CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		1

DESIGN SPEED: N/A
ADT: N/A

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL-AID PROJECT NUMBER
PROJECT NUMBER STP 2021(834)TAPS
CSJ 0914-33-087
LIMITS FROM: SPORTS PARK DR
LIMITS TO: FOUNDERS PARK RD

PROJECT LENGTH = 4417.60 FEET = 0.84 MILES

100% PLAN SET

DATE OF LETTING: _____

DATE WORK BEGAN: _____

DATE WORK COMPLETED AND ACCEPTED: _____

FINAL CONTRACT COST: $_____

CONTRACTOR: _____

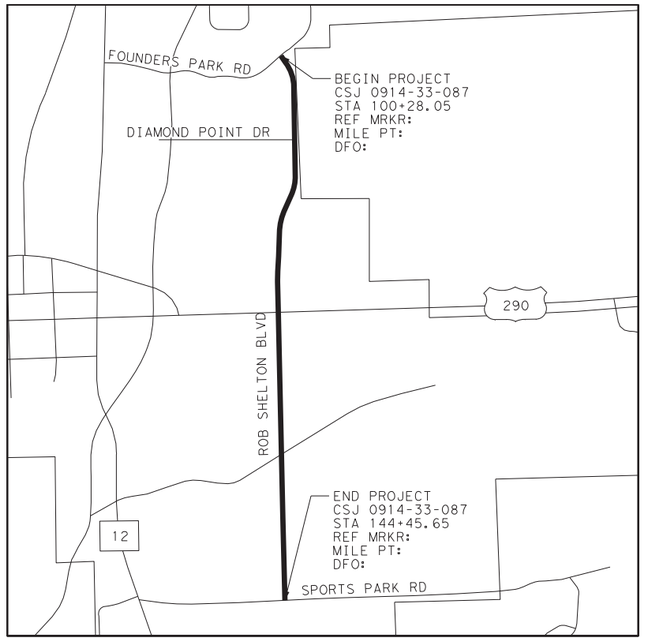
LIST OF APPROVED CHANGE ORDERS:

Registered Accessibility Specialist (RAS) Inspection Required

TDLR No. EABPRJ TABS2022011216

HAYS COUNTY
ROB SHELTON BLVD SIDEWALKS

CONSTRUCT SIDEWALKS, A GRANITE TRAIL, ONE PEDESTRIAN BRIDGE AND BIKE LANES



VICINITY MAP
N.T.S.

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

I CERTIFY THAT THIS PROJECT WAS CONSTRUCTED IN SUBSTANTIAL COMPLIANCE WITH THE FINAL AS-BUILT PLANS AND SPECIFICATIONS.

_____ P.E. _____
AREA ENGINEER DATE

CORRECT: DATE 3-23-2022

FREESE AND NICHOLS, INC. (TBPE FIRM REG. F-2144)

STATE OF TEXAS
GIANCARLO G. PATINO
111624
LICENSED
PROFESSIONAL ENGINEER

3-23-2022

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com

RECOMMENDED FOR LETTING: DATE 3/25/2022

DocuSigned by:
Dwayne Hellmich, P.E.
198012497A804A0...
DISTRICT DESIGN ENGINEER

SUBMITTED FOR LETTING: DATE 3/24/2022

DocuSigned by:
William L Senora Jr, P.E.
917B7C376B3C4D5...
AREA ENGINEER

APPROVED FOR LETTING: DATE 3/25/2022

DocuSigned by:
Heather Ashley-Nguyen
8912AF18F45A416...
DIRECTOR OF TRANSPORTATION PLANNING & DEVELOPMENT

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION ON 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, MAY 2012).

Texas Department of Transportation

DATE: Feb. 09, 2022 - 11:05:18 AM
FILE: N:\Plan Set\1. General\DSP21528_GEN_TITLE01.dgn

GENERAL

TRAFFIC CONTROL PLAN STANDARDS (?)

ROADWAY

ROADWAY STANDARDS (?)

BRIDGE

BRIDGE STANDARDS ($)

TRAFFIC SIGNAL

TRAFFIC SIGNAL STANDARDS (?)

SIGNING, PAVEMENT MARKINGS AND DELINEATIONS AND ENVIRONMENTAL ISSUES

SIGNING STANDARDS (?)

PAVEMENT MARKINGS AND DELINEATION STANDARDS (?)

ENVIRONMENTAL ISSUES STANDARDS (?)

STATE OF TEXAS
FERIDOON MALEKGHASSEMI
94488
LICENSED
PROFESSIONAL ENGINEER

05/03/2022

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ON THIS INDEX ($) HAVE BEEN ISSUED BY FERIDOON MALEKGHASSEMI, P.E. AND ARE APPLICABLE TO THIS PROJECT.

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

5/3/2022

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ON THIS INDEX (?) HAVE BEEN ISSUED BY ANDREA BRYANT, P.E. AND ARE APPLICABLE TO THIS PROJECT.

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD INDEX OF SHEETS

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		2

DATE: May. 03, 2022 - 10:58:05 AM
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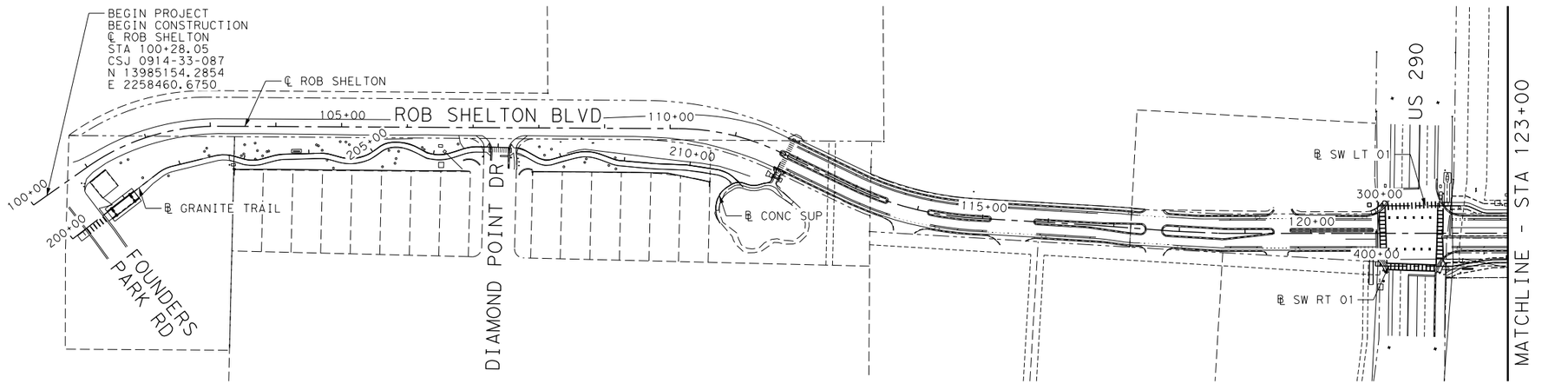

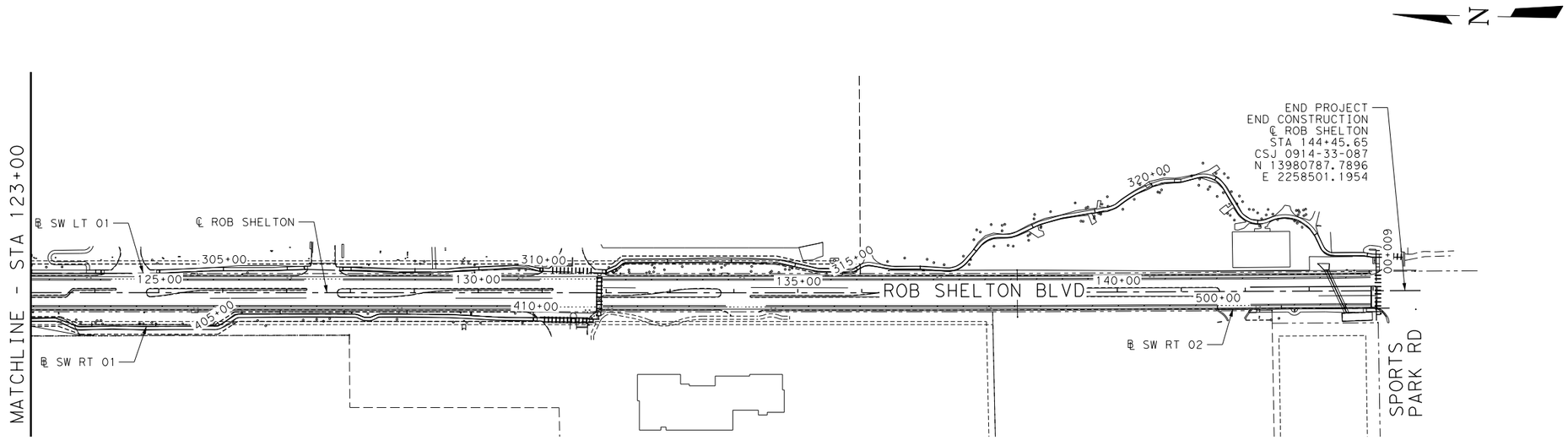

0 100′ 200′
HORIZONTAL SCALE

LEGEND

EXIST ROW

CENTER LINE/ BASE LINE

STATE OF TEXAS
GIANCARLO G. PATINO
111624
LICENSED PROFESSIONAL ENGINEER

11-4-2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD PROJECT LAYOUT

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		3

DATE: Nov. 02, 2021 - 02:05:56 PM
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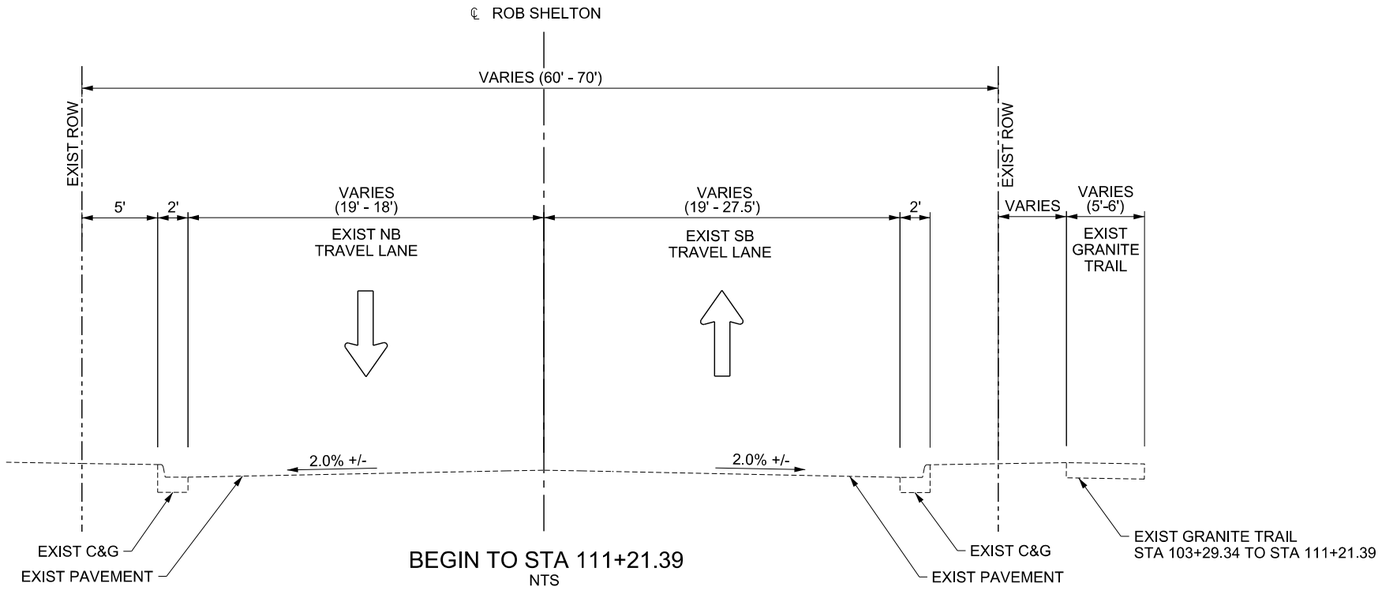

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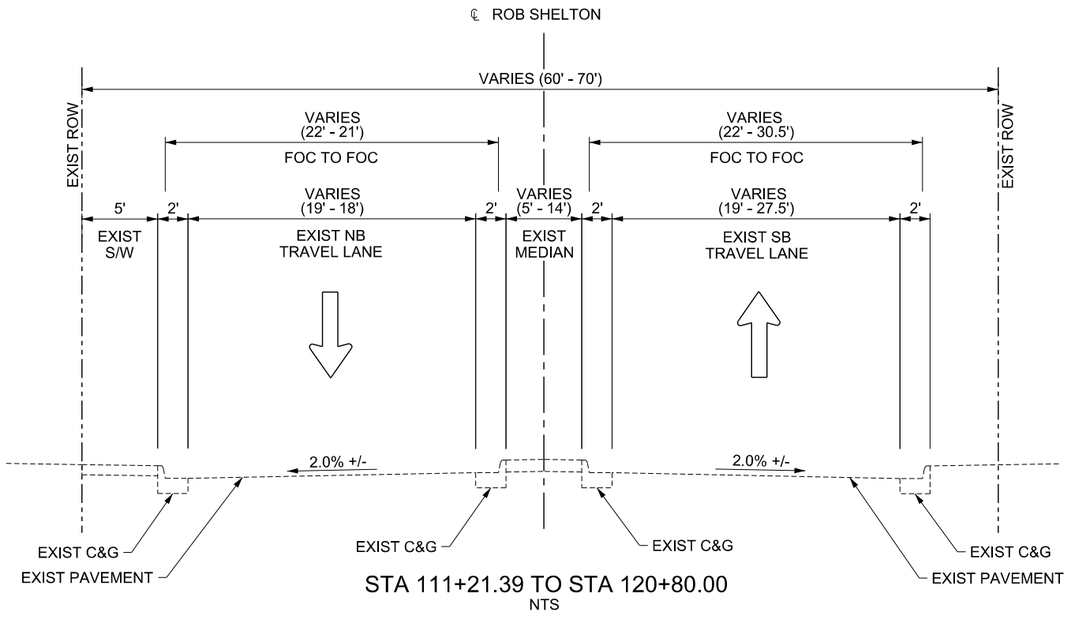
NTS



STA 111+21.39 TO STA 120+80.00
NTS

EXIST US 290 INTERSECTION
STA 120+80.00 TO STA 122+05.72

11-4-2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD EXIST TYPICAL SECTIONS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		4

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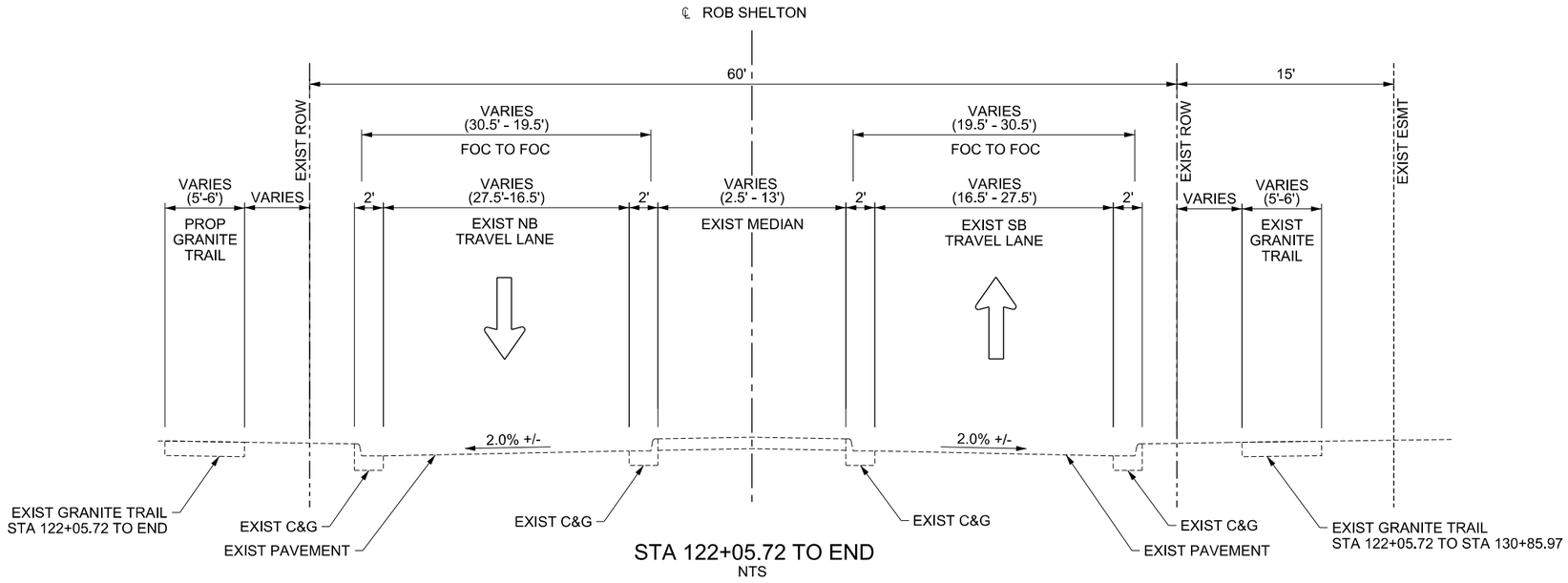

STA 122+05.72 TO END
NTS

STATE OF TEXAS
GIANCARLO G. PATINO
111624
LICENSED
PROFESSIONAL ENGINEER

11-4-2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
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TX FIRM F-2144

ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
EXIST TYPICAL SECTIONS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		5

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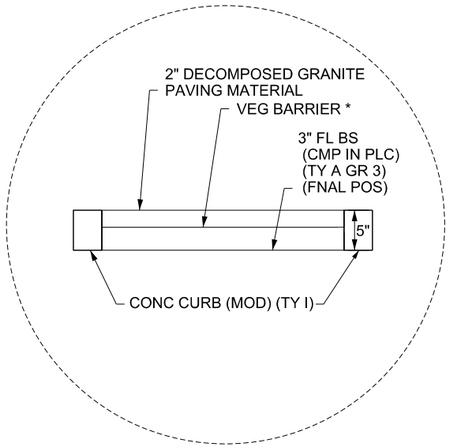
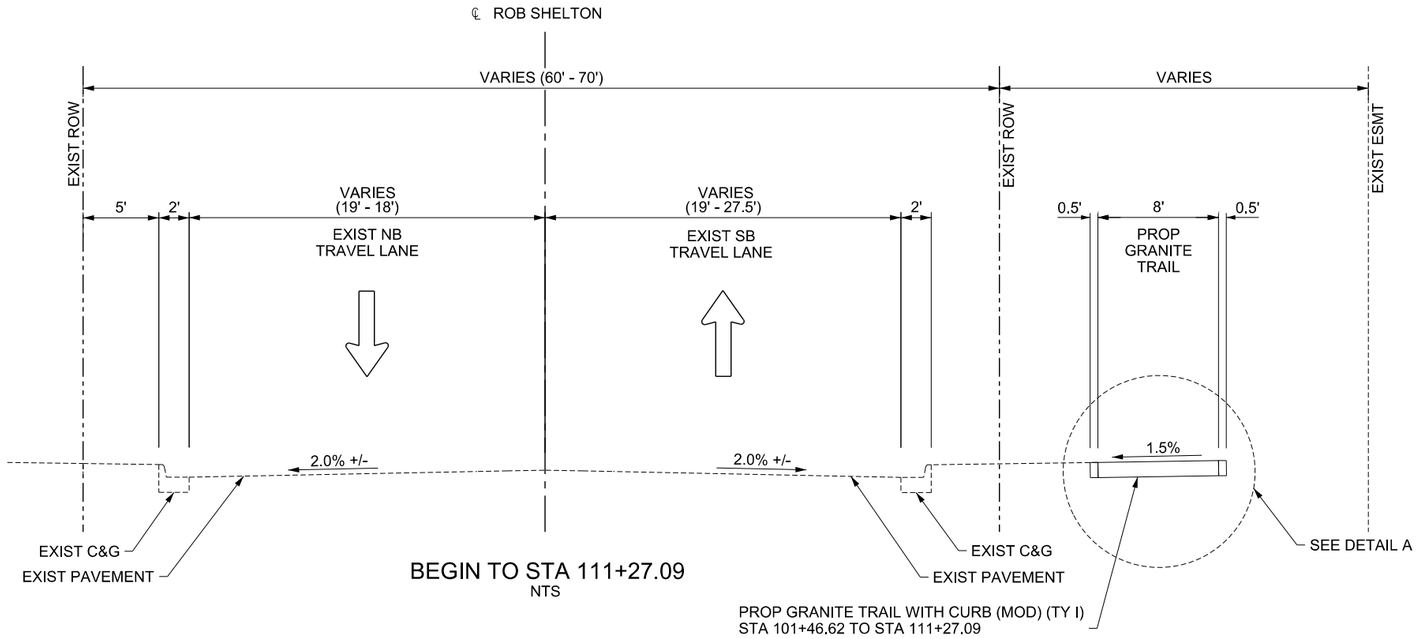


DETAIL A
NTS



BEGIN TO STA 111+27.09
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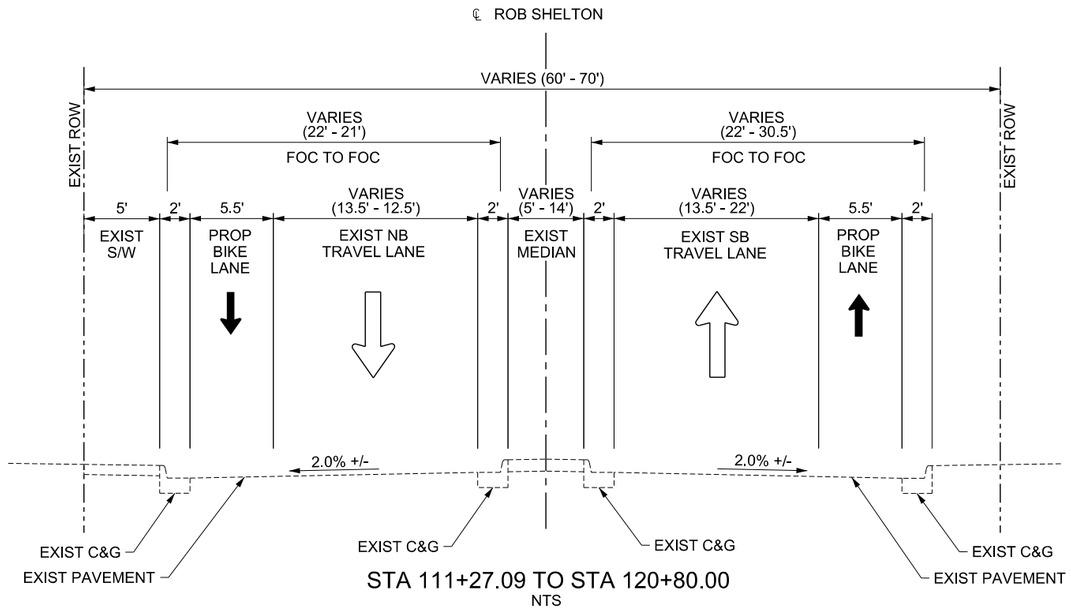


STA 111+27.09 TO STA 120+80.00
NTS

EXIST US 290 INTERSECTION
STA 120+80.00 TO STA 122+01.47

* ITEM IS SUBSIDIARY TO OTHER ITEMS

DATE: Feb. 17, 2022 - 04:15:48 PM
FILE: N:\Plan Set\1. General\DSP21528_GEN_TYPICAL_PR01.dgn

STATE OF TEXAS
GIANCARLO G. PATINO
111624
LICENSED
PROFESSIONAL ENGINEER

2-24-2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

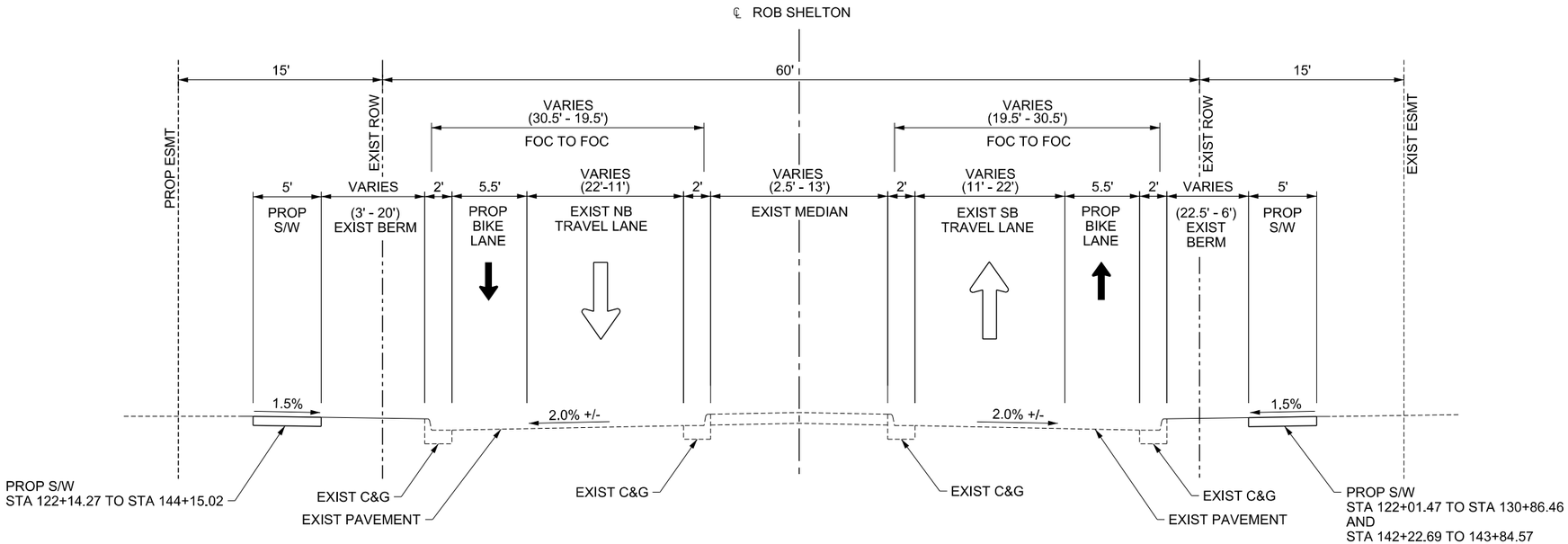
FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
PROP TYPICAL SECTIONS

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		6



STA 122+01.47 TO END
NTS

STATE OF TEXAS
GIANCARLO G. PATINO
111624
LICENSED
PROFESSIONAL ENGINEER

11-4-2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
PROP TYPICAL SECTIONS

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		7

DATE: Nov. 02, 2021 - 02:06:00 PM
FILE: N:\Plan Set\1. General\DSP21528_GEN_TYPICAL_PR02.dgn

GENERAL NOTES: Version: February 9, 2022

Item	Description	**Rate
247	**Flexible Base (CMP IN PLC)**	132 LB/CF

** For Informational Purposes Only

The following standard detail sheet or sheets have been modified:

Modified Standards

CCCG-21

GENERAL
Contractor questions on this project are to be addressed to the following individual(s):
South Austin Tommy.Abrego@txdot.gov

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

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

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

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 48 hours before commencing any work that might affect present ITS Infrastructure. Use caution if working in these areas to avoid damaging or interfering with existing facilities. Repair any damage to this system within 8 hours of occurrence at no cost to the Department. In the event of system damage, notify TxDOT/CTECC at (512) 974-0883 within one hour of occurrence. Failure of the Contractor to repair damage to any infrastructure that conveys any corridor information to TxDOT/CTECC will result in the Contractor being billed for the full cost of emergency repairs.
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.

Use a self-contained vacuum broom to sweep the roadway and keep it free of sediment as directed. The contractor will be responsible for any sweeping above and beyond the normal maintenance required to keep fugitive sediment off the roadway as directed by the Engineer.

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.

ITEM 5 – CONTROL OF THE WORK
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 https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/publications/bridge.html#design. Acceptance or denial of an alternate is at the sole discretion of the Engineer. Impacts to the project schedule and any additional costs resulting from the use of alternates are the sole responsibility of the Contractor.

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/specifications/shop-drawings.html (TxDOT.gov Business > Resources - General > Shop Drawings). Pre-approved producers can be found online at TxDOT.gov > Business > Resources - Material Producer List. 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.

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.

Refer to the Environmental Permits, Issues and Commitments (EPIC) plan sheets for additional requirements and permits.

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.

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.

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

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 110 – EXCAVATION
The Engineer will define unsuitable material.

ITEM 132 – ALL EMBANKMENT
At no time will the retaining wall backfill material exceed the adjacent embankment operation by more than one lift. At no time will the embankment adjacent to the retaining wall backfill exceed the wall backfill by any elevation. Embankment placed over the area of MSE backfill must meet the same backfill requirements for the type specified under Item 423.

The Engineer will define unsuitable material. Material which the Contractor might deem to be unsuitable due to moisture content will not be considered unsuitable material.

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 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 169 – SOIL RETENTION BLANKETS
Type A blankets containing straw fibers are not allowed. Type B and D blankets shall be a spray type blanket.

ITEM 247 - FLEXIBLE BASE
The layer thickness will be 4 in. to 6 in. unless shown on the plans. Placing in a single layer is allowed when total thickness of base is 8 in. or less. When placed in multiple layers, compact the bottom and middle layers to at least 95% and 98% of the maximum dry density, respectively. When placed in a single layer or the final layer, compact to at least 100%.

Correction of subgrade soft spots is subsidiary.

Complete per plans the subgrade, ditches, slopes, and drainage structures prior to the placement of base.

Do not use a vibratory roller to compact base placed directly on top of a drainage structure.

Grade 4 will have the same material requirements as Grade 5 except minimum compressive strength at lateral pressure 3 psi will be **70** psi and at lateral pressure 15 psi will be 150 psi. Grade 4 does not have a minimum compressive strength at lateral pressure 0 psi.

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.

Where Retaining Walls are integral parts of the abutment header, do not place the abutment cap prior to backfilling the wall and the abutment area up to the elevation of the bottom of the abutment cap.

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

The "H" values shown on Bridge Layouts are estimated column heights. Calculate the actual column heights based on field conditions.

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.

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 or in the pay items. 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.

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.
For cement-stabilized riprap, provide Type A Grade 5 flexible base. Compressive strengths for Item 247 are waived.

SGT approach taper, paid using mow strip item, shall be installed using concrete, flexible base coated with SS-1 at a rate of 0.12 GAL/SY, or HMA Type B/C/D. Placement shall be ordinary compaction and does not require placement using an asphalt paver.

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

ITEM 502 - BARRICADES, SIGNS, AND TRAFFIC HANDLING

Table 1

Roadway	Limits	Allowable Closure Time
IH 35	All (1 lane closed)	9 P to 5 A
IH 35	All (2 lanes closed, see allowable work below)	9 P to 5 A
IH 35	All (2 lanes closed, all work)	11 P to 5 A
SH 45	US 183 to SH130	8 P to 5 A
LP 1	William Cannon to Parmer Lane	8 P to 5 A
US 183	SH 29 to FM 1327	8 P to 5 A
SH 71	SH 130 to IH 35	8 P to 5 A
SH 71	SH 304 to Tahitian Drive	8 P to 5 A
SH 71	US 290 W to RM 3238	8 P to 5 A
US 290 W	IH 35 to Nutty Brown Rd	8 P to 5 A

US 290 E	IH 35 to SH 95	8 P to 5 A
FM 734	FM 1431 to US 290 E	8 P to 5 A
US 79	IH 35 to Bus 79 in Taylor	8 P to 5 A
RM 1431	Lohmans Ford Rd to IH 35	8 P to 5 A
SH 29	LP 332 western terminus to SH 130	8 P to 5 A
SH 80	Charles Austin to River Road	8 P to 5 A
RM 2222	All	8 P to 5 A
RM 620	All	8 P to 5 A
RM 2244	All	8 P to 5 A
SPUR 69	All	8 P to 5 A
LP 360	All	8 P to 5 A
LP 343	All	8 P to 5 A
LP 275	All	8 P to 5 A
FM 1325	All	8 P to 5 A
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

For roadways without defined allowable closure times, nighttime lane closures will be allowed from 7 P to 6 A. Unless stated, daytime or Friday night lane closures will not be allowed and one lane in each direction will remain open at all times for all roadways.

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.

Cover, relocate or remove existing signs that conflict with traffic control. 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.

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 traffic control, if at any time the queue becomes greater than 20 minutes. Have a contingency plan of how modification will occur. Consider inclement weather prior to implementing the lane closures. Do not set up traffic control when the pavement is wet.

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

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.

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, 531, & 536 – MISCELLANEOUS CONSTRUCTION
Reinforcement will be in accordance with Item 432.3.1 unless shown on the plans. Fiber reinforcement is not allowed. Class A and B Concrete are allowed to use Coarse Aggregate Grades 1-8. Expansion joints will be placed every 40 ft. Expansion joints must be 1" wide asphalt board and flush with the surface. The bottom of the joint shall be at half the depth of the concrete. Sidewalk cross slope must not exceed 1.5%.

Unless shown on the plans or in the pay items, 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. 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.

ITEMS 600s & 6000s – ITS, 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 Douglas Turner (Douglas.L.Turner@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 illumination or 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 illumination or 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 Test Period is required for signals and ITS equipment 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.

Maintain the existing ITS equipment and HUB buildings operational during construction. ITS downtime is allowed from 12A to 4A. Downtime is restricted to one time per HUB or equipment.
Definitions of abbreviations used to designate ITS equipment, material, etc. can be provided by the Engineer.

For illumination conduit and ITS multi duct, smooth wall schedule 40 HDPE can be substituted for schedule 40 PVC. Minimum distance between HDPE joints will be 200 ft. If multi duct replaced with individual HDPE pipes, each ITS multi duct requires replacement with 4 x 1.5 in. pipes. If using individual pipes, ITS conduit spacers are not required but each set of 4 pipes shall be bound together at 5 ft. max spacing. For illumination conduit and ITS multi duct, schedule 80 bore can be replaced with an HDPE carrier pipe of adequate size to carry the proposed conduits. Stakes or other physical method shall be installed to hold down conduit prior to placement of encasement. Each LF payment of multi duct will include all 4 pipes and total quantity paid will not change due to substitution. All HDPE shall meet the material requirements of the applicable specification or be pre-qualified for Item 618.

ITEM 618 - CONDUIT
Fit PVC and HDPE conduit terminations with bell ends.

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 conduit runs. Cap all empty conduit using standard weather tight conduit caps. This work is subsidiary.

Use a coring device, not a hammer drill, when drilling holes through concrete structures.

Structurally mounted junction boxes will be as shown on the plans. When used for traffic signal installations, these boxes will be 12" x 12" x 8". This work is subsidiary.

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. Abandon existing underground conduit that is unusable is allowed if all conductors are removed. Replacement conduit will be paid using the existing bid items.

ITEM 644 – SMALL ROADSIDE SIGN ASSEMBLIES
Triangular slip base that use set screws to secure the post will require 1 of the set screws to penetrate the post by drilling a hole in the post at the location of the screw. All set screws shall be treated with anti-seize compound.

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

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 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. Back plates will be black aluminum.

Provide louvers, which have five vanes with a black finish on inside surfaces when required. Fasten a hardware cloth screen, securely, with $\frac{5}{8}$" or smaller mesh size to the front face of each louver to prevent bird nesting.

Use the four-point mounting system (TY A) for signal heads, except in cases of skewed or vertical heads when (TY B) will be used.

ITEM 684 – TRAFFIC SIGNAL CABLES
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.

County: Hays
Highway: Shelton Lane

Sheet:
Control: 0914-33-087

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

ITEM 688 - PEDESTRIAN DETECTORS AND VEHICLE LOOP DETECTORS
Test all loops in accordance with the FHWA loop detector handbook.
Install vehicle loops prior to placement of roadway surface.

For work within the city limits of Austin, notify COA (512) 974-4099 and TxDOT 21 days prior to loop installation. Install quadrapole layout for presence detectors within city limits of Austin.

For replacement of existing loops, replacement of damaged or missing conduit from the vehicle loop detector to the ground box will be measured and paid by overrun of loop detector bid item. Removal of damaged ground boxes at end of lead in cable is subsidiary to the new ground box. Test period for the pedestrian detectors shall be in accordance with item 680.3.1.8.

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 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 0914-33-087 **DISTRICT** Austin **COUNTY** Hays
HIGHWAY SHELTON LN

			CONTROL SECTION JOB		**0914-33-087**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00133287**		
			COUNTY		**Hays**		
			HIGHWAY		**SHELTON LN**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	100-6002	PREPARING ROW	STA	44.180		44.180	
	104-6021	REMOVING CONC (CURB)	LF	27.000		27.000	
	104-6022	REMOVING CONC (CURB AND GUTTER)	LF	37.000		37.000	
	104-6036	REMOVING CONC (SIDEWALK OR RAMP)	SY	137.000		137.000	
	110-6001	EXCAVATION (ROADWAY)	CY	458.300		458.300	
	132-6003	EMBANKMENT (FINAL)(ORD COMP)(TY B)	CY	38.000		38.000	
	160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	7,780.700		7,780.700	
	162-6002	BLOCK SODDING	SY	7,780.700		7,780.700	
	168-6001	VEGETATIVE WATERING	MG	124.500		124.500	
	247-6043	FL BS (CMP IN PLC)(TY A GR 3)(FNAL POS)	CY	67.000		67.000	
	400-6005	CEM STABIL BKFL	CY	25.200		25.200	
	416-6003	DRILL SHAFT (30 IN)	LF	72.000		72.000	
	420-6013	CL C CONC (ABUT)	CY	18.300		18.300	
	422-6015	APPROACH SLAB	CY	5.600		5.600	
	432-6002	RIPRAP (CONC)(5 IN)	CY	3.000		3.000	
	432-6033	RIPRAP (STONE PROTECTION)(18 IN)	CY	83.300		83.300	
	450-6052	RAIL (HANDRAIL)(TY F)	LF	92.000		92.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	7.000		7.000	
	506-6001	ROCK FILTER DAMS (INSTALL) (TY 1)	LF	111.000		111.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	111.000		111.000	
	506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	234.000		234.000	
	506-6024	CONSTRUCTION EXITS (REMOVE)	SY	234.000		234.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	4,569.000		4,569.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	4,569.000		4,569.000	
	506-6042	BIODEG EROSN CONT LOGS (INSTL) (18")	LF	331.000		331.000	
	506-6043	BIODEG EROSN CONT LOGS (REMOVE)	LF	331.000		331.000	
	529-6002	CONC CURB (TY II)	LF	10.000		10.000	
	529-6014	CONC CURB (MOD) (TYPE I)	LF	1,851.000		1,851.000	
	531-6002	CONC SIDEWALKS (5")	SY	2,072.000		2,072.000	
	531-6004	CURB RAMPS (TY 1)	EA	3.000		3.000	
	531-6008	CURB RAMPS (TY 5)	EA	3.000		3.000	
	531-6013	CURB RAMPS (TY 10)	EA	1.000		1.000	
	531-6036	CURB RAMPS (TY 2)(MOD)	EA	1.000		1.000	
	618-6046	CONDT (PVC) (SCH 80) (2")	LF	140.000		140.000	
	644-6071	RELOCATE SM RD SN SUP&AM TY TWT	EA	2.000		2.000	
	666-6006	REFL PAV MRK TY I (W)4"(DOT)(100MIL)	LF	219.000		219.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0914-33-087 **DISTRICT** Austin **COUNTY** Hays
HIGHWAY SHELTON LN

			CONTROL SECTION JOB		**0914-33-087**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00133287**		
			COUNTY		**Hays**		
			HIGHWAY		**SHELTON LN**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	1,100.000		1,100.000	
	666-6105	REFL PAV MRK TY I (W)(BIKE ARW)(100MIL)	EA	23.000		23.000	
	666-6111	REFL PAV MRK TY I(W)(BIKE SYML)(100MIL)	EA	23.000		23.000	
	666-6170	REFL PAV MRK TY II (W) 4" (SLD)	LF	10,503.000		10,503.000	
	666-6437	PAVEMENT SEALER (SOLID GREEN BLOCK)	SF	144.000		144.000	
	668-6128	PREFAB PAV MRK TY C (GRN)(SLD)(BLOCK)	SF	144.000		144.000	
	678-6048	PAV SURF PREP FOR MRK (SOLID BLOCK)	SF	144.000		144.000	
	682-6018	PED SIG SEC (LED)(COUNTDOWN)	EA	2.000		2.000	
	684-6028	TRF SIG CBL (TY A)(14 AWG)(2 CONDR)	LF	965.000		965.000	
	684-6031	TRF SIG CBL (TY A)(14 AWG)(5 CONDR)	LF	242.000		242.000	
	687-6001	PED POLE ASSEMBLY	EA	2.000		2.000	
	687-6003	RELOCATE PED POLE ASSEMBLY	EA	1.000		1.000	
	688-6001	PED DETECT PUSH BUTTON (APS)	EA	2.000		2.000	
	1002-6002	LANDSCAPE AMENITY (TY 1)	EA	3.000		3.000	
	1002-6026	LANDSCAPE AMENITY (BENCH)	EA	1.000		1.000	
	1004-6001	TREE PROTECTION	EA	189.000		189.000	
	3097-6001	DECOMPOSED GRANITE	TON	73.000		73.000	
	4196-6003	PREFAB PED STL TRUSS BRG SPAN (35 FT)	EA	1.000		1.000	
	6185-6002	TMA (STATIONARY)	DAY	24.000		24.000	
	6185-6005	TMA (MOBILE OPERATION)	DAY	24.000		24.000	
	18	EROSION CONTROL MAINTENANCE: CONTRACTOR FORCE ACCOUNT WORK (PART)	LS	1.000		1.000	
		LAW ENFORCEMENT: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	
		SAFETY CONTINGENCY: CONTRACTOR FORCE ACCOUNT WORK (PARTICIPATING)	LS	1.000		1.000	

SUMMARY OF WORKZONE TRAFFIC CONTROL ITEMS				
LOCATION	500 6001	502 6001	6185 6002	6185 6005
	MOBILIZATION	BARRICADES, SIGNS AND TRAFFIC HANDLING	TMA (STATIONARY)	TMA (MOBILE OPERATION)
	LS	MO	DAY	DAY
ROB SHELTON IMPROVEMENTS PROJECT LIMITS	1	7	24	24
PROJECT TOTALS	1	7	24	24

SUMMARY OF REMOVAL ITEMS				
LOCATION	104 6021	104 6022	104 6036	*
	REMOVING CONC (CURB)	REMOVING CONC (CURB AND GUTTER)	REMOVING CONC (SIDEWALK OR RAMP)	REMOVING GRANITE TRAIL
	LF	LF	SY	SY
BEGIN TO STA 111+00	16		7	639
STA 111+00 TO STA 123+00		17	130	69
STA 123+00 TO STA 134+00				922
STA 134+00 TO STA 140+00				436
STA 140+00 TO END	11	20		354
PROJECT TOTALS	27	37	137	2420

* ITEM IS SUBSIDIARY TO 100 PREP ROW AND SHOWN FOR CONTRACTOR'S INFO ONLY.

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD SUMMARY OF QUANTITIES

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		10

DATE: May. 03, 2022 - 03:18:41 PM
FILE: N:\Plan Set\1. General\DSP21528_GEN_SUMMARY_OF_Q.dgn

SUMMARY OF ROADWAY ITEMS																
LOCATION	100 6002	110 6001	132 6003	247 6043	432 6002	450 6052	529 6002	529 6014	531 6002	531 6004	531 6008	531 6013	531 6036	1002 6002	1002 6026	3097 6001
	PREPARING ROW	EXCAVATION (ROADWAY)	EMBANKMENT (FINAL) (ORD COMP) (TY B)	FL BS (CMP IN PLC) (TY A GR 3) (FNAL POS)	RIPRAP (CONC) (5 IN)	RAIL (HANDRAIL) (TY F)	CONC CURB (TY II)	CONC CURB (MOD) (TYPE I)	CONC SIDEWALKS (5")	CURB RAMPS (TY 1)	CURB RAMPS (TY 5)	CURB RAMPS (TY 10)	CURB RAMPS (TY 2) (MOD)	LANDSCAPE AMENITY (TY 1) **	LANDSCAPE AMENITY (BENCH)	DECOMPOSED GRANITE PAVING MATERIAL #
	STA	CY	CY	CY	CY	LF	LF	LF	SY	EA	EA	EA	EA	EA	EA	TON
BEGIN TO STA 111+00	10.72	*	*	66				1811	50						1	71
STA 111+00 TO STA 123+00	12.00	*	*	1	3	18	10	40	237	1						2
STA 123+00 TO STA 134+00	11.00	*	*						1049							
STA 134+00 TO STA 140+00	6.00	*	*						351							
STA 140+00 TO END	4.46	*	*						385					3		
ROB SHELTON AT FOUNDERS PARK RD											2					
ROB SHELTON AT US 290											1		1			
ROB SHELTON AT SPORTS PARK RD						58				2		1				
PROJECT TOTALS	44.18	458	38	67	3	76	10	1851	2072	3	3	1	1	3	1	73

* EARTHWORK DETERMINED BASED ON SIDEWALK ALIGNMENT (SEE EARTHWORK SUMMARY) AND INCLUDED IN THE TOTAL SHOWN.

QUANTITY DETERMINED BASED ON RATE OF 1 TON PER 100 SF AT 2" DEPTH.

** LANDSCAPE AMENITY (TY I) IS FOR THE BIKE RACKS WITHIN THE PROJECT LIMITS. SEE LANDSCAPE AMENITY DETAILS.

SUMMARY OF TRAFFIC SIGNAL ITEMS									
LOCATION	618 6046	682 6018	684 6028	684 6031	687 6001	687 6003	688 6001	*	*
	CONDT (PVC) (SCH 80) (2")	PED SIG SEC (LED) (COUNTDOWN)	TRF SIG CBL (TY A) (14 AWG) (2 CONDR)	TRF SIG CBL (TY A) (14 AWG) (5 CONDR)	PED POLE ASSEMBLY	RELOCATE PED POLE ASSEMBLY	PED DETECT PUSH BUTTON (APS)	RESET EXIST GROUND BOX	REMOVE EXIST CONDUIT & CONDUCTOR
	LF	EA	LF	LF	EA	EA	EA	EA	LF
ROB SHELTON AT US 290	140	2	965	242	2	1	2	1	28
PROJECT TOTALS	140	2	965	242	2	1	2	1	28

* ITEM IS SUBSIDIARY TO VARIOUS SIGNAL BID ITEMS AND SHOWN FOR CONTRACTOR'S INFO ONLY.

NOTE: PREPARING ROW INCLUDES TREE AND BRUSH CLEARING TO MEET ADA HEIGHT AND WIDTH REQUIREMENTS AROUND TRAIL PER PED STANDARDS.

DATE: May. 03, 2022 - 10:55:33 AM
FILE: N:\Plan Set\1. General\DSP21528_GEN_SUMMARY_OF_Q02.dgn

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
SUMMARY OF QUANTITIES

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		11

SUMMARY OF SIGNING ITEMS		
LOCATION	644 6071 RELOCATE SM RD SN SUP&AM TY TWT EA	* REMOVE EXIST PED CROSSING SIGN EA
BEGIN TO STA 111+00		
STA 111+00 TO STA 123+00		2
STA 123+00 TO STA 134+00		
STA 134+00 TO STA 140+00		
STA 140+00 TO END	2	
PROJECT TOTALS	2	2

* ITEM IS SUBSIDIARY TO VARIOUS SIGNING BID ITEMS AND SHOWN FOR CONTRACTOR'S INFO ONLY.

SUMMARY OF PAVEMENT MARKING ITEMS								
LOCATION	666 6006 REFL PAV MRK TY I (W)4"(DOT)(100MIL) LF	666 6048 REFL PAV MRK TY I (W)24"(SLD)(100MIL) LF	666 6105 REFL PAV MRK TY I (W)(BIKE ARW)(100MIL) EA	666 6111 REFL PAV MRK TY I(W)(BIKE SYML)(100MIL) EA	666 6170 REFL PAV MRK TY II (W) 4" (SLD) LF	666 6437 PAVEMENT SEALER (SOLID GREEN BLOCK) SF	668 6128 PREFAB PAV MRK TY C (GRN)(SLD)(BLOCK) SF	678 6048 PAV SURF PREP FOR MRK (SOLID BLOCK) SF
BEGIN TO STA 111+00								
STA 111+00 TO STA 123+00	108	650	10	10	3001	144	144	144
STA 123+00 TO STA 134+00	86	320	6	6	3714			
STA 134+00 TO STA 140+00	13		4	4	2300			
STA 140+00 TO END	13	130	3	3	1488			
PROJECT TOTALS	219	1100	23	23	10503	144	144	144

REV	DATE	DESCRIPTION

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
SUMMARY OF QUANTITIES

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		12

DATE: Feb. 24, 2022 - 10:57:38 AM
FILE: N:\Plan Set\1. General\DSP21528_GEN_SUMMARY_OF_QUANTITIES.dgn

SUMMARY OF EROSION CONTROL ITEMS												
LOCATION	160 6003 FURNISHING AND PLACING TOPSOIL (4")	162 6002 BLOCK SODDING	168 6001 VEGETATIVE WATERING	506 6001 ROCK FILTER DAMS (INSTALL) (TY 1)	506 6011 ROCK FILTER DAMS (REMOVE)	506 6020 CONSTRUCTION EXITS (INSTALL) (TY 1)	506 6024 CONSTRUCTION EXITS (REMOVE)	506 6038 TEMP SEDMT CONT FENCE (INSTALL)	506 6039 TEMP SEDMT CONT FENCE (REMOVE)	506 6042 BIODEG EROSN CONT LOGS (INSTL) (18")	506 6043 BIODEG EROSN CONT LOGS (REMOVE)	1004 6001 TREE PROTECTION
	SY	SY	MG	LF	LF	SY	SY	LF	LF	LF	LF	EA
BEGIN TO STA 111+00	2786.6	2786.6	44.6	44	44	156	156	878	878			30
STA 111+00 TO STA 123+00	546.9	546.9	8.8	53	53			521	521	206	206	
STA 123+00 TO STA 134+00	2078.8	2078.8	33.3					1897	1897	75	75	63
STA 134+00 TO STA 140+00	1178.9	1178.9	18.9			78	78	631	631			50
STA 140+00 TO END	1189.5	1189.5	19.0	14	14			642	642	50	50	46
PROJECT TOTALS	7780.7	7780.7	124.5	111	111	234	234	4569	4569	331	331	189

NOTE: VEGETATIVE WATERING BASED ON 80 MG PER 5,000 SY

REV	DATE	DESCRIPTION

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
SUMMARY OF QUANTITIES

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		13

DATE: Feb. 24, 2022 - 10:57:39 AM
FILE: N:\Plan Set\1. General\DSP21528_GEN_SUMMARY_OF_QQ4.dgn

SUMMARY OF EARTHWORK QUANTITIES - SW LT 01

Cross Section Set Name: SW_LT_01_XS
Alignment Name: SW_LT_01
Input Grid Factor: 1

All units in this report are in feet, square feet and cubic yards unless specified otherwise.

Baseline Station	Station Quantities - Cut - Factor	Area	Volume	Adjusted	Station Quantities - Fill - Factor	Area	Volume	Adjusted	Added Quantities - Cut - Factor	Volume	Adjusted	Added Quantities - Fill - Factor	Volume	Adjusted	Mass Ordinate
301+06.0000 R1	1	1	0	0	1	9	0	0							0
301+50.0000 R1	1	3	3.9	3.9	1	0	7.1	7.1							-3.1
301+76.6925 R1															0
302+00.0000 R1	1	3	5.9	5.9	1	0	0.1	0.1							2.7
302+50.0000 R1	1	6	7.8	7.8	1	0	0	0							10.6
303+00.0000 R1	1	4	8.6	8.6	1	0	0	0							19.1
303+50.0000 R1	1	0	3.4	3.4	1	0	0	0							22.6
304+00.0000 R1	1	0	0	0	1	0	0	0							22.6
304+50.0000 R1	1	3	2.6	2.6	1	0	0	0							25.2
305+00.0000 R1	1	2	4.5	4.5	1	0	0	0							29.7
305+50.0000 R1	1	2	4.1	4.1	1	0	0	0							33.8
306+00.0000 R1	1	2	4.4	4.4	1	0	0	0							38.2
306+50.0000 R1	1	0	2.2	2.2	1	0	0	0							40.4
307+00.0000 R1	1	4	3.3	3.3	1	0	0	0							43.7
307+50.0000 R1	1	2	5.2	5.2	1	0	0	0							48.9
308+00.0000 R1	1	2	4.1	4.1	1	0	0	0							53
308+50.0000 R1	1	3	4.6	4.6	1	0	0	0							57.6
309+00.0000 R1	1	2	4.4	4.4	1	0	0	0							62
309+50.0000 R1	1	2	4	4	1	0	0	0							66
310+00.0000 R1	1	0	1.9	1.9	1	0	0	0							67.8
310+50.0000 R1	1	0	0	0	1	0	0	0							67.8
311+00.0000 R1	1	4	3.8	3.8	1	0	0	0							71.6
311+50.0000 R1	1	6	9.7	9.7	1	0	0	0							81.3
312+00.0000 R1	1	2	8	8	1	0	0	0							89.3
312+50.0000 R1	1	2	3.7	3.7	1	0	0.1	0.1							93
313+00.0000 R1	1	2	3.4	3.4	1	0	0.1	0.1							96.4
313+50.0000 R1	1	2	4.1	4.1	1	0	0	0							100.5
314+00.0000 R1	1	2	4.3	4.3	1	0	0	0							104.8
314+50.0000 R1	1	2	4.2	4.2	1	0	0	0							109
315+00.0000 R1	1	2	3.8	3.8	1	1	0.7	0.7							112.1
315+50.0000 R1	1	1	3	3	1	0	0.7	0.7							114.3
316+00.0000 R1	1	2	3.5	3.5	1	0	0.1	0.1							117.7
316+50.0000 R1	1	2	4.2	4.2	1	0	0	0							121.9
317+00.0000 R1	1	4	6	6	1	0	0	0							127.9
317+50.0000 R1	1	2	6.1	6.1	1	0	0	0							134.1
318+00.0000 R1	1	3	4.6	4.6	1	0	0	0							138.6
318+50.0000 R1	1	3	4.8	4.8	1	0	0	0							143.4
319+00.0000 R1	1	2	4.3	4.3	1	0	0	0							147.7
319+50.0000 R1	1	2	3.8	3.8	1	0	0	0							151.5
320+00.0000 R1	1	5	6.9	6.9	1	0	0	0							158.4
320+50.0000 R1	1	3	7.5	7.5	1	0	0	0							165.9
321+00.0000 R1	1	3	5.5	5.5	1	0	0	0							171.4
321+50.0000 R1	1	2	4.5	4.5	1	0	0	0							175.9
322+00.0000 R1	1	3	4.7	4.7	1	0	0	0							180.6
322+50.0000 R1	1	3	6.2	6.2	1	0	0	0							186.8
323+00.0000 R1	1	2	5.1	5.1	1	0	0	0							191.8
323+50.0000 R1	1	3	4.5	4.5	1	0	0	0							196.3
324+00.0000 R1	1	3	5.4	5.4	1	0	0	0							201.7
324+29.0000 R1	1	3	3.4	3.4	1	0	0	0							205.1
Grand Total:			213.9	213.9			8.7	8.7							

DATE: Nov. 02, 2021 - 11:20:32 AM
FILE: N:\Plan Set\1. General\DSP21528_GEN_EARTHWORK.dgn

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
SUMMARY OF EARTHWORK QUANTITIES

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		14

SUMMARY OF EARTHWORK QUANTITIES - GRANITE TRAIL

Cross Section Set Name: GRAVEL_TRAIL_XS
Alignment Name: GRAVEL_TRAIL
Input Grid Factor: ****

All units in this report are in feet, square feet and cubic yards unless specified otherwise.

Baseline Station	Station Quantities								Added Quantities				Mass Ordinate
	Cut				Fill				Cut		Fill		
	Factor	Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Factor	Volume	Adjusted Factor	Volume Adjusted	
200+64.0000 R1	1	4	0	0									0
201+00.0000 R1	1	0	0	0	1	53	0	0					-32.9
201+50.0000 R1	1	0	0.2	0.2	1	1	2.4	2.4					-82.3
202+00.0000 R1	1	4	3.8	3.8	1	0	0.6	0.6					-79
202+50.0000 R1	1	3	6.1	6.1	1	0	0.1	0.1					-73.1
203+00.0000 R1	1	6	7.8	7.8	1	0	0.1	0.1					-65.3
203+50.0000 R1	1	6	10.5	10.5	1	0	0	0					-54.8
204+00.0000 R1	1	3	8.3	8.3	1	0	0	0					-46.5
204+50.0000 R1	1	4	7.1	7.1	1	0	0	0					-39.4
205+00.0000 R1	1	4	7.6	7.6	1	0	0	0					-31.8
205+50.0000 R1	1	6	9.2	9.2	1	0	0	0					-22.6
206+00.0000 R1	1	4	8.9	8.9	1	0	0	0					-13.7
206+50.0000 R1	1	6	8.9	8.9	1	0	0	0					-4.8
206+93.9321 R1													0
207+00.0000 R1	1	0	5.5	5.5	1	0	0	0					0.7
207+50.0000 R1	1	5	4.9	4.9	1	0	0	0					5.6
208+00.0000 R1	1	4	8.6	8.6	1	0	0	0					14.1
208+50.0000 R1	1	4	7.3	7.3	1	1	1.1	1.1					20.3
209+00.0000 R1	1	5	8.5	8.5	1	0	1.1	1.1					27.7
209+50.0000 R1	1	3	7.8	7.8	1	0	0	0					35.5
210+00.0000 R1	1	4	6.6	6.6	1	0	0	0					42.1
210+50.0000 R1	1	4	7	7	1	0	0	0					49.1
210+75.0000 R1	1	4	3.3	3.3	1	0	0	0					52.5
Grand Total:			137.9	140.3			5.3	87.8					

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
SUMMARY OF EARTHWORK QUANTITIES

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		15

DATE: Dec. 13, 2021 - 03:21:25 PM
FILE: N:\Plan Set\1. General\DSP21528_GEN_EARTHWORK02.dgn

SUMMARY OF EARTHWORK QUANTITIES - SW RT 01

Cross Section Set Name: SW_RT_01_XS
Alignment Name: SW_RT_01
Input Grid Factor: 1

All units in this report are in feet, square feet and cubic yards unless specified otherwise.

Baseline Station	Station Quantities								Added Quantities						Mass Ordinate
	Cut				Fill				Cut			Fill			
	Factor	Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Factor	Volume	Adjusted	Factor	Volume	Adjusted	
401+03.0000 R1	1	1	0	0	1	5	0	0							0
401+50.0000 R1	1	3	3.3	3.3	1	1	4.7	4.7							-1.5
401+69.4778 R1															0
402+00.0000 R1	1	2	4.4	4.4	1	0	0.6	0.6							2.3
402+50.0000 R1	1	2	4.2	4.2	1	0	0.4	0.4							6
403+00.0000 R1	1	2	4.3	4.3	1	0	0.4	0.4							9.9
403+50.0000 R1	1	2	4.4	4.4	1	0	0	0							14.3
404+00.0000 R1	1	2	4.4	4.4	1	0	0	0							18.7
404+50.0000 R1	1	2	4.2	4.2	1	0	0	0							22.9
405+00.0000 R1	1	2	4.4	4.4	1	0	0.1	0.1							27.2
405+50.0000 R1	1	4	5.9	5.9	1	0	0.1	0.1							32.9
406+00.0000 R1	1	4	7.7	7.7	1	0	0	0							40.7
406+50.0000 R1	1	3	7.1	7.1	1	0	0	0							47.7
407+00.0000 R1	1	2	4.9	4.9	1	0	0	0							52.6
407+50.0000 R1	1	2	3.5	3.5	1	1	0.5	0.5							55.6
408+00.0000 R1	1	3	3.8	3.8	1	0	0.5	0.5							58.9
408+50.0000 R1	1	2	4.5	4.5	1	0	0	0							63.4
409+00.0000 R1	1	2	4.4	4.4	1	0	0	0							67.7
409+50.0000 R1	1	3	4.7	4.7	1	0	0	0							72.5
409+97.0000 R1	1	4	5.5	5.5	1	0	0	0							78
Grand Total:			85.3	85.3			7.4	7.4							

SUMMARY OF EARTHWORK QUANTITIES - SW RT 02

Cross Section Set Name: SW_RT_02_XS
Alignment Name: SW_RT_02
Input Grid Factor: 1

All units in this report are in feet, square feet and cubic yards unless specified otherwise.

Baseline Station	Station Quantities								Added Quantities						Mass Ordinate
	Cut				Fill				Cut			Fill			
	Factor	Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Factor	Volume	Adjusted	Factor	Volume	Adjusted	
500+55.0000 R1	1	2	0	0	1	1	0	0							0
501+00.0000 R1	1	2	4.1	4.1	1	6	5.6	5.6							-1.5
501+50.0000 R1	1	3	4.9	4.9	1	3	8.5	8.5							-5.1
502+00.0000 R1	1	4	6.8	6.8	1	0	3	3							-1.3
502+09.9287 R1															0
502+42.0000 R1	1	3	5.5	5.5	1	0	0	0							4.2
Grand Total:			21.2	21.2			17	17							

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
SUMMARY OF EARTHWORK QUANTITIES

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		16

DATE: Nov. 02, 2021 - 11:20:33 AM
FILE: N:\Plan Set\1. General\DSP21528_GEN_EARTHWORK03.dgn

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

WORKER SAFETY NOTES:

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

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

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

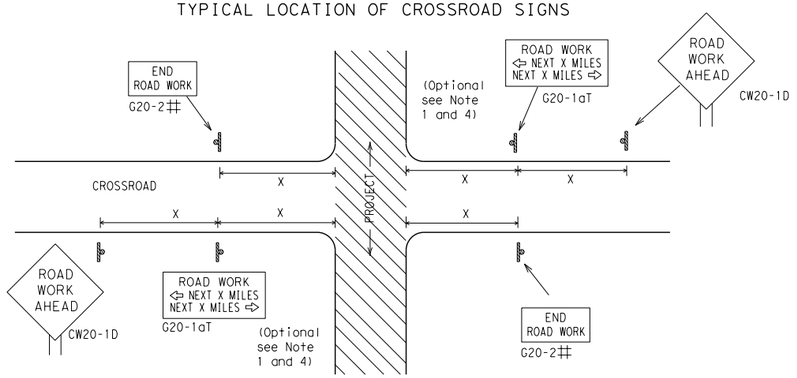
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13	0914	33	087	SHELTON LN
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	AUS	HAYS		17

DATE:
FILE:

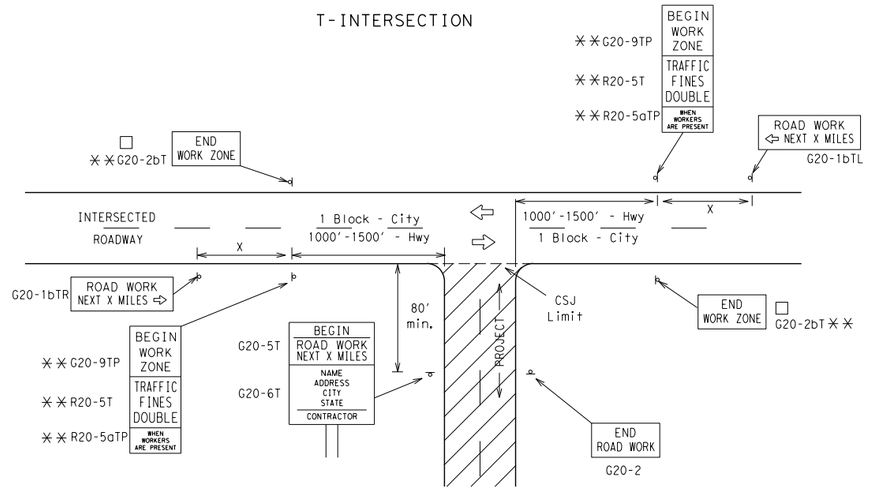
TYPICAL LOCATION OF CROSSROAD SIGNS



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]

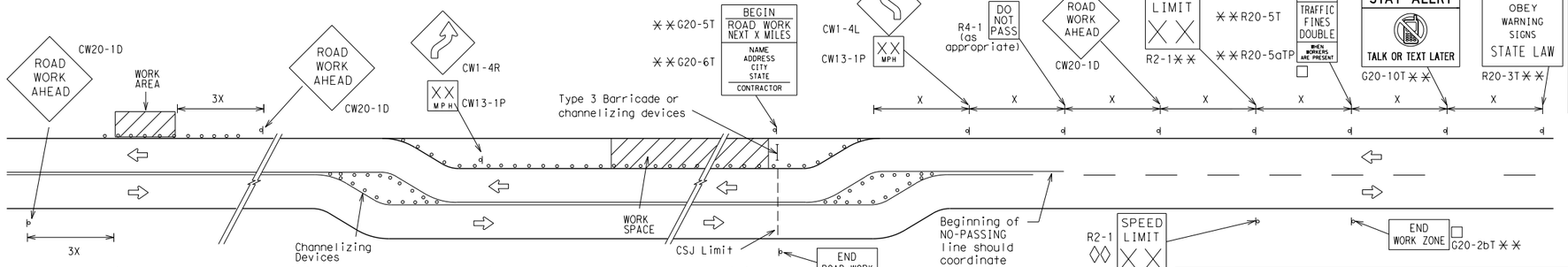
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

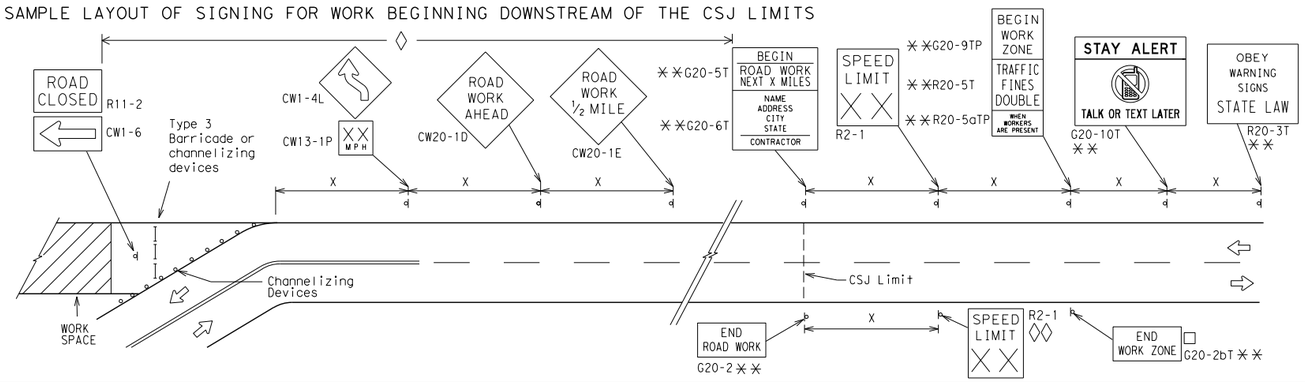
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may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



NOTES

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

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	AUS	HAYS		18

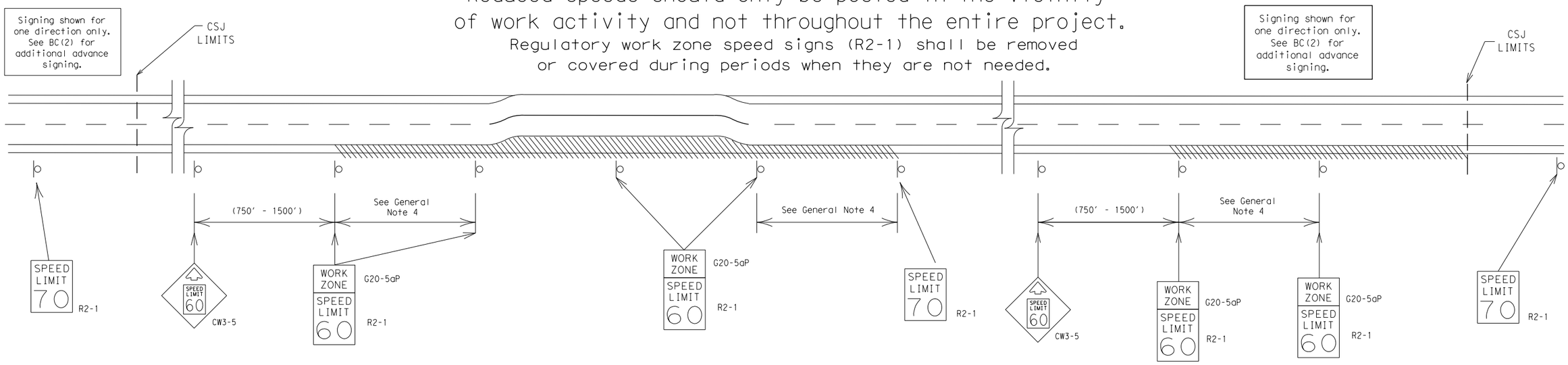
DATE:
FILE:

TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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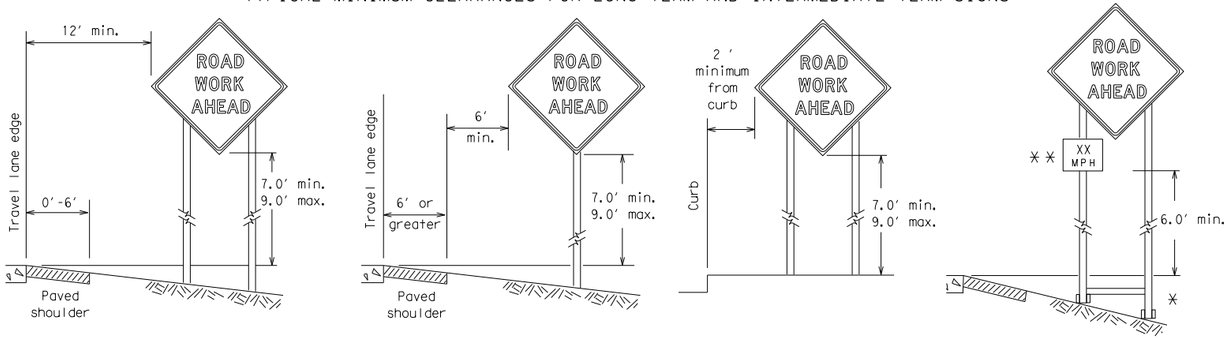
REVISIONS 9-07 8-14 7-13 5-21	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		19

97

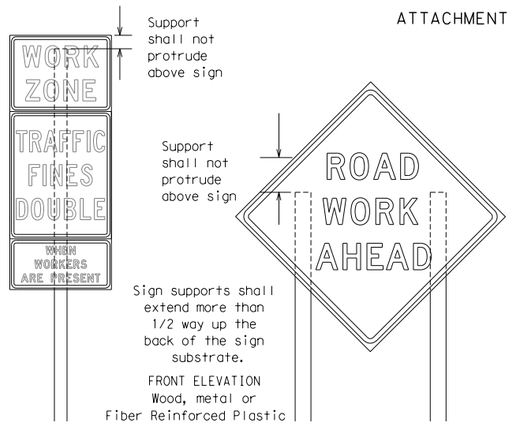
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



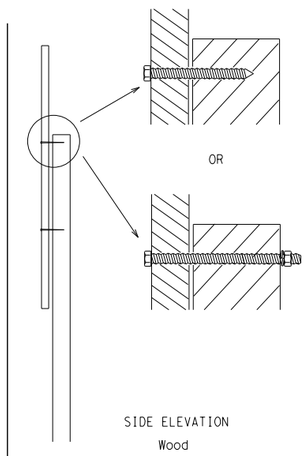
⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

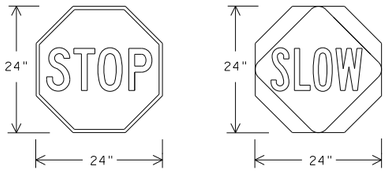
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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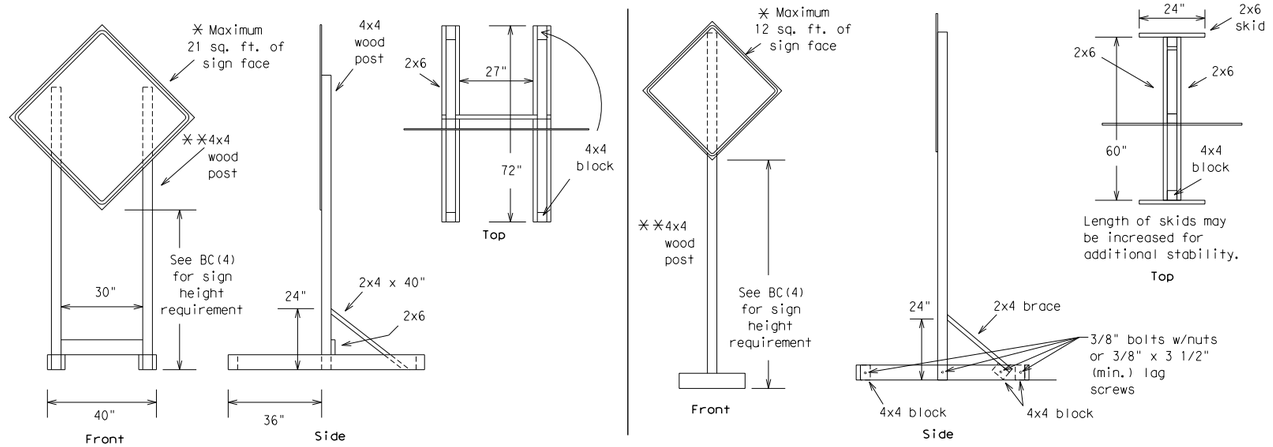
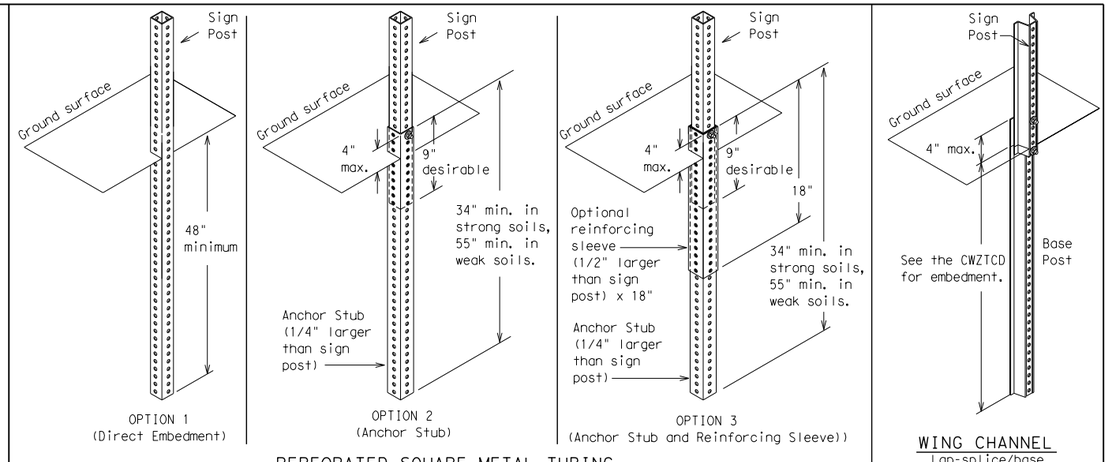


SKID MOUNTED WOOD SIGN SUPPORTS

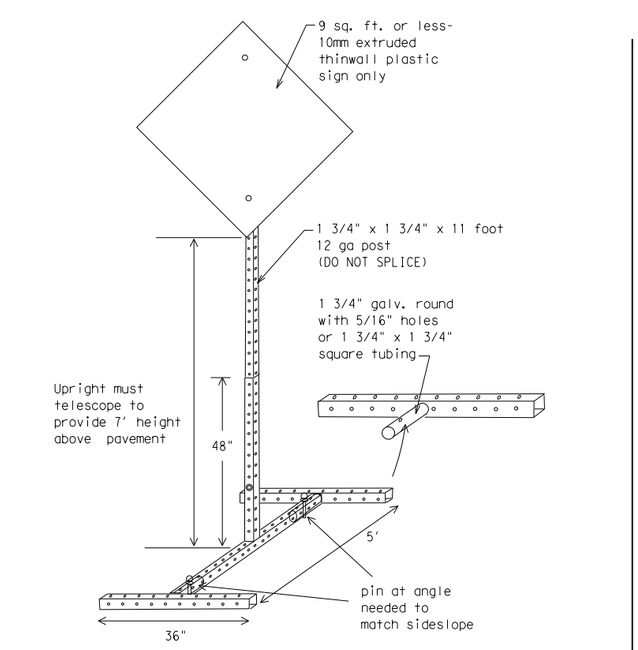
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

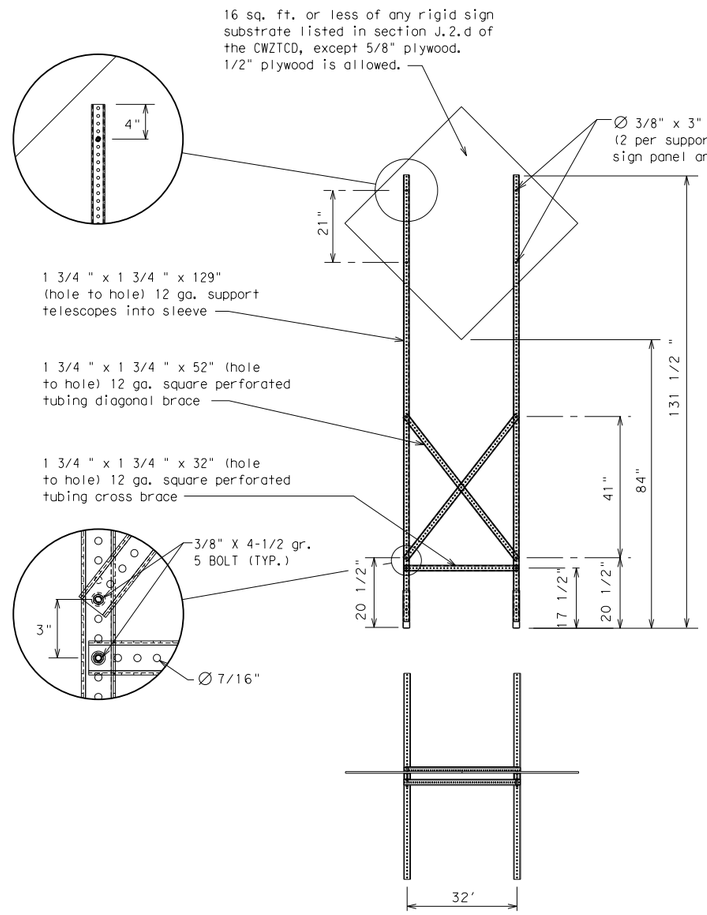


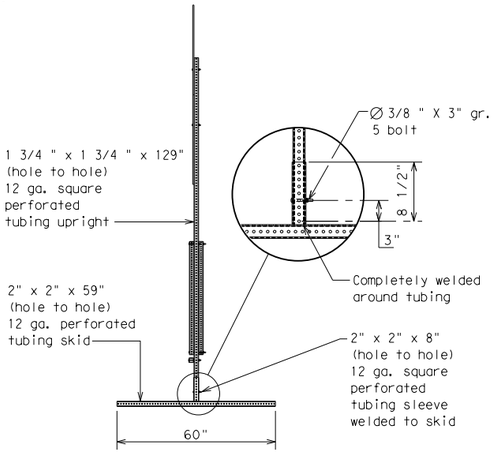
PERFORATED SQUARE METAL TUBING

GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

WORD OR PHRASE	ABBREVIATION
Access Road	ACCS RD
Alternate	ALT
Avenue	AVE
Best Route	BEST RTE
Boulevard	BLVD
Bridge	BRDG
Cannot	CANT
Center	CTR
Construction Ahead	CONST AHD
CROSSING	XING
Detour Route	DETOUR RTE
Do Not	DONT
East	E
Eastbound	(route) E
Emergency	EMER
Emergency Vehicle	EMER VEH
Entrance, Enter	ENT
Express Lane	EXP LN
Expressway	EXPWY
XXXX Feet	XXXX FT
Fog Ahead	FOG AHD
Freeway	FRWY, FWY
Freeway Blocked	FWY BLKD
Friday	FRI
Hazardous Driving	HAZ DRIVING
Hazardous Material	HAZMAT
High-Occupancy	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		Other Condition List	
FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXX BLVD CLOSED			

* 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		Location List	Warning List	** Advance Notice List
MERGE RIGHT	FORM X LINES RIGHT	AT FM XXXX	SPEED LIMIT XX MPH	TUE-FRI XX AM- X PM
DETOUR NEXT X EXITS	USE XXXXX RD EXIT	BEFORE RAILROAD CROSSING	MAXIMUM SPEED XX MPH	APR XX-XX X PM-X AM
USE EXIT XXX	USE EXIT I-XX NORTH	NEXT X MILES	MINIMUM SPEED XX MPH	BEGINS MONDAY
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N	PAST US XXX EXIT	ADVISORY SPEED XX MPH	BEGINS MAY XX
TRUCKS USE US XXX N	WATCH FOR TRUCKS	XXXXXXX TO XXXXXXX	RIGHT LANE EXIT	MAY X-X XX PM - XX AM
WATCH FOR TRUCKS	EXPECT DELAYS	US XXX TO FM XXXX	USE CAUTION	NEXT FRI-SUN
EXPECT DELAYS	PREPARE TO STOP		DRIVE SAFELY	XX AM TO XX PM
REDUCE SPEED XXX FT	END SHOULDER USE		DRIVE WITH CARE	NEXT TUE AUG XX
USE OTHER ROUTES	WATCH FOR WORKERS			TONIGHT XX PM- XX AM
STAY IN LANE *				

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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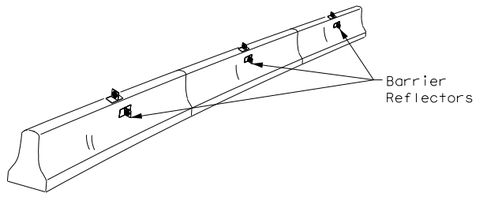
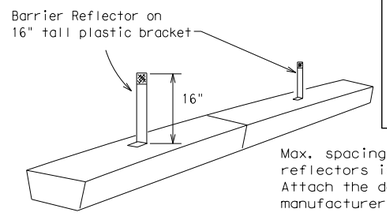
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

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

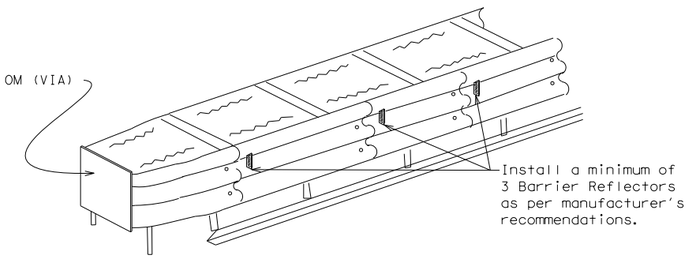


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

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.

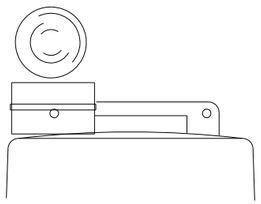


DELINEATION OF END TREATMENTS

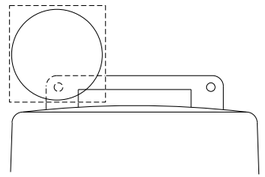
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

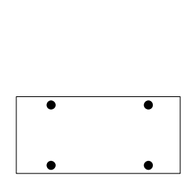
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

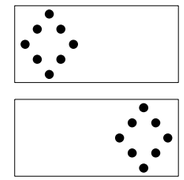
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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:

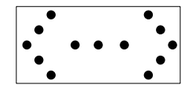


4 CORNER CAUTION

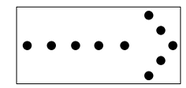
OR



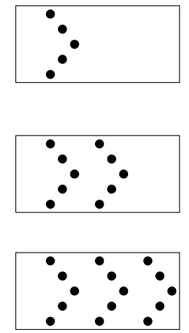
ALTERNATING DIAMOND CAUTION



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.

Texas Department of Transportation

Traffic Safety Division Standard

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

BC(7)-21

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

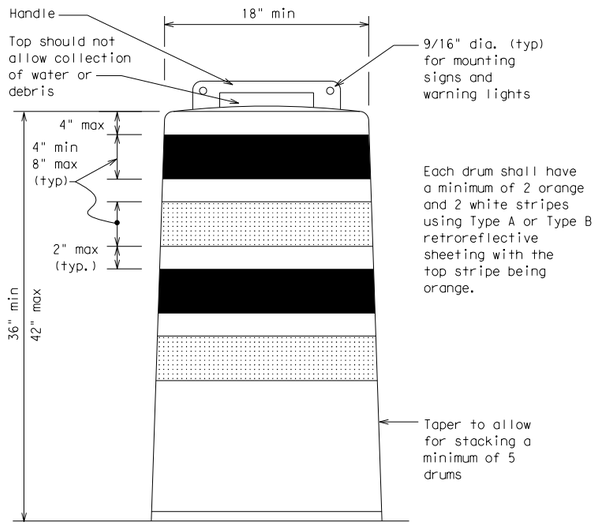
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

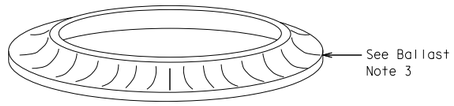
RETROREFLECTIVE SHEETING

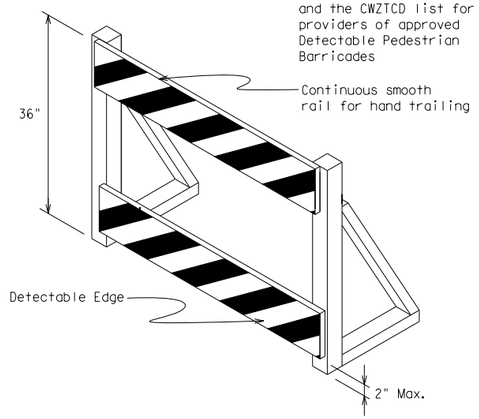
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

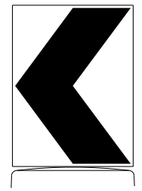




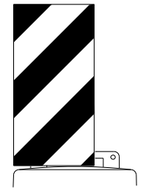


DETECTABLE PEDESTRIAN BARRICADES

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
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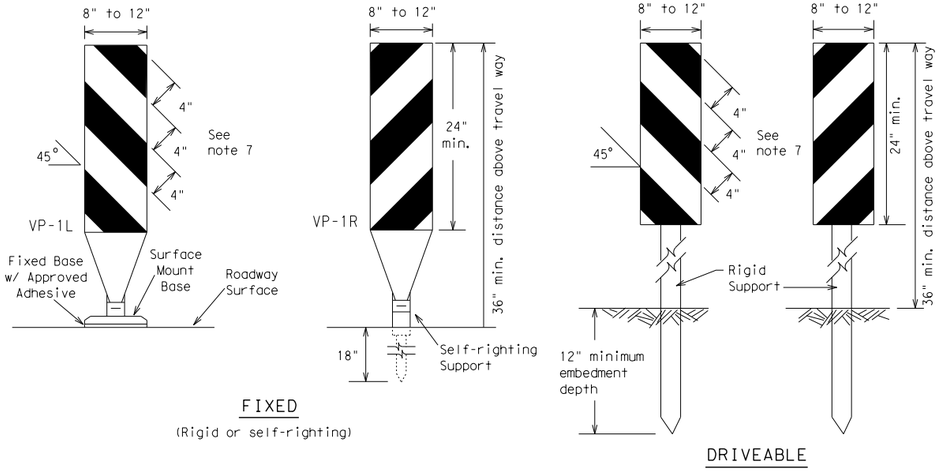
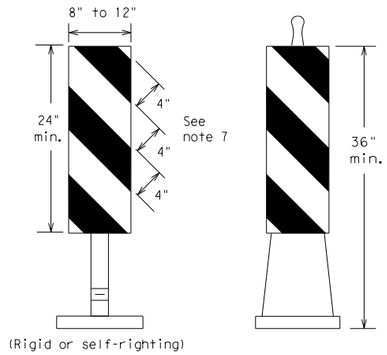


FIXED
(Rigid or self-righting)

DRIVEABLE

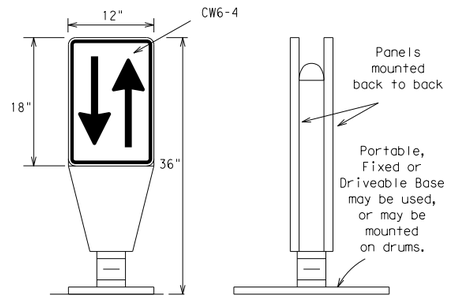


(Rigid or self-righting)

PORTABLE

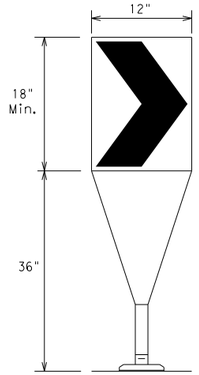
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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)



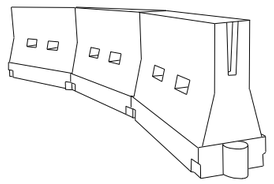
Fixed Base w/ Approved Adhesive
(Driveable Base, or Flexible Support can be used)

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 ✳✳			Suggested Maximum Spacing of Channelizing Devices	
		10′ Offset	11′ Offset	12′ Offset	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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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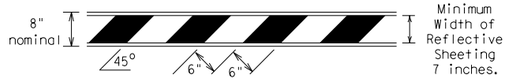
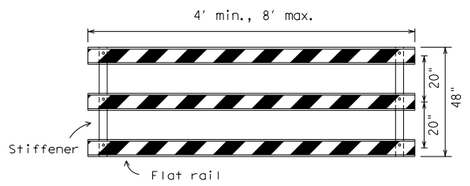
TYPE 3 BARRICADES

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.



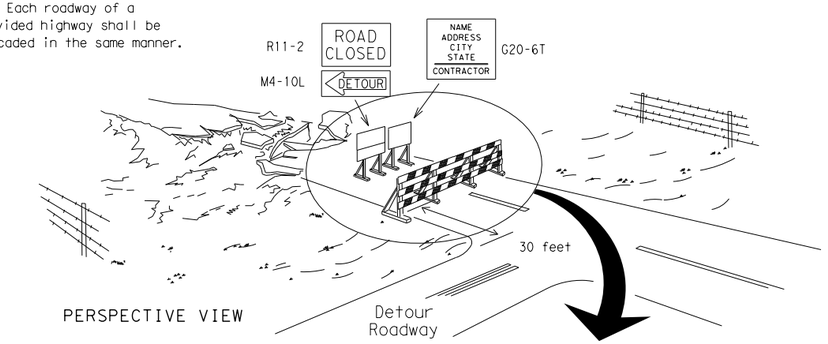
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

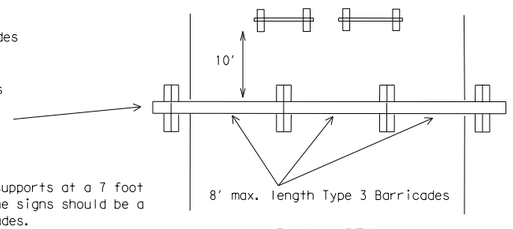
Each roadway of a divided highway shall be barricaded in the same manner.



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.

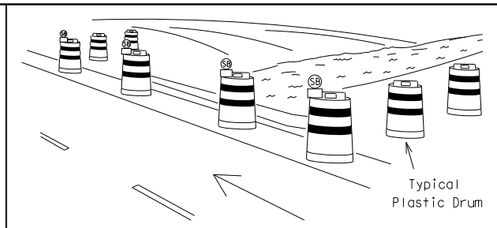
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

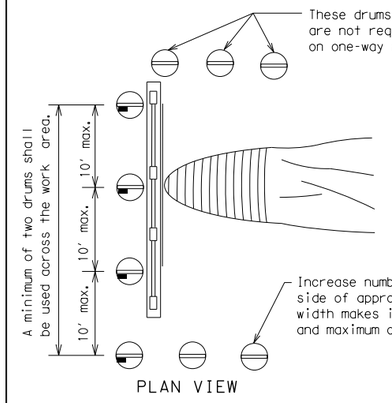
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

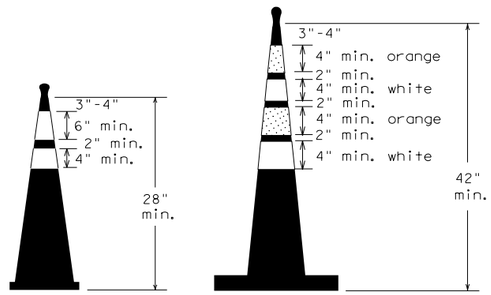
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



PLAN VIEW

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

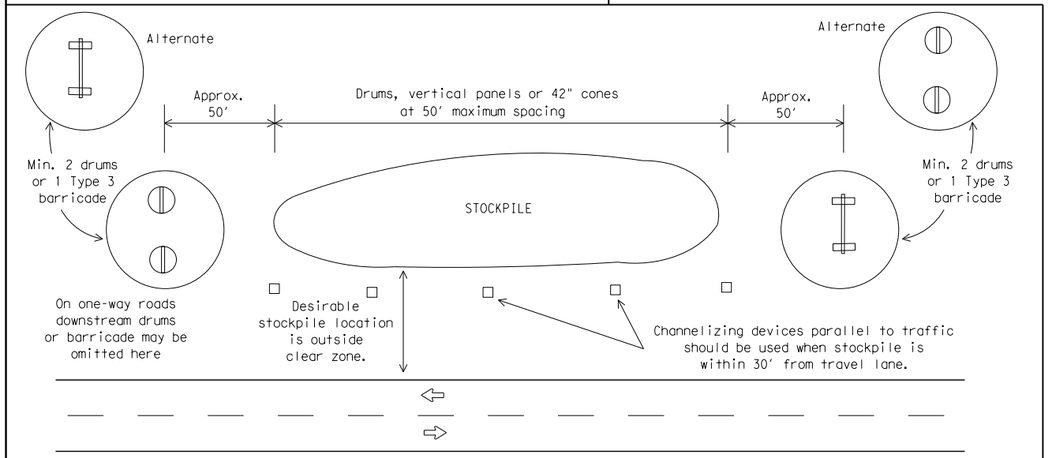
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

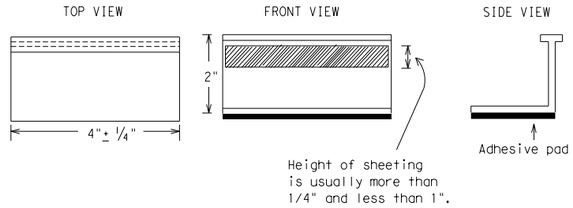
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

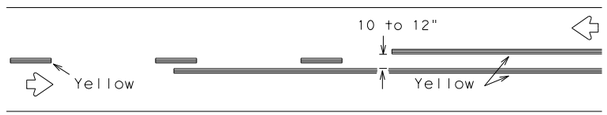
BC(11)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21	0914	33	087	SHELTON LN
1-02 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14	AUS	HAYS		27

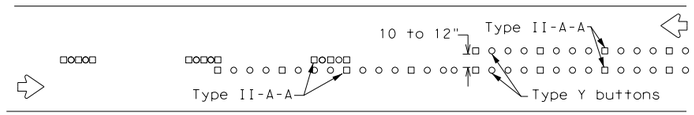
105

DATE:
FILE:

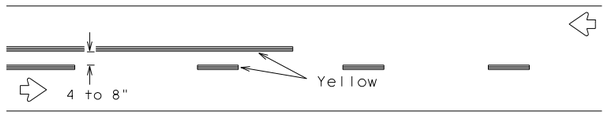
PAVEMENT MARKING PATTERNS



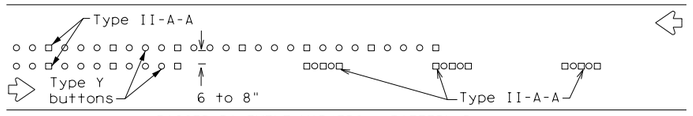
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



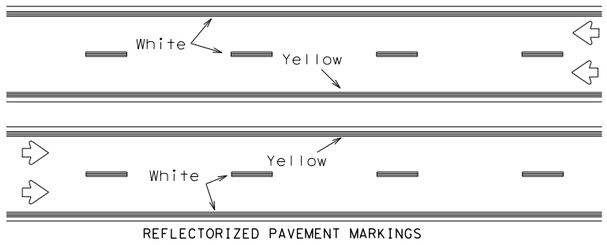
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



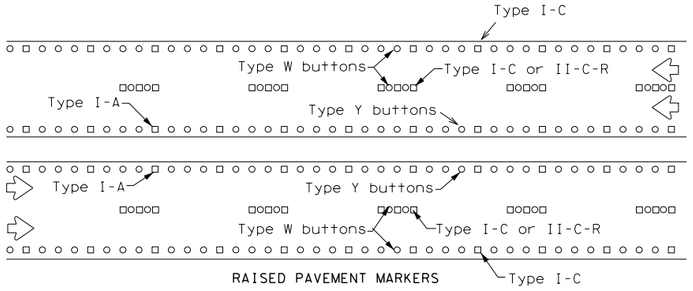
RAISED PAVEMENT MARKERS - PATTERN B

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

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



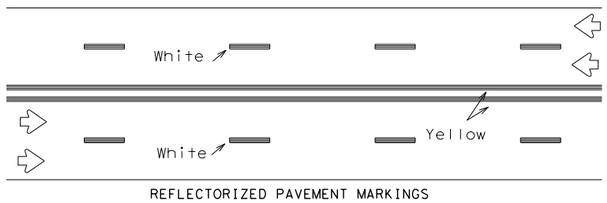
REFLECTORIZED PAVEMENT MARKINGS



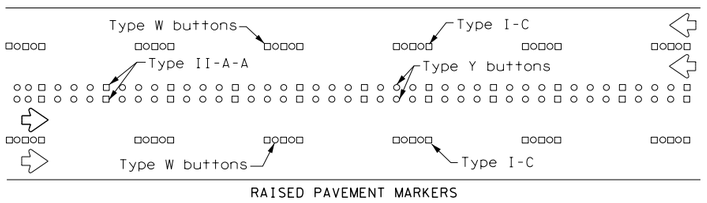
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



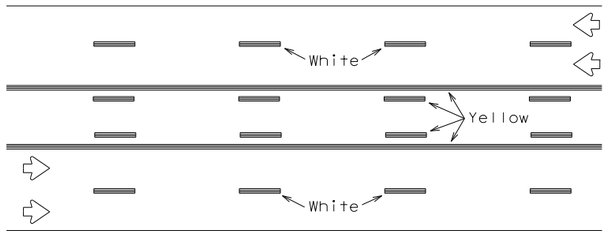
REFLECTORIZED PAVEMENT MARKINGS



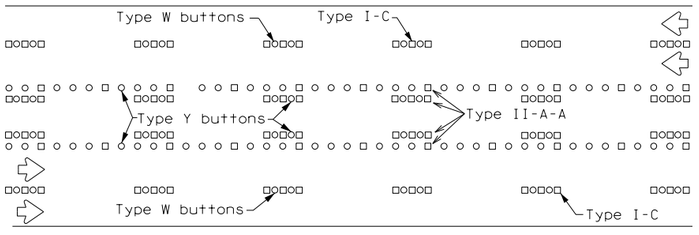
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



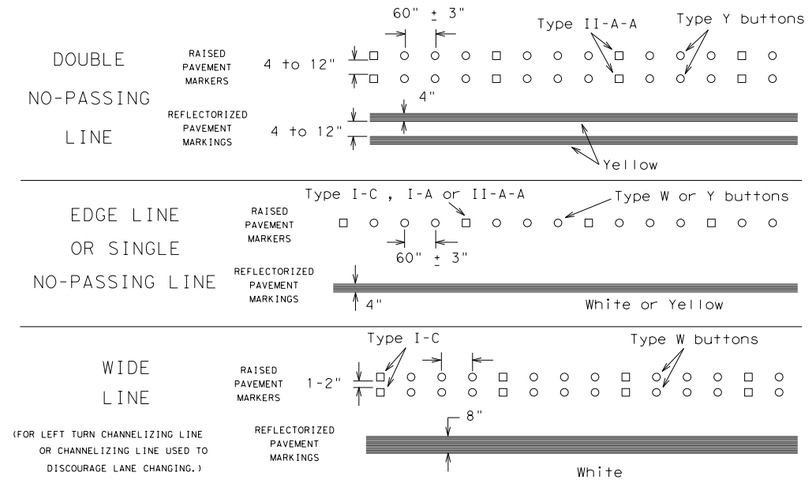
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

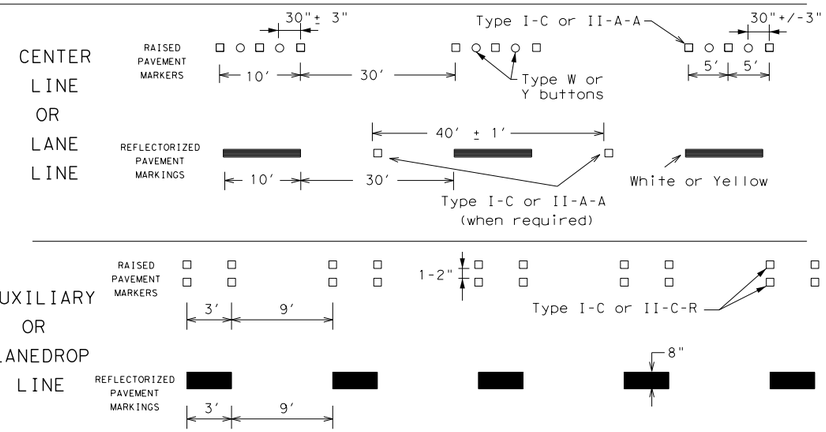
TWO-WAY LEFT TURN LANE

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

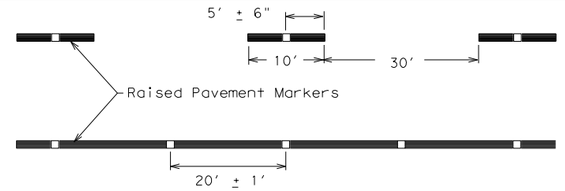


BROKEN LINES



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

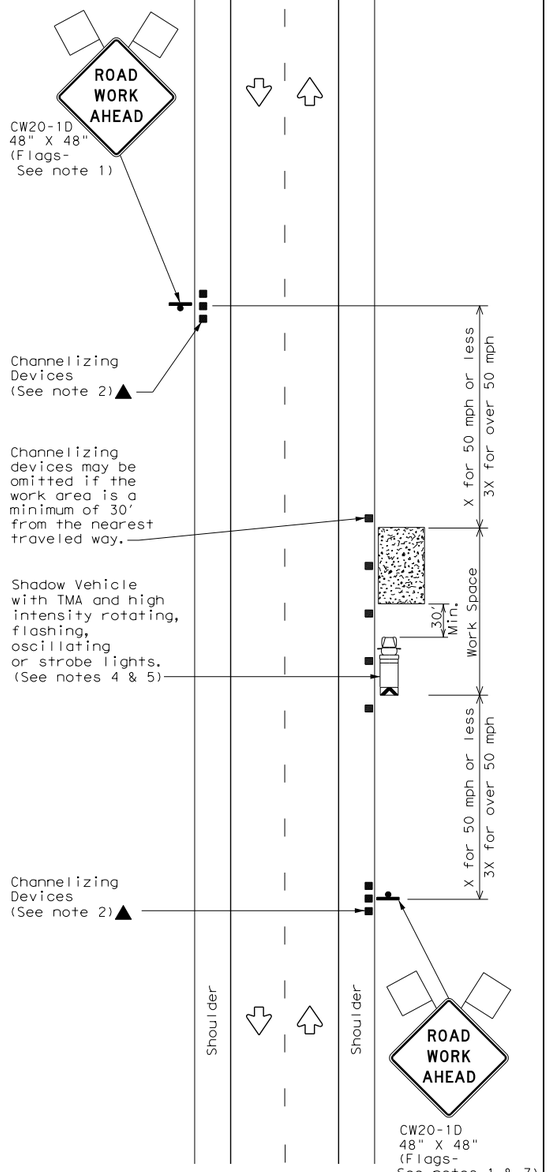
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		28

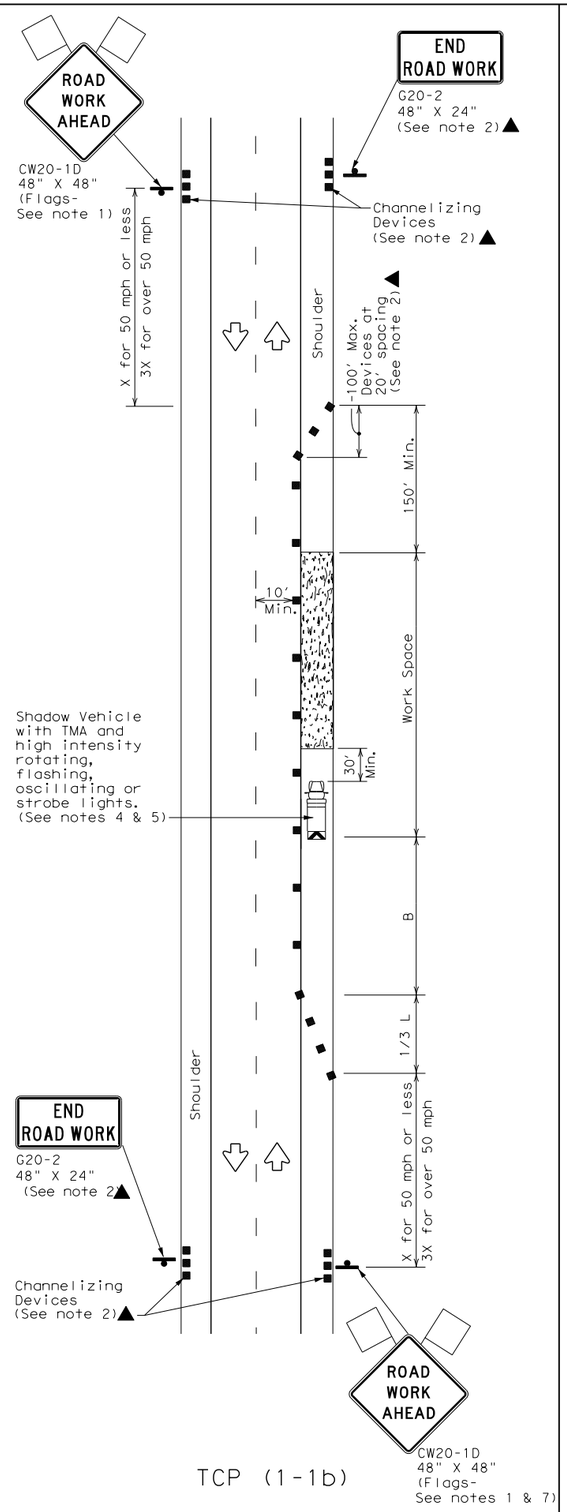
106

DATE:
FILE:



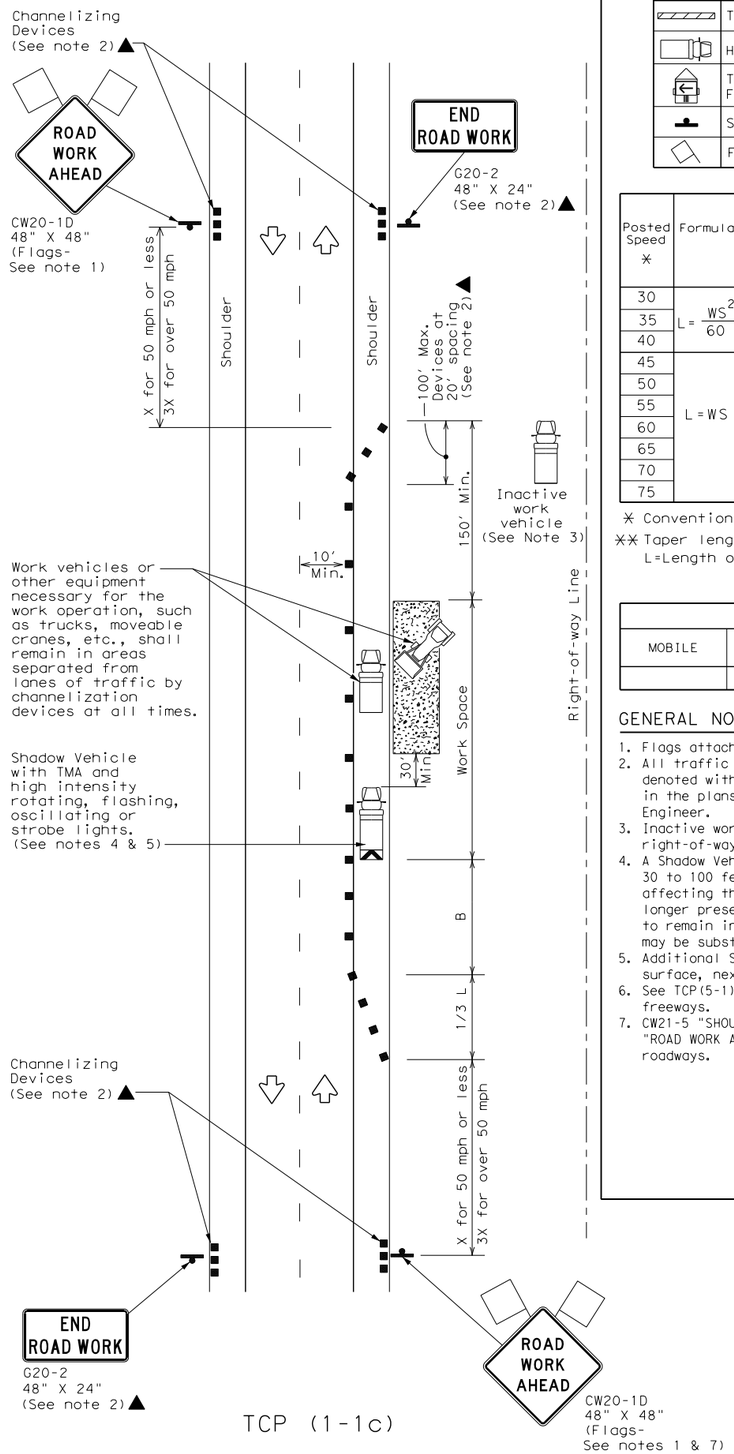
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	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. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
6. See TCP(5-1)for shoulder work on divided highways, expressways and freeways.
7. 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

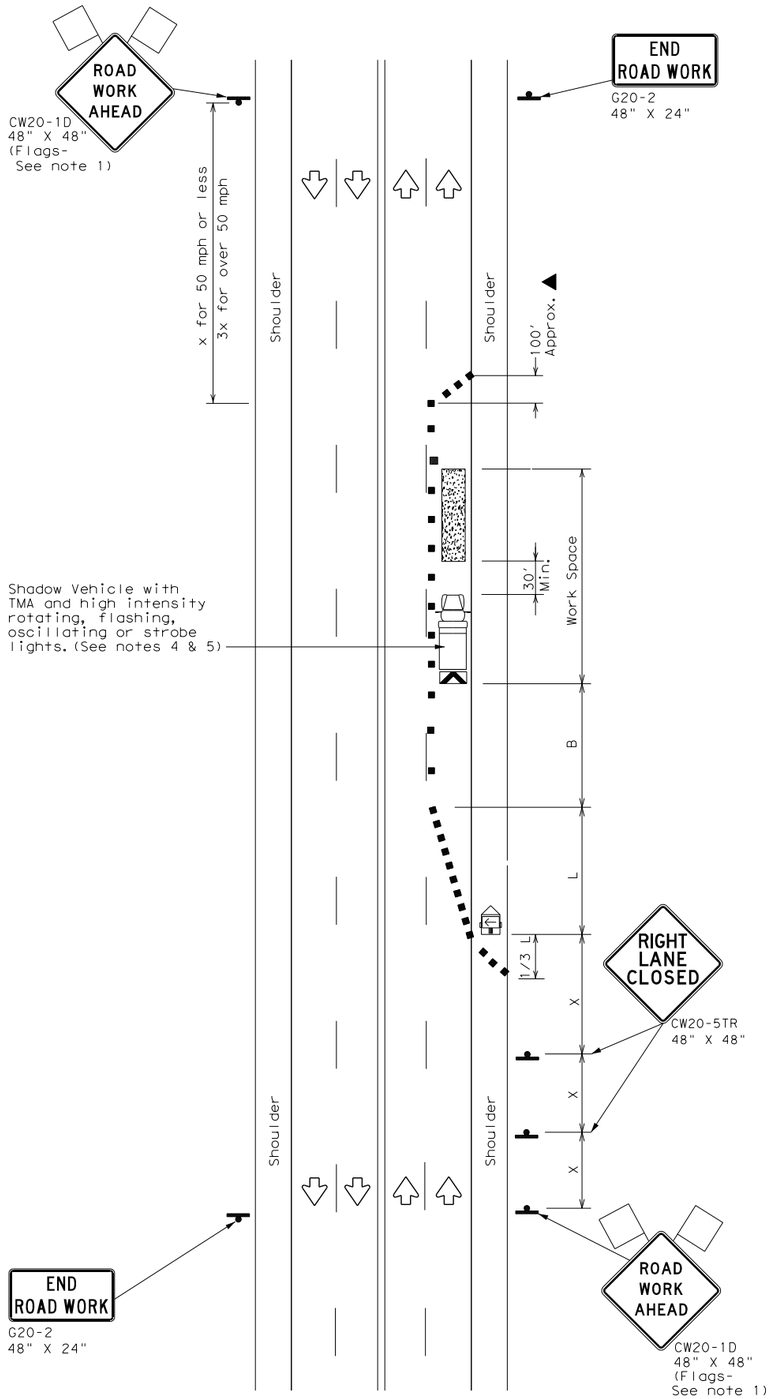
TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(1-1)-18

FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	AUS	HAYS		29
1-97 2-18				

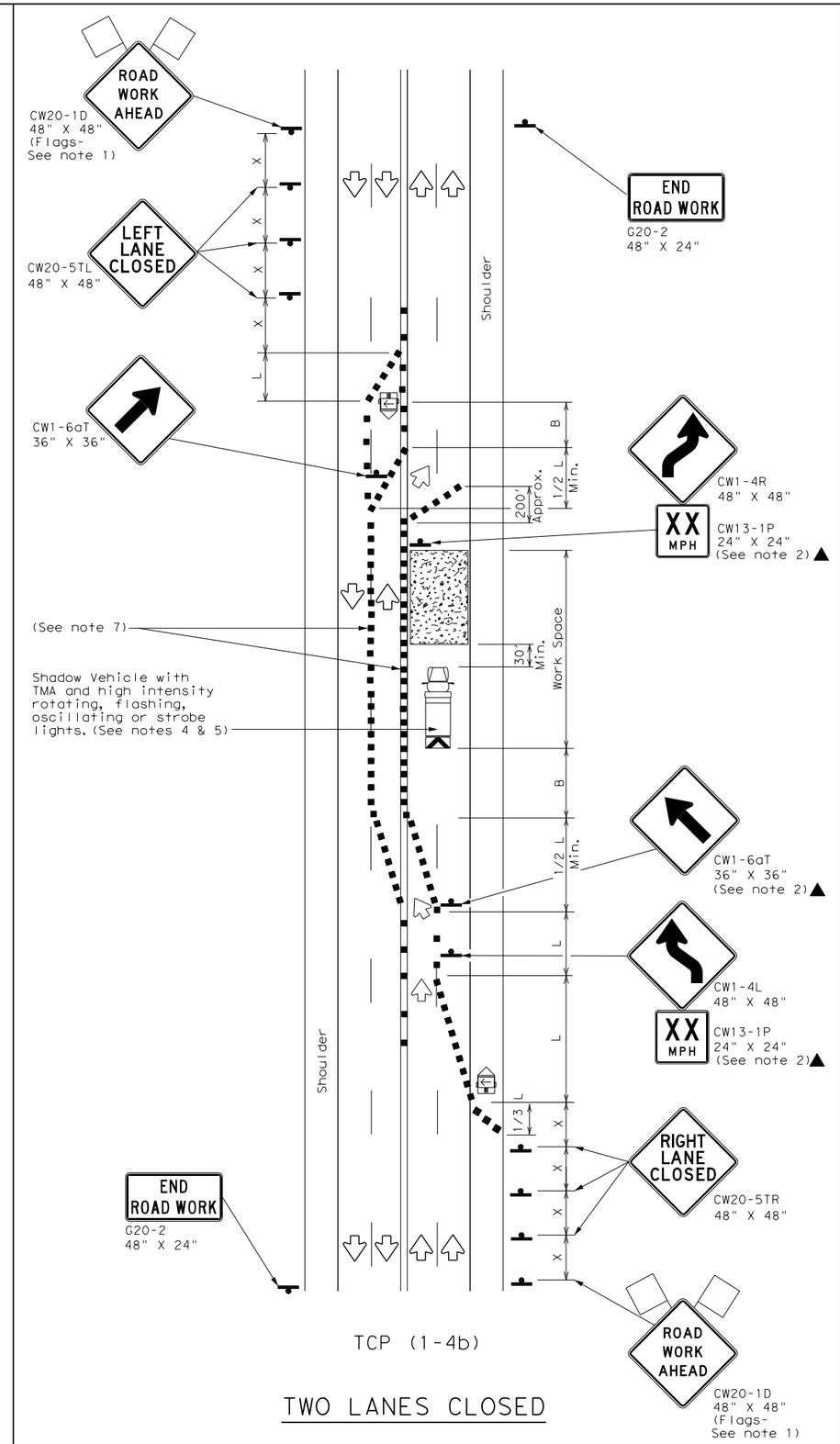
151

DATE:
FILE:



TCP (1-4a)

ONE LANE CLOSED



TCP (1-4b)

TWO LANES CLOSED

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

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

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

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

GENERAL NOTES

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

TCP (1-4a)

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

TCP (1-4b)

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

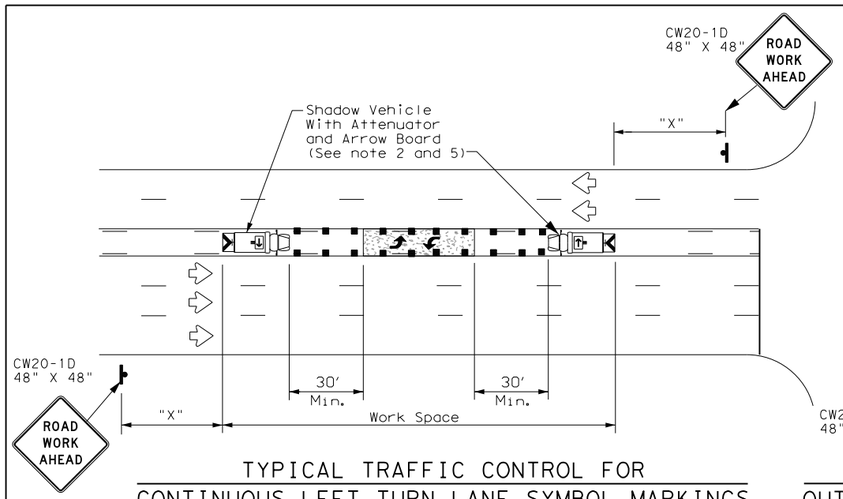
Texas Department of Transportation

Traffic Operations Division Standard

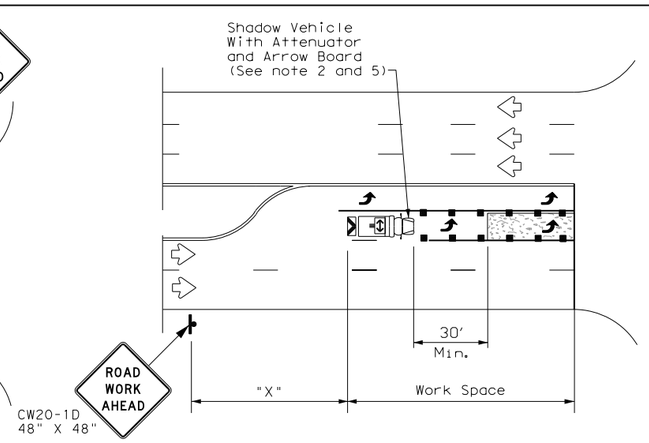
TRAFFIC CONTROL PLAN LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

TCP(1-4)-18

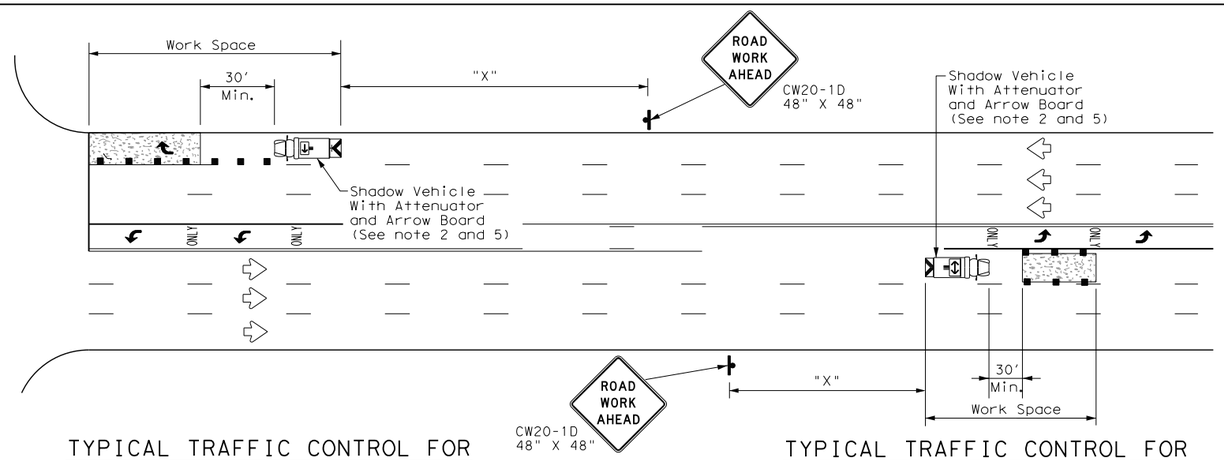
FILE: tcp1-4-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	AUS	HAYS		30
1-97 2-18				



TYPICAL TRAFFIC CONTROL FOR
CONTINUOUS LEFT TURN LANE SYMBOL MARKINGS

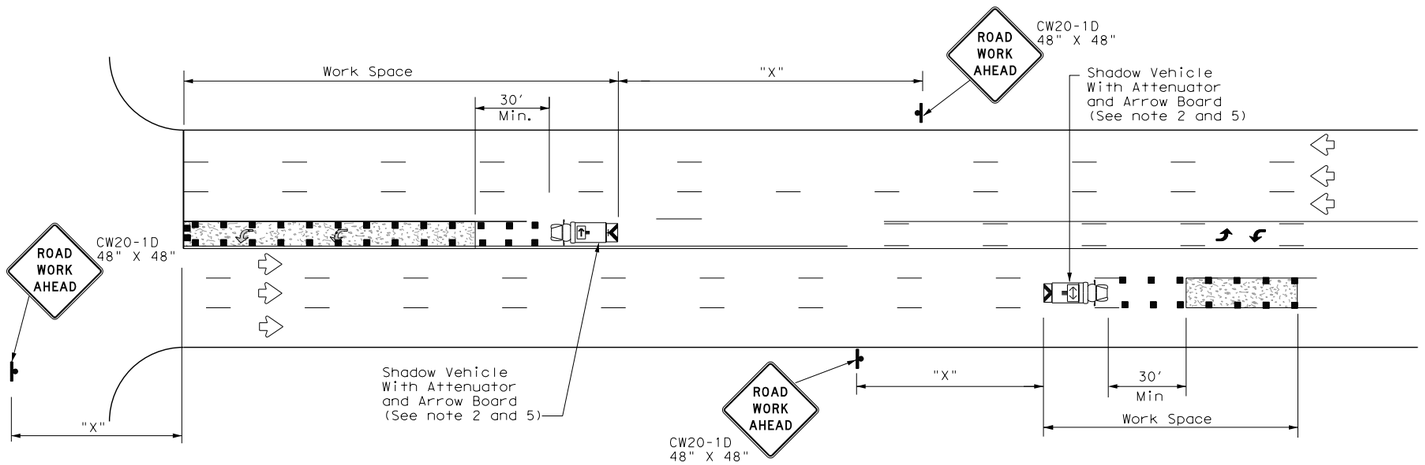


TYPICAL TRAFFIC CONTROL FOR
OUTSIDE DUAL LEFT TURN LANE SYMBOL MARKINGS



TYPICAL TRAFFIC CONTROL FOR
OUTSIDE LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
INSIDE LANE MARKINGS



TYPICAL TRAFFIC CONTROL FOR
LEFT TURN LANE MARKINGS

TYPICAL TRAFFIC CONTROL FOR
CENTER LANE MARKINGS

LEGEND			
✳	Trail Vehicle	ARROW BOARD DISPLAY	
✳✳	Shadow Vehicle		
✳✳✳	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow	■ ■ ■	Channelizing Devices

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′

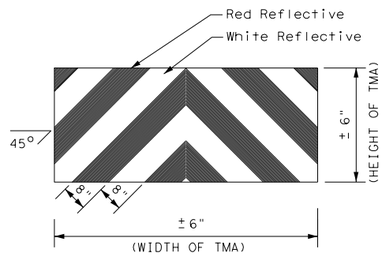
✳ Conventional Roads Only

✳✳ 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. This traffic control plan is for use on conventional roads posted at 45 mph or less and is intended for mobile operations that move continuously or intermittently (stopping up to approximately 15 minutes) such as short-line striping and in-lane rumble strips. When activities are anticipated to take longer amounts of time or traffic conditions warrant, a short duration or short-term stationary traffic control plan should be used.
2. A Truck Mounted Attenuator shall be used on Shadow Vehicle. Striping on the back panel of all truck mounted attenuators shall be 8" red and white reflective sheeting placed in an inverted "V" design. Reflective sheeting shall meet or exceed the reflectivity and color requirements of departmental material specification DMS-8300, Type A.
3. All traffic control devices shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD), latest edition.
4. The use of yellow rotating beacons or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the drivers side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
5. Flashing arrow board shall be used on Shadow Vehicle. Flashing arrow board shall be Type B or Type C as per BC Standards. The arrow board operation shall be controlled from inside the truck.



STRIPING FOR TMA

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS FOR ISOLATED WORK AREAS UNDIVIDED HIGHWAYS

TCP(3-4)-13

FILE: tcp3-4.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT July, 2013	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	AUS	HAYS		31

DATE:
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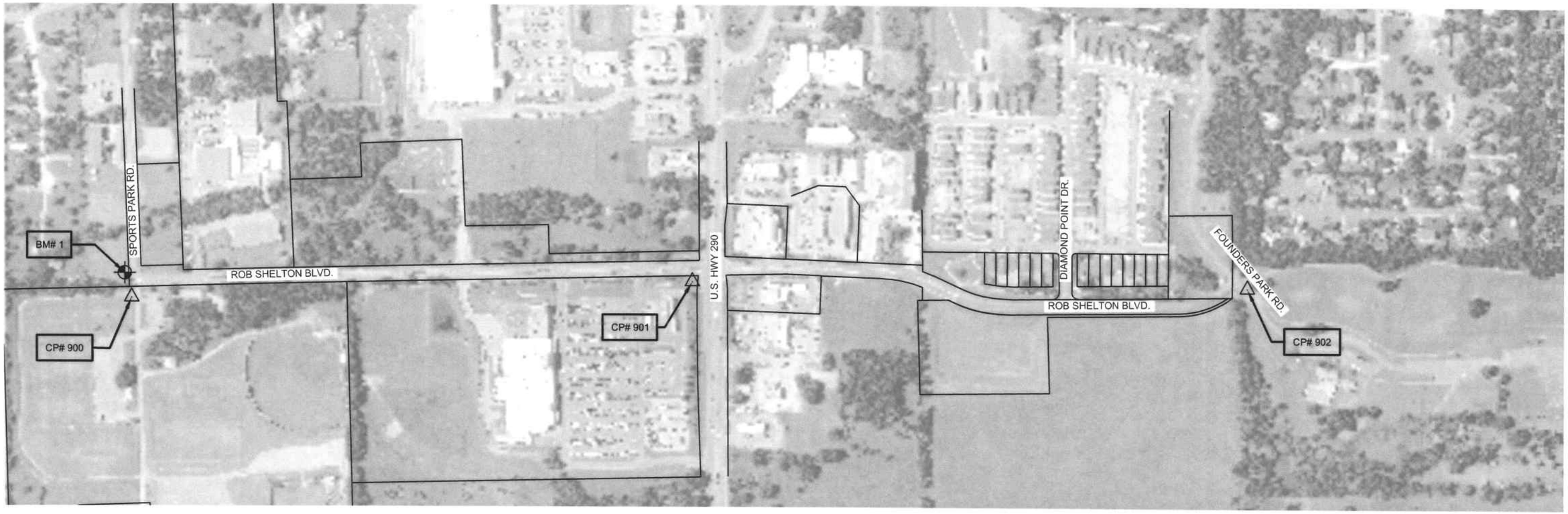


ROB SHELTON PEDESTRIAN IMPROVEMENTS CONTROL POINTS						
CONTROL POINT #	SURFACE NORTHING	SURFACE EASTIING	GRID NORTHING	GRID EASTING	ELEVATION	DESCRIPTION
900	13980787.36'	2258573.45'	13979668.99'	2258392.78'	1164.81'	1/2" IRON ROD W/CAP STAMPED "MAESTAS CONTROL"
901	13982998.23'	2258502.47'	13981879.68'	2258321.80'	1174.85'	1/2" IRON ROD W/CAP STAMPED "MAESTAS CONTROL"
902	13985185.29'	2258516.27'	13984066.56'	2258335.60'	1186.70'	1/2" IRON ROD W/CAP STAMPED "MAESTAS CONTROL"
BENCMARK 1	13980766.67'	2258452.93'	13979648.30'	2258272.27'	1163.74'	RAILROAD SPIKE IN POWER POLE

STATE OF TEXAS
REGISTERED
KEITH C. KEPPLER
6271
PROFESSIONAL
LAND SURVEYOR
10/6/2021

100 0 200 400
SCALE: 1" = 400'

GENERAL NOTES:

1. BASIS OF BEARINGS IS THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83,SOUTH CENTRAL ZONE (4204), AS ESTABLISHED BY GPS OBSERVATIONS.
2. VERTICAL CONTROL IS REFERENCED TO NAVD88, GEOID 18, AND IIS BASED ON GPS OBSERVATION 0F CONTROL POINT NO. 900 AS BEING THE PRIMARY BENCHMARK WITH DIFFERENTIAL LEVELING USED TO ESTABLISH ELEVATIONS ON ALL OTHER CONTROL AND BENCHMARKS.
3. SURFACE ADJLSTMENT FACTOR (SAF) = 1.00008.
4. SURVEY COMPLETED BY MAESTAS & ASSOCIATES, LLC ON JULY 23, 2021.

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

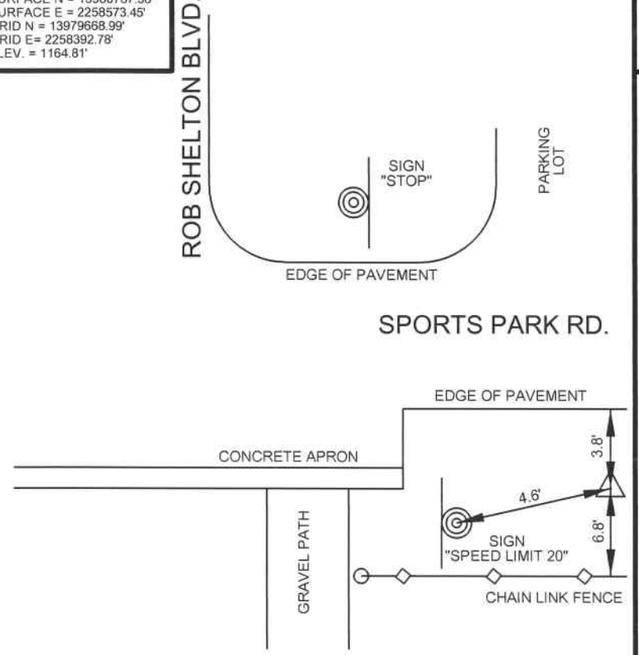
ROB SHELTON
PEDESTRIAN IMPROVEMENTS

PRIMARY CONTROL SHEET
ROB SHELTON BLVD

SHEET 1 OF 2

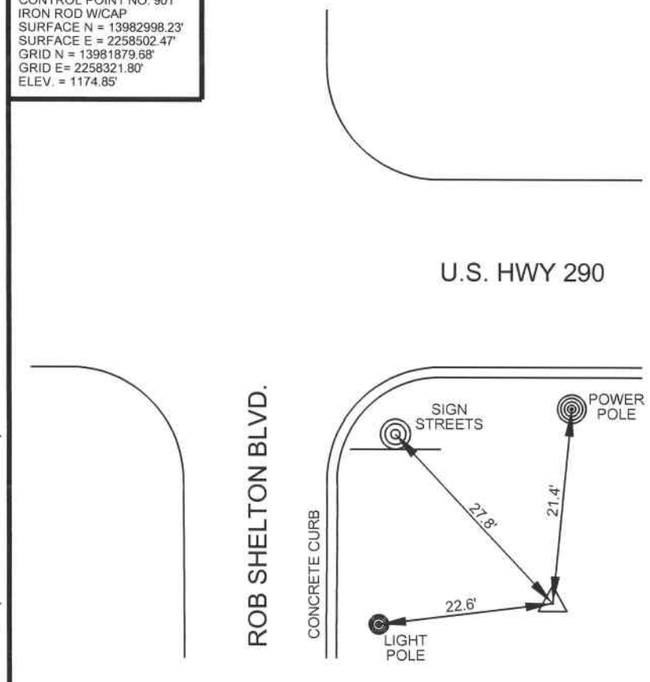
CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		32

CONTROL POINT NO. 900
IRON ROD W/CAP
SURFACE N = 13980787.36'
SURFACE E = 2258573.45'
GRID N = 13979668.99'
GRID E= 2258392.78'
ELEV. = 1164.81'



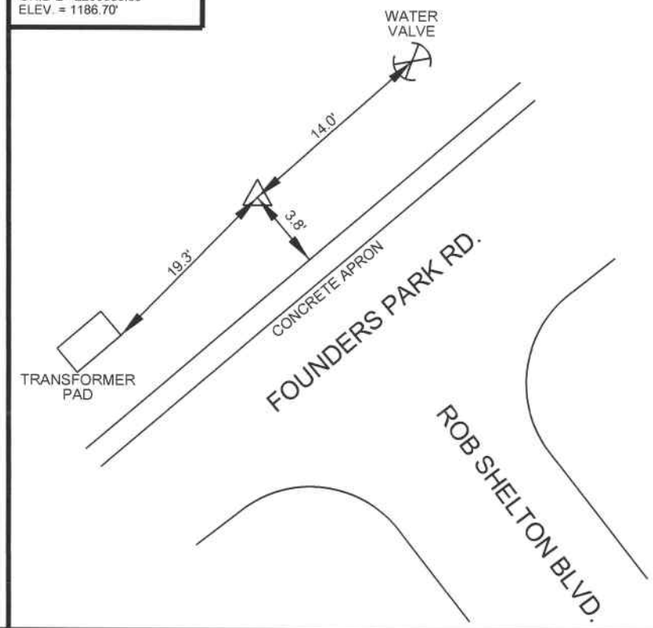
SET1/2" IRON ROD WITH CAP STAMPED "MAESTAS CONTROL" ON THE SOUTHEAST SIDE OF THE INTERSECTION OF ROB SHELTON BOULEVARD AND SPORTS PARK ROAD.

CONTROL POINT NO. 901
IRON ROD W/CAP
SURFACE N = 13982998.23'
SURFACE E = 2258502.47'
GRID N = 13981879.68'
GRID E= 2258321.80'
ELEV. = 1174.85'



SET1/2" IRON ROD WITH CAP STAMPED "MAESTAS CONTROL" AT THE SOUTHEAST CORNER OF THE INTERSECTION OF ROB SHELTON BOULEVARD AND U.S. HIGHWAY 290.

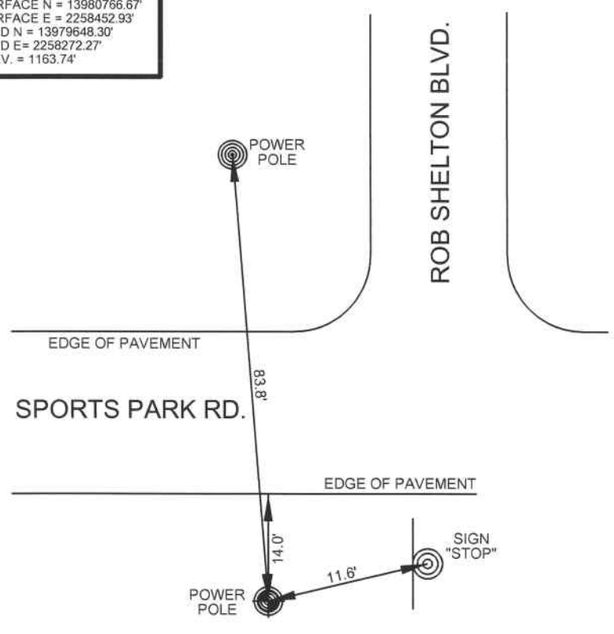
CONTROL POINT NO. 902
IRON ROD W/CAP
SURFACE N = 13985185.29'
SURFACE E = 2258516.27'
GRID N = 13984066.56'
GRID E= 2258335.60'
ELEV. = 1186.70'



SET1/2" IRON ROD WITH CAP STAMPED "MAESTAS CONTROL" ON THE NORTH SIDE OF THE INTERSECTION OF ROB SHELTON BOULEVARD AND FOUNDERS PARK ROAD.

NOT TO SCALE

BENCHMARK NO. 1
RAILROAD SPIKE
SURFACE N = 13980766.67'
SURFACE E = 2258452.93'
GRID N = 13979648.30'
GRID E= 2258272.27'
ELELV. = 1163.74'



RAILROAD SPIKE IN POWER POLE ON THE SOUTHWEST SIDE OF THE INTERSECTION OF ROB SHELTON BOULEVARD AND SPORTS PARK ROAD.

STATE OF TEXAS
REGISTERED
KEITH C. KEPPLER
6271
PROFESSIONAL
LAND SURVEYOR
10/6/2021

GENERAL NOTES:

1. BASIS OF BEARINGS IS THE TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83,SOUTH CENTRAL ZONE (4204), AS ESTABLISHED BY GPS OBSERVATIONS.
2. VERTICAL CONTROL IS REFERENCED TO NAVD88, GEOID 18, AND IS BASED ON GPS OBSERVATION OF CONTROL POINT NO. 900 AS BEING THE PRIMARY BENCHMARK WITH DIFFERENTIAL LEVELING USED TO ESTABLISH ELEVATIONS ON ALL OTHER CONTROL AND BENCHMARKS.
3. SURFACE ADJUSTMENT FACTOR (SAF) = 1.00008.
4. SURVEY COMPLETED BY MAESTAS & ASSOCIATES, LLC ON JULY 23, 2021.

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

PRIMARY CONTROL SHEET
ROB SHELTON BLVD

SHEET 2 OF 2

© 2021	CONT	SECT	JOB	HIGHWAY
	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		33

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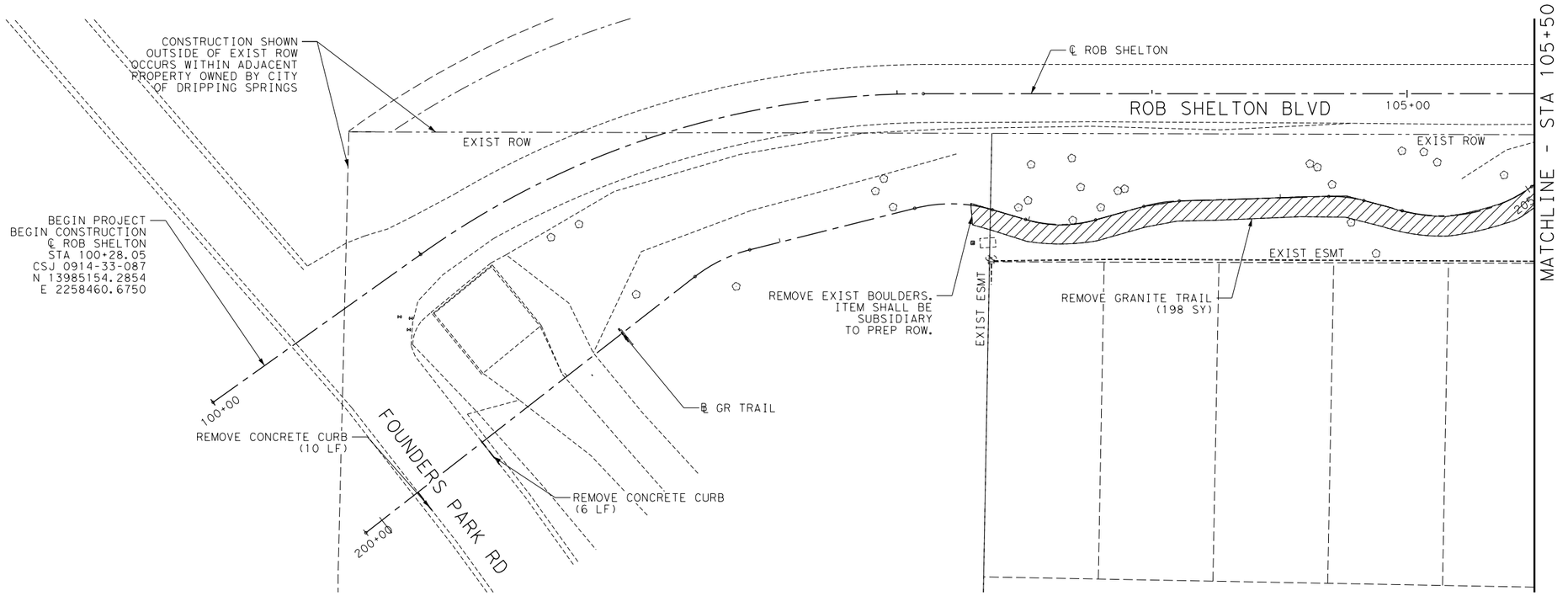
10/6/2021

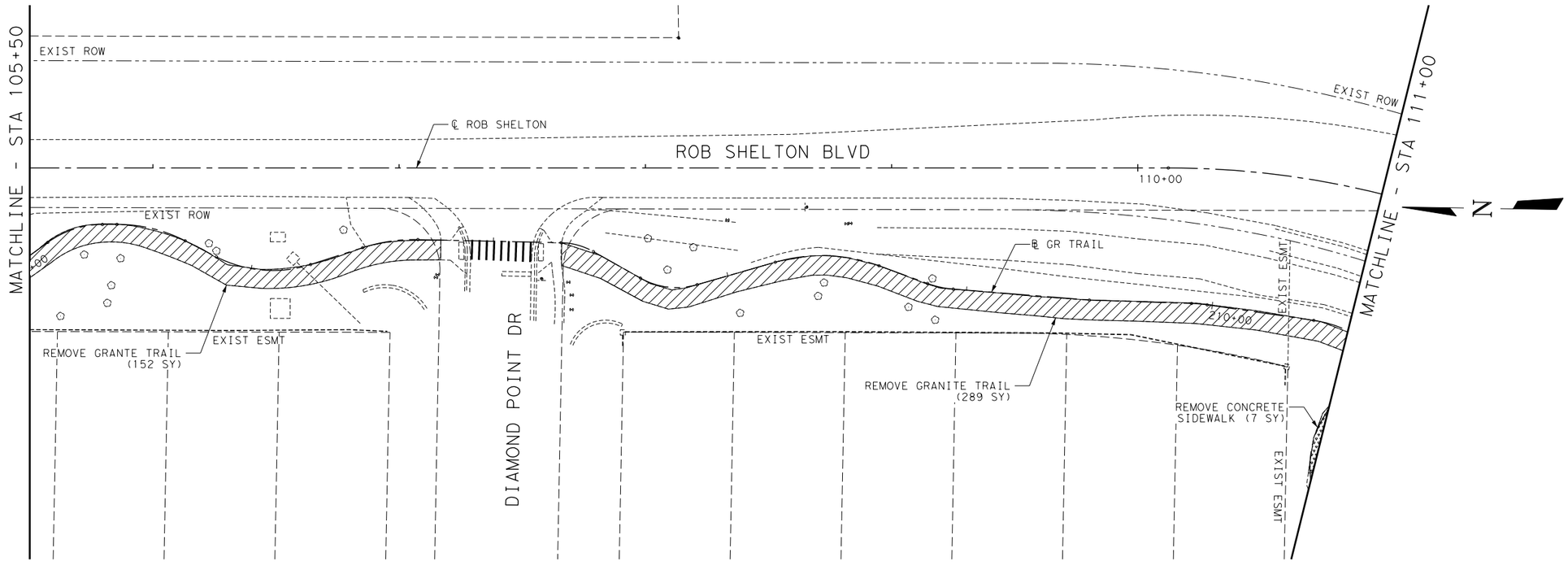


LEGEND

- CONCRETE CURB AND GUTTER REMOVAL
- GRANITE TRAIL REMOVAL
- CONCRETE SIDEWALK AND RAMP REMOVAL

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021



REV	DATE	DESCRIPTION

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD REMOVAL PLANS BEGIN TO STA 111+00

SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		34

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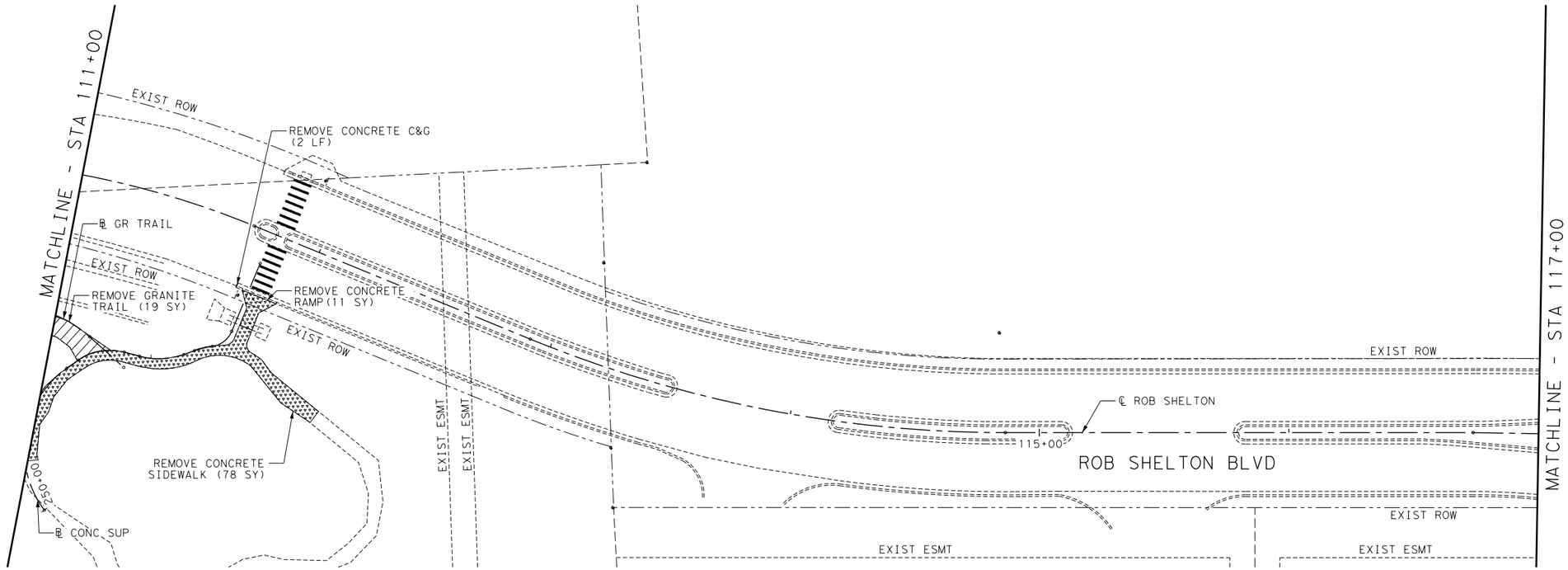

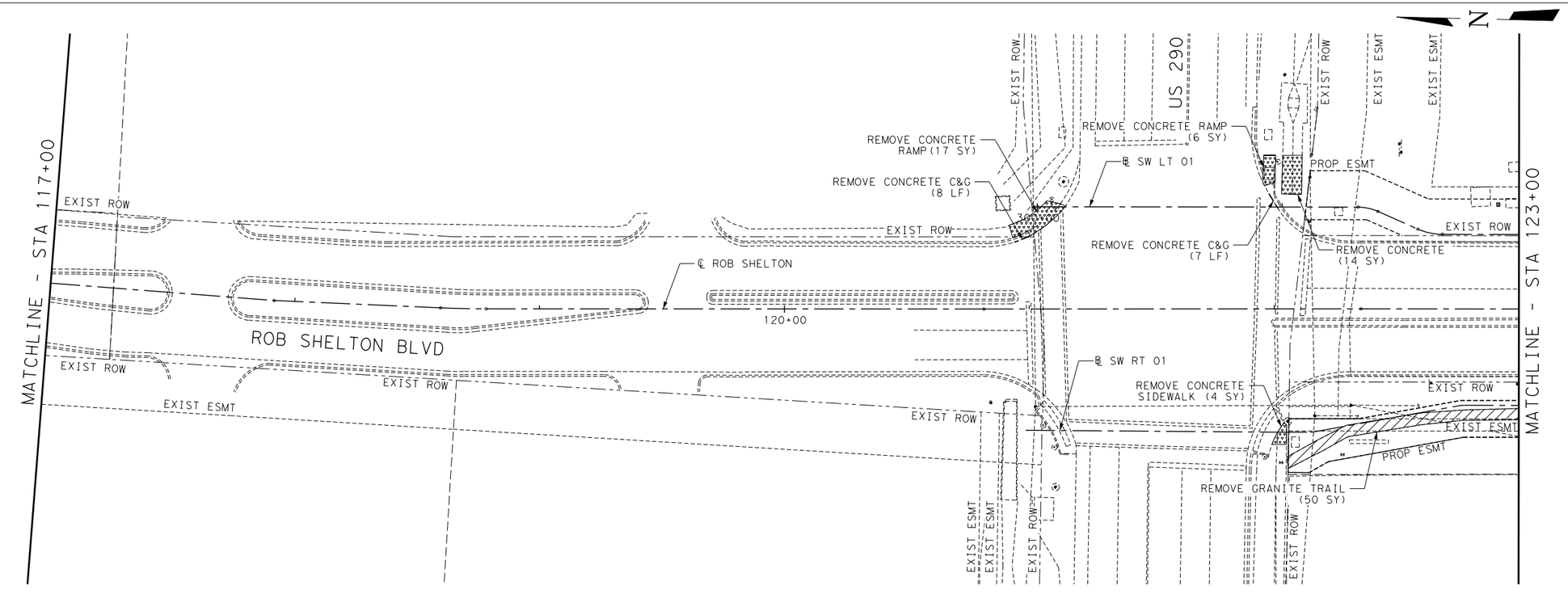

N

0 25′ 50′
HORIZONTAL SCALE

LEGEND

- CONCRETE CURB AND GUTTER REMOVAL
- GRANITE TRAIL REMOVAL
- CONCRETE SIDEWALK AND RAMP REMOVAL

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 2/23/2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD REMOVAL PLANS STA 111+00 TO STA 123+00

SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		35

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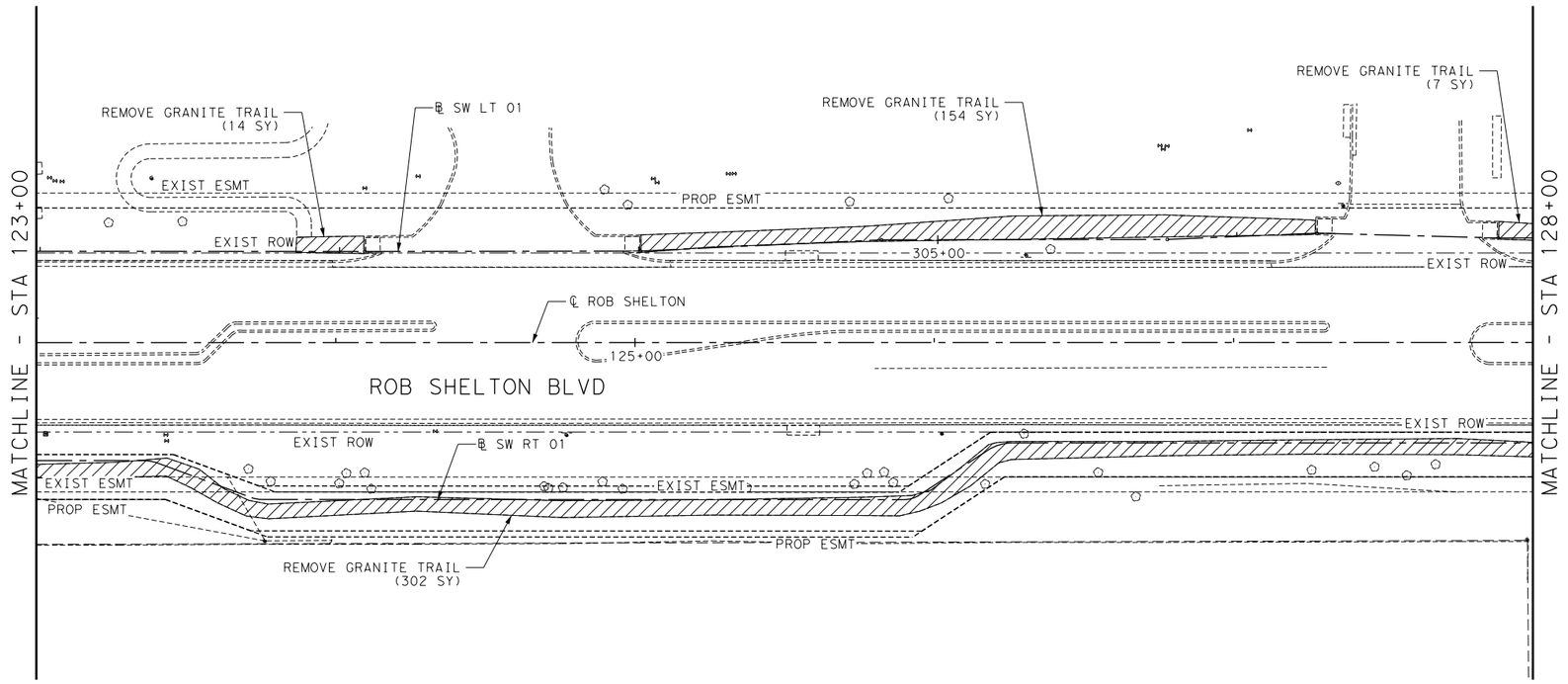

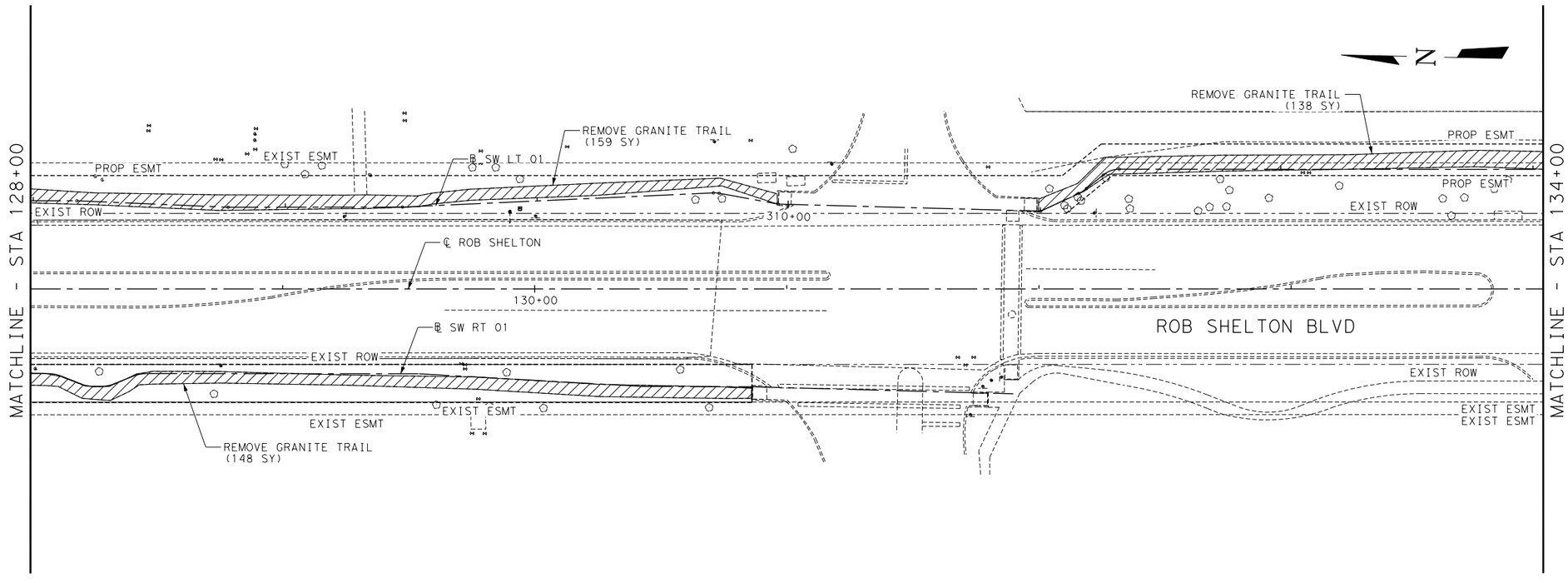

N

0 25′ 50′
HORIZONTAL SCALE

LEGEND
- CONCRETE CURB AND GUTTER REMOVAL
- GRANITE TRAIL REMOVAL
- CONCRETE SIDEWALK AND RAMP REMOVAL

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD REMOVAL PLANS STA 123+00 TO STA 134+00

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		36

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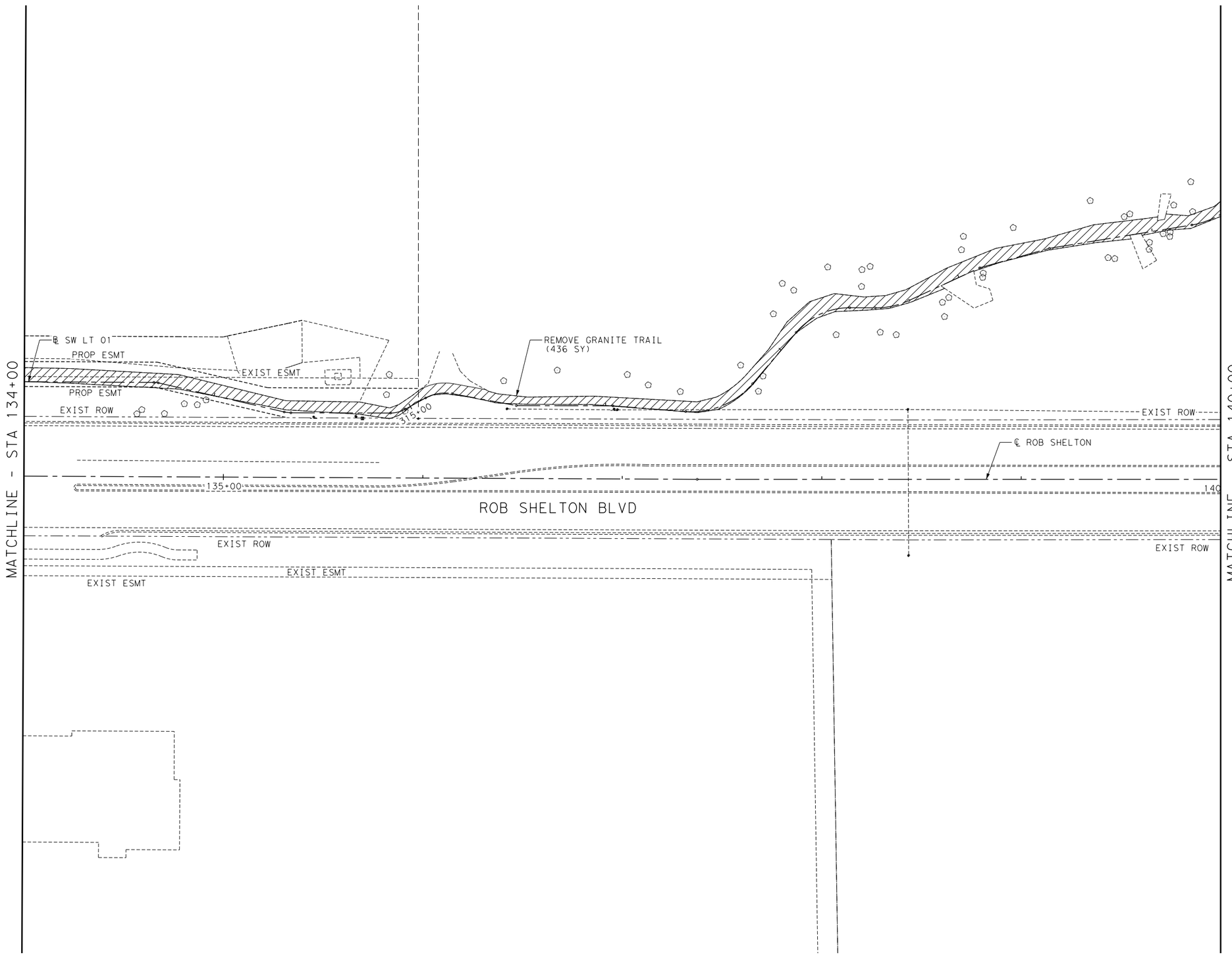

N

0 25′ 50′
HORIZONTAL SCALE

LEGEND

- CONCRETE CURB AND GUTTER REMOVAL
- GRANITE TRAIL REMOVAL
- CONCRETE SIDEWALK AND RAMP REMOVAL

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD REMOVAL PLANS STA 134+00 TO STA 140+00

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		37

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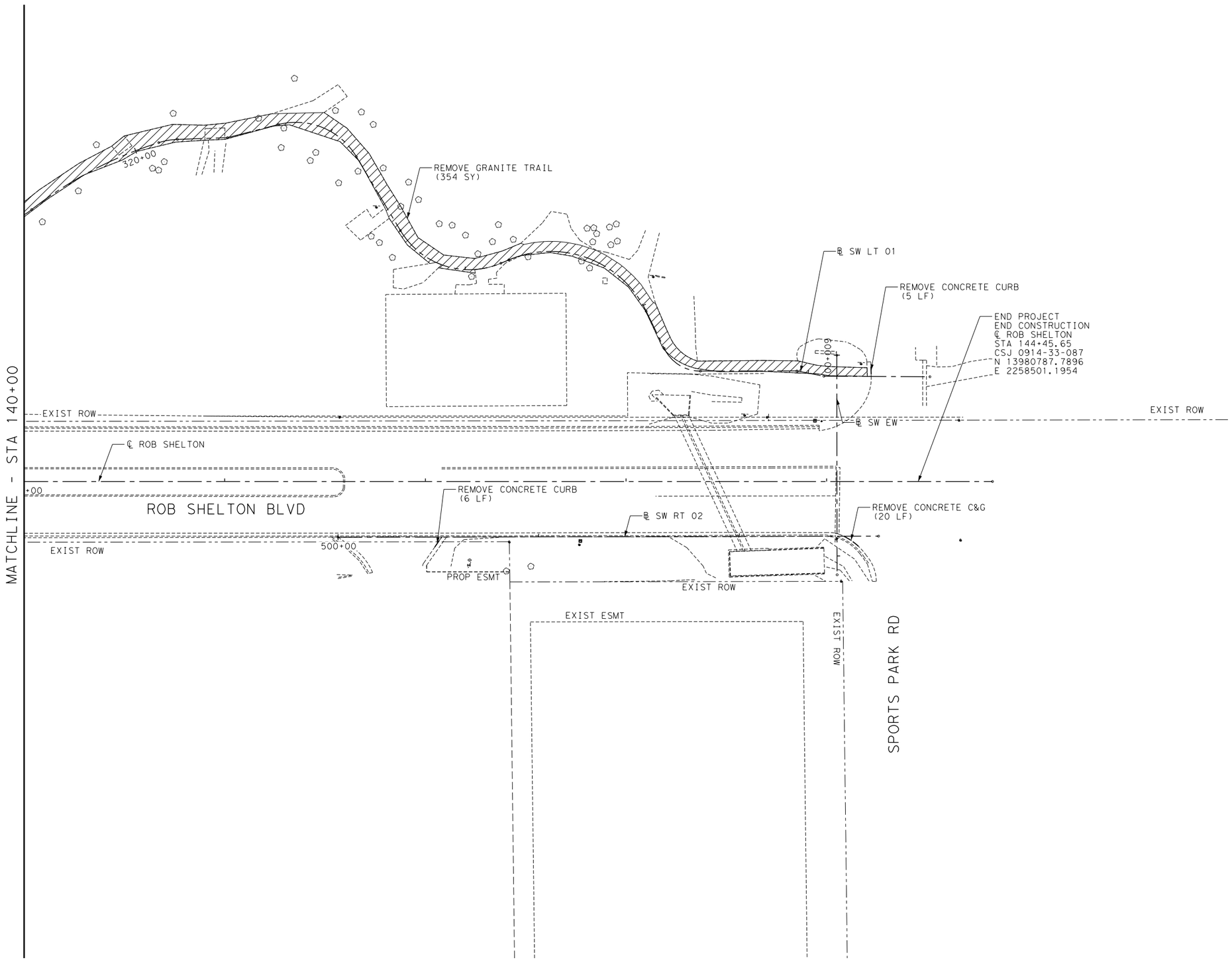

N

0 25′ 50′
HORIZONTAL SCALE

LEGEND

- CONCRETE CURB AND GUTTER REMOVAL
- GRANITE TRAIL REMOVAL
- CONCRETE SIDEWALK AND RAMP REMOVAL

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD REMOVAL PLANS STA 140+00 TO END

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		38

DATE: Nov. 02, 2021 - 11:20:47 AM
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HORIZONAL ALIGNMENT ROB SHELTON BLVD

Chain CL R SHELTON contains:
1 CUR CL R SHELTON 3 CUR CL R SHELTON 6 CUR CL R SHELTON 9 2 3 CUR CL R SHELTO-
N 16 4 5 6 7

Beginning chain CL R SHELTON description
Feature: Geom Centerline

Point 1 N 13,985,176.8548 E 2,258,444.0235 Sta 100+00.00

Course from 1 to PC CL R SHELTON 3 S 36° 25' 10.57" E Dist 100.0000

Curve CL R SHELTON 3	Curve Data				
P.I. Station	102+08.64	N	13,985,008.9672	E	2,258,567.8896
Delta =	35° 26' 21.35" (RT)				
Degree =	16° 51' 06.12"				
Tangent =	108.6362				
Length =	210.3008				
Radius =	340.0000				
External =	16.9339				
Long Chord =	206.9644				
Mid. Ord. =	16.1305				
P.C. Station	101+00.00	N	13,985,096.3857	E	2,258,503.3929
P.T. Station	103+10.30	N	13,984,900.3469	E	2,258,569.7483
C.C.		N	13,984,894.5297	E	2,258,229.7981
Back = S	36° 25' 10.57" E				
Ahead = S	0° 58' 49.22" E				
Chord Bear = S	18° 41' 59.89" E				

Course from PT CL R SHELTON 3 to PC CL R SHELTON 6 S 0° 58' 49.22" E Dist 702.0751

Curve CL R SHELTON 6	Curve Data				
P.I. Station	110+93.45	N	13,984,117.3166	E	2,258,583.1474
Delta =	25° 22' 54.96" (RT)				
Degree =	15° 54' 55.78"				
Tangent =	81.0699				
Length =	159.4794				
Radius =	360.0000				
External =	9.0153				
Long Chord =	158.1785				
Mid. Ord. =	8.7951				
P.C. Station	110+12.38	N	13,984,198.3746	E	2,258,581.7603
P.T. Station	111+71.86	N	13,984,043.4885	E	2,258,549.6550
C.C.		N	13,984,192.2152	E	2,258,221.8130
Back = S	0° 58' 49.22" E				
Ahead = S	24° 24' 05.74" W				
Chord Bear = S	11° 42' 38.26" W				

Course from PT CL R SHELTON 6 to PC CL R SHELTON 9 S 24° 24' 05.74" W Dist 119.4530

Curve CL R SHELTON 9	Curve Data				
P.I. Station	113+90.12	N	13,983,844.7193	E	2,258,459.4826
Delta =	22° 16' 17.12" (LT)				
Degree =	11° 24' 48.61"				
Tangent =	98.8135				
Length =	195.1322				
Radius =	502.0000				
External =	9.6328				
Long Chord =	193.9061				
Mid. Ord. =	9.4514				
P.C. Station	112+91.31	N	13,983,934.7060	E	2,258,500.3054
P.T. Station	114+86.44	N	13,983,745.9741	E	2,258,455.8097
C.C.		N	13,983,727.3148	E	2,258,957.4628
Back = S	24° 24' 05.74" W				
Ahead = S	2° 07' 48.62" W				
Chord Bear = S	13° 15' 57.18" W				

Course from PT CL R SHELTON 9 to 2 S 2° 07' 48.62" W Dist 187.3774

Point 2 N 13,983,558.7262 E 2,258,448.8449 Sta 116+73.82

Course from 2 to 3 S 3° 06' 13.28" W Dist 117.6842

Point 3 N 13,983,441.2146 E 2,258,442.4731 Sta 117+91.50

Course from 3 to PC CL R SHELTON 16 S 1° 12' 42.14" W Dist 68.0544

Curve CL R SHELTON 16	Curve Data				
P.I. Station	118+68.88	N	13,983,363.8579	E	2,258,440.8369
Delta =	2° 30' 44.70" (LT)				
Degree =	13° 28' 52.90"				
Tangent =	9.3196				
Length =	18.6362				
Radius =	425.0000				
External =	0.1022				
Long Chord =	18.6347				
Mid. Ord. =	0.1021				
P.C. Station	118+59.56	N	13,983,373.1755	E	2,258,441.0340
P.T. Station	118+78.19	N	13,983,354.5407	E	2,258,441.0485
C.C.		N	13,983,364.1881	E	2,258,865.9390
Back = S	1° 12' 42.14" W				
Ahead = S	1° 18' 02.56" E				
Chord Bear = S	0° 02' 40.21" E				

Course from PT CL R SHELTON 16 to 4 S 1° 18' 02.56" E Dist 203.3075

Point 4 N 13,983,151.2857 E 2,258,445.6635 Sta 120+81.50

Course from 4 to 5 S 1° 21' 53.11" E Dist 154.0012

Point 5 N 13,982,997.3281 E 2,258,449.3314 Sta 122+35.50

Course from 5 to 6 S 1° 15' 30.45" E Dist 1,502.0483

Point 6 N 13,981,495.6421 E 2,258,482.3201 Sta 137+37.55

Course from 6 to 7 S 1° 31' 38.87" E Dist 745.0969

Point 7 N 13,980,750.8100 E 2,258,502.1815 Sta 144+82.65

Ending chain CL R SHELTON description

HORIZONAL ALIGNMENT GRANITE TRAIL

Chain GR TRAIL contains:
48 CUR GR TRAIL 3 CUR GR TRAIL 6 CUR GR TRAIL 9 CUR GR TRAIL 1-
2 CUR GR TRAIL 15 CUR GR TRAIL 18 CUR GR TRAIL 21 CUR GR TRAIL -
24 CUR GR TRAIL 27 CUR GR TRAIL 30 CUR GR TRAIL 33 CUR GR TRAIL-
36 CUR GR TRAIL 39 CUR GR TRAIL 42 49 CUR GR TRAIL 47 CUR GR T-
RAIL 50 50

Beginning chain GR TRAIL description
Feature: Geom Secondary

Point 48 N 13,985,116.0404 E 2,258,393.8767 Sta 200+00.00

Course from 48 to PC GR TRAIL 3 S 38° 52' 05.68" E Dist 163.6278

Curve GR TRAIL 3	Curve Data				
P.I. Station	201+75.82	N	13,984,979.1457	E	2,258,504.211
Delta =	23° 44' 58.05" (RT)				
Degree =	98° 47' 08.98"				
Tangent =	12.1958				
Length =	24.0414				
Radius =	58.0000				
External =	1.2684				
Long Chord =	23.8696				
Mid. Ord. =	1.2412				
P.C. Station	201+63.63	N	13,984,988.6413	E	2,258,496.558
P.T. Station	201+87.67	N	13,984,967.3721	E	2,258,507.392
C.C.		N	13,984,952.2444	E	2,258,451.400
Back = S	38° 52' 05.68" E				
Ahead = S	15° 07' 07.63" E				
Chord Bear = S	26° 59' 36.65" E				

Course from PT GR TRAIL 3 to PC GR TRAIL 6 S 15° 07' 07.63" E Dist 66.7216

Curve GR TRAIL 6	Curve Data				
P.I. Station	202+70.16	N	13,984,887.7406	E	2,258,528.906
Delta =	30° 24' 44.49" (RT)				
Degree =	98° 47' 08.98"				
Tangent =	15.7650				
Length =	30.7862				
Radius =	58.0000				
External =	2.1044				
Long Chord =	30.4260				
Mid. Ord. =	2.0307				
P.C. Station	202+54.39	N	13,984,902.9599	E	2,258,524.794
P.T. Station	202+85.18	N	13,984,872.5339	E	2,258,524.748
C.C.		N	13,984,887.8323	E	2,258,468.802
Back = S	15° 07' 07.63" E				
Ahead = S	15° 17' 36.86" W				
Chord Bear = S	0° 05' 14.62" W				

Course from PT GR TRAIL 6 to PC GR TRAIL 9 S 15° 17' 36.86" W Dist 13.6251

Curve GR TRAIL 9	Curve Data				
P.I. Station	203+13.09	N	13,984,845.6048	E	2,258,517.384
Delta =	31° 54' 19.55" (LT)				
Degree =	114° 35' 29.61"				
Tangent =	14.2926				
Length =	27.8427				
Radius =	50.0000				
External =	2.0027				
Long Chord =	27.4844				
Mid. Ord. =	1.9256				
P.C. Station	202+98.80	N	13,984,859.3913	E	2,258,521.154
P.T. Station	203+26.64	N	13,984,831.9087	E	2,258,521.470
C.C.		N	13,984,846.2031	E	2,258,569.384
Back = S	15° 17' 36.86" W				
Ahead = S	16° 36' 42.69" E				
Chord Bear = S	0° 39' 32.91" E				

Course from PT GR TRAIL 9 to PC GR TRAIL 12 S 16° 36' 42.69" E Dist 19.6331

Curve GR TRAIL 12	Curve Data				
P.I. Station	203+53.35	N	13,984,806.3166	E	2,258,529.106
Delta =	13° 54' 24.89" (RT)				
Degree =	98° 47' 08.98"				
Tangent =	7.0737				
Length =	14.0778				
Radius =	58.0000				
External =	0.4298				
Long Chord =	14.0433				
Mid. Ord. =	0.4266				
P.C. Station	203+46.28	N	13,984,813.0950	E	2,258,527.083
P.T. Station	203+60.36	N	13,984,799.2508	E	2,258,529.439
C.C.		N	13,984,796.5136	E	2,258,471.504
Back = S	16° 36' 42.69" E				
Ahead = S	2° 42' 17.80" E				
Chord Bear = S	9° 39' 30.25" E				

Course from PT GR TRAIL 12 to PC GR TRAIL 15 S 2° 42' 17.80" E Dist 58.6143

Curve GR TRAIL 15	Curve Data				
P.I. Station	204+25.99	N	13,984,733.6922	E	2,258,532.537
Delta =	16° 38' 06.19" (RT)				
Degree =	119° 21' 58.35"				
Tangent =	7.0174				
Length =	13.9361				
Radius =	48.0000				
External =	0.5103				
Long Chord =	13.8873				
Mid. Ord. =	0.5049				
P.C. Station	204+18.97	N	13,984,740.7018	E	2,258,532.206
P.T. Station	204+32.91	N	13,984,726.8811	E	2,258,530.847
C.C.		N	13,984,738.4366	E	2,258,484.259
Back = S	2° 42' 17.80" E				
Ahead = S	13° 55' 48.39" W				
Chord Bear = S	5° 36' 45.30" W				

Course from PT GR TRAIL 15 to PC GR TRAIL 18 S 13° 55' 48.39" W Dist 15.5585

HORIZONAL ALIGNMENT GRANITE TRAIL (CONTINUED)

Curve GR TRAIL 18	Curve Data				
P.I. Station	204+77.05	N	13,984,684.0353	E	2,258,520.220
Delta =	50° 56' 55.92" (LT)				
Degree =	95° 29' 34.68"				
Tangent =	28.5857				
Length =	53.3535				
Radius =	60.0000				
External =	6.4616				
Long Chord =	51.6130				
Mid. Ord. =	5.8334				
P.C. Station	204+48.46	N	13,984,711.7802	E	2,258,527.102
P.T. Station	205+01.82	N	13,984,661.2114	E	2,258,537.431
C.C.		N	13,984,697.3359	E	2,258,585.337
Back = S	13° 55' 48.39" W				
Ahead = S	37° 01' 07.52" E				
Chord Bear = S	11° 32' 39.57" E				

Course from PT GR TRAIL 18 to PC GR TRAIL 21 S 37° 01' 07.52" E Dist 10.4748

Curve GR TRAIL 21	Curve Data				
P.I. Station	205+24.55	N	13,984,643.0610	E	2,258,551.118
Delta =	35° 45' 21.27" (RT)				
Degree =	150° 46' 42.12"				
Tangent =	12.2575				
Length =	23.7142				
Radius =	38.0000				
External =	1.9280				
Long Chord =	23.3313				
Mid. Ord. =	1.8349				
P.C. Station	205+12.29	N	13,984,652.8479	E	2,258,543.738
P.T. Station	205+36.01	N	13,984,630.8065	E	2,258,551.388
C.C.		N	13,984,629.9690	E	2,258,513.397
Back = S	37° 01' 07.52" E				
Ahead = S	1° 15' 46.25" E				
Chord Bear = S	19° 08' 26.89" E				

Course from PT GR TRAIL 21 to PC GR TRAIL 24 S 1° 15' 46.25" E Dist 5.8924

Curve GR TRAIL 24	Curve Data				
P.I. Station	205+56.59	N	13,984,610.2326	E	2,258,551.841
Delta =	27° 30' 29.28" (RT)				
Degree =	95° 29' 34.68"				
Tangent =	14.6864				
Length =	28.8064				
Radius =	60.0000				
External =	1.7713				
Long Chord =	28.5306				
Mid. Ord. =	1.7205				
P.C. Station	205+41.90	N	13,984,624.9155	E	2,258,551.518
P.T. Station	205+70.71	N	13,984,597.0603	E	2,258,545.347
C.C.		N	13,984,623.5932	E	2,258,491.532
Back = S	1° 15' 46.25" E				
Ahead = S	26° 14' 43.03" W				
Chord Bear = S	12° 29' 28.39" W				

Course from PT GR TRAIL 24 to PC GR TRAIL 27 S 26° 14' 43.03" W Dist 14.2619

Curve GR TRAIL 27	Curve Data				
P.I. Station	206+05.76	N	13,984,565.6223	E	2,258,529.846
Delta =	45° 09' 15.70" (LT)				
Degree =	114° 35' 29.61"				
Tangent =	20.7896				
Length =	39.4046				
Radius =	50.0000				
External =	4.1499				
Long Chord =	38.3928				
Mid. Ord. =	3.8318				
P.C. Station	205+84.97	N	13,984,584.2687	E	2,258,539.040
P.T. Station	206+24.37	N	13,984,545.9546	E	2,258,536.584
C.C.		N	13,984,562.1579	E	2,258,583.885
Back = S	26° 14' 43.03" W				
Ahead = S	18° 54' 32.67" E				
Chord Bear = S	3° 40' 05.18" W				

Course from PT GR TRAIL 27 to PC GR TRAIL 30 S 18° 54' 32.67" E Dist 22.2307

Curve GR TRAIL 30	Curve Data				
P.I. Station	206+58.09	N	13,984,514.0550	E	2,258,547.511
Delta =	19° 10' 44.58" (RT)				
Degree =	84° 15' 30.60"				
Tangent =	11.4886				
Length =	22.7622				
Radius =	68.0000				
External =	0.9637				
Long Chord =	22.6560				
Mid. Ord. =	0.9502				
P.C. Station	206+46.60	N	13,984,524.9236	E	2,258,543.788
P.T. Station	206+69.37	N	13,984,502.5666	E	2,258,547.457
C.C.		N	13,984,502.8870	E	2,258,479.458
Back = S	18° 54' 32.67" E				
Ahead = S	0° 16' 11.91" W				
Chord Bear = S	9° 19' 10.38" E				

Course from PT GR TRAIL 30 to PC GR TRAIL 33 S 0° 16' 11.91" W Dist 58.1254

Curve GR TRAIL 33	Curve Data				
P.I. Station	207+34.51	N	13,984,437.4209	E	2,258,547.150
Delta =	28° 09' 11.79" (RT)				
Degree =	204° 37' 40.02"				
Tangent =	7.0210				
Length =	13.7583				
Radius =	28.0000				
External =	0.8668				
Long Chord =	13.6203				
Mid. Ord. =	0.8408				
P.C. Station	207+27.49	N	13,984,444.4418	E	2,258,547.183
P.T. Station	207+41.25	N	13,984,431.2463	E	2,258,543.808
C.C.		N	13,984,444.5737	E	2,258,519.183
Back = S	0° 16' 11.91" W				
Ahead = S	28° 25' 23.70" W				
Chord Bear = S	14° 20' 47.81" W				

Course from PT GR TRAIL 33 to PC GR TRAIL 36 S 28° 25' 23.70" W Dist 21.9387

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
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TX FIRM F-2144

ROB SHELTON
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HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		39

DATE: Nov. 02, 2021 - 11:20:48 AM
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HORIZONTAL ALIGNMENT GRANITE TRAIL (CONTINUED)

Curve Data

Curve GR TRAIL 36
P.I. Station = 207+75.77 N 13,984,400.8905 E 2,258,527.3792
Delta = 45° 29' 33.35" (LT)
Degree = 190° 59' 09.35"
Tangent = 12.5778
Length = 23.8199
Radius = 30.0000
External = 2.5300
Long Chord = 23.1991
Mid. Ord. = 2.3332
P.C. Station 207+63.19 N 13,984,411.9521 E 2,258,533.3660
P.T. Station 207+87.01 N 13,984,388.8668 E 2,258,531.0711
C.C. N 13,984,397.6727 E 2,258,559.7496
Back = S 28° 25' 23.70" W
Ahead = S 17° 04' 09.64" E
Chord Bear = S 5° 40' 37.03" W

Course from PT GR TRAIL 36 to PC GR TRAIL 39 S 17° 04' 09.64" E Dist 32.9987

Curve Data

Curve GR TRAIL 39
P.I. Station = 208+42.19 N 13,984,336.1189 E 2,258,547.2676
Delta = 36° 07' 48.25" (RT)
Degree = 84° 15' 30.60"
Tangent = 22.1799
Length = 42.8800
Radius = 68.0000
External = 3.5259
Long Chord = 42.1731
Mid. Ord. = 3.3520
P.C. Station 208+20.01 N 13,984,357.3217 E 2,258,540.7572
P.T. Station 208+62.89 N 13,984,315.1550 E 2,258,540.0243
C.C. N 13,984,337.3618 E 2,258,475.7526
Back = S 17° 04' 09.64" E
Ahead = S 19° 03' 38.60" W
Chord Bear = S 0° 59' 44.48" W

Course from PT GR TRAIL 39 to PC GR TRAIL 42 S 19° 03' 38.60" W Dist 20.9236

Curve Data

Curve GR TRAIL 42
P.I. Station = 208+89.22 N 13,984,290.2637 E 2,258,531.4241
Delta = 15° 24' 34.06" (LT)
Degree = 143° 14' 22.02"
Tangent = 5.4116
Length = 10.7558
Radius = 40.0000
External = 0.3644
Long Chord = 10.7254
Mid. Ord. = 0.3611
P.C. Station 208+83.81 N 13,984,295.3786 E 2,258,533.1913
P.T. Station 208+94.57 N 13,984,284.8631 E 2,258,531.0794
C.C. N 13,984,282.3158 E 2,258,570.9982
Back = S 19° 03' 38.60" W
Ahead = S 3° 39' 04.55" W
Chord Bear = S 11° 21' 21.58" W

Course from PT GR TRAIL 42 to 49 S 3° 39' 04.55" W Dist 55.4568

Point 49 N 13,984,229.5189 E 2,258,527.5478 Sta 209+50.02

Course from 49 to PC GR TRAIL 47 S 0° 55' 23.16" W Dist 41.5123

Curve Data

Curve GR TRAIL 47
P.I. Station = 209+94.75 N 13,984,184.7953 E 2,258,526.8271
Delta = 6° 20' 58.48" (RT)
Degree = 98° 47' 08.98"
Tangent = 3.2171
Length = 6.4276
Radius = 58.0000
External = 0.0892
Long Chord = 6.4243
Mid. Ord. = 0.0890
P.C. Station 209+91.54 N 13,984,188.0120 E 2,258,526.8790
P.T. Station 209+97.96 N 13,984,181.6041 E 2,258,526.4199
C.C. N 13,984,188.9464 E 2,258,468.8865
Back = S 0° 55' 23.16" W
Ahead = S 7° 16' 21.64" W
Chord Bear = S 4° 05' 52.40" W

Course from PT GR TRAIL 47 to PC GR TRAIL 50 S 7° 16' 21.64" W Dist 43.7088

Curve Data

Curve GR TRAIL 50
P.I. Station = 210+57.63 N 13,984,122.4170 E 2,258,518.8665
Delta = 36° 46' 48.57" (RT)
Degree = 119° 21' 58.35"
Tangent = 15.9582
Length = 30.8129
Radius = 48.0000
External = 2.5833
Long Chord = 30.2865
Mid. Ord. = 2.4513
P.C. Station 210+41.67 N 13,984,138.2469 E 2,258,520.8867
P.T. Station 210+72.49 N 13,984,110.9478 E 2,258,507.7704
C.C. N 13,984,144.3233 E 2,258,473.2729
Back = S 7° 16' 21.64" W
Ahead = S 44° 03' 10.22" W
Chord Bear = S 25° 39' 45.93" W

Course from PT GR TRAIL 50 to 50 S 44° 03' 10.22" W Dist 18.3346

Point 50 N 13,984,097.7708 E 2,258,495.0220 Sta 210+90.82

Ending chain GR TRAIL description

HORIZONTAL ALIGNMENT SW LT 01

Chain SW LT 01 contains:
17 CUR SW LT 01 3 CUR SW LT 01 6 18 19 20 21 22 23 24 25 26 CUR SW LT 01 27 27-28 CUR SW LT 01 34 CUR SW LT 01 37 CUR SW LT 01 40 CUR SW LT 01 43 CUR SW LT 01 46 CUR SW LT 01 49 29 30 CUR SW LT 01 56 CUR SW LT 01 59 CUR SW LT 01 62 31 32 CUR SW LT 01 69 CUR SW LT 01 70 CUR SW LT 01 71 33 CUR SW LT 01 76 CUR SW LT 01 79 CUR SW LT 01 82 CUR SW LT 01 85 34 35 36

Beginning chain SW LT 01 description
Feature: Geom Secondary

Point 17 N 13,983,130.4030 E 2,258,487.9317 Sta 300+00.00

Course from 17 to PC SW LT 01 3 S 1° 15' 46.25" E Dist 130.9599

Curve Data

Curve SW LT 01 3
P.I. Station = 301+35.18 N 13,982,995.2567 E 2,258,490.9109
Delta = 23° 49' 31.18" (RT)
Degree = 286° 28' 44.03"
Tangent = 4.2193
Length = 8.3166
Radius = 20.0000
External = 0.4402
Long Chord = 8.2568
Mid. Ord. = 0.4307
P.C. Station 301+30.96 N 13,982,999.4750 E 2,258,490.8179
P.T. Station 301+39.28 N 13,982,991.3604 E 2,258,489.2920
C.C. N 13,982,999.0342 E 2,258,470.8227
Back = S 1° 15' 46.25" E
Ahead = S 22° 33' 44.93" W
Chord Bear = S 10° 38' 59.34" W

Course from PT SW LT 01 3 to PC SW LT 01 6 S 22° 33' 44.93" W Dist 17.8341

Curve Data

Curve SW LT 01 6
P.I. Station = 301+62.37 N 13,982,970.0321 E 2,258,480.4303
Delta = 23° 46' 18.45" (LT)
Degree = 229° 10' 59.22"
Tangent = 5.2619
Length = 10.3724
Radius = 25.0000
External = 0.5478
Long Chord = 10.2982
Mid. Ord. = 0.5360
P.C. Station 301+57.11 N 13,982,974.8913 E 2,258,482.4492
P.T. Station 301+67.48 N 13,982,964.7714 E 2,258,480.5413
C.C. N 13,982,965.2990 E 2,258,505.5358
Back = S 22° 33' 44.93" W
Ahead = S 1° 12' 33.52" E
Chord Bear = S 10° 40' 35.71" W

Course from PT SW LT 01 6 to 18 S 1° 12' 33.52" E Dist 140.9587

Point 18 N 13,982,823.8441 E 2,258,483.5162 Sta 303+08.44

Course from 18 to 19 S 1° 21' 42.24" E Dist 92.1367

Point 19 N 13,982,731.7335 E 2,258,485.7058 Sta 304+00.58

Course from 19 to 20 S 3° 56' 25.40" E Dist 80.5519

Point 20 N 13,982,651.3720 E 2,258,491.2412 Sta 304+81.13

Course from 20 to 21 S 1° 19' 33.23" E Dist 95.5537

Point 21 N 13,982,555.8439 E 2,258,493.4523 Sta 305+76.68

Course from 21 to 22 S 3° 37' 22.61" E Dist 50.0870

Point 22 N 13,982,505.8570 E 2,258,496.6173 Sta 306+26.77

Course from 22 to 23 S 0° 13' 11.56" W Dist 60.5089

Point 23 N 13,982,445.3486 E 2,258,496.3851 Sta 306+87.28

Course from 23 to 24 S 1° 15' 35.47" E Dist 30.0000

Point 24 N 13,982,415.3558 E 2,258,497.0447 Sta 307+17.28

Course from 24 to 25 S 1° 11' 14.43" W Dist 60.0548

Point 25 N 13,982,355.3139 E 2,258,495.8002 Sta 307+77.33

Course from 25 to 26 S 1° 19' 45.17" E Dist 69.1712

Point 26 N 13,982,286.1613 E 2,258,497.4048 Sta 308+46.51

Course from 26 to PC SW LT 01 27 S 3° 51' 57.62" E Dist 123.4408

Curve Data

Curve SW LT 01 27
P.I. Station = 309+71.09 N 13,982,161.8619 E 2,258,505.8046
Delta = 13° 01' 50.89" (RT)
Degree = 572° 57' 28.06"
Tangent = 1.1421
Length = 2.2743
Radius = 10.0000
External = 0.0650
Long Chord = 2.2694
Mid. Ord. = 0.0646
P.C. Station 309+69.95 N 13,982,163.0014 E 2,258,505.7276
P.T. Station 309+72.22 N 13,982,160.7344 E 2,258,505.6227
C.C. N 13,982,162.3272 E 2,258,495.7504
Back = S 3° 51' 57.62" E
Ahead = S 9° 09' 53.28" W
Chord Bear = S 2° 38' 57.83" W

Course from PT SW LT 01 27 to 27 S 9° 09' 53.28" W Dist 23.8238

Point 27 N 13,982,137.2148 E 2,258,501.8282 Sta 309+96.04

Course from 27 to 28 S 0° 15' 21.38" W Dist 104.2180

Point 28 N 13,982,032.9978 E 2,258,501.3626 Sta 311+00.26

Course from 28 to PC SW LT 01 34 S 26° 12' 36.40" E Dist 16.5102

HORIZONTAL ALIGNMENT SW LT 01 (CONTINUED)

Curve Data

Curve SW LT 01 34
P.I. Station = 311+18.63 N 13,982,016.5167 E 2,258,509.4760
Delta = 14° 08' 05.35" (LT)
Degree = 381° 58' 18.71"
Tangent = 1.8597
Length = 3.7005
Radius = 15.0000
External = 0.1148
Long Chord = 3.6911
Mid. Ord. = 0.1140
P.C. Station 311+16.77 N 13,982,018.1852 E 2,258,508.6546
P.T. Station 311+20.47 N 13,982,015.0993 E 2,258,510.6799
C.C. N 13,982,024.8101 E 2,258,522.1123
Back = S 26° 12' 36.40" E
Ahead = S 40° 20' 41.76" E
Chord Bear = S 33° 16' 39.08" E

Course from PT SW LT 01 34 to PC SW LT 01 37 S 40° 20' 41.76" E Dist 8.6456

Curve Data

Curve SW LT 01 37
P.I. Station = 311+32.67 N 13,982,005.8019 E 2,258,518.5772
Delta = 39° 07' 17.51" (RT)
Degree = 572° 57' 28.06"
Tangent = 3.5531
Length = 6.8280
Radius = 10.0000
External = 0.6125
Long Chord = 6.6961
Mid. Ord. = 0.5771
P.C. Station 311+29.12 N 13,982,008.5100 E 2,258,516.2770
P.T. Station 311+35.95 N 13,982,002.2496 E 2,258,518.6531
C.C. N 13,982,002.0361 E 2,258,508.6554
Back = S 40° 20' 41.76" E
Ahead = S 1° 13' 24.25" E
Chord Bear = S 20° 47' 03.00" E

Course from PT SW LT 01 37 to PC SW LT 01 40 S 1° 13' 24.25" E Dist 233.1036

Curve Data

Curve SW LT 01 40
P.I. Station = 313+70.16 N 13,981,768.0872 E 2,258,523.6538
Delta = 12° 41' 30.78" (RT)
Degree = 572° 57' 28.06"
Tangent = 1.1121
Length = 2.2152
Radius = 10.0000
External = 0.0617
Long Chord = 2.2106
Mid. Ord. = 0.0613
P.C. Station 313+69.05 N 13,981,769.1991 E 2,258,523.6300
P.T. Station 313+71.27 N 13,981,766.9973 E 2,258,523.4326
C.C. N 13,981,768.9856 E 2,258,513.6323
Back = S 1° 13' 24.25" E
Ahead = S 11° 28' 06.53" W
Chord Bear = S 5° 07' 21.14" W

Course from PT SW LT 01 40 to PC SW LT 01 43 S 11° 28' 06.53" W Dist 64.7851

Curve Data

Curve SW LT 01 43
P.I. Station = 314+37.74 N 13,981,701.8533 E 2,258,510.2163
Delta = 12° 49' 35.92" (LT)
Degree = 381° 58' 18.71"
Tangent = 1.6861
Length = 3.3580
Radius = 15.0000
External = 0.0945
Long Chord = 3.3510
Mid. Ord. = 0.0939
P.C. Station 314+36.05 N 13,981,703.5057 E 2,258,510.5515
P.T. Station 314+39.41 N 13,981,700.1677 E 2,258,510.2562
C.C. N 13,981,700.5232 E 2,258,525.2520
Back = S 11° 28' 06.53" W
Ahead = S 1° 21' 29.39" E
Chord Bear = S 5° 03' 18.57" W

Course from PT SW LT 01 43 to PC SW LT 01 46 S 1° 21' 29.39" E Dist 49.9656

Curve Data

Curve SW LT 01 46
P.I. Station = 314+93.27 N 13,981,646.3219 E 2,258,511.5328
Delta = 29° 06' 52.75" (LT)
Degree = 381° 58' 18.71"
Tangent = 3.8953
Length = 7.6222
Radius = 15.0000
External = 0.4975
Long Chord = 7.5405
Mid. Ord. = 0.4816
P.C. Station 314+89.37 N 13,981,650.2161 E 2,258,511.4405
P.T. Station 314+97.00 N 13,981,642.9647 E 2,258,513.5083
C.C. N 13,981,650.5716 E 2,258,526.4363
Back = S 1° 21' 29.39" E
Ahead = S 30° 28' 22.14" E
Chord Bear = S 15° 54' 55.76" E

Course from PT SW LT 01 46 to PC SW LT 01 49 S 30° 28' 22.14" E Dist 11.7416

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
HORIZONTAL ALIGNMENT DATA

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		40

DATE: Nov. 02, 2021 - 11:20:49 AM
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HORIZONTAL ALIGNMENT SW LT 01 (CONTINUED)

Curve Data

Curve SW LT 01 49
P.I. Station 315+15.91 N 13,981,626.6620 E 2,258,523.1008
Delta = 39° 27' 54.84" (RT)
Degree = 286° 28' 44.03"
Tangent = 7.1739
Length = 13.7760
Radius = 20.0000
External = 1.2477
Long Chord = 13.5052
Mid. Ord. = 1.1744
P.C. Station 315+08.74 N 13,981,632.8450 E 2,258,519.4628
P.T. Station 315+22.51 N 13,981,619.5763 E 2,258,521.9795
C.C. N 13,981,622.7024 E 2,258,502.2254
Back = S 30° 28' 22.14" E
Ahead = S 8° 59' 32.70" W
Chord Bear = S 10° 44' 24.72" E

Course from PT SW LT 01 49 to 29 S 8° 59' 32.70" W Dist 32.6925

Point 29 N 13,981,587.2856 E 2,258,516.8696 Sta 315+55.21

Course from 29 to 30 S 1° 19' 50.92" E Dist 48.4690

Point 30 N 13,981,538.8297 E 2,258,517.9953 Sta 316+03.68

Course from 30 to PC SW LT 01 56 S 2° 55' 14.88" W Dist 36.5394

Curve Data

Curve SW LT 01 56
P.I. Station 316+60.62 N 13,981,481.9560 E 2,258,515.0935
Delta = 54° 03' 42.70" (LT)
Degree = 143° 14' 22.02"
Tangent = 20.4082
Length = 37.7423
Radius = 40.0000
External = 4.9054
Long Chord = 36.3577
Mid. Ord. = 4.3695
P.C. Station 316+40.22 N 13,981,502.3377 E 2,258,516.1334
P.T. Station 316+77.96 N 13,981,469.1518 E 2,258,530.9852
C.C. N 13,981,500.2995 E 2,258,556.0814
Back = S 2° 55' 14.88" W
Ahead = S 51° 08' 27.83" E
Chord Bear = S 24° 06' 36.48" E

Course from PT SW LT 01 56 to PC SW LT 01 59 S 51° 08' 27.82" E Dist 33.7571

Curve Data

Curve SW LT 01 59
P.I. Station 317+27.99 N 13,981,437.7610 E 2,258,569.9453
Delta = 49° 52' 41.58" (RT)
Degree = 163° 42' 08.02"
Tangent = 16.2755
Length = 30.4689
Radius = 35.0000
External = 3.5991
Long Chord = 29.5158
Mid. Ord. = 3.2635
P.C. Station 317+11.71 N 13,981,447.9724 E 2,258,557.2717
P.T. Station 317+42.18 N 13,981,421.4895 E 2,258,570.3040
C.C. N 13,981,420.7181 E 2,258,535.3125
Back = S 51° 08' 27.83" E
Ahead = S 1° 15' 46.25" E
Chord Bear = S 26° 12' 07.04" E

Course from PT SW LT 01 59 to PC SW LT 01 62 S 1° 15' 46.25" E Dist 12.7446

Curve Data

Curve SW LT 01 62
P.I. Station 317+63.80 N 13,981,399.8748 E 2,258,570.7805
Delta = 25° 01' 14.03" (LT)
Degree = 143° 14' 22.02"
Tangent = 8.8753
Length = 17.4676
Radius = 40.0000
External = 0.9728
Long Chord = 17.3292
Mid. Ord. = 0.9497
P.C. Station 317+54.93 N 13,981,408.7480 E 2,258,570.5849
P.T. Station 317+72.40 N 13,981,391.9171 E 2,258,574.7106
C.C. N 13,981,409.6295 E 2,258,610.5751
Back = S 1° 15' 46.25" E
Ahead = S 26° 17' 00.28" E
Chord Bear = S 13° 46' 23.27" E

Course from PT SW LT 01 62 to 31 S 26° 17' 00.28" E Dist 39.1430

Point 31 N 13,981,356.8208 E 2,258,592.0435 Sta 318+11.54

Course from 31 to 32 S 17° 08' 06.29" E Dist 36.2079

Point 32 N 13,981,322.2201 E 2,258,602.7113 Sta 318+47.75

Course from 32 to PC SW LT 01 69 S 10° 51' 29.93" E Dist 72.4093

Curve Data

Curve SW LT 01 69
P.I. Station 319+30.41 N 13,981,241.0335 E 2,258,618.2842
Delta = 28° 45' 55.46" (LT)
Degree = 143° 14' 22.02"
Tangent = 10.2574
Length = 20.0820
Radius = 40.0000
External = 1.2942
Long Chord = 19.8718
Mid. Ord. = 1.2537
P.C. Station 319+20.16 N 13,981,251.1072 E 2,258,616.3519
P.T. Station 319+40.24 N 13,981,233.1327 E 2,258,624.8257
C.C. N 13,981,258.6424 E 2,258,655.6357
Back = S 10° 51' 29.93" E
Ahead = S 39° 37' 25.40" E
Chord Bear = S 25° 14' 27.67" E

HORIZONTAL ALIGNMENT SW LT 01 (CONTINUED)

Curve Data

Curve SW LT 01 70
P.I. Station 319+76.63 N 13,981,205.1000 E 2,258,648.0360
Delta = 20° 37' 36.23" (RT)
Degree = 28° 38' 52.40"
Tangent = 36.3944
Length = 72.0009
Radius = 200.0000
External = 3.2844
Long Chord = 71.6127
Mid. Ord. = 3.2313
P.C. Station 319+40.24 N 13,981,233.1327 E 2,258,624.8257
P.T. Station 320+12.24 N 13,981,170.6878 E 2,258,659.8830
C.C. N 13,981,105.5841 E 2,258,470.7759
Back = S 39° 37' 25.40" E
Ahead = S 18° 59' 49.17" E
Chord Bear = S 29° 18' 37.28" E

Curve Data

Curve SW LT 01 71
P.I. Station 320+17.00 N 13,981,166.1848 E 2,258,661.4333
Delta = 15° 29' 49.85" (RT)
Degree = 163° 42' 08.02"
Tangent = 4.7624
Length = 9.4667
Radius = 35.0000
External = 0.3225
Long Chord = 9.4379
Mid. Ord. = 0.3196
P.C. Station 320+12.24 N 13,981,170.6878 E 2,258,659.8830
P.T. Station 320+21.71 N 13,981,161.4313 E 2,258,661.7240
C.C. N 13,981,159.2947 E 2,258,626.7893
Back = S 18° 59' 49.17" E
Ahead = S 3° 29' 59.32" E
Chord Bear = S 11° 14' 54.24" E

Course from PT SW LT 01 71 to 33 S 3° 29' 59.32" E Dist 24.9976

Point 33 N 13,981,136.4803 E 2,258,663.2500 Sta 320+46.70

Course from 33 to PC SW LT 01 76 S 15° 59' 41.42" E Dist 26.2099

Curve Data

Curve SW LT 01 76
P.I. Station 320+99.11 N 13,981,086.1037 E 2,258,677.6903
Delta = 73° 37' 32.60" (RT)
Degree = 163° 42' 08.02"
Tangent = 26.1956
Length = 44.9754
Radius = 35.0000
External = 8.7174
Long Chord = 41.9442
Mid. Ord. = 6.9791
P.C. Station 320+72.91 N 13,981,111.2851 E 2,258,670.4721
P.T. Station 321+17.89 N 13,981,072.0793 E 2,258,655.5651
C.C. N 13,981,101.6409 E 2,258,636.8271
Back = S 15° 59' 41.42" E
Ahead = S 57° 37' 51.18" W
Chord Bear = S 20° 49' 04.88" W

Course from PT SW LT 01 76 to PC SW LT 01 79 S 57° 37' 51.18" W Dist 42.9515

Curve Data

Curve SW LT 01 79
P.I. Station 321+95.75 N 13,981,030.3936 E 2,258,589.8007
Delta = 82° 13' 41.61" (LT)
Degree = 143° 14' 22.02"
Tangent = 34.9116
Length = 57.4061
Radius = 40.0000
External = 13.0925
Long Chord = 52.6049
Mid. Ord. = 9.8639
P.C. Station 321+60.84 N 13,981,049.0843 E 2,258,619.2875
P.T. Station 322+18.25 N 13,980,998.6501 E 2,258,604.3322
C.C. N 13,981,015.2996 E 2,258,640.7024
Back = S 57° 37' 51.18" W
Ahead = S 24° 35' 50.44" E
Chord Bear = S 16° 31' 00.37" W

Course from PT SW LT 01 79 to PC SW LT 01 82 S 24° 35' 50.44" E Dist 4.3300

Curve Data

Curve SW LT 01 82
P.I. Station 322+73.02 N 13,980,948.8442 E 2,258,627.1323
Delta = 87° 10' 19.37" (RT)
Degree = 108° 06' 18.88"
Tangent = 50.4466
Length = 80.6363
Radius = 53.0000
External = 20.1701
Long Chord = 73.0809
Mid. Ord. = 14.6100
P.C. Station 322+22.58 N 13,980,994.7130 E 2,258,606.1345
P.T. Station 323+03.21 N 13,980,925.6089 E 2,258,582.3553
C.C. N 13,980,972.6523 E 2,258,557.9440
Back = S 24° 35' 50.44" E
Ahead = S 62° 34' 28.94" W
Chord Bear = S 18° 59' 19.25" W

Course from PT SW LT 01 82 to PC SW LT 01 85 S 62° 34' 28.94" W Dist 20.6198

HORIZONTAL ALIGNMENT SW LT 01 (CONTINUED)

Curve Data

Curve SW LT 01 85
P.I. Station 323+36.38 N 13,980,910.3344 E 2,258,552.919
Delta = 64° 11' 13.79" (LT)
Degree = 286° 28' 44.03"
Tangent = 12.5429
Length = 22.4055
Radius = 20.0000
External = 3.6077
Long Chord = 21.2521
Mid. Ord. = 3.0564
P.C. Station 323+23.83 N 13,980,916.1116 E 2,258,564.053
P.T. Station 323+46.24 N 13,980,897.7966 E 2,258,553.272
C.C. N 13,980,898.3593 E 2,258,573.264
Back = S 62° 34' 28.94" W
Ahead = S 1° 36' 44.85" E
Chord Bear = S 30° 28' 52.04" W

Course from PT SW LT 01 85 to 34 S 1° 36' 44.85" E Dist 48.0771

Point 34 N 13,980,849.7385 E 2,258,554.6256 Sta 323+94.31

Course from 34 to 35 S 9° 32' 06.14" W Dist 13.7090

Point 35 N 13,980,836.2189 E 2,258,552.3547 Sta 324+08.02

Course from 35 to 36 S 1° 15' 46.25" E Dist 52.8734

Point 36 N 13,980,783.3584 E 2,258,553.5199 Sta 324+60.90

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Ending chain SW LT 01 description

HORIZONTAL ALIGNMENT SW RT 01

Chain SW RT 01 contains:
51 52 CUR SW RT 01 5 CUR SW RT 01 8 CUR SW RT 01 11 CUR SW RT 01 14 CUR SW RT 01 17 CUR SW RT 01 20 CUR SW RT 01 23 CUR SW RT 01 26 CUR SW RT 01 29 CUR SW RT 01 32 53 54 55 56

Beginning chain SW RT 01 description
Feature: Geom Secondary

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Point 51 N 13,983,133.1121 E 2,258,396.5426 Sta 400+00.00

Course from 51 to 52 S 0° 55' 03.37" E Dist 102.9736

Point 52 N 13,983,030.1518 E 2,258,398.1917 Sta 401+02.97

Course from 52 to PC SW RT 01 5 S 1° 15' 35.47" E Dist 13.1580

Curve Data

Curve SW RT 01 5
P.I. Station 401+17.03 N 13,983,016.0969 E 2,258,398.5008
Delta = 10° 17' 16.01" (LT)
Degree = 572° 57' 28.06"
Tangent = 0.9002
Length = 1.7956
Radius = 10.0000
External = 0.0404
Long Chord = 1.7931
Mid. Ord. = 0.0403
P.C. Station 401+16.13 N 13,983,016.9969 E 2,258,398.4810
P.T. Station 401+17.93 N 13,983,015.2150 E 2,258,398.6810
C.C. N 13,983,017.2168 E 2,258,408.4785
Back = S 1° 15' 35.47" E
Ahead = S 11° 32' 51.48" E
Chord Bear = S 6° 24' 13.47" E

Course from PT SW RT 01 5 to PC SW RT 01 8 S 11° 32' 51.48" E Dist 59.4724

Curve Data

Curve SW RT 01 8
P.I. Station 401+78.75 N 13,982,955.6208 E 2,258,410.8571
Delta = 10° 18' 30.11" (RT)
Degree = 381° 58' 18.71"
Tangent = 1.3530
Length = 2.6987
Radius = 15.0000
External = 0.0609
Long Chord = 2.6951
Mid. Ord. = 0.0607
P.C. Station 401+77.40 N 13,982,956.9464 E 2,258,410.5863
P.T. Station 401+80.10 N 13,982,954.2681 E 2,258,410.8864
C.C. N 13,982,953.9437 E 2,258,395.8895
Back = S 11° 32' 51.48" E
Ahead = S 1° 14' 21.37" E
Chord Bear = S 6° 23' 36.42" E

Course from PT SW RT 01 8 to PC SW RT 01 11 S 1° 14' 21.37" E Dist 57.8069

Curve Data

Curve SW RT 01 11
P.I. Station 402+40.57 N 13,982,893.8095 E 2,258,412.1943
Delta = 20° 09' 17.33" (RT)
Degree = 381° 58' 18.71"
Tangent = 2.6658
Length = 5.2765
Radius = 15.0000
External = 0.2350
Long Chord = 5.2494
Mid. Ord. = 0.2314
P.C. Station 402+37.91 N 13,982,896.4747 E 2,258,412.1366
P.T. Station 402+43.18 N 13,982,891.2876 E 2,258,411.3301
C.C. N 13,982,896.1503 E 2,258,397.1401
Back = S 1° 14' 21.37" E
Ahead = S 18° 54' 55.97" W
Chord Bear = S 8° 50' 17.30" W

Course from PT SW RT 01 11 to PC SW RT 01 14 S 18° 54' 55.96" W Dist 33.2865

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
HORIZONTAL ALIGNMENT DATA

SHEET 3 OF 4

© 2021	CONT	SECT	JOB	HIGHWAY
	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		41

DATE: Nov. 02, 2021 - 11:20:50 AM
FILE: N:\Plan Set\3. Roadway\DSP21528_ROW_HAD03.dgn

HORIZONTAL ALIGNMENT SW RT 01 (CONTINUED)

Curve Data

Curve SW RT 01 14
P.I. Station = 402+78.25 N 13,982,858.1175 E 2,258,399.9634
Delta = 20° 09' 17.33" (LT)
Degree = 572° 57' 28.06"
Tangent = 1.7772
Length = 3.5177
Radius = 10.0000
External = 0.1567
Long Chord = 3.4996
Mid. Ord. = 0.1543
P.C. Station 402+76.47 N 13,982,859.7987 E 2,258,400.5395
P.T. Station 402+79.99 N 13,982,856.3407 E 2,258,400.0018
C.C. N 13,982,856.5570 E 2,258,409.9995
Back = S 18° 54' 55.97" W
Ahead = S 1° 14' 21.37" E
Chord Bear = S 8° 50' 17.30" W

Course from PT SW RT 01 14 to PC SW RT 01 17 S 1° 14' 21.37" E Dist 214.3067

Curve Data

Curve SW RT 01 17
P.I. Station = 404+97.28 N 13,982,639.0996 E 2,258,404.7013
Delta = 33° 14' 33.34" (LT)
Degree = 572° 57' 28.06"
Tangent = 2.9852
Length = 5.8019
Radius = 10.0000
External = 0.4361
Long Chord = 5.7209
Mid. Ord. = 0.4178
P.C. Station 404+94.29 N 13,982,642.0841 E 2,258,404.6367
P.T. Station 405+00.09 N 13,982,636.6389 E 2,258,406.3913
C.C. N 13,982,642.3004 E 2,258,414.6344
Back = S 1° 14' 21.37" E
Ahead = S 34° 28' 54.71" E
Chord Bear = S 17° 51' 38.04" E

Course from PT SW RT 01 17 to PC SW RT 01 20 S 34° 28' 54.71" E Dist 27.1969

Curve Data

Curve SW RT 01 20
P.I. Station = 405+31.77 N 13,982,610.5293 E 2,258,424.3238
Delta = 33° 14' 33.34" (RT)
Degree = 381° 58' 18.71"
Tangent = 4.4778
Length = 8.7029
Radius = 15.0000
External = 0.6541
Long Chord = 8.5813
Mid. Ord. = 0.6268
P.C. Station 405+27.29 N 13,982,614.2204 E 2,258,421.7887
P.T. Station 405+35.99 N 13,982,606.0526 E 2,258,424.4206
C.C. N 13,982,605.7282 E 2,258,409.4242
Back = S 34° 28' 54.71" E
Ahead = S 1° 14' 21.37" E
Chord Bear = S 17° 51' 38.04" E

Course from PT SW RT 01 20 to PC SW RT 01 23 S 1° 14' 21.37" E Dist 180.7539

Curve Data

Curve SW RT 01 23
P.I. Station = 407+19.59 N 13,982,422.4971 E 2,258,428.3914
Delta = 21° 28' 31.13" (RT)
Degree = 381° 58' 18.71"
Tangent = 2.8445
Length = 5.6222
Radius = 15.0000
External = 0.2673
Long Chord = 5.5894
Mid. Ord. = 0.2626
P.C. Station 407+16.75 N 13,982,425.3410 E 2,258,428.3299
P.T. Station 407+22.37 N 13,982,419.8282 E 2,258,427.4076
C.C. N 13,982,425.0166 E 2,258,413.3334
Back = S 1° 14' 21.37" E
Ahead = S 20° 14' 09.76" W
Chord Bear = S 9° 29' 54.20" W

Course from PT SW RT 01 23 to PC SW RT 01 26 S 20° 14' 09.76" W Dist 8.9166

Curve Data

Curve SW RT 01 26
P.I. Station = 407+33.18 N 13,982,409.6827 E 2,258,423.6675
Delta = 21° 28' 31.13" (LT)
Degree = 572° 57' 28.06"
Tangent = 1.8963
Length = 3.7481
Radius = 10.0000
External = 0.1782
Long Chord = 3.7262
Mid. Ord. = 0.1751
P.C. Station 407+31.29 N 13,982,411.4620 E 2,258,424.3234
P.T. Station 407+35.04 N 13,982,407.7868 E 2,258,423.7085
C.C. N 13,982,408.0031 E 2,258,433.7062
Back = S 20° 14' 09.76" W
Ahead = S 1° 14' 21.37" E
Chord Bear = S 9° 29' 54.20" W

Course from PT SW RT 01 26 to PC SW RT 01 29 S 1° 14' 21.37" E Dist 4.4292

Curve Data

Curve SW RT 01 29
P.I. Station = 407+41.37 N 13,982,401.4585 E 2,258,423.8454
Delta = 21° 31' 20.90" (LT)
Degree = 572° 57' 28.06"
Tangent = 1.9006
Length = 3.7564
Radius = 10.0000
External = 0.1790
Long Chord = 3.7343
Mid. Ord. = 0.1759
P.C. Station 407+39.46 N 13,982,403.3586 E 2,258,423.8043
P.T. Station 407+43.22 N 13,982,399.7059 E 2,258,424.5807
C.C. N 13,982,403.5749 E 2,258,433.8020
Back = S 1° 14' 21.37" E
Ahead = S 22° 45' 42.27" E
Chord Bear = S 12° 00' 01.82" E

Course from PT SW RT 01 29 to PC SW RT 01 32 S 22° 45' 42.27" E Dist 8.8840

HORIZONTAL ALIGNMENT SW RT 01 (CONTINUED)

Curve Data

Curve SW RT 01 32
P.I. Station = 407+54.96 N 13,982,388.8808 E 2,258,429.1227
Delta = 21° 33' 18.44" (RT)
Degree = 381° 58' 18.71"
Tangent = 2.8553
Length = 5.6431
Radius = 15.0000
External = 0.2693
Long Chord = 5.6099
Mid. Ord. = 0.2646
P.C. Station 407+52.10 N 13,982,391.5138 E 2,258,428.0180
P.T. Station 407+57.75 N 13,982,386.0261 E 2,258,429.1828
C.C. N 13,982,385.7103 E 2,258,414.1861
Back = S 22° 45' 42.27" E
Ahead = S 1° 12' 23.82" E
Chord Bear = S 11° 59' 03.04" E

Course from PT SW RT 01 32 to 53 S 1° 12' 23.82" E Dist 107.9232

Point 53 N 13,982,278.1269 E 2,258,431.4554 Sta 408+65.67

Course from 53 to 54 S 1° 59' 19.99" W Dist 88.5479

Point 54 N 13,982,189.6323 E 2,258,428.3823 Sta 409+54.22

Course from 54 to 55 S 1° 08' 59.79" E Dist 43.6090

Point 55 N 13,982,146.0321 E 2,258,429.2575 Sta 409+97.83

Course from 55 to 56 S 0° 18' 02.74" W Dist 103.6697

Point 56 N 13,982,042.3638 E 2,258,428.7133 Sta 411+01.50

Ending chain SW RT 01 description

HORIZONTAL ALIGNMENT SW RT 02

Chain SW_RT_02 contains:
40 41

Beginning chain SW_RT_02 description

Point 40 N 13,981,076.1249 E 2,258,465.7278 Sta 500+00.00

Course from 40 to 41 S 1° 38' 32.41" E Dist 269.3748

Point 41 N 13,980,806.8607 E 2,258,473.4482 Sta 502+69.37

Ending chain SW_RT_02 description

HORIZONTAL ALIGNMENT CONC SUP

Chain CONC_SUP contains:
CUR CONC_SUP_1 CUR CONC_SUP_4 CUR CONC_SUP_7 CUR CONC_SUP_10 CUR CONC_SUP_11 65

Beginning chain CONC_SUP description
Feature: Geom_Secondary

Curve Data

Curve CONC_SUP_1
P.I. Station = 250+41.42 N 13,984,155.2860 E 2,258,473.1026
Delta = 91° 59' 45.09" (RT)
Degree = 143° 14' 22.02"
Tangent = 41.4182
Length = 64.2252
Radius = 40.0000
External = 17.5801
Long Chord = 57.5452
Mid. Ord. = 12.2126
P.C. Station 250+00.00 N 13,984,131.6319 E 2,258,439.1034
P.T. Station 250+64.23 N 13,984,120.4836 E 2,258,495.5583
C.C. N 13,984,098.7968 E 2,258,461.9476
Back = N 55° 10' 21.70" E
Ahead = S 32° 49' 53.21" E
Chord Bear = S 78° 49' 45.76" E

Course from PT CONC_SUP_1 to PC CONC_SUP_4 S 32° 49' 53.21" E Dist 5.5827

Curve Data

Curve CONC_SUP_4
P.I. Station = 250+80.09 N 13,984,107.1571 E 2,258,504.1570
Delta = 50° 04' 42.22" (RT)
Degree = 260° 26' 07.30"
Tangent = 10.2771
Length = 19.2287
Radius = 22.0000
External = 2.2821
Long Chord = 18.6225
Mid. Ord. = 2.0676
P.C. Station 250+69.81 N 13,984,115.7926 E 2,258,498.5851
P.T. Station 250+89.04 N 13,984,097.3421 E 2,258,501.1099
C.C. N 13,984,103.8649 E 2,258,480.0992
Back = S 32° 49' 53.21" E
Ahead = S 17° 14' 49.01" W
Chord Bear = S 7° 47' 32.10" E

Course from PT CONC_SUP_4 to PC CONC_SUP_7 S 17° 14' 49.01" W Dist 6.2766

HORIZONTAL ALIGNMENT CONC SUP (CONTINUED)

Curve Data

Curve CONC_SUP_7
P.I. Station = 251+04.65 N 13,984,082.4310 E 2,258,496.4808
Delta = 34° 34' 26.76" (LT)
Degree = 190° 59' 09.35"
Tangent = 9.3365
Length = 18.1030
Radius = 30.0000
External = 1.4193
Long Chord = 17.8295
Mid. Ord. = 1.3552
P.C. Station 250+95.31 N 13,984,091.3477 E 2,258,499.2490
P.T. Station 251+13.42 N 13,984,073.5182 E 2,258,499.2615
C.C. N 13,984,082.4530 E 2,258,527.9001
Back = S 17° 14' 49.01" W
Ahead = S 17° 19' 37.75" E
Chord Bear = S 0° 02' 24.37" E

Course from PT CONC_SUP_7 to PC CONC_SUP_10 S 17° 19' 37.75" E Dist 4.5093

Curve Data

Curve CONC_SUP_10
P.I. Station = 251+21.62 N 13,984,065.6900 E 2,258,501.7037
Delta = 11° 05' 43.68" (RT)
Degree = 150° 46' 42.12"
Tangent = 3.6909
Length = 7.3588
Radius = 38.0000
External = 0.1788
Long Chord = 7.3473
Mid. Ord. = 0.1780
P.C. Station 251+17.93 N 13,984,069.2135 E 2,258,500.6045
P.T. Station 251+25.28 N 13,984,062.0209 E 2,258,502.1044
C.C. N 13,984,057.8960 E 2,258,464.3289
Back = S 17° 19' 37.75" E
Ahead = S 6° 13' 54.08" E
Chord Bear = S 11° 46' 45.92" E

Curve Data

Curve CONC_SUP_11
P.I. Station = 251+30.92 N 13,984,056.4191 E 2,258,502.7161
Delta = 58° 48' 12.36" (LT)
Degree = 572° 57' 28.06"
Tangent = 5.6351
Length = 10.2631
Radius = 10.0000
External = 1.4784
Long Chord = 9.8186
Mid. Ord. = 1.2880
P.C. Station 251+25.28 N 13,984,062.0209 E 2,258,502.1044
P.T. Station 251+35.55 N 13,984,054.0407 E 2,258,507.8247
C.C. N 13,984,063.1064 E 2,258,512.0453
Back = S 6° 13' 54.08" E
Ahead = S 65° 02' 06.45" E
Chord Bear = S 35° 38' 00.26" E

Course from PT CONC_SUP_11 to 65 S 65° 02' 06.45" E Dist 29.4675

Point 65 N 13,984,041.6036 E 2,258,534.5389 Sta 251+65.01

Ending chain CONC_SUP description

HORIZONTAL ALIGNMENT SW E W

Chain SW E W contains:
10 11

Beginning chain SW E W description

Point 10 N 13,980,830.0585 E 2,258,563.0109 Sta 600+00.00

Course from 10 to 11 S 88° 22' 57.53" W Dist 109.3858

Point 11 N 13,980,826.9711 E 2,258,453.6687 Sta 601+09.39

Ending chain SW E W description

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER
Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
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Web - www.freese.com
TX FIRM F-2144

ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
HORIZONTAL ALIGNMENT DATA

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		42

DATE: Nov. 02, 2021 - 11:20:51 AM
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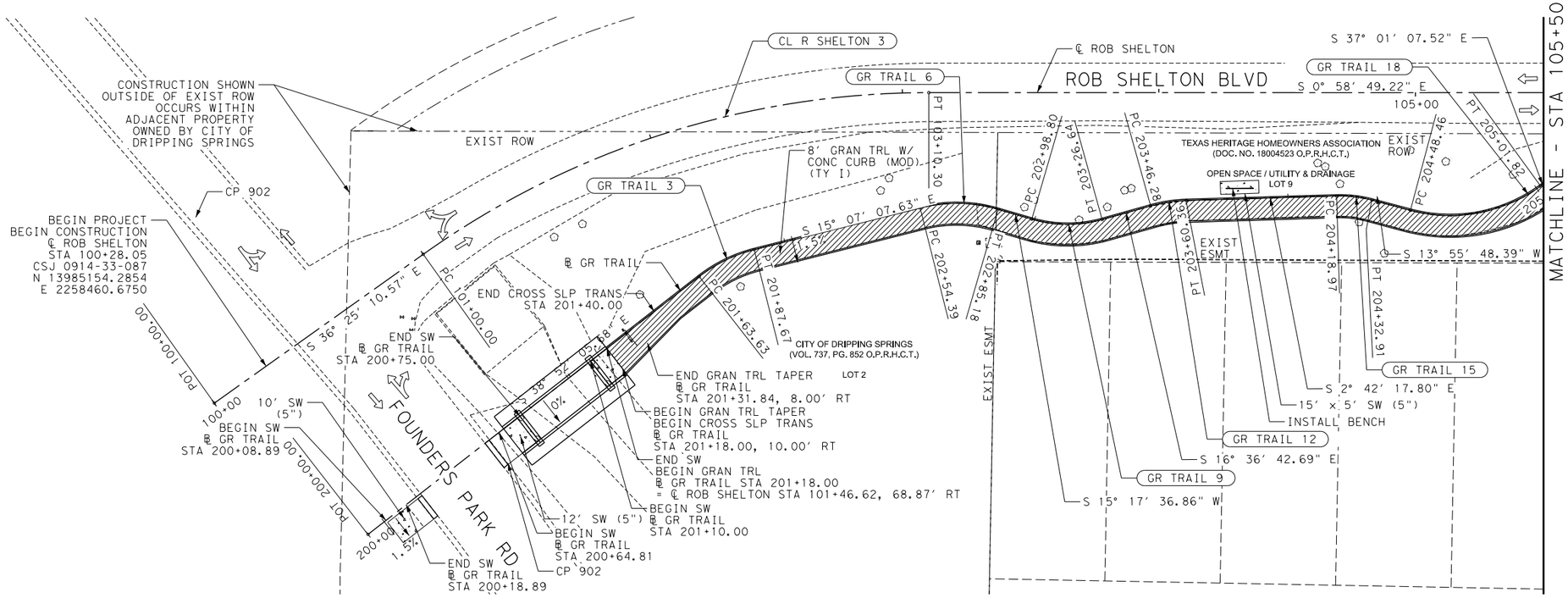


LEGEND

- EXIST ROW
- EXIST ESMT
- PROP ESMT
- PROPERTY LINE
- PROP SIDEWALK
- PROP GRANITE TRAIL
- EXIST TRAFFIC DIRECTION
- (X) CURVE CALLOUT
- CRUSHED GRANITE TO REMAIN. REPAIR AND RESTORE DISTURBED GRANITE AS NEEDED.

NOTES:

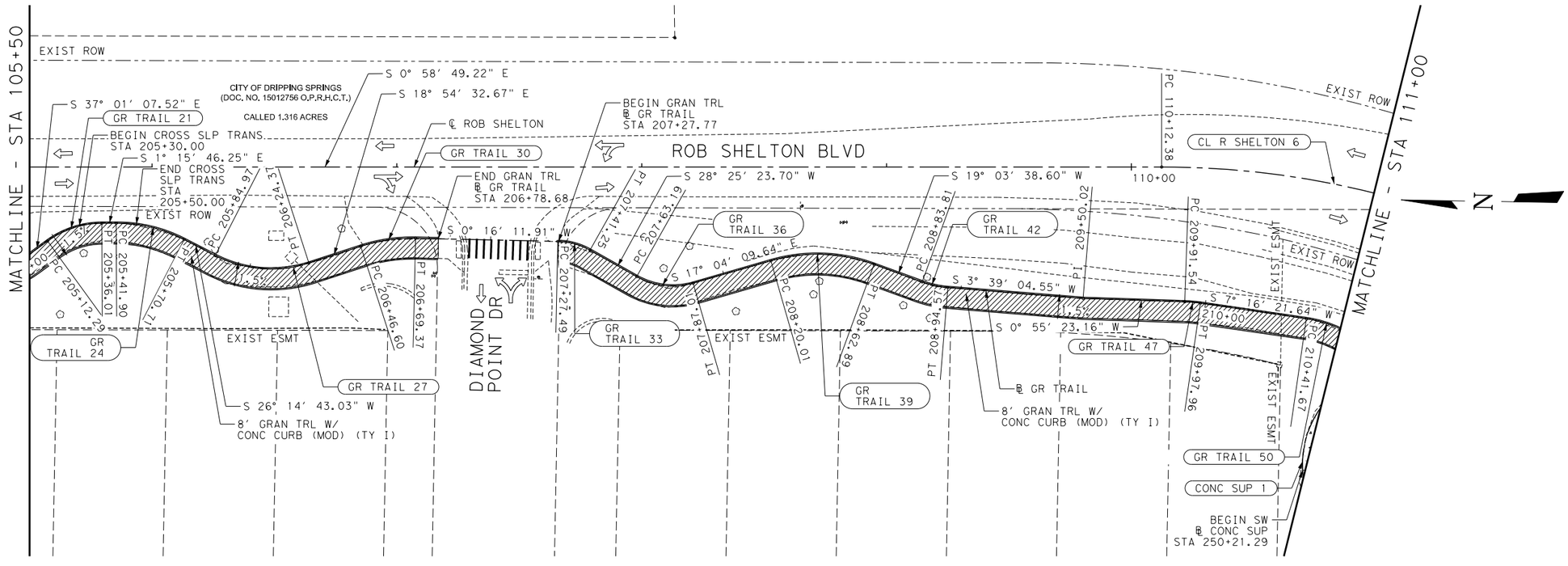
1. DIMS TO CURB OR HANDRAIL ARE SHOWN TO NOMINAL FACE.
2. REFER TO HORIZONTAL ALIGNMENT DATA SHEETS FOR CURVE DATA & ALIGNMENT INFO.
3. PROP SW & GRAN TRL TO MATCH EXIST GROUND EXCEPT IN AREAS NOTED ON INTERSECTION LAYOUT & PROFILE SHEETS.

N

0 25' 50'
HORIZONTAL SCALE

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 2/10/2022



REV	DATE	DESCRIPTION

DRIPPING SPRINGS
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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD ROADWAY PLANS BEGIN TO STA 111+00

SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		43

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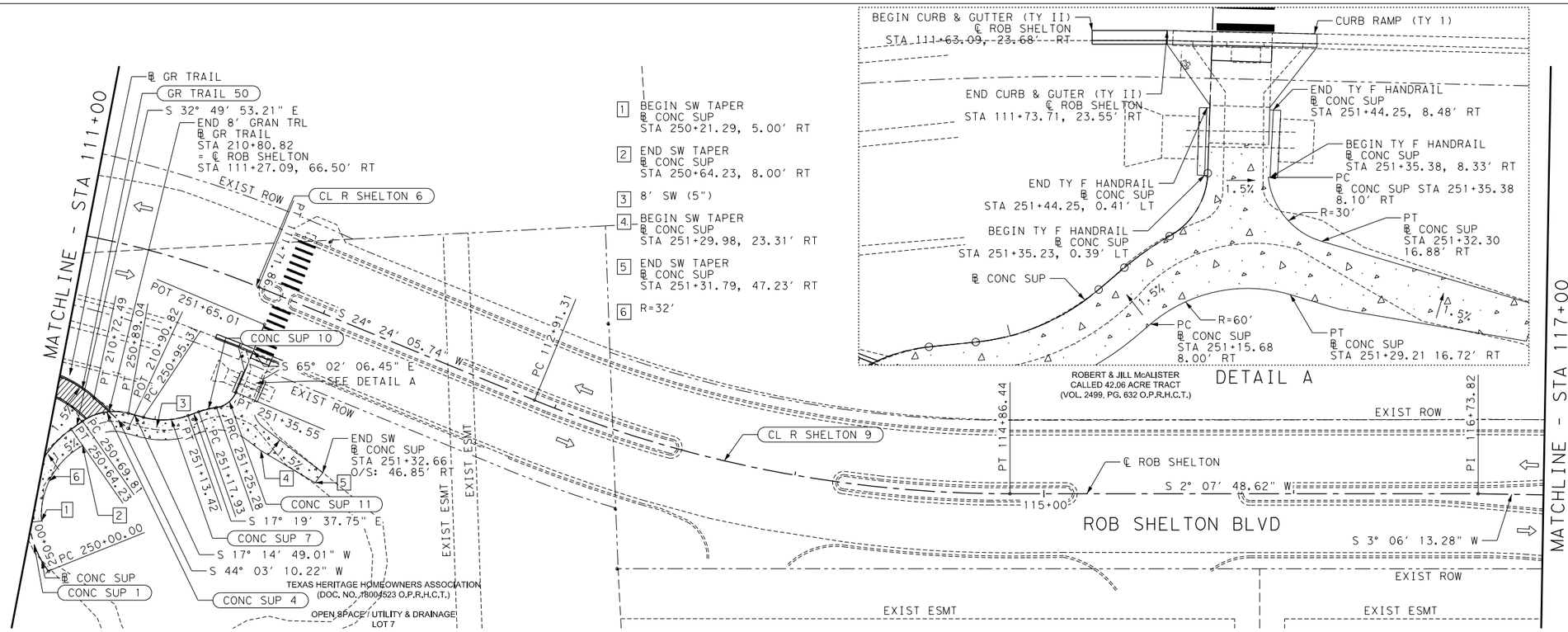

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD ROADWAY PLANS STA 111+00 TO STA 123+00

SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		44

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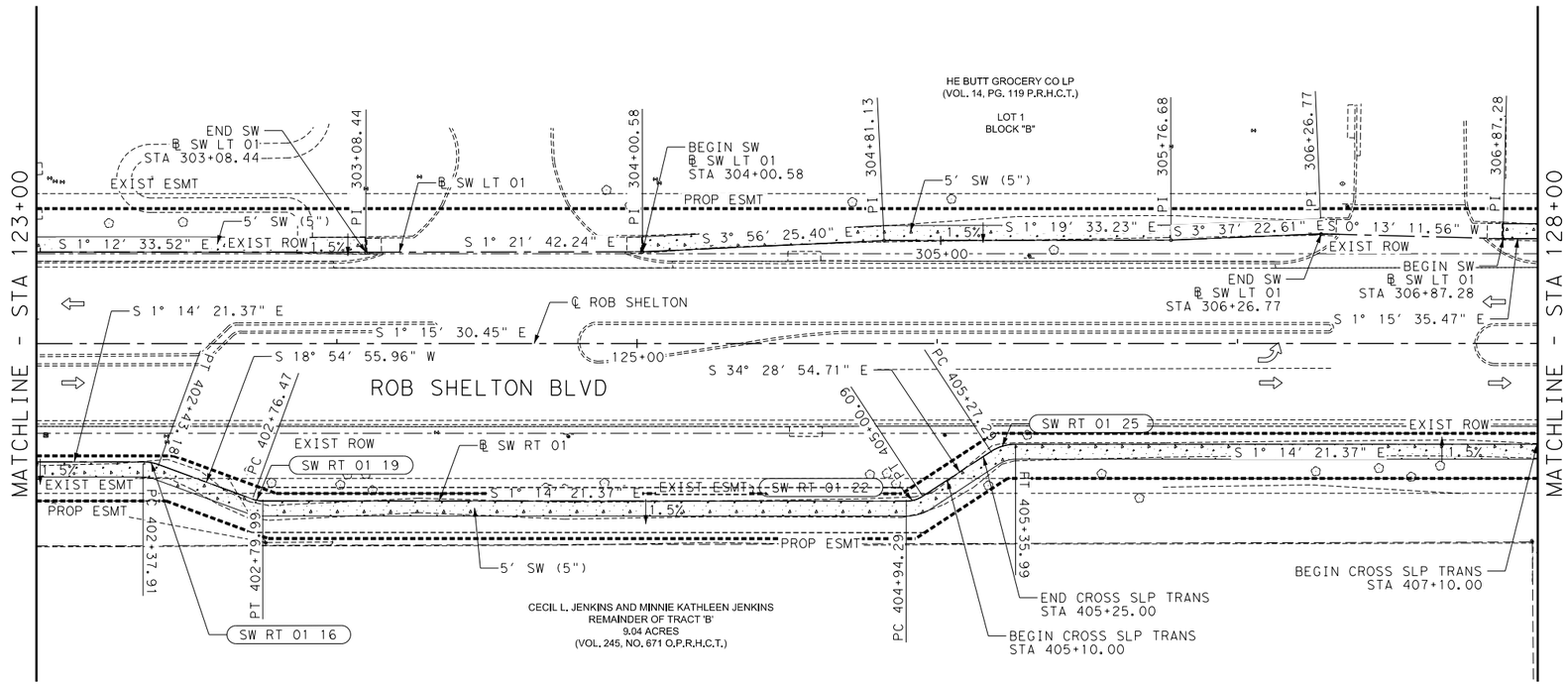

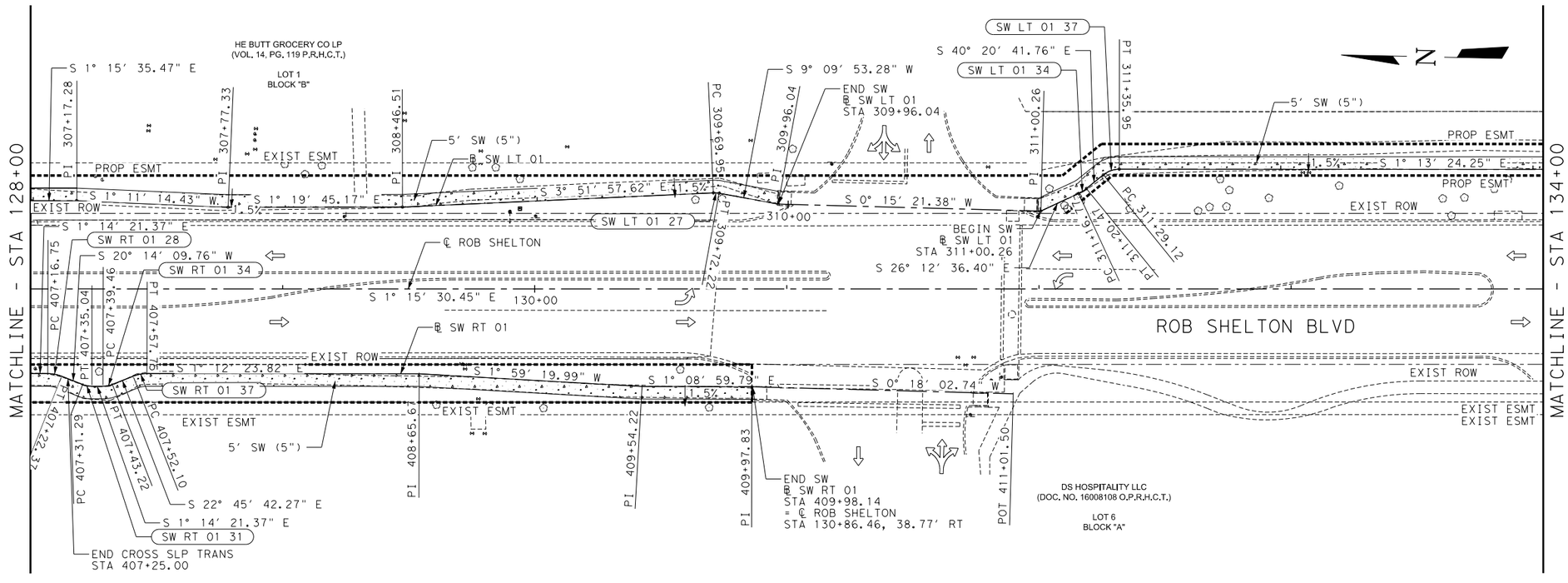

LEGEND

- EXIST ROW
- EXIST ESMT
- PROP ESMT
- PROPERTY LINE
- PROP SIDEWALK
- PROP GRANITE TRAIL
- EXIST TRAFFIC DIRECTION
- (X) CURVE CALLOUT
- CRUSHED GRANITE TO REMAIN. REPAIR AND RESTORE DISTURBED GRANITE AS NEEDED.

NOTES:

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0 25' 50'
HORIZONTAL SCALE

STATE OF TEXAS
ANDREA BRYANT
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Andrea Bryant 2/10/2022

REV	DATE	DESCRIPTION

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD ROADWAY PLANS STA 123+00 TO STA 134+00

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		45

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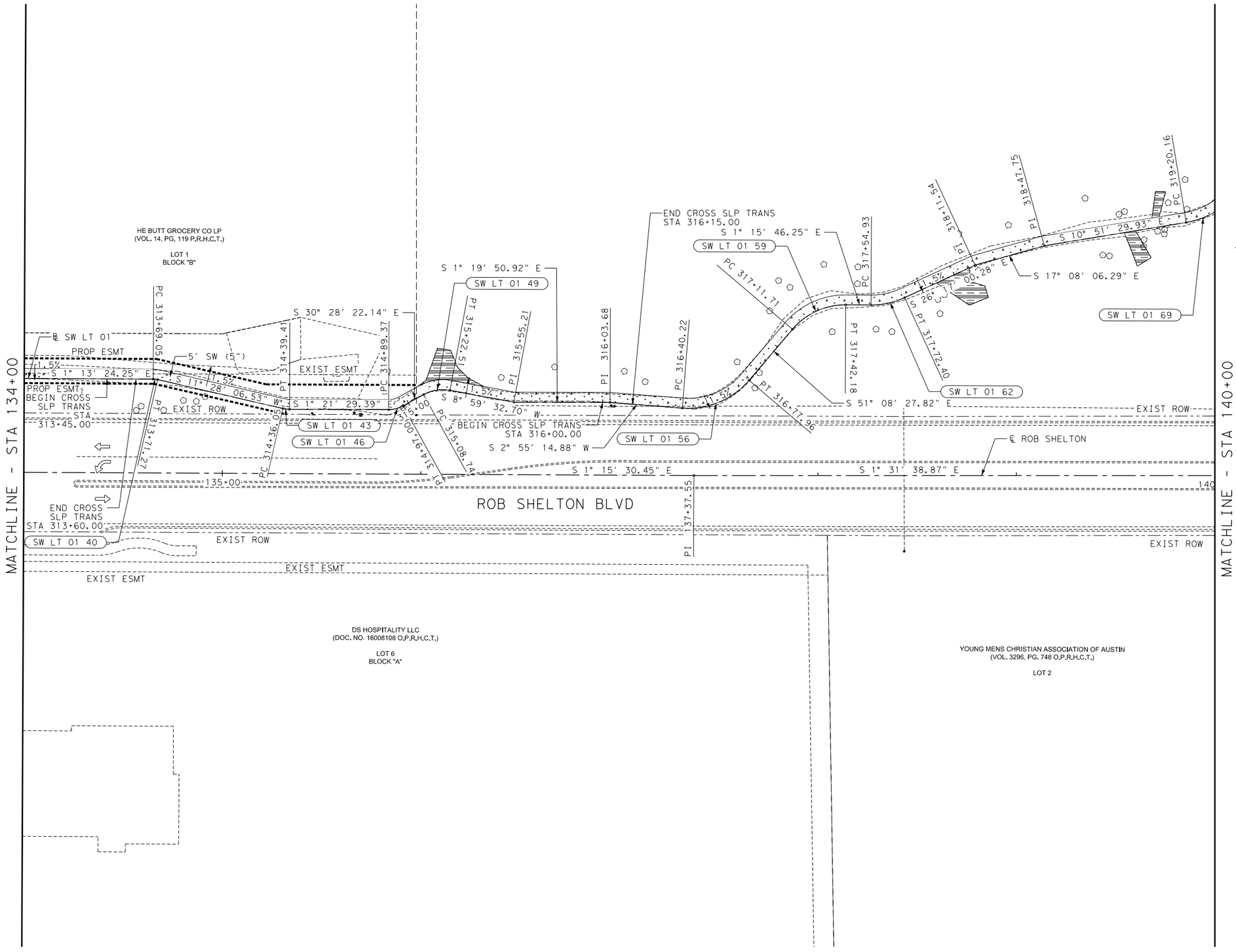

LEGEND

- EXIST ROW
- EXIST ESMT
- PROP ESMT
- PROPERTY LINE
- PROP SIDEWALK
- PROP GRANITE TRAIL
- EXIST TRAFFIC DIRECTION
- (X) CURVE CALLOUT
- CRUSHED GRANITE TO REMAIN. REPAIR AND RESTORE DISTURBED GRANITE AS NEEDED.

NOTES:

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N

0 25' 50'
HORIZONTAL SCALE

STATE OF TEXAS
ANDREA BRYANT
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PROFESSIONAL ENGINEER

Andrea Bryant 2/10/2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD ROADWAY PLANS STA 134+00 TO STA 140+00

SHEET 4 OF 5

© 2021	CONT	SECT	JOB	HIGHWAY
	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		46

DATE: Feb. 10, 2022 - 01:20:46 PM
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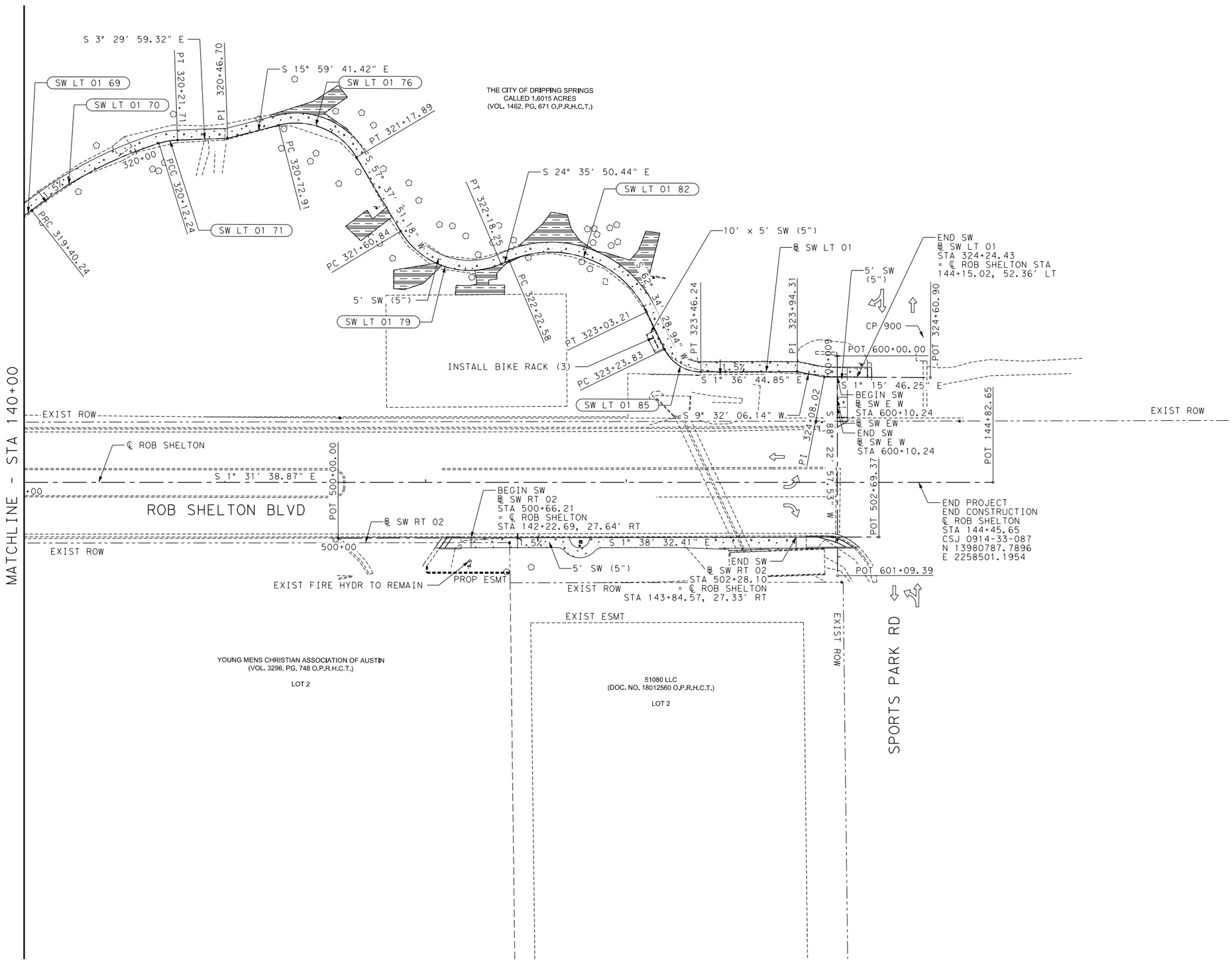

LEGEND

- EXIST ROW
- EXIST ESMT
- PROP ESMT
- PROPERTY LINE
- PROP SIDEWALK
- PROP GRANITE TRAIL
- EXIST TRAFFIC DIRECTION
- (X) CURVE CALLOUT
- CRUSHED GRANITE TO REMAIN. REPAIR AND RESTORE DISTURBED GRANITE AS NEEDED.

NOTES:

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N

0 25' 50'
HORIZONTAL SCALE

STATE OF TEXAS
ANDREA BRYANT
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PROFESSIONAL ENGINEER

Andrea Bryant 2/10/2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
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ROB SHELTON PEDESTRIAN IMPROVEMENTS

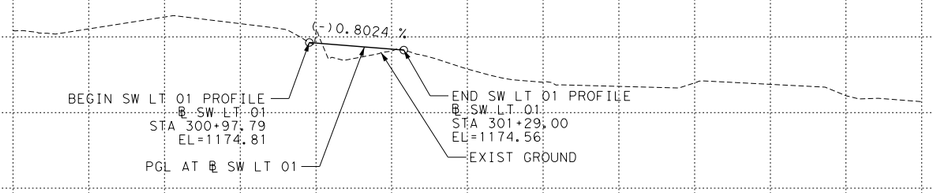
ROB SHELTON BLVD ROADWAY PLANS STA 140+00 TO END

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		47

DATE: Feb. 10, 2022 - 01:20:48 PM
FILE: N:\Plan Set\3. Roadway\DSP21528_RDW_PLAN05.dgn

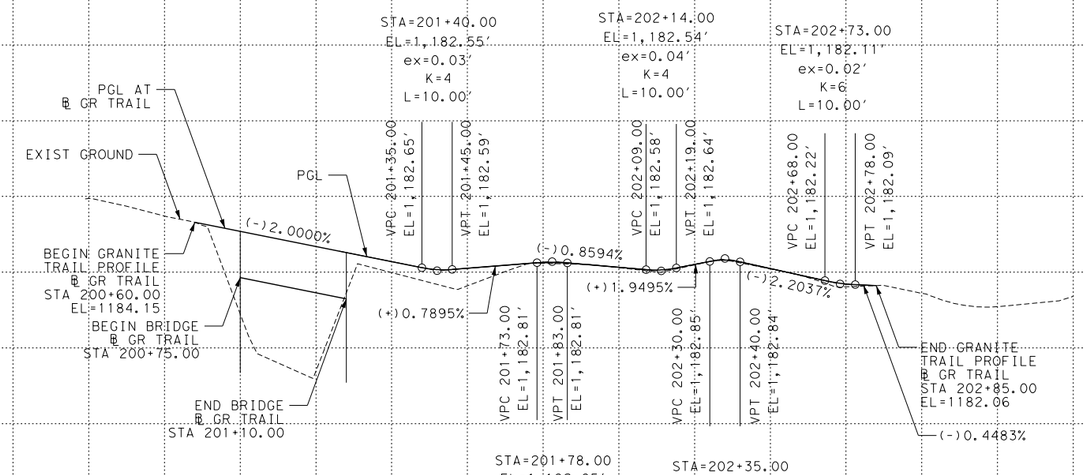
SW LT 01 PROP PROFILE



	300+00		301+00		302+00		303+00	
PROP ELEV	1,175.20	1,175.65	1,174.79	1,175.15	1,173.94	1,173.36	1,173.43	1,172.86

1,185 / 1,180 / 1,175 / 1,170

GRANITE TRAIL PROP PROFILE



	200+00		201+00		202+00		203+00	
PROP ELEV	1,184.35	1,183.35	1,179.23	1,182.63	1,182.05	1,182.66	1,182.65	1,182.62	1,182.61	1,181.80
EXIST ELEV										

1,190 / 1,185 / 1,180 / 1,175 / 1,170

0 25′ 50′
HORIZONTAL SCALE
0 2.5′ 5′
VERTICAL SCALE

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 2/23/2022

REV	DATE	DESCRIPTION

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
ROADWAY PROFILES

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		48

DATE: Feb. 23, 2022 - 04:04:39 PM
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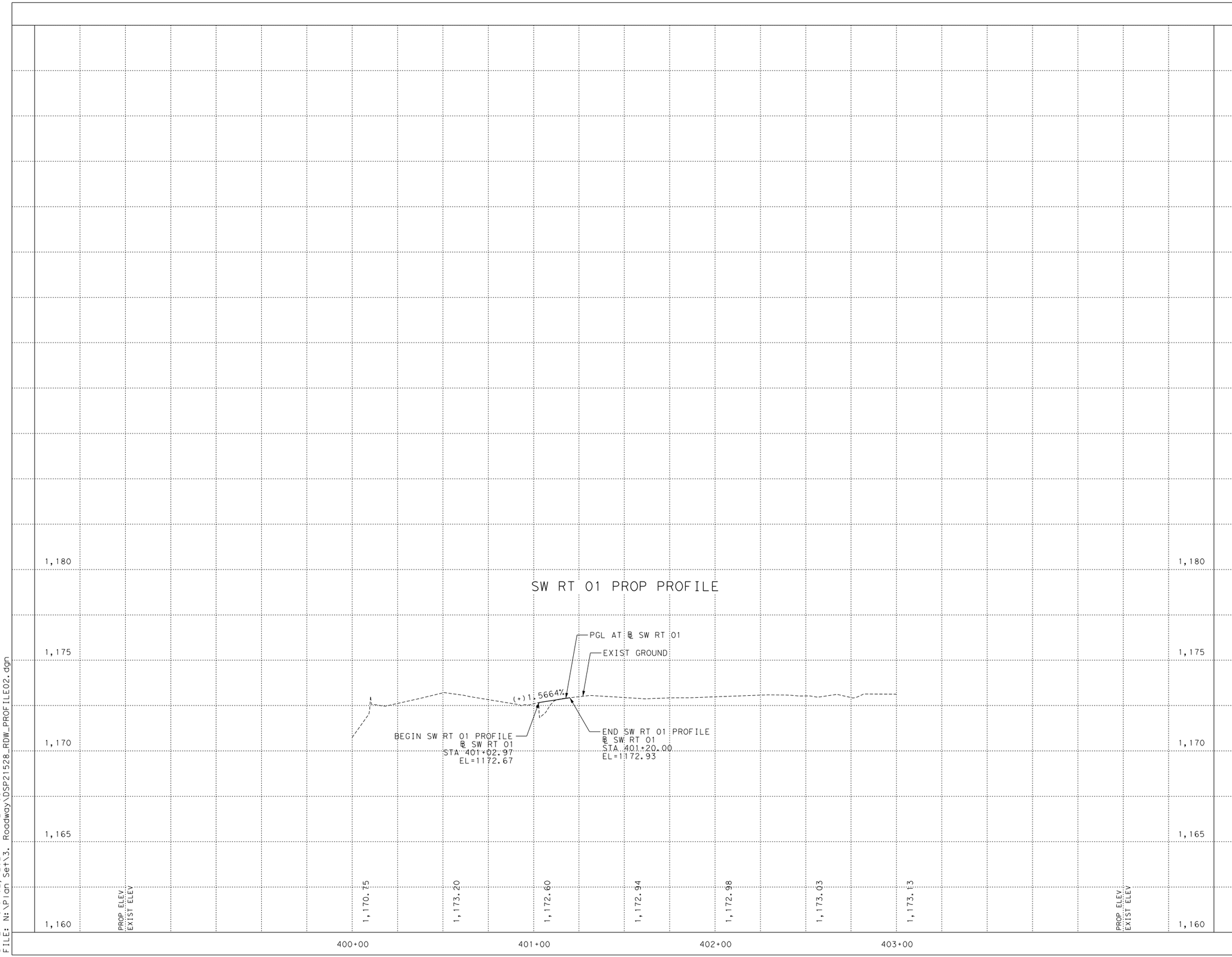

0 25′ 50′
HORIZONTAL SCALE

0 2.5′ 5′
VERTICAL SCALE

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

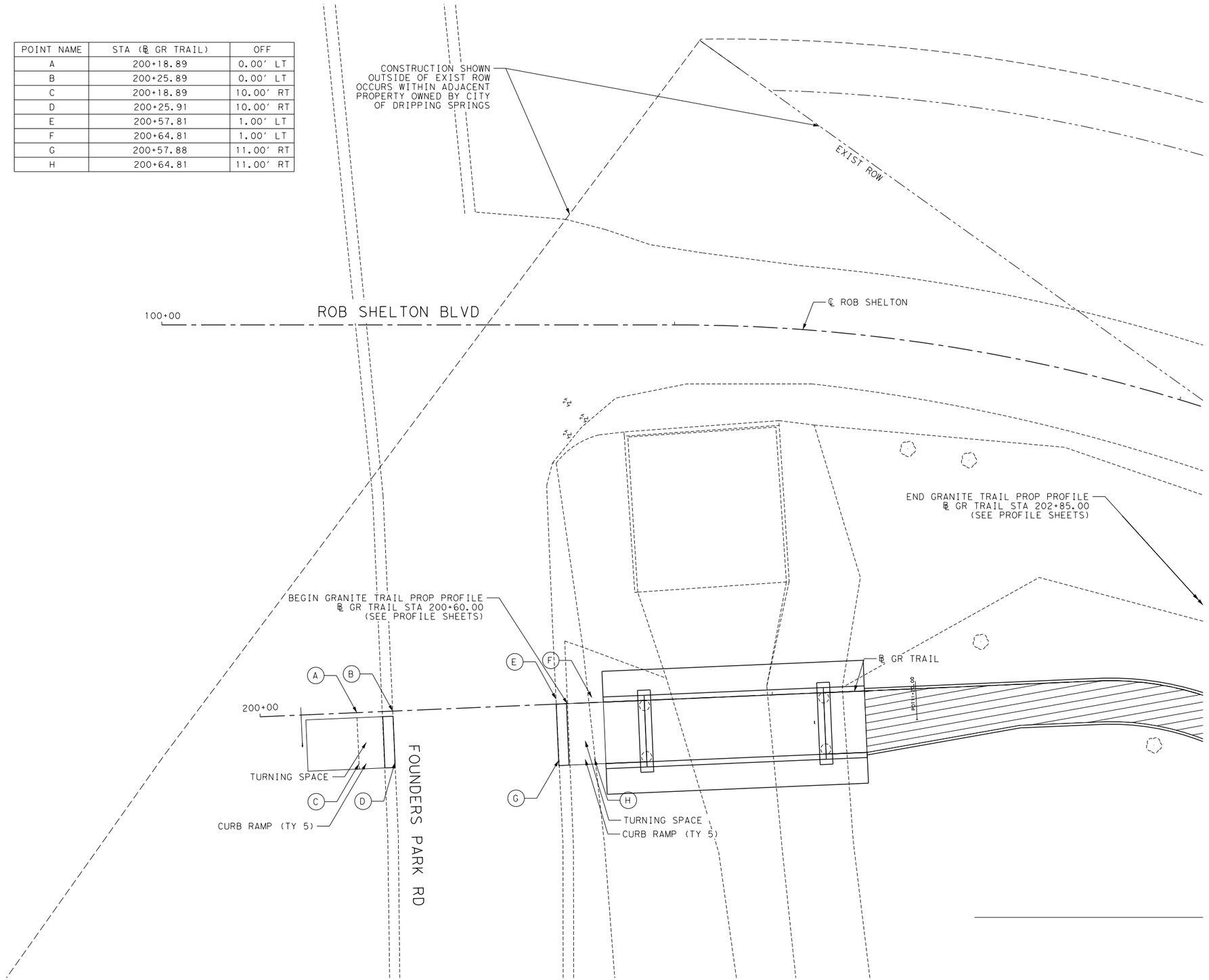
ROB SHELTON BLVD ROADWAY PROFILES

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		49

DATE: Nov. 02, 2021 - 11:21:05 AM
FILE: N:\Plan Set\3. Roadway\DSP21528_ROW_PROFILE02.dgn

POINT NAME	STA (℄ GR TRAIL)	OFF
A	200+18.89	0.00' LT
B	200+25.89	0.00' LT
C	200+18.89	10.00' RT
D	200+25.91	10.00' RT
E	200+57.81	1.00' LT
F	200+64.81	1.00' LT
G	200+57.88	11.00' RT
H	200+64.81	11.00' RT



LEGEND

- EXIST ROW
- EXIST ESMT
- PROP ESMT
- PROPERTY LINE
- PROP SIDEWALK
- PROP GRANITE TRAIL
- EXIST TRAFFIC DIRECTION
- (X) CURVE CALLOUT
- CRUSHED GRANITE TO REMAIN. REPAIR AND RESTORE DISTURBED GRANITE AS NEEDED.

NOTES:

1. DIMS TO CURB OR HANDRAIL ARE SHOWN TO NOMINAL FACE.
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N

0 25' 50'
HORIZONTAL SCALE

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

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ROB SHELTON PEDESTRIAN IMPROVEMENTS

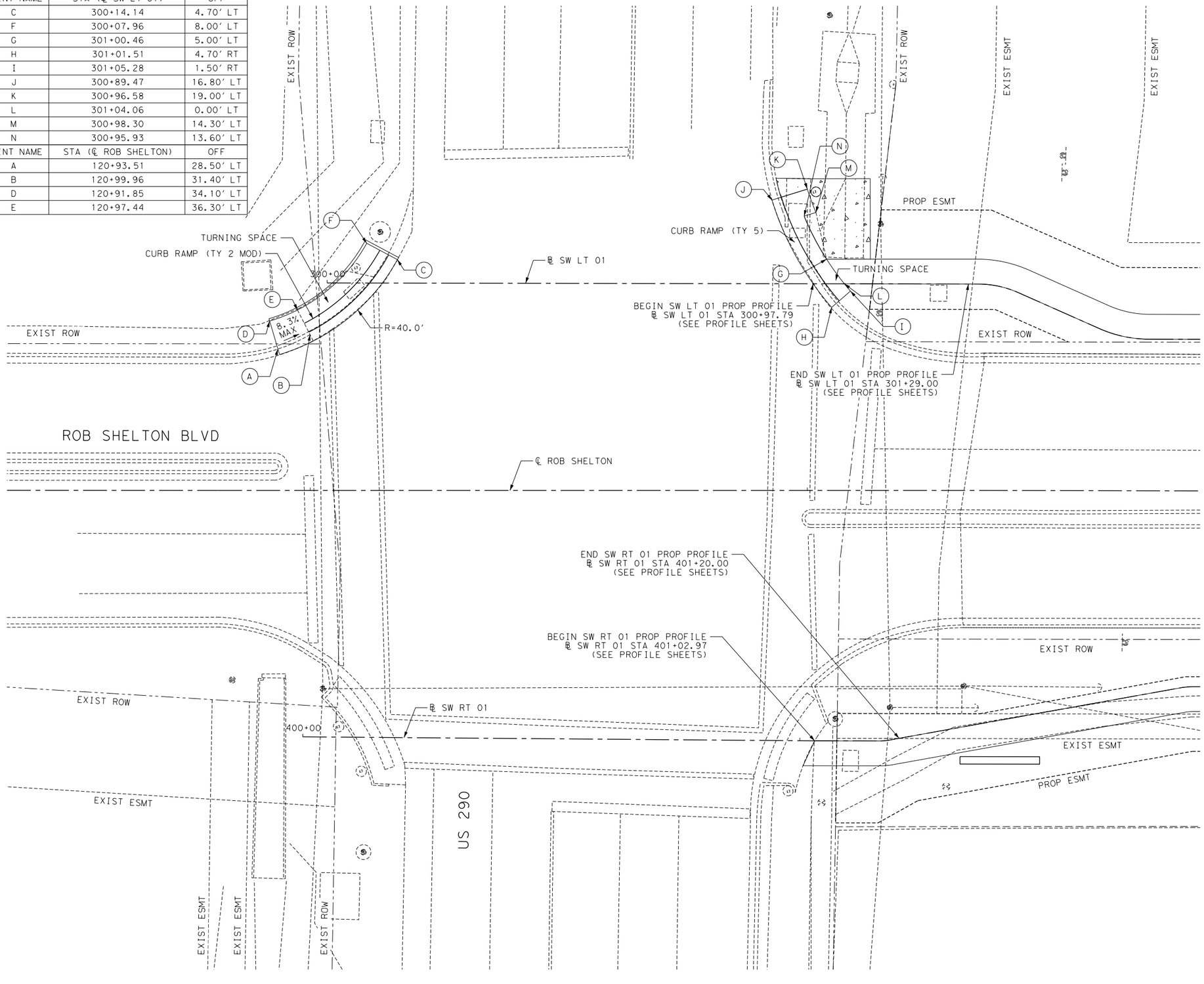
ROB SHELTON BLVD INTERSECTION LAYOUT ROB SHELTON BLVD AT FOUNDERS PARK RD

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		50

DATE: Nov. 02, 2021 - 11:21:08 AM
FILE: N:\Plan Set\3. Roadway\DSP21528_RDW_INTERSECTION01.dgn

POINT NAME	STA (℄ SW LT 01)	OFF
C	300+14.14	4.70' LT
F	300+07.96	8.00' LT
G	301+00.46	5.00' LT
H	301+01.51	4.70' RT
I	301+05.28	1.50' RT
J	300+89.47	16.80' LT
K	300+96.58	19.00' LT
L	301+04.06	0.00' LT
M	300+98.30	14.30' LT
N	300+95.93	13.60' LT
POINT NAME	STA (℄ ROB SHELTON)	OFF
A	120+93.51	28.50' LT
B	120+99.96	31.40' LT
D	120+91.85	34.10' LT
E	120+97.44	36.30' LT



LEGEND

- EXIST ROW
- EXIST ESMT
- PROP ESMT
- PROPERTY LINE
- PROP SIDEWALK
- PROP GRANITE TRAIL
- EXIST TRAFFIC DIRECTION
- (X) CURVE CALLOUT
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N

0 25' 50'
HORIZONTAL SCALE

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 2/23/2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD INTERSECTION LAYOUT ROB SHELTON BLVD AT US 290

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		51

DATE: Feb. 23, 2022 - 03:43:56 PM
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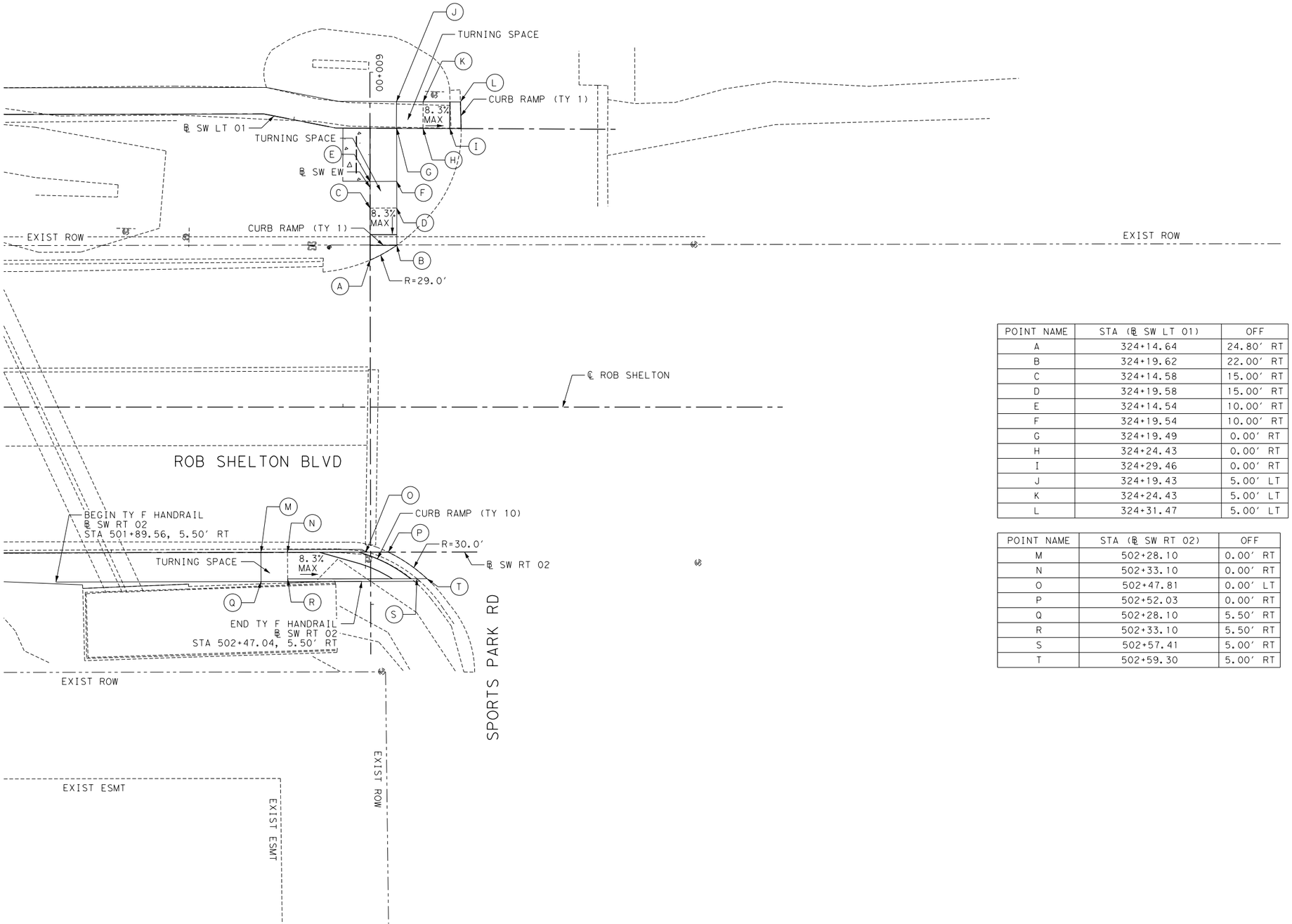

LEGEND

- EXIST ROW
- EXIST ESMT
- PROP ESMT
- PROPERTY LINE
- PROP SIDEWALK
- PROP GRANITE TRAIL
- EXIST TRAFFIC DIRECTION
- (X) CURVE CALLOUT
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3. PROP SW & GRAN TRL TO MATCH EXIST GROUND EXCEPT IN AREAS NOTED ON INTERSECTION LAYOUT & PROFILE SHEETS.

N

0 25' 50'
HORIZONTAL SCALE

POINT NAME	STA (℄ SW LT 01)	OFF
A	324+14.64	24.80' RT
B	324+19.62	22.00' RT
C	324+14.58	15.00' RT
D	324+19.58	15.00' RT
E	324+14.54	10.00' RT
F	324+19.54	10.00' RT
G	324+19.49	0.00' RT
H	324+24.43	0.00' RT
I	324+29.46	0.00' RT
J	324+19.43	5.00' LT
K	324+24.43	5.00' LT
L	324+31.47	5.00' LT

POINT NAME	STA (℄ SW RT 02)	OFF
M	502+28.10	0.00' RT
N	502+33.10	0.00' RT
O	502+47.81	0.00' LT
P	502+52.03	0.00' RT
Q	502+28.10	5.50' RT
R	502+33.10	5.50' RT
S	502+57.41	5.00' RT
T	502+59.30	5.00' RT

STATE OF TEXAS
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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
INTERSECTION LAYOUT
ROB SHELTON BLVD AT
SPORTS PARK RD

SHEET 3 OF 3

© 2021	CONT	SECT	JOB	HIGHWAY
	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		52

DATE: Nov. 02, 2021 - 11:21:11 AM
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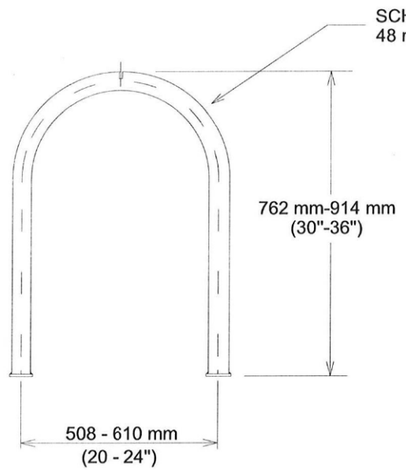
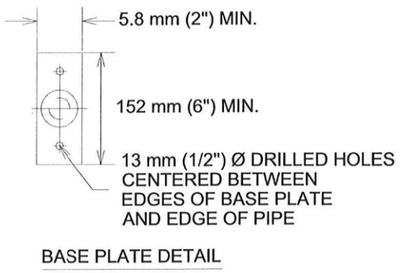
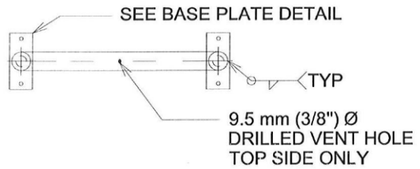


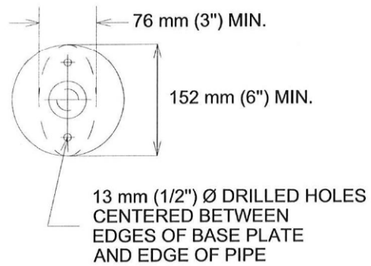
FRONT VIEW



BASE PLATE DETAIL



TOP VIEW

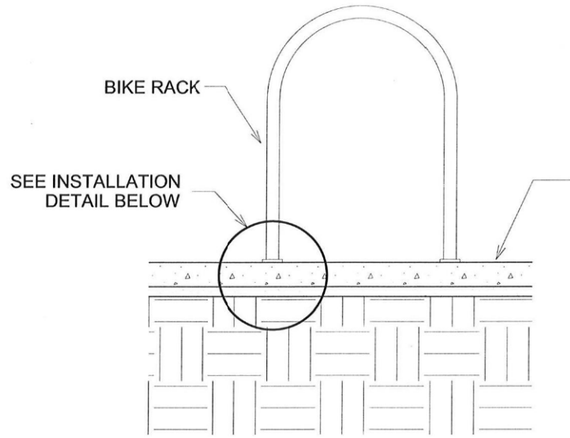


ALT BASE PLATE DETAIL
(CIRCULAR OR OVAL PLATE)

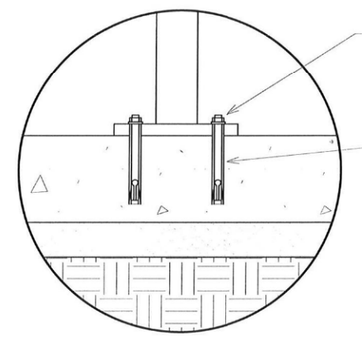
GENERAL NOTES:

1. RACK INSTALLATION METHOD SHALL COMPLY WITH CITY STANDARD DETAIL 710S-3, 710S-4, OR 710S-5.
2. RACK PLACEMENT SHALL COMPLY WITH APPLICABLE CITY STANDARD DETAILS 710S-6A, 710S-6B, OR 710S-6C AND CITY OF AUSTIN CODE SECTION 25-6-477 OR ITS SUCCESSOR.
3. BASE PLATES TO BE 6.35 mm (1/4") PLATES, ASTM A-36 1010-1018 LOW CARBON PRIME STEEL

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	CLASS III STYLE BICYCLE PARKING	STANDARD NO.
9/26/12 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	710S-1 1 OF 1



BASIC INSTALLATION



INSTALLATION DETAIL

GENERAL NOTES:

1. RACKS SHALL COMPLY WITH CITY STANDARD DETAIL 710S-1 OR 710S-2.
2. RACK PLACEMENT SHALL COMPLY WITH APPLICABLE CITY STANDARD DETAILS 710S-6A, 710S-6B, OR 710S-6C AND IN COMPLIANCE WITH CITY OF AUSTIN CODE SECTION 25-6-477 OR ITS SUCCESSOR.

*TO PREVENT THEFT OF BICYCLE RACK OR BIKES, EXPOSED BOLTS MUST BE DEFORMED AND NUTS RE-TIGHTENED TO PREVENT THEM FROM BEING EASILY UNTHREADED. NUTS SHOULD BE TESTED TO ENSURE THAT THEY CANNOT BE EASILY REMOVED AFTER DEFORMATION.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	BICYCLE RACK INSTALLATION IN CONCRETE SIDEWALK-ALTERNATE 1	STANDARD NO.
9/26/12 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	710S-4 1 OF 1

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
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TX FIRM F-2144

ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
LANDSCAPE AMENITY DETAILS

SHEET 1 OF 3

© 2021	CONT	SECT	JOB	HIGHWAY
	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		53

DATE: Nov. 02, 2021 - 11:21:12 AM
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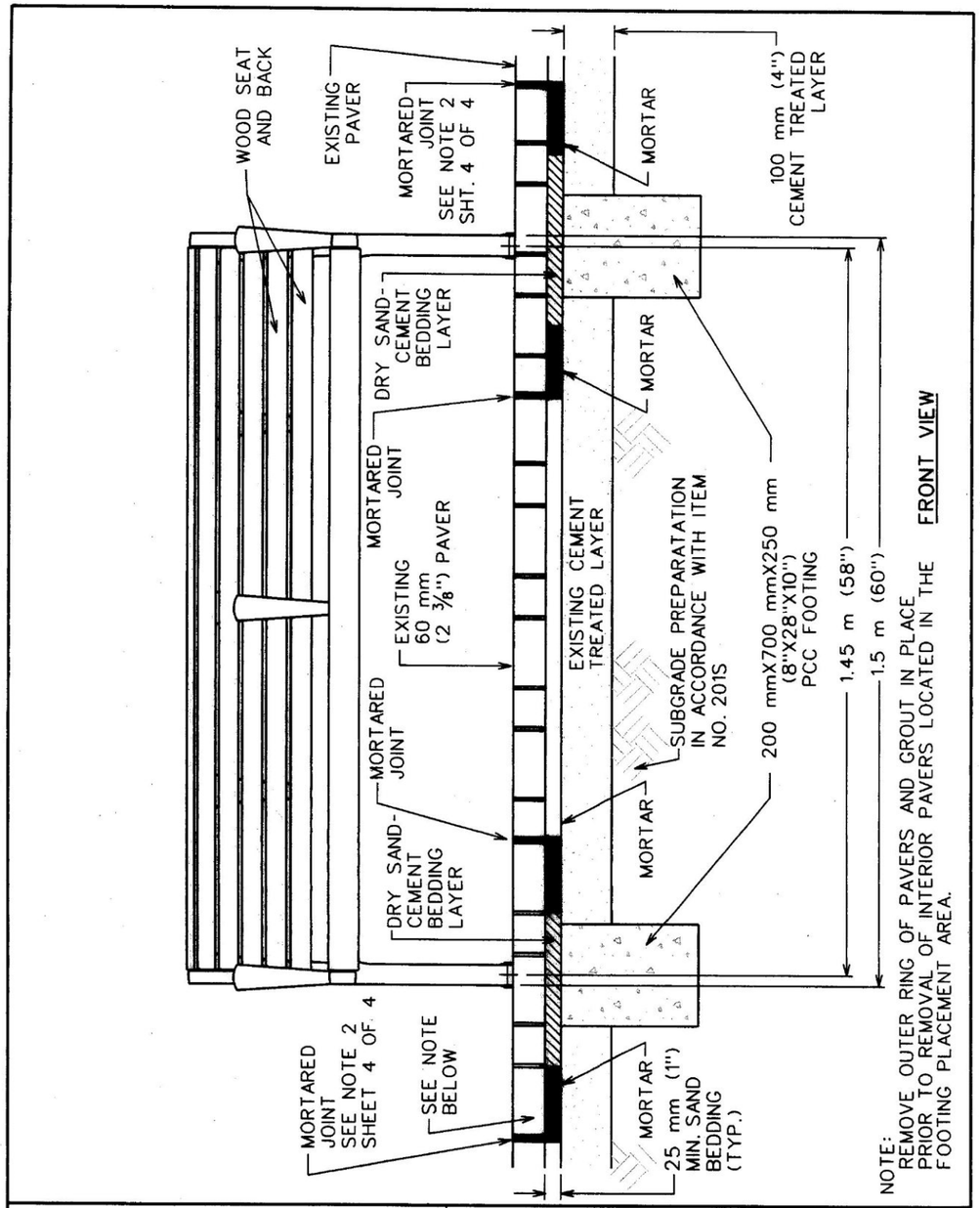
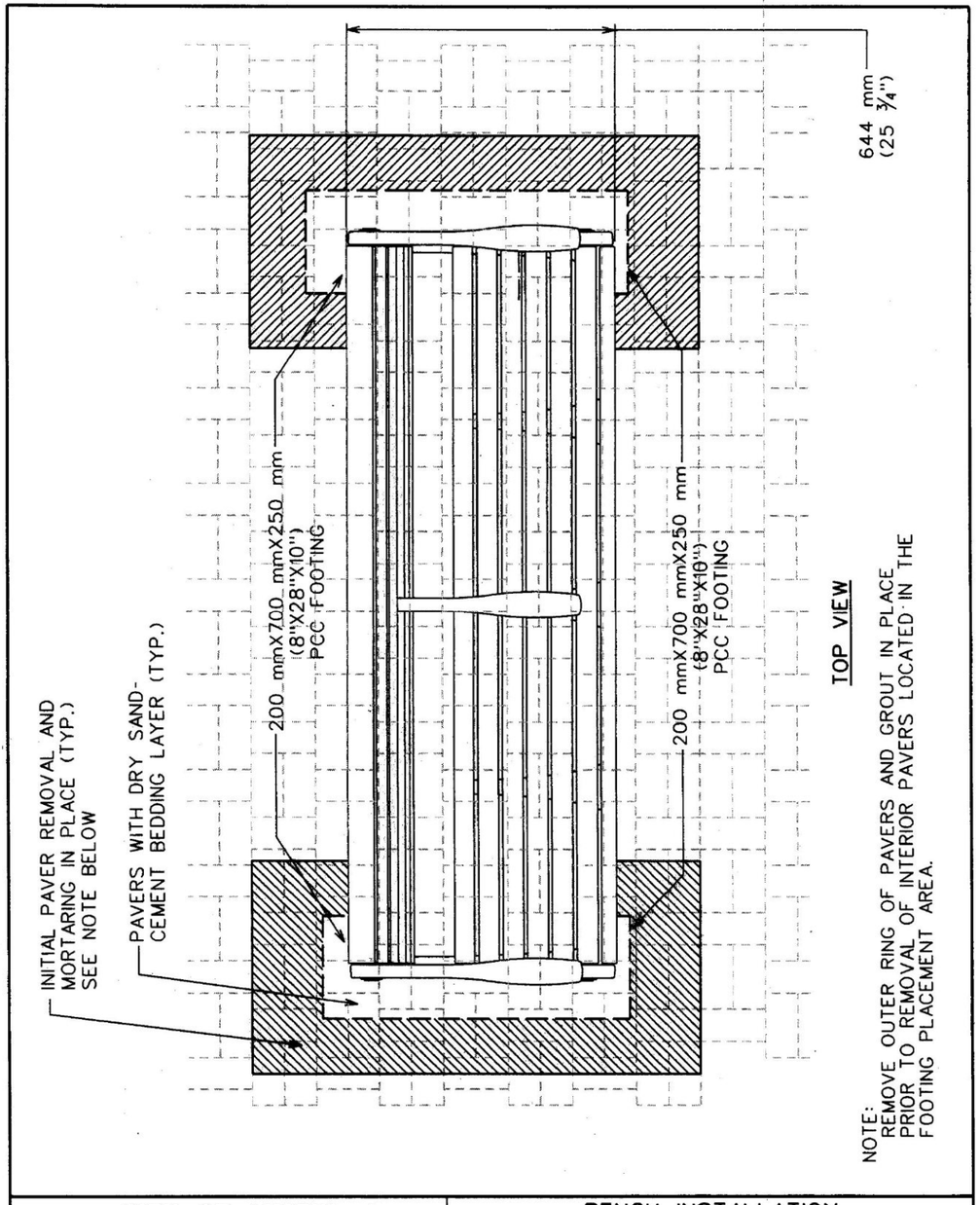


FRONT VIEW



TOP VIEW

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	BENCH INSTALLATION IN CONCRETE PAVER SIDEWALK	
Bill Gardner 11/21/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-9A 1 OF 4

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	BENCH INSTALLATION IN CONCRETE PAVER SIDEWALK	
Bill Gardner 11/21/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-9A 2 OF 4

DATE: Nov. 02, 2021 - 11:21:16 AM
FILE: N:\Plan Set\13. Standard Details\Roadway\432S-9A01.dgn

STATE OF TEXAS
ANDREA BRYANT
120424
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PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

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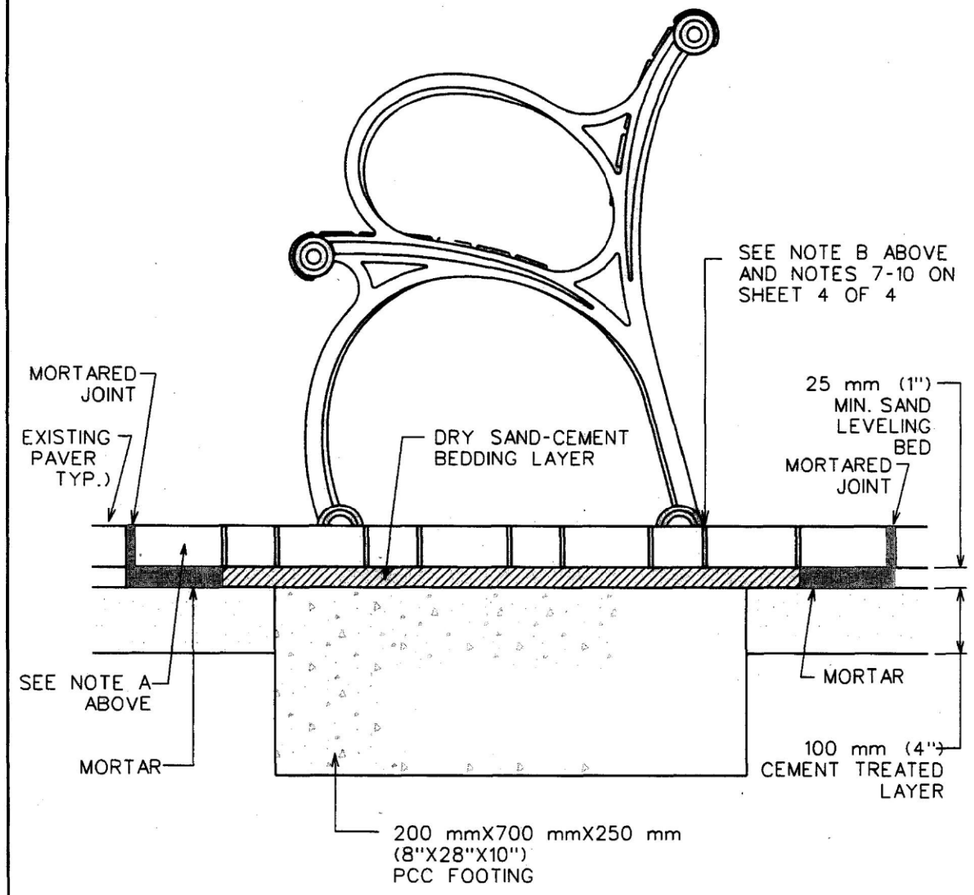
ROB SHELTON BLVD
LANDSCAPE AMENITY DETAILS

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		54

NOTES:

A. REMOVE OUTER RING OF PAVERS AND GROUT IN PLACE PRIOR TO REMOVAL OF PAVERS LOCATED IN THE FOOTING PLACEMENT AREA.
B. SECURE BENCH WITH 9 mm X 150 mm (3/8" X 6") ANCHOR BOLT EPOXIED IN PLACE.



SIDE VIEW

DRY SAND-CEMENT BEDDING PLACEMENT:

1. MATERIAL COMPOSED OF ONE PART CEMENT AND 3 PARTS SAND.
2. THE DRY MIXTURE SHALL BE LIGHTLY WETTED PRIOR TO PLACEMENT OF PAVERS.
3. AFTER COMPACTION OF PAVERS, JOINTS SHALL BE FILLED WITH DRY SAND-CEMENT.
4. THE COMPLETED JOINTS SHALL BE FOGGED LIGHTLY WITH WATER.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	BENCH INSTALLATION IN CONCRETE PAVER SIDEWALK	
Bill Gardner 11/21/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-9A 3 OF 4

CONSTRUCTION SEQUENCE:

*1. PLACE BENCH ON PAVERS AND MARK LOCATIONS OF BOLTHOLES AND REMOVE BENCH.
*2. IDENTIFY LOCATION OF FOOTINGS.
*3. MARK AND REMOVE EXISTING PAVERS ONE UNIT AWAY FROM FOOTING LOCATIONS, PLACE MORTAR BEDDING LAYER, MORTAR THE JOINT AND REPLACE/COMPACT THE "MARKED" PAVERS IN APPROPRIATE LOCATIONS.
*4. MARK AND REMOVE EXISTING PAVERS FROM LOCATION ABOVE FOOTING LOCATIONS.
5. EXCAVATE FOR FOOTINGS AND PLACE CLASS "A" PCC CONCRETE.
6. PLACE DRY SAND-CEMENT BEDDING LAYER, REPLACE THE "MARKED" PAVERS IN APPROPRIATE POSITIONS AND COMPACT THE PAVERS IN PLACE.
7. PLACE BENCH ON PAVERS AT APPROPRIATE LOCATIONS AND RE-MARK BOLT HOLES.
8. DRILL BOLT HOLES THROUGH THE PAVERS INTO THE PCC FOOTINGS.
9. INSTALL ANCHOR BOLTS AND EPOXY THEM IN PLACE.
10. INSTALL BENCH AND BOLT IN PLACE.

* THESE STEPS ARE REQUIRED FOR EXISTING PAVER SIDEWALKS TO MAINTAIN STRUCTURE AND STABILITY OF ADJOINING PAVERS.

GENERAL NOTE:

1. BENCHES SHALL BE LOCATED WITHIN 7.32 m (24') OF EITHER THE MAIN BUILDING ENTRY OR THE ENTRY TO THE PRIMARY LOCAL USE. BENCHES SHALL BE PLACED EITHER PERPENDICULAR TO THE CURB WITH THE CENTER OF THE BENCH ON LINE WITH TREES AND LIGHT POLES AND FACING TOWARD THE BUILDING ENTRY, OR PARALLEL TO THE BUILDING AND WITHIN 150 mm (6") OF THE BUILDING WALL, FACING OUT TO THE STREET.
2. SAW CUT PAVER TO MATCH PAVER CONFIGURATION.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	BENCH INSTALLATION IN CONCRETE PAVER SIDEWALK	
Bill Gardner 11/21/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-9A 4 OF 4

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER
Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

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LANDSCAPE AMENITY DETAILS

SHEET 3 OF 3

© 2021	CONT	SECT	JOB	HIGHWAY
	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		55

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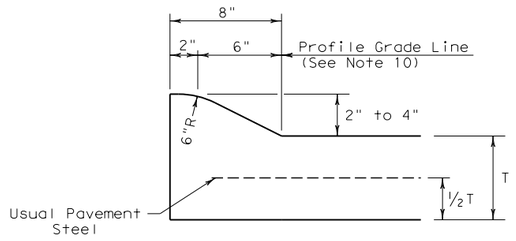
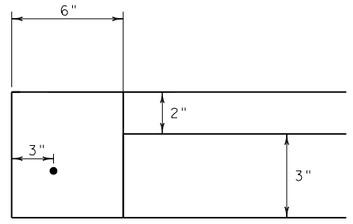
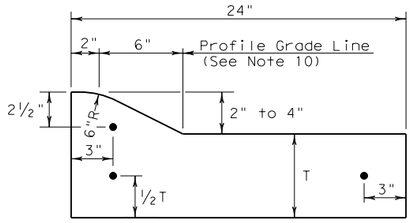


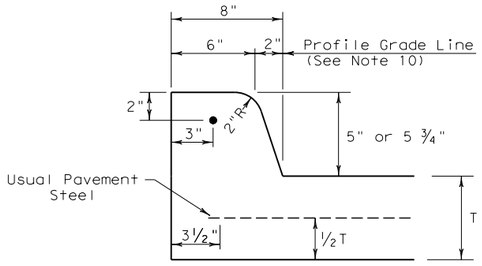
TYPE I CURB (MONOLITHIC)
2" - 4" HEIGHT



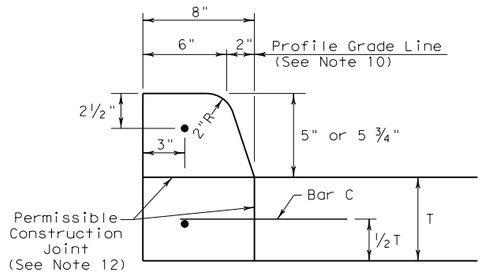
⚠1 TYPE I CURB (MOD)



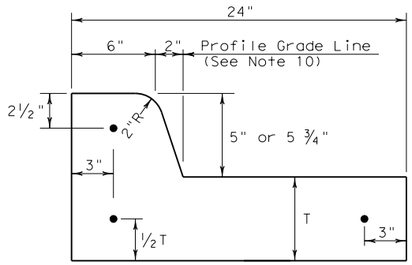
TYPE I CURB AND GUTTER
2" - 4" HEIGHT



TYPE II CURB (MONOLITHIC)
5" - 5 ¾" HEIGHT



TYPE II CURB
5" - 5 ¾" HEIGHT



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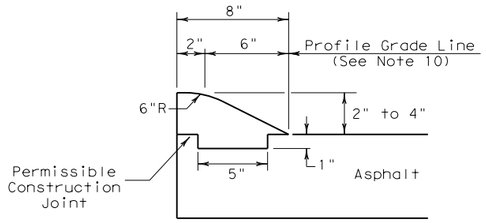
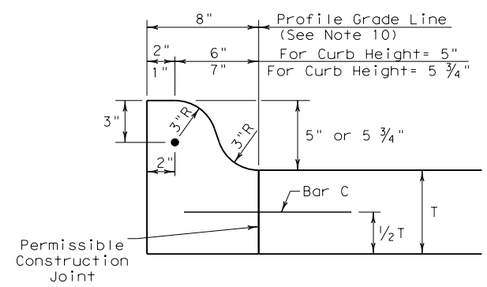
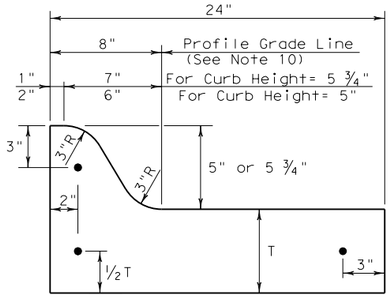


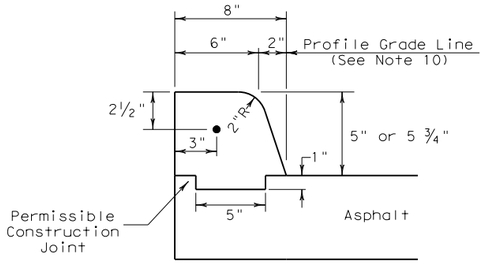
TYPE III CURB (KEYED)
2" - 4" HEIGHT



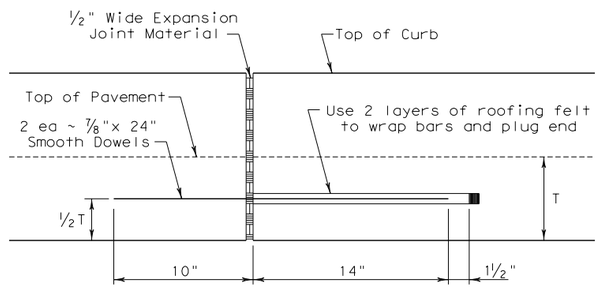
TYPE IIa CURB
5" - 5 ¾" HEIGHT



TYPE IIa CURB AND GUTTER
5" - 5 ¾" HEIGHT

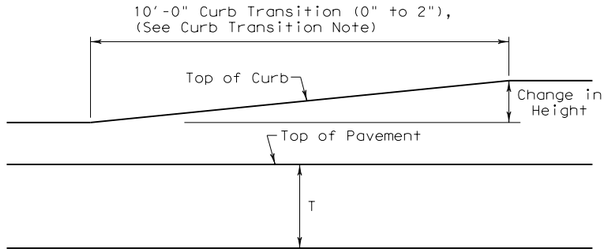


TYPE IV CURB (KEYED)
5" - 5 ¾" HEIGHT



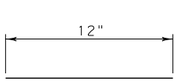
EXPANSION JOINT DETAIL

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

BAR B



BAR C

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 the 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 used as needed to support curb reinforcing steel during concrete placement.

⚠1 MODIFY TY I CURB FOR USE WITH GRANITE TRAIL

STATE OF TEXAS
ANDREA BRYANT
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LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/17/2021

Texas Department of Transportation

Design Division Standard

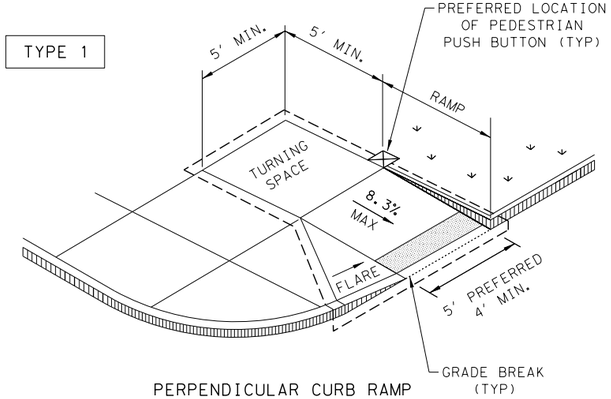
CONCRETE CURB AND CURB AND GUTTER

CCCG-21 (MOD)

FILE: cccg21.dgn	DN: TXDOT		CK: AN	DW: SS		CK: KM	
© TxDOT: FEBRUARY 2021	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0914	33	087		SHELTON LN		
	DIST	COUNTY				SHEET NO.	
	AUS	HAYS				56	

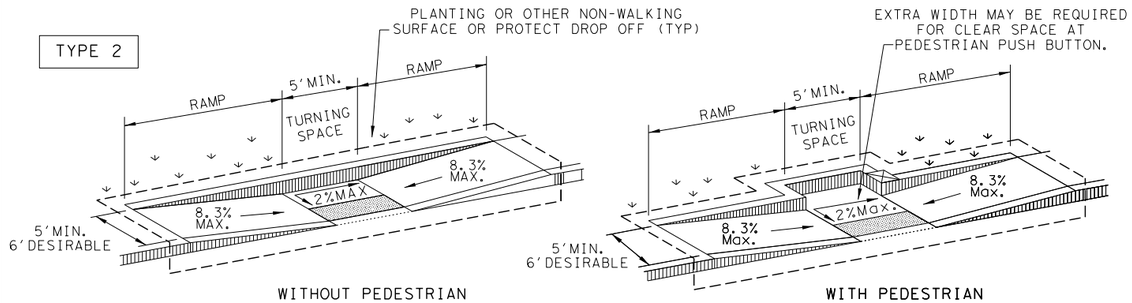
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

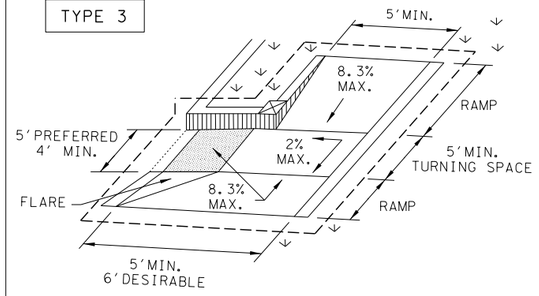


WITHOUT PEDESTRIAN PUSH BUTTON

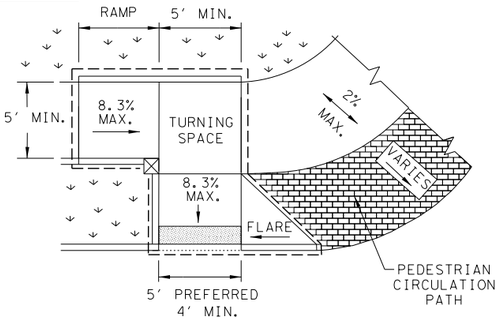
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

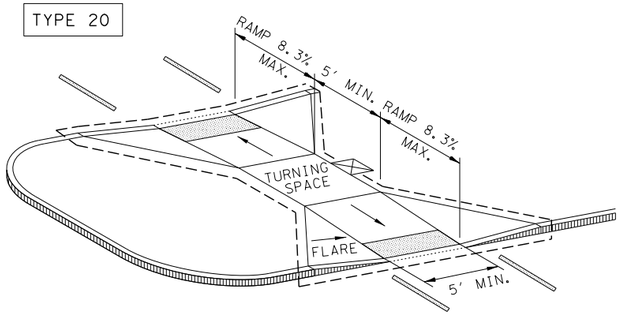


TYPE 6



COMBINATION CURB RAMPS

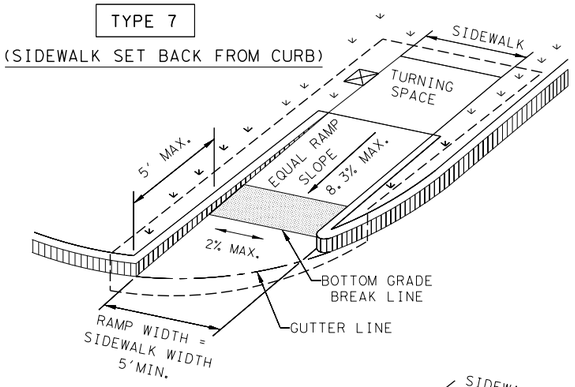
TYPE 20



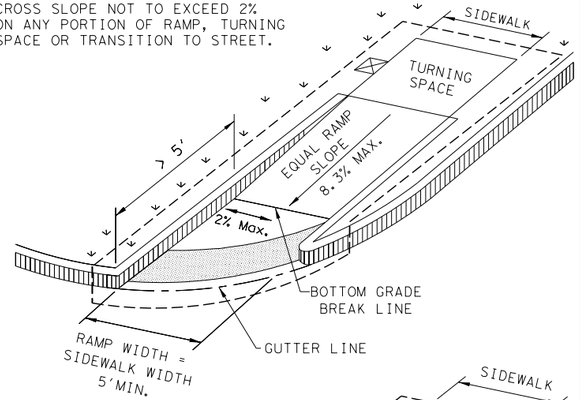
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

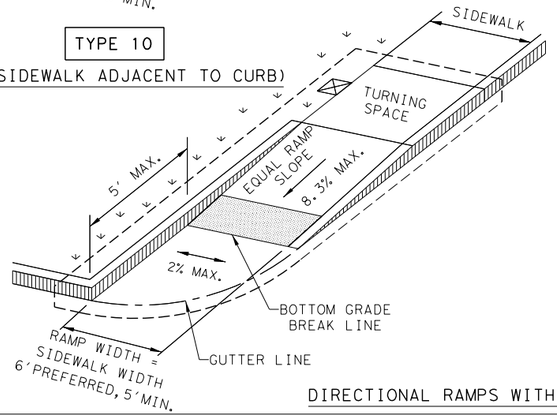


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

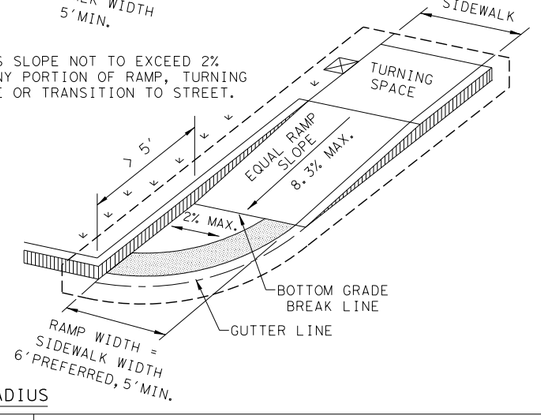


TYPE 10

(SIDEWALK ADJACENT TO CURB)

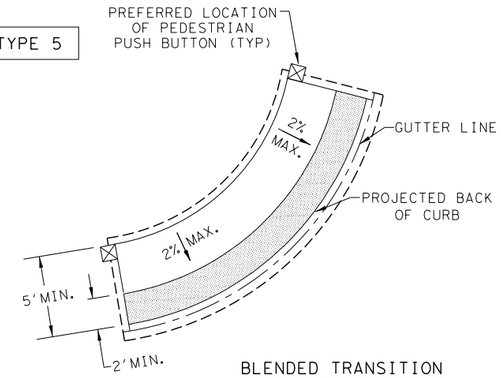


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

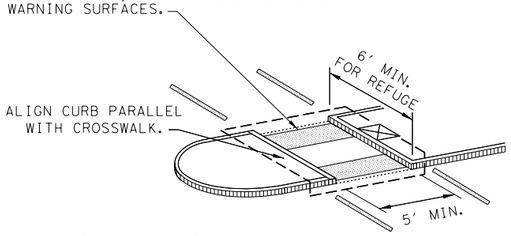
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

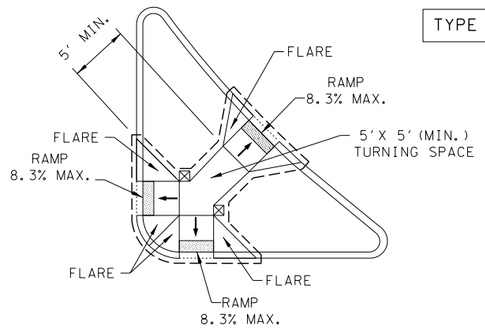
INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.

TYPE 21



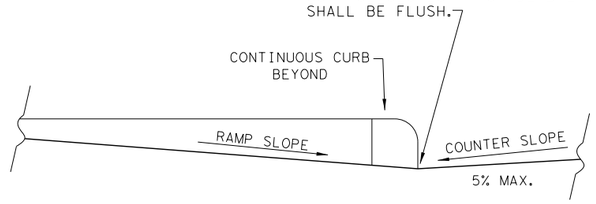
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	AUS	HAYS		57

DATE:
FILE:

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5'. Where the sidewalk is adjacent to the back of curb, a 6' sidewalk width is desirable. Where a 5' sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4' for short distances. 5'x 5' passing areas at intervals not to exceed 200' are required.
5. Turning Spaces shall be 5'x 5' minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4'x 4' wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6' wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5'x 5' landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

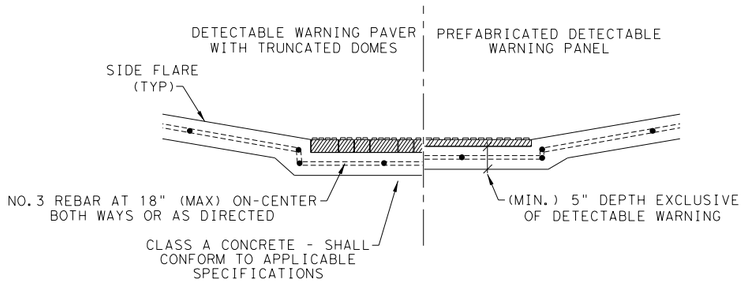
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

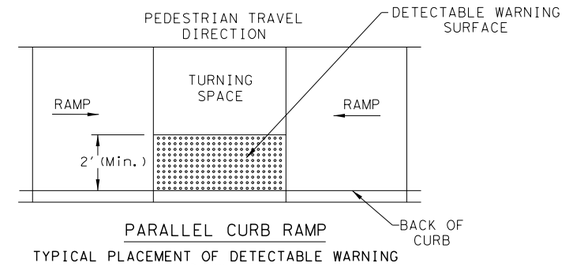
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.



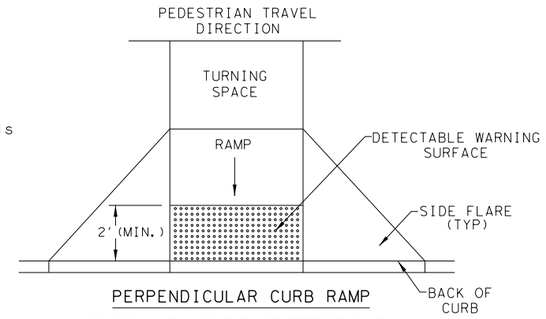
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



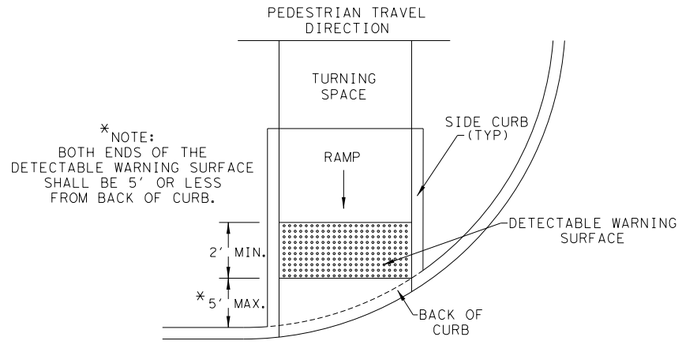
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation

Design Division Standard

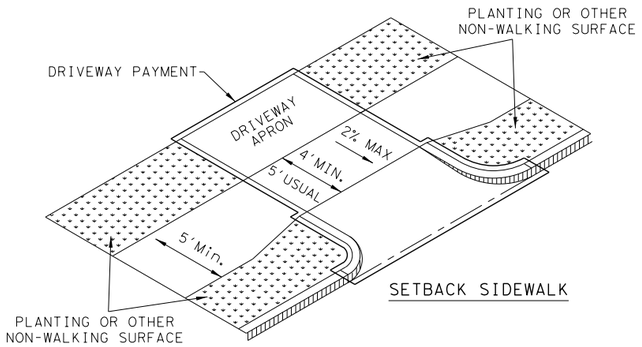
PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

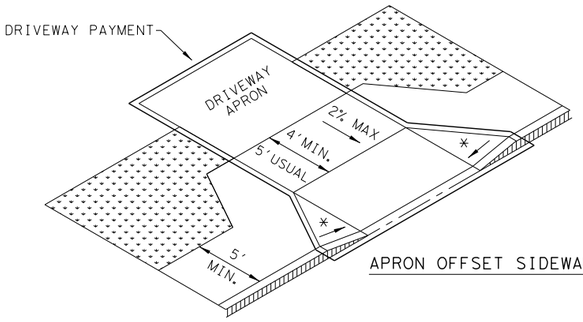
FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS	0914	33	087		SHELTON LN
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY			SHEET NO.
	AUS	HAYS			58

DATE:
FILE:

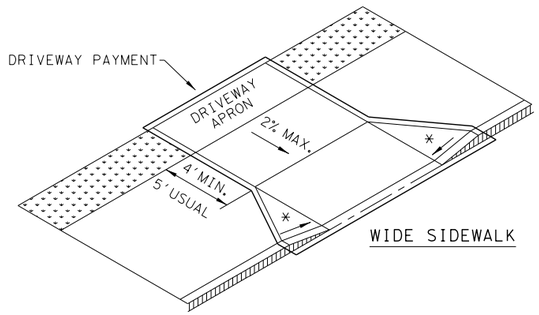
SIDEWALK TREATMENT AT DRIVEWAYS



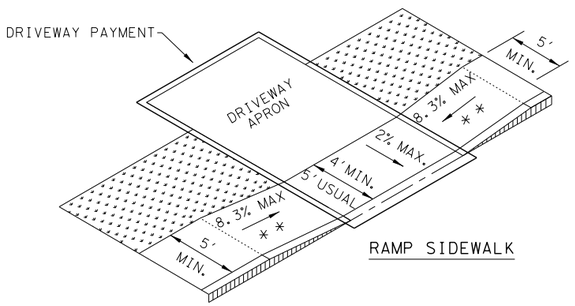
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

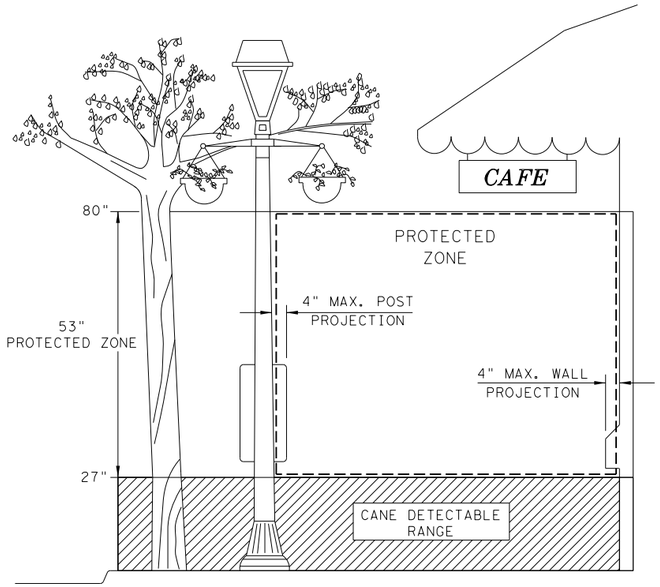


RAMP SIDEWALK

NOTES:

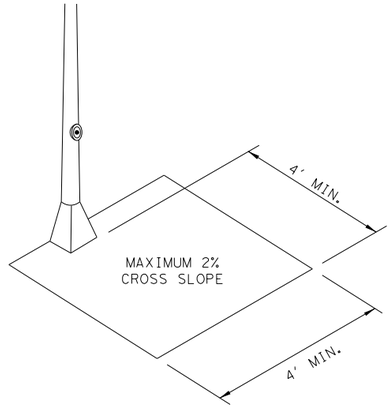
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

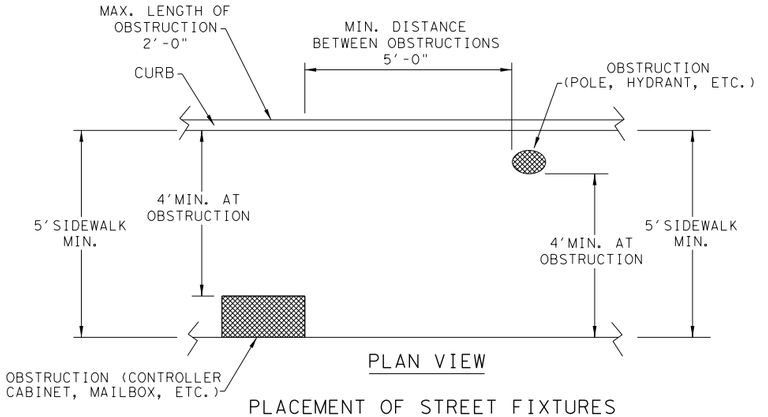


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



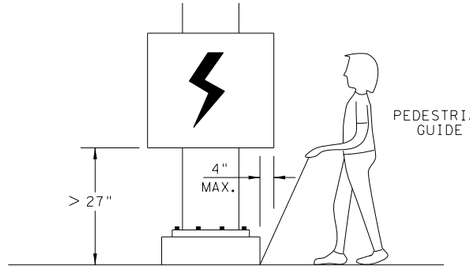
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



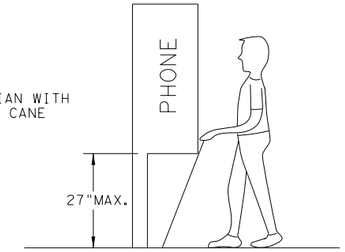
PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

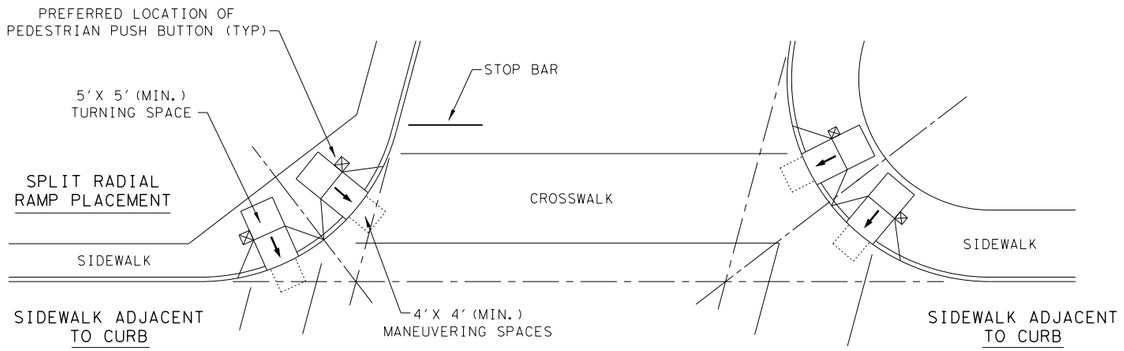
PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	AUS	HAYS		59

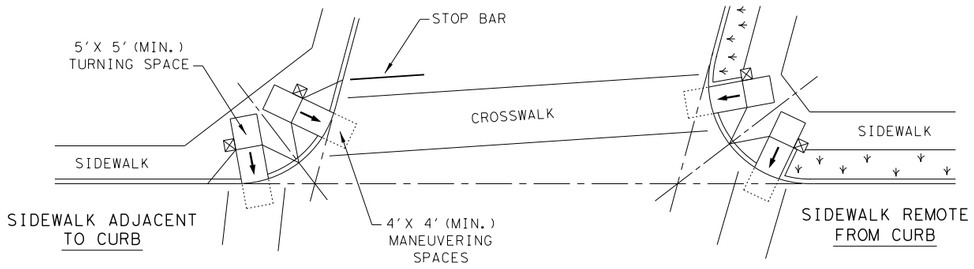
DATE:
FILE:

TYPICAL CROSSING LAYOUTS

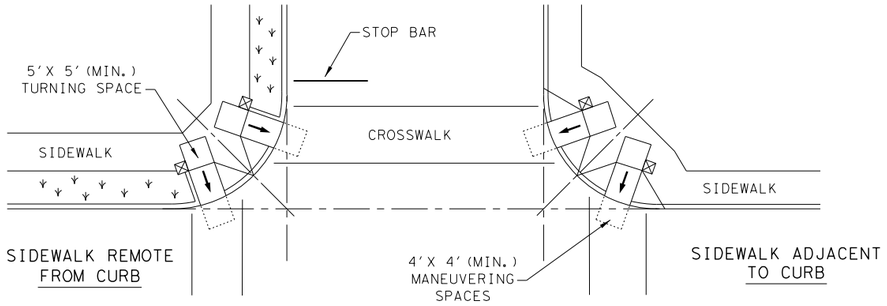
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



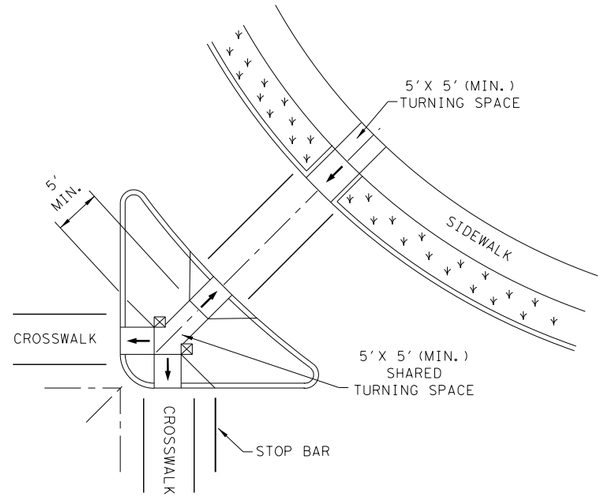
SKEWED INTERSECTION WITH "LARGE" RADIUS



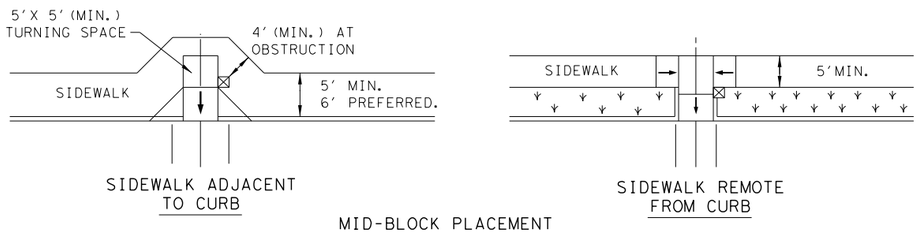
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ⊠

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
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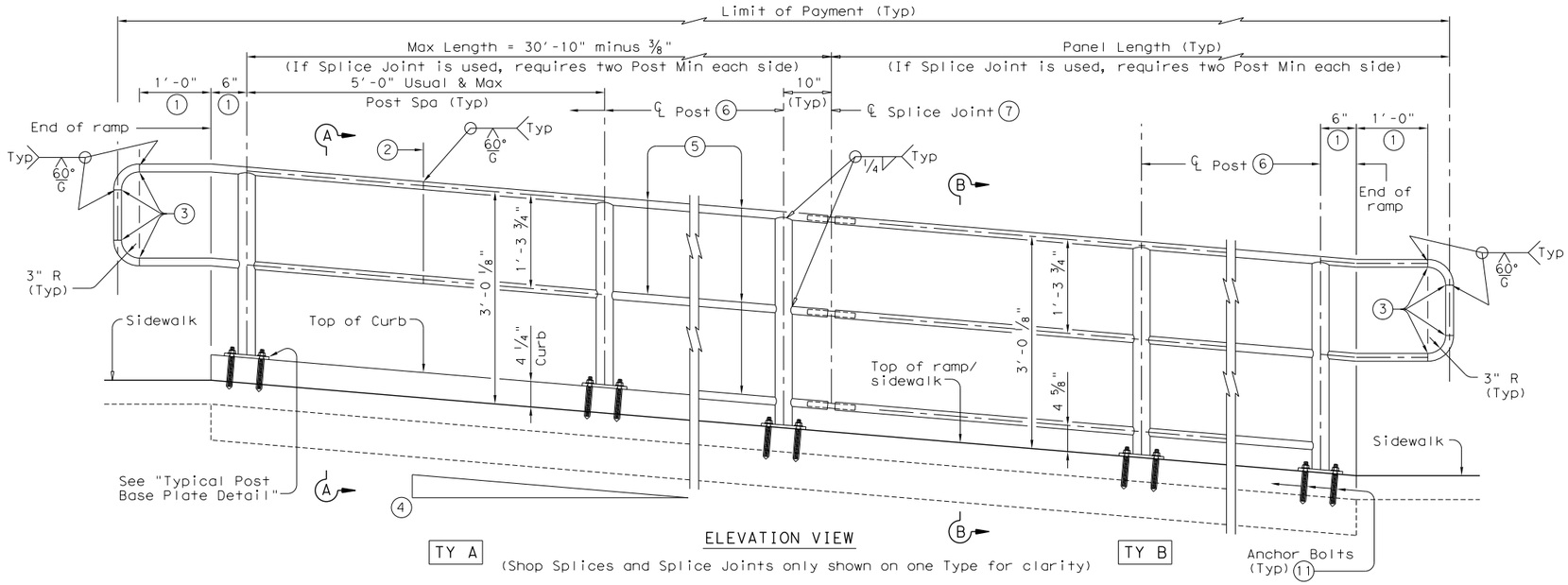
REVISIONS	0914	33	087	SHELTON LN
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.
	AUS	HAYS		60

DATE:
FILE:

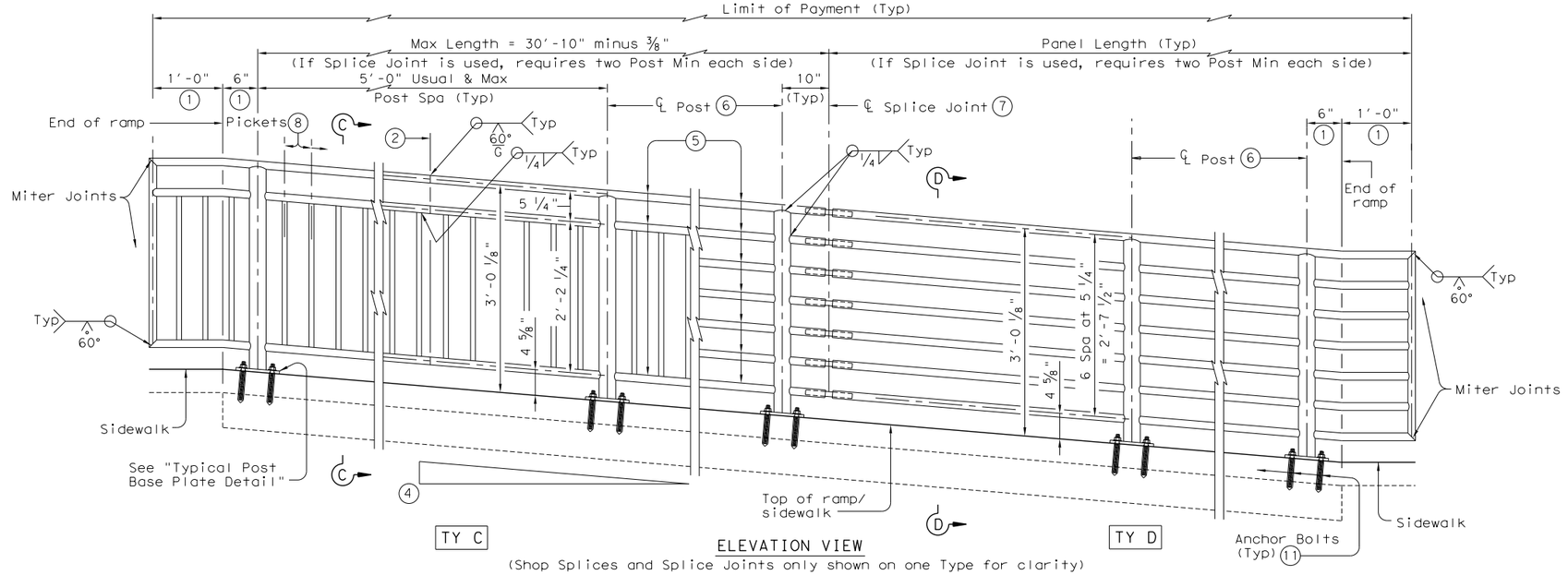


TY A

ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

TY B



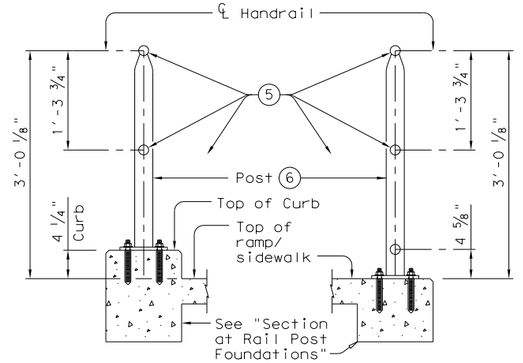
TY C

ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

TY D

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

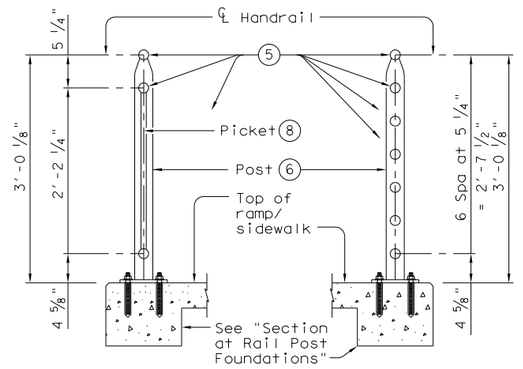


SECTION A-A

(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. ℄ 5/8" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
9. When needed for accessibility (grade > 5 percent) or as needed for pedestrian safety.
10. Not to be used on bridges.
11. See "General Notes" for anchor bolt information.

SHEET 1 OF 3

Texas Department of Transportation

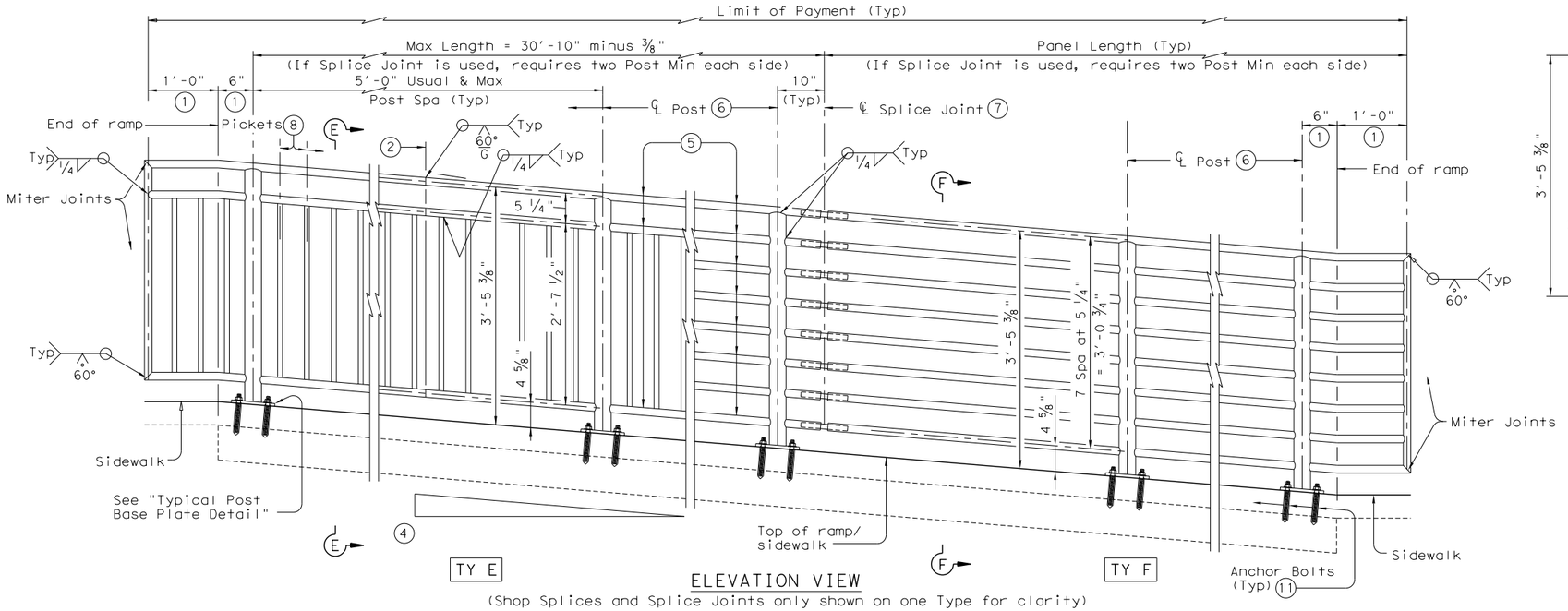
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

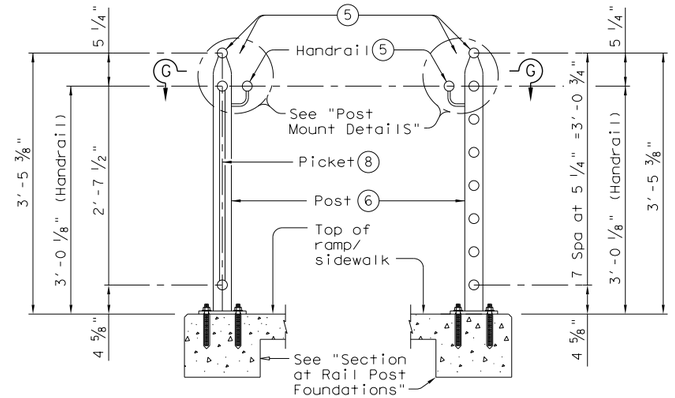
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		61

DATE:
FILE:



ELEVATION VIEW

(Shop Splices and Splice Joints only shown on one Type for clarity)

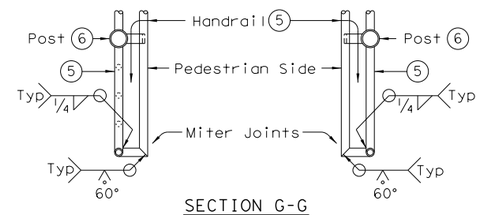


SECTION E-E

(Showing Handrail TY E)

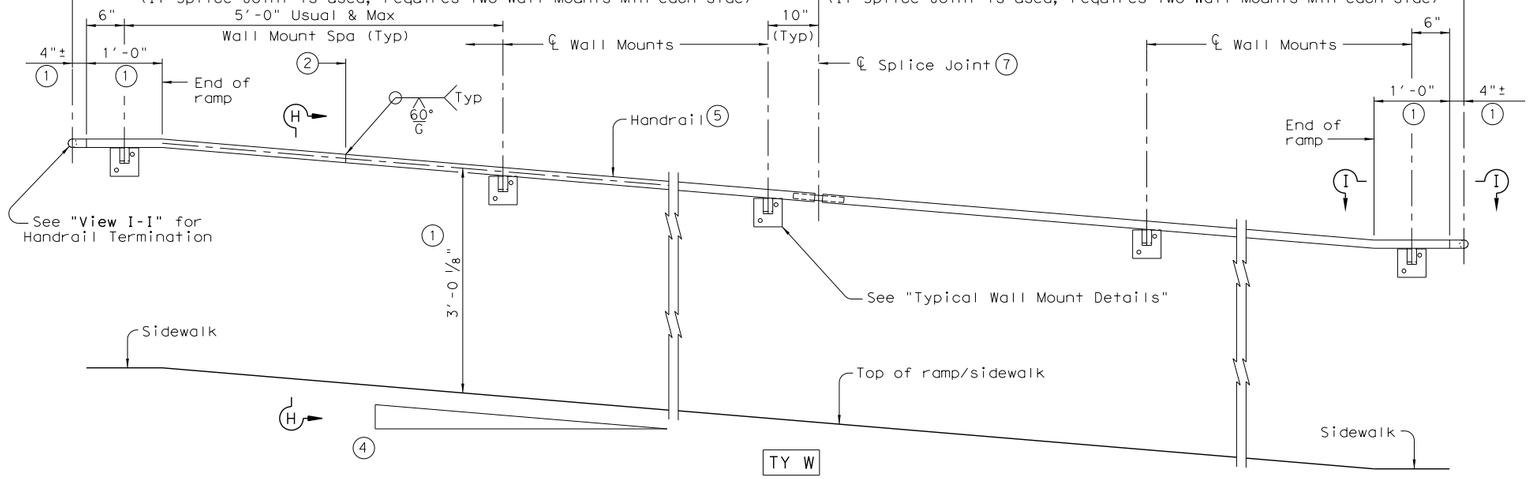
SECTION F-F

(Showing Handrail TY F)

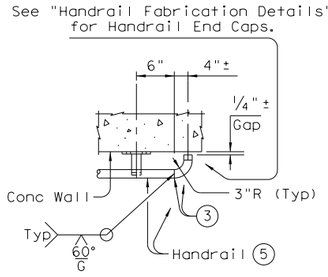


SECTION G-G

(Showing Handrail Termination)

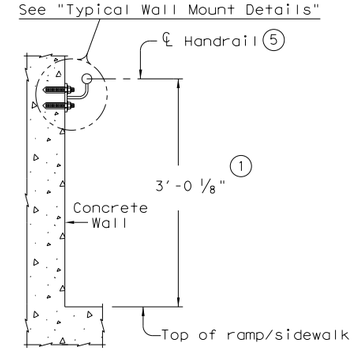


ELEVATION VIEW



VIEW I-I

(Showing Handrail Termination)



SECTION H-H

(Showing Handrail TY W)

1. Parallel to ground.
2. One shop splice per panel is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
3. Shop splice is permitted with minimum 85 percent penetration. The weld may be square groove or single vee groove. Grind smooth.
4. See Ramp Details located elsewhere in plans for ramp slope and dimensions. Maximum ramp slope will not exceed 8.3 percent. Level landing required for each 30" rise if grade exceeds 5 percent.
5. 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp / sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.
6. 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). See "Post Mount Detail" for crimping and trimming post to fit Dia. of top rail. Provide holes as needed in post for galvanizing drainage and venting. Plumb all posts.
7. See "Handrail Fabrication Details" for Splice Joints.
8. ℄ ⅝" Dia. Round Bar equal spacing at 4 ½" Max. Plumb all pickets.
11. See "General Notes" for anchor bolt information.

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	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		62

DATE:
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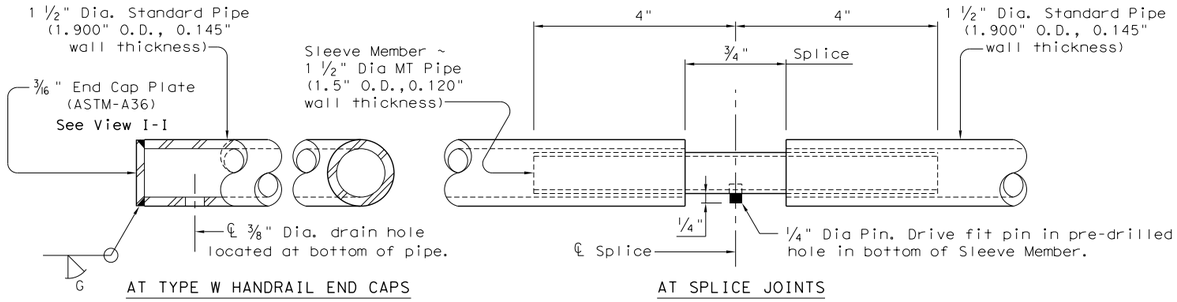
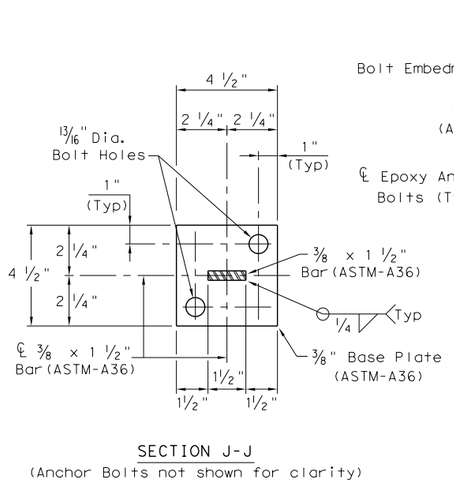
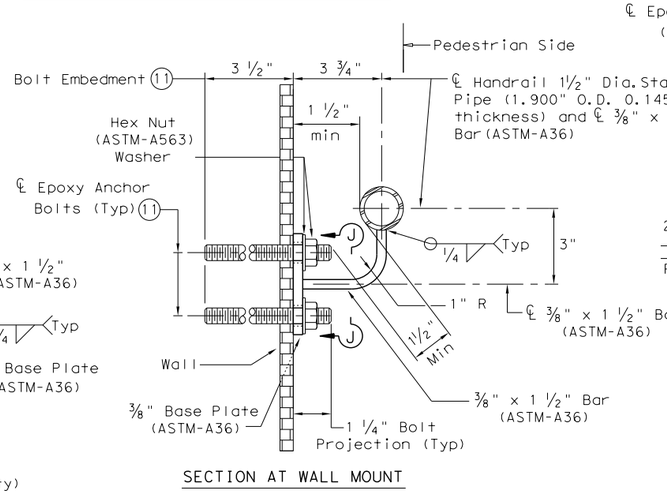
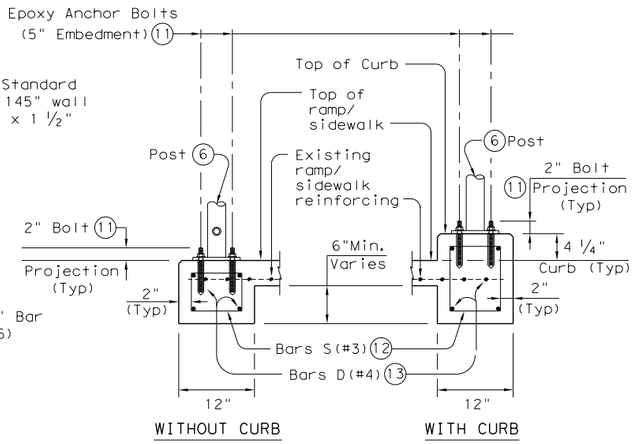


HANDRAIL FABRICATION DETAILS

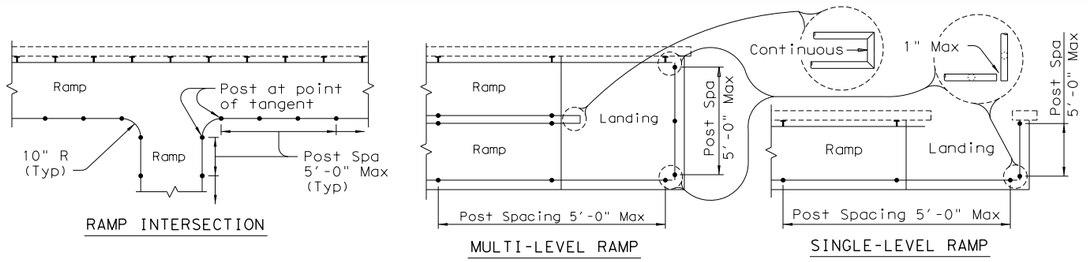






SECTION AT RAIL POST FOUNDATIONS

TYPICAL WALL MOUNT DETAILS



PLAN SHOWING RAIL AT RAMP CONDITIONS

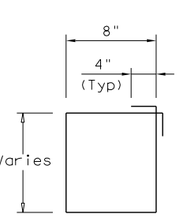
(5) 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

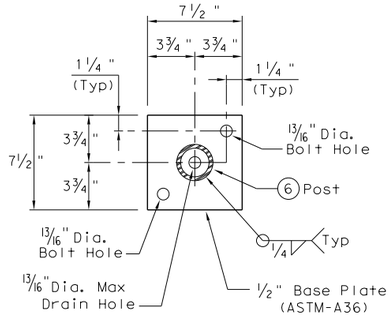
(6) 2 ½" Dia. Standard Pipe (2.875" O.D., 0.203" wall thickness). Plumb all posts. See "Post Mount Detail" for crimping and trimming post to fit the diamenter of top rail. Provide holes as needed in post for galvanizing drainage and venting.

(11) See "General Notes" for anchor bolt information.

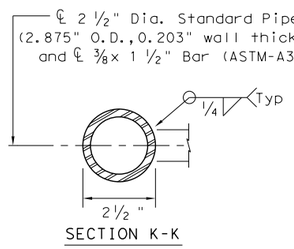
(12) Bars S(#3) spaced at 12" Max (Spaced 3" from outside edge of overall length of Ramp/Sidewalk).

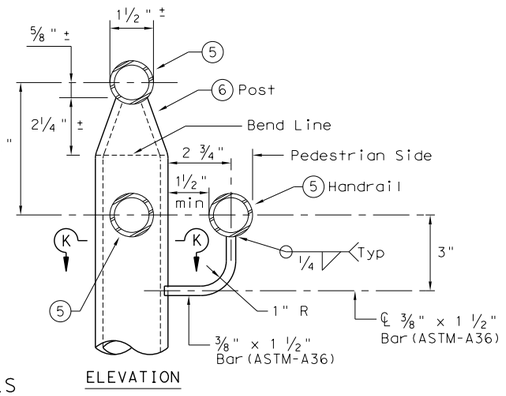
(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.





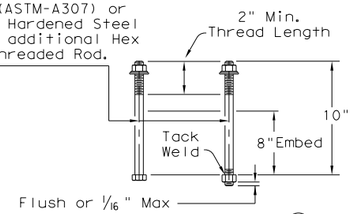
TYPICAL POST BASE PLATE DETAIL





POST MOUNT DETAILS

℄ 5/8" Dia. Hex Head Anchor Bolt (ASTM-A307) or Threaded Rod (ASTM-A36) with one Hardened Steel Washer placed under Hex Nut. One additional Hex Nut will be furnished for each Threaded Rod.



CAST-IN-PLACE ANCHOR BOLT OPTIONS
(Used for Post Base Plate only)

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.

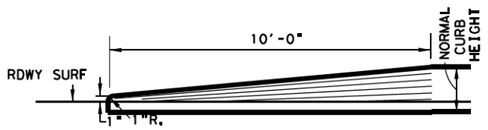
Texas Department of Transportation

Design Division Standard

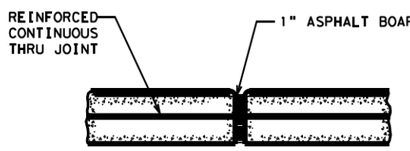
PEDESTRIAN HANDRAIL DETAILS

PRD-13

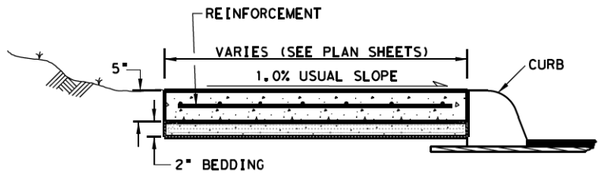
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	AUS	HAYS		63



TRANSITION FOR CONCRETE CURB ENDS



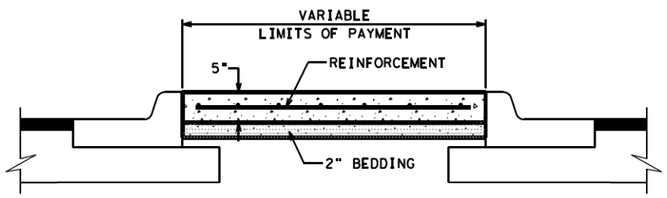
EXPANSION JOINT DETAIL



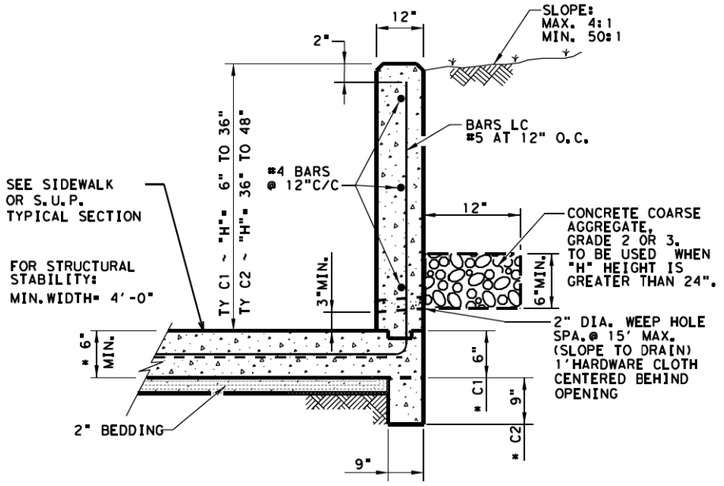
SIDEWALK & SHARED USE PATH (S.U.P.) TYP. SECT.

SIDEWALK OR S.U.P. EXPANSION JOINTS ARE TO BE AT A MAX. SPACING OF 40' AND COINCIDE WITH THE CURB EXPANSION JOINTS.

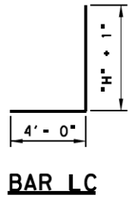
NOTE: TOOLED OR SAWED CONTRACTION JOINTS ARE NOT ALLOWED.



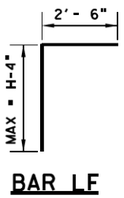
RIPRAP MEDIAN DETAIL



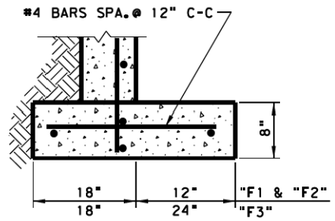
CONC CURB (TY C1) & (TY C2)



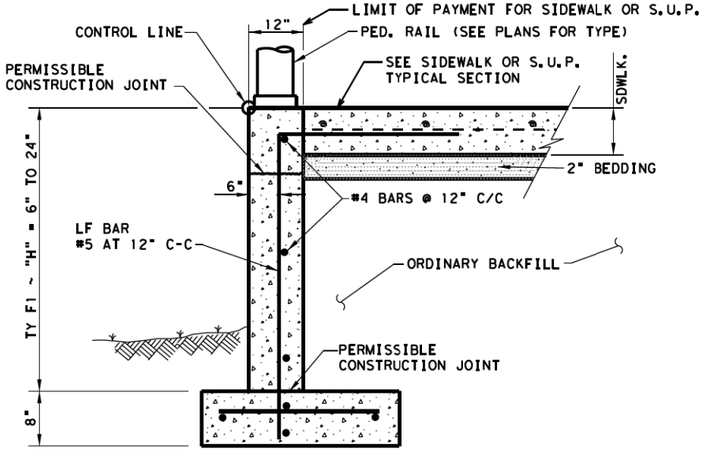
BAR LC



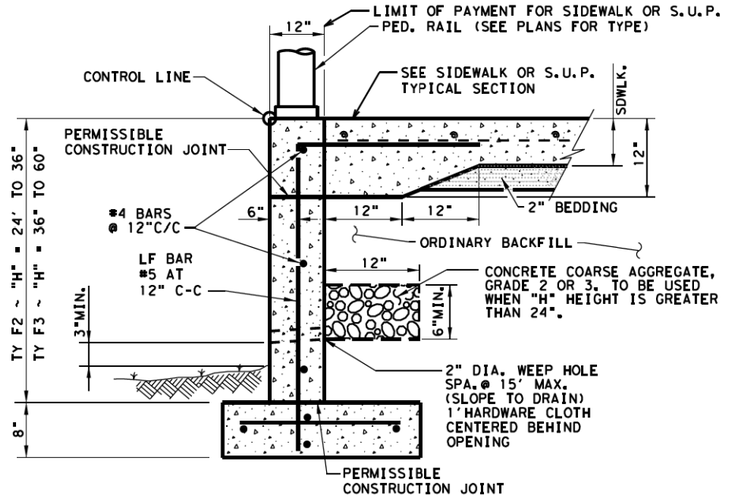
BAR LF



FOOTING DETAIL



CONC CURB (TY F1)‡



CONC CURB (TY F2) & (TY F3)‡

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.

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-19 (AUS)

REVISIONS
04/19 APPROVED

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		63A

DATE: 9/21/2020 12:55:01 PM
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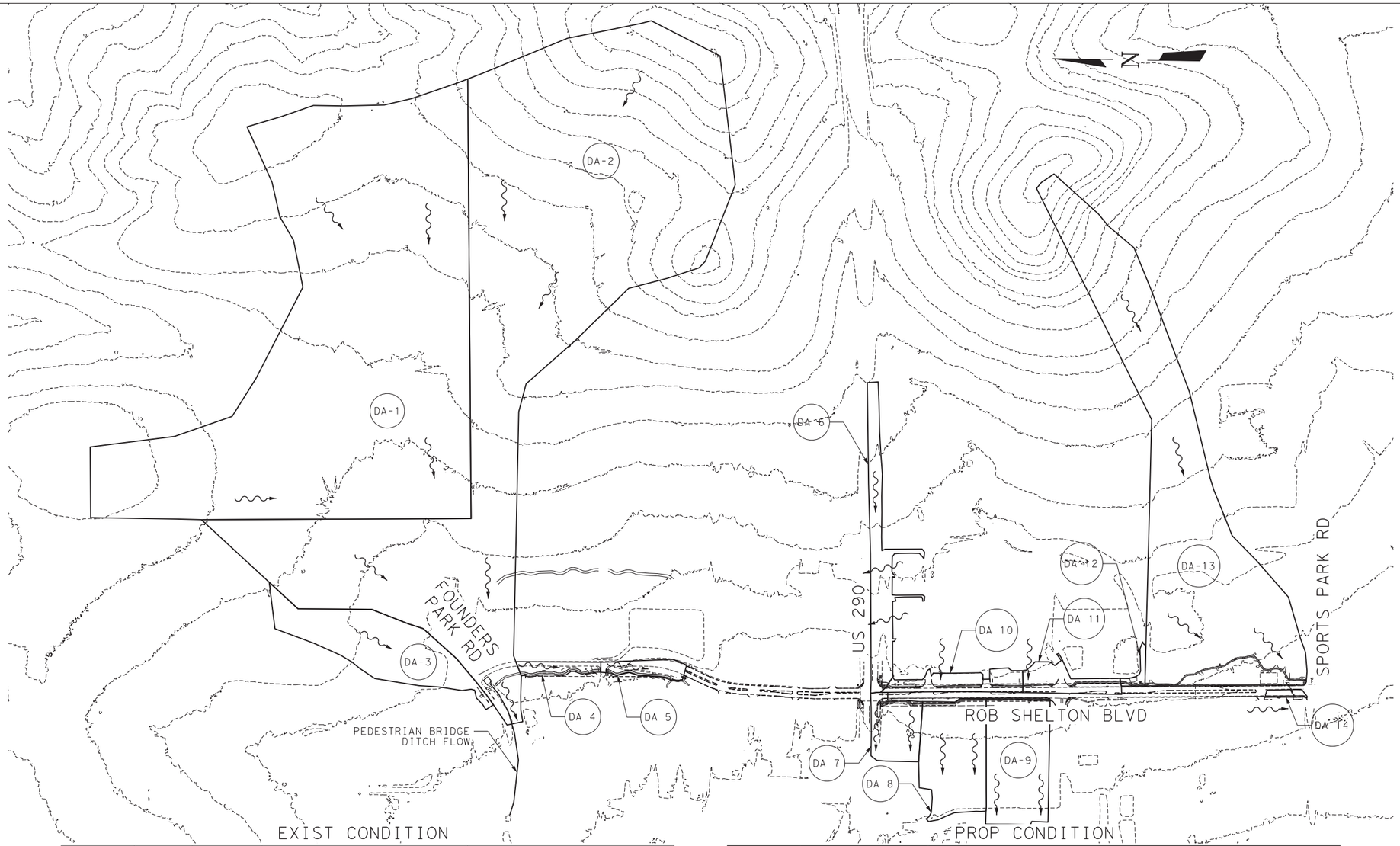

LEGEND

- FLOW DIRECTION
- DRAINAGE AREA BOUNDARY
- DITCH FLOW
- EXIST CONTOUR

NOTES:

1. RATIONAL METHOD USED.
2. DA_1 INCLUDES BIG SKY RANCH DEVELOPMENT AND DRAINS TO THE PROP PED BRIDGE.
3. DA_2 IS UNDEVELOPED LAND AND DRAINS TO THE PROP PED BRIDGE.
4. DA_6 DRAINS TO CULVERT UNDER ROB SHELTON BLVD ON SOUTH SIDE OF HWY 290.
5. DRAINAGE AREA BOUNDARIES DO NOT CHANGE FROM EXISTING TO PROPOSED CONDITIONS.
6. ATLAS-14 RAINFALL INTENSITIES USED.

0 300′ 600′
HORIZONTAL SCALE

STATE OF TEXAS
JEREMY A. BRANCH
133488
LICENSED PROFESSIONAL ENGINEER
02/17/2022

DRAINAGE AREA	AREA (ACRES) A	TC (MINUTES)	10-YEAR STORM			100-YEAR STORM		
			RUNOFF COEFFICIENT C	INTENSITY (IN/HR) I	PEAK FLOW (CFS) Q	RUNOFF COEFFICIENT C	INTENSITY (IN/HR) I	PEAK FLOW (CFS) Q
DA_1	60.61	17.09	0.59	6.10	223.97	0.59	9.79	359.60
DA_2	67.66	38.14	0.41	4.06	93.68	0.41	6.48	150.85
DA_3	5.91	18.76	0.42	5.85	12.30	0.42	9.37	19.64
DA_4	0.64	10.00	0.66	7.60	3.18	0.66	12.40	5.19
DA_5	0.78	10.00	0.47	7.60	2.82	0.47	12.40	4.61
DA_6	3.30	10.00	0.61	7.60	14.83	0.67	12.40	24.13
DA_7	1.94	59.34	0.52	3.00	2.73	0.52	4.86	4.47
DA_8	4.48	15.15	0.40	6.35	9.24	0.40	10.20	14.77
DA_9	4.88	11.24	0.45	7.35	13.42	0.45	11.96	21.54
DA_10	1.50	30.16	0.55	4.46	5.89	0.55	7.10	9.56
DA_11	1.32	30.16	0.59	4.46	5.52	0.59	7.10	8.96
DA_12	0.24	14.78	0.47	6.35	0.60	0.47	10.20	0.97
DA_13	25.39	30.36	0.35	4.46	39.76	0.35	7.10	63.29
DA_14	0.18	10.00	0.83	7.60	1.12	0.83	12.40	1.83

DRAINAGE AREA	AREA (ACRES) A	TC (MINUTES)	10-YEAR STORM			100-YEAR STORM		
			RUNOFF COEFFICIENT C	INTENSITY (IN/HR) I	PEAK FLOW (CFS) Q	RUNOFF COEFFICIENT C	INTENSITY (IN/HR) I	PEAK FLOW (CFS) Q
DA_1	60.61	17.09	0.59	6.10	223.97	0.59	9.79	359.60
DA_2	67.66	38.14	0.41	4.06	93.76	0.41	6.48	150.98
DA_3	5.91	18.76	0.42	5.85	12.30	0.42	9.37	19.65
DA_4	0.64	10.00	0.66	7.60	3.20	0.66	12.40	5.21
DA_5	0.78	10.00	0.47	7.60	2.82	0.47	12.40	4.61
DA_6	3.30	10.00	0.61	7.60	14.85	0.67	12.40	24.16
DA_7	1.94	59.34	0.52	3.00	2.73	0.52	4.86	4.47
DA_8	4.48	15.15	0.40	6.35	9.24	0.40	10.20	14.77
DA_9	4.88	11.24	0.45	7.35	13.42	0.45	11.96	21.54
DA_10	1.50	30.16	0.56	4.46	5.96	0.55	7.10	9.67
DA_11	1.32	30.16	0.59	4.46	5.52	0.59	7.10	8.96
DA_12	0.24	14.78	0.47	6.35	0.60	0.47	10.20	0.97
DA_13	25.39	30.36	0.35	4.46	39.76	0.35	7.10	63.29
DA_14	0.18	10.00	0.90	7.60	1.21	0.83	12.40	1.98

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD DRAINAGE AREA MAP

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		64

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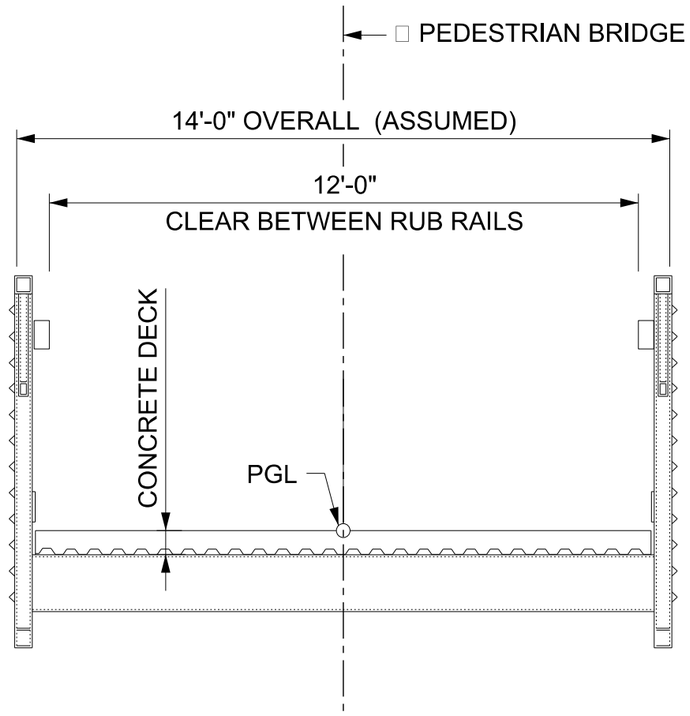

TYPICAL SECTION

NOT TO SCALE

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

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TX FIRM F-2144

ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
PEDESTRIAN BRIDGE
TYPICAL SECTION

STATE OF TEXAS
FERIDOON MALEKGHASSEMI
94488
LICENSED
PROFESSIONAL ENGINEER

02/18/2022

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		65

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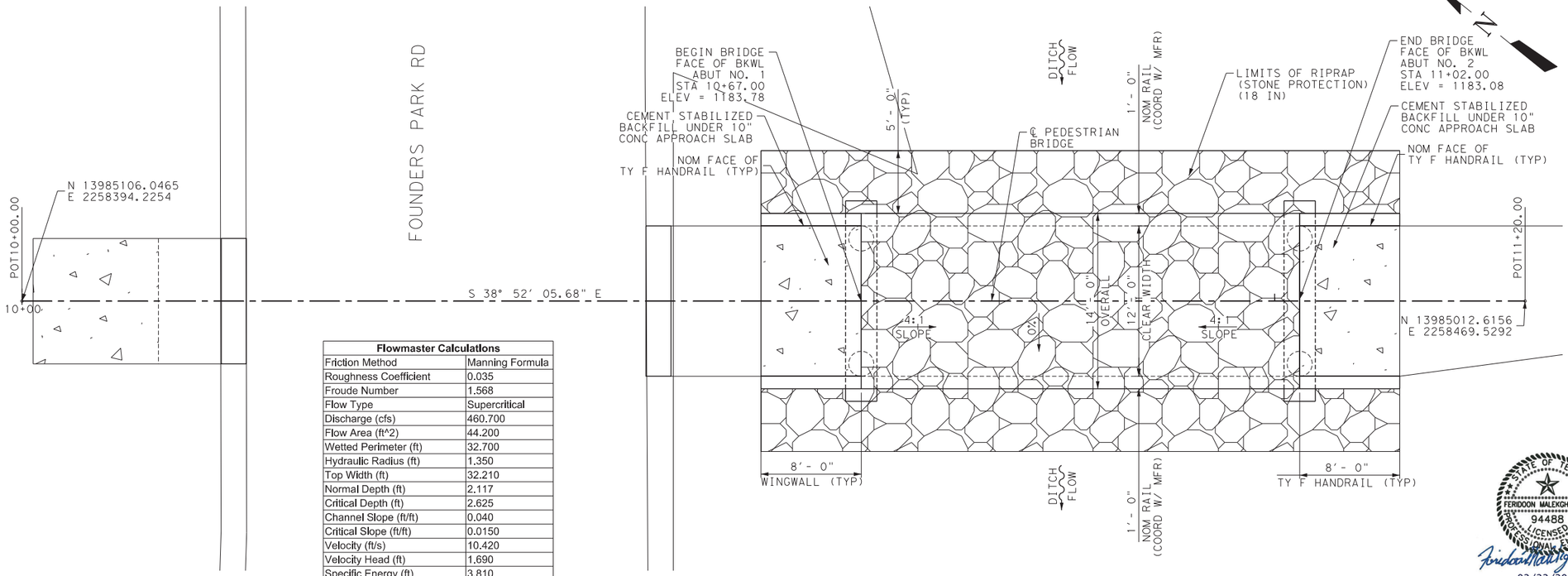


Flowmaster Calculations	
Friction Method	Manning Formula
Roughness Coefficient	0.035
Froude Number	1.568
Flow Type	Supercritical
Discharge (cfs)	460.700
Flow Area (ft^2)	44.200
Wetted Perimeter (ft)	32.700
Hydraulic Radius (ft)	1.350
Top Width (ft)	32.210
Normal Depth (ft)	2.117
Critical Depth (ft)	2.625
Channel Slope (ft/ft)	0.040
Critical Slope (ft/ft)	0.0150
Velocity (ft/s)	10.420
Velocity Head (ft)	1.690
Specific Energy (ft)	3.810
Elevation Range (ft)	1179.0-1183.1
WSEL	1181.130

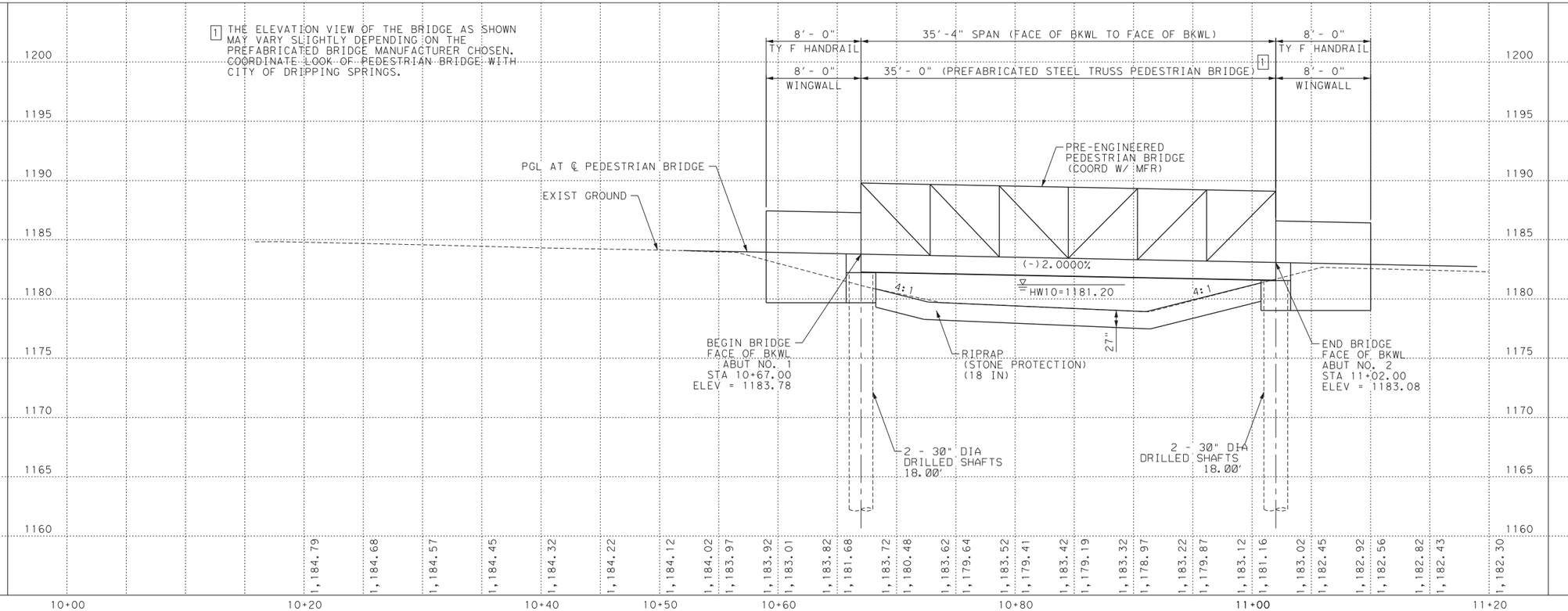
NOTES:

1. DESIGNED FOR H10 & PEDESTRIAN LOADING IN ACCORDANCE WITH AASHTO LRFD GUIDE SPECS FOR THE DESIGN OF PEDESTRIAN BRIDGES.
2. FUTURE OVERLAY WILL NOT BE PERMITTED FOR USE ON THIS BRIDGE.
3. FOR ADDITIONAL BORING LOG INFORMATION REFER TO THE BORING LOG SHEETS.
4. CONTRACTOR TO VERIFY THE LOCATION & DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION OR FABRICATION.
5. BRIDGE DECK SHALL BE REINFORCED CONCRETE W/ A ROUGH BROOM FINISH.
6. PREFABRICATED BRIDGE SHALL INCLUDE A FULL WIDTH JOINT COVER ANGLE OR PLATE AT BOTH ABUTMENTS.
7. PREFABRICATED BRIDGE SHALL COMPLY WITH ALL THE LOCAL AND NATIONAL SAFETY AND ACCESSIBILITY REQUIREMENTS HAVING JURISTICTION.

0 5' 10'
HORIZONTAL SCALE
0 5' 10'
VERTICAL SCALE

STATE OF TEXAS
FERDOON MALEKGHASSEMI
94488
LICENSED
PROFESSIONAL ENGINEER
02/22/2022
SEAL SHOWN FOR STRUCTURAL ELEMENTS ONLY

STATE OF TEXAS
JEREMY A. BRANCH
133488
LICENSED
PROFESSIONAL ENGINEER
02/22/2022
SEAL SHOWN FOR HYDRAULIC ELEMENTS ONLY



REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
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Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD PEDESTRIAN BRIDGE LAYOUT

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		66

DATE: Feb. 22, 2022 - 10:41:37 AM
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SUMMARY OF PEDESTRIAN BRIDGE ITEMS

LOCATION	400 6005 CEM STABIL BKFL	416 6003 DRILL SHAFT (30 IN)	420 6013 CL C CONC (ABUT)	422 6015 APPROACH SLAB	432 6033 RIPRAP (STONE PROTECTION) (18 IN)	450 6052 RAIL (HANDRAIL) (TY F)	4196 6003 PREFAB PED STL TRUSS BRG SPAN (35FT)
	CY	LF	CY	CY	CY	LF	EA
PEDESTRIAN BRIDGE	25.2	72	18.3	5.6	83.3	16	1
PROJECT TOTALS	25.2	72	18.3	5.6	83.3	16	1

01/31/2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
PEDESTRIAN BRIDGE
ESTIMATED QUANTITIES

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		67

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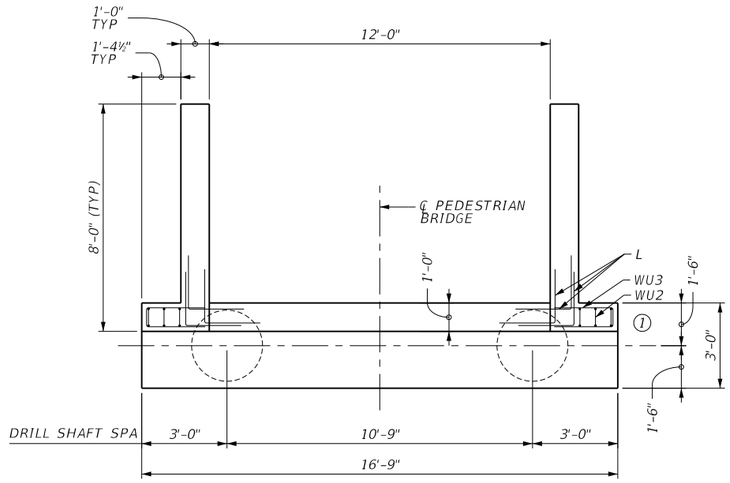

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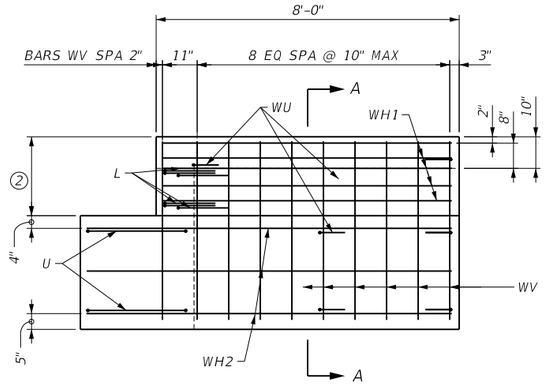
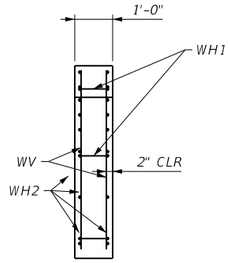


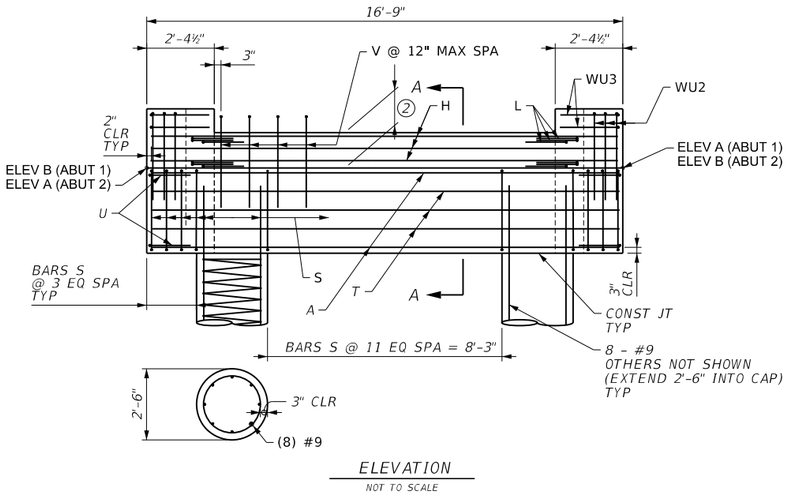
WINGWALL ELEVATION
NOT TO SCALE



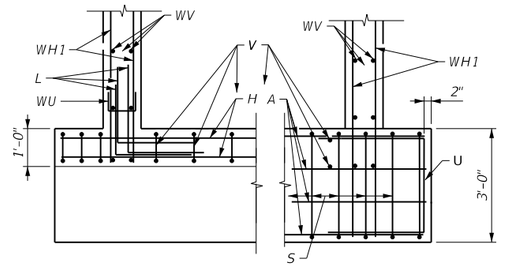
SECTION A
NOT TO SCALE

TABLE OF ESTIMATED QUANTITIES FOR ONE ABUTMENT				
BAR	NO.	SIZE	LENGTH	WEIGHT
A	8	#11	16'-5"	698
H	6	#6	16'-5"	148
L	12	#6	7'-0"	126
S	18	#5	11'-6"	216
T	6	#5	16'-5"	103
U	4	#6	9'-7"	58
V	13	#5	10'-6"	142
WH1	20	#6	7'-8"	230
WH2	12	#6	9'-8"	174
WU1	12	#4	1'-6"	12
WU2	6	#4	4'-8"	19
WU3	4	#4	3'-8"	10
WV	40	#4	4'-8"	125
REINFORCING STEEL			LB	2060
CLASS "C" CONCRETE			CY	9.15

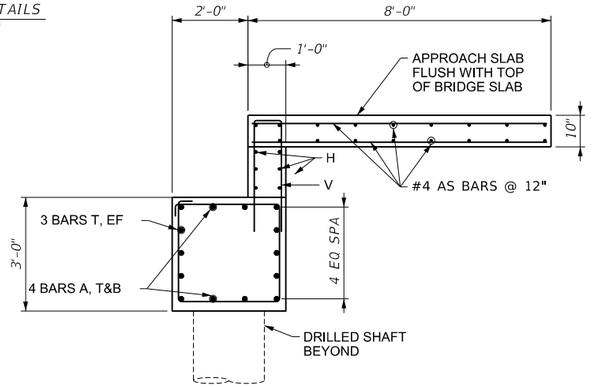
① OTHERS BARS NOT SHOWN
② BACKWALL HEIGHT DEPENDES ON PREFAB BRIDGE REQUIREMENTS. COORDINATE WITH VENDOR.



ELEVATION
NOT TO SCALE



BACKWALL CAP
CORNER DETAILS
NOT TO SCALE

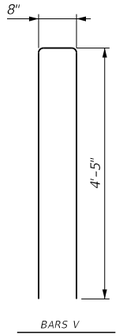


SECTION A
NOT TO SCALE

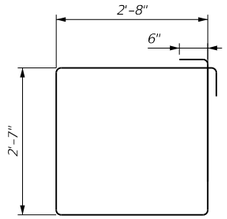
	ELEV A	ELEV B
ABUT 1	1181.69	1189.61
ABUT 2	1181.00	1181.00

NOTES:
1. DESIGNED IN ACCORDANCE WITH AASHTO LRFD, 9TH/ EDITION, BRIDGE DESIGN SPECIFICATIONS.
2. SEE BRIDGE LAYOUT FOR HEADER SLOPE AND FOUNDATION TYPE, SIZE, AND LENGTH.
3. SEE COMMON FOUNDATION DETAILS (FD) STANDARD SHEET FOR ALL FOUNDATION DETAILS AND NOTES.
4. COVER DIMENSIONS FOR REINFORCING STEEL ARE CLEAR DIMENSIONS, UNLESS NOTED OTHERWISE. REINFORCING BAR DIMENSIONS SHOWN ARE OUT-TO-OUT OF BARS.
5. PROVIDE CLASS C CONCRETE WITH MINIMUM COMPRESSIVE STRESS CAPACITY, F'C, OF 3600 PSI.
6. BRIDGE BEARING ASSEMBLY SHALL BE PROVIDED BY BRIDGE VENDOR.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ALL DIMENSIONS, QUANTITIES AND FIELD CONDITIONS PRIOR TO PURCHASE OF ANY MATERIAL AND EXECUTION OF ANY WORK.

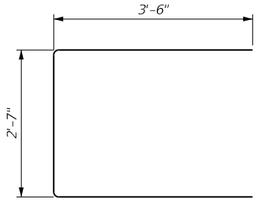
REV	DATE	DESCRIPTION



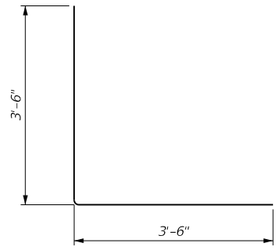
BARS V



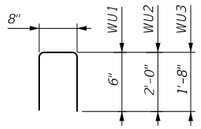
BARS S



BARS U



BARS L



BARS WU

NOTE: TREE SIZE BASED ON AERIAL. CONTRACTOR TO VERIFY SIZE IN FIELD.

STATE OF TEXAS
FERIDOON MALEKGHASSEMI
94488
LICENSED
PROFESSIONAL ENGINEER
02/18/2022

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
PEDESTRIAN BRIDGE
ABUTMENT NO. 1 & 2

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		68

DATE: Feb. 16, 2022 - 03:25:05 PM
FILE: N:\Plan Set\7. Bridge\DSP21528_BRIDGE_ABUT.dgn

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description
			CLAY, sandy, dark brown, dry, firm (CH)
1183.			LIMESTONE, light brown, very hard, with vugs
		50 (4) 50 (3)	
5			
		50 (0) 50 (0)	
10			
		50 (0) 50 (0)	
15			
		50 (0) 50 (0)	
20			
		50 (0) 50 (0)	
1160. 25			
30			

Elev. (ft)	LOG	Texas Cone Penetrometer	Strata Description
			CLAY, sandy, dark brown, moist, stiff (CH)
1187.			LIMESTONE, weathered, light brown, moderately hard
		47 (6) 50 (2)	
1185.			LIMESTONE, light brown, very hard, with vugs
5			
		50 (1) 50 (0)	
10			
		50 (2) 50 (1)	
		50 (0) 50 (0)	
15			
		50 (0) 50 (0)	
20			
		50 (0) 50 (0)	
1164. 25			
30			

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/2/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

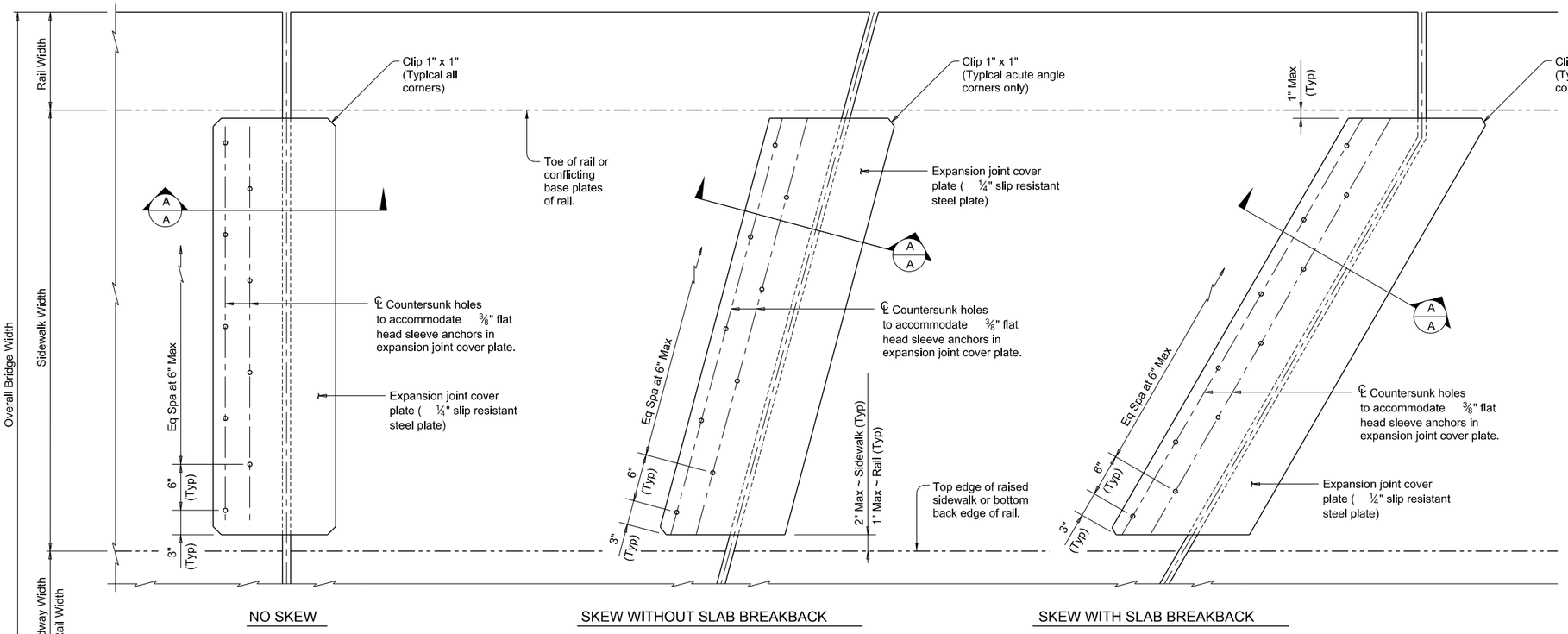
ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
BORING LOG

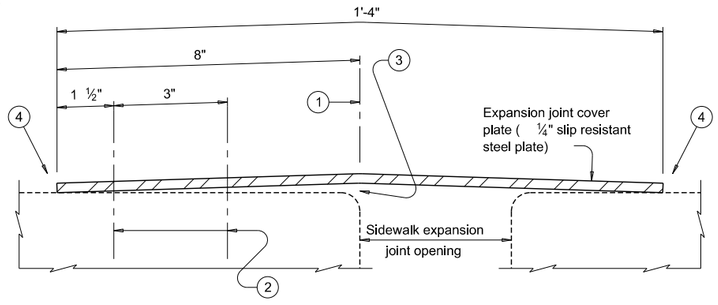
CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		69

DATE: Nov. 02, 2021 - 11:21:39 AM
FILE: N:\Plan Set\7. Bridge\USP21528_BORING_LOG.dgn

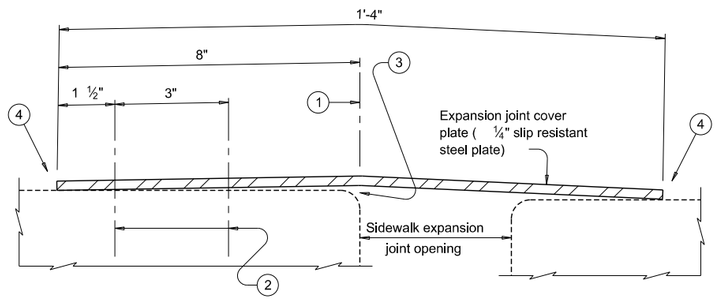
DATE:
FILE:



PLAN



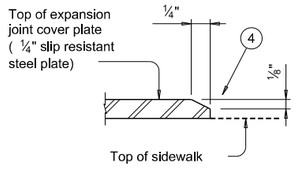
SHOWING LEVEL EXP JOINT



SHOWING UNLEVEL EXP JOINT
(Install sleeve anchors on high side of expansion joint)

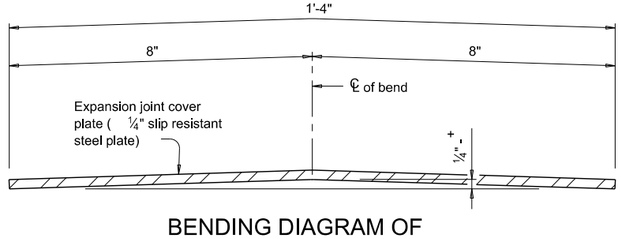
SECTION A-A

1. □ Expansion joint cover plate and edge of expansion joint.
2. □ ⅜" x 2 ½" Min, Flat Head Sleeve Anchors, Stainless Steel. Countersink Flat Head Sleeve Anchors in ¼" Slip Resistant Steel Plate.
3. It is not necessary to remove plate crown provided the plate is firmly secured to the sidewalk.
4. Transverse edges must be in contact with sidewalk surface after installation.



EXP JOINT COVER PLATE BEVEL DETAIL

Bevel all plate edges as shown.



BENDING DIAGRAM OF EXP JOINT COVER PLATE

APPROVED SLIP RESISTANT PLATE	
Product	Manufacturer Website
Algrip ,"Steel	www.algrip.com
Mebac ®#3, Steel	www.harscoikg.com
SlipNOT ®Grade 2, Steel	www.slipnot.com

Provide cover plates fabricated with a product from this list. No exceptions are permitted.

FABRICATION NOTES:

Shop drawings for the fabrication of Bridge Sidewalk Expansion Joint Cover Plate will not require the Engineer's approval if fabrication is in accordance with the details shown on this standard.

A Bridge Sidewalk Expansion Joint Cover Plate Layout which identifies location side of sleeve anchors and orientation of all cover plate sections must be developed by the fabricator. Mark each steel section in accordance with the Bridge Sidewalk Expansion Joint Cover Plate Layout. A copy of the Bridge Sidewalk Expansion Joint Cover Plate Layout is to be provided to the Engineer.

Sidewalk expansion joint cover plates must be hot-dipped galvanized ¼" slip resistant steel plate. Checker plate or diamond plate is not allowed nor are slip resistant tapes, films and non-metallic coatings.

Minimum required yield strength of steel plate is 36 ksi.

Hot-dip galvanize slip resistant steel plate after fabrication in accordance with Item 445, "Galvanizing".

Provide stainless steel flat head sleeve anchors meeting the requirements of ASTM F 593, Group I, Alloy 304. Countersink holes in slip-resistant plate for sleeve anchors. Drill holes in sidewalk as per sleeve anchor manufacturer's recommendations. Install sleeve anchors flush with, or slightly recessed below, top surface of sidewalk expansion joint cover plate.

GENERAL NOTES:

Sidewalk expansion joint cover plates can only accommodate up to a 7" maximum expansion joint opening.

Details provided are applicable to concrete walkway surfaces only.

Payment for sidewalk expansion joint cover plates are by the pound of "Structural Steel (Misc Non-Bridge)" as per Item 442, "Metal for Structures".

Estimated weight of one sidewalk expansion joint cover plate is 14 plf.

Texas Department of Transportation

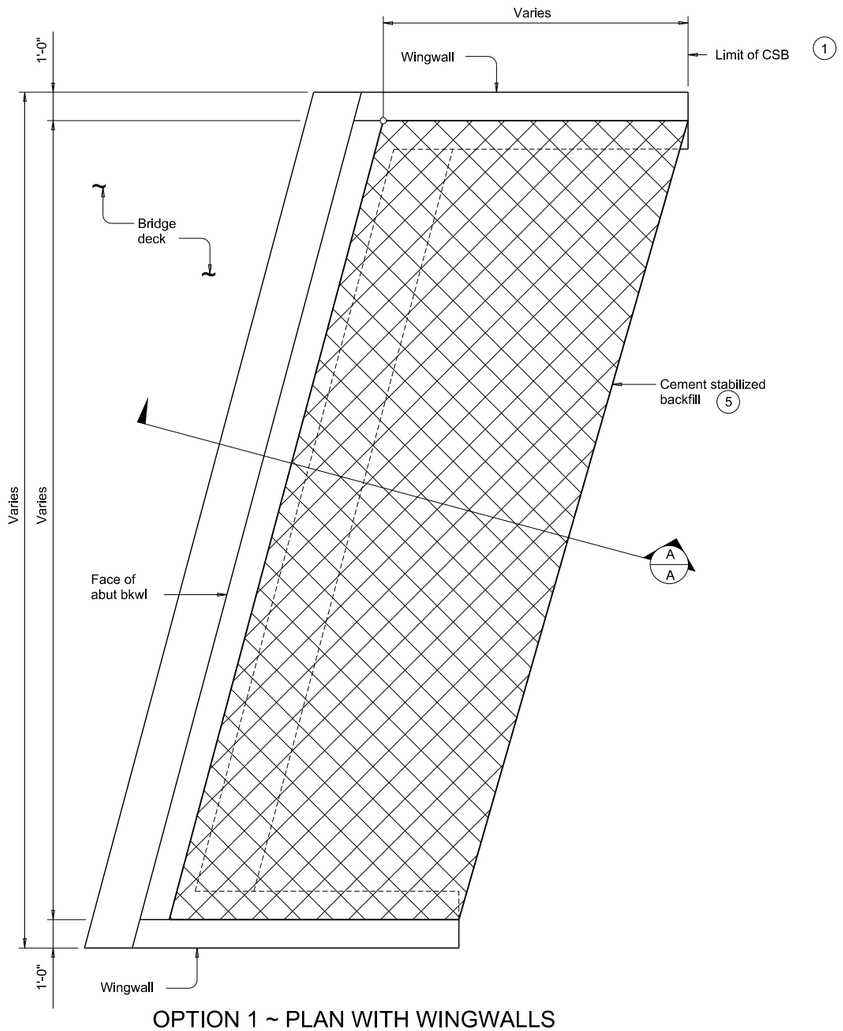
Bridge Division Standard

BRIDGE SIDEWALK EXPANSION JOINT COVER PLATE (ALL SKEWS)

BS-EJCP

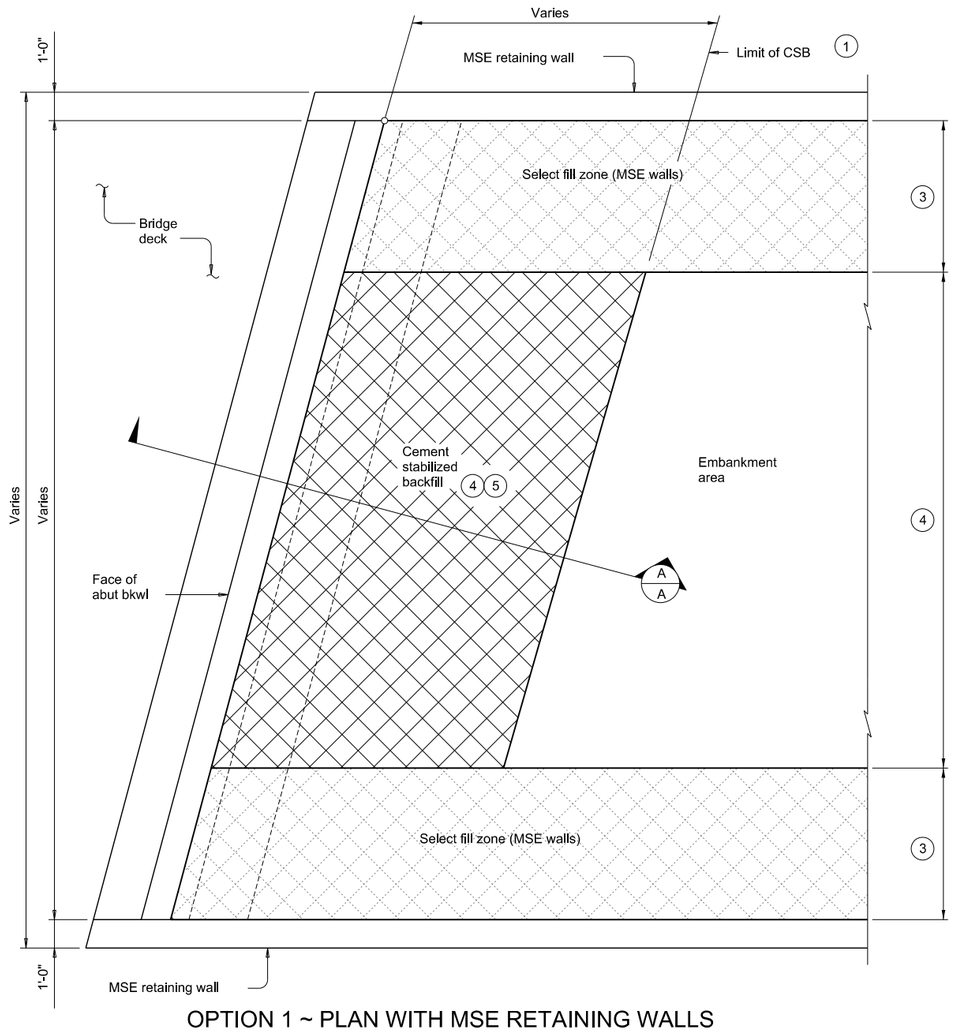
FILE: bsejste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
8-20: Closer tolerances on cover plate.	DIST	COUNTY		SHEET NO.
	AUS	HAYS		70

DATE:
FILE:

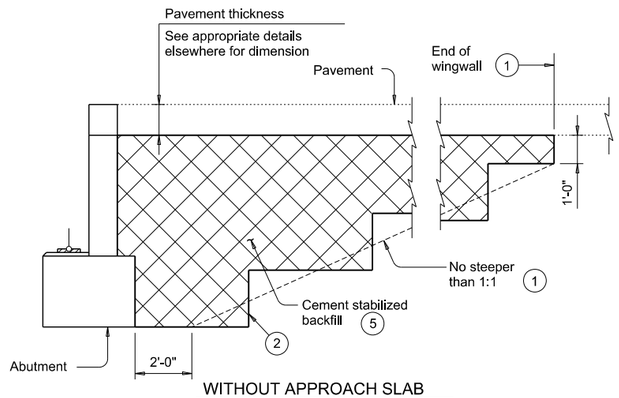


OPTION 1 ~ PLAN WITH WINGWALLS

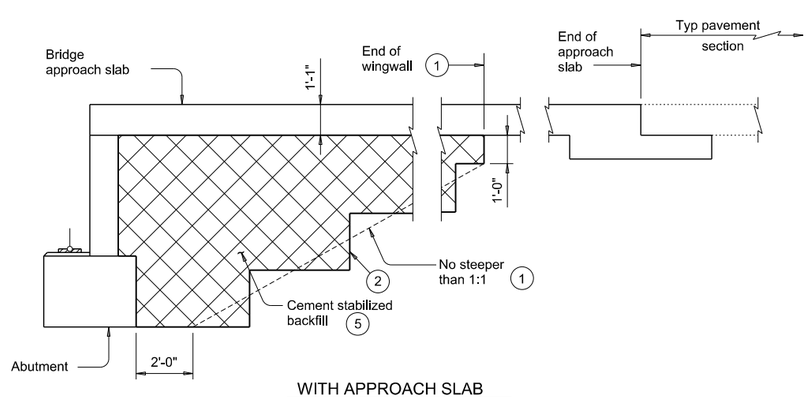
Cast-in-place retaining walls similar.



OPTION 1 ~ PLAN WITH MSE RETAINING WALLS



WITHOUT APPROACH SLAB



WITH APPROACH SLAB
(Showing BAS-C, BAS-A similar.)

SECTION A-A

1. Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.
2. Bench backfill as shown with 12" (approximate) bench depths.
3. Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.
4. When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.
5. If shown in the plans flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:
   a). If flowable backfill is to be placed over MSE backfill then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and
   b). Place flowable fill in lifts not exceeding 2 feet in height, place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).

GENERAL NOTES:

See the Bridge Layout for selected Option. Option 2 is intended for new construction requiring high plasticity embankment fill with a plasticity index (PI) greater than 30 or pavement built in poor native soil. Poor soils are defined as high plasticity clays or expansive clays. Option 1 is intended for construction only requiring PI controlled embankment fill or excavation in competent soils/rocks in order to construct the abutment.

Provide Cement Stabilized Backfill (CSB) meeting the requirements of Item 400, "Excavation and Backfill for Structures", to the limits shown at bridge abutments.

If required elsewhere in the plans, provide Flowable Backfill meeting the requirements of Item 401, "Flowable Backfill", to the limits shown at bridge abutments.

Details are drawn showing left forward skew. See Bridge Layout for actual skew direction.

These details do not apply when Concrete Block retaining walls are used in lieu of wingwalls.

Texas Department of Transportation

Bridge Division Standard

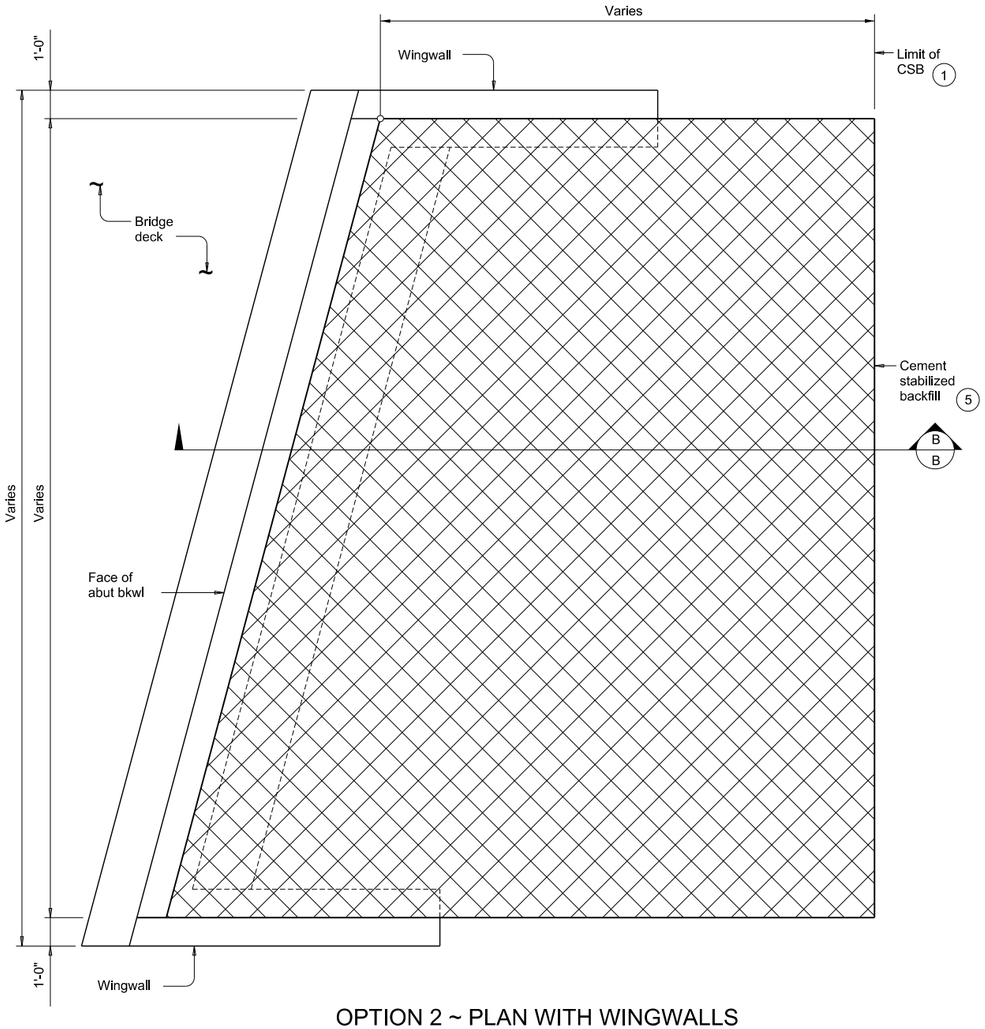
CEMENT STABILIZED ABUTMENT BACKFILL

BRIDGE ABUTMENT

CSAB

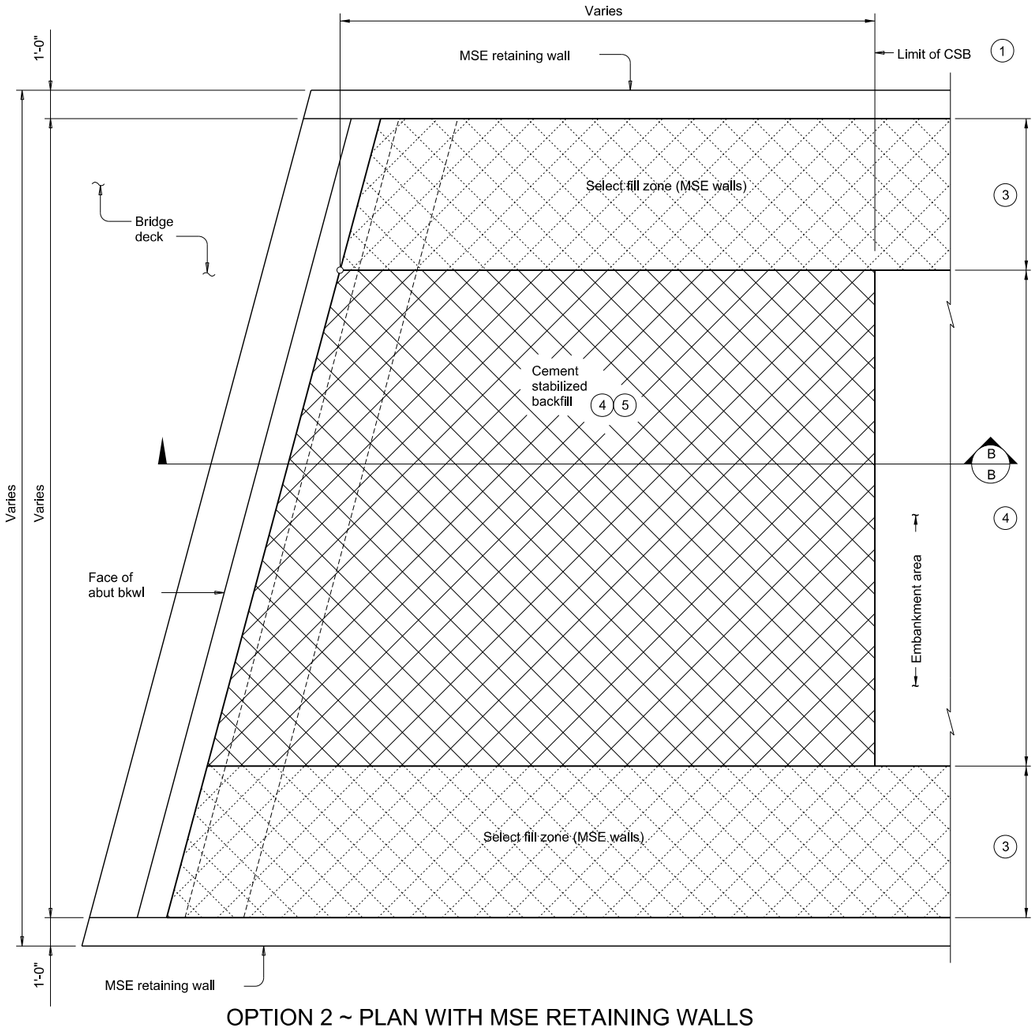
FILE: csabste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
02-20: Added Option 2.	DIST	COUNTY		SHEET NO.
	AUS	HAYS		71

DATE:
FILE:



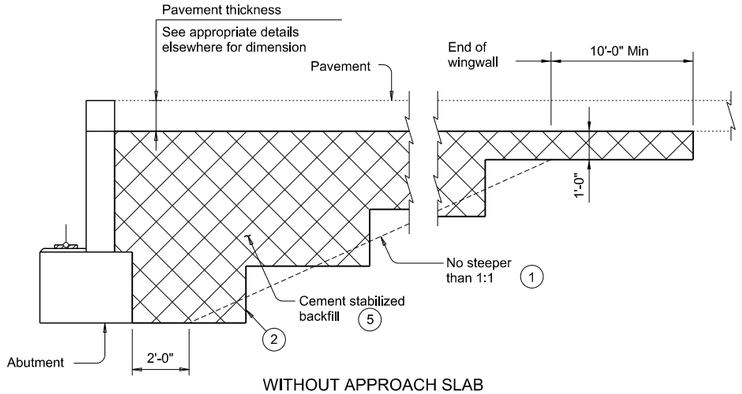
OPTION 2 ~ PLAN WITH WINGWALLS

Cast-in-place retaining walls similar.



OPTION 2 ~ PLAN WITH MSE RETAINING WALLS

1. Usual limit of Cement Stabilized Backfill is at end of wingwall. Extend CSB limits as required to maintain a slope no steeper than 1:1 at bottom of backfill.
2. Bench backfill as shown with 12" (approximate) bench depths.
3. Where MSE retaining walls are present, adjust CSB limits to accommodate the select fill zone. See retaining wall details for additional information.
4. When distance between select fill zones is less than 5'-0", MSE select fill may be substituted for cement stabilized backfill with approval from the Engineer.
5. If shown in the plans flowable backfill can be used as a substitute for cement stabilized backfill with the following constraints:
   a). If flowable backfill is to be placed over MSE backfill then a filter fabric will be placed over the MSE backfill prior to placement of the flowable fill; and
   b). Place flowable fill in lifts not exceeding 2 feet in height, place each successive lift when the previous lift has stiffened/hardened (i.e. has lost its flowability).



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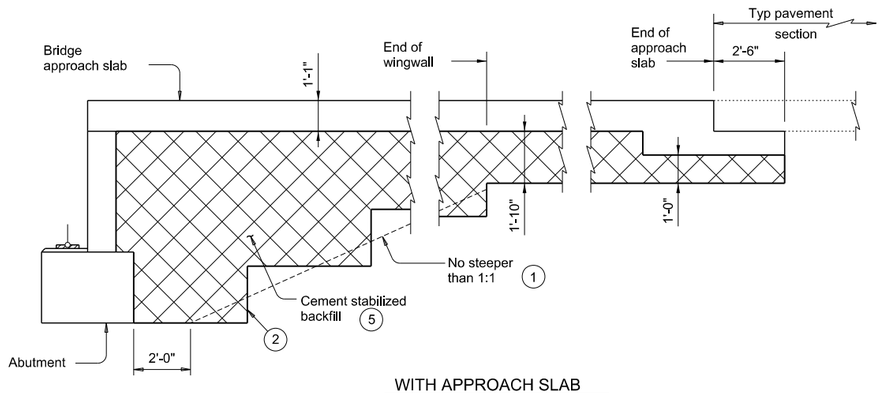


WITH APPROACH SLAB
(Showing BAS-C, BAS-A similar.)

SECTION B-B

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

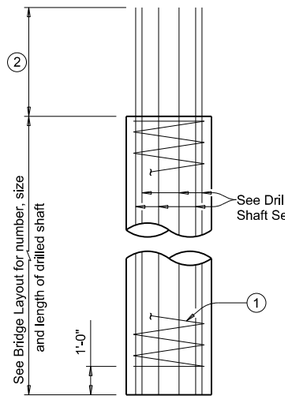
CEMENT STABILIZED ABUTMENT BACKFILL

BRIDGE ABUTMENT

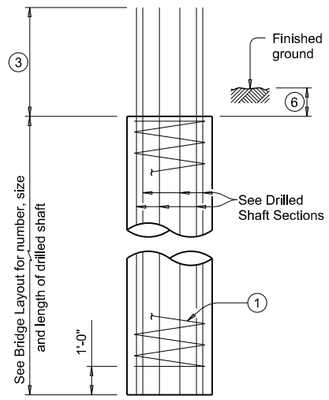
CSAB

FILE: csabste1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
02-20: Added Option 2.	DIST	COUNTY		SHEET NO.
	AUS	HAYS		72

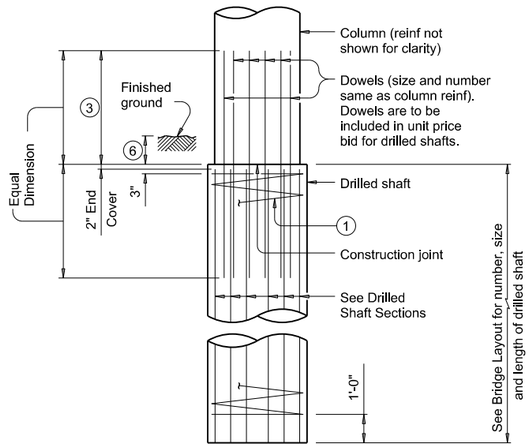
DATE:
FILE:



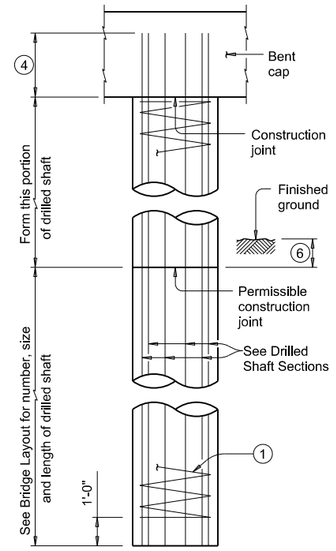
ABUTMENTS, WINGWALLS AND MULTI-DRILLED SHAFT FOOTINGS



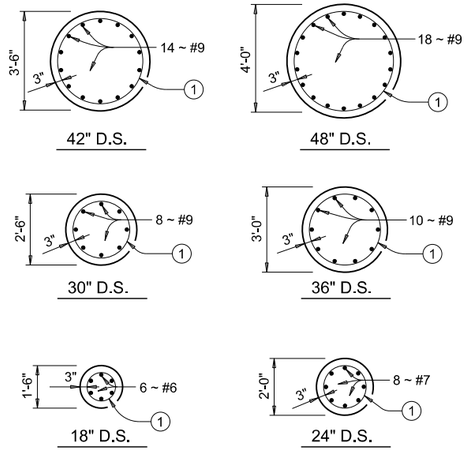
INTERIOR BENTS DRILLED SHAFT DIA EQUAL TO COLUMN DIA



INTERIOR BENTS DRILLED SHAFT DIA GREATER THAN COLUMN DIA



OPTIONAL INTERIOR BENT DRILLED SHAFT DETAIL (5)

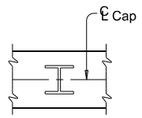


DRILLED SHAFT SECTIONS

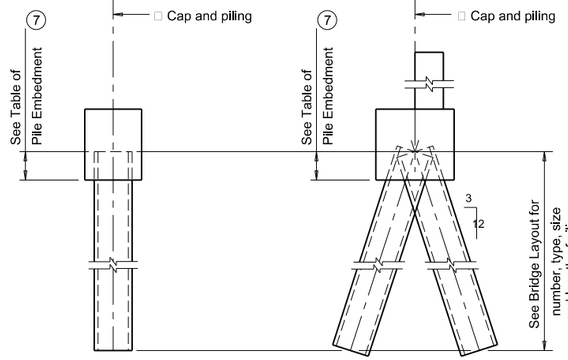
DRILLED SHAFT DETAILS

TABLE OF PILE EMBEDMENT	
Pile Type	Embedment Depth (Ft)
16" Sq Concrete 18" Sq Concrete HP14 Steel HP16 Steel	1'-0"
20" Sq Concrete 24" Sq Concrete HP18 Steel	1'-6"

See Prestressed Concrete Piling (CP) standard for additional details on concrete pile embedment.



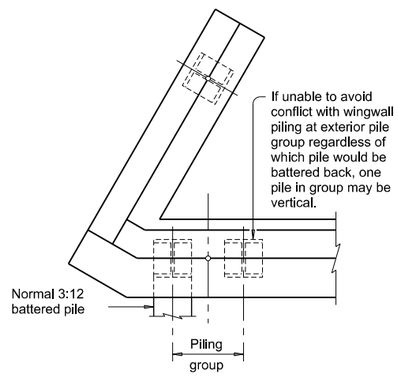
ORIENTATION OF STEEL H-PILING



VERTICAL PILE BATTERED PILE

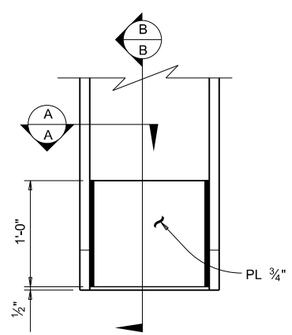
PILING DETAILS

(Concrete or steel H)

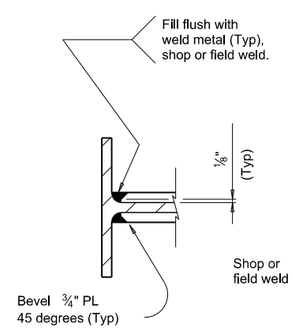


DETAIL "A"

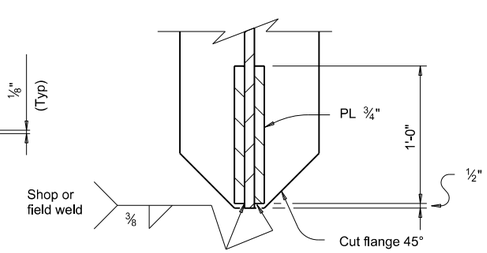
(Showing plan view of a 30° skewed abutment)



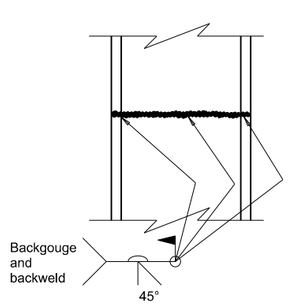
ELEVATION

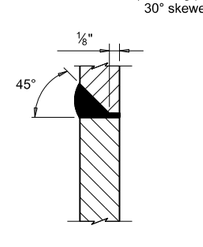


SECTION A-A



SECTION B-B





SECTION THRU FLANGE OR WEB

STEEL H-PILE TIP REINFORCEMENT

See Item 407 "Steel Piling" to determine when tip reinforcement is required and for options to the details shown.

STEEL H-PILE SPLICE DETAIL

Use when required.

(1) #3 spiral at 6" pitch (one and a half flat turns top and bottom).

(2) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-0"
#9 Bars = 2'-3"

(3) Min lap with column reinf:
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(4) Min extension into supported element:
#6 Bars = 1'-11"
#7 Bars = 2'-3"
#9 Bars = 2'-9"

(5) Drilled shafts may extend to the bottom of bent caps for "H" heights of 6 ft and less (as shown on the Bridge Layout), if approved. This option can only be used when the drilled shaft diameter equals the column diameter. Obtain approval of the forming method above the ground line prior to construction. No adjustments in payment will be made if this option is used.

(6) 1'-0" Min, unless shown otherwise on plans.

(7) Or as shown on plans.

Texas Department of Transportation

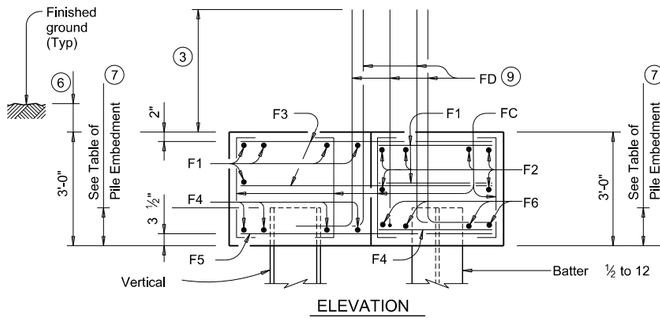
Bridge Division Standard

COMMON FOUNDATION DETAILS

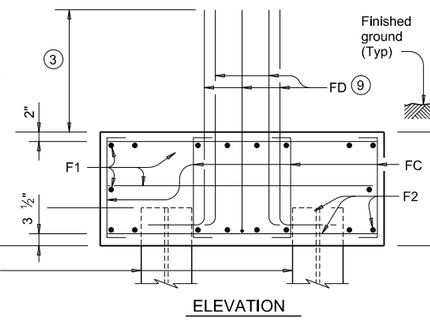
FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS 01-20: Added #11 bars to the FD bars.	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		73

DATE:
FILE:



ELEVATION



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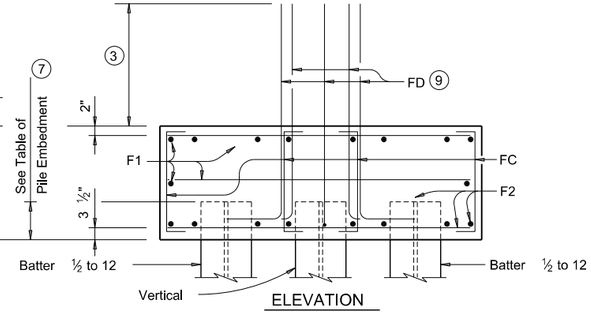

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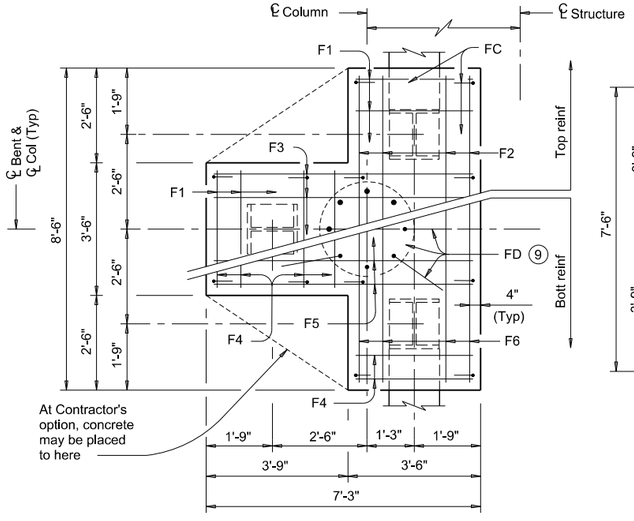
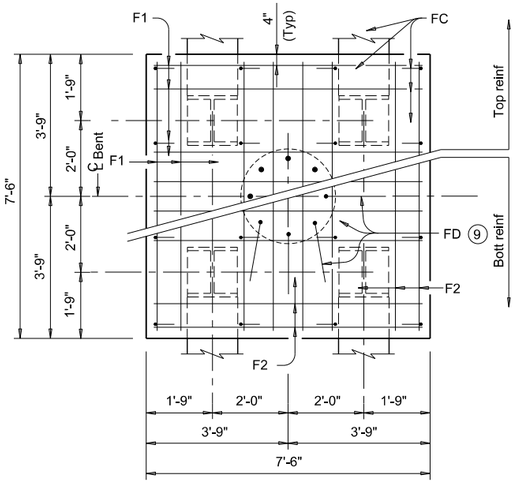


PLAN

THREE PILE FOOTING (8)

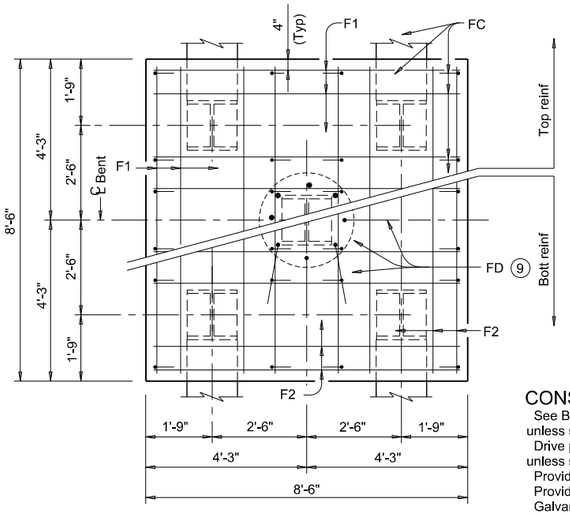
For 36" Dia and smaller columns.



PLAN

FOUR PILE FOOTING (8)

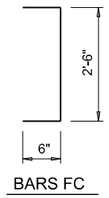
For 42" Dia and smaller columns.



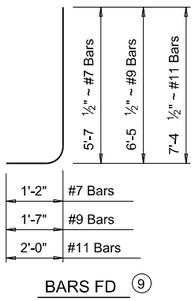
PLAN

FIVE PILE FOOTING (8)

For 42" Dia and smaller columns.



BARS FC



BARS FD (9)

(3) Min lap with column reinforcing:
#7 Bars = 2'-11"
#9 Bars = 3'-9"
#11 Bars = 4'-8"

(6) 1'-0" Min, unless shown otherwise on plans.

(7) Or as shown on plans.

(8) See Bridge Layout for type, size and length of piling.

(9) Number and size of FD bars must match column reinforcing. Tie FD bars to the top of the bottom reinforcing mat.

(10) Adjust FD quantity, size and weight as needed to match column reinforcing.

TABLE OF FOOTING QUANTITIES FOR 30" COLUMNS

ONE 3 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	11	#4	3'- 2"	23
F2	6	#4	8'- 2"	33
F3	6	#4	6'- 11"	28
F4	8	#9	3'- 2"	86
F5	4	#9	6'- 11"	94
F6	4	#9	8'- 2"	111
FC	12	#4	3'- 6"	28
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	623
Class "C" Concrete			CY	4.8

ONE 4 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	20	#4	7'- 2"	96
F2	16	#8	7'- 2"	306
FC	16	#4	3'- 6"	37
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	659
Class "C" Concrete			CY	6.3

ONE 5 PILE FOOTING				
Bar	No.	Size	Length	Weight
F1	20	#4	8'- 2"	109
F2	16	#9	8'- 2"	444
FC	24	#4	3'- 6"	56
FD (10)	8	#9	8'- 1"	220
Reinforcing Steel			Lb	829
Class "C" Concrete			CY	8.0

CONSTRUCTION NOTES:

See Bridge Layout for foundation type required. Use these foundation details unless shown otherwise.

Drive piling under abutment wingwalls to a minimum resistance of 10 Tons/Pile unless shown otherwise.

Provide Class C Concrete (f'c = 3,600 psi), unless shown otherwise.

Provide Grade 60 reinforcing steel.

Galvanize reinforcing if shown elsewhere in the plans.

Provide bar laps for drilled shaft reinforcing, where required, as follows:

Uncoated or galvanized (#6) ~ 2'-6"
Uncoated or galvanized (#7) ~ 2'-11"
Uncoated or galvanized (#9) ~ 3'-9"

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

DESIGNER NOTES:

Do not use the drilled shaft details shown on this standard for retaining wall, noise wall, barrier, or sign foundations without structural evaluation.

Do not use the footings shown on this standard in direct contact with salt water or exposed to salt water spray.

Maximum allowable pile loads for the footings shown are:

72 Tons/Pile with 24" Dia Columns
80 Tons/Pile with 30" Dia Columns
100 Tons/Pile with 36" Dia Columns
120 Tons/Pile with 42" Dia Columns

Texas Department of Transportation

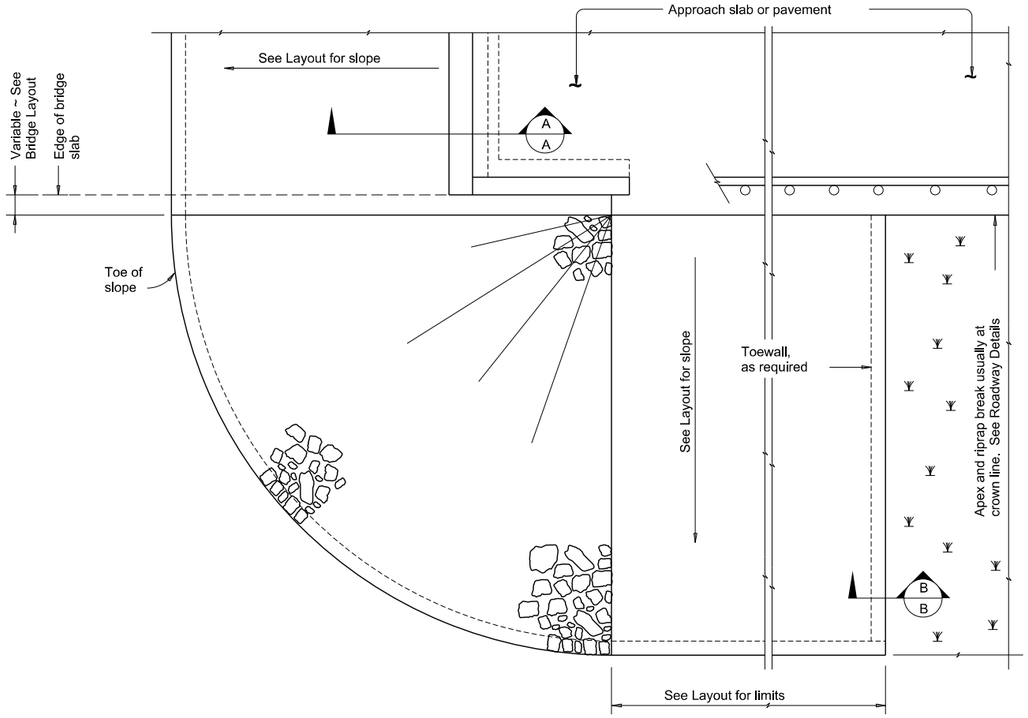
Bridge Division Standard

COMMON FOUNDATION DETAILS

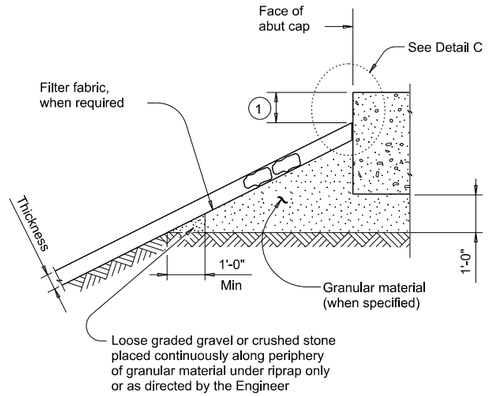
FD

FILE: fdstde01-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
01-20: Added #11 bars to the FD bars.	DIST	COUNTY		SHEET NO.
	AUS	HAYS		74

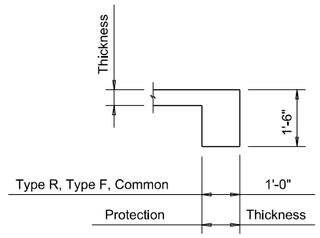
DATE:
FILE:



PLAN

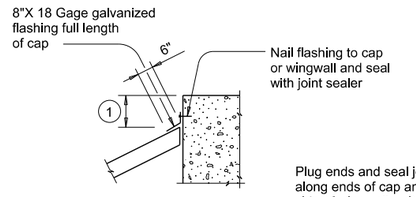


SECTION A-A AT CAP

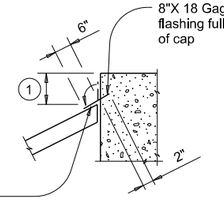


SECTION B-B

Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".

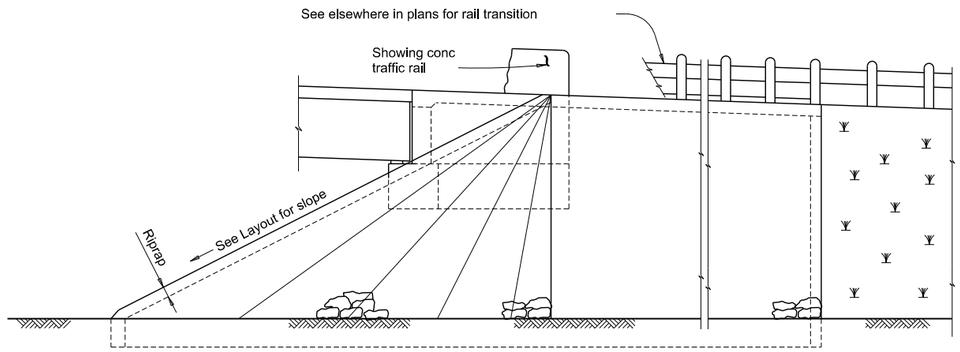


CAP OPTION A



CAP OPTION B

DETAIL C



ELEVATION

(1) Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

GENERAL NOTES:
Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.
See elsewhere in plans for locations and details of shoulder drains.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES		CK: JGD	DW: BWH		CK: AES	
©TxDOT April 2019	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0914	33	087		SHELTON LN		
	DIST	COUNTY				SHEET NO.	
	AUS	HAYS				75	

DATE:
FILE:

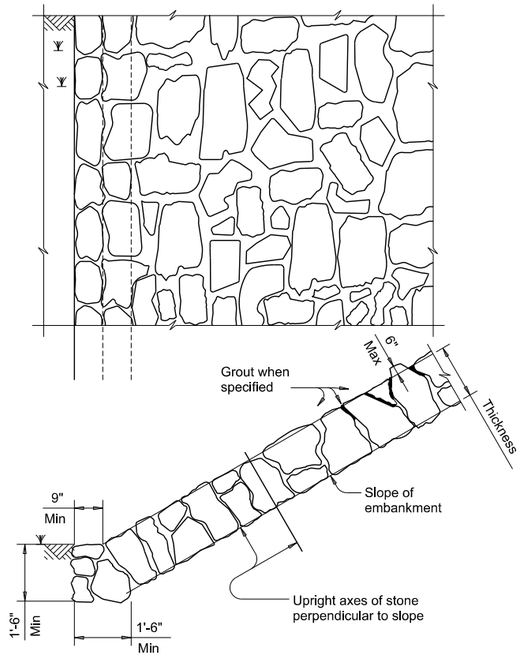


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

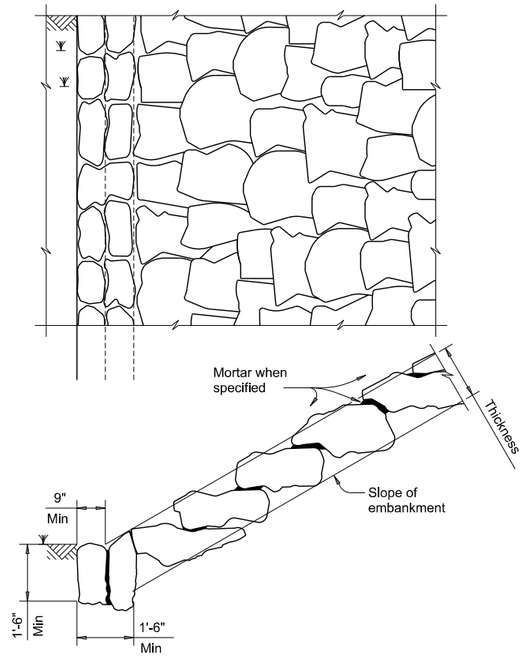


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

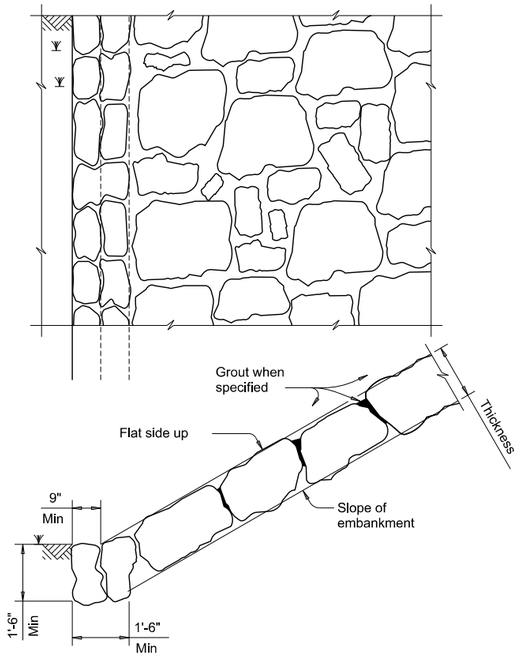


FIGURE 3 ~ TYPE F STONE RIPRAP

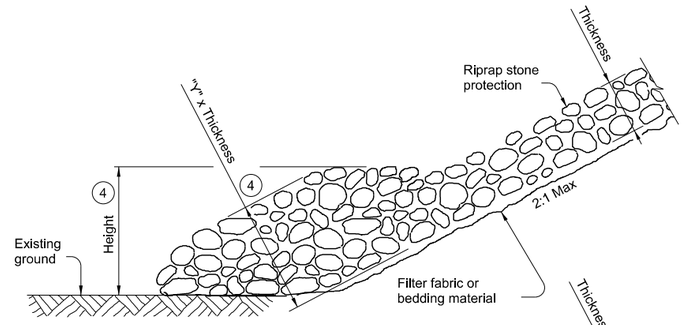
grouted

(2) Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.

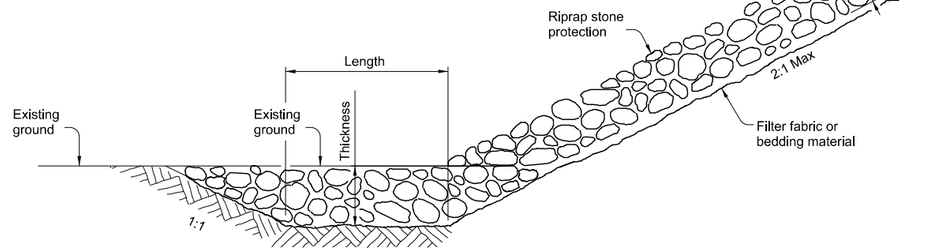
(3) Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

(4) "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.

(5) List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.

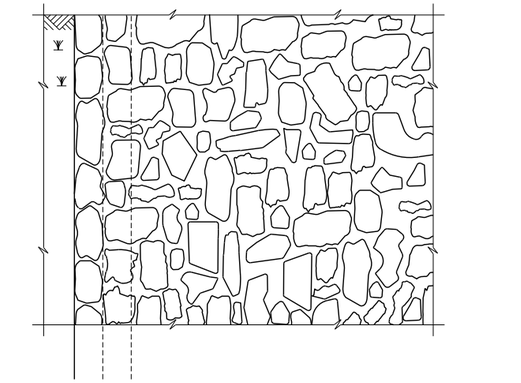


MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)



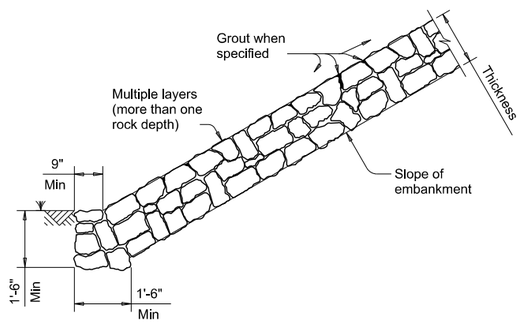
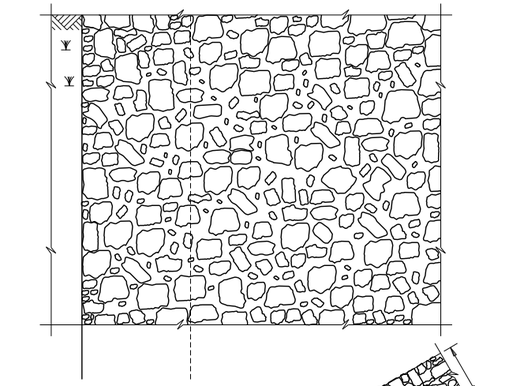


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted



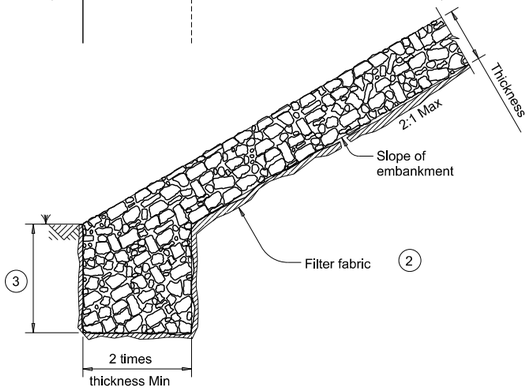


FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

SHEET 2 OF 2

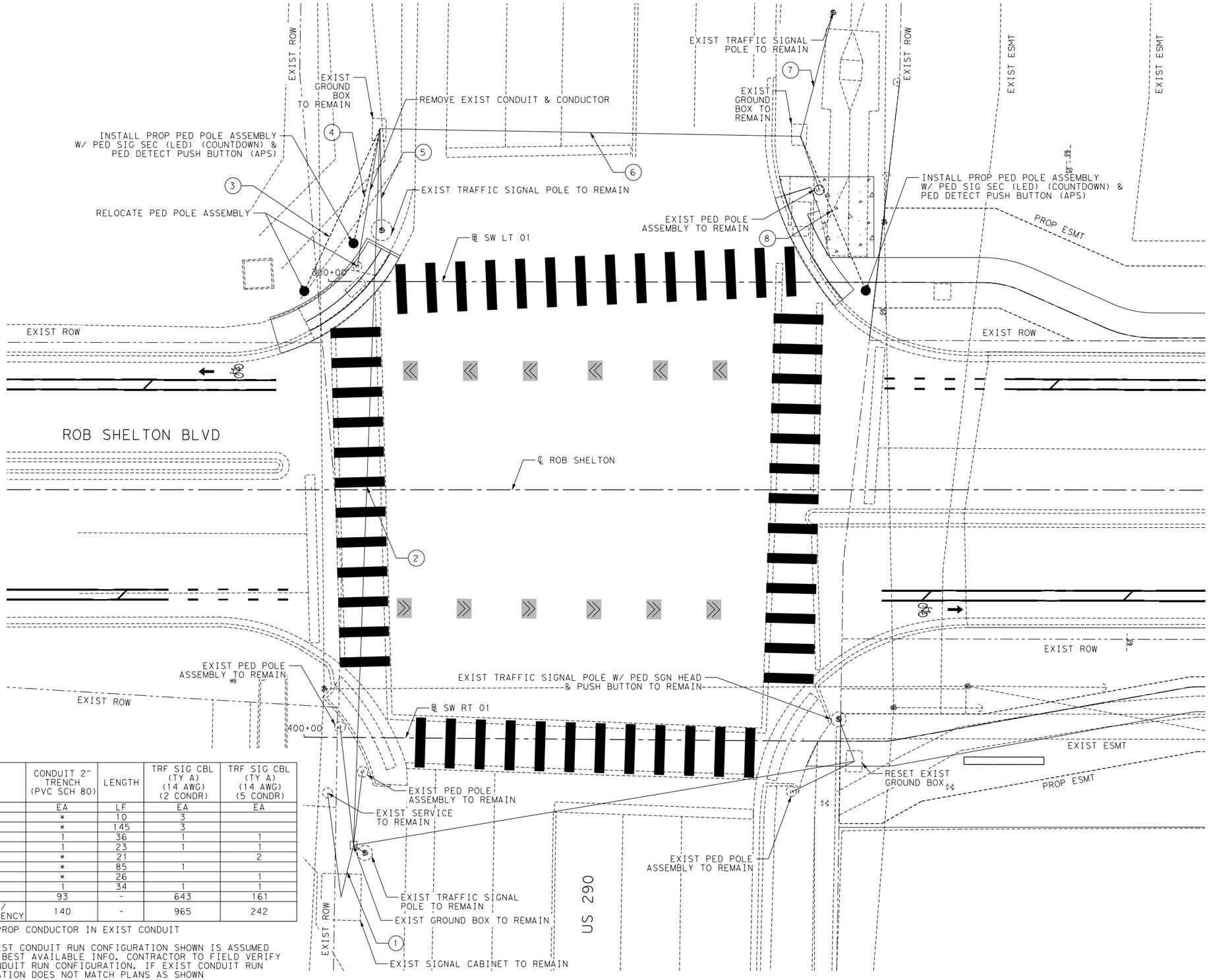
Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: srrstde1-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		76



RUN	CONDUIT 2" TRENCH (PVC SCH 80)	LENGTH	TRF SIG CBL (TY A) (14 AWG) (2 CONDR)	TRF SIG CBL (TY A) (14 AWG) (5 CONDR)
NO.	EA	LF	EA	EA
1	*	10	3	
2	*	145	3	
3	1	36	1	1
4	1	23	1	1
5	*	21		2
6	*	85	1	
7	*	26		1
8	1	34	1	1
TOTAL	93	-	643	161
TOTAL W/ 50% CONTIGENCY	140	-	965	242

* PLACE PROP CONDUCTOR IN EXIST CONDUIT

NOTE: EXIST CONDUIT RUN CONFIGURATION SHOWN IS ASSUMED BASED ON BEST AVAILABLE INFO. CONTRACTOR TO FIELD VERIFY EXIST CONDUIT RUN CONFIGURATION. IF EXIST CONDUIT RUN CONFIGURATION DOES NOT MATCH PLANS AS SHOWN CONTRACTOR SHALL STOP SIGNAL WORK & CONTACT THE ENGINEER. 50% CONTINGENCY HAS BEEN ADDED TO PROPOSED CONDUIT & CONDUCTOR ITEMS TO ACCOUNT FOR UNCERTAINTY.

DATE: Feb. 23, 2022 - 03:45:37 PM
FILE: N:\Plan Set\8. Traffic\DSP21528_SIGNAL01.dgn

LEGEND

- PROP PED POLE ASSEMBLY W/ PED SIGN SEC (LED) (COUNTDOWN) & PED DETECT PUSH BUTTON (APS)
- PROP 2" CONDUIT
- EXIST CONDUIT

N

0 25' 50'
HORIZONTAL SCALE

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 2/23/2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
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Fax - (512) 617-3101
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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD PROP TRAFFIC SIGNAL LAYOUT

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		77

DATE: Nov. 17, 2021 TIME: 10:23:08 AM
FILE: N:\Plan Set\13. Standard Details\Traffic\ts-fd.dgn

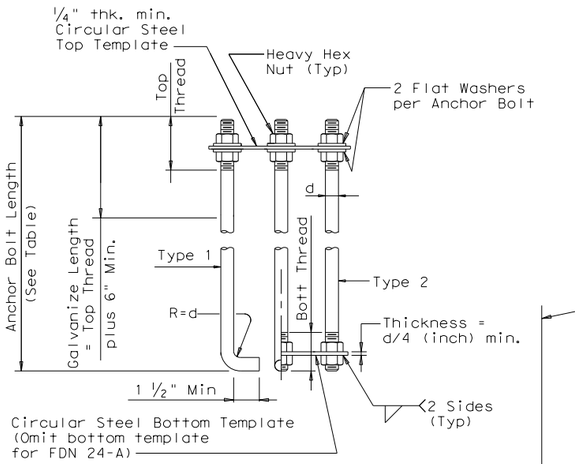
FOUNDATION DESIGN TABLE

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			ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K-ft	SHEAR Kips	
				10	15	40							
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)

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'

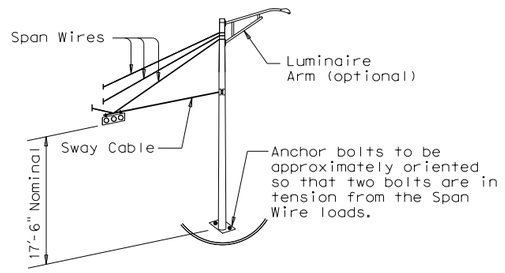
EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



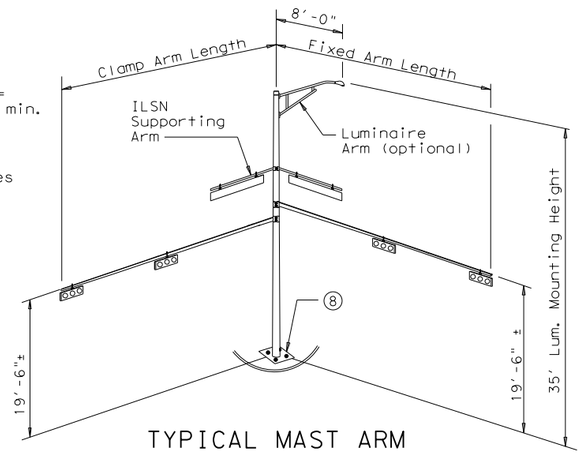
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY

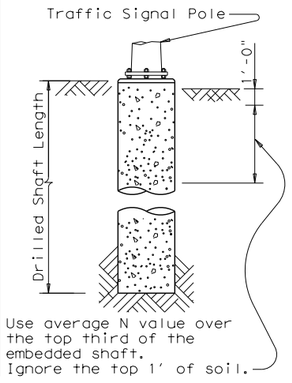
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.



TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY



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.

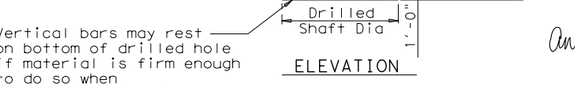
⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

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.



TOP VIEW

ELEVATION

FOUNDATION DETAILS

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
PROP PED (NE CORNER)	10	24-A	1	6				
RELOCATE PED (NE CORNER)	10	24-A	1	6				
PROP PED (SE CORNER)	10	24-A	1	6				
TOTAL DRILLED SHAFT LENGTHS								

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".

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Andrea Bryant 11/17/2021

Texas Department of Transportation
Traffic Operations Division

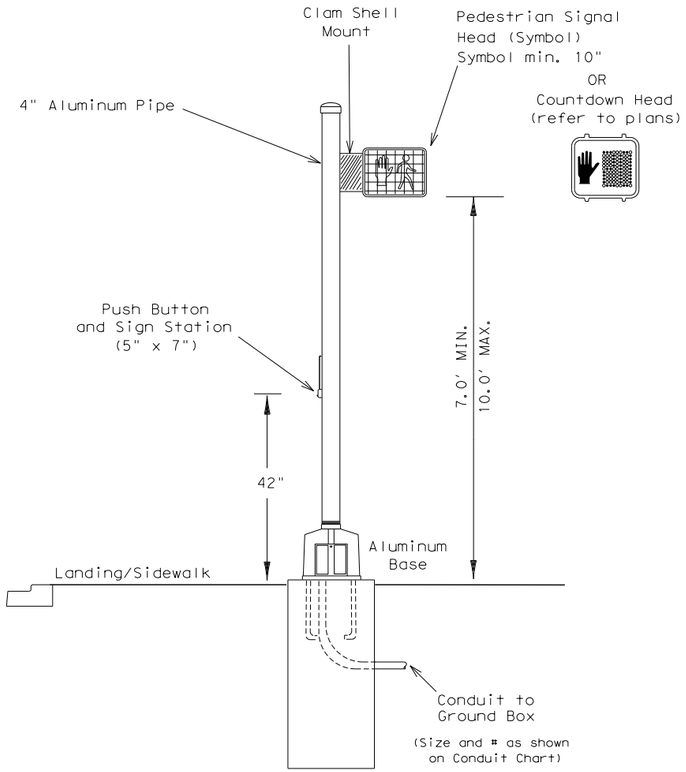
TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB

REVISIONS: 5-96, 11-99, 1-12

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		78



Refer to Standard Sheet TS-FD for details of pedestal pole foundation.

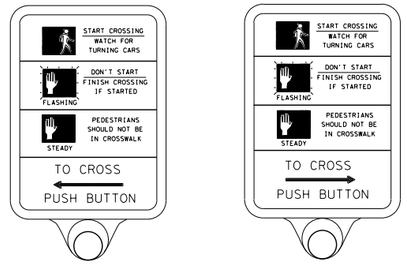
PEDESTAL POLE DETAILS

A separate 2/C wire is to be installed to each push button from the controller

Refer to Austin District General Notes for push button requirements.

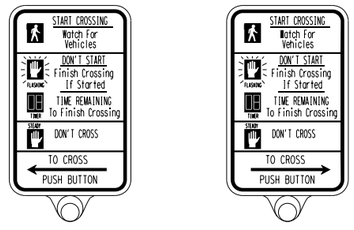
PUSH BUTTON STATIONS FRONT VIEW

STANDARD



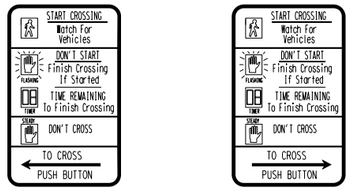
5" x 7" sign for pedestal pole
9" x 12" sign for standard signal pole

COUNTDOWN



5" x 9" station/sign for pedestal pole
9" x 15" station/sign for standard signal pole

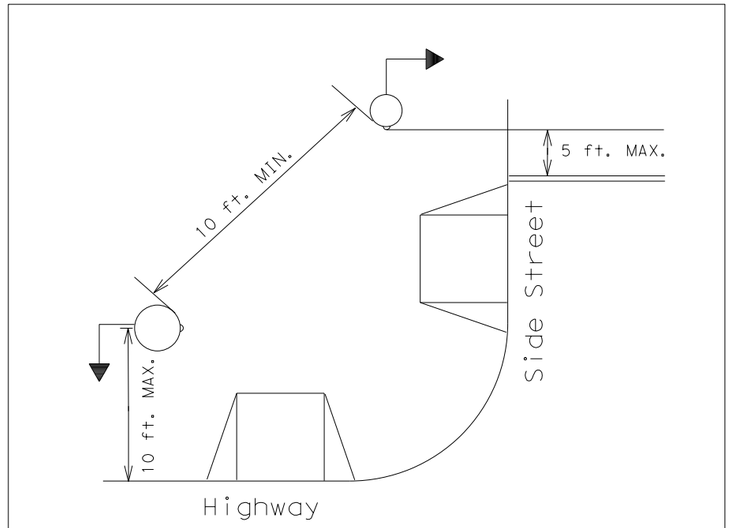
APS w/ COUNTDOWN



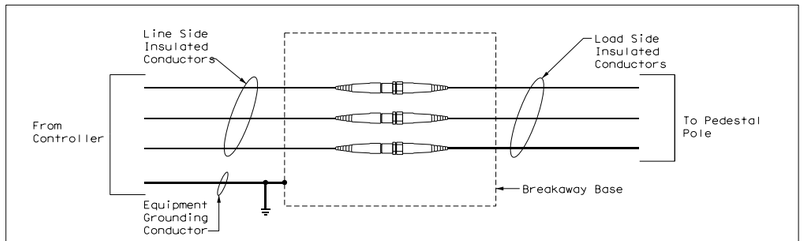
5" x 7" adhesive sign for pedestal pole and for standard signal pole

Adjustable Arrow - Inner arrow is embossed with small indicator light. Push Button can be part of sign assembly or separate. Button housing can be oval or circular.

Only install Double Arrow when called for in plans.



Refer to MUTCD SEC. 4E for guidance on accessible push button placement on one or two curb-cut ramps.



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS

Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug). For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).

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Andrea Bryant 2/23/2022

Texas Department of Transportation

Austin District Standard

Austin District Traffic

PEDESTRIAN POLE ASSEMBLY

PPA-14 (AUS)

REVISIONS

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		79

DATE: Feb. 23, 2022 TIME: 8:57:35 AM
FILE: N:\Plan Set\13. Standard Details\Traffic\PPA-14(AUS).dgn

DATE:
FILE:

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.

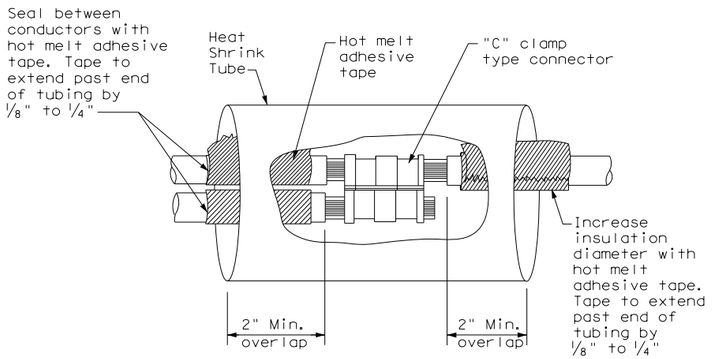
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.

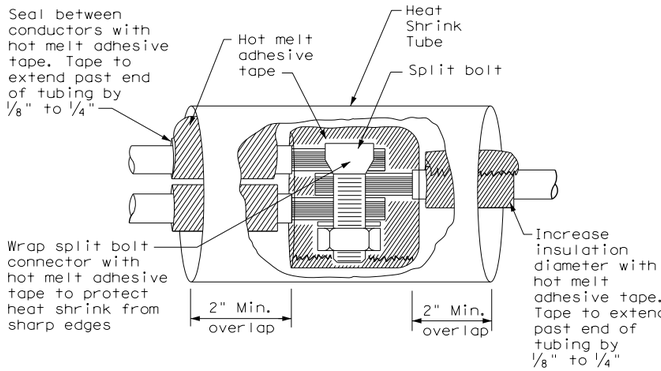
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

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.

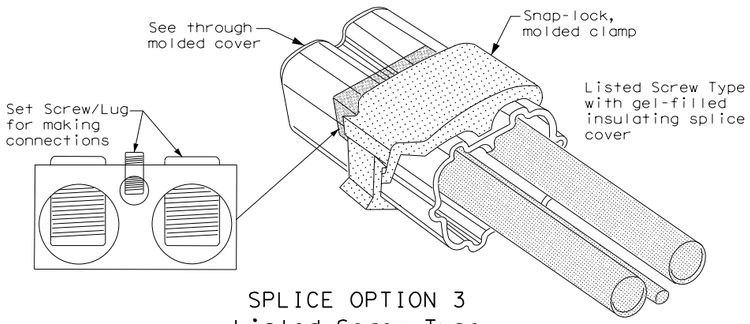
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



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

FILE: ed3-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		80

71C

DATE:
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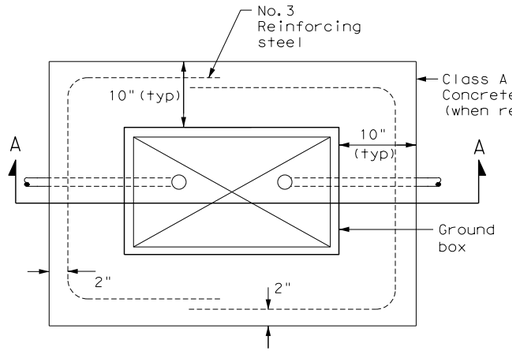
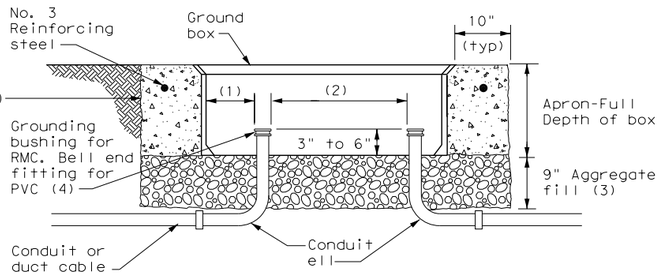


PLAN VIEW



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.

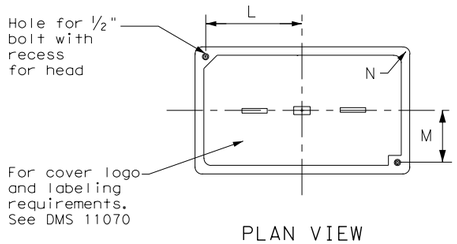
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

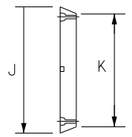
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

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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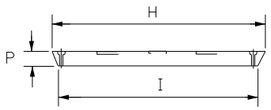


SIDE

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

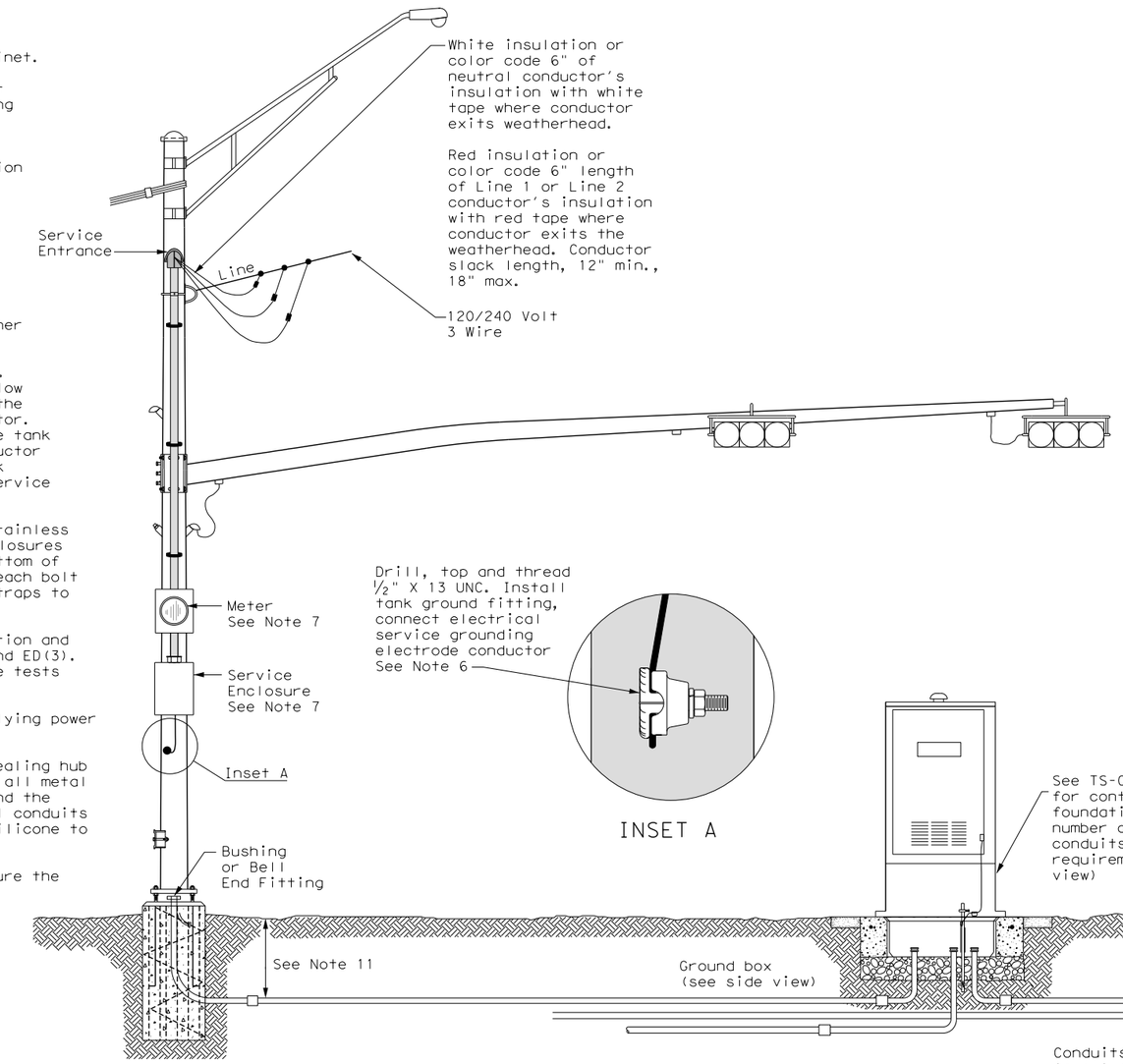
FILE: ed4-14.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2014	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		81

71D

DATE:
FILE:

TRAFFIC SIGNAL NOTES

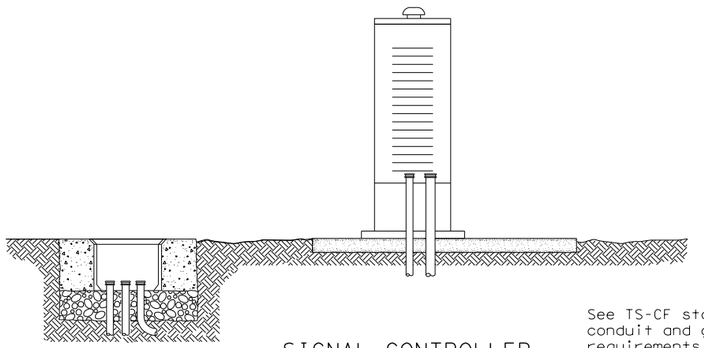
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material 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

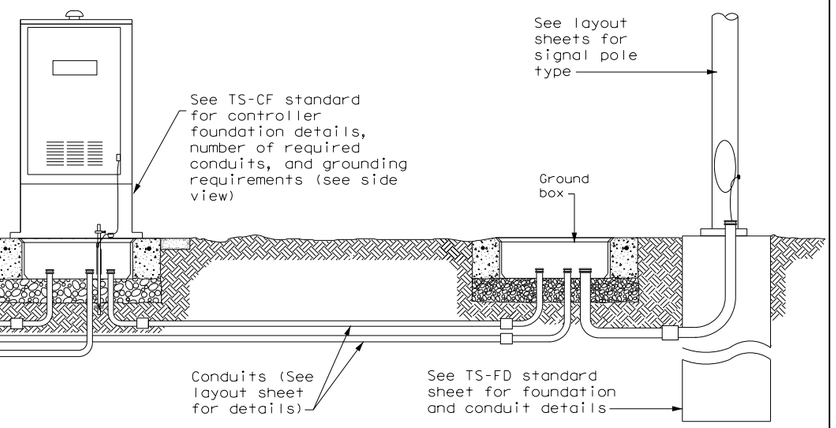
Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

INSET A



SIGNAL CONTROLLER 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.



SIGNAL CONTROLLER FRONT VIEW

SIGNAL POLE

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	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		82

71H

A. GENERAL SITE DATA

1. PROJECT LIMITS:
ROB SHELTON BLVD
FOUNDERS PARK RD TO SPORTS PARK DR
PROJECT LENGTH: 4,417.60 FT = 0.84 MI

PROJECT COORDINATES:
BEGIN PROJECT : STA 100+28.05
END PROJECT : STA 144+45.65

2. PROJECT SITE MAPS:
* PROJECT LOCATION MAP: TITLE SHEET
* DRAINAGE PATTERNS: DRAINAGE AREA MAP
* SLOPES ANTICIPATED AFTER MAJOR GRADINGS OR AREAS OF SOIL DISTURBANCE: EXISTING AND PROPOSED TYPICAL SECTIONS
* LOCATION OF EROSION AND SEDIMENT CONTROLS: EROSION CONTROL PLAN
* SURFACE WATERS AND DISCHARGE LOCATIONS: PEDESTRIAN BRIDGE LAYOUT
* PROJECT SPECIFIC LOCATIONS: TO BE SPECIFIED BY THE PROJECT FIELD OFFICE DURING CONSTRUCTION AND LOCATED IN THE PROJECT SW3P FILE. REFERENCE ITEM #10 BELOW

3. PROJECT DESCRIPTION:
0.84 MILES OF PROPOSED IMPROVEMENTS CONSISTING OF CONSTRUCTING SIDEWALKS, A GRANITE TRAIL, ONE PEDESTRIAN BRIDGE, AND BIKE LANES

4. MAJOR SOIL DISTURBING ACTIVITIES:
PREPARING OF RIGHT-OF-WAY, GRADING, EXCAVATION AND EMBANKMENT OF SIDEWALKS AND GRANITE TRAIL. CONSTRUCTION OF PEDESTRIAN BRIDGE AND TOPSOIL WORK FOR FINAL PLANTING AND SEEDING.

5. EXISTING CONDITION OF SOIL & VEGETATIVE COVER AND % OF EXISTING VEGETATIVE COVER:
GRASS SLOPES, ROCK, BRUSH, TREES, AND DITCHES; 35% COVER

6. TOTAL PROJECT AREA: 10.72 ACRES

7. TOTAL AREA TO BE DISTURBED: 2.00 ACRES

8. WEIGHTED RUNOFF COEFFICIENT
BEFORE CONSTRUCTION: 0.48
AFTER CONSTRUCTION: 0.48

9. NAME OF RECEIVING WATERS: (SEGMENT NUMBER OF RECEIVING WATERS)
ONION CREEK WATERSHED

10. PROJECT SW3P FILE: FOR PROJECTS DISTURBING ONE ACRE OR MORE, TXDOT WILL MAINTAIN AN SW3P FILE WITH ALL PERTINENT ENVIRONMENTAL DOCUMENTS, CORRESPONDENCE, ETC. AT THE PROJECT FIELD OFFICE. IF NO FIELD OFFICE IS AVAILABLE THEN THE SW3P FILE SHALL BE KEPT IN THE INSPECTOR'S TRUCK.

B. EROSION AND SEDIMENT CONTROLS

1. SOIL STABILIZATION PRACTICES:

- [X] TEMPORARY SEEDING
- [X] PERMANENT PLANTING, SODDING, OR SEEDING
- [ ] MULCHING
- [X] SOIL RETENTION BLANKET
- [ ] BUFFER ZONES
- [X] PRESERVATION OF NATURAL RESOURCES

OTHER:

2. STRUCTURAL PRACTICES:

- [X] SILT FENCES
- [X] ROCK FILTER DAMS
- [ ] DIVERSION, INTERCEPTOR, OR PERIMETER DIKES
- [ ] DIVERSION, INTERCEPTOR, OR PERIMETER SWALES
- [ ] DIVERSION DIKE AND SWALE COMBINATIONS
- [ ] PIPE SLOPE DRAINS
- [ ] PAVED FLUMES
- [X] ROCK BEDDING AT CONSTRUCTION EXIT
- [ ] TIMBER MATTING AT CONSTRUCTION EXIT
- [ ] CHANNEL LINERS
- [ ] SEDIMENT TRAPS
- [ ] SEDIMENT BASINS
- [ ] STORM INLET SEDIMENT TRAP
- [ ] STONE OUTLET STRUCTURES
- [X] CURBS AND GUTTERS
- [X] STORM SEWERS
- [ ] VELOCITY CONTROL DEVICES

OTHER:

EROSION CONTROL LOGS
TREE PROTECTION

3. STORM WATER MANAGEMENT:

STORM WATER DRAINAGE WILL BE PROVIDED BY DITCHES, CROSS-CULVERTS AND STORM SEWER
THIS SYSTEM WILL CARRY THE DRAINAGE WITHIN THE RIGHT-OF-WAY TO
CULVERTS WHICH FLOW INTO ONION CREEK WATERSHED AND EVENTUALLY INTO COLORADO RIVER BASIN.

4. STORM WATER MANAGEMENT ACTIVITIES: (SEQUENCE OF CONSTRUCTION)

1. CONSTRUCT SIDEWALKS & GRANITE TRAILS
2. CONSTRUCT PEDESTRIAN BRIDGE

5. NON-STORM WATER DISCHARGES:
FILTER NON-STORM WATER DISCHARGES, OR HOLD RETENTION BASINS, BEFORE BEING ALLOWED TO MIX WITH STORM WATER. THESE DISCHARGES CONSIST OF NON-POLLUTED GROUND WATER, SPRING WATER, FOUNDATION AND/OR FOOTING DRAIN WATER; AND WATER USED FOR DUST CONTROL, PAVEMENT WASHING AND VEHICLE WASHWATER CONTAINING NO DETERGENTS.

C. OTHER REQUIREMENTS & PRACTICES

1. MAINTENANCE:
MAINTENANCE WILL BE PERFORMED AS INDICATED ON FIELD INSPECTION AND MAINTENANCE REPORT FORM 2118.

2. INSPECTION:
INSPECTION WILL BE PERFORMED AS INDICATED ON FIELD INSPECTION AND MAINTENANCE REPORT FORM 2118.

3. WASTE MATERIALS:
ALL WASTE MATERIALS WILL BE COLLECTED, STORED AND DISPOSED OF IN A LEGAL AND PROPER MANNER. NO CONSTRUCTION WASTE MATERIAL WILL BE BURIED ON SITE.

4. HAZARDOUS WASTE (INCLUDING SPILL REPORTING):
AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES ARE CONSIDERED TO BE HAZARDOUS. PAINTS, ACIDS FOR CLEANING MASONRY SURFACES, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION, OR CONCRETECURING COMPOUNDS AND ADDITIVES. IN THE EVENT A SPILL WHICH MAY BE HAZARDOUS, THE SPILL COORDINATOR MUST BE CONTACTED IMMEDIATELY.

5. SANITARY WASTE:
ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION BY A LICENCED SANITARY WASTE MANAGEMENT CONTRACTOR.

OFFSITE VEHICLE TRACKING:

- [X] HAUL ROADS DAMPENED FOR DUST CONTROL
- [X] LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- [X] EXCESS DIRT ON ROAD REMOVED DAILY
- [X] STABILIZED CONSTRUCTION ENTRANCE

OTHER:

REMARKS: DISPOSAL AREAS, STOCKPILES AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL SEDIMENT FROM ENTERING RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WATERBODY OR STREAMBED.

CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED TO MINIMIZE THE RUNOFF OF POLLUTANTS.

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/17/2021

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

Texas Department of Transportation

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		83

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. CITY OF DRIPPING SPRINGS

2. TCEQ

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000
2. Comply with the SW3P and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and TCEQ, EPA or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

The Contractor must adhere to all of the terms and conditions associated with the following permit(s):

☒ No Permit Required
☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)
☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)
☐ Individual 404 Permit Required
☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices planned to control erosion, sedimentation and post-project TSS.

1.

2.

3.

4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

Erosion	Sedimentation	Post-Construction TSS
☒ Temporary Vegetation	☒ Silt Fence	☒ Vegetative Filter Strips
☒ Blankets/Matting	☒ Rock Berm	☐ Retention/Irrigation Systems
☐ Mulch	☐ Triangular Filter Dike	☐ Extended Detention Basin
☐ Sodding	☐ Sand Bag Berm	☐ Constructed Wetlands
☐ Interceptor Swale	☐ Straw Bale Dike	☐ Wet Basin
☐ Diversion Dike	☐ Brush Berms	☐ Erosion Control Compost
☐ Erosion Control Compost	☐ Erosion Control Compost	☐ Mulch Filter Berm and Socks
☐ Mulch Filter Berm and Socks	☐ Mulch Filter Berm and Socks	☐ Compost Filter Berm and Socks
☐ Compost Filter Berm and Socks	☐ Compost Filter Berm and Socks	☐ Vegetation Lined Ditches
	☐ Stone Outlet Sediment Traps	☐ Sand Filter Systems
	☐ Sediment Basins	☐ Grassy Swales

III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.
Contractor must adhere to Construction Specification Requirements Specs 162, 164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☐ No Action Required ☒ Required Action

Action No.

1. During construction, efforts shall be taken by the contractor to avoid and minimize disturbance of vegetation and soils. All areas disturbed during construction shall be revegetated according to TxDOT specifications, as soon as it becomes practicable.
2. Comply with EO 13112.
3. Comply with EM on Environmentally and Economically Beneficial Landscaping.
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. The contractor's attention is directed to the fact that there is the possibility that migratory birds may be nesting within woody vegetation or existing structures within the project limits. No active nests shall be removed as a result of the work. As necessary, the contractor shall trim or clear woody vegetation, and/or remove all old migratory bird nests between October 1 and February 14 while nests are not occupied. In addition, the contractor must be prepared to prevent migratory birds from re-nesting between February 15 and September 30. All methods must be approved by Austin District environmental staff well in advance of implementation. In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young shall be avoided.

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.

VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☐ No Action Required ☒ Required Action

Action No.

1. The project is located within the Edwards Aquifer Contributing Zone.
2. A TCEQ Contributing Zone (CZP) Exception was obtained for the project.
3. Maintain a copy of the CZP Exception and CZP Exception Approval Letter on site or immediately available until completion of construction
4. Comply with the CZP Exception, CZP Exception Approval Letter, and CZP General Construction Notes.

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER

Andrea Bryant 11/17/2021

Texas Department of Transportation

Design Division Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic.dgn	DN: TxDOT	CK: RG	DW: VP	CK: AR
©TxDOT: February 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-12-2011 (DS) 05-07-14 ADDED NOTE SECTION IV. 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES.	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		84

The following TCEQ requirements (Form TCEQ-0592A, Rev. 7/15/15) are applicable to all work that disturbs 5 or more acres in the contributing zone of the Edwards Aquifer in Hays, Travis and/or Williamson Counties and must be adhered to by the Contractor and all Subcontractors:

1. A written notice of construction must be submitted to the TCEQ regional office at least 48 hours prior to the start of any ground disturbance or construction activities. This notice must include:
   - the name of the approved project;
   - the activity start date; and
   - the contact information of the prime contractor.

2. All contractors conducting regulated activities associated with this project should be provided with complete copies of the approved Contributing Zone Plan (CZP) and the TCEQ letter indicating the specific conditions of its approval. During the course of these regulated activities, the contractor(s) should keep copies of the approved plan and approval letter on-site.

3. No hazardous substance storage tank shall be installed within 150 feet of a water supply source, distribution system, well, or sensitive feature.

4. Prior to beginning any construction activity, all temporary erosion and sedimentation (E&S) control measures must be properly installed and maintained in accordance with the manufacturers specifications. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. These controls must remain in place until the disturbed areas have been permanently stabilized.

5. Any sediment that escapes the construction site must be collected and properly disposed of before the next rain event to ensure it is not washed into surface streams, sensitive features, etc.

6. Sediment must be removed from the sediment traps or sedimentation basins when it occupies 50% of the basin's design capacity.

7. Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from being discharged offsite.

8. All excavated material that will be stored on-site must have proper E&S controls.

9. If portions of the site will have a cease in construction activity lasting longer than 14 days, soilstabilization in those areas shall be initiated as soon as possible prior to the 14th day of inactivity. If activity will resume prior to the 21st day, stabilization measures are not required. If drought conditions or inclement weather prevent action by the 14th day, stabilization measures shall be initiated as soon as possible.

10. The following records should be maintained and made available to the TCEQ upon request:
    - the dates when major grading activities occur;
    - the dates when construction activities temporarily or permanently cease on a portion of the site; and
    - the dates when stabilization measures are initiated.

11. The holder of any approved CZP must notify the appropriate regional office in writing and obtain approval from the executive director prior to initiating any of the following:

    A. any physical or operational modification of any best management practices (BMPs) or structure(s), including but not limited to temporary or permanent ponds, dams, berms, silt fences, and diversionary structures;
    B. any change in the nature or character of the regulated activity from that which was originally approved;
    C. any change that would significantly impact the ability to prevent pollution of the Edwards Aquifer; or
    D. any development of land previously identified as undeveloped in the approved contributing zone plan.

TCEQ REGIONAL OFFICE

Austin Regional Office
12100 Park 35 Circle
Bldg A, Room 179
Austin, Texas 78753
Phone: (512) 339-2929
Fax: (512) 339-3795

Texas Department of Transportation | Austin District Standard

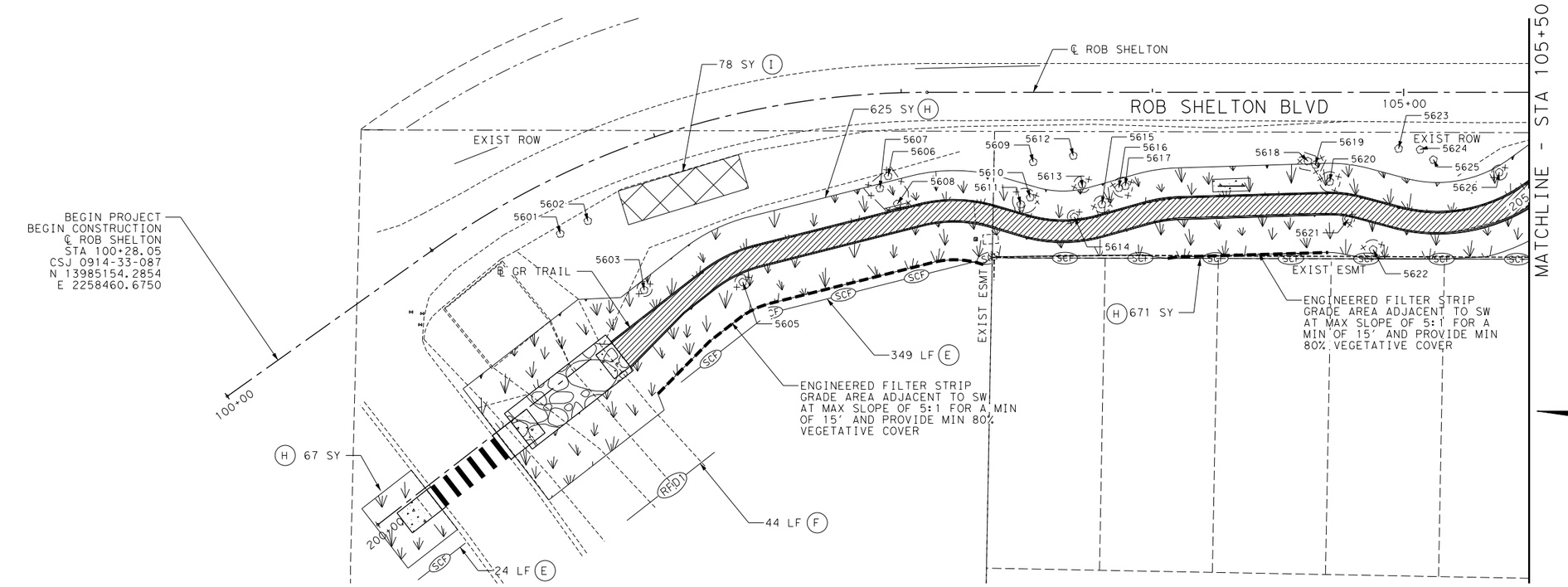
TCEQ REQUIREMENTS FOR THE CONTRIBUTING ZONE OF THE EDWARDS AQUIFER

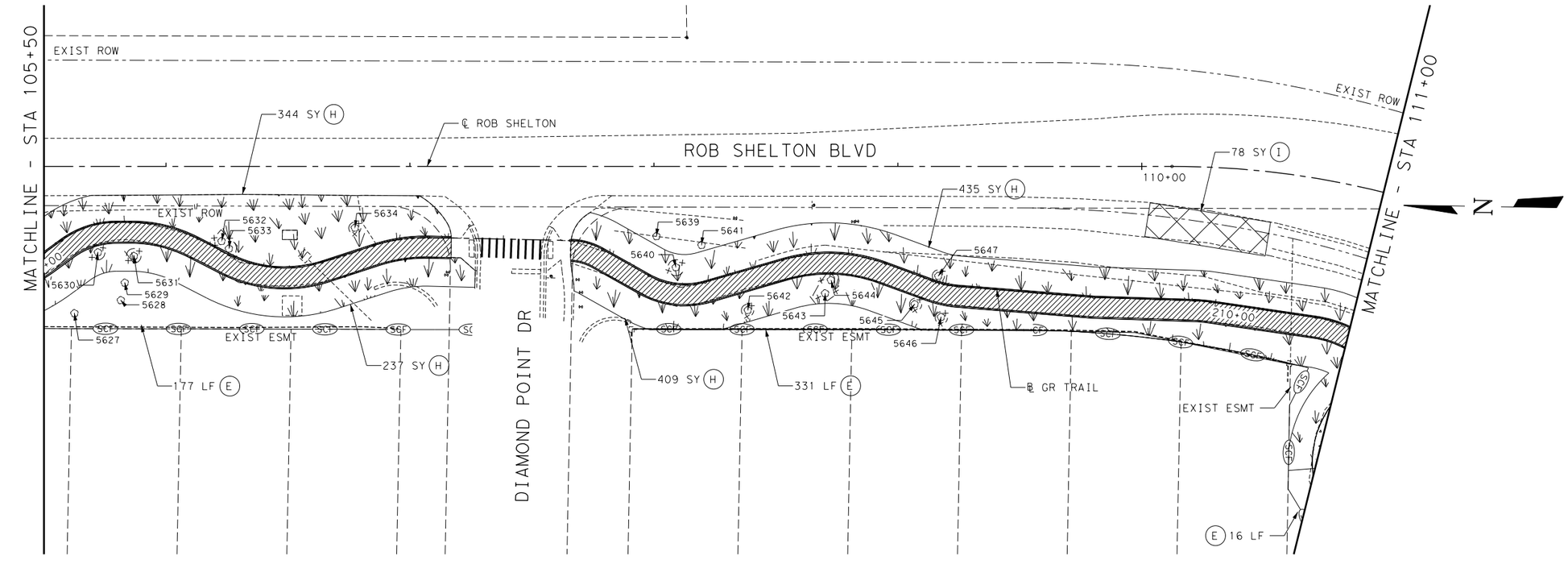
(DISTURBING 5 OR MORE ACRES)

TCEQ-CZ-19(AUS)

REVISIONS
01/10/14: REQUIREMENTS AND ADDRESS UPDATED
01/21/16: REQUIREMENTS UPDATED
09/24/19: UPDATED RELEASE YEAR

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		85





NOTE: TREE INFORMATION PROVIDED ON SHEET 91

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 2/22/2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD SIGNING, PAVEMENT MARKINGS AND DELINEATIONS AND ENVIRONMENTAL ISSUES LAYOUTS BEGIN TO STA 111+00

SHEET 1 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		86

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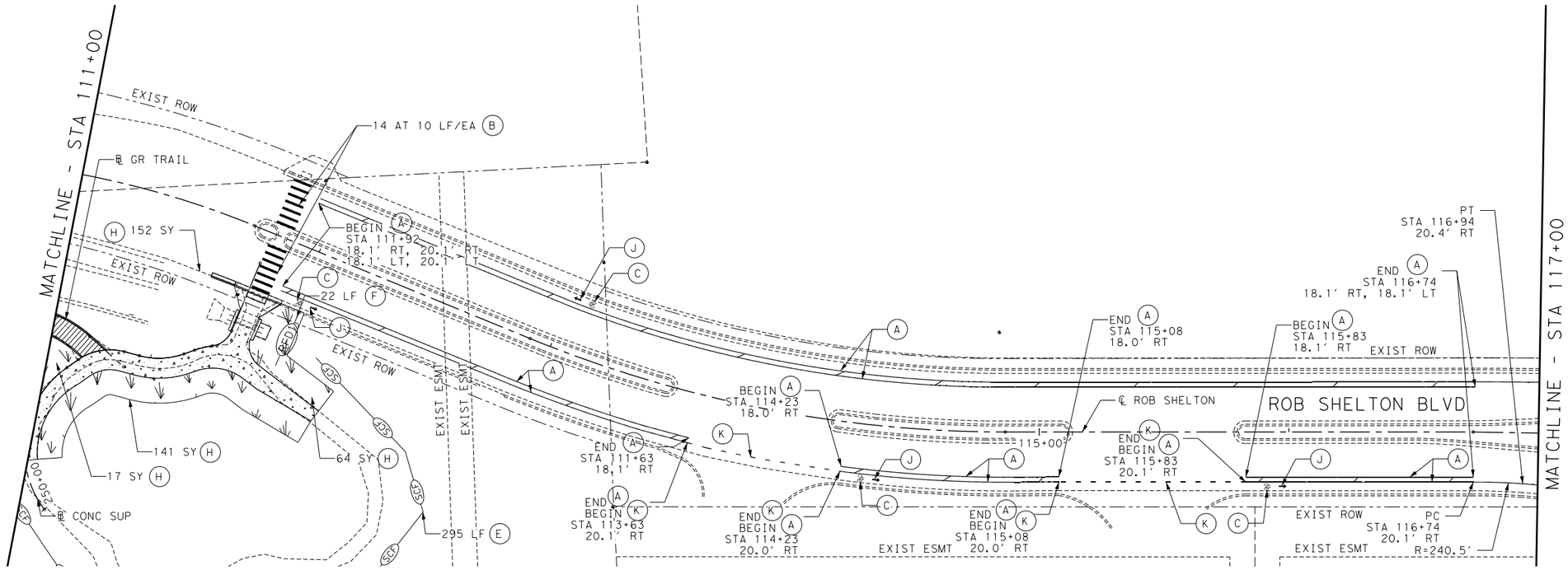


LEGEND

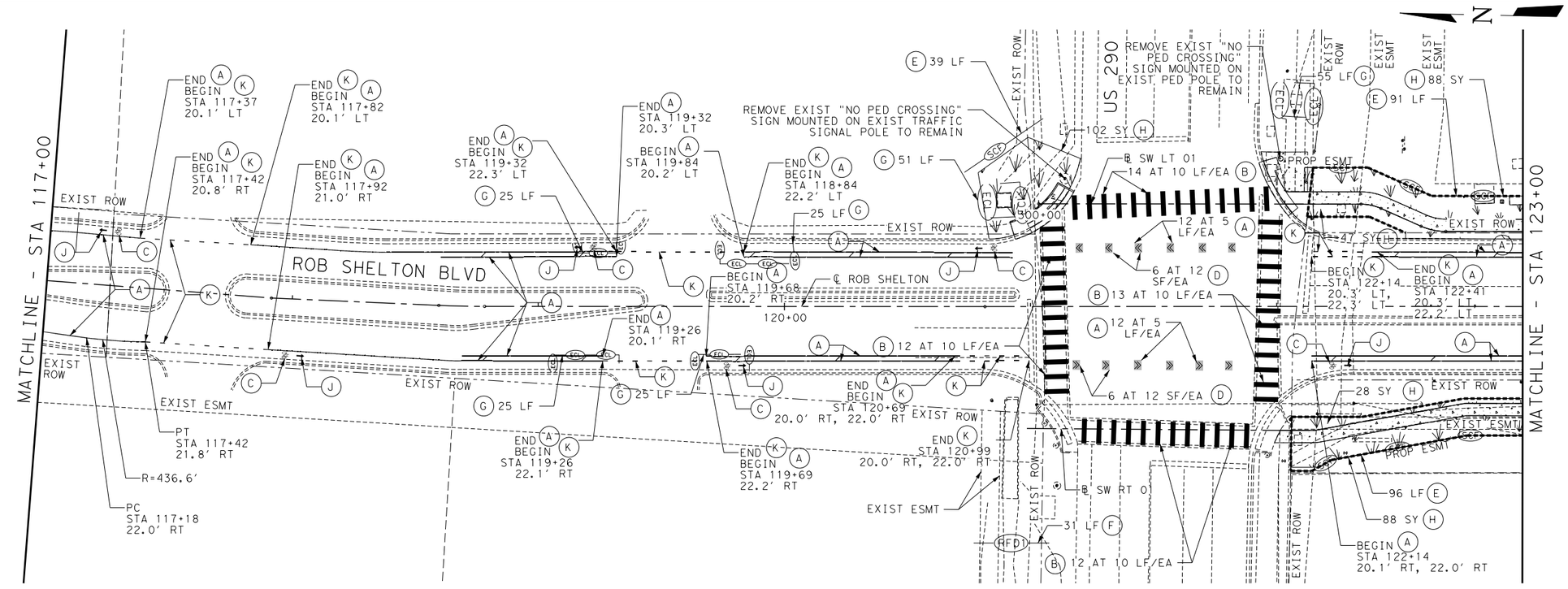
(A)		REFL PAV MRK TY II (W) 4"(SLD)(100 MIL)
(B)		REFL PAV MRK TY I (W) 24"(SLD)(100 MIL)
(C)		REFL PAV MRK TY I (W) (BIKE SYML)(100 MIL)
(D)		PREFAB PAV MRK TY C (GRN)(SLD)(BLOCK) W/ SEALER & PREP
(E)	SCF	TEMPORARY SEDIMENT CONTROL FENCE
(F)	RFD1	TY 1 ROCK FILTER DAM
(G)	ECL	EROSION CONTROL LOG
(H)		BLOCK SOD
(I)		CONSTRUCTION EXIT
(J)		REFL PAV MRK TY I (W) (BIKE ARW)(100 MIL)
(K)		REFL PAV MRK TY I (W) 4"(DOT)(100 MIL)
×—×—×		TREE PROT W/ ID

0 25' 50'
HORIZONTAL SCALE

N

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 2/23/2022



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NOTE: TREE INFORMATION PROVIDED ON SHEET 91

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD SIGNING, PAVEMENT MARKINGS AND DELINEATIONS AND ENVIRONMENTAL ISSUES LAYOUTS STA 111+00 TO STA 123+00

SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		87

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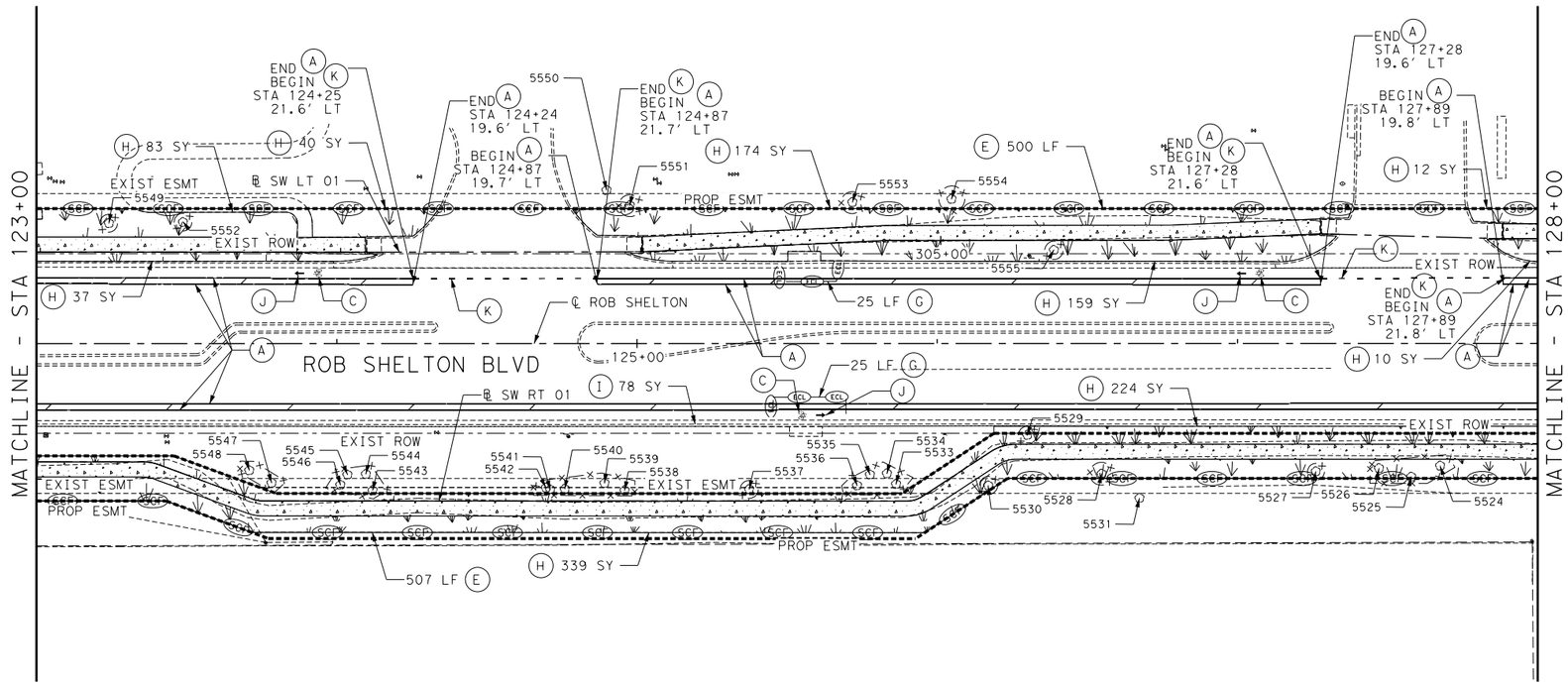

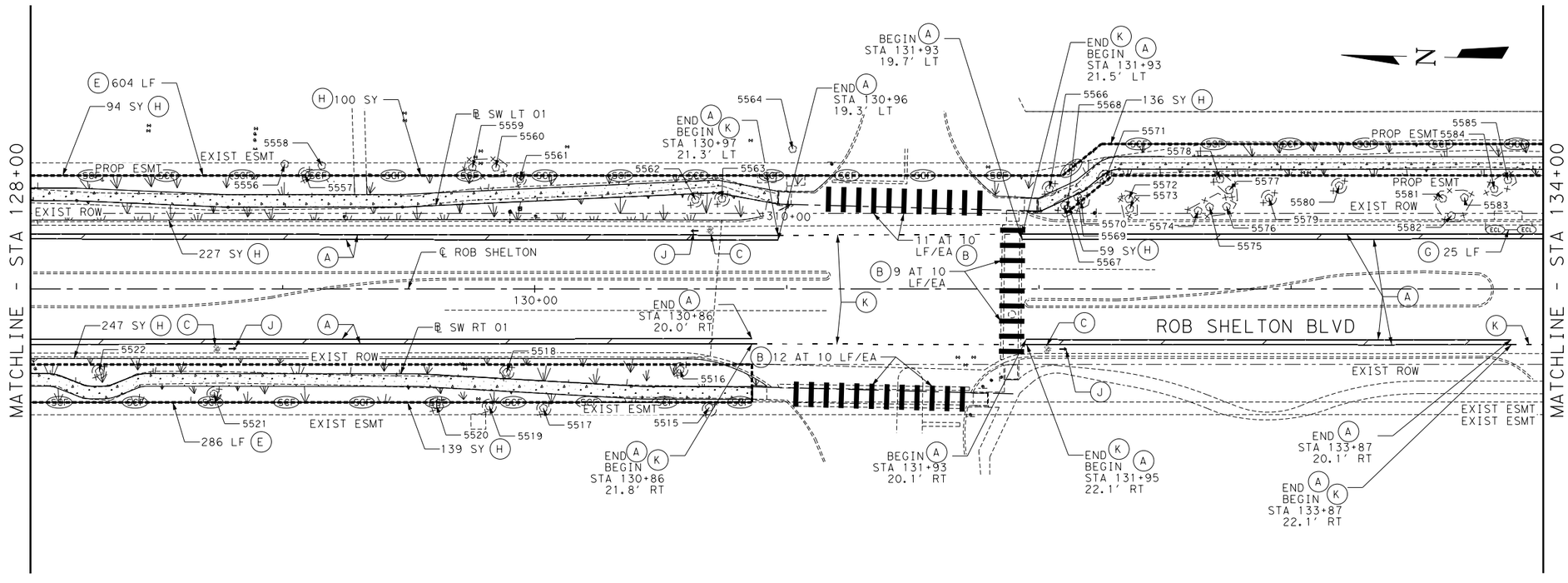

NOTE: TREE INFORMATION PROVIDED ON SHEET 91

LEGEND

- (A) REFL PAV MRK TY II (W) 4"(SLD)(100 MIL)
- (B) REFL PAV MRK TY I (W) 24"(SLD)(100 MIL)
- (C) REFL PAV MRK TY I (W) (BIKE SYML)(100 MIL)
- (D) PREFAB PAV MRK TY C (GRN)(SLD)(BLOCK) W/ SEALER & PREP
- (E) (SCF) TEMPORARY SEDIMENT CONTROL FENCE
- (F) (RFD1) TY 1 ROCK FILTER DAM
- (G) (ECL) EROSION CONTROL LOG
- (H) BLOCK SOD
- (I) CONSTRUCTION EXIT
- (J) REFL PAV MRK TY I (W) (BIKE ARW)(100 MIL)
- (K) REFL PAV MRK TY I (W) 4"(DOT)(100 MIL)
- ×—×—× TREE PROT W/ ID

0 25' 50'
HORIZONTAL SCALE

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 2/22/2022

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DRIPPING SPRINGS
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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD SIGNING, PAVEMENT MARKINGS AND DELINEATIONS AND ENVIRONMENTAL ISSUES LAYOUTS STA 123+00 TO STA 134+00

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		88

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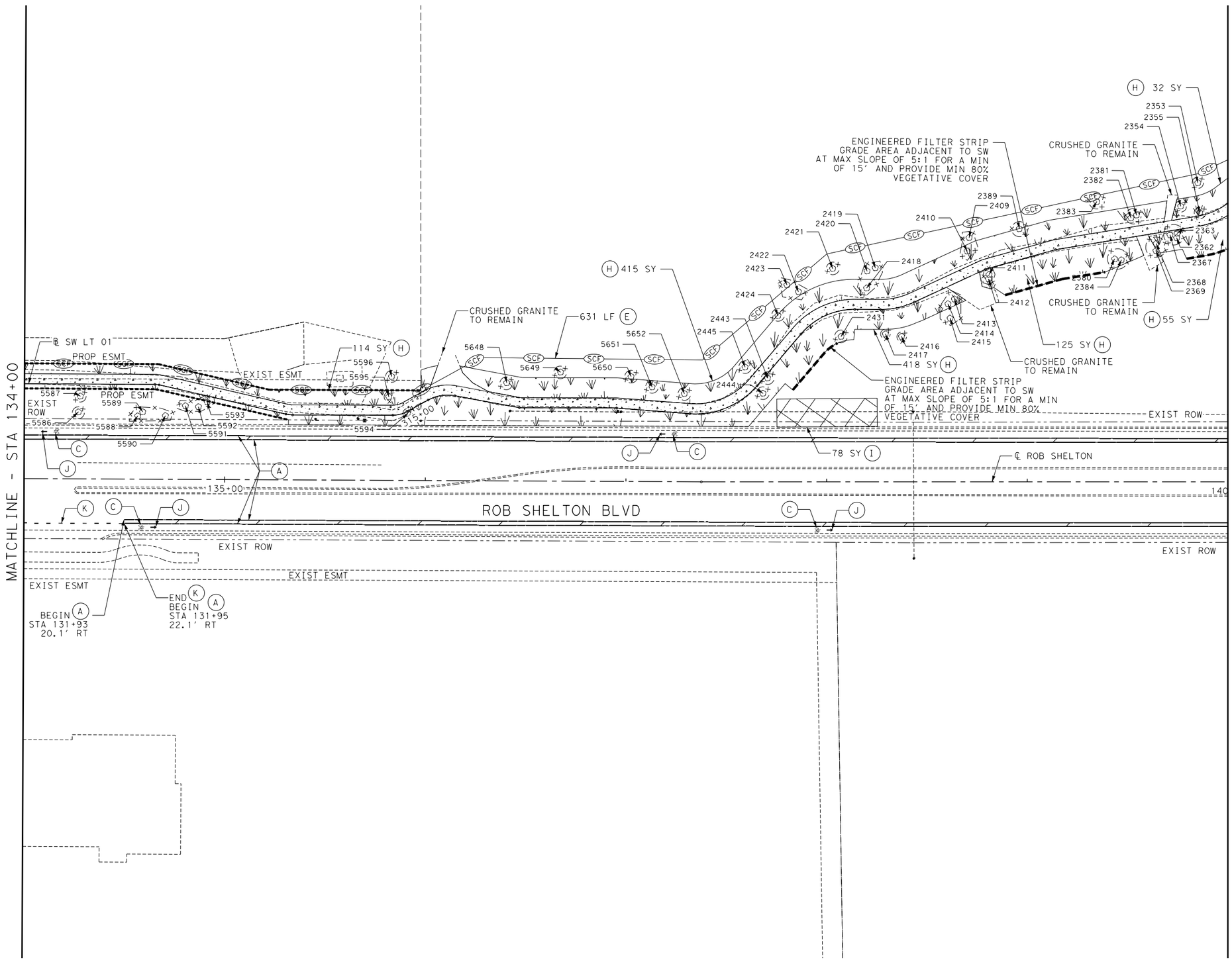

NOTE: TREE INFORMATION PROVIDED ON SHEET 91

LEGEND

- (A) REFL PAV MRK TY II (W) 4"(SLD)(100 MIL)
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- x—x—x TREE PROT W/ ID

0 25' 50'
HORIZONTAL SCALE

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Texas Department of Transportation

FREESE AND NICHOLS
10431 Morado Circle, Suite 300
Austin, Texas 78759
Phone - (512) 617-3100
Fax - (512) 617-3101
Web - www.freese.com
TX FIRM F-2144

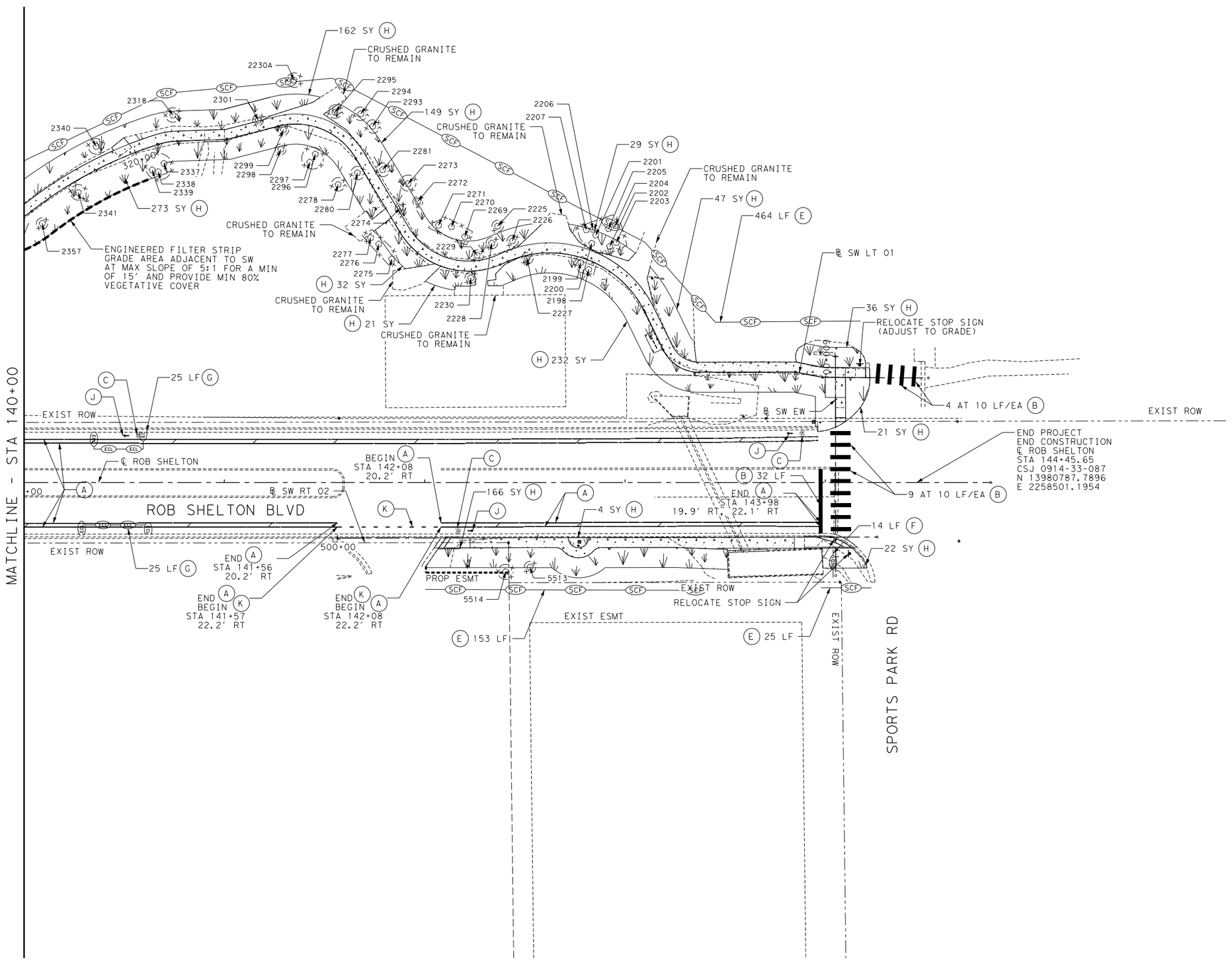
ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
SIGNING, PAVEMENT MARKINGS AND DELINEATIONS
AND ENVIRONMENTAL ISSUES
LAYOUTS
STA 134+00 TO STA 140+00

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		89

DATE: Feb. 21, 2022 - 04:01:10 PM
FILE: N:\Plan Set\9. Environmental\DSP21528_ROW_SPM_EC04.dgn



NOTE: TREE INFORMATION PROVIDED ON SHEET 91

LEGEND

- (A) REFL PAV MRK TY II (W) 4"(SLD)(100 MIL)
- (B) REFL PAV MRK TY I (W) 24"(SLD)(100 MIL)
- (C) REFL PAV MRK TY I (W) (BIKE SYML)(100 MIL)
- (D) PREFAB PAV MRK TY C (GRN)(SLD)(BLOCK) W/ SEALER & PREP
- (E) SCF — TEMPORARY SEDIMENT CONTROL FENCE
- (F) RFD1 — TY 1 ROCK FILTER DAM
- (G) ECL — EROSION CONTROL LOG
- (H) BLOCK SOD
- (I) CONSTRUCTION EXIT
- (J) REFL PAV MRK TY I (W) (BIKE ARW)(100 MIL)
- (K) REFL PAV MRK TY I (W) 4"(DOT)(100 MIL)

× — × — × TREE PROT W/ ID

0 25' 50'
HORIZONTAL SCALE

N

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED PROFESSIONAL ENGINEER

Andrea Bryant 2/22/2022

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

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10431 Morado Circle, Suite 300
Austin, Texas 78759
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ROB SHELTON PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD SIGNING, PAVEMENT MARKINGS AND DELINEATIONS AND ENVIRONMENTAL ISSUES LAYOUTS STA 140+00 TO END

SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		90

DATE: Feb. 21, 2022 - 04:01:13 PM
FILE: N:\Plan Set\9. Environmental\DSP21528_ROW_SPM_EC05.dgn

NO.	SPECIES	SIZE (INCHES)
2198	OAK	29
2199	CEDAR	9
2200	OAK	22
2201	OAK	9
2202	OAK	8
2203	OAK	11
2204	OAK	13.5
2205	OAK	14
2206	OAK	12
2207	OAK	9
2225	OAK	12
2226	OAK	10
2227	OAK	8
2228	OAK	8
2229	OAK	19
2230	INFO UNKNOWN. CONTRACTOR TO FIELD VERIFY.	
2230A	INFO UNKNOWN. CONTRACTOR TO FIELD VERIFY.	
2269	OAK	9
2270	OAK	9
2271	OAK	9
2272	OAK	9
2273	OAK	11
2274	OAK	10
2275	HACKBERRY	15
2276	OAK	10
2277	OAK	10
2278	OAK	8
2280	CEDAR	16
2281	OAK	10
2293	OAK	10
2294	OAK	9
2295	OAK	9
2296	OAK	10
2297	OAK	8
2298	OAK	12
2299	OAK	9
2301	OAK	13
2318	OAK	8
2337	OAK	16
2338	CEDAR	12
2339	CEDAR	11
2340	OAK	26
2341	OAK	11
5513	OAK	10
5514	OAK	22
5515	OAK	11
5516	OAK	11
5517	ELM	9
5518	CHINABERRY	12
5519	ELM	8
5520	ELM	8
5521	OAK	12
5522	OAK	18
5524	CREPE MYRTLE	9
5525	CREPE MYRTLE	9
5526	CREPE MYRTLE	9
5527	CREPE MYRTLE	8
5528	OAK	10
5529	CREPE MYRTLE	9

NO.	SPECIES	SIZE (INCHES)
5530	CREPE MYRTLE	9
5531	OAK	12
5533	PRIVET	11
5534	OAK	11
5535	OAK	13
5536	OAK	11
5537	OAK	23
5538	OAK	10
5539	OAK	9
5540	OAK	15
5541	OAK	10
5542	OAK	9
5543	OAK	13
5544	INFO UNKNOWN. CONTRACTOR TO FIELD VERIFY.	
5545	OAK	18
5546	OAK	12
5547	OAK	11
5548	OAK	33
5549	OAK	9
5550	CREPE MYRTLE	11
5551	CREPE MYRTLE	11
5552	REDBUD	21
5553	REDBUD	15
5554	REDBUD	13
5555	CREPE MYRTLE	9
5556	CREPE MYRTLE	10
5557	CREPE MYRTLE	10
5558	CREPE MYRTLE	11
5559	REDBUD	10
5560	REDBUD	15
5561	OAK	9
5562	REDBUD	11
5563	REDBUD	13
5564	REDBUD	13
5566	OAK	13
5567	OAK	11
5568	OAK	11
5569	OAK	9
5570	CEDAR	9
5571	ELM	9
5572	OAK	16
5573	ELM	11
5574	OAK	10
5575	OAK	12
5576	OAK	11
5577	ELM	11
5578	ELM	11
5579	ELM	13
5580	REDBUD	9
5581	ELM	11
5582	OAK	14
5583	ELM	11
5584	ELM	12
5585	CEDAR	14
5586	OAK	14
5587	CEDAR	18
5588	ELM	9
5589	ELM	12
5590	OAK	18

NO.	SPECIES	SIZE (INCHES)
5591	ELM	10
5592	OAK	9
5593	OAK	9
5594	OAK	16
5595	OAK	14
5596	ELM	9
2353	OAK	10
2354	OAK	11
2355	OAK	12
2357	OAK	11
2362	OAK	11
2363	OAK	10
2367	OAK	12
2368	OAK	10
2369	OAK	12
2380	OAK	9
2381	ELM	9
2382	ELM	25
2383	OAK	10
2384	OAK	11
2389	CEDAR	8
2409	CEDAR	15
2410	CEDAR	10
2411	ELM	36
2412	ELM	14
2413	ELM	21
2414	OAK	11
2415	CEDAR	14
2416	OAK	9
2417	OAK	8
2418	ELM	16
2419	ELM	10
2420	ELM	19
2421	ELM	20
2422	ELM	17
2423	ELM	9
2424	HACKBERRY	10
2431	OAK	8
2443	OAK	8
2444	OAK	9
2445	OAK	12
5601	CEDAR	9
5602	OAK	13
5603	OAK	12
5605	OAK	10
5606	OAK	11
5607	OAK	12
5608	OAK	9
5609	OAK	11
5610	OAK	10
5611	OAK	10
5612	OAK	10
5613	OAK	10
5614	OAK	11
5615	OAK	11
5616	OAK	13
5617	OAK	12
5618	OAK	18
5619	OAK	21

NO.	SPECIES	SIZE (INCHES)
5620	OAK	15
5621	OSAGE ORANGE	13
5622	OAK	14
5623	OAK	22
5624	OAK	10
5625	OAK	43
5626	OAK	27
5627	OAK	12
5628	ELM	9
5629	OAK	14
5630	OAK	12
5631	OAK	10
5632	OAK	12
5633	OAK	29
5634	OAK	21
5639	OAK	17
5640	OAK	41
5641	OAK	14
5642	OAK	17
5643	OAK	11
5644	OAK	11
5645	OAK	9
5646	OAK	13
5647	OAK	19
5648	OAK	14
5649	OAK	15
5650	CEDAR	11
5651	OAK	12
5652	OAK	10

STATE OF TEXAS
ANDREA BRYANT
120424
LICENSED
PROFESSIONAL ENGINEER
Andrea Bryant 11/1/2021

REV	DATE	DESCRIPTION

DRIPPING SPRINGS
Texas

Texas Department of Transportation

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ROB SHELTON
PEDESTRIAN IMPROVEMENTS

ROB SHELTON BLVD
TREE INFORMATION

CONT	SECT	JOB	HIGHWAY
0914	33	087	SHELTON LN
DIST	COUNTY		SHEET NO.
AUS	HAYS		91

DATE: Nov. 01, 2021 - 12:01:48 PM
FILE: N:\Plan Set\9. Environmental\DSP21528_TREEID.dgn

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

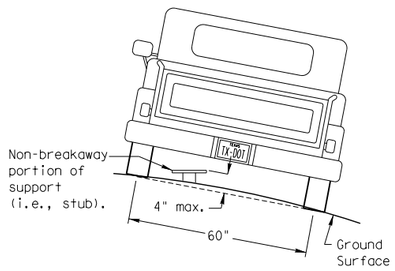
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

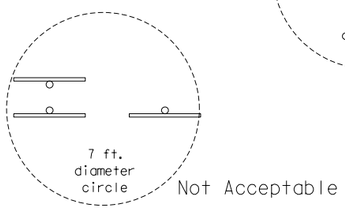
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT

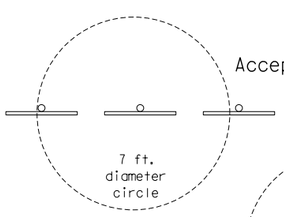


To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

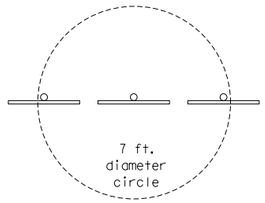
No more than 2 sign posts should be located within a 7 ft. circle.



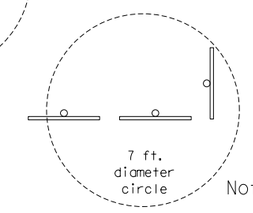
Not Acceptable



Acceptable



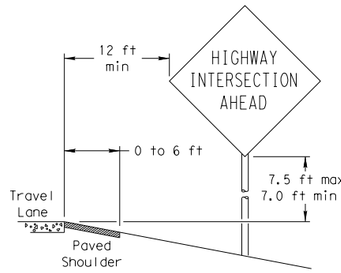
Not Acceptable



Not Acceptable

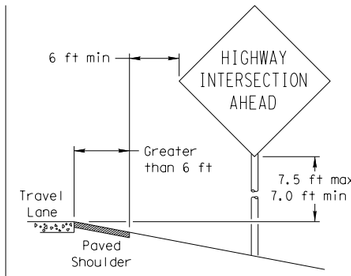
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

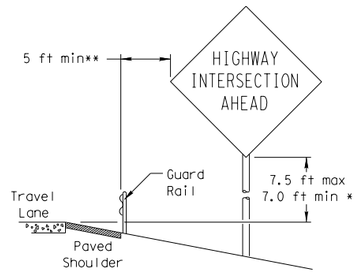
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



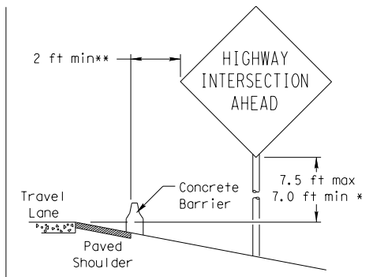
GREATER THAN 6 FT. WIDE

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.

BEHIND BARRIER



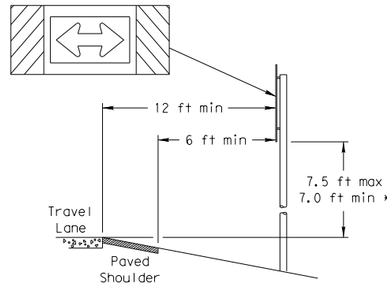
BEHIND GUARDRAIL



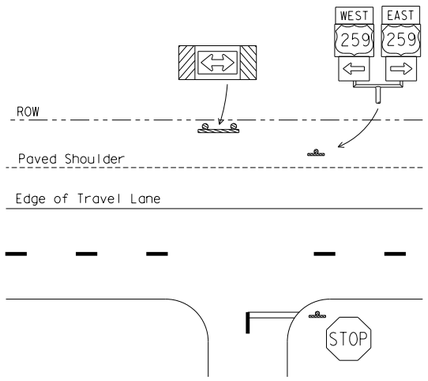
BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

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.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

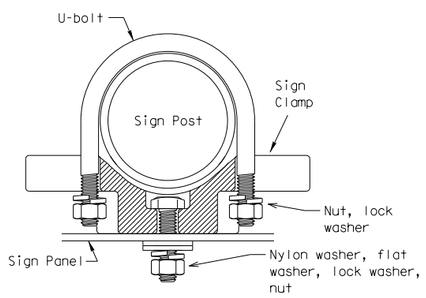
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

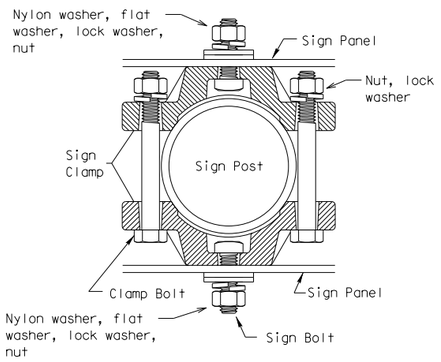
The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs



Back-to-Back Signs



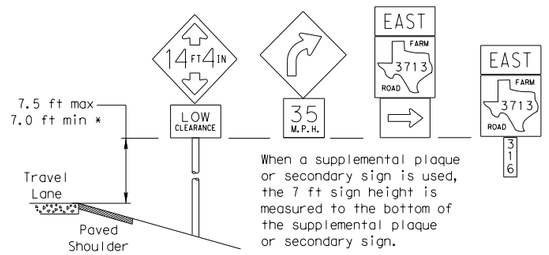
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

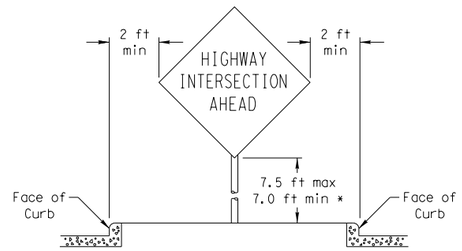
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



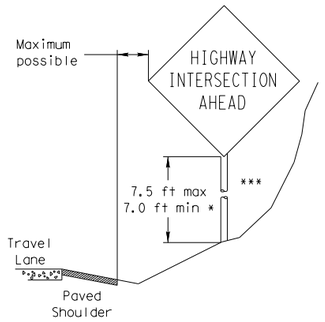
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		92

26A

DATE:
FILE:

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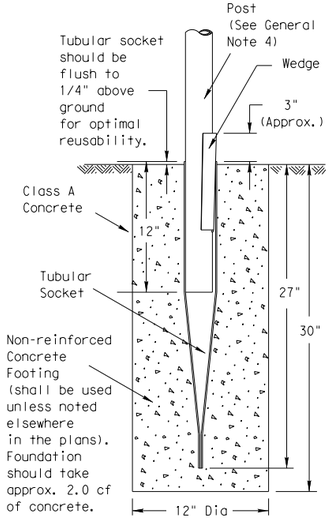
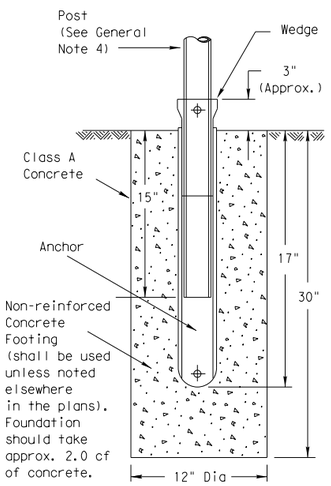
Wedge Anchor Steel System



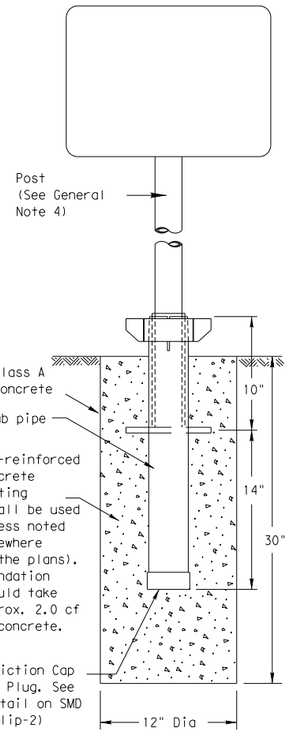
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

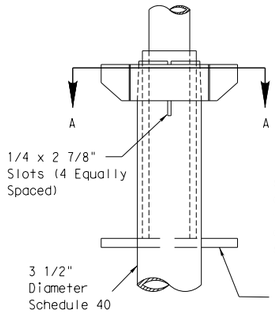


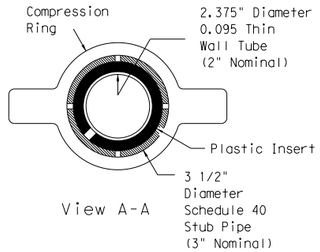
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



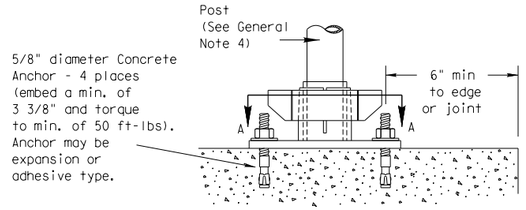
SM RD SGN ASSM TY TWT(X)UA(P)



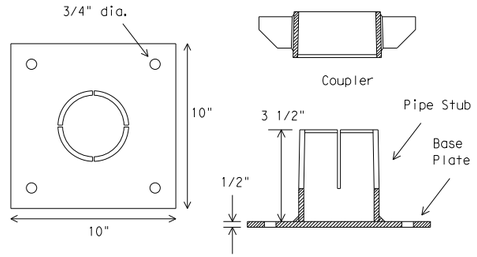


View A-A

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.

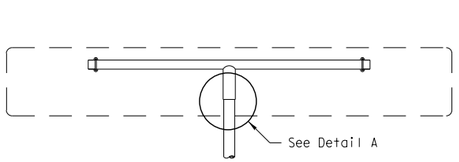


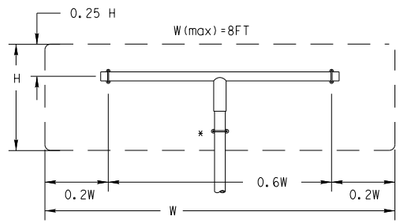
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized 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)

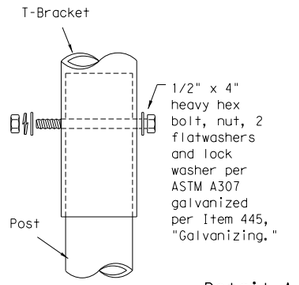
Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





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

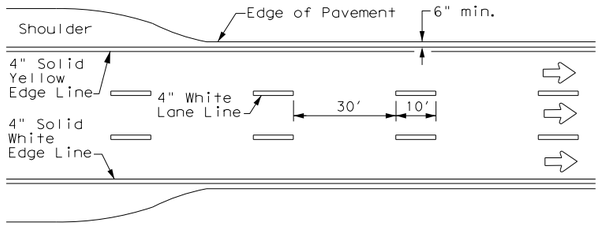
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST

SMD(TWT)-08

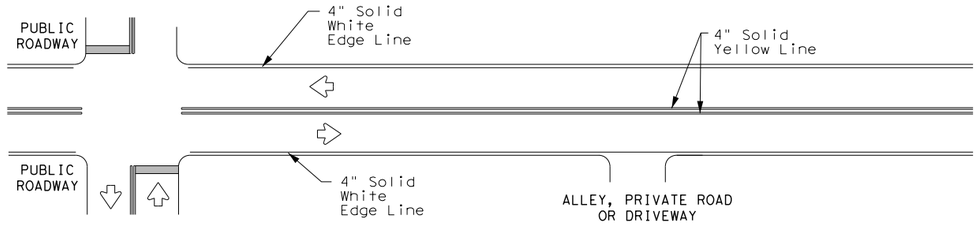
©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		93

26E

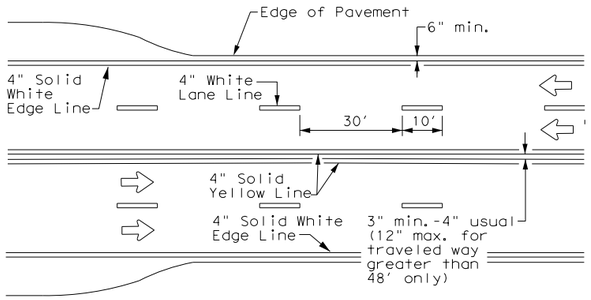
DATE:
FILE:



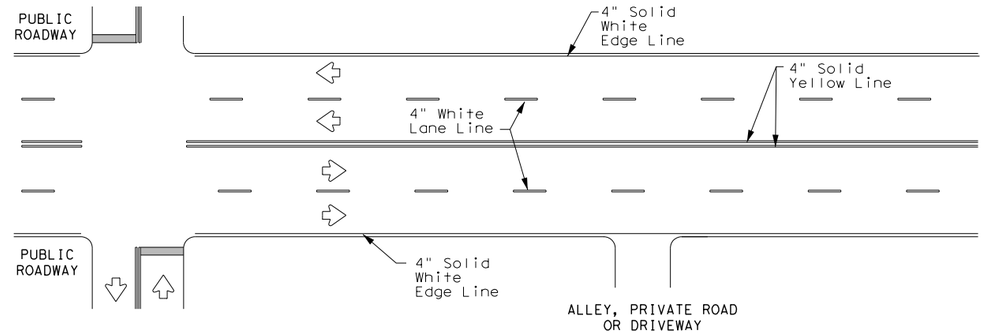
EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



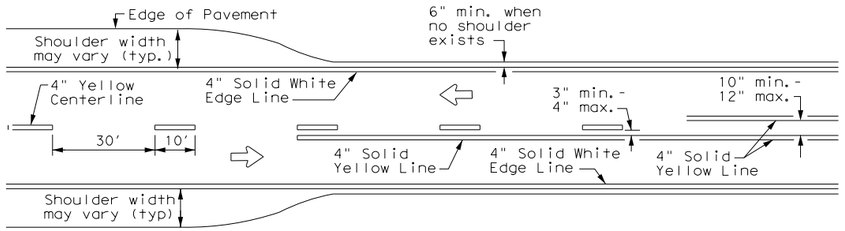
TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS



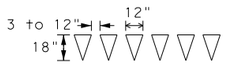
CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



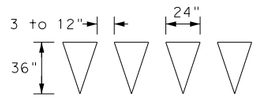
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

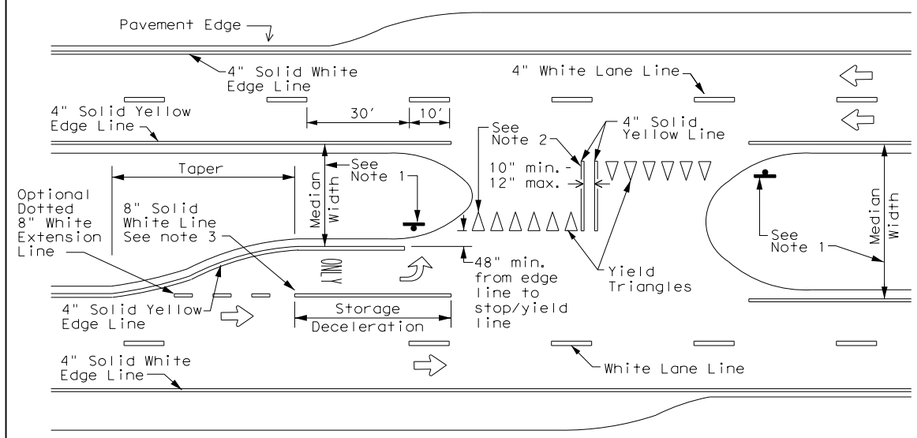


For posted speed on road being marked equal to or less than 40 MPH.



For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs are optional as determined by the Engineer.

2. Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield traingles shall only be used with yield signs.

3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

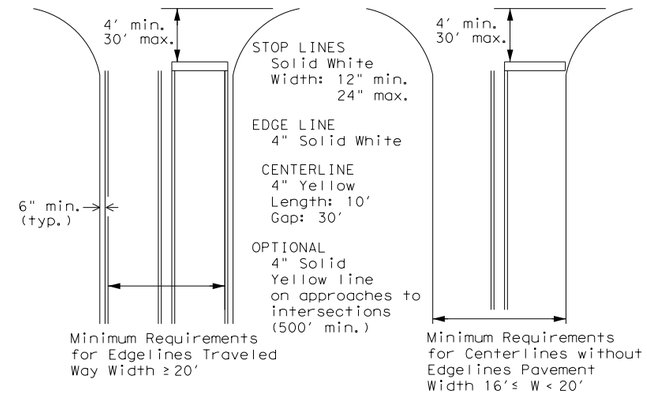
GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.

2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to the inside of edgeline of a two lane roadway.

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

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



GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths
for Undivided Highways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-20

FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
© TxDOT November 1978	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03	0914	33	087	SHELTON LN
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8-00 6-20	AUS	HAYS		94

22A

DATE:
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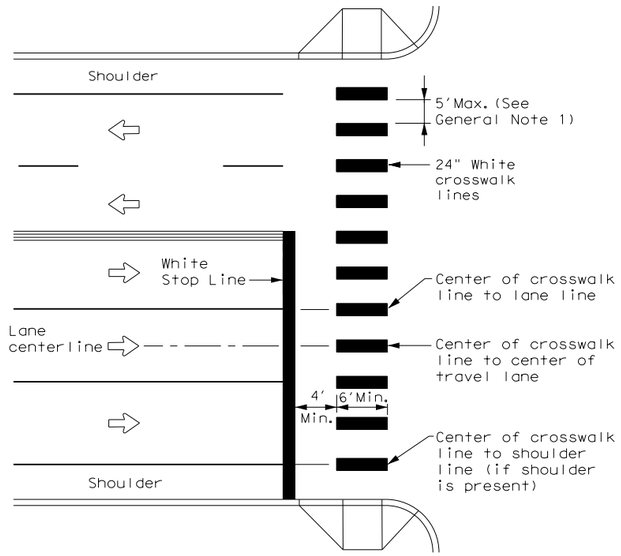


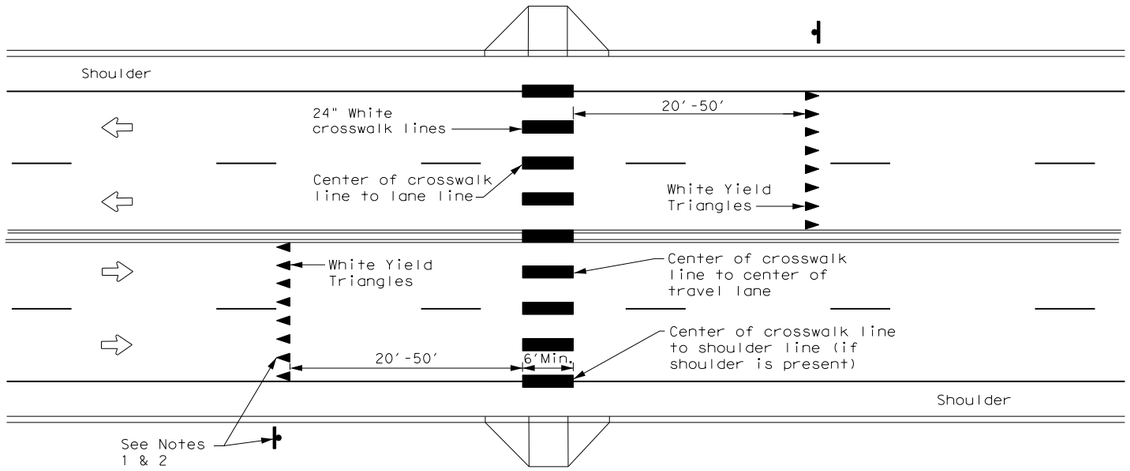
HIGH-VISIBILITY LONGITUDINAL CROSSWALK
AT CONTROLLED APPROACH

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/Yield Triangles and Crosswalk shall be approved by the Engineer in the field.

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

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



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY
LONGITUDINAL CROSSWALK

NOTES

1. Use yield triangles with "Yield Here to Pedestrians" signs at unsignalized mid block crosswalks.
2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

Texas Department of Transportation

Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-20

FILE: pm4-20.dgn	DN:	CK:	DW:	CK:
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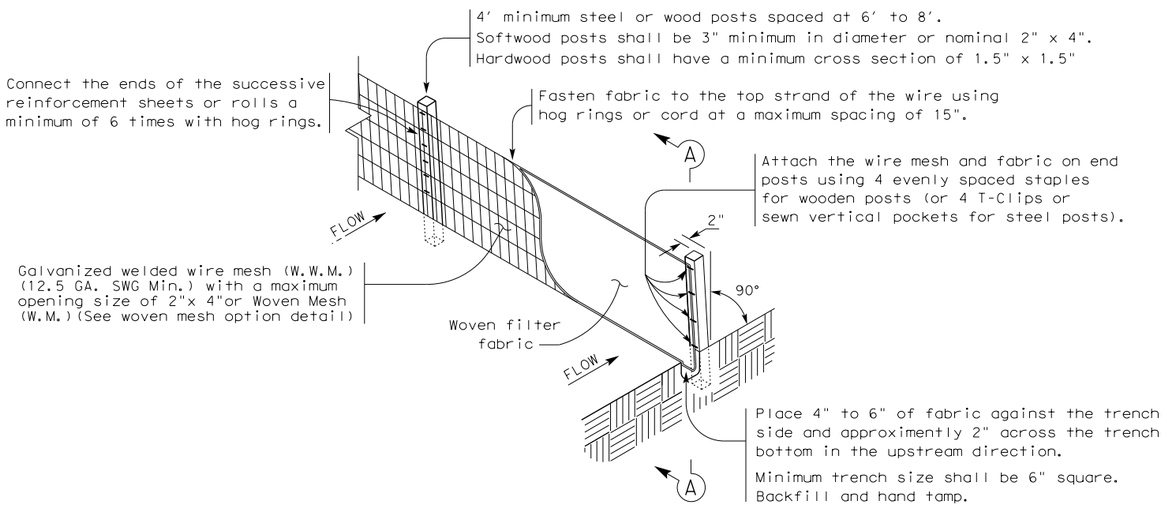
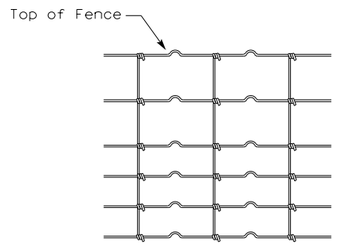
	AUS	HAYS		95

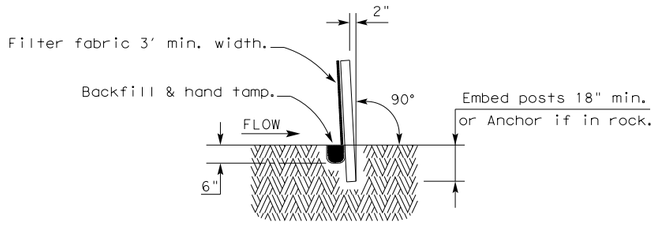
22D



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.

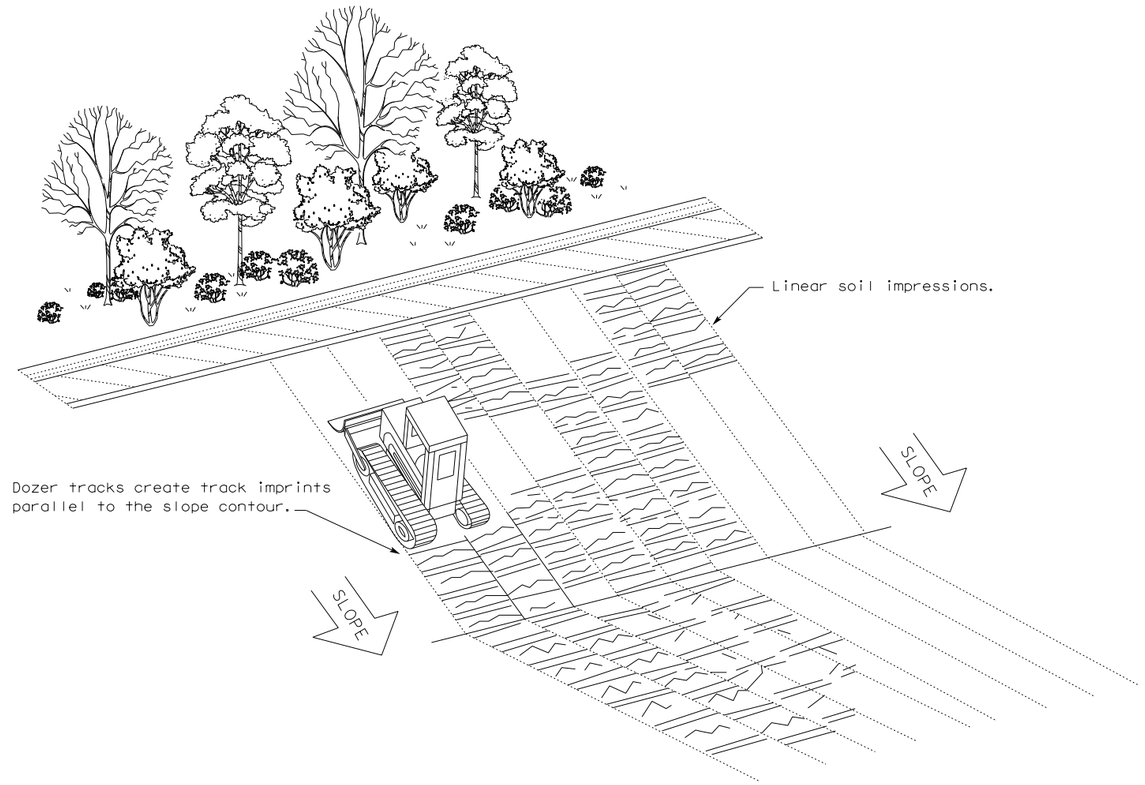
LEGEND

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		
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	DIST	COUNTY			SHEET NO.		
	AUS	HAYS			96		

DATE
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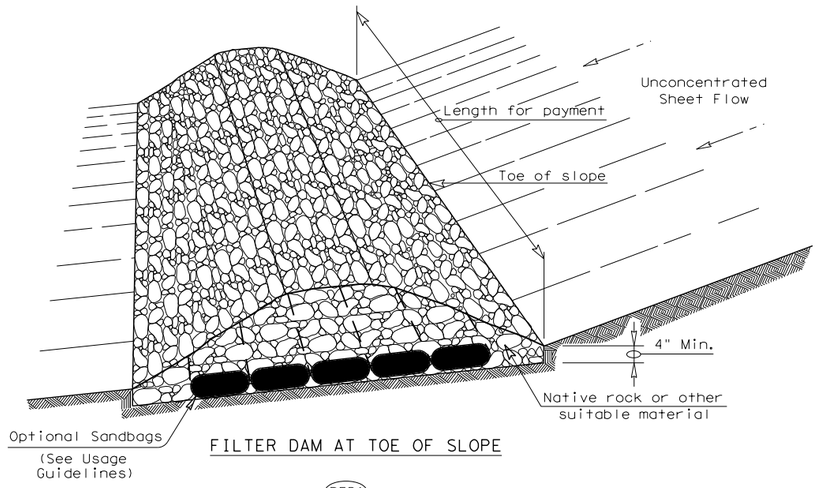
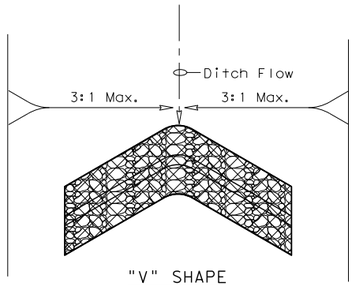
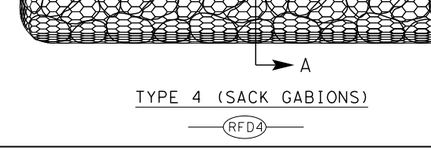


FILTER DAM AT TOE OF SLOPE

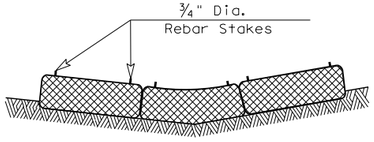
RFD1



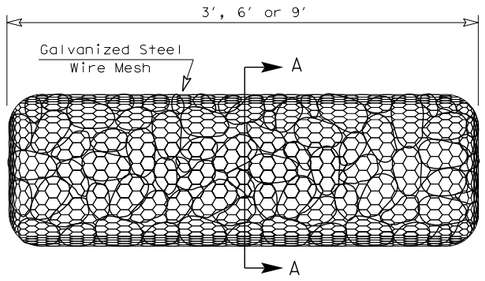
"V" SHAPE
PLAN VIEW



PLAN VIEW

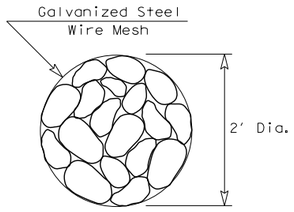


SECTION B-B

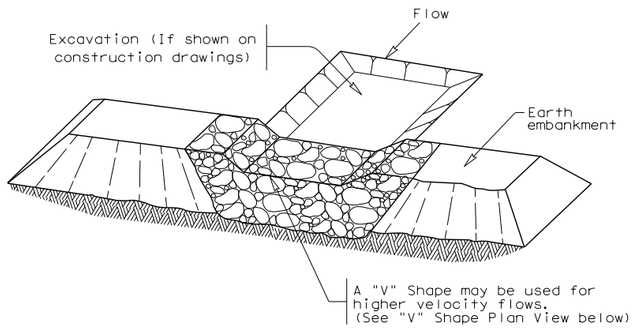


TYPE 4 (SACK GABIONS)

RFD4

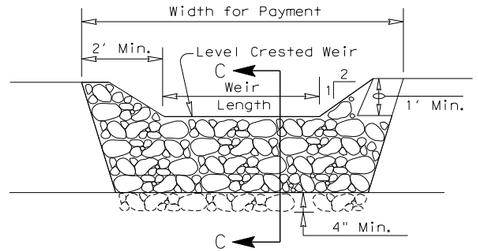


SECTION A-A

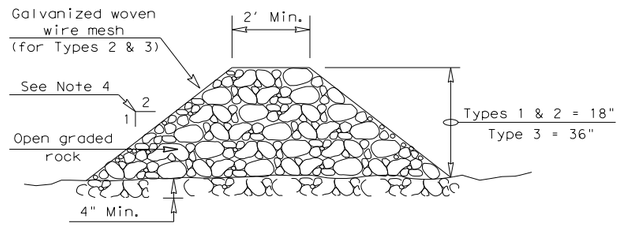


FILTER DAM AT SEDIMENT TRAP

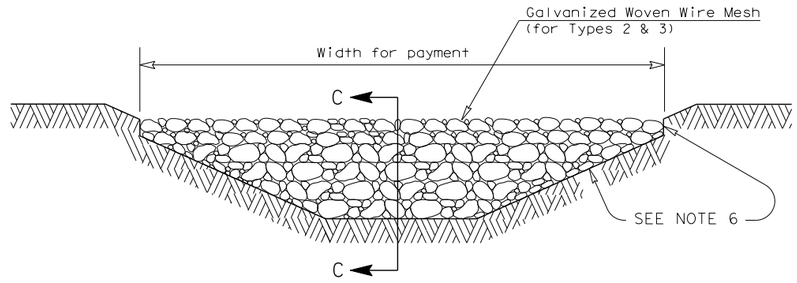
RFD1 OR RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT^2 of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3
Type 4 Rock Filter Dam — RFD4

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

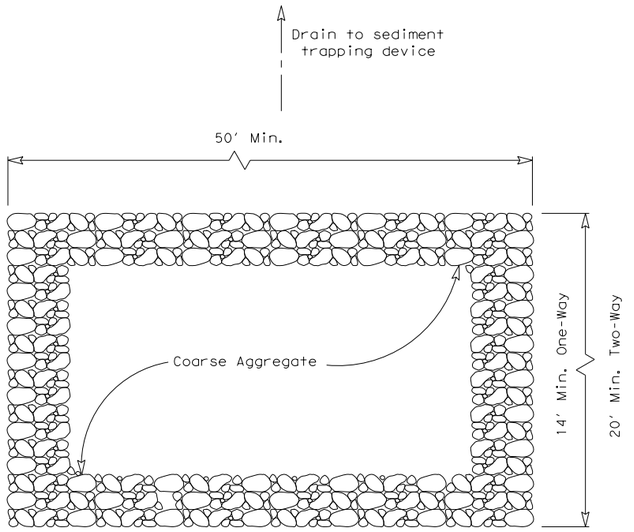
ROCK FILTER DAMS

EC(2)-16

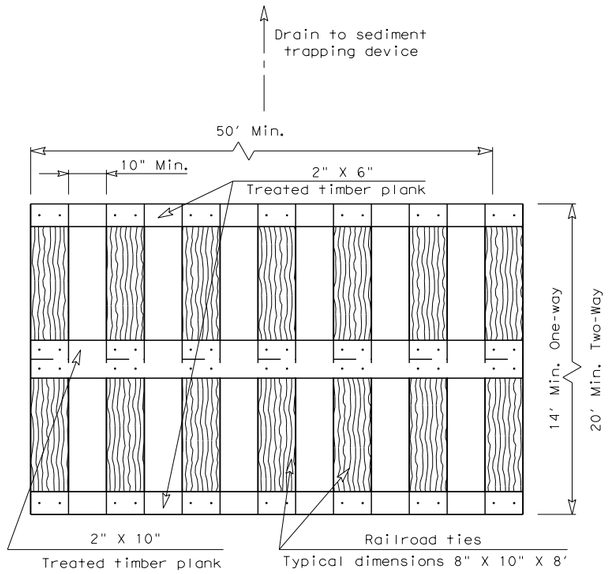
FILE: ec216	DN: TxDOT		CK: KM		DW: VP		DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY		
REVISIONS	0914	33	087		SHELTON LN		
	DIST	COUNTY					SHEET NO.
	AUS	HAYS					97

DATE:
FILE:

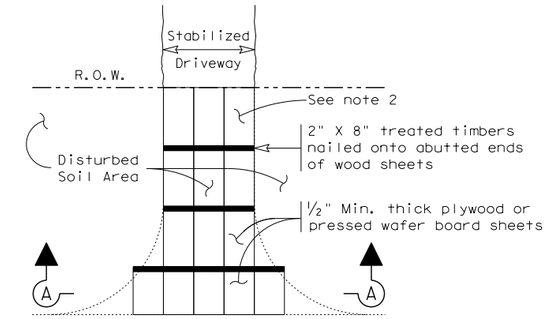
DATE:
FILE:



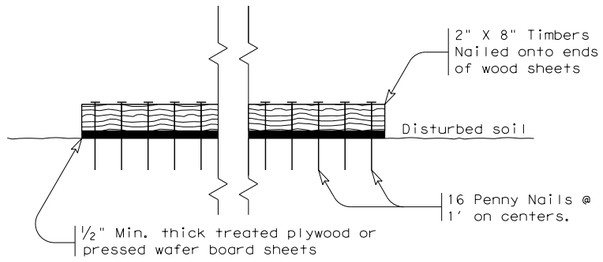
PLAN VIEW



PLAN VIEW



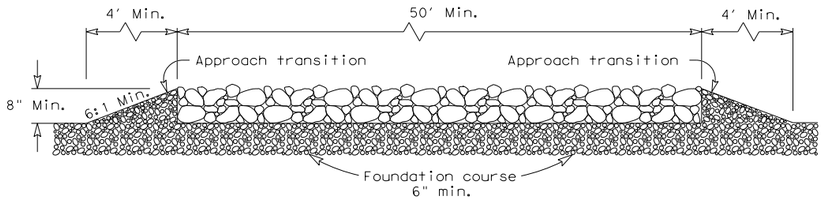
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

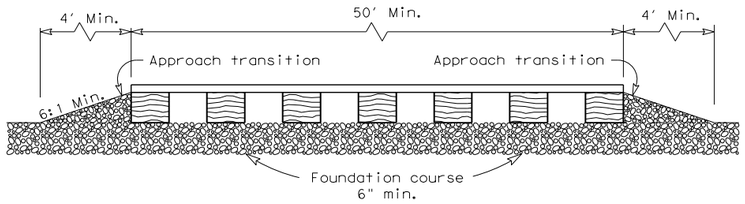
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50′.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materialas approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50′.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

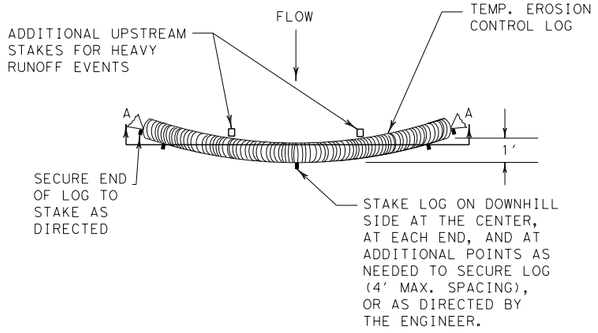
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

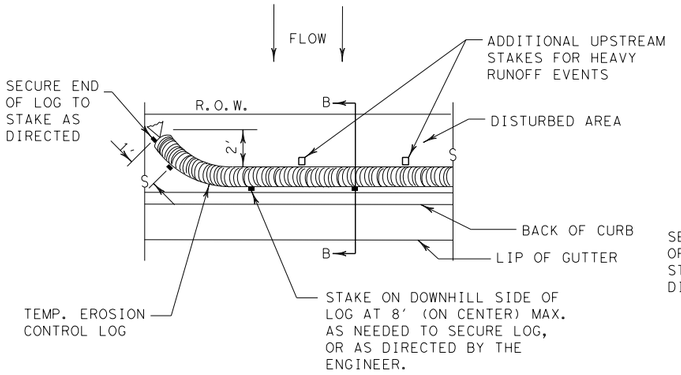
EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
	DIST	COUNTY		SHEET NO.
	AUS	HAYS		98

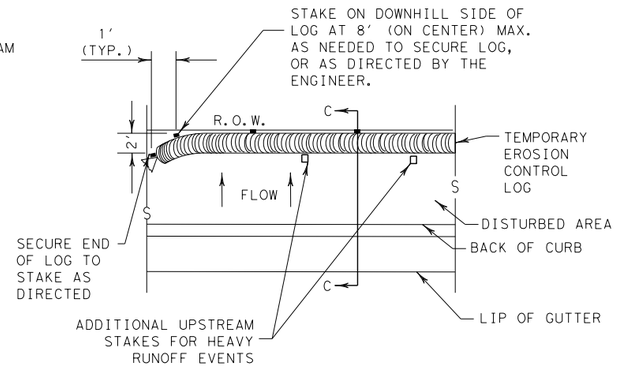
DATE:
FILE:



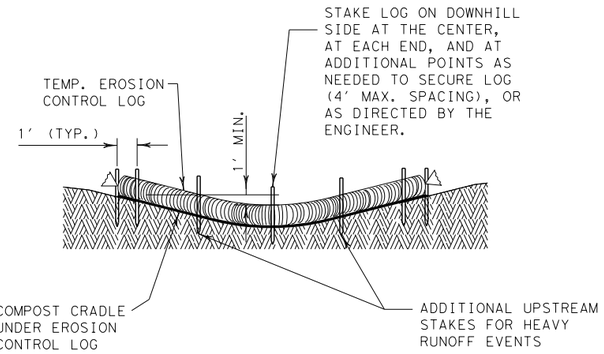
PLAN VIEW



PLAN VIEW



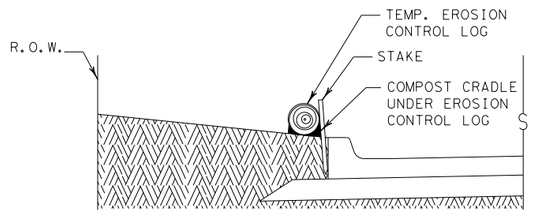
PLAN VIEW



SECTION A-A

EROSION CONTROL LOG DAM

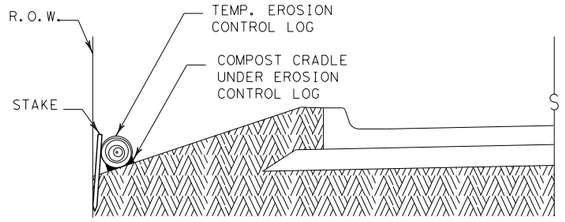
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

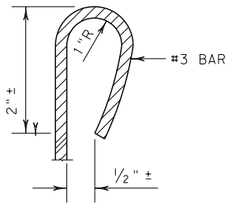
CL-BOC



SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



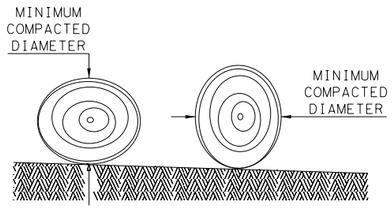
REBAR STAKE DETAIL

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

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

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.

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	
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		DIST		COUNTY			SHEET NO.
		AUS		HAYS			99

DATE:
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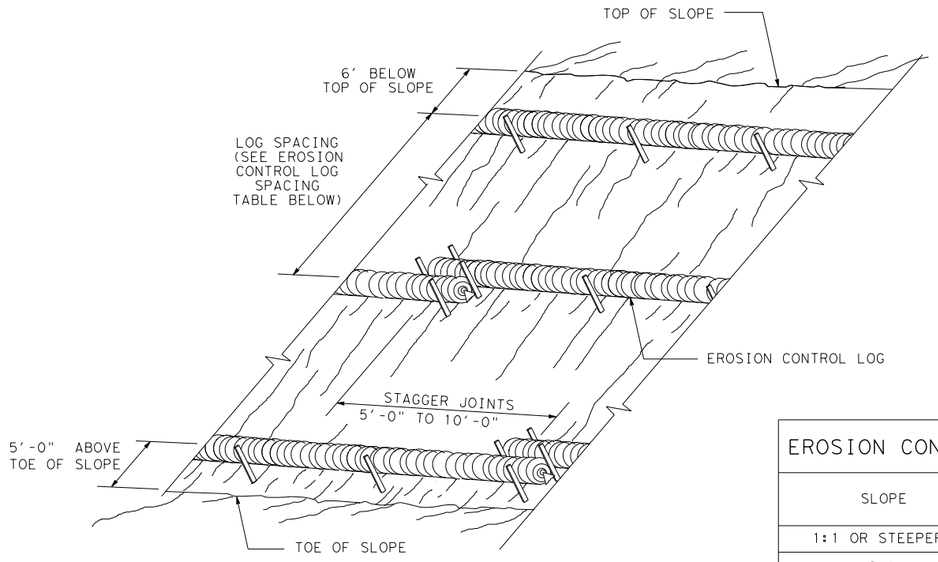
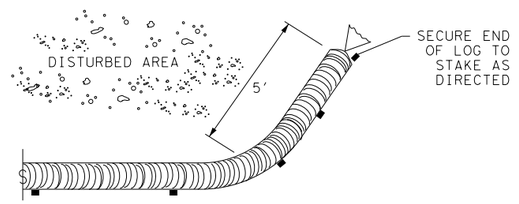


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

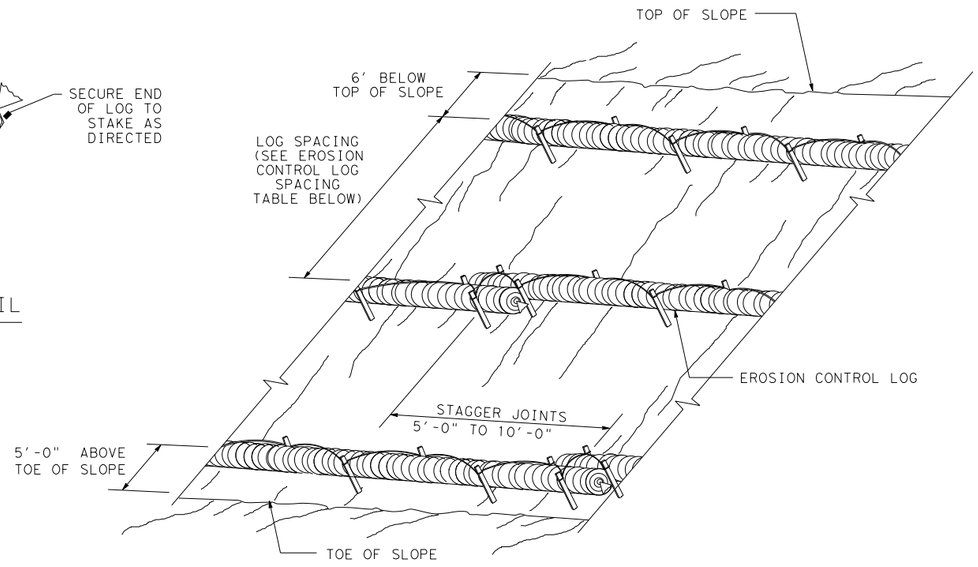
CL-SST



END SECTION RAP DETAIL

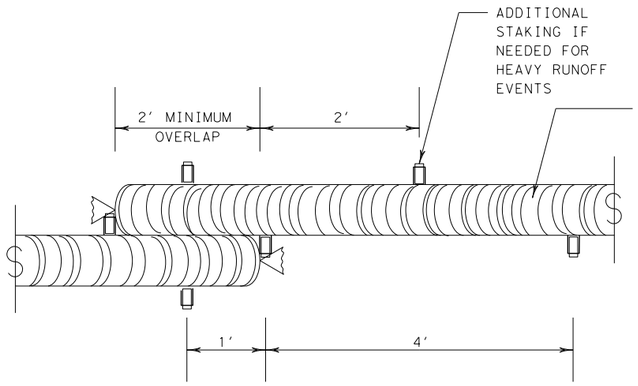
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

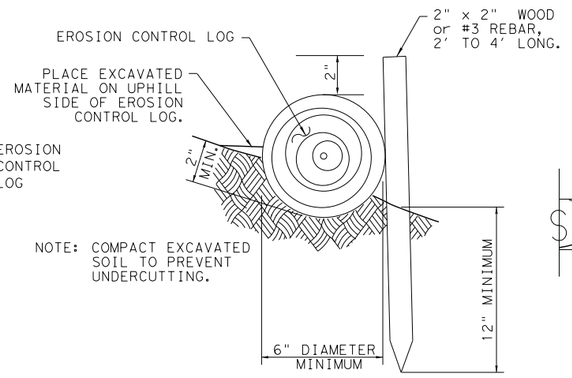
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

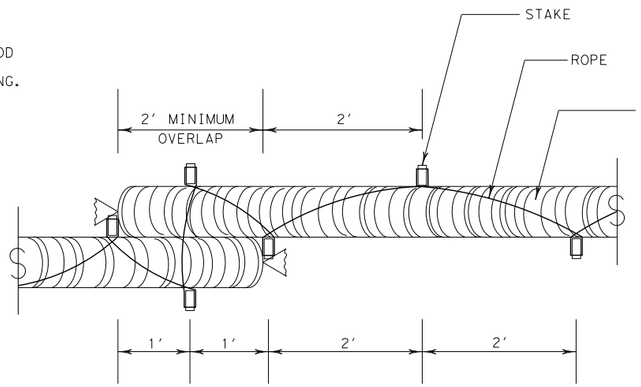


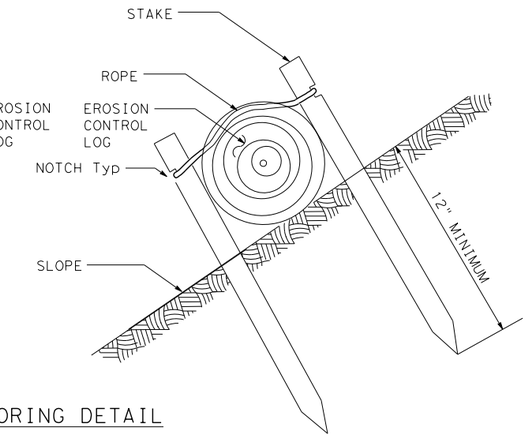


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

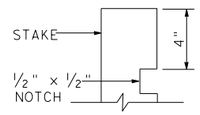
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
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	DIST	COUNTY		SHEET NO.
	AUS	HAYS		100

DATE:
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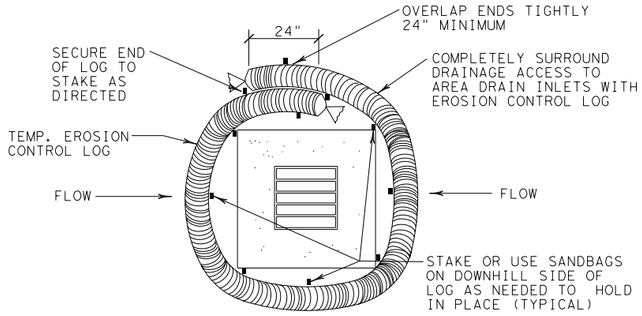
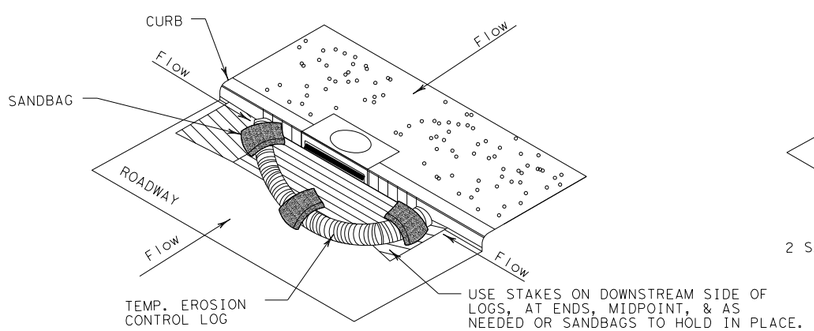


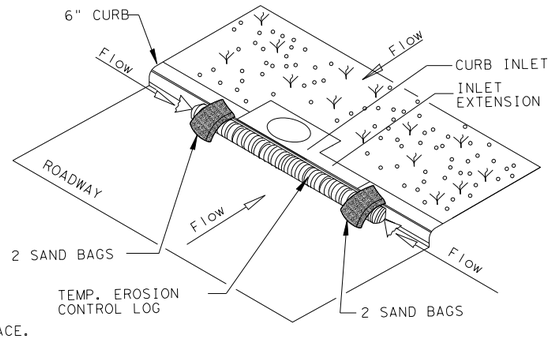
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

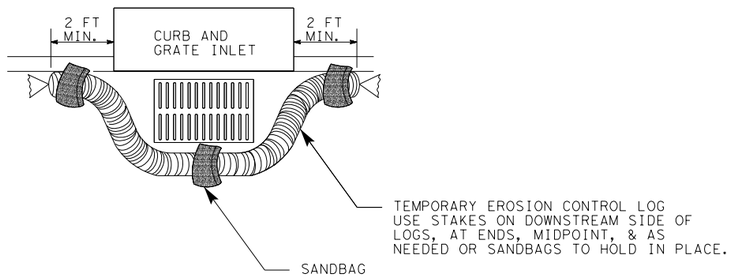
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

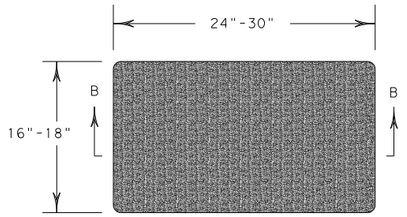
NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.



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	087		SHELTON LN		
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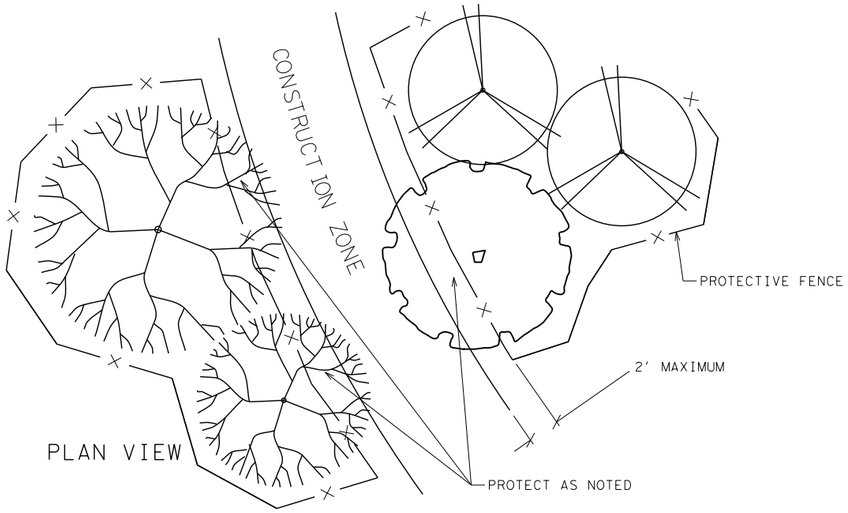
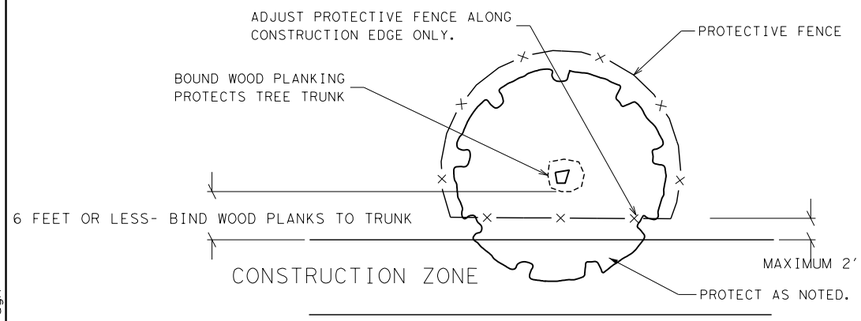
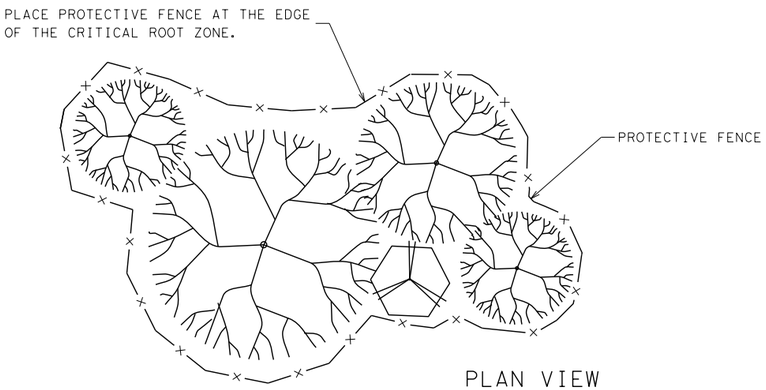
	AUS	HAYS			101		



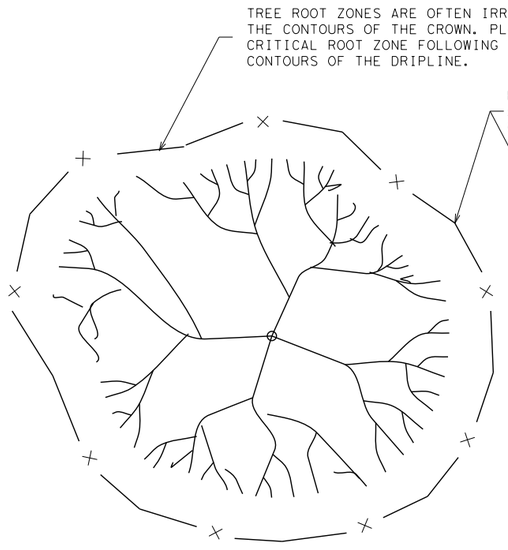
LINEAR CONSTRUCTION THROUGH STAND OF TREES

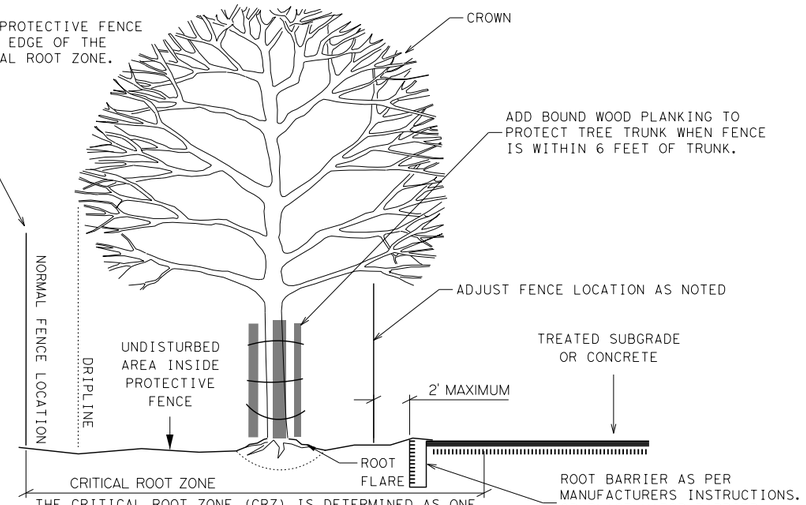


PLAN VIEW
PAVING UNDER TREES



TYPICAL TREE GROUPING PROTECTION





THE CRITICAL ROOT ZONE (CRZ) IS DETERMINED AS ONE (1) FOOT RADIUS FROM TRUNK FOR EACH CALIPER INCH (DIAMETER) OF TRUNK
EXAMPLE: THE CRZ FOR A 6 INCH CALIPER TREE WOULD EXTEND 6 FEET FROM THE TRUNK IN ALL DIRECTIONS

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)

©	CONT	SECT	JOB	HIGHWAY
REVISIONS	0914	33	087	SHELTON LN
06/16: SHEET CREATED 04/19: APPROVED	DIST	COUNTY		SHEET NO.
	AUS	HAYS		102

[DATE]: Nov. 19, 2021 - 09:01:43 AM
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