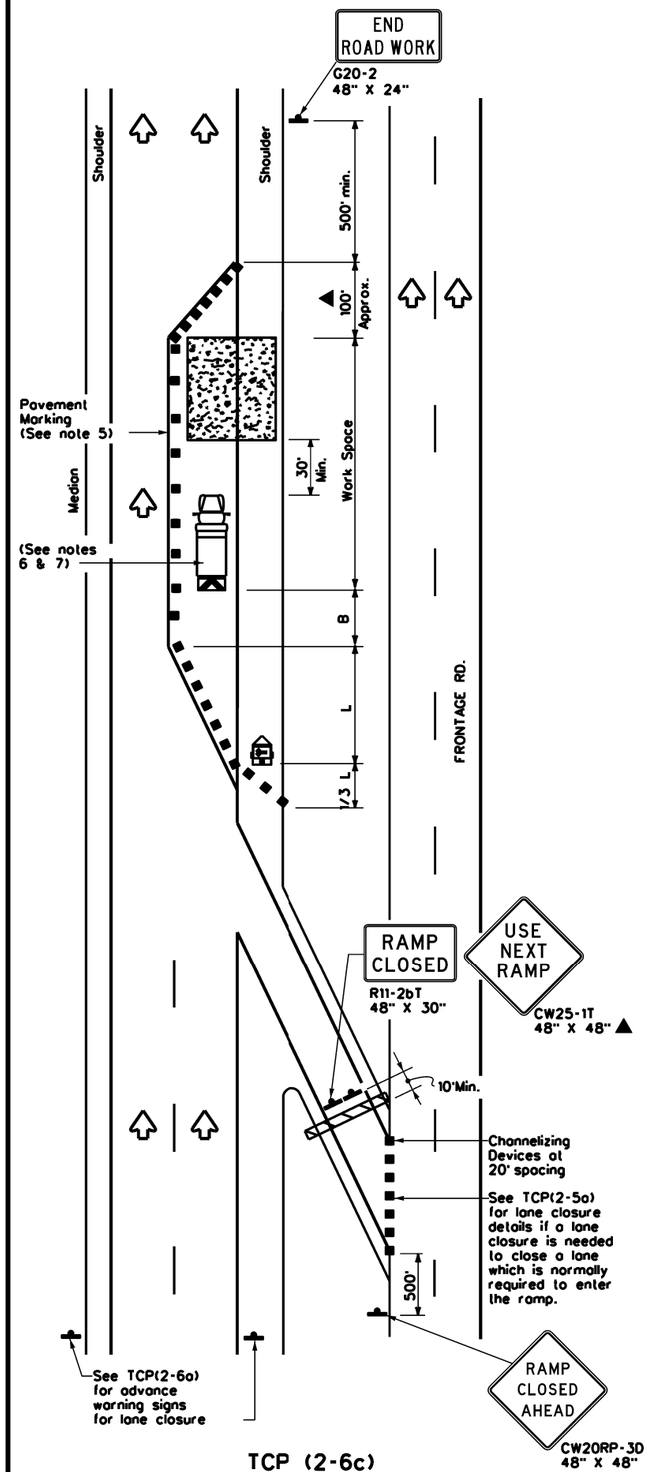
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

LEGEND

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

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

* Conventional Roads Only

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

TYPICAL USAGE

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on everyother channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing,oscillating or strobe lights. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

Texas Department of Transportation

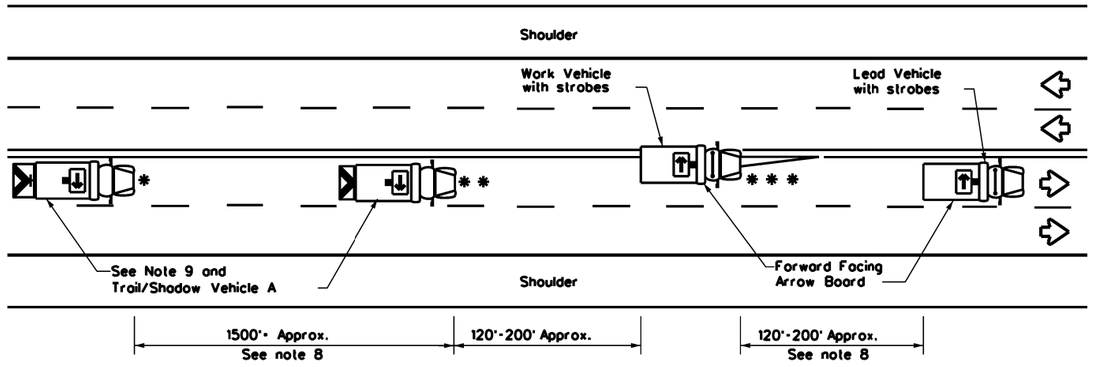
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

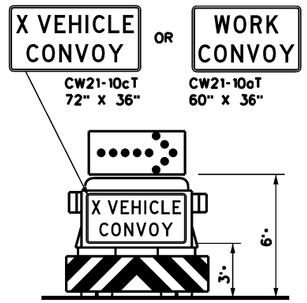
FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	FTW	TARRANT		30
1-97 2-18				

DATE:
FILE:



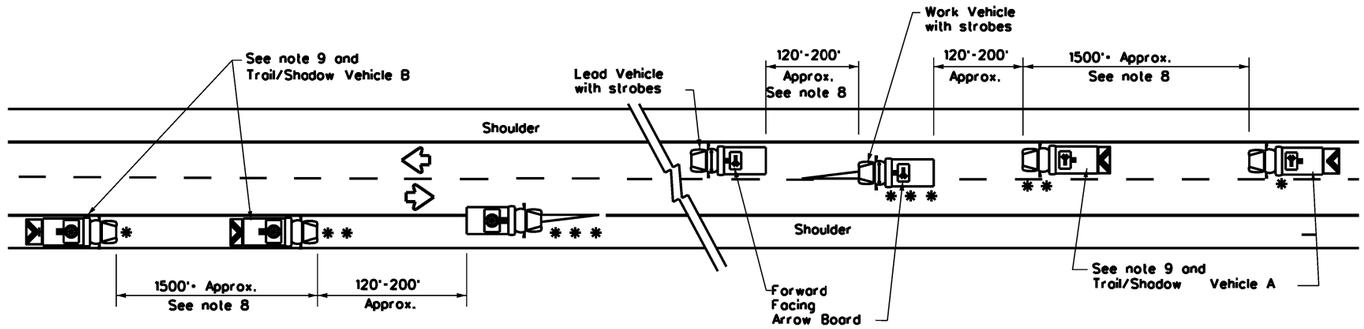
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

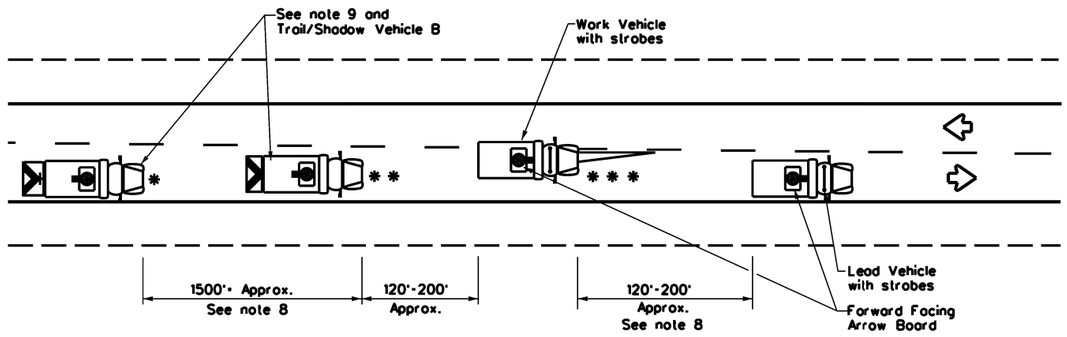


WORK ON SHOULDER

WORK ON TRAVEL LANE

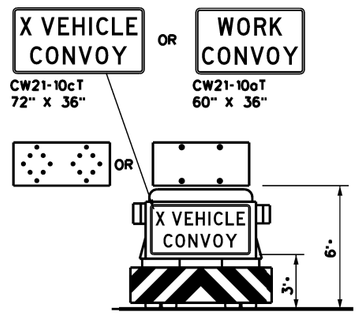
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board in CAUTION display

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

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

GENERAL NOTES

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

2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.

3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.

4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.

5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.

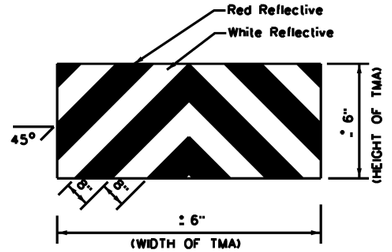
6. Each vehicle shall have two-way radio communication capability.

7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.

8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.

9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10oT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.

10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



STRIPING FOR TMA

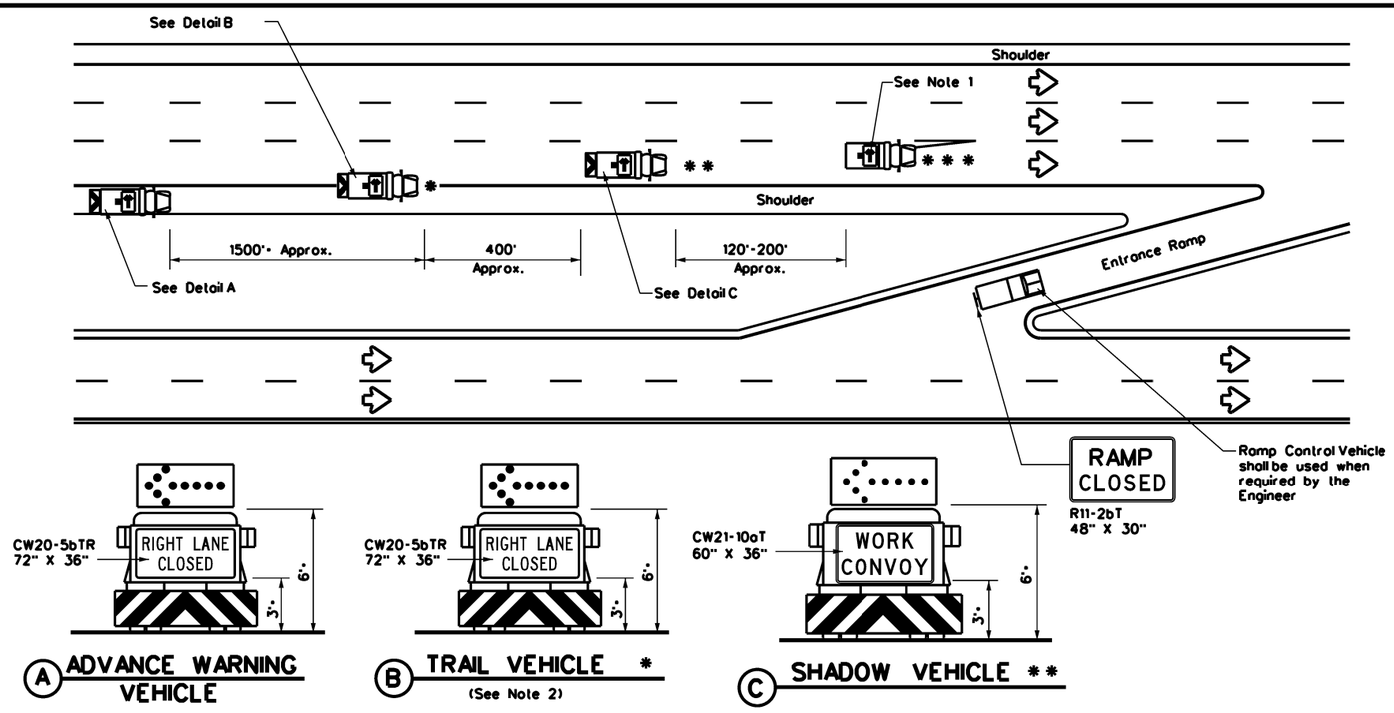
Texas Department of Transportation

Traffic Operations Division Standard

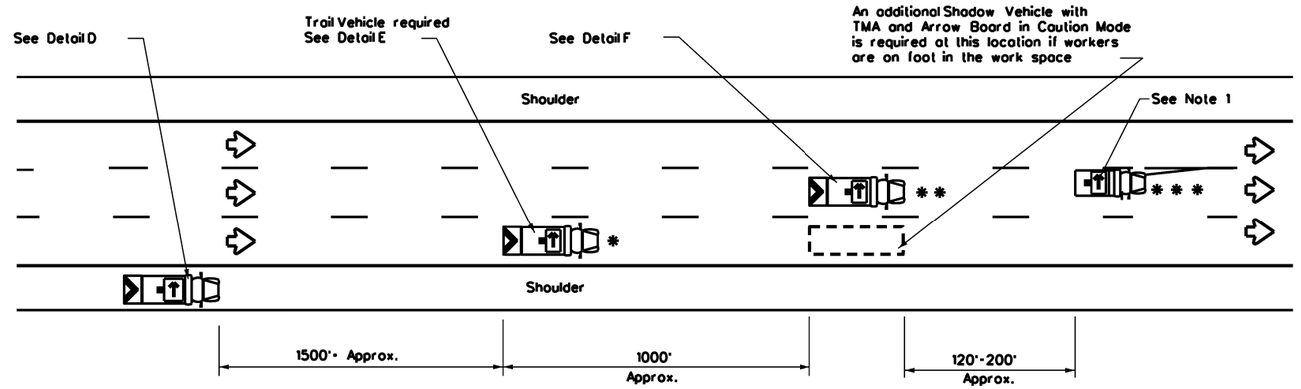
TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13	FTW	TARRANT		31
1-97				



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



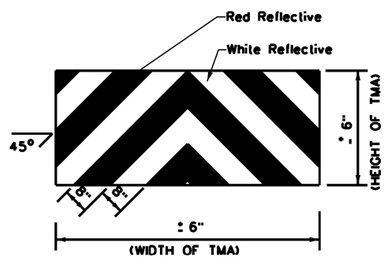
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

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

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

GENERAL NOTES

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



STRIPING FOR TMA

Texas Department of Transportation

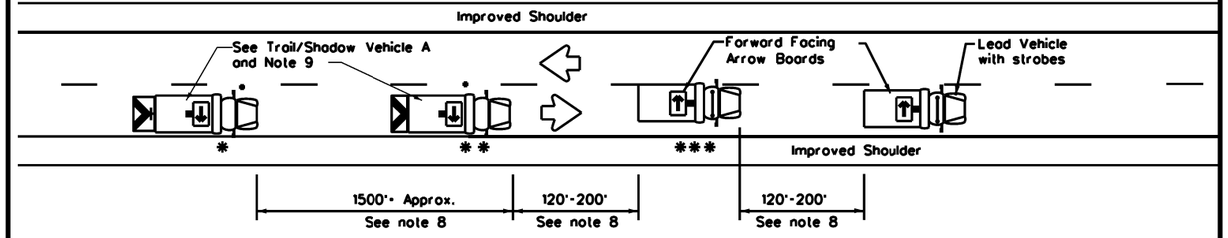
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

TCP(3-2)-13

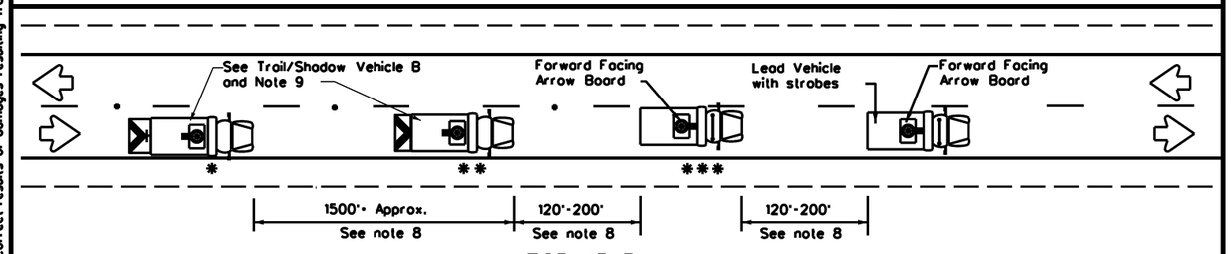
FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
	FTW	Tarrant		32

DATE:
FILE:



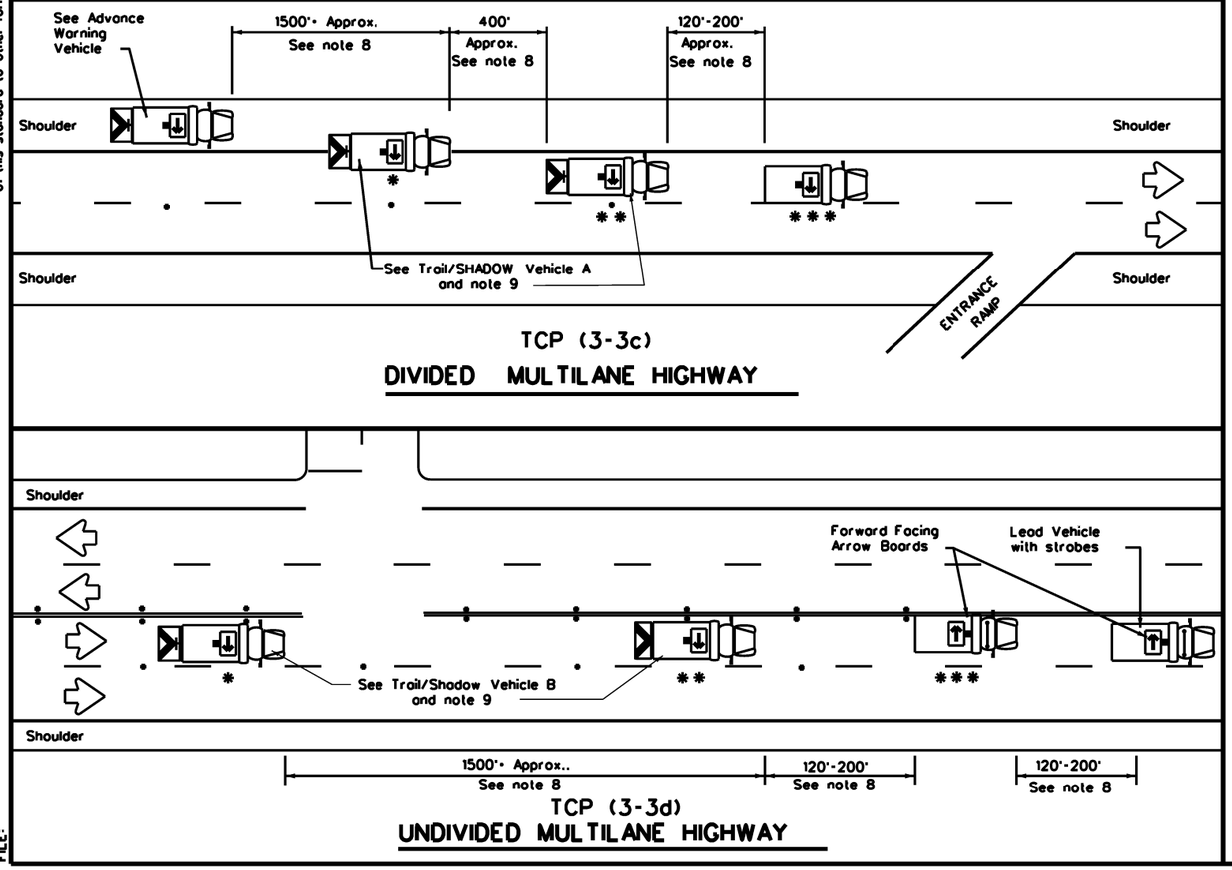
TCP (3-3a)

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



TCP (3-3b)

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



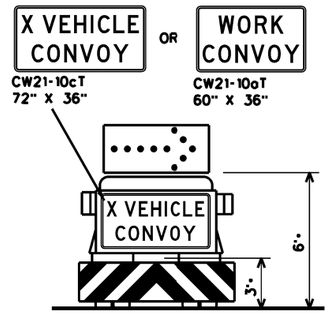
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY

TCP (3-3d)

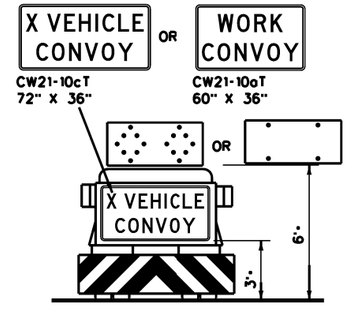
UNDIVIDED MULTILANE HIGHWAY

DATE:
FILE:



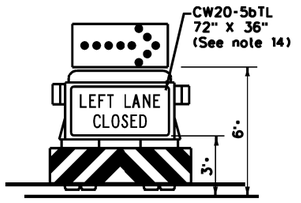
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

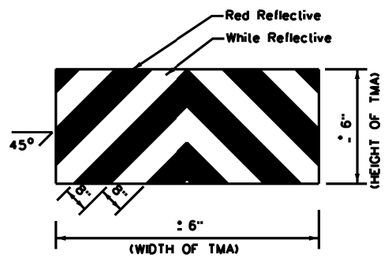


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

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

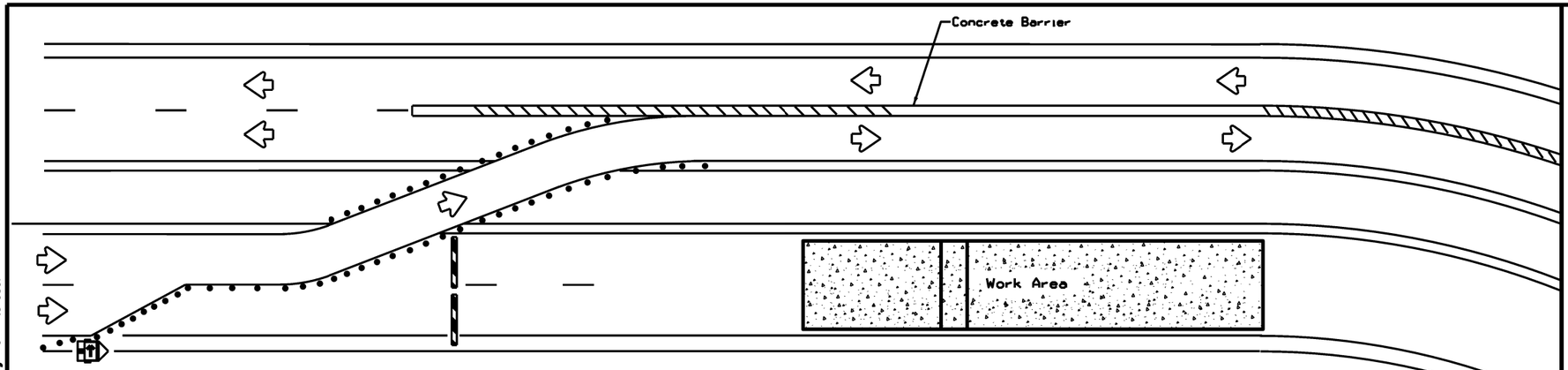
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL

TCP(3-3)-14

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13				
1-97 7-14	FTW	TARRANT		33



NOTES:

1. Length of Safety Glare screen will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular safety glare screen units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one safety glare screen unit.
3. Screen Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one glare screen panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens would be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.

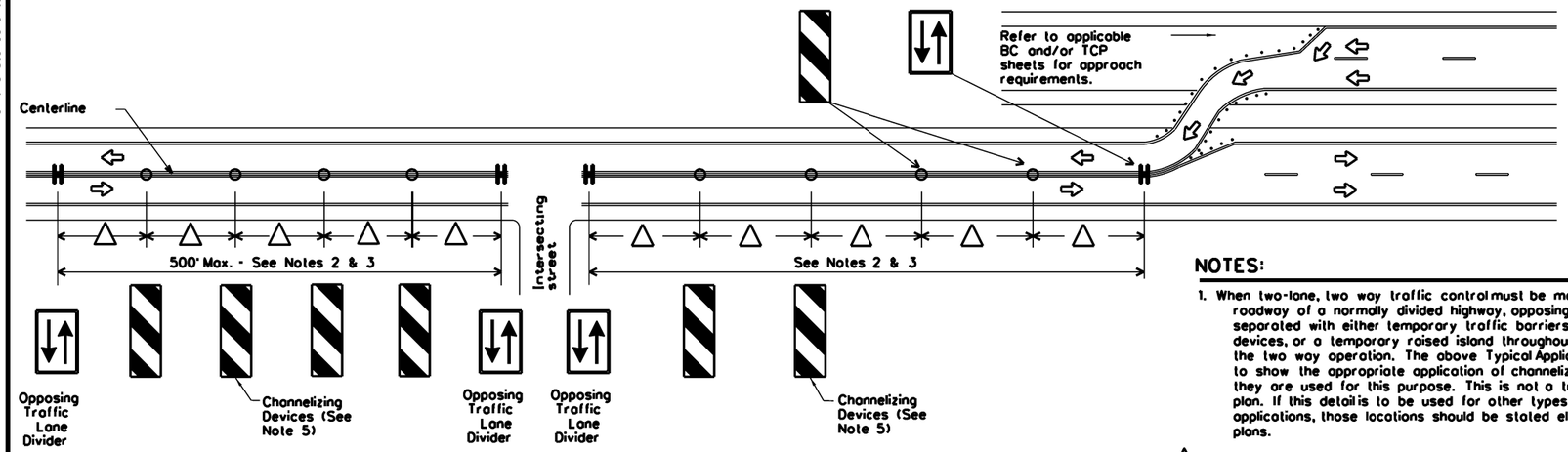
BARRIER DELINEATION WITH MODULAR GLARE SCREENS

LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\\\\	Safety glare screen

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

Only pre-qualified products shall be used. A copy of the Compliant Work Zone Traffic Control Devices List" CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:

http://www.txdot.gov/business/resources/producer-list.html



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD) SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.
2. △ Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.
3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
5. Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

Texas Department of Transportation | Traffic Operations Division Standard

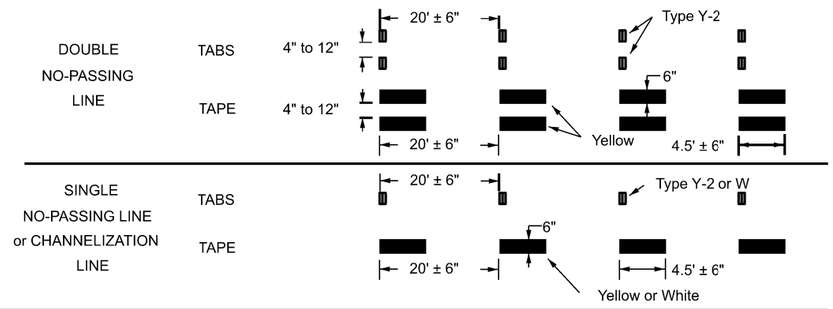
TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-17

FILE:	wztd-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 2-17 3-03 7-13		0172	01	∗.jS	BU 287P
		DIST	COUNTY		SHEET NO.
		FTW	TARRANT		34

DATE:
FILE:

WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS



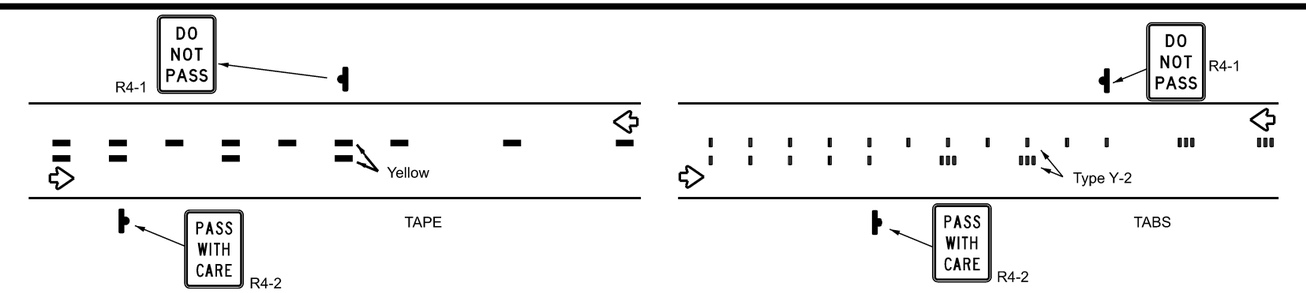
NOTES:

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.

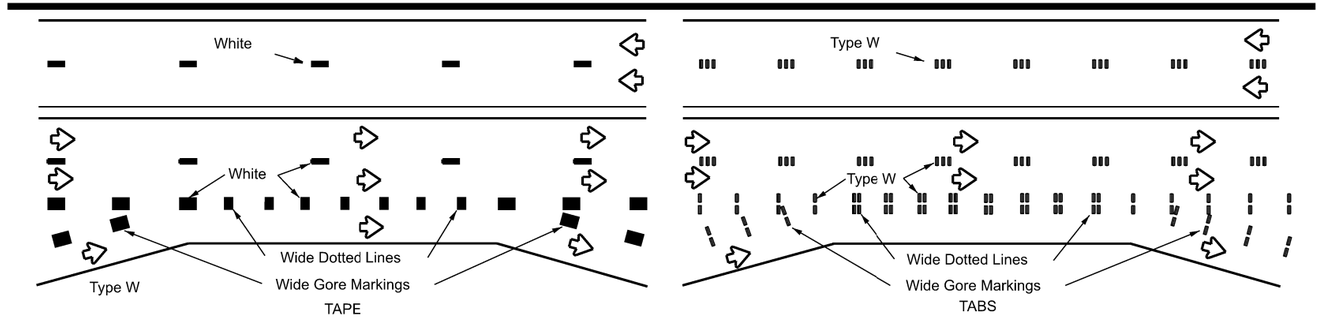
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

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.

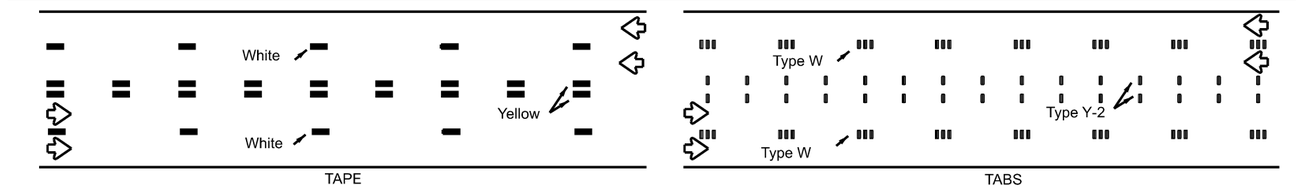
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



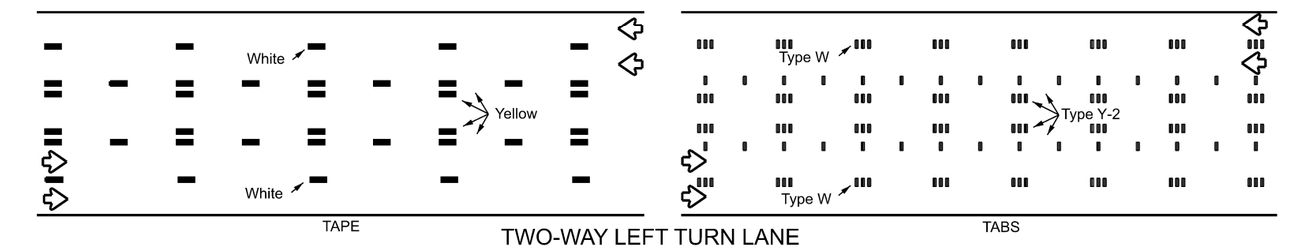
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



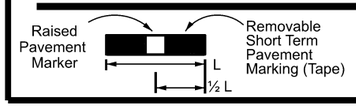
LANE LINES FOR DIVIDED HIGHWAY



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:
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REVISIONS	0172	01	055,ETC	BU 287P
4-92 7-13	DIST	COUNTY		SHEET NO.
1-97 2-23	FTW	TARRANT		35
3-03				

111

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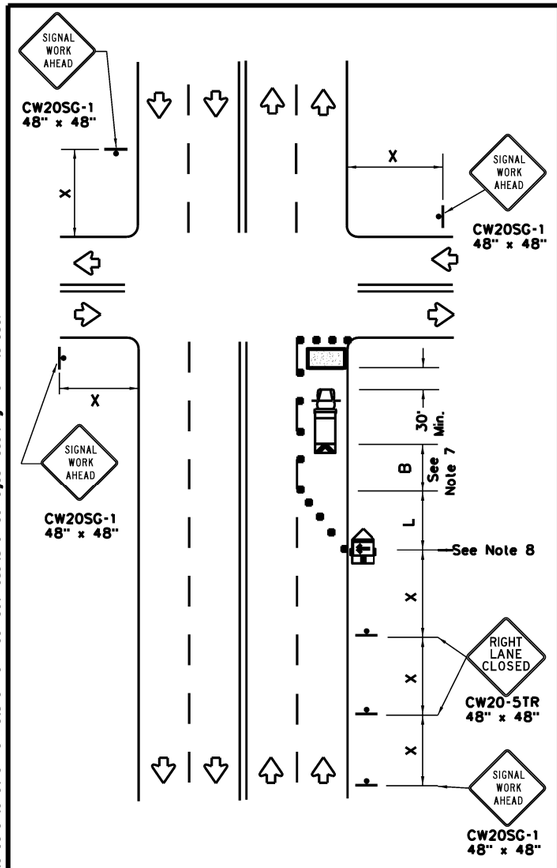
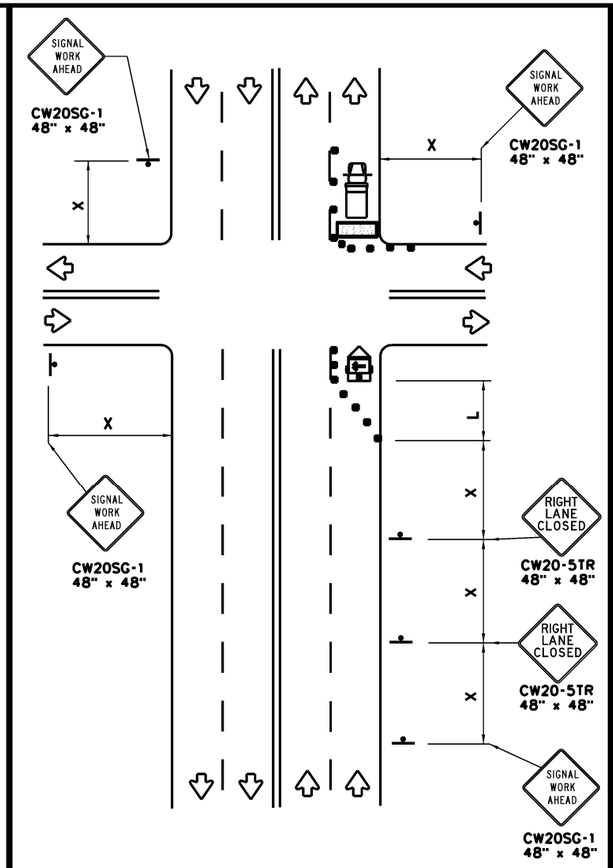


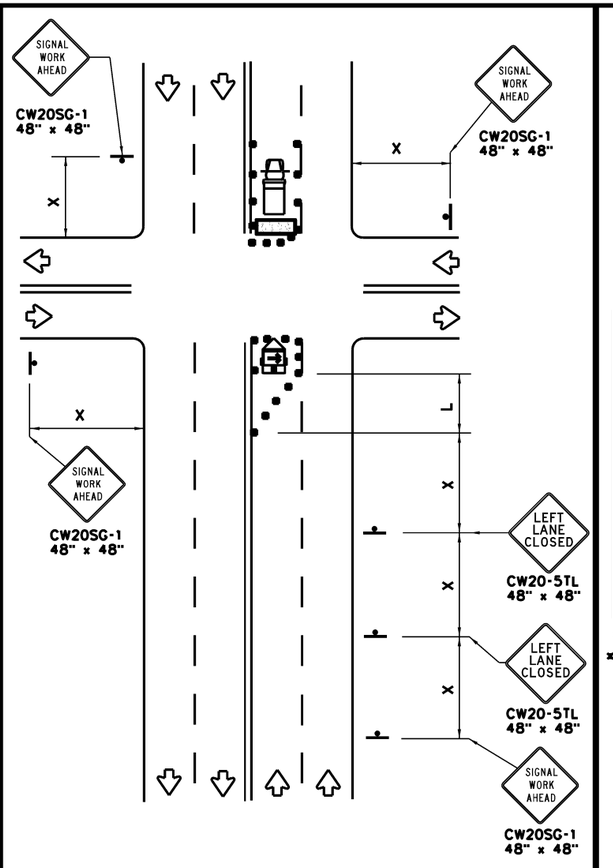
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



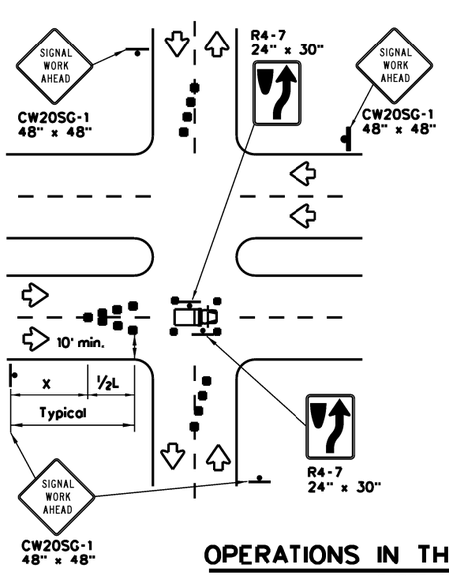
FAR SIDE RIGHT LANE CLOSURE

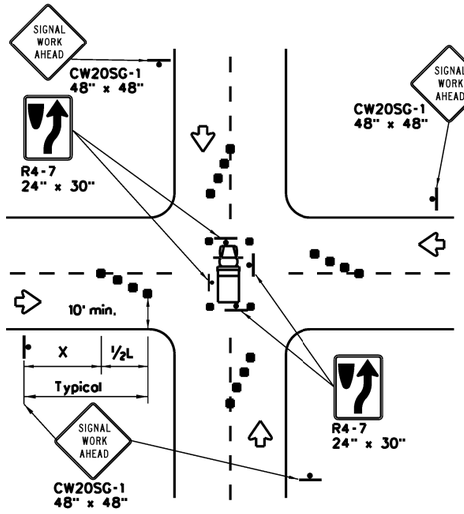
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY





OPERATIONS IN THE INTERSECTION

SHORT DURATION

GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

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

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

* Conventional Roads Only

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

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.

SHEET 1 OF 2

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK TYPICAL DETAILS

WZ(BTS-1)-13

FILE: wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03	FTW	TARRANT		36

DATE:
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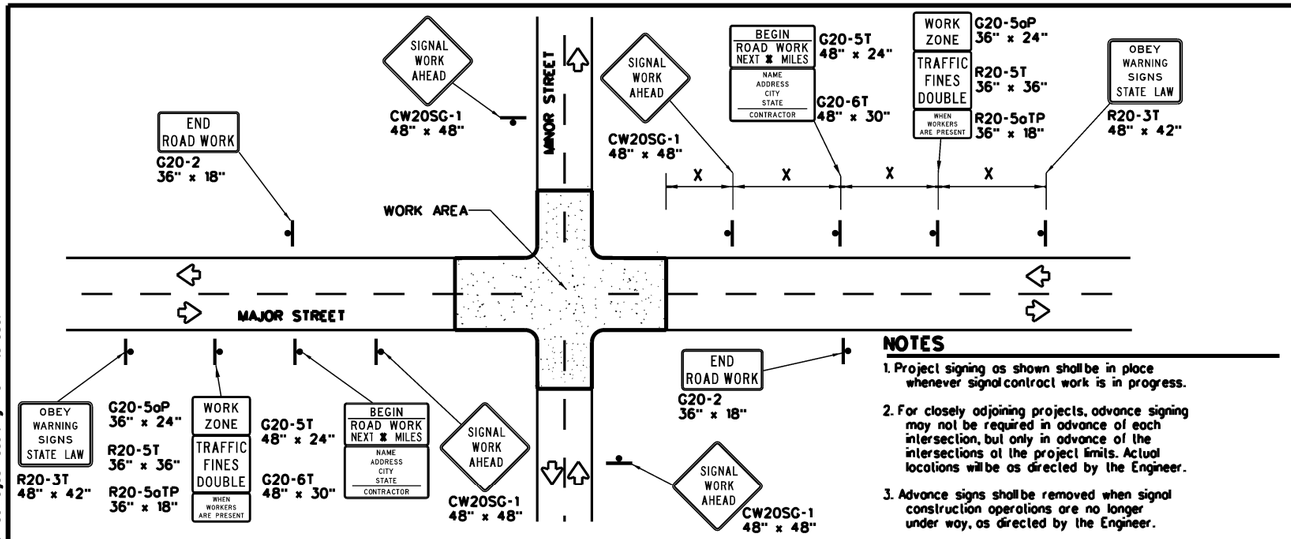


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections of the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. 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".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night without damaging the sign sheeting. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

SIGN SUPPORT WEIGHTS

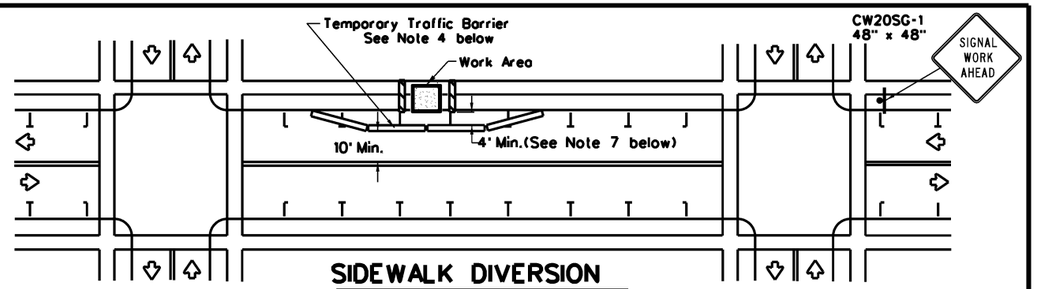
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support 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 fastners. 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.

LEGEND	
	Sign
	Channelizing Devices
	Type 3 Barricade

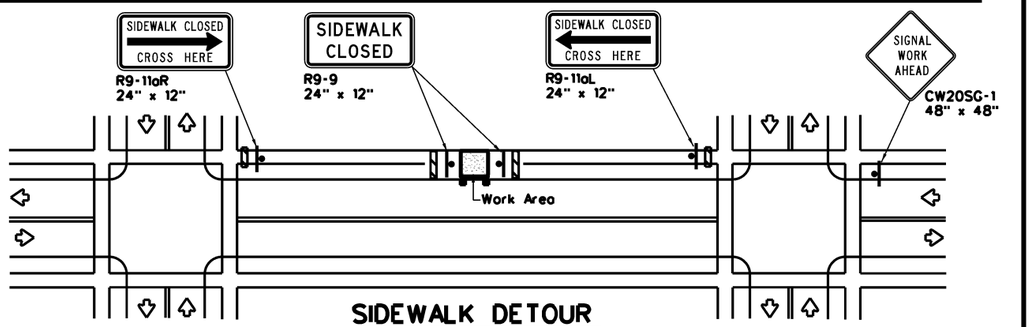
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

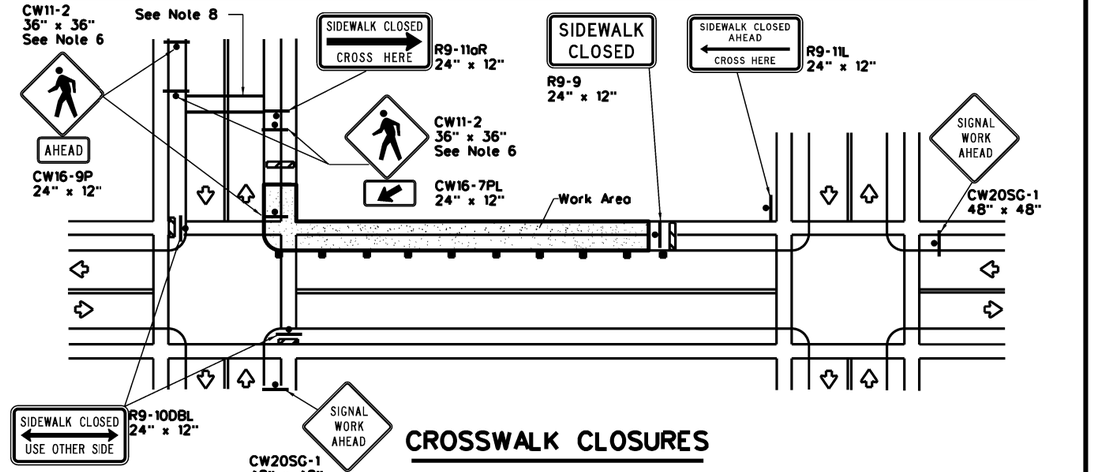
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



SIDEWALK DIVERSION



SIDEWALK DETOUR



CROSSWALK CLOSURES

PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

FILE:	wzbts-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
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2-98 10-99 7-13		DIST	COUNTY		SHEET NO.
4-98 3-03		FTW	TARRANT		37

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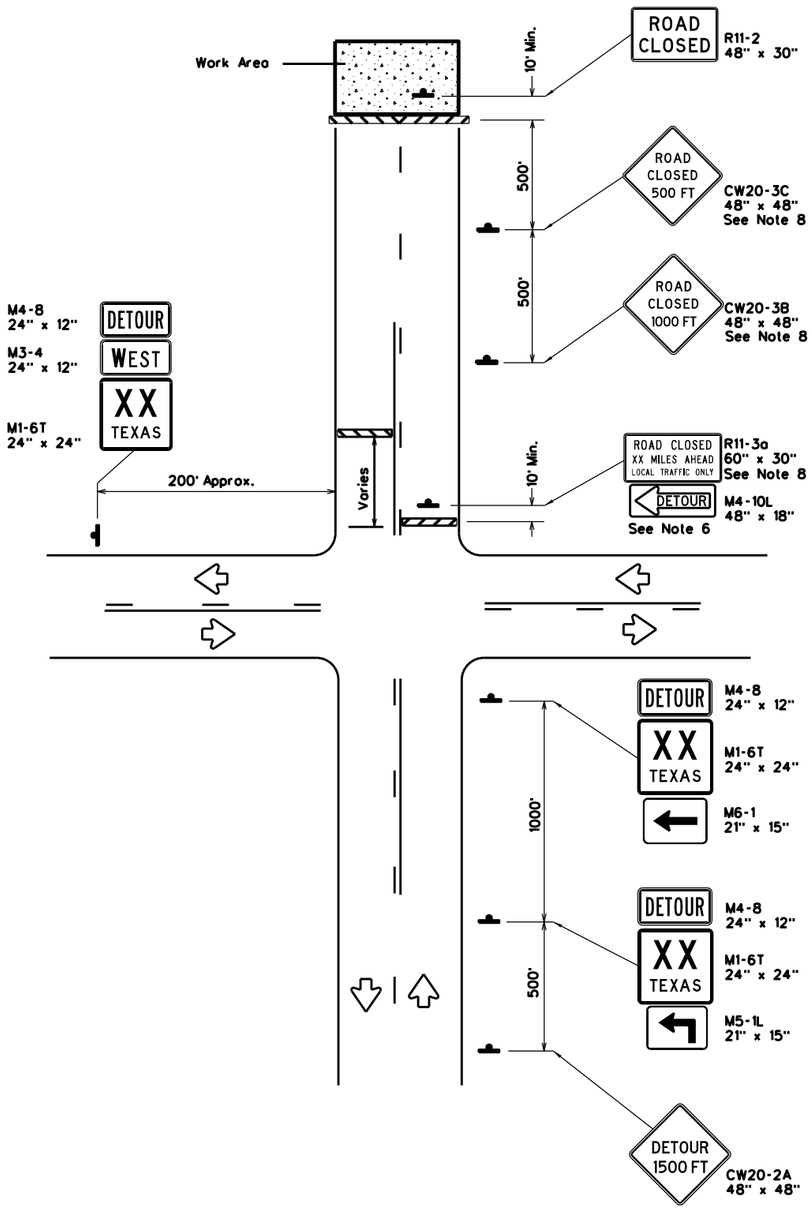
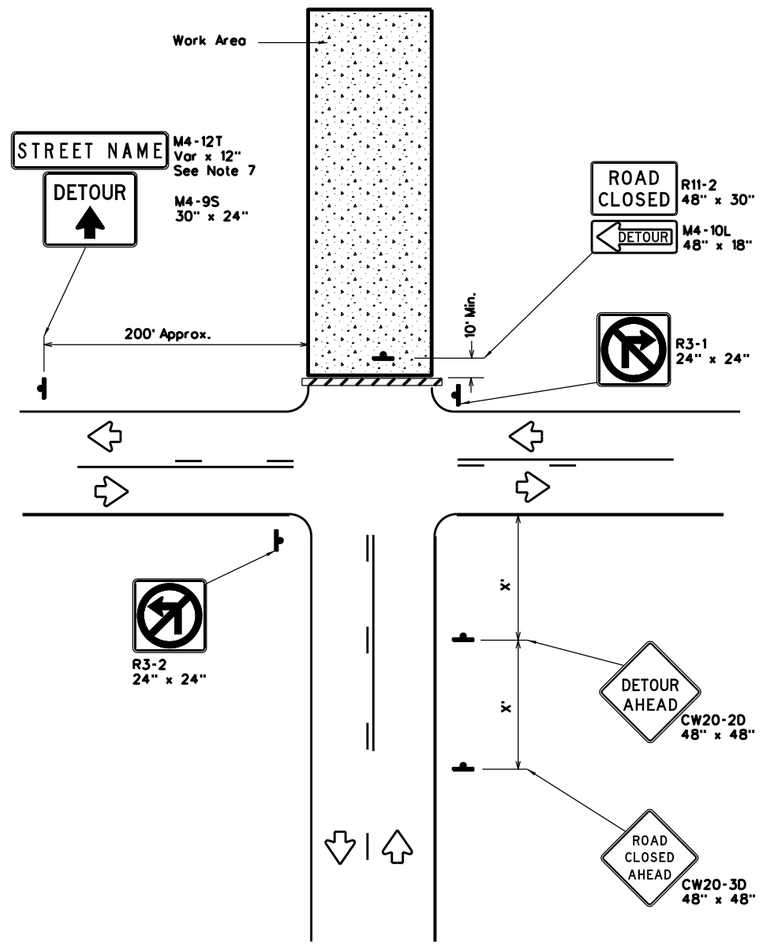


ROAD CLOSURE BEYOND THE INTERSECTION

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.
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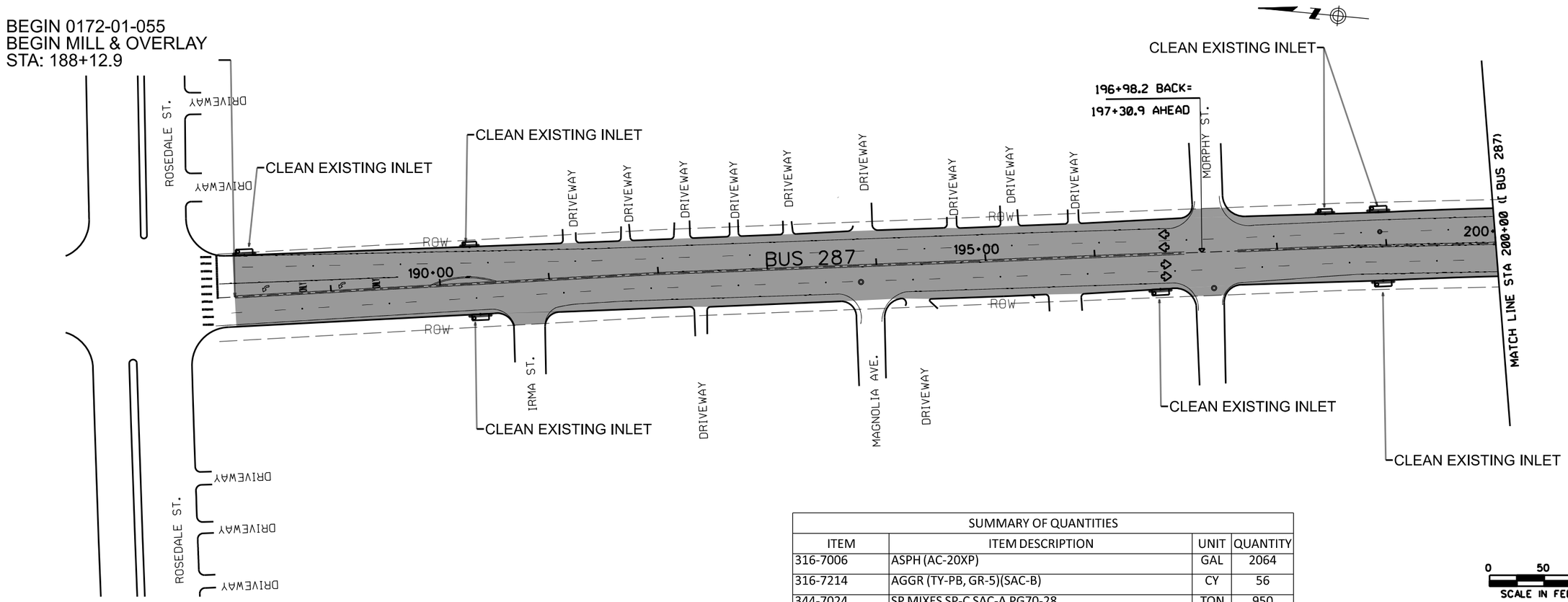

SUMMARY OF QUANTITIES			
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316-7006	ASPH (AC-20XP)	GAL	2064
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	56
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	950
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	8253
479-7001	ADJUSTING MANHOLES	EA	3
764-7001	DRAIN INLET CLEANING	EA	7

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

3167006 ASPH (AC-20XP)
3167173 AGGR(TY-PB,GR-5 SAC-B)
3447024 SP MIXESSP-CSAC-A PG70-28
3547003 PLAN & TEXT ASPH CONC PAV (Ø" TO 3")
MANHOLE
CURB INLET

SHEET 1 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055.ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	39

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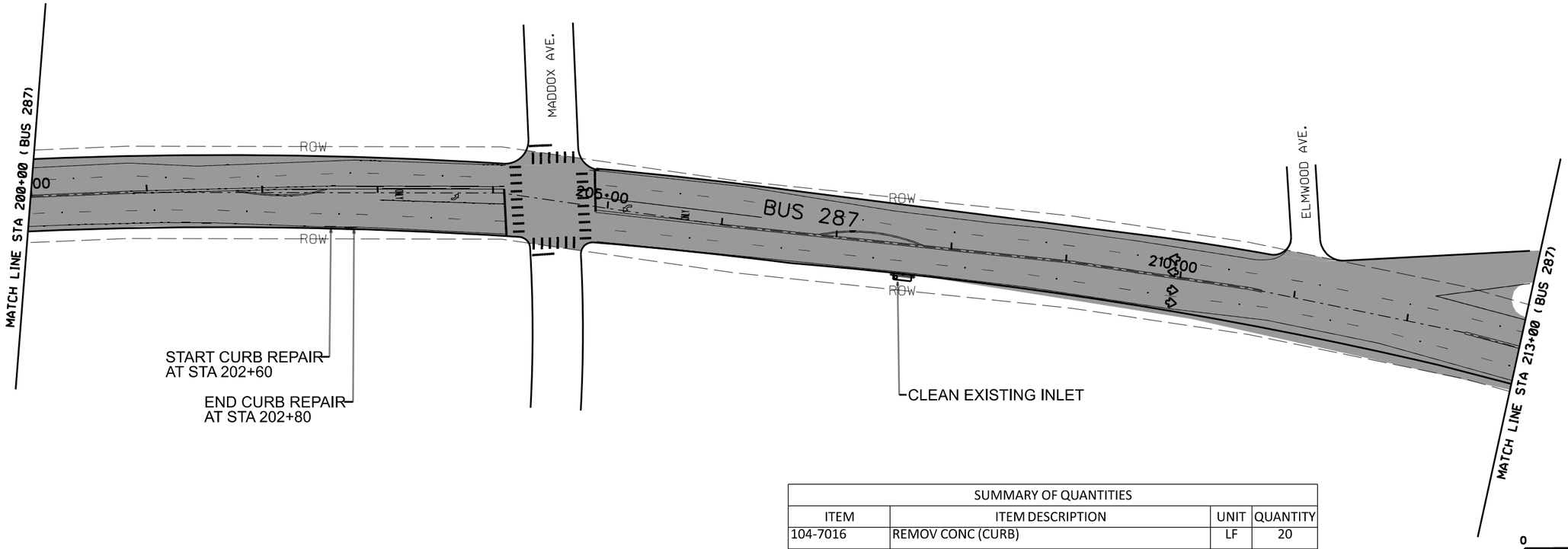

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316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	67
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1144
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9943
529-7002	CONC CURB (TY II)	LF	20
764-7001	DRAIN INLET CLEANING	EA	1

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- ◎ MANHOLE
- CURB INLET

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

SHEET 2 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
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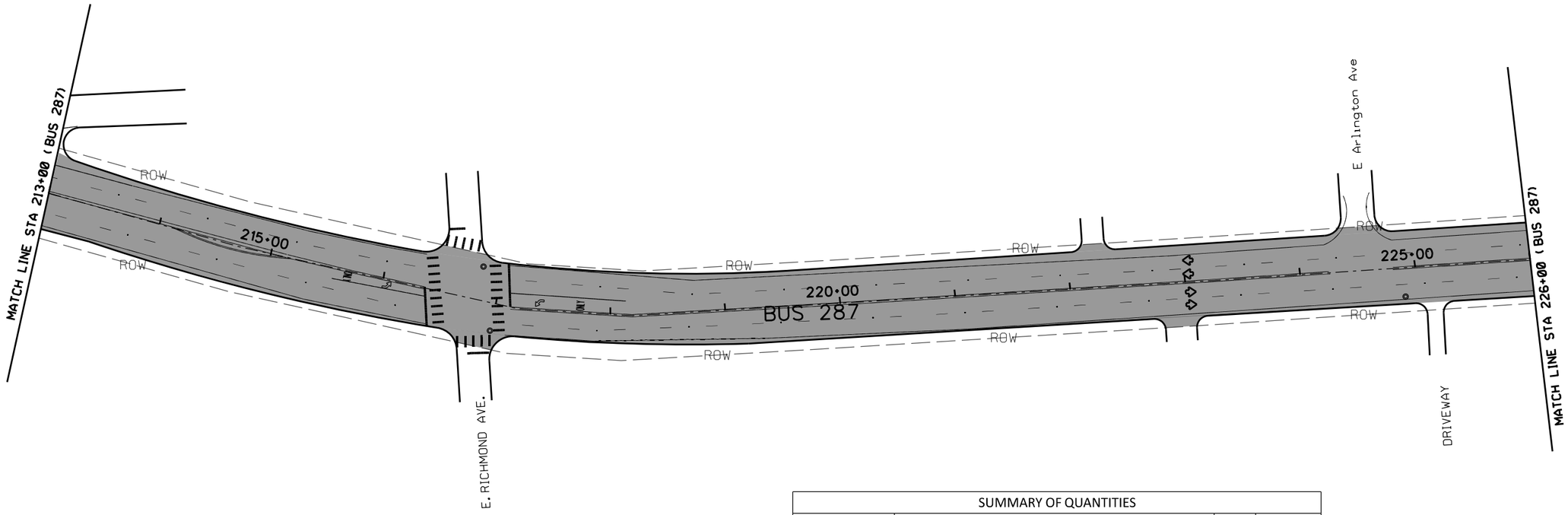

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
316-7006	ASPH (AC-20XP)	GAL	2309
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	62
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1063
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9236
479-7001	ADJUSTING MANHOLES	EA	3

0 50 100
SCALE IN FEET

LEGEND

3167006 ASPH (AC-20XP)
3167173 AGGR(TY-PB, GR-5 SAC-B)
3447024 SP MIXESSP-CSAC-A PG70-28
3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
MANHOLE
CURB INLET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		41

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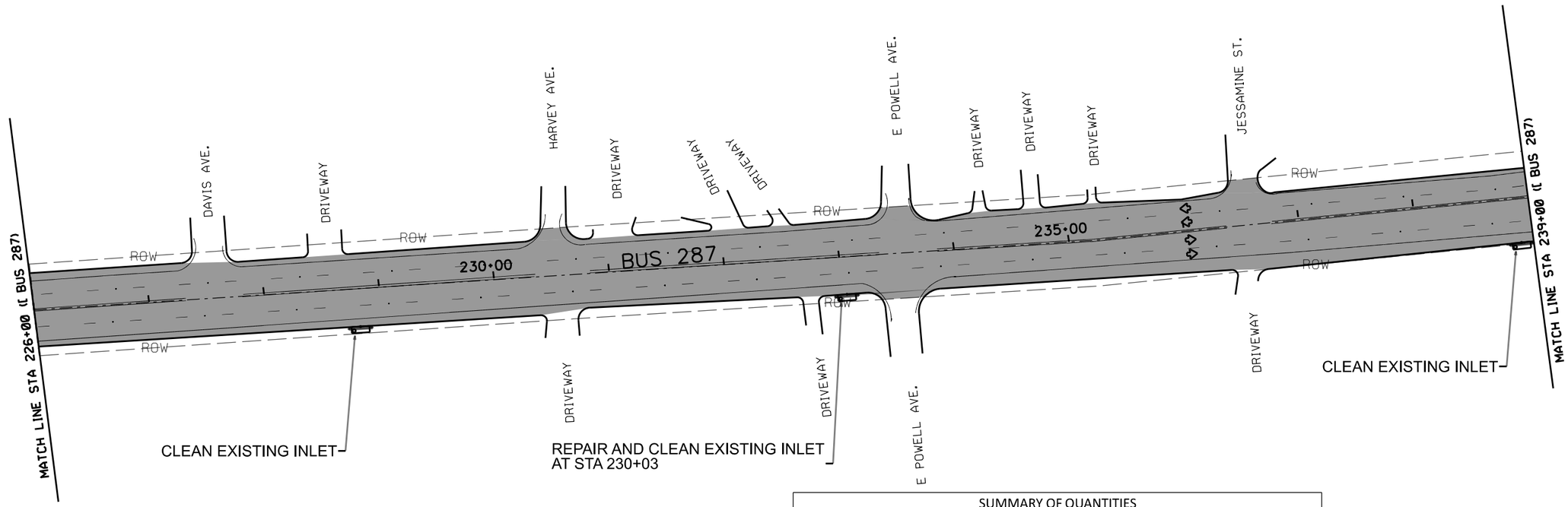

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	15
316-7006	ASPH (AC-20XP)	GAL	2346
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	63
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1079
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9381
529-7002	CONC CURB (TY II)	LF	15
529-7014*	CONC CURB (DOWEL)	LF	15
764-7001	DRAIN INLET CLEANING	EA	3

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- ◎ MANHOLE
- CURB INLET

* - THIS ITEM APPLIES ONLY TO INLET PREPAIR

SHEET 4 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		42

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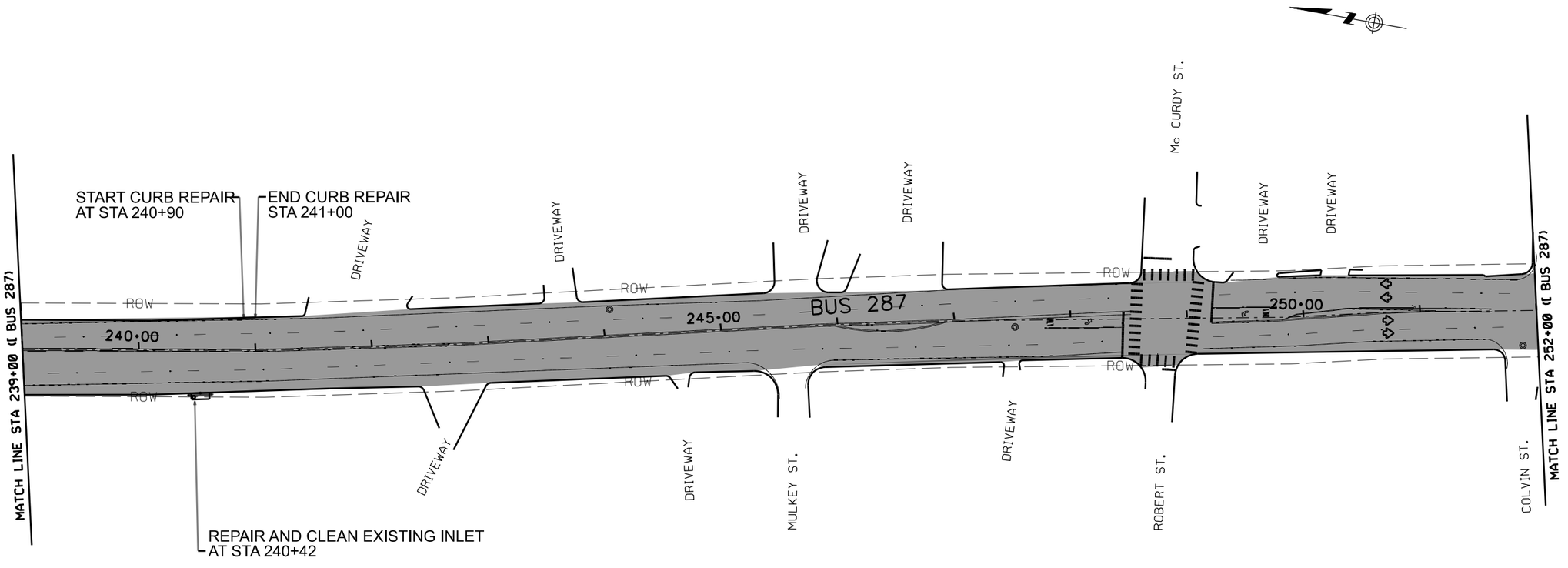

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	25
316-7006	ASPH (AC-20XP)	GAL	2362
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	63
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1087
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9447
479-7001	ADJUSTING MANHOLES	EA	3
529-7002	CONC CURB (TY II)	LF	25
529-7014*	CONC CURB (DOWEL)	LF	15
764-7001	DRAIN INLET CLEANING	EA	1

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- ◎ MANHOLE
- CURB INLET

* - THIS ITEM APPLIES ONLY TO INLET PREPAIR

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	43

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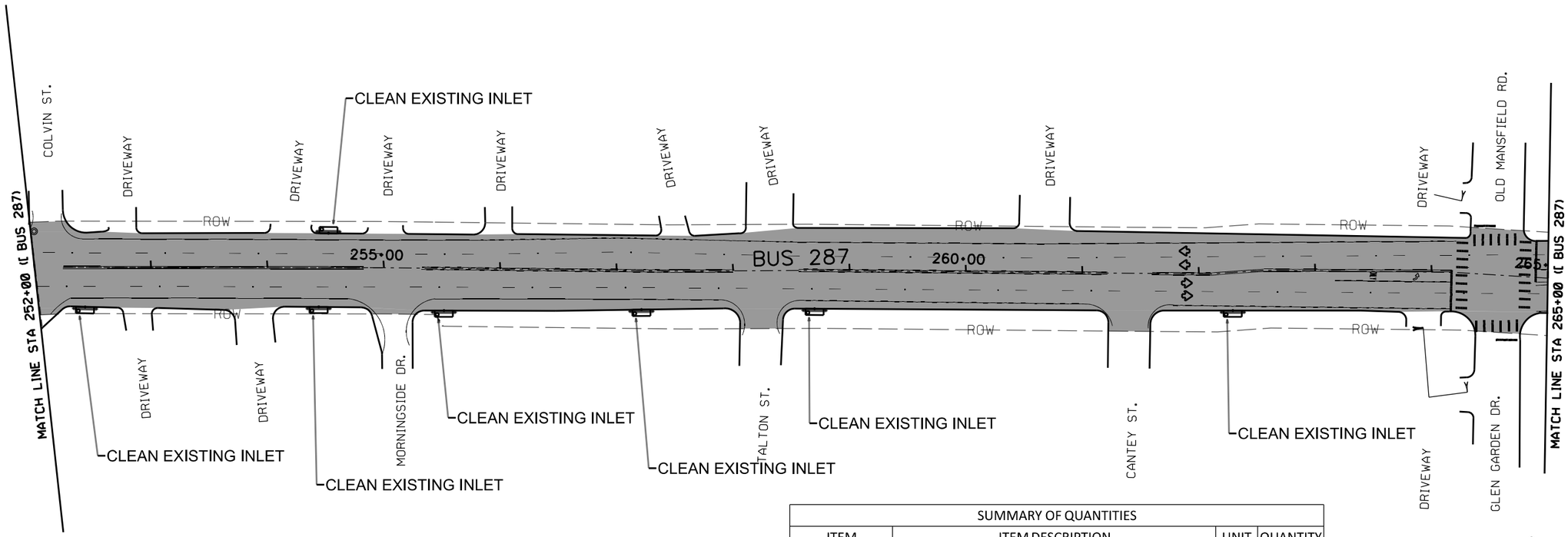

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
316-7006	ASPH (AC-20XP)	GAL	2466
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	66
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1135
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9862
479-7001	ADJUSTING MANHOLES	EA	1
764-7001	DRAIN INLET CLEANING	EA	7

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
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LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- ◎ MANHOLE
- CURB INLET

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Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		44

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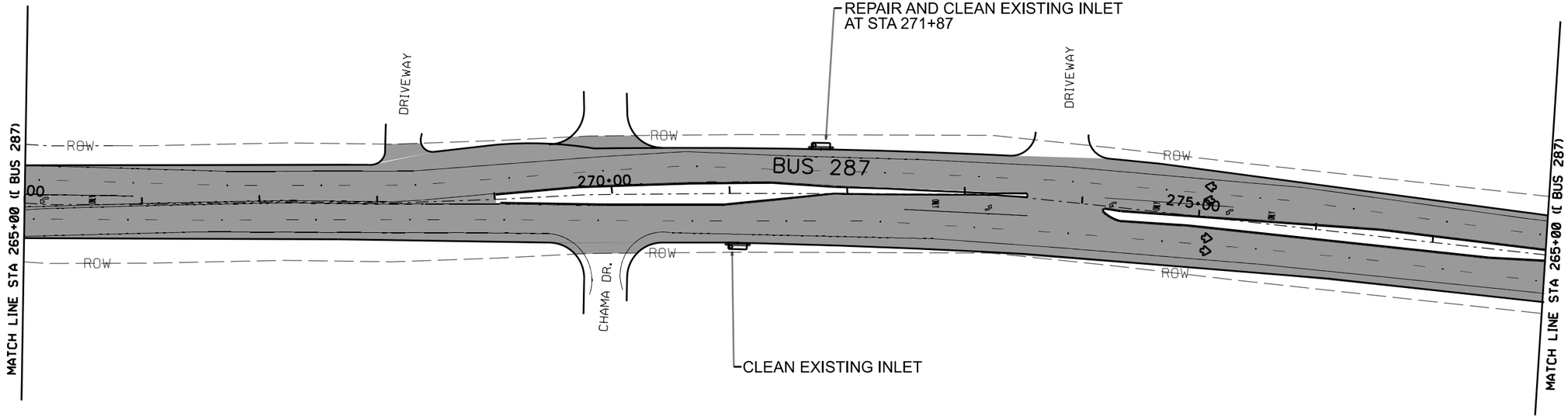

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	10
316-7006	ASPH (AC-20XP)	GAL	2573
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	69
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1184
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	10290
529-7002	CONC CURB (TY II)	LF	15
529-7014*	CONC CURB (DOWEL)	LF	15
764-7001	DRAIN INLET CLEANING	EA	2

0 50 100
SCALE IN FEET

STATE OF TEXAS
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133275
LICENSED
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BUS 287
PLAN SHEET

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- MANHOLE
- CURB INLET

* - THIS ITEM APPLIES ONLY TO INLET PREPAIR

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		45

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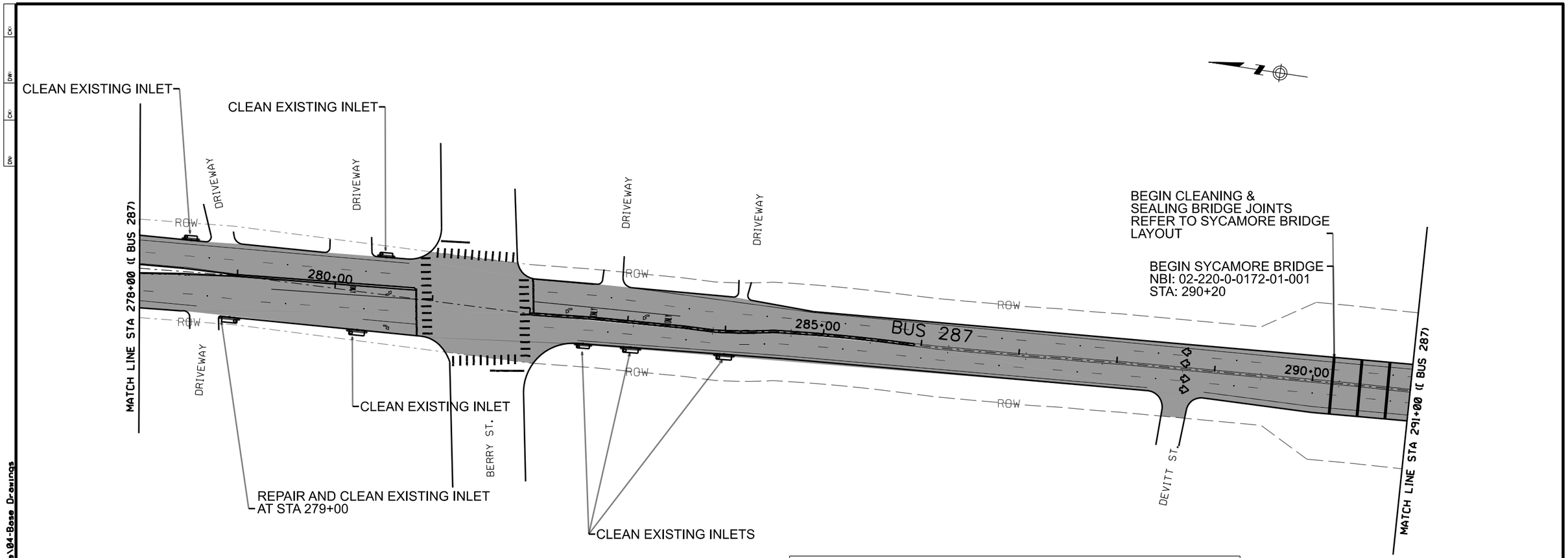

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
316-7006	ASPH (AC-20XP)	GAL	2273
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	61
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1046
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9090
529-7002	CONC CURB (TY II)	LF	10
529-7014*	CONC CURB (DOWEL)	LF	10
764-7001	DRAIN INLET CLEANING	EA	7

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- ◎ MANHOLE
- CURB INLET

* - THIS ITEM APPLIES ONLY TO INLET PREPAIR

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Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		46

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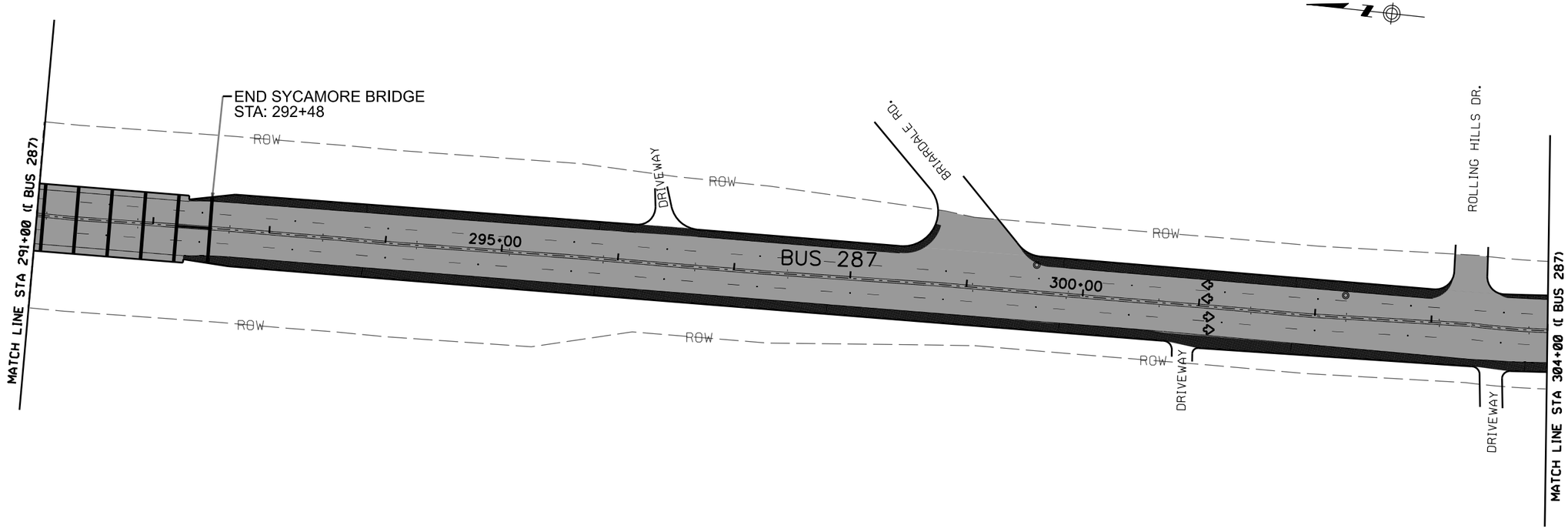

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
316-7006	ASPH (AC-20XP)	GAL	2305
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	62
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1060
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9217
479-7001	ADJUSTING MANHOLES	EA	2
105-7111	REMOV STAB BASE AND ASPHALT	SY	1828.8324

0 50 100
SCALE IN FEET

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- * 1057111 RMV (0"-12") TRT/UNTRT BASE & ASPH PAV (FOR INFORMATION ONLY. ITEM WILL BE PAID UNDER CSJ 0172-01-057)
- ◎ MANHOLE
- CURB INLET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

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Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		47

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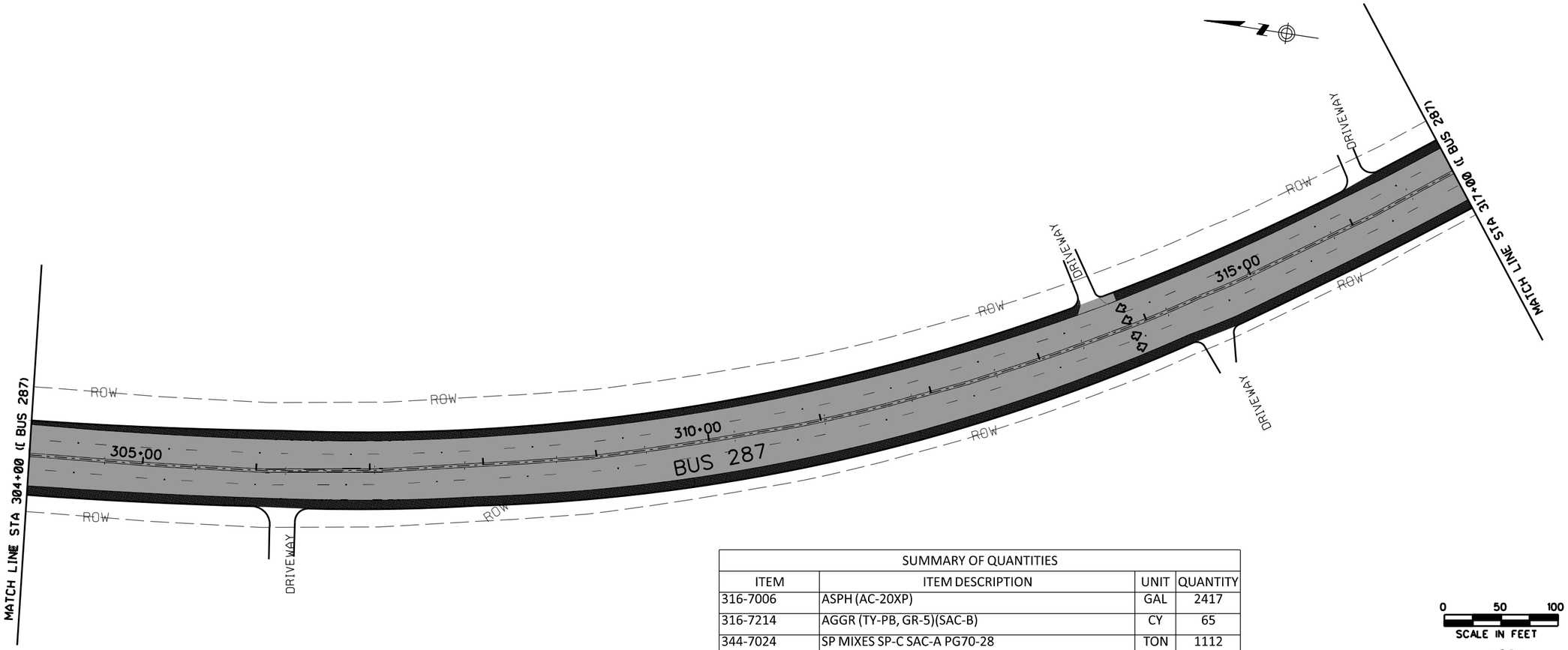

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
316-7006	ASPH (AC-20XP)	GAL	2417
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	65
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1112
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9668
105-7111	REMOV STAB BASE AND ASPHALT	SY	2088.8285

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- * 1057111 RMV (0"-12") TRT/UNTRT BASE & ASPH PAV (FOR INFORMATION ONLY. ITEM WILL BE PAID UNDER CSJ 0172-01-057)
- MANHOLE
- CURB INLET

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

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Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		48

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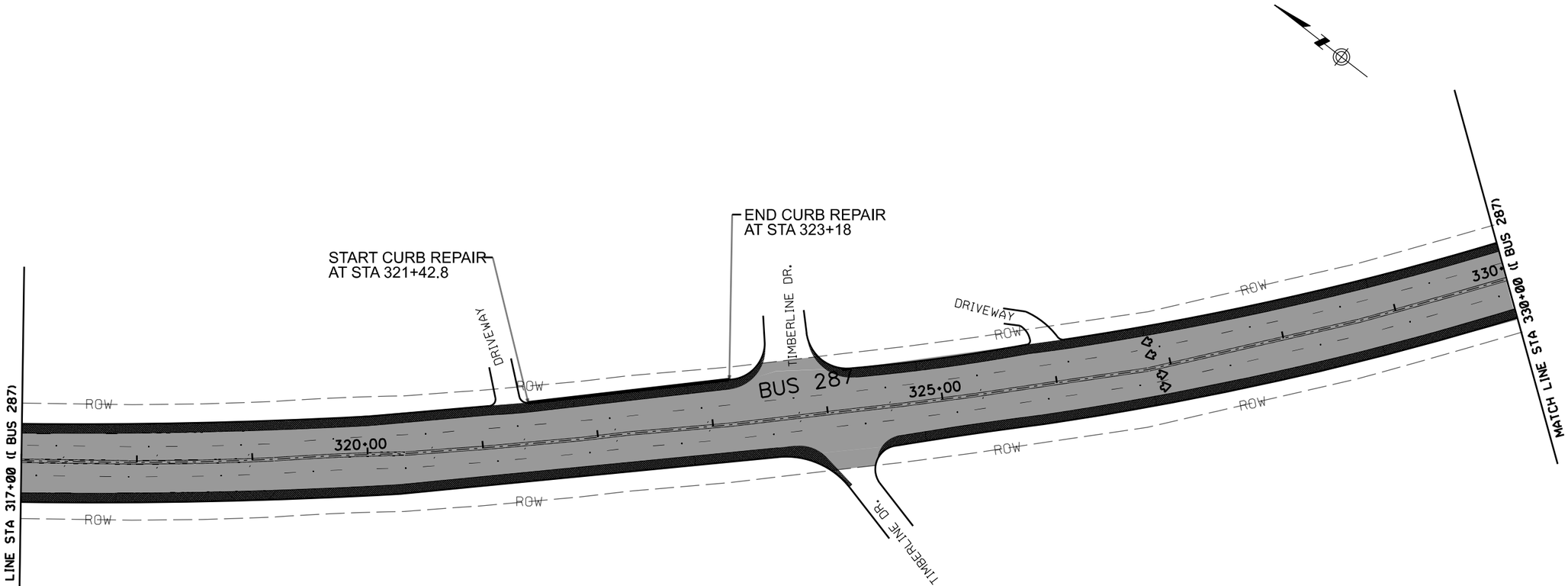

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	175.2
316-7006	ASPH (AC-20XP)	GAL	2475
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	66
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1139
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9898
529-7002	CONC CURB (TY II)	LF	175.2
105-7111	REMOV STAB BASE AND ASPHALT	SY	2224.2503

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- * 1057111 RMV (0"-12") TRT/UNTRT BASE & ASPH PAV (FOR INFORMATION ONLY. ITEM WILL BE PAID UNDER CSJ 0172-01-057)
- MANHOLE
- CURB INLET

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

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Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		49

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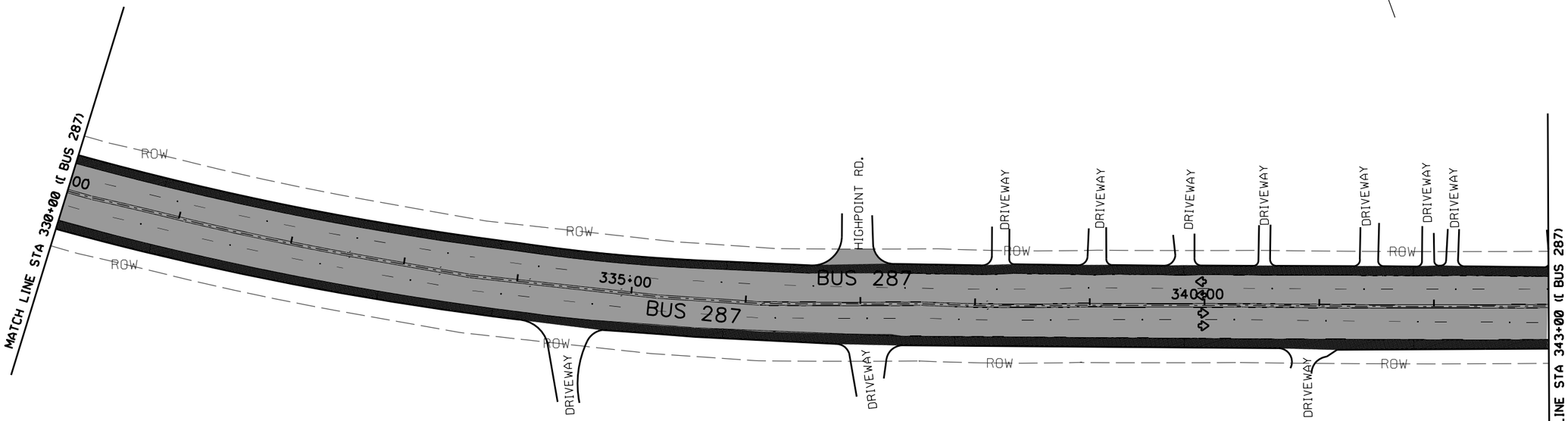

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
316-7006	ASPH (AC-20XP)	GAL	2439
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	66
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1122
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9753
105-7111	REMOV STAB BASE AND ASPHALT	SY	2215.4

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- * 1057111 RMV (0"-12") TRT/UNTRT BASE & ASPH PAV (FOR INFORMATION ONLY. ITEM WILL BE PAID UNDER CSJ 0172-01-057)
- ◎ MANHOLE
- CURB INLET

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

SHEET 12 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		50

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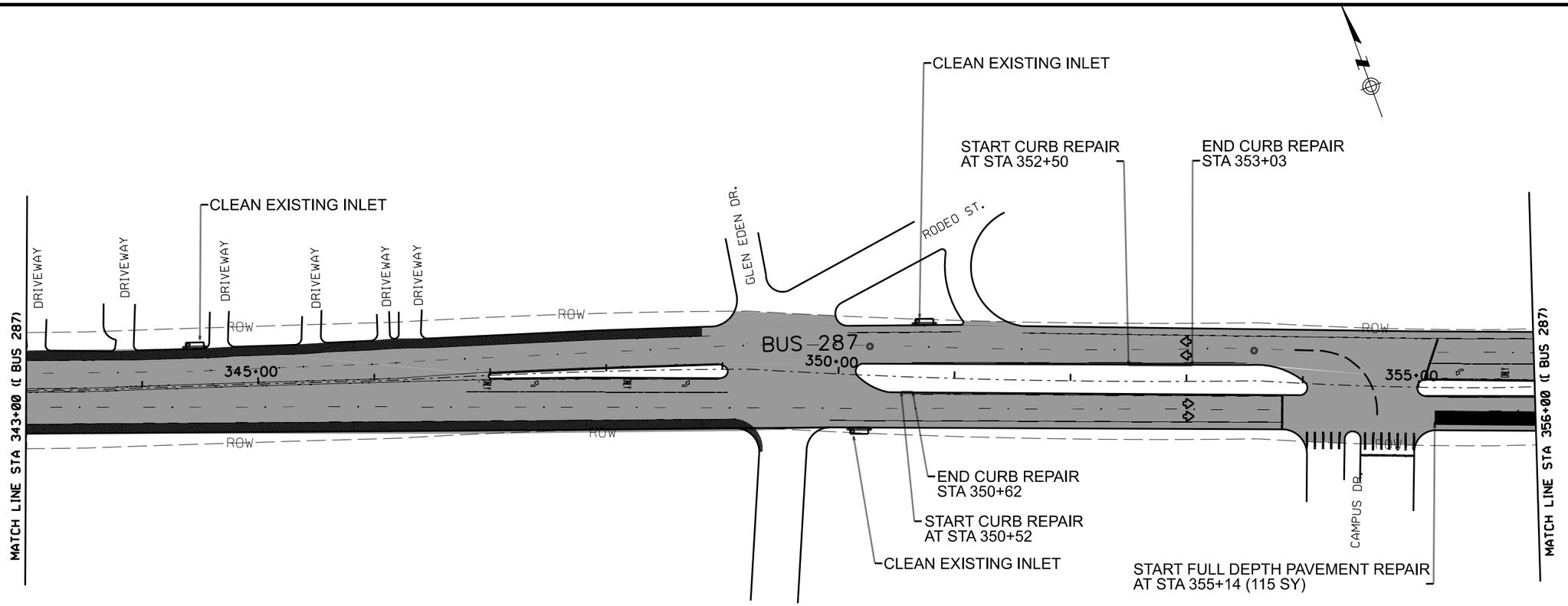

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	65
316-7006	ASPH (AC-20XP)	GAL	2715
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	73
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1249
351-7004	FLEXIBLE PAVEMENT STRUCTURE REPAIR(5")	SY	115
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	10858
479-7001	ADJUSTING MANHOLES	EA	2
529-7002	CONC CURB (TY II)	LF	65
764-7001	DRAIN INLET CLEANING	EA	3
105-7111	REMOV STAB BASE AND ASPHALT	SY	1083.3098

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (Ø" TO 3")
- 3517004 FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")
- * 1057111 RMV (Ø"-12") TRT/UNTRT BASE & ASPH PAV (FOR INFORMATION ONLY. ITEM WILL BE PAID UNDER CSJ Ø172-01-057)
- MANHOLE
- CURB INLET

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

SHEET 13 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	51

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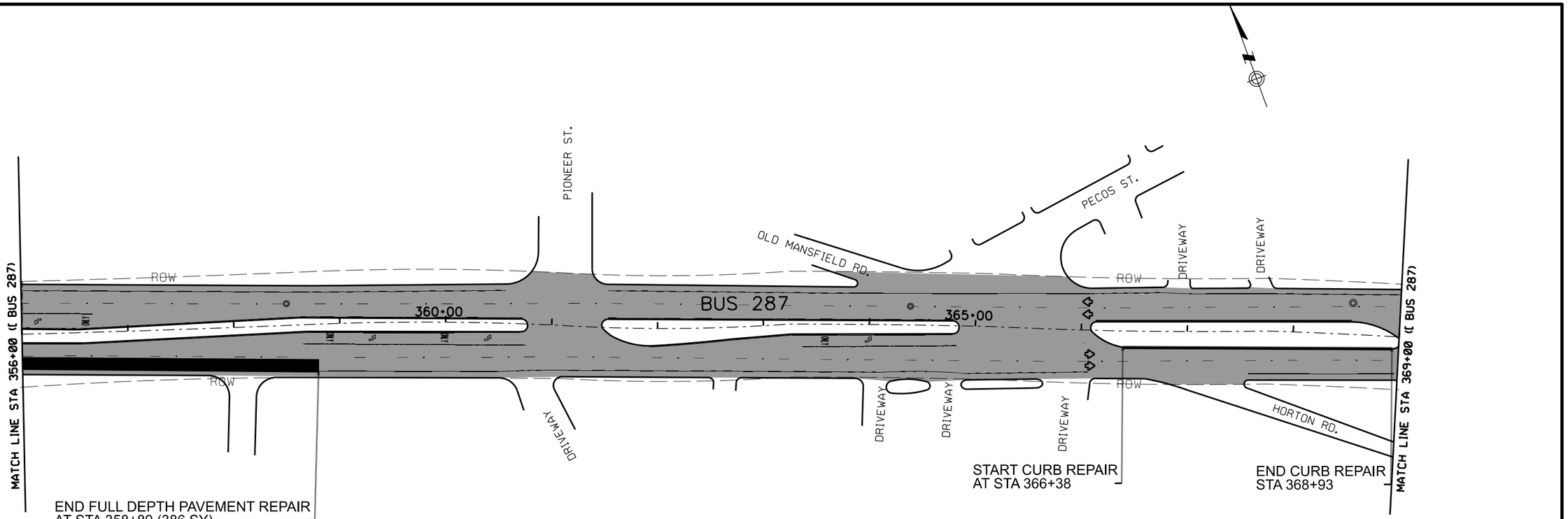

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	255
316-7006	ASPH (AC-20XP)	GAL	2719
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	73
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1251
351-7004	FLEXIBLE PAVEMENT STRUCTURE REPAIR(5")	SY	115
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	10875
479-7001	ADJUSTING MANHOLES	EA	3
529-7002	CONC CURB (TY II)	LF	255

0 50 100
SCALE IN FEET

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- 3517004 FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")
- MANHOLE
- CURB INLET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

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Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		52

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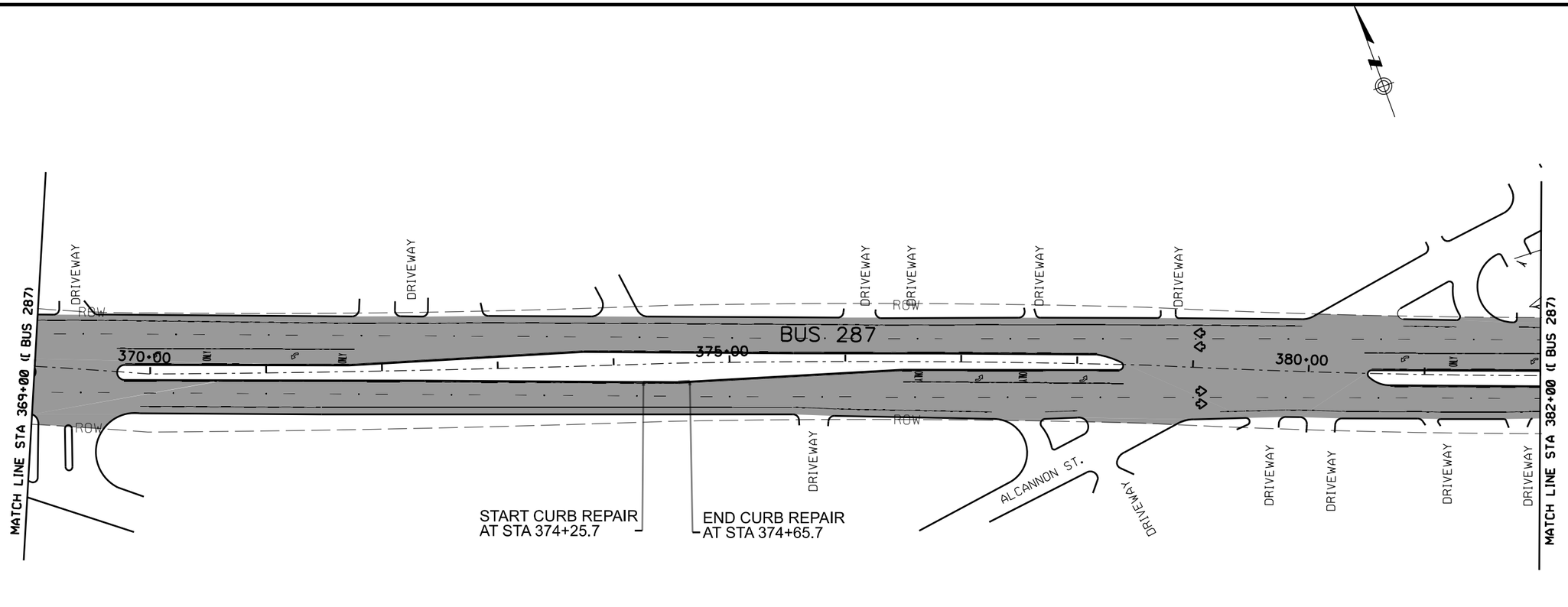

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	40
316-7006	ASPH (AC-20XP)	GAL	2653
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	71
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1221
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	10611
529-7002	CONC CURB (TY II)	LF	40

0 50 100
SCALE IN FEET

LEGEND

3167006 ASPH (AC-20XP)
3167173 AGGR(TY-PB, GR-5 SAC-B)
3447024 SP MIXESSP-CSAC-A PG70-28
3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
MANHOLE
CURB INLET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	53

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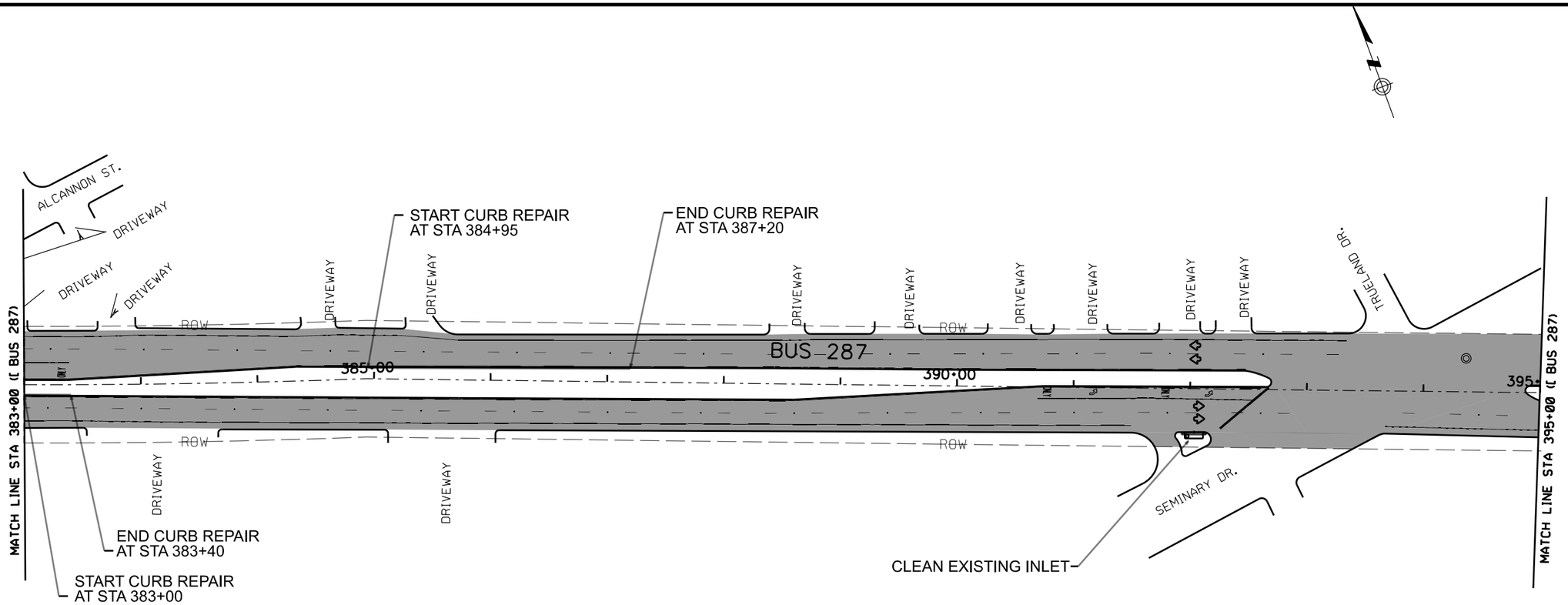

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	40
316-7006	ASPH (AC-20XP)	GAL	2485
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	67
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1143
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9939
479-7001	ADJUSTING MANHOLES	EA	1
529-7002	CONC CURB (TY II)	LF	40
764-7001	DRAIN INLET CLEANING	EA	1

0 50 100
SCALE IN FEET

LEGEND

3167006 ASPH (AC-20XP)
3167173 AGGR(TY-PB, GR-5 SAC-B)
3447024 SP MIXESSP-CSAC-A PG70-28
3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
MANHOLE
CURB INLET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

SHEET 16 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	54

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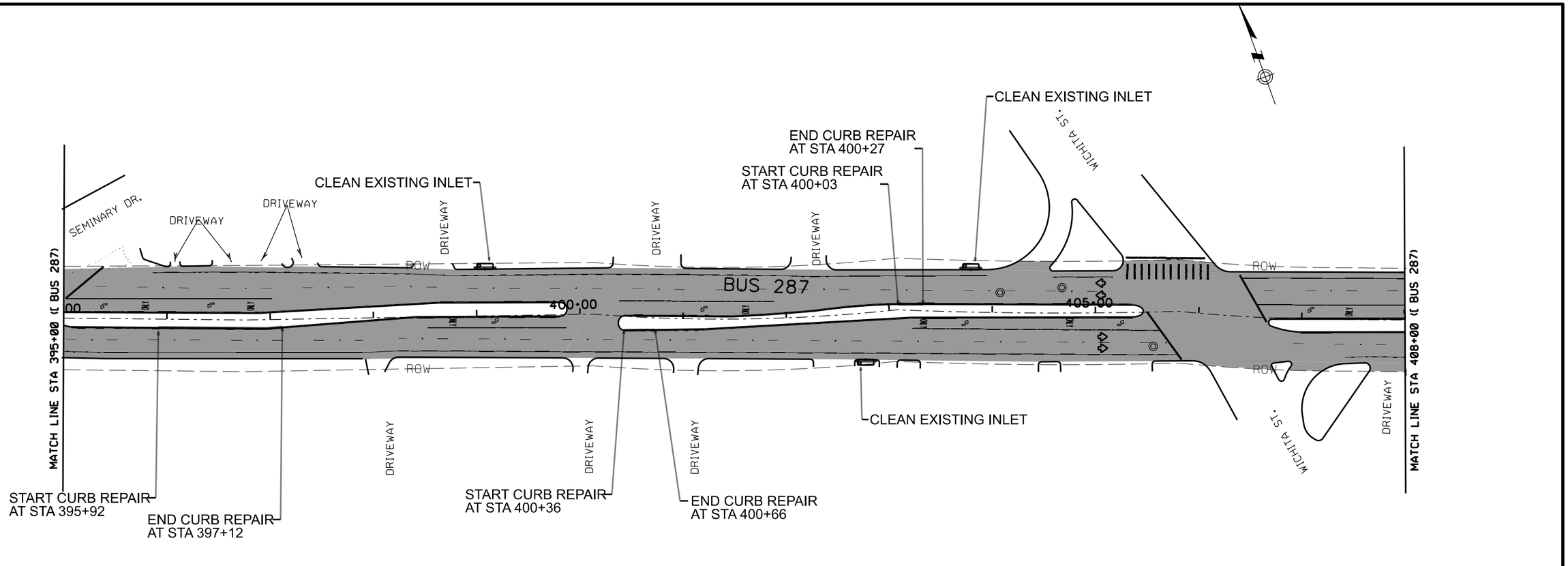

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	174
316-7006	ASPH (AC-20XP)	GAL	2825
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	76
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1300
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	11298
479-7001	ADJUSTING MANHOLES	EA	3
529-7002	CONC CURB (TY II)	LF	174
764-7001	DRAIN INLET CLEANING	EA	3

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

3167006 ASPH (AC-20XP)
3167173 AGGR(TY-PB, GR-5 SAC-B)
3447024 SP MIXESSP-CSAC-A PG70-28
3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
◎ MANHOLE
CURB INLET

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	55

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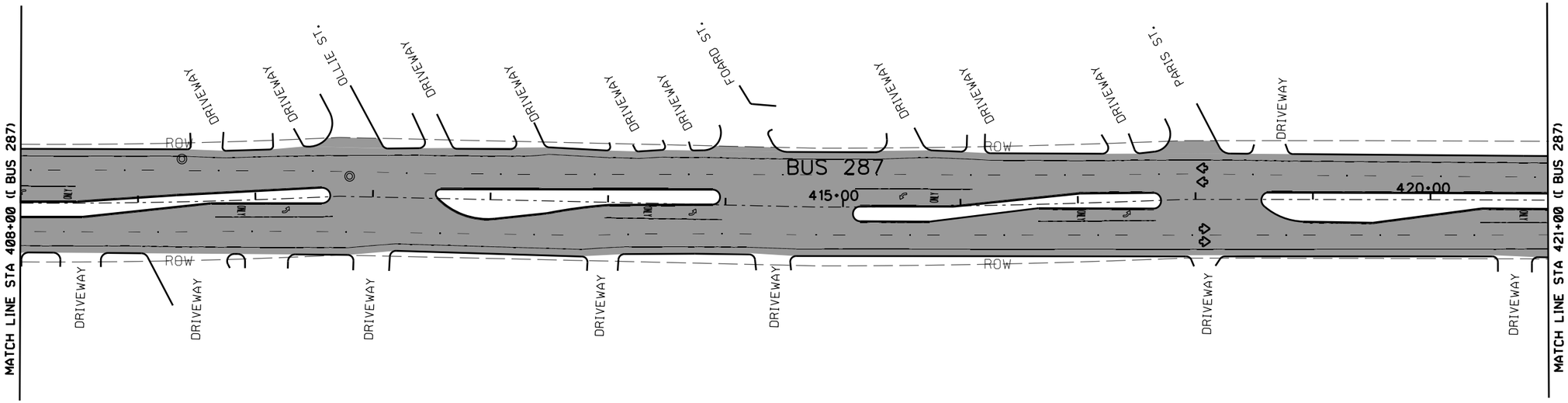

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
316-7006	ASPH (AC-20XP)	GAL	2803
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	75
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1290
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	11211
479-7001	ADJUSTING MANHOLES	EA	2

0 50 100
SCALE IN FEET

STATE OF TEXAS
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133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

3167006 ASPH (AC-20XP)
3167173 AGGR(TY-PB, GR-5 SAC-B)
3447024 SP MIXESSP-CSAC-A PG70-28
3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
MANHOLE
CURB INLET

SHEET 18 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		56

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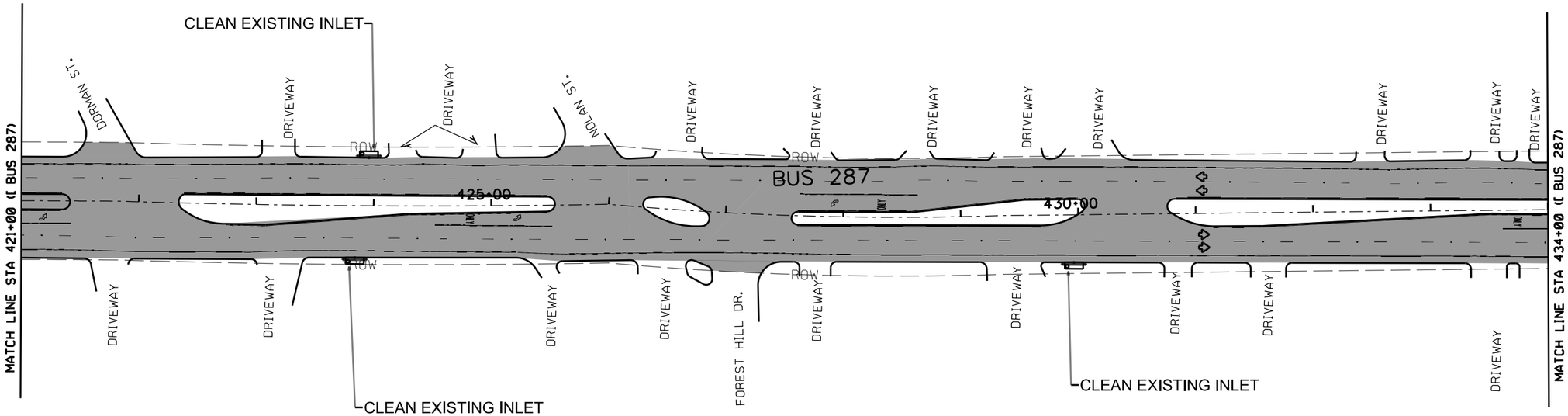

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
316-7006	ASPH (AC-20XP)	GAL	2742
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	74
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1261
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	10965
764-7001	DRAIN INLET CLEANING	EA	3

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
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PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

- 3167006 ASPH (AC-20XP)
- 3167173 AGGR(TY-PB, GR-5 SAC-B)
- 3447024 SP MIXESSP-CSAC-A PG70-28
- 3547003 PLAN & TEXT ASPH CONC PAV (0" TO 3")
- MANHOLE
- CURB INLET

SHEET 19 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		57

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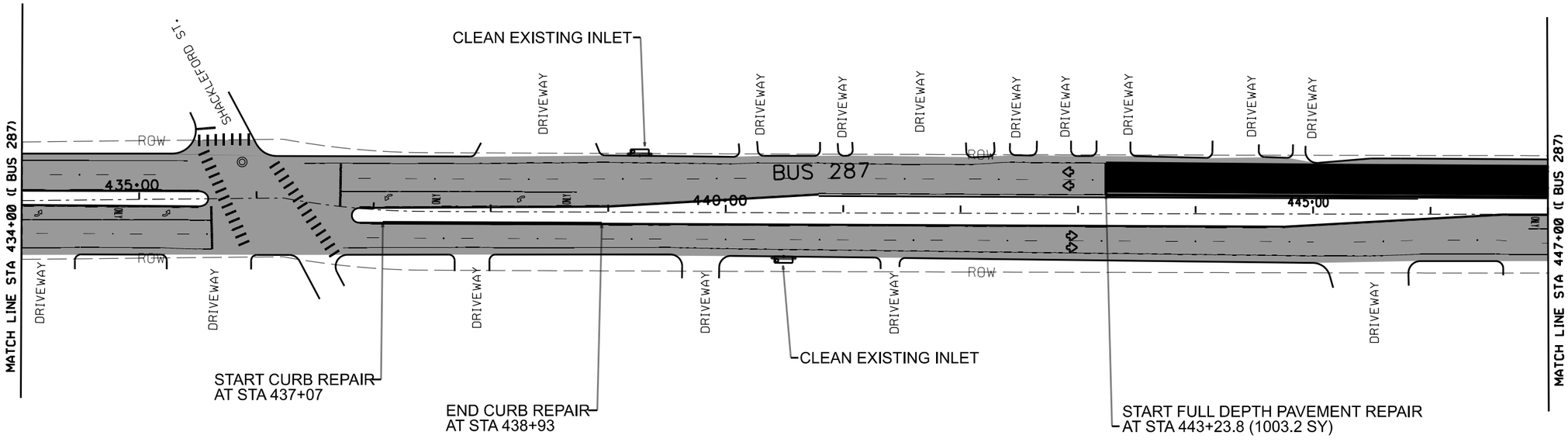

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	186
316-7006	ASPH (AC-20XP)	GAL	2505
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	67
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1152
351-7004	FLEXIBLE PAVEMENT STRUCTURE REPAIR(5")	SY	1050
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	10017
479-7001	ADJUSTING MANHOLES	EA	1
529-7002	CONC CURB (TY II)	LF	186
764-7001	DRAIN INLET CLEANING	EA	2

LEGEND

3167006 ASPH (AC-20XP)
3167173 AGGR(TY-PB, GR-5 SAC-B)
3447024 SP MIXESSP-CSAC-A PG70-28
3547003 PLAN & TEXT ASPH CONC PAV (Ø" TO 3")
3517004 FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")
MANHOLE
CURB INLET

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	58

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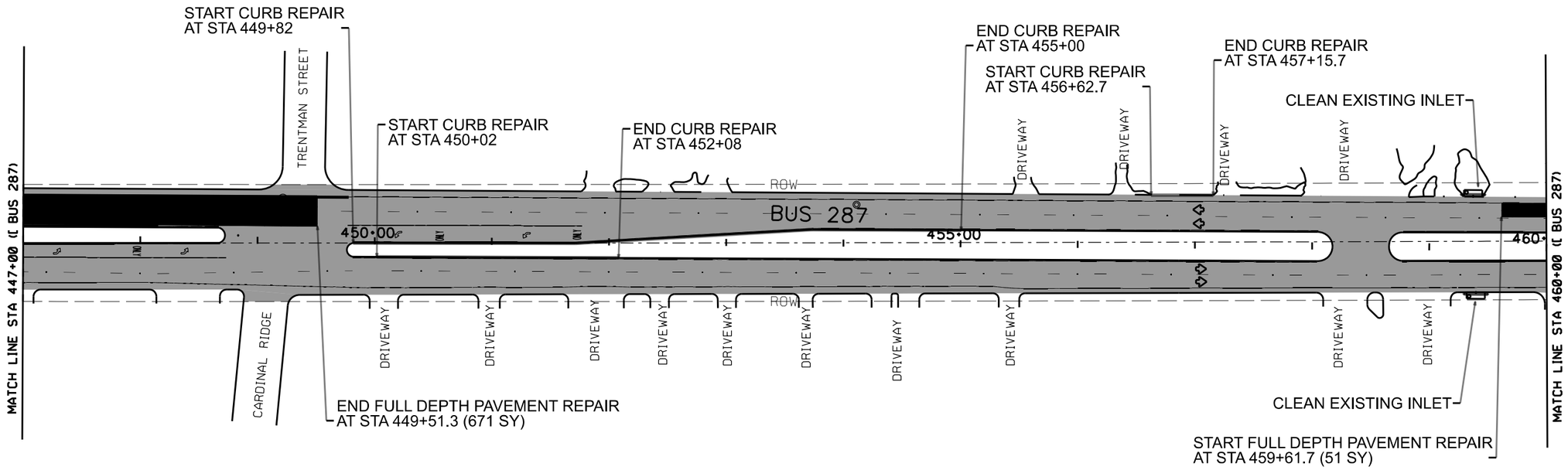

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	777
316-7006	ASPH (AC-20XP)	GAL	2484
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	67
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	1143
351-7004	FLEXIBLE PAVEMENT STRUCTURE REPAIR(5")	SY	751
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	9933
479-7001	ADJUSTING MANHOLES	EA	2
529-7002	CONC CURB (TY II)	LF	777
764-7001	DRAIN INLET CLEANING	EA	2

0 50 100
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
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PROFESSIONAL ENGINEER

BUS 287
PLAN SHEET

LEGEND

- 3167006 ASPH (AC-20XP)
  3167173 AGGR(TY-PB,GR-5 SAC-B)
  3447024 SP MIXESSP-CSAC-A PG70-28
  3547003 PLAN & TEXT ASPH CONC PAV (Ø" TO 3")
- 3517004 FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")
- ◎ MANHOLE
- CURB INLET

SHEET 21 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST		COUNTY	SHEET NO.
FTW		TARRANT	59

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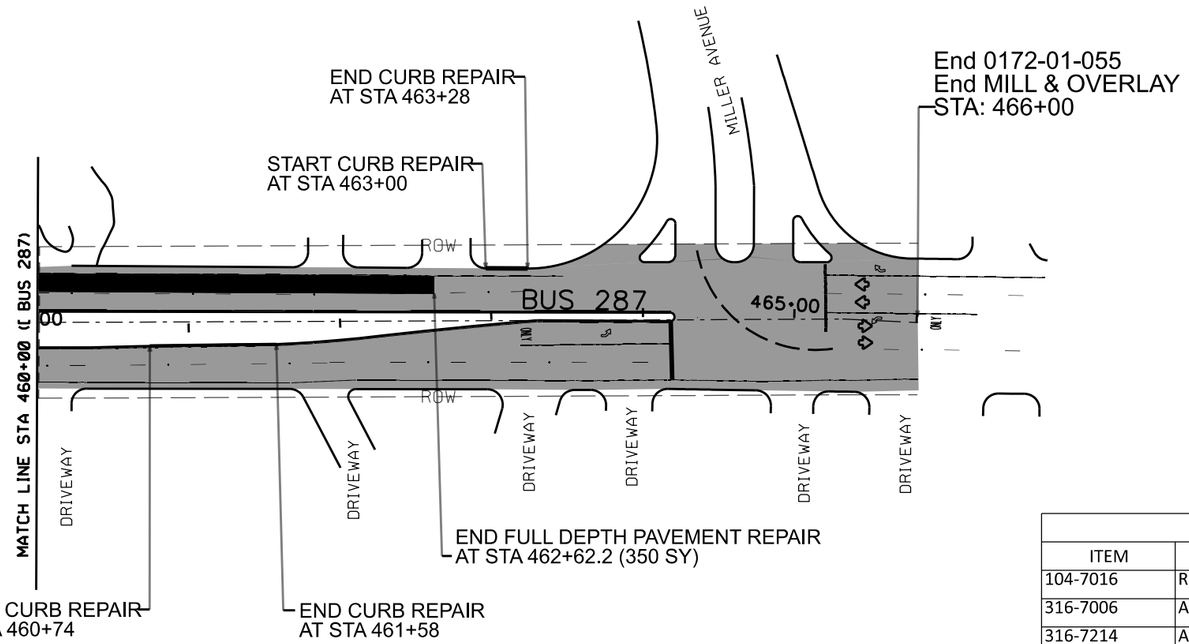

SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
104-7016	REMOV CONC (CURB)	LF	84
316-7006	ASPH (AC-20XP)	GAL	1197
316-7214	AGGR (TY-PB, GR-5)(SAC-B)	CY	32
344-7024	SP MIXES SP-C SAC-A PG70-28	TON	551
351-7004	FLEXIBLE PAVEMENT STRUCTURE REPAIR(5")	SY	350
354-7003	PLANE & TEXT ASPH CONC PAV(0" TO 3")	SY	4787
529-7002	CONC CURB (TY II)	LF	84

0 50 100
SCALE IN FEET

STATE OF TEXAS
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BUS 287
PLAN SHEET

LEGEND

- 3167006 ASPH (AC-20XP)
  3167173 AGGR(TY-PB, GR-5 SAC-B)
  3447024 SP MIXESSP-CSAC-A PG70-28
  3547003 PLAN & TEXT ASPH CONC PAV (Ø" TO 3")
- 3517004 FLEXIBLE PAVEMENT STRUCTURE REPAIR (5")
- MANHOLE
- CURB INLET

SHEET 22 OF 22

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		60

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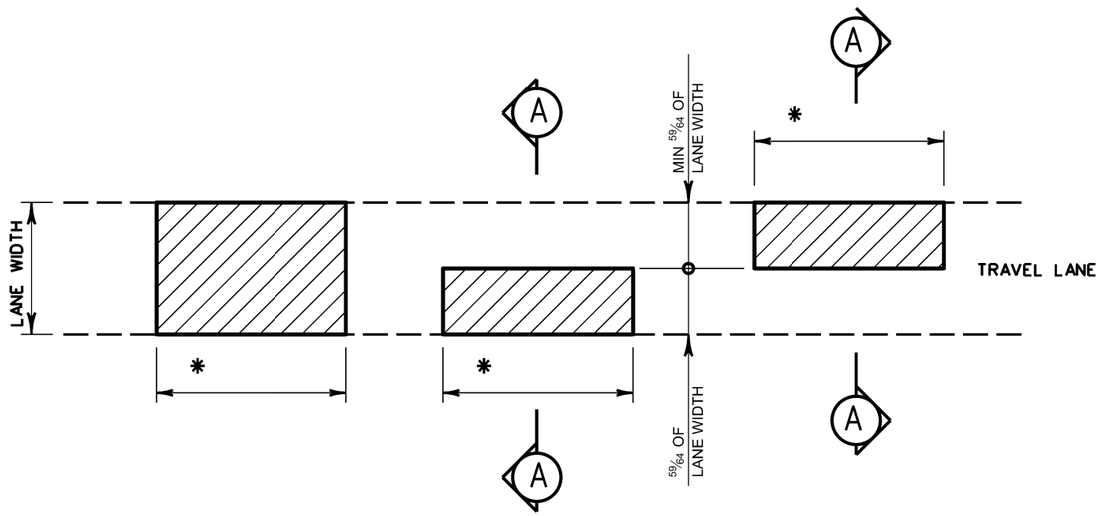
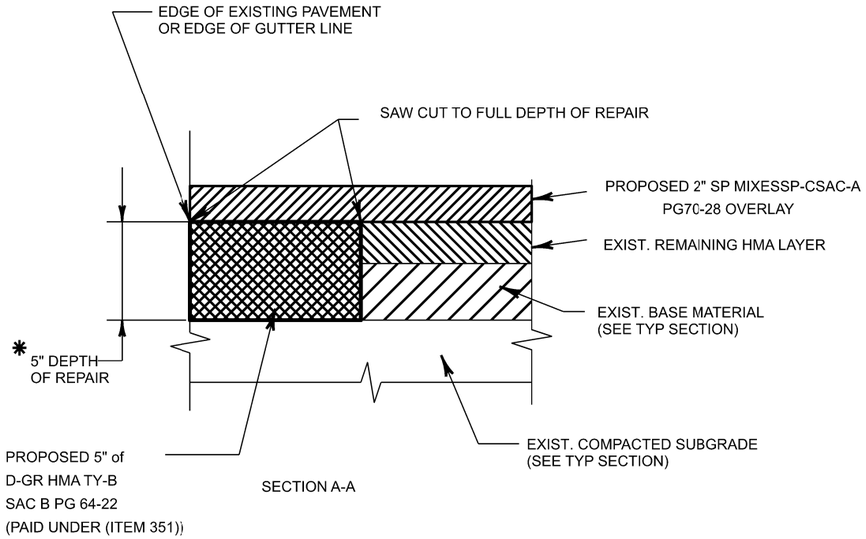
FILE: T:\STCAD Files\STCAD Design\Projects\0172-01-055 BUS 287,E Berry St to Miller Ave\04-Base Drawings

NOTES:

* REFER TO MILL & OVERLAY LAYOUT FOR APPROXIMATE DIMENSIONS AND LOCATION AND AS DIRECTED BY THE ENGINEER.





FLEXIBLE PAVEMENT REPAIR DETAIL

ACTUAL DIMENSIONS TO BE DETERMINED IN THE FIELD BY THE ENGINEER
FROM STA 355+14 TO STA 358+89
FROM STA 443+23.8 TO STA 449+51.3
FROM STA 459+61.7 TO STA 462+62.2

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BU 287P
FULL DEPTH PAVEMENT REPAIR DETAIL

SHEET 1 OF 1

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	Tarrant		61

DATE: 09/09/2024 7:27AM
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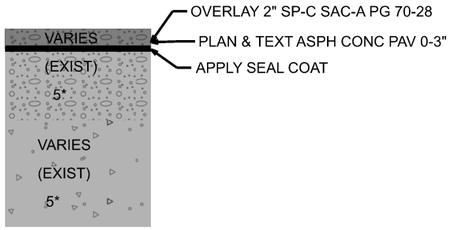
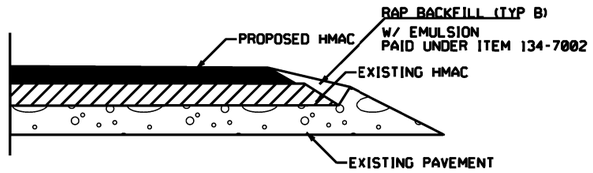


PROPOSED MILL AND OVERLAY WORK
NTS



BACKFILL EDGE DETAIL
(NTS)

NOTES:

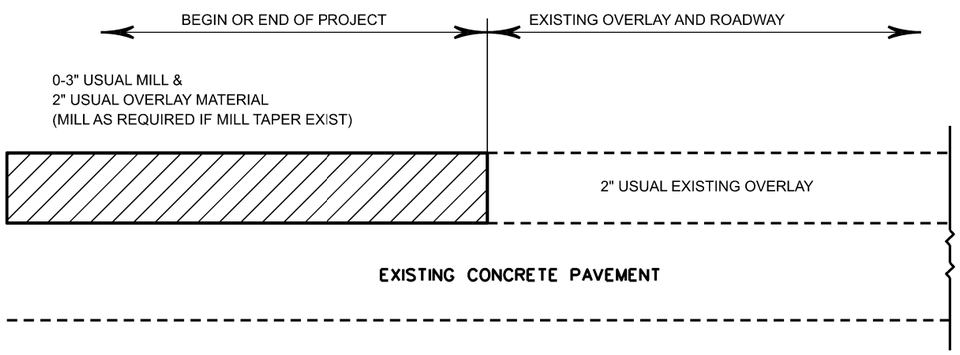
1* BASE COURSE SHALL MEET REQUIREMENTS OF ITEM 354

2* CONTRACTOR TO BE AWARE OF THE VARIABILITY OF THE PAVEMENT STRUCTURE

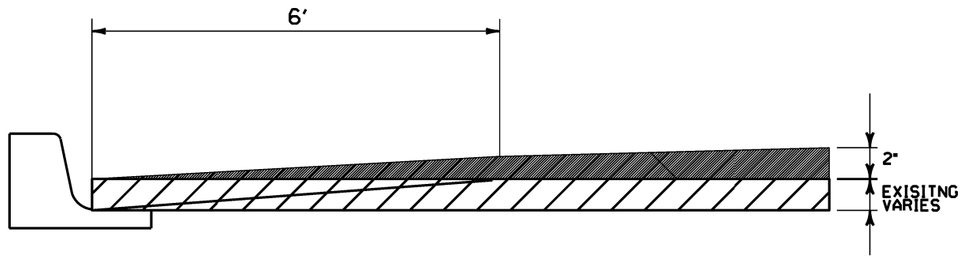
3* MILLING DEPTH MAY VARY THROUGHOUT CORRIDOR

4* CORE REPORT WILL BE PROVIDED UPON REQUEST.

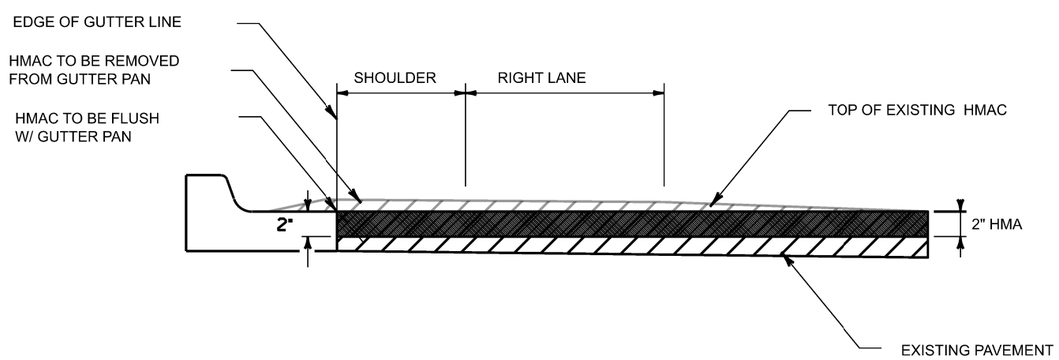
** WEDGE MILL WORK IS SUBSIDIARY TO ITEM 354.



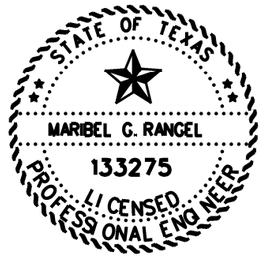
HMA MILL & OVERLAY DETAIL AT BEGINNING AND END OF PROJECT
LONGITUDINAL SECTION



WEDGE MILL DETAIL NEAR CURB**
(NTS)



WEDGE MILL DETAIL NEAR CURB AND GUTTER
(NTS)



BU 287P
MISCELLANEOUS ROADWAY DETAILS

SHEET 1 OF 1

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	Tarrant		62

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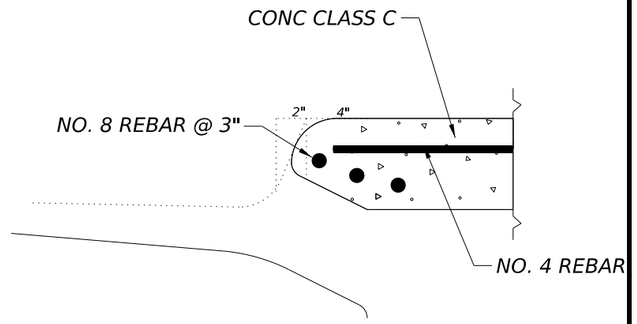
REPAIR CURB INLET AT STA: 230+03

REPAIR CURB INLET AT STA: 240+42



INLET CURB DETAIL

1. SAW CUT DAMAGED INLET CURB
2. REMOVE DAMAGED CURB AND REBAR
3. INSTALL THE DOWELS TO THE EXISTING STRUCTURE
4. INSTALL NEW INLET CURB

NOTE:

- REFER TO DETAIL OF INLET CURB FROM AS-BUILT 0172-01-015, SHEET CURB INLET DETAIL AS-BUILT
- THIS WORK WILL BE PAID FOR UNDER ITEMS: 104-7016, 529-7002, & 529-7014

REPAIR CURB INLET AT STA: 271+87

REPAIR CURB INLET AT STA: 279+00

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BU 287P
INELT REPAIR DETAIL

SHEET 1 OF 1

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	Tarrant		63

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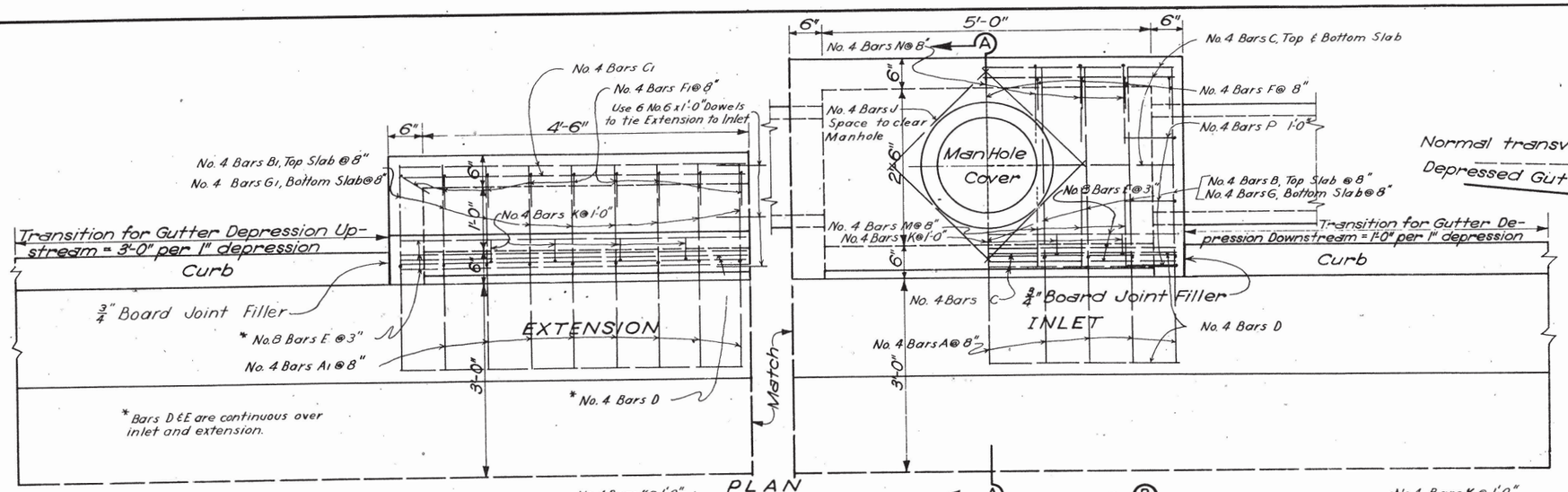

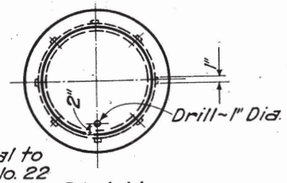

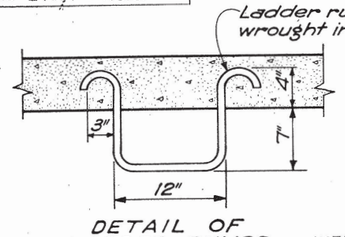

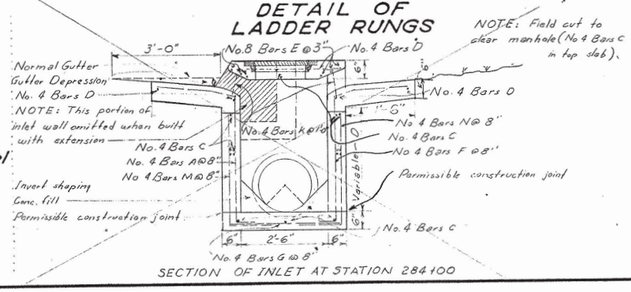

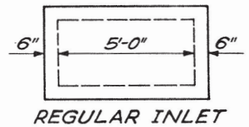

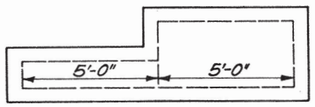

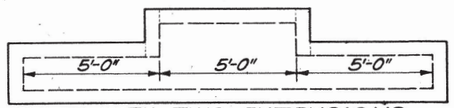

GENERAL NOTES:-

All concrete shall be Class A. All exposed corners shall be chamfered 3/4".

Cast Iron steps, spaced 14" and located as directed by the Engineer, shall be provided and installed in all inlets where the depth exceeds 5'-0".

Payment of curb inlets and extensions thereto as shown on the plans will be made at the unit price bid for "Inlets", "Inlets with one Extension", and "Inlets with two Extensions", as the case may be.

Construction Joints shown at flow line on Section A-A may be raised a maximum of 6" if desired.

All dimensions relating to reinforcing bars are to center of bars.

Steel cover to be 2" from center of outside layer of steel to face of concrete.

DETAIL OF CURB INLET

& BACK OF CURB INLET, STATION 284+00

Dn. :H.W.K.	Drawing	Date	Fed. Road Div. No.	State	State Aid Project No.		Sheet No.
Ck. Dn.:	Original	Feb. 1951	6	Texas	C172-1-15		17
Dw. :H.W.K.	Reinf. Added May 1954		State Dist. No.	County	Control No.	Section No.	Job No.	Highway No.
Ck. Dn.:			2	Tarrant	172	1	15	US 287
Tr. :Z.C.F.							
Ck. Tr.:							

http://www.dot.state.tx.us/ftw/specinfo/standard.htm
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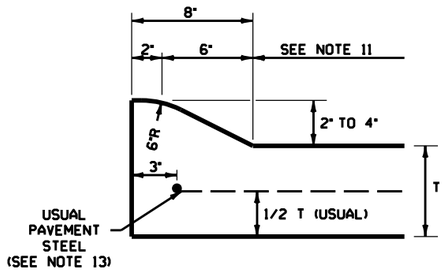
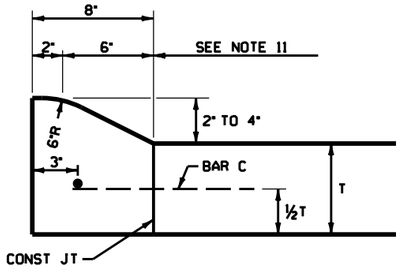
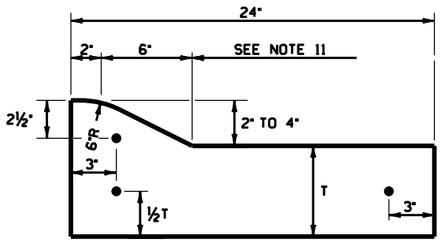


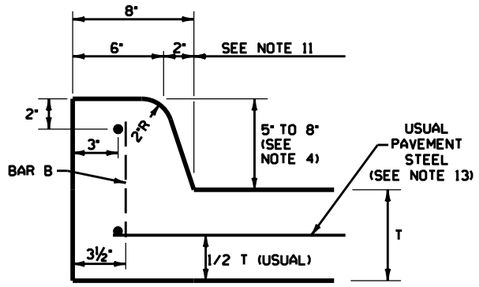
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



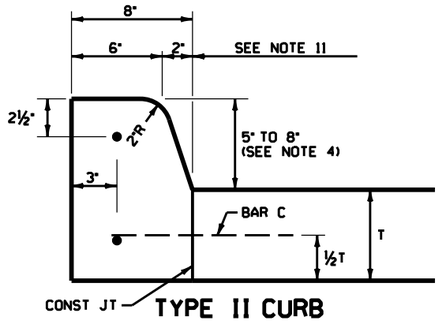
TYPE I CURB
2" - 4" HEIGHT



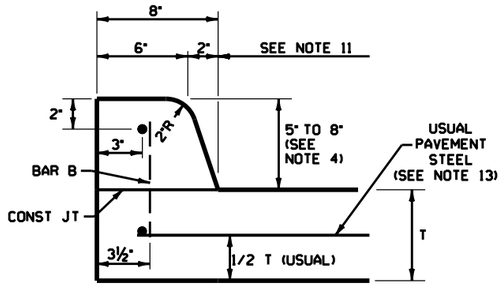
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



TYPE II CURB (MONOLITHIC)
5" - 8" HEIGHT



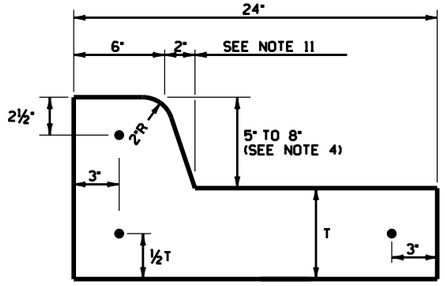
TYPE II CURB
5" - 8" HEIGHT
DOWELED VERTICAL JOINT



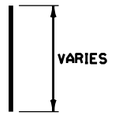
TYPE II CURB
5" - 8" HEIGHT
DOWELED HORIZONTAL JOINT

GENERAL NOTES

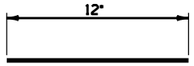
1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ITEM 529, "CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER".
2. ALL CONCRETE SHALL BE CLASS "A".
3. ALL REINFORCING BARS SHALL BE #4, UNLESS OTHERWISE SHOWN.
4. UNLESS OTHERWISE SHOWN, ALL TYPE II CURB SHALL BE 6" HEIGHT .
5. ROUND EXPOSED SHARP EDGES WITH A ROUNDING TOOL, TO A MINIMUM RADIUS OF ¼".
6. ALL EXISTING CURBS AND DRIVEWAYS TO BE REMOVED SHALL BE SAW CUT FULL DEPTH OR REMOVED AT EXISTING JOINTS.
7. WHERE CONCRETE CURB IS PLACED ON EXISTING CONCRETE PAVEMENT, THE PAVEMENT SHALL BE DRILLED AND THE REINFORCING BARS GROUTED OR EPOXIED IN PLACE.
8. EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH PAVEMENT JOINTS IN ALL CURBS OR CURB AND GUTTER ADJACENT TO JOINTED CONCRETE PAVEMENT. WHERE PLACEMENT OF CURB OR CURB AND GUTTER IS NOT ADJACENT TO CONCRETE PAVEMENT, EXPANSION JOINTS SHALL BE PROVIDED AT STRUCTURES, CURB RETURNS AT STREETS OR DRIVEWAYS, AND AT LOCATIONS DIRECTED BY THE ENGINEER.
9. VERTICAL AND HORIZONTAL DOWELS BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT 4' C-C.
10. DIMENSION "T" SHOWN IS THE THICKNESS OF ADJACENT CONCRETE PAVEMENT, OR, WHEN CURB IS INSTALLED ADJACENT TO FLEXIBLE PAVEMENT, "T" IS 6" MINIMUM, 8" MAXIMUM.
11. USUAL PROFILE GRADE LINE. REFER TO TYPICAL SECTIONS AND PLAN-PROFILE SHEETS FOR EXACT LOCATIONS.
12. A SEALED, ½" EXPANSION JOINT SHALL BE PROVIDED WHERE CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP.
13. LONGITUDINAL AND TRANSVERSE PAVEMENT STEEL SHALL BE PLACED IN ACCORDANCE WITH PAVEMENT DETAILS SHOWN ELSEWHERE IN THE PLANS.



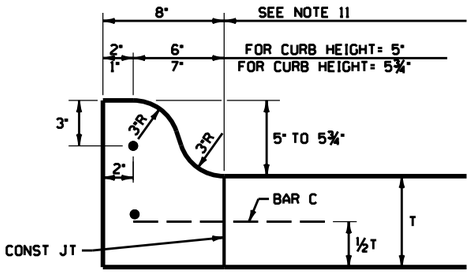
TYPE II CURB AND GUTTER
5" - 8" HEIGHT



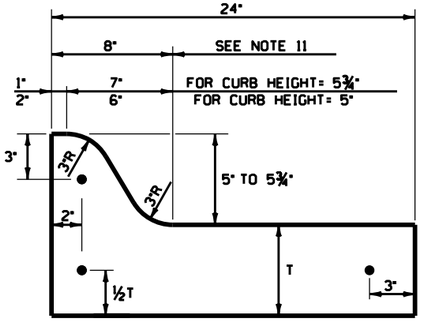
BAR B
L = (T/2) + (H- 1½")
WHERE "H" = CURB HEIGHT
FOR NEW PAVEMENT, EMBED T/2 INTO FRESH CONCRETE.
FOR EXISTING PAVEMENT, DRILL 3/8" DIAM HOLE T/2 + 1/4" INTO PAVEMENT. SECURE WITH TY III EPOXY, CLASS "E" OR "F".



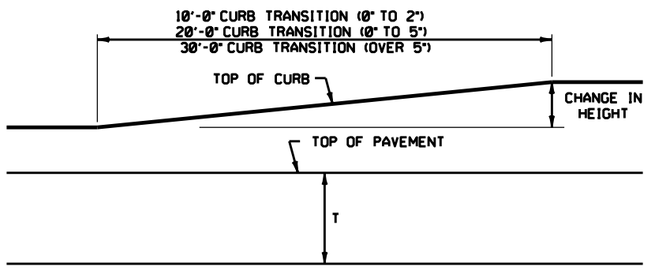
BAR C
EMBED 6" INTO EXISTING CONCRETE PAVEMENT.
DRILL 3/8" X 6 1/4" HOLE SECURE WITH TY III EPOXY, CLASS "E" OR "F".



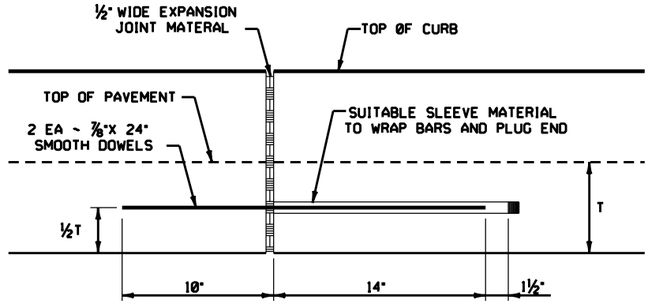
TYPE IIA CURB
5" - 5 3/4" HEIGHT



TYPE IIA CURB AND GUTTER
5" - 5 3/4" HEIGHT



CURB TRANSITION
NOTE: TO BE PAID FOR AS HIGHEST CURB



EXPANSION JOINT DETAIL

Texas Department of Transportation

Fort Worth District Standard

CONCRETE CURB AND CURB AND GUTTER DETAILS

CCCG (FTW)

ORIGINAL DRAWING: 05/2019	cccg-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
DATE	REVISIONS	6		65
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY
07/2022	DESIGNATE USUAL 6" HEIGHT	TEXAS	FTW	Tarrant
		CONT.	SECT.	JOB / HIGHWAY NO.
		0172	01	055,ETC BU 287P

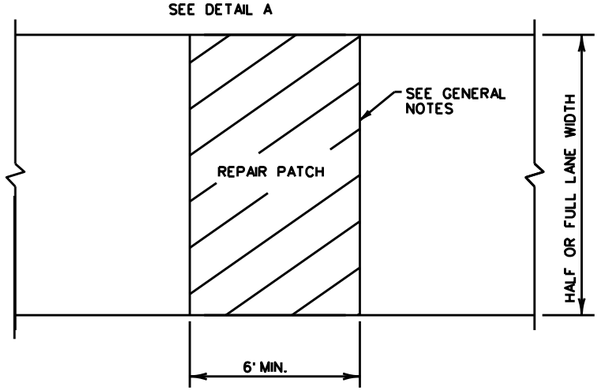
DATE:
FILE:

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

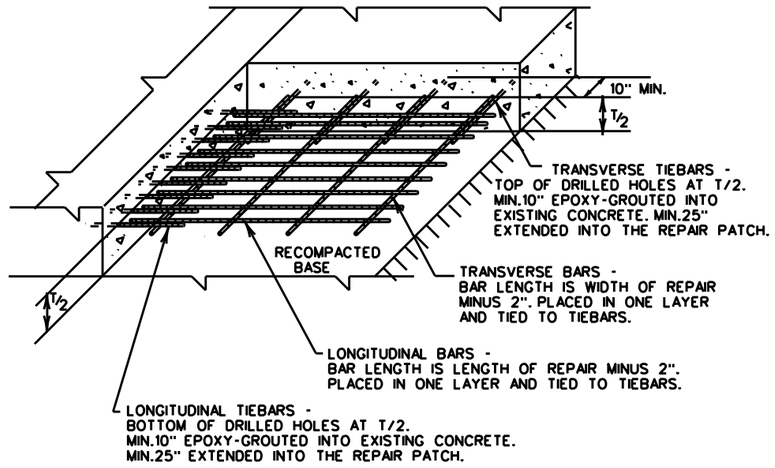
* USE 12" SPACING AS FIRST AND LAST SPACING AT END OR SIDE FOR ALL BARS.

GENERAL NOTES

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



PLAN VIEW

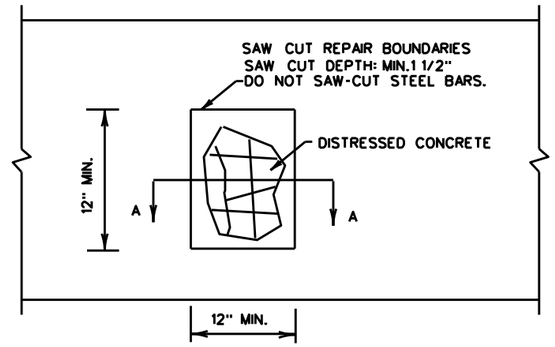


DETAIL A
GROUTED TIEBARS & REINFORCEMENT

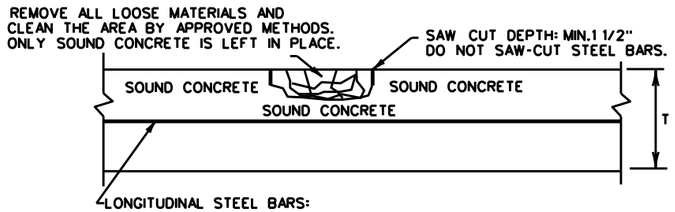
FULL-DEPTH REPAIR OF CRCP, JRCP, AND CPCD

GENERAL NOTES

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



PLAN VIEW



LONGITUDINAL STEEL BARS:

- REPAIR AREAS MAY BE ADJUSTED AFTER REMOVING DISTRESSED CONCRETE. SWITCH THE HALF-DEPTH REPAIR TO FULL-DEPTH REPAIR IF EXPOSED EXISTING LONGITUDINAL BARS ARE DEFICIENT, AS APPROVED. COMPENSATION WILL BE MADE FOR UNEXPECTED VOLUMES OF REPAIR AREAS OR CHANGES IN SCOPE OF WORK.
- INCREASE THE REPAIR AREA AND PERFORM A FULL-DEPTH REPAIR AS DIRECTED IF LONGITUDINAL STEEL BARS WERE DAMAGED BY THE REMOVAL OPERATIONS. NO ADDITIONAL COMPENSATION WILL BE MADE.

SECTION A-A

HALF-DEPTH REPAIR

SHEET 1 OF 2

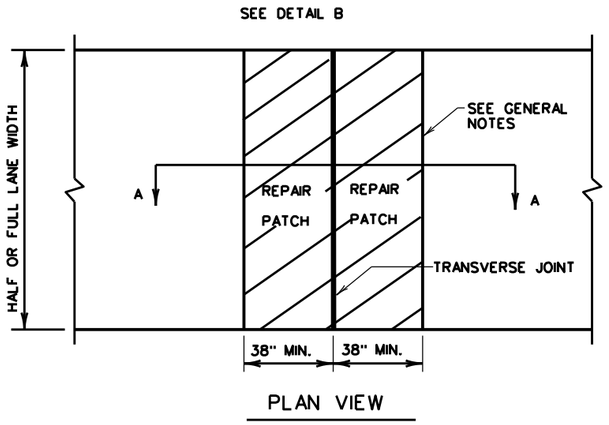
Texas Department of Transportation | Design Division Standard

REPAIR OF CONCRETE PAVEMENT

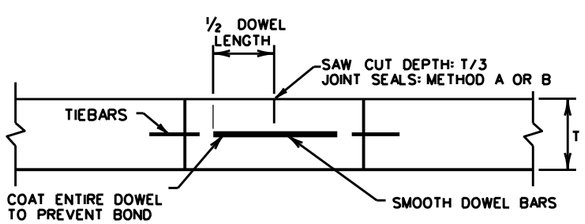
REPCP-14

FILE: repcp14.dgn	DN: TxDOT	CK: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		66

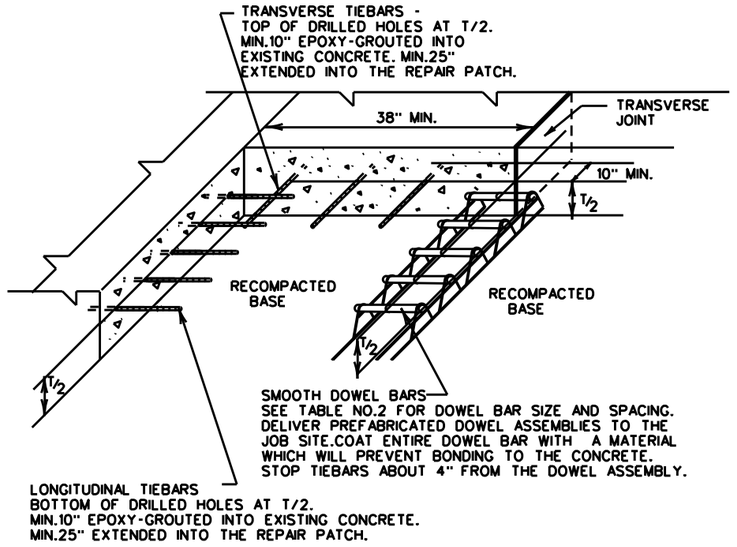
DATE:
FILE:



PLAN VIEW



SECTION A-A



DETAIL B
GROUTED TIEBARS & DOWELS

GENERAL NOTES

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

TABLE NO. 2 DOWELS (SMOOTH BARS)

PAVEMENT THICKNESS (INCHES)	SIZE AND DIA.	LENGTH (IN.)	SPACING (IN.)
<10	•8 (1 IN.)	18.0	12.0
≥10	•10 (1¼IN.)		

REPAIR OF TRANSVERSE JOINT OF CPCD

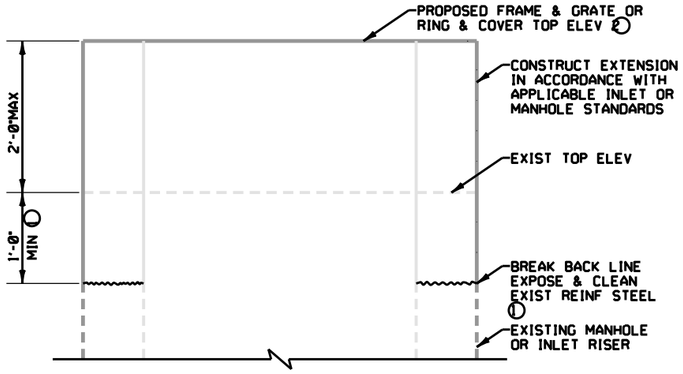
Texas Department of Transportation

Design Division Standard

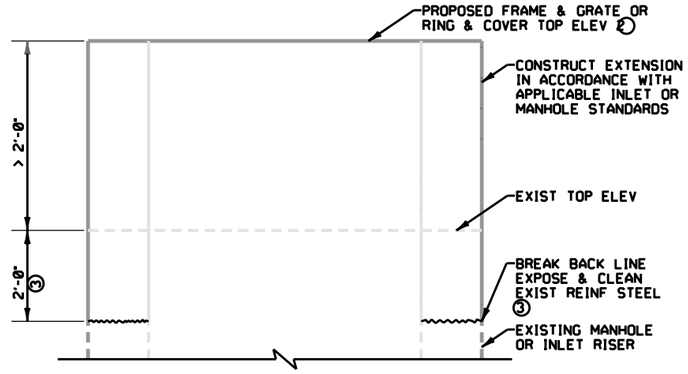
REPAIR OF CONCRETE PAVEMENT

REPCP-14

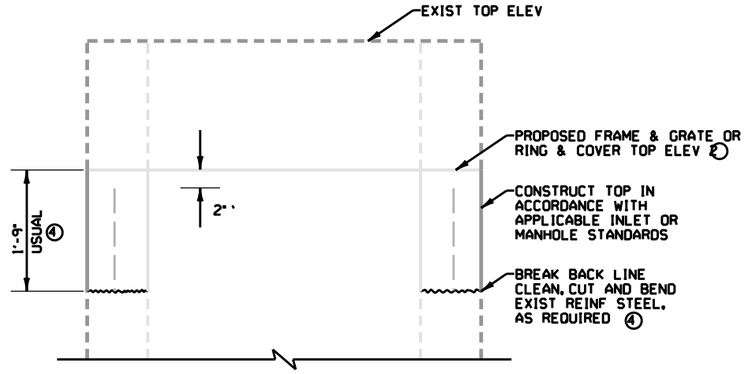
FILE: repcp14.dgn	DN: TxDOT	CK: HC	DW: HC	CK: AN
©TxDOT: DECEMBER 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		67



VERTICAL EXTENSIONS
</= 2'-0"



VERTICAL EXTENSIONS
> 2'-0"



VERTICAL REDUCTION

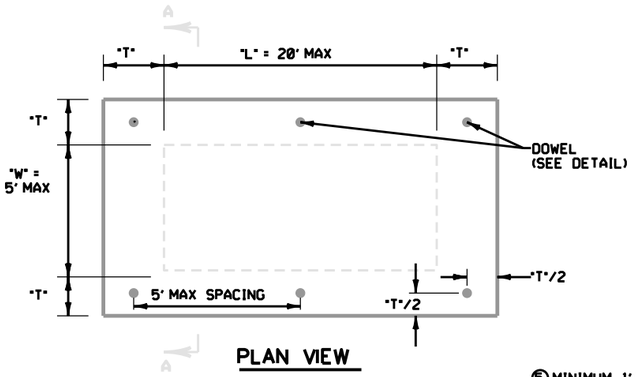
(1) BREAK BACK 1'-0" MIN OR AS REQUIRED TO PROVIDE 10" MIN LAP IN VERTICAL REINFORCING

(2) EXISTING FRAME & GRATE OR RING & COVER MAY BE RE-USED, IF APPROVED

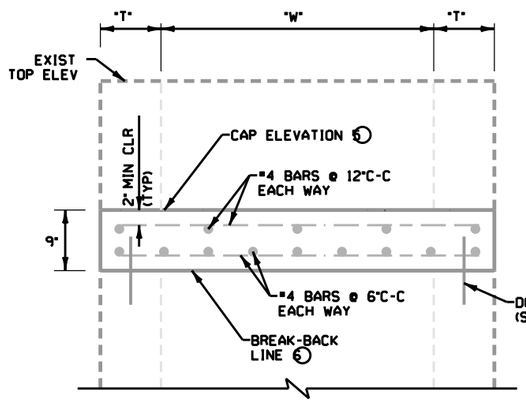
(3) BREAK BACK 2'-0" MIN OR AS REQUIRED TO PROVIDE 1'-10" MIN LAP IN VERTICAL REINFORCING

(4) BREAK BACK TO DEPTH NECESSARY TO CONSTRUCT TOP OF APPLICABLE INLET OR MANHOLE AND PROVIDE 10" MIN. LAP IN VERTICAL REINFORCING

MANHOLE AND INLET ADJUSTMENT DETAILS
N.T.S.



PLAN VIEW

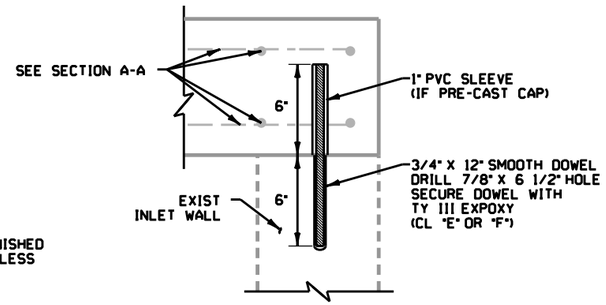


SECTION A-A

(5) MINIMUM 1' BELOW FINISHED GRADE OR SUBGRADE, UNLESS OTHERWISE APPROVED.

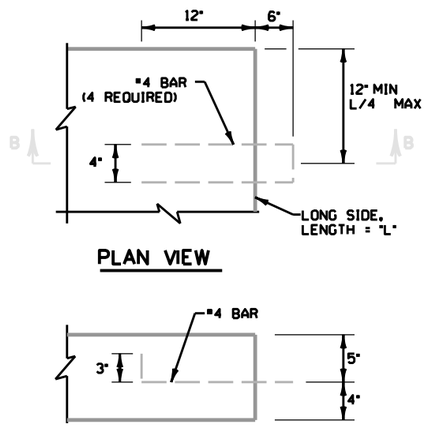
(6) CUT EXISTING STEEL FLUSH WITH CONCRETE & LEVEL WITH GROUT.

"T" = EXIST WALL THICKNESS



DOWEL DETAIL
MIN 4 EA
PLACED AT CORNERS OF INLET OR MANHOLE FOR CURB INLETS, PLACE AT CORNERS AND AT 5' +/- C-C ALONG WALLS

MANHOLE AND INLET CAP DETAILS
N.T.S.



PLAN VIEW

SECTION B-B

LIFTING LOOPS
USE WITH PRE-CAST CAP

GENERAL NOTES

1. USE CLASS "C" CONCRETE FOR CAST-IN-PLACE CAPS. USE CLASS "H" CONCRETE (MINIMUM DESIGN STRENGTH 5000 PSI) FOR PRECAST CAPS.
2. USE GRADE 60 STEEL FOR ALL REINFORCING.
3. MANHOLE AND INLET CAPS MAY BE CAST-IN-PLACE OR PRECAST. IF CAST-IN-PLACE, PERMANENT METAL DECK FORMS (PMDF) MAY BE USED. THE METHOD OF SUPPORTING PMDF TO BE APPROVED IN WRITING.

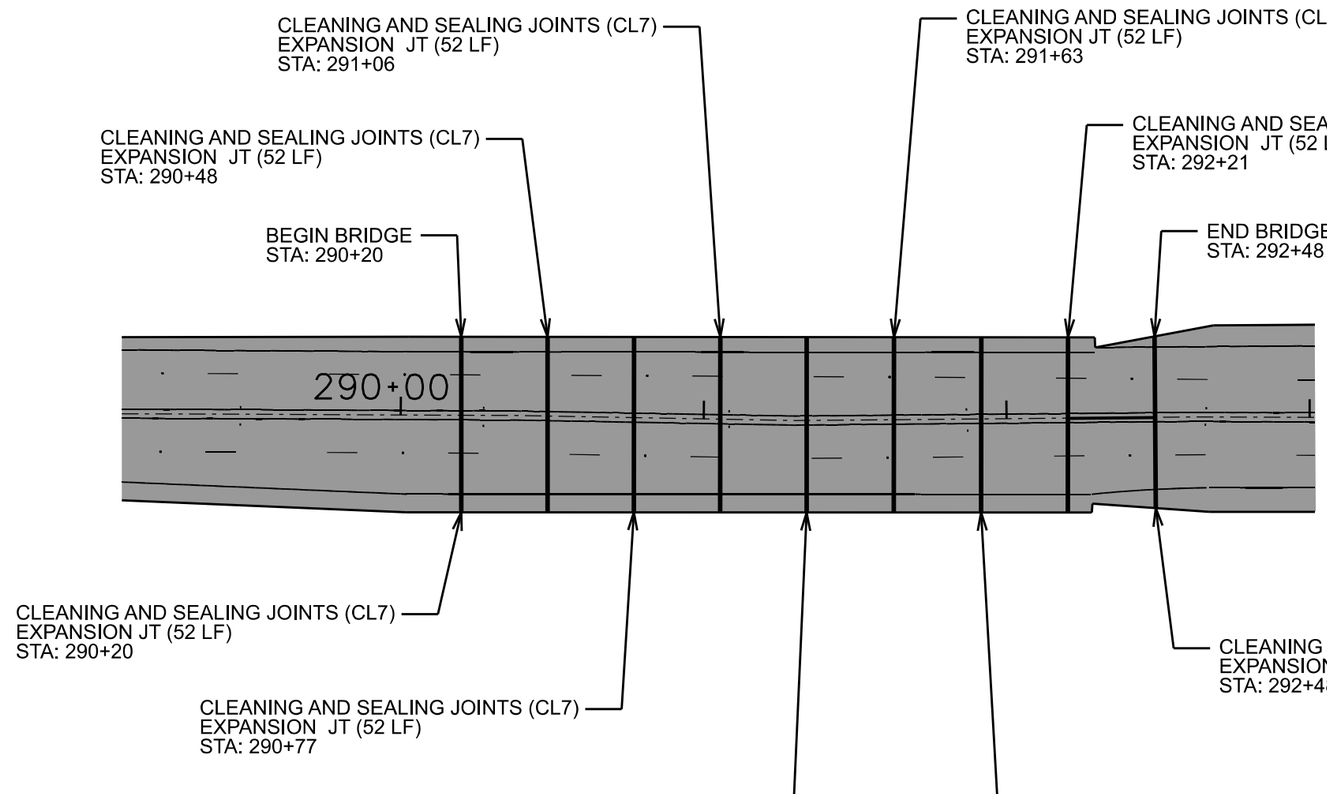
Texas Department of Transportation

Fort Worth District Standard

MANHOLE AND INLET ADJUSTMENT AND CAP DETAILS

MI-AC (FTW)

ORIGINAL DRAWING: 05/2019	misc-ftw.dgn	PROJECT NO.		SHEET NO.
DATE	REVISIONS			68
05/2019	REPLACES MI-AC (FW)	STATE	STATE DIST.NO.	COUNTY
		TEXAS	FTW	TARRANT
		CONT.	SECT.	JOB / HIGHWAY NO.
		0172	01	055,ETC BU 287P



SUMMARY OF QUANTITIES			
ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
438-7007	CLEANING AND SEALING EXIST JOINTS (CL7)	LF	468
454-7007	HEADER TYPE EXPANSION JOINT	CY	65

LEGEND

3167006	ASPH (AC-20XP)
3167173	AGGR(TY-PB,GR-5 SAC-B)
3447024	SP MIXESSP-CSAC-A PG70-28
3547003	PLAN & TEXT ASPH CONC PAV (0" TO 3")

0 25 50
SCALE IN FEET

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

BUS 287
SYCAMORE
BRIDGE LAYOUT

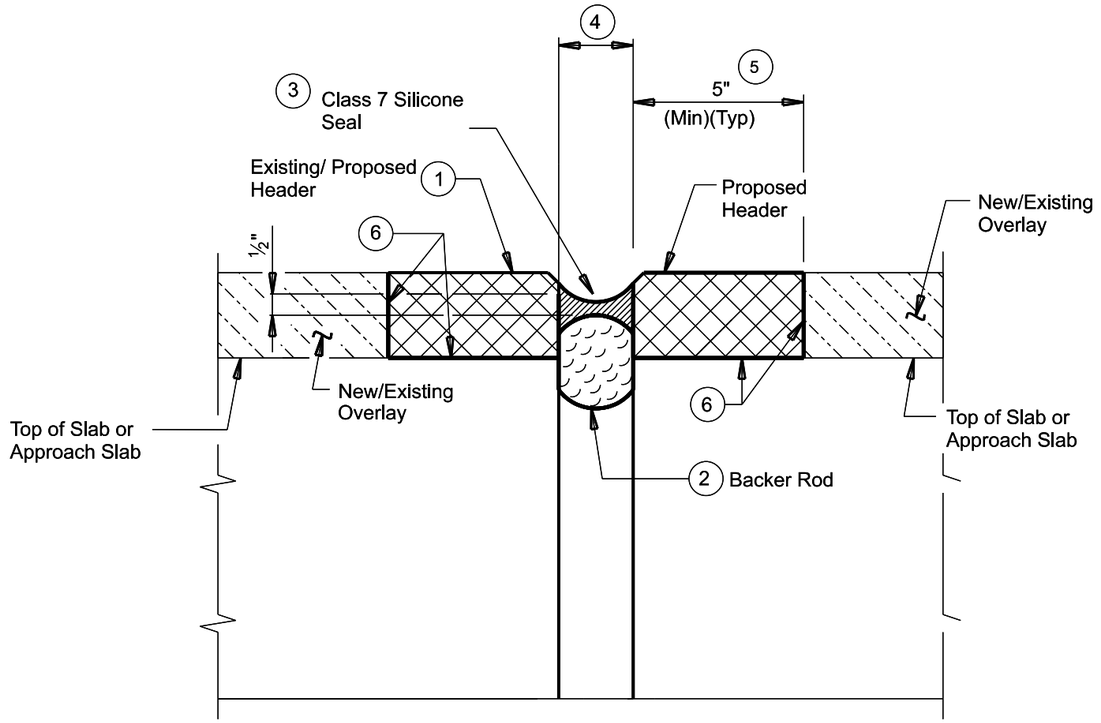
STRUCTURE NBI:
02-220-0-0172-01-001

SHEET 1 OF 1

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		69

DATE: 09/09/2024 7:27AM
FILE: T:\STICAD Files\STICAD Design\Projects\0172-01-055 BUS 287.E Berry St. to Miller Ave\04-Base Drawings



EXISTING EXPANSION JOINT WITH HEADER/POLYMER NOSING

(With New or Existing Overlay)

1. Remove Existing Nosing/Header Adjacent To Joint.
2. "B" Backer Rod Must be Compatible With Joint Sealant. Use of Multiple Pieces To Create A Backer Rod Cross Section Is Not Permitted. Tap Of Backer Rod Must Be Convex As Shown.
3. Class 7 Silicone Sealant That Conforms To DMS-6310. Install When Ambient Temperature Is Between 55°F and 85°F And Rising. Engineer To Determine Allowable Hours For Sealant Application.
4. Joint Opening Shall Match Existing, 1".
5. The Thickness Of The Header Shall Match The Thickness Of The Existing Overlay. The Width Of The Header Material Shall Be 2X The Thickness Of The Existing Overlay Or 5", Whichever Is Greater
6. Surface Where Nosing/Header Material Is To Be Placed Shall Be Clean And Dry In Accordance With The Manufacturer's Specifications.

NOTES:

Clean And Seal In Accordance With Item 438. "Cleaning And Sealing Joints".

Measurement And Payment For Header Shall Be In Accordance With Item 454, "Bridge Expansion Joints". Measurement And Payment For Cleaning And Sealing Shall Be In Accordance With Item 438, "Cleaning And Sealing Joints".

Notify Engineer Of Record If Existing Condition Does Not Match Detail During Repair

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

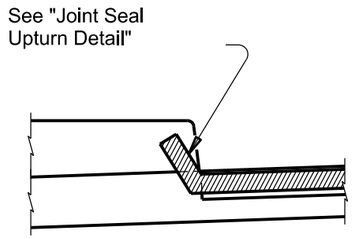
Texas Department of Transportation

Fort Worth Bridge Design

EXPANSION JOINT DETAIL

	DN:	CK:	DW:	CK:
©TxDOT 06-08-23	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
Revised notes & callouts	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		70

T:\STCAO Files\STCAO Design\Projects\0172-01-055 BUS 287, E Berry St. to Miller Ave\04-Base Drawings



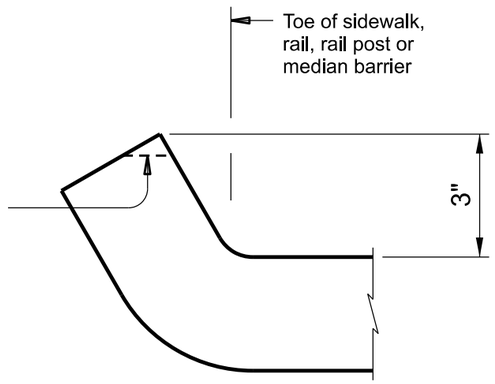
AT SIDEWALK

JOINT SEALANT TERMINATION DETAILS

GENERAL NOTES

Extend sealant up into rail or curb 3 inches on low side or sides of deck. If the Class 7 Sealant cannot be effectively placed in the vertical position, a Class 4 Sealant compatible with the Class 7 sealant is allowed for the extension of the seal into the curb or rail.

Prepare surfaces where sealant is to be placed in accordance with manufacturer's specifications.



JOINT SEAL UPTURN DETAIL

T:\STCAO Files\STCAO Design\Projects\0172-01-055 BUS 287, E Berry St. to Miller Ave\04-Base Drawings

SHEET 1 OF 1

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

Texas Department of Transportation

Fort Worth Bridge Design

JOINT SEALANT TERMINATION DETAILS

FILE:	DN:	CK:	DW:	CK:
©TxDOT 06-08-23	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
Revised notes & callouts	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		71

GENERAL NOTES:

• COORDINATE WITH THE CITY OF FTW ON ALL SIGNAL OPERATION ACTIVITIES

• USE COFW STANDARD DETAIL D611 TO DETERMINE THE PLACEMENT OF THE HVDS.

• REFER TO COFTW STANDARDS: D606 - TRAFFIC SIGNAL TYPE 352i SINGLE GB FOUNDATION DETAIL

VACANT

INSTALL HVDS

INSTALL VDS CABLE

VACANT

REMOVE EXISTING SIGNAL CABINET

INSTALL NEW SIGNAL CABINET

REMOVE EXISTING GROUND BOX

INSTALL NEW GROUND BOX

VACANT

MANSFIELD HWY. U.S. HWY. 287

SOUTH CAMPUS DRIVE

LEGEND

CONTROLLER

STEEL POLE

WOOD POLE

STREET LIGHT

PULL BOX

SERVICE

2" CONDUIT

1¼" CONDUIT

SIGNAL FACES

12" HEADS

8" HEADS

3-VANE LOUVERS & FULL CIRCLE VISORS

ALL 12" HEADS SHALL BE EQUIPPED WITH 5" BACKPLATES UNLESS NOTED OTHERWISE.

CONDUIT & CABLE CHART

RUN NO.	CONDUIT	CABLE
R-1	1-1¼" P.V.C.	1-#8 B.R.H.W. & 1-#8 B.T.W.
R-2	1-1¼" P.V.C.	1-#8 B.R.H.W. & 1-#8 B.T.W. (1-2 COND. (SHIELDED)
R-3	1-2"	1-4 COND. + N. (1-SPARE)
R-4	1-2"	1-8 COND. + N. (2-SPARES)
R-5	1-2"	SAME AS R-4
R-6	2-2" & 1-1¼"	1-12 COND. + N. (5-SPARES)
R-7	1-2"	1-4 COND. + N. (1-SPARE)
R-8	2-2" & 1-1¼"	1-12 COND. + N, 1-4 COND. (7-SPARES)
R-9	2-2" & 1-1¼"	1-8 COND. + N. (5-SPARES)
R-10	1-1¼" P.V.C.	1-2 COND. (SHIELDED)
R-11	1-2"	1-8 COND. + N. (2-SPARE) 1-#8 B.R.H.W.
R-12	2-2" & 1-1¼"	2-8 COND. + N. (5-SPARES) 2-2 CONDS. (SHIELDED) 1-#8 B.R.H.W.
R-13	1-2"	1-4 COND. + N. (1-SPARE)
R-14	2-2" & 1-1¼"	1-16 COND. + N. (2-SPARES) 2-2 CONDS. (SHIELDED) 1-#8 B.R.H.W.
R-15	1-2"	1-4 COND. + N. (1-SPARE)
R-16	2-2" & 1-1¼"	1-16 COND. + N., 1-4 COND. (5-SPARES) 4-2 CONDS. (SHIELDED) 1-#8 B.R.H.W.
R-17	3-2"	1-16 COND. + N., 1-12 COND. (2-SPARES) 5-2 CONDS. (SHIELDED) 2-#8 B.R.H.W. & 1-#8 B.T.W.
R-18	1-2"	1-4 COND. + N. (1-SPARE)

MANSFIELD HWY.

SOUTH CAMPUS DR.

CONDUIT & CABLE RUNS FROM CONTROLLER

SUMMARY OF QUANTITIES

ITEM	ITEM DESCRIPTION	UNIT	QUANTITY
690-7006	REMOVAL OF GROUND BOXES	EA	1
624-7008	GROUND BOX TY D (162922)W/APRON	EA	1
690-7100	REMOVE TRAFFIC SIGNAL	EA	1
6017-7001	VDS PROSR SYS	EA	1
6017-7010	VDS (HVDS) (VIVDS AND RVDS)	EA	3
6017-7012	VDS CABLING	LF	950
6017-7014	VDS ATSPM	EA	1
6040-7001	HIGHWAY TRAFFIC SIGNALS (COFW)	EA	1

STATE OF TEXAS
MOHAMMAD AZIZUR RAHMAN
118252
LICENSED PROFESSIONAL ENGINEER
09-17-24

REVISED 7/4/93 BY HAROLD DAVIS

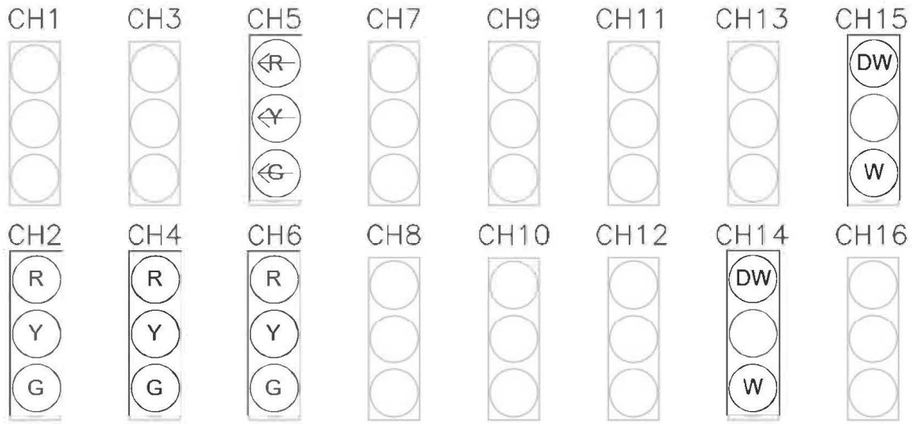
DEPARTMENT OF TRANSPORTATION
Gary L. Santerre, Director

AS BUILT CITY OF FORT WORTH
FINAL PLANS
TRAFFIC E...

TRAFFIC SIGNAL
S. CAMPUS DR. & MANSFIELD HWY.

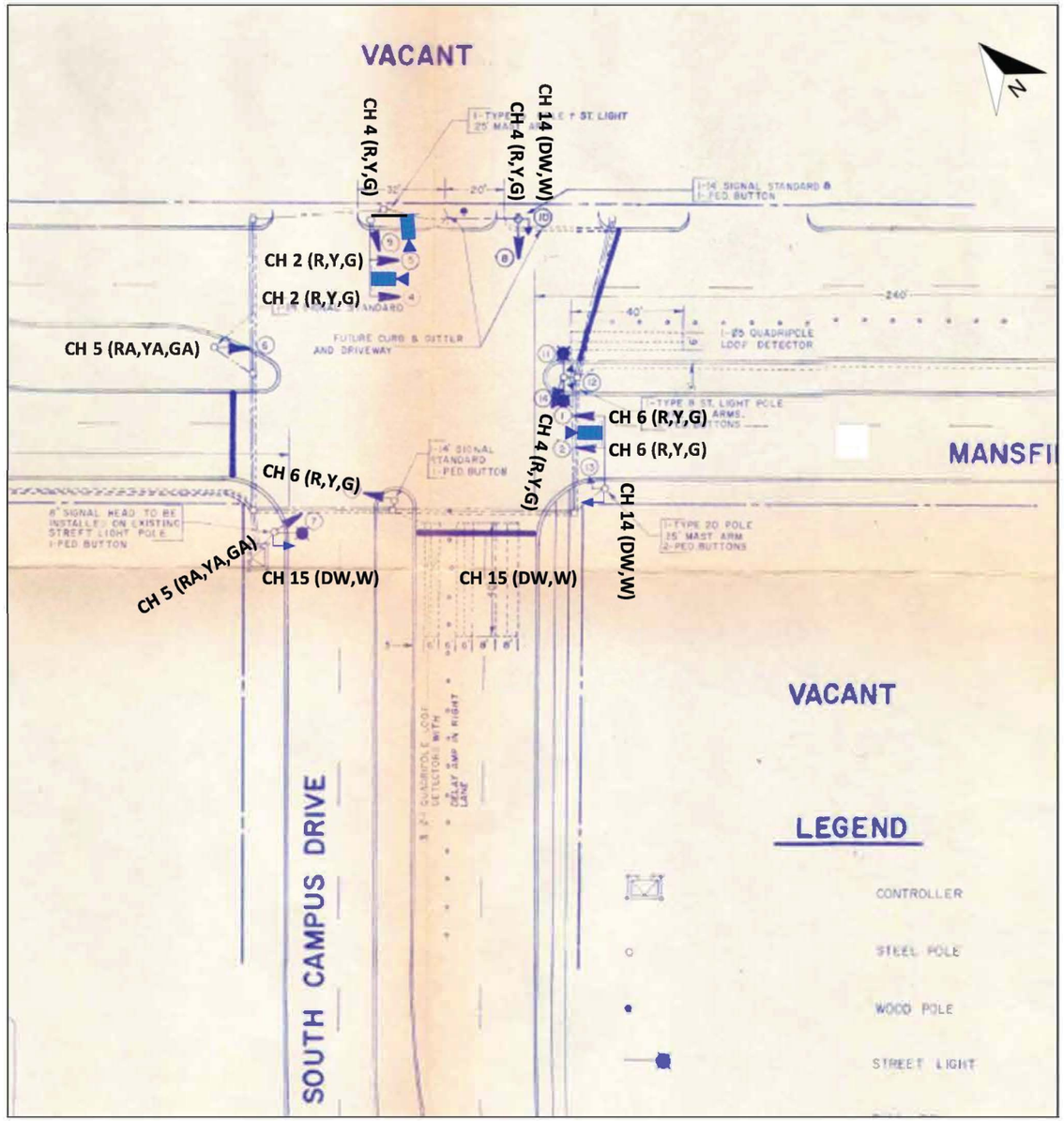
DESIGNED BY: SCOTT, STAN	DATE 10-29-82	CHECKED BY	DATE
DRAWN BY: S. SCOTT	DATE 10-29-82	APPROVED BY	DATE
SCALE: 1"=40'	SHEET NO. 1 OF 2	DWG. NO. 2655	

LOAD SWITCH OUTPUT ASSIGNMENT



SIGNAL DETECTOR ATTRIBUTE / CHANNEL												
	1	2	3	4	5	6	7	8	9	10	11	12
352i ATC								PED 6 DET 15				
							PED 4 DET 14					

ALL VEHICULAR DETECTION SHALL BE ON SDLC



FORT WORTH

5001 JAMES AVENUE
FORT WORTH, TX 76115

PHONE: (817) 392-8656
FAX: (817) 392-2533

LEGEND

SIGNAL HEAD — PED POLE

PED HEAD — MAST ARM

STATE OF TEXAS
MOHAMMAD AZIZUR RAHMAN
118252
LICENSED PROFESSIONAL ENGINEER
09-15-24

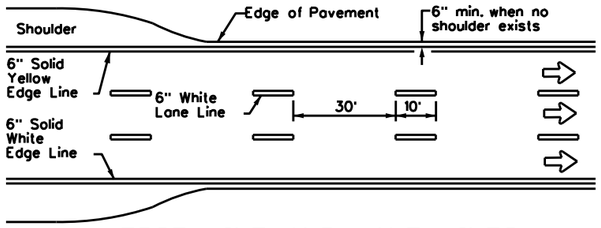
CITY OF FORT WORTH

DEPARTMENT OF TRANSPORATION AND PUBLIC WORKS
TRAFFIC MANAGEMENT DIVISION

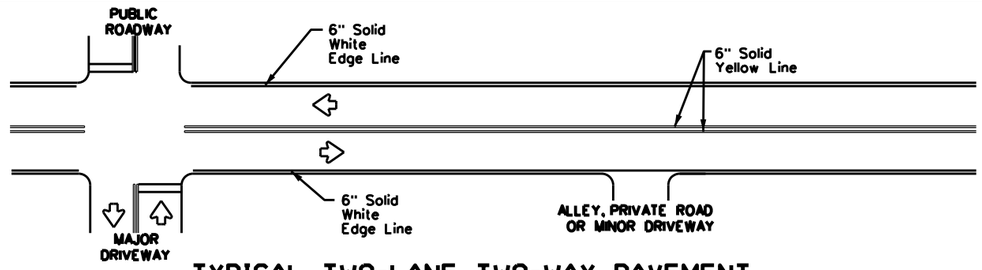
MANSFIELD HWY (US 287 BUS) & CAMPUS DR

CHANNEL ASSIGNMENT DRAWING

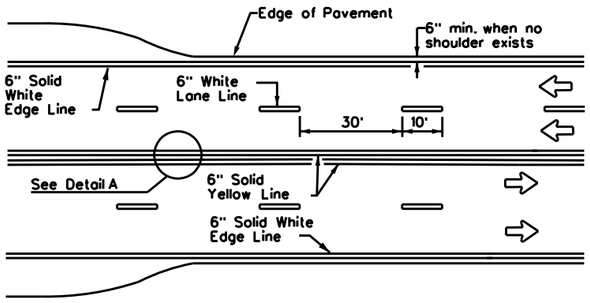
NOTES	NAME	DATE
DESIGN BY	Sagar M	9/10/2024
ENGINEER	Sagar M	9/11/2024
APPROVED	Aziz R	9/11/2024
SHEET No.	72A	

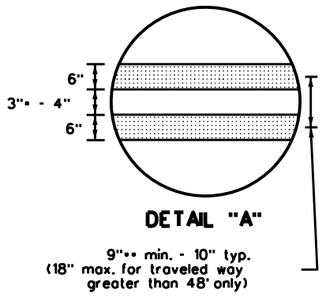


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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

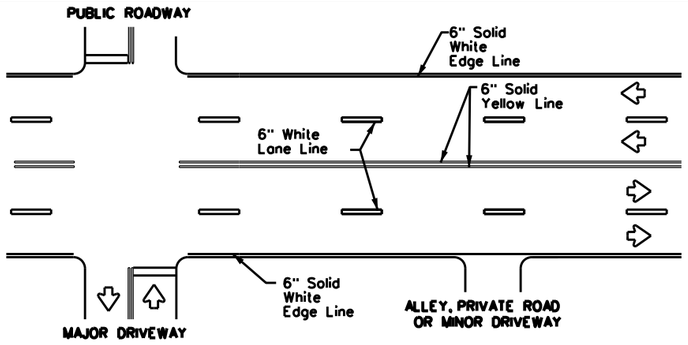




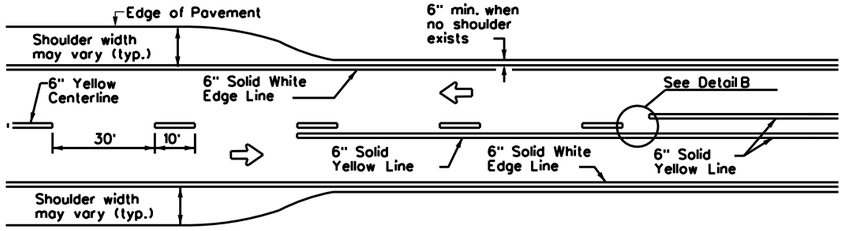
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

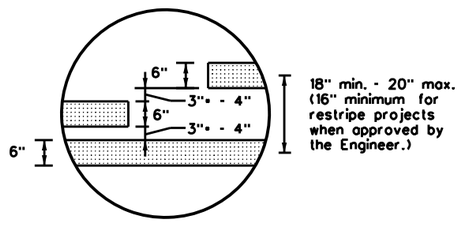
** 8" minimum for restripe projects when approved by the Engineer.



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

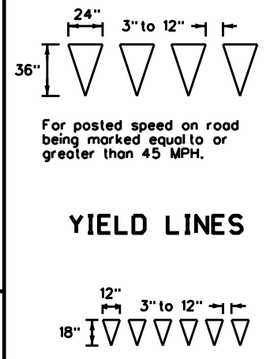


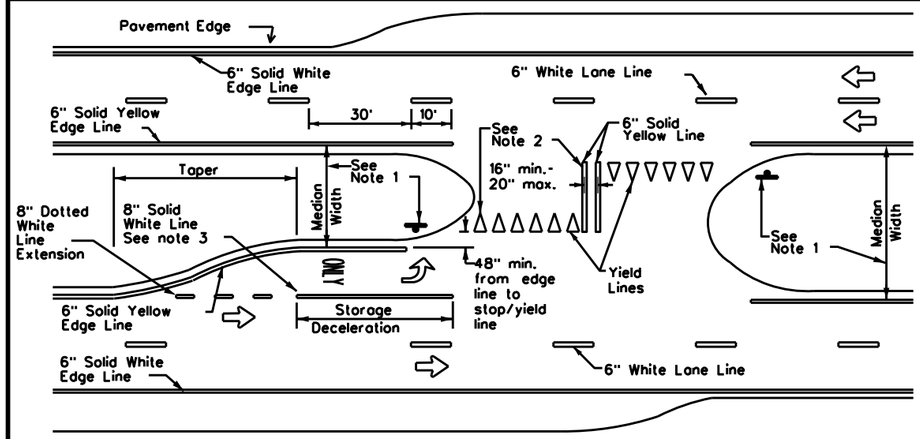
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



DETAIL "B"

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





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.

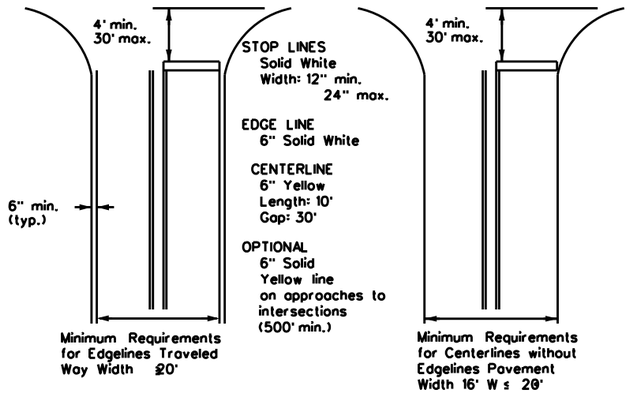
GENERAL NOTES

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.



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

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

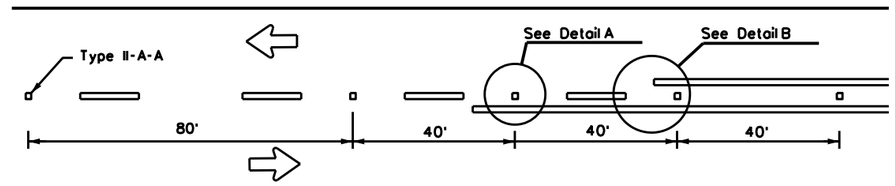
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
11-78 8-00 6-20	DIST	COUNTY		SHEET NO.
8-95 3-03 12-22	FTW	TARRANT		73
5-00 2-12				

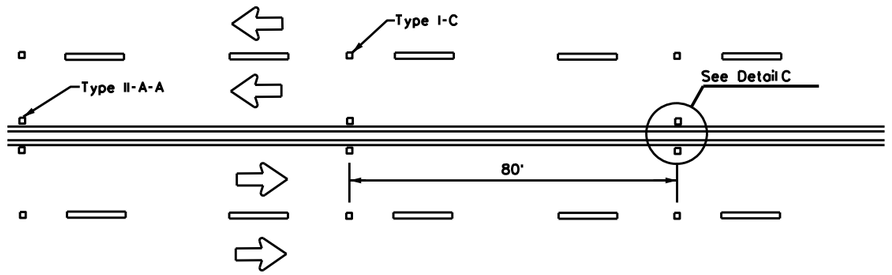
22A

DATE:
FILE:

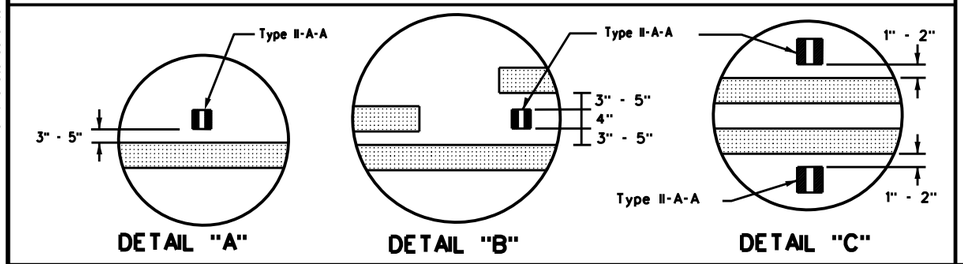
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

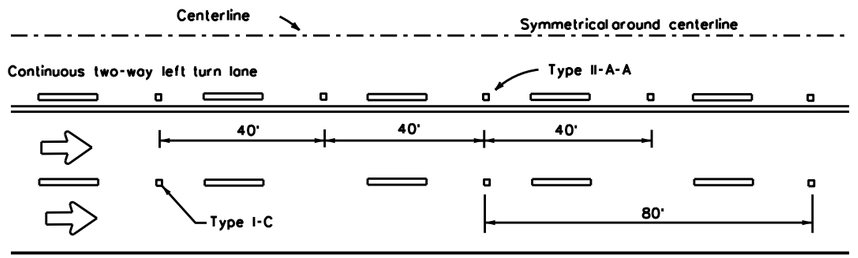


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

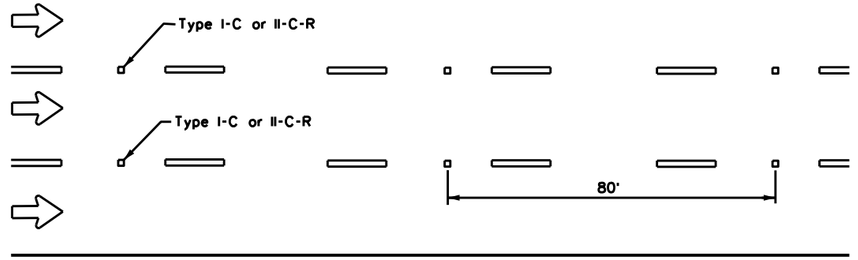


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



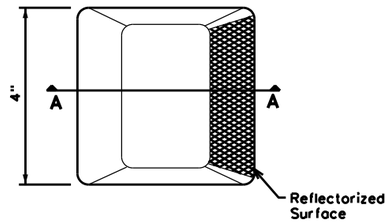
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

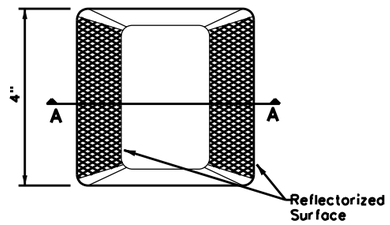
See Note 3.

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

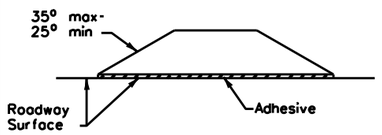
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

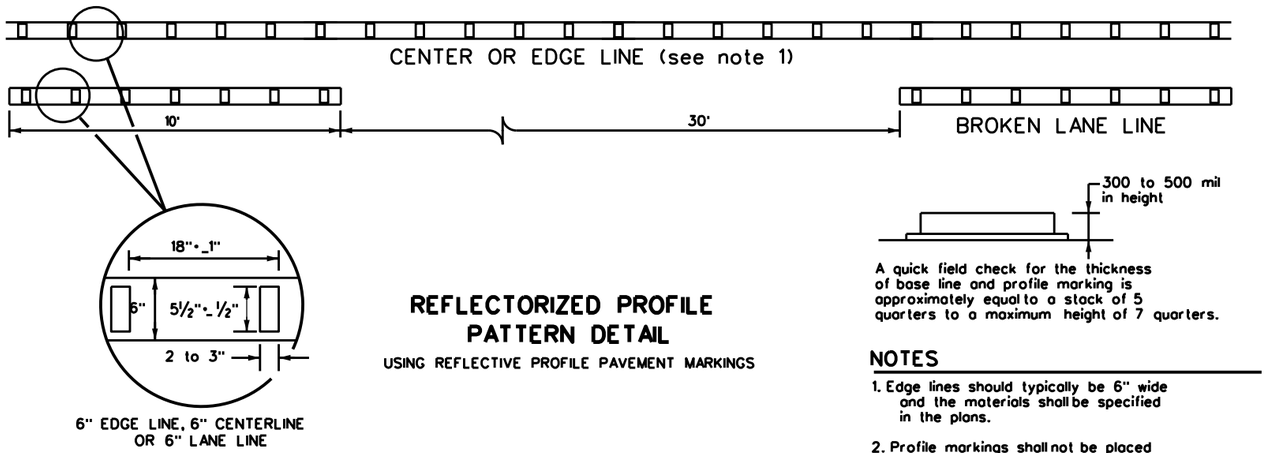


Type II (Top View)



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	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		74

228

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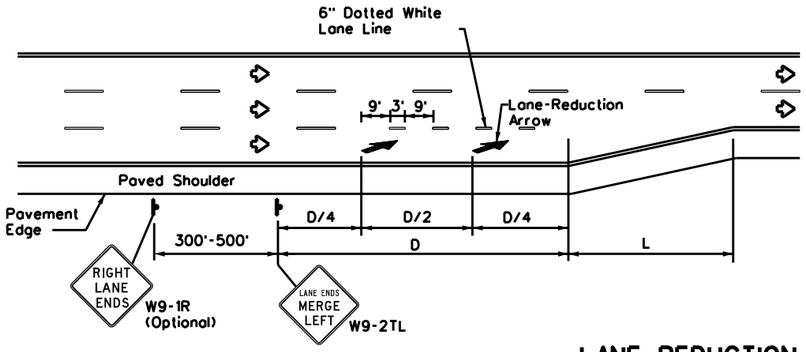
DATE:
FILE:

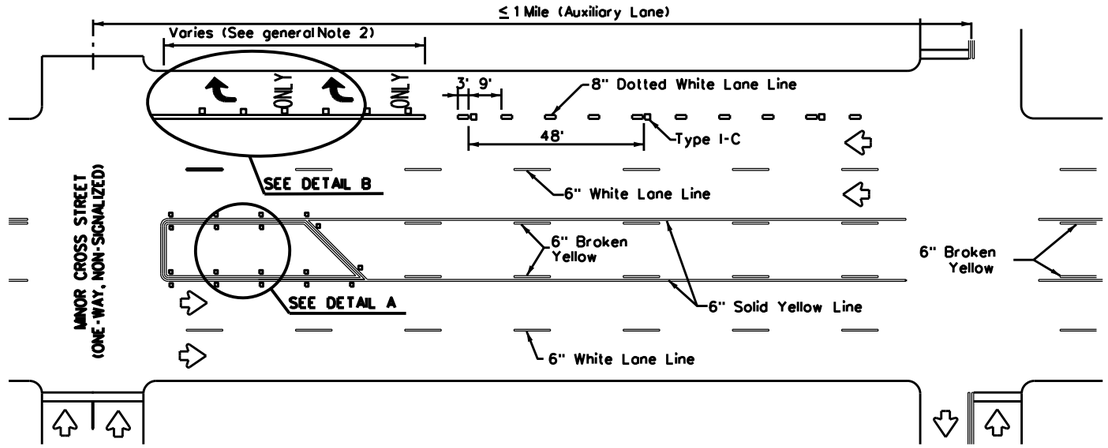


LANE REDUCTION

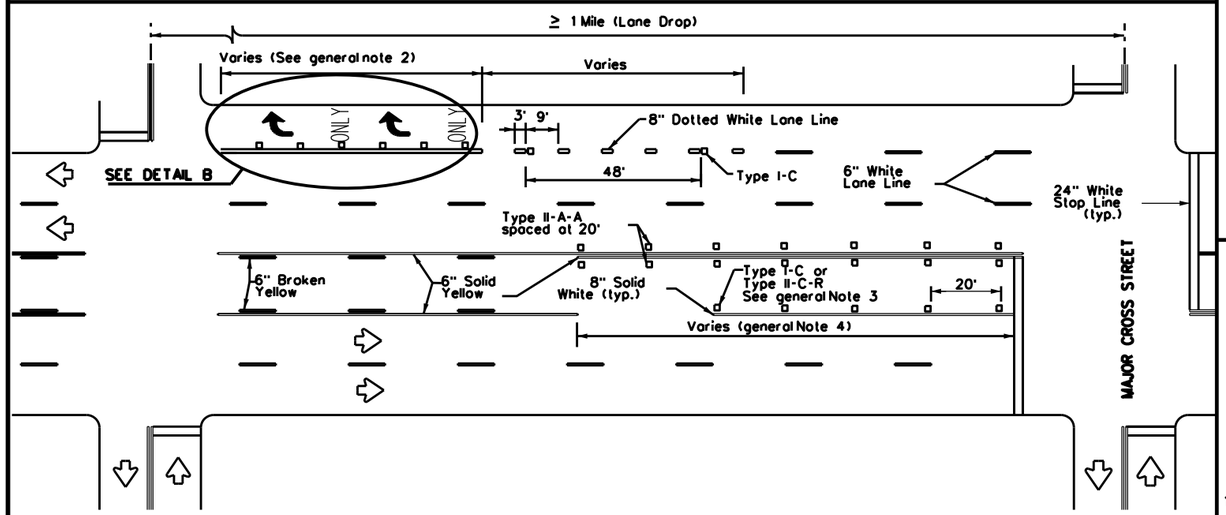
NOTES

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.

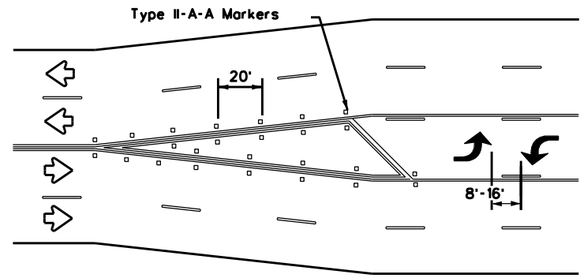
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L = \frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



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



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



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

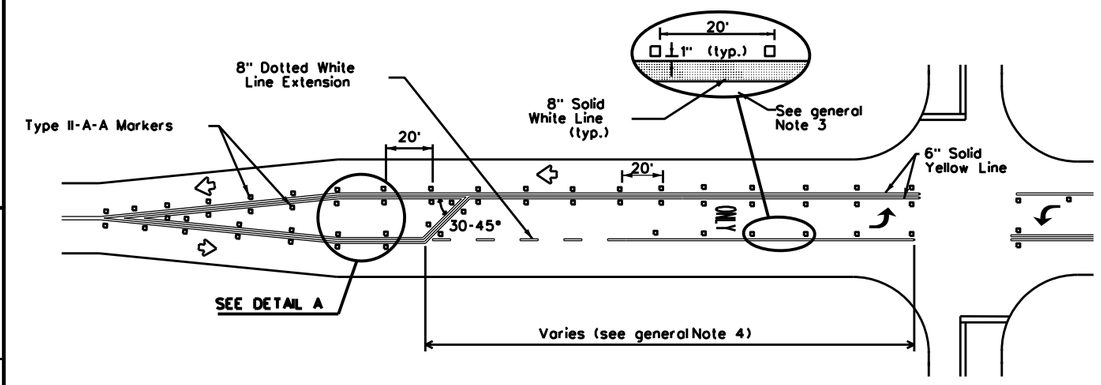
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

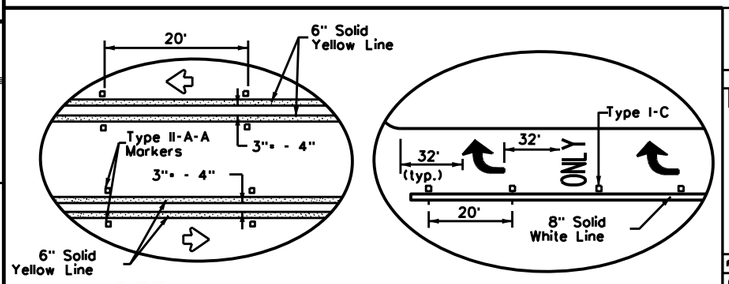
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn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

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

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



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



DETAIL A

DETAIL B

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

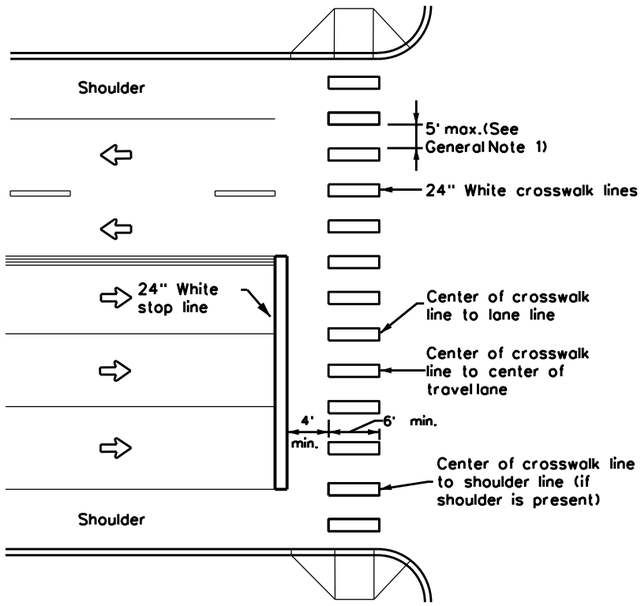
Texas Department of Transportation

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	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		75

DATE:
FILE:



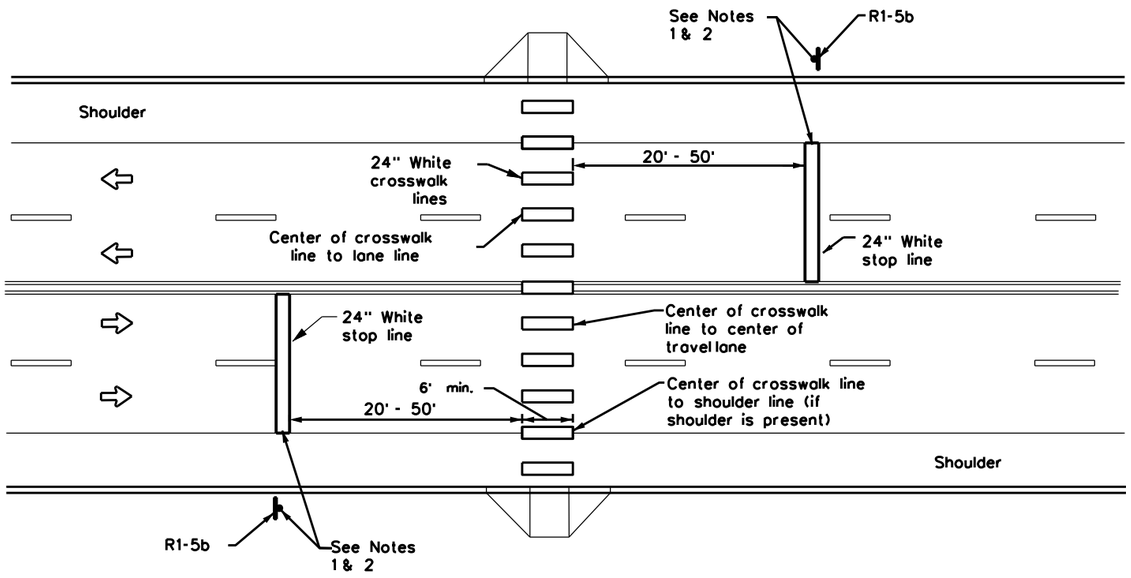
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

1. Use stop bars with Stop Here For Pedestrians (R1-5b) signs at unsignalized midblock cross walks.
2. Use stop bars with STOP HERE ON RED (R10-6 or R10-6a) signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287P
6-20	DIST	COUNTY		SHEET NO.
6-22	FTW	TARRANT		76
12-22				

22D

DATE:
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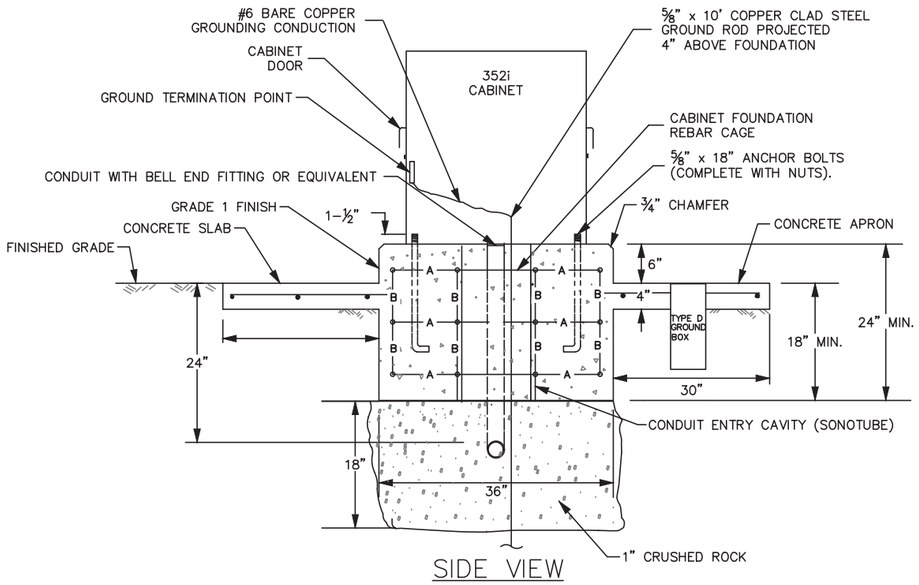
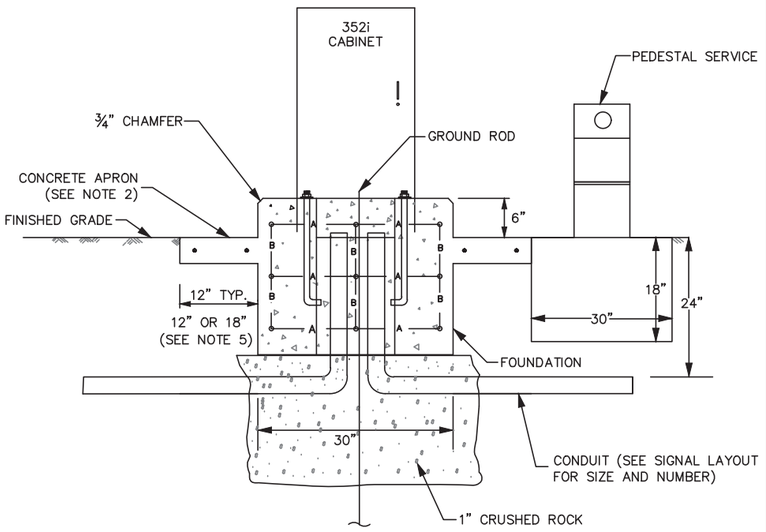


SIDE VIEW

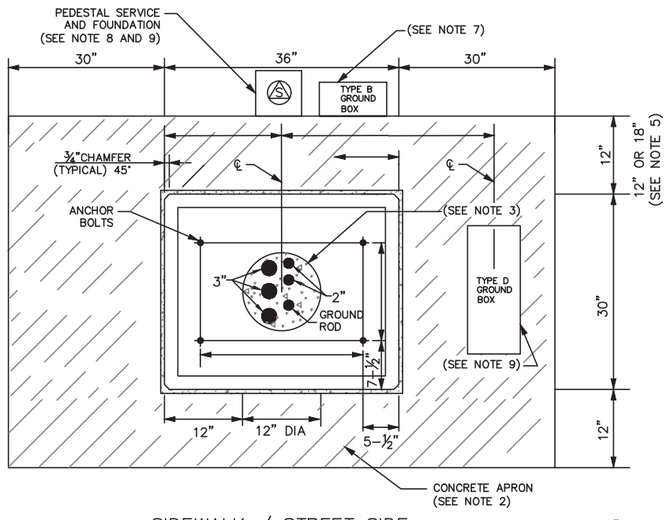
NOTES:
1. ANCHOR BOLT THREADS SHALL BE TAPED PRIOR TO POURING CONCRETE.
2. ALL OR PART OF CONCRETE APRON MAY BE REQUIRED DEPENDING ON THE PLACEMENT OF CABINET FOUNDATION IN RELATION TO EXISTING CONDITIONS.
3. CAVITY IN FOUNDATION (SONOTUBE) ALLOWS FOR FUTURE PLACEMENT OF CONDUIT. CAVITY EXTENDS FROM TOP TO BOTTOM OF FOUNDATION. PLACE 1" CRUSHED STONE IN CAVITY TO WITHIN 4" FROM THE TOP OF THE FOUNDATION.
4. CONTROLLER FOUNDATION APRON SHALL BE CONSTRUCTED OF CLASS B CONCRETE RIP–RAP AND SHALL BE SUBSIDIARY TO THE CONTROLLER FOUNDATION.
5. CABINET FOUNDATION SHALL BE 8' x 5.5' IF A BATTERY BACK–UP UNIT IS ATTACHED TO THE CABINET.
6. FIELD TERMINATIONS SIDE OF CABINET SHALL FACE TOWARDS INTERSECTION.
7. INSTALL TYPE B GROUND BOX FOR ILLUMINATION CIRCUIT AS DETERMINED BY CITY TRAFFIC ENGINEER.
8. INSTALL PEDESTAL SERVICE ON THE SAME PAD AS CABINET FOUNDATION UNLESS THERE ARE OTHER SITE CONSTRAINTS. THE PEDESTAL SERVICE SHALL NOT BE LOCATED ON THE FRONT AND BACK SIDE OF SIGNAL CABINET DOOR. IF THE PEDESTAL IS INSTALLED ON SAME PAD AS CABINET FOUNDATION, THE CONTRACTOR SHALL GET APPROVAL FROM THE CITY ON THE LOCATION ON PEDESTAL FOUNDATION PRIOR TO PORING FOUNDATION.
9. PEDESTAL SERVICE SHALL BE AT LEAST 4 FEET AWAY FORM SIGNAL CABINET FOUNDATION IF IT IS INSTALL SEPARATELY. LOCATION OF TYPE D GROUND BOX IN CONCRETE APRON WILL BE DETERMINED BY CITY TRAFFIC ENGINEER.
10. CONCRETE MIX DESIGN SHALL BE IN ACCORDANCE WITH CITY OF FORTH WORTH STANDARD SPECIFICATIONS DIVISION 03 30 00, CAST–IN–PLACE CONCRETE. CONTRACTOR SHALL USE A PRE–APPROVED CONCRETE MIX DESIGN OR SUBMIT PROPOSED MIX DESIGN FOR APPROVAL PRIOR TO CONSTRUCTION. CONCRETE FOR STRUCTURES SHALL BE CLASS S AND HAVE A MINIMUM 28–DAY COMPRESSION STRENGTH OF 3,600 PSI.

STEEL SUMMARY TABLE				
BAR	NO. BARS	SIZE	LENGTH	SPACING
A	3	5	9'–8"	8" C.C.
B	10	5	2'–2"	VAR.
*C	6	3	1'– 8"	8.5" C.C.
**D	6	3	4'–0"	10" C.C.
E	6	3	0'–8"	10" C.C.
F	4	3	6'–8"	8" C.C.

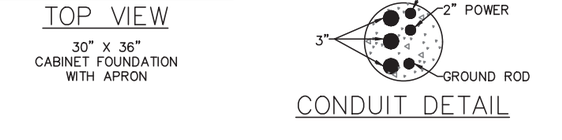
PROVIDE 2" MIN. COVER FOR TOP AND SIDES
* ADJUST THREE "C" BAR LENGTHS TO 9"–11" FOR GROUND BOX INSTALLATION
** ADJUST ONE "D" BAR LENGTH TO 14"–16" FOR GROUND BOX INSTALLATION



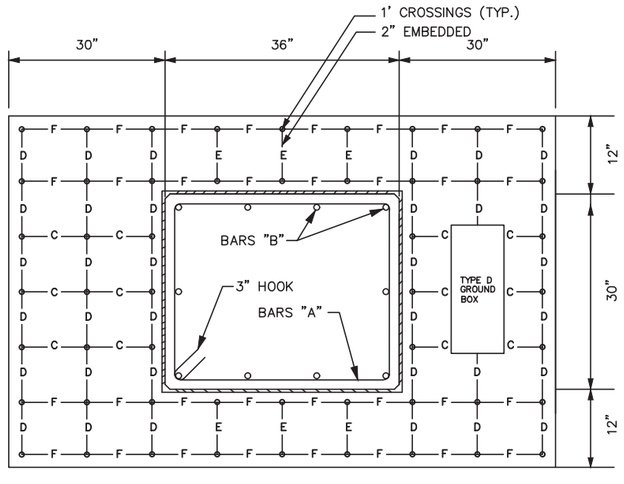
FRONT VIEW



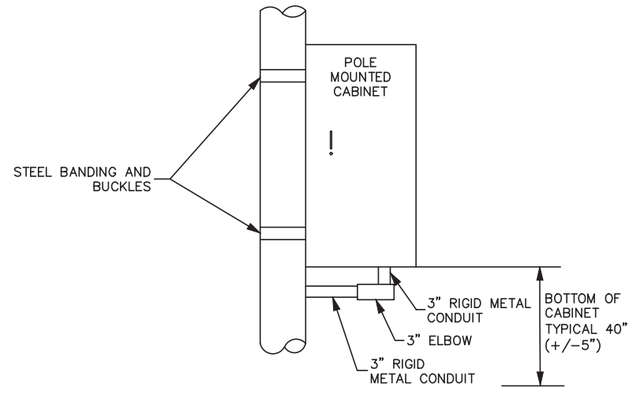
SIDEWALK / STREET SIDE
TOP VIEW
30" X 36"
CABINET FOUNDATION
WITH APRON



CONDUIT DETAIL



TOP VIEW
CONCRETE EMBEDDED REBAR AND CAGE DETAIL



POLE MOUNTED CABINET

(CABINET IS BANDED TO POLE)

FOR CABINETS MOUNTED TO TIMBER POLES, USE ATTACHMENT METHODS APPROVED BY ENGINER

FORT WORTH

CITY OF FORT WORTH, TEXAS
TRAFFIC SIGNAL TYPE 352i SINGLE GROUND BOX FOUNDATION DETAIL

REVISED: 11-03-2021

34 41 10-D606 77

PART 1 - GENERAL

1.01 DESCRIPTION

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

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

1.02 REQUEST FOR INFORMATION / CLARIFICATION

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

1.03 PLANS / SPECIFICATIONS

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

PART 2 - UTILITIES AND FIBER OPTIC

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

PART 3 - CONSTRUCTION

3.01 GENERAL

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

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

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

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

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

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

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

3.02 RAILROAD OPERATIONS

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

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

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

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

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

3.03 RIGHT OF ENTRY, ADVANCE NOTICE AND WORK STOPPAGES

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

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

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

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

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

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

3.04 INSURANCE

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

3.05 RAILROAD SAFETY ORIENTATION

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

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

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

3.06 COOPERATION

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

3.07 MINIMUM CONSTRUCTION CLEARANCES FOR FALSEWORK AND OTHER TEMPORARY STRUCTURES

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

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

3.08 APPROVAL OF REDUCED CLEARANCES

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

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

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

SHEET 1 OF 2

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

REVISIONS
March 2020

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
	CONT	SECT	JOB	HIGHWAY
	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		78

DATE:
FILE:

3.09 MAINTENANCE OF RAILROAD FACILITIES

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

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

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

3.10 SITE INSPECTIONS BY RAILROAD's DESIGNATED REPRESENTATIVE

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

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

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

3.11 RAILROAD REPRESENTATIVES

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

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

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

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

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

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

3.12 COMMUNICATIONS AND SIGNAL LINES

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

3.13 TRAFFIC CONTROL

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

3.14 CONSTRUCTION EXCAVATIONS AND BORING ACTIVITIES UNDER TRACK

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

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

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

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

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

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

C. Projects involving a boring or jack and bore operation under track such as drainage pipes or culverts and utilities require an installation plan reviewed and approved by the Railroad and TxDOT prior to proceeding with such construction. A railroad inspector and contractor assisted monitoring of ground and track movement is required to maintain safe passage of rail traffic. Stop installation and do not allow passage of trains if movements in excess of ¼ inch vertical or horizontal is detected in the tracks. Immediately repair the damage to the satisfaction of TxDOT and the Railroad before proceeding.

3.15 RAILROAD FLAGGING

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

3.16 CLEANING OF RIGHT-OF-WAY

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

Texas Department of Transportation | Rail Division

RAILROAD REQUIREMENTS FOR NON-BRIDGE CONSTRUCTION PROJECTS

FILE:	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2018	CONT	SECT	JOB	HIGHWAY
REVISIONS March 2020	0172	01	055,ETC	BU 287P
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		79

DATE:
FILE:

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

☐ This project is adjacent or parallel work, not within RR ROW:

DOT No.: See table
Crossing Type: AT-GRADE
RR Company Operating Track at Crossing: UPRR
RR Company Owning Track at Crossing: UPRR
RR MP: See multi table
RR Subdivision: See multi table
City: Fort Worth
County: Tarrant
CSJ at this Crossing: 0172-01-055
Latitude: multi locs
Longitude: multi locs

Scope of Work, including any TCP, to be performed by State Contractor:

Mill , Overlay and Installation of Pavement Markings on 287P. Will need TCP at multiple RR crossings.

Scope of Work to be performed by Railroad Company:

none

II. FLAGGING & INSPECTION

No. of Days of Railroad Flagging Expected: 30

On this project, night or weekend flagging is:

☑ Expected
☐ Not Expected

Flagging services will be provided by:

☐ Railroad Company: 1) Txdot will pay flagging invoices. Flagging Agreement with railroad will be needed or, 2) Permitted crossing. Railroad company to provide flagging.
☑ Outside Party: Contractor will pay flagging invoices to be reimbursed by TxDOT

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

Contact Information for Flagging:

☑ **UPRR** UP.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
UP.request@nrssinc.net
Call Center 877-984-6777

☐ **BNSF** BNSFinfo@railprosfs.com
Call Center 877-315-0513, Select #1 for flagging

☐ **CPKCR** KCS.info@railpros.com
Call Center 877-315-0513, Select #1 for flagging
Bottom Line On-Track Safety Services
bottomline076@aol.com, 903-767-7630

☐ OTHERS:

Contractor must incorporate railroad construction inspection into anticipated construction schedule.

☑ Not Required
☐ Required. Contact Information for Construction Inspection:

III. CONSTRUCTION WORK TO BE PERFORMED BY THE RAILROAD

☐ Required.
☑ Not Required

Railroad Point of Contact: _____

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

IV. RAILROAD INSURANCE REQUIREMENTS

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

Insurance policies and corresponding certificates of insurance must be issued by the contractor on behalf of the Railroad. Separate insurance policies and certificates are required when more than one Railroad Company is operating on the same right of way, or when several Railroad Companies are involved and operate on their own separate right of ways.

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

Escalated Limits

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

Railroad Protective Liability Limits

☐ Not Required	
☑ Non - Bridge/Typical Maintenance Projects. Includes repairs to overpass/underpass and culvert structures	$2,000,000 / $6,000,000
☐ Bridge Structure Projects. Includes new construction or replacement of overpass/ underpass structures	$5,000,000 / $10,000,000
☐ Other: _____	

V. CONTRACTOR'S RIGHT OF ENTRY (CROE)

☐ Not Required
☑ Required: UPRR Maintenance Consent Letter. TxDOT to assist
☐ Required: TxDOT to assist in obtaining the UPRR CROE
☐ Required: Contractor to obtain
- ☐ BNSF: _____
  https://bnsf.railpermitting.com
- ☐ CPKCR
  https://jllrpg.360works.com/fmi/webd/rpo_web_kcs.fmp12
- ☐ Other Railroads: _____

To view previously approved CROE templates agreed upon between the State and Railroad, see: https://www.txdot.gov/business/resources/railroad-highway-crossing/sample-right-of-entry-agreements.html

Approved CROE templates are not to be modified by the Contractor.

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

VI. RAILROAD COORDINATION MEETING

A Railroad Coordination Meeting is required. See item 5, Article 8.1, of the Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges Manual for more details.

VII. RAILROAD SAFETY ORIENTATION

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

UPRR, BNSF, CPKCR will not accept on-track safety training certificates from other Railroads. Refer to each Railroad's specific contractor right of entry for training information.

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

VIII. SUBCONTRACTORS

Contractor shall not subcontract work without written consent of TxDOT. Subcontractors are subject to the same insurance requirements as the Prime Contractor.

IX. EMERGENCY NOTIFICATION

In Case of Railroad Emergency

Call: UPRR
Railroad Emergency Line at: 817-821-6092
Location: DOT Multi locs
RR Milepost: Multi locs
Subdivision: Midlothian

RRD Review Only
Initials: JLL
Date: 11/3/2023

Texas Department of Transportation — Rail Division

RAILROAD SCOPE OF WORK
PROJECT SPECIFIC DETAILS

FILE: rr-scope-of-work.pdf		DN: TxDOT	CK:	DW:		CK:	
© TxDOT June 2014		CONT	SECT	JOB		HIGHWAY	
REVISIONS	6/2023	0172	01	055		287 P	
		DIST	COUNTY			SHEET NO.	
		02	Tarrant			80	

STORMWATER POLLUTION PRVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with TxDOT policy for projects disturbing less than 1 acre of soil, and not part of a larger common plan of development.

This SWP3 is consistent with requirements specified in applicable stormwater plans, and the project's environmental permits, issues, and commitments (EPICs).

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

0172-01-055

1.2 PROJECT LIMITS:

From: E ROSEDALE ST.

To: MILLER AVE.

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 32.731513 ,(Long) -97.303147

END: (Lat) 32.675620 ,(Long) -97.263450

1.4 TOTAL PROJECT AREA (Acres): 43.7

1.5 TOTAL AREA TO BE DISTURBED (Acres): 0

1.6 NATURE OF CONSTRUCTION ACTIVITY:

5.25 Mill & Overlay, Full Depth Repair, Upgrade Loop Detection, Curb Repair, Cleaning & Sealing brg jnts, Pavement mrkngs, Cleaning drng inlets

1.7 MAJOR SOIL TYPES:

Soil Type	Description
N/A	N/A

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

☐ PSLs determined during preconstruction meeting
☐ PSLs determined during construction
☒ No PSLs planned for construction

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.3.)

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

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

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

X Development of plans and specifications
X Perform SWP3 inspections
X Maintain SWP3 records and update to reflect daily operations
☐ Other: _____
☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

X Day To Day Operational Control
X Maintain schedule of major construction activities
X Install, maintain and modify BMPs
☐ Other: _____
☐ Other: _____
☐ Other: _____

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			81
STATE	STATE DIST.	COUNTY	
TEXAS	STATE DIST.	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0172	01	055,ETC	BU 287P

STORMWATER POLLUTION PRVENTION 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

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
N/A	N/A	N/A

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: _____

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
N/A	N/A	N/A

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:

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 2.3 of this SWP3 .

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 2.3 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3) (Less Than 1 Acre)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			82
STATE	STATE DIST.	COUNTY	
TEXAS		TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0172	01	055,ETC	BU 287P

DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

☒ No Action Required ☐ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000

2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.

3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.

4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP= _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.

2.

3.

4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

BMP: Best Management Practice	SPCC: Spill Prevention Control and Countermeasure
CGP: Construction General Permit	SW3P: Storm Water Pollution Prevention Plan
DSHS: Texas Department of State Health Services	PCN: Pre-Construction Notification
FHWA: Federal Highway Administration	PSL: Project Specific Location
MOA: Memorandum of Agreement	TCEQ: Texas Commission on Environmental Quality
MOU: Memorandum of Understanding	TPDES: Texas Pollutant Discharge Elimination System
MS4: Municipal Separate Stormwater Sewer System	TPWD: Texas Parks and Wildlife Department
MBTA: Migratory Bird Treaty Act	TxDOT: Texas Department of Transportation
NOT: Notice of Termination	T&E: Threatened and Endangered Species
NWP: Nationwide Permit	USACE: U.S. Army Corps of Engineers
NOI: Notice of Intent	USFWS: U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Points, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:

- Dead or distressed vegetation (not identified as normal)
- Trash piles, drums, canister, barrels, etc.
- Undesirable smells or odors
- Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☒ No

If "No", then no further action is required.
If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☐ No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☐ No Action Required ☒ Required Action

Action No.

1. Lead was detected in Grey Paint over Green Paint on West and East Side Bridge Rails of Bridge: 02-220-0-0172-001
2. This project's proposed work should not disturb lead base material.
3.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation

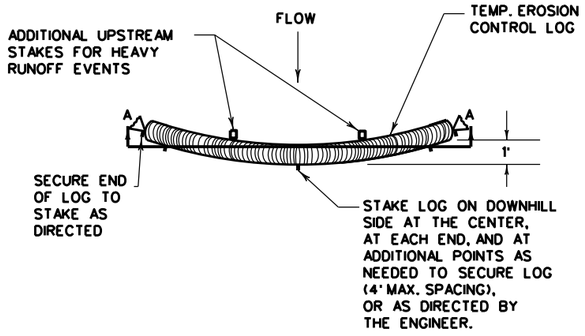
Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

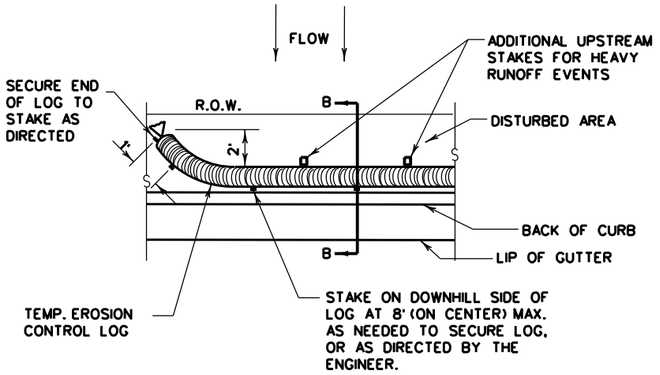
EPIC

FILE: epic.dgn		DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015		CONT	SECT	JOB	HIGHWAY	
REVISIONS		0172	01	055,ETC	BU 287P	
12-12-2011 ADDED NOTE SECTION IV.		DIST	COUNTY		SHEET NO.	
01-23-2015 SECTION II CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.		FTW	TARRANT		83	

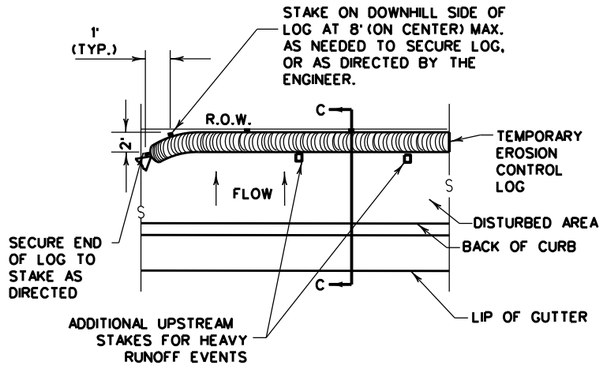
DATE:
FILE:



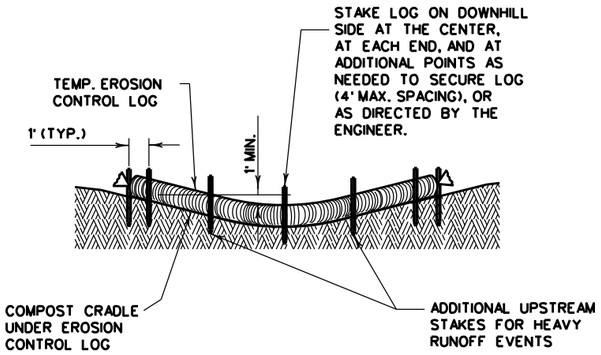
PLAN VIEW



PLAN VIEW



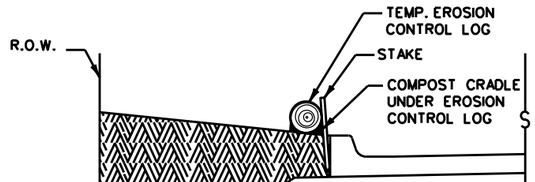
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

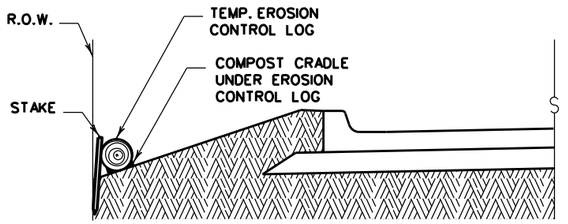
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

CL-BOC



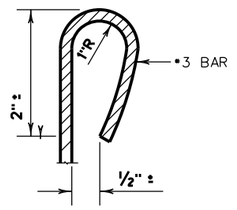
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET



REBAR STAKE DETAIL

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

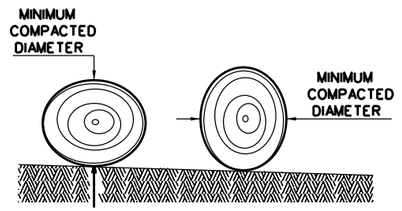
1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH 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.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation

Design Division Standard

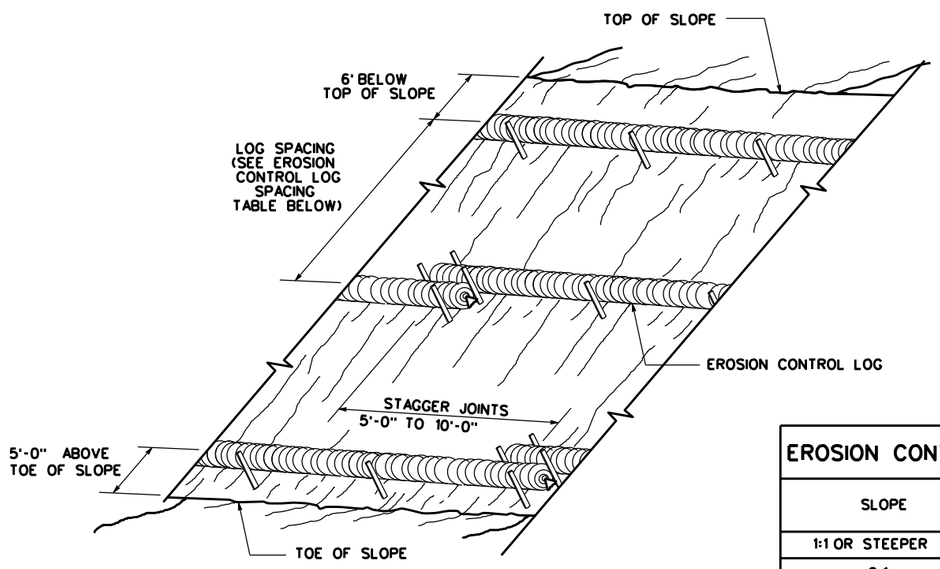
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

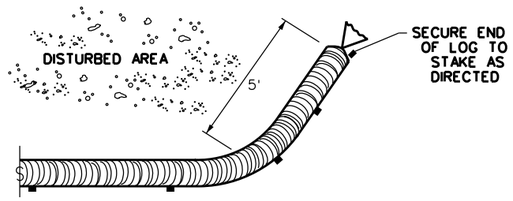
FILE: ec916	DW: TxDOT	CK: KM	DW: LS/PT	CK: LS		
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY		
REVISIONS	0172	01	055,ETC	BU 287P		
	DIST	COUNTY		SHEET NO.		
	FTW	TARRANT		84		

DATE:
FILE:



EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

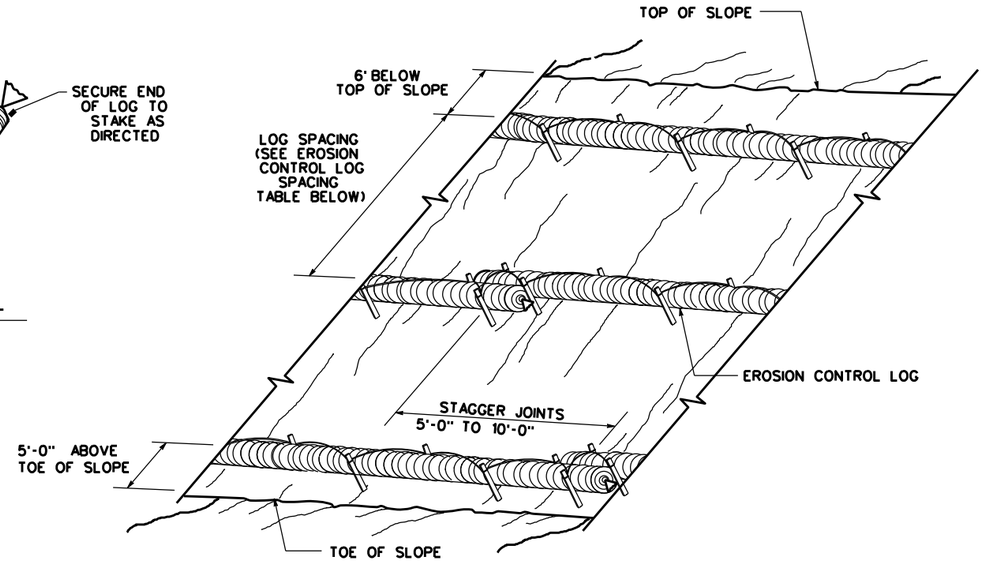
CL-SST



END SECTION RAP DETAIL

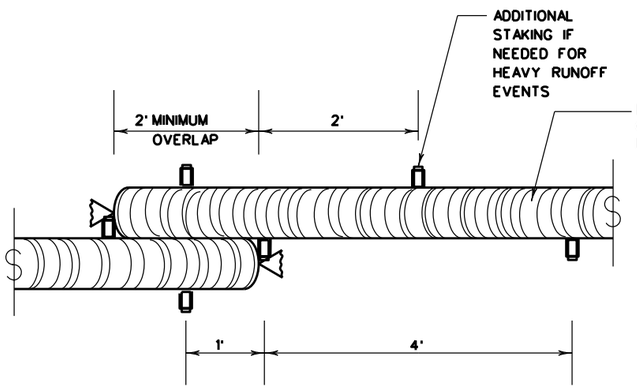
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

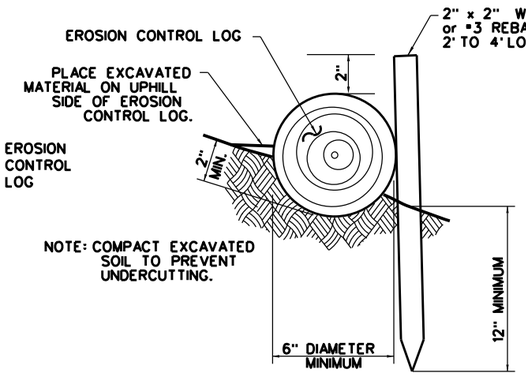
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER:
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

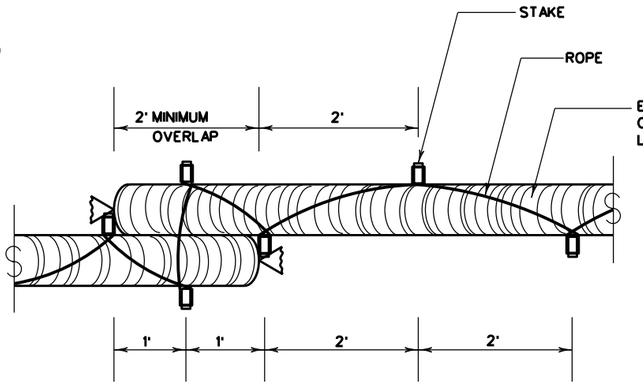


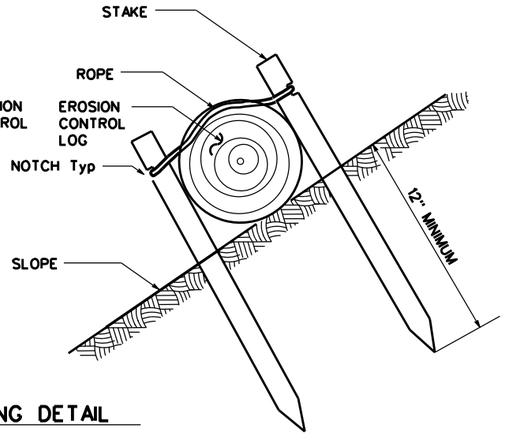


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

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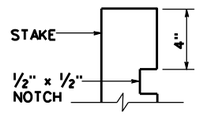


STAKE NOTCH DETAIL

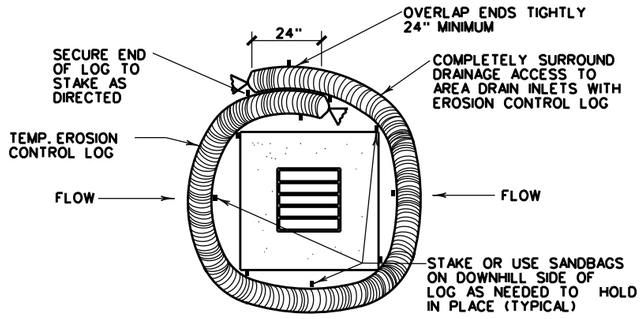
Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

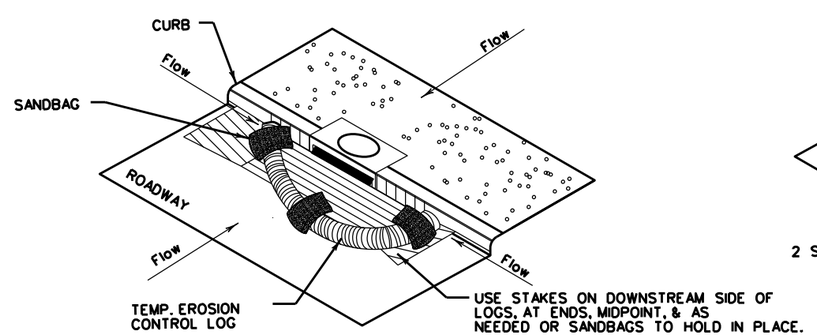
FILE: ec116		DN: TxDOT	CK: KM	DW: LS/PT		CK: LS
© TxDOT: JULY 2016		CONT	SECT	JOB		HIGHWAY
REVISIONS		0172	01	055,ETC		BU 287P
		DIST	COUNTY			SHEET NO.
		FTW	TARRANT			85

DATE:
FILE:



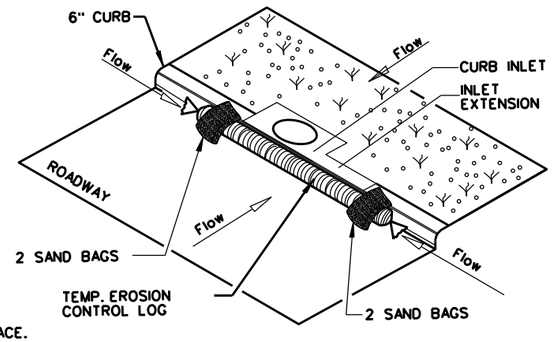
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

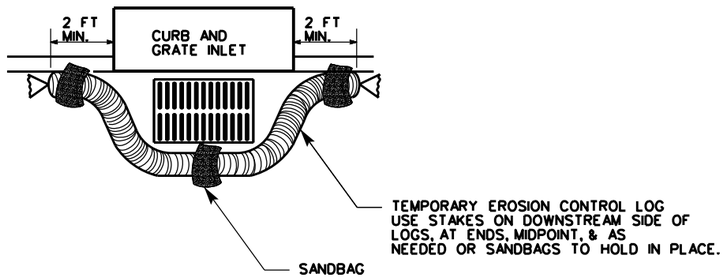
CL-CI



EROSION CONTROL LOG AT CURB INLET

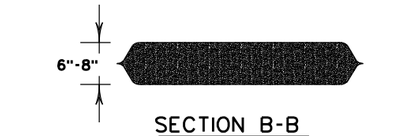
CL-CI

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.

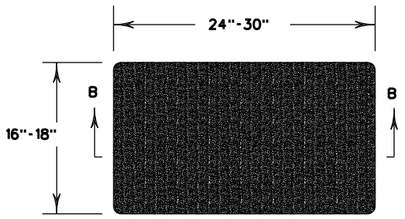


EROSION CONTROL LOG AT CURB & GRADE INLET

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

EC(9)-16

FILE: ec916		DN: TxDOT	CK: KM	DW: LS/PT	CK: LS		
© TxDOT: JULY 2016		CONT	SECT	JOB	HIGHWAY		
REVISIONS		0172	01	055,ETC	BU 287P		
		DIST	COUNTY		SHEET NO.		
		FTW	TARRANT		86		

FEDERAL AID PROJECT NO.			
F 2025(292), ETC			
CONT	SECT	JOB	HIGHWAY
0172	01	055, ETC	BU 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		87

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

F 2025(292), ETC

BU 287P
TARRANT COUNTY

FUNCTIONAL CLASS: PRINCIPAL ARTERIAL
DESIGN SPEED: MOEE

AADT 2022: 12,998
AADT 2042: 18,197

INDEX OF SHEETS

VOLUME 2
(CONTRACT CSJ 0172-01-055)

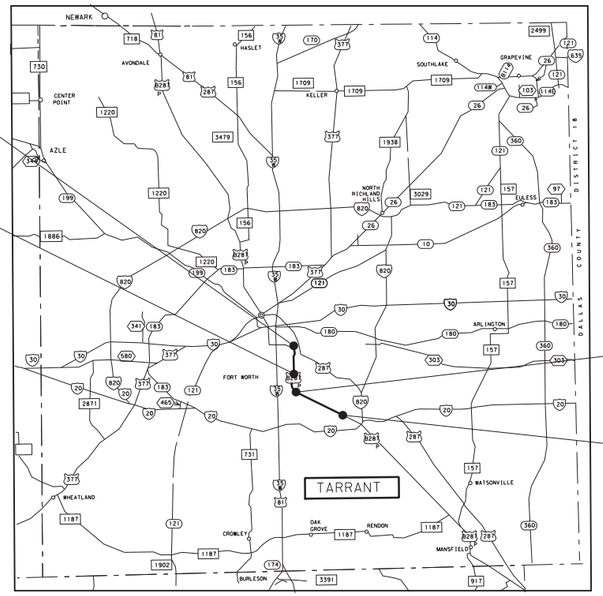
CSJ	HWY	LIMITS	ROADWAY LENGTH		BRIDGE LENGTH		PROJECT LENGTH	
			FEET	MILES	FEET	MILES	FEET	MILES
0172-01-055	BUS 287	E ROSEDALE ST TO MILLER AVE	27,524.64	5.213	228.00	0.043	27,751.68	5.256
0172-01-057	BUS 287	DIVETT AVE TO GLEN DRIVE	5751.14	1.089	0.00	0.00	5751.14	1.089

TOTAL PROJECT LENGTH = 6.345 MILES

FOR THE CONSTRUCTION OF Preventive Maintenance and Bicycle And Pedestrian ImprovementsWork
CONSISTING OF: Mill & Overlay, Full Depth Repair, Upgrade Loop Detection,
Curb Repair, Pavement mrkngs, Cleaning drng inlets.
ADA Remediation and New Construction on BU 287P in Fort Worth

BEGIN PROJECT
BEGIN CCSJ 0172-01-055
STA 188+12.90
REF MARKER 272+0.96
BEGIN MP 3.319

BEGIN PROJECT
BEGIN CSJ 0172-01-057
STA 292+48
REF MARKER 274+1.415
BEGIN MP 5.291



TARRANT COUNTY

END PROJECT
END CSJ 0172-01-057
STA 349+51
REF MARKER 276+0.512
END MP 6.368

END PROJECT
END CCSJ 0172-01-055
STA 466+00
REF MARKER 278+0.723
END MP 8.575

REGISTERED ACCESSIBILITY SPECIALIST (RAS) INSPECTION REQUIRED.
TDLR NO. EABPRJ: **TABS2024023742**

LETTING DATE:
CONTRACTOR:

WORK BEGAN:
WORK COMPLETED:
WORK ACCEPTED:
CHANGE ORDERS:

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER
9/11/2024

REQUIRED SIGNS SHALL BE IN ACCORDANCE WITH BC (1)- 21 THRU BC (12)- 21 AND THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1,2024 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT:
REQUIRED CONTRACT PROVISIONS, FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, OCTOBER 2023)

EQUATIONS: 196+98.2 BACK=197+30.9 AHEAD
RAILROAD:
UNION PACIFIC RAILROAD
DOT#765248A
FORT WORTH AND WESTERN RAILROAD
EXCEPTIONS: NONE
NO TDLR REQUIRED

Texas Department of Transportation

CORRECT FOR LETTING: 9/11/2024
Thomas S.T. Cochill
CONSULTANT PROJECT MANAGER

RECOMMENDED FOR LETTING: 9/27/2024
DocuSigned by:
7879B0B92E5D403...
DIRECTOR, TP&D

SUBM.: DocuSigned by: 9/12/2024
Maribel Rangel
E0D25AC6252D429...
AREA ENGINEER

APPROVED FOR LETTING: 9/30/2024
DocuSigned by:
David M Salazar, P.E.
B741E64FAD82411...
DISTRICT ENGINEER

INDEX OF SHEETS

VOLUME 1

VOLUME 2

STATE OF TEXAS
MARIBEL G. RANGEL
133275
LICENSED
PROFESSIONAL ENGINEER

* DENOTES STANDARD SHEETS

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

DocuSigned by:
Maribel Rangel
E0D25AC6252D429...

ENGINEER NAME, PE

9/12/2024
DATE

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

Δ DENOTES STANDARD SHEETS

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN ISSUED BY ME AND ARE APPLICABLE TO THIS PROJECT.

Thomas E.T. Cochill

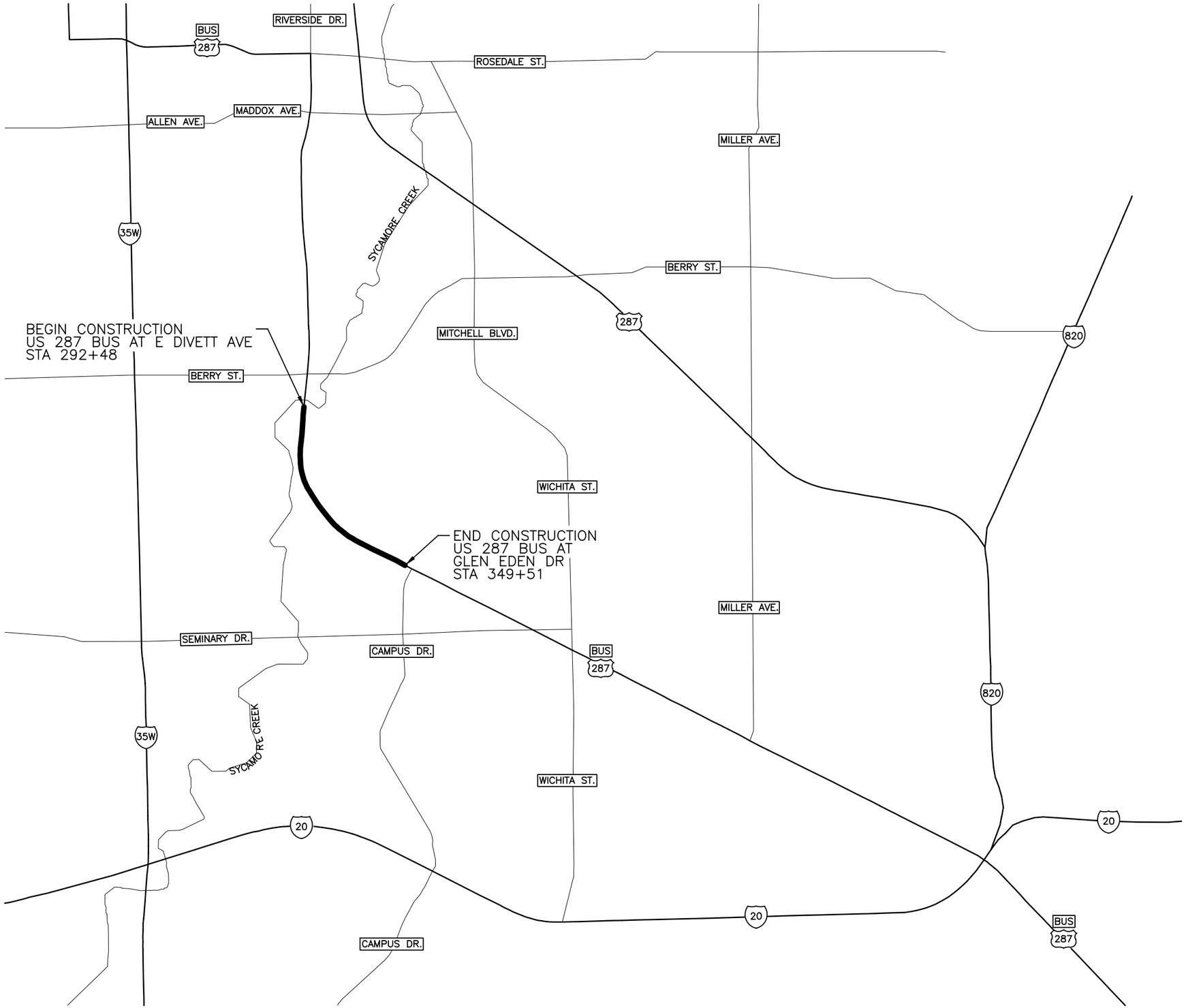
ENGINEER NAME, PE

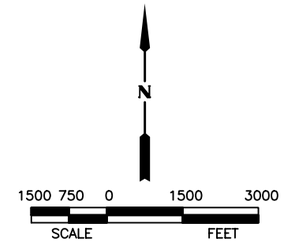
9/10/2024
DATE

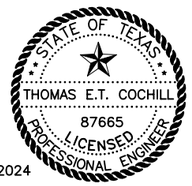
BU 287P
INDEX OF SHEETS

Texas Department of Transportation

CONT	SECT	JOB	HIGHWAY
0172	01	055, ETC	BUS 287P
DIST	COUNTY		SHEET NO.
FTW	TARRANT		88







8/29/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

PROJECT LAYOUT MAP

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		89

SHEET 1 OF 1

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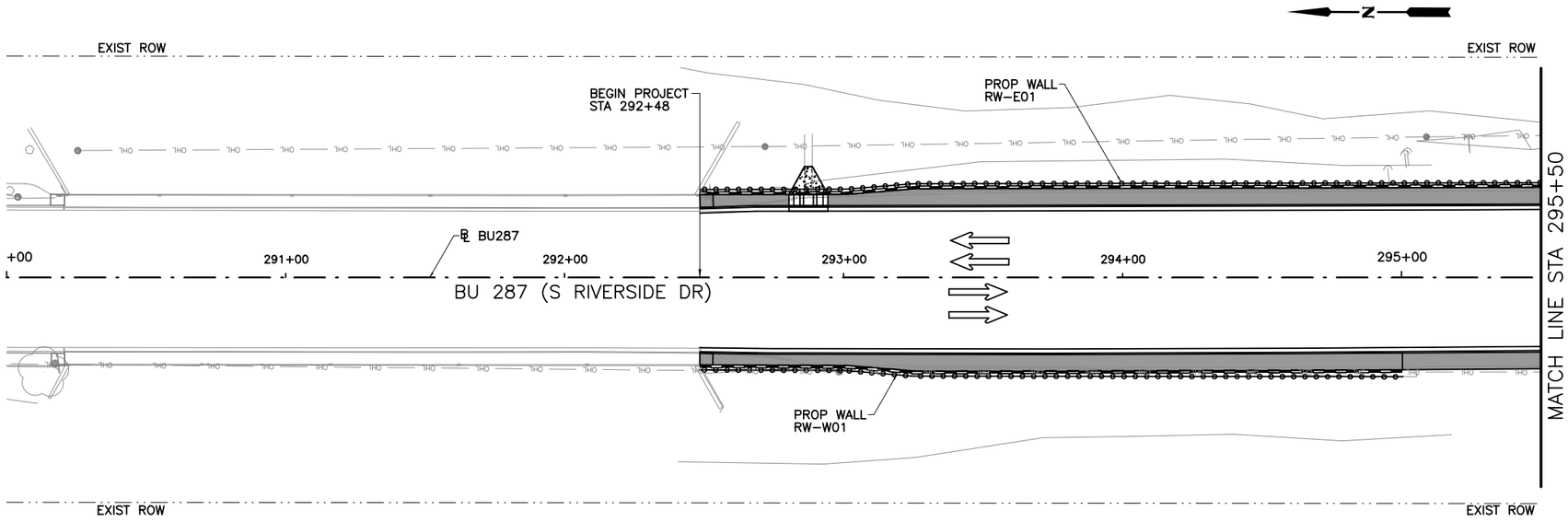

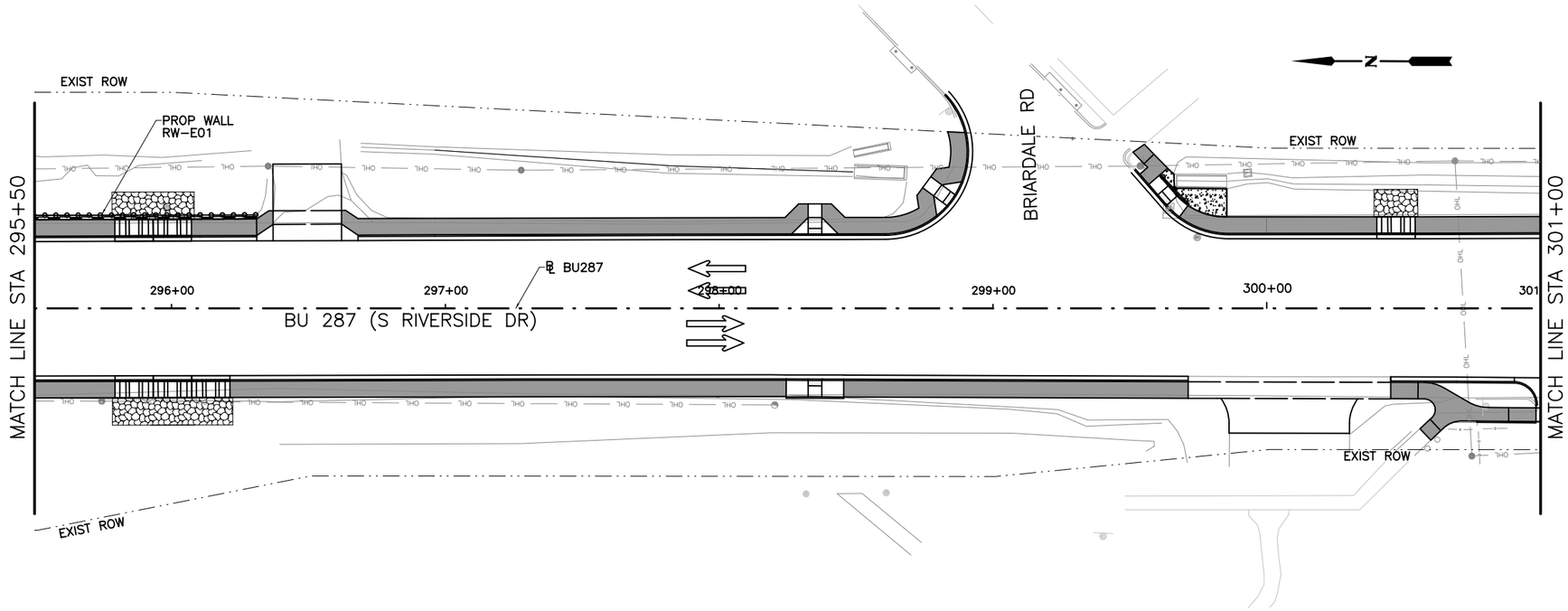

25 12.5 0 25 50
SCALE FEET

N

LEGEND

- EXIST ROW
- TRAFFIC ARROW
- PED RAIL
- WALL
- PROP SIDEWALK
- RIPRAP (4" CONC)
- STONE RIPRAP

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

8/29/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

PROJECT LAYOUT

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
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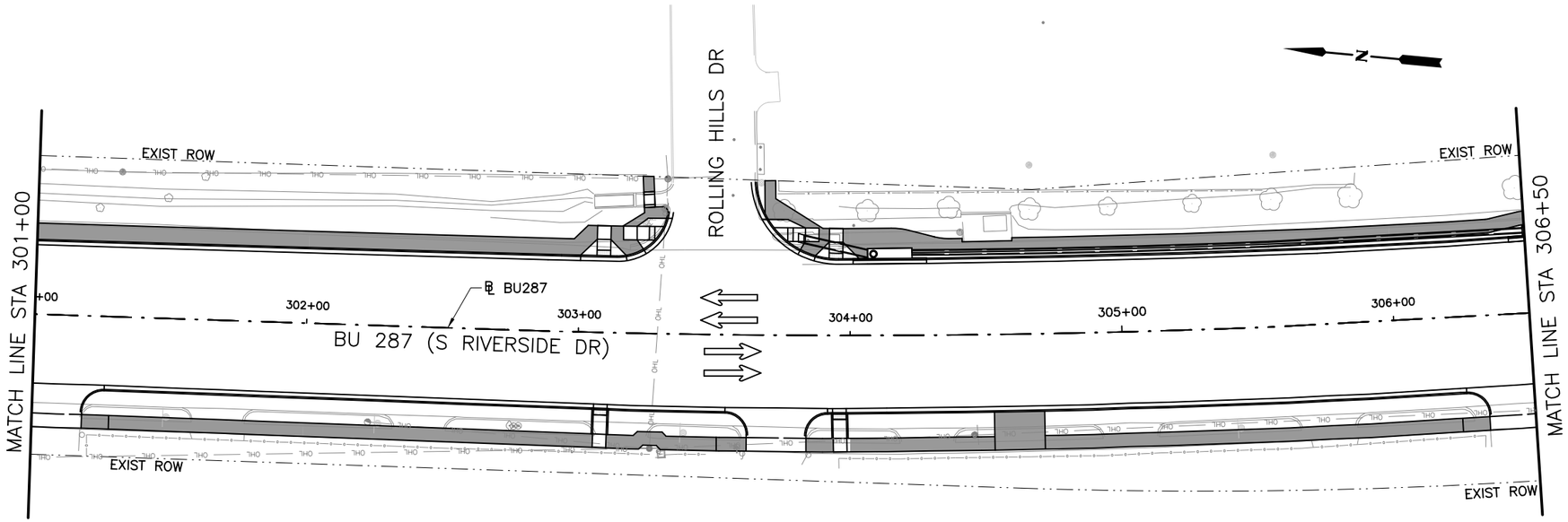
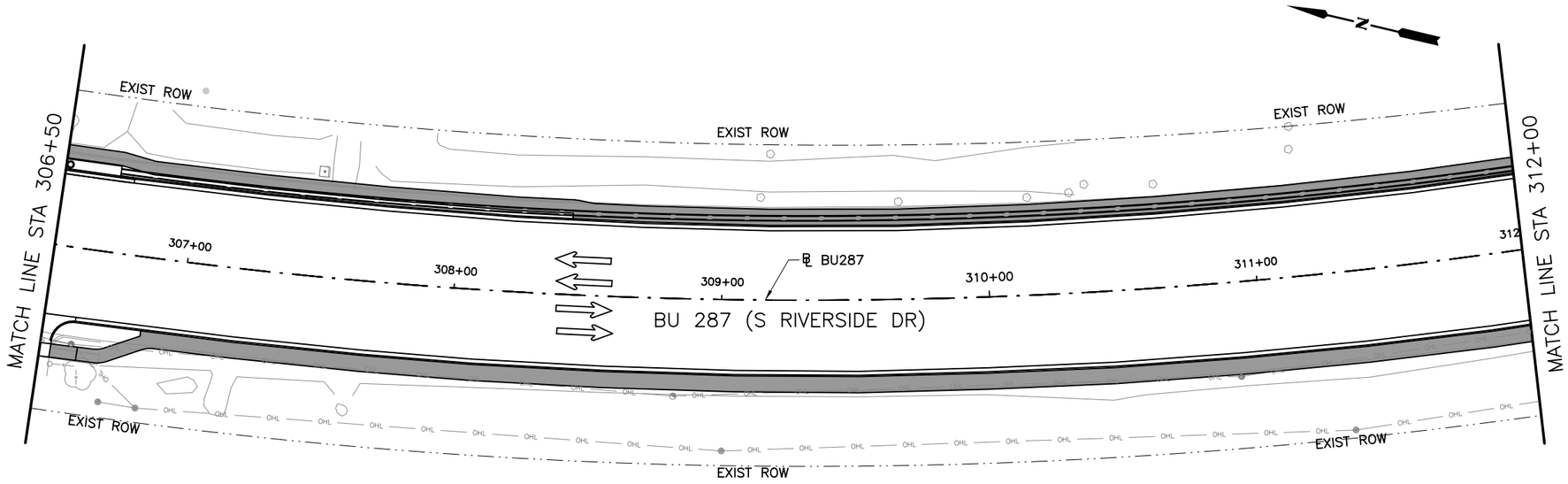
SHEET 1 OF 6





25 12.5 0 25 50
SCALE FEET

LEGEND
- EXIST ROW
- TRAFFIC ARROW
- PED RAIL
- WALL
- PROP SIDEWALK
- RIPRAP (4" CONC)
- STONE RIPRAP

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED PROFESSIONAL ENGINEER
9/9/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

PROJECT LAYOUT

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
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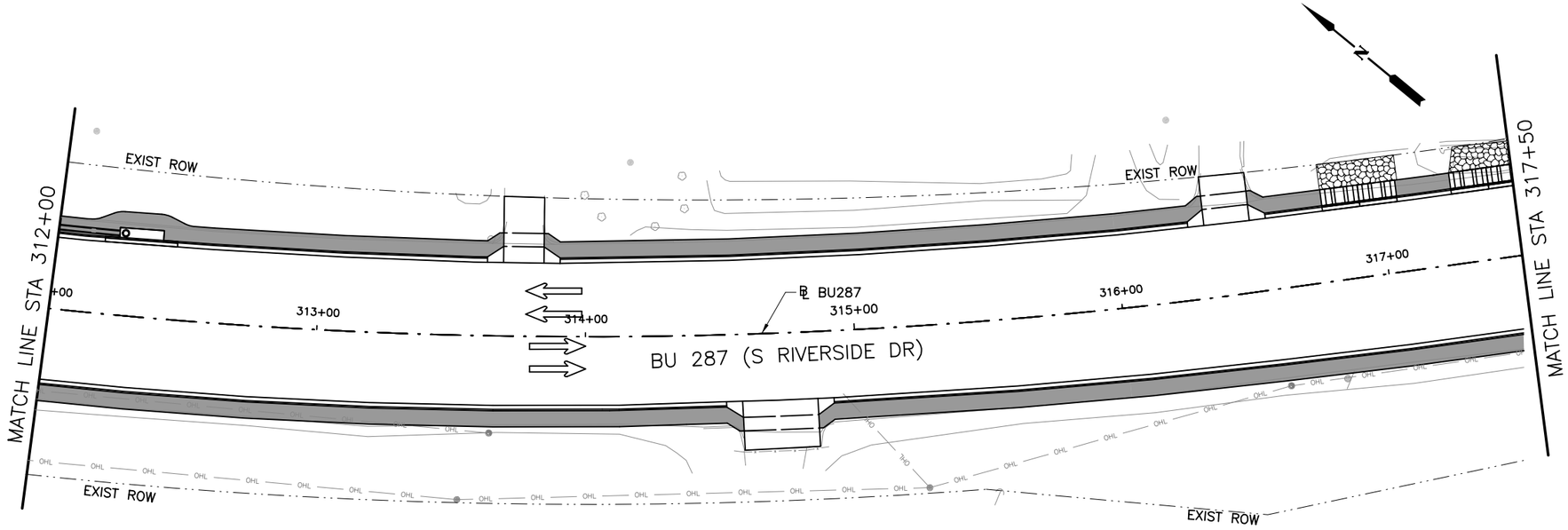
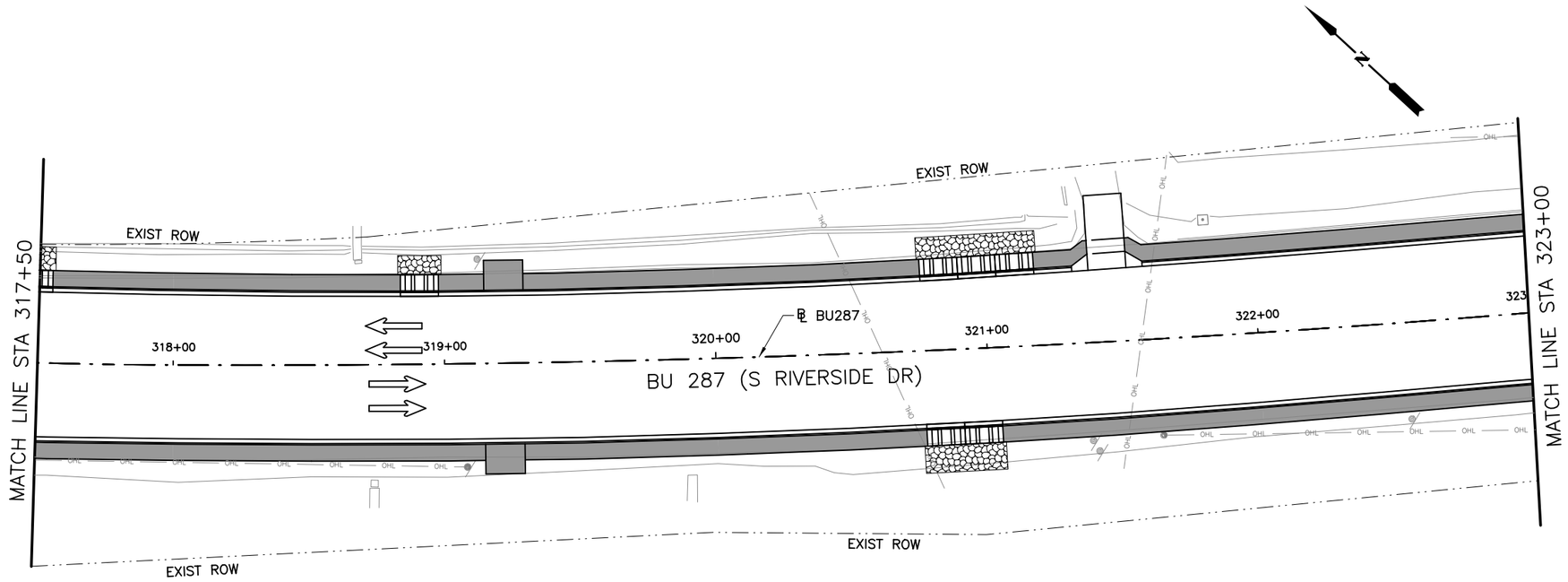
SHEET 2 OF 6





25 12.5 0 25 50
SCALE FEET

LEGEND
- EXIST ROW
- TRAFFIC ARROW
- PED RAIL
- WALL
- PROP SIDEWALK
- RIPRAP (4" CONC)
- STONE RIPRAP

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED PROFESSIONAL ENGINEER
8/29/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

PROJECT LAYOUT

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
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Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	92
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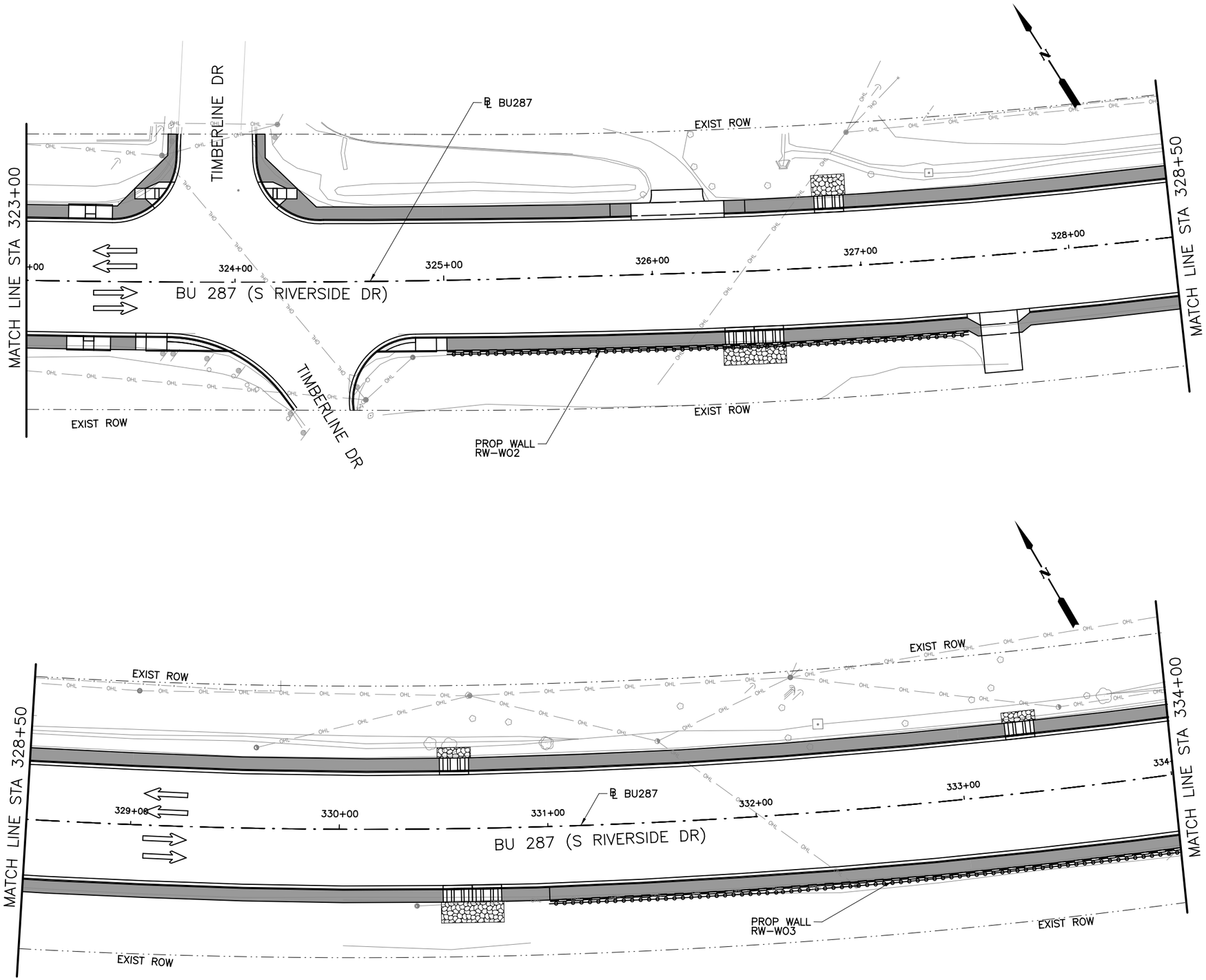
SHEET 3 OF 6



25 12.5 0 25 50
SCALE FEET

LEGEND

- EXIST ROW
- TRAFFIC ARROW
- PED RAIL
- WALL
- PROP SIDEWALK
- RIPRAP (4" CONC)
- STONE RIPRAP

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

9/9/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

PROJECT LAYOUT

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
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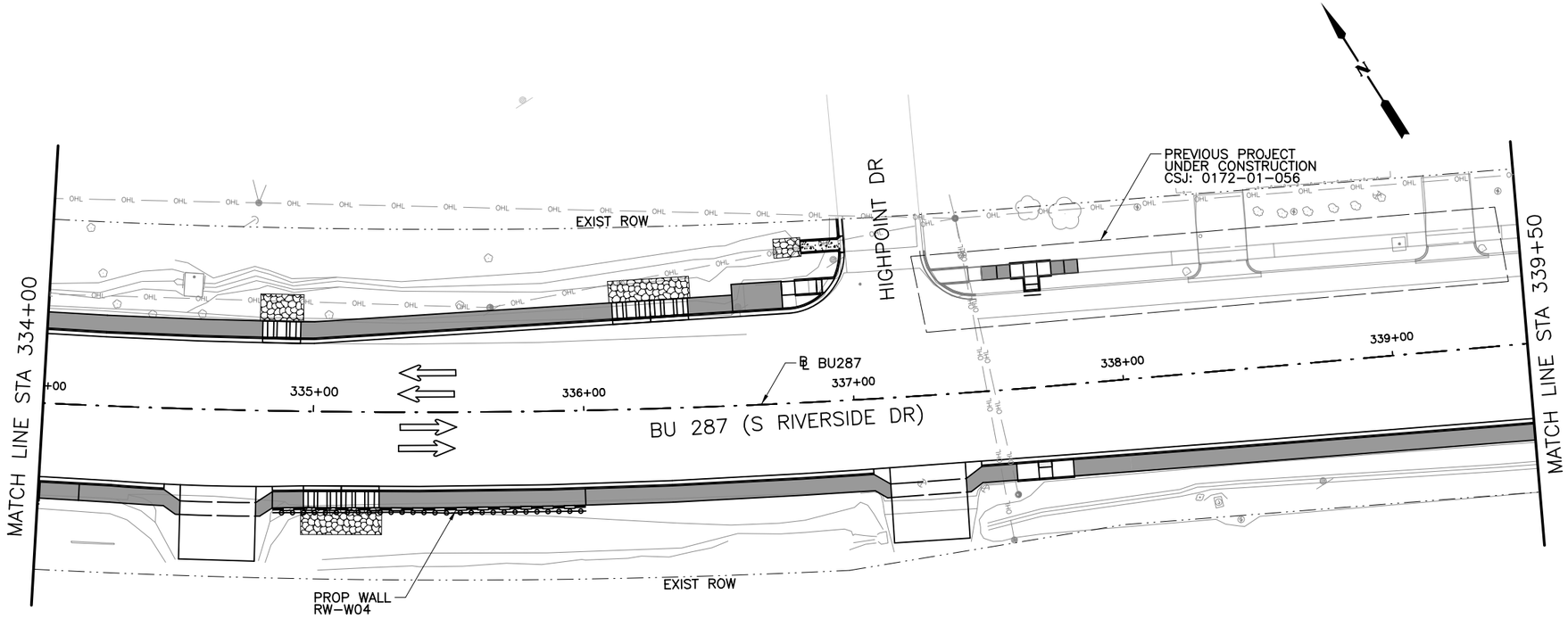
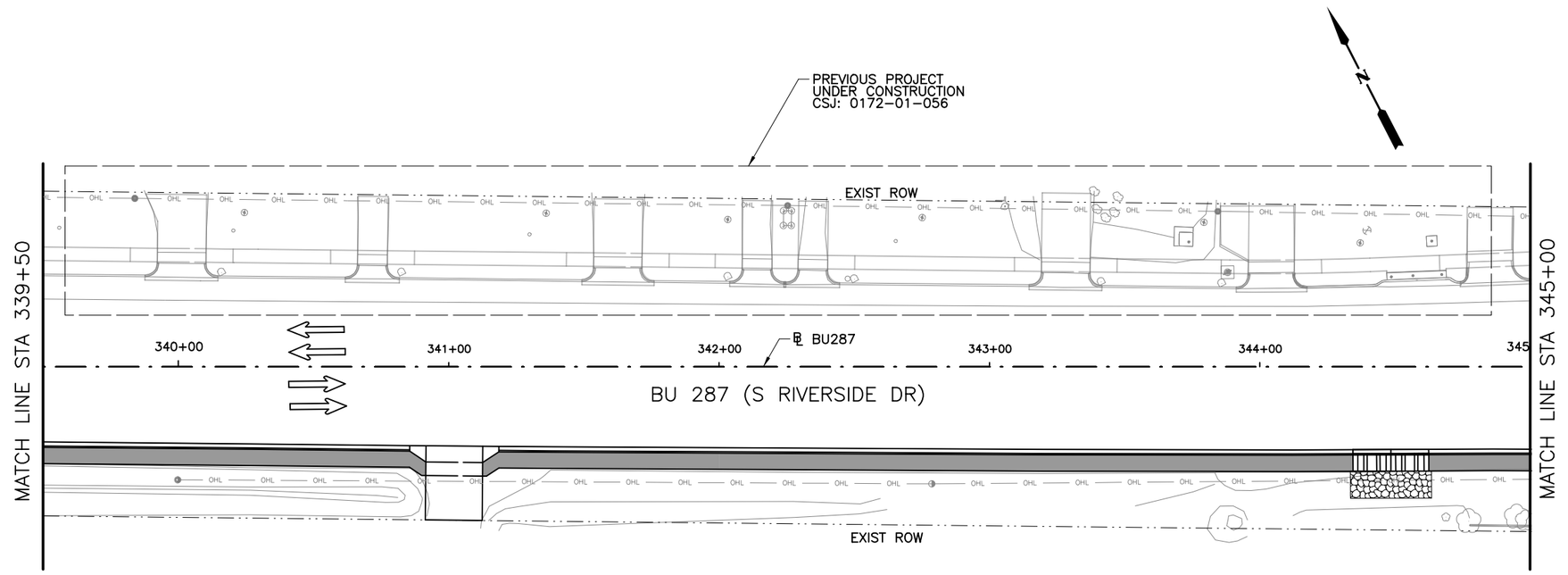
SHEET 4 OF 6





25 12.5 0 25 50
SCALE FEET

LEGEND
- EXIST ROW
- TRAFFIC ARROW
- PED RAIL
- WALL
- PROP SIDEWALK
- RIPRAP (4" CONC)
- STONE RIPRAP

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED PROFESSIONAL ENGINEER
8/29/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

 Texas Department of Transportation

FORT WORTH SIDEWALK IMPROVEMENTS

PROJECT LAYOUT

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	94

SHEET 5 OF 6

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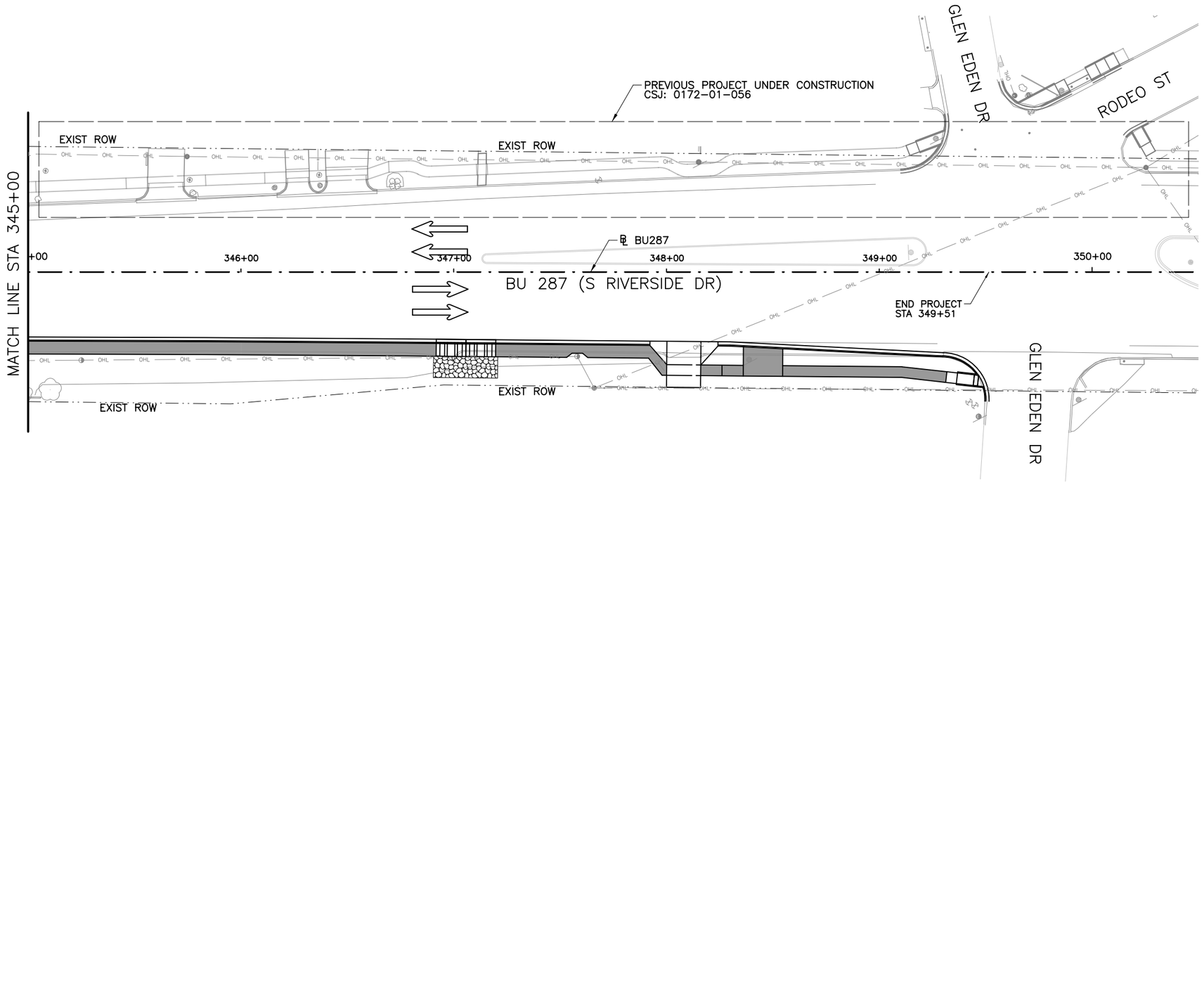


N

25 12.5 0 25 50
SCALE FEET

LEGEND

- EXIST ROW
- TRAFFIC ARROW
- PED RAIL
- WALL
- PROP SIDEWALK
- RIPRAP (4" CONC)
- STONE RIPRAP

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED PROFESSIONAL ENGINEER

8/29/2024

NO.	REVISION	BY	DATE

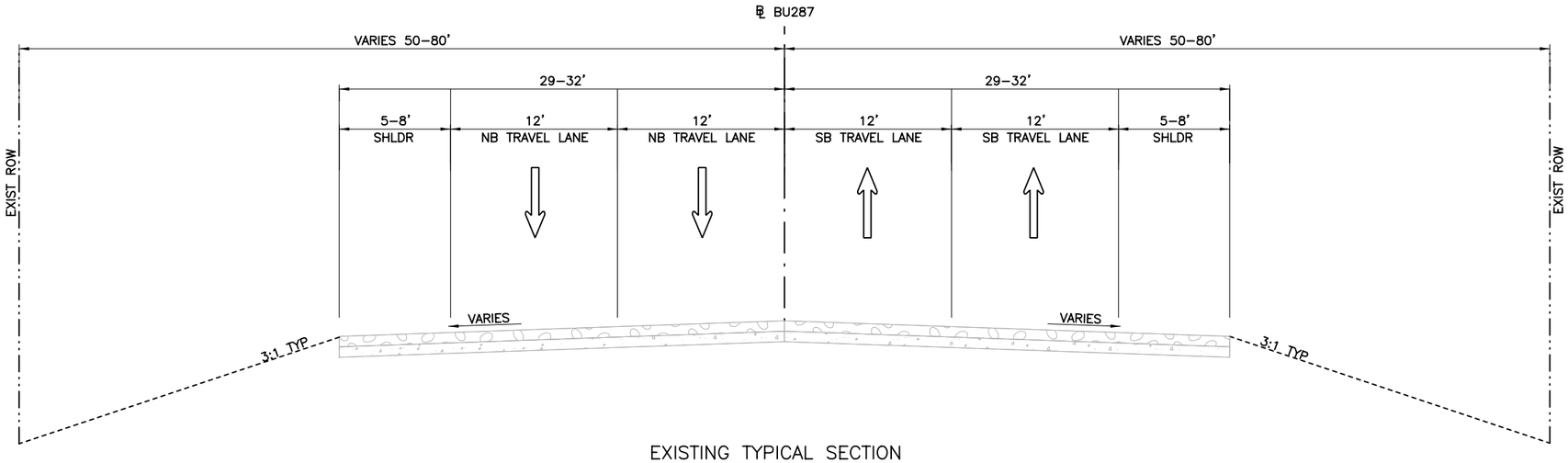
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

PROJECT LAYOUT

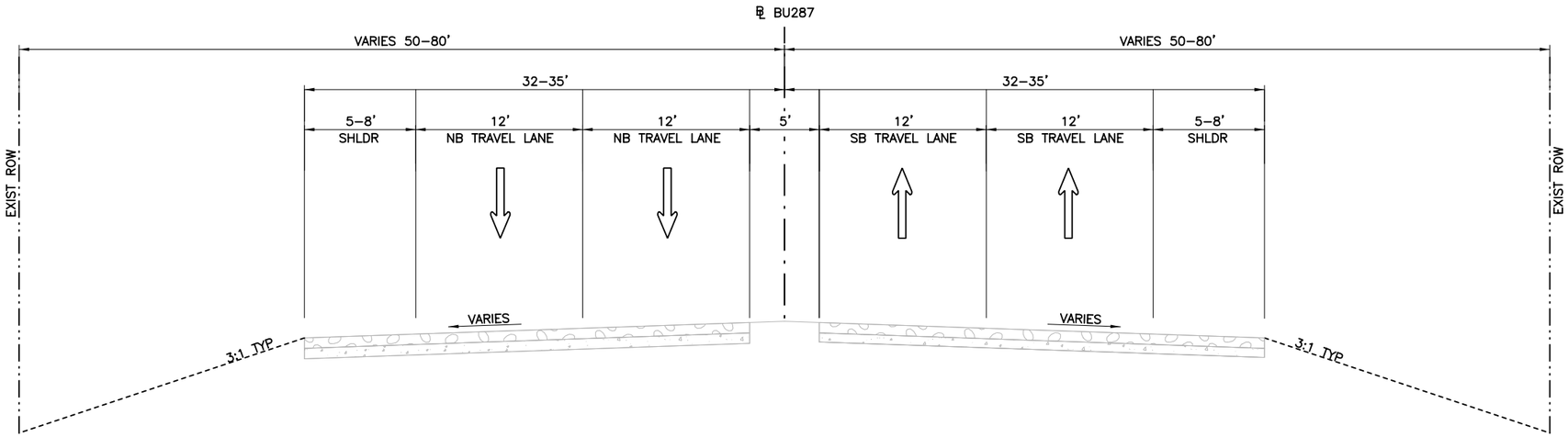
Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		95

SHEET 6 OF 6



EXISTING TYPICAL SECTION

WITHOUT RAISED MEDIAN AND CURB AND GUTTER
BEGIN PROJECT TO STA 300+50



EXISTING TYPICAL SECTION

WITHOUT RAISED MEDIAN
FROM STA 300+50 TO STA 349+50

LEGEND

- EXIST ROW
- EXIST GROUND
- EXIST 2–9.5" LIMESTONE TY C HMAC
- EXIST 0–9.5" CONCRETE
- PROP 4" SIDEWALK
- PROP CURB AND GUTTER

NOTES:

1. EXISTING PAVEMENT DEPTH AND MATERIAL ARE APPROXIMATE TAKING FROM RECORD DRAWINGS.
2. SEE ROADWAY SHEETS FOR ADDITIONAL MISCELLANEOUS SIDEWALK DETAILS.
3. SEE ROADWAY SHEETS FOR GRADING LIMITS.
4. STATION LIMITS SHOWN ARE APPROXIMATE. SEE PLAN SHEETS FOR ADDITIONAL INFORMATION.
5. REFER TO (MOD) CCCG (FTW) DETAILS FOR ADDITIONAL CURB AND GUTTER INFORMATION.
6. VOLUME I PLAN SET ℄ = VOL II PLAN SET ℄

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER
9/9/2024

NO.	REVISION	BY	DATE

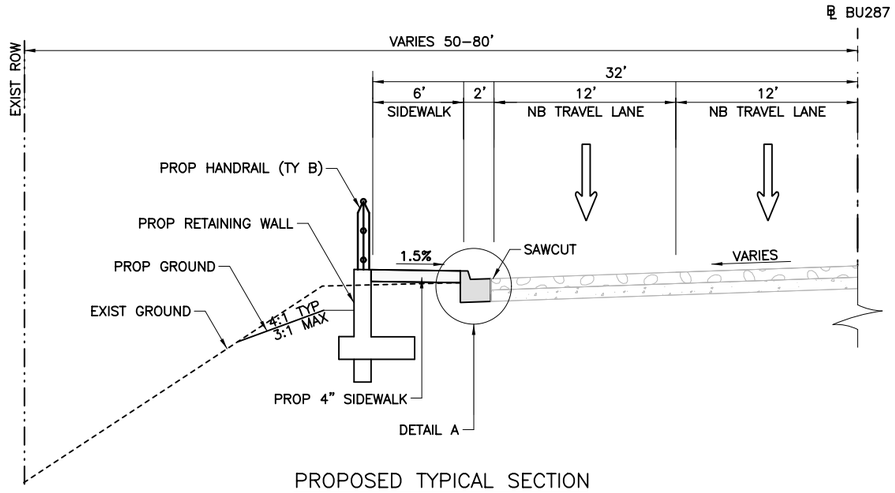
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

TYPICAL SECTIONS

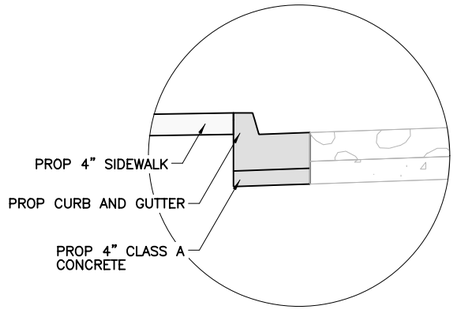
Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	96

SHEET 1 OF 5



PROPOSED TYPICAL SECTION

BEGIN PROJECT TO STA 296+25

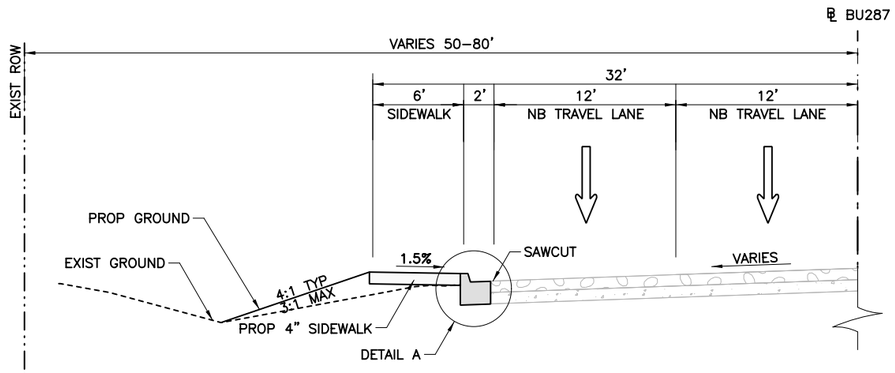


DETAIL A

N.T.S.

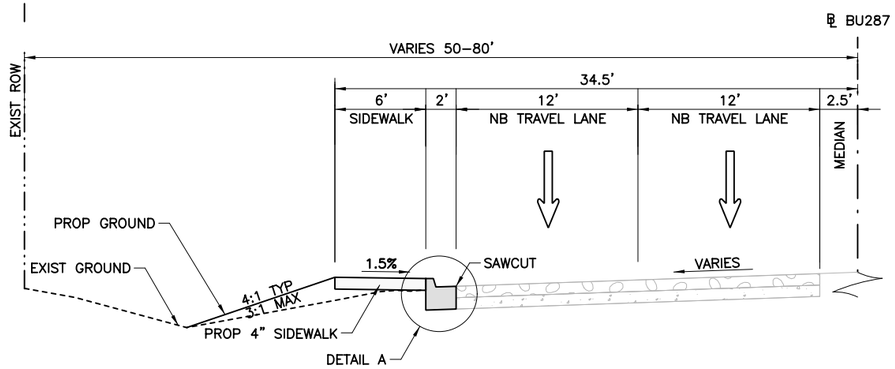
LEGEND

- EXIST ROW
- EXIST GROUND
- EXIST 2–9.5" LIMESTONE TY C HMAC
- EXIST 0–9.5" CONCRETE
- PROP 4" SIDEWALK
- PROP CURB AND GUTTER



PROPOSED TYPICAL SECTION

STA 296+25 TO STA 300+50



PROPOSED TYPICAL SECTION

STA 300+50 TO STA 303+50
STA 316+50 TO STA 321+50
STA 324+50 TO END PROJECT

NOTES:

1. EXISTING PAVEMENT DEPTH AND MATERIAL ARE APPROXIMATE TAKING FROM RECORD DRAWINGS.
2. SEE ROADWAY SHEETS FOR ADDITIONAL MISCELLANEOUS SIDEWALK DETAILS.
3. SEE ROADWAY SHEETS FOR GRADING LIMITS.
4. STATION LIMITS SHOWN ARE APPROXIMATE. SEE PLAN SHEETS FOR ADDITIONAL INFORMATION.
5. REFER TO (MOD) CCCG (FTW) DETAILS FOR ADDITIONAL CURB AND GUTTER INFORMATION.
6. VOLUME I PLAN SET ℄ = VOL II PLAN SET ℄

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

9/9/2024

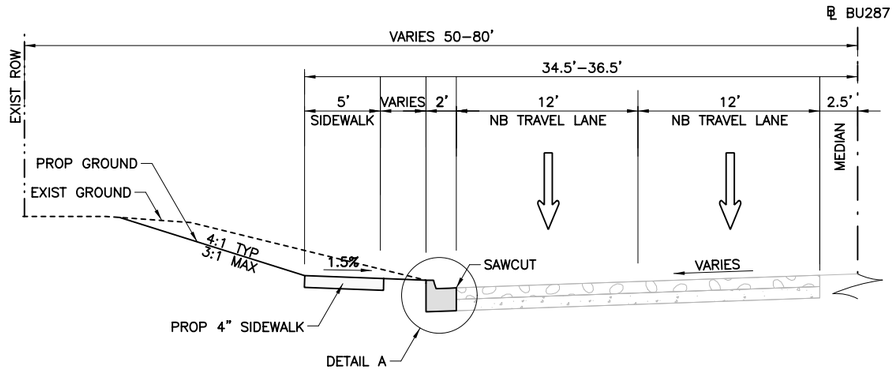
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

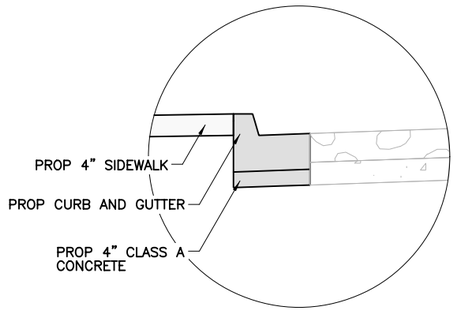
TYPICAL SECTIONS

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	97



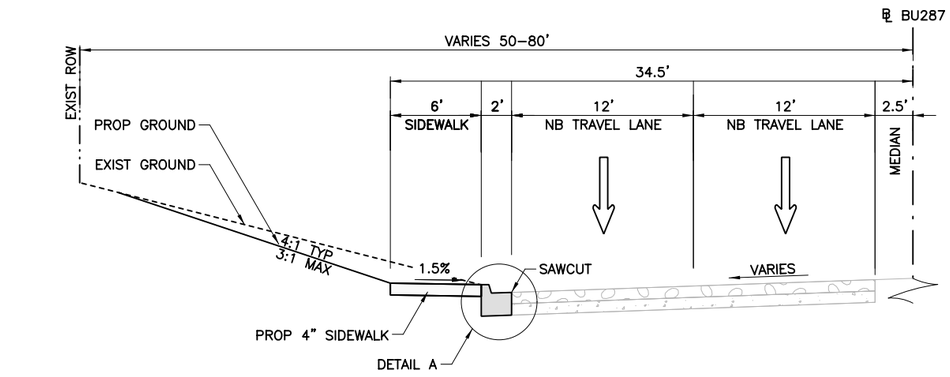
PROPOSED TYPICAL SECTION

STA 303+50 TO STA 308+50



DETAIL A

N.T.S.

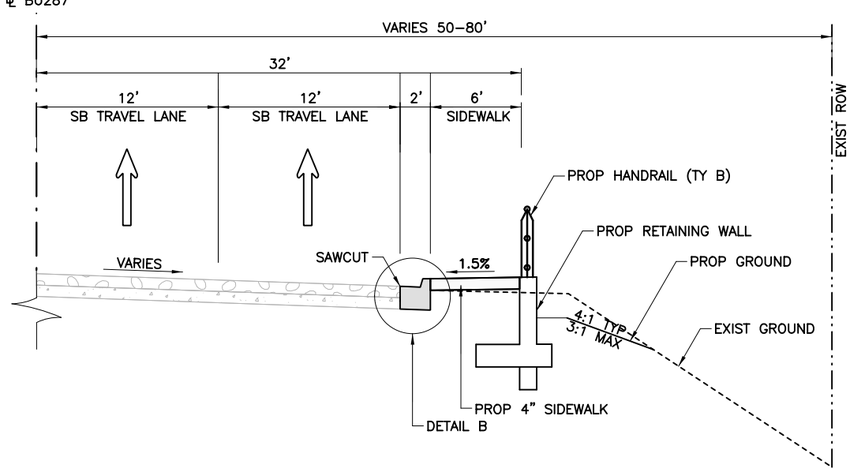


PROPOSED TYPICAL SECTION

STA 308+50 TO STA 316+50
STA 321+50 TO STA 324+50

DETAIL B

N.T.S.



PROPOSED TYPICAL SECTION

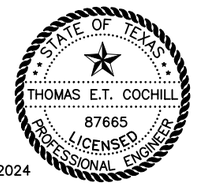
BEGIN PROJECT TO STA 295+00

LEGEND

- EXIST ROW
- EXIST GROUND
- EXIST 2–9.5" LIMESTONE TY C HMAC
- EXIST 0–9.5" CONCRETE
- PROP 4" SIDEWALK
- PROP CURB AND GUTTER

NOTES:

1. EXISTING PAVEMENT DEPTH AND MATERIAL ARE APPROXIMATE TAKING FROM RECORD DRAWINGS.
2. SEE ROADWAY SHEETS FOR ADDITIONAL MISCELLANEOUS SIDEWALK DETAILS.
3. SEE ROADWAY SHEETS FOR GRADING LIMITS.
4. STATION LIMITS SHOWN ARE APPROXIMATE. SEE PLAN SHEETS FOR ADDITIONAL INFORMATION.
5. REFER TO (MOD) CCCG (FTW) DETAILS FOR ADDITIONAL CURB AND GUTTER INFORMATION.
6. VOLUME I PLAN SET ℄ = VOL II PLAN SET ℄



9/9/2024

NO.	REVISION	BY	DATE

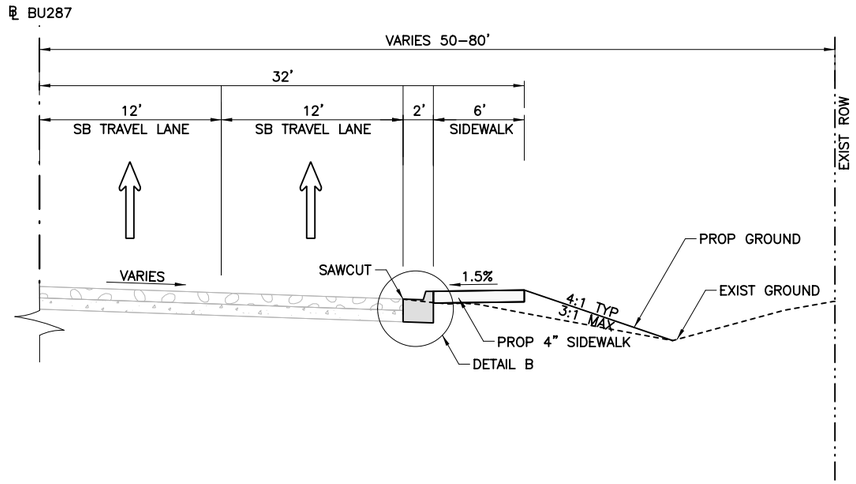
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

TYPICAL SECTIONS

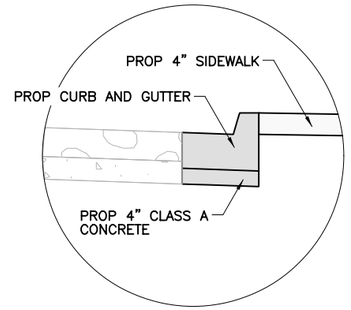
Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		98

SHEET 3 OF 5



PROPOSED TYPICAL SECTION

STA 295+00 TO STA 300+50



DETAIL B

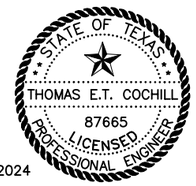
N.T.S.

LEGEND

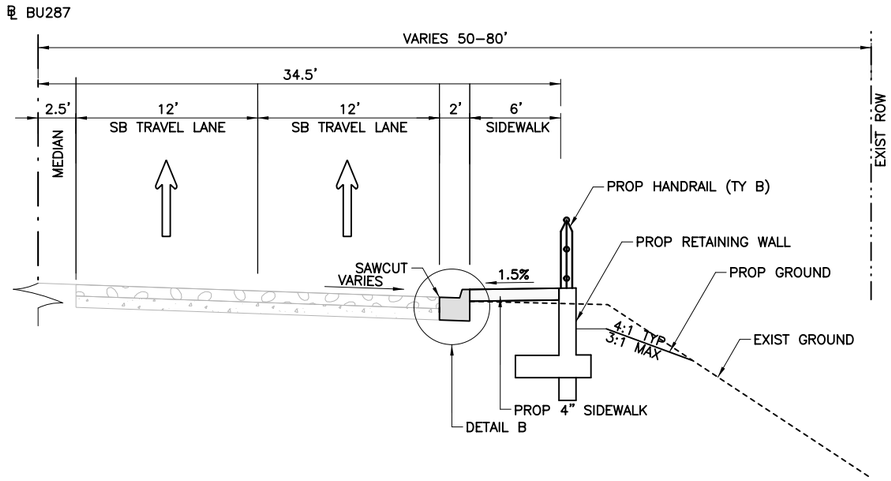
- EXIST ROW
- EXIST GROUND
- EXIST 2–9.5" LIMESTONE TY C HMAC
- EXIST 0–9.5" CONCRETE
- PROP 4" SIDEWALK
- PROP CURB AND GUTTER

NOTES:

1. EXISTING PAVEMENT DEPTH AND MATERIAL ARE APPROXIMATE TAKING FROM RECORD DRAWINGS.
2. SEE ROADWAY SHEETS FOR ADDITIONAL MISCELLANEOUS SIDEWALK DETAILS.
3. SEE ROADWAY SHEETS FOR GRADING LIMITS.
4. STATION LIMITS SHOWN ARE APPROXIMATE. SEE PLAN SHEETS FOR ADDITIONAL INFORMATION.
5. REFER TO (MOD) CCCG (FTW) DETAILS FOR ADDITIONAL CURB AND GUTTER INFORMATION.
6. VOLUME I PLAN SET ℄ = VOL II PLAN SET ℄



9/9/2024



PROPOSED TYPICAL SECTION

STA 325+00 TO STA 327+50
STA 331+00 TO STA 336+00

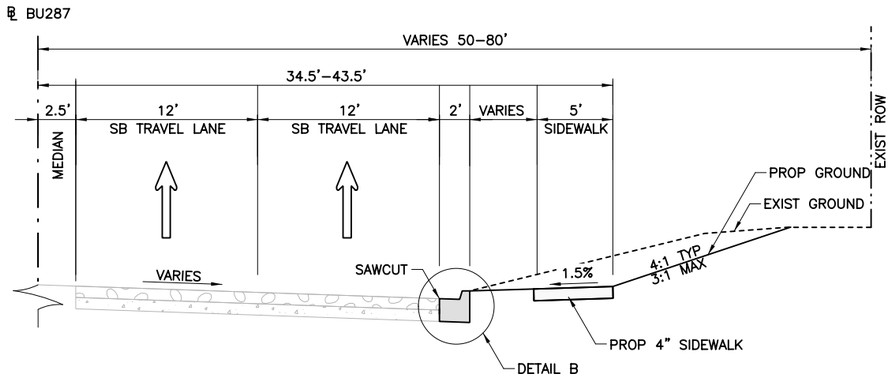
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

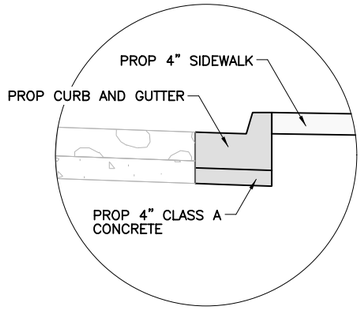
TYPICAL SECTIONS

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		99



PROPOSED TYPICAL SECTION

STA 300+50 TO STA 307+00
STA 348+00 TO END PROJECT



DETAIL B

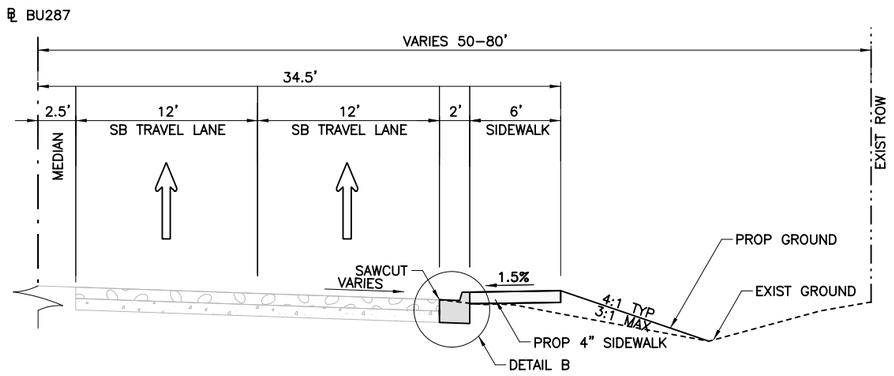
N.T.S.

LEGEND

- EXIST ROW
- EXIST GROUND
- EXIST 2–9.5" LIMESTONE TY C HMAC
- EXIST 0–9.5" CONCRETE
- PROP 4" SIDEWALK
- PROP CURB AND GUTTER

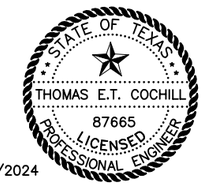
NOTES:

1. EXISTING PAVEMENT DEPTH AND MATERIAL ARE APPROXIMATE TAKING FROM RECORD DRAWINGS.
2. SEE ROADWAY SHEETS FOR ADDITIONAL MISCELLANEOUS SIDEWALK DETAILS.
3. SEE ROADWAY SHEETS FOR GRADING LIMITS.
4. STATION LIMITS SHOWN ARE APPROXIMATE. SEE PLAN SHEETS FOR ADDITIONAL INFORMATION.
5. REFER TO (MOD) CCCG (FTW) DETAILS FOR ADDITIONAL CURB AND GUTTER INFORMATION.
6. VOLUME I PLAN SET ℄ = VOL II PLAN SET ℄



PROPOSED TYPICAL SECTION

STA 307+00 TO STA 325+00
STA 327+50 TO STA 331+00
STA 336+00 TO STA 348+00



9/9/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

TYPICAL SECTIONS

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV						
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	100

SHEET 5 OF 5

ROADWAY SUMMARY

SHEET NO.	LOCATION	0341 7044① D-GR HMA TY-D SAC-A PG64-22	0420 7002② CL A CONC (MISC)	0432 7002 RIPRAP (CONC)(5 IN)	0432 7012 RIPRAP (CONC)(FLUME)	0432 7029 RIPRAP (STONE COMMON)(DRY)(6 IN)	0450 7059 RAIL (HANDRAIL) (TY B)	0471 7003 GRATE & FRAME	479 7001 ADJUSTING MANHOLES	0529 7007 CONC CURB (MONO) (TY II)	0529 7009 CONC CURB & GUTTER (TY II)	0530 7006 DRIVEWAYS (CONC)	0531 7001 CONC SIDEWALKS (4")	0531 7015 CURB RAMPS (TY 1)	0531 7016 CURB RAMPS (TY 2)	0531 7017 CURB RAMPS (TY 3)	0531 7020 CURB RAMPS (TY 7)	0531 7021 CURB RAMPS (TY 10)	0531 7025 CONC SIDEWALKS (SPECIAL)
	CSJ 0172-01-057	TON	CY	CY	CY	CY	LF	EA	EA	LF	LF	SY	SY	SY	SY	SY	SY	SY	SY
1	STA 292+00 TO STA 294+00		7	1				3			289		168						6
2	STA 294+00 TO STA 296+00		9			8		10			359		237						27
3	STA 296+00 TO STA 298+00		9			6		5			371	73	231						19
4	STA 298+00 TO STA 300+00		8	2			15		1		319	33	201	28	33				
5	STA 300+00 TO STA 302+00		10			3		3		22	386	97	214						9
6	STA 302+00 TO STA 304+00		8					1	1		311	35	204	48			31		3
7	STA 304+00 TO STA 306+00		10								398		248	1					
8	STA 306+00 TO STA 308+00		10								398	34	225						
9	STA 308+00 TO STA 310+00		10								400		262						
10	STA 310+00 TO STA 312+00		10								400		267						
11	STA 312+00 TO STA 314+00		10								400	39	261						
12	STA 314+00 TO STA 316+00		10								400	51	248						
13	STA 316+00 TO STA 318+00		8			9		12			343	31	218						36
14	STA 318+00 TO STA 320+00		10			2		3			386		274						9
15	STA 320+00 TO STA 322+00		8			12		15			330	41	210						45
16	STA 322+00 TO STA 323+00		5								200		133						
17	STA 323+00 TO STA 325+00		7								280		142		41		29	62	
18	STA 325+00 TO STA 327+00		9			9		9			358	43	207						27
19	STA 327+00 TO STA 329+00		10								400	55	255						
20	STA 329+00 TO STA 331+00		9			7		9			358		239						27
21	STA 331+00 TO STA 333+00		10								400		267						
22	STA 333+00 TO STA 334+00		5			1		3			186		124						9
23	STA 334+00 TO STA 336+00		9			8		9			358	81	219						27
24	STA 336+00 TO STA 338+00		6		1	6		6			259	81	153		20	14	13		18
25	STA 338+00 TO STA 340+00		5								200		133						
26	STA 340+00 TO STA 342+00		5								200	60	119						
27	STA 342+00 TO STA 344+00		5								200		133						
28	STA 344+00 TO STA 346+00		4			6		6			172		115						18
29	STA 346+00 TO STA 348+00		4			6		6			172	3	114						18
30	STA 348+00 TO STA 350+00		2								100	38	64						
31	STA 350+00 TO STA 352+00		1								56		18				12		
	MISCELLANEOUS			27															
	PROJECT TOTAL	131	233	30	1	83	15	100	2	22	9389	795	5903	77	94	14	84	62	298

① QUANTITIES INCLUDED FOR ASHALT STRUCTURE REPAIR. REFER TO MISCELLANEOUS DETAILS FOR MORE INFORMATION.

② FOR CONTRACTORS INFORMATION ONLY. ITEM 420 7002 CL A CONC (MISC) IS CONSIDERED SUBSIDARY TO ITEM 0529-7009 CONC CURB & GUTTER (TY II). REFER TO CCCG (FTW)(MOD) DETAIL FOR MORE INFOMRATION.

REMOVAL SUMMARY

SHEET NO.	LOCATION	0100 7004 PREP ROW (TREE REMOVE) (12"-24" DIA)	0104 7011 REMOVING CONC (DRIVEWAYS)	0104 7013 REMOV CONC (SIDEWALK, RAMP OR SUP)	0104 7018 REMOVING CONC (CURB OR CURB & GUTTER)	105 7002 (2"-6") TRT/UNTRT BASE & ASPH PAV	0105 7111 (0"-12") TRT/UNTRT BASE & ASPH PAV
	CSJ 0172-01-057	EA	SY	SY	LF	SY	SY
1	STA 292+00 TO STA 294+00				73		177
2	STA 294+00 TO STA 296+00						297
3	STA 296+00 TO STA 298+00					24	275
4	STA 298+00 TO STA 300+00				9		250
5	STA 300+00 TO STA 302+00		42		95		327
6	STA 302+00 TO STA 304+00	1	71	17	213		242
7	STA 304+00 TO STA 306+00		68	22	354		334
8	STA 306+00 TO STA 308+00		29		247		331
9	STA 308+00 TO STA 310+00				196		349
10	STA 310+00 TO STA 312+00				196		330
11	STA 312+00 TO STA 314+00		31		191		310
12	STA 314+00 TO STA 316+00		32		56		345
13	STA 316+00 TO STA 318+00		26		27		300
14	STA 318+00 TO STA 320+00						332
15	STA 320+00 TO STA 322+00				27		335
16	STA 322+00 TO STA 323+00				99		171
17	STA 323+00 TO STA 325+00				99		318
18	STA 325+00 TO STA 327+00						336
19	STA 327+00 TO STA 329+00						322
20	STA 329+00 TO STA 331+00						308
21	STA 331+00 TO STA 333+00						337
22	STA 333+00 TO STA 334+00						175
23	STA 334+00 TO STA 336+00		111				292
24	STA 336+00 TO STA 338+00		19	19	78	55	183
25	STA 338+00 TO STA 340+00						177
26	STA 340+00 TO STA 342+00					68	192
27	STA 342+00 TO STA 344+00						196
28	STA 344+00 TO STA 346+00						163
29	STA 346+00 TO STA 348+00		1		104		131
30	STA 348+00 TO STA 349+00		3		85		50
31	STA 349+00 TO STA 352+00				62		12
	PROJECT TOTAL	1	433	58	2211	147	7897

MOBILIZATION QUANTITIES

LOCATION	0500 7001 MOBILIZATION
	LS
CSJ 0172-01-057	
PROJECT TOTAL	1

EARTHWORK QUANTITIES

LOCATION	0110 7003 EXCAV (SPECIAL)	0132 7001 EMBANK (FNL)(QC)(TY A)	0132 7005 EMBANK (FNL)(QC)(TY C)
	CY	CY	CY
CSJ 0172-01-057			
PROJECT TOTAL	900	1000	1500

RETAINING WALL SUMMARY

LOCATION	0403 7001 TEMPORARY SPL SHORING	0423 7015 RETAINING WALL (SPREAD FOOTING)	0450 7059 RAIL (HANDRAIL) (TY B)	0556 7006 PIPE UNDERDRAINS (TY 6) (6")
CSJ 0172-01-057	SF	SF	LF	LF
RW-E01		1403	383	383
RW-W01		850	252	252
RW-W02		1038	250	250
RW-W03	1335	1733	305	305
RW-W04		346	116	116
PROJECT TOTAL	1335	5370	1306	1306

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

QUANTITY SUMMARIES

Designed: STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked: STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn: STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked: STV	FTW	TARRANT	0172	01	055,ETC		101

SHEET 1 OF 2

DRAINAGE SUMMARY

SHEET NO.	LOCATION	0402 7001 TRENCH EXCAVATION PROTECTION	0464 7005 RC PIPE (CL III) (24 IN)	0464 7009 RC PIPE (CL III) (36 IN)	0465 7186 INLET (COMPL)(CO) (15 FT)(FTW)	0465 7187 INLET (COMPL)(CO) (20 FT)(FTW)	0529 7018 CONC CURB & GUTTER (ARMOR CURB)
	CSJ 0172-01-057	LF	LF	LF	EA		LF
1	STA 292+00 TO STA 294+00						14
2	STA 294+00 TO STA 296+00						28
3	STA 296+00 TO STA 298+00						42
4	STA 298+00 TO STA 300+00						
5	STA 300+00 TO STA 302+00						14
6	STA 302+00 TO STA 304+00	16		16			
7	STA 304+00 TO STA 306+00	200	176	8	1		
8	STA 306+00 TO STA 308+00	200	184			1	
9	STA 308+00 TO STA 310+00	200	200				
10	STA 310+00 TO STA 312+00	200	200				
11	STA 312+00 TO STA 314+00	30	15		1		
12	STA 314+00 TO STA 316+00						
13	STA 316+00 TO STA 318+00						56
14	STA 318+00 TO STA 320+00						14
15	STA 320+00 TO STA 322+00						70
16	STA 322+00 TO STA 323+00						
17	STA 323+00 TO STA 325+00						
18	STA 325+00 TO STA 327+00						42
19	STA 327+00 TO STA 329+00						
20	STA 329+00 TO STA 331+00						42
21	STA 331+00 TO STA 333+00						
22	STA 333+00 TO STA 334+00						14
23	STA 334+00 TO STA 336+00						42
24	STA 336+00 TO STA 338+00						28
25	STA 338+00 TO STA 340+00						
26	STA 340+00 TO STA 342+00						
27	STA 342+00 TO STA 344+00						
28	STA 344+00 TO STA 346+00						28
29	STA 346+00 TO STA 348+00						28
30	STA 348+00 TO STA 350+00						
31	STA 350+00 TO STA 352+00						
	PROJECT TOTAL	846	775	24	2	1	462

TRAFFIC CONTROL PLANS SUMMARY

SHEET NO.	LOCATION	0512 7009 PORT CTB (FUR & INST) (LOW PROF)(TY 1)	0512 7010 PORT CTB (FUR & INST) (LOW PROF)(TY 2)	0512 7033 PORT CTB (MOVE) (LOW PROF)(TY 1)	0512 7034 PORT CTB (MOVE) (LOW PROF)(TY 2)	0512 7057 PORT CTB (REMOVE) (LOW PROF)(TY 1)	0512 7058 PORT CTB (MOVE) (REMOVE)(TY 2)
	CSJ 0172-01-057	LF	LF	LF	LF	LF	LF
PHASE 1A							
1	STA 292+00 TO STA 301+00	460	80				
2	STA 301+00 TO STA 312+00	800	20				
3	STA 312+00 TO STA 323+00	120	20			40	
4	STA 323+00 TO STA 334+00						
5	STA 334+00 TO STA 345+00						
6	STA 345+00 TO STA 349+51						
	STEP TOTAL	1380	120			40	

TRAFFIC CONTROL PLANS SUMMARY

SHEET NO.	LOCATION	0512 7009 PORT CTB (FUR & INST) (LOW PROF)(TY 1)	0512 7010 PORT CTB (FUR & INST) (LOW PROF)(TY 2)	0512 7033 PORT CTB (MOVE) (LOW PROF)(TY 1)	0512 7034 PORT CTB (MOVE) (LOW PROF)(TY 2)	0512 7057 PORT CTB (REMOVE) (LOW PROF)(TY 1)	0512 7058 PORT CTB (REMOVE) (LOW PROF)(TY 2)
	CSJ 0172-01-057	LF	LF	LF	LF	LF	LF
PHASE 1B							
1	STA 292+00 TO STA 301+00			400	40	400	40
2	STA 301+00 TO STA 312+00						
3	STA 312+00 TO STA 323+00						
4	STA 323+00 TO STA 334+00			820	60	820	60
5	STA 334+00 TO STA 345+00		40	120	60	120	60
6	STA 345+00 TO STA 349+51						
	STEP TOTAL		40	1340	160	1340	160
	PROJECT TOTAL	1380	160	1340	160	1380	160

EROSION CONTROL SUMMARY

SHEET NO.	LOCATION	0161 7002 COMPOST MANUF TOPSOIL (4")	0162 7002 BLOCK SODDING	0168 7001 VEGETATIVE WATERING	0506 7039 TEMP SEDMT CONT FENCE (INSTALL)	0506 7041 TEMP SEDMT CONT FENCE (REMOVE)	0506 7043 BIODEG EROSN CONT LOGS (INSTL)(8")	0506 7046 BIODEG EROSN CONT LOGS (REMOVE)
	CSJ 0172-01-057	SY	SY	MG	LF	LF	LF	LF
1	STA 292+00 TO STA 294+00	287	287	10	303	303	20	20
2	STA 294+00 TO STA 296+00	564	564	20	366	366	60	60
3	STA 296+00 TO STA 298+00	351	351	12	344	344	40	40
4	STA 298+00 TO STA 300+00	214	214	7	337	337		
5	STA 300+00 TO STA 302+00	324	324	11	338	338	20	20
6	STA 302+00 TO STA 304+00	393	393	14	341	341		
7	STA 304+00 TO STA 306+00	424	424	15	382	382	20	20
8	STA 306+00 TO STA 308+00	312	312	11	381	381	20	20
9	STA 308+00 TO STA 310+00	360	360	13	416	416		
10	STA 310+00 TO STA 312+00	447	447	16	404	404		
11	STA 312+00 TO STA 314+00	282	282	10	416	416		
12	STA 314+00 TO STA 316+00	208	208	7	375	375		
13	STA 316+00 TO STA 318+00	183	183	6	325	325	80	80
14	STA 318+00 TO STA 320+00	224	224	8	404	404	20	20
15	STA 320+00 TO STA 322+00	180	180	6	325	325	100	100
16	STA 322+00 TO STA 323+00	111	111	4	200	200		
17	STA 323+00 TO STA 325+00	207	207	7	365	365		
18	STA 325+00 TO STA 327+00	278	278	10	330	330	60	60
19	STA 327+00 TO STA 329+00	222	222	8	404	404		
20	STA 329+00 TO STA 331+00	197	197	7	354	354	60	60
21	STA 331+00 TO STA 333+00	334	334	12	400	400		
22	STA 333+00 TO STA 334+00	175	175	6	184	184	20	20
23	STA 334+00 TO STA 336+00	345	345	12	338	338	60	60
24	STA 336+00 TO STA 338+00	258	258	9	293	293	40	40
25	STA 338+00 TO STA 340+00	220	220	8	200	200		
26	STA 340+00 TO STA 342+00	178	178	6	192	192		
27	STA 342+00 TO STA 344+00	111	111	4	200	200		
28	STA 344+00 TO STA 346+00	94	94	3	170	170	40	40
29	STA 346+00 TO STA 348+00	98	98	3	174	174	40	40
30	STA 348+00 TO STA 350+00	98	98	3	84	84		
31	STA 350+00 TO STA 352+00	50	50	2	50	50		
	PROJECT TOTAL	7729	7729	271	9393	9393	700	700

SIGNING SUMMARY

SHEET NO.	LOCATION	0644 7001 IN SM RD SN SUP&AM TY10BWG(1)SA (P)	644 7028 IN SM RD SN SUP&AM TYS80(1)SA(T)	644 7073 REMOVE SM RD SN SUP&AM	0658 7066 INSTL OM ASSM (OM-3L)(TWT)GND	0658 7078 REMOVE DELIN & OBJECT MARKER ASSMS
	CSJ 0172-01-057	EA	EA	EA	EA	EA
1	STA 292+00 TO STA 294+00				1	1
2	STA 294+00 TO STA 296+00	1		1		
3	STA 296+00 TO STA 298+00					
4	STA 298+00 TO STA 300+00					
5	STA 300+00 TO STA 302+00	2		2		
6	STA 302+00 TO STA 304+00	2	1	3		
7	STA 304+00 TO STA 306+00	1		1		
8	STA 306+00 TO STA 308+00					
9	STA 308+00 TO STA 310+00					
10	STA 310+00 TO STA 312+00					
11	STA 312+00 TO STA 314+00					
12	STA 314+00 TO STA 316+00					
13	STA 316+00 TO STA 318+00					
14	STA 318+00 TO STA 320+00					
15	STA 320+00 TO STA 322+00					
16	STA 322+00 TO STA 323+00					
17	STA 323+00 TO STA 325+00		1	1		
18	STA 325+00 TO STA 327+00					
19	STA 327+00 TO STA 329+00					
20	STA 329+00 TO STA 331+00					
21	STA 331+00 TO STA 333+00					
22	STA 333+00 TO STA 334+00					
23	STA 334+00 TO STA 336+00					
24	STA 336+00 TO STA 338+00	1		1		
25	STA 338+00 TO STA 340+00	1		1		
26	STA 340+00 TO STA 342+00					
27	STA 342+00 TO STA 344+00					
28	STA 344+00 TO STA 346+00					
29	STA 346+00 TO STA 348+00					
30	STA 348+00 TO STA 349+00					
31	STA 350+00 TO STA 352+00					
	PROJECT TOTAL	8	2	10	1	1

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

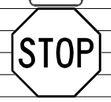
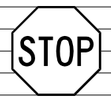
FORT WORTH SIDEWALK IMPROVEMENTS

QUANTITY SUMMARIES

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		102

SHEET 2 OF 2

SUMMARY OF SMALL SIGNS

RDWY PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) 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"	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
2	1	R-2		30 X 36	X		10BWG	1	SA	P		
5	2	R7-1		12 X 18	X		10BWG	1	SA	P		
	3	R7-1		12 X 18	X		10BWG	1	SA	P		
6	4	R7-1		12 X 18	X		10BWG	1	SA	P		
	5	R1-1		36 X 36	X		S80	1	SA	T		
	6	R7-1		12 X 18	X		10BWG	1	SA	P		
7	7	R7-1		12 X 18	X		10BWG	1	SA	P		
17	8	R1-1		36 X 36	X		S80	1	SA	T		
24	9	RS-031	BUS STOP SIGN	24 X 24	X		10BWG	1	SA	P		
30	10	RS-031	BUS STOP SIGN	24 X 24	X		10BWG	1	SA	P		

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

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).

DATE: DATE TIME
FILE: DOCUMENT NAME

Texas Department of Transportation

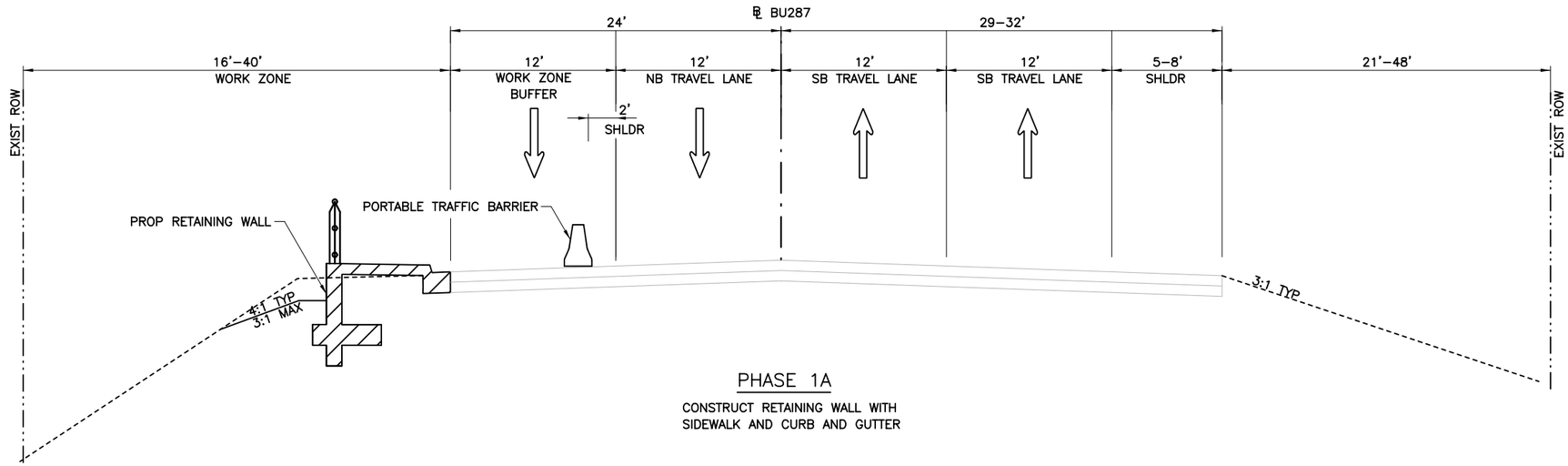
Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

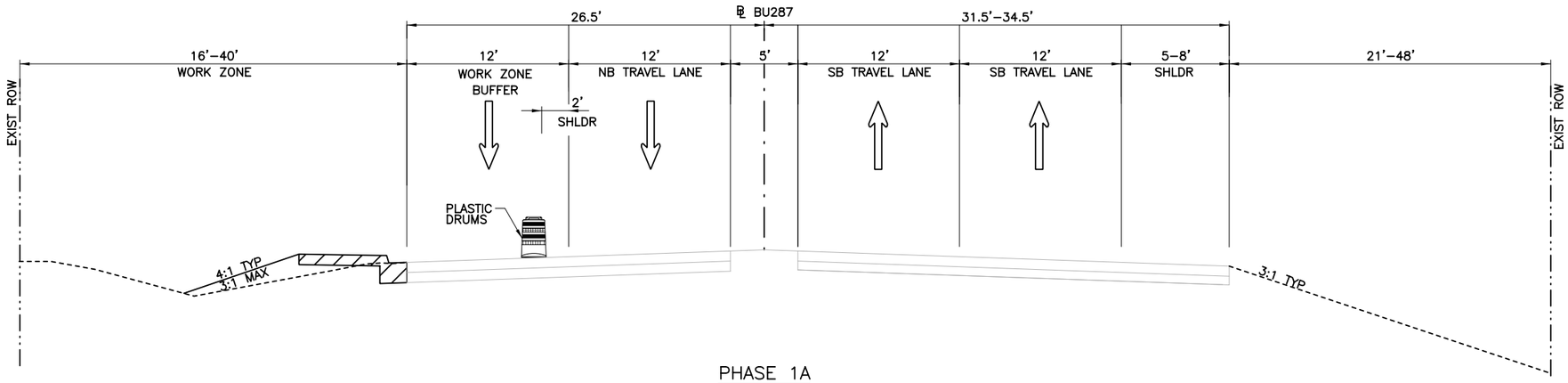
FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055	BU 287
4-16 8-16	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		103

TB



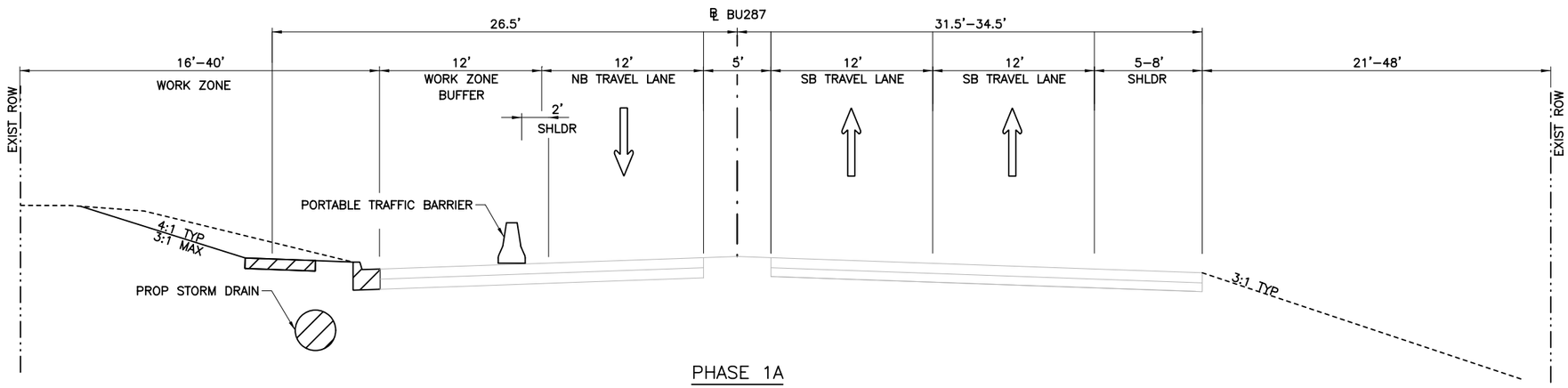
PHASE 1A

CONSTRUCT RETAINING WALL WITH
SIDEWALK AND CURB AND GUTTER



PHASE 1A

CONSTRUCT SIDEWALK AND CURB AND GUTTER



PHASE 1A

CONSTRUCT STORM DRAIN WITH
SIDEWALK AND CURB AND GUTTER

LEGEND

- WORK UNDER CONSTRCTION
- WORK COMPLETED

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

8/29/2024

NO.	REVISION	BY	DATE

stv

TEXAS REGISTERED
ENGINEERING FIRM
F-1741

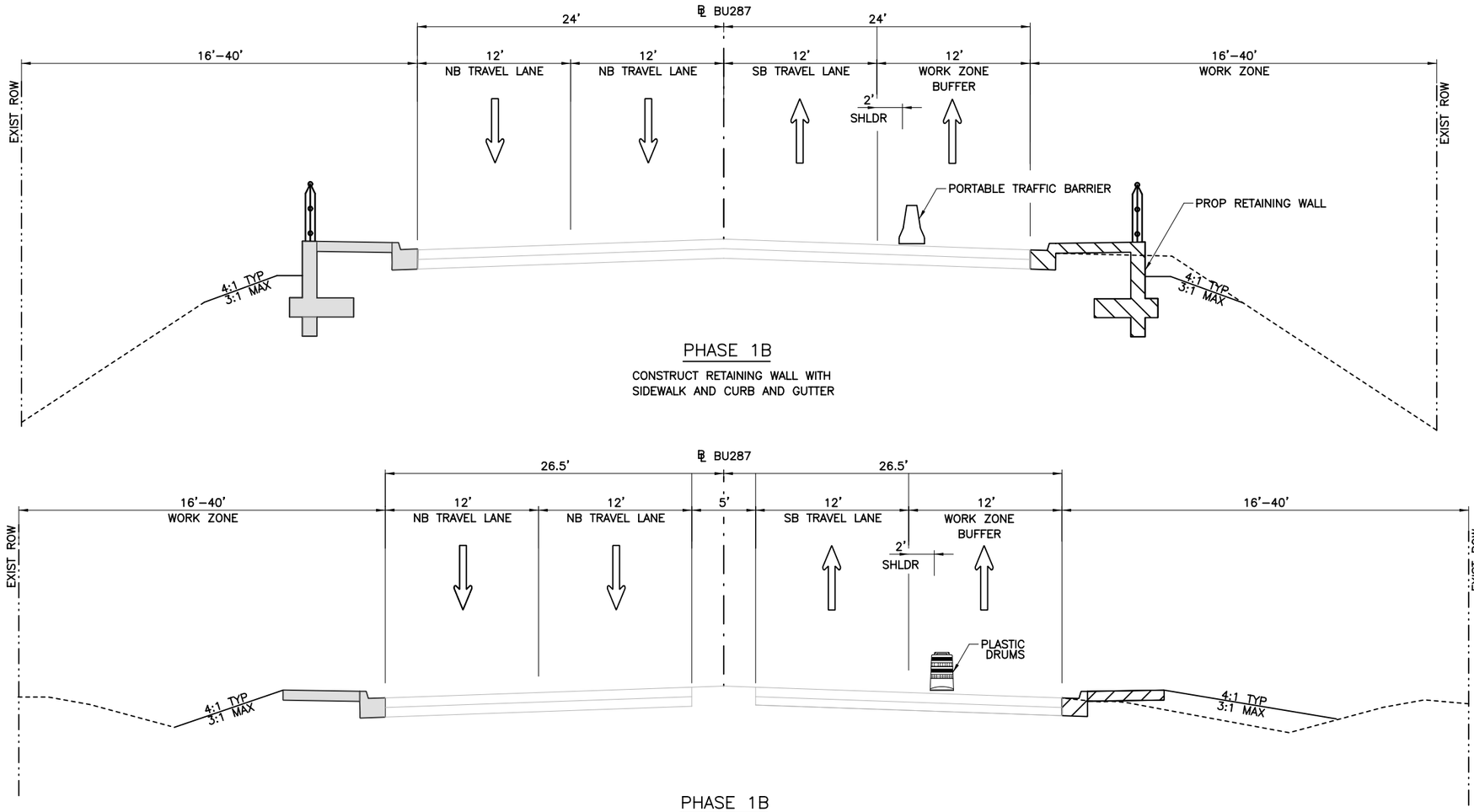
 Texas Department of Transportation

FORT WORTH SIDEWALK IMPROVEMENTS

TCP TYPICAL SECTIONS PHASE 1A

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	104
Checked:	STV						

SHEET 1 OF 2

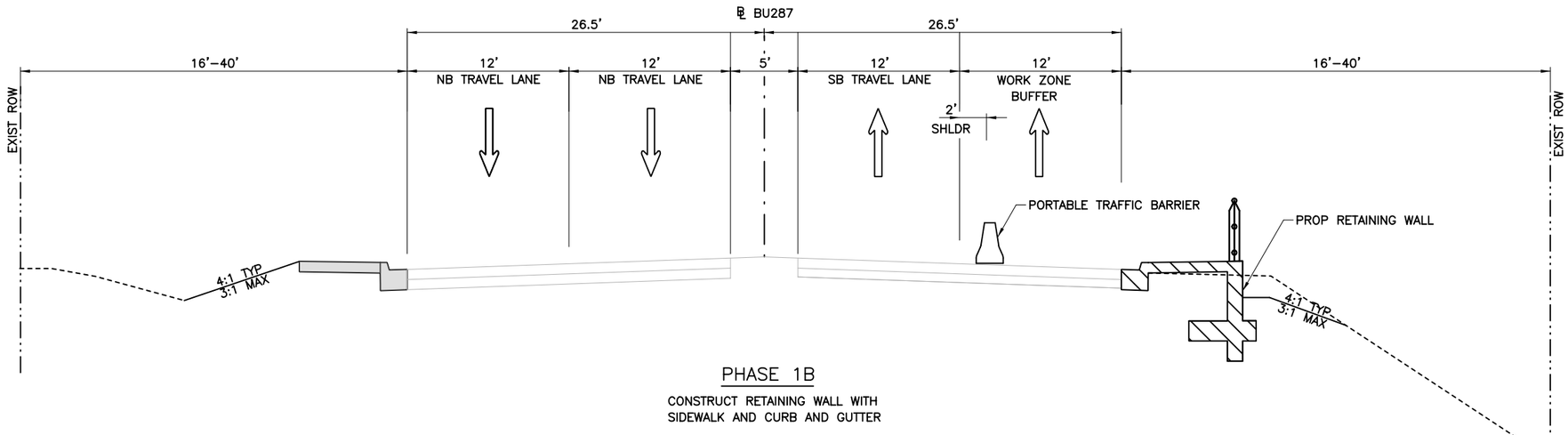


PHASE 1B

CONSTRUCT RETAINING WALL WITH
SIDEWALK AND CURB AND GUTTER

PHASE 1B

CONSTRUCT SIDEWALK AND CURB AND GUTTER



PHASE 1B

CONSTRUCT RETAINING WALL WITH
SIDEWALK AND CURB AND GUTTER

LEGEND

WORK UNDER CONSTRCTION

WORK COMPLETED

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
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8/29/2024

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stv

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 Texas Department of Transportation

FORT WORTH SIDEWALK IMPROVEMENTS

TCP TYPICAL SECTIONS PHASE 1B

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	105
Checked:	STV						

SHEET 2 OF 2

cpybw ANSIB.tbl
cpypdf ANSIB.pltcfg
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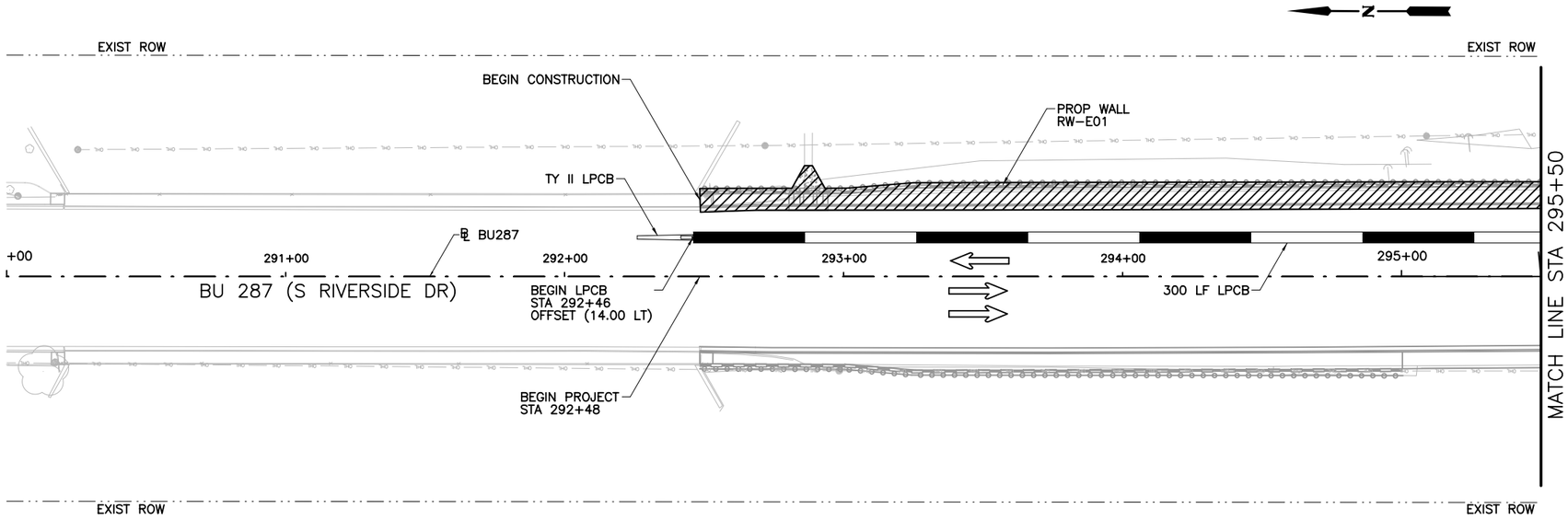
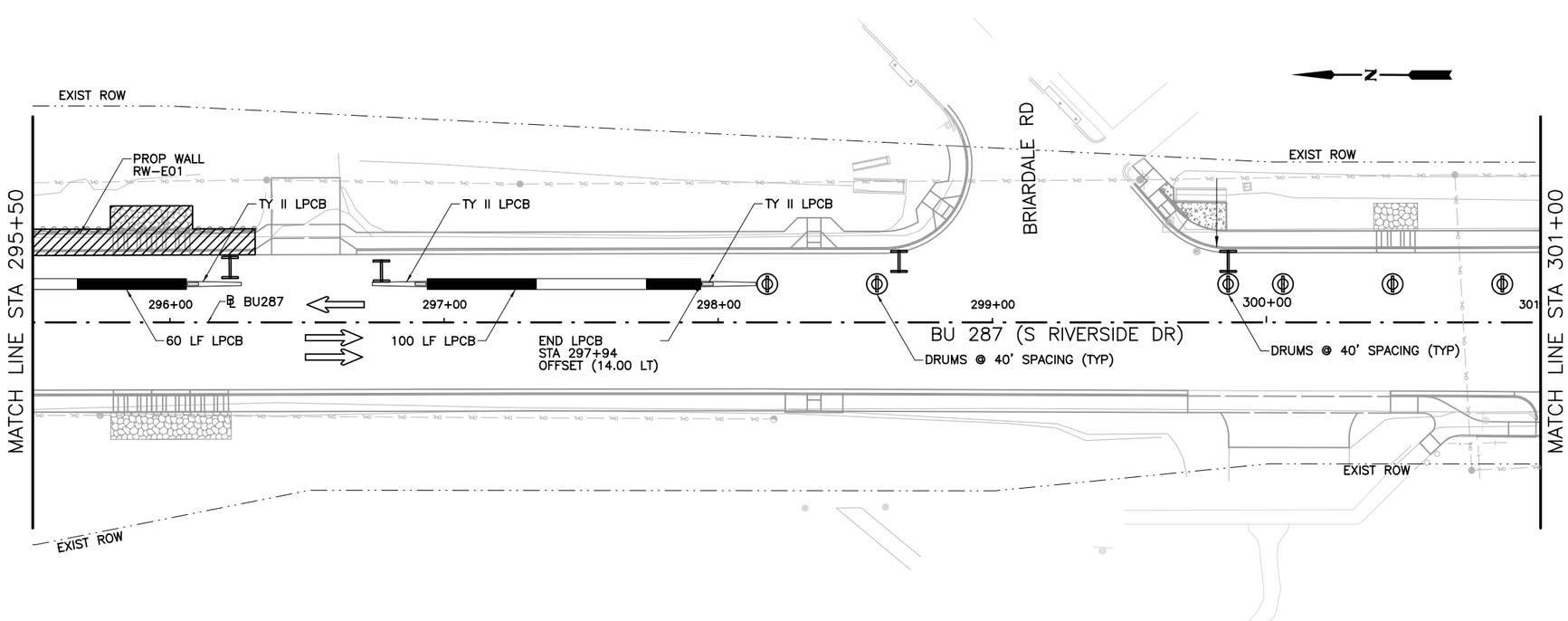
8/29/2024 7:57:45 PM HornorC





25 12.5 0 25 50
SCALE FEET

LEGEND

- PROPOSED CONSTRUCTION THIS PHASE
- PROPOSED CONSTRUCTION PREVIOUS PHASE
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER
- EXIST DIRECTION OF TRAFFIC

NOTES:

1. PERFORM CONSTRUCTION ON ONE SIDE OF THE ROAD AT A TIME
2. PORTABLE TRAFFIC BARRIER TO BE USED ON ONE SIDE OF THE ROAD AT A TIME.

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER
8/29/2024

NO.	REVISION	BY	DATE

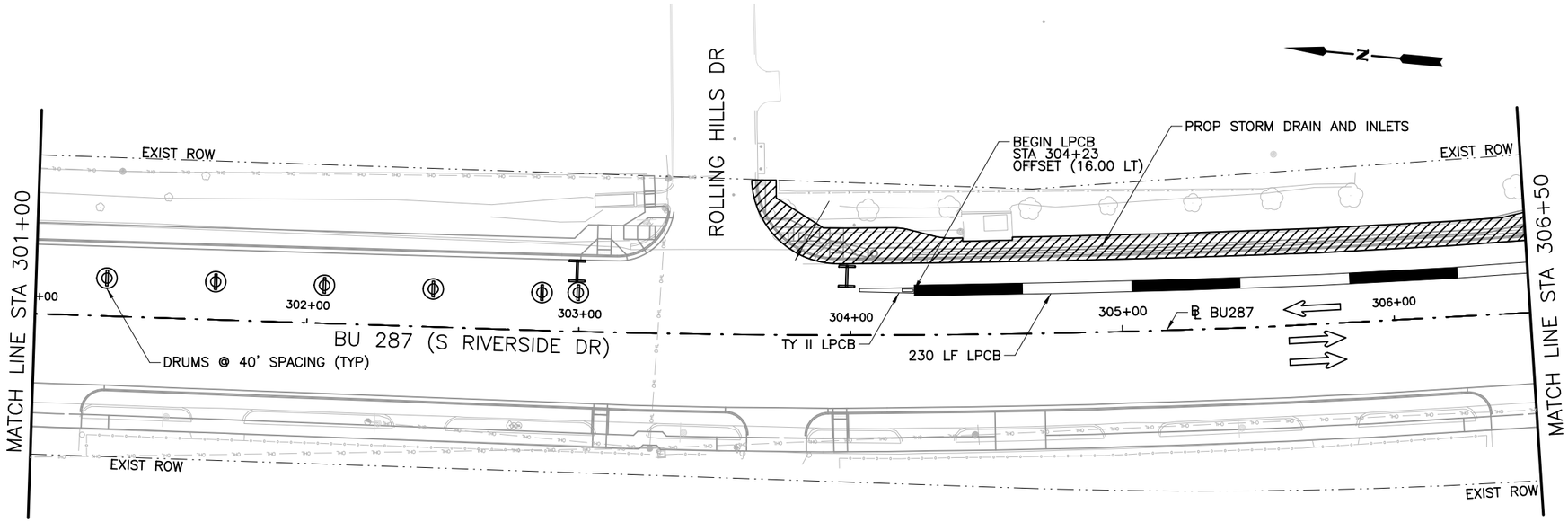
TEXAS REGISTERED ENGINEERING FIRM F-1741

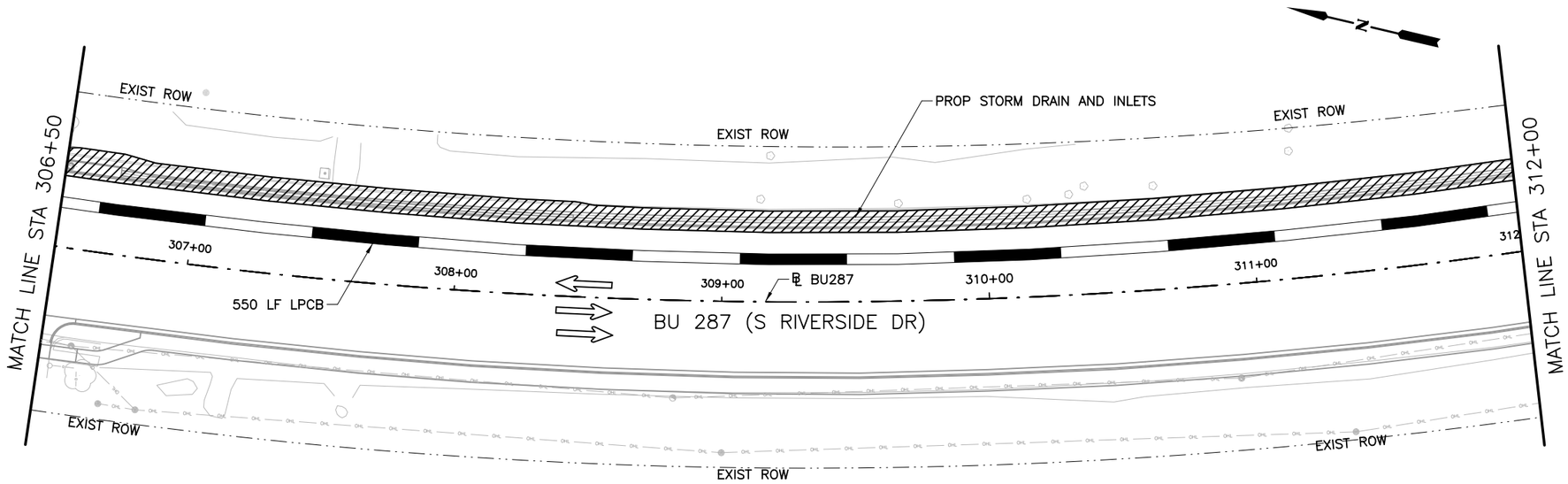
FORT WORTH SIDEWALK IMPROVEMENTS

TCP DETAILS
PHASE 1A

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	106

SHEET 1 OF 7





25 12.5 0 25 50
SCALE FEET

LEGEND

- PROPOSED CONSTRUCTION THIS PHASE
- PROPOSED CONSTRUCTION PREVIOUS PHASE
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER
- EXIST DIRECTION OF TRAFFIC

NOTES:

1. PERFORM CONSTRUCTION ON ONE SIDE OF THE ROAD AT A TIME
2. PORTABLE TRAFFIC BARRIER TO BE USED ON ONE SIDE OF THE ROAD AT A TIME.

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER
9/9/2024

NO.	REVISION	BY	DATE

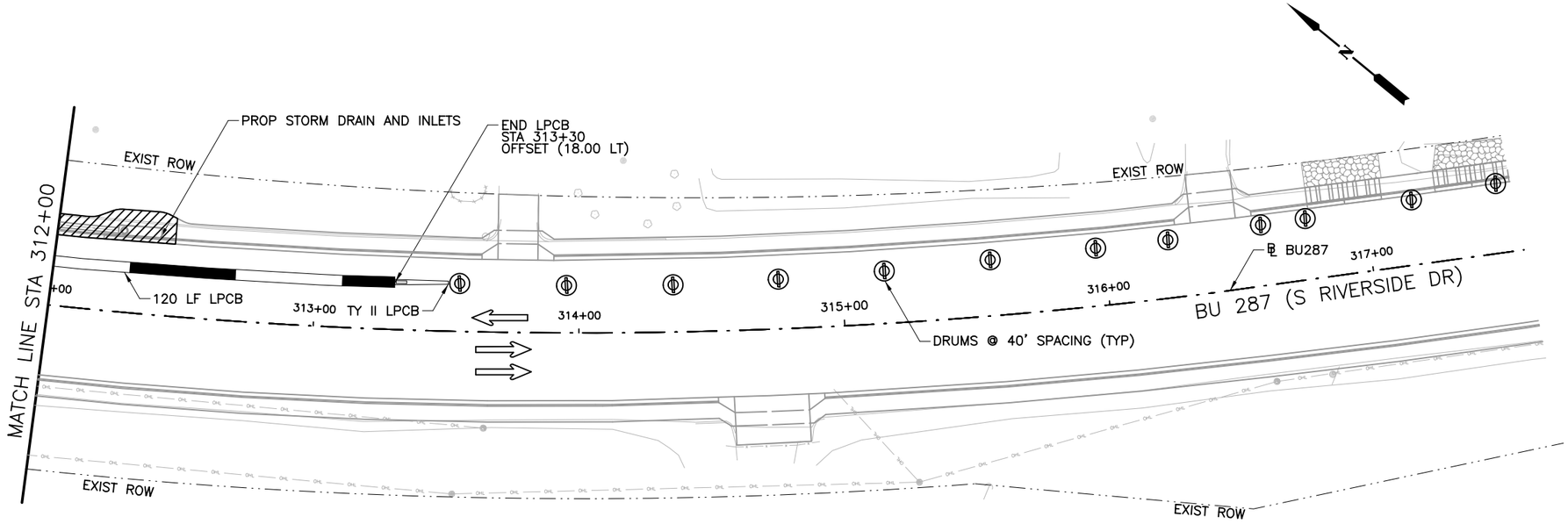
TEXAS REGISTERED ENGINEERING FIRM F-1741

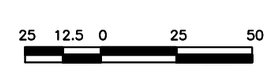
FORT WORTH SIDEWALK IMPROVEMENTS

TCP DETAILS PHASE 1A

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	107

SHEET 2 OF 7





LEGEND

- PROPOSED CONSTRUCTION THIS PHASE
- PROPOSED CONSTRUCTION PREVIOUS PHASE
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER
- EXIST DIRECTION OF TRAFFIC

NOTES:

1. PERFORM CONSTRUCTION ON ONE SIDE OF THE ROAD AT A TIME
2. PORTABLE TRAFFIC BARRIER TO BE USED ON ONE SIDE OF THE ROAD AT A TIME.

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

8/29/2024

NO.	REVISION	BY	DATE

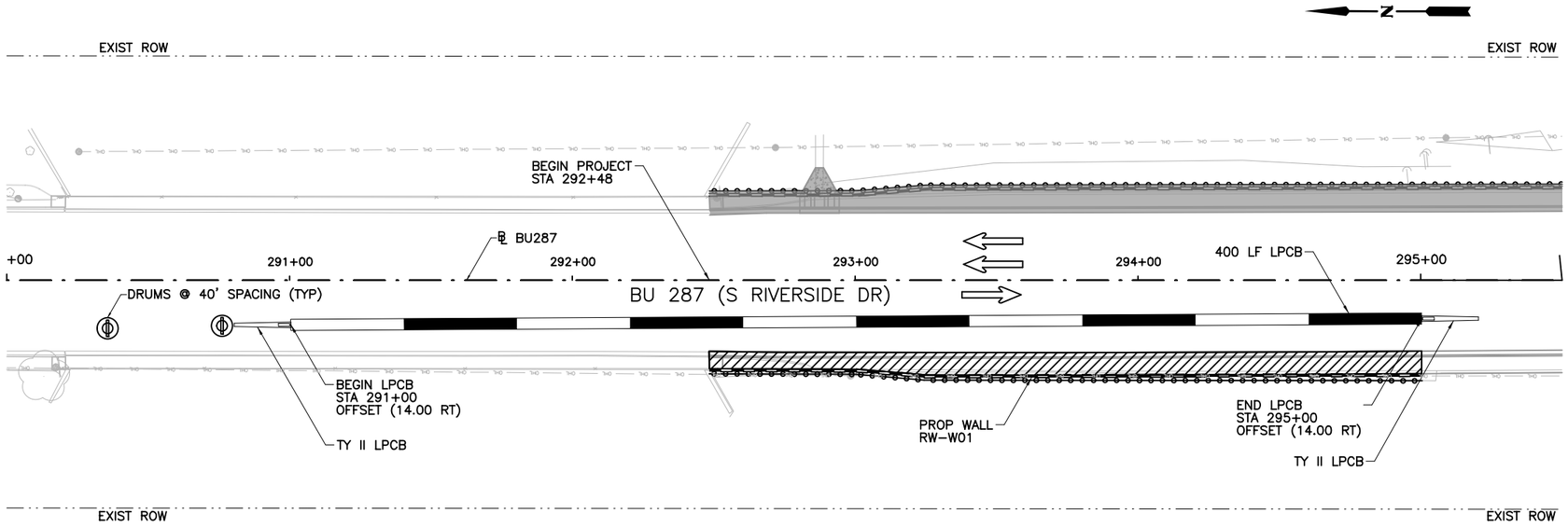
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

TCP DETAILS
PHASE 1A

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	108

SHEET 3 OF 7



N

25 12.5 0 25 50

SCALE FEET

LEGEND

- PROPOSED CONSTRUCTION THIS PHASE
- PROPOSED CONSTRUCTION PREVIOUS PHASE
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER
- EXIST DIRECTION OF TRAFFIC

NOTES:

1. PERFORM CONSTRUCTION ON ONE SIDE OF THE ROAD AT A TIME
2. PORTABLE TRAFFIC BARRIER TO BE USED ON ONE SIDE OF THE ROAD AT A TIME.

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

8/29/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

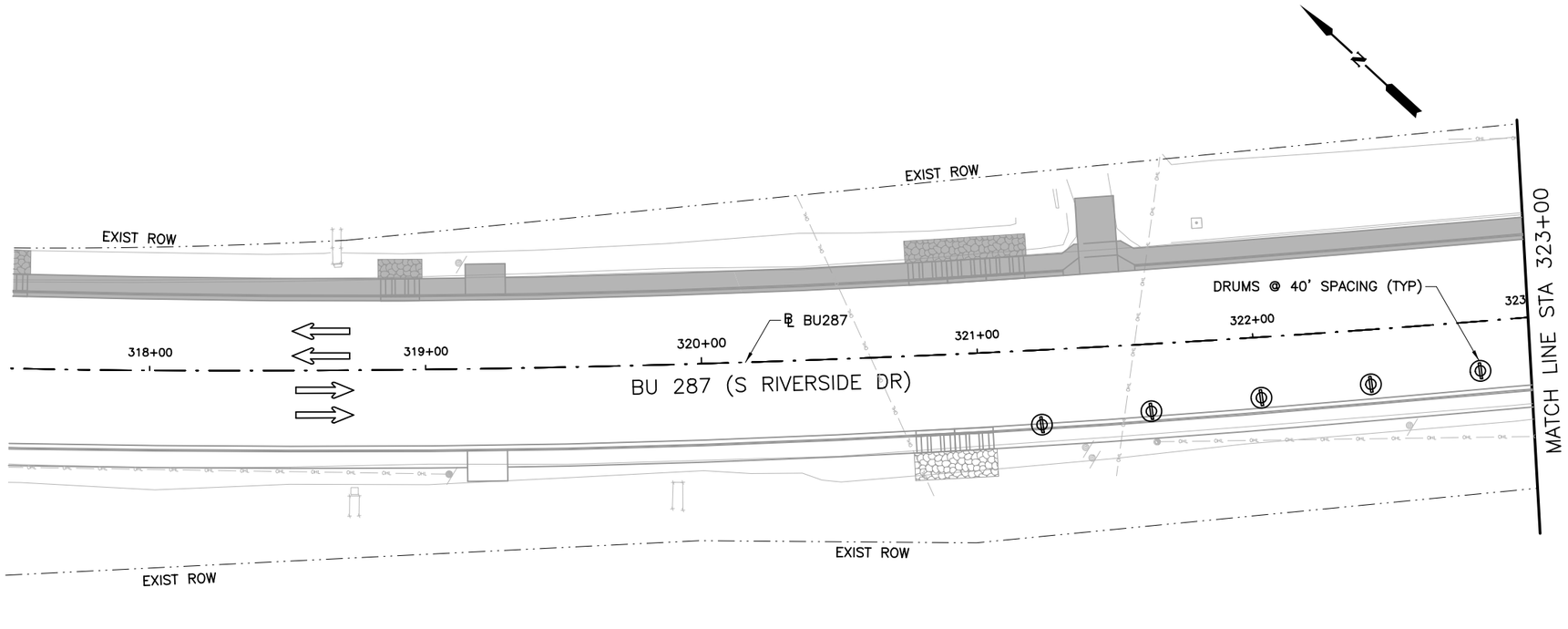
FORT WORTH SIDEWALK IMPROVEMENTS

TCP DETAILS
PHASE 1B

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		109

SHEET 4 OF 7

cpybw ANSIB.tbl
cypsf_ANSIB.pltcfg
pw:\\stv-sw-pw.bentley.com:stv-sw-pw-01\Documents\Active Projects\TXD02000292.00\TXD02000292.02\FTW-BU287\8.00 Plans and Drawings\8.30 Cut Sheets\8.3.03 TCP\200029202TCP_PHASE1_ST6_01.dgn
8/29/2024 7:58:10 PM HornorC



25 12.5 0 25 50
SCALE FEET

LEGEND

- PROPOSED CONSTRUCTION THIS PHASE
- PROPOSED CONSTRUCTION PREVIOUS PHASE
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER
- EXIST DIRECTION OF TRAFFIC

NOTES:

1. PERFORM CONSTRUCTION ON ONE SIDE OF THE ROAD AT A TIME
2. PORTABLE TRAFFIC BARRIER TO BE USED ON ONE SIDE OF THE ROAD AT A TIME.

STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED PROFESSIONAL ENGINEER

8/29/2024

NO.	REVISION	BY	DATE

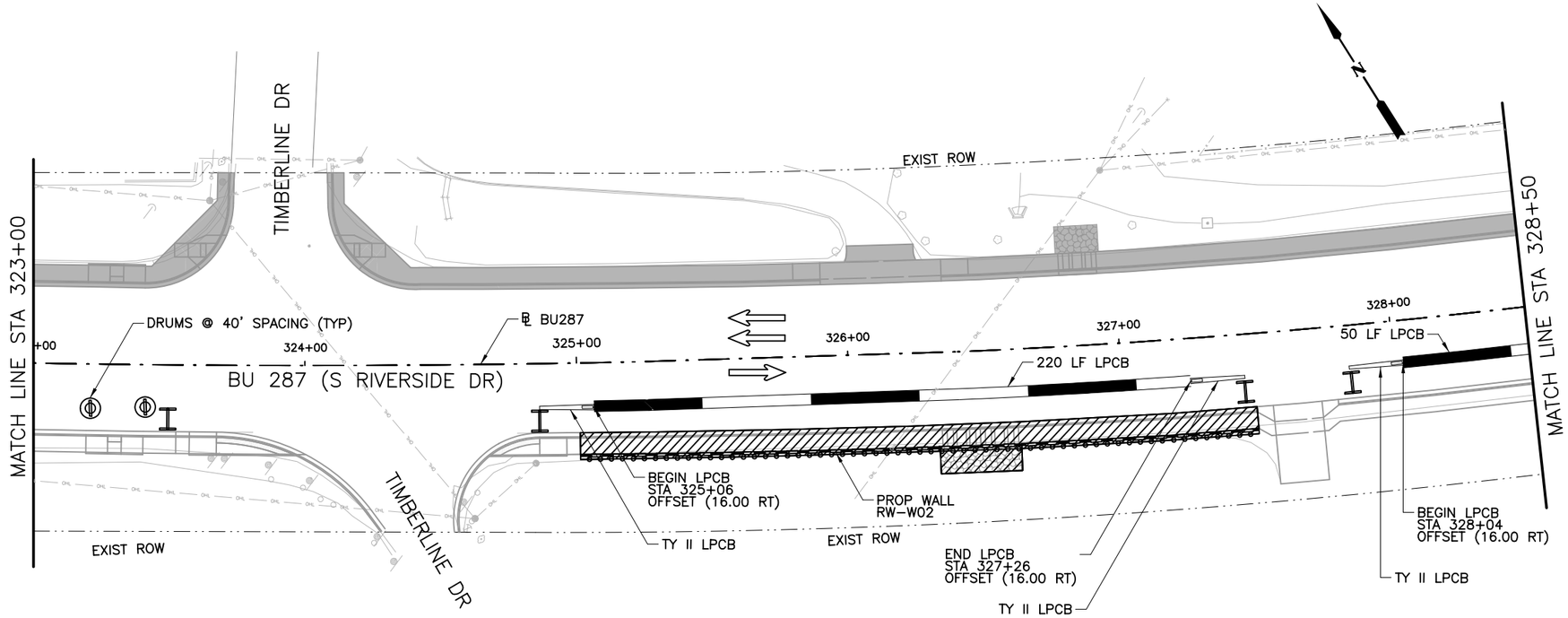
TEXAS REGISTERED ENGINEERING FIRM F-1741

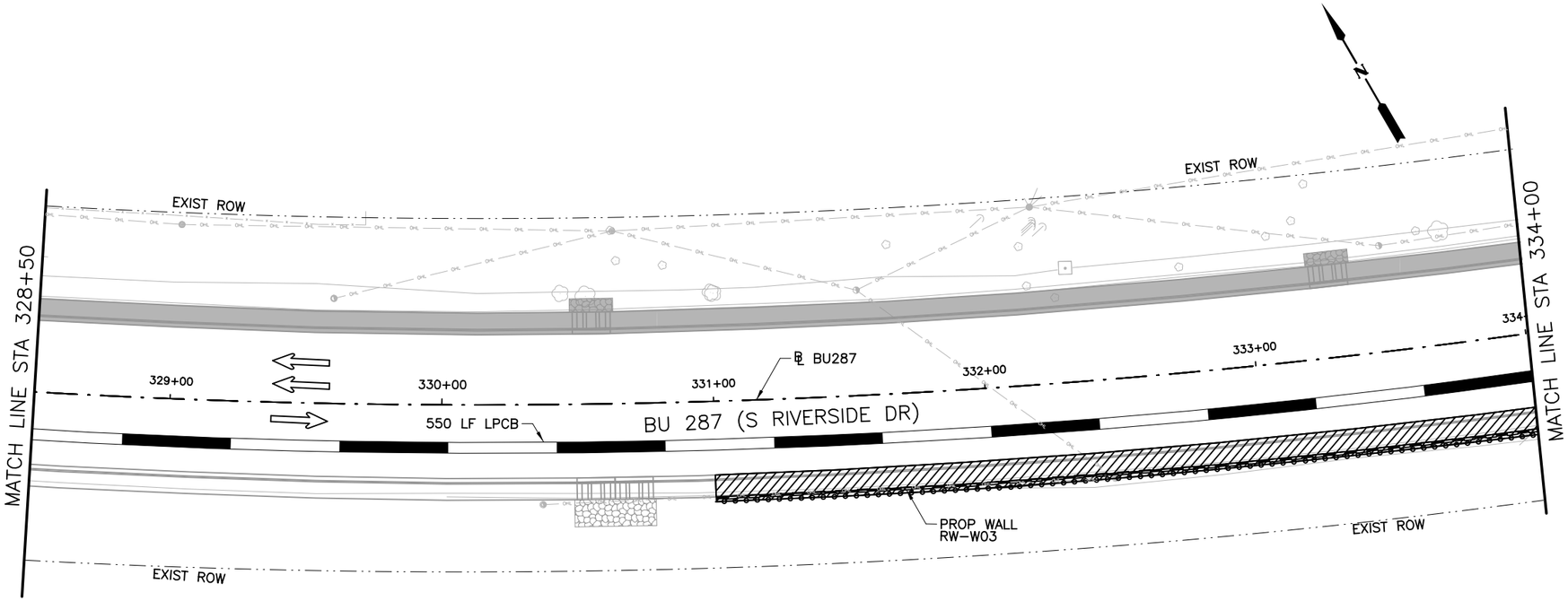
FORT WORTH SIDEWALK IMPROVEMENTS

TCP DETAILS
PHASE 1B

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	110

SHEET 5 OF 7





25 12.5 0 25 50
SCALE FEET

LEGEND

- PROPOSED CONSTRUCTION THIS PHASE
- PROPOSED CONSTRUCTION PREVIOUS PHASE
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER
- EXIST DIRECTION OF TRAFFIC

NOTES:

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STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER
9/9/2024

NO.	REVISION	BY	DATE

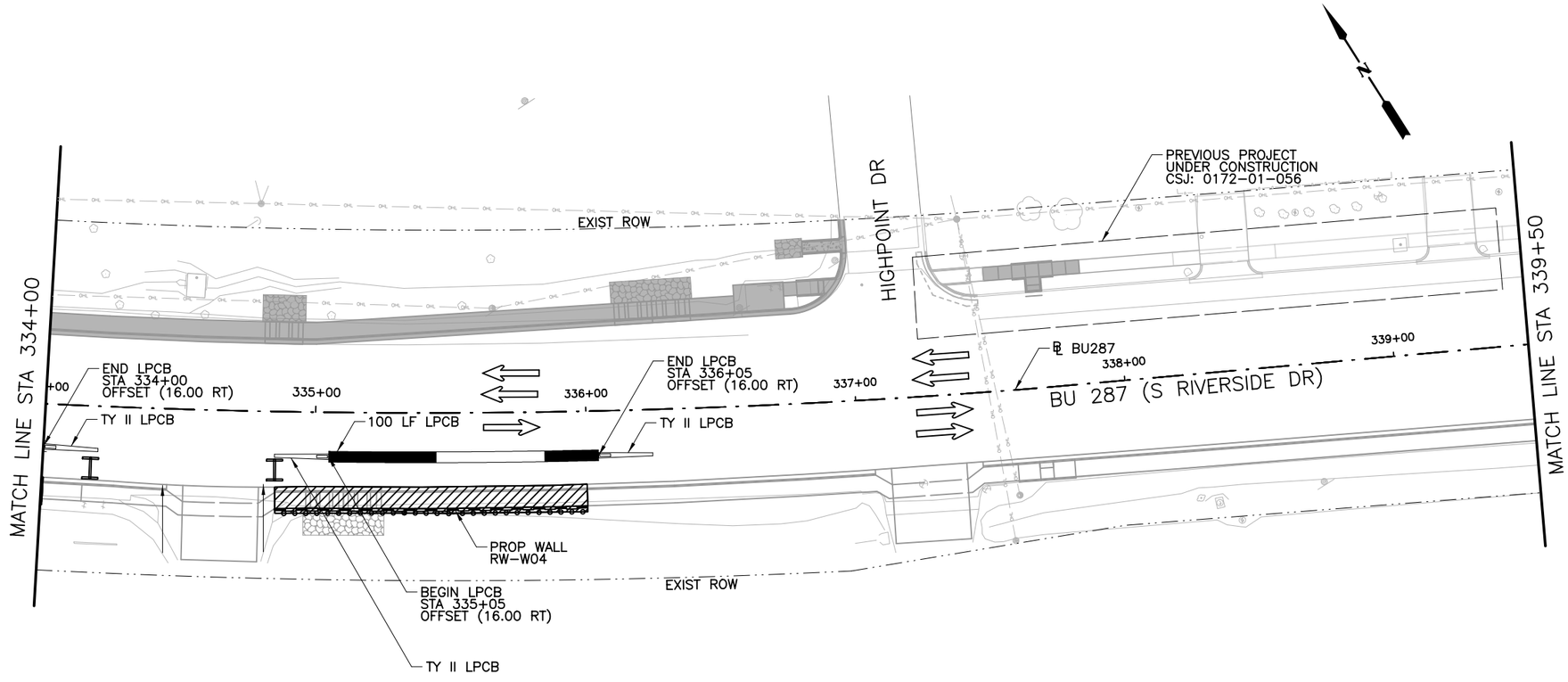
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

TCP DETAILS PHASE 1B

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		111

SHEET 6 OF 7



N

25 12.5 0 25 50
SCALE FEET

LEGEND

- PROPOSED CONSTRUCTION THIS PHASE
- PROPOSED CONSTRUCTION PREVIOUS PHASE
- CHANNELIZING DEVICES
- TYPE III BARRICADE
- LOW PROFILE CONCRETE BARRIER
- EXIST DIRECTION OF TRAFFIC

NOTES:

1. PERFORM CONSTRUCTION ON ONE SIDE OF THE ROAD AT A TIME
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STATE OF TEXAS
THOMAS E.T. COCHILL
87665
LICENSED
PROFESSIONAL ENGINEER

8/29/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

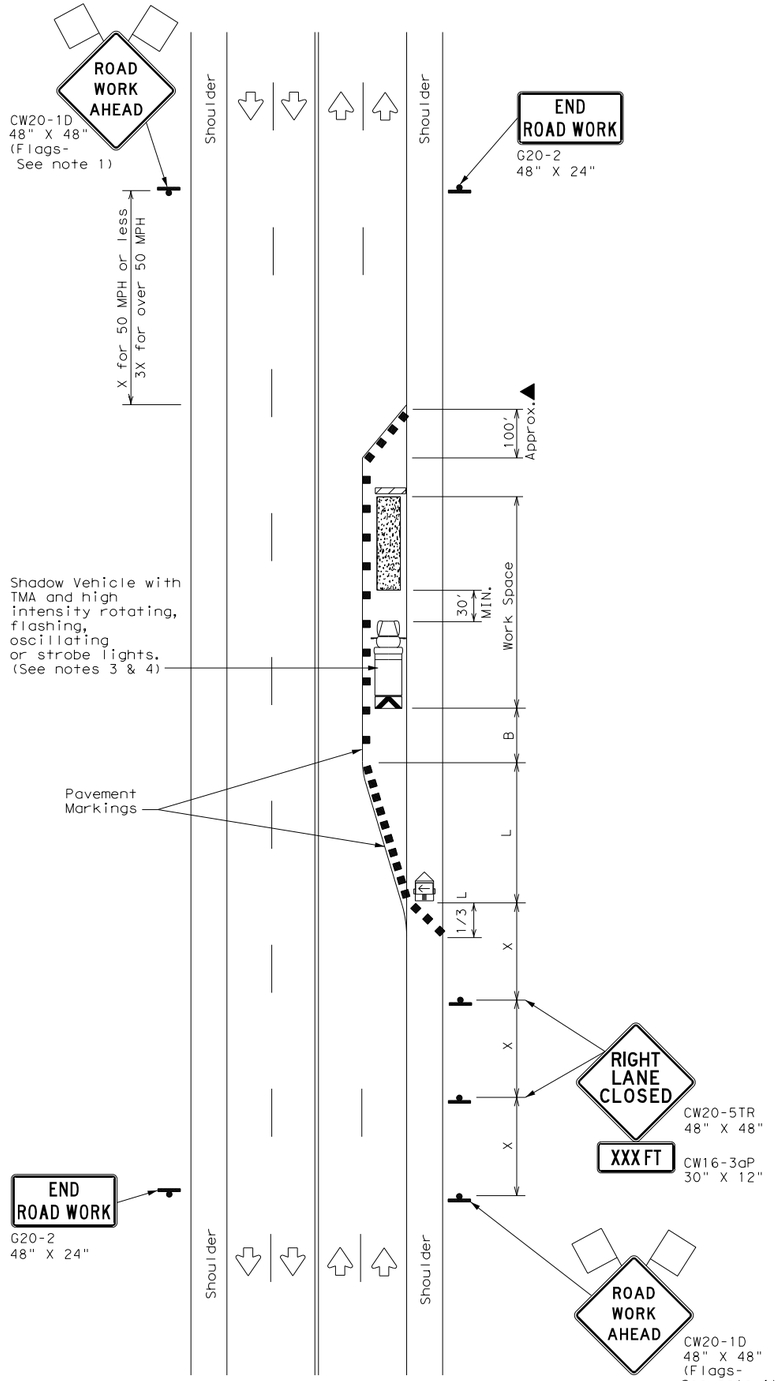
TCP DETAILS
PHASE 1B

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		112

SHEET 7 OF 7

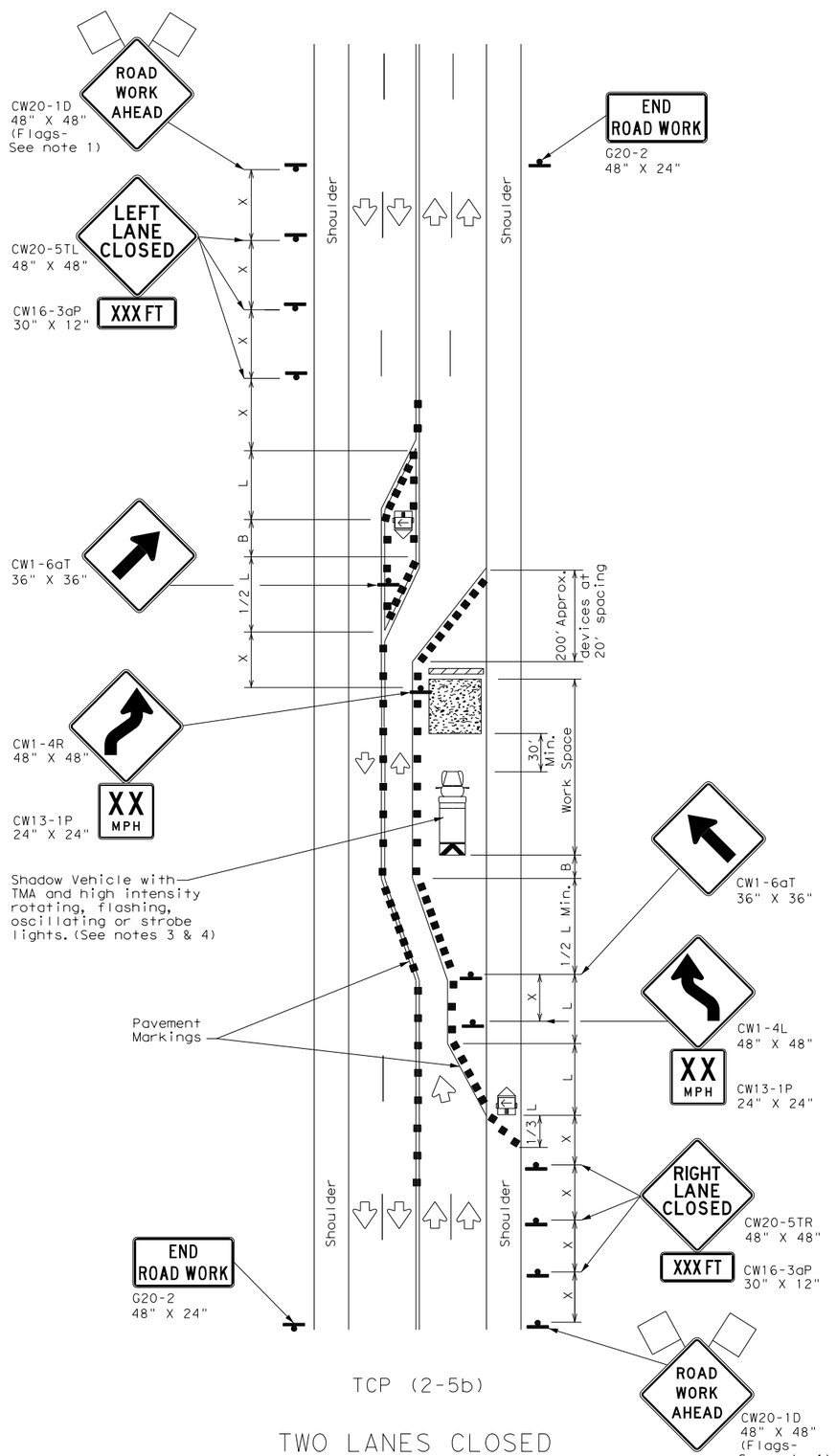
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:



TCP (2-5a)

ONE LANE CLOSED



TCP (2-5b)

TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew eposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substitutued for the Shadow Vehicle and TMA.
4. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.
5. The downstream taper is optional. When used, it should be 100 feet approximately per lane, with channelizing devices spaced at 20 feet.

TCP (2-5a)

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

TCP (2-5b)

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

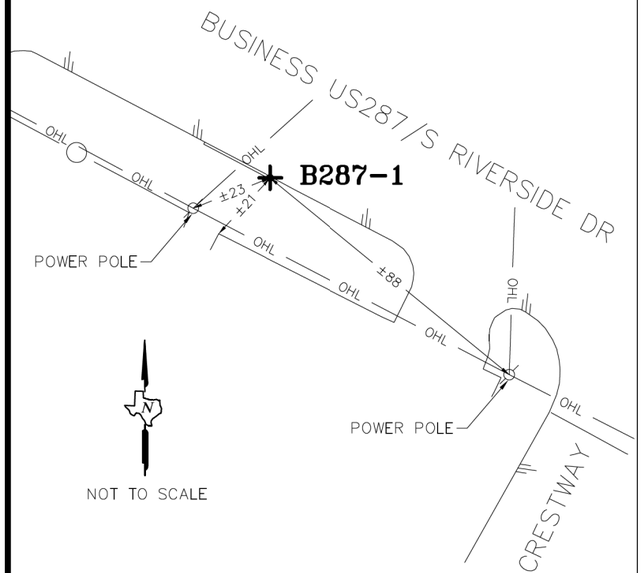
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LONG TERM LANE CLOSURES MULTILANE CONVENTIONAL RDS.

TCP(2-5)-18

FILE: tcp2-5-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 2-12	0172	01	055,ETC	BU 287
1-97 3-03	DIST	COUNTY		SHEET NO.
4-98 2-18	FTW	TARRANT		113



B287-1
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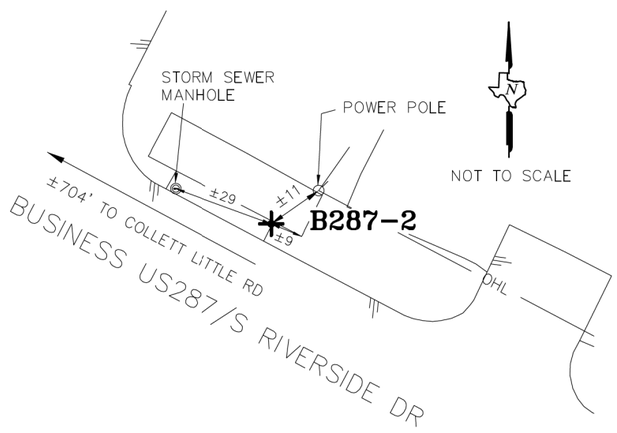
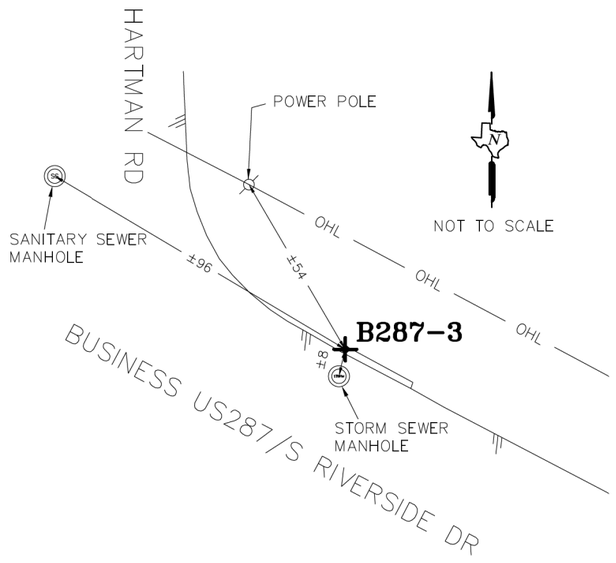
SURFACE EASTING= 2,355,431.03'
ELEV= 601.07'



B287-2
SURFACE NORTHING= 6,929,667.44'
SURFACE EASTING= 2,353,412.90'
ELEV= 630.13'



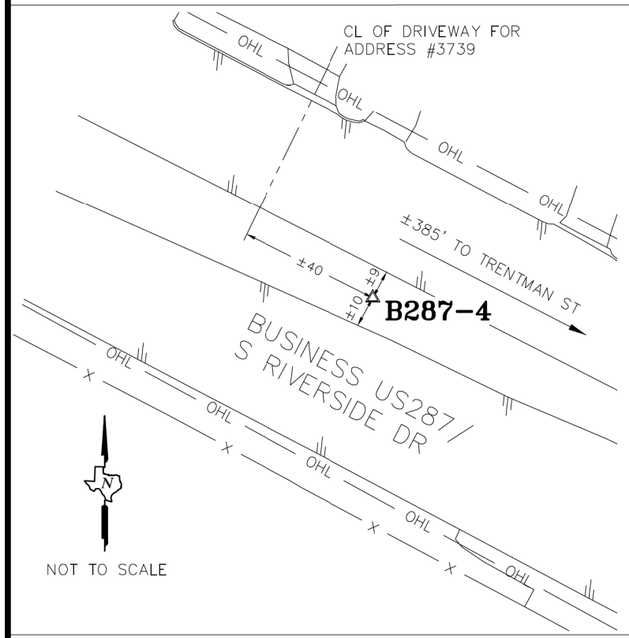
B287-3
SURFACE NORTHING= 6,931,238.96'
SURFACE EASTING= 2,350,421.97'
ELEV= 654.81'

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY IN JANUARY 14-16, 2020 AND IS CORRECTLY SHOWN HEREON

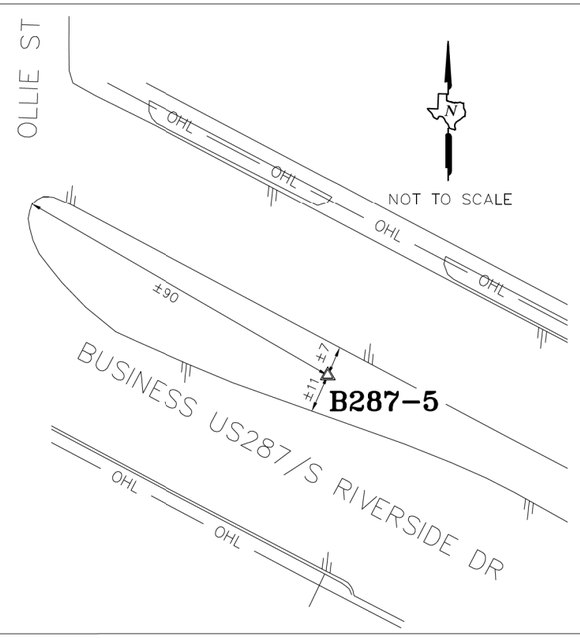
FOR REVIEW AND COMMENT ONLY "PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT"

Scott M. Posey
Registered Professional Land Surveyor
No. 5350

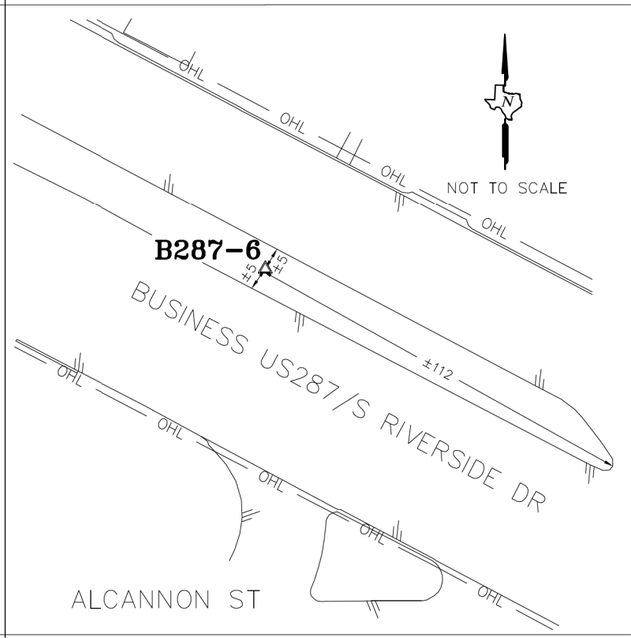
LAMB-STAR ENGINEERING, L.P.
5700 W. PLANO PARKWAY,
SUITE 1000
PLANO, TX. 75093
TBPLS # 10048300



B287-4
SURFACE NORTHING= 6,932,695.13'
SURFACE EASTING= 2,347,547.87'
ELEV= 657.42'



B287-5
SURFACE NORTHING= 6,934,234.97'
SURFACE EASTING= 2,344,635.49'
ELEV= 648.37'



B287-6
SURFACE NORTHING= 6,935,879.15'
SURFACE EASTING= 2,341,522.78'
ELEV= 672.17'

NO.	REVISION	BY	DATE

CONTROL POINT LEGEND

△ DENOTES PRIMARY CONTROL POINT (5/8" IRON ROD SET IN CONCRETE WITH A 3 1/4" ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL POINT"), UNLESS OTHERWISE NOTED

\+ DENOTES PRIMARY CONTROL POINT (3 1/4" ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL POINT" SET IN A CONCRETE STRUCTURE), UNLESS OTHERWISE NOTED

LAMB-STAR ENGINEERING, L.P.
5700 W. PLANO PARKWAY, SUITE 1000
PLANO, TX 75093
P 214-440-3600
F 214-440-3601
TBPLS # 10048300

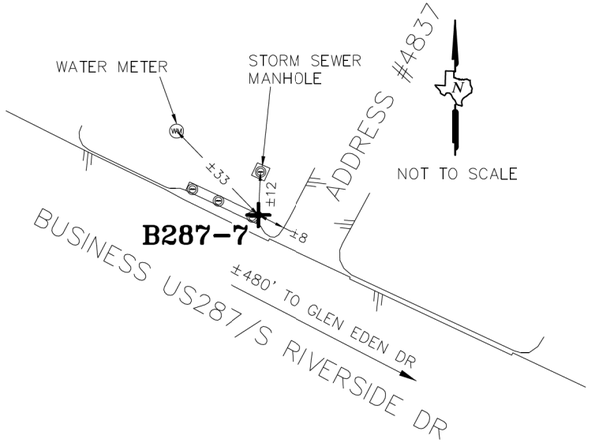
TEXAS REGISTERED ENGINEERING FIRM F-1741

BUSINESS 287/RIVERSIDE DR.

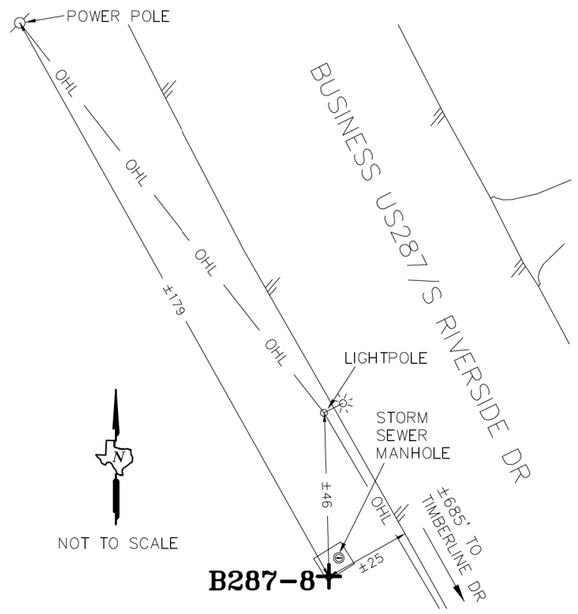
SURVEY CONTROL DATA SHEET

SHEET 1 OF 2

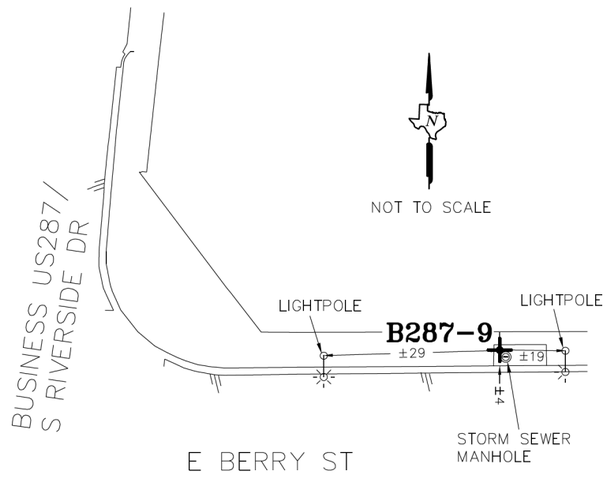
		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	N/A	6	TEXAS				BU 287
Drawn:	RBH	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	SMP	FTW	TARRANT	0172	01	055, ETC	114



B287-7
SURFACE NORTHING= 6,937,424.33'
SURFACE EASTING= 2,338,638.66'
ELEV= 666.59'



B287-8
SURFACE NORTHING= 6,939,162.57'
SURFACE EASTING= 2,336,543.08'
ELEV= 612.31'



B287-9
SURFACE NORTHING= 6,942,704.66'
SURFACE EASTING= 2,336,741.70'
ELEV= 569.88'

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY A FIELD SURVEY IN JANUARY 14-16, 2020 AND IS CORRECTLY SHOWN HEREON

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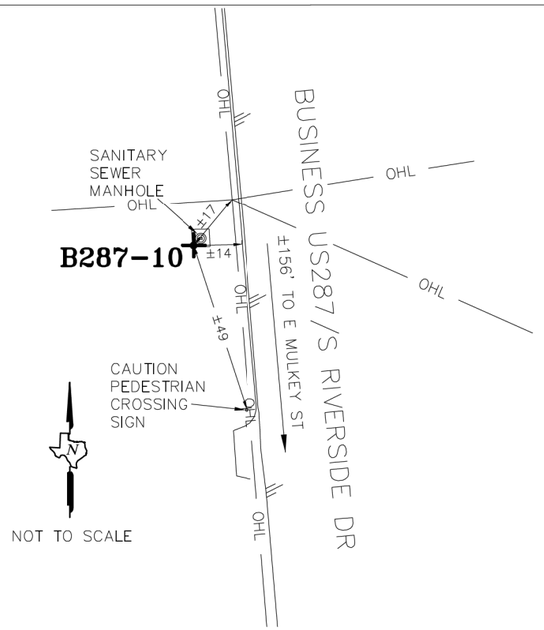
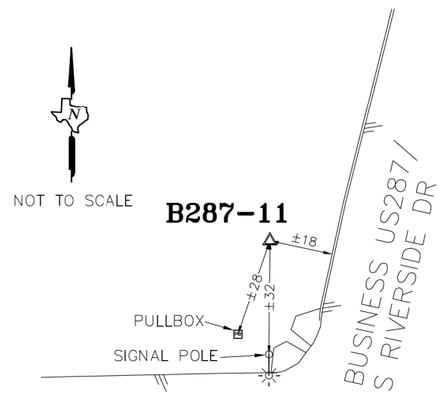
"PRELIMINARY, THIS DOCUMENT SHALL NOT BE RECORDED FOR ANY PURPOSE AND SHALL NOT BE USED OR VIEWED OR RELIED UPON AS A FINAL SURVEY DOCUMENT"

Scott M. Posey
Registered Professional Land Surveyor
No. 5350

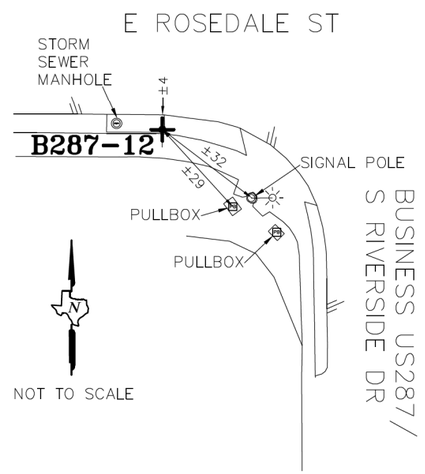
LAMB-STAR ENGINEERING, L.P.
5700 W. PLANO PARKWAY,
SUITE 1000
PLANO, TX. 75093
TBPLS # 10048300



B287-10
SURFACE NORTHING= 6,946,391.43'
SURFACE EASTING= 2,336,492.71'
ELEV= 588.13'



B287-11
SURFACE NORTHING= 6,949,171.49'
SURFACE EASTING= 2,336,453.21'
ELEV= 614.61'



B287-12
SURFACE NORTHING= 6,951,954.99'
SURFACE EASTING= 2,336,721.91'
ELEV= 603.33'

NO.	REVISION	BY	DATE

CONTROL POINT LEGEND

△ DENOTES PRIMARY CONTROL POINT (5/8" IRON ROD SET IN CONCRETE WITH A 3 1/4" ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL POINT"), UNLESS OTHERWISE NOTED

\+ DENOTES PRIMARY CONTROL POINT (3 1/4" ALUMINUM CAP STAMPED "TEXAS DEPT OF TRANSPORTATION CONTROL POINT" SET IN A CONCRETE STRUCTURE), UNLESS OTHERWISE NOTED

LAMB-STAR ENGINEERING, L.P.
5700 W. PLANO PARKWAY, SUITE 1000
PLANO, TX 75093
P 214-440-3600
F 214-440-3601
TBPLS # 10048300

TEXAS REGISTERED ENGINEERING FIRM F-1741

BUSINESS 287/RIVERSIDE DR.

SURVEY CONTROL DATA SHEET

SHEET 2 OF 2

Designed:	N/A	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	N/A	6	TEXAS					BU 287
Drawn:	RBH	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	SMP	FTW	TARRANT	0172	01	055, ETC		115

Curve Data

Curve BUS287_24
P.I. Station = 321+49.67 N 6,938,804.5200 E 2,336,823.9343
Delta = 7° 28' 15.24" (LT)
Degree = 1° 00' 18.68"
Tangent = 372.1440
Length = 743.2333
Radius = 5,700.0000
External = 12.1354
Long Chord = 742.7069
Mid. Ord. = 12.1097
P.C. Station = 317+77.52 N 6,939,123.9478 E 2,336,632.9969
P.T. Station = 325+20.76 N 6,938,512.6301 E 2,337,054.7837
C.C. N 6,942,048.4695 E 2,341,525.5599
Back = S 30° 52' 07.69" E
Ahead = S 38° 20' 22.93" E
Chord Bear = S 34° 36' 15.31" E

Course from PT BUS287_24 to PC BUS287_27 S 38° 56' 29.39" E Dist 119.7352

Curve Data

Curve BUS287_27
P.I. Station = 332+11.00 N 6,937,979.5541 E 2,337,493.2637
Delta = 22° 43' 02.40" (LT)
Degree = 2° 01' 02.85"
Tangent = 570.5127
Length = 1,126.0381
Radius = 2,840.0000
External = 56.7369
Long Chord = 1,118.6767
Mid. Ord. = 55.6256
P.C. Station = 326+40.49 N 6,938,419.5014 E 2,337,130.0405
P.T. Station = 337+66.53 N 6,937,714.0088 E 2,337,998.2097
C.C. N 6,940,227.6188 E 2,339,320.0888
Back = S 39° 32' 35.85" E
Ahead = S 62° 15' 38.25" E
Chord Bear = S 50° 54' 07.05" E

Course from PT BUS287_27 to BUS28730 S 62° 46' 55.75" E Dist 1,539.5337

Point BUS28730 N 6,937,009.8646 E 2,339,367.2769 Sta 353+06.06

Course from BUS28730 to BUS28732 S 62° 10' 39.41" E Dist 1,564.2419

Point BUS28732 N 6,936,279.7825 E 2,340,750.6903 Sta 368+70.30

Course from BUS28732 to BUS28734 S 62° 11' 22.73" E Dist 932.7960

Point BUS28734 N 6,935,844.5898 E 2,341,575.7453 Sta 378+03.10

Course from BUS28734 to BUS28736 S 62° 10' 01.40" E Dist 796.0626

Point BUS28736 N 6,935,472.9120 E 2,342,279.7136 Sta 385+99.16

Course from BUS28736 to BUS28738 S 62° 11' 14.40" E Dist 1,977.3446

Point BUS28738 N 6,934,550.3182 E 2,344,028.6310 Sta 405+76.51

Course from BUS28738 to BUS28740 S 62° 10' 09.32" E Dist 3,724.7688

Point BUS28740 N 6,932,811.3680 E 2,347,322.5580 Sta 443+01.28

Course from BUS28740 to BUS28742 S 62° 11' 50.32" E Dist 1,488.5413

Point BUS28742 N 6,932,117.0705 E 2,348,639.2607 Sta 457+89.82

Course from BUS28742 to BUS28744 S 62° 22' 37.51" E Dist 728.2118

Point BUS28744 N 6,931,779.4348 E 2,349,284.4696 Sta 465+18.03

Course from BUS28744 to BUS28746 S 62° 50' 38.87" E Dist 469.0840

Point BUS28746 N 6,931,565.3389 E 2,349,701.8456 Sta 469+87.11

Course from BUS28746 to BUS28748 S 62° 19' 07.56" E Dist 1,628.3645

Point BUS28748 N 6,930,808.8789 E 2,351,143.8370 Sta 486+15.48

Course from BUS28748 to BUS28750 S 62° 13' 48.73" E Dist 1,469.8859

Point BUS28750 N 6,930,124.0292 E 2,352,444.4313 Sta 500+85.36

Course from BUS28750 to PC BUS287_52 S 62° 14' 17.46" E Dist 3,558.0429

Curve Data

Curve BUS287_52
P.I. Station = 540+45.67 N 6,928,279.3325 E 2,355,948.8688
Delta = 14° 33' 16.91" (RT)
Degree = 1° 49' 08.09"
Tangent = 402.2586
Length = 800.1863
Radius = 3,150.0000
External = 25.5806
Long Chord = 798.0366
Mid. Ord. = 25.3745
P.C. Station = 536+43.41 N 6,928,466.7034 E 2,355,592.9135
P.T. Station = 544+43.59 N 6,928,008.5216 E 2,356,246.3137
C.C. N 6,925,679.2949 E 2,354,125.6528
Back = S 62° 14' 17.46" E
Ahead = S 47° 41' 00.54" E
Chord Bear = S 54° 57' 39.00" E

Ending chain BUS287 description

THOMAS E.T. COCHILL
87665
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
8/29/2024

NO.	REVISION	BY	DATE

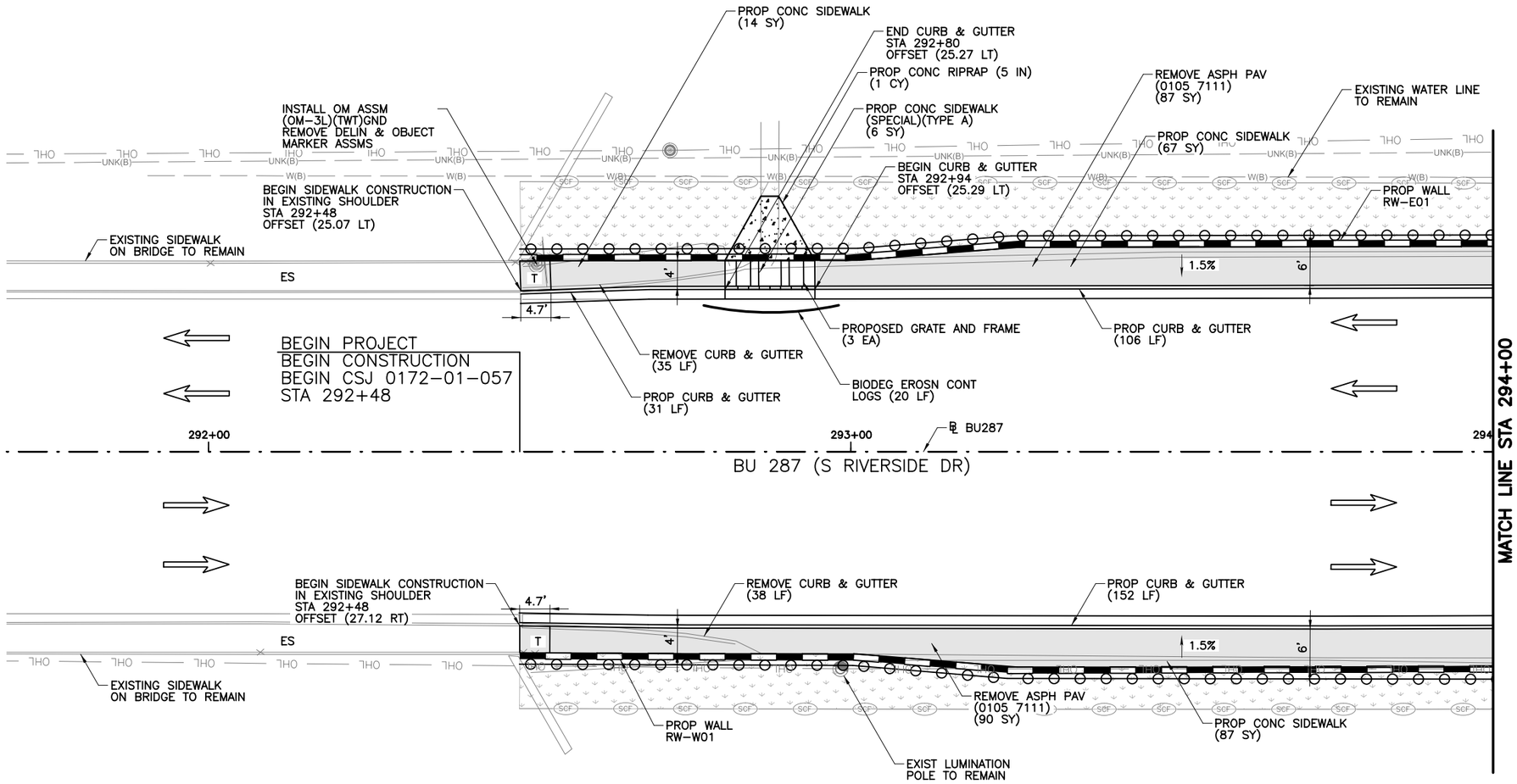
TEXAS REGISTERED ENGINEERING FIRM F-1741

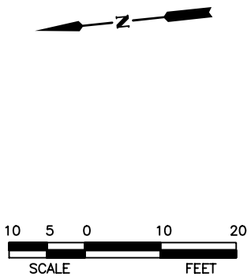
FORT WORTH SIDEWALK IMPROVEMENTS

HORIZONTAL CONTROL DATA SHEET

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		116

SHEET 1 OF 1





NOTES:

1. LINEAR DIMENSIONS ARE TO THE BACK OF CURB.
2. REFER TO DRIVEWAY DETAIL SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
3. REFER TO MISCELLANEOUS DETAILS SHEET FOR ADDITIONAL CONSTRUCTION AND DETAILS.
4. REFER TO TXDOT PED-18 STANDARDS FOR ADDITIONAL INFORMATION.
5. REFER TO RETAINING WALL SHEETS FOR ADDITIONAL RETAINING WALL INFORMATION.
6. REFER TO DRAINAGE SHEETS FOR ADDITIONAL DRAINAGE INFORMATION.
7. CONTRACTOR TO FIELD VERIFY CURB HEIGHTS USED FOR SIDEWALK CURB. SEE DETAILS FOR ADDITIONAL DETAILS REGUARDING CONSTRUCTION.
8. CONTRACTOR SHALL FIELD VERIFY SLOPE, DIMENSION, AND ELEVATIONS.
9. SAWCUT SHALL BE SUBSIDIARY TO PAVEMENT REMOVAL.
10. THE LOCATIONS WHERE EXISTING CURB AND GUTTER WILL BE REMOVED, THE REPLACED CURB AND GUTTER WILL BE LOCATED IN A NEW LOCATION AS PART OF THE PROJECT PLAN SET.

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

— · · —	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK			⇒	TRAFFIC ARROW
ER	EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
— X —	FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F	FLARE		MANHOLE		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GAS METER		PED SIGNAL POLE		WALL
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
W	IRRIGATION CONTROL	X	PIPELINE RISER		WATER VALVE
J	JUNCTION BOX	PBX	PULL BOX		RIPRAP (4" CONC)
L	LANDING	R	RAMP		STONE RIPRAP
L1	LANDING (COMMON)		PROPOSED SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

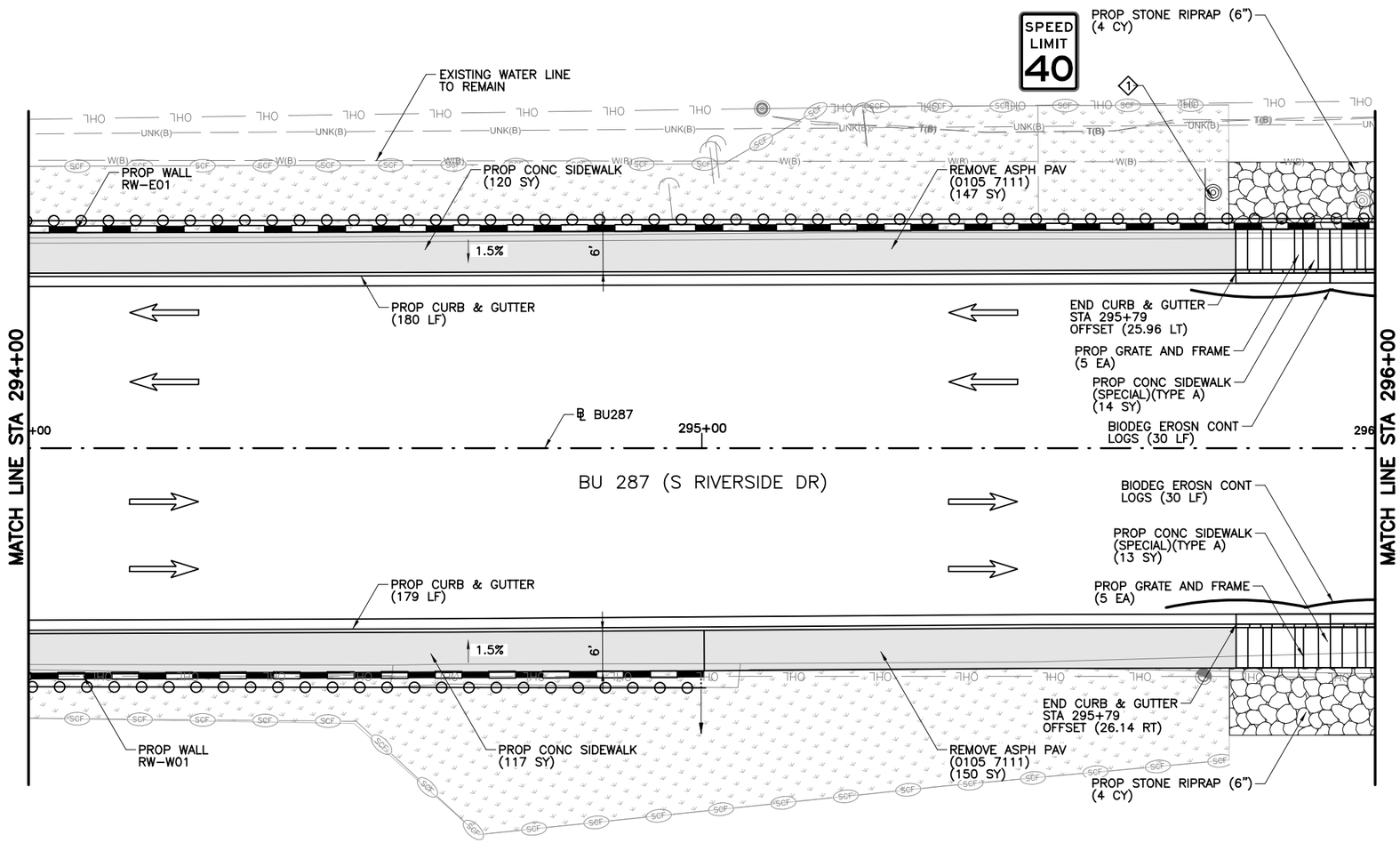
SHEET 1 OF 31

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
BEGIN TO STA 294+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		117	



N

10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW		SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
ES	EXISTING SIDEWALK		
ER	EXISTING RAMP		LIGHT POLE
X	FENCE		MAIL BOX
F	FLARE		MANHOLE
	FIRE HYDRANT		PED RAIL
	GAS METER		PED SIGNAL POLE
	GUY ANCHOR		POWER/UTILITY POLE
W	IRRIGATION CONTROL		PIPELINE RISER
J	JUNCTION BOX	PBX	PULL BOX
L	LANDING	R	RAMP
L1	LANDING (COMMON)		PROPOSED SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN
SCF	SILT FENCE		SODDING

T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

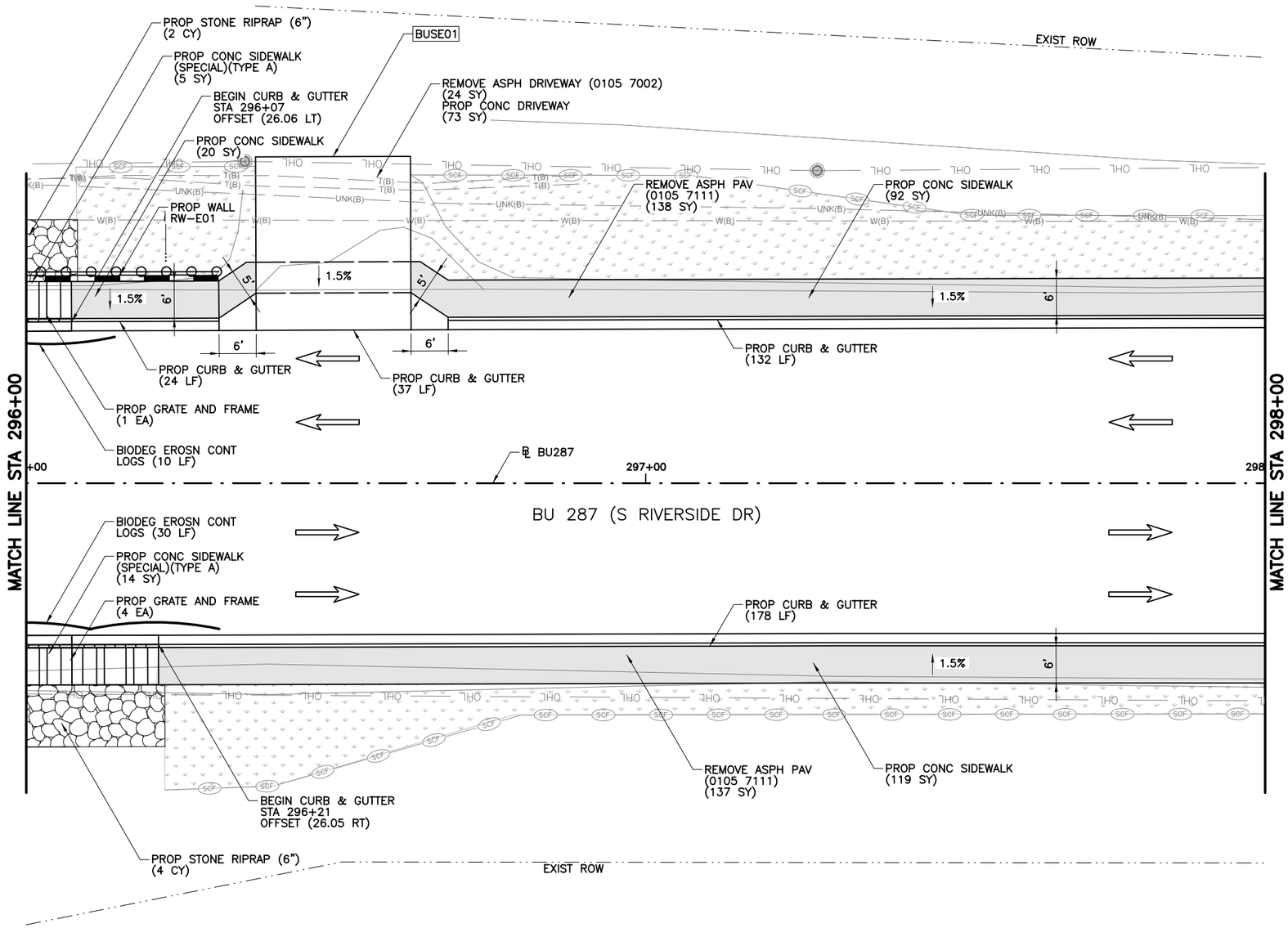
SHEET 2 OF 31

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 294+00 TO STA 296+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	118



N

10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

— · · —	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%, CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK				TRAFFIC ARROW
ER	EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
— X —	FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F	FLARE		MANHOLE		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GAS METER		PED SIGNAL POLE		WALL
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
IC	IRRIGATION CONTROL		PIPELINE RISER		WATER VALVE
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L	LANDING	R	RAMP		STONE RIPRAP
L1	LANDING (COMMON)		PROPOSED SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

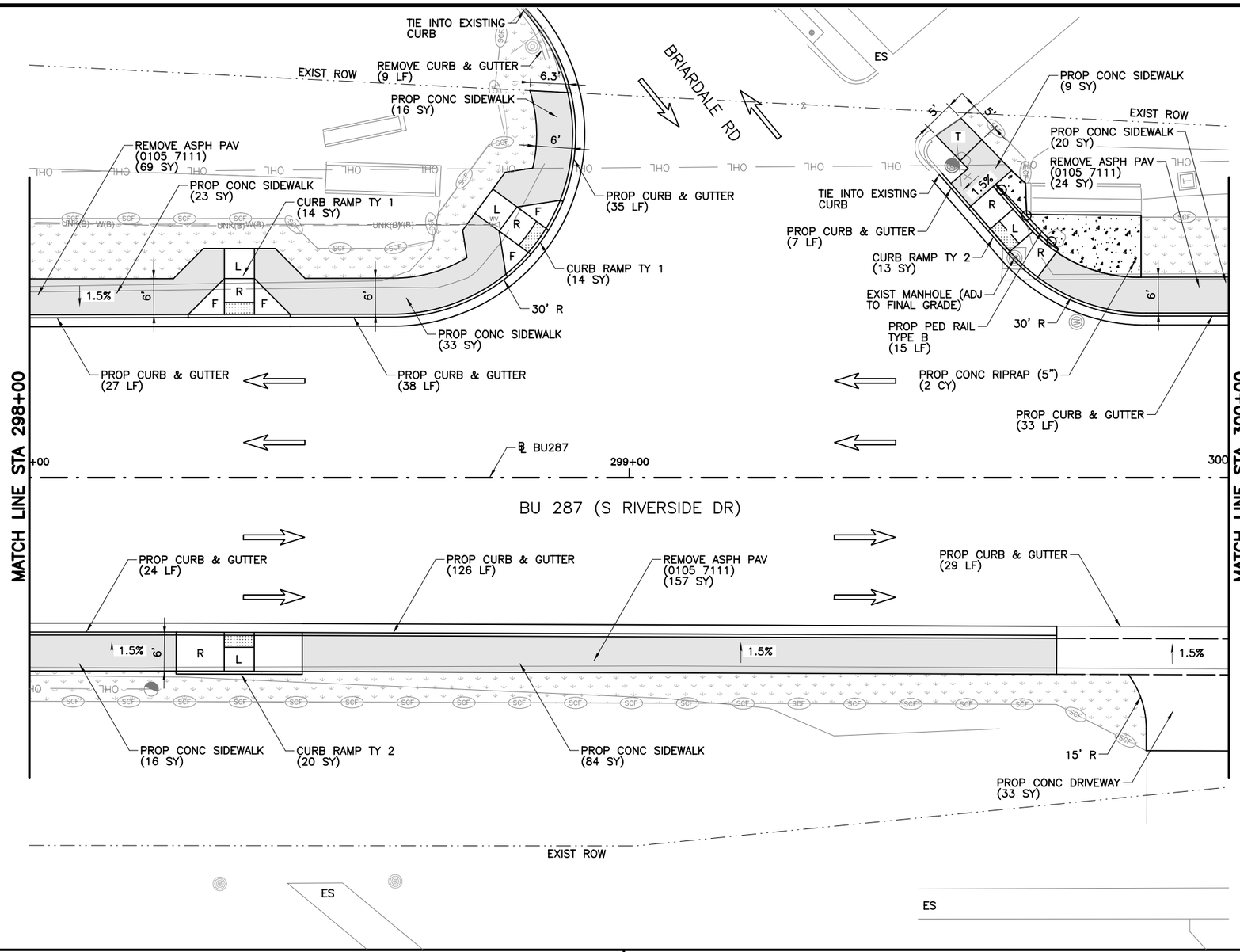
SHEET 3 OF 31

NO.	REVISION	BY	DATE

stv TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 296+00 TO STA 298+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	119	



10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW		SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK				TRAFFIC ARROW
ER	EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
X	FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
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	GAS METER		PED SIGNAL POLE		WALL
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
IRV	IRRIGATION CONTROL		PIPELINE RISER		WATER VALVE
J	JUNCTION BOX	PBX	PULL BOX		RIPRAP (4" CONC)
L	LANDING	R	RAMP		STONE RIPRAP
L1	LANDING (COMMON)		PROPOSED SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

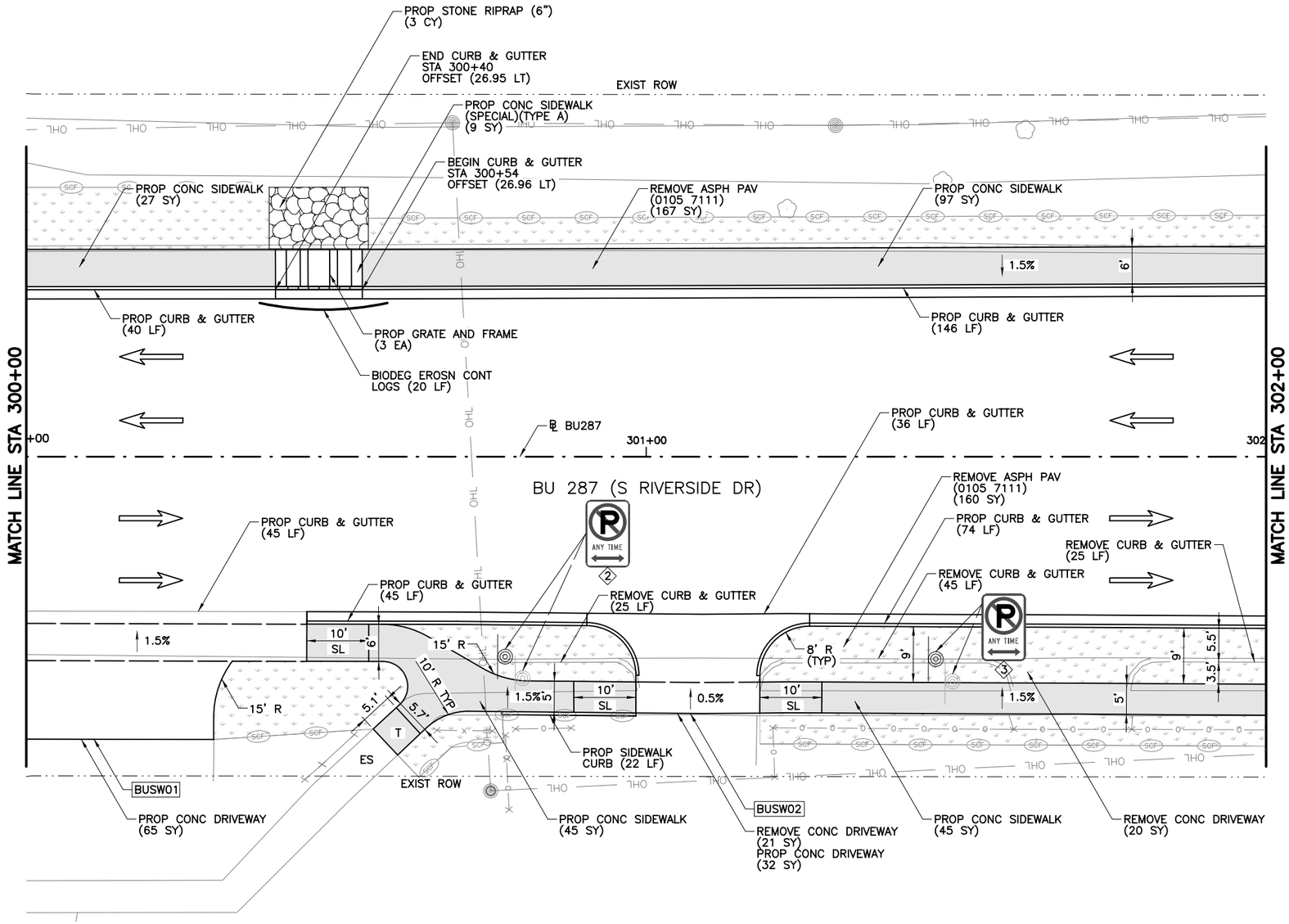
SHEET 4 OF 31

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 298+00 TO STA 300+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		120	



N

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SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T TRANSITION
ES EXISTING SIDEWALK			TRAFFIC ARROW
ER EXISTING RAMP		LIGHT POLE	TELEPHONE PEDESTAL
X FENCE		MAIL BOX	TRAFFIC SIGNAL CONTROLLER
F FLARE		MANHOLE	TRAFFIC SIGNAL POLE
FIRE HYDRANT		PED RAIL	TREE/SHRUBS
GAS METER		PED SIGNAL POLE	WALL
GUY ANCHOR		POWER/UTILITY POLE	WATER METER
IRRIGATION CONTROL		PIPELINE RISER	WATER VALVE
JUNCTION BOX	PBX	PULL BOX	RIPRAP (4" CONC)
L LANDING	R	RAMP	STONE RIPRAP
L1 LANDING (COMMON)		PROPOSED SIGN	PROP SIDEWALK
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN	BIODEG EROSN CONT LOGS
SCF SILT FENCE		SODDING	

SHEET 5 OF 31

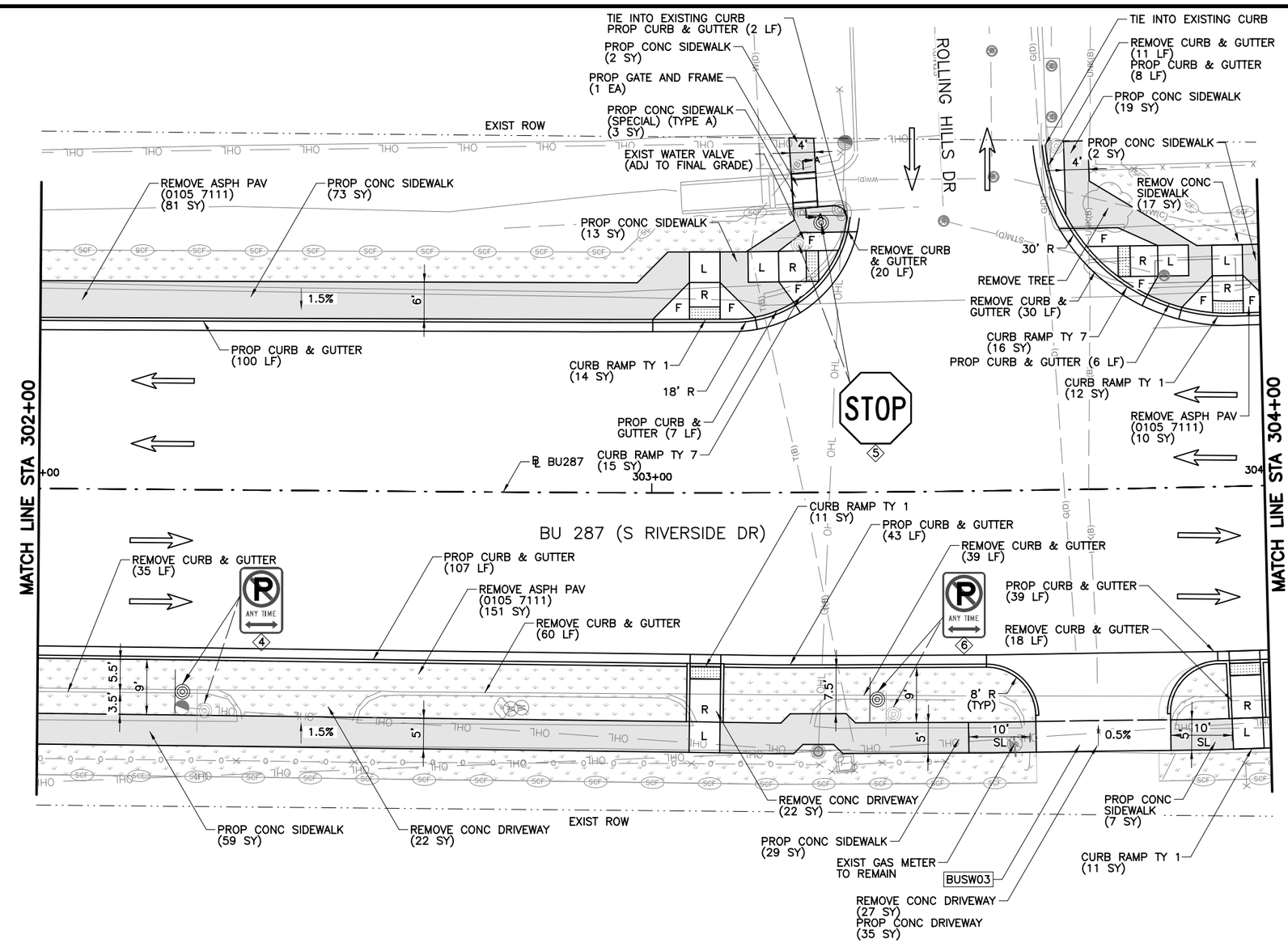
NO.	REVISION	BY	DATE

stv TEXAS REGISTERED ENGINEERING FIRM F-1741

 Texas Department of Transportation

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 300+00 TO STA 302+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	121	



10 5 0 10 20
SCALE FEET

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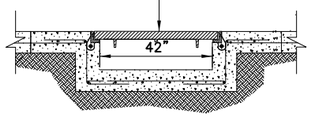
STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER
9/9/2024

SPECIAL NOTES & DETAILS

GRATE & FRAME (ITEM 471)
NEENAH FOUNDRY TYPE R-4999-NX
TYPE D OR EQUIVALENT.
BOLT DOWN GRATE W/FRAME.



REFER TO SIDEWALK (SPECIAL)(TYPE A) DETAIL FOR ADDITIONAL INFORMATION

SECTION A-A
N.T.S.

LEGEND

EXIST ROW		SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
ES	EXISTING SIDEWALK		
ER	EXISTING RAMP		LIGHT POLE
X	FENCE		MAIL BOX
F	FLARE		MANHOLE
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	GUY ANCHOR		POWER/UTILITY POLE
W	IRRIGATION CONTROL	X	PIPELINE RISER
J	JUNCTION BOX	PBX	PULL BOX
L	LANDING	R	RAMP
L1	LANDING (COMMON)		PROPOSED SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN
SCF	SILT FENCE		SODDING
T	TRANSITION		
	TRAFFIC ARROW		
T	TELEPHONE PEDESTAL		
	TRAFFIC SIGNAL CONTROLLER		
	TRAFFIC SIGNAL POLE		
	TREE/SHRUBS		
	WALL		
W	WATER METER		
	WATER VALVE		
	RIPRAP (4" CONC)		
	STONE RIPRAP		
	PROP SIDEWALK		
	BIODEG EROSN CONT LOGS		

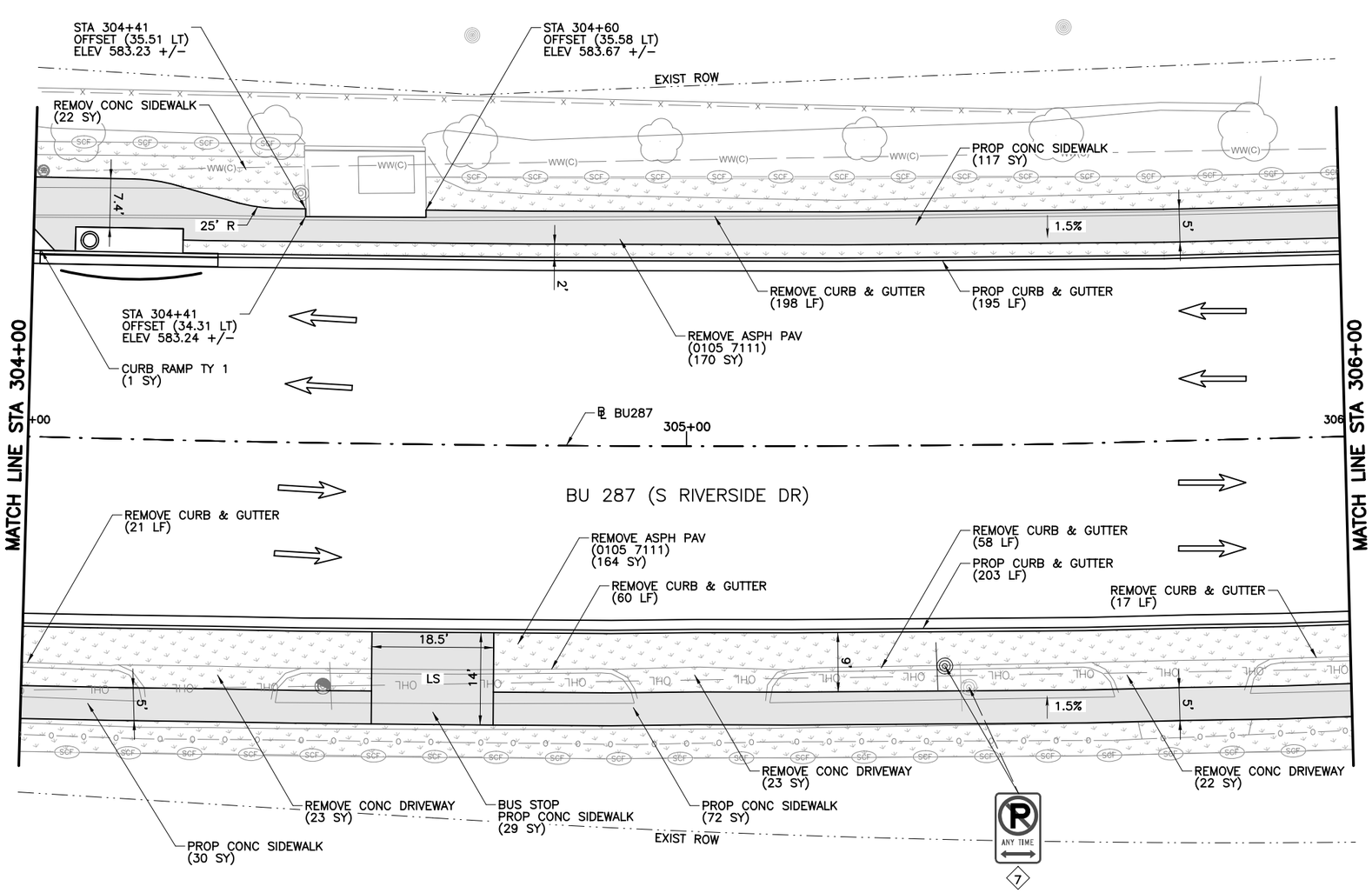
SHEET 6 OF 31

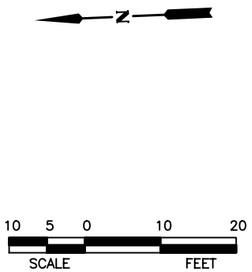
NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 302+00 TO STA 304+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	122
Checked:	STV						





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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

—·—·—	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
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ER	EXISTING RAMP		LIGHT POLE
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	FIRE HYDRANT		PED RAIL
	GAS METER		PED SIGNAL POLE
	GUY ANCHOR		POWER/UTILITY POLE
W	IRRIGATION CONTROL	X	PIPELINE RISER
J	JUNCTION BOX	PBX	PULL BOX
L	LANDING	R	RAMP
L1	LANDING (COMMON)		PROPOSED SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN
SCF	SILT FENCE		SODDING

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	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

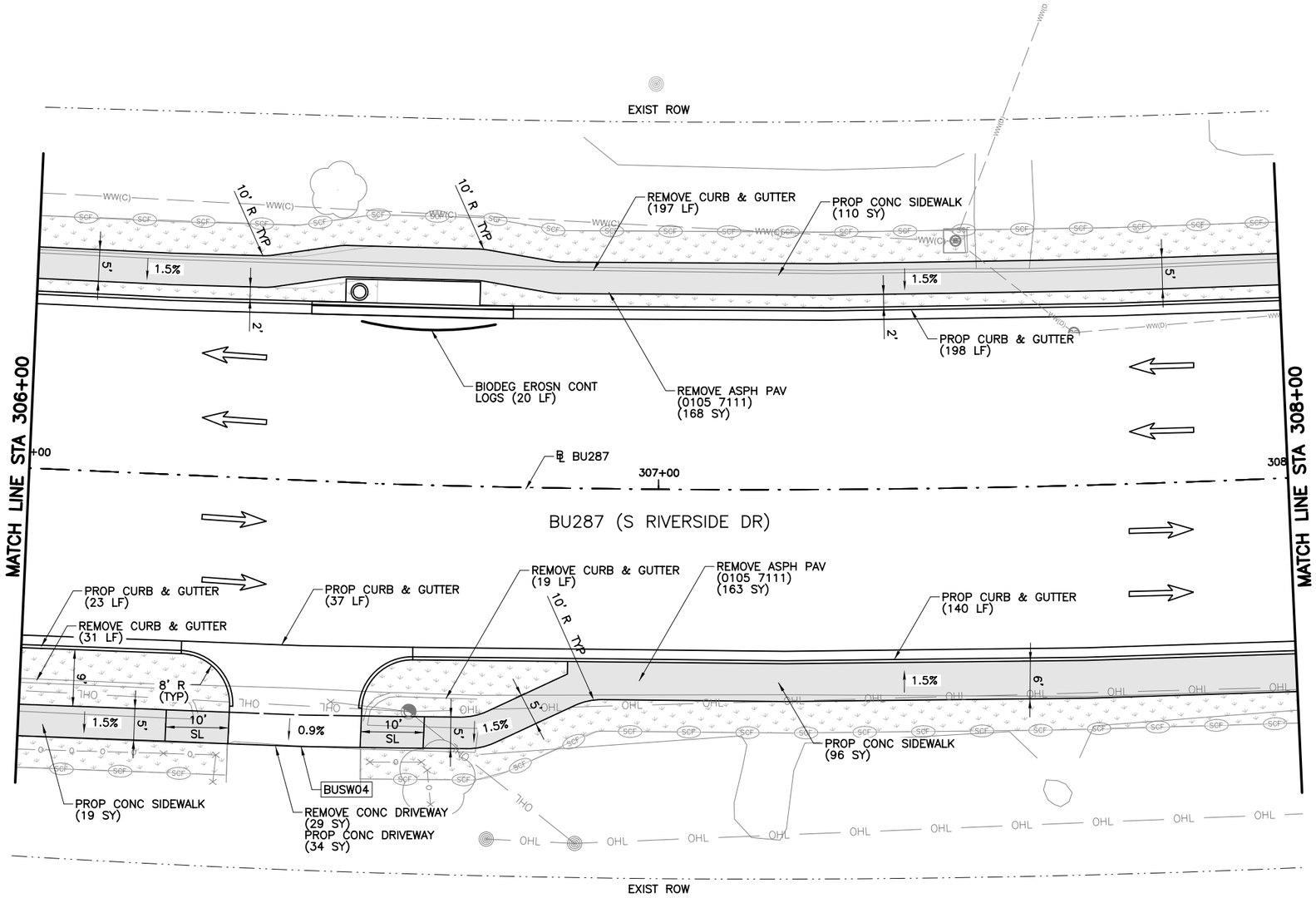
SHEET 7 OF 31

NO.	REVISION	BY	DATE

stv — TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 304+00 TO STA 306+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	123	



N

10 5 0 10 20
SCALE FEET

NOTES:

1. LINEAR DIMENSIONS ARE TO THE BACK OF CURB.
2. REFER TO DRIVEWAY DETAIL SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
3. REFER TO MISCELLANEOUS DETAILS SHEET FOR ADDITIONAL CONSTRUCTION AND DETAILS.
4. REFER TO TXDOT PED-18 STANDARDS FOR ADDITIONAL INFORMATION.
5. REFER TO RETAINING WALL SHEETS FOR ADDITIONAL RETAINING WALL INFORMATION.
6. REFER TO DRAINAGE SHEETS FOR ADDITIONAL DRAINAGE INFORMATION.
7. CONTRACTOR TO FIELD VERIFY CURB HEIGHTS USED FOR SIDEWALK CURB. SEE DETAILS FOR ADDITIONAL DETAILS REGUARDING CONSTRUCTION.
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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T TRANSITION
ES EXISTING SIDEWALK			TRAFFIC ARROW
ER EXISTING RAMP		LIGHT POLE	TELEPHONE PEDESTAL
X FENCE		MAIL BOX	TRAFFIC SIGNAL CONTROLLER
F FLARE		MANHOLE	TRAFFIC SIGNAL POLE
FIRE HYDRANT		PED RAIL	TREE/SHRUBS
GAS METER		PED SIGNAL POLE	WALL
GUY ANCHOR		POWER/UTILITY POLE	WATER METER
IRRIGATION CONTROL		PIPELINE RISER	WATER VALVE
JUNCTION BOX	PBX	PULL BOX	RIPRAP (4" CONC)
L LANDING	R	RAMP	STONE RIPRAP
L1 LANDING (COMMON)		PROPOSED SIGN	PROP SIDEWALK
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN	BIODEG EROSN CONT LOGS
SILT FENCE		SODDING	

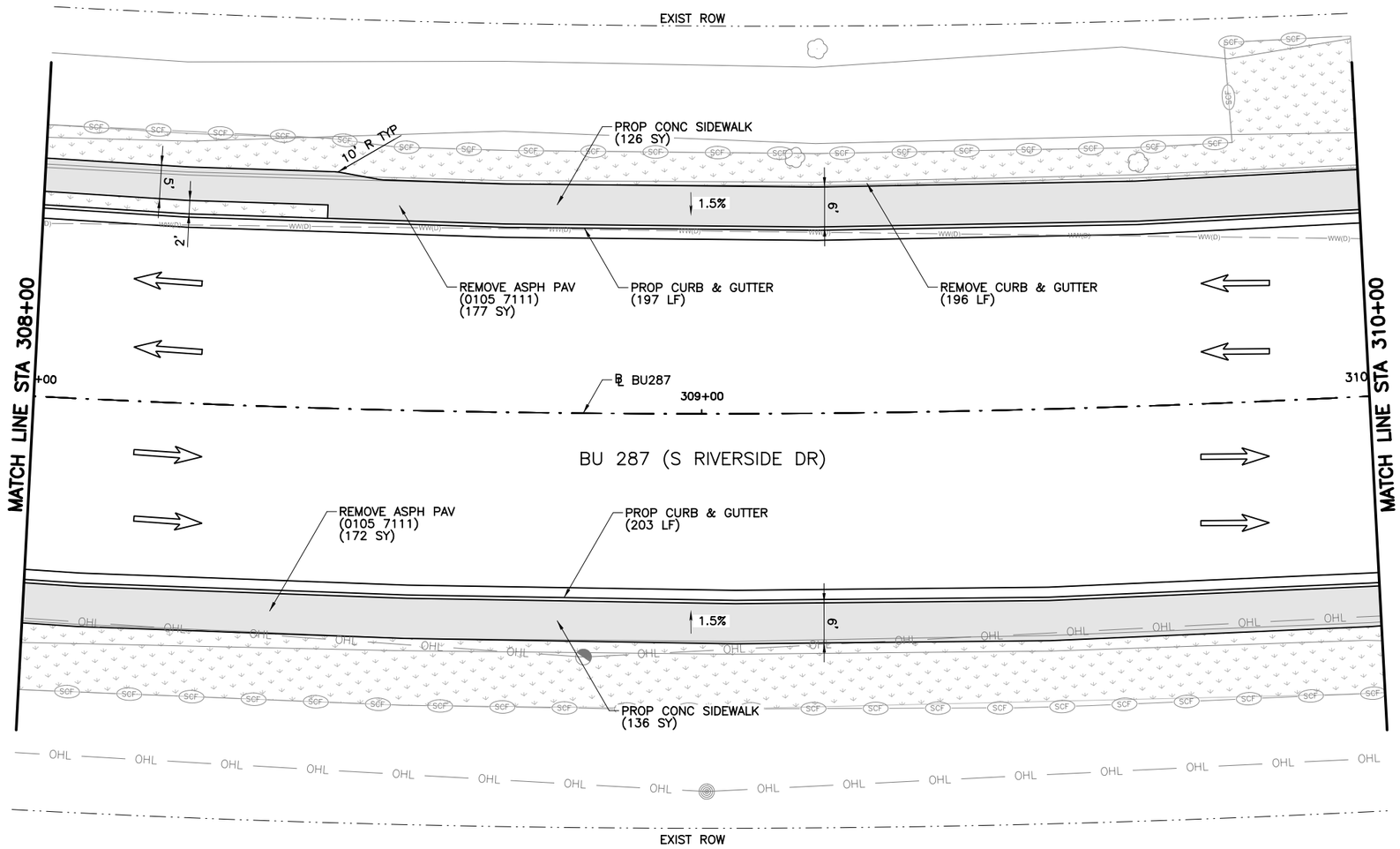
NO.	REVISION	BY	DATE

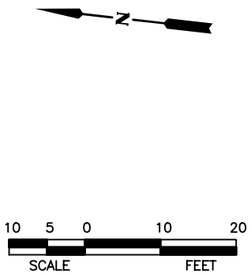
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 306+00 TO STA 308+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	124	

SHEET 8 OF 31





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8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

— · —	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
ES	EXISTING SIDEWALK		LIGHT POLE
ER	EXISTING RAMP		MAIL BOX
— X —	FENCE		MANHOLE
F	FLARE		PED RAIL
	FIRE HYDRANT		PED SIGNAL POLE
	GAS METER		POWER/UTILITY POLE
	GUY ANCHOR		PIPELINE RISER
W	IRRIGATION CONTROL	PBX	PULL BOX
J	JUNCTION BOX	R	RAMP
L	LANDING		PROPOSED SIGN
L1	LANDING (COMMON)		SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SODDING
SCF	SILT FENCE		

T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

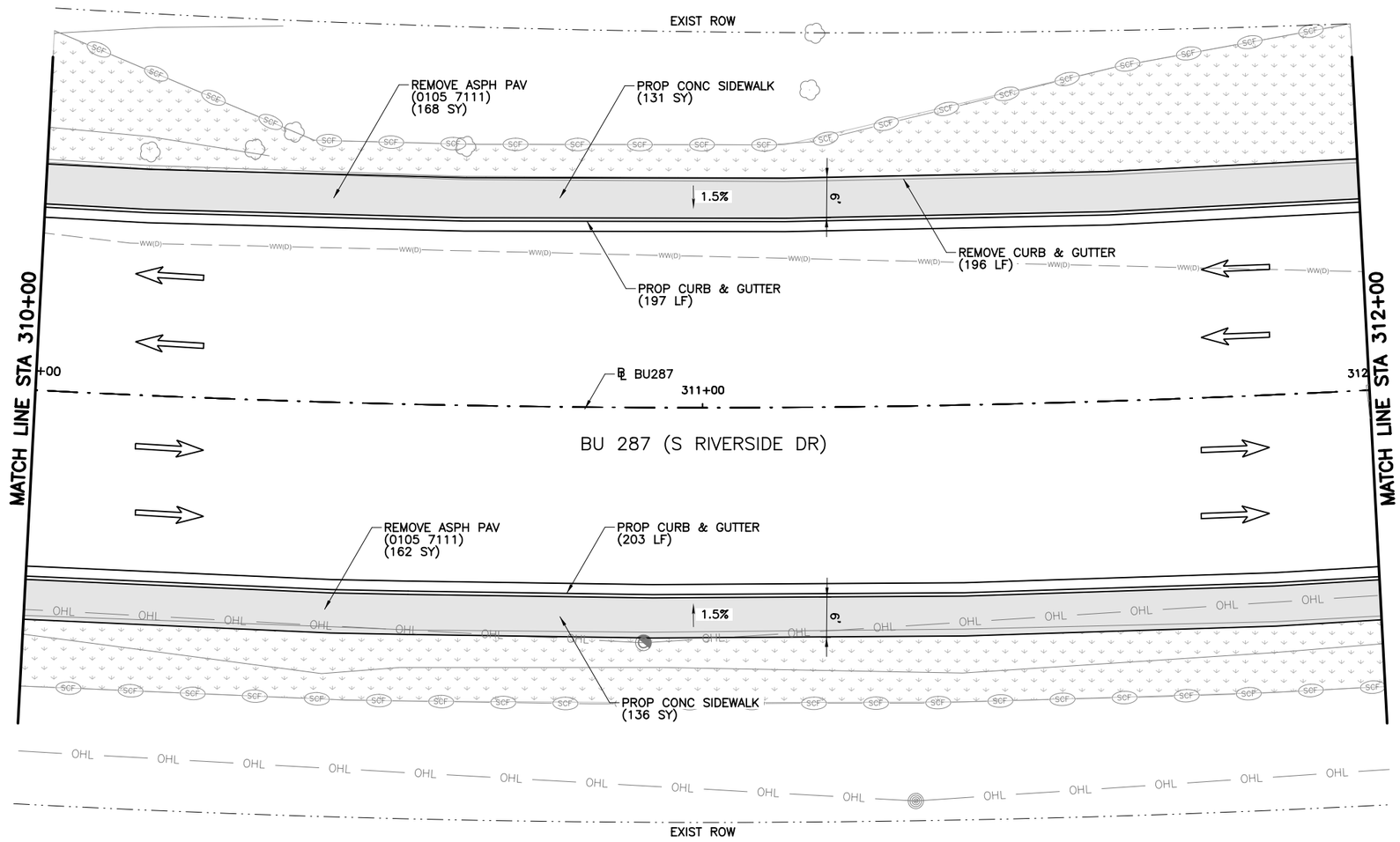
SHEET 9 OF 31

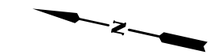
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 308+00 TO STA 310+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		125





10 5 0 10 20
SCALE FEET

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8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

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ES	EXISTING SIDEWALK		LIGHT POLE
ER	EXISTING RAMP		MAIL BOX
X	FENCE		MANHOLE
F	FLARE		PED RAIL
	FIRE HYDRANT		PED SIGNAL POLE
	GAS METER		POWER/UTILITY POLE
	GUY ANCHOR		PIPELINE RISER
W	IRRIGATION CONTROL	PBX	PULL BOX
J	JUNCTION BOX	R	RAMP
L	LANDING		PROPOSED SIGN
L1	LANDING (COMMON)		SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SODDING
SCF	SILT FENCE	T	TRANSITION
			TRAFFIC ARROW
		T	TELEPHONE PEDESTAL
			TRAFFIC SIGNAL CONTROLLER
			TRAFFIC SIGNAL POLE
			TREE/SHRUBS
			WALL
		W	WATER METER
			WATER VALVE
			RIPRAP (4" CONC)
			STONE RIPRAP
			PROP SIDEWALK
			BIODEG EROSN CONT LOGS

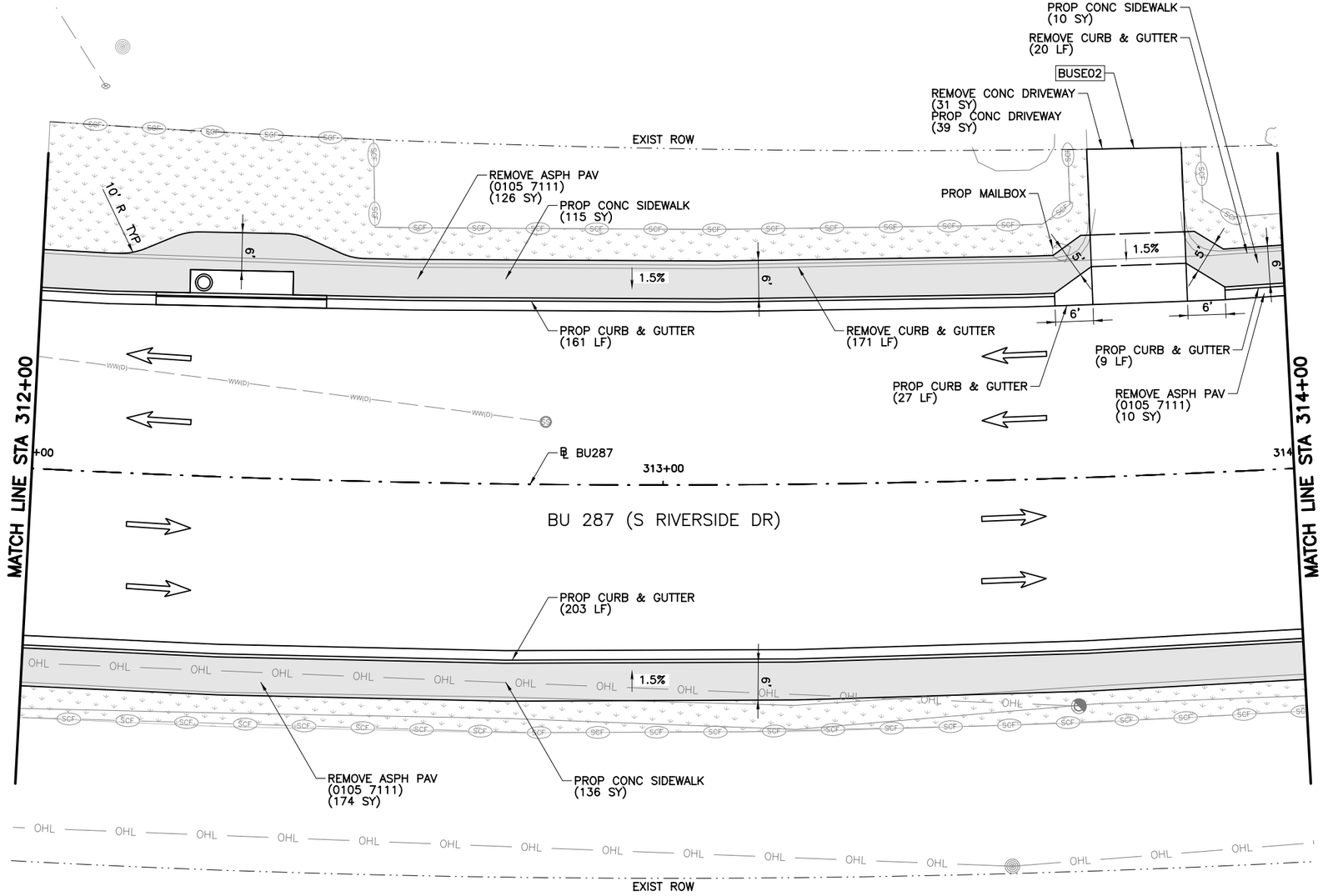
SHEET 10 OF 31

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 310+00 TO STA 312+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		126



10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

— · — · —	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T	TRANSITION
ES	EXISTING SIDEWALK				TRAFFIC ARROW
ER	EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
— X —	FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F	FLARE		MANHOLE		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GAS METER		PED SIGNAL POLE		WALL
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
W	IRRIGATION CONTROL	X	PIPELINE RISER		WATER VALVE
J	JUNCTION BOX	PBX	PULL BOX		RIPRAP (4" CONC)
L	LANDING	R	RAMP		STONE RIPRAP
L1	LANDING (COMMON)		PROPOSED SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

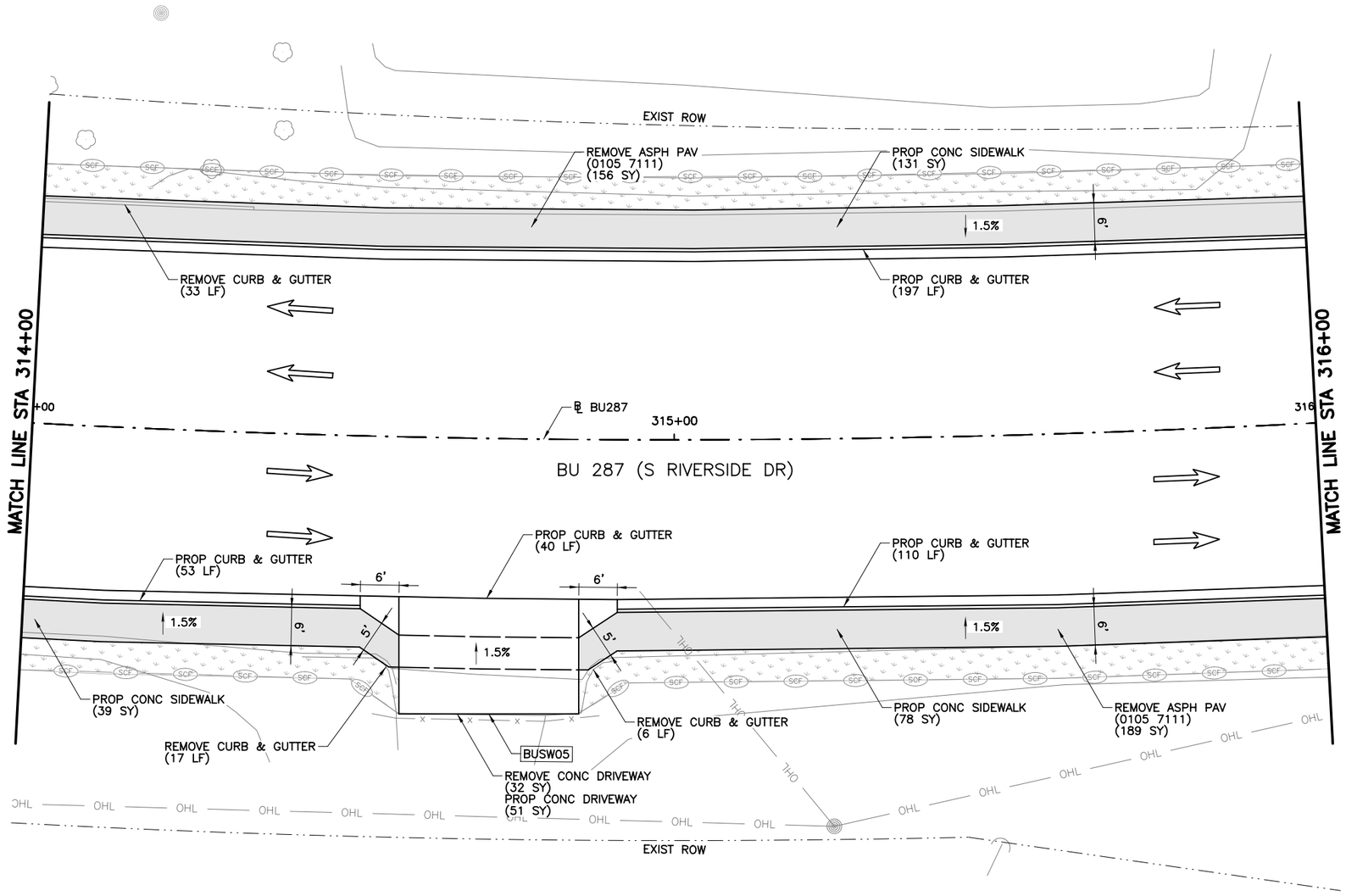
SHEET 11 OF 31

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 312+00 TO STA 314+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		127	



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SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

— · —	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%, CROSS SLOPES MAY NOT EXCEED 2%
ES	EXISTING SIDEWALK		
ER	EXISTING RAMP		LIGHT POLE
— X —	FENCE		MAIL BOX
F	FLARE		MANHOLE
	FIRE HYDRANT		PED RAIL
	GAS METER		PED SIGNAL POLE
	GUY ANCHOR		POWER/UTILITY POLE
IRR	IRRIGATION CONTROL	X	PIPELINE RISER
J	JUNCTION BOX	PBX	PULL BOX
L	LANDING	R	RAMP
L1	LANDING (COMMON)		PROPOSED SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN
SCF	SILT FENCE		SODDING

T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

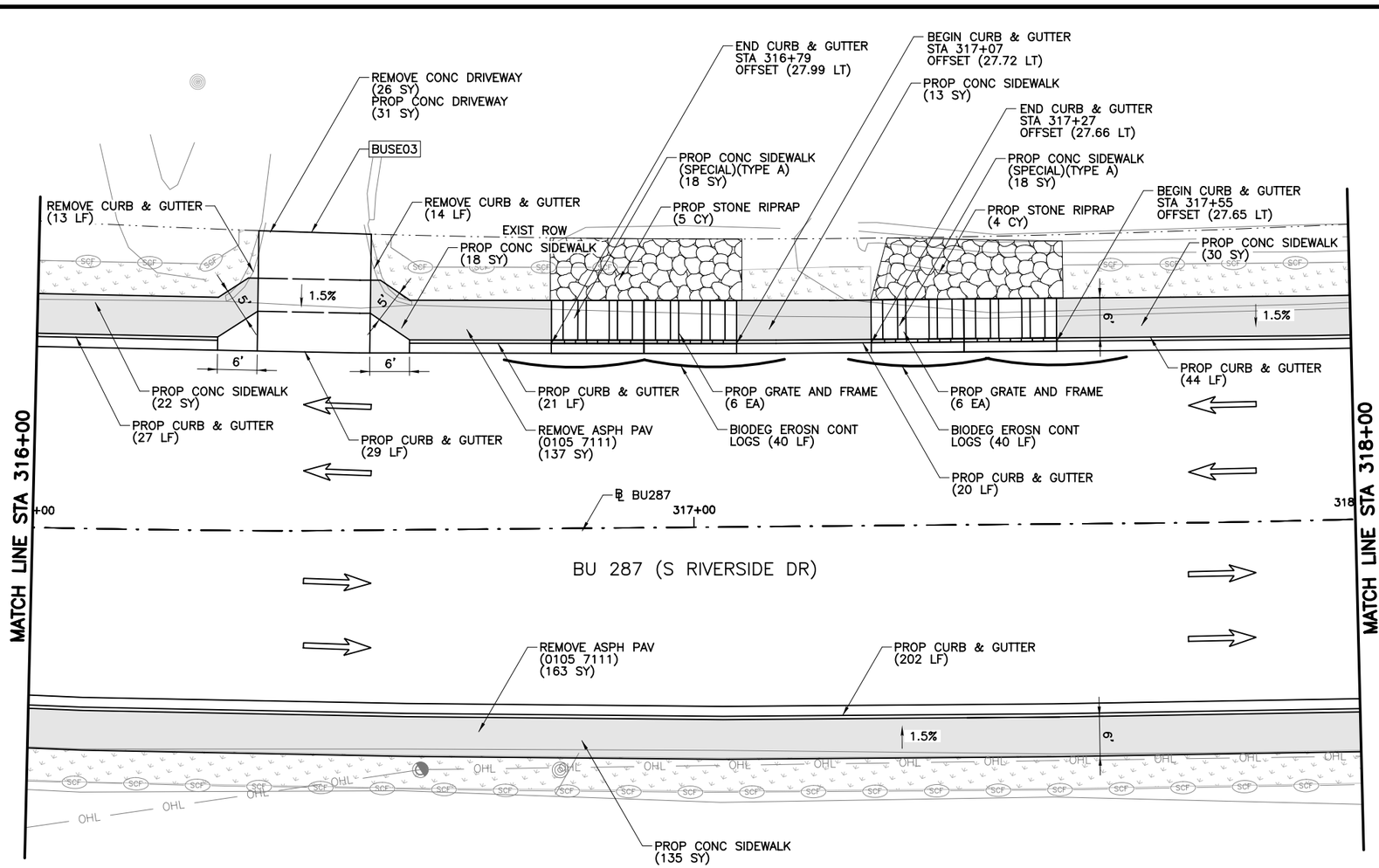
SHEET 12 OF 31

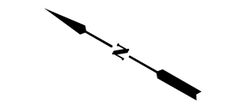
NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 314+00 TO STA 316+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	128	





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8/30/2024

SPECIAL NOTES & DETAILS

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	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GAS METER		PED SIGNAL POLE		WALL
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
W	IRRIGATION CONTROL	X	PIPELINE RISER		WATER VALVE
J	JUNCTION BOX	PBX	PULL BOX		RIPRAP (4" CONC)
L	LANDING	R	RAMP		STONE RIPRAP
L1	LANDING (COMMON)		PROPOSED SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

SHEET 13 OF 31

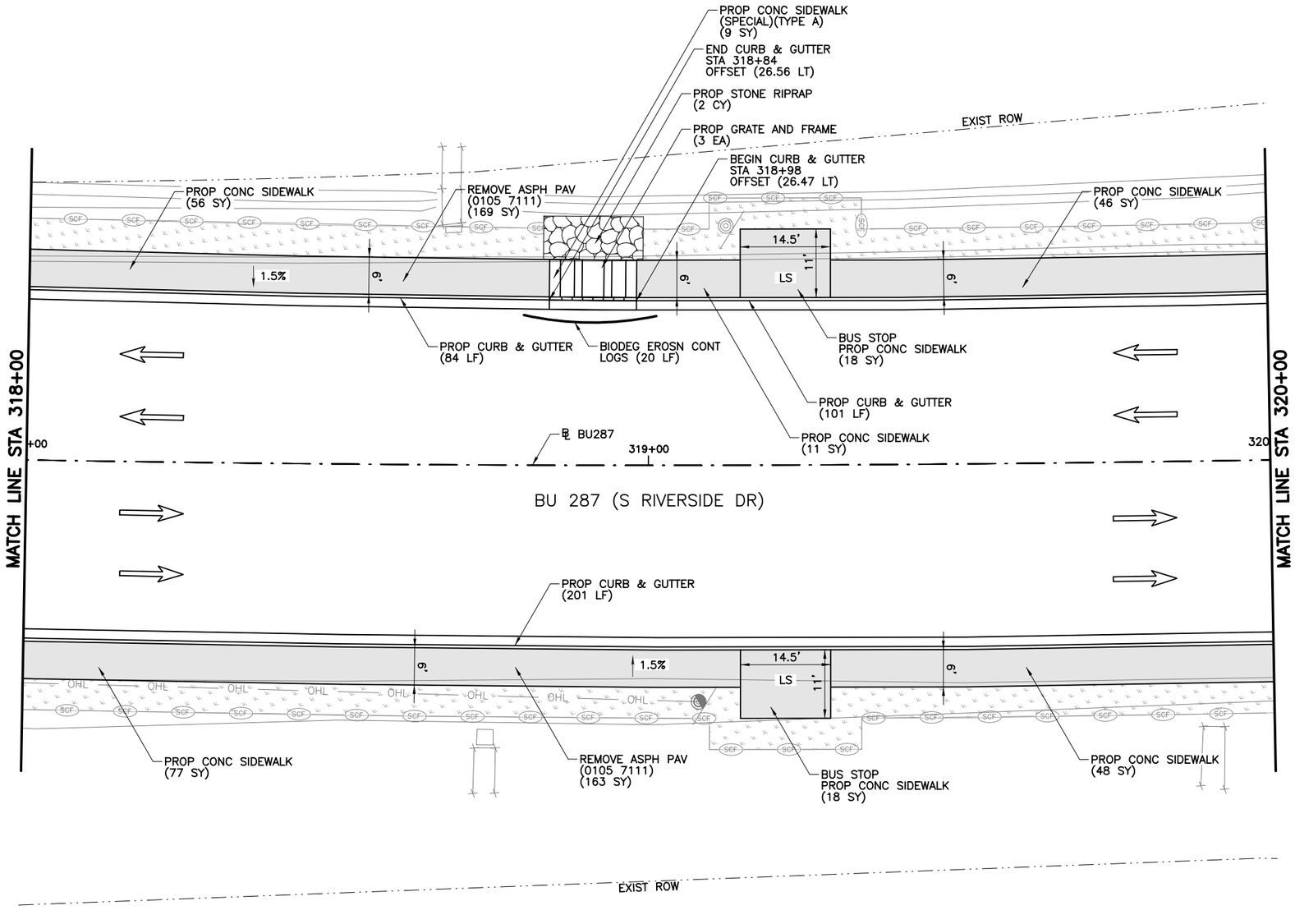
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 316+00 TO STA 318+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	129



10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

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LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

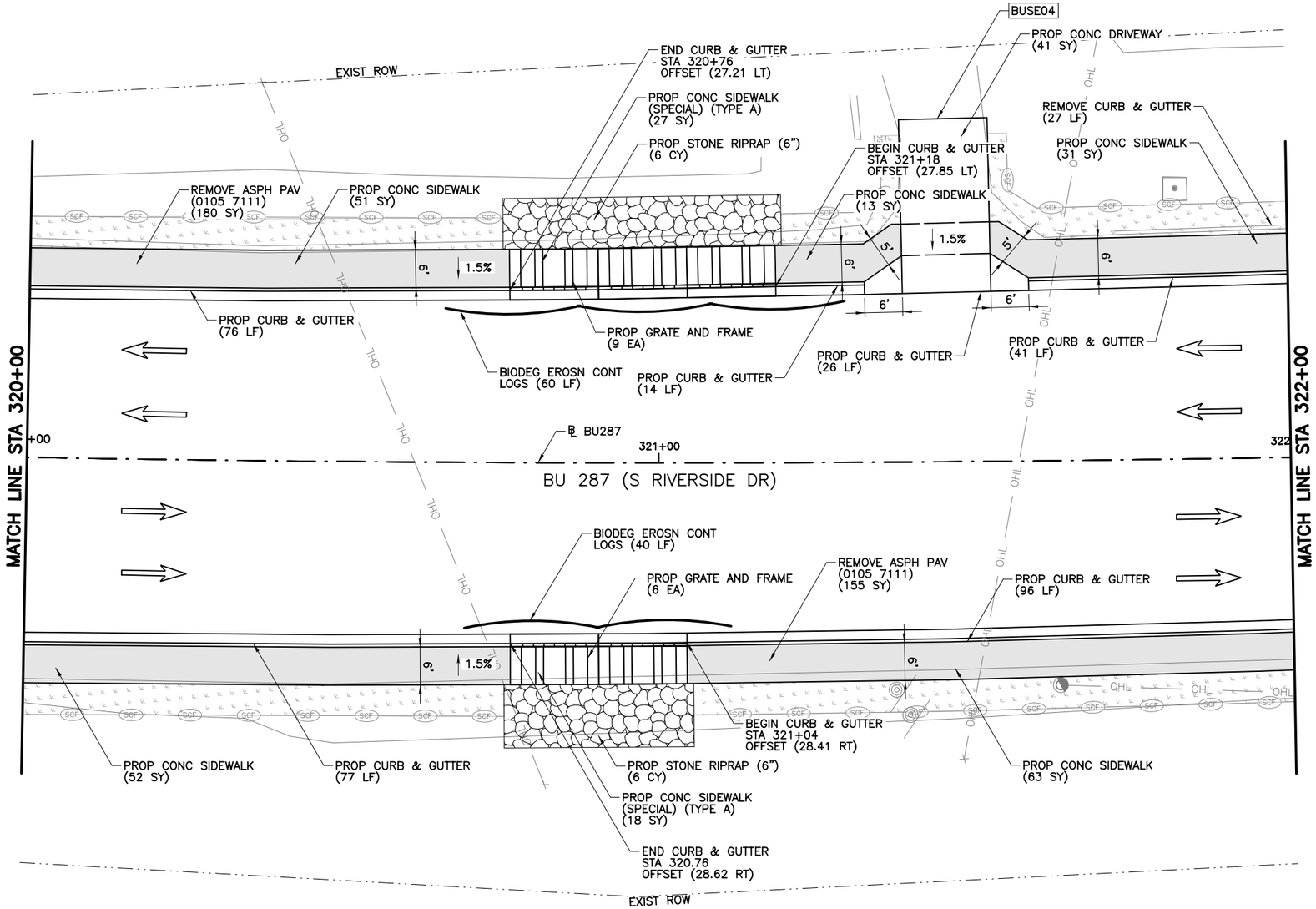
SHEET 14 OF 31

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 318+00 TO STA 320+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	130
Checked:	STV						



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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW		SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
ES	EXISTING SIDEWALK		LIGHT POLE
ER	EXISTING RAMP		MAIL BOX
X	FENCE		MANHOLE
F	FLARE		PED RAIL
	FIRE HYDRANT		PED SIGNAL POLE
	GAS METER		POWER/UTILITY POLE
	GUY ANCHOR		PIPELINE RISER
W	IRRIGATION CONTROL	PBX	PULL BOX
J	JUNCTION BOX	R	RAMP
L	LANDING		PROPOSED SIGN
L1	LANDING (COMMON)		SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SODDING
SCF	SILT FENCE	T	TRANSITION
			TRAFFIC ARROW
		T	TELEPHONE PEDESTAL
			TRAFFIC SIGNAL CONTROLLER
			TRAFFIC SIGNAL POLE
			TREE/SHRUBS
			WALL
		W	WATER METER
			WATER VALVE
			RIPRAP (4" CONC)
			STONE RIPRAP
			PROP SIDEWALK
			BIODEG EROSN CONT LOGS

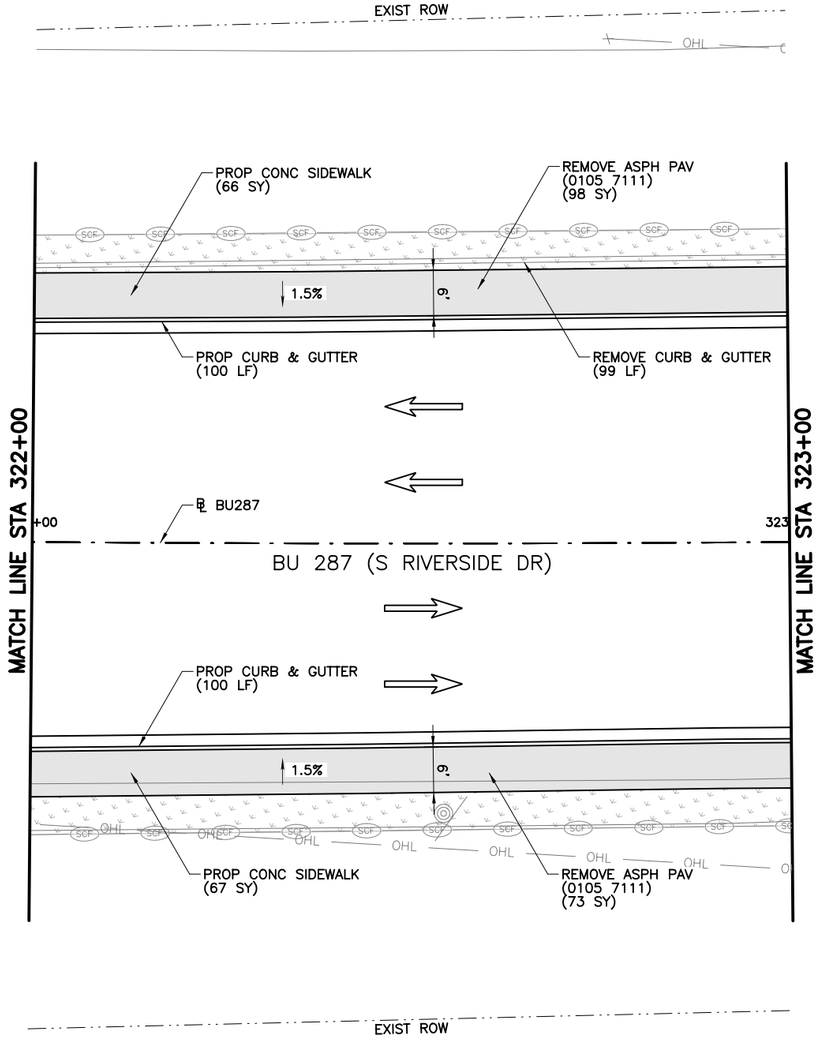
SHEET 15 OF 31

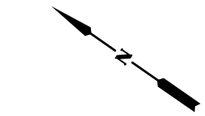
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 320+00 TO STA 322+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	131





NOTES:

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4. REFER TO TXDOT PED-18 STANDARDS FOR ADDITIONAL INFORMATION.
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8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

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ES	EXISTING SIDEWALK				TRAFFIC ARROW
ER	EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
— X —	FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F	FLARE		MANHOLE		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GAS METER		PED SIGNAL POLE		WALL
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
IC	IRRIGATION CONTROL	X	PIPELINE RISER		WATER VALVE
J	JUNCTION BOX	PBX	PULL BOX		RIPRAP (4" CONC)
L	LANDING	R	RAMP		STONE RIPRAP
L1	LANDING (COMMON)		PROPOSED SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

SHEET 16 OF 31

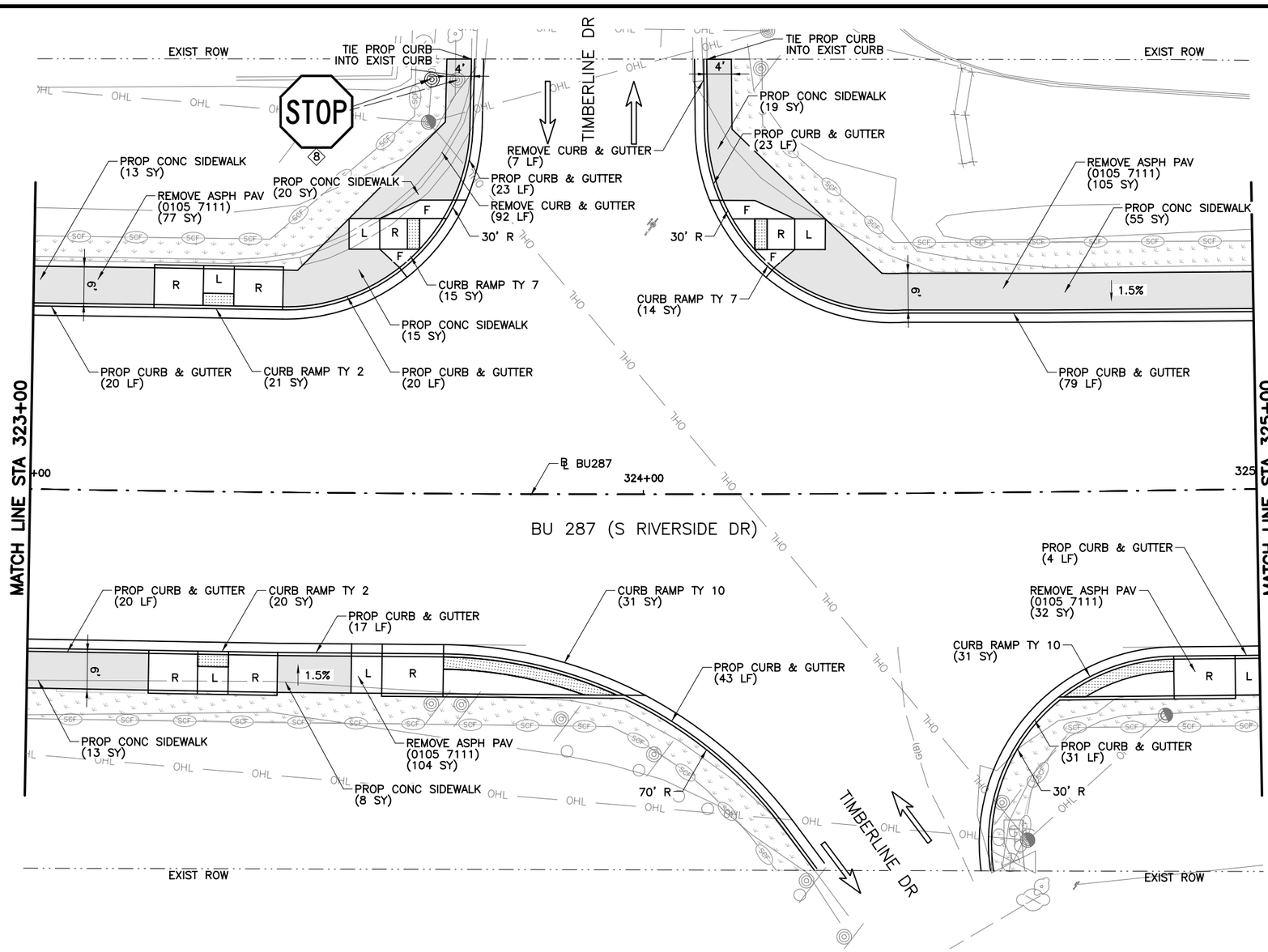
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 322+00 TO STA 323+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	132	



10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER

9/9/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
X	FENCE
F	FLARE
	FIRE HYDRANT
	GAS METER
	GUY ANCHOR
W	IRRIGATION CONTROL
J	JUNCTION BOX
L	LANDING
L1	LANDING (COMMON)
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)
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	MAIL BOX
SS	MANHOLE
	PED RAIL
	PED SIGNAL POLE
	POWER/UTILITY POLE
	PIPELINE RISER
PBX	PULL BOX
R	RAMP
	PROPOSED SIGN
	SIGN
	SODDING
T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

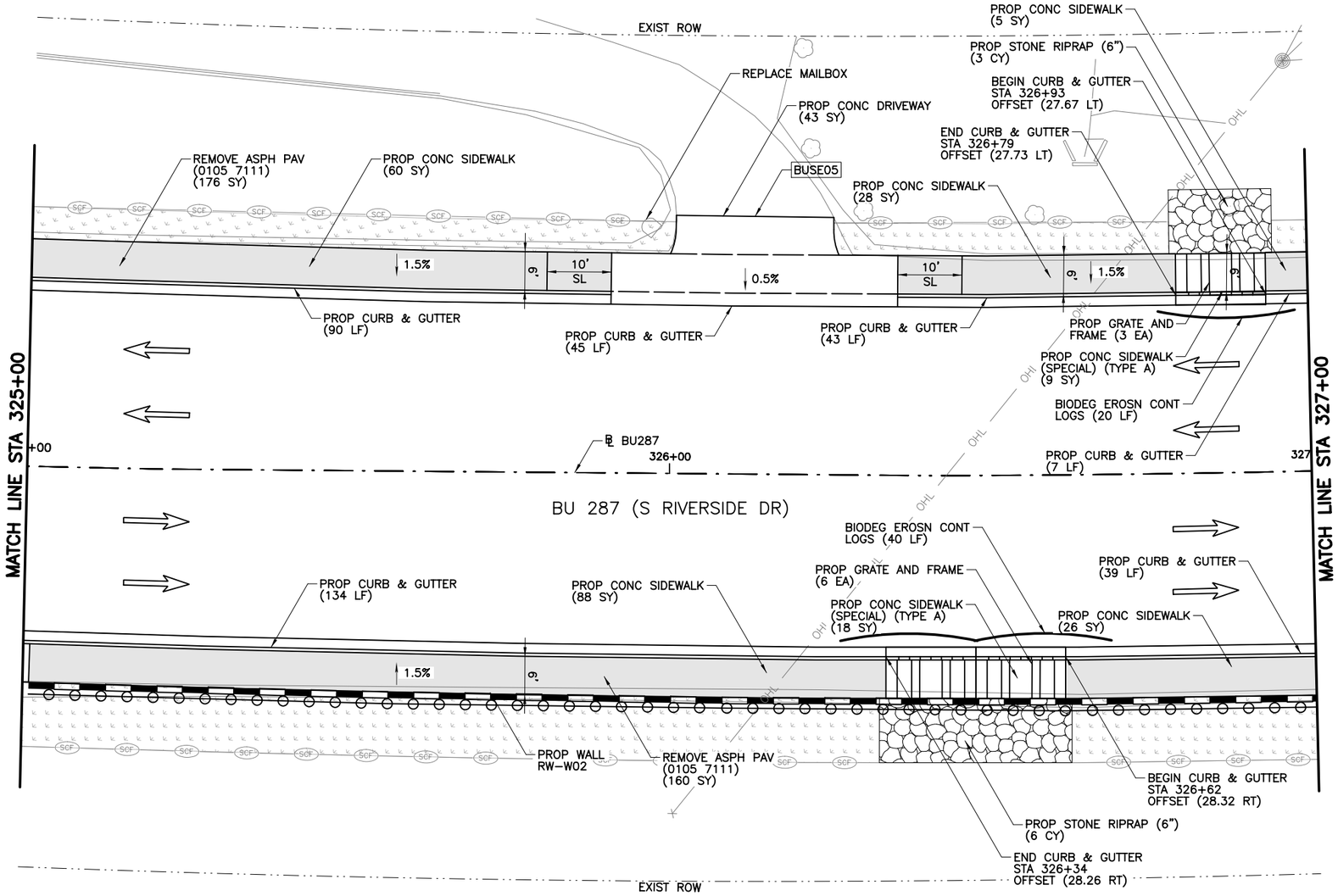
SHEET 17 OF 31

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 323+00 TO STA 325+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	133



10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER
8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
X	FENCE
F	FLARE
	FIRE HYDRANT
	GAS METER
	GUY ANCHOR
IRR	IRRIGATION CONTROL
J	JUNCTION BOX
L	LANDING
L1	LANDING (COMMON)
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)
SCF	SILT FENCE
SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
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	MANHOLE
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	POWER/UTILITY POLE
	PIPELINE RISER
PBX	PULL BOX
R	RAMP
	PROPOSED SIGN
	SIGN
	SODDING
T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

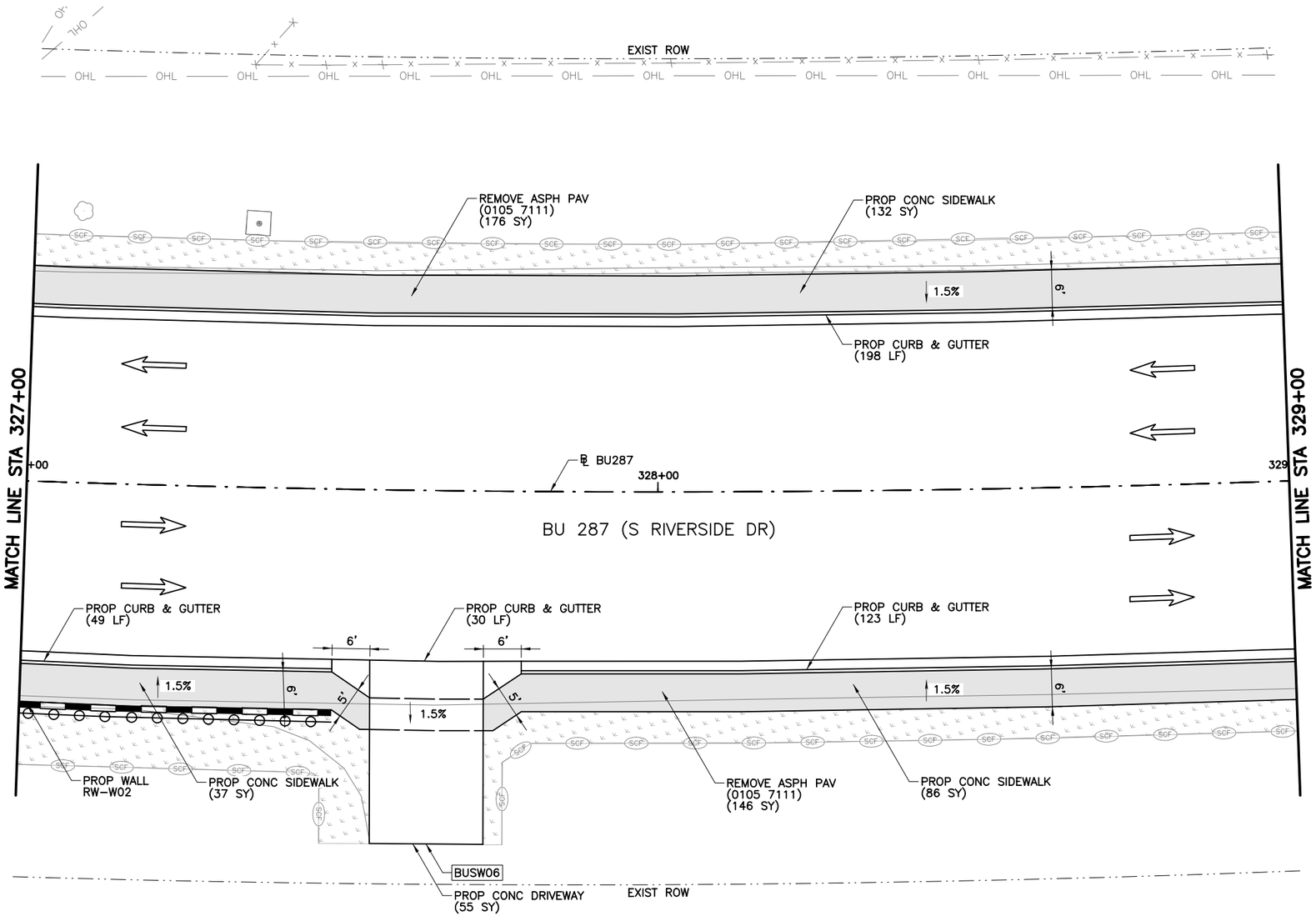
SHEET 18 OF 31

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 325+00 TO STA 327+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	134
Checked:	STV						



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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

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ES	EXISTING SIDEWALK		LIGHT POLE
ER	EXISTING RAMP		MAIL BOX
X	FENCE		MANHOLE
F	FLARE		PED RAIL
	FIRE HYDRANT		PED SIGNAL POLE
	GAS METER		POWER/UTILITY POLE
	GUY ANCHOR		PIPELINE RISER
	IRRIGATION CONTROL	PBX	PULL BOX
	JUNCTION BOX	R	RAMP
L	LANDING		PROPOSED SIGN
L1	LANDING (COMMON)		SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SODDING
SCF	SILT FENCE	T	TRANSITION
			TRAFFIC ARROW
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			TRAFFIC SIGNAL CONTROLLER
			TRAFFIC SIGNAL POLE
			TREE/SHRUBS
			WALL
		W	WATER METER
			WATER VALVE
			RIPRAP (4" CONC)
			STONE RIPRAP
			PROP SIDEWALK
			BIODEG EROSN CONT LOGS

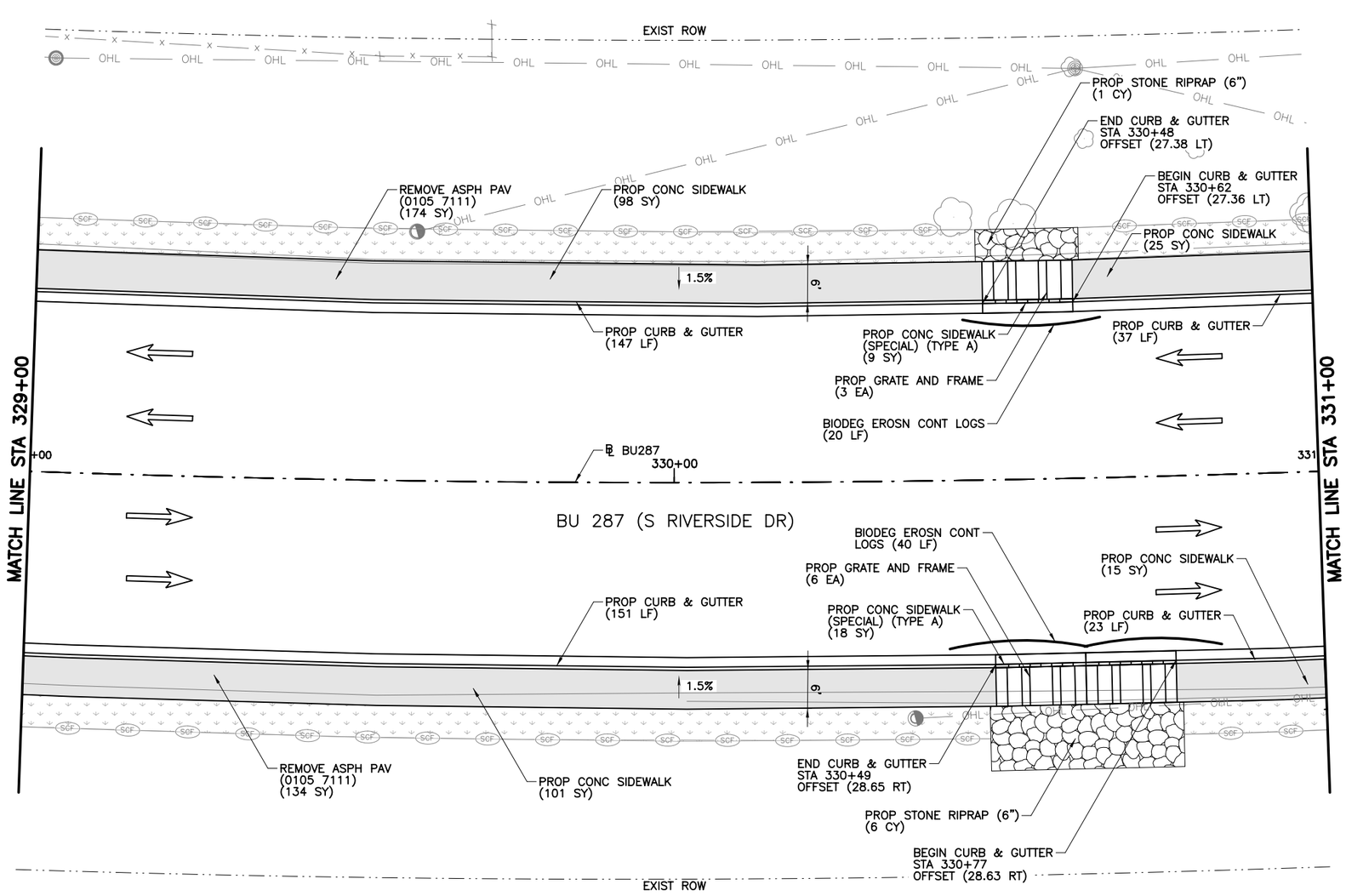
SHEET 19 OF 31

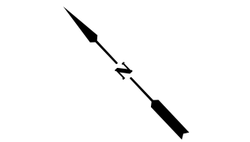
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 327+00 TO STA 329+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		135	





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8/30/2024

SPECIAL NOTES & DETAILS

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ES EXISTING SIDEWALK			TRAFFIC ARROW
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FIRE HYDRANT		PED RAIL	TREE/SHRUBS
GAS METER		PED SIGNAL POLE	WALL
GUY ANCHOR		POWER/UTILITY POLE	WATER METER
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JUNCTION BOX	PBX	PULL BOX	RIPRAP (4" CONC)
L LANDING	R	RAMP	STONE RIPRAP
L1 LANDING (COMMON)		PROPOSED SIGN	PROP SIDEWALK
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN	BIODEG EROSN CONT LOGS
SCF SILT FENCE		SODDING	

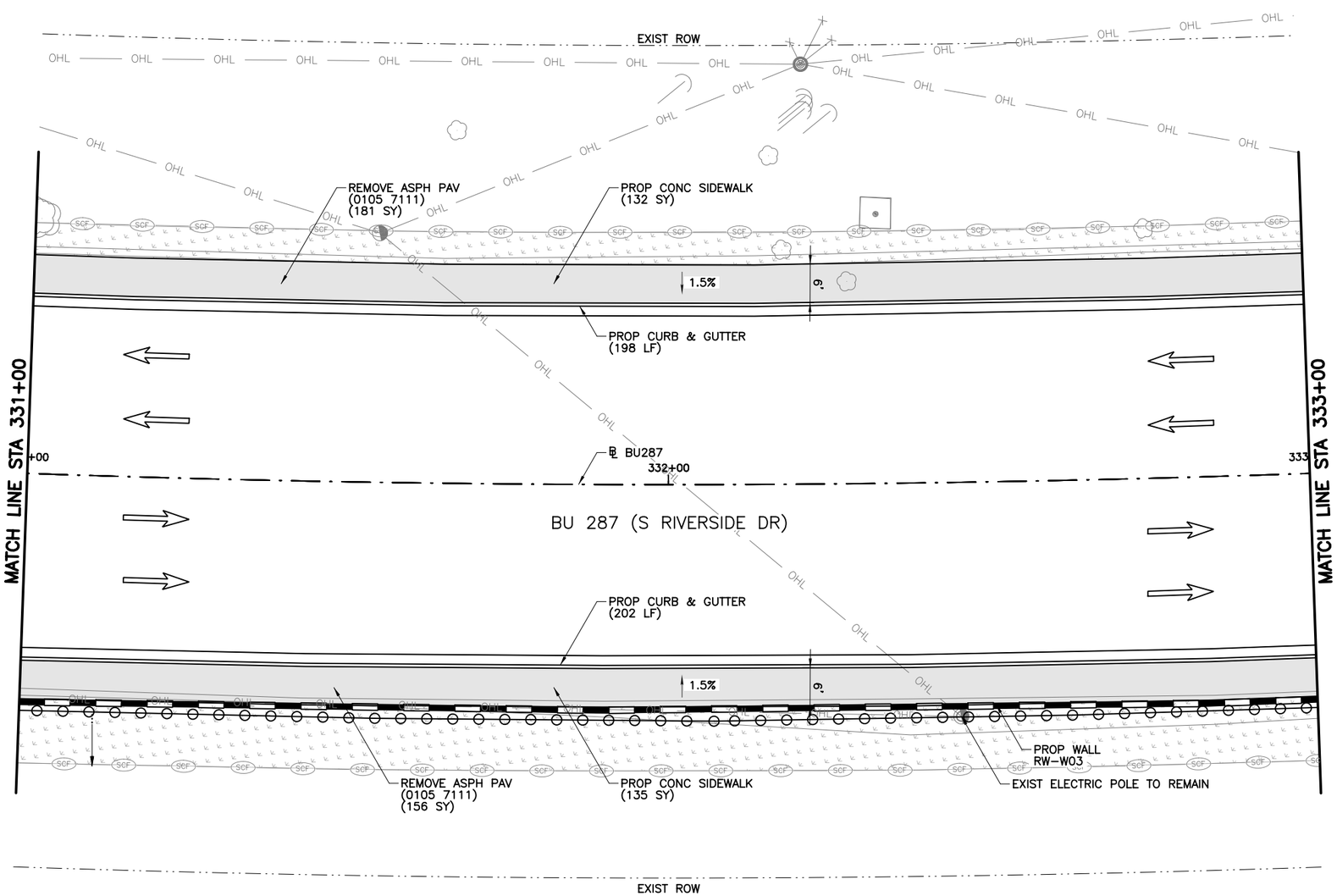
SHEET 20 OF 31

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 329+00 TO STA 331+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		136



10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

Mary Caroline Hornor

SPECIAL NOTES & DETAILS

LEGEND

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	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GAS METER		PED SIGNAL POLE		WALL
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
W	IRRIGATION CONTROL		PIPELINE RISER		WATER VALVE
J	JUNCTION BOX	PBX	PULL BOX		RIPRAP (4" CONC)
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L1	LANDING (COMMON)		PROPOSED SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

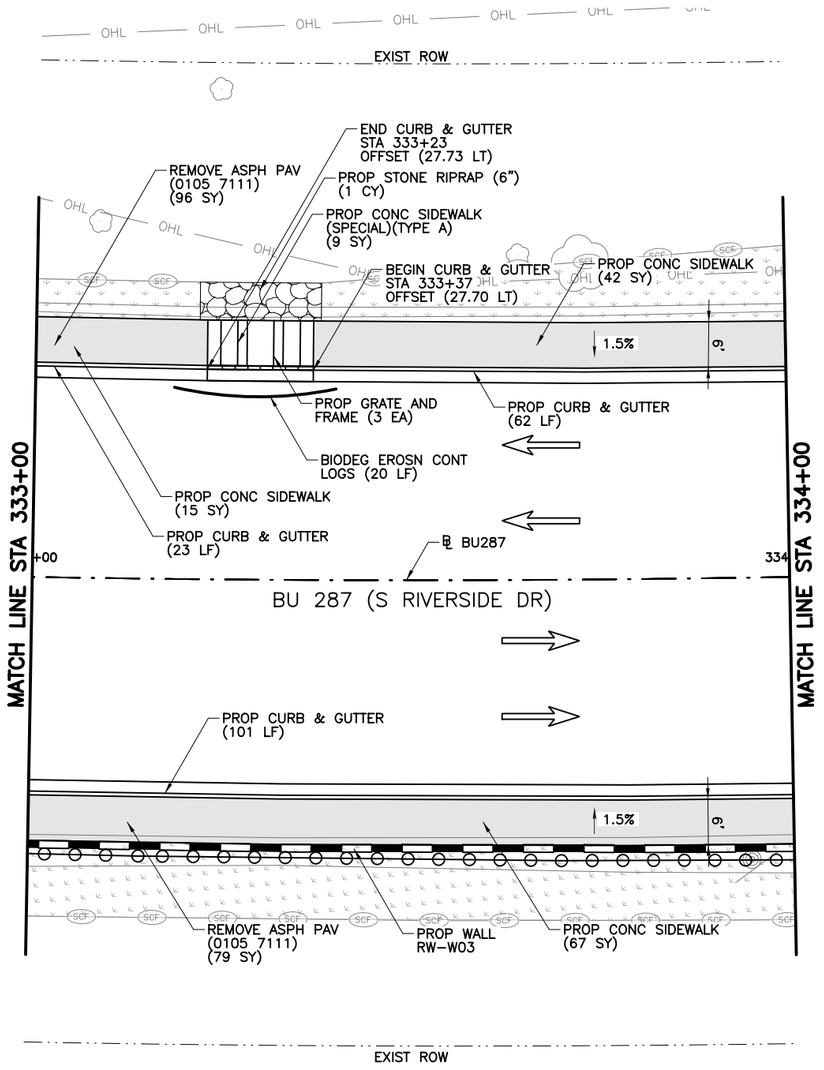
SHEET 21 OF 31

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 331+00 TO STA 333+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	137



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10 5 0 10 20
SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

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ER	EXISTING RAMP		MAIL BOX	T	TELEPHONE PEDESTAL
X	FENCE		MANHOLE		TRAFFIC SIGNAL CONTROLLER
F	FLARE		PED RAIL		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED SIGNAL POLE		TREE/SHRUBS
G	GAS METER		POWER/UTILITY POLE		WALL
	GUY ANCHOR		PIPELINE RISER	W	WATER METER
IC	IRRIGATION CONTROL	PBX	PULL BOX		WATER VALVE
J	JUNCTION BOX	R	RAMP		RIPRAP (4" CONC)
L	LANDING		PROPOSED SIGN		STONE RIPRAP
L1	LANDING (COMMON)		SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SODDING		BIODEG EROSN CONT LOGS
SCF	SILT FENCE				

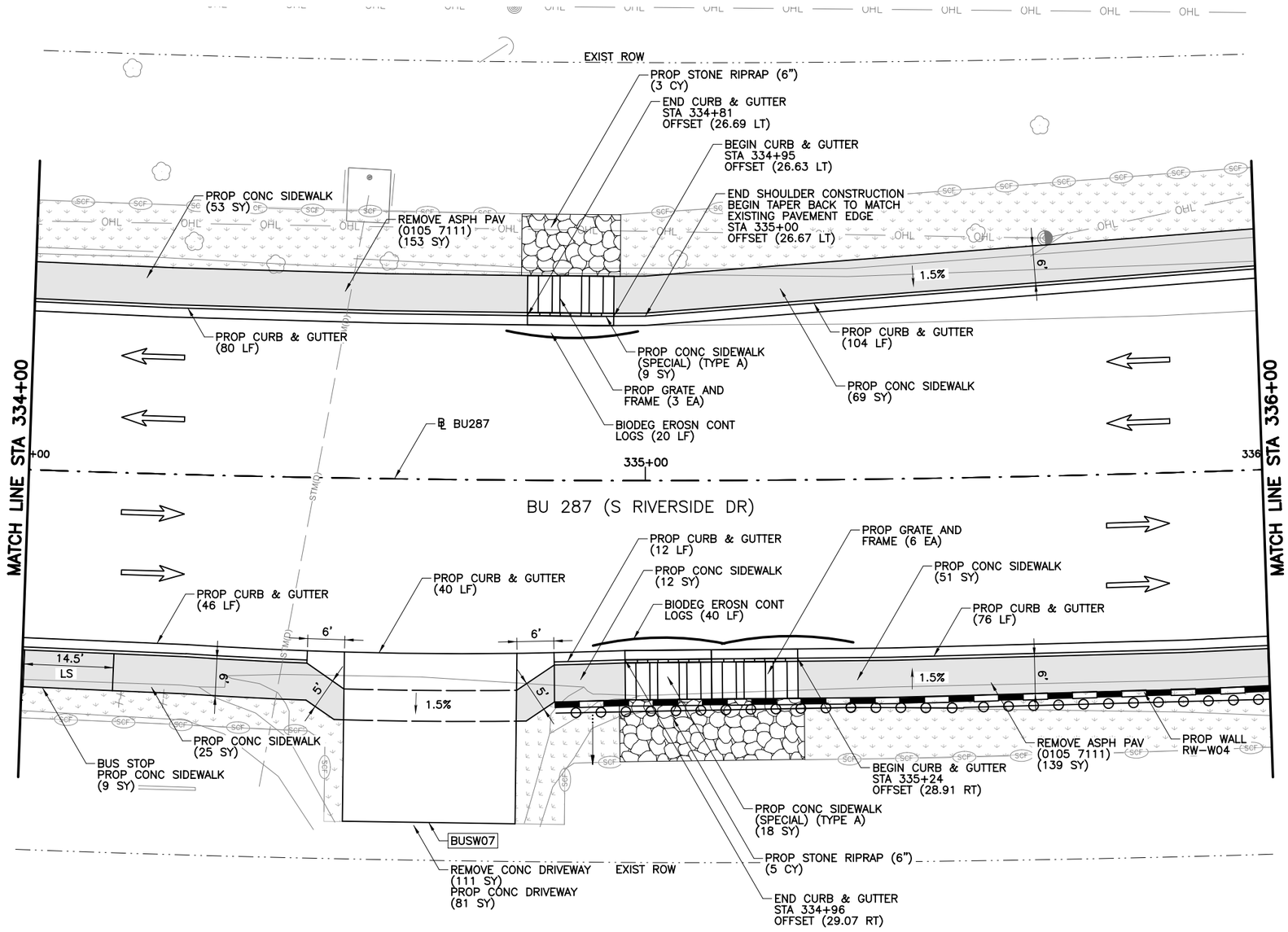
SHEET 22 OF 31

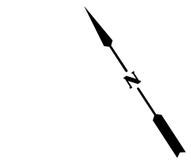
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 333+00 TO STA 334+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		138	





10 5 0 10 20
SCALE FEET

NOTES:

1. LINEAR DIMENSIONS ARE TO THE BACK OF CURB.
2. REFER TO DRIVEWAY DETAIL SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
3. REFER TO MISCELLANEOUS DETAILS SHEET FOR ADDITIONAL CONSTRUCTION AND DETAILS.
4. REFER TO TXDOT PED-18 STANDARDS FOR ADDITIONAL INFORMATION.
5. REFER TO RETAINING WALL SHEETS FOR ADDITIONAL RETAINING WALL INFORMATION.
6. REFER TO DRAINAGE SHEETS FOR ADDITIONAL DRAINAGE INFORMATION.
7. CONTRACTOR TO FIELD VERIFY CURB HEIGHTS USED FOR SIDEWALK CURB. SEE DETAILS FOR ADDITIONAL DETAILS REGUARDING CONSTRUCTION.
8. CONTRACTOR SHALL FIELD VERIFY SLOPE, DIMENSION, AND ELEVATIONS.
9. SAWCUT SHALL BE SUBSIDIARY TO PAVEMENT REMOVAL.
10. THE LOCATIONS WHERE EXISTING CURB AND GUTTER WILL BE REMOVED, THE REPLACED CURB AND GUTTER WILL BE LOCATED IN A NEW LOCATION AS PART OF THE PROJECT PLAN SET.

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T TRANSITION
ES EXISTING SIDEWALK			TRAFFIC ARROW
ER EXISTING RAMP		LIGHT POLE	TELEPHONE PEDESTAL
X FENCE		MAIL BOX	TRAFFIC SIGNAL CONTROLLER
F FLARE		MANHOLE	TRAFFIC SIGNAL POLE
FIRE HYDRANT		PED RAIL	TREE/SHRUBS
GAS METER		PED SIGNAL POLE	WALL
GUY ANCHOR		POWER/UTILITY POLE	WATER METER
IRRIGATION CONTROL		PIPELINE RISER	WATER VALVE
JUNCTION BOX	PBX	PULL BOX	RIPRAP (4" CONC)
L LANDING	R	RAMP	STONE RIPRAP
L1 LANDING (COMMON)		PROPOSED SIGN	PROP SIDEWALK
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN	BIODEG EROSN CONT LOGS
SCF SILT FENCE		SODDING	

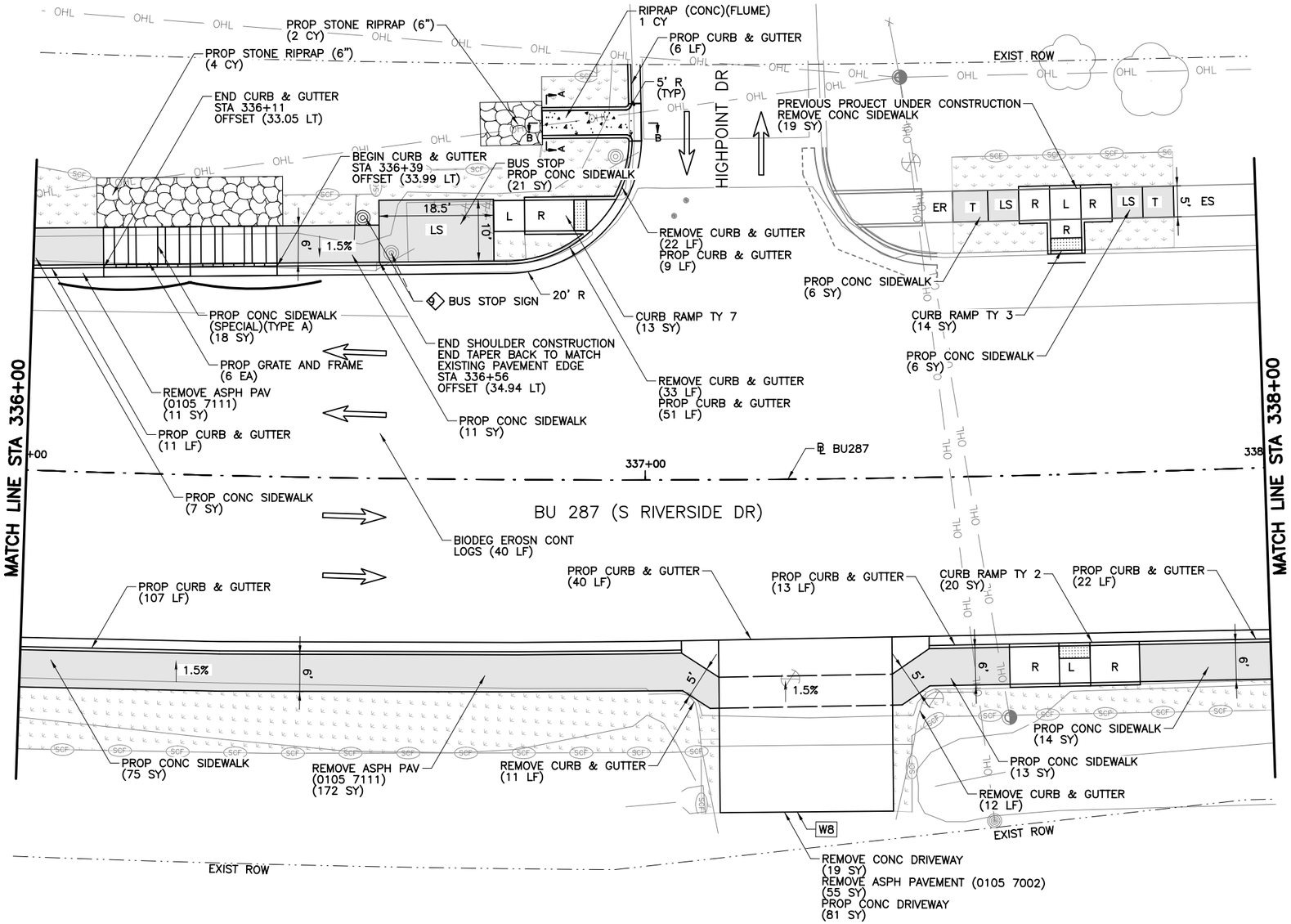
SHEET 23 OF 31

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 334+00 TO STA 336+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	139



10 5 0 10 20
SCALE FEET

NOTES:

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2. REFER TO DRIVEWAY DETAIL SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
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5. REFER TO RETAINING WALL SHEETS FOR ADDITIONAL RETAINING WALL INFORMATION.
6. REFER TO DRAINAGE SHEETS FOR ADDITIONAL DRAINAGE INFORMATION.
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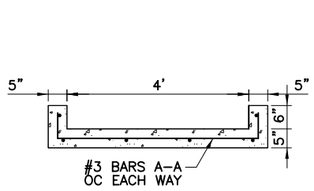
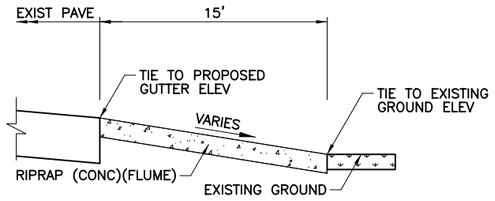
STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS



CONCRETE FLUME
SECTION A-A
N.T.S



CONCRETE FLUME
SECTION B-B
N.T.S

LEGEND

EXIST ROW	
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
X	FENCE
F	FLARE
	FIRE HYDRANT
	GAS METER
	GUY ANCHOR
W	IRRIGATION CONTROL
J	JUNCTION BOX
L	LANDING
L1	LANDING (COMMON)
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)
SCF	SILT FENCE
SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
	LIGHT POLE
	MAIL BOX
SS	MANHOLE
	PED RAIL
	PED SIGNAL POLE
	POWER/UTILITY POLE
	PIPELINE RISER
PBX	PULL BOX
R	RAMP
	PROPOSED SIGN
	SIGN
	SODDING
T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

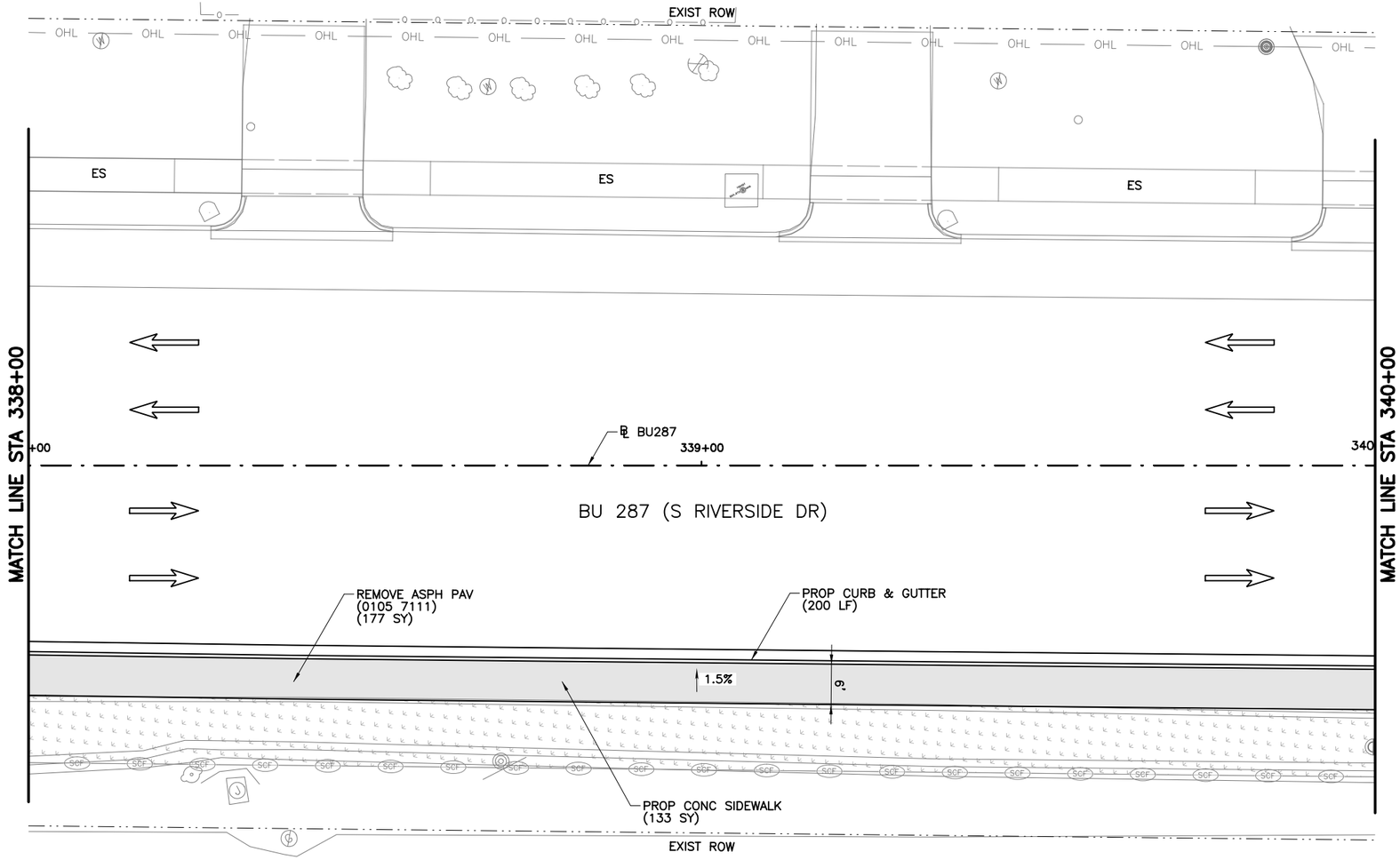
SHEET 24 OF 31

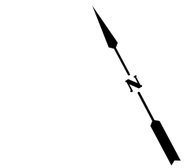
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 336+00 TO STA 338+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		140	





10 5 0 10 20
SCALE FEET

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8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	
ES	EXISTING SIDEWALK
ER	EXISTING RAMP
X	FENCE
F	FLARE
	FIRE HYDRANT
	GAS METER
	GUY ANCHOR
W	IRRIGATION CONTROL
J	JUNCTION BOX
L	LANDING
L1	LANDING (COMMON)
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)
SCF	SILT FENCE
SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
	LIGHT POLE
	MAIL BOX
SS	MANHOLE
	PED RAIL
	PED SIGNAL POLE
	POWER/UTILITY POLE
	PIPELINE RISER
PBX	PULL BOX
R	RAMP
	PROPOSED SIGN
	SIGN
	SODDING
T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

SHEET 25 OF 31

NO.	REVISION	BY	DATE

stv TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 338+00 TO STA 340+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	141

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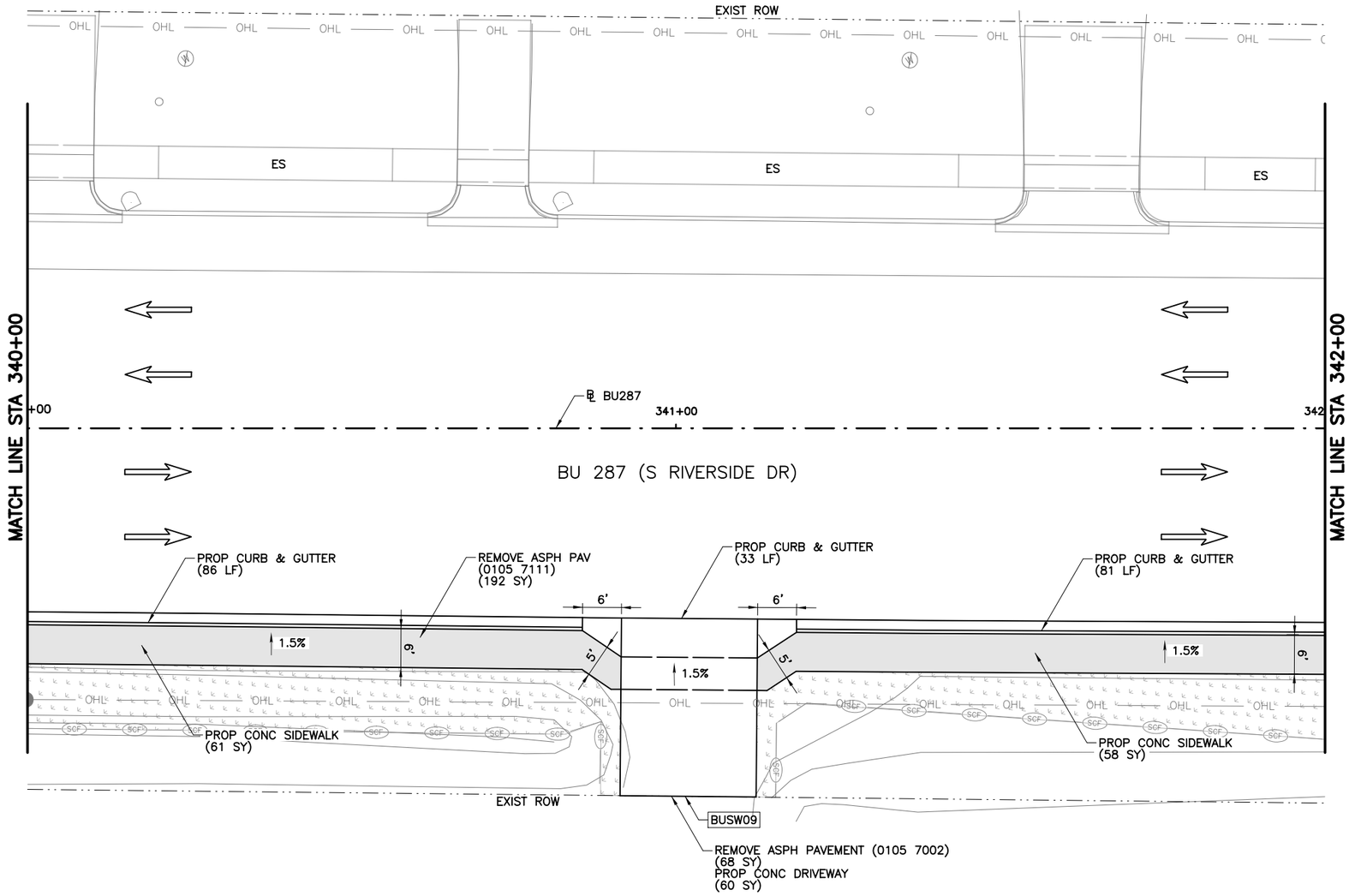

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

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ES EXISTING SIDEWALK			TRAFFIC ARROW
ER EXISTING RAMP		LIGHT POLE	TELEPHONE PEDESTAL
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F FLARE		MANHOLE	TRAFFIC SIGNAL POLE
FIRE HYDRANT		PED RAIL	TREE/SHRUBS
GAS METER		PED SIGNAL POLE	WALL
GUY ANCHOR		POWER/UTILITY POLE	WATER METER
IRRIGATION CONTROL		PIPELINE RISER	WATER VALVE
JUNCTION BOX	PBX	PULL BOX	RIPRAP (4" CONC)
L LANDING	R	RAMP	STONE RIPRAP
L1 LANDING (COMMON)		PROPOSED SIGN	PROP SIDEWALK
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN	BIODEG EROSN CONT LOGS
SCF SILT FENCE		SODDING	

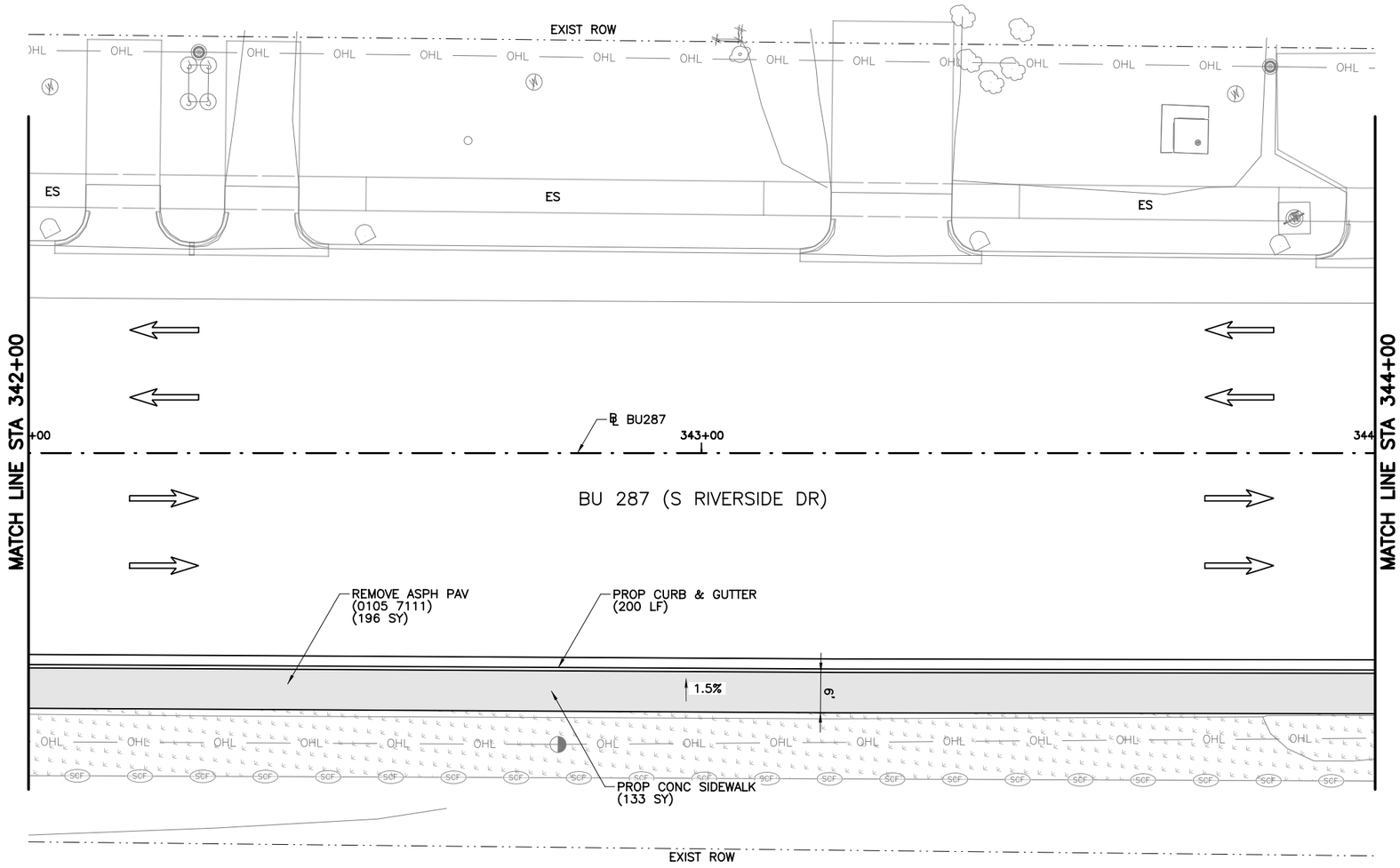
SHEET 26 OF 31

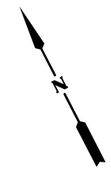
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 340+00 TO STA 342+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	142
Checked:	STV						





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SCALE FEET

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T TRANSITION
ES EXISTING SIDEWALK			TRAFFIC ARROW
ER EXISTING RAMP		LIGHT POLE	TELEPHONE PEDESTAL
X FENCE		MAIL BOX	TRAFFIC SIGNAL CONTROLLER
F FLARE		MANHOLE	TRAFFIC SIGNAL POLE
FIRE HYDRANT		PED RAIL	TREE/SHRUBS
GAS METER		PED SIGNAL POLE	WALL
GUY ANCHOR		POWER/UTILITY POLE	WATER METER
IRRIGATION CONTROL		PIPELINE RISER	WATER VALVE
JUNCTION BOX	PBX	PULL BOX	RIPRAP (4" CONC)
L LANDING	R	RAMP	STONE RIPRAP
L1 LANDING (COMMON)		PROPOSED SIGN	PROP SIDEWALK
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN	BIODEG EROSN CONT LOGS
SCF SILT FENCE		SODDING	

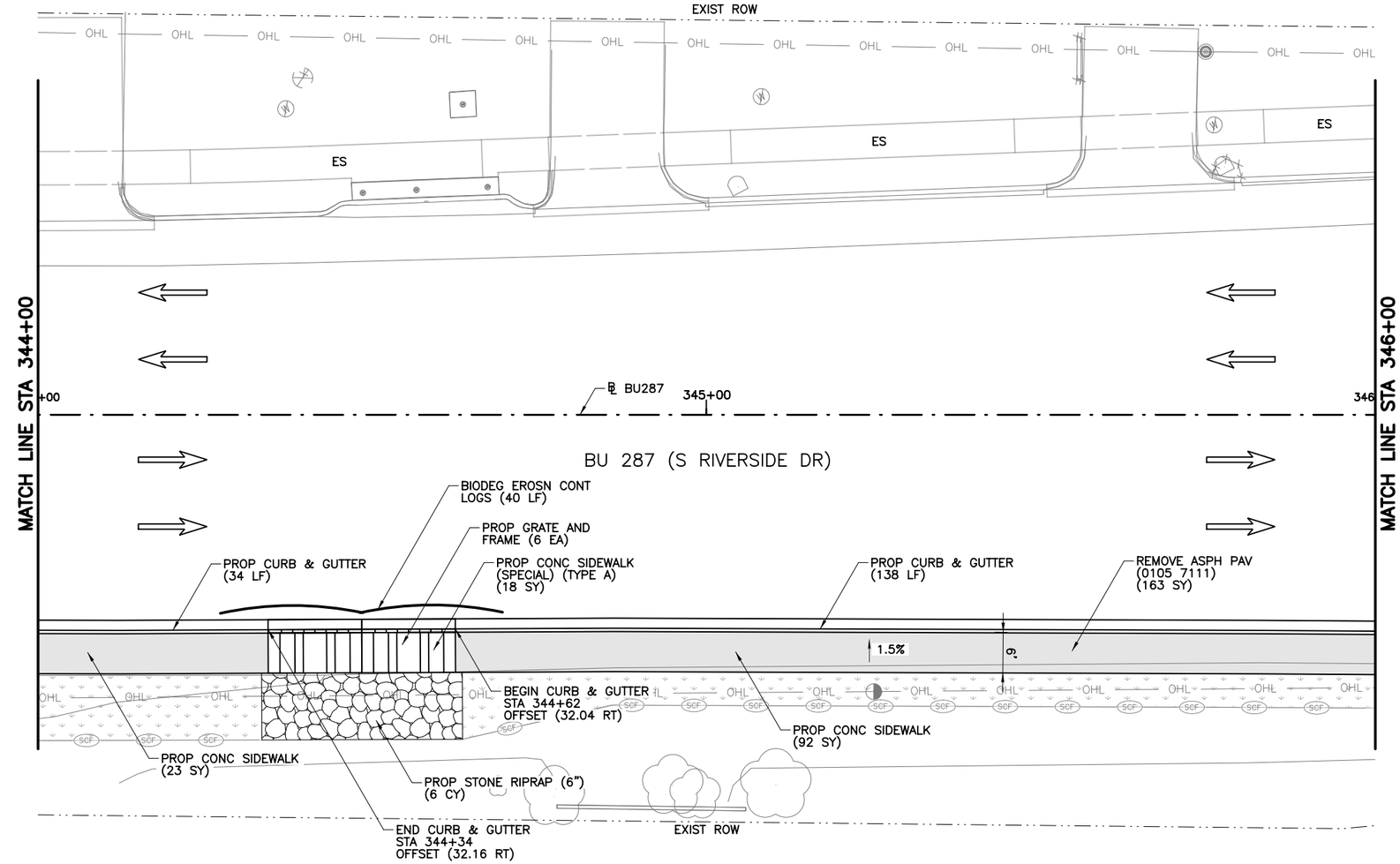
SHEET 27 OF 31

NO.	REVISION	BY	DATE

stv TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 342+00 TO STA 344+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		143



N

10 5 0 10 20
SCALE FEET

NOTES:

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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

—·—·—	EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
ES	EXISTING SIDEWALK		
ER	EXISTING RAMP		LIGHT POLE
—X—	FENCE		MAIL BOX
F	FLARE		MANHOLE
	FIRE HYDRANT		PED RAIL
	GAS METER		PED SIGNAL POLE
	GUY ANCHOR		POWER/UTILITY POLE
W	IRRIGATION CONTROL	X	PIPELINE RISER
J	JUNCTION BOX	PBX	PULL BOX
L	LANDING	R	RAMP
L1	LANDING (COMMON)		PROPOSED SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN
SCF	SILT FENCE		SODDING
T	TRANSITION		
	TRAFFIC ARROW		
T	TELEPHONE PEDESTAL		
	TRAFFIC SIGNAL CONTROLLER		
	TRAFFIC SIGNAL POLE		
	TREE/SHRUBS		
	WALL		
W	WATER METER		
	WATER VALVE		
	RIPRAP (4" CONC)		
	STONE RIPRAP		
	PROP SIDEWALK		
	BIODEG EROSN CONT LOGS		

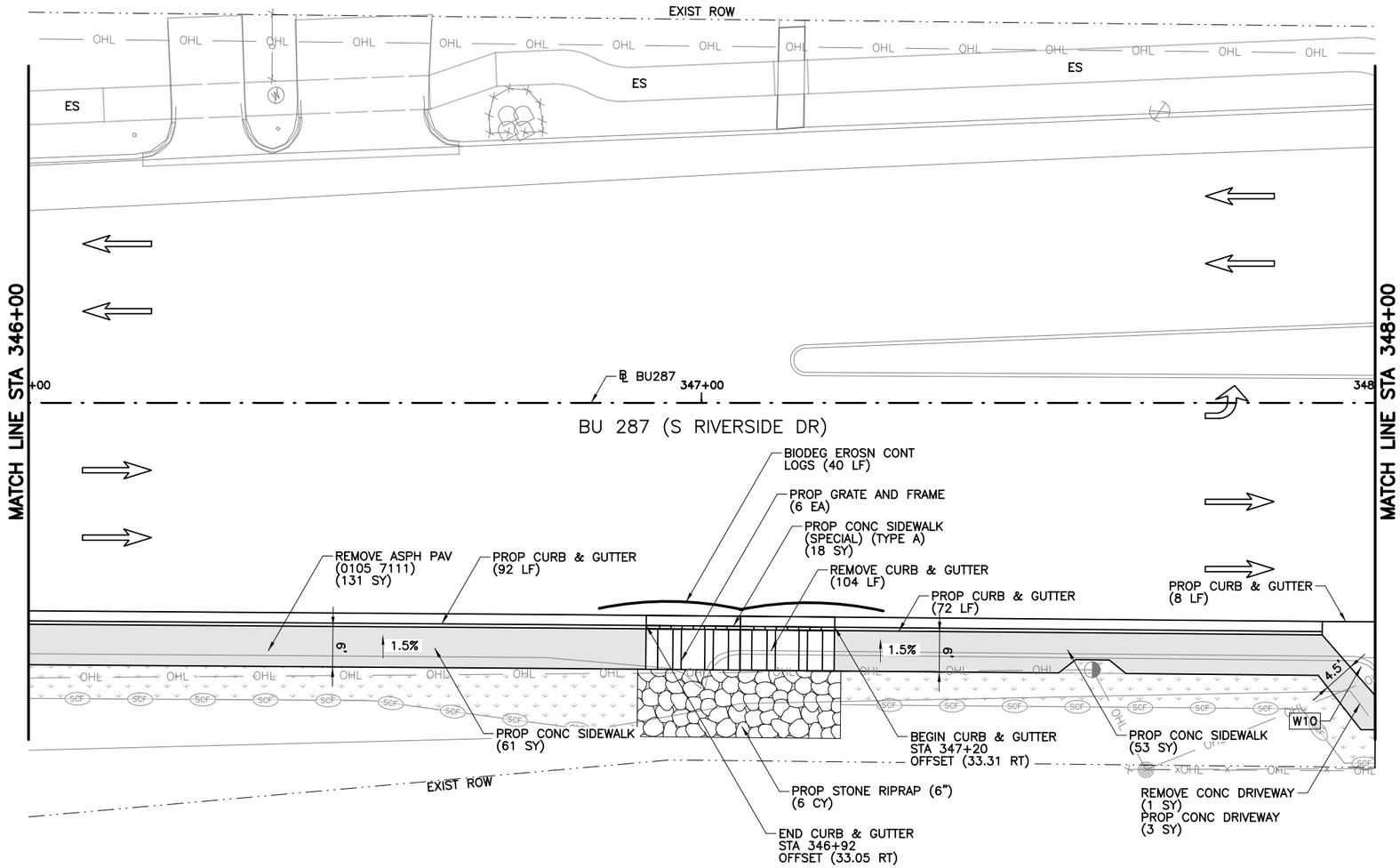
SHEET 28 OF 31

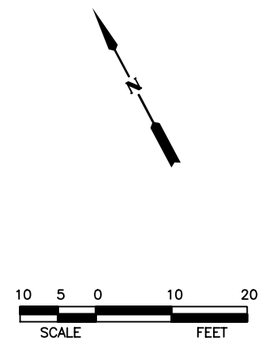
NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 344+00 TO STA 346+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	144
Checked:	STV						





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8/30/2024

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ER	EXISTING RAMP		LIGHT POLE	T	TELEPHONE PEDESTAL
X	FENCE		MAIL BOX		TRAFFIC SIGNAL CONTROLLER
F	FLARE		MANHOLE		TRAFFIC SIGNAL POLE
	FIRE HYDRANT		PED RAIL		TREE/SHRUBS
	GAS METER		PED SIGNAL POLE		WALL
	GUY ANCHOR		POWER/UTILITY POLE	W	WATER METER
IRR	IRRIGATION CONTROL		PIPELINE RISER		WATER VALVE
J	JUNCTION BOX	PBX	PULL BOX		RIPRAP (4" CONC)
L	LANDING	R	RAMP		STONE RIPRAP
L1	LANDING (COMMON)		PROPOSED SIGN		PROP SIDEWALK
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN		BIODEG EROSN CONT LOGS
SCF	SILT FENCE		SODDING		

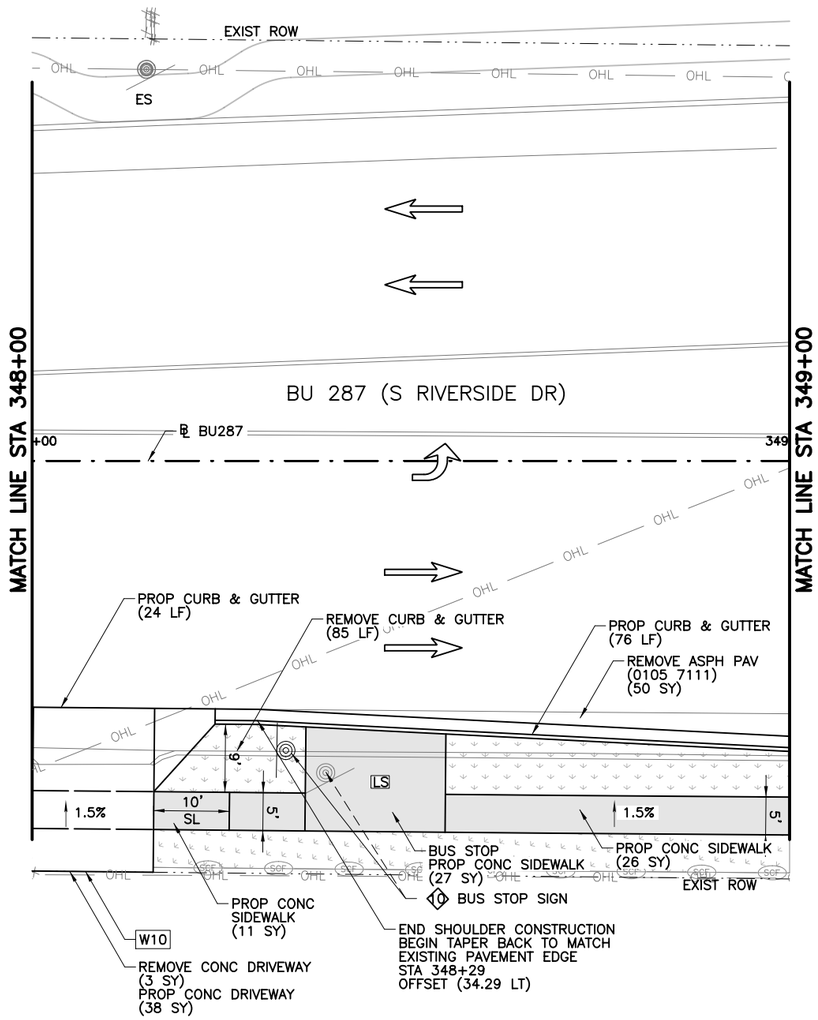
SHEET 29 OF 31

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 346+00 TO STA 348+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	145
Checked:	STV						



NOTES:

1. LINEAR DIMENSIONS ARE TO THE BACK OF CURB.
2. REFER TO DRIVEWAY DETAIL SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
3. REFER TO MISCELLANEOUS DETAILS SHEET FOR ADDITIONAL CONSTRUCTION AND DETAILS.
4. REFER TO TXDOT PED-18 STANDARDS FOR ADDITIONAL INFORMATION.
5. REFER TO RETAINING WALL SHEETS FOR ADDITIONAL RETAINING WALL INFORMATION.
6. REFER TO DRAINAGE SHEETS FOR ADDITIONAL DRAINAGE INFORMATION.
7. CONTRACTOR TO FIELD VERIFY CURB HEIGHTS USED FOR SIDEWALK CURB. SEE DETAILS FOR ADDITIONAL DETAILS REGUARDING CONSTRUCTION.
8. CONTRACTOR SHALL FIELD VERIFY SLOPE, DIMENSION, AND ELEVATIONS.
9. SAWCUT SHALL BE SUBSIDIARY TO PAVEMENT REMOVAL.
10. THE LOCATIONS WHERE EXISTING CURB AND GUTTER WILL BE REMOVED, THE REPLACED CURB AND GUTTER WILL BE LOCATED IN A NEW LOCATION AS PART OF THE PROJECT PLAN SET.

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW		SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%
ES	EXISTING SIDEWALK		
ER	EXISTING RAMP		LIGHT POLE
X	FENCE		MAIL BOX
F	FLARE		MANHOLE
	FIRE HYDRANT		PED RAIL
	GAS METER		PED SIGNAL POLE
	GUY ANCHOR		POWER/UTILITY POLE
W	IRRIGATION CONTROL		PIPELINE RISER
J	JUNCTION BOX	PBX	PULL BOX
L	LANDING	R	RAMP
L1	LANDING (COMMON)		PROPOSED SIGN
LS	LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN
SCF	SILT FENCE		SODDING

T	TRANSITION
	TRAFFIC ARROW
T	TELEPHONE PEDESTAL
	TRAFFIC SIGNAL CONTROLLER
	TRAFFIC SIGNAL POLE
	TREE/SHRUBS
	WALL
W	WATER METER
	WATER VALVE
	RIPRAP (4" CONC)
	STONE RIPRAP
	PROP SIDEWALK
	BIODEG EROSN CONT LOGS

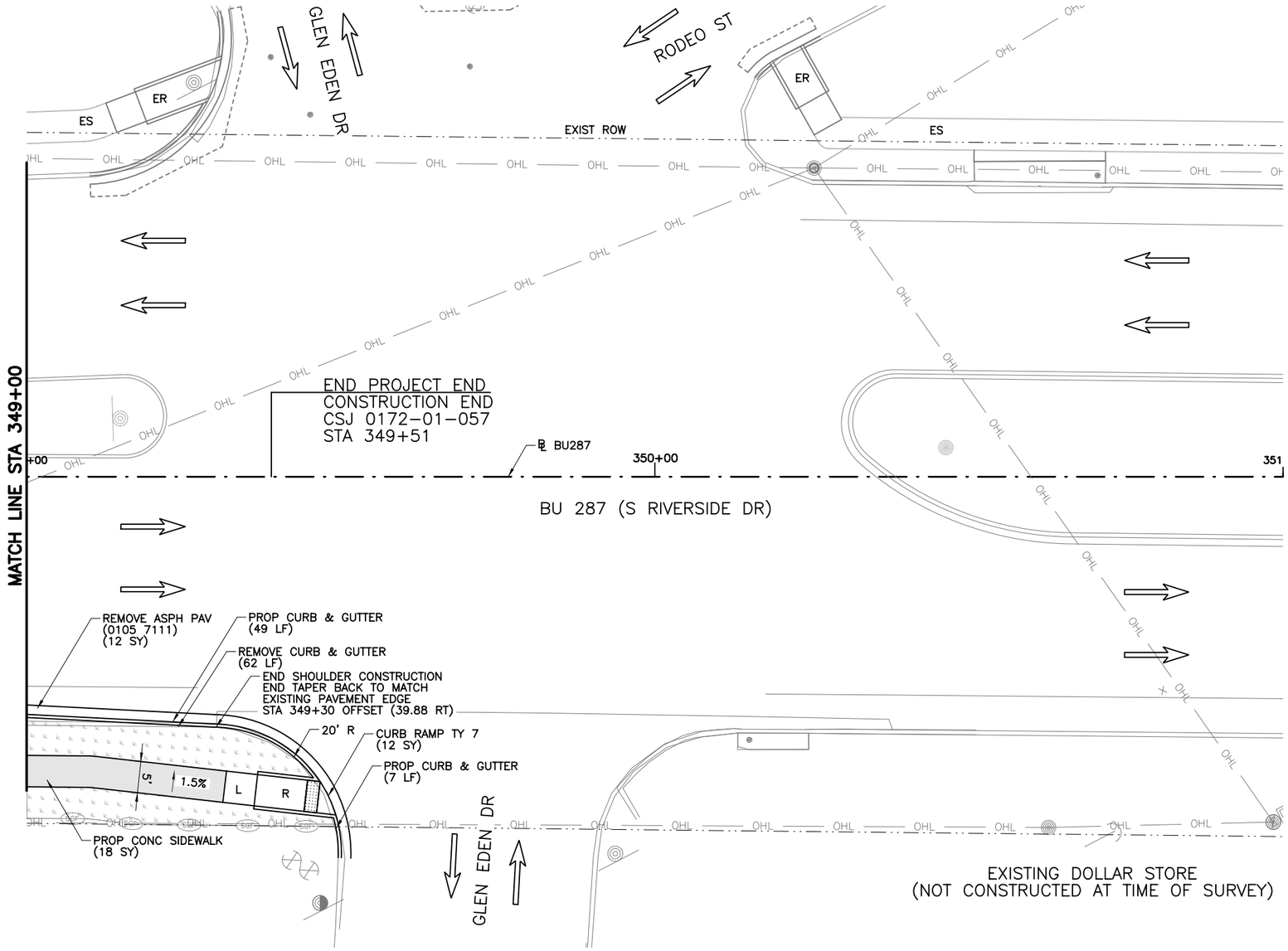
SHEET 30 OF 31

NO.	REVISION	BY	DATE

stv — TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 348+00 TO STA 349+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	146
Checked:	STV						



N

10 5 0 10 20
SCALE FEET

NOTES:

1. LINEAR DIMENSIONS ARE TO THE BACK OF CURB.
2. REFER TO DRIVEWAY DETAIL SHEET FOR ADDITIONAL DRIVEWAY INFORMATION.
3. REFER TO MISCELLANEOUS DETAILS SHEET FOR ADDITIONAL CONSTRUCTION AND DETAILS.
4. REFER TO TXDOT PED-18 STANDARDS FOR ADDITIONAL INFORMATION.
5. REFER TO RETAINING WALL SHEETS FOR ADDITIONAL RETAINING WALL INFORMATION.
6. REFER TO DRAINAGE SHEETS FOR ADDITIONAL DRAINAGE INFORMATION.
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STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

SPECIAL NOTES & DETAILS

LEGEND

EXIST ROW	SL	LONGITUDINAL SLOPES MAY NOT EXCEED 5%; CROSS SLOPES MAY NOT EXCEED 2%	T TRANSITION
ES EXISTING SIDEWALK			TRAFFIC ARROW
ER EXISTING RAMP		LIGHT POLE	T TELEPHONE PEDESTAL
X FENCE		MAIL BOX	TRAFFIC SIGNAL CONTROLLER
F FLARE		MANHOLE	TRAFFIC SIGNAL POLE
FIRE HYDRANT		PED RAIL	TREE/SHRUBS
GAS METER		PED SIGNAL POLE	WALL
GUY ANCHOR		POWER/UTILITY POLE	W WATER METER
IRRIGATION CONTROL		PIPELINE RISER	WATER VALVE
J JUNCTION BOX	PBX	PULL BOX	RIPRAP (4" CONC)
L LANDING	R	RAMP	STONE RIPRAP
L1 LANDING (COMMON)		PROPOSED SIGN	PROP SIDEWALK
LS LEVEL SIDEWALK (NOT TO EXCEED 2% IN ANY DIRECTION)		SIGN	BIODEG EROSN CONT LOGS
SCF SILT FENCE		SODDING	

SHEET 31 OF 31

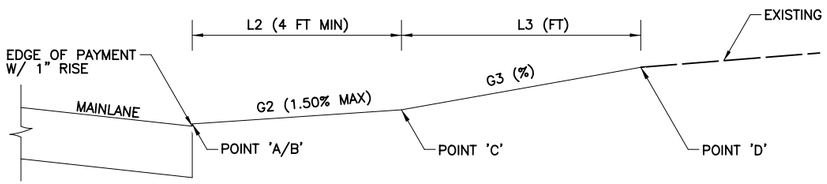
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

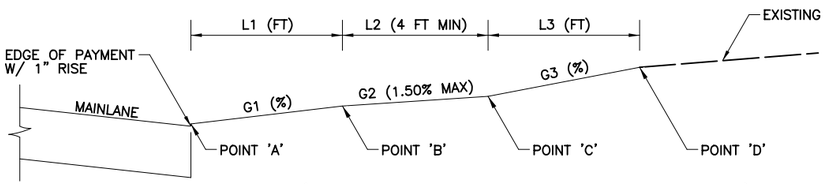
FORT WORTH SIDEWALK IMPROVEMENTS
BUSINESS 287
S RIVERSIDE DR.
SIDEWALK LAYOUT
STA 349+00 TO END

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	147
Checked:	STV						

DRIVEWAY TABLE											
DRIVEWAY ID	ELEV A (FT)	L1 (FT)	G1	ELEV B (FT)	L2 (FT)	G2	ELEV C (FT)	L3 (FT)	G3	ELEV D (FT)	Width (FT)
BUSE01	576.30	4.50	0.50%	576.33	5.00	1.50%	576.40	17.00	−6.25%	575.34	25
BUSE02	619.55	4.50	1.50%	619.62	5.00	1.50%	619.70	13.48	5.58%	620.45	15
BUSE03	619.08	4.50	1.50%	619.15	5.00	1.50%	619.22	7.08	6.89%	619.71	17
BUSE04	623.15	4.50	1.50%	623.21	5.00	1.50%	623.29	16.50	1.67%	623.56	14
BUSE05	630.38	N/A	N/A	630.38	6.50	0.50%	630.41	5.95	−11.59%	629.72	24.5
BUSW01	576.43	N/A	N/A	576.43	6.50	1.50%	576.53	12.62	2.78%	576.88	44
BUSW02	577.10	9.50	1.20%	577.21	5.00	0.50%	577.24	N/A	N/A	N/A	20
BUSW03	583.07	9.50	0.61%	583.13	5.00	0.50%	583.16	N/A	N/A	N/A	22
BUSW04	590.54	9.50	−0.50%	590.49	5.00	−0.91%	590.44	N/A	N/A	N/A	21
BUSW05	621.81	4.50	1.50%	621.87	5.00	1.50%	621.95	7.00	−5.62%	621.56	28
BUSW06	633.47	4.50	−8.00%	633.11	5.00	−1.50%	633.04	17.96	−11.44%	630.98	18
BUSW07	645.08	4.50	−1.50%	645.01	5.00	−1.50%	644.94	16.39	−4.76%	644.16	28
BUSW08	656.62	4.50	1.50%	656.69	5.00	1.50%	656.76	16.99	5.68%	657.73	28
BUSW09	669.95	4.50	0.50%	669.98	5.00	1.50%	670.05	16.41	0.59%	670.15	21
BUSW10	669.80	9.50	0.50%	669.85	5.00	1.50%	669.92	5.62	−2.51%	669.78	16



DRIVEWAY PROFILE (SIDEWALK CROSSING ADJACENT TO CURB)
SCALE: NTS



DRIVEWAY PROFILE (SIDEWALK CROSSING OFFSET FROM CURB)
SCALE: NTS

LEGEND

ELEV A – ELEVATION OF DRIVEWAY AT FACE OF CURB LINE. (INCLUDING 1" RISE)

L1 – LENGTH FROM FACE OF CURB LINE TO FRONT OF SIDEWALK CROSSING.

G1 – SLOPE OF DRIVEWAY ACROSS L1.

ELEV B – ELEVATION OF DRIVEWAY AT FRONT OF SIDEWALK CROSSING. (SAME AS ELEV A IN CASES WHERE SIDEWALK CROSSING IS ADJACENT TO BACK OF CURB)

L2 – LENGTH OF SIDEWALK CROSSING.

G2 – SLOPE OF SIDEWALK CROSSING.

ELEV C – ELEVATION OF DRIVEWAY AT BACK OF SIDEWALK CROSSING.

L3 – LENGTH FROM BACK OF SIDEWALK CROSSING TO TIE IN LOCATION.

G3 – SLOPE OF DRIVEWAY ACROSS L3.

ELEV D – ELEVATION OF TIE IN LOCATION. (SAME AS ELEV C IN CASES WHERE BACK OF SIDEWALK CROSSING IS SAME AS TIE IN POINT)

NOTES:

1. REFER TO PLAN SHEETS FOR ADDITONAL DRIVEWAY INFORMATION.
2. REFER TO FORT WORTH DISTRICT DRIVEWAY STANDARD CDD(FTW) FOR ADDITIONAL INFORMATION.
3. PROPOSED DRIVEWAY GRADES ARE APPROXIMATES. FIELD VERIFY TIE POINTS.
4. ALL DRIVEWAYS SHALL BE CONCRETE UNLESS OTHERWISE SPECIFIED IN PLANS.

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

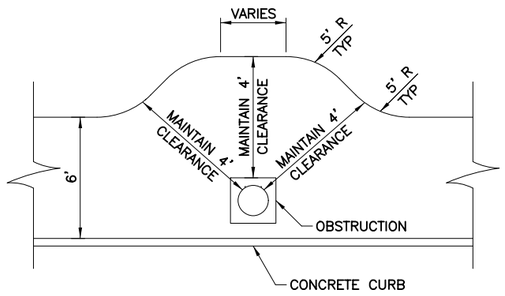
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRIVEWAY TABLE

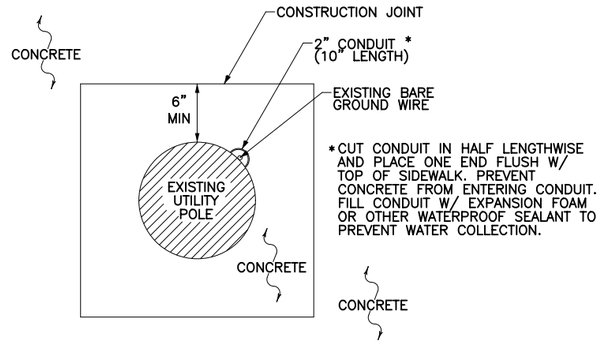
Designed: STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked: STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn: STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked: STV	FTW	TARRANT	0172	01	055,ETC		148

SHEET 1 OF 1

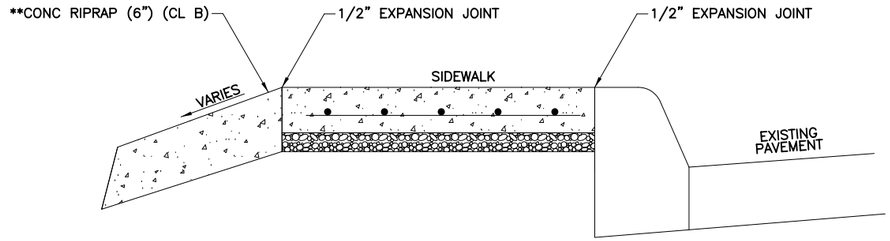


NOTE:
UTILIZE DETAIL AT OBSTRUCTION ENCROACHMENTS INTO THE PEDESTRIAN ACCESS ROUTE. A MINIMUM UNOBSTRUCTED CLEARANCE OF 4' SHOULD BE MAINTAINED AROUND THE OBSTRUCTION OR AS APPROVED BY THE ENGINEER.

OBSTRUCTION CONFLICT
(NTS)



BARE GROUND WIRE PROTECTION
(NTS)
SUBSIDIARY TO ITEM 531,
SIDEWALK OR CURB RAMP



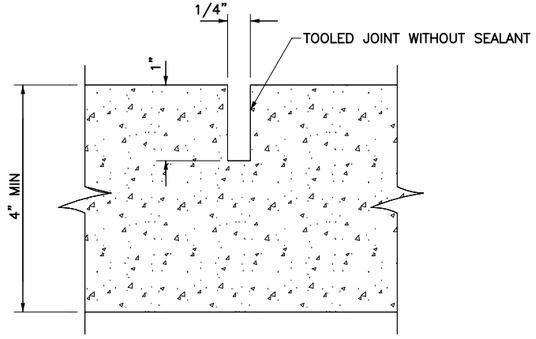
PLACE GROOVED JOINTS AT A MAX SPACING OF 10 FT
PLACE 3/4" EXPANSION JOINTS AT A MAX SPACING OF 40 FT TO CONICIDE WITH THE CURBAND SIDEWALK JOINTS.

** REINFORCEMENT AS SPECIFIED IN ITEM 432

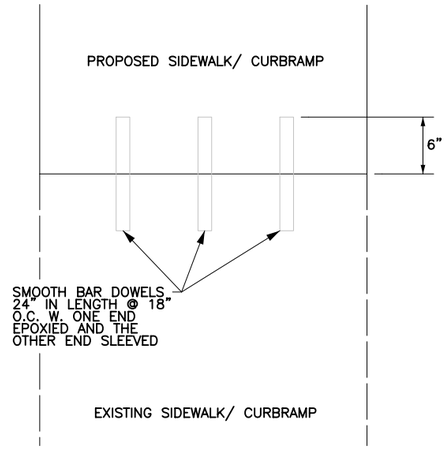
RIPRAP DETAIL
(NTS)

GENERAL NOTES:

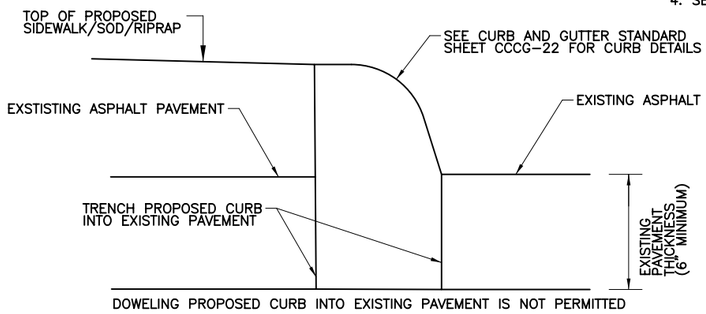
1. SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS.
2. LONGITUDINAL SLOPE OF SIDEWALKS SHALL NOT EXCEED 5% EXCEPT IN CASES WHERE THE ADJACENT ROADWAY SLOPE EXCEEDS 5%. IF ROADWAY SLOPE EXCEEDS 5%, LONGITUDINAL SLOPE OF SIDEWALK MAY MATCH THAT OF ROADWAY.
3. ALL REINFORCING TO BE GRADE 60.
4. SEE CSWD (FT) FOR ADDITIONAL DETAILS.



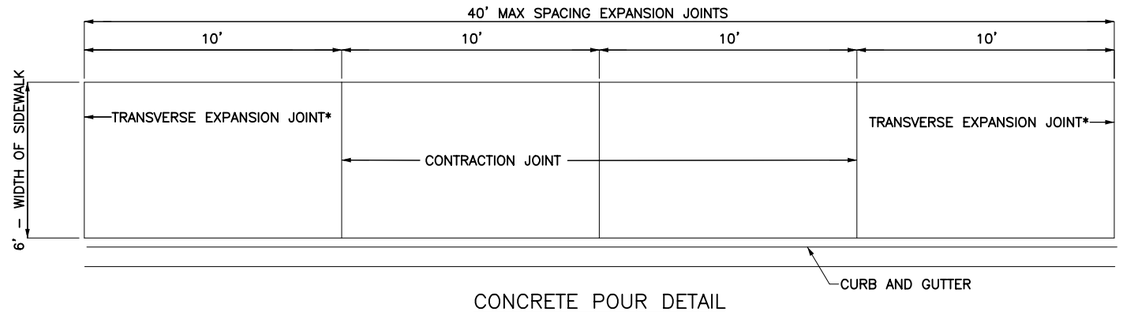
CONTRACTION JOINT



CONSTRUCTION JOINT



CURB TRENCH DETAIL
USE WHEN INSTALLING A CURB INTO EXISTING ASPHALT PAVEMENT



CONCRETE POUR DETAIL
PLACE CONTRACTION JOINTS AT A MAX SPACING OF 10 FT
PLACE 3/4" TRANSVERSE EXPANSE JOINTS AT A MAX SPACING OF 40 FT.

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER
8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

MISCELLANEOUS DETAILS

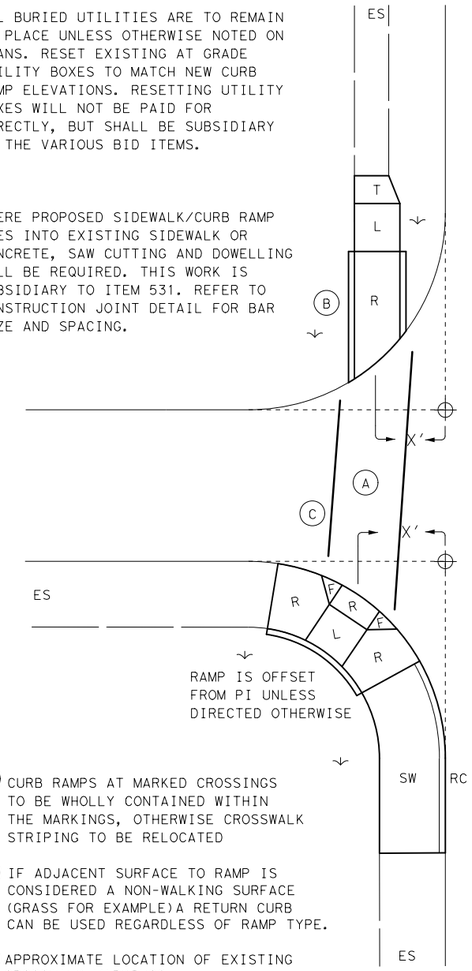
Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	149

SHEET 1 OF 5

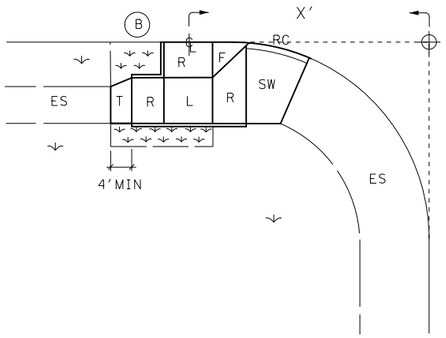
NOTES

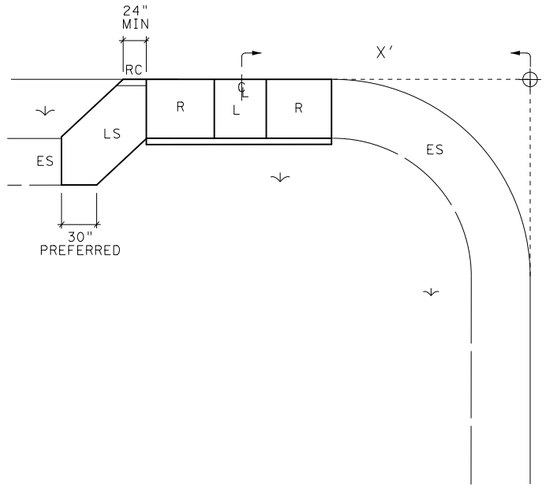
1. ALL BURIED UTILITIES ARE TO REMAIN IN PLACE UNLESS OTHERWISE NOTED ON PLANS. RESET EXISTING AT GRADE UTILITY BOXES TO MATCH NEW CURB RAMP ELEVATIONS. RESETTING UTILITY BOXES WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.

2. WHERE PROPOSED SIDEWALK/CURB RAMP TIES INTO EXISTING SIDEWALK OR CONCRETE, SAW CUTTING AND DOWELLING WILL BE REQUIRED. THIS WORK IS SUBSIDIARY TO ITEM 531. REFER TO CONSTRUCTION JOINT DETAIL FOR BAR SIZE AND SPACING.



NOTE: BLOCK SOD PLACED ADJACENT TO RAMP AND/OR SIDEWALK WORK LIMITS AS REQUIRED TO RETURN SITE TO PRE-CONSTRUCTION CONDITION





(A) CURB RAMPS AT MARKED CROSSINGS TO BE WHOLLY CONTAINED WITHIN THE MARKINGS, OTHERWISE CROSSWALK STRIPING TO BE RELOCATED

(B) IF ADJACENT SURFACE TO RAMP IS CONSIDERED A NON-WALKING SURFACE (GRASS FOR EXAMPLE)A RETURN CURB CAN BE USED REGARDLESS OF RAMP TYPE.

(C) APPROXIMATE LOCATION OF EXISTING CROSSWALK MARKINGS.

SAMPLE CURB RAMP PLACEMENT
(HORIZONTAL CONTROL)

LEGEND

F = FLARE (10:1 OR LESS)

R = RAMP (CROSS SLOPE NOT TO EXCEED 2%: LONGITUDINAL NOT TO EXCEED 8.33% OR 12:1)

L = LANDING (NOT TO EXCEED 2% SLOPE IN ANY DIRECTION)

T = TRANSITION (PAID FOR UNDER CONC SIDEWALK)

RC = REPLACE CURB/CURB & GUTTER

= SIDEWALK (EXISTING)

X' = LENGTH MEASURED FROM PI POINT (SEE INTERSECTION SHEETS FOR DIMENSION)

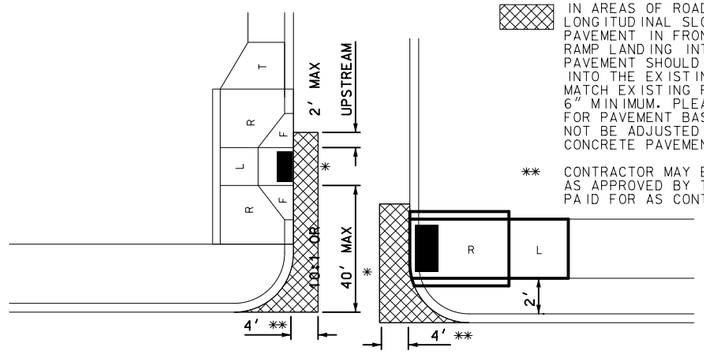
SW = SIDEWALK (NOT EXCEED 2% CROSS SLOPE)

LS = LEVEL SIDEWALK (NOT EXCEED 2% SLOPE IN ANY DIRECTION)

⊕ = PI POINT MEASURED FROM TANGENTIAL CURBLINE INTERSECTION

= EXISTING TURF

CONCRETE ROADWAY OR CURB AND GUTTER SECTION *

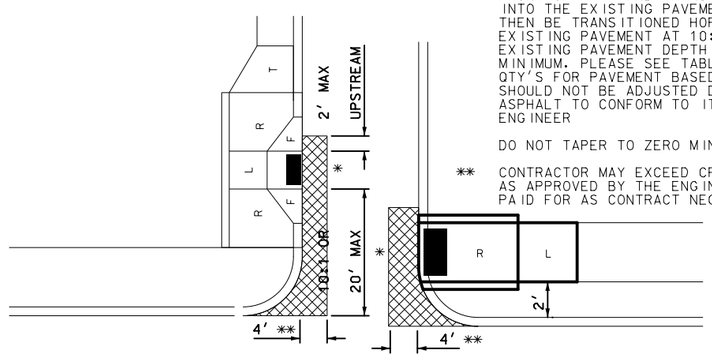


SAW CUT (NSPI)

IN AREAS OF ROADWAY CROSS SLOPES EXCEEDING 2% LONGITUDINAL SLOPE, SAW CUT AND EXCAVATE 4' OF PAVEMENT IN FRONT OF RAMP AND TRANSITION THE RAMP LANDING INTO THE EXISTING PAVEMENT.THE PAVEMENT SHOULD THEN BE TRANSITIONED HORIZONTALLY INTO THE EXISTING PAVEMENT AT 10:1. PAVEMENT SHOULD MATCH EXISTING PAVEMENT DEPTH BUT NOT LESS THAN 6" MINIMUM. PLEASE SEE TABLE 1 FOR CALCULATED QTY'S FOR PAVEMENT BASED ON RAMP TYPE. GUTTERLINES SHOULD NOT BE ADJUSTED DOWNWARD.
CONCRETE PAVEMENT TO CONFORM TO ITEM 360

** CONTRACTOR MAY EXCEED CROSS SLOPE TRANSITION DISTANCE AS APPROVED BY THE ENGINEER. PAYMENT BEYOND 4' IS PAID FOR AS CONTRACT NEGOTIATED UNIT RATES.

ASPHALT/SEALCOAT ROADWAY



* SAW CUT (NSPI)

IN AREAS OF ROADWAY CROSS SLOPES EXCEEDING 2% LONGITUDINAL SLOPE, EXCAVATE 2' OF PAVEMENT IN FRONT OF RAMP AND TRANSITION THE RAMP LANDING INTO THE EXISTING PAVEMENT.THE PAVEMENT SHOULD THEN BE TRANSITIONED HORIZONTALLY INTO THE EXISTING PAVEMENT AT 10:1. PAVEMENT SHOULD MATCH EXISTING PAVEMENT DEPTH BUT NOT LESS THAN 2" MINIMUM. PLEASE SEE TABLE 1 FOR CALCULATED PAYMENT QTY'S FOR PAVEMENT BASED ON RAMP TYPE. GUTTERLINES SHOULD NOT BE ADJUSTED DOWNWARD.
ASPHALT TO CONFORM TO ITEM 340 AS DIRECTED BY THE ENGINEER

DO NOT TAPER TO ZERO MINIMUM 1 1/2" DEPTH @ TIE-IN

** CONTRACTOR MAY EXCEED CROSS SLOPE TRANSITION DISTANCE AS APPROVED BY THE ENGINEER. PAYMENT BEYOND 4' IS PAID FOR AS CONTRACT NEGOTIATED UNIT RATES.

TABLE 1

RAMP TYPE	ASPHALT TAPER QTY	CONC TAPER QTY
	MAX (SY)	MAX (SY)
1	5.78	20.44
2	5.78	20.44
3	5.78	20.44
4	5.78	20.44
5	5.78	20.44
6	5.78	20.44
7	5.78	20.44
8	5.78	20.44
9	5.78	20.44
10	5.78	20.44
11	5.78	20.44
20	11.56	40.89
21	11.56	40.89
22	17.33	61.33

TRANSITIONS SHOWN IN TABLE 1 ARE FOR CONTRACTORS INFORMATION ONLY.TRANSITIONS ARE NOT PAID FOR SEPARATELY BUT ARE SUBSIDIARY TO ITEM 531 "CURB RAMP."

CURB RAMPS

ALL CURB RAMPS ARE TO BE 6" IN THICKNESS UNLESS OTHERWISE SHOWN

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER
8/30/2024

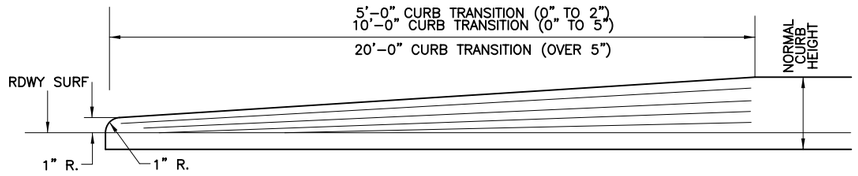
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

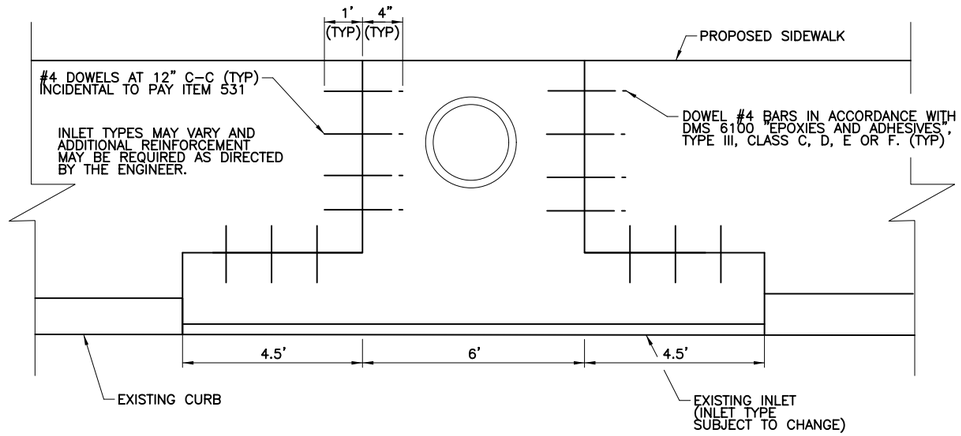
FORT WORTH SIDEWALK IMPROVEMENTS

MISCELLANEOUS DETAILS

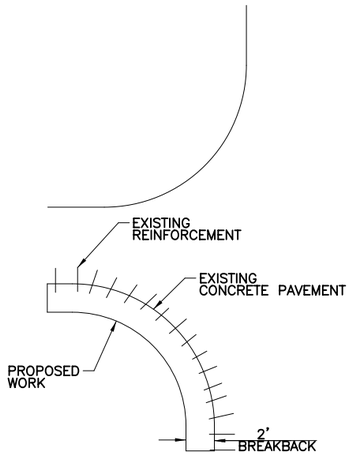
Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		150

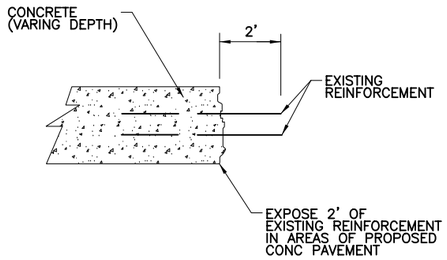


TYPICAL TRANSITION
FOR CONCRETE CURB ENDS
(NTS)



INLET DOWELING DETAIL
(NTS)





* WORK ASSOCIATED WITH THE ABOVE WORK IS NOT PAID FOR SEPARATELY BUT IS SUBSIDIARY TO ITEM 360

CONCRETE BREAKBACK DETAIL
(NTS)

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER
8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

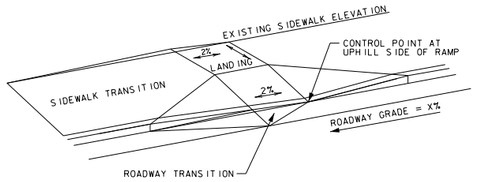
FORT WORTH SIDEWALK IMPROVEMENTS

MISCELLANEOUS DETAILS

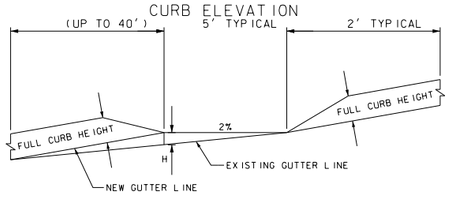
Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		151

SHEET 3 OF 5

ROADWAY TRANSITION



VARIABLE CURB ELEVATION



HORIZONTAL RAMP CONTROL

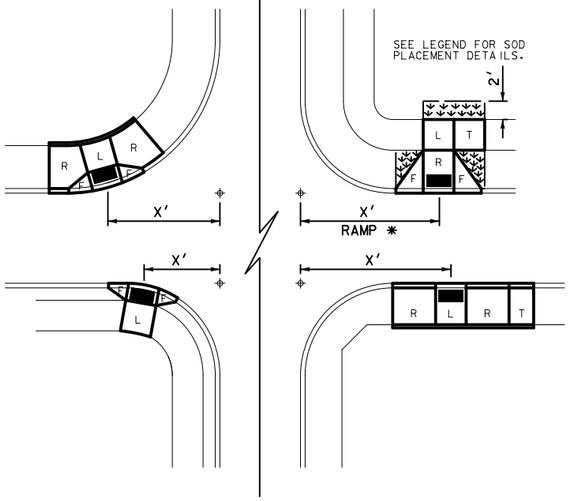
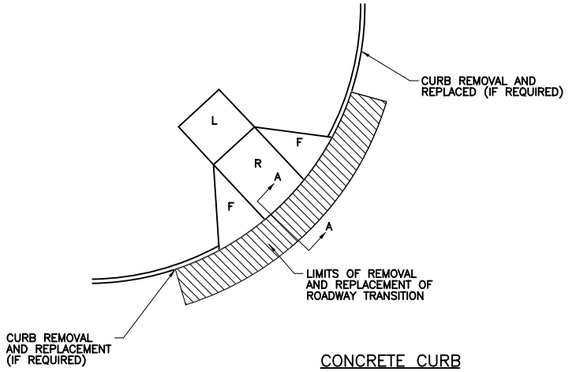


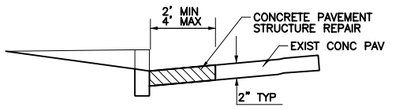
TABLE 2		
DIFFERENTIAL BETWEEN RAMP AND ROADWAY LONGITUDINAL SLOPE	H	
1%	0.04'	0.50"
2%	0.08'	1.00"
3%	0.12'	1.50"
4%	0.16'	2.00"
5%	0.20'	2.40"
6%	0.24'	2.90"

*H= DIFFERENCE IN ELEVATION BETWEEN THE NEW GUTTER LINE AND EXISTING GUTTER LINE

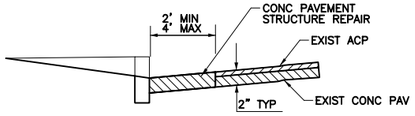
ROADWAY TRANSITION



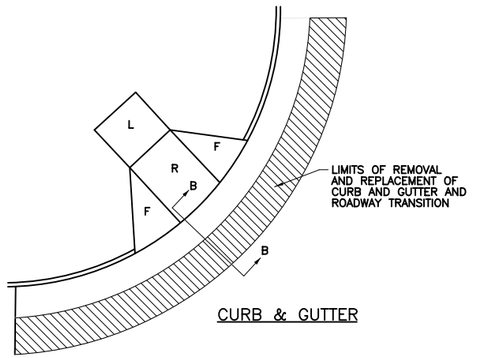
CONCRETE CURB



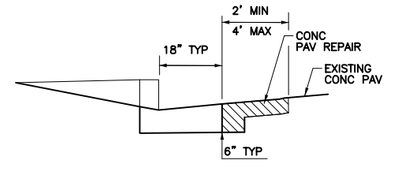
SECTION A–A



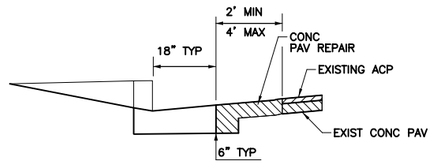
SECTION A–A ALT.



CURB & GUTTER



SECTION B–B



SECTION B–B ALT.

NOTES:

1. UTILIZE ROADWAY TRANSITION TO TIE CROSS SLOPE OF NEWLY CONSTRUCTED CURB RAMP TO THE EXISTING ROADWAY GRADE. ROADWAY TRANSITIONS SHOULD NOT EXTEND MORE THAN 4 FEET INTO ROADWAY.
2. FOR CURB SECTION, REMOVE ~~A 2 FOOT WIDE (MIN.) BY 2 INCH DEEP SECTION~~ OF PAVEMENT THE LENGTH OF THE TRANSITION PRIOR TO CONSTRUCTION.
3. FOR CURB AND GUTTER SECTION, REMOVE CURB, GUTTER AND IF NECESSARY A SECTION OF PAVEMENT (24 INCHES MIN.) BEYOND THE GUTTER BY 6 INCHES DEEP. CONSTRUCT TRANSITION IN THE GUTTER SECTION AS SHOWN.
4. CONSTRUCT FULL HEIGHT CURB AND CURB RAMP FLARES (IF REQUIRED) BASED ON NEW GUTTER LINE ELEVATIONS.
5. CONSTRUCT TRANSITION FROM BOTTOM OF CURB RAMP TO ROADWAY WITH HOT–MIX ASPHALT CONCRETE AS PER PLANS AND SPECIFICATION OR AS DIRECTED.
6. TRAFFIC SIGNAL LOOP DETECTORS MAY EXIST WITHIN THE ROADWAY CONSTRUCTION TRANSITION ZONE. MAINTAIN OPERATION OF LOOP DETECTORS THROUGHOUT CONSTRUCTION. REPAIR OR REPLACE ANY LOOP DETECTORS DAMAGED DURING CONSTRUCTION OPERATIONS.

SPECIAL NOTES & DETAILS

LEGEND

F = FLARE (10:1 OR LESS)

R = RAMP (CROSS SLOPE NOT TO EXCEED 2%; LONGITUDINAL NOT TO EXCEED 8.33% OR 12:1)

L = LANDING (SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION)

L1 = SHARED LANDING (SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION)

LS = LEVEL SIDEWALK (SHALL NOT EXCEED 2% SLOPE IN ANY DIRECTION)(PAID AS SIDEWALK)

T = TRANSITION (PAID FOR UNDER CONC SIDEWALKS)

X' = LENGTH MEASURED FROM PI POINT

⌖ = PI POINT MEASURED FROM TANGENTIAL CURBLINE INTERSECTION

⌄ = BLOCK SOD: PLACED BEHIND CONSTRUCTION LIMITS NEIGHBORING ROW, PLACED FULL LIMITS BETWEEN BACK OF CURB AND CONSTRUCTION IF DIVORCED: OR AS SHOWN ON THE PLANS

(NSPI) = ITEM IS INCIDENTAL TO CURB RAMP/SIDEWALK CONSTRUCTION. (NO SEPERATE PAY ITEM)

NOTES

1. FLARE (F), RAMP (R), AND LANDING (L), DIRECTLY IN CONTACT WITH THE CURB RAMP ARE PAID FOR UNDER ITEM 531 "CURB RAMPS"
2. LEVEL SIDEWALK (LS) AND RAMPS (R) NOT DIRECTLY IN CONTACT WITH THE CURB RAMP ARE PAID FOR UNDER ITEM 531 "SIDEWALK"

STATE OF TEXAS
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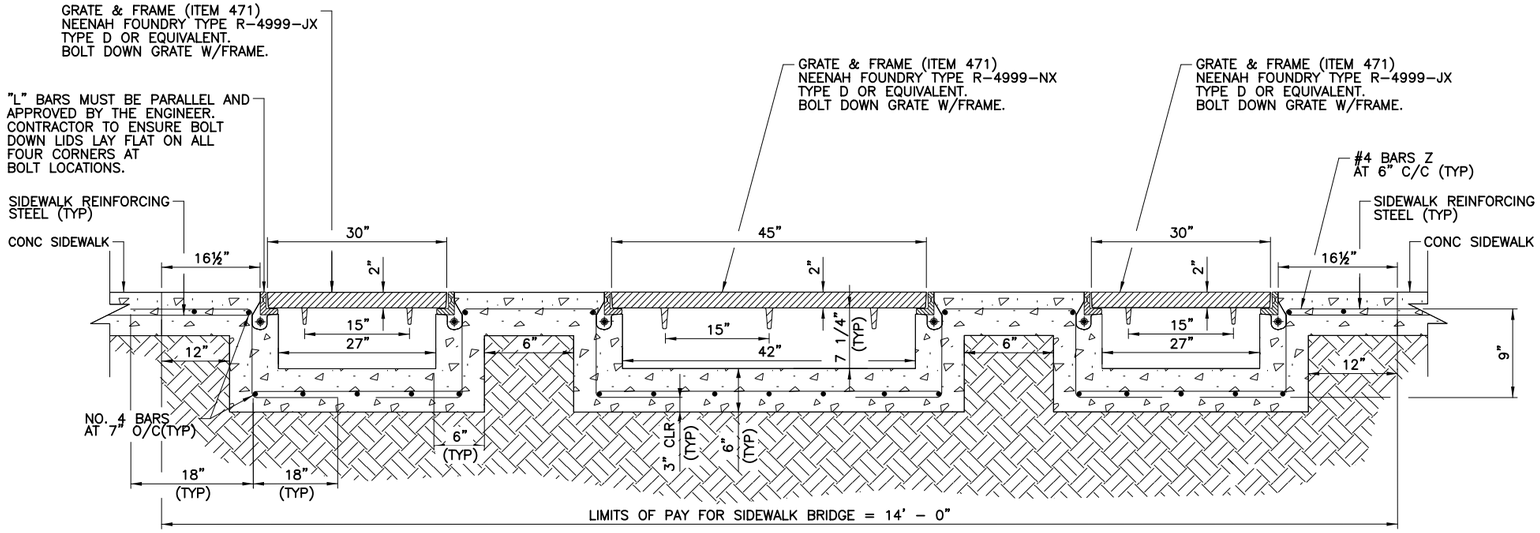
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

MISCELLANEOUS DETAILS

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	152
Checked:	STV						

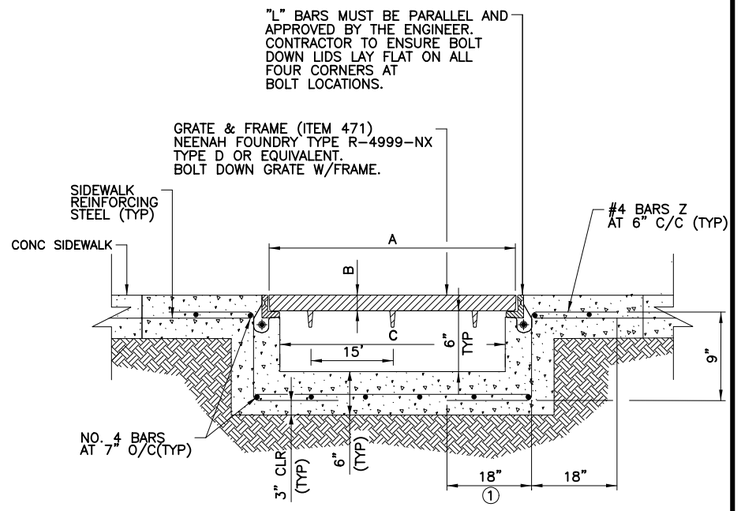
SHEET 4 OF 5



SIDEWALK (SPECIAL)(TYPE A)

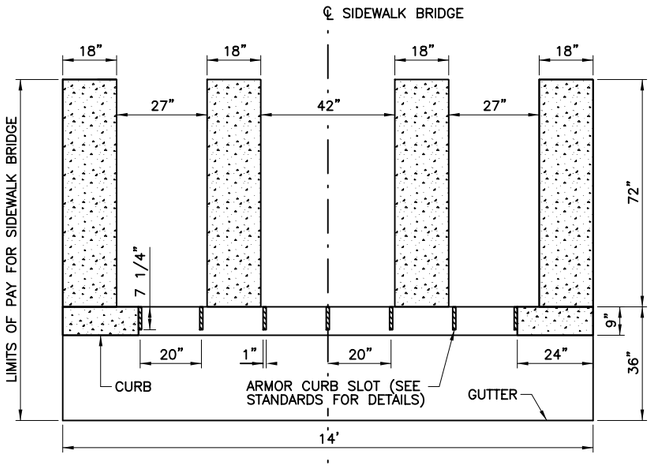
(SIDEWALK BRIDGE) ITEM 531-7025

(NTS)



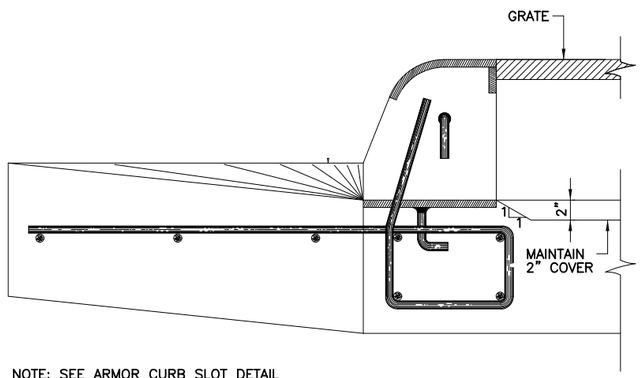
NOTE: CONCRETE AND REBAR FOR FRAME AND COVER INCIDENTAL TO THE SIDEWALK.

① FIELD CUT AS NECESSARY IF OPENING "C" IS LESS THAN 14" TO INSTALL BAR Z WITH 2" END COVER.



CONCRETE SIDEWALK DRAIN DETAIL

(NTS)



NOTE: SEE ARMOR CURB SLOT DETAIL STANDARD FOR ADDITIONAL DETAILS

ARMOR CURB SLOT DETAIL

(NTS)

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER
8/30/2024

NO.	REVISION	BY	DATE

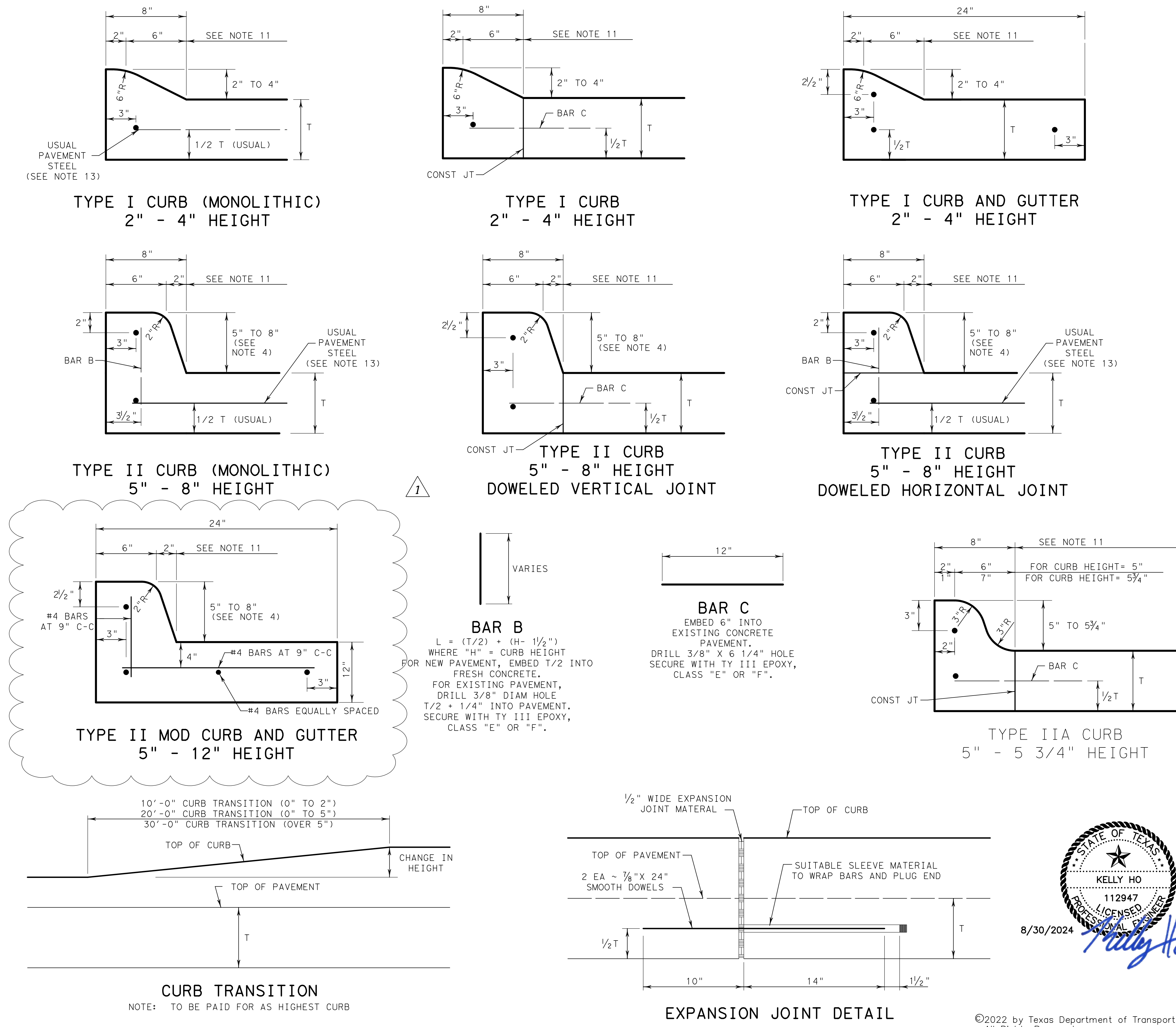
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

MISCELLANEOUS DETAILS

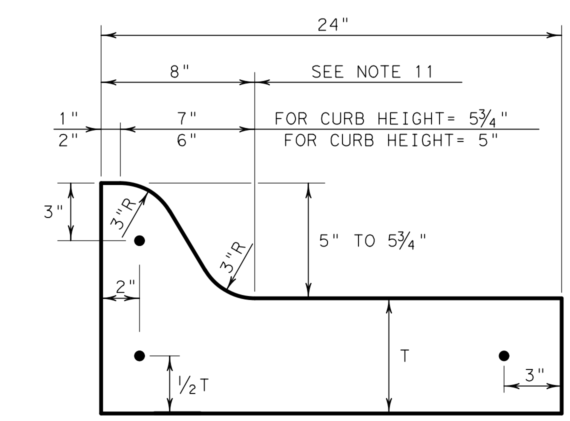
Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	153

SHEET 5 OF 5



GENERAL NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ITEM 529, "CONCRETE CURB, GUTTER, AND COMBINED CURB AND GUTTER".
2. ALL CONCRETE SHALL BE CLASS "A".
3. ALL REINFORCING BARS SHALL BE #4, UNLESS OTHERWISE SHOWN.
4. UNLESS OTHERWISE SHOWN, ALL TYPE II CURB SHALL BE 6" HEIGHT .
5. ROUND EXPOSED SHARP EDGES WITH A ROUNDING TOOL, TO A MINIMUM RADIUS OF ¼".
6. ALL EXISTING CURBS AND DRIVEWAYS TO BE REMOVED SHALL BE SAW CUT FULL DEPTH OR REMOVED AT EXISTING JOINTS.
7. WHERE CONCRETE CURB IS PLACED ON EXISTING CONCRETE PAVEMENT, THE PAVEMENT SHALL BE DRILLED AND THE REINFORCING BARS GROUTED OR EPOXIED IN PLACE.
8. EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH PAVEMENT JOINTS IN ALL CURBS OR CURB AND GUTTER ADJACENT TO JOINTED CONCRETE PAVEMENT. WHERE PLACEMENT OF CURB OR CURB AND GUTTER IS NOT ADJACENT TO CONCRETE PAVEMENT, EXPANSION JOINTS SHALL BE PROVIDED AT STRUCTURES, CURB RETURNS AT STREETS OR DRIVEWAYS, AND AT LOCATIONS DIRECTED BY THE ENGINEER.
9. VERTICAL AND HORIZONTAL DOWELS BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT 4' C-C.
10. DIMENSION "T" SHOWN IS THE THICKNESS OF ADJACENT CONCRETE PAVEMENT, OR, WHEN CURB IS INSTALLED ADJACENT TO FLEXIBLE PAVEMENT, "T" IS 6" MINIMUM, 8" MAXIMUM.
11. USUAL PROFILE GRADE LINE. REFER TO TYPICAL SECTIONS AND PLAN-PROFILE SHEETS FOR EXACT LOCATIONS.
12. A SEALED, ½" EXPANSION JOINT SHALL BE PROVIDED WHERE CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP.
13. LONGITUDINAL AND TRANSVERSE PAVEMENT STEEL SHALL BE PLACED IN ACCORDANCE WITH PAVEMENT DETAILS SHOWN ELSEWHERE IN THE PLANS.



TYPE IIA CURB AND GUTTER
5" - 5 3/4" HEIGHT

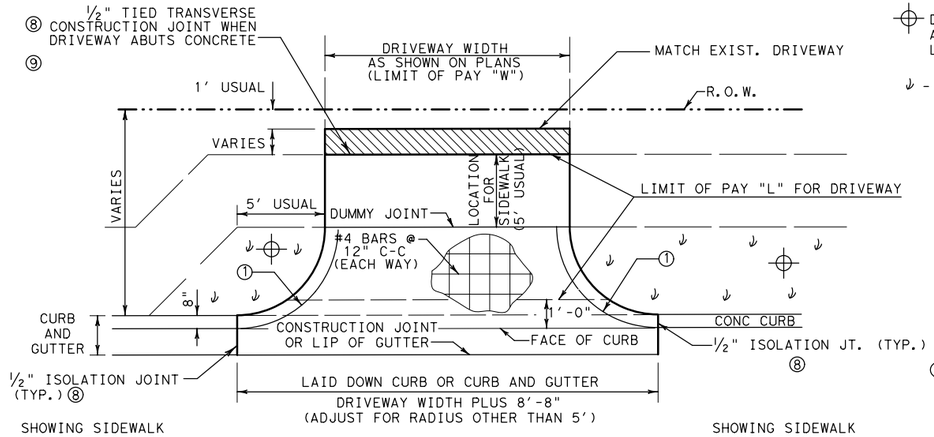
Texas Department of Transportation

Fort Worth District Standard

CONCRETE CURB AND CURB AND GUTTER DETAILS

CCCG (FTW)(MOD)

ORIGINAL DRAWING: 05/2019	cccg-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
DATE	REVISIONS	02	SEE TITLE SHEET		154
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
07/2022	DESIGNATE USUAL 6" HEIGHT	TEXAS	FTW	TARRANT	
△1	REVISED CURB THICKNESS. - KH 07/2024	CONT.	SECT.	JOB	HIGHWAY NO.
		0172	01	055, ETC	BU 287



PLAN VIEW

⊕ DO NOT PAVE AREA BETWEEN SIDEWALK AND DRIVEWAY CURB. SEED, SOD, OR LANDSCAPE AS DIRECTED.

↓ - SEEDING OR OTHER SURFACE NOT SUITABLE AS PEDESTRIAN WALKWAY.

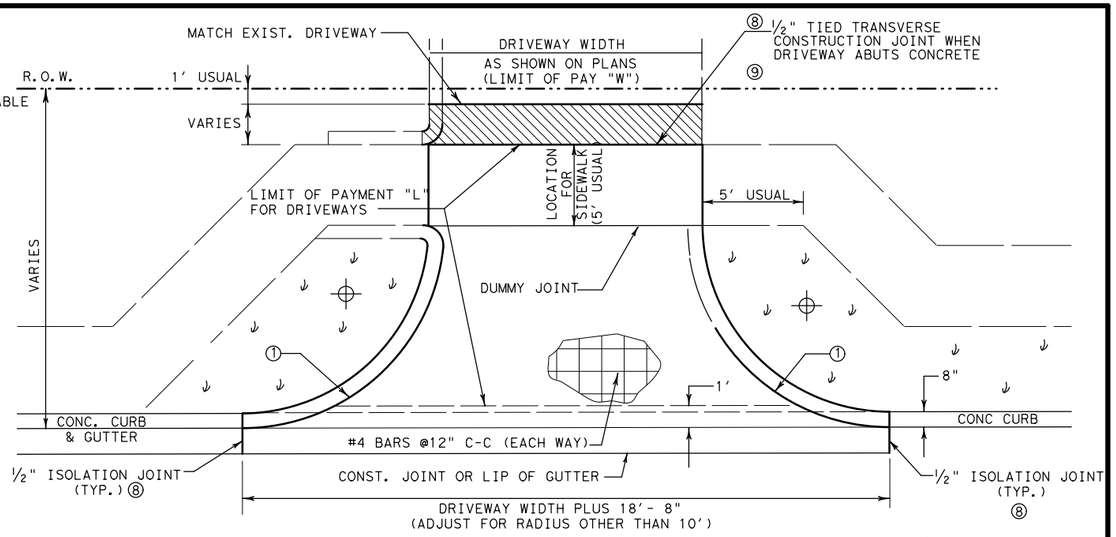
PAY AREA FOR DRIVEWAY SHALL BE THE PRODUCT OF "L" x "W"

S.Y. NON-PAY CONCRETE IN DRIVEWAY RADIUS	
2-90° RADII (FT)	NON-PAY CONC. (S.Y.)
5	0.42
10	3.04
15	10.73
20	15.36
25	29.81
30	37.19

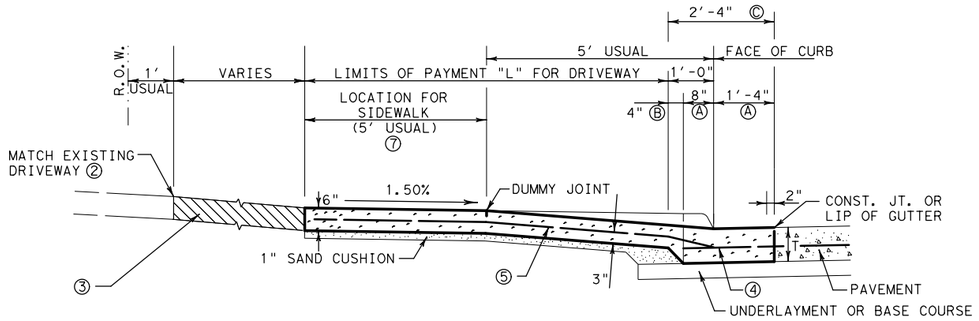
① RADII AS SHOWN ON PLANS

SEE ROADWAY DESIGN MANUAL, APPENDIX C FOR RECOMMENDED RADII.

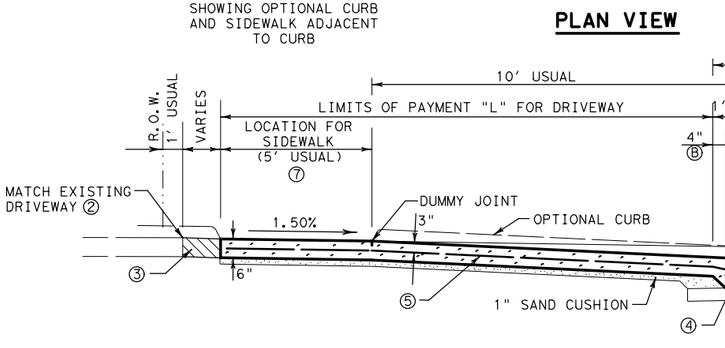
② FULL DEPTH SAW CUT IF CONCRETE



PLAN VIEW



SECTION VIEW
CONCRETE RESIDENTIAL DRIVEWAY



SECTION VIEW
CONCRETE COMMERCIAL DRIVEWAY

③ REPLACE EXISTING DRIVEWAY WITH EQUAL OR BETTER MATERIAL:

IF CONCRETE, PAY FOR AS CONCRETE DRIVEWAY.

IF HOT MIX OR OTHER MATERIAL, PAY FOR IN ACCORDANCE WITH APPROPRIATE BID ITEMS.

④ WHERE DRIVEWAY IS ADJACENT TO CONCRETE PAVEMENT, 36" - #4 TIE BAR, 12" EMBEDMENT INTO PAVEMENT (CAST-IN-PLACE OR DRILLED AND GROUTED). SPACING TO MATCH TRANSVERSE STEEL IN CONCRETE PAVEMENT.

MULTIPLE-PIECE TIE BARS OR 24" EXTENSION OF TRANSVERSE PAVING STEEL MAY BE USED IN LIEU OF TIE BARS.

LONGITUDINAL STEEL IN GUTTER PORTION TO MATCH CONCRETE PAVEMENT OR CONCRETE CURB AND GUTTER DETAILS.

⑤ #4 BARS @ 12" C-C EACH WAY (EXTEND TO FACE OF CURB) BEND AS REQ'D TO TIE TO PAVING STEEL OR TIE BARS.

⑥ IF ADJACENT TO CONCRETE PAVEMENT:
Ⓐ PAID FOR AS CONCRETE PAVEMENT,
Ⓑ PAID FOR AS CONCRETE CURB.

IF ADJACENT TO HOT MIX OR FLEXIBLE PAVEMENT:
Ⓒ PAID FOR AS CONCRETE CURB AND GUTTER.

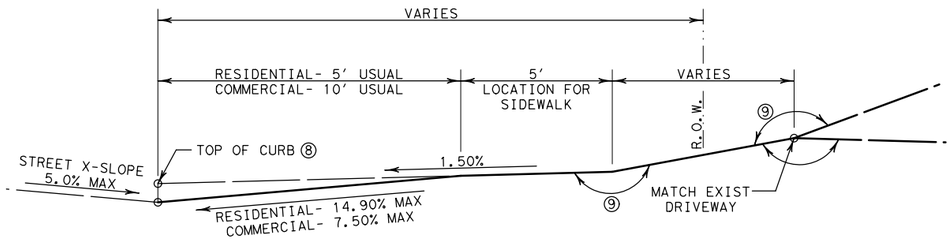
T = THICKNESS OF CONCRETE PAVEMENT OR CONCRETE CURB AND GUTTER

⑦ LOCATION FOR SIDEWALK TO BE PROVIDED ON ALL DRIVEWAYS

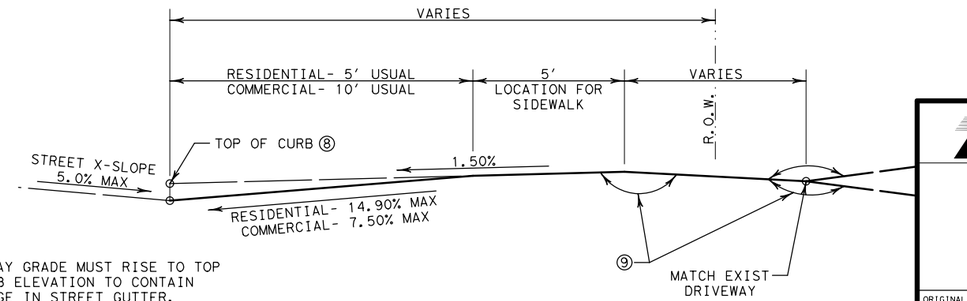
FOR SIDEWALK DETAILS, SEE STANDARD CSWD(FTW)

⑧ SEE STANDARD JS (FTW) FOR JOINT DETAILS.

⑨ IF, IN THE OPINION OF THE ENGINEER, ADJACENT CONCRETE IS NOT SOUND, 1/2" ISOLATION JOINT MAY BE USED IN LIEU OF TIED JOINT.



SAG CONDITION



CREST CONDITION

⑧ DRIVEWAY GRADE MUST RISE TO TOP OF CURB ELEVATION TO CONTAIN DRAINAGE IN STREET GUTTER.

⑨ 8% MAX CHANGE IN GRADE

ALLOWABLE DRIVEWAY GRADES

Texas Department of Transportation

Fort Worth District Standard

CONCRETE DRIVEWAY DETAILS CDD (FTW)

ORIGINAL DRAWING: 05/2019	cdd-ftw.dgn	PROJECT NO.			SHEET NO.
DATE	REVISIONS	SEE TITLE SHEET			155
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
11/2020	REVISED JOINT NOMENCLATURE REVISED NOTE 4 ADD NOTE 9	TEXAS	FTW	TARRANT	
07/2022	ELIMINATE 1" RISE AT GUTTER LINE	CONT.	SECT.	JOB	HIGHWAY NO.
		0172	01	055,ETC	BU 287

File: I:\Projects\TXDOT\2000292.00\TXDOT2000292.02\FTW-BU287\8.00 Plans\Standards\cptep-ftw.dgn
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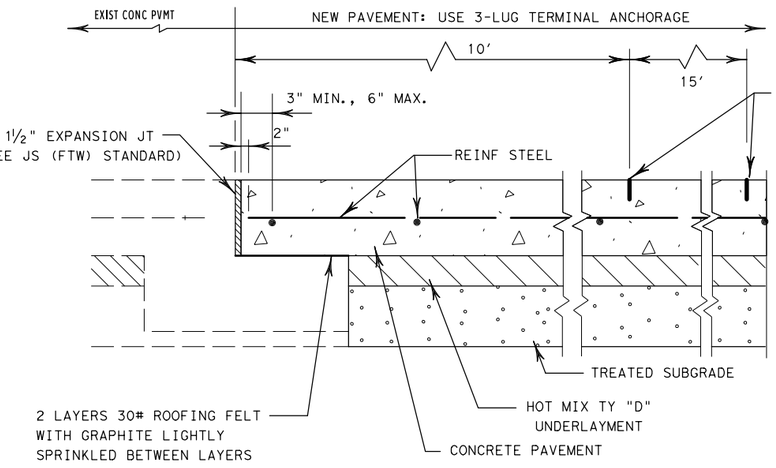
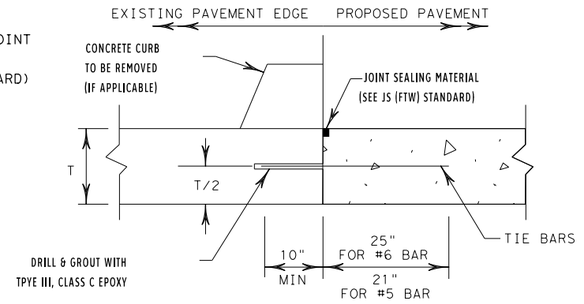


TIE TO EXIST. CONCRETE PAVEMENT

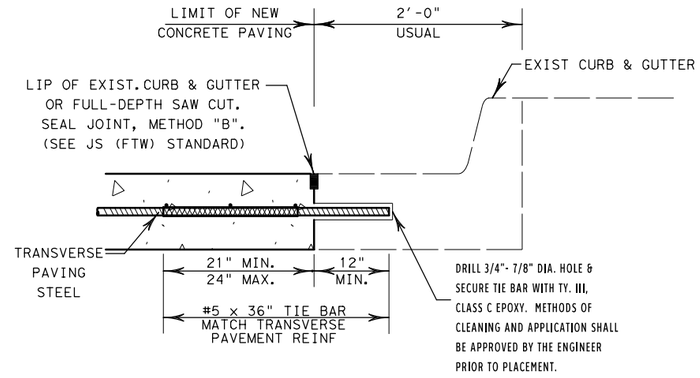
(TRANSVERSE JOINTS W/EXISTING "SLEEPER" SLAB)
N.T.S.



1. BEFORE WIDENING WORK, DEMONSTRATE THAT THE BOND STRENGTH OF THE EPOXY-GROUTED TIE BARS MEETS THE REQUIRMENTS OF PULL-OUT TEST SPECIFIED IN ITEM 361.
2. SPACE TIE BARS AT 24" SPACING. USE #6 TIE BARS FOR 8" AND THICKER SLABS, USE #5 TIE BARS FOR LESS THAN 8" THICK SLABS.

LONGITUDINAL WIDENING JOINT DETAIL

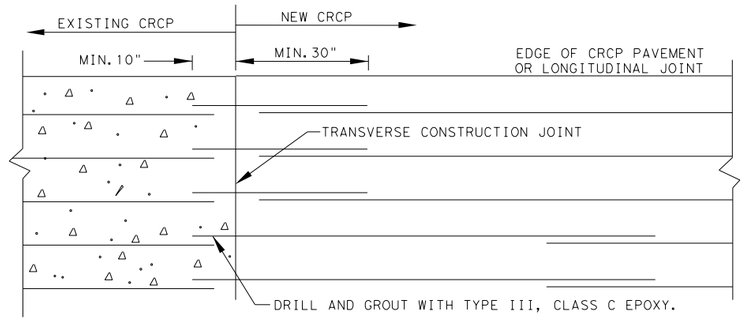
N.T.S.



TIE TO EXIST. CONC. CURB & GUTTER

N.T.S.

NOTE:
SAWING OF PAVEMENT AND REMOVAL OF EXISTING CONC. WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.



NOTE:
TIE BAR SIZE AND SPACING TO MATCH LONGITUDINAL REINFORCING. FOR LONGITUDINAL BAR SIZE AND SPACING, REFER TO CONCRETE PAVEMENT STANDARDS.

IF, IN THE OPINION OF THE ENGINEER, THE LENGTH OF AREA OF NEW PAVEMENT DOES NOT WARRANT STAGGERED LAPPING AS SHOWN, THIS REQUIREMENT MAY BE WAIVED.

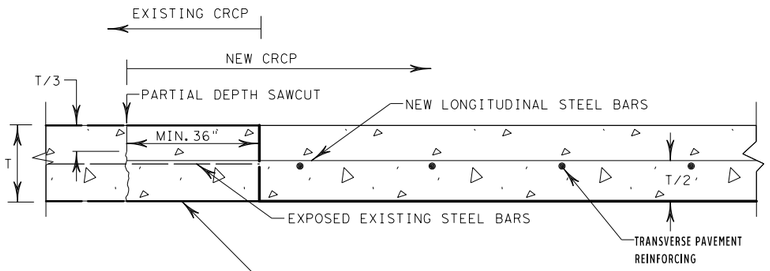
GENERAL NOTES

TIE BARS SHALL BE SECURED INTO THE EXISTING CONCRETE THE MINIMUM LENGTHS SHOWN, USING TY III EPOXY, CLASS "C" AND MUST MEET THE REQUIREMENTS OF THE PULL-OUT TEST SPECIFIED IN ITEM 361.

ALL HOLES FOR TIE BARS OR CONCRETE ANCHORS SHALL BE DRILLED WITH A CORE OR ROTARY DRILL. THE USE OF HAMMER DRILLS WILL NOT BE PERMITTED.

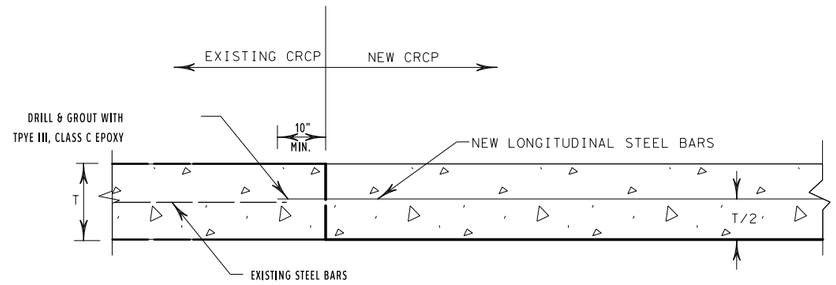
SEE JS (FTW) STANDARD FOR JOINT DETAILS.

SEE CONCRETE PAVEMENT STANDARD FOR ADDITIONAL INFORMATION



TIED TRANSVERSE CONSTRUCTION JOINT DETAIL

EXISTING CRCP TO NEW CRCP
BREAKBACK AND LAP
N.T.S.



TIED TRANSVERSE CONSTRUCTION JOINT DETAIL

EXISTING CRCP TO NEW CRCP
DRILL AND EPOXY
N.T.S.

Texas Department of Transportation

Fort Worth District Standard

CONCRETE PAVEMENT TIES TO EXISTING PAVEMENT

CP-TEP (FTW)

ORIGINAL DRAWING: 05/2019	cptep-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.			SHEET NO.
DATE	REVISIONS	02	SEE TITLE SHEET			156
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY		
06/2020	ADD LONGITUDINAL AND TRAVERSE JOINTS	TEXAS	FTW	TARRANT		
11/2020	ADD DRILL AND EPOXY TRANSVERSE JOINT DETAIL, REVISED JOINT NOMENCLATURE, ADD REFERENCE TO CONC PAVING STANDARDS	CONT.	SECT.	JOB	HIGHWAY NO.	
		0172	01	055,ETC	BU 287	

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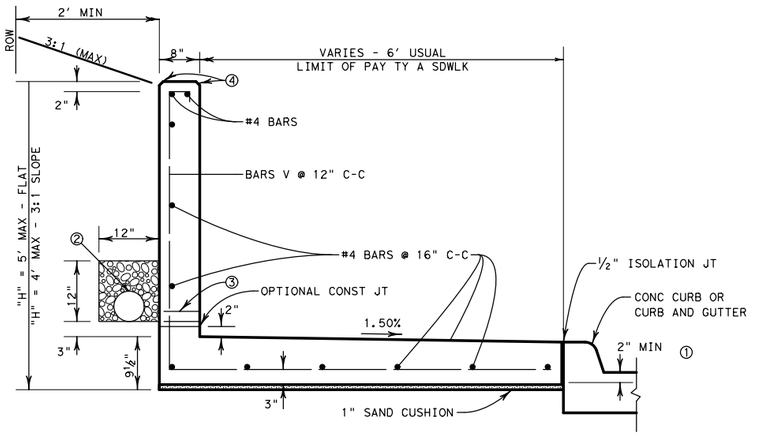
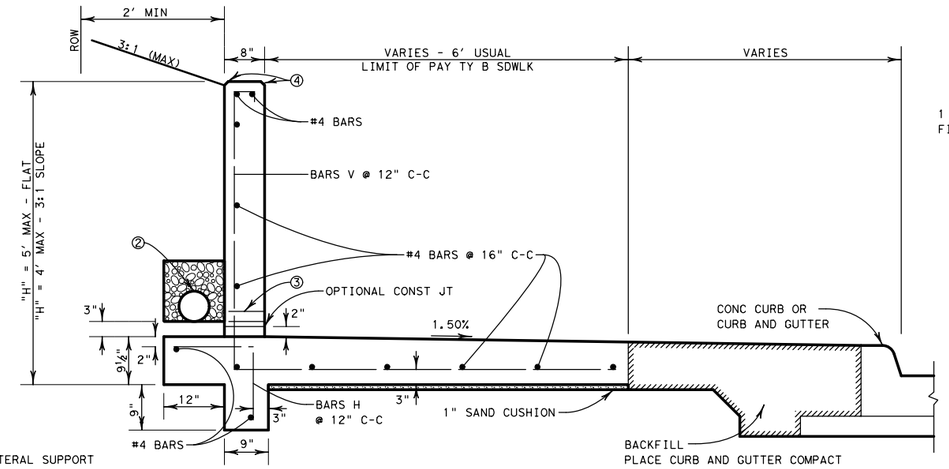


TYPE A SIDEWALK-ADJACENT TO CURB

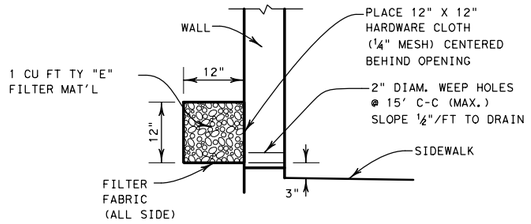


TYPE B SIDEWALK-REMOTE FROM CURB

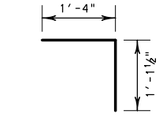
① 2" MINIMUM REQUIRED FOR LATERAL SUPPORT
② INSTALL 6" PIPE UNDERDRAIN (TY. 5, 6, 7, OR 8) ENTIRE LENGTH OF WALL. USE TY. "E" FILTER MATERIAL. SLOPE TO DRAIN AND CONNECT TO STORM DRAIN.
⑤ IF, IN THE OPINION OF THE ENGINEER, USE OF UNDERDRAIN IS IMPRACTICAL, INSTALL WEEP HOLES AS SHOWN.
④ ¾" CHAMFER

SPECIAL CONCRETE SIDEWALK w/ INTEGRATED RETAINING WALL

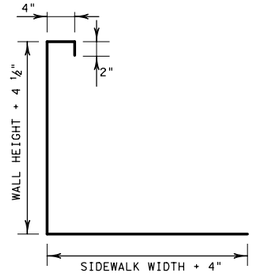
N. T. S.



WEEP HOLE DETAIL

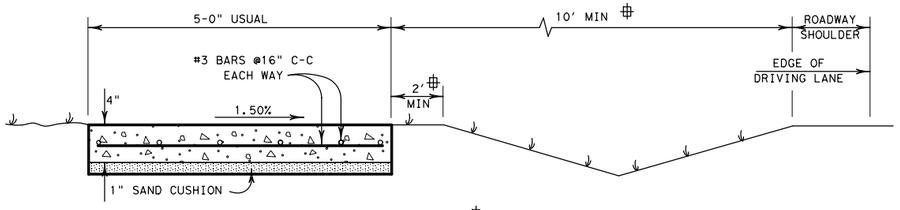


#4 BARS H @ 12" C-C



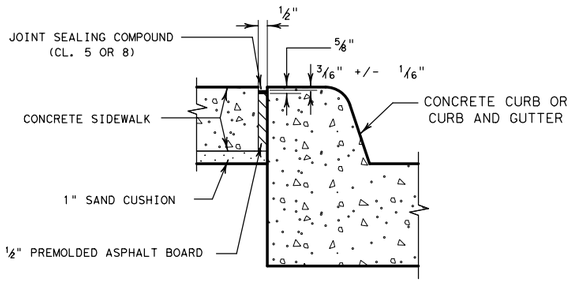
#4 BARS V @ 12" C-C

REINFORCING STEEL DETAILS



⋕ SIDEWALK TO BE 10' MIN. FROM EDGE OF SHOULDER OR 2' MIN. FROM TOP OF DITCH BACK SLOPE, WHICHEVER IS GREATER (10' MIN. FROM EDGE OF SHOULDER IF NO DITCH.)

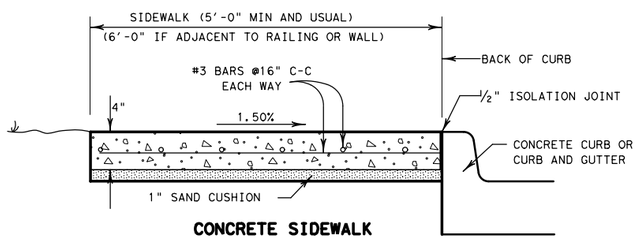
CONCRETE SIDEWALK
(ROADWAY W/O CURB)



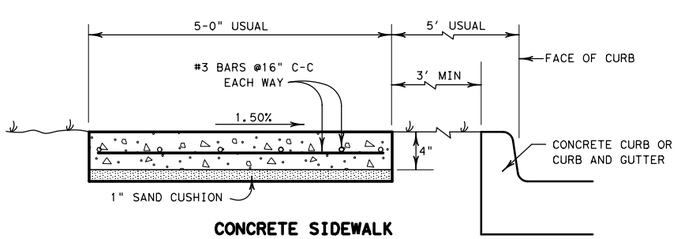
1/2" ISOLATION JOINT
(SIDEWALK ADJACENT TO CURB)

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS "C".
2. ALL REINFORCING STEEL SHALL BE GRADE 60, # 4 BARS UNLESS OTHERWISE INDICATED.
3. SEE PLAN SHEETS FOR LOCATIONS OF SIDEWALKS AND RETAINING WALLS.
4. LONGITUDINAL SLOPE OF SIDEWALKS SHALL NOT EXCEED 5% EXCEPT IN CASES WHERE THE ADJACENT ROADWAY SLOPE EXCEEDS 5%. IF ROADWAY SLOPE EXCEEDS 5%, LONGITUDINAL SLOPE OF SIDEWALK MAY MATCH THAT OF ROADWAY.
5. IF SIDEWALK WIDTH IS LESS THAN 5', PROVIDE 5' X 5' PASSING AREAS AT INTERVALS NOT TO EXCEED 200' SPACING.
6. RETAINING WALL WILL BE SUBSIDIARY TO THE ITEM, "CONC SIDEWALKS (SPECIAL) (TYPE A)" OR "CONC SIDEWALKS (SPECIAL)(TYPE B)", WITH LIMITS OF PAY AS SHOWN.
7. SURFACE TREATMENT OF RETAINING WALL FACE DETAILED ELSEWHERE IN THE PLANS.
8. SEE PED STANDARDS FOR TREATMENT AT INTERSECTIONS AND CROSSWALKS.



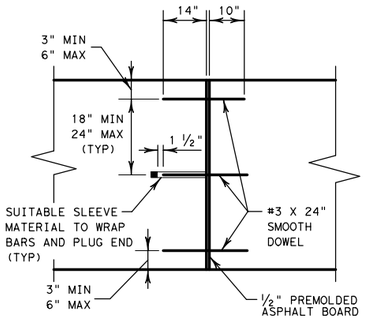
CONCRETE SIDEWALK
(ADJACENT TO CURB)



CONCRETE SIDEWALK
(REMOTE FROM CURB)

CONCRETE SIDEWALK DETAILS

N. T. S.



TRANSVERSE EXPANSION JOINT

Texas Department of Transportation

Fort Worth District Standard

CONCRETE SIDEWALK DETAILS
CSWD (FTW)

ORIGINAL DRAWING: 05/2019	cswd-ftw.dgn	PROJECT NO.			SHEET NO.
DATE	REVISIONS	SEE TITLE SHEET			157
05/2019	NEW STANDARD	STATE	STATE DIST. NO.	COUNTY	
11/2020	REVISE JOINT NOMENCLATURE, REVISE ALLOWABLE SEALANT TYPES	TEXAS	FTW	TARRANT	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0172	01	055,ETC	BU 287

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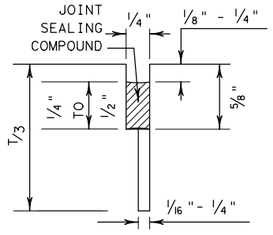
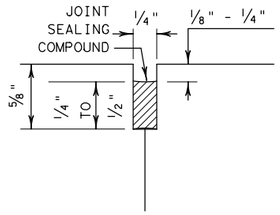
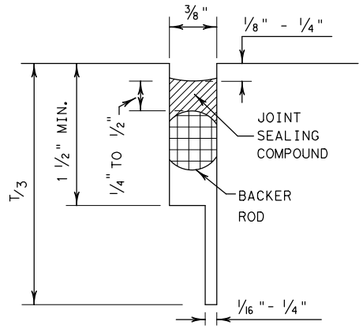
METHOD B: JOINT SEALING COMPOUND



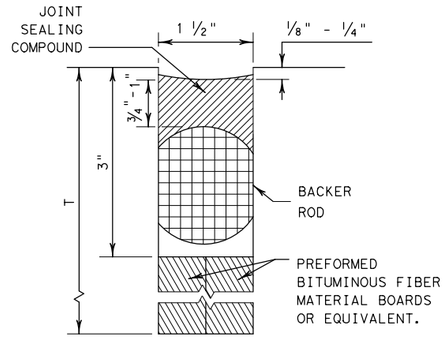
LONGITUDINAL SAWED
CONTRACTION JOINT



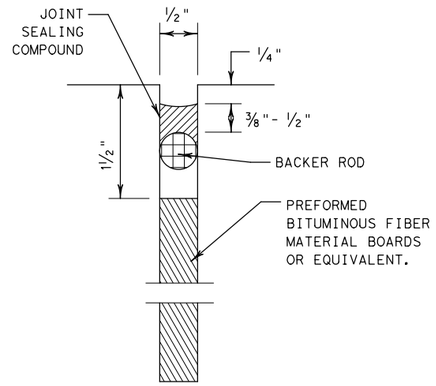
LONGITUDINAL OR TRANSVERSE
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT



TRANSVERSE FORMED
EXPANSION JOINT



FORMED
ISOLATION JOINT

GENERAL NOTES

1. PREFORMED COMPRESSION SEALS (METHOD A) WILL NOT BE PERMITTED.
2. DIMENSION "T" IS THICKNESS OF CONCRETE PAVEMENT.
3. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
4. THE JOINT RESERVOIR FOR SEALANT FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION JOINTS AND SAWED JOINTS SHALL BE SAWED UNLESS OTHERWISE SHOWN ON THE PLANS.
5. REFER TO DMS-6310 "JOINT SEALANTS AND FILLERS" FOR SEALANT CLASSIFICATIONS.
6. FOR SAWED LONGITUDINAL JOINTS, LONGITUDINAL OR TRANSVERSE CONSTRUCTION JOINTS, USE JOINT SEALANT CLASS 5 OR 8 UNLESS OTHERWISE SHOWN ON THE PLANS OR APPROVED.
7. FOR TRANSVERSE SAWED CONTRACTION JOINTS, TRANSVERSE FORMED EXPANSION JOINTS, AND ISOLATION/EXPANSION JOINTS, USE JOINT SEALANT CLASS 5 OR 8 AT NEW JOINTS. USE JOINT SEALANT CLASS 4,5,7,OR 8 FOR MAINTAINING EXISTING JOINTS.
8. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 "CLEANING AND SEALING JOINTS" OR ITEM 713 "CLEANING AND SEALING JOINTS AND CRACKS (CONCRETE PAVEMENT)".
9. ISOLATION JOINTS ACCOMMODATE HORIZONTAL AND VERTICAL MOVEMENTS THAT OCCUR BETWEEN A PAVEMENT AND A STRUCTURE. ISOLATION JOINTS MAY BE USED FOR BRIDGE ABUTMENTS, INTERSECTIONS, CURB AND GUTTER, OLD AND NEW PAVEMENTS, OR AROUND DRAINAGE INLETS, MANHOLES, FOOTINGS AND LIGHTING STRUCTURES.

Texas Department of Transportation

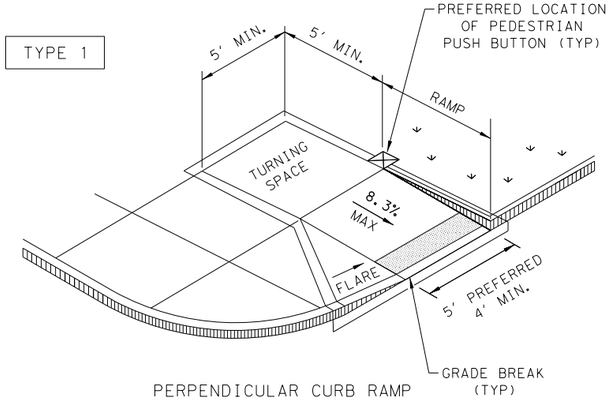
Fort Worth District Standard

CONCRETE PAVING DETAILS
JOINT SEALS
JS (FTW)

ORIGINAL DRAWING: 05/2019	js-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
DATE	REVISIONS	02	SEE TITLE SHEET		158
05/2019	REPLACES JS-03(FW)	STATE	STATE DIST.NO.	COUNTY	
11/2020	REVISE NOMENCLATURE FOR ISOLATION JOINTS (OMIT "EXPANSION")	TEXAS	FTW	TARRANT	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0172	01	055,ETC	BU 287

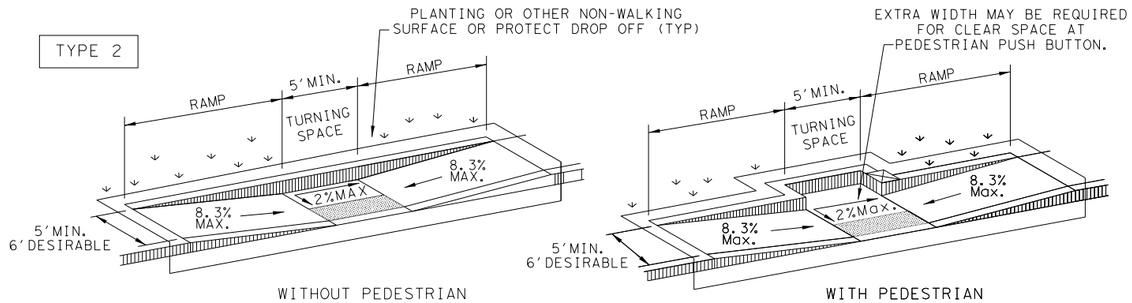
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

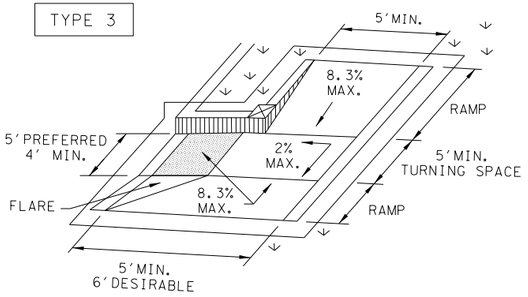


WITHOUT PEDESTRIAN PUSH BUTTON

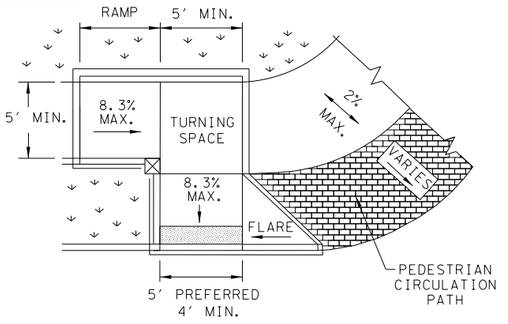
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

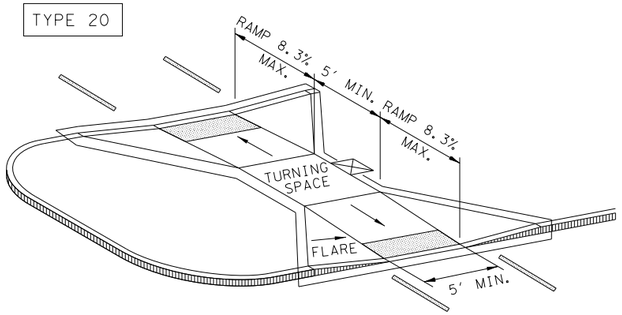


TYPE 6



COMBINATION CURB RAMPS

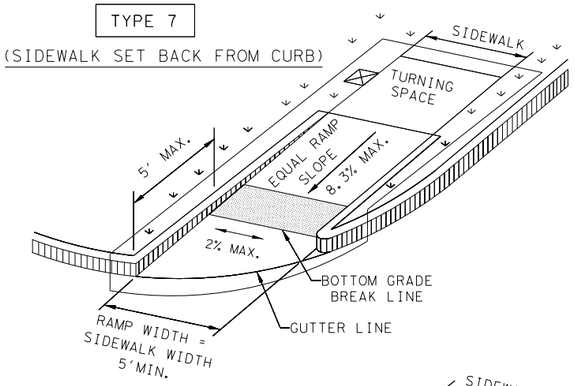
TYPE 20



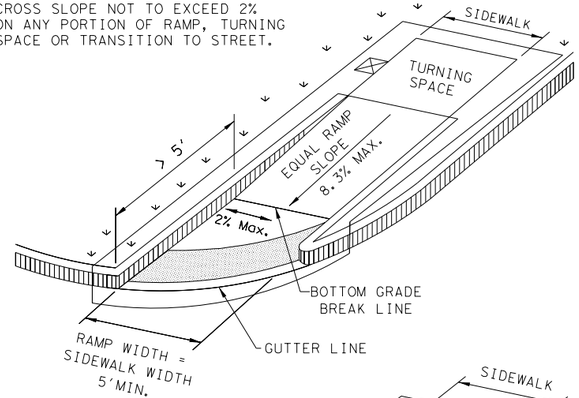
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

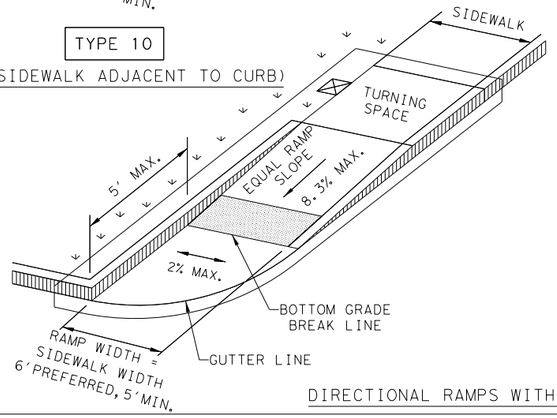


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

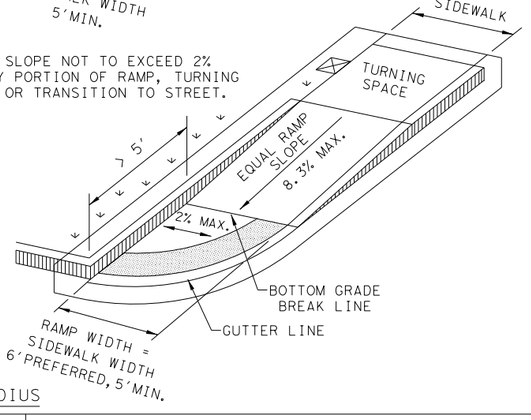


TYPE 10

(SIDEWALK ADJACENT TO CURB)

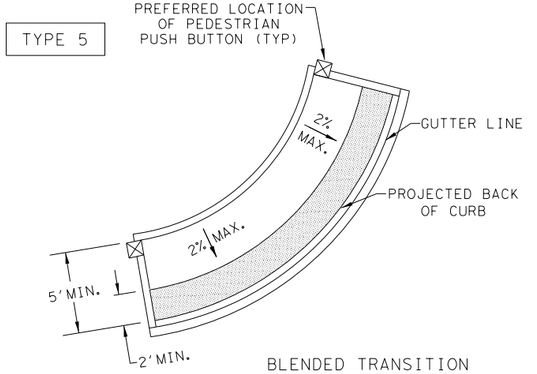


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

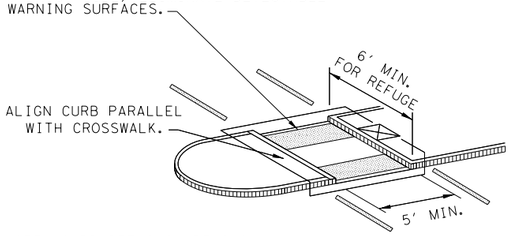
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

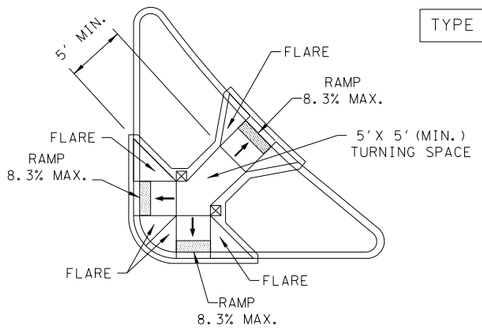
INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.

TYPE 21



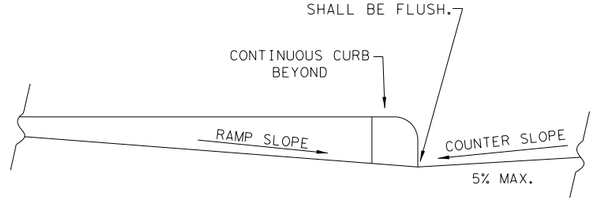
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0172	01	055,ETC		BU 287
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	FTW	TARRANT			159

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

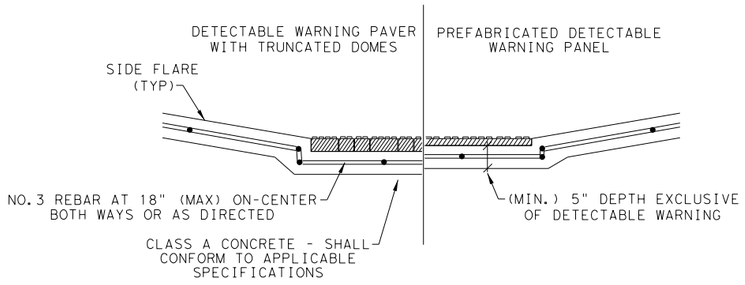
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

SIDEWALKS

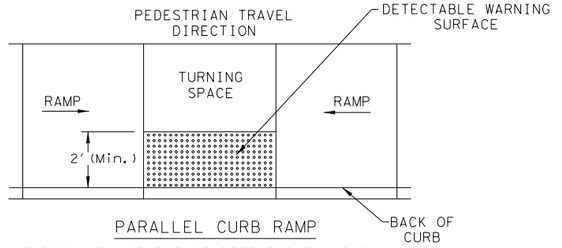
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.



SECTION VIEW DETAIL

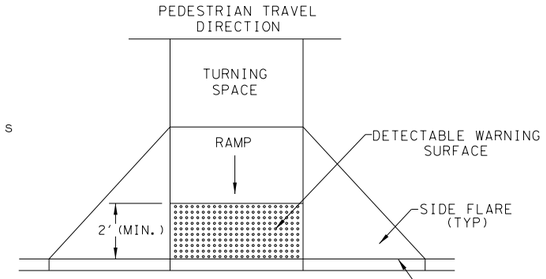
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



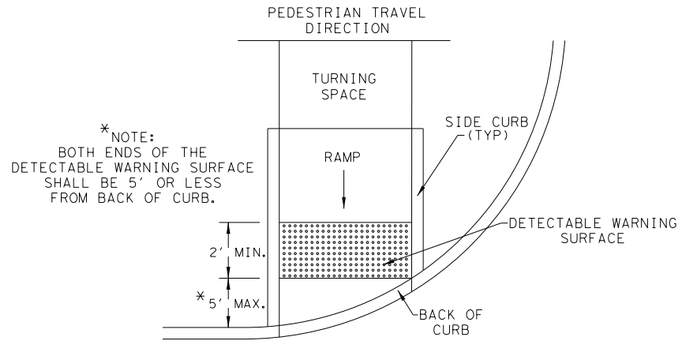
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation

Design Division Standard

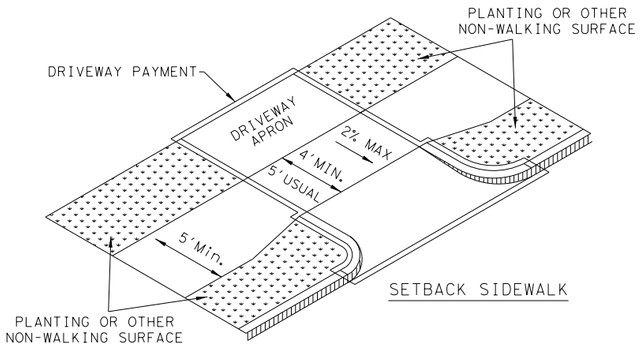
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

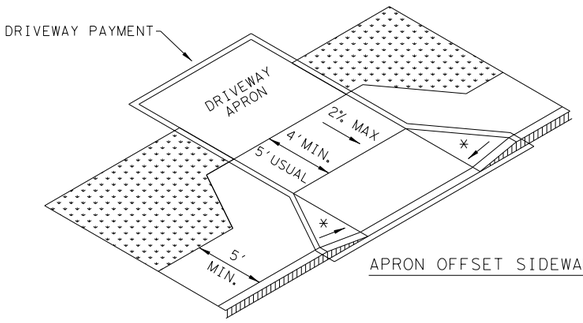
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0172	01	055,ETC	BU 287	
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.	
	FTW	TARRANT		160	

DATE:
FILE:

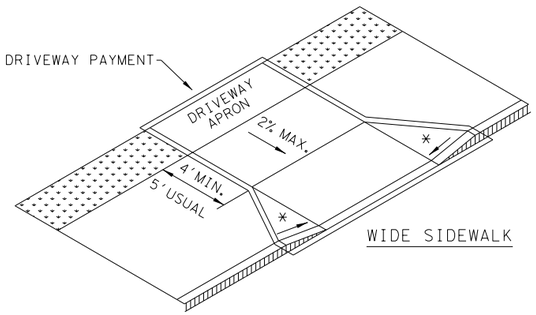
SIDEWALK TREATMENT AT DRIVEWAYS



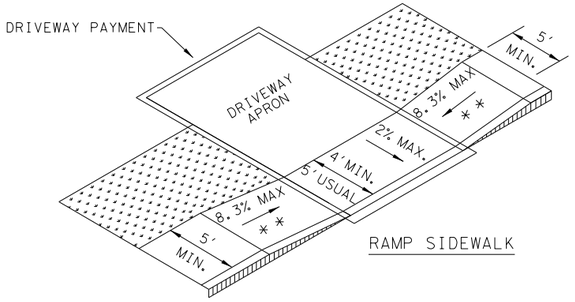
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

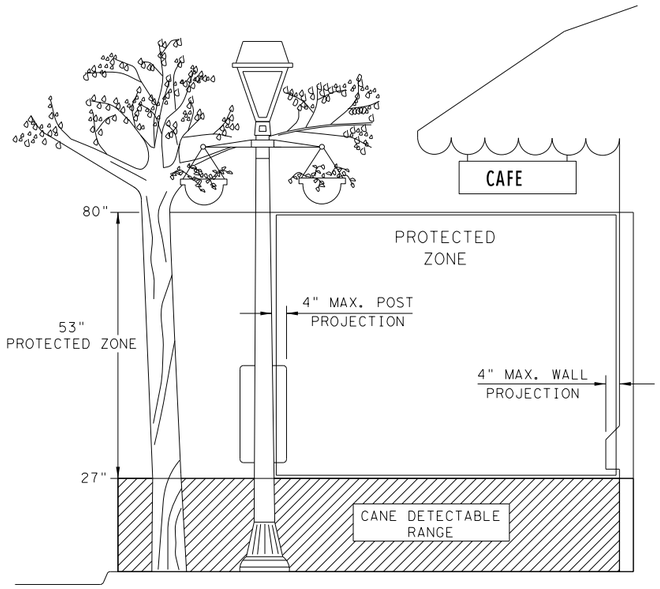


RAMP SIDEWALK

NOTES:

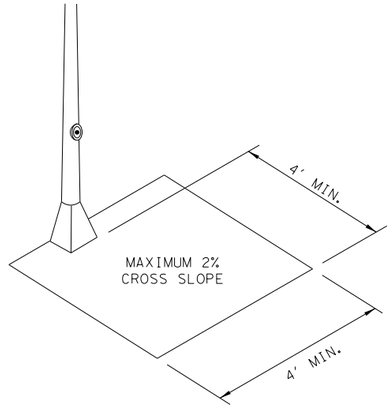
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

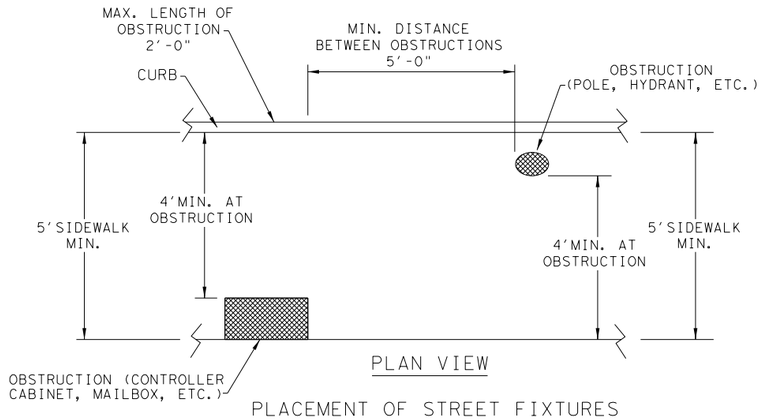


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



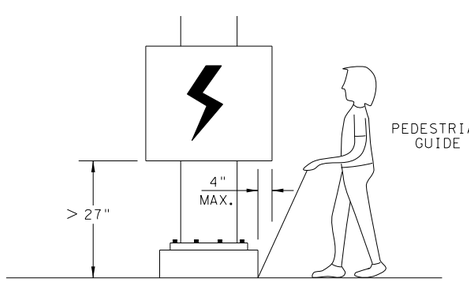
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



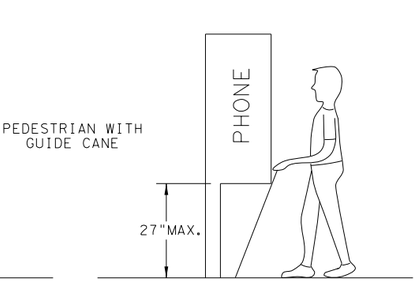
PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤ 27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

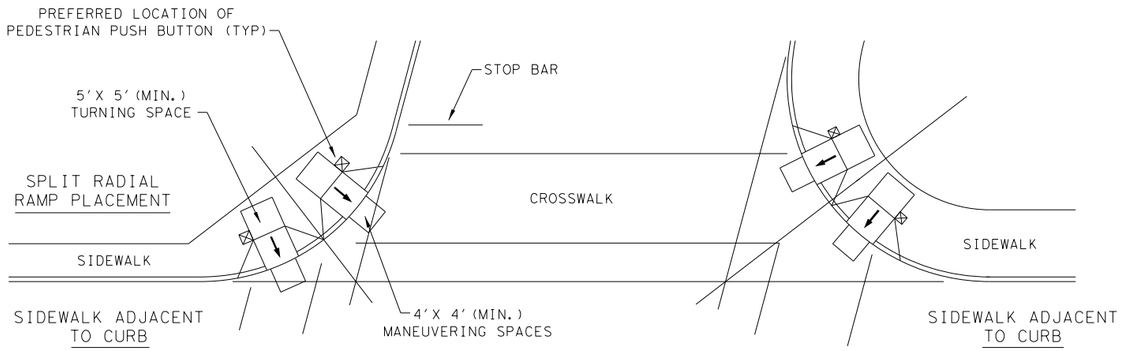
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS	0172	01	055,ETC	BU 287	
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.	
	FTW	TARRANT		161	

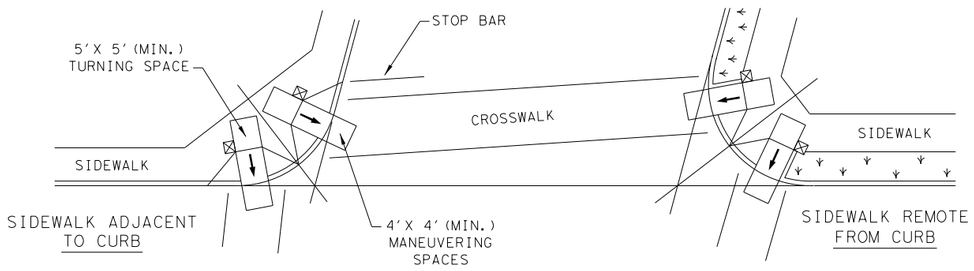
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

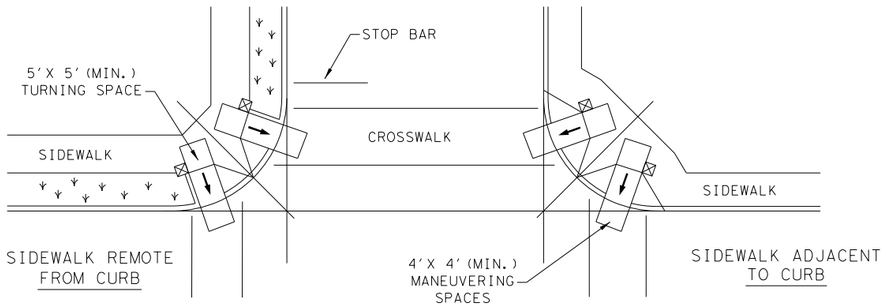
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



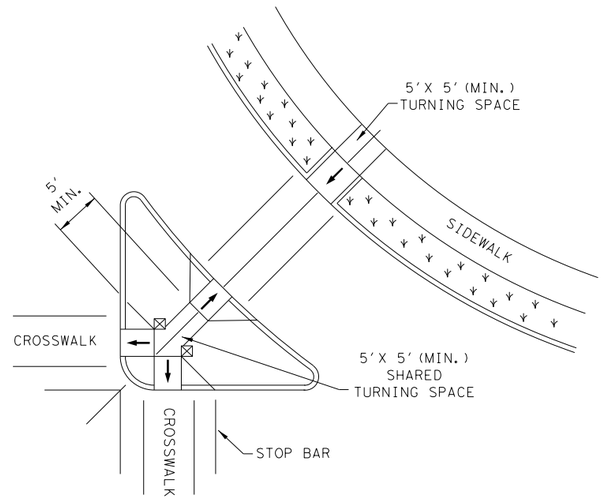
SKEWED INTERSECTION WITH "LARGE" RADIUS



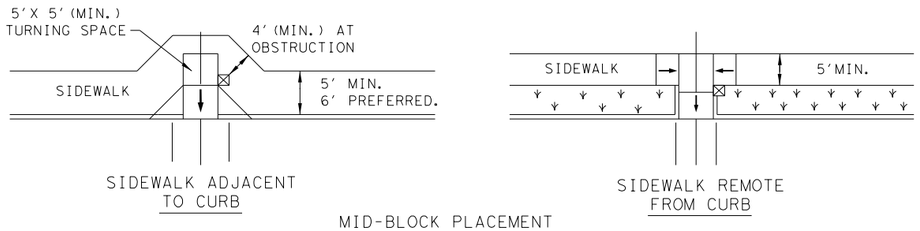
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation

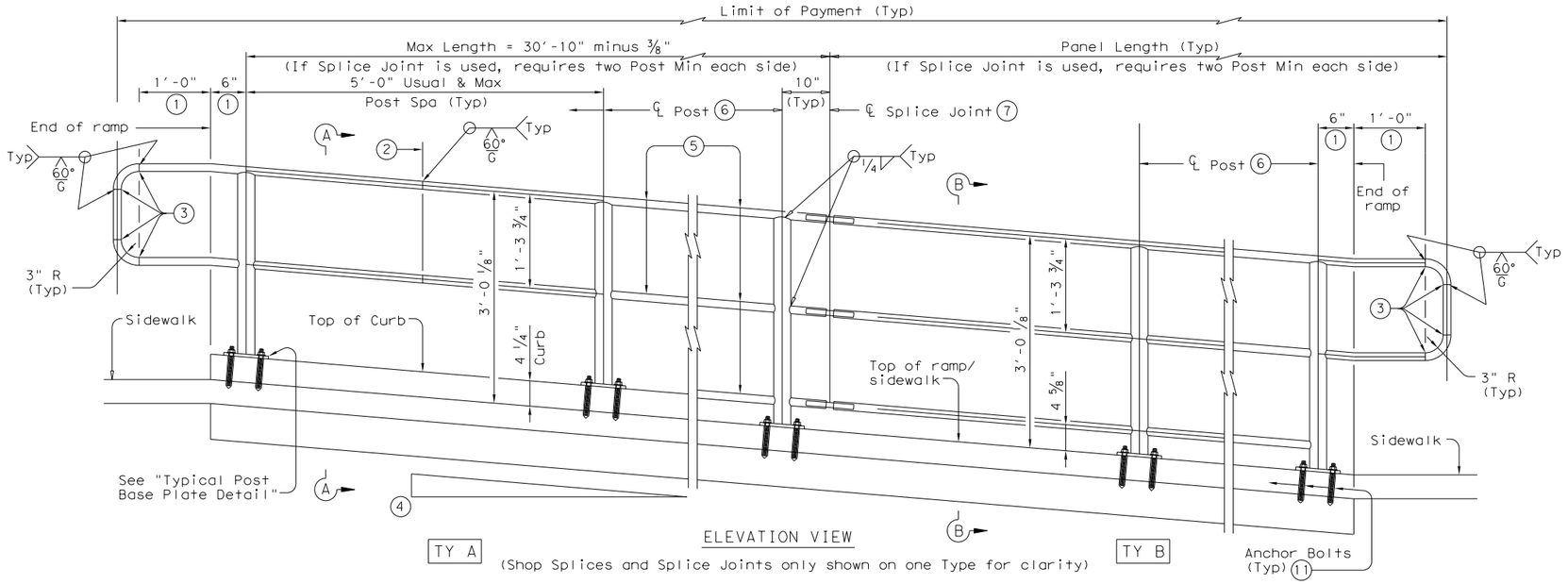
Design Division Standard

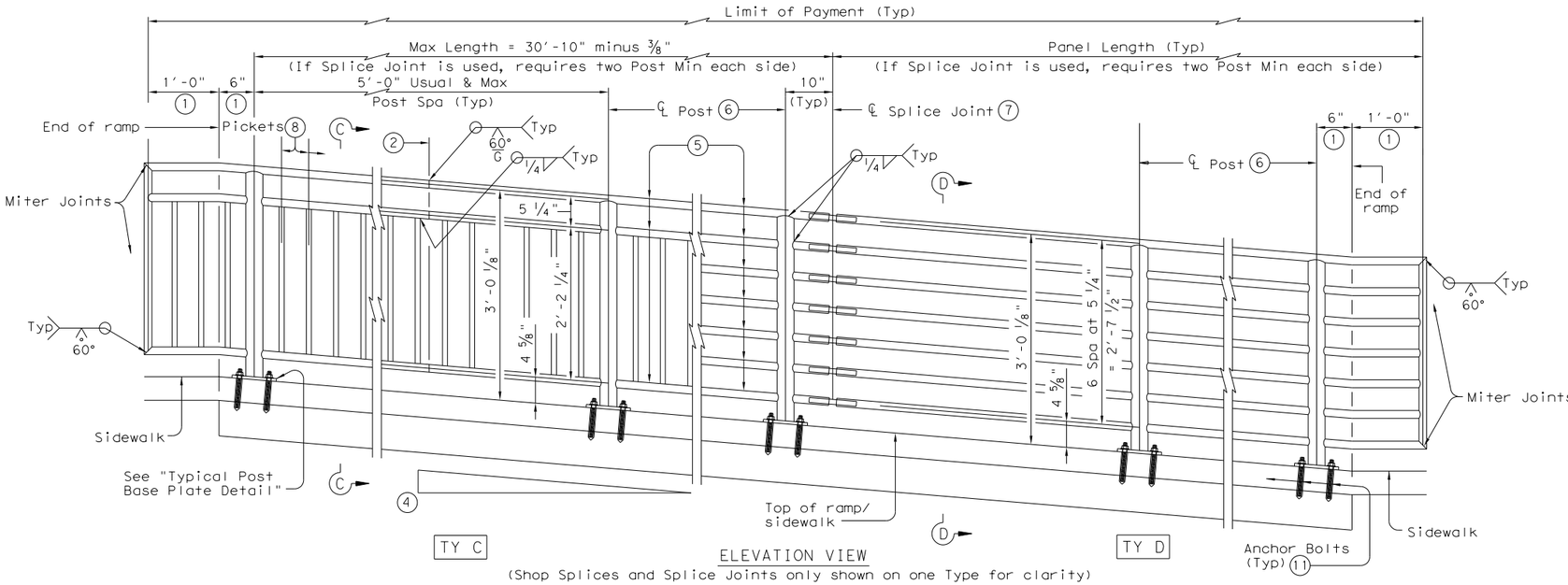
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

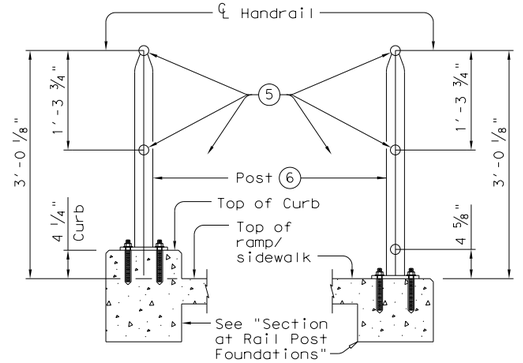
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0172	01	055,ETC		BU 287
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	FTW	TARRANT			162

DATE:
FILE:



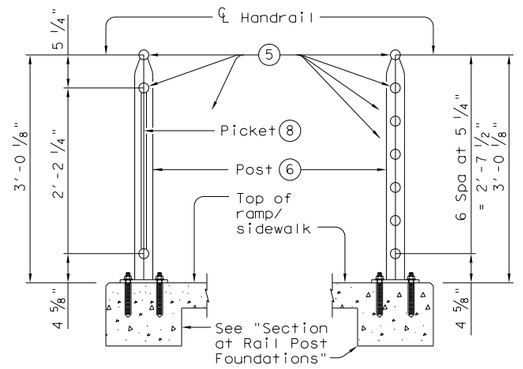


RECOMMENDED USAGE (9) (10)	
Dropoff Height/ Condition	Recommended Rail Options
<30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F



SECTION A-A
(Showing Handrail TY A)

SECTION B-B
(Showing Handrail TY B)



SECTION C-C
(Showing Handrail TY C)

SECTION D-D
(Showing Handrail TY D)

(1) Parallel to ground.

(2) One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.

(3) Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.

(4) See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.

(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.

(7) See "Handrail Fabrication Details" for Splice Joints.

(8) ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.

(9) When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.

(10) Not to be used on bridges.

(11) See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation

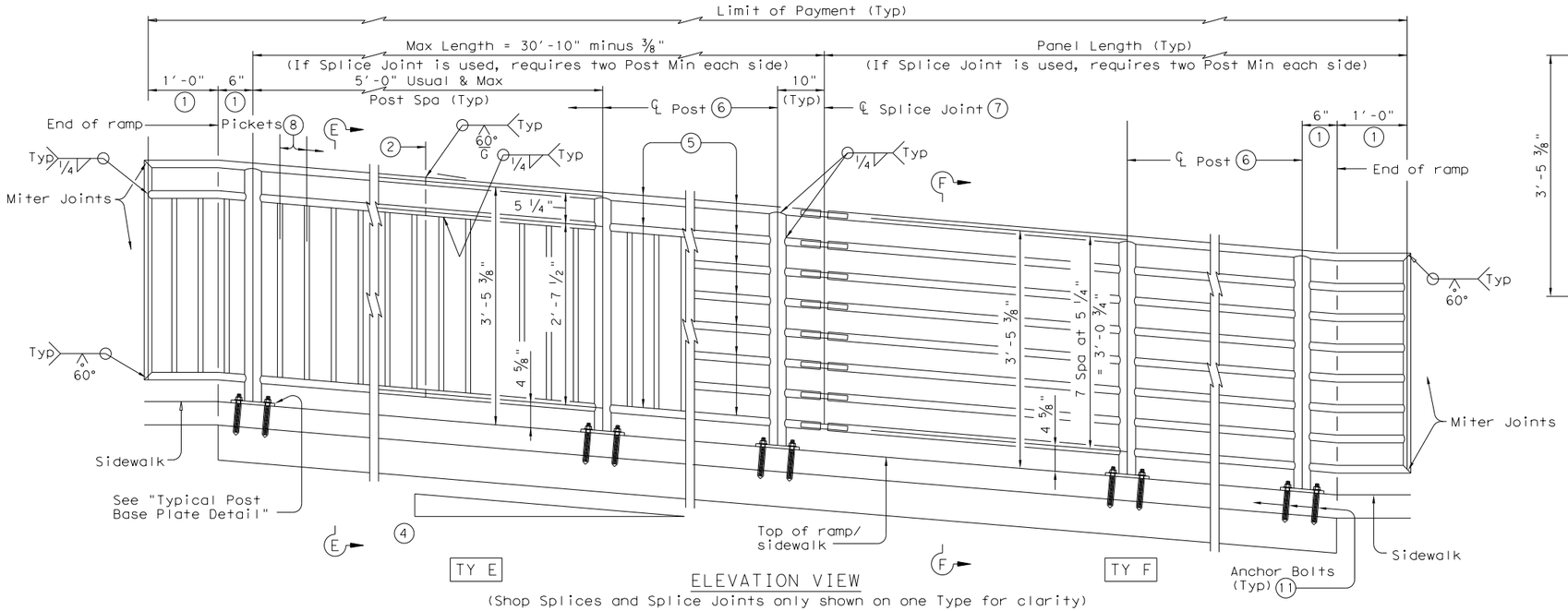
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

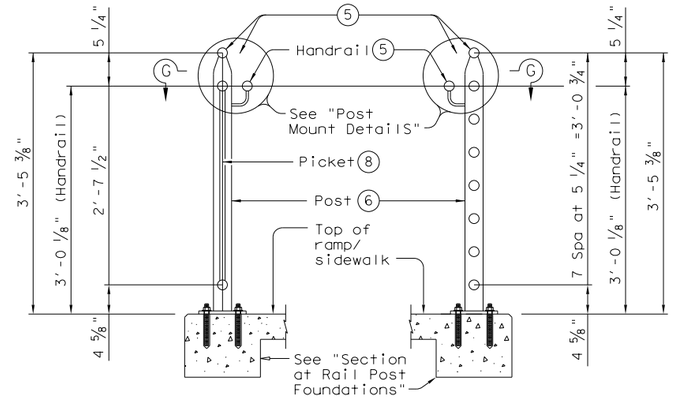
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
© TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	0172	01	055,ETC	BU 287
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		163

DATE:
FILE:



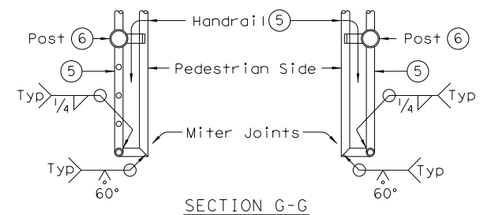
ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

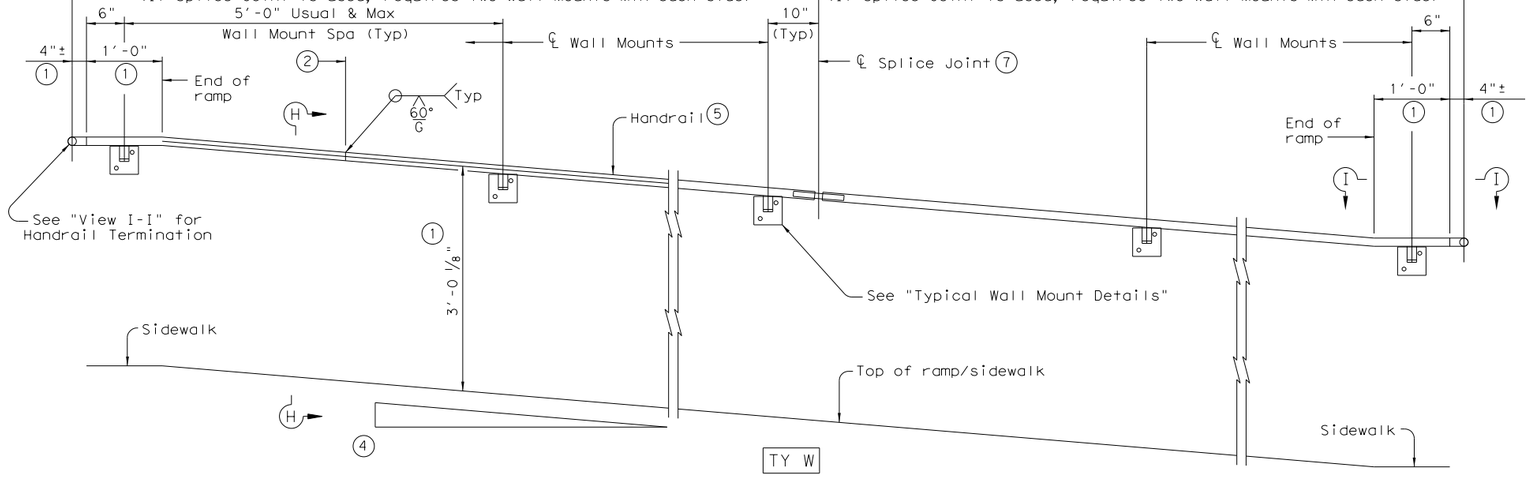


SECTION E-E
(Showing Handrail TY E)

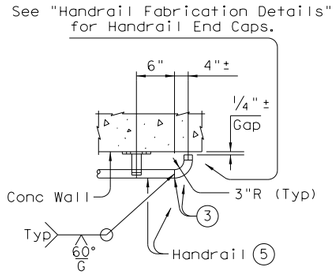
SECTION F-F
(Showing Handrail TY F)



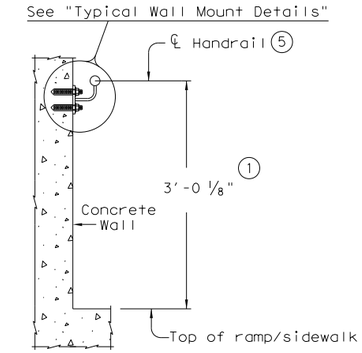
SECTION G-G
(Showing Handrail Termination)



ELEVATION VIEW



VIEW I-I
(Showing Handrail Termination)



SECTION H-H
(Showing Handrail TY W)

(1) Parallel to ground.

(2) One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.

(3) Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.

(4) See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.

(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.

(7) See "Handrail Fabrication Details" for Splice Joints.

(8) ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.

(11) See "General Notes" for anchor bolt information.

SHEET 2 OF 3

Texas Department of Transportation

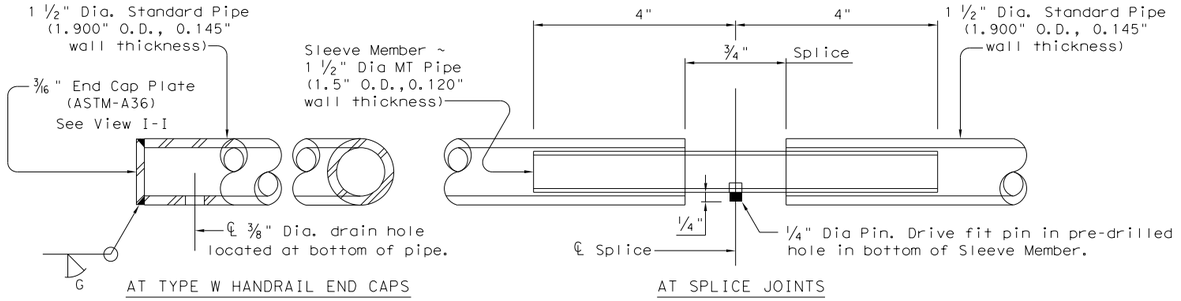
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

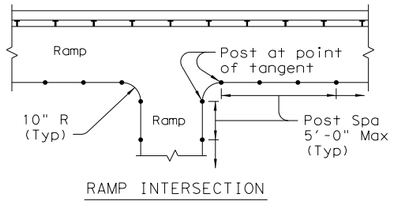
PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	0172	01	055,ETC	BU 287
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		164

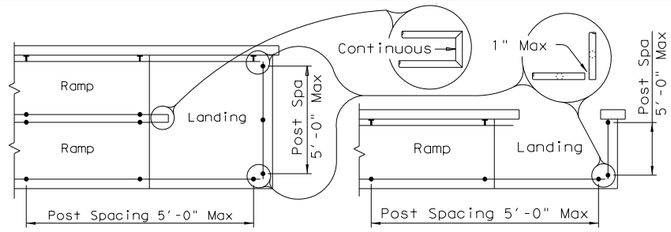
DATE:
FILE:



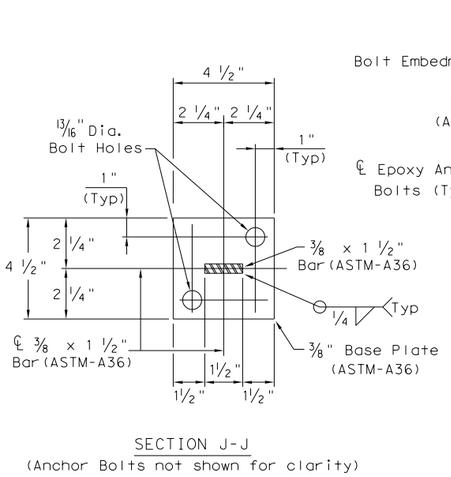
HANDRAIL FABRICATION DETAILS



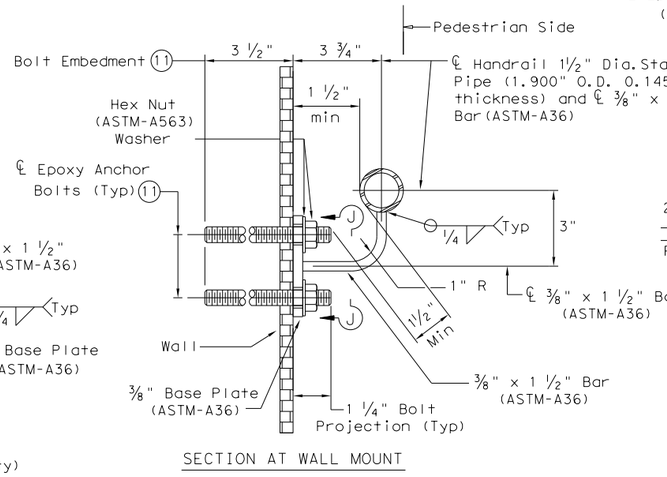
RAMP INTERSECTION



PLAN SHOWING RAIL AT RAMP CONDITIONS

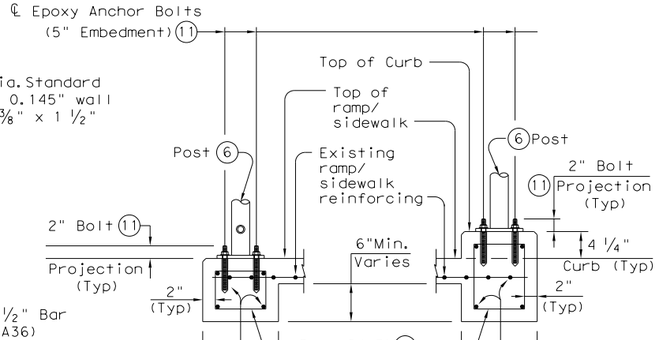


SECTION J-J
(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT

TYPICAL WALL MOUNT DETAILS



SECTION AT RAIL POST FOUNDATIONS

GENERAL NOTES

Designed according to ADAAG, Texas Accessibility Standards, Uniform Building Code, and AASHTO LRFD Specifications.

Handrail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

Pipe will conform to ASTM-A53 Grade B or A500 Grade B. Steel plates and steel bars will conform to ASTM-A36. Mechanical tubing (MT) will conform to ASTM A513 Grade 1015 or higher. Galvanize all steel components except reinforcing steel unless noted otherwise.

Concrete for foundations will be in accordance with Item 531 "Sidewalks". All reinforcing steel must be Grade 60. Bar laps, where required, will be as follows: Uncoated ~ #4 = 1'-5" Epoxy coated ~ #4 = 2'-1"

When the plans require painted steel, follow the requirements for painting galvanized steel in Item 446, "Cleaning and Painting Steel". Sleeve Members will receive galvanization and only get field painted after installation unless directed otherwise by Engineer.

Epoxy Anchor bolts for wall mount and post base plate will be ⅝" Dia. ASTM A36 threaded rods with one hex nut and one hardened steel washer at each bolt. ⅝" Dia. threaded rod embedment depth for wall mounts is 3 ½" and embedment depth for post base plate is 5".

Embed threaded rods into concrete with a Type III (Class C) epoxy meeting the requirements of DMS-6100, "Epoxies and Adhesives". Mix and dispense adhesive with the manufacturer's static mixing nozzle/dual cartridge system. Core drill holes (percussion drilling not permitted).

At the contractor's option the post base plate anchor bolts may be cast with the Ramp/Sidewalk (See Cast-in-Place Anchor Bolt Options).

Optional cast-in-place anchor bolts will be ⅝" Dia ASTM A307 Grade A bolts (or A36 threaded rods with one tack welded hex nut each) with one hex nut and one hardened steel washer at each bolt. Embedment depth of cast-in-place bolt will be 8" for post base plate.

Handrails and any wall or other surface adjacent to them will be free of any sharp or abrasive elements.

Submit shop drawings to the Engineer unless otherwise noted. For curved handrail applications, fabricate the handrail to the curve if radius is less than 600 ft. Shop drawings are required when rail is fabricated to the curve.

For all handrails, erection drawings will be submitted to the Engineer for approval to ensure proper installation.

Drawings will show handrail mount locations with bolts setting, spacing, ramp slope, and/or splice joint locations, and handrail lengths with identification showing where each handrail goes on the layout.

Payment for concrete sidewalks or curb ramps will be paid for in accordance with Item 531 "Sidewalks".

Payment for all items shown is to be included in unit price bid in accordance with Item 450 "Railing" of the type specified.

All exposed edges will be rounded or chamfered to approximately ⅛" by grinding.

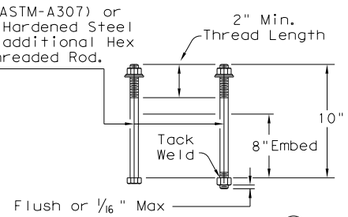
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

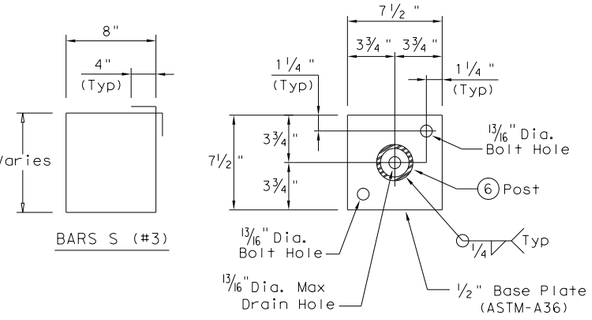
(11) See "General Notes" for anchor bolt information.

(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

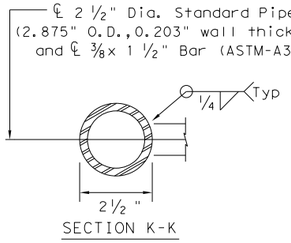
(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



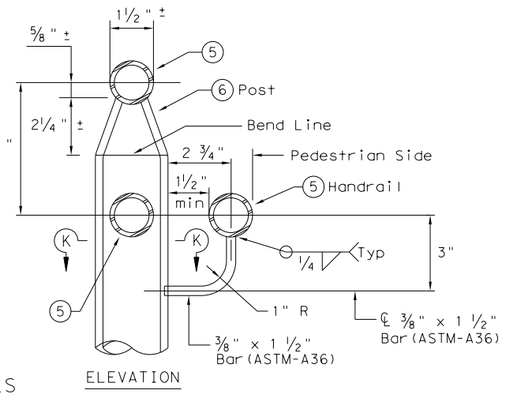
CAST-IN-PLACE ANCHOR BOLT OPTIONS
(Used for Post Base Plate only)



TYPICAL POST BASE PLATE DETAIL



SECTION K-K



ELEVATION

POST MOUNT DETAILS

SHEET 3 OF 3

Texas Department of Transportation

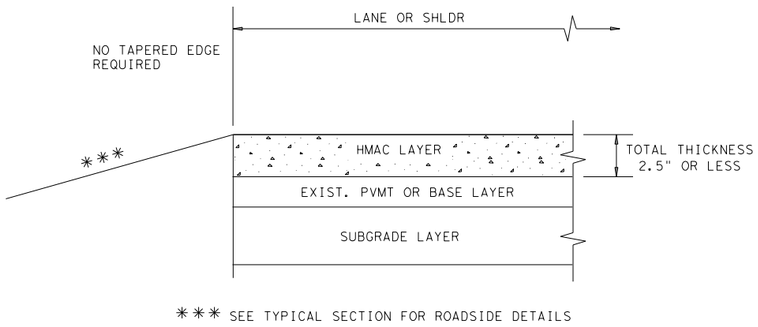
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

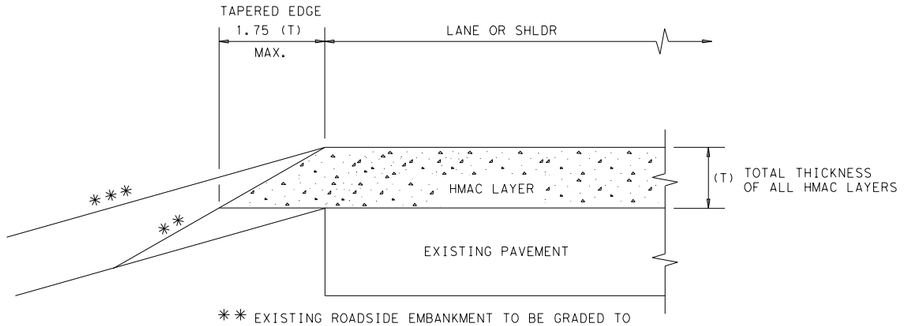
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		165

DATE:
FILE:



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

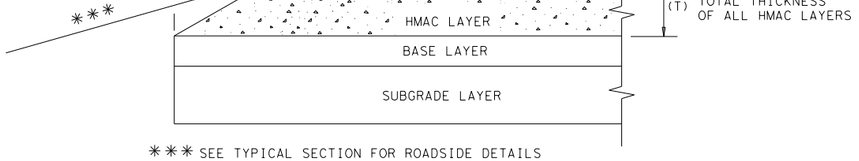
CONDITION - 1
THIN HMAC SURFACES OR HMAC OVERLAY
WITH THICKNESS OF 2.5" OR LESS



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

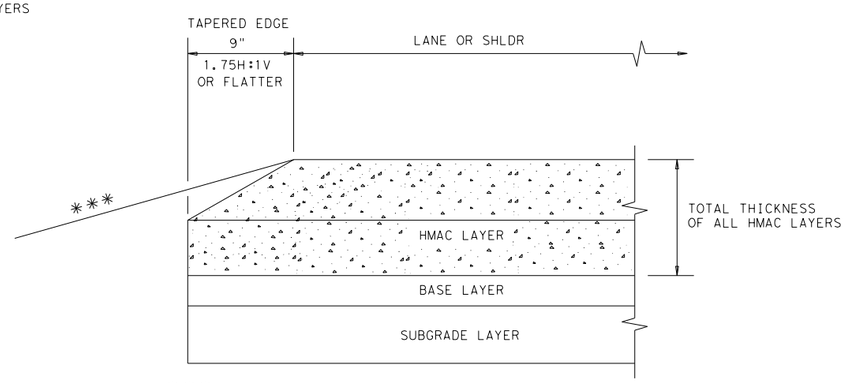
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

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



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

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



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

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

(NOT TO SCALE)

GENERAL NOTES

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

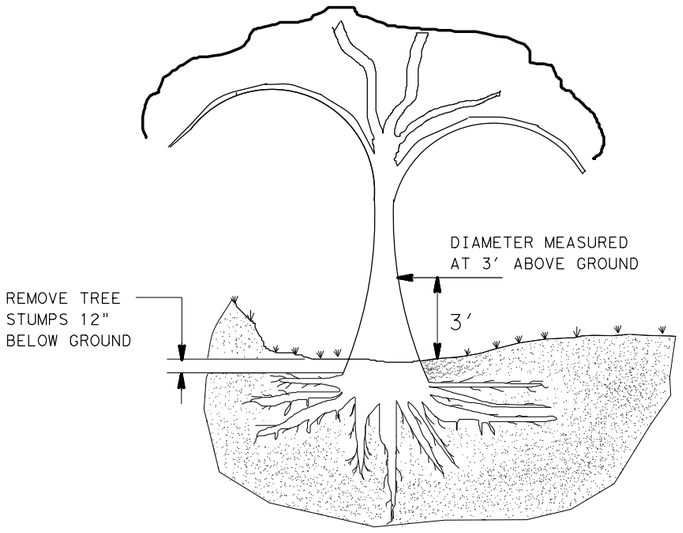
Texas Department of Transportation

Design Division Standard

TAPERED EDGE DETAILS
HMAC PAVEMENT

TE(HMAC)-11

FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:		
REVISIONS	CONT	SECT	JOB		HIGHWAY	
	0172	01	055,ETC		BU 287	
	DIST	COUNTY			SHEET NO.	
	FTW	TARRANT			166	

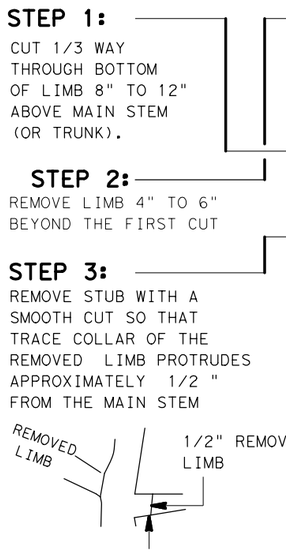


TREE REMOVAL

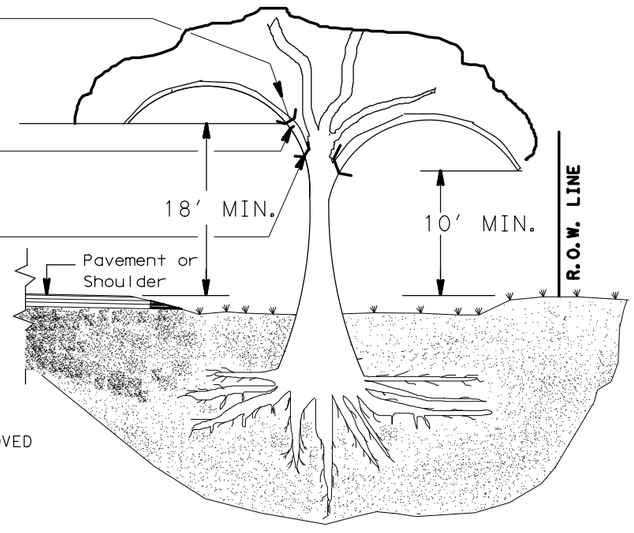
STEP 1:
CUT 1/3 WAY THROUGH BOTTOM OF LIMB 8" TO 12" ABOVE MAIN STEM (OR TRUNK).

STEP 2:
REMOVE LIMB 4" TO 6" BEYOND THE FIRST CUT

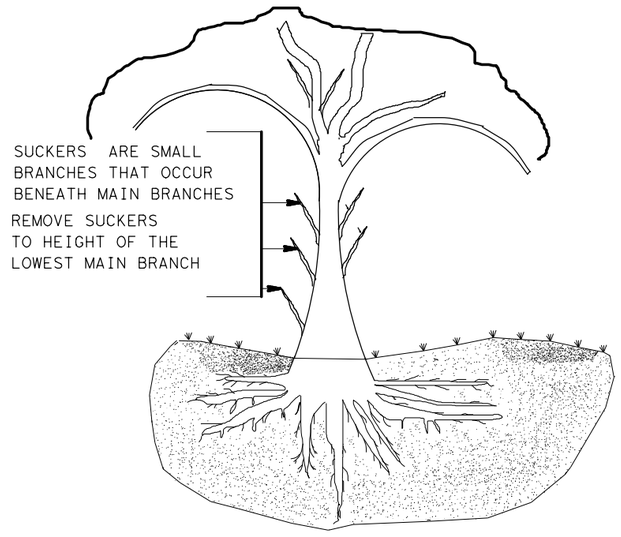
STEP 3:
REMOVE STUB WITH A SMOOTH CUT SO THAT TRACE COLLAR OF THE REMOVED LIMB PROTRUDES APPROXIMATELY 1/2 " FROM THE MAIN STEM



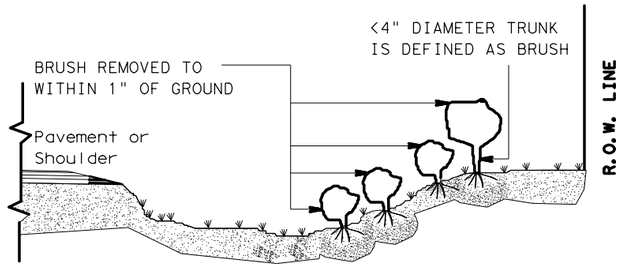
EXAMPLE 1/2 " PROTRUDING COLLAR



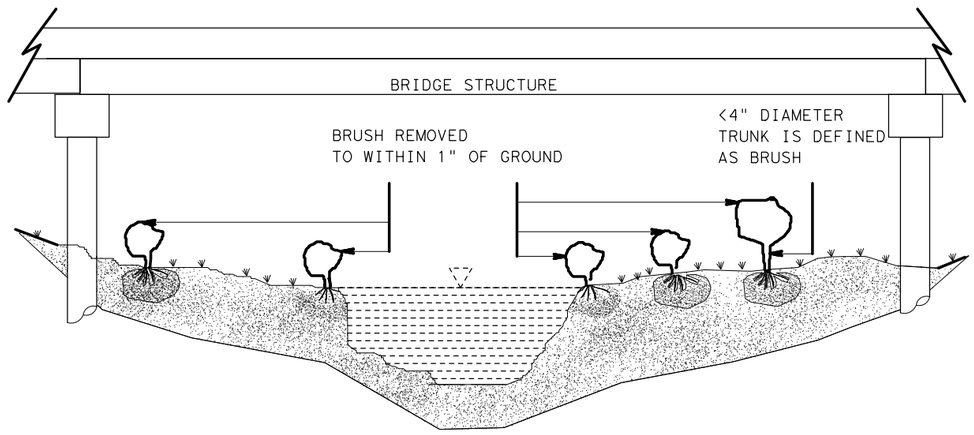
TREE TRIMMING



STEPS 1,2 AND 3 APPLY WHEN REMOVING LIMBS 2" IN DIAMETER OR LARGER.



BRUSH REMOVAL



BRUSH REMOVAL UNDER BRIDGE AND IN CHANNEL

GENERAL NOTES:

TREE TRIMMING

1. **TRIM AND REMOVE ALL TREE LIMBS ON THE PAVEMENT SIDE OF THE TRUNK 18' ABOVE THE PAVEMENT OR BRIDGE DECK ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.**

2. **TRIM AND REMOVE ALL TREE LIMBS BETWEEN THE TRUNK AND R.O.W. LINE 10' ABOVE NATURAL GROUND, TERRAIN OR OTHER STRUCTURE ELEVATION, UNLESS OTHERWISE SHOWN ON THE PLANS.**

TREE REMOVAL

3. **FOR TREES MARKED FOR REMOVAL, THE DIAMETER OF TREES ARE DETERMINED BY MEASUREMENT OF THE TRUNK CIRCUMFERENCE 3' ABOVE THE GROUND. TREES WITH TRUNKS OF LESS THAN 4" DIAMETER ARE CONSIDERED TO BE BRUSH. TREES WITH MULTIPLE TRUNKS AT THE POINT OF MEASUREMENT ARE MEASURED AND PAID FOR SEPARATELY.**

4. **MEASUREMENTS FOR PAYMENT OF TREE DIAMETERS ARE DIVIDED INTO THE RANGES SHOWN IN TABLE 1.**

TABLE 1
TREE TRUNK SIZE FOR TREE REMOVAL PAYMENT

PAY ITEM	RANGE FOR PAY ITEMS			
	TRUNK DIAMETER *		TRUNK CIRCUMFERENCE	
	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO	LOWER LIMIT IS GREATER THAN	UPPER LIMIT IS LESS THAN OR EQUAL TO
752 6005	4	12	12 1/2	37 1/2
752 6006	12	18	37 1/2	56 1/2
752 6007	18	24	56 1/2	75 1/2
752 6008	24	30	75 1/2	94
752 6009	30	36	94	113
752 6010	36	42	113	132
752 6011	42	48	132	151
752 6012	48	60	151	188 1/2
752 6013	60	72	188 1/2	226
752 6019	72	84	226	264
	84	GREATER THAN 84	264	NOT APPLICABLE

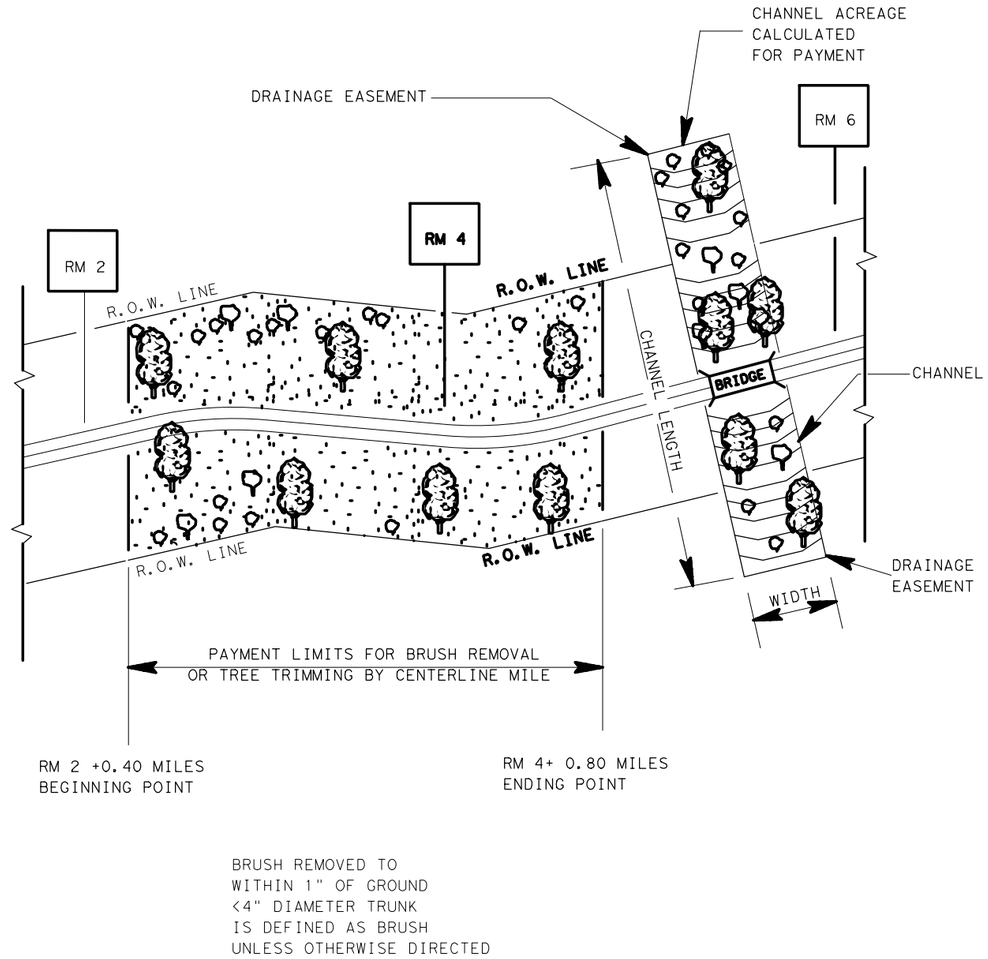
*SEE GENERAL NOTE #3.

Texas Department of Transportation | Maintenance Division Standard

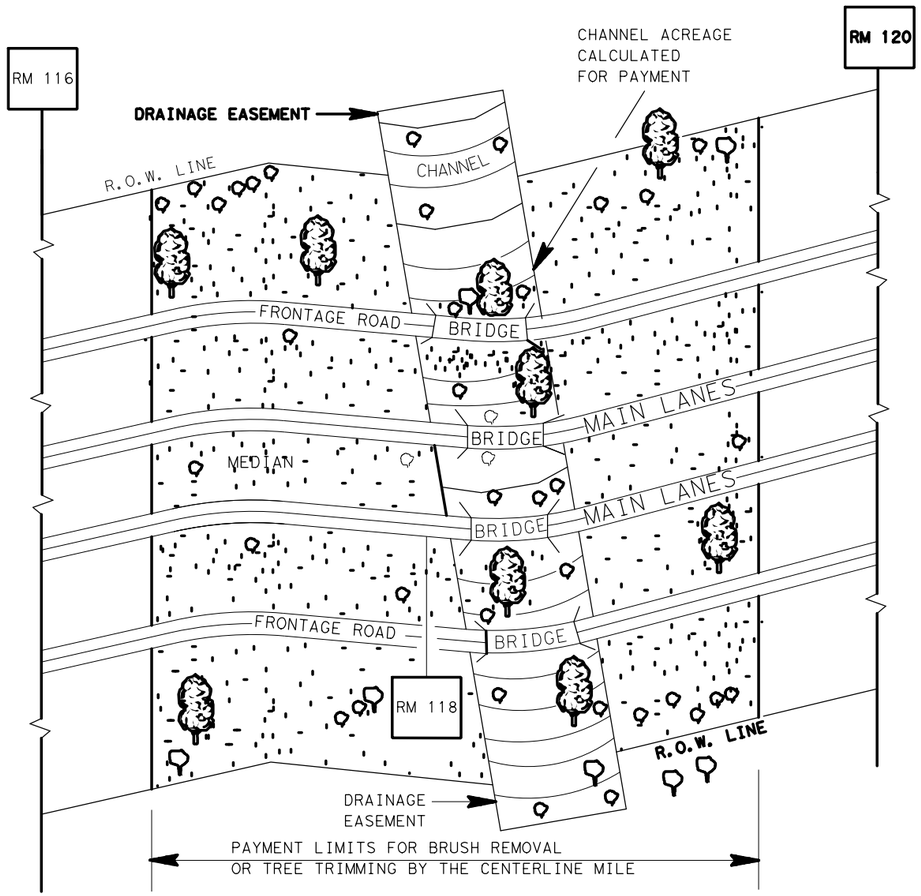
TREE AND BRUSH REMOVAL

TRB-15(1)

FILE:	DN: JEO	CK: LJB	DW: JEO	CK:
©TxDOT MARCH 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287
Revised table 1 to 2014 Specification	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		167



EXAMPLE: UNDIVIDED HIGHWAY



EXAMPLE: DIVIDED HIGHWAY WITH FRONTAGE ROADS

GENERAL NOTES:

TREE TRIMMING AND BRUSH REMOVAL

1. PAYMENT BY THE CENTERLINE MILE IS MADE TO THE NEAREST 1/100 (0.01) MILE.
2. LIMITS OF WORK ARE SHOWN AS DISTANCES FROM REFERENCE MARKERS (RM).
3. PAY ITEMS BY THE CENTERLINE MILE INCLUDE ALL TREE TRIMMING OR BRUSH REMOVAL IN THE RIGHT OF WAY ON BOTH SIDES OF THE HIGHWAY. FOR DIVIDED HIGHWAYS, THE MEDIAN IS INCLUDED. FOR HIGHWAYS WITH FRONTAGE ROADS, THE AREAS BETWEEN THE FRONTAGE ROADS AND MAIN LANES, AND THE AREAS OUTSIDE OF THE FRONTAGE ROADS ARE INCLUDED.
4. BRUSH REMOVAL AND TREE TRIMMING UNDER BRIDGES, IN AND ALONG CHANNELS AND EASEMENTS ARE PAID FOR BY THE ACRE FOR AREAS DESIGNATED ON THE PLANS.

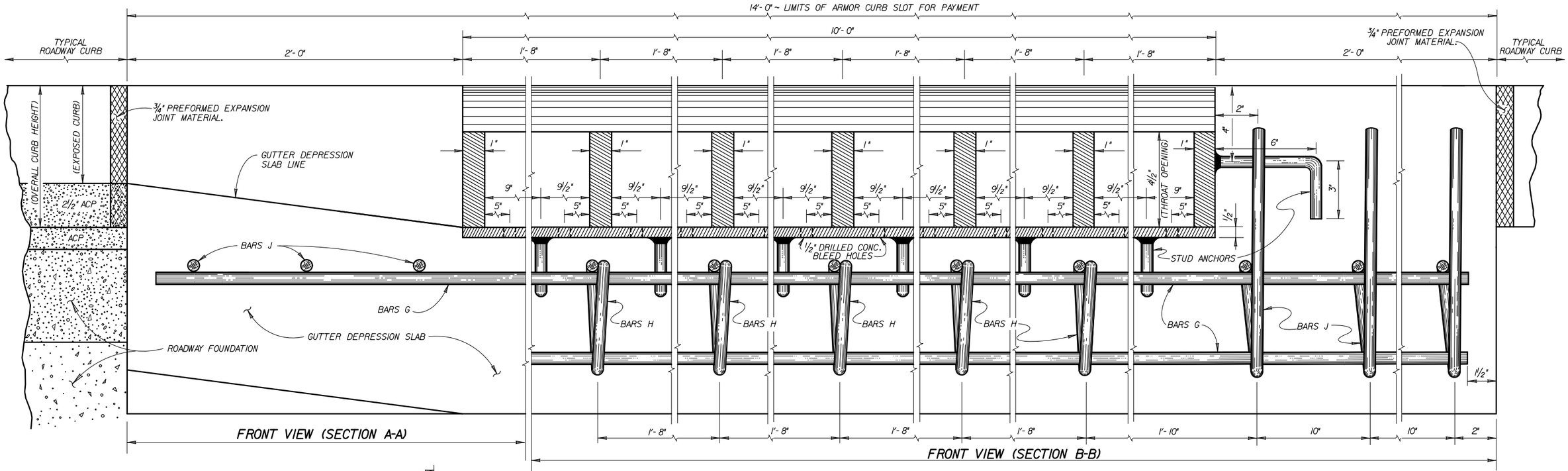
LEVELS DISPLAYED
1

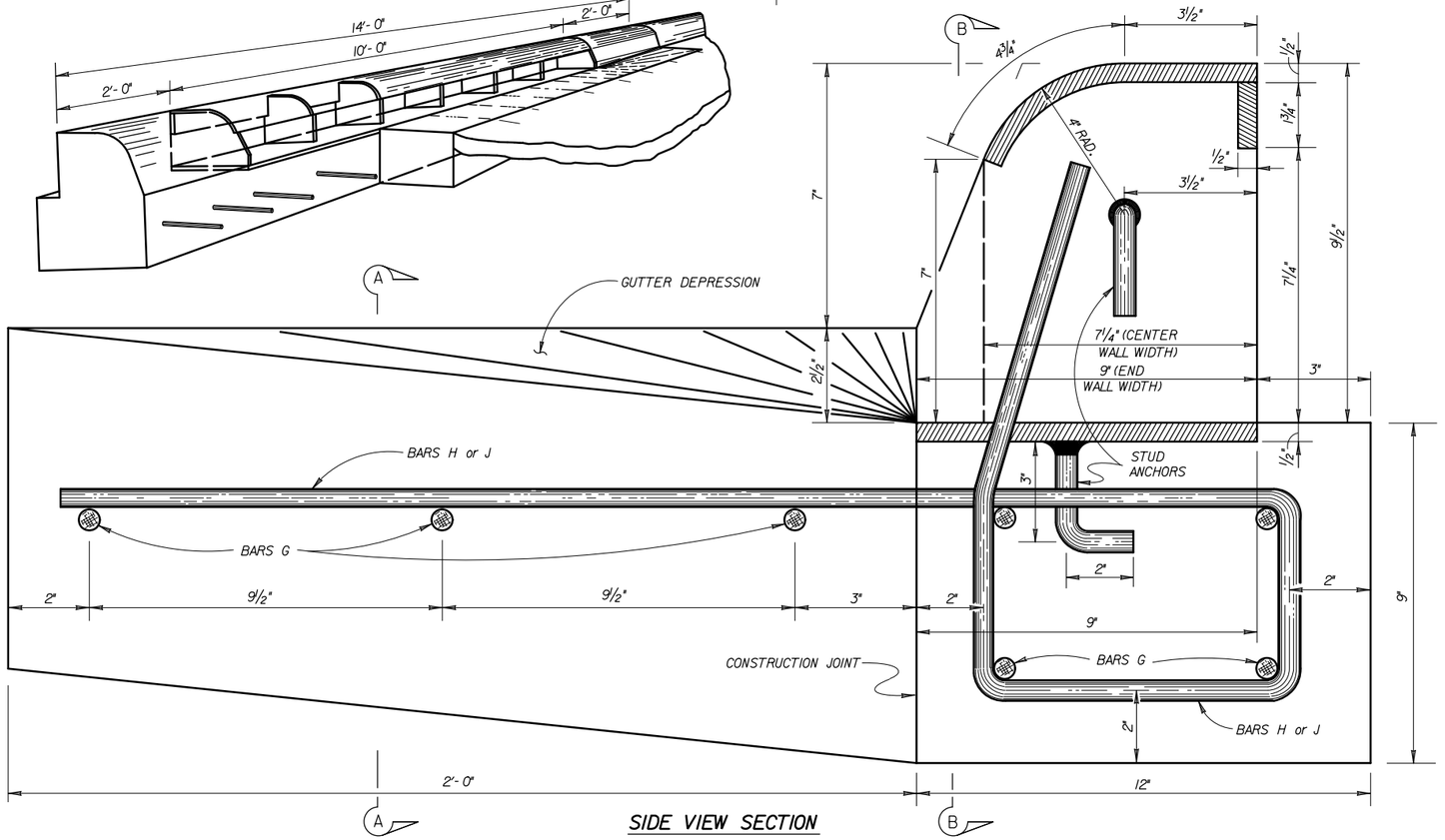
Texas Department of Transportation
Maintenance Division
Standard Plans

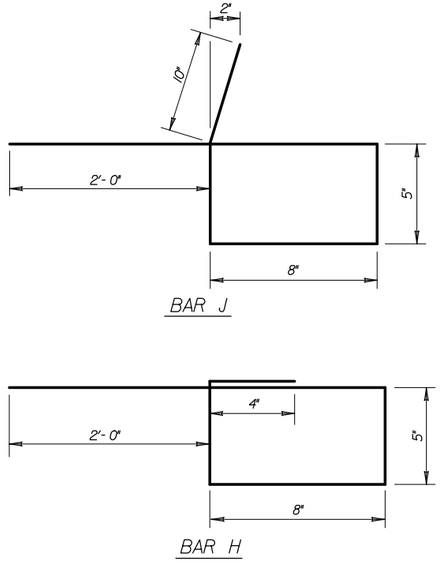
TREE AND BRUSH REMOVAL

TRB-15(2)

FILE: TRB-15(2).DGN	DRAWN: JEO MODIFIED:		CHECKED: DW:LJB	DW: -	CK: -	NEG NO.:		
		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
REVISED: 5/13/2004	LJB			SEE TITLE SHEET				168
REVISED: 9/24/2004	LJB	COUNTY			CONTROL	SECTION	JOB	HIGHWAY
REVISED: APRIL 2015	JEO	TARRANT			0172	01	055,ETC	BU 287







ESTIMATED QUANTITIES
FOR REINFORCING STEEL

BAR	NO.	SIZE	SPAC.	LENGTH	WEIGHT
G	7	#4	SHOWN	13'-9"	64
H	5	#4	1'-8"	4'-6"	15
J	6	#4	8"	5'-0"	20
TOTAL WEIGHT *				LBS.	99
CONCRETE FOR FOUNDATION *				C.Y.	0.47
CONCRETE FOR GUTTER DEPRESSION *				C.Y.	0.78

STRUCTURAL STEEL FOR ARMOR CURB SLOT		
STUD ANCHORS (1/2"DIA.)	LBS.	3.5
STEEL PLATE	LBS.	451
TOTAL WEIGHT *	LBS.	454.5

* FOR CONTRACTORS INFO ONLY.

GENERAL NOTES:

ALL CONCRETE SHALL BE CL."A".

ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.

ALL SIDES OF ARMOR CURB SLOT AND STUD ANCHORS SHALL BE 1/4" FILLET WELDS.

ALL EXPOSED STRUCTURAL STEEL (ARMOR) SHALL BE GALVANIZED.

ALL EXPOSED EDGES ON ARMOR CURB SHALL RECEIVE A 1/8" BEVEL.

THE SHAPE OF THE TYPICAL ROADWAY CURB SHALL TRANSITION TO THE ARMOR CURB AS APPROVED BY THE ENGINEER.

STATE OF TEXAS
MICHAEL J. CHISHOLM
123343
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

ARMOR CURB SLOT
WITH CONCRETE FOUNDATION

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
X	(SEE TITLE SHEET)		169
STATE	STATE DISTRICT	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0172	01	056	BU 287

10/95
REV. 07/01

* STRUCTURE DESIGN /BRIDGE/STDS/ARMORCURB.DGN

8/30/2024

TOP OF WALL TO MATCH SIDEWALK (SPECIAL)(TYPE A) OPENINGS TO FACILITATE ROADWAY RUNOFF DRAINAGE. CONTRACTOR'S ATTENTION IS BROUGHT TO THIS AREA TO ENSURE PEDESTRAIN RAIL POST SPACING DOES NOT CONFLICT WITH DRAINAGE OPENINGS.

BEGIN WALL
RW-E01 STA 10+00
BU287 STA 292+48
OFFSET (30.70 LT)

EXISTING UTILITIES TO REMAIN

PROP PED RAIL TYPE B (152 LF)

PROP WALL RW-E01

FACE OF WALL

RW-E01 STA 10+52
BU287 STA 283+00
OFFSET (30.80 LT)

RW-E01 STA 10+78
BU287 STA 283+26
OFFSET (32.80 LT)

S 5° 55' 40.68" W

292+00 293+00 ℄ BU287 294

BU 287 (S RIVERSIDE DR)

MATCH LINE STA 11+50

RW-W01 STA 10+78
BU287 STA 293+25
OFFSET (36.55 RT)

RW-W01 STA 10+52
BU287 STA 293+00
OFFSET (32.50 RT)

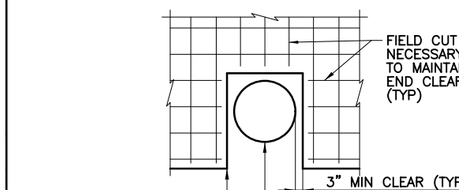
BEGIN WALL
RW-W01 STA 10+00.00
BU287 STA 292+48
OFFSET (32.30 RT)

PROP WALL RW-W01

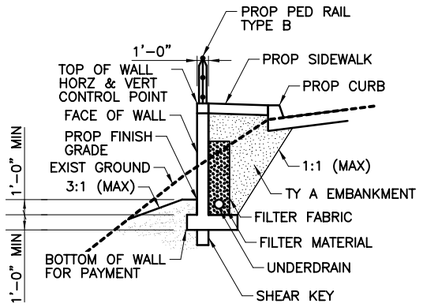
PROP PED RAIL TYPE B (152 LF)

FACE OF WALL

EXISTING POWER POLE TO REMAIN (SEE RETAINING WALL FOOTING AT POWER POLE DETAIL)

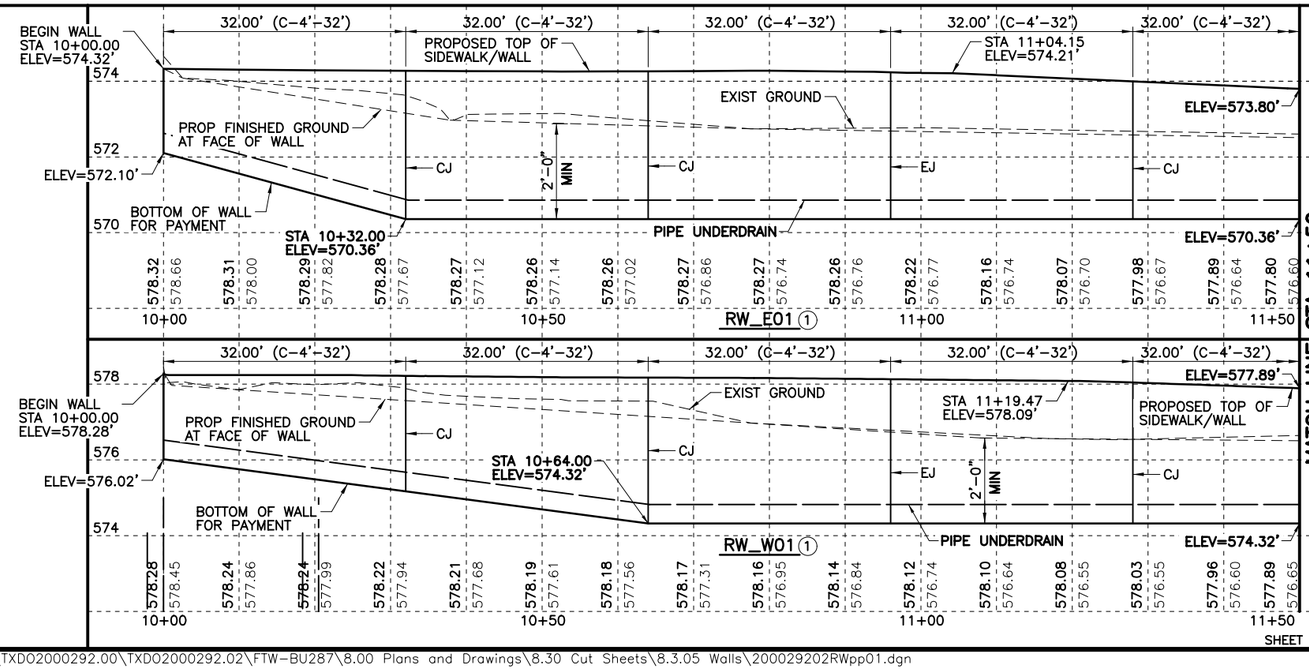


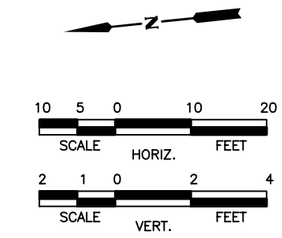
RETAINING WALL FOOTING AT POWER POLE
(PLAN VIEW)



SECTION A-A
N.T.S.

① BOTTOM OF SHEAR KEY NOT SHOWN FOR CLARITY.





RW-E01			
ITEM NUMBER	ITEM	UNIT	QUANTITY
0423 7015	RETAINING WALL (SPREAD FOOTING)	SF	1403
0450 7059	RAIL (HANDRAIL)(TY B)	LF	381
0556 7006	PIPE UNDERDRAINS (TY 6) (6")	LF	381

RW-W01			
ITEM NUMBER	ITEM	UNIT	QUANTITY
0423 7015	RETAINING WALL (SPREAD FOOTING)	SF	850
0450 7059	RAIL (HANDRAIL)(TY B)	LF	250
0556 7006	PIPE UNDERDRAINS (TY 6) (6")	LF	250

GENERAL NOTES:

1. ALL RETAINING WALL MEASUREMENTS ARE TO THE FACE OF WALL, UNLESS OTHERWISE NOTED.
2. SQUARE FOOT SURFACE AREA OF RETAINING WALL IS MEASURED BETWEEN FINISHED GRADE AT TOP OF WALL AND THE PLAN DESIGNED BOTTOM OF FOOTING. THE PLAN DESIGNED TOP OF FOOTING IS SET AT A MINIMUM OF 1 FEET BELOW FINISHED GROUND AT FACE OF WALL.
3. ANY ADJUSTMENTS MADE TO ACCOMMODATE THE AVAILABLE DESIGNS WILL NOT BE MEASURED. THE QUANTITY FOR WHICH PAYMENT IS MADE WILL BE THE QUANTITY SHOWN IN THE PLANS
4. SEE RETAINING WALL TYPICAL SECTION FOR WALL SECTION.
5. SEE BORING LOGS SHEETS FOR GEOTECHNICAL INFORMATION.
6. CJ = WALL CONSTRUCTION JOINT
   EJ = WALL EXPANSION JOINT
7. SEE RW(SF) AND RW(SFC) STANDARDS FOR MORE INFORMATION.

8/30/2024

FOR STRUCTURAL DESIGN ONLY

NO.	REVISION	BY	DATE

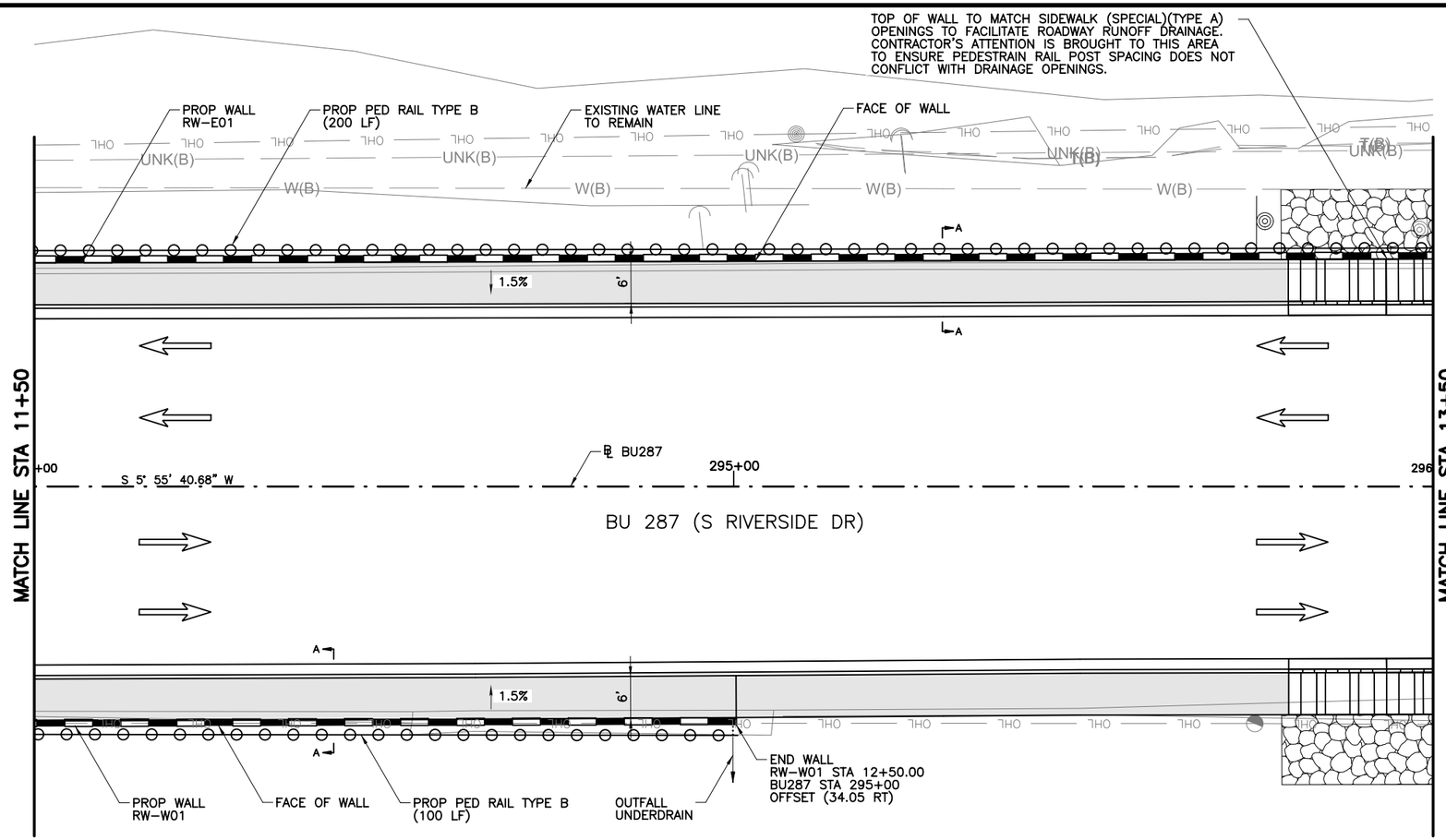
TEXAS REGISTERED ENGINEERING FIRM F-1741

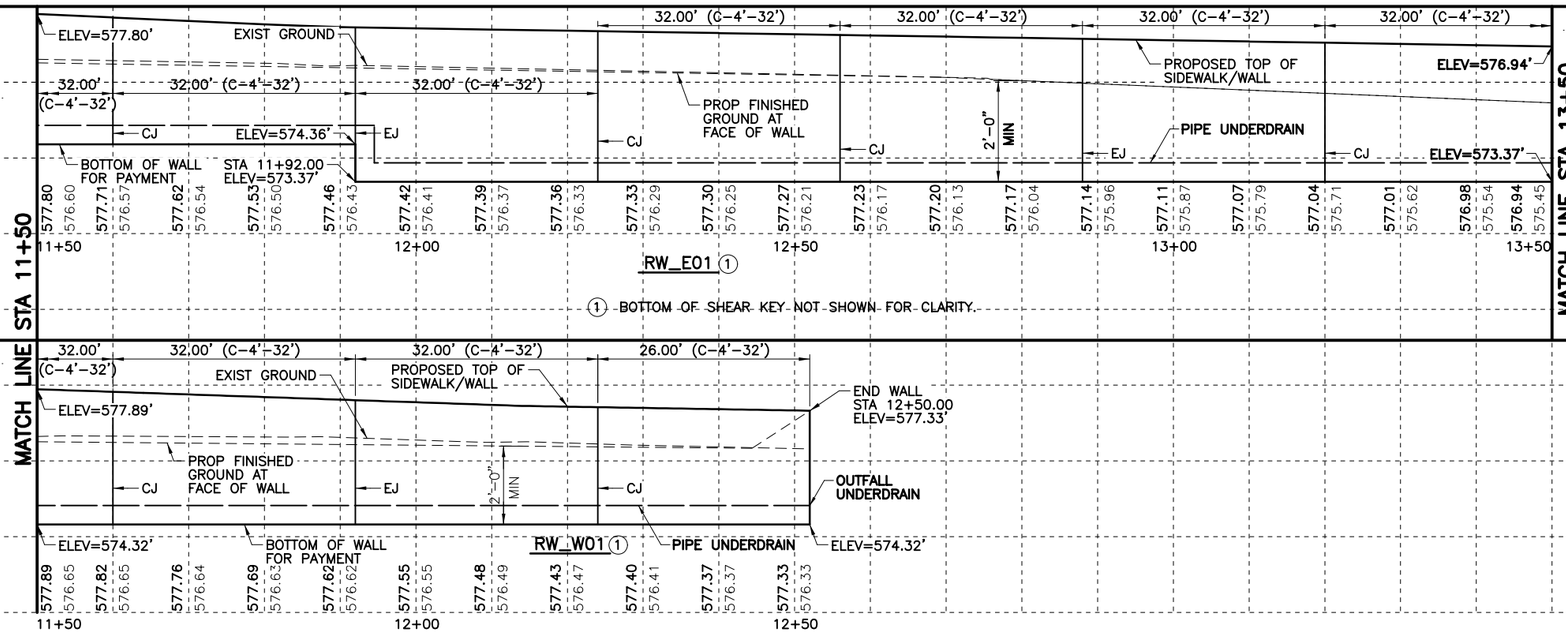
FORT WORTH SIDEWALK IMPROVEMENTS

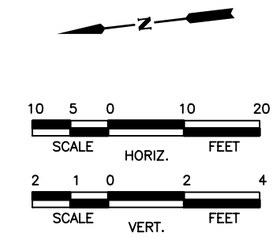
RETAINING WALL PLAN & PROFILE
RW_W01 & RW_E01

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	170

SHEET 1 OF 8







STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER
8/30/2024

STATE OF TEXAS
KELLY HO
112947
LICENSED PROFESSIONAL ENGINEER
8/30/2024
FOR STRUCTURAL DESIGN ONLY

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

RETAINING WALL PLAN & PROFILE

RW_W01 & RW_E01

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
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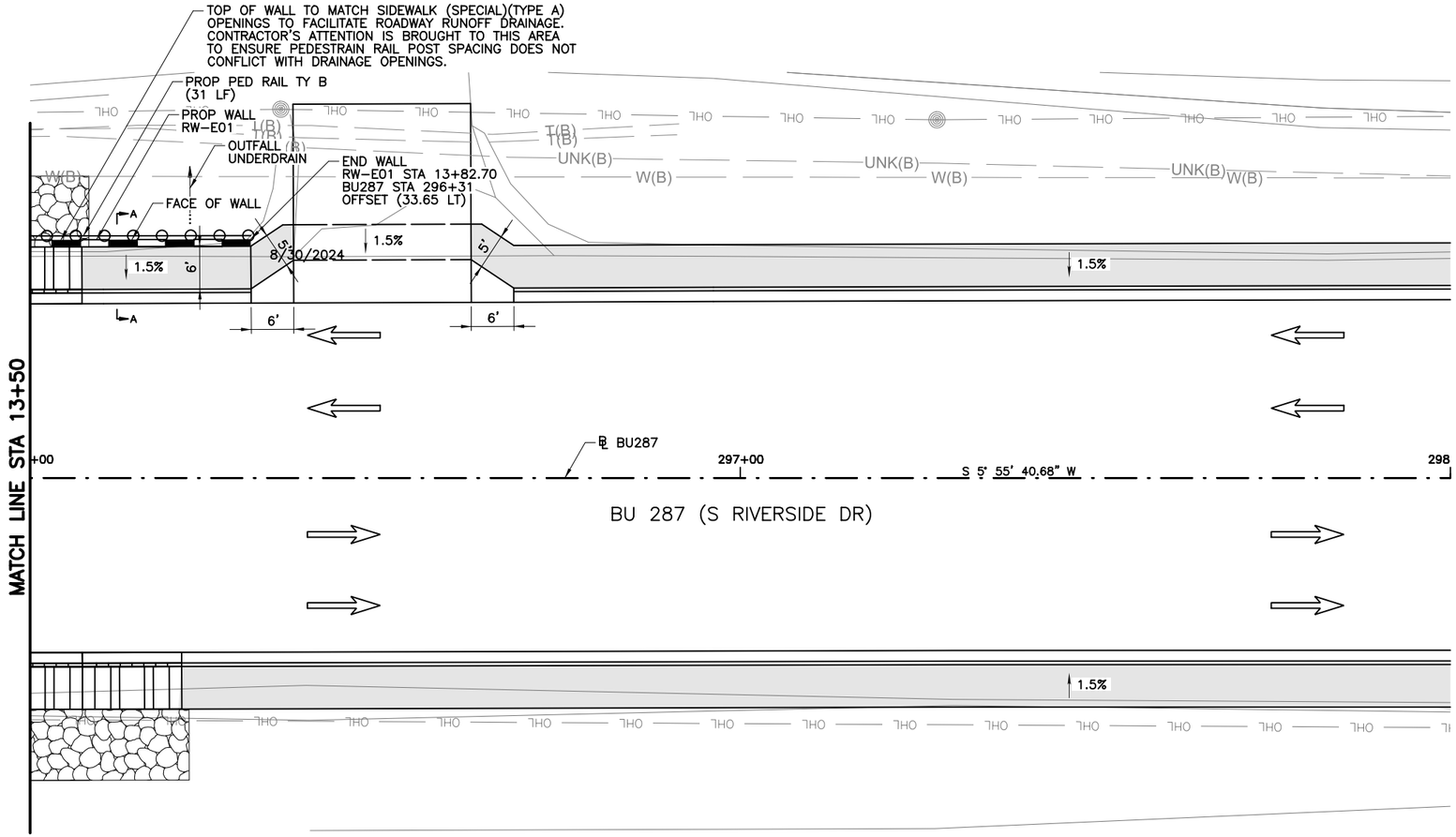
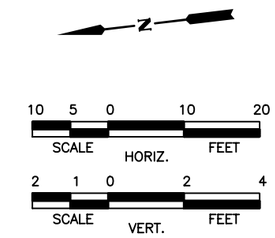




① BOTTOM OF SHEAR KEY NOT SHOWN FOR CLARITY.

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

RETAINING WALL PLAN & PROFILE

RW_E01

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	172

SHEET 3 OF 8

BUS287_24
PI STATION = 321+49.67
NORTHING = 6,938,804.5200
EASTING = 2,336,823.9343
DELTA = 7° 28' 15" (LT)
RADIUS = 5,700.00'
D = 1° 00' 19"
TANGENT = 372.14'
LENGTH = 743.23'

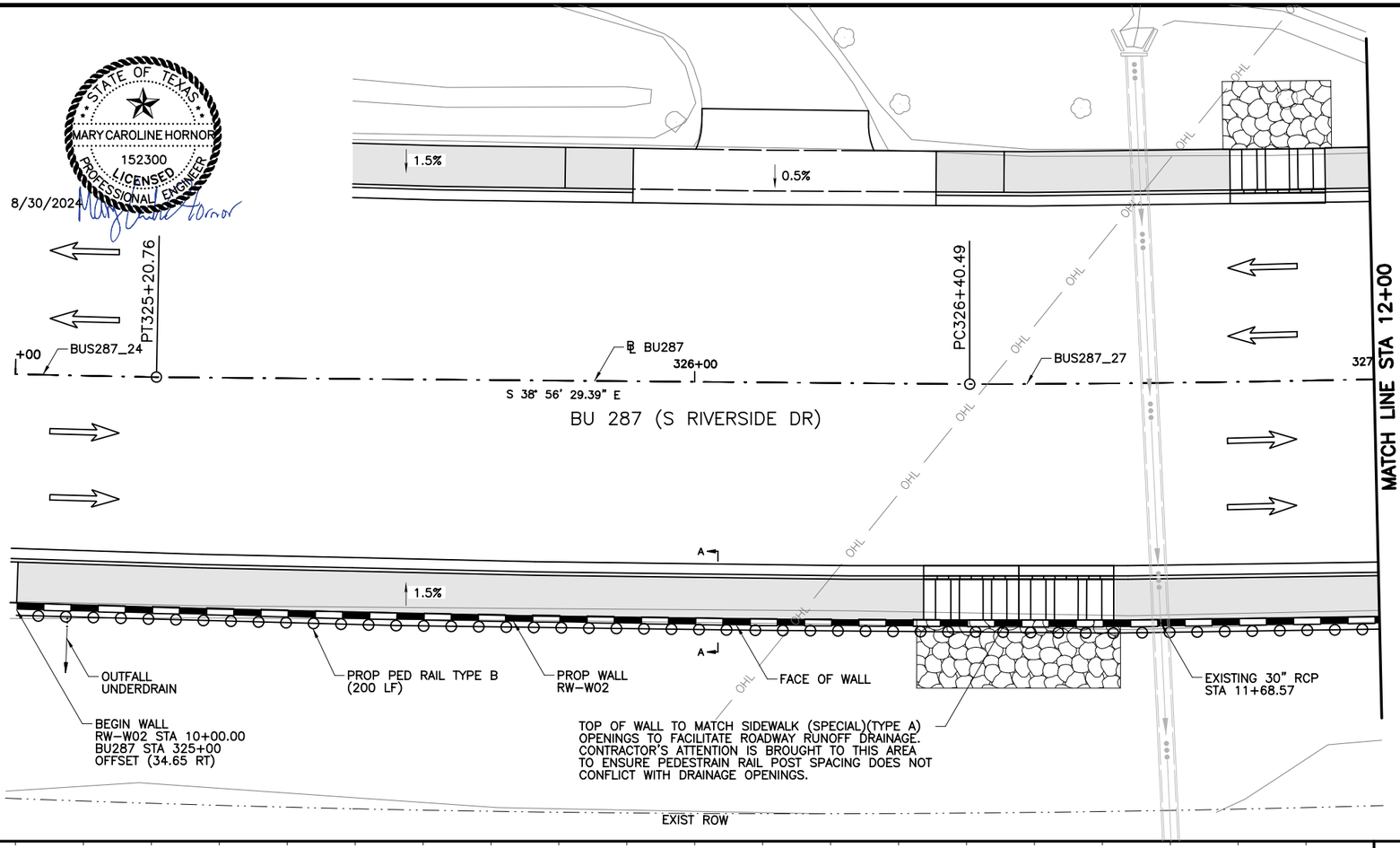
BUS287_27
PI STATION = 332+11.00
NORTHING = 6,937,979.5541
EASTING = 2,337,493.2637
DELTA = 22° 43' 02" (LT)
RADIUS = 2,840.00'
D = 2° 01' 03"
TANGENT = 570.51'
LENGTH = 1,126.04'

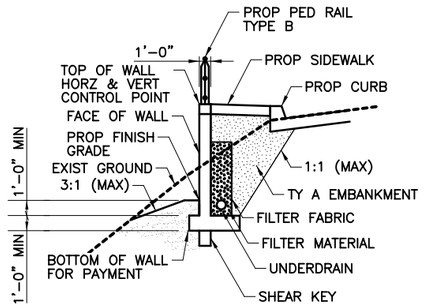
N

10 5 0 10 20
SCALE FEET
HORIZ.

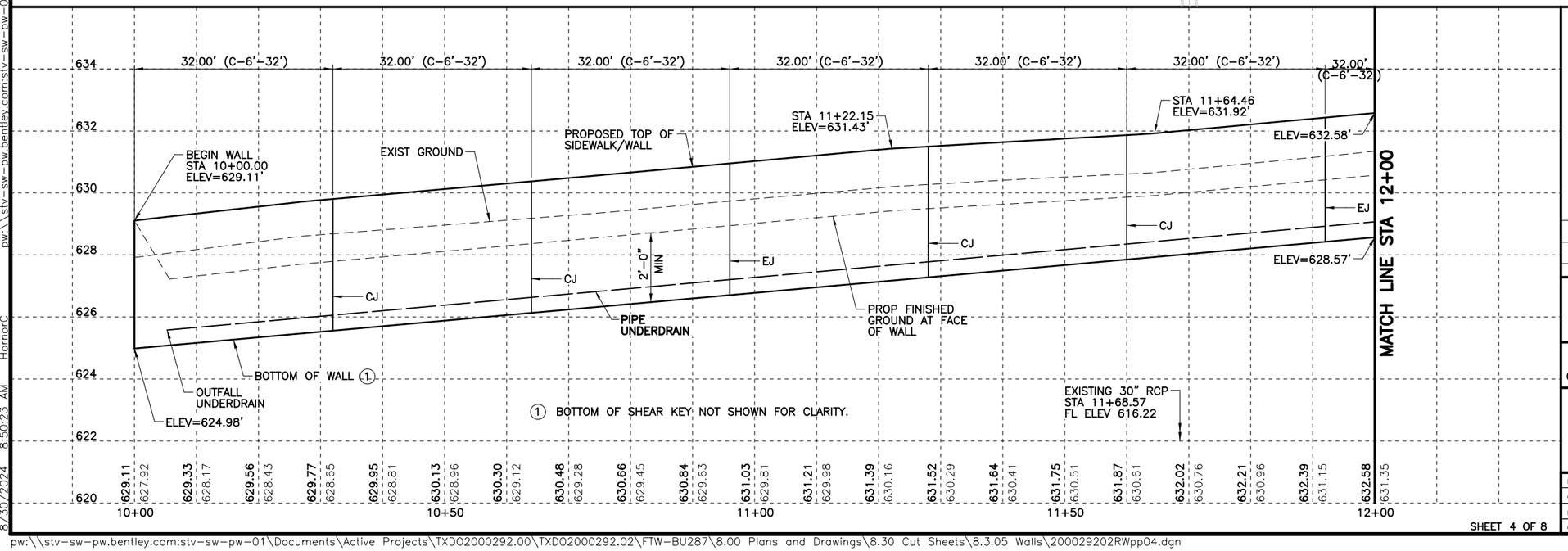
2 1 0 2 4
SCALE FEET
VERT.

RW-W02			
ITEM NUMBER	ITEM	UNIT	QUANTITY
0423 7015	RETAINING WALL (SPREAD FOOTING)	SF	1038
0450 7059	RAIL (HANDRAIL)(TY B)	LF	252
0556 7006	PIPE UNDERDRAINS (TY 6) (6")	LF	252





SECTION A–A
N.T.S.



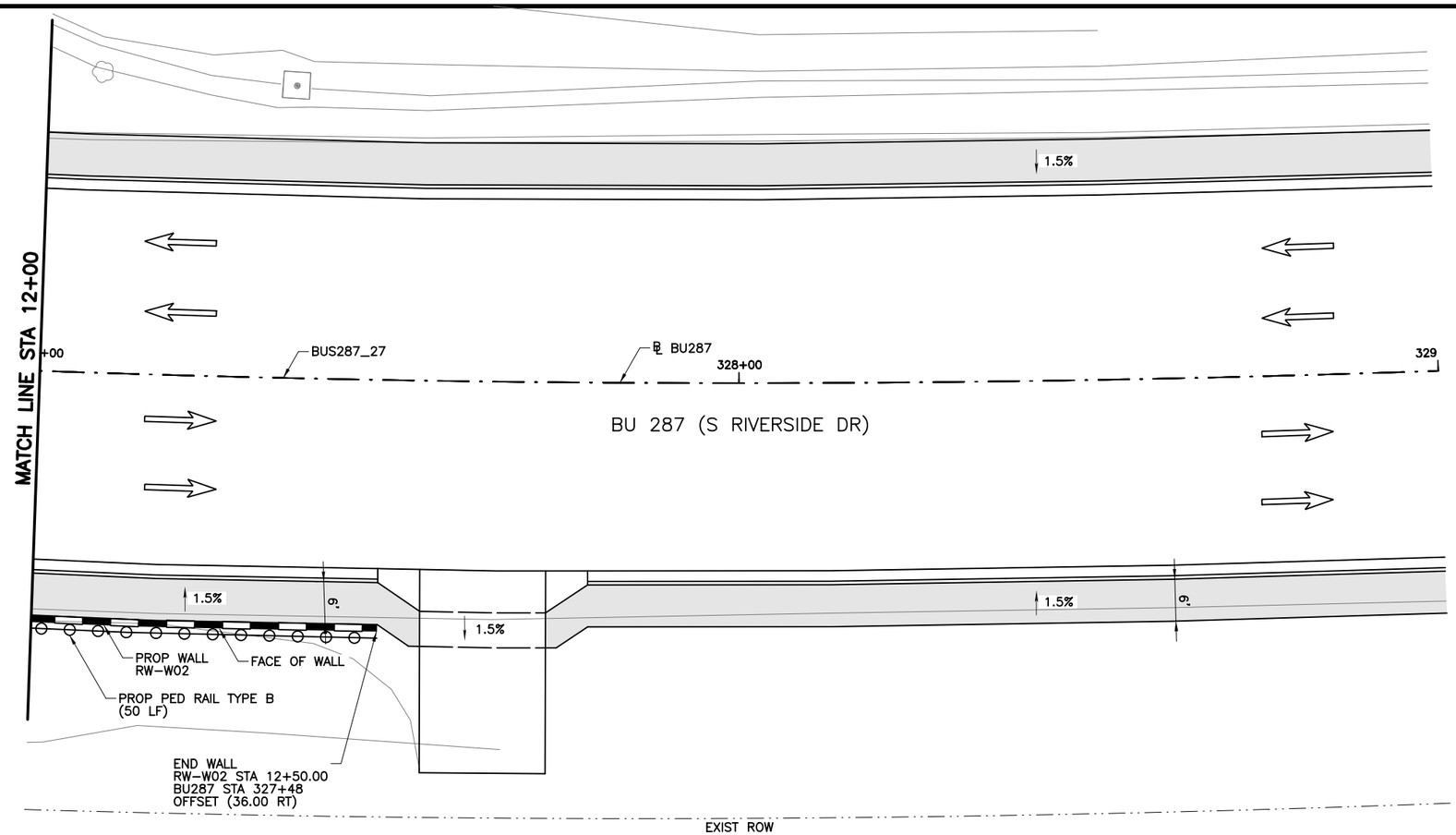
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

RETAINING WALL PLAN & PROFILE
RW_W02

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	173



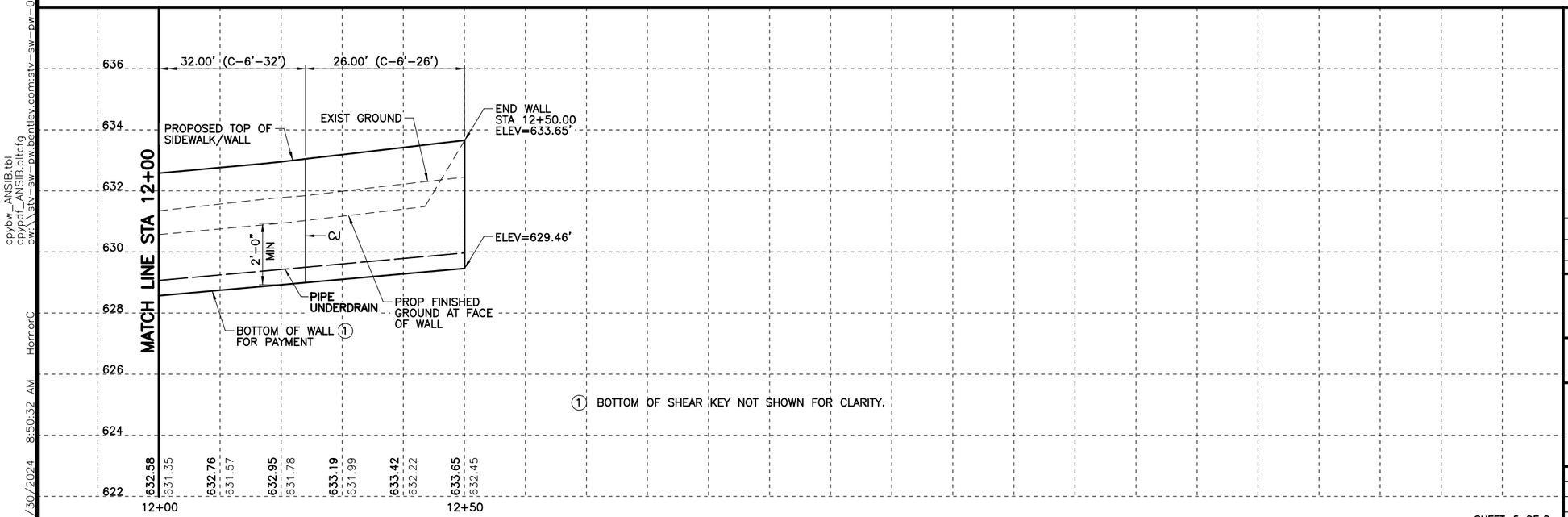
BUS287_27
PI STATION = 332+11.00
NORTHING = 6,937,979.5541
EASTING = 2,337,493.2637
DELTA = 22° 43' 02" (LT)
RADIUS = 2,840.00'
D = 2° 01' 03"
TANGENT = 570.51'
LENGTH = 1,126.04'

N

10 5 0 10 20
SCALE HORIZ. FEET

2 1 0 2 4
SCALE VERT. FEET

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER
8/30/2024



(1) BOTTOM OF SHEAR KEY NOT SHOWN FOR CLARITY.

STATE OF TEXAS
KELLY HO
112947
LICENSED PROFESSIONAL ENGINEER
8/30/2024
FOR STRUCTURAL DESIGN ONLY

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

RETAINING WALL PLAN & PROFILE

RW_W02

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		174

SHEET 5 OF 8

RETAINING WALL FOOTING AT POWER POLE
(PLAN VIEW)

8/30/2024

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER

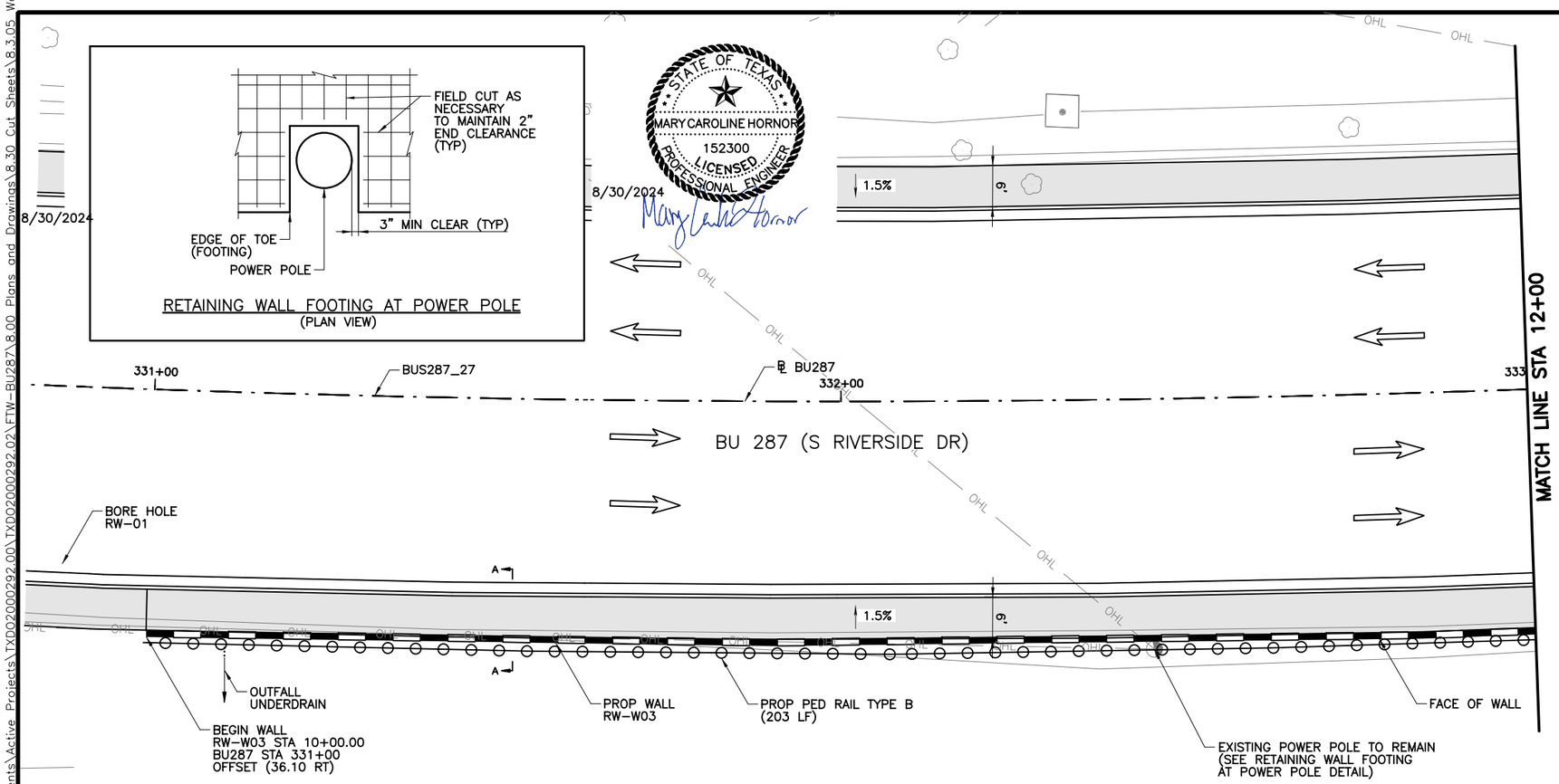
8/30/2024

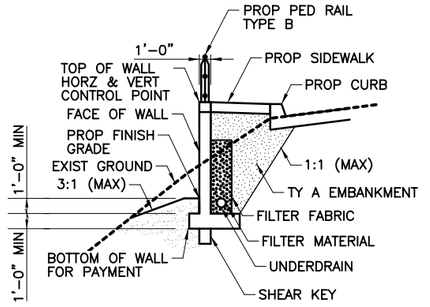
BUS287_27
PI STATION = 332+11.00
NORTHING = 6,937,979.5541
EASTING = 2,337,493.2637
DELTA = 22° 43' 02" (LT)
RADIUS = 2,840.00'
D = 2° 01' 03"
TANGENT = 570.51'
LENGTH = 1,126.04'

10 5 0 10 20
SCALE HORIZ. FEET

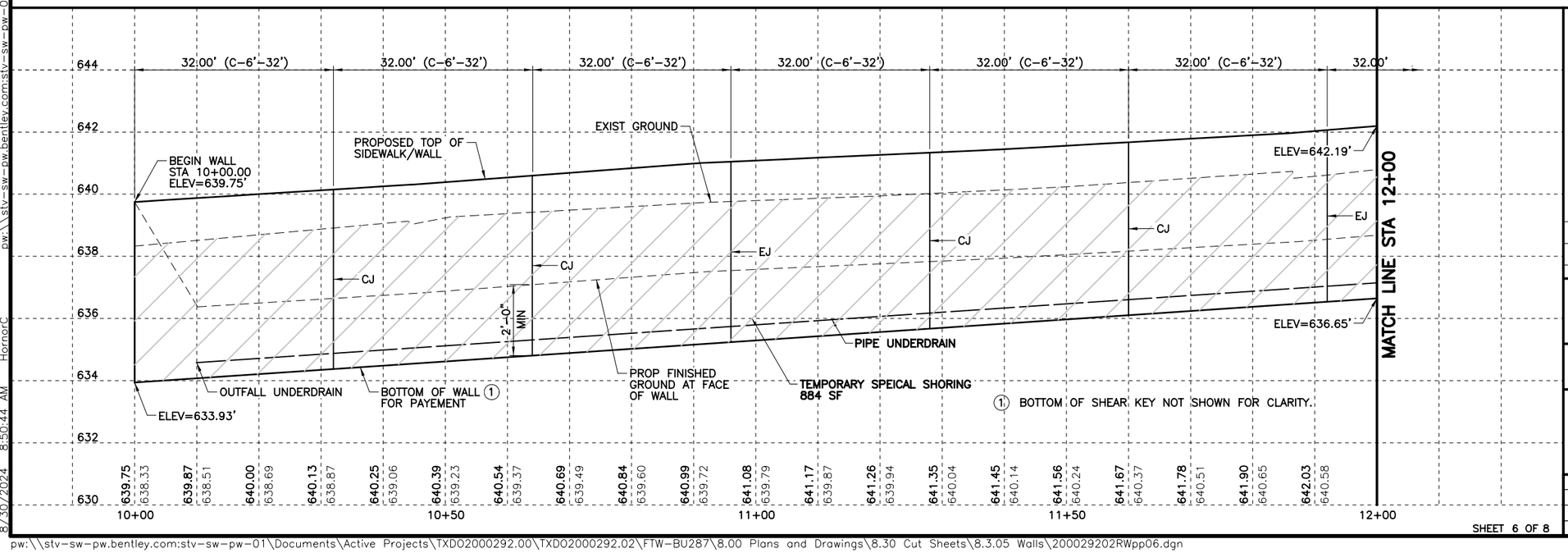
2 1 0 2 4
SCALE VERT. FEET

RW-W03			
ITEM NUMBER	ITEM	UNIT	QUANTITY
0423 7015	RETAINING WALL (SPREAD FOOTING)	SF	1733
0450 7059	RAIL (HANDRAIL)(TY B)	LF	303
0556 7006	PIPE UNDERDRAINS (TY 6) (6")	LF	303





SECTION A-A
N.T.S.



(1) BOTTOM OF SHEAR KEY NOT SHOWN FOR CLARITY.

SHEET 6 OF 8

STATE OF TEXAS
KELLY HO
112947
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

FOR STRUCTURAL DESIGN ONLY

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

 Texas Department of Transportation

FORT WORTH SIDEWALK IMPROVEMENTS

RETAINING WALL PLAN & PROFILE

RW_W03

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	175

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cpypdf_ANSIB.pltcfg
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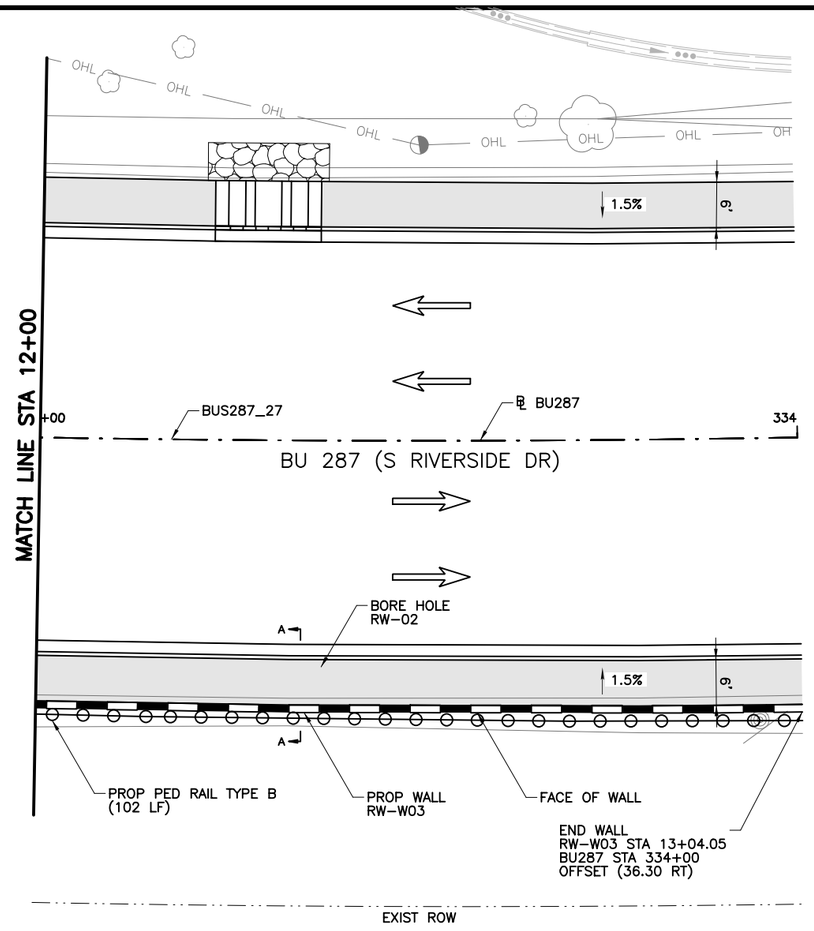
HornorC
8:50:44 AM
8/30/2024



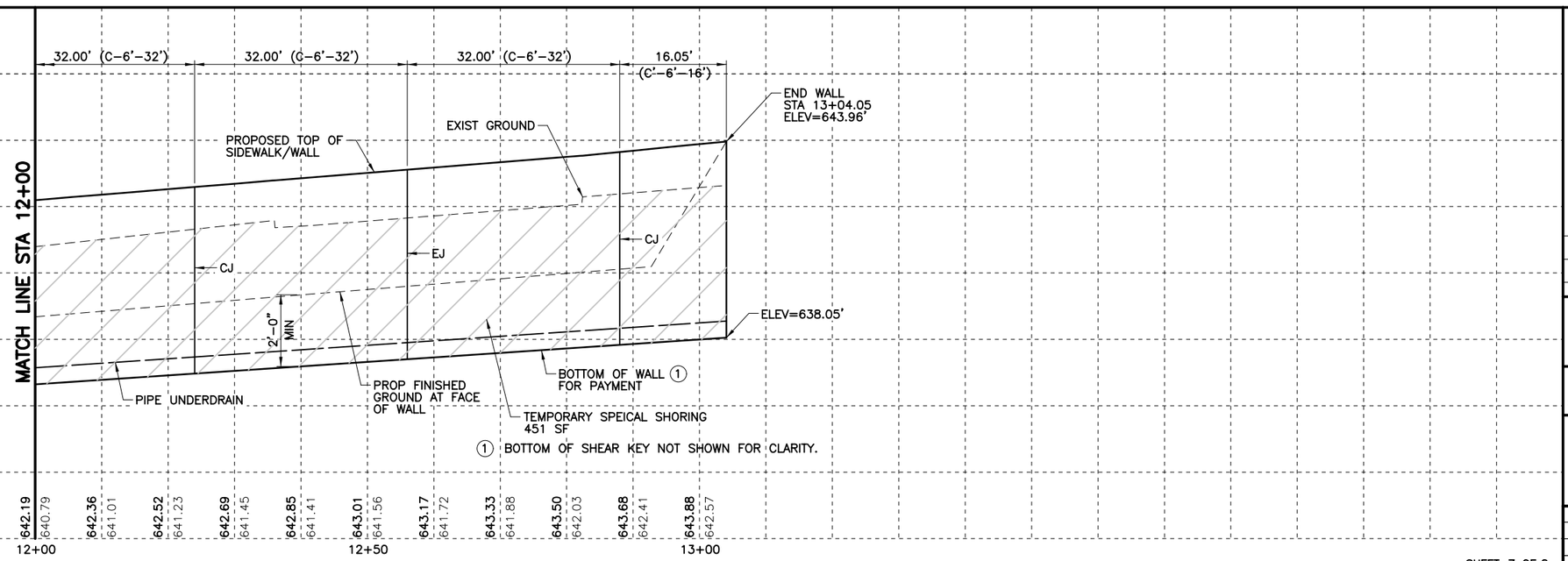
BUS287_27
PI STATION = 332+11.00
NORTHING = 6,937,979.5541
EASTING = 2,337,493.2637
DELTA = 22° 43' 02" (LT)
RADIUS = 2,840.00'
D = 2° 01' 03"
TANGENT = 570.51'
LENGTH = 1,126.04'

N

10 5 0 10 20
SCALE HORIZ. FEET

2 1 0 2 4
SCALE VERT. FEET

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED PROFESSIONAL ENGINEER
8/30/2024



STATE OF TEXAS
KELLY HO
112947
LICENSED PROFESSIONAL ENGINEER
8/30/2024
FOR STRUCTURAL DESIGN ONLY

NO.	REVISION	BY	DATE

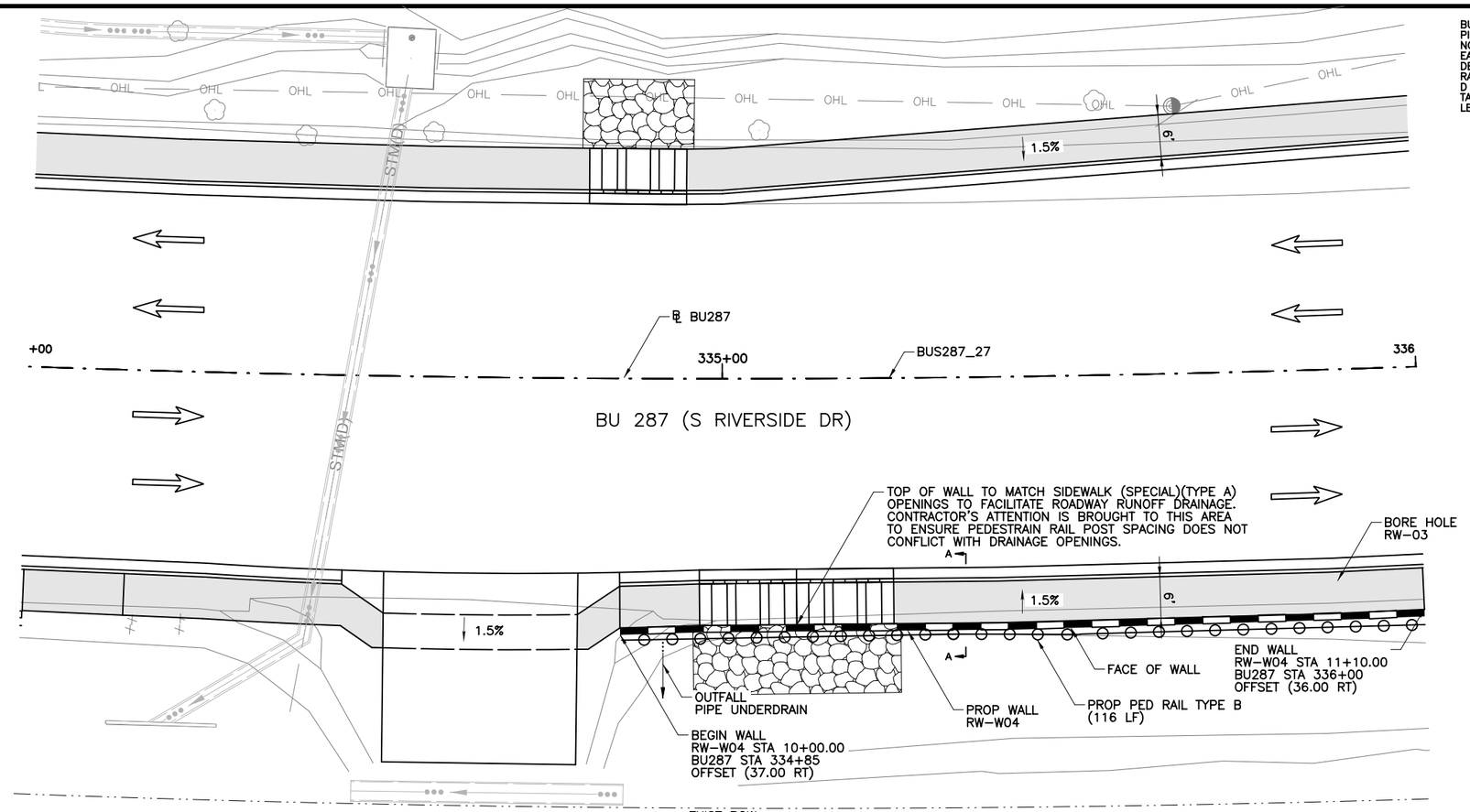
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

RETAINING WALL PLAN & PROFILE
RW_W03

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		176	

SHEET 7 OF 8



BUS287_27
PI STATION = 332+11.00
NORTHING = 6,937,979.5541
EASTING = 2,337,493.2637
DELTA = 22° 43' 02" (LT)
RADIUS = 2,840.00'
D = 2° 01' 03"
TANGENT = 570.51'
LENGTH = 1,126.04'

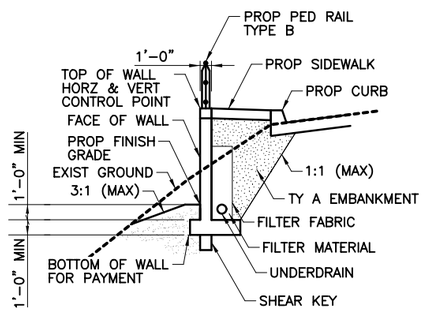
N

10 5 0 10 20
SCALE HORIZ. FEET

2 1 0 2 4
SCALE VERT. FEET

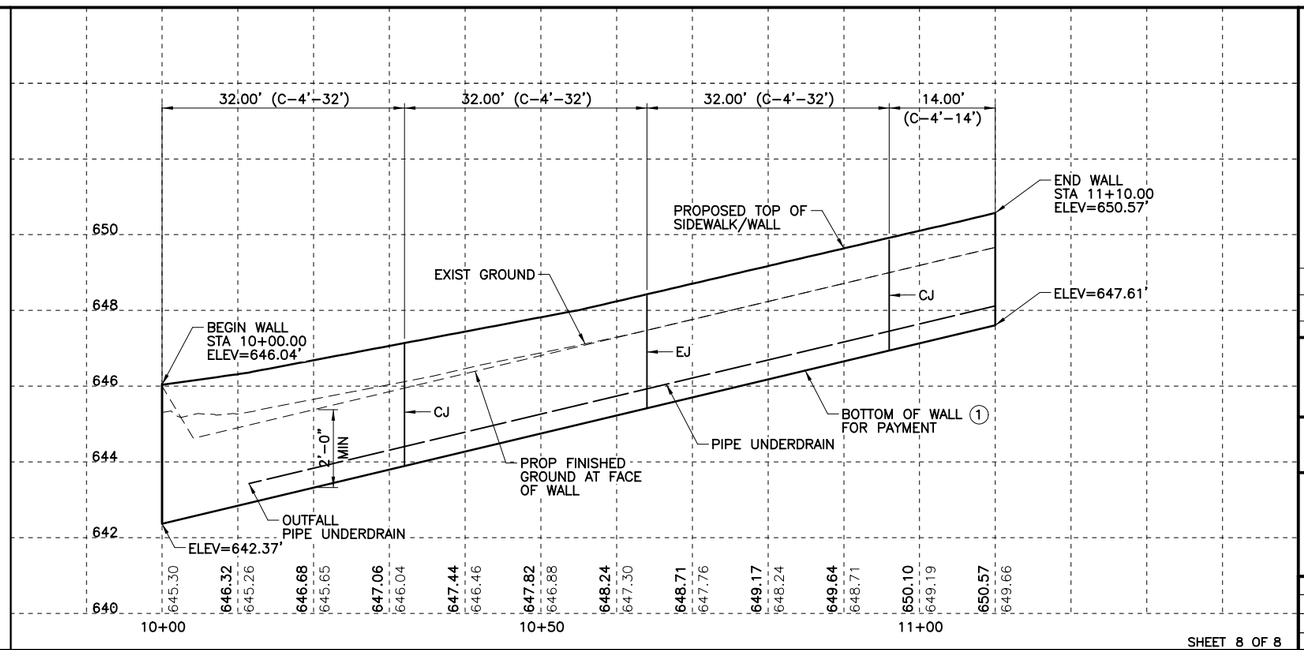
RW-W04			
ITEM NUMBER	ITEM	UNIT	QUANTITY
0423 7015	RETAINING WALL (SPREAD FOOTING)	SF	346
0450 7059	RAIL (HANDRAIL)(TY B)	LF	110
0556 7006	PIPE UNDERDRAINS (TY 6) (6")	LF	110

STATE OF TEXAS
MARY CAROLINE HORNOR
152300
LICENSED
PROFESSIONAL ENGINEER
8/30/2024



SECTION A–A
N.T.S.

① BOTTOM OF SHEAR KEY NOT SHOWN FOR CLARITY.



STATE OF TEXAS
KELLY HO
112947
LICENSED
PROFESSIONAL ENGINEER
8/30/2024
FOR STRUCTURAL DESIGN ONLY

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

RETAINING WALL PLAN & PROFILE
RW_W04

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV						
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	177

SHEET 8 OF 8

DRILLING LOG

WinCore Version 3.3

County	Tarrant	Hole	RW-01	District	Fort Worth
Highway	BUS287	Structure	Retaining Wall	Date	2/8/2024
CSJ	0172-01-057	Station	330+87.53	Grnd. Elev.	639.28 ft
		Offset	25.91 RT	GW Elev.	N/A

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			PAVEMENT, HMAC:12", BASE:15"			4				SSS@2', N=19
637.			SAND, Clayey, compact to very dense, moist, dark brown, trace Gravel, trace FE stains (SC)			16	45	26		-#200=71.3%
						9	38	22		SSS@3.5', N=16, -#200=39.2%
5		37 (6) 16 (6)								
						9				SSS@6.3', N=17
						10	49	32		SSS@8', N=34, -#200=45.5%
10		50 (2.75) 50 (2)								
628.3						8				SSS@10.6', N=50/4.5"
			CLAY, Lean, stiff, moist, brown and tan, trace fine Gravel (CL)							
15		14 (6) 15 (6)								
						18	45	27		SSS@16.3', N=32, -#200=94.1%
621.5			CLAY, Fat, stiff, dark gray, shaley (CH)							
20		12 (6) 13 (6)								
						23	70	48		SSS@21.5', N=25, -#200=99.9%
616.3			LIMESTONE, moist, very hard, gray							
25		50 (0) 50 (0)		0	3328.2	6			154.6	CORE@25', REC=95% RQD=82%
30		50 (0.5) 50 (0.25)		0	1156.8	6			151.8	CORE@30', REC=80% RQD=65%
35		50 (0.5) 50 (0)				8				CORE@35', REC=87% RQD=70%
599.3	40	50 (0.5) 50 (0.25)								Boring Terminated at 40.1'

Remarks: LAT: 32.693161, LONG: -97.301560. Drill Rig: CME-55 with TxDOT 170-pound Automatic Hammer. Drilling Method: Continuous Flight Auger to 25', then Coring thereafter. Boring coordinates were determined with a handheld GPS and should be considered approximate.

The ground water elevation was not determined during the course of this boring.

Driller: Beyond Engineering and Testing, LLC Logger: LC **Organization: Foresight PES, LLC**

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DRILLING LOG

WinCore Version 3.3

County	Tarrant	Hole	RW-02	District	Fort Worth
Highway	BUS287	Structure	Retaining Wall	Date	2/9/2024
CSJ	0172-01-057	Station	333+37.26	Grnd. Elev.	642.21 ft
		Offset	29.89 RT	GW Elev.	N/A

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	LL	PI	Wet Den. (pcf)	Additional Remarks
			PAVEMENT, HMAC: 12", BASE: 14"			6				SSS@2', N=20
640.			SAND, Clayey, compact, moist, brown, trace Gravel, FE Stains and roots (SC)			6	41	24		-#200=16.3%, pH=8.7 Sulfate Content: 860 ppm
						4				SSS@3.5', N=60
5		25 (6) 25 (6)								
						9				SSS@6.4', N=26
634.8			CLAY, Fat, stiff, moist, brown, trace calcareous deposits, trace FE stains (CH)			14	54	34		SSS@8', N=22, -#200=96%
10		10 (6) 19 (6)								
631.2			CLAY, Lean, dry to moist, very stiff to hard, shaley, dark gray (CL)			5	29	12		SSS@11.5', N=50/4.5" -#200=84.6%
15		50 (3.25) 42 (6)				10	40	24		SSS@16',N=25/3", -#200=67.5%
626.2			LIMESTONE, moist, very hard, gray, trace Shale seams	0	1556.8	9			150.8	CORE@15', REC=70% RQD=47%
20		50 (0.5) 50 (0.25)		0	418.5	14			139.8	CORE@20', REC=90% RQD=82%
25		50 (1.25) 50 (1.25)				17				CORE@25', REC=72% RQD=13%
30		50 (4) 50 (2.5)				13				CORE@30', REC=100% RQD=95%
35		50 (1.5) 50 (1)				14				CORE@35', REC=98% RQD=82%
602.2	40									Boring Terminated at 40'

Remarks: LAT: 32.692786, LONG: -97.301023. Drill Rig: CME-55 with TxDOT 170-pound Automatic Hammer. Drilling Method: Continuous Flight Auger to 15', then Coring thereafter. Boring coordinates were determined with a handheld GPS and should be considered approximate.

The ground water elevation was not determined during the course of this boring.

Driller: Beyond Engineering and Testing, LLC Logger: LC **Organization: Foresight PES, LLC**

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NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

BORING LOG

Designed: STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.	
Checked: STV	02	TEXAS	SEE TITLE SHEET				BU 287	
Drawn: STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.	
Checked: STV	FTW	TARRANT	0172	01	055,ETC		178	

SHEET 1 OF 2

DRILLING LOG

WinCore
Version 3.3

County	Tarrant	Hole	RW-03	District	Fort Worth
Highway	BUS287	Structure	Retaining Wall	Date	2/9/2024
CSJ	0172-01-057	Station	335+87.80	Grnd. Elev.	649.88 ft
		Offset	30.48 RT	GW Elev.	N/A

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description	Triaxial Test Lateral Press. (psi)	Triaxial Test Deviator Stress (psi)	Properties MC	Properties LL	Properties PI	Properties Wet Den. (pcf)	Additional Remarks
			PAVEMENT, HMAC: 8", BASE:16"			12				SSS@2', N=26
647.9			SAND, Clayey, loose, moist, brown, trace Gravel, FE Stains and roots, very loose below 11' (SC)			13	31	13		-#200=24%
						16				SSS@3.5', N=19
5		8 (6) 8 (6)								
						12	38	21		SSS@6.5', N=32, -#200=41.6%
						14				SSS@8', N=50/2"
10		9 (6) 4 (6)								
										SSS@11.1', N=4
637.4			CLAY, Fat, soft, moist, brown, trace calcareous deposits (CH)							
15		8 (6) 10 (6)								
						25	64	44		SSS@16.5', N=20, -#200=94.2%
631.9			LIMESTONE, hard, gray, soft at 30'							
20		50 (1) 50 (1)		0	2198	5			154.3	SSS@20.5', N=30/2" CORE@20', REC=80% RQD=70%
25		50 (1) 50 (0.25)				12				CORE@25', REC=88% RQD=83%
30		50 (3) 50 (3)								
619.2										Boring Terminated at 30.7'
35										
40										

Remarks: LAT: 32.692499, LONG: -97.300549. Drill Rig: CME-55 with TxDOT 170-pound Automatic Hammer. Drilling Method: Continuous Flight Auger to 20', then Coring thereafter. Boring coordinates were determined with a handheld GPS and should be considered approximate.

The ground water elevation was not determined during the course of this boring.

Driller: Beyond Engineering and Testing, LLC Logger: LC **Organization: Foresight PES, LLC**

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NO.	REVISION	BY	DATE

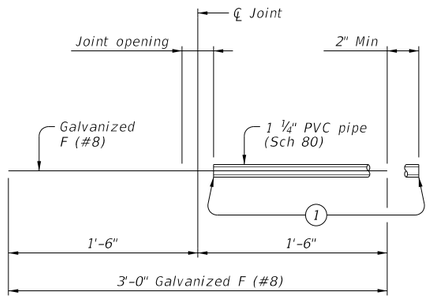
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

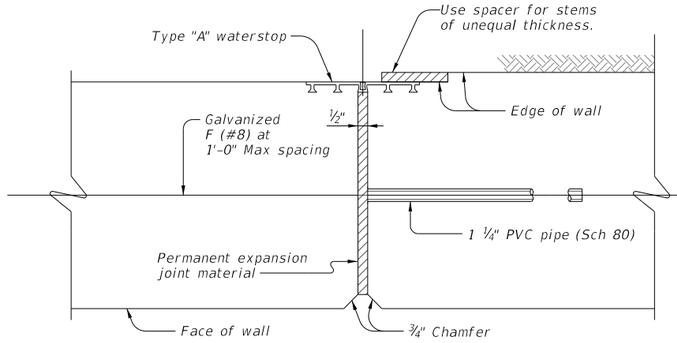
BORING LOG

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		179

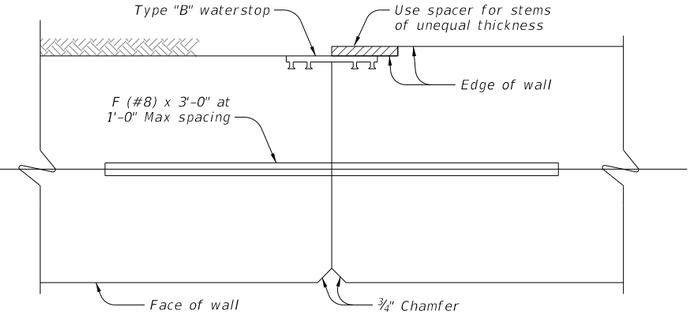
SHEET 2 OF 2



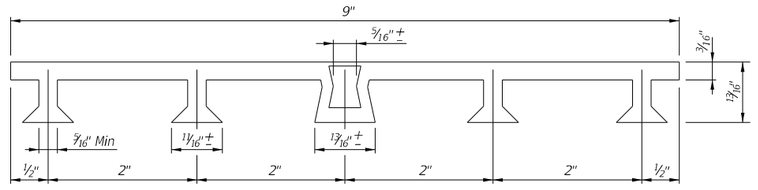
BAR F (#8) ASSEMBLY DETAIL



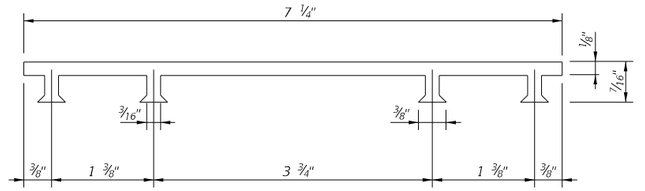
EXPANSION JOINT



CONSTRUCTION JOINT

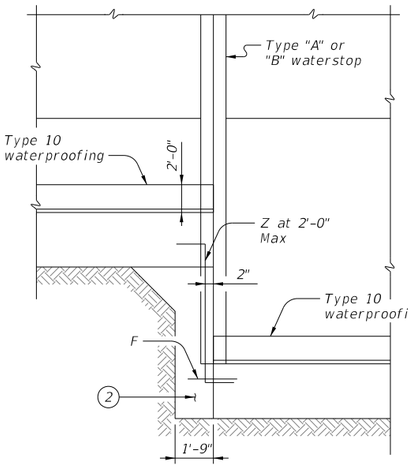


PVC WATERSTOP TYPE "A"

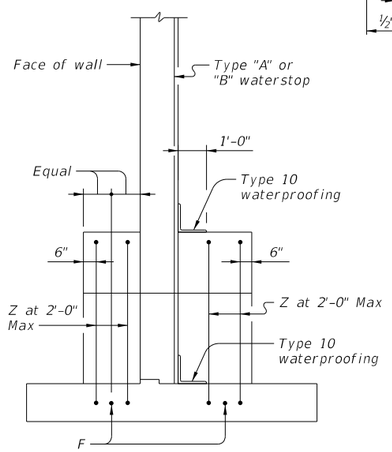


PVC WATERSTOP TYPE "B"

Note: Dimensions and shapes may vary slightly depending on manufacturer.

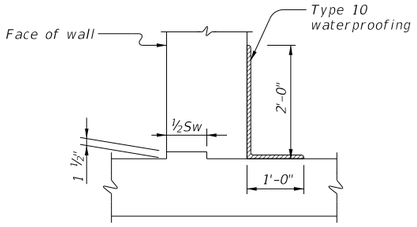


PARTIAL ELEVATION

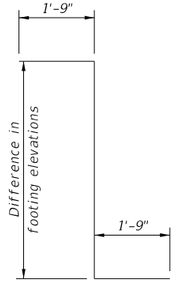


PARTIAL SECTION

SHOWING WATERSTOP AT FOOTING ELEVATION TRANSITION

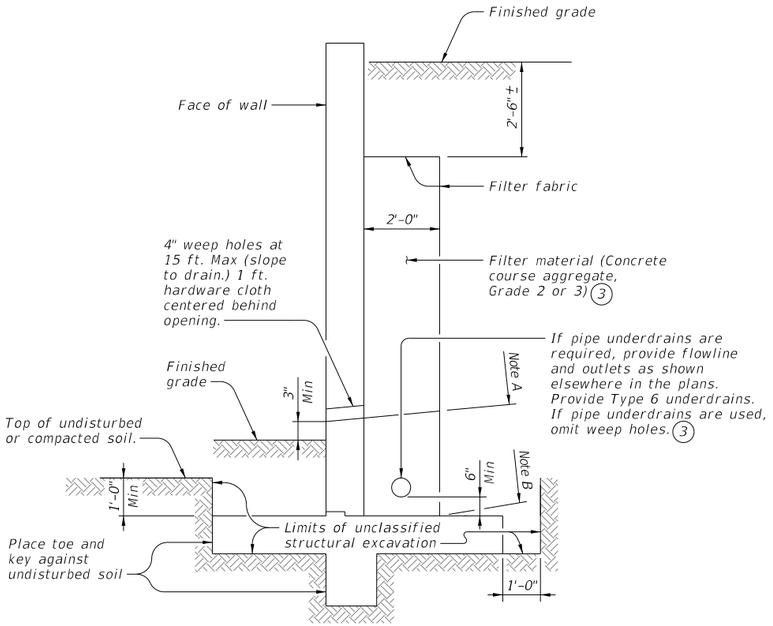


JOINT AND WATERSTOP DETAILS



BARS Z (#5)

(Omit Bars Z when difference in top of footing elevations is less than 2 ft).



DRAINAGE DETAILS AND EXCAVATION DIAGRAM

Note A: Stop coarse aggregate at this level when weep holes are used.

Note B: Use coarse aggregate to here when underdrains are used.

1. Tape ends of 1 ¼" PVC Schedule 80 to prevent concrete or mortar from seeping in.
2. Class C unreinforced concrete when difference in top of footing elevations is less than 2 feet. Omit when Dowel Bars F can be placed between adjacent footings with 4-inch cover top and bottom. Footing elevation difference not to exceed 4 feet.
3. Underdrain pipe to be in accordance with Item 556, "Pipe Underdrains."

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.

The undisturbed or compacted soil depth in front of walls must not measure less than Kd + Ft + 1 foot as measured upwards from bottom of key.

Retaining walls are detailed to be placed on grades up to 10% with level footing, with no changes in reinforcing steel. Steeper grades can be accommodated by shortening Bars A and Bars B and increasing the length of legs of Bars U by the same amount. No change in quantities will be required.

Retaining walls may be placed on horizontal curves by adjusting lengths of Bars T and Bars H in the footing. Minor revisions to concrete quantities may be required as a result.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

Bridge Division Standard

SPREAD FOOTING RETAINING WALL MISCELLANEOUS DETAILS

RW(SF)

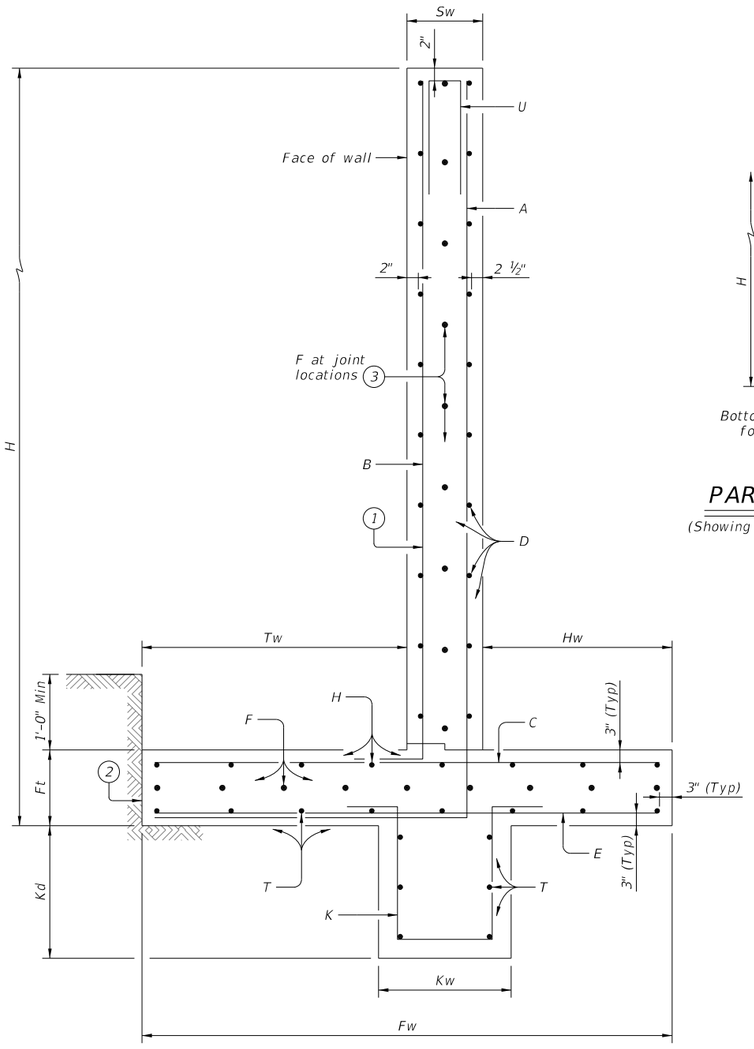
FILE:	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287
8-22: Updated underdrain requirements.	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		180

DATE:
FILE:

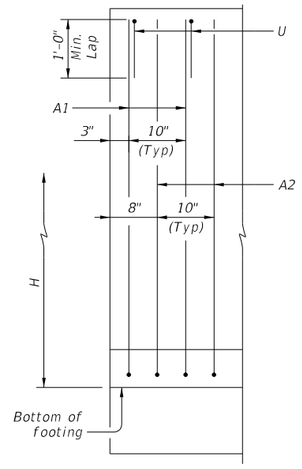
DATE:
FILE:

PROPERTIES / REINFORCING STEEL FOR ONE 32' PANEL (DESIGN C)

Wall Height "H"	WALL DIMENSIONS							MAX SOIL PRESS	Bars A1					Bars A2					Bars B					Bars C					Bars E					Bars K					D (#5) at 12" Max.		Dowel F at 12" Max.		H (#5) at 12" Max.		T (#5) at 12" Max.		U ~ 39 #5 at 10" Max.		QUANTITY FOR ONE 32' PANEL		Wall Height "H"
									No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Size	Spa.	Length	Weight	No.	Weight	No.	Weight	No.	Weight	No.	Weight	Length	Weight	Conc (CY)	REINF (LB)	
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	Kd	T/SF																																										(Ft)
2	5'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.218	39	#4	10"	3'-2"	83	39	#4	10"	3'-2"	83	39	#4	10"	1'-11"	50	39	#4	10"	4'-6"	118	39	#4	10"	4'-6"	118	39	#4	10"	3'-10"	100	4	132	8	65	6	198	6	198	2'-0"	82	8.3	1227	2
4	5'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.321	39	#4	10"	5'-2"	135	39	#4	10"	5'-2"	135	39	#4	10"	3'-11"	103	39	#4	10"	4'-6"	118	39	#4	10"	4'-6"	118	39	#4	10"	3'-10"	100	8	263	10	81	6	198	6	198	6'-0"	245	10.7	1694	4
6	5'-6"	1'-6"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	0.395	39	#4	10"	7'-8"	200	39	#4	10"	7'-8"	200	39	#4	10"	5'-11"	155	39	#4	10"	5'-0"	131	39	#4	10"	5'-0"	131	39	#4	10"	3'-10"	100	12	395	12	97	6	198	6	198	8'-5"	343	13.7	2148	6
8	7'-4"	1'-9"	1'-1"	4'-6"	1'-0"	1'-0"	1'-0"	0.500	39	#4	10"	10'-0"	261	39	#4	10"	10'-0"	261	39	#4	10"	7'-11"	207	39	#4	10"	6'-10"	179	39	#4	10"	6'-10"	179	39	#4	10"	3'-10"	100	16	526	16	129	8	263	8	263	8'-6"	346	18.9	2714	8
10	8'-8"	2'-4"	1'-1"	5'-3"	1'-2"	1'-6"	1'-6"	0.590	39	#5	10"	12'-7"	512	39	#4	10"	12'-7"	328	39	#4	10"	9'-9"	255	39	#5	10"	8'-2"	333	39	#4	10"	8'-2"	213	39	#4	10"	5'-4"	139	20	658	20	161	10	329	10	329	8'-6"	346	26.0	3603	10
12	10'-4"	2'-11"	1'-2"	6'-3"	1'-4"	1'-9"	1'-9"	0.684	39	#5	10"	15'-3"	621	39	#4	10"	15'-3"	398	39	#4	10"	11'-7"	302	39	#5	10"	9'-10"	400	39	#4	10"	9'-10"	257	39	#4	10"	6'-1"	159	24	789	23	185	11	362	11	362	8'-7"	350	34.8	4185	12
14	11'-8"	3'-6"	1'-4"	6'-10"	1'-7"	2'-0"	2'-0"	0.769	39	#5	10"	18'-0"	733	39	#4	10"	18'-0"	469	39	#4	10"	13'-4"	348	39	#5	10"	11'-2"	455	39	#4	10"	11'-2"	291	39	#4	10"	6'-10"	179	28	920	27	217	13	428	13	428	8'-9"	356	46.3	4824	14
16	13'-1"	4'-0"	1'-6"	7'-7"	1'-9"	2'-0"	2'-0"	0.853	39	#5	10"	20'-8"	841	39	#4	10"	20'-8"	841	39	#4	10"	15'-2"	396	39	#6	10"	12'-7"	738	39	#4	10"	12'-7"	329	39	#4	10"	6'-10"	179	32	1052	30	241	14	460	14	460	8'-11"	363	57.3	5900	16
18	14'-7"	4'-6"	1'-8"	8'-5"	1'-9"	2'-0"	2'-0"	0.937	39	#6	10"	23'-4"	1367	39	#5	10"	23'-4"	950	39	#4	10"	17'-2"	448	39	#7	10"	14'-1"	1124	39	#4	10"	14'-1"	368	39	#4	10"	6'-10"	179	36	1183	34	273	16	526	16	526	9'-1"	370	67.1	7314	18
20	16'-5"	5'-0"	1'-10"	9'-7"	2'-0"	2'-0"	2'-0"	1.039	39	#6	10"	26'-0"	1524	39	#6	10"	26'-0"	1524	39	#4	10"	18'-11"	493	39	#7	10"	17'-11"	1429	39	#4	10"	17'-11"	467	39	#4	10"	6'-10"	179	38	1249	36	289	17	559	17	559	9'-3"	377	82.8	8649	20

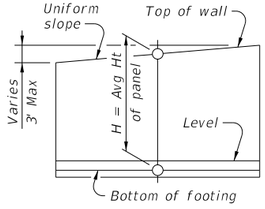


SECTION

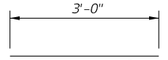


PARTIAL WALL ELEVATION

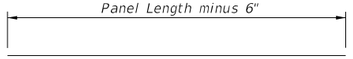
(Showing vertical reinforcing pattern in back face.)



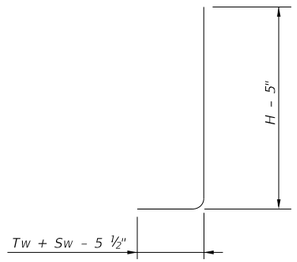
H DEFINITION



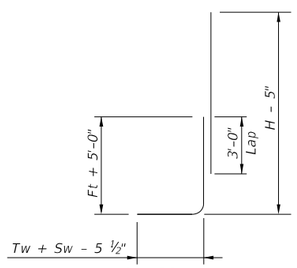
BARS F (3)



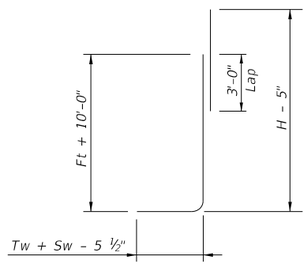
BARS D, H, and T



BARS A1 & A2



OPTIONAL BARS A1 (4)



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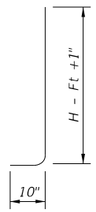
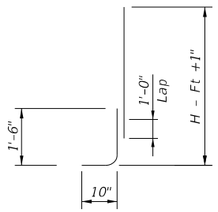
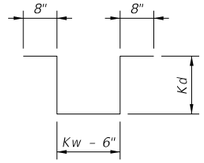


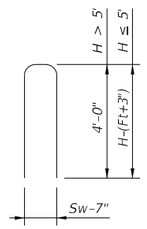
BARS B



OPTIONAL BARS B (4)



BARS K



BARS U

(1) Place vertical bars inside of horizontal bars (Typical both faces).

(2) Place footing toe against undisturbed soil.

(3) See Retaining Wall Miscellaneous Details (RW(SF)) standard for size.

(4) Optional bars splices not included in above table.

MATERIAL NOTES:

Provide Class C concrete (f'c=3,600 psi.)
Provide Grade 60 reinforcing steel.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Walls are designed assuming unit weight of soil = 120 pcf and a friction angle = 30 degrees for foundation and retained soil.
See Retaining Wall Miscellaneous Details (RW(SF)) standard for details and notes not shown.
These details provide designs for wall heights of 2 to 20 feet. For heights not shown, round up "H" to determine wall dimensions and reinforcing. (For example, a 9-foot high wall would use the 10-foot high dimensions and reinforcing.)
Quantities are based on "H" being average height of panel.
Retaining walls are designed to be coded as follows on Retaining Wall Layout Sheets:

C - 15 - 32
- Panel length ~ 32 ft. is standard; 28 ft. requires special quantities.
- Average height (H) of panel.
- Design A = No surcharge or slope above wall.
- Design B = No surcharge; slopes to 3:1.
- Design C = Traffic surcharge; no slope above wall.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

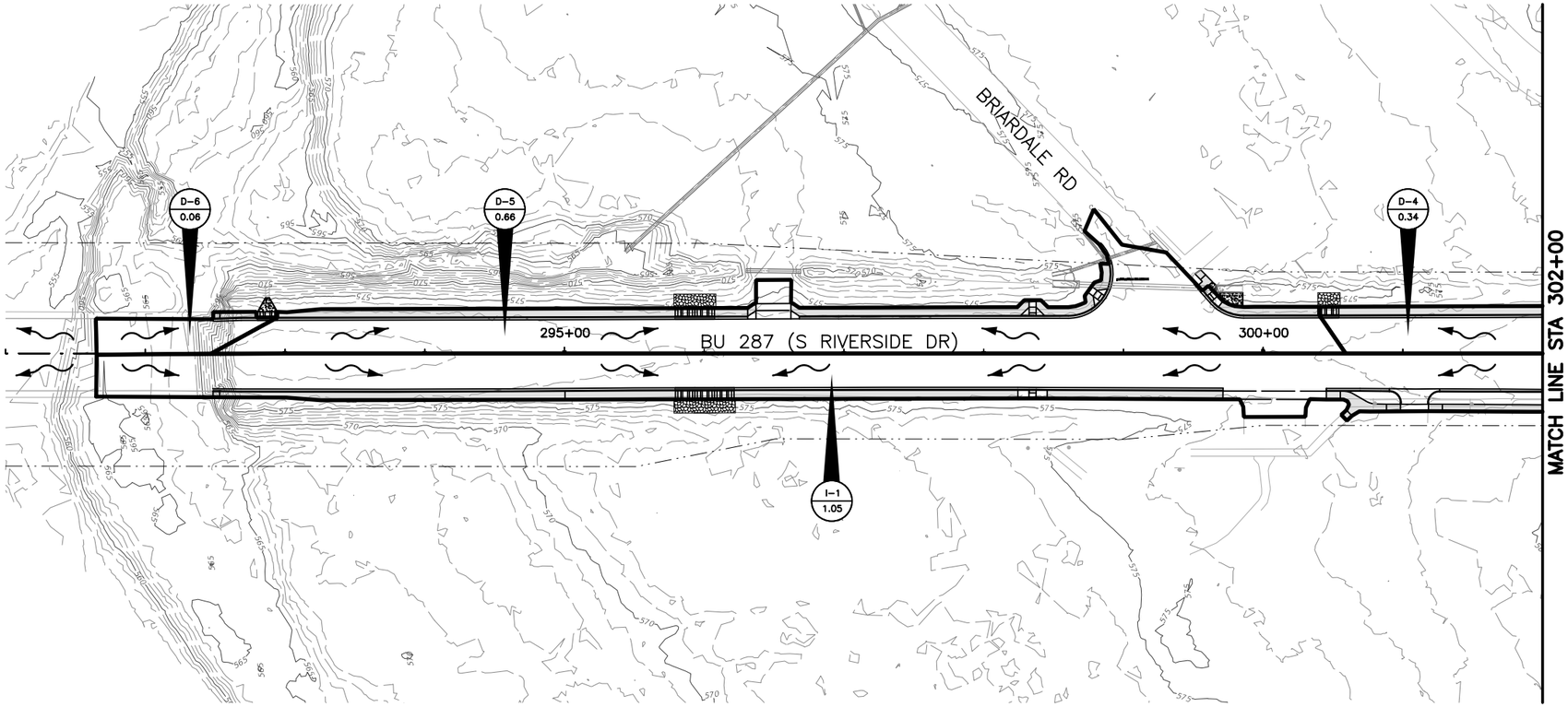
Texas Department of Transportation

Bridge Division Standard

SPREAD FOOTING RETAINING WALL

RW(SFC)

FILE:	DN: TAR	CK: RLE	DW: JER	CK: TAR
©TxDOT June 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172	01	055,ETC	BU 287
8-22: Constructability update.	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		181



50 25 0 50 100
SCALE FEET

N

LEGEND

- X-X / XX — AREA ID / AREA IN ACRES
- PROP STORM PIPE
- DIRECTION OF FLOW
- DRAINAGE AREA BOUNDARY
- CONTOUR MAJOR
- CONTOUR MINOR

STATE OF TEXAS
MICHAEL J. CHISHOLM
123343
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

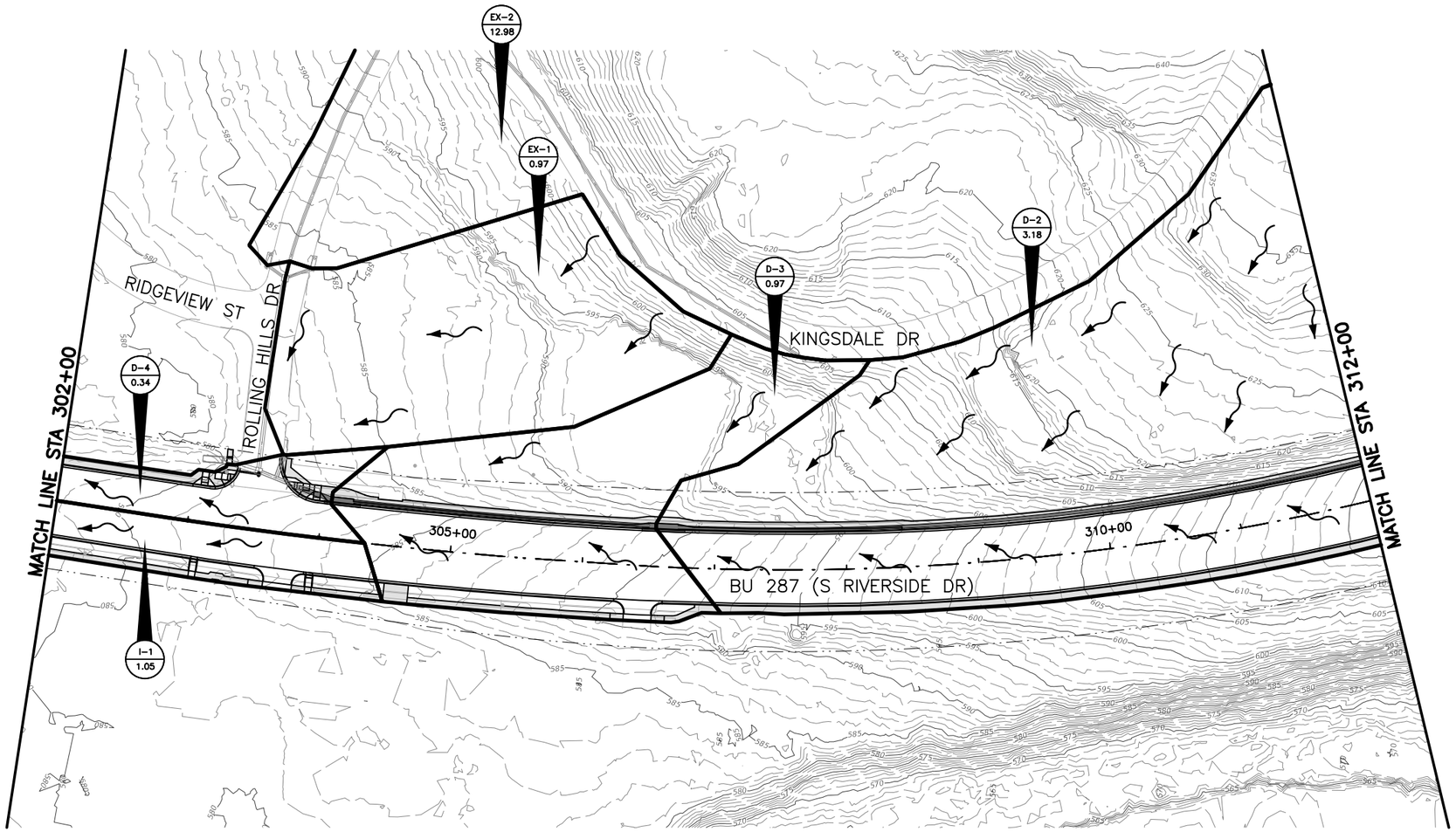
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE AREA MAP

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	182
Checked:	STV						

SHEET 1 OF 6



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SCALE FEET

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LEGEND

- X-X / XX — AREA ID / AREA IN ACRES
- PROP STORM PIPE
- DIRECTION OF FLOW
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FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE AREA MAP

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	183

SHEET 2 OF 6

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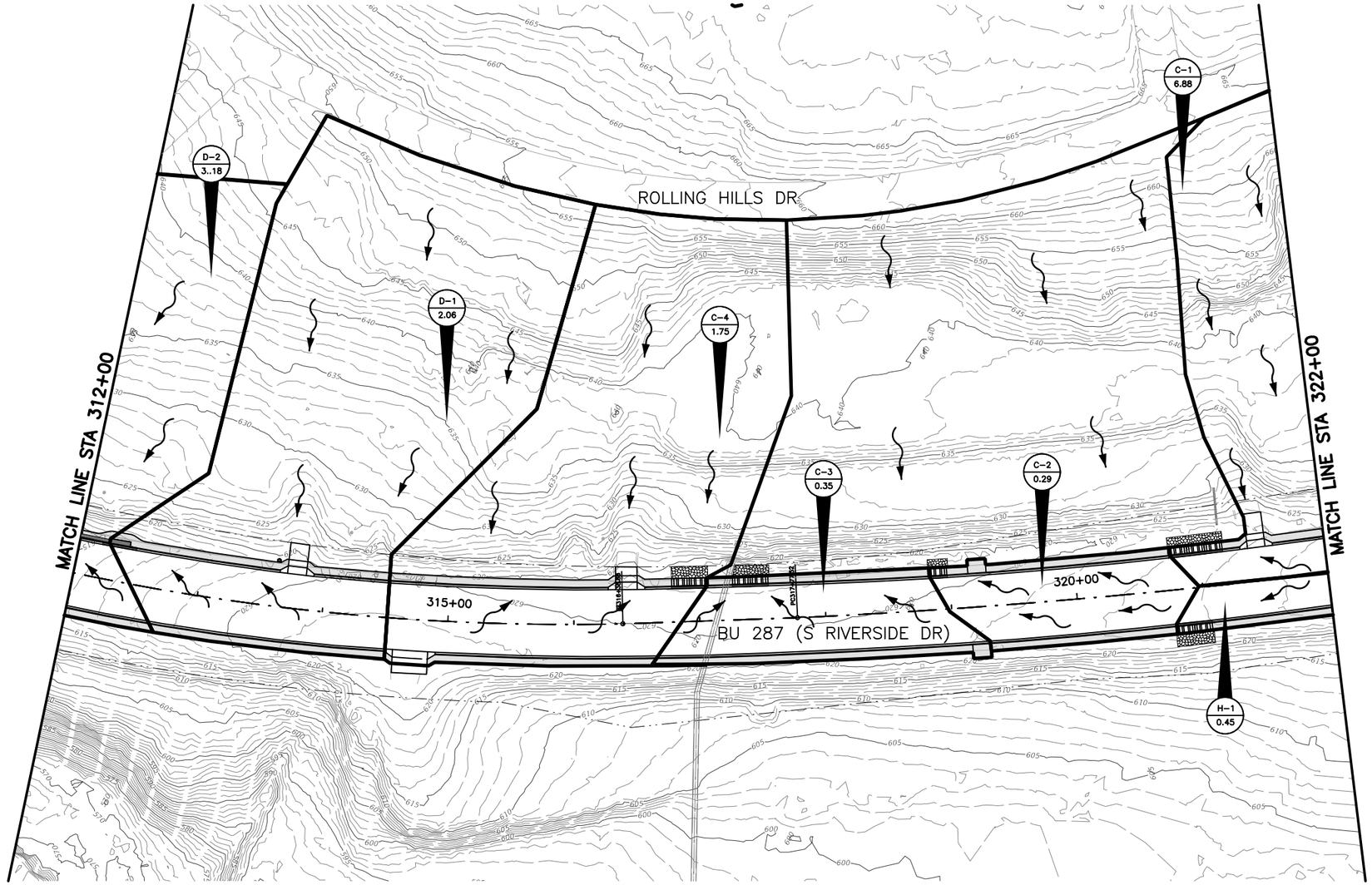

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SCALE FEET

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LEGEND

- X-X / XX — AREA ID / AREA IN ACRES
- PROP STORM PIPE
- DIRECTION OF FLOW
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- CONTOUR MINOR

STATE OF TEXAS
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8/30/2024

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TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE AREA MAP

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
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SHEET 3 OF 6

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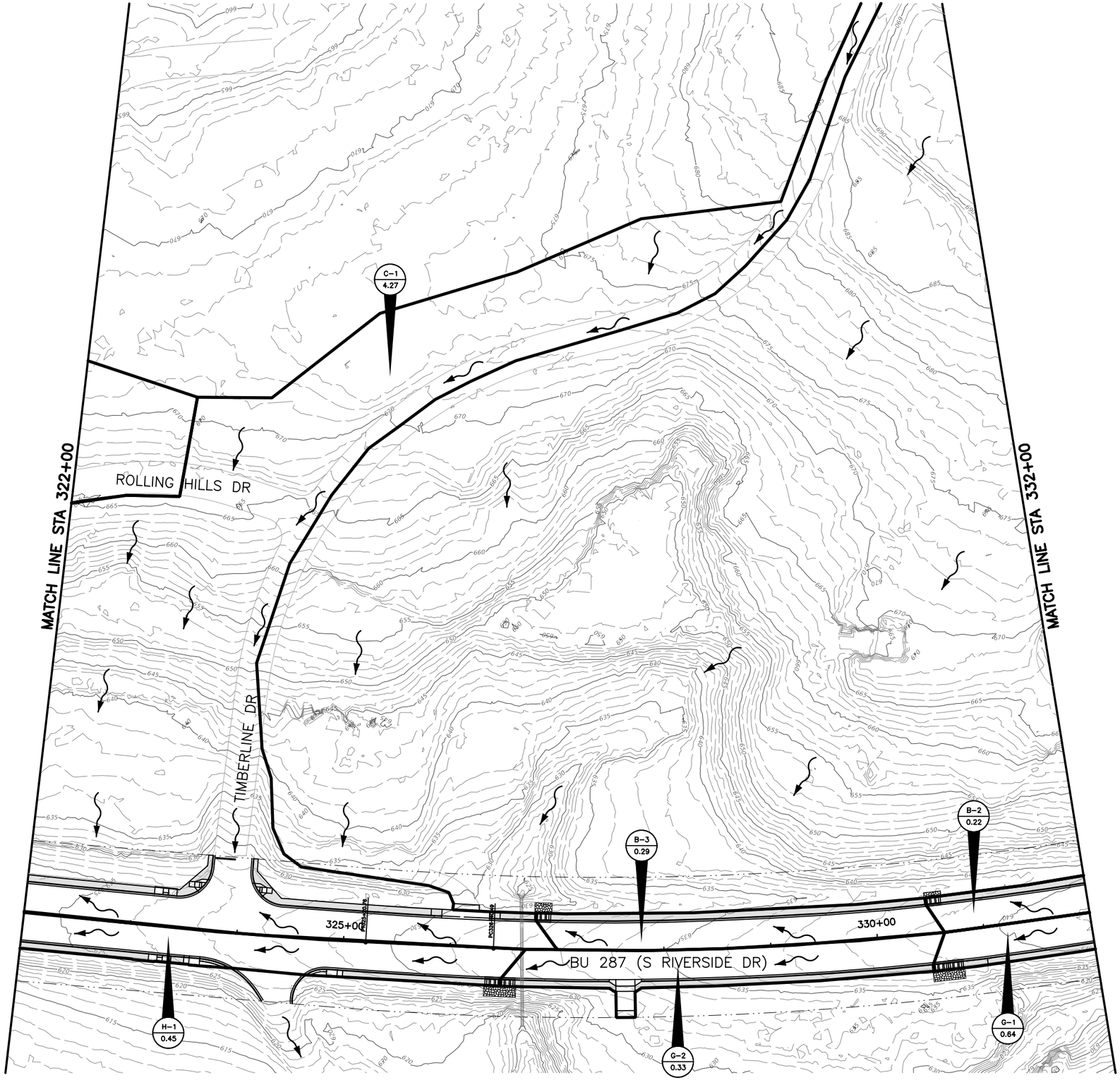

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SCALE FEET

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LEGEND

- X-X / XX — AREA ID / AREA IN ACRES
- PROP STORM PIPE
- DIRECTION OF FLOW
- DRAINAGE AREA BOUNDARY
- CONTOUR MAJOR
- CONTOUR MINOR

STATE OF TEXAS
MICHAEL J. CHISHOLM
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LICENSED PROFESSIONAL ENGINEER
8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

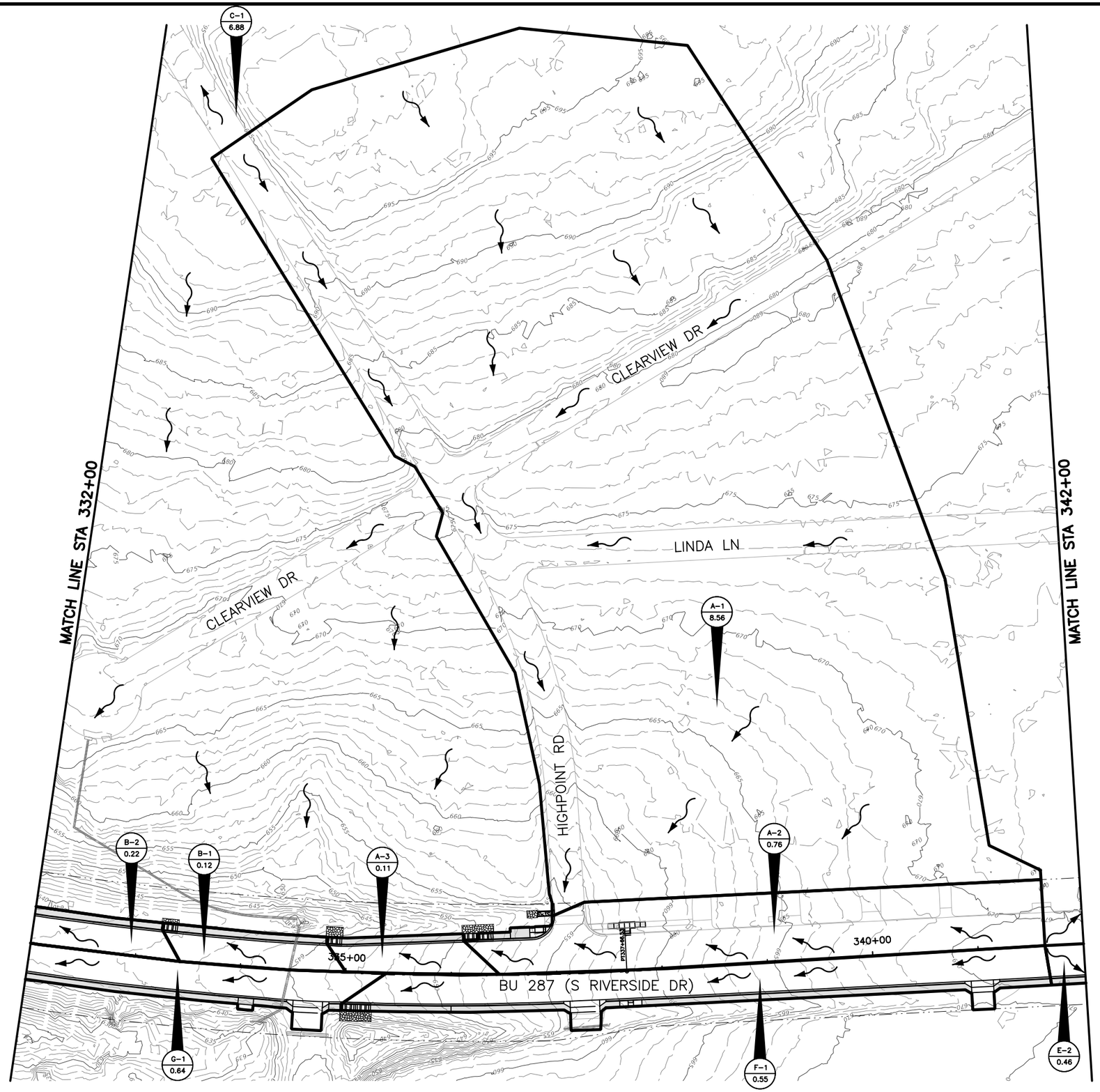
 Texas Department of Transportation

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE AREA MAP

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		185

SHEET 4 OF 6



50 25 0 50 100
SCALE FEET

N

LEGEND

- X-X / XX — AREA ID / AREA IN ACRES
- PROP STORM PIPE
- DIRECTION OF FLOW
- DRAINAGE AREA BOUNDARY
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- CONTOUR MINOR

STATE OF TEXAS
MICHAEL J. CHISHOLM
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8/30/2024

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

 Texas Department of Transportation

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE AREA MAP

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
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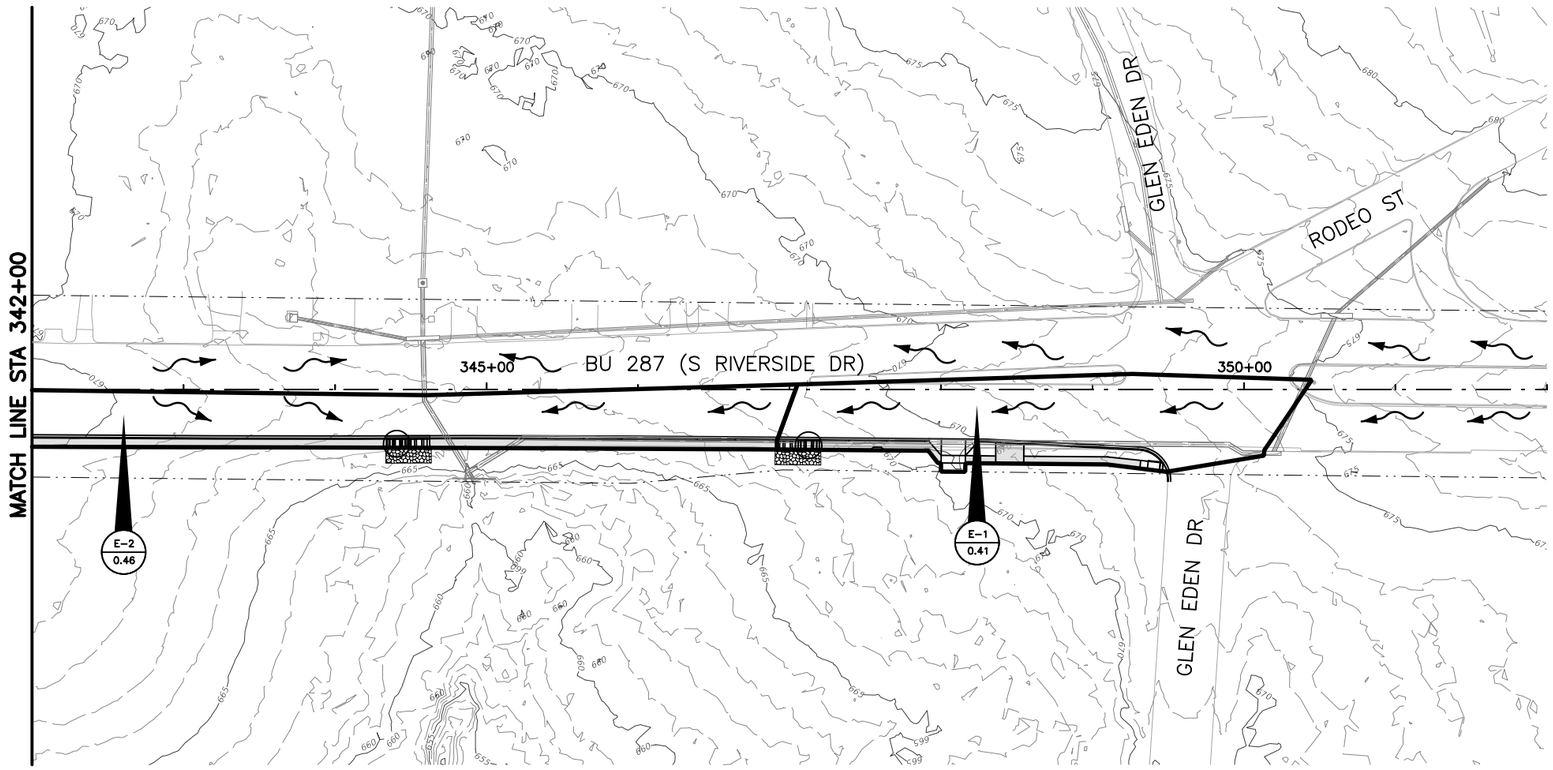
SHEET 5 OF 6



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SCALE FEET

N

LEGEND

- X-X / XX — AREA ID / AREA IN ACRES
- PROP STORM PIPE
- DIRECTION OF FLOW
- DRAINAGE AREA BOUNDARY
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- CONTOUR MINOR

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MICHAEL J. CHISHOLM
123343
LICENSED PROFESSIONAL ENGINEER
8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

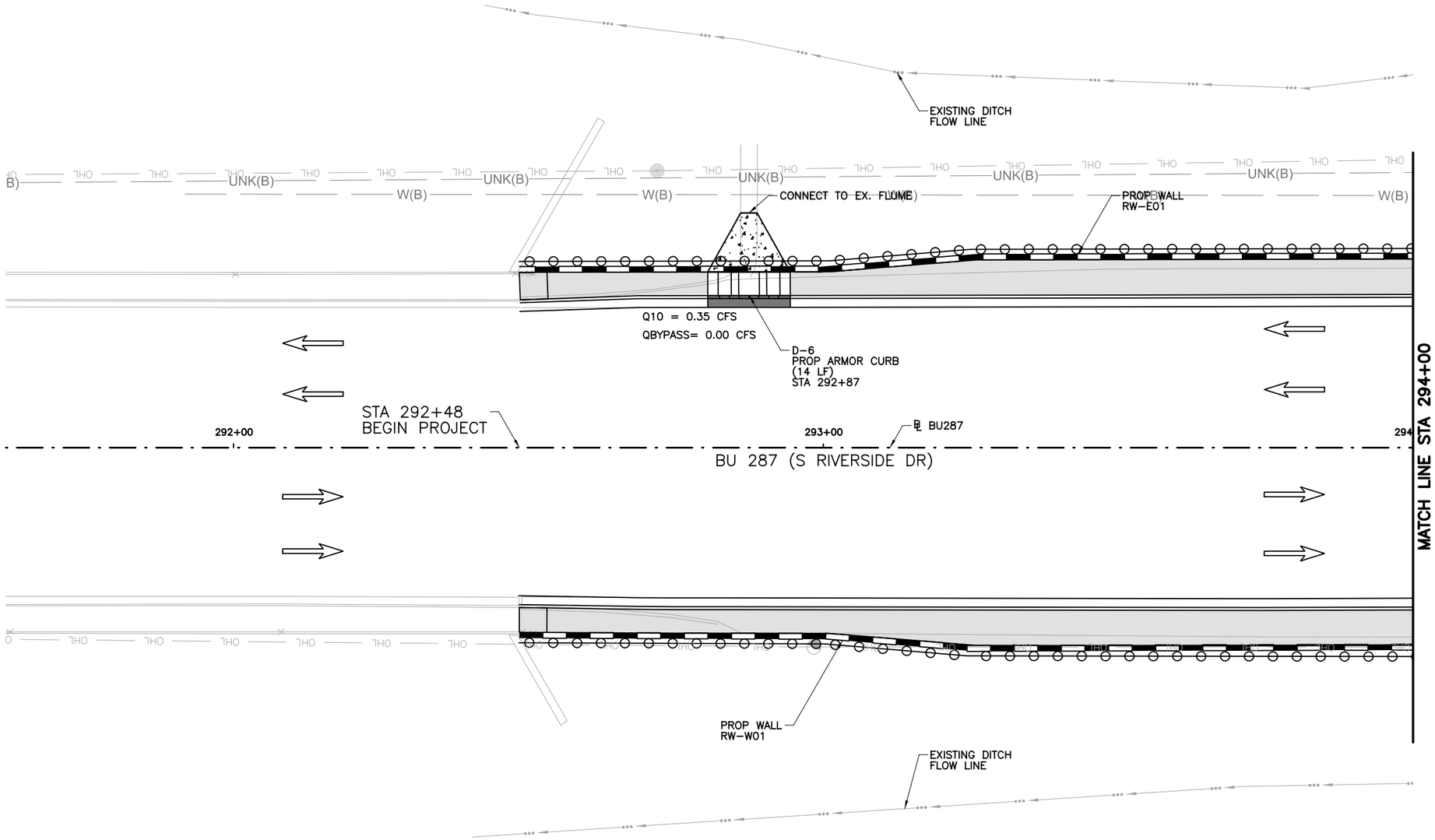
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE AREA MAP

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV						
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
		DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV						
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	187

SHEET 6 OF 6

pw:\\stv-sw-pw.bentley.com:stv-sw-pw-01\Documents\Active Projects\TXDO2000292.00\TXDO2000292.02\FTW-BU287\8.00 Plans and Drawings\8.30 Cut Sheets\8.3.06 Drainage\200029202DRmp06.dgn



N

10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

1. REFER TO DRAINAGE DETAILS FOR ADDITIONAL DRAINAGE INFORMATION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO EXCAVATION. THE LOCATION AND DEPTH OF ALL UTLITIES SHOW IN THE PLANS ARE APPROXIMATE AND THERE MAY BE OTHER UNKOWN UTILITIES NOT SHOWN IN THE PLANS. ALL EXISTING UTILITIES SHALL BE FIELD VERIFIED AND PROTECTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE ANY UTILITIES DAMAGED AT THE CONTRACTORS EXPENSE.

STATE OF TEXAS
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8/30/2024

NO.	REVISION	BY	DATE

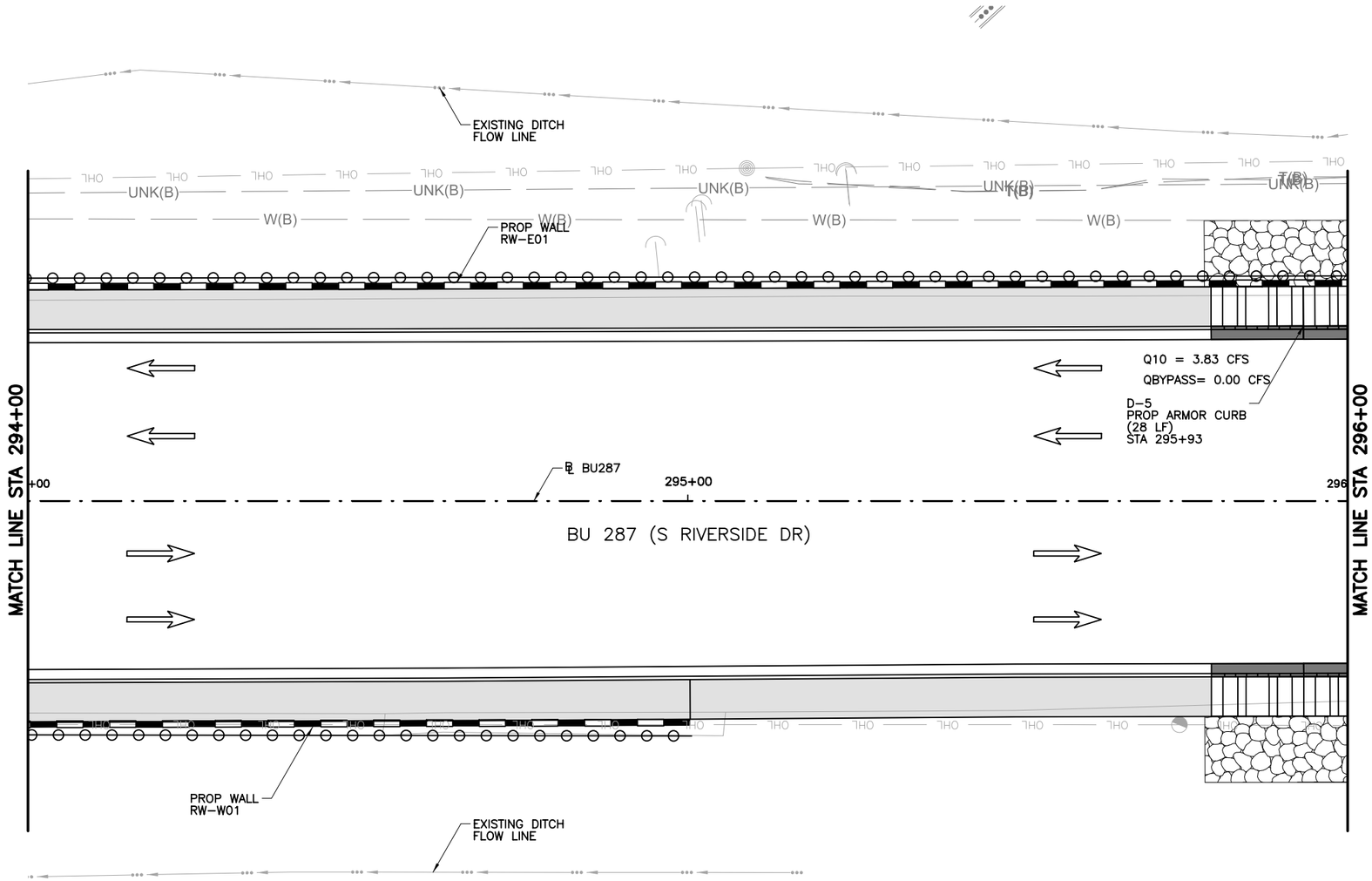
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 292+00 TO STA 294+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		188

SHEET 1 OF 31



N

10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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STATE OF TEXAS
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8/30/2024

NO.	REVISION	BY	DATE

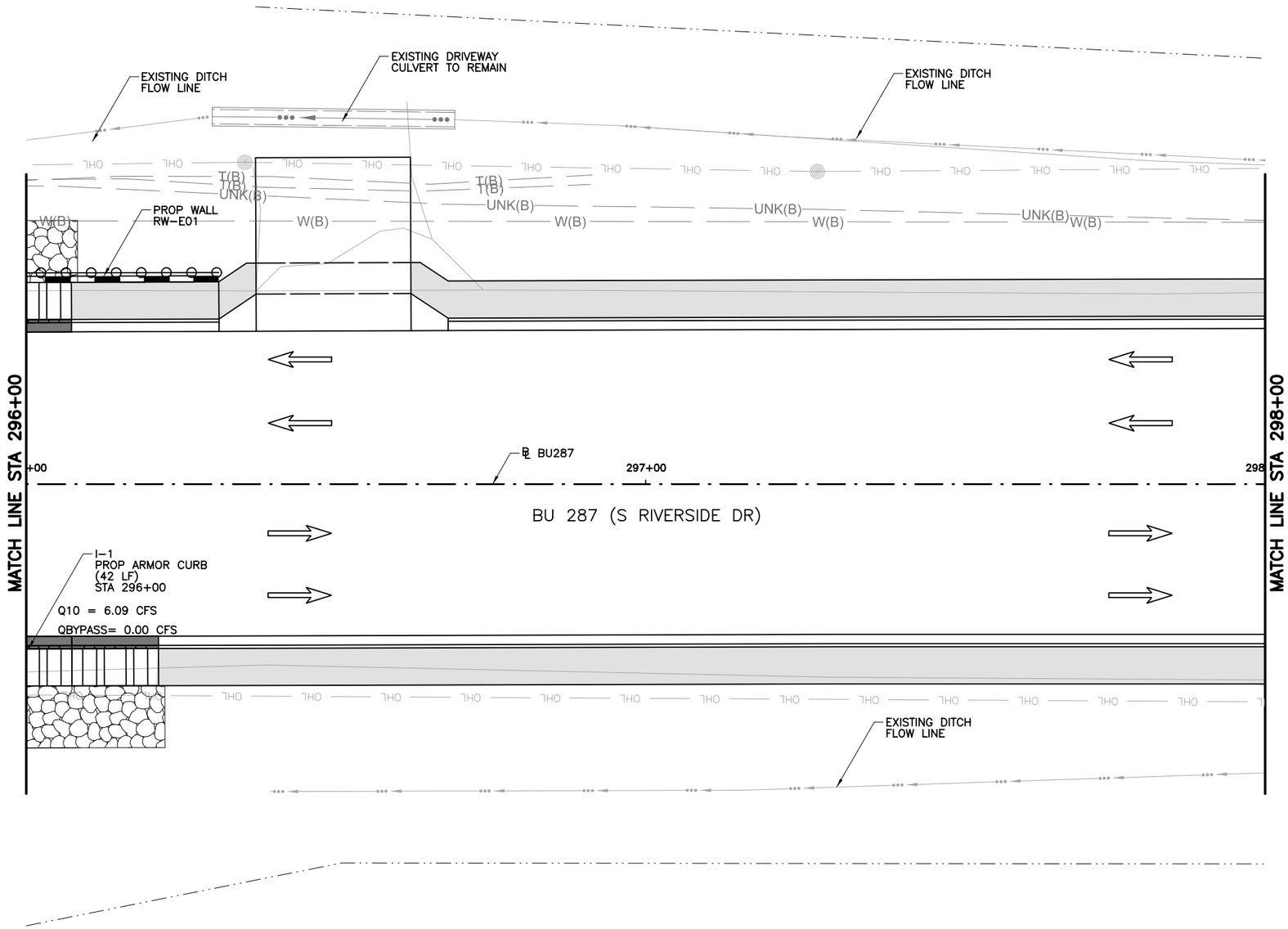
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 294+00 TO STA 296+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		189

SHEET 2 OF 31



N

10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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8/30/2024

NO.	REVISION	BY	DATE

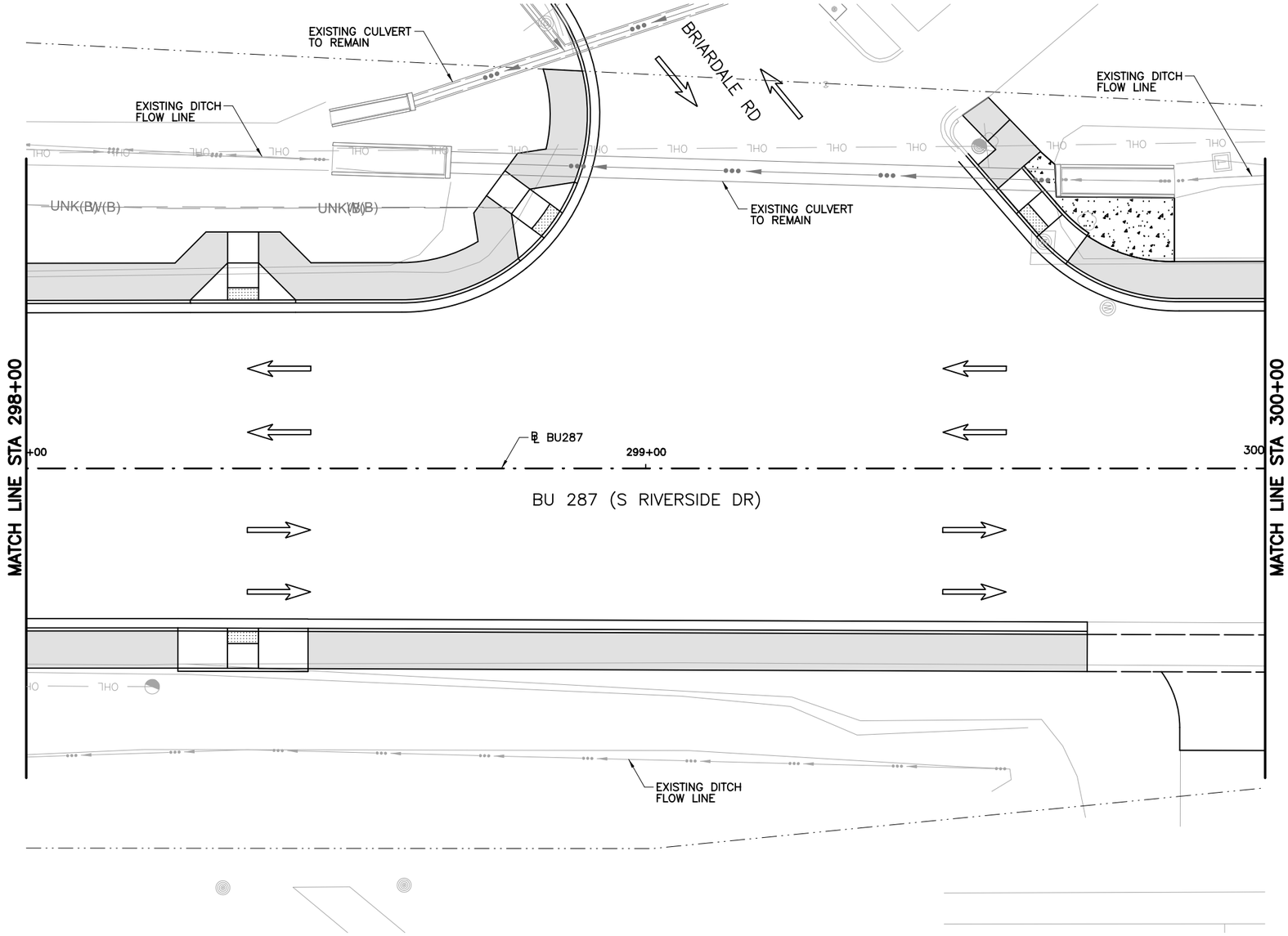
stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 296+00 TO STA 298+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	190
Checked:	STV						

SHEET 3 OF 31



N

10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

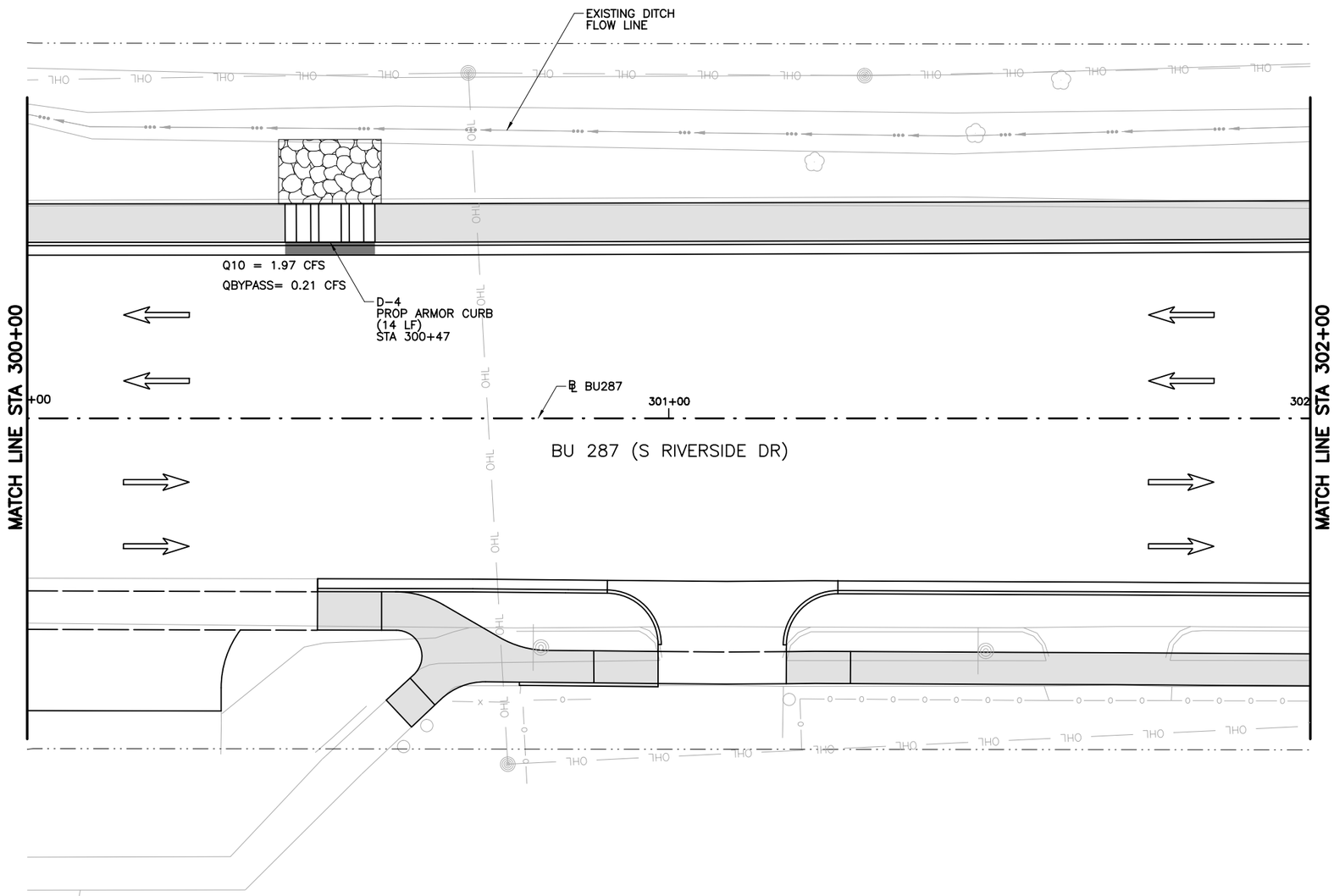
TEXAS REGISTERED ENGINEERING FIRM F-1741

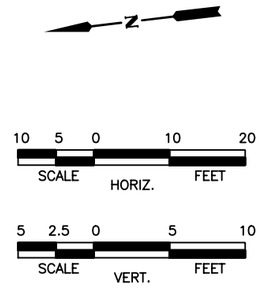
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 298+00 TO STA 300+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	191
Checked:	STV						

SHEET 4 OF 31





LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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NO.	REVISION	BY	DATE

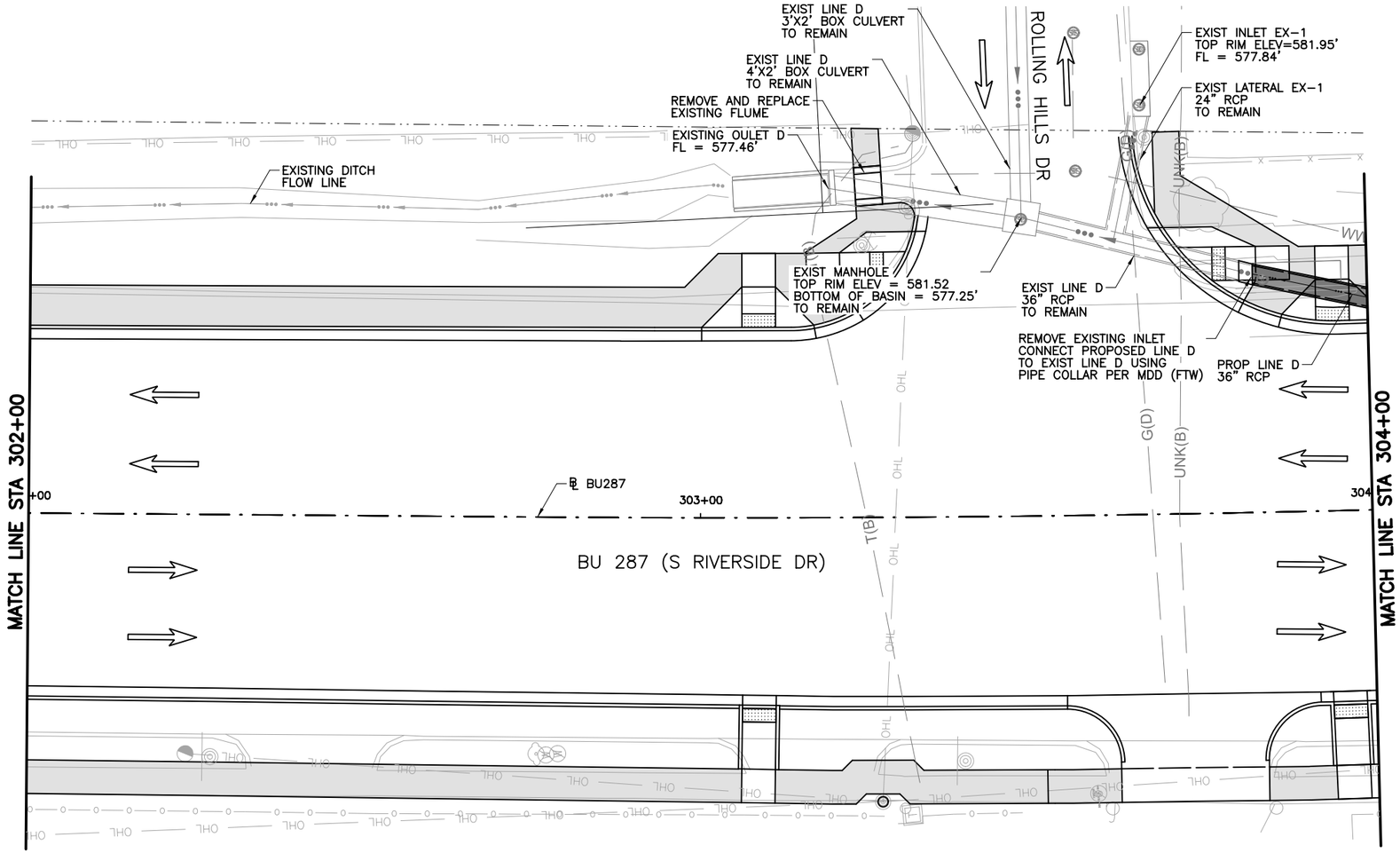
TEXAS REGISTERED ENGINEERING FIRM F-1741

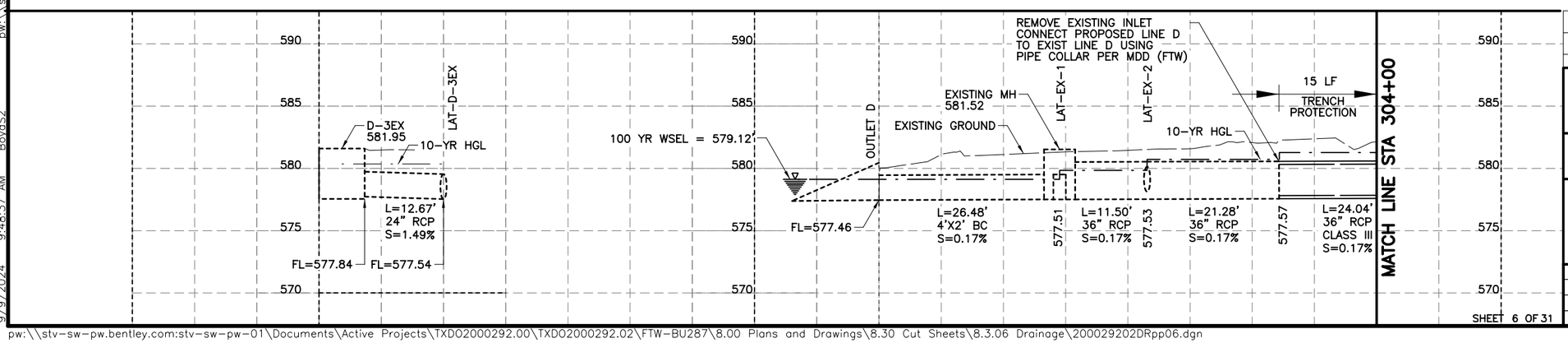
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 300+00 TO STA 302+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		192

SHEET 5 OF 31





10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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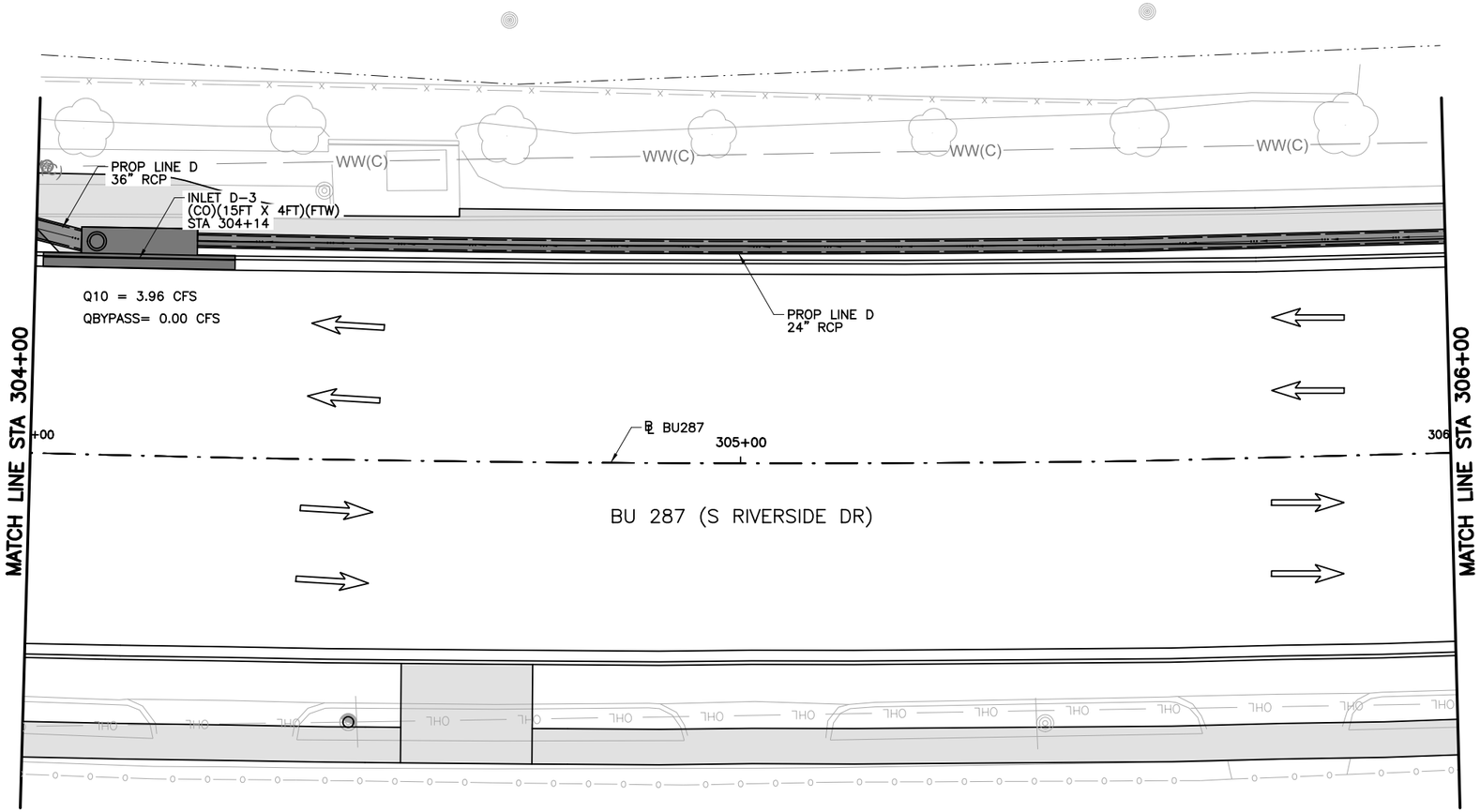
NO.	REVISION	BY	DATE

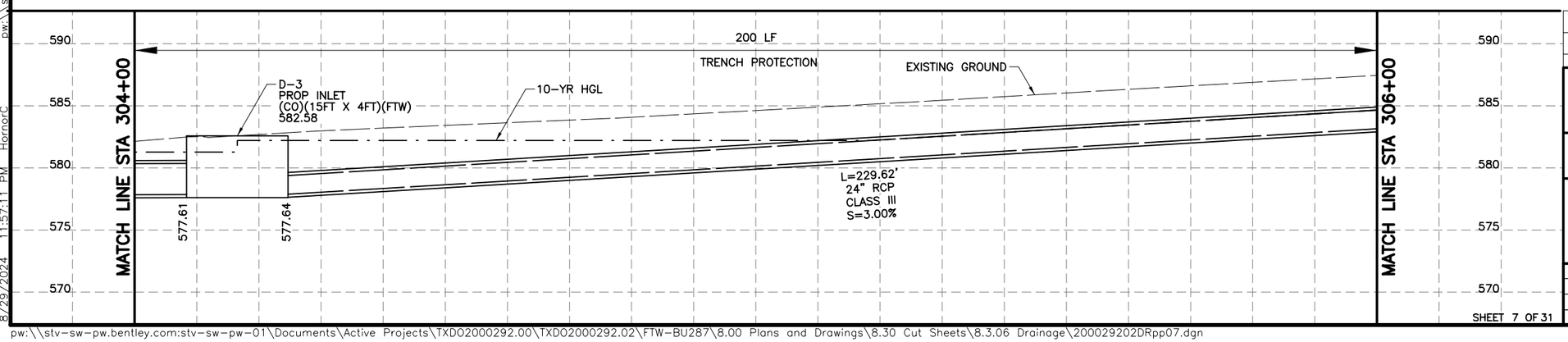
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 302+00 TO STA 304+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		193

SHEET 6 OF 31





N

10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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PROFESSIONAL ENGINEER

8/30/2024

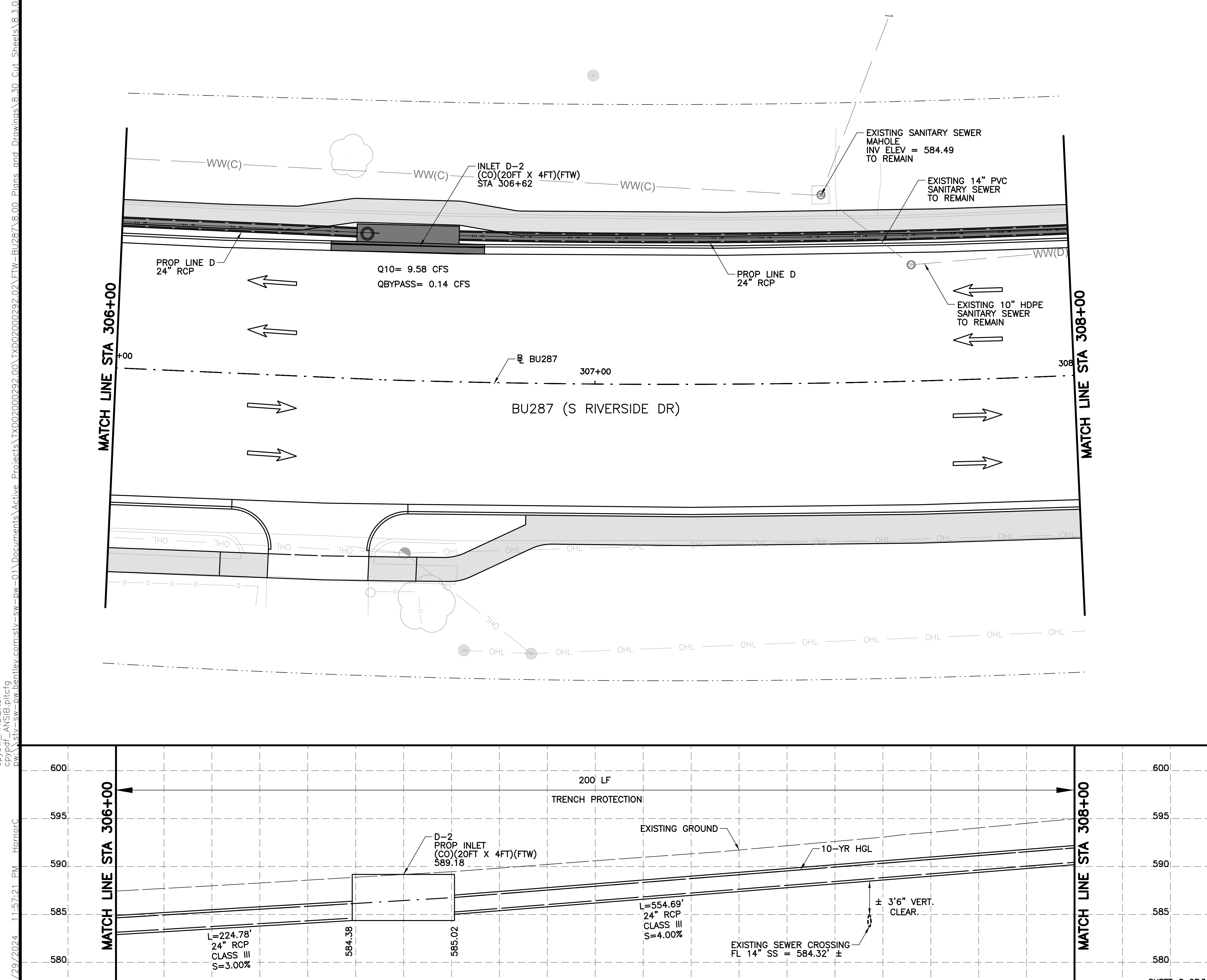
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 304+00 TO STA 306+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	194
Checked:	STV						

SHEET 7 OF 31



N

10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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8/30/2024

NO.	REVISION	BY	DATE

stv
TEXAS REGISTERED ENGINEERING FIRM F-1741

 Texas Department of Transportation

FORT WORTH SIDEWALK IMPROVEMENTS
DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 306+00 TO STA 308+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	195

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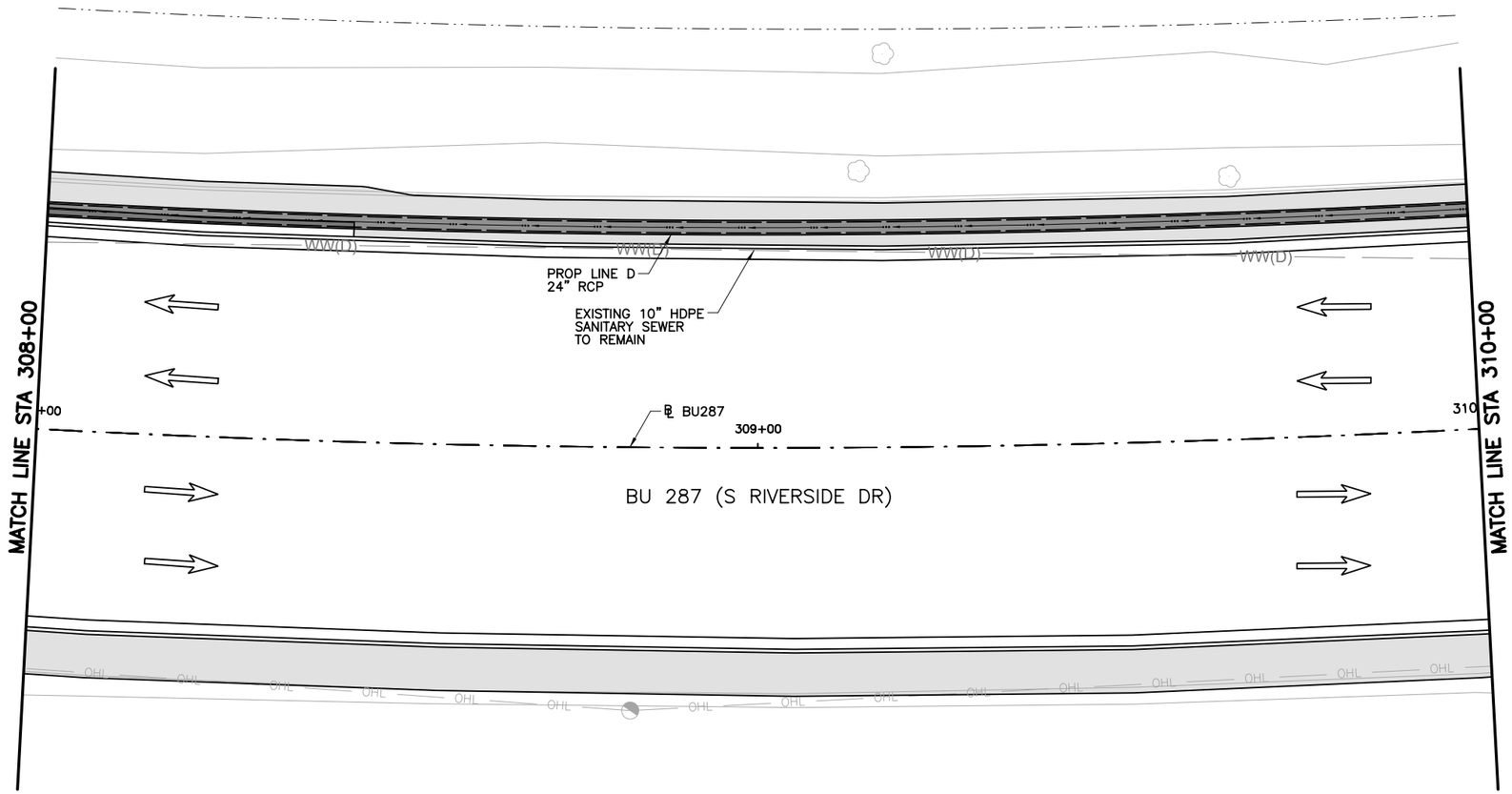

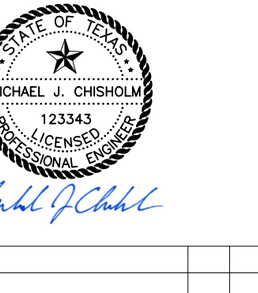

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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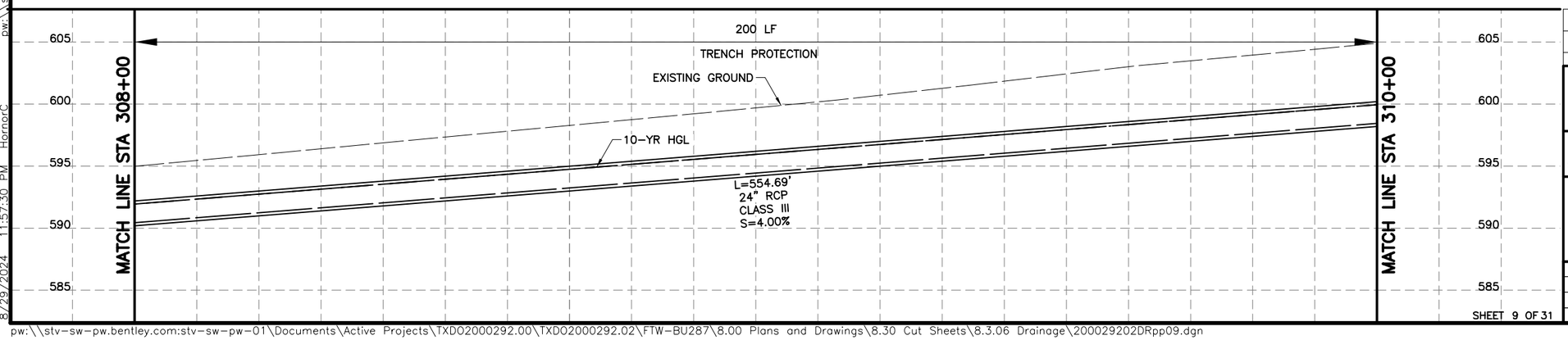
8/30/2024



NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 308+00 TO STA 310+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		196

SHEET 9 OF 31

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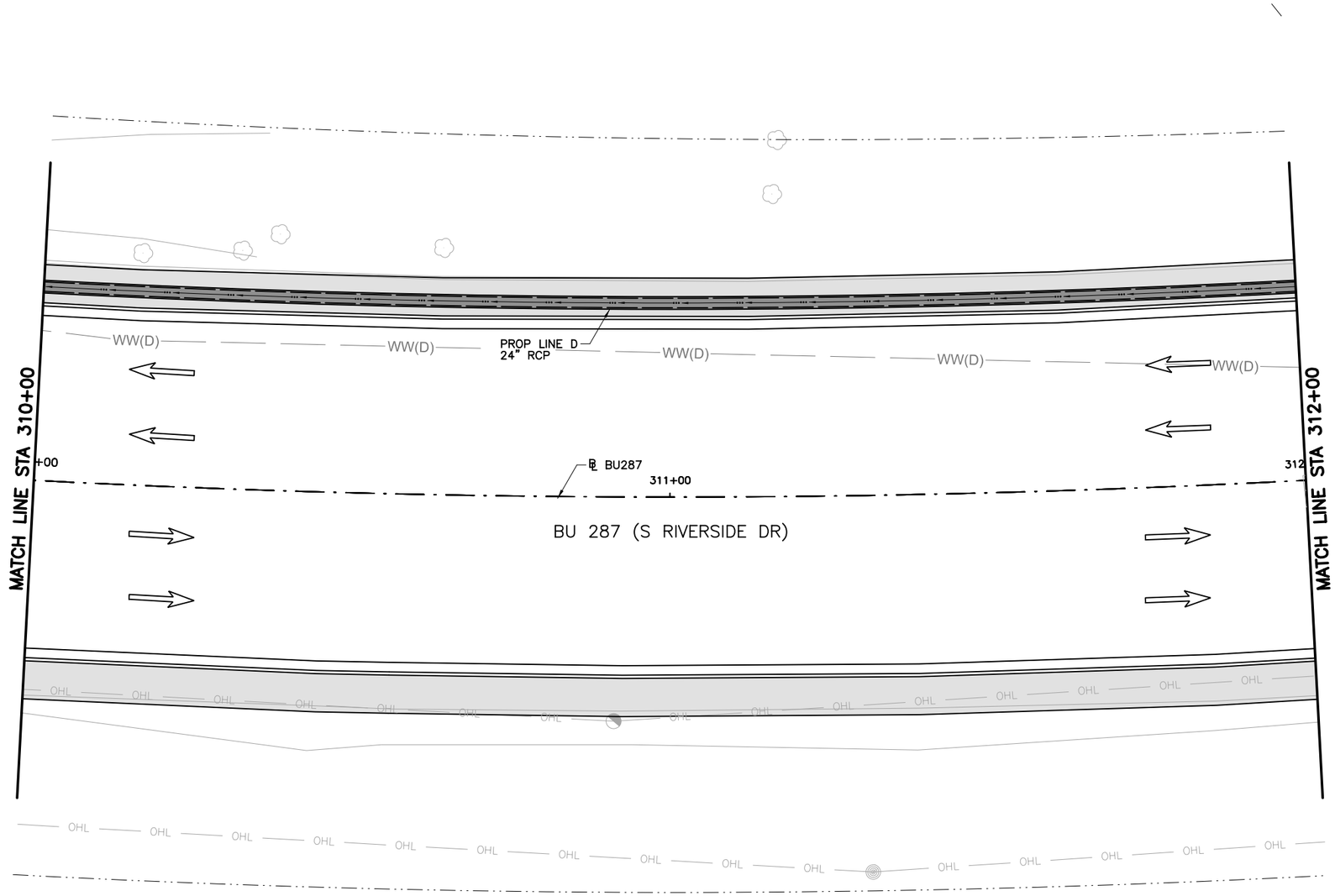
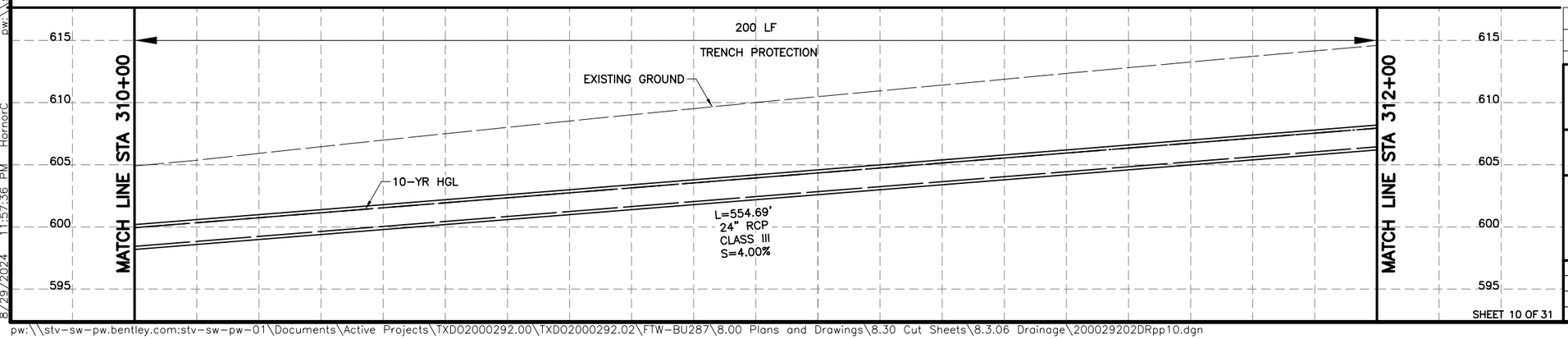
8/29/2024 11:57:30 PM HornorC

pw:\\stv-sw-pw.bentley.com:stv-sw-pw-01\Documents\Active Projects\TXDO2000292.00\TXDO2000292.02\FTW-BU287\8.00 Plans and Drawings\8.30 Cut Sheets\8.3.06 Drainage\200029202DRpp09.dgn





N

10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

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PROFESSIONAL ENGINEER
8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

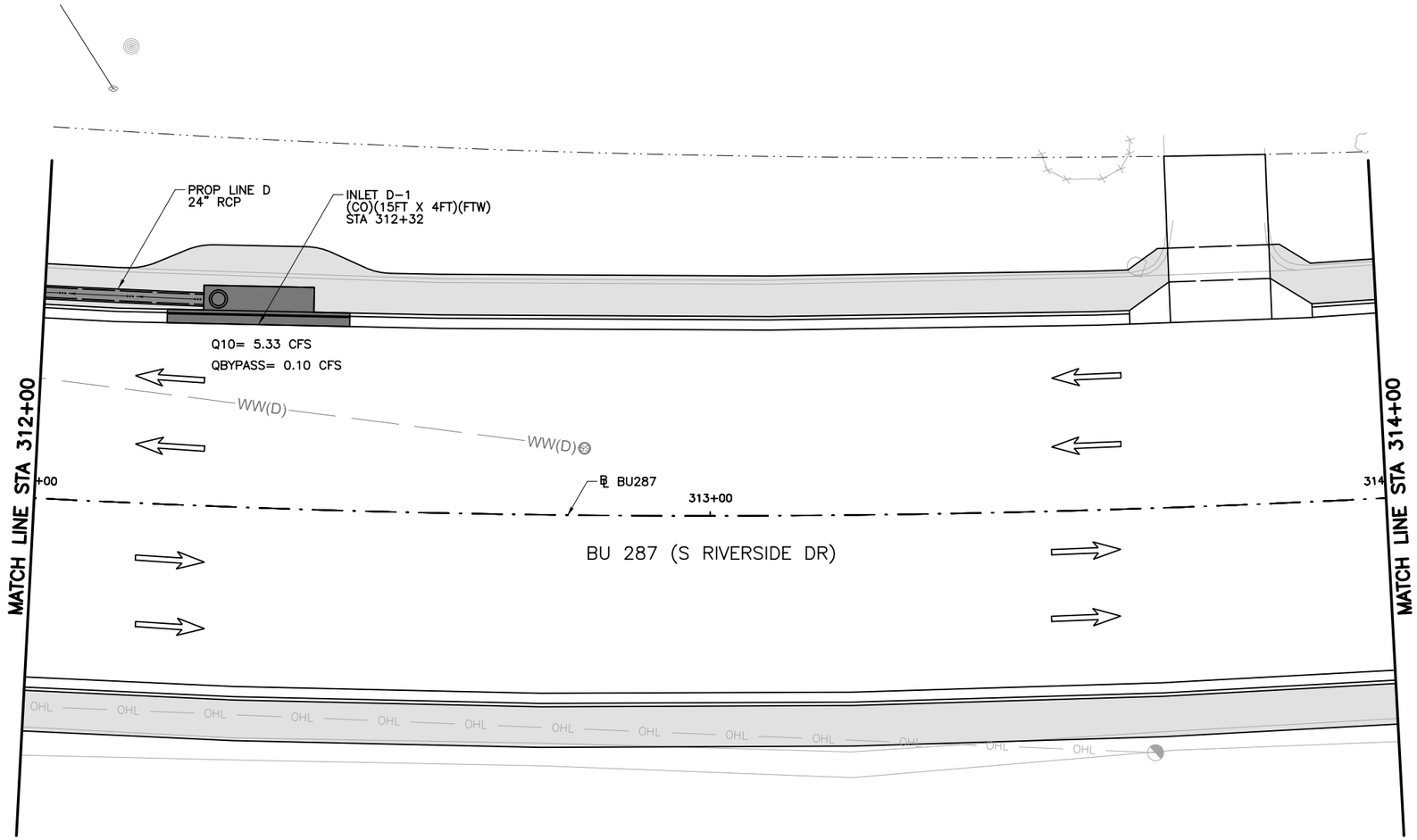
FORT WORTH SIDEWALK IMPROVEMENTS

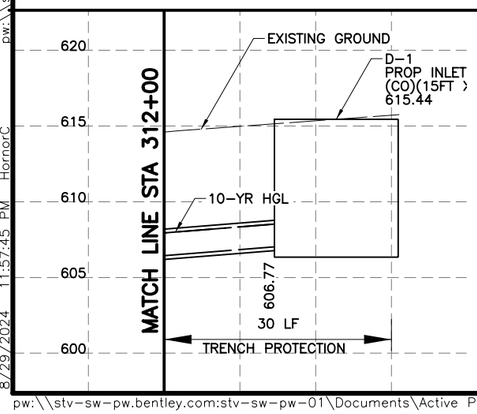
DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.

STA 310+00 TO STA 312+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		197

SHEET 10 OF 31





N

SCALE HORIZ. FEET: 10 5 0 10 20

SCALE VERT. FEET: 5 2.5 0 5 10

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

1. REFER TO DRAINAGE DETAILS FOR ADDITIONAL DRAINAGE INFORMATION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO EXCAVATION. THE LOCATION AND DEPTH OF ALL UTLITIES SHOW IN THE PLANS ARE APPROXIMATE AND THERE MAY BE OTHER UNKOWN UTILITIES NOT SHOWN IN THE PLANS. ALL EXISTING UTILITIES SHALL BE FIELD VERIFIED AND PROTECTED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE ANY UTILITIES DAMAGED AT THE CONTRACTORS EXPENSE.

STATE OF TEXAS
MICHAEL J. CHISHOLM
123343
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

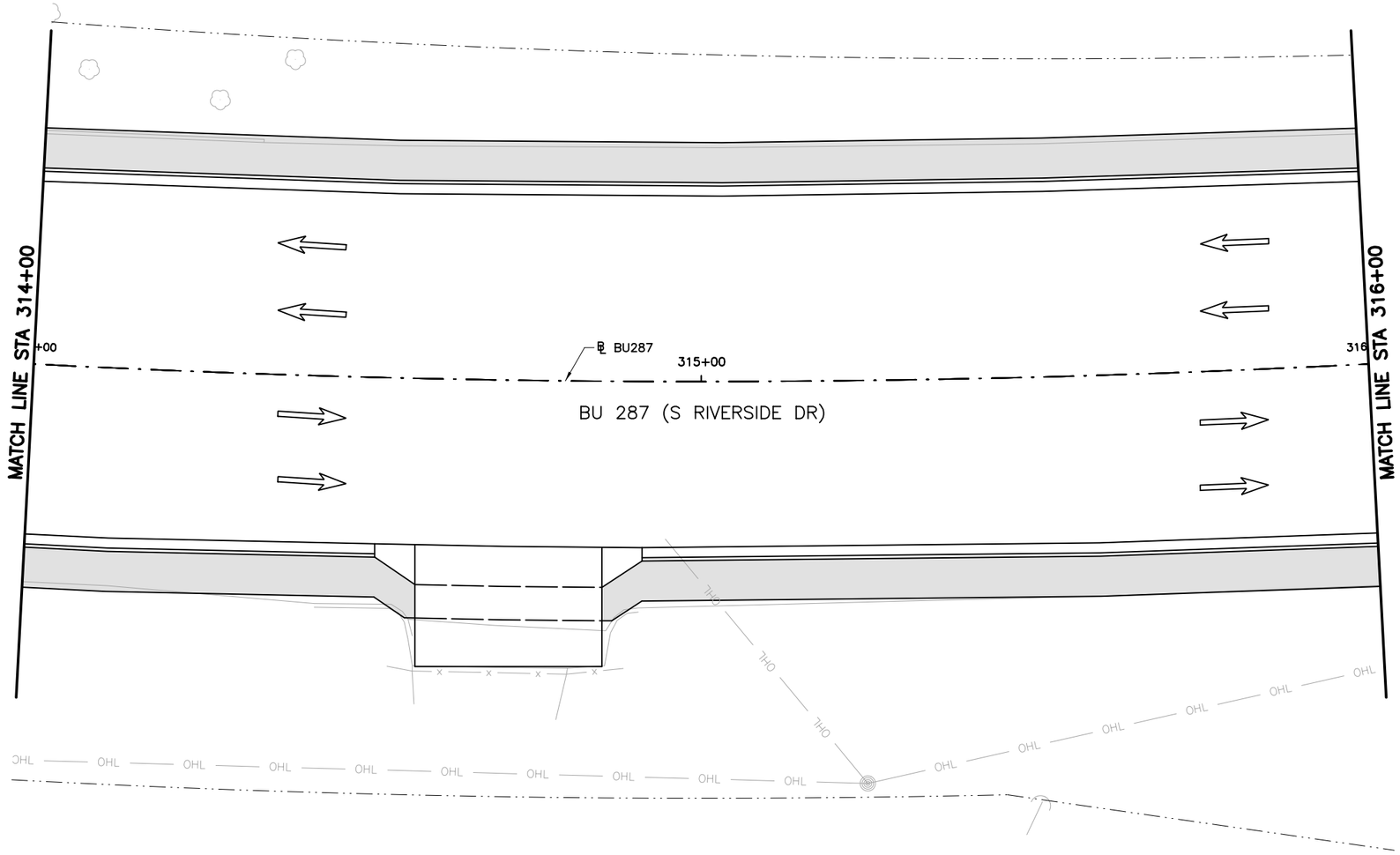
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 312+00 TO STA 314+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	198
Checked:	STV						

SHEET 11 OF 31

NO PROPOSED DRAINAGE ON THIS SHEET



10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

8/30/2024

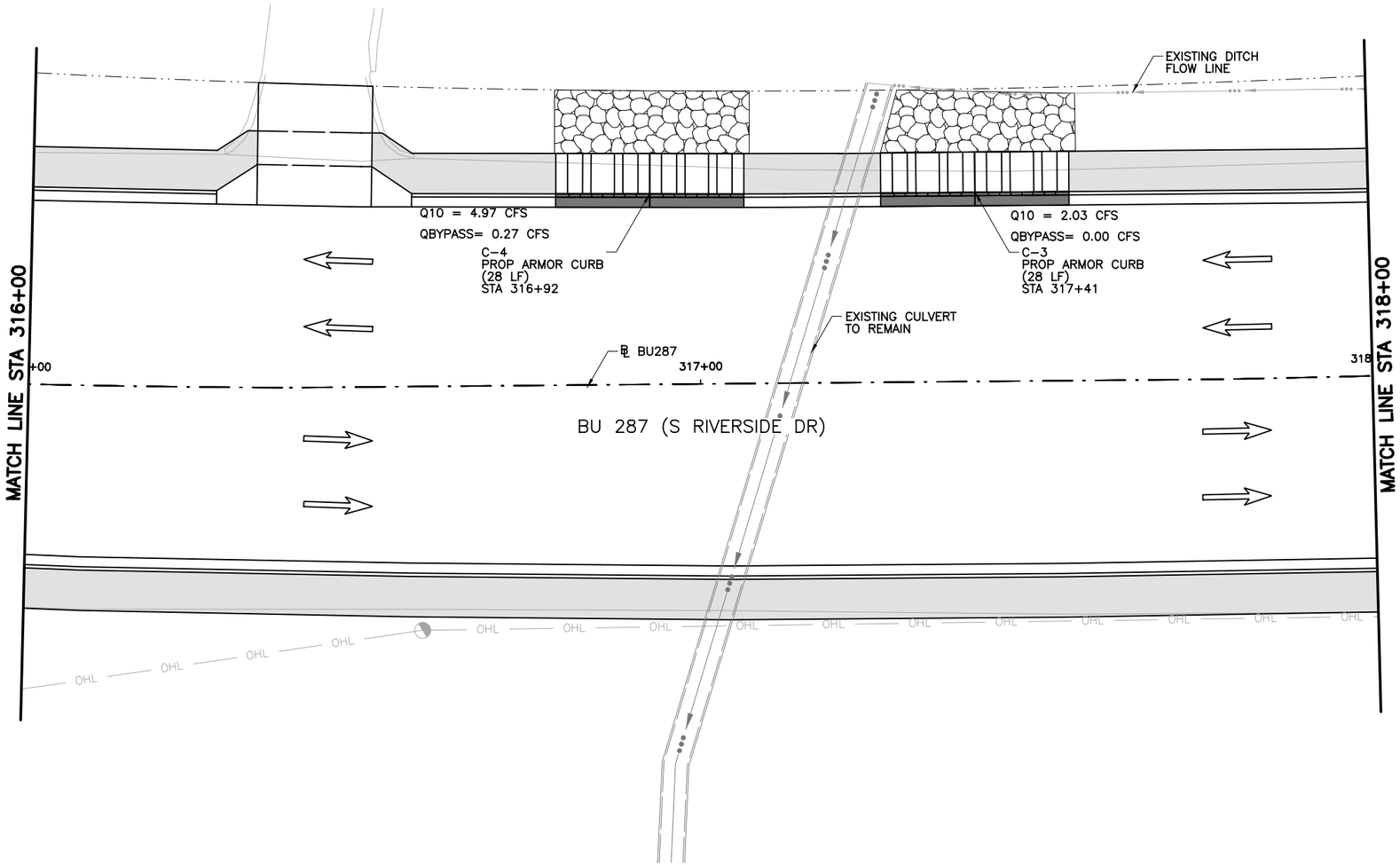
NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS
DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 314+00 TO STA 316+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		199

SHEET 12 OF 31



10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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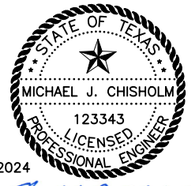


8/30/2024

NO.	REVISION	BY	DATE

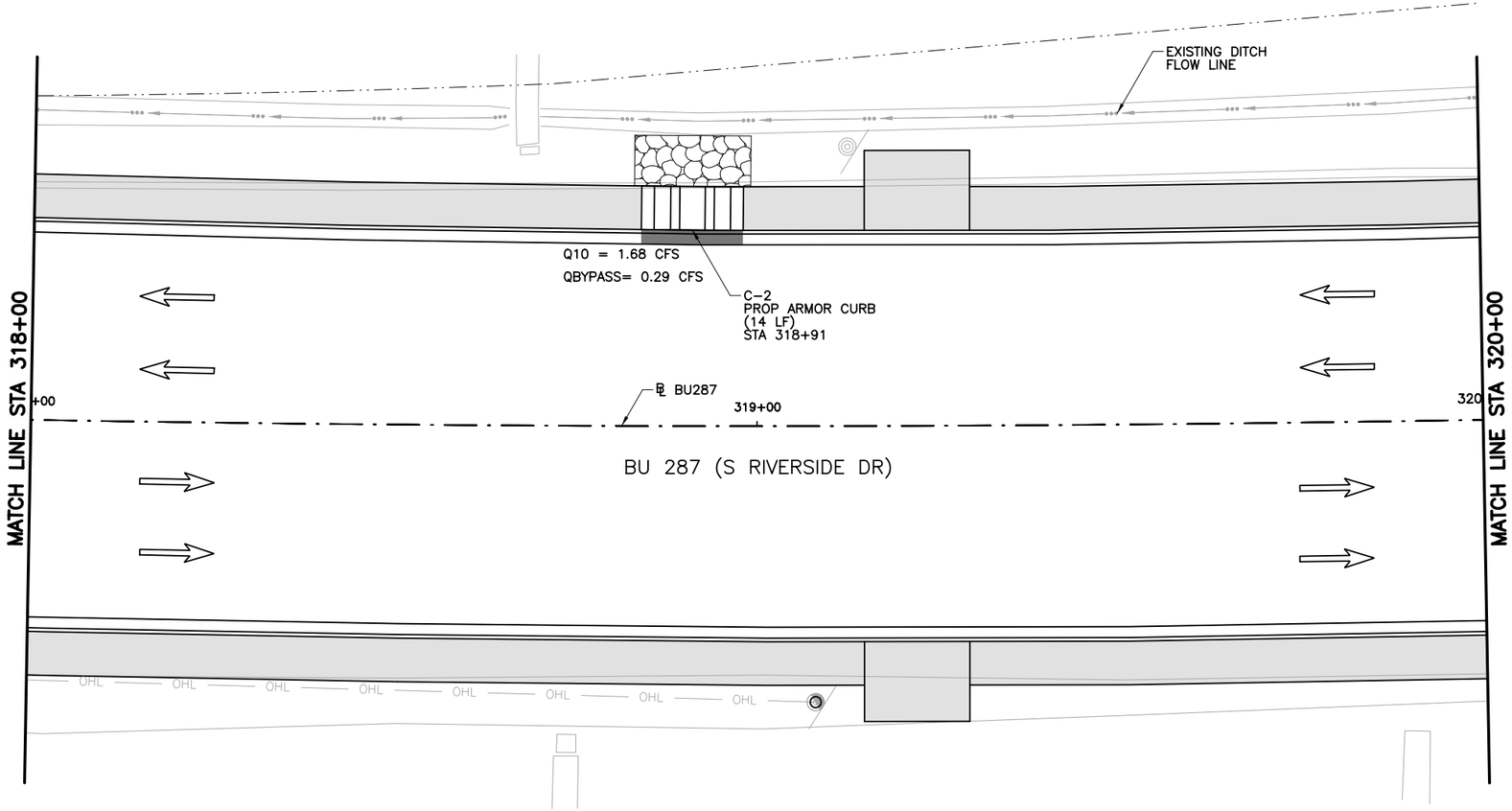
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 316+00 TO STA 318+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		200

SHEET 13 OF 31



10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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STATE OF TEXAS
MICHAEL J. CHISHOLM
123343
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

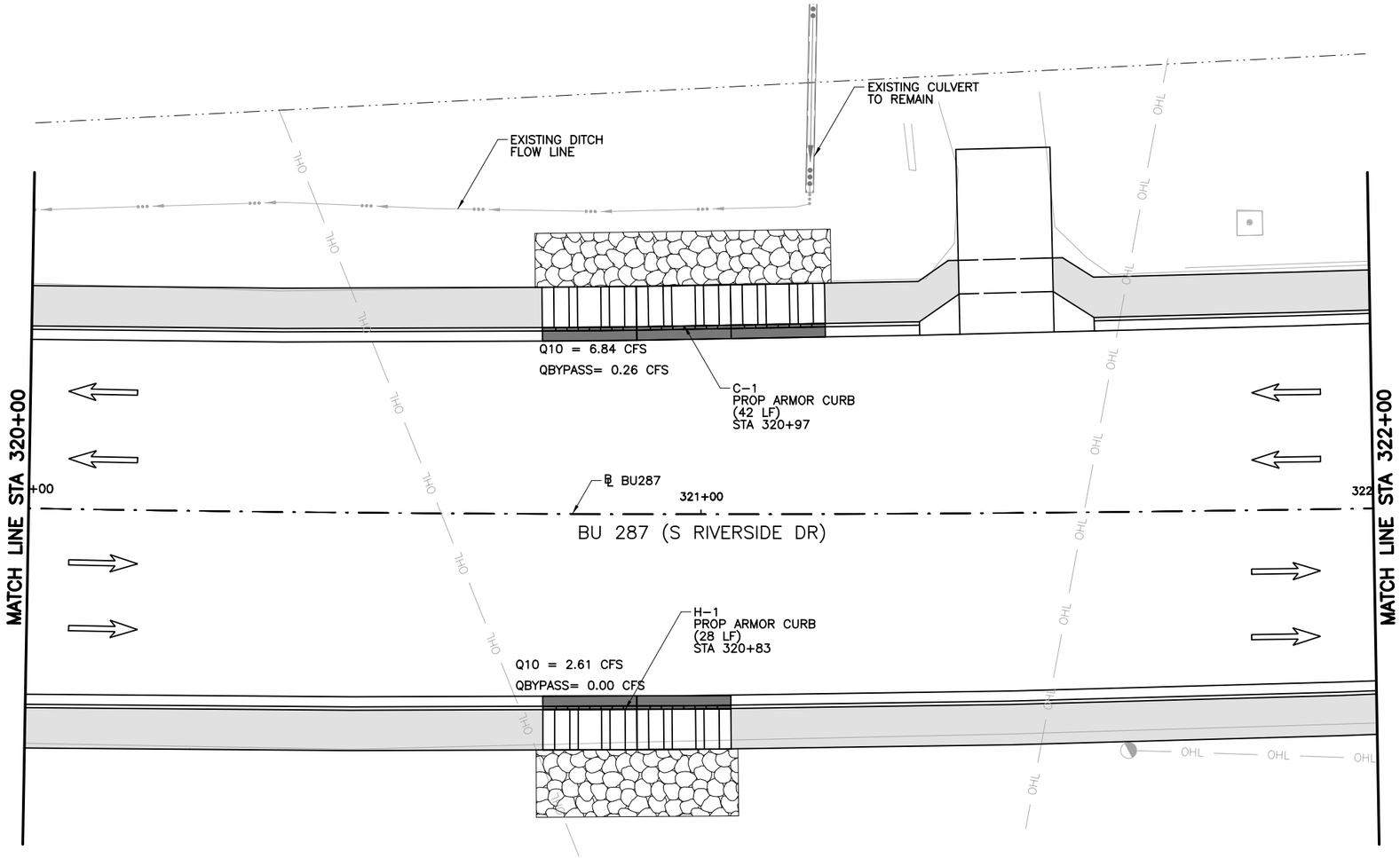
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 318+00 TO STA 320+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	201

SHEET 14 OF 31



10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

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8/30/2024

NO.	REVISION	BY	DATE

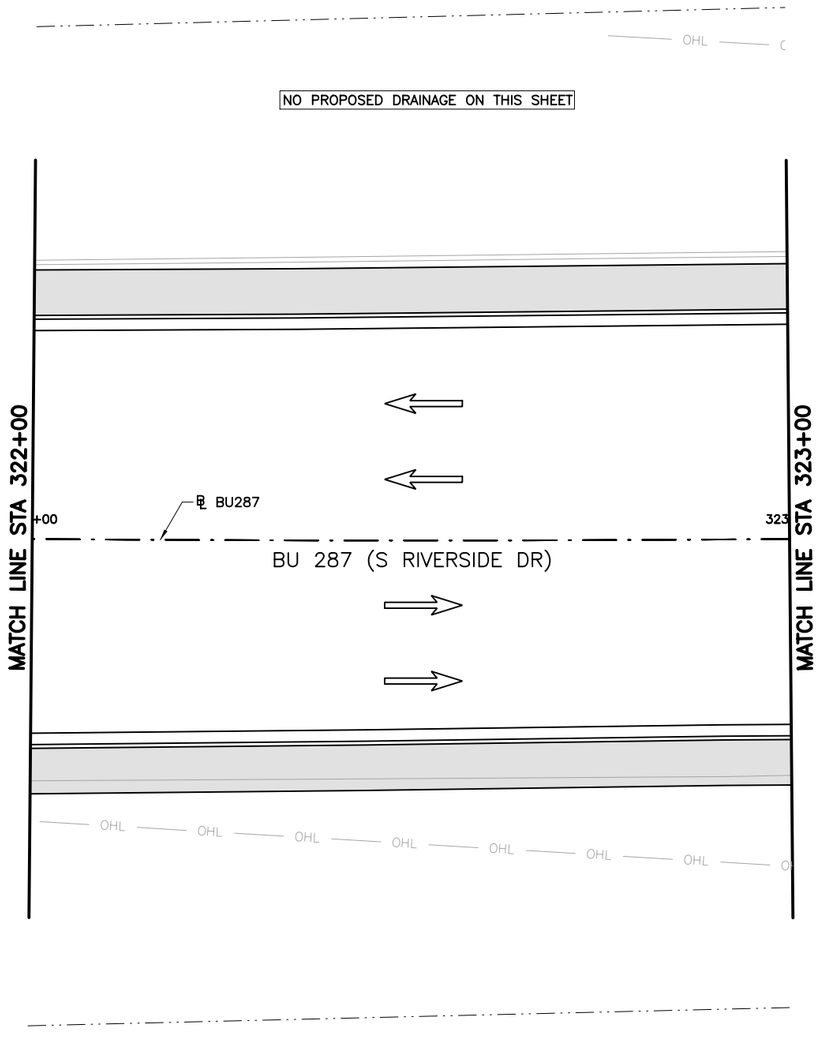
TEXAS REGISTERED ENGINEERING FIRM F-1741

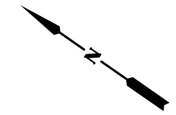
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 320+00 TO STA 322+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	202	

SHEET 15 OF 31





10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

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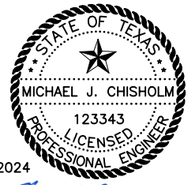


8/30/2024

NO.	REVISION	BY	DATE

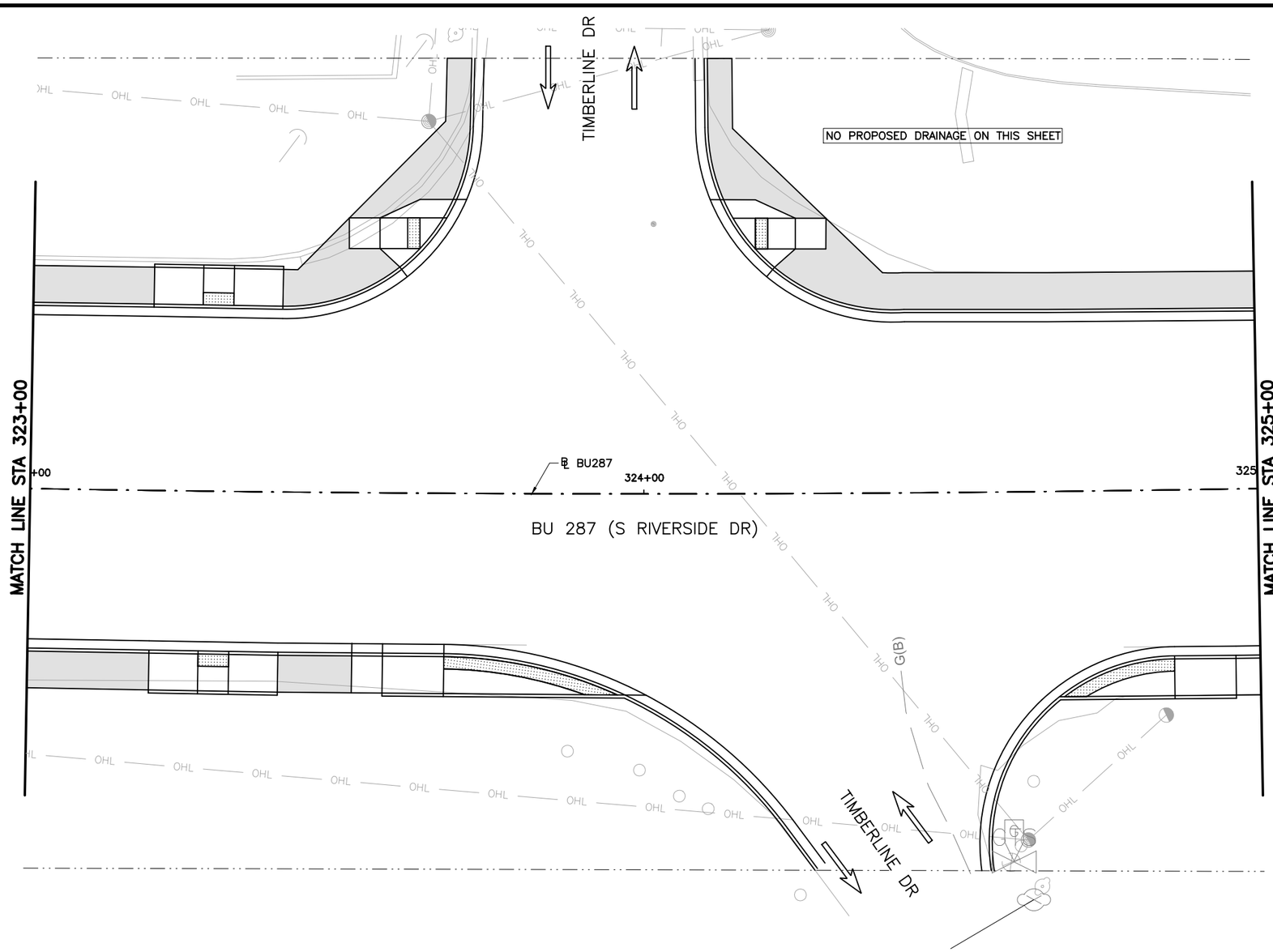
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 322+00 TO STA 323+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		203

SHEET 16 OF 31



10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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STATE OF TEXAS
MICHAEL J. CHISHOLM
123343
LICENSED PROFESSIONAL ENGINEER
8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 323+00 TO STA 325+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		204

SHEET 17 OF 31

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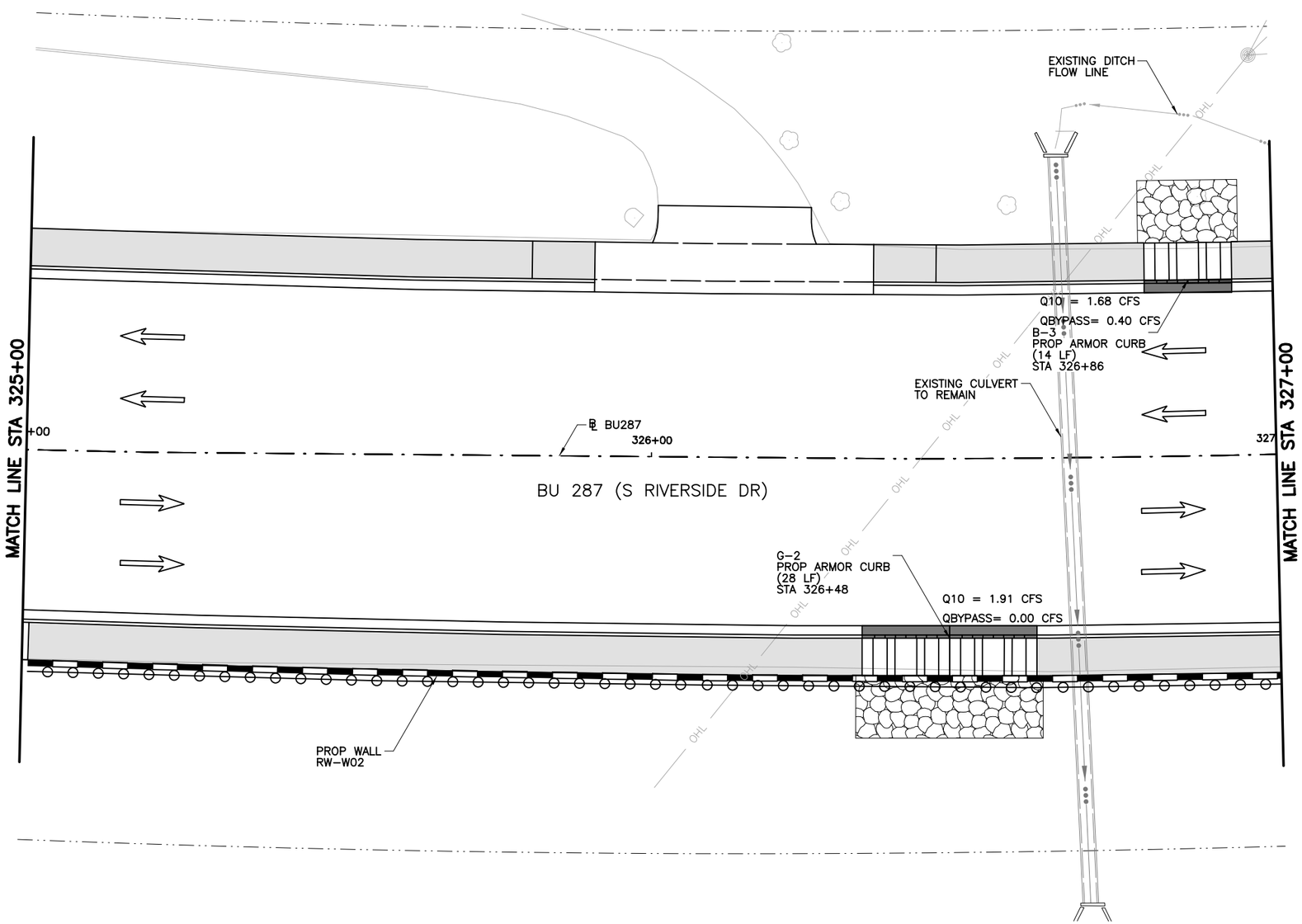

10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

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NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 325+00 TO STA 327+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.	
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287	
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	205	

SHEET 18 OF 31

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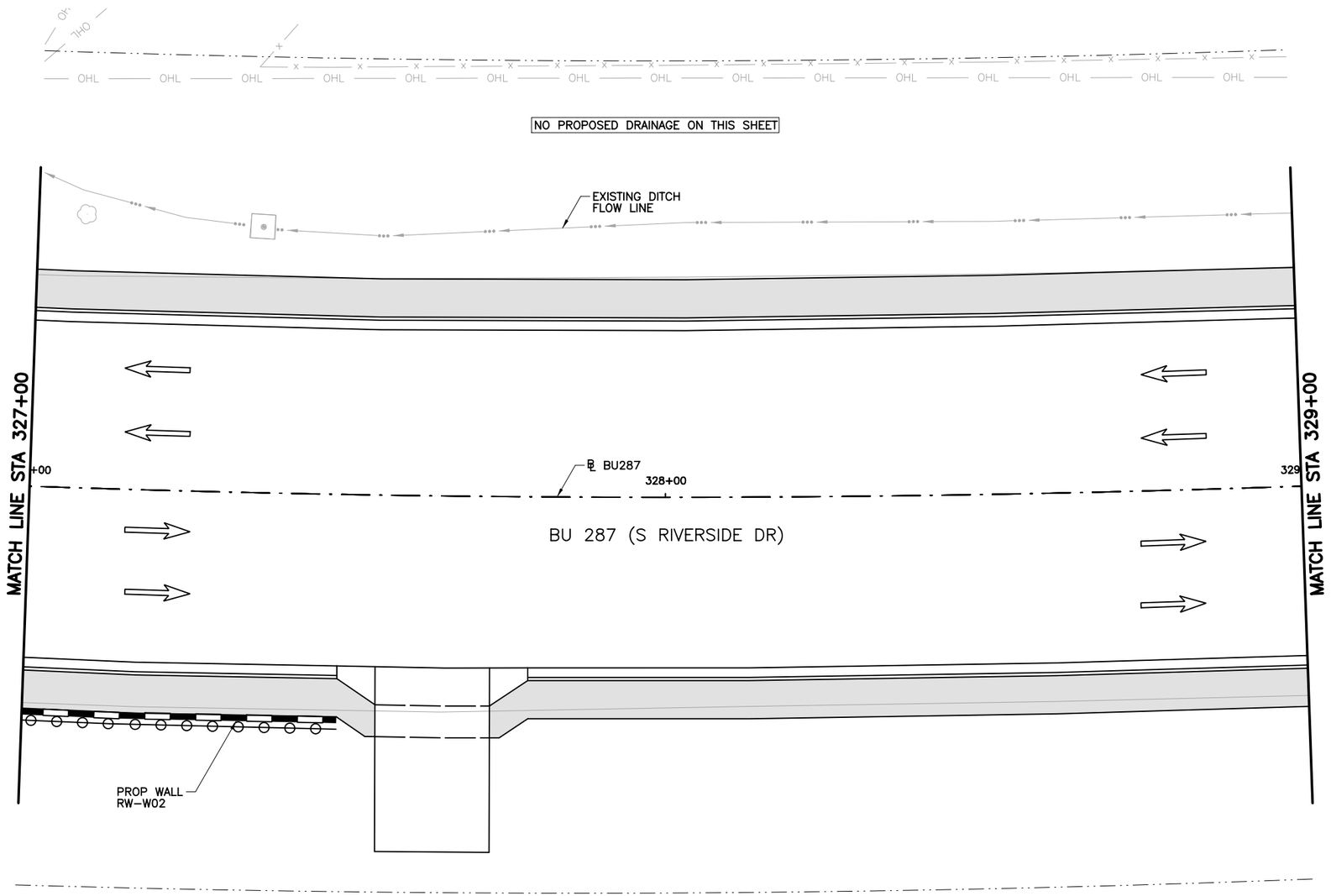

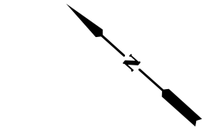

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

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8/30/2024

NO.	REVISION	BY	DATE

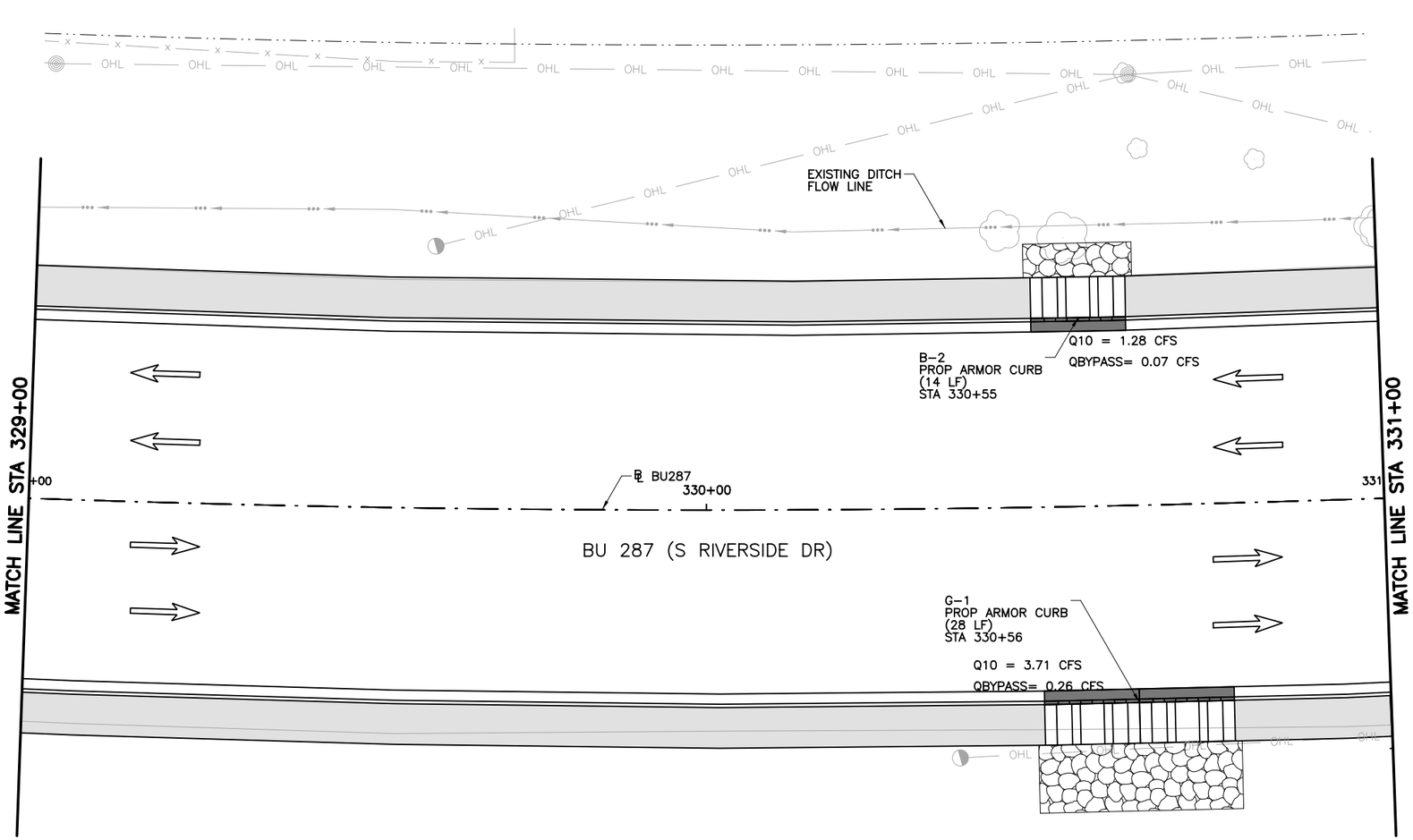
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 327+00 TO STA 329+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		206

SHEET 19 OF 31



N

10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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STATE OF TEXAS
MICHAEL J. CHISHOLM
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LICENSED
PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

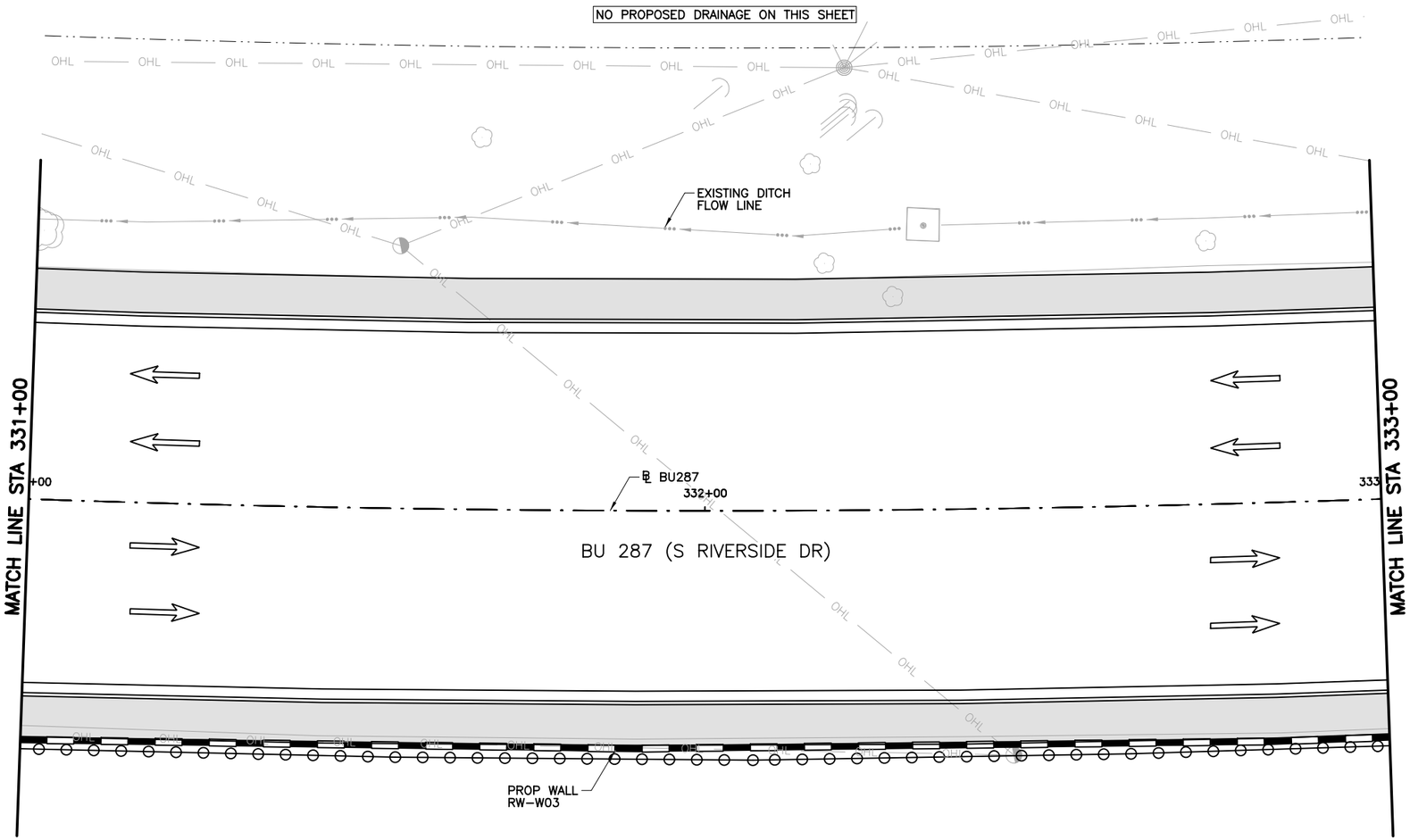
TEXAS REGISTERED ENGINEERING FIRM F-1741

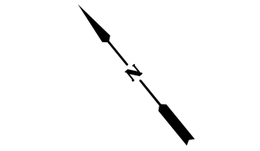
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 329+00 TO STA 331+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		207

SHEET 20 OF 31





LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 331+00 TO STA 333+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	208
Checked:	STV						

SHEET 21 OF 31

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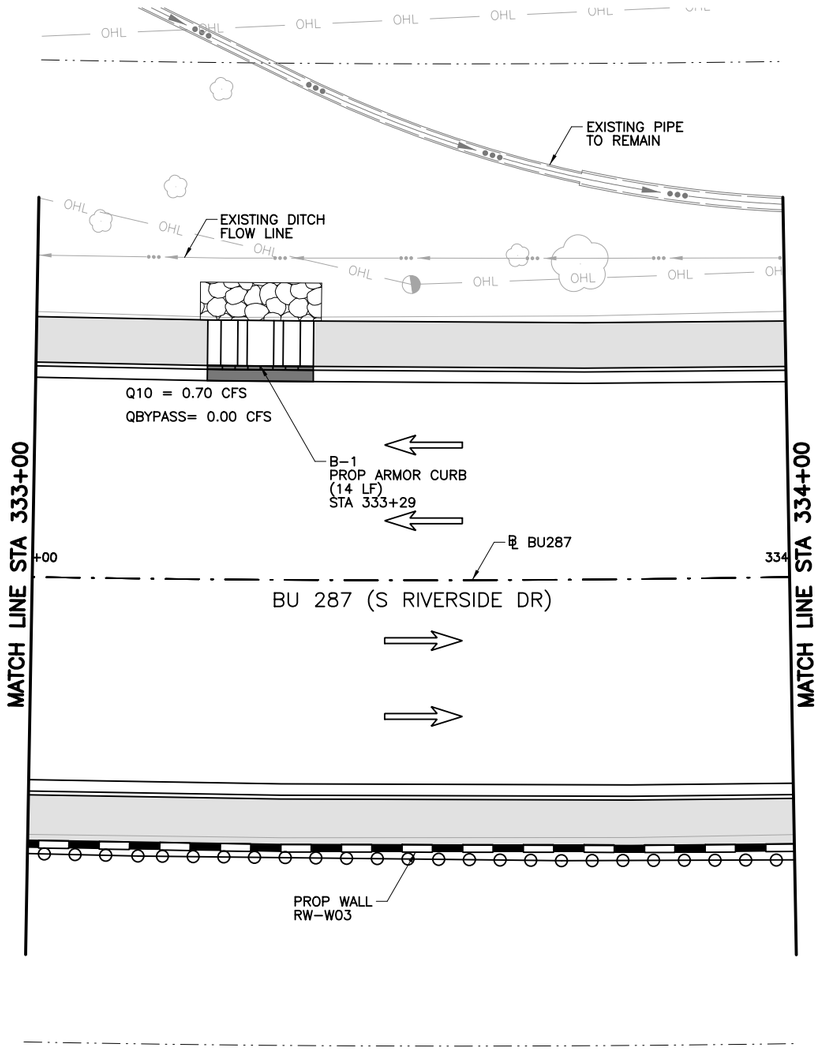

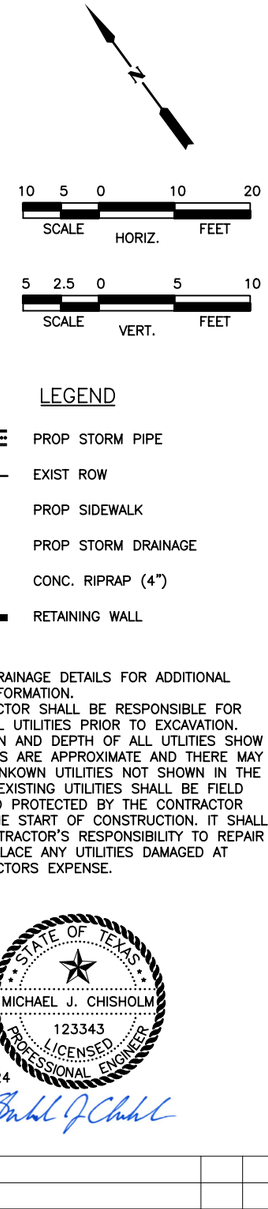

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

1. REFER TO DRAINAGE DETAILS FOR ADDITIONAL DRAINAGE INFORMATION.
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STATE OF TEXAS
MICHAEL J. CHISHOLM
123343
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

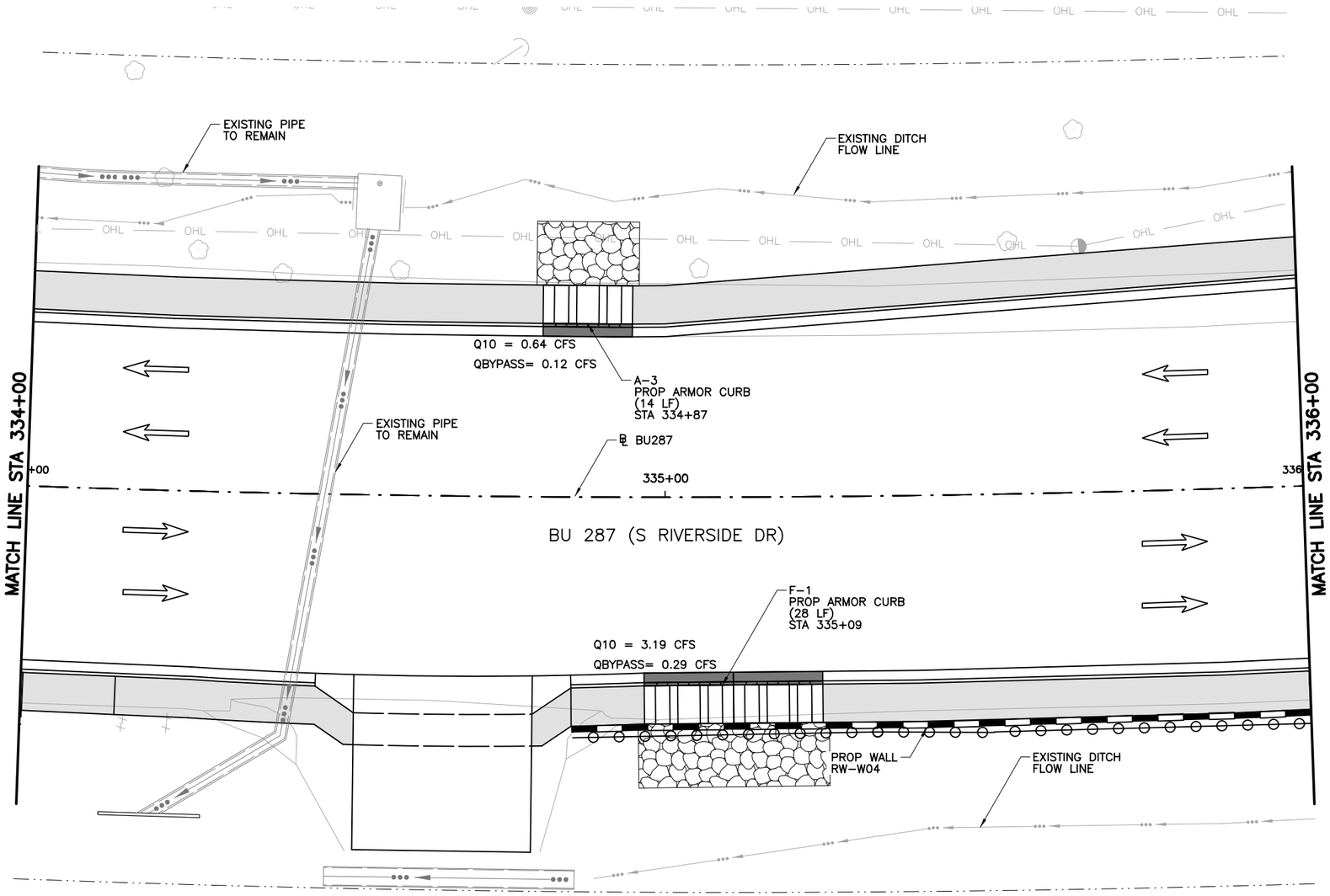
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 333+00 TO STA 334+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		209

SHEET 22 OF 31



N

10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

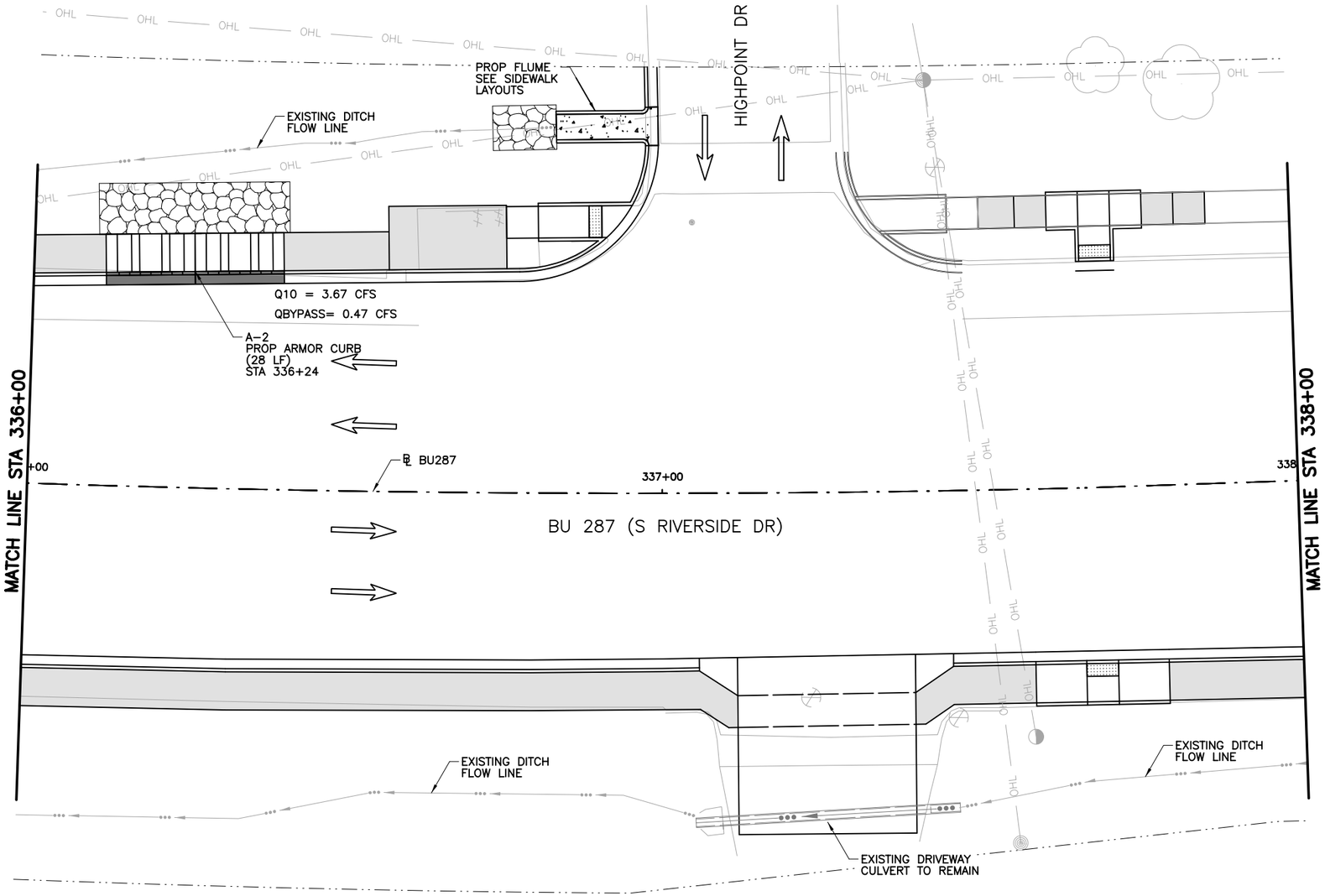
TEXAS REGISTERED ENGINEERING FIRM F-1741

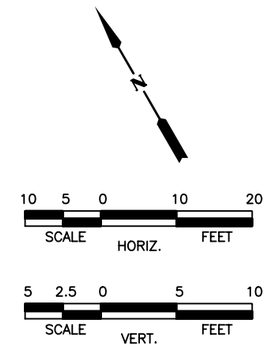
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 334+00 TO STA 336+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	210

SHEET 23 OF 31





LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

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8/30/2024

NO.	REVISION	BY	DATE

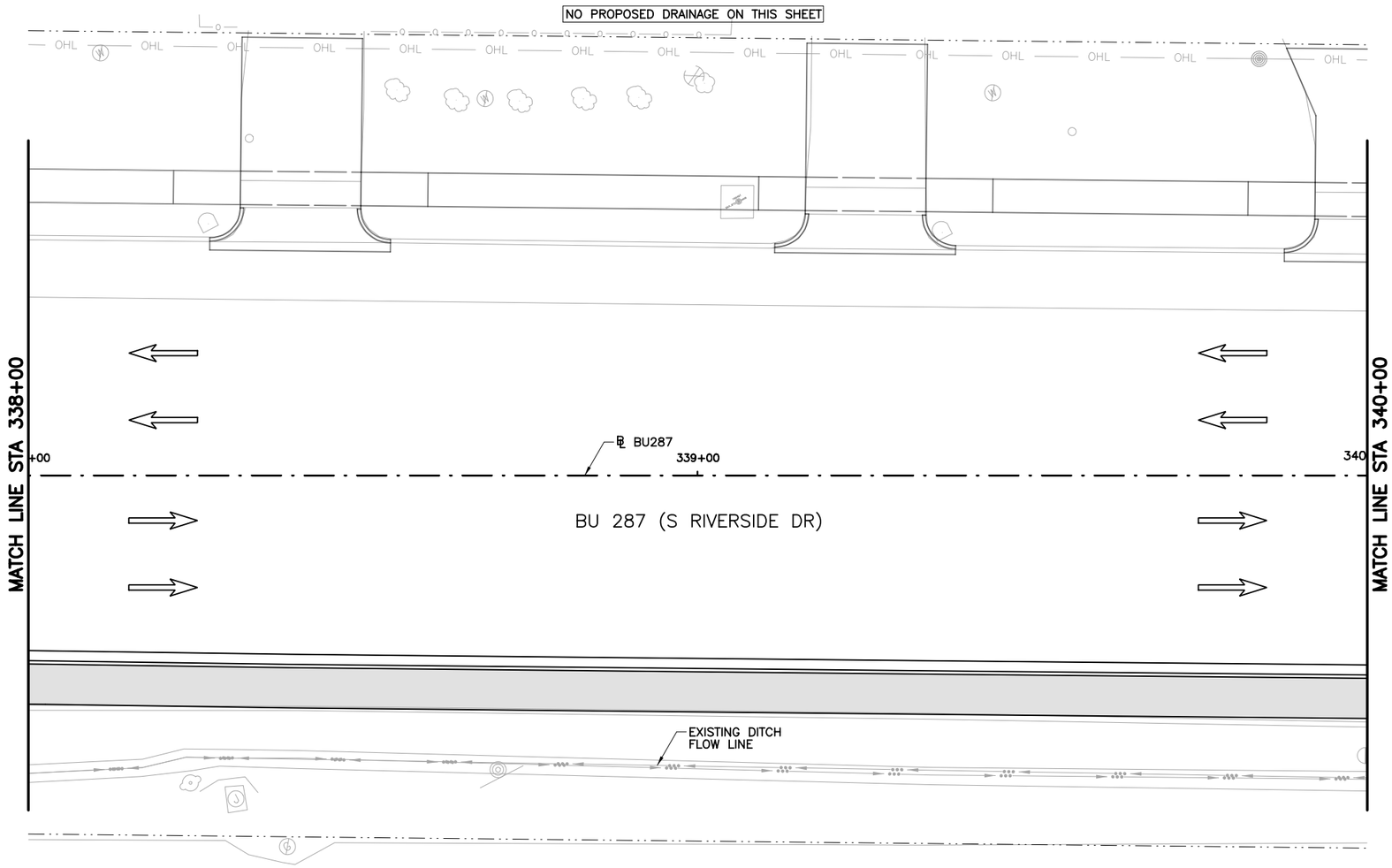
TEXAS REGISTERED ENGINEERING FIRM F-1741

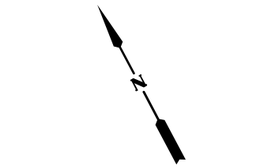
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 336+00 TO STA 338+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		211

SHEET 24 OF 31





LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 338+00 TO STA 340+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	212
Checked:	STV						

SHEET 25 OF 31

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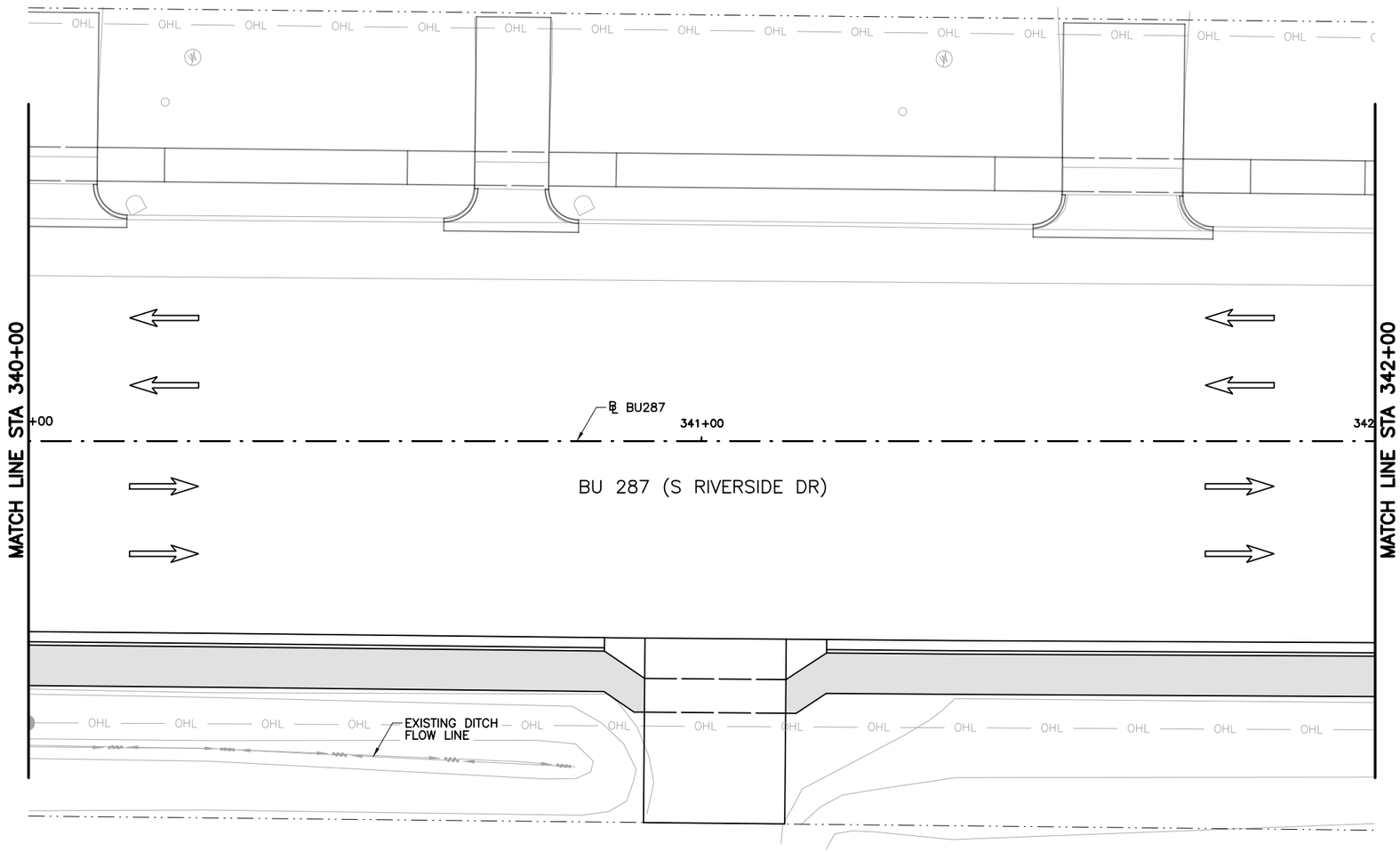
NO PROPOSED DRAINAGE ON THIS SHEET



LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 340+00 TO STA 342+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		213

SHEET 26 OF 31

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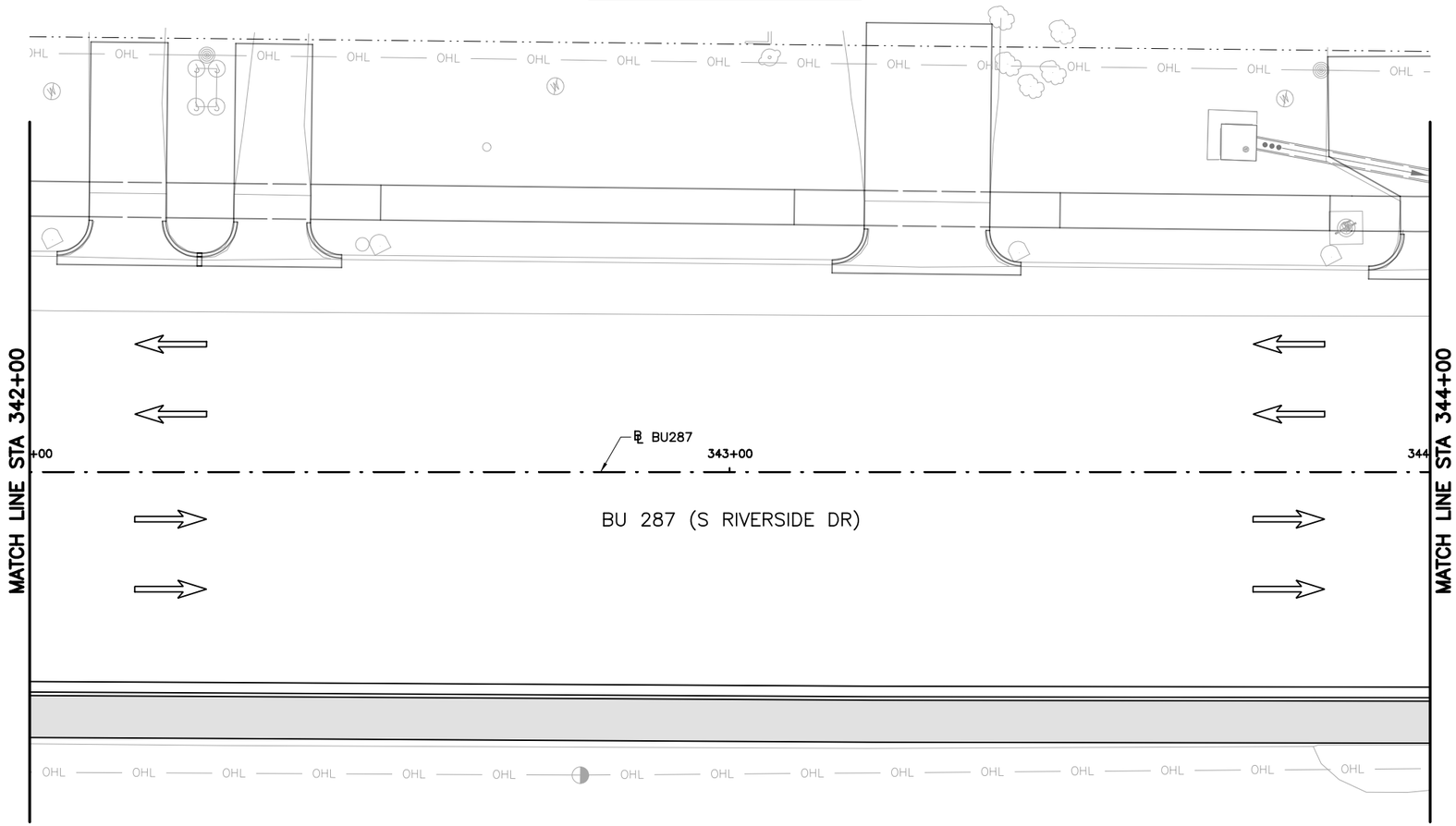
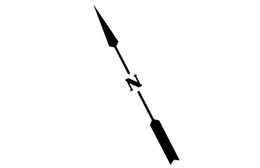
NO PROPOSED DRAINAGE ON THIS SHEET





LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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STATE OF TEXAS
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PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

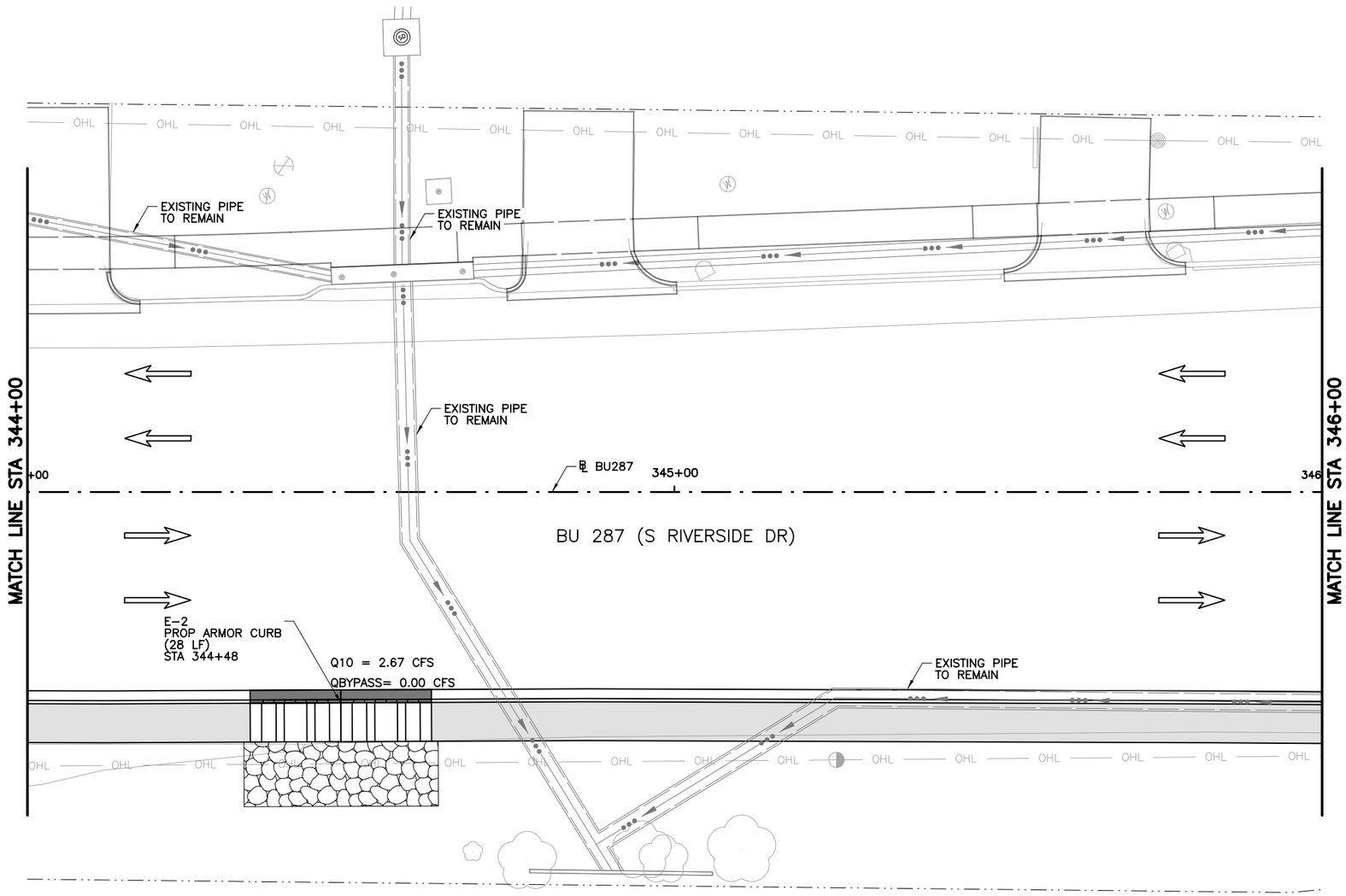
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.

STA 342+00 TO STA 344+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		214

SHEET 27 OF 31



N

10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

NOTES:

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STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

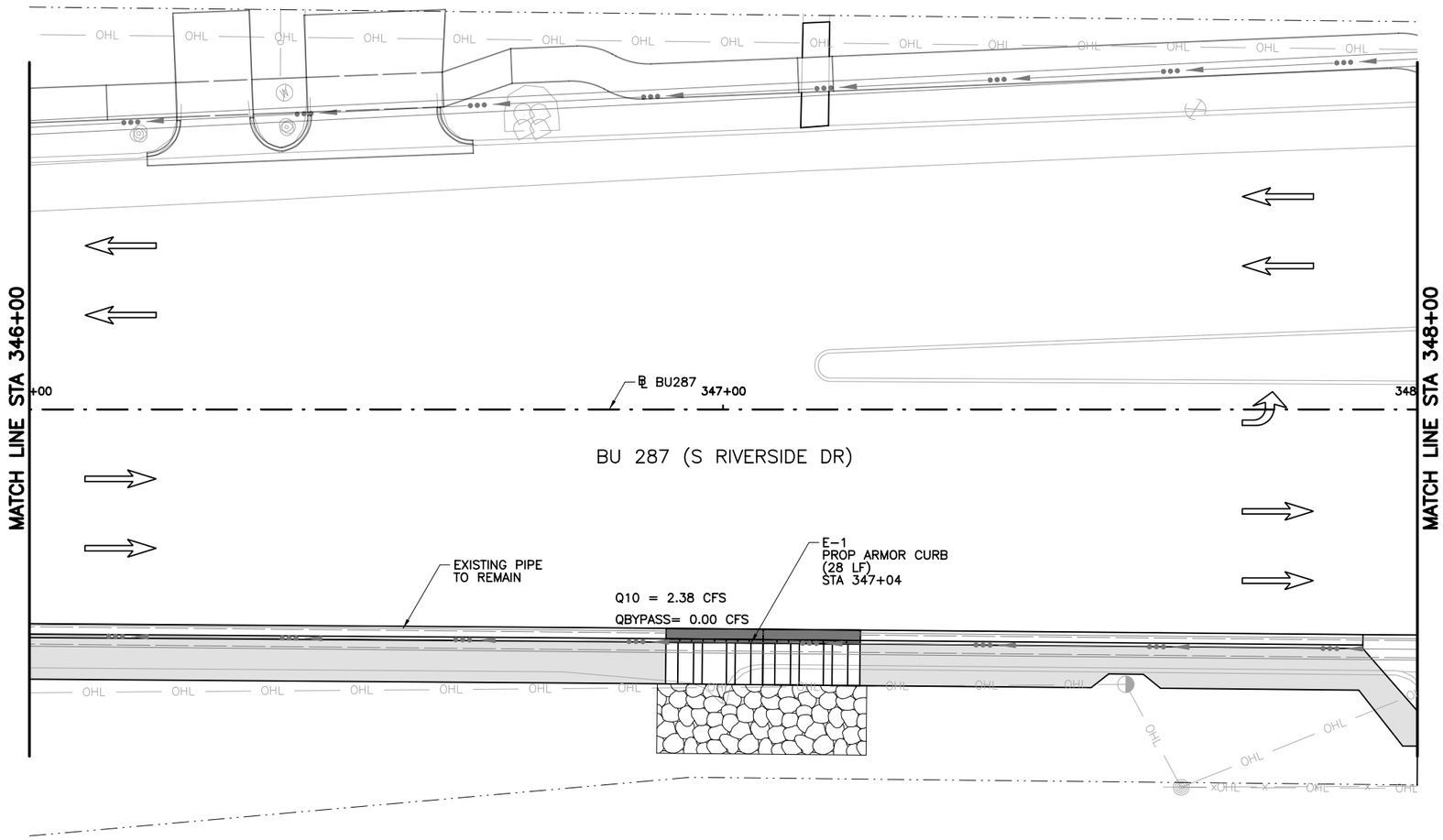
TEXAS REGISTERED ENGINEERING FIRM F-1741

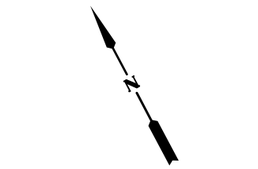
FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 344+00 TO STA 346+00

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	215
Checked:	STV						

SHEET 28 OF 31





LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

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NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

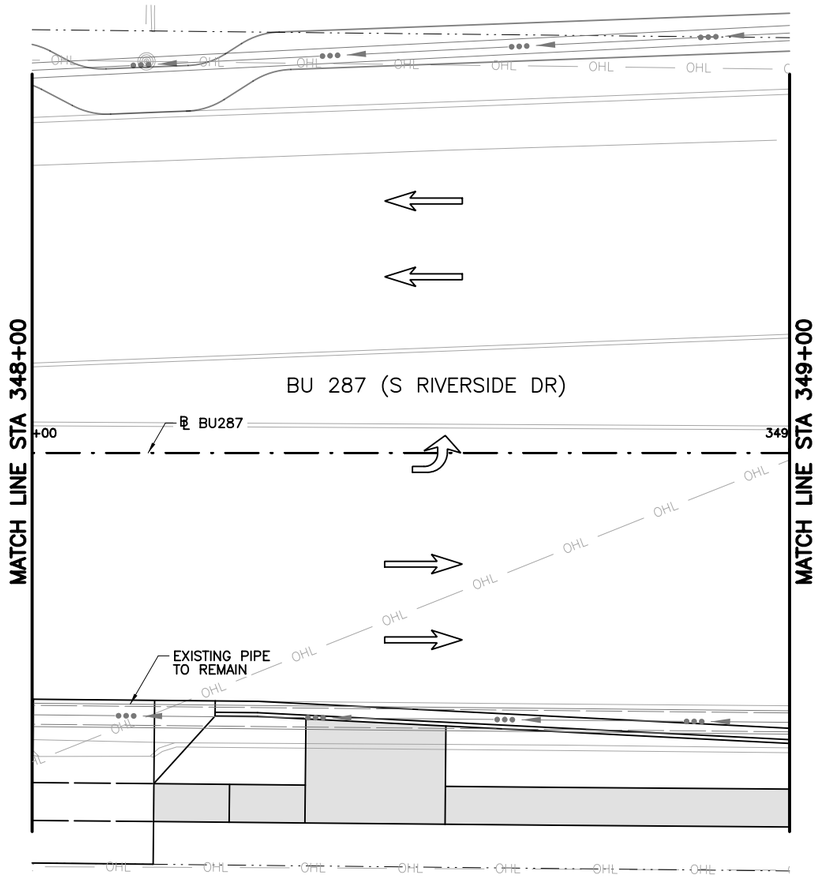
FORT WORTH SIDEWALK IMPROVEMENTS

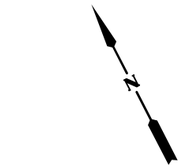
DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 346+00 TO STA 348+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		216

SHEET 29 OF 31

NO PROPOSED DRAINAGE ON THIS SHEET





10 5 0 10 20
SCALE FEET
HORIZ.

5 2.5 0 5 10
SCALE FEET
VERT.

LEGEND

- PROP STORM PIPE
- EXIST ROW
- PROP SIDEWALK
- PROP STORM DRAINAGE
- CONC. RIPRAP (4")
- RETAINING WALL

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NO.	REVISION	BY	DATE

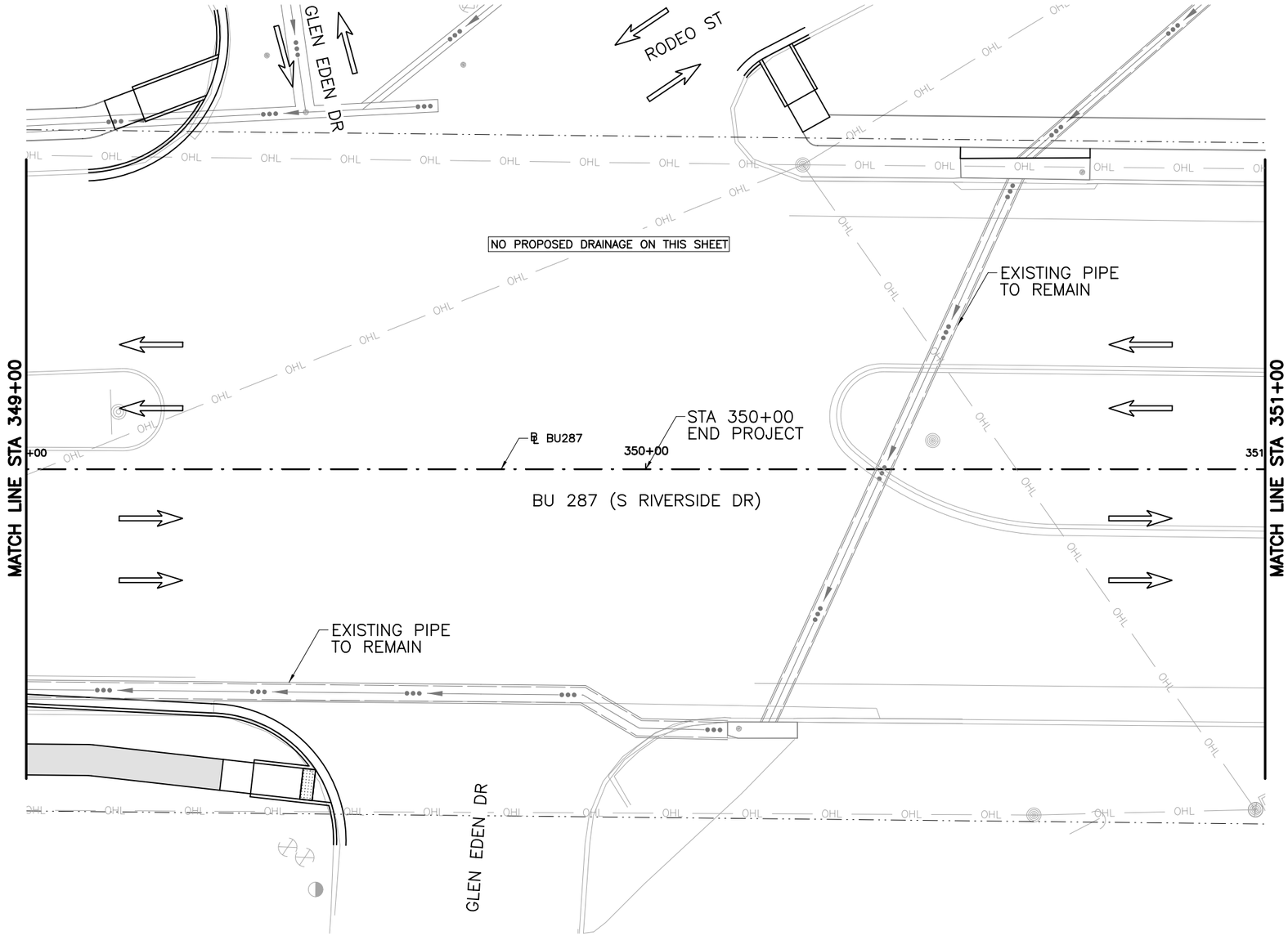
TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 348+00 TO STA 349+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.				HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET				BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC		217

SHEET 30 OF 31



N

10 5 0 10 20
SCALE HORIZ. FEET

5 2.5 0 5 10
SCALE VERT. FEET

LEGEND

- PROP STORM PIPE
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TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE PLAN
BUSINESS 287
S RIVERSIDE DR.
STA 349+00 TO STA 351+00

Designed:	STV	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Checked:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Drawn:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Checked:	STV	FTW	TARRANT	0172	01	055,ETC	218

SHEET 31 OF 31

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RUNOFF SUMMARY FOR DRAINAGE AREAS SMALL THAN 200 ACRES USING THE RATIONAL METHOD

DRAINAGE AREA NO.	ACRES	SUBAREAS (AC) SUBAREA 1 AREA (AC)	C	LAND USE	SUBAREAS (AC) SUBAREA 2 AREA (AC)	C	LAND USE	COMPOSITE C VALUE	TOTAL Tc (MIN)	INTENSITY I(10) (IN/HR)	DISCHARGE Q(10)	INTENSITY I(100) (IN/HR)	DISCHARGE Q(100)
A1	8.56	0.00	0.9	IMPERVIOUS	8.56	0.3	SINGLE FAMILY RESIDENTIAL	0.30	10	6.44	16.54	9.66	24.81
A2	0.76	0.57	0.9	IMPERVIOUS	0.19	0.3	SINGLE FAMILY RESIDENTIAL	0.75	10	6.44	3.67	9.66	5.51
A3	0.11	0.11	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	0.64	9.66	0.96
B1	0.12	0.12	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	0.70	9.66	1.04
B2	0.22	0.22	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	1.28	9.66	1.91
B3	0.29	0.29	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	1.68	9.66	2.52
C1	4.27	0.46	0.9	IMPERVIOUS	3.81	0.3	SINGLE FAMILY RESIDENTIAL	0.36	23	4.39	6.84	7.94	12.36
C2	0.29	0.29	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	1.68	9.66	2.52
C3	0.35	0.35	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	2.03	9.66	3.04
C4	1.75	0.41	0.9	IMPERVIOUS	1.34	0.3	SINGLE FAMILY RESIDENTIAL	0.44	10	6.44	4.97	9.66	7.45
D1	2.06	0.35	0.9	IMPERVIOUS	1.71	0.3	SINGLE FAMILY RESIDENTIAL	0.40	10	6.44	5.33	9.66	8.00
D2	3.18	0.89	0.9	IMPERVIOUS	2.29	0.3	SINGLE FAMILY RESIDENTIAL	0.47	10	6.44	9.58	9.66	14.37
D3	0.97	0.54	0.9	IMPERVIOUS	0.43	0.3	SINGLE FAMILY RESIDENTIAL	0.63	10	6.44	3.96	9.66	5.94
EX-1	0.97	0.46	0.9	IMPERVIOUS	0.51	0.3	SINGLE FAMILY RESIDENTIAL	0.58	10	6.44	3.65	9.66	5.48
EX-2	12.98	0.00	0.9	IMPERVIOUS	12.98	0.3	SINGLE FAMILY RESIDENTIAL	0.30	15	5.43	21.14	8.86	34.50
D4	0.34	0.34	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	1.97	9.66	2.96
D5	0.66	0.66	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	3.83	9.66	5.74
D6	0.06	0.06	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	0.35	9.66	0.52
E1	0.41	0.41	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	2.38	9.66	3.56
E2	0.46	0.46	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	2.67	9.66	4.00
F1	0.55	0.55	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	3.19	9.66	4.78
G1	0.64	0.64	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	3.71	9.66	5.56
G2	0.33	0.33	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	1.91	9.66	2.87
H1	0.45	0.45	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	2.61	9.66	3.91
I1	1.05	1.05	0.9	IMPERVIOUS	0.00	0.3	SINGLE FAMILY RESIDENTIAL	0.90	10	6.44	6.09	9.66	9.13

Inlet No.	Inlet Type	10-year Runoff (cfs)	10-year Carryover Flow (cfs)	10-year Total Gutter Q (cfs)	Sag Inlet Percentage of flow from: Lower Station	Higher Station	Sag Inlet Split 10-year Runoff (cfs)		"SL" Street Long. Slope (%)		Roadway Cross Slope "Sx" (%)	Maning's coefficient for pavement "n"	Street Capacity (cfs)	10-year Depth of Flow (ft)		10-year Spread of Flow "T" (ft)		Allowable Ponded Width	Gutter Cross Slope "Sw" (%)	Width of Depressed Gutter "W" (ft)	5-year Ratio of Flow "E0"	Gutter Depression Depth "a"	Equivalent Cross Slope "Se" (%)	10-year Required Length "LT" (ft)	Clogging Factor	Length Provided "L" (ft)	Inlet Efficiency "E"	10-year Captured Flow "Qi" (cfs)	10-year Carryover Flow "q" (cfs)	Target Inlet
A2	SIDEWALK BRIDGE (28') CURB INLET	3.67		3.67					5.00%		2.50%	0.0130	37.67	0.17		6.97		12.00	10.42%	2.00	0.76	0.208	10.37%	13.23	50%	* 9.00	0.87	3.20	0.47	A-2
A3	SIDEWALK BRIDGE (14') CURB INLET	0.64	0.47	1.11					5.00%		2.50%	0.0130	37.67	0.11		4.45		12.00	10.42%	2.00	0.92	0.208	12.14%	6.36	50%	* 4.50	0.89	0.99	0.12	B-1
B1	SIDEWALK BRIDGE (14') CURB INLET	0.70	0.12	0.82					2.70%		2.50%	0.0130	27.68	0.11		4.45		12.00	10.42%	2.00	0.92	0.208	12.13%	3.73	50%	* 4.50	1.00	0.82	0.00	B-2
B2	SIDEWALK BRIDGE (14') CURB INLET	1.28	0.00	1.28					3.00%		2.50%	0.0130	29.18	0.13		5.16		12.00	10.42%	2.00	0.88	0.208	11.66%	5.58	50%	* 4.50	0.95	1.21	0.07	B-3
B3	SIDEWALK BRIDGE (14') CURB INLET	1.68	0.07	1.75					4.30%		2.50%	0.0130	34.93	0.14		5.43		12.00	10.42%	2.00	0.86	0.208	11.47%	8.05	50%	* 4.50	0.77	1.35	0.40	C-1
C1	SIDEWALK BRIDGE (42') CURB INLET	6.84	0.40	7.24					3.00%		2.50%	0.0130	29.18	0.25		9.89		12.00	10.42%	2.00	0.58	0.208	8.58%	16.01	50%	* 13.50	0.96	6.98	0.26	C-2
C2	SIDEWALK BRIDGE (14') CURB INLET	1.68	0.26	1.94					2.50%		2.50%	0.0130	26.64	0.16		6.25		12.00	10.42%	2.00	0.80	0.208	10.88%	6.87	50%	* 4.50	0.85	1.65	0.29	C-3
C3	SIDEWALK BRIDGE (28') CURB INLET	2.03	0.56	2.59	5%	95%	0.13	2.46	1.00%	1.00%	2.50%	0.0130	16.85	0.21	0.21	8.26	8.26	12.00	10.42%	2.00	0.67	0.208	9.51%	5.58	50%	* 9.00	1.00	2.59	0.00	–
C4	SIDEWALK BRIDGE (28') CURB INLET	4.97	0.00	4.97					2.00%		2.50%	0.0130	23.82	0.23		9.27		12.00	10.42%	2.00	0.62	0.208	8.92%	11.24	50%	* 9.00	0.95	4.69	0.27	C-3
D1	I-CO (15FT X 4FT)(FTW)	5.33	0.00	5.33					4.50%		2.50%	0.0130	35.74	0.20		8.18		12.00	25.00%	1.33	0.63	0.333	18.22%	16.83		15.00	0.98	5.23	0.10	D-2
D2	I-CO (20FT X 4FT)(FTW)	9.58	0.10	9.68					4.20%		2.50%	0.0130	34.52	0.26		10.36		12.00	25.00%	1.33	0.51	0.333	15.17%	22.09		20.00	0.99	9.54	0.14	D-3
D3	I-CO (15FT X 4FT)(FTW)	3.96	0.14	4.10					3.50%		2.50%	0.0130	31.52	0.19		7.77		12.00	25.00%	1.33	0.66	0.333	18.89%	13.57		* 15.00	1.00	4.10	0.00	D-4
D4	SIDEWALK BRIDGE (14') CURB INLET	1.97	0.00	1.97					2.00%		2.50%	0.0130	23.82	0.16		6.55		12.00	10.42%	2.00	0.78	0.208	10.66%	6.31	50%	* 4.50	0.89	1.76	0.21	D-5
D5	SIDEWALK BRIDGE (28') CURB INLET	3.83	0.21	4.03	50%	50%	2.02	2.02	1.50%	1.50%	2.50%	0.0130	20.63	0.23	0.23	9.05	9.05	12.00	10.42%	2.00	0.63	0.208	9.04%	8.90	50%	* 9.00	1.00	4.03	0.00	–
D6	SIDEWALK BRIDGE (14') CURB INLET	0.35	0.00	0.35					2.00%		2.50%	0.0130	23.82	0.09		3.42		12.00	10.42%	2.00	0.98	0.208	12.67%	1.04	50%	* 4.50	1.00	0.35	0.00	D-5
E1	SIDEWALK BRIDGE (28') CURB INLET	2.38	0.00	2.38					2.50%		2.50%	0.0130	26.64	0.17		6.74		12.00	10.42%	2.00	0.77	0.208	10.53%	7.85	50%	* 9.00	1.00	2.38	0.00	E1
E2	SIDEWALK BRIDGE (28') CURB INLET	2.67	0.00	2.67	50%	50%	1.33	1.33	2.00%	2.00%	2.50%	0.0130	23.82	0.18	0.18	7.34	7.34	12.00	10.42%	2.00	0.73	0.208	10.11%	7.71	50%	* 9.00	1.00	2.67	0.00	–
F1	SIDEWALK BRIDGE (28') CURB INLET	3.19	0.00	3.19					5.00%		2.50%	0.0130	37.67	0.17		6.61		12.00	10.42%	2.00	0.78	0.208	10.62%	12.22	50%	* 9.00	0.91	2.90	0.29	G1
G1	SIDEWALK BRIDGE (28') CURB INLET	3.71	0.29	4.00					3.00%		2.50%	0.0130	29.18	0.20		7.92		12.00	10.42%	2.00	0.69	0.208	9.73%	11.53	50%	* 9.00	0.93	3.74	0.26	G2
G2	SIDEWALK BRIDGE (28') CURB INLET	1.91	0.26	2.17					4.20%		2.50%	0.0130	34.52	0.15		5.92		12.00	10.42%	2.00	0.83	0.208	11.12%	9.14	50%	* 9.00	1.00	2.17	0.00	
H1	SIDEWALK BRIDGE (28') CURB INLET	2.61	0.00	2.61	50%	50%	1.30	1.30	1.50%		2.50%	0.0130	20.63	0.19		7.68		12.00	10.42%	2.00	0.71	0.208	9.88%	6.73	50%	* 9.00	1.00	2.61	0.00	
I1	SIDEWALK BRIDGE (42') CURB INLET	6.09	0.00	6.09					2.00%	3.00%	2.50%	0.0130	29.18	0.25	0.23	10.00	9.27	12.00	10.42%	2.00	0.58	0.208	8.53%	12.62	50%	13.50	1.00	6.09	0.00	

* L ADJUSTED BASED ON 50% CLOGGING FACTOR FOR SIDEWALK BRIDGE INLETS.

10YR – Storm Drain Calculations

From	To	Pipe Length	10-year Runoff	Carrover (To Inlet)	Carryover "q" (From Inlet)	Q pipe	Pipe Diam.	Qcap	Box Size Width	Box Size Height	n	Sf	HGL U/S	HGL D/S	V1 (in)	V2 (out)	V12/2g	V22/2g	Kj	KjV12/2g	Head Loss	Design HGL	Invert Elevation From	Invert Elevation To	T/C or Ground Elev.
		ft	cfs	cfs	cfs	cfs	in	cfs	ft	ft		ft/ft	ft	ft	ft/s	ft/s	ft	ft		ft	ft	ft	ft	ft	ft
1	2	3	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Line D																									
D-01	D-02	554.69	5.33	0.00	0.59	4.74	24	45.24			0.013	0.0004	587.02	586.61	0.00	1.51	0.00	0.04	1.25	0.00	0.10	587.12	606.77	585.02	615.44
D-02	D-03	224.78	9.68	4.74	1.88	12.54	24	39.18			0.013	0.0031	586.38	581.28	1.51	3.99	0.04	0.25	0.50	0.02	0.23	586.61	584.38	577.64	589.18
D-03	36" – 36" Connection	24.04	4.10	12.54	0.12	16.52	24	39.18			0.013	0.0053	580.85	580.72	3.99	5.26	0.25	0.43	0.00	0.00	0.43	581.28	577.61	577.57	582.58
36" – 36" Connectio	EX –Y – Connection	21.28	0.00	16.52	0.00	16.52	36	27.50			0.013	0.0006	580.62	580.61	3.99	2.34	0.25	0.08	0.75	0.19	0.10	580.72	577.57	577.53	582.26
EX –Y – Connection	EX –MH	11.50	3.65	16.52	0.00	20.17	36	23.83			0.015	0.0012	580.51	579.85	5.26	2.85	0.43	0.13	0.50	0.21	0.10	580.61	577.53	577.51	581.52
EX –MH	EX –Outfall D	26.48	24.22	20.17	0.00	44.40		32.68	4	2	0.015	0.0017	579.46	579.12	2.34	5.55	0.08	0.48	1.00	0.08	0.39	579.85	577.51	577.46	581.51
Lat D																									
EX-01	EX –Y – Connection	21.50	3.65	0.00	0.00	3.65	24	27.71			0.013	0.0003	580.62	580.61	0.00	1.16	0.00	0.02	0.50	0.00	0.10	580.72	577.53	577.84	581.95

NOTE – STARTING 100 YEAR WATER SURFACE ELEVATION AT OUTFALL D IS ASSUMED TO BE EQUAL TO 579.12 FT PER CITY PROJECT NO. 00704

STATE OF TEXAS
MICHAEL J. CHISHOLM
123343
LICENSED
PROFESSIONAL ENGINEER

8/30/2024

NO.	REVISION	BY	DATE

TEXAS REGISTERED ENGINEERING FIRM F-1741

FORT WORTH SIDEWALK IMPROVEMENTS

DRAINAGE CALCULATIONS

		FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
Designed:	STV	02	TEXAS	SEE TITLE SHEET			BU 287
Checked:	STV	DIST.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
Drawn:	STV	FTW	TARRANT	0172	01	055,ETC	219
Checked:	STV						

SHEET 1 OF 1

http://www.dot.state.tx.us/ftw/specinfo/standard.htm
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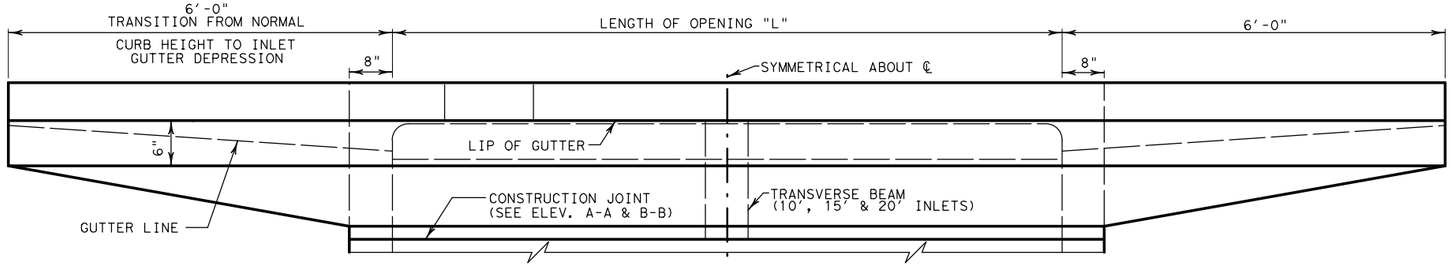
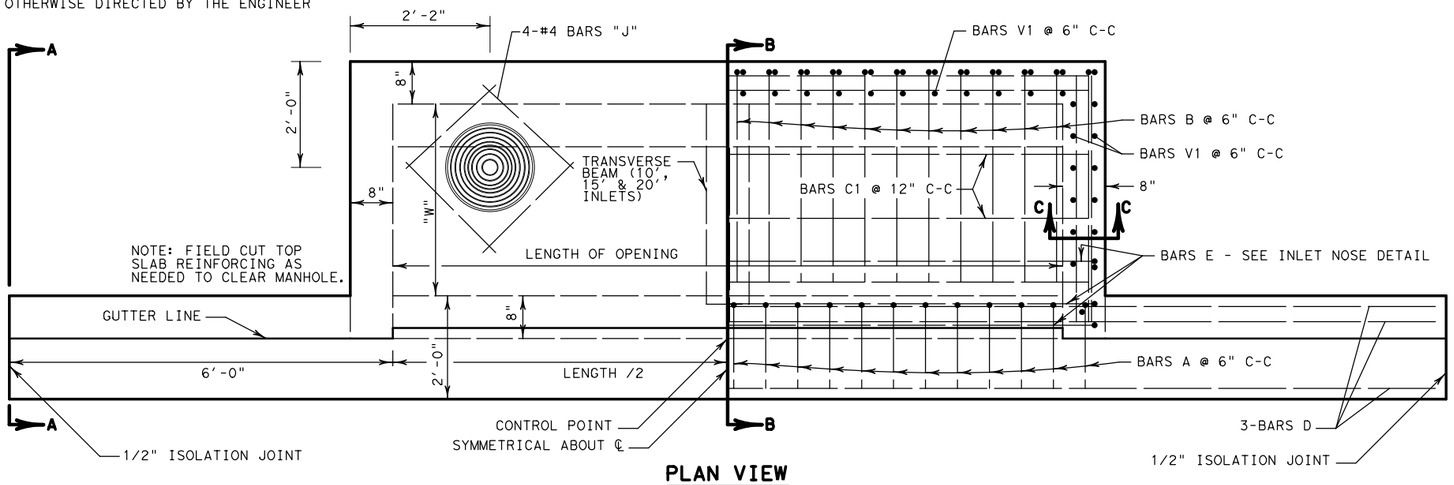
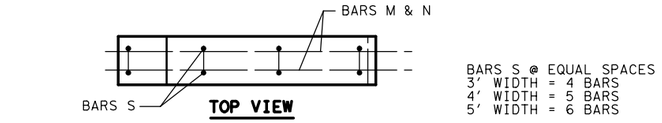


FRONT ELEVATION VIEW
N.T.S.

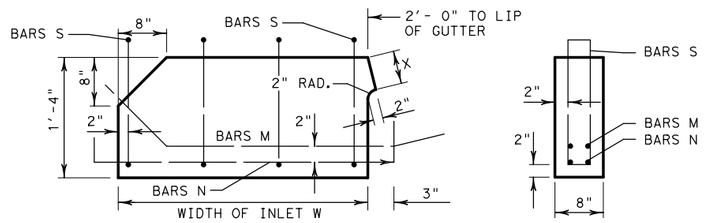
NOTE: LOCATION OF RING AND COVER TO BE AT OUTFALL END, UNLESS OTHERWISE DIRECTED BY THE ENGINEER



PLAN VIEW
(ONLY TOP LAYER OF SLAB REINFORCING SHOWN, FOR CLARITY)
N.T.S.



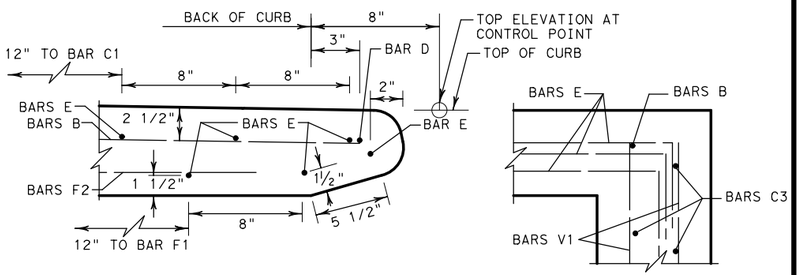
TOP VIEW



SIDE SECTION

END VIEW

TRANSVERSE BEAM DETAIL
BEAMS AT 5' C - C (10', 15' & 20' INLETS)
N.T.S.

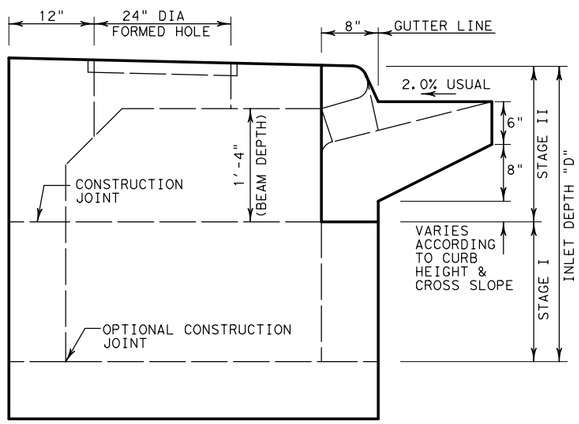


SIDE SECTION

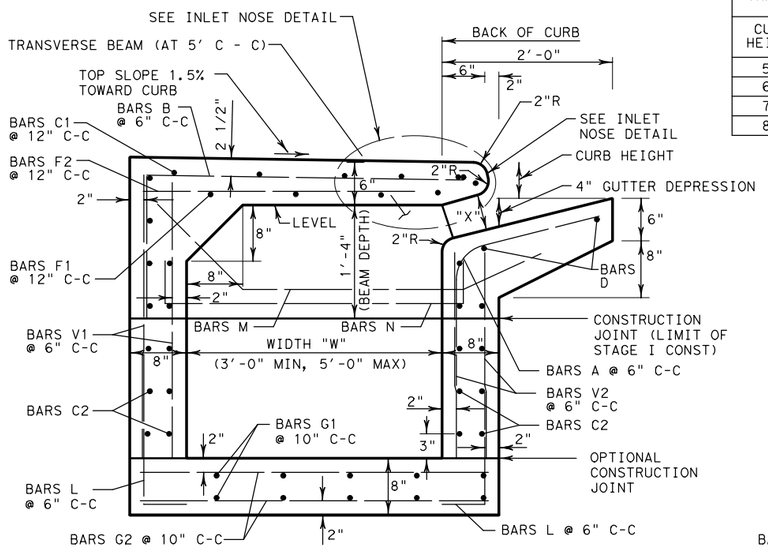
SLAB/WALL CONNECTION

INLET NOSE DETAIL
N.T.S.

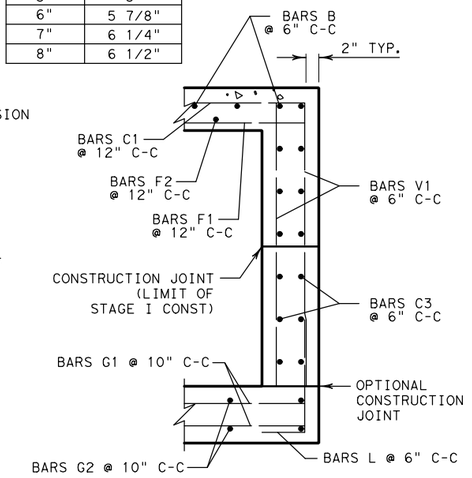
THROAT DIMENSION	
CURB HEIGHT	"X"
5"	5"
6"	5 7/8"
7"	6 1/4"
8"	6 1/2"



SIDE ELEVATION "A-A"
N.T.S.



SECTION "B-B"
N.T.S.



SECTION "C-C"
N.T.S.

SEE SHEET 2 OF 2 FOR DETAILS OF REINFORCING, BILL OF REINFORCING STEEL, SUMMARY OF QUANTITIES, TABLE OF MAXIMUM CONDUIT SIZES AND GENERAL NOTES.

Texas Department of Transportation

Fort Worth District Standard

CURB INLET OUTSIDE PAVEMENT FOR USE WITH TYPE II CURB
I-CO (FTW)

ORIGINAL DRAWING: 05/2019	ico-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
DATE	REVISIONS	6			220
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
04/2020	ADD MAX CONDUIT SIZE TABLE	TEXAS	FTW	TARRANT	
11/2020	REVISED JOINT NOMENCLATURE	CONT.	SECT.	JOB	HIGHWAY NO.
		0172	01	055,ETC	BU 287

http://www.dot.state.tx.us/ftw/specinfo/standard.htm
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BILL OF REINFORCING STEEL FOR "D" = 4'

Width "W"	Length "L"	Bars A		Bars B			Bars C1		Bars C2		Bars C3		Bars D		Bars E		Bars F1		Bars F2		Bars G1		Bars G2		Bars J	
		#4	at 6" Spa	#4		at 6" Spa	#5	at 12" Spa	#5	at 6" Spa	#5	at 6" Spa	#4		#5		#4	at 12" Spa	#4	at 12" Spa	#5	at 10" Spa	#5	at 10" Spa	#4	
[ft]	[ft]	No	Wt	No	Length	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt
3.0	5.0	13	37	10	5.417	36	2	13	29	181	27	113	3	33	6	48	1	4	7	12	10	63	14	58	4	8
4.0	5.0	13	37	10	6.417	43	3	19	29	181	27	141	3	33	6	48	2	8	7	16	12	75	14	73	4	8
5.0	5.0	13	37	10	7.417	50	4	25	29	181	27	169	3	33	6	48	3	12	7	21	14	88	14	88	4	8
3.0	10.0	23	65	20	5.417	72	2	23	29	333	27	113	3	43	6	80	1	7	12	20	10	115	26	108	4	8
4.0	10.0	23	65	20	6.417	86	3	34	29	333	27	141	3	43	6	80	2	15	12	28	12	138	26	136	4	8
5.0	10.0	23	65	20	7.417	99	4	46	29	333	27	169	3	43	6	80	3	22	12	36	14	161	26	163	4	8
3.0	15.0	33	94	30	5.417	109	2	33	29	484	27	113	3	53	6	111	1	11	17	28	10	167	38	159	4	8
4.0	15.0	33	94	30	6.417	129	3	50	29	484	27	141	3	53	6	111	2	21	17	40	12	200	38	198	4	8
5.0	15.0	33	94	30	7.417	149	4	67	29	484	27	169	3	53	6	111	3	32	17	51	14	234	38	238	4	8
3.0	20.0	43	122	40	5.417	145	2	44	29	635	27	113	3	63	6	142	1	14	22	37	10	219	50	209	4	8
4.0	20.0	43	122	40	6.417	171	3	66	29	635	27	141	3	63	6	142	2	28	22	51	12	263	50	261	4	8
5.0	20.0	43	122	40	7.417	198	4	88	29	635	27	169	3	63	6	142	3	42	22	66	14	307	50	313	4	8

BILL OF REINFORCING STEEL FOR "D" = 4' (CONTINUED)

Width "W"	Length "L"	Bars L		Bars M		Bars N		Bars S		Bars V1		Bars V2	
		#5	at 6" Spa	#4		#5		#4	at 12" Spa	#5	at 6" Spa	#5	at 6" Spa
[ft]	[ft]	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt
3.0	5.0	36	125	0	0	0	0	0	0	58	232	26	77
4.0	5.0	40	139	0	0	0	0	0	0	66	264	26	77
5.0	5.0	44	153	0	0	0	0	0	0	74	296	26	77
3.0	10.0	56	195	2	7	2	11	4	11	78	312	46	136
4.0	10.0	60	209	2	8	2	13	5	14	86	344	46	136
5.0	10.0	64	223	2	9	2	15	6	17	94	376	46	136
3.0	15.0	76	264	4	13	4	22	8	22	98	392	66	195
4.0	15.0	80	278	4	16	4	26	10	28	106	424	66	195
5.0	15.0	84	292	4	19	4	30	12	33	114	456	66	195
3.0	20.0	96	334	6	20	6	32	12	33	118	472	86	254
4.0	20.0	100	348	6	24	6	39	15	42	126	504	86	254
5.0	20.0	104	362	6	28	6	45	18	50	134	536	86	254

SUMMARY OF QUANTITIES

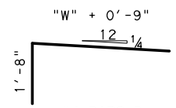
Total Reinf Weight	Steel Qty Adjust. P.L.F.	Class "C" Concrete	Concrete Qty Adjust. P.L.F.
[Lb]	[Lb]	[CY]	[CY]
1,040	171.1	3.8	0.46
1,163	187.7	4.3	0.51
1,286	204.4	4.8	0.56
1,659	254.5	5.9	0.71
1,829	271.2	6.6	0.76
2,000	287.9	7.3	0.81
2,278	337.9	7.9	0.95
2,496	354.6	8.9	1.00
2,714	371.3	9.8	1.05
2,896	421.4	9.9	1.20
3,162	438.1	11.2	1.25
3,428	454.7	12.4	1.30

MAXIMUM PARALLEL * CONDUIT SIZE		
INLET WIDTH	PIPE DIAMETER (IN)	BOX SPAN (FT)
3'	24	-
4'	36	3
5'	48	4

* PARALLEL TO ROADWAY

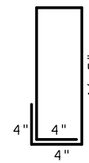
NOTE:
AT CONTRACTOR'S OPTION, BARS L MAY BE FABRICATED TO BE CONTINUOUS WITH BARS V1 AND/OR V2.

AT CONTRACTOR'S OPTION, BARS A MAY BE FABRICATED TO BE CONTINUOUS WITH BARS V2.



#4 BARS B

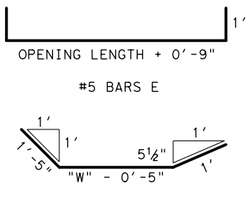
#5 BARS V1



#4 BARS S

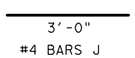
#5 BARS V2

#5 BARS L

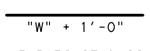


#5 BARS E

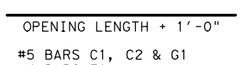
#4 BARS M



#4 BARS J



#5 BARS C3 & G2

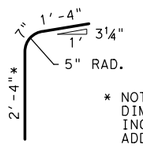


#5 BARS C1, C2 & G1
#4 BARS F1

#5 BARS N

#4 BARS D

#4 BARS F2



#4 BARS A

* NOTE:
DIMENSION SHOWN FOR 5" CURB.
INCREASE LENGTH BY 1" FOR EACH ADDITIONAL 1" OF CURB HEIGHT.

GENERAL NOTES

1. DESIGNED ACCORDING TO AASHTO LRFD SPECIFICATIONS FOR PEDESTRIAN LOADING AND HL-93 LOADING UNDER "EXTREME EVENT II" LOAD COMBINATION.
2. ALL CONCRETE FOR CAST-IN-PLACE STRUCTURES SHALL BE CLASS "C"; ALL CONCRETE FOR PRECAST STRUCTURES SHALL BE CLASS "H" (MINIMUM 5000 PSI DESIGN STRENGTH).
3. ALL REINFORCING STEEL SHALL BE GRADE 60.
4. STAGE I MAY BE EITHER CAST-IN-PLACE OR PRECAST. FABRICATE PRECAST STRUCTURES USING REBAR AS DETAILED HEREON, WITH BARS A, V1, AND V2 TO BE INCLUDED WITH STAGE I. SPLICING OF BARS WILL NOT BE PERMITTED, EXCEPT AS NOTED.
5. STAGE II SHALL BE CAST-IN-PLACE.
6. CHAMFER ALL EXPOSED CORNERS 3/4", EXCEPT WHERE NOTED OTHERWISE.
7. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO THE CENTERS OF BARS
8. FIELD CUT AND BEND BARS AS NECESSARY TO ACCOMMODATE STORM DRAIN PIPE.
9. FOR PIPE AND BOX CONNECTIONS TO PRECAST INLETS, SEE STANDARD SHEET PPGC.
10. INSTALL RING AND COVER AT OUTFALL END OF INLET, UNLESS OTHERWISE DIRECTED. CAST IRON RING AND COVER SHALL CONFORM TO ITEM 471. SEE STANDARD MDD (FTW) FOR RING AND COVER DETAILS.
11. DEPTHS OTHER THAN THOSE SHOWN MAY BE USED WHENEVER NECESSARY, UP TO A MAXIMUM DEPTH OF 15'. QUANTITIES FOR OTHER DEPTHS MAY BE DETERMINED BY INTERPOLATION.
12. DO NOT COMMENCE WITH STAGE II CONSTRUCTION UNTIL CONCRETE PAVEMENT AND CURB, OR CONCRETE CURB AND GUTTER CONSTRUCTION IS COMPLETED AT THE INLET SITE.
13. INSTALL A TEMPORARY WOOD COVER AFTER STAGE I IS COMPLETED, TO REMAIN IN PLACE UNTIL STAGE II CONSTRUCTION BEGINS.
14. THE LOCATION OF INLET AS SHOWN IN THE PLAN REFERS TO THE CONTROL POINT AT THE FACE OF CURB AND MID-POINT OF THE INLET.
15. PLACE A SEALED 1/2" ISOLATION JOINT ALONG ALL VERTICAL FACES ABUTTING CONCRETE PAVEMENT, CURB, CURB AND GUTTER, OR SIDEWALK. USE CLASS 5 OR 8 JOINT SEALANT TO SEAL THE JOINT. SEE STANDARD JS (FTW) FOR ADDTIONAL INFORMATION.

Texas Department of Transportation

Fort Worth District Standard

CURB INLET OUTSIDE PAVEMENT FOR USE WITH TYPE II CURB
I-CO (FTW)

ORIGINAL DRAWING: 05/2019	ico-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
DATE	REVISIONS	6			221
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
04/2020	ADD MAX CONDUIT SIZE TABLE	TEXAS	FTW	TARRANT	
11/2020	REVISED JOINT NOMENCLATURE	CONT.	SECT.	JOB	HIGHWAY NO.
01/2021	REVISE MAX CONDUIT SIZE TABLE	0172	01	055,ETC	BU 287

http://www.dot.state.tx.us/ftw/specinfo/standard.htm
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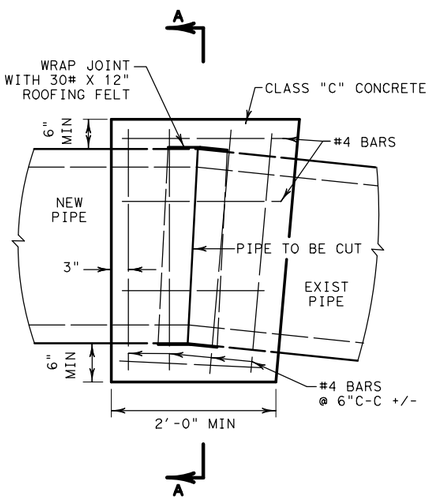
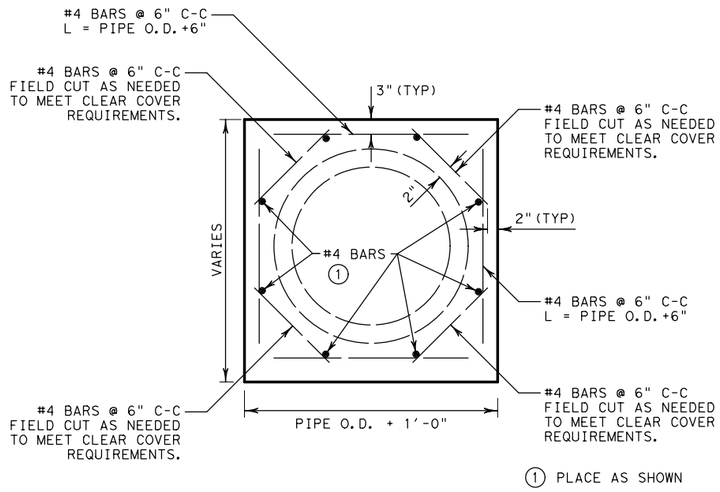


PLAN/ELEVATION



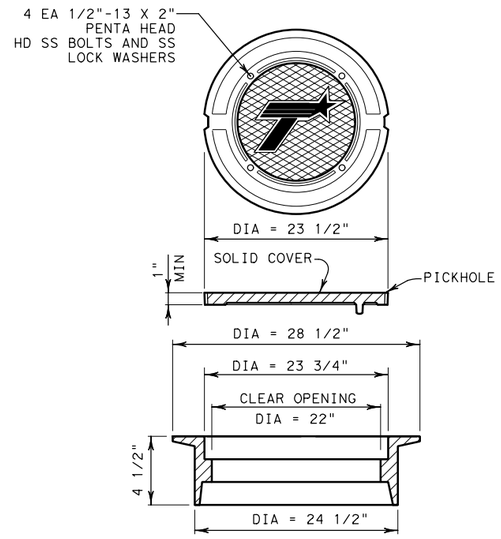
SECTION A-A

PIPE COLLAR GENERAL NOTES

1. THE CONTRACTOR SHALL TAKE STEPS TO ENSURE A SMOOTH JOINT ALONG THE INSIDE WALL OF PIPE.
2. ANY SPILLAGE OF CONCRETE THROUGH THE JOINT SHALL BE REMOVED AND THE INSIDE PIPE SURFACES SMOOTHED AS DIRECTED BY THE ENGINEER.
3. PIPE COLLARS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 464.

PIPE COLLAR DETAIL

FOR HORIZONTAL OR VERTICAL PLACEMENT
N.T.S.



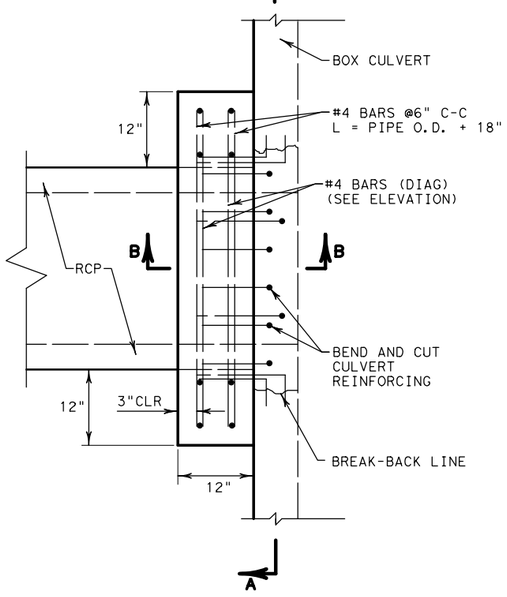
RING AND COVER DETAILS

MANHOLES AND CURB INLETS
N.T.S.

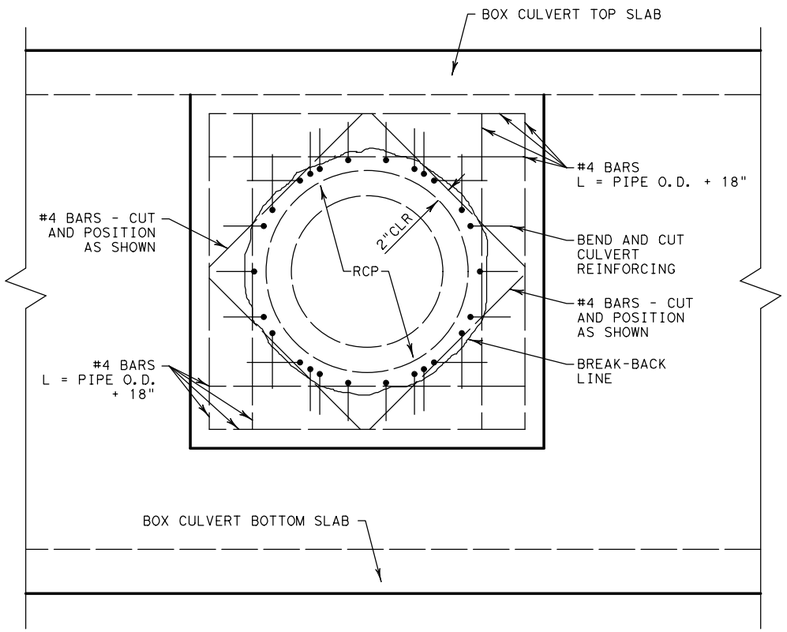
RING AND COVER SHALL CONFORM TO THE REQUIREMENTS OF ITEM 471 AND SHALL BE INCLUDED IN THE CURRENT TXDOT "APPROVED CAST IRON PRODUCTS SHEETS"

DIMENSIONS SHOWN ARE APPROXIMATE; ACTUAL DIMENSIONS PER MANUFACTURE/FABRICATOR.

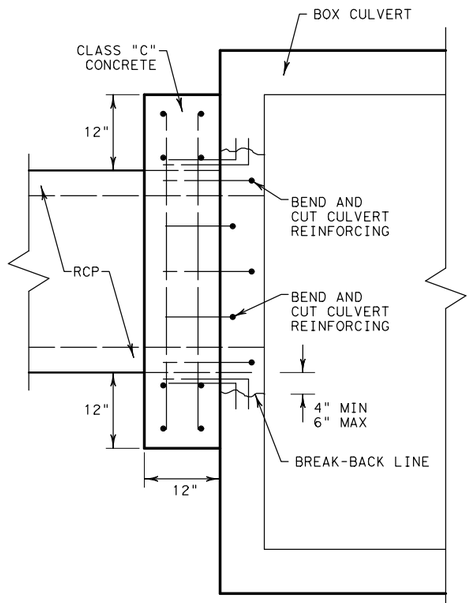
IF RING AND COVER ARE LOCATED IN PAVEMENT; SECURE COVER WITH BOLTS AS SHOWN.



PLAN VIEW



SECTION A-A



SECTION B-B

PIPE STUB-IN CONNECTION TO BOX CULVERT OR EXISTING DRAINAGE STRUCTURE

N.T.S.

PIPE STUB-IN GENERAL NOTES

1. SAW CUT A MAXIMUM 1/2" DEPTH AT BREAK-BACK LINE. USE REMOVAL METHODS THAT WILL NOT DAMAGE REMAINING CONCRETE OR CULVERT REINFORCING.
2. EXPOSE AND CLEAN BOX CULVERT REINFORCING. BEND BARS INTO PROPOSED CONNECTION AND TIE TO CONNECTION REINFORCING.
3. ROUGHEN AND CLEAN EXISTING CONCRETE SURFACES THAT ARE IN CONTACT WITH NEW CONCRETE BEFORE PLACING FORMS.
4. MATERIAL & LABOR FOR PIPE/BOX CONNECTIONS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO ITEMS 462 AND 464.

Texas Department of Transportation

Fort Worth District Standard

MISCELLANEOUS DRAINAGE DETAILS
MDD(FTW)

ORIGINAL DRAWING: 05/2019	mdd-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
DATE	REVISIONS	6			222
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
07/2022	REVISE AND CORRECT RING AND COVER NOTES	TEXAS	FTW	TARRANT	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0172	01	055,ETC	BU 287

http://www.dot.state.tx.us/ftw/specinfo/standard.htm
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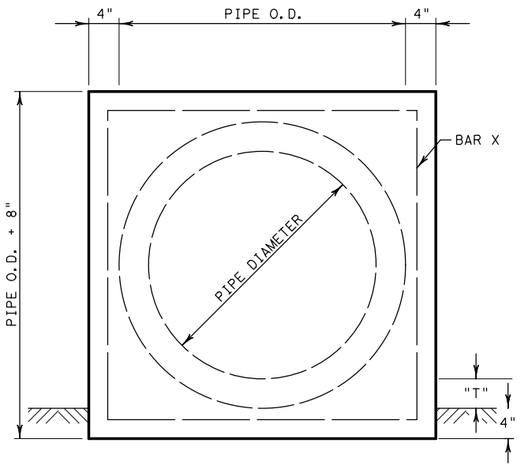
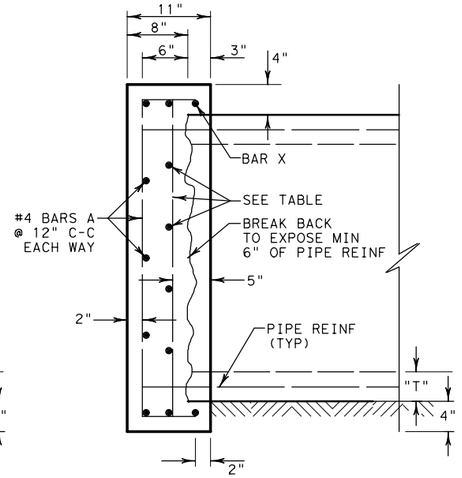


FRONT ELEVATION

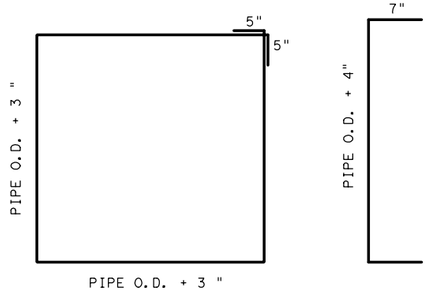


SIDE ELEVATION

INNER REINFORCING SIZE/SPACING		
PIPE DIA(IN)	MAXIMUM DEPTH	
	15'	30'
<48	#4 @ 12" C-C	#4 @ 12" C-C
60	#4 @ 12" C-C	#4 @ 10" C-C
72	#4 @ 12" C-C	#5 @ 10" C-C
84	#4 @ 10" C-C	#5 @ 8" C-C

PIPE END CAP GENERAL NOTES

1. "T" = PIPE WALL THICKNESS.
2. ALL CONCRETE SHALL BE CLASS "C".
3. ALL REINFORCING STEEL SHALL BE GRADE 60.
4. OCTAGONAL PLUG MAY BE USED IN LIEU OF SQUARE. PROVIDE 4" MINIMUM COVER OVER OUTSIDE OF PIPE. DIMENSIONS OF PIPE PLUG AND REINFORCING TO BE AS APPROVED.

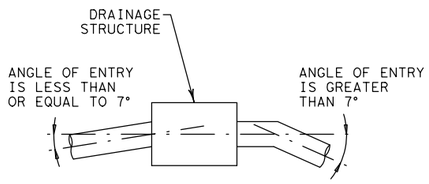


#4 BAR X

#4 BAR A

DRAINAGE PIPE END CAP OR PLUG DETAILS

N.T.S.

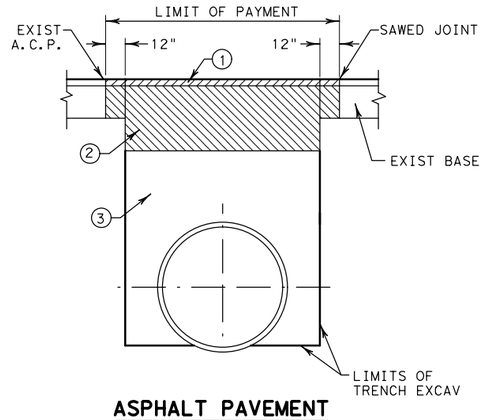


CONNECT PIPES WITHIN 7° OF NORMAL TO INLET OR MANHOLE. IF NECESSARY, USE PIPE ELBOW OR CURVED APPROACH ALIGNMENT TO STAY WITHIN THIS LIMIT.

PIPE CONNECTION

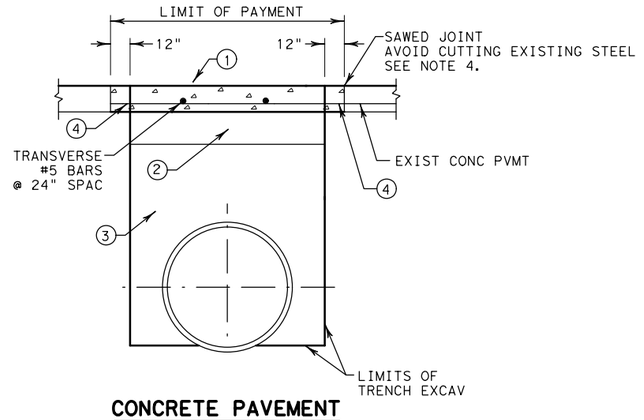
N.T.S.

1. APPROX 2" HOT MIX, TYPE C, OR AS DIRECTED.
2. APPROX 10" HOT MIX BASE, TYPE B, OR AS DIRECTED.
3. CEMENT STABILIZED BACKFILL IN ACCORDANCE WITH ITEM 400.3.3.1, 400.3.3.2, 400.3.3.3., AND 400.3.3.4.



ASPHALT PAVEMENT

1. CLASS "A", "P", OR "HES" CONCRETE PAVEMENT. MATCH EXISTING PAVEMENT DEPTH. USE CLASS "HES" IF OPENING TO TRAFFIC LESS THAN 72 HOURS AFTER PLACEMENT.
2. 4" COLD MIX ASPHALT BASE. PLACE BASE MATERIAL IN ACCORDANCE WITH ITEM 361.2.2.2.
3. CEMENT STABILIZED BACKFILL IN ACCORDANCE WITH ITEM 400.3.3.1, 400.3.3.2, 400.3.3.3., AND 400.3.3.4.
4. AT CONTRACTOR'S OPTION, USE FULL-DEPTH SAW CUT AND TIE TO EXISTING PAVEMENT IN ACCORDANCE WITH ITEM 361.4.2. FOR PARTIAL DEPTH SAW CUT, EXPOSE MINIMUM 8" OF LONGITUDINAL REINFORCING AND CONSTRUCT 8" WELDED LAP (MATCH LONGITUDINAL PAVEMENT REINFORCEMENT).



CONCRETE PAVEMENT

CUTTING AND RESTORING PAVEMENT DETAILS

N.T.S.

CUTTING AND RESTORING PAVEMENT GENERAL NOTES

1. HOT MIX OR CONCRETE PAVEMENT WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO CUTTING AND RESTORING PAVEMENT.
2. CONCRETE CURB OR CURB AND GUTTER WILL BE INCLUDED IN AREA OF "CUTTING AND RESTORING PAVEMENT". CONSTRUCT CURB OR CURB AND GUTTER ACCORDING TO PLAN DETAILS, OR AS DIRECTED. REMOVAL AND REPLACMENT OF CONCRETE CURB OR CURB AND GUTTER WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO CUTTING AND RESTORING PAVEMENT.
3. CEMENT STABILIZED BACKFILL WILL BE MEASURED AND PAID FOR IN ACCORDANCE WITH ITEM 400.
4. SEE STANDARD JS (FTW) FOR JOINT SEALING DETAILS.
5. "NON-EXCAVATABLE" FLOWABLE BACKFILL, AS DEFINED BY ITEM 401, TABLE 2, MAY BE USED AS A SUBSITITUTE FOR CEMENT STABILIZED BACKFILL, WITH THE FOLLOWING CONSTRAINTS:
   a). PLACE FLOWABLE FILL IN LIFTS NOT EXCEEDING 2 FEET IN DEPTH; PLACE EACH SUCCESSIVE LIFT WHEN THE PREVIOUS LIFT HAS STIFFENED/HARDENED (HAS LOST ITS FLOWABILITY).
   b). NO ADJUSTMENT IN PAYMENT WILL BE MADE FOR SUBSTITUTION OF FLOWABLE FILL IN LIEU OF CEMENT STABILIZED BACKFILL.

Texas Department of Transportation

Fort Worth District Standard

MISCELLANEOUS DRAINAGE DETAILS
MDD(FTW)

ORIGINAL DRAWING: 05/2019	mdd-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
DATE	REVISIONS	6			223
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
07/2022	REVISE CUT & RESTORE PAVEMENTS FOR CSB & FLOWABLE FILL; ALLOW OCTAGONAL PIPE PLUG; EDIT GENERAL NOTES	TEXAS	FTW	TARRANT	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0172	01	055,ETC	BU 287

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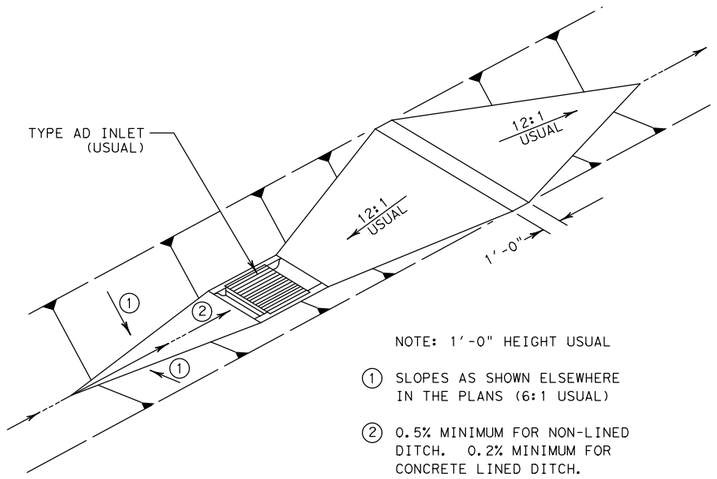
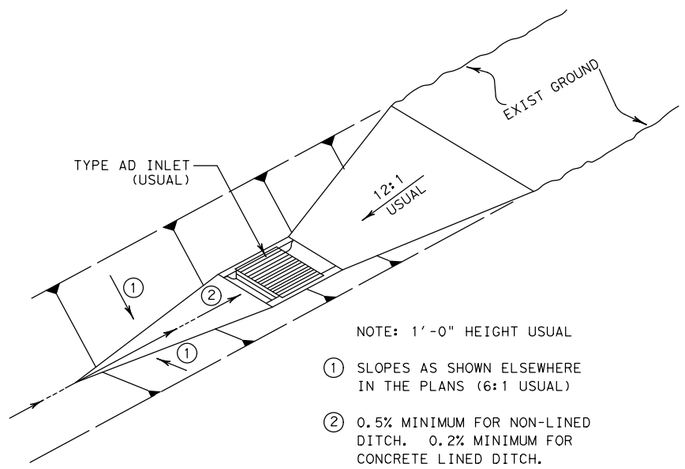


NOTE: 1'-0" HEIGHT USUAL

1. SLOPES AS SHOWN ELSEWHERE IN THE PLANS (6:1 USUAL)
2. 0.5% MINIMUM FOR NON-LINED DITCH. 0.2% MINIMUM FOR CONCRETE LINED DITCH.

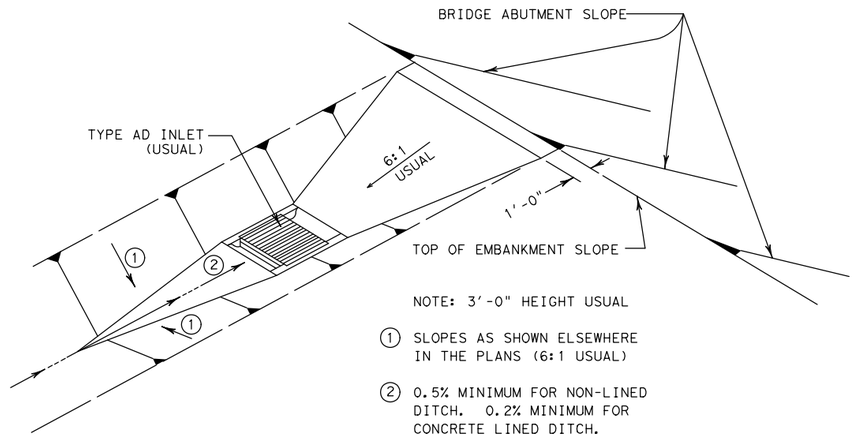
CONTINUOUS DITCH



NOTE: 1'-0" HEIGHT USUAL

1. SLOPES AS SHOWN ELSEWHERE IN THE PLANS (6:1 USUAL)
2. 0.5% MINIMUM FOR NON-LINED DITCH. 0.2% MINIMUM FOR CONCRETE LINED DITCH.

DITCH TERMINATION



NOTE: 3'-0" HEIGHT USUAL

1. SLOPES AS SHOWN ELSEWHERE IN THE PLANS (6:1 USUAL)
2. 0.5% MINIMUM FOR NON-LINED DITCH. 0.2% MINIMUM FOR CONCRETE LINED DITCH.

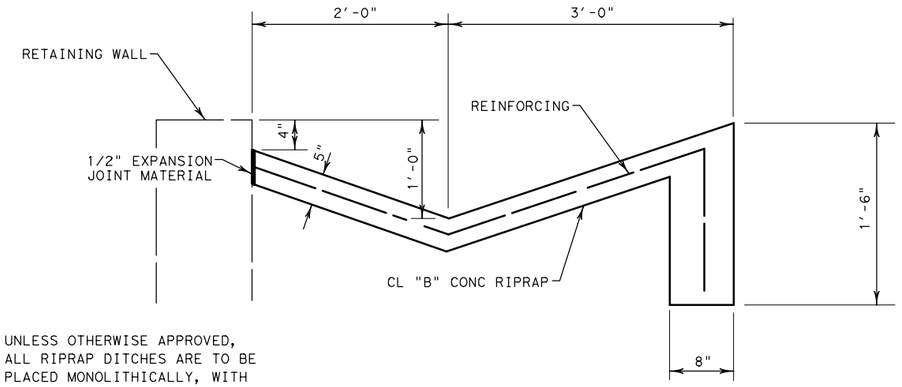
DITCH TERMINATION AT BRIDGE END

DITCH BLOCK GENERAL NOTES

1. DITCH BLOCK AND INLET LOCATIONS SHOWN ELSEWHERE IN THE PLANS.
2. DITCH BLOCKS WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE SUBSIDIARY TO THE VARIOUS BID ITEMS.

DITCH BLOCK DETAILS

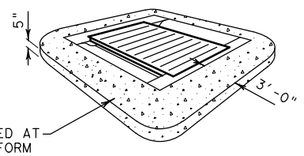
N.T.S.



UNLESS OTHERWISE APPROVED, ALL RIPRAP DITCHES ARE TO BE PLACED MONOLITHICALLY, WITH NO CONSTRUCTION JOINTS.

RIPRAP DITCH AT RETAINING WALL

N.T.S.



RIPRAP TO BE PLACED AT EACH INLET TO CONFORM TO ADJACENT SLOPES.
SINGLE INLET: 1 CY
DOUBLE INLET: 2 CY

TYPICAL RIPRAP APRON DETAIL

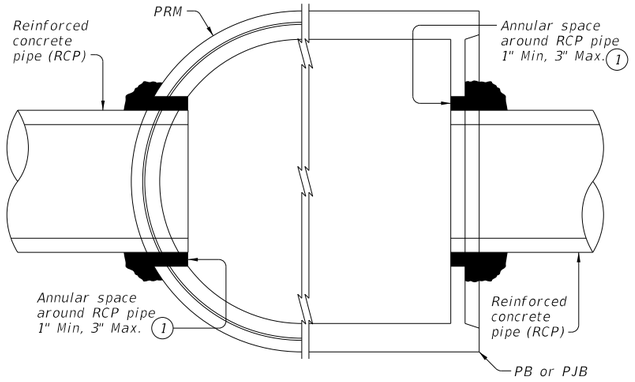
TYPE AD INLET SHOWN
TYPE AD-2 INLET IS SIMILAR

Texas Department of Transportation

Fort Worth District Standard

MISCELLANEOUS DRAINAGE DETAILS
MDD(FTW)

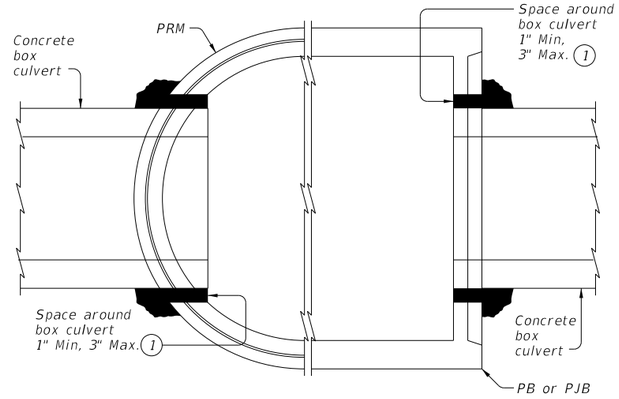
ORIGINAL DRAWING: 05/2019	mdd-ftw.dgn	FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
DATE	REVISIONS	6			224
05/2019	NEW STANDARD	STATE	STATE DIST.NO.	COUNTY	
07/2022	ADD NOTE FOR MONOLITHIC PLACEMENT OF RIPRAP DITCHES	TEXAS	FTW	TARRANT	
		CONT.	SECT.	JOB	HIGHWAY NO.
		0172	01	055,ETC	BU 287



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

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

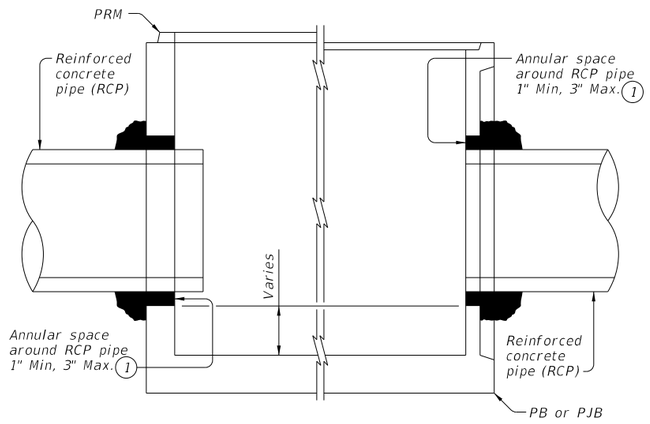
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

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

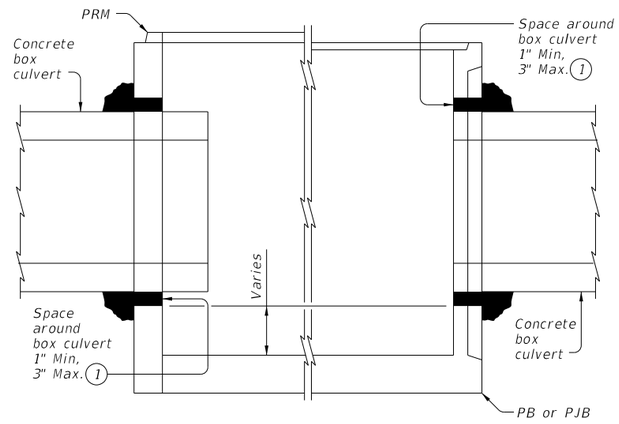
TYPICAL HALF PLAN



PRECAST ROUND MANHOLE (PRM) WITH THROUGH-HOLE

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

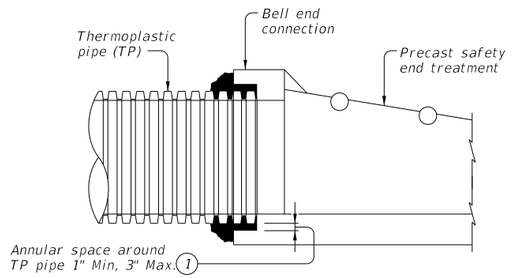
TYPICAL HALF ELEVATION



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:	DN: TxDOT	CK: TAR	DW: JTR	CK: TAR
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0172		055,ETC	BU 287
	DIST	COUNTY		SHEET NO.
		TARRANT		225

DATE:
FILE:

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

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)

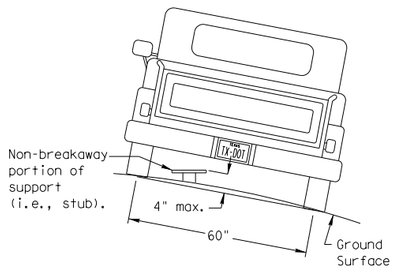
Anchor Type

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

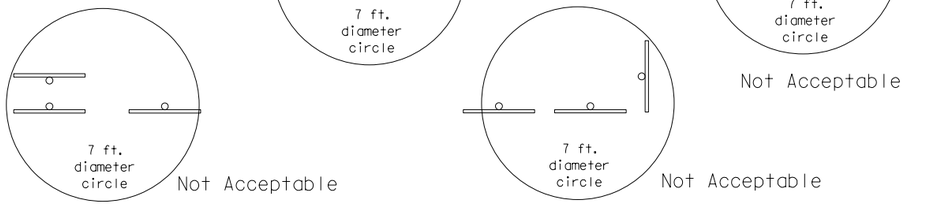
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
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



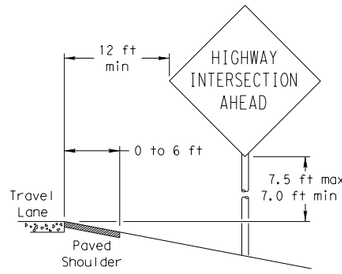
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

No more than 2 sign posts should be located within a 7 ft. circle.



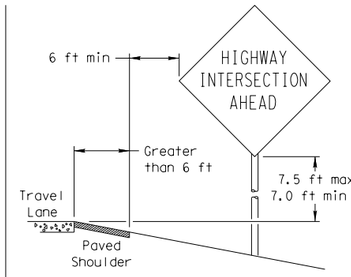
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

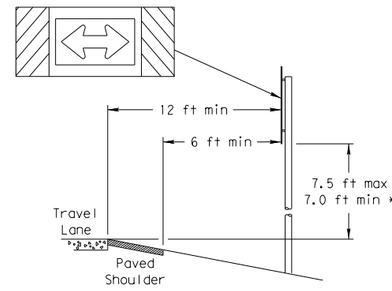
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



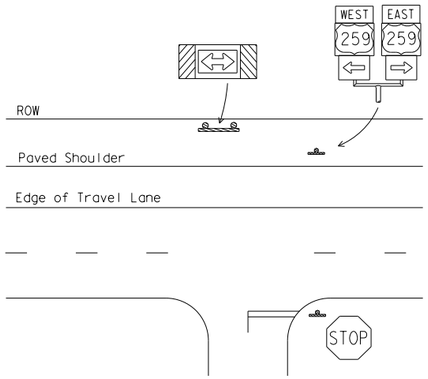
GREATER THAN 6 FT. WIDE

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.

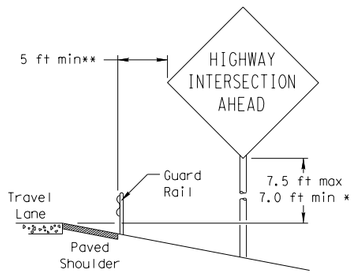
T-INTERSECTION



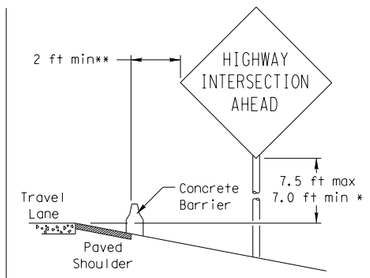
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

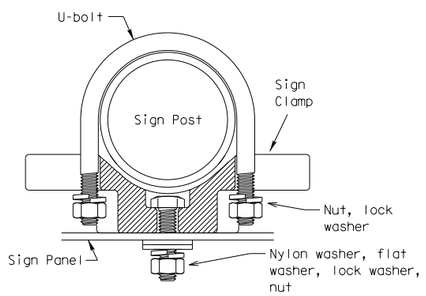
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

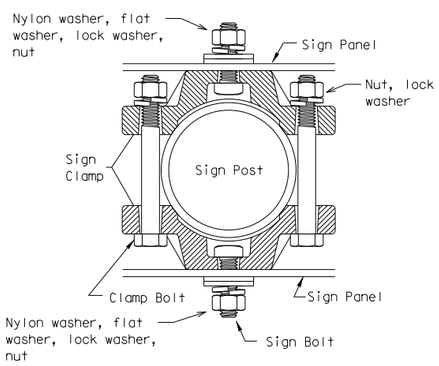


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

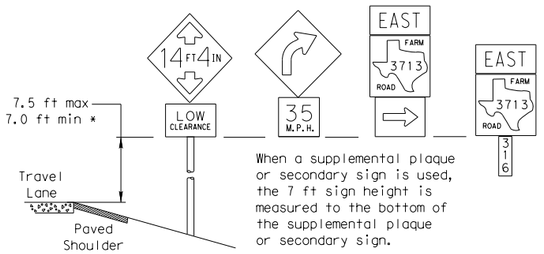
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



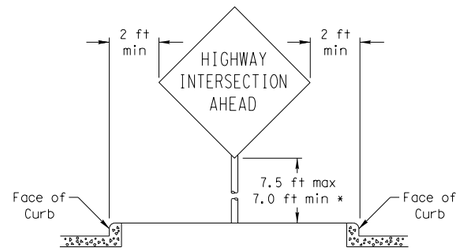
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



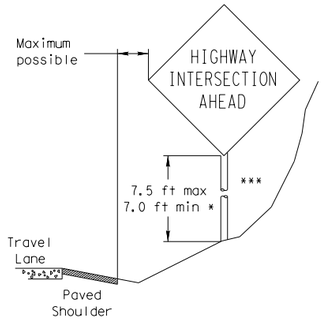
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

REVISIONS
9-08

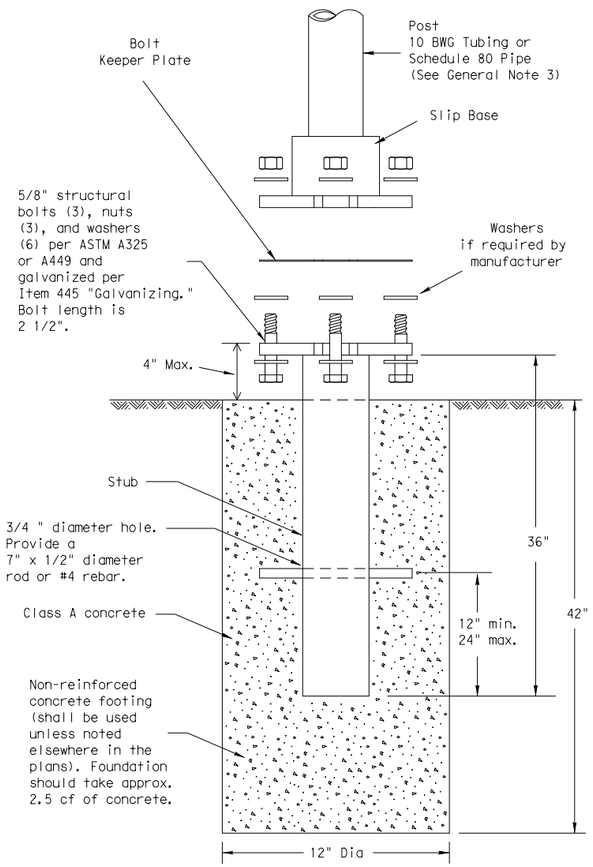
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287
DIST	COUNTY		SHEET NO.
FTW	TARRANT		226

26A

DATE:
FILE:

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:

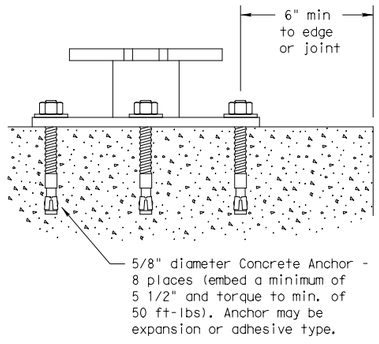
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   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

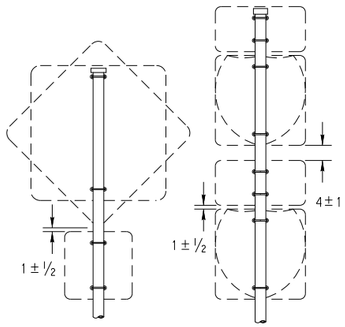
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

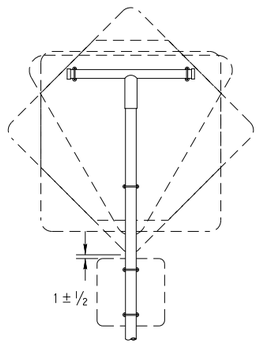
CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287

DIST	COUNTY	SHEET NO.
FTW	TARRANT	227

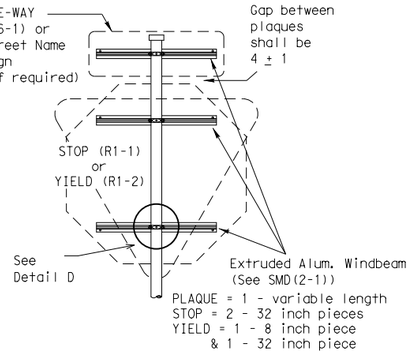
DATE:
FILE:



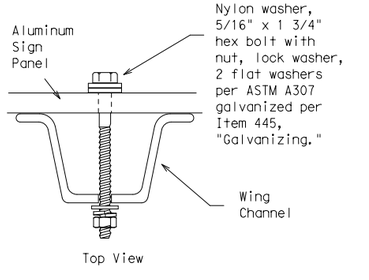
SM RD SGN ASSM TY XXXXX(1)XX(P)



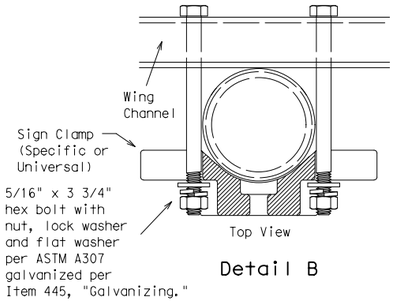
SM RD SGN ASSM TY XXXXX(1)XX(T)



SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Detail A



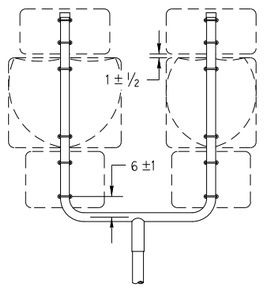
Detail B

GENERAL NOTES:

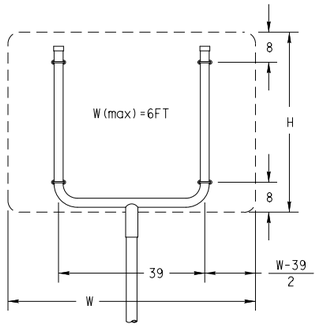
1.

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

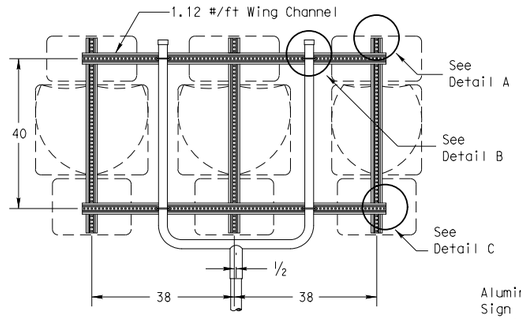
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material 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.



SM RD SGN ASSM TY XXXXX(1)XX(U)

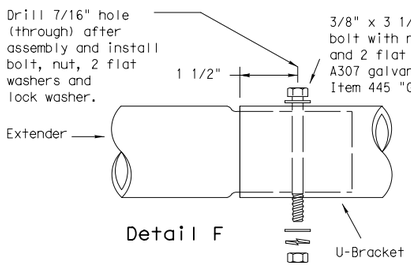


SM RD SGN ASSM TY XXXXX(1)XX(U)

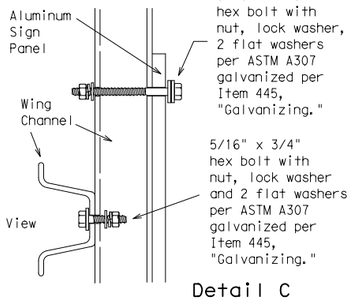


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

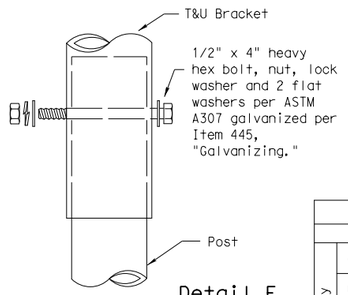
Splices shall only be allowed behind the sign substrate.



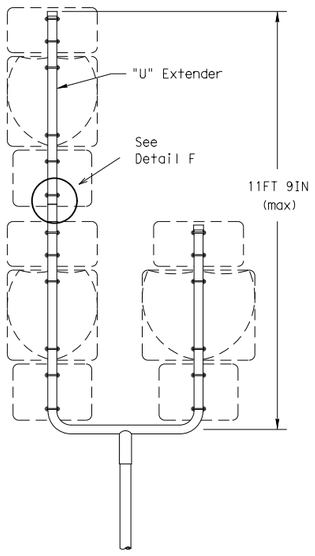
Detail F



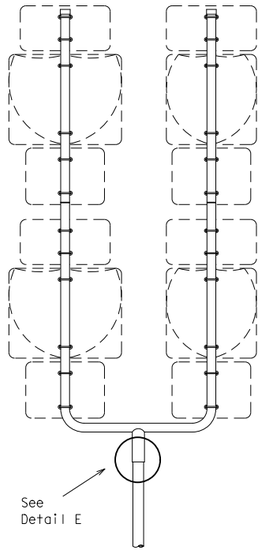
Detail C



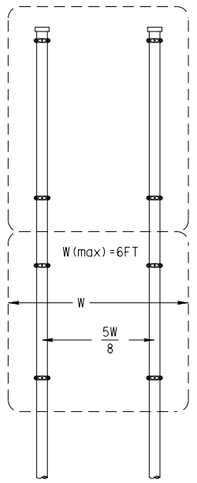
Detail E



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

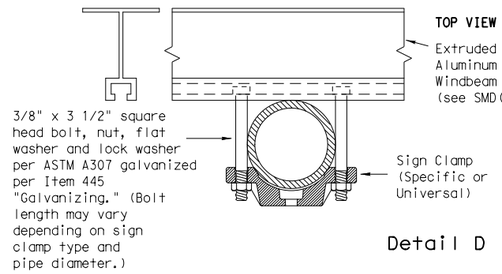


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

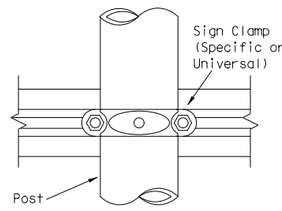


SM RD SGN ASSYM TY XXXXX(2)XX(P)

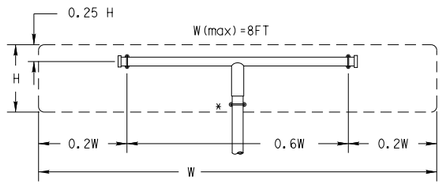
SIDE VIEW



Detail D



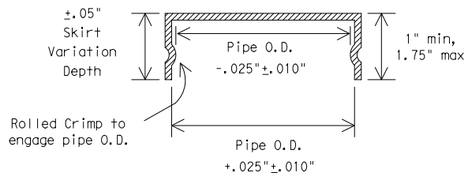
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	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)



All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

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.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

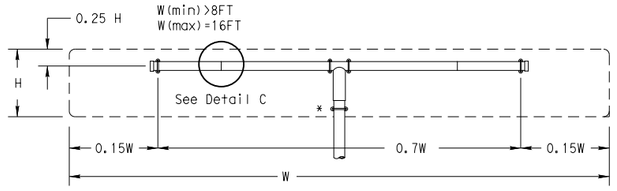
SMD(SLIP-2)-08

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

REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0172	01	055,ETC	BU 287
	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		228

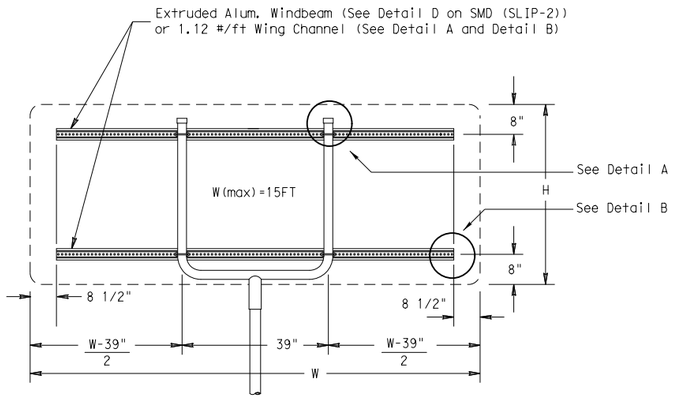
DATE:
FILE:

DATE:
FILE:

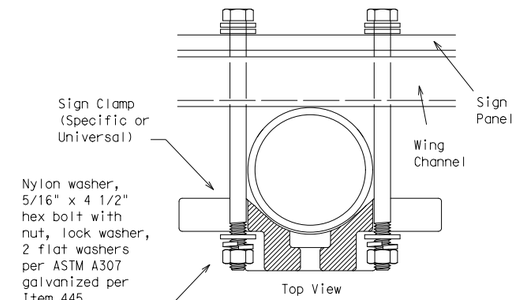


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

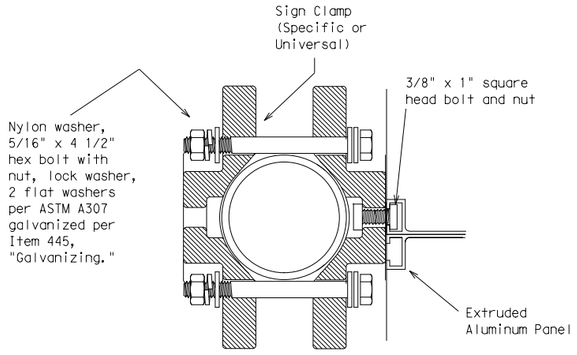
(* - See Note 12)



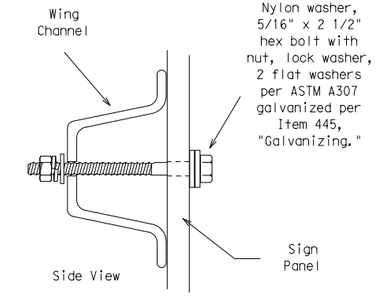
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



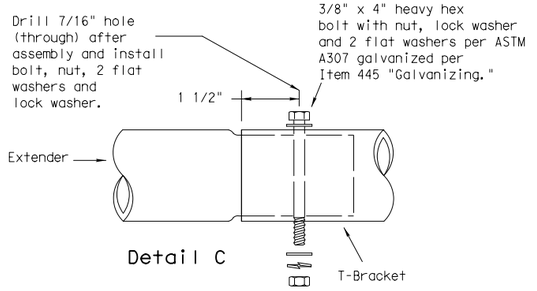
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

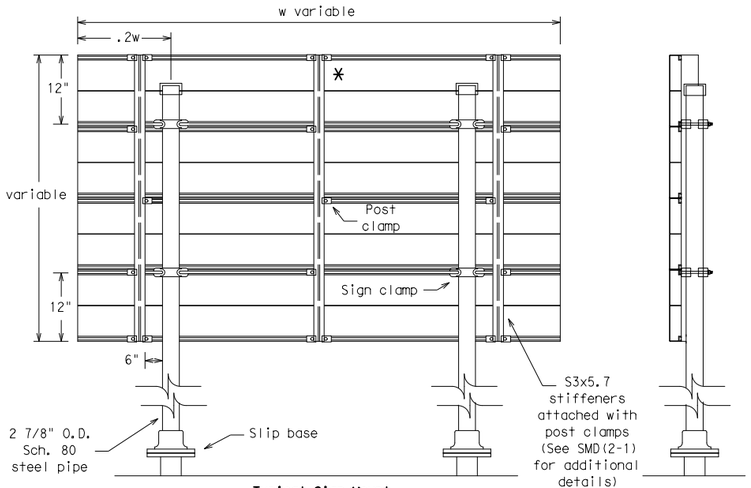


Detail B



Detail C

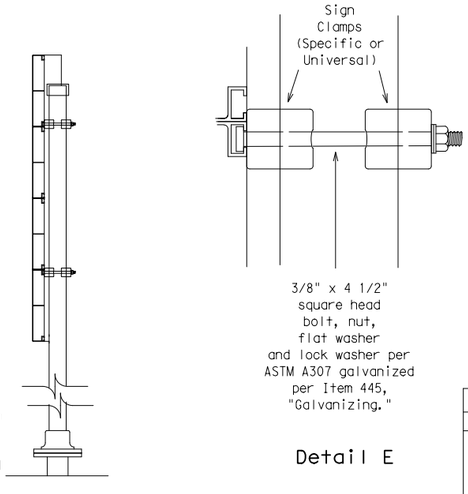
Splices shall only be allowed behind the sign substrate.



Typical Sign Mount

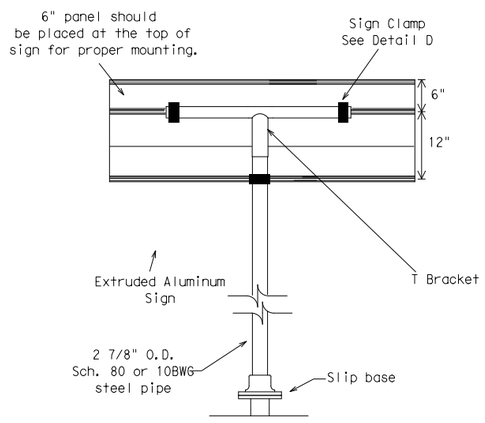
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

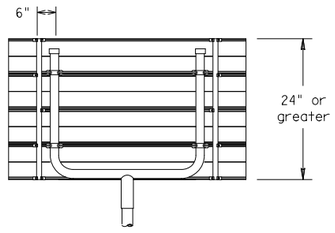


Detail E

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
9-08

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

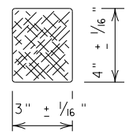
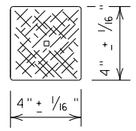
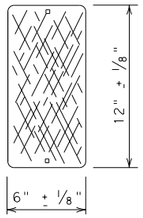
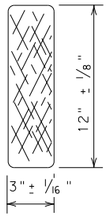
CONT	SECT	JOB	HIGHWAY
0172	01	055,ETC	BU 287

DIST	COUNTY	SHEET NO.
FTW	TARRANT	229

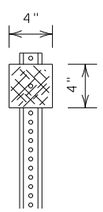
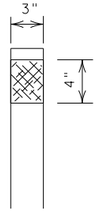
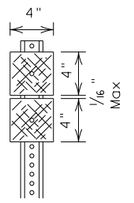
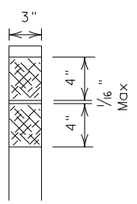
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

DATE:
FILE:

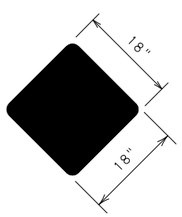
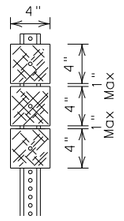
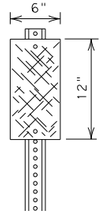
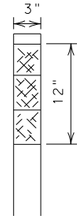
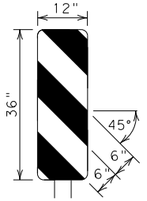
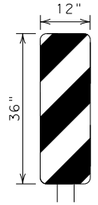
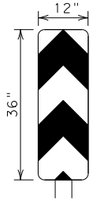
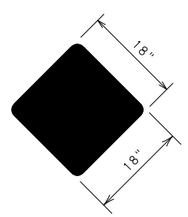
REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	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.			

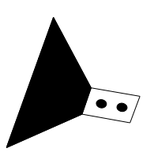
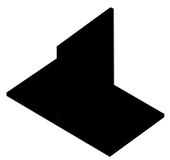
DELINEATORS

	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

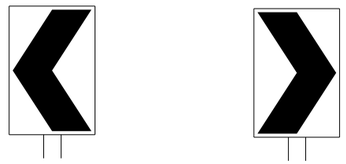
OBJECT MARKERS

	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

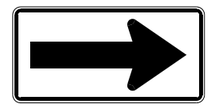
BARRIER REFLECTORS (BRF)

	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	
NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).			

ONE DIRECTION LARGE ARROW

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

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

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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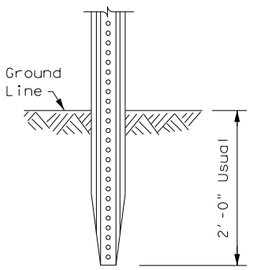
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	FTW	TARRANT		230

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

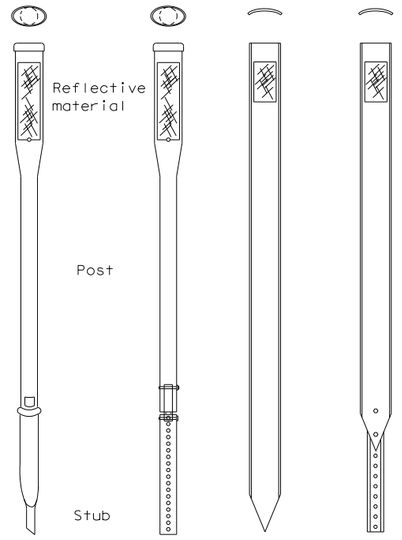


NOTES

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.

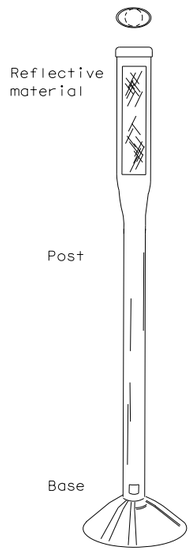
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



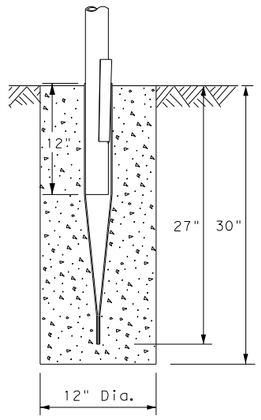
SURFACE MOUNT

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.

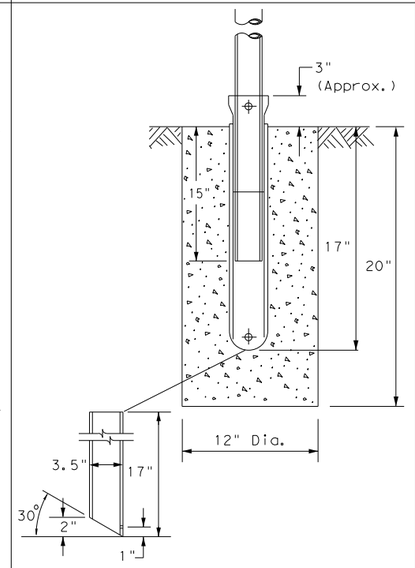
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

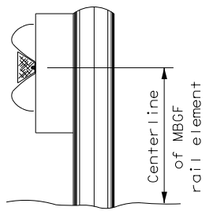
NOTE

1. Install per manufacturer's recommendations.

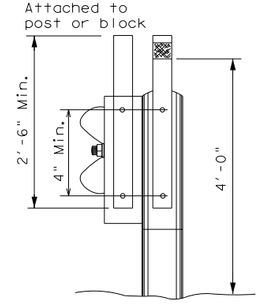
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

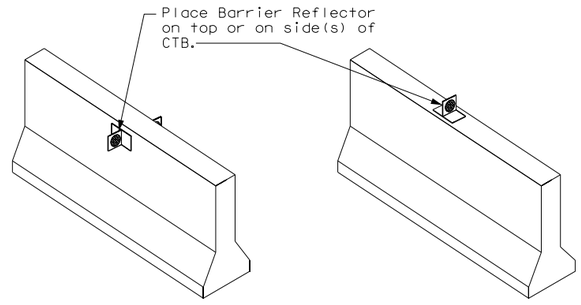
GF1



GF2



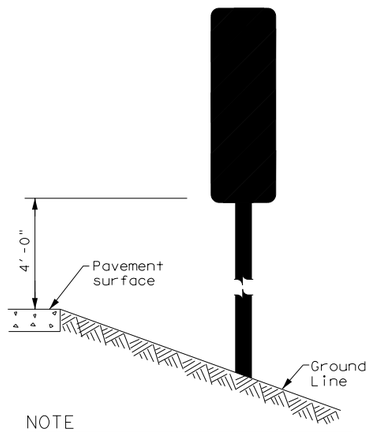
CONCRETE TRAFFIC BARRIER (CTB)



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.

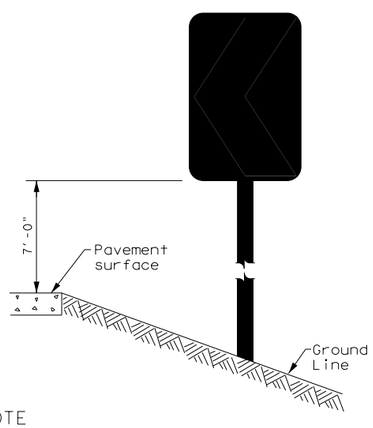
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

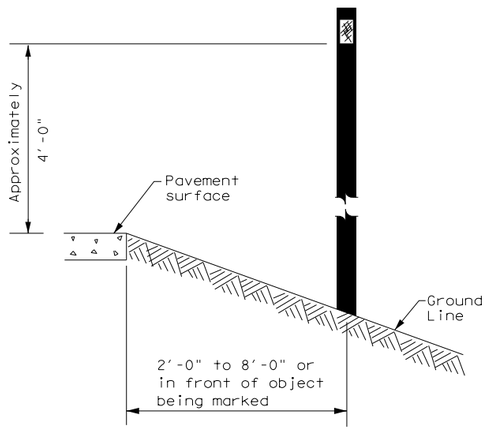
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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
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10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	FTW	TARRANT		231

20B

DATE:
FILE:

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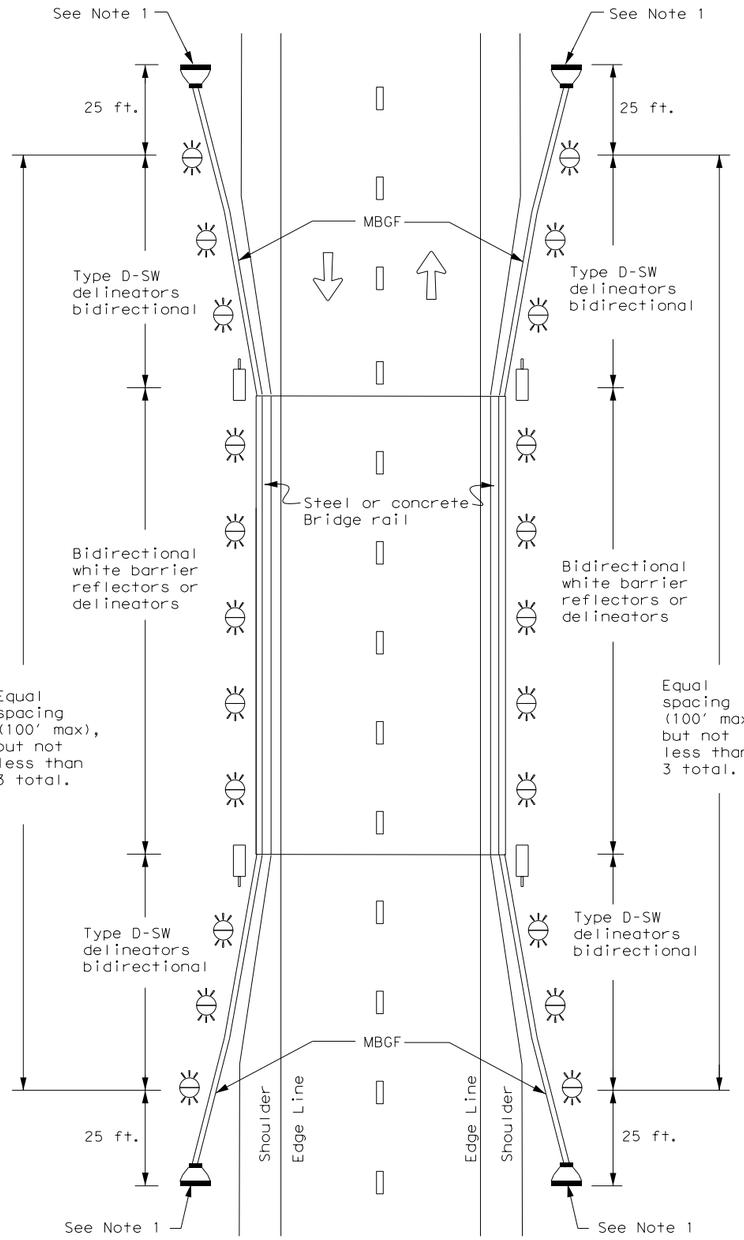
DATE:
FILE:

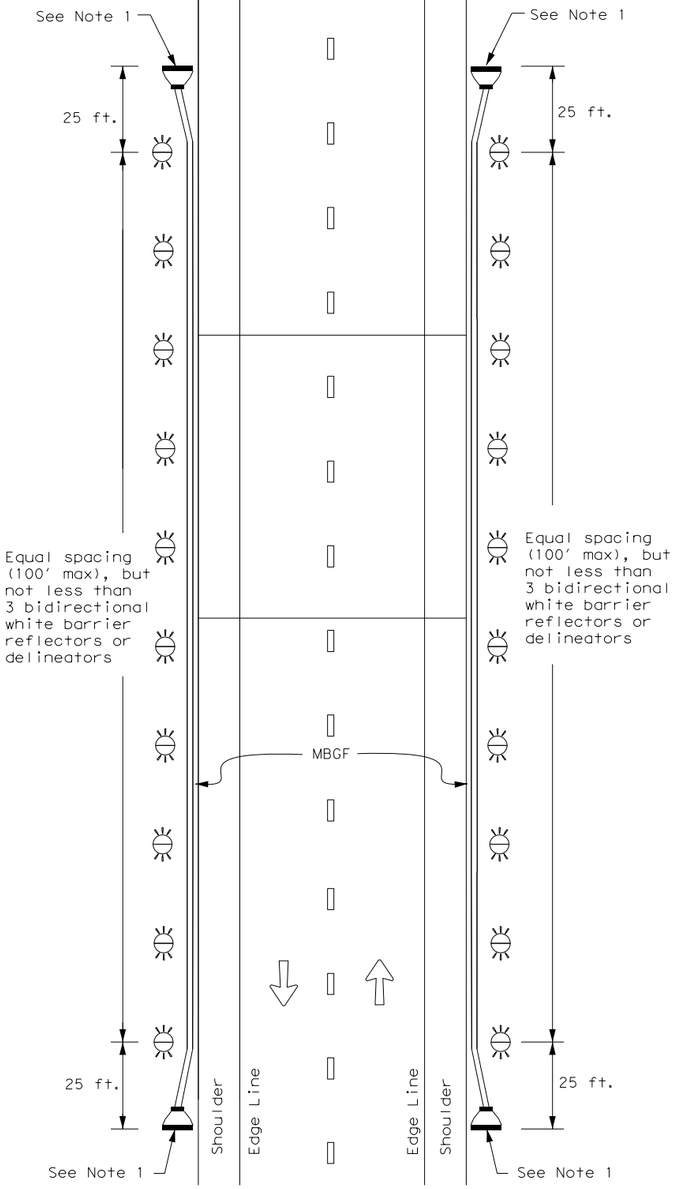
TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

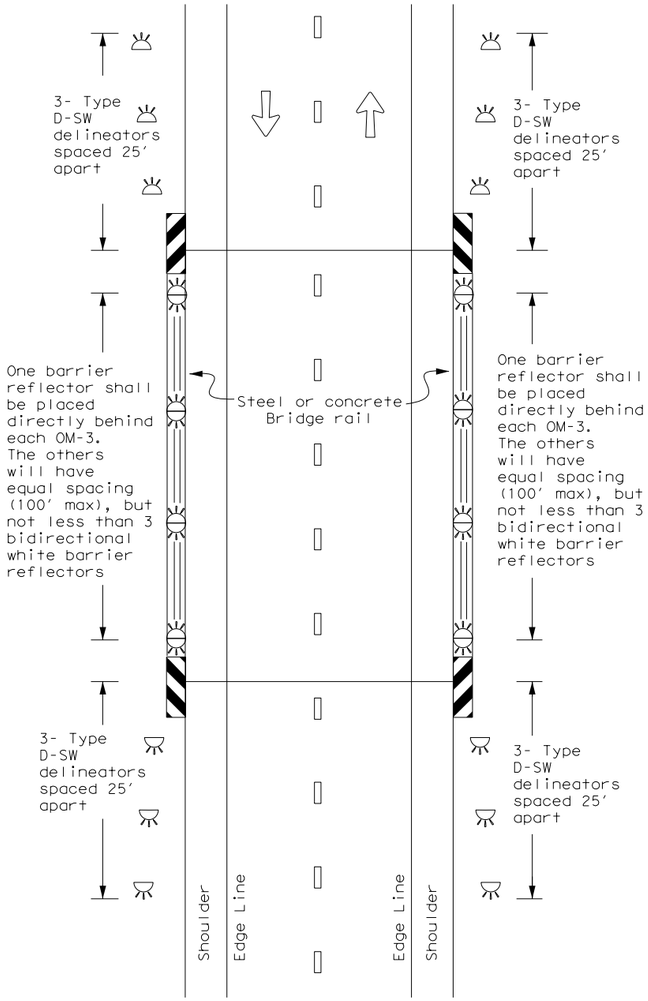
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

1. Terminal ends require reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



LEGEND

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

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(5)-20

FILE: dom5-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS	0172	01	055,ETC	BU 287
7-20	DIST	COUNTY		SHEET NO.
	FTW	TARRANT		232

20E

DATE:
FILE:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1.

2.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.

2.

3.

4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediate area, and contact the Engineer immediately.

LIST OF ABBREVIATIONS

BMP:	Best Management Practice	SPCC:	Spill Prevention Control and Countermeasure
CGP:	Construction General Permit	SW3P:	Storm Water Pollution Prevention Plan
DSHS:	Texas Department of State Health Services	PCN:	Pre-Construction Notification
FHWA:	Federal Highway Administration	PSL:	Project Specific Location
MOA:	Memorandum of Agreement	TCEQ:	Texas Commission on Environmental Quality
MOU:	Memorandum of Understanding	TPDES:	Texas Pollutant Discharge Elimination System
MS4:	Municipal Separate Stormwater Sewer System	TPWD:	Texas Parks and Wildlife Department
MBTA:	Migratory Bird Treaty Act	TxDOT:	Texas Department of Transportation
NOT:	Notice of Termination	T&E:	Threatened and Endangered Species
NWP:	Nationwide Permit	USACE:	U.S. Army Corps of Engineers
NOI:	Notice of Intent	USFWS:	U.S. Fish and Wildlife Service

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropriate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the following are detected:
* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☒ No

If "No", then no further action is required.
If "Yes", then TxDOT is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☒ No

If "Yes", then TxDOT must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then TxDOT is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation — Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR	
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	0172	01	055,ETC	BU 287	
	DIST	COUNTY		SHEET NO.	
	FTW	TARRANT		233	

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.

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):
172-01-57

1.2 PROJECT LIMITS:

From: US 287 BUS AT E DIVENT AVE

To: US 287 BUS AT GLEN EDEN DRIVE

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 32.7029 ,(Long) -97.3047

END: (Lat) 32.6907 ,(Long) -97.2964

1.4 TOTAL PROJECT AREA (Acres): 16.4

1.5 TOTAL AREA TO BE DISTURBED (Acres): 3.51

1.6 NATURE OF CONSTRUCTION ACTIVITY:
CONSTRUCTION OF CURB RAMPS, SIDEWALK, AND MISCELLANEOUS PEDESTRIAN ELEMENTS

1.7 MAJOR SOIL TYPES:

Soil Type	Description
ALEDO-URBAN LAND COMPLEX, 1% TO 8% SLOPES	50% ALEDO AND SIMILAR SOILS, MEDIUM RATE OF RUNOFF, WELL DRAINED
ALEDO-BOLAR-URBAN LAND COMPLEX, 3% TO 20% SLOPES	35% ALEDO AND SIMILAR SOILS, 20% BOLAR AND SIMILAR SOILS, MEDIUM RATE OF RUNOFF, WELL DRAINED
FRIO-URBAN LAND COMPLEX, 0% TO 1% SLOPES	55% FRIO AND SIMILAR SOILS, LOW RATE OF RUNOFF, WELL DRAINED, OCCASIONALLY FLOODED
PURVES-URBAN LAND COMPLEX, 0% TO 5% SLOPES	60% PURVES AND SIMILAR SOILS, HIGH RATE OF RUNOFF, WELL DRAINED

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

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

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

Type	Sheet #s

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

1.9 CONSTRUCTION ACTIVITIES:

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

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

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☒ Sediment laden stormwater from stormwater conveyance over disturbed area
- ☒ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☐ Solvents, paints, adhesives, etc. from various construction activities
- ☒ Transported soils from offsite vehicle tracking
- ☒ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☒ Sanitary waste from onsite restroom facilities
- ☒ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☒
- ☐ Other: _____
- ☐ 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
SYCAMORE CREEK	0806E

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

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

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

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

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

MS4 Entity

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			234
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0172	01	055,ETC	BU 287

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ X 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

- X ☐ 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
  - X 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:

- X Excess dirt/mud on road removed daily
- X Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- X Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- X Chemical Management
- X Concrete and Materials Waste Management
- X Debris and Trash Management
- X Dust Control
- X Sanitary Facilities
- ☐ 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:

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

2.8 DEWATERING:

2.9 INSPECTIONS:

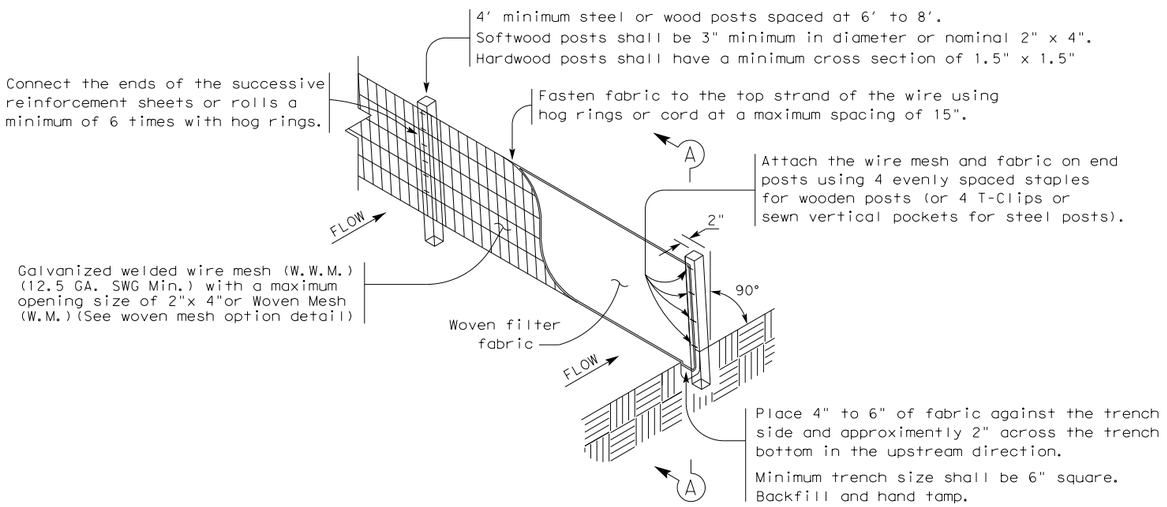
2.10 MAINTENANCE:

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

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

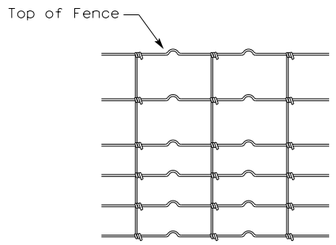
Texas Department of Transportation

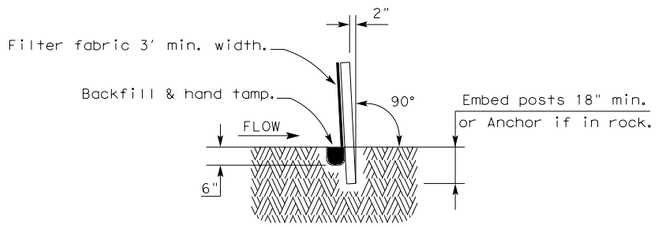
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
			235
STATE	STATE DIST.	COUNTY	
TEXAS	FTW	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0172	01	055,ETC	BU 287



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

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

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

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

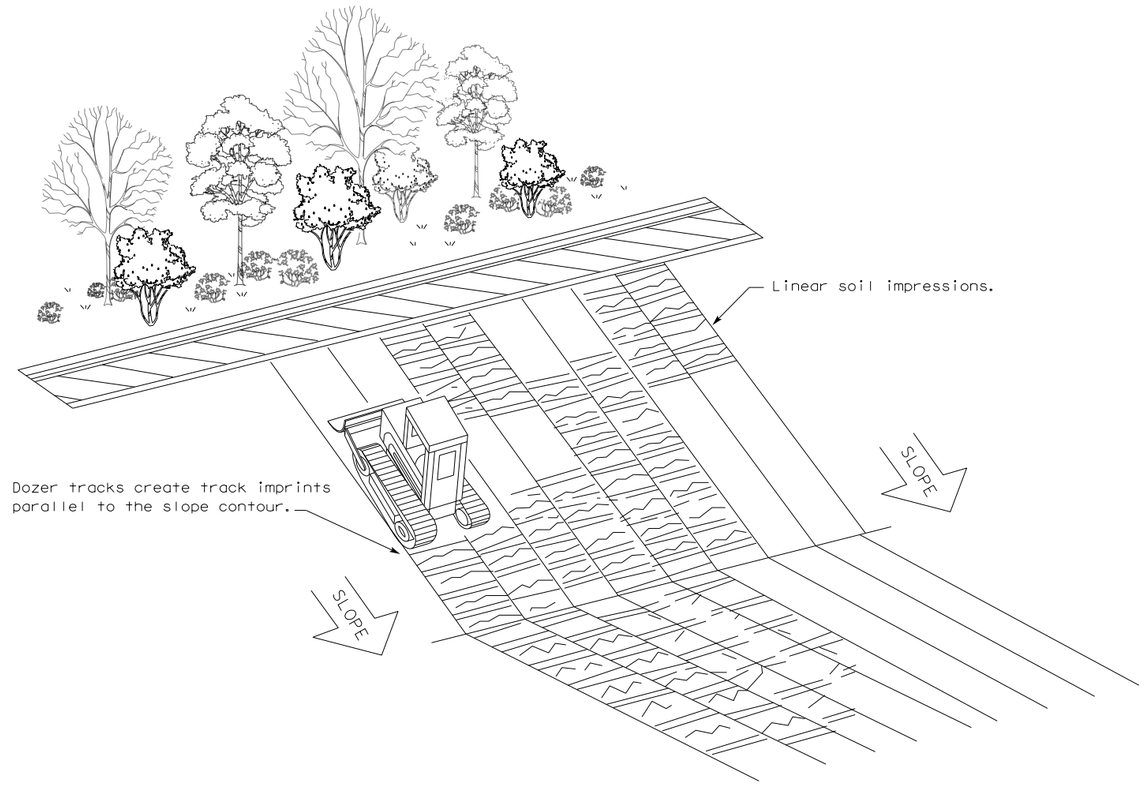
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

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



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0172	01	055,ETC		BU 287	
	DIST	COUNTY			SHEET NO.	
	FTW	TARRANT			236	

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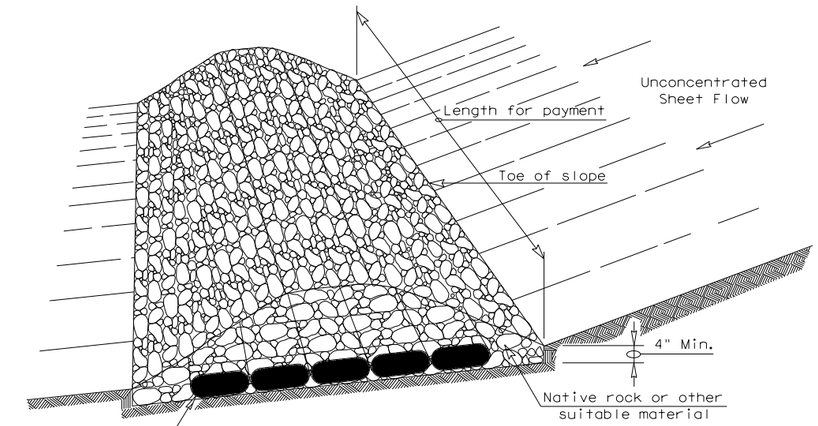
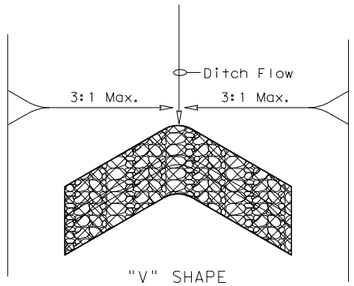


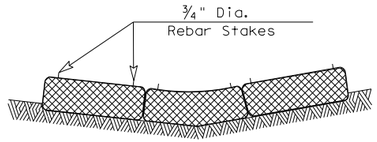
FILTER DAM AT TOE OF SLOPE

RFD1

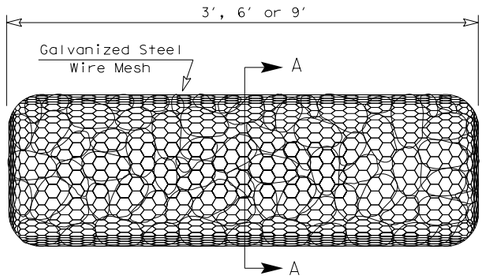


"V" SHAPE
PLAN VIEW

PLAN VIEW

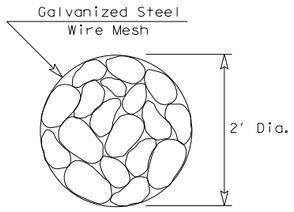


SECTION B-B

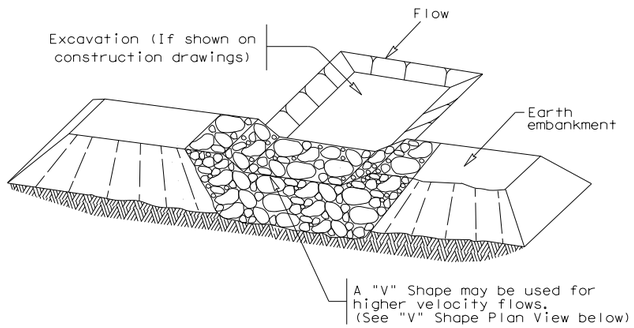


TYPE 4 (SACK GABIONS)

RFD4

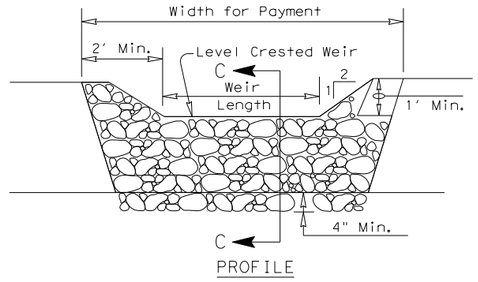


SECTION A-A

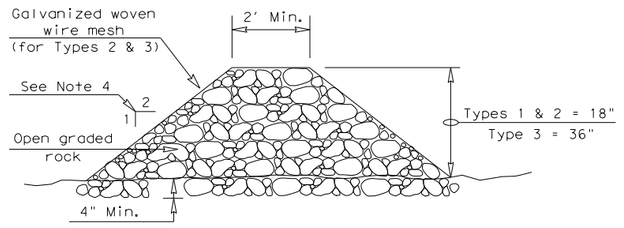


FILTER DAM AT SEDIMENT TRAP

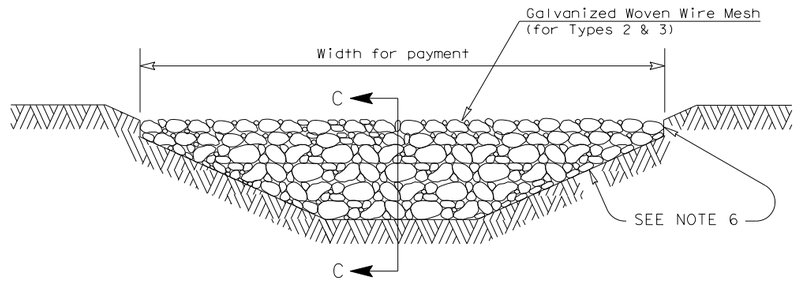
RFD1 OR RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS			
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REVISIONS	0172	01	055,ETC	BU 287			
	DIST	COUNTY		SHEET NO.			
	FTW	TARRANT		237			