FEDERAL AID PROJECT NO.			
STP 2023(490)TAPS			
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		1

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

FEDERAL AID PROJECT
STP 2023(490) TAPS
CSJ: 0915-00-252

BEXAR COUNTY

W FARM TO MARKET 2790 S, COTTAGE STREET & N PRAIRIE STREET

DESIGN SPEED = 15 MPH
AREA OF DISTURBED SOIL = 4.10 AC
ADT: 4,040VPD

ACCESSIBILITY STANDARDS = PROWAG

LIMITS: ALONG FM 2790, COTTAGE ST. AND PRAIRIE ST
IN LYTLE: MEDINA, ATACOSA, BEXAR COUNTY

NET LENGTH OF ROADWAY = 4734 FT.= 0.896 MI.
NET LENGTH OF PROJECT = 4734 FT.= 0.896 MI.

REGISTERED ACCESSIBILITY SPECIALIST INSPECTION REQUIRED
TDLR NO. TABS2024000032

FINAL PLANS

LETTING DATE: _____

DATE CONTRACTOR BEGAN WORK: _____

DATE WORK WAS ACCEPTED: _____

FINAL CONTRACT COST: $ _____

CONTRACTOR: _____

FINAL PLANS STATEMENT:

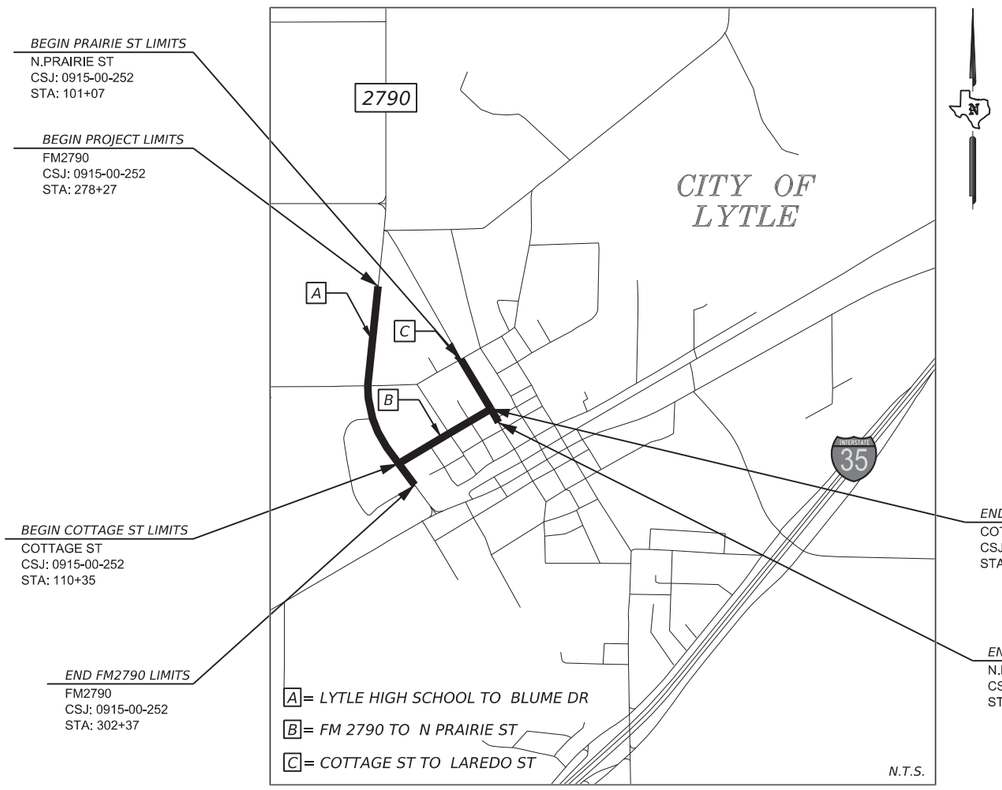
THE CONSTRUCTION WORK WAS PERFORMED
IN ACCORDANCE WITH THE PLANS.

P.E. _____
AREA ENGINEER DATE

INDEX OF SHEETS

SEE SHEET 2 FOR INDEX OF SHEETS

FOR THE CONSTRUCTION OF CURB RAMPS, SIDEWALKS AND OTHER PEDESTRIAN RELATED INFRASTRUCTURE IN BEXAR COUNTY



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

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSINGS: NONE

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

SUBMITTED FOR 8/9/2023
DocuSigned by: Lizette J. Collat, P.E. DF7D9915513A45A...
VISOR

RECOMMENDED FOR 8/9/2023
DocuSigned by: Clayton Kipps, P.E. 74F59ACB883D4EB...
PLANNING & DEVELOPMENT

REVIEWED FOR 8/9/2023
DocuSigned by: DERogers, P.E. F29100BAA508499...
SUPERVISOR

APPROVED FOR 8/9/2023
DocuSigned by: Gina Gallegos 124372CCDF604F5...

DATE: 8/1/2023 5:59:38 PM
FILE: ...\FM2790 TITLE SHEET.dgn

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

SHEET NO.	DESCRIPTION
	GENERAL
1	TITLE SHEET
2	INDEX OF SHEETS
3 -- 4	PROJECT LAYOUT FM2790
5	PROJECT LAYOUT COTTAGE ST
6	PROJECT LAYOUT PRAIRIE ST
7	FM2790 EXISTING/PROPOSED TYPICAL SECTIONS
8	COTTAGE ST EXISTING/PROPOSED TYPICAL SECTIONS
9	PRARIE EXISTING/PROPOSED TYPICAL SECTIONS
10, 10A - 10E	GENERAL NOTES
11 & 11A	ESTIMATE AND QUANTITY SHEET
12 -- 13	SUMMARY OF QUANTITIES
	TRAFFIC CONTROL PLAN
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16	TCP SCHEDULE OF BARRICADES
17	TCP ADVANCED WARNING SIGNS
18	TCP PLAN OVERALL PHASING LAYOUT
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37	TCP(1-2)-18*
38	TCP(1-3)-18*
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70	PRAIRIE ST ROADWAY PLANS
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	DRIVEWAY & CULVERT DATA
74 -- 75	DRIVEWAY & CULVERT PLAN & PROFILES
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90	PED-18*
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	SIGNING & PAVEMENT MARKING - STANDARDS
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129	SMD(SLIP-2)-08*
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133	PM(3)-22*
134	PM(4)-22A*
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NOTES:

* STATE STANDARDS
** SAT DISTRICT STANDARDS

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

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
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Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

INDEX OF SHEETS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY		SHEET NO.
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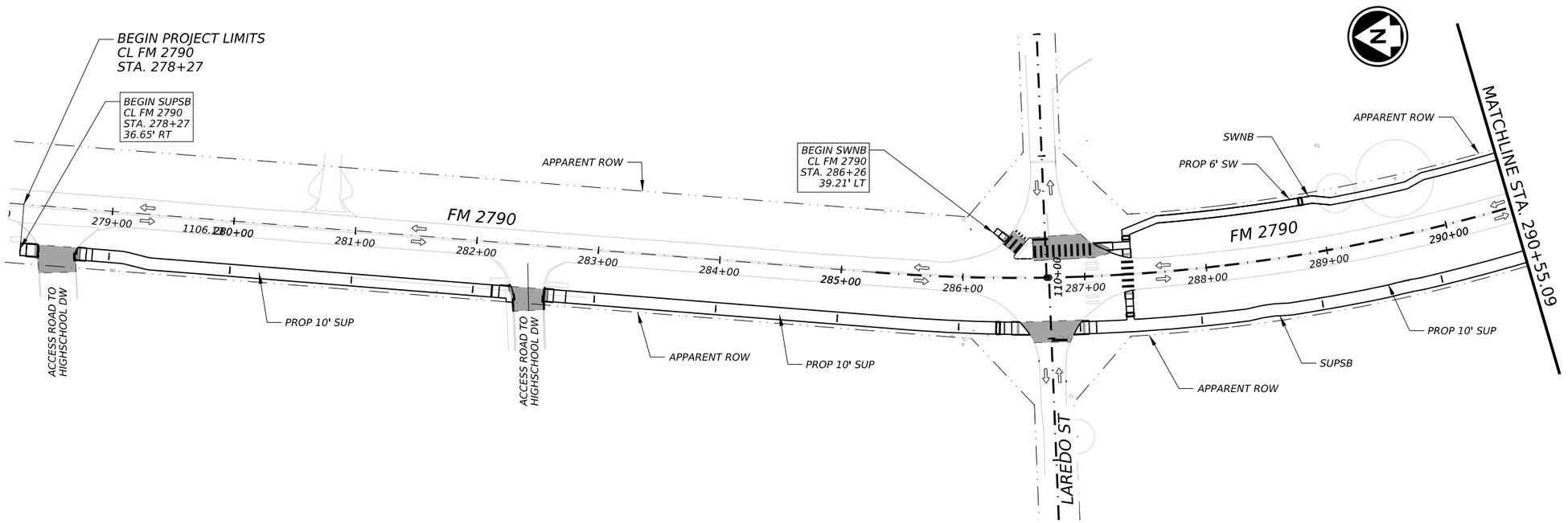

STATE OF TEXAS
ROGER F. SORENSON
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FM2790,COTTAGE,PRAIRIE

PROJECT LAYOUT
FM 2790

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
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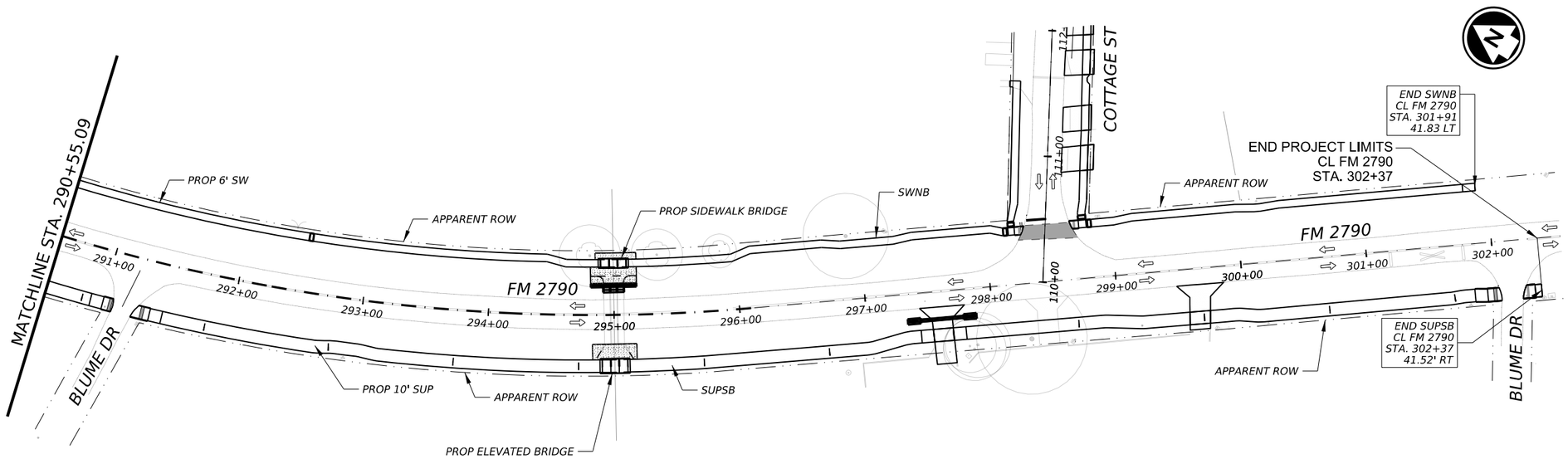

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ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

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FM2790,COTTAGE,PRAIRIE

PROJECT LAYOUT
FM 2790

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
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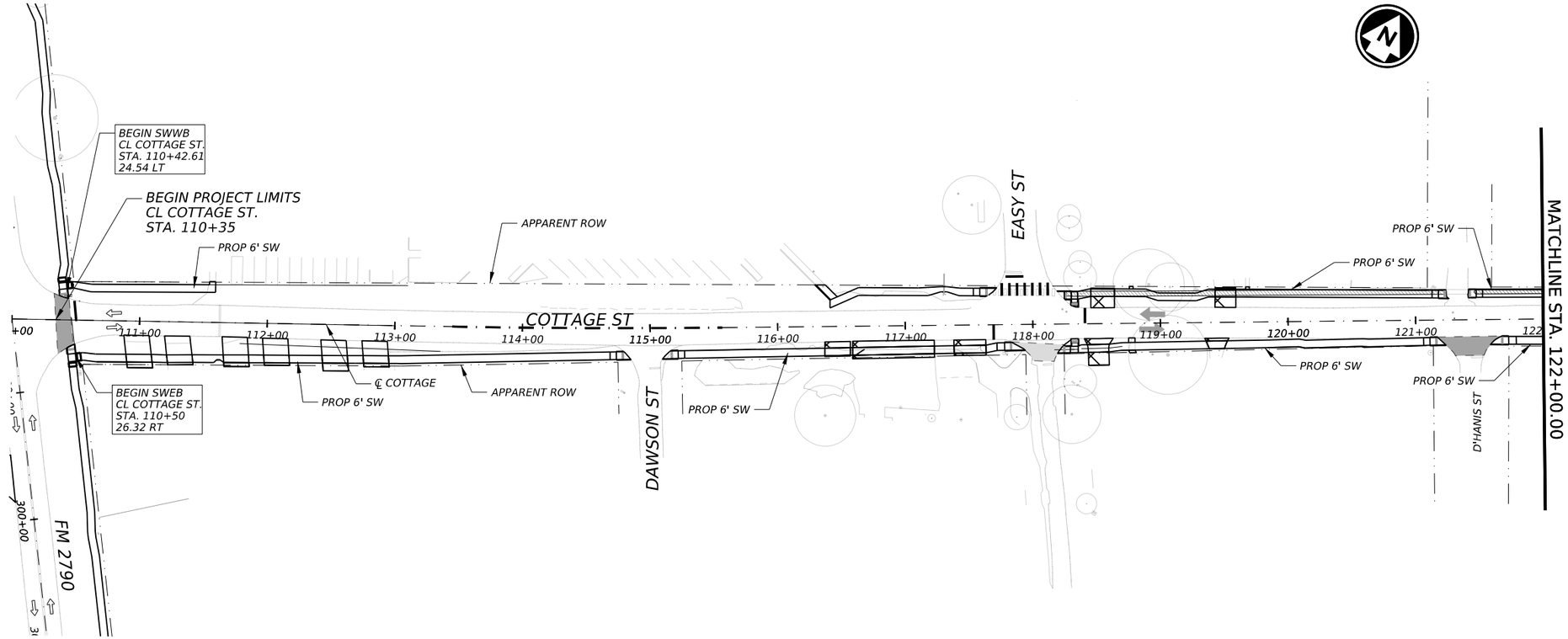

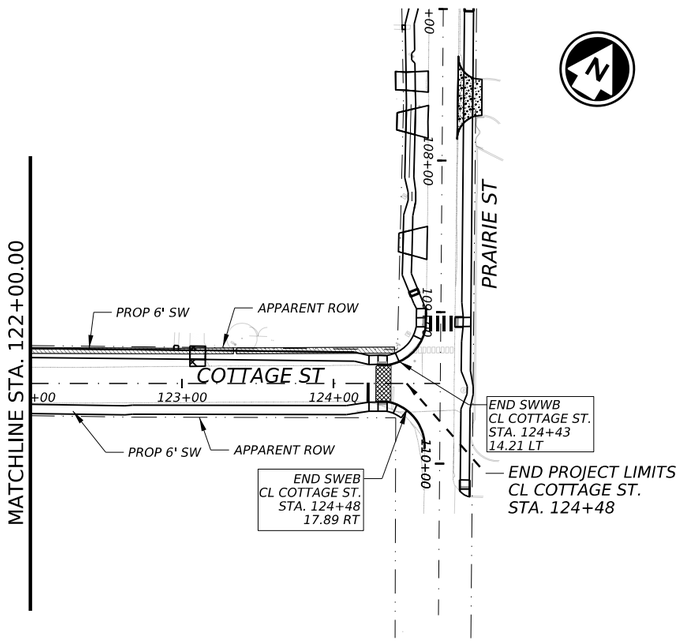

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STATE OF TEXAS
ROGER F. SORENSON
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FM2790,COTTAGE,PRAIRIE

PROJECT LAYOUT
COTTAGE ST

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY		SHEET NO.
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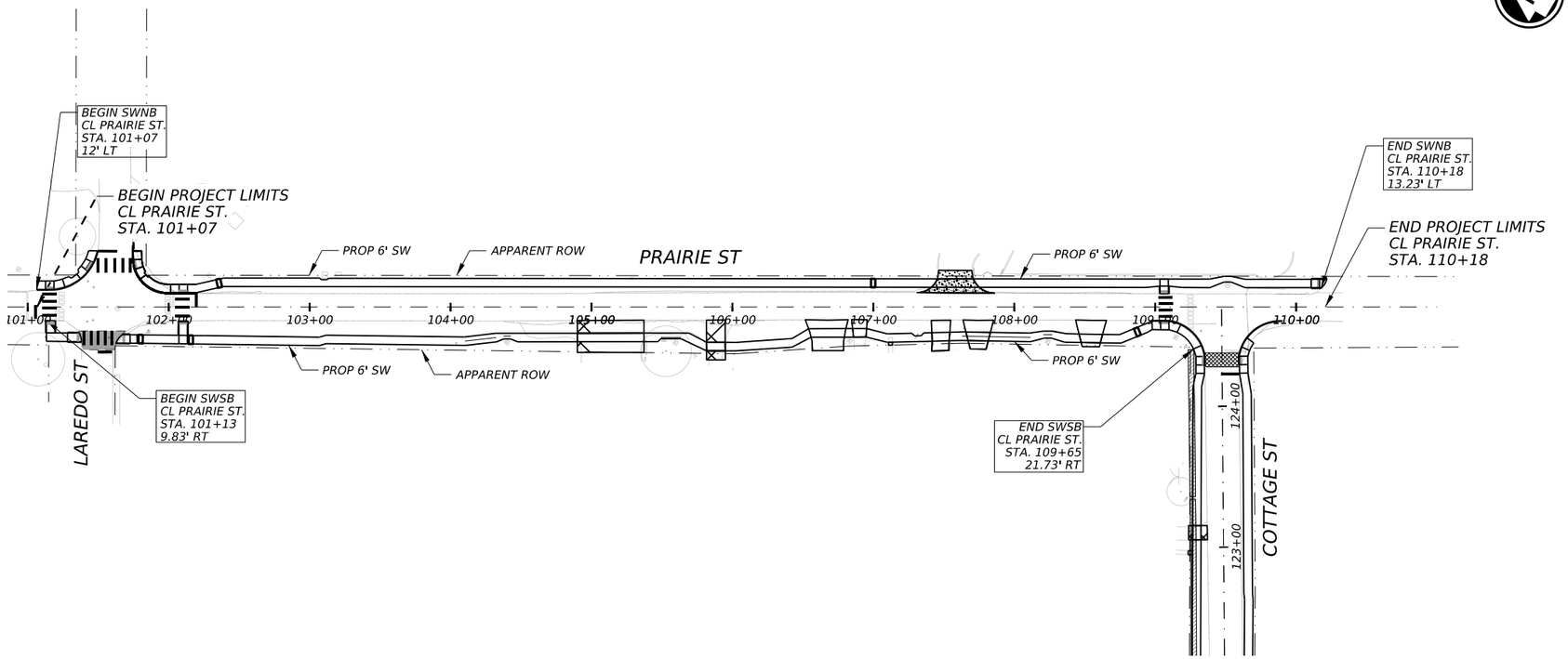

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SCALE: 1"=100'

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

PROJECT LAYOUT
N. PRAIRIE ST

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
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DIST	COUNTY		SHEET NO.
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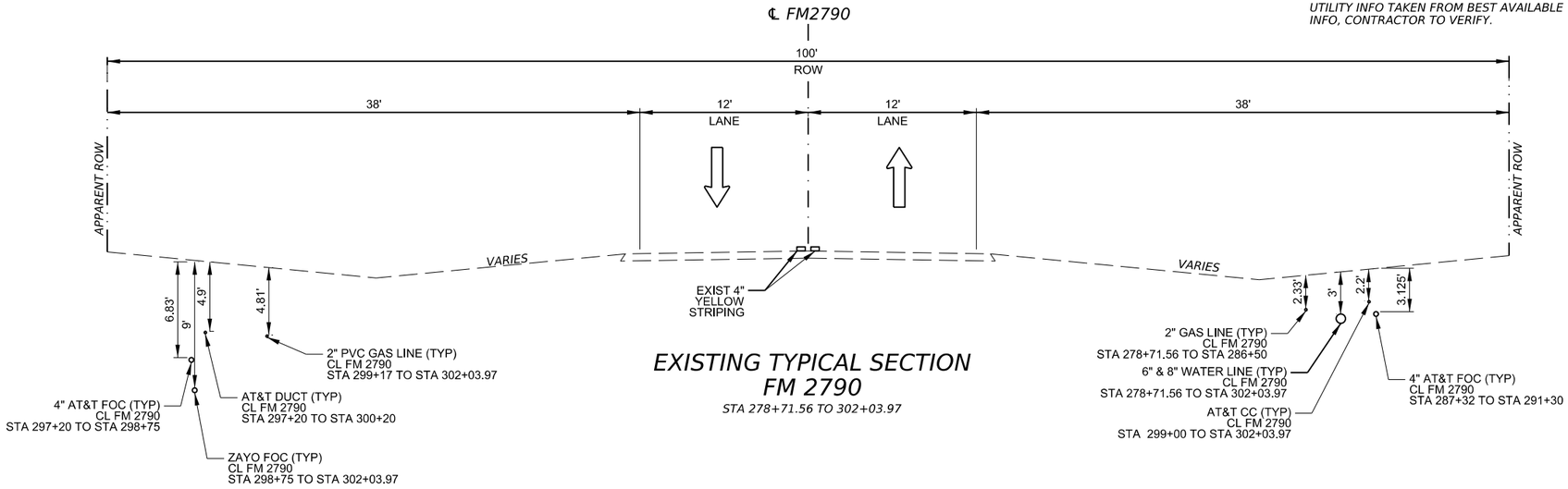
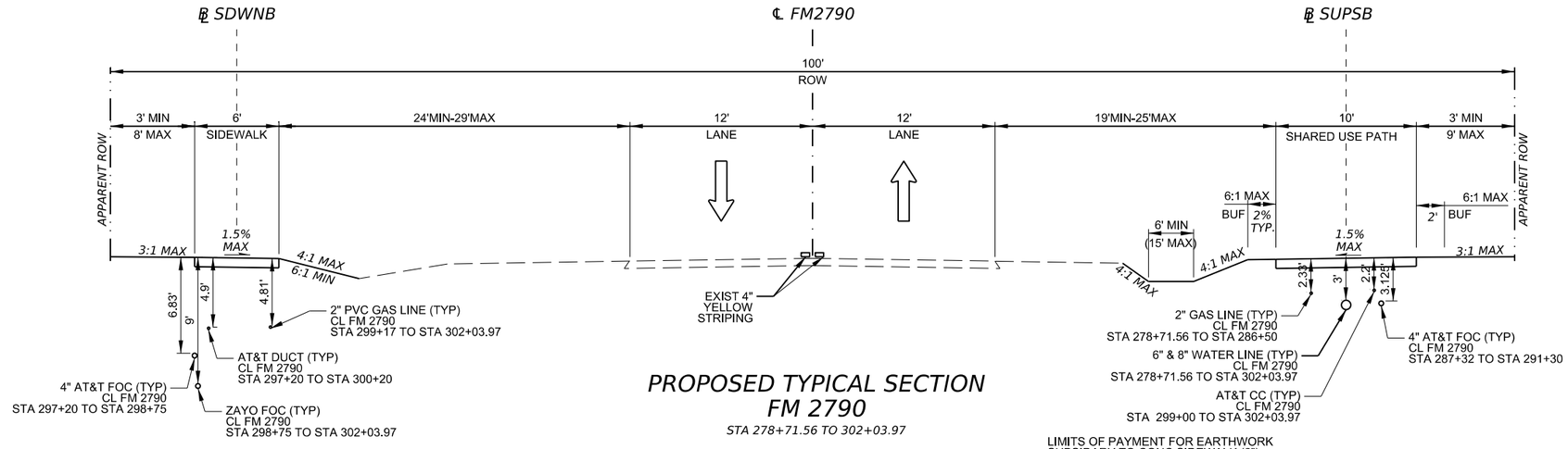


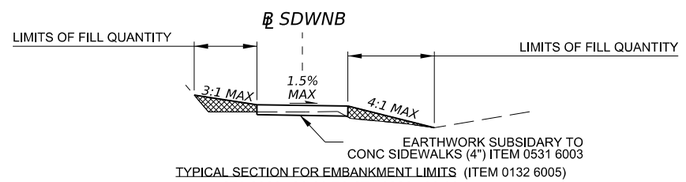
EXISTING TYPICAL SECTION
FM 2790

STA 278+71.56 TO 302+03.97



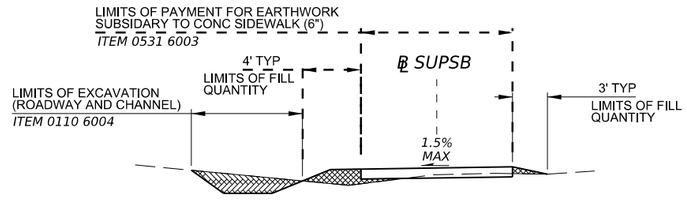
PROPOSED TYPICAL SECTION
FM 2790

STA 278+71.56 TO 302+03.97



TYPICAL SECTION FOR EMBANKMENT LIMITS (ITEM 0132 6005)

STA 2289+20.00 TO STA 2292+00.00
STA 2294+00.000 TO STA 2294+82.00
STA 2296+65.00 TO STA 2297+65.00
STA 2298+00.00 TO STA 2301+54.00



TYPICAL SECTION FOR LIMITS OF EXCAVATION (ITEM 0110 6004)

STA 278+71.56 TO 302+03.97

TYPICAL SECTIONS (NOT TO SCALE)

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
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MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

TYPICAL SECTIONS

FM 2790

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		7

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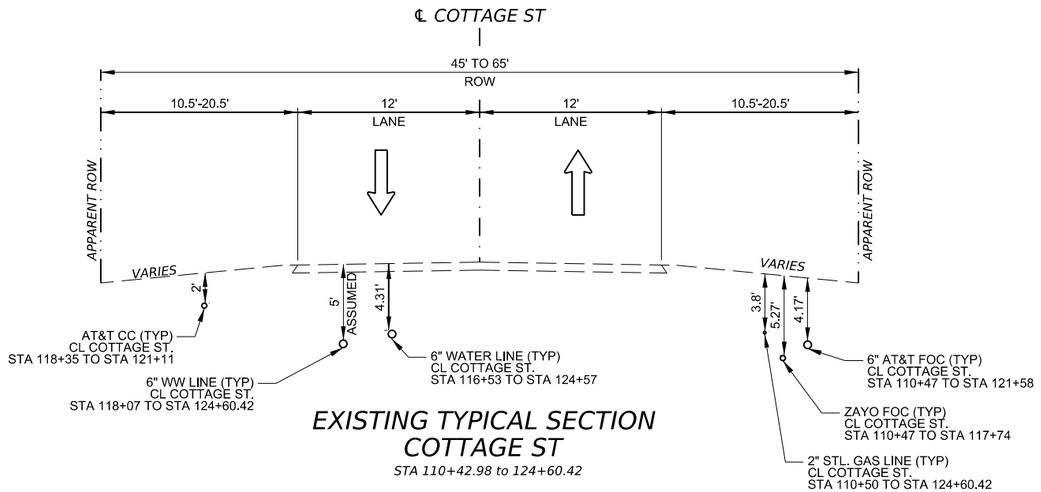
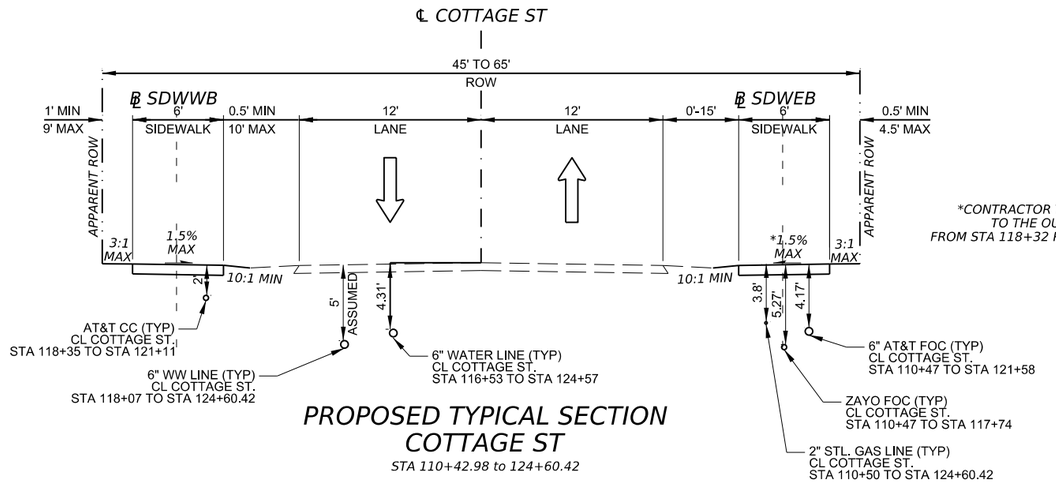


EXISTING TYPICAL SECTION
COTTAGE ST

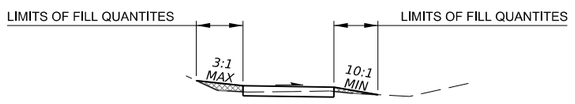
STA 110+42.98 to 124+60.42



PROPOSED TYPICAL SECTION
COTTAGE ST

STA 110+42.98 to 124+60.42

**CONTRACTOR TO SLOPE SIDEWALK TO THE OUTSIDE OF ROW FROM STA 118+32 RT TO STA 124+60.42 RT*



NOTES:

UTILITY INFO TAKEN FROM BEST AVAILABLE INFO, CONTRACTOR TO VERIFY.

TYPICAL SECTIONS (NOT TO SCALE)

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
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8/22/2023

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FM2790,COTTAGE,PRAIRIE

TYPICAL SECTIONS

COTTAGE ST.

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
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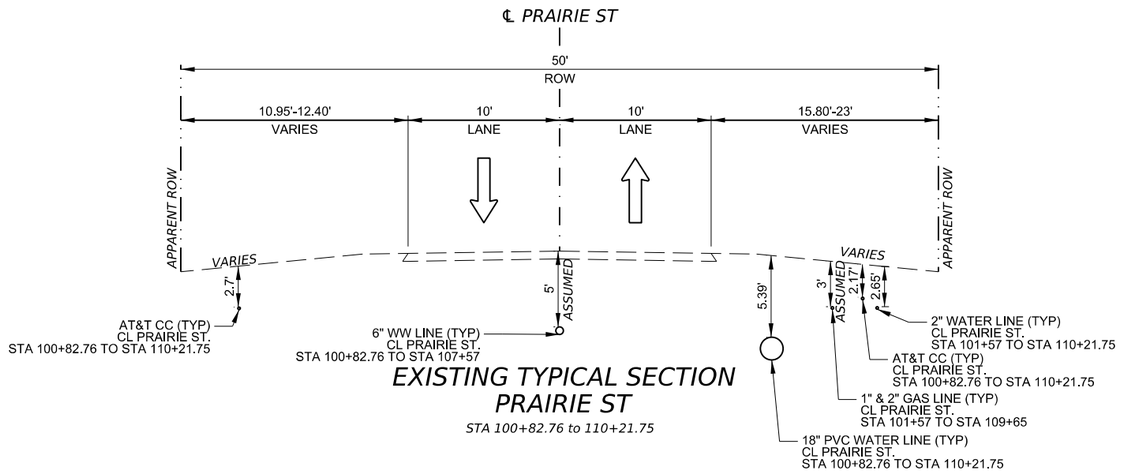
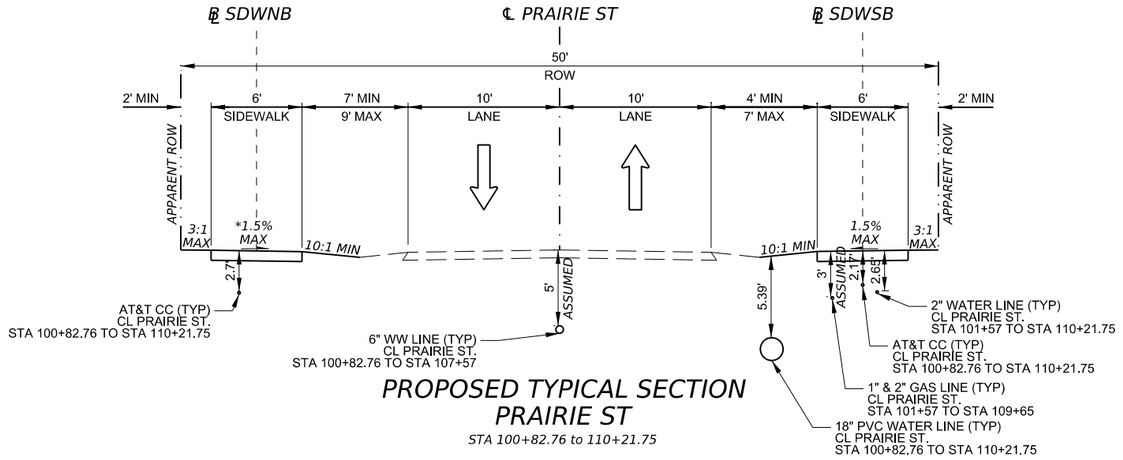


EXISTING TYPICAL SECTION
PRAIRIE ST

STA 100+82.76 to 110+21.75

NOTES:

UTILITY INFO TAKEN FROM BEST AVAILABLE INFO, CONTRACTOR TO VERIFY.



PROPOSED TYPICAL SECTION
PRAIRIE ST

STA 100+82.76 to 110+21.75

TYPICAL SECTIONS (NOT TO SCALE)

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

TYPICAL SECTIONS

N.PRAIRIE ST.

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		9

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**********GENERAL NOTES**********
2014 Specification Book

========== **Asphalt Concrete Pavement** ==========

Type	Location	Depth	Rate/Area	Quant-Tons
3076 6010	Main Rdwy	3 in	115lbs/sy-in 659sy	114 tons

*For contractors reference only. Item 3076 6010 to be paid under Item 530 6002 Intersections (ACP)

--General--
Any materials removed and not reused and determined to be salvageable shall be stored within the project limits at an approved location or delivered undamaged to the storage yard as directed. Deface traffic signs so that they will not reappear in public as signs.

Any sign panels that are adjusted or removed and replaced, shall be done the same workday unless otherwise approved. This work shall be considered subsidiary to Item 502.

Locate and reference all manholes and valves within the construction area with station and offset or GPS. Each manhole and valve shall be identified by its owner (SAWS, CPS, etc.). No roadwork will begin until this list has been submitted. All valves and manhole covers have to be accessible at all times, therefore; temp. CTB, material stockpiles, etc. cannot be placed over these valves or covers.

The Contractor has the option to adjust or construct all manholes and valves to final pavement elevations prior to the final mat of HMA or after final mat of HMA. If between the final elevation adjustment and the final mat of HMA, the manholes and valves are going to be exposed to traffic, place temporary asphalt around the manhole and valve to provide a +/- 50:1 taper. The cost of elevation adjustment and the concrete apron around the manhole and valve will be part of the manhole and valve work. The asphalt tapers are part of the HMA work.

Hurricane Evacuation

Hurricane Season is from June 1 thru November 30. As the closest metropolitan city inland from the Texas Coast, the City of San Antonio is a major shelter destination during mandatory hurricane evacuations. As such, planned work zone lane or road closures may be restricted and/or suspended during mandatory hurricane evacuation operations. The District will coordinate these restrictions at a minimum H-120 from any projected impact to the Texas Coast.

No time charges will be made if the Engineer determines that work on the project was impacted by the hurricane.

The Engineer may order changes in the Traffic Control Plan to accommodate evacuation traffic, and may suspend the work, all or in part, to ensure timely completion of this work. All work to implement changes in the Traffic Control Plan will be paid through existing bid prices or through Item 9.5, Force Account. However, the Department will not entertain any request for delay damages, loss of efficiency that may be attributed to the restriction or suspension of road or lane closures, or to changes in the Traffic Control Plan.

In accordance with the Underground Facility Damage Prevention Act (One Call Bill) the phone number for a utility locator is 811. It is the Contractor's responsibility to plan for utility locators as needed.

Underground utilities owned by the Texas Department of Transportation may be present within the Right-Of-Way. Call or email the TxDOT offices listed below for locates a minimum of 48 hours in advance of excavation. If city or town owned irrigation facilities are present, call the appropriate department of the local city or town a minimum of 48 hours in advance of excavation. The Contractor is liable for all damages incurred to the above-mentioned utilities when working without having the utilities located prior to excavation.

For signal and ITS locates call TransGuide at 210-731-5136 or email sat_its_locates@txdot.gov for ITS locates and signal.request@txdot.gov for signal locates.

Contractor questions on this project are to be addressed to the following individual(s):
Area Engineer,
Assistant Area Engineer, *Frances Merecka, P.E., frances.merecka@txdot.gov*

Questions may be submitted via the Letting Pre-Bid Q&A web page. This webpage can be accessed from the Notice to Contractors dashboard located at the following Address:
https://tableau.txdot.gov/views/ProjectInformationDashboard/NoticetoContractors

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

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

--Item 5--
A horizontal boom or equivalent equipment is required for construction in the vicinity of the CPS Energy electric lines to provide vertical clearance of equipment during construction. Contact CPS Energy Utility Coordination Group sixteen (16) week in anticipation of pole bracing. The estimated duration for pole bracing is 6 to 10 weeks (or longer if temporary construction easements are required) after invoice is paid. For de-energizing or sleeving of the

overhead electrical lines depicted on the plans, please contact CPS Energy Utility Coordination Group sixteen (16) week in anticipation of needed de-energization. The estimated duration for de-energizing is approximately 4 to 6 weeks (after invoice is paid) but could vary on system scenario and back feed requirements. De-energizing may not be possible in all instances or may be restricted during specific periods of time due to load demand. Contractor will be reimbursed for the invoice cost for pole bracing and/or de-energizing or sleeving through force account.

Prevention of Migratory Bird Nesting

It is anticipated that migratory birds, a protected group of species, may try to nest on bridges, culverts, vegetation, or gravel substrate, at any time of the year. The preferred nesting season for migratory birds is from February 15 through October 1. When practicable, schedule construction operations outside of the preferred nesting season. Otherwise, nests containing migratory birds must be avoided and no work will be performed in the nesting areas until the young birds have fledged.

Structures

Bridge and culvert construction operations cannot begin until swallow nesting prevention is implemented, until after October 1 if it's determined that swallow nesting is actively occurring, or until it's determined swallow nests have been abandoned. If the State installed nesting deterrent on the bridges and culverts, maintain the existing nesting deterrent to prevent swallow nesting until October 1 or completion of the bridge and culvert work, whichever occurs earlier. If new nests are built and occupied after the beginning of the work, do not perform work that can interfere with or discourage swallows from returning to their nests. Prevention of swallow nesting can be performed by one of the following methods:

1. By February 15 begin the removal of any existing mud nests and all other mud placed by swallows for the construction of nests on any portion of the bridge and culverts. The Engineer will inspect the bridges and culverts for nest building activity. If swallows begin nest building, scrape, or wash down all nest sites. Perform these activities daily unless the Engineer determines the need to do this work more frequently. Remove nests and mud through October 1 or until bridge and culvert construction operations are completed.

2. By February 15 place a nesting deterrent (which prevents access to the bridge and culvert by swallows) on the entire bridge (except deck and railing) and culverts. This work is subsidiary to the various bid items.

No extension of time or compensation payment will be granted for a delay or suspension of work caused by nesting swallows.

Provide a non-intrusive back-up alarm system on all heavy equipment used in close proximity to residential areas. This item is subsidiary to various bid items.

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.

Excavation within 5 feet of an existing CPS Energy pole will require pole bracing. Contact CPS Energy utility coordination to request pole bracing (Customer Engineering 210-353-4050). The estimated duration for the pole bracing process is approximately 10 to 15 weeks.

--Item 6--
To comply with the latest provisions of Build America, Buy America Act (BABA Act) of the Bipartisan Infrastructure Law, the contractor must submit a notarized original of the TxDOT Construction Material Buy America Certification Form for all items classified as construction materials. This form is not required for materials classified as a manufactured product.

Refer to the Buy America Material Classification Sheet for clarification on material categorization.

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

--Item 7--
The project's total disturbed area is 4.1 acres. The disturbed area in all project locations and Contractor project specific locations (PSL's), within 1/4 mile of the project limits, will further establish the authorization requirements for storm water discharges. The department will obtain an authorization to discharge storm water from the Texas Commission on Environmental Quality (TCEQ) for the construction activities shown on the plans. Obtain any required authorization from the TCEQ for any PSL's on or off the ROW. When the total area disturbed on the project and PSL's within 1/4 mile of the project exceeds 5 acres, provide a copy of the Contractor NOI for PSL's to the Engineer (to the appropriate MS4 operator when the project is on an off-state system route).

Notify the Engineer of the disturbed acreage within one (1) mile of the project limits. Obtain authorization from the TCEQ for Contractor PSL's for construction support activities on or off ROW.

No significant traffic generators events identified.

--Item 8--
Working days will be computed and charged in accordance with Article 8.3.1.4: Standard workweek.

Create and maintain a bar chart schedule.

--Item 9--
When approved, provide uniformed, off-duty law enforcement officers with marked vehicles during work that requires a lane closure. The officer in marked vehicles shall be located as approved to monitor or direct traffic during the closure. The method used to direct traffic at signalized intersections shall be as approved. Additional officers and vehicles may be provided when approved or directed.

Complete the daily tracking form provided by the department and submit invoices that agree with the tracking form for payment at the end of each month approved services were provided.

Show proof of certification by the Texas Commission on Law Enforcement Standards.

All law enforcement personnel used in Work Zone Traffic Control shall be trained for performing duties in work zones and are required to take “Safe and Effective Use of Law Enforcement Personnel in Work Zones” (Course #133119) which can be found online at the following site: www.nhi.fhwa.dot.gov

Certificates of completion should be available to all who finish the course. These should be kept by the officers to substantiate completion when reporting to the work site.

Minimums, scheduling fees, etc. will not be paid; TxDOT will consider paying cancellation fees on a case-by-case basis.

--Item 132--

Item	Description	Percent Retained-Sieve				LL Max	PI Max	PI Min
		3"	3/8"	#4	#40			
132	Embankment (ORD COMP) (TY C)	0	-	30-75	50-85	45	20	6

--Item 162--
Furnish and place Bermuda, St. Augustine or as approved/specified by Engineer grass sod. See Specification 164 (2014).

--Item 166--
Use a fertilizer with an analysis of 13-13-13 (50% of the total N must be sulfur coated urea) to apply 60 lbs of actual N per acre. This requires 460 lbs of 13-13-13 per acre or .095 lbs per SY of area.

--Item 168--
Apply vegetative watering as needed to supplement natural rainfall during the vegetation establishment period. Plan quantity of irrigation water is based on the application of a total of 1.3 gal of water each week for each sq. yd. of area that is sodded or seeded. Establishment time is estimated to be 12 weeks for both sod and permanent seed mixes. Temporary seeding will require less time for establishment. Provide a schedule and coordinate watering cycles and rates per cycle with the Engineer. Obtain approval if the quantity of water to be applied is expected to exceed the plan quantity. Adjust the amount of water applied with each cycle and the number of cycles each wk. according to actual site conditions. Drought or other conditions, as determined by the Engineer, may require the application of supplemental irrigation during hours other than normal working hours.

--Item 320--
Construct all longitudinal ACP joints adjacent to a travel lane with a joint maker device that will create a 3:1 to 6:1 taper. For placement of 2 inches or more, the device shall provide a maximum ½ inch vertical edge. Taper outside edges (next to the grass) or backfill (shoulder-up) the same day.

Provide a material transfer device capable of providing a continuous flow of material to the paver. The material transfer device will consist of a windrow elevator or better.

--Item 354—
Retain planed material.

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

--Item 420--
Mass concrete will be measured in place.

--Item 421--
Use an automated ticket that contains the same information as shown in the standard specification. Submit the ticket for approval prior to use. The concrete producer will contact the District Laboratory or the Engineer’s Office (outside the San Antonio area) to inform TxDOT of scheduled structural concrete batching. The Engineer may suspend concrete operations if ticket information is incomplete/incorrect.

Entrained air is allowed for Class P and Class HES concrete only. Air content testing is waived for all classes of concrete.

The curing facilities and strength testing equipment is not required for this project.

Poly-fiber reinforced concrete may be used as an option, with the approval by the Engineer, for riprap, sidewalk, curb/gutter, and mow strip. Use a TxDOT approved manufacturer or producer for the poly-fiber. The poly-fibers shall be combined with the concrete in proportions as recommended by the manufacturer. A concrete mix design must be approved by the Engineer.

--Item 465--
Concrete Class B invert shaping is required at all inlets, manholes and junction boxes to insure positive flow. The material and work performed for the placement of the inverts shall be considered subsidiary to this item.

--Item 500--
"Materials on Hand" payments will not be considered in determining percentages for mobilization payments.

--Item 502--
General

In addition to providing a Contractor's Responsible Person and a phone number for emergency contact, have an employee available to respond on the project for emergencies and for taking corrective measures within 2 hours or within a reasonable time frame as specified by the Engineer.

Treat the pavement drop-offs as shown in the TCP.

Avoid placing stockpiles, equipment, and other construction materials within the roadway's horizontal clear zone or at any location that will constitute a hazard and will endanger traffic. If a stockpile is placed within the clear zone, address in accordance with the TMUTCD.

If Nighttime work is required and work is not behind positive barrier then full Class 3 reflective gear is required to be worn by all workers, hard hat halos are required to be worn by the flaggers at flagging stations, TY III barricades are required to be spaced at 500 ft, and a mandatory night work meeting is required.

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.

Mounting and moving the mailbox as needed for the various construction phases is subsidiary to Item 502.

Access to adjoining property must be maintained at all times.

Barricades, Signs, and Traffic Control Devices

When advanced warning flashing arrow panels and/or changeable message sign is specified, have one standby unit in good condition at the job site. Standby time shall be considered subsidiary to the bid item.

After written notification, the time frame is provided on the Form 599 to provide properly maintained signs and barricades before considered in non-compliance with this item.

Moving an existing sign to a temporary location is subsidiary to Item 502. Installations with permanent supports at permanent locations will be paid for under the applicable bid item(s). Cover permanent signs if not used. This is subsidiary to Item 502.

Lane Closures and Detours

Notify the Engineer in writing 10 business days in advance of any temporary or permanent lane, ramp, connector, etc. closures/detours, restrictions to lane widths, alterations to vertical clearances, or modifications to radii. Any other modifications to the roadway that may adversely affect the mobility of oversized/overweight trucks also require 10 business days advance written notice to the Engineer. At least one lane must always remain open.

At no time shall two consecutive intersecting roadways be closed at one time during construction.

Unless otherwise noted in the plans and/or as directed by the Engineer, daily lane closures shall be limited according to the following restrictions:

Weekdays from 9:00AM to 3PM:

Hauling

The use of rubber-tired equipment will be required for moving dirt or other materials along or across pavement surfaces. Where the contractor desires to move any equipment not licensed for

operation on public highways, on or across pavement, they shall protect the pavement from damage as directed/approved by the Engineer.

Throughout construction operations, the Contractor will be required to conduct their hauling operations in a manner such that vehicles will not haul over previously recompacted subgrade or compacted base material, except in short sections for dumping manipulations.

The Contractor shall keep the roadway clean and free of dirt or other materials during hauling operations. If the Contractor does not maintain a clean roadway, they shall cease all construction operations, when directed by the Engineer, to clean the roadway to the satisfaction of the Engineer.

--Item 506--
An Inspector will perform a regularly scheduled SWP3 inspection every 7 calendar days.

Failure to address items noted on the SW3P inspection report within two report cycles may result in the Department stopping all construction operations, exclusive of time charges, or withholding that month's estimate until the SW3P deficiencies are corrected unless the Engineer determines that the area is too wet to correct SW3P deficiencies.

Failure to correctly maintain daily monitoring reports and submitting to TxDOT on a daily/weekly basis may result in the monthly estimate being withheld.

--Item 510--
The length of the one-way traffic control section is limited to .44 miles.

For Pilot Car Method, additional flaggers other than the 2 required on each approach, when directed by the Engineer, will be measured by the Flagger Control Method. This may involve stationing additional flaggers at all intersections, public driveways, and commercial driveways as determined by the Engineer.

--Item 529--
Curb inlets and extensions are based on an exposed curb height of 7 inches. The roadway curb height and shape will be transitioned to the inlet's curb with a 40: 1 taper.

--Item 531--
The curb ramp locations shown in the plans have considered the geometric features of the intersection, traffic signals, and the pavement markings. If anything changes during construction, the location of curb ramps must be adjusted to ensure they meet TAS requirements.

--Item 556--
Coarse Aggregate Grade 3 meeting requirements of Item 421, Table 4, is acceptable for Filter Material.

Use Surface Test Type A for travel lanes.

--Item 644--
The wedge anchor system shown on State Standard Sheet SMD (TWT) is not allowed.

Triangular Slipbase Systems with set screws are not allowed.

--Item 666--
Use TY II markings (vs. an acrylic or epoxy) on asphalt surfaces as the sealer for the TY I markings, unless otherwise approved by the Engineer.

--Item 677--
Obtain approval before using the mechanical method for the elimination of existing thermoplastic pavement markings.

--Item 3076

1. Table 10 in Item 3076 and Table 11in Item 3077, Hamburg Wheel Test Requirements tested in accordance with Tex-242-F are changed for PG 64-22 or lower and PG 70-22. Minimum number of passes at 12.55 mm Rut Depth, Tested at 50 degrees C will be 5,000 and 10,000 respectively.

2. Submit a copy of the Tex 233-F production charts on a weekly basis. At the end of the ACP work, provide all originals.

3. Crushing of aggregate for hot mix and immediate use for production of the mix is not allowed. Stockpile the aggregate until enough material is available for five days of production unless prior approval is provided.

4. Hold a pre-paving meeting one month prior to the placement of the hot mix. The date and time of pre-paving meeting should be coordinated with the Engineer prior to scheduling.

5. Do not use diesel or solvents as asphalt release agents in production, transportation, or construction. A list of approved asphalt release agents is available from the District Laboratory.

6. No more than one hot mix lot will be open for any specific type of hot mix, unless authorized. After a lot is open and the Contractor gets approval to change plants, the previous lot will be closed, and a new lot will be opened. The numbering for the lots produced at the new plant will start with No. 1. If allowed to switch back to the original or previous plant, the next lot from that plant will resume numbering sequentially from the last lot produced by that plant.

--Item 3084 & 3085 --
The minimum application rates are listed in Table UC/BC. The Engineer may adjust the application rates taking into consideration the existing pavement surface conditions.

Table UC/BC

Material	Minimum Application Rate (gal. per square yard)
TRAIL – Hot Asphalt	0.15
Spray Applied Underseal Membrane	0.20
Seal Coat – Emulsion (CHFRS-2P, CRS-2P)	0.25
Seal Coat – Asphalt (AC-15P, AC-20-5TR, AC-20XP, AC10-2TR)	0.23
Aggregate for Seal Coat Options TY PB GR 4(AC) or TY B GR 4(Emulsion)	1 CY:120 SY

--Item 6185--
1 shadow vehicles with TMA will be required for this project. The TMA's will be measured and paid for by the DAY for each TMA/TA set up and operational on the worksite. The contractor will be responsible for determining if one or more of these operations will be ongoing at the same time to determine the total number of TMA's needed for the project. See TMA and TA Summary sheet in the plans.

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0915-00-252 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY Various

			CONTROL SECTION JOB		**0915-00-252**	TOTAL EST.	TOTAL FINAL
			PROJECT ID		**A00184426**		
			COUNTY		**Bexar**		
			HIGHWAY		**Various**		
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	104-6015	REMOVING CONC (SIDEWALKS)	SY	267.000		267.000	
	104-6017	REMOVING CONC (DRIVEWAYS)	SY	729.000		729.000	
	104-6021	REMOVING CONC (CURB)	LF	45.000		45.000	
	105-6045	REMOVING STAB BASE AND ASPH PAV (2"-8")	SY	118.000		118.000	
	110-6004	EXCAVATION (ROADWAY AND CHANNEL)	CY	455.000		455.000	
	132-6005	EMBANKMENT (FINAL)(ORD COMP)(TY C)	CY	194.000		194.000	
	160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	8,072.000		8,072.000	
	162-6002	BLOCK SODDING	SY	8,072.000		8,072.000	
	166-6002	FERTILIZER	TON	7.700		7.700	
	168-6001	VEGETATIVE WATERING	MG	126.000		126.000	
	420-6002	CL A CONC (MISC)	CY	9.500		9.500	
	432-6002	RIPRAP (CONC)(5 IN)	CY	18.000		18.000	
	442-6007	STR STEEL (MISC NON - BRIDGE)	LB	2,515.000		2,515.000	
	450-6048	RAIL (HANDRAIL)(TY B)	LF	48.000		48.000	
	450-6103	RAIL (TY PR11)	LF	48.000		48.000	
	462-6050	CONC BOX CULV (5 FT X 2 FT)(EXTEND)	LF	15.000		15.000	
	464-6017	RC PIPE (CL IV)(18 IN)	LF	40.000		40.000	
	465-6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	2.000		2.000	
	466-6178	WINGWALL (PW - 1) (HW=3 FT)	EA	1.000		1.000	
	467-6363	SET (TY II) (18 IN) (RCP) (6: 1) (P)	EA	2.000		2.000	
	480-6001	CLEAN EXIST CULVERTS	EA	1.000		1.000	
	496-6005	REMOV STR (WINGWALL)	EA	1.000		1.000	
	500-6001	MOBILIZATION	LS	1.000		1.000	
	502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	18.000		18.000	
	506-6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	36.000		36.000	
	506-6011	ROCK FILTER DAMS (REMOVE)	LF	36.000		36.000	
	506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	4,234.000		4,234.000	
	506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	4,234.000		4,234.000	
	529-6002	CONC CURB (TY II)	LF	141.000		141.000	
	530-6002	INTERSECTIONS (ACP)	SY	530.000		530.000	
	530-6004	DRIVEWAYS (CONC)	SY	855.000		855.000	
	530-6005	DRIVEWAYS (ACP)	SY	284.000		284.000	
	531-6001	CONC SIDEWALKS (4")	SY	2,880.000		2,880.000	
	531-6003	CONC SIDEWALKS (6")	SY	2,366.000		2,366.000	
	531-6004	CURB RAMPS (TY 1)	EA	1.000		1.000	
	531-6005	CURB RAMPS (TY 2)	EA	7.000		7.000	
	531-6010	CURB RAMPS (TY 7)	EA	33.000		33.000	

Estimate & Quantity Sheet

CONTROLLING PROJECT ID 0915-00-252 **DISTRICT** San Antonio **COUNTY** Bexar
HIGHWAY Various

						TOTAL EST.	TOTAL FINAL
		CONTROL SECTION JOB		**0915-00-252**			
		PROJECT ID		**A00184426**			
		COUNTY		**Bexar**			
		HIGHWAY		**Various**			
ALT	**BID CODE**	**DESCRIPTION**	**UNIT**	EST.	FINAL		
	531-6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	1.000		1.000	
	644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	24.000		24.000	
	644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	14.000		14.000	
	644-6076	REMOVE SM RD SN SUP&AM	EA	24.000		24.000	
	658-6100	INSTL OM ASSM (OM-2Z)(WFLX)GND(BI)	EA	4.000		4.000	
	666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	67.000		67.000	
	666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	596.000		596.000	
	666-6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	4.000		4.000	
	666-6226	PAVEMENT SEALER 8"	LF	67.000		67.000	
	666-6230	PAVEMENT SEALER 24"	LF	596.000		596.000	
	677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	321.000		321.000	
	678-6004	PAV SURF PREP FOR MRK (8")	LF	67.000		67.000	
	678-6008	PAV SURF PREP FOR MRK (24")	LF	441.000		441.000	
	752-6022	TREE TRIMMING AND BRUSH REMOVAL	LF	140.000		140.000	
	6001-6002	PORTABLE CHANGEABLE MESSAGE SIGN	EA	2.000		2.000	
	6185-6002	TMA (STATIONARY)	DAY	93.000		93.000	
	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	

	REMOVAL QUANTITIES					ROADWAY QUANTITIES						
BID ITEM #	0104 6015	0104 6017	0104 6021	0105 6045	0110 6004	0132 6005	0420 6002	0442 6007	0450 6048	0450 6103	0465 6233	0529 6002
ITEM DESCRIPTION	REMOVING CONC (SIDEWALKS)	REMOVING CONC (DRIVEWAYS)	REMOVING CONC (CURB)	REMOVING STAB BASE AND ASPH PAV (2"-8")	EXCAVATION (ROADWAY AND CHANNEL)	EMBANKMENT (FINAL)(ORD COMP)(TY C)	CL A CONC (MISC)	STR STEEL (MISC NON - BRIDGE)	RAIL (HANDRAIL)(TY B)	RAIL (TY PR11)	INLET (COMP) (TY SIDEWALK BRIDGE)	CONC CURB (TY II)
UNITS	SY	SY	LF	SY	CY	CY	CY	LB	LF	LF	EA	LF
FM2790 NB SHEET 1 of 5						1	0.71	184				
FM2790 NB SHEET 2 of 5						16	0.71	184				
FM2790 NB SHEET 3 of 5						4			48		1	
FM2790 NB SHEET 4 of 5						16	2.84	736				
FM2790 NB SHEET 5 of 5						27						
FM2790 SB SHEET 1 of 7			22		37.83	5.24		`				
FM2790 SB SHEET 2 of 7	7		23.0		121.11	4.76						
FM2790 SB SHEET 3 of 7					65.5	12.03	1.69	491				
FM2790 SB SHEET 4 of 7					33.63	2.90						
FM2790 SB SHEET 5 of 7					63.26	13.45				48	1	
FM2790 SB SHEET 6 of 7		149			94.61	44.34						
FM2790 SB SHEET 7 of 7		74			19.75	17.08						
FM2790 TOTAL	**7**	**223**	**45**		**435.69**	**163.41**	**5.95**	**1595**	**48**	**48**	**2**	
COTTAGE ST SHEET 1 of 2	123	276		104	9	18						
COTTAGE ST EB SHEET 2 of 2	137			2	2	3						83
COTTAGE ST TOTAL	**260**	**276**		**106**	**11**	**21**						**83**
PRAIRIE ST NB SHEET 1 of 1		230		12	8	10	3.55	920				58
PRAIRIE ST TOTAL		**230**		**12**	**8**	**10**	**3.55**	**920**				**58**
PROJECT TOTAL	~~267~~	**729**	**45**	**118**	**454.69**	**194.41**	**9.5**	**2515**	**48**	**48**	**2**	**141**

	ROADWAY QUANTITIES									
BID ITEM #	0530 6002	0530 6004	0530 6005	0531 6001	0531 6003	0531 6004	0531 6005	0531 6010	0531 6032	0752 6022
ITEM DESCRIPTION	INTERSECTIONS (ACP)	DRIVEWAYS (CONC)	DRIVEWAYS (ACP)	CONC SIDEWALKS (4")	CONC SIDEWALKS (6")	CURB RAMPS (TY 1)	CURB RAMPS (TY 2)	CURB RAMPS (TY 7)	CONC SIDEWALKS (SPECIAL) (TYPE A)	TREE TRIMMING AND BRUSH REMOVAL
UNITS	SY	SY	SY	SY	SY	EA	EA	EA	SY	LF
FM2790 NB SHEET 1 of 5	130			130		1		2		10.00
FM2790 NB SHEET 2 of 5				240						10.00
FM2790 NB SHEET 3 of 5				224						30.00
FM2790 NB SHEET 4 of 5	55			195				2		10.00
FM2790 NB SHEET 5 of 5				111						
FM2790 SB SHEET 1 of 7	75				273			2		
FM2790 SB SHEET 2 of 7	57				333			2		
FM2790 SB SHEET 3 of 7	77				310			3		
FM2790 SB SHEET 4 of 7					336			2		
FM2790 SB SHEET 5 of 7					372					
FM2790 SB SHEET 6 of 7		90			364					40.00
FM2790 SB SHEET 7 of 7		74			378			2		
FM2790 TOTAL	**394**	**164**		**900**	**2366**	**1**		**15.00**		**100.00**
COTTAGE ST SHEET 1 of 2	40	405	155	754				8	1.00	30.00
COTTAGE ST EB SHEET 2 of 2	56	7	8	321			3	4		10.00
COTTAGE ST TOTAL	**96**	**412**	**163**	**1075**			**3**	**12**	**1.00**	**40.00**
PRAIRIE ST NB SHEET 1 of 1	40	279	121	905			4	6		
PRAIRIE ST TOTAL	**40**	**279**	**121**	**905**			**4**	**6.00**		
PROJECT TOTAL	**530**	**855**	**284**	**2880**	**2366**	**1**	**7**	**33**	**1.00**	**140.00**

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/23/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

FM2790 QUANTITY SUMMARY

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		12

DATE: 8/23/2023 2:08:31 AM
FILE: ...\1. General\QTY SUM 01-1.dgn

CK:
DW:
CK:
DW:

CROSS CULVERT QUANTITIES					
BID ITEM #	0432 6002	0462 6050	0466 6178	0480 6001	0496 6005
ITEM DESCRIPTION	RIPRAP (CONC)(5 IN)	CONC BOX CULV (5 FT X 2 FT)(EXTEND)	WINGWALL (PW - 1) (HW=3 FT)	CLEAN EXIST CULVERTS	REMOV STR (WINGWALL)
UNITS	CY	LF	EA	EA	EA
FM 2790: 295+00.03	18	15	1	1	1
PROJECT TOTAL	18	15	1	1	1

DRIVEWAY CULVERT QUANTITIES		
BID ITEM #	0464 6017	0467 6363
ITEM DESCRIPTION	RC PIPE (CL IV)(18 IN)	SET (TY II) (18 IN) (RCP) (6: 1) (P)
UNITS	LF	EA
FM 2790: 295+00.03	40	2
PROJECT TOTAL	40	2

TRAFFIC (SIGNING & STRIPING) QUANTITIES

0644 6001	0644 6068	0644 6076	0658 6100	0666 6036	0666 6048	0666 6102	0666 6226	0666 6230	0677 6007	0678 6004	0678 6008
IN SM RD SN SUP&AM TY10BWG(1)SA(P)	RELOCATE SM RD SN SUP&AM TY 10BWG	REMOVE SM RD SN SUP&AM	INSTL OM ASSM (OM-2Z)(WFLX)GND(BI)	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	PAVEMENT SEALER 8"	PAVEMENT SEALER 24"	ELIM EXT PAV MRK & MRKS (24")	PAV SURF PREP FOR MRK (8")	PAV SURF PREP FOR MRK (24")
EA	EA	EA	EA	LF	LF	EA	LF	LF	LF	LF	LF
3	4	3		67	205	4	67	205	50	67	50
2	6	2	4		16			16	0		16
1	1	1									
6	**11**	**6**	**4**	**67**	**221**	**4**	**67**	**221**	**50**	**67**	**66**
2	2	2			108			108	84		108
1	1	1			53			53	65		53
3	**3**	**3**			**161**			161	149		161
15	0	15			214			214	122		214
15		**15**			**214**			214	122		214
24	**14**	**24**	**4**	**67**	**596**	**4**	**67**	**596**	**321**	**67**	**441**

SW3P QUANTITIES

BID ITEM #	0160 6003	0162 6002	0166 6002	0168 6001	0506 6003	0506 6011	0506 6038	0506 6039
ITEM DESCRIPTION	FURNISHING AND PLACING TOPSOIL (4")	BLOCK SODDING	FERTILIZER	VEGETATIVE WATERING	ROCK FILTER DAMS (INSTALL) (TY 3)	ROCK FILTER DAMS (REMOVE)	TEMP SEDMT CONT FENCE (INSTALL)	TEMP SEDMT CONT FENCE (REMOVE)
UNITS	SY	SY	TON	MG	LF	LF	LF	LF
FM2790 SHEET 1 of 3	2016	2016	1.9	31.5			746	746
FM2790 SHEET 2 of 3	3666	3666	3.5	57.2	36	36	1262	1262
FM2790 SHEET 3 of 3	903	903	0.9	14.1			284	284
FM2790 TOTAL	**6585**	**6585**	**6.3**	**102.8**	**36**	**36**	**2292**	**2292**
COTTAGE ST SHEET 1 of 2	565	565	0.5	8.8			588	588
COTTAGE ST EB SHEET 2 of 2	238	238	0.2	3.7			390	390
COTTAGE ST TOTAL	**803**	**803**	**0.7**	**12.5**			**978**	**978**
PRAIRIE ST NB SHEET 1 of 1	684	684	0.7	10.7			964	964
PRAIRIE ST TOTAL	**684**	**684**	**0.7**	**10.7**			**964**	**964**
PROJECT TOTAL	**8072**	**8072**	**7.7**	**126**	**36**	**36**	**4234**	**4234**

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/23/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

FM2790 QUANTITY SUMMARY

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		13

DATE: 8/23/2023 2:08:51 AM
FILE: ...\1. General\QTY SUM 02-1.dgn

CK:
DW:
CK:
DW:

TRAFFIC CONTROL PLAN SEQUENCE OF WORK

1. THIS PROJECT WILL BE CONSTRUCTED IN (3) PHASES. BEFORE THE COMMENCEMENT OF EACH PHASE, INSTALL ADVANCE WARNING SIGNS, TEMPORARY SIGNS AND BARRICADES AS SHOWN ON THE PLANS AND/OR AS DIRECTED/APPROVED BY THE ENGINEER. DAILY LANE CLOSURES WILL BE USED IN ACCORDANCE WITH STATE TCP STANDARDS. DROP OFF CONDITIONS OF GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY, AS WELL AS THROUGHOUT THE PROJECT WHERE ACCESS TO ADJACENT PROPERTIES IS ALLOWED TO DRIVEWAYS AND SIDE STREETS.
2. PREPARING ROW / REMOVAL OF EXISTING ITEMS TO BE DONE ONLY IN AREAS WHERE WORK IS OCCURING, AS PER THE PHASES NOTED BELOW.
3. PLANING, SURFACE TREATMENTS AND OVERLAYS SHALL BE PERFORMED IN THE DIRECTION OF TRAFFIC. BEGIN SURFACE CONSTRUCTION ON HIGH SIDE OF ROAD TO AVOID WATER PONDING ISSUES.
4. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE REQUIREMENTS OF ITEM 7, "LEGAL RELATIONS AN RESPONSIBILITIES TO THE PUBLIC" AND ITEM 502, "BARRICADES, SIGNS, AND TRAFFIC HANDLING", OF THE STANADARD SPECIFICATIONS, AND TO THE GENERAL NOTES
5. CONTRACTOR IS NOT PERMITTED TO WORK AREAS WITH ONGOING UTILITY RELOCATION OR ROW ACQUISITION.
6. A BRIEF DESCRIPTION OF THESE PHASES ARE AS FOLLOWS.

PHASE 1 – FM 2790: FROM LYTLE HS TO BLUME DR

THE INTENT OF THIS PHASE IS TO CONSTRUCT FM 2790 SIDEWALK, SHARED-USE PATH, PEDESTRIAN HANDRAIL, CURB RAMPS, DRIVEWAYS, DITCHES, SIGN STRUCTURES, CULVERT EXTENSION, RIP RAP, SODDING, AND SIDEWALK BRIDGES(S).

STEP 1 - CONTRUCTION ON SOUTHBOUND OF FM 2790 (CONSTRUCTION ON RIGHT FM 2790 ℄)

STEP 2 - CONTRUCTION ON NORTHBOUND OF FM 2790 (CONSTRUCTION ON LEFT FM 2790 ℄)

STEP 1: CONSTRUCTION ON SOUTHBOUND OF FM 2790 (CONSTRUCTION ON RIGHT FM 2790 ℄)

A. INSTALL TRAFFIC CONTROL DEVICES AND SHIFT TRAFFIC IN ACCORDANCE WITH TCP (1-1)-18.
B. INSTALL SW3P IN ACCORDANCE WITH STORM WATER POLLUTION PREVENTION PLAN.
C. FOR EXISTING SIGNS TO BE RELOCATED THAT ARE IN CONFLICT WITH PROPOSED CONSTRUCTION, COMPLETE SIGN RELOCATIONS AS DEFINED ON SIGNING & PAVEMENT MARKING PLANS PRIOR TO BEGINNING OTHER ACTIVITIES. IF RELOCATED SIGNS CANNOT BE INSTALLED DUE TO GRADING, ETC. NOT BEING COMPLETE, PLACE TEMPORARY SIGNS PER ITEM 502 UNTIL PROPOSED RELOCATION CAN BE COMPLETED.
D. CONTRACTOR TO NOTIFY/COORDINATE WITH CITY OF LYTLE FOR WATER VALVE ADJUSTMENTS DURING CONSTRUCTION. ONE WEEK ADVANCE NOTICE REQUIRED TO CITY OF LYTLE, MATTHEW DEAR, CPM 210-557-9124, PRIOR TO ADJUSTMENT.
E. INSTALL DRAINAGE ELEMENTS FROM DOWNSTREAM TO UPSTREAM. ENSURE POSITIVE DRAINAGE FROM EXISTING TO PROPOSED DITCHES.
F. CONSTRUCT PROPOSED SIDEWALK BRIDGE AS DEFINED ON THE ROADWAY AND DRAINAGE PLANS.
G. CONSTRUCT PROPOSED DRIVEWAYS AND DRIVEWAY CULVERT REPLACEMENTS AS DEFINED ON THE ROADWAY AND DRAINAGE PLANS.
H. CONSTRUCT PROPOSED GRADING, CURB, SHARED-USE PATH, CURB RAMPS, INSTALL PEDESTRIAN RAILS, CONCRETE RIP RAP AND SODDING AS DEFINED ON THE ROADWAY PLANS.
I. COORDINATE WITH LYTLE HIGHSCHOOL SCHOOL CROSSING GUARD TO PROVIDE ACCESS FOR SCHOOL PEDESTRIANS TO TRAVEL FROM FM 2790 TO LAREDO ST WHILE SIDEWALK IS CLOSED.
J. AFTER SIDEWALK AND DRAINAGE IMPROVEMENTS ARE COMPLETE FOR ALL CORNERS, PLANE ASPHALT AND PROVIDE LEVEL-UP AS INDICATED IN THE ROADWAY PLANS.
K. INSTALL PROPOSED SIGNS, CROSSWALKS, STOP BARS, ETC. AS DEFINED ON SIGNING & PAVEMENT MARKINGS PLANS.

STEP 2: CONSTRUCTION ON NORTHBOUND OF FM 2790 (CONSTRUCTION ON LEFT FM 2790 ℄)

A. INSTALL TRAFFIC CONTROL DEVICES AND SHIFT TRAFFIC IN ACCORDANCE WITH TCP (1-1)-18.
B. INSTALL SW3P IN ACCORDANCE WITH STORM WATER POLLUTION PREVENTION PLAN.
C. FOR EXISTING SIGNS TO BE RELOCATED THAT ARE IN CONFLICT WITH PROPOSED CONSTRUCTION, COMPLETE SIGN RELOCATIONS AS DEFINED ON SIGNING & PAVEMENT MARKING PLANS PRIOR TO BEGINNING OTHER ACTIVITIES. IF RELOCATED SIGNS CANNOT BE INSTALLED DUE TO GRADING, ETC. NOT BEING COMPLETE, PLACE TEMPORARY SIGNS PER ITEM 502 UNTIL PROPOSED RELOCATION CAN BE COMPLETED.
D. CONTRACTOR TO NOTIFY/COORDINATE WITH OWNERS OF UTILITIES THAT ARE TO BE ADJUSTED DURING CONSTRUCTION. CONTRACTOR TO ADJUST UTILITIES THAT CANNOT REMAIN IN PLACE.
E. INSTALL DRAINAGE ELEMENTS FROM DOWNSTREAM TO UPSTREAM. ENSURE POSITIVE DRAINAGE FROM EXISTING TO PROPOSED DITCHES.
F. CONSTRUCT PROPOSED SIDEWALK BRIDGE AS DEFINED ON THE ROADWAY AND DRAINAGE PLANS.
G. CONSTRUCT PROPOSED CULVERT EXTENSION AT STA 295+00 AND CHANNEL GRADING ON THE LEFT SIDE OF FM 2790 ℄ AS DEFINED ON THE DRAINAGE PLANS.
H. CONSTRUCT PROPOSED GRADING, CURB, SIDEWALKS, CURB RAMPS, INSTALL PEDESTRIAN RAILS, CONCRETE RIP RAP AND SODDING AS DEFINED ON THE ROADWAY PLANS.
I. COORDINATE WITH LYTLE HIGHSCHOOL SCHOOL CROSSING GUARD TO PROVIDE ACCESS FOR SCHOOL PEDESTRIANS TO TRAVEL FROM 2790 TO LAREDO ST WHILE SIDEWALK IS CLOSED.
J. AFTER SIDEWALK AND DRAINAGE IMPROVEMENTS ARE COMPLETE FOR ALL CORNERS, PLANE ASPHALT AND PROVIDE LEVEL-UP AS INDICATED IN THE ROADWAY PLANS.
K. INSTALL PROPOSED SIGNS, CROSSWALKS, STOP BARS, ETC. AS DEFINED ON SIGNING & PAVEMENT MARKINGS PLANS.

PHASE 2 – COTTAGE ST: FROM FM 2790 TO N PRAIRIE ST

THE INTENT OF THIS PHASE IS TO CONSTRUCT COTTAGE ST SIDEWALK, CURB RAMPS, DRIVEWAYS, DITCHES, SODDING, AND SIGN STRUCTURES.

STEP 1 - CONTRUCTION ON RIGHT OF COTTAGE ST ℄

STEP 2 - CONTRUCTION ON LEFT OF COTTAGE ℄

STEP 1: CONSTRUCTION ON RIGHT OF COTTAGE ST ℄

A. INSTALL TRAFFIC CONTROL DEVICES AND SHIFT TRAFFIC IN ACCORDANCE WITH TCP (1-1)-18.
B. INSTALL SW3P IN ACCORDANCE WITH STORM WATER POLLUTION PREVENTION PLAN.
C. FOR EXISTING SIGNS TO BE RELOCATED THAT ARE IN CONFLICT WITH PROPOSED CONSTRUCTION, COMPLETE SIGN RELOCATIONS AS DEFINED ON SIGNING & PAVEMENT MARKING PLANS PRIOR TO BEGINNING OTHER ACTIVITIES. IF RELOCATED SIGNS CANNOT BE INSTALLED DUE TO GRADING, ETC. NOT BEING COMPLETE, PLACE TEMPORARY SIGNS PER ITEM 502 UNTIL PROPOSED RELOCATION CAN BE COMPLETED.
D. CONTRACTOR TO NOTIFY/COORDINATE WITH ATT FOR UTILITY GROUND BOX ADJUSTMENTS DURING CONSTRUCTION. TWO WEEK ADVANCE NOTICE REQUIRED TO ATT UTILITY COORDINATOR, PARISH AUSTIN 210-213-1893, PRIOR TO ADJUSTMENT.
E. INSTALL DRAINAGE ELEMENTS FROM DOWNSTREAM TO UPSTREAM. ENSURE POSITIVE DRAINAGE FROM EXISTING TO PROPOSED DITCHES.
F. CONSTRUCT PROPOSED DRIVEWAYS AS DEFINED ON THE ROADWAY PLANS.
G. CONSTRUCT PROPOSED GRADING, CURB, SIDEWALKS, CURB RAMPS, AND SODDING AS DEFINED ON THE ROADWAY PLANS.
H. AFTER SIDEWALK ARE COMPLETE FOR ALL CORNERS, PLANE ASPHALT AND PROVIDE LEVEL-UP AS INDICATED IN THE ROADWAY PLANS.
I. INSTALL PROPOSED SIGNS, CROSSWALKS, STOP BARS, ETC. AS DEFINED ON SIGNING & PAVEMENT MARKINGS PLANS.

STATE OF TEXAS
RICARDO RAMOS JR
144241
LICENSED
PROFESSIONAL ENGINEER
8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

TRAFFIC CONTROL PLAN SEQUENCE OF WORK NARRATIVE

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		14

DATE: 8/22/2023 8:44:19 PM
FILE: ...\2_TCP\FM2790_S_TCP_NARR

CK:
DW:
CK:
DW:

STEP 2: CONSTRUCTION ON LEFT OF COTTAGE ST ℄

A. INSTALL TRAFFIC CONTROL DEVICES AND SHIFT TRAFFIC IN ACCORDANCE WITH TCP (1-1)-18.
B. INSTALL SW3P IN ACCORDANCE WITH STORM WATER POLLUTION PREVENTION PLAN.
C. FOR EXISTING SIGNS TO BE RELOCATED THAT ARE IN CONFLICT WITH PROPOSED CONSTRUCTION, COMPLETE SIGN RELOCATIONS AS DEFINED ON SIGNING & PAVEMENT MARKING PLANS PRIOR TO BEGINNING OTHER ACTIVITIES. IF RELOCATED SIGNS CANNOT BE INSTALLED DUE TO GRADING, ETC. NOT BEING COMPLETE, PLACE TEMPORARY SIGNS PER ITEM 502 UNTIL PROPOSED RELOCATION CAN BE COMPLETED.
D. CONTRACTOR TO NOTIFY/COORDINATE WITH CITY OF LYTLE FOR WATER VALVE ADJUSTMENTS DURING CONSTRUCTION. ONE WEEK ADVANCE NOTICE REQUIRED TO CITY OF LYTLE, MATTHEW DEAR, CPM 210-557-9124, PRIOR TO ADJUSTMENT.
E. INSTALL DRAINAGE ELEMENTS FROM DOWNSTREAM TO UPSTREAM. ENSURE POSITIVE DRAINAGE FROM EXISTING TO PROPOSED DITCHES.
F. CONSTRUCT PROPOSED DRIVEWAYS AS DEFINED ON THE ROADWAY PLANS.
G. CONSTRUCT PROPOSED GRADING, CURB, SIDEWALKS, CURB RAMPS, AND SODDING AS DEFINED ON THE ROADWAY PLANS.
H. AFTER SIDEWALK ARE COMPLETE FOR ALL CORNERS, PLANE ASPHALT AND PROVIDE LEVEL-UP AS INDICATED IN THE ROADWAY PLANS.
I. INSTALL PROPOSED SIGNS, CROSSWALKS, STOP BARS, ETC. AS DEFINED ON SIGNING & PAVEMENT MARKINGS PLANS.

PHASE 3 – N PRAIRIE ST: FROM LAREDO ST TO COTTAGE ST

THE INTENT OF THIS PHASE IS TO CONSTRUCT N PRAIRIE ST SIDEWALK, CURB RAMPS, DRIVEWAYS, SODDING, AND SIGN STRUCTURES.

STEP 1 - CONTRUCTION ON RIGHT OF N PRAIRIE ST ℄
STEP 2 - CONTRUCTION ON LEFT OF N PRAIRIE ST ℄

STEP 1: CONSTRUCTION ON RIGHT OF N PRAIRIE ST ℄

A. INSTALL TRAFFIC CONTROL DEVICES AND SHIFT TRAFFIC IN ACCORDANCE WITH TCP (1-1)-18.
B. INSTALL SW3P IN ACCORDANCE WITH STORM WATER POLLUTION PREVENTION PLAN.
C. FOR EXISTING SIGNS TO BE RELOCATED THAT ARE IN CONFLICT WITH PROPOSED CONSTRUCTION, COMPLETE SIGN RELOCATIONS AS DEFINED ON SIGNING & PAVEMENT MARKING PLANS PRIOR TO BEGINNING OTHER ACTIVITIES. IF RELOCATED SIGNS CANNOT BE INSTALLED DUE TO GRADING, ETC. NOT BEING COMPLETE, PLACE TEMPORARY SIGNS PER ITEM 502 UNTIL PROPOSED RELOCATION CAN BE COMPLETED.
D. CONTRACTOR TO NOTIFY/COORDINATE WITH CITY OF LYTLE FOR WATER VALVE ADJUSTMENTS DURING CONSTRUCTION. ONE WEEK ADVANCE NOTICE REQUIRED TO CITY OF LYTLE, MATTHEW DEAR, CPM 210-557-9124, PRIOR TO ADJUSTMENT.
E. INSTALL DRAINAGE ELEMENTS FROM DOWNSTREAM TO UPSTREAM. ENSURE POSITIVE DRAINAGE FROM EXISTING TO PROPOSED.
F. CONSTRUCT PROPOSED DRIVEWAYS AS DEFINED ON THE ROADWAY PLANS.
G. CONSTRUCT PROPOSED GRADING, CURB, SIDEWALKS, CURB RAMPS, AND SODDING AS DEFINED ON THE ROADWAY PLAN.
H. AFTER SIDEWALK ARE COMPLETE FOR ALL CORNERS, PLANE ASPHALT AND PROVIDE LEVEL-UP AS INDICATED IN THE ROADWAY PLANS.
I. INSTALL PROPOSED SIGNS, CROSSWALKS, STOP BARS, ETC. AS DEFINED ON SIGNING & PAVEMENT MARKINGS PLANS.

STEP 2: CONSTRUCTION ON LEFT OF N PRAIRIE ST ℄

A. INSTALL TRAFFIC CONTROL DEVICES AND SHIFT TRAFFIC IN ACCORDANCE WITH TCP (1-1)-18.
B. INSTALL SW3P IN ACCORDANCE WITH STORM WATER POLLUTION PREVENTION PLAN.
C. FOR EXISTING SIGNS TO BE RELOCATED THAT ARE IN CONFLICT WITH PROPOSED CONSTRUCTION, COMPLETE SIGN RELOCATIONS AS DEFINED ON SIGNING & PAVEMENT MARKING PLANS PRIOR TO BEGINNING OTHER ACTIVITIES. IF RELOCATED SIGNS CANNOT BE INSTALLED DUE TO GRADING, ETC. NOT BEING COMPLETE, PLACE TEMPORARY SIGNS PER ITEM 502 UNTIL PROPOSED RELOCATION CAN BE COMPLETED.

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

TRAFFIC CONTROL PLAN SEQUENCE OF WORK NARRATIVE

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		15

DATE: 8/22/2023 8:44:35 PM
FILE: ...\2. TCP\FM2790 S TCP NARR 2

DW: MBI | CK: MBI | DW: MBI | CK: MBI | DW: MBI

TRAFFIC CONTROL PLAN ITEMS

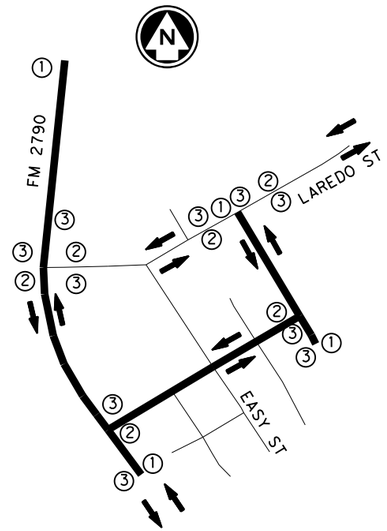
LOCATION	END ROAD WORK	NAME ADDRESS CITY STATE CONTRACTOR	WORK ZONE	ROAD WORK NEXT XX MILES	ROAD WORK ← NEXT X MILES NEXT X MILES →	END WORK ZONE	OBEY WARNING SIGNS STATE LAW	BEGIN WORK ZONE	TRAFFIC FINES DOUBLE WHEN WORKERS ARE PRESENT	BEGIN ROAD WORK NEXT X MILES	STAY ALERT TALK OR TEXT LATER	ROAD WORK AHEAD	ROAD WORK 1500 FT	ROAD WORK 1000 FT	ROAD WORK 500 FT	RIGHT LANE ENDS	ROAD CLOSED	LANE ENDS MERGE LEFT	RIGHT LANE CLOSED	UNEVEN LANES	BE PREPARED TO STOP	TRUCK CROSSING
	G20-2 48" X 24"	G20-6T 48" X 30"	G20-5aP 24" X 18"	G20-1bTR 72" X 36"	G20-1aT 72" X 36"	G20-2bT 48" X 24"	R20-3T 48" X 42"	G20-9TP 36" X 30"	R20-5T 36" X 36" R20-5aTP 36" X 18"	G20-5T 48" X 24"	G20-10T 60" X 48"	CW20-1D 48" X 48"	CW20-1A 48" X 48"	CW20-1B 48" X 48"	CW20-1C 48" X 48"	CW9-1R,L 36" X 36"	R11-2 48" X 30"	CW9-2TL,R 36" X 36"	CW20-5TR 48" X 48"	CW8-11 36" X 36"	CW3-4 48" X 48"	CW8-6 36" X 36"
1		X	X				X	X	X	X	X											
2			X		X							X										
3	X					X																
4		X		X		X						X	X	X	X	X	X	X	X	X	X	X

TRAFFIC CONTROL PLAN ITEMS

LOCATION	Give Us A BRAKE	RIGHT SHOULDER CLOSED	NEXT X MILES	LOOSE GRAVEL	YIELD	NARROW LANES AHEAD			BUMP	XXX FT	XX MPH	ONE WAY	SPEED LIMT XX	STOP		DO NOT ENTER	RD-NAME	NARROW LANES AHEAD	SHOULDER WORK			
	CW21-1T 48" X 48"	CW21-5aR,L 48" X 48"	CW7-3aP 36" X 30"	CW8-7 36" X 36"	R1-2 42" X 42" X 42"	CW20-8T 48" x 48"	CW1-6aT 36" X 36"	CW1-4L,R 36" X 36"	CW8-1 36" X 36"	DIST PLAQUE	CW13-1P 24" X 24"	R6-1R,L 36" X 12"	R2-1 24" X 30"	R1-1 36"X36"	R3-2	R5-1	M4-02	CW20-8	CW21-5	OPPOSING TRAFFIC LANE DIVIDER	TRAILER MOUNTED FLASHING ARROW	TRUCK MOUNTED ATTENUAOR
1																						
2																						
3																						
4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

TRAFFIC CONTROL PLAN ITEMS

LOCATION	SIDEWALK CLOSED	SIDEWALK CLOSED USE OTHER SIDE						
	R9-9 24"X12"	R9-10DBL 24"X12"	TYPE III	BARRELS	VP(F)1R,L	ARROW BOARD	CW1-8(F)	P.C.M.S
1								
2								
3								
4	X	X	X	X	X	X	X	X



GENERAL NOTES:

LOCATION NO. 1 TO USED ENTERING THE PROJECT WORK ZONE.

LOCATION NO. 2 TO BE USED AT SIDE STREETS.

LOCATION NO. 3 TO BE USED WHEN EXITING THE PROJECT WORK ZONE, SIDE STREET, AND RAMPS.

LOCATION NO. 4 TO BE USED THROUGHOUT THE DURATION OF THE PROJECT AS DIRECTED BY THE ENGINEER OR AS SHOWN ON THE STANDARDS FOR BARRICADES AND CONSTRUCTION, TRAFFIC CONTROL PLANS, AND WORK ZONES.

NOTES:

1. CERTAIN SIGNS MUST BE USED IN CONJUNCTION WITH OTHER SIGNS.
2. BARRICADES AND WARNING SIGNS ON THIS SHEET ARE MINIMAL CONSTRUCTION ZONE SIGNING, ADDITIONAL BARRICADES, WARNING SIGNS, ARROW PANELS, CONES, ETC. IN ACCORDANCE WITH CURRENT BC STANDARDS AND THE TEXAS MUTCD MAY BE REQUIRED IN AREAS OF ACTUAL CONSTRUCTION.
3. BARRICADES SHALL NOT BE USED AS A SIGN SUPPORT. SUPPORTS FOR SIGNS SHALL BE TEMPORARY, OR PORTABLE SIGN SUPPORTS AS DIRECTED BY THE ENGINEER OR IN ACCORDANCE WITH CURRENT BC STANDARDS AND THE TEXAS MUTCD.
4. A DISTANCE PLAQUE IN FEET OR MILES MAY BE REQUIRED FOR USE IN CONJUNCTION WITH WARNING SIGNS.
5. LOCATION NO. 1 AND NO. 2 SIGNS ARE TO BE RELOCATED TO THE BEGINNING AND END OF EACH TCP SECTION.

STATE OF TEXAS
RICARDO RAMOS JR
144241
LICENSED
PROFESSIONAL ENGINEER
8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

TRAFFIC CONTROL PLAN SCHEDULE OF BARRICADE

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		16

DATE: 8/22/2023 8:44:51 PM
FILE: ...\2. TCP\FM2790 S TCP SCHD

DW: MBI CK: MBI DW: MBI CK: MBI DW: MBI

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

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

③ WORK ZONE — G20-5aP, 24" X 18"
TRAFFIC FINES DOUBLE — R20-5T, 36" X 36"
WHEN WORKERS ARE PRESENT — R20-5aTP, 36" X 18"

④ BEGIN ROAD WORK NEXT X MILES — G20-5T, 48" X 24"
NAME ADDRESS CITY STATE CONTRACTOR — G20-6T, 48" X 30"

⑤ ROAD WORK AHEAD — CW20-1D, 48" X 48"

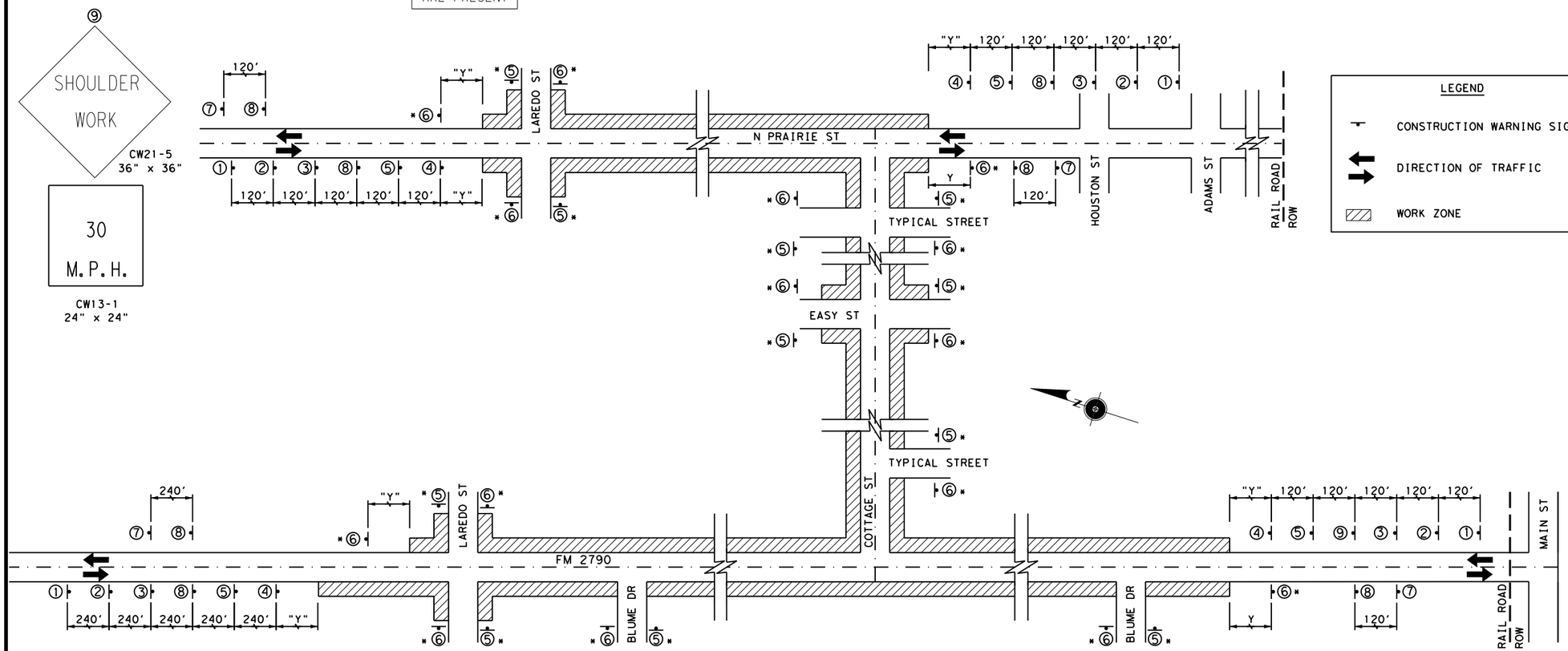
⑥ END ROAD WORK — G20-2, 48" X 24"

⑦ END WORK ZONE — G20-2bT, 48" X 24"

⑧ SPEED LIMIT XX — R2-1, 24" X 30"

⑨ SHOULDER WORK — CW21-5, 36" x 36"

30 M.P.H. — CW13-1, 24" x 24"



LEGEND
- CONSTRUCTION WARNING SIGN
- DIRECTION OF TRAFFIC
- WORK ZONE

NOTES:
1. CONTRACTOR SHALL PLACE ADVANCE WARNING SIGNS ACCORDING TO DISTANCE "X" ON STANDARDS BC(2)-21.
2. CONTRACTOR SHALL FIELD VERIFY POSTED SPEED FOR SIGN SPACING. SIGNS SHOWN SHALL NOT CONFLICT WITH RAIL ROAD ROW.
3. SIGN LOCATIONS MAY BE ADJUSTED DUE TO CONDITIONS AS APPROVED BY THE ENGINEER.
4. CONFLICTING SIGNS SHALL BE COVERED BY CONTRACTOR OR AS DIRECTED BY THE ENGINEER.
5. SIGNS SHOWN SHALL BE COORDINATED WITH SPECIFIC WORK TRAFFIC CONTROL DETAILS INCLUDED IN THE PLANS.
6. SIGNS 5 & 6 TO BE MOVED AND PLACED ONLY IN ADVANCE OF WHERE WORK IS BEING PERFORMED.
7. SIGN 8 SHALL DISPLAY APPROPRIATE SPEED LIMIT IN PLACE OF "XX". SPEED LIMIT FOR FM 2790 WILL BE 40, COTTAGE AND N PRAIRIE ST 30.

POSTED SPEED	LONGITUDINAL BUFFER SPACE "Y" DISTANCE
MPH	FT(APPROX)
30	90
35	120
40	155
45	195
50	240
55	295
60	350
65	410
70	475

* SEE NOTE 6 FOR TYPICAL USE OF SIGNS 5 & 6

N.T.S

FM 2790: FROM LYTLE HS TO BLUME DR
COTTAGE ST: FROM FM 2790 TO N PRAIRIE ST
N PRAIRIE ST: FROM LAREDO ST TO COTTAGE ST

SIDEWALK PLAN SHEETS - REFER TO TCP (1-1a) AND TCP (1-2b) FOR ADDITIONAL INFORMATION

STATE OF TEXAS
RICARDO RAMOS JR
144241
LICENSED
PROFESSIONAL ENGINEER
8/23/2023

NO	DATE	REVISION	APPROVED

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TBPE Registration No. F-2677

Texas Department of Transportation

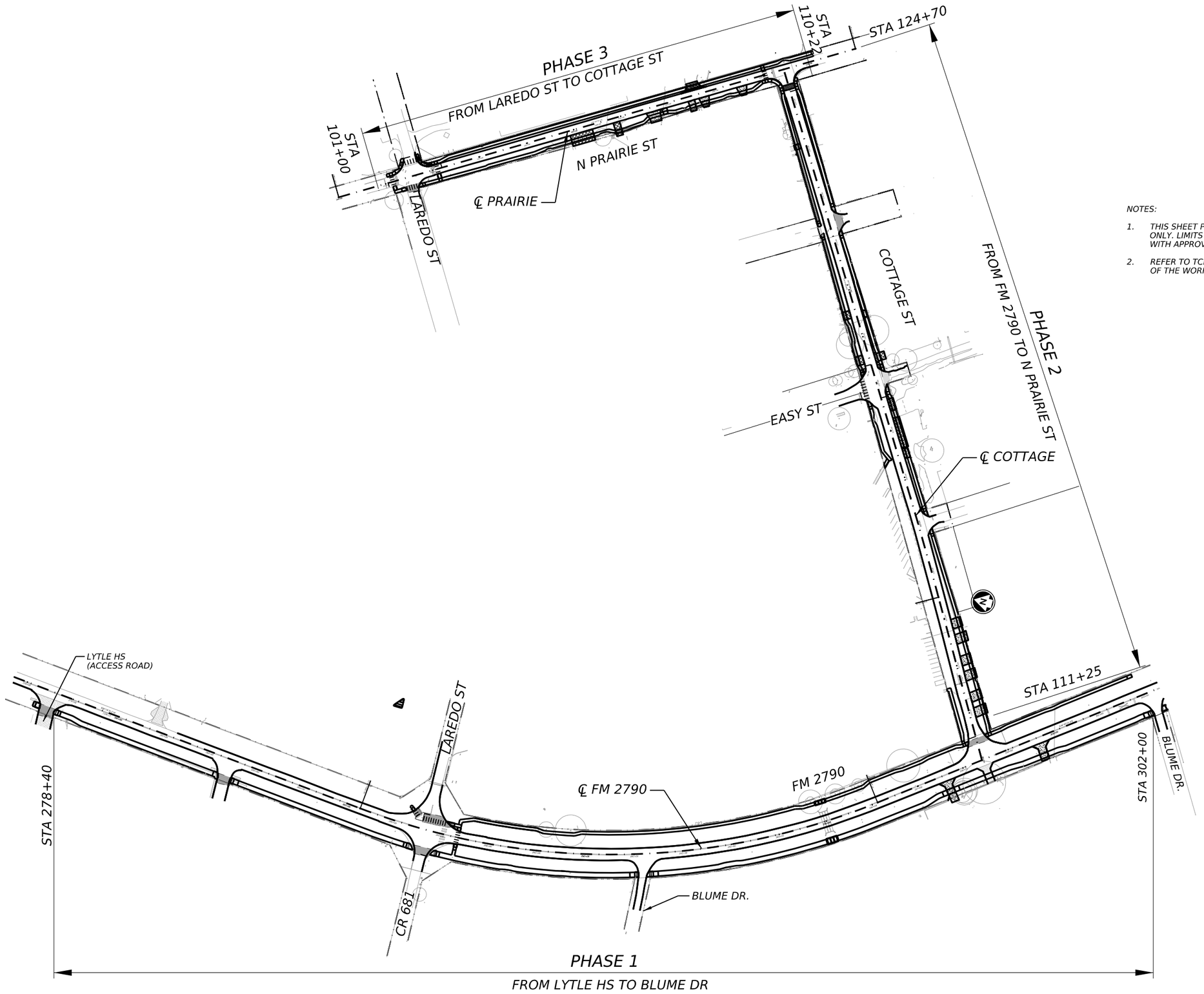
FM2790,COTTAGE,PRAIRIE

TRAFFIC CONTROL PLAN ADVANCE WARNING DEVICES

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		17

DATE: 8/23/2023 2:09:56 PM
FILE: ...\2_TCP\FM2790_S_TCP_AWS.dgn



NOTES:

1. THIS SHEET PROVIDED FOR INFORMATION ONLY. LIMITS CAN BE ADJUSTED AS NEEDED WITH APPROVAL OF THE ENGINEER.
2. REFER TO TCP SEQUENCE OF WORK FOR DETAILS OF THE WORK TO OCCUR IN EACH PHASE.

0 100 200

SCALE: 1"=200' H

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TRAFFIC CONTROL PLAN OVERALL PHASING LAYOUT

SHEET 1 OF 1

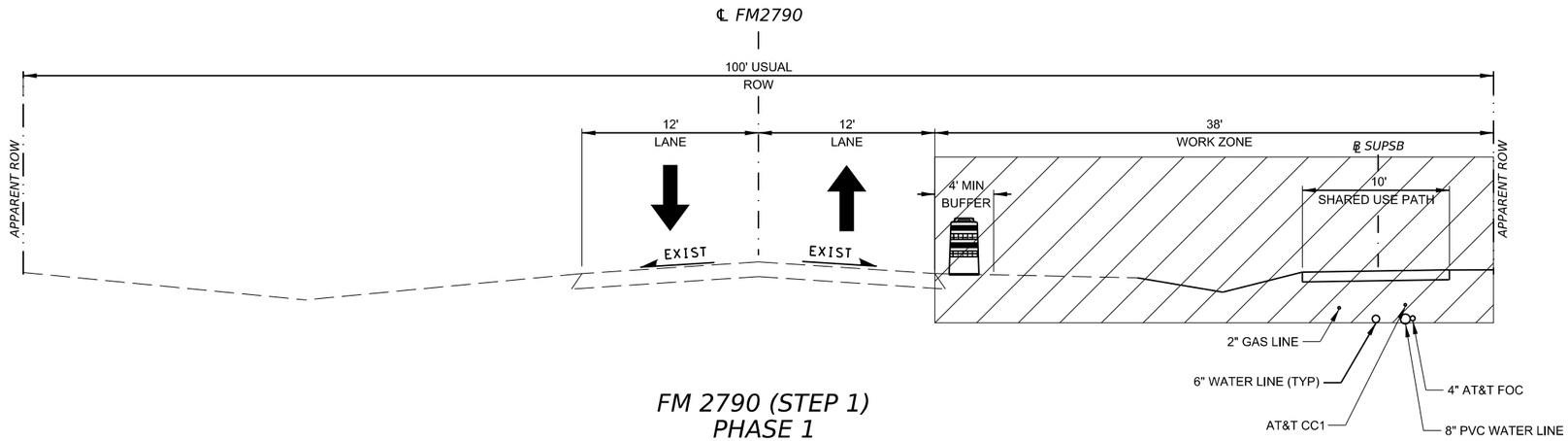
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		18

DATE: 8/22/2023 8:45:32 PM
FILE: ...\2. TCP\FM2790 TCP 01.dgn

CK:
DW:
CK:
DN:

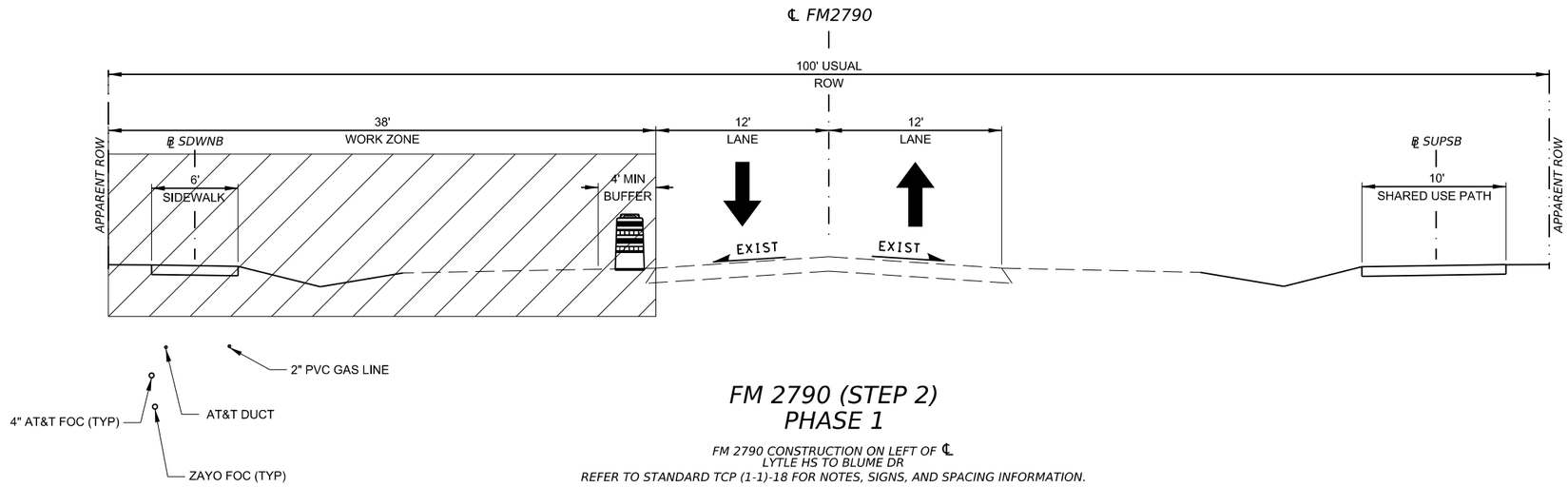
LEGEND

- WORK ZONE
- DIRECTION OF TRAFFIC
- CHANNEL. DEVICE(DRUM W/REFL.)
- CHANNEL. DEVICE(VERT.PANELS)



FM 2790 (STEP 1)
PHASE 1

FM 2790 CONSTRUCTION ON RIGHT OF ℄
LYTLE HS TO BLUME DR
REFER TO STANDARD TCP (1-1)-18 FOR NOTES, SIGNS, AND SPACING INFORMATION.



FM 2790 (STEP 2)
PHASE 1

FM 2790 CONSTRUCTION ON LEFT OF ℄
LYTLE HS TO BLUME DR
REFER TO STANDARD TCP (1-1)-18 FOR NOTES, SIGNS, AND SPACING INFORMATION.

NOTES:

1. *THIS SHEET SHOWS THE LANE CONFIGURATION FOR CONVENTIONAL SHOULDER WORK. IT IS INTENDED TO BE USED IN CONJUNCTION WITH TCP STANDARDS AND DETAILS. PLEASE REFER TO STANDARD TCP(1-2)-18 FOR DAILY LANE CLOSURES.*
2. *CONTRACTOR SHALL RETURN TRAFFIC TO TWO-LANE TWO-WAY OPERATIONS AT THE END OF EACH WORK DAY.*
3. *SIDEWALK, PROPOSED FEATURES, UTILITIES AND OTHER GEOMETRIC DESIGN INFORMATION SHOWN ELSEWHERE IN PLANS.*

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FM2790,COTTAGE,PRAIRIE

TRAFFIC CONTROL PLAN
TYPICAL SECTIONS
PHASE 1

SHEET 1 OF 3

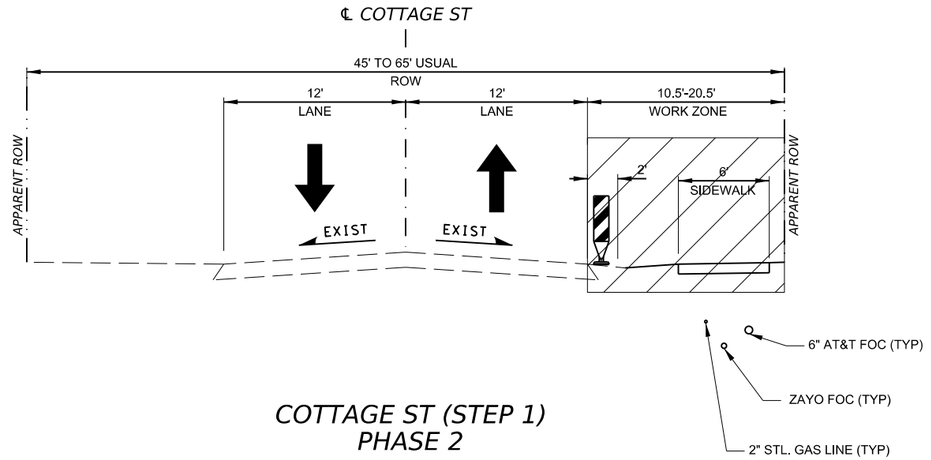
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		19

DATE: 8/22/2023 8:46:05 PM
FILE: ...\2. TCP\FM 2790 TCP TYP.dgn

CK:
DW:
CK:
DW:

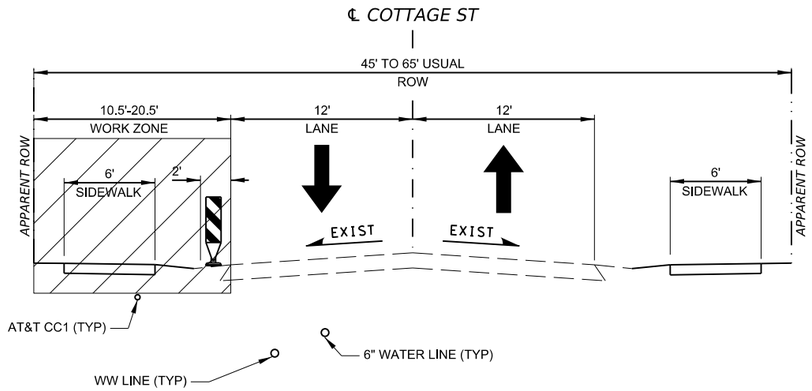
LEGEND

- WORK ZONE
- DIRECTION OF TRAFFIC
- CHANNEL. DEVICE(DRUM W/REFL.)
- CHANNEL. DEVICE(VERT.PANELS)



COTTAGE ST (STEP 1)
PHASE 2

COTTAGE ST CONSTRUCTION ON RIGHT OF ℄
FM 2790 TO PRAIRIE ST
REFER TO STANDARD TCP (1-1)-18 FOR NOTES, SIGNS, AND SPACING INFORMATION.



COTTAGE ST (STEP 2)
PHASE 2

COTTAGE ST CONSTRUCTION ON LEFT OF ℄
FM 2790 TO N PRAIRIE ST
REFER TO STANDARD TCP (1-1)-18 FOR NOTES, SIGNS, AND SPACING INFORMATION.

NOTES:

1. THIS SHEET SHOWS THE LANE CONFIGURATION FOR CONVENTIONAL SHOULDER WORK. IT IS INTENDED TO BE USED IN CONJUNCTION WITH TCP STANDARDS AND DETAILS. PLEASE REFER TO STANDARD TCP(1-2)-18 FOR DAILY LANE CLOSURES.
2. CONTRACTOR SHALL RETURN TRAFFIC TO TWO-LANE TWO-WAY OPERATIONS AT THE END OF EACH WORK DAY.
3. SIDEWALK, PROPOSED FEATURES, UTILITIES AND OTHER GEOMETRIC DESIGN INFORMATION SHOWN ELSEWHERE IN PLANS.

STATE OF TEXAS
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FM2790,COTTAGE,PRAIRIE

TRAFFIC CONTROL PLAN
TYPICAL SECTIONS
PHASE 2

SHEET 2 OF 3

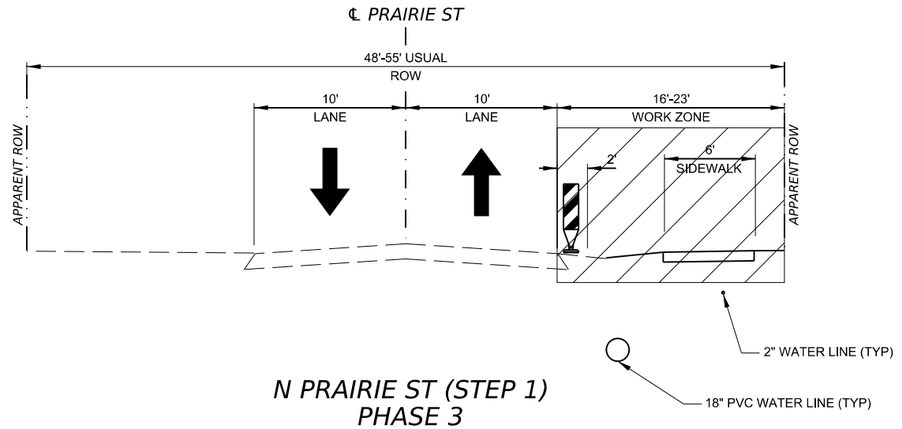
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		20

DATE: 8/22/2023 8:46:21 PM
FILE: ...\2_TCP\FM 2790_TYP2.dgn

CK:
DW:
CK:
DN:

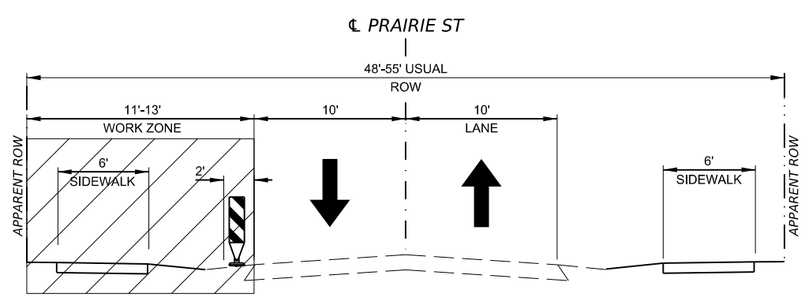
LEGEND

- WORK ZONE
- DIRECTION OF TRAFFIC
- CHANNEL. DEVICE(DRUM W/REFL.)
- CHANNEL. DEVICE(VERT.PANELS)



N PRAIRIE ST (STEP 1)
PHASE 3

N PRAIRIE ST CONSTRUCTION ON RIGHT OF ℄
LAREDO ST TO COTTAGE ST
REFER TO STANDARD TCP (1-1)-18 FOR NOTES, SIGNS, AND SPACING INFORMATION.



N PRAIRIE ST (STEP 2)
PHASE 3

N PRAIRIE ST CONSTRUCTION ON LEFT OF ℄
LAREDO ST TO COTTAGE ST
REFER TO STANDARD TCP (1-1)-18 FOR NOTES, SIGNS, AND SPACING INFORMATION.

NOTES:

1. THIS SHEET SHOWS THE LANE CONFIGURATION FOR CONVENTIONAL SHOULDER WORK. IT IS INTENDED TO BE USED IN CONJUNCTION WITH TCP STANDARDS AND DETAILS. PLEASE REFER TO STANDARD TCP(1-2)-18 FOR DAILY LANE CLOSURES.
2. CONTRACTOR SHALL RETURN TRAFFIC TO TWO-LANE TWO-WAY OPERATIONS AT THE END OF EACH WORK DAY.
3. SIDEWALK, PROPOSED FEATURES, UTILITIES, AND OTHER GEOMETRIC DESIGN INFORMATION SHOWN ELSEWHERE IN PLANS.

STATE OF TEXAS
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FM2790,COTTAGE,PRAIRIE

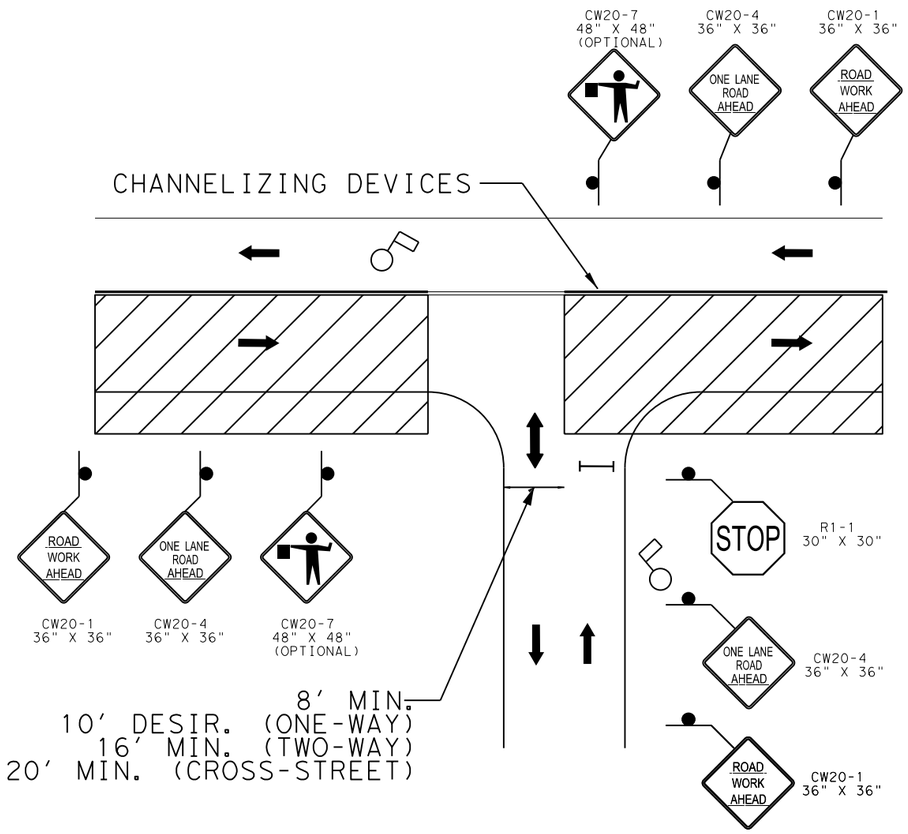
TRAFFIC CONTROL PLAN
TYPICAL SECTIONS
PHASE 3

SHEET 3 OF 3

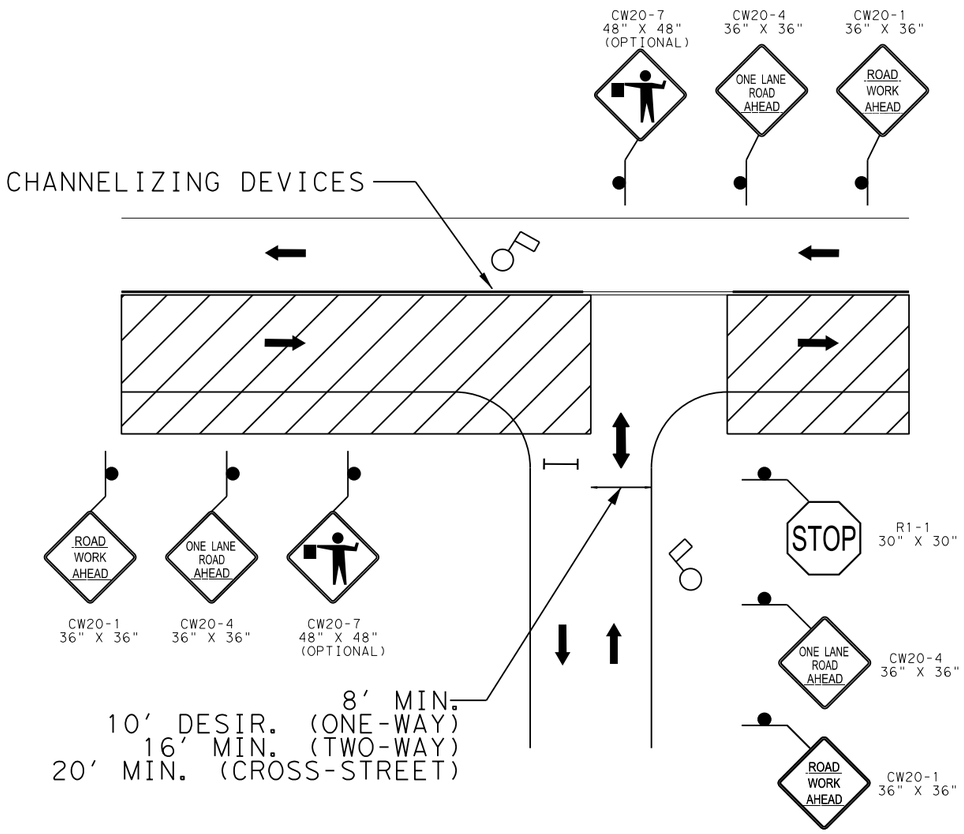
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		21

DATE: 8/22/2023 8:46:37 PM
FILE: ...\2_TCP\FM 2790_TYP-3.dgn

SIDE STREET/DRIVEWAY HALF-SECTION CONSTRUCTION DETAILS



TYPICAL SIDE STREET/DRIVEWAY
HALF-SECTION CONSTRUCTION DETAILS
STEP 1



TYPICAL SIDE STREET/DRIVEWAY
HALF-SECTION CONSTRUCTION DETAILS
STEP 2

LEGEND

- PROPOSED CONSTRUCTION
- DIRECTION OF TRAFFIC
- TY III BARRICADE
- SIGN
- FLAGGER

NOTES

1. THE CONTRACTOR SHALL COORDINATE ALL STREET AND DRIVEWAY CLOSURES PRIOR TO COMMENCEMENT OF CONSTRUCTION. PROPERTIES WITH MORE THAN ONE DRIVEWAY SHALL BE RECONSTRUCTED ONE DRIVEWAY AT A TIME BEFORE PROCEEDING TO THE SECOND DRIVEWAY. CROSS STREETS OR DRIVEWAYS WITH ONE DRIVEWAY ACCESS SHALL BE RECONSTRUCTED IN HALF WIDTHS UNLESS ARRANGEMENTS HAVE MADE WITH THE OWNER. SIDE STREET/DRIVEWAY HALF WIDTH CONSTRUCTION SHALL BE CONDUCTED DURING OFFPEAK, WEEKEND, NIGHT CLOSURES, OR AS APPROVED BY THE ENGINEER.
2. FLAGGERS TO BE USED TO DIRECT TRAFFIC DURING INTERSECTION CONSTRUCTION. USE OF FLAGGERS TO BE SUBSIDIARY TO ITEM 502 BARRICADES, SIGNS AND TRAFFIC HANDLING.
3. CHANNELIZING DEVICES SHALL BE SPACED PER BARRICADE CONSTRUCTION STANDARDS, UNLESS OTHERWISE SHOWN ON PLANS.
4. SEE ADVANCED WARNING SIGNS LAYOUT FOR ADDITIONAL INFORMATION
5. REFER TO BARRICADE CONSTRUCTION STANDARD BC(2)-21 TYPICAL CONSTRUCTION SIGN SPACING TABLE FOR MINIMUM SPACING OF CONSTRUCTION WARNING AND CROSS STREET SIGNS.

STATE OF TEXAS
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FM2790,COTTAGE,PRAIRIE

TRAFFIC CONTROL PLAN
MISCELLANEOUS DETAILS

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		22

DATE: 8/23/2023 1:47:47 PM
FILE: ...\mbjpw\6\FM 2790 detail.dgn

LOC NO.	TCP PHASE	SPECIFIC TCP PLAN SHEET OR TCP STANDARD SHEET					6185 6002	6185 6005
			FURNISH TMA/TA	RELOCATE/REUSE TMA/TA	TOTAL TMA/TA PER SET UP	DURATION OF TMA/TA SET UP	TMA (STATIONARY)	TMA (MOBILE OPERATION)
		SHEET NUMBER	EA	EA	EA	DAYS PER TMA/TA USE	DAY	DAY
ALL	PHASE 1	TCP (1-1) - 18 & TCP (1-2) - 18	1		1	57	57	
ALL	PHASE 2	TCP (1-1) - 18 & TCP (1-2) - 18		1	1	22	22	
ALL	PHASE 3	TCP (1-1) - 18 & TCP (1-2) - 18		1	1	14	14	
		TOTALS	1				93	

NOTE.
FURNISH TMA/TA - THE NUMBER OF ATTENUATORS BEING FURNISHED FOR THE SPECIFIC TCP.
RELOCATE/REUSE TMA/TA - THE NUMBER OF ATTENUATORS BEING REUSED FROM A PREVIOUS TCP FOR THE SPECIFIC TCP.
TOTAL TMA/TA PER SET UP = (FURNISH TMA/TA) + (RELOCATE/REUSE TMA/TA)
DURATION OF TMA/TA SET UP - THE NUMBER OF DAYS THE ATTENTUATORS WILL BE USED FOR THE SPECIFIC TCP.
TMA/TA (STATIONARY) = (TOTAL TMA/TA PER SET UP) X (THE DURATION OF TMA/TA SET UP)
TMA/TA (MOBILE OPERATION) = (TOTAL TMA/TA PER SET UP) X (THE DURATION OF TMA/TA SET UP)

TRUCK MOUNTED ATTENUATOR (TMA) AND TRAILER ATTENUATOR (TA) SUMMARY SHEET

FILE: tma.dgn	DN: TxDOT	CK:		CK:
© TxDOT	CONT	SECT	JOB	HIGHWAY
REVISIONS 3/2018	0915	00	252	VARIOUS
	DIST	COUNTY		
	SAT	BEXAR		
	FEDERAL AID PROJECT			SHEET NO.
	SEE TITLE SHEET			23

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

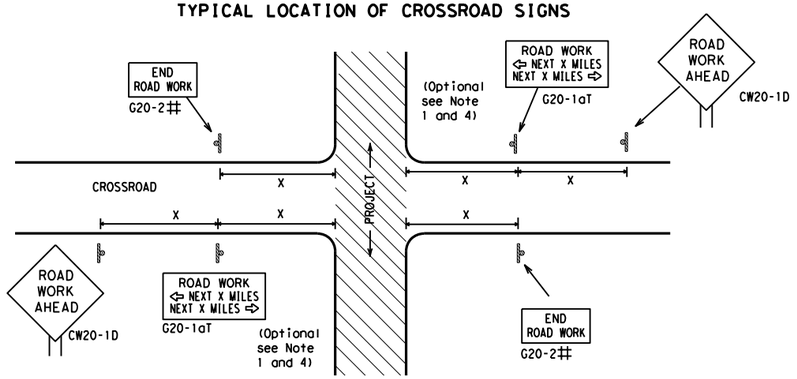
BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
4-03 7-13	DIST	COUNTY		SHEET NO.
9-07 8-14	SAT	BEXAR		24
5-10 5-21				

95

DATE: 8/22/2023 8:47:28 PM
FILE: ...\FM2790_TCP_STANDARDS.dgn

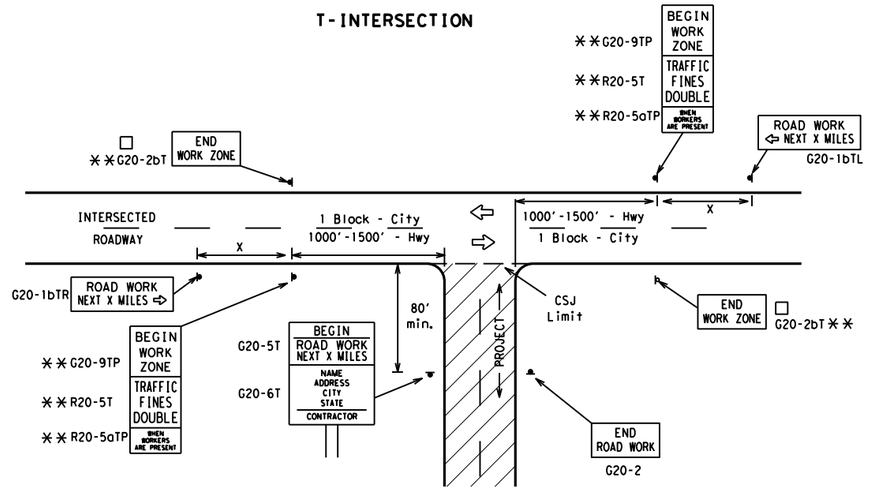
TYPICAL LOCATION OF CROSSROAD SIGNS



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

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

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

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

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

SIZE

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

SPACING

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

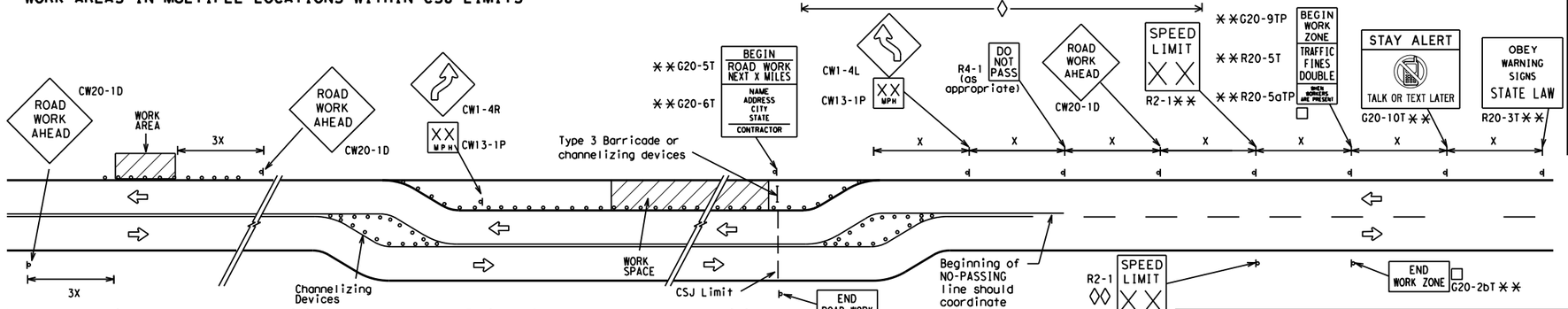
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

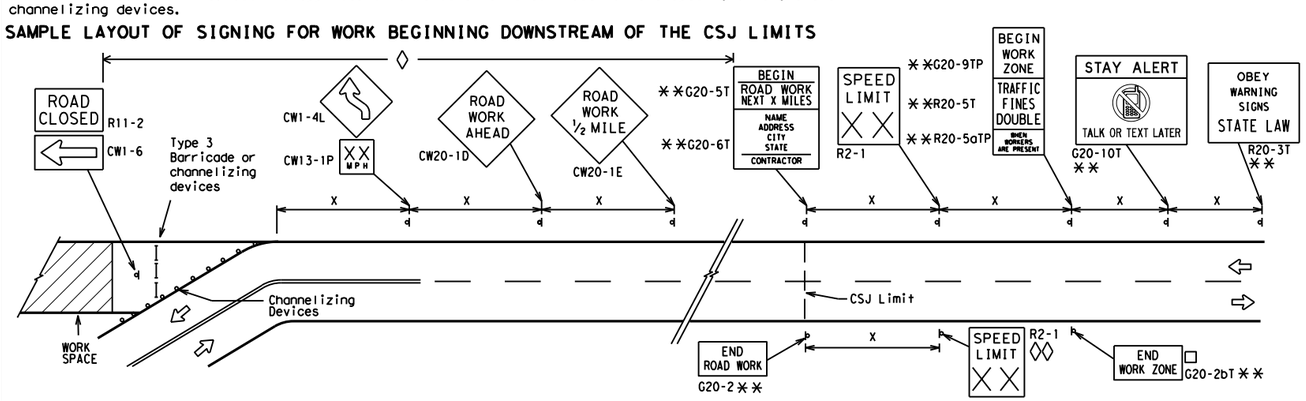
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

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

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

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

LEGEND

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

SHEET 2 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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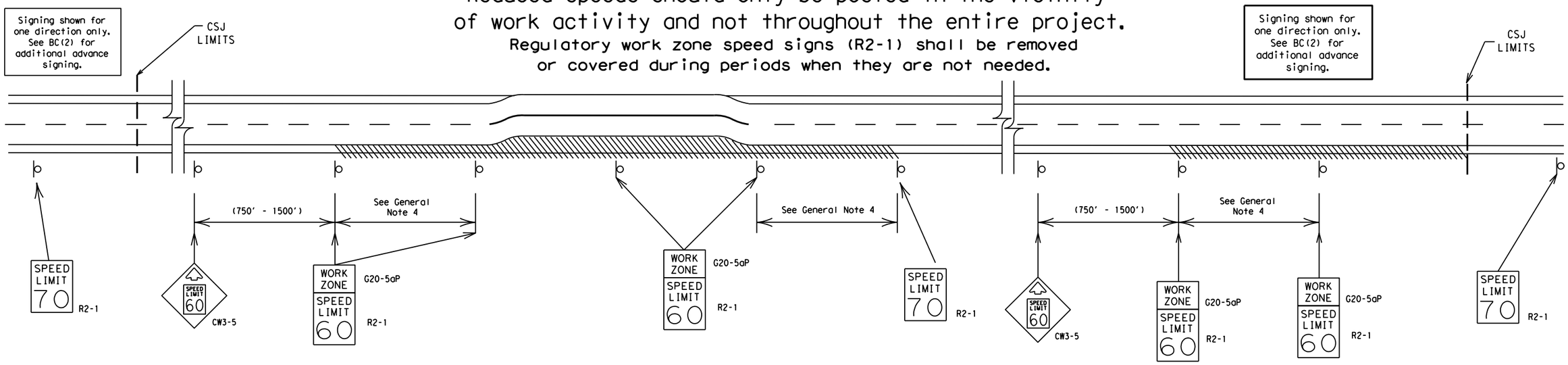
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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

GENERAL NOTES

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

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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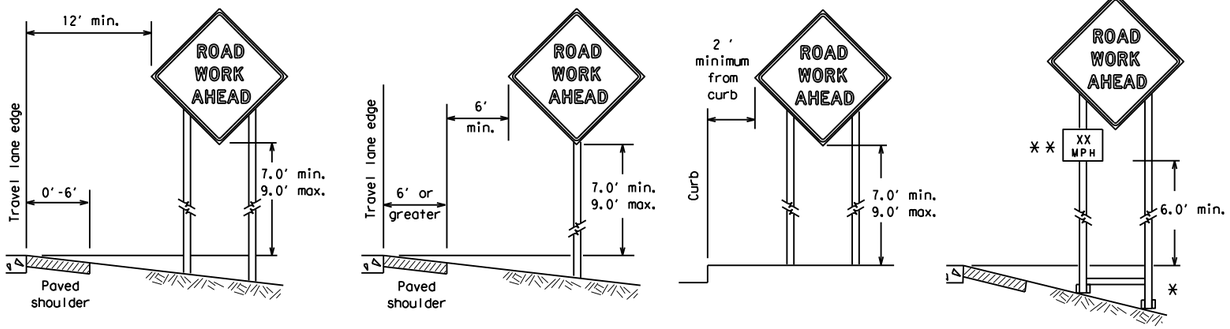
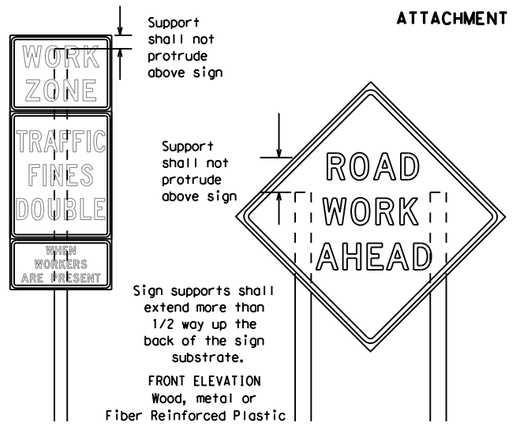
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



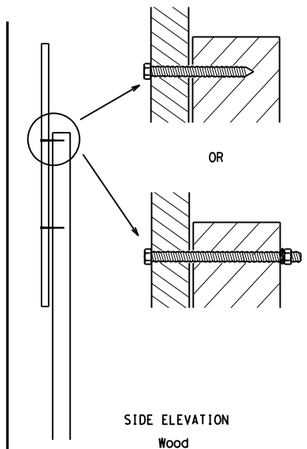
* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS



FRONT ELEVATION
Wood, metal or
Fiber Reinforced Plastic



SIDE ELEVATION
Wood

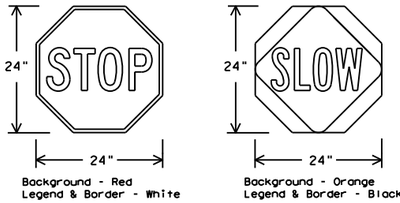
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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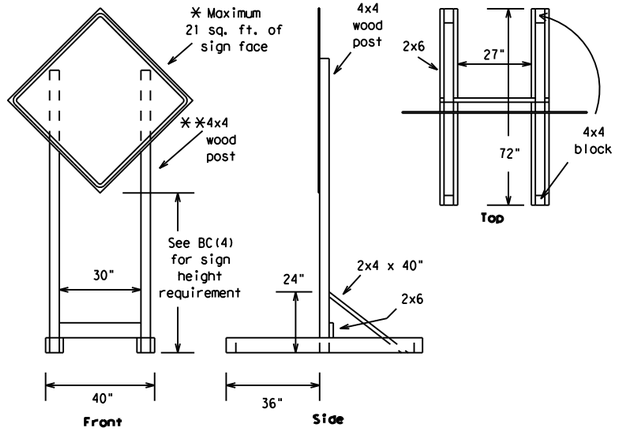
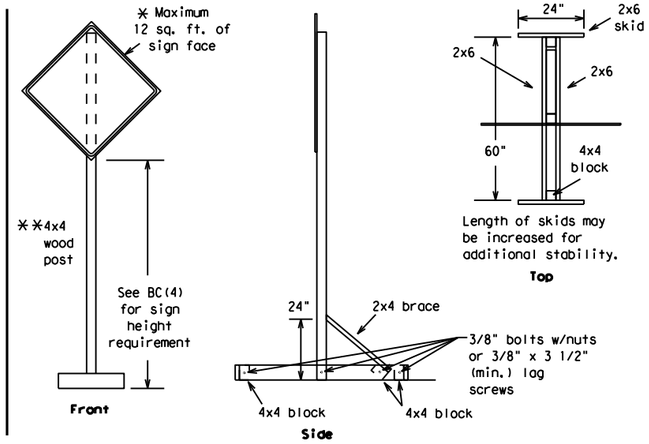
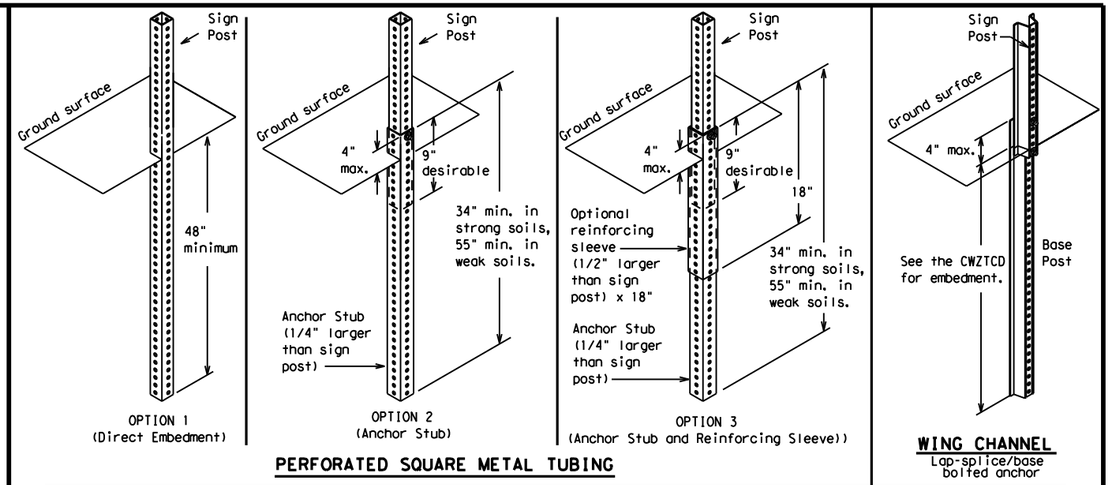




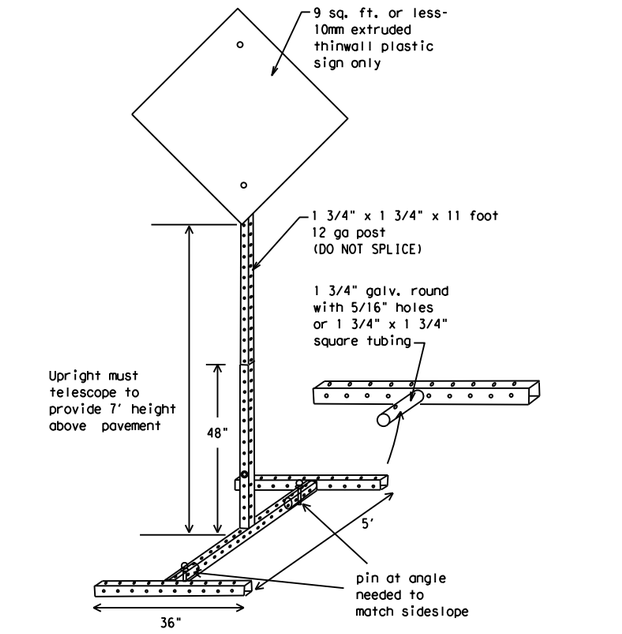
SKID MOUNTED WOOD SIGN SUPPORTS

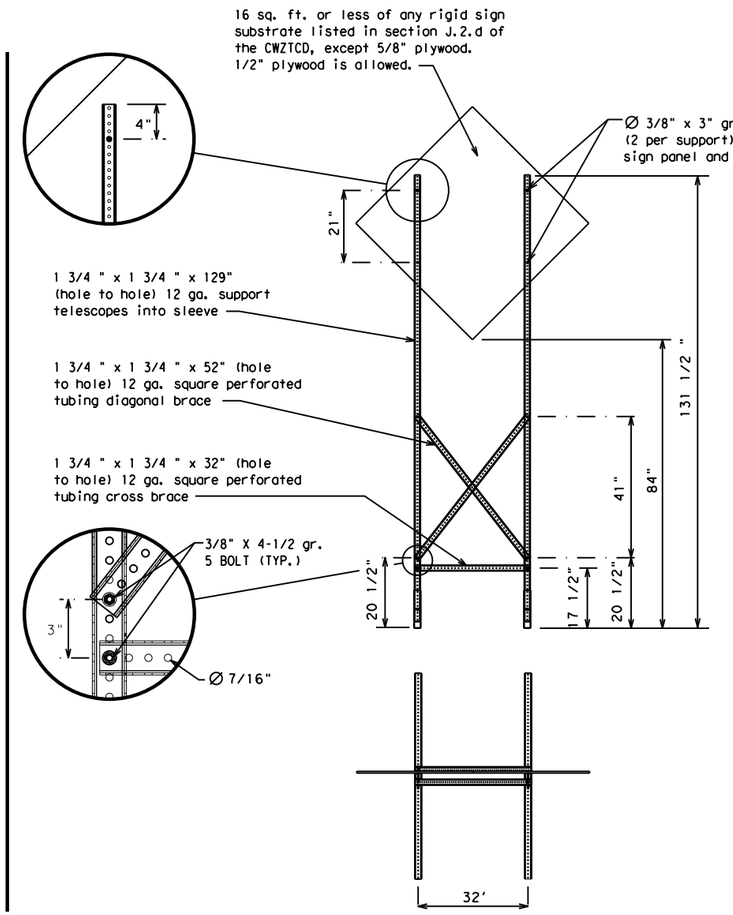
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

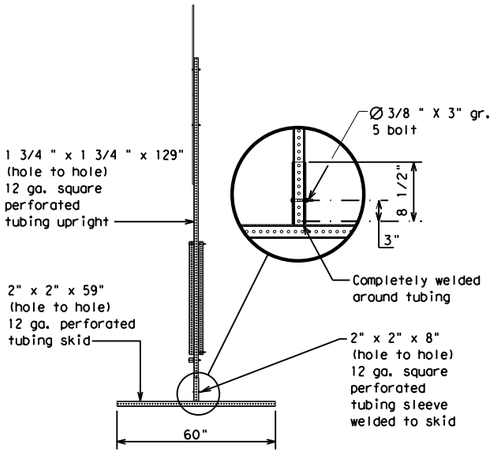


GROUND MOUNTED SIGN SUPPORTS

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







SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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

WEDGE ANCHORS

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

OTHER DESIGNS

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

GENERAL NOTES

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

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

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

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

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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

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

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

** See Application Guidelines Note 6.

APPLICATION GUIDELINES

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

WORDING ALTERNATIVES

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

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation

Traffic Safety Division Standard

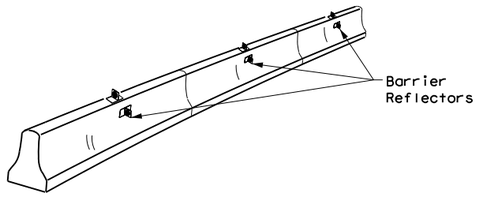
BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BS(6)-21

FILE: _bc-21.dgn_	DN: _IxDOT_	CK: IxDOT	DW: _IxDOT_	CK: IxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		29

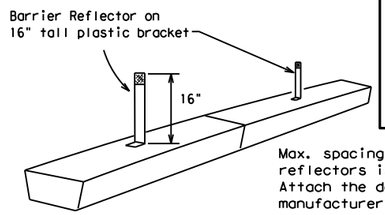
DATE: 8/22/2023 8:47:29 PM
FILE: ...\FM2790_TCP_STANDARDS.dgn

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



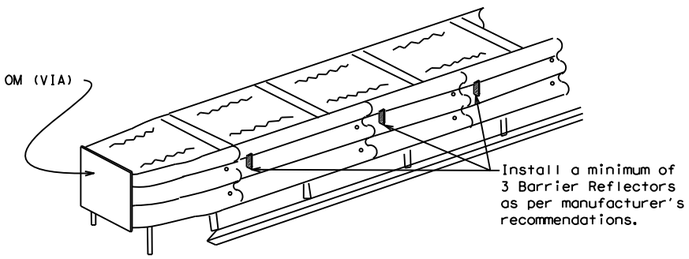
CONCRETE TRAFFIC BARRIER (CTB)

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



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

LOW PROFILE CONCRETE BARRIER (LPCB)



DELINEATION OF END TREATMENTS

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

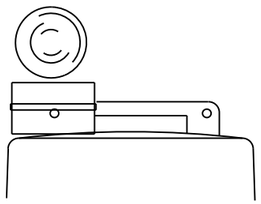
LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.

END TREATMENTS FOR CTB'S USED IN WORK ZONES

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

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

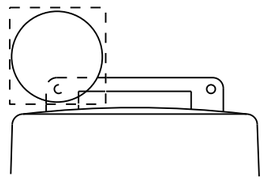


Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

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



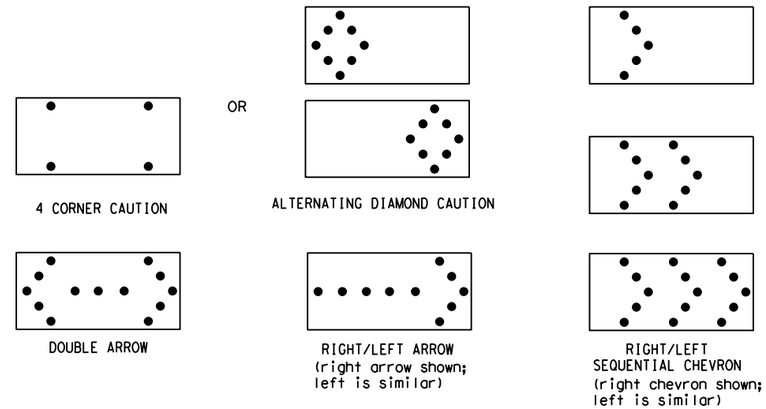
Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

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

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

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

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



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

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

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

FLASHING ARROW BOARDS

TRUCK-MOUNTED ATTENUATORS

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

SHEET 7 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BEXAR		30

GENERAL NOTES

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

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

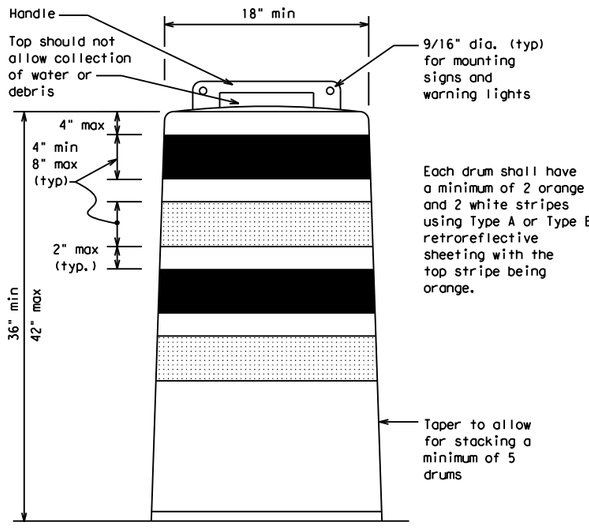
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

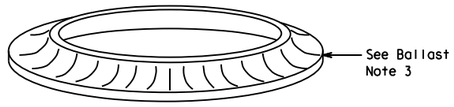
RETROREFLECTIVE SHEETING

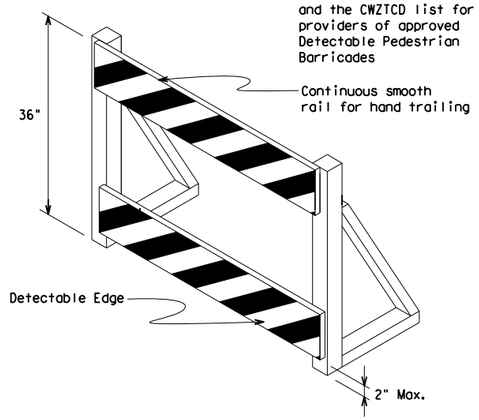
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

BALLAST

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

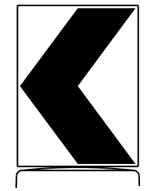




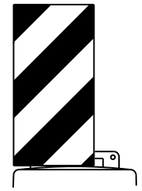


DETECTABLE PEDESTRIAN BARRICADES

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



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



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

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

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	SAT	BEXAR		31
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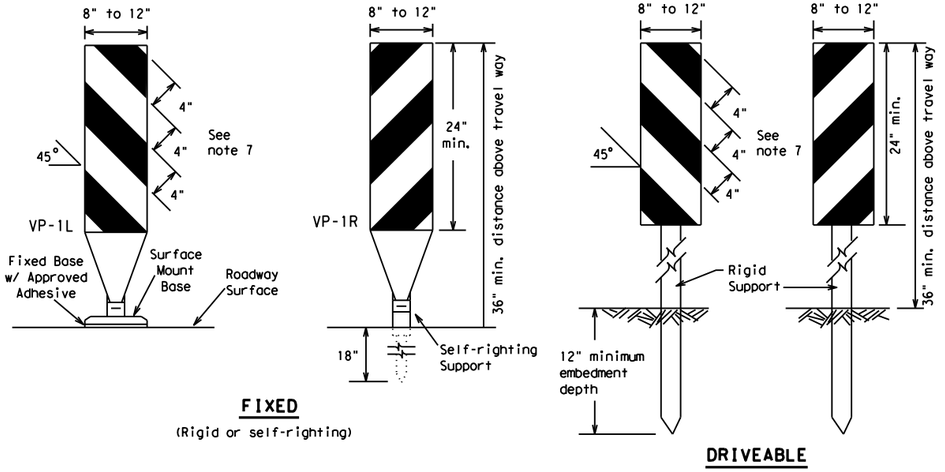
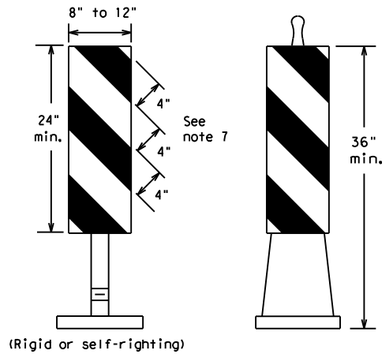


FIXED
(Rigid or self-righting)

DRIVEABLE

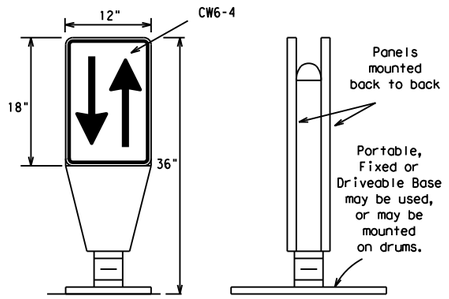


(Rigid or self-righting)

PORTABLE

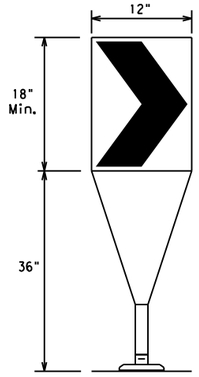
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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

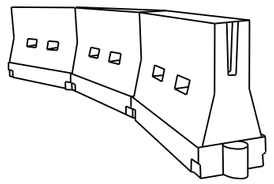
OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



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



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

GENERAL NOTES

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

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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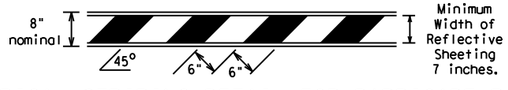
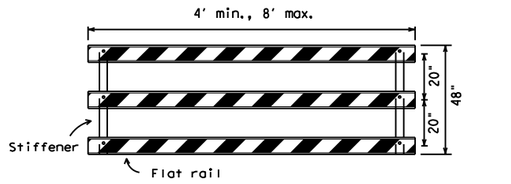
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



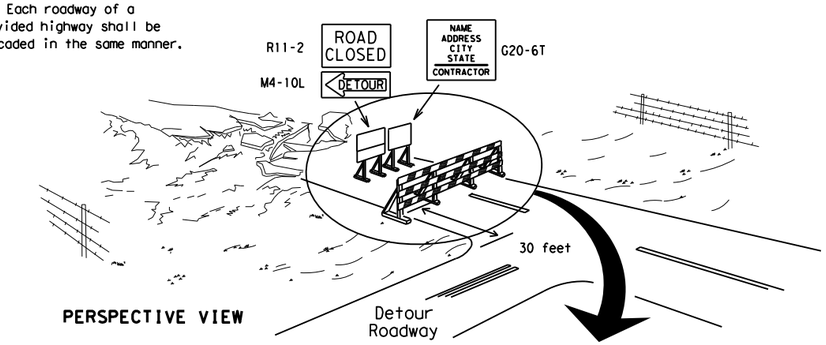
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

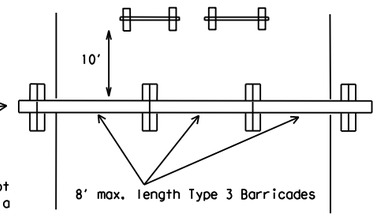
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

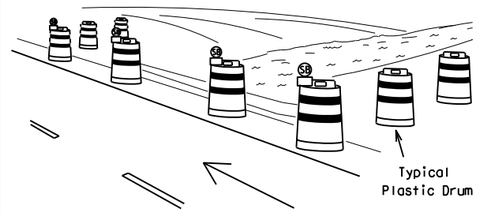
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

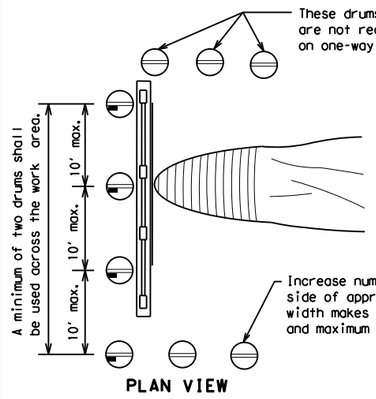
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

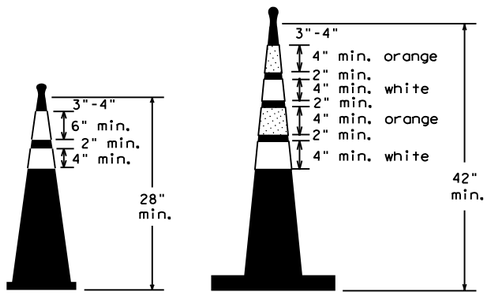
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



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

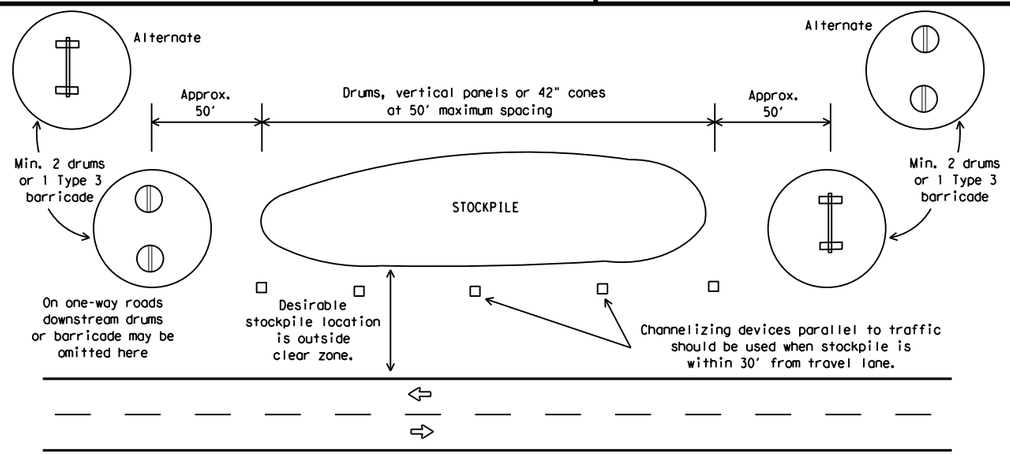
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



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

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



TRAFFIC CONTROL FOR MATERIAL STOCKPILES

Texas Department of Transportation — 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.

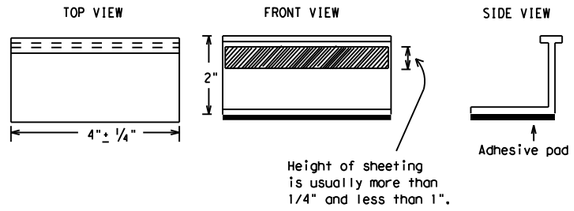
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

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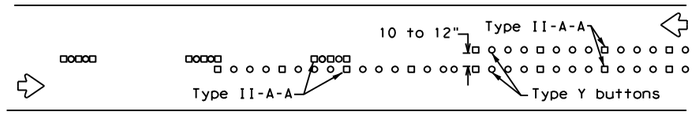
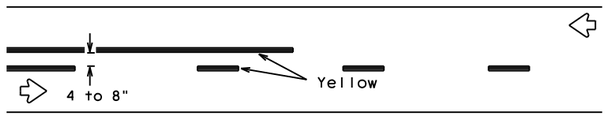
PAVEMENT MARKING PATTERNS

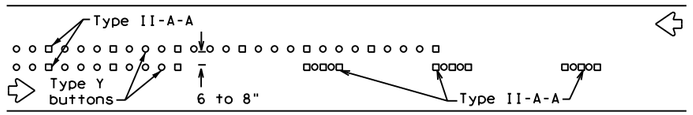
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



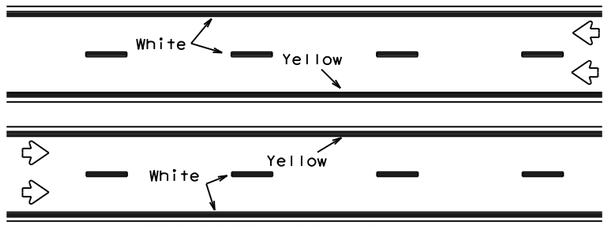
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



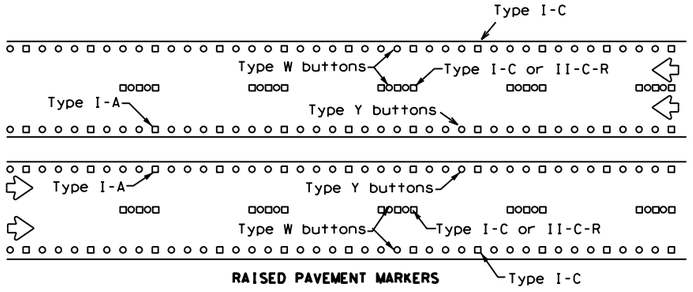
RAISED PAVEMENT MARKERS - PATTERN B

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

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



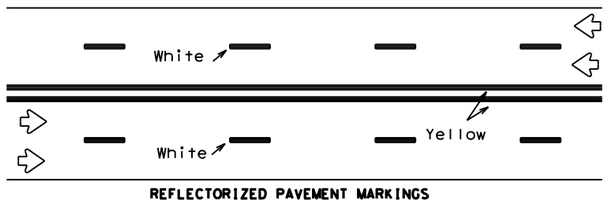
REFLECTORIZED PAVEMENT MARKINGS



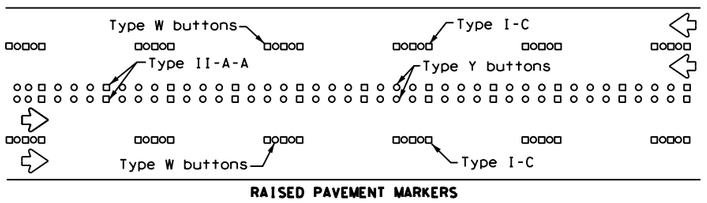
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



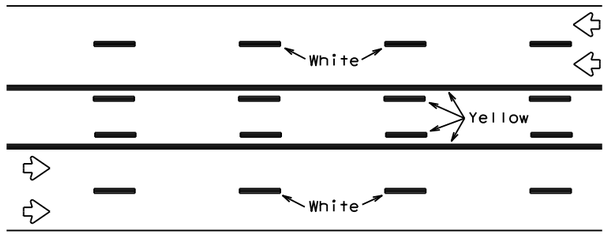
REFLECTORIZED PAVEMENT MARKINGS



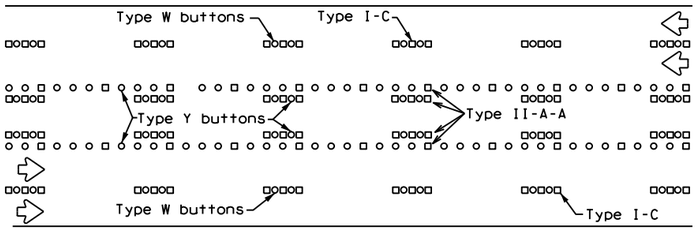
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

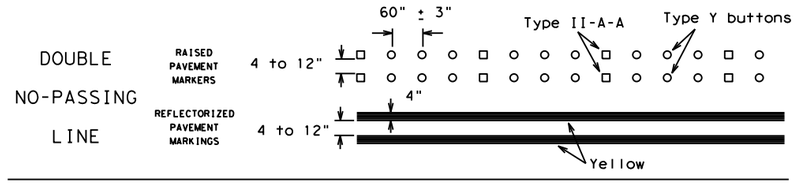
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

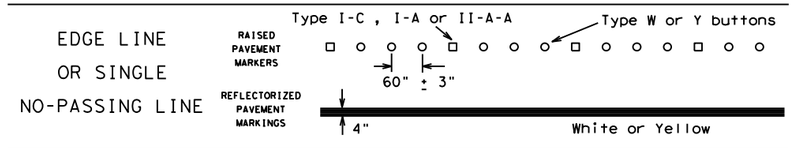
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

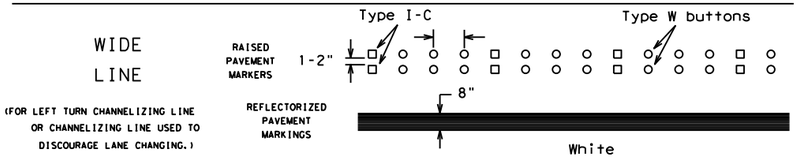


EDGE LINE OR SINGLE NO-PASSING LINE



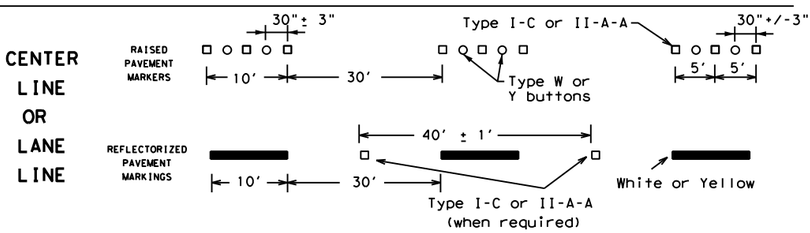
WIDE LINE

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

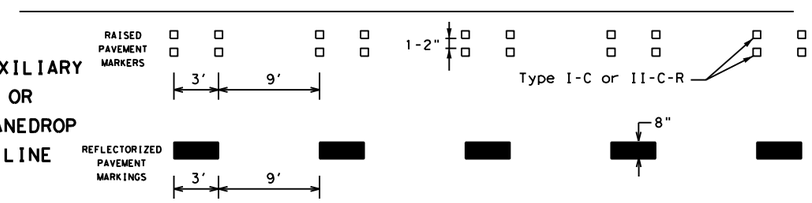


BROKEN LINES

CENTER LINE OR LANE LINE

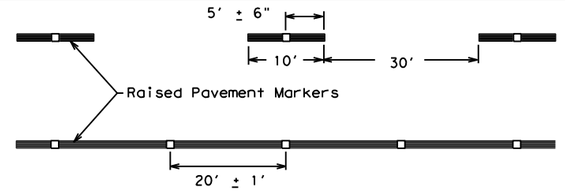


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

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



Centerline only - not to be used on edge lines

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

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		35

106

DATE: 8/22/2023 8:47:30 PM
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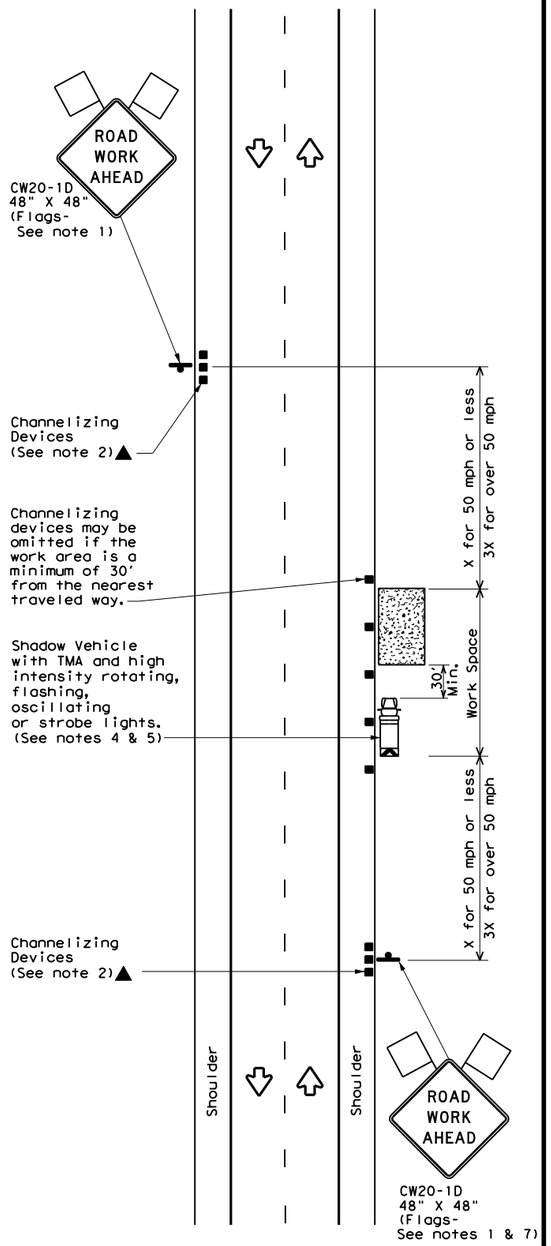
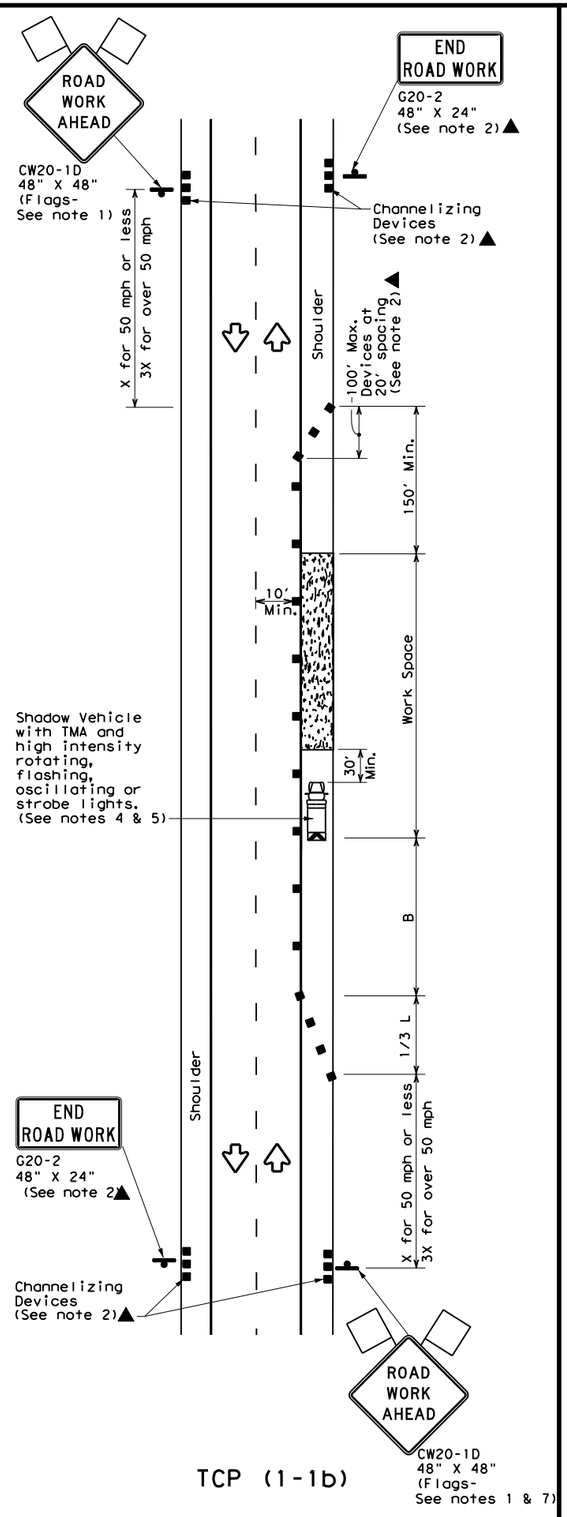


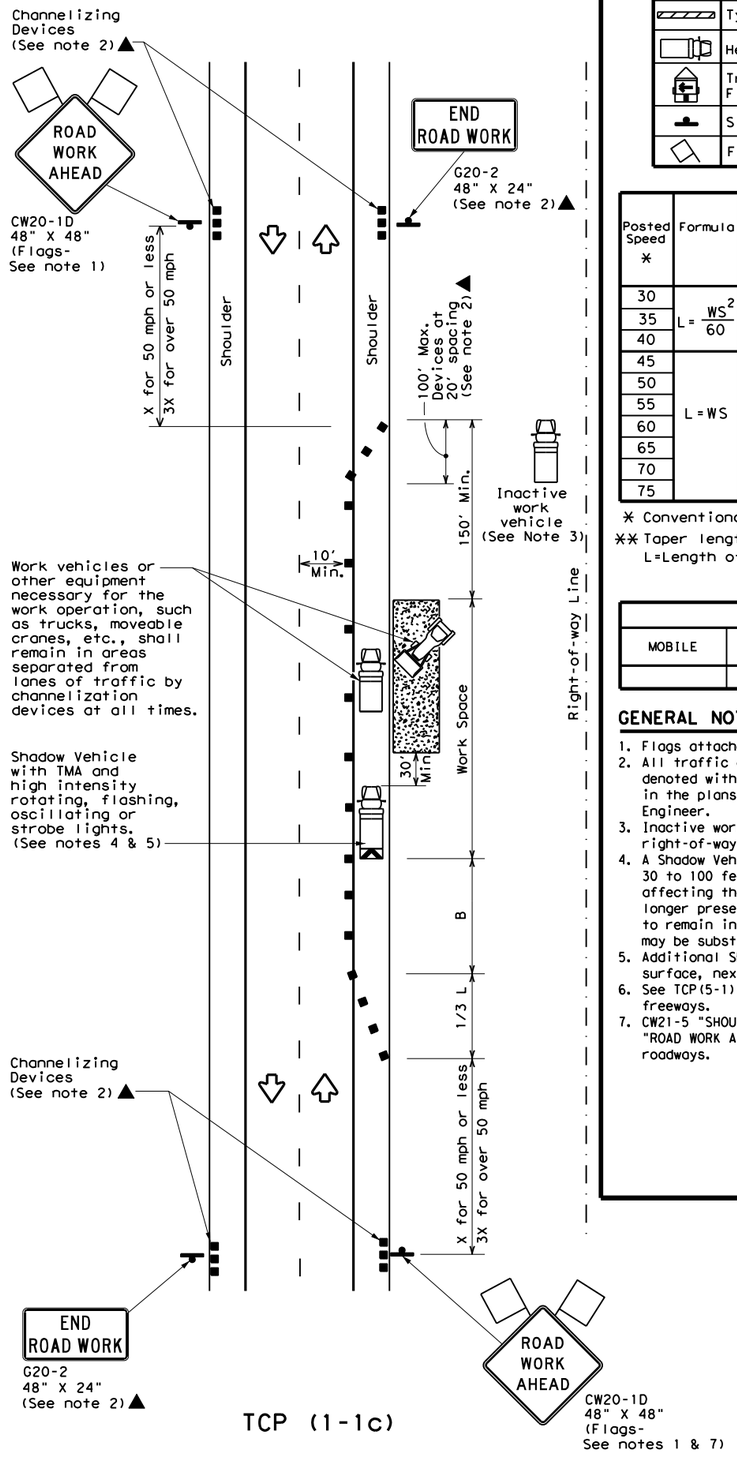
TCP (1-1a)

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 2-94 4-98 8-95 2-12 1-97 2-18	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		36

151

DATE: 8/22/2023 8:47:30 PM
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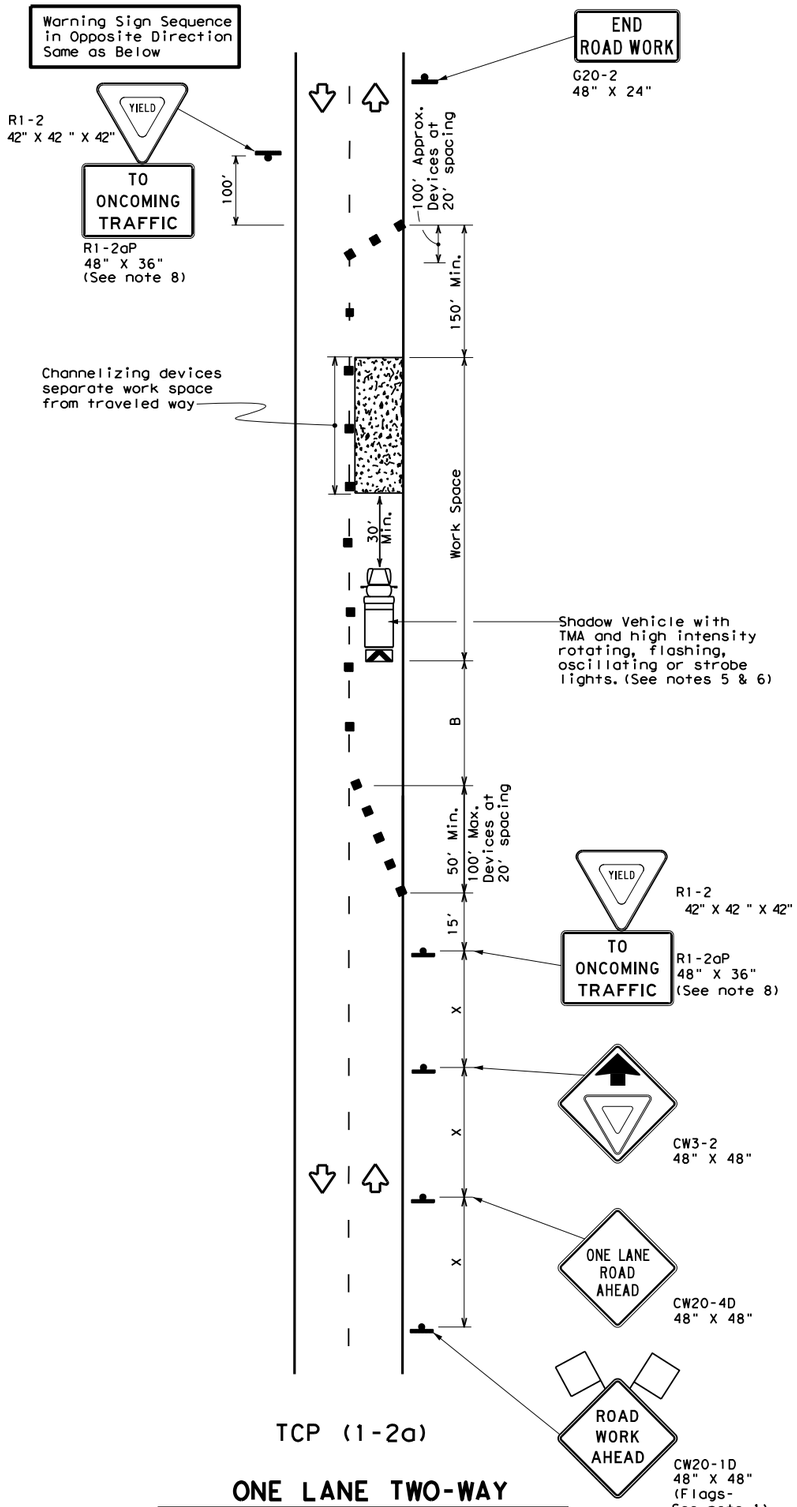
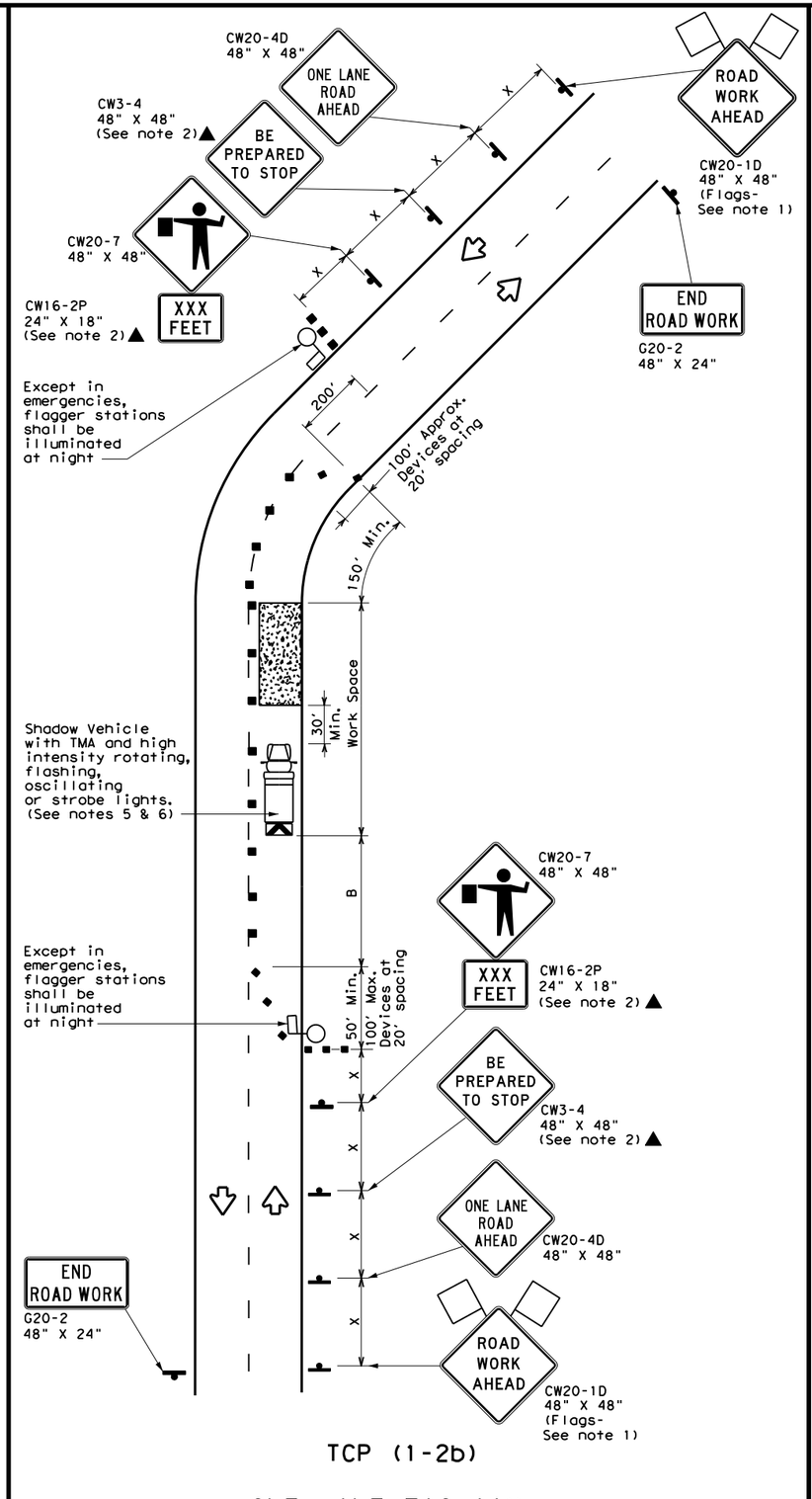


TCP (1-2a)

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



TCP (1-2b)

ONE LANE TWO-WAY CONTROL WITH FLAGGERS

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

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

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

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

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

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

TCP (1-2b)

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

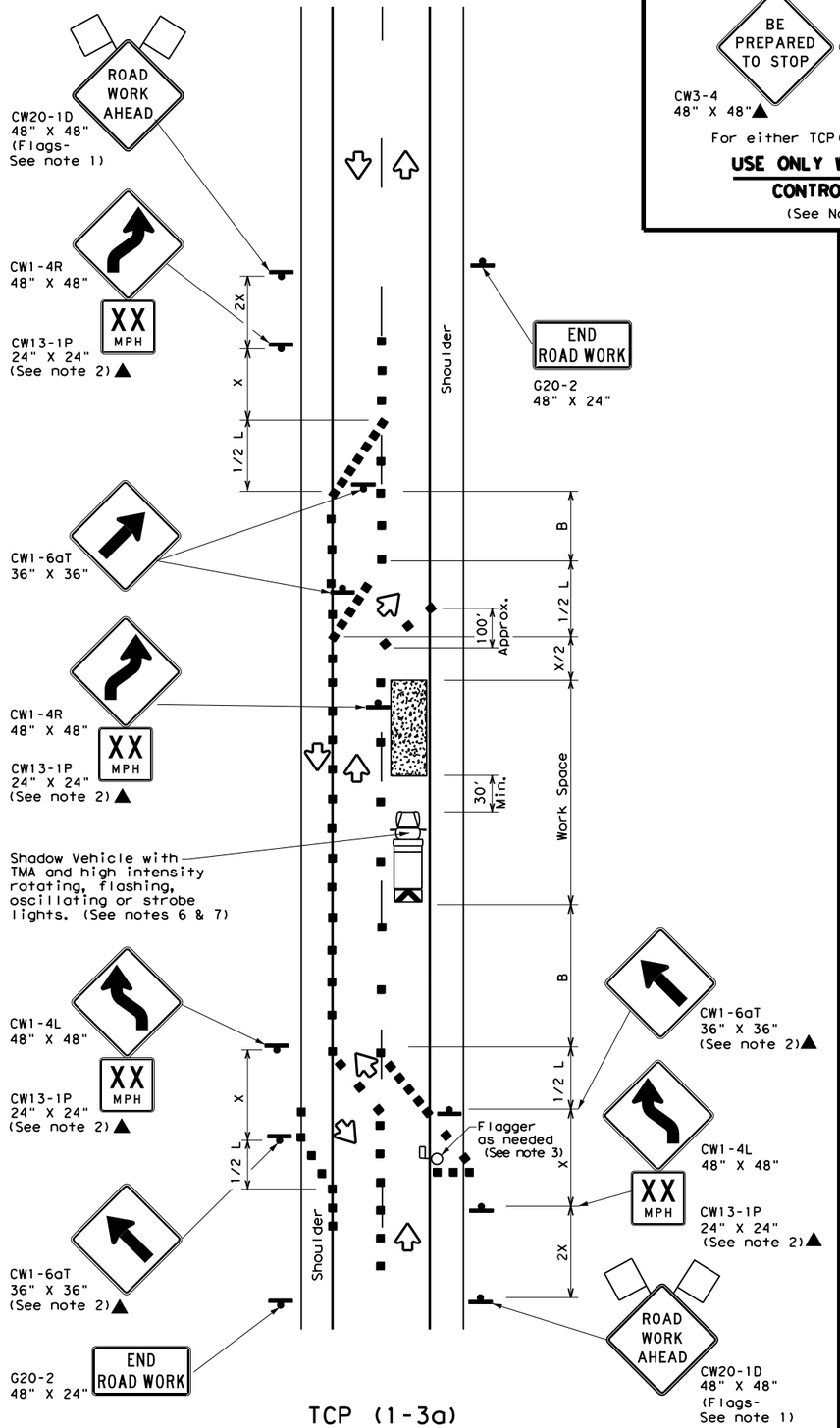
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-18

FILE: tcp1-2-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-90 4-98	0915	00	252	VARIOUS
2-94 2-12	DIST	COUNTY		SHEET NO.
1-97 2-18	SAT	BEXAR		37



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

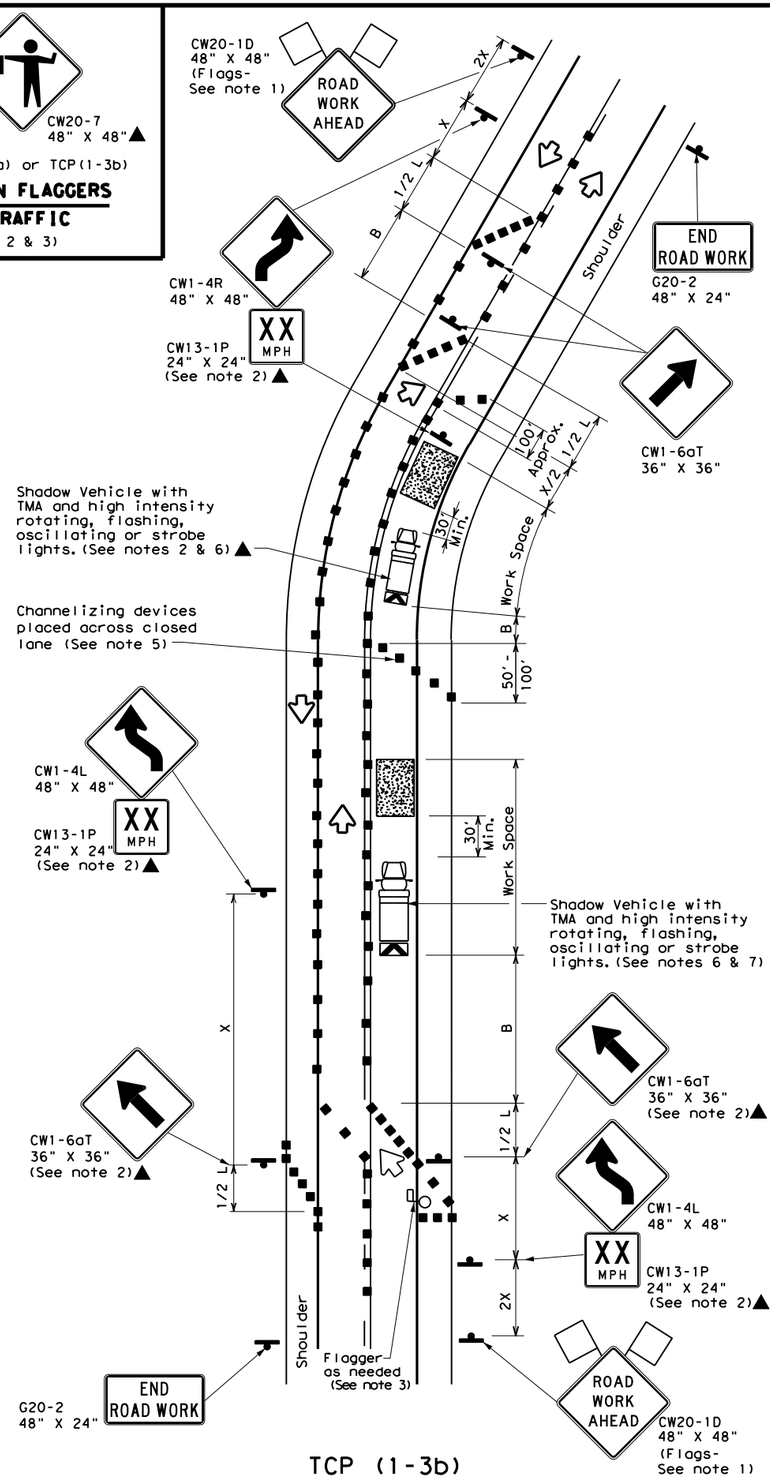
ONE LANE CLOSED
ADEQUATE FIELD OF VIEW

BE PREPARED TO STOP
CW3-4 48" X 48"
CW20-7 48" X 48"

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

USE ONLY WHEN FLAGGERS CONTROL TRAFFIC

(See Notes 2 & 3)



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

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	SAT	BEXAR		38
1-97 2-18				

153

DATE: 8/22/2023 8:47:30 PM
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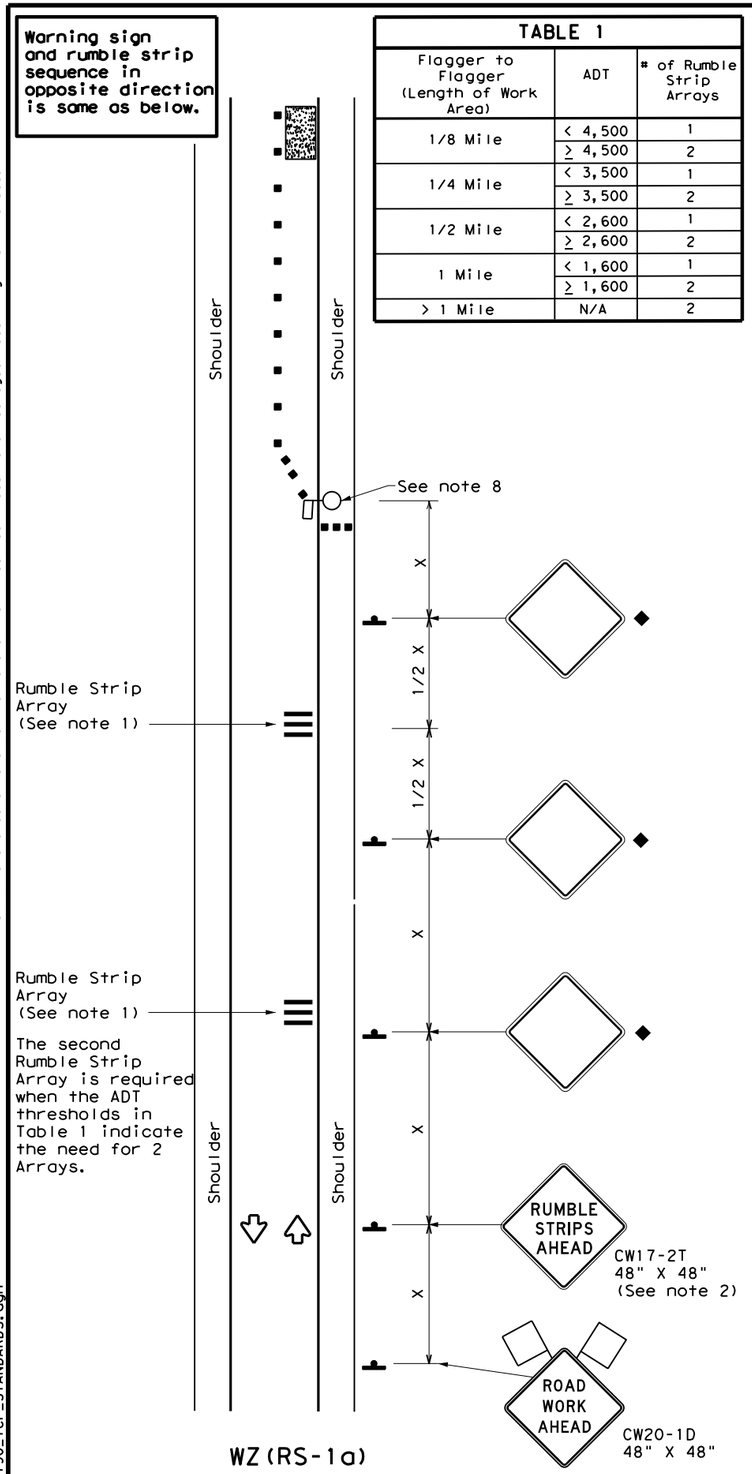
DATE: 8/22/2023 8:47:31 PM
FILE: ...\FM2790_TCP_STANDARDS.dgn

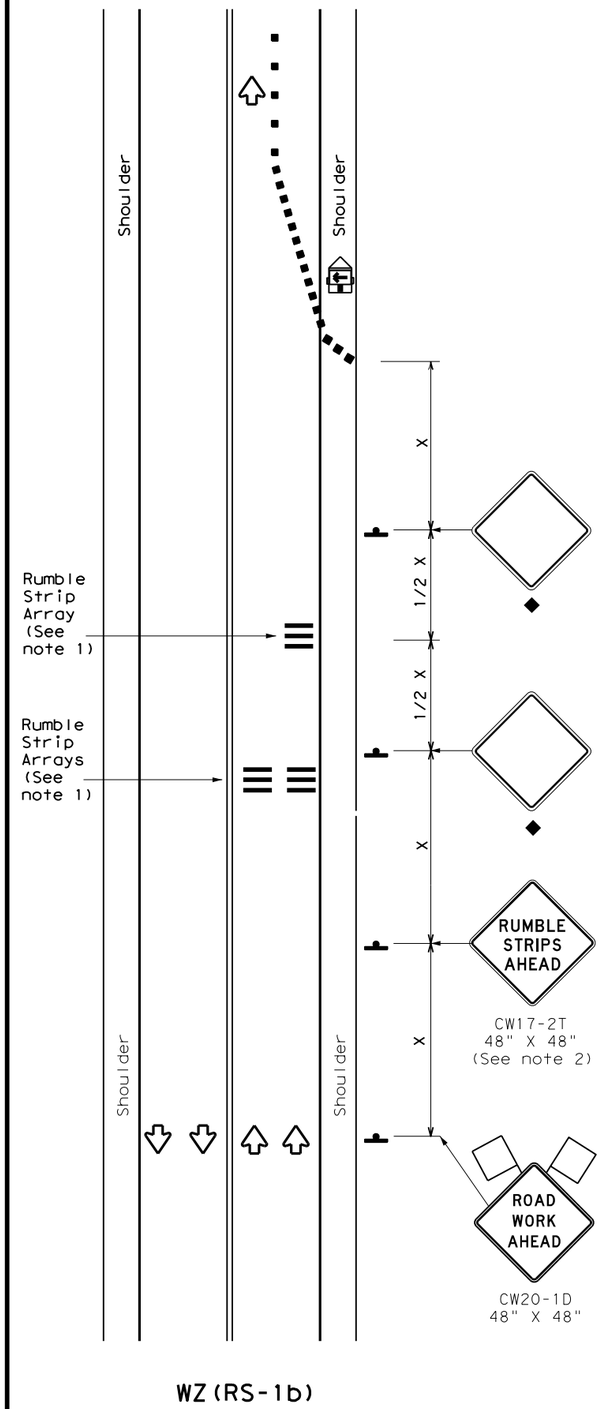
Warning sign and rumble strip sequence in opposite direction is same as below.

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



WZ(RS-1a)

RUMBLE STRIPS ON ONE-LANE TWO-WAY APPLICATION



WZ(RS-1b)

RUMBLE STRIPS FOR LANE CLOSURE ON CONVENTIONAL ROADWAY

GENERAL NOTES

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

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

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

* Conventional Roads Only

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

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

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

TEMPORARY RUMBLE STRIPS

WZ(RS)-22

FILE: wzrs22.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-14 1-22 4-16	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		39

DW: MBI | CK: MBI | DW: MBI | CK: MBI

HORIZONTAL ALIGNMENT REPORT

Alignment name: FM2790_CL
Alignment description:
Report Created: Monday, June 26, 2023
Time: 8:19:22 PM

	STATION	X	Y
POT	27421.976 R1	2030633.855	13634371.587
PC	28528.109 R1	2030513.594	13633272.011
Tangential Direction:		S6.242?W	
Tangential Length:		1106.133	

PC	28528.109 R1	2030513.594	13633272.011
PI	29096.775 R1	2030451.767	13632706.716
CC		2031951.832	13633114.710
PT	29611.767 R1	2030791.398	13632250.611
Radius:	1446.815		
Delta:	42.914? Left		
Degree of Curvature(Arc):		3.960?	
Length:	1083.658		
Tangent:	568.666		
Chord:	1058.505		
Middle Ordinate:		100.277	
External:	107.744		
Tangent Back Direction:		S6.242?W	
Radial Direction:		N83.758?W	
Chord Direction:		S15.215?E	
Radial Direction:		S53.327?W	
Tangent Ahead Direction:		S36.673?E	

PT	29611.767 R1	2030791.398	13632250.611
POT	30447.665 R1	2031290.632	13631580.170
Tangential Direction:		S36.673?E	
Tangential Length:		835.898	

HORIZONTAL ALIGNMENT REPORT

Alignment name: COTTAGE CL-
Alignment description:
Report Created: Monday, June 26, 2023
Time: 8:53:33 PM

	STATION	X	Y
POT	11000.000 R1	2030928.893	13632065.965
PC	11344.953 R1	2031229.246	13632235.612
Tangential Direction:		N60.541°E	
Tangential Length:		344.953	

PC	11344.953 R1	2031229.246	13632235.612
PI	11450.779 R1	2031321.390	13632287.658
CC		2027491.567	13638852.996
PT	11556.592 R1	2031412.049	13632342.249
Radius:	7600.000		
Delta:	1.596°Left		
Degree of Curvature(Arc):		0.754°	
Length:	211.639		
Tangent:	105.826		
Chord:	211.632		
Middle Ordinate:		0.737	
External:	0.737		
Tangent Back Direction:		N60.541°E	
Radial Direction:		S29.459°E	
Chord Direction:		N59.743°E	
Radial Direction:		S31.054°E	
Tangent Ahead Direction:		N58.946°E	

PT	11556.592 R1	2031412.049	13632342.249
POT	12470.468 R1	2032194.945	13632813.674
Tangential Direction:		N58.946°E	
Tangential Length:		913.876	

HORIZONTAL ALIGNMENT REPORT

Alignment name: PRAIRIE CL-
Alignment description:
Report Created: Monday, June 26, 2023
Time: 8:56:07 PM

	STATION	X	Y
POT	10000.000 R1	2031712.833	13633628.907
POT	11100.000 R1	2032272.766	13632682.083
Tangential Direction:		S30.599°E	
Tangential Length:		1100.000	

HORIZONTAL ALIGNMENT REPORT

Alignment name: LAREDO ST SB
Alignment description:
Report Created: Tuesday, June 27, 2023
Time: 1:53:29 AM

	STATION	X	Y
POT	25000.000 R1	2030255.097	13633126.991
POT	25250.017 R1	2030505.097	13633129.885
Tangential Direction:		N89.337°E	
Tangential Length:		250.017	

POT	25000.000 R1	2030255.097	13633126.991
POT	25250.017 R1	2030505.097	13633129.885
Tangential Direction:		N89.337°E	
Tangential Length:		250.017	

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE
HORIZONTAL ALIGNMENT REPORT & LAREDO CENTERLINE FM 2790, COTTAGE, PRAIRIE

SHEET 1 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		40

DATE: 8/22/2023 9:06:56 PM
FILE: ...\FM 2790_Cottage, Prairie & Laredo Centerline HORZ

DW: MBI CK: MBI DW: MBI CK: MBI

HORIZONTAL ALIGNMENT REPORT

Alignment name: BL_SDWNB
Alignment description:
Report Created: Monday, June 26, 2023
Time: 2:16:05 PM

STATION		X	Y
POT	228400.000 R1	2030571.037	13633394.247
PC	228527.745 R1	2030557.155	13633267.258
Tangential Direction:		S6.239°W	
Tangential Length:		127.745	
PC	228527.745 R1	2030557.155	13633267.258
PI	228571.940 R1	2030552.188	13633223.344
CC		2031930.164	13633111.976
PT	228616.104 R1	2030550.038	13633179.202
Radius:	1381.762		
Delta:	3.664°Left		
Degree of Curvature(Arc):	4.147°		
Length:	88.358		
Tangent:	44.194		
Chord:	88.343		
Middle Ordinate:	0.706		
External:	0.707		
Tangent Back Direction:	S6.453°W		
Radial Direction:	N83.547°W		
Chord Direction:	S4.621°W		
Radial Direction:	N87.211°W		
Tangent Ahead Direction:	S2.789°W		
PT	228616.104 R1	2030550.038	13633179.202
PI	228651.223 R1	2030527.259	13633152.473
Tangential Direction:		S40.439°W	
Tangential Length:		35.119	
PI	228651.223 R1	2030527.259	13633152.473
PI	228738.075 R1	2030529.730	13633065.656
Tangential Direction:		S1.631°E	
Tangential Length:		86.852	
PI	228738.075 R1	2030529.730	13633065.656
PI	228748.937 R1	2030540.588	13633065.965
Tangential Direction:		N88.369°E	
Tangential Length:		10.862	
PI	228748.937 R1	2030540.588	13633065.965
PC	228776.331 R1	2030550.260	13633040.335
Tangential Direction:		S20.676°E	
Tangential Length:		27.394	
PC	228776.331 R1	2030550.260	13633040.335
PI	228840.786 R1	2030553.602	13632975.967
CC		2031930.164	13633111.976
PT	228905.148 R1	2030562.922	13632912.189
Radius:	1381.762		
Delta:	5.341°Left		
Degree of Curvature(Arc):	4.147°		
Length:	128.816		
Tangent:	64.455		
Chord:	128.770		
Middle Ordinate:	1.501		
External:	1.502		
Tangent Back Direction:	S2.972°E		
Radial Direction:	S87.028°W		
Chord Direction:	S5.643°E		
Radial Direction:	S81.687°W		
Tangent Ahead Direction:	S8.313°E		
PT	228905.148 R1	2030562.922	13632912.189
PC	228920.484 R1	2030561.022	13632896.971
Tangential Direction:		S7.117°W	
Tangential Length:		15.336	
PC	228920.484 R1	2030561.022	13632896.971
PI	228952.065 R1	2030565.921	13632865.772
CC		2031930.164	13633111.977
PT	228983.636 R1	2030572.237	13632834.828
Radius:	1385.921		
Delta:	2.611°Left		
Degree of Curvature(Arc):	4.134°		
Length:	63.152		
Tangent:	31.582		
Chord:	63.147		
Middle Ordinate:	0.360		
External:	0.360		
Tangent Back Direction:	S8.925°E		
Radial Direction:	S81.075°W		
Chord Direction:	S10.230°E		
Radial Direction:	S78.465°W		
Tangent Ahead Direction:	S11.535°E		
PT	228983.636 R1	2030572.237	13632834.828
PC	228998.974 R1	2030579.337	13632821.233
Tangential Direction:		S27.576°E	
Tangential Length:		15.337	
PC	228998.974 R1	2030579.337	13632821.233
PI	229221.392 R1	2030626.137	13632603.795
CC		2031930.164	13633111.977
PT	229440.026 R1	2030738.806	13632412.025
Radius:	1381.762		
Delta:	18.289°Left		
Degree of Curvature(Arc):	4.147°		
Length:	441.053		
Tangent:	222.418		
Chord:	439.183		
Middle Ordinate:	17.560		
External:	17.786		
Tangent Back Direction:	S12.147°E		
Radial Direction:	S77.853°W		
Chord Direction:	S21.291°E		
Radial Direction:	S59.565°W		
Tangent Ahead Direction:	S30.435°E		
PT	229440.026 R1	2030738.806	13632412.025
PC	229455.793 R1	2030743.209	13632396.886
Tangential Direction:		S16.216°E	
Tangential Length:		15.767	
PC	229455.793 R1	2030743.209	13632396.886
PI	229521.633 R1	2030776.831	13632340.278
CC		2031951.901	13633114.785
PT	229587.376 R1	2030815.596	13632287.061
Radius:	1405.815		
Delta:	5.363°Left		
Degree of Curvature(Arc):	4.076°		
Length:	131.583		
Tangent:	65.840		
Chord:	131.535		
Middle Ordinate:	1.539		
External:	1.541		
Tangent Back Direction:	S30.708°E		
Radial Direction:	S59.292°W		
Chord Direction:	S33.389°E		
Radial Direction:	S53.929°W		
Tangent Ahead Direction:	S36.071°E		
PT	229587.376 R1	2030815.596	13632287.061
PI	229603.442 R1	2030828.752	13632277.839
Tangential Direction:		S54.970°E	
Tangential Length:		16.066	
PI	229603.442 R1	2030828.752	13632277.839
PI	229660.050 R1	2030862.387	13632232.306
Tangential Direction:		S36.453°E	
Tangential Length:		56.608	

DATE: 8/22/2023 9:07:18 PM
FILE: ...\FM 2790_NB_HORZ_01

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
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Phone: (210) 408-3700
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TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT
FM 2790_NB

SHEET 2 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		41

PI	229660.050 R1	2030862.387	13632232.306
PI	229675.123 R1	2030869.566	13632219.053
Tangential Direction:		S28.444°E	
Tangential Length:		15.073	
PI	229675.123 R1	2030869.566	13632219.053
PI	229717.629 R1	2030894.821	13632184.864
Tangential Direction:		S36.453°E	
Tangential Length:		42.506	
PI	229717.629 R1	2030894.821	13632184.864
PI	229732.874 R1	2030905.482	13632173.966
Tangential Direction:		S44.371°E	
Tangential Length:		15.245	
PI	229732.874 R1	2030905.482	13632173.966
PI	229795.380 R1	2030942.621	13632123.690
Tangential Direction:		S36.453°E	
Tangential Length:		62.506	
PI	229795.380 R1	2030942.621	13632123.690
PI	229805.888 R1	2030946.191	13632113.808
Tangential Direction:		S19.864°E	
Tangential Length:		10.507	
PI	229805.888 R1	2030946.191	13632113.808
PI	229822.632 R1	2030956.140	13632100.339
Tangential Direction:		S36.453°E	
Tangential Length:		16.745	
PI	229822.632 R1	2030956.140	13632100.339
PI	229858.843 R1	2030978.523	13632071.875
Tangential Direction:		S38.180°E	
Tangential Length:		36.210	
PI	229858.843 R1	2030978.523	13632071.875
PI	229894.147 R1	2030999.607	13632043.558
Tangential Direction:		S36.670°E	
Tangential Length:		35.305	
PI	229894.147 R1	2030999.607	13632043.558
PI	229909.218 R1	2031009.993	13632032.636
Tangential Direction:		S43.558°E	
Tangential Length:		15.071	
PI	229909.218 R1	2031009.993	13632032.636
PI	229991.077 R1	2031058.802	13631966.920
Tangential Direction:		S36.603°E	
Tangential Length:		81.859	
PI	229991.077 R1	2031058.802	13631966.920
PI	230006.128 R1	2031066.789	13631954.164
Tangential Direction:		S32.052°E	
Tangential Length:		15.051	
PI	230006.128 R1	2031066.789	13631954.164
PI	230011.366 R1	2031069.918	13631949.962
Tangential Direction:		S36.670°E	
Tangential Length:		5.238	
PI	230011.366 R1	2031069.918	13631949.962
PI	230026.411 R1	2031079.818	13631938.634
Tangential Direction:		S41.151°E	
Tangential Length:		15.044	
PI	230026.411 R1	2031079.818	13631938.634
POT	230323.042 R1	2031256.727	13631700.530
Tangential Direction:		S36.612°E	
Tangential Length:		296.632	

DATE: 8/22/2023 9:07:33 PM
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DW: MBI CK: MBI DW: MBI CK: MBI

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO.	DATE	REVISION	APPROVED

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TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT
FM 2790_NB

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		42

CK: MBI
DW: MBI
CK: MBI
DW: MBI

VERTICAL ALIGNMENT REPORT

Alignment name: BL_SDWSB
Alignment description:
Report Created: Monday, June 26, 2023
Time: 9:50:19 PM

	STATION		ELEVATION
POT	228741.070	R1	721.402
VPC	228763.646	R1	721.528
Tangent Grade:	0.006		
Tangent Length:	22.576		
VPC	228763.646	R1	721.528
VPI	228781.730	R1	721.629
VPT	228799.813	R1	721.245
VHP	228771.165	R1	721.549
Length:	36.167		
Entrance Grade:	0.006		
Exit Grade:	-0.021		
K Value =:	13.495		
Middle Ordinate (E):	-0.121		
VPT	228799.813	R1	721.245
VPC	228820.000	R1	720.816
Tangent Grade:	-0.021		
Tangent Length:	20.187		
VPC	228820.000	R1	720.816
VPI	228845.000	R1	720.285
VPT	228870.000	R1	720.035
Length:	50.000		
Entrance Grade:	-0.021		
Exit Grade:	-0.010		
K Value =:	44.529		
Middle Ordinate (E):	0.070		
VPT	228870.000	R1	720.035
VPI	228880.510	R1	719.930
Tangent Grade:	-0.010		
Tangent Length:	10.510		
VPI	228880.510	R1	719.930
VPI	228904.510	R1	719.930
Tangent Grade:	0.000		
Tangent Length:	24.000		
VPI	228904.510	R1	719.930
VPC	228918.000	R1	719.795
Tangent Grade:	-0.010		
Tangent Length:	13.490		
VPC	228918.000	R1	719.795
VPI	228938.000	R1	719.595
VPT	228958.000	R1	719.498
Length:	40.000		
Entrance Grade:	-0.010		
Exit Grade:	-0.005		
K Value =:	78.204		
Middle Ordinate (E):	0.026		
VPT	228958.000	R1	719.498
VPC	228979.030	R1	719.395
Tangent Grade:	-0.005		
Tangent Length:	21.030		
VPC	228979.030	R1	719.395
VPI	229004.030	R1	719.273
VPT	229029.030	R1	718.939
Length:	50.000		
Entrance Grade:	-0.005		
Exit Grade:	-0.013		
K Value =:	58.989		
Middle Ordinate (E):	-0.053		
VPT	229029.030	R1	718.939
VPC	229268.515	R1	715.739
Tangent Grade:	-0.013		
Tangent Length:	239.485		
VPC	229268.515	R1	715.739
VPI	229293.515	R1	715.405
VPT	229318.515	R1	715.330
Length:	50.000		
Entrance Grade:	-0.013		
Exit Grade:	-0.003		
K Value =:	48.256		
Middle Ordinate (E):	0.065		
VPT	229318.515	R1	715.330
VPC	229325.000	R1	715.311
Tangent Grade:	-0.003		
Tangent Length:	6.485		
VPC	229325.000	R1	715.311
VPI	229350.000	R1	715.236
VPT	229375.000	R1	714.990
Length:	50.000		
Entrance Grade:	-0.003		
Exit Grade:	-0.010		
K Value =:	73.321		
Middle Ordinate (E):	-0.043		
VPT	229375.000	R1	714.990
VPC	229405.000	R1	714.695
Tangent Grade:	-0.010		
Tangent Length:	30.000		
VPC	229405.000	R1	714.695
VPI	229430.000	R1	714.450
VPT	229455.000	R1	714.655
VLP	229432.275	R1	714.562
Length:	50.000		
Entrance Grade:	-0.010		
Exit Grade:	0.008		
K Value =:	27.777		
Middle Ordinate (E):	0.113		
VPT	229455.000	R1	714.655
VPI	229482.216	R1	714.877
Tangent Grade:	0.008		
Tangent Length:	27.216		
VPI	229482.216	R1	714.877
VPI	229506.216	R1	714.877
Tangent Grade:	0.000		
Tangent Length:	24.000		
VPI	229506.216	R1	714.877
VPC	229575.000	R1	714.533
Tangent Grade:	-0.005		
Tangent Length:	68.784		
VPC	229575.000	R1	714.533
VPI	229600.000	R1	714.408
VPT	229625.000	R1	714.773
VLP	229587.761	R1	714.501
Length:	50.000		
Entrance Grade:	-0.005		
Exit Grade:	0.015		
K Value =:	25.523		
Middle Ordinate (E):	0.122		
VPT	229625.000	R1	714.773
VPC	229705.000	R1	715.940
Tangent Grade:	0.015		
Tangent Length:	80.000		
VPC	229705.000	R1	715.940
VPI	229730.000	R1	716.305
VPT	229755.000	R1	716.410
Length:	50.000		
Entrance Grade:	0.015		
Exit Grade:	0.004		
K Value =:	48.056		
Middle Ordinate (E):	-0.065		
VPT	229755.000	R1	716.410
VPC	229770.170	R1	716.473
Tangent Grade:	0.004		
Tangent Length:	15.170		
VPC	229770.170	R1	716.473
VPI	229780.170	R1	716.515
VPT	229790.170	R1	716.280
VHP	229773.192	R1	716.479
Length:	20.000		
Entrance Grade:	0.004		
Exit Grade:	-0.024		
K Value =:	7.220		
Middle Ordinate (E):	-0.069		
VPT	229790.170	R1	716.280
VPI	229809.930	R1	715.815
Tangent Grade:	-0.024		
Tangent Length:	19.760		
VPI	229809.930	R1	715.815
VPI	229814.930	R1	715.740
Tangent Grade:	-0.015		
Tangent Length:	5.000		
VPI	229814.930	R1	715.740
VPI	229821.370	R1	715.895
Tangent Grade:	0.024		
Tangent Length:	6.440		
VPI	229821.370	R1	715.895
VPI	229859.790	R1	716.004
Tangent Grade:	0.003		
Tangent Length:	38.420		
VPI	229859.790	R1	716.004
VPI	229866.130	R1	716.023
Tangent Grade:	0.003		
Tangent Length:	6.340		
VPI	229866.130	R1	716.023
VPI	229872.130	R1	716.113
Tangent Grade:	0.015		
Tangent Length:	6.000		
VPI	229872.130	R1	716.113
VPC	229896.142	R1	717.272
Tangent Grade:	0.048		
Tangent Length:	24.012		
VPC	229896.142	R1	717.272
VPI	229906.142	R1	717.755
VPT	229916.142	R1	717.843
Length:	20.000		
Entrance Grade:	0.048		
Exit Grade:	0.009		
K Value =:	5.067		
Middle Ordinate (E):	-0.099		
VPT	229916.142	R1	717.843
VPC	229986.661	R1	718.465
Tangent Grade:	0.009		
Tangent Length:	70.519		
VPC	229986.661	R1	718.465
VPI	230011.661	R1	718.685
VPT	230036.661	R1	718.781
Length:	50.000		
Entrance Grade:	0.009		
Exit Grade:	0.004		
K Value =:	100.390		
Middle Ordinate (E):	-0.031		
VPT	230036.661	R1	718.781
VPC	230077.974	R1	718.939
Tangent Grade:	0.004		
Tangent Length:	41.313		
VPC	230077.974	R1	718.939
VPI	230102.974	R1	719.035
VPT	230127.974	R1	718.835
VHP	230094.176	R1	718.970
Length:	50.000		
Entrance Grade:	0.004		
Exit Grade:	-0.008		
K Value =:	42.270		
Middle Ordinate (E):	-0.074		
VPT	230127.974	R1	718.835
VPC	230128.000	R1	718.835
Tangent Grade:	-0.008		
Tangent Length:	0.026		
VPC	230128.000	R1	718.835
VPI	230153.000	R1	718.635
VPT	230178.000	R1	718.169
Length:	50.000		
Entrance Grade:	-0.008		
Exit Grade:	-0.019		
K Value =:	47.048		
Middle Ordinate (E):	-0.066		
VPT	230178.000	R1	718.169
POT	230182.962	R1	718.077
Tangent Grade:	-0.019		
Tangent Length:	4.962		

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STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

VERTICAL ALIGNMENT REPORT
FM 2790_NB

SHEET 4 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		43

DW: MBI | CK: MBI | DW: MBI | CK: MBI

HORIZONTAL ALIGNMENT REPORT

Alignment name: BL_SUPSB
Alignment description:
Report Created: Tuesday, June 27, 2023
Time: 2:09:57 AM

	STATION	X	Y
POT	127700.000 R1	2030566.676	13634099.256
PC	127908.376 R1	2030544.200	13633892.096
Tangential Direction:		S6.192°W	
Tangential Length:		208.376	
PC	127908.376 R1	2030544.200	13633892.096
PI	127911.865 R1	2030543.824	13633888.627
CC		2030503.439	13633896.518
PT	127915.337 R1	2030542.867	13633885.272
Radius:	41.000		
Delta:	9.728°Right		
Degree of Curvature(Arc):		139.746°	
Length:	6.961		
Tangent:	3.489		
Chord:	6.953		
Middle Ordinate:	0.148		
External:	0.148		
Tangent Back Direction:		S6.192°W	
Radial Direction:	N83.808°W		
Chord Direction:	S11.056°W		
Radial Direction:	N74.080°W		
Tangent Ahead Direction:		S15.920°W	
PT	127915.337 R1	2030542.867	13633885.272
PC	127929.666 R1	2030538.936	13633871.493
Tangential Direction:		S15.920°W	
Tangential Length:		14.329	
PC	127929.666 R1	2030538.936	13633871.493
PI	127933.155 R1	2030537.979	13633868.138
CC		2030578.364	13633860.247
PT	127936.627 R1	2030537.603	13633864.670
Radius:	41.000		
Delta:	9.728°Left		
Degree of Curvature(Arc):		139.746°	
Length:	6.961		
Tangent:	3.489		
Chord:	6.953		
Middle Ordinate:	0.148		
External:	0.148		
Tangent Back Direction:		S15.920°W	
Radial Direction:	N74.080°W		
Chord Direction:	S11.056°W		
Radial Direction:	N83.808°W		
Tangent Ahead Direction:		S6.192°W	
PT	127936.627 R1	2030537.603	13633864.670
PC	128551.932 R1	2030471.234	13633252.954
Tangential Direction:		S6.192°W	
Tangential Length:		615.305	
PC	128551.932 R1	2030471.234	13633252.954
PI	128694.629 R1	2030455.843	13633111.090
CC		2031858.095	13633102.485
PCC	128836.337 R1	2030469.492	13632969.047
Radius:	1395.000		
Delta:	11.681°Left		
Degree of Curvature(Arc):		4.107°	
Length:	284.404		
Tangent:	142.697		
Chord:	283.912		
Middle Ordinate:	7.242		
External:	7.279		
Tangent Back Direction:		S6.192°W	
Radial Direction:	N83.808°W		
Chord Direction:	S0.352°W		
Radial Direction:	S84.511°W		
Tangent Ahead Direction:		S5.489°E	
PCC	128836.337 R1	2030469.492	13632969.047
PI	128838.362 R1	2030469.686	13632967.031
CC		2030510.304	13632972.969
PCC	128840.385 R1	2030470.077	13632965.043
Radius:	41.000		
Delta:	5.658°Left		
Degree of Curvature(Arc):		139.746°	
Length:	4.048		
Tangent:	2.026		
Chord:	4.047		
Middle Ordinate:	0.050		
External:	0.050		
Tangent Back Direction:		S5.489°E	
Radial Direction:	S84.511°W		
Chord Direction:	S8.318°E		
Radial Direction:	S78.854°W		
Tangent Ahead Direction:		S11.146°E	
PCC	128840.385 R1	2030470.077	13632965.043
PI	128844.426 R1	2030470.859	13632961.079
CC		2031844.484	13633235.849
PRC	128848.466 R1	2030471.663	13632957.119
Radius:	1400.831		
Delta:	0.331°Left		
Degree of Curvature(Arc):		4.090°	
Length:	8.081		
Tangent:	4.041		
Chord:	8.081		
Middle Ordinate:	0.006		
External:	0.006		
Tangent Back Direction:		S11.146°E	
Radial Direction:	S78.854°W		
Chord Direction:	S11.312°E		
Radial Direction:	S78.523°W		
Tangent Ahead Direction:		S11.477°E	
PRC	128848.466 R1	2030471.663	13632957.119
PI	128850.376 R1	2030472.043	13632955.247
CC		2030431.482	13632948.961
PRC	128852.284 R1	2030472.247	13632953.348
Radius:	41.000		
Delta:	5.335°Right		
Degree of Curvature(Arc):		139.746°	
Length:	3.818		
Tangent:	1.910		
Chord:	3.816		
Middle Ordinate:	0.044		
External:	0.044		
Tangent Back Direction:		S11.477°E	
Radial Direction:	S78.523°W		
Chord Direction:	S8.810°E		
Radial Direction:	S83.858°W		
Tangent Ahead Direction:		S6.142°E	
PRC	128852.284 R1	2030472.247	13632953.348
PI	128855.594 R1	2030472.601	13632950.056
CC		2031858.095	13633102.485
PRC	128858.905 R1	2030472.971	13632946.766
Radius:	1393.850		
Delta:	0.272°Left		
Degree of Curvature(Arc):		4.111°	
Length:	6.622		
Tangent:	3.311		
Chord:	6.622		
Middle Ordinate:	0.004		
External:	0.004		
Tangent Back Direction:		S6.142°E	
Radial Direction:	S83.858°W		
Chord Direction:	S6.278°E		
Radial Direction:	S83.586°W		
Tangent Ahead Direction:		S6.414°E	

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STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
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8/22/2023

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TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT
FM 2790_SB

SHEET 5 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		44

DSN: MBI | DW: MBI | CK: MBI | CK: MBI

PRC 128858.905 R1 2030472.971 13632946.766
PI 128860.816 R1 2030473.185 13632944.868
CC 2030432.228 13632942.185
PRC 128862.723 R1 2030473.221 13632942.958
Radius: 41.000
Delta: 5.335°Right
Degree of Curvature(Arc): 139.746°
Length: 3.818
Tangent: 1.910
Chord: 3.816
Middle Ordinate: 0.044
External: 0.044
Tangent Back Direction: S6.414°E
Radial Direction: S83.586°W
Chord Direction: S3.747°E
Radial Direction: S88.920°W
Tangent Ahead Direction: S1.080°E

PRC 128862.723 R1 2030473.221 13632942.958
PI 128866.763 R1 2030473.297 13632938.918
CC 2031873.803 13632969.352
PCC 128870.804 R1 2030473.396 13632934.879
Radius: 1400.831
Delta: 0.331°Left
Degree of Curvature(Arc): 4.090°
Length: 8.081
Tangent: 4.041
Chord: 8.081
Middle Ordinate: 0.006
External: 0.006
Tangent Back Direction: S1.080°E
Radial Direction: S88.920°W
Chord Direction: S1.245°E
Radial Direction: S88.590°W
Tangent Ahead Direction: S1.410°E

PCC 128870.804 R1 2030473.396 13632934.879
PI 128872.830 R1 2030473.446 13632932.854
CC 2030514.384 13632935.888
PCC 128874.852 R1 2030473.695 13632930.843
Radius: 41.000
Delta: 5.658°Left
Degree of Curvature(Arc): 139.746°
Length: 4.048
Tangent: 2.026
Chord: 4.047
Middle Ordinate: 0.050
External: 0.050
Tangent Back Direction: S1.410°E
Radial Direction: S88.590°W
Chord Direction: S4.239°E
Radial Direction: S82.932°W
Tangent Ahead Direction: S7.068°E

PCC 128874.852 R1 2030473.695 13632930.843
PI 128900.871 R1 2030476.896 13632905.023
CC 2031858.095 13633102.485
PCC 128926.883 R1 2030481.058 13632879.339
Radius: 1395.000
Delta: 2.137°Left
Degree of Curvature(Arc): 4.107°
Length: 52.030
Tangent: 26.018
Chord: 52.027
Middle Ordinate: 0.243
External: 0.243
Tangent Back Direction: S7.068°E
Radial Direction: S82.932°W
Chord Direction: S8.136°E
Radial Direction: S80.795°W
Tangent Ahead Direction: S9.205°E

PCC 128926.883 R1 2030481.058 13632879.339
PI 128940.887 R1 2030483.299 13632865.516
CC 2031939.844 13633115.732
PCC 128954.890 R1 2030485.800 13632851.737
Radius: 1477.815
Delta: 1.086°Left
Degree of Curvature(Arc): 3.877°
Length: 28.007
Tangent: 14.004
Chord: 28.007
Middle Ordinate: 0.066
External: 0.066
Tangent Back Direction: S9.205°E
Radial Direction: S80.795°W
Chord Direction: S9.748°E
Radial Direction: S79.710°W
Tangent Ahead Direction: S10.290°E

PCC 128954.890 R1 2030485.800 13632851.737
PI 128955.869 R1 2030485.975 13632850.774
CC 2030526.141 13632859.061
PCC 128956.847 R1 2030486.196 13632849.820
Radius: 41.000
Delta: 2.735°Left
Degree of Curvature(Arc): 139.746°
Length: 1.957
Tangent: 0.979
Chord: 1.957
Middle Ordinate: 0.012
External: 0.012
Tangent Back Direction: S10.290°E
Radial Direction: S79.710°W
Chord Direction: S11.658°E
Radial Direction: S76.974°W
Tangent Ahead Direction: S13.026°E

PCC 128956.847 R1 2030486.196 13632849.820
PI 128960.385 R1 2030486.993 13632846.373
CC 2031927.329 13633183.211
PRC 128963.923 R1 2030487.807 13632842.930
Radius: 1479.194
Delta: 0.274°Left
Degree of Curvature(Arc): 3.873°
Length: 7.076
Tangent: 3.538
Chord: 7.076
Middle Ordinate: 0.004
External: 0.004
Tangent Back Direction: S13.026°E
Radial Direction: S76.974°W
Chord Direction: S13.163°E
Radial Direction: S76.700°W
Tangent Ahead Direction: S13.300°E

PRC 128963.923 R1 2030487.807 13632842.930
PI 128964.849 R1 2030488.020 13632842.029
CC 2030447.907 13632833.498
PRC 128965.775 R1 2030488.192 13632841.119
Radius: 41.000
Delta: 2.587°Right
Degree of Curvature(Arc): 139.746°
Length: 1.852
Tangent: 0.926
Chord: 1.851
Middle Ordinate: 0.010
External: 0.010
Tangent Back Direction: S13.300°E
Radial Direction: S76.700°W
Chord Direction: S12.006°E
Radial Direction: S79.288°W
Tangent Ahead Direction: S10.712°E

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT
FM 2790_SB

SHEET 6 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		45

DATE: 8/22/2023 9:08:43 PM
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DW: MBI | CK: MBI | DW: MBI | CK: MBI

PRC	128965.775 R1	2030488.192	13632841.119
PI	128969.948 R1	2030488.968	13632837.019
CC		2031939.844	13633115.732
PRC	128974.120 R1	2030489.766	13632832.923
Radius:	1477.398		
Delta:	0.324°Left		
Degree of Curvature(Arc):	3.878°		
Length:	8.346		
Tangent:	4.173		
Chord:	8.346		
Middle Ordinate:	0.006		
External:	0.006		
Tangent Back Direction:	S10.712°E		
Radial Direction:	S79.288°W		
Chord Direction:	S10.874°E		
Radial Direction:	S78.964°W		
Tangent Ahead Direction:	S11.036°E		

PRC	128974.120 R1	2030489.766	13632832.923
PI	128975.046 R1	2030489.944	13632832.015
CC		2030449.525	13632825.075
PRC	128975.972 R1	2030490.080	13632831.099
Radius:	41.000		
Delta:	2.587°Right		
Degree of Curvature(Arc):	139.746°		
Length:	1.852		
Tangent:	0.926		
Chord:	1.851		
Middle Ordinate:	0.010		
External:	0.010		
Tangent Back Direction:	S11.036°E		
Radial Direction:	S78.964°W		
Chord Direction:	S9.742°E		
Radial Direction:	S81.552°W		
Tangent Ahead Direction:	S8.448°E		

PRC	128975.972 R1	2030490.080	13632831.099
PI	128979.510 R1	2030490.600	13632827.599
CC		2031953.223	13633048.419
PCC	128983.048 R1	2030491.136	13632824.102
Radius:	1479.194		
Delta:	0.274°Left		
Degree of Curvature(Arc):	3.873°		
Length:	7.076		
Tangent:	3.538		
Chord:	7.076		
Middle Ordinate:	0.004		
External:	0.004		
Tangent Back Direction:	S8.448°E		
Radial Direction:	S81.552°W		
Chord Direction:	S8.585°E		
Radial Direction:	S81.278°W		
Tangent Ahead Direction:	S8.722°E		

PCC	128983.048 R1	2030491.136	13632824.102
PI	128984.027 R1	2030491.284	13632823.135
CC		2030531.662	13632830.320
PCC	128985.005 R1	2030491.479	13632822.175
Radius:	41.000		
Delta:	2.735°Left		
Degree of Curvature(Arc):	139.746°		
Length:	1.957		
Tangent:	0.979		
Chord:	1.957		
Middle Ordinate:	0.012		
External:	0.012		
Tangent Back Direction:	S8.722°E		
Radial Direction:	S81.278°W		
Chord Direction:	S10.090°E		
Radial Direction:	S78.542°W		
Tangent Ahead Direction:	S11.458°E		

PCC	128985.005 R1	2030491.479	13632822.175
PI	129136.587 R1	2030521.589	13632673.615
CC		2031939.844	13633115.732
PCC	129287.112 R1	2030581.232	13632534.260
Radius:	1477.815		
Delta:	11.713°Left		
Degree of Curvature(Arc):	3.877°		
Length:	302.107		
Tangent:	151.582		
Chord:	301.581		
Middle Ordinate:	7.713		
External:	7.754		
Tangent Back Direction:	S11.458°E		
Radial Direction:	S78.542°W		
Chord Direction:	S17.314°E		
Radial Direction:	S66.830°W		
Tangent Ahead Direction:	S23.170°E		

PCC	129287.112 R1	2030581.232	13632534.260
PI	129289.670 R1	2030582.238	13632531.908
CC		2030618.925	13632550.392
PCC	129292.221 R1	2030583.530	13632529.700
Radius:	41.000		
Delta:	7.141°Left		
Degree of Curvature(Arc):	139.746°		
Length:	5.110		
Tangent:	2.558		
Chord:	5.106		
Middle Ordinate:	0.080		
External:	0.080		
Tangent Back Direction:	S23.170°E		
Radial Direction:	S66.830°W		
Chord Direction:	S26.741°E		
Radial Direction:	S59.689°W		
Tangent Ahead Direction:	S30.311°E		

PCC	129292.221 R1	2030583.530	13632529.700
PI	129296.764 R1	2030585.822	13632525.778
CC		2031867.979	13633280.600
PRC	129301.307 R1	2030588.139	13632521.870
Radius:	1487.838		
Delta:	0.350°Left		
Degree of Curvature(Arc):	3.851°		
Length:	9.085		
Tangent:	4.543		
Chord:	9.085		
Middle Ordinate:	0.007		
External:	0.007		
Tangent Back Direction:	S30.311°E		
Radial Direction:	S59.689°W		
Chord Direction:	S30.486°E		
Radial Direction:	S59.339°W		
Tangent Ahead Direction:	S30.661°E		

PRC	129301.307 R1	2030588.139	13632521.870
PI	129303.727 R1	2030589.373	13632519.788
CC		2030552.871	13632500.962
PRC	129306.141 R1	2030590.353	13632517.576
Radius:	41.000		
Delta:	6.756°Right		
Degree of Curvature(Arc):	139.746°		
Length:	4.834		
Tangent:	2.420		
Chord:	4.831		
Middle Ordinate:	0.071		
External:	0.071		
Tangent Back Direction:	S30.661°E		
Radial Direction:	S59.339°W		
Chord Direction:	S27.283°E		
Radial Direction:	S66.095°W		
Tangent Ahead Direction:	S23.905°E		

STATE OF TEXAS
ROGER F. SORENSON
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FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT
FM 2790_SB

SHEET 7 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		46

DATE: 8/22/2023 9:08:58 PM
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PRC	129306.141 R1	2030590.353	13632517.576
PI	129313.990 R1	2030593.534	13632510.401
CC		2031939.844	13633115.732
PRC	129321.838 R1	2030596.791	13632503.259

Radius: 1476.115
Delta: 0.609°Left
Degree of Curvature(Arc): 3.882°
Length: 15.697
Tangent: 7.849
Chord: 15.697
Middle Ordinate: 0.021
External: 0.021
Tangent Back Direction: S23.905°E
Radial Direction: S66.095°W
Chord Direction: S24.210°E
Radial Direction: S65.486°W
Tangent Ahead Direction: S24.514°E

PRC	129321.838 R1	2030596.791	13632503.259
PI	129324.258 R1	2030597.795	13632501.058
CC		2030559.486	13632486.248
PRC	129326.673 R1	2030598.533	13632498.753

Radius: 41.000
Delta: 6.756°Right
Degree of Curvature(Arc): 139.746°
Length: 4.834
Tangent: 2.420
Chord: 4.831
Middle Ordinate: 0.071
External: 0.071
Tangent Back Direction: S24.514°E
Radial Direction: S65.486°W
Chord Direction: S21.137°E
Radial Direction: S72.241°W
Tangent Ahead Direction: S17.759°E

PRC	129326.673 R1	2030598.533	13632498.753
PI	129331.215 R1	2030599.918	13632494.427
CC		2032015.475	13632952.557
PCC	129335.758 R1	2030601.330	13632490.109

Radius: 1487.838
Delta: 0.350°Left
Degree of Curvature(Arc): 3.851°
Length: 9.085
Tangent: 4.543
Chord: 9.085
Middle Ordinate: 0.007
External: 0.007
Tangent Back Direction: S17.759°E
Radial Direction: S72.241°W
Chord Direction: S17.934°E
Radial Direction: S71.891°W
Tangent Ahead Direction: S18.109°E

PCC	129335.758 R1	2030601.330	13632490.109
PI	129338.316 R1	2030602.125	13632487.678
CC		2030640.300	13632502.853
PCC	129340.868 R1	2030603.217	13632485.364

Radius: 41.000
Delta: 7.141°Left
Degree of Curvature(Arc): 139.746°
Length: 5.110
Tangent: 2.558
Chord: 5.106
Middle Ordinate: 0.080
External: 0.080
Tangent Back Direction: S18.109°E
Radial Direction: S71.891°W
Chord Direction: S21.679°E
Radial Direction: S64.751°W
Tangent Ahead Direction: S25.249°E

PCC	129340.868 R1	2030603.217	13632485.364
PI	129471.620 R1	2030658.989	13632367.104
CC		2031939.844	13633115.732
PT	129601.692 R1	2030734.659	13632260.474

Radius: 1477.815
Delta: 10.112°Left
Degree of Curvature(Arc): 3.877°
Length: 260.824
Tangent: 130.752
Chord: 260.486
Middle Ordinate: 5.750
External: 5.773
Tangent Back Direction: S25.249°E
Radial Direction: S64.751°W
Chord Direction: S30.305°E
Radial Direction: S54.639°W
Tangent Ahead Direction: S35.361°E

PT	129601.692 R1	2030734.610	13632260.542
PC	129729.462 R1	2030810.306	13632157.610

Tangential Direction: S36.331°E
Tangential Length: 127.770

PC	129729.462 R1	2030810.306	13632157.610
PI	129733.521 R1	2030812.712	13632154.339
CC		2030843.336	13632181.900
PT	129737.555 R1	2030815.712	13632151.604

Radius: 41.000
Delta: 11.310°Left
Degree of Curvature(Arc): 139.746°
Length: 8.093
Tangent: 4.060
Chord: 8.080
Middle Ordinate: 0.200
External: 0.201
Tangent Back Direction: S36.331°E
Radial Direction: S53.669°W
Chord Direction: S41.986°E
Radial Direction: S42.359°W
Tangent Ahead Direction: S47.641°E

PT	129737.555 R1	2030815.712	13632151.604
PC	129760.029 R1	2030832.319	13632136.461

Tangential Direction: S47.641°E
Tangential Length: 22.475

PC	129760.029 R1	2030832.319	13632136.461
PI	129764.089 R1	2030835.319	13632133.725
CC		2030804.694	13632106.165
PT	129768.123 R1	2030837.724	13632130.455

Radius: 41.000
Delta: 11.310°Right
Degree of Curvature(Arc): 139.746°
Length: 8.093
Tangent: 4.060
Chord: 8.080
Middle Ordinate: 0.200
External: 0.201
Tangent Back Direction: S47.641°E
Radial Direction: S42.359°W
Chord Direction: S41.986°E
Radial Direction: S53.669°W
Tangent Ahead Direction: S36.331°E

PT	129768.123 R1	2030837.724	13632130.455
PC	129918.884 R1	2030927.042	13632009.000

Tangential Direction: S36.331°E
Tangential Length: 150.762

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

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Phone: (210) 408-3700
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TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT FM 2790_SB

SHEET 8 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		47

DW: MBI CK: MBI DW: MBI CK: MBI

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DW: MBI CK: MBI DW: MBI CK: MBI

PC	129918.884 R1	2030927.042	13632009.000
PI	129921.099 R1	2030928.354	13632007.216
CC		2030894.012	13631984.709
PT	129923.309 R1	2030929.466	13632005.301
Radius:	41.000		
Delta:	6.183° Right		
Degree of Curvature(Arc):	139.746°		
Length:	4.424		
Tangent:	2.214		
Chord:	4.422		
Middle Ordinate:	0.060		
External:	0.060		
Tangent Back Direction:	S36.331° E		
Radial Direction:	S53.669° W		
Chord Direction:	S33.239° E		
Radial Direction:	S59.852° W		
Tangent Ahead Direction:	S30.148° E		

PT	129923.309 R1	2030929.466	13632005.301
PC	129949.055 R1	2030942.397	13631983.037
Tangential Direction:		S30.148° E	
Tangential Length:		25.747	

PC	129949.055 R1	2030942.397	13631983.037
PI	129951.270 R1	2030943.509	13631981.122
CC		2030977.851	13632003.628
PT	129953.480 R1	2030944.821	13631979.338
Radius:	41.000		
Delta:	6.183° Left		
Degree of Curvature(Arc):	139.746°		
Length:	4.424		
Tangent:	2.214		
Chord:	4.422		
Middle Ordinate:	0.060		
External:	0.060		
Tangent Back Direction:	S30.148° E		
Radial Direction:	S59.852° W		
Chord Direction:	S33.239° E		
Radial Direction:	S53.669° W		
Tangent Ahead Direction:	S36.331° E		

PT	129953.480 R1	2030944.821	13631979.338
PI	130016.179 R1	2030981.967	13631928.827
Tangential Direction:		S36.331° E	
Tangential Length:		62.699	

PI	130016.179 R1	2030981.967	13631928.827
PC	130023.405 R1	2030986.291	13631923.037
Tangential Direction:		S36.754° E	
Tangential Length:		7.226	

PC	130023.405 R1	2030986.291	13631923.037
PI	130026.519 R1	2030988.154	13631920.542
CC		2030953.441	13631898.504
PT	130029.621 R1	2030989.619	13631917.794
Radius:	41.000		
Delta:	8.686° Right		
Degree of Curvature(Arc):	139.746°		
Length:	6.216		
Tangent:	3.114		
Chord:	6.210		
Middle Ordinate:	0.118		
External:	0.118		
Tangent Back Direction:	S36.754° E		
Radial Direction:	S53.246° W		
Chord Direction:	S32.410° E		
Radial Direction:	S61.933° W		
Tangent Ahead Direction:	S28.067° E		

PT	130029.621 R1	2030989.619	13631917.794
PC	130041.602 R1	2030995.256	13631907.222
Tangential Direction:		S28.067° E	
Tangential Length:		11.981	

PC	130041.602 R1	2030995.256	13631907.222
PI	130044.716 R1	2030996.721	13631904.475
CC		2031031.435	13631926.513
PT	130047.818 R1	2030998.585	13631901.980
Radius:	41.000		
Delta:	8.686° Left		
Degree of Curvature(Arc):	139.746°		
Length:	6.216		
Tangent:	3.114		
Chord:	6.210		
Middle Ordinate:	0.118		
External:	0.118		
Tangent Back Direction:	S28.067° E		
Radial Direction:	S61.933° W		
Chord Direction:	S32.410° E		
Radial Direction:	S53.246° W		
Tangent Ahead Direction:	S36.754° E		

PT	130047.818 R1	2030998.585	13631901.980
PC	130195.434 R1	2031086.914	13631783.708
Tangential Direction:		S36.754° E	
Tangential Length:		147.615	

PC	130195.434 R1	2031086.914	13631783.708
PI	130196.969 R1	2031087.833	13631782.478
CC		2031119.764	13631808.241
PT	130198.503 R1	2031088.841	13631781.320
Radius:	41.000		
Delta:	4.289° Left		
Degree of Curvature(Arc):	139.746°		
Length:	3.069		
Tangent:	1.535		
Chord:	3.069		
Middle Ordinate:	0.029		
External:	0.029		
Tangent Back Direction:	S36.754° E		
Radial Direction:	S53.246° W		
Chord Direction:	S38.898° E		
Radial Direction:	S48.957° W		
Tangent Ahead Direction:	S41.043° E		

PT	130198.503 R1	2031088.841	13631781.320
PC	130205.460 R1	2031093.409	13631776.072
Tangential Direction:		S41.043° E	
Tangential Length:		6.957	

PC	130205.460 R1	2031093.409	13631776.072
PI	130206.996 R1	2031094.418	13631774.914
CC		2031062.486	13631749.151
PT	130208.529 R1	2031095.336	13631773.684
Radius:	41.000		
Delta:	4.289° Right		
Degree of Curvature(Arc):	139.746°		
Length:	3.069		
Tangent:	1.535		
Chord:	3.069		
Middle Ordinate:	0.029		
External:	0.029		
Tangent Back Direction:	S41.043° E		
Radial Direction:	S48.957° W		
Chord Direction:	S38.898° E		
Radial Direction:	S53.246° W		
Tangent Ahead Direction:	S36.754° E		

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STATE OF TEXAS
ROGER F. SORENSON
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HORIZONTAL ALIGNMENT REPORT
FM 2790_SB

SHEET 9 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		48

DW: MBI CK: MBI DW: MBI CK: MBI

PT 130208.529 R1 2031095.336 13631773.684
PC 130215.382 R1 2031099.436 13631768.194
Tangential Direction: S36.754°E
Tangential Length: 6.852

PC 130215.382 R1 2031099.436 13631768.194
PI 130217.431 R1 2031100.663 13631766.552
CC 2031066.587 13631743.661
PT 130219.478 R1 2031101.719 13631764.796
Radius: 41.000
Delta: 5.724°Right
Degree of Curvature(Arc): 139.746°
Length: 4.096
Tangent: 2.050
Chord: 4.094
Middle Ordinate: 0.051
External: 0.051
Tangent Back Direction: S36.754°E
Radial Direction: S53.246°W
Chord Direction: S33.892°E
Radial Direction: S58.970°W
Tangent Ahead Direction: S31.030°E

PT 130219.478 R1 2031101.719 13631764.796
PC 130222.898 R1 2031103.483 13631761.865
Tangential Direction: S31.030°E
Tangential Length: 3.420

PC 130222.898 R1 2031103.483 13631761.865
PI 130224.948 R1 2031104.539 13631760.108
CC 2031138.616 13631782.999
PT 130226.994 R1 2031105.766 13631758.466
Radius: 41.000
Delta: 5.724°Left
Degree of Curvature(Arc): 139.746°
Length: 4.096
Tangent: 2.050
Chord: 4.094
Middle Ordinate: 0.051
External: 0.051
Tangent Back Direction: S31.030°E
Radial Direction: S58.970°W
Chord Direction: S33.892°E
Radial Direction: S53.246°W
Tangent Ahead Direction: S36.754°E

PT 130226.994 R1 2031105.766 13631758.466
POT 130419.466 R1 2031220.936 13631604.255
Tangential Direction: S36.754°E
Tangential Length: 192.472

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HORIZONTAL ALIGNMENT REPORT
FM 2790_SB

SHEET 10 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		49

DATE: 8/22/2023 9:10:07 PM
FILE: ...\FM 2790 SB HOR2 06

DW: MBI CK: MBI DW: MBI CK: MBI DW: MBI

VERTICAL ALIGNMENT REPORT

Alignment name: BL_SUPSB-P
Alignment description:
Report Created: Tuesday, June 27, 2023
Time: 2:13:22 AM

	STATION	ELEVATION
POT	127871.800 R1	731.091
VPC	127895.605 R1	729.991
Tangent Grade:	-0.046	
Tangent Length:	23.805	
VPC	127895.605 R1	729.991
VPI	127920.605 R1	728.836
VPT	127945.605 R1	728.749
Length:	50.000	
Entrance Grade:	-0.046	
Exit Grade:	-0.004	
K Value =:	11.710	
Middle Ordinate (E):	0.267	
VPT	127945.605 R1	728.749
VPC	128028.000 R1	728.460
Tangent Grade:	-0.004	
Tangent Length:	82.395	
VPC	128028.000 R1	728.460
VPI	128053.000 R1	728.373
VPT	128078.000 R1	728.298
Length:	50.000	
Entrance Grade:	-0.004	
Exit Grade:	-0.003	
K Value =:	1000.000	
Middle Ordinate (E):	0.003	
VPT	128078.000 R1	728.298
VPC	128169.203 R1	728.024
Tangent Grade:	-0.003	
Tangent Length:	91.203	
VPC	128169.203 R1	728.024
VPI	128194.203 R1	727.949
VPT	128219.203 R1	728.542
VLP	128174.819 R1	728.016
Length:	50.000	
Entrance Grade:	-0.003	
Exit Grade:	0.024	
K Value =:	18.722	
Middle Ordinate (E):	0.167	
VPT	128219.203 R1	728.542
VPI	128232.970 R1	728.868
Tangent Grade:	0.024	
Tangent Length:	13.767	
VPI	128232.970 R1	728.868
VPI	128241.242 R1	728.868
Tangent Grade:	-0.000	
Tangent Length:	8.272	
VPI	128241.242 R1	728.868
VPI	128258.030 R1	728.764
Tangent Grade:	-0.006	
Tangent Length:	16.788	
VPI	128258.030 R1	728.764
VPC	128273.824 R1	728.140
Tangent Grade:	-0.040	
Tangent Length:	15.794	
VPC	128273.824 R1	728.140
VPI	128298.824 R1	727.152
VPT	128323.824 R1	726.891
Length:	50.000	
Entrance Grade:	-0.040	
Exit Grade:	-0.010	
K Value =:	17.222	
Middle Ordinate (E):	0.181	
VPT	128323.824 R1	726.891
VPC	128598.708 R1	724.011
Tangent Grade:	-0.010	
Tangent Length:	274.884	
VPC	128598.708 R1	724.011
VPI	128623.708 R1	723.749
VPT	128648.708 R1	723.931
VLP	128628.187 R1	723.857
Length:	50.000	
Entrance Grade:	-0.010	
Exit Grade:	0.007	
K Value =:	28.139	
Middle Ordinate (E):	0.111	
VPT	128648.708 R1	723.931
VPI	128654.640 R1	723.975
Tangent Grade:	0.007	
Tangent Length:	5.932	
VPI	128654.640 R1	723.975
VPI	128697.460 R1	723.568
Tangent Grade:	-0.010	
Tangent Length:	42.820	
VPI	128697.460 R1	723.568
VPC	128713.577 R1	722.762
Tangent Grade:	-0.050	
Tangent Length:	16.117	
VPC	128713.577 R1	722.762
VPI	128738.577 R1	721.512
VPT	128763.577 R1	721.217
Length:	50.000	
Entrance Grade:	-0.050	
Exit Grade:	-0.012	
K Value =:	13.089	
Middle Ordinate (E):	0.239	
VPT	128763.577 R1	721.217
VPC	128933.618 R1	719.210
Tangent Grade:	-0.012	
Tangent Length:	170.041	
VPC	128933.618 R1	719.210
VPI	128958.618 R1	718.915
VPT	128983.618 R1	718.750
Length:	50.000	
Entrance Grade:	-0.012	
Exit Grade:	-0.007	
K Value =:	95.770	
Middle Ordinate (E):	0.033	
VPT	128983.618 R1	718.750
VPC	129069.331 R1	718.186
Tangent Grade:	-0.007	
Tangent Length:	85.712	
VPC	129069.331 R1	718.186
VPI	129094.331 R1	718.022
VPT	129119.331 R1	716.923
Length:	50.000	
Entrance Grade:	-0.007	
Exit Grade:	-0.044	
K Value =:	13.372	
Middle Ordinate (E):	-0.234	
VPT	129119.331 R1	716.923
VPI	129125.260 R1	716.662
Tangent Grade:	-0.044	
Tangent Length:	5.929	
VPI	129125.260 R1	716.662
VPI	129142.470 R1	716.404
Tangent Grade:	-0.015	
Tangent Length:	17.210	
VPI	129142.470 R1	716.404
VPC	129147.707 R1	716.438
Tangent Grade:	0.006	
Tangent Length:	5.237	
VPC	129147.707 R1	716.438
VPI	129172.707 R1	716.600
VPT	129197.707 R1	716.331
VHP	129166.521 R1	716.499
Length:	50.000	
Entrance Grade:	0.006	
Exit Grade:	-0.011	
K Value =:	29.068	
Middle Ordinate (E):	-0.108	
VPT	129197.707 R1	716.331
VPC	129426.674 R1	713.875
Tangent Grade:	-0.011	
Tangent Length:	228.967	
VPC	129426.674 R1	713.875
VPI	129451.674 R1	713.607
VPT	129476.674 R1	713.756
VLP	129458.800 R1	713.702
Length:	50.000	
Entrance Grade:	-0.011	
Exit Grade:	0.006	
K Value =:	29.945	
Middle Ordinate (E):	0.104	
VPT	129476.674 R1	713.756
VPI	129516.990 R1	713.996
Tangent Grade:	0.006	
Tangent Length:	40.315	
VPI	129516.990 R1	713.996
VPI	129540.990 R1	713.996
Tangent Grade:	0.000	
Tangent Length:	24.000	
VPI	129540.990 R1	713.996
VPC	129576.700 R1	713.587
Tangent Grade:	-0.011	
Tangent Length:	35.711	
VPC	129576.700 R1	713.587
VPI	129601.700 R1	713.300
VPT	129626.700 R1	713.339
VLP	129620.755 R1	713.334
Length:	50.000	
Entrance Grade:	-0.011	
Exit Grade:	0.002	
K Value =:	38.403	
Middle Ordinate (E):	0.081	
VPT	129626.700 R1	713.339
VPC	129672.696 R1	713.410
Tangent Grade:	0.002	
Tangent Length:	45.995	
VPC	129672.696 R1	713.410
VPI	129692.696 R1	713.441
VPT	129712.696 R1	713.740
Length:	40.000	
Entrance Grade:	0.002	
Exit Grade:	0.015	
K Value =:	29.875	
Middle Ordinate (E):	0.067	
VPT	129712.696 R1	713.740
VPC	129716.206 R1	713.792
Tangent Grade:	0.015	
Tangent Length:	3.510	
VPC	129716.206 R1	713.792
VPI	129741.206 R1	714.165
VPT	129766.206 R1	714.964
Length:	50.000	
Entrance Grade:	0.015	
Exit Grade:	0.032	
K Value =:	29.379	
Middle Ordinate (E):	0.106	
VPT	129766.206 R1	714.964
VPI	129784.350 R1	715.544
Tangent Grade:	0.032	
Tangent Length:	18.144	
VPI	129784.350 R1	715.544
VPI	129800.070 R1	715.546
Tangent Grade:	0.000	
Tangent Length:	15.720	
VPI	129800.070 R1	715.546
VPC	129810.800 R1	715.436
Tangent Grade:	-0.010	
Tangent Length:	10.730	

DATE: 8/22/2023 9:10:24 PM
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STATE OF TEXAS
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FM2790,COTTAGE,PRAIRIE

VERTICAL ALIGNMENT REPORT
FM 2790_SB

SHEET 11 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		50

DW: MBI | CK: MBI | DW: MBI | CK: MBI | DW: MBI

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VPC       129810.800 R1              715.436
VPI       129835.800 R1              715.181
VPT       129860.800 R1              715.249
VLP       129850.190 R1              715.235
Length:              50.000
Entrance Grade:              -0.010
Exit Grade:                0.003
K Value =:              38.508
Middle Ordinate (E):                0.081

VPT       129860.800 R1              715.249
VPI       129867.590 R1              715.268
Tangent Grade:               0.003
Tangent Length:               6.790

VPI       129867.590 R1              715.268
VPI       129883.670 R1              715.200
Tangent Grade:              -0.004
Tangent Length:              16.080

VPI       129883.670 R1              715.200
VPC       129890.000 R1              715.214
Tangent Grade:               0.002
Tangent Length:               6.330

VPC       129890.000 R1              715.214
VPI       129910.000 R1              715.257
VPT       129930.000 R1              715.619

Length:              40.000
Entrance Grade:              0.002
Exit Grade:                0.018
K Value =:              25.139
Middle Ordinate (E):                0.080

VPT       129930.000 R1              715.619
VPC       129936.378 R1              715.734
Tangent Grade:               0.018
Tangent Length:               6.378

VPC       129936.378 R1              715.734
VPI       129961.575 R1              716.190
VPT       129986.772 R1              715.606
VHP       129958.470 R1              715.934
Length:              50.394
Entrance Grade:              0.018
Exit Grade:               -0.023
K Value =:              12.219
Middle Ordinate (E):               -0.260

VPT       129986.770 R1              715.606
VPI       129988.530 R1              715.565
Tangent Grade:              -0.023
Tangent Length:               1.760

VPI       129988.530 R1              715.565
VPI       130004.770 R1              715.607
Tangent Grade:               0.003
Tangent Length:              16.240

VPI       130004.770 R1              715.607
VPC       130012.950 R1              715.848
Tangent Grade:               0.029
Tangent Length:               8.180

VPC       130012.950 R1              715.848
VPI       130037.950 R1              716.585
VPT       130062.950 R1              716.510
VHP       130058.329 R1              716.517
Length:              50.000
Entrance Grade:              0.029
Exit Grade:               -0.003
K Value =:              15.403
Middle Ordinate (E):               -0.203

VPT       130062.950 R1              716.510
VPC       130185.700 R1              716.142
Tangent Grade:              -0.003
Tangent Length:             122.750

VPC       130185.700 R1              716.142
VPI       130210.700 R1              716.067
VPT       130235.700 R1              715.386

Length:              50.000
Entrance Grade:              -0.003
Exit Grade:               -0.027
K Value =:              20.629
Middle Ordinate (E):               -0.151

VPT       130235.700 R1              715.386
POT       130236.930 R1              715.352
Tangent Grade:              -0.027
Tangent Length:               1.230
```

DATE: 8/22/2023 9:10:39 PM
FILE: ...\FM 2790 SB VERT 02

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

VERTICAL ALIGNMENT REPORT
FM 2790_SB

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		51

CK: MBI
DW: MBI
CK: MBI
DW: MBI

HORIZONTAL ALIGNMENT REPORT

Alignment name: BL_SDWEB
Alignment description:
Report Created: Tuesday, June 27, 2023
Time: 12:01:25 AM

	STATION	X	Y
POT	1000.000 R1	2030949.909	13632037.740
PI	1052.685 R1	2030992.168	13632069.204
Tangential Direction:		N53.330°E	
Tangential Length:		52.685	
PI	1052.685 R1	2030992.168	13632069.204
PI	1062.858 R1	2031001.503	13632073.245
Tangential Direction:		N66.590°E	
Tangential Length:		10.173	
PI	1062.858 R1	2031001.503	13632073.245
PI	1301.231 R1	2031207.679	13632192.883
Tangential Direction:		N59.875°E	
Tangential Length:		238.373	
PI	1301.231 R1	2031207.679	13632192.883
PI	1759.608 R1	2031598.495	13632432.410
Tangential Direction:		N58.496°E	
Tangential Length:		458.378	
PI	1759.608 R1	2031598.495	13632432.410
PI	1768.422 R1	2031604.980	13632438.378
Tangential Direction:		N47.376°E	
Tangential Length:		8.814	
PI	1768.422 R1	2031604.980	13632438.378
PI	1795.513 R1	2031628.078	13632452.535
Tangential Direction:		N58.496°E	
Tangential Length:		27.091	
PI	1795.513 R1	2031628.078	13632452.535
PI	1813.932 R1	2031645.261	13632459.166
Tangential Direction:		N68.900°E	
Tangential Length:		18.419	
PI	1813.932 R1	2031645.261	13632459.166
PI	1832.596 R1	2031661.170	13632468.926
Tangential Direction:		N58.469°E	
Tangential Length:		18.664	
PI	1832.596 R1	2031661.170	13632468.926
PI	1835.039 R1	2031662.947	13632470.603
Tangential Direction:		N46.654°E	
Tangential Length:		2.443	
PI	1835.039 R1	2031662.947	13632470.603
PI	1856.967 R1	2031681.598	13632482.135
Tangential Direction:		N58.273°E	
Tangential Length:		21.928	
PI	1856.967 R1	2031681.598	13632482.135
PI	1866.871 R1	2031689.458	13632488.160
Tangential Direction:		N52.527°E	
Tangential Length:		9.904	
PI	1866.871 R1	2031689.458	13632488.160
PI	1981.737 R1	2031787.394	13632548.184
Tangential Direction:		N58.496°E	
Tangential Length:		114.866	
PI	1981.737 R1	2031787.394	13632548.184
PI	2005.862 R1	2031807.852	13632560.968
Tangential Direction:		N57.999°E	
Tangential Length:		24.125	
PI	2005.862 R1	2031807.852	13632560.968
PI	2010.921 R1	2031812.588	13632562.748
Tangential Direction:		N69.400°E	
Tangential Length:		5.059	
PI	2010.921 R1	2031812.588	13632562.748
PI	2055.819 R1	2031850.664	13632586.541
Tangential Direction:		N57.999°E	
Tangential Length:		44.898	
PI	2055.819 R1	2031850.664	13632586.541
PI	2060.827 R1	2031855.154	13632588.757
Tangential Direction:		N63.730°E	
Tangential Length:		5.007	
PI	2060.827 R1	2031855.154	13632588.757
PI	2125.768 R1	2031910.227	13632623.172
Tangential Direction:		N57.999°E	
Tangential Length:		64.942	
PI	2125.768 R1	2031910.227	13632623.172
PI	2151.316 R1	2031932.010	13632636.520
Tangential Direction:		N58.501°E	
Tangential Length:		25.547	
PI	2151.316 R1	2031932.010	13632636.520
PI	2259.861 R1	2032025.766	13632691.217
Tangential Direction:		N59.741°E	
Tangential Length:		108.545	
PI	2259.861 R1	2032025.766	13632691.217
PI	2264.844 R1	2032029.798	13632694.146
Tangential Direction:		N54.001°E	
Tangential Length:		4.983	
PI	2264.844 R1	2032029.798	13632694.146
PI	2405.925 R1	2032150.832	13632766.635
Tangential Direction:		N59.082°E	
Tangential Length:		141.082	
PI	2405.925 R1	2032150.832	13632766.635
PI	2420.913 R1	2032162.383	13632776.186
Tangential Direction:		N50.413°E	
Tangential Length:		14.988	
PI	2420.913 R1	2032162.383	13632776.186
POT	2468.014 R1	2032202.599	13632800.704
Tangential Direction:		N58.631°E	
Tangential Length:		47.101	

DATE: 8/22/2023 9:10:55 PM
FILE: ...\COTTAGE EB HOR2

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
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Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT
COTTAGE_EB

SHEET 13 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		52

DW: MBI | CK: MBI | DW: MBI | CK: MBI | DW: MBI

HORIZONTAL ALIGNMENT REPORT

Alignment name: BL_SDWWB
Alignment description:
Report Created: Tuesday, June 27, 2023
Time: 12:55:30 AM

	STATION	X	Y
POT	1000.000 R1	2030915.945	13632083.336
PI	1050.433 R1	2030956.511	13632113.302
Tangential Direction:		N53.547°E	
Tangential Length:		50.433	
PI	1050.433 R1	2030956.511	13632113.302
PI	1065.050 R1	2030970.186	13632118.462
Tangential Direction:		N69.329°E	
Tangential Length:		14.616	
PI	1065.050 R1	2030970.186	13632118.462
PI	1312.997 R1	2031184.496	13632243.157
Tangential Direction:		N59.807°E	
Tangential Length:		247.947	
PI	1312.997 R1	2031184.496	13632243.157
PI	1341.803 R1	2031212.875	13632248.100
Tangential Direction:		N80.120°E	
Tangential Length:		28.807	
PI	1341.803 R1	2031212.875	13632248.100
PI	1644.429 R1	2031474.446	13632400.295
Tangential Direction:		N59.807°E	
Tangential Length:		302.625	
PI	1644.429 R1	2031474.446	13632400.295
PI	1670.001 R1	2031489.759	13632420.774
Tangential Direction:		N36.787°E	
Tangential Length:		25.572	
PI	1670.001 R1	2031489.759	13632420.774
PI	1716.940 R1	2031530.330	13632444.381
Tangential Direction:		N59.807°E	
Tangential Length:		46.939	
PI	1716.940 R1	2031530.330	13632444.381
PI	1734.578 R1	2031544.471	13632454.923
Tangential Direction:		N53.296°E	
Tangential Length:		17.638	
PI	1734.578 R1	2031544.471	13632454.923
PI	1739.462 R1	2031548.693	13632457.379
Tangential Direction:		N59.807°E	
Tangential Length:		4.884	
PI	1739.462 R1	2031548.693	13632457.379
PI	1749.464 R1	2031558.169	13632460.579
Tangential Direction:		N71.342°E	
Tangential Length:		10.002	
PI	1749.464 R1	2031558.169	13632460.579
PI	1783.239 R1	2031587.362	13632477.564
Tangential Direction:		N59.807°E	
Tangential Length:		33.775	
PI	1783.239 R1	2031587.362	13632477.564
PI	1821.145 R1	2031621.255	13632494.540
Tangential Direction:		N63.396°E	
Tangential Length:		37.907	
PI	1821.145 R1	2031621.255	13632494.540
PI	1842.430 R1	2031639.582	13632505.365
Tangential Direction:		N59.430°E	
Tangential Length:		21.285	
PI	1842.430 R1	2031639.582	13632505.365
PI	1852.420 R1	2031646.875	13632512.192
Tangential Direction:		N46.892°E	
Tangential Length:		9.990	
PI	1852.420 R1	2031646.875	13632512.192
PI	1895.125 R1	2031683.787	13632533.669
Tangential Direction:		N59.807°E	
Tangential Length:		42.705	
PI	1895.125 R1	2031683.787	13632533.669
PI	1905.125 R1	2031693.541	13632535.873
Tangential Direction:		N77.265°E	
Tangential Length:		10.000	
PI	1905.125 R1	2031693.541	13632535.873
PI	1936.192 R1	2031720.393	13632551.497
Tangential Direction:		N59.807°E	
Tangential Length:		31.067	
PI	1936.192 R1	2031720.393	13632551.497
PI	1946.192 R1	2031727.129	13632558.888
Tangential Direction:		N42.349°E	
Tangential Length:		10.000	
PI	1946.192 R1	2031727.129	13632558.888
PI	2121.007 R1	2031878.237	13632646.790
Tangential Direction:		N59.813°E	
Tangential Length:		174.815	
PI	2121.007 R1	2031878.237	13632646.790
PI	2160.620 R1	2031912.105	13632667.336
Tangential Direction:		N58.757°E	
Tangential Length:		39.613	
PI	2160.620 R1	2031912.105	13632667.336
PI	2254.249 R1	2031992.768	13632714.873
Tangential Direction:		N59.488°E	
Tangential Length:		93.629	
PI	2254.249 R1	2031992.768	13632714.873
PI	2421.339 R1	2032136.887	13632799.426
Tangential Direction:		N59.600°E	
Tangential Length:		167.091	
PI	2421.339 R1	2032136.887	13632799.426
PI	2431.676 R1	2032146.663	13632802.783
Tangential Direction:		N71.049°E	
Tangential Length:		10.336	
PI	2431.676 R1	2032146.663	13632802.783
PI	2437.997 R1	2032152.057	13632806.079
Tangential Direction:		N58.571°E	
Tangential Length:		6.322	
PI	2437.997 R1	2032152.057	13632806.079
POT	2478.783 R1	2032187.461	13632826.329
Tangential Direction:		N60.233°E	
Tangential Length:		40.786	

DATE: 8/23/2023 2:34:31 AM
FILE: ...\COTTAGE WB HORZ

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/23/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT
COTTAGE_WB

SHEET 14 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		53

CK: MBI
DW: MBI
CK: MBI
DW: MBI

HORIZONTAL ALIGNMENT REPORT

Alignment name: BL_PRASDWNB
Alignment description:
Report Created: Monday, June 26, 2023
Time: 10:27:40 PM

STATION		X	Y
POT	2000.000 R1	2031730.369	13633639.260
PI	2146.572 R1	2031804.212	13633512.648
Tangential Direction:		S30.252°E	
Tangential Length:		146.572	
PI	2146.572 R1	2031804.212	13633512.648
PI	2183.946 R1	2031822.682	13633480.157
Tangential Direction:		S29.616°E	
Tangential Length:		37.374	
PI	2183.946 R1	2031822.682	13633480.157
PI	2219.813 R1	2031835.683	13633446.729
Tangential Direction:		S21.254°E	
Tangential Length:		35.867	
PI	2219.813 R1	2031835.683	13633446.729
PI	2239.869 R1	2031849.547	13633432.236
Tangential Direction:		S43.727°E	
Tangential Length:		20.056	
PI	2239.869 R1	2031849.547	13633432.236
PI	2939.800 R1	2032205.187	13632829.390
Tangential Direction:		S30.538°E	
Tangential Length:		699.931	
PI	2939.800 R1	2032205.187	13632829.390
PI	2950.398 R1	2032212.942	13632822.167
Tangential Direction:		S47.035°E	
Tangential Length:		10.597	
PI	2950.398 R1	2032212.942	13632822.167
PI	2955.349 R1	2032215.463	13632817.905
Tangential Direction:		S30.599°E	
Tangential Length:		4.952	
PI	2955.349 R1	2032215.463	13632817.905
PI	2965.257 R1	2032217.661	13632808.245
Tangential Direction:		S12.823°E	
Tangential Length:		9.907	
PI	2965.257 R1	2032217.661	13632808.245
POT	3028.466 R1	2032249.779	13632753.802
Tangential Direction:		S30.538°E	
Tangential Length:		63.210	

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HORIZONTAL ALIGNMENT REPORT
N. PRAIRIE_NB

SHEET 15 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		54

DATE: 8/22/2023 9:11:39 PM
FILE: ...\PRAIRIE NB HOR2

CK: MBI | DW: MBI | CK: MBI | DW: MBI

HORIZONTAL ALIGNMENT REPORT

Alignment name: BL_PRASDWSB
Alignment description:
Report Created: Monday, June 26, 2023
Time: 11:09:44 PM

	STATION	X	Y
POT	2000.000 R1	2031695.194	13633618.412
PI	2143.014 R1	2031767.104	13633494.792
Tangential Direction:		S30.187°E	
Tangential Length:		143.014	
PI	2143.014 R1	2031767.104	13633494.792
PI	2157.628 R1	2031773.744	13633481.773
Tangential Direction:		S27.022°E	
Tangential Length:		14.614	
PI	2157.628 R1	2031773.744	13633481.773
PI	2306.827 R1	2031848.046	13633352.392
Tangential Direction:		S29.869°E	
Tangential Length:		149.198	
PI	2306.827 R1	2031848.046	13633352.392
PI	2311.950 R1	2031851.787	13633348.891
Tangential Direction:		S46.892°E	
Tangential Length:		5.123	
PI	2311.950 R1	2031851.787	13633348.891
PI	2410.901 R1	2031901.066	13633263.084
Tangential Direction:		S29.869°E	
Tangential Length:		98.951	
PI	2410.901 R1	2031901.066	13633263.084
PI	2432.683 R1	2031914.229	13633245.729
Tangential Direction:		S37.179°E	
Tangential Length:		21.782	
PI	2432.683 R1	2031914.229	13633245.729
PI	2438.116 R1	2031917.828	13633241.660
Tangential Direction:		S41.491°E	
Tangential Length:		5.433	
PI	2438.116 R1	2031917.828	13633241.660
PI	2443.116 R1	2031920.379	13633237.360
Tangential Direction:		S30.681°E	
Tangential Length:		5.000	
PI	2443.116 R1	2031920.379	13633237.360
PI	2448.215 R1	2031922.070	13633232.549
Tangential Direction:		S19.371°E	
Tangential Length:		5.099	
PI	2448.215 R1	2031922.070	13633232.549
PI	2563.984 R1	2031981.124	13633132.975
Tangential Direction:		S30.671°E	
Tangential Length:		115.769	
PI	2563.984 R1	2031981.124	13633132.975
PI	2583.285 R1	2031984.718	13633114.010
Tangential Direction:		S10.731°E	
Tangential Length:		19.302	
PI	2583.285 R1	2031984.718	13633114.010
PI	2604.010 R1	2031995.212	13633096.138
Tangential Direction:		S30.420°E	
Tangential Length:		20.725	
PI	2604.010 R1	2031995.212	13633096.138
PI	2643.273 R1	2032017.436	13633063.772
Tangential Direction:		S34.476°E	
Tangential Length:		39.262	
PI	2643.273 R1	2032017.436	13633063.772
PI	2658.377 R1	2032030.346	13633055.931
Tangential Direction:		S58.725°E	
Tangential Length:		15.105	
PI	2658.377 R1	2032030.346	13633055.931
PI	2699.316 R1	2032051.235	13633020.722
Tangential Direction:		S30.681°E	
Tangential Length:		40.939	
PI	2699.316 R1	2032051.235	13633020.722
PI	2714.279 R1	2032055.387	13633006.347
Tangential Direction:		S16.110°E	
Tangential Length:		14.963	
PI	2714.279 R1	2032055.387	13633006.347
PI	2767.049 R1	2032083.409	13632961.631
Tangential Direction:		S32.074°E	
Tangential Length:		52.770	
PI	2767.049 R1	2032083.409	13632961.631
PI	2815.604 R1	2032107.408	13632919.422
Tangential Direction:		S29.622°E	
Tangential Length:		48.555	
PI	2815.604 R1	2032107.408	13632919.422
PI	2824.957 R1	2032113.699	13632912.501
Tangential Direction:		S42.265°E	
Tangential Length:		9.353	
PI	2824.957 R1	2032113.699	13632912.501
PI	2831.145 R1	2032116.856	13632907.179
Tangential Direction:		S30.681°E	
Tangential Length:		6.188	
PI	2831.145 R1	2032116.856	13632907.179
PI	2840.589 R1	2032119.521	13632898.119
Tangential Direction:		S16.390°E	
Tangential Length:		9.444	
PI	2840.589 R1	2032119.521	13632898.119
PI	2879.780 R1	2032138.892	13632864.049
Tangential Direction:		S29.622°E	
Tangential Length:		39.191	
PI	2879.780 R1	2032138.892	13632864.049
PI	2904.348 R1	2032158.651	13632849.450
Tangential Direction:		S53.541°E	
Tangential Length:		24.568	

DATE: 8/22/2023 9:12:01 PM
FILE: ...\PRAIRIE SB HORZ

STATE OF TEXAS
ROGER F. SORENSON
136831
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PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

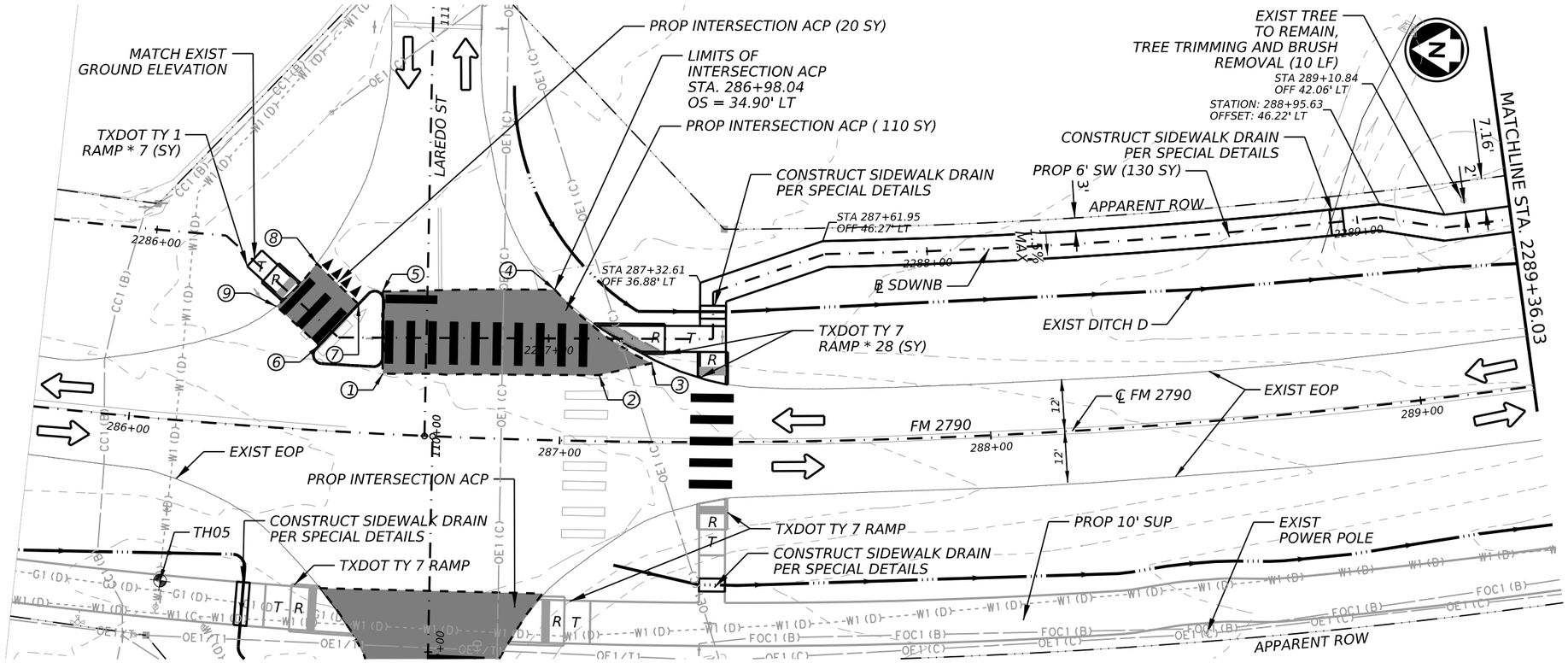
FM2790,COTTAGE,PRAIRIE

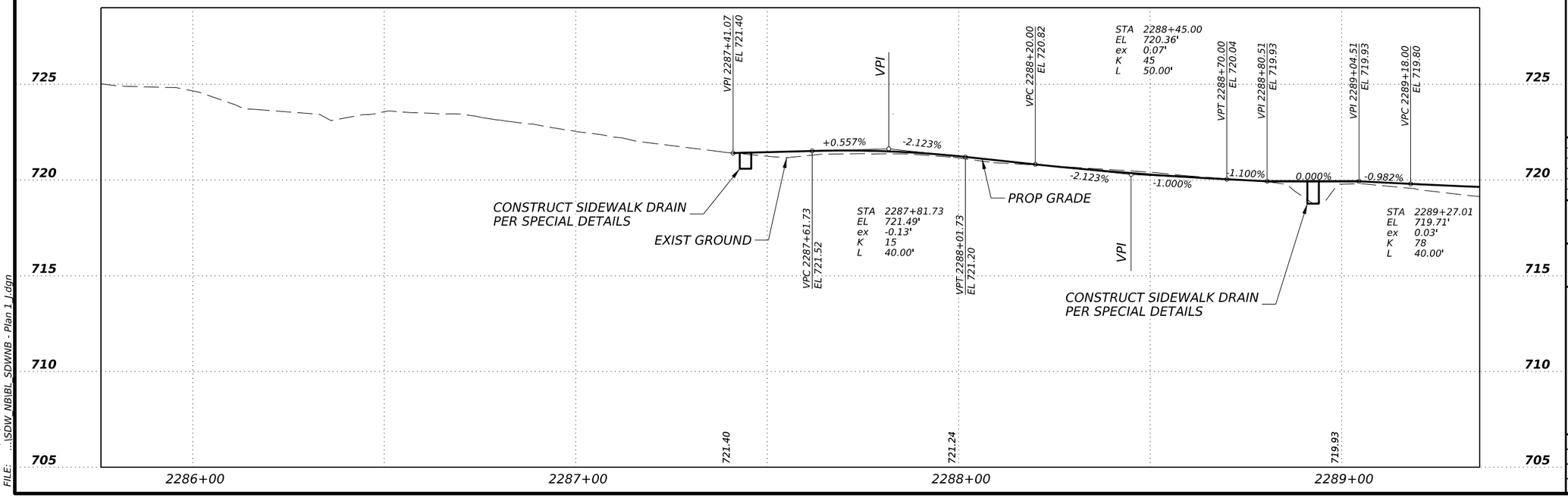
HORIZONTAL ALIGNMENT REPORT
N. PRAIRIE_SB

SHEET 16 OF 16

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		55

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	-
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	1.08
0420 6002	CL A CONC (MISC)	CY	0.71
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	184
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	130
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	130
0531 6003	CONC SIDEWALKS (6")	SY	-
0531 6004	CURB RAMPS (TY 1)	EA	1
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	2
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	10





① STA: 286+58.28 OFFSET: 13.93' LT
② STA: 287+08.94 OFFSET: 15.34' LT
③ STA: 287+21.20 OFFSET: 18.22' LT
④ STA: 286+98.04 OFFSET: 34.90' LT
⑤ STA: 286+57.24 OFFSET: 32.99' LT
⑥ STA: 286+43.00 OFFSET: 19.65' LT
⑦ STA: 286+51.69 OFFSET: 29.71' LT
⑧ STA: 286+41.29 OFFSET: 38.57' LT
⑨ STA: 286+32.33 OFFSET: 28.05' LT

NOTES:

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4. CURB RAMPS ARE DENOTED AS: R TURNING SPACES ARE DENOTED AS: T

0 15 30
SCALE: 1"=30' H
1"=6' V

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER
8/22/2023

NO.	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SIDEWALK PLAN & PROFILE FM 2790

NORTHBOUND

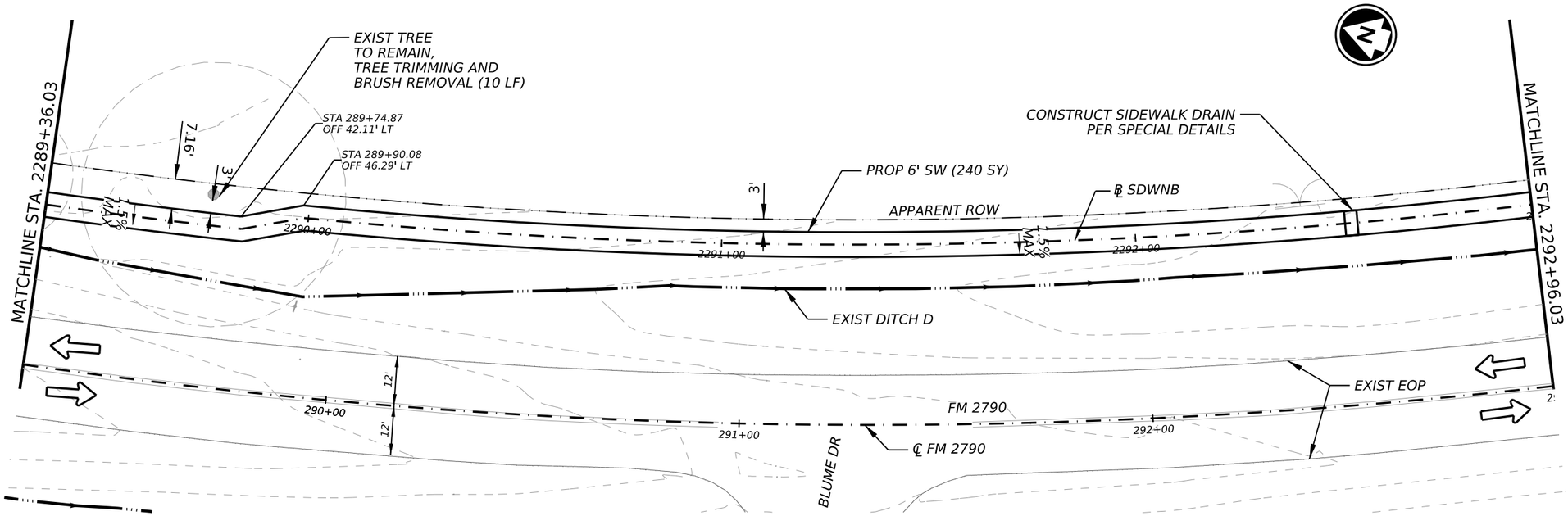
SHEET 1 OF 5

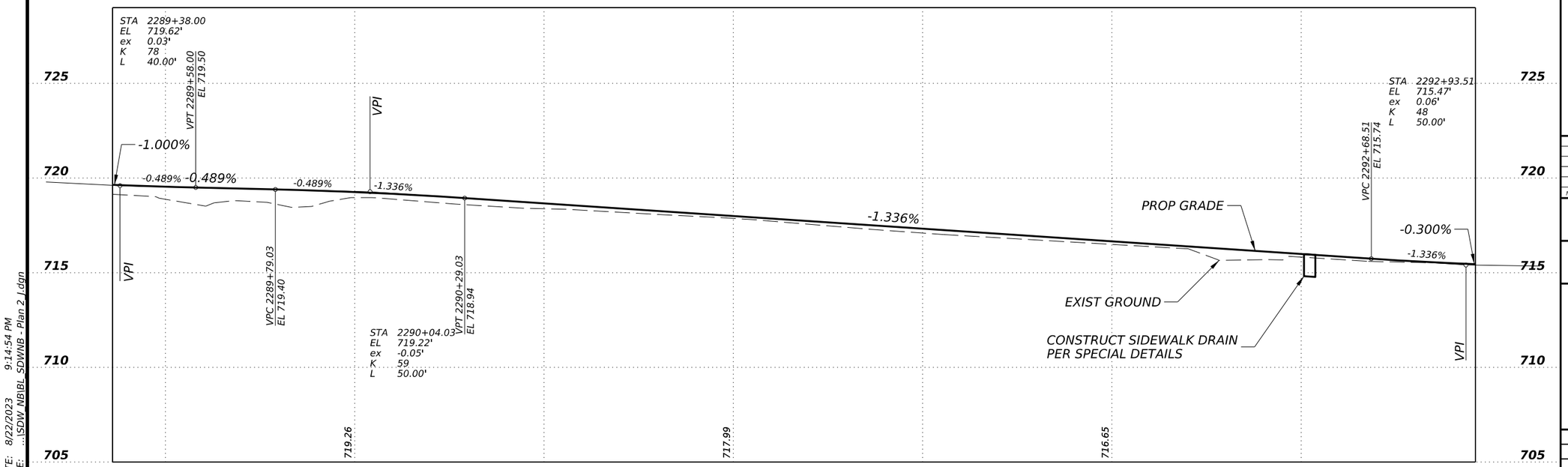
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		56

DATE: 8/22/2023 9:14:11 PM
FILE: ...\SDW NBIBL SDWNB - Plan 1 J.dgn

CK:
DW:
CK:
DW:

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	-
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	16
0420 6002	CL A CONC (MISC)	CY	0.71
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	184
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	-
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	240
0531 6003	CONC SIDEWALKS (6")	SY	-
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	-
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	10





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   TURNING SPACES ARE DENOTED AS: T

0 15 30

SCALE: 1"=30' H
1"=6' V

STATE OF TEXAS
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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SIDEWALK PLAN & PROFILE FM 2790

NORTHBOUND

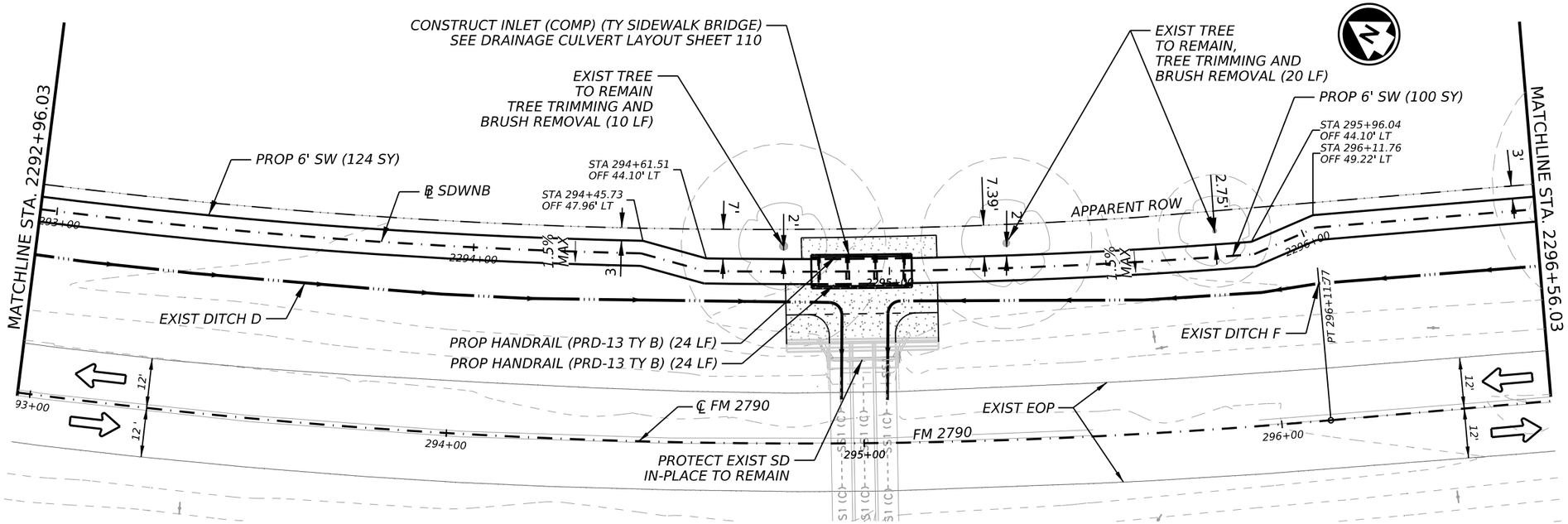
SHEET 2 OF 5

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		57

DATE: 8/22/2023 9:14:54 PM
FILE: ...\SDW_NB\BL_SDWNB - Plan 2.dgn

CK:
DW:
CK:
DW:

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	-
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	3.57
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	48
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	1
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	-
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	224
0531 6003	CONC SIDEWALKS (6")	SY	-
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	-
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	30



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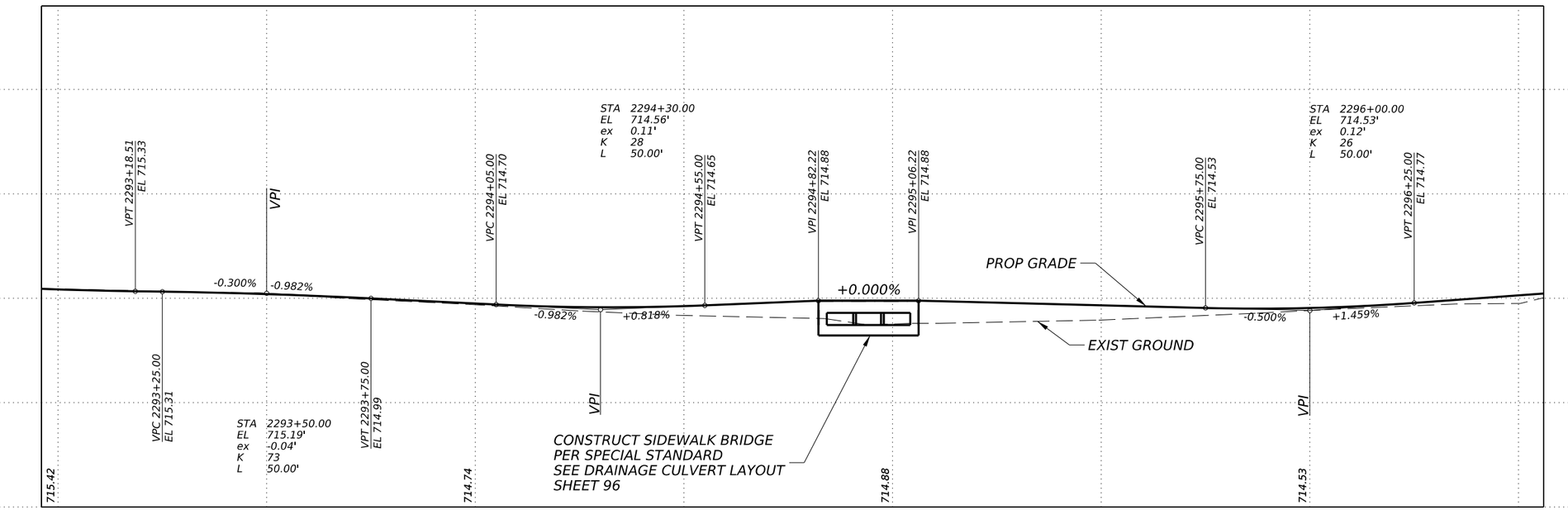
   SPACES ARE DENOTED AS: T

0 15 30

SCALE: 1"=30' H
1"=6' V



DATE: 8/22/2023 9:15:32 PM
FILE: ...\SDW NBIBL SDWNB - Plan 3 J.dgn

DN: CK: DW: CK:

STATE OF TEXAS
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FM2790,COTTAGE,PRAIRIE

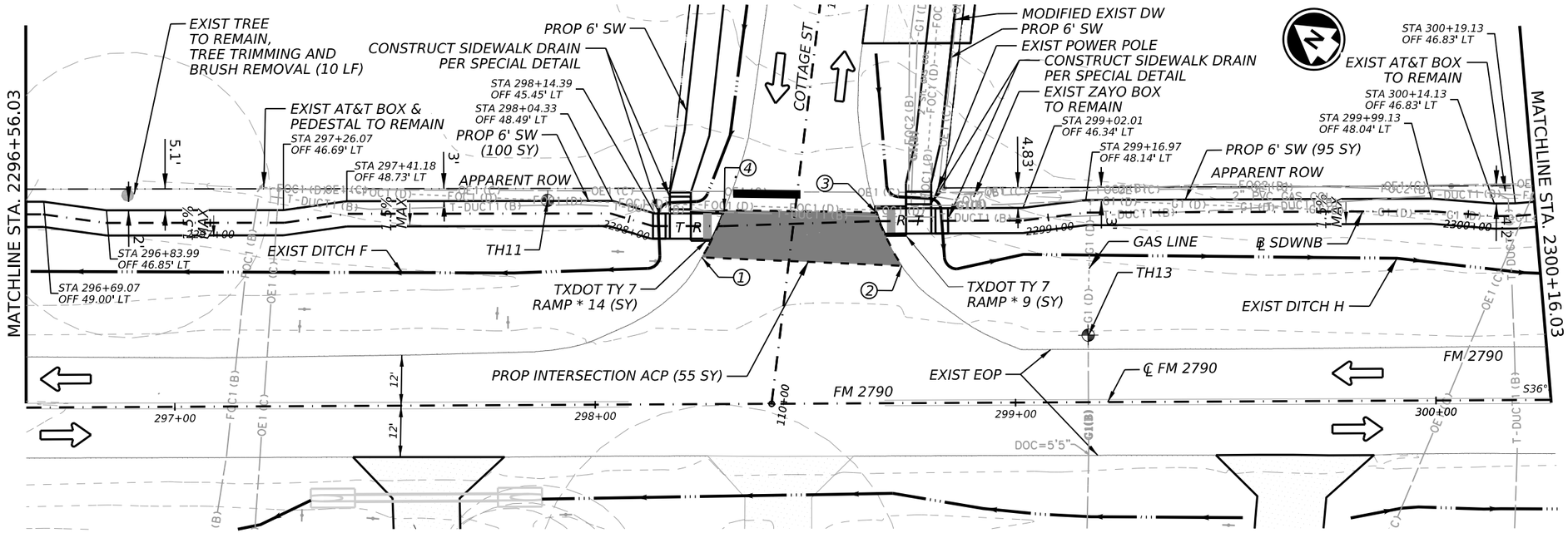
SIDEWALK PLAN & PROFILE FM 2790

NORTHBOUND

SHEET 3 OF 5

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		58

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	-
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	16.46
0420 6002	CL A CONC (MISC)	CY	2.84
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	736
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	55
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	195
0531 6003	CONC SIDEWALKS (6")	SY	-
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	2
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	10



1. STA: 298+25.54 OFFSET: 34.94' LT
2. STA: 298+73.09 OFFSET: 32.72' LT
3. STA: 298+67.19 OFFSET: 45.29' LT
4. STA: 298+30.94 OFFSET: 46.14' LT

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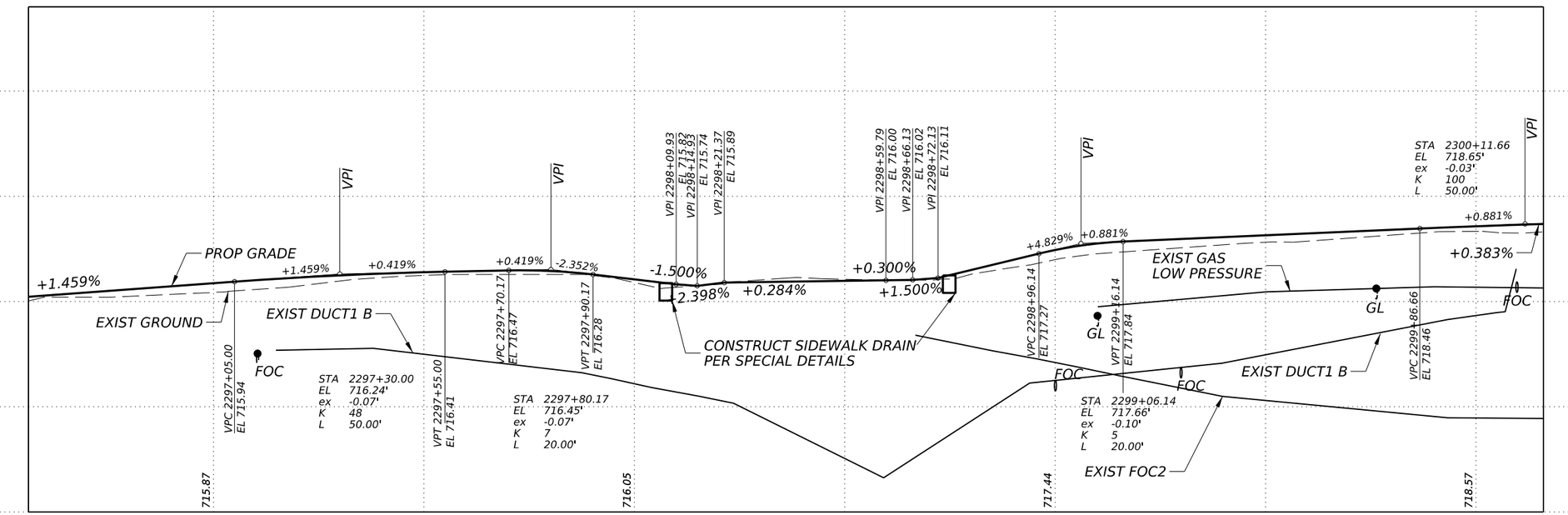
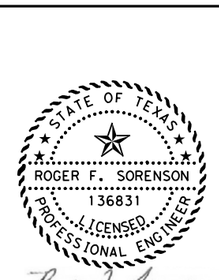
0 15 30

SCALE: 1"=30' H
1"=6' V





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FM2790,COTTAGE,PRAIRIE

SIDEWALK PLAN & PROFILE FM 2790

NORTHBOUND

SHEET 4 OF 5

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		59

DATE: 8/22/2023 9:16:30 PM
FILE: ...\SDW_NB\BL_SDWNB - Plan 4 J.dgn

CK:
DW:
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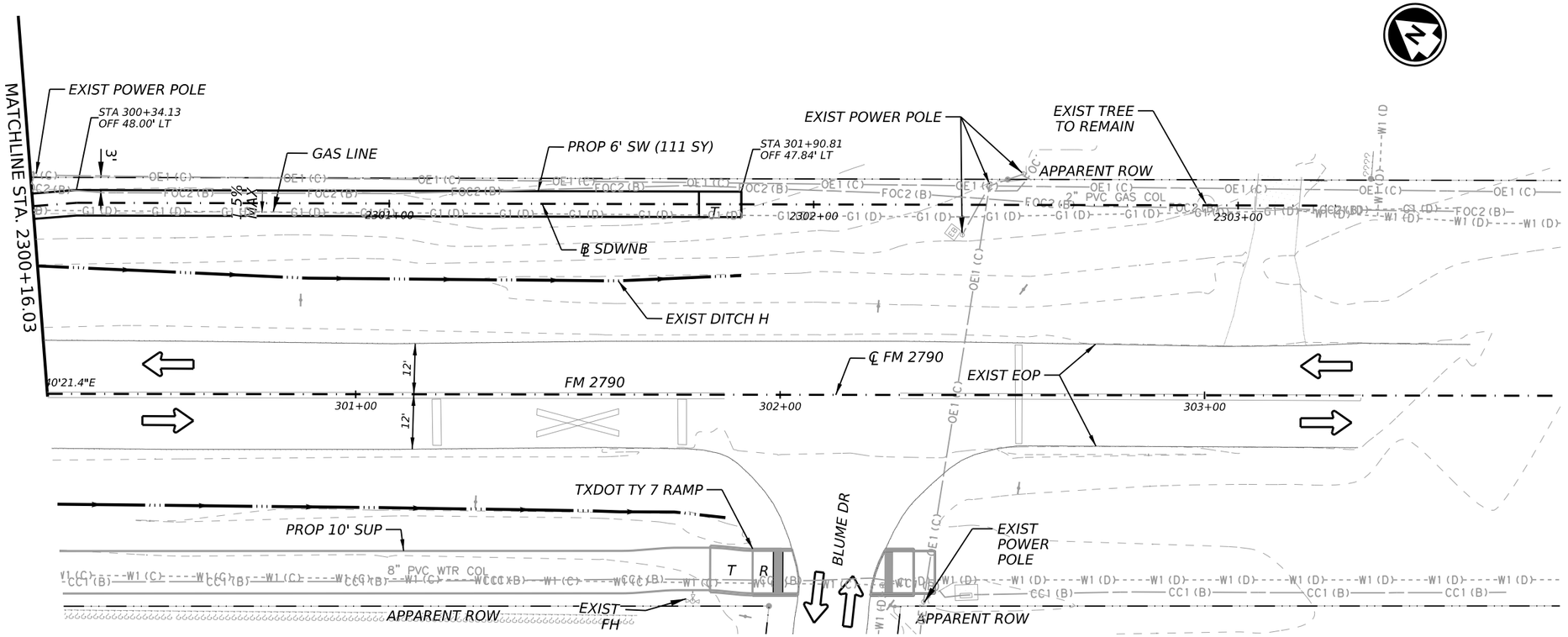
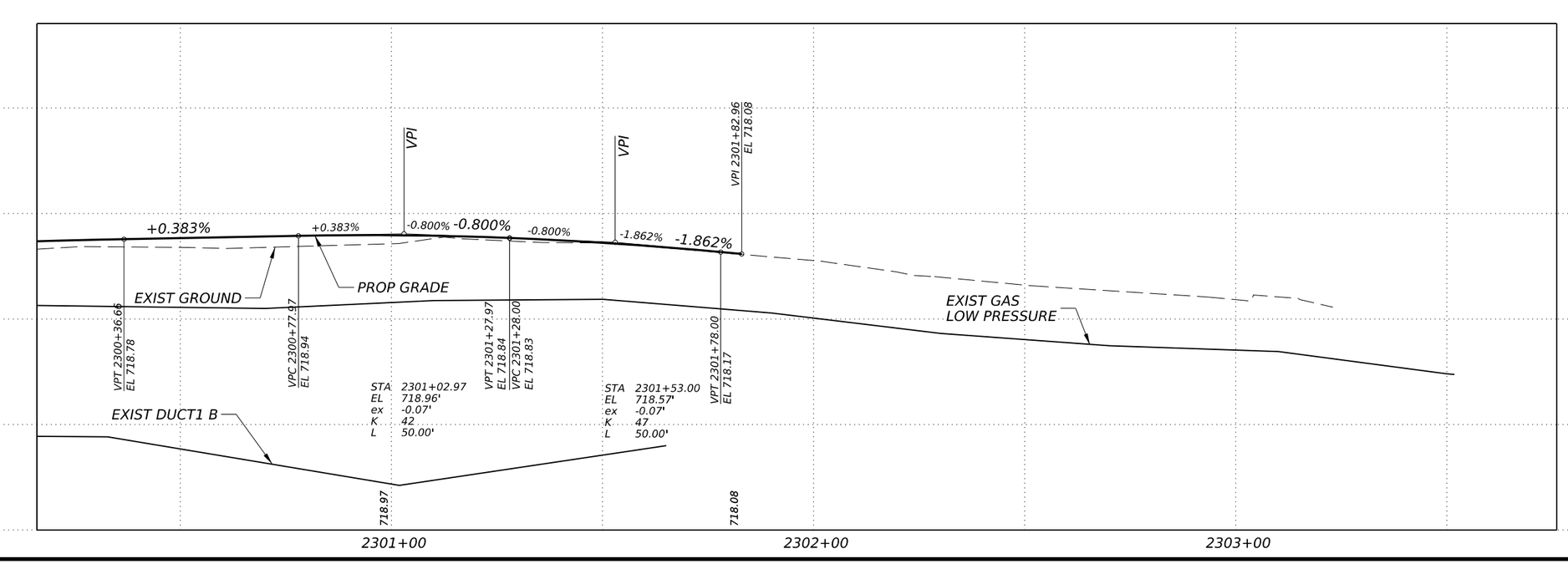
DW:

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	-
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	26.5
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	-
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	111
0531 6003	CONC SIDEWALKS (6")	SY	-
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	-
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	-





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   TURNING SPACES ARE DENOTED AS: T

0 15 30

SCALE: 1"=30' H
1"=6' V

STATE OF TEXAS
ROGER F. SORENSON
136831
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8/22/2023

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SIDEWALK PLAN & PROFILE FM 2790

NORTHBOUND

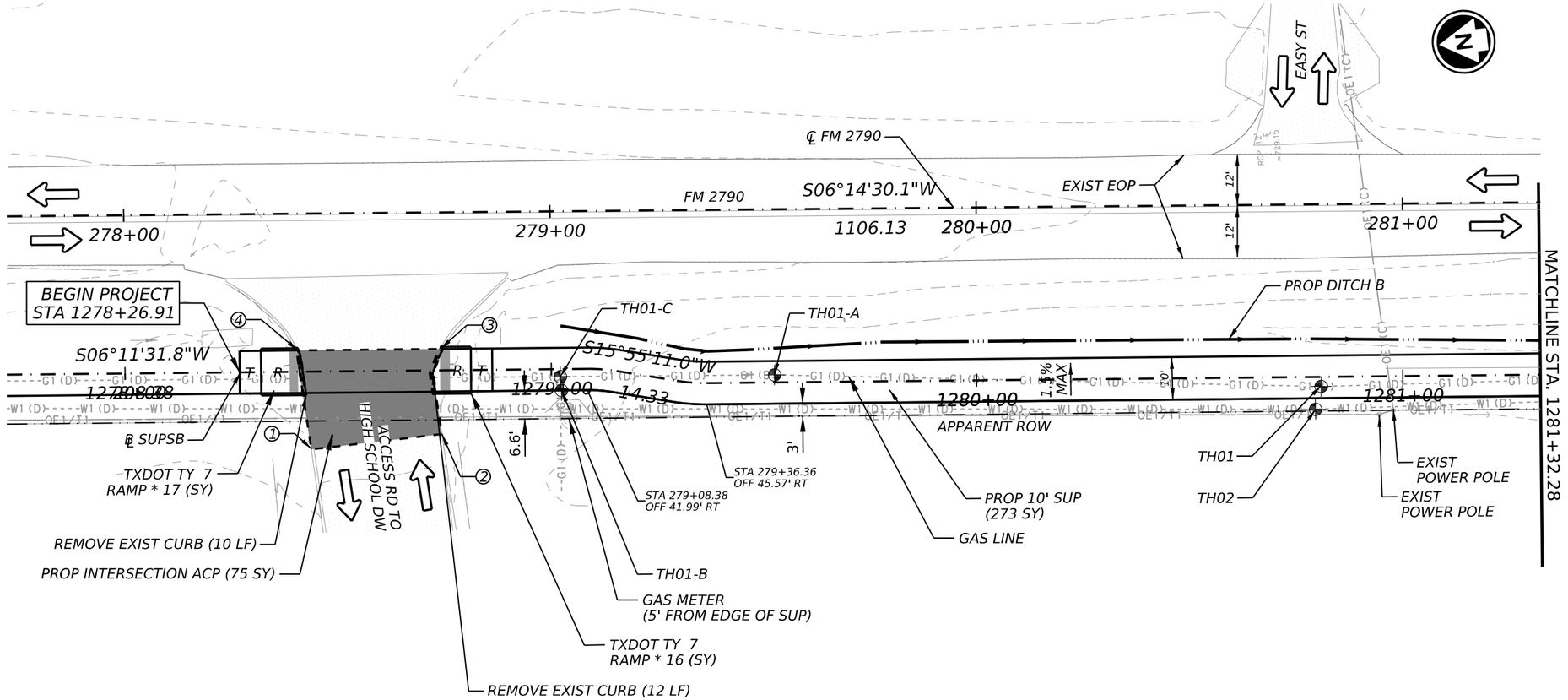
SHEET 5 OF 5

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		60

DATE: 8/22/2023 9:16:52 PM
FILE: ...\SDW NBIBL SDWNB - Plan 5 l.dgn

CK:
DW:
CK:
DN:

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	22
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	37.83
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	5.24
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	75
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	-
0531 6003	CONC SIDEWALKS (6")	SY	273
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	2
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	-



① STA: 278+43.51
OFFSET: 55.26' RT

② STA: 278+74.18
OFFSET: 51.96' RT

③ STA: 278+73.99
OFFSET: 32.02' RT

④ STA: 278+40.62
OFFSET: 32.05' RT

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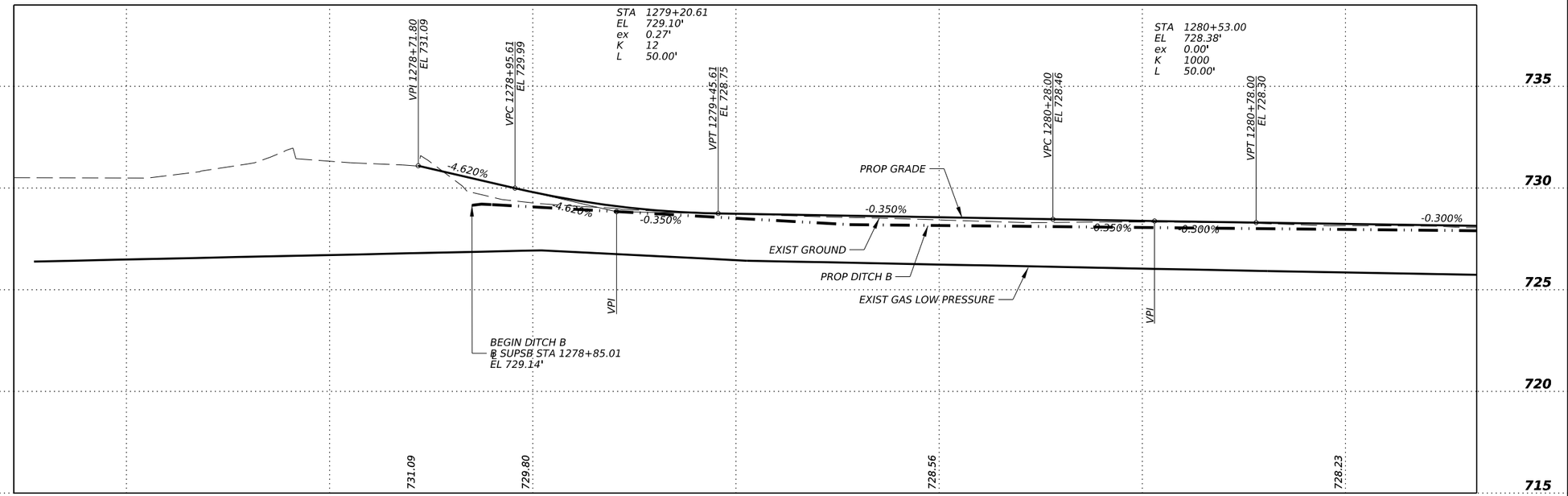
TURNING SPACES ARE DENOTED AS: T

0 15 30

SCALE: 1"=30' H
1"=6' V



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FM2790,COTTAGE,PRAIRIE

SUP PLAN & PROFILE
FM 2790

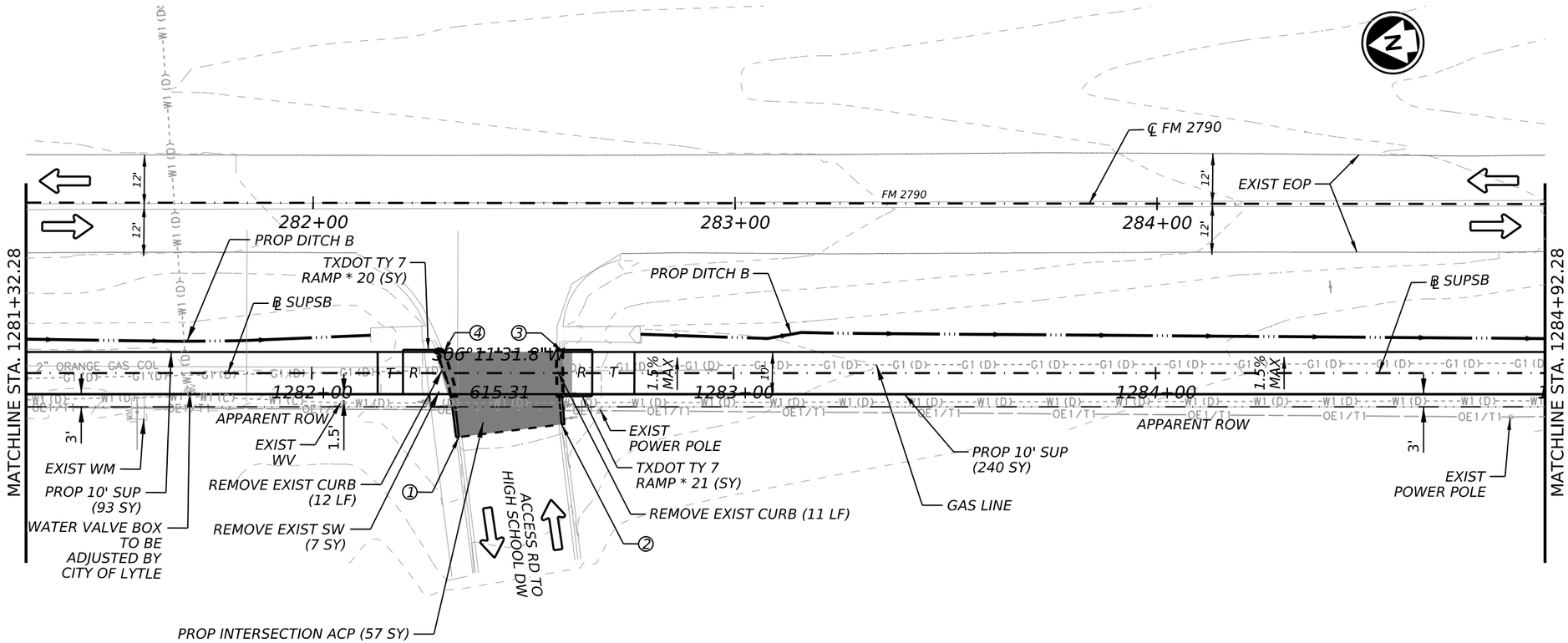
SOUTHBOUND

SHEET 1 OF 7

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		61

DATE: 8/23/2023 2:10:44 AM
FILE: ...IBL SUPSB - Plan 1-1 T.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	7
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	23
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	121.11
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	4.76
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	57
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	-
0531 6003	CONC SIDEWALKS (6")	SY	333
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	2
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH	LF	-



① STA: 282+34.58
OFFSET: 55.50' RT
② STA: 282+58.92
OFFSET: 52.47' RT
③ STA: 282+59.19
OFFSET: 35.28' RT
④ STA: 282+30.96
OFFSET: 35.42' RT

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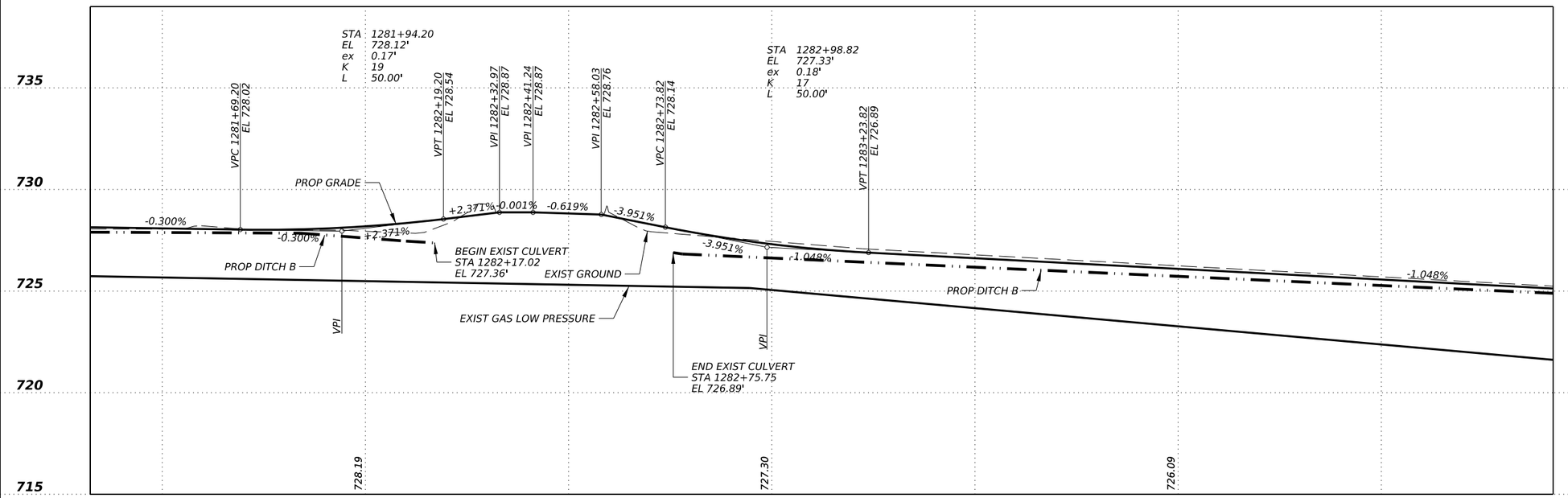
0 15 30
SCALE: 1"=30' H
1"=6' V



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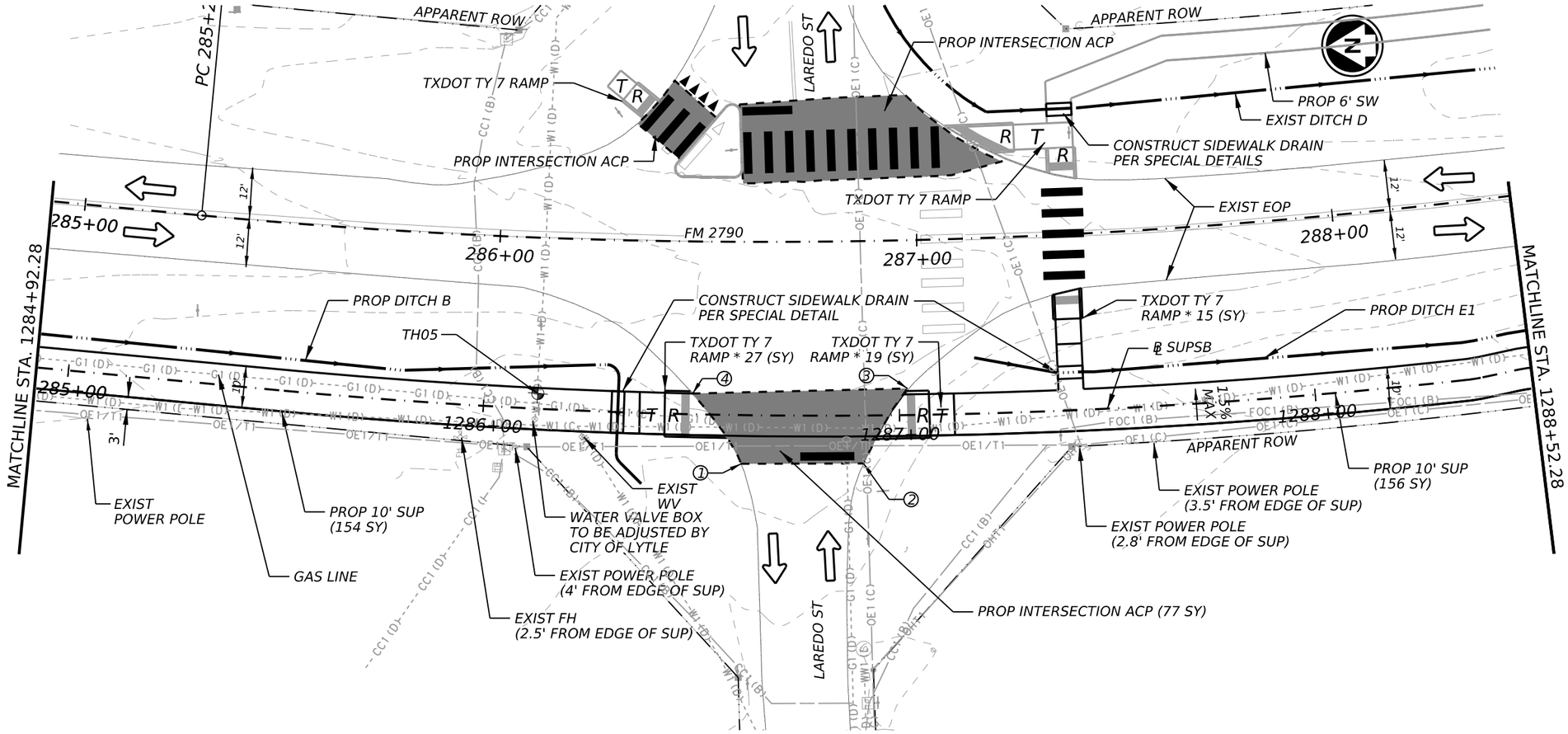
SUP PLAN & PROFILE
FM 2790

SOUTHBOUND

SHEET 2 OF 7

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		62

DATE: 8/23/2023 2:11:02 AM
FILE: ...\BL SUPSB - Plan 2-1 T.dgn



ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	65.5
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	12.03
0420 6002	CL A CONC (MISC)	CY	1.69
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	491
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	77
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	-
0531 6003	CONC SIDEWALKS (6")	SY	310
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	3
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	-

① STA: 286+58.05
OFFSET: 53.28' RT
② STA: 286+86.41
OFFSET: 53.37' RT
③ STA: 286+96.94
OFFSET: 35.56' RT
④ STA: 286+46.66
OFFSET: 36.48' RT

NOTES:

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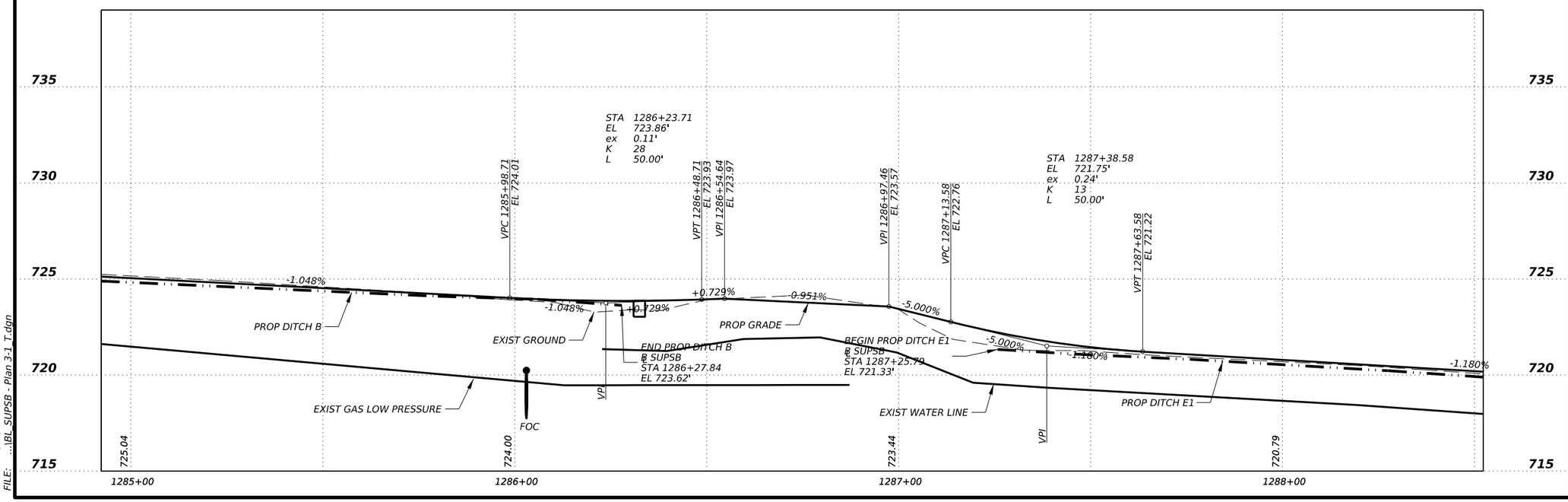
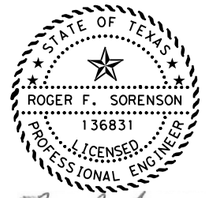
2. QUANTITY BOX IS FOR SOUTHBOUND ITEMS ONLY. FOR NORTHBOUND QUANTITIES SEE FM 2790 NORTHBOUND SHEETS.
3. UTILITY INFO TAKEN FROM BEST AVAILABLE INFO, CONTRACTOR TO VERIFY.
4. CURB RAMPS ARE DENOTED AS: R
TURNING SPACES ARE DENOTED AS: T

0 15 30
SCALE: 1"=30' H
1"=6' V





8/23/2023

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TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SUP PLAN & PROFILE
FM 2790

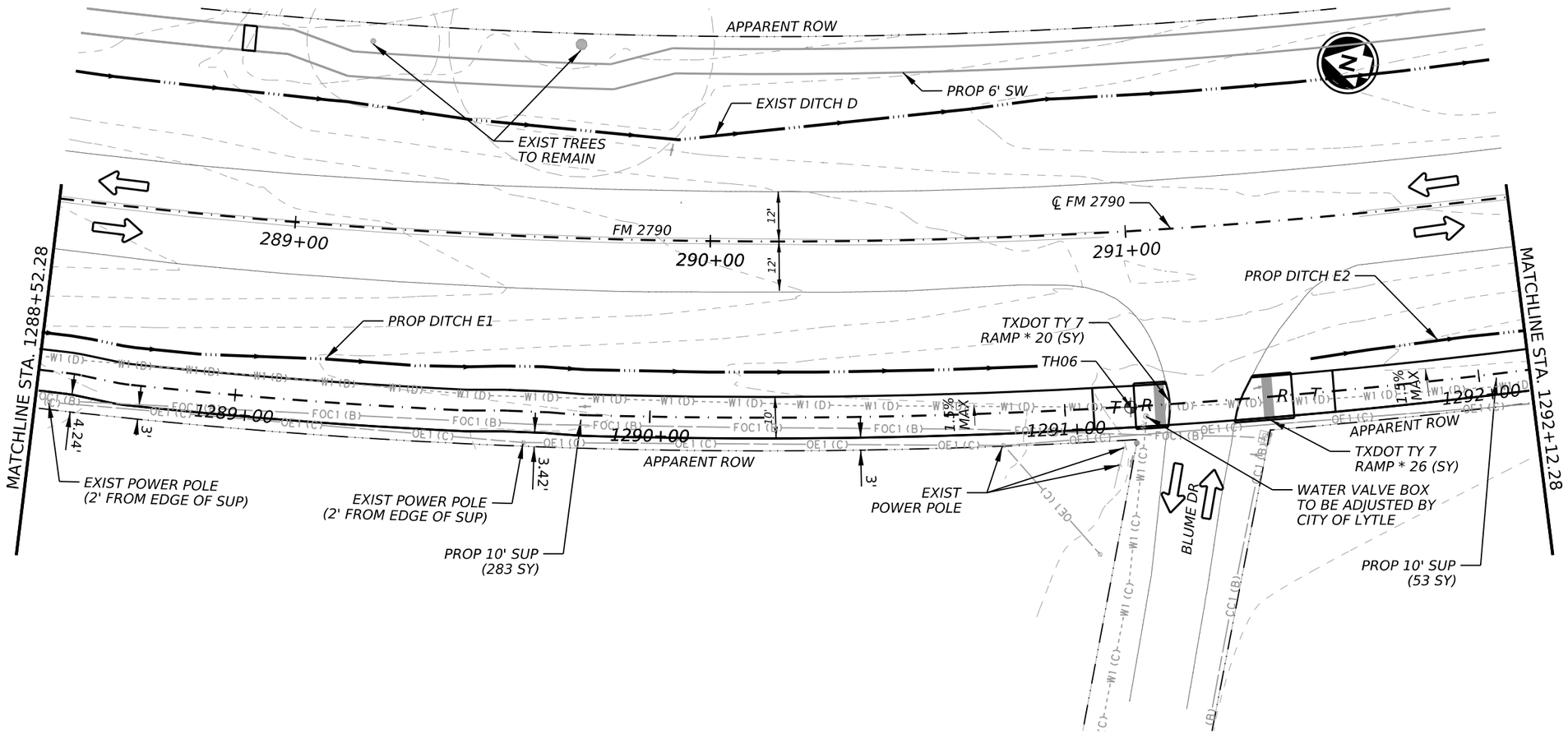
SOUTHBOUND

SHEET 3 OF 7

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		63

DATE: 8/23/2023 2:11:19 AM
FILE: ...\BL SUPSB - Plan 3-1 T.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	33.63
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	2.9
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	-
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	-
0531 6003	CONC SIDEWALKS (6")	SY	336
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	2
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	-



NOTES:

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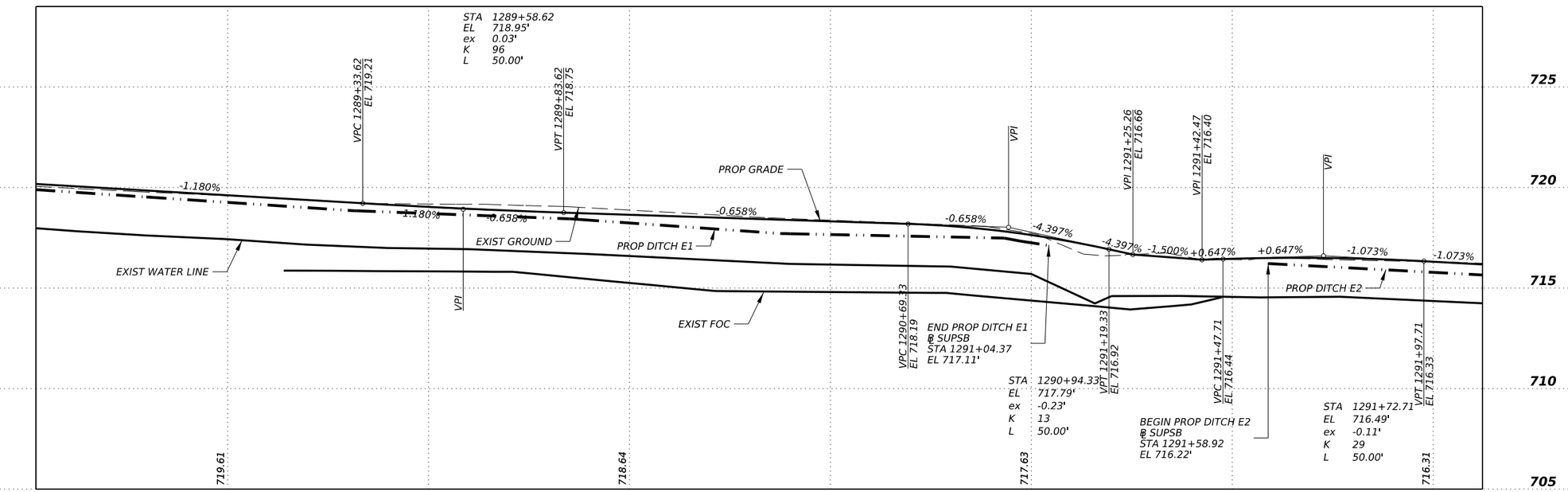
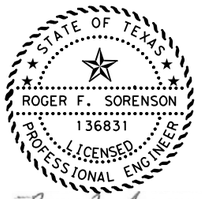
3. UTILITY INFO TAKEN FROM BEST AVAILABLE INFO, CONTRACTOR TO VERIFY.
4. CURB RAMPS ARE DENOTED AS: R
   TURNING SPACES ARE DENOTED AS: T

0 15 30

SCALE: 1"=30' H
1"=6' V





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FM2790,COTTAGE,PRAIRIE

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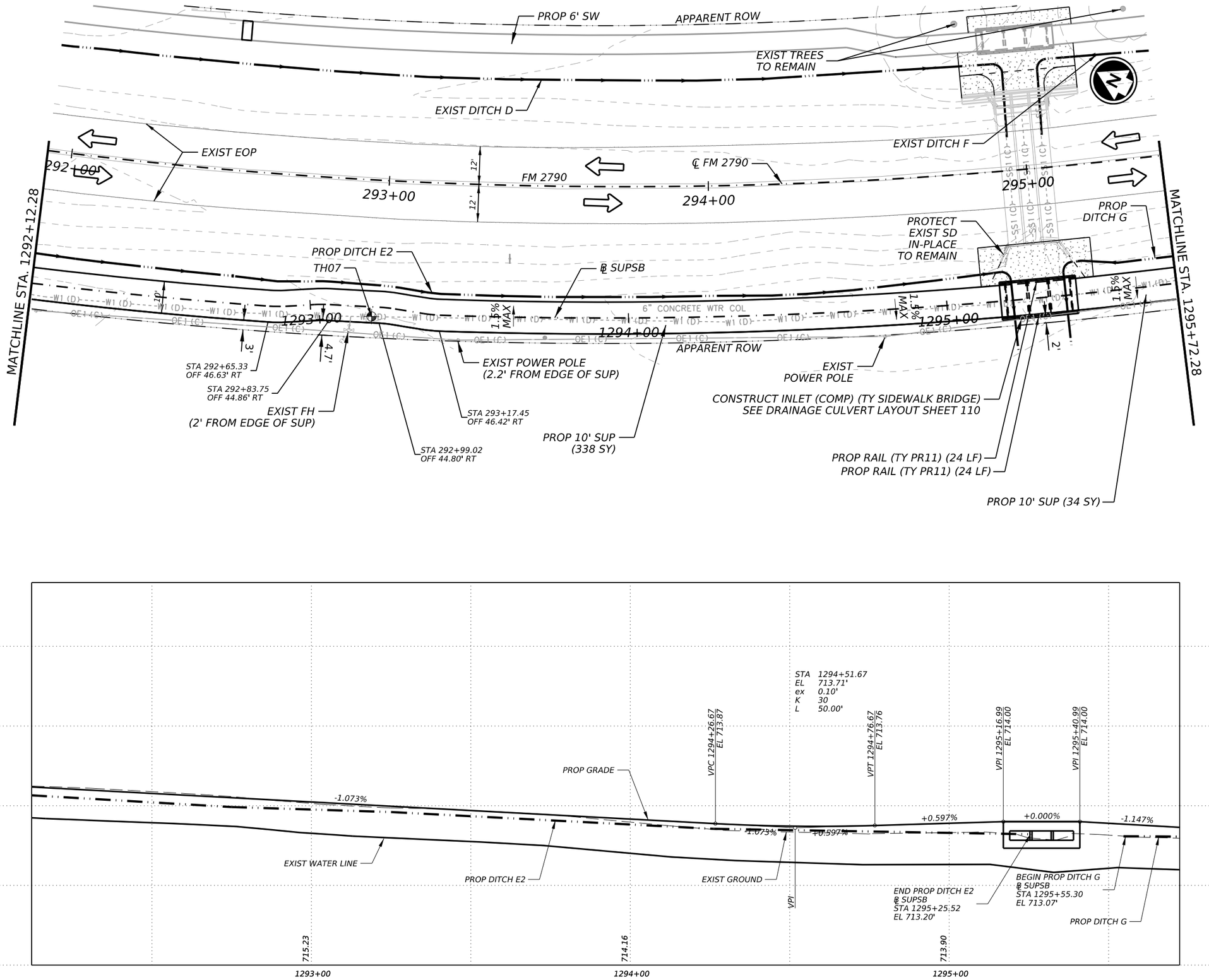
SOUTHBOUND

SHEET 4 OF 7

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		64

DATE: 8/23/2023 2:11:37 AM
FILE: ...\BL SUPSB - Plan 4-1 T.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	63.26
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	13.45
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	48
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	1
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	-
0530 6004	DRIVEWAYS (CONC)	SY	-
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	-
0531 6003	CONC SIDEWALKS (6")	SY	372
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	-
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	-



NOTES:

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3. UTILITY INFO TAKEN FROM BEST AVAILABLE INFO, CONTRACTOR TO VERIFY.
4. CURB RAMPS ARE DENOTED AS: R TURNING SPACES ARE DENOTED AS: T

0 15 30

SCALE: 1"=30' H
1"=6' V

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/23/2023

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SUP PLAN & PROFILE FM 2790

SOUTHBOUND

SHEET 5 OF 7

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		65

DATE: 8/23/2023 2:11:57 AM
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CK:
DW:
CK:
DW:

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	149
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	94.61
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	44.34
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	-
0530 6004	DRIVEWAYS (CONC)	SY	90
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	-
0531 6003	CONC SIDEWALKS (6")	SY	364
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	-
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	40

NOTES:

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3. UTILITY INFO TAKEN FROM BEST AVAILABLE INFO, CONTRACTOR TO VERIFY.
4. CURB RAMPS ARE DENOTED AS: R
   TURNING SPACES ARE DENOTED AS: T

0 15 30

SCALE: 1"=30' H
1"=6' V

STATE OF TEXAS
ROGER F. SORENSON
136831
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FM2790,COTTAGE,PRAIRIE

SUP PLAN & PROFILE
FM 2790

SOUTHBOUND

SHEET 6 OF 7

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		66

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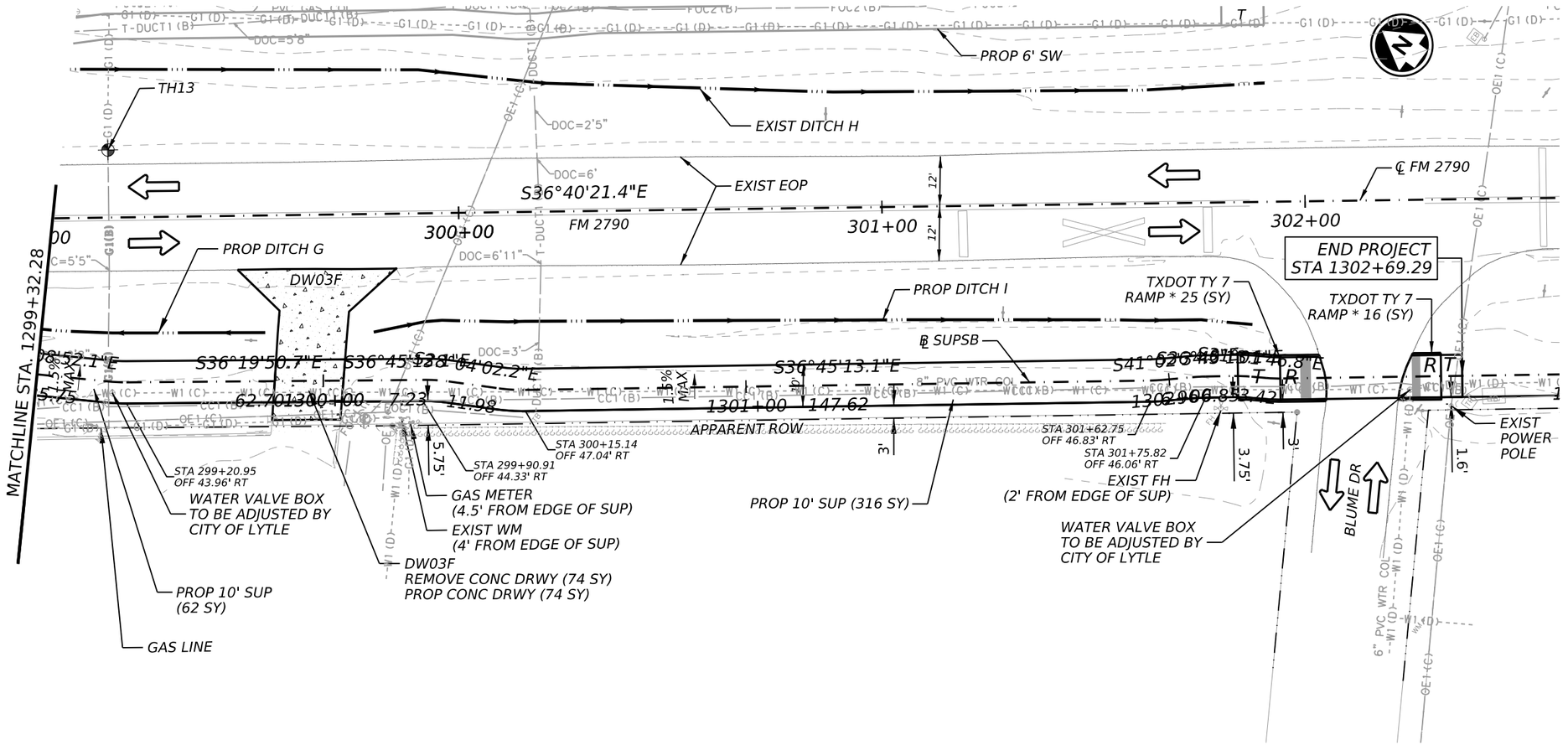

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	74
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	-
0110 6004	EXCAVATION (ROADWAY AND	CY	19.75
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	17.08
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	-
0530 6004	DRIVEWAYS (CONC)	SY	74
0530 6005	DRIVEWAYS (ACP)	SY	-
0531 6001	CONC SIDEWALKS (4")	SY	-
0531 6003	CONC SIDEWALKS (6")	SY	378
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	2
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	-

NOTES:

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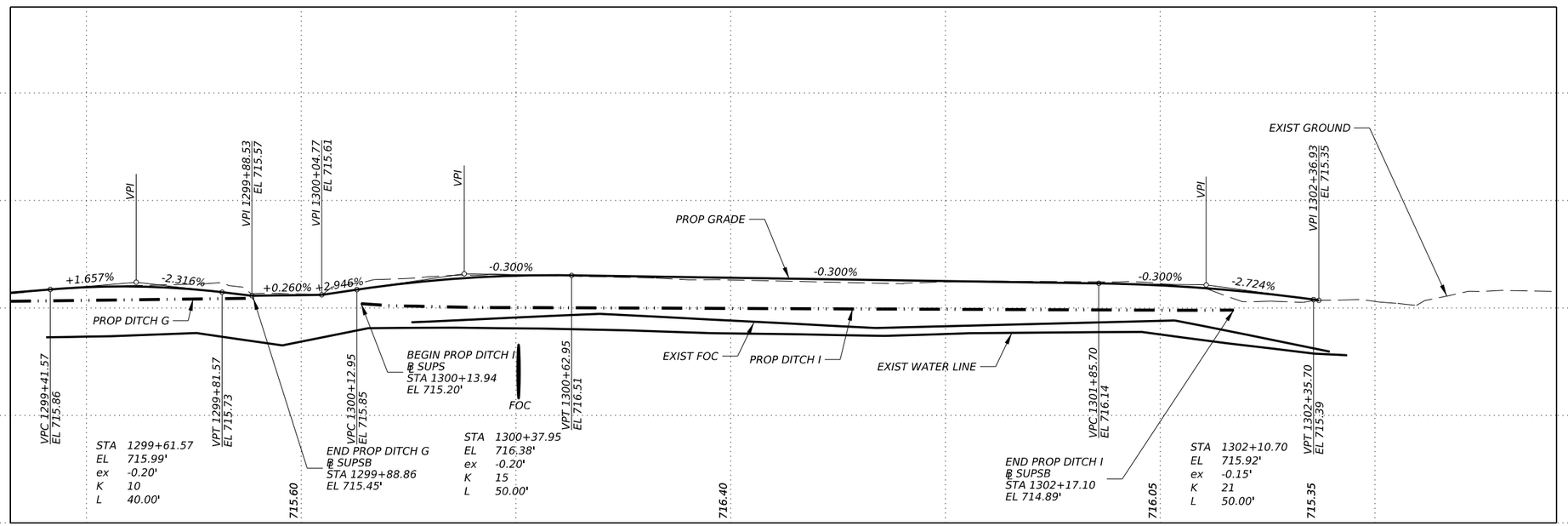
3. UTILITY INFO TAKEN FROM BEST AVAILABLE INFO, CONTRACTOR TO VERIFY.
4. CURB RAMPS ARE DENOTED AS: R
   TURNING SPACES ARE DENOTED AS: T

0 15 30

SCALE: 1"=30' H
1"=6' V



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STATE OF TEXAS
ROGER F. SORENSON
136831
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8/23/2023

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SUP PLAN & PROFILE FM 2790

SOUTHBOUND

SHEET 7 OF 7

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		67

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	123
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	276
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	104
0110 6004	EXCAVATION (ROADWAY AND	CY	9
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	18
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	-
0530 6002	INTERSECTIONS (ACP)	SY	40
0530 6004	DRIVEWAYS (CONC)	SY	405
0530 6005	DRIVEWAYS (ACP)	SY	155
0531 6001	CONC SIDEWALKS (4")	SY	754
0531 6003	CONC SIDEWALKS (6")	SY	-
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	-
0531 6010	CURB RAMPS (TY 7)	EA	8
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	1
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	30

LEGEND

- EXISTING TRAFFIC
- EXIST. CONCRETE REMOVAL
- REMOVE ACP DRIVEWAY / PROPOSED CONC DRIVEWAY
- REMOVE CONC DRIVEWAY / PROPOSED CONC DRIVEWAY
- DW## DRIVEWAY NUMBER
- SAWCUT
- INTERSECTION ACP
- MILLING & OVERLAY

NOTES:

1. * QUANTITIES FOR CONTRACTOR INFORMATION ONLY.
2. CURB RAMPS ARE DENOTED AS: R
   TURNING SPACES ARE DENOTED AS: T

0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
ROGER F. SORENSON
136831
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FM2790,COTTAGE,PRAIRIE

COTTAGE ST ROADWAY PLANS

STA 109+00 TO STA 121+00

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		68

DATE: 8/22/2023 9:21:50 PM
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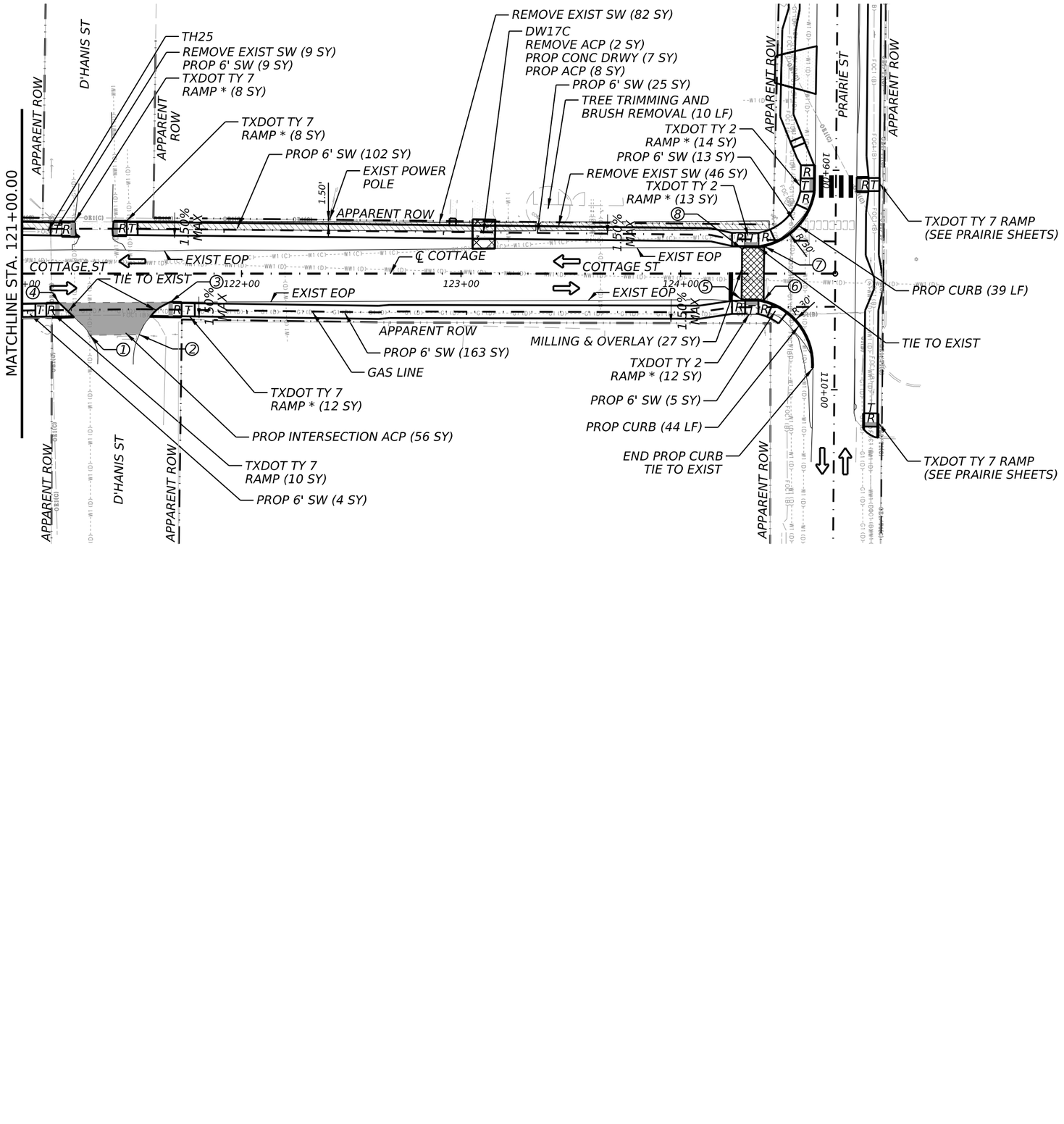

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	137
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	-
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	2
0110 6004	EXCAVATION (ROADWAY AND	CY	2
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	3
0420 6002	CL A CONC (MISC)	CY	-
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	-
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	83
0530 6002	INTERSECTIONS (ACP)	SY	56
0530 6004	DRIVEWAYS (CONC)	SY	7
0530 6005	DRIVEWAYS (ACP)	SY	8
0531 6001	CONC SIDEWALKS (4")	SY	321
0531 6003	CONC SIDEWALKS (6")	SY	-
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	3
0531 6010	CURB RAMPS (TY 7)	EA	4
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	10

LEGEND

- EXISTING TRAFFIC
- EXIST. CONCRETE REMOVAL
- REMOVE ACP DRIVEWAY / PROPOSED CONC DRIVEWAY
- REMOVE CONC DRIVEWAY / PROPOSED CONC DRIVEWAY
- DW## DRIVEWAY NUMBER
- SAWCUT
- INTERSECTION ACP
- MILLING & OVERLAY

1. STA: 121+31.00 OFFSET: 28.07' RT
2. STA: 121+53.44 OFFSET: 27.76' RT
3. STA: 121+67.54 OFFSET: 12.93' RT
4. STA: 121+16.78 OFFSET: 13.23' RT
5. STA: 124+27.78 OFFSET: 11.80' RT
6. STA: 124+37.87 OFFSET: 12.26' RT
7. STA: 124+38.12 OFFSET: 12.46' LT
8. STA: 124+28.04 OFFSET: 11.27' LT

NOTES:

1. * QUANTITIES FOR CONTRACTOR INFORMATION ONLY.
2. CURB RAMPS ARE DENOTED AS: R
   TURNING SPACES ARE DENOTED AS: T
3. CONTRACTOR TO CONSTRUCT FLUSH CURBS AT RAMPS.

0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
ROGER F. SORENSON
136831
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8/22/2023

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

COTTAGE ST ROADWAY PLANS

STA 121+00 TO STA 127+00

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		69

DATE: 8/22/2023 9:22:18 PM
FILE: ...\3. Roadway\CTGRDWYPL002.dgn

ITEM	DESCRIPTION	UNIT	QTY
0104 6015	REMOVING CONC (SIDEWALKS)	SY	-
0104 6017	REMOVING CONC (DRIVEWAYS)	SY	230
0104 6021	REMOVING CONC (CURB)	LF	-
0105 6045	REMOVING STAB BASE AND ASPH PAV	SY	12
0110 6004	EXCAVATION (ROADWAY AND	CY	8
0132 6005	EMBANKMENT (FINAL)(ORD COMP)(TY	CY	10
0420 6002	CL A CONC (MISC)	CY	3.55
0442 6007	STR STEEL (MISC NON - BRIDGE)	LB	920
0450 6048	RAIL (HANDRAIL)(TY B)	LF	-
0450 6103	RAIL (TY PR11)	LF	-
0465 6233	INLET (COMP) (TY SIDEWALK BRIDGE)	EA	-
0529 6002	CONC CURB (TY II)	LF	58
0530 6002	INTERSECTIONS (ACP)	SY	40
0530 6004	DRIVEWAYS (CONC)	SY	279
0530 6005	DRIVEWAYS (ACP)	SY	121
0531 6001	CONC SIDEWALKS (4")	SY	905
0531 6003	CONC SIDEWALKS (6")	SY	-
0531 6004	CURB RAMPS (TY 1)	EA	-
0531 6005	CURB RAMPS (TY 2)	EA	4
0531 6010	CURB RAMPS (TY 7)	EA	6
0531 6032	CONC SIDEWALKS (SPECIAL) (TYPE A)	SY	-
0752 6022	TREE TRIMMING AND BRUSH REMOVAL	LF	-

LEGEND

- EXISTING TRAFFIC
- EXIST. CONCRETE REMOVAL
- REMOVE ACP DRIVEWAY / PROPOSED CONC DRIVEWAY
- REMOVE CONC DRIVEWAY / PROPOSED CONC DRIVEWAY
- DW## DRIVEWAY NUMBER
- SAWCUT
- INTERSECTION ACP
- MILLING & OVERLAY

NOTES:

1. * QUANTITIES FOR CONTRACTOR INFORMATION ONLY.
2. CURB RAMPS ARE DENOTED AS: R
   TURNING SPACES ARE DENOTED AS: T
3. CONTRACTOR TO CONSTRUCT FLUSH CURBS AT RAMPS.

0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

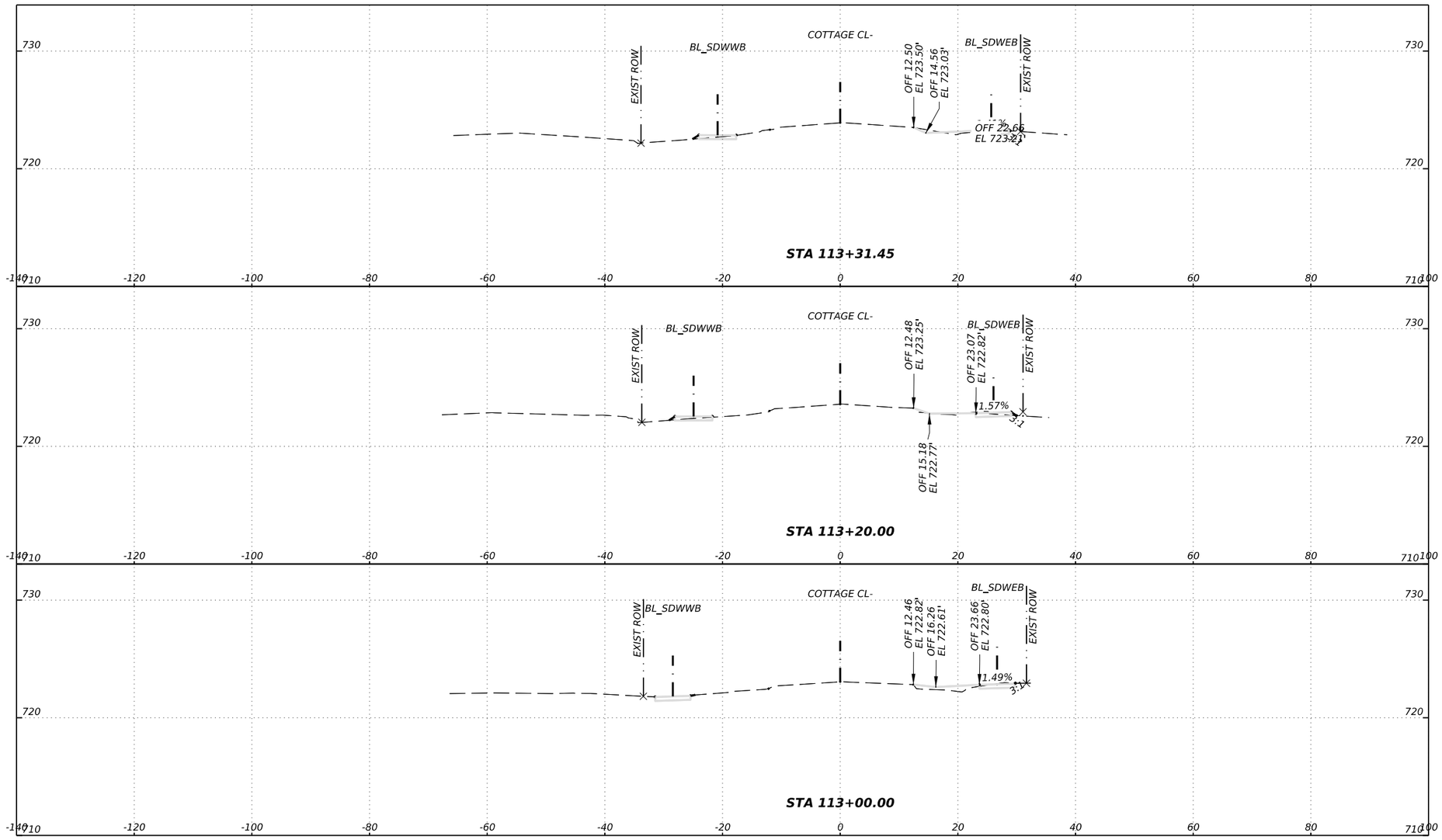
N. PRAIRIE ST ROADWAY PLANS

STA 100+00 TO STA 112+00

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		70

DATE: 8/22/2023 9:22:44 PM
FILE: ...\3. Roadway\PRARDWYPL.dgn



0 10 20
SCALE IN FEET

STATE OF TEXAS
ROGER F. SORENSON
136831
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7/14/2023

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FM 2790

COTTAGE
PROPOSED
DITCH CROSS SECTIONS

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		71

DATE: 7/14/2023 12:56:35 PM
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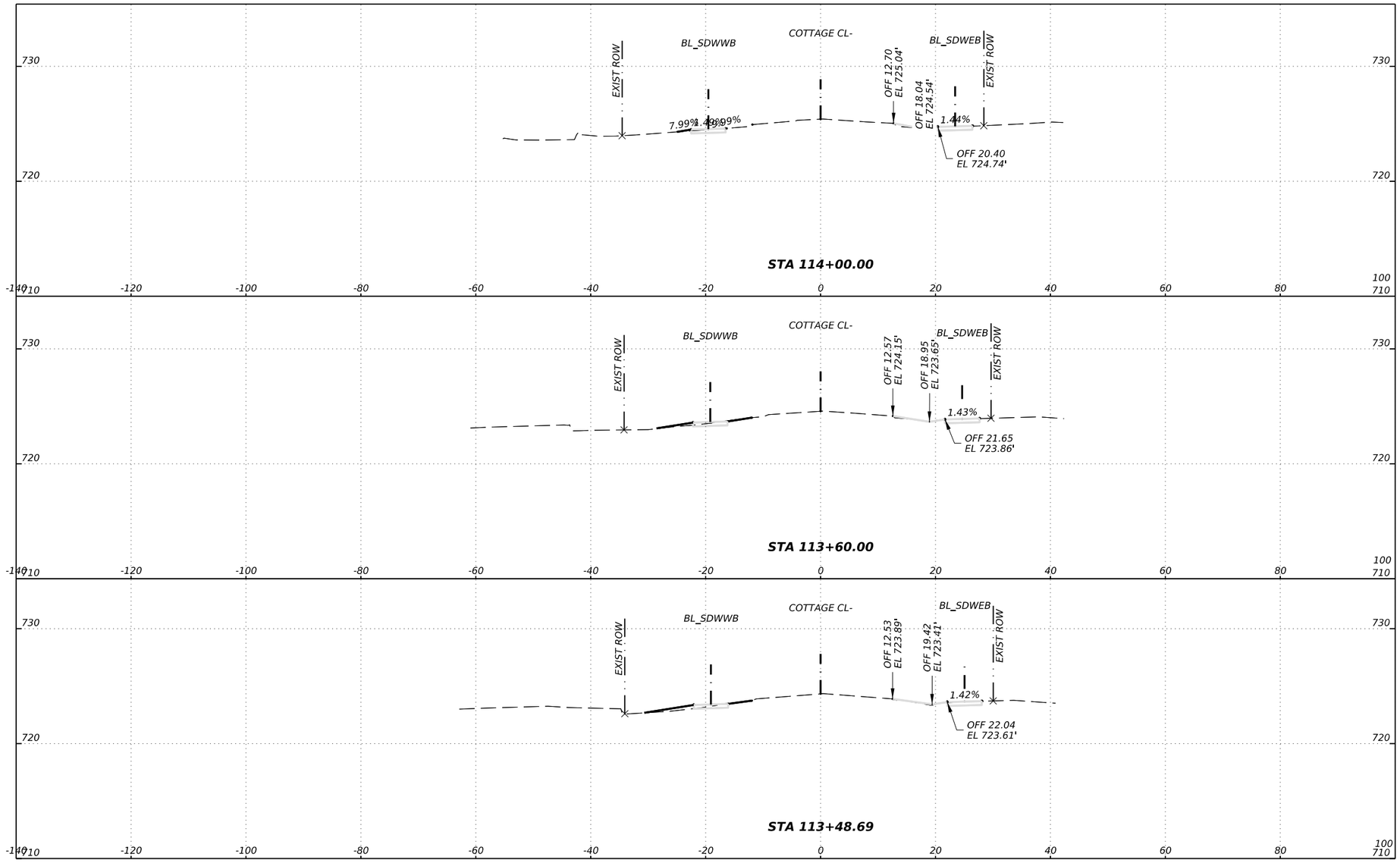

0 10 20

SCALE IN FEET

DATE: 7/14/2023 12:57:00 PM
FILE: ...\FM 2790 CTG WB XSTREETS ditch.dgn

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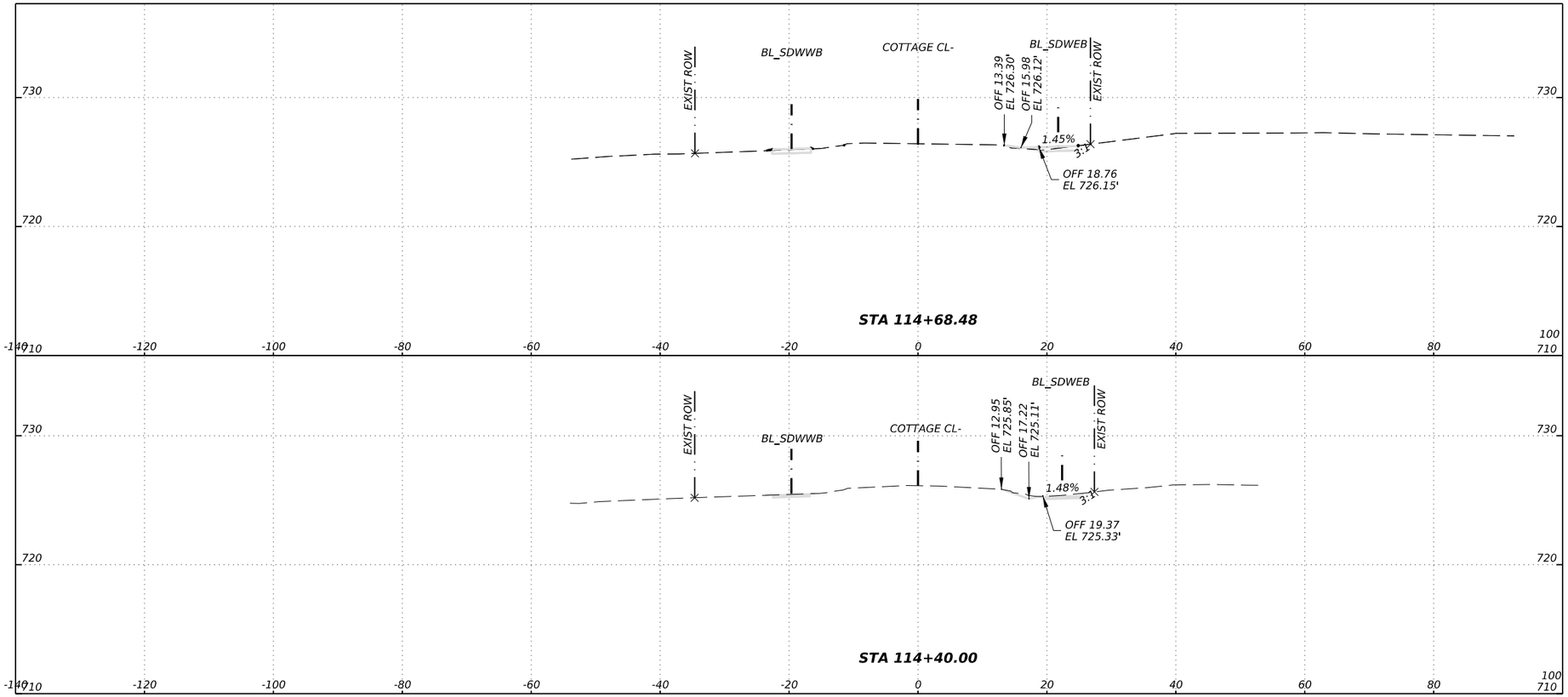
FM 2790

COTTAGE PROPOSED DITCH CROSS SECTIONS

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		72

CK:
DW:
CK:
DW:



0 10 20
SCALE IN FEET

STATE OF TEXAS
ROGER F. SORENSON
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7/14/2023

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FM 2790

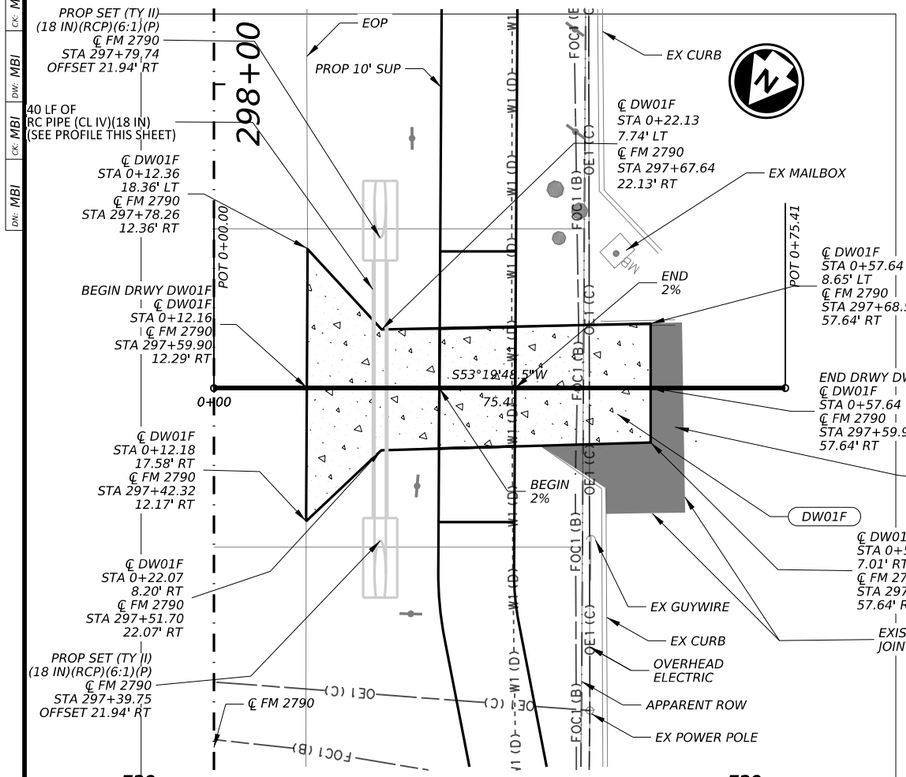
COTTAGE
PROPOSED
DITCH CROSS SECTIONS

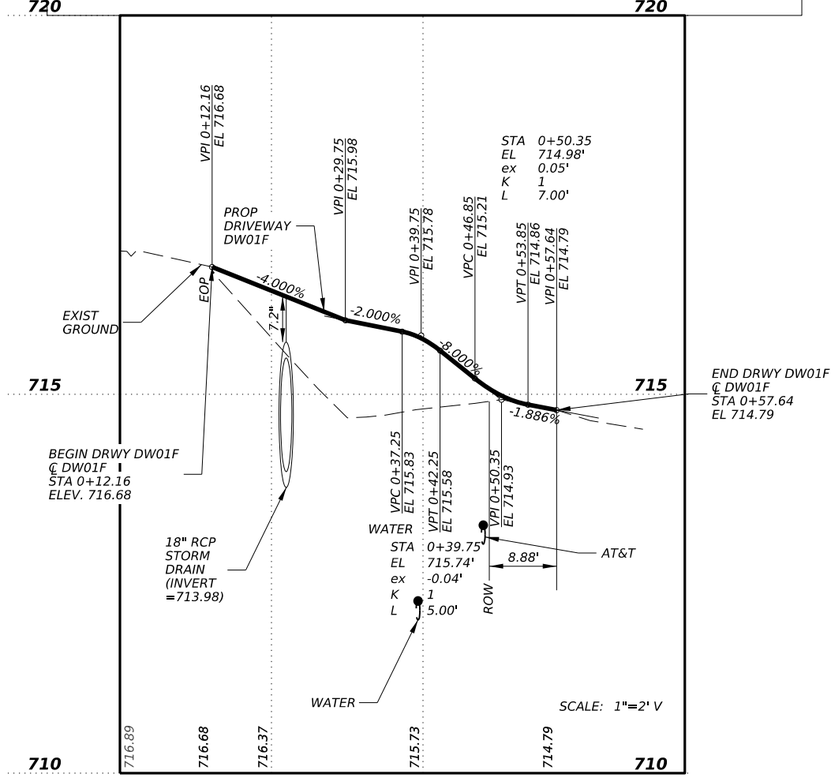
SHEET 3 OF 3

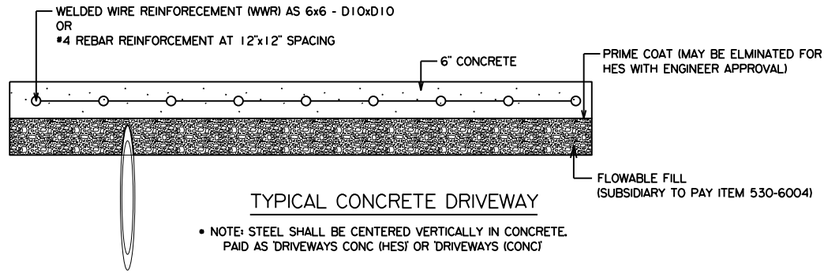
CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		73

DATE: 7/14/2023 12:57:27 PM
FILE: ...\FM 2790 CTG WB XSTREETS ditch.dgn

ITEM	DESCRIPTION	UNIT	QTY
464-6017	RC PIPE (CL IV)(18 IN)	LF	40
467-6363	SET (TY II) (18 IN) (RCP) (6:1) (P)	EA	2







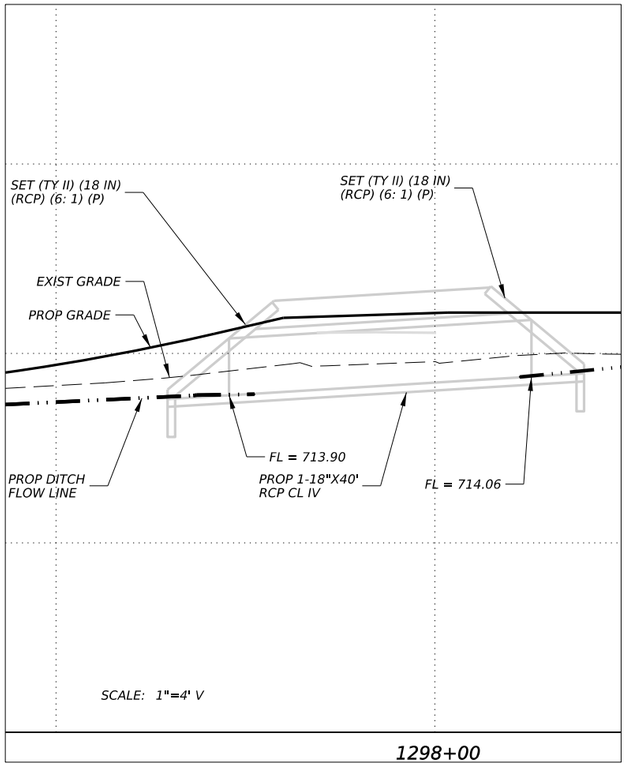
TYPICAL CONCRETE DRIVEWAY

- NOTE: STEEL SHALL BE CENTERED VERTICALLY IN CONCRETE. PAID AS 'DRIVEWAYS CONC (HES)' OR 'DRIVEWAYS (CONC)'

HORIZONTAL ALIGNMENT REPORT
Alignment name: DW01F

	STATION	X	Y
POTFM2790_CL	0.000	2030879.872	13632131.797
POT	75.414	2030819.383	13632086.760
Tangential Direction:	S53.330°W		
Tangential Length:	75.414		

CULVERT PROFILE



1298+00

LEGEND

FOC1	AT&T LEVEL B
OC1 (D) FOC1 (D) FOC1	AT&T LEVEL D
FOC2	ZAYO GROUP LEVEL B
T-DUCT1	AT&T LEVLE B
OE1	CPS LEVEL C
OE1/T1	CPS/ATT LEVEL C
G1	CITY OF LYTLE LEVEL B
G1 (D) G1 (D) G1 (D)	CITY OF LYTLE LEVEL D
W1 (C) W1 (C) W1 (C)	CITY OF LYTLE WATER LEVEL C
W1 (D) W1 (D) W1 (D)	CITY OF LYTLE WATER LEVEL D
SS1 (C) SS1 (C) SS1 (C)	TXDOT STORM SEWER LEVEL C
WW1 (C) WW1 (C) WW1 (C)	CITY OF LYTLE SANITARY SEWER LEVEL C
WW1 (D) WW1 (D) WW1 (D)	CITY OF LYTLE SANITARY SEWER LEVEL D
	EX TREE
	EX SIGN
	APPARENT ROW

NOTES:

1. REFER TO SIDEWALK PLAN & PROFILE SHEETS FOR DRIVEWAY QUANTITIES .
2. DEPTH OF THE UNDERGROUND EXISTING UTILITIES SHOWN IS APPROXIMATE AND CONTRACTOR TO FIELD VERIFY THE ACTUAL DEPTH.

0 10 20
SCALE: 1"=20' H

STATE OF TEXAS
ROGER F. SORENSON
136831
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8/22/2023

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FM2790,COTTAGE,PRAIRIE

DRIVEWAY & CULVERT PLAN & PROFILE DW01F

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		74

CK: MBI DW: MBI CK: MBI DW: MBI

DATE: 8/22/2023 9:20:08 PM
FILE: ...\Driveway\DW01F_PNP.dgn

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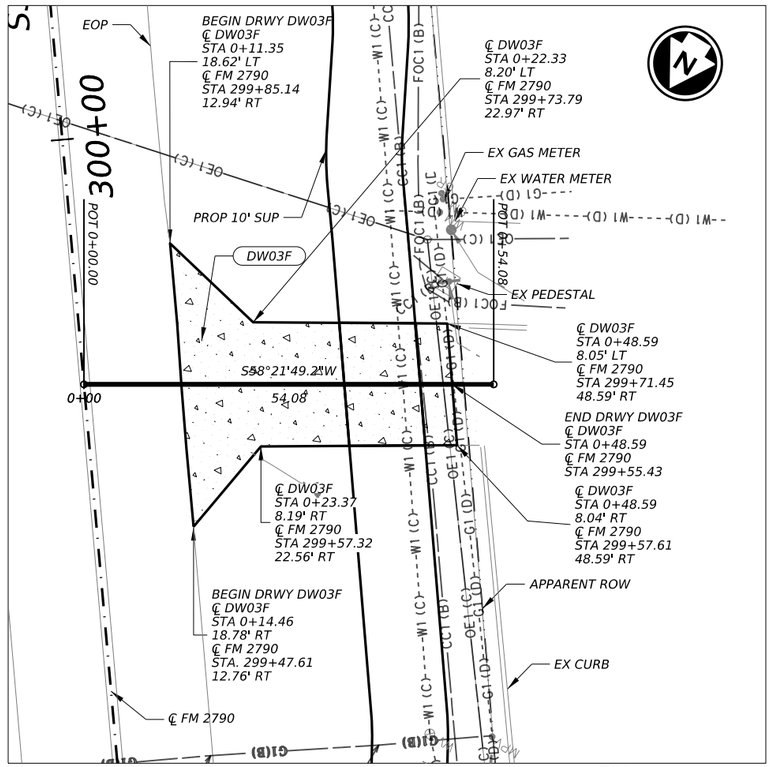
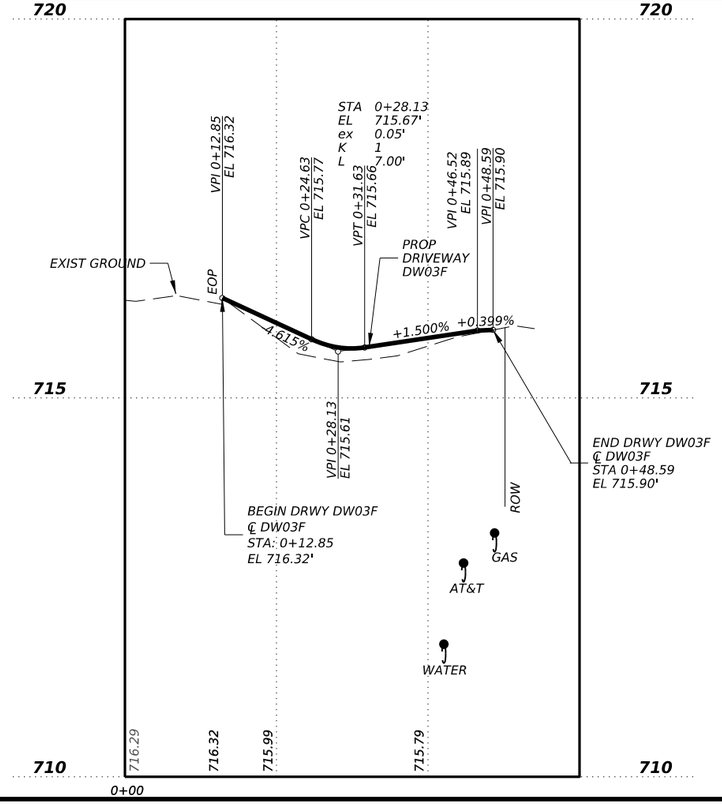
DW: MBI | CK: MBI
DW: MBI | CK: MBI





LEGEND

FOC1	AT&T LEVEL B
OC1(D)----FOC1(D)----FOC1	AT&T LEVEL D
FOC2	ZAYO GROUP LEVEL B
T-DUCT1	AT&T LEVLE B
OE1	CPS LEVEL C
OE1/T1	CPS/ATT LEVEL C
G1	CITY OF LYTLE LEVEL B
--G1(D)----G1(D)----G1(D)--	CITY OF LYTLE LEVEL D
--W1(C)----W1(C)----W1(C)--	CITY OF LYTLE WATER LEVEL C
--W1(D)----W1(D)----W1(D)--	CITY OF LYTLE WATER LEVEL D
SS1(C)----SS1(C)----SS1(C)	TXDOT STORM SEWER LEVEL C
WW1(C)----WW1(C)----WW1(C)	CITY OF LYTLE SANITARY SEWER LEVEL C
WW1(D)----WW1(D)----WW1(D)	CITY OF LYTLE SANITARY SEWER LEVEL D
	EX TREE
	EX SIGN
	APPARENT ROW

NOTES:

1. REFER TO SIDEWALK PLAN & PROFILE SHEETS FOR DRIVEWAY QUANTITIES .
2. DEPTH OF THE UNDERGROUND EXISTING UTILITIES SHOWN IS APPROXIMATE AND CONTRACTOR TO FIELD VERIFY THE ACTUAL DEPTH.

HORIZONTAL ALIGNMENT REPORT
Alignment name: DW03F

	STATION	X	Y
POTFM2790_CL	0.000	2031003.908	13631965.223
POT	54.081	2030957.864	13631936.856
Tangential Direction:	S58.364°W		
Tangential Length:	54.081		

0 10 20
SCALE: 1"=20' H
1"=2' V

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FM2790,COTTAGE,PRAIRIE

DRIVEWAY PLAN & PROFILE

DW03F

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		75

DATE: 8/22/2023 9:20:53 PM
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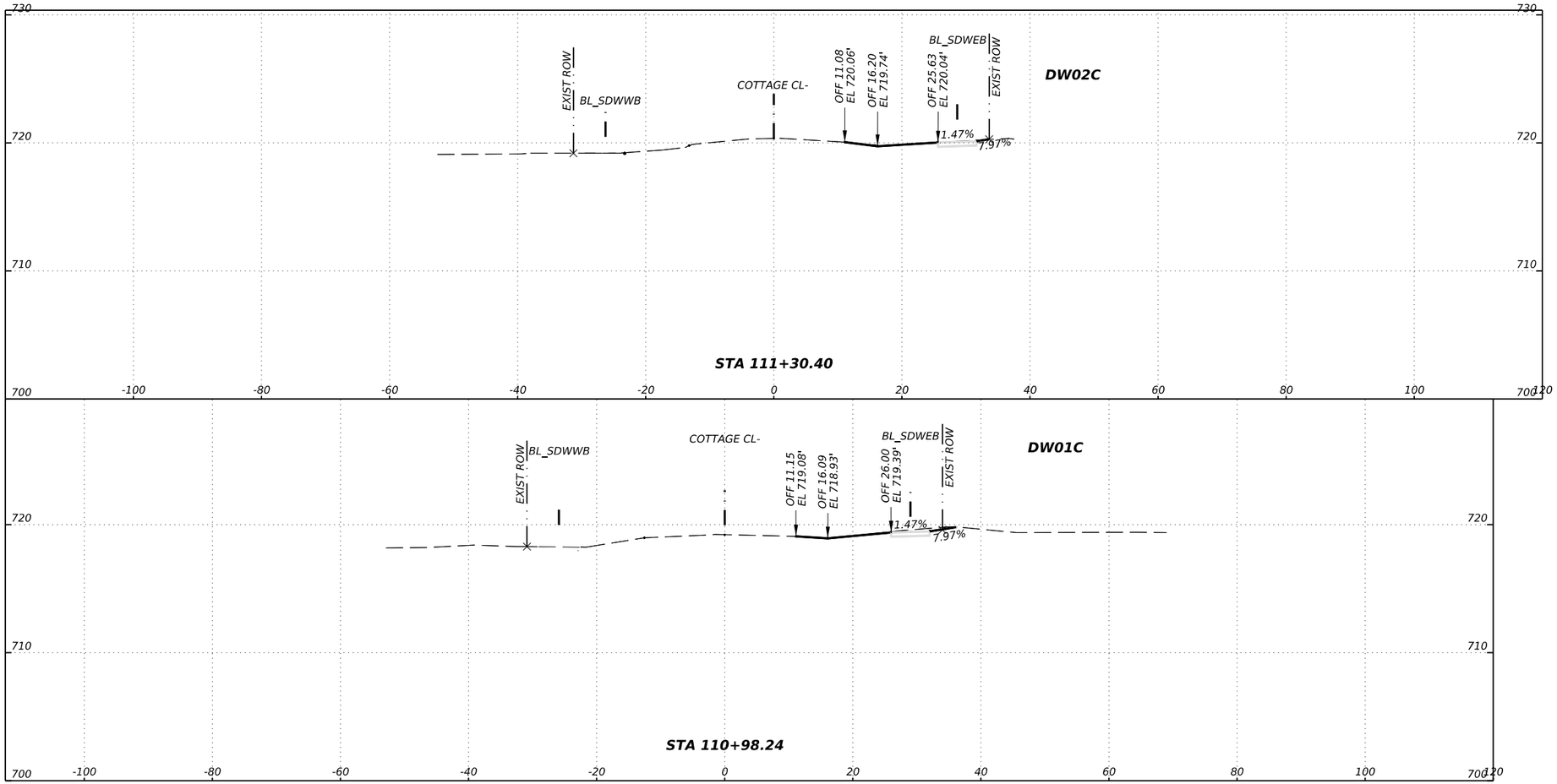

0 10 20

SCALE IN FEET

DATE: 7/14/2023 12:04:20 PM
FILE: ...\FM 2790 CTG WB XSTREETS driveway.dgn

CK:
DW:
CK:
DW:

STATE OF TEXAS
ROGER F. SORENSON
136831
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7/14/2023

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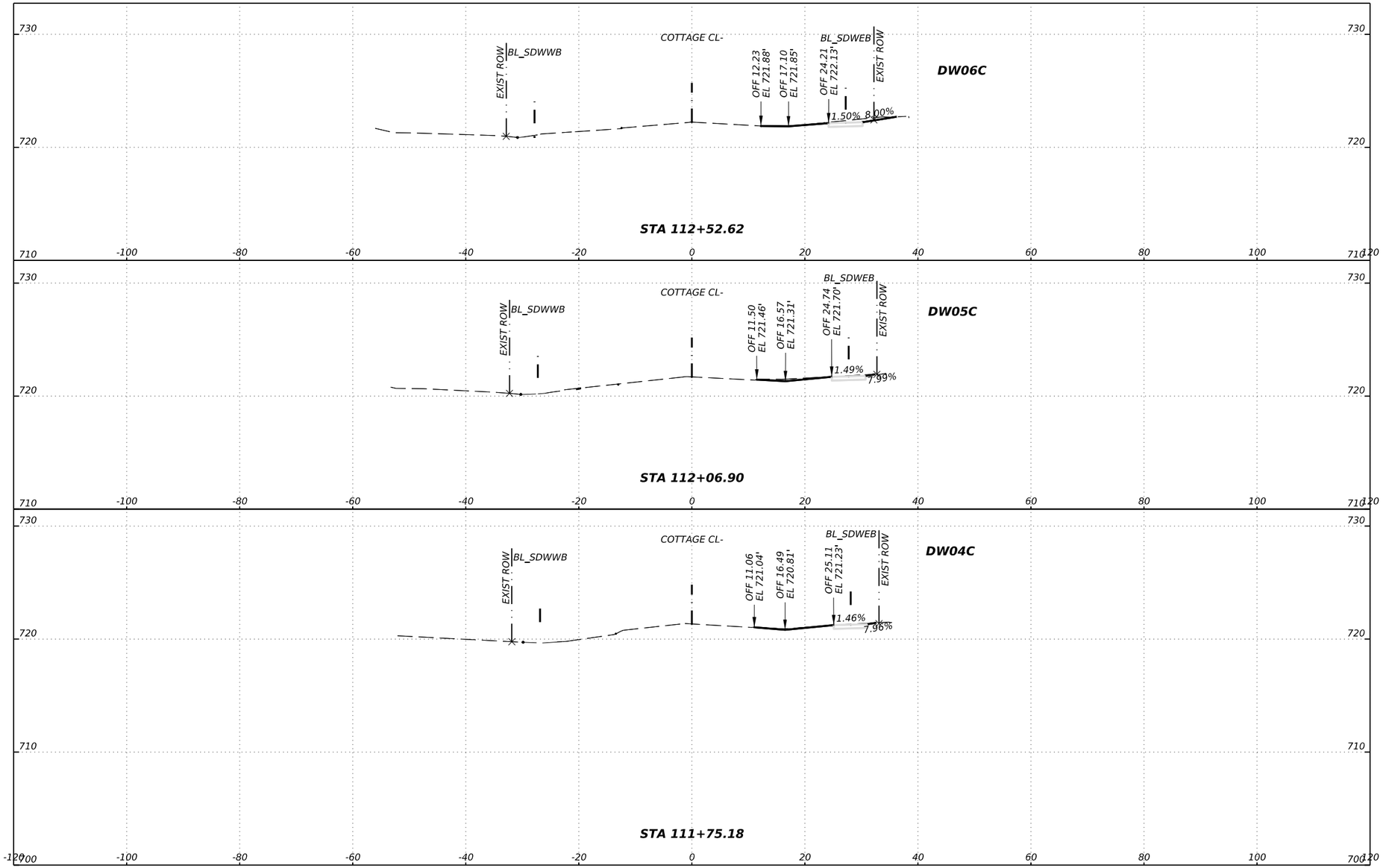
FM 2790

PROPOSED DRIVEWAY CROSS SECTIONS COTTAGE STREET

SHEET 1 OF 6

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		76



0 10 20

SCALE IN FEET

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FM 2790

PROPOSED DRIVEWAY CROSS SECTIONS COTTAGE STREET

SHEET 2 OF 6

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		77

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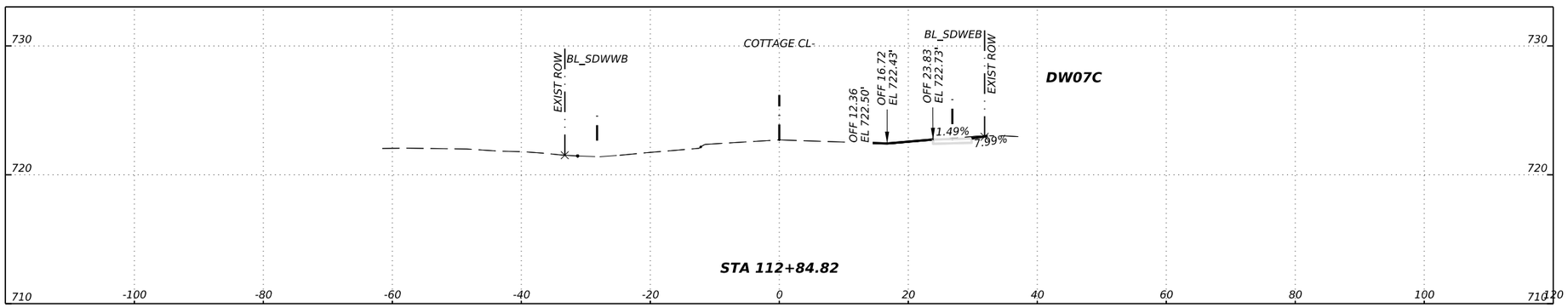
DW:
CK:
DW:



0 10 20
SCALE IN FEET

DATE: 7/14/2023 12:05:00 PM
FILE: ...\FM 2790 CTG WB XSTREETS driveway.dgn

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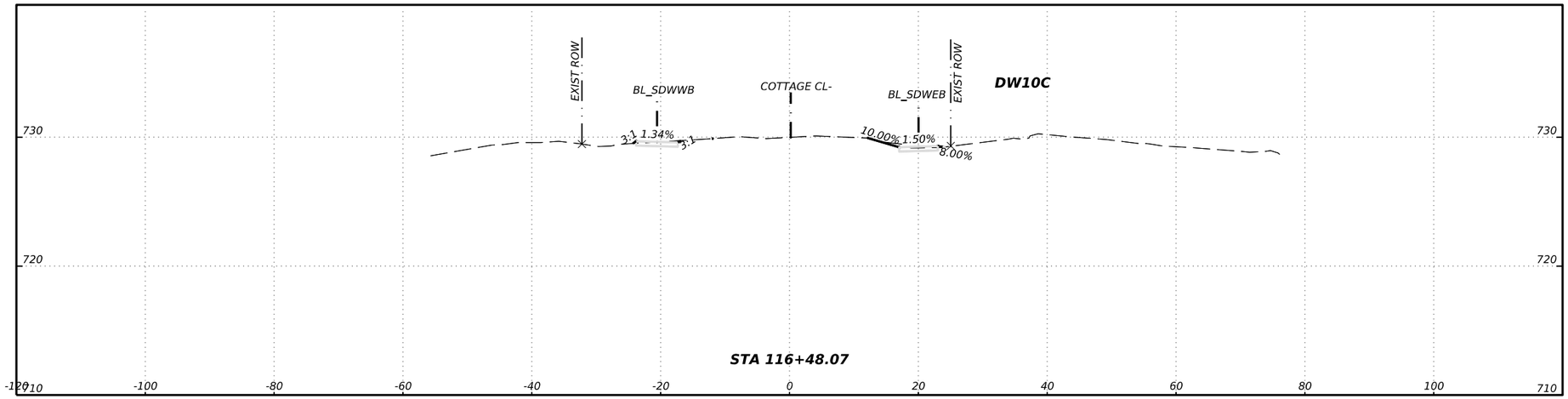
PROPOSED DRIVEWAY CROSS SECTIONS COTTAGE STREET

SHEET 3 OF 6

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		78



0 10 20

SCALE IN FEET

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FM 2790

PROPOSED DRIVEWAY CROSS SECTIONS COTTAGE STREET

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		79

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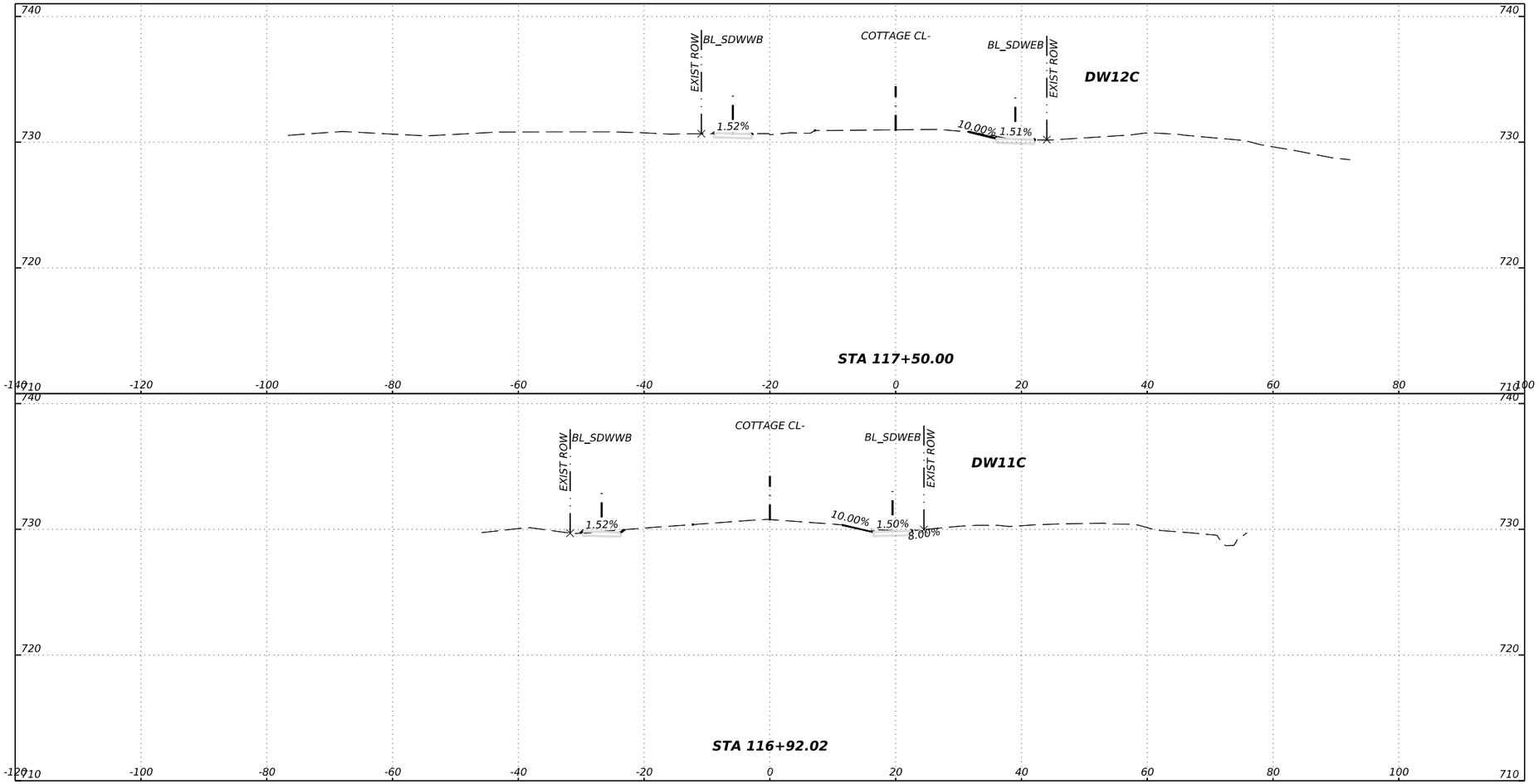

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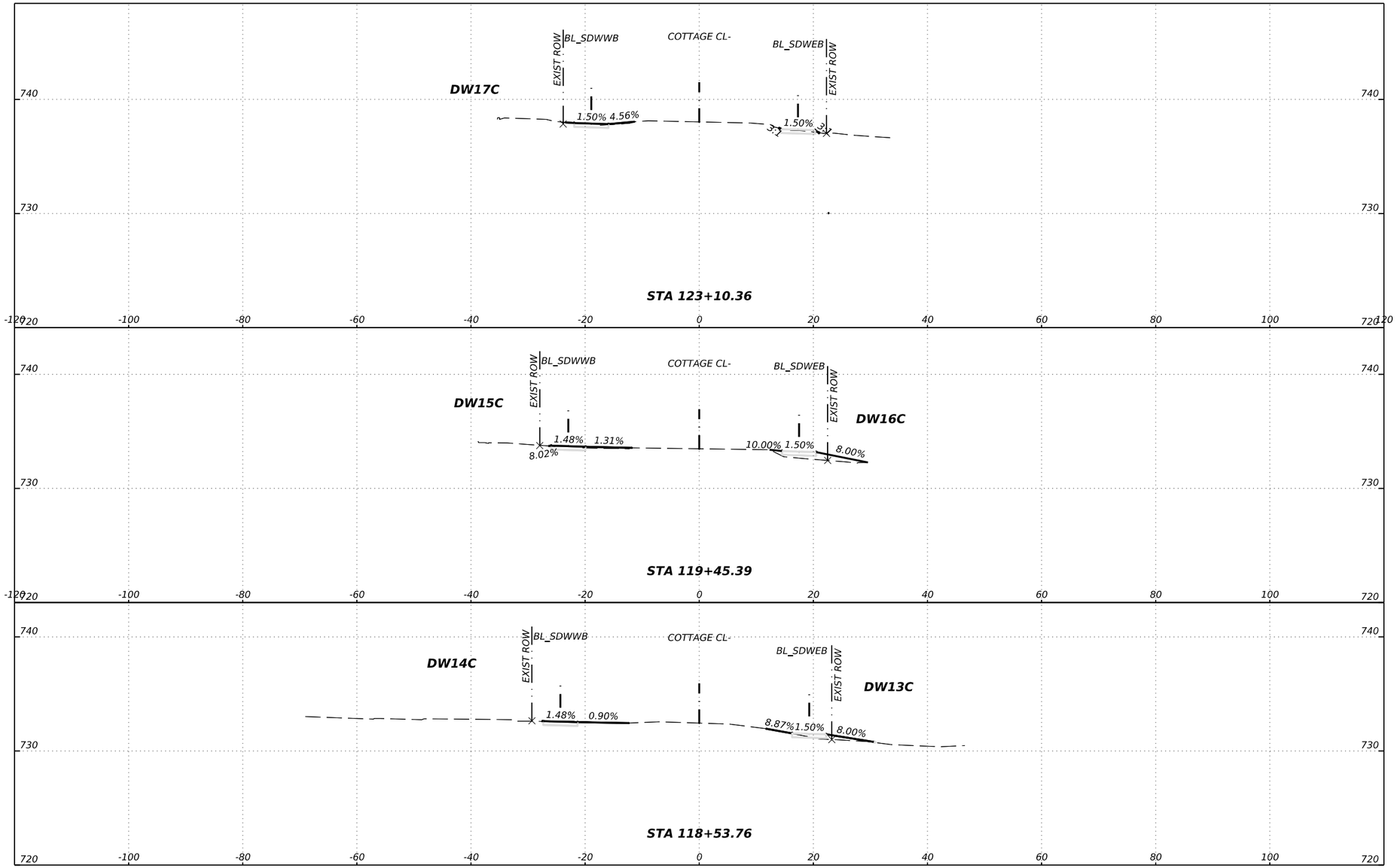
PROPOSED DRIVEWAY CROSS SECTIONS COTTAGE STREET

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		80



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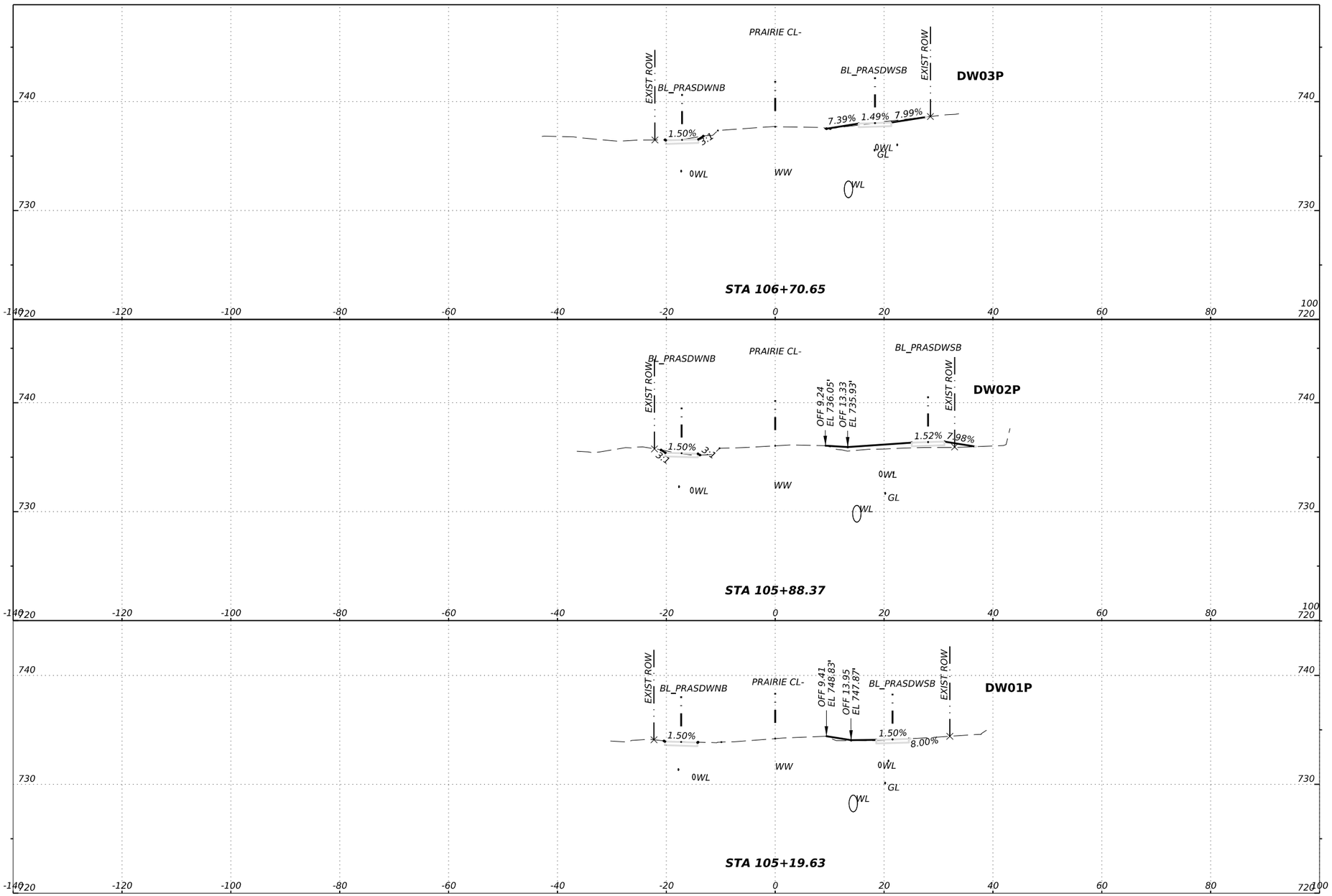
FM 2790

PROPOSED DRIVEWAY CROSS SECTIONS COTTAGE STREET

SHEET 6 OF 6

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		81



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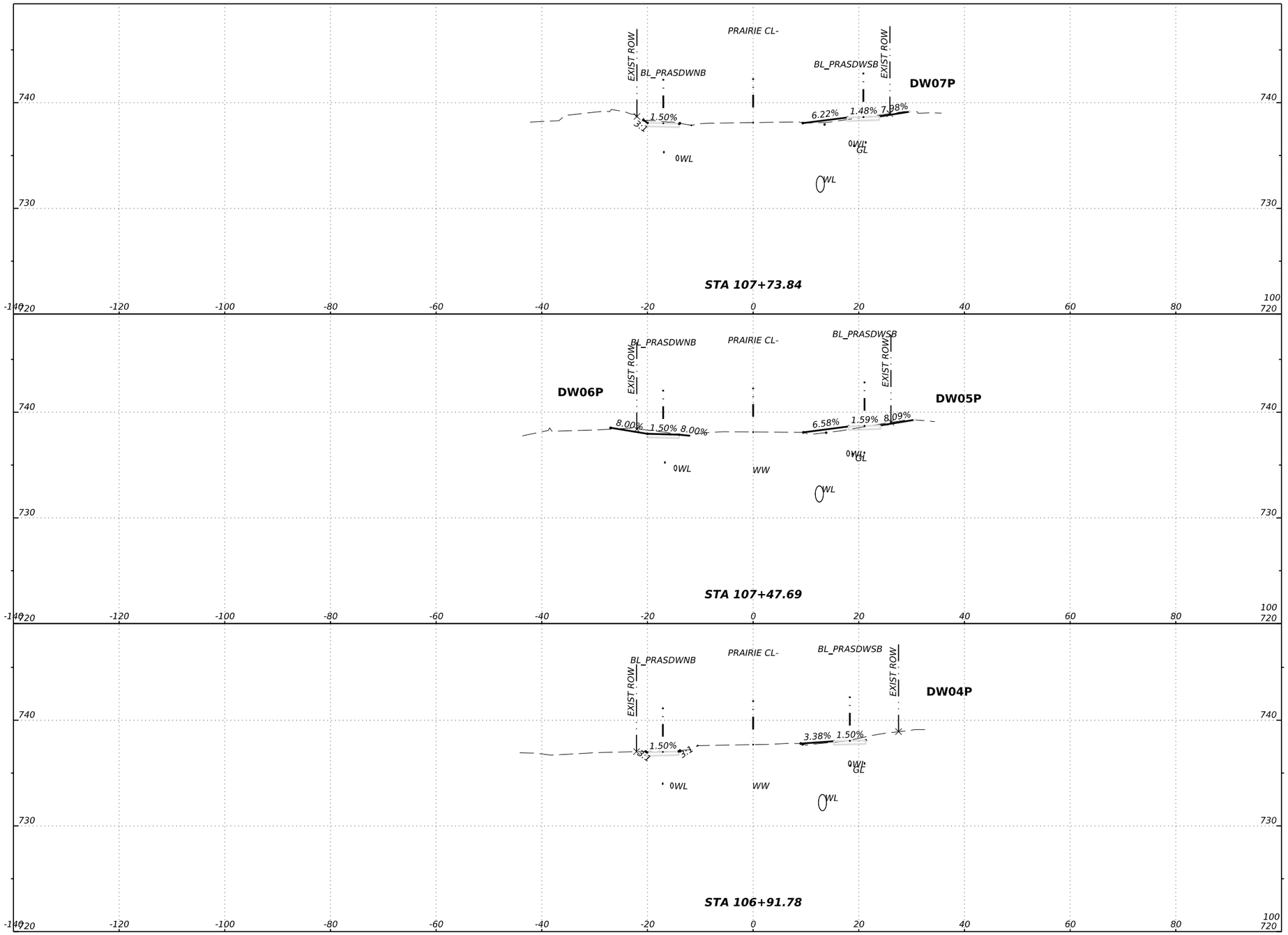
DRIVEWAY CROSS SECTIONS N. PRAIRIE ST

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		82



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SCALE IN FEET

DATE: 7/14/2023 11:59:11 AM
FILE: ...\XSECTXSEC_PRE_driveways.dgn

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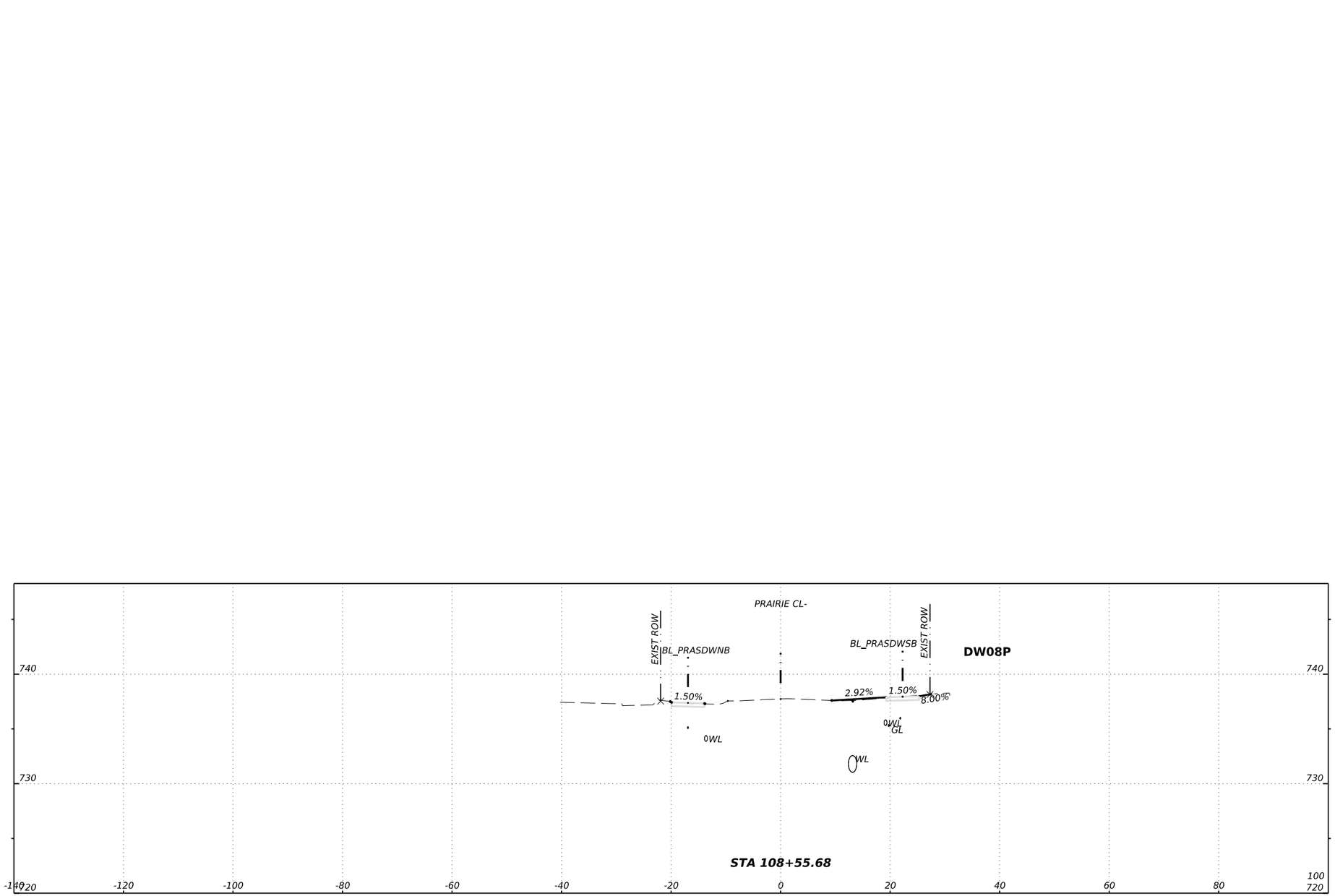
DRIVEWAY CROSS SECTIONS N. PRAIRIE ST

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		83

CK:
DW:
CK:
DW:



0 10 20
SCALE IN FEET

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DRIVEWAY CROSS SECTIONS N. PRAIRIE ST

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	FM 2790
DIST	COUNTY		SHEET NO.
SAT	BEXAR		84

DATE: 7/14/2023 11:59:59 AM
FILE: ...\XSEC\XSEC_PRE driveways.dgn

DRIVEWAY ID	ALIGNMENT	APPROX STA	LT/RT	WIDTH "W" (FT)	LENGTH "L" (FT)	RADIUS "R1" (FT)	RADIUS "R2" (FT)	LENGTH "L1" (FT)	GRADE "G1D" (%)	GRADE "G2D" (%)	GRADE "G1" (%)	LENGTH "L2" (FT)	GRADE "G2" (%)	LENGTH "L3" (FT)	GRADE "G3" (%)	DRIVEWAY PENETRATION "P0" (FT)
DW01C	COTTAGE ST	110+98	RT	20	22.84	0	0	14.84	-3.17	4.48	N/A	6	1.5%	2	-8.00%	2.55
DW14C	COTTAGE ST	118+52	LT	18	15.32	0	0	8.92	N/A	N/A	0.90%	6	1.5%	0.42	-8.00%	0.00
DW15C	COTTAGE ST	119+45	LT	16	16.11	0	0	8.12	N/A	N/A	1.31%	6	1.5%	1.21	-8.00%	0.00
DW17C	COTTAGE ST	123+10	LT	10	12.52	0	0	4.52	N/A	N/A	-4.56%	6	1.5%	2.76	-8.00%	0.00
DW02C	COTTAGE ST	111+30	RT	20	22.74	0	0	14.67	-6.13	3	N/A	6	1.5%	1.86	-8.00%	0.00
DW04C	COTTAGE ST	111+75	RT	20	22.31	0	0	14.04	-4.13	4.87	N/A	6	1.5%	2	-8.00%	1.07
DW05C	COTTAGE ST	112+07	RT	20	21.34	0	0	13	-2.59	4.66	N/A	6	1.5%	1.92	-8.00%	0.00
DW06C	COTTAGE ST	112+53	RT	20	20.3	0	0	11.98	-0.5	3.64	N/A	6	1.5%	2	-8.00%	4.00
DW07C	COTTAGE ST	112+85	RT	20	19.74	0	0	11.47	-1.41	4.29	N/A	6	1.5%	2	-8.00%	0.75
DW10C	COTTAGE ST	116+47	RT	20	11.37	0	0	4.82	N/A	N/A	8.00%	6	1.5%	0.56	-8.00%	0.00
DW11C	COTTAGE ST	116+92	RT	64	12.96	0	0	4.89	N/A	N/A	-10.00%	6	1.5%	2	-8.00%	0.76
DW12C	COTTAGE ST	117+50	RT	20	12.11	0	0	4.36	N/A	N/A	-10.00%	6	1.5%	1.73	-8.00%	4.00
DW13C	COTTAGE ST	118+53	RT	16	11.59	0	0	4.59	N/A	N/A	-8.87%	6	1.5%	0.92	-8.00%	9.33
DW16C	COTTAGE ST	119+45	RT	11	8.17	0	0	2.17	N/A	N/A	-10.00%	6	1.5%	0	8.00%	7.04
DW06P	PRAIRIE ST	107+58	LT	25	11.88	15	16	3.88	N/A	N/A	-8.00%	6	1.5%	2	-8.00%	4.00
DW01P	PRAIRIE ST	105+15	RT	47	22.5	0	0	9.12	-9.11	1.49	N/A	6	1.5%	7.3	-8.00%	0.25
DW02P	PRAIRIE ST	105+89	RT	13	28.27	0	0	15.81	-2.97	3.43	N/A	6	1.5%	1.85	-8.00%	4.52
DW03P	PRAIRIE ST	106+68	RT	22	19.76	0	0	6.09	N/A	N/A	4.17%	6	1.5%	7.38	-8.00%	3.00
DW04P	PRAIRIE ST	106+90	RT	8	12.32	0	0	6.34	N/A	N/A	3.38%	6	1.5%	0	0.00%	0.00
DW05P	PRAIRIE ST	107+48	RT	12	16.7	0	0	8.7	N/A	N/A	6.58%	6	1.5%	2	-8.00%	4.94
DW07P	PRAIRIE ST	107+74	RT	14	16.46	0	0	8.46	N/A	N/A	6.22%	6	1.5%	2	-8.00%	3.98
DW08P	PRAIRIE ST	108+54	RT	14	17.85	0	0	9.84	N/A	N/A	2.92%	6	1.5%	2	-8.00%	0.86

***REFER TO DRIVEWAY PLAN & PROFILE FOR DRIVEWAYS ON FM 2790

***REFER TO DRIVEWAY CROSS-SECTIONS FOR DRIVEWAYS ON COTTAGE ST & PRAIRIE ST.

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

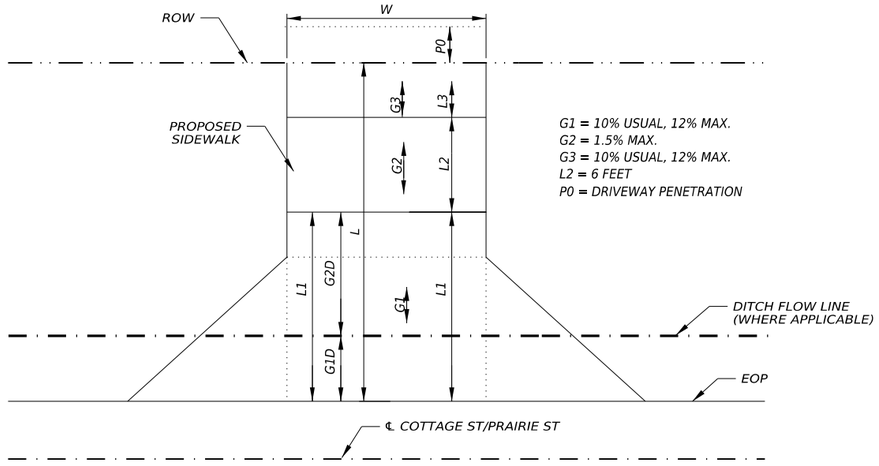
DRIVEWAY SUMMARY

SHEET 1 OF 1

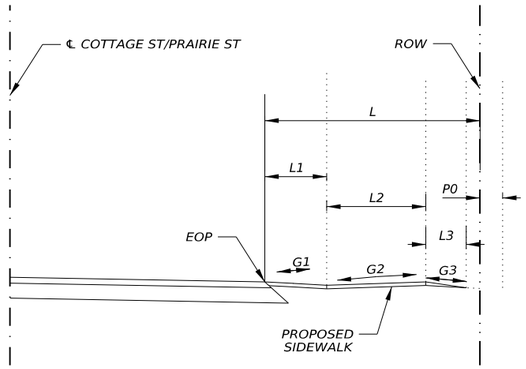
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		85

DATE: 8/22/2023 9:23:02 PM
FILE: ...\FM_2790_Driveway Summary

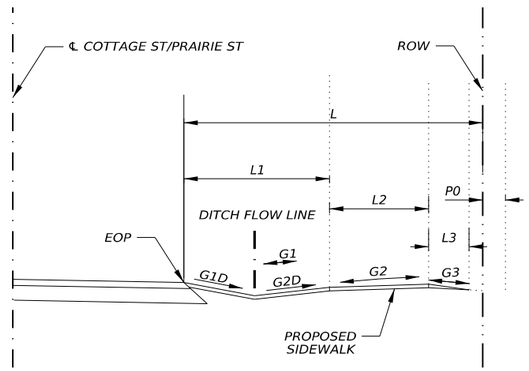
CK:
DW:
CK:
DW:



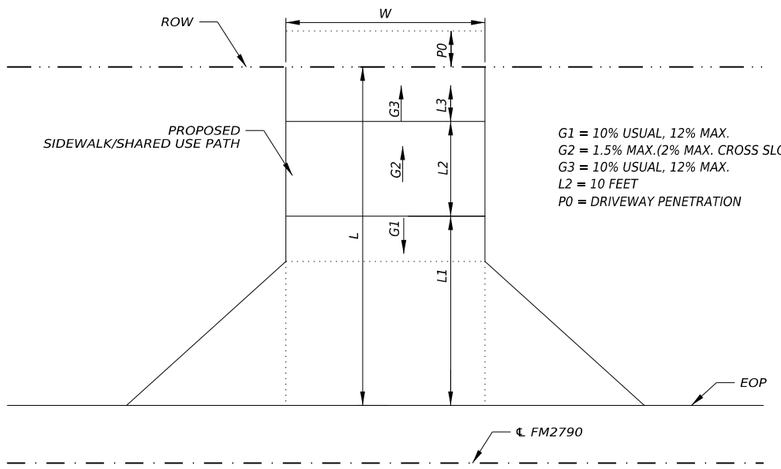
DRIVEWAY PLAN
N.T.S.



DRIVEWAY PROFILE
N.T.S.



DRIVEWAY PROFILE
(WHERE DITCHES ARE PRESENT)
N.T.S.



DRIVEWAY PLAN
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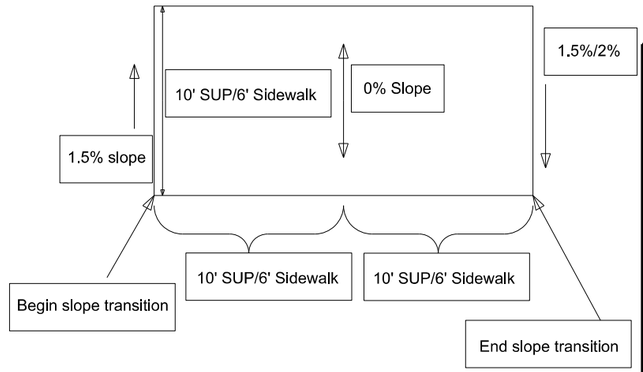
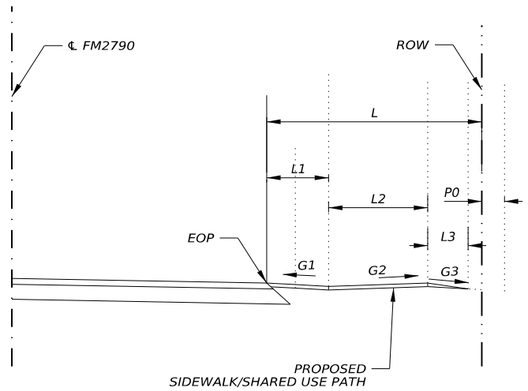


SIDEWALK TRANSITION



DRIVEWAY PROFILE
N.T.S.

STATE OF TEXAS
ROGER F. SORENSON
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LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

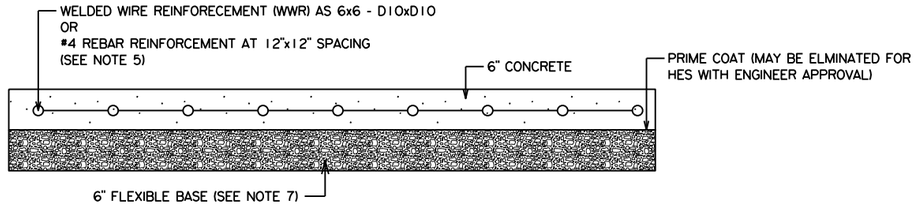
FM2790,COTTAGE,PRAIRIE

DRIVEWAY DETAILS

SHEET 1 OF 1

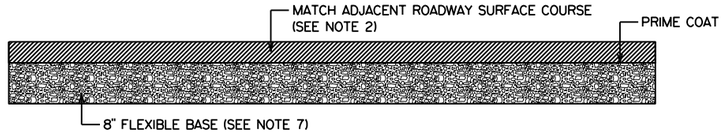
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		86

DATE: 8/22/2023 9:23:22 PM
FILE: ...\FM 2790 Driveway Details



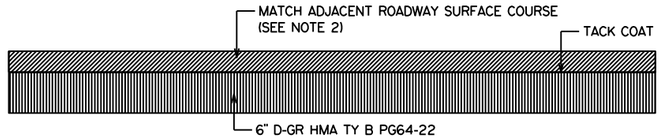
TYPICAL CONCRETE DRIVEWAY

• NOTE: STEEL SHALL BE CENTERED VERTICALLY IN CONCRETE.
PAID AS 'DRIVEWAYS CONC (HES)' OR 'DRIVEWAYS (CONC)'



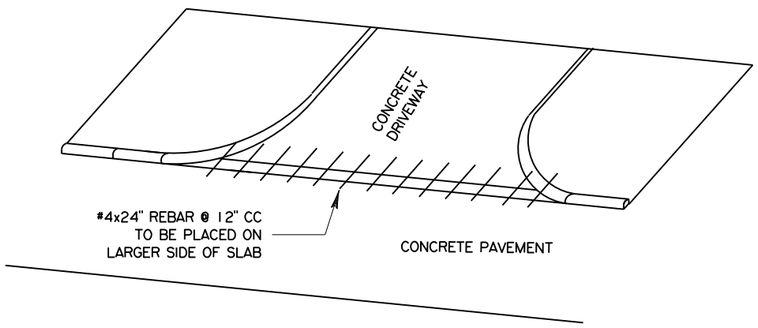
TYPICAL ROADWAY DRIVEWAY (TYPE 1)

PAID AS DRIVEWAYS ACP (TYPE 1)

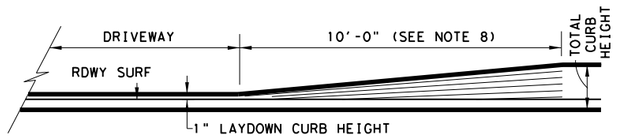


TYPICAL ROADWAY DRIVEWAY (TYPE 2)

PAID AS DRIVEWAYS ACP (TYPE 2)



TIE BAR PLACEMENT WITH CRCP



LAYDOWN CURB AT DRIVEWAYS DETAIL

NOTES:

1. USE CLASS A CONCRETE UNLESS OTHERWISE NOTED.
2. DENSE GRADED HMA MAY BE USED WHEN APPROVED BY THE ENGINEER IF THE ROADWAY SURFACE COURSE IS A PERFORMANCE MIX.
3. REFER TO PLAN SHEETS FOR GEOMETRIC DESIGN DETAILS.
4. FOR CONCRETE DRIVEWAYS, PROVIDE EXPANSION JOINT 20 FT C-C FOR WIDTH OR LENGTH OVER 25 FT.
5. FIBER REINFORCEMNT IS NOT ALLOWED.
6. MACHINE LAID HMA IS REQUIRED UNLESS OTHERWISE APPROVED BY THE ENGINEER.
7. FURNISH BASE MEETING THE REQUIREMENTS FOR ANY TYPE OF GRADE IN ACCORDANCE WITH ITEM 247. FLEXIBLE BASE COMPRESSIVE STRENGTHS ARE WAIVED. BASE IS SUBSIDIARY TO THE ITEM.
8. WHERE SIDEWALK IS PRESENT, SLOPE AND LENGTH OF CURB TRANSITION SHOULD MATCH THE SIDEWALK AND MEET ADA REQUIREMENTS.
9. IF ROOTS ARE ENCOUNTERED VERIFY WITH THE ENGINEER PRIOR TO ACCOMODATING OR REMOVING 2 IN. DIAMETER OR LARGER ROOTS. ROOT REMOVAL MUST BE IN ACCORDANCE WITH ITEM 752.4.2. ROOTS MAY REMAIN IN THE BASE. FOR IMPROVEMENTS WITHIN 6 IN. OF A ROOT, THE CONCRETE THICKNESS MAY BE REDUCED BY 1 IN. AND THE BASE INCREASED BY 1 IN. TO MINIMIZE THE IMPACT TO THE ROOTS. ADJUST BASE AND SURFACE PROFILE TO PROVIDE A 1 IN. BASE CUSHION AROUND THE ROOTS. THE SURFACE PROFILE MAY BE ADJUSTED TO THE EXTENT ALLOWED BY ADA. THIS WORK IS SUBSIDIARY.

Texas Department of Transportation
San Antonio District

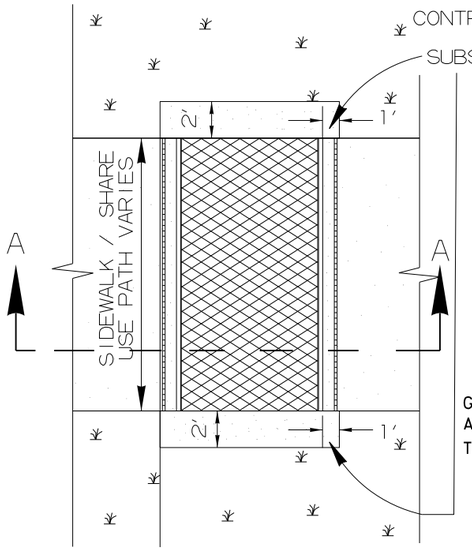
DRIVEWAY DETAILS

San Antonio District Standard
Sheet (1 of 1)

I:Engdata/Standards/Drivewaydetails.dgn	PREPARED BY AND FOR USE OF TxDoT.						
ORIGINAL DRAWING DATE: 8/1/2020	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT #				SHEET
REVISIONS		6					
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY	

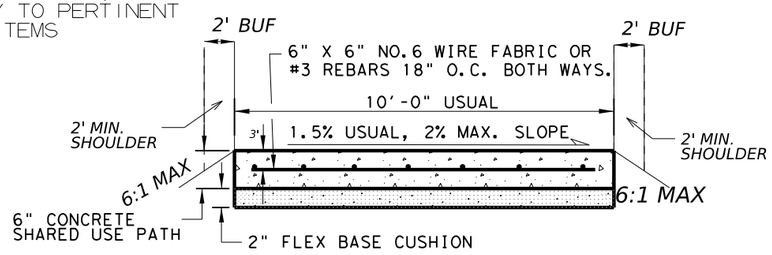
$TIME$
$DATE$
$FILE$

OBSTRUCTION CONFLICT



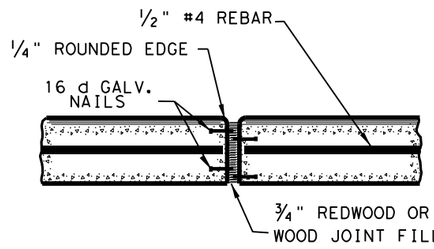
CONCRETE SIDEWALK DRAIN DETAIL

SCALE : 1" =4'



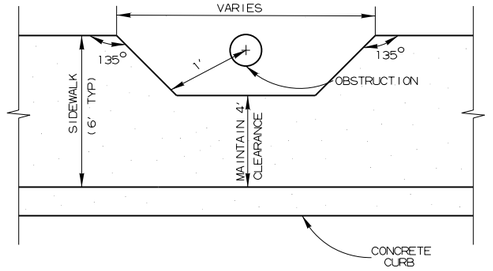
TYPICAL CONCRETE SECTION (SHARED USED PATH)

GROOVED JOINTS IN THE SHARED USE PATH SHALL BE AT A MAX. SPACING OF 10 FT. AND SHALL HAVE ¾" EXPANSION JOINTS AT A MAX. SPACING OF 60' AND TO COINSIDE WITH THE CURB EXP. JOINTS.



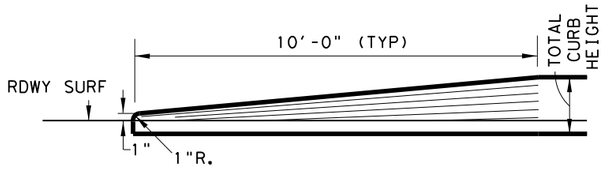
TYPICAL CURB EXPANSION JOINT DETAIL

EXPANSION JOINTS TO BE PLACED AT BEGINNING AND END OF CURVES, DRIVEWAYS WHEELCHAIR RAMPS, INLETS, ILLUMINATION/ SIGNAL FOUNDATIONS AND OTHER FIXED OBJECTS.



OBSTRUCTION IN SIDEWALK

* UNLESS OTHERWISE SPECIFIED

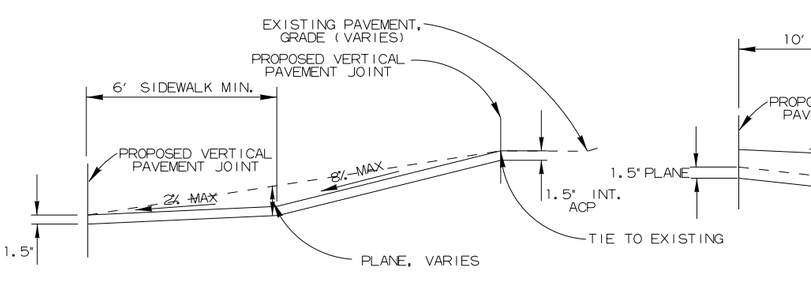


TRANSITION FOR CONCRETE CURB ENDS

SEE CURB DETAIL FOR REINFORCEMENT

NOTES :

1. UTILIZE DETAIL AT OBSTRUCTION ENCROACHMENTS INTO THE PEDESTRIAN ACCESS ROUTE. A MINIMUM UNOBSTRUCTED CLEARANCE OF 4', UNLESS OTHERWISE SPECIFIED, SHOULD BE MAINTAINED AROUND THE OBSTRUCTION MEASURED FROM THE MOST RESTRICTIVE LOCATION OR AS APPROVED BY THE ENGINEER.
2. IF OBSTRUCTION IS LOCATED WITHIN THE SIDEWALK, CONSTRUCT 2' SQUARE CONSTRUCTION JOINT CENTERED ON OBSTRUCTION TO FACILITATE FUTURE MAINTAINANCE WITHOUT FULL SIDEWALK PANEL REMOVAL/REPLACEMENT.
3. SIDEWALK PAID BY ITEM 531 6001 & SHARED USE PATH PAID BY ITEM 531 6003.
4. SIDEWALK DRAIN PAID BY ITEM 420 6002 CLASS A CONCRETE MISC. AND ITEM 442 6007 STR STEEL
5. SIDEWALK STEPS PAID BY ITEM 0531 6032 CONC SIDEWALK (SPECIAL)



INTERSECTION DETAILS

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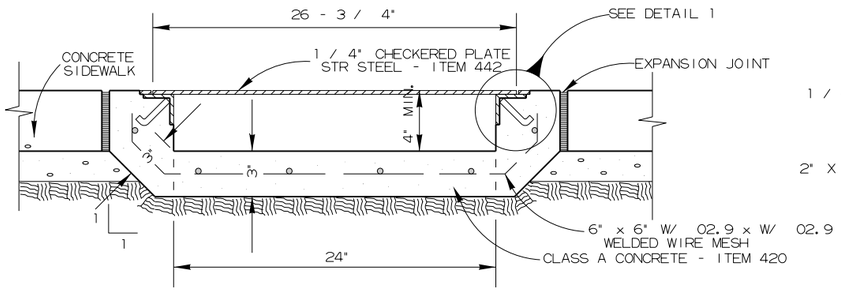
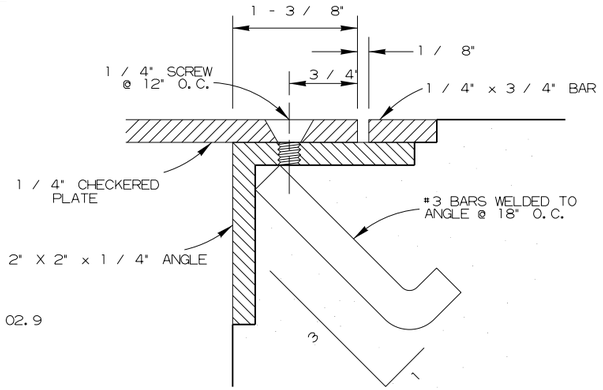


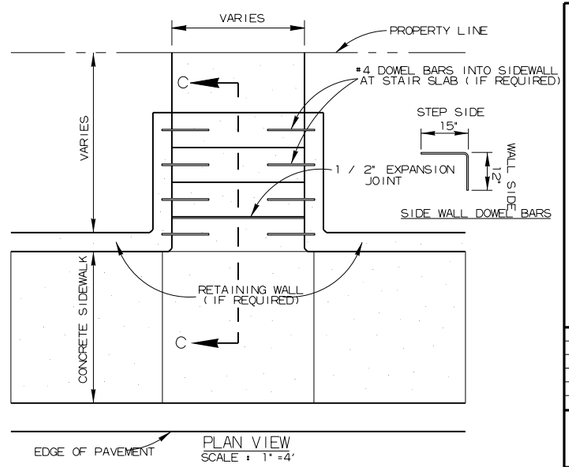
SECTION A-A

SCALE=1 : 12



DETAIL 1

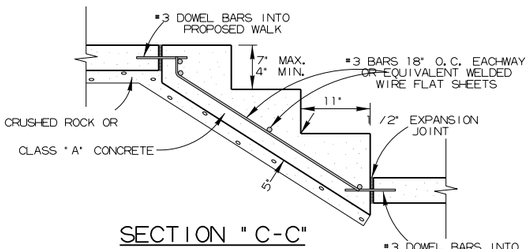
SCALE=1 : 1



PLAN VIEW
SCALE : 1" =4'

CONCRETE STEPS

ITEM 531



SECTION "C-C"

SCALE : 1" =2'

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED PROFESSIONAL ENGINEER
8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
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MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SPECIAL DETAILS

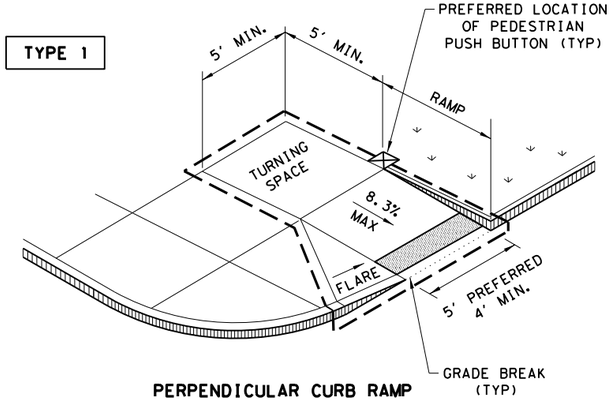
SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		87

DATE: 8/22/2023 9:23:41 PM
FILE: ...\FM 2790 SPECIAL DETAILS

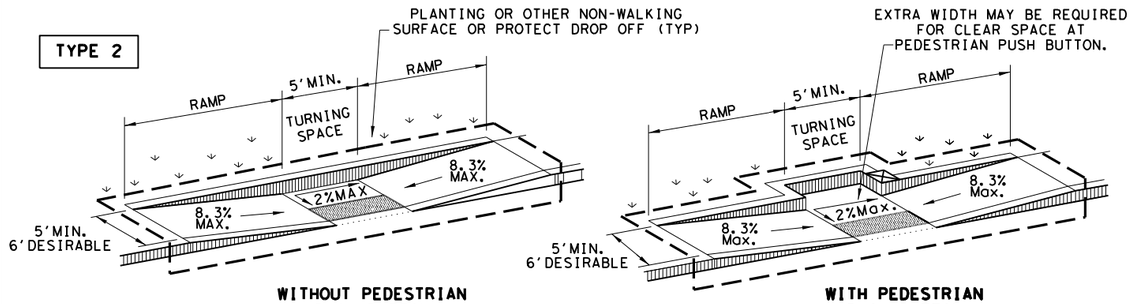
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

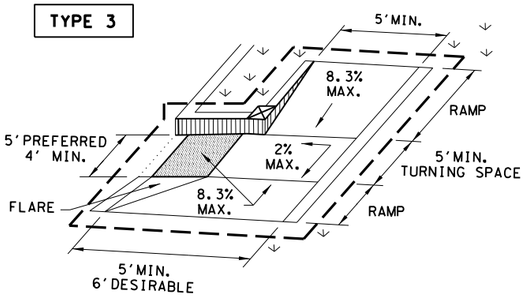


WITHOUT PEDESTRIAN PUSH BUTTON

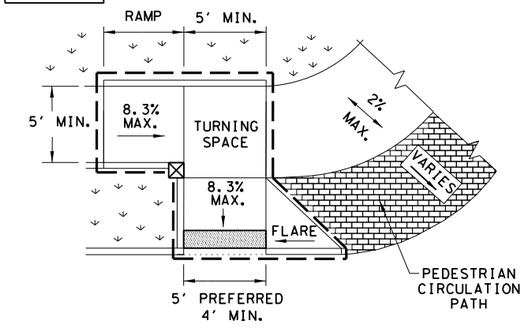
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

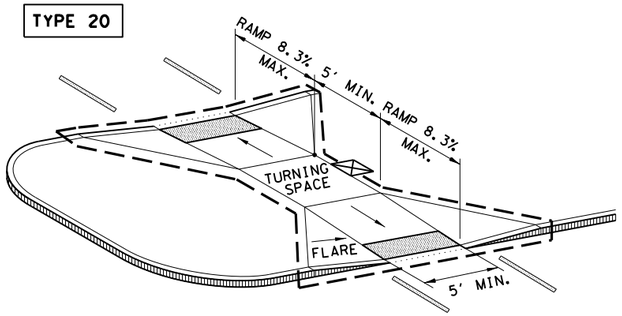


TYPE 6



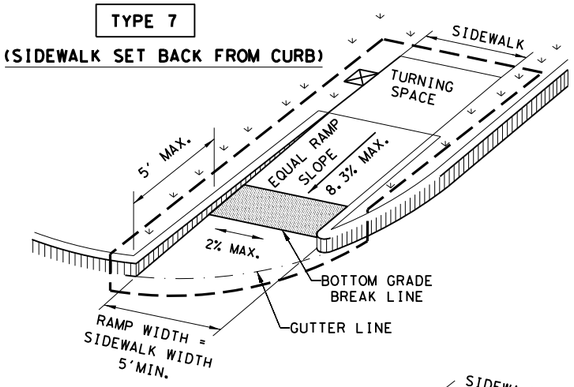
COMBINATION CURB RAMPS

TYPE 20

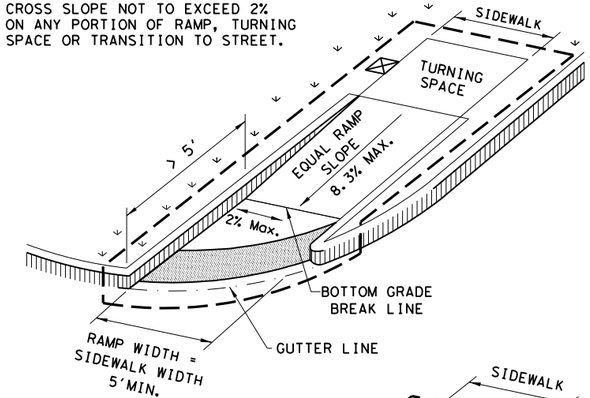


CURB RAMPS AT MEDIAN ISLANDS

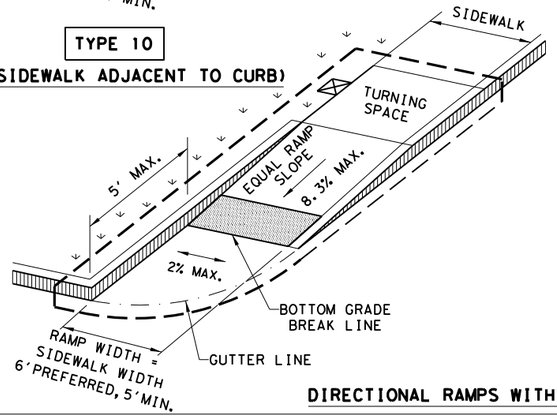
TYPE 7
(SIDEWALK SET BACK FROM CURB)



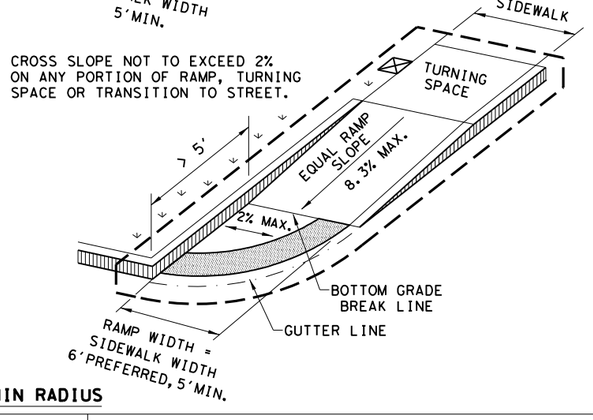
CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



TYPE 10
(SIDEWALK ADJACENT TO CURB)

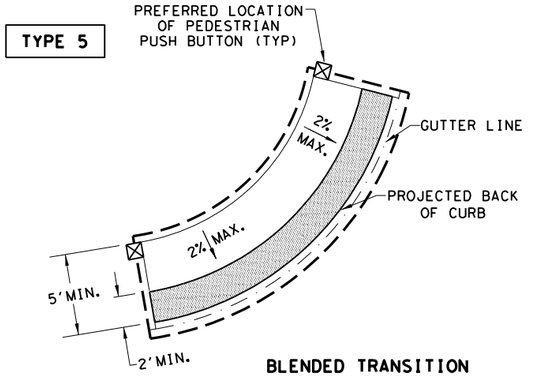


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

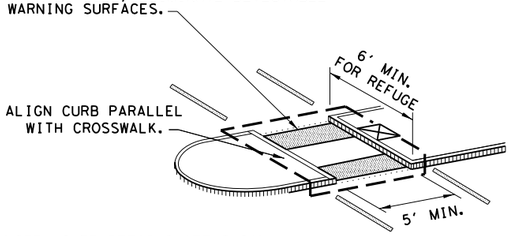
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

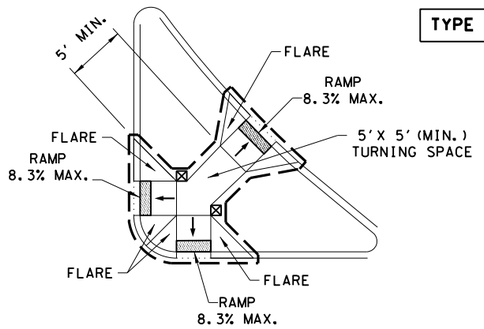
TYPE 21

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



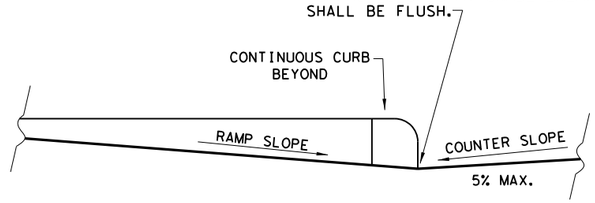
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012	SAT	BEXAR		88
REVISED 01,2018				

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.

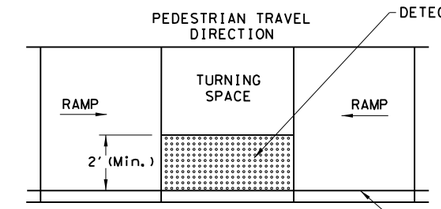
DETECTABLE WARNING PAVERS (IF USED)

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

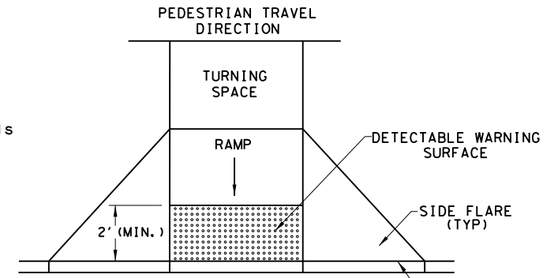
27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items 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.

DETECTABLE WARNING SURFACE DETAILS



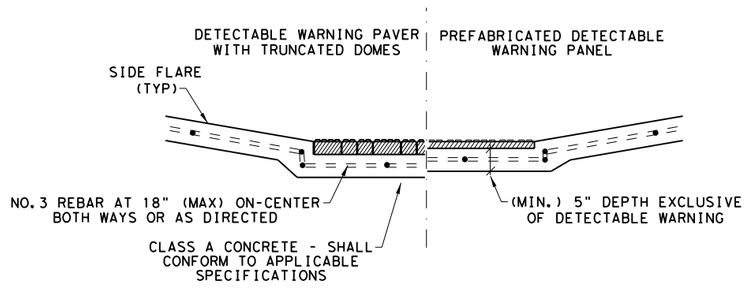
PARALLEL CURB RAMP

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

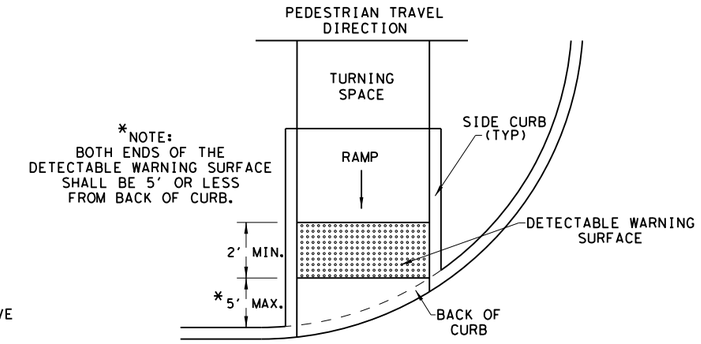


PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

SHEET 2 OF 4

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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	0915	00	252		VARIOUS
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SAT	BEXAR			89

DATE:
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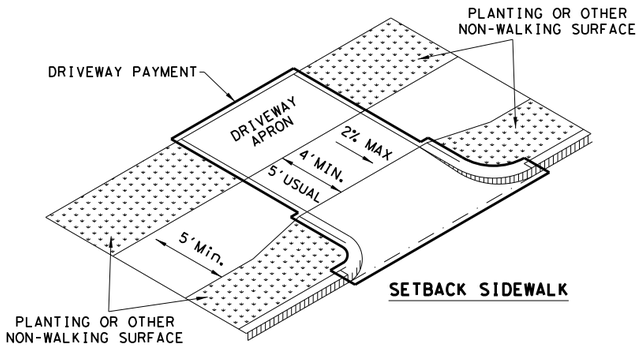
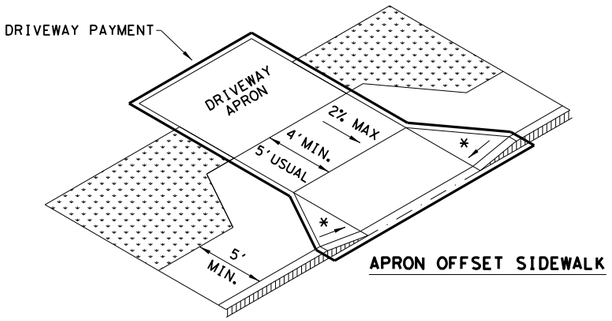
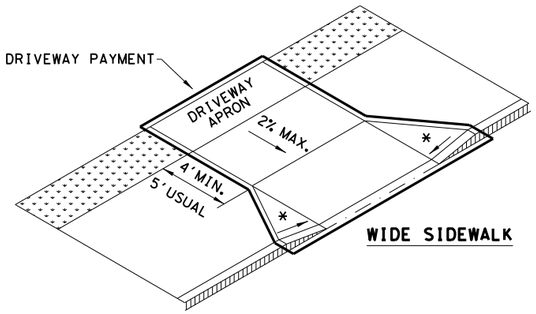
SIDEWALK TREATMENT AT DRIVEWAYS



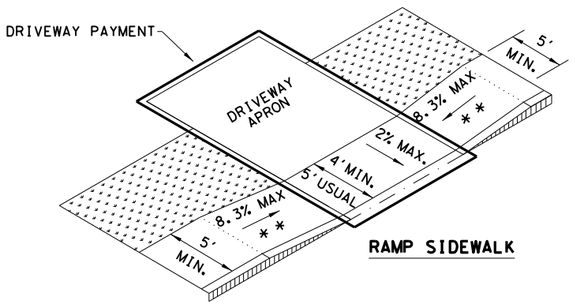
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

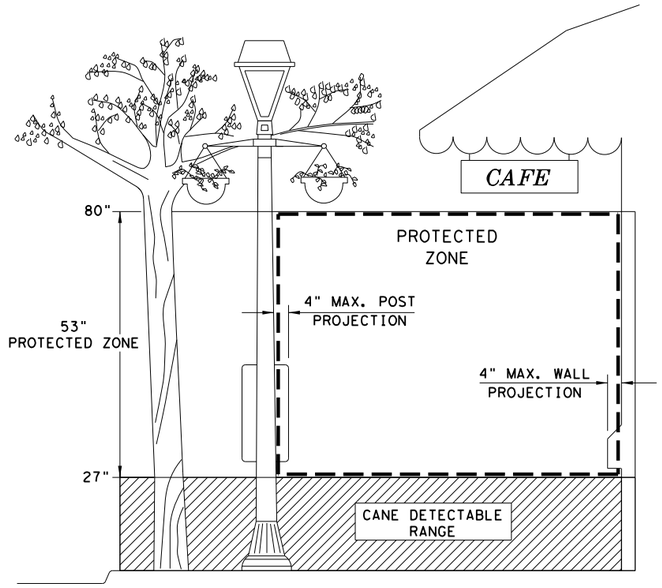


RAMP SIDEWALK

NOTES:

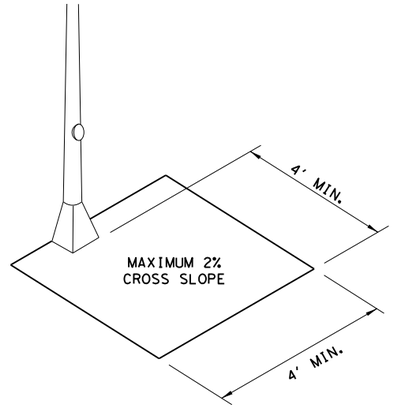
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

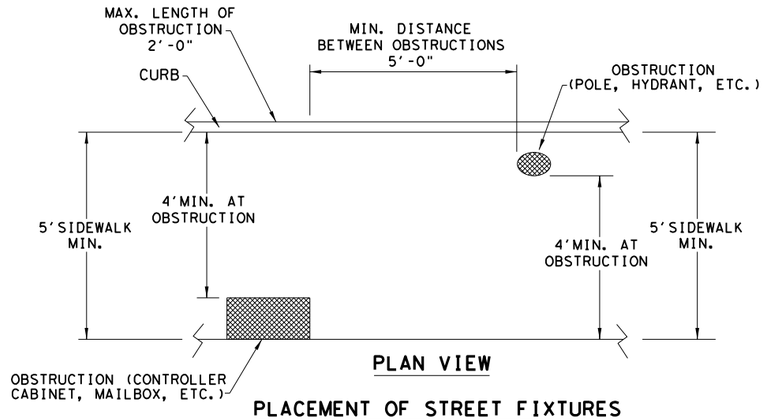


PROTECTED ZONE

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



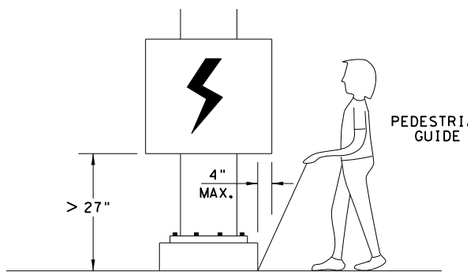
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



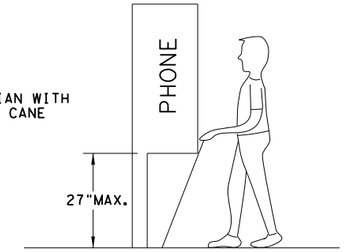
PLAN VIEW

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"

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PEDESTRIAN FACILITIES CURB RAMPS

PED-18

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REVISIONS	0915	00	252	VARIOUS	
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.	
	SAT	BEXAR		90	

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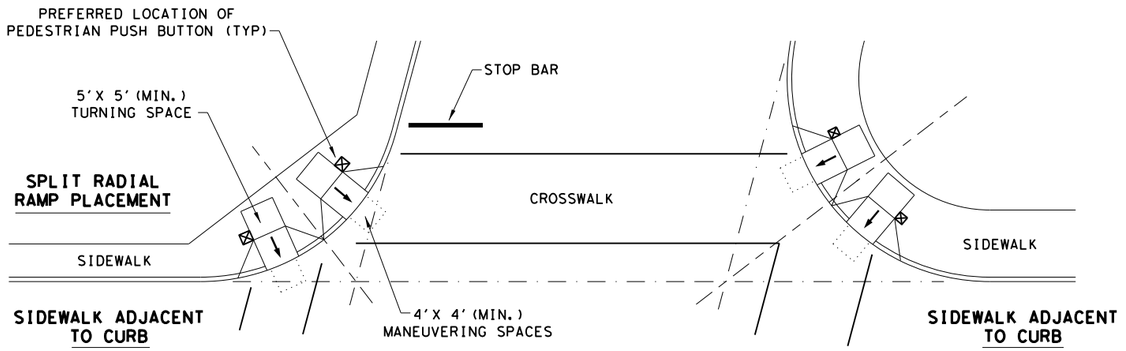
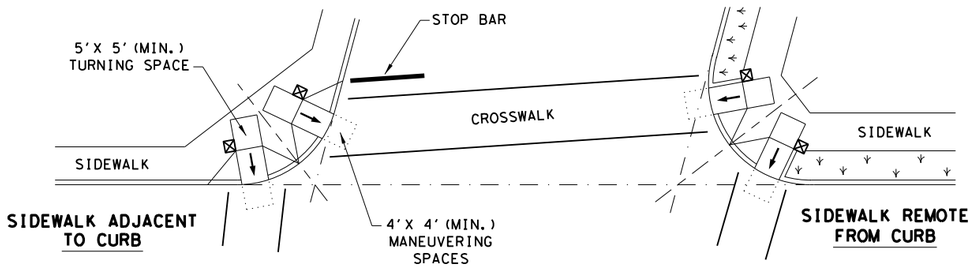
TYPICAL CROSSING LAYOUTS

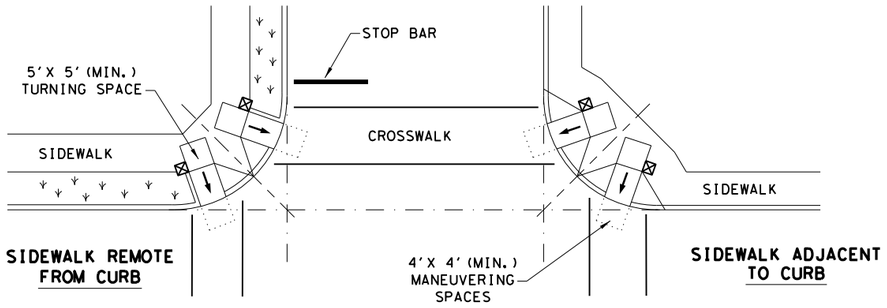
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



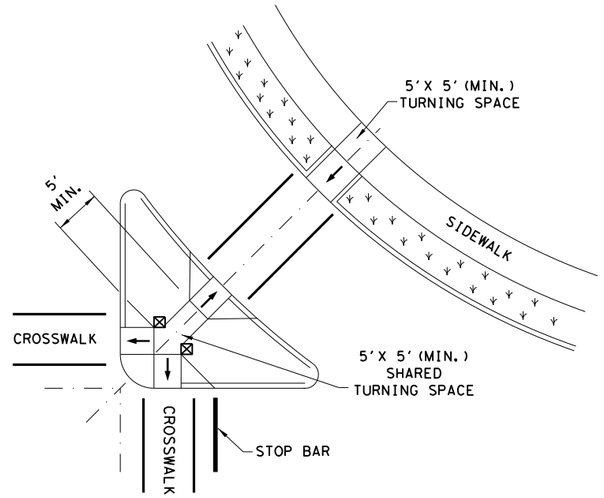
SKEWED INTERSECTION WITH "LARGE" RADIUS



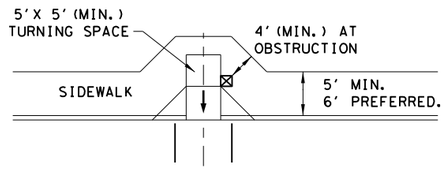
SKEWED INTERSECTION WITH "SMALL" RADIUS

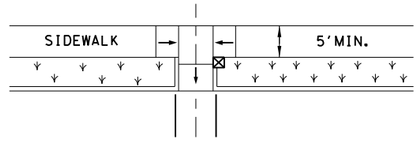


NORMAL INTERSECTION WITH "SMALL" RADIUS



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.

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PEDESTRIAN FACILITIES CURB RAMPS

PED-18

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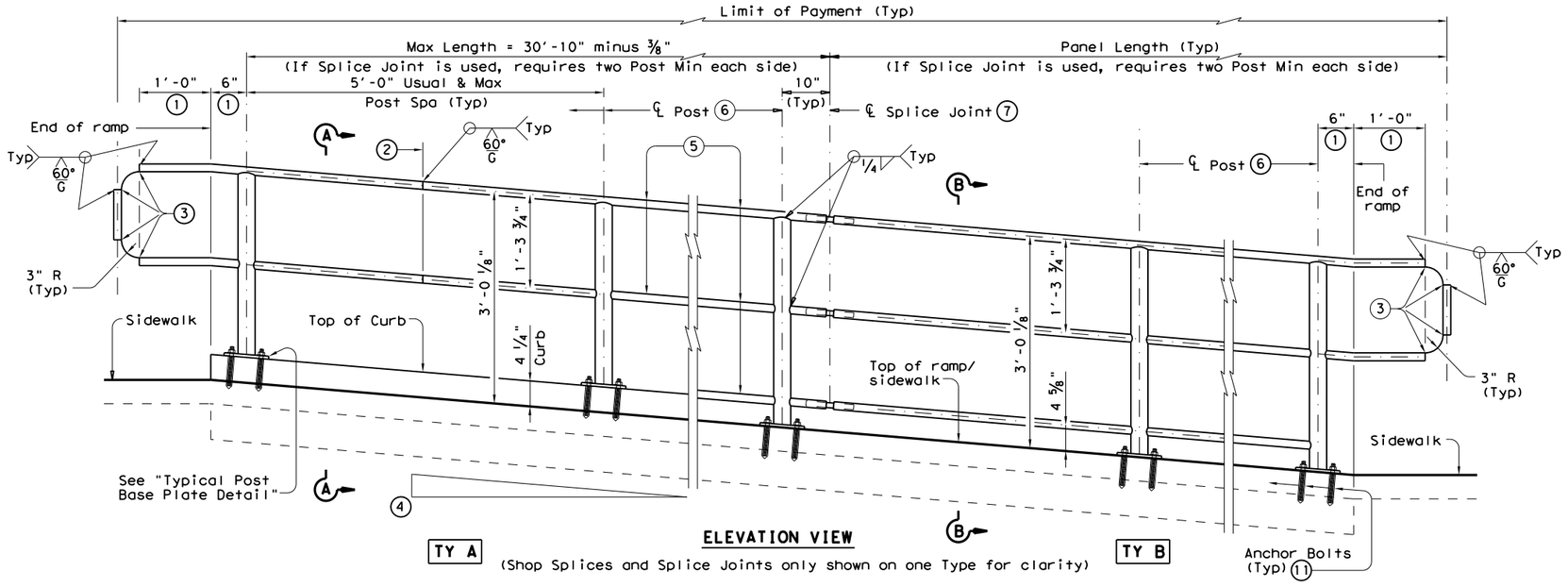
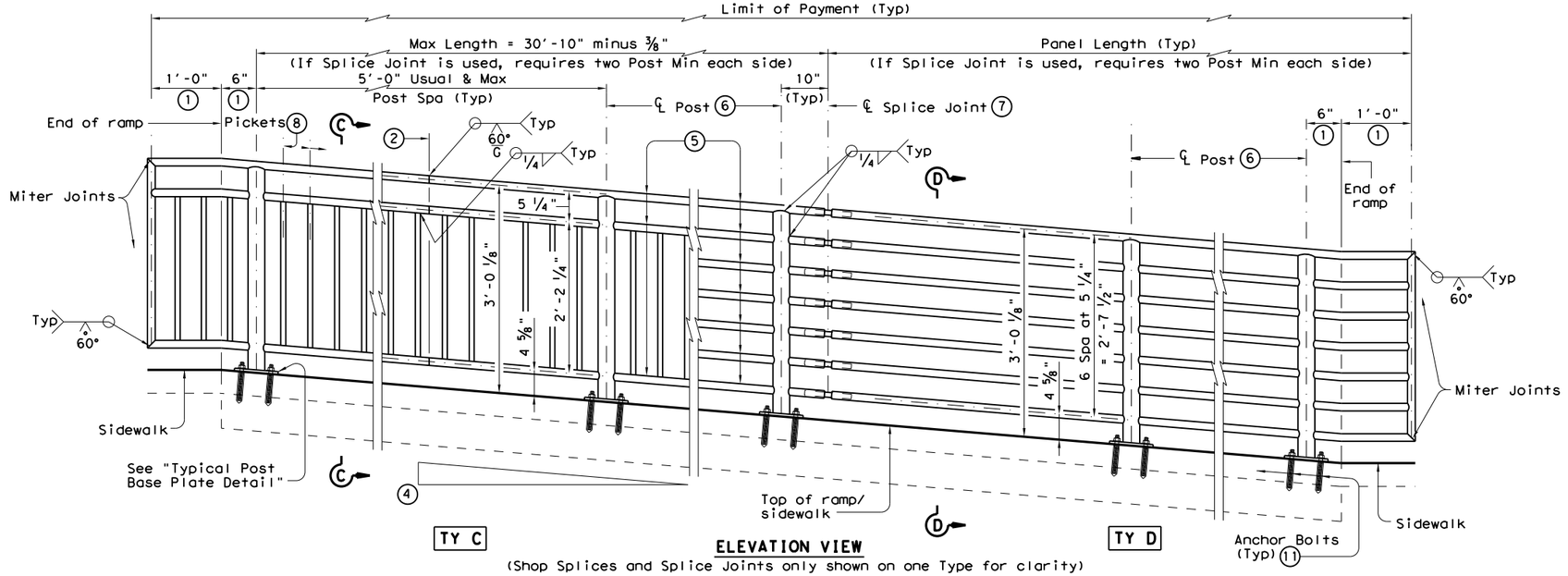
REVISIONS	0915	00	252	VARIOUS	
REVISED 08, 2005 REVISED 06, 2012 REVISED 01, 2018	DIST	COUNTY		SHEET NO.	
	SAT	BEXAR		91	

DATE:
FILE:



ELEVATION VIEW

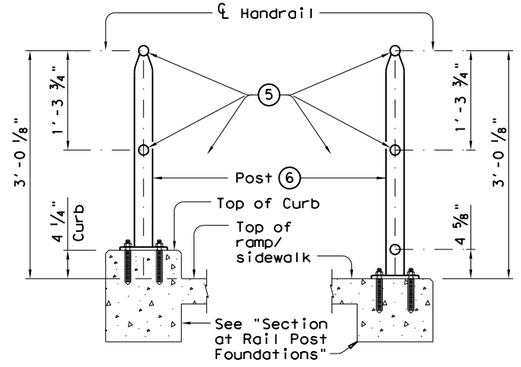
(Shop Splices and Splice Joints only shown on one Type for clarity)



ELEVATION VIEW

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

RECOMMENDED USAGE ⑨⑩	
Dropoff Height/ Condition	Recommended Rail Options
< 30" dropoff	TY A, TY B, TY C, or TY D
≥ 30" dropoff, or along Bike Path	TY E or TY F

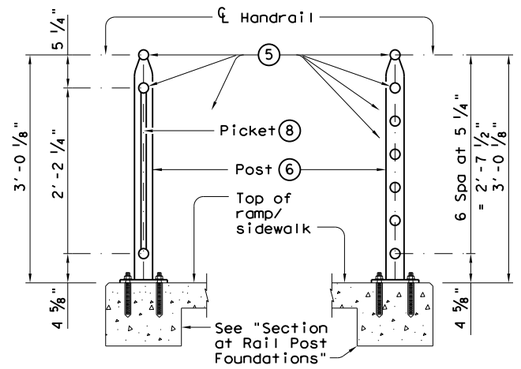


SECTION A-A

(Showing Handrail **TY A**)

SECTION B-B

(Showing Handrail **TY B**)



SECTION C-C

(Showing Handrail **TY C**)

SECTION D-D

(Showing Handrail **TY D**)

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

SHEET 1 OF 3

Texas Department of Transportation

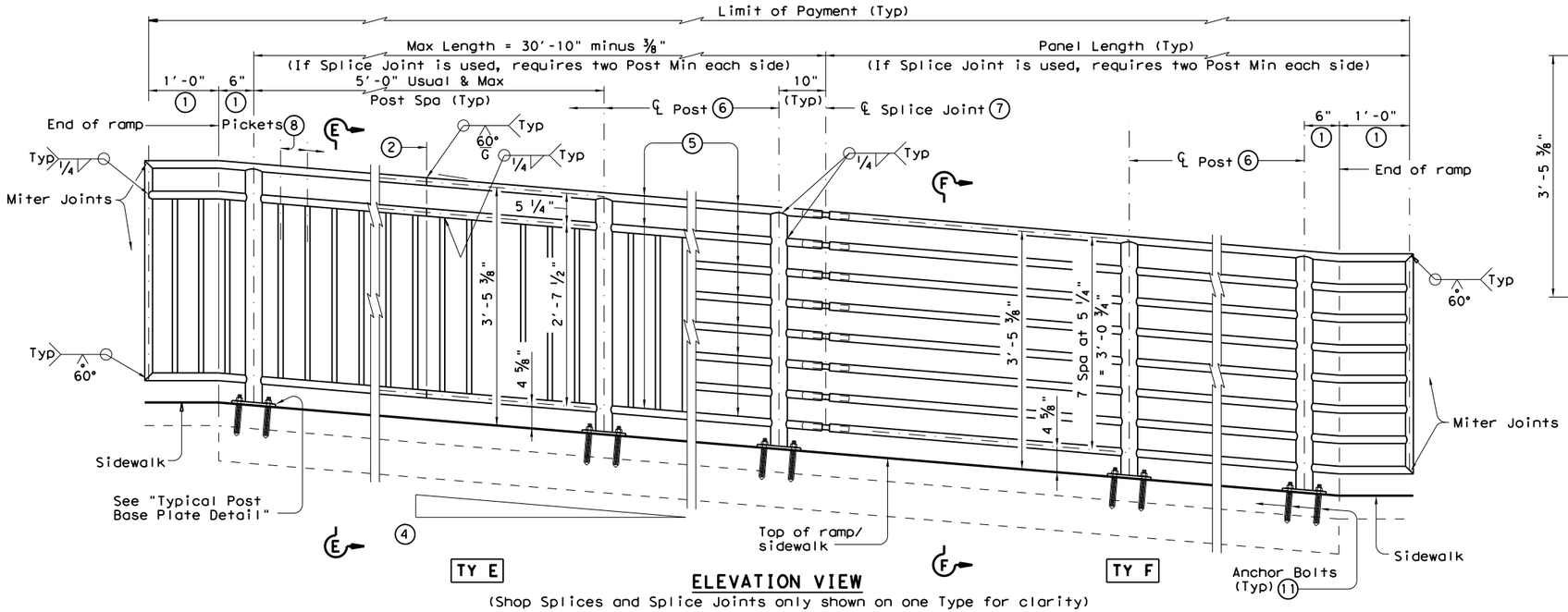
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

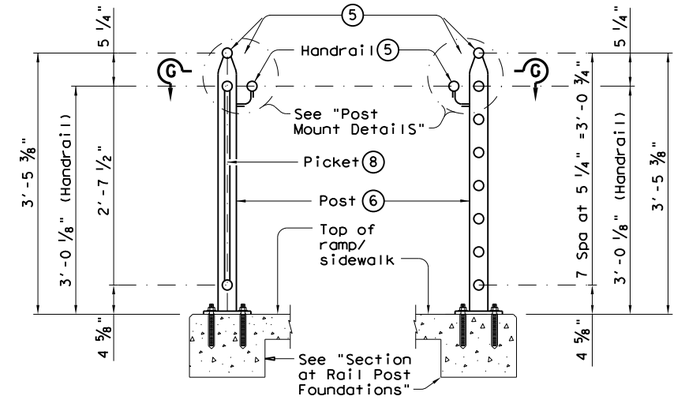
FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT Decmeber 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS REVISED MAY, 2013 (VP)	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		92

DATE:
FILE:



ELEVATION VIEW

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

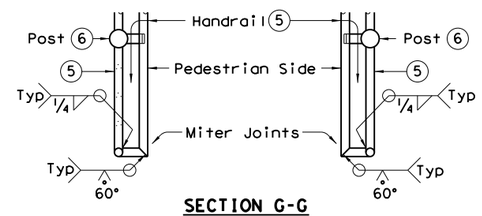


SECTION E-E

(Showing Handrail **TY E**)

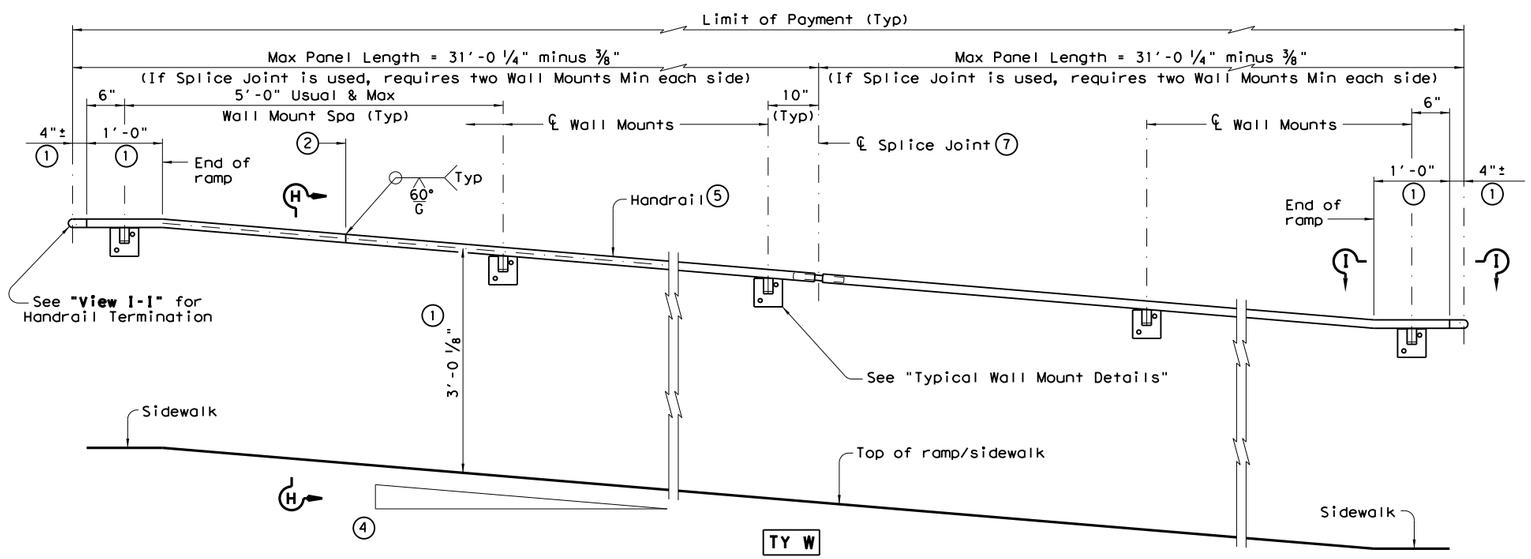
SECTION F-F

(Showing Handrail **TY F**)

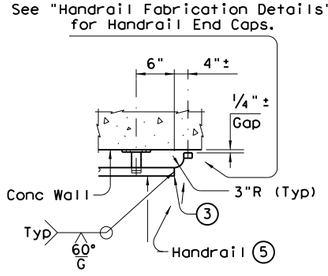


SECTION G-G

(Showing Handrail Termination)

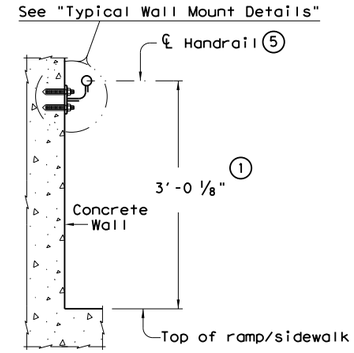


ELEVATION VIEW



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.

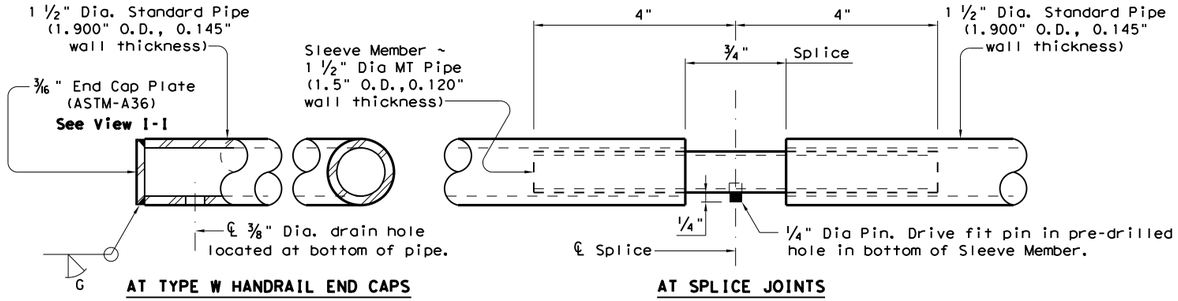
Texas Department of Transportation — Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		93

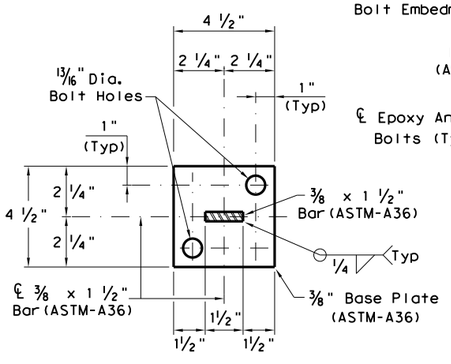
DATE:
FILE:



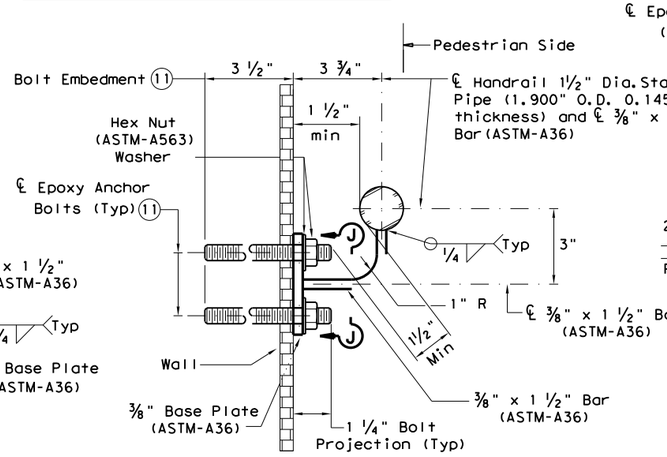
AT TYPE W HANDRAIL END CAPS

AT SPLICE JOINTS

HANDRAIL FABRICATION DETAILS



SECTION J-J
(Anchor Bolts not shown for clarity)



SECTION AT WALL MOUNT

TYPICAL WALL MOUNT DETAILS

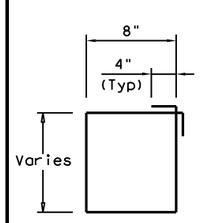
⑤ 1 ½" Dia. Standard Pipe (1.900" O.D., 0.145" wall thickness). Parallel to ramp/sidewalk. Provide holes as needed in 1 ½" Dia. pipe for galvanizing drainage and venting.

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

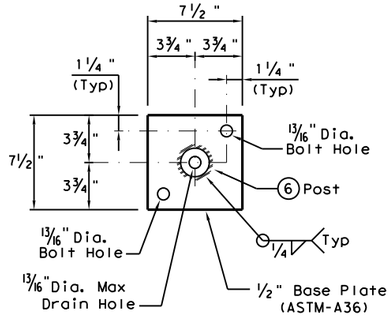
(11) See "General Notes" for anchor bolt information.

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

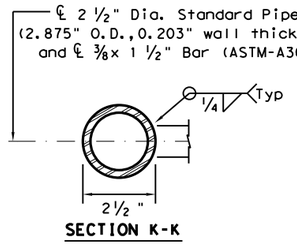
(13) Provide 1 ½" end cover to Bars D(#4) from outside edge of overall length of Ramp/Sidewalk.



BARS S (#3)

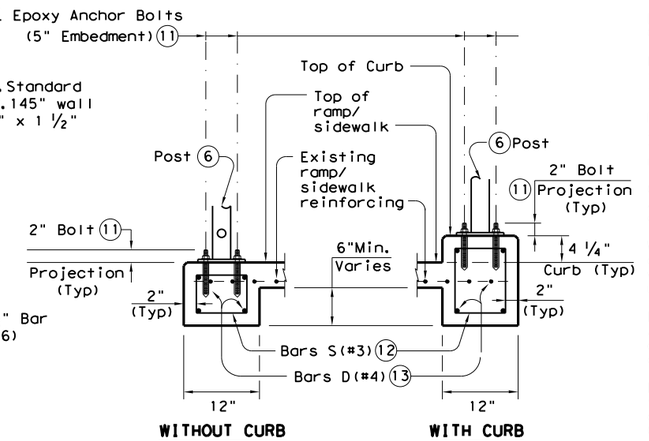


TYPICAL POST BASE PLATE DETAIL

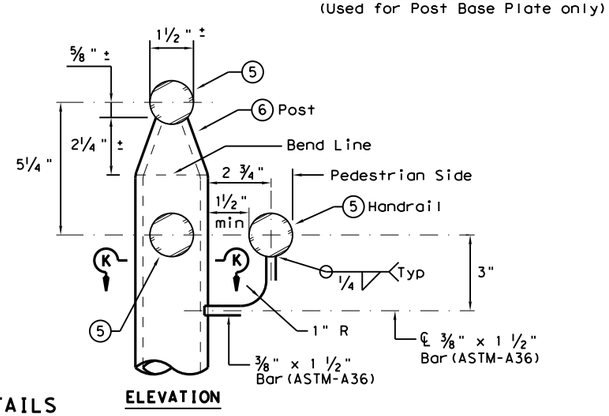


SECTION K-K

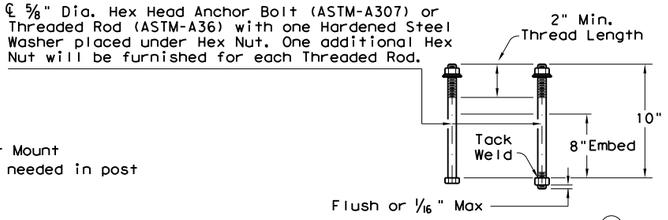
POST MOUNT DETAILS



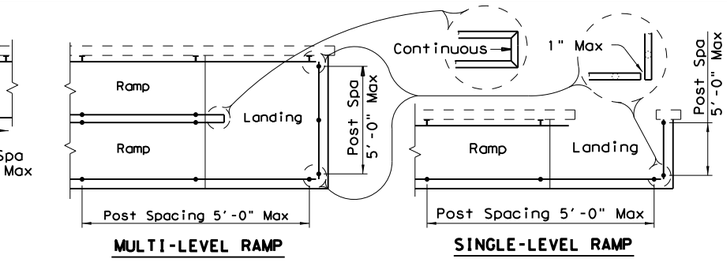
SECTION AT RAIL POST FOUNDATIONS



ELEVATION



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



RAMP INTERSECTION

MULTI-LEVEL RAMP

SINGLE-LEVEL RAMP

PLAN SHOWING RAIL AT RAMP CONDITIONS

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

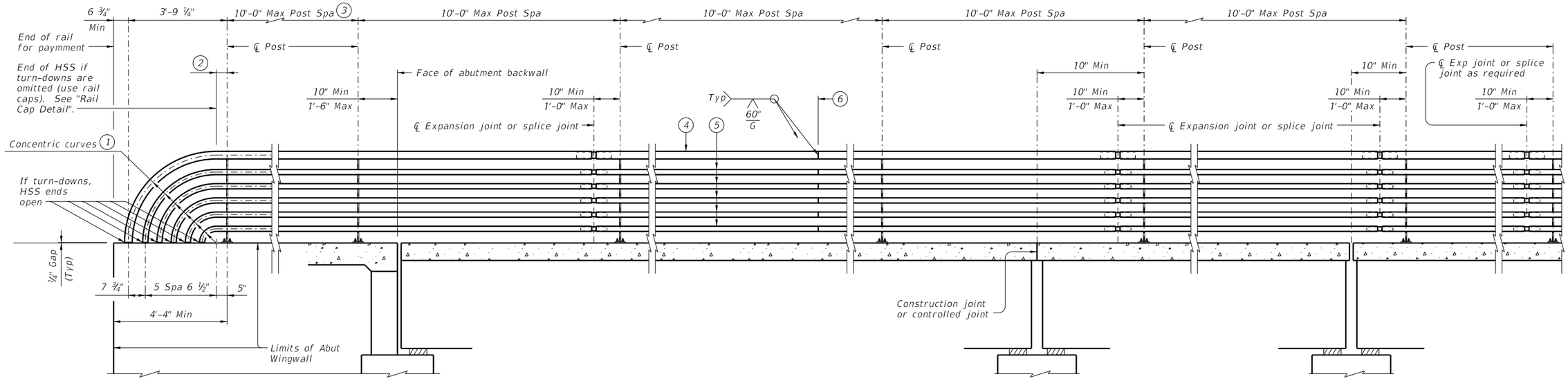
Design Division Standard

PEDESTRIAN HANDRAIL DETAILS

PRD-13

FILE: prd13.dgn	DN: TxDOT	CK: AM	DW: JTR	CK: CGL
©TxDOT December 2006	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
REVISED MAY, 2013 (VP)	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		94

DATE:
FILE:

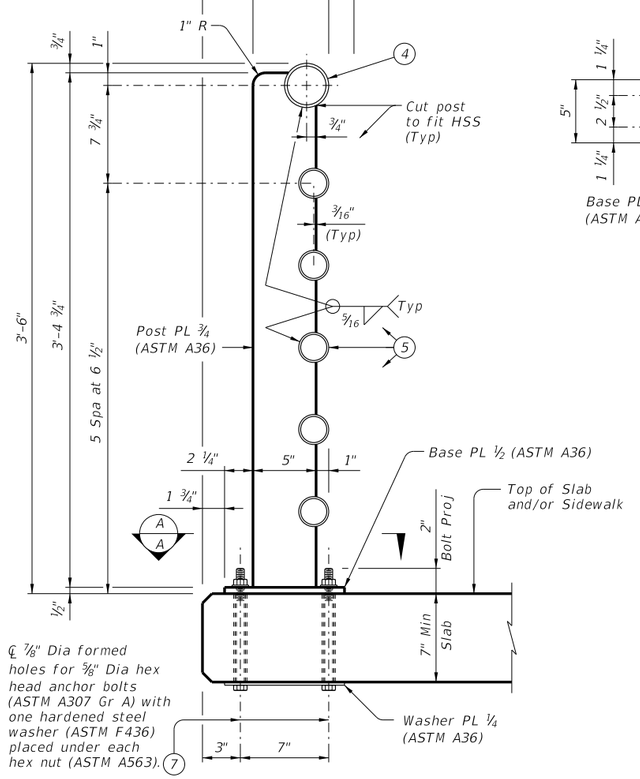


AT ABUTMENTS

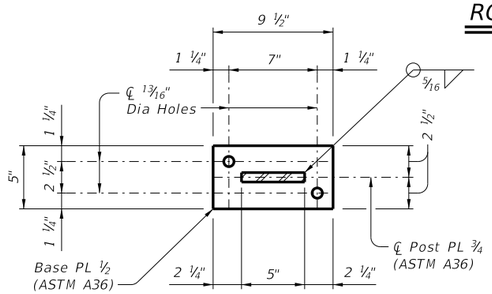
AT BENTS WITHOUT SLAB EXP JOINTS

AT BENTS WITH SLAB EXP JOINTS

ROADWAY ELEVATION OF RAIL

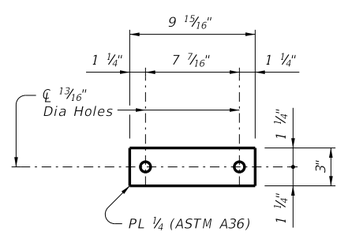


ON BRIDGE SLAB

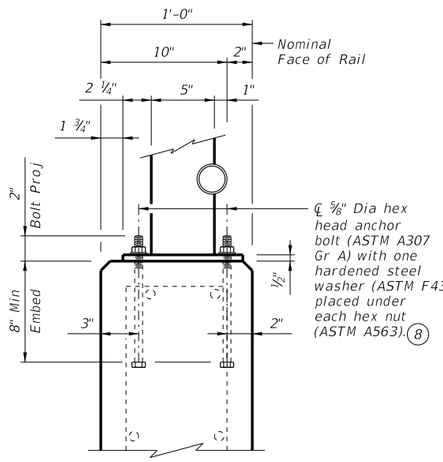


SECTION A-A

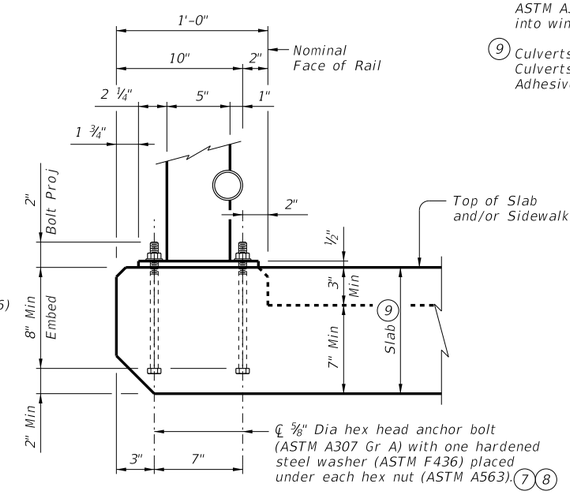
Showing base plate detail.



WASHER PLATE DETAIL



ON ABUTMENT WINGWALLS OR CIP RETAINING WALLS



ON CULVERTS WITH OR WITHOUT CURBS

Used with 1'-0" Min thick parallel wings on culverts.

SECTIONS THRU RAIL

(1) Portion of railing with turn-downs to be used or omitted as indicated on Bridge Layout.

(2) 10" Min ~ 1'-6" Max if turn-downs are omitted.

(3) Min of 2 posts required on wingwall.

(4) HSS 3.500 x 0.216 (Rail Member)

(5) HSS 2.375 x 0.154 (Rail Member)

(6) One shop splice per panel is permitted (with minimum 85 percent penetration). The weld may be square groove or single vee groove. Grind smooth.

(7) At Contractor's option, adhesive anchors may be used. Adhesive anchors must be ⅝" Dia ASTM A307 Grade A fully threaded rods. Minimum adhesive anchor embedment depth is 5" into slabs or culverts without curbs. See "Material Notes" for adhesive anchor requirements.

(8) At Contractor's option, adhesive anchors may be used. Adhesive anchors must be ⅝" Dia ASTM A307 Grade A fully threaded rods. Minimum adhesive anchor embedment depth is 7" into wingwalls or culverts with curbs. See "Material Notes" for adhesive anchor requirements.

(9) Culverts without curbs for cast-in-place anchor bolts require a 10" Min slab thickness. Culverts with curbs for cast-in-place anchor bolts require a curb plus slab thickness of 10" Min. Adhesive anchors may be used with a 7" Min slab thickness or culverts with curbs.

SHEET 1 OF 2

Texas Department of Transportation

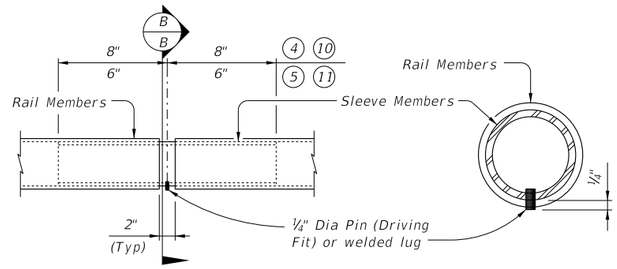
Bridge Division Standard

PEDESTRIAN RAIL

TYPE PR11

FILE: rlstd028-19.dgn	DN: TAR	CK: TBE	DW: JTR	CK: TAR
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

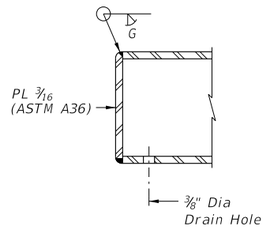
DATE:
FILE:



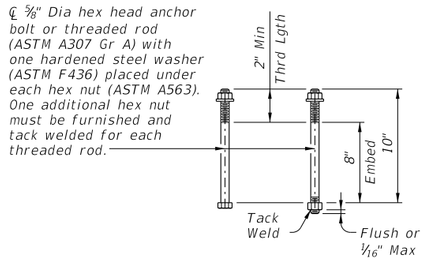
AT SPLICES OR EXP JTS

SECTION B-B

PIPE SPLICE DETAIL



RAIL CAP DETAIL



CAST-IN-PLACE & FORMED HOLE ANCHOR BOLT OPTIONS

(4) HSS 3.500 x 0.216 (Rail Member)

(5) HSS 2.375 x 0.154 (Rail Member)

(10) HSS 2.875 x 0.203 (Sleeve Member)

(11) HSS 1.900 x 0.145 (Sleeve Member)

CONSTRUCTION NOTES:

Panel lengths of railing must be attached to a minimum of three posts except at abutment wingwalls.

At the Contractor's option anchor bolts may be an adhesive anchorage system. See "Material Notes".

Test adhesive anchors in accordance with Item 450.3.3, "Tests". Test 3 anchors per 100 anchors installed. Perform corrective measures to provide adequate capacity if any of the tests do not meet the required test load. Repair damage from testing as directed.

Face of rail and posts must be vertical transversely unless otherwise approved. Posts must be perpendicular to adjacent roadway grade. Use Type VIII epoxy mortar under post base plates if gaps larger than 1/16" exist.

For curved railing applications, fabricate the HSS rail to the radius when the radius is 600' or less. Submit shop drawings for approval when tubes are required to be fabricated to a radius. Shop drawings must be submitted to the Engineer for approval.

Round or chamfer all exposed edges of steel components 1/16" by grinding prior to galvanizing.

MATERIAL NOTES:

Provide ASTM A500 Gr B, A1085 or A53 Gr B for all HSS.

Galvanize all metal components of steel rail system. Apply additional coatings when shown elsewhere on the plans. When plans require paint over galvanizing, follow the requirements for painting galvanized steel in Item 445, "Galvanizing" and when field painting, Item 446, "Field Cleaning and Painting Steel". Sleeve members and anchor bolts must receive galvanization prior to installation and only field paint after installation unless directed otherwise by Engineer.

Anchor bolts must be ⅝" Dia ASTM A307 Gr A with one hardened steel washer (ASTM F436) placed under each hex nut or ASTM A307 Gr A threaded rods with one tack welded hex nut each and with one hex nut with one hardened steel washer (ASTM F436) each. Nuts must conform to ASTM A563 requirements.

Optional adhesive anchorage system must be ⅝" Dia ASTM A307 Gr A fully threaded rods with one hex nut and one hardened steel washer (ASTM F436). Nuts must conform to ASTM A563 requirements. Embed fully threaded rods into slab, wingwalls, or culvert curbs using a Type III, Class C, D, E, or F anchor adhesive. Anchor adhesive chosen must be able to achieve a nominal bond strength in tension, Na, of a single anchor of 10 kips (edge distance must be accounted for). Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing".

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

Do not use this railing on bridges with expansion joints providing more than 5" movement.

Rail anchorage details shown on this standard may require modification for select structure types. See appropriate details elsewhere in plans for these modifications.

For all rails, submit erection drawings showing section lengths, splice locations, rail post spacing and anchor bolt setting for approval.

Average weight of railing is 30 plf.

Texas Department of Transportation

Bridge Division Standard

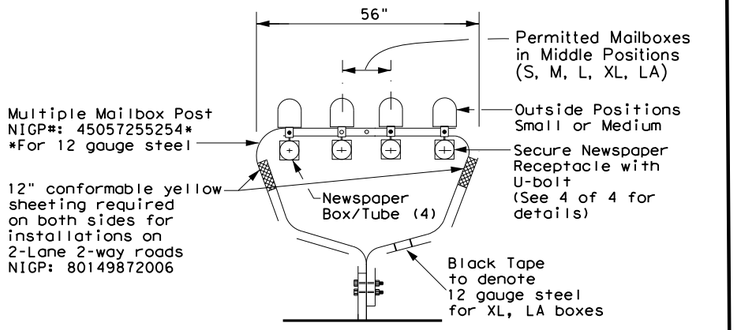
PEDESTRIAN RAIL

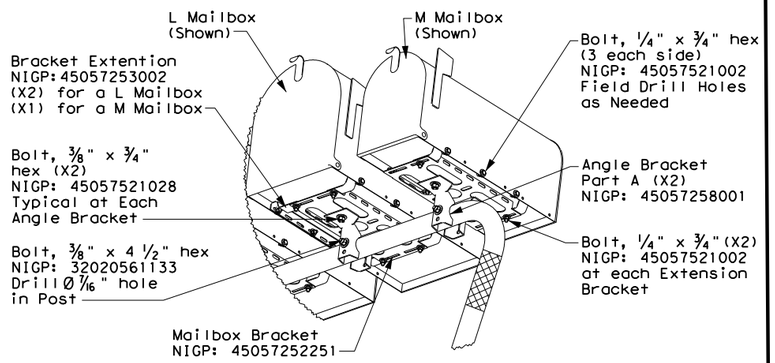
TYPE PR11

FILE: rlstd028-19.dgn	DN: TAR	CK: TBE	DW: JTR	CK: TAR
©TxDOT September 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

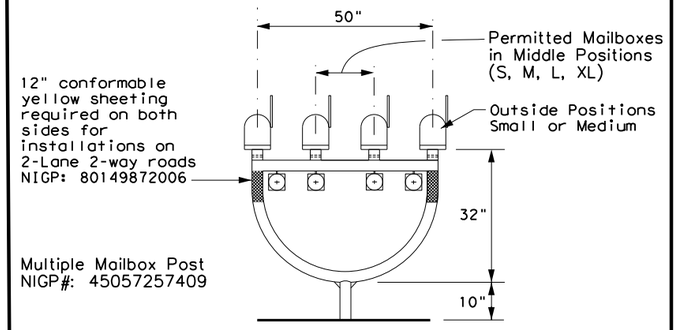
DATE: DATE TIME
FILE: DOCUMENT NAME

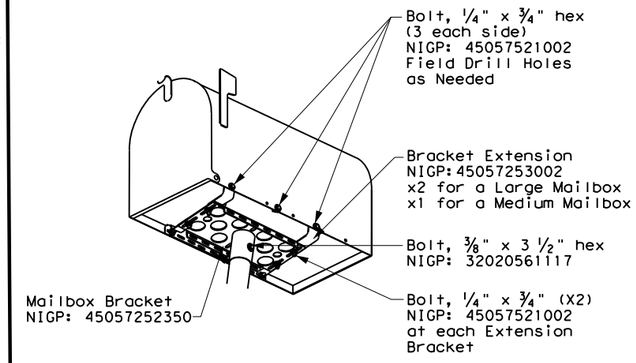
TYPE 1 - MULTIPLE





TYPE 4 - MULTIPLE





MAILBOX SIZES

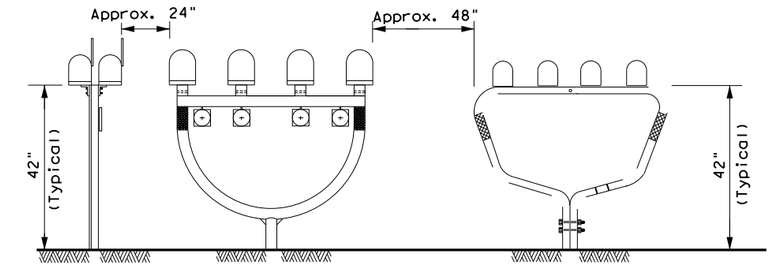
MAILBOX SIZE	TYPICAL DIMENSIONS			MAX **
	LENGTH	WIDTH	HEIGHT	WEIGHT
SMALL	19 1/2"	6"	7"	6 LBS
MEDIUM	22 1/2" *	8" *	11 1/2" *	8 LBS
LARGE	23 1/2"	11 1/2"	13 1/2"	11 LBS
EXTRA LARGE	18"	14"	12"	13 LBS
LOCKABLE	18"	11 1/2"	15"	23 LBS

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

GENERAL NOTES:

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

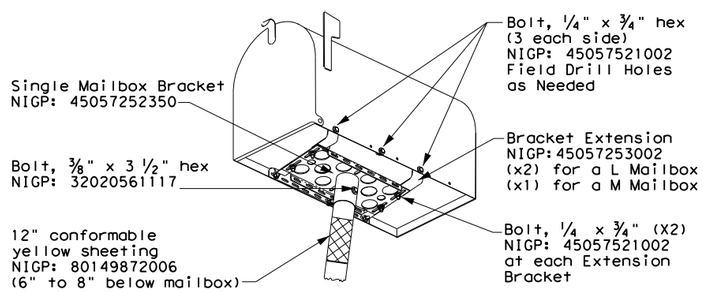
TYPICAL INSTALLATION MEASUREMENTS

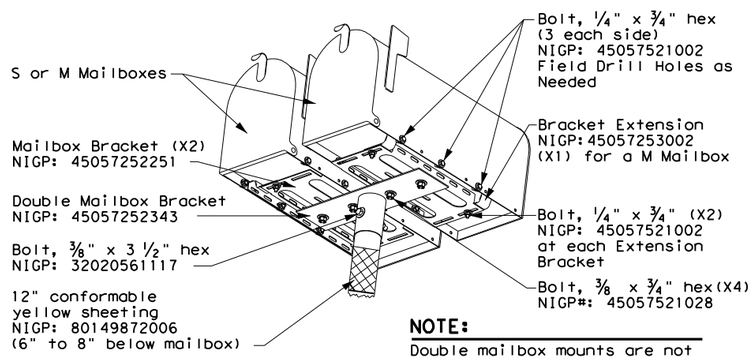


NOTE:

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

TYPE 2 and 4 - SINGLE/DOUBLE

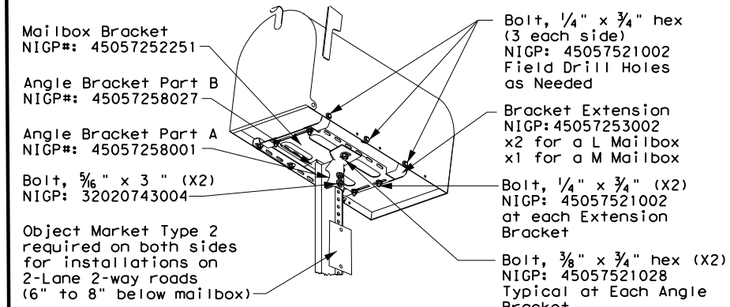


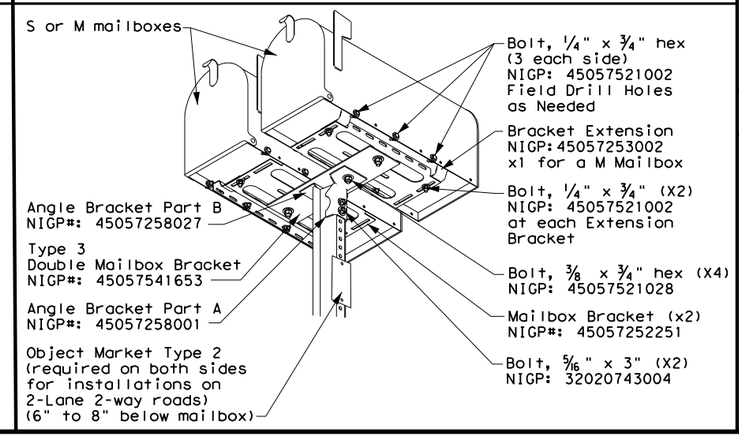


NOTE:

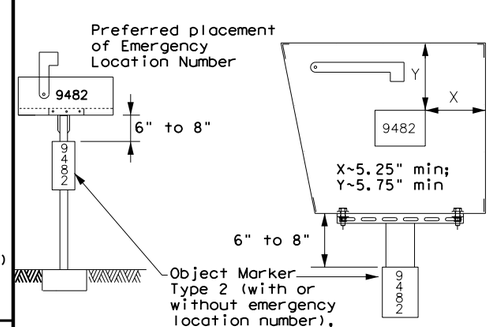
Double mailbox mounts are not allowed with a type 4 multiple mailbox installation

TYPE 3 - SINGLE/DOUBLE





PLACEMENT OF EMERGENCY LOCATION NUMBER

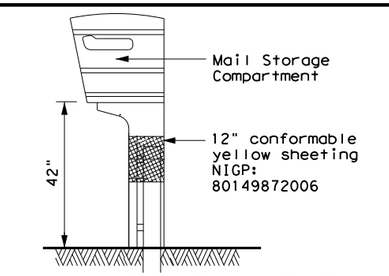


NOTES:

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

SHEET 1 OF 4

TYPE 5



Typical Molded Plastic Mailbox

Texas Department of Transportation — Maintenance Division Standard

MAILBOX MOUNTING AND ASSEMBLY

MB(1)-21

FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		96

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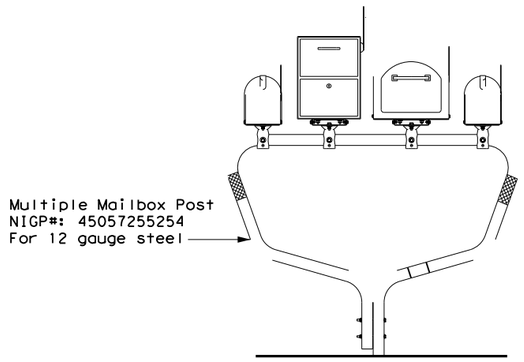
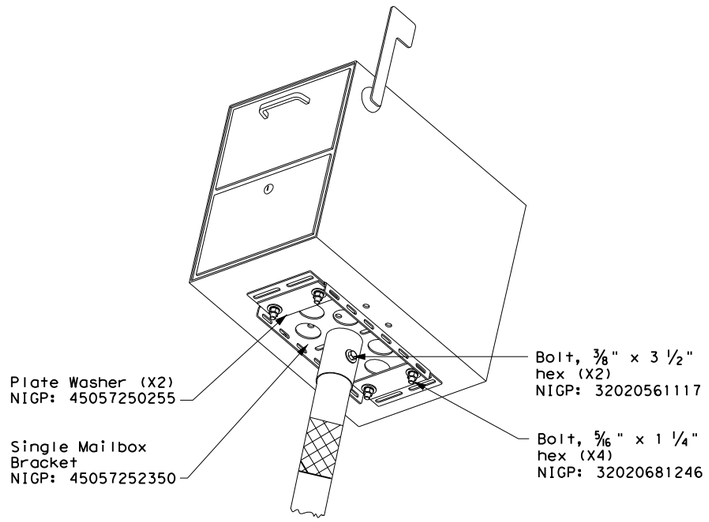
DATE: DATE TIME
FILE: DOCUMENT NAME

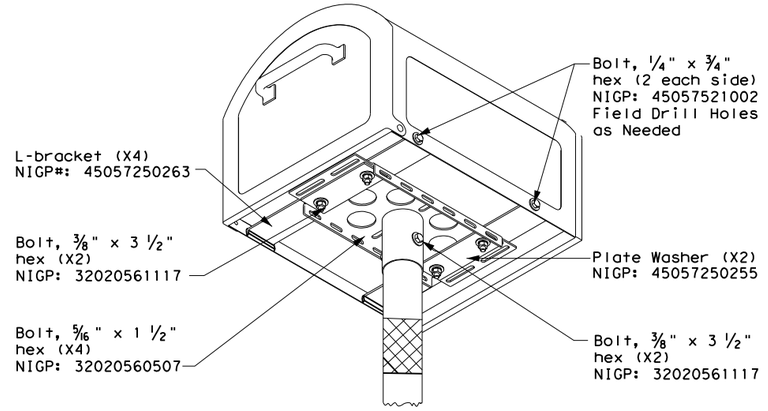
TYPE 1- MULTI LOCKABLE AND XL MAILBOX



TYPE 2/4 - SINGLE LOCKABLE MAILBOX

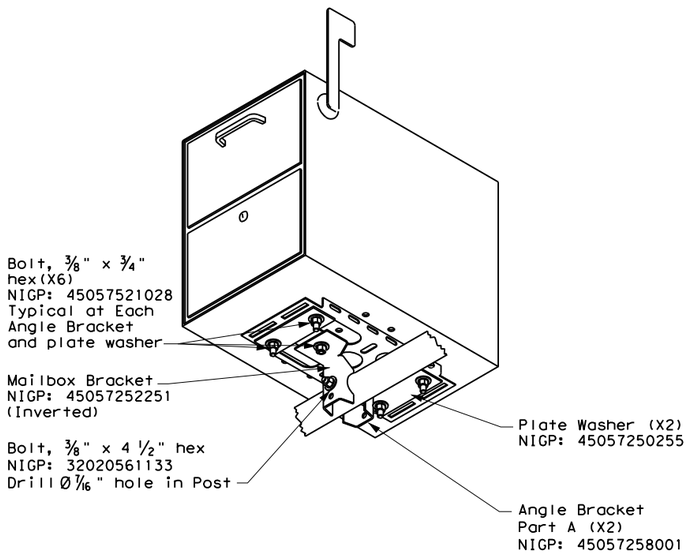


TYPE 2/4 - SINGLE XL MAILBOX

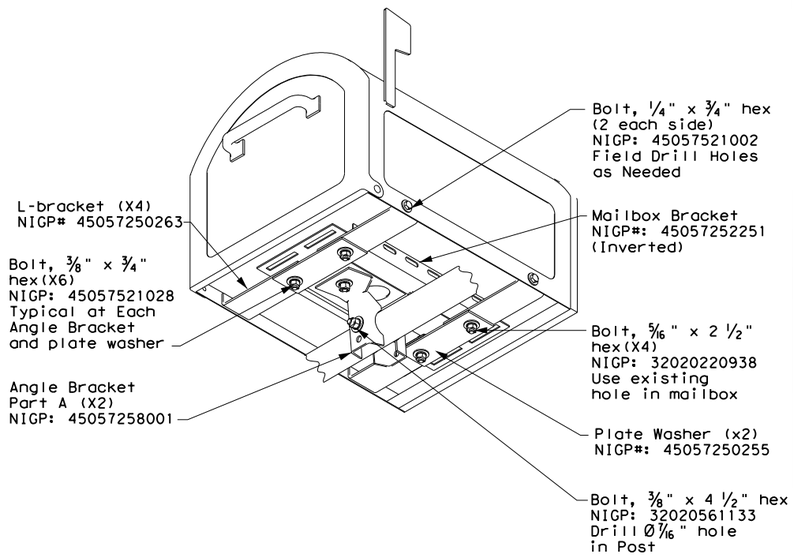


NOTE:
Follow same configuration when mounting an XL mailbox on a Type 4 multi post.

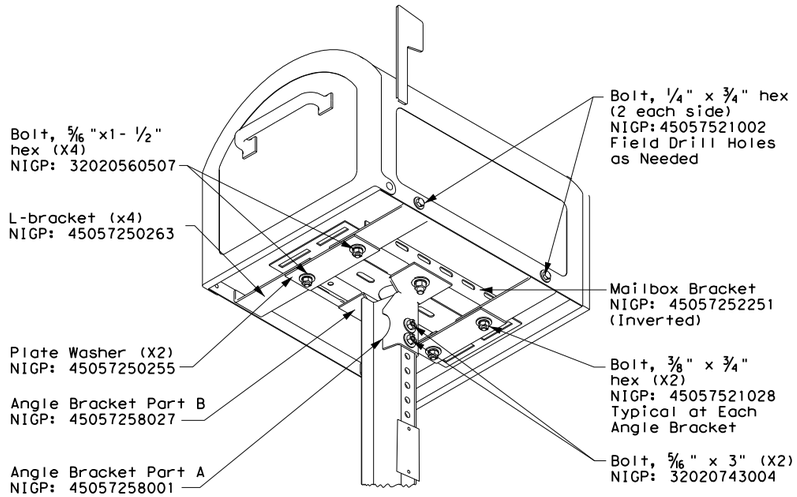
TYPE 1 MULTI – LOCKABLE ARCHITECTURAL (LA)



TYPE 1 MULTI – XL MAILBOX



TYPE 3 - XL MAILBOX MOUNTING



Texas Department of Transportation — Maintenance Division Standard

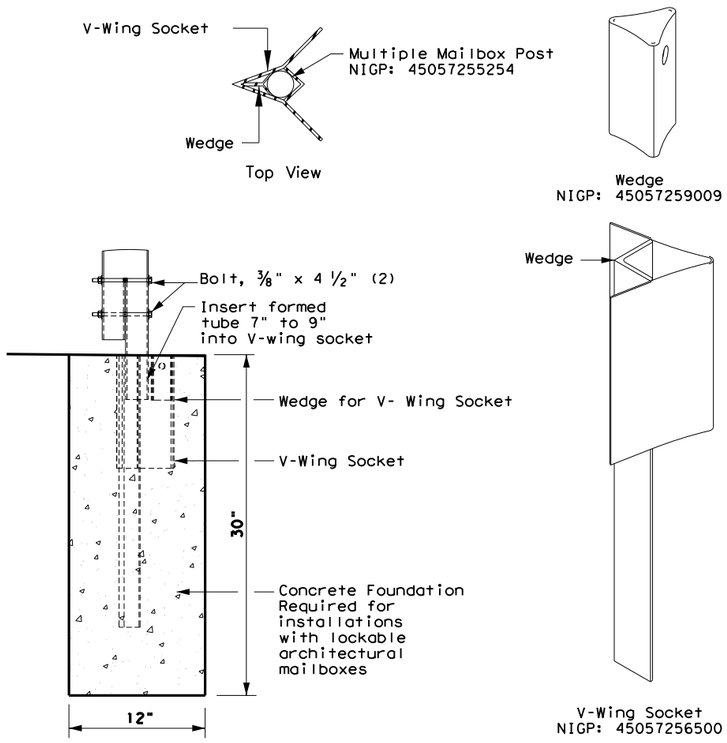
XL AND LOCKABLE ARCHITECTURAL MAILBOX ASSEMBLY

MB(2)-21

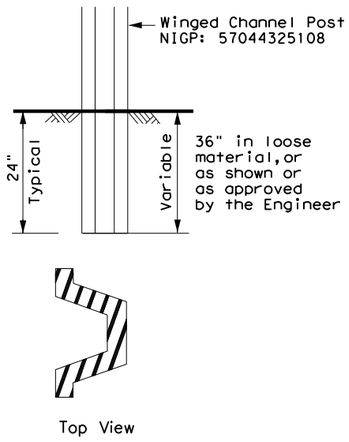
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		97

TYPE 1 - SUPPORT/FOUNDATION

Thin Wall Tube w/ V-LOC Anchorage



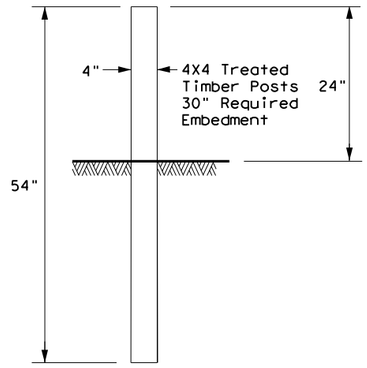
TYPE 3 - SUPPORT/FOUNDATION



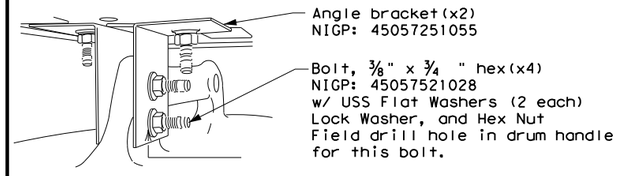
NOTES:

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

TYPE 5 - SUPPORT/FOUNDATION



TYPE 6 - TEMPORARY MAILBOX SUPPORT



Plastic Drum NIGP: 55093383655
Rubber Collar NIGP: 55093387102

NOTES:

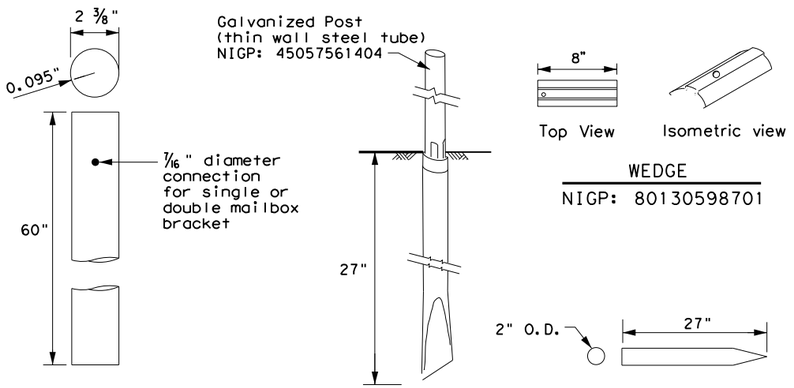
1. Place on approved plastic drum as shown in the Compliant Work Zone Traffic Control Devices (CWZTCD).
2. Existing attachment hardware shall be used unless damaged. Damaged hardware shall be replaced.

GENERAL NOTES:

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

TYPE 2 - SUPPORT/FOUNDATION

Thin Wall Steel Tube w/Wedge Anchor System

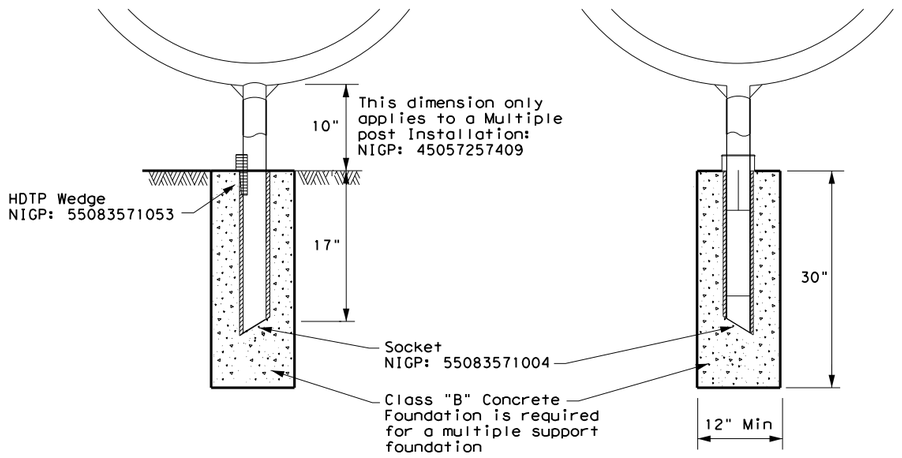


MAILBOX POST

WEDGE ANCHOR
NIGP: 80130238407

TYPE 4 - SUPPORT/FOUNDATION

Whitecoated steel post NIGP: 45057561107
Multiple post NIGP: 45057257409
Recycled Rubber post (RR) NIGP: 45057561057



SHEET 3 OF 4

Texas Department of Transportation

Maintenance Division Standard

MAILBOX SUPPORT AND FOUNDATION

MB(3)-21

FILE: MB-21.dgn	DN:	CK:	DW:	CK:
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		98

DATE: DATE TIME
FILE: DOCUMENT NAME

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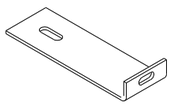
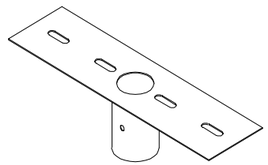
DATE: DATE TIME
FILE: DOCUMENT NAME

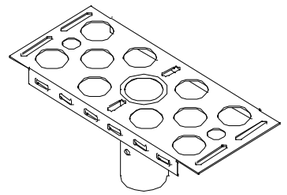
TYPE	TYPE 1	TYPE 2	TYPE 3	TYPE 4			TYPE 5	TYPE 6
Configuration	Multiple	Single or Double	Single or Double	Single	Double	Multiple	Single	Single
Mailbox Size NIGP #	Outside Position: S or M Inside Position: S, M, L, XL, or LA	Single: S, M, L, XL, or LA Double: SS, SM, MM	Single: S, M, L, or XL Double: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



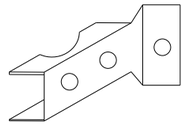
NIGP: 45057250263
L-Bracket x4 for
XL sized mailboxes



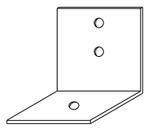
NIGP: 45057252343
Double Mailbox Bracket
For Type 2 and Type 4
double mount



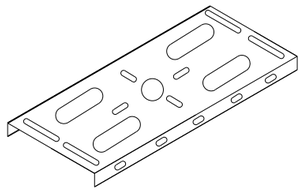
NIGP: 45057252350
Single Mailbox Bracket
For Type 2 single and for
Type 4 single and multi mount



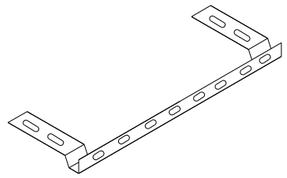
NIGP: 45057258001
Part "A" Angle Bracket
For Type 1 multi (2 per mailbox)
and Type 3 single and double



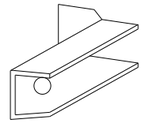
NIGP: 45057251055
Type 6 Angle Bracket
(2 per mailbox)



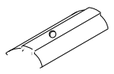
NIGP: 45057252251
Mailbox Bracket
For Type 1 multi and
any double mount (use 2)



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



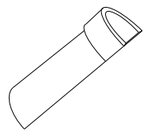
NIGP: 45057258027
Part "B" Angle Bracket
For Type 3 single
and double



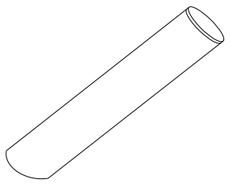
NIGP: 80130598701
Wedge for Type 2

NIGP: 45057250255
Plate Washer for Architecural
and XL Mailboxes

NIGP: 45057541653
Type 3 double mailbox bracket

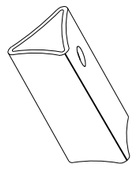


NIGP: 55083571053
Type 4 Mailbox Wedge

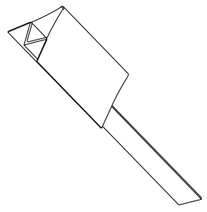


NIGP: 55083571004
Type 4 Mailbox Socket

NIGP: 80130238407
Type 2 Wedge Anchor



NIGP: 45057259009
Wedge for Type 1 V-wing Socket



NIGP: 45057256500
V-wing Socket for
Type 1 Foundation

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

NOTES:

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

BID CODES FOR CONTRACTS

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

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

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

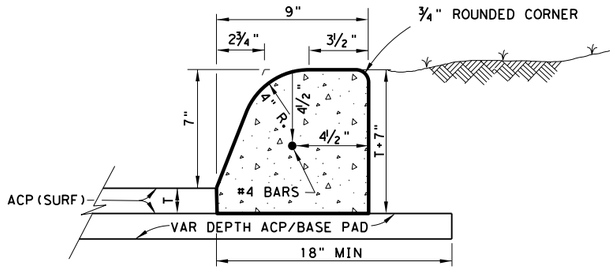
Type of Foundation
- Ty 1 = V-Loc
- Ty 2 = Wedge Anchor Steel System
- Ty 3 = Winged Channel post
- Ty 4 = Wedge Anchor Plastic System
- Ty 5 = 4 X 4 Post

Texas Department of Transportation — Maintenance Division Standard

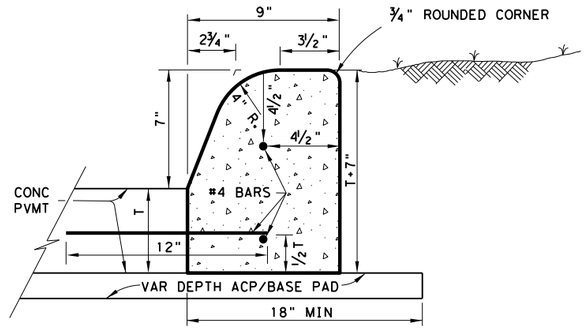
NIGP PARTS LIST AND COMPATIBILITY

MB(4)-21

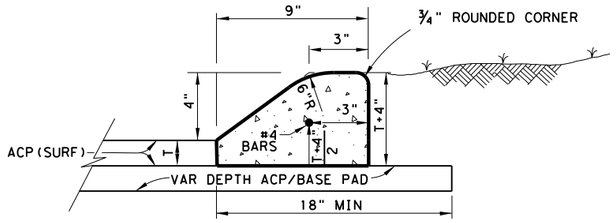
FILE: MB-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT March 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 2/2005 11/2009 4/2015 6/2005 1/2011 11/2006 7/2014	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		99



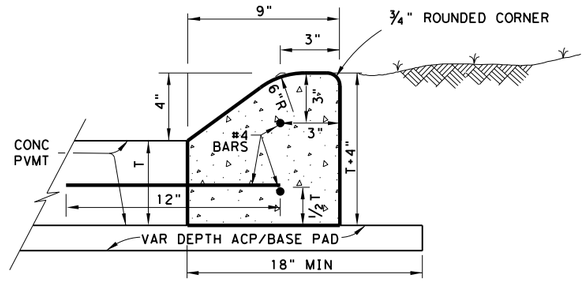
CONCRETE CURB (TYPE 1)
W/ ACP



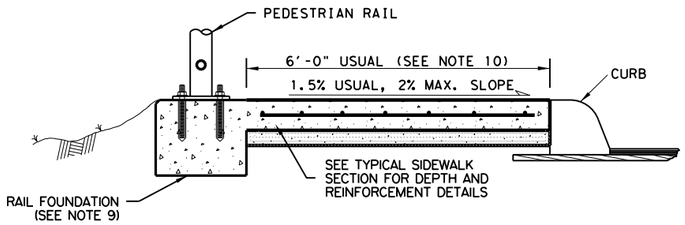
CONCRETE CURB (TYPE 1)
W/ CONC PAVEMENT



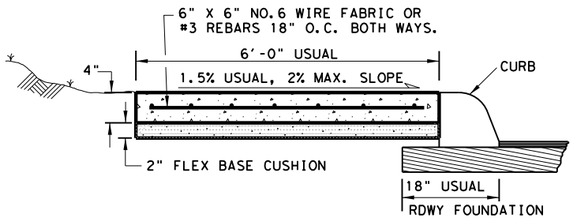
CONCRETE CURB (TYPE 2)
W/ ACP



CONCRETE CURB (TYPE 2)
W/ CONC PAVEMENT

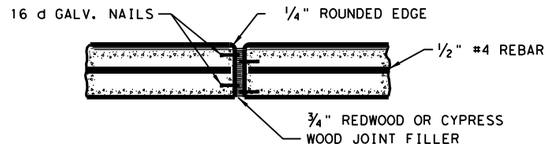


TYPICAL SIDEWALK SECTION WITH PEDESTRIAN RAIL



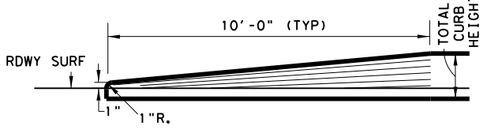
TYPICAL SIDEWALK SECTION

GROOVED JOINTS IN THE SIDE WALK SHALL BE AT A MAX. SPACING OF 10 FT. AND SHALL HAVE ¾" EXPANSION JOINTS AT A MAX. SPACING OF 60' AND TO COINSIDE WITH THE CURB EXP. JOINTS.



TYPICAL CURB EXPANSION JOINT DETAIL

EXPANSION JOINTS TO BE PLACED AT BEGINNING AND END OF CURVES, DRIVEWAYS WHEELCHAIR RAMPS, INLETS, ILLUMINATION/ SIGNAL FOUNDATIONS AND OTHER FIXED OBJECTS.



TRANSITION FOR CONCRETE CURB ENDS

SEE CURB DETAIL FOR REINFORCEMENT

GENERAL NOTES:

1. CONCRETE CURB TYPE 1 AND 2 SHOWN SHALL MEET THE MINIMUM SPECIFICATION REQUIREMENTS OF CLASS "A" CONCRETE PER ITEM 529 AND 421.
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. WHERE CONCRETE CURB IS PLACED ON EXISTING CONCRETE PAVEMENT, THE PAVEMENT SHALL BE DRILLED AND THE REINFORCING BARS GROUTED IN PLACE.
4. 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.
5. VERTICAL AND HORIZONTAL DOWEL BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT 4 FEET C-C, UNLESS OTHERWISE SHOWN.
6. ONE-HALF INCH EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB OR CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP. THIS IS SUBSIDIARY TO THE CURB, ITEM 529.
7. LAYDOWN CURB AT DRIVEWAYS WILL BE PAID AS SUBSIDIARY TO ITEM 530.
8. FOR SIDEWALK DETAILS AT DRIVEWAYS, SEE SAN ANTONIO DISTRICT STANDARD "DRIVEWAY DETAILS".
9. SEE PEDESTRIAN HANDRAIL DETAILS STANDARD "PRD" FOR MORE INFORMATION. CONCRETE RAIL FOUNDATION TO BE POURED WITH THE SIDEWALK BUT PAYMENT IS SUBSIDIARY TO ITEM 450 "RAILING".
10. CLEAR SIDEWALK WIDTH EXCLUDING THE PEDESTRIAN RAIL FOUNDATION SHALL BE 6' UNLESS OTHERWISE SPECIFIED IN THE PLANS

Texas Department of Transportation
San Antonio District

MISCELLANEOUS CURB AND SIDEWALK DETAILS

San Antonio District Standard
Sheet (1 of 2)

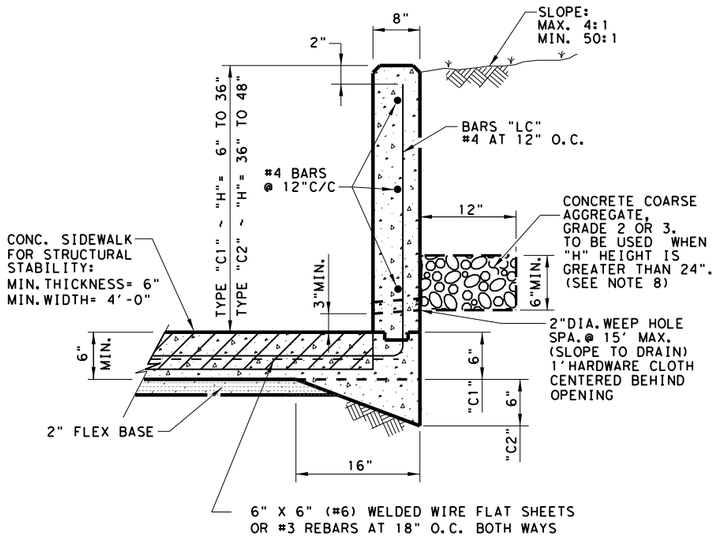
T:\Engdata\Standards\MiscCurbdetails.dgn
ORIGINAL DRAWING DATE:
REVISIONS
09-01-08
10-10-17 sidewalk width equals 6' usual
07-22-20 9" curb + curb w/ conc pvmt det.
- -

PREPARED BY AND FOR USE OF TxDoT.

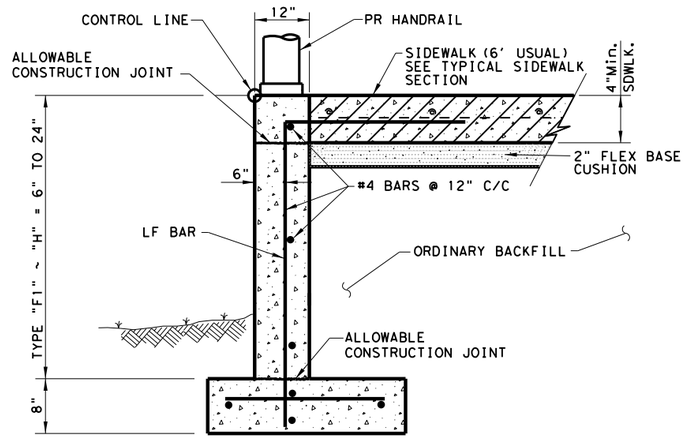
STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT #	SHEET
SAT	6	STP 2023(490) TAPS	100

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
BEXAR	0915	00	252	VARIOUS

8/22/2023 9:24:02 PM
...\STANDARDS\STANDARD-SHEETS.dgn



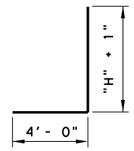
TYPE "C1" & "C2" CURB



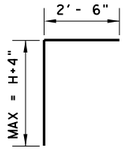
TYPE "F1" CURB

GENERAL NOTES:

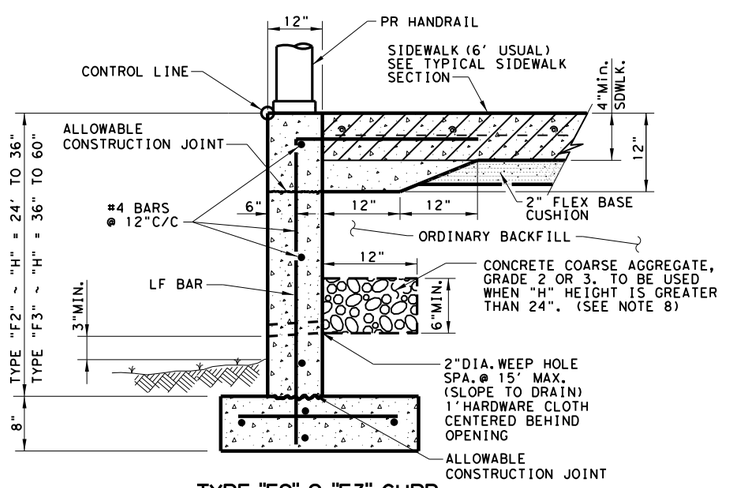
1. CONCRETE FOR CURB TYPE F AND C SHOWN SHALL MEET THE MINIMUM SPECIFICATION REQUIREMENTS OF CLASS "C" CONCRETE PER ITEM 421
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH PAVEMENT JOINITS IN ALL CURBS AND CURB AND GUTTER ADJACENT TO JOINTED 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.
4. VERTICAL AND HORIZONTAL DOWEL BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT 4 FEET C-C, UNLESS OTHERWISE SHOWN.
5. UNTIL THE SIDEWALK IS COMPLETE, LATERAL SUPPORT FOR THE "F" CURBS WILL BE REQUIRED.
6. IF AGGREGATE IS REQUIRED PER THE DETAIL, IT IS PAID AS SUBSIDIARY TO THE CURB, ITEM 529.



BAR "LC"

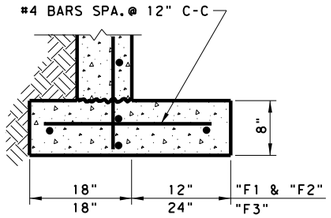


BAR "LF"



TYPE "F2" & "F3" CURB

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.



FOOTING DETAIL

CLASS C CONCRETE PAID UNDER ITEM 531, SIDEWALK. (NOTE. ADDITIONAL CONCRETE TO MEET THE THICKENED SECTIONS REQUIRED BY THESE DETAILS IS SUBSIDIARY TO ITEM 531, CURB.)

Texas Department of Transportation
San Antonio District

MISCELLANEOUS CURB AND SIDEWALK DETAILS

San Antonio District Standard
Sheet (2 of 2)

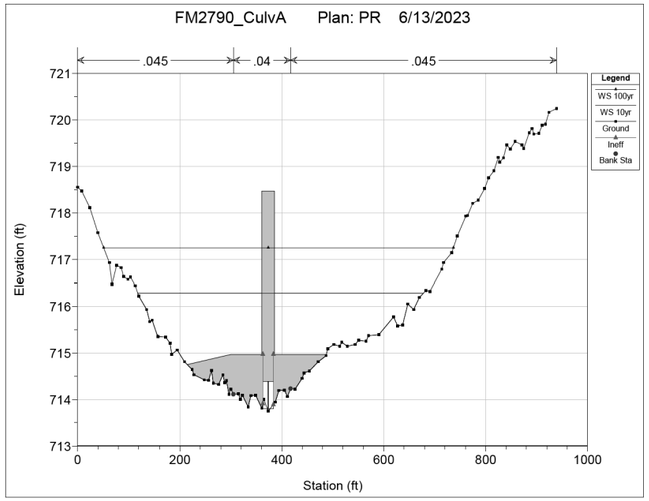
T:Engdata/Standards/MiscCurbdetails.dgn
ORIGINAL DRAWING DATE:
REVISIONS
09-01-08
10-10-17 sidewalk width equals 6' usual
07-22-20 9" curb + curb w/ conc pvmt det.
- -

PREPARED BY AND FOR USE OF TxDoT.

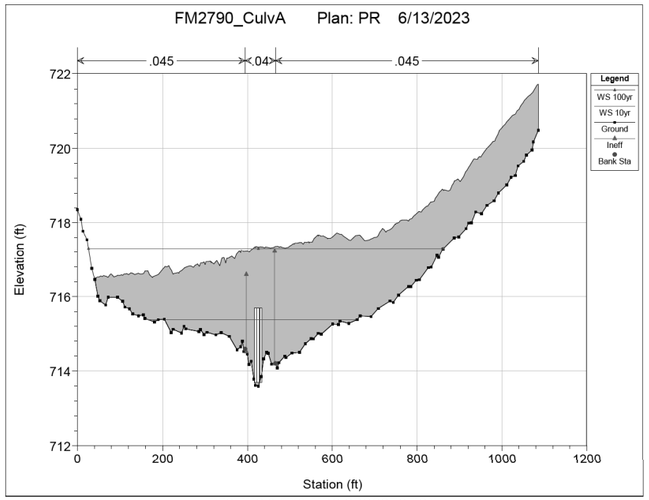
STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT #	SHEET
SAT	6	STP 2023(490) TAPS	101

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
BEXAR	0915	00	252	VARIOUS

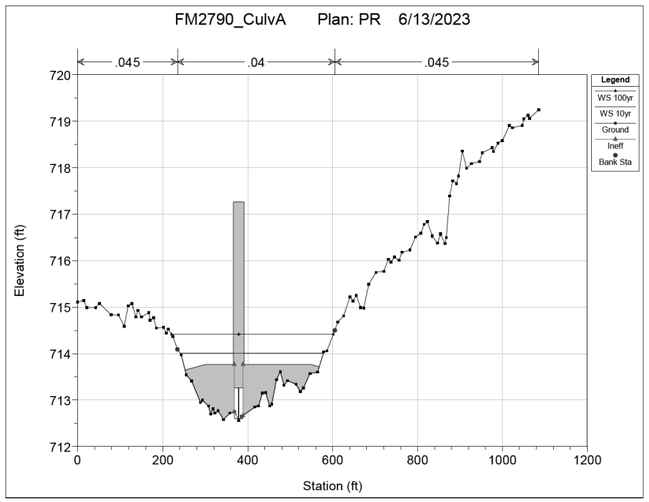
8/22/2023 9:24:02 PM
...\STANDARDS\STANDARD-SHEETS.dgn



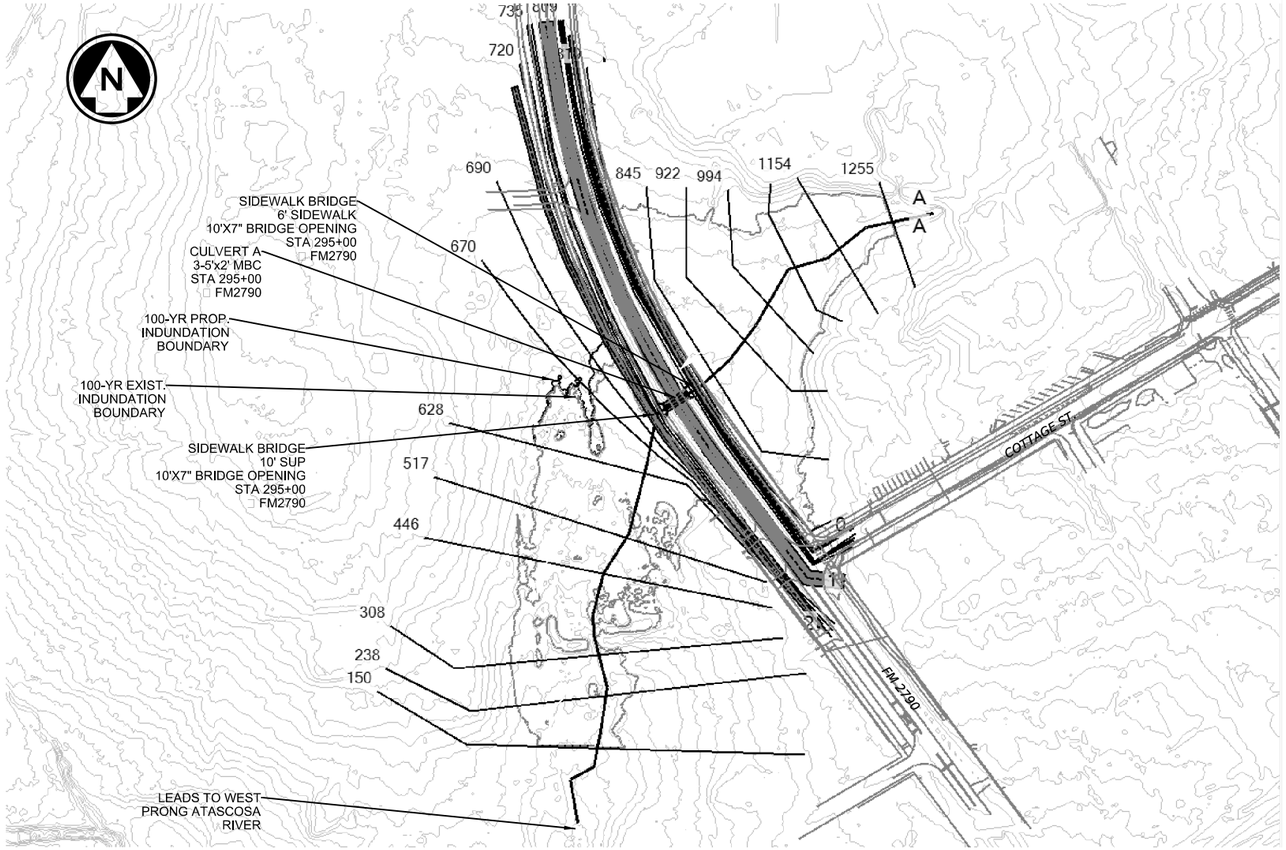
PROPOSED 6' SIDEWALK CROSS-SECTION



EXISTING 3-5'X2' MBC CROSSECTION



PROPOSED 10' SHARED USE PATH CROSS-SECTION



HEC-RAS CROSS-SECTION MAP

N.T.S.

NOTES:
1. *NO IMPACT TO ADJACENT STRUCTURES.*
2. *NEGLIGIBLE WATER SURFACE ELEVATION RISE.*
3. *NORMAL DEPTH ASSUMED AT DOWNSTREAM CONDITIONS.*

STATE OF TEXAS
JESUS R SANTOS
126654
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Sulte 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HYDRAULIC DATA SHEET

CULVERT A
STA 295+00

SHEET 1 OF 4

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		102

DATE: 8/22/2023 9:26:24 PM
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CK:
DW:
CK:
DW:

HEC-RAS HYDRAULIC SUMMARY

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
A	1255	10yr	PR	157	717.59	718.8	718.78	719.13	0.019212	4.61	34.06	49.01	0.98
A	1255	10yr	EX	157	717.59	718.81	718.78	719.13	0.018189	4.53	34.69	49.28	0.95
A	1255	100yr	PR	236	717.59	719.16	719	719.47	0.010982	4.47	53.46	64.68	0.78
A	1255	100yr	EX	236	717.59	719.16	719	719.47	0.010982	4.47	53.46	64.68	0.78
A	1154	10yr	PR	157	717.05	717.74		717.83	0.008251	2.51	66.48	149.46	0.61
A	1154	10yr	EX	157	717.05	717.73		717.83	0.008679	2.55	65.37	149.14	0.62
A	1154	100yr	PR	236	717.05	717.72	717.72	717.95	0.020758	3.9	64.14	148.79	0.96
A	1154	100yr	EX	236	717.05	717.72	717.72	717.95	0.020758	3.9	64.14	148.79	0.96
A	1073	10yr	PR	157	716.11	716.81	716.76	716.95	0.015201	3.21	56.34	147.87	0.82
A	1073	10yr	EX	157	716.11	716.81		716.95	0.014341	3.15	57.45	148.31	0.8
A	1073	100yr	PR	236	716.11	717.27		717.33	0.002655	2.11	136.43	194.18	0.38
A	1073	100yr	EX	236	716.11	717.27		717.33	0.002655	2.11	136.44	194.18	0.38
A	994	10yr	PR	157	715.32	716.26		716.33	0.004538	2.37	91.11	183.55	0.48
A	994	10yr	EX	157	715.32	716.25		716.32	0.004858	2.43	88.91	182.54	0.5
A	994	100yr	PR	236	715.32	717.25		717.26	0.000313	1.09	307.27	245.13	0.15
A	994	100yr	EX	236	715.32	717.25		717.26	0.000313	1.09	307.28	245.13	0.15
A	922	10yr	PR	157	714.49	716.28		716.29	0.000108	0.59	343.23	317.09	0.08
A	922	10yr	EX	157	714.49	716.27		716.28	0.000111	0.6	339.85	316.6	0.08
A	922	100yr	PR	236	714.49	717.25		717.25	0.000035	0.46	684.12	381.03	0.05
A	922	100yr	EX	236	714.49	717.25		717.25	0.000035	0.46	684.14	381.03	0.05
A	845	10yr	PR	157	713.72	716.28	714.37	716.28	0.000024	0.33	681.7	444.21	0.04
A	845	10yr	EX	157	713.72	716.27		716.27	0.000024	0.33	676.93	443.47	0.04
A	845	100yr	PR	236	713.72	717.25	714.54	717.25	0.000012	0.3	1149.34	528.3	0.03
A	845	100yr	EX	236	713.72	717.25		717.25	0.000012	0.3	1149.37	528.3	0.03
A	819	10yr	PR	157	713.75	716.28	714.97	716.28	0.000019	0.28	776.12	559.47	0.03
A	819	10yr	EX	157	713.75	716.27		716.27	0.00002	0.28	770.12	558.22	0.03
A	819	100yr	PR	236	713.75	717.25	714.97	717.25	0.000009	0.24	1387.5	685.49	0.02
A	819	100yr	EX	236	713.75	717.25		717.25	0.000009	0.24	1387.55	685.49	0.02
A	813			Culvert									
A	809	10yr	PR	157	713.53	716.28	714.85	716.28	0.000009	0.2	1121.76	735.59	0.02
A	809	10yr	EX	157	713.53	716.27		716.27	0.000009	0.2	1114.37	731.73	0.02
A	809	100yr	PR	236	713.53	717.25	714.97	717.25	0.000004	0.18	1892.93	840.93	0.02
A	809	100yr	EX	236	713.53	717.25		717.25	0.000004	0.18	1892.93	840.93	0.02
A	806	10yr	PR	157	713.59	716.28	714.8	716.28	0.000009	0.21	1104.75	729.36	0.02
A	806	10yr	EX	157	713.59	716.27		716.27	0.000009	0.21	1097.42	726.69	0.02
A	806	100yr	PR	236	713.59	717.25	714.97	717.25	0.000004	0.18	1873.77	839.22	0.02
A	806	100yr	EX	236	713.59	717.25		717.25	0.000004	0.18	1873.77	839.22	0.02
A	804	10yr	PR	157	713.61	716.26	714.39	716.28	0.000203	0.95	164.58	737.56	0.11
A	804	10yr	EX	157	713.61	716.25	714.39	716.27	0.000206	0.96	163.88	736.41	0.11
A	804	100yr	PR	236	713.61	717.25	714.57	717.25	0.000005	0.19	1819.76	837.77	0.02
A	804	100yr	EX	236	713.61	717.25	714.57	717.25	0.000005	0.19	1819.76	837.77	0.02
A	799	10yr	PR	157	713.59	716.26	714.66	716.27	0.000312	1.09	143.64	733.78	0.13
A	799	10yr	EX	157	713.59	716.25	714.66	716.26	0.000317	1.1	142.95	732.57	0.13
A	799	100yr	PR	236	713.59	717.25	714.83	717.25	0.000008	0.22	1600.1	832.41	0.02
A	799	100yr	EX	236	713.59	717.25	714.83	717.25	0.000008	0.22	1600.1	832.41	0.02
A	765			Culvert									
A	740	10yr	PR	157	713.04	714.35	714.35	714.67	0.026959	4.51	34.88	270.79	1
A	740	10yr	EX	157	713.04	714.35	714.35	714.67	0.026959	4.51	34.88	270.79	1
A	740	100yr	PR	236	713.04	714.55	714.55	714.97	0.024566	5.16	46.01	319.46	1
A	740	100yr	EX	236	713.04	714.55	714.55	714.97	0.024566	5.16	46.01	319.46	1
A	735	10yr	PR	157	712.85	713.87	713.77	714.08	0.016324	3.77	43.26	315.16	0.79
A	735	10yr	EX	157	712.85	713.77	713.77	714.06	0.02843	4.46	36.59	307.06	1.01
A	735	100yr	PR	236	712.85	714.3	713.95	714.48	0.007574	3.51	69.69	380.31	0.58
A	735	100yr	EX	236	712.85	713.95	713.95	714.33	0.025927	5.09	48.11	321.65	1.01
A	730	10yr	PR	157	712.65	714.01	713.13	714.02	0.000222	0.56	329.04	363.68	0.1
A	730	10yr	EX	157	712.65	713.34		713.37	0.006071	1.43	107.72	278	0.43
A	730	100yr	PR	236	712.65	714.42	713.22	714.42	0.00016	0.6	484.8	412.58	0.09
A	730	100yr	EX	236	712.65	713.47		713.51	0.005784	1.73	146.49	310.5	0.44
A	725	10yr	PR	157	712.68	714.01	713.77	714.01	0.000235	0.55	319.38	353.69	0.1
A	725	10yr	EX	157	712.68	713.29		713.34	0.008018	1.63	93.39	251.38	0.49
A	725	100yr	PR	236	712.68	714.42	713.77	714.42	0.000171	0.59	469.66	402.03	0.09
A	725	100yr	EX	236	712.68	713.42		713.48	0.007628	1.66	127.19	275.48	0.48
A	720	10yr	PR	157	712.56	714.01	713.77	714.01	0.000236	0.53	298.41	337.25	0.1
A	720	10yr	EX	157	712.56	713.15	713.09	713.26	0.020911	2.63	59.66	173.99	0.79
A	720	100yr	PR	236	712.56	714.41	713.77	714.42	0.000159	0.53	445.63	381.25	0.09
A	720	100yr	EX	236	712.56	713.26		713.39	0.020394	2.89	81.54	202.3	0.8

NOTES:
1. NO IMPACT TO ADJACENT STRUCTURES.
2. NEGLIGIBLE WATER SURFACE ELEVATION RISE.
3. NORMAL DEPTH ASSUMED AT DOWNSTREAM CONDITIONS.

PR = PROPOSED CONDITIONS
EX = EXISING CONDITIONS

STATE OF TEXAS
JESUS R SANTOS
126654
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
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San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HYDRAULIC DATA SHEET

CULVERT A
STA 295+00

SHEET 2 OF 4

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		103

DATE: 8/22/2023 9:26:44 PM
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CK:
DW:
CK:
DW:

HEC-RAS HYDRAULIC SUMMARY

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
A	715			Culvert									
A	690	10yr	PR	157	711.96	713.25	713.25	713.85	0.021413	6.21	25.27	311.85	0.99
A	690	10yr	EX	157	711.96	712.81		712.86	0.008042	1.7	92.35	253.32	0.5
A	690	100yr	PR	236	711.96	713.62	713.62	714.41	0.019892	7.15	32.99	332.24	1
A	690	100yr	EX	236	711.96	712.92		712.98	0.008664	1.96	120.63	283.41	0.53
A	670	10yr	PR	157	711.89	712.56	712.56	712.85	0.028106	4.33	36.22	258.34	1
A	670	10yr	EX	157	711.89	712.47	712.45	712.57	0.028732	2.52	62.26	245.61	0.88
A	670	100yr	PR	236	711.89	712.74	712.74	713.12	0.025588	4.96	47.57	280.09	1
A	670	100yr	EX	236	711.89	712.55	712.52	712.68	0.027096	2.87	82.31	256.33	0.89
A	628	10yr	PR	157	711.4	712.03		712.06	0.006356	1.56	107.7	274.7	0.45
A	628	10yr	EX	157	711.4	712.03		712.06	0.006356	1.56	107.7	274.7	0.45
A	628	100yr	PR	236	711.4	712.16		712.2	0.0057	1.8	145.41	292.13	0.44
A	628	100yr	EX	236	711.4	712.16		712.2	0.0057	1.8	145.41	292.13	0.44
A	517	10yr	PR	157	709.87	711.16		711.19	0.00967	1.35	117.25	196.39	0.3
A	517	10yr	EX	157	709.87	711.16		711.19	0.00967	1.35	117.25	196.39	0.3
A	517	100yr	PR	236	709.87	711.34		711.38	0.009971	1.56	154.36	221.3	0.31
A	517	100yr	EX	236	709.87	711.34		711.38	0.009971	1.56	154.36	221.3	0.31
A	446	10yr	PR	157	709.19	710.18	709.92	710.23	0.020016	1.76	89.75	169.87	0.42
A	446	10yr	EX	157	709.19	710.18	709.92	710.23	0.020016	1.76	89.75	169.87	0.42
A	446	100yr	PR	236	709.19	710.32		710.39	0.02081	2.07	117.33	218.5	0.44
A	446	100yr	EX	236	709.19	710.32		710.39	0.02081	2.07	117.33	218.5	0.44
A	308	10yr	PR	157	705.71	707.19		707.27	0.02292	2.33	80.51	165.39	0.47
A	308	10yr	EX	157	705.71	707.19		707.27	0.02292	2.33	80.51	165.39	0.47
A	308	100yr	PR	236	705.71	707.36		707.45	0.021669	2.6	109.73	178.23	0.48
A	308	100yr	EX	236	705.71	707.36		707.45	0.021669	2.6	109.73	178.23	0.48
A	238	10yr	PR	157	704.59	706.05		706.09	0.012895	1.63	101.25	170.97	0.35
A	238	10yr	EX	157	704.59	706.05		706.09	0.012895	1.63	101.25	170.97	0.35
A	238	100yr	PR	236	704.59	706.25		706.3	0.012753	1.79	138.26	194.33	0.35
A	238	100yr	EX	236	704.59	706.25		706.3	0.012753	1.79	138.26	194.33	0.35
A	150	10yr	PR	157	703.41	704.74	704.35	704.79	0.016912	1.81	86.53	132.83	0.4
A	150	10yr	EX	157	703.41	704.74	704.35	704.79	0.016912	1.81	86.53	132.83	0.4
A	150	100yr	PR	236	703.41	704.94	704.51	705	0.016901	2.06	114.57	145.28	0.41
A	150	100yr	EX	236	703.41	704.94	704.51	705	0.016901	2.06	114.57	145.28	0.41

NOTES:
1. NO IMPACT TO ADJACENT STRUCTURES.
2. NEGLIGIBLE WATER SURFACE ELEVATION RISE.
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PR = PROPOSED CONDITIONS
EX = EXISITING CONDITIONS

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FM2790,COTTAGE,PRAIRIE

HYDRAULIC DATA SHEET
CULVERT A
STA 295+00

SHEET 3 OF 4

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		104

DATE: 8/22/2023 9:27:00 PM
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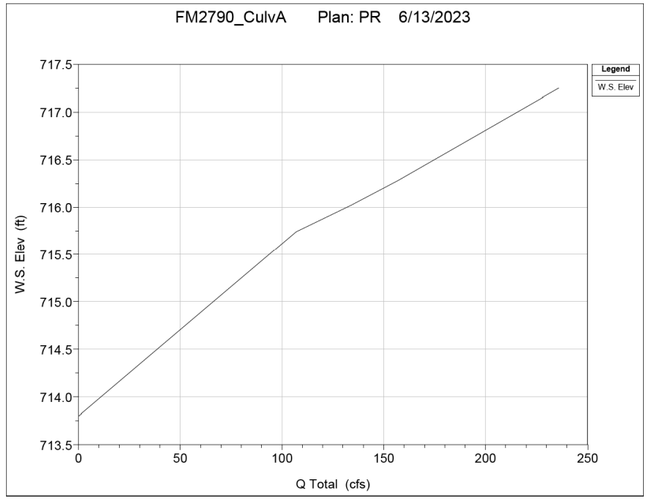
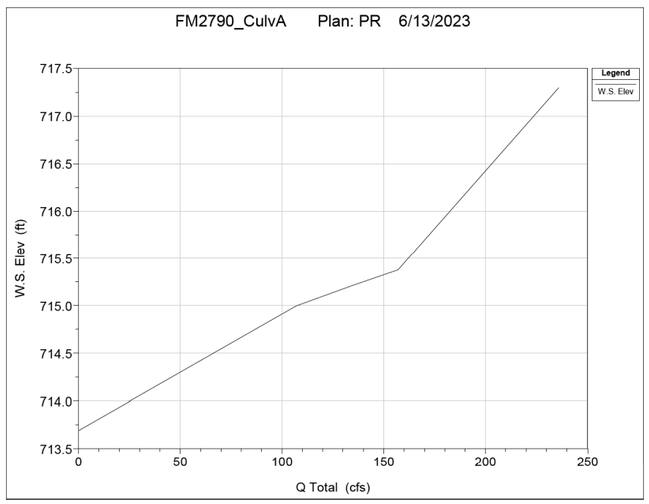
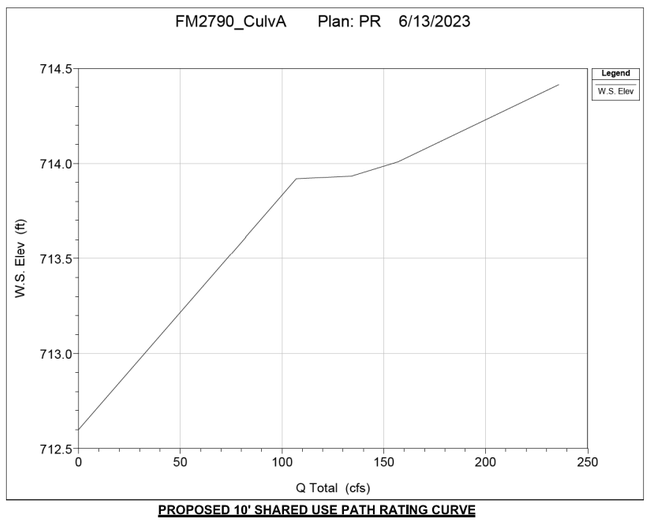


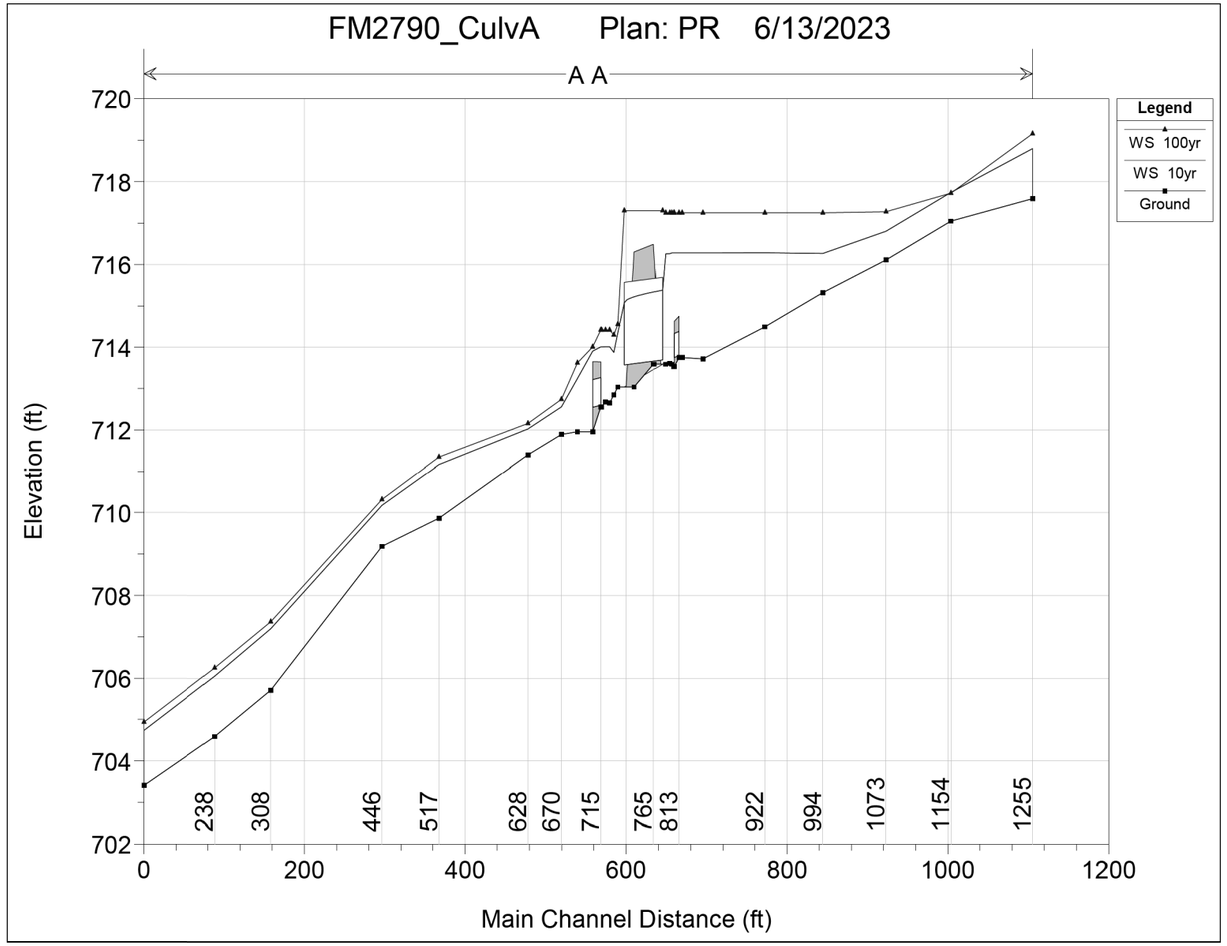
PROPOSED 6' SIDEWALK RATING CURVE



EXISTING 3-5'X2' MBC RATING CURVE



PROPOSED 10' SHARED USE PATH RATING CURVE



HEC-RAS PROFILE PLOT

Storm Frequency	Q Total	W.S. Elev
[years]	[cfs]	[ft]
-	0	713.80
10	157	716.28
100	236	717.25

PROPOSED 6' SIDEWALK RATING CURVE TABLE

Storm Frequency	Q Total	W.S. Elev
[years]	[cfs]	[ft]
-	0	713.69
10	157	715.38
100	236	717.30

FM 2790 CULVERT A RATING CURVE TABLE

Storm Frequency	Q Total	W.S. Elev
[years]	[cfs]	[ft]
-	0	712.60
10	157	714.01
100	236	714.41

PROPOSED 10' SHARED USE PATH RATING CURVE TABLE

NOTES:
1. *NO IMPACT TO ADJACENT STRUCTURES.*
2. *NEGLIGIBLE WATER SURFACE ELEVATION RISE.*
3. *NORMAL DEPTH ASSUMED AT DOWNSTREAM CONDITIONS.*

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

HYDRAULIC DATA SHEET

CULVERT A
STA 295+00

SHEET 4 OF 4

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		105

DATE: 8/22/2023 9:27:16 PM
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CK:
DW:
CK:
DW:

DITCH B (PROPOSED)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
280+00	28.81	728.14	728.63	0.93%	CLASS E	7	0.49	0.17	4	4	0.035	1.19	5	1.57	0.1	728.31	0.32	
281+00	29.16	727.92	728.31	0.22%	CLASS E	7	0.39	0.39	4	4	0.035	0.95	5	3.14	0.05	728.31	0.00	
282+00	29.84	727.60	728.26	0.32%	CLASS E	7	0.66	0.44	4	4	0.035	1.22	5	4.71	0.09	728.04	0.22	
283+00	28.10	726.30	727.37	1.30%	CLASS E	7	1.07	0.35	3	4	0.035	2.18	5	6.29	0.28	726.65	0.72	
284+00	27.36	725.40	726.16	0.90%	CLASS E	7	0.76	0.44	4	4	0.035	2.05	5	7.86	0.25	725.84	0.32	
285+00	26.85	724.50	725.12	0.90%	CLASS E	9	0.62	0.43	4	4	0.035	2.06	5	9.43	0.24	724.93	0.19	
286+00	28.27	723.57	724.05	0.93%	CLASS E	9	0.48	0.46	4	4	0.035	2.2	5	11.00	0.27	724.03	0.02	DITCH TIES TO EXISTING DITCH AT LAREDO ST.

DITCH E1 (PROPOSED)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
288+00	31.58	720.44	720.77	1.10%	CLASS E	4	0.33	0.11	4	15	0.035	0.9	5	0.50	0.08	720.55	0.22	
289+00	30.37	719.11	719.55	1.33%	CLASS E	6.67	0.44	0.12	4	8	0.035	1.12	5	1.00	0.1	719.23	0.32	
290+00	29.23	718.04	718.63	1.07%	CLASS E	8.5	0.59	0.14	4	5	0.035	1.15	5	1.50	0.1	718.18	0.45	
290+50	29.10	717.60	718.29	0.88%	CLASS E	8.5	0.69	0.18	4	4	0.035	1.21	5	2.00	0.1	717.78	0.51	DITCH TIES TO EXISTING DITCH AT BLUME ST.

DITCH E2 (PROPOSED)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
293+00	31.75	714.61	715.06	0.96%	CLASS E	0	0.45	0.31	4	4	0.035	1.17	5	0.44	0.18	714.92	0.14	
294+00	33.17	713.55	713.96	1.06%	CLASS E	0	0.41	0.39	4	4	0.035	1.45	5	0.89	0.26	713.94	0.02	
294+50	32.44	713.30	713.83	0.50%	CLASS E	0	0.53	0.50	5	4	0.035	1.18	5	1.33	0.16	713.80	0.03	DITCH TIES TO DOWNSTREAM OF CULVERT A

DITCH G (PROPOSED)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
299+00	23.72	714.93	715.79	0.12%	CLASS E	6	0.86	0.14	5	4	0.035	0.38	5	0.36	0.01	715.07	0.72	
298+00	20.81	714.71	716.15	0.22%	CLASS E	4	1.44	0.22	4	4	0.035	0.65	5	0.71	0.03	714.93	1.22	
297+00	26.91	713.32	714.29	1.39%	CLASS E	0	0.97	0.34	8	4	0.035	1.53	5	1.07	0.3	713.66	0.63	
296+00	31.34	712.85	713.42	0.47%	CLASS E	0	0.57	0.54	4	4	0.035	1.2	5	1.42	0.16	713.39	0.03	
295+50	29.52	712.82	713.63	0.06%	CLASS E	0	0.81	0.80	6	4	0.035	0.56	5	1.78	0.03	713.62	0.01	DITCH TIES TO DOWNSTREAM OF CULVERT A

DITCH I (PROPOSED)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
301+00	26.97	714.95	716.38	0.10%	CLASS E	6	1.43	0.35	4	4	0.035	0.38	5	0.36	0.01	715.30	0.72	
301+50	27.34	714.91	716.23	0.08%	CLASS E	6	1.32	0.54	4	4	0.035	0.65	5	0.71	0.03	715.45	1.22	

DITCH D (PROPOSED)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATIO	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE	RIGHT SIDE SLOPE	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATI	FREE BOARD (FT)	REMARKS
287+50	-34.75	721.12	721.48	1.54%	CLASS C	13	0.36	0.25	4	8	0.035	1.95	5	7.00	0.24	721.37	0.11	
288+00	-21.50	720.37	720.71	1.50%	CLASS C	17	0.34	0.32	4	6	0.035	2.32	5	14.00	0.3	720.69	0.02	
289+00	-30.14	718.64	719.65	1.73%	CLASS C	0	1.01	0.86	9	9	0.035	3.17	5	21.00	0.93	719.50	0.15	
290+00	-21.58	717.85	719.13	0.79%	CLASS C	14	1.28	0.58	25	7	0.035	2.09	5	28.00	0.28	718.43	0.70	
291+00	-31.18	716.51	717.88	1.34%	CLASS C	0	1.37	1.05	7	13	0.035	3.19	5	35.00	0.88	717.56	0.32	
292+00	-34.75	715.76	716.58	0.75%	CLASS C	14	0.82	0.80	8	6	0.035	2.68	5	42.00	0.37	716.56	0.02	
293+00	-26.67	715.04	715.34	0.72%	CLASS C	0	0.30	0.90	50	7	0.035	2.12	5	49.00	0.4	715.94	-0.60	0.96-FT OF FREEBOARD TO FM 2790 ROADWAY
294+00	-28.27	714.48	714.65	0.56%	CLASS C	13	0.17	1.07	4	7	0.035	2.77	5	56.00	0.37	715.55	-0.90	1.22-FT OF FREEBOARD TO FM 2790 ROADWAY; DITCH TIES TO UPSTREAM OF CULVERT A

DITCH F (PROPOSED)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATIO	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATI	FREE BOARD (FT)	REMARKS
297+00	-30.77	714.41	715.66	0.83%	CLASS E	0	1.25	0.60	8	8	0.035	1.73	5	5.00	0.31	715.01	0.65	
296+00	-32.58	713.97	714.80	0.44%	CLASS E	0	0.83	0.90	8	7	0.035	1.65	5	10.00	0.25	714.87	-0.07	1.82-FT OF FREEBOARD TO FM 2790 ROADWAY; DITCH TIES TO UPSTREAM OF CULVERT A

DITCH H (PROPOSED)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATIO	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE	RIGHT SIDE SLOPE	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATI	FREE BOARD (FT)	REMARKS
300+00	-22.70	715.39	716.24	0.27%	CLASS D	4	0.85	0.58	5	12	0.035	1.15	5	5.33	0.1	715.97	0.27	
301+00	-27.30	715.19	716.19	0.20%	CLASS D	4	1.00	0.90	4	10	0.035	1.29	5	10.67	0.11	716.09	0.10	
301+50	-26.93	714.82	715.98	0.74%	CLASS D	4	1.16	0.83	4	8	0.035	2.4	5	16.00	0.38	715.65	0.33	

NOTES:

1. HYDROLOGY DETERMINED USING RATIONAL METHOD.

2. THE FREEBOARD SHOWN IN THE TABLE IS CALCULATED TO THE OUTSIDE EDGE OF THE PROPOSED SIDEWALK OR SHARED USE PATH.

3. PROPOSED NORTH BOUND SIDE DITCHES (D, F, & H) USE THE EXISTING DITCH FLOW LINE. THE ADJACENT SIDEWALK EDGE IS USED AS THE LIMIT OF THE DITCH DEPTH.

STATE OF TEXAS
JESUS R SANTOS
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LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

PROPOSED
DITCH COMPUTATIONS
FM 2790

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		106

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CK

DW

CK

DW

DITCH B (EXISTING)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
280+00	28.28	728.56	728.66	0.80%	GRASS	0	0.10	0.14	7	202	0.035	0.65	5	1.38	0.07	728.70	-0.04	
281+00	30.7	727.85	728.20	0.71%	GRASS	0	0.35	0.41	7	19	0.035	1.24	5	2.75	0.18	728.26	-0.06	
282+00	33.33	727.73	727.96	0.12%	GRASS	0	0.23	0.59	10	25	0.035	0.66	5	4.13	0.04	728.32	-0.36	
283+00	30.43	726.83	727.48	0.90%	GRASS	0	0.65	0.56	8	13	0.035	1.72	5	5.50	0.31	727.39	0.09	
284+00	33.51	726.17	726.22	0.66%	GRASS	0	0.05	0.30	19	138	0.035	0.97	5	6.88	0.12	726.47	-0.25	
285+00	30.76	724.55	724.62	1.62%	GRASS	0	0.07	0.24	21	189	0.035	1.33	5	8.25	0.25	724.79	-0.17	
286+00	40.54	723.85	724.05	0.70%	GRASS	0	0.20	0.59	16	19	0.035	1.57	5	9.63	0.26	724.44	-0.39	
287+00	92.53	721.39	722.12	2.46%	GRASS	0	0.73	0.33	92	8	0.035	2.01	5	11.00	0.51	721.72	0.40	

DITCH E1 (EXISTING)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
289+00	31.63	719.11	719.47	1.33%	GRASS	0	0.36	0.19	7	29	0.035	1.02	5	0.67	0.16	719.30	0.17	
290+00	29.78	718.07	718.73	1.04%	GRASS	0	0.66	0.29	7	19	0.035	1.2	5	1.33	0.19	718.36	0.37	
291+00	40.19	716.65	716.66	1.42%	GRASS	0	0.01	0.07	15	1341	0.035	0.56	5	2.00	0.06	716.72	-0.06	

DITCH E2 (EXISTING)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
293+00	32.98	714.80	715.06	0.76%	GRASS	0	0.26	0.18	6	45	0.035	0.76	5	0.67	0.09	714.98	0.08	
294+00	35.82	713.44	713.67	1.36%	GRASS	0	0.23	0.23	5	39	0.035	1.17	5	1.33	0.19	713.67	0.00	
295+00	43.82	712.77	713.07	0.67%	GRASS	0	0.30	0.30	22	22	0.035	0.99	5	2.00	0.13	713.07	0.00	DITCH TIES TO DOWNSTREAM OF CULVERT A

DITCHG (EXISTING)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
299+00	28.8	714.98	716.14	0.07%	GRASS	0	1.16	0.31	12	14	0.035	0.32	5	0.40	0.01	715.29	0.85	
298+00	29.4	714.95	715.32	0.03%	GRASS	0	0.37	0.33	13	54	0.035	0.22	5	0.80	0.01	715.28	0.04	
297+00	30.96	713.73	714.36	1.22%	GRASS	0	0.63	0.23	6	33	0.035	1.12	5	1.20	0.18	713.96	0.40	
296+00	33.77	713.09	713.10	0.64%	GRASS	0	0.01	0.07	5	1817	0.035	0.36	5	1.60	0.03	713.16	-0.06	
295+00	43.82	712.77	713.07	0.32%	GRASS	0	0.30	0.35	22	22	0.035	0.75	5	2.00	0.07	713.12	-0.05	DITCH TIES TO DOWNSTREAM OF CULVERT A

DITCH D (EXISTING)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
288+00	-21.5	720.37	721.12	1.44%	GRASS	0	0.75	0.42	37	6	0.035	1.81	5	7	0.38	720.79	0.33	
289+00	-30.24	718.64	720.38	1.73%	GRASS	0	1.74	0.64	17	9	0.035	2.62	5	14	0.69	719.28	1.10	
290+00	-21.58	717.85	719.28	0.79%	GRASS	15.56	1.43	0.51	7	7	0.035	2.16	5	21	0.25	718.36	0.92	
291+00	-21.25	716.68	717.86	1.17%	GRASS	0	1.18	0.93	17	6	0.035	2.76	5	28	0.68	717.61	0.25	
292+00	-21.09	715.90	716.87	0.78%	GRASS	0	0.97	0.94	29	6	0.035	2.27	5	35	0.46	716.84	0.03	
293+00	-26.67	715.04	715.62	0.86%	GRASS	0	0.58	0.89	39	7	0.035	2.3	5	42	0.48	715.93	-0.31	
294+00	-28.27	714.48	714.78	0.56%	GRASS	0	0.30	0.85	69	7	0.035	1.8	5	49	0.3	715.33	-0.55	
295+00	-21.1	713.55	714.00	0.93%	GRASS	0	0.45	0.86	62	3	0.035	2.33	5	56	0.5	714.41	-0.41	DITCH TIES TO UPSTREAM OF CULVERT A

DITCH F (EXISTING)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
297+00	-30.77	714.41	715.95	0.84%	GRASS	0	1.54	0.45	14	8	0.035	1.45	5	3	0.24	714.86	1.09	
296+00	-32.58	713.97	714.39	0.44%	GRASS	0	0.42	0.47	48	7	0.035	1.08	5	7	0.13	714.44	-0.05	
295+00	-21.1	713.55	714.00	0.42%	GRASS	0	0.45	0.52	62	3	0.035	1.13	5	10	0.14	714.07	-0.07	DESING FLOW INCLUDES DITCH-F AND DITCH-H, DITCH TIES TO UPSTREAM OF CULVERT A

DITCH H (EXISTING)

FM 2790 CL STA	INSIDE FL OFFSET	FLOW LINE ELEVATION	CONTROLLING TOP DITCH ELEVATION	DITCH SLOPE (%)	LINING MATERIAL	BOTTOM WIDTH (FT)	CHANNEL DEPTH (FT)	NORMAL DEPTH (FT)	LEFT SIDE SLOPE (X:1)	RIGHT SIDE SLOPE (X:1)	MANNING' S n	DESIGN VELOCITY (FPS)	DESIGN YEAR	DESIGN Q (CFS)	DESIGN SHEAR (LB/SF)	WATER SURFACE ELEVATION	FREE BOARD (FT)	REMARKS
300+00	-22.7	715.39	716.24	0.27%	GRASS	0	0.85	0.63	8	12	0.035	1.03	5	4	0.11	716.02	0.22	
301+00	-27.3	715.19	716.19	0.20%	GRASS	0	1.00	0.88	5	14	0.035	1.09	5	8	0.11	716.07	0.12	
301+50	-26.93	714.82	716.06	0.74%	GRASS	0	1.24	0.88	4	11	0.035	2.11	5	12	0.41	715.70	0.36	
301+76	-27.02	714.72	716.06	0.39%	GRASS	0	1.34	1.12	4	10	0.035	1.79	5	16	0.27	715.84	0.22	DITCH CHAIN ENDS AT STA 301+75.86, DITCH FLOWS ALONG THE ROADSIDE TOWARDS SOUTH

NOTES:

1. HYDROLOGY DETERMINED USING RATIONAL METHOD.

2. THE FREEBOARD SHOWN IN THE TABLE IS CALCULATED TO THE EXISTING GROUND ELEVATION AT RIGHT OF WAY.

STATE OF TEXAS
JESUS R SANTOS
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LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

EXISTING DITCH COMPUTATIONS FM 2790

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		107

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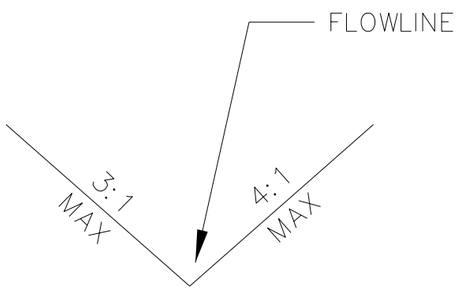
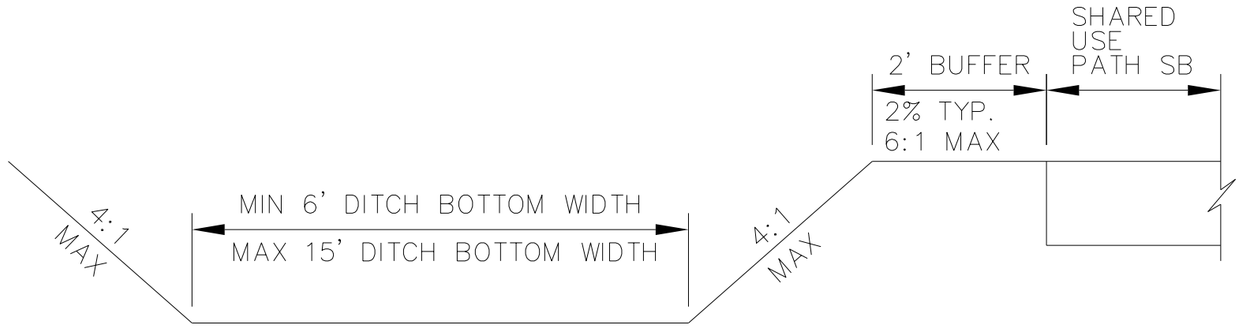
DITCH TYPE	BEGIN WIDTH	END WIDTH	BEGIN STATION	END STATION
DITCH BOTTOM WIDTH	7	7	1279+77.00	1280+07.00
DITCH BOTTOM WIDTH	7	7	1280+07.00	1280+62.00
DITCH BOTTOM WIDTH	7	7	1280+62.00	1283+00.31
DITCH BOTTOM WIDTH	7	9	1283+00.31	1285+00.00
DITCH BOTTOM WIDTH	9	9	1285+00.00	1286+40.00
DITCH BOTTOM WIDTH	6	7	1288+91.00	1289+21.00
DITCH BOTTOM WIDTH	7	7	1289+21.00	1289+42.00
DITCH BOTTOM WIDTH	7	8.5	1289+42.00	1289+72.00
DITCH BOTTOM WIDTH	8.5	8.5	1289+72.00	1290+80.00
DITCH BOTTOM WIDTH	8.5	8.5	1290+80.00	1290+93.94
DITCH BOTTOM WIDTH/VDITCH	6	0	1292+00.00	1293+00.00
V DITCH	0	0	1293+00.00	1295+00.00
DITCH BOTTOM WIDTH	6	6	1299+20.00	1299+41.00
DITCH BOTTOM WIDTH	6	8	1299+41.00	1299+75.00
DITCH BOTTOM WIDTH	6	6	1299+75.00	1300+33.25
DITCH BOTTOM WIDTH	8	6	1300+33.25	1301+83.70
DITCH BOTTOM WIDTH	15	15	1302+23.50	1304+19.46



V - DITCH DETAIL



FLAT - BOTTOM DITCH DETAIL

STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/23/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

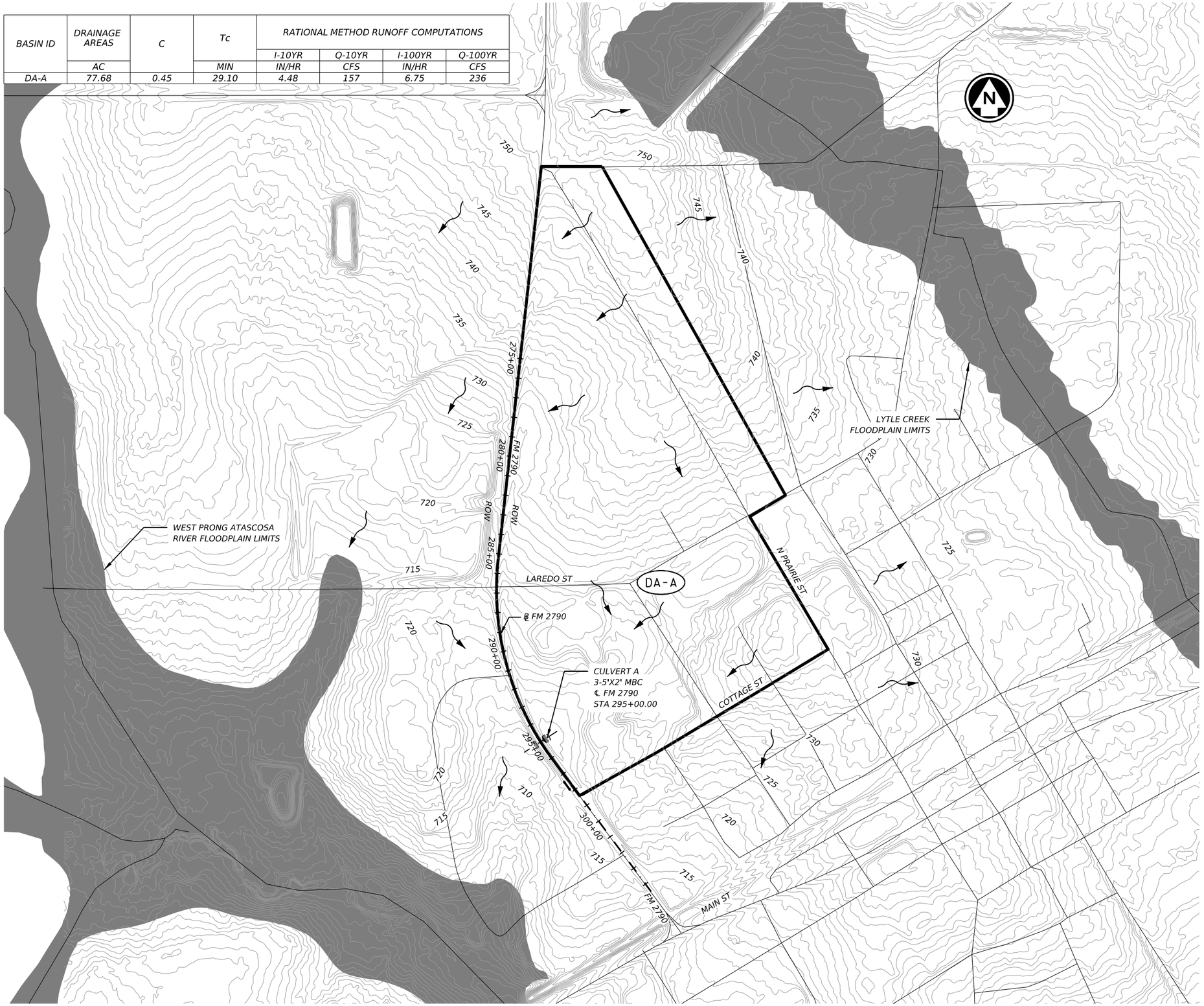
PROPOSED DITCH
BOTTOM WIDTH DETAILS
FM 2790

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		107A

DATE: 8/23/2023 12:26:34 AM
FILE: ...\FM 2790 Ditch Detail

BASIN ID	DRAINAGE AREAS	C	Tc	RATIONAL METHOD RUNOFF COMPUTATIONS			
				I-10YR	Q-10YR	I-100YR	Q-100YR
	AC		MIN	IN/HR	CFS	IN/HR	CFS
DA-A	77.68	0.45	29.10	4.48	157	6.75	236



LEGEND

- ROW
- DRAINAGE AREA BOUNDARY
- EXISTING CONTOUR
- FLOW ARROW
- X-X INTERIOR DRAINAGE AREA

NOTES:
1. DRAINAGE AREAS CALCULATED USING RATIONAL METHOD AND RAINFALL INTENSITY VALUES PER TXDOT HDM CH. 4 SEC. 12 EQ. 4-21, AND ATASCOSA COUNTY 2019 E, B, AND D VALUES.
2. TEXAS NATURAL RESOURCES INFORMATION SYSTEM (TNRIS). BEXAR & TRAVIS COUNTIES LIDAR 2021.

0 250 500
SCALE: 1"=500' H

STATE OF TEXAS
JESUS R SANTOS
126654
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

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TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

OVERALL DRAINAGE AREA MAP

SHEET 1 OF 1

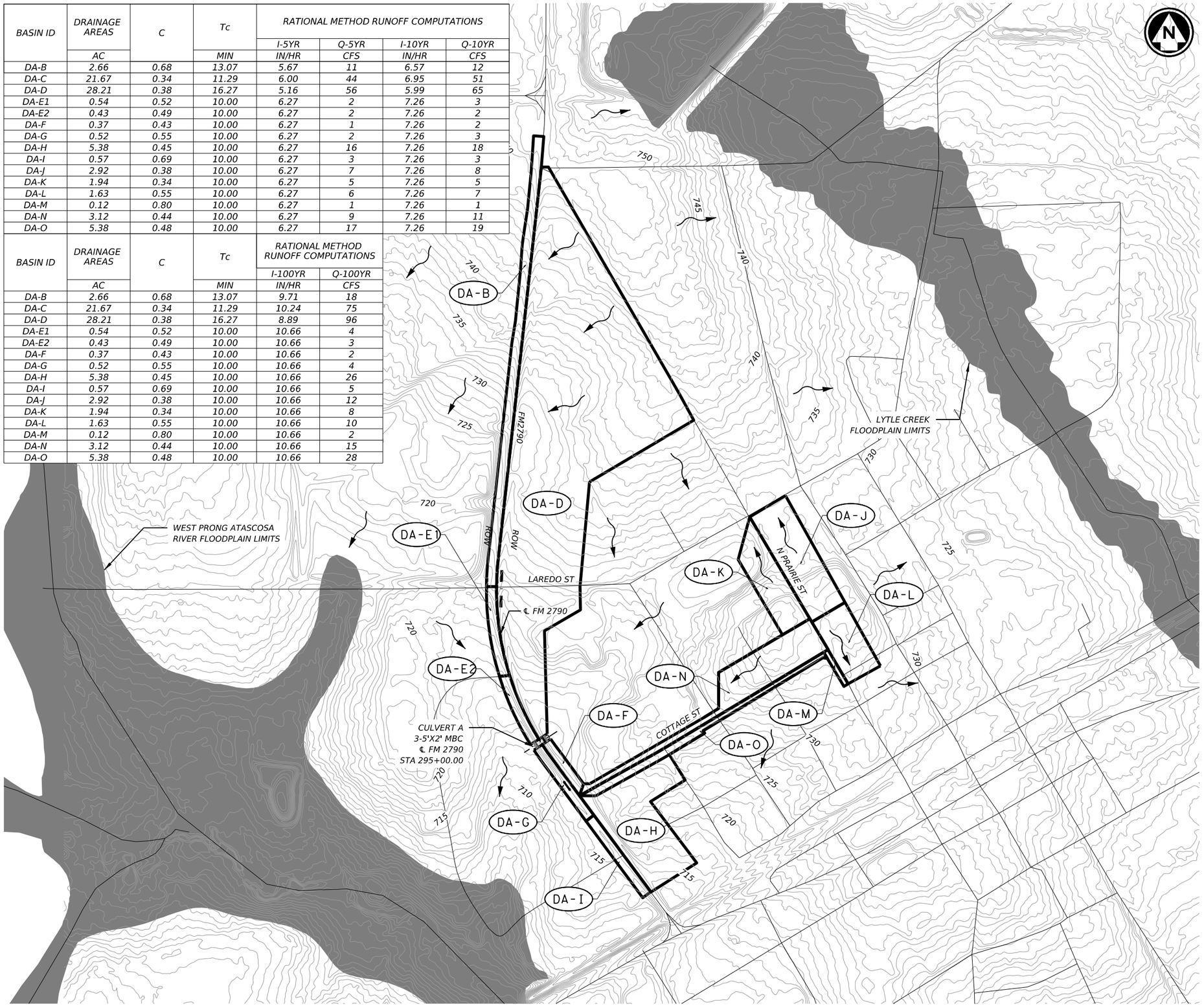
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		108

DATE: 8/22/2023 9:29:07 PM
FILE: ...\5 Drainage\FM2790_DA01.dgn

CK:
DW:
CK:
DW:

BASIN ID	DRAINAGE AREAS	C	Tc	RATIONAL METHOD RUNOFF COMPUTATIONS			
				I-5YR	Q-5YR	I-10YR	Q-10YR
	AC		MIN	IN/HR	CFS	IN/HR	CFS
DA-B	2.66	0.68	13.07	5.67	11	6.57	12
DA-C	21.67	0.34	11.29	6.00	44	6.95	51
DA-D	28.21	0.38	16.27	5.16	56	5.99	65
DA-E1	0.54	0.52	10.00	6.27	2	7.26	3
DA-E2	0.43	0.49	10.00	6.27	2	7.26	2
DA-F	0.37	0.43	10.00	6.27	1	7.26	2
DA-G	0.52	0.55	10.00	6.27	2	7.26	3
DA-H	5.38	0.45	10.00	6.27	16	7.26	18
DA-I	0.57	0.69	10.00	6.27	3	7.26	3
DA-J	2.92	0.38	10.00	6.27	7	7.26	8
DA-K	1.94	0.34	10.00	6.27	5	7.26	5
DA-L	1.63	0.55	10.00	6.27	6	7.26	7
DA-M	0.12	0.80	10.00	6.27	1	7.26	1
DA-N	3.12	0.44	10.00	6.27	9	7.26	11
DA-O	5.38	0.48	10.00	6.27	17	7.26	19

BASIN ID	DRAINAGE AREAS	C	Tc	RATIONAL METHOD RUNOFF COMPUTATIONS	
				I-100YR	Q-100YR
	AC		MIN	IN/HR	CFS
DA-B	2.66	0.68	13.07	9.71	18
DA-C	21.67	0.34	11.29	10.24	75
DA-D	28.21	0.38	16.27	8.89	96
DA-E1	0.54	0.52	10.00	10.66	4
DA-E2	0.43	0.49	10.00	10.66	3
DA-F	0.37	0.43	10.00	10.66	2
DA-G	0.52	0.55	10.00	10.66	4
DA-H	5.38	0.45	10.00	10.66	26
DA-I	0.57	0.69	10.00	10.66	5
DA-J	2.92	0.38	10.00	10.66	12
DA-K	1.94	0.34	10.00	10.66	8
DA-L	1.63	0.55	10.00	10.66	10
DA-M	0.12	0.80	10.00	10.66	2
DA-N	3.12	0.44	10.00	10.66	15
DA-O	5.38	0.48	10.00	10.66	28



LEGEND

- ROW
- DRAINAGE AREA BOUNDARY
- EXISTING CONTOUR
- FLOW ARROW
- X-X INTERIOR DRAINAGE AREA

NOTES:
1. DRAINAGE AREAS CALCULATED USING RATIONAL METHOD AND RAINFALL INTENSITY VALUES PER TXDOT HDM CH. 4 SEC. 12 EQ. 4-21, AND ATASCOSA COUNTY 2019 E, B, AND D VALUES.
2. TEXAS NATURAL RESOURCES INFORMATION SYSTEM (TNRIS). BEXAR & TRAVIS COUNTIES LIDAR 2021.

0 250 500
SCALE: 1"=500' H

STATE OF TEXAS
JESUS R SANTOS
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LICENSED
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8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

INTERNAL DRAINAGE AREA MAP

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		109

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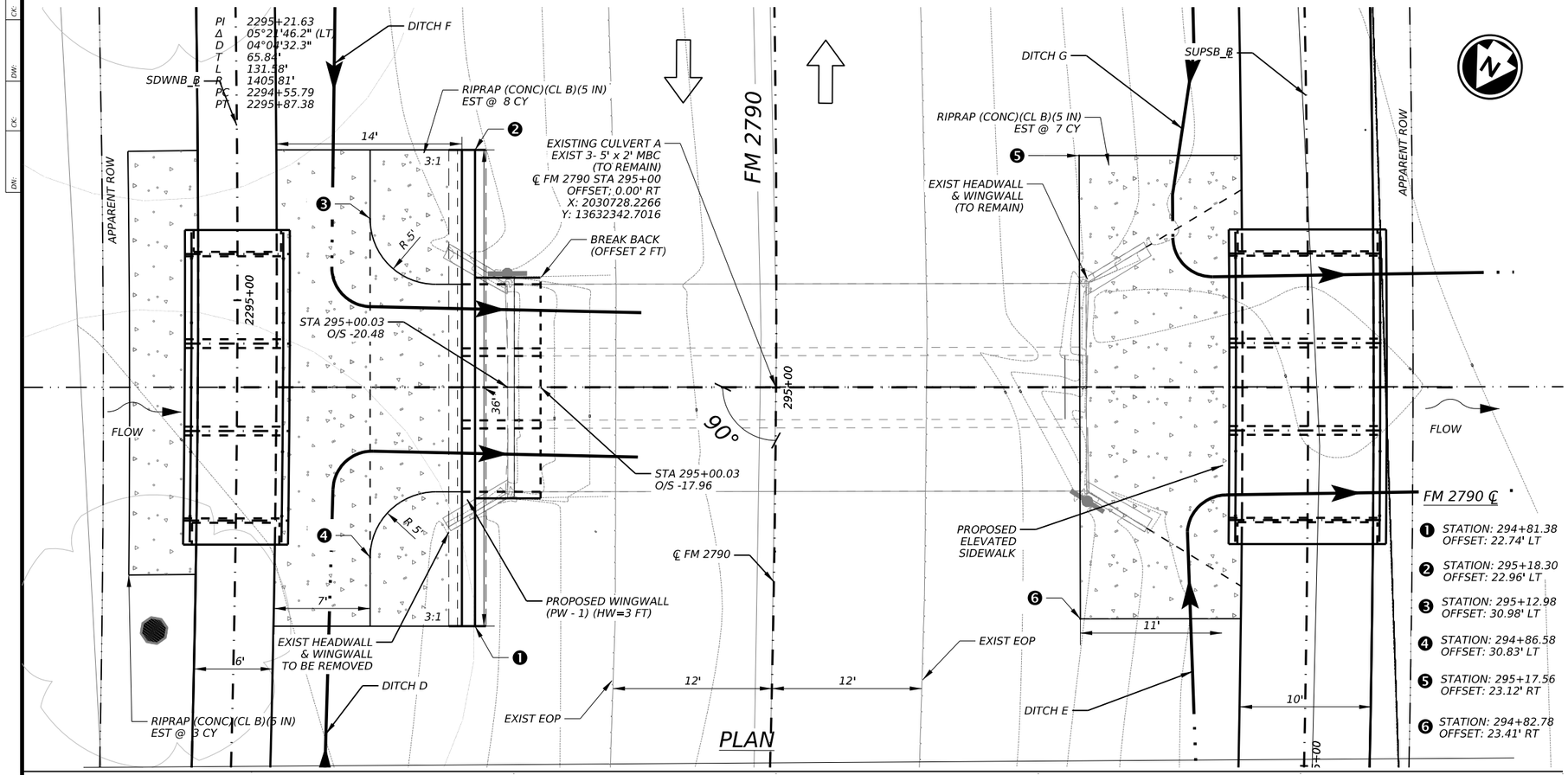


LEGEND

- RIGHT OF WAY
- FLOW DIRECTION
- TRAFFIC FLOW
- EXISTING FENCE
- RIPRAP (CONC) (5 IN)
- CULVERT CENTERLINE

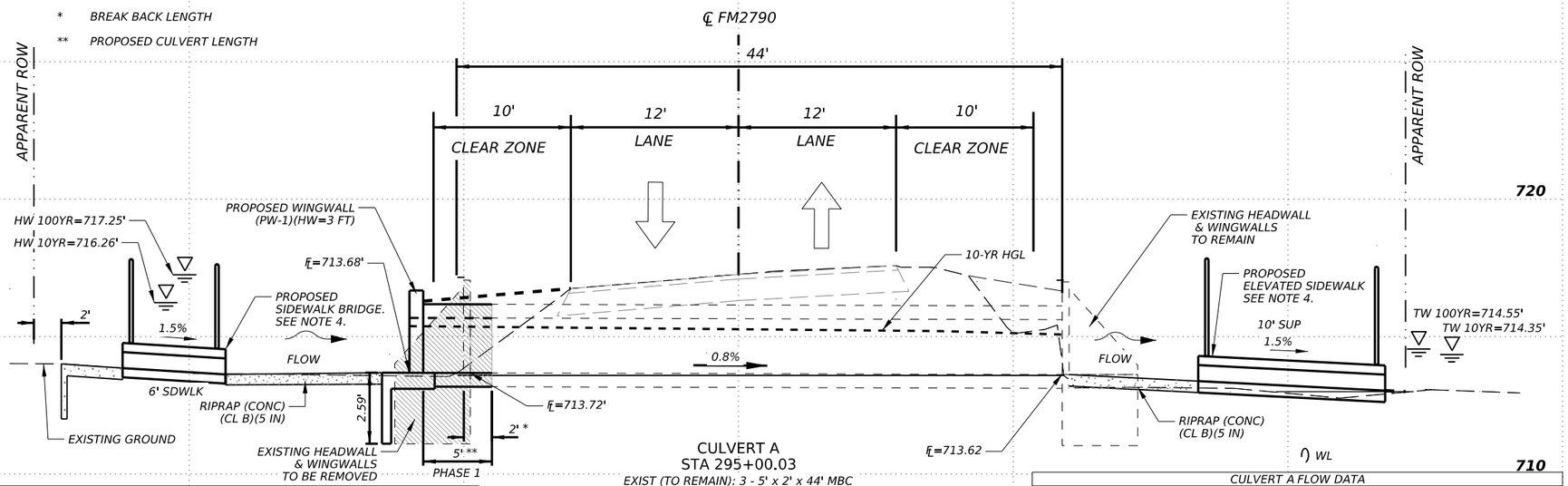
ITEM	DESCRIPTION	UNIT	QTY
0432 6002	RIPRAP (CONC)(5 IN)	CY	18
0462 6050	CONC BOX CULV (5 FT X 2 FT)(EXTEND)	LF	15
0466 6178	WINGWALL (PW - 1) (HW=3 FT)	EA	1
0480 6001	CLEAN EXIST CULVERTS	EA	1
0496 6005	REMOV STR (WINGWALL)	EA	1

NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL EXISTING UTILITIES BEFORE CONSTRUCTION.
2. SEE HORIZONTAL ALIGNMENT DATA SHEET FOR ROADWAY GEOMETRY DATA.
3. SET SHALL BE INSTALLED FLAT UNLESS SHOWN OTHERWISE IN THE PROFILE.
4. REFER TO SIDEWALK BRIDGE (MOD.) DETAILS.

0 5 10

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



CULVERT A
STA 295+00.03

EXIST (TO REMAIN): 3 - 5' x 2' x 44' MBC
PROP: 3 - 5' x 2' X 47 MBC
WITH PW-1(HW=3') UPSTRM
6' SIDEWALK BRIDGE UPSTRM
& 10' SIDEWALK BRIDGE DNSTRM

PROFILE

CULVERT A HYDRAULIC DATA

EXISTING CONDITIONS			PROPOSED CONDITIONS		
STORM FREQUENCY	CLV US WSEL (FT)	CLV DS WSEL (FT)	STORM FREQUENCY	CLV US WSEL (FT)	CLV DS WSEL (FT)
10 YR	716.25	714.35	10 YR	716.26	714.35
100 YR	717.25	714.55	100 YR	717.25	714.55

CULVERT A FLOW DATA

EXISTING CONDITIONS			PROPOSED CONDITIONS		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)	STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY (FPS)
10 YR	157	6.96	10 YR	157	6.96
100 YR	236	8.81	100 YR	236	8.68

8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

DRAINAGE
CULVERT LAYOUT
CULVERT A
STA 295+00.03

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		110

DATE: 8/22/2023 9:29:56 PM
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Culvert Station and/or Creek Name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°,15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw Height of Wingwall (1) (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (2) (CY)	Class "C" Conc (Wingwall) (3) (CY)	Total Wingwall Area (SF)
STA 295+00 - CULV A LT	3 - 5' X 2'	1.28'	MC-5-20	PW-1	0	3:1	8"	7"	0.583	3.250	N/A	N/A	9.750	17.333	N/A	0.0	0.8	11.4	126

NOTES:
Skew = 0° on SW-0, FW-0, SETB-CD, SETB-SW-0, and SETB-FW-0 standard sheets;
30° maximum for safety end treatment

SL:1 = Horizontal : 1 Vertical
· Side slope at culvert for flared or straight wingwalls.
· Channel slope for parallel wingwalls.
· Slope must be 3:1 or flatter for safety end treatments.

T = Box culvert top slab thickness. Dimension can be found on the applicable box culvert standard sheet.

U = Box culvert wall thickness. Dimension can be found on the applicable box culvert standard sheet.

C = Curb height

See applicable wing or end treatment standard sheets for calculations of Hw, A, B, Lw, Ltw, Atw, and Total Wingwall Area.

Hw = Height of wingwall

A = Distance from face of curb to end of wingwall (not applicable to parallel or straight wingwalls)

B = Offset of end of wingwall (not applicable to parallel or straight wingwalls)

Lw = Length of longest wingwall.

Ltw = Length of culvert toewall (not applicable when using riprap apron)

Atw = Length of anchor toewall (applicable to safety end treatment only)
Total Wingwall Area = Wingwall area in sq. ft. for two wingwalls (one structure end) if Lt or Rt.
Area for four wingwalls (two structure ends) if Both.

(1) Round the wall heights shown to the nearest foot for bidding purposes.

(2) Concrete volume shown is for box culvert curb only. For curbs using the Box Culvert Rail Mounting Details (RAC) standard sheet quantities shown must be increased by a factor of 2.25. If Class S concrete is required for the top slab of the culvert, also provide Class S concrete for the curb. Curb concrete is considered part of the Box Culvert for payment.

(3) Concrete volume shown is total of wings, footings, culvert toewall (if any), anchor toewalls (if any) and wingwall toewalls. Riprap aprons, culverts, and curb quantities are not included.

(4) Regardless of the type of culvert shown on this sheet, the Contractor has the option of furnishing cast-in-place or precast culverts unless otherwise shown elsewhere on the plans. If the Contractor elects to provide culverts of a different type than those shown on this sheet, it is the Contractor's responsibility to make the necessary adjustments to the dimensions and quantities shown.

SPECIAL NOTE:

This sheet is a supplement to the box culvert standards. It is to be filled out by the culvert specifier and provides dimensions for the construction of the box culvert wingwalls and safety end treatments.

An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.

DATE: 8/22/2023 9:30:16 PM
FILE: ...\Standards\bcsstde1-20.dgn

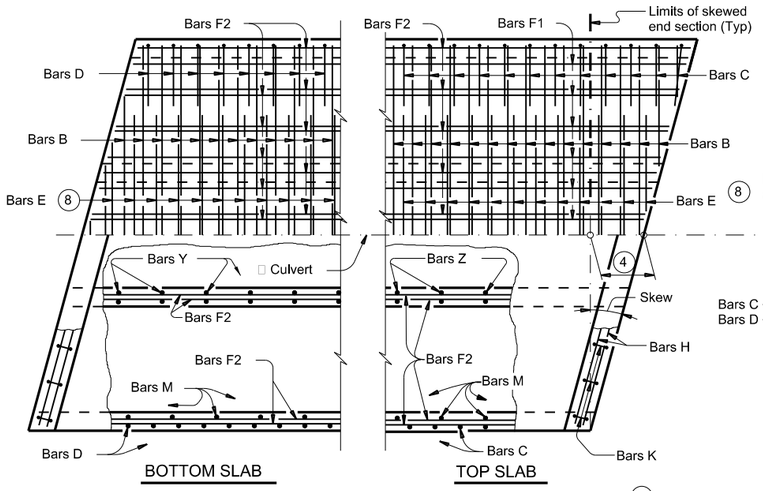
Texas Department of Transportation

Bridge Division Standard

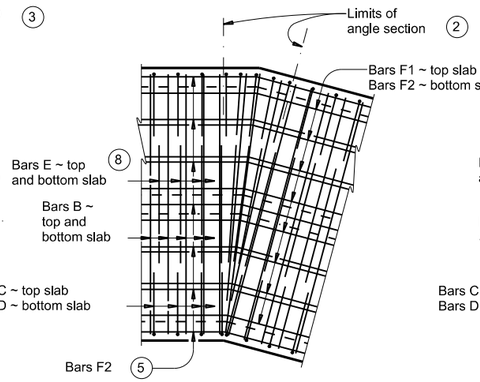
BOX CULVERT SUPPLEMENT
WINGS AND END TREATMENTS

BCS

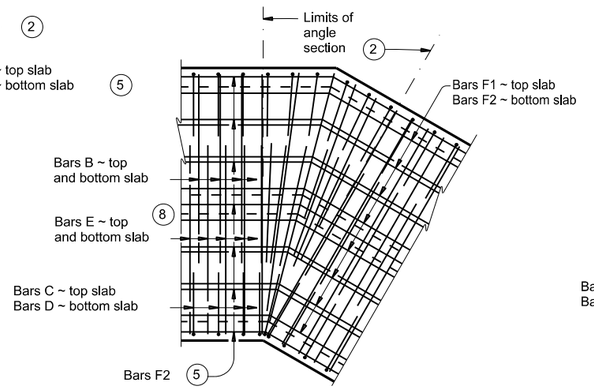
FILE: bcsstde1-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		111



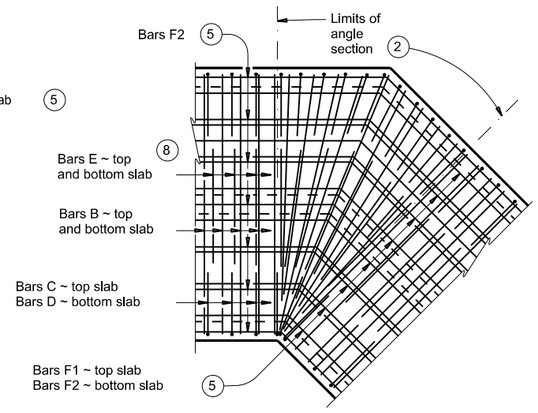
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° (7)



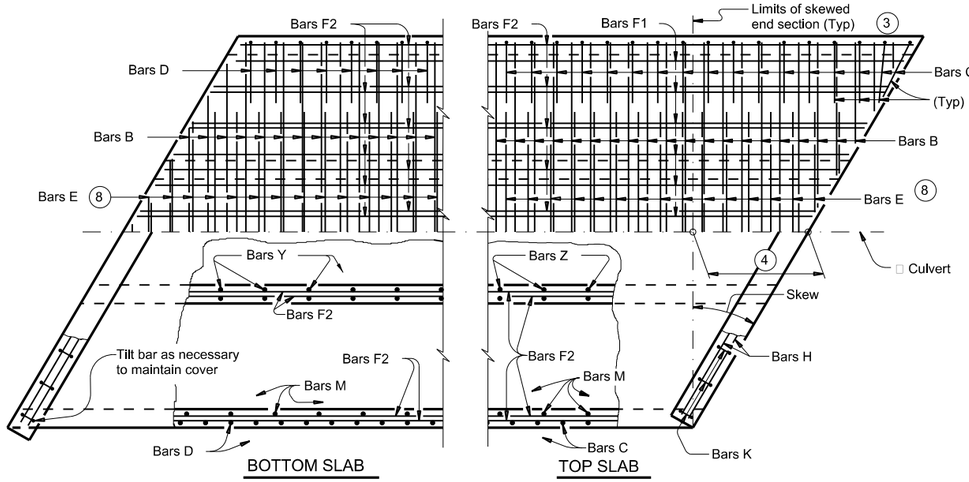
PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



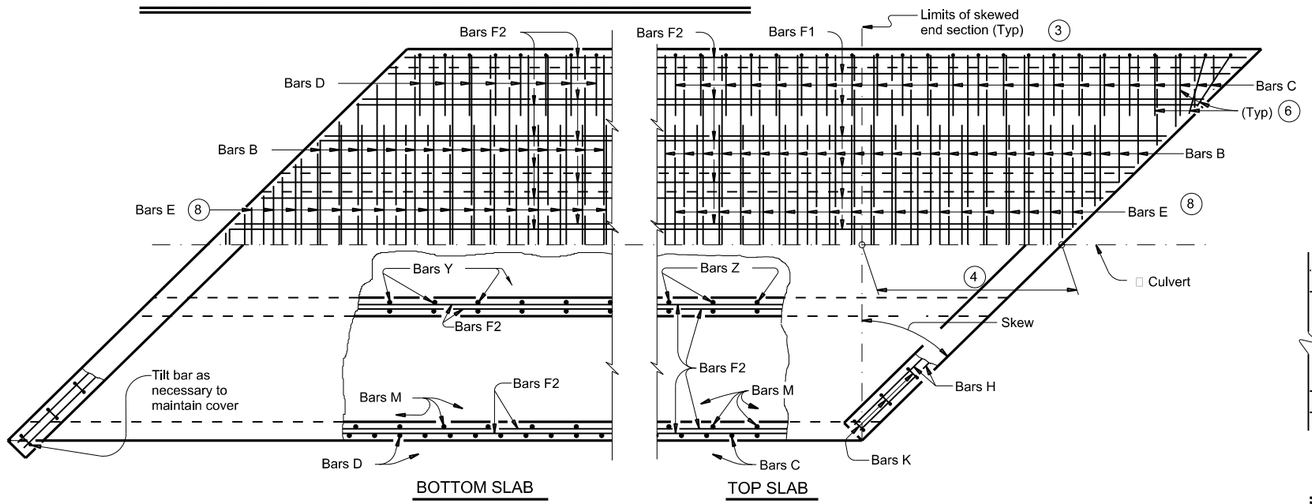
PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°

(1) For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.

For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, Class C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

(2) When the spacing between Bars B or Bars E becomes less than half of the normal spacing, cut bars to avoid conflict.

(3) The length of Bars B and Bars E will vary in the skewed end sections.

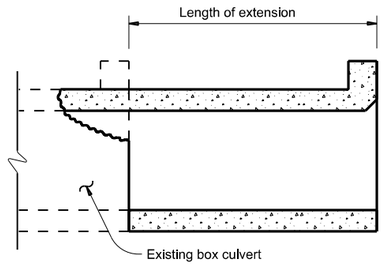
(4) [One half of overall width] x [tangent of the skew angle]

(5) Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.

(6) When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.

(7) At the Contractor's option, for skews of 15° or less, place Bars B, C, D, and E parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B and Bars E shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets to accommodate the skew.

(8) Extend Bars E as shown on the MC standard sheet for direct traffic culverts.



LENGTHENING DETAIL (1)

CONSTRUCTION NOTES:
Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) with these exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

MC-MD

FILE: mc-mdste-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		112

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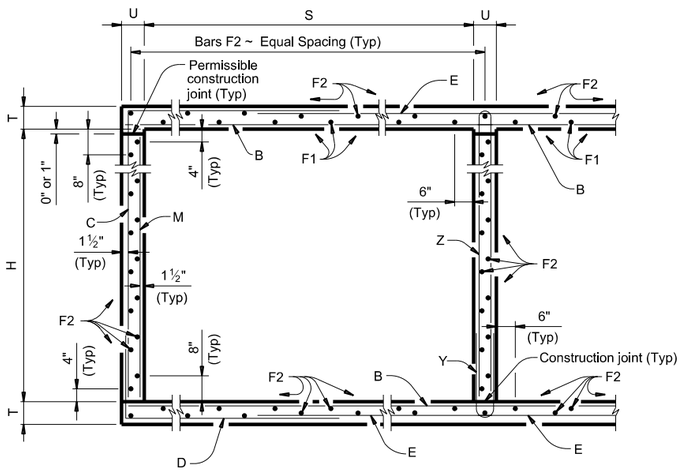
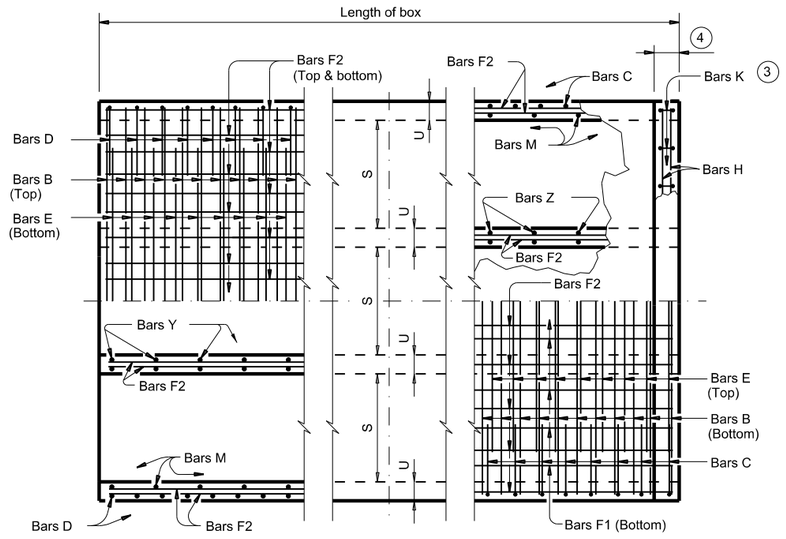


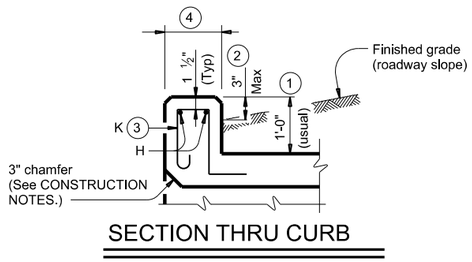
TYPICAL SECTION



BOTTOM SLAB

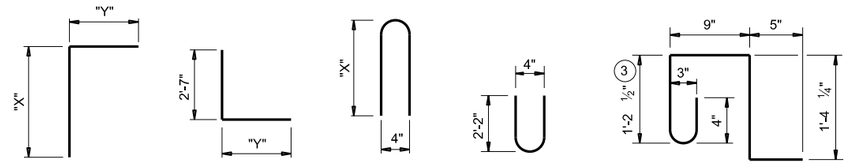
TOP SLAB

PART PLANS



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
2'-0"	2'-6 ½"	3'-8 ½"
3'-0"	3'-6 ½"	3'-8 ½"
4'-0"	4'-6 ½"	3'-8 ½"
5'-0"	5'-6 ½"	3'-8 ½"



BARS C | BARS D | BARS Z | BARS Y | BARS K (#4) (Spa = 1'-0" Max) (Length = 4'-2")

1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

2. For vehicle safety, the following requirements must be met:
   · For structures without bridge rail, construct curbs no more than 3" above finished grade.
   · For structures with bridge rail, construct curbs flush with finished grade.
   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
· culverts with overlay,
· culverts with 1-to-2 course surface treatment, or
· culverts with the top slab as the final riding surface.
Provide bar laps, where required, as follows:
· Uncoated or galvanized ~ #4 = 1'-8" Min
· Uncoated or galvanized ~ #5 = 2'-1" Min
· Uncoated or galvanized ~ #6 = 2'-6" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Multiple Box Culverts Cast-In-Place Miscellaneous Detail (MC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

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

HL93 LOADING

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE

5'-0" SPAN
0' TO 20' FILL

MC-5-20

FILE: mc520ste-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		113

DATE: 8/22/2023 9:31:10 PM
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TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

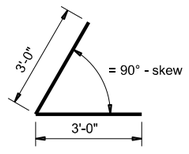
Dimensions					Variable Reinforcing				Estimated Quantities per ft of wing (2~wings) (4)		Estimated Quantities per ft of Toewall (1~toewall)	
Maximum Wingwall Height Hw	W	X	Y	Z	Bars J1		Bars J2					
					Size	Spa	Size	Spa	Reinf (Lb/Ft)	Conc (CY/Ft)	Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	48.64	0.406	6.85	0.071
2'-9"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.31	0.424	6.85	0.071
3'-0"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	49.98	0.444	6.85	0.071
3'-3"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.32	0.462	6.85	0.071
3'-6"	2'-10"	10"	1'-0"	7"	#4	1'-0"	#4	1'-0"	53.98	0.480	6.85	0.071
4'-0"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	55.77	0.532	6.85	0.071
4'-6"	3'-2"	1'-2"	1'-0"	7"	#4	1'-0"	#4	1'-0"	59.77	0.568	6.85	0.071
5'-0"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	63.45	0.632	6.96	0.075
5'-6"	3'-9"	1'-7"	1'-2"	7"	#4	1'-0"	#4	1'-0"	67.46	0.668	6.96	0.075
6'-0"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	80.67	0.730	7.07	0.078
6'-6"	4'-4"	2'-0"	1'-4"	7"	#5	1'-0"	#5	1'-0"	85.05	0.768	7.07	0.078
7'-0"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	92.15	0.864	8.07	0.093
7'-6"	5'-0"	2'-3"	1'-9"	8"	#5	1'-0"	#5	1'-0"	96.54	0.902	8.07	0.093
8'-0"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	139.04	0.962	8.13	0.095
8'-6"	5'-6"	2'-8"	1'-10"	8"	#5	6"	#5	6"	144.47	1.000	8.13	0.095
9'-6"	6'-0"	2'-10"	2'-2"	9"	#5	6"	#5	6"	156.93	1.136	8.41	0.110
10'-6"	6'-5"	3'-0"	2'-5"	9"	#6	6"	#5	6"	196.27	1.234	8.57	0.117
11'-6"	7'-2"	3'-6"	2'-8"	11"	#6	6"	#6	6"	230.13	1.438	9.52	0.140
12'-6"	7'-8"	3'-9"	2'-11"	1'-0"	#7	6"	#6	6"	283.41	1.592	9.74	0.157
13'-6"	8'-2"	4'-0"	3'-2"	1'-2"	#8	6"	#6	6"	348.72	1.804	10.02	0.186
14'-6"	8'-10"	4'-5"	3'-5"	1'-4"	#9	6"	#6	6"	432.94	2.046	10.30	0.218
15'-6"	9'-6"	4'-10"	3'-8"	1'-6"	#9	6"	#7	6"	489.52	2.302	11.24	0.253
16'-0"	9'-11"	5'-0"	3'-11"	1'-7"	#9	6"	#7	6"	505.72	2.448	11.47	0.279

TABLE OF WINGWALL REINFORCING
(2~wings)

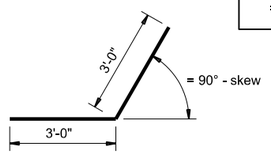
Bar	Size	No.	Spa
D1	#6	~	1'-0"
D2	#6	~	1'-0"
E1	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	~	8"
M1	#4	4	~
P	#4	~	1'-0"
V	#4	~	1'-0"

TABLE OF TOEWALL REINFORCING

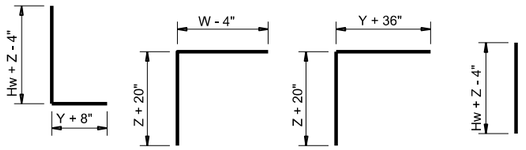
Bar	Size	No.	Spa
J3	#4	~	1'-0"
M2	#4	2	~
E2	#4	~	1'-0"



BARS D1



BARS D2



BARS J1 BARS J2 BARS J3 BARS V

WING DIMENSION FORMULAS:

(All values are in feet.)

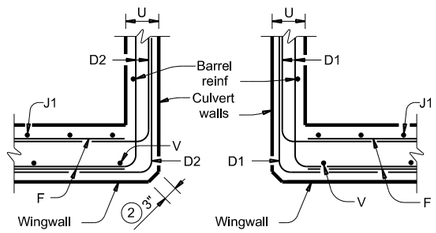
Hw = H + T + C
Lw = (Hw) (SL) ÷ cosine (θ) for Type PW-1
= (Hw - 1') (SL) ÷ cosine (θ) for Type PW-2 and Hw 4' ≥
= (Hw - 0.5') (SL) ÷ cosine (θ) for Type PW-2 and Hw 4' <

For cast-in-place culverts:
Ltw = [(N) (S) + (N + 1) (U)] ÷ cosine (θ)

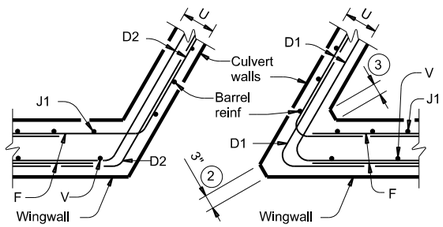
For precast culverts:
Ltw = [(N) (2 U + S) + (N - 1) (0.5')] ÷ cosine (θ)
Total Wingwall Area (two wings ~ SF)
= (2)(Hw)(Lw) for Type PW-1
= (2)(Hw)(Lw) - 6 SF for Type PW-2 and Hw 4' ≥
= (2)(Hw)(Lw) - 1.5 SF for Type PW-2 and Hw 4' <

Hw = Height of wingwall
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans
SL:1 = Channel slope ratio. (horizontal: 1 vertical, usual value is 2:1)
θ = Culvert skew

See applicable box culvert standard sheet for S, H, T, and U values.



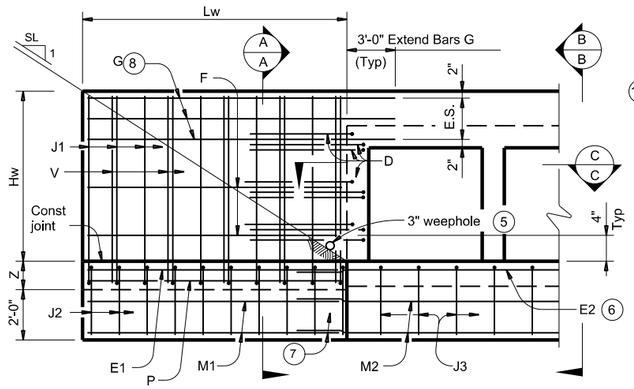
SECTION C-C - PW-1



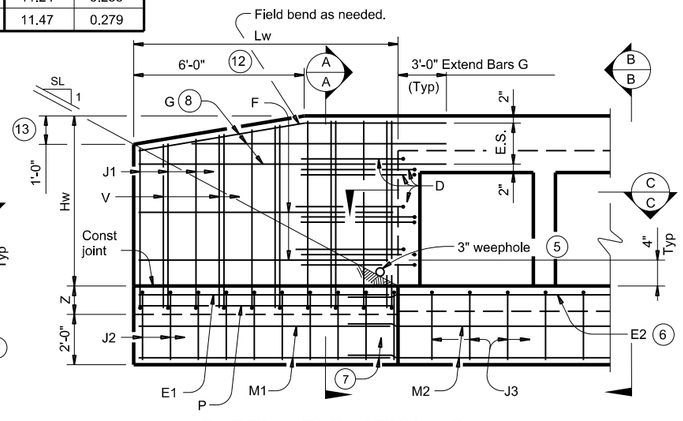
SECTION C-C - PW-2

1. Skew = 0°
2. At discharge end, chamfer may be ¾" minimum.
3. For 15° skew ~ 1"
   For 30° skew ~ 2"
   For 45° skew ~ 3"
4. Quantities shown are for two Type PW-1 wings. Adjust concrete volume for Type PW-2 wings. To determine estimated quantities for two wings, multiply the tabulated values by Lw. Quantities shown do not include weight of Bars D.
5. Provide weepholes for Hw = 5'-0" and greater. Fill around weepholes with coarse gravel.
6. Extend Bars E2 1'-6" minimum into the wingwall footing.
7. Lap Bars M1 1'-6" minimum with Bars M2.
8. Place Bars G as shown, equally spaced at 8" maximum. Provide at least two pairs of Bars G per wing.
9. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.
10. For vehicle safety, the following requirements must be met:
    - For structures without bridge rail, construct curbs no more than 3" above finished grade.
    - For structures with bridge rail, construct curbs flush with finished grade.

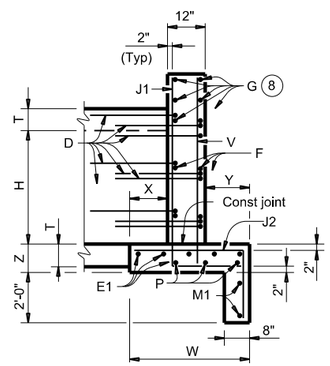
    Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.
11. 1'-0" typical. 2'-3" when the Box Culvert Rail Mounting Details (RAC) standard sheet is referred to elswhere in the plans.
12. 3'-0" for Hw < 4'.
13. 6" for Hw < 4'.



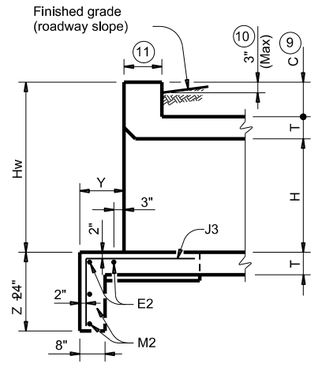
PARTIAL ELEVATION - PW-1



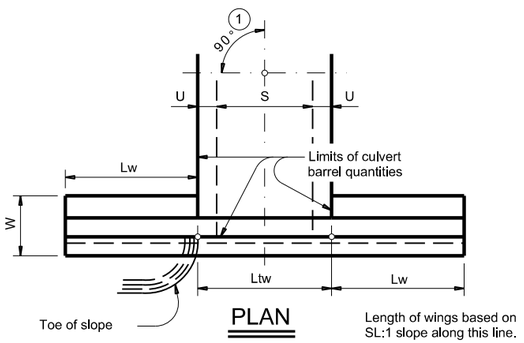
PARTIAL ELEVATION - PW-2



SECTION A-A
(Showing wing reinforcement.)



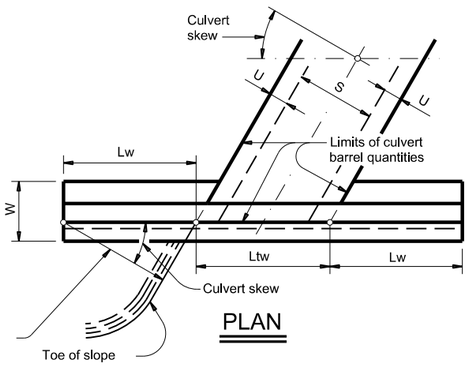
SECTION B-B
(Showing wing reinforcement.)



PLAN

Length of wings based on SL:1 slope along this line.

DETAILS FOR NON-SKEWED BOX CULVERTS



PLAN

DETAILS FOR SKEWED BOX CULVERTS
(Showing 30° skew.)

DESIGNER NOTES:
Type PW-1 can be used for all applications and must be used if railing is to be mounted to the wingwall.
Type PW-2 can only be used for applications without a railing mounted to the wingwall.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforing steel if required elsewhere in the plans.

GENERAL NOTES:
Designed in accordance with AASHTO LRFD Bridge Design Specifications.
Depth of toewalls for wingwalls and culverts may be reduced or eliminated when founded on solid rock, when directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for wingwall type and additional dimensions and information.
Quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for the Contractor's information only.

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

Texas Department of Transportation
Bridge Division Standard

CONCRETE WINGWALLS
WITH PARALLEL WINGS FOR BOX CULVERTS TYPES PW-1 AND PW-2

PW

FILE: pwstde01-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
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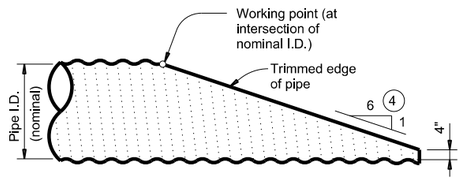
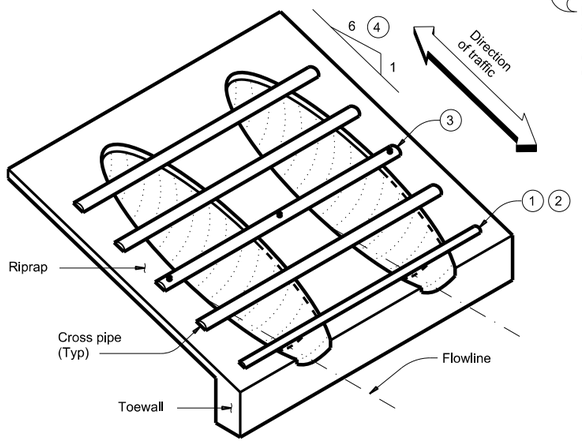
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		114



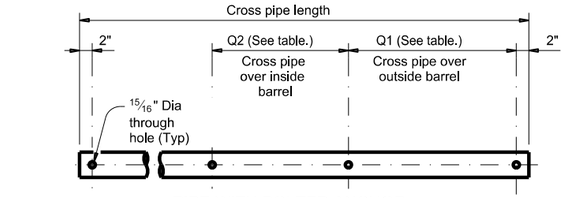
NOTE: All cross pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

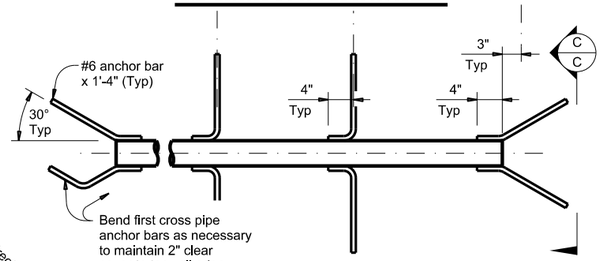
(Showing corrugated metal pipe (CMP) culvert Details at reinforced concrete pipe (RCP) culvert are similar.)



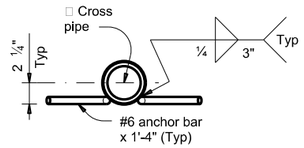
ISOMETRIC VIEW OF TYPICAL INSTALLATION



PIPE WITH BOLTED ANCHOR

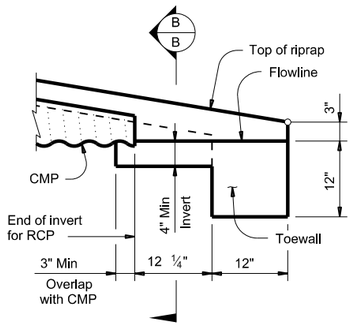


PIPE WITH ANCHOR BARS



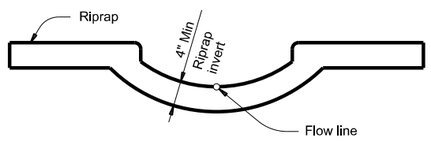
SECTION C-C

CROSS PIPE DETAILS



DETAIL "A"

(Showing invert with corrugated metal pipe (CMP) culvert. Reinforced concrete pipe (RCP) culvert details are similar. Cross pipes not shown for clarity.)



SECTION B-B

(Cross pipes not shown for clarity.)

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, AND RIPRAP QUANTITIES (2)

Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for Use of Cross Pipes	Cross Pipe Sizes
12"	0.6	0' - 9"	N/A	2' - 1"	1' - 9"	3 or more pipe culverts	3" Std (3.500" O.D.)
15"	0.7	0' - 11"	N/A	2' - 5"	2' - 2"		
18"	0.8	1' - 2"	N/A	2' - 10"	2' - 8"		
21"	0.9	1' - 4"	N/A	3' - 2"	3' - 1"		
24"	0.9	1' - 7"	N/A	3' - 6"	3' - 7"		
27"	1.0	1' - 8"	N/A	3' - 10"	3' - 11"	3 or more pipe culverts	3 1/2" Std (4.000" O.D.)
30"	1.1	1' - 10"	N/A	4' - 2"	4' - 4"	2 or more pipe culverts	
33"	1.2	1' - 11"	4' - 2"	4' - 5"	4' - 8"	All pipe culverts	
36"	1.3	2' - 1"	4' - 5"	4' - 9"	5' - 1"	All pipe culverts	4" Std (4.500" O.D.)
42"	1.5	2' - 4"	4' - 11"	5' - 5"	5' - 10"		
48"	1.7	2' - 7"	5' - 5"	6' - 0"	6' - 7"	All pipe culverts	5" Std (5.563" O.D.)
54"	2.0	3' - 0"	5' - 11"	6' - 9"	7' - 6"		
60"	2.2	3' - 3"	6' - 5"	7' - 4"	8' - 3"		
66"	2.4	3' - 3"	6' - 11"	7' - 10"	8' - 9"		
72"	2.7	3' - 4"	7' - 5"	8' - 5"	9' - 4"		

(1) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe no more than 6" above the flow line.

(2) Provide cross pipes, except the first bottom pipe, of the size shown in the table. Provide a 3 1#2" standard pipe (4" O.D.) for the first bottom pipe.

(3) Install the third cross pipe from the bottom of the culvert using a bolted connection. Ensure that riprap concrete does not flow into the cross pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, install all other cross pipes using the bolted connection details.

(4) Match cross slope as shown elsewhere in the plans. Cross slope of 6:1 or flatter is required for vehicle safety.

(5) Riprap placed beyond the limits shown will be paid for as concrete riprap in accordance with Item 432, "Riprap".

(6) Quantities shown are for one end of one reinforced concrete pipe (RCP) culvert. For multiple pipe culverts or for corrugated metal pipe (CMP) culverts, quantities will need to be adjusted. Riprap quantities are for contractor's information only.

MATERIAL NOTES:

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

Provide cross pipes that meet the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 (Gr B), or API 5LX52.

Provide ASTM A307 bolts and nuts.

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

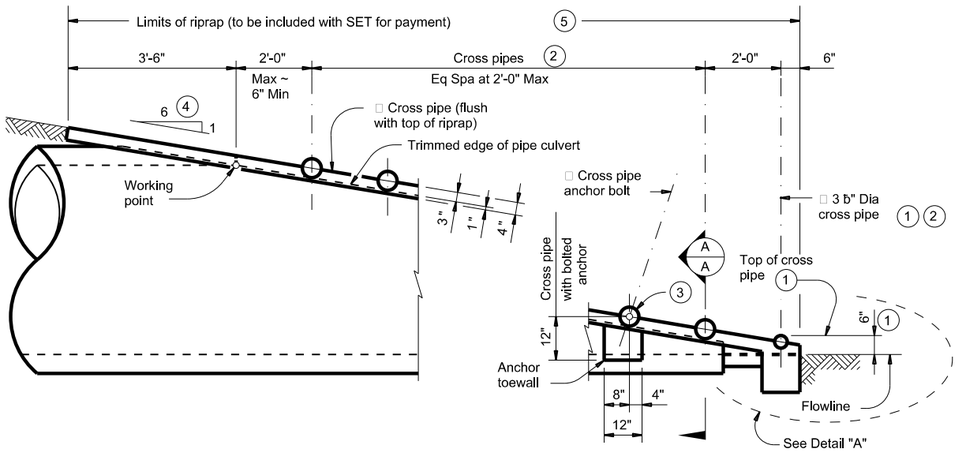
GENERAL NOTES:

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

Safety end treatments (SET) shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.

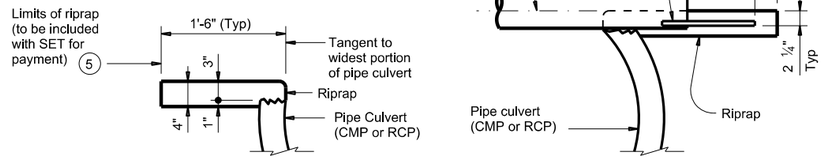
Construct concrete riprap and all necessary inverts in accordance with the requirements of Item 432, "Riprap".

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.



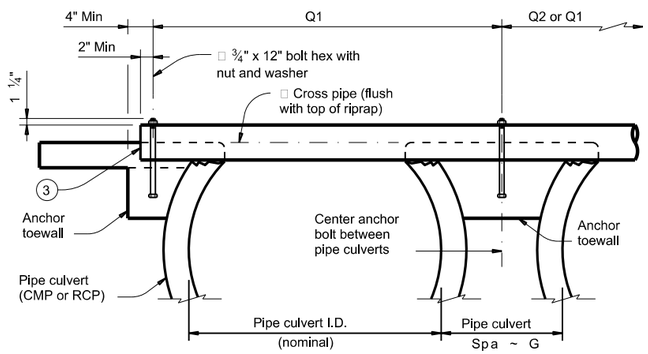
SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing reinforced concrete pipe (RCP) culvert. Details at corrugated metal pipe (CMP) culvert are similar.)



SHOWING TYPICAL PIPE CULVERT AND RIPRAP

SHOWING CROSS PIPE WITH ANCHOR BAR



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA PIPE CULVERTS TYPE II ~ PARALLEL DRAINAGE

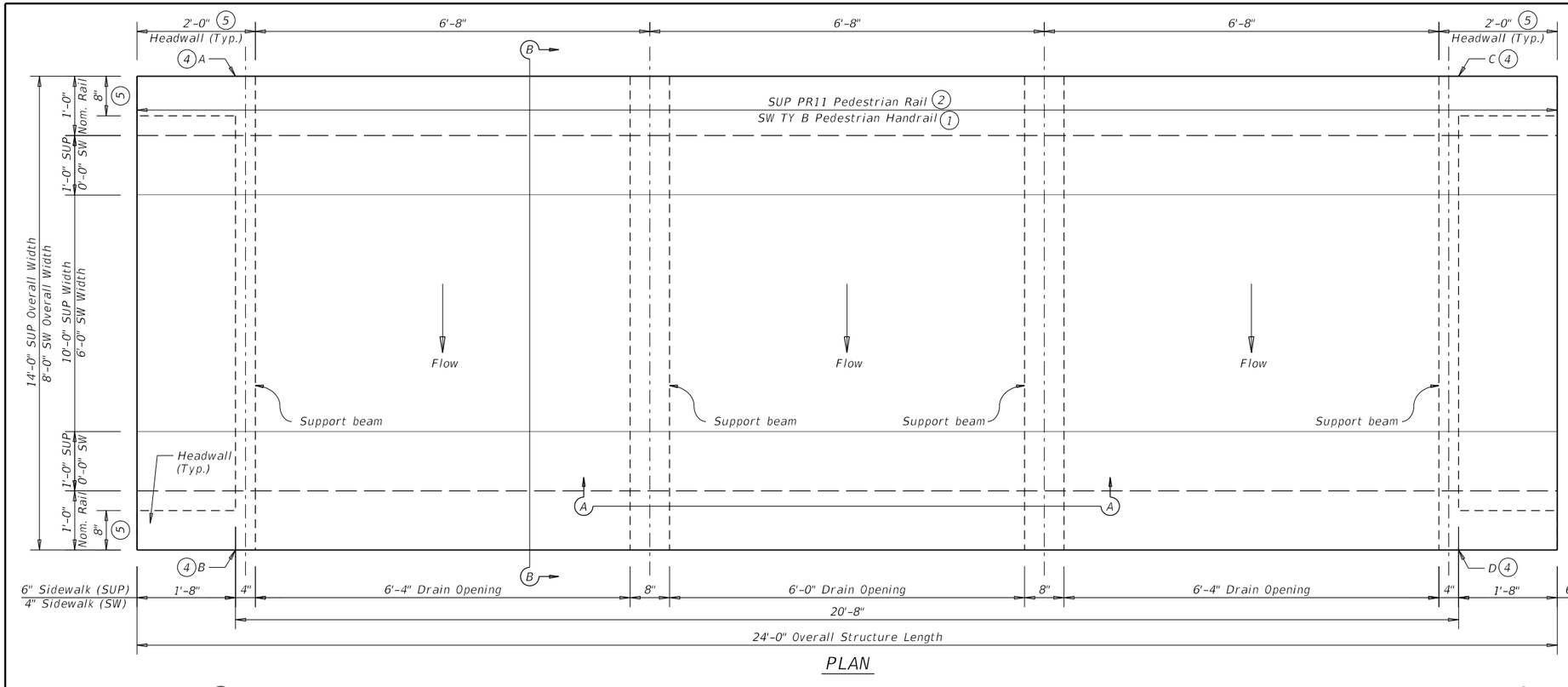
SETP-PD

FILE: setppdse-20.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		115

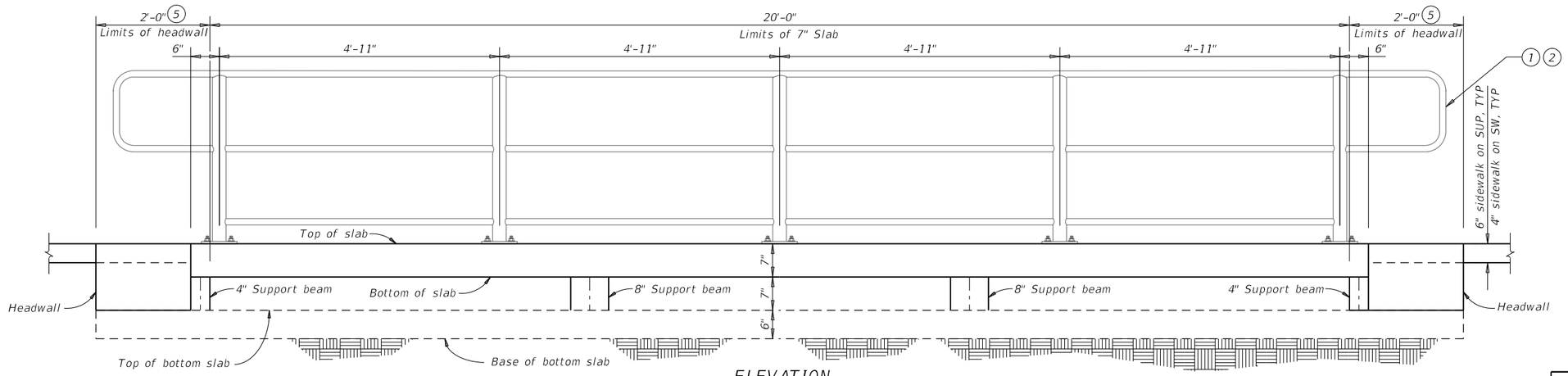
DATE: 8/22/2023 9:31:29 PM
FILE: ...\Standards\setppdse-20.dgn

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

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.

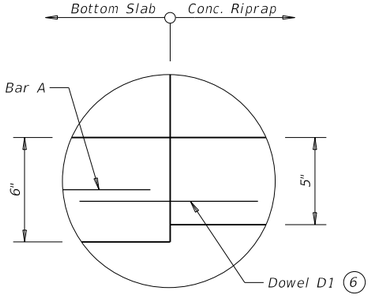


PLAN



ELEVATION

(Pedestrian Handrail PRD-13 Shown, PR-11 Not Shown)



DETAIL "A"

LEGEND:

SUP = Shared Use Path
SW = Sidewalk

(1) Refer to TY B pedestrian handrail PRD-13 for details.

(2) Refer to PR11 pedestrian handrail.

(3) Refer to drainage sheets for riprap and toe wall details.

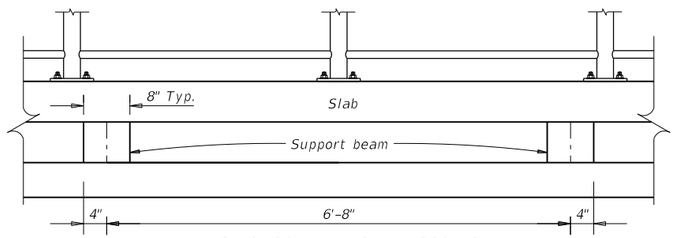
(4) See table 1 for Station and Offset with respect to FM2790.

(5) Headwall (2'-0" L X 0'-8" W X 1'-2" D) to be poured monolithically with 4" support beam.

(6) Splice Dowel D1 2'-0" with Bottom Slab Bars A.

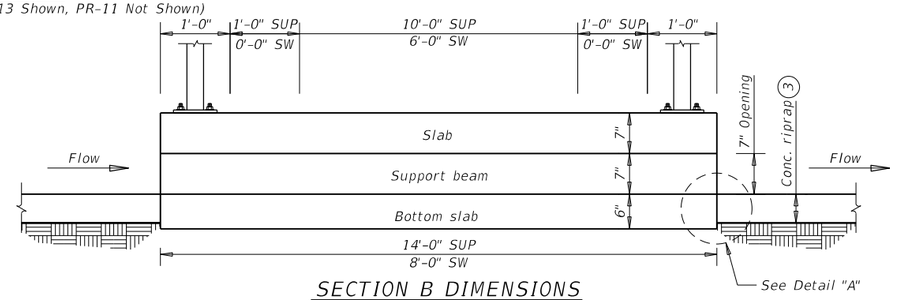
TABLE 1: LOCATION OF SUP AND SW

	SUP		SW	
Location	Station	Offset	Station	Offset
A	294+90.18	35.63' RT	294+89.09	45.10' LT
B	294+90.32	45.62' RT	294+89.20	37.10' LT
C	295+10.37	35.52' RT	295+10.42	45.10' LT
D	295+10.34	45.52' RT	295+10.41	37.10' LT



SECTION A DIMENSIONS

(Partial section shown)
Pedestrian handrail elevation not shown completely for clarity



SECTION B DIMENSIONS

Pedestrian handrail elevation not shown completely for clarity

STATE OF TEXAS
DHEERAJ GADI REDDY
141619
LICENSED
PROFESSIONAL ENGINEER

07/26/2023
F-2677

SHEET 1 OF 2

Texas Department of Transportation
San Antonio District (Structural Design)
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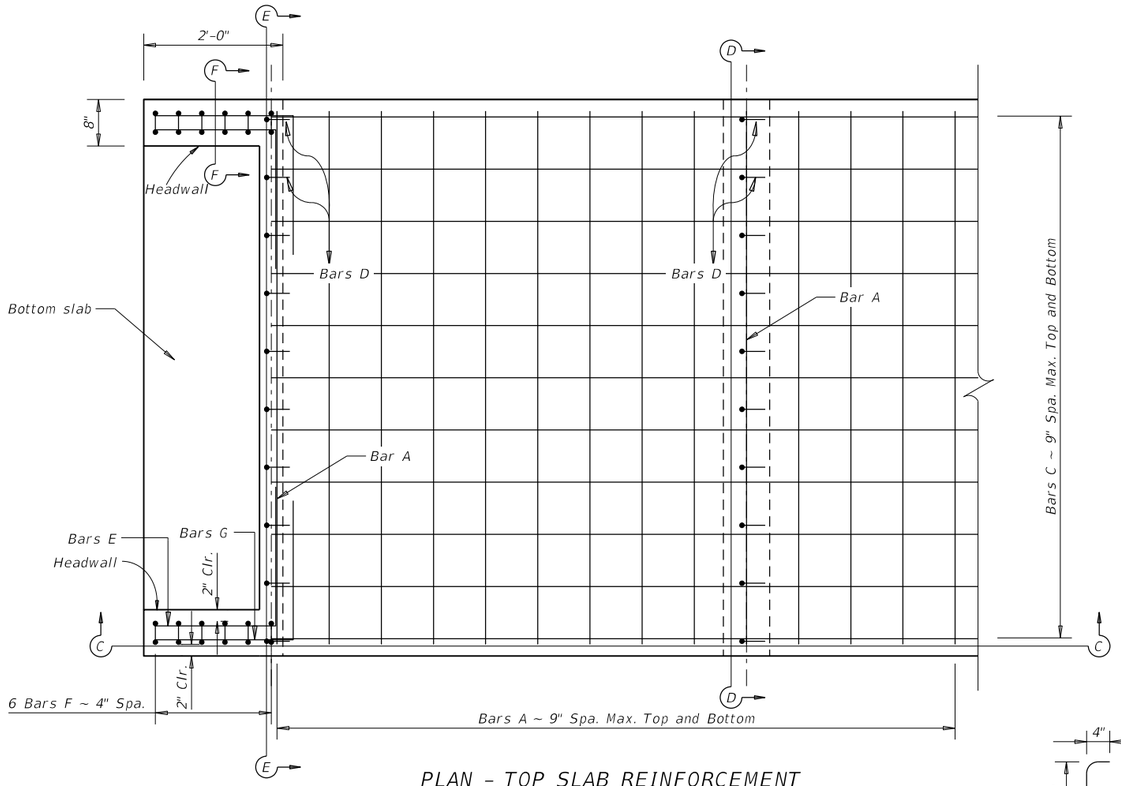
Prepared by and for the use of TxDOT

SIDEWALK BRIDGE (MOD.)

SAN ANTONIO DISTRICT STANDARD

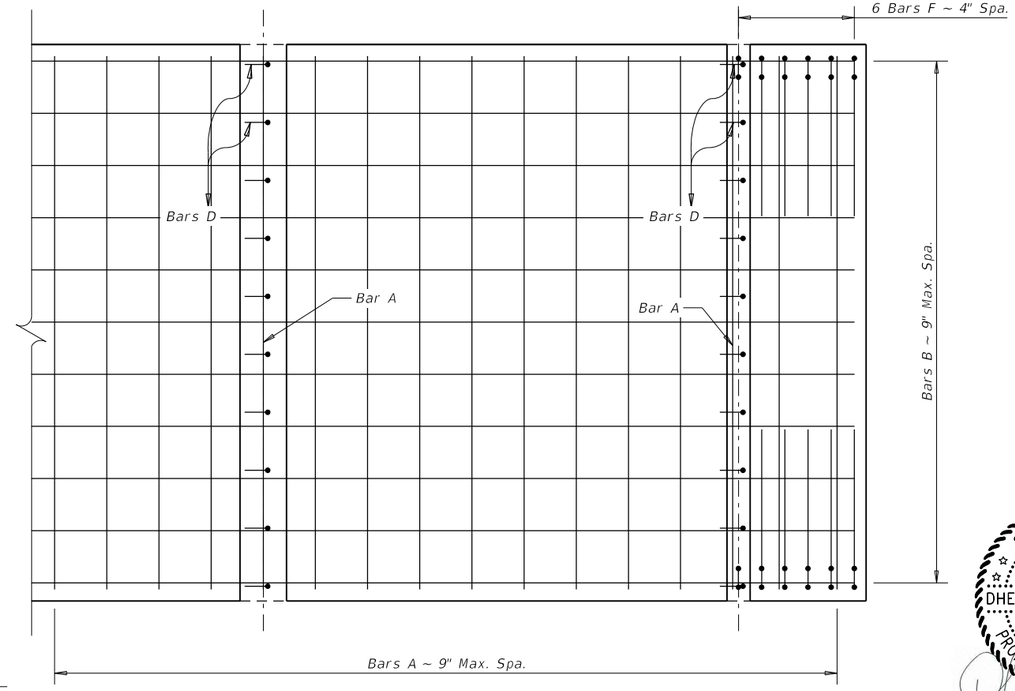
DN: BL	CK: DG	FILENAME: SA District Sidewalk Bridge.dgn		
DW: BL	CK: DG	ORIGINAL DRAWING DATE: January 2020		
DIST	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		COUNTY
SAT	6			CTY
CONTROL	SECTION	JOB	SHEET NO.	ROUTE
C	S	J	$SWBR	FM2790

REVISIONS:



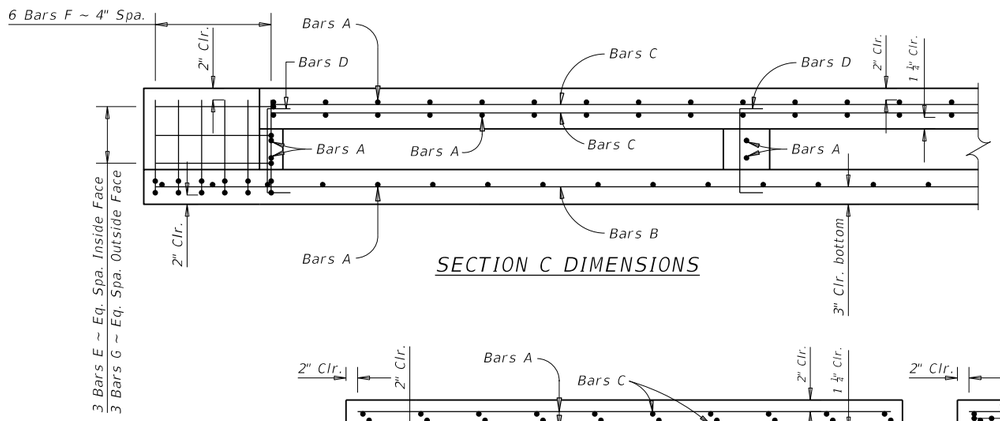
PLAN - TOP SLAB REINFORCEMENT

(Partial Slab Shown)

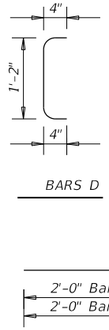


PLAN - BOTTOM SLAB REINFORCEMENT

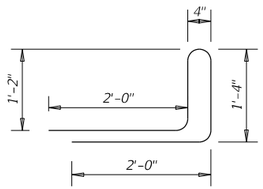
(Partial Slab Shown)



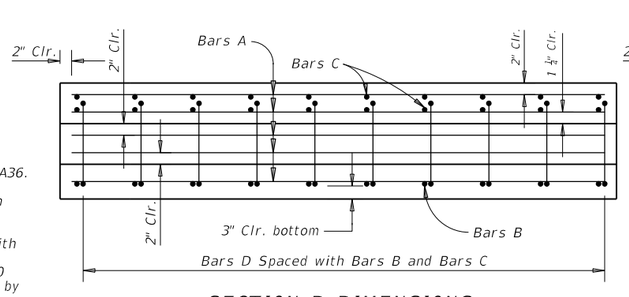
SECTION C DIMENSIONS



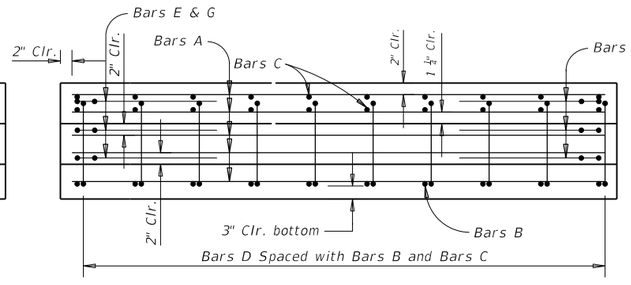
BARS E AND G



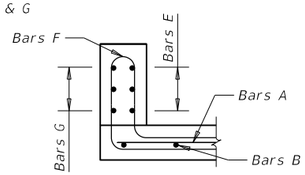
BARS F



SECTION D DIMENSIONS



SECTION E DIMENSIONS



SECTION F DIMENSIONS

GENERAL NOTES:

Provide Class C concrete (f'c = 3600 psi).
Provide Grade 60 reinforcing steel.
Structural steel components must be Grade A36.
All structural steel components must be galvanized after fabrication in accordance with Item 445, "Galvanizing".
Galvanizing damaged during transport or construction must be repaired in accordance with the Specification.
Adhesive anchor system must be HIT HY 150 H.I.S. internally threaded inserts as furnished by Hilti, Inc., Tulsa, OK, or approved equivalent.
Sidewalk bridge, including all labor, bridge plate, and other material complete and in place must be paid for under Item 465, "Inlet (Comp) (Ty Sidewalk Bridge)" by location.
Shop drawings will not require the Engineer's approval if fabrication is in accordance with the details shown.

TABLE OF ESTIMATED QUANTITIES SW

For Contractor information only.

Bar	No.	Size	Length	Weight
A	94	#4	7'-8"	481
B	12	#4	23'-8"	190
C	24	#4	20'-4"	327
D	48	#4	1'-10"	59
D1	56	#4	2'-0"	75
E	12	#4	3'-8"	29
F	24	#4	6'-10"	110
G	12	#4	3'-11"	31
Struct. steel (Misc. non bridge)		Lb		0
Reinforcing Steel		Lb		1,302
Class "C" Concrete		CY		7.5

TABLE OF ESTIMATED QUANTITIES SUP

For Contractor information only.

Bar	No.	Size	Length	Weight
A	94	#4	13'-8"	859
B	20	#4	23'-8"	316
C	40	#4	20'-4"	544
D	80	#4	1'-10"	98
D1	56	#4	2'-0"	75
E	12	#4	3'-8"	29
F	24	#4	6'-10"	110
G	12	#4	3'-11"	31
Struct. steel (Misc. non bridge)		Lb		0
Reinforcing Steel		Lb		2,062
Class "C" Concrete		CY		13.1

STATE OF TEXAS
DHEERAJ GADI REDDY
141619
LICENSED PROFESSIONAL ENGINEER

07/26/2023
F-2677

SHEET 2 OF 2

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

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.

Texas Department of Transportation
San Antonio District (Structural Design)
Prepared by and for the use of TxDOT

SIDEWALK BRIDGE (MOD.)

SAN ANTONIO DISTRICT STANDARD

DN: BL	CK: DG	FILENAME: SA District Sidewalk Bridge.dgn	
DW: BL	CK: DG	ORIGINAL DRAWING DATE: January 2020	
DIST	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.	COUNTY
SAT	6		CTY
CONTROL	SECTION	JOB	SHEET NO. / ROUTE
C	S	J	$SWBR / FM2790

REVISIONS:

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
FM 2790												
SHEET 1 OF 3												
	1	R5-3	NO MOTOR VEHICLES	24"X24"	X		10BWG	1	SA	P		
	2	R5-3	NO MOTOR VEHICLES	24"X24"	X		10BWG	1	SA	P		
	3											
		R1-1	STOP	36"X36"	X		10BWG	1	SA	P		
SHEET 2 OF 3												
	1	I-8	LIBRARY (SYMBOL)	24"X24"	X		10BWG	1	SA	P		
		I-8TP	LIBRARY	6"X24"								
		I-ARW	RT ARROW (GREEN)									
		I-8	LIBRARY (SYMBOL)	24"X24"								
		I-8TP	LIBRARY	6"X24"								
		I-ARW	RT ARROW (GREEN)	6"X24"								
	2	D3-1G	COTTAGE ST	VAR X 18"	X		10BWG	1	SA	P		
		R1-1	STOP	36"X36"								
SHEET 3 OF 3												
	1	R1-1	STOP	36"X36"	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

1. Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.
2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.
3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

DATE: DATE TIME
FILE: DOCUMENT NAME

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
C TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
4-16	DIST	COUNTY		SHEET NO.
8-16	SAT	BEXAR		118

SUMMARY OF SMALL SIGNS

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

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	POST TYPE FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	POSTS 1 or 2	ANCHOR TYPE UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	MOUNTING DESIGNATION PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE TY N TY S
Cottage St												
SHEET 1 OF 2												
	1	R1-1	STOP	36"X36"	X		10BWG	1	SA	P		
	2	R5-2	NO TRUCKS (SYMBOL)	24"X24"	X		10BWG	1	SA	P		
		R5-2A	NO TRUCK	24"X24"								
SHEET 2 OF 2												
	1	S1-1	SCHOOL CROSSING	30"X30"	X		10BWG	1	SA	P		
		W16-7PL	45 DEG DOWN LEFT ARROW	24"X12"								

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

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Traffic Operations Division Standard

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SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
C TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
4-16	DIST	COUNTY		SHEET NO.
8-16	SAT	BEXAR		119

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX)					BRIDGE MOUNT CLEARANCE SIGNS (See Note 2)
							POST TYPE	POSTS	ANCHOR TYPE	MOUNTING DESIGNATION		TY = TYPE
							FRP = Fiberglass TWT = Thin-Wall 10BWG = 10 BWG S80 = Sch 80	1 or 2	UA=Universal Conc UB=Universal Bolt SA=Slipbase-Conc SB=Slipbase-Bolt WS=Wedge Steel WP=Wedge Plastic	PREFABRICATED P = "Plain" T = "T" U = "U"	1EXT or 2EXT = # of Ext BM = Extruded Wind Beam WC = 1.12 #/ft Wing Channel EXAL= Extruded Alum Sign Panels	TY N TY S
PRAIRIE St												
	1	R1-1	STOP	36"X36"	X		10BWG	1	SA	P		
		R1-3P	ALL-WAY									
	2	R5-2	NO TRUCKS (SYMBOL)	24"X24"	X		10BWG	1	SA	P		
		R5-2A	NO TRUCKS	24"X24"								
	3	S4-3P	SCHOOL	24"X8"	X		10BWG	1	SA	P		
		R2-1	SPEED LIMIT	18"X24"								
		S4-1P	SCHOOL ZONE SPEED TIME-RANGE PLAQUE	24"X10"								
	4	R1-1	STOP	36"X36"	X		10BWG	1	SA	P		
		R1-3P	ALL-WAY	18"X 6"								
	5	S1-1	SCHOOL ZONE	30"X30"	X		10BWG	1	SA	P		
	6	S1-1	SCHOOL ZONE	30"X30"	X		10BWG	1	SA	P		
	7	R1-1	STOP	36"X36"	X		10BWG	1	SA	P		
		R1-3P	ALL-WAY									
	8	S1-1	SCHOOL ZONE	30"X30"								
	9	R1-1	STOP	36"X36"	X		10BWG	1	SA	P		
		R1-3P	ALL-WAY									
	10	R8-3a	NO PARKING (DBL ARROW)	18"x24"	X		10BWG	1	SA	P		
	11	R8-3a	NO PARKING (DBL ARROW)	18"x24"	X		10BWG	1	SA	P		
	12	R8-3a	NO PARKING (DBL ARROW)	18"x24"	X		10BWG	1	SA	P		
	13	S1-1	SCHOOL CROSSING	30"X30"	X		10BWG	1	SA	P		
		W16-7PL	45 DEG DOWN LEFT ARROW	24"X12"								
	14	R8-3a	NO PARKING (DBL ARROW)	18"x24"	X		10BWG	1	SA	P		
	15	R8-3a	NO PARKING (DBL ARROW)	18"x24"	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

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Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

SOSS

FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
C TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
4-16	DIST	COUNTY		SHEET NO.
8-16	SAT	BEXAR		120

18

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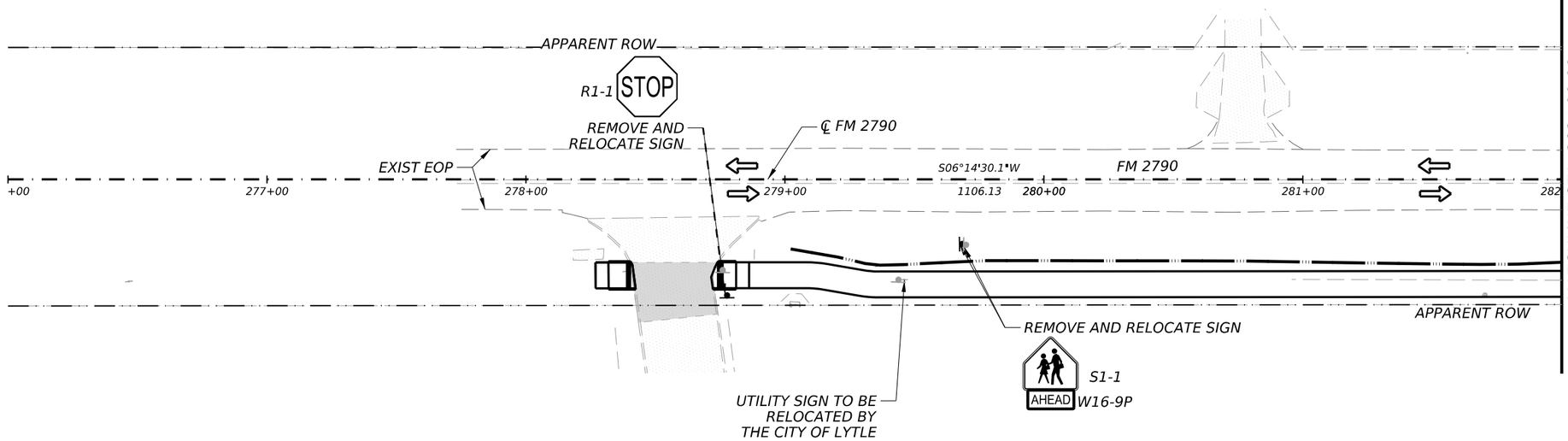
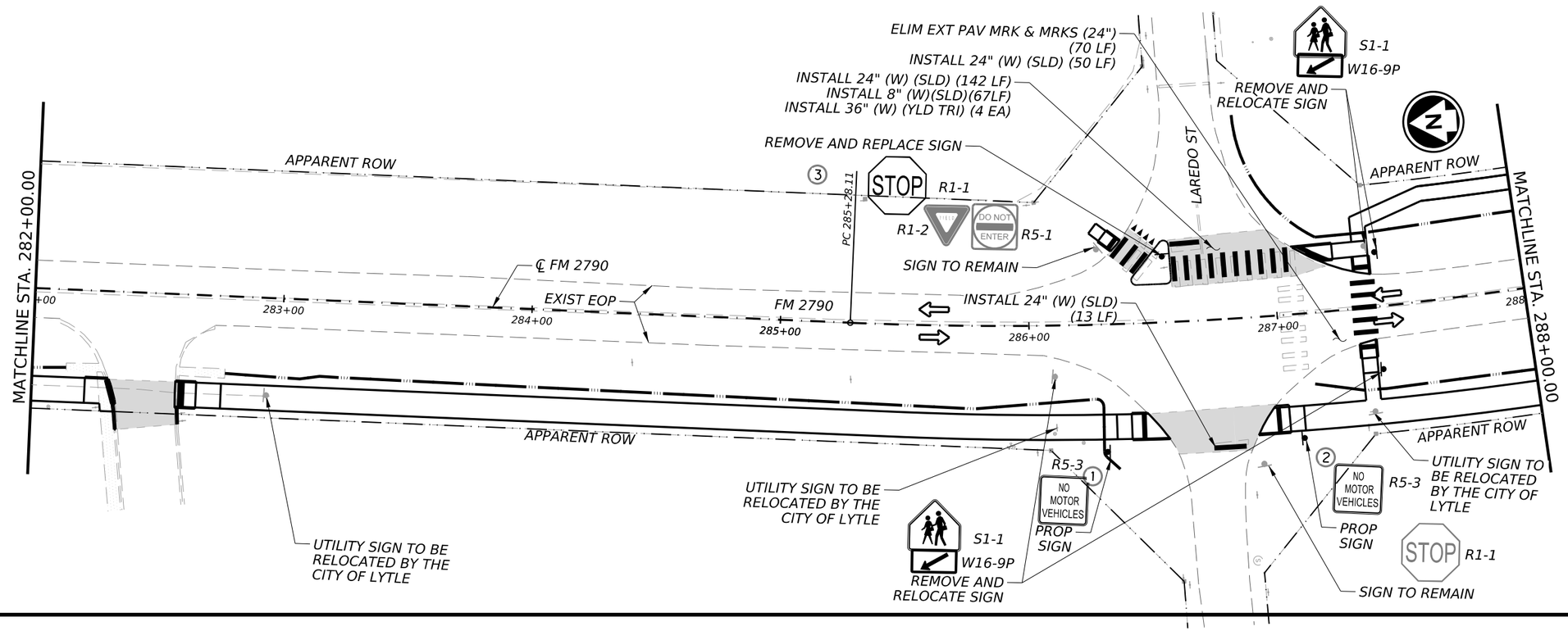
DATE: DATE TIME
FILE: DOCUMENT NAME

CK:
DW:
CK:
DW:

ITEM	DESCRIPTION	UNIT	QTY
0644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	3
0644 6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	4
0644 6076	REMOVE SM RD SN SUP&AM	EA	3
0658 6100	INSTL OM ASSM	EA	-
0666 6036	REFL PAV MRK TY I	LF	67
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	205
0666 6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	4
0666 6226	PAVEMENT SEALER 8"	LF	67
0666 6230	PAVEMENT SEALER 24"	LF	205
0677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	50
0678 6004	PAV SURF PREP FOR MRK (8")	LF	67
0678 6008	PAV SURF PREP FOR MRK (24")	LF	50





LEGEND

- TRAFFIC FLOW DIRECTION
- PROPOSED SIGN NUMBER
- PROPOSED SIGN POST
- EXISTING SIGN POST
- PROPOSED OBJECT MARKER

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER TXDOT STANDARDS
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TMUTCD" AND "STANDARD HIGHWAY SIGN DETAILS FOR TEXAS", LATEST EDITIONS.
4. ALL PROPOSED AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
5. ALL TY I PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.

0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
RICARDO RAMOS JR
144241
LICENSED
PROFESSIONAL ENGINEER
8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

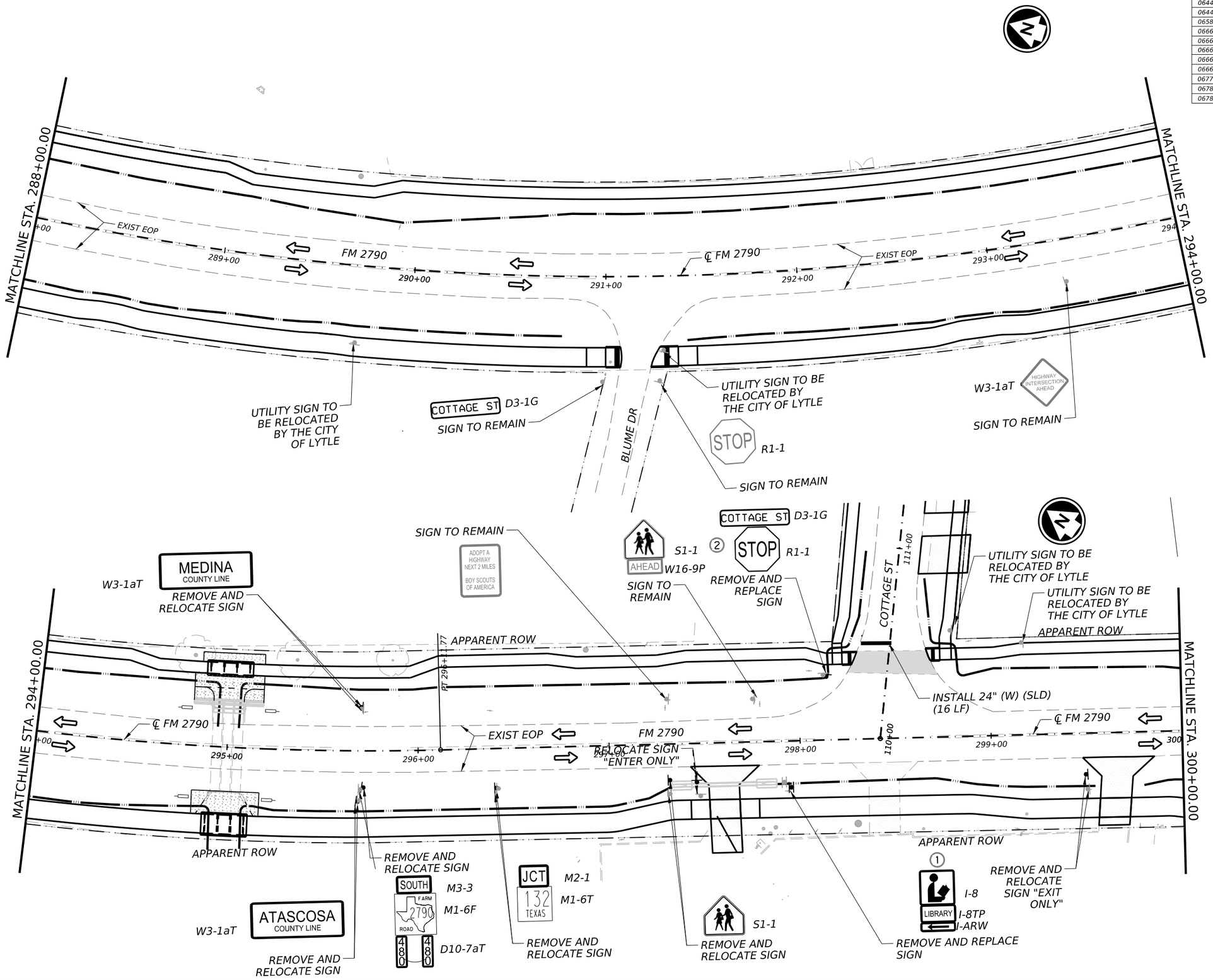
SIGNING AND PAVEMENT MARKING LAYOUT

SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		121

DATE: 8/22/2023 9:33:38 PM
FILE: ...\FM2790 S SIGNS 1.dgn

ITEM	DESCRIPTION	UNIT	QTY
0644 6001	IN SM RD SN SUP&AM	EA	2
0644 6068	RELOCATE SM RD SN SUP&AM TY	EA	6
0644 6076	REMOVE SM RD SN SUP&AM	EA	2
0658 6100	INSTL OM ASSM	EA	4
0666 6036	REFL PAV MRK TY I	LF	-
0666 6048	REFL PAV MRK TY I	LF	16
0666 6102	REF PAV MRK TY I(W)36"(YLD	EA	-
0666 6226	PAVEMENT SEALER 8"	LF	-
0666 6230	PAVEMENT SEALER 24"	LF	16
0677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	-
0678 6004	PAV SURF PREP FOR MRK (8")	LF	-
0678 6008	PAV SURF PREP FOR MRK (24")	LF	16



LEGEND

- TRAFFIC FLOW DIRECTION
- PROPOSED SIGN NUMBER
- PROPOSED SIGN POST
- EXISTING SIGN POST
- PROPOSED OBJECT MARKER

NOTES:

1. ALL PROPOSED MARKINGS SHALL MEET AND BE INSTALLED PER TXDOT STANDARDS
2. ALL SIGNS MUST BE CONSTRUCTED IN ACCORDANCE WITH DETAILS FOUND IN "TMUTCD" AND "STANDARD HIGHWAY SIGN DETAILS FOR TEXAS", LATEST EDITIONS.
4. ALL PROPOSED AND RELOCATED SIGNS CALLED OUT WILL REQUIRE REMOVAL OF EXISTING SIGN ASSEMBLY. ALL OTHER EXISTING SIGNS WILL REMAIN IN PLACE.
5. ALL TY I PAVEMENT MARKING SHALL HAVE PAVEMENT SEALER.

0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
RICARDO RAMOS JR
144241
LICENSED
PROFESSIONAL ENGINEER
8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SIGNING AND PAVEMENT MARKING LAYOUT

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		122

DATE: 8/22/2023 9:33:56 PM
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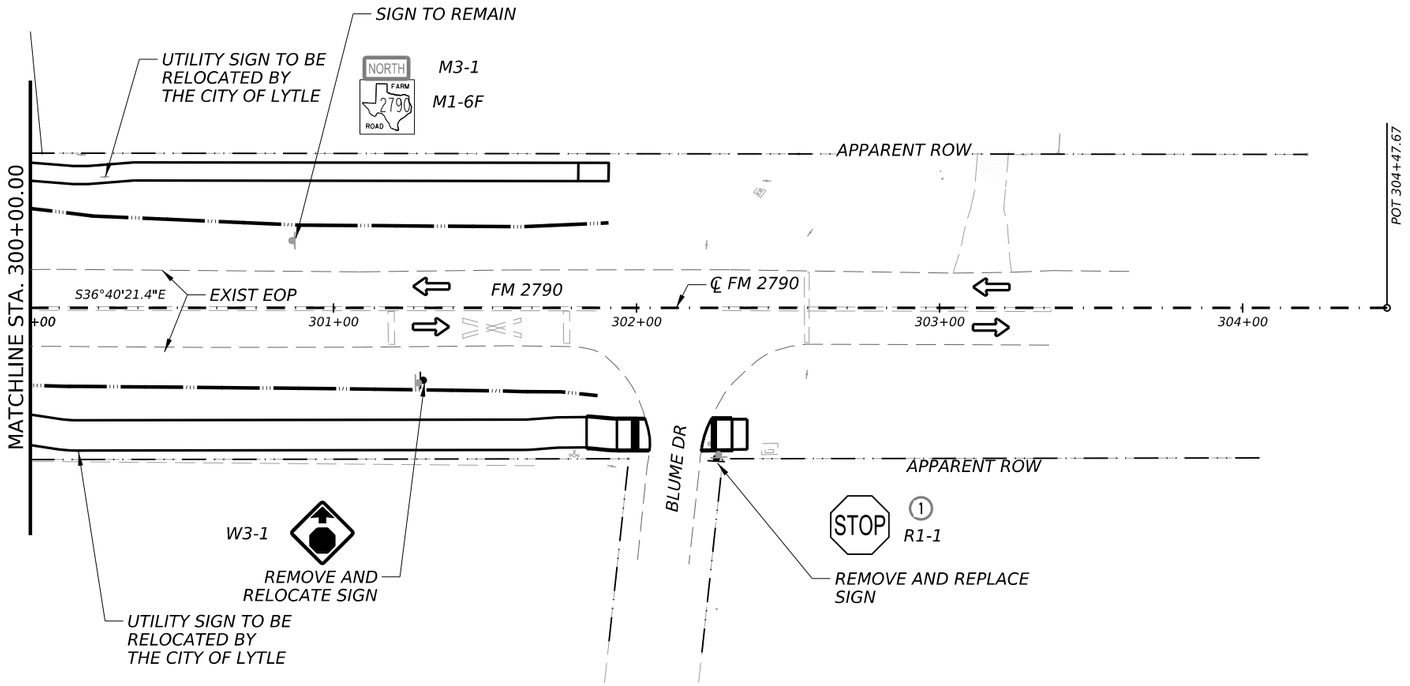
DW:
CK:
DN:

CK:
DW:
CK:
DW:



ITEM	DESCRIPTION	UNIT	QTY
0644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
0644 6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1
0644 6076	REMOVE SM RD SN SUP&AM	EA	1
0658 6100	INSTL OM ASSM	EA	-
0666 6036	REFL PAV MRK TY I	LF	-
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	-
0666 6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	-
0666 6226	PAVEMENT SEALER 8"	LF	-
0666 6230	PAVEMENT SEALER 24"	LF	-
0677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	-
0678 6004	PAV SURF PREP FOR MRK (8")	LF	-
0678 6008	PAV SURF PREP FOR MRK (24")	LF	-

LEGEND

- TRAFFIC FLOW DIRECTION
- PROPOSED SIGN NUMBER
- PROPOSED SIGN POST
- EXISTING SIGN POST
- PROPOSED OBJECT MARKER

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0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

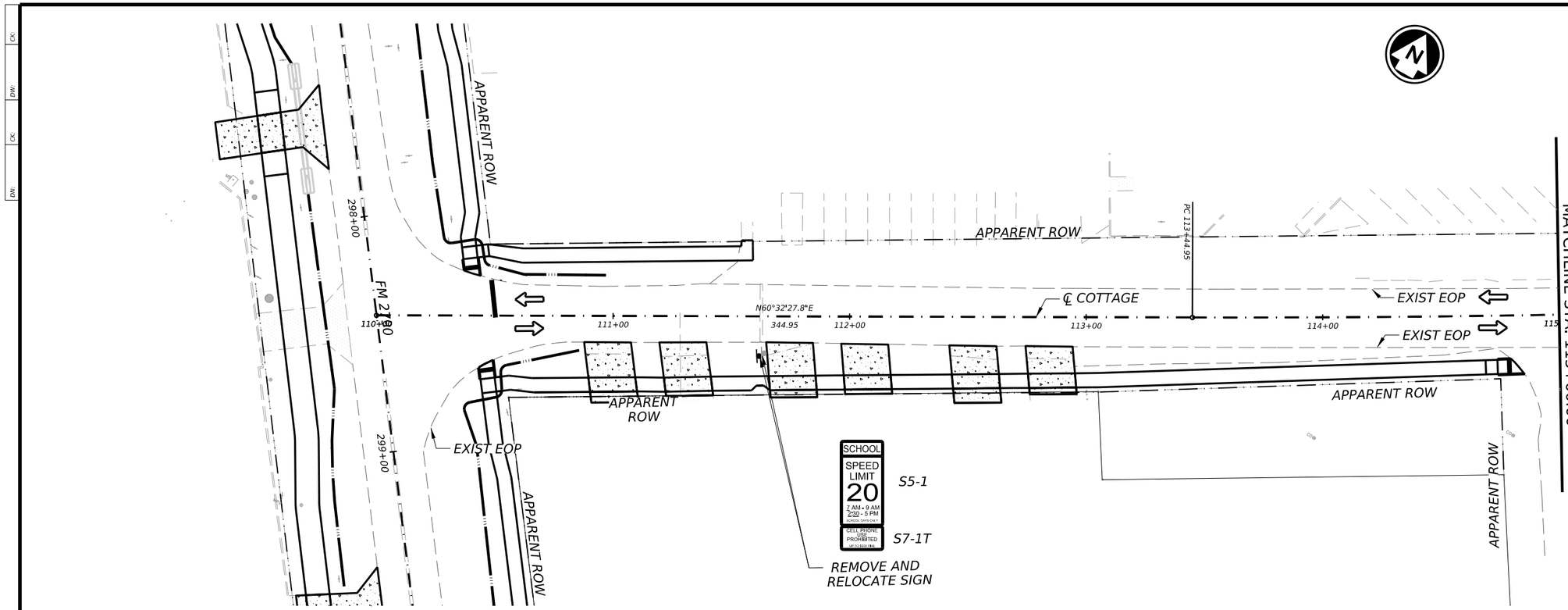
SIGNING AND PAVEMENT MARKING LAYOUT

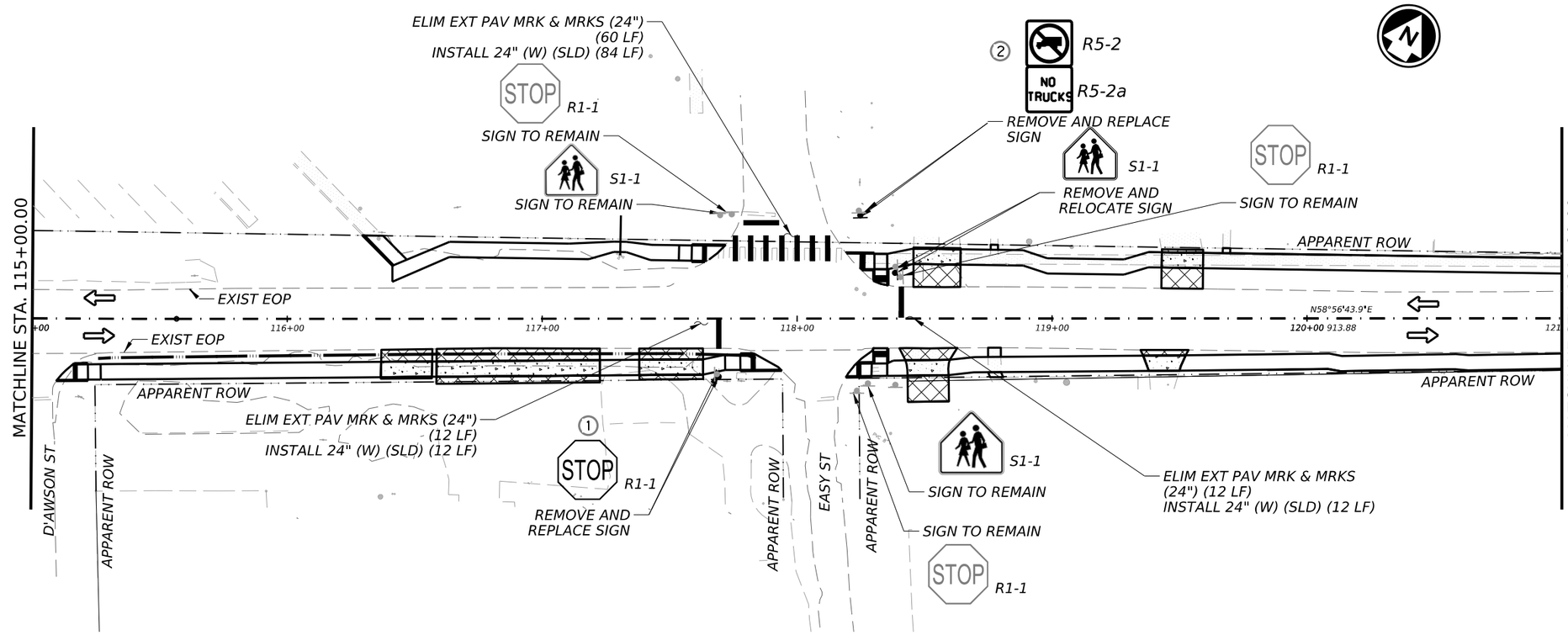
SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		123

DATE: 8/22/2023 9:34:12 PM
FILE: ...\FM2790 S SIGNS 3.dgn

ITEM	DESCRIPTION	UNIT	QTY
0644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	2
0644 6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	2
0644 6076	REMOVE SM RD SN SUP&AM	EA	2
0658 6100	INSTL OM ASSM	EA	-
0666 6036	REFL PAV MRK TY I	LF	-
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	108
0666 6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	-
0666 6226	PAVEMENT SEALER 8"	LF	-
0666 6230	PAVEMENT SEALER 24"	LF	108
0677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	84
0678 6004	PAV SURF PREP FOR MRK (8")	LF	-
0678 6008	PAV SURF PREP FOR MRK (24")	LF	108





LEGEND

- TRAFFIC FLOW DIRECTION
- PROPOSED SIGN NUMBER
- PROPOSED SIGN POST
- EXISTING SIGN POST
- PROPOSED OBJECT MARKER

NOTES:

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0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
RICARDO RAMOS JR
144241
LICENSED
PROFESSIONAL ENGINEER
8/22/2023

NO	DATE	REVISION	APPROVED

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TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SIGNING AND PAVEMENT MARKING LAYOUT COTTAGE ST

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		124

DATE: 8/22/2023 9:34:33 PM
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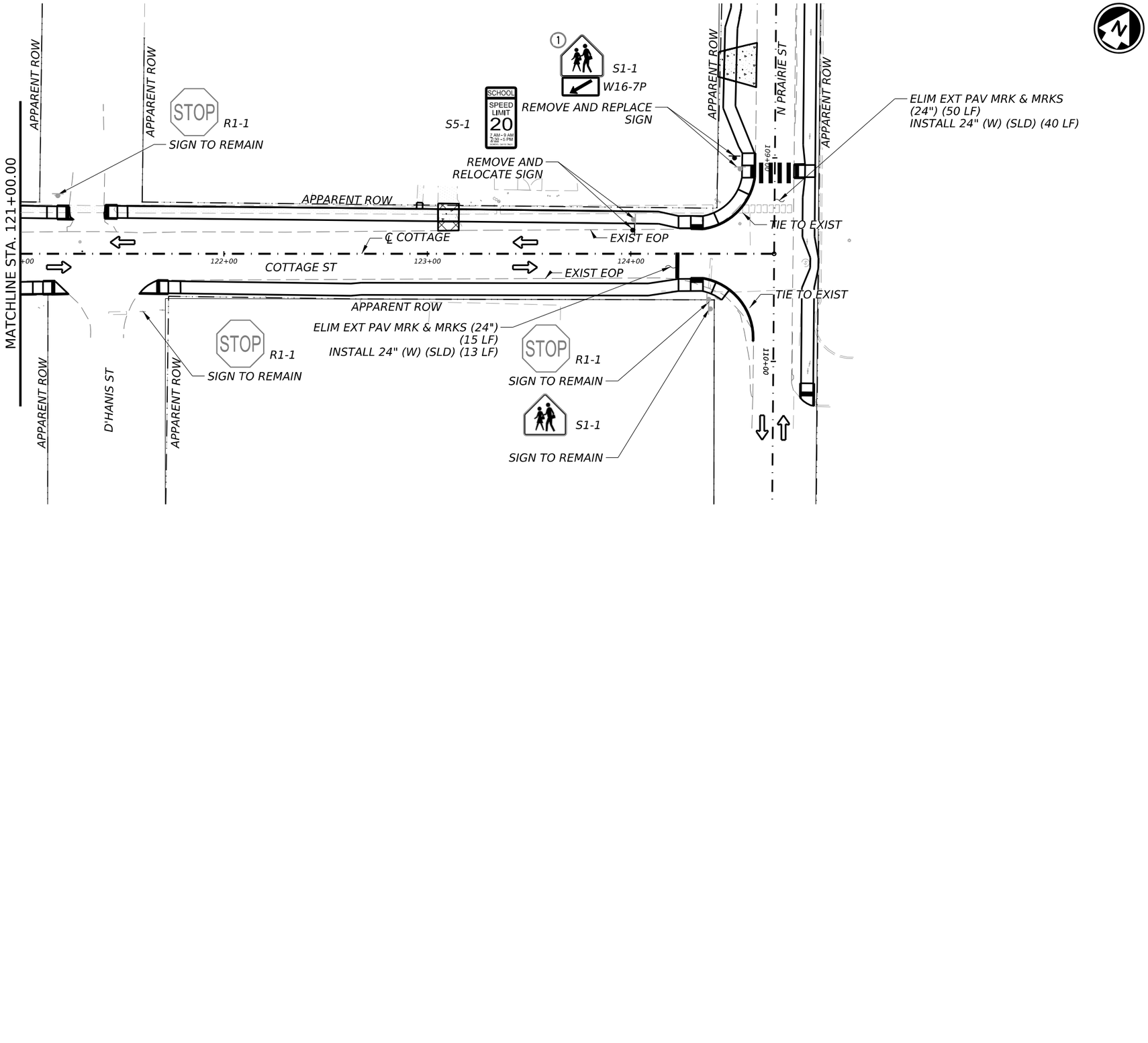

ITEM	DESCRIPTION	UNIT	QTY
0644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	1
0644 6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	1
0644 6076	REMOVE SM RD SN SUP&AM	EA	1
0658 6100	INSTL OM ASSM	EA	-
0666 6036	REFL PAV MRK TY I	LF	-
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	53
0666 6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	-
0666 6226	PAVEMENT SEALER 8"	LF	-
0666 6230	PAVEMENT SEALER 24"	LF	53
0677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	65
0678 6004	PAV SURF PREP FOR MRK (8")	LF	-
0678 6008	PAV SURF PREP FOR MRK (24")	LF	53

LEGEND

- TRAFFIC FLOW DIRECTION
- PROPOSED SIGN NUMBER
- PROPOSED SIGN POST
- EXISTING SIGN POST
- PROPOSED OBJECT MARKER

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0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
RICARDO RAMOS JR
144241
LICENSED
PROFESSIONAL ENGINEER
8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SIGNING AND PAVEMENT MARKING LAYOUT COTTAGE ST

SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		125

DATE: 8/22/2023 9:34:53 PM
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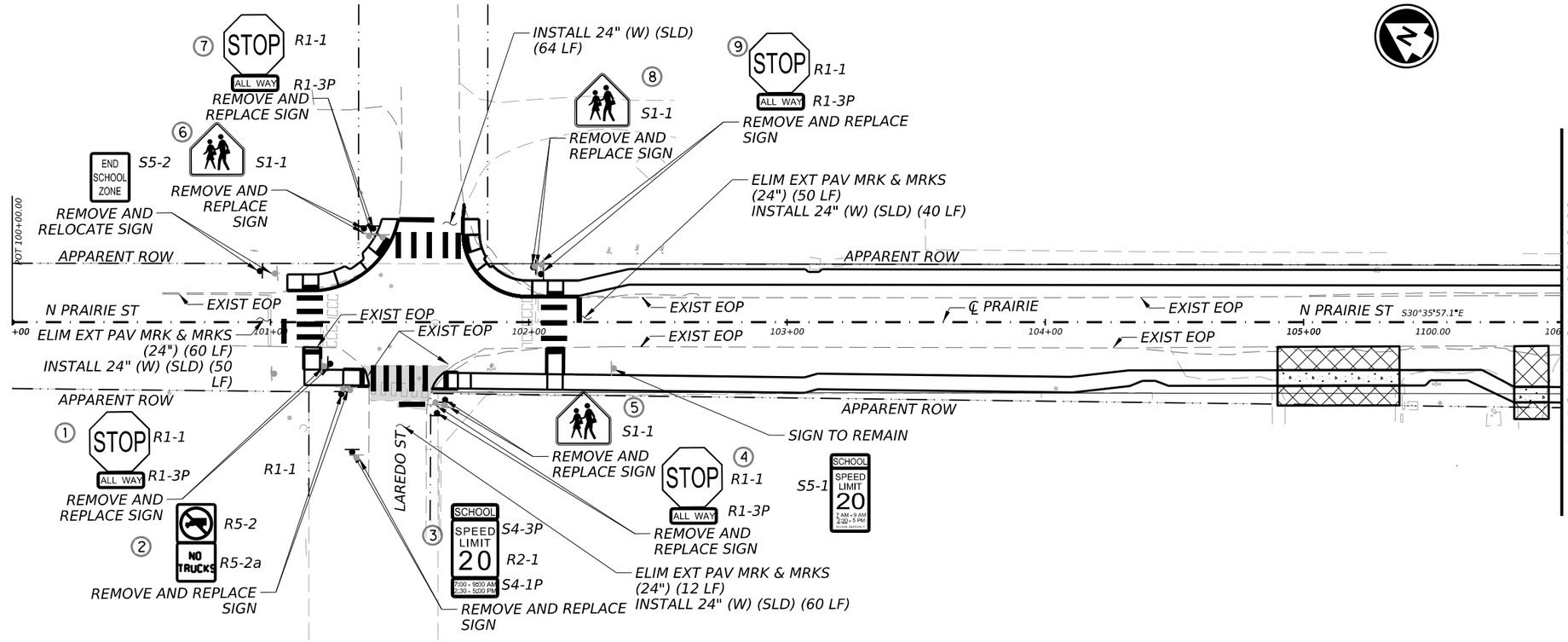

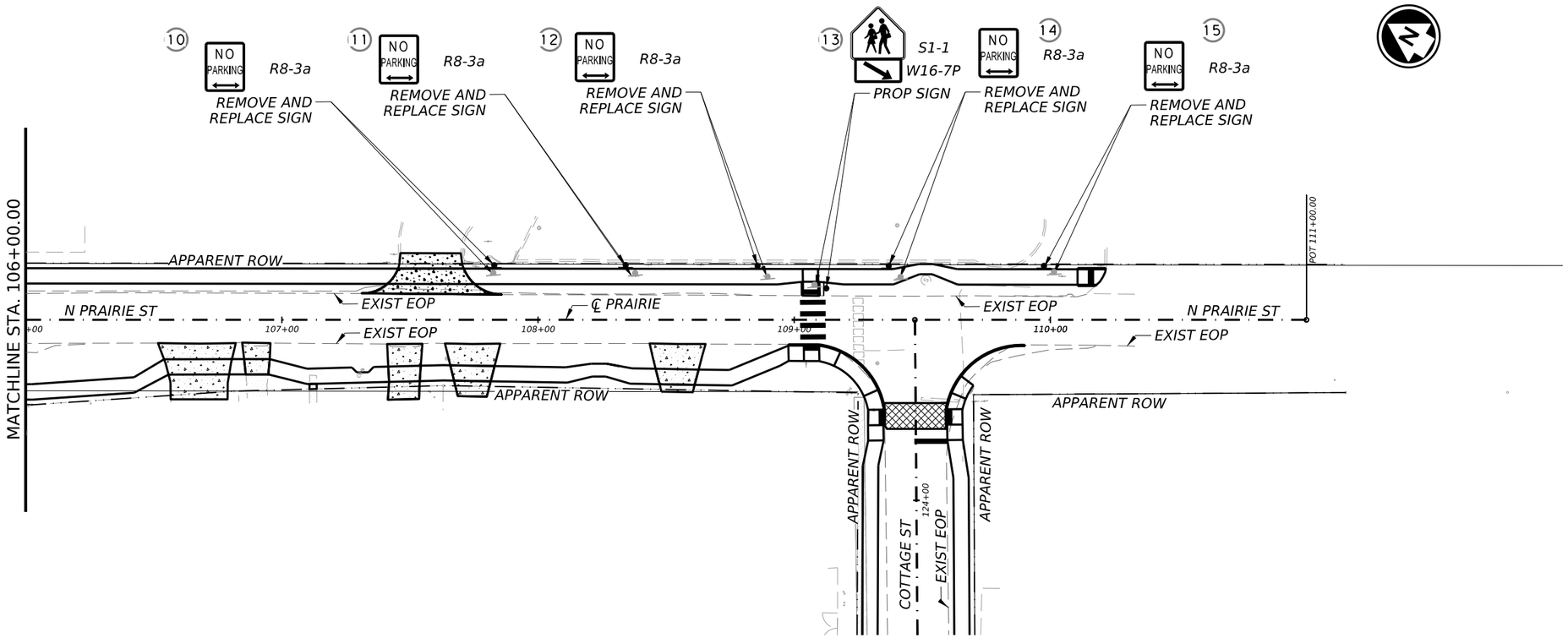

ITEM	DESCRIPTION	UNIT	QTY
0644 6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	15
0644 6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	-
0644 6076	REMOVE SM RD SN SUP&AM	EA	15
0658 6100	INSTL OM ASSM	EA	-
0666 6036	REFL PAV MRK TY I	LF	-
0666 6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	214
0666 6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	-
0666 6226	PAVEMENT SEALER 8"	LF	-
0666 6230	PAVEMENT SEALER 24"	LF	214
0677 6007	ELIM EXT PAV MRK & MRKS (24")	LF	122
0678 6004	PAV SURF PREP FOR MRK (8")	LF	-
0678 6008	PAV SURF PREP FOR MRK (24")	LF	214

LEGEND

- TRAFFIC FLOW DIRECTION
- (#) PROPOSED SIGN NUMBER
- PROPOSED SIGN POST
- EXISTING SIGN POST
- PROPOSED OBJECT MARKER

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0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
RICARDO RAMOS JR
144241
LICENSED
PROFESSIONAL ENGINEER
8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SIGNING AND PAVEMENT MARKING LAYOUT N PRAIRIE ST

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		126

DATE: 8/22/2023 9:35:12 PM
FILE: ...\FM2790_PRAIRIE_S_SIGNS_1.dgn

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

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

Post Type

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

Number of Posts (1 or 2)

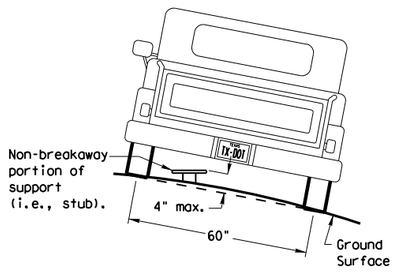
Anchor Type

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

Sign Mounting Designation

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

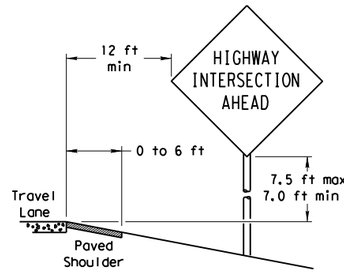
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



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

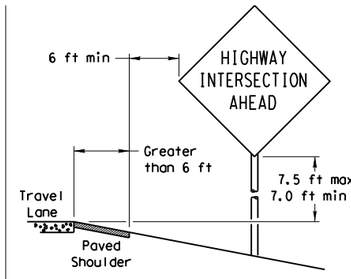
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

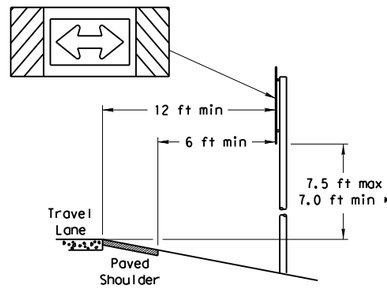
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



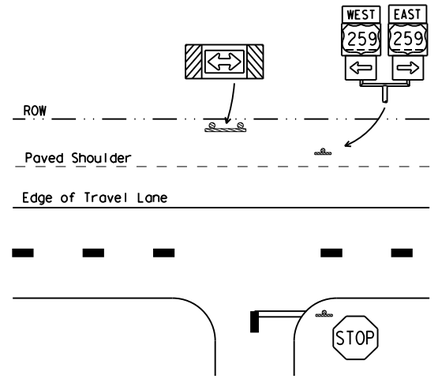
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

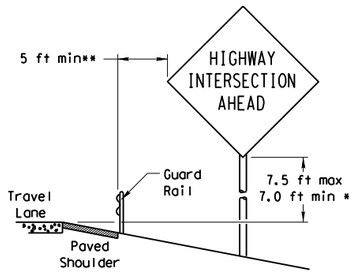
T-INTERSECTION



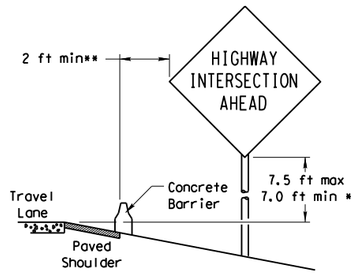
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

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

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

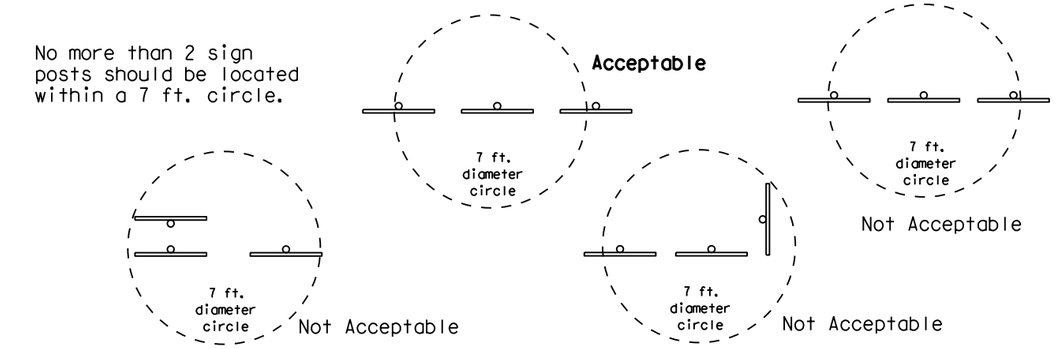
(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

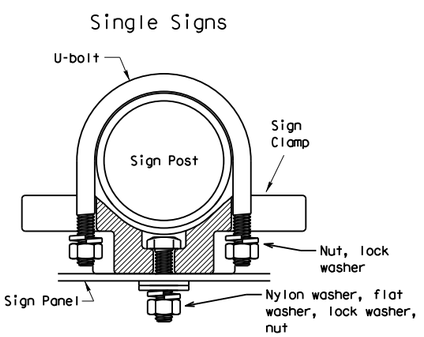
The maximum values may be increased when directed by the Engineer.

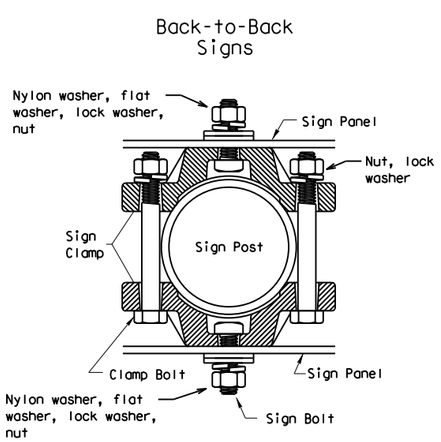
See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm



TYPICAL SIGN ATTACHMENT DETAIL





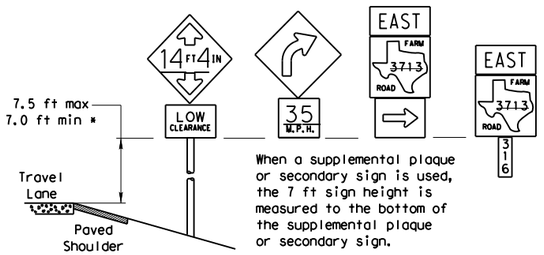
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

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.

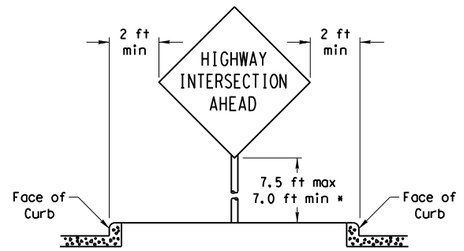
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



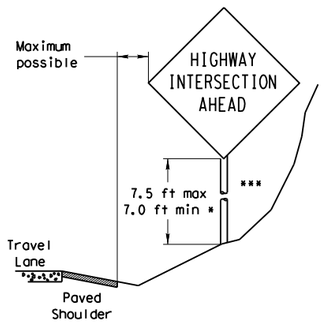
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

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

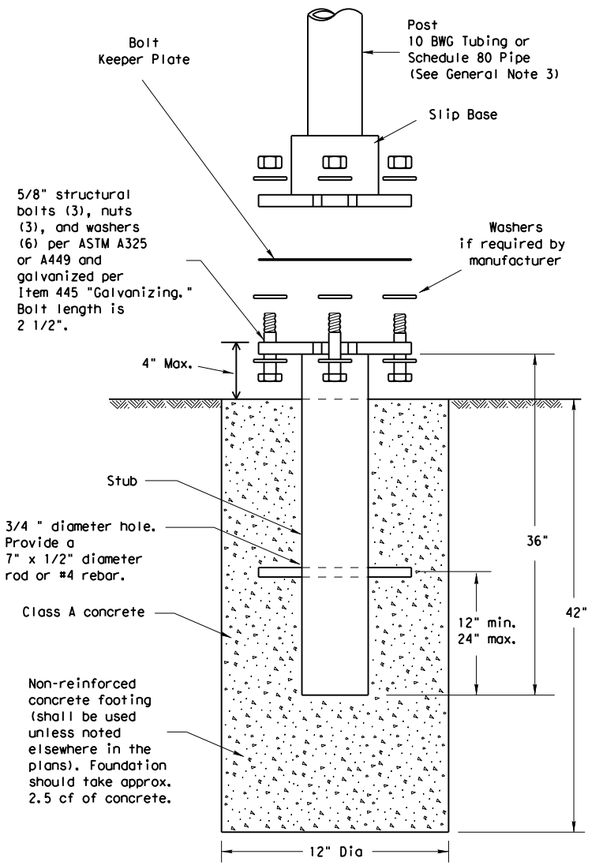
SMD(GEN)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		127

DATE:
FILE:

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



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

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

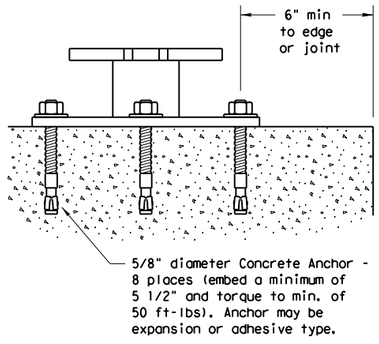
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



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

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

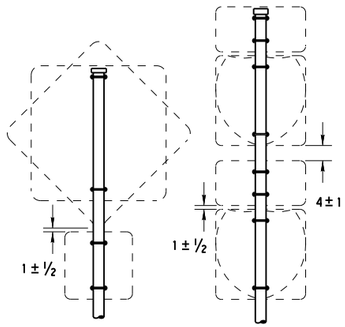
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS 9-08

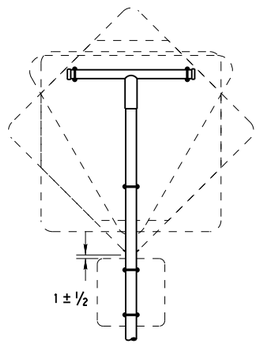
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS

DIST	COUNTY	SHEET NO.
SAT	BEXAR	128

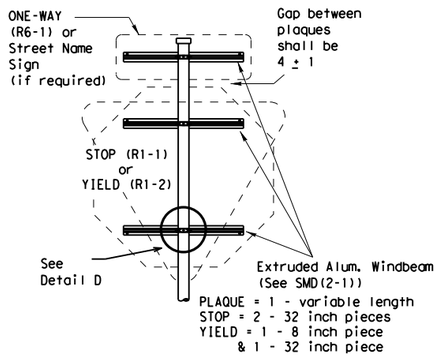
DATE:
FILE:



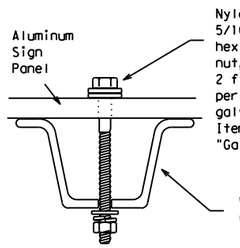
SM RD SGN ASSM TY XXXXX(1)XX(P)



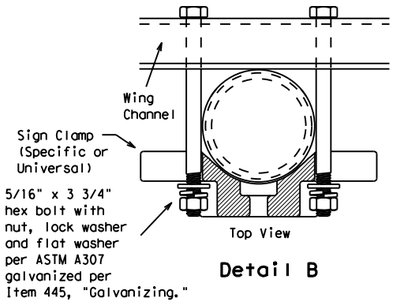
SM RD SGN ASSM TY XXXXX(1)XX(T)



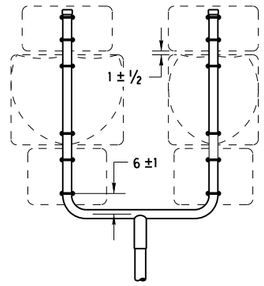
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



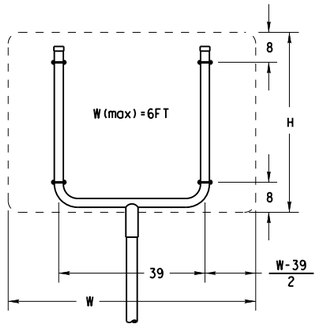
Detail A



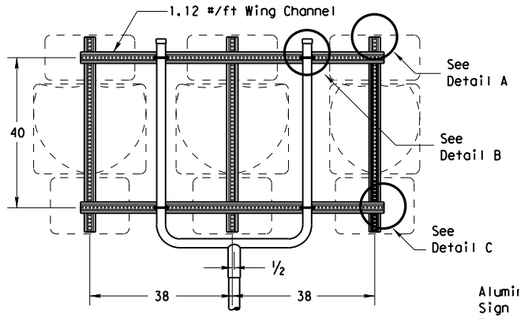
Detail B



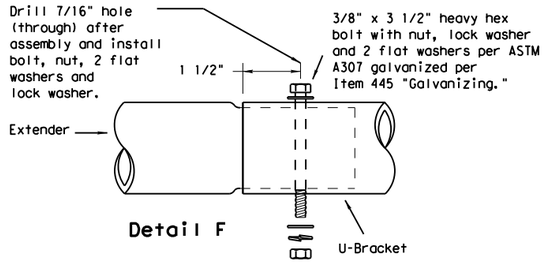
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

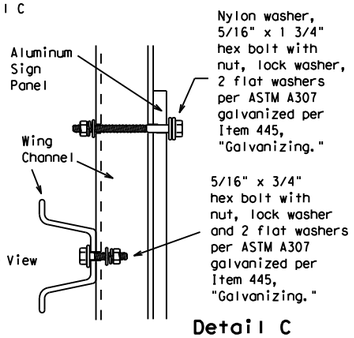


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

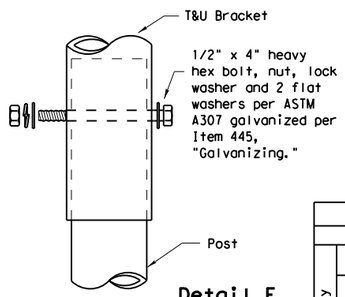


Detail F

Splices shall only be allowed behind the sign substrate.



Detail C



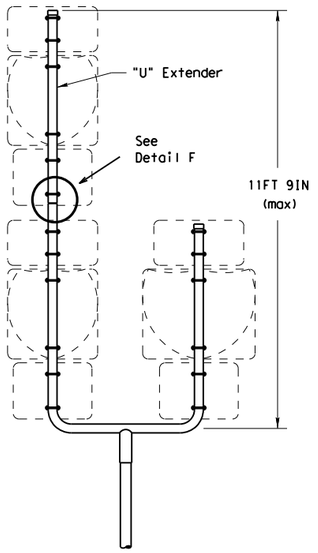
Detail E

GENERAL NOTES:

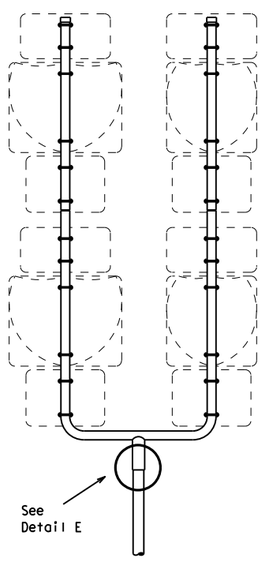
1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

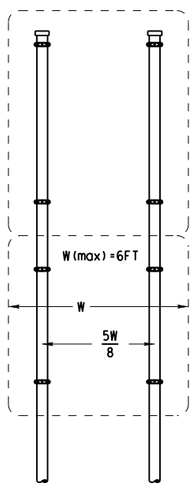
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.



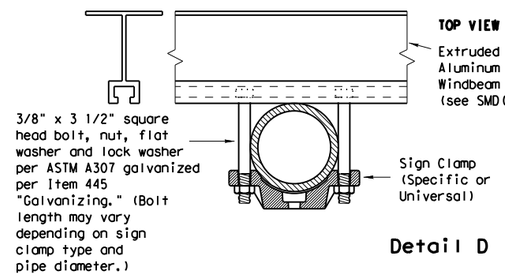
SM RD SGN ASSM TY S80(1)XX(U-1EXT)



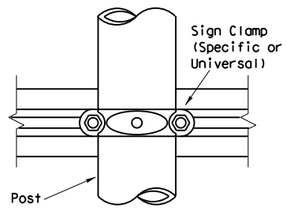
SM RD SGN ASSM TY S80(1)XX(U-2EXT)



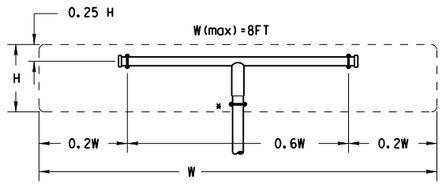
SM RD SGN ASSYM TY XXXXX(2)XX(P)



Detail D



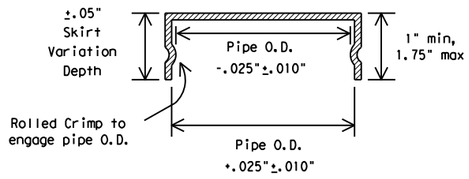
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



All dimensions are in english unless detailed otherwise.

SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

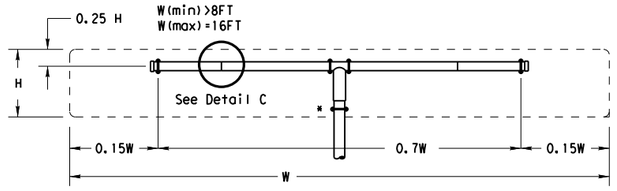
SMD(SLIP-2)-08

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		129

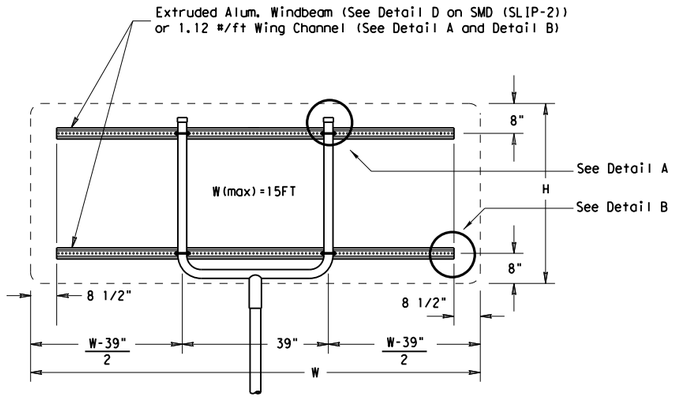
9-08 REVISIONS

DATE:
FILE:

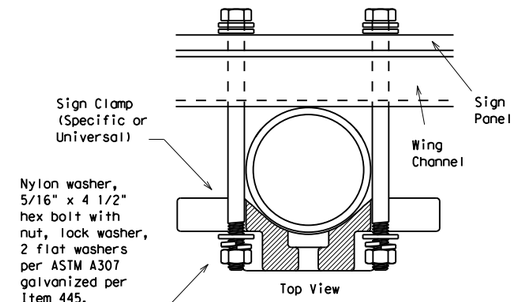
DATE:
FILE:



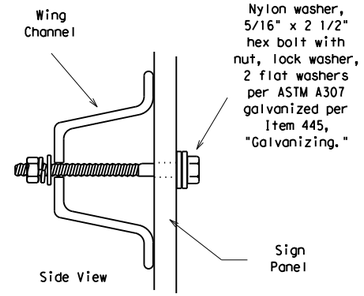
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



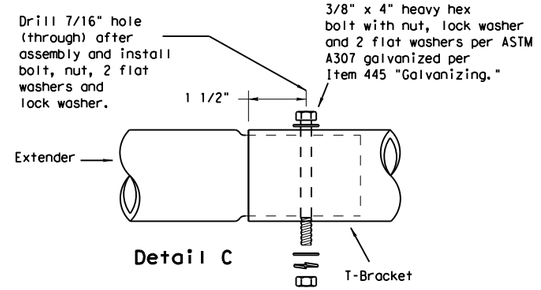
SM RD SGN ASSM TY XXXXX(1)XX(U-XX)



Detail A

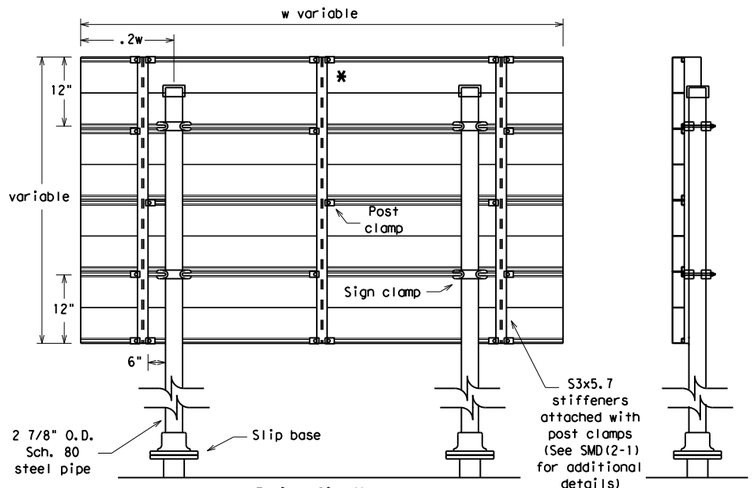


Detail B



Detail C

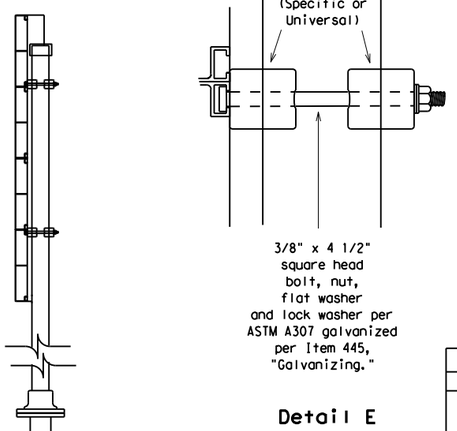
Splices shall only be allowed behind the sign substrate.



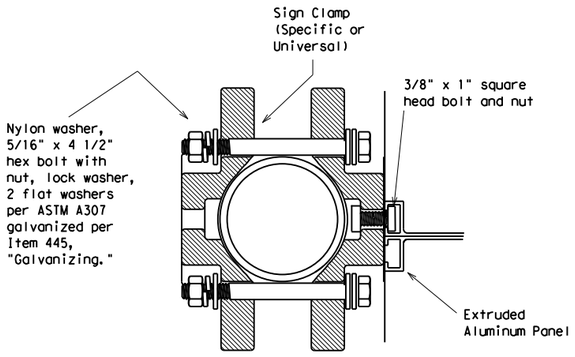
Typical Sign Mount

SM RD SGN ASSM TY S80(2)XX(P-EXAL)

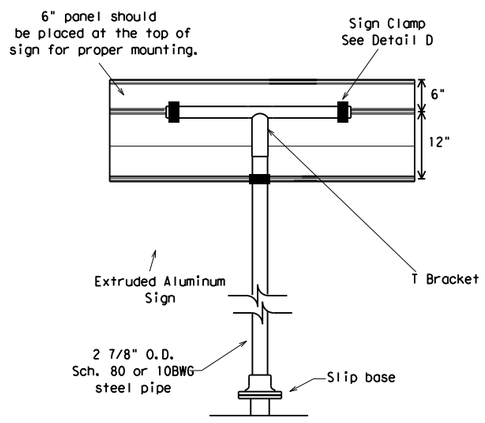
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



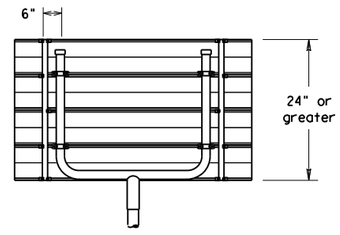
Detail E



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

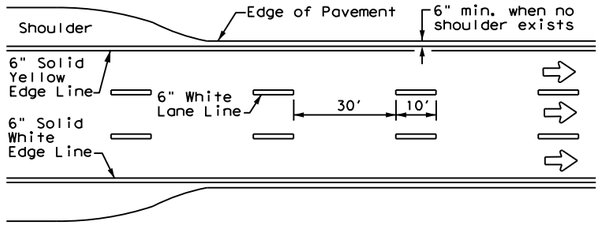
SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

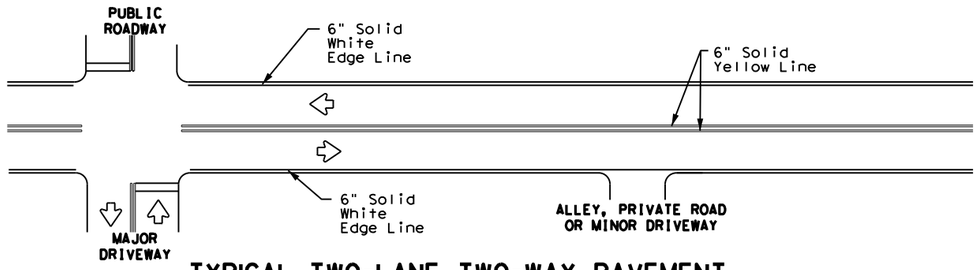
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS
9-08

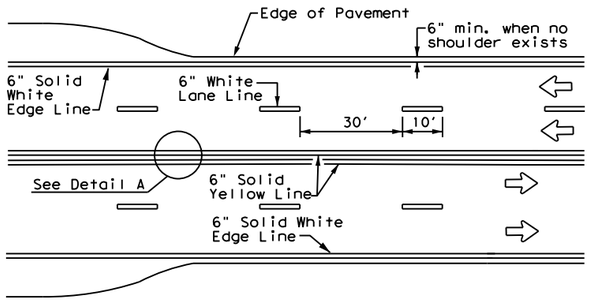
CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		130

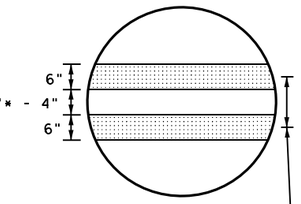


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



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

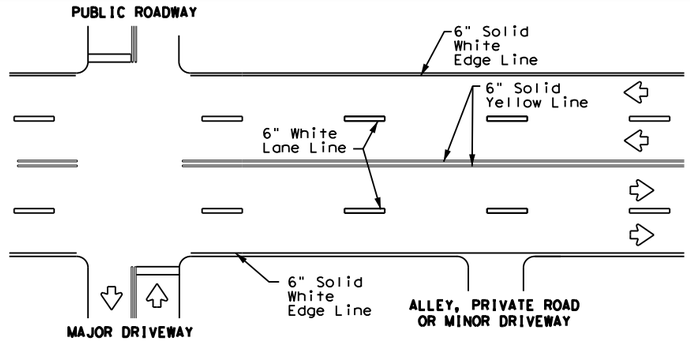




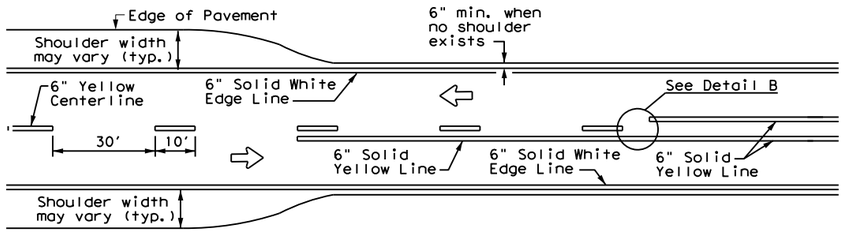
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

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

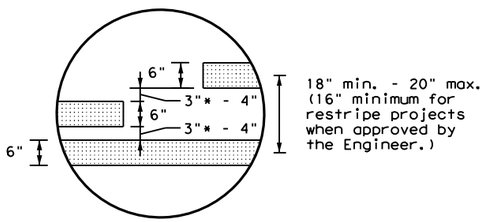
** 8" minimum for restripe projects when approved by the Engineer.



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

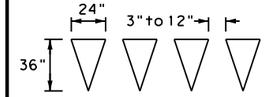


TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



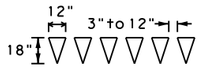
DETAIL "B"

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

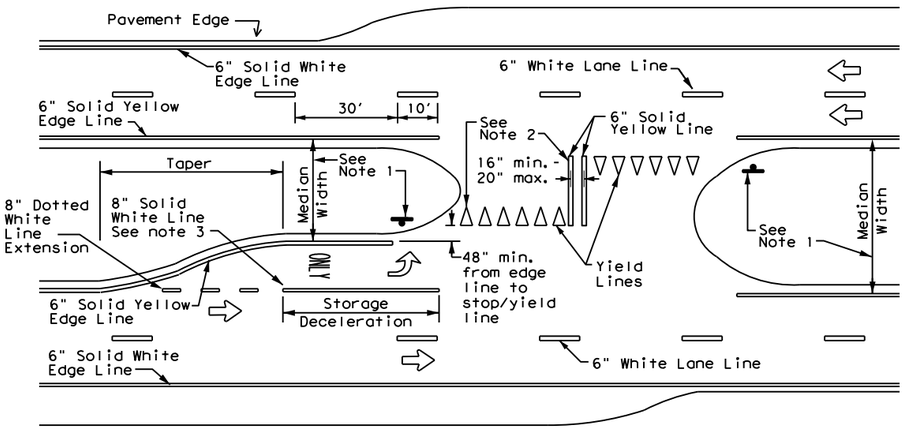


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

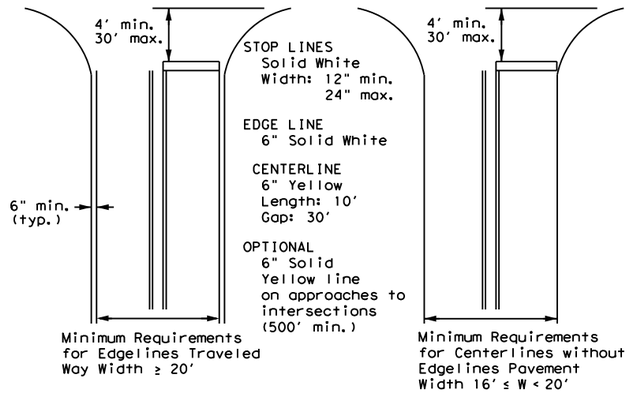
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

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

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



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

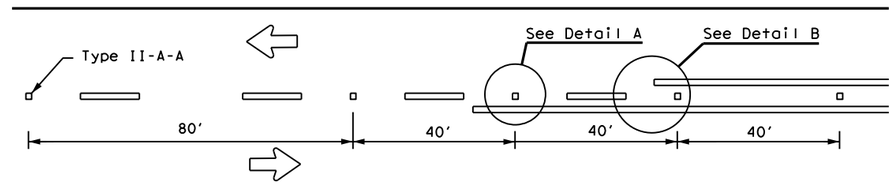
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 11-78 8-00 6-20	0915	00	252	VARIOUS
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	SAT	BEXAR		131

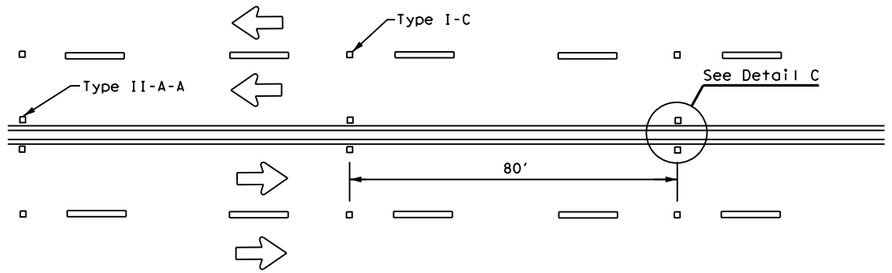
22A

DATE:
FILE:

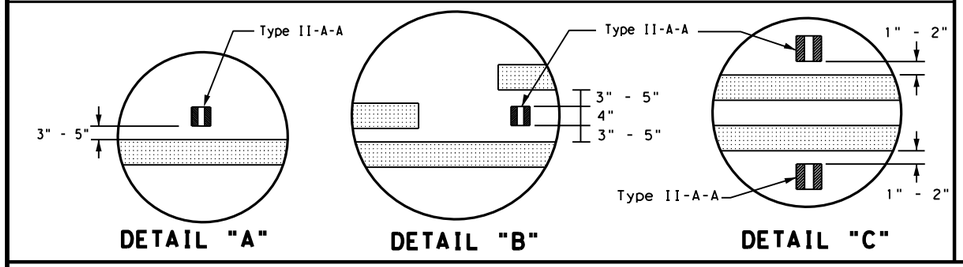
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

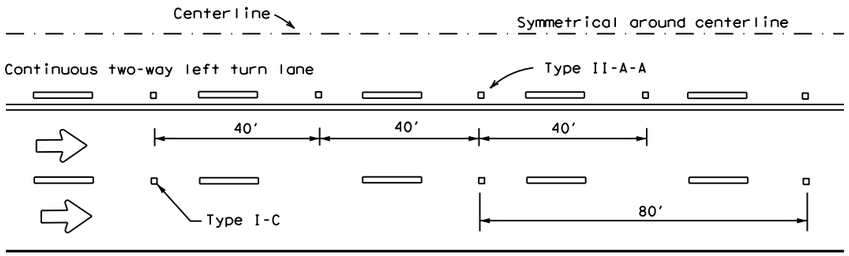


CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS

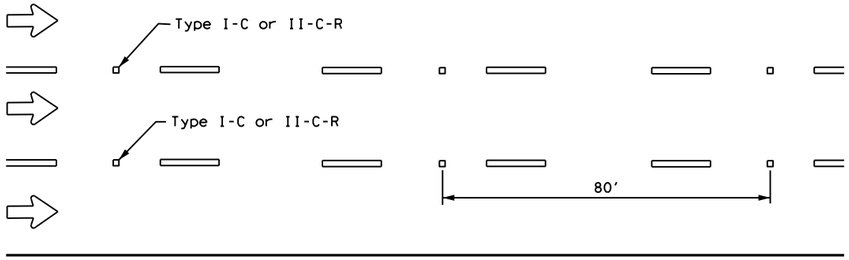


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY ROADWAYS





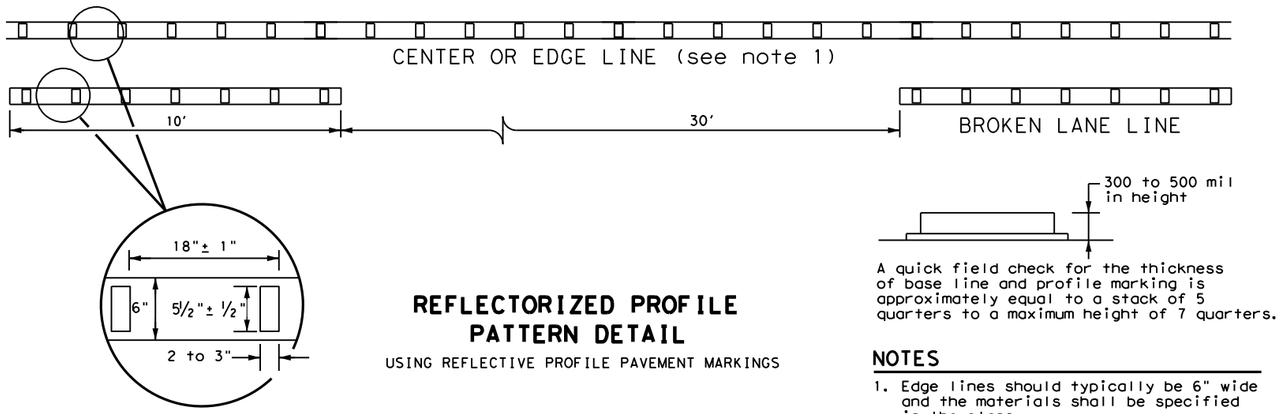
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



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

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

See Note 3.



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

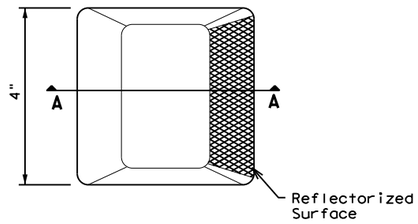
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

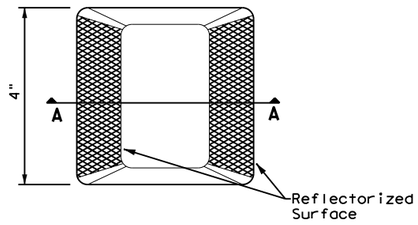
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

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

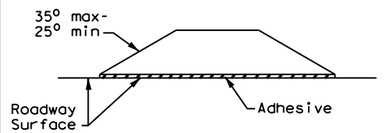
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation

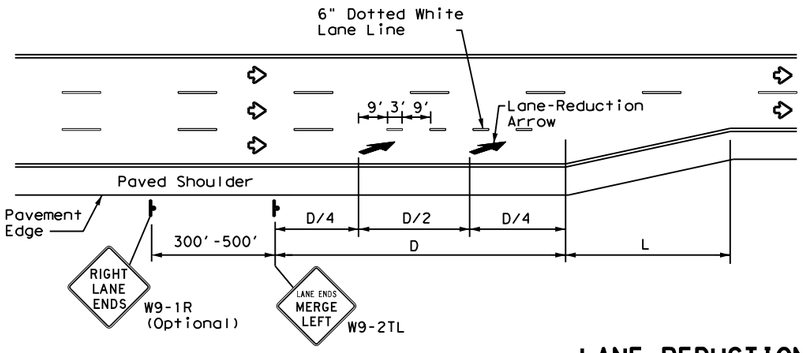
Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		132

22B

DATE:
FILE:

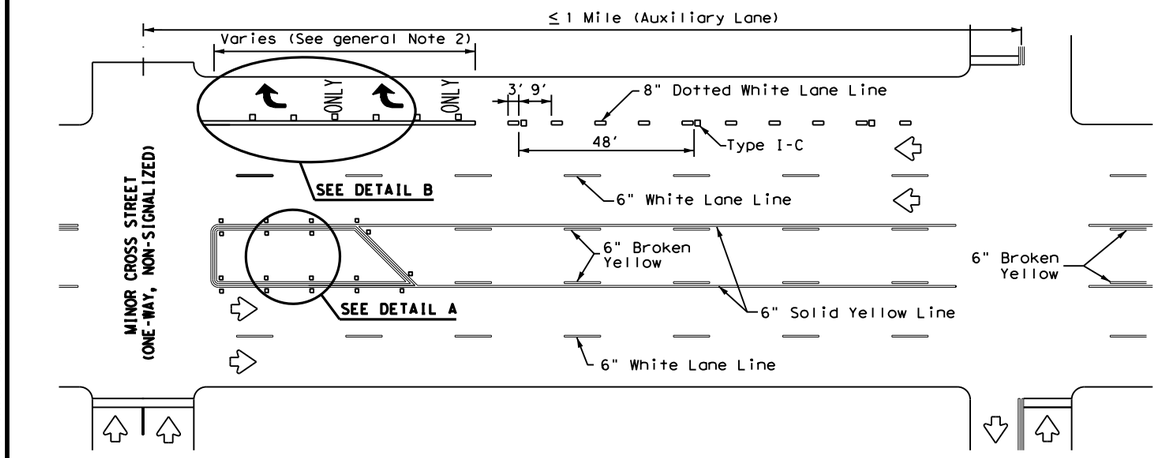


LANE REDUCTION

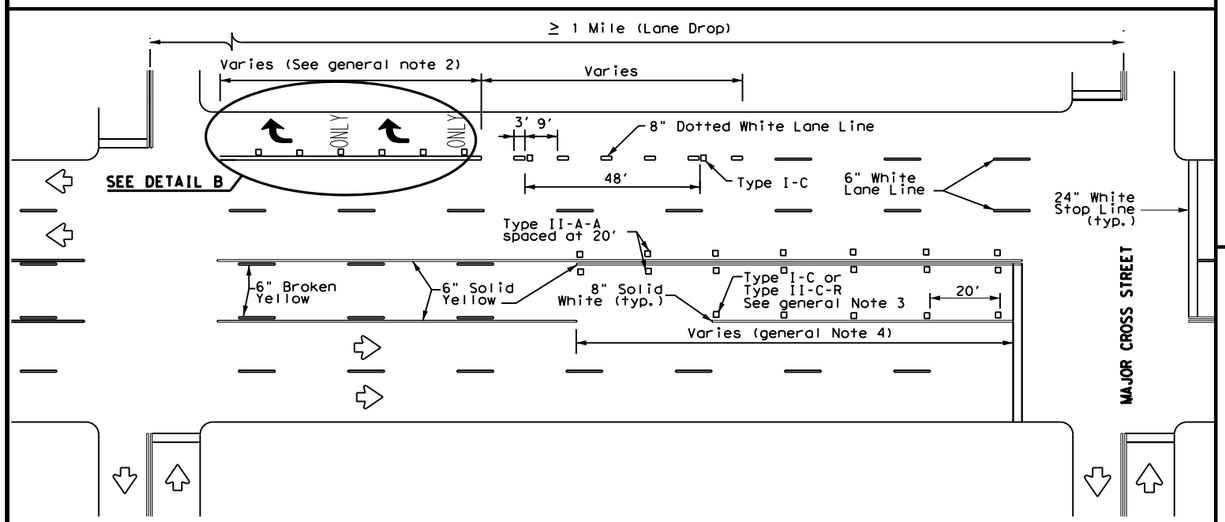
NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

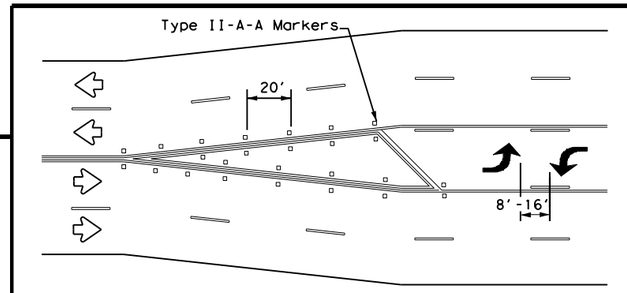
ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



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

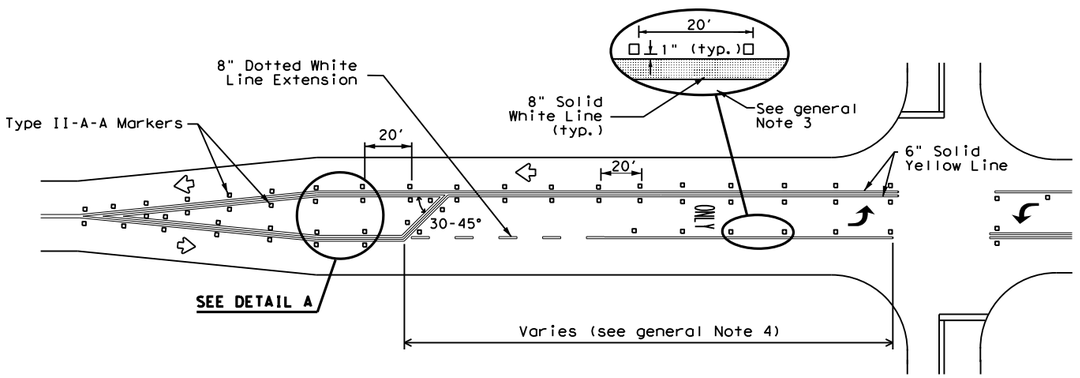


TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP

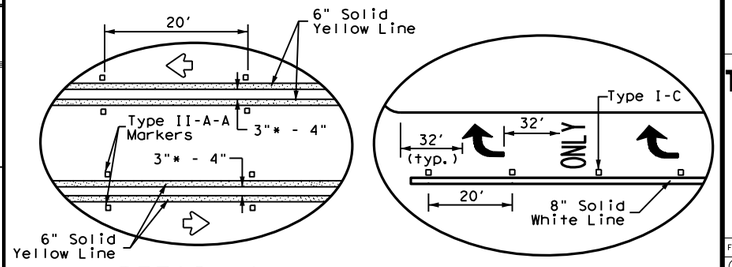


A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



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

GENERAL NOTES

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

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

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

Texas Department of Transportation

Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS

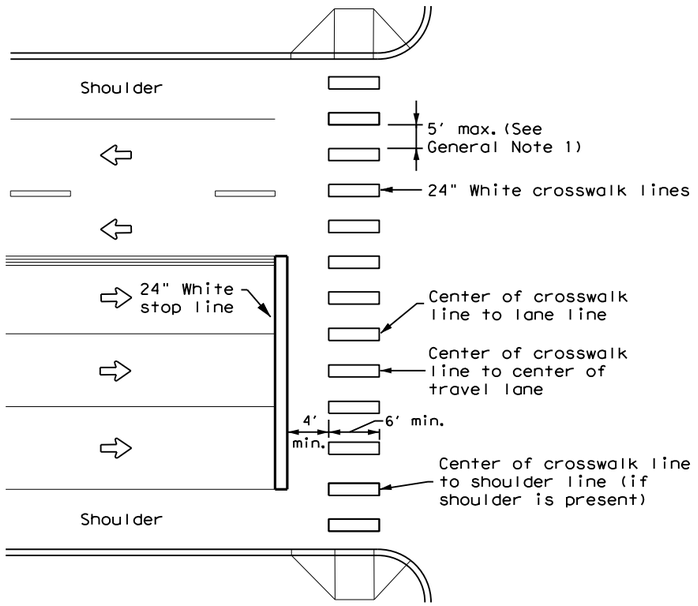
PM(3)-22

FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-98 3-03 6-20 5-00 2-10 12-22 8-00 2-12	0915	00	252	VARIOUS
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		133

22C

DATE:
FILE:

DATE:
FILE:



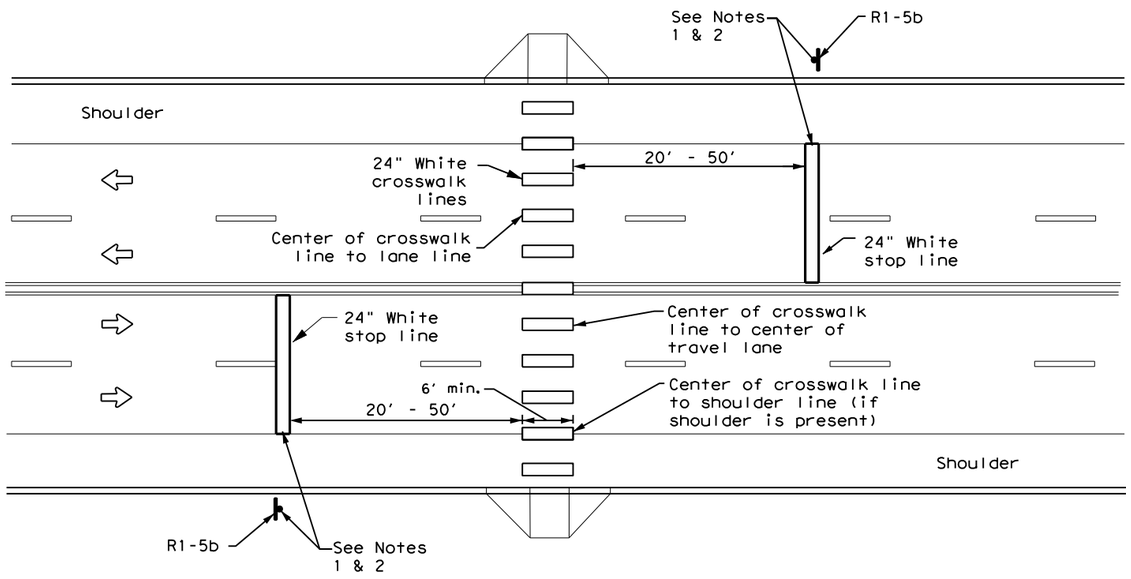
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

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

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

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



UNSIGNALIZED MIDBLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES:

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

Texas Department of Transportation

Traffic Safety Division Standard

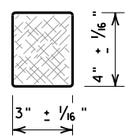
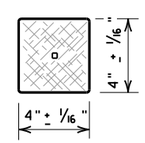
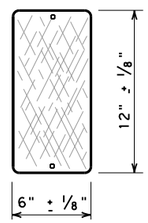
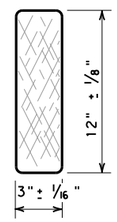
CROSSWALK PAVEMENT MARKINGS

PM(4)-22A

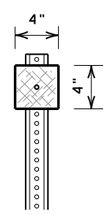
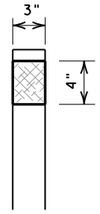
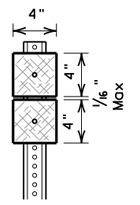
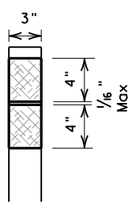
FILE: pm4-22a.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	0915	00	252	VARIOUS
6-20	DIST	COUNTY		SHEET NO.
6-22	SAT	BEXAR		134
12-22				

22D

REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (flx). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

DELINEATORS

	SINGLE		DOUBLE	
DEVICE				
	1-Size 2 reflector unit	1-Size 1 reflector unit	2-Size 2 reflector units	2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

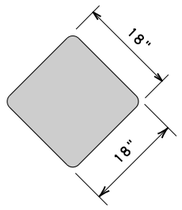
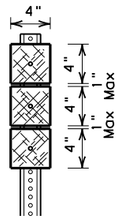
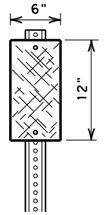
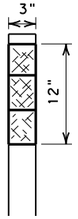
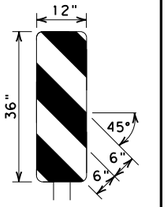
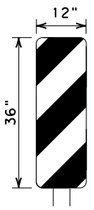
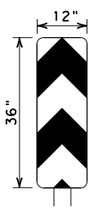
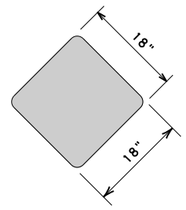
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s)(Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

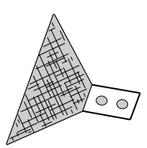
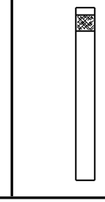
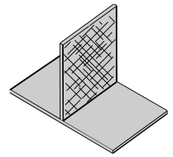
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE								
		3-Size 2 reflector units	1-Size 3 reflector unit	3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

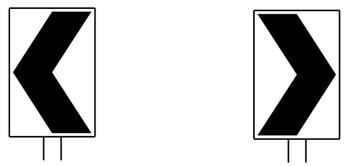
DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

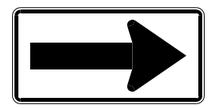
BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE	 W1-8			
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	
NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).			

ONE DIRECTION LARGE ARROW

DEVICE	 W1-6	
SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:

Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20				135

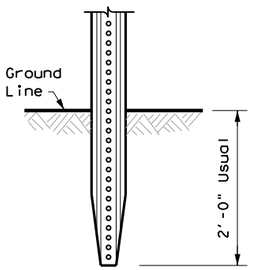
20A

DATE:
FILE:

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

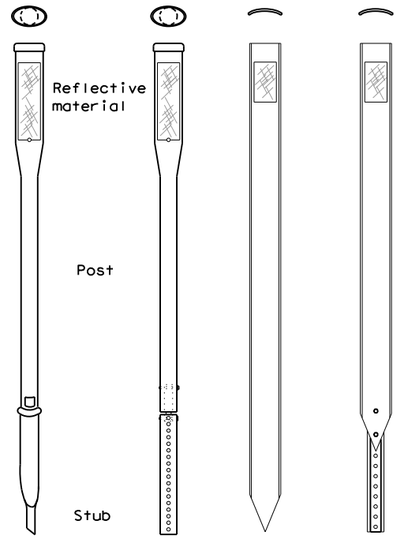


NOTES

1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

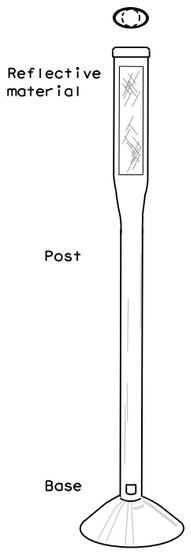
FLEXIBLE POSTS (YFLX, WFLX)

GND



EMBEDDED

SRF



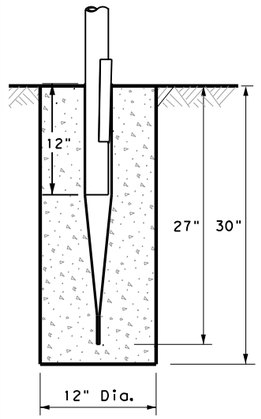
SURFACE MOUNT

NOTES

1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

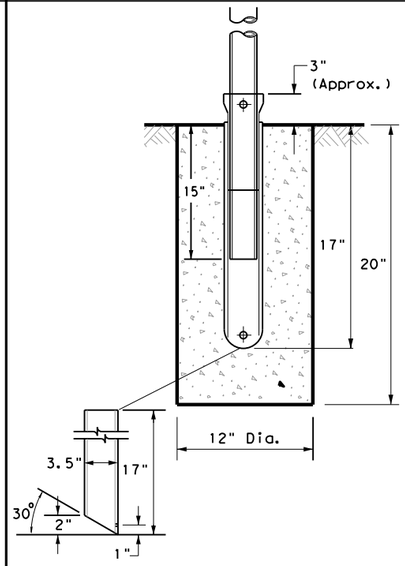
WEDGE ANCHOR SYSTEMS

WAS



STEEL

WAP



PLASTIC

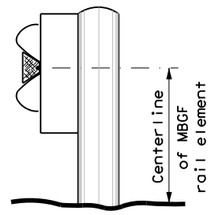
NOTE

1. Install per manufacturer's recommendations.

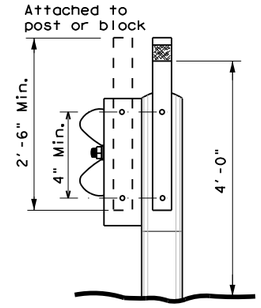
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

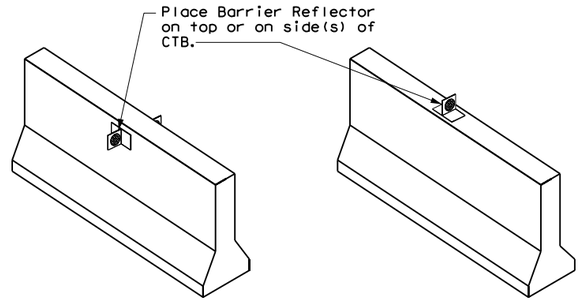
GF1



GF2



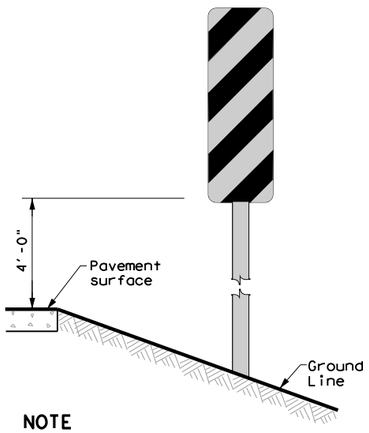
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

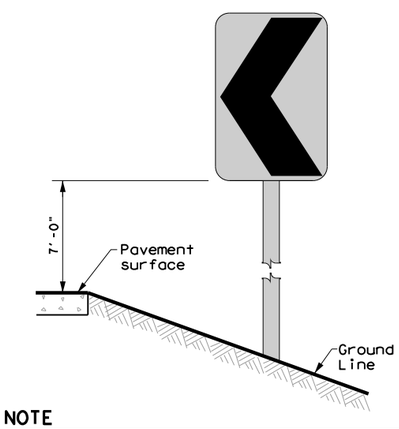
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

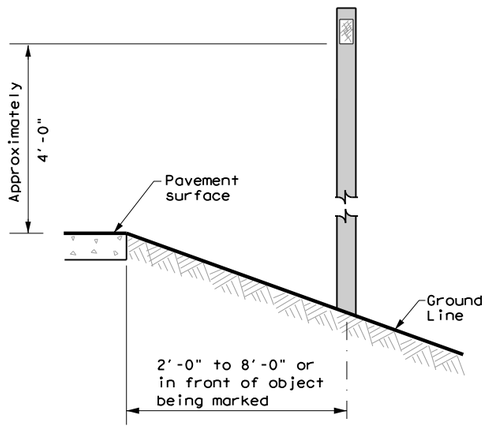
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

FILE: dom2-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10 7-20				136

20B

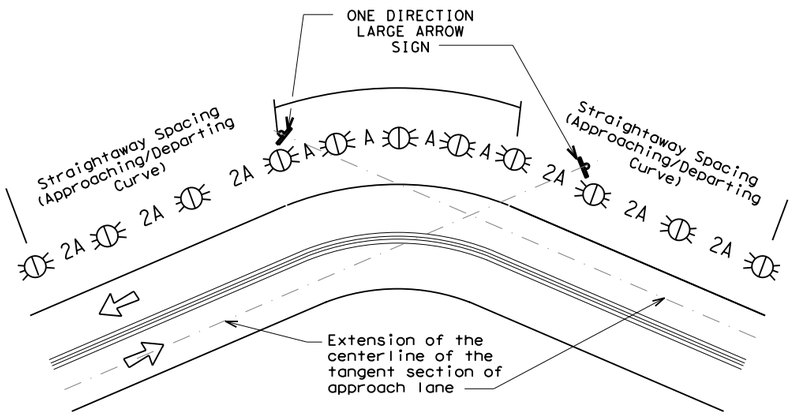
DATE:
FILE:

MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

Curve Spacing

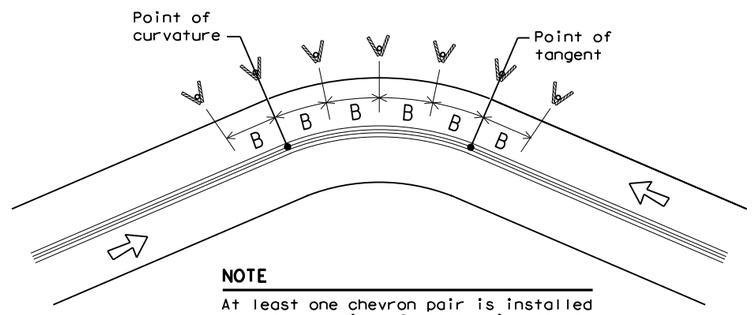
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DATE:
FILE:

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	FEET			
	Radius of Curve	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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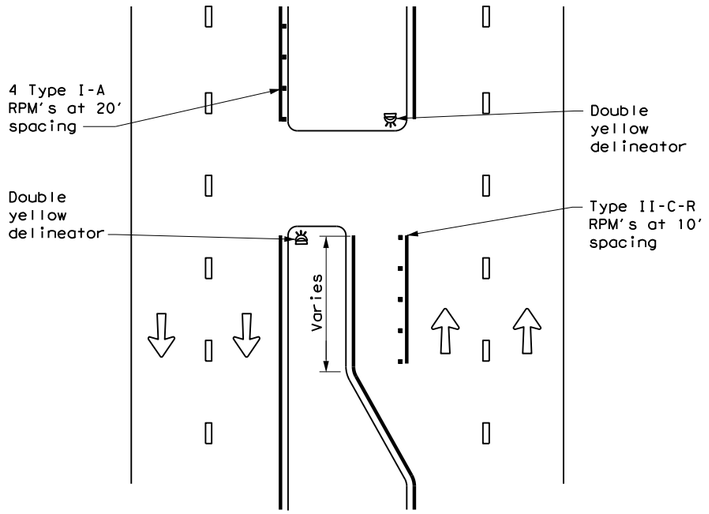
REVISIONS				
3-15 8-15	DIST	COUNTY		SHEET NO.
8-15 7-20				137

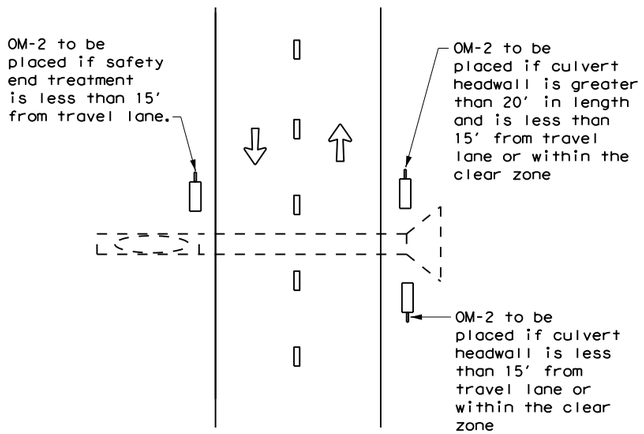
20C

CROSSOVERS



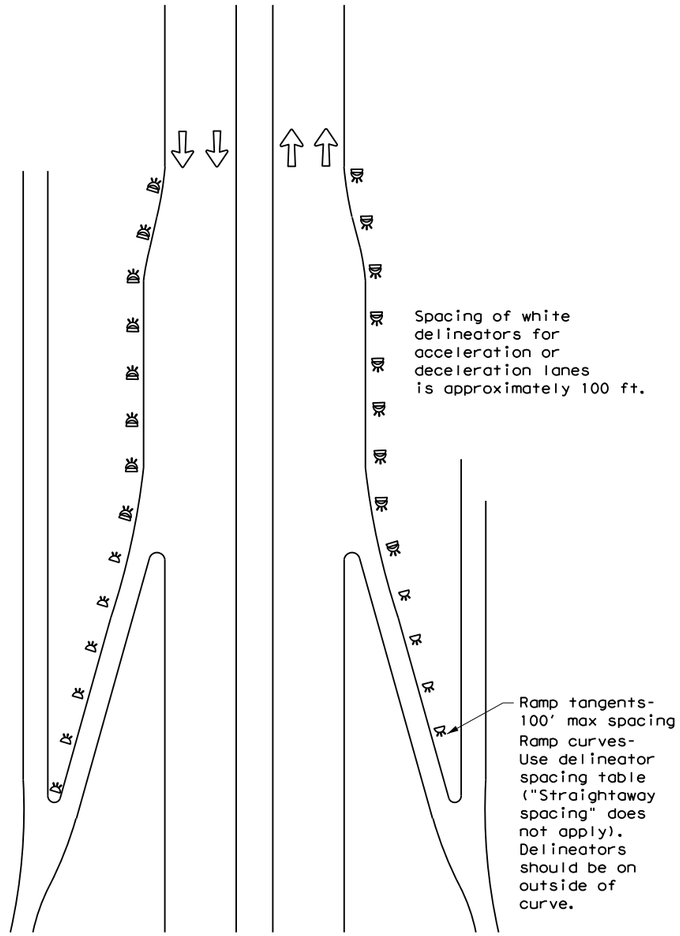
DETAIL 1

FOR CULVERTS WITHOUT MBGF



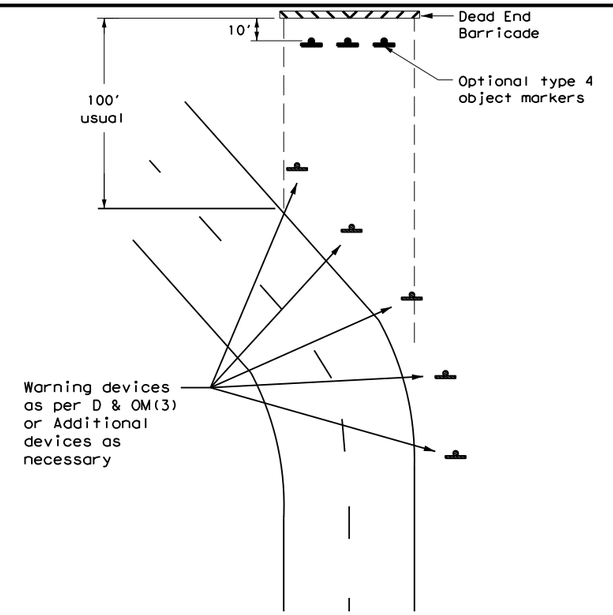
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



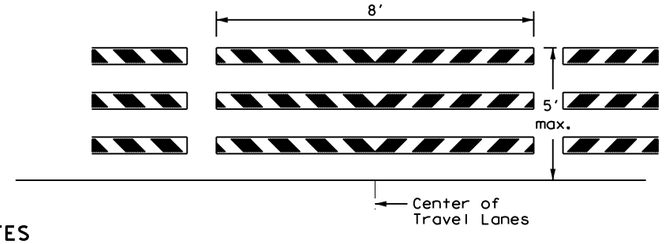
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation

Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

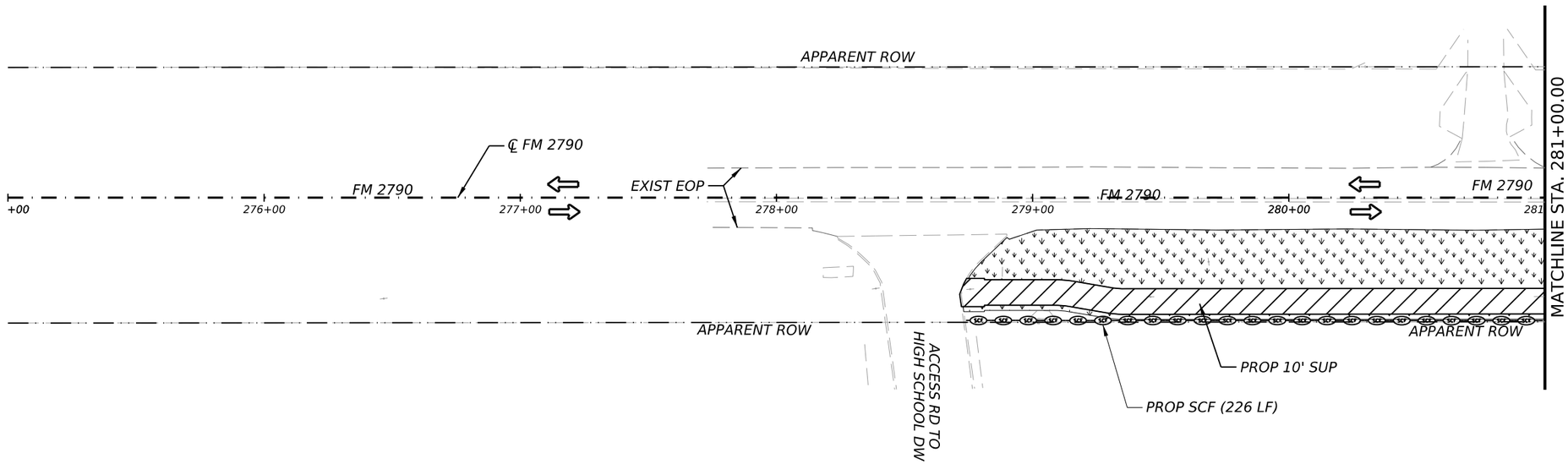
D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS 3-15 7-20	DIST	COUNTY		SHEET NO. 138

20D

DATE:
FILE:

ITEM	DESCRIPTION	UNIT	QTY
0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	2016
0162 6002	BLOCK SODDING	SY	2016
0166 6002	FERTILIZER	TON	1.9
0168 6001	VEGETATIVE WATERING	MG	31.5
0506 6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	-
0506 6011	ROCK FILTER DAMS (REMOVE)	LF	-
0506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	746
0506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	746

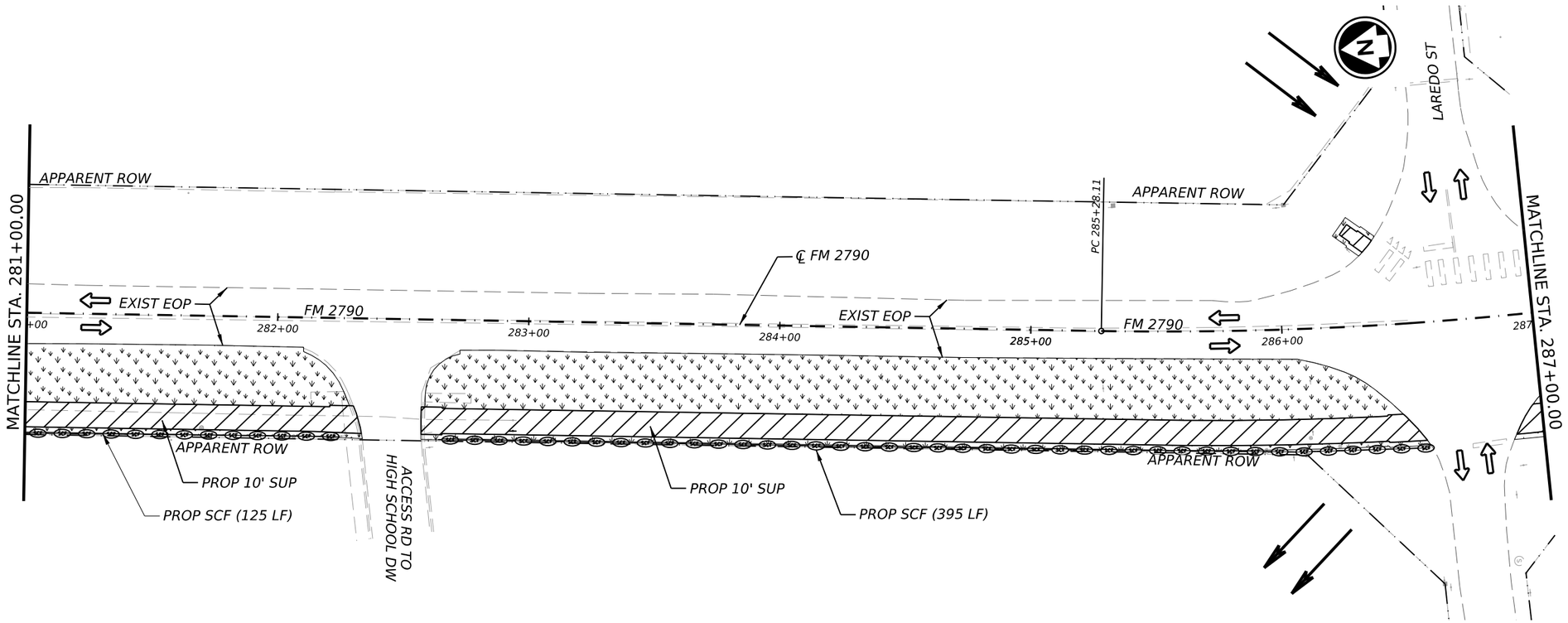


LEGEND

- EXISTING TRAFFIC
- FLOW DIRECTION
- PROPOSED WORK AREA
- SODDING
- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)

0 25 50

SCALE: 1"=50' H



STATE OF TEXAS
ROGER F. SORENSON
136831
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

SW3P GENERAL LAYOUT

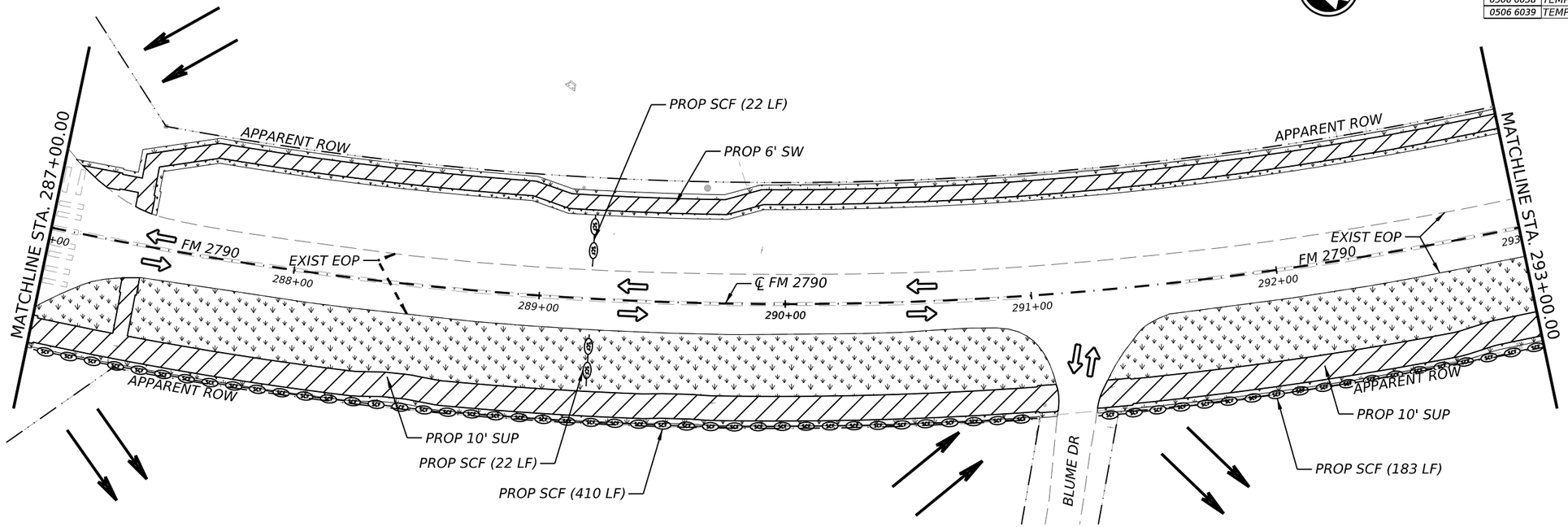
SHEET 1 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		139

DATE: 8/22/2023 9:39:33 PM
FILE: ...\FM2790SW3P001.dgn

CK:
DW:
CK:
DW:

ITEM	DESCRIPTION	UNIT	QTY
0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	3666
0162 6002	BLOCK SODDING	SY	3666
0166 6002	FERTILIZER	TON	3.5
0168 6001	VEGETATIVE WATERING	MG	57.2
0506 6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	36
0506 6011	ROCK FILTER DAMS (REMOVE)	LF	36
0506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	1262
0506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	1262

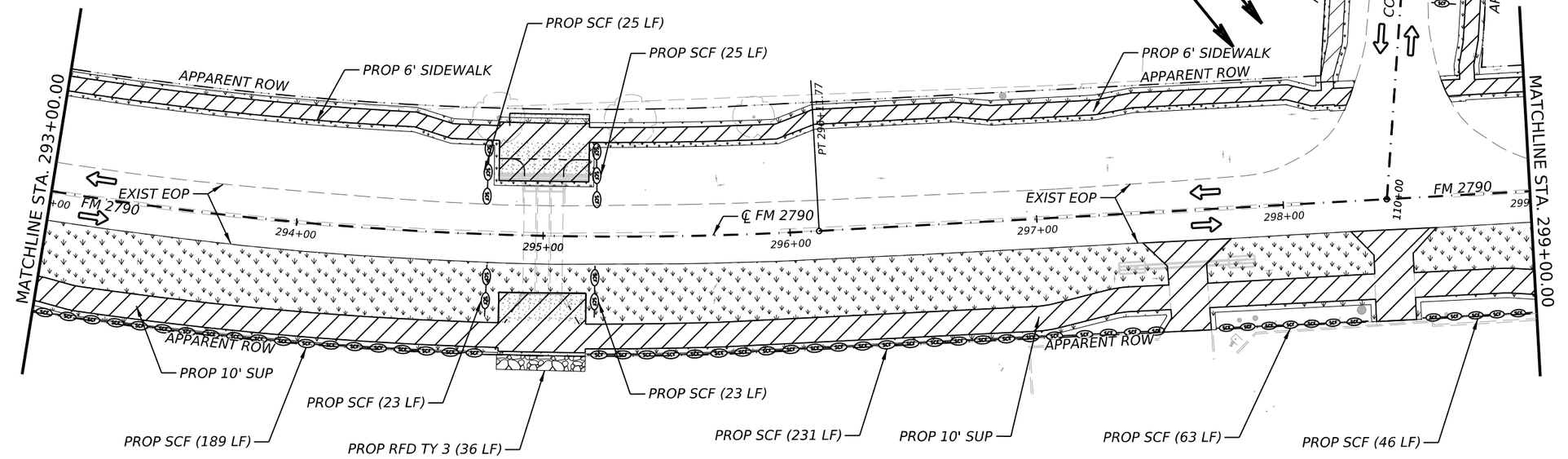


LEGEND

- EXISTING TRAFFIC
- FLOW DIRECTION
- PROPOSED WORK AREA
- SODDING
- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)

0 25 50

SCALE: 1"=50' H



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FM2790,COTTAGE,PRAIRIE

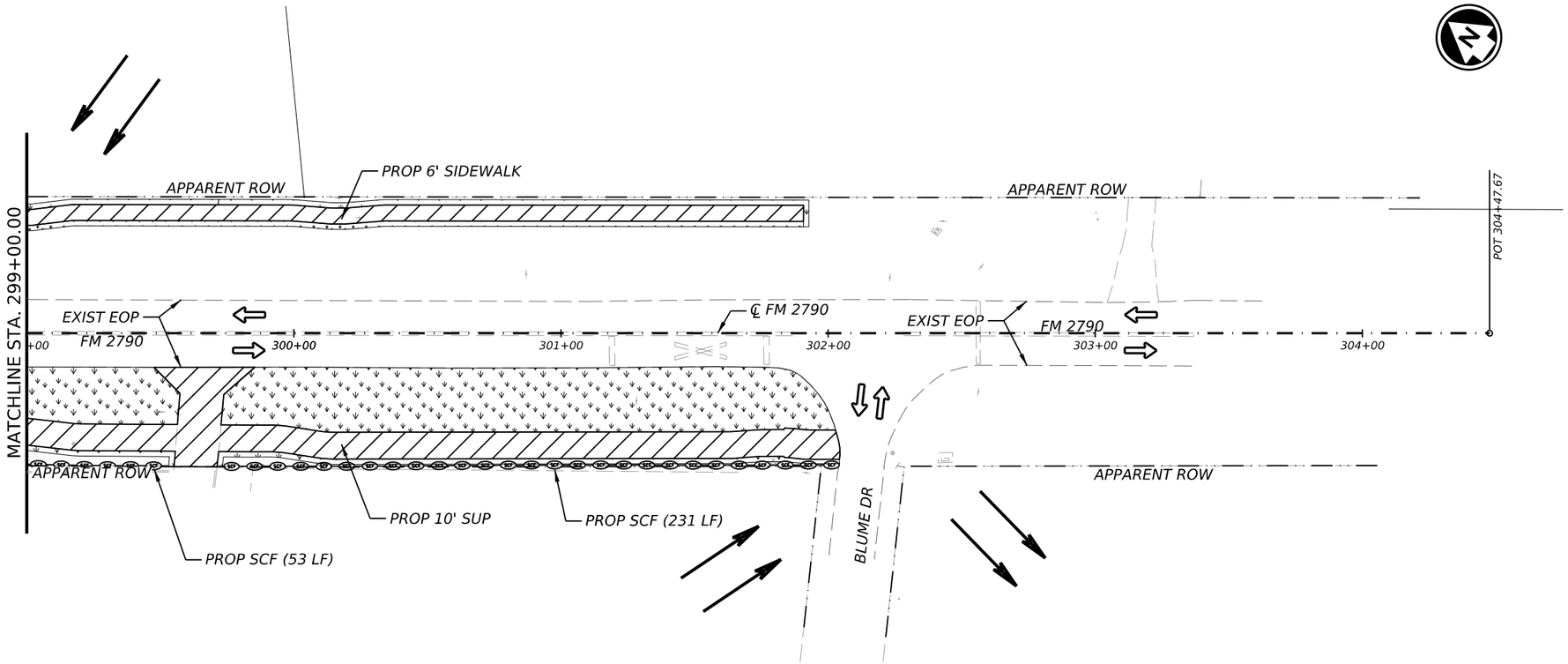
SW3P GENERAL LAYOUT

SHEET 2 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		140

DATE: 8/22/2023 9:39:51 PM
FILE: ...\FM2790SW3P002.dgn

0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	903
0162 6002	BLOCK SODDING	SY	903
0166 6002	FERTILIZER	TON	0.9
0168 6001	VEGETATIVE WATERING	MG	14.1
0506 6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	-
0506 6011	ROCK FILTER DAMS (REMOVE)	LF	-
0506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	284
0506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	284



LEGEND

- EXISTING TRAFFIC
- FLOW DIRECTION
- PROPOSED WORK AREA
- SODDING
- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)

0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

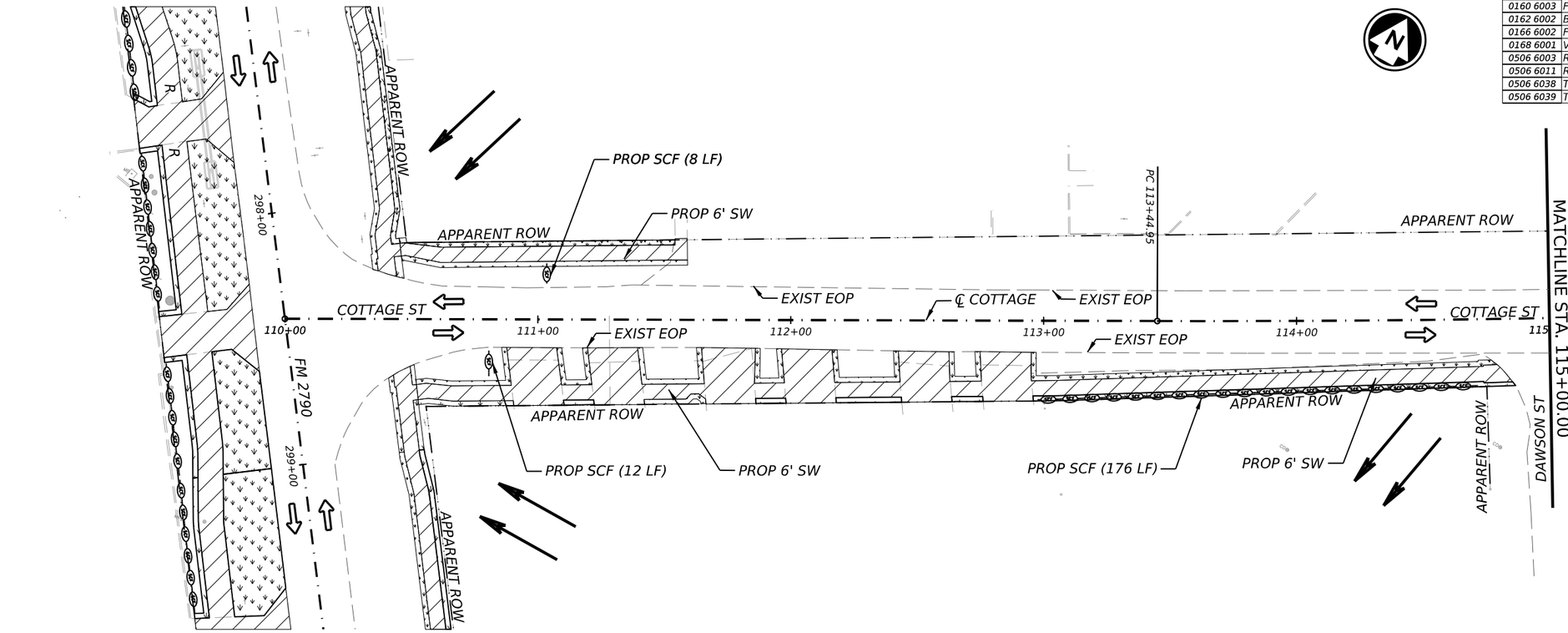
SW3P GENERAL LAYOUT

SHEET 3 OF 3

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		141

DATE: 8/22/2023 9:40:27 PM
FILE: ...\FM2790SW3P003.dgn

ITEM	DESCRIPTION	UNIT	QTY
0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	565
0162 6002	BLOCK SODDING	SY	565
0166 6002	FERTILIZER	TON	0.5
0168 6001	VEGETATIVE WATERING	MG	8.8
0506 6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	-
0506 6011	ROCK FILTER DAMS (REMOVE)	LF	-
0506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	588
0506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	588

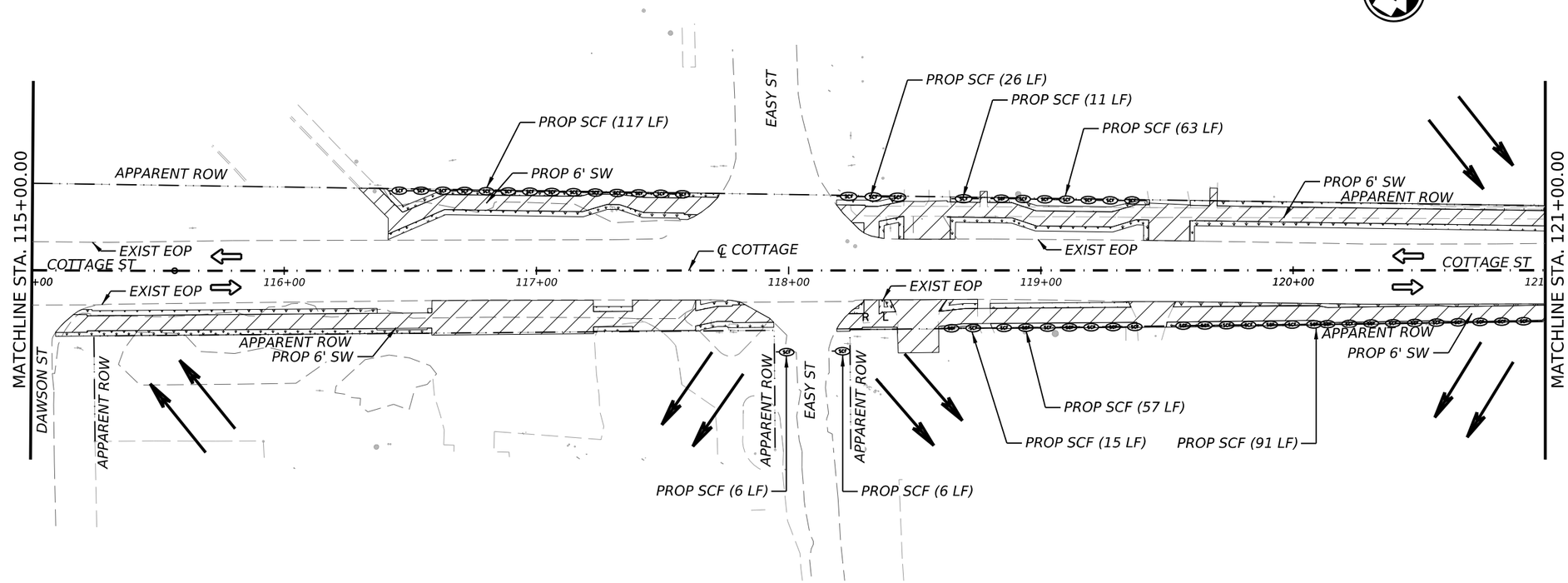


LEGEND

- EXISTING TRAFFIC
- FLOW DIRECTION
- PROPOSED WORK AREA
- SODDING
- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)

0 25 50

SCALE: 1"=50' H



STATE OF TEXAS
ROGER F. SORENSON
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8/22/2023

NO	DATE	REVISION	APPROVED

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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

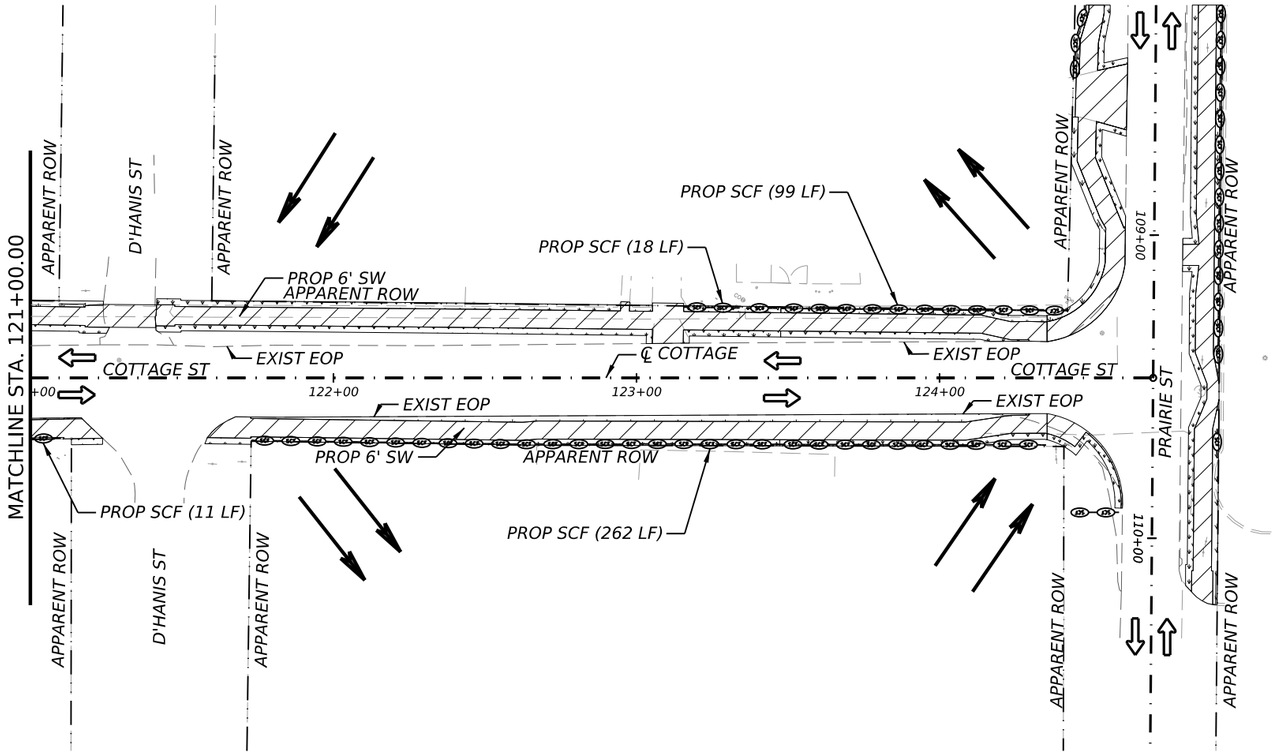
COTTAGE STREET SW3P GENERAL LAYOUT

SHEET 1 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		142

DATE: 8/22/2023 9:40:47 PM
FILE: ...\CTGSW3P001.dgn

ITEM	DESCRIPTION	UNIT	QTY
0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	238
0162 6002	BLOCK SODDING	SY	238
0166 6002	FERTILIZER	TON	0.2
0168 6001	VEGETATIVE WATERING	MG	3.7
0506 6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	-
0506 6011	ROCK FILTER DAMS (REMOVE)	LF	-
0506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	390
0506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	390



LEGEND

- EXISTING TRAFFIC
- FLOW DIRECTION
- PROPOSED WORK AREA
- SODDING
- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)

0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
ROGER F. SORENSON
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San Antonio, Tx 78258
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Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

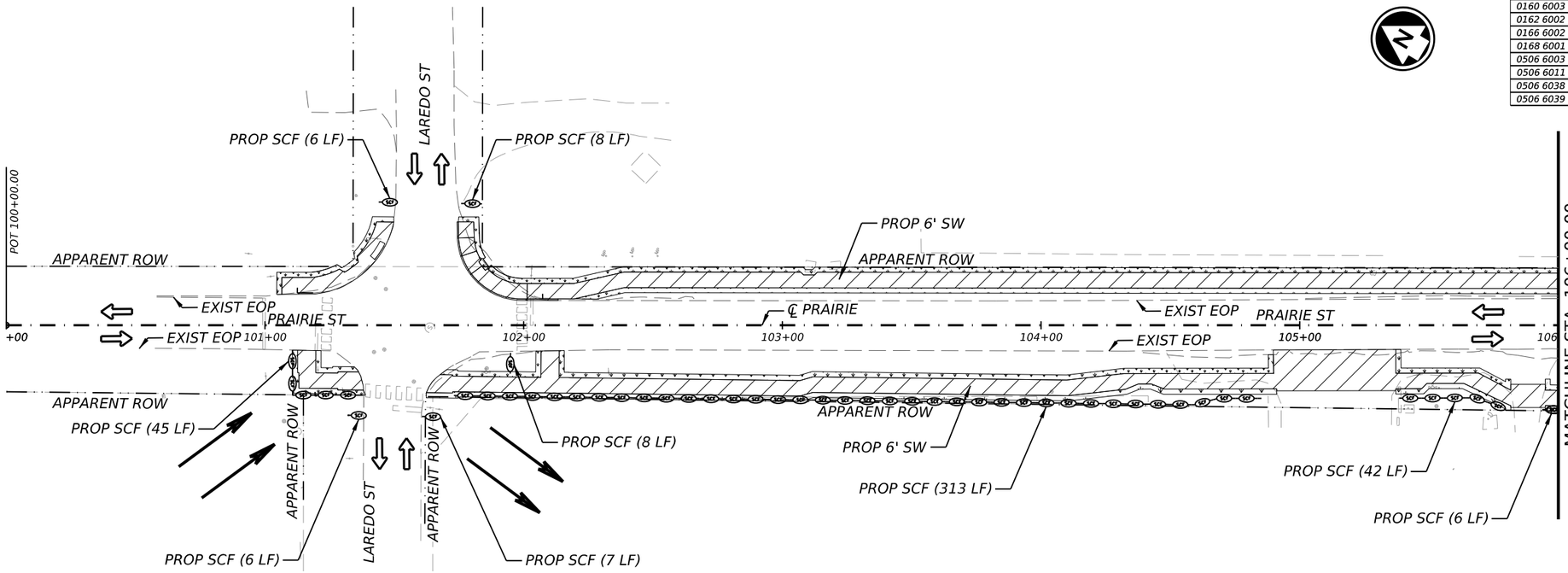
COTTAGE STREET SW3P GENERAL LAYOUT

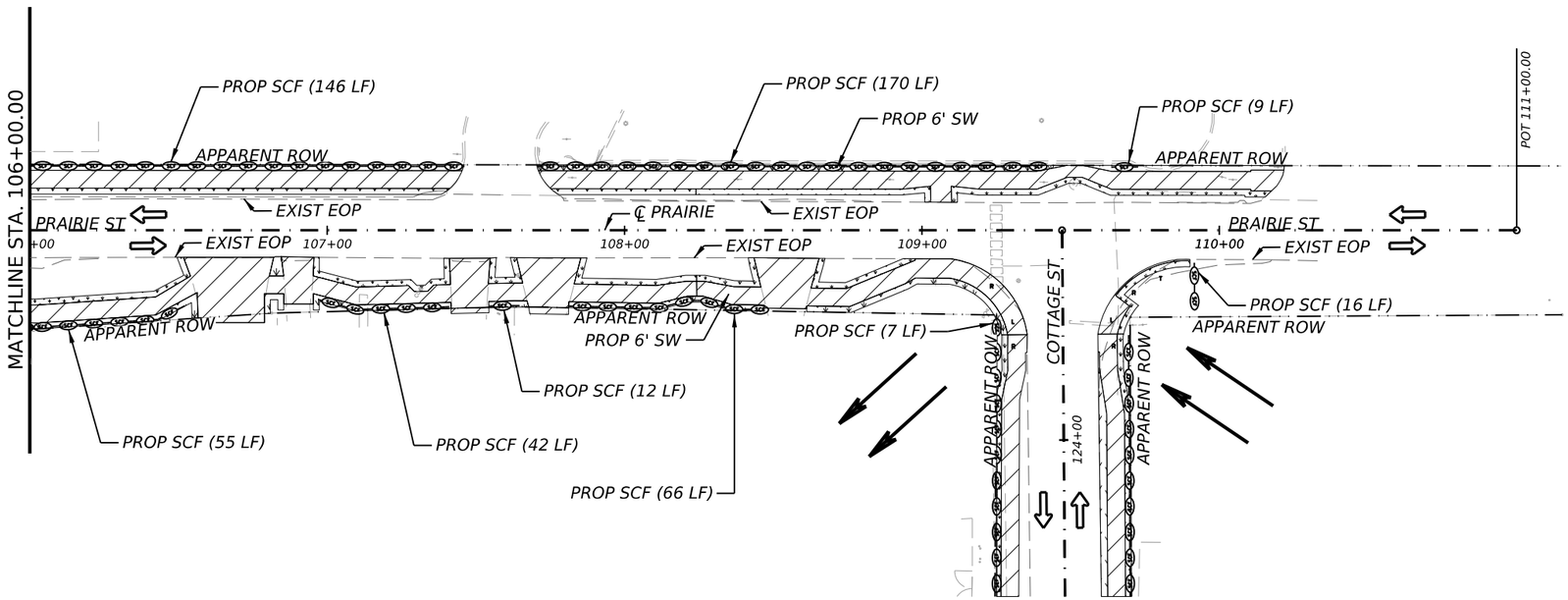
SHEET 2 OF 2

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		143

DATE: 8/22/2023 9:41:07 PM
FILE: ...\CTGSW3P002.dgn

ITEM	DESCRIPTION	UNIT	QTY
0160 6003	FURNISHING AND PLACING TOPSOIL (4")	SY	684
0162 6002	BLOCK SODDING	SY	684
0166 6002	FERTILIZER	TON	0.7
0168 6001	VEGETATIVE WATERING	MG	10.7
0506 6003	ROCK FILTER DAMS (INSTALL) (TY 3)	LF	-
0506 6011	ROCK FILTER DAMS (REMOVE)	LF	-
0506 6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	964
0506 6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	964





LEGEND

- EXISTING TRAFFIC
- FLOW DIRECTION
- PROPOSED WORK AREA
- SODDING
- SEDIMENT CONTROL FENCE
- ROCK FILTER DAM (TY 3)

0 25 50

SCALE: 1"=50' H

STATE OF TEXAS
ROGER F. SORENSON
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LICENSED
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8/22/2023

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TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

PRAIRIE STREET SW3P GENERAL LAYOUT

SHEET 1 OF 1

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		144

DATE: 8/22/2023 9:41:26 PM
FILE: ...\PRASW3P001.dgn

DN: CK: DW: CK:

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit (CGP) required for projects with 1 or more acres distrubed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

☐ 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 Storm Water Pollution Prevention Plan (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 Texas Commission on Environmental Quality (TCEQ), Environmental Protection Agency (EPA) or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, Contractor shall submit Notice of Intent (NOI) to TCEQ and the Engineer.
5. NOI required: ☐Yes ☒No

Note: If amount of soil disturbance changes, permit requirements may change.

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

US Army Corps of Engineers (USACE) Permit required for filling, dredging, excavating or other work in any potential USACE jurisdictional water, such as, rivers, creeks, streams, or wetlands.

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

☒ No Permit Required

☐ Nationwide Permit (NWP) 14 - Pre-construction Notice (PCN) not Required

☐ Nationwide Permit 14 - PCN Required

☐ 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 (BMPs) planned to control erosion, sedimentation and post-project total suspended solids (TSS).

1.

2.

3.

4.

401 Best Management Practices: (Not applicable if no USACE permit)

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	☐ Sedimentation Chambers
		☐ Grassy Swales

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

☐ No Action Required ☒ Required Action

Action No.

1. MIGRATORY BIRD NESTS: Schedule construction activities as needed to meet the following requirements:

   A. Do not remove or destroy any active migratory bird nests (nests containing eggs and/or flightless birds) at any time of year. If there are any active nests, they shall not be removed until the nests become inactive.

   B. On/in structures, if there are any active nests, they shall not be removed until all nests become inactive. After inactive nests are removed and/or before nest activity begins, deterrent materials may be applied to the structures to prevent future nest building.

2. See Item 5 in General Notes.

3.

4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediated area, and contact the Engineer immediately.

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 follwing 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

Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Does the project involve the demolition of a span bridge?

☐ Yes ☒ No (No further action required)

If "Yes", a pre- demolition notification must be submitted to the Texas Department of State Health Services. The contractor shall contact TxDOT's Project Engineer 25 calendar days prior to the demolition of the bridges(s) on the project to assist with the notification.

VII. OTHER ENVIRONMENTAL ISSUES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Texas Department of Transportation
San Antonio District Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

EPIC

FILE: epic_2015-10-09_SAT.dgn	DN: TxDOT		CK: TxDOT	DW: BW		CK: GAG
	CONT	SECT	JOB		HIGHWAY	
REVISIONS	0915	00	252		VARIOUS	
	DIST		COUNTY			SHEET NO.
	SAT		BEXAR			145

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with any soil disturbing activities, TxDOT will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SWP3 shall be kept in the appropriate TxDOT Area Office.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):
0915-00-0252

1.2 PROJECT LIMITS: 1) FM 2790 2) COTTAGE ST 3) N PRAIRIE ST

From: 1) LAREDO ST 2) FM 2790 3) LAREDO ST

To: 1) BLUME DR 2) N PAIRIE ST 3) COTTAGE ST

1.3 PROJECT COORDINATES:

BEGIN: (Lat) 29°14'14.88"N ,(Long) 98°48'19.66"W

END: (Lat) 29°13'53.29"N ,(Long) 98°48'13.34"W

1.4 TOTAL PROJECT AREA (Acres): 8.277

1.5 TOTAL AREA TO BE DISTURBED (Acres): 4.100

1.6 NATURE OF CONSTRUCTION ACTIVITY:
FOR THE CONSTRUCTION OF CURB RAMPS, SIDEWALKS AND OTHER PEDESTRIAN RELATED INFRASTRUCTURE IN BEXAR COUNTY

1.7 MAJOR SOIL TYPES:

Soil Type	Description
AmA	Amphion clay loam, 0 to 1 percent slopes
AmB	Amphion clay loam, 1 to 3 percent slopes
DwC	Duval loamy fine sand, 0 to 5 percent slopes
MgA	Miguel fine sandy loam, 0 to 1 percent slopes
MhA	Poteet soils, 0 to 1 percent slopes, frequently flooded
WbB	Webb fine sandy loam, 1 to 3 percent slopes
WoB	Wilco loamy fine sand, 0 to 3 percent slopes

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):
PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☐ PSLs determined during construction
- ☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:
(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- X Mobilization
- X Install sediment and erosion controls
- ☐ Blade existing topsoil into windrows, prep ROW, clear and grub
- X Remove existing pavement
- X Grading operations, excavation, and embankment
- ☐ Excavate and prepare subgrade for proposed pavement widening
- X Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- X Install proposed pavement per plans
- X Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- X Place flex base
- X Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- X Revegetation of unpaved areas
- X Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☐ Sediment laden stormwater from stormwater conveyance over disturbed area
- X Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☐ Solvents, paints, adhesives, etc. from various construction activities
- X Transported soils from offsite vehicle tracking
- ☐ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☐ Sanitary waste from onsite restroom facilities
- X Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.11 RECEIVING WATERS:
Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- X Development of plans and specifications
- X Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- X Post Construction Site Notice
- X Submit NOI/CSN to local MS4
- X Perform SWP3 inspections
- X Maintain SWP3 records and update to reflect daily operations
- X Complete and submit Notice of Termination to TCEQ
- X Maintain SWP3 records for 3 years
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- X Day To Day Operational Control
- X Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- X Post Construction Site Notice
- X Submit NOI/CSN to local MS4
- X Maintain schedule of major construction activities
- X Install, maintain and modify BMPs
- X Complete and submit Notice of Termination to TCEQ
- X Maintain SWP3 records for 3 years
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
..	..		146
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	BEXAR	
CONT.	SECT.	JOB	HIGHWAY NO.
0915	00	252	VARIOUS

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ X Permanent Planting, Sodding or Seeding
- ☐ ☐ Biodegradable Erosion Control Logs
- X ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ X Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☐ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- ☐ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- X ☐ Sediment Control Fence
- ☐ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - ☐ Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☐ Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☐ Stabilized construction exit
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☐ Chemical Management
- ☐ Concrete and Materials Waste Management
- ☐ Debris and Trash Management
- ☐ Dust Control
- ☐ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- X Fire hydrant flushings
- X Irrigation drainage
- X Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- X Potable water sources
- X Springs
- X Uncontaminated groundwater
- X Water used to wash vehicles or control dust
- X Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by TxDOT as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3 .

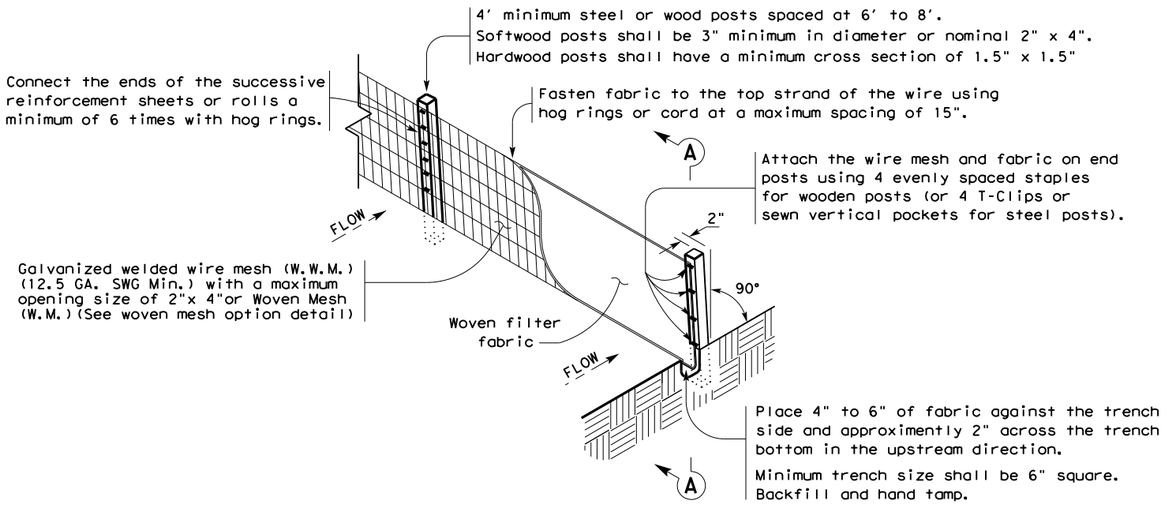
2.9 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

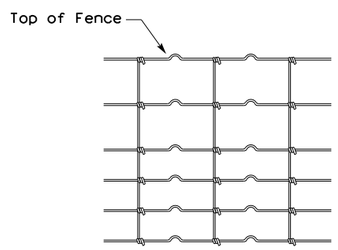
Texas Department of Transportation

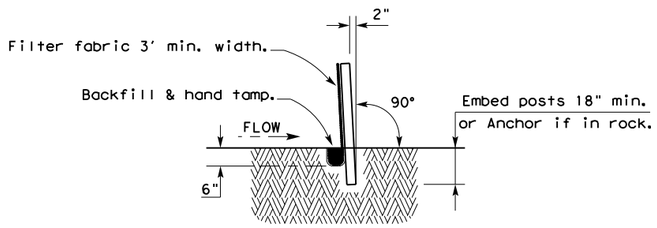
FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
..	..		147
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	BEXAR	
CONT.	SECT.	JOB	HIGHWAY NO.
0915	00	252	VARIOUS



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a maximum flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

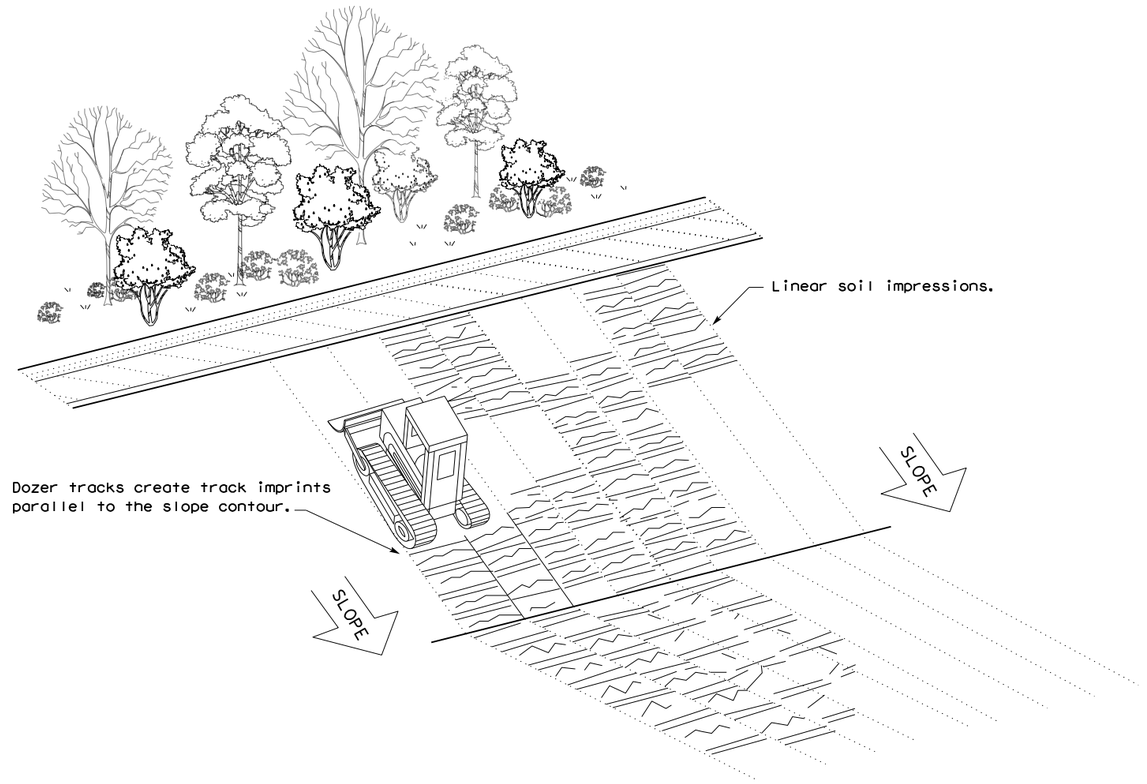
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT		CK: KM		DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB			HIGHWAY
REVISIONS	0915	00	252			VARIOUS
	DIST		COUNTY			SHEET NO.
	SAT		BEXAR			148

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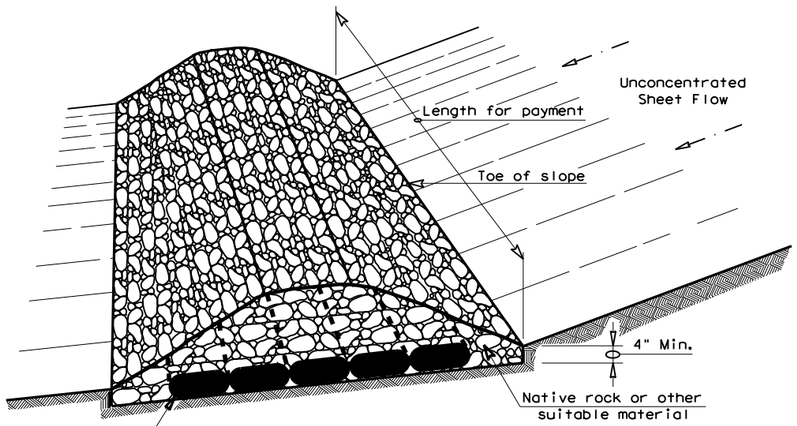
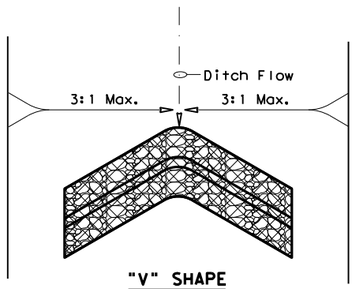
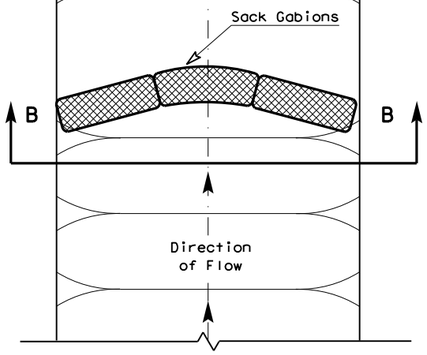


FILTER DAM AT TOE OF SLOPE

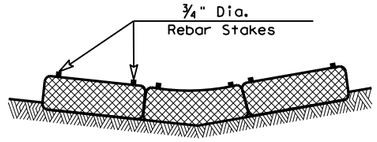
RFD1



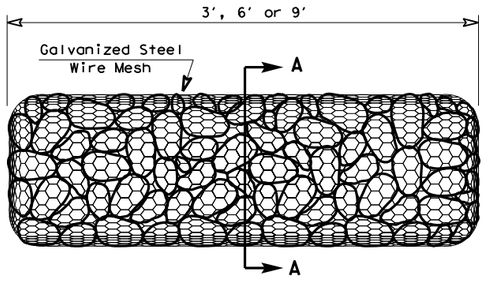
"V" SHAPE PLAN VIEW



PLAN VIEW

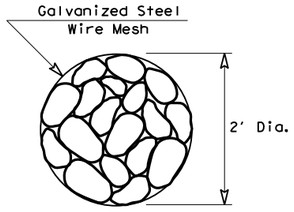


SECTION B-B

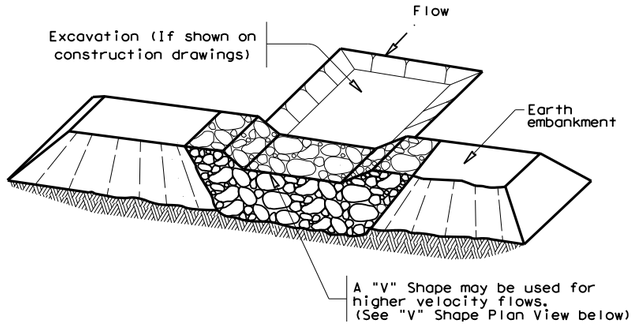


TYPE 4 (SACK GABIONS)

RFD4

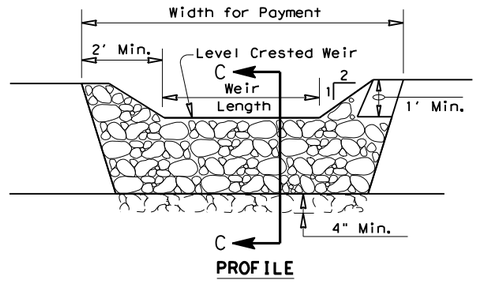


SECTION A-A



FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



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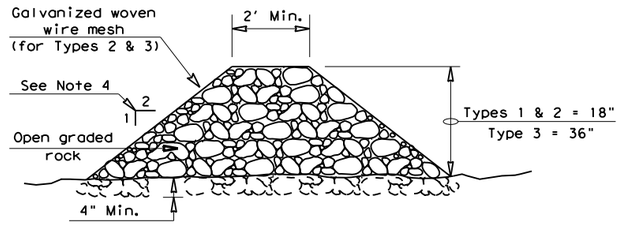
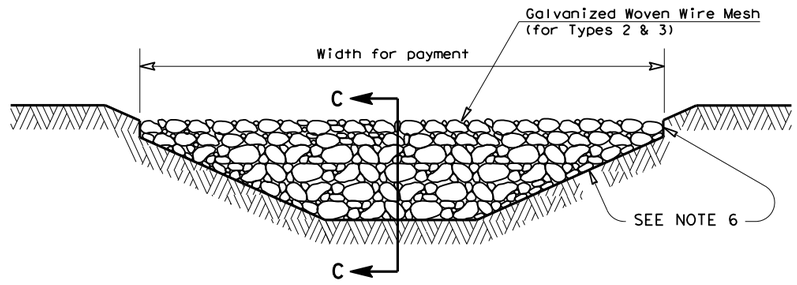


SECTION C-C



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	0915	00	252		VARIOUS	
	DIST	COUNTY			SHEET NO.	
	SAT	BEXAR			149	

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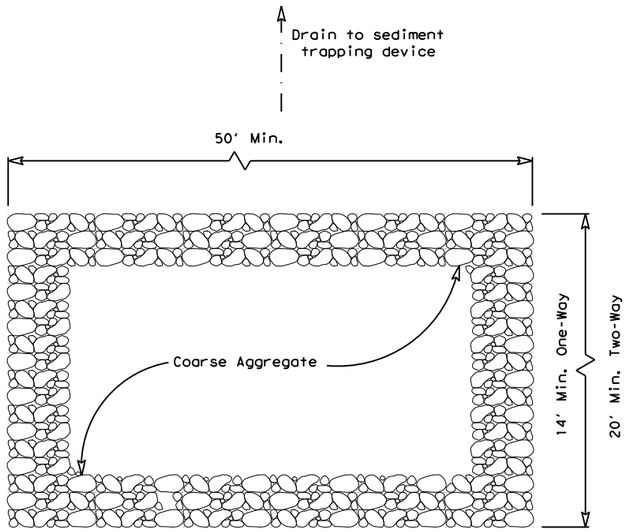
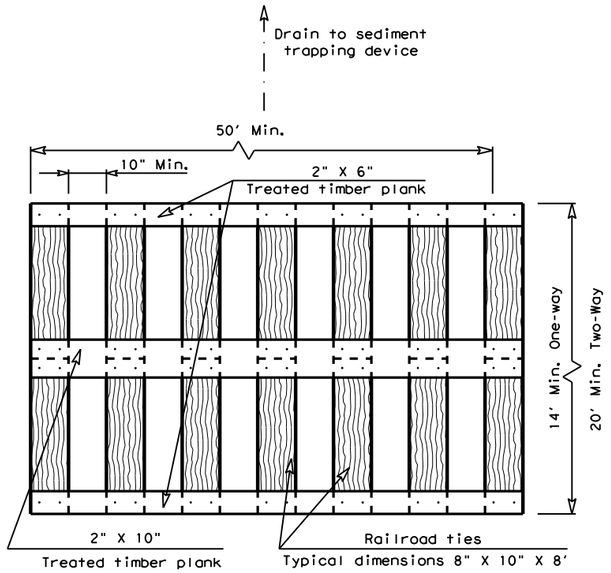


PLAN VIEW



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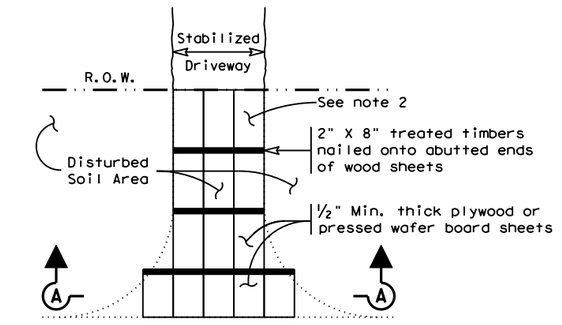
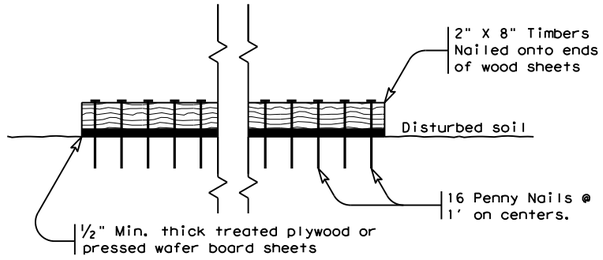


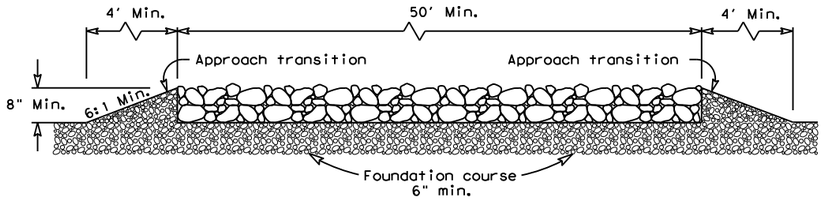
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

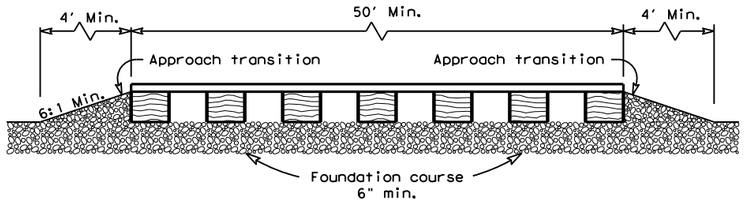
SHORT TERM



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	
©TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
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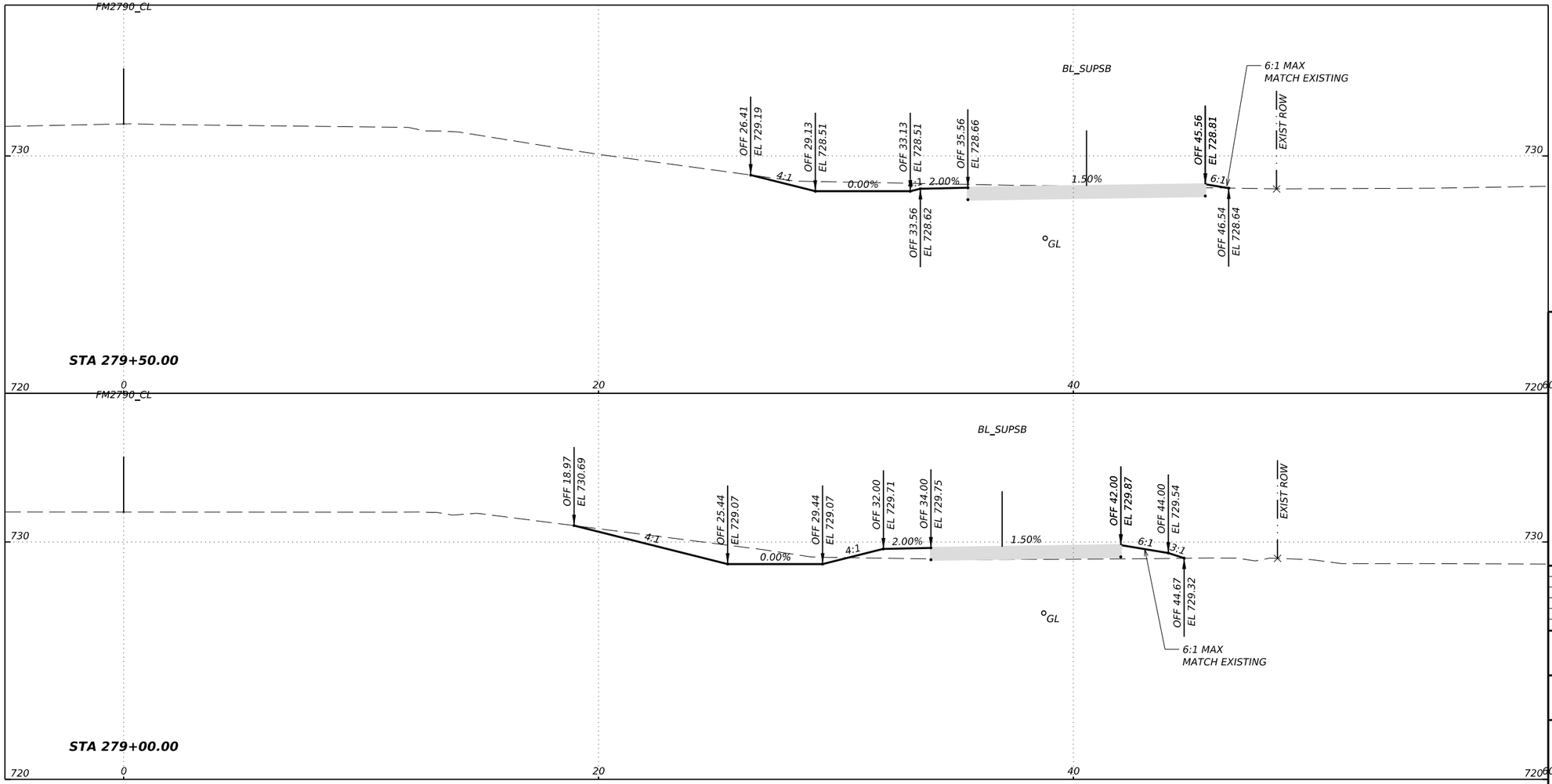
	SAT	BEXAR		150	



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STATE OF TEXAS
ROGER F. SORENSON
136831
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8/22/2023

NO	DATE	REVISION	APPROVED

Michael Baker INTERNATIONAL
17721 Rogers Ranch Pkwy, Suite 250
San Antonio, Tx 78258
Phone: (210) 408-3700
MBAKERINTL.COM
TBPE Registration No. F-2677

Texas Department of Transportation

FM2790,COTTAGE,PRAIRIE

PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 1 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		151

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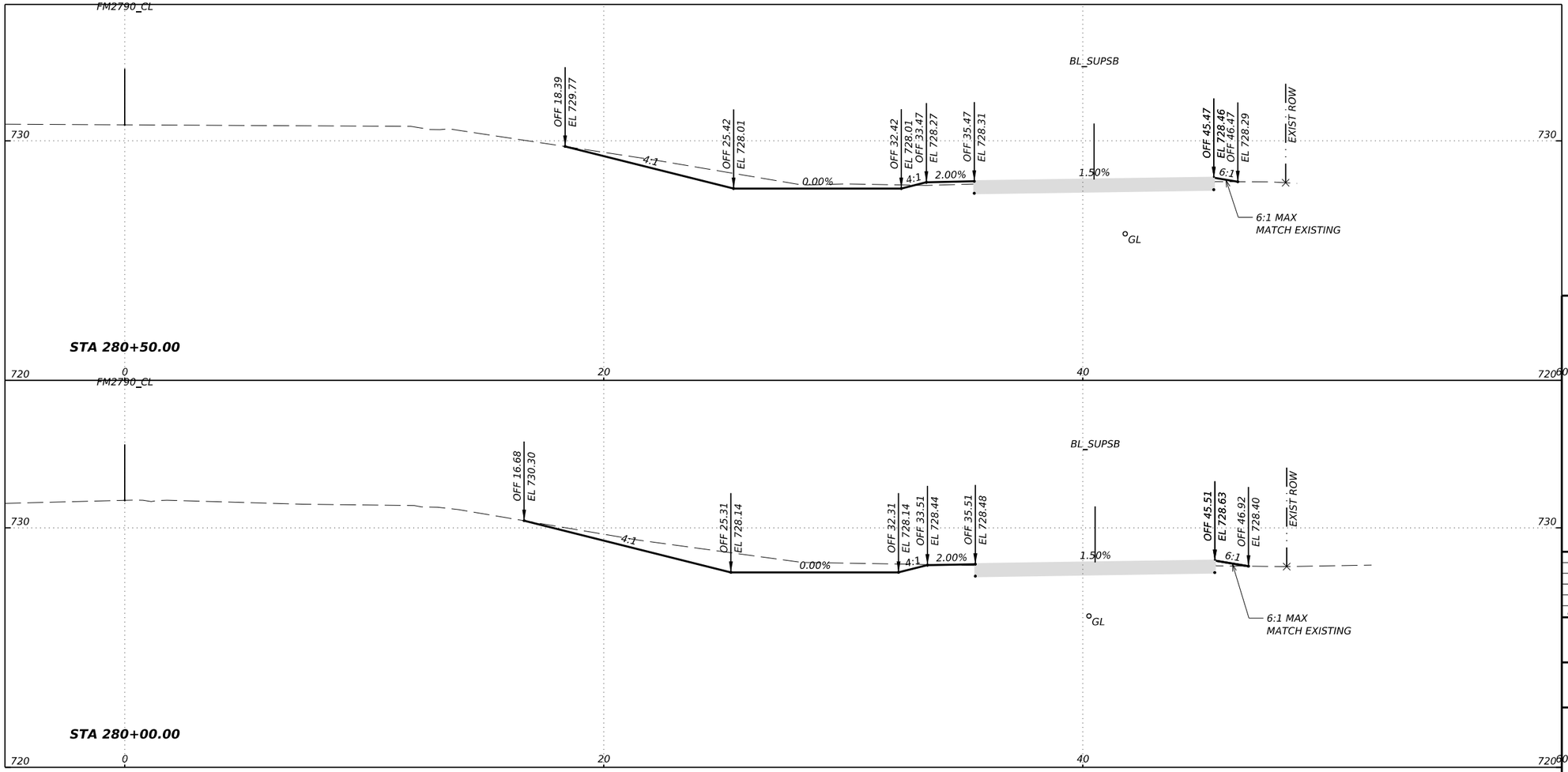

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FM2790,COTTAGE,PRAIRIE

PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 2 OF 21

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DIST	COUNTY		SHEET NO.
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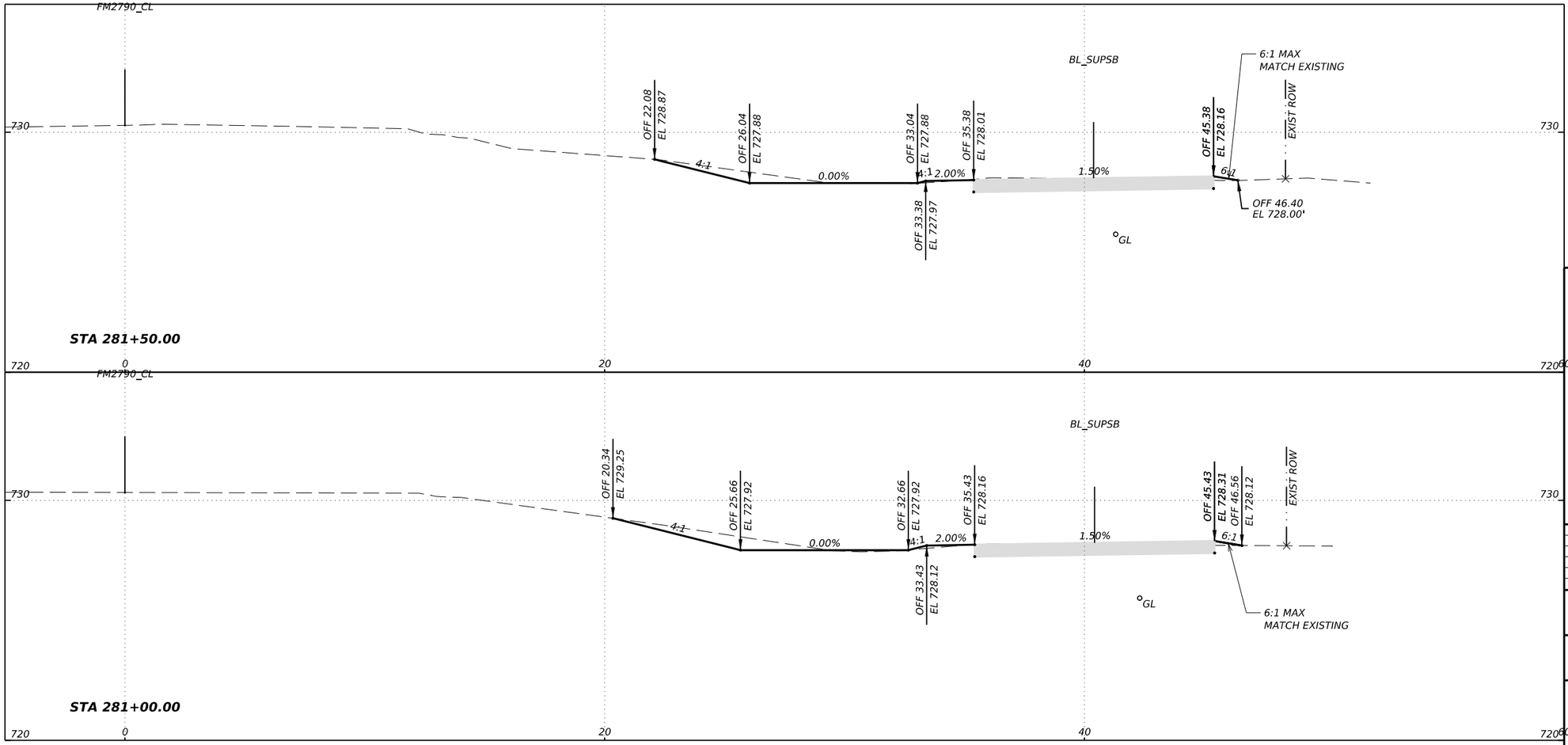

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 3 OF 21

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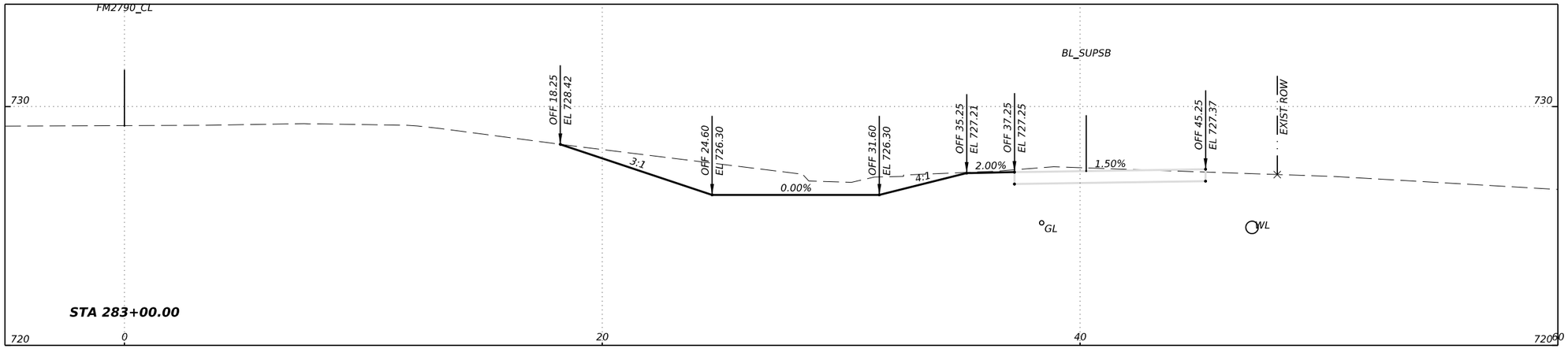

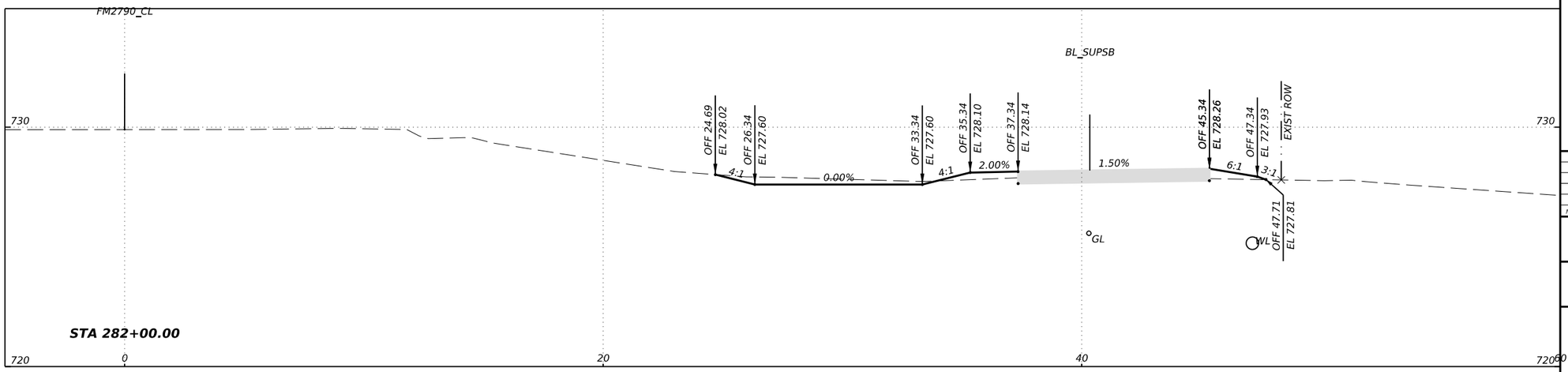

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 4 OF 21

CONT	SECT	JOB	HIGHWAY
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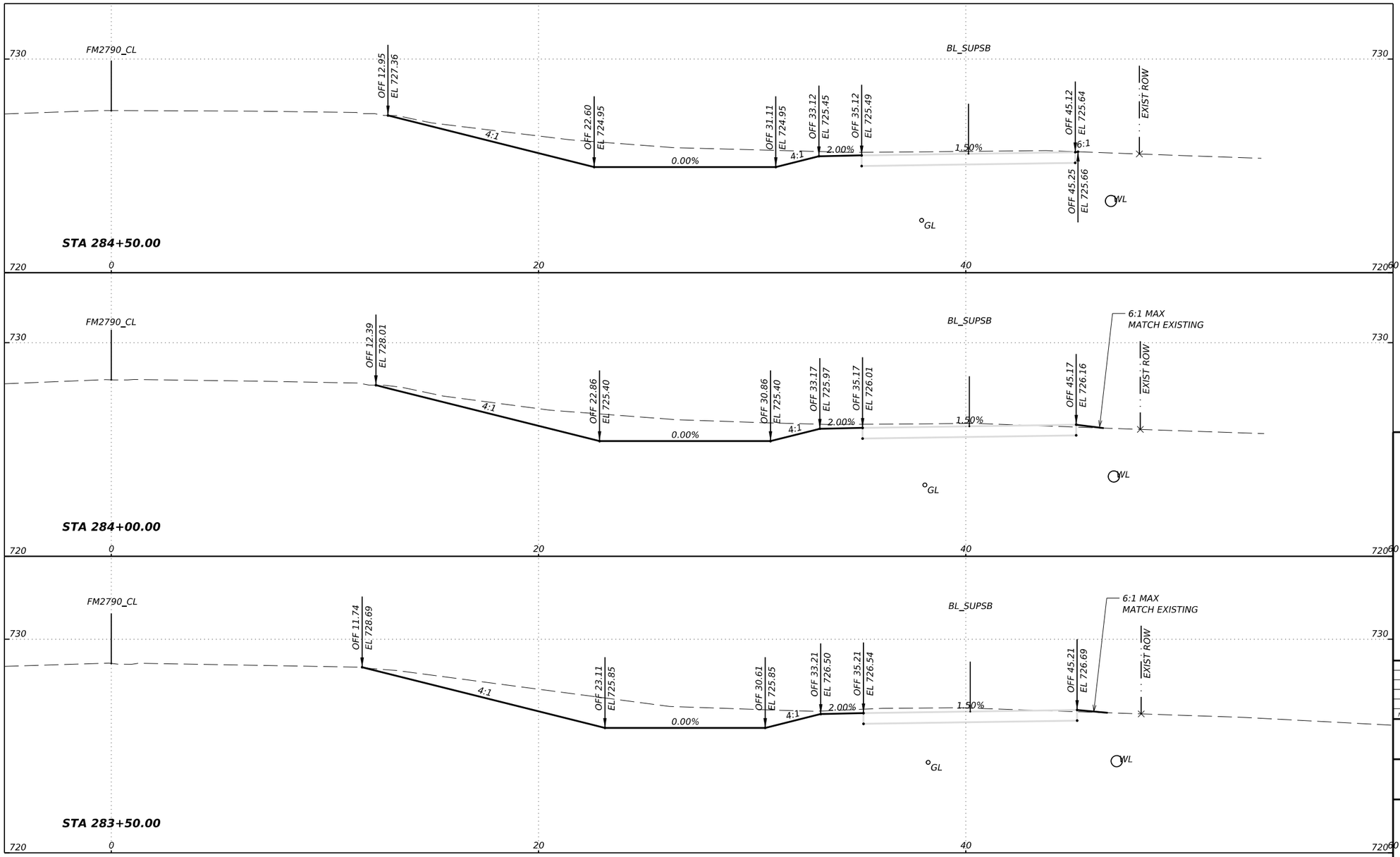

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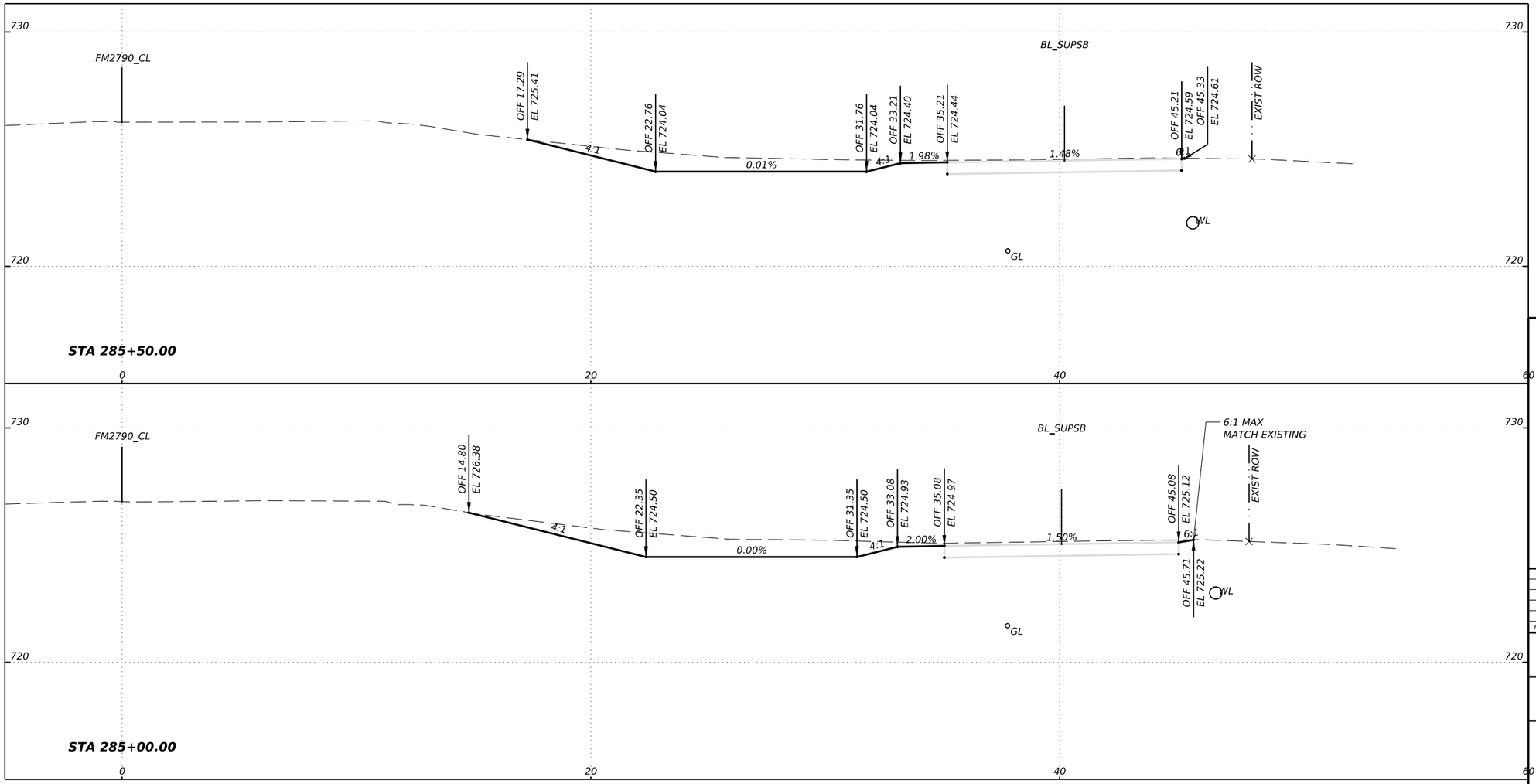
FM2790,COTTAGE,PRAIRIE

PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 5 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		155



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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 6 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		156

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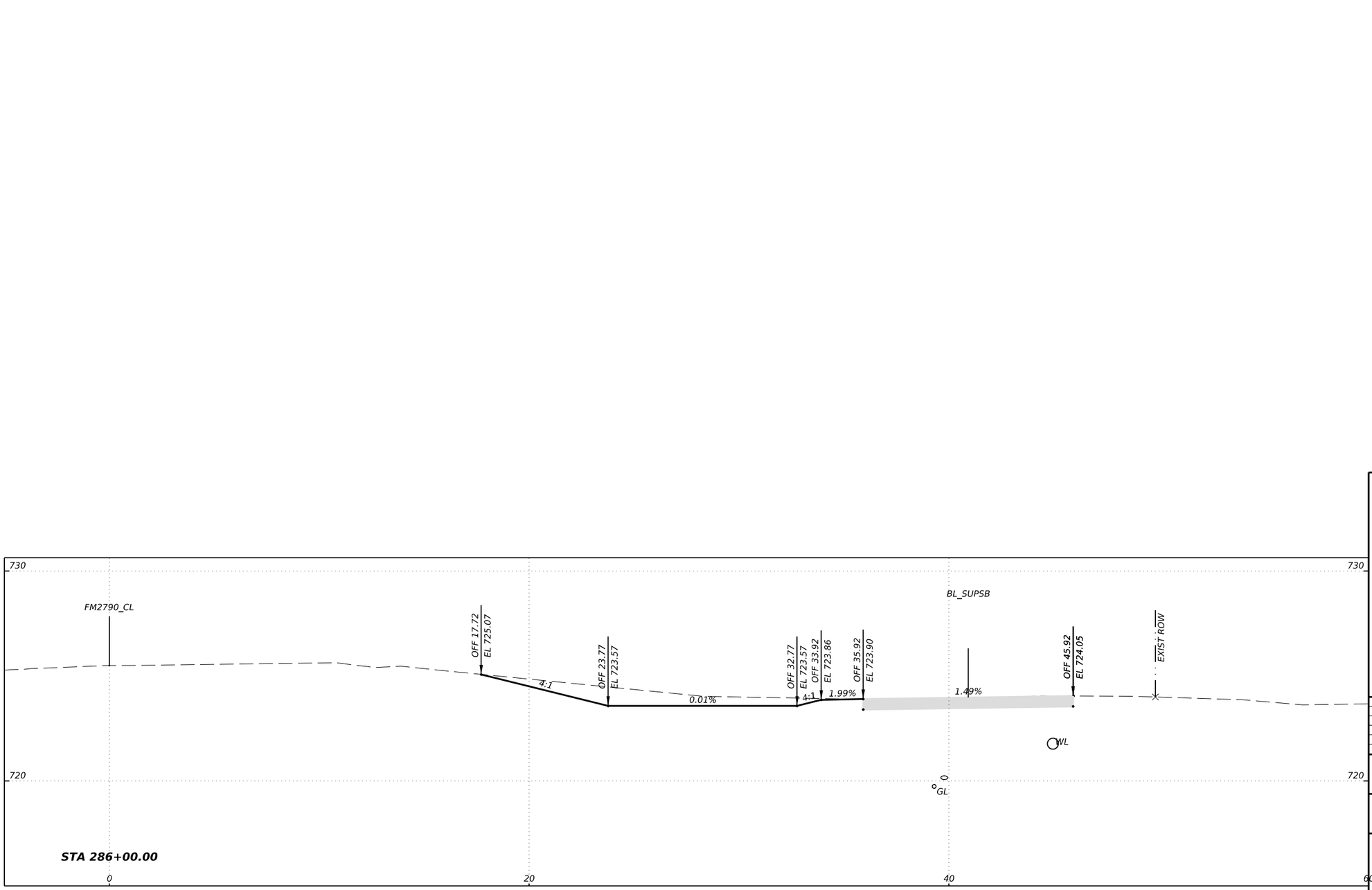

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 7 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		157

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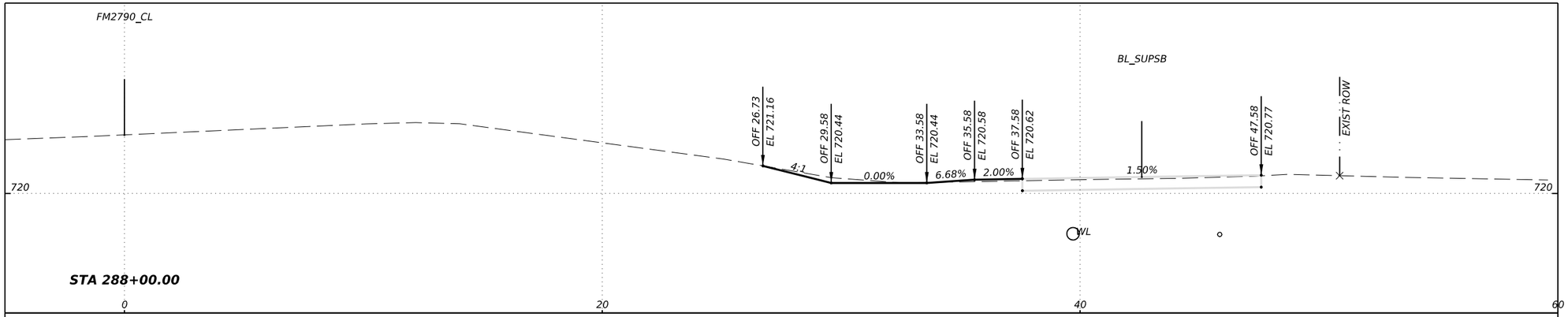

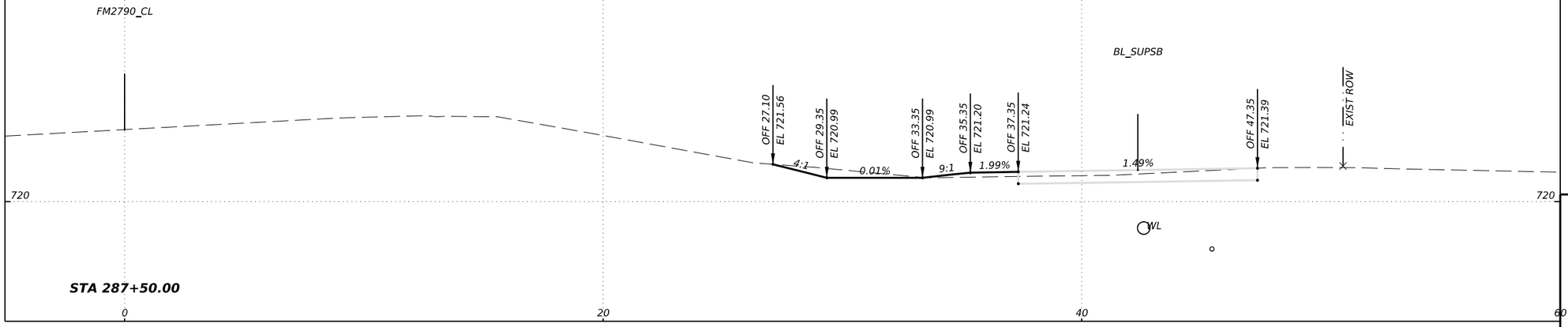

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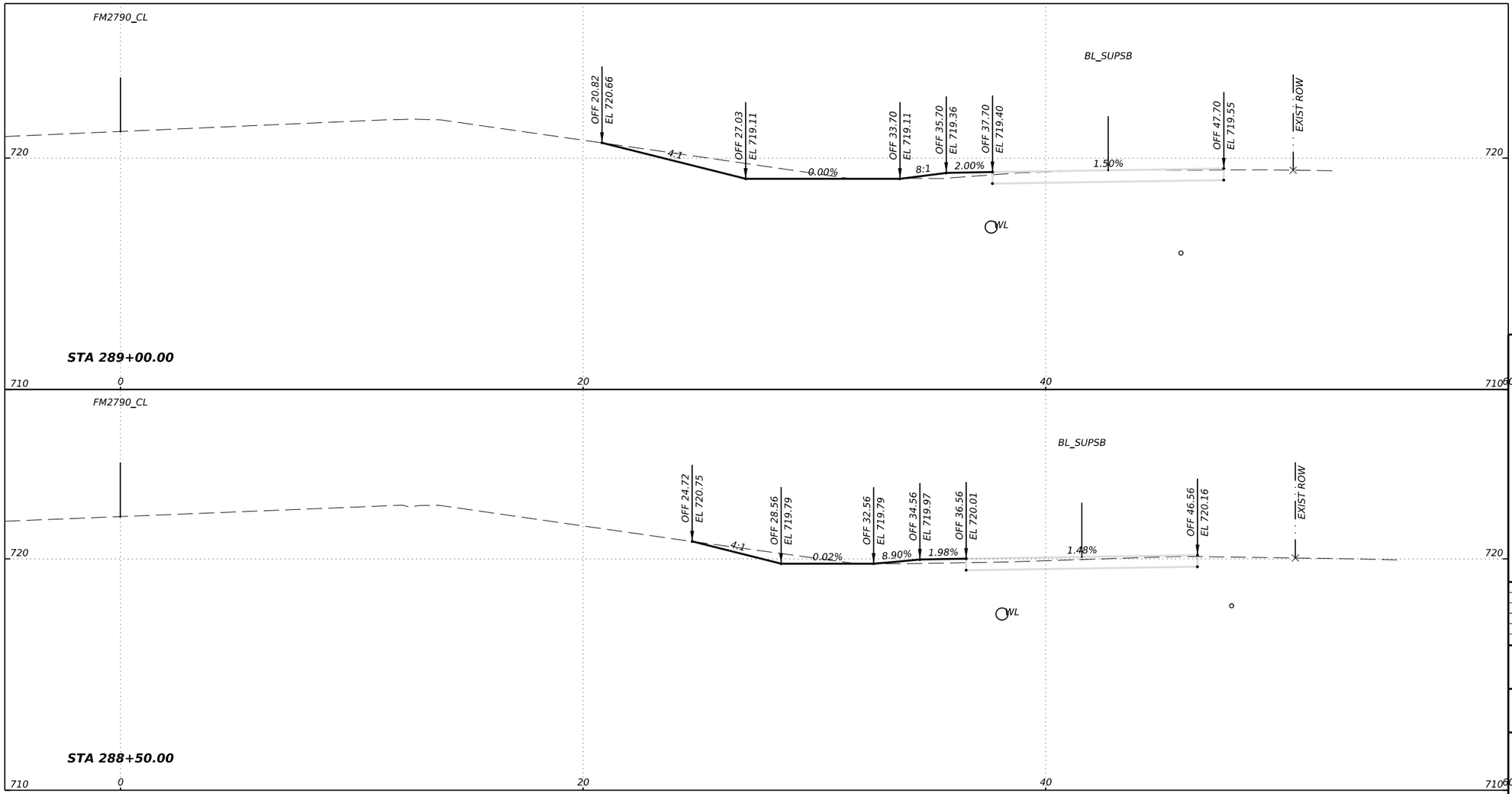
PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 8 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		158



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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 9 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		159

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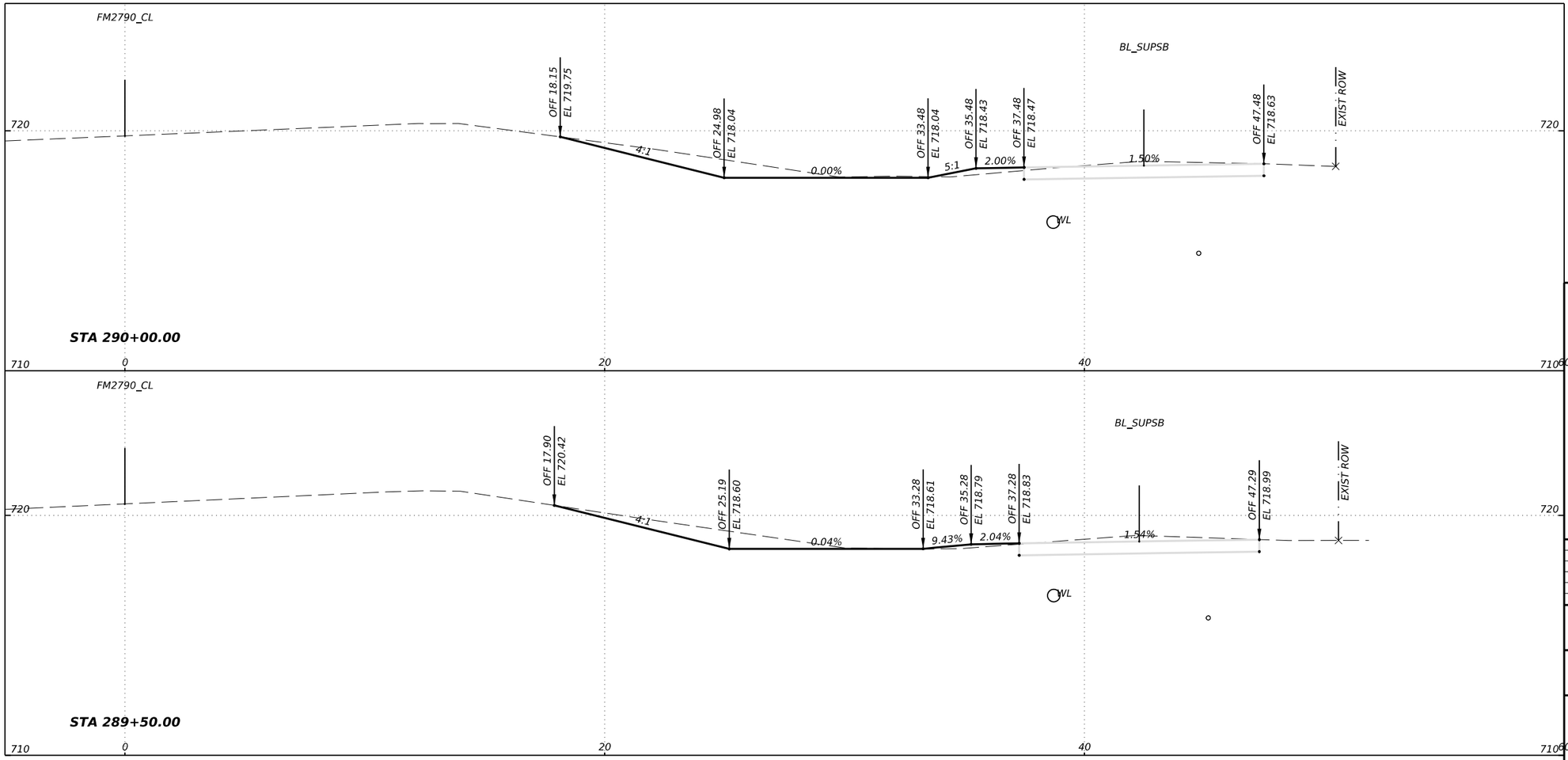

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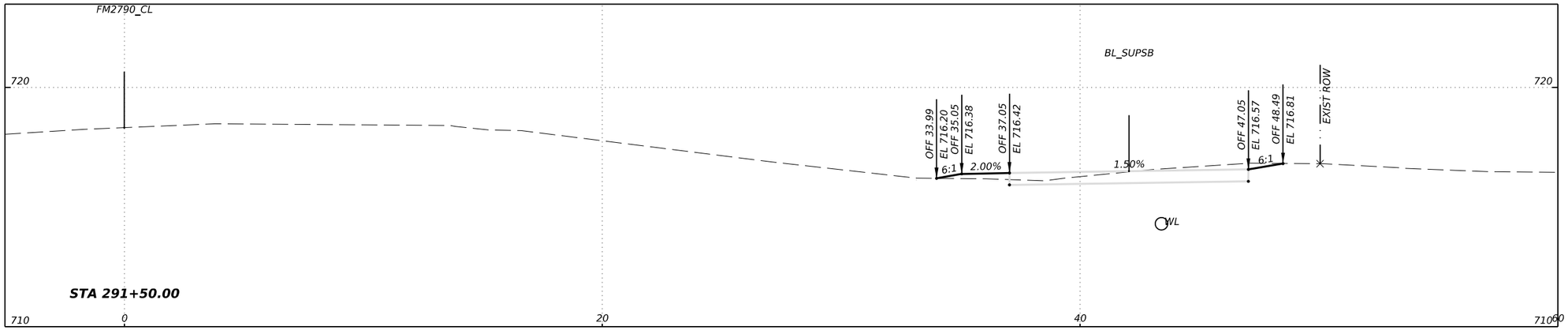
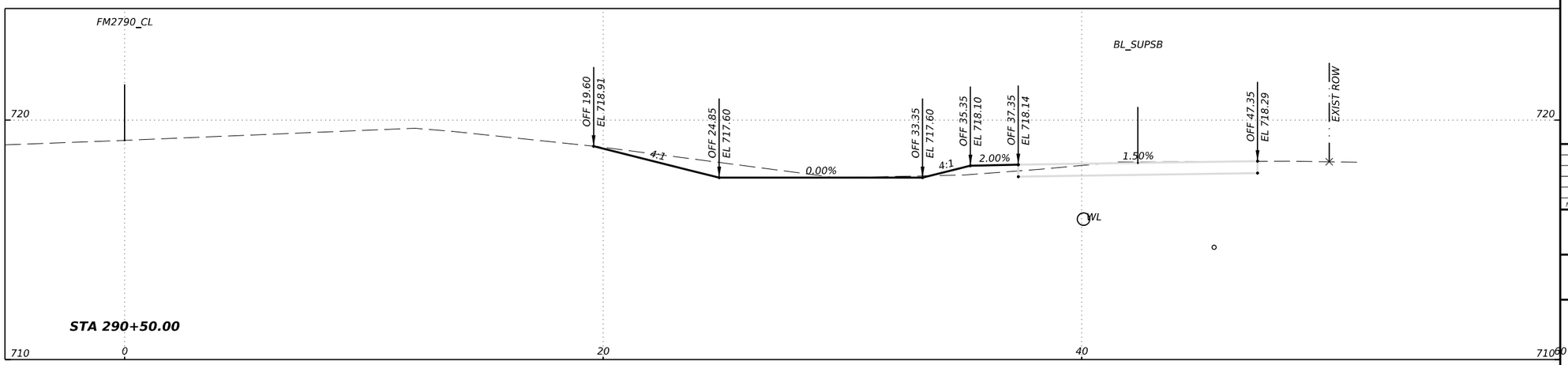
PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 10 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		160





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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 11 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		161

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DW:
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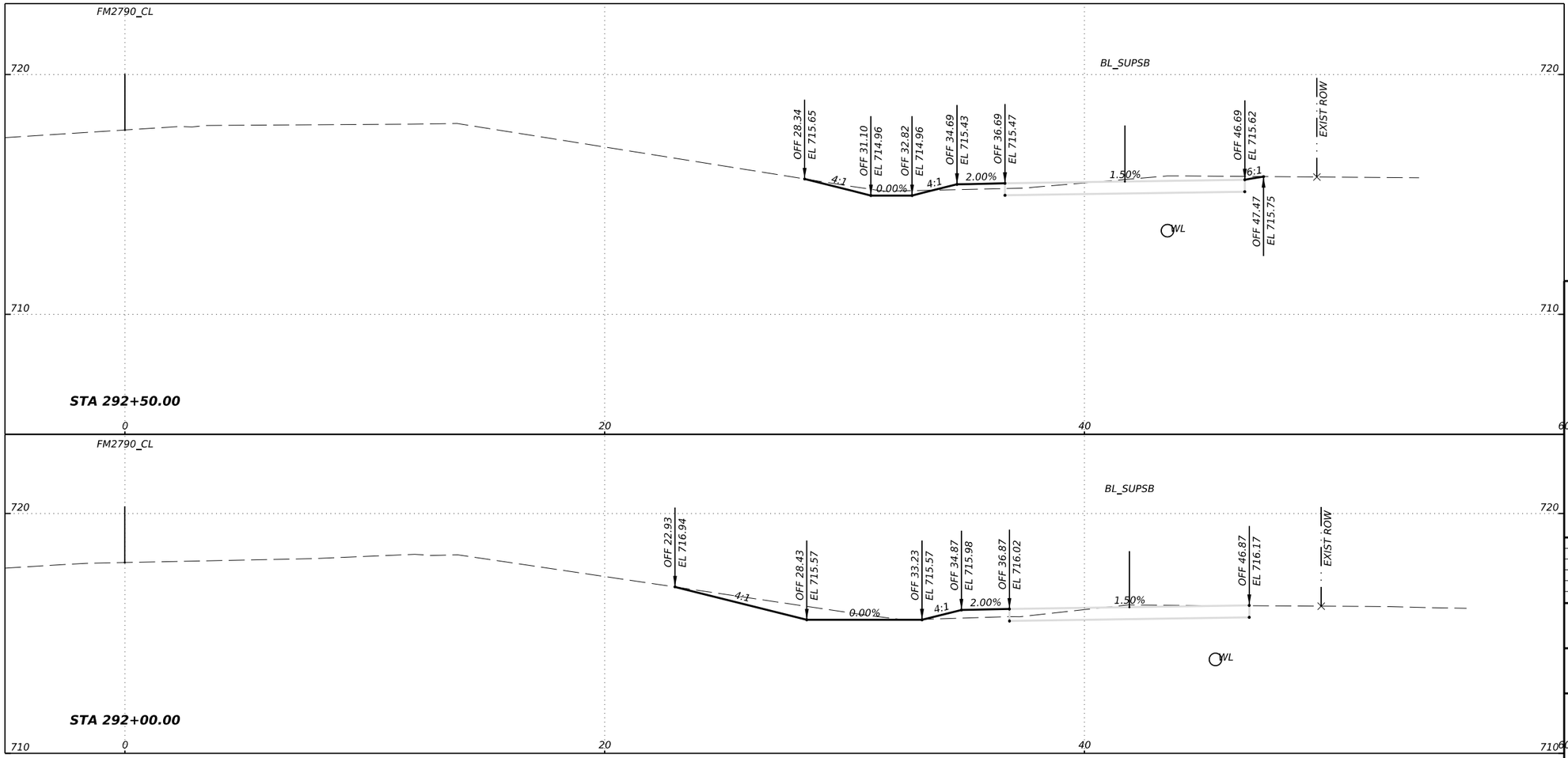

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 12 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		162

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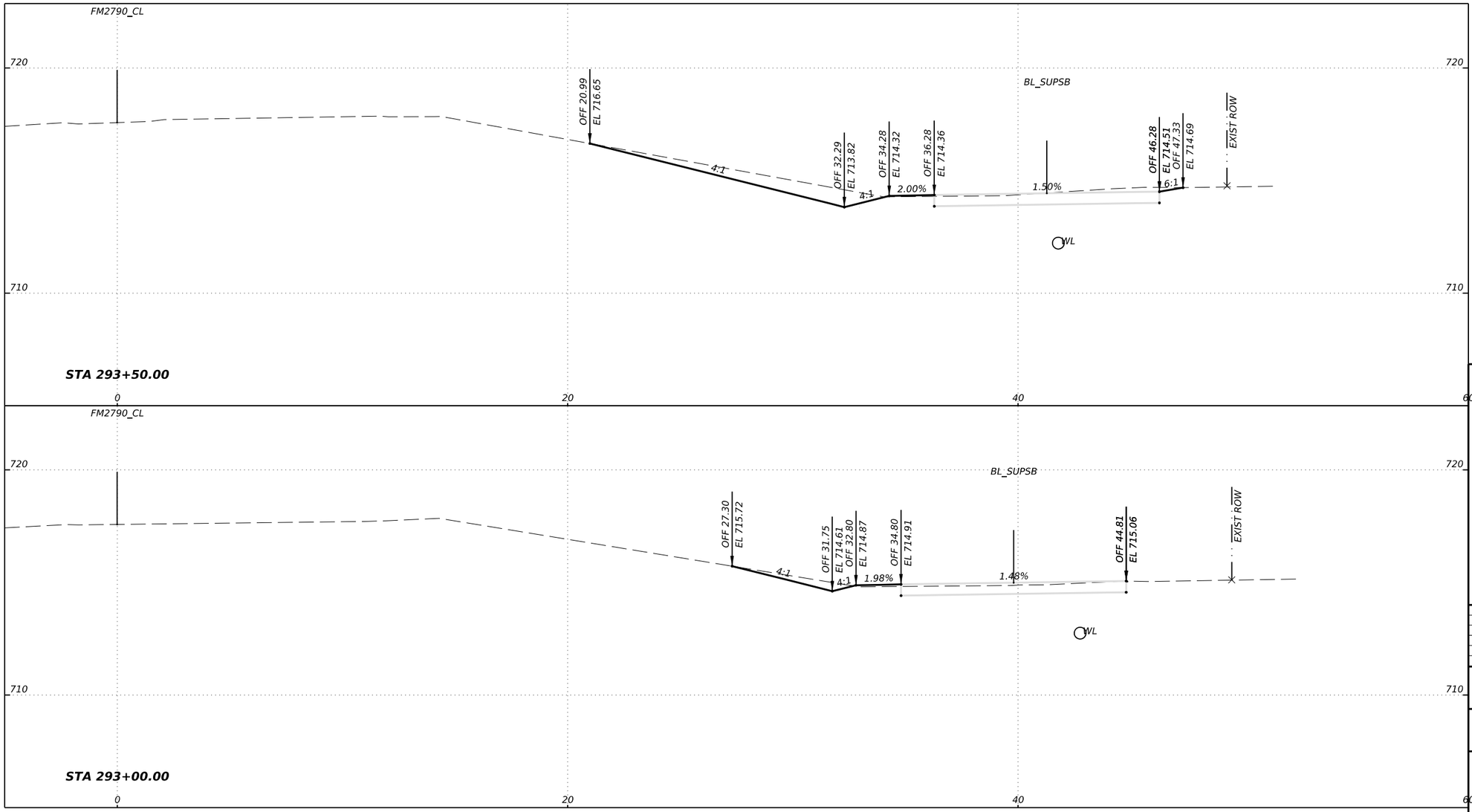

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 13 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		163

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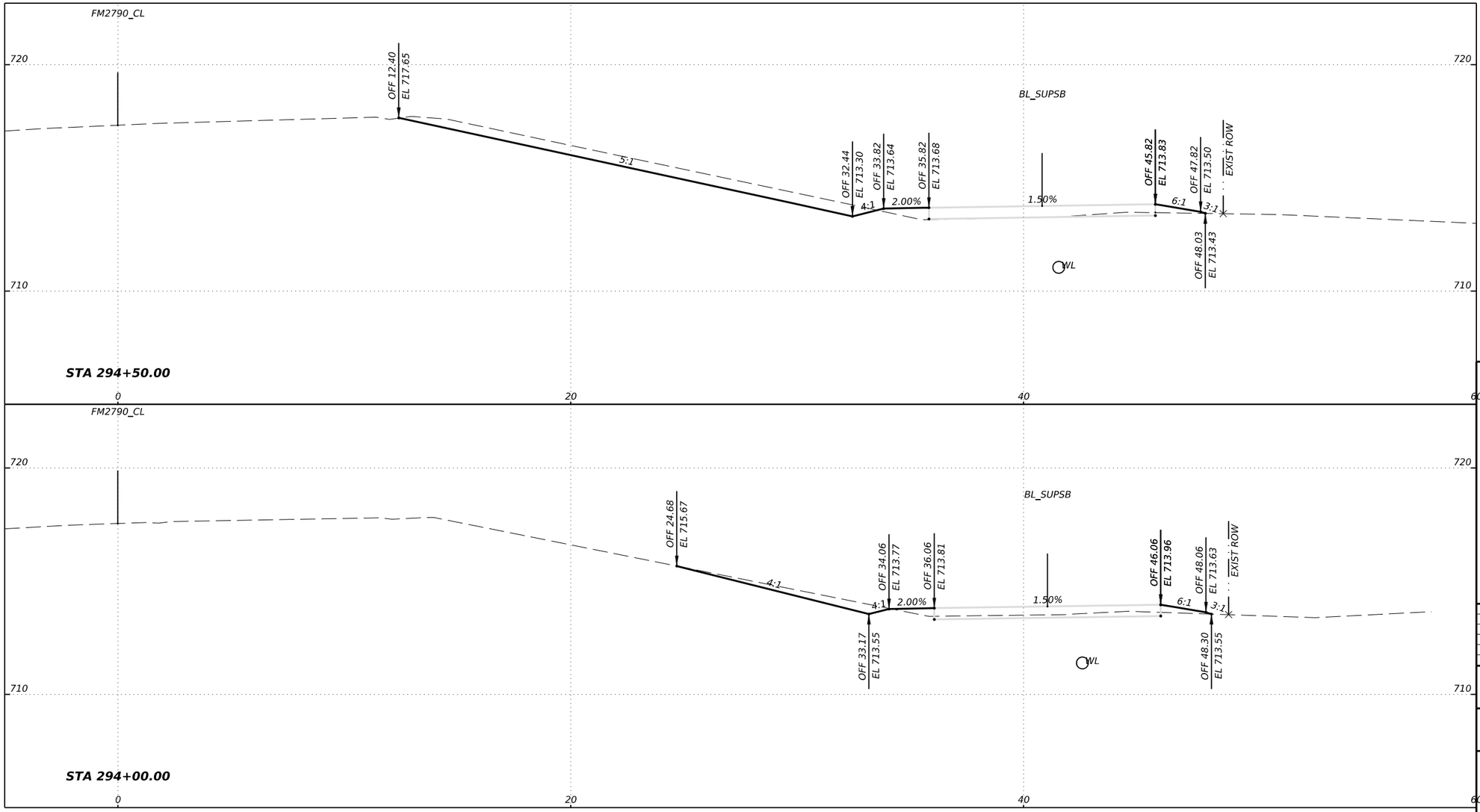

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 14 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		164

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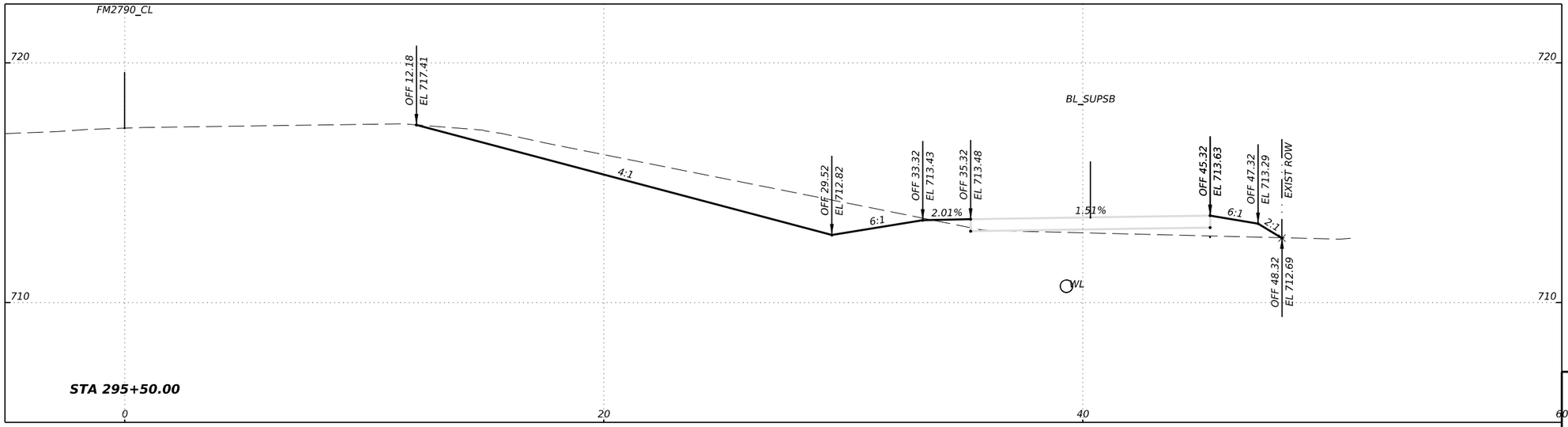

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 15 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		165

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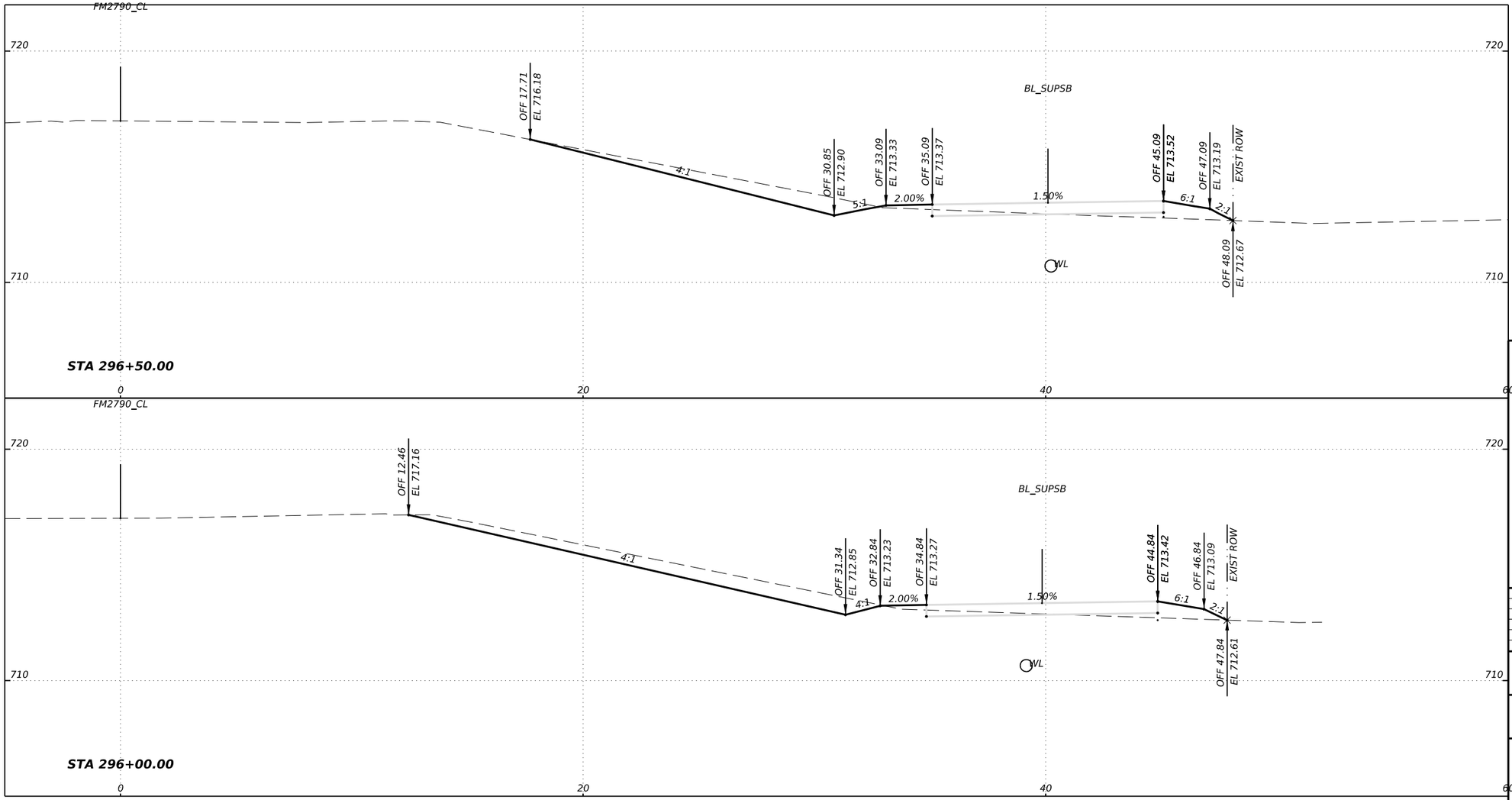

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 16 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		166

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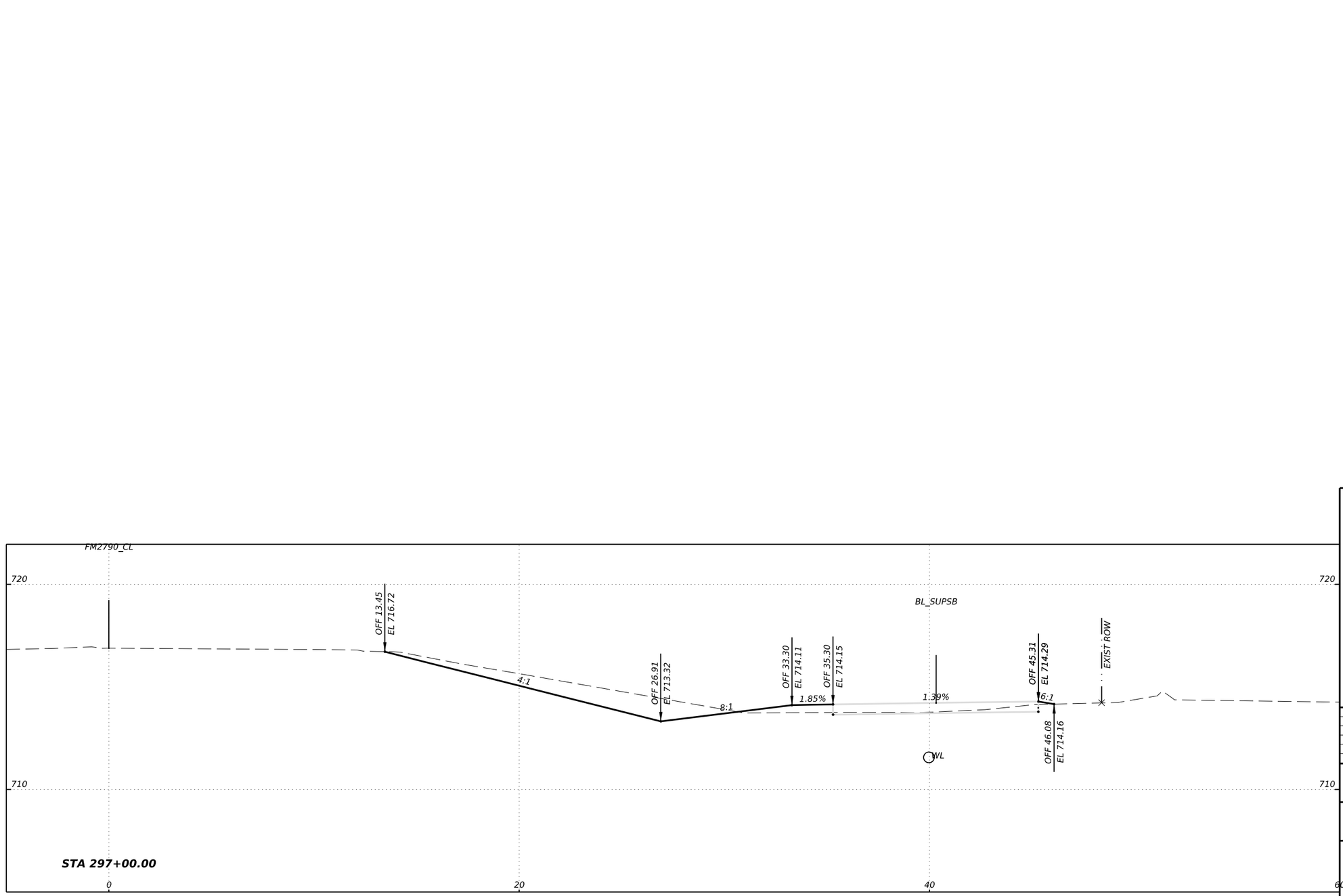

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 17 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		167

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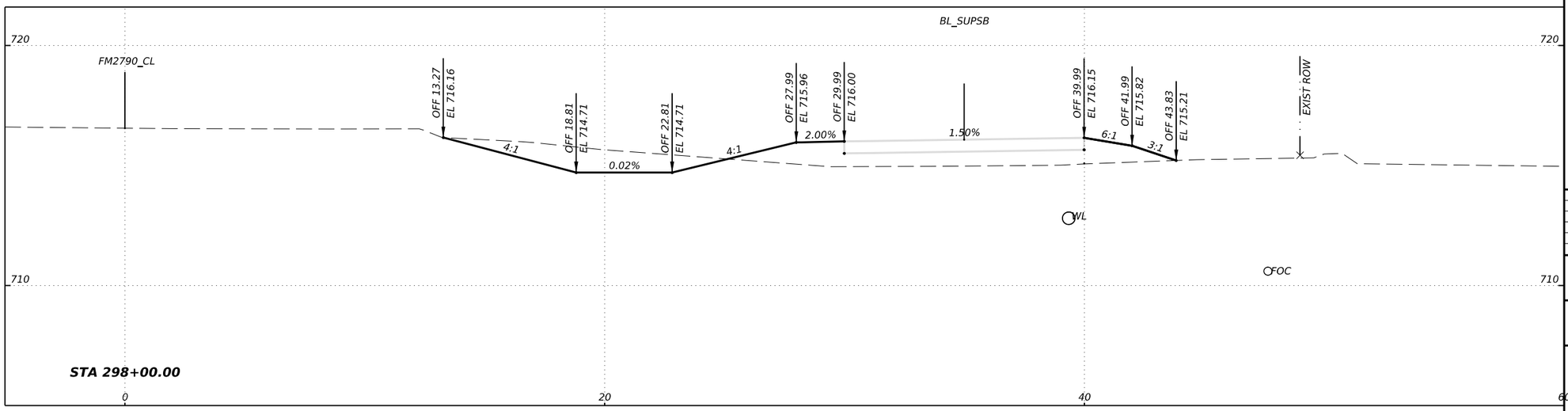

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 18 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		168

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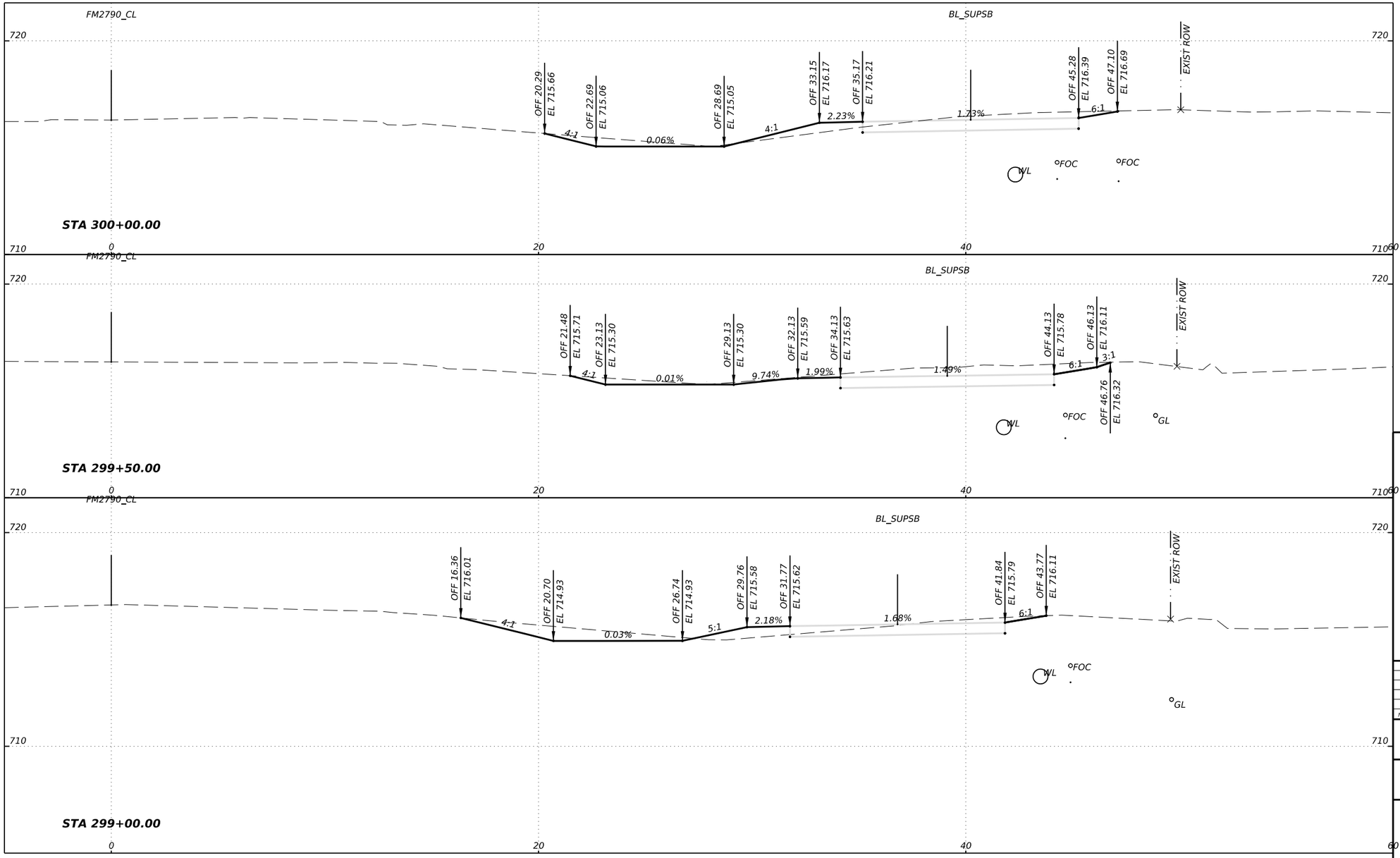

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PROPOSED CROSS SECTIONS SHARDED USE PATH SOUTHBOUND

SHEET 19 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		169

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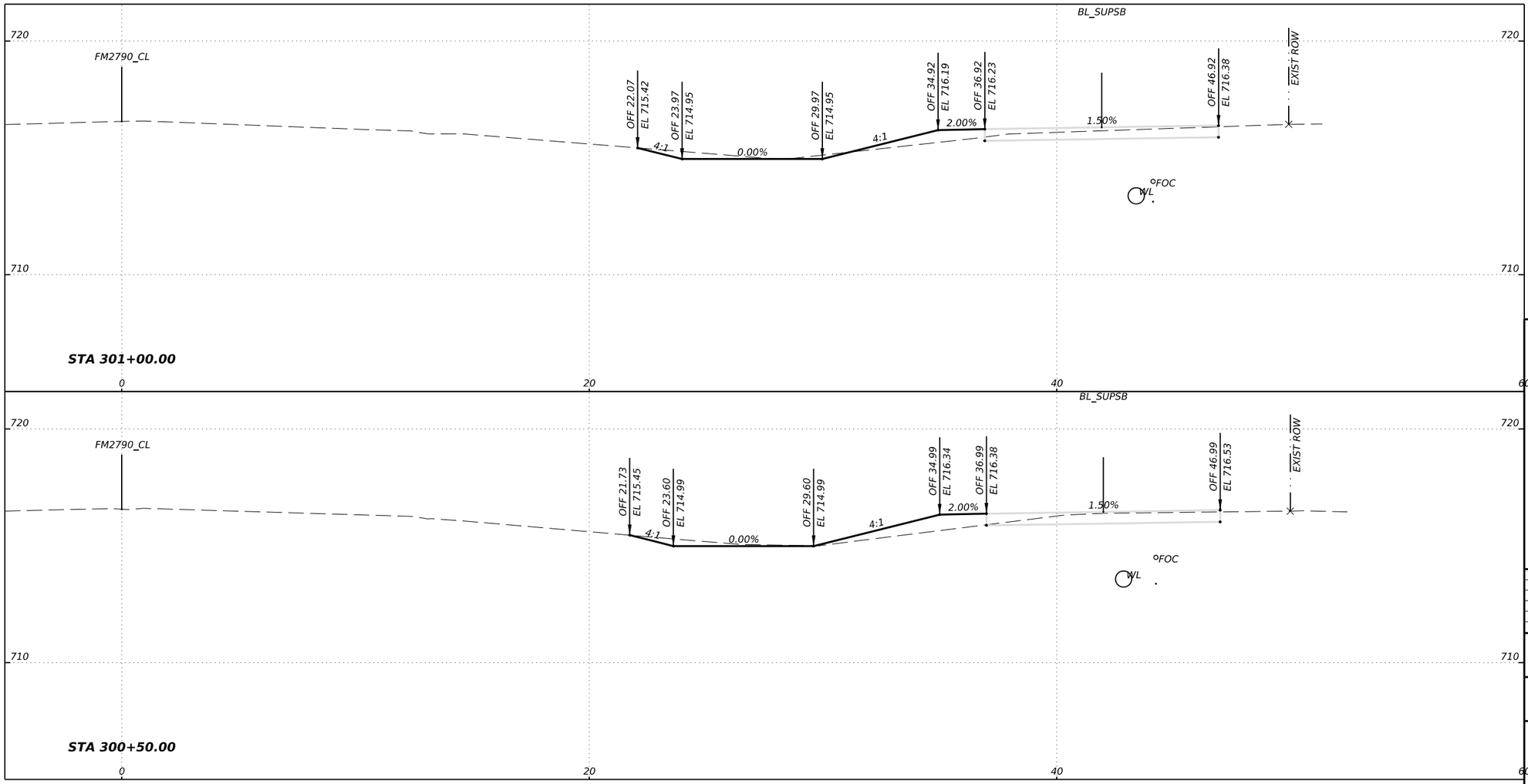

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SHEET 20 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		170

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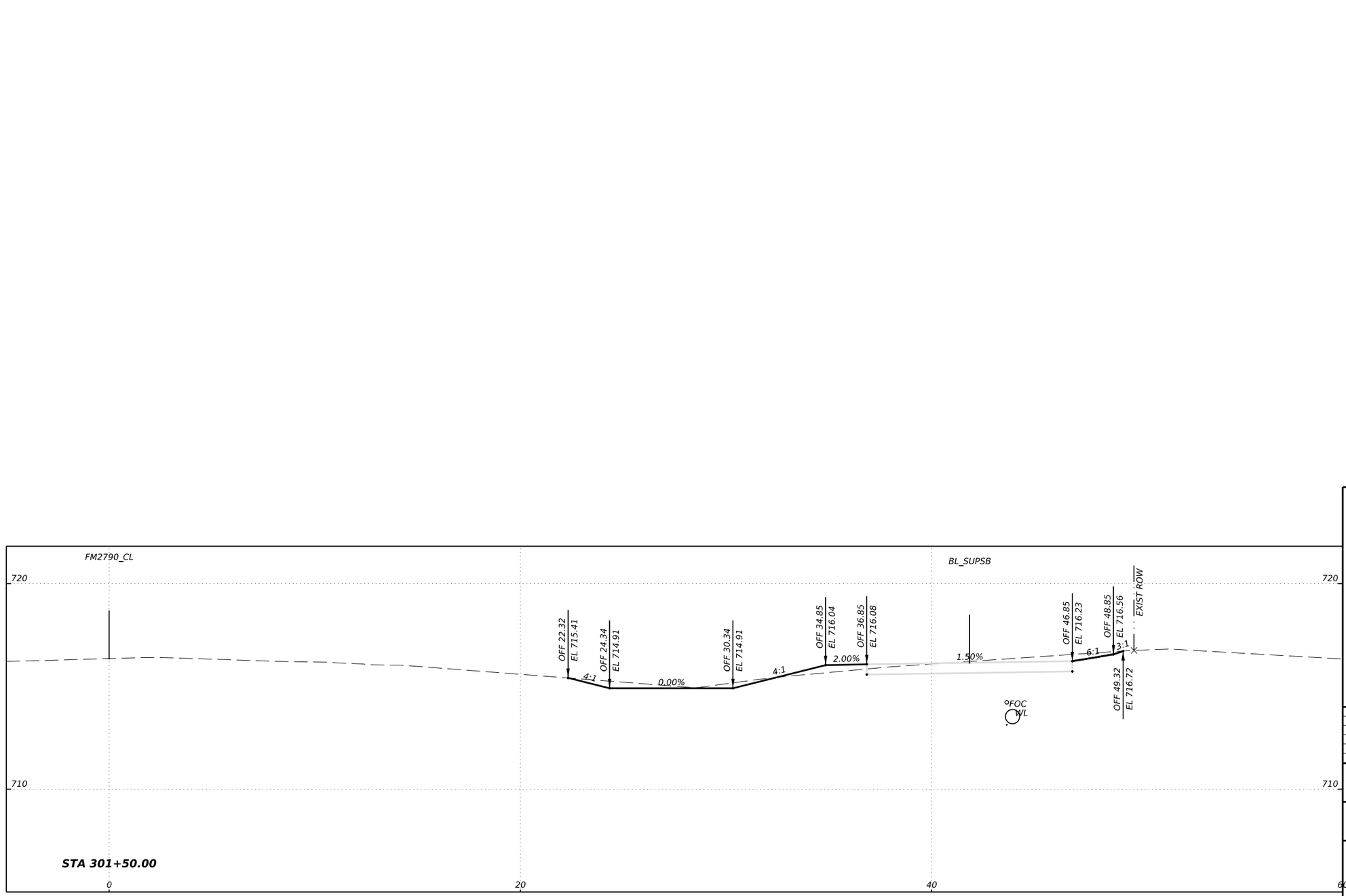
DW:
CK:
DW:



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SHEET 21 OF 21

CONT	SECT	JOB	HIGHWAY
0915	00	252	VARIOUS
DIST	COUNTY		SHEET NO.
SAT	BEXAR		171

DATE: 8/22/2023 5:38:22 PM
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