FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2022(313)TAPS		1
STATE	STATE DIST.	COUNTY	
TEXAS	AUS	HAYS	
CONT.	SECT.	JOB	HIGHWAY NO.
0914	33	088	VAR

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENTS

FEDERAL AID PROJECT
PROJECT NO. STP 2022(313)TAPS

HAYS COUNTY

CSJ: 0914-33-088

VARIOUS

LIMITS: FROM DRIPPING SPRINGS MIDDLE SCHOOL TO ROGER HANKS PARKWAY/BROKEN LANCE ROAD
LENGTH OF PROJECT = 8,404.25 FT = 1.592 MI
ROAD = 8,404.25 FT = 1.592 MI
BRIDGE = 0.00 FT = 0.000 MI

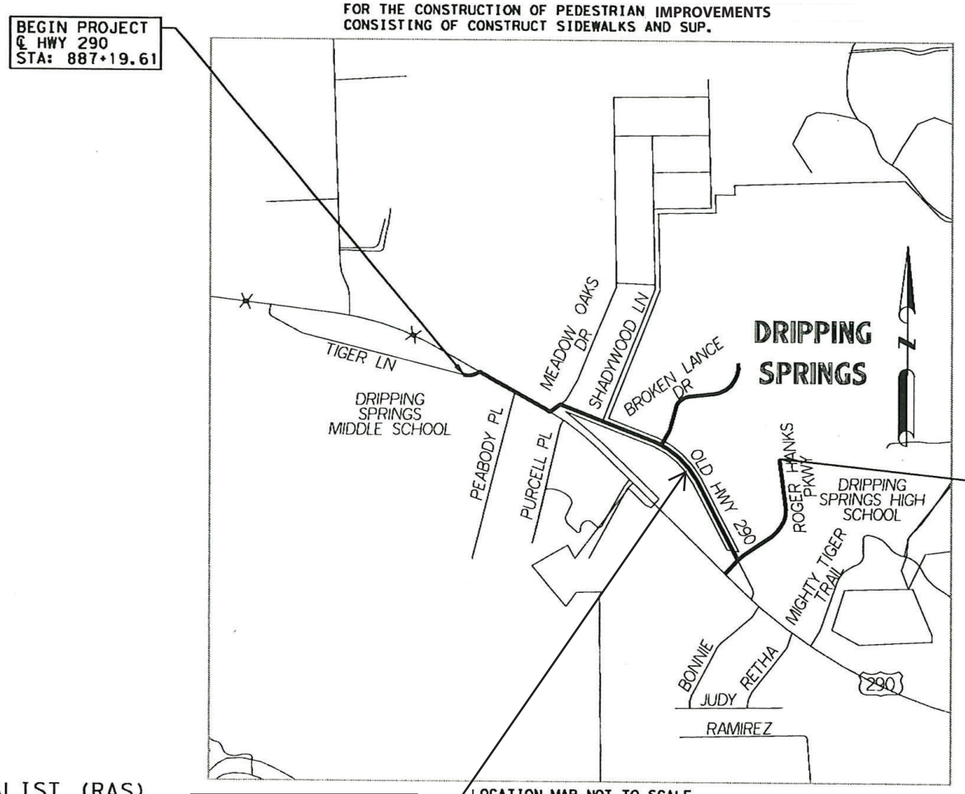
FOR THE CONSTRUCTION OF PEDESTRIAN IMPROVEMENTS
CONSISTING OF CONSTRUCT SIDEWALKS AND SUP.

INDEX OF SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS

DESIGN SPEED = N/A
ADT = N/A
ACCESSIBILITY STANDARDS = PROWAG

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



SEE PROJECT LAYOUT SHEETS FOR BEGIN & END OF EACH ALIGNMENT

LOCATION MAP NOT TO SCALE

EXCEPTIONS: NONE
EQUATIONS: NONE
R.R. CROSSINGS: NONE

DRIPPING SPRINGS
Texas

CITY OF DRIPPING SPRINGS CONCURRENCE 6-22-23
DIRECTOR OF PUBLIC WORKS AND UTILITIES

CITY OF DRIPPING SPRINGS CONCURRENCE 6-22-23
CHAD GORDON
CITY ENGINEER

PLANS PREPARED BY:
Kimley»Horn
TX FIRM NO. F-928

6/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

REGISTERED ACCESSIBILITY SPECIALIST (RAS)
INSPECTION REQUIRED TDLR No. TABS2023018034

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, JULY 5, 2022)

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Texas Department of Transportation

RECOMMENDED FOR LETTING 6/29/2023
DocuSigned by: Susana Ceballos P.E.
E1816167B5C7414...

SUBMITTED FOR LETTING 6/29/2023
DocuSigned by: P.E.
917B7C376B3C4D5... ENGINEER

APPROVED 6/29/2023
DocuSigned by:
8912AF18F45A416... DIRECTOR OF PLANNING AND DEVELOPMENT

COUNTY_____ PROJ. NO._____
HWY. NO._____ LETTING DATE_____
DATE ACCEPTED_____

FILE LOCATION
http://www.txdot.gov/inside-txdot/district/san-antonio/specinfo.html

LEVELS DISPLAYED
1

SHEET	DESCRIPTION
	I. GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3-6	PROJECT LAYOUT
7	EXISTING TYPICAL SECTIONS
8	PROPOSED TYPICAL SECTIONS
9, 9A-9I	GENERAL NOTES
10, 10A-10B	ESTIMATE AND QUANTITY
11	QUANTITY SUMMARY
	II. TRAFFIC CONTROL PLAN
12	TRAFFIC CONTROL PLAN NARRATIVE
	TRAFFIC CONTROL - STANDARDS
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26	* TCP(2-2)-18
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71	ROADWAY PLAN
72	DRIVEWAY DETAILS
73-75	MISCELLANEOUS DETAILS
76	ASSET MAINTENANCE
	ROADWAY - STANDARDS
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95	CULVERT LAYOUT
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104	US 290 & MEADOW OAKS DRIVE - TRAFFIC SIGNAL ELEVATION VIEWS
105	US 290 & MEADOW OAKS DRIVE - TRAFFIC SIGNAL LOAD SWITCHES
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STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

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

P.E. 5/22/2023

RYAN LOHMANN, P.E.
KIMLEY-HORN AND ASSOCIATES, INC.

DATE

STATE OF TEXAS
MATTHEW A. GAAL
140753
LICENSED
PROFESSIONAL ENGINEER

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

P.E. 5/22/2023

MATTHEW A. GAAL, P.E.
KIMLEY-HORN AND ASSOCIATES, INC.

DATE

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

INDEX OF SHEETS

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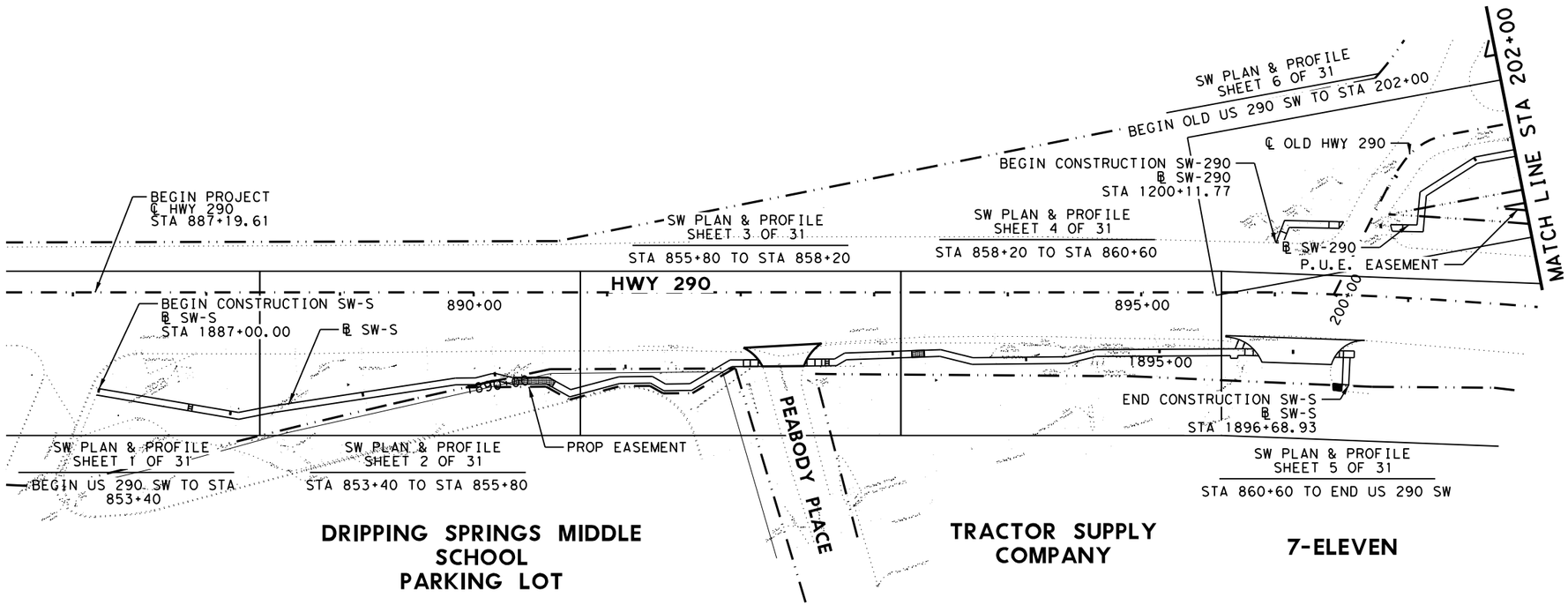
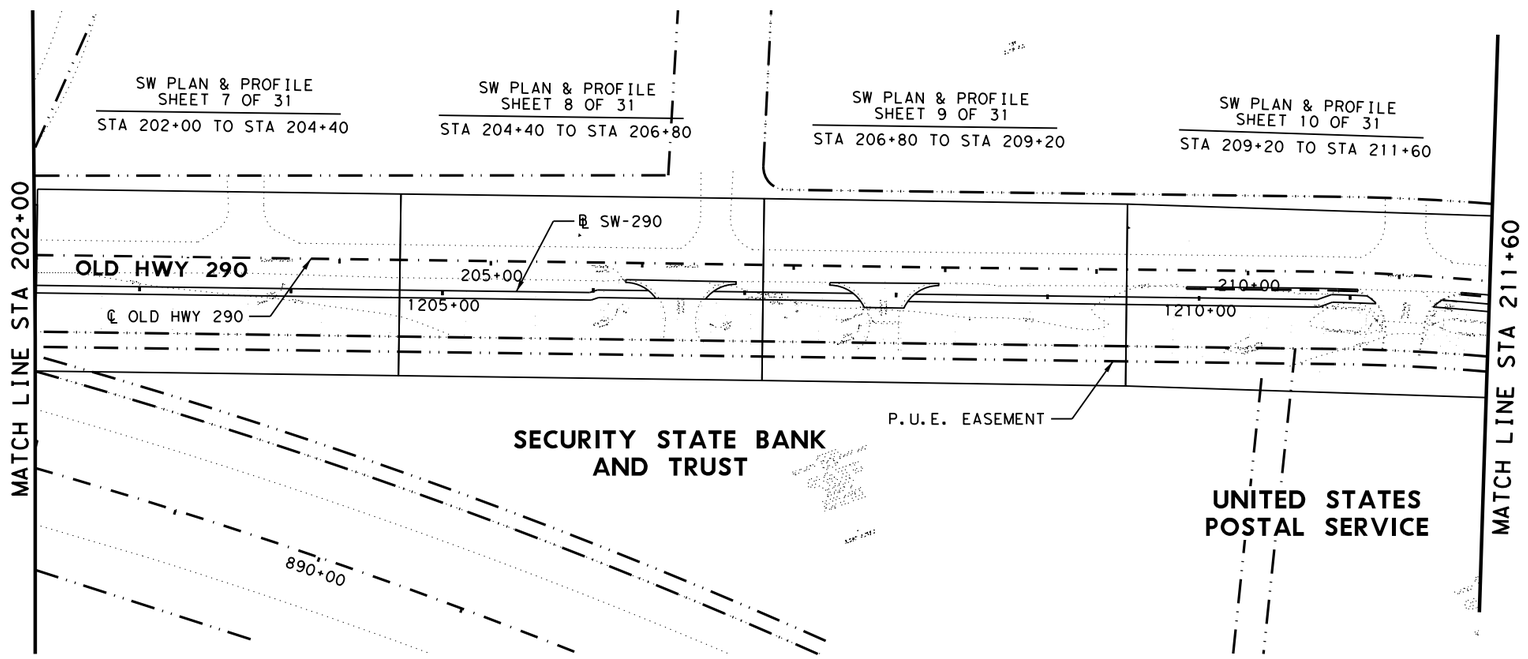
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	2
CONT.	SECT.	JOB	
0914	33	088	





LEGEND

- EXIST ROW
- PROP IMPROVEMENTS

NOTES:

1. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ADDITIONAL INFORMATION.

6/28/2023

RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

DRIPPING SPRINGS
Texas

Kimley»Horn
F-928

Texas Department of Transportation

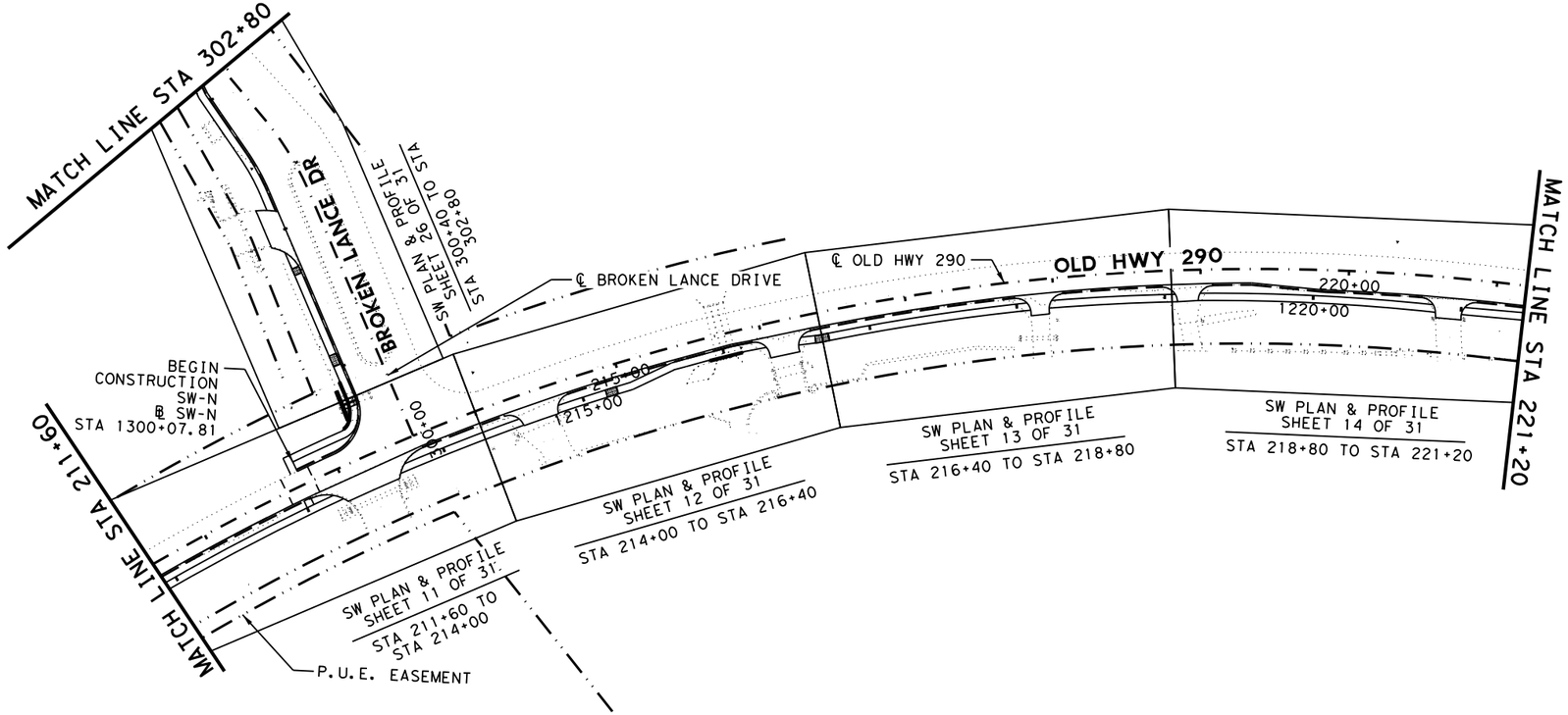
DRIPPING SPRINGS SRTS

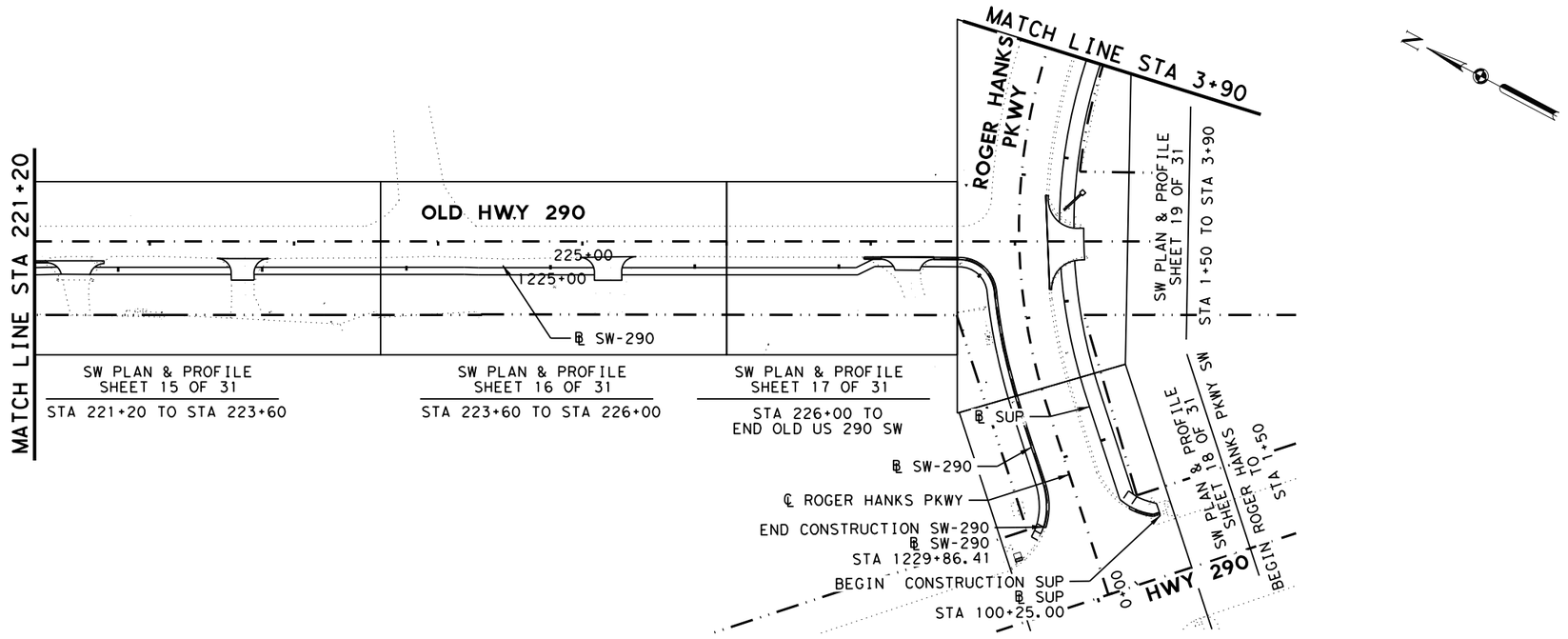
PROJECT LAYOUT

SHEET 1 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	
CONT.	SECT.	JOB	3
0914	33	088	





LEGEND

- EXIST ROW
- PROP IMPROVEMENTS

NOTES:

1. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ADDITIONAL INFORMATION.

6/28/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PROJECT LAYOUT

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	4
CONT.	SECT.	JOB	
0914	33	088	

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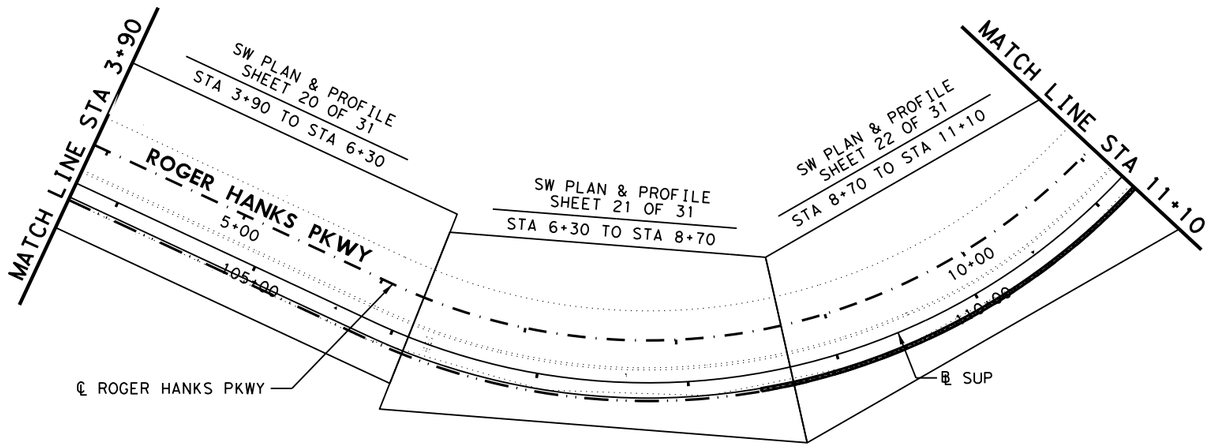

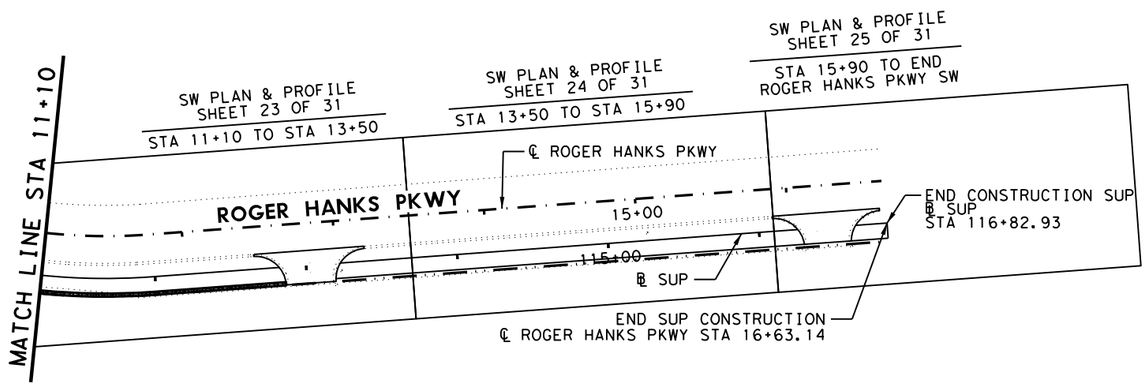

LEGEND

EXIST ROW

PROP IMPROVEMENTS

NOTES:

1. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ADDITIONAL INFORMATION.

6/28/2023

RYAN W. LOHMANN
133721
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

DRIPPING SPRINGS
Texas

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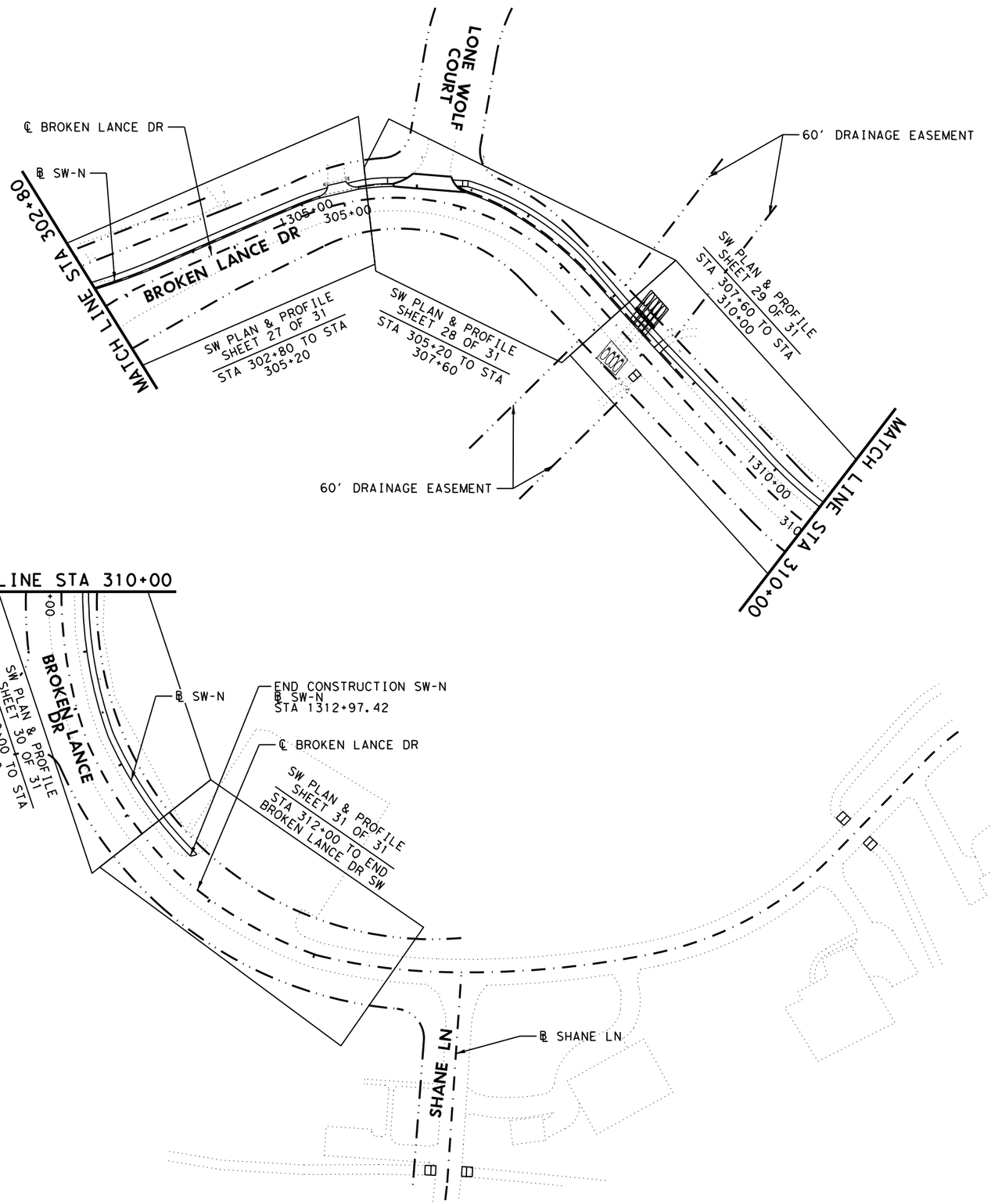
DRIPPING SPRINGS SRTS

PROJECT LAYOUT

SHEET 3 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	5
CONT.	SECT.	JOB	
0914	33	088	



LEGEND

EXIST ROW

PROP IMPROVEMENTS

NOTES:

1. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA AND ADDITIONAL INFORMATION.

6/28/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PROJECT LAYOUT

SHEET 4 OF 4

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	6
CONT.	SECT.	JOB	
0914	33	088	

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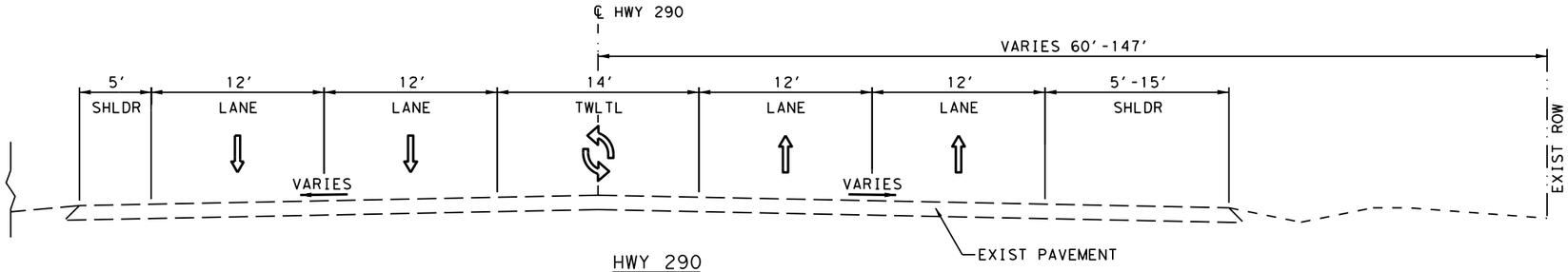
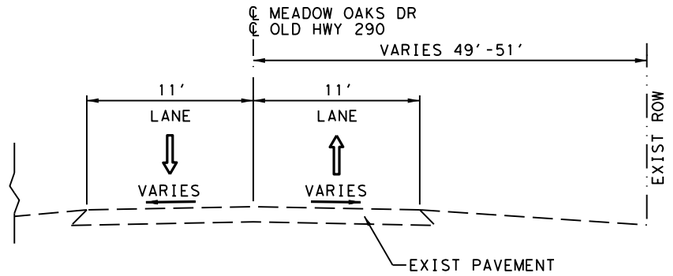
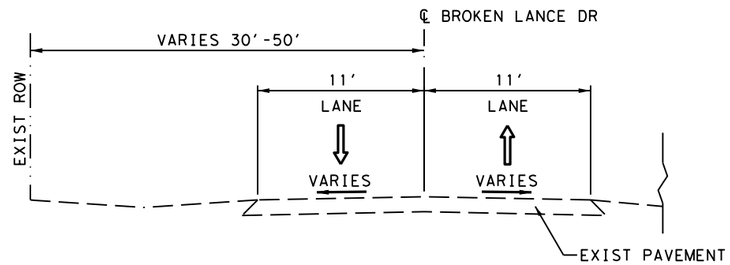


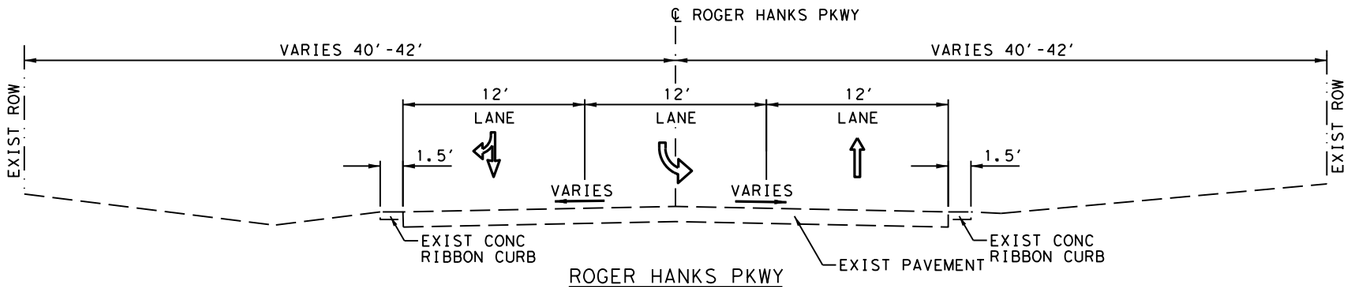
HWY 290
FROM TIGER LN TO MEADOW OAKS DR



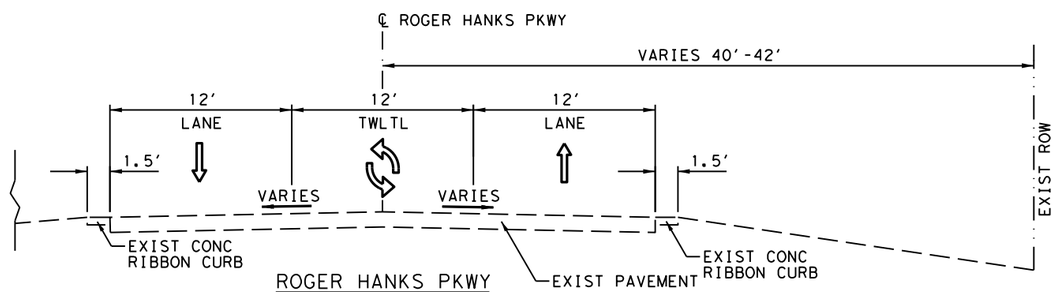
MEADOW OAKS DR / OLD HWY 290
FROM HWY 290 TO ROGER HANKS PKWY



BROKEN LANCE DR
FROM OLD HWY 290 TO SOUTH OF SHANE LN



ROGER HANKS PKWY
FROM HWY 290 TO OLD HWY 290



ROGER HANKS PKWY
FROM OLD HWY 290 TO HIGH SCHOOL

5/22/2023

RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

DRIPPING SPRINGS
Texas

Kimley»Horn
F-928

Texas Department of Transportation

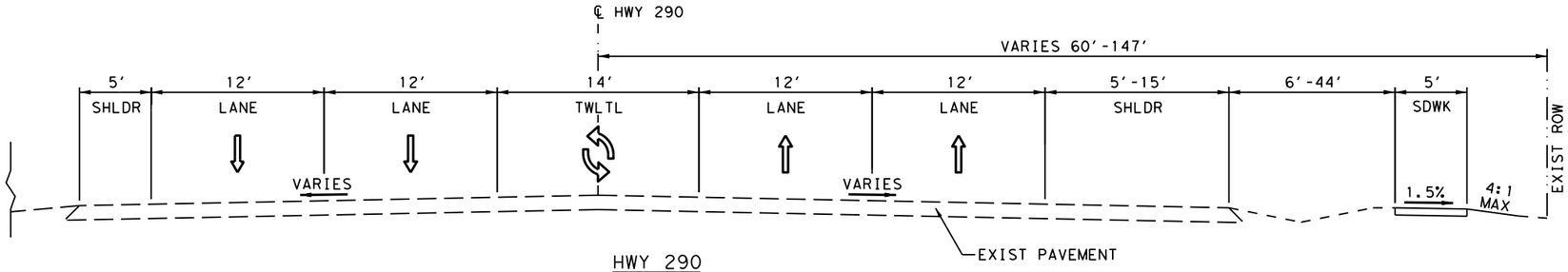
DRIPPING SPRINGS SRTS

EXISTING TYPICAL SECTIONS

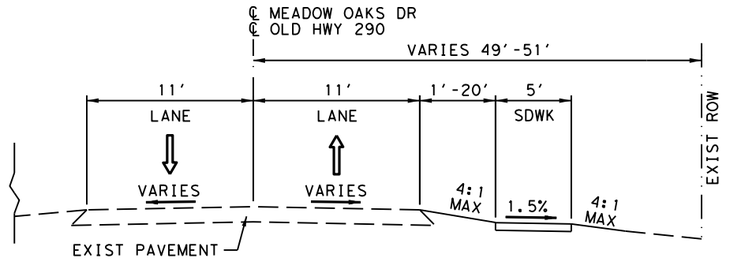
SHEET 1 OF 1

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

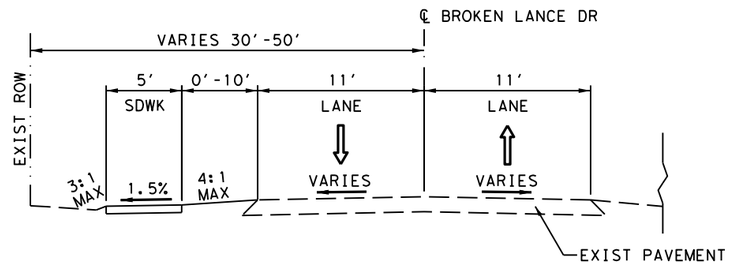
STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	7
CONT.	SECT.	JOB	
0914	33	088	



HWY 290
FROM TIGER LN TO MEADOW OAKS DR



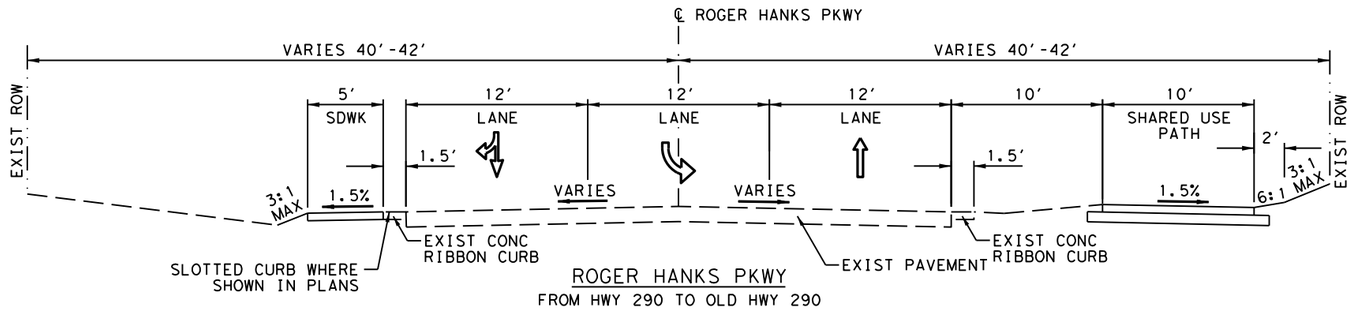
MEADOW OAKS DR / OLD HWY 290
FROM HWY 290 TO ROGER HANKS PKWY



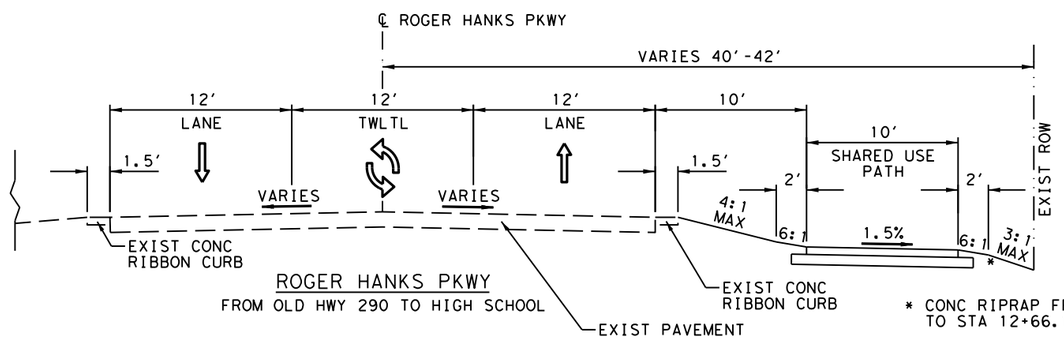
BROKEN LANCE DR
FROM OLD HWY 290 TO SOUTH OF SHANE LN

NOTES:

1. SEE PLAN FOR LOCATION OF TY II CURB AND GUTTER (SLOTTED). SEE MISCELLANEOUS DETAILS SHEET FOR MORE INFORMATION.



ROGER HANKS PKWY
FROM HWY 290 TO OLD HWY 290



ROGER HANKS PKWY
FROM OLD HWY 290 TO HIGH SCHOOL

* CONC RIPRAP FROM STA 8+50.00 TO STA 12+66.11

5/23/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PROPOSED TYPICAL SECTIONS

SHEET 1 OF 1

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	8
CONT.	SECT.	JOB	
0914	33	088	

GENERAL NOTES: Version: June 23, 2023

Item	Description	**Rate
341/3076, 344/3077	**Dense-Graded Hot-Mix Asphalt and Superpave**	110 LB/SY/IN
3084	**Bonding Course**	0.09 GAL/SY

** For Informational Purposes Only

GENERAL

South Austin Mark.Baumann@txdot.gov
South Austin Shane.Swimm@txdot.gov

Questions and requests for documents will be accepted via the Letting Pre-Bid Q&A web page. All questions and any corresponding responses that are generated will be posted through the same Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:
https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

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

References to manufacturer's trade name or catalog numbers are for the purpose of identification only. Similar materials from other manufacturers are permitted if they are of equal quality, comply with the specifications for this project, and are approved.

If work is performed at Contractor's option, when inclement weather is impending, and the work is damaged by subsequent precipitation, the Contractor is responsible for all costs associated with replacing the work, if required.

The roadbed will be free of organic material prior to placing any section of the pavement structure.

Contact the supervisor for the passenger facility at Capital Metro and request the relocation of Capital Metro signs. Contact the supervisor at (512) 385-0190.

Equip all construction equipment used in roadway work with highly visible omnidirectional flashing warning lights.

Intelligent Transportation Systems (ITS) Infrastructure may exist within the limits of this project and that the system must remain operational throughout construction. The exact location of ITS Infrastructure is not known. Contact the TxDOT Area Engineer's or Inspection Team's Office for the location(s) at least 72 hours before commencing any work that might affect present ITS Infrastructure. In the event of system damage, notify TxDOT/CTECC at (512) 974-0883 within one hour of occurrence. Refer to Item 6000 for additional details.

Provide a smooth, clean sawcut along the existing asphalt or concrete pavement structure, as directed. Consider subsidiary to the pertinent Items.

Construct all manholes/valves to final pavement elevations prior to the placement of final surface. If the manholes/valves are going to be exposed to traffic, place temporary asphalt around the manhole/valve to provide a 50:1 taper. The asphalt taper is subsidiary to the ACP work.

Supply litter barrels in enough numbers at locations as directed to control litter within the project. Consider subsidiary to pertinent Items.

Keep the roadway free of debris and sediment caused by construction activities. Dispose of all material in accordance with federal, state, and local regulations. This work is subsidiary.

Damage to existing pipes and SET's due to Contractor operations will be repaired at Contractor's expense.

All locations used for storing construction equipment, materials, and stockpiles of any type, within the right of way, will be as directed. Use of right of way for these purposes will be restricted to those locations where driver sight distance to businesses and side street intersections is not obstructed and at other locations where an unsightly appearance will not exist. The Contractor will not have exclusive use of right of way but will cooperate in the use of the right of way with the city/county and various public utility companies as required.

Coordinate and obtain approval for all bridgework over existing roadways.

Bridge Vertical Clearance and Traffic Handling.
Notify TxDOT project staff and the local bridge engineer 10 business days prior to the following: change in vertical clearance, placing beams/girders over traffic, opening or removing traffic from a bridge or portion of a bridge, and completion of bridge work. This requirement includes bridge class culverts. Provide vertical clearance for all structures (including signal mast arms, span wires, and overhead sign bridge structures) within the project limit. Submit information and notices to local bridge engineer at AUS_BRG_Notify@txdot.gov.

During evacuation periods for Hurricane events the Contractor will cooperate with Department for the restricting of Lane Closures and arranging for Traffic Control to facilitate Coastal Evacuation Efforts.

ITEM 5 – CONTROL OF THE WORK
Place construction or silt fence 2 ft. inside TxDOT ROW or as shown in plans.

Place construction stakes at intervals of no more than 100 ft. This work is subsidiary.

Provide a 72 hour advance email notice to AUS_Locate@TxDOT.gov to request illumination, traffic signal, ITS, or toll equipment utility locates. Provide AUS_Locate@TxDOT.gov an

electronic pdf of as-builts within 21 calendar days of illumination, traffic signal, ITS, or toll equipment being placed into operation. As-built shall include GPS coordinates of manholes and junction boxes. Include final version of RFI's and revised plan sheets.

Precast Alternate Proposals.
When a precast or cast-in-place concrete element is included in the plans, a precast concrete alternate may be submitted in accordance with "Standard Operating Procedure for Alternate Precast Proposal Submission" found online at Alternate Precast Proposal Submission (txdot.gov). Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

Thermoplastic Pipe Alternate Proposals
When a reinforced concrete or corrugated metal pipe is included in the plans, a thermoplastic polypropylene pipe alternate may be submitted in a 2-phase process. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

Phase 1 submit an official request to TxDOT PM with a summary of proposed locations, max depth of placement for each location, cover depth, and pipe diameters. TxDOT goal is to review and respond within 10 days. Phase 1 approval does not guarantee Phase 2 approval.

Phase 2 submit the following documents with all documents signed and sealed by a licensed Engineer in the state of Texas. 1-Provide a redline or revised set of drainage plans reflecting the revised locations. 2-Provide certification that the use of the alternate pipe and proposed bedding are adequate for the proposed application, depth, etc. 3-Provide a completed thermoplastic pipe installation drawing using the following,

https://ftp.txdot.gov/pub/txdot/brg/thermoplastic-pipe-installation-drawing.pdf
https://ftp.txdot.gov/pub/txdot/brg/thermoplastic-pipe-installation-drawing.dgn

For all uses of thermoplastic pipe as an alternate, furnish, install, and inspect the thermoplastic pipe in accordance with SS4216 or latest thermoplastic pipe special specification at time of letting. Minimum values, such as cover depth, required by the specification, installation drawing, etc. will not be waived. Use granular backfill unless flowable fill or CSB is required by the alternate design. Backfill locations shown in the bid plans using flowable fill or CSB must use the backfill per the bid plans.

Electronic Shop Drawing Submittals.
Submit electronic shop drawing submittals according to the current Guide to Electronic Shop Drawing Submittal, https://www.txdot.gov/business/resources/highway/bridge/shop-drawing-submittal-cycle.html. Pre-approved producers can be found online at https://www.txdot.gov/business/resources/materials/material-producer-list.html. Use the following contact list for all submittals that are not required to be sent to Bridge Division and to copy the Engineer for all submittals to the Bridge Division.

Submittal Contact List
South Austin Mark.Baumann@txdot.gov AUS_SA-ShopReview@txdot.gov

Alignment and Profile.
Unless shown in the plans, profile and alignment data for roadways being overlaid or widened are for design verification only. Provide survey and construct the roadway in accordance with the typical section. Bid items and data may be provided to adjust cross slope and super elevations.

ITEM 6 - CONTROL OF MATERIALS
Give a minimum of 1 business day notice for materials, which require inspection at the Plant.

For structures with paint containing hazardous materials, provide locations of material removal 60 days prior to begin removal. For metal elements to be removed, mechanical shear or unbolting for removal and disposal does not require paint abatement but requires 60 day advance notice.

The area designated as the potential habitat for the Houston Toad will not be allowed as a source for embankment unless approved by the Engineer. The general area is Bastrop County north of the Colorado River and east of SH 95 unless provided in the plans.

For removal, tie, or tap of asbestos concrete (AC) pipe, contact TxDOT and the local utility company 60 days prior to performing the work. Expose the AC pipe to provide a minimum of 1 ft. of clearance around the top and sides. A minimal amount of soil may remain around the AC pipe to avoid disturbance. The local utility company will be responsible for the demo notice to DSHS and removal of the AC pipe. Tie or tap into existing AC pipe may require removing an entire section of pipe from collar to collar and replacement of pipe with new pipe using existing bid items.

For Federally Funded Contracts, comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, by submitting a notarized original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product. Refer to the Buy America Material Classification Sheet, located at the following link, for clarification on material categorization. Buy America material classification sheet (txdot.gov)

ITEM 7 – LEGAL RELATIONS AND RESPONSIBILITIES
TxDOT will coordinate with TDLR regarding pedestrian elements and sidewalks. The contractor will procure and provide all permits, licenses, and inspections; pay all charges, fees, and taxes regarding TDLR rules governing industrialized housing and buildings.

No significant traffic generator events identified.

When any abandoned well is encountered, cease construction operations in this area and notify the Engineer who will coordinate the proper plugging procedures. A water well driller licensed in the State of Texas must be used to plug a well.

Perform maintenance of vehicles or equipment at designated maintenance sites. Keep a spill kit on-site during fueling and maintenance. This work is subsidiary.

Maintain positive drainage for permanent and temporary work for the duration of the project. Be responsible for any items associated with the temporary or interim drainage and all related maintenance. This work is subsidiary.

Suspend all activities near any significant recharge features, such as sinkholes, caves, or any other subterranean openings that are discovered during construction or core sampling. Do not proceed until the designated Geologist or TCEQ representative is present to evaluate and approve remedial action.

Locate aboveground storage tanks kept on-site for construction purposes in a contained area as to not allow any exposure to soils. The containment will be sized to capture 150% of the total capacity of the storage tanks.

PSL in Edwards Aquifer Recharge and Contributing Zone.
Obtain written approval from the Engineer for all on or off right of way PSLs not specifically addressed in the plans. Provide a signed sketch of the location 30 business days prior to use of the PSL. Include a list of materials, equipment and portable facilities that will be stored at the PSL. TxDOT will coordinate with the necessary agencies. Approval of the PSL is not guaranteed. Un approved PSL is not a compensable impact.

Work within a USACE Jurisdictional Area.
Do not initiate activities within a U.S. Army Corps of Engineers (USACE) jurisdictional area that have 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. Obtain written approval from the Engineer for activities not specifically addressed in the plans. Provide a signed sketch and description of the location 60 business days prior to begin work at the location. Complete and return any forms provided by TxDOT. Approval of the work is not guaranteed. Un approved work is not a compensable impact.

Work over or near Bodies of Water (lakes, rivers, ponds, creeks, dry waterways, etc.).
Keep on site a universal spill kit adequate for the body of water and the work being performed.
Debris is not allowed to fall into the ordinary high-water level (OHWL). Debris that falls into the OHWL must be removed at the end of each work day. Debris that falls into the floodway must be removed at the end of each work week or prior to a rain event. Install and maintain traffic control devices to maintain a navigable corridor for water traffic, except during bridge demo and beam placement. This work is subsidiary.
Obtain written approval from the Engineer for temporary fill or crossings not specifically addressed in the plans. Provide a signed sketch of the location 60 business days prior to begin

work at the location. Complete and return any forms provided by TxDOT. Approval of the work is not guaranteed. Unapproved work is not a compensable impact.

DSHS Asbestos and Demolition Notification.
Complete and provide the Texas Department of State Health Services (DSHS) notification form to the Engineer and email to AUS_BRG_Notify@txdot.gov at least 30 calendar days prior to bridge removal or renovation for each phase or step of work. Notify the Engineer via email of any changes to the work start and end dates.

Migratory Birds and Bats.
Migratory birds and bats may be nesting within the project limits and concentrated on roadway structures such as bridges and culverts. Remove all old and unoccupied migratory bird nests from any structures, trees, etc. between September 16 and February 28. Prevent migratory birds from re-nesting between March 1 and September 15. Prevention shall include all areas within 25 ft. of proposed work. All methods used for the removal of old nesting areas and the prevention of re-nesting must be submitted to TxDOT 30 business days prior to begin work. This work is subsidiary.

If active nests are encountered on-site during construction, all construction activity within 25 ft. of the nest must stop. Contact the Engineer to determine how to proceed.

Tree and Brush Trimming and Removal.
Work will be conducted September 16 thru February 28. Work conducted outside this timeframe will require a bird survey. Submit a survey request to TxDOT 30 business days prior to begin work.

If within the removal time period, removal work may be conducted during delayed start period using proper traffic control per TCP standards.

Upon begin removal operations, all removal work for the project must be completed within 21 calendar days. Completion of removal includes removing from ROW or mulching of all debris.

No extension of time or compensation will be granted for a delay or suspension due to the above bird, bat, and tree/brush requirements.

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

No payment will be made for law enforcement personnel needed for moving equipment or payment for drive time to/from the event site. A minimum number of hours is not guaranteed.

Payment is for work performed. If the Contractor has a field office, provide an office location for a supervisory officer when event requires a supervising officer. This work is subsidiary.

A maximum combined rate of $70 per hour for the law enforcement personnel and the patrol vehicle will be allowed. Any scheduling fee is subsidiary per Standard Specification 502.4.2. Cancel law enforcement personnel when the event is canceled. Cancellation, minimums or "show up" fees will not be paid when cancellation is made 12 hours prior to beginning of the event. Failure to cancel within 12 hours will not be cause for payment for cancellation, minimums, or "show up" time. Payment of actual "show up" time to the event site due to cancellation will be on a case-by-case basis at a maximum of 2 hours per officer.

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

Back Up Alarm.
For hours 9 P to 5 A, utilize a non-intrusive, self-adjusting noise level reverse signal alarm. This is not applicable to hotmix or seal coat operations. This is subsidiary.

ITEM 8 – PROSECUTION AND PROGRESS
Electronic versions of schedules will be saved in Primavera P6 format.

Working days will be charged in accordance with 8.3.1.4, "Standard Workweek."
A CPM schedule in Primavera format and a PSSR is required. Use software fully compatible with Primavera P6.

ITEM 100 - PREPARING RIGHT OF WAY
Prep ROW must not begin until accessible trees designated for preservation have been protected, items listed in the EPIC have been addressed, and SW3P controls installed in accessible areas.

Backfill material will be Type B Embankment using ordinary compaction.

Follow Item 752.4 Work Methods and Item 752 general notes when removing or working on or near trees and brush.

Unless shown otherwise in the plans or a designated non-mow area, perform trimming or removal for areas within 30 ft. of edge of pavement under construction. Trim or remove to provide minimum of 5 ft. of horizontal clearance and 7 ft. of vertical clearance for the following: sidewalks, paths, guard fence, rails, signs, object markers, and structures. Trim to provide a minimum of 14 ft. vertical clearance under all trees. This work is subsidiary.

ITEM 105 – REMOVING TREATED AND UNTREATED BASE AND ASPHALT PAVEMENT
Existing typical is based on information available. This typical may not account for all maintenance work such as overlays or pavement repairs. A change in material type or thickness

does not warrant additional payment. Payment is full compensation for removing all material to the depth specified.

ITEM 110 – EXCAVATION
The Engineer will define unsuitable material.

ITEM 132 – ALL EMBANKMENT

Prior to begin embankment of existing area, correct or replace unstable material to a depth of 6 in. below existing grade. Embankment areas will be inspected prior to beginning work.

Rock or broken concrete produced by the project is allowed in earth embankments. The size of the rock or broken concrete will not exceed the layer thickness requirements in Section 132.3.4., "Compaction Methods." The material will not be placed vertically within 5 ft. of the finished subgrade elevation.

Embankment placed vertically within 5 ft. of the finished subgrade elevation or within the edges of the subgrade and treated with lime, cement, or other calcium based additives must have a sulfate content less than 3000 ppm. Allow 5 business days for testing. Treatment of sulfate material 3000 ppm to 7000 ppm requires 7 days of mellowing and continuous water curing, in accordance TxDOT guidelines for Treatment of Sulfate-Rich Soils and Bases in Pavement Structures (9/2005). Material over 7000 ppm is not allowed.

ITEM 160 - TOPSOIL
Off-site topsoil will have a minimum PI of 25.

No Sandy Loam allowed.

Obtain approval of the actual depth of the topsoil sources for both on-site and off-site sources.

Construct topsoil stockpiles of no more than five (5) feet in height.

It is permissible to use topsoil dikes for erosion control berms within the right of way, as directed.
Seed or track slopes within 14 days of placement.

Salvage topsoil from sites of excavation and embankment. Maximum salvage depth is 6 inches.
Windrowing of topsoil obtained from the Right of Way (ROW) is not allowed.

ITEM 162 – SODDING FOR EROSION CONTROL
Provide common Bermuda. Provide St. Augustine if the adjacent grass is St. Augustine.

ITEM 168 – VEGETATIVE WATERING
Water all areas of project to be seeded or sodded.

Maintain the seedbed in a condition favorable for the growth of grass. Watering can be postponed immediately after a rainfall on the site of ½ inch or greater, but will be resumed before the soil dries out. Continue watering until final acceptance.

Vegetative watering rates and quantities are based on ¼ inch of watering per week over a 3-month watering cycle. The actual rates used and paid for will be as directed and will be based on prevailing weather conditions to maintain the seedbed.

Obtain water at a source that is metered (furnish a current certification of the meter being used) or furnish the manufacturer's specifications showing the tank capacity for each truck used. Notify the Engineer, each day that watering takes place, before watering, so that meter readings or truck counts can be verified.

ITEM 300s – SURFACE COURSES AND PAVEMENTS
Asphalt season is May 1 thru September 15. Emulsified Asphalt season is April 1 thru October 15. The latest work start date for asphalt season is August 1.
Overlay and seal coat projects must include placement of surface material on the existing mailbox turnouts, including turnouts that are worn paths without a pavement structure. Apply a new surface and material as necessary to create a mailbox turnout with a cross slope that matches the adjacent pavement. Payment of work will be in accordance with the item for the type of material placed.

If an under seal is not provided, furnish a tack coat. Apply tack coat at 0.08 GAL/SY (residual). Apply non-tracking tack coat using manufacturer recommend rates.

ITEMS 341/3076 - DENSE-GRADED HOT-MIX ASPHALT
Use the SGC for design and production testing of all mixtures. Design all Type D mixtures as a surface mix, maximum 15% RAP and no RAS. Contractor may not use a substitute PG binder for 76-22. When using substitute binders, mold specimens for mix design and production at the temperature required for the substitute binder used to produce the HMA.

The Hamburg Wheel minimum number of passes for PG 64 or lower is reduced to 7,000. The Engineer may accept Hamburg Wheel test results for production and placement if no more than 1 of the 5 most recent tests is below the specified number of passes and the failing test is no more than 2,000 passes below the specified number of passes.

ITEM 354 - PLANING AND TEXTURING PAVEMENT
Contractor retains ownership of salvaged materials.

Unless shown on the plans, mill and resurface the work area during each shift on roadways with ADT greater than 20,000 or if milling will expose the flex base or subgrade per the typical

section. Unless shown on the plans, mill and resurface a work area within 5 days for roadways with ADT 20,000 or less.

Taper permanent transverse faces 50 ft. per 1 in. Taper temporary transverse faces 25 ft. per 1 in. Taper permanent longitudinal faces 6 ft. per 1 in. HMA may be used as temporary tapers. Provide minimum 1 in. butt joints at bridge ends and paving ends. This work is subsidiary.

Milled surfaces directly covered by a mat thickness of 1 in. or less shall produce a milled texture with a ridge to valley depth (RVD) no greater than 0.25 in. (6.5 mm).

Micro-milling equipment may use a drum narrower than 12 ft.

ITEM 416 - DRILLED SHAFT FOUNDATIONS
Stake all Foundations, for approval, before beginning drilling operations.

Calculate the vertical signal head clearance before placing any signal pole foundation.

For mast-arm signal and strain pole anchor bolts, set two in tension and two in compression.

Obtain approval of placement prior to placing concrete.
Remove spoils from a flood plain at the end of each work day.

ITEM 420 – CONCRETE SUBSTRUCTURES
Do not use PMDF in areas where a "Free Joint" is indicated in the plans.

Check the sign plans for locations of clearance signs and brackets on structures, which will require inserts in the pre-stressed beams.

Mass placements are defined as placements with a least dimension greater than or equal to 5 ft., or designated elsewhere on the plans.

Perform work during good weather unless otherwise directed. If work is performed at Contractor's option, when inclement weather is impending, and the work is damaged by the weather, the Contractor is responsible for all costs associated with repairs/replacement.

Upon completion of the structure, stencil the National Bridge Inventory (NBI) number (structure number) using black paint and 4 in. tall numbers at 4 locations designated by TxDOT. This work is subsidiary.

Bonding agents are required at construction joints. Do not use membrane curing for structural concrete as defined in Item 421, Table 8.

Remove all loose Formwork and other Materials from the floodplain or drainage areas daily.

ITEM 432 - RIPRAP
Mow strip riprap will be 4 in. and all other riprap will be 5 in. unless otherwise shown on the plans. Mow strip for cable barrier may be placed monolithically with the barrier foundations if using concrete in accordance with Item 543. Fiber reinforcement is not allowed except in mow strip for cable barrier if foundation and mow strip are placed monolithically. GFRP is allowed reinforcement for all applications.

Saw-cut existing riprap then epoxy 12 in. long No. 3 or No. 4 bars 6 in. deep at a maximum spacing of 18 in. in each direction to tie new riprap to existing riprap. This work is subsidiary.

Provide Type A Grade 3 or 5 flexible base for cement stabilized riprap. Compressive strengths for flexible base are waived.

ITEM 450 - RAILING
Use the elliptical tube option for rails T401, T402, and C402.

ITEM 460 - CORRUGATED METAL PIPE
Field adjust pipe end to maintain the necessary slope. Field cutting of pipe end is allowed. Coat all field cuts with asphalt paint. Cut ditches to grade before laying pipe.

ITEM 465 – JUNCTION BOXES, MANHOLES, AND INLETS
Maintain drainage at curb inlets until the final roadway surface is placed.

For inlets not placed in roadway, construct cast-in-place reinforced concrete apron as shown in the standards. This work is subsidiary.

Backfill shall use cohesionless material per Item 400 or flowable fill if width between structure and extent of excavation is 2 ft. or less. This is subsidiary.

ITEM 466 - HEADWALLS AND WINGWALLS
Remove all loose formwork and materials from the waterway at the end of each work week or prior to a rain event. Debris that falls into the waterway must be removed at the end of each work day. Upon completion of the structure, stencil the National Bridge Inventory (NBI) number (structure number) using black paint and 4 in. tall numbers at 4 locations designated by TxDOT. This work is subsidiary.

ITEM 467 - SAFETY END TREATMENT
Field adjust pipe end to maintain the necessary slope. Field cutting of pipe end is allowed. Coat all metal field cuts or exposed reinforcement with asphalt paint.

For all Type II SETs, provide riprap apron shown in the cast-in-place standards and precast riprap detail standard. This work is subsidiary.

Cast-in-place or precast will be allowed unless stated otherwise.

ITEM 496 - REMOVING STRUCTURES
Submit a demolition plan to the Engineer. Have the plan signed and sealed by a licensed professional engineer when the structure will continue to accommodate traffic after removal has begun and the removal impacts any part of the structure below the deck or riding surface. If applicable, the plan must detail requirements for meeting the U.S. Army Corps of Engineers' Section 404 Permit. The demolition plan must detail handling of roadway and waterway traffic. Waterway traffic must be maintained at all times unless a closure is approved by the Engineer.

No debris is allowed to fall into a body of water. Debris that falls into the water must be removed at the end of each work day. Debris that falls into the floodway must be removed at the end of each work week or prior to a rain event.

ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING

Table 1

Roadway	Limits	Allowable Closure Time
All	Within 200' of a signalized intersection	9 P to 5 A
All	All (Full Closure, see allowable work below)	11 P to 4 A

Table 2

Roadway	Limits	Allowable Closure Time
Various	All	See Traffic Control Narrative

Table 3 (Mobile Operations)

Roadway	Allowable Sun Night thru Fri Noon	Allowable Sat thru Sun Morn
Outside Austin City Limits	9 A to 3 P and 7 P to 7 A	6 P to 11 A
AADT over 50,000	8 P to 6 A	8 P to 10 A

For roadways without defined allowable closure times, nighttime lane closures will be allowed from 8 P to 6 A.

Daytime or Friday night lane closures will not be allowed unless otherwise shown on the plans. One lane in each direction will remain open at all times for all roadways unless otherwise shown on the plans.

Two lanes closed on IH 35 allowed to begin at 9 P for main lane (shoulder work not included) hotmix overlay or pavement repair operations (does not include bridge joint work).

Full closures only allowed Friday night thru Monday morning for bridge beam installation, bridge demolition, or OSB truss removal/installation. Full closures only allowed for roadways with frontage roads or if a designated detour route is provided in the plans.

No closures will be allowed on the weekends, working day prior, and working day after the National Holidays defined in the Standard Specifications, Good Friday, and Easter weekend.
No closures will be allowed 1 P.M. to 11 P.M. the Sunday of the Super Bowl.

No closures will be allowed on Friday and the weekends for projects within 20 miles of Formula 1 at COTA, MotoGP at COTA, ACL Fest, SXSW, ROT Rally, UT home football games (includes games not on a Friday or weekend), sales tax holiday, Rodeo Austin, or other special events that could be impacted by the construction.

All lanes will be open by noon of the day before these special events.

No closures will be allowed during the upcoming eclipses on October 14, 2023, and April 8, 2024. All lanes will be open from noon October 12th to noon October 15th. All lanes will be open from noon April 5th to noon April 9th. Time charges will not be suspended during this event.

To account for directional traffic volumes, begin and end times of closures may be shifted equally by the Engineer. The closure duration will remain. Added compensation is not allowed.

Submit an emailed request for a lane closure (LCN) to TxDOT. The email will be submitted in the format provided. Receive concurrence prior to implementation. Submit a cancellation of lane closures a minimum of 18 hours prior to implementation. Blanket requests for extended periods are not allowed. Max duration of a request is 2 weeks prior to requiring resubmittal.

Provide 2 hour notice prior to implementation and immediately upon removal of the closure.

For roadways listed in Table 1: Submit the request 96 hours prior to implementation.

For roadways not listed in Table 1: Submit the request a minimum of 48 hours prior to the closure and by the following deadline immediately prior to the closure: 11A on Tuesday or 11A on Friday.

For all roadways: Submit request for traffic detours and full roadway closures 168 hours prior to implementation. Submit request for nighttime work 96 hours to implementation date.

Cancellations of accepted closures (not applicable to full closures or detours) due to weather will not require resubmission in accordance with the above restrictions if the work is completed during the next allowable closure time.

Closures that conflict with adjacent contractor will be prioritized according to critical path work per latest schedule. Conflicting critical path or non-critical work will be approved for first LCN submitted. Denial of a closure due to prioritization or other reasons will not be reason for time suspension, delay, overhead, etc.

Meet with the Engineer prior to lane closures to ensure that sufficient equipment, materials, devices, and workers will be used. Take immediate action to modify current and future traffic control, if at any time the queue becomes greater than 20 minutes.

Consider inclement weather prior to implementing the lane closures. Do not set up traffic control when the pavement is wet.

Cover, relocate, or remove existing small, large, and overhead signs that conflict with traffic control. Cover large and overhead signs to remain using latest standard TS-CD. This work is subsidiary.
Install all permanent signs, delineation, and object markers required for the operation of the roadway before opening to traffic. Use of temporary mounts is allowed or may be required until the permanent mounts are installed or not impacted by construction. Maintain the temporary mounts. This work is subsidiary.

Place a 28-inch cone, meeting requirements of BC (10) and Ty III barricades, on top of foundations that have protruding studs. This work is subsidiary.

Vertical panels used on roadways with speed limit 55mph or greater must be round in shape or have a self-righting mechanism. The “flat” or “oblong” shaped vertical panels are not allowed.

A series of sequential flashing warning lights, per BC(7), must be installed in a merging taper for long term stationary TCP. This includes all TCP setups, such as those shown on the plans or TCP setups per the standards.

Edge condition treatment types must be in accordance with the TxDOT standard. Installation and removal of a safety slope is subsidiary.

To determine a speed limit or an advisory speed limit, submit a request to TxDOT 60 business days prior to manufacture of the sign.
For non-site specific signal projects, 2 months of barricades will be paid per work order location.

The Contractor Force Account “Safety Contingency” that has been established for this project is intended to be utilized for work zone enhancements, to improve the effectiveness of the Traffic Control Plan, that could not be foreseen in the project planning and design stage. These enhancements will be mutually agreed upon by the Engineer and the Contractor’s Responsible Person based on weekly or more frequent traffic management reviews on the project. The Engineer may choose to use existing bid items if it does not slow the implementation of enhancement.

ITEM 506 - TEMPORARY EROSION, SEDIMENTATION, AND ENV CONTROLS
If SW3P plan sheets are not provided, place the control measures as directed.

Install, maintain, remove control measures in areas of the right of way utilized by the Contractor that are outside the limits of disturbance required for construction. Permanently stabilize the area. This work is subsidiary.

Erosion control measures must be initiated immediately in areas where construction activities have ceased and will not resume for a period exceeding 14 calendar days. Vertical track all exposed soil, stockpiles, and slopes. Re-track after each rain event or every 14 days, whichever occurs first. Sheep foot roller is allowed for vertical tracking. This work is subsidiary.

Unless a specific pay item is provided in the plans, the installation of the 6:1 or flatter for RFD side slopes in the safety zone will be subsidiary to pertinent bid items.

ITEMS 528, 529, 530, 531, & 536 – MISCELLANEOUS CONSTRUCTION
Reinforcement will be in accordance with Section 432.3.1 unless shown on the plans. Fiber reinforcement is not allowed. GFRP is allowed reinforcement for all applications. Class A and B Concrete are allowed to use Coarse Aggregate Grades 1-8.

Unless shown on the plans, all concrete will be 5 in. thick and have 2 in. sand, base, or RAP bedding. Furnish base meeting the requirement for any type or grade in accordance with Item 247. Compressive strengths for flexible base are waived. RAP must be 100% passing a 1 in. sieve. Bedding and flexible base must be placed using ordinary compaction.

Expansion joints will be placed every 40 ft. Expansion joints must be 1 in. wide asphalt board and flush with the surface. The bottom of the asphalt board will be at half the depth of the concrete. The reinforcement will be continuous thru the expansion joint.
Sidewalk cross slope must not exceed 1.5%.

If roots are encountered verify with the Engineer before accommodating or removing 2 in. diameter or larger roots. Root removal must be in accordance with Section 752.4.2. Roots may remain in the bedding or base. For improvements within 6 in. of a root, the concrete thickness may be reduced by 1 in. and the bedding increased by 1 in. to minimize impacts to the roots. Adjust bedding and surface profile to provide a 1 in. bedding cushion around the roots. The surface profile may be adjusted to the extent allowed by ADA. This work is subsidiary.

ITEM 530 – INTERSECTIONS, DRIVEWAYS, AND TURNOUTS
Notify property owners at least 48 hr. before beginning work on their driveway. Use a means and methods to construct the driveway while maintaining access to the property at all times. Full closure of a driveway is allowed for reconstruction if duration and alternate access are approved by Engineer. Install and maintain material across a work zone as temporary access. This work is subsidiary.

The following typical section notes apply to all driveways and turnouts:
For ACP or SURF TREAT, the pavement structure will match the adjacent roadway unless detailed on the plans. HMA, including surface, may use a maximum allowable quantity of 40% RAP and 5% RAS for private driveways, public driveways for 2-lane roadways or smaller, and turnouts. Blending of 2 or more sources is allowed.

For CONC, the pavement structure will be 6 in. thick and have 3 in. flexible base bedding unless detailed on the plans.
Driveways that are public (county road and city street) the pavement structure will match the adjacent roadway.

ITEMS 600s & 6000s – ITS, TOLLING, LIGHTING, SIGNING, MARKINGS, AND SIGNALS

Meet the requirements of the NEC, Texas MUTCD, TxDOT standards, and TxDOT Standard Specifications. Notify the Engineer if existing elements to remain do not meet code or specification.

Contractor shall provide all service, equipment and material required to provide a functional item and interface with existing equipment and software.

For signal shop contact Charles Vaughn Jr (Charles.Vaughn@txdot.gov) and Robert Bolin (Robert.Bolin@txdot.gov)

Use the TxDOT provided form to submit an electrical, illumination, and signal checklist prior to request for signal activation or a punch list.

Provide a 7-day advance email notice to the Engineer to request traffic signal punch list inspection.
Provide a 14-day advance email notice to the Engineer with signal technician contact information and signal locations prior to working or assuming operations of traffic signal.

Provide a 60-day advance email notice to the Engineer to request signal timing if timing is not provided in the plans.

Provide a 180-day advance email notice to the Engineer for equipment to be provided by TxDOT.
Provide equipment that requires TxDOT programming, etc. to TxDOT 180 day in advance.

Prior to relief of maintenance, a 30-day Test Period is required for signals in accordance with Item 680.3.1.8. Response time to reported trouble calls shall be less than 2 hours. Complete repairs within 24 hours. Notify the Engineer and maintain a logbook in the controller cabinet of each trouble call. Do not clear the error log in the conflict monitor without approval.

Minimum distance between HDPE joints will be 200 ft.

ITEM 618 - CONDUIT
Shift the locations of conduit and ground boxes to accommodate field conditions. Install conduit not exceeding 2 feet in any direction from a straight line. Install conduit at a minimum depth of 2 ft. below finished grade. Installation of the conduit by jacking or boring method will be at a depth of at least 1 ft. below subgrade.

Install a high tension, non-metallic pull rope in all empty conduit runs. This work is subsidiary.
Use a coring device, not a hammer drill, when drilling holes through concrete structures.

For underground conduit, smooth wall schedule 40 equivalent HDPE can be substituted for schedule 40 PVC. Schedule 80 bore can be replaced with a schedule 40 equivalent HDPE carrier

pipe of adequate size to carry the proposed conduits. HDPE must transition to RMC/PVC per ED (11)-14.
When using existing conduit, ensure that all conduits have bushings and cleaned of dirt, mud, grease, and other debris. Re-strap existing or relocated conduit per the specification. This work is subsidiary.

Abandoned underground conduit must have all conductors removed.

ITEM 620 - ELECTRICAL CONDUCTORS
Provide 10 amp time delay fuses.

For Pedestal Poles (Item 687), provide single-pole breakaway disconnects.

Install a minimum size 8 AWG equipment grounding conductor (EGC) in all conduits including loop detectors and traffic signal cables. Payment and the size of the EGC will be in accordance with standard ED (3)-14 note 12.

Permanently mark "Illumination" on the luminaire conductors installed inside a traffic signal pole. Make the marks easily visible from the hand hole.

ITEM 624 – GROUND BOXES
Aggregate for fill under the box will be crushed, have a maximum size of 2 in., minimum size of ½ in., and requirements per Item 302 are waived.

ITEM 644 – SMALL ROADSIDE SIGN ASSEMBLIES
Triangular slip base must be the clamp style to secure the post to the slip base. Set screw style slip base will not be allowed.

ITEM 658 – DELINEATOR AND OBJECT MARKER ASSEMBLIES
Installation and maintenance of portable CTB reflectors will be subsidiary to the barrier.

Flexible posts YFLX and WFLX must be tubular in shape. The "flat" flexible posts are not allowed.

ITEM 666 - RETROREFLECTORIZED PAVEMENT MARKINGS
Notify the Engineer at least 24 hr. before beginning work.

The center-to-center minimum width for double yellow solid stripes must be 18 in. for all roadways.

Place longitudinal markings nightly for IH 35 main lanes or roadways with AADT greater than 100,000. Use of temporary flexible reflective roadway marker tabs is subsidiary and at the Contractor's option. Replace missing or damaged tabs nightly. If using tabs, place longitudinal markings weekly by 5 AM Friday for all weekday work and by 5 AM Monday for all weekend work. Failure to maintain tabs or place longitudinal markings by deadline will require nightly placement of longitudinal markings.

Place longitudinal markings no later than 7 calendar days after placement of the surface for roadways with AADT greater than 20,000.

When the raised portion of a profile marking is placed as a separate operation from the pavement marking, the raised portion must be placed first then covered with TY I.

When using black shadow to cover existing stripe apply a non-retroreflective angular abrasive bead drop. The marking color shall be adjusted to resemble the pavement color. If Item 677 is not used prior to placement of black shadow, scrape the top of the marking with a blade or large piece of equipment unless surface is a seal coat. The scraping of the marking is subsidiary.

ITEM 677 - ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS
Dispose of removed materials and debris at locations off the right of way.
Elimination using a pavement marking will not be allowed in lieu of methods listed in specification.

Remove pavement markings on concrete surfaces by a blasting method. Flail milling will be allowed when total quantity of removal on concrete surfaces is less than 1000 ft.

Strip seal is only method allowed on seal coat surface unless project includes placement of a new surface. If total quantity of removal on a seal coat surface is less than 2000 ft., elimination using a pavement marking is allowed if a test section is approved by the Engineer. Test section shall demonstrate the thermo marking color matches the existing pavement color.

Remove pavement markings outside the limits of the new surface by a blasting method.

Use a TRAIL or a non-retroreflective paint to cover stripe remnants that remain after elimination.

The test requirements for these materials are waived. The paint color shall be adjusted to resemble the existing pavement color. Installation and maintenance is subsidiary.

ITEM 680 - HIGHWAY TRAFFIC SIGNALS

Furnish all materials and install signs mounted on the traffic signal wire, traffic signal poles, mast arms, and pedestal pole assemblies. Remove all conflicting signs and sign foundations when signal is placed into operation. This work is subsidiary.

Place the traffic signal into operation after the traffic signal and installation of striping have been completed. The timing Engineer will be present to program the controller and assist with detection setup. Have a qualified technician and a representative from the controller supplier on the project site to place the traffic signals in operation.

Upon removal, contact signal shop to stockpile salvage materials that meet the current TxDOT standards at the Austin District Headquarters located at 7901 North IH 35, 78753. If signal shop declines receipt of material, Contractor will be responsible for disposal. All poles/arms will be stripped of components but must include all hardware including bolts. Contact signal shop 48 hours before delivery.

ITEM 682 – VEHICLE AND PEDESTRIAN SIGNAL HEADS
Install signal head attachments so the wiring to each passes from the signal pole through the attachment hardware to the signal head. Use UV rated tie wraps.

Traffic signal heads will be aluminum unless otherwise shown on the plans.

ITEM 684 – TRAFFIC SIGNAL CABLES
For Type A cables, cables meeting the requirements of IMSA 19-1 can be substituted for IMSA 20-1. For all types of cables, an increase of one size larger wire diameter and thickness can be substituted for plan size without additional cost to the Department. For example, 12 AWG can be substituted for 14 AWG.

For each cable run, coil an extra 2 ft. of cable in each steel pole and 5 ft. in the controller cabinet. Provide a separate multi-conductor signal cable (14 AWG) inside pedestal poles and mast-arm signal poles from the terminal strip to each signal head as shown on the plans.

ITEM 687 – PEDESTAL POLE ASSEMBLIES
Verify the required pole height prior to ordering material.

ITEM 688 - PEDESTRIAN DETECTORS AND VEHICLE LOOP DETECTORS
Pedestrian push buttons will be mounted at 42 in. above the walking surface and have permanent type signs within the detector unit (9 in. x 12 in. sign and push button station on signal poles and 5 in. x 7 in. sign and push button station on pedestrian poles), which explains their purpose and indicates which crosswalk signal is actuated. Provide speech walk message as shown in the plans or per Engineer.

ITEM 3084 – BONDING COURSE
The minimum application rates are listed in Table BC. Miscellaneous Tack is allowed for use with dense-graded Type B HMA. If a tack bid item is not provided, use bonding course item.

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

Table BC

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

Table BCS (For Informational Tests)

Material	Target Shear Bond Strength (Tex-249-F psi)
SMA – Stone-Matrix Asphalt	60.0
PFC – Permeable Friction Course	N/A
All Other Materials	40.0

ITEM 6001 – PORTABLE CHANGEABLE MESSAGE SIGN
Provide 2 PCMS. Provide a replacement within 12 hours. PCMS will be available for traffic control, event notices, roadway conditions, service announcements, etc.

Place PCMS 10 calendar days prior to begin work stating “Road Work Begin Soon, Contact 832-7000 For Info”.

Place PCMS at time of LCN request. Place the PCMS at the expected end of queue caused by the closure. When the closure is active, revise the message to reflect the actual condition during the closure, such as “RIGHT LN CLOSED XXX FT”.

ITEM 6185 – TRUCK MOUNTED ATTENUATOR AND TRAILER ATTENUATOR
The TMA/TA used for installation/removal of traffic control for a work area will be subsidiary to the TMA/TA used to perform the work.

The contractor will be responsible for determining if one or more operations will be ongoing at the same time to determine the total number of TMA/TA required for the work. TMA/TAs paid by the day is full compensation for all worksite locations during an entire day.

TMA/TAs used to protect damaged attenuators will be paid by the day using the force account item for the repair.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0914-33-088 **DISTRICT** Austin **COUNTY** Hays
HIGHWAY Various

			CONTROL SECTION JOB		**0914-33-088**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00133288**		
			COUNTY		**Hays**		
			HIGHWAY		**Various**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6002	PREPARING ROW	STA	70.000		70.000	
	104-6015	REMOVING CONC (SIDEWALKS)	SY	4.000		4.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	174.000		174.000	
	104-6021	REMOVING CONC (CURB)	LF	51.000		51.000	
	105-6026	REMOVE STAB BASE & ASPH PAV (13"-18")	SY	860.000		860.000	
	110-6001	EXCAVATION (ROADWAY)	CY	658.000		658.000	
	132-6003	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	200.000		200.000	
	160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	3,298.000		3,298.000	
	162-6002	BLOCK SODDING	SY	3,298.000		3,298.000	
	168-6001	VEGETATIVE WATERING	MG	56.000		56.000	
	354-6188	PLANE ASPH CONC PAV(MICRO-MLLING)(1")	SY	17.000		17.000	
	420-6071	CL C CONC (COLLAR)	EA	1.000		1.000	
	432-6001	RIPRAP (CONC)(4 IN)	CY	12.000		12.000	
	450-6052	RAIL (HANDRAIL)(TY F)	LF	53.000		53.000	
	460-6004	CMP (GAL STL 30 IN)	LF	60.000		60.000	
	460-6007	CMP (GAL STL 48 IN)	LF	112.000		112.000	
	464-6001	RC PIPE (CL III)(12 IN)	LF	15.000		15.000	
	465-6149	INLET (COMPL)(PAZD)(SL)(3FTX3FT)	EA	1.000		1.000	
	466-6099	HEADWALL (CH - PW - 0) (DIA= 30 IN)	EA	1.000		1.000	
	467-6468	SET (TY II) (48 IN) (CMP) (4: 1) (C)	EA	4.000		4.000	
	471-6003	GRATE & FRAME	EA	6.000		6.000	
	496-6002	REMOV STR (INLET)	EA	1.000		1.000	
	496-6004	REMOV STR (SET)	EA	6.000		6.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	8.000		8.000	
	506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	345.000		345.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	345.000		345.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	4,600.000		4,600.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	4,600.000		4,600.000	
	506-6041	BIODEG EROSN CONT LOGS (INSTL) (12")	LF	40.000		40.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	40.000		40.000	
	529-6021	CONC CURB & GUTTER (SLOTTED)	LF	2,446.000		2,446.000	
	530-6002	INTERSECTIONS (ACP)	SY	132.000		132.000	
	530-6004	DRIVEWAYS (CONC)	SY	1,018.000		1,018.000	
	531-6002	CONC SIDEWALKS (5")	SY	4,452.000		4,452.000	
	531-6004	CURB RAMPS (TY 1)	EA	2.000		2.000	
	531-6008	CURB RAMPS (TY 5)	EA	2.000		2.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0914-33-088 **DISTRICT** Austin **COUNTY** Hays
HIGHWAY Various

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0914-33-088**			
		PROJECT ID		**A00133288**			
		COUNTY		**Hays**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	531-6010	CURB RAMPS (TY 7)	EA	12.000		12.000	
	531-6013	CURB RAMPS (TY 10)	EA	1.000		1.000	
	552-6004	WIRE FENCE (TY D)	LF	625.000		625.000	
	618-6029	CONDT (PVC) (SCH 40) (3")	LF	165.000		165.000	
	618-6030	CONDT (PVC) (SCH 40) (3") (BORE)	LF	180.000		180.000	
	620-6007	ELEC CONDR (NO.8) BARE	LF	345.000		345.000	
	624-6010	GROUND BOX TY D (162922)W/APRON	EA	2.000		2.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	8.000		8.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1.000		1.000	
	644-6113	REMOVE SM RD SN (FOUNDATION ONLY)	EA	1.000		1.000	
	658-6046	INSTL OM ASSM (OM-2X)(WC)GND	EA	6.000		6.000	
	666-6042	REFL PAV MRK TY I (W)12"(SLD)(100MIL)	LF	19.000		19.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	712.000		712.000	
	666-6180	REFL PAV MRK TY II (W) 12" (SLD)	LF	19.000		19.000	
	666-6182	REFL PAV MRK TY II (W) 24" (SLD)	LF	712.000		712.000	
	677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	80.000		80.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	124.000		124.000	
	678-6006	PAV SURF PREP FOR MRK (12")	LF	19.000		19.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	712.000		712.000	
	680-6011	INSTALL HWY TRF SIG (UPGRADE)	EA	2.000		2.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	8.000		8.000	
	684-6007	TRF SIG CBL (TY A)(12 AWG)(2 CONDR)	LF	1,260.000		1,260.000	
	684-6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF	1,300.000		1,300.000	
	687-6001	PED POLE ASSEMBLY	EA	7.000		7.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	8.000		8.000	
	688-6003	PED DETECTOR CONTROLLER UNIT	EA	1.000		1.000	
	1004-6001	TREE PROTECTION	EA	26.000		26.000	
	3076-6070	D-GR HMA TY-D PG 76-22 SAC-B (EXEMPT)	TON	1.000		1.000	
	3084-6001	BONDING COURSE	GAL	2.000		2.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6027-6003	CONDUIT (PREPARE)	LF	575.000		575.000	
	6027-6008	GROUND BOX (PREPARE)	EA	7.000		7.000	
	6027-6010	GROUND BOX W/ APRON (ADJUST)	EA	1.000		1.000	
	6185-6002	TMA (STATIONARY)	DAY	160.000		160.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	10.000		10.000	
	18	OTHER: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0914-33-088 **DISTRICT** Austin **COUNTY** Hays
HIGHWAY Various

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0914-33-088**			
		PROJECT ID		**A00133288**			
		COUNTY		**Hays**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	18	LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

SUMMARY OF TCP ITEMS

SPEC ITEM #	0500 6001	0502 6001	6001 6002	6185 6002	6185 6005
ITEM DESCRIPTION	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING	PORTABLE CHANGEABLE MESSAGE SIGN	TMA (STATIONARY)	TMA (MOBILE OPERATIONS)
UNITS	LS	MO	EA	DAY	DAY
TCP	1	8	2	160	10
TOTAL	1	8	2	160	10

SUMMARY OF REMOVAL ITEMS

SPEC ITEM #	0104 6015	0104 6017	0104 6021	0105 6026	0496 6002	0496 6004	0677 6001	0677 6007
ITEM DESCRIPTION	REMOVING CONC (SIDEWALKS)	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB)	REMOVE STAB BASE & ASPH PAV (13"-18")	REMOV SRT (INLET)	REMOV STR (SET)	ELIM EXT PAV MRK & MRKS (4")	ELIM EXT PAV MRK & MRKS (24")
UNITS	SY	SY	LF	SY	EA	EA	LF	LF
REMOVAL	4	174	51	860	1	6	80	124
TOTAL	4	174	51	860	1	6	80	124

SUMMARY OF ROADWAY ITEMS

SPEC ITEM #	0100 6002	0110 6001	0132 6003	0354 6188	0401 6002	0432 6001	0450 6052	0471 6003	0529 6021	0530 6002	0530 6004	0531 6002	0531 6004	0531 6008	0531 6010	0531 6013	0552 6004	3076 6070	3084 6001
ITEM DESCRIPTION	PREPARING ROW	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (ORD COMP) (TY B)	PLANE ASPH CONC PAVE (MICRO-MILLING) (1")	FLOWABLE BACKFILL (OPTION 1) *	CONC RIPRAP (4")	RAIL (HANDRAIL) (TY F)	GRATE & FRAME	CONC CURB & GUTTER (SLOTTED)	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	CONC SIDEWALKS (5")	CURB RAMPS (TY 1)	CURB RAMP (TY 5)	CURB RAMP (TY 7)	CURB RAMP (TY 10)	WIRE FENCE (TY D)	D-GR HMA TY-D SAC-B PG76-22 (EXEMPT)	BONDING COURSE
UNITS	STA	CY	CY	SY	CY	CY	LF	EA	LF	SY	SY	SY	EA	EA	EA	EA	LF	TON	GAL
ROADWAY PLAN	70	658	200	17	113	12	53	6	2446	132	1018	4452	2	2	12	1	625	1	2
TOTAL	70	658	200	17	113	12	53	6	2446	132	1018	4452	2	2	12	1	625	1	2

SUMMARY OF SIGNING AND PAVEMENT MARKING ITEMS

SPEC ITEM #	0644 6001	0644 6068	0644 6113	0658 6046	0666 6042	0666 6048	0666 6180	0666 6182	0678 6006	0678 6008
ITEM DESCRIPTION	IN SM RD SN SUP&AM TY10BWG(1) SA(P)	RELOCATE SM RD SN SUP&AM TY 10BWG	REMOVE SM RD SN (FOUNDATION ONLY)	INSTL OM ASSM (OM-2X) (WC) GND	REFL PAV MRK TY I (W) 12" (SLD) (100MIL)	REFL PAV MRK TY I (W) 24" (SLD) (100MIL)	REFL PAV MRK TY II (W) 12" (SLD)	REFL PAV MRK TY II (W) 24" (SLD)	PAV SURF PREP FOR MRK (12")	PAV SURF PREP FOR MRK (24")
UNITS	EA	EA	EA	EA	LF	LF	LF	LF	LF	LF
SIGNING AND PAVEMENT MARKINGS	8	1	1	6	19	712	19	712	19	712
TOTAL	8	1	1	6	19	712	19	712	19	712

SUMMARY OF DRAINAGE ITEMS

SPEC ITEM #	0420 6071	0460 6004	0460 6007	0464 6001	0465 6149	0466 6099	0467 6468
ITEM DESCRIPTION	CL C CONC (COLLAR)	CMP (GAL STL 30 IN)	CMP (GAL STL 48 IN)	RC PIPE (CL III) (12 IN)	INLET (COMPL) (PAZD) (SL) (3FTX3FT)	HEADWALL (CH-PW-O) (DIA = 30 IN)	SET (TY II) (48 IN) (CMP) (4:1) (C)
UNITS	EA	LF	LF	LF	EA	EA	EA
DRAINAGE	1	60	112	15	1	1	4
TOTAL	1	60	112	15	1	1	4

SUMMARY OF TRAFFIC SIGNAL ITEMS

SPEC ITEM #	0618 6029	0618 6030	0620 6007	0624 6010	0680 6011	0682 6018	0684 6007	0684 6031	0687 6001	0688 6001	0688 6003	6027 6003	6027 6008	6027 6010
ITEM DESCRIPTION	CONDT (PVC) (SCH 40) (3")	CONDT (PVC) (SCH 40) (3") (BORE)	ELEC CONDR (NO. 8) BARE	GROUND BOX TY D (16922) W/ APRON	INSTALL HWY TRF SIG (UPGRADE)	PED SIG SEC (LED) COUNTDOWN	TRF SIG CBL (TY A) (12 AWG) (2 CONDR)	TRF SIG CBL (TY A) (14 AWG) (5 CONDR)	PED POLE ASSEMBLY	PED DETECT PUSH BUTTONS (APS)	PED DETECTOR CONTROLLER UNIT	CONDUIT (PREPARE)	GROUND BOX (PREPARE)	GROUND BOX W/ APRON ADJUST
UNITS	LF	LF	LF	EA	EA	EA	LF	LF	EA	EA	EA	LF	EA	EA
TRAFFIC SIGNALS	165	180	345	2	2	8	1260	1300	7	8	1	575	7	1
TOTAL	165	180	345	2	2	8	1260	1300	7	8	1	575	7	1

SUMMARY OF SW3P ITEMS

SPEC ITEM #	0160 6003	0162 6002	0166 6002	0168 6001	0506 6002	0506 6011	0506 6038	0506 6039	0506 6041	0506 6043	1004 6001
ITEM DESCRIPTION	FURNISHING AND PLACING TOPSOIL (4")	BLOCK SODDING	FERTILIZER *	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 2)	ROCK FILTER DAMS (REMOVE)	TEMP SDMT CONT FENCE (INSTALL)	TEMP SDMT CONT FENCE (REMOVE)	BIODEG EROSN CONT LOGS (INSTL) (12")	BIODEG EROSN CONT LOGS (REMOVE)	TREE PROTECTION
UNITS	SY	SY	TON	MG	LF	LF	LF	LF	LF	LF	EA
SW3P	3298	3298	0.03	56	345	345	4600	4600	40	40	26
TOTAL	3298	3298	0.03	56	345	345	4600	4600	40	40	26

* FOR CONTACTORS INFORMATION ONLY

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

QUANTITY SUMMARY

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	11
CONT.	SECT.	JOB	
0914	33	088	

GENERAL

A. INSTALL ALL SIGNS, BARRICADES AND TRAFFIC CONTROL DEVICES AS SHOWN AND IN ACCORDANCE WITH THE TMUTCD, STANDARD BC SHEETS AND AS DIRECTED BY THE ENGINEER. THE SIGNS WILL BE PLACED PRIOR TO COMMENCING ANY CONSTRUCTION AND WILL REMAIN IN PLACE FOR THE DURATION OF THE PROJECT UNTIL COMPLETION AND ACCEPTANCE OF THE PROJECT BY THE CITY.

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

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

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

E. MAINTAIN POSITIVE DRAINAGE AT ALL TIMES FOR THE DURATION OF THE JOB. INSTALL APPROPRIATE SEDIMENT AND WATER POLLUTION CONTROL MEASURES AS SHOWN ON THE EROSION CONTROL PLAN AND STANDARDS OR AS APPROVED BY THE ENGINEER.

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

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

H. LANE AND/OR ROAD CLOSURES WILL BE COORDINATED WITH CITY OF DRIPPING SPRINGS AND TXDOT AS APPLICABLE.

I. LANE CLOSURES AND SHOULDER CLOSURES WILL ONLY BE ALLOWED MONDAY-FRIDAY FROM 9:00AM TO 3:00PM. OPEN TRAFFIC UNRESTRICTED AT THE END OF EACH WORK DAY.

J. VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION

K. EXISTING TRAFFIC SIGNALS TO REMAIN OPERATIONAL AT ALL TIMES UNLESS OTHERIWSE APPROVED BY TXDOT. MARKED LAW ENFORCEMENT VEHICLES REQUIRED DURING ANY SIGNAL DOWN TIME.

SEQUENCE OF CONSTRUCTION

A. SCHEDULE PROPOSED WORK IN ONLY ONE STREET AT A TIME IN A WORK AREA WITH A MAXIMUM LENGTH OF 1000 LINEAR FEET AT A TIME. THERE WILL BE NO WORK PERFORMED IN MORE THAN ONE WORK AREA AT A TIME.

B. FINISH PROPOSED WORK IN EACH WORK AREA BEFORE PROCEEDING TO PERFORM WORK IN ANOTHER WORK AREA.

C. SUBMIT A DETAILED SCHEDULE OF WORK TO THE ENGINEER PRIOR TO THE BEGINNING OF CONSTRUCTION, WHICH GENERALLY CONFORMS TO THE FOLLOWING SEQUENCE:

SIDEWALK AND SHARED USE PATH

1. PLACE TEMPORARY EROSION CONTROL DEVICES AS SHOWN IN THE PLANS AND AS DIRECTED BY THE ENGINEER.

2. MAINTAIN TRAFFIC AS SPECIFIED BELOW

   2a. FOR WORK ADJACENT TO US 290, CONTRACTOR MAY CLOSE SHOULDER ACCORDING TO TCP(2-1)-18 AS NEEDED.

   2b. FOR WORK ADJACENT TO OLD HWY 290 AND BROKEN LANCE DR, ESTABLISH AND MAINTAIN ONE-LANE TWO-WAY TRAFFIC CONTROL WITH FLAGGERS ACCORDING TO TCP(2-2)-18.

   2c. FOR WORK ADJACENT TO ROGER HANKS PKWY, CONTRACTOR MAY CLOSE OUTSIDE LANE ACCORDING TO TCP(2-5)-18 AND UTILIZE 2 WAY VERTICAL PANELS TO USE CENTER TURN LANE AS THROUGH LANE.

3. REMOVE EXISTING CONCRETE, ASPHALT, FOUNDATIONS, CULVERTS OR OTHER FEATURES WHERE INDICATED IN THE PLANS WITHIN THE AREA OF PROPOSED WORK.

4. EXCAVATE OR BACKFILL AS NECESSARY TO ACHIEVE PROPOSED GRADES. PLACE BEDDING MATERIALS.

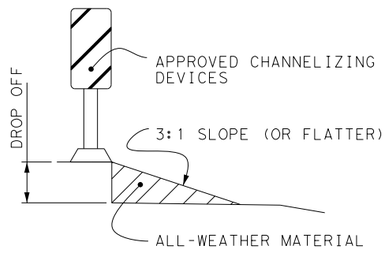
5. CONSTRUCT PROPOSED FEATURES, REMOVE AND INSTALL PAVEMENT MARKINGS, AND PLACE SIGNS WHERE INDICATED.

6. REMOVE FORMWORK AND BACKFILL DISTURBED AREAS FOR A SMOOTH FINISHED GRADE. GRADE TO DRAIN AS NECESSARY.

7. PLACE AND IRRIGATE BLOCK SODDING WHERE INDICATED AND AS SPECIFIED. BACKFILL AND SOD PLACEMENT TO FOLLOW SIDEWALK/RAMP CONSTRUCTION WITHIN TWO WEEKS. MULTIPLE MOBILIZATIONS EXPECTED.

8. REMOVE ANY DEBRIS, TRAFFIC CONTROL, AND SW3P FEATURES AT THE COMPLETION OF CONSTRUCTION.

2 WAY VERTICAL PANELS WILL BE REQUIRED TO SIMULATE CENTERLINE.



PAV EDGE DROP-OFF DETAIL

1. LESS THAN 2 INCHES: CW 8-11 SIGNS ARE REQUIRED.
2. GREATER THAN 2 INCHES BUT LESS THAN 24 INCHES: VERTICAL PANELS AND EITHER CW 8-9a OR CW 8-11 SIGNS ARE REQUIRED.
3. GREATER THAN 24 INCHES: POSITIVE BARRIER REQUIRED.
4. THE SAFETY SLOPE WILL BE CONSTRUCTED WITH AN ALL- WEATHER MATERIAL SUCH AS RAP, WHICH IS CLEAN AND FREE OF DEBRIS AND LARGE ROCKS.

NOTES

1. ALL TRAFFIC CONTROL DEVICES WILL CONFORM WITH THE TEXAS "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" (TMUTCD), AND WILL BE MAINTAINED AS DIRECTED. ADDITIONAL GUIDELINES FOR TRAFFIC CONTROL DEVICES MAY BE FOUND IN THE TMUTCD.
2. FOR CHANNELING DEVICE PLACEMENT AND SPACING FOR ALL PHASES, REFER TO THE TCP STANDARDS.
3. SIGNS G20-1T WITH PLAQUE OR G20-5T, G20-6, G20-2a, G20-2b, CW20-1D, R20-3, R20-5, G20-9T AND R20-5 PLAQUE WILL BE REQUIRED AT PROJECT LIMITS.
4. CW20-1D AND G20-2a WILL BE REQUIRED AT ALL CROSSROADS.
5. G20-1a WILL BE REQUIRED AT ALL MAJOR CROSSROADS.

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

TRAFFIC CONTROL PLAN NARRATIVE

SHEET 1 OF 1

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	12
CONT.	SECT.	JOB	
0914	33	088	

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	AUS	HAYS		13
5-10 5-21				

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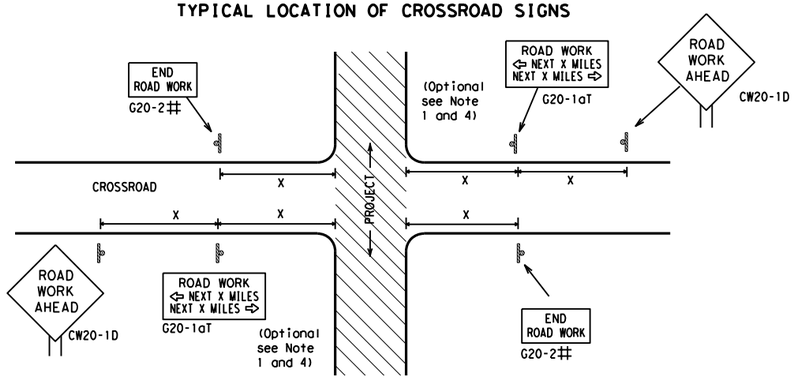
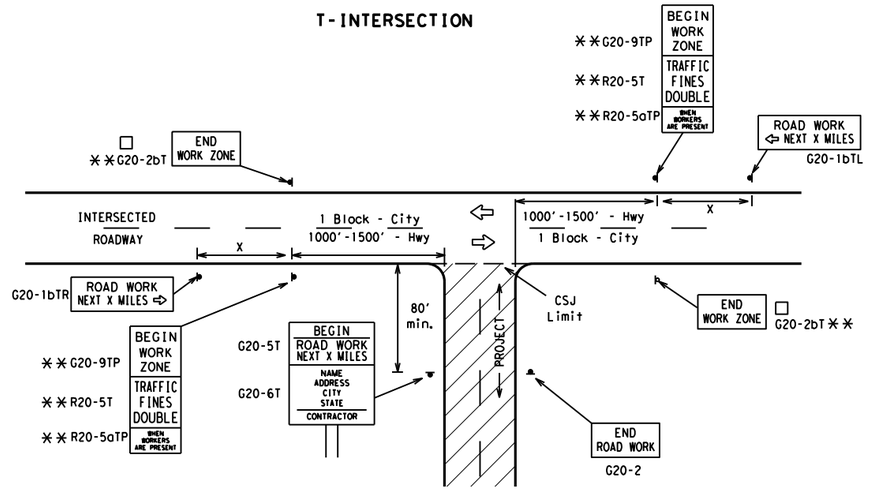
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

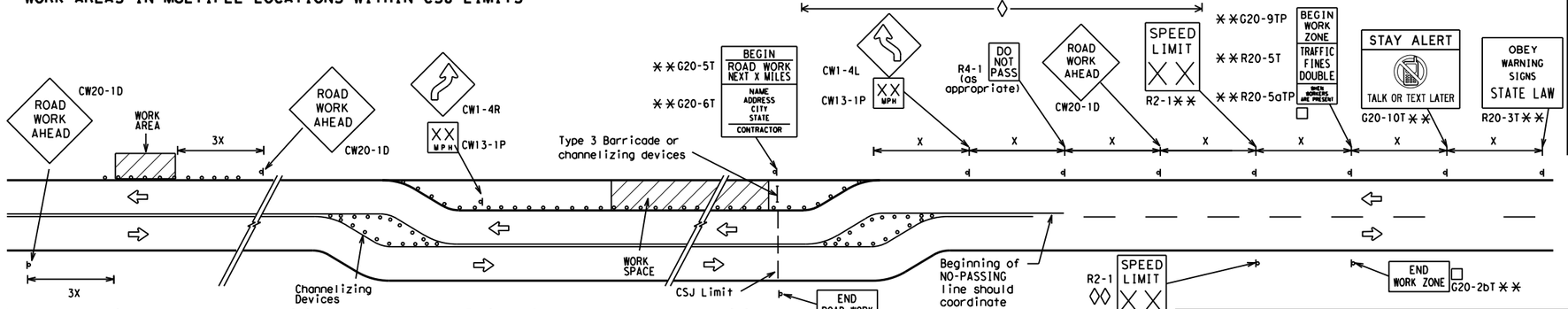
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

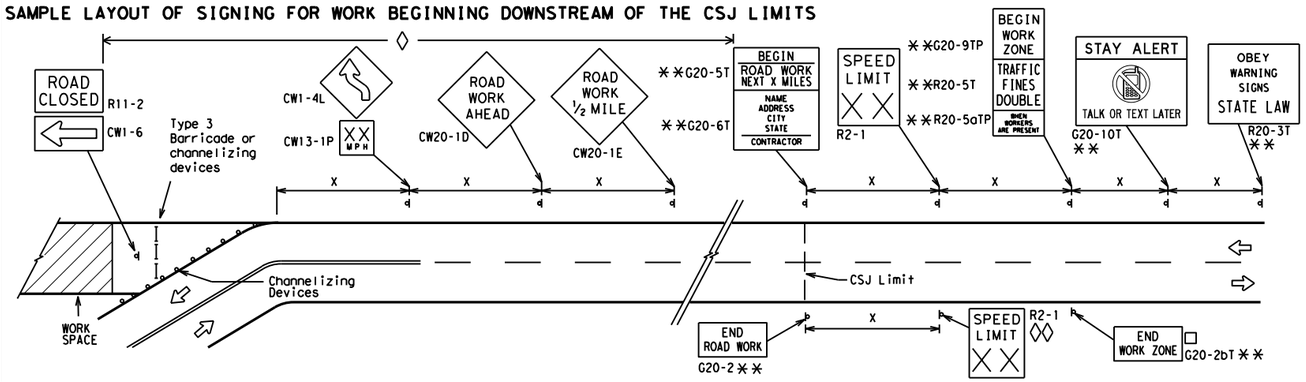
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

** CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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

SHEET 2 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AUS	HAYS		14

96

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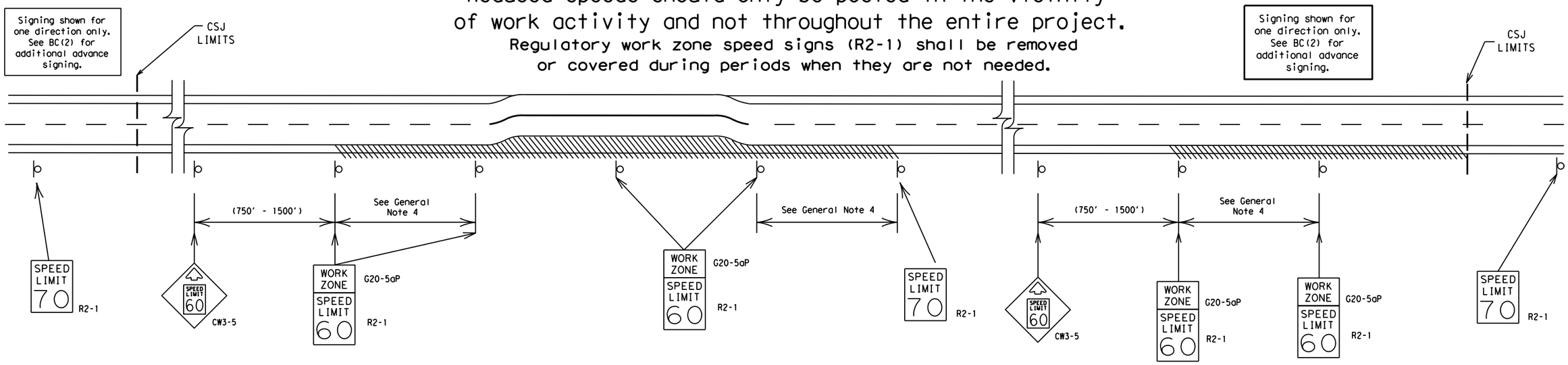
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
9-07 8-14	DIST	COUNTY		SHEET NO.
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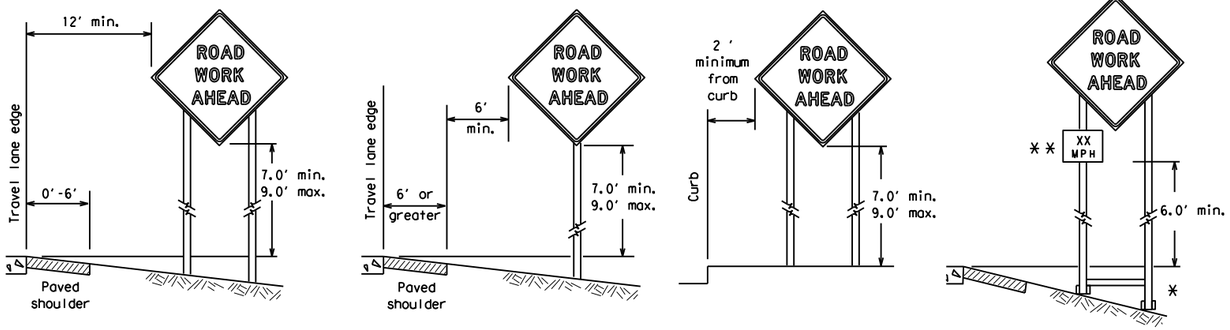
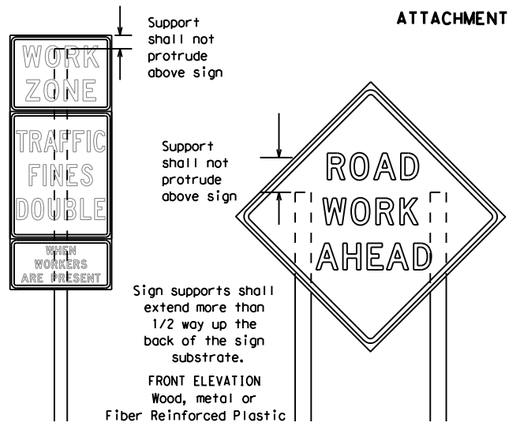
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

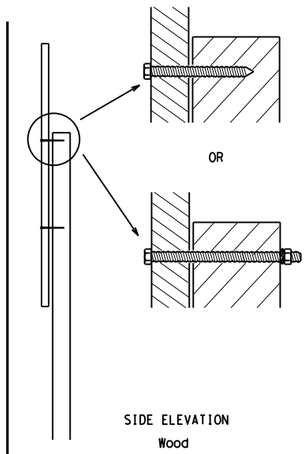


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





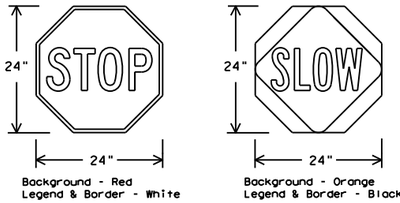
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

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BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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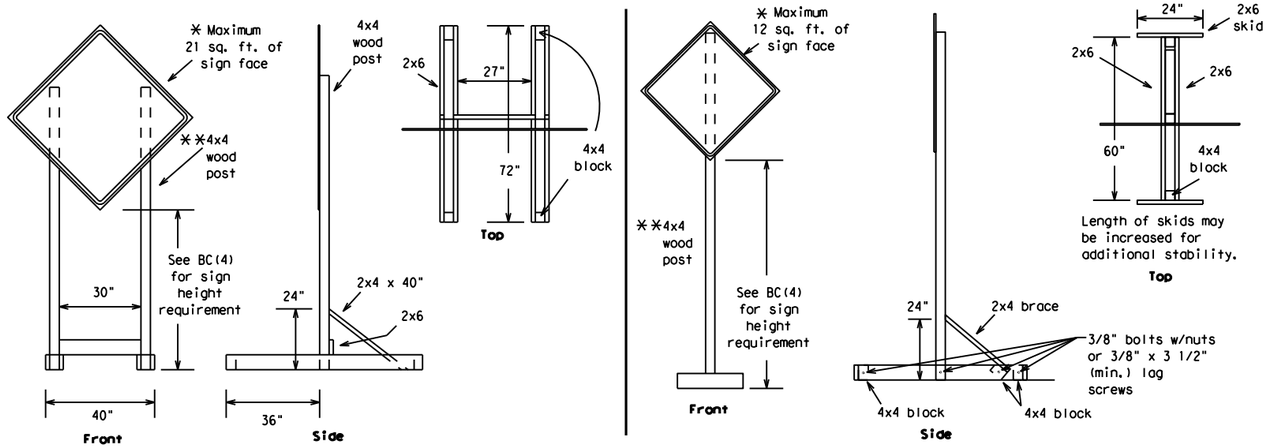
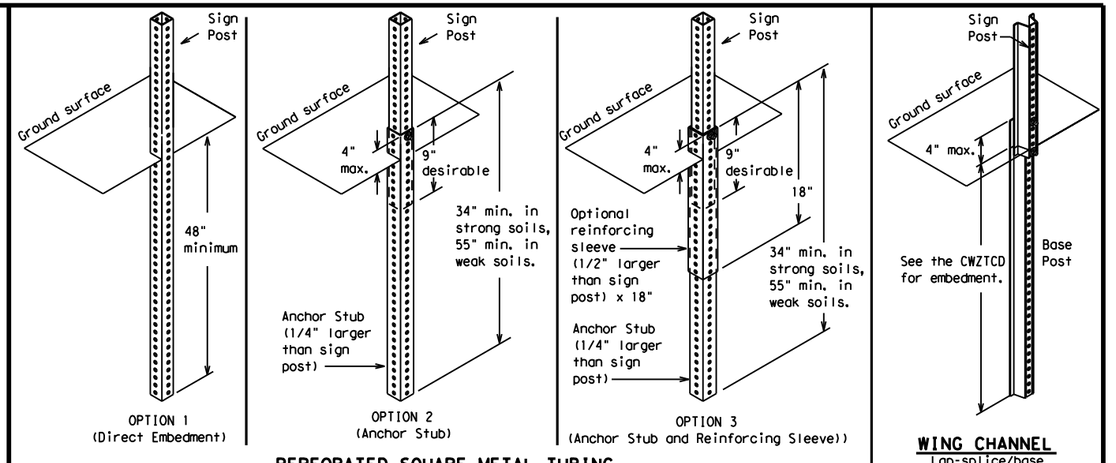


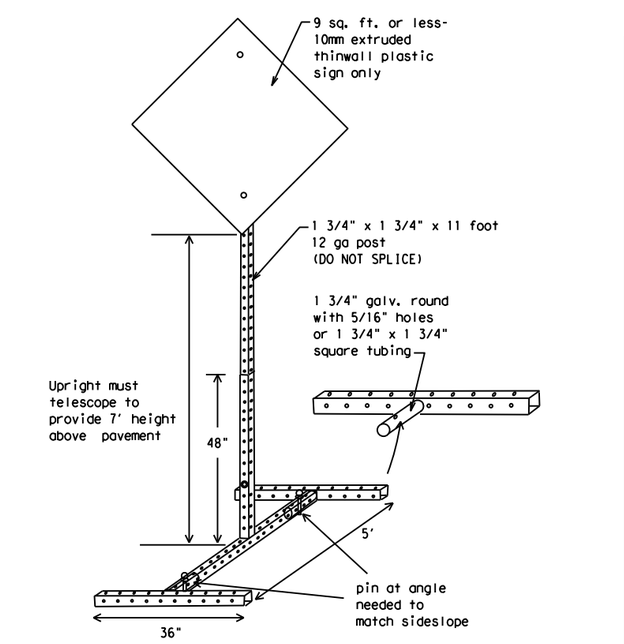
SKID MOUNTED WOOD SIGN SUPPORTS

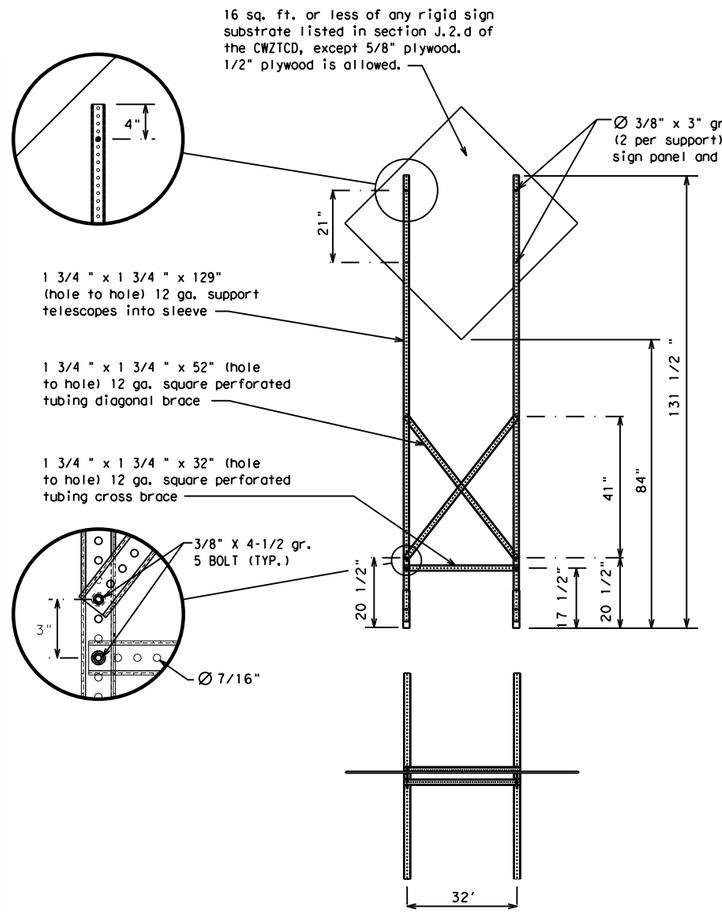
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

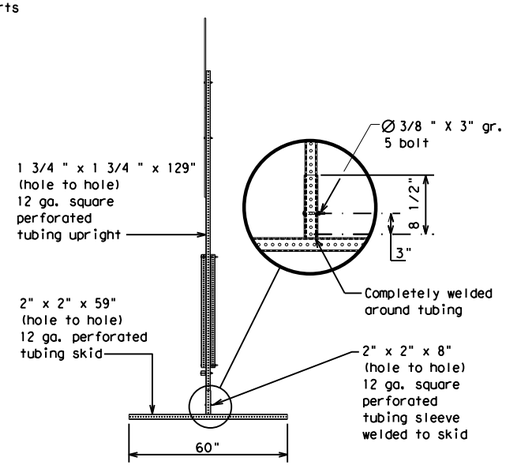


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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REVISIONS	0914	33	088	VAR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AUS	HAYS		17

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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

** 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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9-07 8-14		DIST	COUNTY		SHEET NO.
7-13 5-21		AUS	HAYS		18

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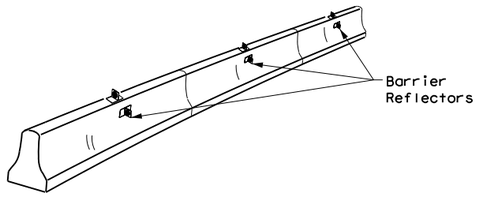
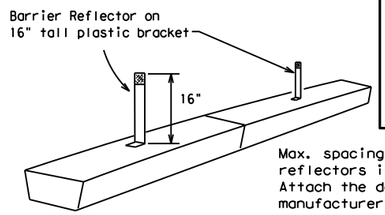
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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

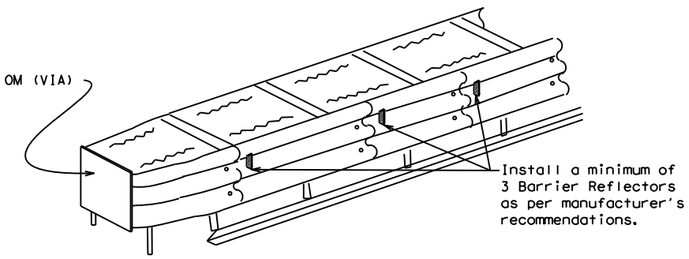


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

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

LOW PROFILE CONCRETE BARRIER (LPCB)

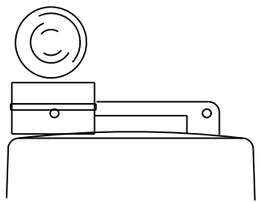


DELINEATION OF END TREATMENTS

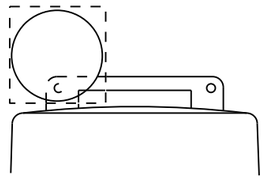
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

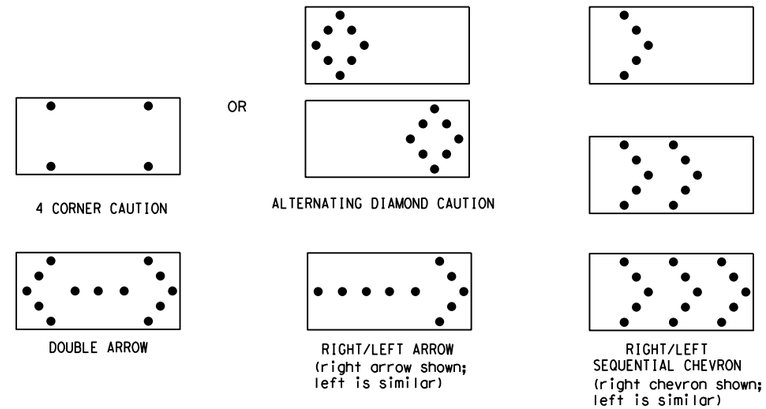
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

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

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

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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

SHEET 7 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AUS	HAYS		19

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GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

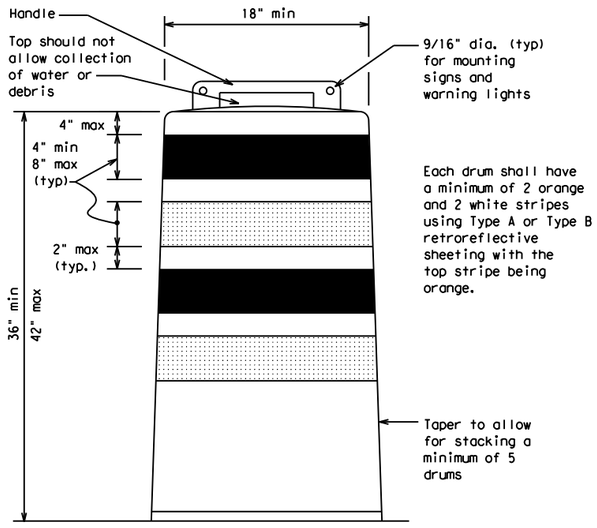
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

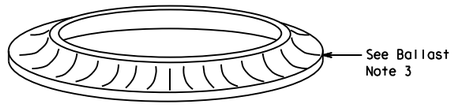
RETROREFLECTIVE SHEETING

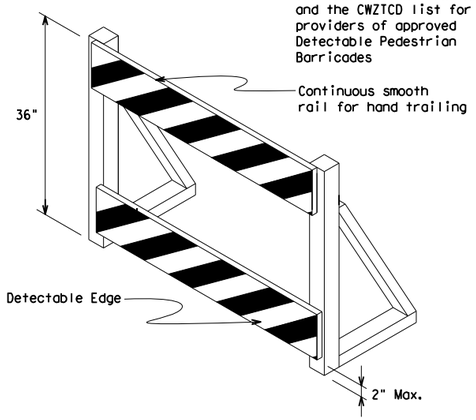
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

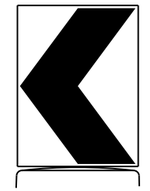




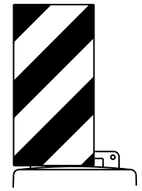


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
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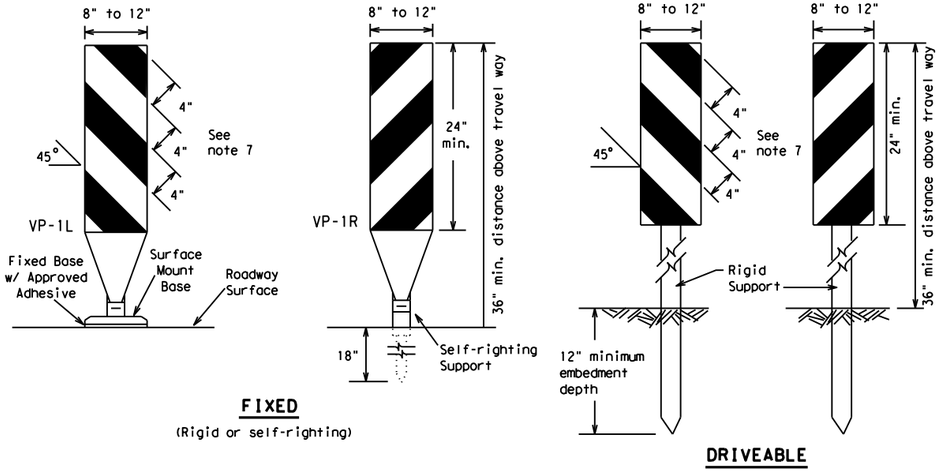
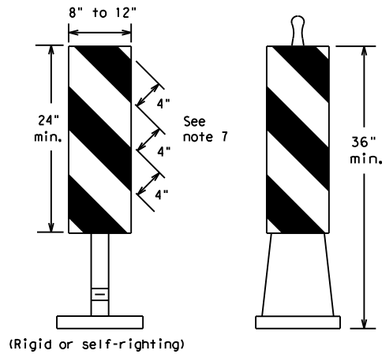


FIXED
(Rigid or self-righting)

DRIVEABLE

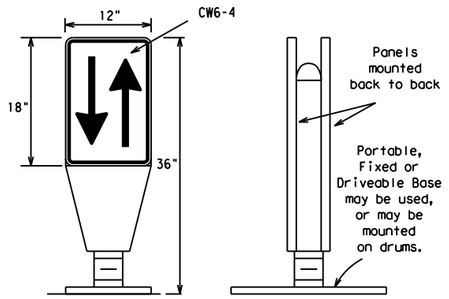


(Rigid or self-righting)

PORTABLE

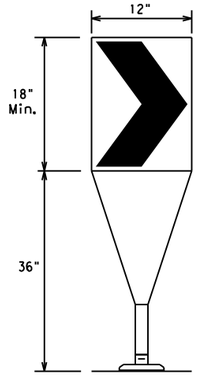
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

VERTICAL PANELS (VPs)



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

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



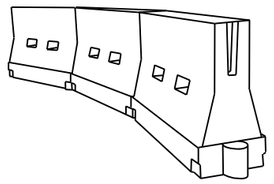
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

CHEVRONS

GENERAL NOTES

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



LONGITUDINAL CHANNELIZING DEVICES (LCD)

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

WATER BALLASTED SYSTEMS USED AS BARRIERS

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

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

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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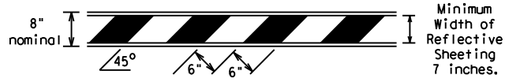
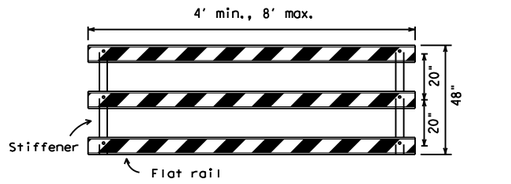
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



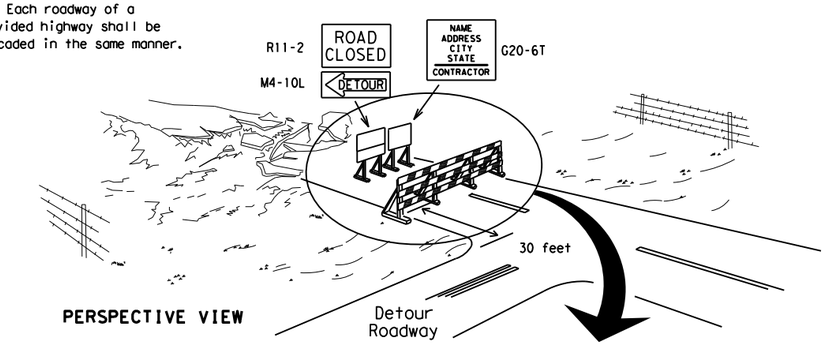
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

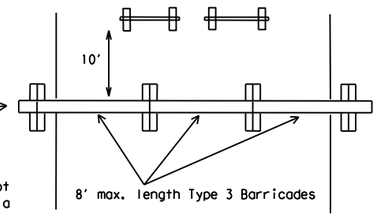
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

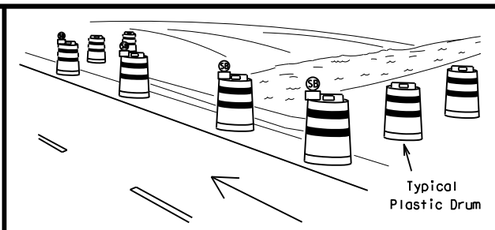
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

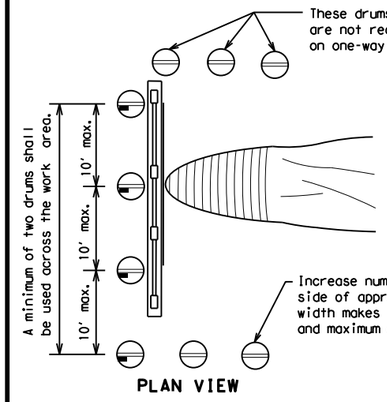
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

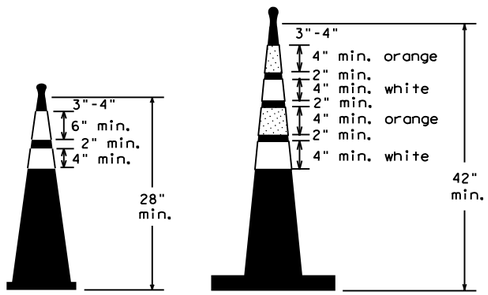
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



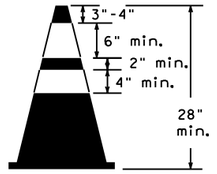
LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

PLAN VIEW

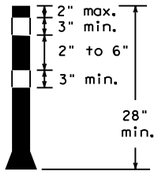
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

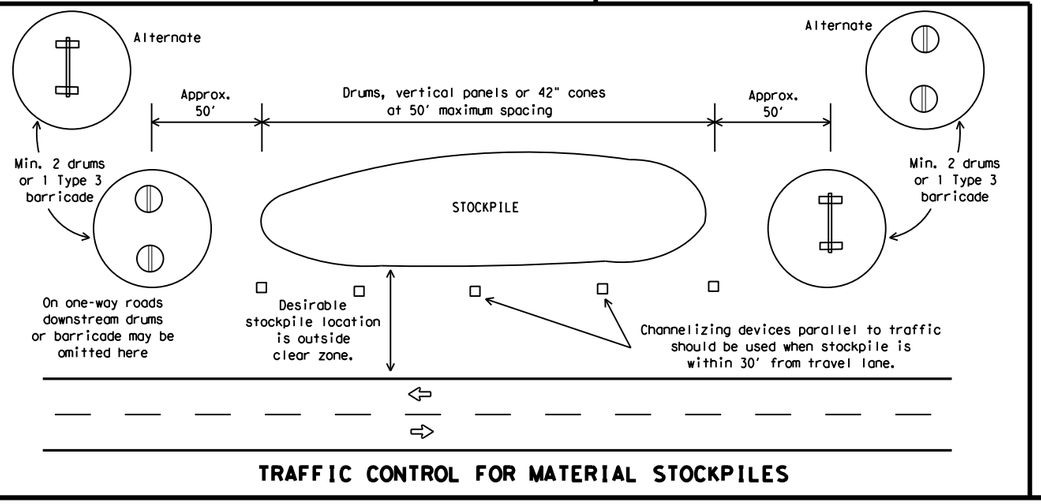


Tubular Marker

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

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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AUS	HAYS		22

104

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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.

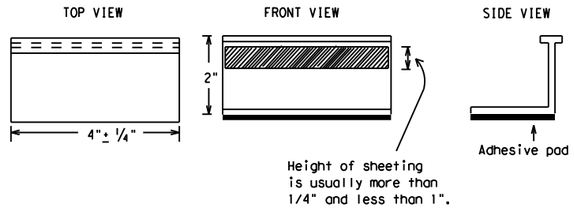
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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
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2-98 9-07 5-21	DIST	COUNTY		SHEET NO.
1-02 7-13	AUS	HAYS		23
11-02 8-14				

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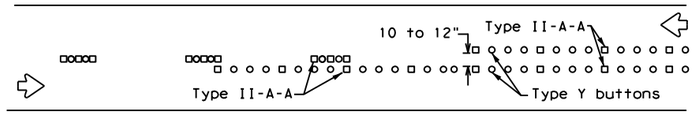
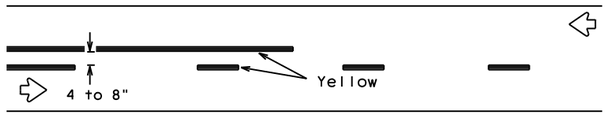
PAVEMENT MARKING PATTERNS

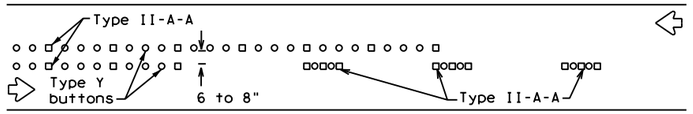
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



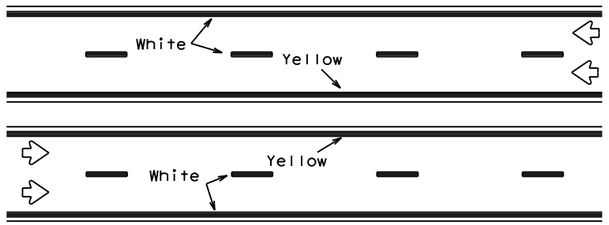
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



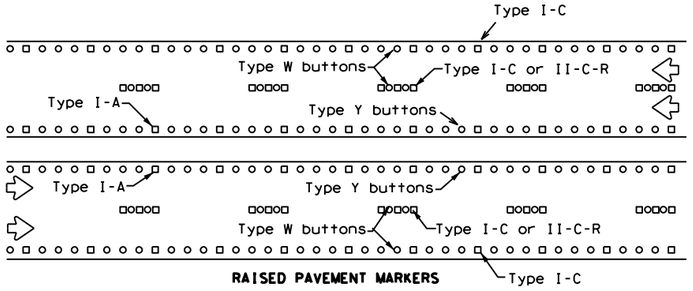
RAISED PAVEMENT MARKERS - PATTERN B

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

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



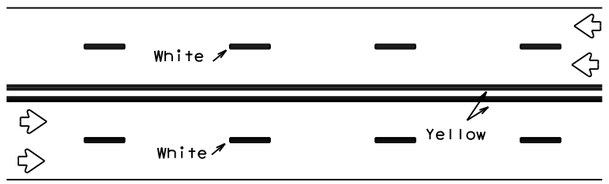
REFLECTORIZED PAVEMENT MARKINGS



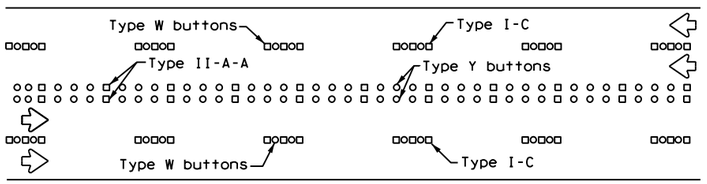
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



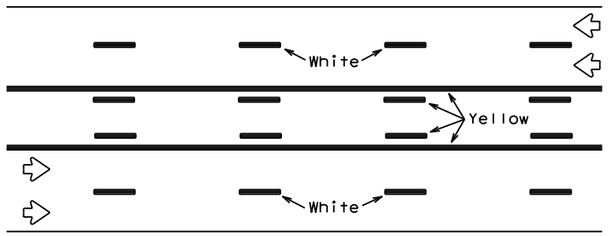
REFLECTORIZED PAVEMENT MARKINGS



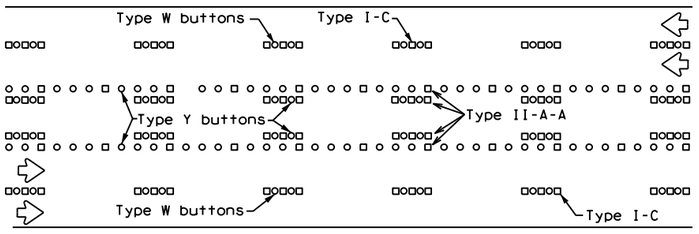
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

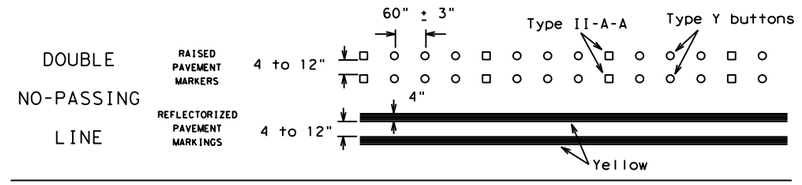
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

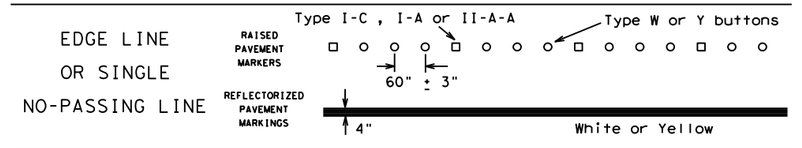
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

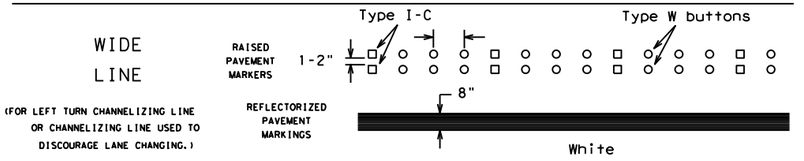


EDGE LINE OR SINGLE NO-PASSING LINE



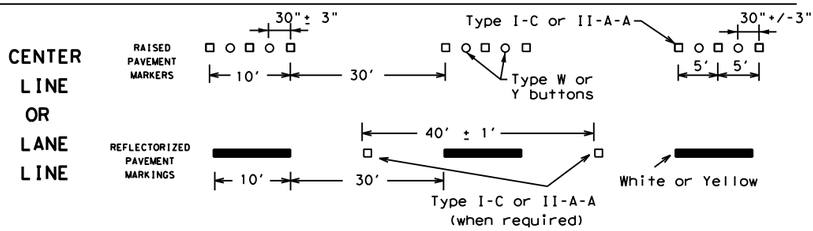
WIDE LINE

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

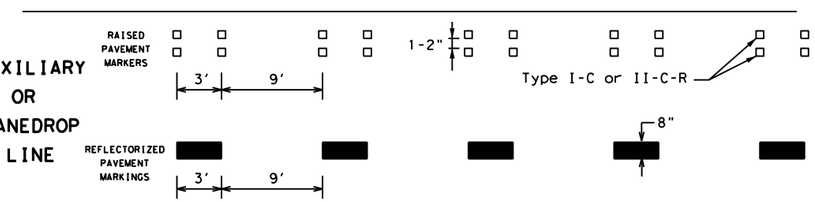


BROKEN LINES

CENTER LINE OR LANE LINE

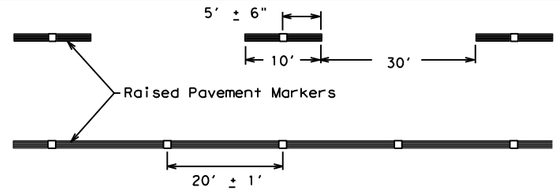


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
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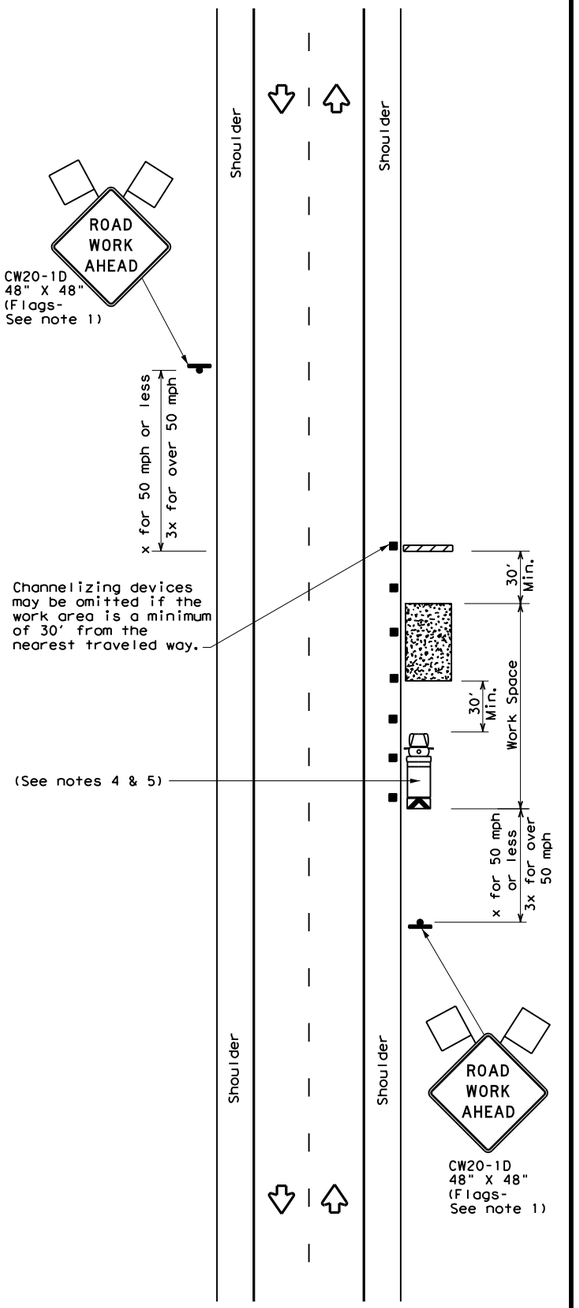
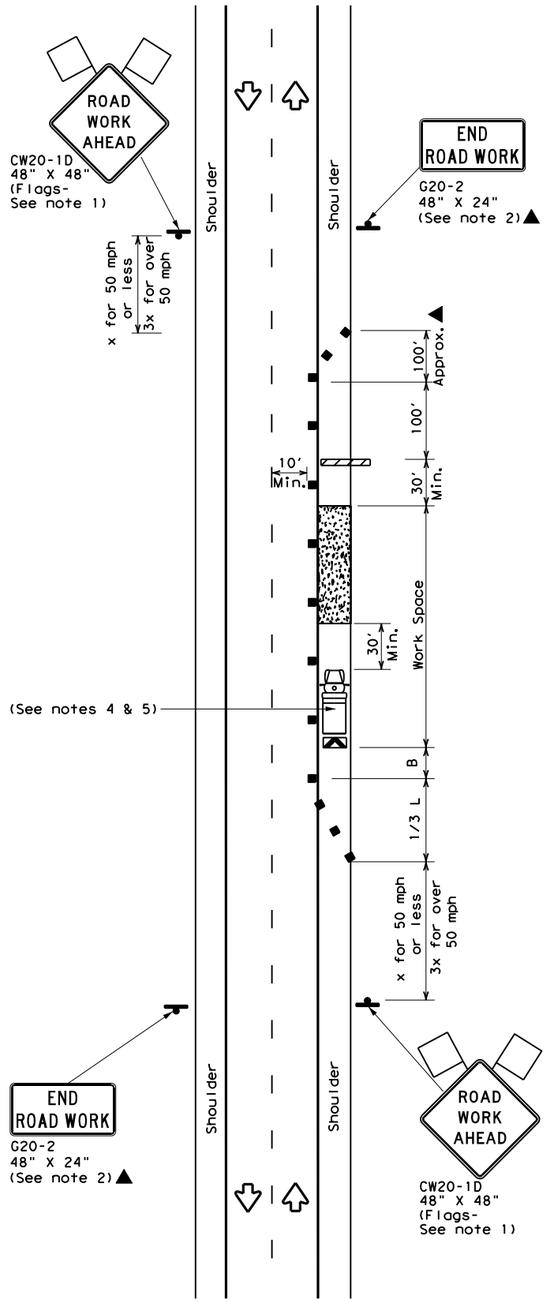


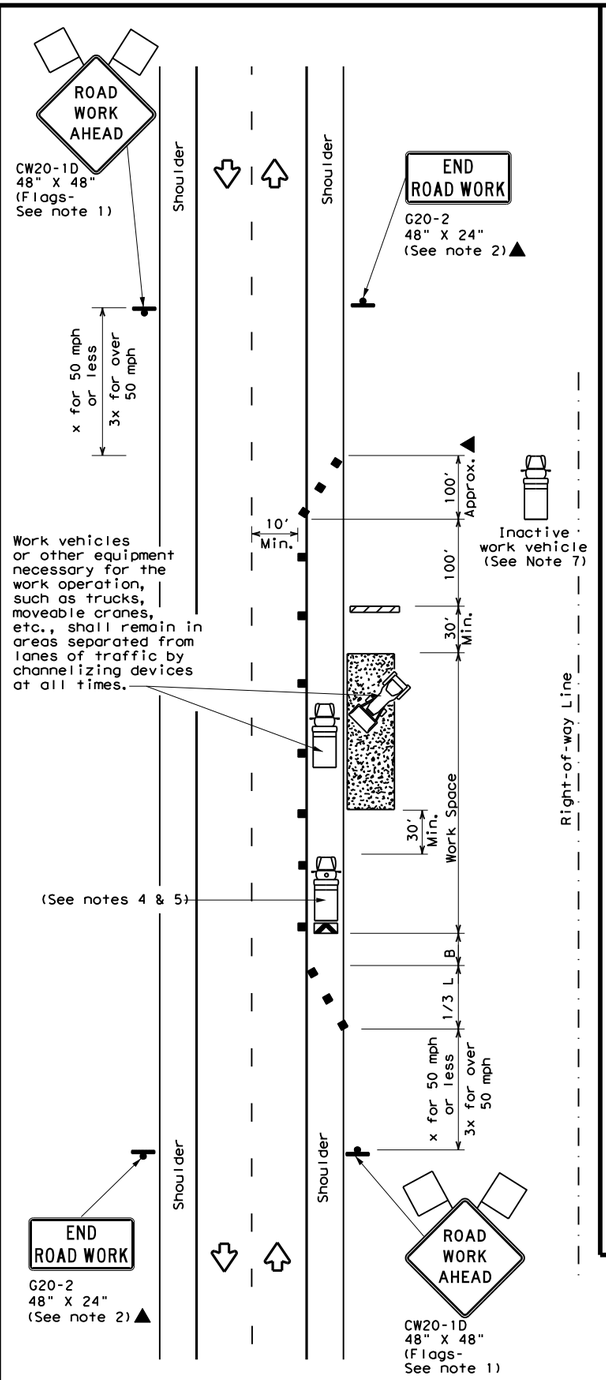
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	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 in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. 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.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

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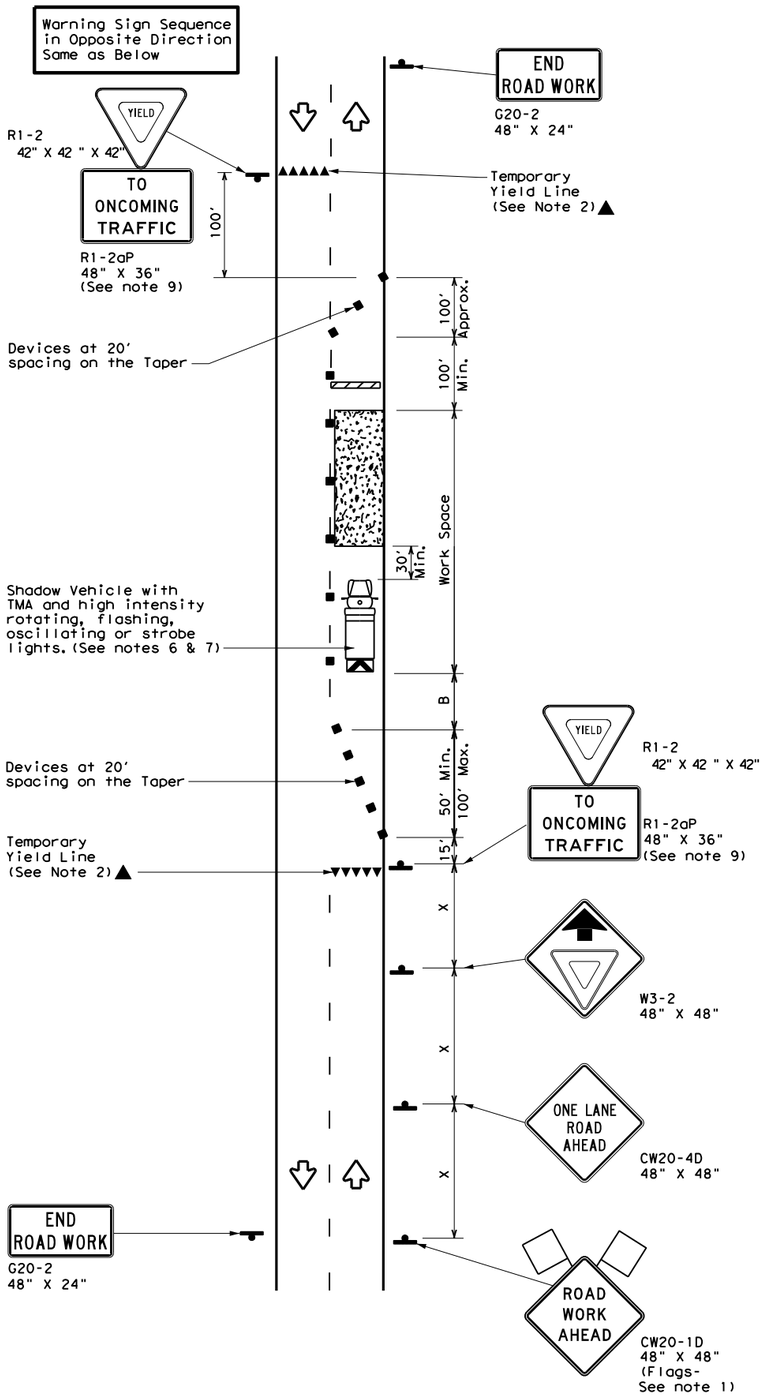
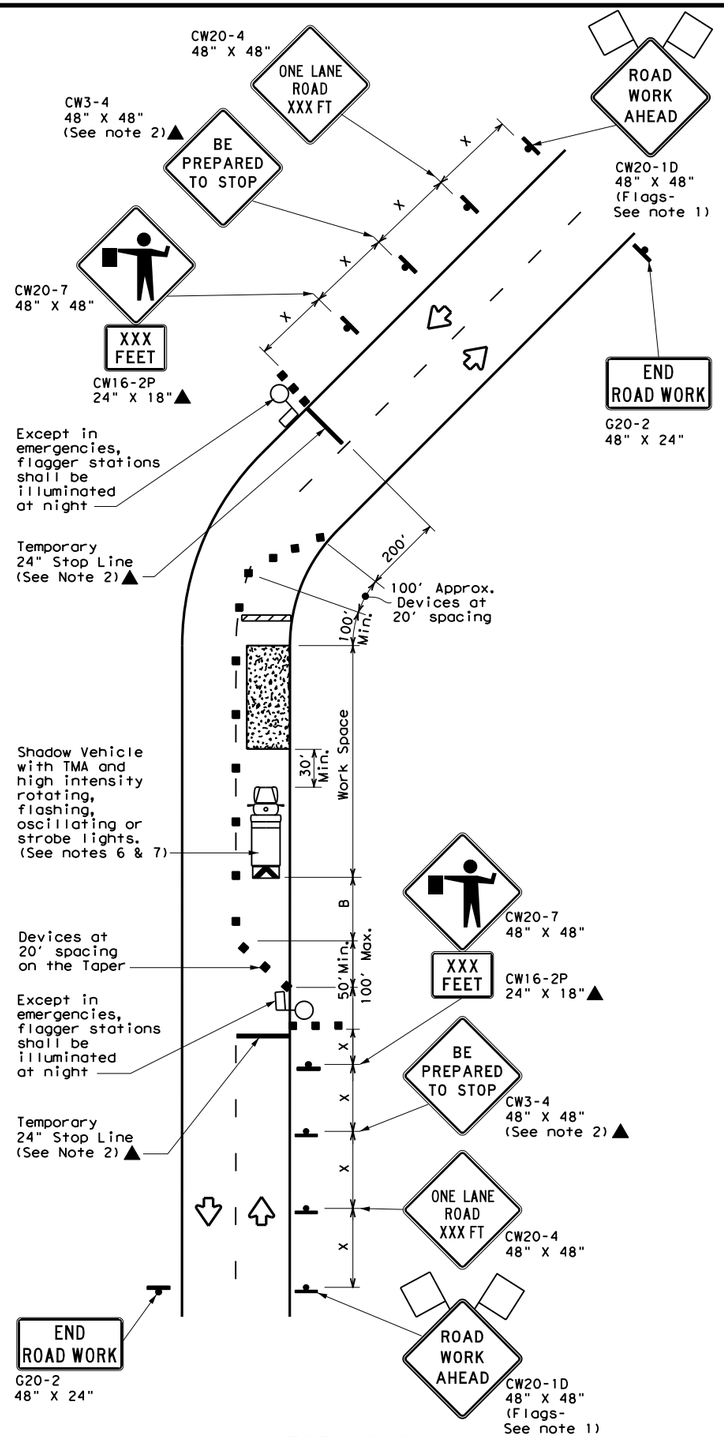


TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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

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

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

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

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY
TRAFFIC CONTROL

TCP(2-2)-18

FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
8-95 3-03	DIST	COUNTY		SHEET NO.
1-97 2-12	AUS	HAYS		26
4-98 2-18				

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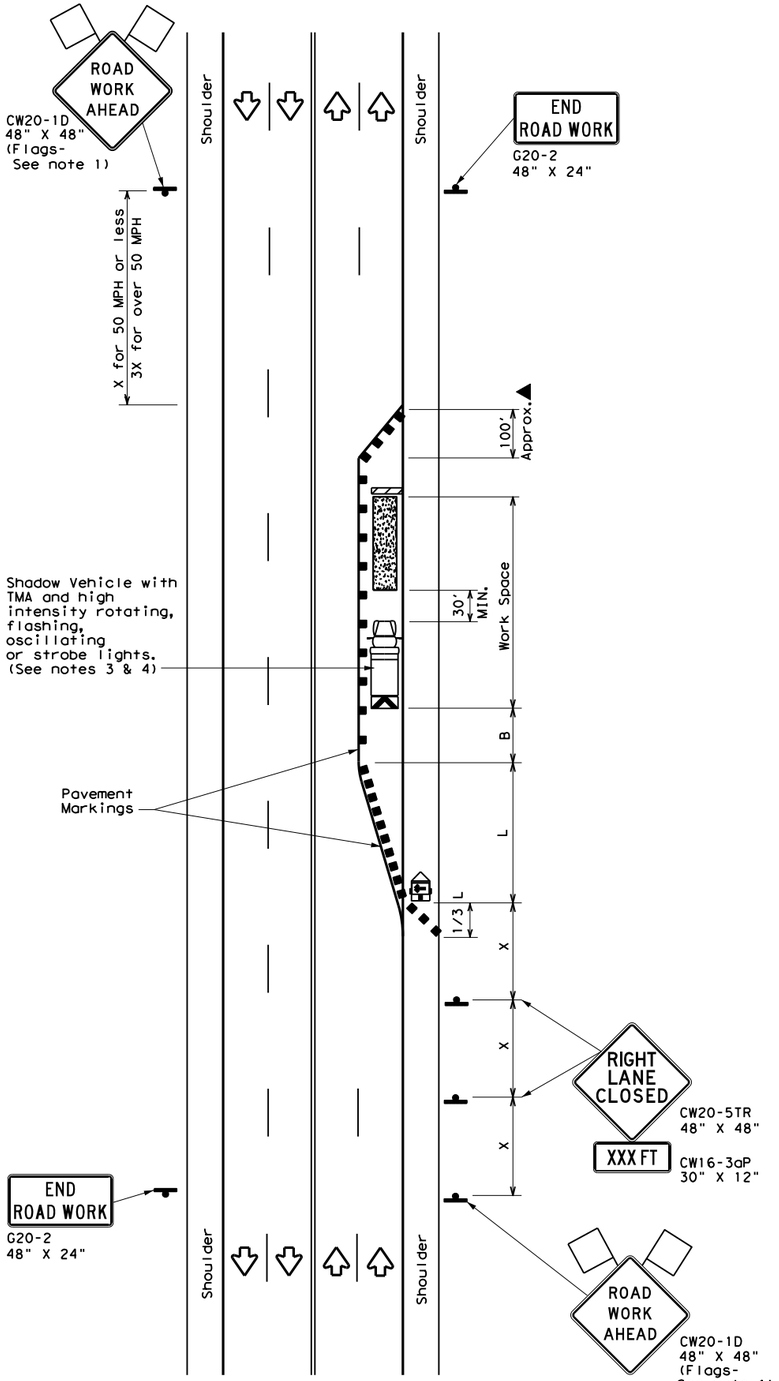
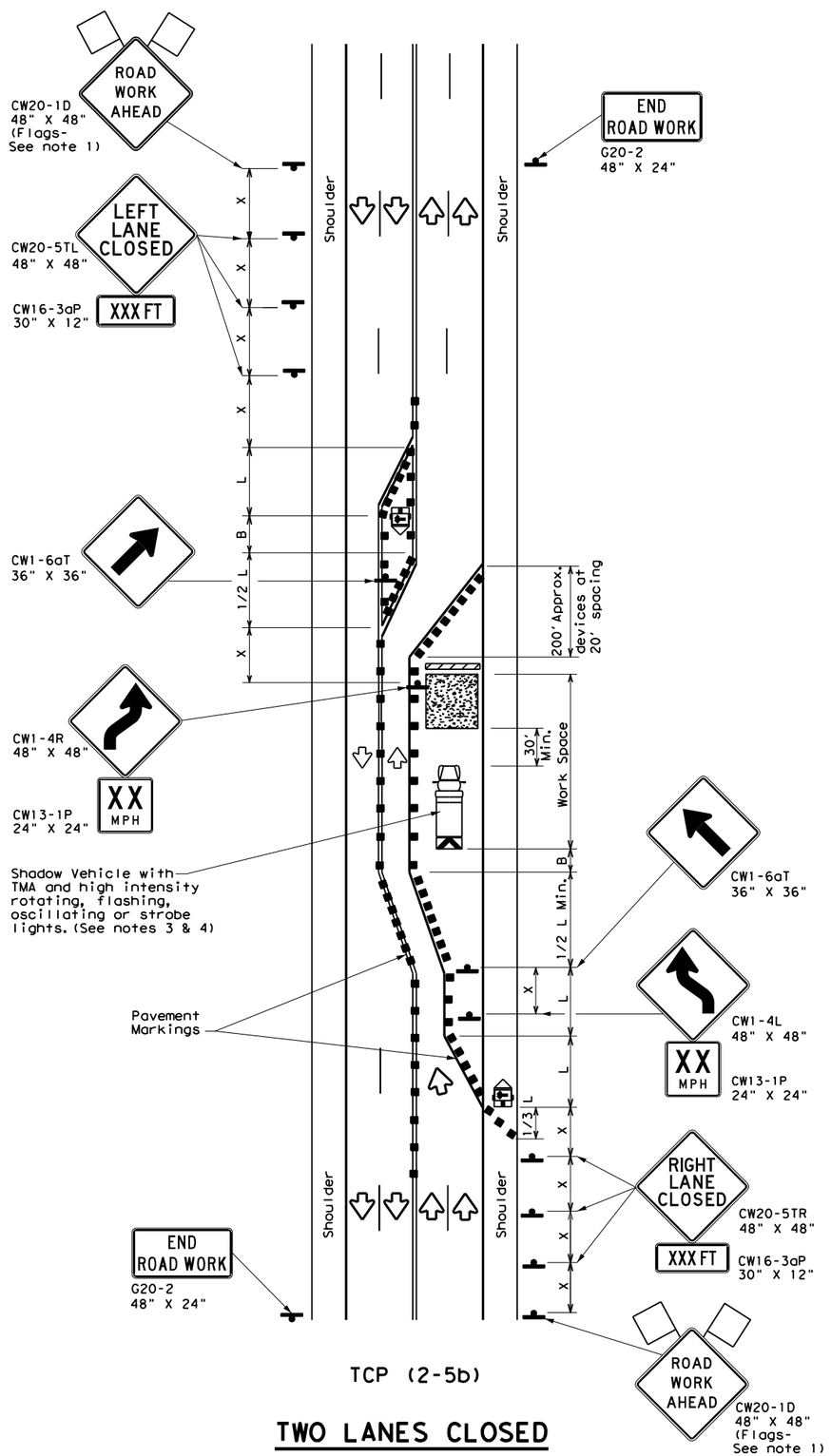


TCP (2-5a)

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

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©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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1-97 3-03	DIST	COUNTY		SHEET NO.
4-98 2-18	AUS	HAYS		27

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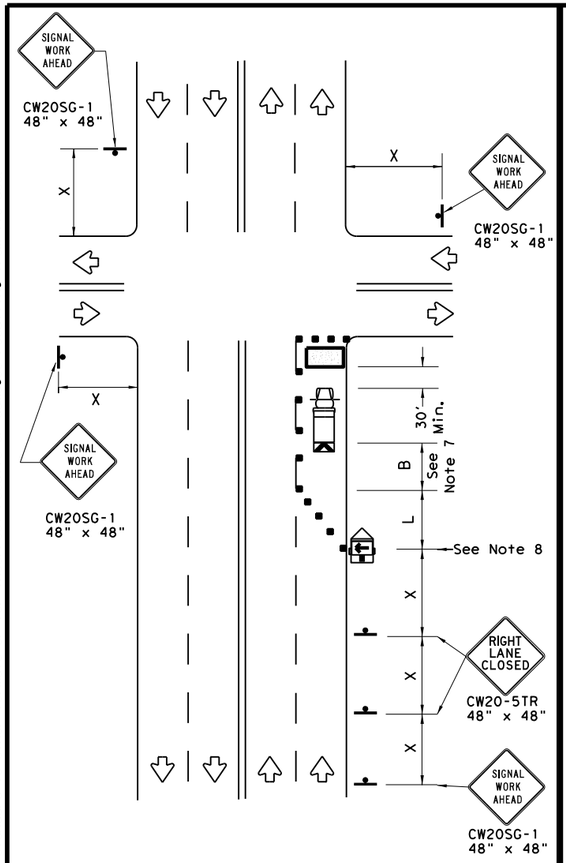
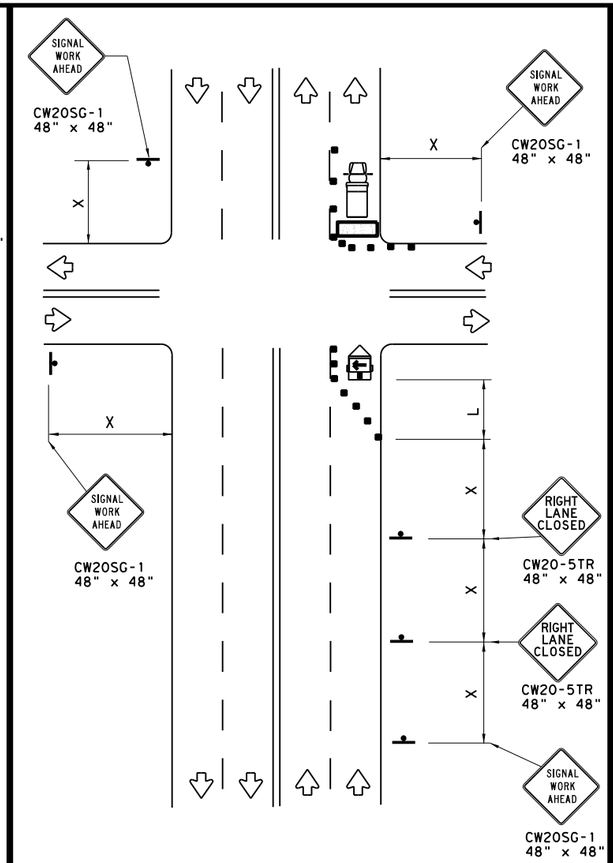


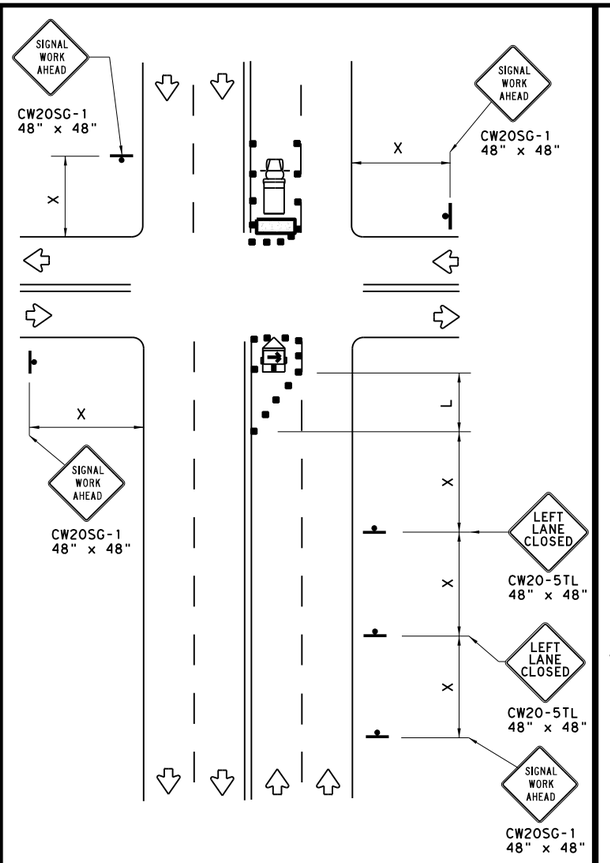
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



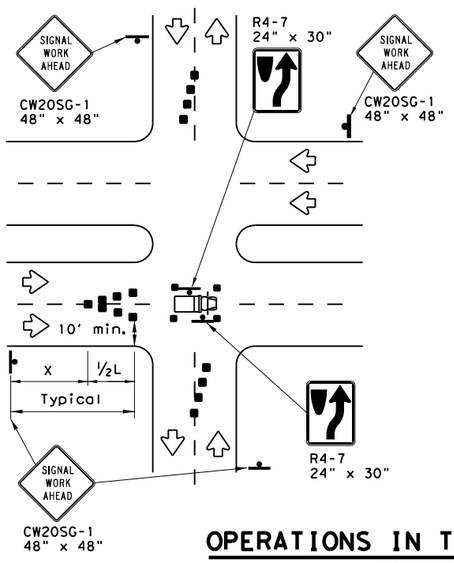
FAR SIDE RIGHT LANE CLOSURE

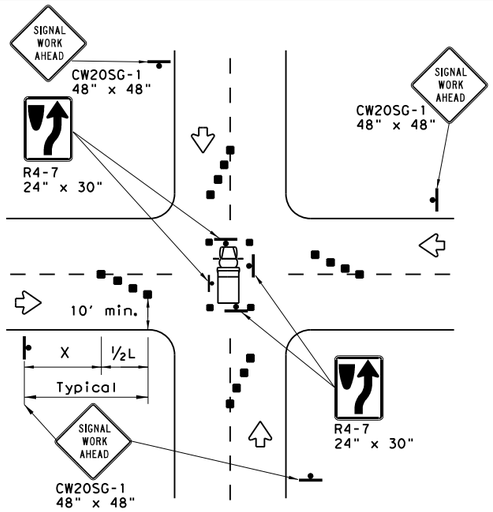
SHORT DURATION OR SHORT TERM STATIONARY



FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY





OPERATIONS IN THE INTERSECTION

SHORT DURATION

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.

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.

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
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4-98 3-03	AUS	HAYS		28

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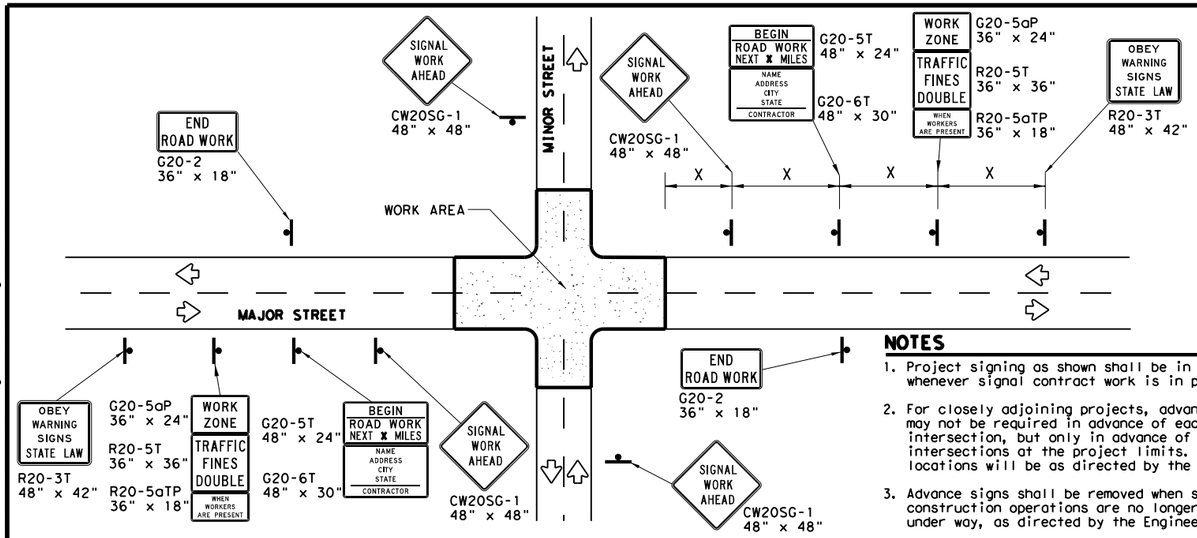


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

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 at 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

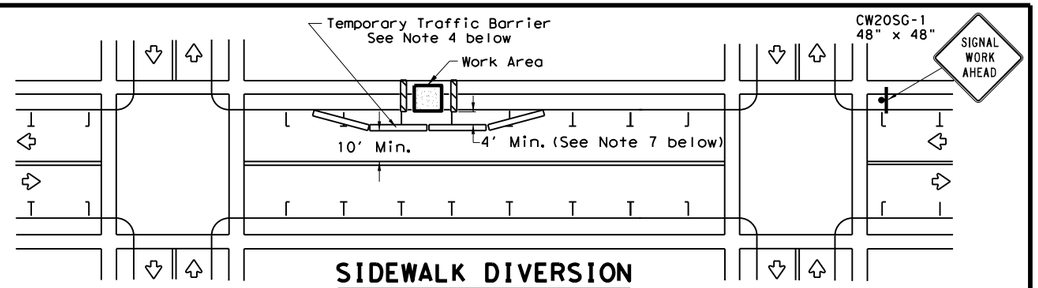
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support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

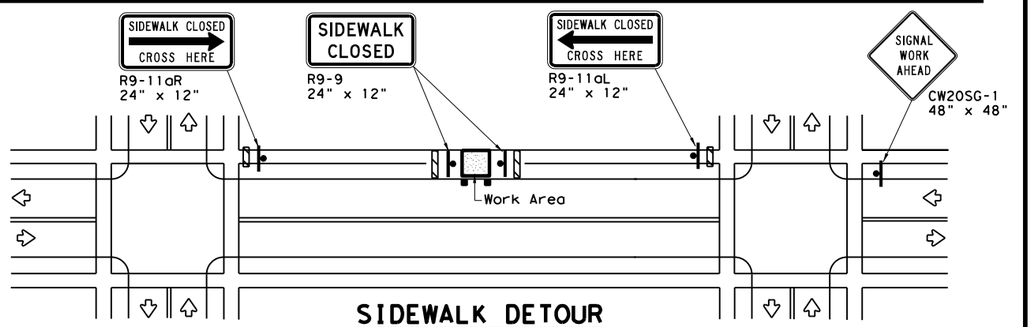
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

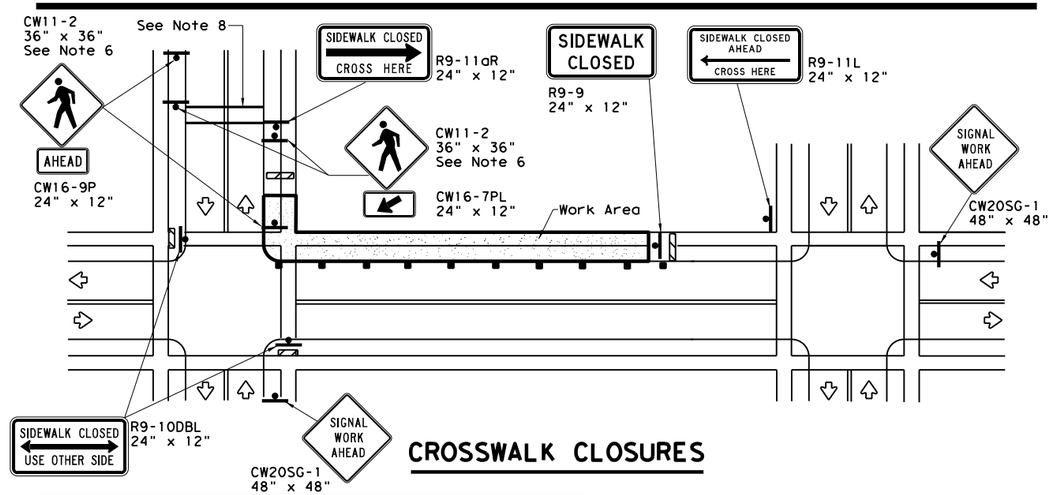
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



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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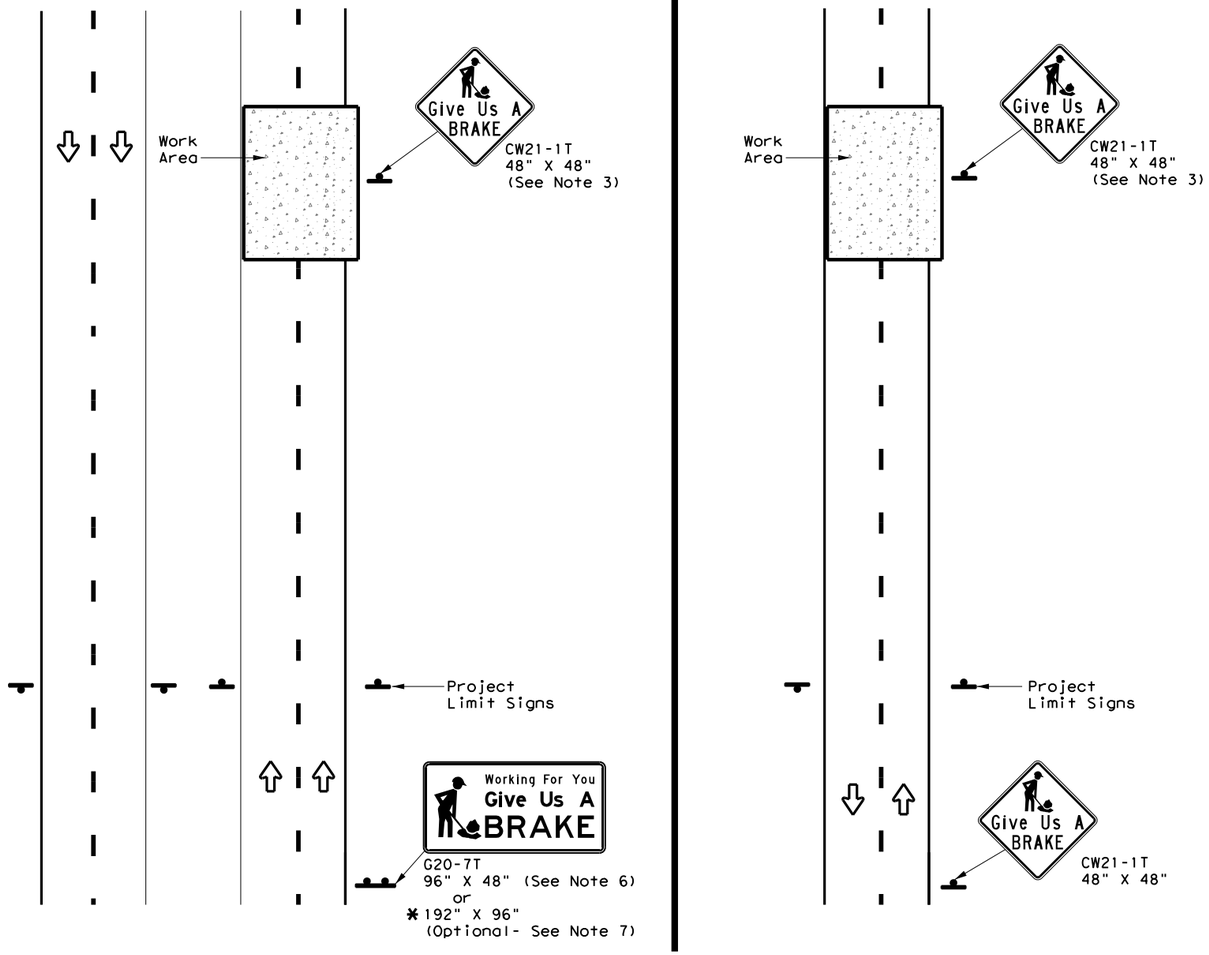

DIVIDED HIGHWAY

UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

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

SUMMARY OF LARGE SIGNS

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

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
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8-96 3-03	AUS	HAYS		30

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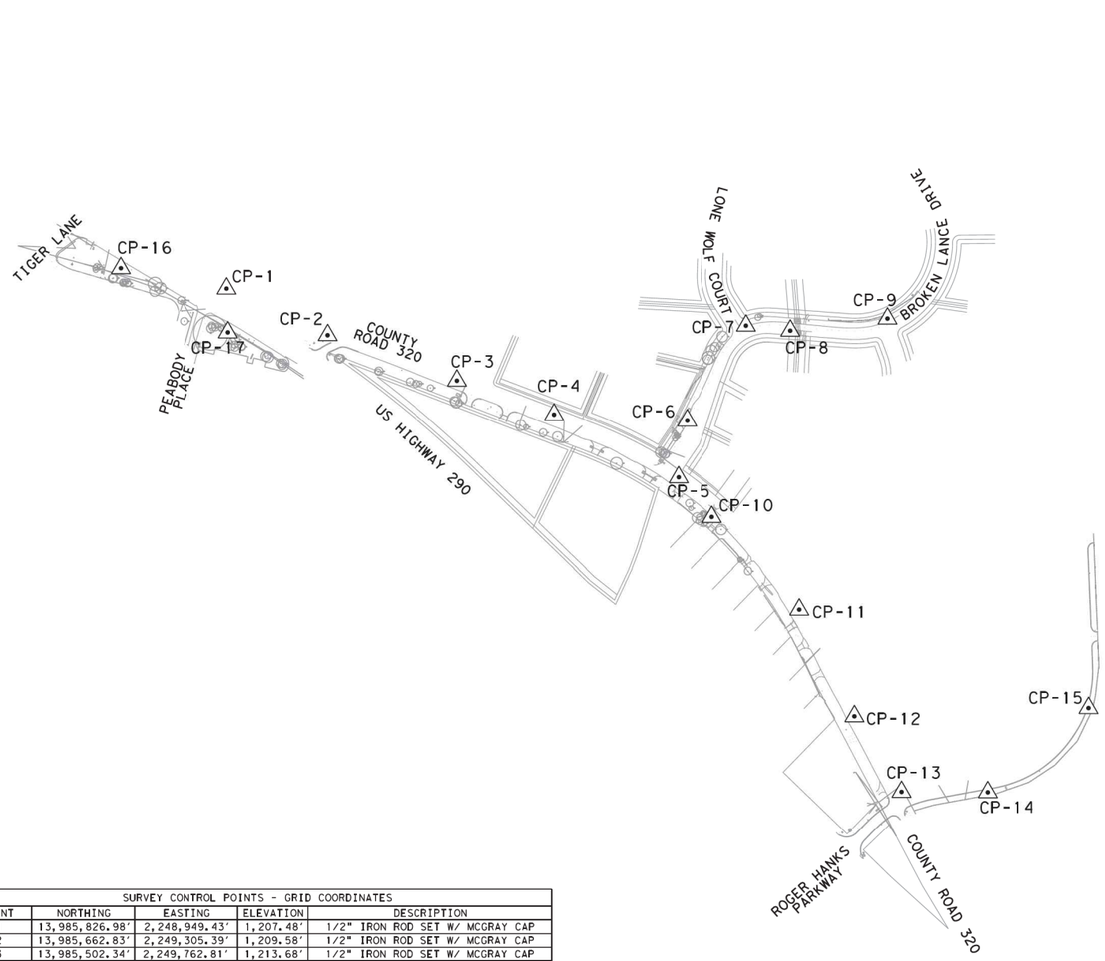

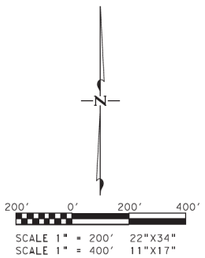

NOTES:

1. THIS PROJECT IS REFERENCED, FOR ALL BEARING AND COORDINATE BASIS, TO THE TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204), NORTH AMERICAN DATUM OF 1983 (2011) EPOCH 2010.00.

2. COORDINATES SHOWN HEREON ARE GRID COORDINATES.

3. ALL ELEVATIONS SHOWN HEREON ARE NORTH AMERICAN VERTICAL DATUM (NAVD) 88 AND WERE DERIVED FROM GPS OBSERVATIONS.

UNITS: U.S. SURVEY FEET.

SURVEY CONTROL POINTS - GRID COORDINATES

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	13,985,826.98'	2,248,949.43'	1,207.48'	1/2" IRON ROD SET W/ MCGRAY CAP
2	13,985,662.83'	2,249,305.39'	1,209.58'	1/2" IRON ROD SET W/ MCGRAY CAP
3	13,985,502.34'	2,249,762.81'	1,213.68'	1/2" IRON ROD SET W/ MCGRAY CAP
4	13,985,382.18'	2,250,104.89'	1,214.92'	1/2" IRON ROD SET W/ MCGRAY CAP
5	13,985,161.89'	2,250,544.78'	1,205.88'	1/2" IRON ROD SET W/ MCGRAY CAP
6	13,985,362.15'	2,250,574.03'	1,211.39'	1/2" IRON ROD SET W/ MCGRAY CAP
7	13,985,696.38'	2,250,781.12'	1,220.83'	1/2" IRON ROD SET W/ MCGRAY CAP
8	13,985,678.56'	2,250,937.04'	1,218.30'	1/2" IRON ROD SET W/ MCGRAY CAP
9	13,985,721.39'	2,251,279.02'	1,221.46'	1/2" IRON ROD SET W/ MCGRAY CAP
10	13,985,022.28'	2,250,660.46'	1,203.84'	1/2" IRON ROD SET W/ MCGRAY CAP
11	13,984,697.84'	2,250,968.64'	1,206.27'	1/2" IRON ROD SET W/ MCGRAY CAP
12	13,984,322.34'	2,251,162.71'	1,206.65'	1/2" IRON ROD SET W/ MCGRAY CAP
13	13,984,055.73'	2,251,328.97'	1,209.60'	1/2" IRON ROD SET W/ MCGRAY CAP
14	13,984,054.44'	2,251,632.08'	1,210.98'	1/2" IRON ROD SET W/ MCGRAY CAP
15	13,984,351.08'	2,251,986.13'	1,204.84'	1/2" IRON ROD SET W/ MCGRAY CAP
16	13,985,898.68'	2,248,576.30'	1,204.18'	1/2" IRON ROD SET W/ MCGRAY CAP
17	13,985,672.75'	2,248,954.12'	1,203.57'	1/2" IRON ROD SET W/ MCGRAY CAP

I HEREBY CERTIFY THAT THE HORIZONTAL AND VERTICAL DATA SHOWN HEREON WAS DETERMINED BY MULTIPLE GPS OBSERVATIONS (RTN) IN JUNE 2022.

STATE OF TEXAS REGISTERED CHRIS CONRAD 5623 PROFESSIONAL LAND SURVEYOR

10/19/2022

CHRIS I. CONRAD, REG. PROF. LAND SURVEYOR NO. 5623 — DATE

McGRAY & McGRAY
LAND SURVEYORS, INC.
TBPELS SURVEY FIRM # 10095500
3301 HANCOCK DRIVE #6
AUSTIN, TEXAS 78731
(512) 451-8591
www.mcgray.com

DRIPPING SPRINGS MIDDLE SCHOOL CONTROL INDEX SHEET

DRIPPING SPRINGS Texas

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DRIPPING SPRINGS SRTS

SURVEY CONTROL

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
6	STP 2022(313)TAPS		VAR
STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	31
CONT.	SECT.	JOB	
0914	33	088	

FILENAME:pw:\\kh-pw.bentley.com:kh-pw-01\Documents\01 Active Projects\TX-AUS-069408400 - Dripping Springs SRTS\Design\Plan Set\3. Roadway\DRIP_RDW_CNTR_SURVEY.dgn
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Beginning chain CL HWY 290 description

Point 5 N 13,986,168.8323 E 2,248,265.3322 Sta 885+00.00

Course from 5 to PC CLHWY2901 S 58° 41′ 00.00" E Dist 1,102.0677

Curve Data

Curve CLHWY2901

P.I. Station	899+82.69	N	13,985,388.1535	E	2,249,525.6907
Delta =	11° 22′ 50.77" (RT)				
Degree =	1° 29′ 59.84"				
Tangent =	380.6223				
Length =	758.7400				
Radius =	3,819.8300				
External =	18.9165				
Long Chord =	757.4933				
Mid. Ord. =	18.8233				
P.C. Station	896+02.07	N	13,985,596.0131	E	2,249,206.8370
P.T. Station	903+60.81	N	13,985,121.4621	E	2,249,797.2584
C.C.		N	13,982,396.0769	E	2,247,120.8099

Back = S 56° 53′ 59.33" E
Ahead = S 45° 31′ 08.56" E
Chord Bear = S 51° 12′ 33.94" E

Course from PT CLHWY2901 to PC CLHWY2902 S 45° 54′ 10.65" E Dist 2,061.5509

Curve Data

Curve CLHWY2902

P.I. Station	925+54.59	N	13,983,594.4997	E	2,251,372.4037
Delta =	2° 38′ 39.18" (LT)				
Degree =	0° 59′ 59.95"				
Tangent =	132.2360				
Length =	264.4250				
Radius =	5,729.6500				
External =	1.5257				
Long Chord =	264.4015				
Mid. Ord. =	1.5253				
P.C. Station	924+22.36	N	13,983,686.8789	E	2,251,277.7864
P.T. Station	926+86.78	N	13,983,506.5840	E	2,251,471.1821
C.C.		N	13,987,786.5515	E	2,255,280.4822

Back = S 45° 41′ 08.65" E
Ahead = S 48° 19′ 47.83" E
Chord Bear = S 47° 00′ 28.24" E

Ending chain CL HWY 290 description

Beginning chain BL SW S description

Point 817 N 13,985,993.0493 E 2,248,415.4515 Sta 1887+00.00

Course from 817 to 818 S 49° 01′ 30.95" E Dist 105.9205

Point 818 N 13,985,923.5944 E 2,248,495.4213 Sta 1888+05.92

Course from 818 to 819 S 69° 36′ 41.87" E Dist 23.5930

Point 819 N 13,985,915.3751 E 2,248,517.5363 Sta 1888+29.51

Course from 819 to 820 S 67° 19′ 46.83" E Dist 203.5830

Point 820 N 13,985,836.9084 E 2,248,705.3900 Sta 1890+33.10

Course from 820 to 821 S 59° 13′ 55.67" E Dist 138.8221

Point 821 N 13,985,765.8924 E 2,248,824.6725 Sta 1891+71.92

Course from 821 to 822 S 89° 13′ 55.65" E Dist 5.6238

Point 822 N 13,985,765.8171 E 2,248,830.2958 Sta 1891+77.54

Course from 822 to 823 S 59° 13′ 55.67" E Dist 78.1840

Point 823 N 13,985,725.8212 E 2,248,897.4751 Sta 1892+55.73

Course from 823 to 824 S 89° 13′ 55.67" E Dist 8.7645

Point 824 N 13,985,725.7037 E 2,248,906.2388 Sta 1892+64.49

Course from 824 to 825 S 60° 42′ 12.95" E Dist 72.0892

Point 825 N 13,985,690.4285 E 2,248,969.1078 Sta 1893+36.58

Course from 825 to 826 S 44° 38′ 49.52" E Dist 24.7539

Point 826 N 13,985,672.8174 E 2,248,986.5033 Sta 1893+61.33

Course from 826 to 827 S 59° 13′ 55.67" E Dist 70.7412

Point 827 N 13,985,636.6290 E 2,249,047.2875 Sta 1894+32.08

Course from 827 to 828 S 72° 43′ 10.47" E Dist 21.8132

Point 828 N 13,985,630.1494 E 2,249,068.1161 Sta 1894+53.89

Course from 828 to 829 S 59° 01′ 34.51" E Dist 56.6723

Point 829 N 13,985,600.9833 E 2,249,116.7071 Sta 1895+10.56

Course from 829 to 830 S 59° 01′ 34.51" E Dist 47.8250

Point 830 N 13,985,576.3703 E 2,249,157.7124 Sta 1895+58.39

Course from 830 to 831 S 59° 01′ 34.51" E Dist 13.3995

Point 831 N 13,985,569.4744 E 2,249,169.2012 Sta 1895+71.79

Ending chain BL SW S description

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS SRTS

HORIZONTAL DATA

SHEET 1 OF 8

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	32
CONT.	SECT.	JOB	
0914	33	088	

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Beginning chain CL OLD HWY 290 description

Point 241 N 13,985,572.8007 E 2,249,242.0187 Sta 200+00.00

Course from 241 to 242 N 57° 58′ 40.61" E Dist 39.7930

Point 242 N 13,985,593.9008 E 2,249,275.7570 Sta 200+39.79

Course from 242 to PC OLDHWY290CL 5 N 57° 58′ 40.61" E Dist 57.4251

Curve Data

Curve OLDHWY290CL 5					
P.I. Station	200+97.58	N	13,985,624.5423	E	2,249,324.7516
Delta =	8° 17′ 18.45" (RT)				
Degree =	1145° 54′ 56.12"				
Tangent =	0.3623				
Length =	0.7233				
Radius =	5.0000				
External =	0.0131				
Long Chord =	0.7227				
Mid. Ord. =	0.0131				
P.C. Station	200+97.22	N	13,985,624.3502	E	2,249,324.4445
P.T. Station	200+97.94	N	13,985,624.6881	E	2,249,325.0833
C.C.		N	13,985,620.1110	E	2,249,327.0957
Back = N 57° 58′ 40.61" E					
Ahead = N 66° 15′ 59.06" E					
Chord Bear = N 62° 07′ 19.83" E					

Course from PT OLDHWY290CL 5 to PC OLDHWY290CL 8 N 66° 15′ 59.07" E Dist 13.6483

Curve Data

Curve OLDHWY290CL 8					
P.I. Station	201+32.17	N	13,985,638.4656	E	2,249,356.4194
Delta =	44° 44′ 59.28" (RT)				
Degree =	114° 35′ 29.61"				
Tangent =	20.5829				
Length =	39.0516				
Radius =	50.0000				
External =	4.0708				
Long Chord =	38.0665				
Mid. Ord. =	3.7644				
P.C. Station	201+11.59	N	13,985,630.1813	E	2,249,337.5773
P.T. Station	201+50.64	N	13,985,631.0839	E	2,249,375.6331
C.C.		N	13,985,584.4100	E	2,249,357.7015
Back = N 66° 15′ 59.06" E					
Ahead = S 68° 59′ 01.66" E					
Chord Bear = N 88° 38′ 28.70" E					

Course from PT OLDHWY290CL 8 to 243 S 69° 06′ 54.68" E Dist 437.7294

Point 243 N 13,985,475.0377 E 2,249,784.6032 Sta 205+88.37

Course from 243 to 244 S 68° 59′ 01.66" E Dist 206.7266

Point 244 N 13,985,400.8989 E 2,249,977.5782 Sta 207+95.10

Course from 244 to PC OLDHWY290CL 15 S 69° 15′ 18.53" E Dist 242.6698

Curve Data

Curve OLDHWY290CL 15					
P.I. Station	215+96.36	N	13,985,115.9769	E	2,250,726.4684
Delta =	41° 21′ 20.20" (RT)				
Degree =	3° 52′ 16.81"				
Tangent =	558.5904				
Length =	1,068.2516				
Radius =	1,480.0000				
External =	101.9049				
Long Chord =	1,045.2129				
Mid. Ord. =	95.3403				
P.C. Station	210+37.77	N	13,985,314.9435	E	2,250,204.5149
P.T. Station	221+06.02	N	13,984,621.7573	E	2,250,986.7955
C.C.		N	13,983,932.0139	E	2,249,677.3475
Back = S 69° 08′ 00.05" E					
Ahead = S 27° 46′ 39.85" E					
Chord Bear = S 48° 27′ 19.95" E					

Course from PT OLDHWY290CL 15 to 245 S 27° 46′ 39.85" E Dist 810.0292

Point 245 N 13,983,905.0741 E 2,251,364.3038 Sta 229+16.05

Ending chain CL OLD HWY 290 description

Beginning chain SW_290 description

Point 832 N 13,985,628.3142 E 2,249,225.0525 Sta 1200+11.77

Course from 832 to 833 N 52° 21′ 16.63" E Dist 17.8525

Point 833 N 13,985,639.2180 E 2,249,239.1882 Sta 1200+29.62

Course from 833 to 834 S 57° 34′ 21.49" E Dist 41.0269

Point 834 N 13,985,617.2182 E 2,249,273.8179 Sta 1200+70.65

Course from 834 to 835 S 55° 27′ 16.31" E Dist 38.5419

Point 835 N 13,985,595.3626 E 2,249,305.5639 Sta 1201+09.19

Course from 835 to 836 S 57° 34′ 21.49" E Dist 9.0151

Point 836 N 13,985,590.5285 E 2,249,313.1732 Sta 1201+18.21

Course from 836 to 837 S 57° 34′ 21.50" E Dist 10.7725

Point 837 N 13,985,584.7520 E 2,249,322.2660 Sta 1201+28.98

Course from 837 to 838 N 36° 16′ 36.39" E Dist 24.8208

Point 838 N 13,985,604.7617 E 2,249,336.9521 Sta 1201+53.80

Course from 838 to 839 N 88° 45′ 24.54" E Dist 48.8011

Point 839 N 13,985,605.8205 E 2,249,385.7417 Sta 1202+02.60

Course from 839 to 840 S 69° 06′ 54.68" E Dist 396.4978

Point 840 N 13,985,464.4728 E 2,249,756.1893 Sta 1205+99.10

Course from 840 to 841 S 89° 06′ 54.67" E Dist 5.2093

Point 841 N 13,985,464.3924 E 2,249,761.3979 Sta 1206+04.31

Course from 841 to 842 S 69° 06′ 54.68" E Dist 34.8623

Point 842 N 13,985,451.9643 E 2,249,793.9698 Sta 1206+39.17

Course from 842 to 843 S 69° 06′ 54.68" E Dist 40.8856

Point 843 N 13,985,437.3890 E 2,249,832.1691 Sta 1206+80.06

Course from 843 to 844 S 69° 06′ 54.68" E Dist 93.4587

Point 844 N 13,985,404.0719 E 2,249,919.4875 Sta 1207+73.51

Course from 844 to 845 S 69° 06′ 54.68" E Dist 39.6813

Point 845 N 13,985,389.9259 E 2,249,956.5617 Sta 1208+13.20

Course from 845 to 846 S 69° 06′ 54.68" E Dist 266.9419

Point 846 N 13,985,294.7637 E 2,250,205.9652 Sta 1210+80.14

Course from 846 to PC SW_290_31 S 89° 06′ 54.68" E Dist 9.4693

Curve Data

Curve SW_290_31					
P.I. Station	1213+14.26	N	13,985,212.1038	E	2,250,424.3842
Delta =	17° 26′ 11.07" (RT)				
Degree =	3° 54′ 39.51"				
Tangent =	224.6529				
Length =	445.8328				
Radius =	1,465.0000				
External =	17.1248				
Long Chord =	444.1144				
Mid. Ord. =	16.9269				
P.C. Station	1210+89.61	N	13,985,294.6175	E	2,250,215.4334
P.T. Station	1215+35.44	N	13,985,070.7701	E	2,250,599.0086
C.C.		N	13,983,932.0139	E	2,249,677.3475
Back = S 68° 27′ 04.19" E					
Ahead = S 51° 00′ 53.12" E					
Chord Bear = S 59° 43′ 58.66" E					

Course from PT SW_290_31 to PC SW_290_34 S 59° 43′ 03.14" E Dist 30.9418

6/28/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

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DRIPPING SPRINGS SRTS

HORIZONTAL DATA

SHEET 2 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	33
CONT.	SECT.	JOB	
0914	33	088	

Curve Data

Curve SW 290 34
P.I. Station 215+90.86 N 13,985,039.3753 E 2,250,644.4306
Delta = 1° 54′ 28.59" (RT)
Degree = 3° 53′ 51.62"
Tangent = 24.4777
Length = 48.9508
Radius = 1,470.0000
External = 0.2038
Long Chord = 48.9485
Mid. Ord. = 0.2038
P.C. Station 215+66.38 N 13,985,055.1673 E 2,250,625.7285
P.T. Station 216+15.33 N 13,985,022.9695 E 2,250,662.5966
C.C. N 13,983,932.0139 E 2,249,677.3475
Back = S 49° 49′ 21.16" E
Ahead = S 47° 54′ 52.57" E
Chord Bear = S 48° 52′ 06.86" E

Course from PT SW 290 34 to 692 S 41° 23′ 45.30" E Dist 5.4602

Point 692 N 13,985,018.8735 E 2,250,666.2072 Sta 216+20.79

Course from 692 to 693 S 41° 23′ 45.29" E Dist 38.8929

Point 693 N 13,984,989.6977 E 2,250,691.9255 Sta 216+59.69

Course from 693 to PC SW 290 41 S 41° 23′ 45.24" E Dist 7.7469

Curve Data

Curve SW 290 41
P.I. Station 217+34.73 N 13,984,937.0463 E 2,250,745.3659
Delta = 5° 15′ 36.25" (RT)
Degree = 3° 54′ 39.51"
Tangent = 67.2948
Length = 134.4951
Radius = 1,465.0000
External = 1.5448
Long Chord = 134.4479
Mid. Ord. = 1.5432
P.C. Station 216+67.43 N 13,984,983.8863 E 2,250,697.0481
P.T. Station 218+01.93 N 13,984,885.9740 E 2,250,789.1861
C.C. N 13,983,932.0139 E 2,249,677.3475
Back = S 45° 53′ 23.06" E
Ahead = S 40° 37′ 46.81" E
Chord Bear = S 43° 15′ 34.94" E

Course from PT SW 290 41 to 694 S 40° 11′ 22.94" E Dist 25.9168

Point 694 N 13,984,866.1758 E 2,250,805.9107 Sta 218+27.84

Course from 694 to PC SW 290 46 S 47° 33′ 11.01" E Dist 0.0752

Curve Data

Curve SW 290 46
P.I. Station 218+63.78 N 13,984,838.1677 E 2,250,828.4313
Delta = 2° 50′ 06.62" (RT)
Degree = 3° 57′ 12.16"
Tangent = 35.8649
Length = 71.7152
Radius = 1,449.2872
External = 0.4437
Long Chord = 71.7079
Mid. Ord. = 0.4436
P.C. Station 218+27.92 N 13,984,866.1251 E 2,250,805.9662
P.T. Station 218+99.63 N 13,984,809.1334 E 2,250,849.4860
C.C. N 13,983,958.3210 E 2,249,676.2207
Back = S 38° 47′ 00.69" E
Ahead = S 35° 56′ 54.08" E
Chord Bear = S 37° 21′ 57.38" E

Course from PT SW 290 46 to 695 S 36° 11′ 18.50" E Dist 30.0754

Point 695 N 13,984,784.8602 E 2,250,867.2438 Sta 219+29.71

Course from 695 to PC SW 290 51 S 36° 10′ 41.58" E Dist 2.4906

Curve Data

Curve SW 290 51
P.I. Station 220+06.67 N 13,984,721.4567 E 2,250,910.8598
Delta = 6° 00′ 12.30" (RT)
Degree = 4° 02′ 04.55"
Tangent = 74.4673
Length = 148.7984
Radius = 1,420.1114
External = 1.9511
Long Chord = 148.7304
Mid. Ord. = 1.9484
P.C. Station 219+32.20 N 13,984,782.8498 E 2,250,868.7140
P.T. Station 220+81.00 N 13,984,655.9923 E 2,250,946.3535
C.C. N 13,983,979.1186 E 2,249,697.9311
Back = S 34° 28′ 09.20" E
Ahead = S 28° 27′ 56.90" E
Chord Bear = S 31° 28′ 03.05" E

Course from PT SW 290 51 to 696 S 29° 11′ 39.84" E Dist 23.1780

Point 696 N 13,984,635.7586 E 2,250,957.6591 Sta 221+04.18

Course from 696 to 697 S 29° 11′ 27.66" E Dist 50.8241

Point 697 N 13,984,591.3892 E 2,250,982.4472 Sta 221+55.00

Course from 697 to 698 S 27° 46′ 39.85" E Dist 33.9337

Point 698 N 13,984,561.3660 E 2,250,998.2618 Sta 221+88.93

Course from 698 to 699 S 27° 46′ 39.85" E Dist 89.5558

Point 699 N 13,984,482.1304 E 2,251,039.9986 Sta 222+78.49

Course from 699 to 700 S 27° 42′ 13.96" E Dist 20.0978

Point 700 N 13,984,464.3366 E 2,251,049.3421 Sta 222+98.59

Course from 700 to 701 S 27° 46′ 39.85" E Dist 143.6785

Point 701 N 13,984,337.2152 E 2,251,116.3025 Sta 224+42.27

Course from 701 to 702 S 26° 29′ 04.78" E Dist 10.0025

Point 702 N 13,984,328.2624 E 2,251,120.7632 Sta 224+52.27

Course from 702 to 703 S 27° 46′ 39.85" E Dist 74.9741

Point 703 N 13,984,261.9282 E 2,251,155.7043 Sta 225+27.24

Course from 703 to 704 S 27° 46′ 39.85" E Dist 31.6699

Point 704 N 13,984,233.9078 E 2,251,170.4639 Sta 225+58.91

Course from 704 to 705 S 27° 46′ 39.85" E Dist 173.4499

Point 705 N 13,984,080.4459 E 2,251,251.2990 Sta 227+32.36

Course from 705 to 706 S 27° 46′ 39.85" E Dist 28.6659

Point 706 N 13,984,055.0835 E 2,251,264.6585 Sta 227+61.03

Course from 706 to PC SW 290 76 S 27° 46′ 39.84" E Dist 29.0903

Curve Data

Curve SW 290 76
P.I. Station 228+08.12 N 13,984,013.4211 E 2,251,286.6039
Delta = 83° 58′ 10.45" (RT)
Degree = 286° 28′ 44.03"
Tangent = 17.9985
Length = 29.3109
Radius = 20.0000
External = 6.9062
Long Chord = 26.7573
Mid. Ord. = 5.1336
P.C. Station 227+90.12 N 13,984,029.3455 E 2,251,278.2158
P.T. Station 228+19.43 N 13,984,003.4065 E 2,251,271.6488
C.C. N 13,984,020.0246 E 2,251,260.5206
Back = S 27° 46′ 39.85" E
Ahead = S 56° 11′ 30.60" W
Chord Bear = S 14° 12′ 25.38" W

5/22/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

HORIZONTAL DATA

SHEET 3 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	34
CONT.	SECT.	JOB	
0914	33	088	

Curve Data

Curve SW 290 77

P.I. Station	228+40.27	N	13,983,991.8138	E	2,251,254.3372
Delta =	6° 21′ 57.60"	(LT)			
Degree =	15° 17′ 35.46"				
Tangent =	20.8346				
Length =	41.6264				
Radius =	374.6491				
External =	0.5789				
Long Chord =	41.6050				
Mid. Ord. =	0.5780				
P.C. Station	228+19.43	N	13,984,003.4065	E	2,251,271.6488
P.T. Station	228+61.06	N	13,983,978.3732	E	2,251,238.4178
C.C.		N	13,983,692.1086	E	2,251,480.1089
Back = S	56° 11′ 30.60" W				
Ahead = S	49° 49′ 33.01" W				
Chord Bear = S	53° 00′ 31.81" W				

Curve Data

Curve SW 290 78

P.I. Station	228+78.66	N	13,983,967.0171	E	2,251,224.9674
Delta =	4° 14′ 04.65"	(LT)			
Degree =	12° 02′ 00.62"				
Tangent =	17.6032				
Length =	35.1903				
Radius =	476.1354				
External =	0.3253				
Long Chord =	35.1823				
Mid. Ord. =	0.3251				
P.C. Station	228+61.06	N	13,983,978.3732	E	2,251,238.4178
P.T. Station	228+96.25	N	13,983,954.6989	E	2,251,212.3923
C.C.		N	13,983,614.5643	E	2,251,545.5790
Back = S	49° 49′ 33.01" W				
Ahead = S	45° 35′ 28.35" W				
Chord Bear = S	47° 42′ 30.68" W				

Curve Data

Curve SW 290 79

P.I. Station	229+18.81	N	13,983,938.8178	E	2,251,196.3634
Delta =	1° 40′ 10.14"	(LT)			
Degree =	3° 41′ 58.93"				
Tangent =	22.5640				
Length =	45.1248				
Radius =	1,548.6593				
External =	0.1644				
Long Chord =	45.1232				
Mid. Ord. =	0.1644				
P.C. Station	228+96.25	N	13,983,954.6989	E	2,251,212.3923
P.T. Station	229+41.37	N	13,983,922.4766	E	2,251,180.8040
C.C.		N	13,982,854.5691	E	2,252,302.3740
Back = S	45° 15′ 55.74" W				
Ahead = S	43° 35′ 45.60" W				
Chord Bear = S	44° 25′ 50.67" W				

Course from PT SW 290 79 to PC SW 290 82 S 44° 14′ 10.77" W Dist 15.2276

Curve Data

Curve SW 290 82

P.I. Station	229+65.70	N	13,983,905.3516	E	2,251,163.5292
Delta =	17° 13′ 29.92"	(RT)			
Degree =	95° 19′ 39.96"				
Tangent =	9.1033				
Length =	18.0692				
Radius =	60.1040				
External =	0.6855				
Long Chord =	18.0012				
Mid. Ord. =	0.6777				
P.C. Station	229+56.60	N	13,983,911.5665	E	2,251,170.1809
P.T. Station	229+74.67	N	13,983,901.3853	E	2,251,155.3354
C.C.		N	13,983,955.4843	E	2,251,129.1479
Back = S	46° 56′ 41.69" W				
Ahead = S	64° 10′ 11.61" W				
Chord Bear = S	55° 33′ 26.65" W				

Curve Data

Curve SW 290 83

P.I. Station	229+80.57	N	13,983,898.9347	E	2,251,149.9630
Delta =	14° 43′ 41.33"	(RT)			
Degree =	125° 24′ 02.87"				
Tangent =	5.9050				
Length =	11.7449				
Radius =	45.6901				
External =	0.3800				
Long Chord =	11.7126				
Mid. Ord. =	0.3769				
P.C. Station	229+74.67	N	13,983,901.3853	E	2,251,155.3354
P.T. Station	229+86.41	N	13,983,897.9304	E	2,251,144.1440
C.C.		N	13,983,942.9549	E	2,251,136.3734
Back = S	65° 28′ 47.51" W				
Ahead = S	80° 12′ 28.84" W				
Chord Bear = S	72° 50′ 38.17" W				

Curve Data

Curve SW 290 84

P.I. Station	229+88.94	N	13,983,897.5010	E	2,251,141.6561
Delta =	6° 19′ 31.61"	(RT)			
Degree =	125° 24′ 02.87"				
Tangent =	2.5247				
Length =	5.0442				
Radius =	45.6901				
External =	0.0697				
Long Chord =	5.0416				
Mid. Ord. =	0.0696				
P.C. Station	229+86.41	N	13,983,897.9304	E	2,251,144.1440
P.T. Station	229+91.46	N	13,983,897.3484	E	2,251,139.1361
C.C.		N	13,983,942.9549	E	2,251,136.3734
Back = S	80° 12′ 28.84" W				
Ahead = S	86° 32′ 00.45" W				
Chord Bear = S	83° 22′ 14.64" W				

Course from PT SW 290 84 to PC SW 290 87 S 87° 59′ 00.43" W Dist 5.0058

Curve Data

Curve SW 290 87

P.I. Station	230+05.04	N	13,983,897.6176	E	2,251,125.5652
Delta =	12° 51′ 25.14"	(RT)			
Degree =	75° 14′ 30.86"				
Tangent =	8.5798				
Length =	17.0875				
Radius =	76.1488				
External =	0.4818				
Long Chord =	17.0517				
Mid. Ord. =	0.4788				
P.C. Station	229+96.46	N	13,983,897.1722	E	2,251,134.1334
P.T. Station	230+13.55	N	13,983,899.9585	E	2,251,117.3109
C.C.		N	13,983,973.2183	E	2,251,138.0868
Back = N	87° 01′ 26.60" W				
Ahead = N	74° 10′ 01.46" W				
Chord Bear = N	80° 35′ 44.03" W				

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Ending chain BL SW 290 description

FILENAME: pw:\\kh-pw.bentley.com:kh-pw-01\Documents\01 Active Projects\TX-AUS-069408400 - Dripping Springs SRTS\DesignData\4 - Design\Plan Set\3. Roadway\DRIP_ROW_HOR_DATA_04.dgn
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5/22/2023

RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

DRIPPING SPRINGS SRTS

HORIZONTAL DATA

SHEET 4 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	35
CONT.	SECT.	JOB	
0914	33	088	

Beginning chain CL ROGER HANKS PKWY description

Point ROGHNKCL1 N 13,983,836.2528 E 2,251,123.8230 Sta 0+00.00

Course from ROGHNKCL1 to PC ROGHNKCL 3 N 44° 07′ 46.30" E Dist 135.8200

Curve Data

Curve ROGHNKCL 3					
P.I. Station	2+64.28	N	13,984,025.9995	E	2,251,307.7846
Delta =	35° 36′ 34.96" (RT)				
Degree =	14° 19′ 26.20"				
Tangent =	128.4633				
Length =	248.6027				
Radius =	400.0000				
External =	20.1224				
Long Chord =	244.6208				
Mid. Ord. =	19.1586				
P.C. Station	1+35.82	N	13,983,933.7400	E	2,251,218.3921
P.T. Station	3+84.42	N	13,984,048.9569	E	2,251,434.1800
C.C.		N	13,983,655.3961	E	2,251,505.6632
Back = N	44° 05′ 44.75" E				
Ahead = N	79° 42′ 19.72" E				
Chord Bear = N	61° 54′ 02.24" E				

Course from PT ROGHNKCL 3 to PC ROGHNKCL 6 N 79° 37′ 24.10" E Dist 223.1100

Curve Data

Curve ROGHNKCL 6					
P.I. Station	9+52.61	N	13,984,151.7960	E	2,251,992.9807
Delta =	81° 34′ 04.33" (LT)				
Degree =	14° 19′ 26.20"				
Tangent =	345.0751				
Length =	569.4512				
Radius =	400.0000				
External =	128.2772				
Long Chord =	522.5667				
Mid. Ord. =	97.1287				
P.C. Station	6+07.53	N	13,984,089.1431	E	2,251,653.6410
P.T. Station	11+76.98	N	13,984,496.6548	E	2,251,980.7650
C.C.		N	13,984,482.4948	E	2,251,581.0157
Back = N	79° 32′ 21.03" E				
Ahead = N	2° 01′ 43.30" W				
Chord Bear = N	38° 45′ 18.86" E				

Course from PT ROGHNKCL 6 to ROGHNKCL8 N 2° 20′ 43.90" W Dist 486.1600

Point ROGHNKCL8 N 13,984,982.4075 E 2,251,960.8685 Sta 16+63.14

Ending chain CL ROGER HANKS PKWY description

Beginning chain BL SUP description

Point SUP1 N 13,983,829.8576 E 2,251,189.0464 Sta 100+25.00

Course from SUP1 to SUP3 N 44° 33′ 21.19" E Dist 2.3662

Point SUP3 N 13,983,831.5437 E 2,251,190.7065 Sta 100+27.37

Course from SUP3 to PC SUP 5 N 45° 54′ 10.65" W Dist 4.3473

Curve Data

Curve SUP 5					
P.I. Station	100+44.17	N	13,983,846.1350	E	2,251,182.9600
Delta =	33° 47′ 56.37" (RT)				
Degree =	139° 44′ 44.89"				
Tangent =	12.4564				
Length =	24.1861				
Radius =	41.0000				
External =	1.8504				
Long Chord =	23.8369				
Mid. Ord. =	1.7705				
P.C. Station	100+31.71	N	13,983,834.5689	E	2,251,187.5844
P.T. Station	100+55.90	N	13,983,858.3189	E	2,251,185.5511
C.C.		N	13,983,849.7902	E	2,251,225.6542
Back = N	21° 47′ 34.31" W				
Ahead = N	12° 00′ 22.06" E				
Chord Bear = N	4° 53′ 36.13" W				

Course from PT SUP 5 to PC SUP 8 N 43° 25′ 43.11" E Dist 77.0237

Curve Data

Curve SUP 8					
P.I. Station	101+78.75	N	13,983,947.1666	E	2,251,270.3891
Delta =	14° 02′ 43.30" (RT)				
Degree =	15° 24′ 07.53"				
Tangent =	45.8253				
Length =	91.1913				
Radius =	372.0000				
External =	2.8119				
Long Chord =	90.9631				
Mid. Ord. =	2.7908				
P.C. Station	101+32.92	N	13,983,914.2559	E	2,251,238.5011
P.T. Station	102+24.11	N	13,983,971.3546	E	2,251,309.3109
C.C.		N	13,983,655.3961	E	2,251,505.6632
Back = N	44° 05′ 44.75" E				
Ahead = N	58° 08′ 28.05" E				
Chord Bear = N	51° 07′ 06.40" E				

Course from PT SUP 8 to PC SUP 11 N 60° 44′ 48.37" E Dist 33.8233

Curve Data

Curve SUP 11					
P.I. Station	103+11.39	N	13,984,011.8556	E	2,251,386.5937
Delta =	16° 21′ 11.01" (RT)				
Degree =	15° 24′ 07.53"				
Tangent =	53.4505				
Length =	106.1743				
Radius =	372.0000				
External =	3.8204				
Long Chord =	105.8143				
Mid. Ord. =	3.7815				
P.C. Station	102+57.94	N	13,983,987.8830	E	2,251,338.8207
P.T. Station	103+64.11	N	13,984,021.4077	E	2,251,439.1838
C.C.		N	13,983,655.3961	E	2,251,505.6632
Back = N	63° 21′ 08.70" E				
Ahead = N	79° 42′ 19.72" E				
Chord Bear = N	71° 31′ 44.21" E				

Course from PT SUP 11 to PC SUP 12 N 79° 37′ 24.10" E Dist 223.1913

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

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DRIPPING SPRINGS SRTS

HORIZONTAL DATA

SHEET 5 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	36
CONT.	SECT.	JOB	
0914	33	088	

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Curve Data

Curve SUP 12
P.I. Station 109+56.53 N 13,984,128.6471 E 2,252,021.8182
Delta = 81° 34′ 04.33" (LT)
Degree = 13° 23′ 12.71"
Tangent = 369.2303
Length = 609.3127
Radius = 428.0000
External = 137.2566
Long Chord = 559.1463
Mid. Ord. = 103.9277
P.C. Station 105+87.30 N 13,984,061.6085 E 2,251,658.7248
P.T. Station 111+96.62 N 13,984,497.6460 E 2,252,008.7475
C.C. N 13,984,482.4948 E 2,251,581.0157
Back = N 79° 32′ 21.03" E
Ahead = N 2° 01′ 43.30" W
Chord Bear = N 38° 45′ 18.86" E

Course from PT SUP 12 to SUP15 N 2° 20′ 43.20" W Dist 125.3483

Point SUP15 N 13,984,622.8893 E 2,252,003.6179 Sta 113+21.96

Course from SUP15 to SUP17 N 2° 20′ 43.90" W Dist 303.3397

Point SUP17 N 13,984,925.9748 E 2,251,991.2035 Sta 116+25.30

Course from SUP17 to SUP19 N 2° 20′ 43.90" W Dist 38.2647

Point SUP19 N 13,984,964.2075 E 2,251,989.6375 Sta 116+63.57

Course from SUP19 to SUP20 N 2° 20′ 43.90" W Dist 19.3622

Point SUP20 N 13,984,983.5534 E 2,251,988.8451 Sta 116+82.93

==========
Ending chain BL SUP description

Beginning chain BRKLANCECL description
==========

Point BRKLANCECL1 N 13,985,171.0589 E 2,250,487.0029 Sta 300+00.00

Course from BRKLANCECL1 to PC BRKLANCECL 3 N 32° 32′ 52.20" E Dist 177.8012

Curve Data

Curve BRKLANCECL 3
P.I. Station 302+07.32 N 13,985,345.8195 E 2,250,598.5429
Delta = 16° 47′ 34.75" (LT)
Degree = 28° 38′ 52.40"
Tangent = 29.5209
Length = 58.6186
Radius = 200.0000
External = 2.1670
Long Chord = 58.4090
Mid. Ord. = 2.1437
P.C. Station 301+77.80 N 13,985,320.9351 E 2,250,582.6605
P.T. Station 302+36.42 N 13,985,374.2314 E 2,250,606.5585
C.C. N 13,985,428.5358 E 2,250,414.0720
Back = N 32° 32′ 52.20" E
Ahead = N 15° 45′ 17.46" E
Chord Bear = N 24° 09′ 04.83" E

Course from PT BRKLANCECL 3 to PC BRKLANCECL 6 N 15° 45′ 17.46" E Dist 53.6098

Curve Data

Curve BRKLANCECL 6
P.I. Station 303+04.68 N 13,985,439.9264 E 2,250,625.0924
Delta = 8° 22′ 43.02" (RT)
Degree = 28° 38′ 52.40"
Tangent = 14.6496
Length = 29.2469
Radius = 200.0000
External = 0.5358
Long Chord = 29.2208
Mid. Ord. = 0.5344
P.C. Station 302+90.03 N 13,985,425.8272 E 2,250,621.1147
P.T. Station 303+19.28 N 13,985,453.2955 E 2,250,631.0821
C.C. N 13,985,371.5228 E 2,250,813.6012
Back = N 15° 45′ 17.46" E
Ahead = N 24° 08′ 00.48" E
Chord Bear = N 19° 56′ 38.97" E

Course from PT BRKLANCECL 6 to BRKLANCECL9 N 24° 07′ 59.23" E Dist 14.6731

Point BRKLANCECL9 N 13,985,466.6862 E 2,250,637.0813 Sta 303+33.95

Course from BRKLANCECL9 to BRKLANCECL11 N 24° 17′ 31.79" E Dist 104.8713

Point BRKLANCECL11 N 13,985,562.2722 E 2,250,680.2243 Sta 304+38.82

Course from BRKLANCECL11 to PC BRKLANCECL 13 N 24° 59′ 53.23" E Dist 24.1140

Curve Data

Curve BRKLANCECL 13
P.I. Station 306+06.64 N 13,985,714.3730 E 2,250,751.1440
Delta = 70° 51′ 29.21" (RT)
Degree = 28° 21′ 51.29"
Tangent = 143.7082
Length = 249.8149
Radius = 202.0000
External = 45.9033
Long Chord = 234.1966
Mid. Ord. = 37.4035
P.C. Station 304+62.93 N 13,985,584.1272 E 2,250,690.4146
P.T. Station 307+12.75 N 13,985,699.7101 E 2,250,894.1021
C.C. N 13,985,498.7643 E 2,250,873.4915
Back = N 24° 59′ 53.23" E
Ahead = S 84° 08′ 37.57" E
Chord Bear = N 60° 25′ 37.83" E

Course from PT BRKLANCECL 13 to BRKLANCECL16 S 84° 08′ 37.57" E Dist 60.9986

Point BRKLANCECL16 N 13,985,693.4863 E 2,250,954.7824 Sta 307+73.75

Course from BRKLANCECL16 to BRKLANCECL18 S 84° 28′ 17.26" E Dist 50.3390

Point BRKLANCECL18 N 13,985,688.6365 E 2,251,004.8872 Sta 308+24.09

Course from BRKLANCECL18 to BRKLANCECL20 S 84° 25′ 37.43" E Dist 50.9045

Point BRKLANCECL20 N 13,985,683.6930 E 2,251,055.5511 Sta 308+74.99

Course from BRKLANCECL20 to PC BRKLANCECL 22 S 85° 05′ 26.48" E Dist 52.5891

Curve Data

Curve BRKLANCECL 22
P.I. Station 310+31.71 N 13,985,667.6014 E 2,251,211.4280
Delta = 31° 04′ 20.10" (LT)
Degree = 15° 17′ 49.18"
Tangent = 104.1279
Length = 203.1265
Radius = 374.5558
External = 14.2046
Long Chord = 200.6465
Mid. Ord. = 13.6856
P.C. Station 309+27.58 N 13,985,679.1925 E 2,251,107.9472
P.T. Station 311+30.71 N 13,985,711.0816 E 2,251,306.0434
C.C. N 13,986,051.4205 E 2,251,149.6415
Back = S 83° 36′ 31.60" E
Ahead = N 65° 19′ 08.30" E
Chord Bear = N 80° 51′ 18.35" E

Curve Data

Curve BRKLANCECL 23
P.I. Station 311+99.44 N 13,985,743.8676 E 2,251,366.4494
Delta = 21° 59′ 45.73" (LT)
Degree = 16° 12′ 04.48"
Tangent = 68.7300
Length = 135.7676
Radius = 353.6505
External = 6.6167
Long Chord = 134.9354
Mid. Ord. = 6.4952
P.C. Station 311+30.71 N 13,985,711.0816 E 2,251,306.0434
P.T. Station 312+66.48 N 13,985,796.8918 E 2,251,410.1788
C.C. N 13,986,021.9012 E 2,251,137.3429
Back = N 61° 30′ 31.13" E
Ahead = N 39° 30′ 45.41" E
Chord Bear = N 50° 30′ 38.27" E

Curve Data

Curve BRKLANCECL 24
P.I. Station 313+35.21 N 13,985,852.1643 E 2,251,451.0292
Delta = 21° 59′ 45.73" (LT)
Degree = 16° 12′ 04.48"
Tangent = 68.7300
Length = 135.7676
Radius = 353.6505
External = 6.6167
Long Chord = 134.9354
Mid. Ord. = 6.4952
P.C. Station 312+66.48 N 13,985,796.8918 E 2,251,410.1788
P.T. Station 314+02.24 N 13,985,918.7137 E 2,251,468.2043
C.C. N 13,986,007.0881 E 2,251,125.7739
Back = N 36° 28′ 01.73" E
Ahead = N 14° 28′ 16.00" E
Chord Bear = N 25° 28′ 08.86" E

==========
Ending chain CL BROKEN LANCE DR description

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

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DRIPPING SPRINGS SRTS

HORIZONTAL DATA

SHEET 6 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	37
CONT.	SECT.	JOB	
0914	33	088	

Beginning chain BL SW N description

Curve SW N 1						
P.I. Station	1300+26.93	N	13,985,218.3680	E	2,250,443.2899	
Delta =	1° 27′ 49.44"	(RT)				
Degree =	3° 49′ 38.54"					
Tangent =	19.1230					
Length =	38.2438					
Radius =	1,497.0000					
External =	0.1221					
Long Chord =	38.2428					
Mid. Ord. =	0.1221					
P.C. Station	1300+07.81	N	13,985,227.9408	E	2,250,426.7355	
P.T. Station	1300+46.05	N	13,985,208.3754	E	2,250,459.5944	
C.C.		N	13,983,932.0139	E	2,249,677.3475	
Back = S 59° 57′ 38.69" E						
Ahead = S 58° 29′ 49.25" E						
Chord Bear = S 59° 13′ 43.97" E						

Curve SW N 2						
P.I. Station	1300+53.67	N	13,985,204.3933	E	2,250,466.0918	
Delta =	53° 51′ 52.43"	(LT)				
Degree =	381° 58′ 18.76"					
Tangent =	7.6206					
Length =	14.1017					
Radius =	15.0000					
External =	1.8248					
Long Chord =	13.5881					
Mid. Ord. =	1.6269					
P.C. Station	1300+46.05	N	13,985,208.3754	E	2,250,459.5944	
P.T. Station	1300+60.15	N	13,985,207.2926	E	2,250,473.1393	
C.C.		N	13,985,221.1646	E	2,250,467.4326	
Back = S 58° 29′ 49.24" E						
Ahead = N 67° 38′ 18.33" E						
Chord Bear = S 85° 25′ 45.45" E						

Curve SW N 3						
P.I. Station	1300+69.16	N	13,985,210.7207	E	2,250,481.4725	
Delta =	35° 05′ 26.13"	(LT)				
Degree =	201° 02′ 16.16"					
Tangent =	9.0108					
Length =	17.4547					
Radius =	28.5000					
External =	1.3905					
Long Chord =	17.1832					
Mid. Ord. =	1.3259					
P.C. Station	1300+60.15	N	13,985,207.2926	E	2,250,473.1393	
P.T. Station	1300+77.61	N	13,985,218.3163	E	2,250,486.3203	
C.C.		N	13,985,233.6494	E	2,250,462.2965	
Back = N 67° 38′ 18.34" E						
Ahead = N 32° 32′ 52.21" E						
Chord Bear = N 50° 05′ 35.27" E						

Course from PT SW N 3 to 797 N 32° 32′ 52.20" E Dist 97.4637

Point 797 N 13,985,300.4726 E 2,250,538.7562 Sta 1301+75.07

Course from 797 to PC SW N 8 N 32° 31′ 18.51" E Dist 49.9927

Curve SW N 8						
P.I. Station	1302+41.17	N	13,985,356.0475	E	2,250,574.5337	
Delta =	12° 22′ 44.06"	(LT)				
Degree =	38° 34′ 58.86"					
Tangent =	16.1046					
Length =	32.0838					
Radius =	148.5000					
External =	0.8707					
Long Chord =	32.0215					
Mid. Ord. =	0.8656					
P.C. Station	1302+25.06	N	13,985,342.6258	E	2,250,565.6333	
P.T. Station	1302+57.15	N	13,985,371.0651	E	2,250,580.3499	
C.C.		N	13,985,424.6961	E	2,250,441.8725	
Back = N 33° 32′ 59.38" E						
Ahead = N 21° 10′ 15.33" E						
Chord Bear = N 27° 21′ 37.36" E						

Course from PT SW N 8 to 798 N 21° 10′ 15.33" E Dist 48.3156

Point 798 N 13,985,416.1198 E 2,250,597.7991 Sta 1303+05.46

Course from 798 to PC SW N 13 N 29° 49′ 39.99" E Dist 17.3828

Curve SW N 13						
P.I. Station	1303+46.95	N	13,985,452.1071	E	2,250,618.4324	
Delta =	5° 32′ 08.20"	(LT)				
Degree =	11° 29′ 37.09"					
Tangent =	24.0999					
Length =	48.1624					
Radius =	498.5000					
External =	0.5822					
Long Chord =	48.1437					
Mid. Ord. =	0.5815					
P.C. Station	1303+22.85	N	13,985,431.1998	E	2,250,606.4452	
P.T. Station	1303+71.01	N	13,985,474.0732	E	2,250,628.3469	
C.C.		N	13,985,679.1510	E	2,250,173.9843	
Back = N 29° 49′ 39.99" E						
Ahead = N 24° 17′ 31.79" E						
Chord Bear = N 27° 03′ 35.89" E						

Course from PT SW N 13 to PC SW N 16 N 24° 25′ 39.60" E Dist 125.9797

Curve SW N 16						
P.I. Station	1305+09.33	N	13,985,599.9648	E	2,250,685.6621	
Delta =	6° 38′ 03.81"	(RT)				
Degree =	26° 53′ 57.94"					
Tangent =	12.3456					
Length =	24.6637					
Radius =	213.0000					
External =	0.3575					
Long Chord =	24.6499					
Mid. Ord. =	0.3569					
P.C. Station	1304+96.99	N	13,985,588.7757	E	2,250,680.4450	
P.T. Station	1305+21.65	N	13,985,610.4763	E	2,250,692.1371	
C.C.		N	13,985,498.7643	E	2,250,873.4915	
Back = N 24° 59′ 53.23" E						
Ahead = N 31° 37′ 57.04" E						
Chord Bear = N 28° 18′ 55.13" E						

Course from PT SW N 16 to PC SW N 19 N 34° 38′ 49.15" E Dist 22.4026

Curve SW N 19						
P.I. Station	1305+57.30	N	13,985,640.0270	E	2,250,712.0699	
Delta =	12° 03′ 05.85"	(RT)				
Degree =	45° 39′ 33.54"					
Tangent =	13.2462					
Length =	26.3947					
Radius =	125.4854					
External =	0.6972					
Long Chord =	26.3460					
Mid. Ord. =	0.6933					
P.C. Station	1305+44.05	N	13,985,628.9062	E	2,250,704.8733	
P.T. Station	1305+70.45	N	13,985,649.4000	E	2,250,721.4299	
C.C.		N	13,985,560.7307	E	2,250,810.2236	
Back = N 32° 54′ 29.50" E						
Ahead = N 44° 57′ 35.35" E						
Chord Bear = N 38° 56′ 02.42" E						

Course from PT SW N 19 to 799 N 46° 46′ 16.89" E Dist 9.9944

Point 799 N 13,985,656.2453 E 2,250,728.7121 Sta 1305+80.44

Course from 799 to 800 N 50° 06′ 57.23" E Dist 53.2976

Point 800 N 13,985,690.4217 E 2,250,769.6096 Sta 1306+33.74

Course from 800 to 801 N 50° 21′ 27.20" E Dist 9.5187

Point 801 N 13,985,696.4946 E 2,250,776.9394 Sta 1306+43.26

Course from 801 to 802 N 65° 36′ 54.54" E Dist 8.9872

Point 802 N 13,985,700.2051 E 2,250,785.1249 Sta 1306+52.25

Course from 802 to 803 N 67° 35′ 26.55" E Dist 5.9928

Point 803 N 13,985,702.4897 E 2,250,790.6652 Sta 1306+58.24

Course from 803 to 804 N 69° 56′ 42.48" E Dist 11.9903

Point 804 N 13,985,706.6014 E 2,250,801.9284 Sta 1306+70.23

Course from 804 to 805 N 73° 03′ 48.84" E Dist 12.0021

Point 805 N 13,985,710.0977 E 2,250,813.4100 Sta 1306+82.23

Course from 805 to 806 N 75° 38′ 49.38" E Dist 8.0106

Point 806 N 13,985,712.0835 E 2,250,821.1706 Sta 1306+90.24

Course from 806 to 807 N 78° 02′ 55.30" E Dist 10.6935

Point 807 N 13,985,714.2979 E 2,250,831.6323 Sta 1307+00.94

Course from 807 to 808 N 80° 06′ 08.05" E Dist 5.3535

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

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DRIPPING SPRINGS SRTS

HORIZONTAL DATA

SHEET 7 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	38
CONT.	SECT.	JOB	
0914	33	088	

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Point 808 N 13,985,715.2182 E 2,250,836.9062 Sta 1307+06.29

Course from 808 to 809 N 82° 19′ 27.69" E Dist 12.0618

Point 809 N 13,985,716.8292 E 2,250,848.8599 Sta 1307+18.35

Course from 809 to 810 N 84° 37′ 49.35" E Dist 6.0415

Point 810 N 13,985,717.3945 E 2,250,854.8748 Sta 1307+24.39

Course from 810 to 811 N 86° 56′ 20.78" E Dist 12.1043

Point 811 N 13,985,718.0409 E 2,250,866.9619 Sta 1307+36.50

Course from 811 to 812 N 89° 15′ 01.64" E Dist 6.0650

Point 812 N 13,985,718.1202 E 2,250,873.0264 Sta 1307+42.56

Course from 812 to 813 S 88° 49′ 03.45" E Dist 9.1141

Point 813 N 13,985,717.9322 E 2,250,882.1386 Sta 1307+51.68

Course from 813 to 814 S 83° 43′ 43.58" E Dist 102.8827

Point 814 N 13,985,706.6937 E 2,250,984.4056 Sta 1308+54.56

Course from 814 to 815 S 84° 18′ 53.66" E Dist 2.0665

Point 815 N 13,985,706.4890 E 2,250,986.4619 Sta 1308+56.63

Course from 815 to 816 S 84° 51′ 38.07" E Dist 5.0211

Point 816 N 13,985,706.0392 E 2,250,991.4628 Sta 1308+61.65

Course from 816 to PC SW N 58 S 85° 40′ 34.45" E Dist 118.8263

Curve Data

Curve SW N 58

P.I. Station	1310+79.12	N	13,985,686.0996	E	2,251,207.9847
Delta =	30° 55′ 47.72" (LT)				
Degree =	16° 04′ 09.23"				
Tangent =	98.6469				
Length =	192.4792				
Radius =	356.5558				
External =	13.3945				
Long Chord =	190.1505				
Mid. Ord. =	12.9096				
P.C. Station	1309+80.47	N	13,985,697.0807	E	2,251,109.9509
P.T. Station	1311+72.95	N	13,985,727.0684	E	2,251,297.7220
C.C.		N	13,986,051.4205	E	2,251,149.6415

Back = S 83° 36′ 31.60" E
Ahead = N 65° 27′ 40.68" E
Chord Bear = N 80° 55′ 34.54" E

Course from PT SW N 58 to PC SW N 61 N 63° 24′ 33.99" E Dist 0.5729

Curve Data

Curve SW N 61

P.I. Station	1312+30.26	N	13,985,754.5192	E	2,251,348.0245
Delta =	19° 11′ 14.26" (LT)				
Degree =	17° 04′ 12.26"				
Tangent =	56.7327				
Length =	112.4031				
Radius =	335.6505				
External =	4.7608				
Long Chord =	111.8786				
Mid. Ord. =	4.6942				
P.C. Station	1311+73.52	N	13,985,727.3249	E	2,251,298.2342
P.T. Station	1312+85.93	N	13,985,796.5669	E	2,251,386.1112
C.C.		N	13,986,021.9012	E	2,251,137.3429

Back = N 61° 21′ 27.26" E
Ahead = N 42° 10′ 13.00" E
Chord Bear = N 51° 45′ 50.13" E

Curve Data

Curve SW N 62

P.I. Station	1312+91.68	N	13,985,800.8274	E	2,251,389.9709
Delta =	1° 58′ 48.59" (LT)				
Degree =	17° 13′ 26.47"				
Tangent =	5.7488				
Length =	11.4965				
Radius =	332.6505				
External =	0.0497				
Long Chord =	11.4960				
Mid. Ord. =	0.0497				
P.C. Station	1312+85.93	N	13,985,796.5669	E	2,251,386.1112
P.T. Station	1312+97.42	N	13,985,805.2187	E	2,251,393.6811
C.C.		N	13,986,019.9040	E	2,251,139.5816

Back = N 42° 10′ 27.07" E
Ahead = N 40° 11′ 38.48" E
Chord Bear = N 41° 11′ 02.77" E

==========

Ending chain BL SW N description

5/22/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

DRIPPING SPRINGS Texas

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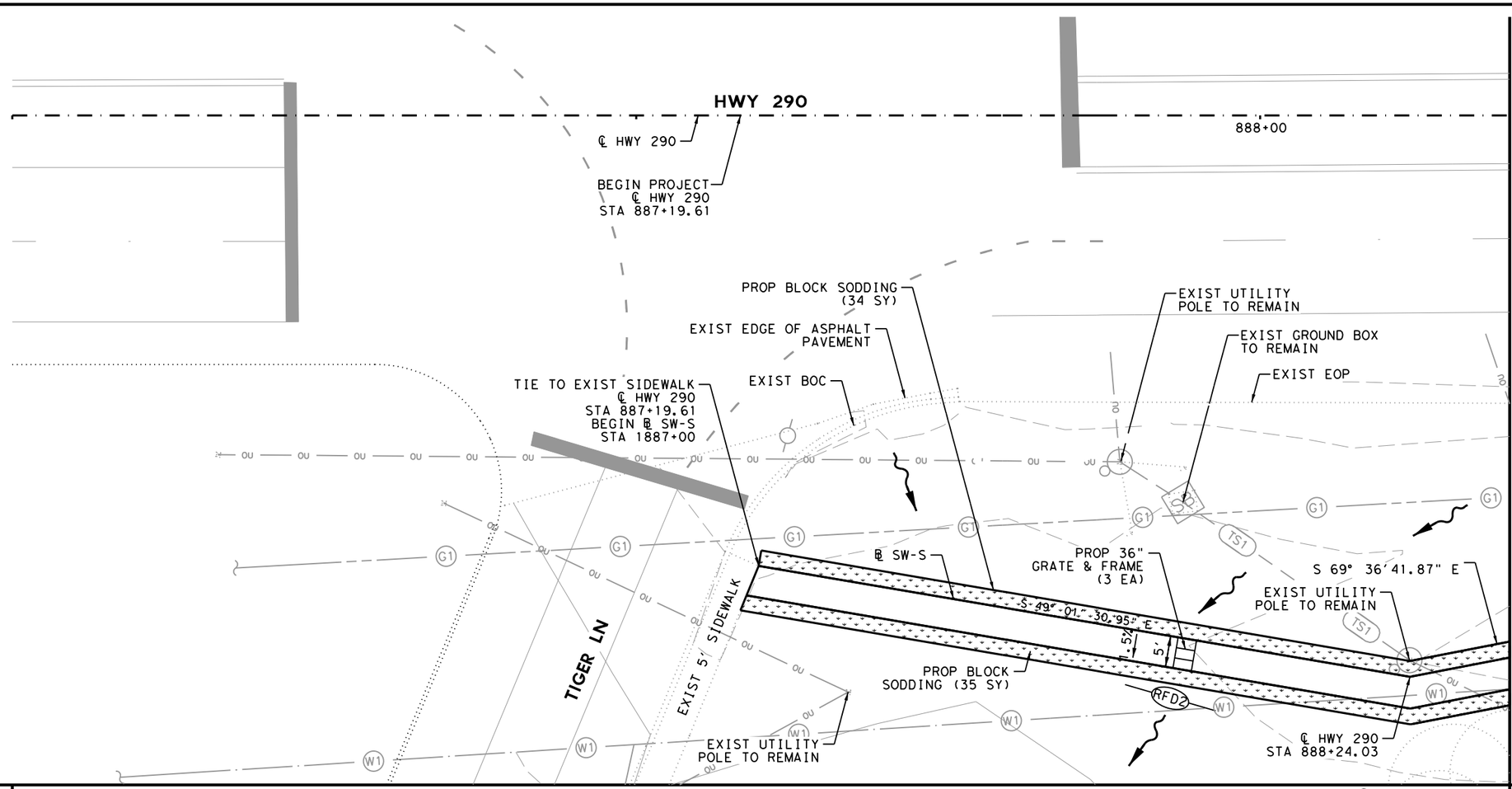
DRIPPING SPRINGS SRTS

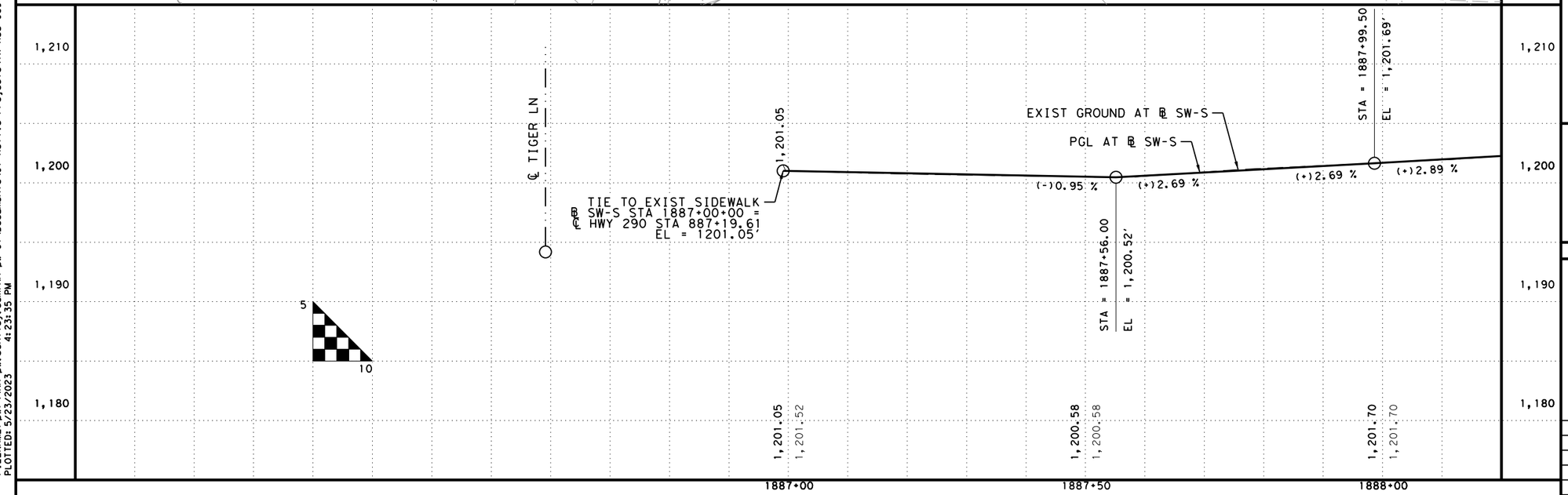
HORIZONTAL DATA

SHEET 8 OF 8

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	39
CONT.	SECT.	JOB	
0914	33	088	





LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

NOTES:

1. ALL EXISTING SIGNS NOT SHOWN ARE TO REMAIN UNLESS OTHERWISE NOTED.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS PRIOR TO CONSTRUCTION AND ENSURE NO CONFLICTS.
3. DIMENSIONS, STATIONS, AND OFFSETS ARE GIVEN AT BACK OF CURB WHEN CURB IS PRESENT.
4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS

DRIPPING SPRINGS
Texas

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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ HWY 290 STA 887+00 TO
℄ HWY 290 STA 888+40

SHEET 1 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	40
CONT.	SECT.	JOB	
0914	33	088	

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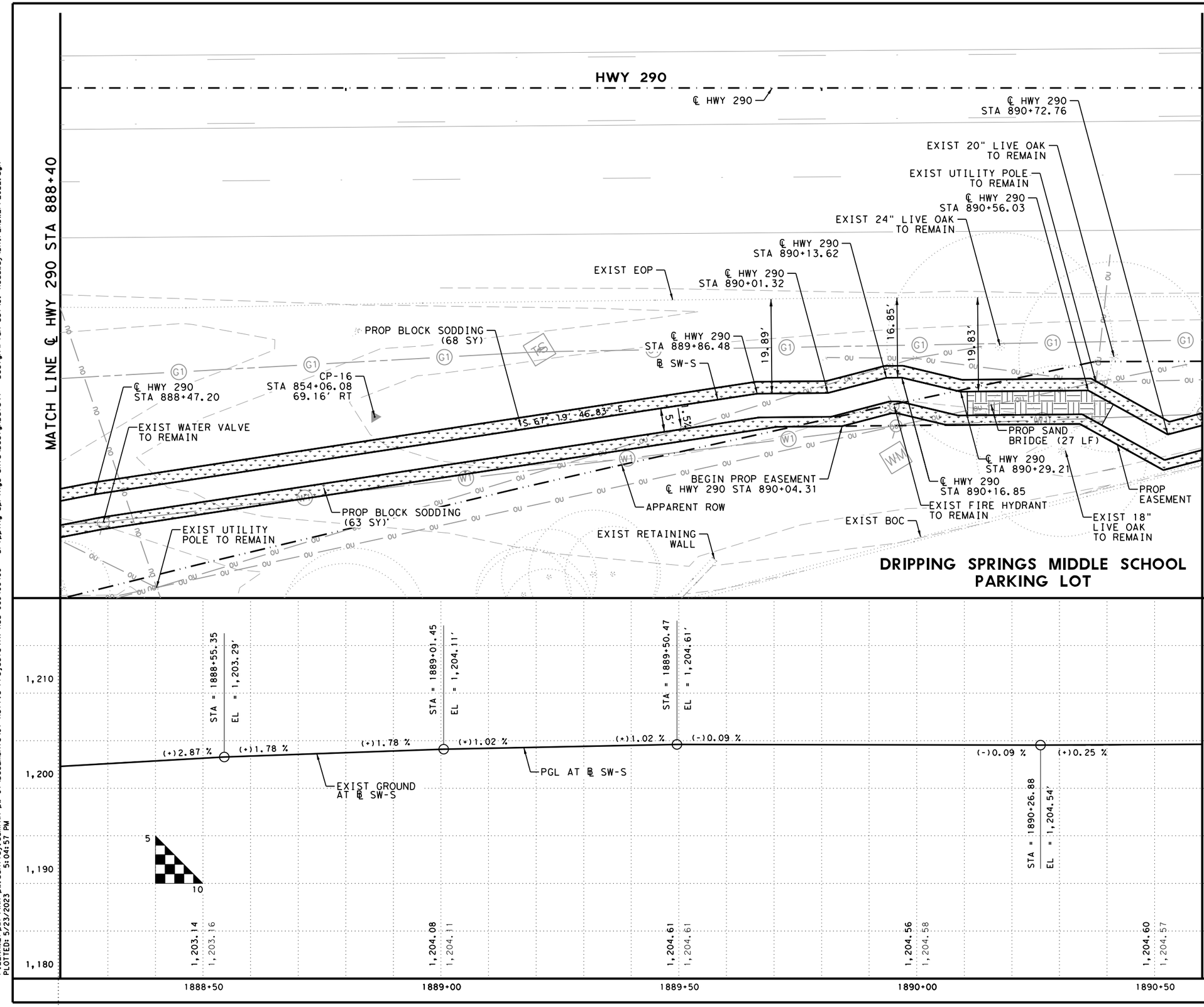

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

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4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ HWY 290 STA 888+40 TO
℄ HWY 290 STA 890+80

SHEET 2 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	41
CONT.	SECT.	JOB	
0914	33	088	

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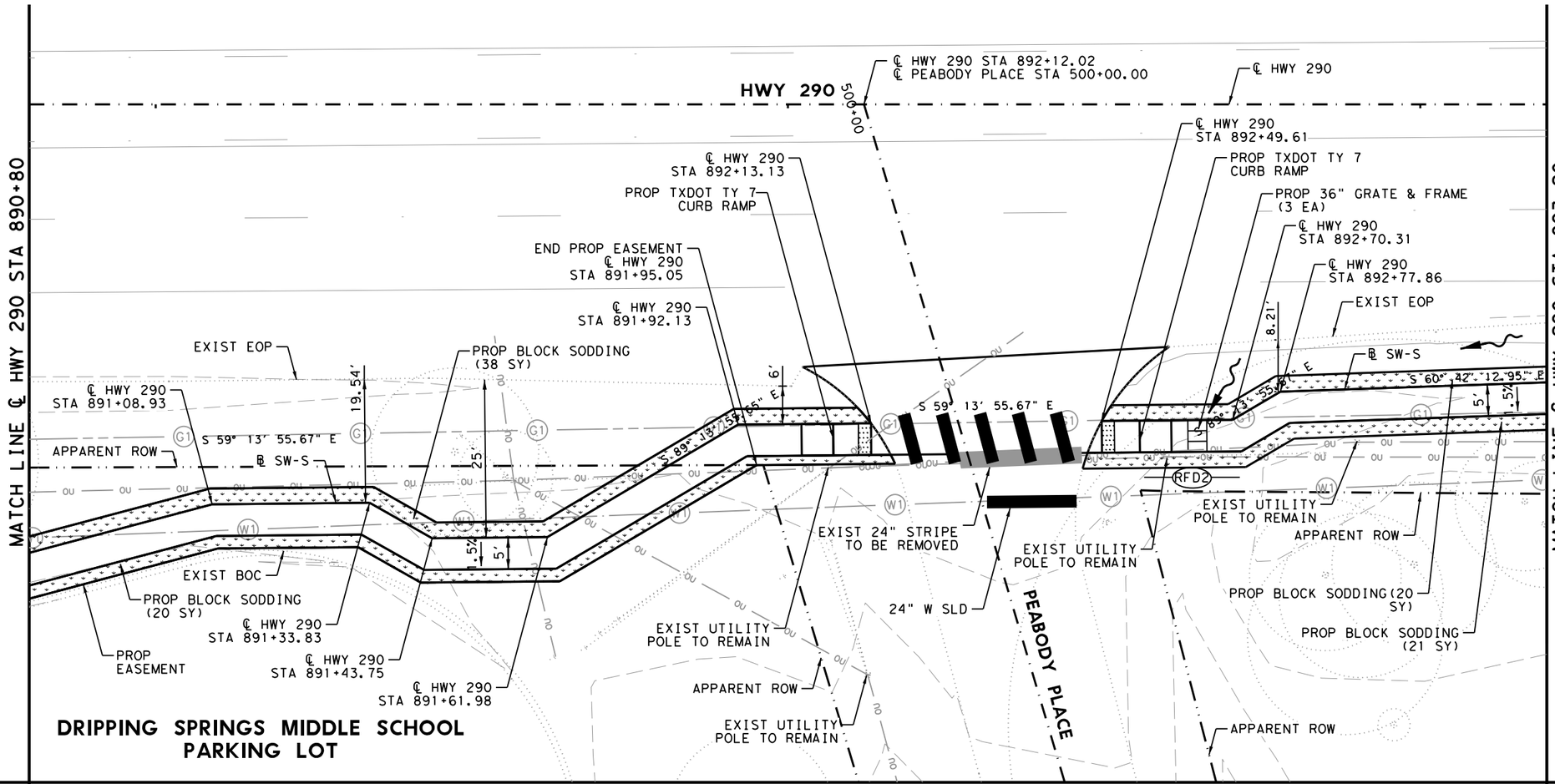
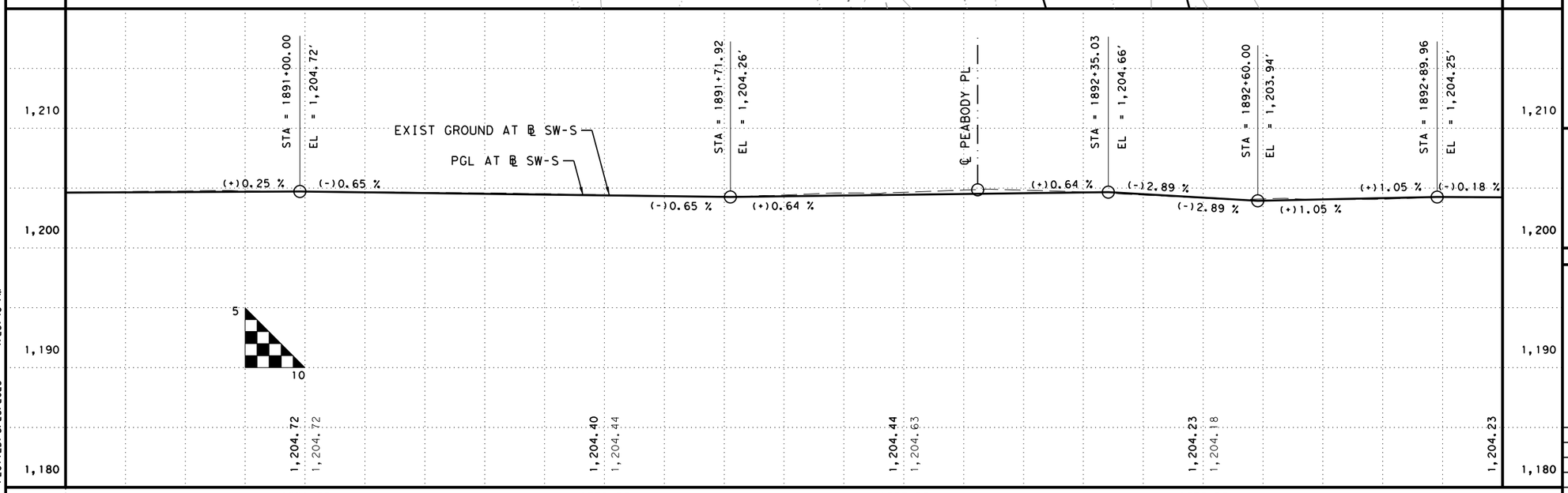


DRIPPING SPRINGS MIDDLE SCHOOL PARKING LOT



LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- (C1) – FRONTIER (TELE)
- (C2) – SPECTRUM (FO/DUCT)
- (G1) – TEXAS GAS
- (E1) – PEC
- (TS1) – TXDOT TRAFFIC SIGNAL
- (W1) – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- (RFD2) – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

NOTES:

1. ALL EXISTING SIGNS NOT SHOWN ARE TO REMAIN UNLESS OTHERWISE NOTED.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS PRIOR TO CONSTRUCTION AND ENSURE NO CONFLICTS.
3. DIMENSIONS, STATIONS, AND OFFSETS ARE GIVEN AT BACK OF CURB WHEN CURB IS PRESENT.
4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

Kimley»Horn F-928

DRIPPING SPRINGS Texas

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ HWY 290 STA 890+80 TO
℄ HWY 290 STA 893+20

SHEET 3 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	42
CONT.	SECT.	JOB	
0914	33	088	

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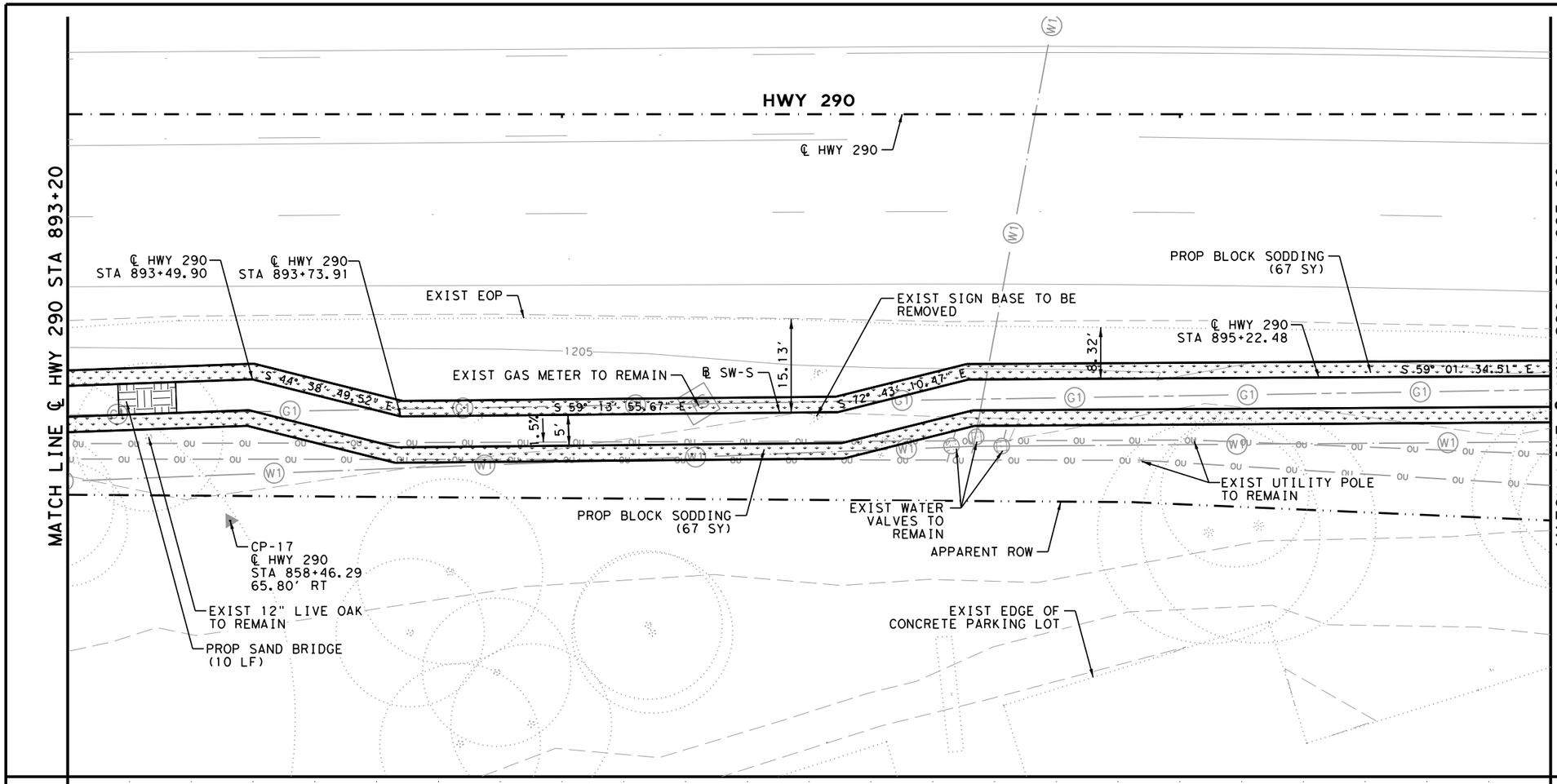

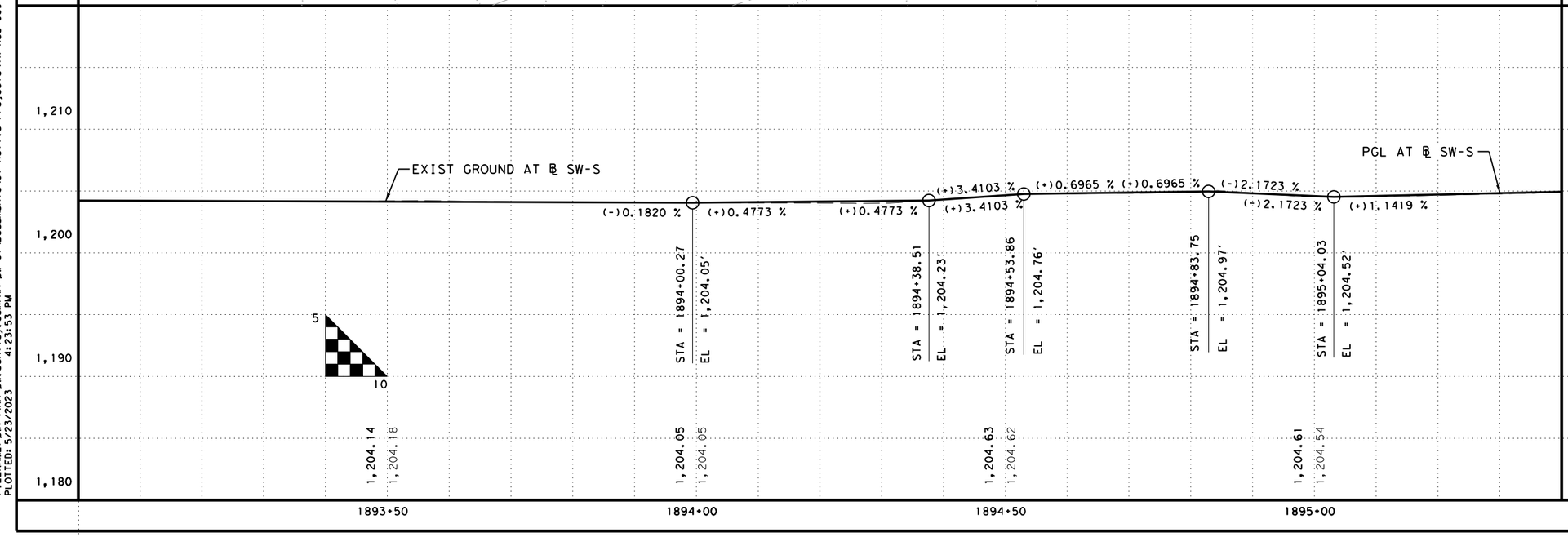

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 — FRONTIER (TELE)
- C2 — SPECTRUM (FO/DUCT)
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- TS1 — TXDOT TRAFFIC SIGNAL
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- EXISTING CONTOURS

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4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

Ryan W. Lohmann

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

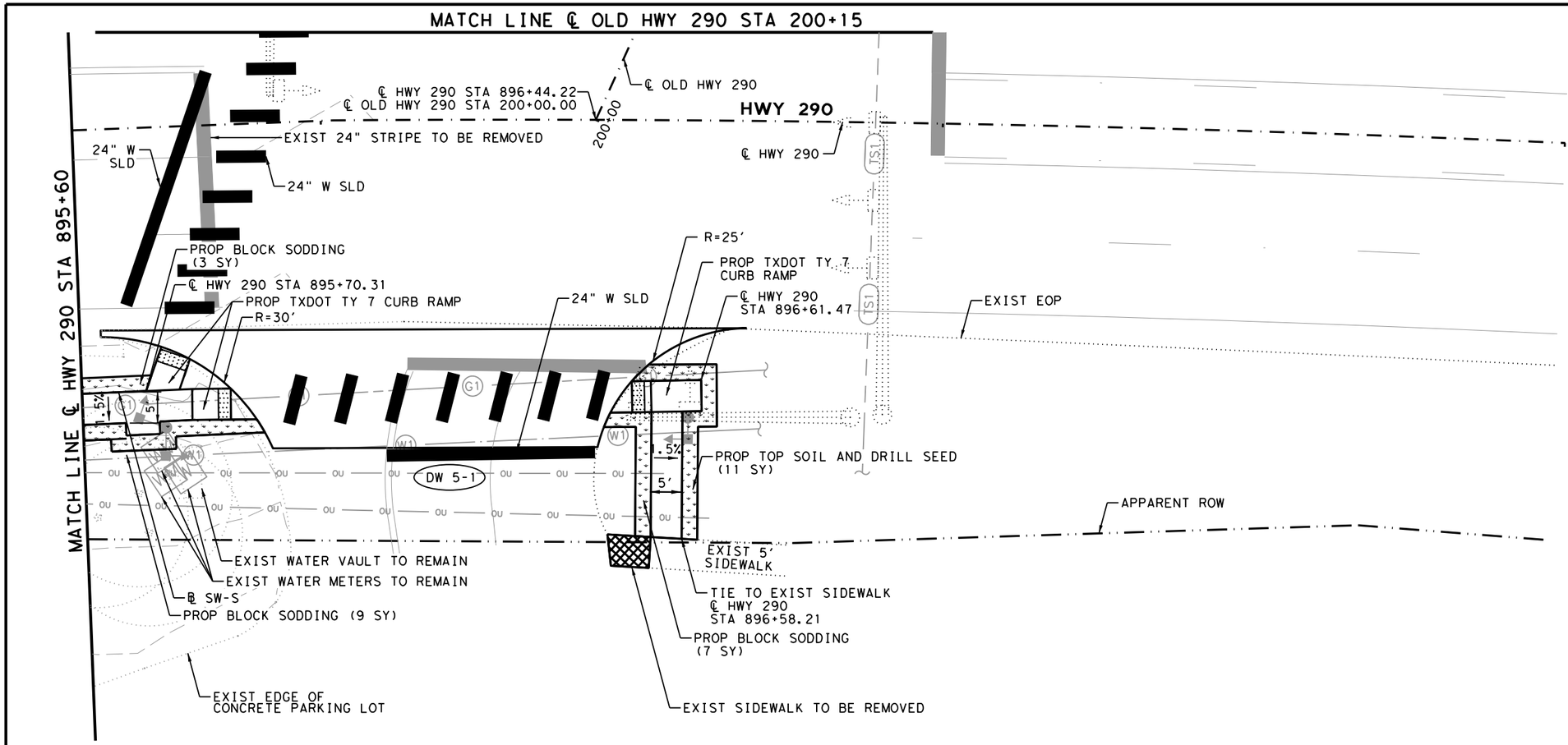
PLAN AND PROFILE

℄ HWY 290 STA 893+20 TO
℄ HWY 290 STA 895+60

SHEET 4 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	43
CONT.	SECT.	JOB	
0914	33	088	



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LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- (C1) – FRONTIER (TELE)
- (C2) – SPECTRUM (FO/DUCT)
- (G1) – TEXAS GAS
- (E1) – PEC
- (TS1) – TXDOT TRAFFIC SIGNAL
- (W1) – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
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4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
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PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas
Kimley»Horn F-928
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DRIPPING SPRINGS SRTS

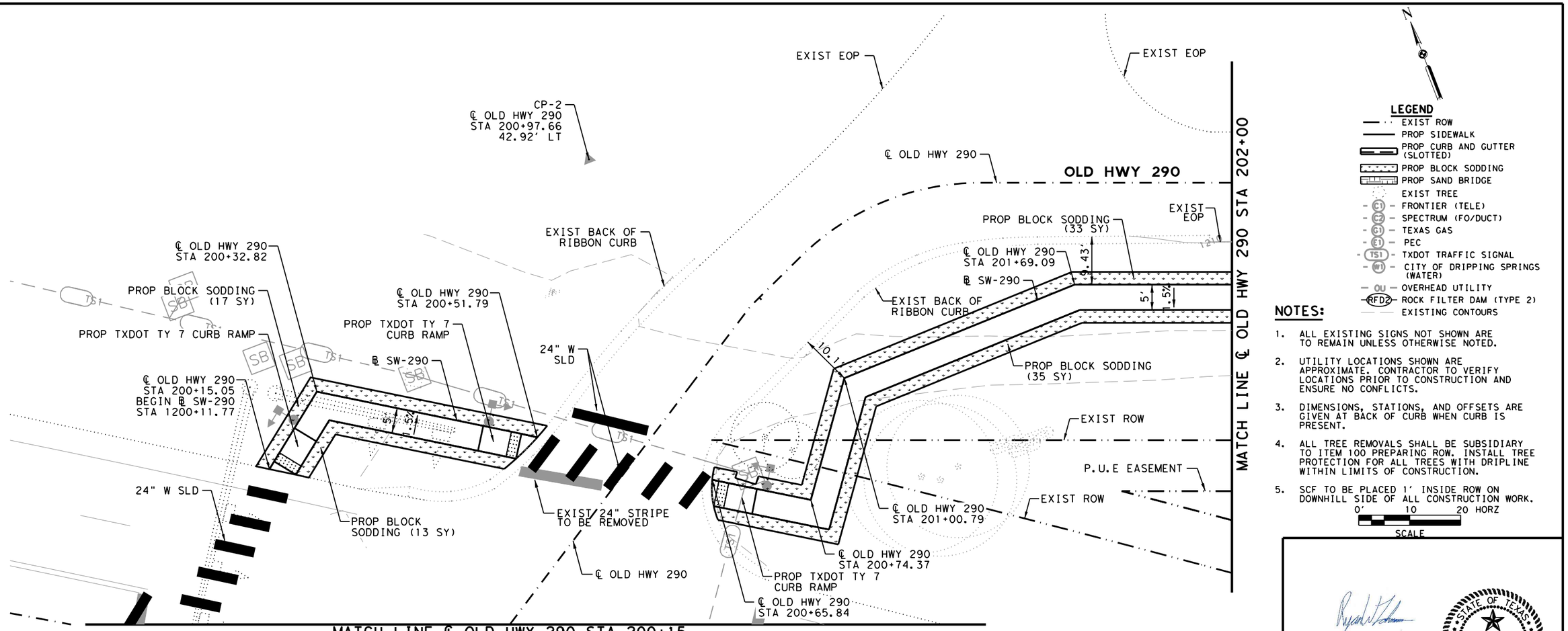
PLAN AND PROFILE

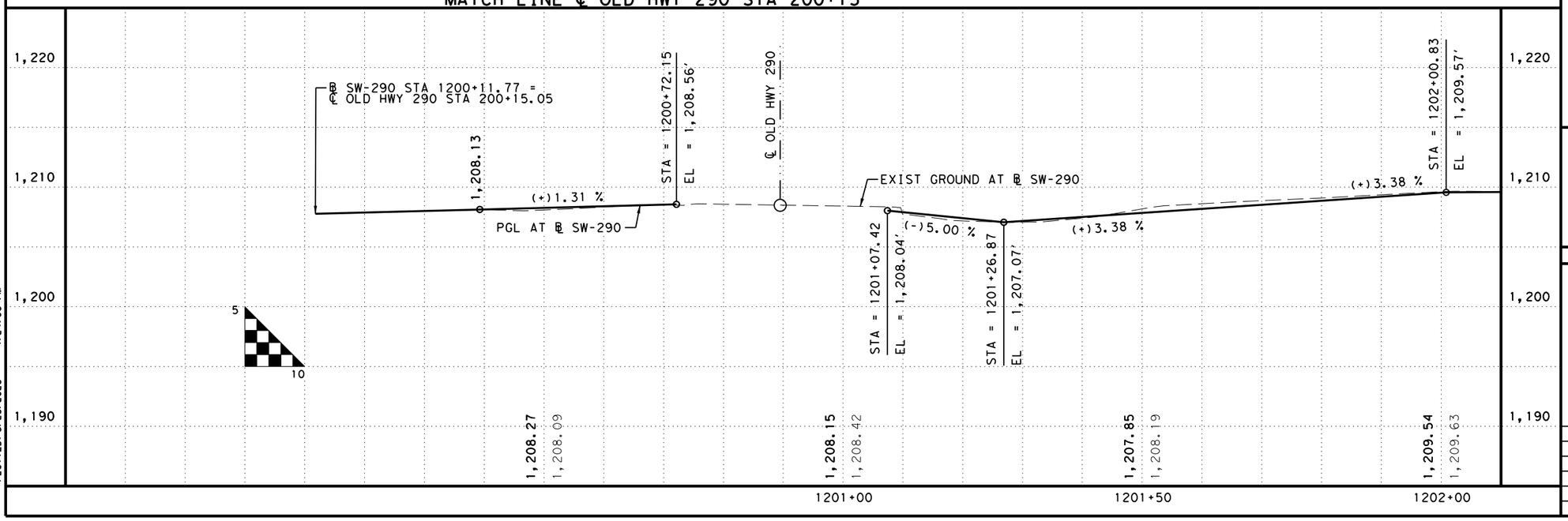
℄ HWY 290 STA 895+60 TO
℄ OLD HWY 290 STA 200+15

SHEET 5 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	44
CONT.	SECT.	JOB	
0914	33	088	





LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

NOTES:

1. ALL EXISTING SIGNS NOT SHOWN ARE TO REMAIN UNLESS OTHERWISE NOTED.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS PRIOR TO CONSTRUCTION AND ENSURE NO CONFLICTS.
3. DIMENSIONS, STATIONS, AND OFFSETS ARE GIVEN AT BACK OF CURB WHEN CURB IS PRESENT.
4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 200+15 TO
℄ OLD HWY 290 STA 202+00

SHEET 6 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	
CONT.	SECT.	JOB	45
0914	33	088	

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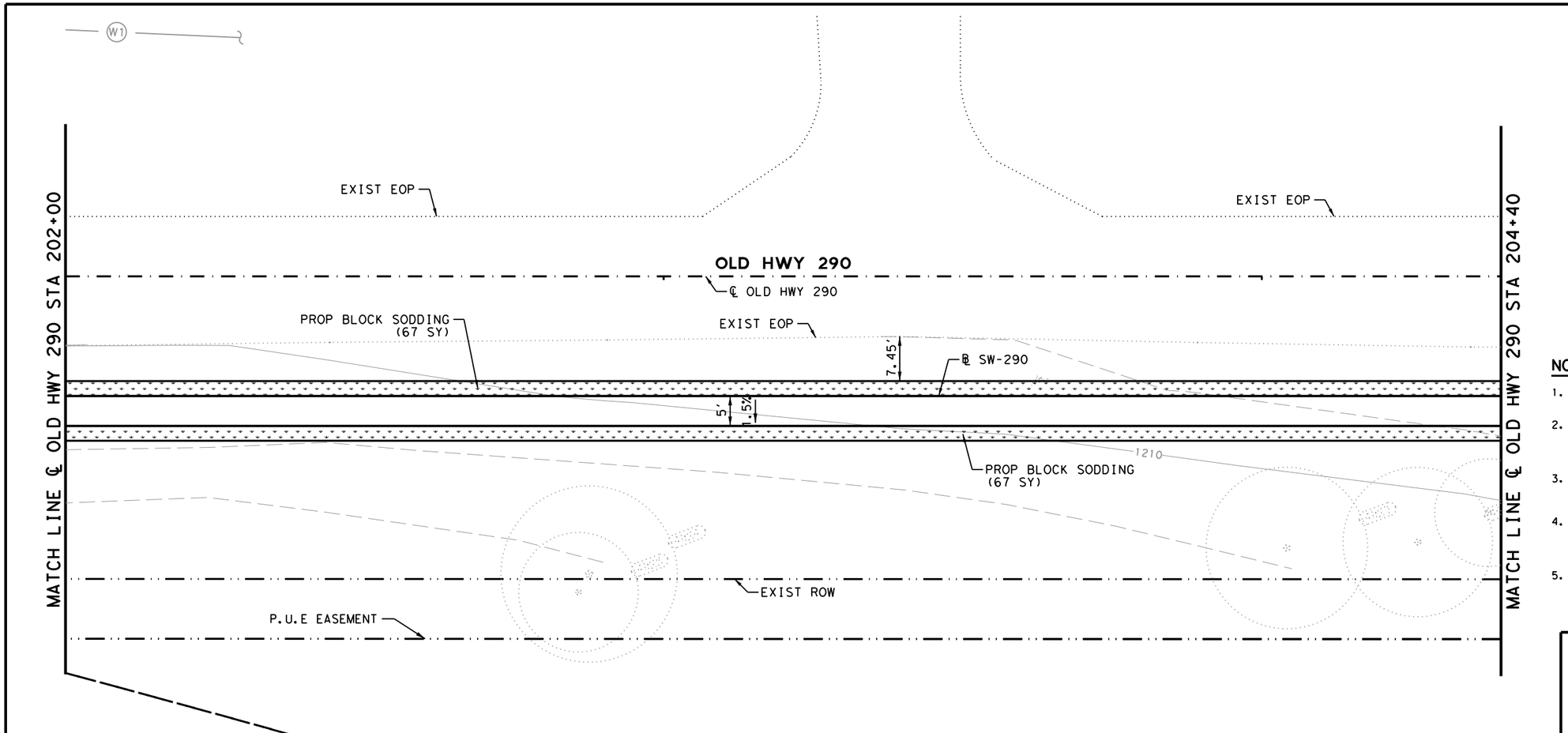

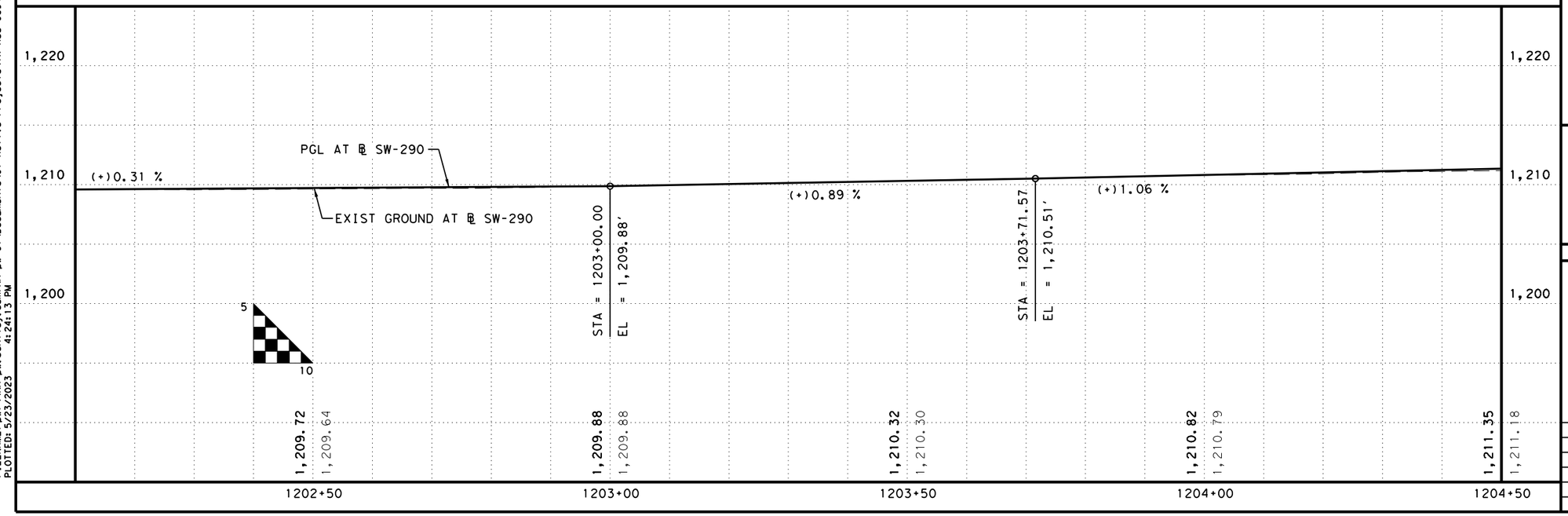

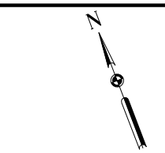

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

NOTES:

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3. DIMENSIONS, STATIONS, AND OFFSETS ARE GIVEN AT BACK OF CURB WHEN CURB IS PRESENT.
4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ

SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

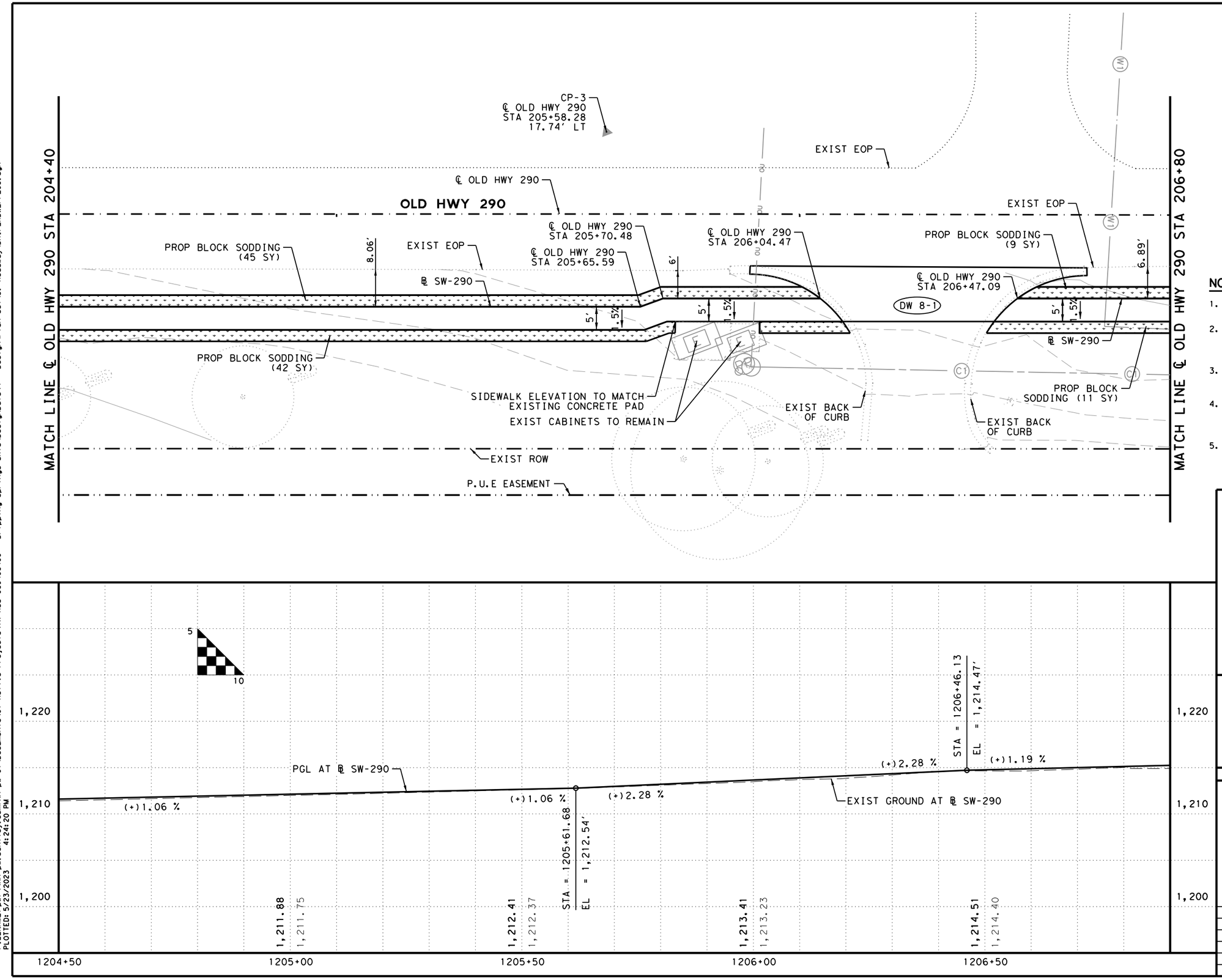
PLAN AND PROFILE

℄ OLD HWY 290 STA 202+00 TO
℄ OLD HWY 290 STA 204+40

SHEET 7 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	46
CONT.	SECT.	JOB	
0914	33	088	



LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
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- EXISTING CONTOURS

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5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ

SCALE

5/23/2023

STATE OF TEXAS
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133721
LICENSED
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Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 204+40 TO
℄ OLD HWY 290 STA 206+80

SHEET 8 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	47
CONT.	SECT.	JOB	
0914	33	088	

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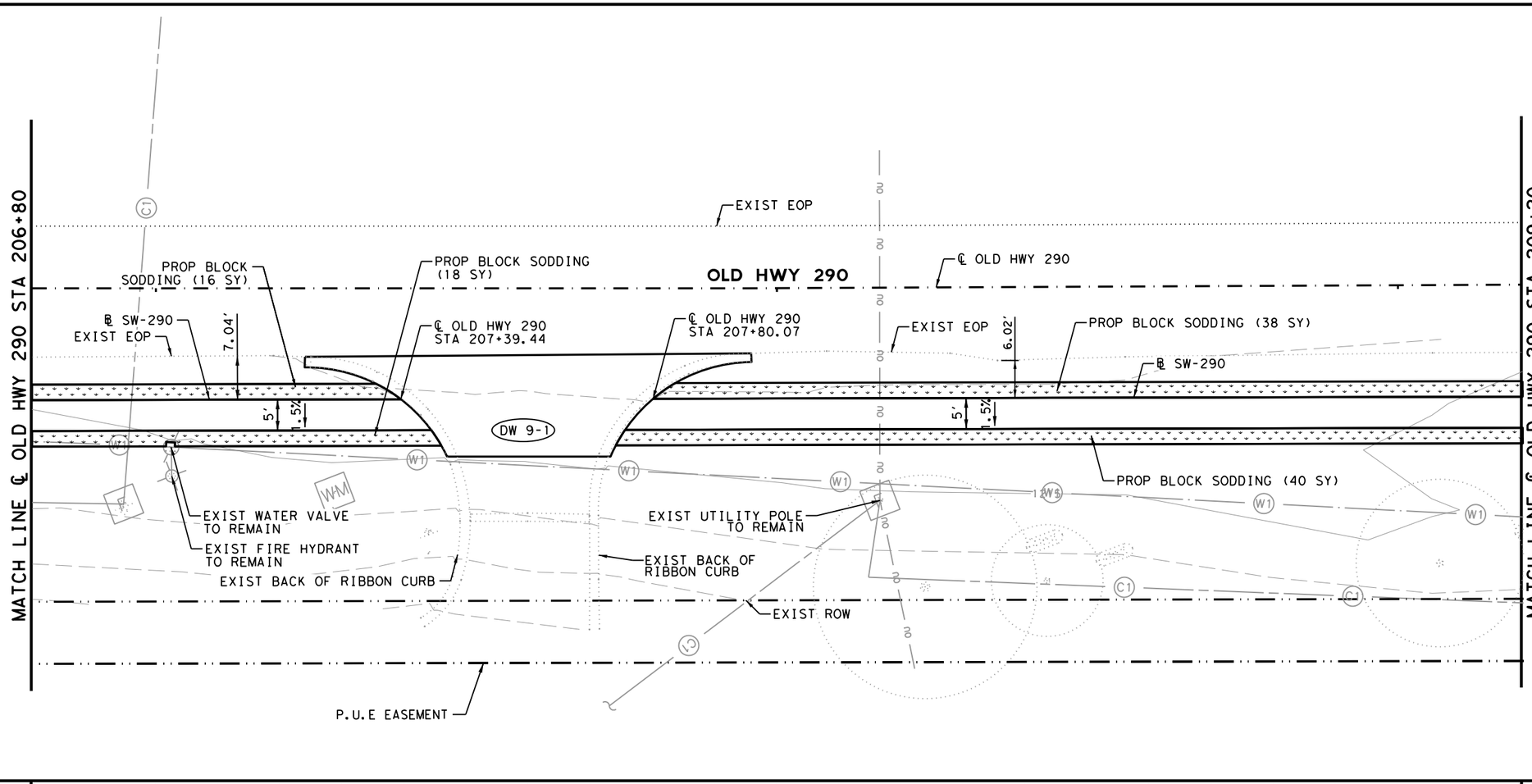

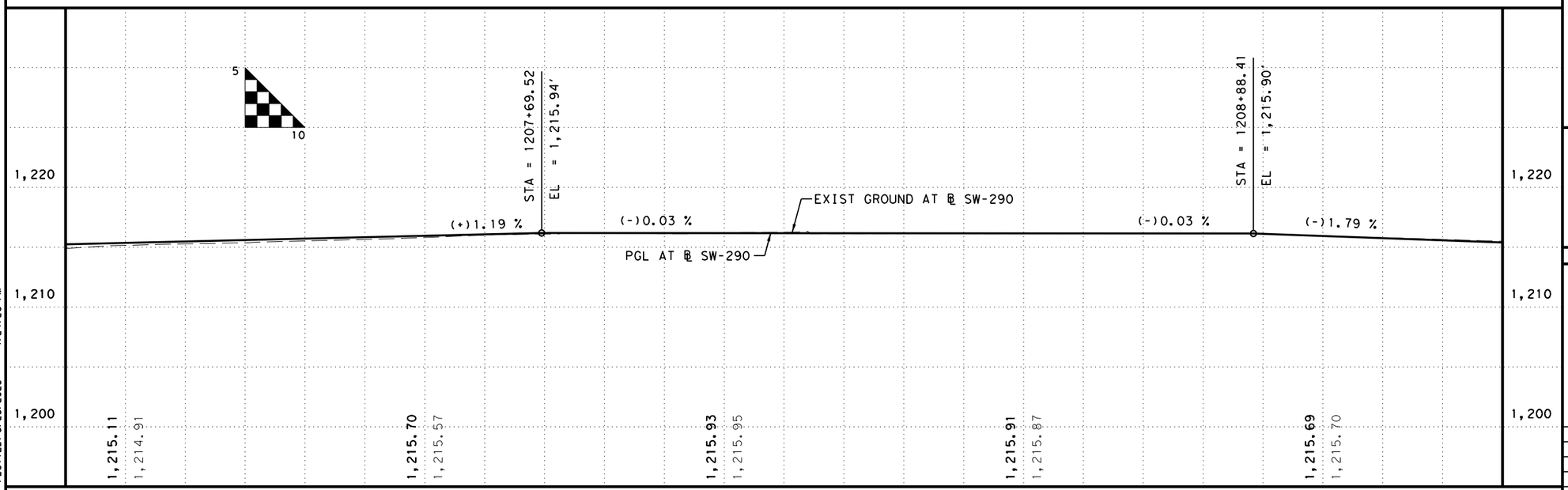

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

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5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ

SCALE

5/23/2023

DRIPPING SPRINGS Texas

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Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 206+80 TO
℄ OLD HWY 290 STA 209+20

SHEET 9 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	48
CONT.	SECT.	JOB	
0914	33	088	

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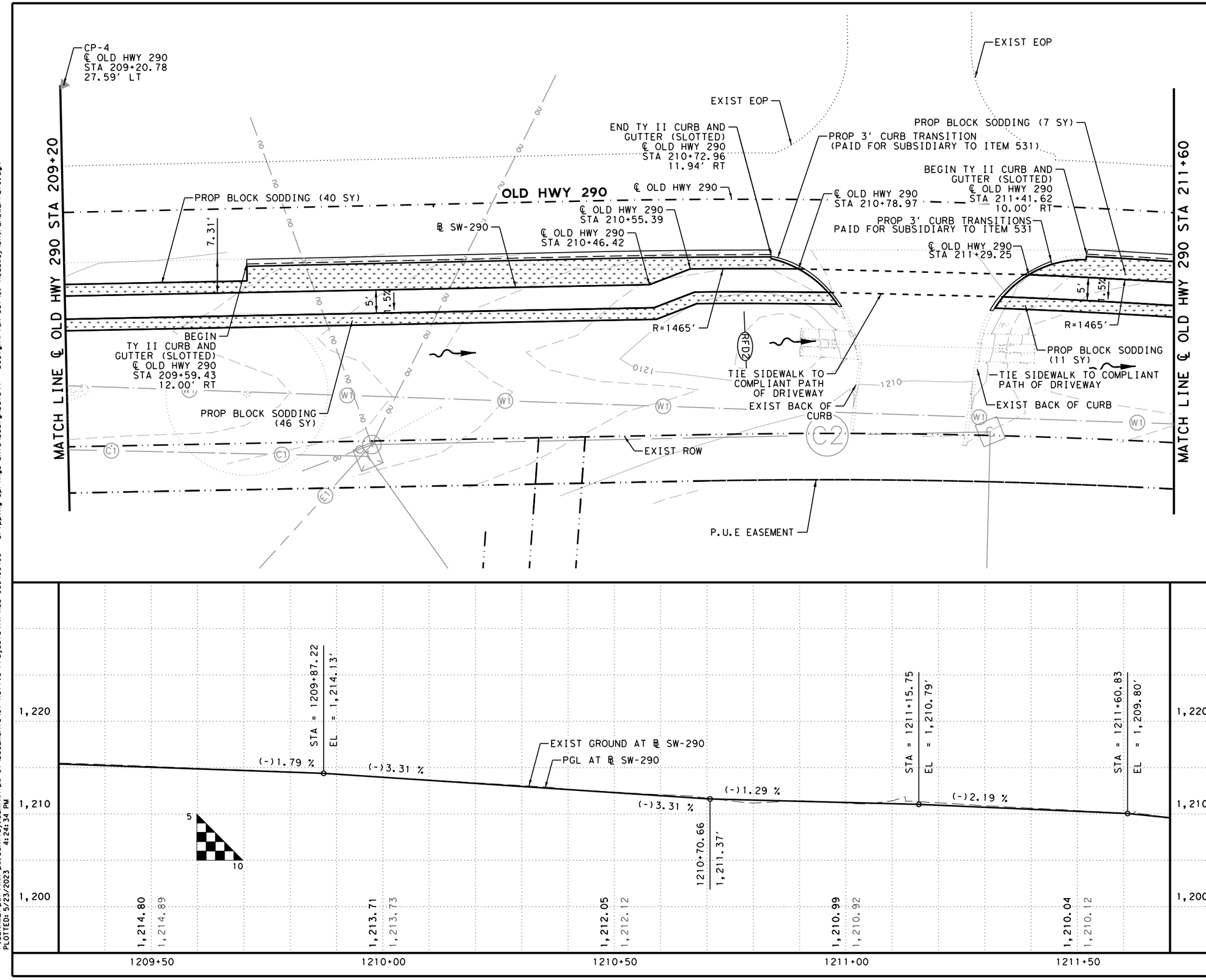

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 — FRONTIER (TELE)
- C2 — SPECTRUM (FO/DUCT)
- G1 — TEXAS GAS
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- TS1 — TXDOT TRAFFIC SIGNAL
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0' 10 20 HORZ
SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

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Kimley»Horn F-928
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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 209+20 TO
℄ OLD HWY 290 STA 2011+60

SHEET 10 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	49
CONT.	SECT.	JOB	
0914	33	088	

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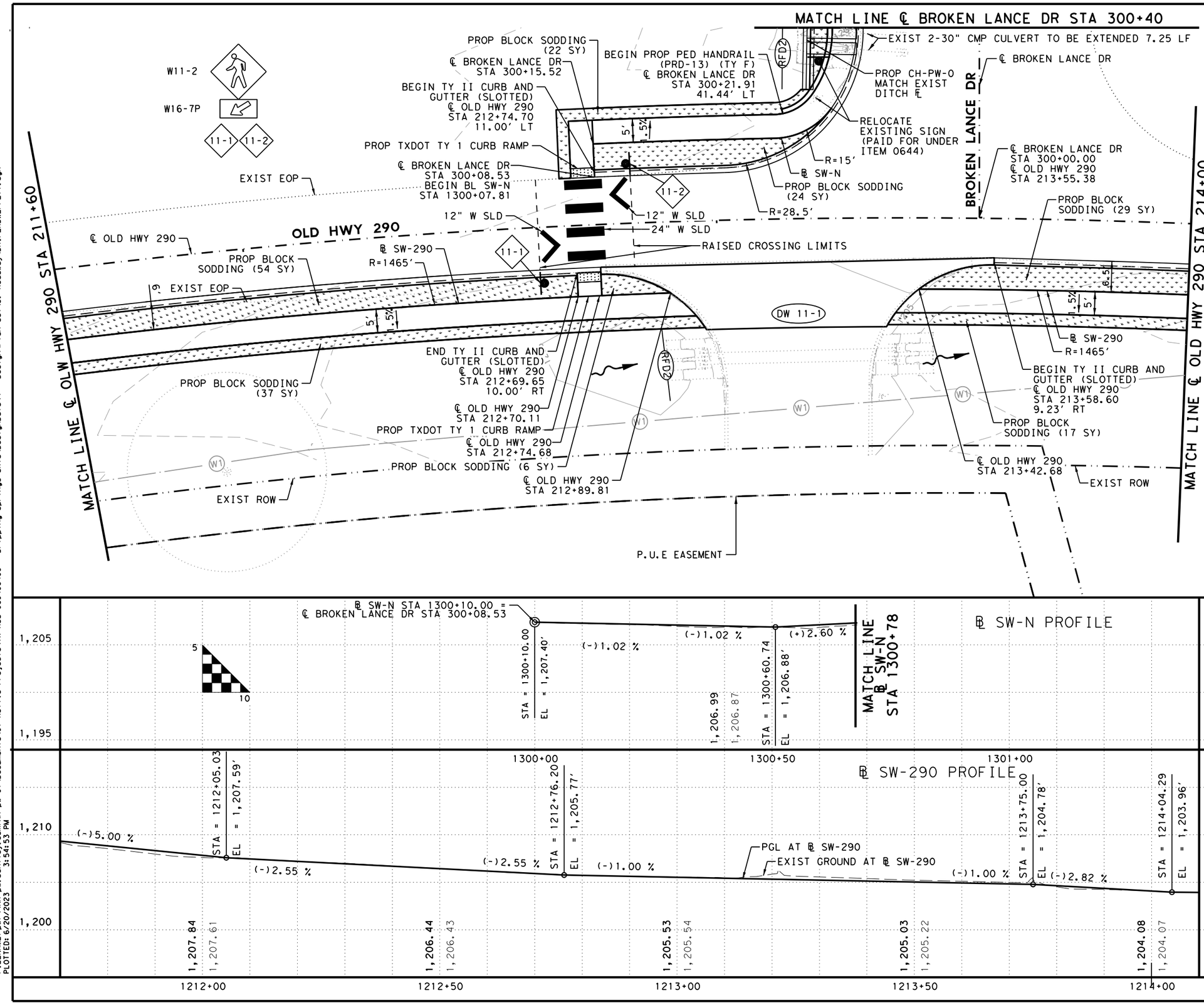

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0' 10 20 HORZ
SCALE

6/20/2023

STATE OF TEXAS
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Texas Department of Transportation
Kimley»Horn F-928

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 211+60 TO ℄ OLD HWY 290 STA 214+00

SHEET 11 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	50
CONT.	SECT.	JOB	
0914	33	088	

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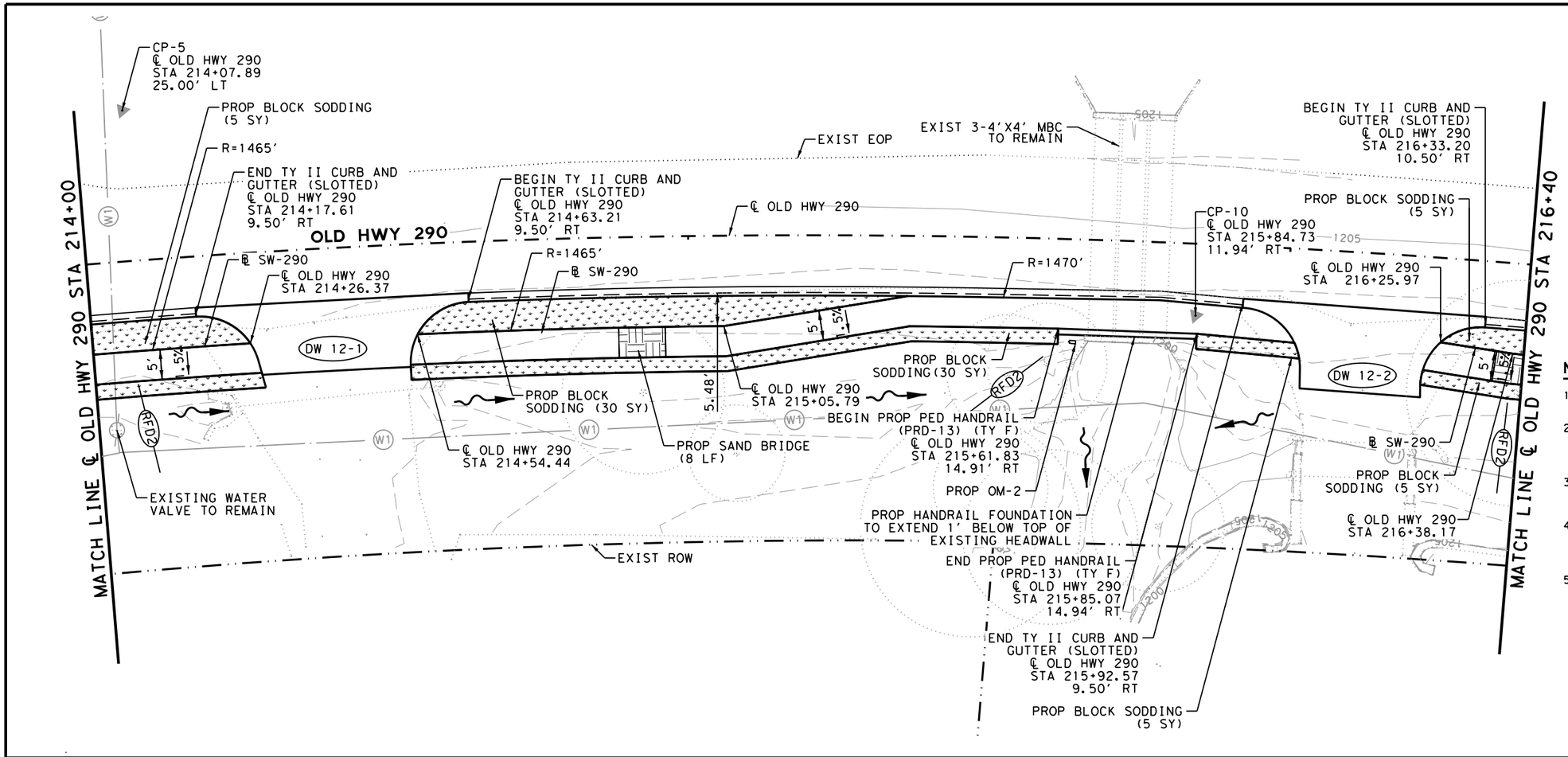

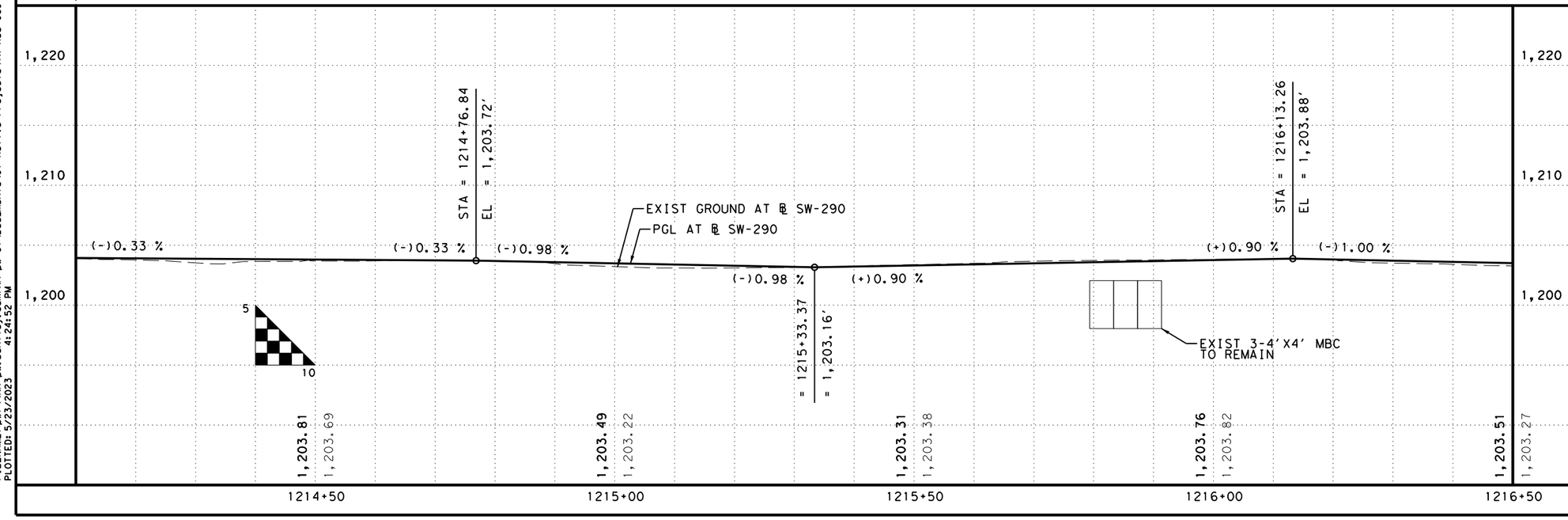

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

NOTES:

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5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
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PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 214+00 TO
℄ OLD HWY 290 STA 216+40

SHEET 12 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	51
CONT.	SECT.	JOB	
0914	33	088	

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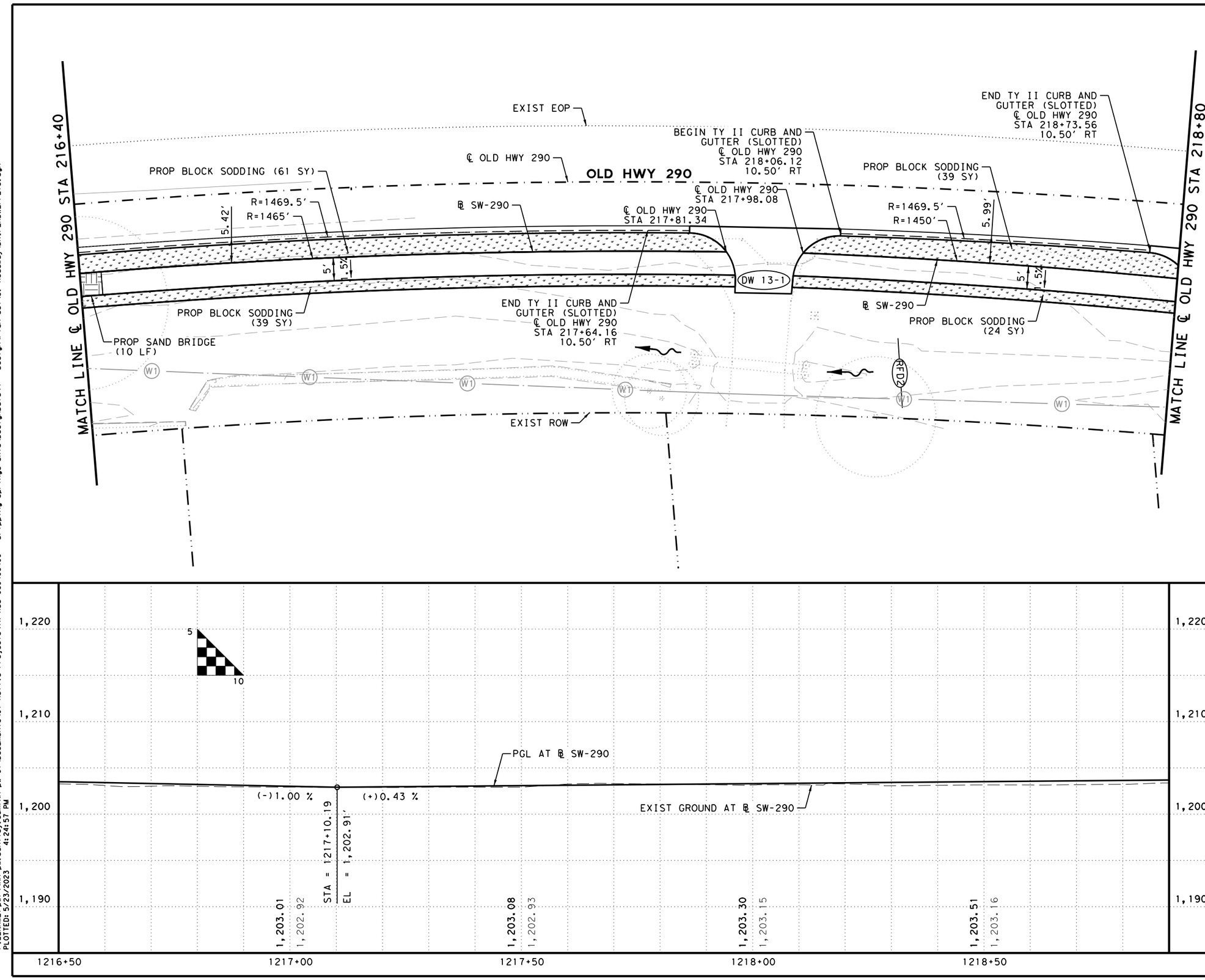

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 — FRONTIER (TELE)
- C2 — SPECTRUM (FO/DUCT)
- G1 — TEXAS GAS
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0' 10 20 HORZ

SCALE

5/23/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 216+40 TO
℄ OLD HWY 290 STA 218+80

SHEET 13 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	52
CONT.	SECT.	JOB	
0914	33	088	

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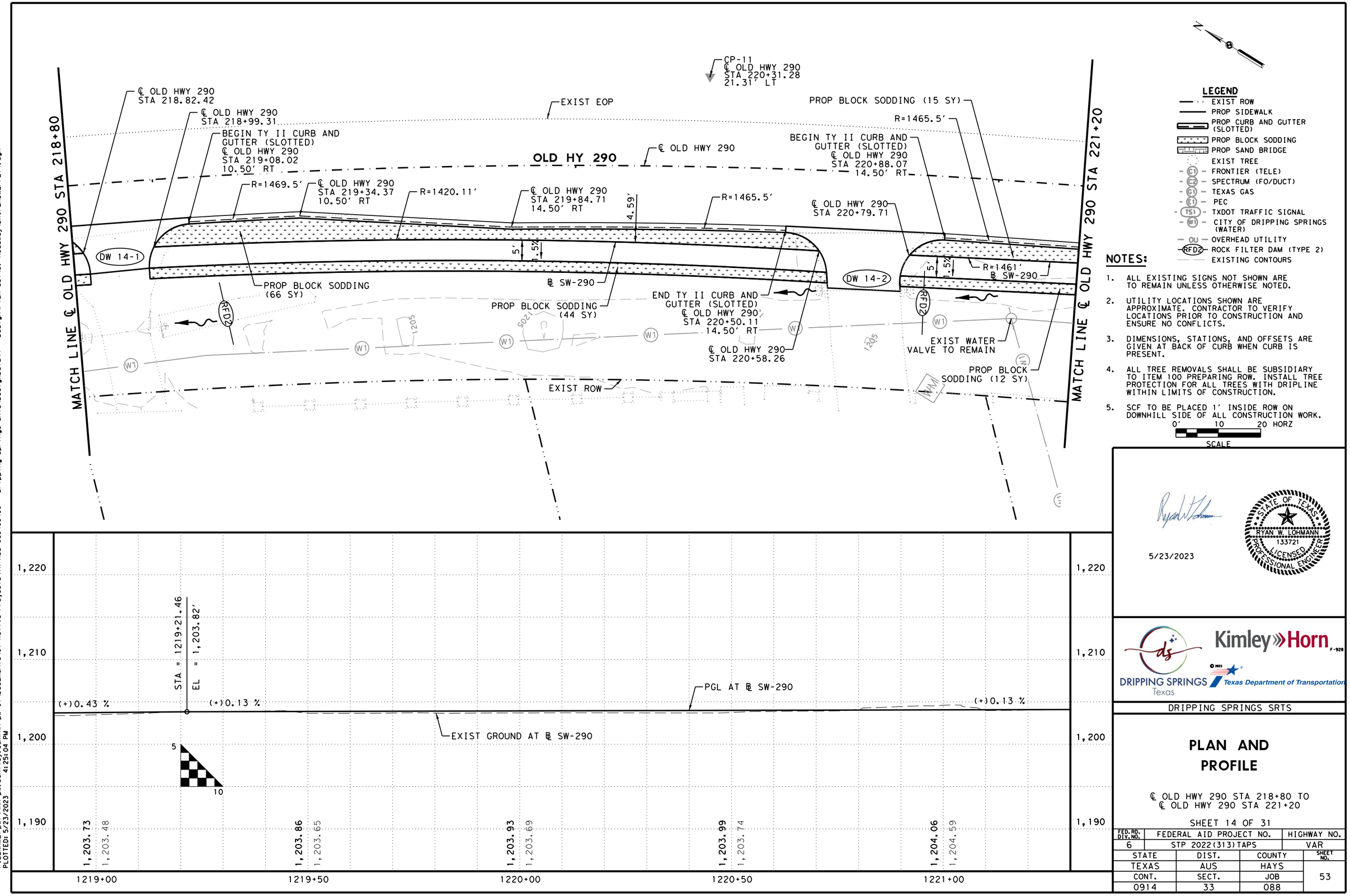

5/23/2023

STATE OF TEXAS
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DRIPPING SPRINGS Texas

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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 218+80 TO
℄ OLD HWY 290 STA 221+20

SHEET 14 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	53
CONT.	SECT.	JOB	
0914	33	088	

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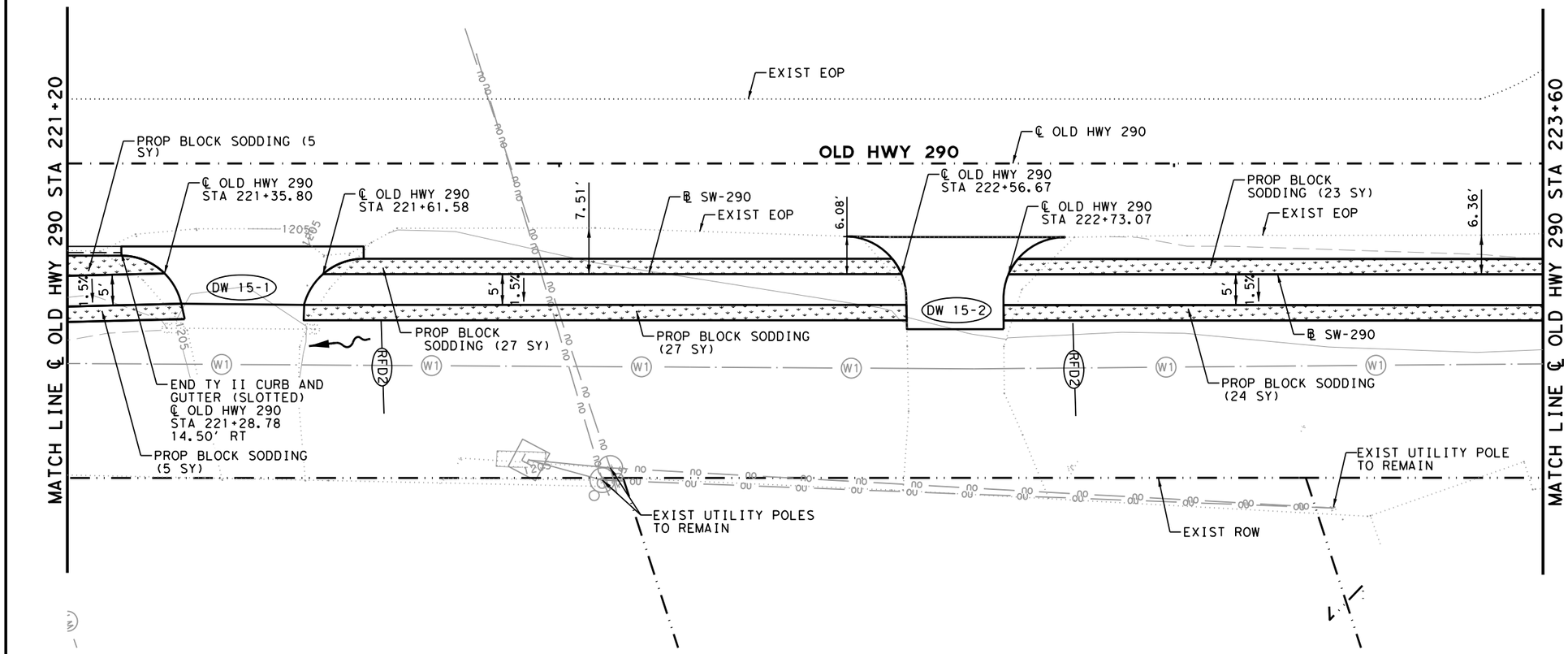

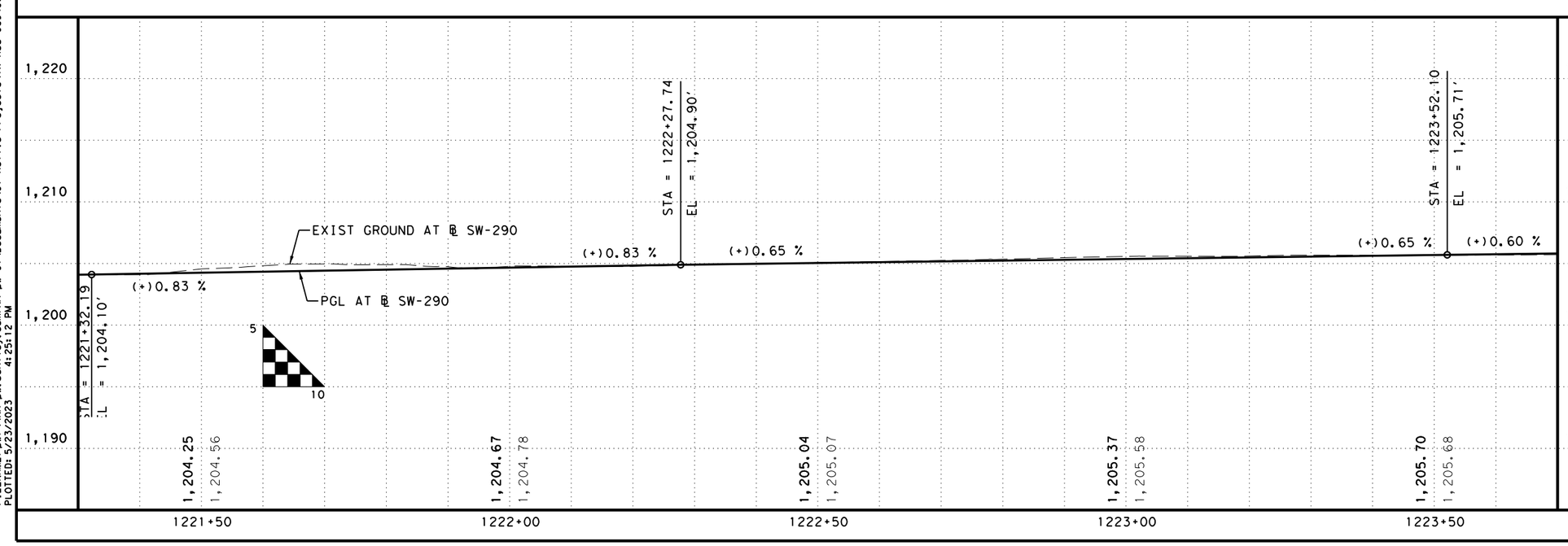

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 — FRONTIER (TELE)
- C2 — SPECTRUM (FO/DUCT)
- G1 — TEXAS GAS
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0' 10 20 HORZ
SCALE

5/23/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

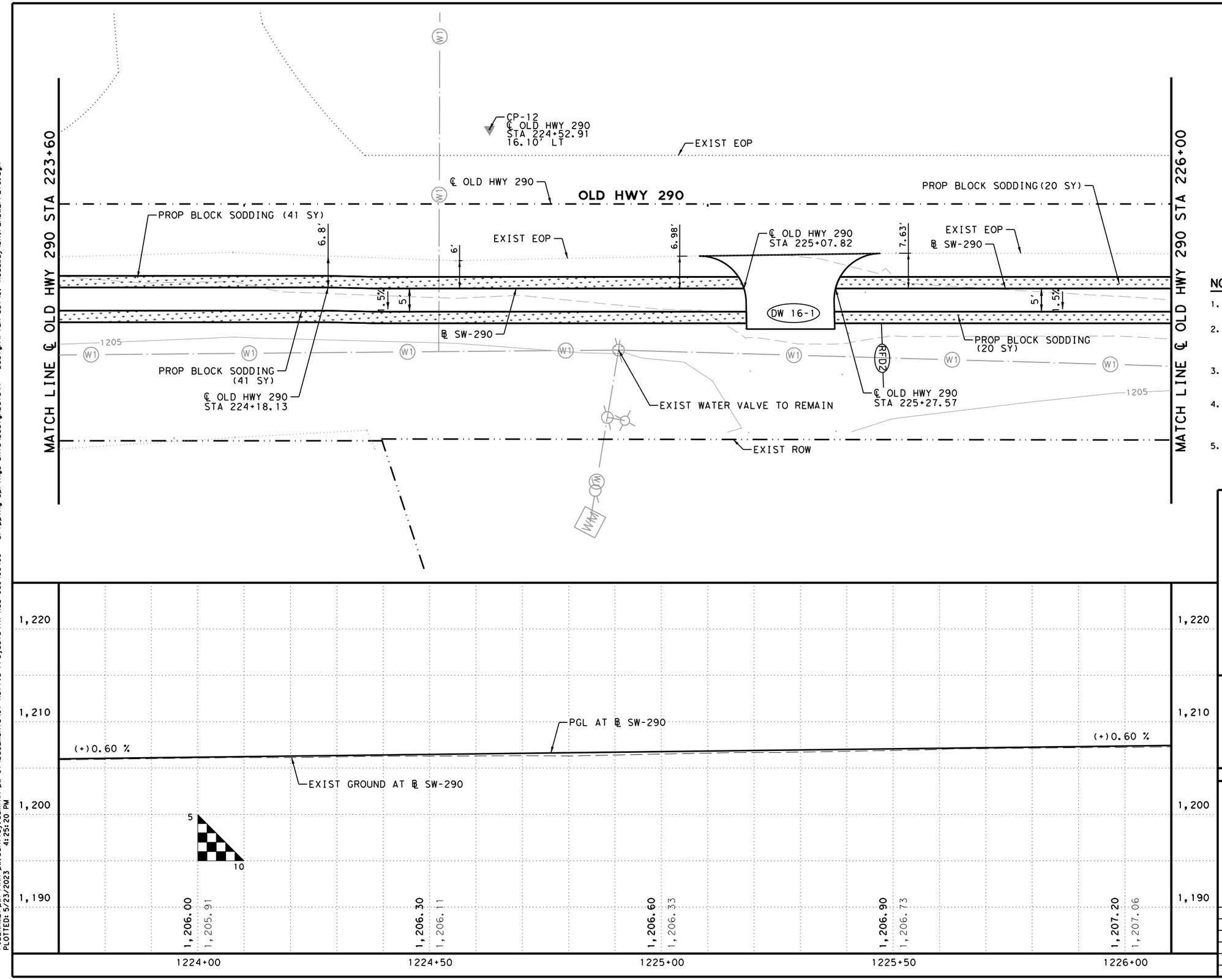
PLAN AND PROFILE

℄ OLD HWY 290 STA 221+20 TO
℄ OLD HWY 290 STA 223+60

SHEET 15 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	54
CONT.	SECT.	JOB	
0914	33	088	



LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

NOTES:

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3. DIMENSIONS, STATIONS, AND OFFSETS ARE GIVEN AT BACK OF CURB WHEN CURB IS PRESENT.
4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ

SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 223+60 TO
℄ OLD HWY 290 STA 226+00

SHEET 16 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	55
CONT.	SECT.	JOB	
0914	33	088	

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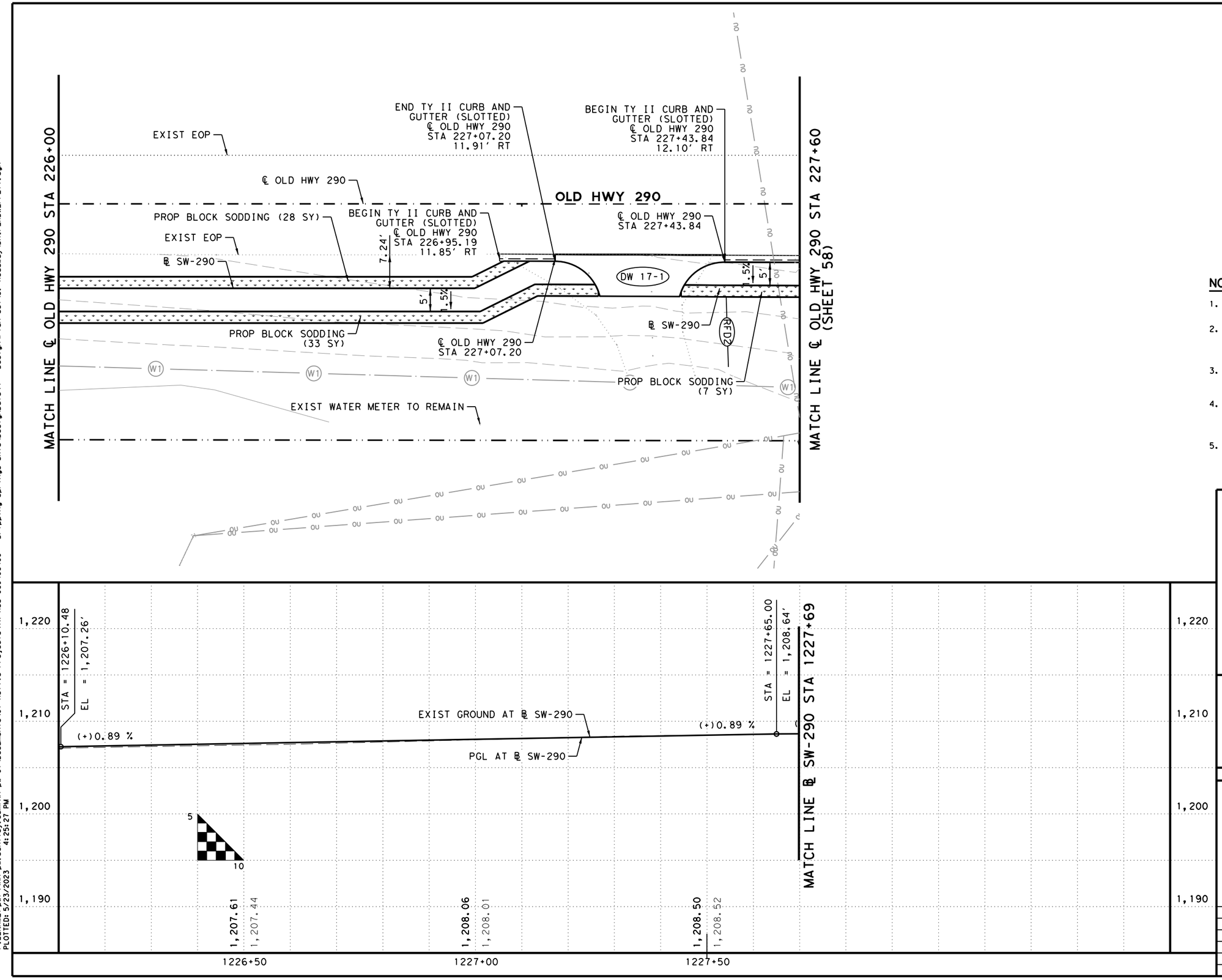

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- (C1) – FRONTIER (TELE)
- (C2) – SPECTRUM (FO/DUCT)
- (G1) – TEXAS GAS
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5/23/2023

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Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ OLD HWY 290 STA 226+00 TO
℄ OLD HWY 290 STA 227+60

SHEET 17 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	56
CONT.	SECT.	JOB	
0914	33	088	

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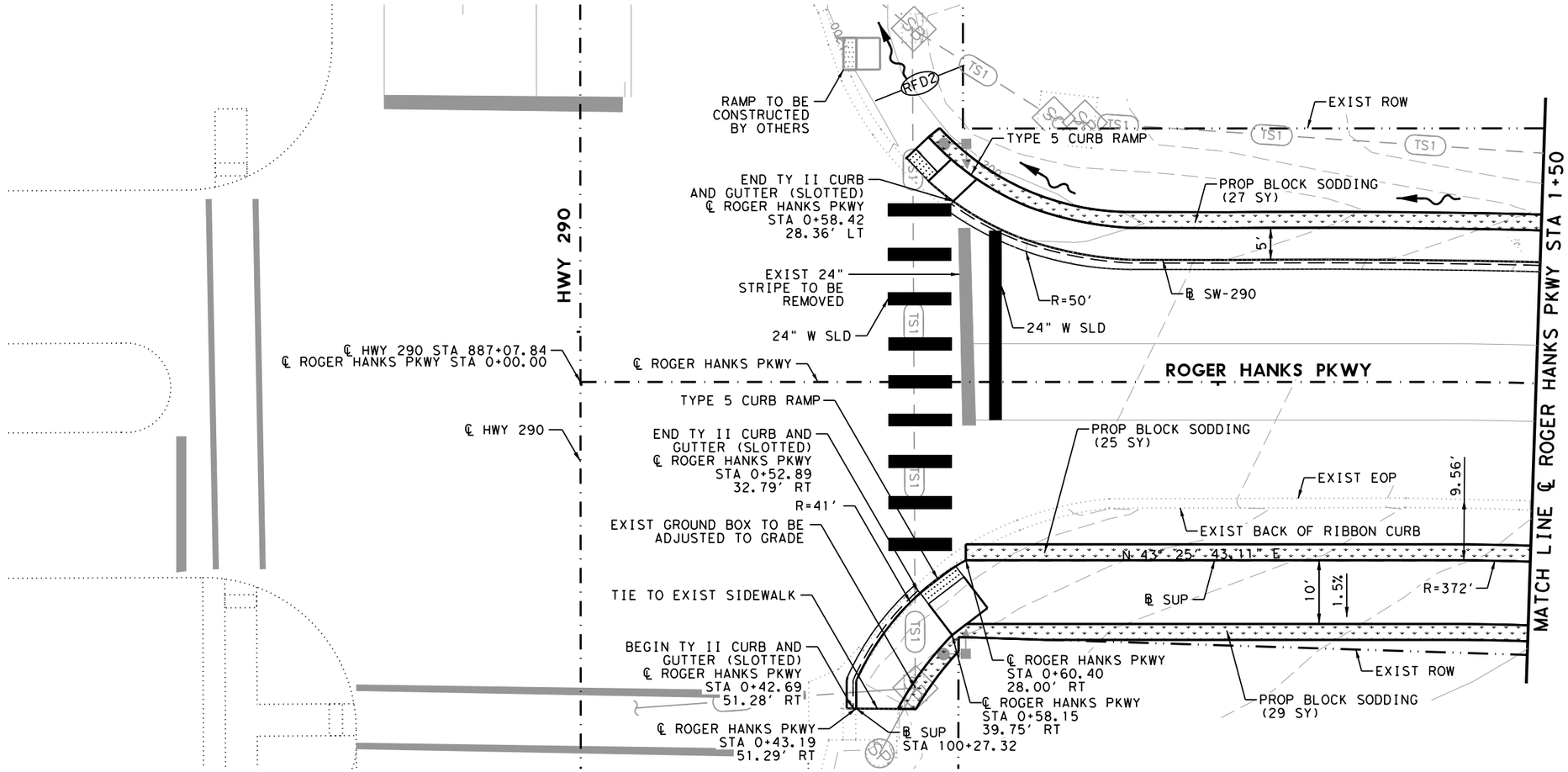

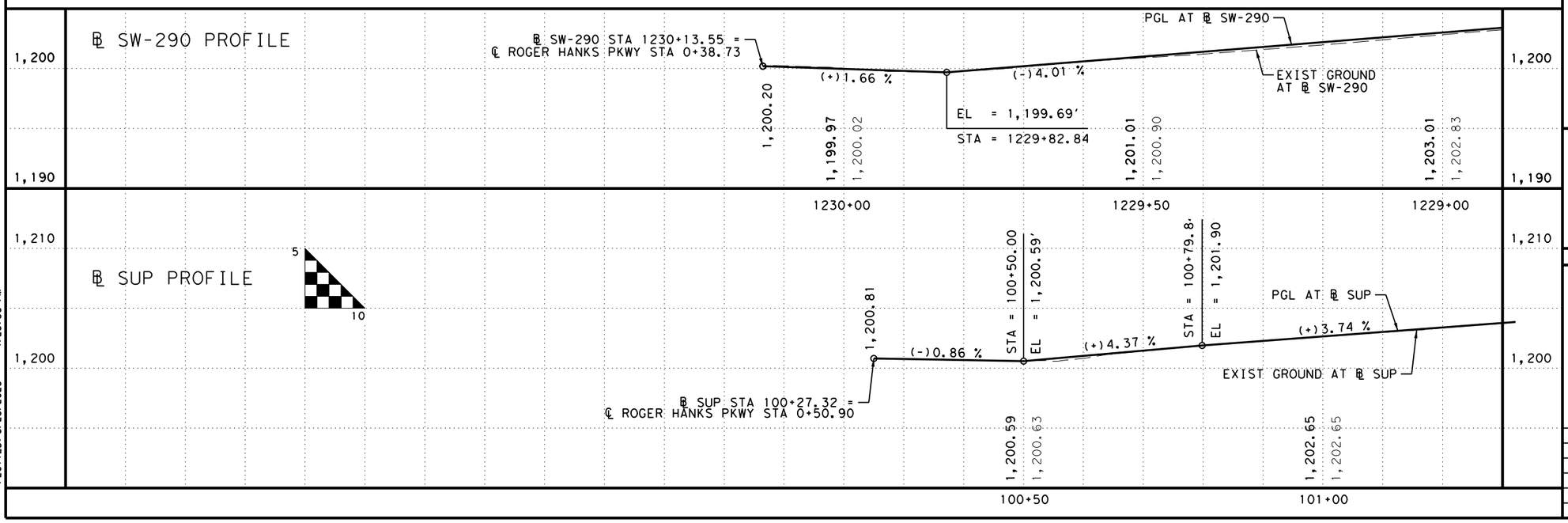

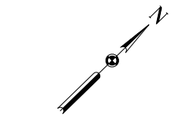

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 — FRONTIER (TELE)
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5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

Kimley»Horn F-928

DRIPPING SPRINGS Texas

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ ROGER HANKS PKWY STA 0+00 TO ℄ ROGER HANKS PKWY STA 1+50

SHEET 18 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	57
CONT.	SECT.	JOB	
0914	33	088	

MATCH LINE ℄ OLD HWY 290 STA 227+60

EXIST ROW

PROP BLOCK SODDING (28 SY)

R=25'

TS1

5'

℄ SW-290

CP-13
℄ ROGER HANKS PKWY
STA 2+90.04
37.59' LT

OLD HWY 290

℄ OLD HWY 290

℄ OLD HWY 290 STA 228+02.93
℄ ROGER HANKS PKWY STA 2+53.66

℄ ROGER HANKS PKWY

EXIST EOP

ROGER HANKS PKWY

MATCH LINE ℄ ROGER HANKS PKWY STA 1+50

MATCH LINE ℄ ROGER HANKS PKWY STA 3+90

℄ ROGER HANKS PKWY
STA 2+33.22
28.00' RT

PROP BLOCK SODDING (21 SY)

EXIST BACK OF RIBBON CURB

EXIST EOP

9.6'

10'

-1.5%

℄ SUP

R=372'

PROP BLOCK SODDING (22 SY)

EXIST ROW

EXIST ROW

N 60° 44' 48.37" E

DW 19-1

℄ ROGER HANKS PKWY
STA 2+67.22
28.00' RT

EXIST BACK OF RIBBON CURB

EXIST EOP

PROP BLOCK SODDING (32 SY)

9.65'

10'

1.5%

℄ SUP

R=372'

GRADE ADJACENT AREA TO DRAIN

EXIST FENCE

PROP BLOCK SODDING (26 SY)

APPARENT ROW

PROP INLET PROTECTION CL-DI

EXIST AREA DRAIN TO BE REMOVED. BREAK EXIST RCP 1' BACK. SEE CONCRETE COLLAR DETAIL.

PROP INLET PROTECTION CL-DI

PROP 12" RCP EXTENSION (17 LF)

APPARENT ROW

PROP PAZD-CZ (3'X3') RCP FL=1205.74' SEE HYDRAULIC DATA SHEET FOR CALCULATIONS

LEGEND

- EXIST ROW
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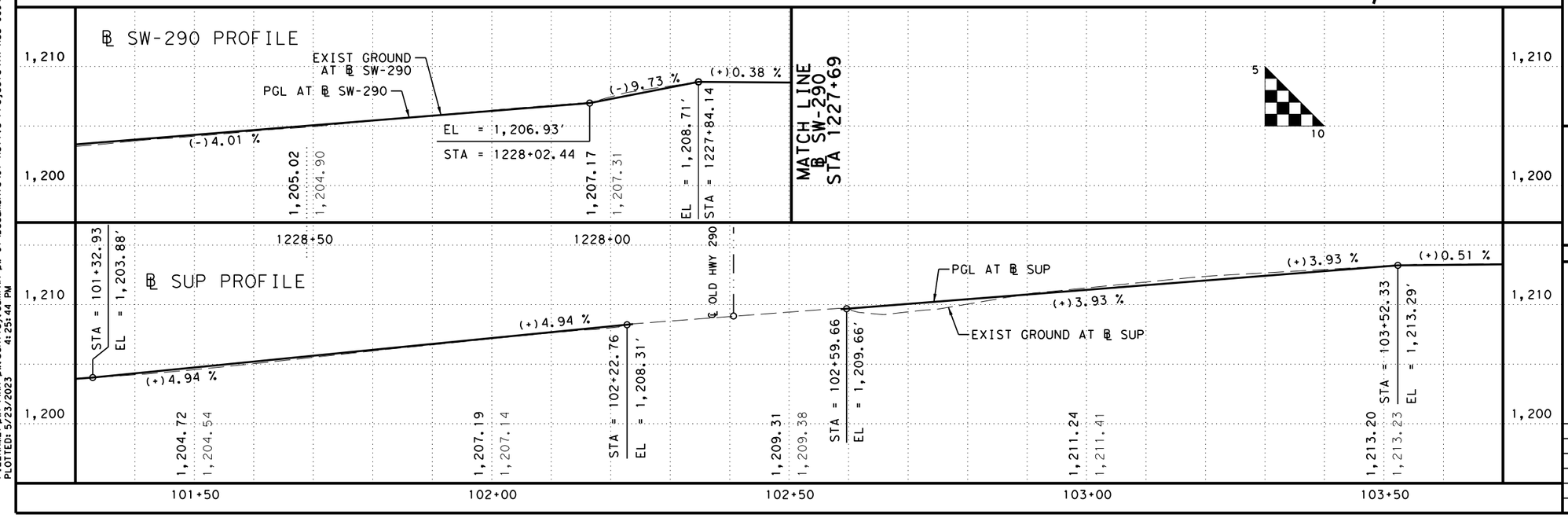
0' 10 20 HORZ

SCALE



Ryan W. Lohmann

5/23/2023

STATE OF TEXAS
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133721
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PROFESSIONAL ENGINEER

Kimley»Horn F-928

DRIPPING SPRINGS Texas

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ ROGER HANKS PKWY STA 1+50 TO
℄ ROGER HANKS PKWY STA 3+90

SHEET 19 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	58
CONT.	SECT.	JOB	
0914	33	088	

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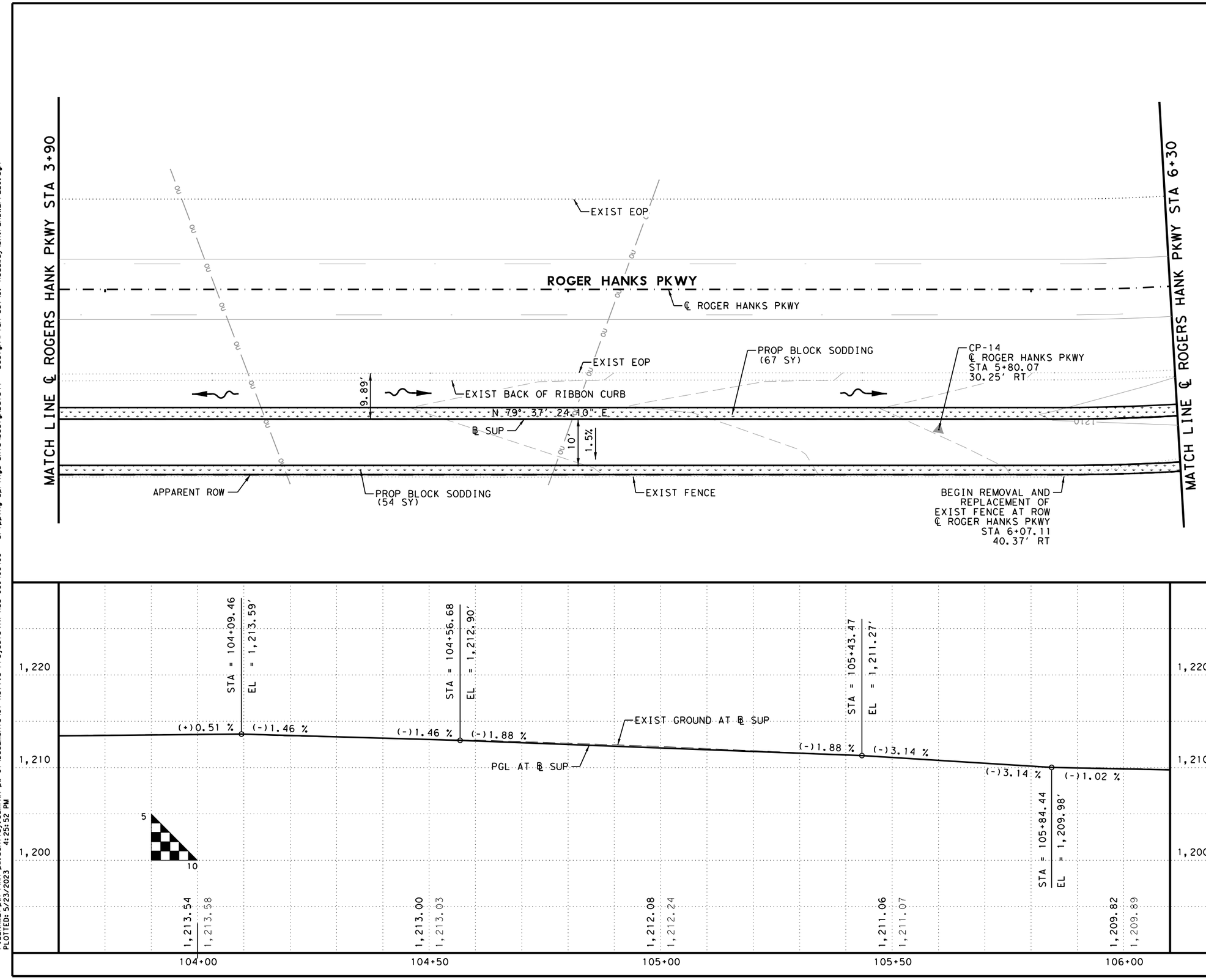

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SCALE

5/23/2023

STATE OF TEXAS
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DRIPPING SPRINGS Texas

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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ ROGER HANKS PKWY STA 3+90 TO
℄ ROGER HANKS PKWY STA 6+30

SHEET 20 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	59
CONT.	SECT.	JOB	
0914	33	088	

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MATCH LINE ℄ ROGER HANKS PKWY STA 6+30

MATCH LINE ℄ ROGER HANKS PKWY STA 8+70

EXIST EOP

ROGER HANKS PKWY

℄ ROGER HANKS PKWY

EXIST RFD TO BE REMOVED

PROP BLOCK SODDING (71 SY)

EXIST EOP

EXIST BACK OF RIBBON CURB

9.46'

℄ SUP

10'

1.5%

R=428'

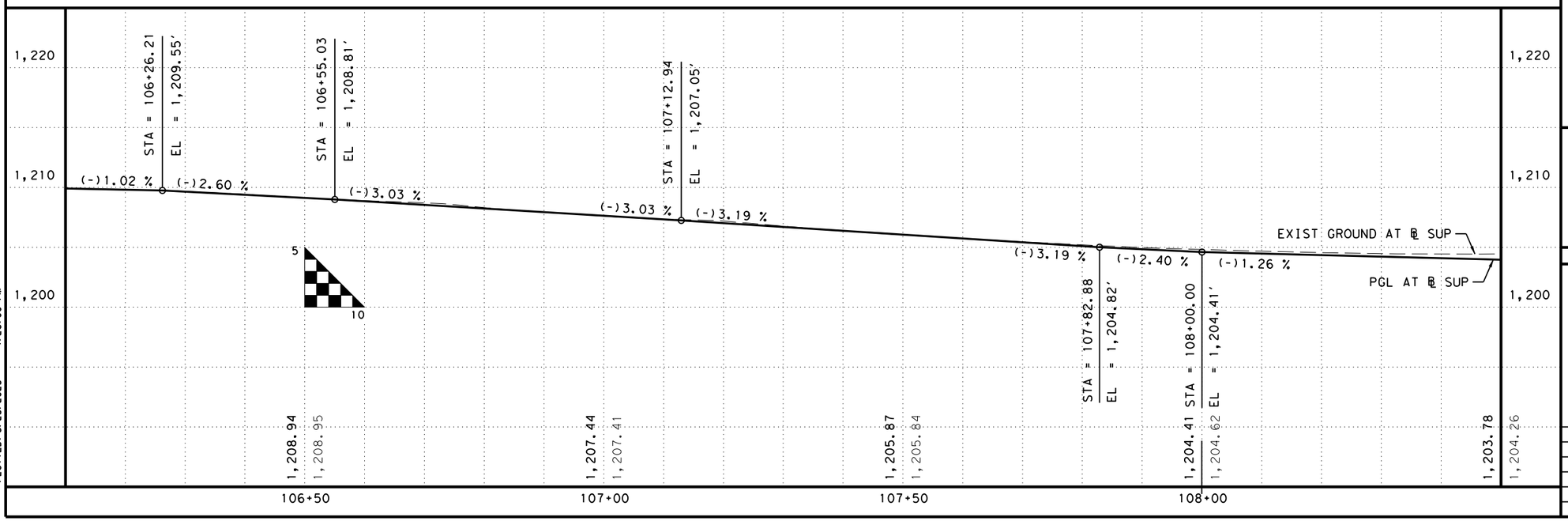
APPARENT ROW

EXIST FENCE TO BE REMOVED AND REPLACED AT ROW

PROP BLOCK SODDING (59 SY)

BEGIN CONC RIPRAP
℄ ROGER HANKS PKWY
STA 8+50.00
38.00'RT

PROP 4" CONC RIPRAP



LEGEND

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- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
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0' 10 20 HORZ

SCALE

5/23/2023

STATE OF TEXAS · RYAN W. LOHMANN · 133721 · LICENSED PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ ROGER HANKS PKWY STA 6+30 TO
℄ ROGER HANKS PKWY STA 8+70

SHEET 21 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	60
CONT.	SECT.	JOB	
0914	33	088	

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SECTION A-A
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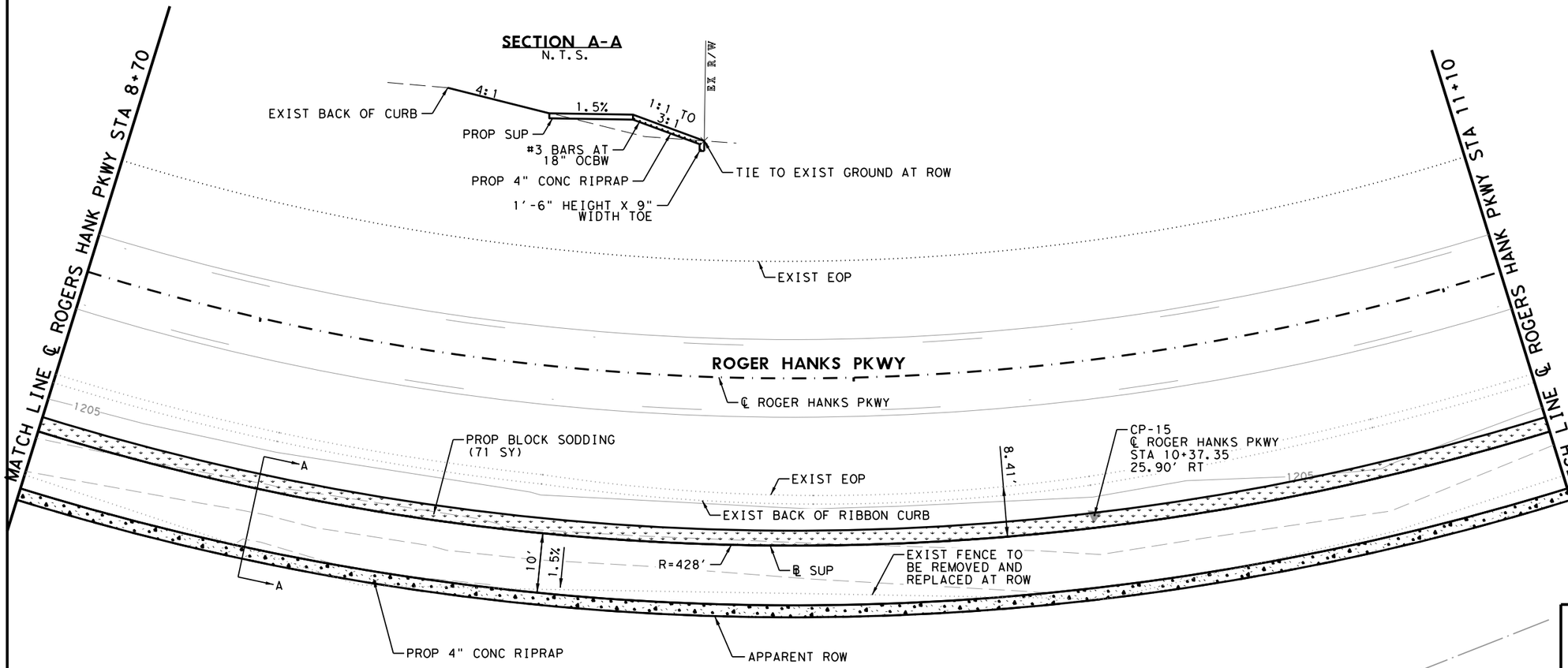

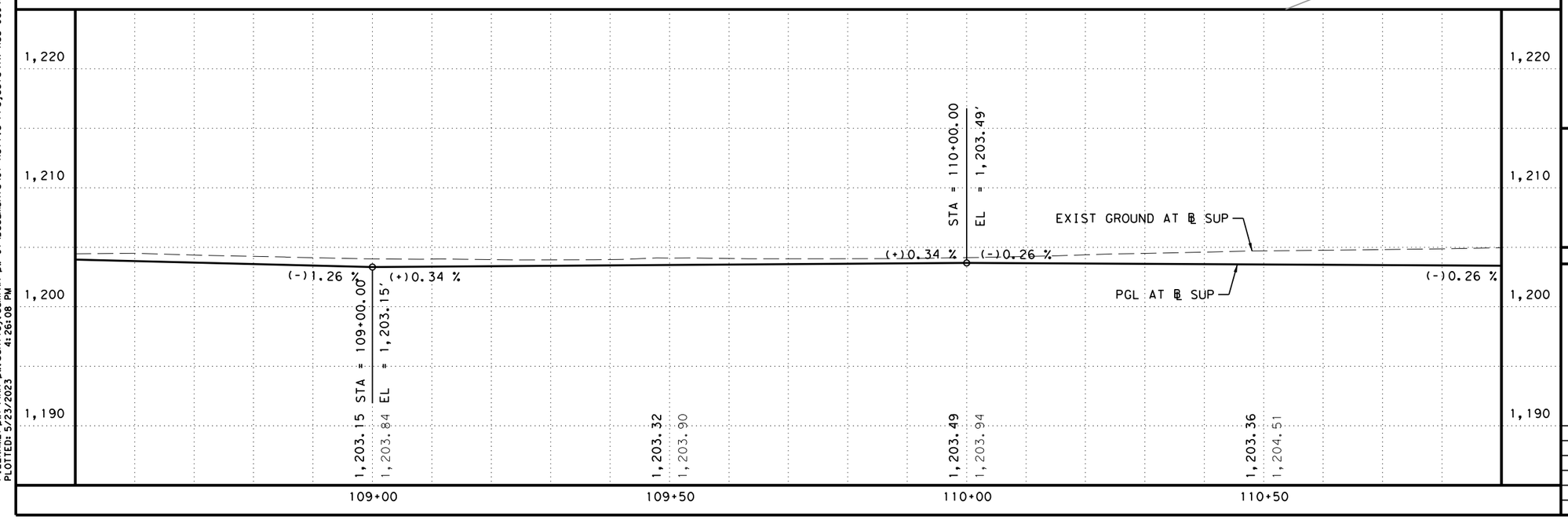

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SCALE

5/23/2023

STATE OF TEXAS · RYAN W. LOHMANN · 133721 · LICENSED PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas · Kimley»Horn F-928 · Texas Department of Transportation

DRIPPING SPRINGS SRTS

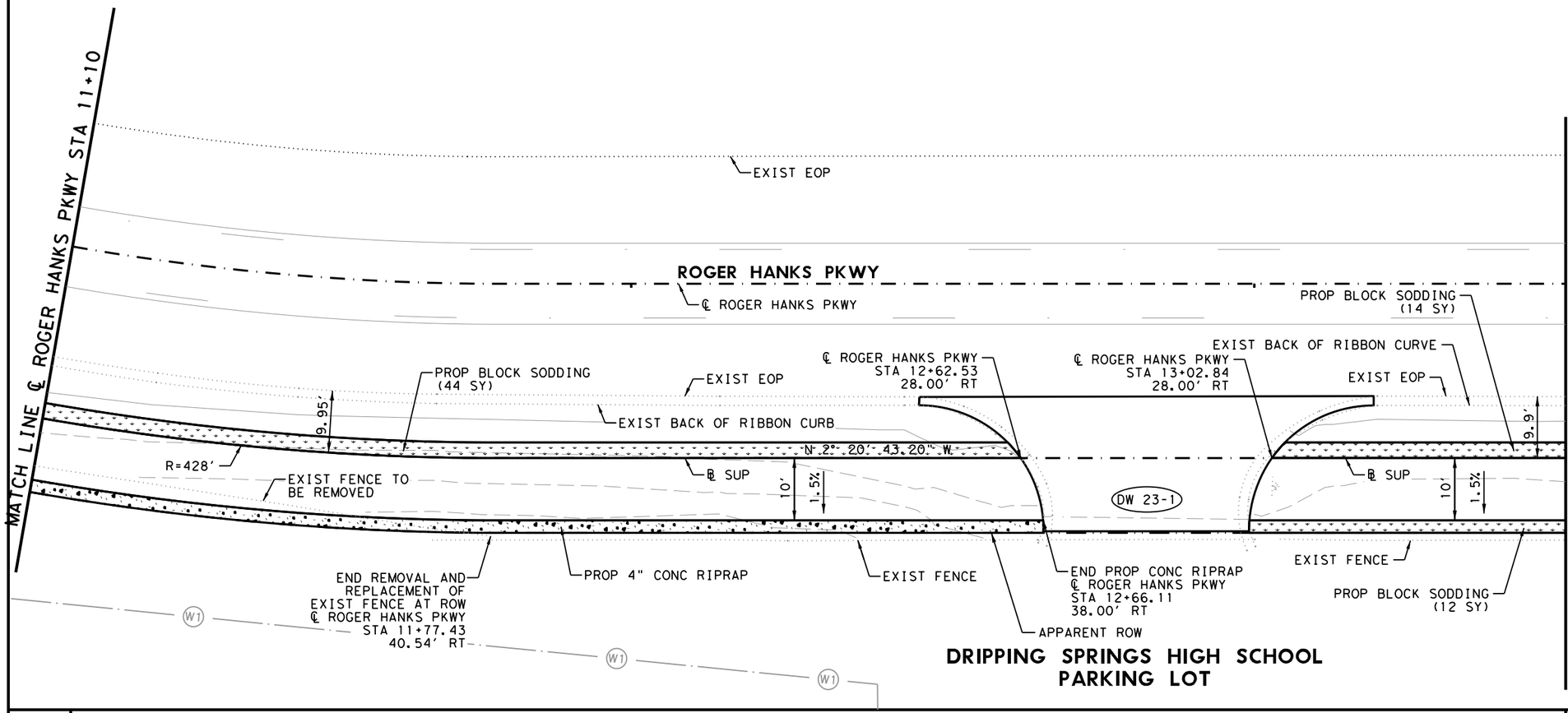
PLAN AND PROFILE

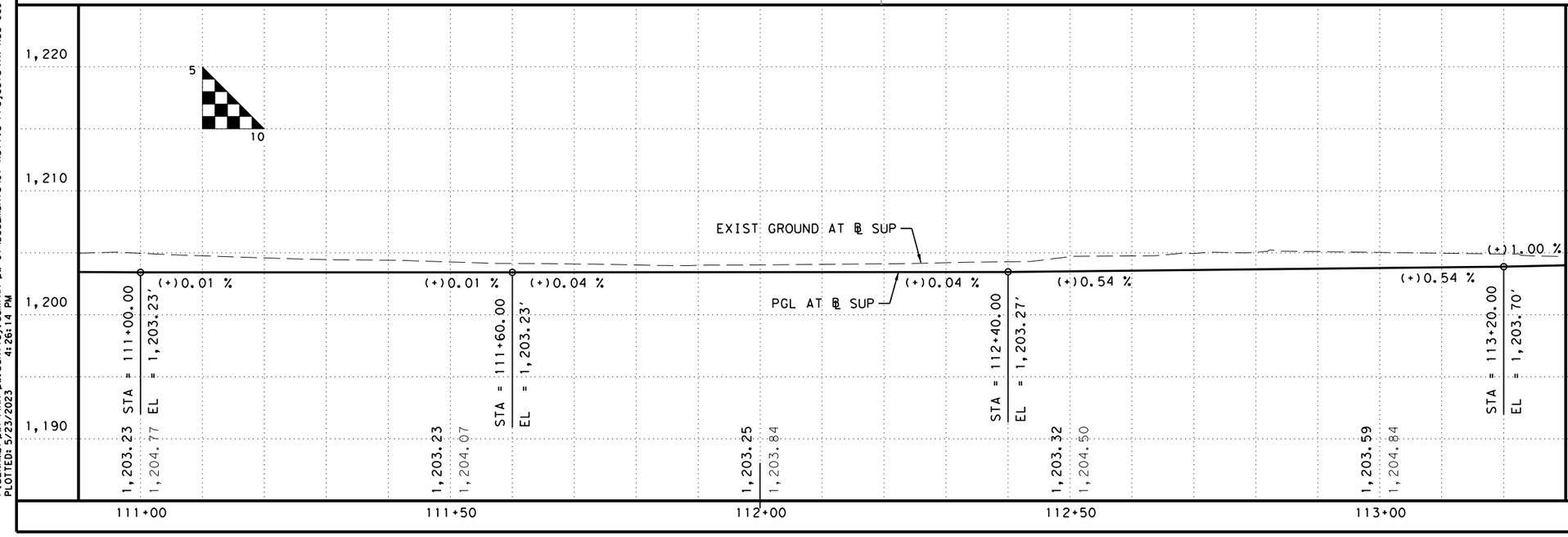
℄ ROGER HANKS PKWY STA 8+70 TO
℄ ROGER HANKS PKWY STA 11+10

SHEET 22 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	61
CONT.	SECT.	JOB	
0914	33	088	





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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ ROGER HANKS PKWY STA 11+10 TO
℄ ROGER HANKS PKWY STA 13+50

SHEET 23 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	62
CONT.	SECT.	JOB	
0914	33	088	

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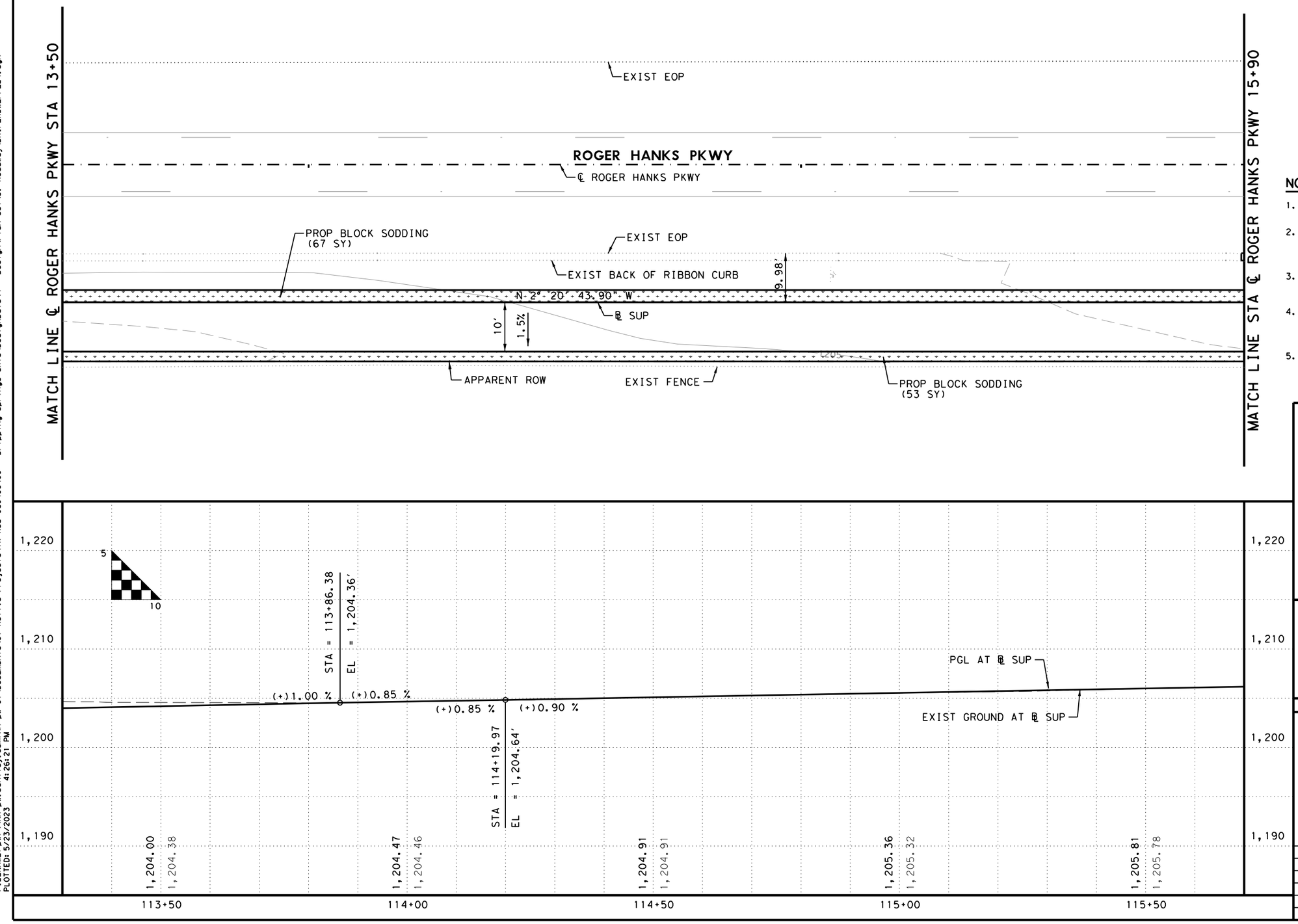

LEGEND

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- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
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- EXIST TREE
- C1 – FRONTIER (TELE)
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DRIPPING SPRINGS SRTS

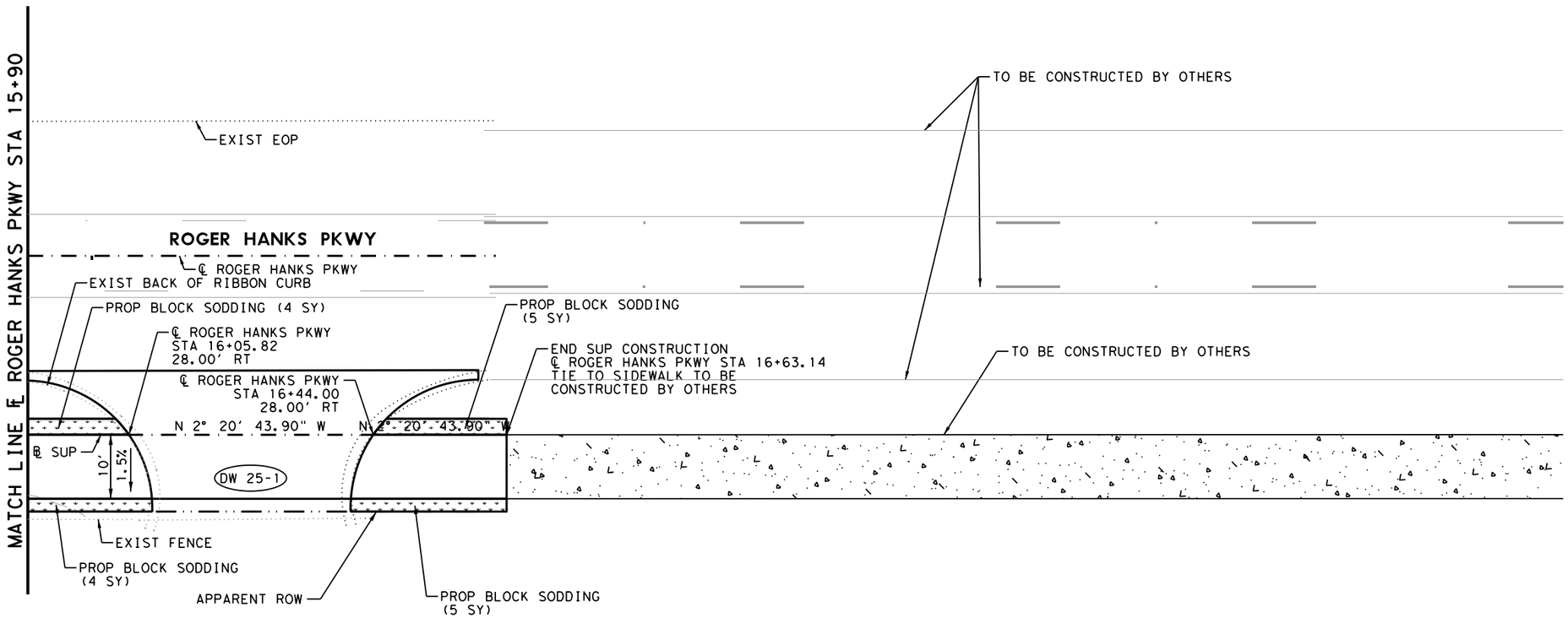
PLAN AND PROFILE

℄ ROGER HANKS PKWY STA 13+50 TO
℄ ROGER HANKS PKWY STA 15+90

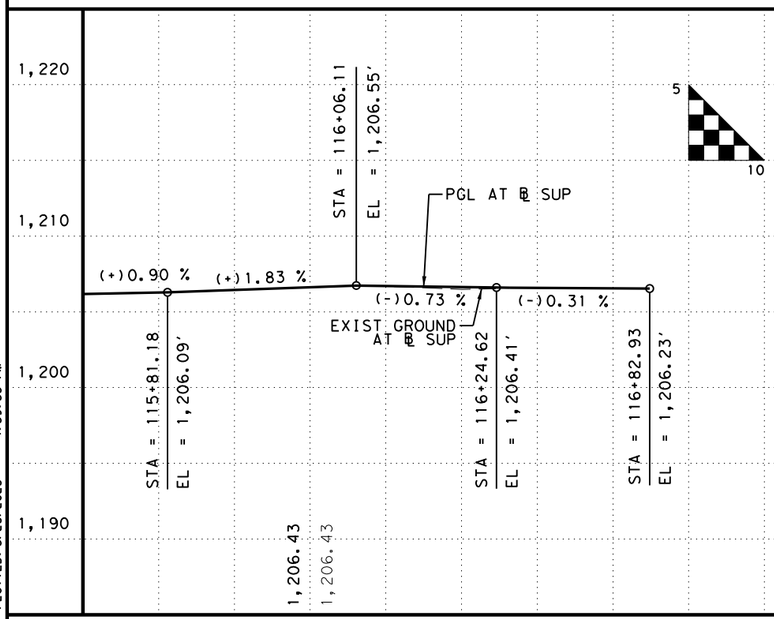
SHEET 24 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	63
CONT.	SECT.	JOB	
0914	33	088	



DRIPPING SPRINGS HIGH SCHOOL PARKING LOT



LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

NOTES:

1. ALL EXISTING SIGNS NOT SHOWN ARE TO REMAIN UNLESS OTHERWISE NOTED.
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATIONS PRIOR TO CONSTRUCTION AND ENSURE NO CONFLICTS.
3. DIMENSIONS, STATIONS, AND OFFSETS ARE GIVEN AT BACK OF CURB WHEN CURB IS PRESENT.
4. ALL TREE REMOVALS SHALL BE SUBSIDIARY TO ITEM 100 PREPARING ROW. INSTALL TREE PROTECTION FOR ALL TREES WITH DRIPLINE WITHIN LIMITS OF CONSTRUCTION.
5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ

SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ ROGER HANKS PKWY STA 15+90 TO
℄ ROGER HANKS PKWY STA 16+63

SHEET 25 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	
CONT.	SECT.	JOB	64
0914	33	088	

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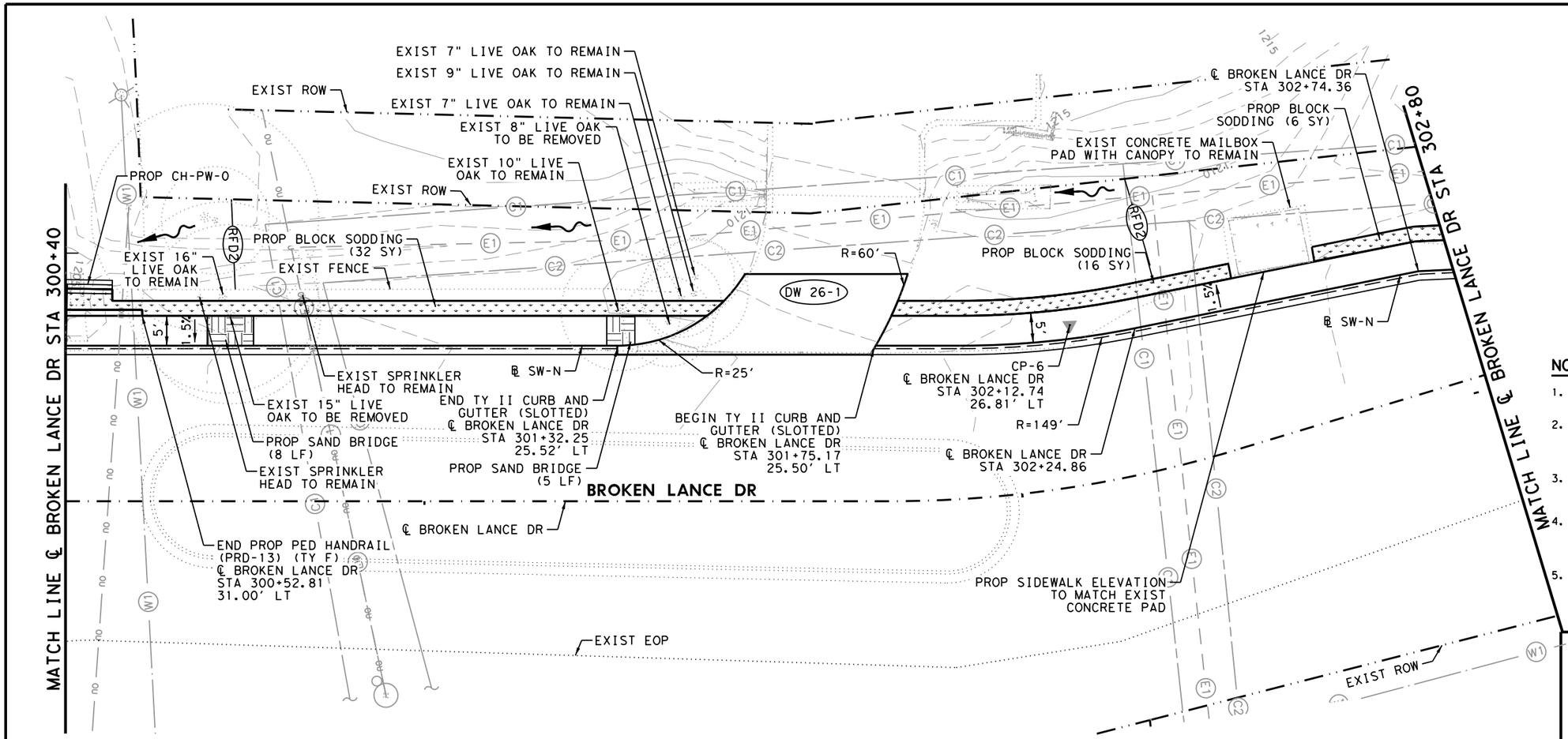

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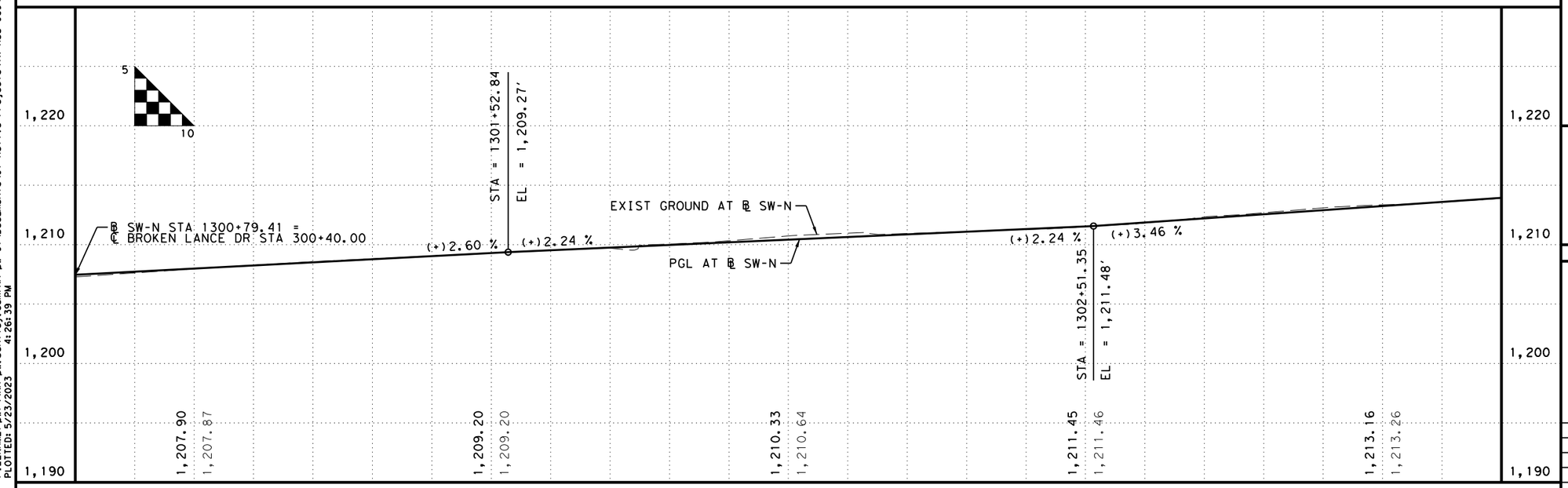
0' 10 20 HORZ
SCALE



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133721
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STATE OF TEXAS

DRIPPING SPRINGS Texas

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Texas Department of Transportation

DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ BROKEN LANCE DR STA 300+40 TO
℄ BROKEN LANCE DR STA 302+80

SHEET 26 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	65
CONT.	SECT.	JOB	
0914	33	088	

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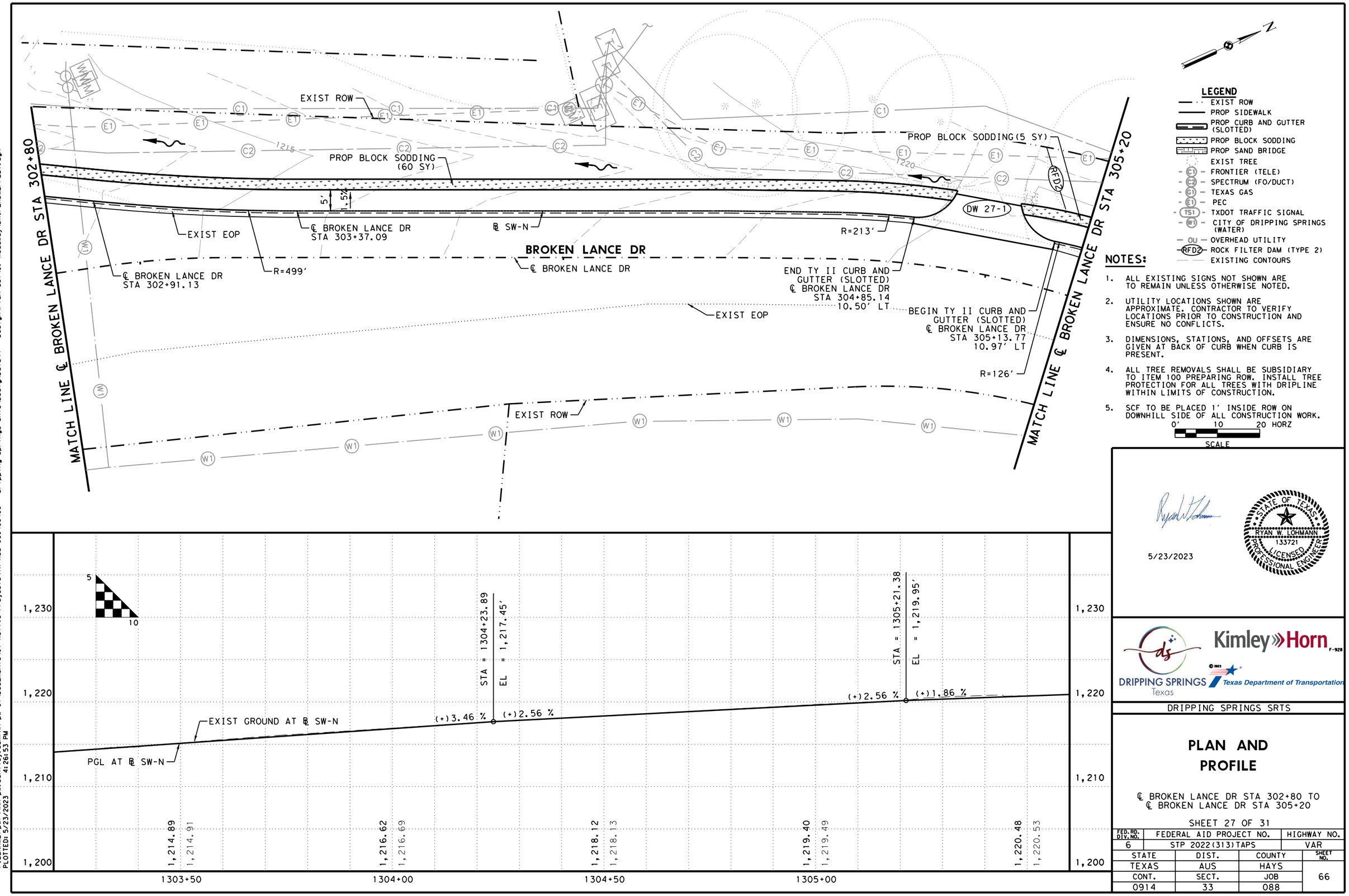

5/23/2023

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RYAN W. LOHMANN
133721
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PROFESSIONAL ENGINEER

DRIPPING SPRINGS SRTS

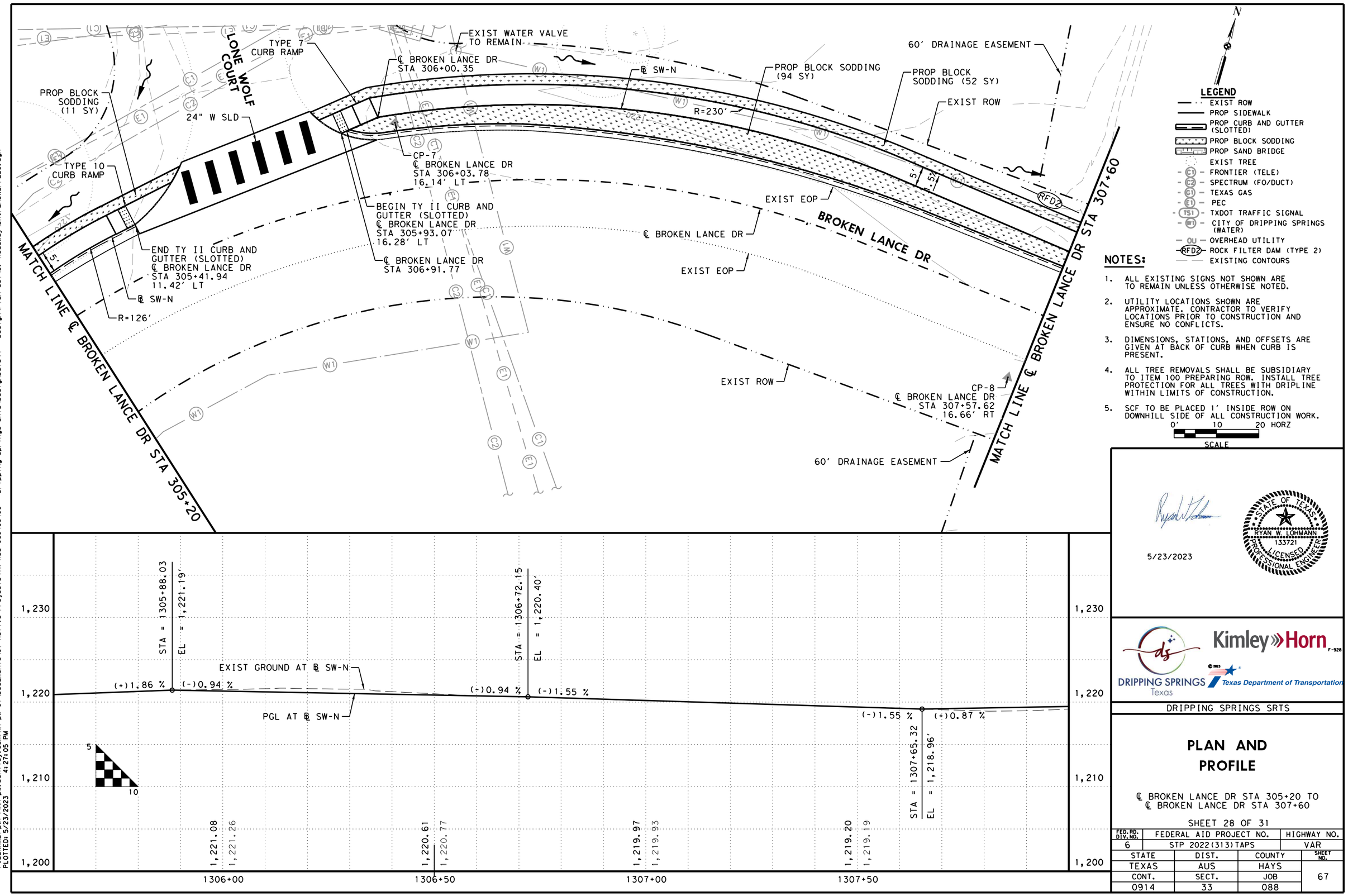
PLAN AND PROFILE

℄ BROKEN LANCE DR STA 302+80 TO
℄ BROKEN LANCE DR STA 305+20

SHEET 27 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	66
CONT.	SECT.	JOB	
0914	33	088	



NOTES:

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5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas
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DRIPPING SPRINGS SRTS

PLAN AND PROFILE

℄ BROKEN LANCE DR STA 305+20 TO
℄ BROKEN LANCE DR STA 307+60

SHEET 28 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	67
CONT.	SECT.	JOB	
0914	33	088	

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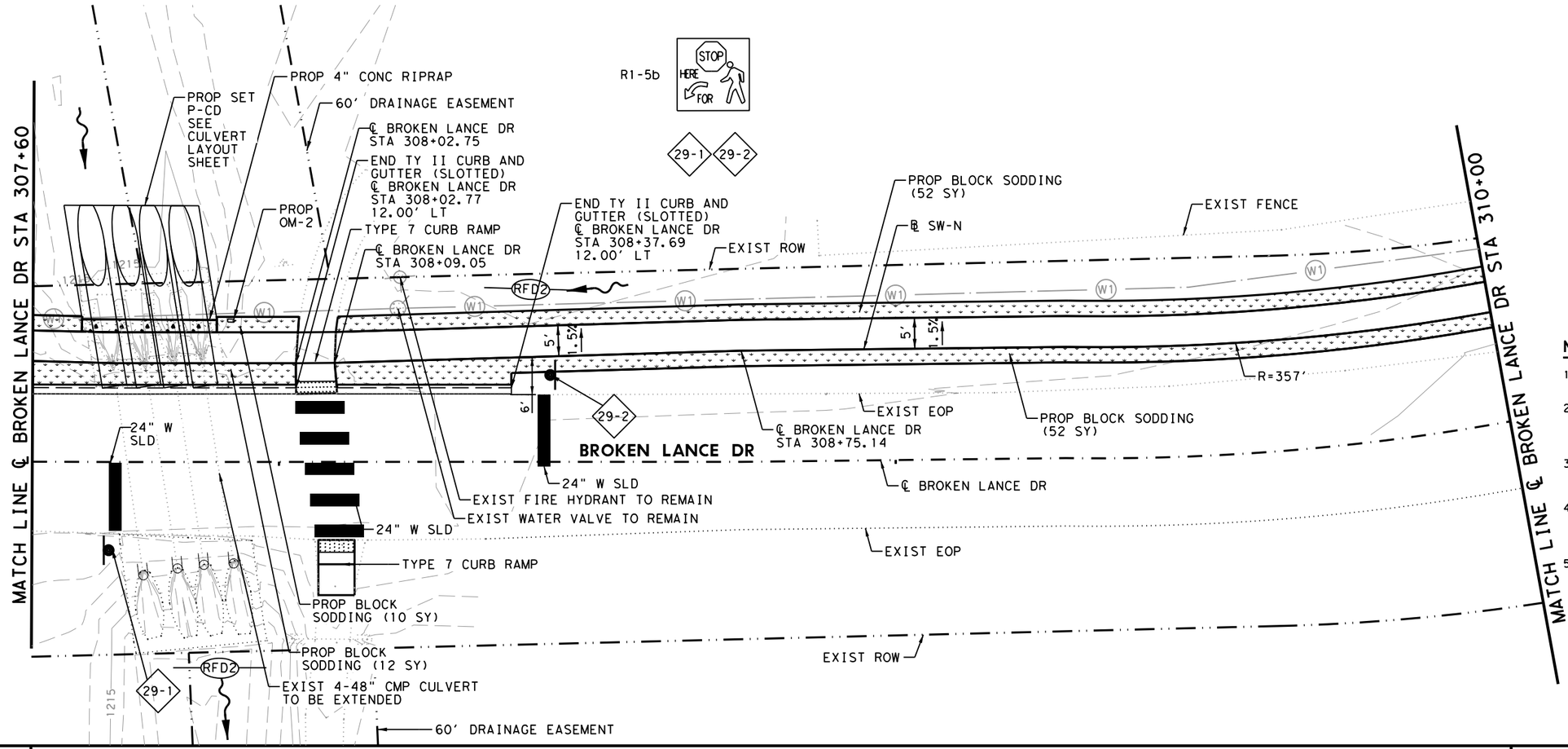

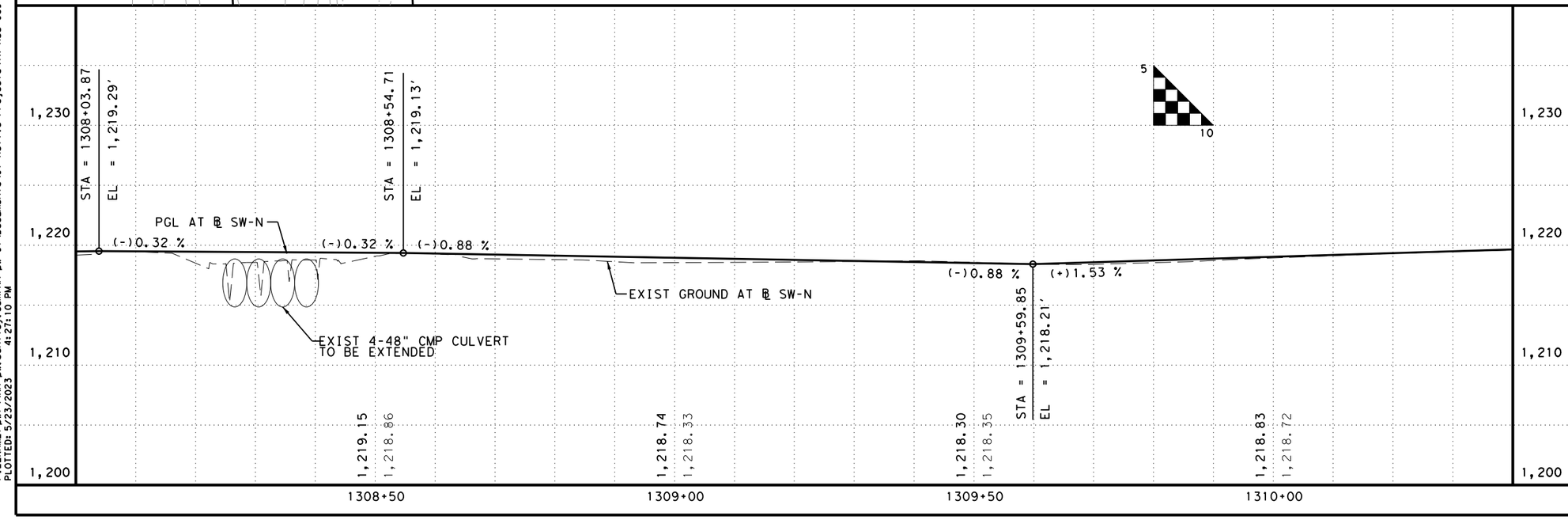

N

LEGEND

- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
- PROP BLOCK SODDING
- PROP SAND BRIDGE
- EXIST TREE
- C1 – FRONTIER (TELE)
- C2 – SPECTRUM (FO/DUCT)
- G1 – TEXAS GAS
- E1 – PEC
- TS1 – TXDOT TRAFFIC SIGNAL
- W1 – CITY OF DRIPPING SPRINGS (WATER)
- OU – OVERHEAD UTILITY
- RFD2 – ROCK FILTER DAM (TYPE 2)
- EXISTING CONTOURS

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5. SCF TO BE PLACED 1' INSIDE ROW ON DOWNHILL SIDE OF ALL CONSTRUCTION WORK.

0' 10 20 HORZ
SCALE

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

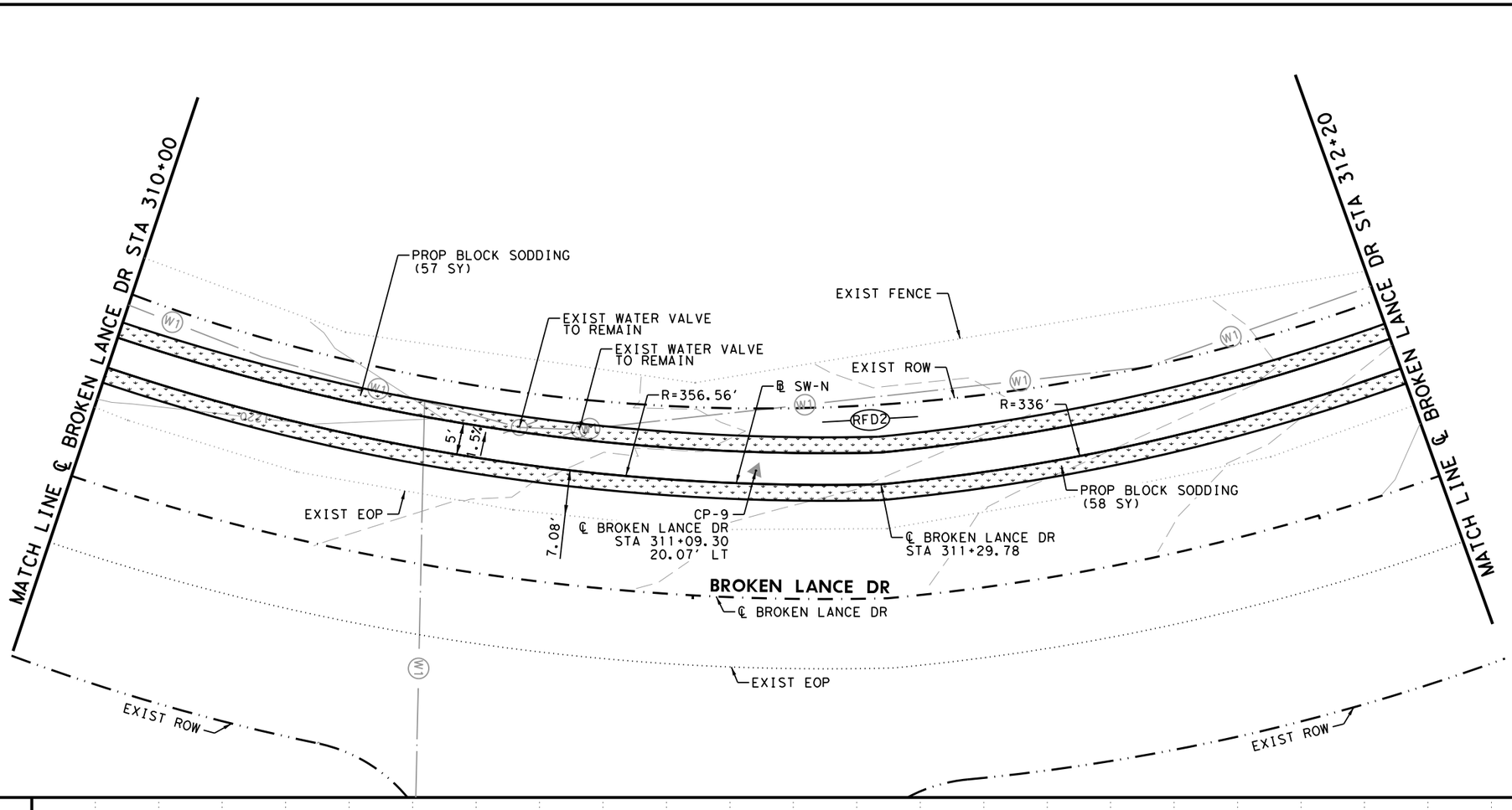
PLAN AND PROFILE

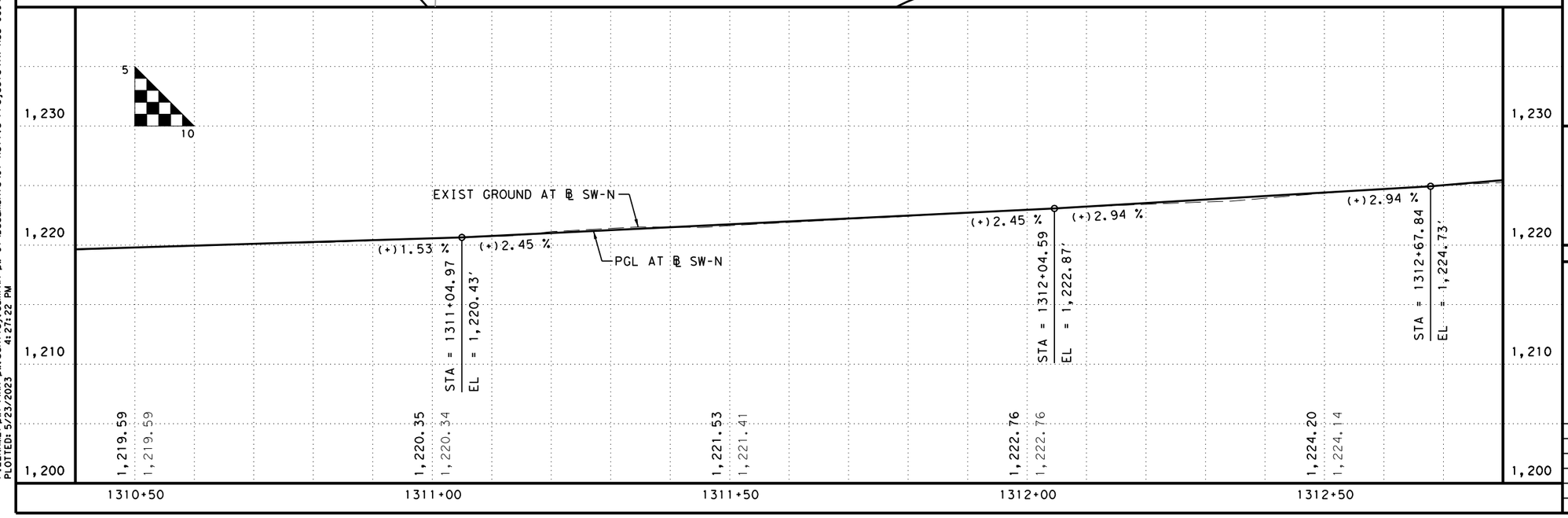
℄ BROKEN LANCE DR STA 307+60 TO ℄ BROKEN LANCE DR STA 310+00

SHEET 29 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	68
CONT.	SECT.	JOB	
0914	33	088	





N

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- EXIST ROW
- PROP SIDEWALK
- PROP CURB AND GUTTER (SLOTTED)
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- EXIST TREE
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SCALE

Ryan W. Lohmann

5/23/2023

STATE OF TEXAS
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PLAN AND PROFILE

℄ BROKEN LANCE DR STA 310+00 TO
℄ BROKEN LANCE DR STA 312+20

SHEET 30 OF 31

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	69
CONT.	SECT.	JOB	
0914	33	088	

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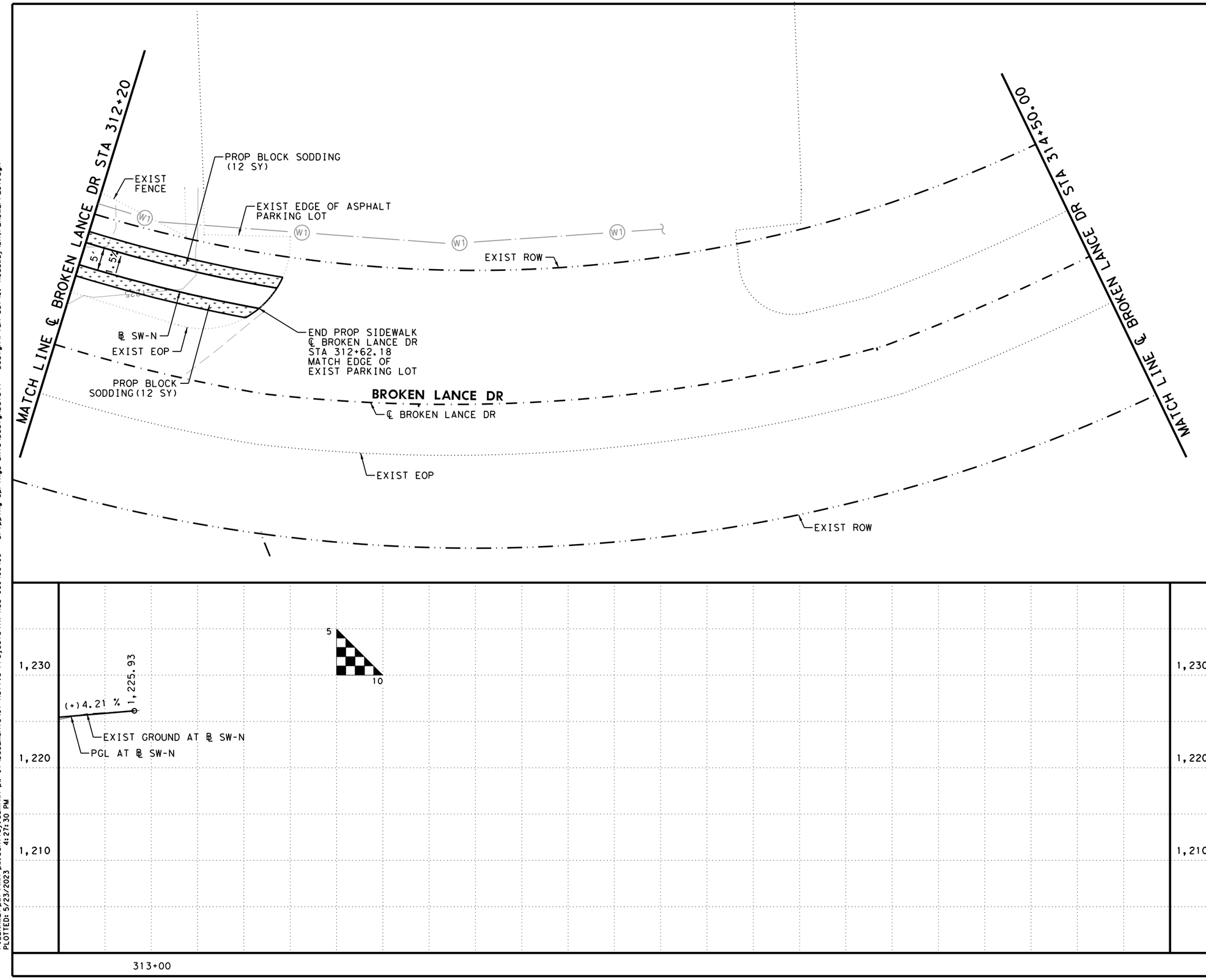

LEGEND

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- PROP SAND BRIDGE
- EXIST TREE
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SCALE

5/23/2023

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PLAN AND PROFILE

℄ BROKEN LANCE DR STA 312+20 TO
℄ BROKEN LANCE DR STA 314+50

SHEET 31 OF 31

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	70
CONT.	SECT.	JOB	
0914	33	088	

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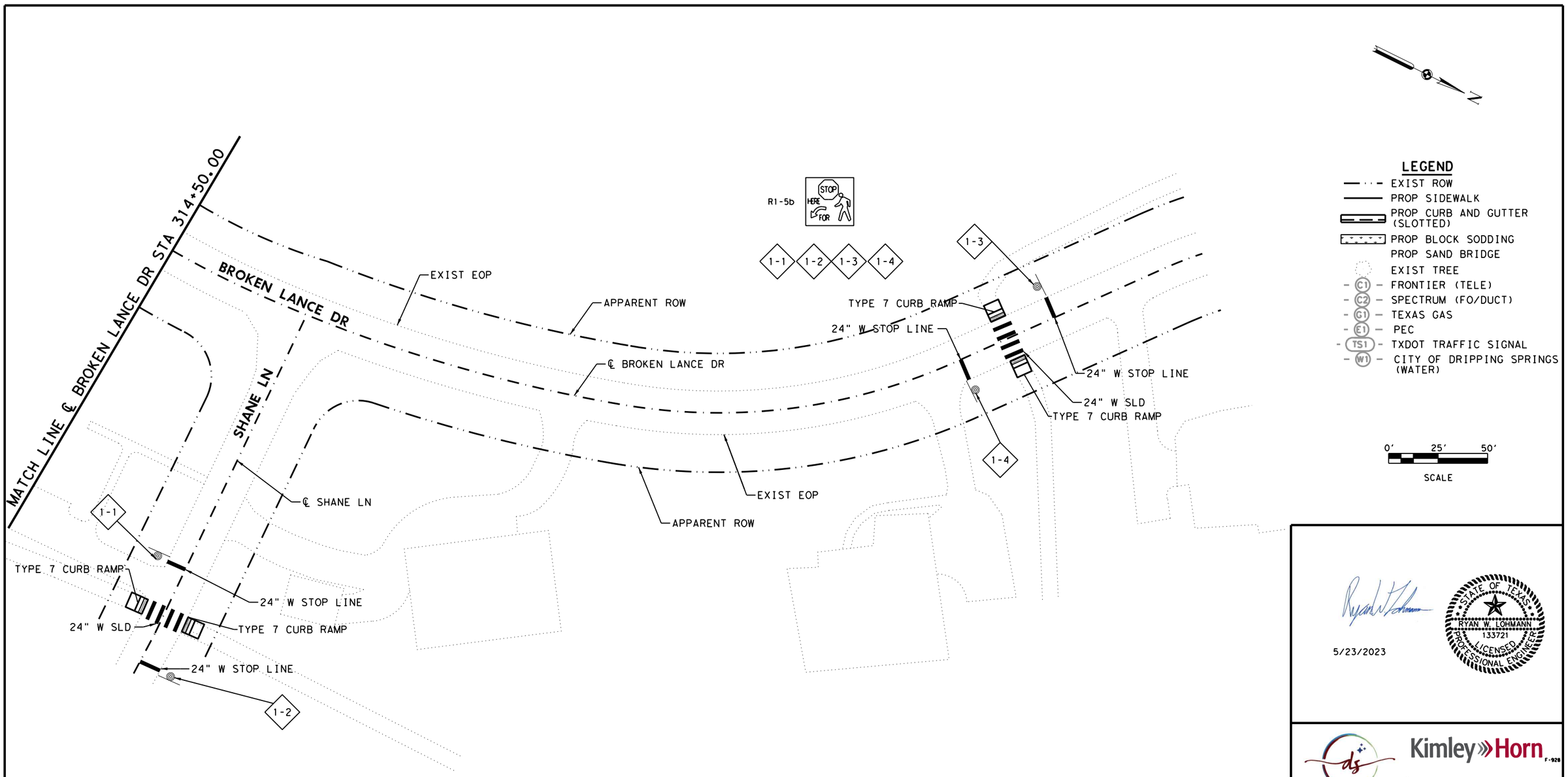

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5/23/2023

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STATE OF TEXAS

DRIPPING SPRINGS SRTS

ROADWAY PLAN

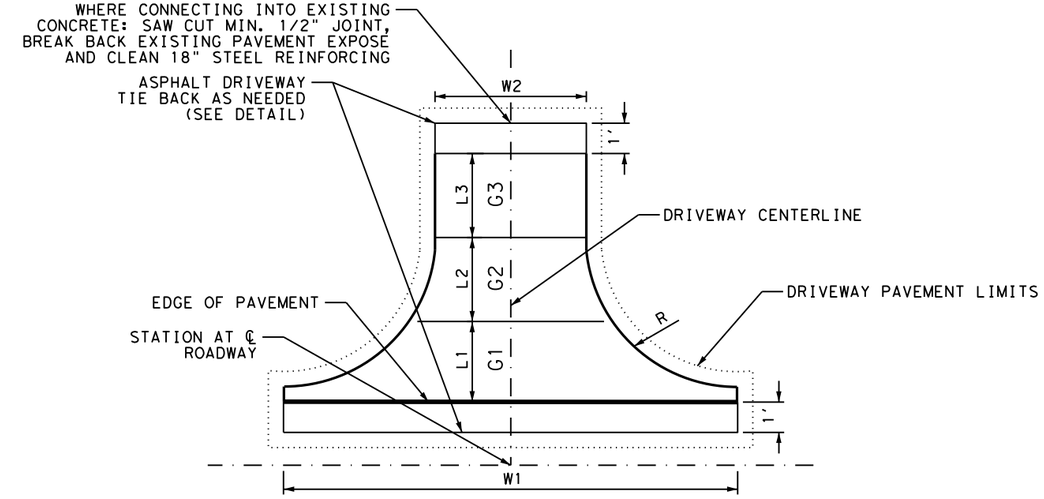
℄ BROKEN LANCE STA 314+50 TO
℄ BROKEN LANCE STA 320+00

SHEET 1 OF 1

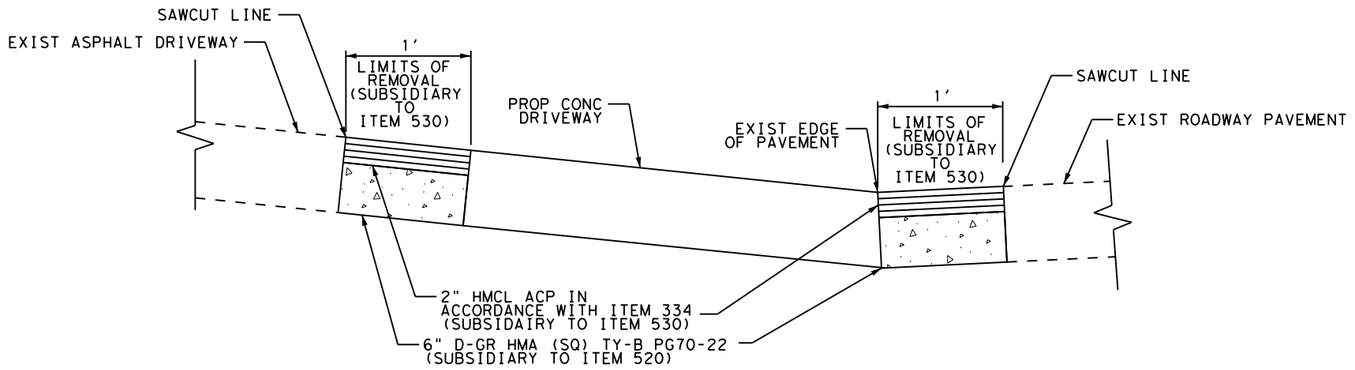
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	71
CONT.	SECT.	JOB	
0914	33	088	

	LOCATION		EXISTING DRIVEWAY TYPE	PROPOSED DRIVEWAY TYPE	L1 (FT)	G1 (%)	L2 (FT)	G2 (%)	L3 (FT)	G3 (%)	R (FT)	W1 (FT)	W2 (FT)	AREA (SY)
PEABODY PL	CL HWY 290	892+28.00	ASPH	ASPH	10.5	-5.00%	5.00	-1.50%	--	--	30	58.06	31.12	71.00
DW 5-2		896+17.00	ASPH	CONC	8.76	-8.00%	5.00	-1.50%	5.27	-12.00%	25/31	103.81	52.19	142.14
DW 8-1	CL OLD HWY 290	206+26.00	ASPH	CONC	6.82	-8.00%	5.00	-1.50%	--	--	25	72.71	32.71	64.21
DW 9-1		207+60.00	ASPH	CONC	7.07	-10.00%	5.00	-1.50%	4.25	-12.00%	25	71.85	26.31	76.67
DW 11-1		213+17.00	CONC	CONC	10.76	1.50%	2.94	6.00%	--	--	25	82.96	37.93	82.5
DW 12-1		214+42.00	BASE	CONC	6.33	-8.00%	5.00	-1.50%	0.35	-8.00%	10	45.34	24.68	40.59
DW 12-2		216+14.00	BASE	CONC	3.76	-12.00%	5.00	-1.50%	5.37	-12.00%	10	40.38	20.03	39.95
DW 13-1		217+89.00	BASE	CONC	5.28	-8.00%	5.00	-1.50%	3.93	-8.00%	10	32.66	12.25	27.71
DW 14-1		218+92.00	BASE	CONC	11.50	1.00%	--	--	--	--	10	34.24	13.98	25.86
DW 14-2		220+70.00	CONC	CONC	10.44	1.50%	1.00	8.00%	--	--	10	37.61	17.17	35.23
DW 15-1		221+50.00	BASE	CONC	11.08	1.50%	--	--	--	--	10	39.37	19.97	29.64
DW 15-2		222+66.00	ASPH	CONC	6.05	-6.00%	5.00	-1.50%	3.93	-8.00%	10	35.48	15.75	30.97
DW 16-1		225+18.00	ASPH	CONC	7.29	-6.00%	5.00	-1.50%	3.79	-8.00%	10	39.00	19.00	38.63
DW 17-1		227+28.00	BASE	CONC	5.50	-1.50%	2.50	-12.00%	--	--	10	36.63	17.21	24.67
DW 19-1	CL ROGER HANKS PKWY	2+52.00	ASPH	CONC	8.61	12.00%	10.00	1.50%	6.49	12.00%	20	65.45	22.00	87.95
DW 23-1		12+82.00	ASPH	CONC	9.90	-12.00%	8.00	-1.50%	2.60	-9.00%	20	72.94	33.00	104.85
DW 25-1		16+25.00	ASPH	CONC	10.06	-4.00%	10.00	-1.50%	--	--	20	71.00	31.10	94.79
DW 26-1	CL BROKEN LANCE DR	301+67.00	CONC	CONC	1.51	8.00%	5.00	1.50%	7.01		25/60	42.32	27.22	48.54
DW 27-1		305+00.00	CONC	CONC	0.98	12.00%	4.00	1.50%	3.76	12.00%	10	33.50	15.66	22.60
LONE WOLF CT		305+78.00	ASPH	ASPH	10	1.50%	2.08	6.00%	--	--	30/40	60.42	32.56	60.68

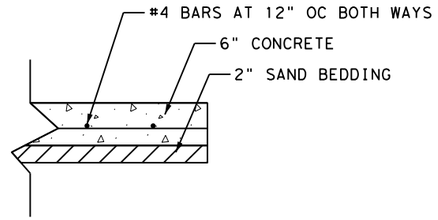


TYPICAL PLAN VIEW

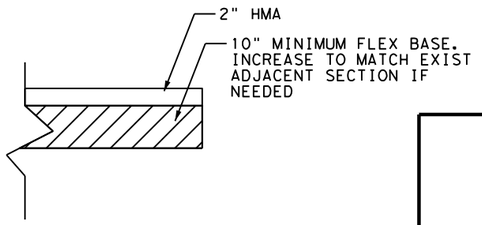


ASPHALT DRIVEWAY TIE IN DETAIL

NTS



CONCRETE DRIVEWAY PAVEMENT SECTION



ASPHALT INTERSECTION PAVEMENT SECTION

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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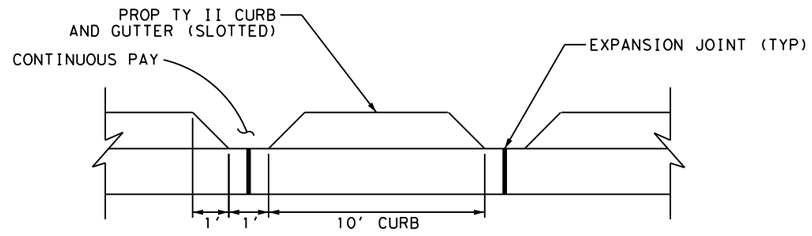
DRIPPING SPRINGS SRTS

DRIVEWAY DETAILS

SHEET 1 OF 1

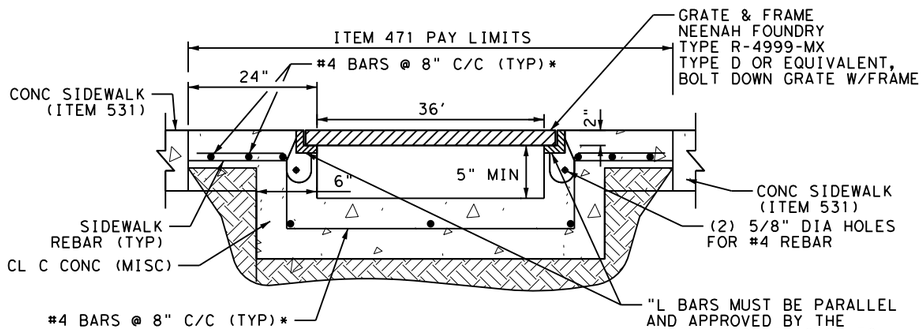
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	72
CONT.	SECT.	JOB	
0914	33	088	

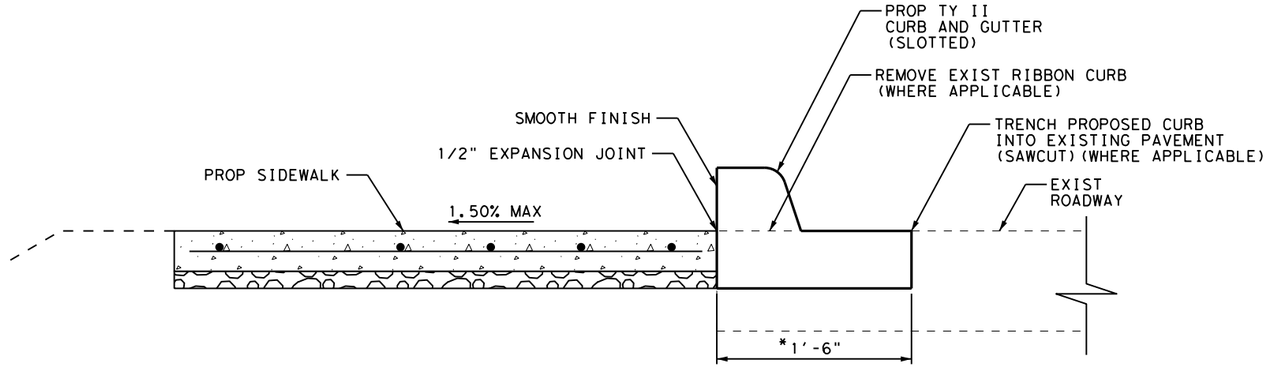


ITEM 529-6012 CONCRETE CURB (SLOTTED)
ITEM 529-6021 CONCRETE CURB AND GUTTER (SLOTTED)

SLOTTED CURB DETAIL

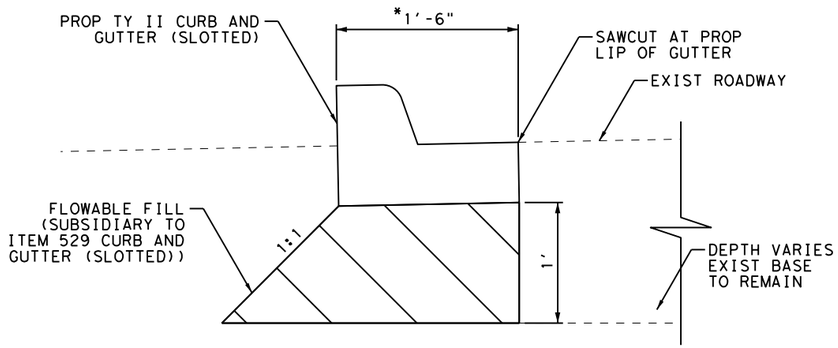


GRATE & FRAME DETAIL
N.T.S.



SIDEWALK WITH CURB AND GUTTER (SLOTTED)

* 1'-6" USUAL, MAY VARY IN SOME LOCATIONS WHERE NEEDED TO FILL GAP TO EXIST EDGE OF PAVEMENT.



CURB AND GUTTER (SLOTTED)

* 1'-6" USUAL, MAY VARY IN SOME LOCATIONS WHERE NEEDED TO FILL GAP TO EXIST EDGE OF PAVEMENT.

NOTES:

1. SEE PLANS FOR LOCATION OF TY II CURB AND GUTTER (SLOTTED).

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

MISCELLANEOUS DETAILS

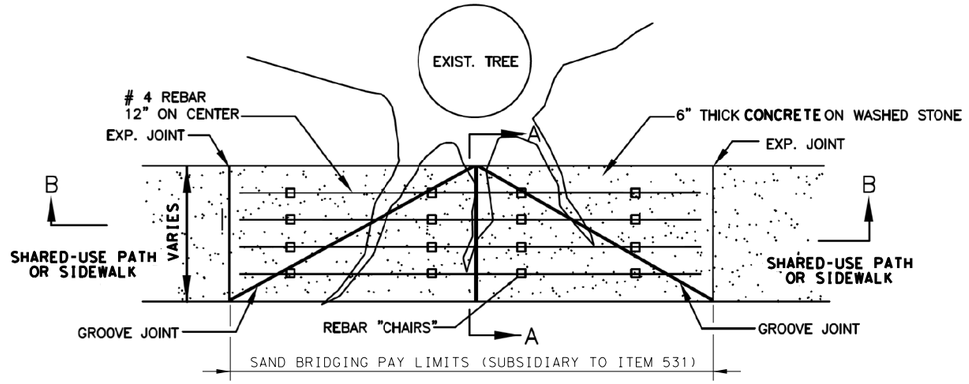
SHEET 1 OF 3

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

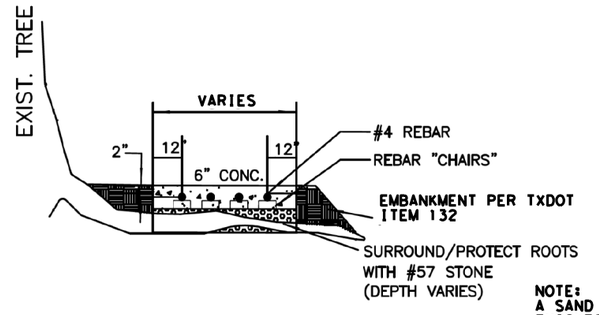
STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	73
CONT.	SECT.	JOB	
0914	33	088	

SAND BRIDGE DETAIL

N. T. S.

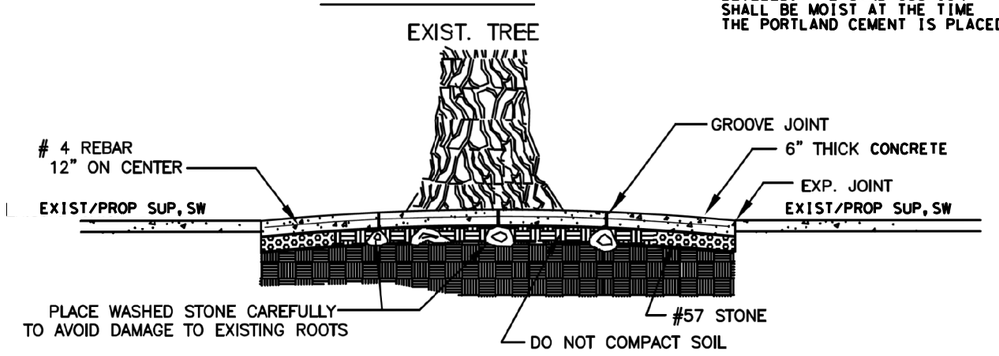


PLAN VIEW



NOTE:
A SAND CUSHION OF A MINIMUM THICKESS OF 2 INCHES (50 MM) OVER THE ROOTS, COMPOSED OF COARSE SAND, SHALL BE SPREAD, WETTED THOROUGHLY, TAMPED AND LEVELED. THE SAND CUSHION SHALL BE MOIST AT THE TIME THE PORTLAND CEMENT IS PLACED.

SECTION A–A



SECTION B–B

THIS DETAIL FOR BRIDGING TREE ROOTS

6/19/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

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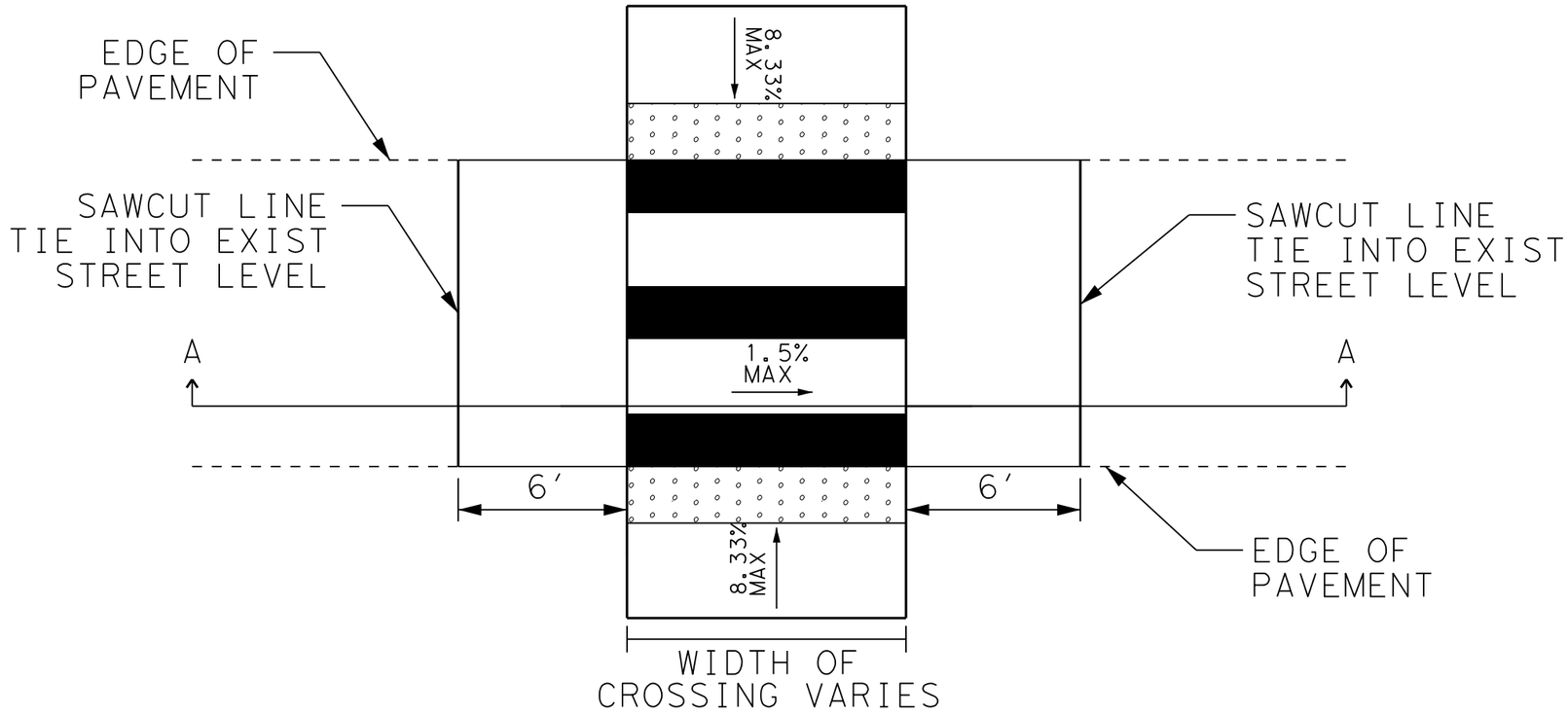
DRIPPING SPRINGS SRTS

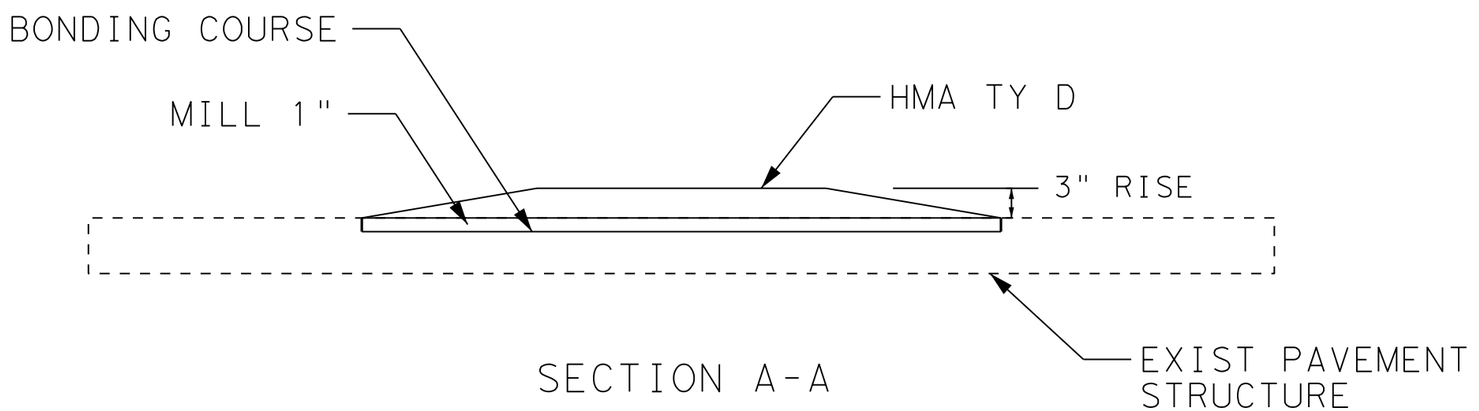
MISCELLANEOUS DETAILS

SHEET 2 OF 3

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	74
CONT.	SECT.	JOB	
0914	33	088	





SECTION A-A

RAISED CROSSING DESIGN

N.T.S.

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

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Texas Department of Transportation

DRIPPING SPRINGS SRTS

MISCELLANEOUS DETAILS

SHEET 3 OF 3

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	75
CONT.	SECT.	JOB	
0914	33	088	

ASSET DESCRIPTION	ROADWAY	LIMITS	
		FROM	TO
Shared Use Path/ Sidewalk	US 290	2248415.4539, 13985993.0025	2249233.0278, 13985528.5852
Pedestrian Ramps	US 290	2248415.4539, 13985993.0025	2249233.0278, 13985528.5852
Pedestrian Rail	US 290	2248415.4539, 13985993.0025	2249233.0278, 13985528.5852

Note: The asset locations specified in the tables are provided in GPS grid coordinates.

The City of Dripping Springs accepts the fixed responsibility to maintain, control, supervise, and regulate the above on State highway ROW through its corporate limits Code.

This document is per Chapter 311 of the Texas Transportation Code supplemental to the existing Municipal Maintenance Agreement (MMA) with the City of Dripping Springs.

This document does not relieve the City of Dripping Springs from their responsibility to maintain all roads within their city limits as stated in the MMA.

Executed on behalf of the City by: _____ Date: 05/23/2023

DATE: 5/22/2023 5:45:59 PM
FILE: c:\pw\khi\d0213946\AUS ASSET MAINT TEMPLATE.DGN

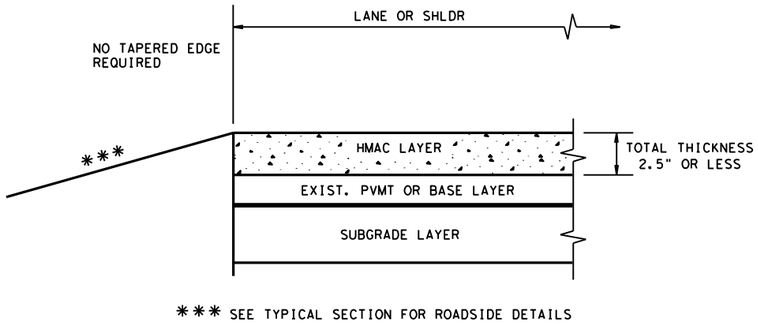
Austin District
Maintenance Office

Texas Department of Transportation

US 290
ASSET MAINTENANCE

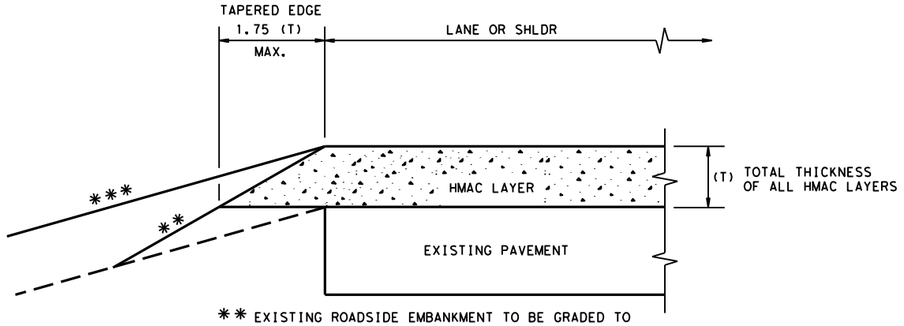
SHEET 1 OF 1

© 2023		CONT	SECT	JOB	HIGHWAY
DS:	CK:	0914	33	088	VAR
DN:	CK:	DIST	COUNTY		SHEET NO.
		AUS	HAYS		76



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

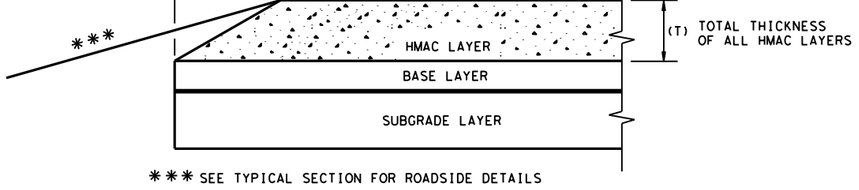
CONDITION - 1
THIN HMAC SURFACES OR HMAC OVERLAY WITH THICKNESS OF 2.5" OR LESS



** 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.

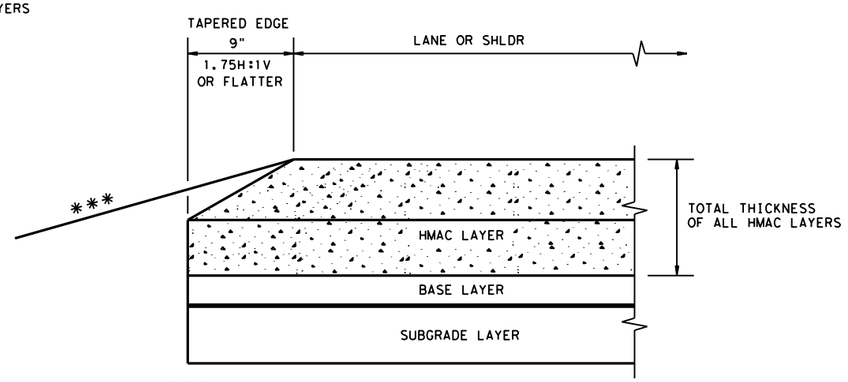
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

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

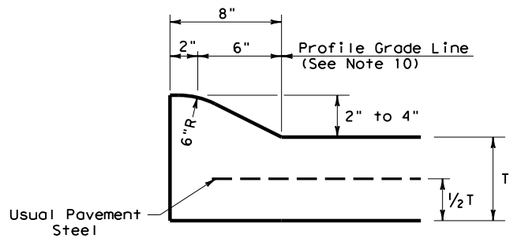
Design Division Standard

TAPERED EDGE DETAILS HMAC PAVEMENT

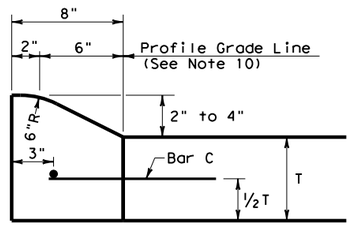
TE(HMAC)-11

FILE: tehmac11.dgn		DN: TxDOT	CK: RL	DW: KB		CK:	
©TxDOT January 2011		CONT	SECT	JOB		HIGHWAY	
REVISIONS		0914	33	088		VAR	
		DIST	COUNTY			SHEET NO.	
		AUS	HAYS			77	

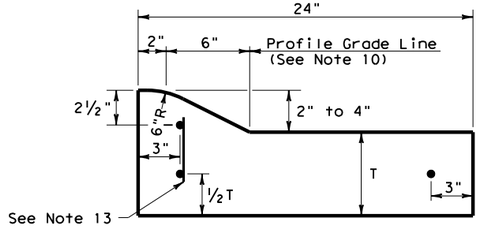
DATE: 5/22/2023
FILE: c:\pw\khl\d0213952\tehmac11.dgn



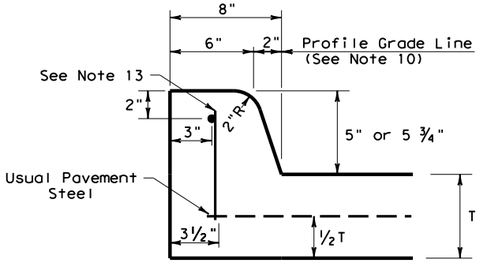
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



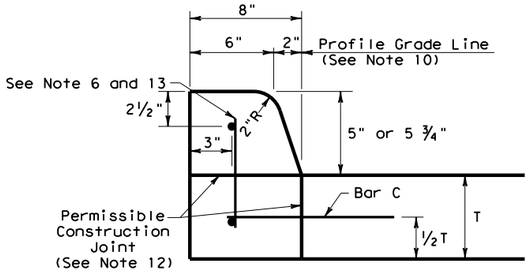
TYPE I CURB
2" - 4" HEIGHT



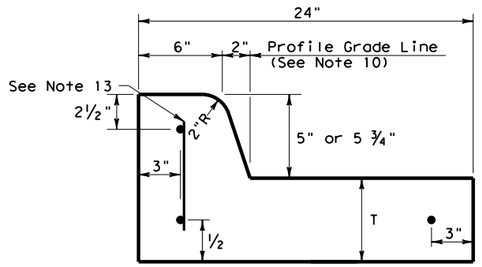
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



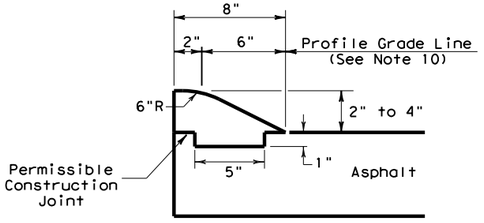
TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



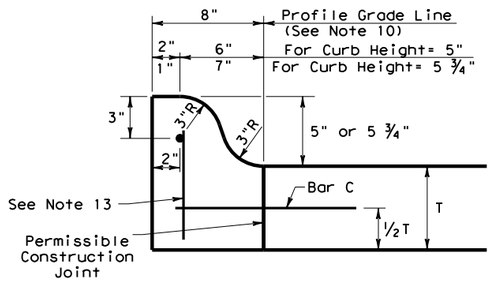
TYPE II CURB
5" - 5 ¾" HEIGHT



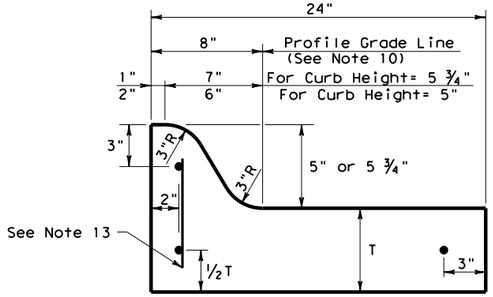
TYPE II CURB AND GUTTER
5" - 5 ¾" HEIGHT



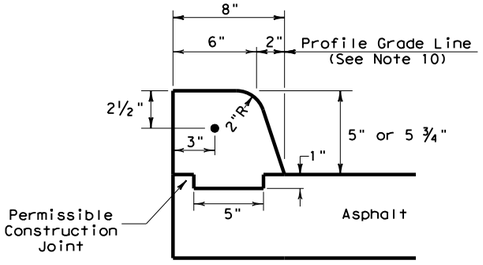
TYPE III CURB (KEYED)
2" - 4" HEIGHT



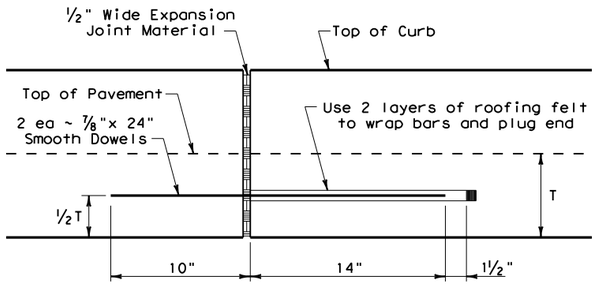
TYPE IIa CURB
5" - 5 ¾" HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT

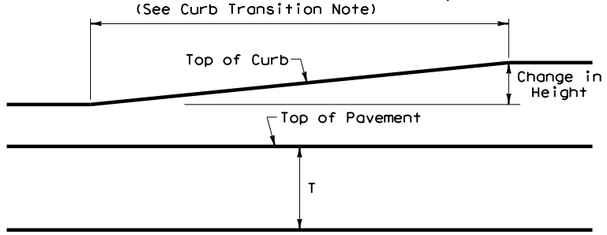


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



EXPANSION JOINT DETAIL

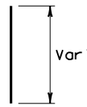
CURB TRANSITION NOTE:
Field conditions may require a longer or shorter transition, and shall be shown elsewhere in the plans, or as directed by the Engineer.



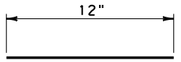
CURB TRANSITION
Note: To be paid for as Highest Curb

GENERAL NOTES

1. All materials and construction shall be in accordance with Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
2. Concrete shall be Class A.
3. When reinforcing bars are used, they shall be No.4 unless otherwise shown. The use of fiber reinforced concrete in lieu of reinforcing steel is acceptable. Use fibers meeting the requirements of DMS 4550, "Fibers for Concrete," and dose fibers in accordance with Material Producers List (MPL) "Fibers for Class A and B Concrete Applications."
4. Round exposed sharp edges with a rounding tool, to a minimum radius of ¼ inch.
5. All existing curbs and driveways to be removed shall be sawed or removed at existing joints.
6. Where concrete curb is to be placed on existing concrete pavement, Bar B may be drilled and grouted in place, or may be inserted into fresh concrete.
7. Expansion and contraction joints shall be constructed to match pavement joints in all curbs and curb and gutter adjacent to jointed concrete pavement. Where placement of curb or curb and gutter is not adjacent to concrete pavement, expansion joints shall be provided at structures, curb returns at streets, and at locations directed by The Engineer.
8. Vertical and horizontal dowel bars and transverse reinforcing bars shall be placed at four feet C~C.
9. Dimension 'T' shown is the thickness of concrete pavement. When curb is installed adjacent to flexible pavement dimension 'T' is 8" maximum.
10. Usual profile grade line. Refer to typical sections and plan-profile sheets for exact locations.
11. One-half inch expansion joint material shall be provided where curb or curb and gutter is adjacent to sidewalk or riprap.
12. When horizontal permissible construction joints are used, the longitudinal pavement steel shall be placed in accordance with pavement details shown elsewhere in the plans. Reinforcing steel for curb section shall then conform to that required for concrete curb.
13. Bar B placement as needed (typically at four ft. C-C) to support curb reinforcing steel during concrete placement.



BAR B



BAR C

Texas Department of Transportation

Design Division Standard

CONCRETE CURB AND CURB AND GUTTER

CCCG-22

FILE: cccg21.dgn	DN: TXDOT	CK: AN	DW: CS	CK: KM
© TxDOT: JUNE 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		78

DATE: 5/22/2023
FILE: c:\pw\khl\d0213952\cccg22 (2).dgn

DATE: 5/22/2023
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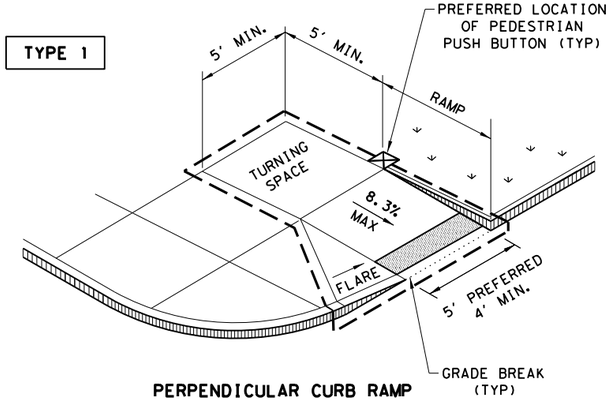
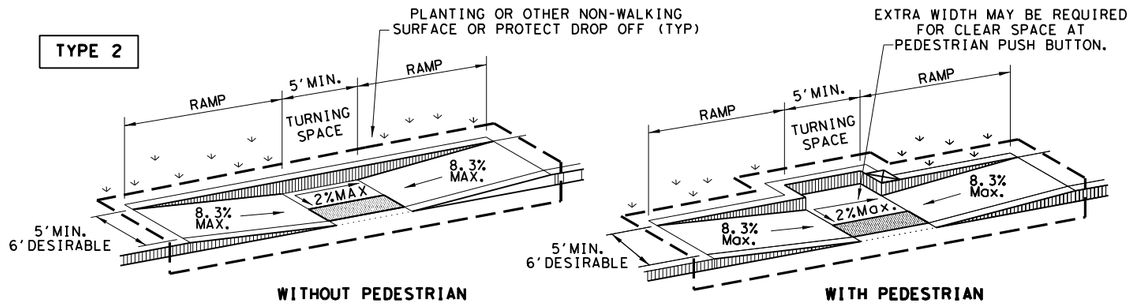


PERPENDICULAR CURB RAMP

TYPE 2

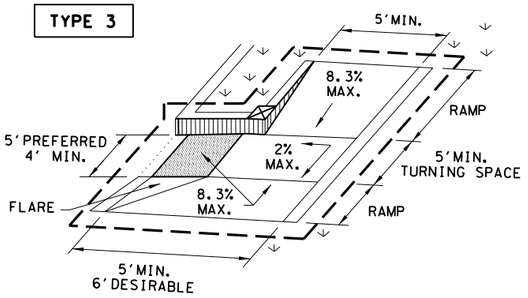


WITHOUT PEDESTRIAN PUSH BUTTON

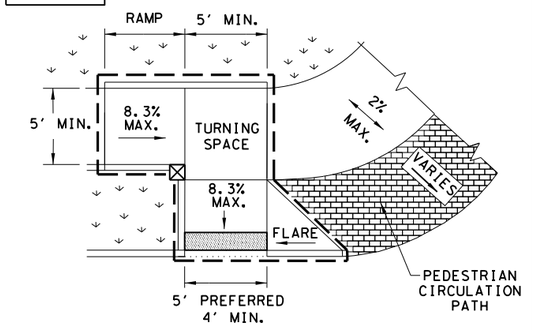
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

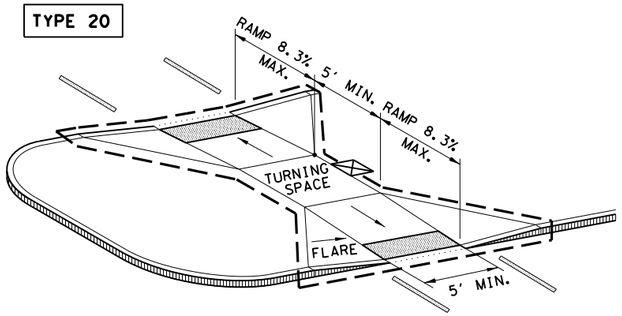


TYPE 6



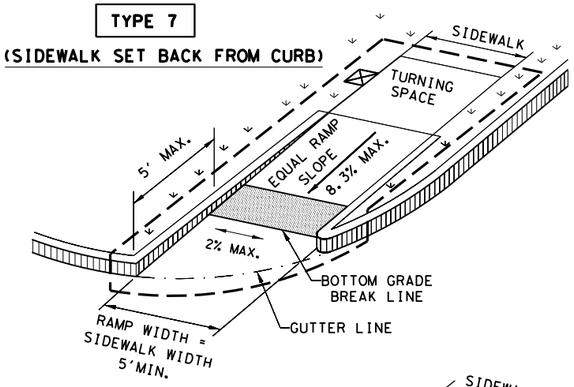
COMBINATION CURB RAMPS

TYPE 20

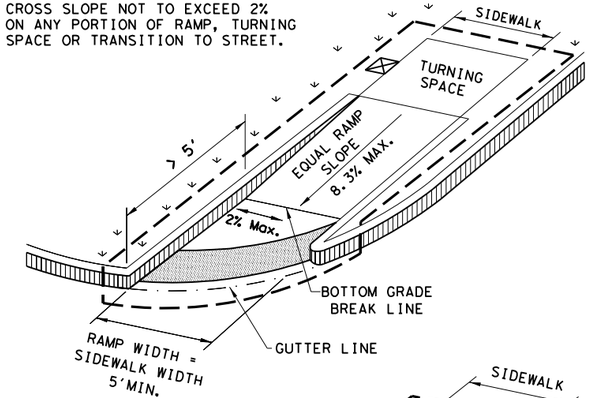


CURB RAMPS AT MEDIAN ISLANDS

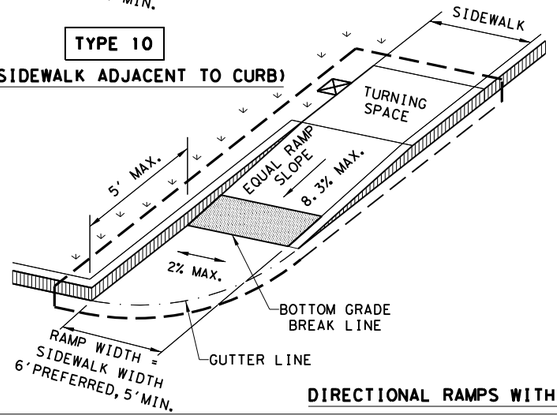
TYPE 7
(SIDEWALK SET BACK FROM CURB)



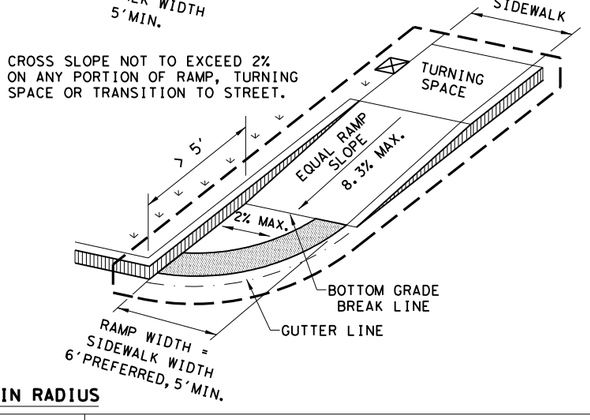
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)

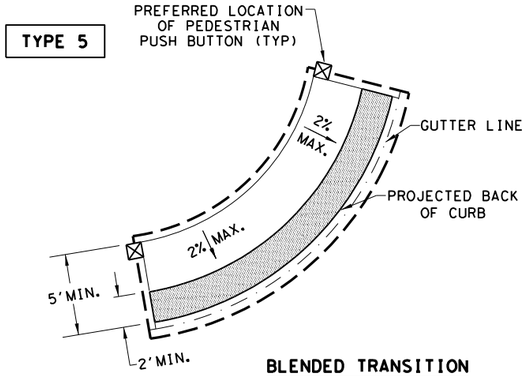


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

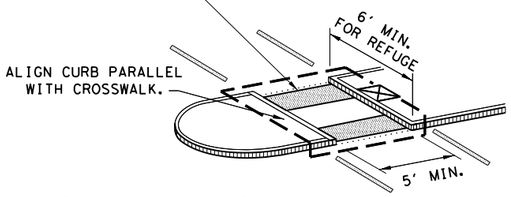
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

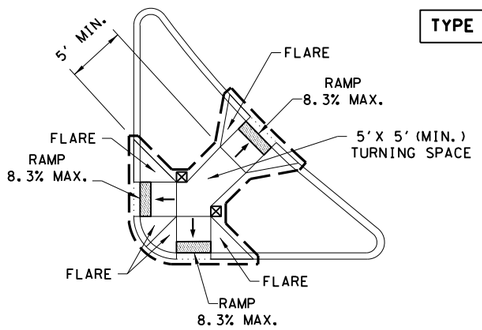
TYPE 21

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.



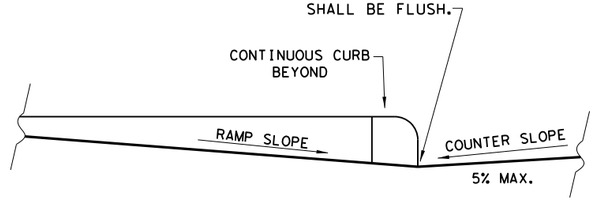
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

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	0914	33	088	VAR
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012	AUS	HAYS		79
REVISED 01,2018				

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

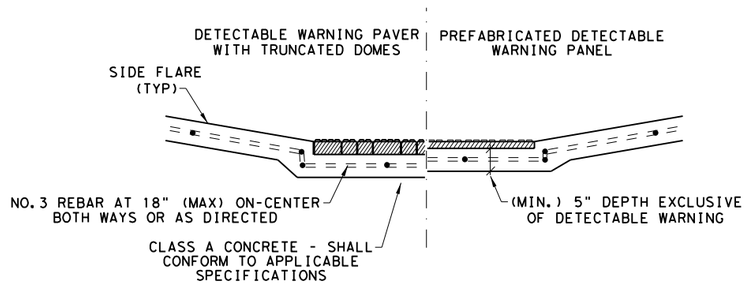
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material 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.

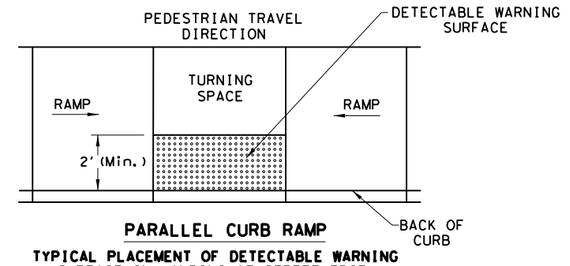
SIDEWALKS

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.

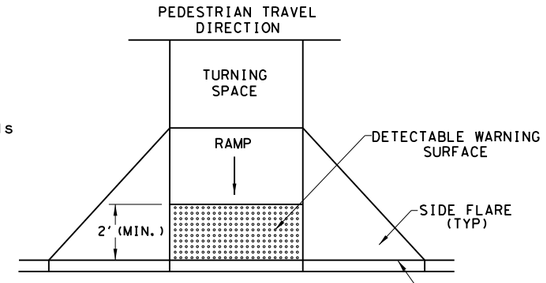


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

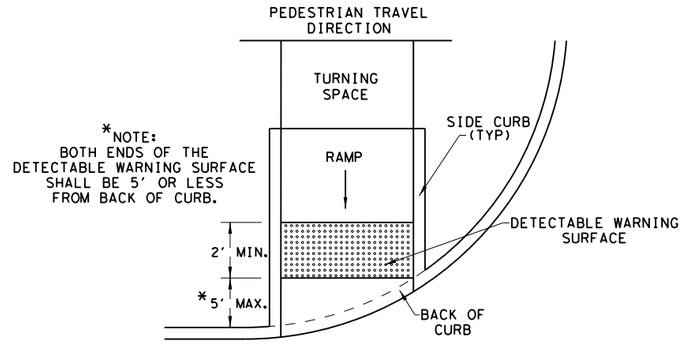
DETECTABLE WARNING SURFACE DETAILS



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

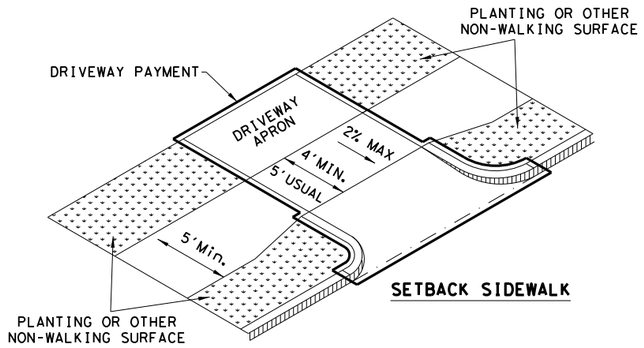
PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0914	33	088		VAR
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	AUS	HAYS			80

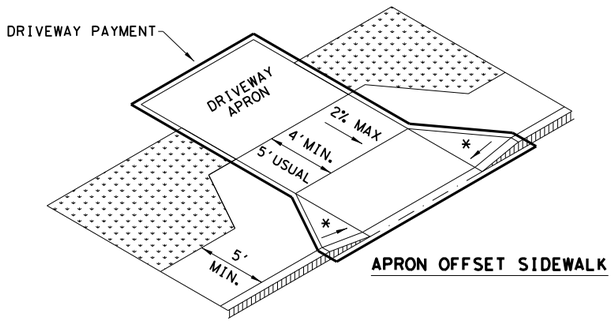
DATE: 5/22/2023
FILE: c:\pw\kni\d0213952\ped18.dgn

DATE: 5/22/2023
FILE: c:\pw\khl\d0213952\ped18.dgn

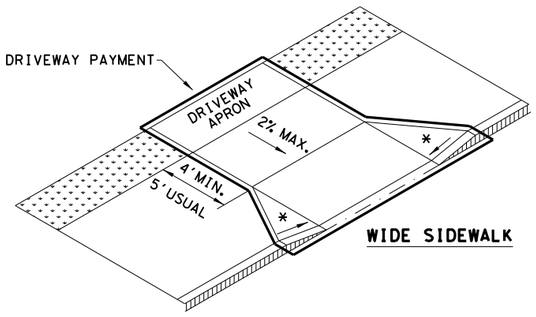
SIDEWALK TREATMENT AT DRIVEWAYS



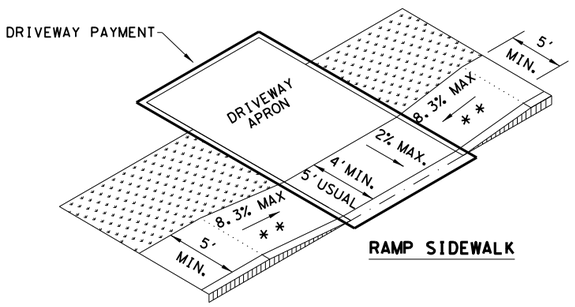
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

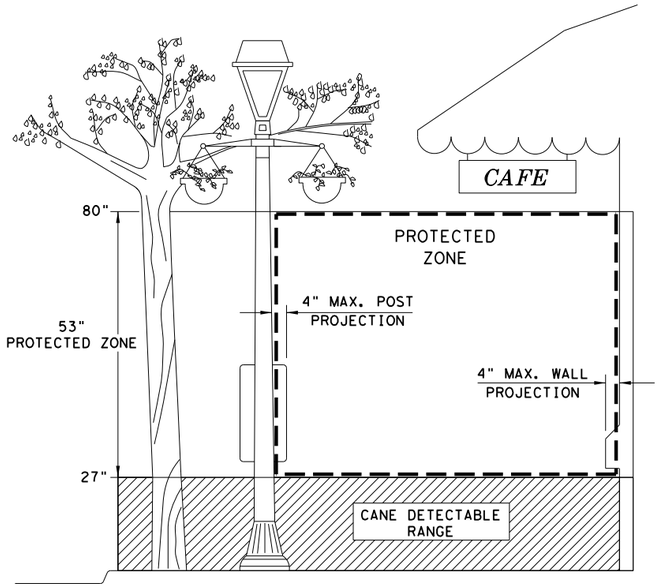


RAMP SIDEWALK

NOTES:

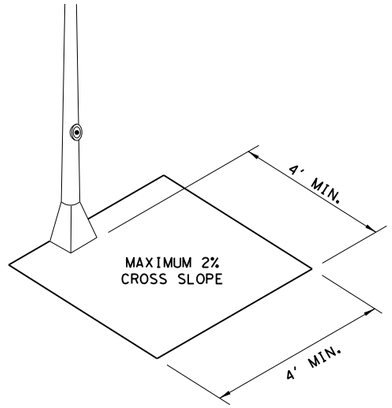
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

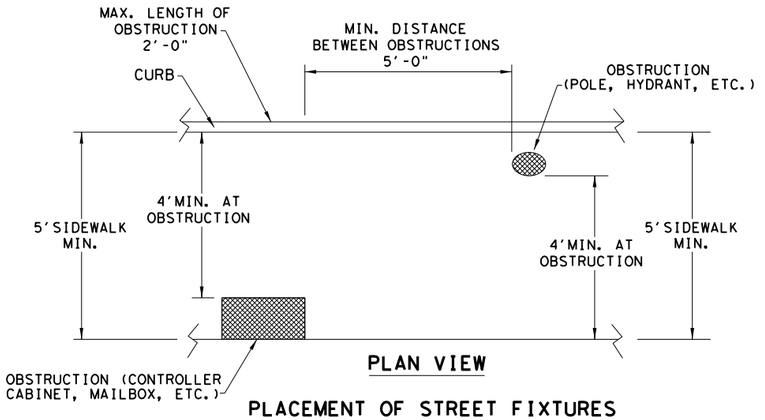


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



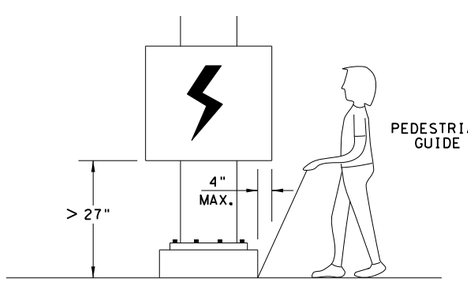
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



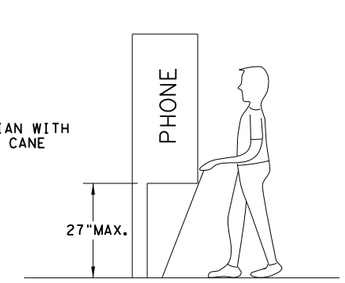
PLAN VIEW

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

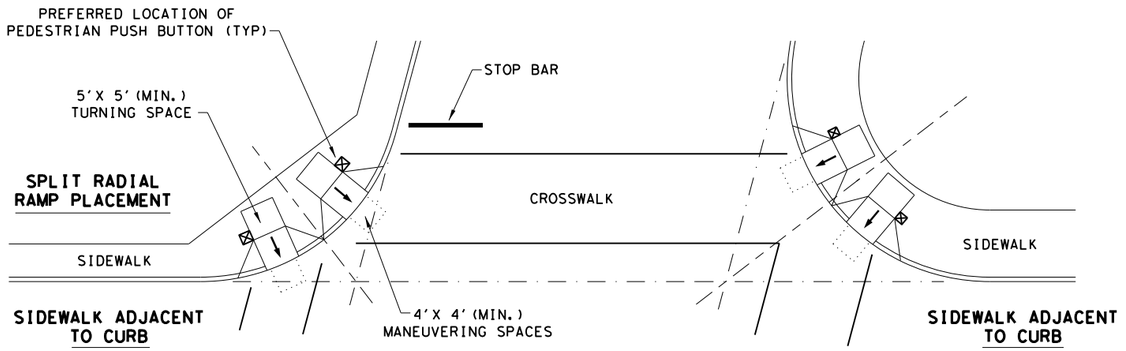
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	AUS	HAYS		81

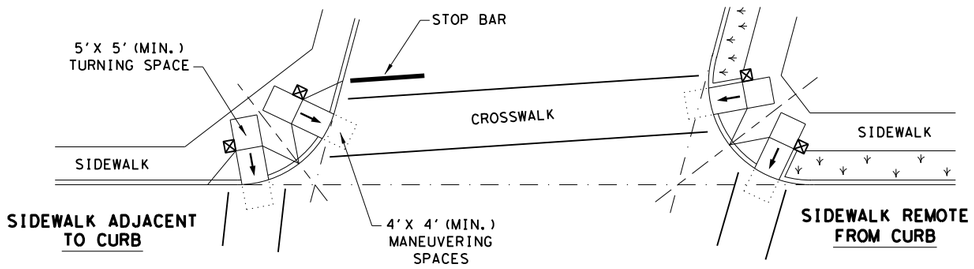
DATE: 5/22/2023
FILE: c:\pw\kn1\d0213952\ped18.dgn

TYPICAL CROSSING LAYOUTS

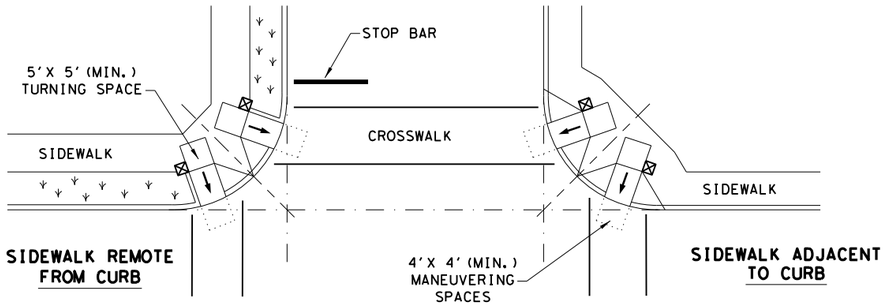
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



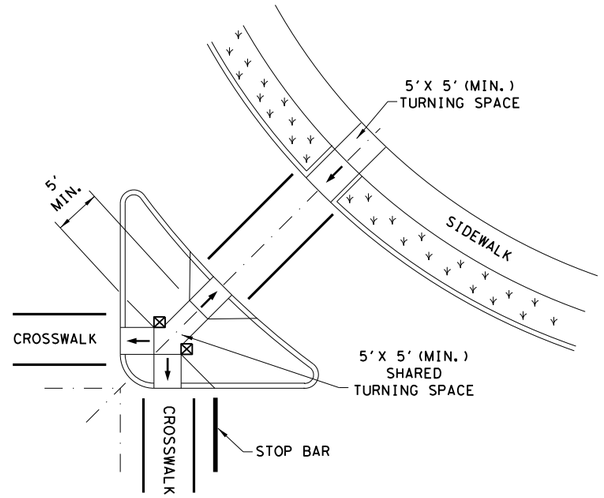
SKEWED INTERSECTION WITH "LARGE" RADIUS



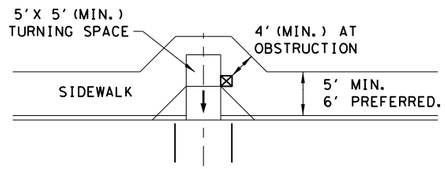
SKEWED INTERSECTION WITH "SMALL" RADIUS

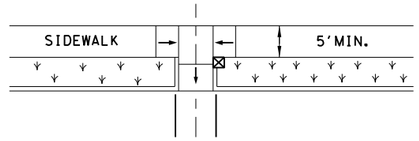


NORMAL INTERSECTION WITH "SMALL" RADIUS



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.

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
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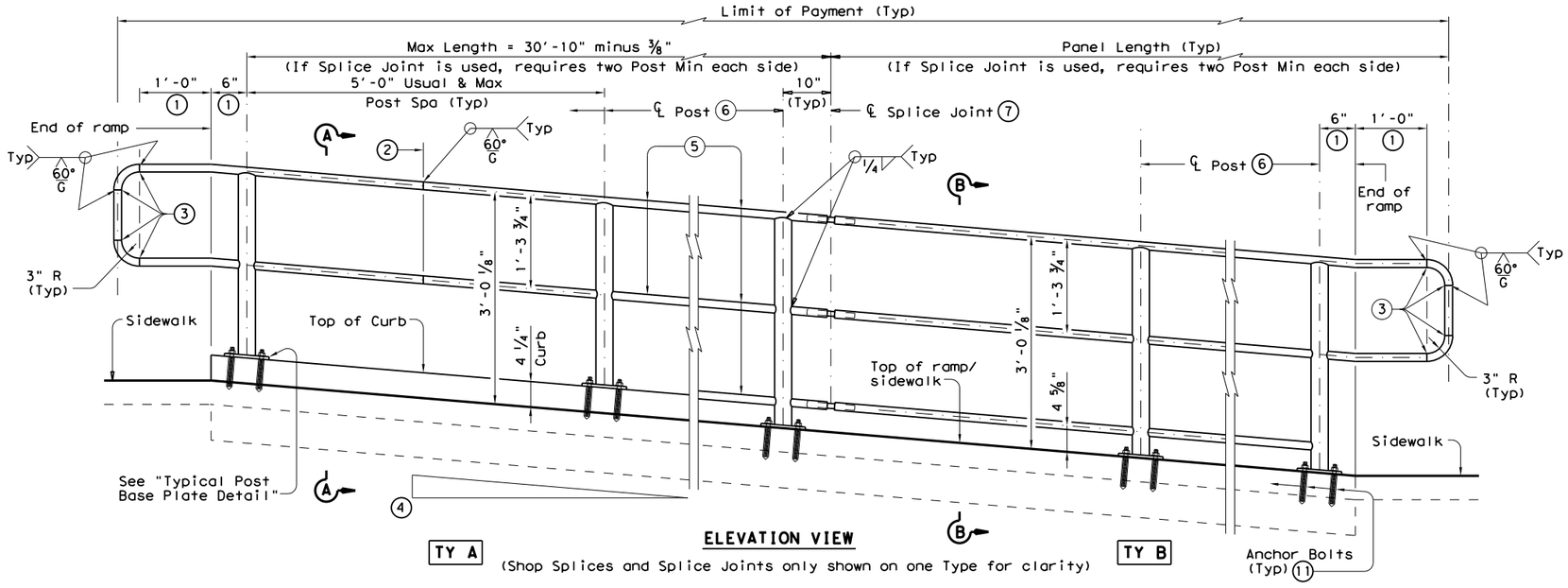
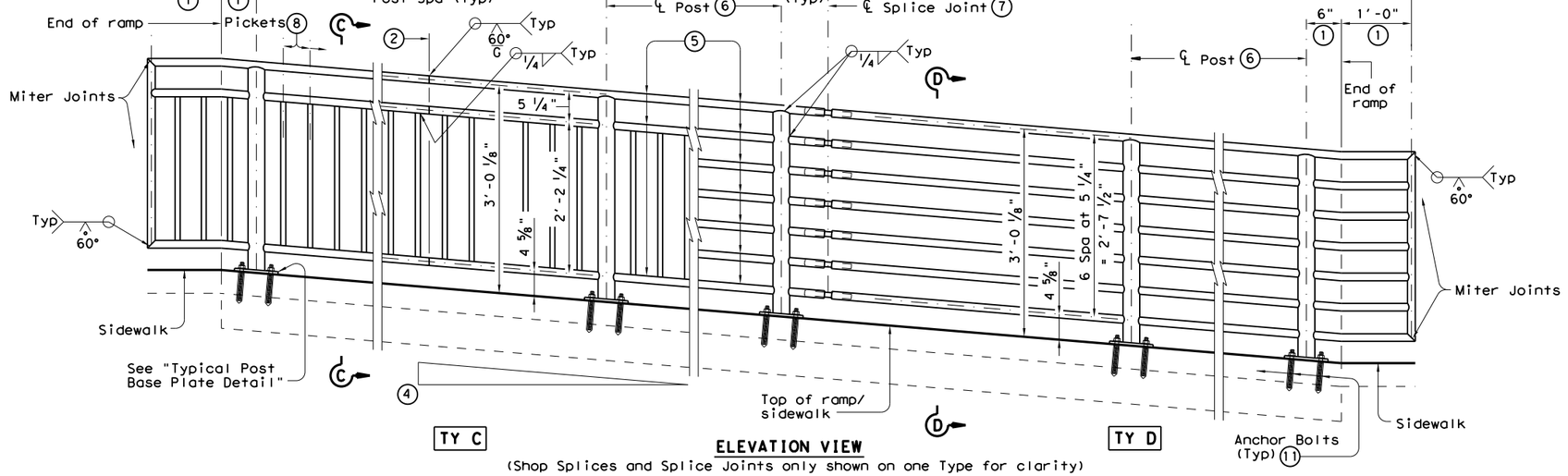
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	AUS	HAYS		82



ELEVATION VIEW

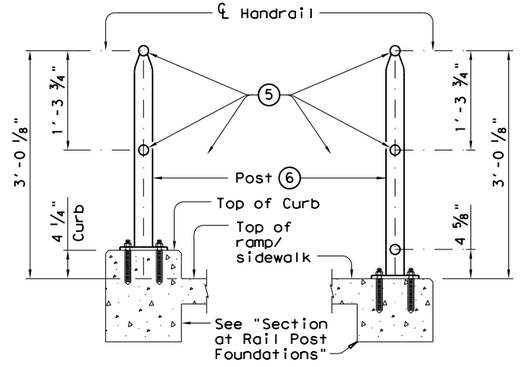
(Shop Splices and Splice Joints only shown on one Type for clarity)



ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

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

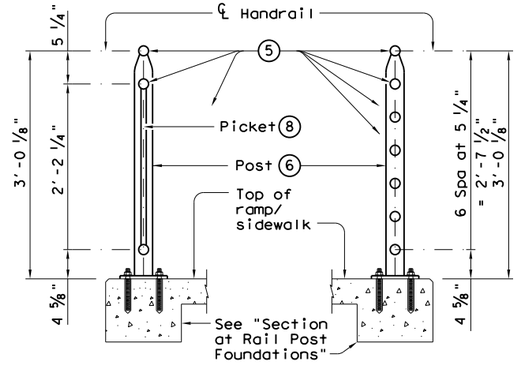


SECTION A-A

(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

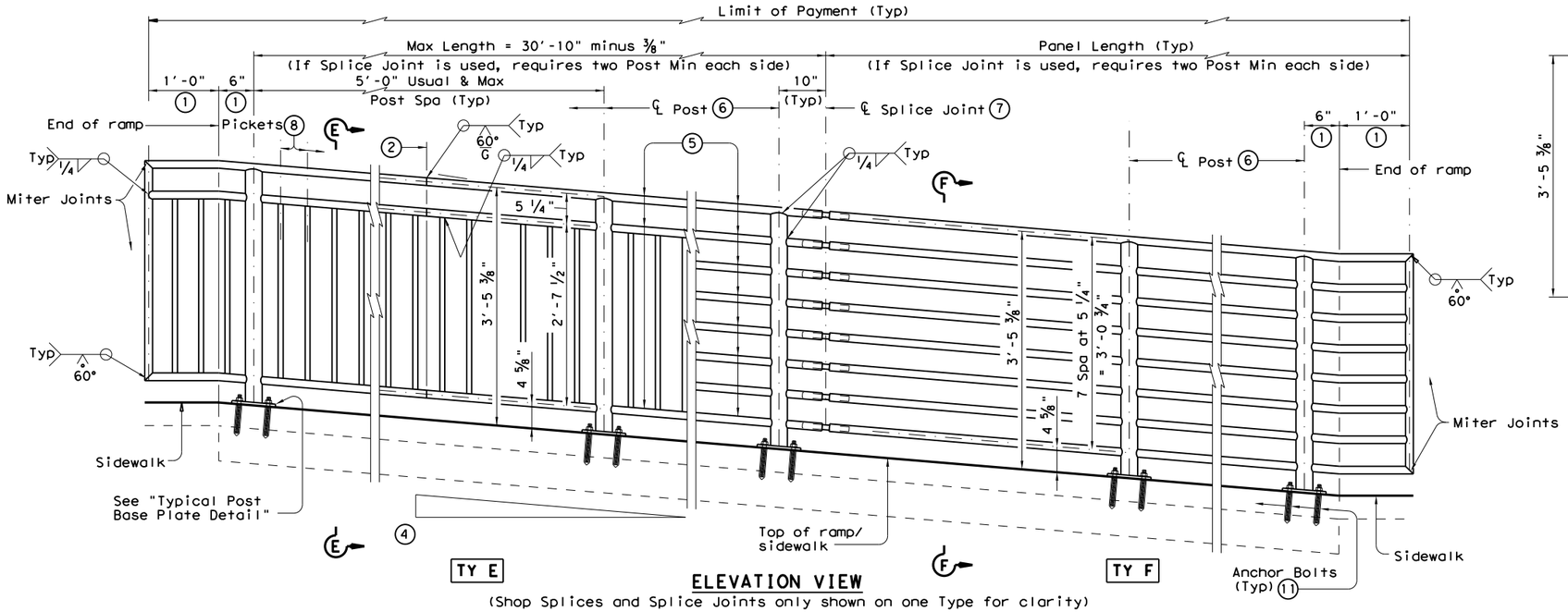
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

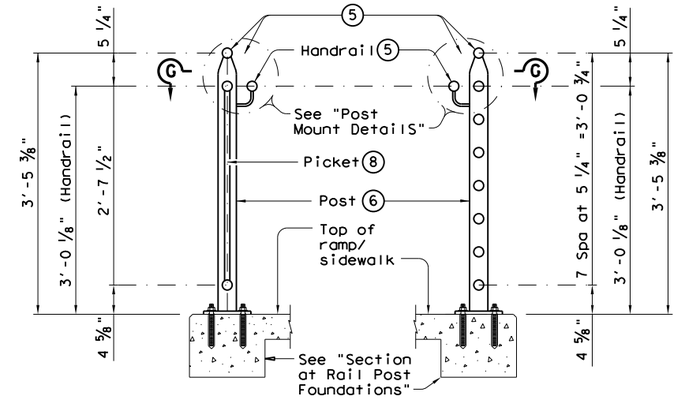
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	AUS	HAYS		83

DATE: 5/22/2023
FILE: c:\pw\khi\d0213952\prd13.dgn



ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

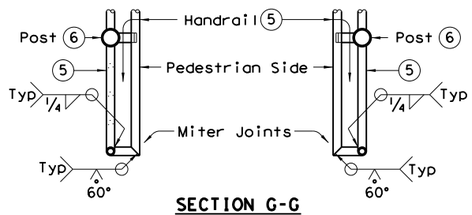


SECTION E-E

(Showing Handrail **TY E**)

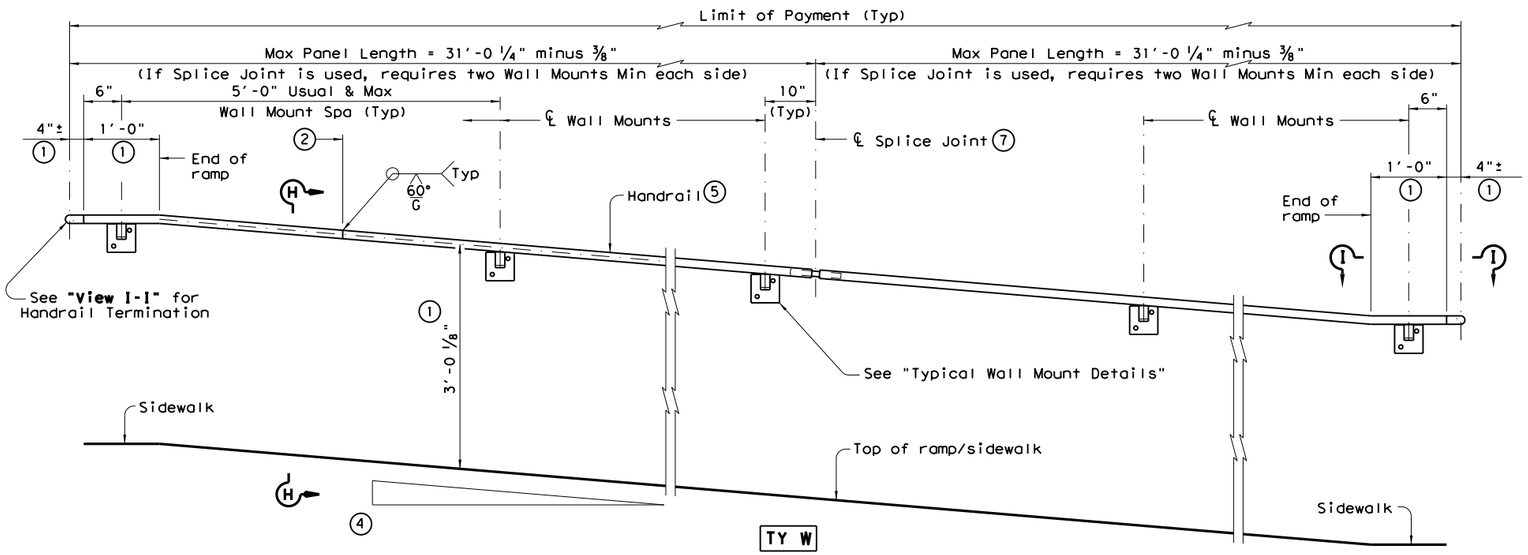
SECTION F-F

(Showing Handrail **TY F**)

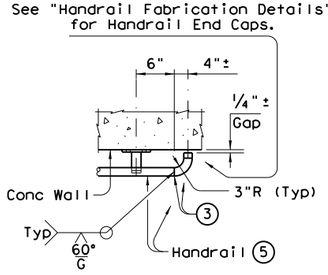


SECTION G-G

(Showing Handrail Termination)

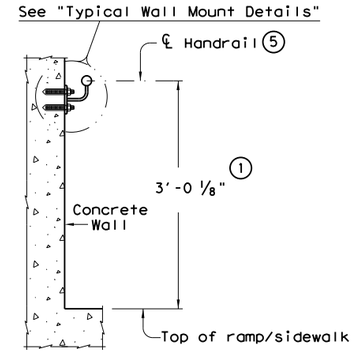


ELEVATION VIEW



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.

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)	0914	33	088	VAR
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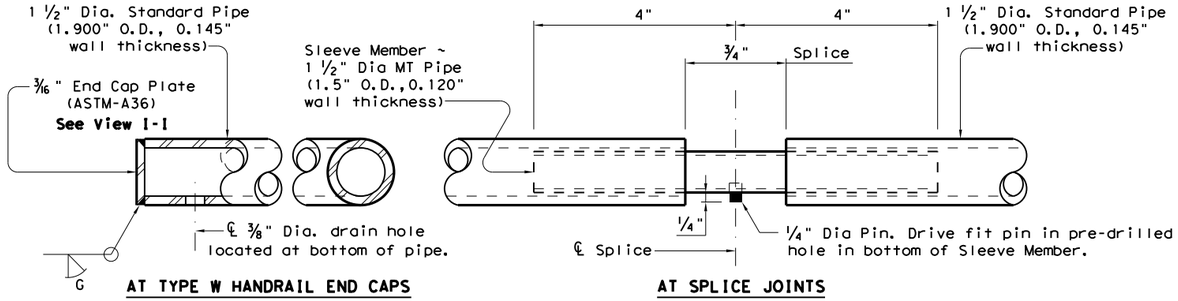
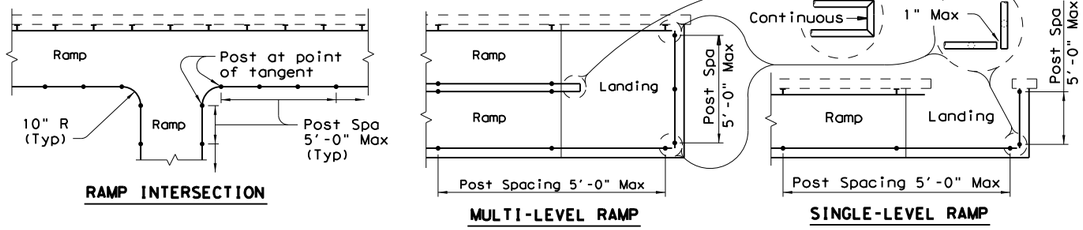


AT TYPE W HANDRAIL END CAPS

AT SPLICE JOINTS



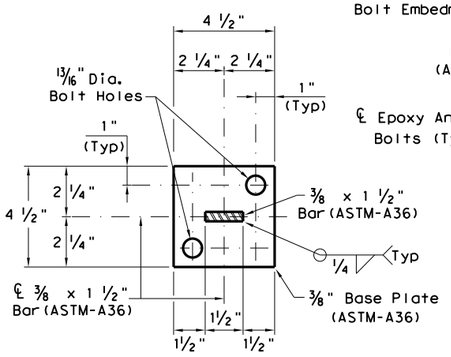
RAMP INTERSECTION

MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

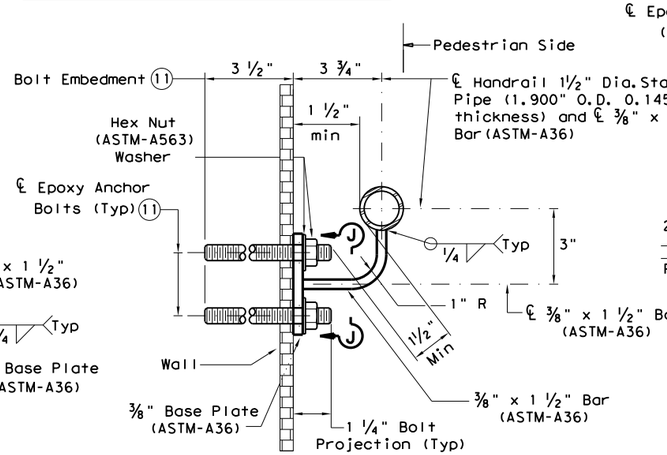
PLAN SHOWING RAIL AT RAMP CONDITIONS

HANDRAIL FABRICATION DETAILS

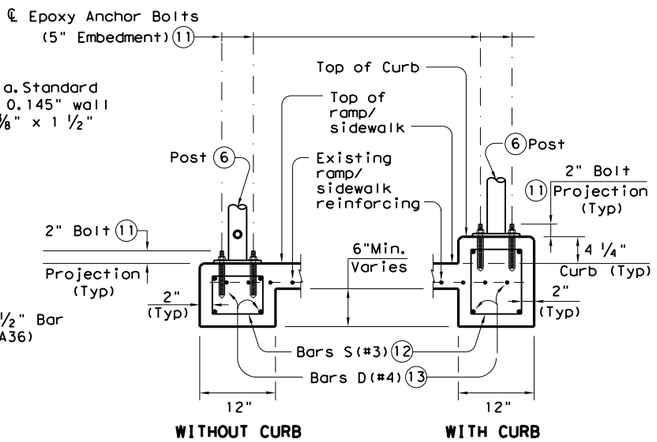


SECTION J-J

(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT



WITHOUT CURB

WITH CURB

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.

TYPICAL WALL MOUNT DETAILS

(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.

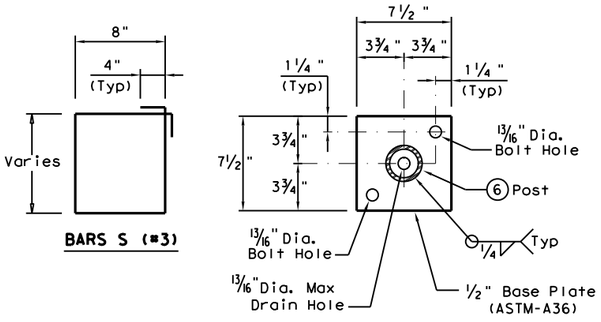
(11) See "General Notes" for anchor bolt information.

(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.

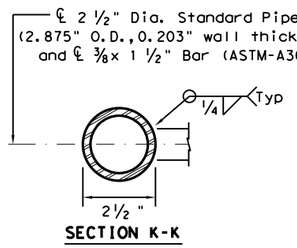
CAST-IN-PLACE ANCHOR BOLT OPTIONS

(Used for Post Base Plate only)



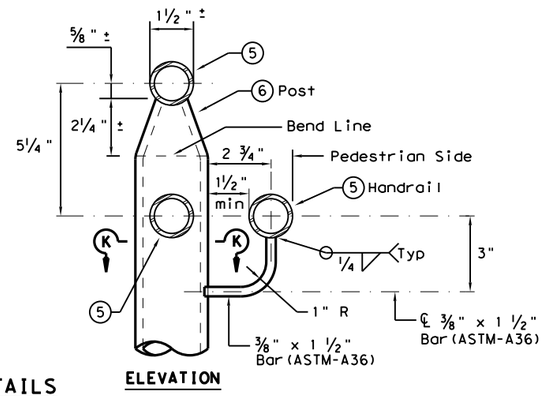
BARS S (#3)

TYPICAL POST BASE PLATE DETAIL



SECTION K-K

POST MOUNT DETAILS



ELEVATION

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

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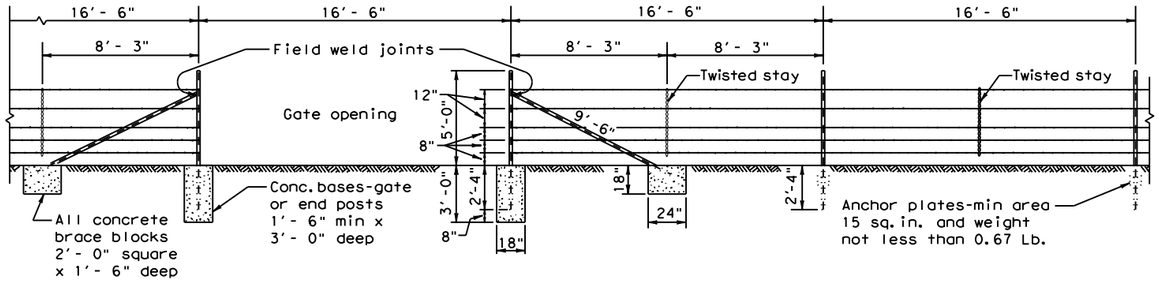
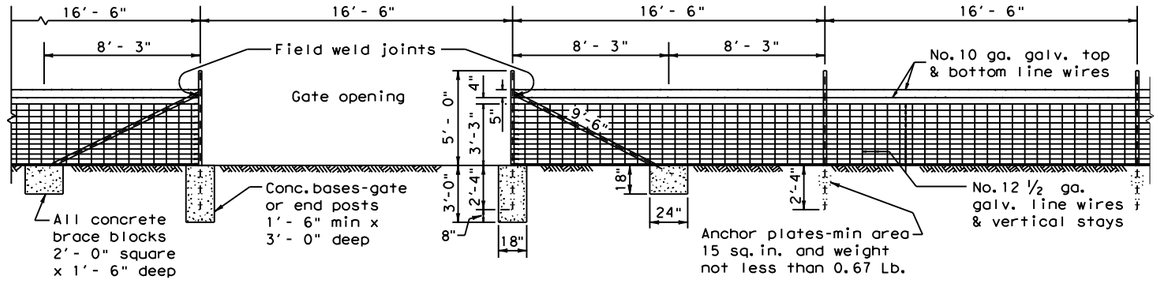
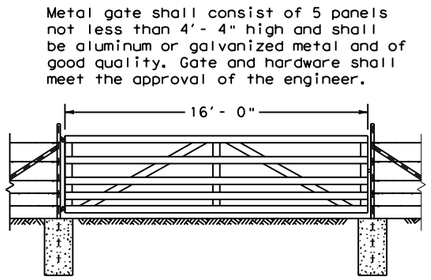


SECTION GALVANIZED BARBED WIRE FENCE WITH METAL POSTS
BRACING DETAIL USED AT ENDS AND GATES
TYPE "C" FENCE
(See General Note 8)

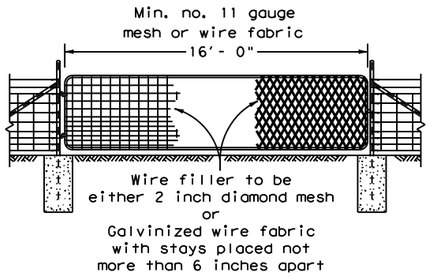
Note:
For Steel pipe and T-Post requirements. (See General Notes 6 & 7)



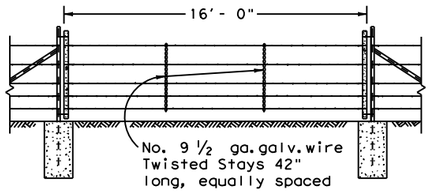
SECTION GALVANIZED WOVEN WIRE FENCE WITH METAL POSTS
BRACING DETAIL USED AT ENDS AND GATES
TYPE "D" FENCE
(See General Note 8)



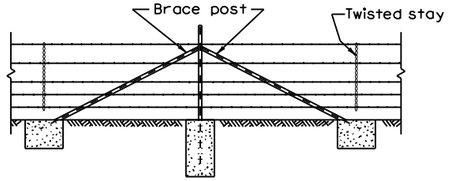
DETAIL TYPE 1 GATE



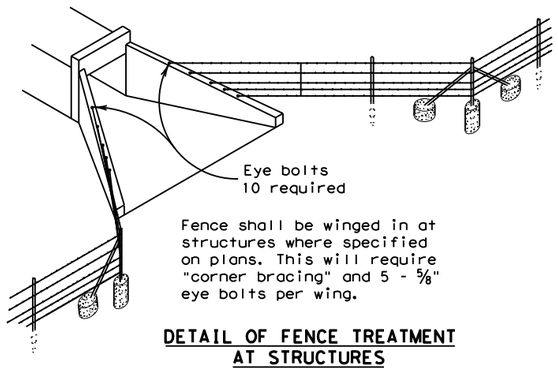
DETAIL TYPE 2 GATE



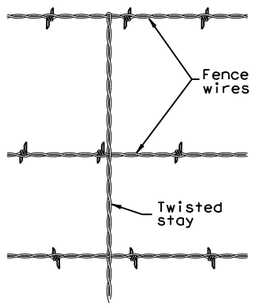
DETAIL TYPE 3 GATE



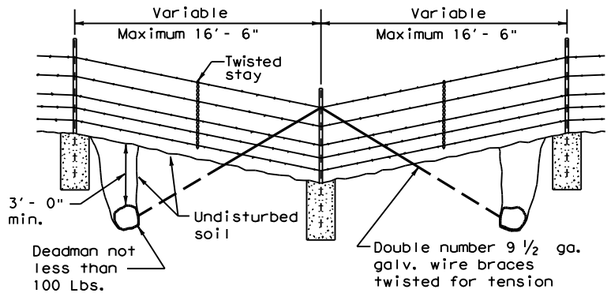
CORNER OR PULL POST ASSEMBLY



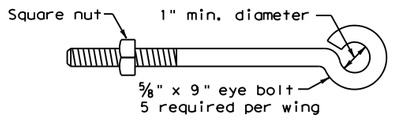
DETAIL OF FENCE TREATMENT AT STRUCTURES



DETAIL OF STAY
(Barbed Wire Fence)



DETAIL OF FENCE SAG



DETAIL OF EYE BOLT

GENERAL NOTES

1. Any high point which interferes with the placing of wire mesh shall be excavated to provide a 2 inch clearance.
2. Latches for Type 1 and Type 2 gates shall be good commercial quality and design latch of the spring, fork or chain type. All latches shall be suitable to the gate and shall be approved by the Engineer.
3. Hinges for Type 2 gates shall be a commercial design approved by the Engineer suitable for post and gate.
4. Concrete shall be of the design and consistency approved by the Engineer and shall contain not less than 4 sacks of cement per cubic yard. Concrete footings are to be crowned at the top to shed water.
5. Steel anchor plates shall be of a design and thickness sufficient to prevent turning of the post in firm soil.
6. Steel pipe end posts, corner and pull posts shall be a minimum of 2" Std. pipe (2.375" O.D., 0.154" wall thickness) with a 1¼" Std. pipe brace (1.660" O.D., 0.140" wall thickness), with a 2"x2"x1/4" angle, or other as approved by the Engineer. Fasteners for securing barbed wire or woven wire fence to metal posts shall be a minimum of 11 gauge galvanized steel wire. Tubular posts shall be fitted with water malleable iron caps.
7. If Steel pipe is used for posts and braces, use standard pipe in accordance with ASTM A 53, Class B or A 501. For T-Posts use steel that meets ASTM A 702. Metal line posts shall be not less than 6'-6" in length and shall weigh not less than (1.33 lbs./lin.ft.). These Items shall be in accordance with Item 552, "Wire Fence."
8. Barbed Wire shall be in accordance with ASTM A 121, Class 1 Design designation 12-2-4-1 4R or 12-2-5-1 4R, or as approved by the Engineer.

   Woven Wire Fence (Type D) shall be in accordance with ASTM A 116, Class 1 No. 12-1/2 Grade 60 (See Table 1 ASTM A 116) to the height and design shown on the plans, or as approved by the Engineer.
9. The location of gates and corner posts will be as indicated elsewhere in these plans.

Texas Department of Transportation | Design Division Standard

BARBED WIRE AND WOVEN WIRE FENCE
(STEEL POSTS)
WF(2)-10

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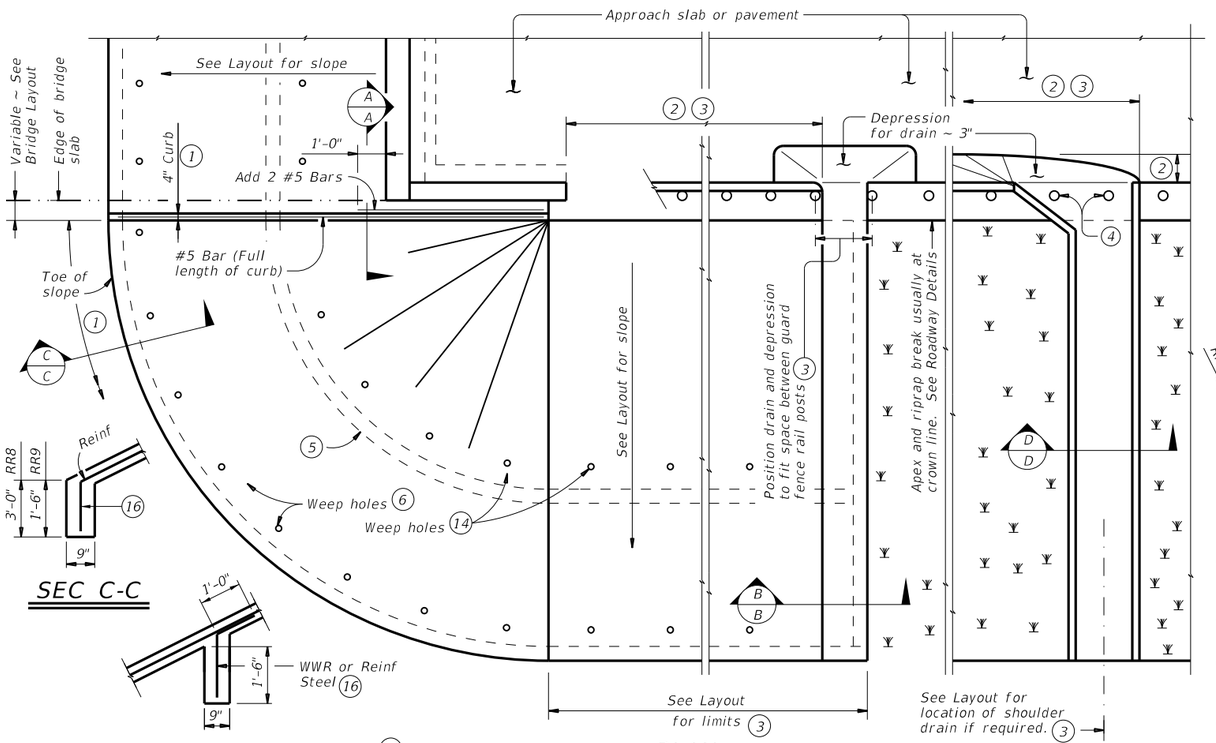
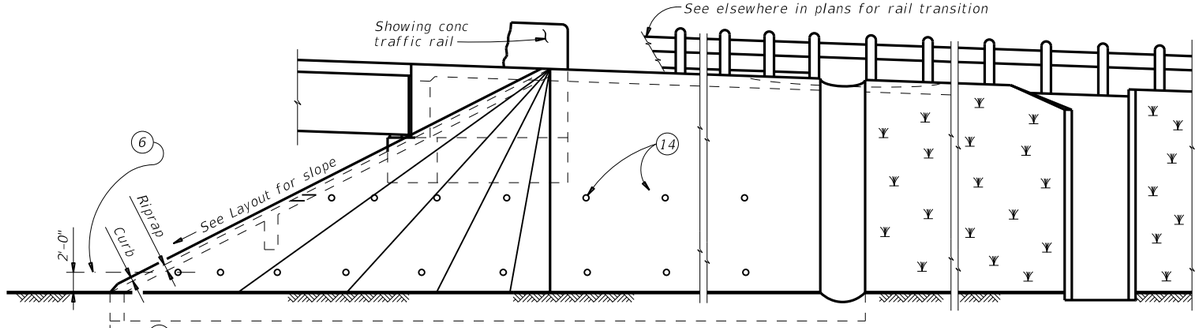


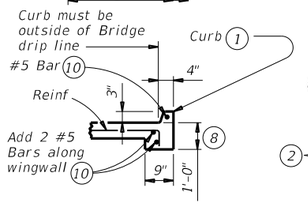
PLAN

SEC C-C

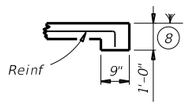
INTERMEDIATE TOEWALL



ELEVATION

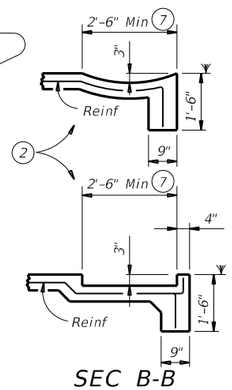


SEC A-A



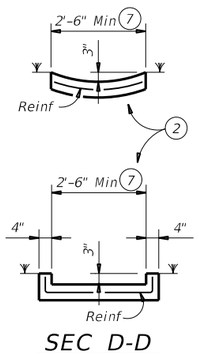
SEC B-B

(No drain)



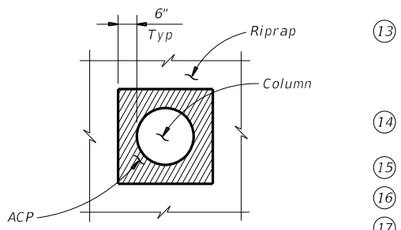
SEC B-B

(Shoulder drain integral with riprap)



SEC D-D

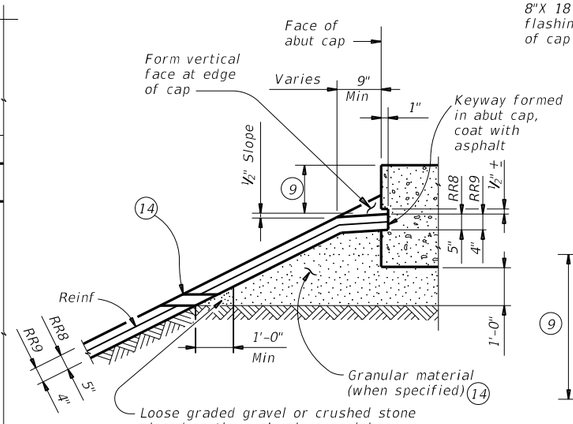
(Shoulder drain)



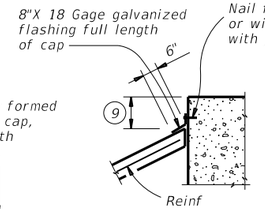
Riprap blockout to be filled with ACP. (Subsidiary to riprap)

RIPRAP DETAIL AT COLUMNS

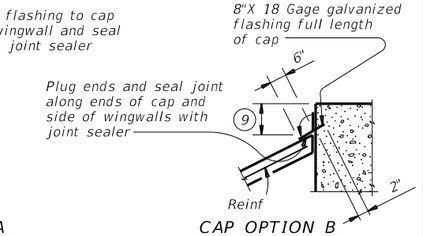
(As directed by the Engineer)



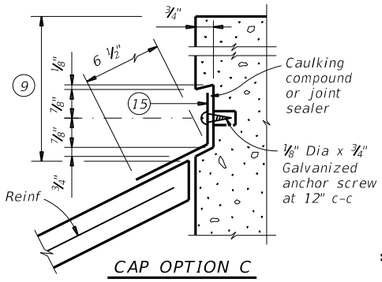
SHOWING KEYWAY OPTION



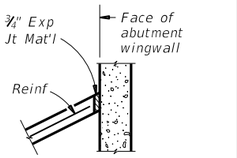
CAP OPTION A



CAP OPTION B

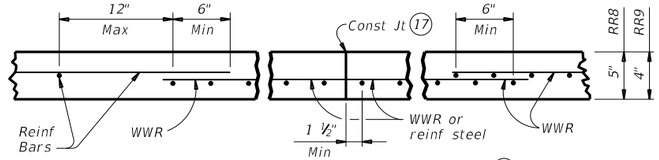


CAP OPTION C



SECT THRU RIPRAP AT WINGWALL (12)

SECTIONS THRU RIPRAP AT CAP (11)



REINFORCEMENT DETAILS (13)

See General Notes for optional synthetic fiber reinforcement.

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

FOR CONTRACTOR'S INFORMATION ONLY:
5" of RR8 = 0.015 CY/SF
4" of RR9 = 0.012 CY/SF
#3 Reinf at 18" c-c = 0.501 Lbs/SF
6x6-D3xD3 = 0.408 Lbs/SF

GENERAL NOTES:

Provide Class "B" concrete (f'c = 2,000 psi) unless noted elsewhere in plans.

Provide Grade 60 reinforcing steel.

Provide deformed welded wire reinforcement (WWR) meeting ASTM A1064, unless otherwise shown.

Provide reinforcing bars, deformed WWR, or any suitable combination of both types for riprap reinforcing, unless specified elsewhere in the plans.

Optionally synthetic fibers may be used if approved by the Engineer. Provide synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) in lieu of steel reinforcing in riprap concrete.

Install construction joints or grooved joints extending the full slant slope height at intervals of approximately 20 feet unless otherwise directed by the Engineer.

Hardware cloth, loose grade stone behind weep holes, flashing, or other sealing material are subsidiary to the bid item "Riprap".

See Layout for limits of riprap.

RR8 is to be used on stream crossings.

RR9 is to be used on other embankments.

Texas Department of Transportation

Bridge Division Standard

CONCRETE RIPRAP AND SHOULDER DRAINS
EMBANKMENTS AT BRIDGE ENDS (TYPES RR8 & RR9)

CRR

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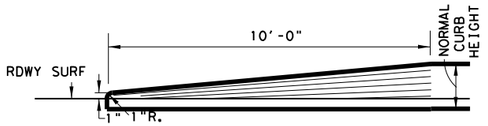
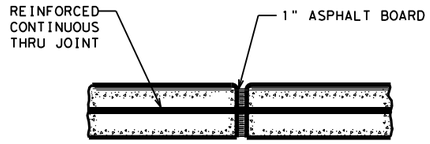
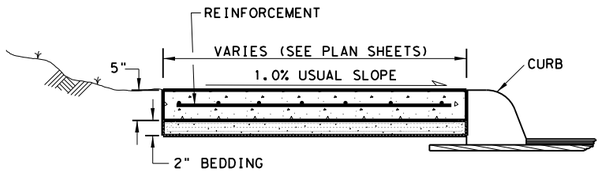


TRANSITION FOR CONCRETE CURB ENDS



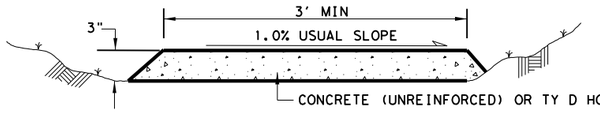
EXPANSION JOINT DETAIL



SIDEWALK & SHARED USE PATH (S.U.P.) TYP. SECT.

SIDEWALK OR S.U.P. EXPANSION JOINTS ARE TO BE AT A MAX. SPACING OF 40' AND COINCIDE WITH THE CURB EXPANSION JOINTS (WHEN ADJACENT TO CURB).

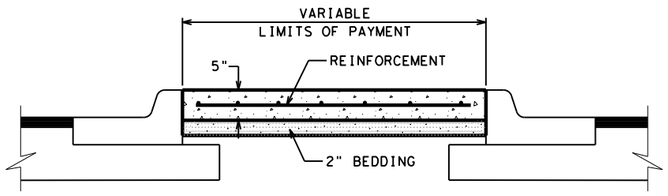
NOTE: TOOLED OR SAWED CONTRACTION JOINTS ARE NOT ALLOWED.



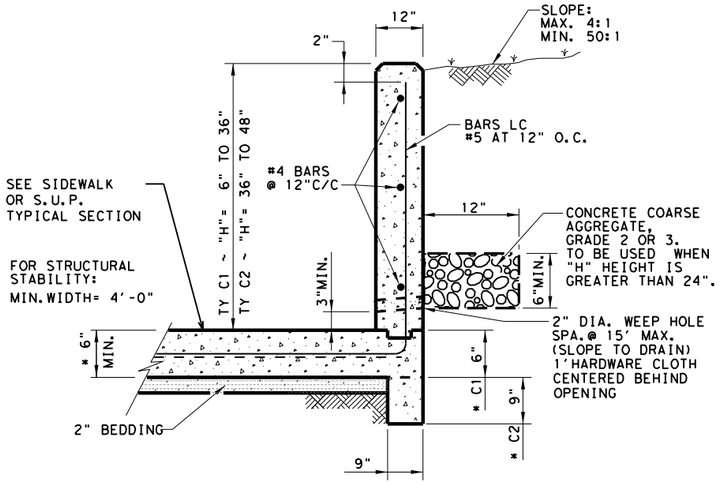
TEMPORARY SIDEWALK & SHARED USE PATH (S.U.P.)

CONC SIDEWALK (SPECIAL) (TYPE B)

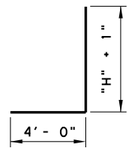
1. EXPANSION JOINTS, BEDDING, AND TOOL JOINTS ARE NOT REQUIRED.
2. PROVIDE 5' X 5' PASSING AREA AT INTERVALS NOT TO EXCEED 200'.
3. 4' TALL ORANGE CONSTRUCTION FENCE REQUIRED IF DROP OFF GREATER THAN 6" ADJACENT TO SIDEWALK.
4. ALL MATERIAL AND TESTING REQUIREMENTS ARE WAIVED.
5. INSTALLATION, MAINTENANCE, FENCE, AND REMOVAL ARE SUBSIDIARY TO SIDEWALK ITEM.
6. EXCAVATION AND EMBANKMENT TO PROVIDE ADA COMPLIANCE WILL BE PAID USING PERTINENT BID ITEMS.
7. LOCATION AS DIRECTED BY ENGINEER.



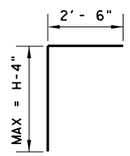
RIPRAP MEDIAN DETAIL



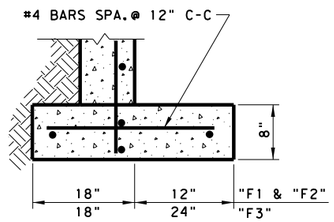
CONC CURB (TY C1) & (TY C2)



BAR LC



BAR LF



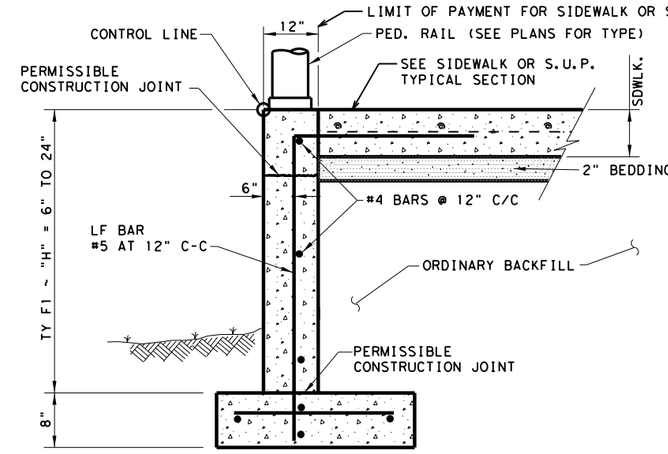
FOOTING DETAIL

SIDEWALK, SHARED USE PATH, AND MEDIAN NOTES

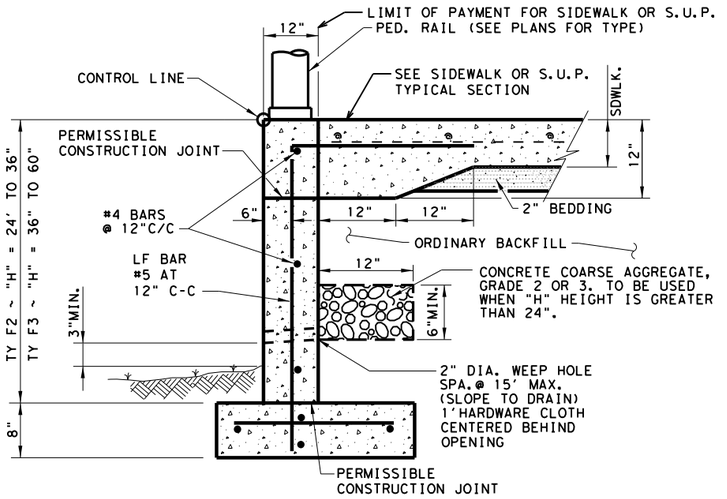
Reinforcement will be in accordance with Item 432.3.1. Fiber reinforcement is not allowed. Class A and B Concrete are allowed to use Coarse Aggregate Grades 1-8.

Bedding may be sand, base, or RAP bedding. Furnish base meeting the requirement for any type or grade in accordance with Item 247. Base compressive strengths are waived. RAP must be 100% passing a 1 in. sieve. Bedding must be placed using ordinary compaction.

If roots are encountered verify with the Engineer prior to accommodating or removing 2 in. diameter or larger roots. Root removal must be in accordance with Item 752.4.2. Roots may remain in the bedding or base. For improvements within 6 in. of a root, the concrete thickness may be reduced by 1 in. and the bedding increased by 1 in. to minimize impacts to the roots. Adjust bedding and surface profile to provide a 1 in. bedding cushion around the roots. The surface profile may be adjusted to the extent allowed by ADA. This work is subsidiary.



CONC CURB (TY F1)‡



CONC CURB (TY F2) & (TY F3)‡

CONCRETE CURB NOTES:
- All Concrete, including adjacent sidewalk or S.U.P., shall be Class "C".
- All Reinforcing Steel shall be Grade 60.
- Minimum 4' sidewalk width for CONC CURB (TYPES C1 & C2).

‡ Until the sidewalk is complete, lateral support for the "F" curbs will be required.

ALL WORK SHOWN BEYOND TYPICAL SIDEWALK, S.U.P., AND PED RAIL IS SUBSIDIARY.

DESIGN SOIL PARAMETERS:
- Soil Unit Wt.= 120 pcf
- Phi = 30 Degrees
- Cohesion = 50 psf
- Min. PI = 15
- Max. PI = 30
- SURCHARGE:
  - TYPE F CURB q = 2' Adjacent to sidewalk
  - Max. slope behind TYPE C Curb = 4:1
  - Min. Factor of Safety against sliding is 1.5.
  - Designed in accordance with current AASHTO Standards and Interim Specifications.

NOT TO SCALE

Texas Department of Transportation | Austin District Standard

MISCELLANEOUS CURB, PATH, SIDEWALK, AND MEDIAN DETAILS

MCPSWMD-23 (AUS)

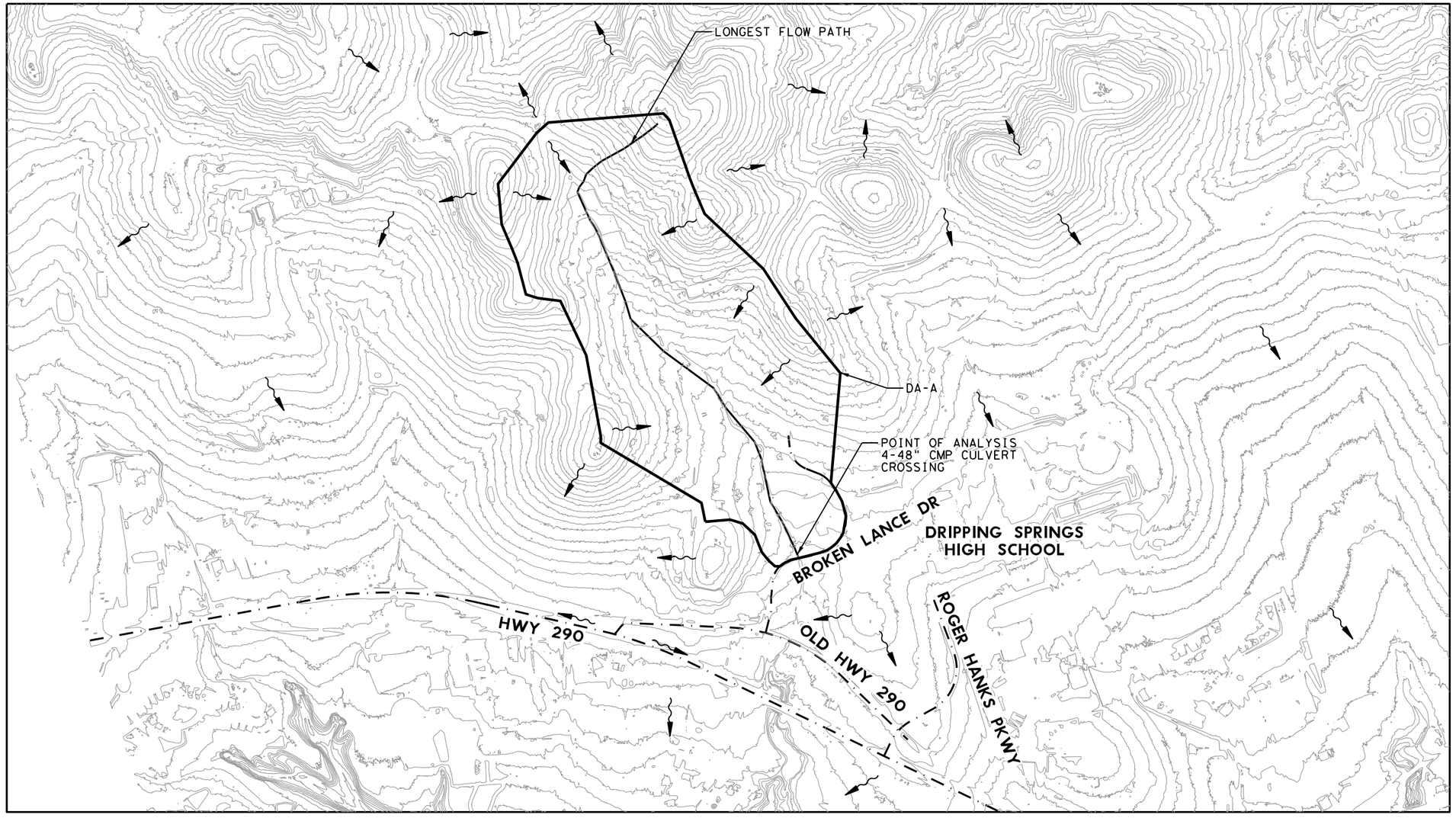
REVISIONS
04/19: APPROVED
02/23: ADDED TEMP S/W

CONT	SECT	JOB	HIGHWAY
0914	33	088	VAR
DIST	COUNTY		SHEET NO.
AUS	HAYS		88

DATE: 5/22/2023 5:46:29 PM
FILE: c:\pw\khl\d0213952\mcpswmd-23.dgn

Name	Frequency Year	Area (acres)	Runoff Coefficients (C) Cr	Ci	Cv	Cs	Weighted Coefficien	TOC (min)	I (in/hr	Q (cfs)
DA-A	2	150	0.14	0.1	0.08	0.08	0.4	18	3.59	215.4
	5								4.88	292.8
	10								5.91	354.6
	25								7.34	440.4
	50								8.48	508.8
	100								9.71	582.6
	500								12.88	772.8

TOC COMPUTATION TABLE-NRCS METHOD	DA-A
Sheet Flow Tt (min)	7
Shallow Concentrated Flow Tt (min)	4
Channel Flow Tt (min)	7
Watershed Tt (min)	18



N

LEGEND

- EXIST DRAINAGE AREA
- EXISTING CONTOUR
- FLOW DIRECTION

NOTES:

1. DRAINAGE AREA DELINEATED BASED ON TNRIS 5 FT LIDAR (2016).
2. FLOW VALUES WERE CALCULATED USING THE RATIONAL METHOD WITH NOAA ATLAS-14 INTENSITIES.
3. PROPOSED CONDITIONS HAVE BEEN ANALYZED AND DO NOT APPEAR TO NEGATIVELY IMPACT NEARBY INSURABLE STRUCTURES.

0' 500' 1000' HORZ

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

DRAINAGE AREA MAP AND HYDROLOGIC CALCULATIONS

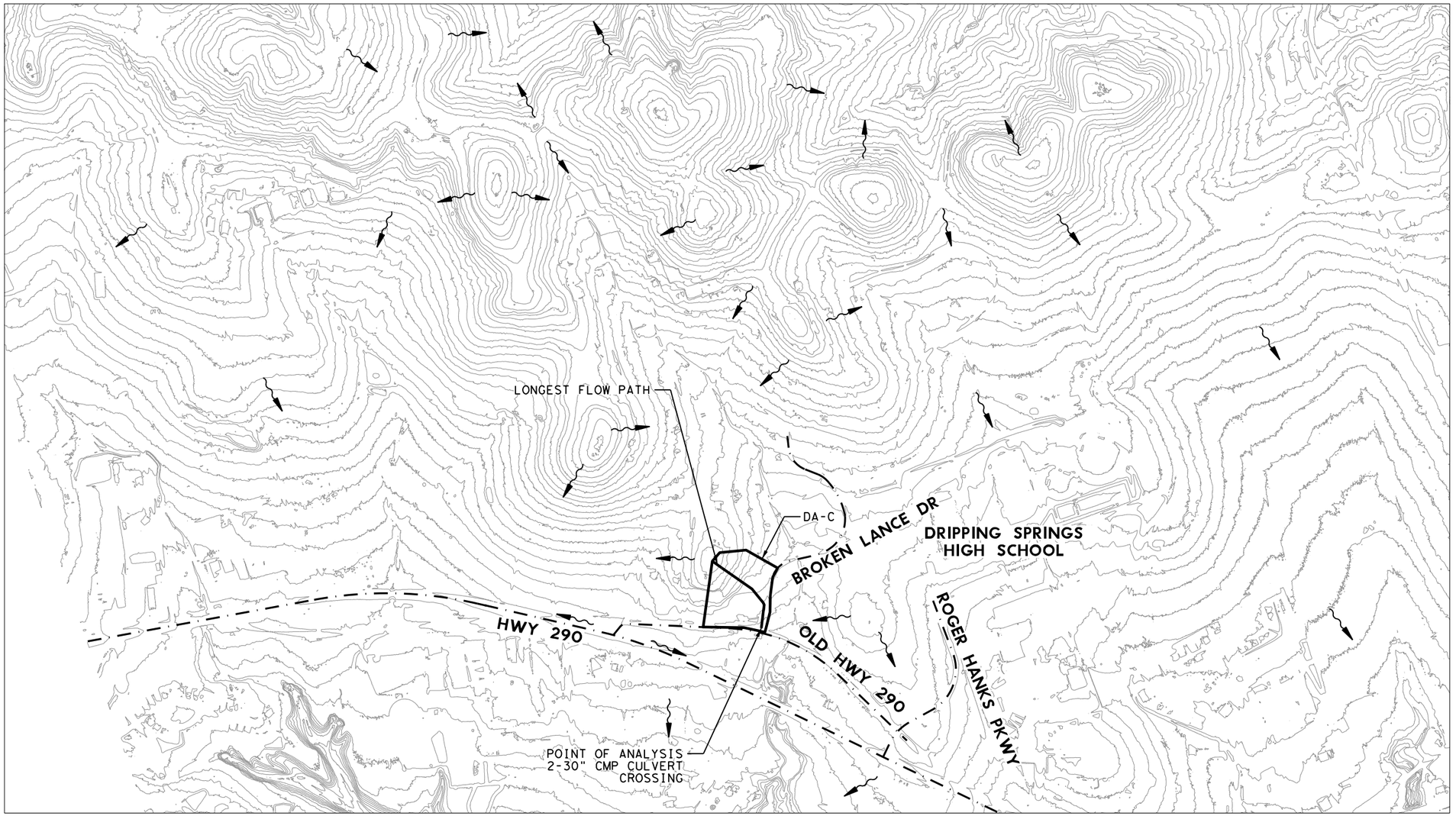
SHEET 1 OF 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	89
CONT.	SECT.	JOB	
0914	33	088	

Name	Frequency Year	Area (acres)	Runoff Coefficients (C) Cr	Ci	Cv	Cs	Weighted Coefficien	TOC (min)	I (in/hr	Q (cfs)
DA-C	2	8.00	0.14	0.1	0.08	0.1	0.42	10	4.59	15.4
	5								6.22	20.9
	10								7.48	25.1
	25								9.21	30.9
	50								10.56	35.5
	100								11.96	40.2
	500								15.45	51.9

TOC COMPUTATION TABLE-NRCS METHOD	DA-C
Sheet Flow Tt (min)	7
Shallow Concentrated Flow Tt (min)	2
Channel Flow Tt (min)	1
Watershed Tt (min)	10



N

LEGEND

- EXIST DRAINAGE AREA
- EXISTING CONTOUR
- FLOW DIRECTION

NOTES:

1. DRAINAGE AREA DELINEATED BASED ON TNRIS 5 FT LIDAR (2016).
2. FLOW VALUES WERE CALCULATED USING THE RATIONAL METHOD WITH NOAA ATLAS-14 INTENSITIES.
3. PROPOSED CONDITIONS HAVE BEEN ANALYZED AND DO NOT APPEAR TO NEGATIVELY IMPACT NEARBY INSURABLE STRUCTURES.

0' 500' 1000' HORZ

5/22/2023

RYAN W. LOHMANN 133721 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

DRAINAGE AREA MAP AND HYDROLOGIC CALCULATIONS

SHEET 2 OF 2

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	90
CONT.	SECT.	JOB	
0914	33	088	

BROKEN LANCE CROSS CULVERT - EXISTING CONDITIONS

Site Data:
Inlet Station: -19.97 ft
Inlet Elevation: 1213.40 ft
Outlet Station: 18.87 ft
Outlet Elevation: 1213.26 ft
Number of Barrels: 4
Culvert Length: 38.84 ft,
Culvert Slope: 0.0036

Culvert Data:
Barrel Shape: Circular
Barrel Diameter: 4.00 ft
Barrel Material: Corrugated Aluminum
Embedment: 0.00 in
Barrel Manning's n: 0.0220
Culvert Type: Straight
Inlet Configuration: Mitered to Conform to Slope (Ke=0.7)
Inlet Depression: None

Tailwater Channel Data:
Tailwater Channel Option: Trapezoidal Channel
Bottom Width: 20.00 ft
Side Slope (H:V): 2.50 (_:1)
Channel Slope: 0.0223
Channel Manning's n: 0.0400
Channel Invert Elevation: 1211.75 ft

Roadway Data for Crossing:
Roadway Profile Shape: Irregular Roadway Shape (coordinates)
Irregular Roadway Cross-Section

Coord No.	Station (ft)	Elevation (ft)
0	-100	1220.25
1	0	1219.46
2	100	1218.8
3	200	1220.18

Roadway Surface: Paved
Roadway Top Width: 23.00 ft

Culvert Summary Table: EXIST_BRK_LN

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 year	215.40 cfs	215.40 cfs	1217.04	3.32	3.64	2-M2c	3.46	2.21	2.21	1.44	7.58	6.35
5 year	292.80 cfs	292.80 cfs	1217.82	4.15	4.42	7-M2c	4.00	2.59	2.59	1.72	8.51	7.03
10 year	354.60 cfs	354.60 cfs	1218.46	4.95	5.06	7-M2c	4.00	2.85	2.85	1.91	9.24	7.48
25 year	440.40 cfs	411.54 cfs	1219.23	5.83	5.70	7-M2c	4.00	3.07	3.07	2.16	9.94	8.01
50 year	508.80 cfs	424.85 cfs	1219.46	6.06	5.88	7-M2c	4.00	3.12	3.12	2.35	10.10	8.39
100 year	582.60 cfs	433.71 cfs	1219.61	6.21	6.00	7-M2c	4.00	3.15	3.15	2.53	10.22	8.75
500 year	772.80 cfs	449.87 cfs	1219.90	6.50	6.24	7-M2c	4.00	3.20	3.20	2.96	10.43	9.54

Downstream Channel Rating Curve (Crossing: Existing Conditions)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
215.4	1213.19	1.44	6.35	2	1
292.8	1213.47	1.72	7.03	2.39	1.03
354.6	1213.66	1.91	7.48	2.66	1.04
440.4	1213.91	2.16	8.01	3.01	1.06
508.8	1214.1	2.35	8.39	3.26	1.07
582.6	1214.28	2.53	8.75	3.52	1.08
772.8	1214.71	2.96	9.54	4.12	1.1

Summary of Culvert Flows at Crossing- Existing Conditions

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1217.04	2 year	215.4	215.4	0	1
1217.82	5 year	292.8	292.8	0	1
1218.46	10 year	354.6	354.6	0	1
1219.23	25 year	440.4	411.54	28.67	6
1219.46	50 year	508.8	424.85	83.26	8
1219.61	100 year	582.6	433.71	148.03	6
1219.9	500 year	772.8	449.87	322.04	5
1218.8	Overtopping	384.81	384.81	0	Overtopping

NOTES:

1. HY-8 V7.70 WAS USED FOR CULVERT HYDRUALIC CALCULATIONS.

ROGER HANKS AREA INLET - EXISTING CONDITIONS

	Drainage Area (ac)	C value 10 year	C value 100 Year	TOC	Intensity 10 year	Intensity 100 year	Q 25 (cfs)	Q 100 (cfs)
Existing	0.48	0.357	0.427	5	9.5	15.4	1.62	3.14

INLET ID	Total Curb Depth	d (MAX DEPTH)	Weir or Orifice	Cw	L	W	d	Qi
	ft	ft			ft	ft		
Existing	0.5	0.5	Weir	2.3	10	2	0.7	18.32

*NOTE: TXDOT EQUATION 10-4 USED TO CALCULATE Qi

6/20/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas
Kimley»Horn F-928
Texas Department of Transportation

DRIPPING SPRINGS SRTS

HYDRAULIC DATA
EXISTING CONDITIONS

SHEET 1 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	91
CONT.	SECT.	JOB	
0914	33	088	

BROKEN LANCE CROSS CULVERT - PROPOSED CONDITIONS

Site Data:
Inlet Station: -28.87 ft
Inlet Elevation: 1213.42 ft
Outlet Station: 19.53 ft
Outlet Elevation: 1213.26 ft
Number of Barrels: 4
Culvert Length: 48.40 ft,
Culvert Slope: 0.0033

Culvert Data:
Barrel Shape: Circular
Barrel Diameter: 4.00 ft
Barrel Material: Corrugated Aluminum
Embedment: 0.00 in
Barrel Manning's n: 0.0220
Culvert Type: Straight
Inlet Configuration: Mitered to Conform to Slope (Ke=0.7)
Inlet Depression: None

Tailwater Channel Data:
Tailwater Channel Option: Trapezoidal Channel
Bottom Width: 20.00 ft
Side Slope (H:V): 2.50 (_:1)
Channel Slope: 0.0223
Channel Manning's n: 0.0400
Channel Invert Elevation: 1211.75 ft

Roadway Data for Crossing:
Roadway Profile Shape: Irregular Roadway Shape (coordinates)
Irregular Roadway Cross-Section

Coord No.	Station (ft)	Elevation (ft)
0	-100	1220.25
1	0	1219.46
2	100	1218.8
3	200	1220.18

Roadway Surface: Paved
Roadway Top Width: 33.00 ft

Culvert Summary Table: PROP_BRK_LN

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 year	215.40 cfs	215.40 cfs	1217.08	3.32	3.66	2-M2c	4	2.21	2.21	1.44	7.58	6.35
5 year	292.80 cfs	292.80 cfs	1217.87	4.15	4.45	7-M2c	4	2.59	2.59	1.72	8.51	7.03
10 year	354.60 cfs	354.60 cfs	1218.53	4.95	5.11	7-M2c	4	2.85	2.85	1.91	9.24	7.48
25 year	440.40 cfs	410.69 cfs	1219.24	5.82	5.81	7-M2c	4	3.07	3.07	2.16	9.93	8.01
50 year	508.80 cfs	423.96 cfs	1219.46	6.04	6.01	7-M2c	4	3.12	3.12	2.35	10.09	8.39
100 year	582.60 cfs	432.74 cfs	1219.61	6.19	6.14	7-M2c	4	3.15	3.15	2.53	10.20	8.75
500 year	772.80 cfs	448.91 cfs	1219.90	6.48	6.38	7-M2c	4	3.20	3.20	2.96	10.41	9.54

Downstream Channel Rating Curve (Crossing: Proposed Conditions)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
215.40	1213.19	1.44	6.35	2.00	1.00
292.80	1213.47	1.72	7.03	2.39	1.03
354.60	1213.66	1.91	7.48	2.66	1.04
440.40	1213.91	2.16	8.01	3.01	1.06
508.80	1214.10	2.35	8.39	3.26	1.07
582.60	1214.28	2.53	8.75	3.52	1.08
772.80	1214.71	2.96	9.54	4.12	1.10

Summary of Culvert Flows at Crossing- Proposed Conditions

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1217.08	2 year	215.40	215.40	0.00	1.00
1217.87	5 year	292.80	292.80	0.00	1.00
1218.53	10 year	354.60	354.60	0.00	1.00
1219.24	25 year	440.40	410.69	29.53	7.00
1219.46	50 year	508.80	423.96	84.19	8.00
1219.61	100 year	582.60	432.74	149.01	6.00
1219.90	500 year	772.80	448.91	323.02	5.00
1218.80	Overtopping	378.23	378.23	0.00	Overtopping

ROGER HANKS AREA INLET - PROPOSED CONDITIONS

	Drainage Area (ac)	C value 10 year	C value 100 Year	TOC	Intensity 10 year	Intensity 100 year	Q 25 (cfs)	Q 100 (cfs)
Proposed	0.48	0.398	0.470	5	9.5	15.4	1.81	3.46

INLET ID	Total Curb Depth	d (MAX DEPTH)	Weir or Orifice	Co	h	L	do	g	Qi
	ft	ft			ft	ft		ft/s	
Proposed	0.5	3.5	Orifice	0.67	0.525	10	3.2375	32.17	50.77

*NOTE: TXDOT EQUATION 10-4 USED TO CALCULATE Qi

NOTES:

1. HY-8 V7.70 WAS USED FOR CULVERT HYDRUALIC CALCULATIONS.

6/20/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas
Kimley»Horn F-928
Texas Department of Transportation

DRIPPING SPRINGS SRTS

HYDRAULIC DATA
PROPOSED CONDITIONS

SHEET 2 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	92
CONT.	SECT.	JOB	
0914	33	088	

BROKEN LANCE DR DITCH CULVERT - EXISTING CONDITIONS

Site Data:
Inlet Station: 0.00 ft
Inlet Elevation: 1204.77 ft
Outlet Station: 55.00 ft
Outlet Elevation: 1204.49 ft
Number of Barrels: 2
Culvert Length: 55.00 ft,
Culvert Slope: 0.0050

Culvert Data:
Barrel Shape: Circular
Barrel Diameter: 2.50 ft
Barrel Material: Corrugated Aluminum
Embedment: 0.00 in
Barrel Manning's n: 0.0310
Culvert Type: Straight
Inlet Configuration: Mitered to Conform to Slope
Inlet Depression: None

Tailwater Channel Data:
Tailwater Channel Option:
Trapezoidal Channel
Bottom Width: 6.00 ft
Side Slope (H:V): 5.00 (_:1)
Channel Slope: 0.0300
Channel Manning's n: 0.0450
Channel Invert Elevation: 1204.00 ft

Roadway Data for Crossing:
Roadway Profile Shape: Constant Roadway Elevation
Crest Length: 70.00 ft
Crest Elevation: 1207.67 ft
Roadway Surface: Paved
Roadway Top Width: 52.00 ft

Culvert Summary Table: Broken Lance Ditch Culvert - Existing

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 year	15.40 cfs	15.40 cfs	1206.33	1.34	1.57	2-M2c	1.44	0.92	0.92	0.55	4.68	3.19
5 year	20.90 cfs	20.90 cfs	1206.62	1.59	1.87	2-M2c	1.78	1.08	1.08	0.65	5.14	3.48
10 year	25.10 cfs	25.10 cfs	1206.83	1.76	2.09	2-M2c	2.12	1.19	1.19	0.71	5.45	3.67
25 year	30.90 cfs	30.90 cfs	1207.12	1.99	2.39	2-M2c	2.50	1.33	1.33	0.80	5.84	3.90
50 year	35.50 cfs	35.50 cfs	1207.35	2.17	2.64	7-M2c	2.50	1.43	1.43	0.85	6.14	4.05
100 year	40.20 cfs	39.81 cfs	1207.61	2.35	2.91	7-M2c	2.50	1.51	1.51	0.91	6.40	4.19
500 year	51.90 cfs	41.23 cfs	1207.79	2.41	3.04	7-M2c	2.50	1.54	1.54	1.03	6.49	4.50

Downstream Channel Rating Curve (Crossing: Existing Conditions)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
15.4	1204.55	0.55	3.19	1.03	0.87
20.9	1204.65	0.65	3.48	1.21	0.89
25.1	1204.71	0.71	3.67	1.34	0.9
30.9	1204.8	0.8	3.9	1.49	0.91
35.5	1204.85	0.85	4.05	1.6	0.92
40.2	1204.91	0.91	4.19	1.7	0.93
51.9	1205.03	1.03	4.5	1.93	0.94

Summary of Culvert Flows at Crossing- Existing Conditions

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1206.33	2 year	15.4	15.4	0	1
1206.62	5 year	20.9	20.9	0	1
1206.83	10 year	25.1	25.1	0	1
1207.12	25 year	30.9	30.9	0	1
1207.35	50 year	35.5	35.5	0	1
1207.61	100 year	40.2	39.81	0.28	22
1207.79	500 year	51.9	41.23	10.56	5

NOTES:

1. HY-8 V7.70 WAS USED FOR CULVERT HYDRUALIC CALCULATIONS.

6/20/2023

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RYAN W. LOHMANN
133721
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PROFESSIONAL ENGINEER

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HYDRAULIC DATA
EXISTING CONDITIONS

SHEET 3 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	93
CONT.	SECT.	JOB	
0914	33	088	

BROKEN LANCE DR DITCH CULVERT - PROPOSED CONDITIONS

Site Data:
Inlet Station: -7.25 ft
Inlet Elevation: 1204.77 ft
Outlet Station: 55.00 ft
Outlet Elevation: 1204.49 ft
Number of Barrels: 2
Culvert Length: 62.25 ft,
Culvert Slope: 0.0044

Culvert Data:
Barrel Shape: Circular
Barrel Diameter: 2.50 ft
Barrel Material: Corrugated Aluminum
Embedment: 0.00 in
Barrel Manning's n: 0.0310
Culvert Type: Straight
Inlet Configuration: Square Edge with Headwall (Ke=0.5)
Inlet Depression: None

Tailwater Channel Data:
Tailwater Channel Option:
Trapezoidal Channel
Bottom Width: 6.00 ft
Side Slope (H:V): 5.00 (_:1)
Channel Slope: 0.0300
Channel Manning's n: 0.0450
Channel Invert Elevation: 1204.00 ft

Roadway Data for Crossing:
Roadway Profile Shape: Constant Roadway Elevation
Crest Length: 70.00 ft
Crest Elevation: 1207.67 ft
Roadway Surface: Paved
Roadway Top Width: 52.00 ft

Culvert Summary Table: Broken Lance Ditch Culvert - Proposed

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 year	15.40 cfs	15.40 cfs	1206.33	1.28	1.54	2-M2c	1.43	0.92	0.92	0.55	4.68	3.19
5 year	20.90 cfs	20.90 cfs	1206.62	1.52	1.84	2-M2c	1.77	1.08	1.08	0.65	5.14	3.48
10 year	25.10 cfs	25.10 cfs	1206.83	1.70	2.05	2-M2c	2.1	1.19	1.19	0.71	5.45	3.67
25 year	30.90 cfs	30.90 cfs	1207.12	1.93	2.34	2-M2c	2.5	1.33	1.33	0.80	5.84	3.90
50 year	35.50 cfs	35.50 cfs	1207.36	2.11	2.59	7-M2c	2.5	1.43	1.43	0.85	6.14	4.05
100 year	40.20 cfs	40.20 cfs	1207.63	2.29	2.87	7-M2c	2.5	1.52	1.52	0.91	6.43	4.19
500 year	51.90 cfs	42.12 cfs	1207.80	2.37	3.03	7-M2c	2.5	1.56	1.56	1.03	6.54	4.50

Downstream Channel Rating Curve (Crossing: Proposed Conditions)

Flow (cfs)	Water Surface Elev (ft)	Velocity (ft/s)	Depth (ft)	Shear (psf)	Froude Number
15.40	1204.55	0.55	3.19	1.03	0.87
20.90	1204.65	0.65	3.48	1.21	0.89
25.10	1204.71	0.71	3.67	1.34	0.90
30.90	1204.80	0.80	3.90	1.49	0.91
35.50	1204.85	0.85	4.05	1.60	0.92
40.20	1204.91	0.91	4.19	1.70	0.93
51.90	1205.03	1.03	4.50	1.93	0.94

Summary of Culvert Flows at Crossing- Proposed Conditions

Headwater Elevation (ft)	Discharge Names	Total Discharge (cfs)	Discharge (cfs)	Roadway Discharge (cfs)	Iterations
1206.33	2 year	15.40	15.40	0.00	1.00
1206.62	5 year	20.90	20.90	0.00	1.00
1206.83	10 year	25.10	25.10	0.00	1.00
1207.12	25 year	30.90	30.90	0.00	1.00
1207.36	50 year	35.50	35.50	0.00	1.00
1207.63	100 year	40.20	40.20	0.00	1.00
1207.80	500 year	51.90	42.12	9.72	6.00
1207.67	Overtopping	40.37	40.37	0.00	Overtopping

NOTES:

1. HY-8 V7.70 WAS USED FOR CULVERT HYDRUALIC CALCULATIONS.

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STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
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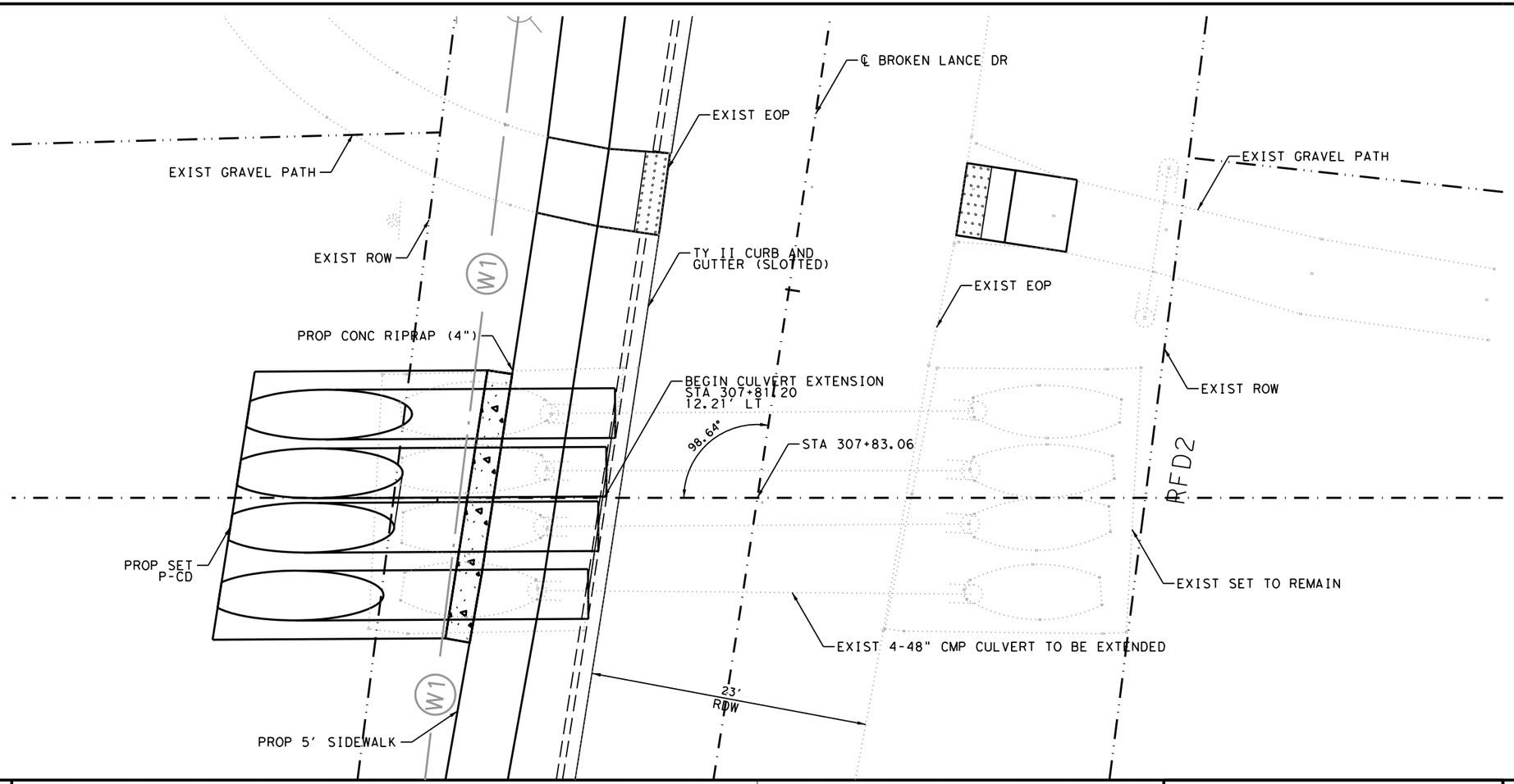
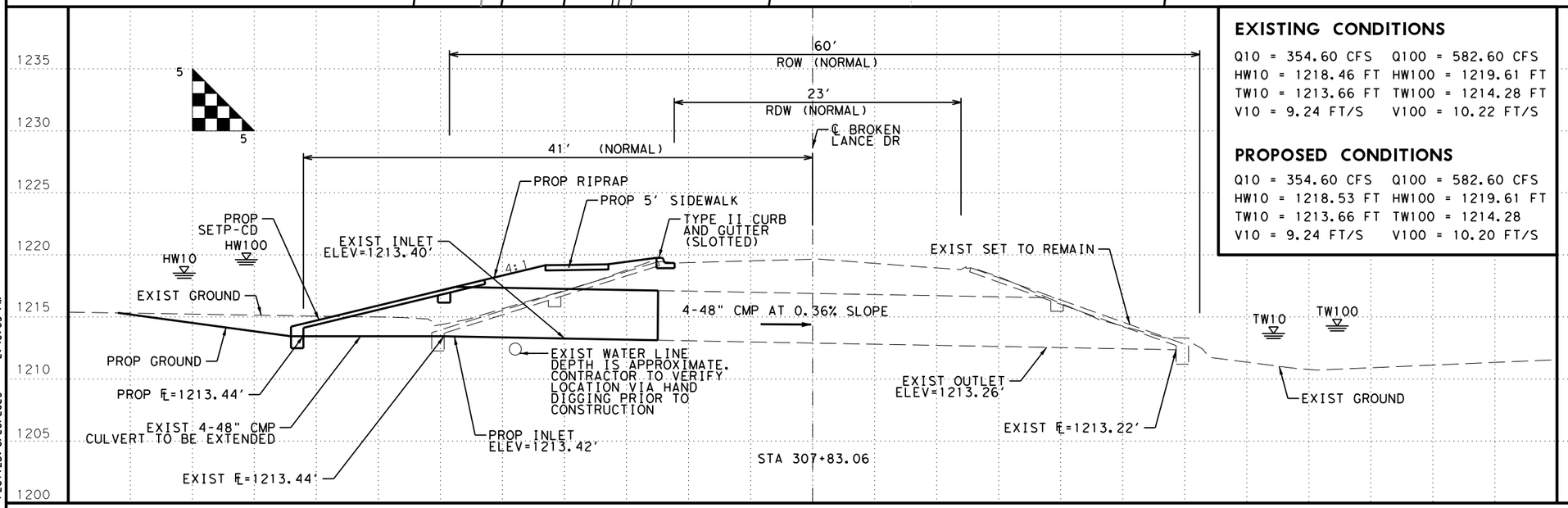
HYDRAULIC DATA
PROPOSED CONDITIONS

SHEET 4 OF 4

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	94
CONT.	SECT.	JOB	
0914	33	088	





N

0' 5' 10' HORZ

SCALE

NOTES:

1. SEE HYRDAULIC DATA SHEET FOR DETAILED CALCULATIONS.

EXISTING CONDITIONS

Q10 = 354.60 CFS Q100 = 582.60 CFS
HW10 = 1218.46 FT HW100 = 1219.61 FT
TW10 = 1213.66 FT TW100 = 1214.28 FT
V10 = 9.24 FT/S V100 = 10.22 FT/S

PROPOSED CONDITIONS

Q10 = 354.60 CFS Q100 = 582.60 CFS
HW10 = 1218.53 FT HW100 = 1219.61 FT
TW10 = 1213.66 FT TW100 = 1214.28
V10 = 9.24 FT/S V100 = 10.20 FT/S

6/20/2023

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CULVERT LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	95
CONT.	SECT.	JOB	
0914	33	088	

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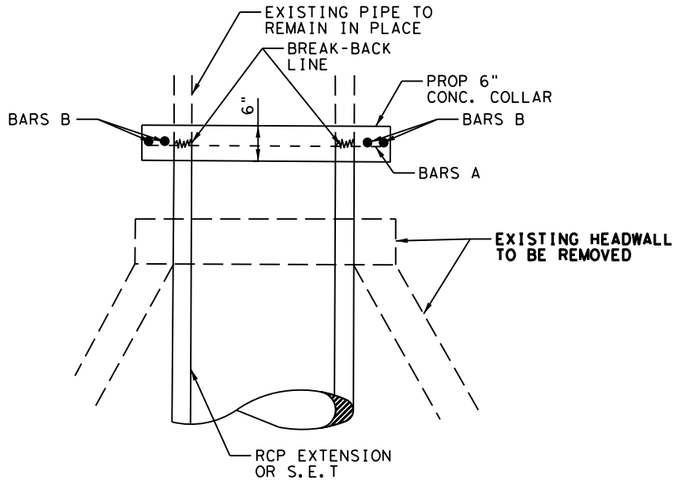
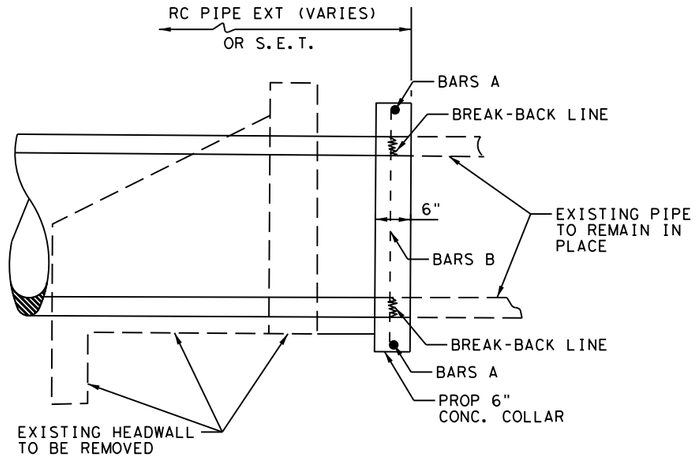
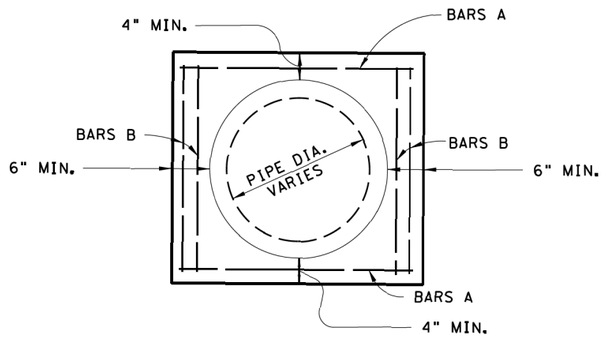




LONGITUDINAL ELEVATION



END VIEW

NOTE:

A CL C CONCRETE COLLAR SHALL BE USED AT LOCATIONS AS SHOWN ON THE PLANS WHERE ONLY THE EXISTING HEADWALL OR LESS THAN A FULL JOINT OF PIPE IS TO BE REMOVED PRIOR TO THE INSTALLATION OF THE CULVERT EXTENSION.
A CONCRETE COLLAR SHALL BE USED AT LOCATIONS WHERE AN EXISTING METAL PIPE CULVERT IS BEING EXTENDED WITH R.C. PIPE OR A SAFETY END TREATMENT.
A CONCRETE COLLAR SHALL BE USED AT ALL 15, 30, & 45 DEGREE PIPE BEND JOINT CONNECTIONS.
REINFORCING STEEL (BARS A & B) SHALL BE #4 BARS CUT IN THE FIELD TO FIT.
CONCRETE COLLAR SHALL CONFORM TO INSIDE DIAMETER OF PIPE CULVERTS.

5/22/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED PROFESSIONAL ENGINEER

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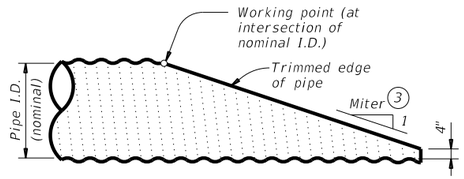
CONCRETE COLLAR DETAIL

SHEET 1 OF 1

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

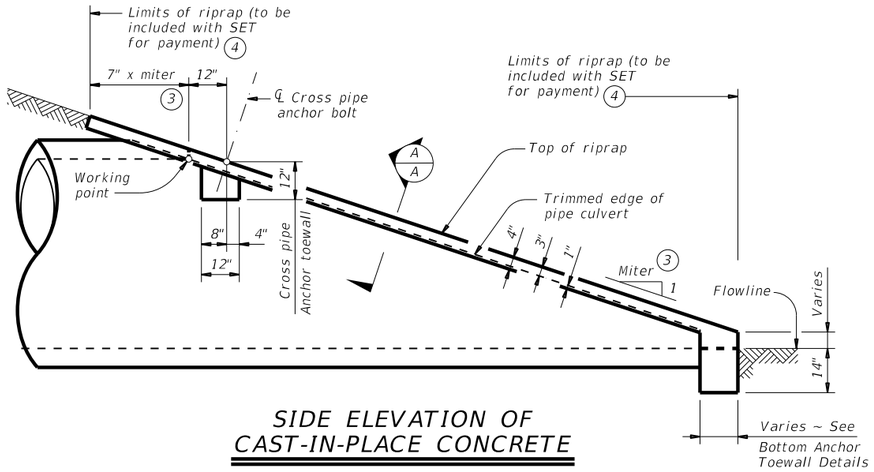
STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	96
CONT.	SECT.	JOB	
0914	33	088	



NOTE: All pipe runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

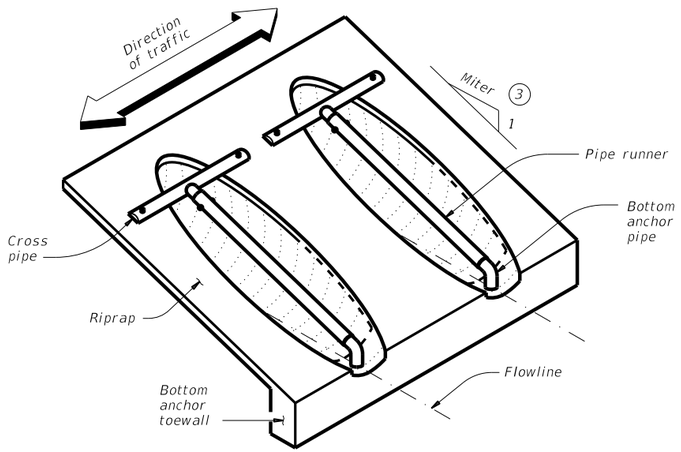
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing corrugated metal pipe (CMP) culvert.
Details of reinforced concrete pipe (RCP) culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert.
Details of corrugated metal pipe (CMP) culvert
are similar. Pipe runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS AND PIPE RUNNER LENGTHS (1) (2)

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length											
			3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
			0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
24"	1' – 7"	3' – 5"	N/A	N/A	N/A	5' – 10"	N/A	N/A	N/A	8' – 1"	N/A	N/A	N/A	12' – 9"
27"	1' – 8"	3' – 8"	N/A	N/A	5' – 5"	6' – 11"	N/A	N/A	7' – 7"	9' – 7"	N/A	N/A	11' – 11"	14' – 11"
30"	1' – 10"	3' – 11"	N/A	N/A	6' – 4"	8' – 0"	N/A	N/A	8' – 9"	11' – 0"	N/A	N/A	13' – 8"	17' – 0"
33"	1' – 11"	4' – 2"	6' – 2"	6' – 5"	7' – 3"	9' – 1"	8' – 6"	8' – 10"	10' – 0"	12' – 5"	13' – 3"	13' – 9"	15' – 5"	19' – 2"
36"	2' – 1"	4' – 5"	6' – 11"	7' – 3"	8' – 2"	10' – 2"	9' – 6"	9' – 11"	11' – 2"	13' – 10"	14' – 9"	15' – 3"	17' – 2"	21' – 3"
42"	2' – 4"	4' – 11"	8' – 6"	8' – 10"	9' – 11"	12' – 4"	11' – 7"	12' – 0"	13' – 6"	16' – 8"	17' – 9"	18' – 5"	20' – 8"	25' – 7"
48"	2' – 7"	5' – 5"	10' – 1"	10' – 5"	11' – 9"	N/A	13' – 7"	14' – 2"	15' – 10"	N/A	20' – 9"	21' – 6"	24' – 2"	N/A
54"	3' – 0"	5' – 11"	11' – 8"	12' – 1"	N/A	N/A	15' – 8"	16' – 3"	N/A	N/A	23' – 10"	24' – 8"	N/A	N/A
60"	3' – 3"	6' – 5"	13' – 3"	N/A	N/A	N/A	17' – 9"	N/A	N/A	N/A	26' – 10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS (3)

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED (2)

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (no skew)	Always required
42" thru 60"	Always required	Always required

STANDARD PIPE SIZES AND MAX PIPE RUNNER LENGTHS (1)

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10' – 0"
4" STD	4.500"	4.026"	19' – 8"
5" STD	5.563"	5.047"	34' – 2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) (5)

Nominal Culvert I.D.	3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

(1) Provide pipe runner of the size shown in the tables. Provide cross pipe of the same size as the pipe runner. Provide cross pipe stub out and bottom anchor pipe of the next smaller size pipe as shown in the Standard Pipe Sizes and Max Pipe Runner Lengths table.

(2) This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT Roadway Design Manual.

(3) Miter = slope of mitered end of pipe culvert.

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(5) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

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SHEET 1 OF 2

Texas Department of Transportation

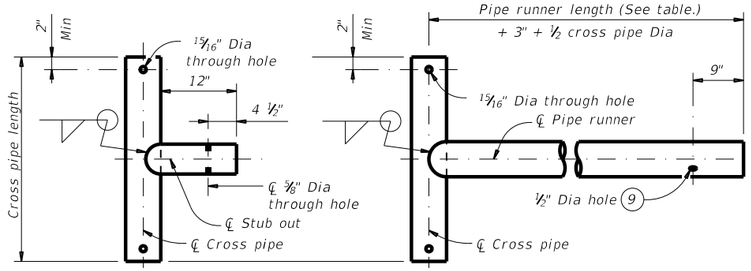
Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

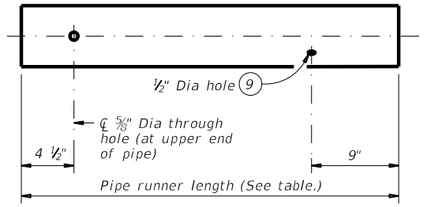
SETP-CD

FILE: setpcdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		97



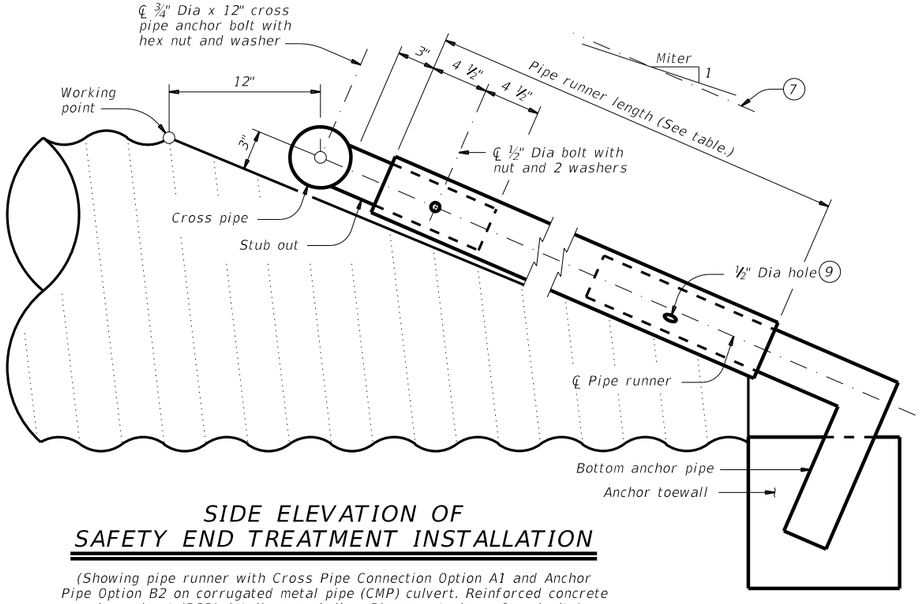
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



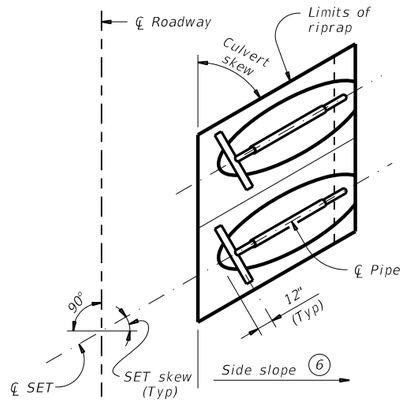
NOTE: The separate pipe runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

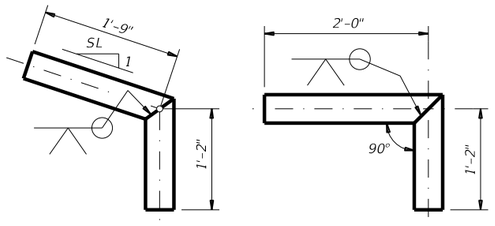


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing pipe runner with Cross Pipe Connection Option A1 and Anchor Pipe Option B2 on corrugated metal pipe (CMP) culvert. Reinforced concrete pipe culvert (RCP) details are similar. Riprap not shown for clarity)

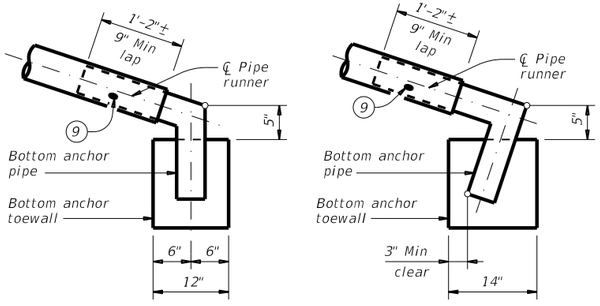


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

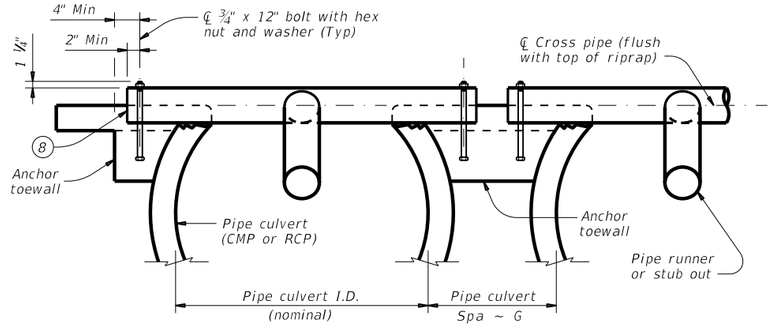
BOTTOM ANCHOR PIPE DETAILS (10)



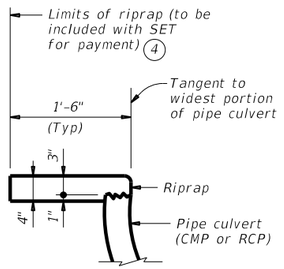
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert and riprap not shown for clarity.)



SHOWING CROSS PIPE AND ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SECTION A-A

(4) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, and 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

(7) Note that actual slope of pipe runner may vary slightly from side slope of riprap and trimmed culvert pipe edge.

(8) Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, inspect the 1/2" hole to ensure that the lap of the pipe runner with the bottom anchor pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the runner) may be substituted for the mitered and welded joint in the bottom anchor pipe.

MATERIAL NOTES:

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

Provide pipe runners, cross pipes, and anchor pipes conforming to the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.

Provide ASTM A307 bolts and nuts.

Galvanize all steel components, except concrete reinforcing, after fabrication.

Repair galvanizing damaged during transport or construction in accordance with the specifications.

GENERAL NOTES:

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

Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the pipe runners.

Payment for riprap and toewall is included in the price bid for each safety end treatment.

Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

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SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

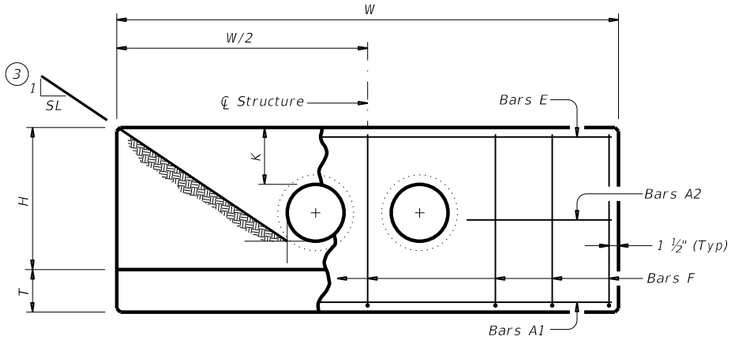
FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

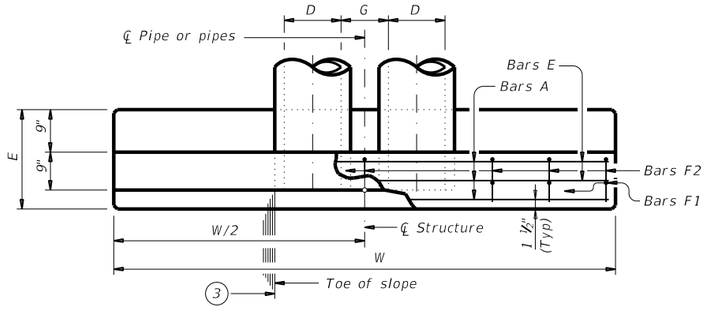
FILE: setpcdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		98

TABLE OF VARIABLE DIMENSIONS AND QUANTITIES FOR ONE HEADWALL (5)

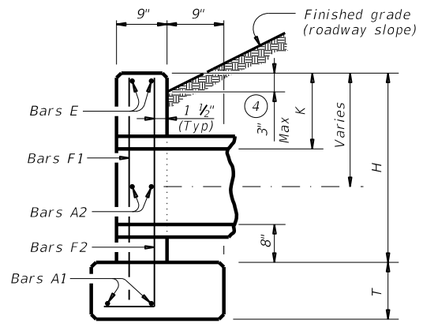
Slope	Dia of Pipe (D)	Values for One Pipe			Values To Be Added for Each Addt'l Pipe		
		W	Reinf (Lbs) (1)	Conc (CY) (2)	W	Reinf (Lbs) (1)	Conc (CY) (2)
2:1	12"	9' – 0"	122	1.1	1' – 9"	15	0.2
	15"	10' – 3"	136	1.3	2' – 2"	16	0.2
	18"	11' – 6"	163	1.5	2' – 8"	19	0.3
	21"	12' – 9"	200	1.8	3' – 1"	31	0.4
	24"	14' – 0"	217	2.1	3' – 7"	34	0.4
	27"	15' – 3"	254	2.4	3' – 11"	37	0.5
	30"	16' – 6"	272	2.7	4' – 4"	40	0.6
	33"	17' – 9"	314	3.1	4' – 8"	43	0.6
	36"	19' – 0"	371	3.9	5' – 1"	46	0.8
	42"	21' – 6"	442	4.9	5' – 10"	52	1.0
	48"	25' – 0"	569	6.4	6' – 7"	59	1.3
	54"	27' – 6"	701	7.5	7' – 6"	82	1.6
	60"	30' – 0"	794	8.8	8' – 3"	90	1.8
	66"	32' – 6"	894	10.2	8' – 9"	96	2.0
	72"	35' – 0"	1,055	11.7	9' – 4"	103	2.3
3:1	12"	13' – 0"	175	1.6	1' – 9"	14	0.2
	15"	14' – 9"	193	1.9	2' – 2"	17	0.2
	18"	16' – 6"	228	2.2	2' – 8"	19	0.3
	21"	18' – 3"	299	2.6	3' – 1"	31	0.4
	24"	20' – 0"	323	3.0	3' – 7"	33	0.4
	27"	21' – 9"	371	3.5	3' – 11"	37	0.5
	30"	23' – 6"	415	4.0	4' – 4"	40	0.5
	33"	25' – 3"	469	4.6	4' – 8"	43	0.6
	36"	27' – 0"	556	5.7	5' – 1"	46	0.8
	42"	30' – 6"	675	7.1	5' – 10"	52	1.0
	48"	35' – 6"	837	9.2	6' – 7"	59	1.3
	54"	39' – 0"	1,015	11.0	7' – 6"	84	1.6
	60"	42' – 6"	1,171	12.9	8' – 3"	91	1.8
	66"	46' – 0"	1,298	14.9	8' – 9"	98	2.0
	72"	49' – 6"	1,561	17.1	9' – 4"	103	2.3
4:1	12"	17' – 0"	229	2.0	1' – 9"	15	0.2
	15"	19' – 3"	266	2.4	2' – 2"	17	0.2
	18"	21' – 6"	308	2.9	2' – 8"	19	0.3
	21"	23' – 9"	382	3.5	3' – 1"	31	0.3
	24"	26' – 0"	430	3.9	3' – 7"	34	0.4
	27"	28' – 3"	486	4.7	3' – 11"	37	0.5
	30"	30' – 6"	539	5.2	4' – 4"	40	0.6
	33"	32' – 9"	603	6.0	4' – 8"	42	0.6
	36"	35' – 0"	738	7.5	5' – 1"	47	0.8
	42"	39' – 6"	881	9.3	5' – 10"	52	1.0
	48"	46' – 0"	1,102	12.1	6' – 7"	61	1.3
	54"	50' – 6"	1,364	14.4	7' – 6"	84	1.6
	60"	55' – 0"	1,547	16.9	8' – 3"	91	1.8
	66"	59' – 6"	1,741	19.5	8' – 9"	98	2.0
	72"	64' – 0"	2,077	22.4	9' – 4"	102	2.3
6:1	12"	25' – 0"	336	3.0	1' – 9"	14	0.2
	15"	28' – 3"	384	3.6	2' – 2"	17	0.2
	18"	31' – 6"	452	4.2	2' – 8"	19	0.3
	21"	34' – 9"	581	5.1	3' – 1"	31	0.4
	24"	38' – 0"	644	5.8	3' – 7"	34	0.4
	27"	41' – 3"	737	6.9	3' – 11"	37	0.5
	30"	44' – 6"	807	7.7	4' – 4"	39	0.6
	33"	47' – 9"	912	8.9	4' – 8"	44	0.6
	36"	51' – 0"	1,108	11.0	5' – 1"	48	0.8
	42"	57' – 6"	1,318	13.7	5' – 10"	54	1.0
	48"	67' – 0"	1,682	17.9	6' – 7"	59	1.3
	54"	73' – 6"	2,072	21.3	7' – 6"	83	1.6
	60"	80' – 0"	2,351	24.9	8' – 3"	89	1.8
	66"	86' – 6"	2,643	28.9	8' – 9"	96	2.0
	72"	93' – 0"	3,121	33.1	9' – 4"	101	2.3



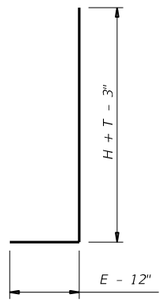
ELEVATION



PLAN OF NON-SKEWED PIPES



SECTION AT CENTER OF PIPE



BARS F2

(1) Total quantities include one 3'-1" lap for bars over 60' in length.

(2) Quantities shown are for concrete pipe and will increase slightly for metal pipe installations.

(3) Indicated slope is perpendicular to centerline pipe or pipes.

(4) For vehicle safety, construct curbs no more than 3" above finished grade. Reduce curb heights, if necessary, to meet these requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(5) Dimensions shown are usual and maximum.

(6) Quantities shown are for one structure end only (one headwall).

TABLE OF CONSTANT DIMENSIONS

Dia of Pipe (D)	G	K (5)	H	T	E
12"	0' – 9"	1' – 0"	2' – 8"	0' – 9"	1' – 9"
15"	0' – 11"	1' – 0"	2' – 11"	0' – 9"	1' – 9"
18"	1' – 2"	1' – 0"	3' – 2"	0' – 9"	1' – 9"
21"	1' – 4"	1' – 0"	3' – 5"	0' – 9"	2' – 0"
24"	1' – 7"	1' – 0"	3' – 8"	0' – 9"	2' – 0"
27"	1' – 8"	1' – 0"	3' – 11"	0' – 9"	2' – 3"
30"	1' – 10"	1' – 0"	4' – 2"	0' – 9"	2' – 3"
33"	1' – 11"	1' – 0"	4' – 5"	0' – 9"	2' – 6"
36"	2' – 1"	1' – 0"	4' – 8"	1' – 0"	2' – 6"
42"	2' – 4"	1' – 0"	5' – 2"	1' – 0"	2' – 9"
48"	2' – 7"	1' – 3"	5' – 11"	1' – 0"	3' – 0"
54"	3' – 0"	1' – 3"	6' – 5"	1' – 0"	3' – 3"
60"	3' – 3"	1' – 3"	6' – 11"	1' – 0"	3' – 6"
66"	3' – 3"	1' – 3"	7' – 5"	1' – 0"	3' – 9"
72"	3' – 4"	1' – 3"	7' – 11"	1' – 0"	4' – 0"

TABLE OF REINFORCING STEEL (6)

Bar	Size	Spa	No.
A1	#5	~	2
A2	#5	1' – 6"	~
E	#5	~	2
F	#5	1' – 0"	~

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide Class C concrete (f'c = 3,600 psi).

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Do not mount bridge rails of any type directly to these culvert headwalls.
This standard may not be used for wall heights, H, exceeding the values shown.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.

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Texas Department of Transportation

Bridge Division Standard

CONCRETE HEADWALLS WITH PARALLEL WINGS FOR NON-SKEWED PIPE CULVERTS

CH-PW-0

FILE: chpw0ste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		99

DATE: 5/22/2023 5:47:51 PM
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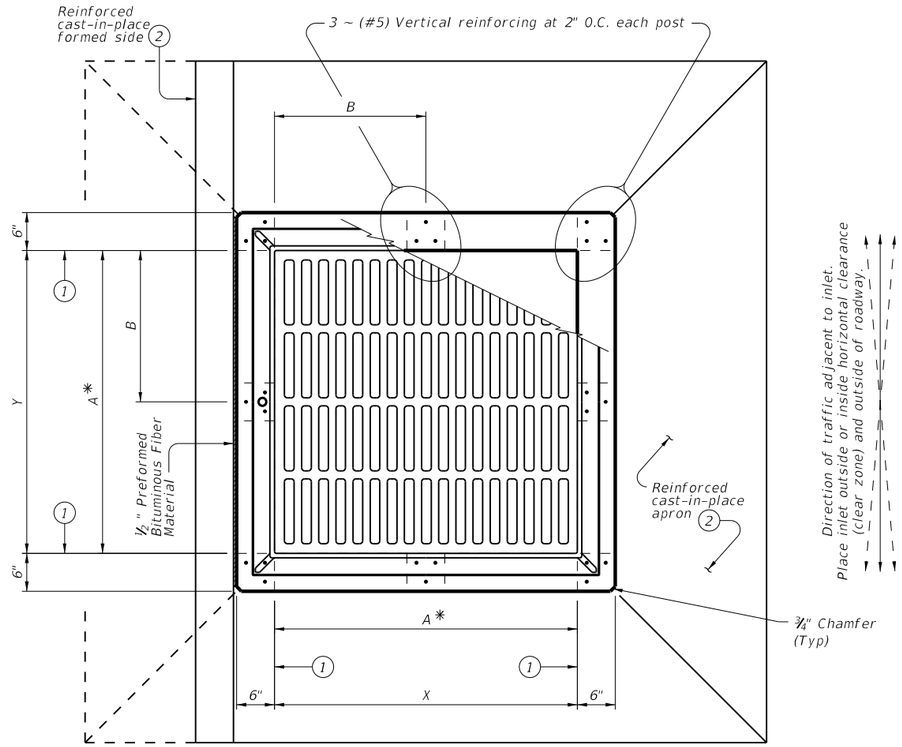
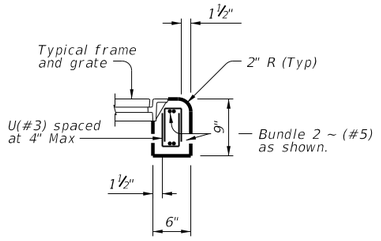
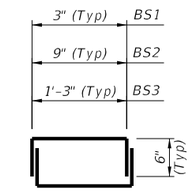


PLAN VIEW ~ STYLE 'FG' (3)



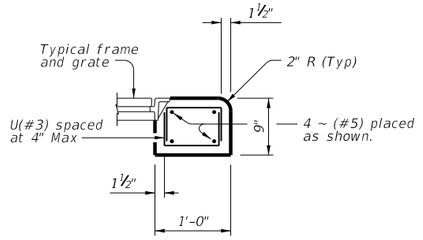
SECTION A-A ~ BS1



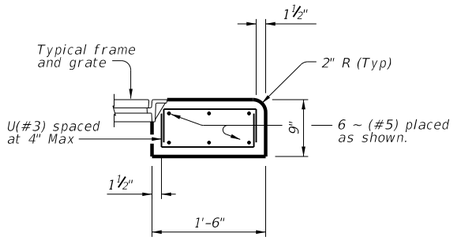
BARS U (#3)
Showing one complete bar.

Style	Size (X x Y)	A x A *	B x B	Beam Section
FG	3'x3'	3'x3'	1.5'x1.5'	BS1
FG	4'x4'	3'x3'	2'x2'	BS2
FG	4'x4'	4'x4'	2'x2'	BS1
FG	5'x5'	3'x3'	2.5'x2.5'	BS3
FG	5'x5'	4'x4'	2.5'x2.5'	BS2

* Nominal frame/grate size.



SECTION A-A ~ BS2



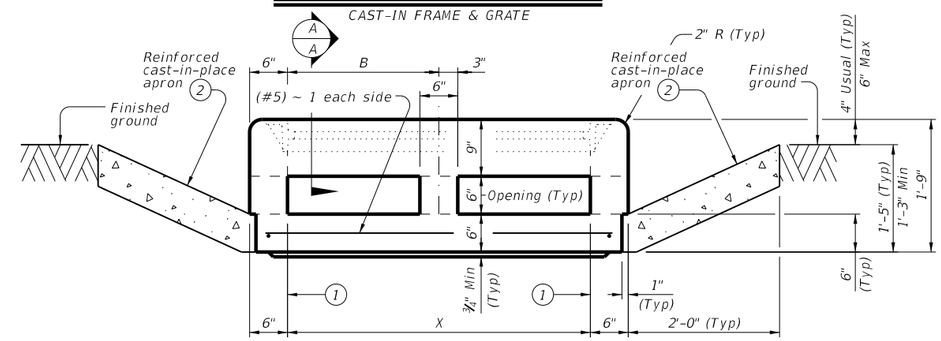
SECTION A-A ~ BS3

(1) Matches inside face of wall of precast base or riser below inlet.

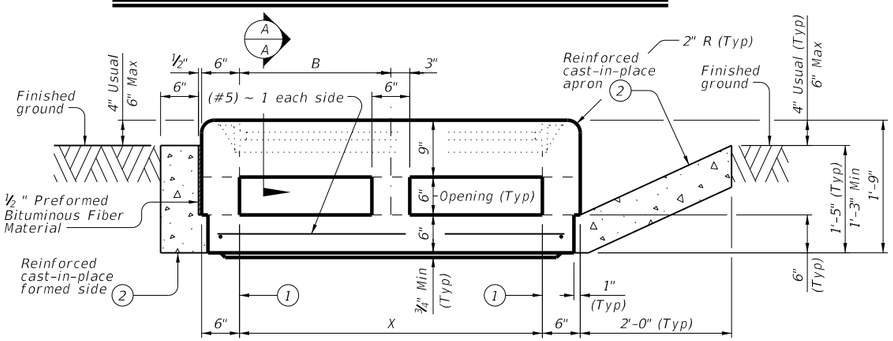
(2) Construct cast-in-place reinforced concrete with or without formed side. Place formed side/sides as directed elsewhere in the plans. Formed sides may only be used on sides parallel to traffic. Use Class "C" concrete. Apron and formed side reinforcing not shown for clarity. Apron and formed side are subsidiary to PAZD-CZ. Apron is 2'-0" width around precast zone drain, unless an optional formed side is used. For apron and formed side, provide (#4) reinforcing at 12" O.C.

(3) Top slab reinforcing not shown for clarity.

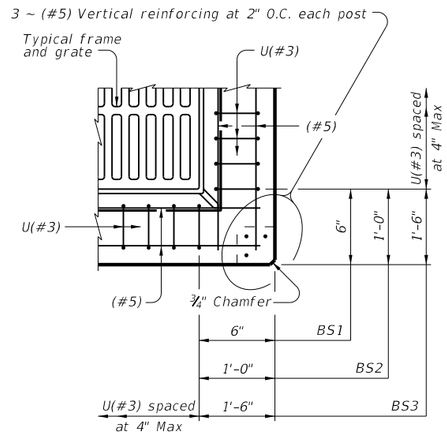
(4) Top slab reinforcing and post reinforcing not shown for clarity.



ELEVATION VIEW WITHOUT FORMED SIDE (4)



ELEVATION VIEW WITH FORMED SIDE (4)



TYPICAL CORNER REINFORCING PLAN DETAIL
Showing BS2 other beam sections similar.

FABRICATION NOTES:
1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR.
3. Provide clear cover of ¾" to reinforcing from bottom of slab and 2" to reinforcing from top of slab for structural reinforcement.
4. Provide 1 ½" end cover on (#5) reinforcing.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.

INSTALLATION NOTES:
1. Precast Area Zone Drain within Clear Zone (PAZD-CZ) is for use in ditches and medians outside and inside of the horizontal clearance (clear zone). PAZD-CZ is never placed in the roadway.
2. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
3. Do not grout rubber gasket joints without Manufacturer's recommendation.

GENERAL NOTES:
1. Designed according to ASTM C913.
2. Payment for inlet is per Item 465, "Junction Boxes, Manholes, and Inlets" by type, style, size, and opening size (when applicable).

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

PRECAST AREA ZONE DRAIN WITHIN CLEAR ZONE

PAZD-CZ

FILE: prestd15-20.dgn	DN: SDC	CK: TAR	DW: JTR	CK: SDC
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		100

EXISTING POLES

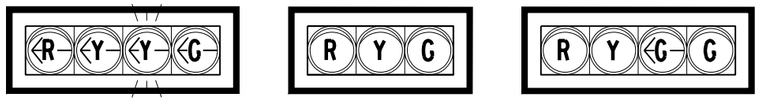
POLE E1: EXISTING 48' SINGLE MAST ARM W/ LUMINAIRE

POLE E2: EXISTING 36' SINGLE MAST ARM

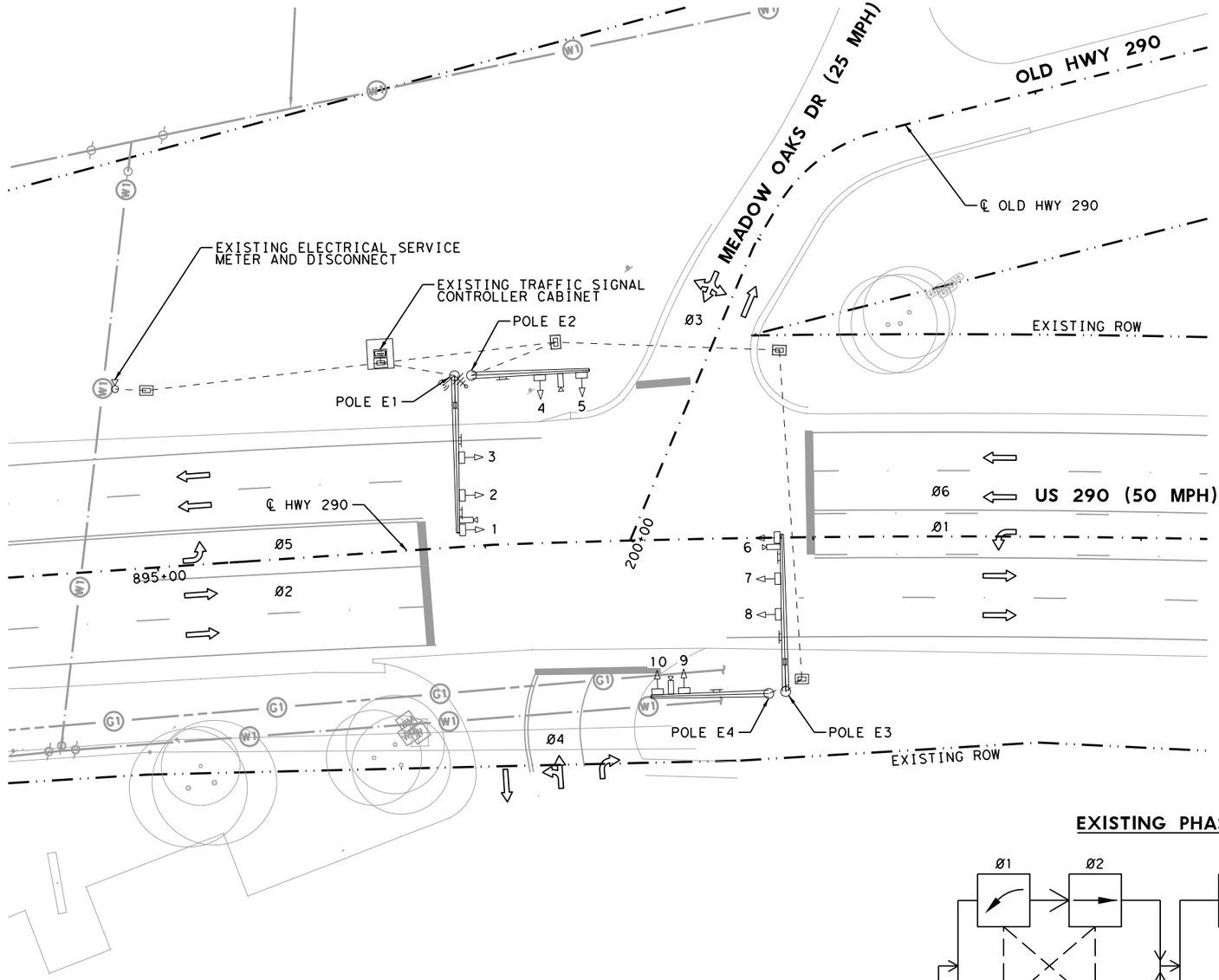
POLE E3: EXISTING 48' SINGLE MAST ARM W/ LUMINAIRE

POLE E4: EXISTING 36' SINGLE MAST ARM

EXISTING SIGNALS



1, 6 | 2, 3, 5, 7, 8, 10 | 4, 9



LEGEND

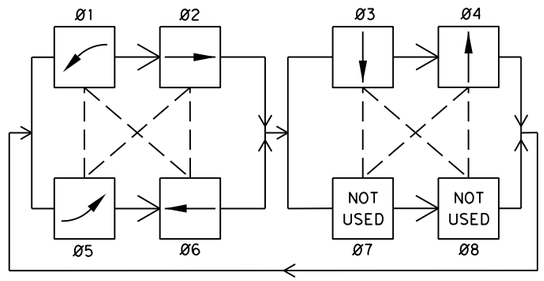
- EX. SIGNAL POLE W/ MAST ARM
- EX. LUMINAIRE
- EX. HORIZONTAL SIGNAL HEAD
- EX. PEDESTRIAN POLE W/ SIGNAL HEAD
- EX. GROUND BOX
- EX. CONDUIT
- EX. SERVICE METER AND DISCONNECT
- EX. GROUND MOUNTED CONTROLLER CABINET
- EX. VIVDS DETECTOR
- EX. RADAR DETECTOR
- EX. MAST ARM SIGN
- EX. OMNI ANTENNA
- EX. WIRELESS RADIO

N

0' 20' 40'

SCALE

EXISTING PHASING



NOTE: EXISTING PHASE NUMBERS AND/OR PHASE SEQUENCE PROGRAMMED INTO TRAFFIC SIGNAL CONTROLLER MAY DIFFER FROM PHASE/SEQUENCE PATTERN SHOWN ABOVE. EXISTING SIGNAL PHASING IS PROVIDED ONLY TO SHOW GENERAL OPERATION/PATTERN OF TRAFFIC SIGNAL.

NOTES:

1. THE PRESENCE AND LOCATION OF UTILITIES SHOWN ON THE PLANS ARE BASED ON THE BEST AVAILABLE RECORDS. UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY AND DETERMINE THE EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK VIA TEXAS "ONE-CALL"/811 SYTEM. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE, PRESERVE, AND PROTECT ANY UTILITIES.

Matthew Gaal
5/22/2023

STATE OF TEXAS
MATTHEW A. GAAL
140753
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

US 290 & MEADOW OAKS DRIVE

EXISTING TRAFFIC SIGNAL LAYOUT

SHEET 1 OF 1

FED.RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	101
CONT.	SECT.	JOB	
0914	33	088	

FILENAME: pw:\\kh-pw.bentley.com:kh-pw-01\Documents\01 Active Projects\TX-AUS-069408400 - Dripping Springs SRTS\Design\Data\4 - Design\Plan Set\8. Traffic\DRIP_TRF_SIG101
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PROPOSED PEDESTRIAN SIGNAL HEADS AND APS BUTTONS

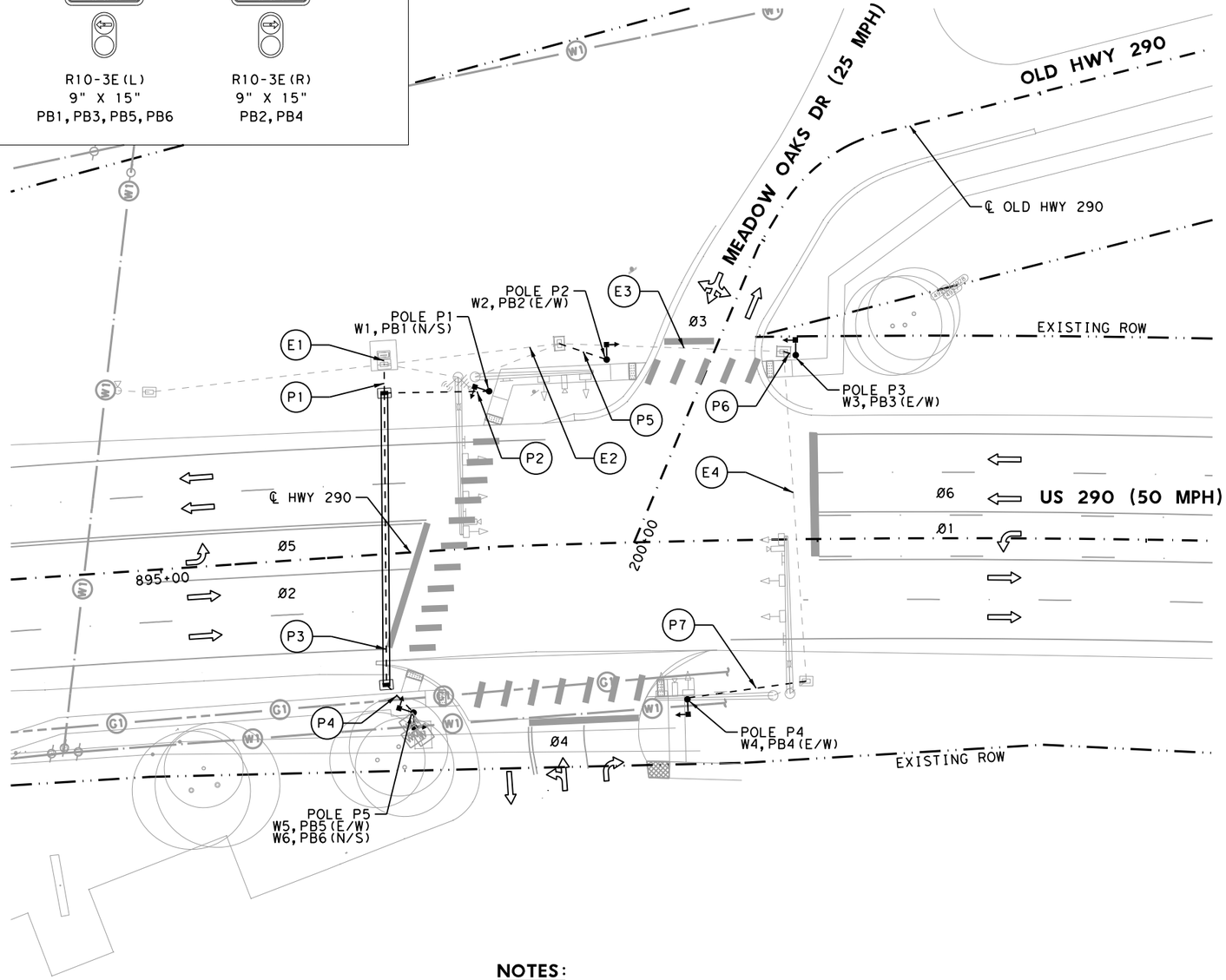
COUNTDOWN
PEDESTRIAN SIGNAL
W1, W2, W3,
W4, W5, W6

R10-3E(L)
9" X 15"
PB1, PB3, PB5, PB6

R10-3E(R)
9" X 15"
PB2, PB4

PROPOSED POLE LOCATIONS

POLE	CHAIN	STATION	OFFSET
P1	℄ HWY 290	896 + 02.3	47.5' LT
P2		896 + 39.3	55.4' LT
P3		896 + 94.5	55.6' LT
P4		896 + 59.4	47.8' RT
P5		895 + 73.3	48.3' RT



LEGEND

- EX. SIGNAL POLE W/ MAST ARM
- EX. LUMINAIRE
- EX. HORIZONTAL SIGNAL HEAD
- EX. PEDESTRIAN POLE W/ SIGNAL HEAD
- EX. GROUND BOX
- EX. CONDUIT
- EX. SERVICE METER AND DISCONNECT
- EX. GROUND MOUNTED CONTROLLER CABINET
- PROP. PEDESTRIAN POLE W/ SIGNAL HEAD
- PROP. CONDUIT (TRENCH)
- PROP. CONDUIT (BORE)
- PROP. GROUND BOX TY D W/ APRON
- (XY) CONDUIT RUN ID

0' 20' 40'
SCALE

PROPOSED PED SIGNAL NOTES

POLES P1, P2, P3, P4, P5: PED POLE ASSEMBLY (0687-6001)

PB1, PB2, PB3, PB4, PB5, PB6: PED DETECT PUSH BUTTON (APS) (0688-6001)

W1, W2, W3, W4, W5, W6: PED SIGN SEC (LED) (COUNTDOWN) (0682-6018)

NOTES:

1. THE PRESENCE AND LOCATION OF UTILITIES SHOWN ON THE PLANS ARE BASED ON THE BEST AVAILABLE RECORDS. UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY AND DETERMINE THE EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK VIA TEXAS "ONE-CALL"/811 SYTEM. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE, PRESERVE, AND PROTECT ANY UTILITIES.
2. CONTRACTOR SHALL CONNECT FIELD WIRING TO CONTROLLER.
3. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
4. CONTRACTOR SHALL CONTACT TXDOT TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF SIGNAL WORK.

Matthew Gaal
5/22/2023

STATE OF TEXAS
MATTHEW A. GAAL
140753
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

US 290 & MEADOW OAKS DRIVE

PROPOSED TRAFFIC SIGNAL LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	102
CONT.	SECT.	JOB	
0914	33	088	

GROUND WIRING

RUN #	ITEM 618 CONDUIT		ITEM 620 ELECTRICAL CONDUCTORS	ITEM 684 SIGNAL CABLE TYPE A		LENGTH OF RUN	RUN #
	3" PVC SCH 40 TRENCH	3" PVC SCH 40 BORE	NO. 8 BARE	5 CNDR NO. 14	2 CNDR NO. 12		
E1	EXISTING			6	6	5	E1
P1	2		2	3	3	10	P1
P2	1		1	1	1	35	P2
P3		2	2	2	2	90	P3
P4	1		1	2	2	15	P4
E2	EXISTING			3	3	55	E2
P5	1		1	1	1	20	P5
E3	EXISTING			2	2	70	E3
P6	1		1	1	1	5	P6
E4	EXISTING			1	1	105	E4
P7	1		1	1	1	40	P7
TOTAL QTY (LF)	135	180	315	780	780		

POLE WIRING

INSIDE POLES	SIGNAL CABLE TY A	
	5C #14	2C #12
POLE P1	10	5
POLE P2	10	5
POLE P3	10	5
POLE P4	10	5
POLE P5	20	10
TOTAL QTY (LF)	60	30

NOTE: THE PRESENCE OF EXISTING TRAFFIC SIGNAL CONDUITS WAS DETERMINED BASED ON THE BEST AVAILABLE RECORDS. CONTRACTOR SHALL CONFIRM THE PRESENCE OF EXISTING TRAFFIC SIGNAL CONDUITS IN THE FIELD AND IMMEDIATELY INFORM ENGINEER OF ANY DISCREPANCIES NOTED. CONTRACTOR IS FULLY RESPONSIBLE FOR MAINTAINING COMPLIANCE WITH NATIONAL ELECTRICAL CODE.

CABINET WIRING

INSIDE CABINET	SIGNAL CABLE TY A	
	5C #14	2C #12
TOTAL QTY (LF)	30	30

NOTE: EXISTING PHASE NUMBERS PROGRAMMED INTO TRAFFIC SIGNAL CONTROLLER MAY DIFFER FROM PHASES SHOWN IN THESE PLANS. THE PHASING PROVIDED IN THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH TXDOT SIGNAL SHOP TO CONFIRM EXISTING PHASE ASSIGNMENTS PROGRAMMED INTO EXISTING CONTROLLER.

CABLE TERMINATIONS

TERMINAL #	CONDUCTOR COLOR	POLE P1 TO SIGNAL CABINET		POLE P2 TO SIGNAL CABINET		POLE P3 TO SIGNAL CABINET	
		CABLE 1 W1 PHASE 03 - PED	CABLE 2 PB1 PHASE 03 - PED	CABLE 3 W2 PHASE 06 - PED	CABLE 4 PB2 PHASE 06 - PED	CABLE 5 W3 PHASE 06 - PED	CABLE 6 PB3 PHASE 06 - PED
		5C	2C	5C	2C	5C	2C
1	BLACK	SPARE	PED CALL	DW	PED CALL	DW	PED CALL
2	WHITE	PED COMMON	APS COMMON	PED COMMON	APS COMMON	PED COMMON	APS COMMON
3	RED	DW		SPARE		SPARE	
4	GREEN	W		SPARE		SPARE	
5	ORANGE	SPARE		W		W	

TERMINAL #	CONDUCTOR COLOR	POLE P4 TO SIGNAL CABINET		POLE P5 TO SIGNAL CABINET			
		CABLE 7 W4 PHASE 02 - PED	CABLE 8 PB4 PHASE 02 - PED	CABLE 9 W5 PHASE 02 - PED	CABLE 10 PB5 PHASE 02 - PED	CABLE 11 W6 PHASE 03 - PED	CABLE 12 PB6 PHASE 03 - PED
		5C	2C	5C	2C	5C	2C
1	BLACK	DW	PED CALL	DW	PED CALL	SPARE	PED CALL
2	WHITE	PED COMMON	APS COMMON	PED COMMON	APS COMMON	PED COMMON	APS COMMON
3	RED	SPARE		SPARE		DW	
4	GREEN	SPARE		SPARE		W	
5	ORANGE	W		W		SPARE	

APS MESSAGE INFORMATION

APS UNIT NO.	ACKNOWLEDGEMENT DEFAULT "WAIT"	EXTENDED PRESS MESSAGE "WAIT TO CROSS (STREET NAME) AT (CROSS STREET NAME)"	WALK PRESS MESSAGE "WALK SIGN IS ON TO CROSS (STREET NAME)"
PB1	YES	US 290 AT MEADOW OAKS	US 290
PB2	YES	MEADOW OAKS AT US 290	MEADOW OAKS
PB3	YES	MEADOW OAKS AT US 290	MEADOW OAKS
PB4	YES	MEADOW OAKS AT US 290	MEADOW OAKS
PB5	YES	MEADOW OAKS AT US 290	MEADOW OAKS
PB6	YES	US 290 AT MEADOW OAKS	US 290

NOT TO SCALE

Matthew Gaal
5/22/2023

STATE OF TEXAS
MATTHEW A. GAAL
140753
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

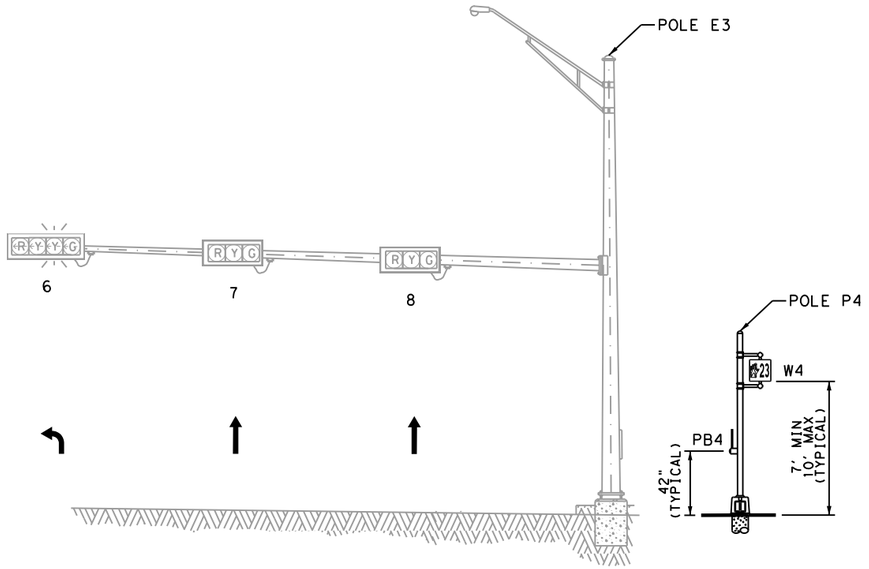
US 290 & MEADOW OAKS DRIVE

TRAFFIC SIGNAL ELECTRICAL DETAILS

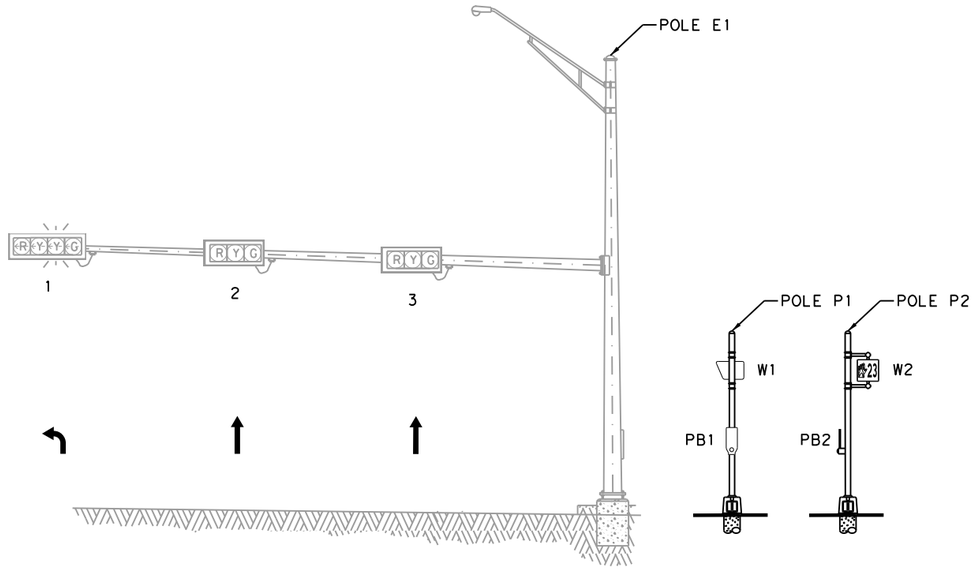
SHEET 1 OF 1

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	103
CONT.	SECT.	JOB	
0914	33	088	

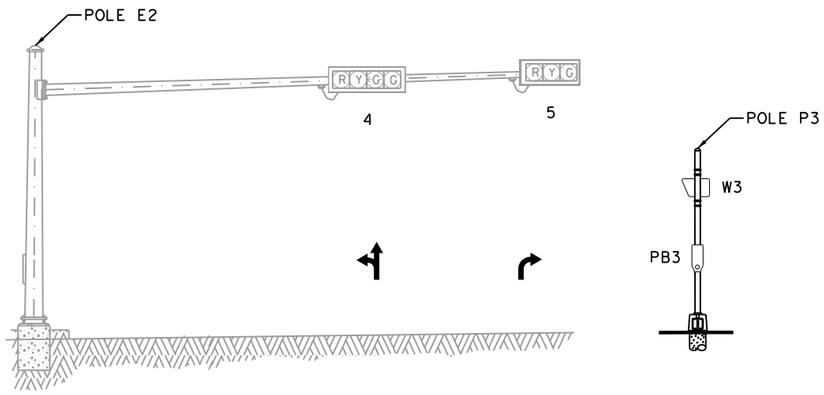


LOOKING EAST ON US 290

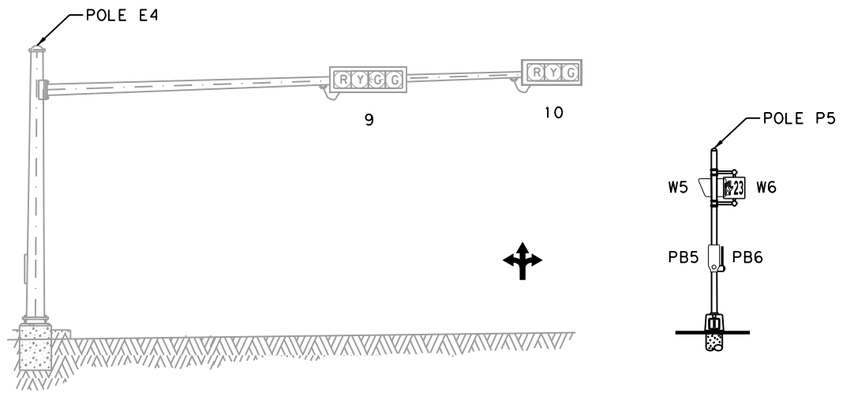


LOOKING WEST ON US 290

NOT TO SCALE



LOOKING NORTH ON MEADOW OAKS DRIVE



LOOKING SOUTH ON MEADOW OAKS DRIVE

Matthew Caal
5/22/2023

STATE OF TEXAS
MATTHEW A. CAAL
140753
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

Kimley»Horn
F-928

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DRIPPING SPRINGS SRTS

US 290 & MEADOW OAKS DRIVE

TRAFFIC SIGNAL ELEVATION VIEWS

SHEET 1 OF 1

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	104
CONT.	SECT.	JOB	
0914	33	088	

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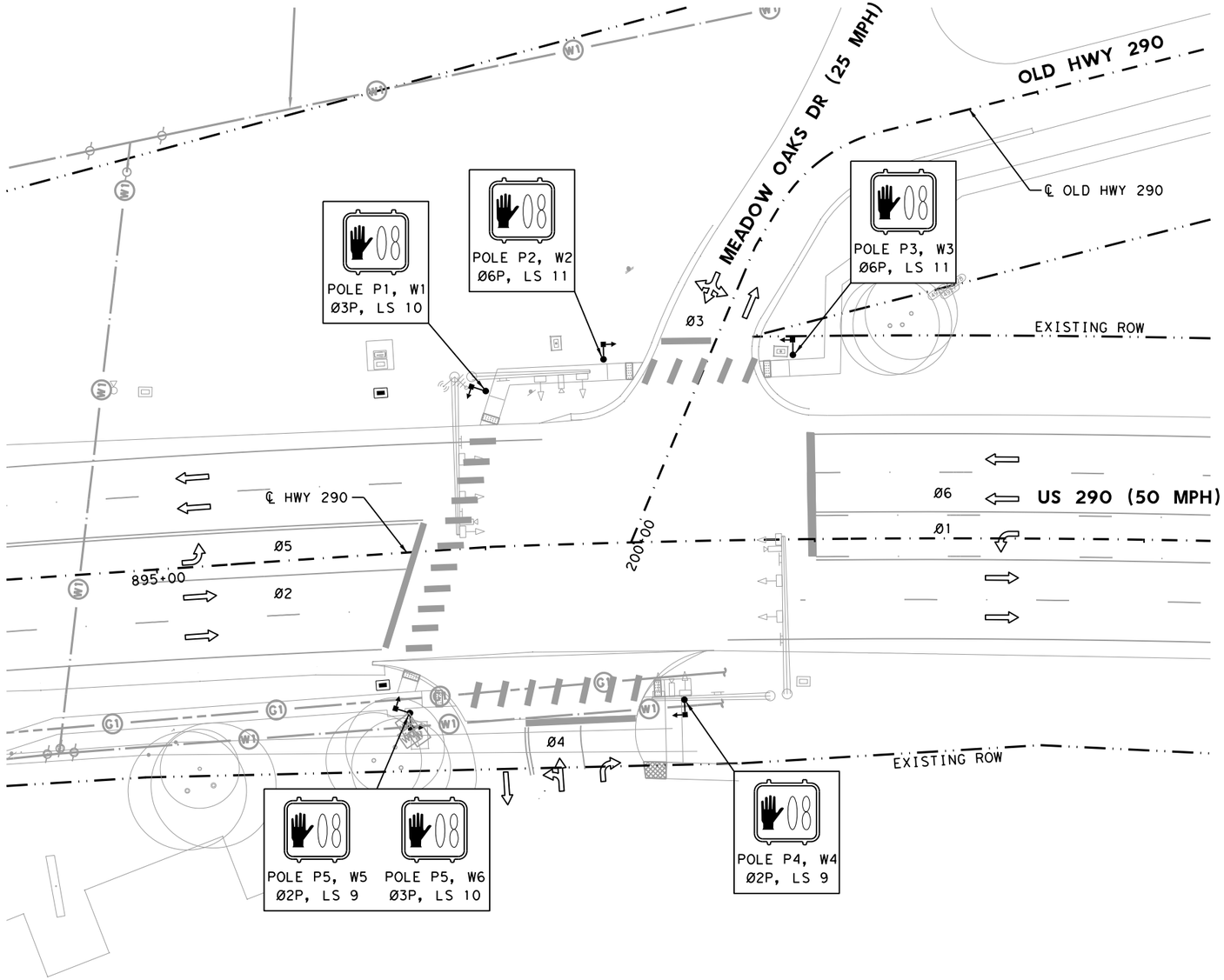

LEGEND

- EX. SIGNAL POLE W/ MAST ARM
- EX. HORIZONTAL SIGNAL HEAD
- EX. PEDESTRIAN POLE W/ SIGNAL HEAD
- EX. GROUND BOX
- EX. SERVICE METER AND DISCONNECT
- EX. GROUND MOUNTED CONTROLLER CABINET
- PROP. PEDESTRIAN POLE W/ SIGNAL HEAD
- PROP. GROUND BOX TY D W/ APRON

N

0' 20' 40'
SCALE

NOTE: EXISTING PHASE NUMBERS PROGRAMMED INTO TRAFFIC SIGNAL CONTROLLER MAY DIFFER FROM PHASES SHOWN IN THESE PLANS. THE PHASING PROVIDED IN THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH TXDOT SIGNAL SHOP TO CONFIRM EXISTING PHASE ASSIGNMENTS PROGRAMMED INTO EXISTING CONTROLLER.

Matthew Gaal
5/22/2023

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140753
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

US 290 & MEADOW OAKS DRIVE

TRAFFIC SIGNAL LOAD SWITCHES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	105
CONT.	SECT.	JOB	
0914	33	088	

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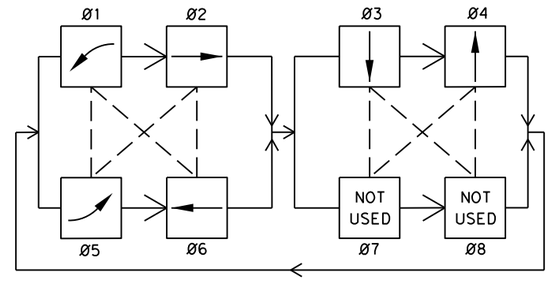
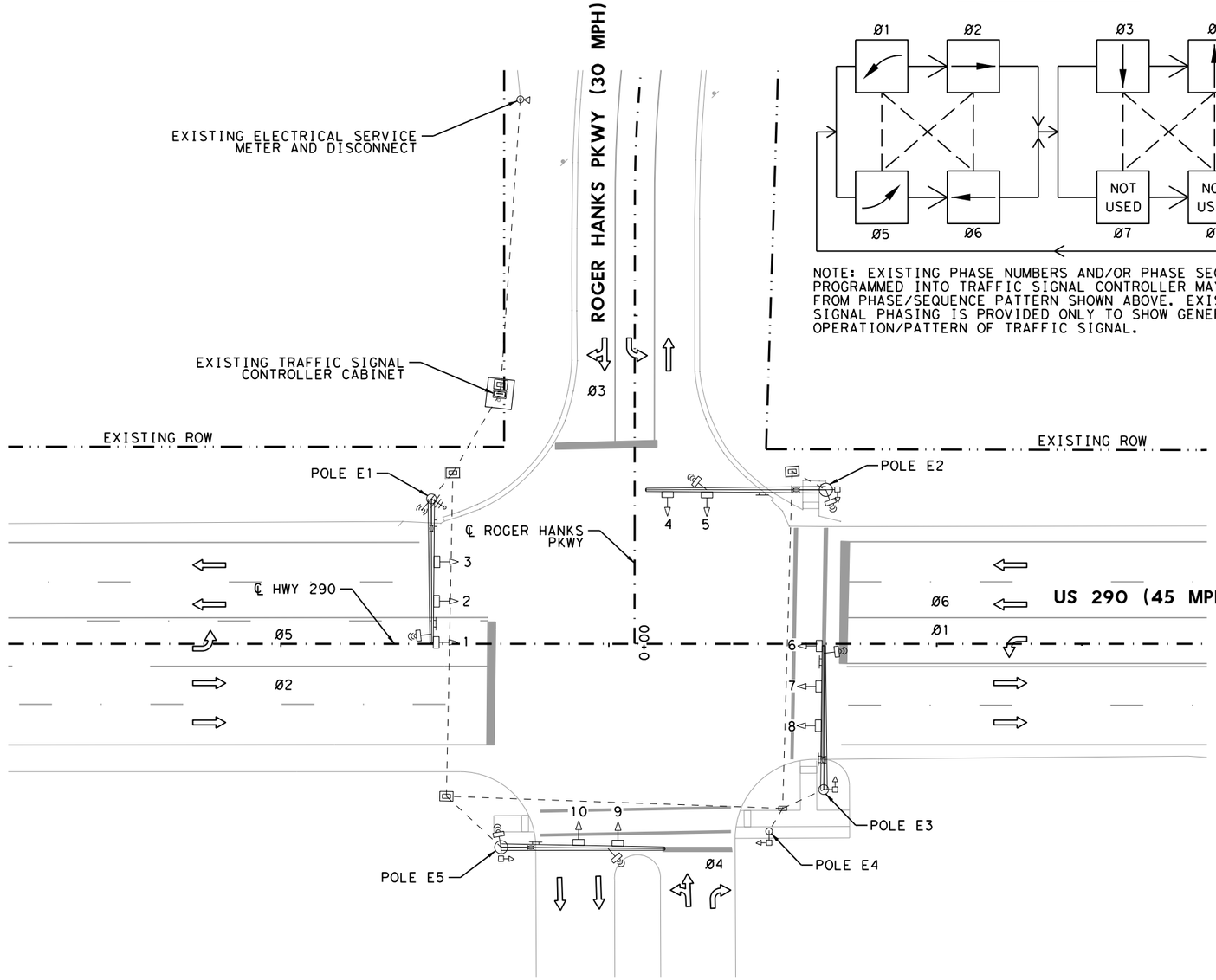
EXISTING PHASING



NOTE: EXISTING PHASE NUMBERS AND/OR PHASE SEQUENCE PROGRAMMED INTO TRAFFIC SIGNAL CONTROLLER MAY DIFFER FROM PHASE/SEQUENCE PATTERN SHOWN ABOVE. EXISTING SIGNAL PHASING IS PROVIDED ONLY TO SHOW GENERAL OPERATION/PATTERN OF TRAFFIC SIGNAL.



LEGEND

- EX. SIGNAL POLE W/ MAST ARM
- EX. LUMINAIRE
- EX. HORIZONTAL SIGNAL HEAD
- EX. PEDESTRIAN POLE W/ SIGNAL HEAD
- EX. GROUND BOX
- EX. CONDUIT
- EX. SERVICE METER AND DISCONNECT
- EX. GROUND MOUNTED CONTROLLER CABINET
- EX. VIVDS DETECTOR
- EX. RADAR DETECTOR
- EX. MAST ARM SIGN
- EX. OMNI ANTENNA
- EX. WIRELESS RADIO

0' 20' 40'
SCALE

NOTES:

1. THE PRESENCE AND LOCATION OF UTILITIES SHOWN ON THE PLANS ARE BASED ON THE BEST AVAILABLE RECORDS. UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY AND DETERMINE THE EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK VIA TEXAS "ONE-CALL"/811 SYTEM. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE, PRESERVE, AND PROTECT ANY UTILITIES.

EXISTING POLES

POLE E1: EXISTING 44' SINGLE MAST ARM W/ LUMINAIRE

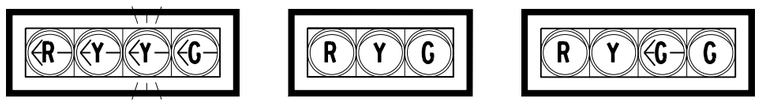
POLE E2: EXISTING 44' SINGLE MAST ARM W/ LUMINAIRE

POLE E3: EXISTING 44' SINGLE MAST ARM W/ LUMINAIRE

POLE E4: EXISTING PED POLE ASSEMBLY

POLE E5: EXISTING 50' SINGLE MAST ARM W/ LUMINAIRE

EXISTING SIGNALS



1, 6 | 2, 3, 5, 7, 8, 10 | 4, 9

Matthew Gaal
5/22/2023

STATE OF TEXAS
MATTHEW A. GAAL
140753
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

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DRIPPING SPRINGS SRTS

US 290 & ROGER HANKS PKWY

EXISTING TRAFFIC SIGNAL LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	106
CONT.	SECT.	JOB	
0914	33	088	

PROPOSED PEDESTRIAN SIGNAL HEADS AND APS BUTTONS

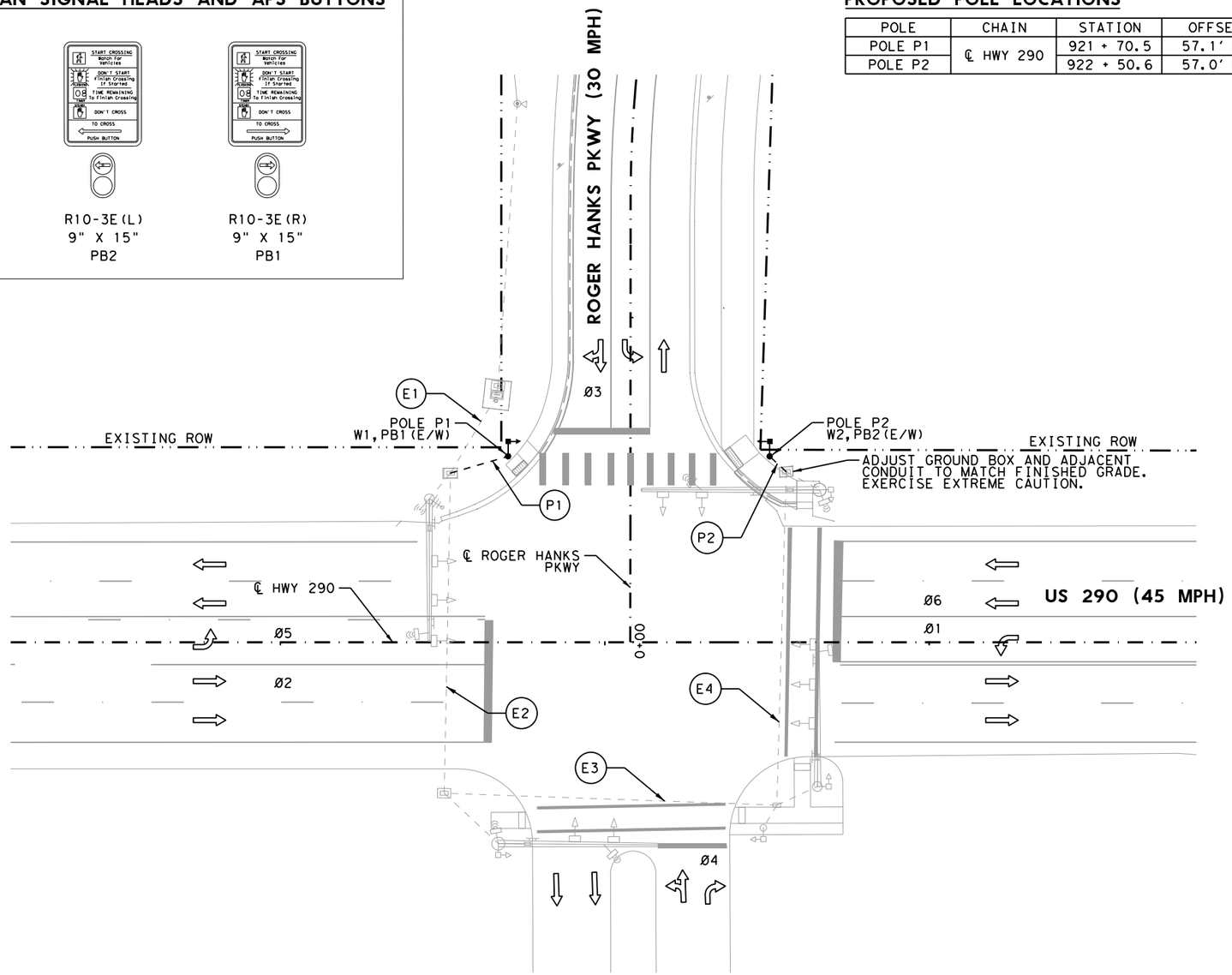
COUNTDOWN
PEDESTRIAN SIGNAL
W1, W2

R10-3E(L)
9" X 15"
PB2

R10-3E(R)
9" X 15"
PB1

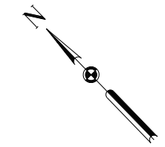
PROPOSED POLE LOCATIONS

POLE	CHAIN	STATION	OFFSET
POLE P1	℄ HWY 290	921 + 70.5	57.1' LT
POLE P2		922 + 50.6	57.0' LT



LEGEND

- EX. SIGNAL POLE W/ MAST ARM
- EX. LUMINAIRE
- EX. HORIZONTAL SIGNAL HEAD
- EX. PEDESTRIAN POLE W/ SIGNAL HEAD
- EX. GROUND BOX
- EX. CONDUIT
- EX. SERVICE METER AND DISCONNECT
- EX. GROUND MOUNTED CONTROLLER CABINET
- PROP. PEDESTRIAN POLE W/ SIGNAL HEAD
- PROP. CONDUIT (TRENCH)
- PROP. CONDUIT (BORE)
- PROP. GROUND BOX TY D W/ APRON
- (XY) CONDUIT RUN ID



0' 20' 40'
SCALE

PROPOSED PED SIGNAL NOTES

POLES P1, P2: PED POLE ASSEMBLY (0687-6001)

PB1, PB2: PED DETECT PUSH BUTTON (APS) (0688-6001)

W1, W2: PED SIGN SEC (LED) (COUNTDOWN) (0682-6018)

NOTES:

1. THE PRESENCE AND LOCATION OF UTILITIES SHOWN ON THE PLANS ARE BASED ON THE BEST AVAILABLE RECORDS. UTILITIES MAY BE PRESENT THAT ARE NOT SHOWN ON THE PLANS. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO VERIFY AND DETERMINE THE EXACT LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL CALL UTILITY LOCATOR SERVICE AT LEAST 48 HOURS PRIOR TO COMMENCING WORK VIA TEXAS "ONE-CALL"/811 SYTEM. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY THE FAILURE TO LOCATE, PRESERVE, AND PROTECT ANY UTILITIES.
2. CONTRACTOR SHALL CONNECT FIELD WIRING TO CONTROLLER.
3. CONTRACTOR SHALL POTHOLE ALL SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TO INSTALLING POLE FOUNDATIONS.
4. CONTRACTOR SHALL CONTACT TXDOT TRAFFIC ENGINEER A MINIMUM OF SEVEN (7) DAYS PRIOR TO BEGINNING OF SIGNAL WORK.

Matthew Gaal
5/22/2023

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Texas

Kimley»Horn
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DRIPPING SPRINGS SRTS

US 290 & ROGER HANKS PKWY

PROPOSED TRAFFIC SIGNAL LAYOUT

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	107
CONT.	SECT.	JOB	
0914	33	088	

GROUND WIRING

RUN #	ITEM 618 CONDUIT	ITEM 620 ELECTRICAL CONDUCTORS	ITEM 684 SIGNAL CABLE TYPE A		LENGTH OF RUN	RUN #
	3" PVC SCH 40 TRENCH	NO. 8 BARE	5 CNDR NO. 14	2 CNDR NO. 12		
E1	EXISTING		2	2	30	E1
P1	1	1	1	1	20	P1
E2	EXISTING		1	1	100	E2
E3	EXISTING		1	1	105	E3
E4	EXISTING		1	1	105	E4
P2	1	1	1	1	10	P2
TOTAL QTY (LF)	30	30	400	400		

NOTE: THE PRESENCE OF EXISTING TRAFFIC SIGNAL CONDUITS WAS DETERMINED BASED ON THE BEST AVAILABLE RECORDS. CONTRACTOR SHALL CONFIRM THE PRESENCE OF EXISTING TRAFFIC SIGNAL CONDUITS IN THE FIELD AND IMMEDIATELY INFORM ENGINEER OF ANY DISCREPANCIES NOTED. CONTRACTOR IS FULLY RESPONSIBLE FOR MAINTAINING COMPLIANCE WITH NATIONAL ELECTRICAL CODE.

POLE WIRING

INSIDE POLES	SIGNAL CABLE TY A	
	5C #14	2C #12
POLE P1	10	5
POLE P2	10	5
TOTAL QTY (LF)	20	10

CABINET WIRING

INSIDE CABINET	SIGNAL CABLE TY A	
	5C #14	2C #12
TOTAL QTY (LF)	10	10

CABLE TERMINATIONS

TERMINAL #	CONDUCTOR COLOR	POLE P1 TO SIGNAL CABINET		POLE P2 TO SIGNAL CABINET	
		CABLE 1 W1 PHASE 06 - PED	CABLE 2 PB1 PHASE 06 - PED	CABLE 3 W2 PHASE 06 - PED	CABLE 4 PB2 PHASE 06 - PED
		5C	2C	5C	2C
1	BLACK	DW	PED CALL	DW	PED CALL
2	WHITE	PED COMMON	APS COMMON	PED COMMON	APS COMMON
3	RED	SPARE		SPARE	
4	GREEN	SPARE		SPARE	
5	ORANGE	W		W	

NOTE: EXISTING PHASE NUMBERS PROGRAMMED INTO TRAFFIC SIGNAL CONTROLLER MAY DIFFER FROM PHASES SHOWN IN THESE PLANS. THE PHASING PROVIDED IN THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH TXDOT SIGNAL SHOP TO CONFIRM EXISTING PHASE ASSIGNMENTS PROGRAMMED INTO EXISTING CONTROLLER.

APS MESSAGE INFORMATION

APS UNIT NO.	ACKNOWLEDGEMENT DEFAULT "WAIT"	EXTENDED PRESS MESSAGE	WALK PRESS MESSAGE
		"WAIT TO CROSS (STREET NAME) AT (CROSS STREET NAME)"	"WALK SIGN IS ON TO CROSS (STREET NAME)"
PB1	YES	ROGER HANKS AT US 290	ROGER HANKS
PB2	YES	ROGER HANKS AT US 290	ROGER HANKS

NOT TO SCALE

Matthew Gaal
5/22/2023

STATE OF TEXAS
MATTHEW A. GAAL
140753
LICENSED
PROFESSIONAL ENGINEER

DRIPPING SPRINGS
Texas

Kimley»Horn
F-928

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DRIPPING SPRINGS SRTS

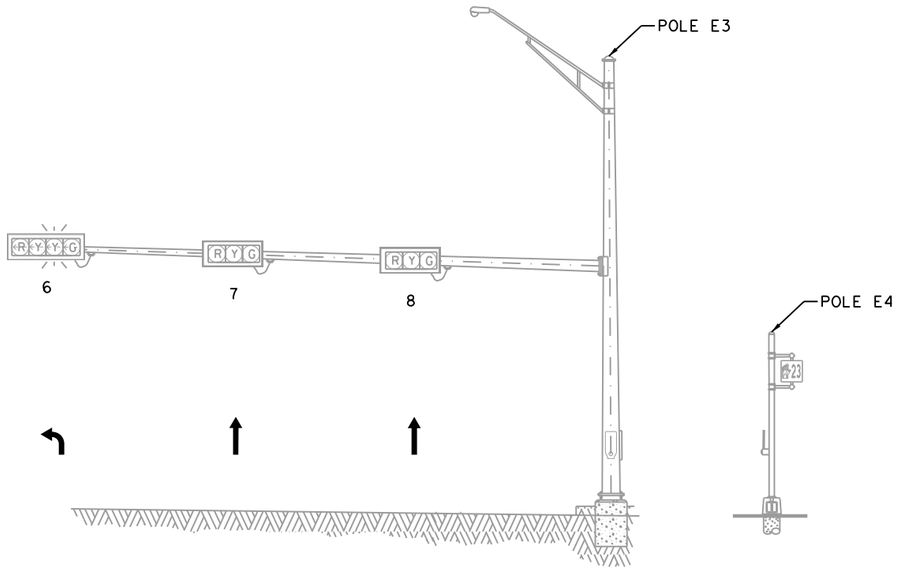
US 290 & ROGER HANKS PKWY

TRAFFIC SIGNAL ELECTRICAL DETAILS

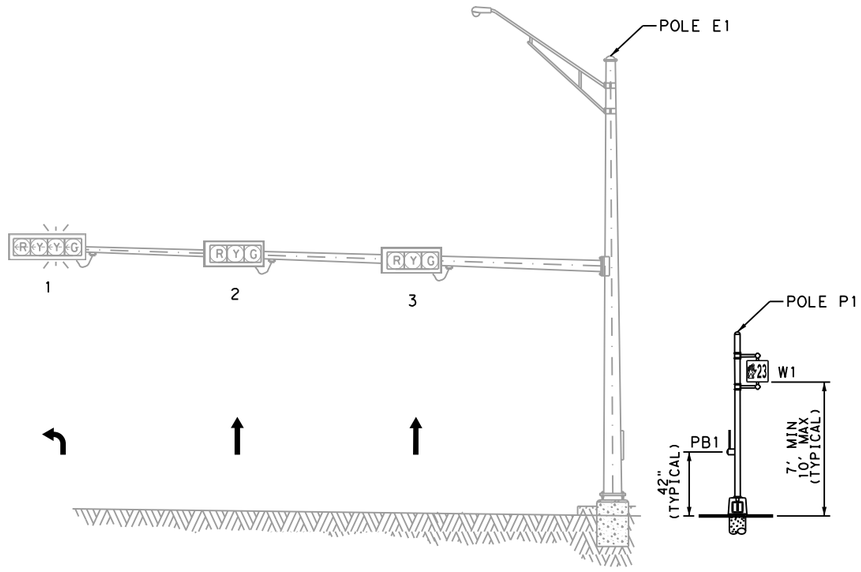
SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	108
CONT.	SECT.	JOB	
0914	33	088	

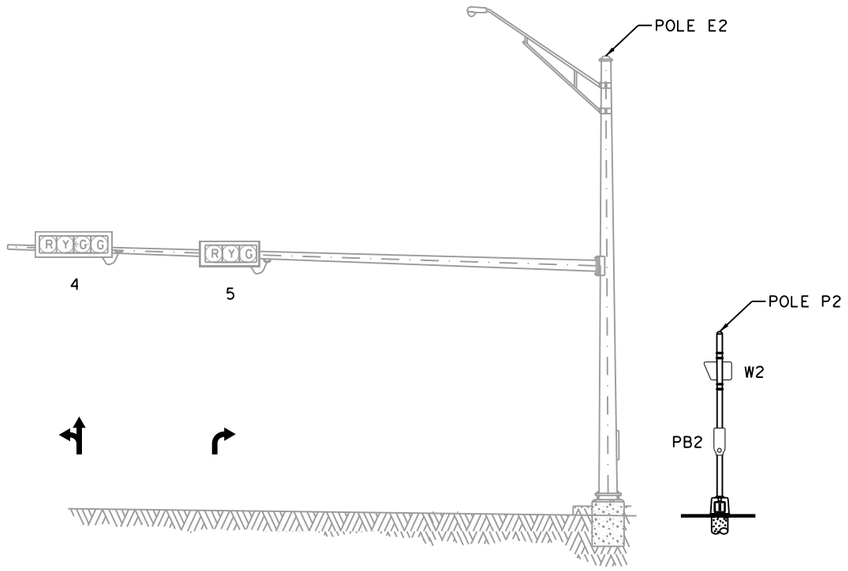


LOOKING EAST ON US 290

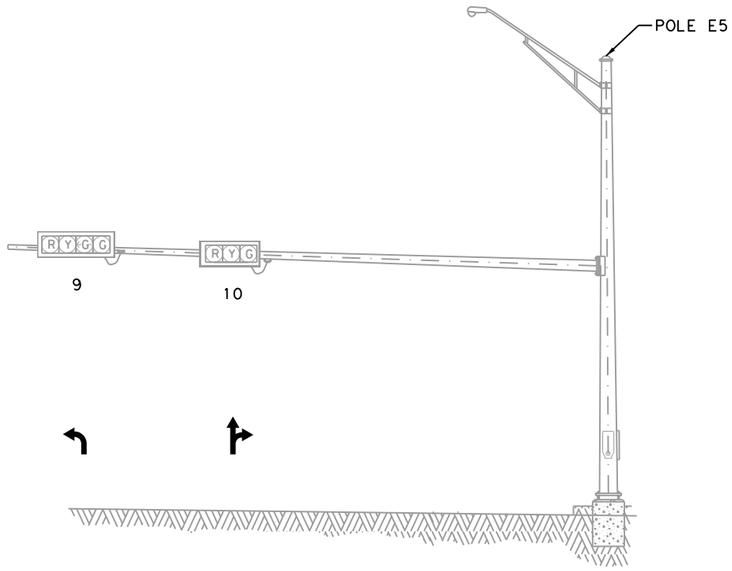


LOOKING WEST ON US 290

NOT TO SCALE



LOOKING NORTH ON ROGER HANKS PARKWAY



LOOKING SOUTH ON ROGER HANKS PARKWAY

Matthew Gaal
5/22/2023

STATE OF TEXAS
MATTHEW A. GAAL
140753
LICENSED PROFESSIONAL ENGINEER

DRIPPING SPRINGS Texas

Kimley»Horn F-928

Texas Department of Transportation

DRIPPING SPRINGS SRTS

US 290 & ROGER HANKS PKWY

TRAFFIC SIGNAL ELEVATION VIEWS

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	109
CONT.	SECT.	JOB	
0914	33	088	

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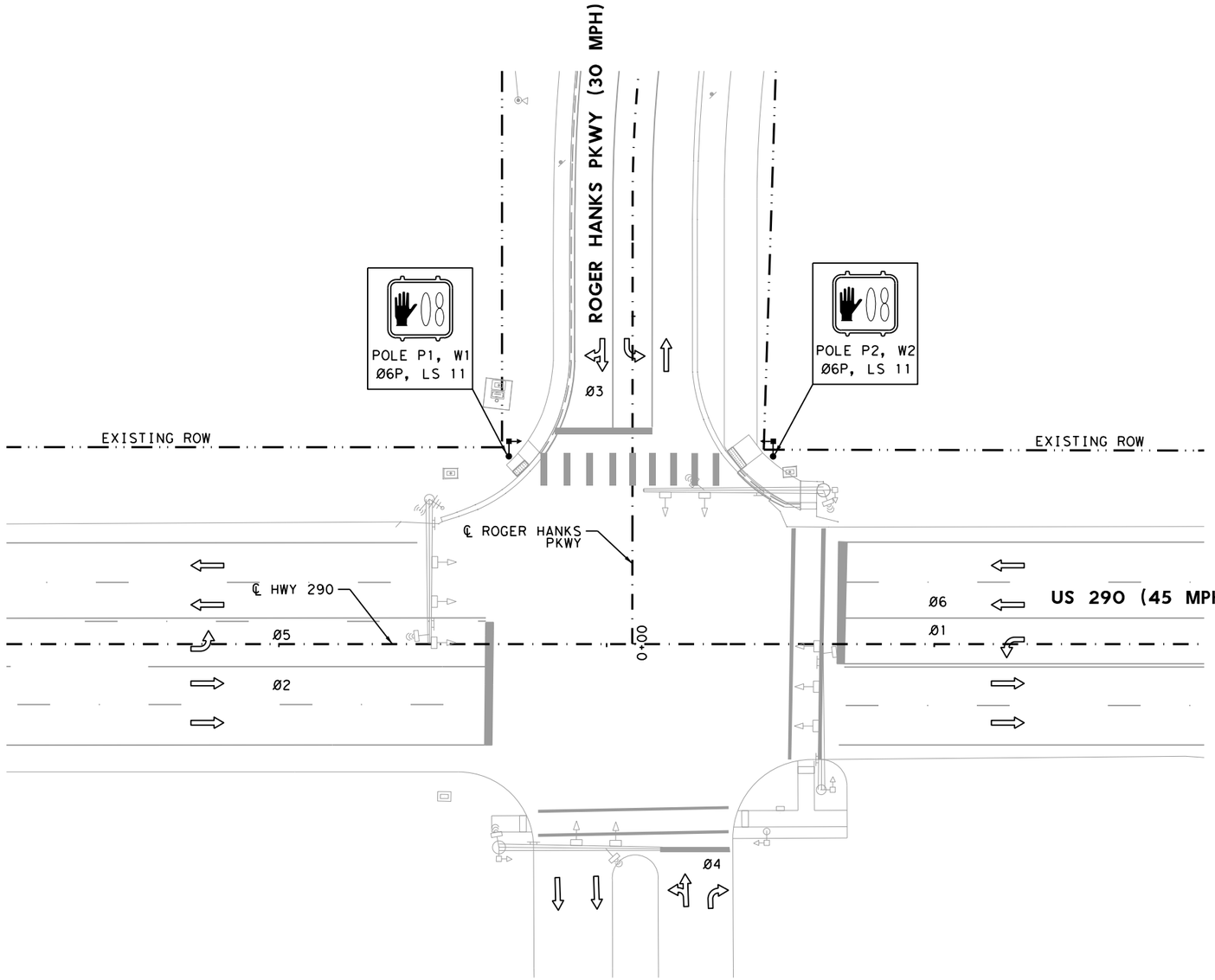

LEGEND

- EX. SIGNAL POLE W/ MAST ARM
- EX. HORIZONTAL SIGNAL HEAD
- EX. PEDESTRIAN POLE W/ SIGNAL HEAD
- EX. GROUND BOX
- EX. SERVICE METER AND DISCONNECT
- EX. GROUND MOUNTED CONTROLLER CABINET
- PROP. PEDESTRIAN POLE W/ SIGNAL HEAD
- PROP. GROUND BOX TY D W/ APRON

N

0' 20' 40'
SCALE

NOTE: EXISTING PHASE NUMBERS PROGRAMMED INTO TRAFFIC SIGNAL CONTROLLER MAY DIFFER FROM PHASES SHOWN IN THESE PLANS. THE PHASING PROVIDED IN THESE PLANS ARE FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR SHALL COORDINATE WITH TXDOT SIGNAL SHOP TO CONFIRM EXISTING PHASE ASSIGNMENTS PROGRAMMED INTO EXISTING CONTROLLER.

Matthew Gaal
5/22/2023

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DRIPPING SPRINGS SRTS

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TRAFFIC SIGNAL LOAD SWITCHES

SHEET 1 OF 1

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.	HIGHWAY NO.
6	STP 2022(313)TAPS	VAR

STATE	DIST.	COUNTY	SHEET NO.
TEXAS	AUS	HAYS	110
CONT.	SECT.	JOB	
0914	33	088	

GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new and unused materials. Ensure that all materials and installations comply with the applicable articles of the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as Canadian Standard Association (CSA), Intertek Testing Services NA Inc., or FM Approvals LLC can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to a NEMA listed device. Acceptable devices may have both a NEMA and IEC listing. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits; metal poles; luminaires; and metal enclosures are bonded to the equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producers List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

CONDUIT

A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware as per TxDOT Departmental Material Specification (DMS) 11030 "Conduit" and Item 618 "Conduit" of TxDOT's "Standard Specifications For Construction And Maintenance Of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide liquidtight flexible metal conduit (LFMC) when flexible conduit is called for on galvanized steel rigid metallic conduit (RMC) systems. Provide liquidtight flexible nonmetallic conduit (LFNC) when flexible conduit is called for on polyvinyl chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, count the conductors as if all are of the larger size. For situations not applicable to the table, size junction boxes in accordance with NEC.

AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

4. Junction boxes with an internal volume of less than 100 cu. in. and supported by entering raceways must have threaded entries or hubs identified for the intended purpose and supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the enclosure or within 18 in. of the enclosure if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. inches.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.

2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.

2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.

11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber pole.

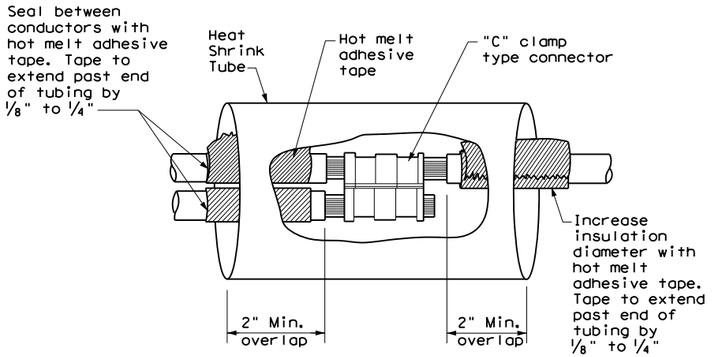
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.

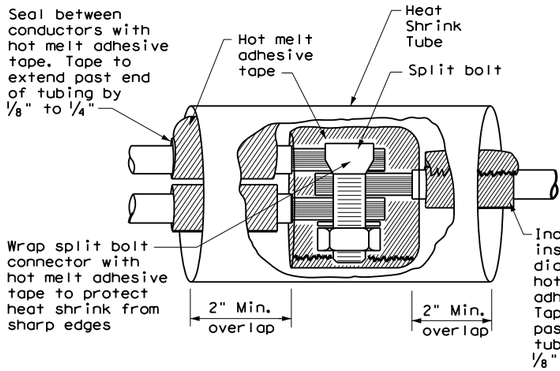
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.

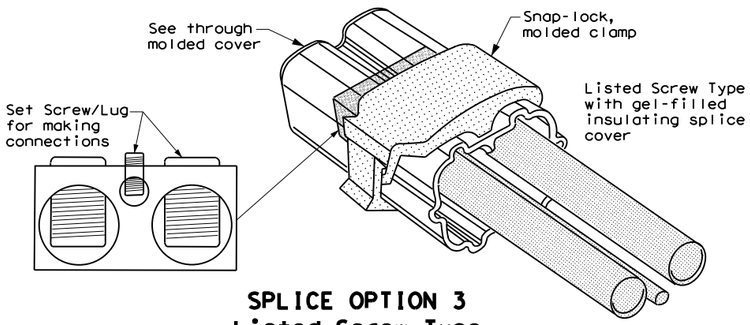
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUCTORS

ED(3)-14

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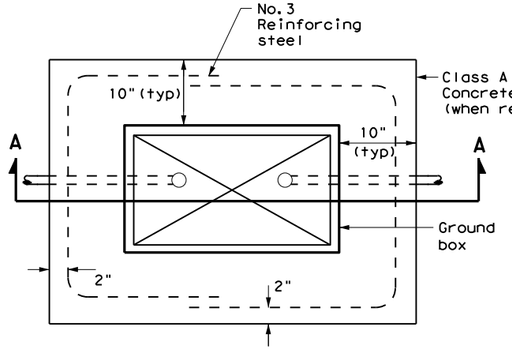
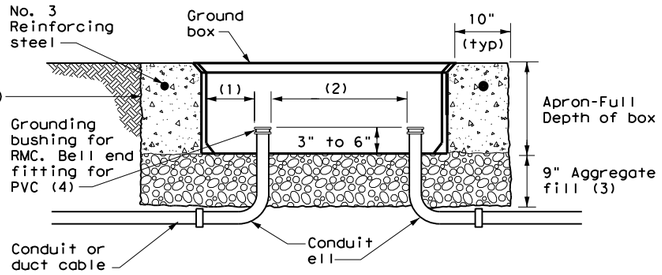


PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

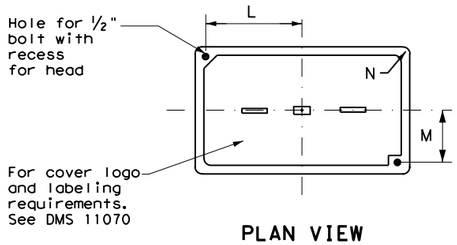
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

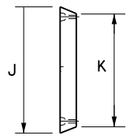
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



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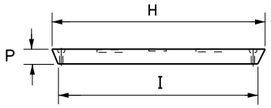

SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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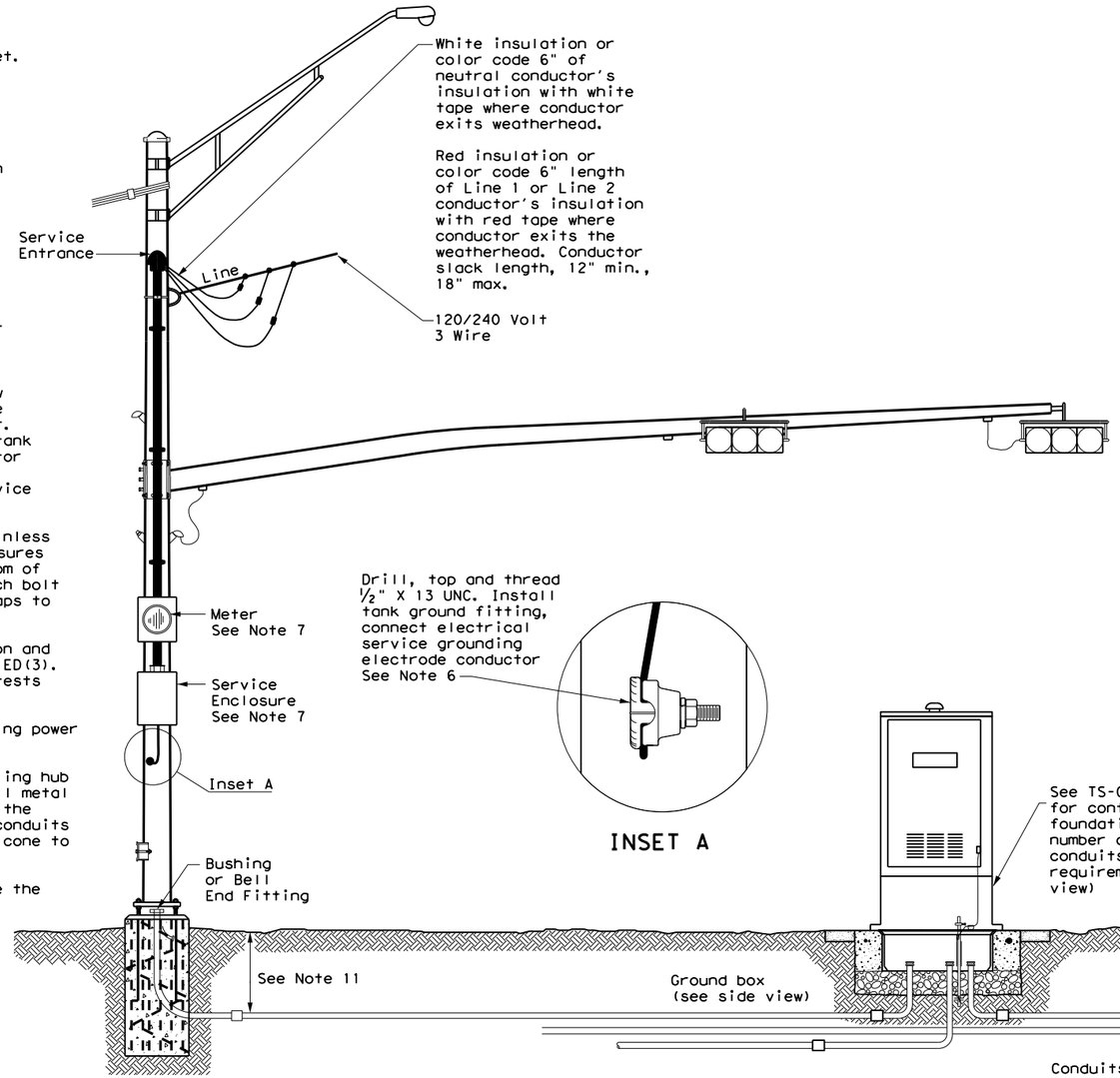
TRAFFIC SIGNAL NOTES

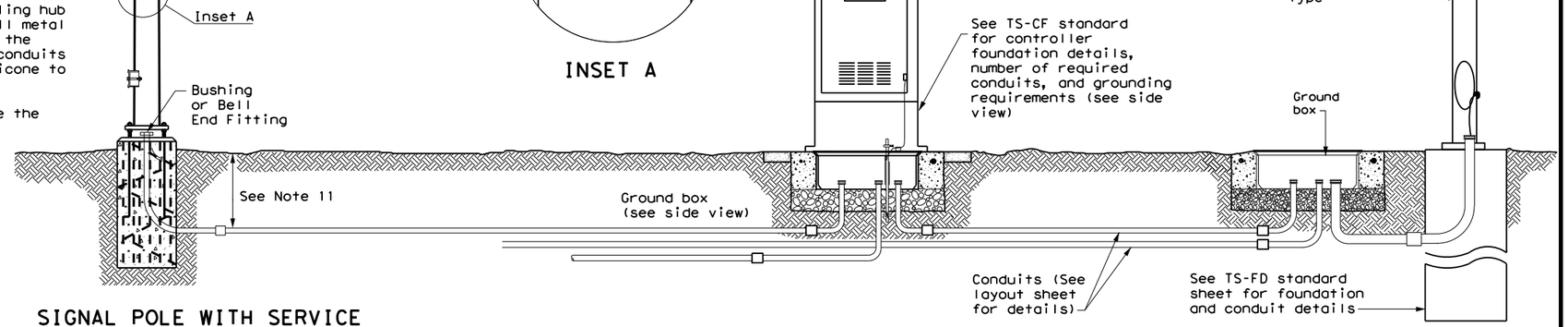
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



SIGNAL POLE WITH SERVICE

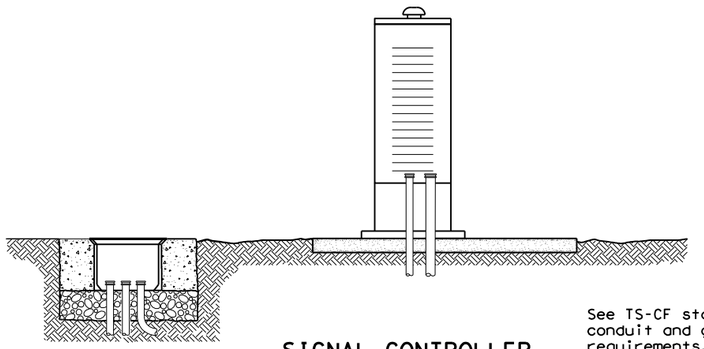
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

INSET A



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

FILE: ed8-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		114

71H

DATE: 5/22/2023 8:59:57 PM
FILE: ED(8)-14.dgn

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FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥			ANCHOR BOLT DESIGN ①				FOUNDATION DESIGN LOAD ②		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft 10	15	40	ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
24-A	24"	4- #5	#2 at 12"	5.7	5.3	4.5	¾"	36	12 ¾"	1	10	1	Pedestal pole, pedestal mounted controller.
30-A	30"	8- #9	#3 at 6"	11.3	10.3	8.0	1 ½"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36-A	36"	10- #9	#3 at 6"	13.2	12.0	9.4	1 ¾"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36-B	36"	12- #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42-A	42"	14- #9	#3 at 6"	17.4	15.6	11.9	2 ¼"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

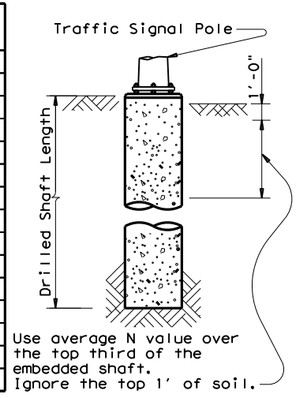
⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

FOUNDATION SUMMARY TABLE ③

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET) 24-A	30-A	36-A	36-B	42-A
US 290 AT MEADOW OAKS								
POLE P1	10	24-A	1	6				
POLE P2	10	24-A	1	6				
POLE P3	10	24-A	1	6				
POLE P4	10	24-A	1	6				
US 290 AT ROGER HANKS								
POLE P1	10	24-A	1	6				
POLE P2	10	24-A	1	6				
TOTAL DRILLED SHAFT LENGTHS				36				

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30-A	FDN 36-A	FDN 36-B	FDN 42-A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	32'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH		36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

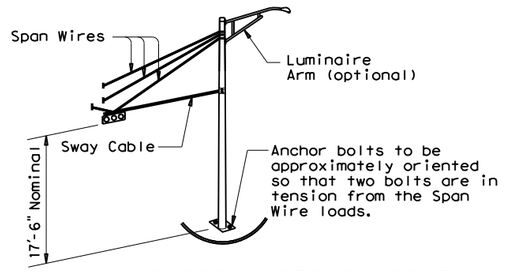


ANCHOR BOLT & TEMPLATE SIZES

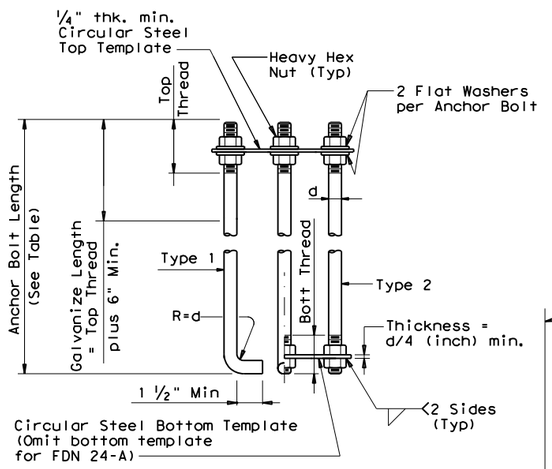
BOLT DIA IN.	⑦ BOLT LENGTH	TOP THREAD	BOTTOM THREAD	BOLT CIRCLE	R2	R1
¾"	1'-6"	3"	—	12 ¾"	7 ⅛"	5 ⅝"
1 ½"	3'-4"	6"	4"	17"	10"	7"
1 ¾"	3'-10"	7"	4 ½"	19"	11 ¼"	7 ¾"
2"	4'-3"	8"	5"	21"	12 ½"	8 ½"
2 ¼"	4'-9"	9"	5 ½"	23"	13 ¾"	9 ¼"

⑦ Min dimensions given, longer bolts are acceptable.

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



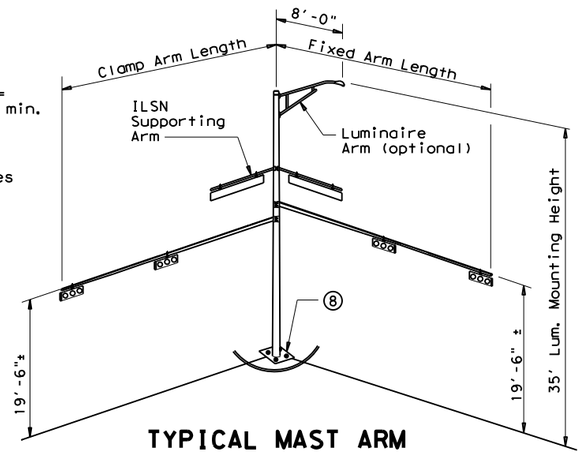
TYPICAL STRAIN POLE ASSEMBLY



HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TYPICAL MAST ARM ASSEMBLY

FOUNDATION DETAILS

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

STATE OF TEXAS
MATTHEW A. GAAL
140753
LICENSED
PROFESSIONAL ENGINEER

Matthew Gaal
5/22/2023

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

DN: MS	CK: JSY	DW: MAQ/MMF	CK: JSY/TEB

REVISIONS 5-96 11-99 1-12

CONT	SECT	JOB	HIGHWAY
0914	33	088	VAR
DIST	COUNTY		SHEET NO.
AUS	HAYS		115

DATE: 5/22/2023 9:00:04 PM
FILE: TS-FD-12.dgn

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NOTE: Structures north of ice line to be designed for ice.

ZONE 2
(90 MPH WIND)

ZONE 3
(80 MPH WIND)

ZONE 4
(70 MPH WIND)

ICE LINE

ZONE 4
(70 MPH WIND)

ICE LINE

ZONE 3
(80 MPH WIND)

ZONE 1
(100 MPH WIND)

LEGEND

ZONE 1 - = (100 MPH WIND)
ZONE 2 - = (90 MPH WIND)
ZONE 3 - = (80 MPH WIND)
ZONE 4 - = (70 MPH WIND)
= (ICE LINE)
= (DISTRICT LINES)

WIND VELOCITY & ICE ZONES FOR APPLICABLE OVERHEAD SIGN SUPPORTS, HIGH MAST POLES, AND TRAFFIC SIGNAL POLES

Based on 50 Year Mean Recurrence Interval of Fastest Mile Wind Velocity at 33 feet height.

APPLICABLE STANDARDS SHEETS

OVERHEAD SIGN BRIDGE STANDARDS:

OSB-SE
OSB-Z#
OSB-Z#1
HOSB-Z#
HOSB-Z1L
HOSB-Z#1
OSBT
OSBC
OSBC-SC-Z#
OSBS-SC
OSB-FD
OSB-FD-SC

CANTILEVER OVERHEAD SIGN SUPPORT STANDARDS:

COSS-SE
COSS-Z#-10
HCOSS-Z#-10
COSS-Z21-10
COSS-Z#&Z#1-10
COSSD
COSSF
COSS-FD

Note: # = Wind Zone number 1, 2, 3 or 4

HIGH MAST ILLUMINATION POLE STANDARDS:

HMIP-98
HMIF-98

WALKWAYS AND BRACKETS STANDARDS:

SWW
SB(SWL-1)

TRAFFIC SIGNAL POLE STANDARDS:

SP-80
SP-100
SMA-80
SMA-100
DMA-80
DMA-100
MA-C
MAC(ILSN)
MAD-D
TS-FD
LUM-A
CFA
LMA
TS-C
MA-DPD

FOR HARRIS CO. ONLY
Zone line is just North of US 90, around on the North, West and South sides of IH 610 and down the West side of SH 288.

FOR JACKSON CO. ONLY
Zone line is just North of SH 616.

THIS SHEET TO BE INCLUDED IN ALL P.S.&E. PACKAGES CONTAINING ONE OR MORE OF THE APPLICABLE STANDARD SHEETS LISTED HEREON

Texas Department of Transportation

Traffic Operations Division Standard

WIND VELOCITY AND ICE ZONES

WV & IZ-14

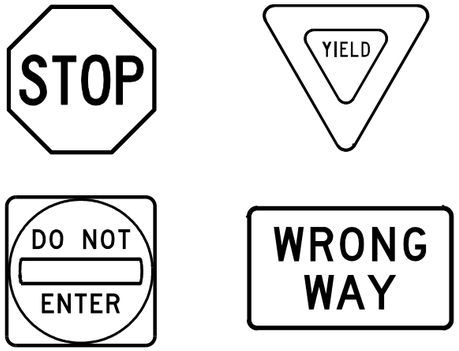
FILE: windice.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 1996	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
8-14-Added list of applicable standards, restricting use to structures designed for Fastest Mile wind speeds.	DIST	COUNTY		SHEET NO.
	AUS	HAYS		116

DATE: 5/22/2023 9:00:11 PM
FILE: WV&IZ-14.dgn

DATE: 5/22/2023 5:48:49 PM
FILE: c:\pw\khl\d021395\tsr4-13.dgn

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

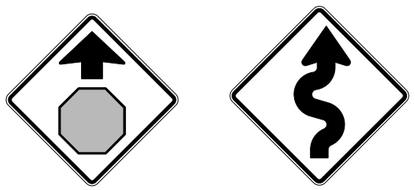
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

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

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

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
12-03 7-13 9-08	DIST	COUNTY		SHEET NO.
	AUS	HAYS		117

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

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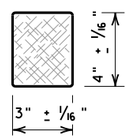
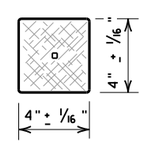
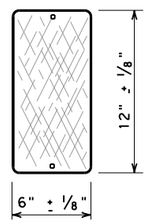
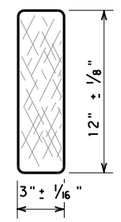
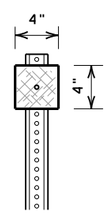
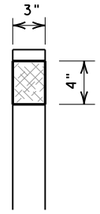
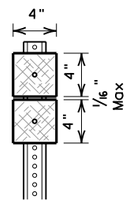
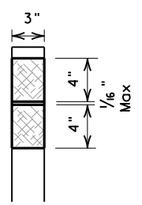
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

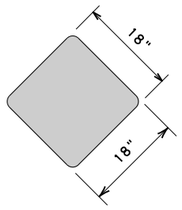
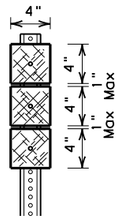
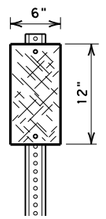
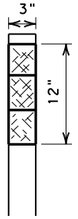
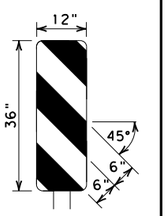
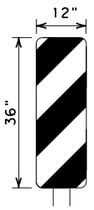
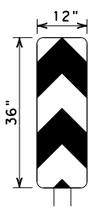
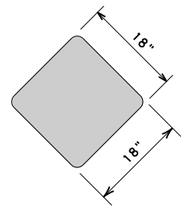
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

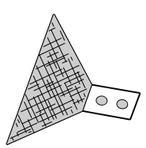
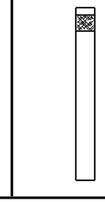
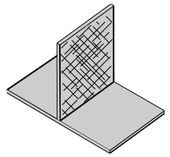
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

DEPARTMENTAL MATERIAL SPECIFICATIONS

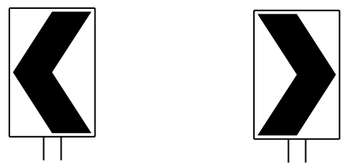
FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE



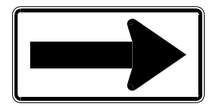
W1-8

SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	

NOTE
1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies).
2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE



W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

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DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	AUS	HAYS		118

20A

DATE: 5/22/2023 5:48:52 PM
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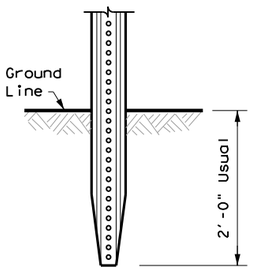
POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

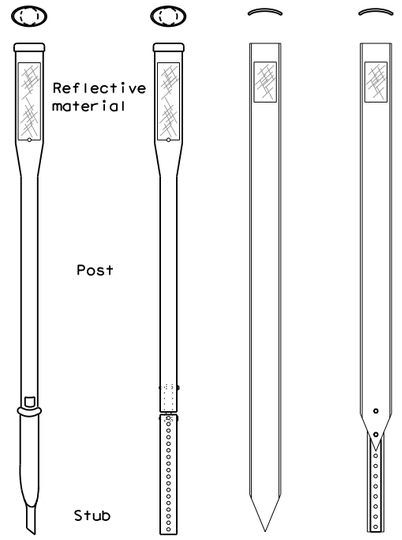


NOTES

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.

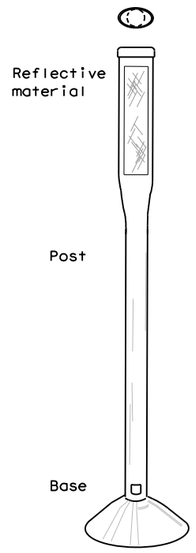
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



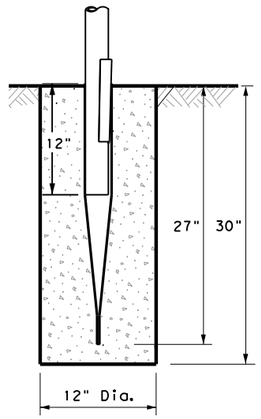
SURFACE MOUNT

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.

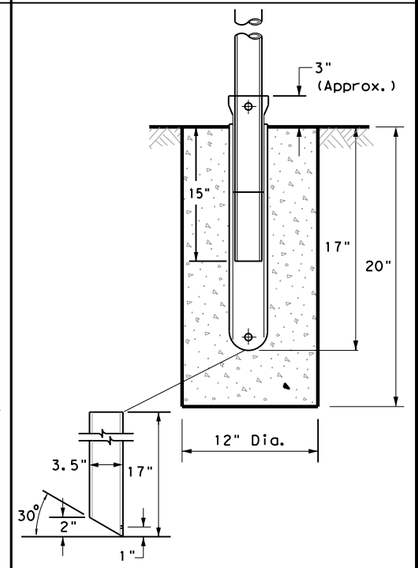
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

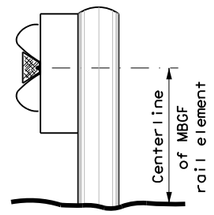
NOTE

1. Install per manufacturer's recommendations.

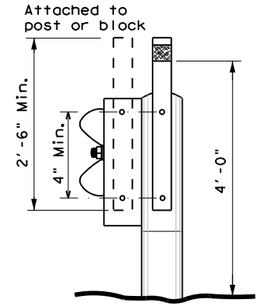
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

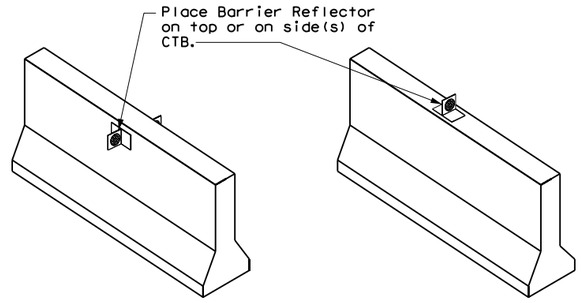
GF1



GF2



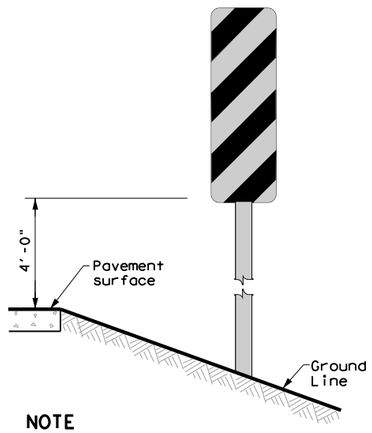
CONCRETE TRAFFIC BARRIER (CTB)



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.

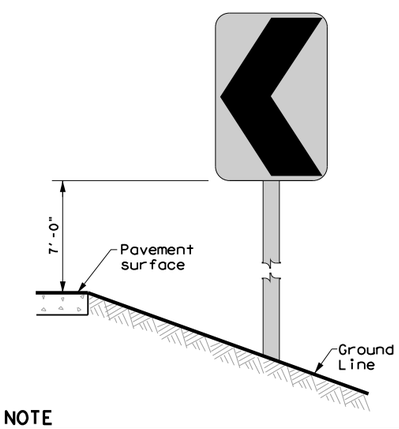
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

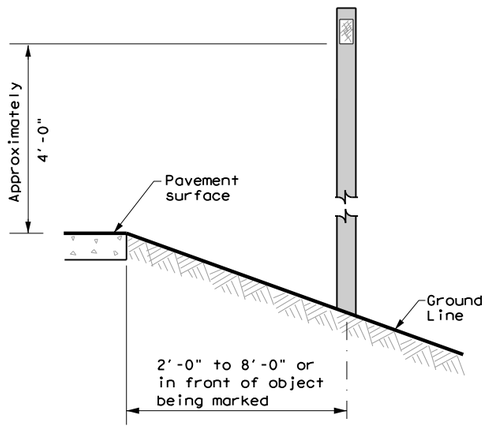
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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

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10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20	AUS	HAYS		119

20B

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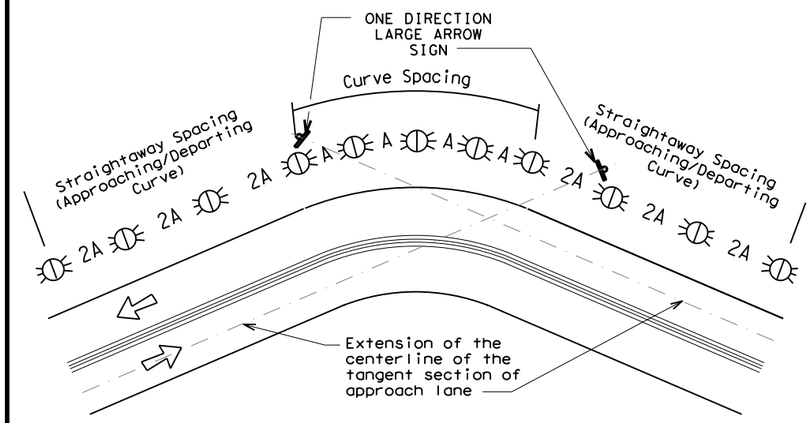
MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

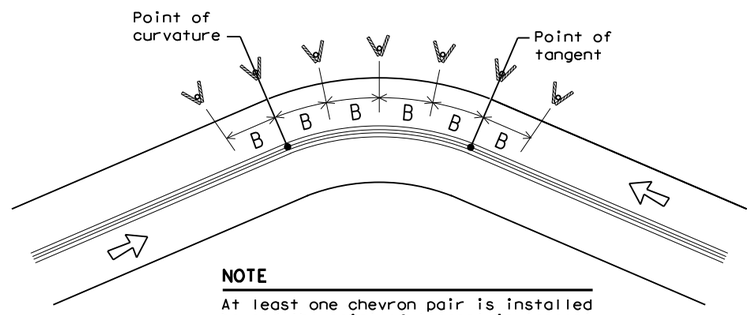
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

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DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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8-15 7-20	AUS	HAYS		120

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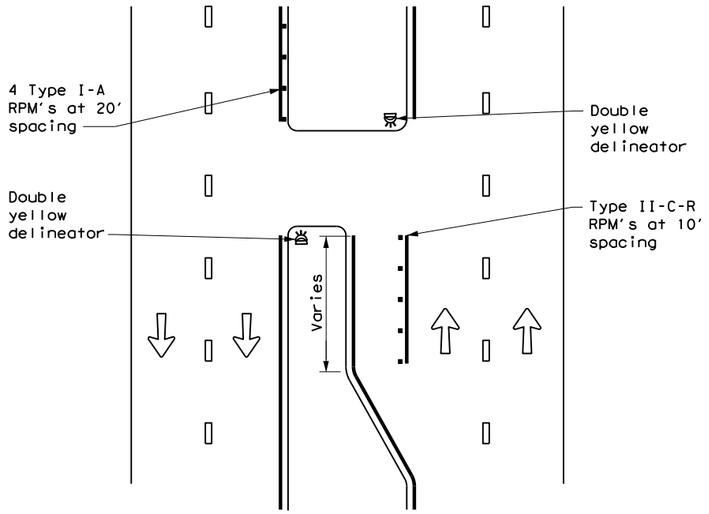
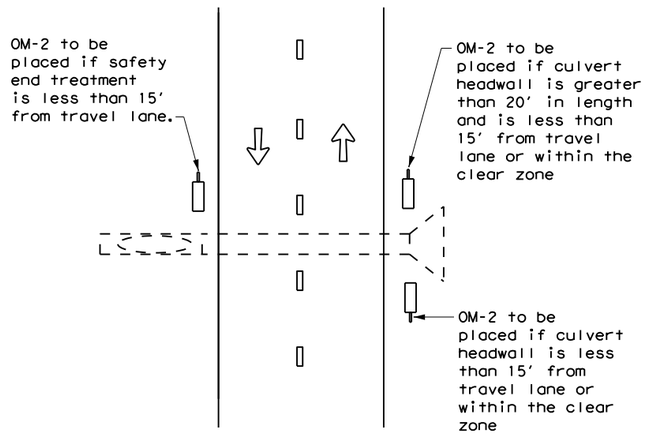
CROSSOVERS



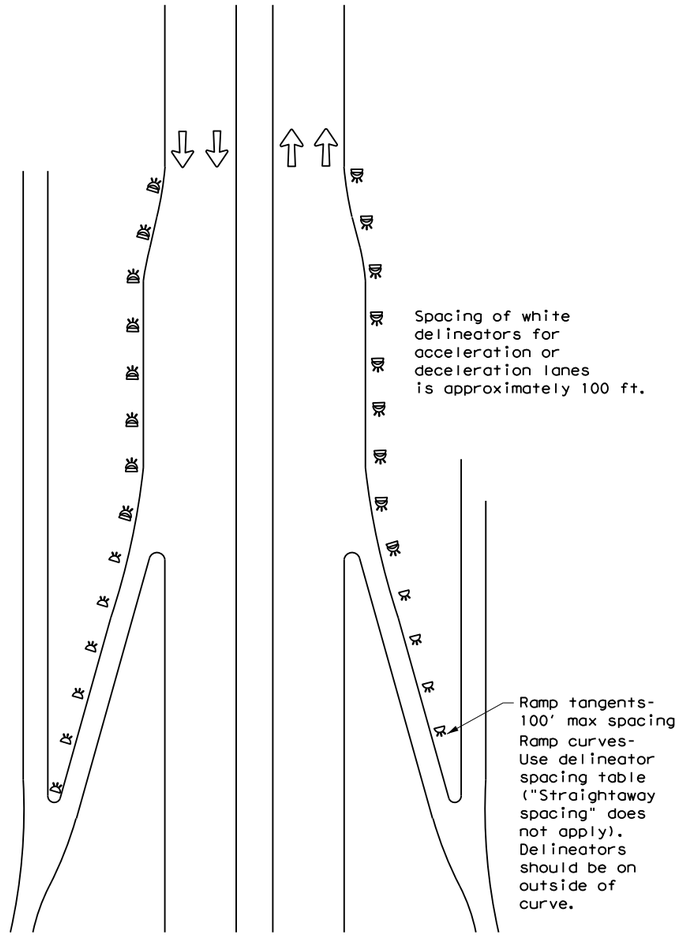
DETAIL 1

FOR CULVERTS WITHOUT MBGF



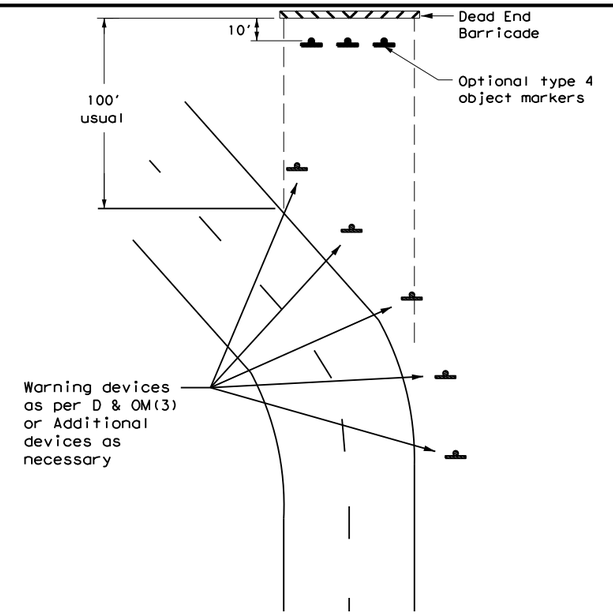
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



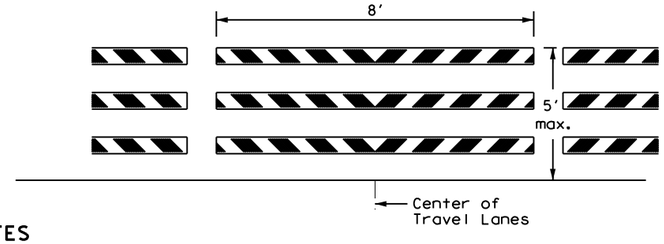
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
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	AUS	HAYS		121

20D

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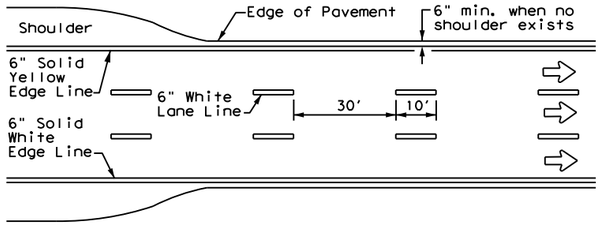
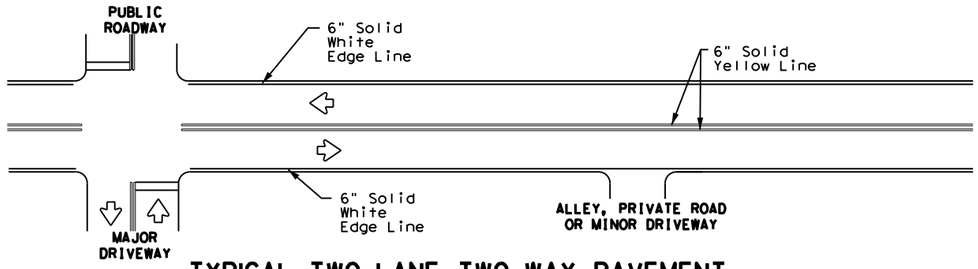
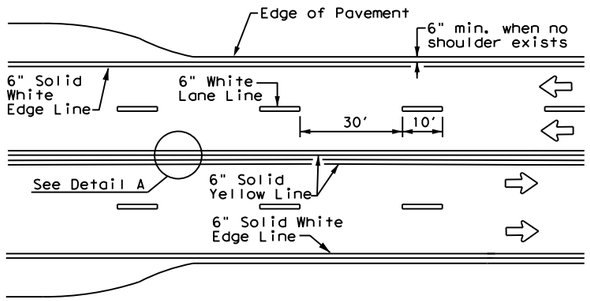
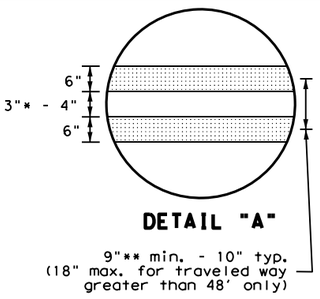


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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

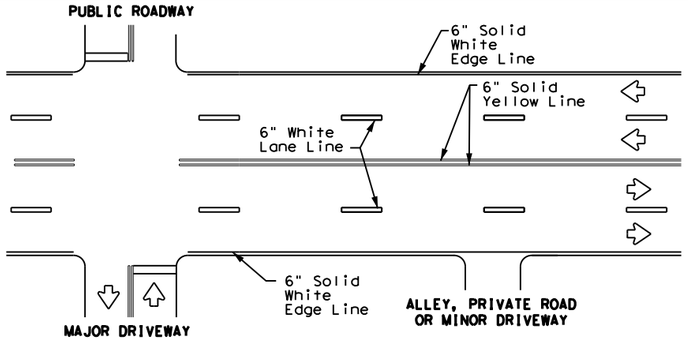




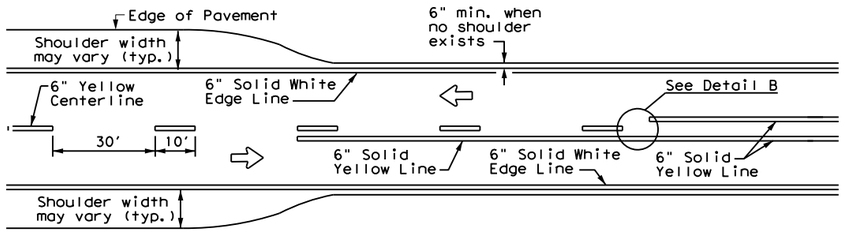
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

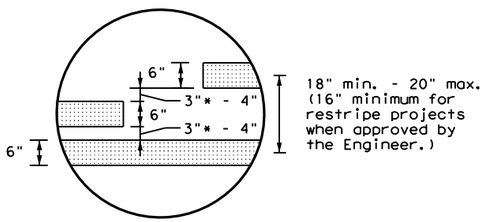
** 8" minimum for restripe projects when approved by the Engineer.



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

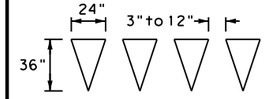


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



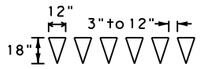
DETAIL "B"

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

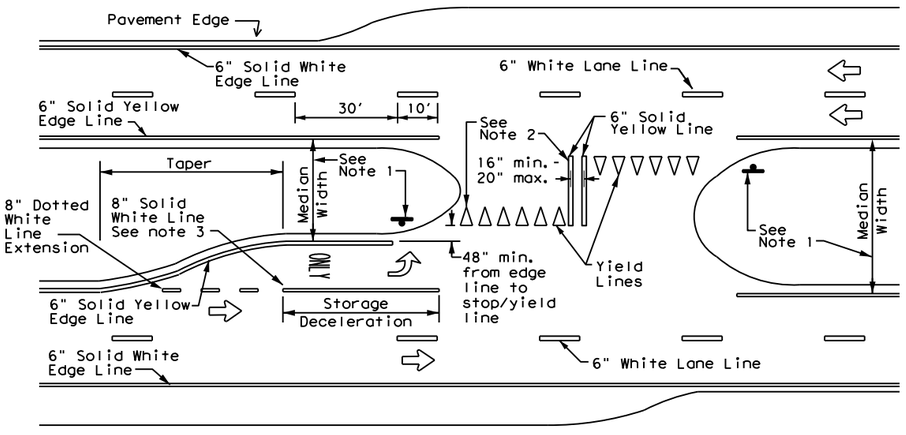


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

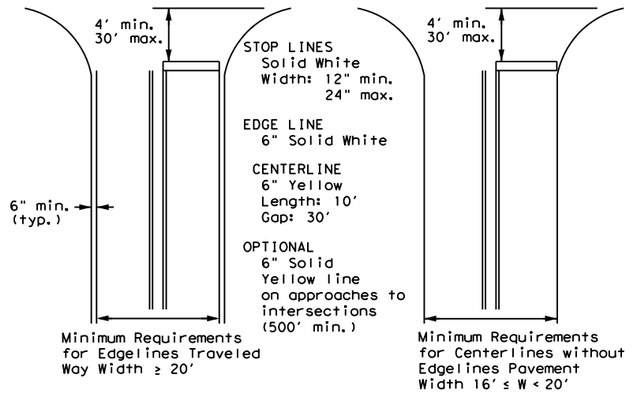
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling 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

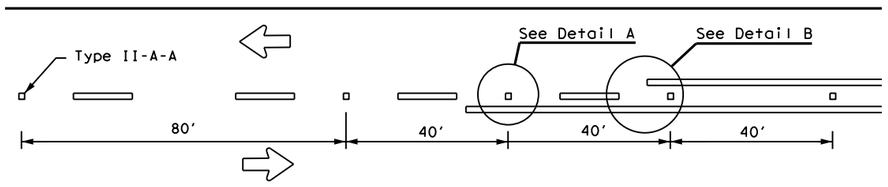
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
11-78 8-00 6-20	DIST	COUNTY		SHEET NO.
8-95 3-03 12-22	AUS	HAYS		122
5-00 2-12				

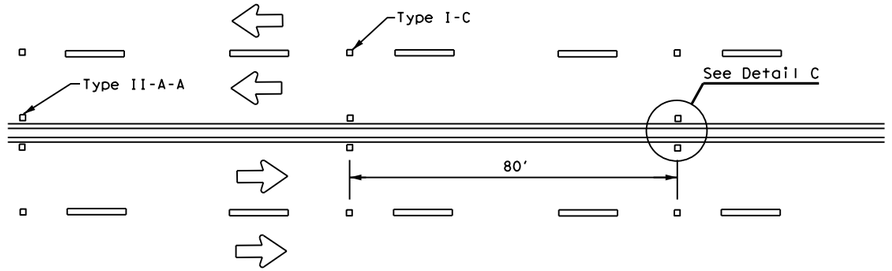
22A

DATE: 5/22/2023 5:49:04 PM
FILE: c:\pw\khl\d0213957\pm1-22.dgn

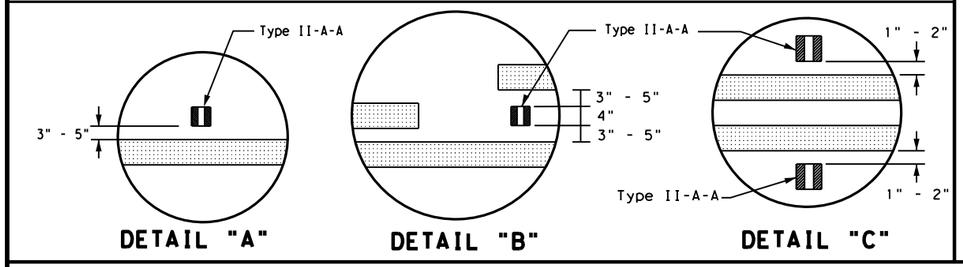
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



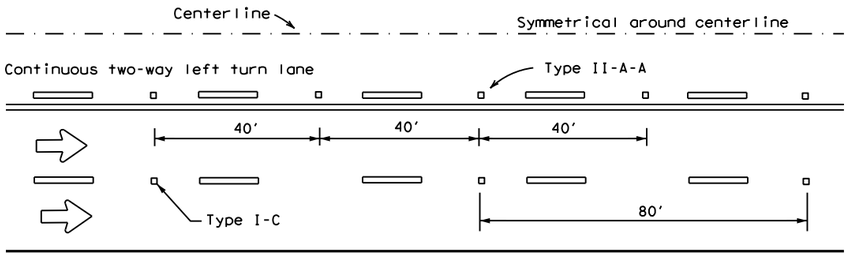
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



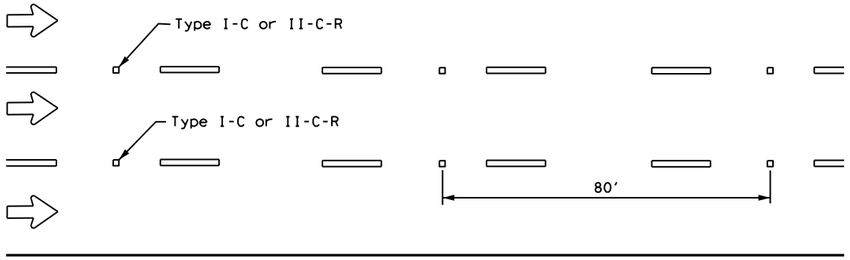
CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS



DETAIL "A" **DETAIL "B"** **DETAIL "C"**



CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



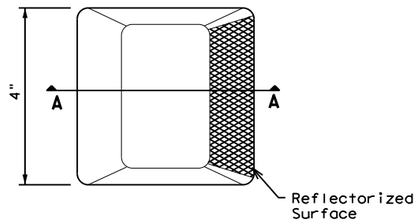
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

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

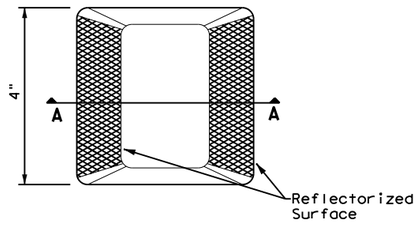
See Note 3.

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

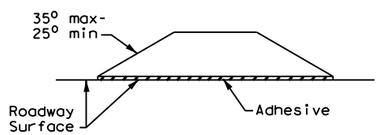
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)

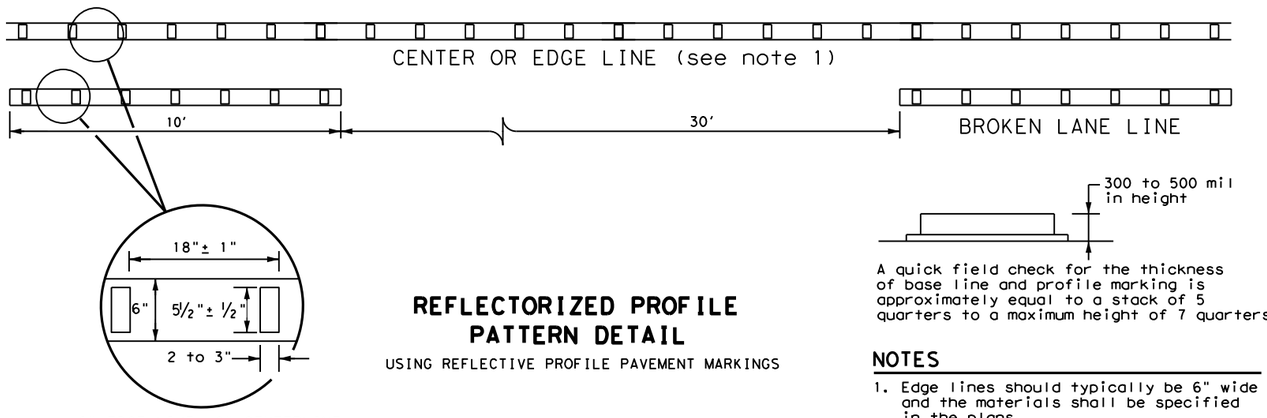


Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS



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

REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

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	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		123

22B

DATE: 5/22/2023 5:49:08 PM
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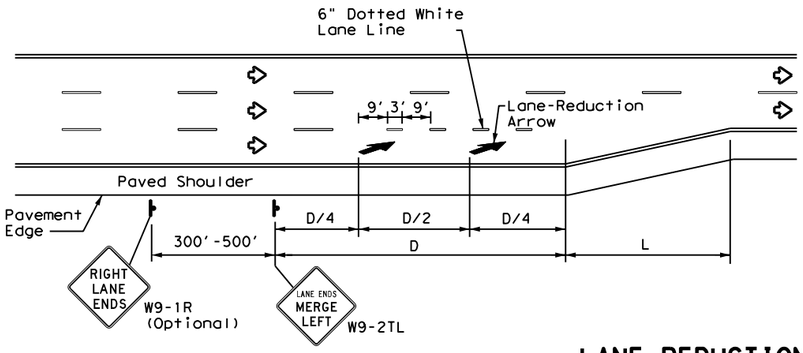


LANE REDUCTION

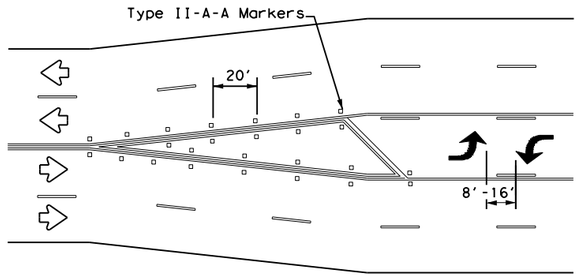
NOTES

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

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

GENERAL NOTES

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

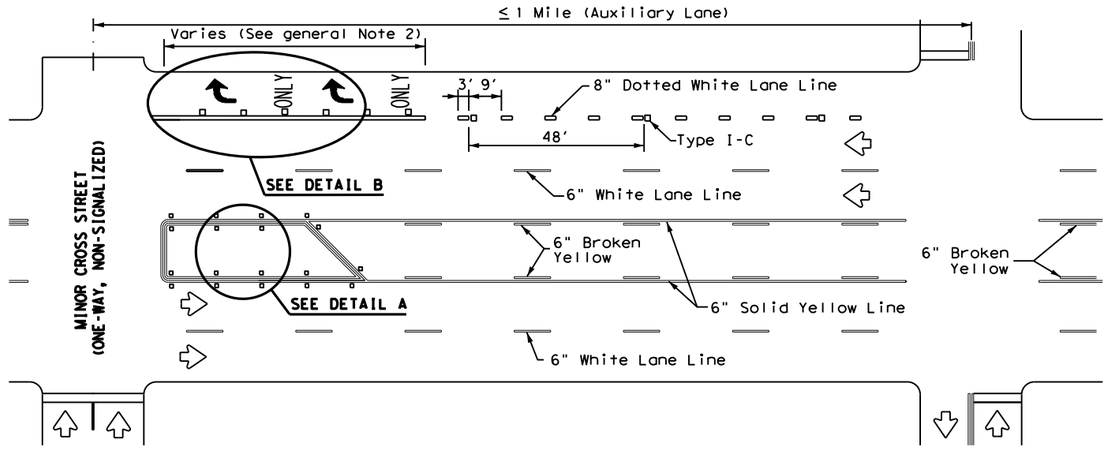


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

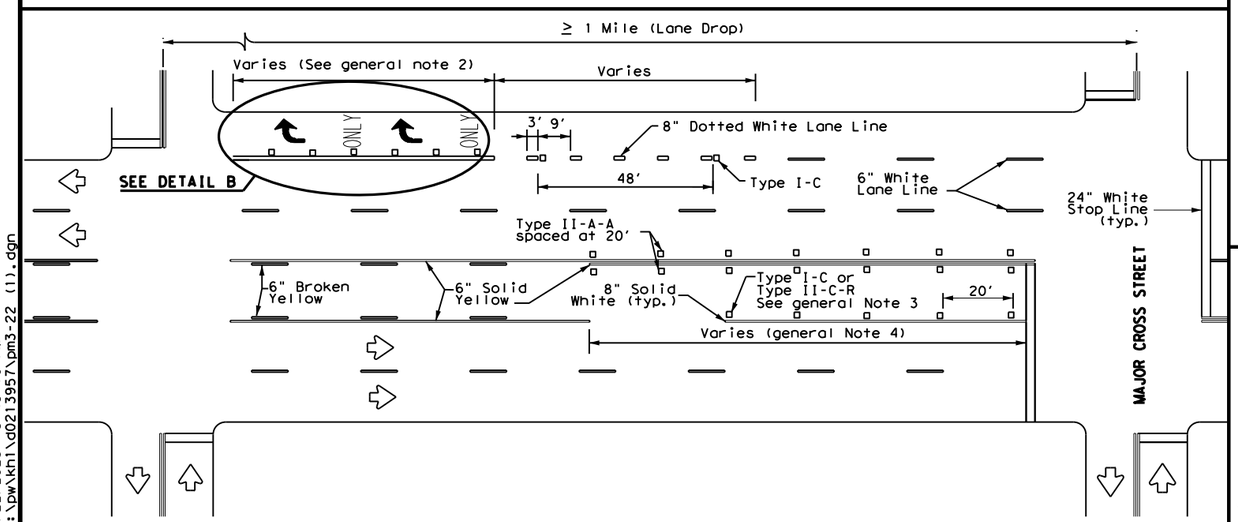
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

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

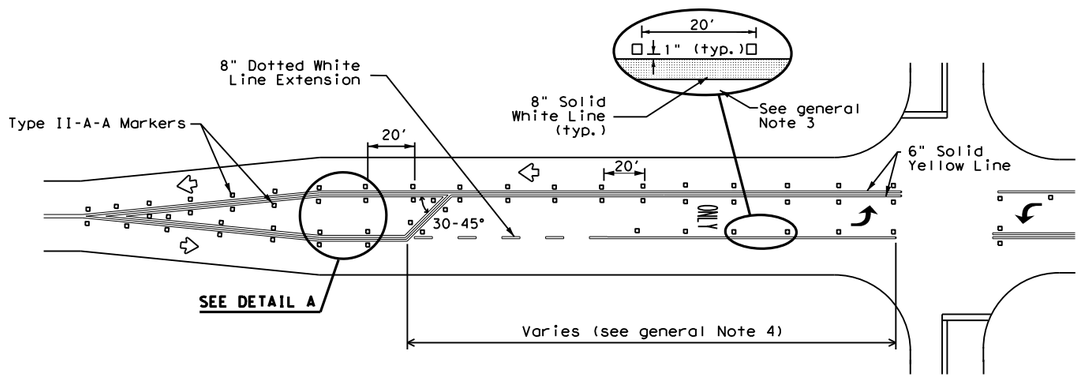
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



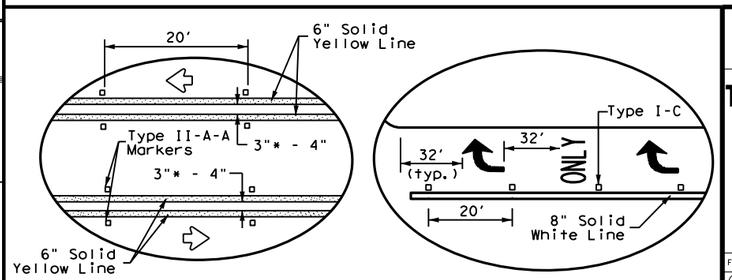
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



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



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



* 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	0914	33	088	VAR
5-00 2-10 12-22	DIST	COUNTY		SHEET NO.
8-00 2-12	AUS	HAYS		124

22C

DATE: 5/22/2023 5:49:10 PM
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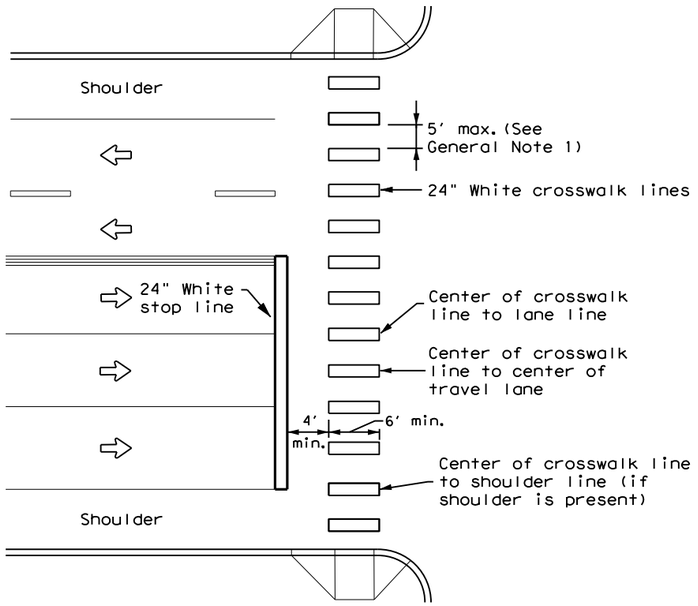


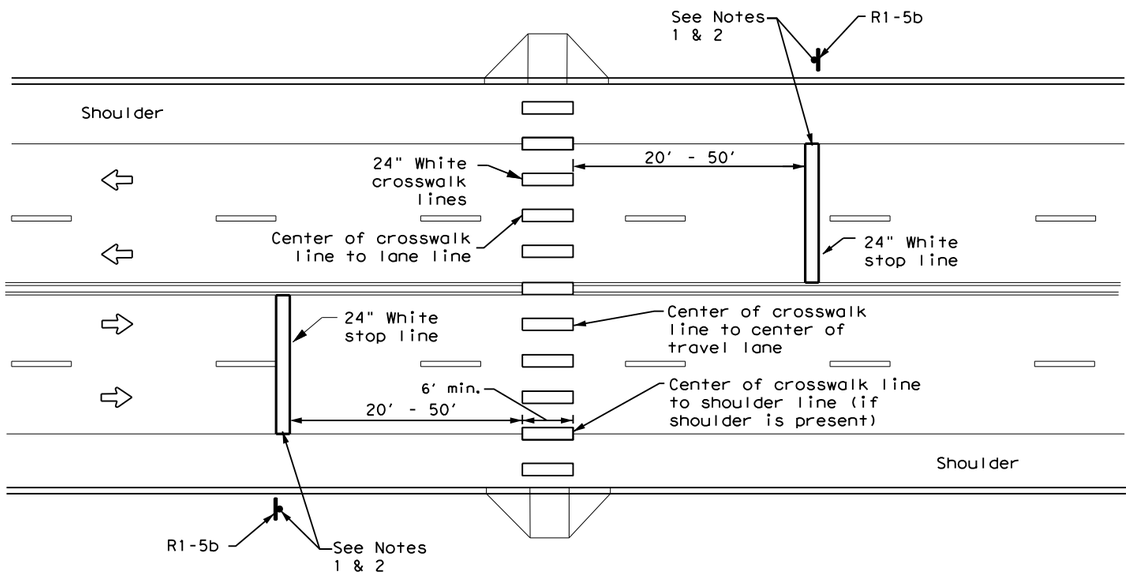
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

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	0914	33	088	VAR
6-20	DIST	COUNTY		SHEET NO.
6-22	AUS	HAYS		125
12-22				

22D

DATE: 5/22/2023 5:49:13 PM
FILE: c:\pw\khl\d0213957\pm4-22a (1).dgn

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

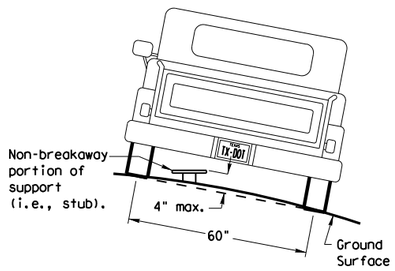
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

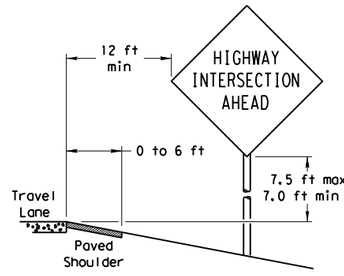
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

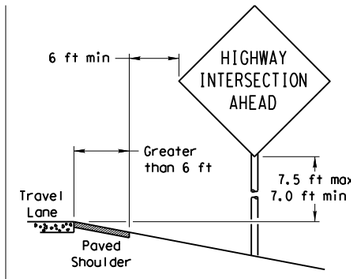
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

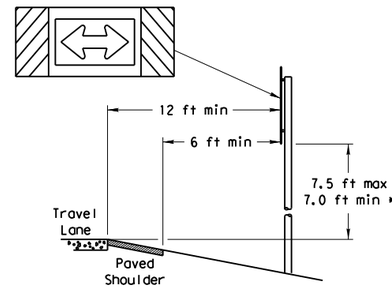
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



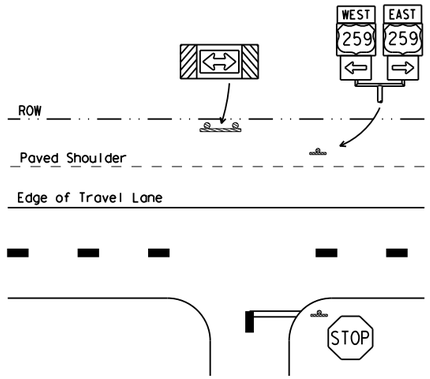
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

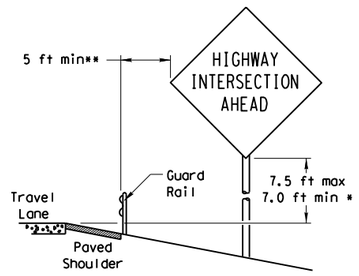
T-INTERSECTION



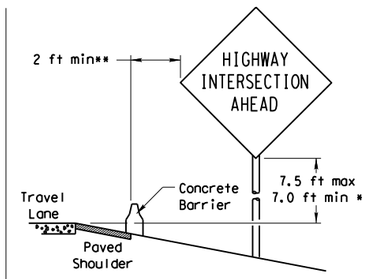
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**When 6 ft min. is not possible, see RESTRICTED RIGHT-OF-WAY.

* 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

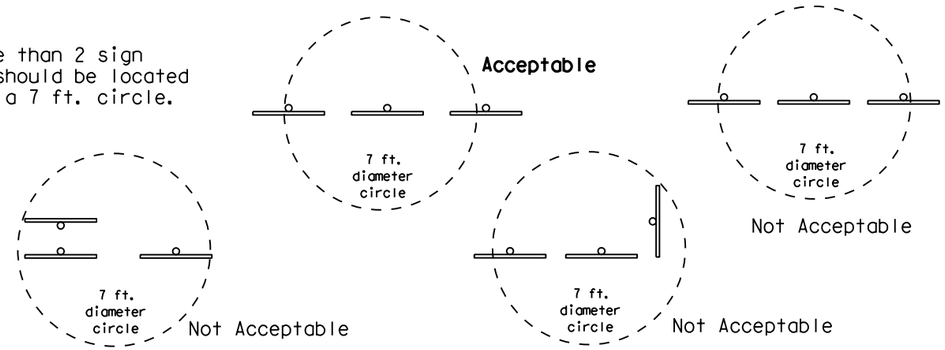
(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

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.

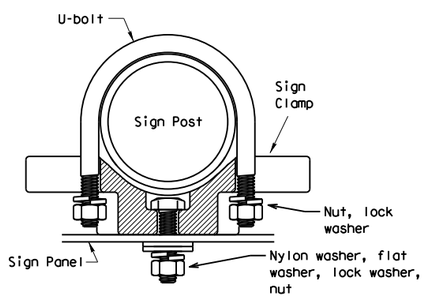
The website address is:
http://www.txdot.gov/publications/traffic.htm

No more than 2 sign posts should be located within a 7 ft. circle.



TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

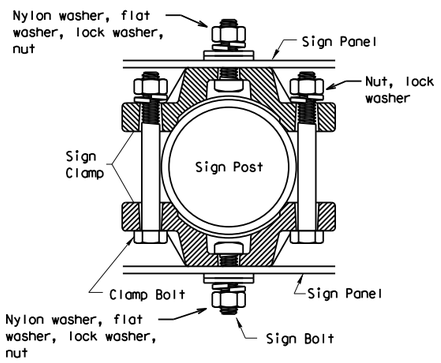


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

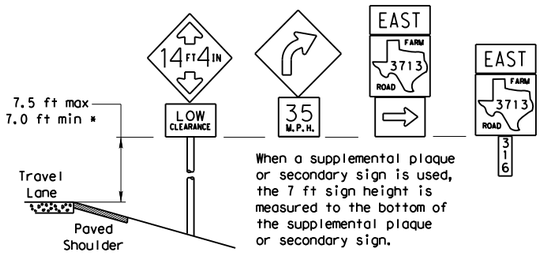
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



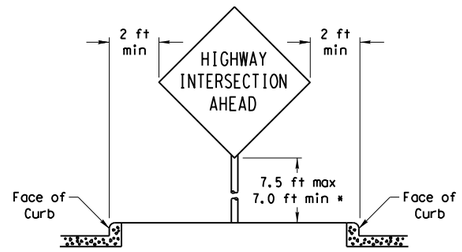
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



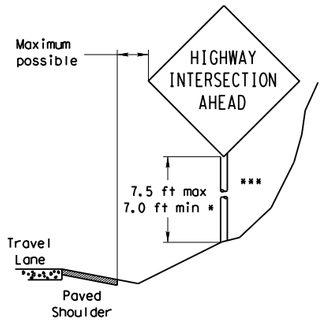
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

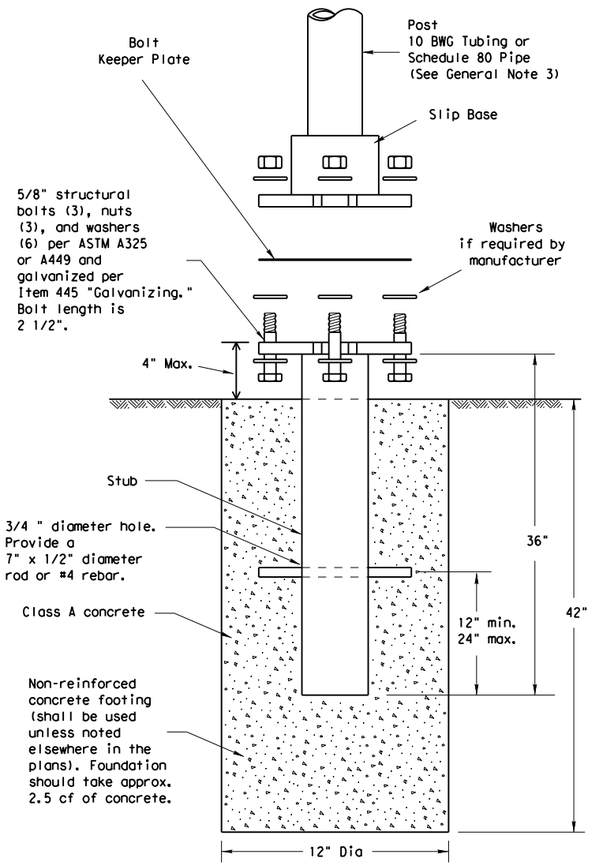
SMD(GEN)-08

REVISIONS 9-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0914	33	088	VAR
DIST	COUNTY		SHEET NO.
AUS	HAYS		126

DATE: 5/22/2023 5:49:17 PM
FILE: c:\pw\kn1\d021395\smdgen.dgn

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

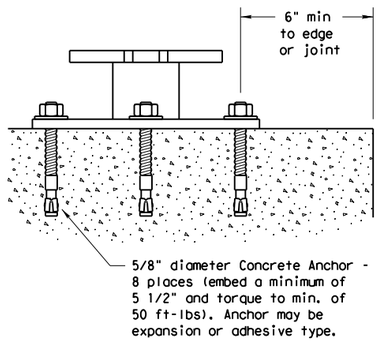
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

CONT	SECT	JOB	HIGHWAY
0914	33	088	VAR

DIST	COUNTY	SHEET NO.
AUS	HAYS	127

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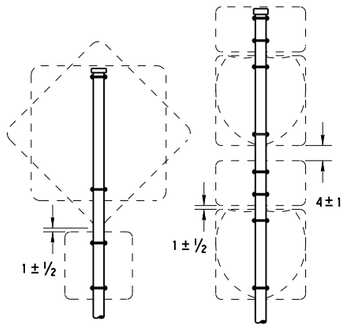
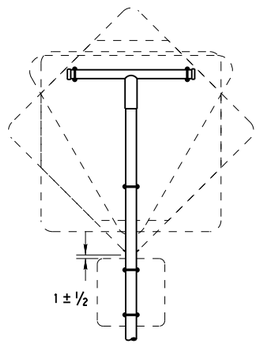


SM RD SGN ASSM TY XXXXX(1)XX(P)



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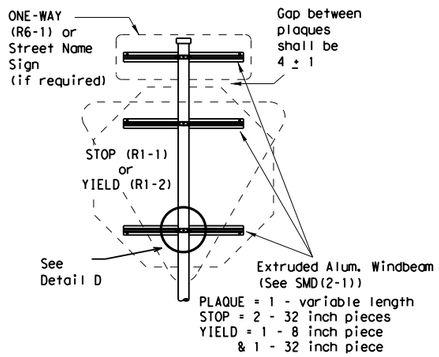

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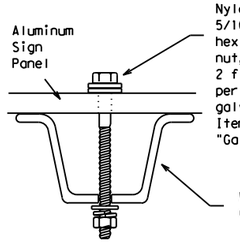
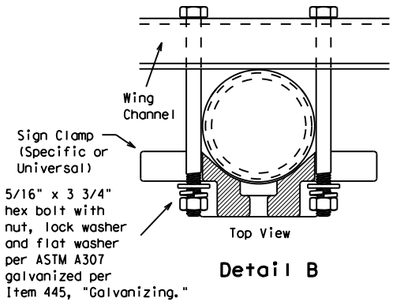
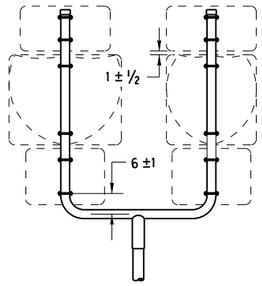


Detail A



Detail B



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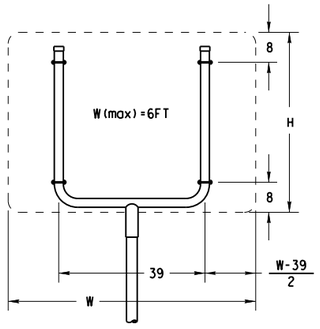

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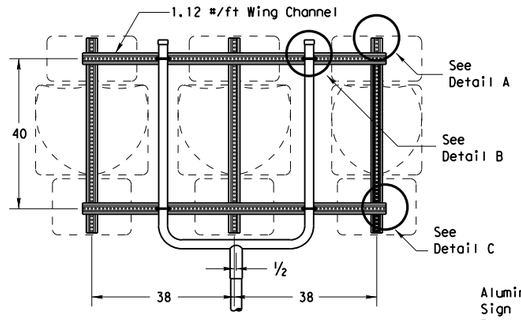
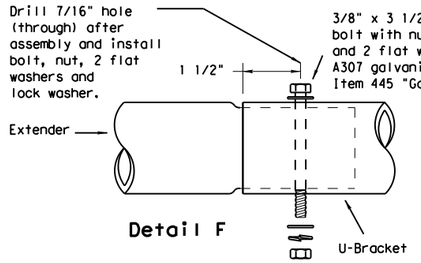
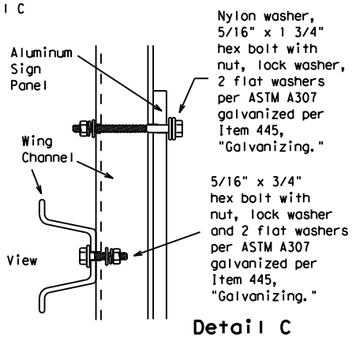


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

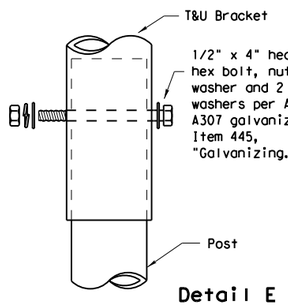


Detail F

Splices shall only be allowed behind the sign substrate.



Detail C



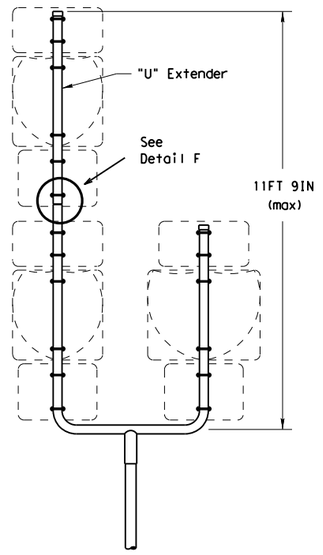
Detail E

GENERAL NOTES:

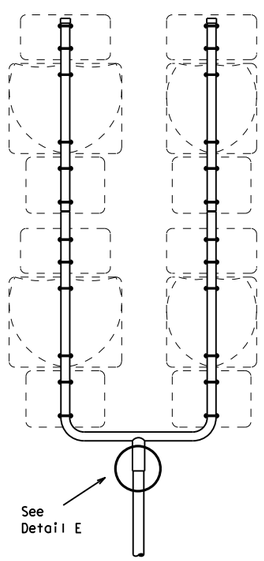
1.

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 S80(1)XX(U-1EXT)



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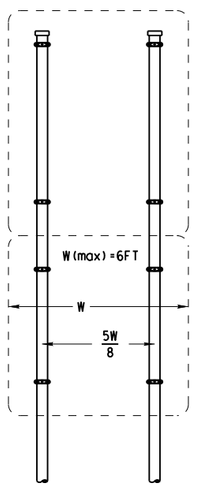
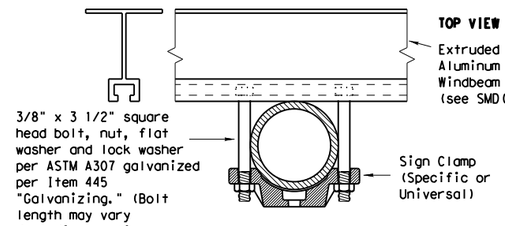
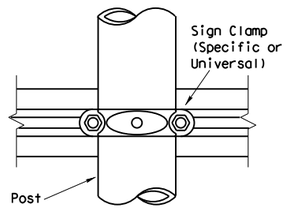


SM RD SGN ASSYM TY XXXXX(2)XX(P)

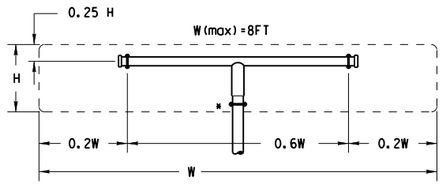
SIDE VIEW



Detail D



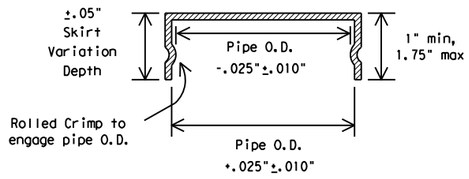
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	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

CONT	SECT	JOB	HIGHWAY
0914	33	088	VAR

DIST	COUNTY	SHEET NO.
AUS	HAYS	128

9-08 REVISIONS

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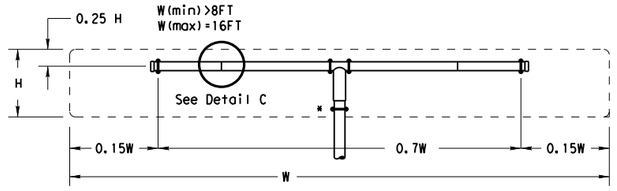
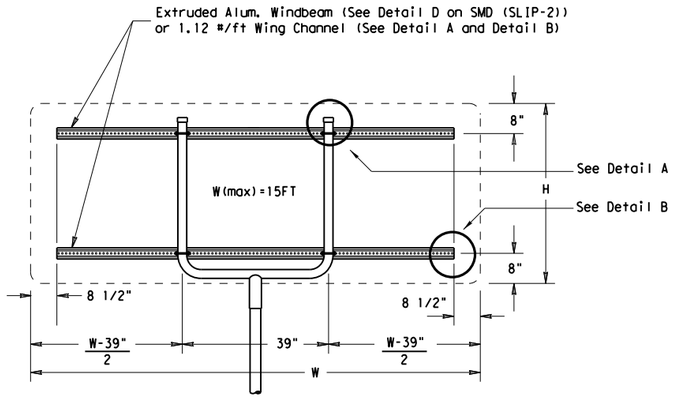
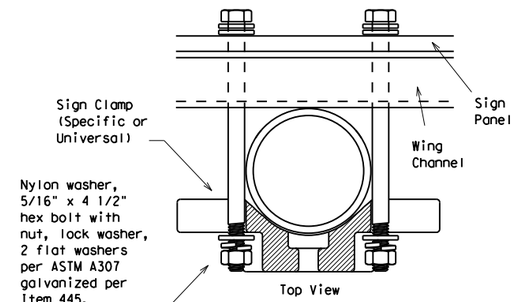


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

(* - See Note 12)

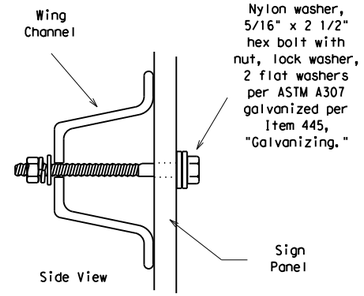


SM RD SGN ASSM TY XXXXX(1)XX(U-XX)

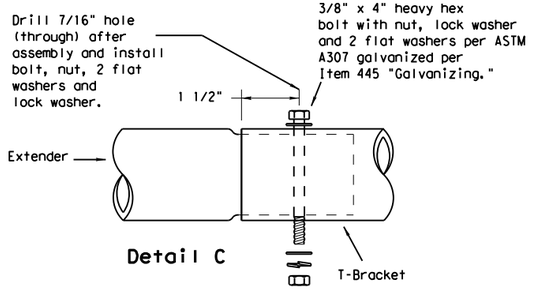


Top View

Detail A

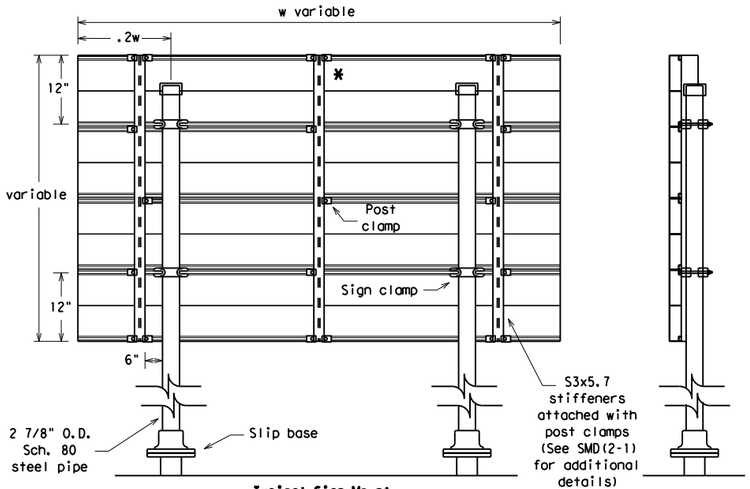


Detail B



Detail C

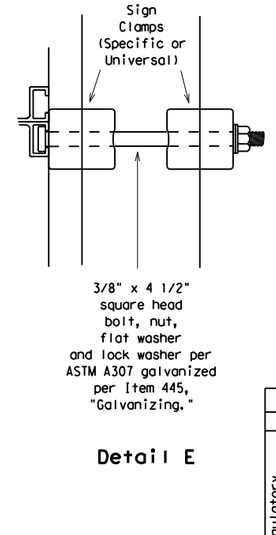
Splices shall only be allowed behind the sign substrate.



Typical Sign Mount

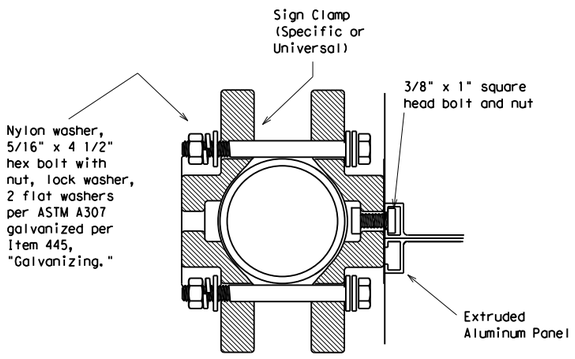
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



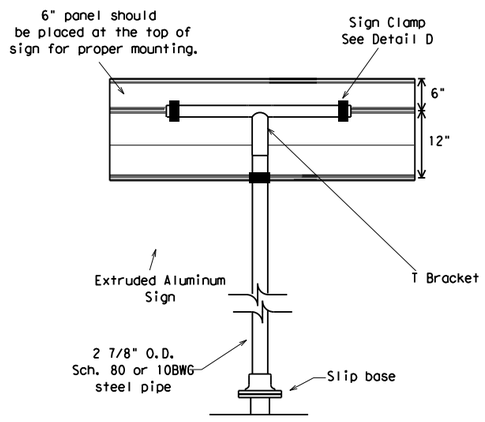
Detail E

See Detail E
for clamp installation

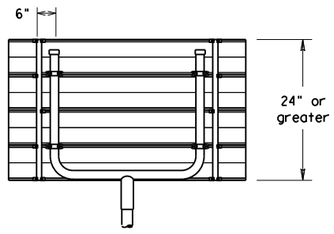


Detail D

EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

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
0914	33	088	VAR

DIST	COUNTY	SHEET NO.
AUS	HAYS	129

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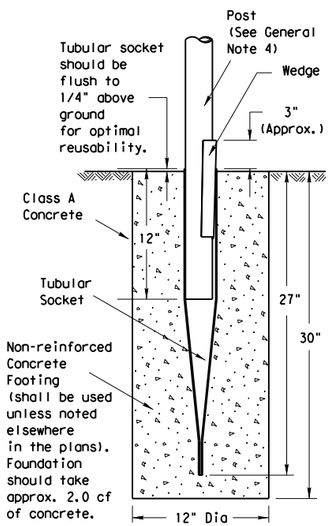
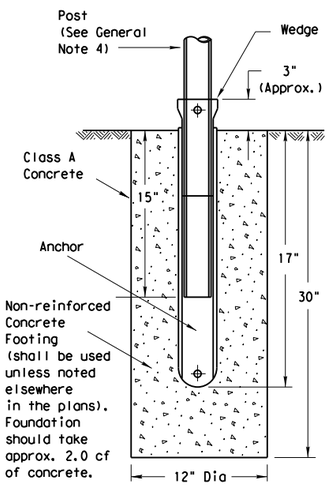
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

Wedge Anchor Steel System



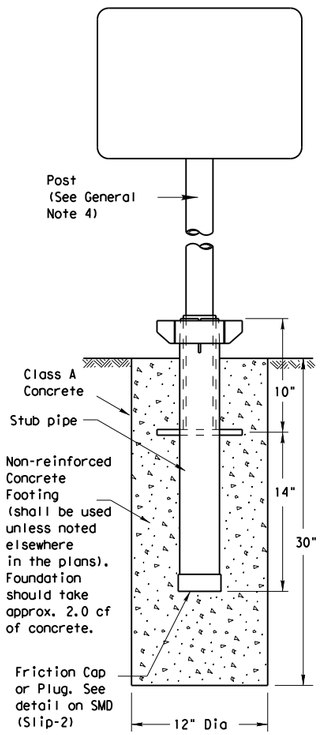
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

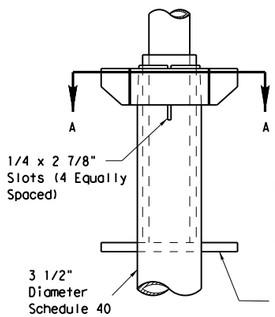


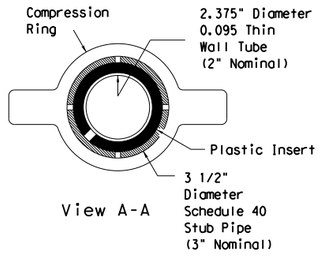
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



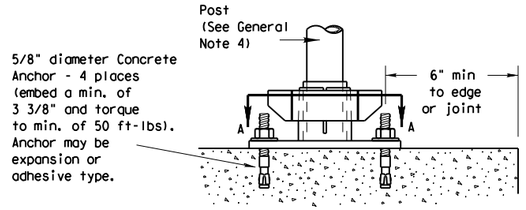
SM RD SGN ASSM TY TWT(X)UA(P)



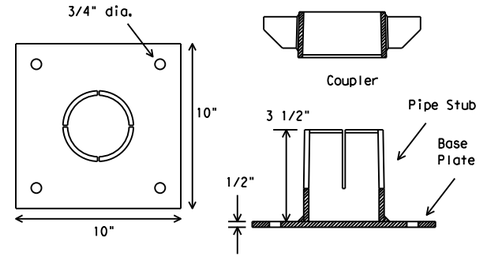


View A-A

Plastic insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

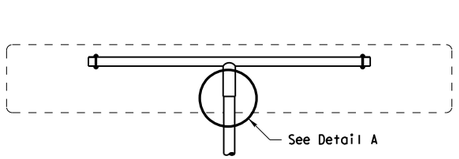


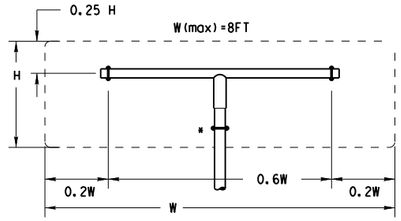
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



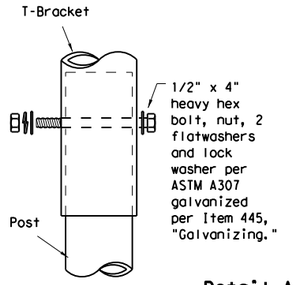
SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is: http://www.txdot.gov/business/producer list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is: http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximaely 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

9-08 REVISIONS

CONT	SECT	JOB	HIGHWAY
0914	33	088	VAR
DIST	COUNTY		SHEET NO.
AUS	HAYS		130

26E

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STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

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

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0914-33-088

1.2 PROJECT LIMITS:
From: Dripping Springs Middle School

To: Roger Hanks Parkway/Broken Lance Road

1.3 PROJECT COORDINATES:
BEGIN: (Lat) 30.2031° (N) ,(Long) -98.1138° (W)

END: (Lat) 30.2042° (N) ,(Long) -98.1026° (W)

1.4 TOTAL PROJECT AREA (Acres): 4.8

1.5 TOTAL AREA TO BE DISTURBED (Acres): 2.0

1.6 NATURE OF CONSTRUCTION ACTIVITY:
Construction of shared use paths, sidewalk, curb ramps, signals, and drainage improvements

1.7 MAJOR SOIL TYPES:

Soil Type	Description
Brackett-Rock outcrop-Comfort complex, 1-8% slopes	Clay and bedrock, well drained, high rate of runoff, and slight to moderate eroision potential.
Comfort-Rock outcrop complex, 1-8% slopes	Clay and bedrock, well drained, very high rate of runoff and slight to moderate erosion potential.
Denton silty clay, 1-3% slopes	Silty clay and bedrock, well drained, high rate of runoff, and slight erosion potential.
Krum clay, 1-3% slopes	100% clay, well drained, high rate of runoff, and slight erosion potential.
Purves clay, 1-5% slopes	Clay and bedrock, well drained, high rate of runoff, and slight erosion potential.
Real-Comfort-Doss complex, 1-8% slopes	Clay, loam, and bedrock, well drained, high rate of runoff, and slight to moderate erosion potential.

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
Unnamed	Onion Creek (1427)

* 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
No MS4s receive stormwater discharge from the site.

6/19/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2022(313)TAPS		131
STATE	STATE DIST.	COUNTY	
TEXAS	AUS	HAYS	
CONT.	SECT.	JOB	HIGHWAY NO.
0914	33	088	VAR

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

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

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

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

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

2.2 SEDIMENT CONTROL BMPs:

T / P

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

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

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

T / P

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

2.3 PERMANENT CONTROLS:

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

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

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

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

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

2.5 POLLUTION PREVENTION MEASURES:

- ☐ Chemical Management
- ☐ Concrete and Materials Waste Management
- ☐ Debris and Trash Management
- ☐ Dust Control
- ☐ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

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

Type	Stationing	
	From	To

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

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

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

2.8 INSPECTIONS:

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

2.9 MAINTENANCE:

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

5/23/2023

STATE OF TEXAS
RYAN W. LOHMANN
133721
LICENSED
PROFESSIONAL ENGINEER

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6	STP 2022(313)TAPS		132
STATE	STATE DIST.	COUNTY	
TEXAS	AUS	HAYS	
CONT.	SECT.	JOB	HIGHWAY NO.
0914	33	088	VAR

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. This project is not located within the boundaries of a Municipal Separate Storm Sewer System.
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. Unnamed tributary to Onion Creek (Station 307+60)
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. Implement Vegetation BMPs
2. Implement Aquatic Amphibian and Reptile BMPs
3. Implement Terrestrial Amphibian and Reptile BMPs
4. Survey for tree dodder, bigflower cornsalad, and Glass Mountains coral-root prior to construction

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. Preparation of Edwards Aquifer Protection Plan (CZP)
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	
	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.	091	433	088	VAR	
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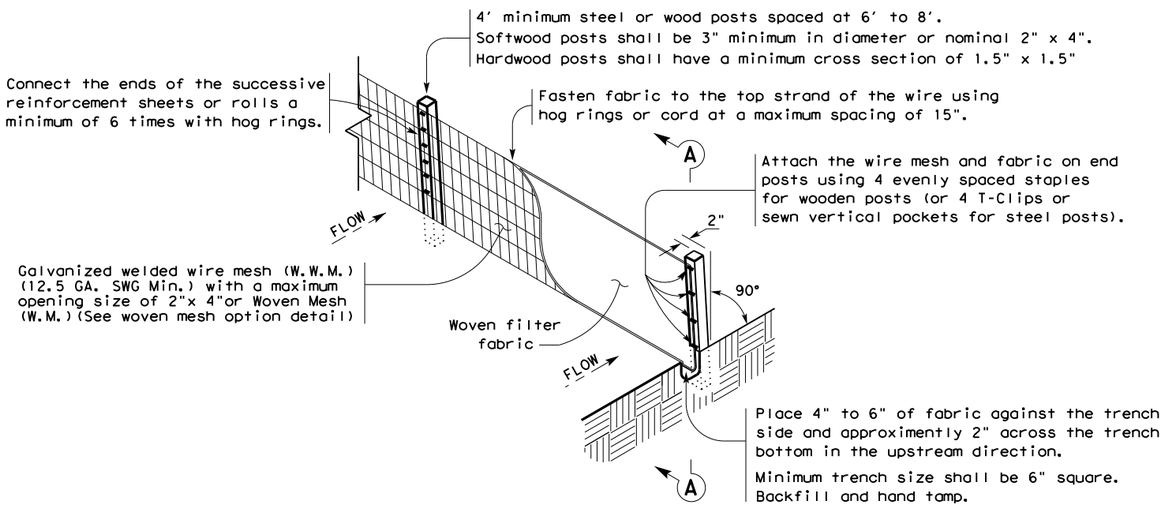
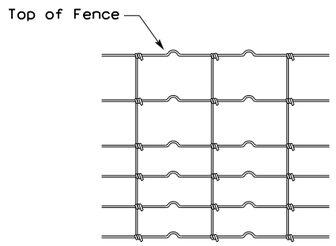
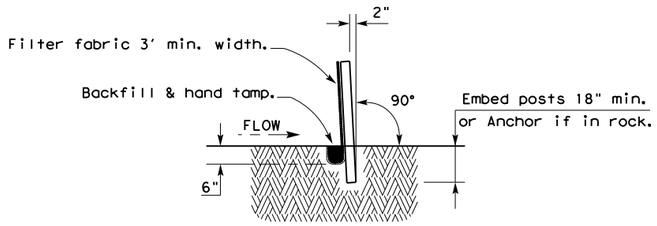
	AUS	HAYS		133	



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.

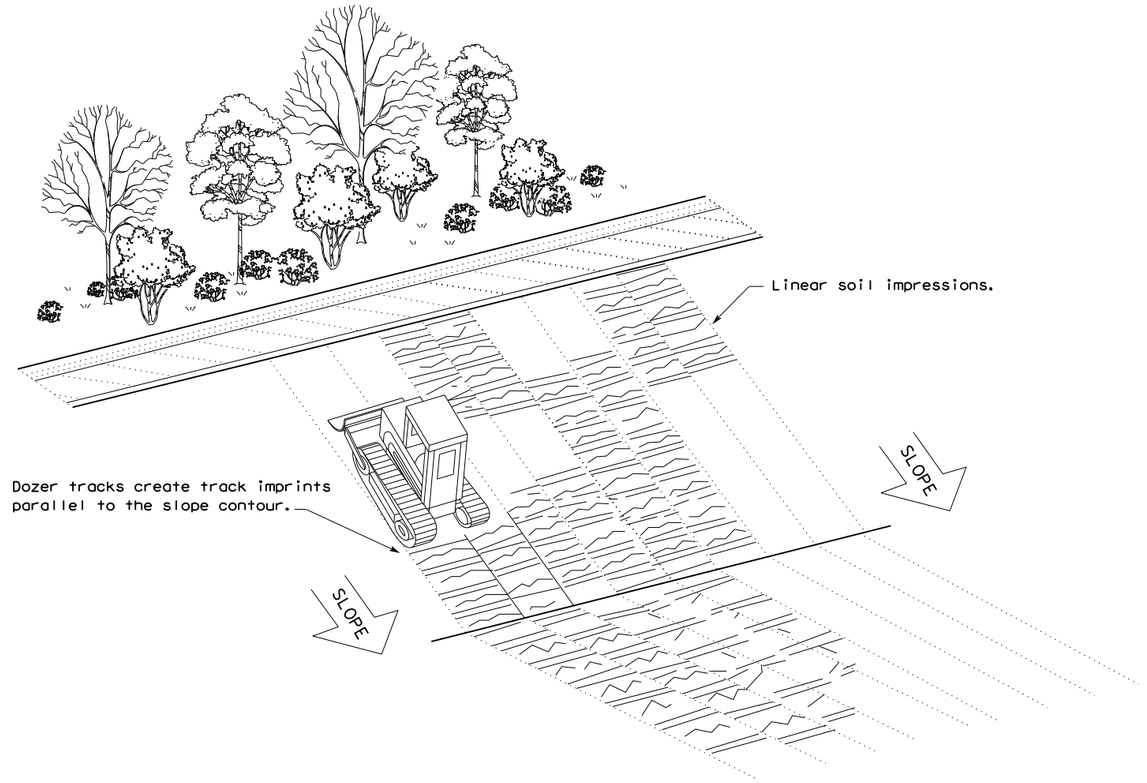
LEGEND

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	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		134

5/27/2023
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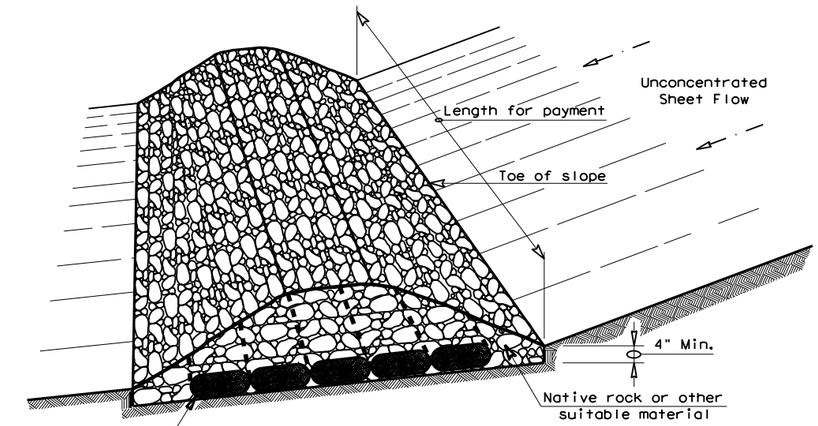
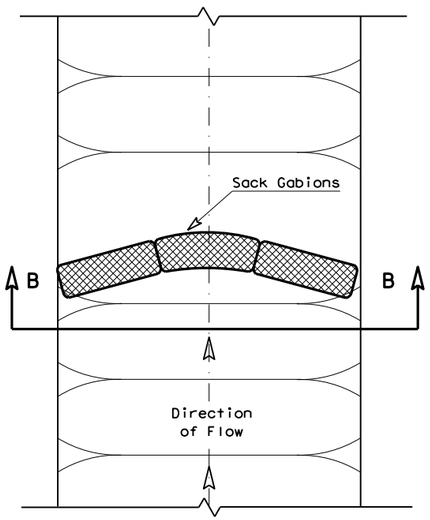
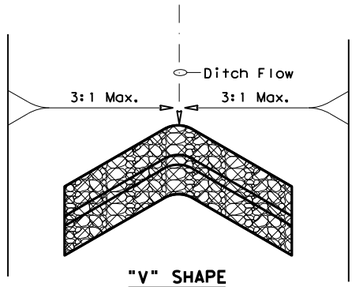


FILTER DAM AT TOE OF SLOPE

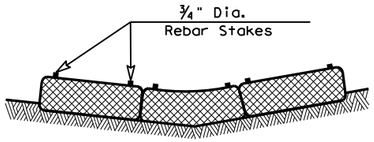
RFD1



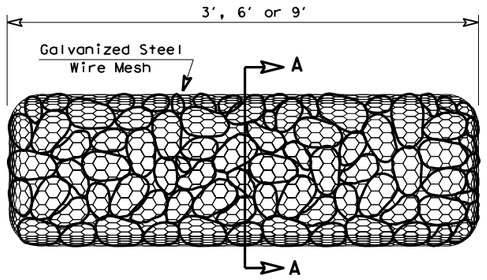
PLAN VIEW



"V" SHAPE
PLAN VIEW

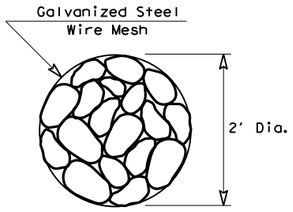


SECTION B-B

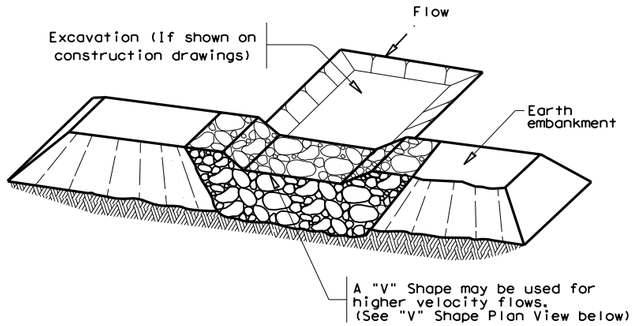


TYPE 4 (SACK GABIONS)

RFD4

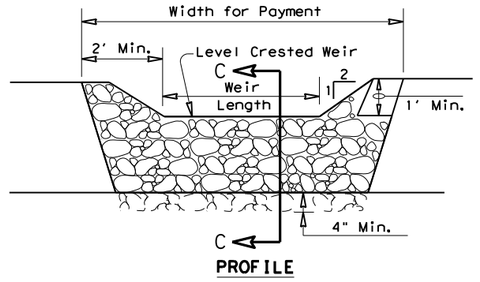


SECTION A-A

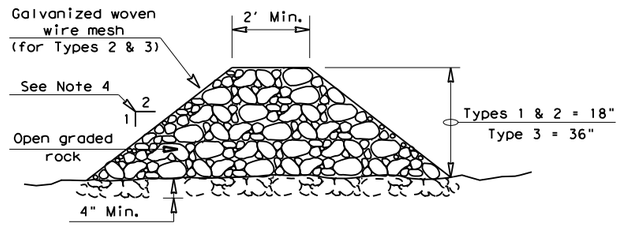


FILTER DAM AT SEDIMENT TRAP

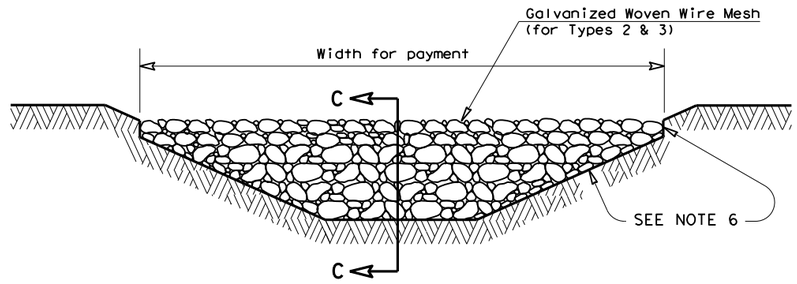
RFD1 — OR — RFD2



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
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
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DATE: 5/22/2023
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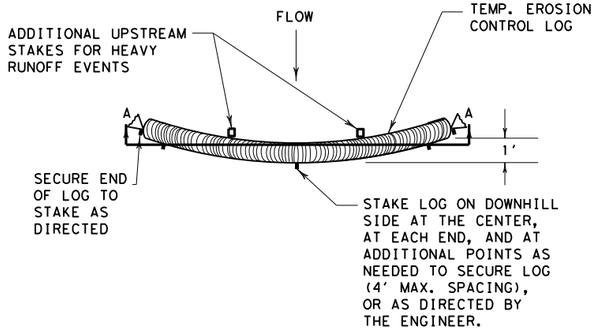
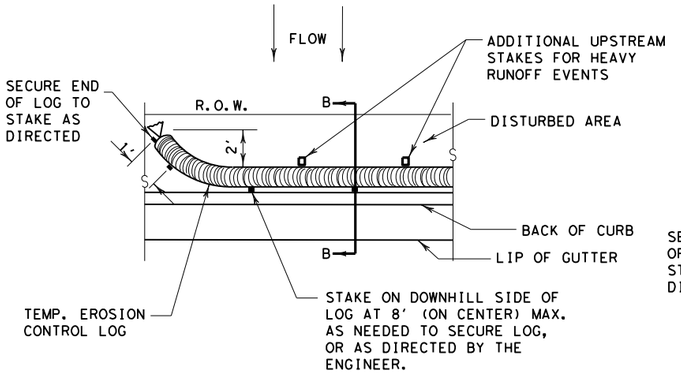


PLAN VIEW



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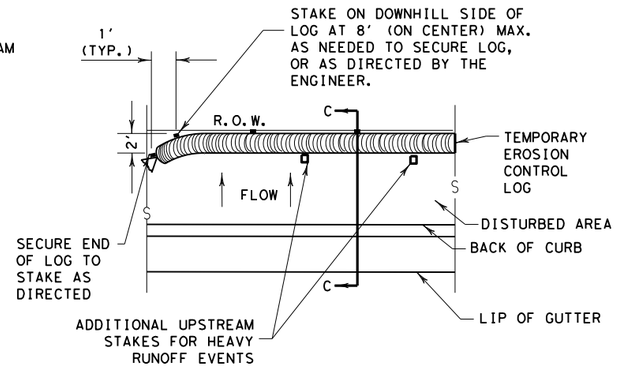
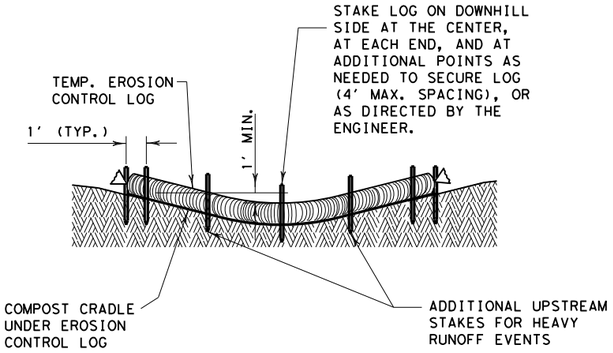


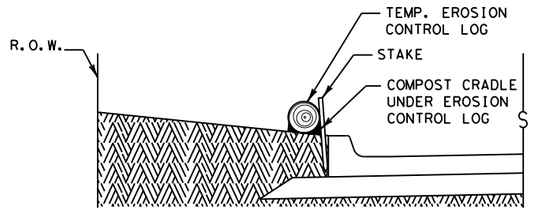
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

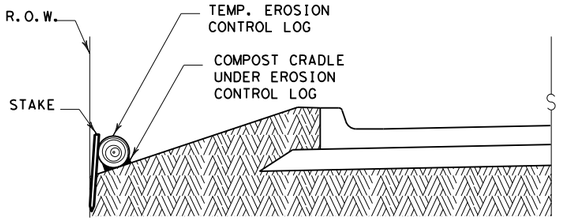
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

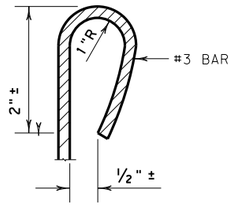
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

LEGEND

- CL-D — EROSION CONTROL LOG DAM
- CL-BOC — EROSION CONTROL LOG AT BACK OF CURB
- CL-ROW — EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
- CL-SST — EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
- CL-SSL — EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
- CL-DI — EROSION CONTROL LOG AT DROP INLET
- CL-CI — EROSION CONTROL LOG AT CURB INLET
- CL-GI — EROSION CONTROL LOG AT CURB & GRATE INLET

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

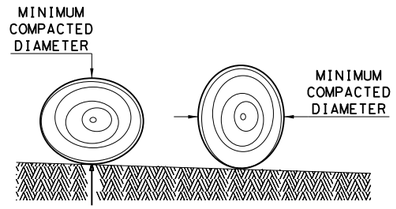
Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:

1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		136

DATE: 5/22/2023
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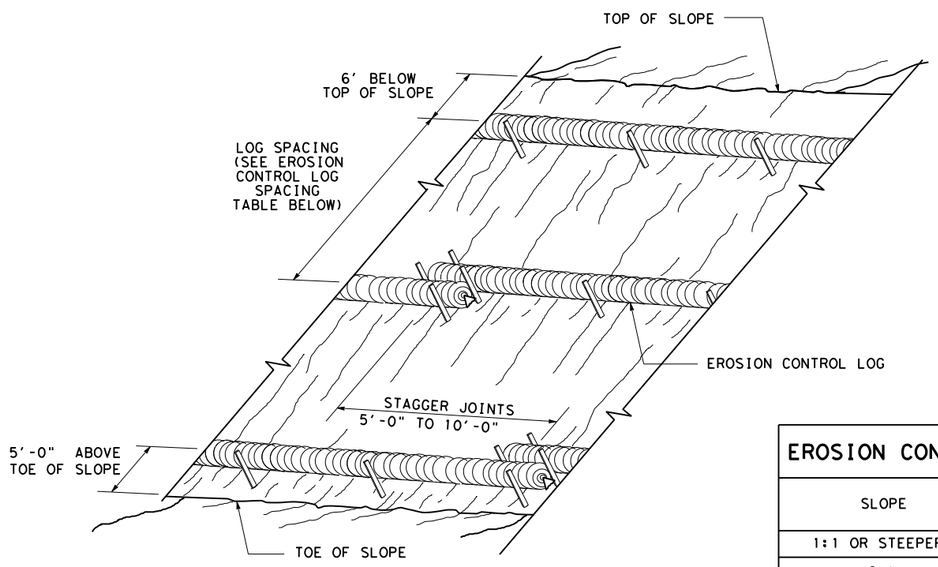
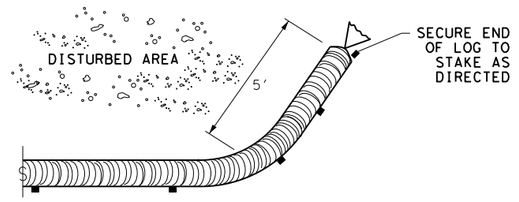


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

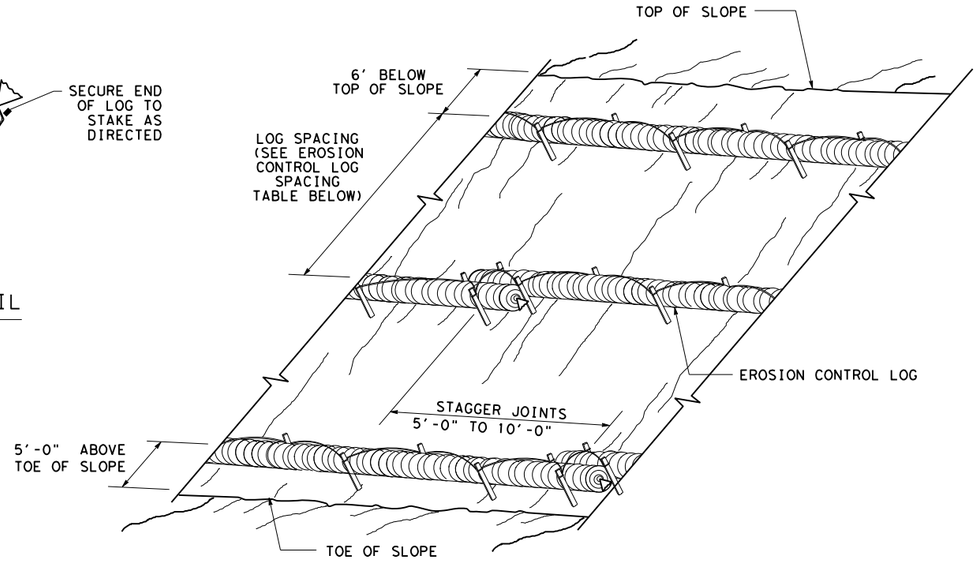
CL-SST



END SECTION RAP DETAIL

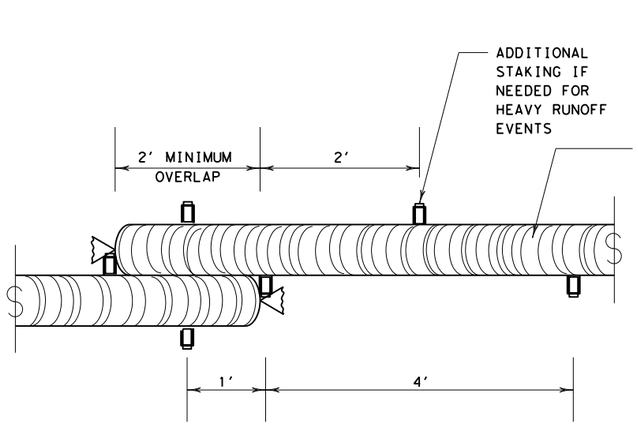
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

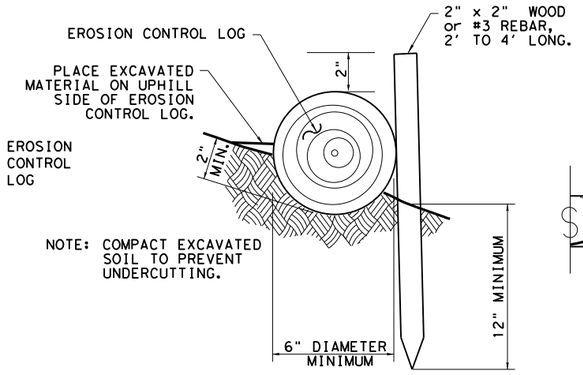
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

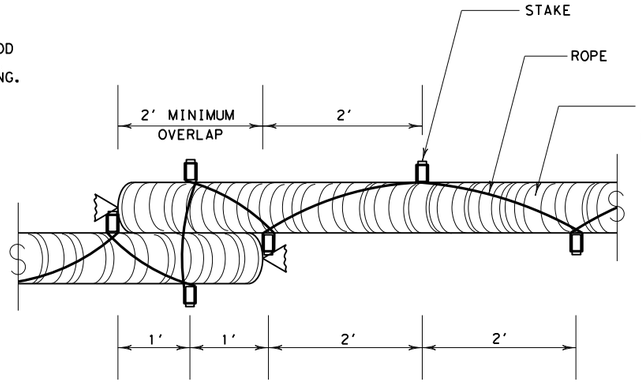


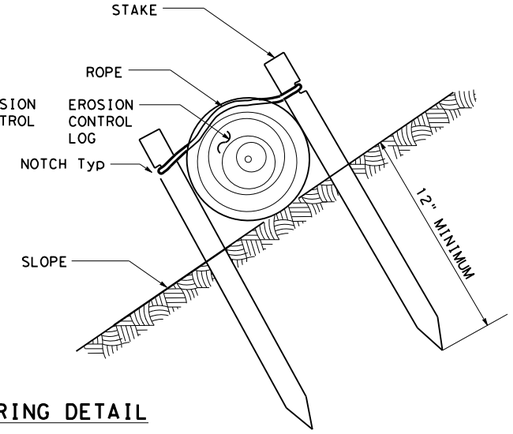


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

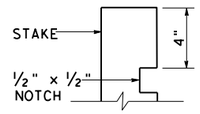
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

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	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		137

DATE: 5/22/2023
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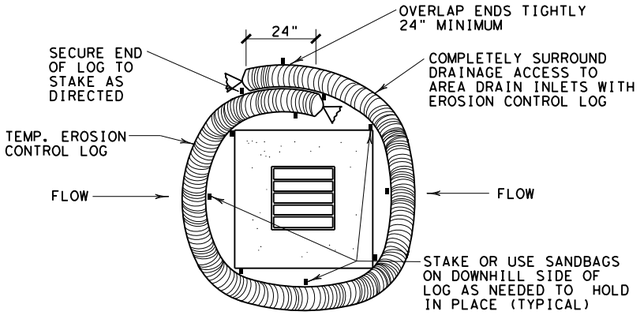
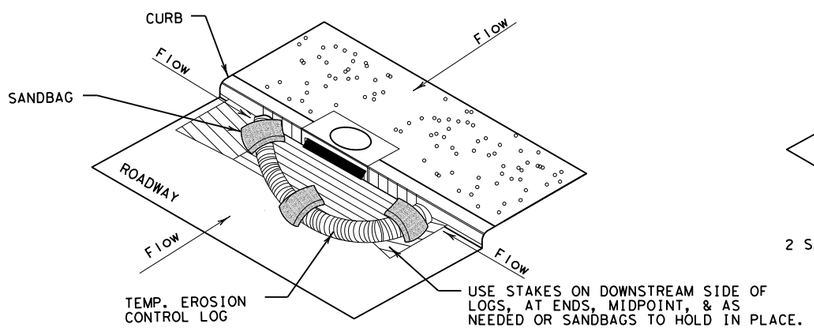


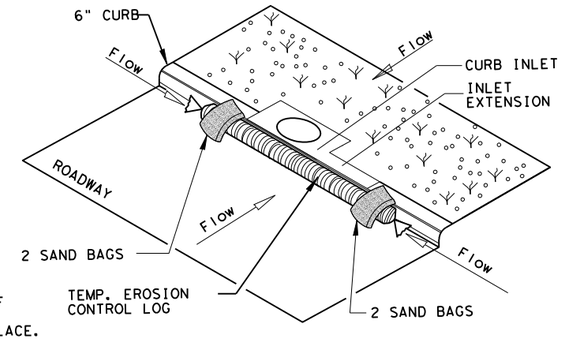
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

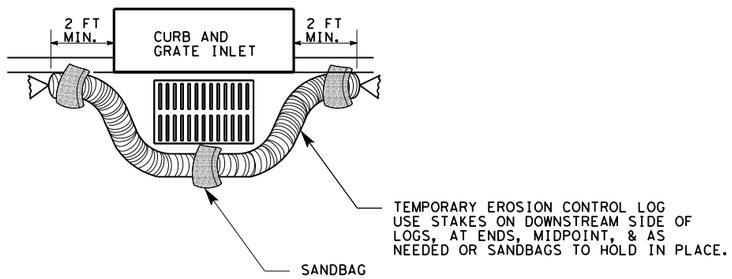
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

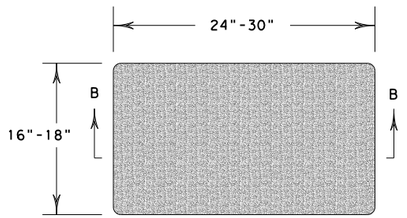
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI

SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	088	VAR
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		138

DATE: 5/22/2023
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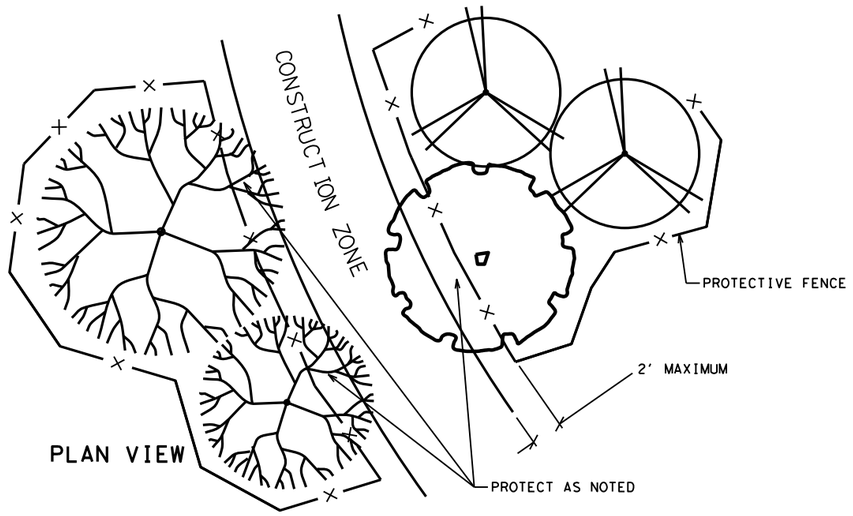
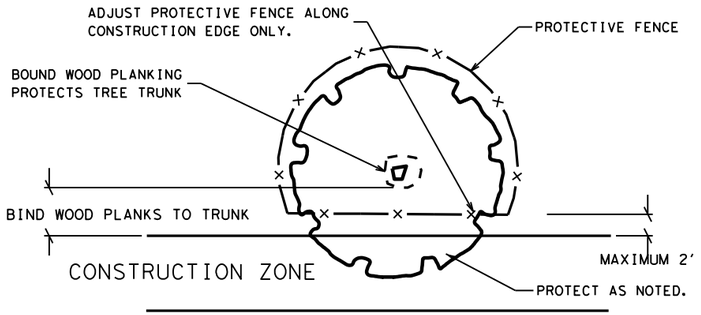
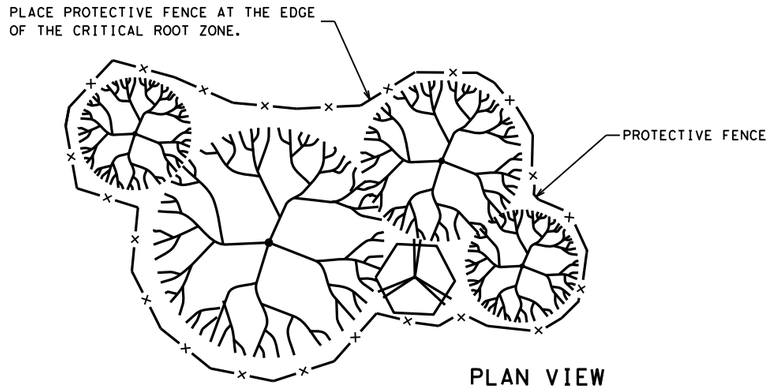


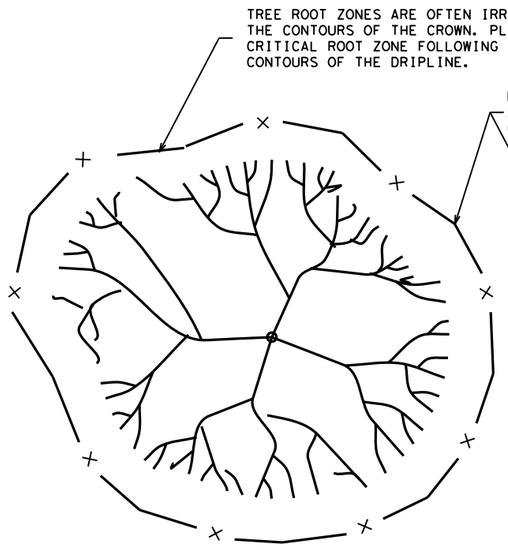
LINEAR CONSTRUCTION THROUGH STAND OF TREES

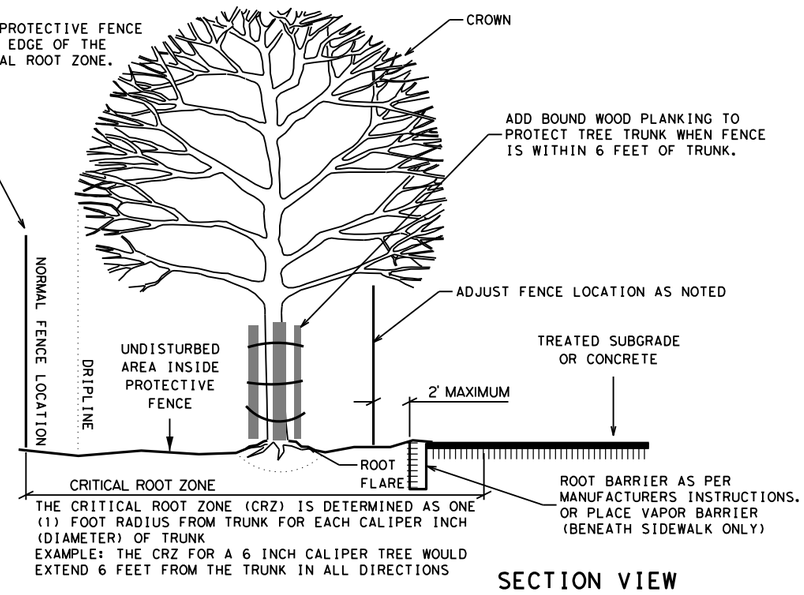


PLAN VIEW
PAVING UNDER TREES



TYPICAL TREE GROUPING PROTECTION





TYPICAL TREE PROTECTION

NOTES:

CRITICAL ROOT ZONE IS 1 FT. AWAY FROM TREE TRUNK FOR EVERY 1 IN. OF TREE DIAMETER MEASURED AT 4 FT. HEIGHT.

WATER TREES EVERY 2 WEEKS WITH A MINIMUM OF 100 GALLONS PER TREE.

SPRAY TREE WITH WATER TO REMOVE CONSTRUCTION DUST WHEN DIRECTED.

CONSTRUCTION FENCE SHALL BE 4 FT. TALL.

DO NOT PERFORM WORK OR STORE EQUIPMENT WITHIN PROTECTED AREA.

COVER THE CRITICAL ROOT ZONE BETWEEN THE PROTECTED AREA AND THE CONSTRUCTION ZONE WITH 4 IN. OF MULCH

PERFORM TREE TRIMMING AND WOUND REPAIR PER STANDARD SPECIFICATIONS.

DAMAGED AND EXPOSED ROOTS SHALL BE TRIMMED AND TREATED PER STANDARD SPECIFICATIONS. BACKFILL EXPOSED ROOTS WITH TOPSOIL WITHIN 24 HOURS OF EXPOSURE.

PLACE PLASTIC UNDER CONCRETE PLACED IN THE CRITICAL ROOT ZONE.

PLACE A ROOT BARRIER IN THE CRITICAL ROOT ZONE AT THE EDGE OF TREATED SUBGRADE TO THE DEPTH OF THE SUBGRADE.

ALL WORK IS SUBSIDIARY TO BID ITEM.

Texas Department of Transportation | Austin District Standard

TREE PROTECTION DETAILS

TPD-19(AUS)

REVISIONS
06/16: SHEET CREATED
04/19: APPROVED

CONT	SECT	JOB	HIGHWAY
0914	33	088	VAR
DIST	COUNTY		SHEET NO.
AUS	HAYS		139

DATE: 5/22/2023 5:49:54 PM
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